GLOUCESTER COUNTY SPECIFICATION MANUAL

Design Standards for
Highway and Related Land Improvements
In Gloucester County

Office of the County Engineer

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CHAPTER I

INTRODUCTION

A. Objective. All site plans, subdivision plats and accompanying development design plans shall conform to the design standards, as set forth in this County Specification Manual, which are intended to encourage desirable development patterns within the County.

B. Design standards include, but are not limited to: auxiliary turning lanes; barrier-free design; buffering; curbing, drainage; driveways, intersections; right-of-way; roads; setback requirements; sidewalks; sight clearance and distance, traffic control devices and signals; and utilities.

C. The design criteria set forth herein are those which may be requested or enforced by the Gloucester County Planning Board or the County Engineer in the review and decision of development applications.

D. Responsibility for Design. Within the criteria established by, and subject to the review and action of the County approving authority, design of a site plan or subdivision is the responsibility of the developer, and he shall be responsible for and bear the entire cost of any and all investigations, tests, reports, surveys, samples, calculations, environmental assessments, designs, researches or any other activity necessary for the completion of the design. The standards set forth in this Specification Manual and the accompanying Land Development Resolution shall be taken to be the minimum necessary to meet their intent and purpose. In cases not covered by these standards, sufficient precautions shall be taken to assure that the eventual design of the subject site is conducive to the implementation of the intent and purpose of this Specification Manual and the Land Development Resolution.

E. Design Data. To properly execute the design of a site plan or subdivision, it is anticipated that the developer will obtain or cause to be obtained certain design data, including but not limited to stormwater calculations, soil tests and analyses, environmental assessments, traffic studies and traffic projections, surveys, reports and similar design data. Any and all such data obtained by the developer, or by others retained by him to complete the design, shall be made available to the County approving authority, the County Engineer, the County Planning Division and professional consultants employed by the County for the purpose of reviewing the proposed design. Should the County Engineer determine that the design data submitted are not sufficient for the purpose of completing a full review of the proposal, he may request the applicant to provide such additional information as is deemed necessary. Until the applicant supplies such information, no submission under the provisions of the Land Development Resolution shall be deemed complete.

F. Design Standards. The design standards to be used shall be those set forth in this Specification Manual, the Land Development Resolution and the Official County Map. If it becomes necessary for a developer to use design standards other than those listed above the following may be used;

1. A current edition of "A Policy on Geometric Design of Highways and Streets, as published by the American Association of State Highway and Transportation Officials (AASHTO).

2. A current edition of the New Jersey Department of Transportation Roadway Design Manual.

If a situation requires the use of a design standard not listed above, the standard must be approved by the County Engineer.

G. General Improvement Standards

1. All improvements shall be installed in complete accordance with the standards set forth in this Specification Manual and the Land Development Resolution, with other particular specifications approved by the County Engineer, and with all other applicable municipal, county, State and federal regulations. Materials and construction shall conform to the latest edition of the New Jersey Department of Transportation standard Specifications for Road and Bridge Construction.

2. Should improvements be required which are not provided for within this Specification Manual and the Land Development Resolution, they shall be designed and constructed in accordance with good engineering practice and recognized design standards. The developer, or his engineer, shall submit detailed design calculations and construction specifications in each such instance. Prior to the initiation of such specialized design, the particular standards to be utilized shall be submitted for review by the County Engineer.

H. Waivers. The applicant may request a waiver from strict compliance with the standards and criteria set forth herein if it can be demonstrated, in writing, that due to site conditions, the literal enforcement of one or more of the design standards will cause undue hardship. The County approving authority may, by majority vote, waive or adjust design standards, pursuant to the recommendations of the County Engineer.

I. This Specification Manual is not inclusive and is subject to revision at the discretion of the County Engineer.

CHAPTER 2

DEFINITIONS

A. Word Usage

1. For the purpose of this Specification Manual, certain terms or words used herein shall be interpreted or defined as follows:

    a. Words used in the present tense include the future; the singular number includes the plural and the plural, the singular; the word "lot" includes the word "plot"; the word "building" includes the word "structure"; the word "occupied" includes the phrase "intended to be occupied"; the word "use" includes the words "arrange" and "designed" and the phrase "intended to be used"; and the word "shall" is mandatory and not directory; and the word "abut" shall include the words "adjacent" and "next to".

    b. The term "such as", where used herein, shall be considered as introducing typical or illustrative, rather than an entirely exclusive or inclusive designation of, activities, establishments or structures.

B. Terms Defined

1. Certain words, phrases and terms in this Specification Manual are defined for the purpose herein, as follows:

    ABUTTING COUNTY ROAD – The right-of-way of any existing or proposed road within the County Road System, under the County's jurisdiction, or shown in the adopted County Development Plan or on the Official County Map, which contacts the property line bounding any lot or parcel of land.

    ACCESS PERMIT – The written permission, issued by the Permit Division of the Department of Public Works, allowing one or more driveways entering on a County road, the construction of sidewalk or curbing, or any other related work within the limits of the County right-of-way.

    ADVERSE DRAINAGE CONDITION – The absence or present inadequacy of drainage facilities or drainage easements in a drainageway leading to, along, through or under a County road or County drainage structure, either within or exterior to a proposed subdivision or site development including facilities of such location, size, design, construction or condition that storm drainage cannot be adequately provided for, that either flooding, erosion, silting, undermining or other damaging effects to a County road or County drainage facility will result, or that a threat exists to damage property as a result of storm drainage from, along or through a County road, County drainage facility or any other private property.

    APPLICANT – A developer submitting an application for development.

APPLICATION FOR DEVELOPMENT – The application form and all accompanying documents required by the Land Development Resolution for review and action on a subdivision plat, site plan or planned development.

BARRIER-FREE DESIGN – The design of facilities to eliminate physical obstacles which inhibit the mobility of the physically disadvantaged.

BENCHMARK – A mark on a fixed and enduring object indicating a particular elevation, and used as a reference in topographical surveys and tidal observations.

BERM – A mound of soil, either natural or man-made, topped with grass and/or shrubbery, deciduous and/or evergreen trees, and used as a view and/or sound obstruction, or landscape or drainage feature.

BLOCK – Land that is identified and referenced on the official tax map of the municipality within which same is located, or that is described on a recorded instrument, and which contains one (1) or more lots.

BOX CULVERT – A rectangular closed conduit, normally constructed of poured in-place or precast concrete, used to conduct water from one point to another.

BRIDGE – A structure erected over a depression or obstruction, such as, but not limited to, a watercourse, road or railroad, supporting passageway for vehicular, bicycle or pedestrian movement, forming a conduit consisting of approaches, decks, sidewalls, piers and foundations.

CAPITAL IMPROVEMENT – A governmental acquisition of real property of major construction project.

CAPITAL IMPROVEMENTS PROGRAM – The six year plan developed and adopted by the County Planning Board, and/or adopted by the Board of Chosen Freeholders, and which lists plans for the improvement of County facilities including, but not limited to, road and bridge reconstruction, road widening, signalization, and drainage.

CENTERLINE OF THE RIGHT-OF-WAY – A reference map line which is located in the exact center of the original right-of-way as laid out by road return or the County Engineer. This may or may not be the exact center of the current paved roadway.

CONCEPT PLAN – The same as "SKETCH PLAN".

CONTROL OF ACCESS – A condition where the right of access to a County road is fully or partially controlled by the Gloucester County Engineer.

CORNER CLEARANCE – The distance from a projection of right-of-way lines, perpendicular or radial, to the curbline, and thence along the curbline to the nearest edge of a proposed curbline opening.

COUNTY APPROVING AUTHORITY – The Land Development Review Committee or the County Planning Board, whichever body acts on an application for development or takes other action, pursuant to the Land Development Resolution.

COUNTY DEVELOPMENT PLAN – A composite of the plan for the physical development of the County, with the accompanying maps, plats, charts and descriptive and explanatory matter, as adopted by the Gloucester County Planning Board, pursuant to N.J.R.S. 40:27-2 and N.J.R.S. 40:27-4.

COUNTY DRAINAGE FACILITY – Any drainage facility for which the County of Gloucester is responsible, in whole or in part.

COUNTY ENGINEER – The County Engineer of the County of Gloucester acting directly or through his/her duly authorized representatives acting within the scope of the particular duties delegated to them.

COUNTY HIGHWAY – The same as "COUNTY ROAD".

COUNTY MASTER PLAN – The same as "COUNTY DEVELOPMENT PLAN".

COUNTY PLANNING BOARD – The Planning Board of the County of Gloucester, as defined in N.J.R.S. 40:27-6.1.

COUNTY ROAD – For the purposes of this Specification Manual, those existing and proposed roads under the legal jurisdiction of Gloucester County, as shown in the adopted County Development Plan or on the Official County Map.

COUNTY STORMWATER MANAGEMENT AREA – Any area within which the County has constructed facilities to accommodate stormwater runoff.

CROSS-SECTION – A diagram of the vertical cut-through a road, normally perpendicular to the centerline, showing the right-of-way lines, centerline of the roadway, base line of the project, median, pavement, cross-slope, number of traffic bearing lanes, sidewalks, curbs, shoulders, roadside slopes superimposed over the existing terrain and any necessary adjacent easements.

CROSSWALK – Lines painted on pavement to facilitate pedestrian movement across travel lanes, per The Manual On Uniform Control Devices (MUTCD).

CULVERT – A round or elliptical, normally prefabricated, closed conduit used to conduct water from one point to another.

CURB – The concrete edging along a road.

CURBLINE – An existing or proposed line which establishes the outer edge of a roadway pavement or shoulder. A "Curbline" may also be the gutterline.

CURB OPENING – The overall opening dimension at the curbline, measured from the extreme outer edges of the existing or proposed property access points.

CURB RETURN – Curbing along the radius of a road or driveway opening, which extends from a point tangent to the adjacent traveled lane, paved shoulder or acceleration or deceleration lanes, to a point tangent to the road or driveway lane.

CURRENT STANDARDS – The standards and specifications, as prescribed by this Specification Manual and the Official County Map, establishing pavement widths, right-of-way widths, type of pavement, curbing, drainage facilities or any other facility authorized by law to be constructed or reconstructed and maintained and regulated by the County.

DAYS – Calendar days.

DECELERATION LANE – A driving lane designed primarily for the deceleration of vehicles leaving the through-traffic lanes. The term deceleration applies broadly to the added pavement joining the traveled way of a County road with that of an intersecting road or driveway. This lane must be constructed in conformance with Gloucester County road design standards, subject to modification by the County Engineer, where those standards are in conflict with special site conditions.

DETENTION BASIN – A man-made or natural water collector facility designed or intended to collect storm water runoff in order to alternate its flow, and to gradually release same in to natural or man-made outlets.

DEVELOPER – The legal or beneficial owner or owners of a lot or of any land proposed to be included in a proposed development, including the holder of an option or contract to purchase, or any other person having enforceable proprietary interest in such land.

DEVELOPMENT – The construction, reconstruction, conversion, structural alteration, or relocation or enlargement of any building or other structure; and any use or change in the use of any building or other structure, or land, or extension of use of land for which permission may be required pursuant to the Land Development Resolution.

DISTANCE BETWEEN DRIVEWAYS – The distance measured along the curbline, between the tangent projections of the inside edges of two (2) adjacent driveways having the same frontage.

DRAINAGE – The removal of surface water or groundwater from land by drains, grading, or other means, and which shall include control of runoff during and after construction or development to minimize erosion and sedimentation, to assure that adequacy of existing and proposed culverts and bridges, to induce water recharge into the ground where practical, to lessen non-point pollution, to maintain the integrity of stream channels for their biological functions as well as for drainage, and the means necessary for water supply preservation or prevention or alleviation of flooding.

DRAINAGE AREA – That area contributing runoff to a single point measured in a horizontal plane, and which is enclosed by a ridge line.

DRAINAGE BASIN – All that area of land that collects surface water runoff from a drainage area, as defined above.

DRAINAGE COVENANT – A written agreement signed by the land owner, which states that responsibility for operating and maintaining a drainage facility will remain with the land owner and pass to any successive owner of the property.

DRAINAGE DITCH - A man-made or natural trench or swale used for the purpose of carrying storm, surface or subsurface water from one point to another.

DRAINAGE EASEMENT – The land or assignable rights and restrictions to the lands required for the installation and/or maintenance of stormwater sewers, culverts, drainage channels, ditches, swales or facilities, or that which is required along a natural stream or watercourse for preserving the channel, and providing for the flow therein to safeguard the public against flood damage, sedimentation, erosion, or for similar or related storm drainage purposes, including requiring assignable rights and restrictions in floodplain lands from upstream property owners in order to facilitate the impoundment of water in the floodplain, pursuant to the provisions of N.J.S.A. 58:1, 13:1A-8 and 13:1A-12, et.seq.

DRAINAGE FACILITY – Any component of the drainage system.

DRAINAGE PLAN – A plan of the existing or proposed stormwater management system design in accordance with the requirements of the Land Development Resolution and this Specification Manual.

DRIVEWAY – A paved or unpaved area used for the ingress or egress of vehicles, and allowing access from a street to a building or other structure, facility or use.

DRIVEWAY ANGLE – An angle of 90° or less between the driveway centerline and roadway centerline.

DRIVEWAY WIDTH – The narrowest width of any driveway, within the right-of-way area, normally measured to the edges of the driveway.

EASEMENT – A grant of one or more of the property rights by the property owner to and/or for use by an individual, the County, State, Utilities Authority or other public or quasi-public agency or their agents.

EASEMENT FOR COUNTY ROAD PURPOSES – The assignable rights and restrictions conveyed to Gloucester County for the purpose of installation of utilities, or for construction, reconstruction, widening, repairing, maintaining or improving a County road, or for the construction, reconstruction or alteration of facilities related to the safety, convenience or carrying capacity of the County road, including drainage facilities, traffic control devices and pedestrian walkways, or for purposes of maintaining a clear sight area.

EDGE CLEARANCE – The distance measured along the edge of roadway from the lateral property line extended to the beginning of a driveway.

EXTENDED CAPITAL IMPROVEMENTS PROGRAM – The plan which lists all capital improvement projects that have been identified but can not be funded in the County's six year Capital Improvements Program,

EXTENDED PROPERTY LINE – A line, radial or perpendicular to the edge of roadway or curbline, at each end of the frontage, extending from the right-of-way line to the edge of roadway or curbline.

FINAL APPROVAL – The official action of the County Approving Authority taken on a preliminary approved subdivision after all conditions of preliminary approval, engineering plans and other requirements have been completed or fulfilled, and guarantees for the required improvements have been completed or fulfilled, and guarantees for the required improvements have been properly posted.

FINAL PLAN – The final map and design plan of all or a portion of a proposed application for development, meeting all of the standards and regulations of the Land Development Resolution, and this Specification Manual, and meeting all the conditions established by the County Approving Authority in granting preliminary development approval.

FINAL PLAT – Final plats required to be filed with the County Clerk must also comply with the New Jersey Map Filing Act (N.J.R.S. 46:23-9.9 et seq, P.L. 1960, c.141).

FINISHED GRADE – The final elevation of the ground surface, walks, streets or roads resulting from development, as shown on approved plans or designs relating thereto.

FRESHWATER WETLAND – The area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophilic vegetation; provided that the designation of freshwater wetlands is based upon the three-parameter approach (hydrology, soils and vegetation) enumerated in the January 1989 "Federal Manual for Identifying and Delineating Jurisdictional Wetlands" developed by the USEPA, U.S. Fish and Wildlife Service, Department of the Army, and the Soil Conservation Service, or any subsequent amendments thereto.

HYDRIC SOIL – A soil that, in its undrained condition, is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophilic vegetation. These soils may be on New Jersey's Official List of Hydric Soils developed by the United States Department of Agriculture Soil Conservation Service and the United States Fish and Wildlife Service National Wetlands Inventory, in the "The Wetlands of New Jersey" 1985, published by the United States Fish and Wildlife Service or in the USEPA Wetlands Identification and Delineation Manual. Alluvial land, as mapped by soil surveys, may also be considered a hydric soil for the purposes of wetland classification. Also, wet phase of somewhat poorly drained soils not on New Jersey's Official List of Hydric Soils may also, on occasion, be associated with a wetland, and therefore, for the

purposes of this Specification Manual and the Land Development Resolution, shall be considered a "Hydric Soil".

IMPERVIOUS COVERAGE – The total area of impervious surfaces on a lot, expressed as a percentage of the lot area.

IMPERVIOUS SURFACE – A surface that has been compacted or covered with a layer of material so that it is highly resistant to infiltration by water.

IMPROVEMENT – Any man-made, immovable item which becomes part of, is placed upon, or is affixed to land.

INFILTRATION – The passage of water into soil material or other permeable surface.

INGRESS – Access or entry.

LAND DEVELOPMENT REVIEW COMMITTEE – The Committee of the Planning board, created pursuant to the By-Laws of the Board, and vested with the powers to review and act on applications for development.

LAND DISTURBANCE – Any activity involving the clearing, cutting, grading, excavation, filing, transporting, or any other activity which alters land topography or vegetative cover.

LANDSCAPING – The means of improving the aesthetic value of a project or project sites through the use of grass, ground covers, planting, shrubs and trees in a coherent manner consistent with good design practices.

LETTER OF CREDIT An agreement, by a bank or other financial institution, made at the request of an applicant, and of a kind within the scope of N.J.S.A. 12A:5-102 that the issuer will honor drafts or other demands for payment upon compliance with conditions specified in the credit. Credits shall be irrevocable and in a form which is acceptable to the Gloucester County Planning Board Attorney.

LOT – A parcel of land that is identified and referenced on the official tax map of the municipality within which same is located, or that is described on a recorded instrument.

MAINTENANCE GUARANTEE – Any security, acceptable in form to, and in an amount recommended by, the Gloucester County Highway Division, not to exceed 15% of the total cost and installation of improvements, to assure the maintenance of duly approved improvements installed by the developer. Such security shall be in effect for a period of two years.

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS (MUTCD) – The manual, as published by the U.S. Department of Transportation, Federal Highway Administration (FHWA), and adopted by the FHWA Administrator, as a national standard for applications on all classes of highways, and as adopted by the NJDOT for all classes of highways in New Jersey.

MARGINAL ACCESS STREET – A service street that runs parallel to a higher-order street which, for purposes of safety, provides access to abutting properties and separation from through traffic.

MEDIAN – That portion of a divided street separating the traveled ways of traffic.

NATURAL DRAINAGE FLOW – The pattern of surface and stormwater drainage from a particular site, or portion thereof, before the construction of installation of improvements or prior to any grading, excavation or filing.

NATURAL GROUND SURFACE – The ground surface in its original state before the construction or installation of improvements, or prior to any grading, cutting or filing.

NATURAL GRADE – The elevation of the ground surface in its natural state before any grading, cutting or filling.

OFFICIAL COUNTY MAP – The map, with changes and additions thereto, adopted and amended, from time to time, by resolution of the Board of Chosen Freeholders of Gloucester County, pursuant to N.J.R.S. 40:27-5.

OFFSITE – Located outside the lot lines of the lot-in-question, but within the property (of which the lot is a part) which is the subject of a development application or contiguous portion of a street or right-of-way.

OFFSITE OR OFF-TRACT IMPROVEMENTS – Improvements to County facilities, including but not limited to roads, traffic facilities, culverts, bridges and other drainage facilities located outside of a given development, which must be made to accommodate increased traffic or water run-off which would be generated as a result of the development.

OFF-TRACT – Not located on the property which is the subject of a development application, or on a contiguous portion of a street or right-of-way.

ONSITE – Located on the lot in question.

ON-TRACT – Located on the property which is the subject of a development application, or on a contiguous portion of a street or right-of-way.

OWNER – See "PROPERTY OWNER".

PARCEL – A lot or tract of land.

PARKING AISLE – The traveled way by which vehicles enter and department parking spaces.

PARKING AREA – Any public or private land area designed, used, or intended to be used for the parking of motor vehicles, including parking lots, garages, private driveways, and legally designated areas of public or private streets.

PARKING LOT – An off-street, ground level area, usually surfaced and improved, for the temporary parking of motor vehicles.

PARKING SPACE – A suitable space provided for vehicle parking, including adequate driving access thereto and egress therefrom.

PERFORMANCE GUARANTEE – Any security for improvements acceptable in form by the Gloucester County Planning Board Attorney, and in an amount established by the Gloucester County Engineer, not to exceed 120% of the cost and installation of the improvements as determined by the Office of the County Engineer.

PREVIOUS SURFACE – Any material that permits full or partial absorption of stormwater.

PLAT – A map or maps of a site showing property lines, easements, rights-of-way and legal descriptions.

PRELIMINARY APPROVAL – The conferral of certain rights prior to final approval, after specific elements of a development plan have been agreed upon by the County approving authority and the applicant.

PRELIMINARY PLAN – The preliminary map of a proposed application for development, meeting all of the standards and regulations of this Specification Manual and the Land Development Resolution, which is presented to the County approving authority for consideration and preliminary approval, in accordance with the Land Development Resolution.

PROPERTY OWNER – The individual, individuals, firm, association, syndicate, partnership, co-partnership or corporation owning fee or title, or the individual, individuals, firm, association, syndicate, partnership, co-partnership or the corporation in whose name or names the legal title to the property appears by deed duly recorded in the Gloucester County Clerk's Office, or the individual, individuals, firm, association, syndicate, partnership, co-partnership or corporation in possession of the property or buildings under claim of or exercising acts of ownership over the same for himself, or itself, as the case may be, or as the executor, administrator, or guardian of the property.

PROPOSED COUNTY ROAD – A road not presently under the legal jurisdiction of Gloucester County, but shown in the County Development Plan or on the Official County Map as a "proposed County road".

PUBLIC DRAINAGE WAY – The land reserved or dedicated for the installation of stormwater sewers or drainage ditches, or required along a natural stream or watercourse for preserving the biological, as well as drainage function of the channel, and providing for the flow of water to safeguard the public against flood damage, sedimentation and erosion and to assure the adequacy of existing and proposed culverts and bridges, to induce water recharge into the ground where practical, and to lessen non-point pollution.

RESUBDIVISION

a. The further division or relocation of lot lines of any lot or lots within a subdivision previously made and approved or recorded according to law, or;

b. The alteration of any streets or the establishment of any new streets with any subdivision previously made and approved or recorded according o law, but not including conveyances so as to combine existing lots by deed or other instrument.

RETAINING WALL – A structure more than 12" high erected between lands of different elevation to protect structures and/or to prevent the washing down or erosion of earth from the upper slope level.

RETENTION BASIN – A pond, pool, basin or depression formed by the construction of a berm or dam, and built at a location suitable to retain stormwater runoff, allowing this water to percolate into the ground. A "Retention Basin" may also be referred to as a "Recharge Pond".

REVERSE FRONTAGE - The provision in the design of a development allowing for lots contiguous to an abutting County road to front on an internal street, without direct access to said County road.

RIGHT-OF-WAY – A strip of land occupied or intended to be occupied by a street, crosswalk, railroad, road, electric transmission line, gas pipeline, water main, sanitary or storm sewer line main, shade trees, or for another special use or structure. For the purposes of this Specification Manual, such "Right-of-Way" shall be referred to as "ROW". Where appropriate to the context, ROW shall include proposed ROW widths as shown in the County Development Plan or on the Official County Map.

RIGHT-OF-WAY LINE – The existing or proposed outer edge of County road property or easement, separating County property from abutting properties owned by others.

ROAD OPENING PERMIT – The permit issued pursuant to the "Resolution Requiring a Permit for the Opening or Excavating of County Roads in the County of Gloucester" (Resolution #R-36m-82), by the Permit Division of the Gloucester County Department of Public Works allowing the construction of reconstruction of curbs, gutters, utility extensions or connections, or any similar operation involving tearing up, opening, excavating or connecting into any portion of a County roadway.

ROADWAY – The actual road surface area from curb to curb or edge of pavement to edge of pavement, which may include travel lanes, turning lanes, shoulders, parking lanes, and deceleration and acceleration lanes.

ROADWAY BORDER AREA – The area between the roadway and the right-of-way line, or, where the County has been granted a road easement, the area including the easement.

SEDIMENTATION - The deposition of soil or rock that has been transported from its site of origin by water, ice, wind, gravity or other natural means as a product of erosion.

SETBACK LINE – A line, established by a municipality's land development ordinance, measuring the horizontal distance between a building or structure and any front, rear, or side lot line. A "Setback Line" shall be drawn parallel with a lot line and measured perpendicular to such lot line.

SHOULDER – The graded part of the roadway that lies between the edge of the main travel lane and either the edge of the road or the curbline and/or the point of intersection shoulder slope and foreslope which will accommodate stopped vehicles for emergency use.

SIGHT TRIANGLE EASEMENT – The rights and restrictions assignable to the triangular shaped portion of land, established at street or driveway intersections in accordance with the requirements of this Specification Manual and the Land Development Resolution, in which nothing shall be erected, placed, planted or allowed to grow in such a manner so as to limit or obstruct the sight distance of motorists entering or leaving the intersection.

SIGN – A visual medium that is used for the purpose of bringing the subject thereof to the attention of others. The term does not include buildings themselves, traffic signs or other official messages displayed within the public right-of-way. "Signs" include letters, numbers, symbols, trademarks, illustrations or designs as they may appear on signs, billboards, banners, store fronts, marquees, canopies and other stationary visual media on or off the premises of the activity to which the message pertains. A "Sign" may also be described as a street graphic.

SILTATION BASIN – Any facility designed to collect silt and eroded soil resulting from development for the purpose of substantially limiting the deposit of silt and eroded soil in natural watercourses and man-made drainage facilities.

SITE – Any plot, parcel, piece or tract of land, or combination of contiguous lots or parcels of land.

SITE PLAN – A development plan of one or more lots on which is shown:

a. The existing and proposed conditions of the lot, including but not necessarily limited to topography, vegetation, drainage, floodplains, marshes, wetlands, and waterways;

b. The location of all existing and proposed buildings, drives, parking spaces, walkways, means of ingress and egress, drainage facilities, utility services, landscaping, structures and signs, lighting and screening devices, and;

c. Any other information that may be reasonably required in order to make an informed determination pursuant to the provisions of this Specification Manual and the Land Development Resolution requiring review and approval of site plans by the County approving authority.

SKETCH PLAN – A plan of a subdivision or site of sufficient accuracy to be used for the purpose of review, discussion and, further, meeting the requirements set forth in this Specification Manual and the Land Development Resolution.

SOIL EROSION AND SEDIMENTATION CONTROL PLAN – A plan, submitted by an applicant, depicting temporary and permanent facilities designed to control soil erosion and retard non-point pollution resulting from stormwater runoff. Such facilities may include, but shall not be limited to siltation basins, diversion berms, interceptors and other control structures for the purpose of limiting the deposit of eroded soil in natural watercourses and man-made drainage facilities.

STATION – A fixed point along a line from which measurements are made in surveying.

STREAM ENCROACHMENT LINE – A line, depicted on a plan, established by the New Jersey Department of Environmental Protection and Energy, pursuant to the determination of jurisdiction in the flooded plain of a brook, stream or river, within which there shall be no filling, grading or other alterations to the natural watercourse.

STREET – Any street, avenue, boulevard, road, lane, parkway, viaduct, alley or other roadway which:

a. Is an existing State, county, municipal, or private roadway; or

b. Is shown on a plat approved pursuant to law; or

c. Is approved by other official action; or

d. Is shown on a plat duly filed and recorded in the Gloucester County Clerk's Office prior to the formation of the Planning Board and the grant to such Board of the power to review plats, and includes the land between the street lines, whether improved or unimproved, and may comprise pavement, shoulders, gutters, curbs, sidewalks, parking areas and other areas within the street lines.

STREET LINE – The same as "RIGHT-OF-WAY LINE".

SUBDIVISION – The division of a lot, tract or parcel of land into two or more lots, tracts parcels, or other divisions of land for sale or development. The following shall not be considered "Subdivisions" within the meaning of this Specification Manual, if no new streets are created:

a. Divisions of land found by the County approving authority to be for agricultural purposes, where all resulting parcels are five acres or larger in size;

b. Divisions of property by testamentary or intestate provisions;

c. Divisions of property upon court order, including but limited to, judgments of foreclosure;

d. Consolidation of existing lots by deed or other recorded instrument, and;

e. The conveyance of one or more adjoining lots, tracts or parcels of land, owned by the same person or persons.

The term "Subdivision" shall include the term "Resubdivision".

SUBGRADE – The natural ground lying beneath a street.

TRACT – An area, parcel, site, piece of land, lot, or property which is the subject of a development application.

TRAFFIC CONTROL DEVICE – Any sign, signal, marking, traffic control island or device placed on or adjacent to a street by authority of Title 39 Revised and the MUTCD.

TRAVELED WAY - The entire paved portion of the roadway utilized for the potential movement of vehicles, inclusive of shoulders.

UTILITY EASEMENT – An easement to a municipality or to the County of Gloucester for the exclusive purpose of installing utilities, repair, maintenance, and alteration of drainage facilities, traffic safety controls and other facilities relating to the safety, convenience and carrying capacity of a County road.

WATERCOURSE – Any natural or artificial stream, river, creek, ditch, channel, canal, conduit, culvert, drain, waterway, gully, ravine or wash in which water flows in a definite direction or course, either continuously or intermittently, and has a definite channel, bed and banks, and includes any area adjacent thereto subject to inundation by reason of overflow or flood water. As used in this Specification Manual, a drainage ditch for agricultural purposes shall not be considered a "Watercourse".

WATERSHED – The total drainage area contributing runoff to a single point.

WETLAND – See "FRESHWATER WETLAND".

WETLANDS SOIL – See "HYDRIC SOIL".

WETLANDS TRANSITION AREA – An area of land adjacent to a freshwater wetland of exceptional resource value and of intermediate resource value, as classified in N.J.A.C. 7:7A-2.5. A transition area is not required adjacent to freshwater wetlands of ordinary resource value, as classified in N.J.A.C. 7:7A-2.5, or adjacent to State open waters, as defined in N.J.A.C. 7:7A-1.4.

ZONING DISTRICT – A specifically delineated area or district within a municipality, established by said municipality's land development ordinance, within which regulations and requirements uniformly govern the use, placement, spacing and size of land, buildings and structures.

CHAPTER 3

DESIGN REQUIREMENTS

A. Paved Shoulders, Deceleration and Turning Lanes

1. Paved shoulders or deceleration lanes shall be required at most intersections of access roads or driveways from development sites to the County Road, as recommended by the County Engineer and as shown in Figure A.

2. Where a development may generate a large amount of traffic, or create a traffic safety hazard, the County Engineer may recommend that the developer design plans and specifications, and construct a separate left turn lane or emergency by-pass lane.

B. Access to Adjoining Property

For non-residential properties fronting on a County road, joint access shall be permitted; however, no unrestricted vehicular access shall be permitted between adjacent properties. Vehicular access, if agreed upon by the owners or possessors of adjacent properties, or if required by the County approving authority, shall, in the case of non-residential sites, normally be limited to one opening with a minimum aisle width of 24', providing two lanes of traffic and shall be located in such a manner so as to offer continuity of a similar access drive on the adjacent property. The opening shall occur at a point having the greatest distance from the right-of-way line which would facilitate the joining of properties.

C. Barrier-Free Design

Curb ramps for the physically handicapped shall be provided where curb or sidewalk is being constructed or reconstructed at intersections. However, where there is no sidewalk, but curb is being constructed or reconstructed, depressed curb for future ramps and sidewalks shall be provided. Where there is no sidewalk, it shall be the decision of the County Engineer as to whether ramps shall be provided. Curb ramps shall be designed and constructed in accordance with the current ADA and NJDOT standards.

D. Construction Specifications

1. All construction within the County right-of-way shall be governed by the current edition of the Standard Specifications for Road and Bridge Construction of the NJDOT, MUTCD supplements and amendments thereto.

2. Maintenance and protection of traffic during periods of construction along or adjacent to the County road shall be the responsibility of the developer and his contractor, in accordance with the current edition of the Manual on Uniform Traffic Control Devices for Streets and Highway, USDOT, and all amendments thereto, and in accordance with the traffic plans included with all County approved construction plans.

3. There shall be no interference with, or disruption of, any County structure or facility on, over, or under a County road, without approval of the County Highway Department.

E. Control of Access

1. Wherever an application for development results in lots abutting a County road, one of the following shall be required:

   a A system of internal roads so that lots fronting on the County road will have access from an internal street.

   b. Cul-de-sac roads.

   c. Frontage roads may be permitted for residential lots on rural roads on a limited basis, provided the following conditions are met:

      i. The frontage roads access to the County road is designed such that an SU Type vehicle can safely turn from the proposed future edge of the County road to the frontage road with no encroachment on opposing lanes of traffic on either road.

      ii. No part of the frontage road encroaches on the proposed County ROW.

2. Whenever cul-de-sac roads, internal roads or the provision for reverse frontage is impractical, as determined by the County approving authority, the lots shall have a driveway turnaround area. (Refer to Figure P,Q).

3. In case a subdivision application for a site which is too small for reverse frontage, but large enough for the creation of more than one lot, the original lot being the creation of more than one lot, the original lot being subdivided may have access to the County road. The remainder of the original site, however, shall be restricted to only one access to the County road.

4. Lots fronting on both municipal and County roads shall be limited, whenever practical, to access from the municipal road. Wherever cross access is feasible, direct access shall also be restricted from the County roadway, wherever feasible.

F. Curbing

1. Applications for development requiring approval from the County approving authority shall be required to install concrete curbs along the property frontage(s) of a County road(s), located and constructed in accordance with standards and specifications shown in this Specification Manual. (Refer to Figures I,J & K). The County Engineer shall direct the amount of curb to be installed, which may include curb along the entire property frontage, and also as noted below.

2. Where proposed street intersections are at or near the property line of a site which is the subject of an application for development, curbing may be required off-site along the County road in order to properly delineate the

intersection and to facilitate safe turning movements of traffic at the intersection. If the approach side of such an intersection is off-site, a minimum length of 200' of linear curb shall be required from the point of tangency of the inbound curb radius. Where feasible, off-site curbing shall be extended across the full frontage of the adjacent lot or lots, rather than end part way across a lot frontage. Depressed curb shall be provided a existing access points at the frontage of lots where off-site curbing is installed. Curbing at the County Engineer's discretion may be required along the County Road either on site or offsite in order to eliminate gaps in curbing between intersections.

3. The criteria for off-site curbing shall also apply to access driveways for non-residential sites where, in the opinion of the County Engineer, traffic volume and turning movements warrant this curbing.

4. Off-site Curbing. Where, for reasons of traffic safety and capacity, and to provide for adequate drainage flow, the developer may be required to extend curbing a reasonable distance beyond his frontage.

5. Curb Radii. At intersections where one or both roads are within the County road system, the minimum inbound curb radii shall be 35'. Radii beyond this minimum may be required by the County Engineer. Outbound right turn radii at a Stop sign controlled location shall be 25'.

6. When curb is required on County roads with speeds 50-MPH or greater, the vertical curb size shall be 9"x16" (4" face). For speeds less than 50-MPH the vertical curb size shall be 9"x18" (6" face). The vertical curb may be increased where required due to special conditions but only if specifically approved by the County Engineer. Driveway Depressions shall be in accordance with Figure O.

7. All existing curb openings not required by the proposed development application shall be closed, as specified by the County Engineering Division.

8. The placement of curbing from the centerline of the County road shall be determined by the County Engineering Division. In general, widening shall be required to the specified width measured from centerline (either the physical or right-of-way centerline whichever provides the greatest width) in accordance with the Official County Map widths. Widening in excess of the County map standard may be required upon review of information from a traffic study or available traffic data at the discretion of the County Engineer. In addition, the area between the new curb and the existing or future edge of pavement shall be paved to the specifications set forth below in this Specification Manual

9. The alignment and grade of curbing shall be constructed in accordance with the roadway plans that have been reviewed and approved by the Office of the County Engineer.

G. Drainage, Bridges and Culverts

1. General Requirements.

a. All applications for development submitted to the County approving authority shall be reviewed by the Gloucester County Engineering Division to establish requirements relative to County roads or drainage facilities, to prevent the inundation, silting, erosion and undermining of County facilities. In cooperation with the New Jersey Department of Environmental Protection, the review shall include stream encroachment, flood plain protection, soil erosion and sediment control and water quality.

b. Storm drainage facilities required to accommodate additional storm drainage resulting from proposed street construction shall be provided for by the owner without cost to the County.

c. Where appurtenant drainage rights or easements have been acquired by the County, no act will be tolerated which adversely affects these rights.

d. Where property adjacent to a County road is to be filled to road grade, the owner shall make adequate provision at his own expense, for the disposition of road drainage.

e. Where ¼ acre or more of widening is required within the County right of way, all stormwater runoff from the County right of way shall be directed internally to stormwater management and water quality treatment facilities in accordance with NJDEP regulations.

2. Drainage Criteria. Drainage will be reviewed in the following categories and in view of corresponding objectives:

Category	Objective	Reference
Watersheds	flood control; adequate drainage	NJ Special Report 38
Development Applications (Subdivisions And Site Plans)	adequate drainage	County and Municipal Standards; SCS Technical Release #55
Roadway Storm Drainage	roadway drainage	NJDOT and Gloucester County Standards
Erosion and Sediment Control	soil erosion control	Soil Conservation Service

3. The following tables, figures and references listed are part of the drainage standards and criteria.

a. Table 1 Design Storm Frequency

b.

Reference	Source
New Jersey Special Report #38	Prepared by the U.S. Geological Survey, Trenton, NJ
Procedures Manual	New Jersey Department of Transportation, Trenton, NJ
Standards for Soil Erosion And Sediment Control in New Jersey	New Jersey State Soil Conservation Committee
Standard Details Conforming To the 2001 Standard Specifications	New Jersey Department of Transportation, Trenton, NJ
Standard Specifications for Roads and Bridge Construction, With supplements	New Jersey Department of Transportation, Trenton, NJ
ASCE Manual 37	American Society of Civil Engineers, New York, NY
Design of Storm Sewers Design of Culverts No. 13 Design of Open Channels No. 13	U.S. Department of Transportation Washington, DC
Soil Survey, Gloucester County, New Jersey	United States Dept. of Agriculture
Soils Manual	Gloucester County Planning Div., Clayton, NJ
Urban Hydrology for Small Watersheds Technical Release #55	Soil Conservation Service, Washington, DC

4. Watershed Criteria.

a. Construction and encroachments in flowing streams shall be designed using major watershed criteria whenever the drainage area is 50-acres or larger. For watersheds up to one square mile in area, the Rational or SCS methods may be used. For watersheds in excess of one square mile in area, Special Report #38 shall be used for the purpose of computing design discharge.

b. The New Jersey Department of Environmental Protection has established standards for storm discharge from drainage areas involving stream encroachment.

5. Criteria for Applications for Development.

a. Computer methods, the Soil Conservation Method, as well as the Rational Formula are acceptable. As long as the calculations meet the criteria and standards set forth herein, the design shall be given consideration, regardless of method.

b. Information in Tables 1 is intended to give guidance to the designer. Runoff coefficients, rainfall intensity factors, friction factors and soil factors will be checked and will be reviewed for pertinence to the project. Table 1, "Design Storm Frequency", will apply, unless a specific exception is involved.

c. Retention Basins, Detention Basins and Flood Plain Storage. In order to minimize peak flows resulting from intensified upstream development, these criteria set standards with the following objectives:

(1) To prevent any reduction in the volume of flood plain storage along existing waterways;

(2) To provide detention basins with outlet flow control and/or additional flood plain storage, as necessary, to prevent peak rates of outflow after development of a tract from exceeding the peak rates prior to said development;

(3) In any case where an existing waterway traverses a tract of land to be developed, the volume of flood waters stored in the waterway and the related flood plain between the normal low water elevation and the flood elevation, as determined by the Design Storm Frequency in Table 1, shall be no less after development than prior to development, unless a proper plan of flood flow storage and/or discharge is presented and approved by the County Engineer;

(4) Where possible, the maintenance of the flood plain storage volume shall be accomplished by leaving the flood plain area undisturbed;

(5) Where it is necessary to disturb the flood plain area in any way that reduces the volume of the flood water stored therein, additional flood plain storage volume shall be provided elsewhere along the stream, as necessary, to compensate fully for such reduction, subject to approval by the New Jersey Department of Environmental Protection;

(6) In any case where the development of the property will increase peak runoff rates, detention basins, retention basins, and/or additional flood plain storage shall be provided as necessary to off-set such increases;

(7) Where peak flow reduction is to be accomplished by provision of a detention basin, the peak rate of outflow permitted for the design storm (25-year) would be that occurring prior to development, for a 10-year storm, using the pre-development time of concentration or a time of concentration of 60 minutes, whichever is greater;

(8) The rates and volumes of inflow shall be based on similar assumptions to those that are used in the Rational Formula, and the duration of storm used to determine such rates and volumes shall be that which will require maximum storage. In general, the duration of the critical storm will be appreciably greater than the time of concentration of flow into the basin;

(9) A suitable method of flood routing shall be used to demonstrate that the storage being provided is adequate. Where additional flood plain storage is to be provided in order to off-set the increase in peak runoff caused by development, a suitable flood routing process should also be used. Routing should be based upon inlet structure or the downstream flow characteristics of the channel, whichever controls the characteristics of the storage to be provided and inflows from inflow hydrographs as determined in H.5.c. (8) above for detention basins and/or storage areas. In general, storage shall be provided so that it commences before the outflow rate exceeds 25% of the peak outflow rate permitted from the start of the outflow to the time when the peak rate is reached. Peak outflow rate should be designed not to exceed the peak outflow rate from a 10-year storm in the undeveloped state (refer to section H.5.c.(7) above);

(10) The benefits of artificial retention/detention basins must be weighed together with other accepted devices to minimize downstream flooding resulting from increased upstream development. The criteria set forth in H.5.c.(9) above and the following standards are intended to guide applicants. Municipalities may have additional requirements. It is not intended that Gloucester County and local standards conflict;

(11) Basins shall be designed with adequate freeboard and provisions for overflow. The recommendations of the Soil and Sediment Control Manual and proper soil investigation and analysis shall be the minimum specifications for earth work;

(12) Design of retention/detention basins and maintenance responsibility shall be fully considered and shall be given critical "case by case" review to avoid objectionable and/or unsightly appearance;

(13) Design Storm Frequency shall not be less than shown in Table 1 included with these guidelines for the applicable condition and size of area;

(14) Upon recommendation of the County Engineer that an in-depth routing analysis of the effects of a detention basin is required, the county approving authority may require that such an analysis be made. The applicant's engineer is not restricted as to method, but shall furnish computations and analysis;

(15) In use of the Rational Method, time of concentration used in determining "I" shall be computed on the basis of "overland" flow time plus stream flow time, where the latter parameter applies. Stormwater concentration time in the sewer system, as with stream flow (open channel) time, will be determined primarily on the basis of hydraulic velocities obtained from the so-called Chezy-Manning equation. Recommended coefficient of runoff values ("C") used in the Rational Method are shown in Table 2;

(16) Compensating storage may be of many different types of combinations, such as, but not limited to the following; paved, unpaved, marsh, or wooded areas, building roofs and parking lots.

(17) In all cases, whether basins are classified as either detention or retention, the elevation of the bottom of the basin must be a minimum of 24 inches from the seasonal high water table.

(18) When retention basins are proposed, the rate of percolation must be determined using a field percolation test in accordance with the County Health Department methods. The percolation test must be performed at the elevation of the bottom of the proposed basin. Laboratory percolation data is not acceptable.

(19) For the purpose of reviewing a predevelopment condition which affects a County facility, conservative runoff coefficients must be utilized as a potential existing use of the land for agricultural use. Bare soil or cultivated land uses must be comparatively reviewed under existing conditions as pasture or other land uses with similar runoff coefficient. In no case shall development of agriculture land result in an analyzed decrease in runoff rates without the use detention or retention systems.

6. Storm Drainage Criteria. Storm drainage systems within the County's right-of-way shall be designed to accommodate a 25 year storm frequency. Drainage swales shall be designed to accommodate a 10 year storm frequency.

a. Storm Sewer Systems.

(1) Inlet structures shall be constructed to accommodate the design storm and to minimize the spread of gutter line flow. Pipe turns shall not exceed 400' without a point of access.

(2) Storm sewer pipe shall be a minimum 18" inside diameter unless otherwise approved by the County Engineer. All pipes crossing under a County Road shall be reinforced concrete.

(3) The height of proposed inlet heads shall match the reveal of adjacent cut unless otherwise directed. In no case shall the top of the inlet curb piece exceed the top elevation of the adjacent curb. Inlet structures with a curb piece not adjacent to a curb line shall have 10' curb transition sections (knock-off sections) constructed on each side of the inlet head (See Figure J).

(4) Pipes less than 48" diameter shall require a structure to accommodate a change in direction. Pipes greater than 48" can accommodate a change in direction by utilizing a minimum 100' radius.

(5) All exposed pipe ends shall terminate with a headwall or flared end section. Pipe ends running parallel with the roadway on the nearside approach and located within the clear zone, shall be equipped with traversable end section.

(6) All inlet structures within the County's right-of-way shall be equipped with Bicycle Safe Grates. Inlet head risers shall conform with current NJDEP requirements.

(7) Ends of pipe starting or terminating in an open ditch shall have suitable traversable outlet structures. Flared end sections and other protective treatment will be considered in specific cases such as parallel ditches.

(8) Inlets, Type B shall be required at 400 feet intervals along the County and/or points along the curbline to insure that drainage flow does not exceed 6.0 cubic feet per second. Inlets must be placed at low points along the curbline.

(9) Bicycle safe grates shall be used on all inlets and catch basins within the roadway and in all areas where bicycle traffic is anticipated.

b. New Culverts and Bridges. The County may, upon specific agreement, assume responsibility for the future maintenance of bridges on new public roads within developments when approved by the County before construction, subject to the following conditions:

(1) The drainage basin upstream of a proposed bridge exceeds 50 acres in area and pipe diameter exceeding 72" or equivalent area.

(2) The plans shall also be accompanied by evidence of submission, and the approval or waiver, where applicable, from the following:

Stream Encroachment Permit – NJ Department of Environmental Protection

Water Quality Certificate – NJ Department of Environmental Protection

Wetlands Permit – NJ Department of Environmental Protection

Riparian Grant and Permit – NJ Department of Environmental Protection

Archaeological Certification – NJ Department of Environmental Protection

Coastal Facilities Approval – NJ Department of Environmental Protection

New Jersey Pinelands Commission

U.S. Coast Guard

U.S. Army Corps of Engineers

(3) All bridge designs shall be in accordance with the latest edition of the American Association of State Highway and Transportation Officials (AASHTO) Standard Specifications for Highway Bridges, including interims. Materials and construction shall conform to the latest edition of New Jersey Department of Transportation Standard Specifications for Road and Bridge Construction.

(4) As a minimum, the design load for bridges and culverts shall be H-20, HS-20 or alternate military loading whichever governs. The County Engineer may require a heavier design loading for some structures.

(5) Bridges and box culverts. In accordance with AASHTO minimum requirements, and subject to approval by the County Engineer.

(6) Plans, calculations and specifications of the proposed structure shall be submitted and reviewed by the County Engineer for approval.

(7) Width of roadway shall, as a minimum, be in accordance with the latest edition of A Policy on Geometric Design of Highways and Streets, published by AASHTO. The County Engineer may require greater widths for some structures.

(8) The County Engineer shall be notified prior to the start of construction.

(9) The construction shall be inspected by an on-site licensed professional engineer, the cost of which shall be borne by the applicant/permittee. The on-site licensed professional engineer shall be present for all aspects of the construction and must certify that the work has been completed in accordance with the construction plans. The engineer shall be responsible for maintaining all construction inspection records including assuring compaction requirements are met, working/shop drawings are in conformance with the plans and specifications, construction means and methods are in accordance with established standards, on-site safety is met, all construction materials and submittals meet the approved plans and the final work product is completed in accordance with the plans. All reports must be submitted to the Permits Division with the final construction certification including all shop drawing approvals, material submittal approvals, material testing results, compaction testing and daily construction inspection reports.

c. Existing Culverts, Box Culverts and Bridges on County Roads to be Widened or Lengthened in Connection with Applications for Development.

(1) In the event that a County road must be widened at a drainage structure as a consequence of a development, and where the developer's frontage includes both sides of the stream, and the existing structure has adequate waterway area and is not scheduled for early replacement by reason of structural inadequacy, the developer shall lengthen all culverts to the full width of the proposed right-of-way, except for those portions necessary for headwalls, guide rails and slopes. All bridges or box culverts shall be widened in accordance with the County Engineer's requirements.

(2) In the further event that the applicant's property fronts on only one side of the County road, the culvert which must be lengthened as a consequence of the development shall be lengthened on the applicant's side of the road from the centerline of the road to the full width of right-of-way on his side, except for those portions necessary for headwalls, guide rails and slopes. Bridges and box culverts may be widened on the developer's side in accordance with the County Engineer's requirements.

(3) Plans for the proposed work shall have the approval of the New Jersey Department of Environmental Protection and the County Engineer. The County Engineer, upon approving the plans, shall set the amount of performance guarantee to be posted to insure the satisfactory completion of the work including inspection costs.

(4) Prior to the commencement of construction, the developer shall be required to obtain a Road Opening Permit from the Gloucester County Road Division. All requirements of the permit shall prevail, except that no additional posting of guarantee shall be required.

(5) In the event that a County road must be widened at a drainage structure as a consequence of the construction of a development, and where the developer's frontage includes a stream, and the existing structure has inadequate waterway area or is structurally inadequate, the existing culvert must be reconstructed to the structural requirements of the County Engineer.

(6) Where, because of proposed or anticipated development upstream from a County culvert or bridge, such facility must be replaced, widened or lengthened to accommodate additional stormwater runoff as a consequence of such development, the developer shall contribute his proportionate share of the cost. This cost shall be determined by the County Engineer using current competitive bid prices for the units involved.

7. Soil Erosion and Sediment Control Criteria. Soil erosion and sediment control permits shall be required, as issued by the Soil Conservation District.

H. Driveways

1. Driveways shall be so located as to avoid undue interference with or restrict the free movement of normal road traffic so that areas of traffic congestion will not be created. In accordance with this principle, driveways shall be constructed where road alignment and profile are favorable: i.e., where there are no sharp curves, or steep grades, and where sight distance in conjunction with driveway access would be adequate for safe traffic operation. Driveway locations shall not be located within intersections, rotaries, and interchanges, or preferably not within 200' of the beginning of any ramp, other portion of an interchange or major intersection. Also to be avoided are locations that

would interfere with the placement and proper functioning of road signs, signals, area of detection for traffic signals, lighting or other devices that affect traffic operations. (Refer to Figure M). Driveways shall not be permitted between the stop line and fartherstmost area of detection at a signalized intersection.

2. The number of driveways from a site which is the subject of a commercial development application onto a County road shall be restricted as follows:

DISTANCE OF SITE FRONTAGE	NUMBER OF DRIVEWAYS
100' or less	1
Over 100'	to be specified by the County Engineer

In no case shall a single family residential lot be allowed more than one driveway.

3. Basic driveway widths (w), radii (r), corner clearance (c), distance between driveways (d), edge clearance (p), and angle (a) required for various land uses in urban and rural areas are given in Table 2. Methods of measurement are illustrated in Figure R.

4. The surface of any driveway shall be constructed with a permanent pavement, as approved by the County Engineer. Such pavement shall extend to the paved traveled way or paved shoulder of the County road; and shall extend throughout the area defined by the required driveway dimensions and County road right-of-way. Driveway elevation at the shoulder shall be supplied by the applicant's engineer.

5. Driveway Profile. All driveway profiles shall be designed as shown in Figures L and M. The profile dimensions given beyond the sidewalk are maximum for grades and minimum for grade lengths. All grade changes on a driveway shall be flat enough to prevent the dragging of any vehicle undercarriage. Should proposed or existing sidewalk, if any, be close to the curb at a depressed curb driveway so as to cause the ramp to be too steep and likely to cause undercarriage drag, the sidewalk shall be appropriately sloped to provide a suitable ramp gradient.

6. If a proposed driveway inhibits the overland flow of water, a culvert of adequate size shall be installed beneath driveways, at the developer's expense. At each end of the pipe, an approved headwall or flared end sections shall be installed. Where conditions are favorable, the County may permit the installation of a continuous pipe under the sidewalk area and drives. Installation longer than 400' shall not be permitted without intervening manholes or inlets. Elevations shall be as approved by the County Engineer. In the case of roadside swales, the driveway may be contoured to conform with the roadside swale. This condition shall apply to shallow swales only will be permitted only with the approval of the County Engineer.

7. The County, under no circumstances, shall not bear any part of the expense of the installation of pipe which may be necessary, nor will it furnish or place fill material either within the right-of-way of the road or outside of it. Pipe to be furnished by the developer for use under a driveway in each instance shall be approved by the County Engineer as to size and type.

8. Where road cross drains and/or drainage ditches exist, the County Engineer may require the construction of a storm sewer system that will adequately handle surface runoff from the County road and abutting property. Depth of cover, types of material and capacities must be approved by the County Engineer. The applicant must secure all necessary permits from agencies retaining jurisdiction prior to the beginning of construction of any portion of a storm sewer system.

9. Where it is necessary to depress existing curbs for the purpose of constructing entrance drives, the curb section shall be entirely removed, and a new section of depressed curb constructed in accordance with the dimensions shown in Figure O.

10. Where a single residential lot will have access to a County road, a driveway with a turnaround area shall be provided. (Refer to Figures P and Q for suggested designs).

11. No driveway which intersects the right-of-way line of any County road shall be constructed or modified unless a Road Opening Permit is first obtained from the County Road Department.

12. Location of Driveways.

    a. All driveways intersecting a County road shall, given the physical constraints of the site, be located to afford maximum safety to traffic on the County road. Side by side driveway accesses or marginal service roads may be required to minimize the number of traffic movements to and from the County road.

    b. The minimum spacing distance a driveway shall be placed from a street corner shall be in accordance with Table 2. However, a traffic engineering study and review of potential queuing at the intersection will be used in conjunction with the minimum spacing to assure the driveway intersection is not unduly blocked by queuing vehicles on the County road.

    c. All driveways shall adequately be shown with proposed grades, and shall be located to conform with the sight distance requirements as shown in Tables 7 and 8. (Refer also to Figure S).

13. Lots abutting two or more County roads shall have and show driveways entering the County road with the lesser County road classification, unless sight distance and/or hazardous vertical or horizontal grades dictate otherwise.

14. Lots abutting both a County road and an existing or proposed municipal or internal road shall:

    a. Show access to the proposed lots from the municipal or internal roads, unless sight distance and/or hazardous vertical or horizontal grades dictate otherwise.

    b. Show on the plans and provide a deed restriction to access onto County roads. Prior to final approval of an application for development by the County approving authority, a copy of the deed shall be submitted to the Planning Division for review. It shall be the responsibility of the applicant to inform the appropriate agencies, i.e., municipal construction code official and other interested parties of the aforementioned requirements so that the location and positioning of the building(s) and other site improvements are conducive to the proposed driveway location(s).

15. Driveway Maintenance. All driveways shall be maintained by the owners of land served by such driveways. In addition, all driveways shall be maintained in such a manner so as to prevent the discharge of water from the driveway onto the County road, the erosion of soil from the driveway and the land served by the driveway, and the obstruction of or interference with drainage within the right-of-way.

I. Street Intersections

1. Alignments. Streets which connect with the County road system from opposite sides of an undivided County road shall not be offset, except where conditions prevent such alignment. If conditions require street to be offset, they shall be separated by at least 375' between centerlines. Streets shall not connect with the County road system from the same side of a County road with less than following separation requirements:

Posted Speed	Minimum Separation/Same Side
50 mph	600 feet
45 mph	450 feet
40 mph	375 feet
35 mph	350 feet
less than 35 mph	325 feet

Separation lengths may be increased depending upon traffic conditions, potential turning conflicts, traffic queue lengths, existence of auxiliary turn lanes, etc.

2. Angle at Intersections. Angles of streets or roads connecting with any road in the County road system should be 90 degrees. Angles less than 75 degrees (measured at the centerline of streets) may be permitted if adequate documented justification is submitted and is acceptable to the County Engineer.

3. Curb Radii. At intersections with a County road, the minimum curb radii shall be designed to accommodate an SU design vehicle based on current AASHTO design criteria. The criteria for turning vehicles shall be measured from the edge of road or shoulder approaching the turn. In no case shall the radius be less than 35; (inbound) or 25' (outbound). At intersections where large bus or truck traffic is anticipated, the appropriate AASHTO design vehicle shall be used.

4. The width of the local road intersection must be at least 25 feet in width for a sufficient throat length to stack at least one B-40 vehicle or longer in accordance with available traffic information.

5. Grading.

   a. Minimum practical grades shall be maintained on approaches to intersections on streets connecting with County roads.

   b. Grading shall be designed to direct surface drainage away from County roads, unless intercepting underground drainage facilities are provided to prevent flow of stormwater over County road surfaces.

6. Right-of-Way Control. No part of the County right-of-way shall be used for private business. The County road right-of-way shall be kept clear of, but not limited to, the following: buildings, sales or merchandise displays, vehicular parking areas, servicing of vehicles, advertising signs, devices or markings, service equipment and appurtenances thereto. After due notice, the County shall have the right of entry to remove any obstruction to vision within the easement. The right-of-way shall be cleared of all trees and buses by the developer at the recommendation of the County Engineer. No signs shall be permitted in the right-of way, unless approved by the County Engineer.

7. Right-of-Way Radii. At intersections where either or both roads are in the County road system, the radii of the right-of-way lines shall be a minimum of 25' normal to the intersecting right-of-way lines. In no case shall it be less than 10' behind a proposed curbline or edge of road.

8. Sight Distances. There shall be unobstructed sight along both roads at an intersection and across their included corners for distances sufficient to allow drivers to see each other in time to prevent a collision. For passenger vehicles, the required sight distance shall be measured from a point 17.80 feet beyond the extended curb line or edge of road from a driver's eye height of 3.50' above the pavement surface to the left and right to an object height of 3.50 feet above the road surface. (Refer to Table 7 and Figure S). For semi-trailer trucks, a driver's eye height of 8.0' above the pavement surface shall be used. (Refer to Table 8 and Figure S).

9. Sight Triangles. Sight triangle easements, as required at intersections, shall be prepared in accordance with all provisions of Section 409F of the Land Development Resolution, and shall be dedicated to Gloucester County. Horizontal Sight triangles shall only be required for areas outside of the proposed right-of-way on the Developer's property or outside of the existing right-of-way on adjacent lots.

10. At high volume driveways and at locations where additional safety measures are necessary at the discretion of the County Engineer, street intersection standards may be applied to driveways. Private right of ways that provide access to more than 3 lots shall also adhere to standards for street intersections.

J. Off-Street Loading and Unloading Areas

No portion of any off-street loading or unloading area shall be designed or located within the right-of-way of any County road, or within any other County right-of-way or easement.

K. Off-Street Parking

No off-street parking area, including adjacent parking access aisles or maneuvering area, shall be designed or located within the right-of-way of any County road, or within any other County right-of-way or easement.

L. Outdoor Storage of Materials and Display of Goods

1. Non-residential uses shall not store or display goods or materials outdoors, whether for sale or as components of a finished product or representing a finished product, including motor vehicles, except in accordance with a site plan approved by the County approving authority.

2. Goods or materials displayed or stored outdoors, as well as coin-operated vending machines, shall not be located in any easement or sight triangle area.

M. Right-of Way

1. Right-of-way for existing or proposed County roads within or abutting a site which is the subject of a development application shall conform to the classification of County roads contained on the adopted Official County Map.

2. Sites that adjoin or include existing non-conforming County roads shall grant additional right-of-way along the site frontage(s) of such roads in the form of a road easement. If the proposed development is along one side only, one-half of the required additional width shall be granted, measured from the original right-of-way centerline.

3. Based on recommendations of the County Engineer, applicants may be required to acquire and grant an easement for additional right-of-way on either side of the intersections or points of access along the proposed right-of-way of County roads.

Applicants will be required to grant/acquire easements for additional right-of-way as required to construct the roadway improvements as required by the County. The County can not exercise powers of eminent domain for private development. Procurement of all necessary right-of-way shall be at the developer's expense.

4. Relocation or Removal of Structures within the County Right-of-Way. The relocation or removal of curbs, drainage structures, guide rails, County owned signs, traffic control devices and constituent parts may be approved by the County Engineer and shall be accomplished at the developer's expense.

N. Roads

1. County road widening, required by the County approving authority for a land development application, shall be done to conform with the Official County Map, and with specifications set forth in this Specification Manual. Road widening is required along the full site frontage of County roadways for all Site Plans and Major Subdivisions (as classified as a major subdivision by the municipality) and at a minimum of 200 feet in advance of the inbound radius and 200 feet departing the outbound radius, with appropriate tapers, unless specifically waived by the County Approving Authority.

2. Minimum Standard Details for County Road Improvements.

   a. The roadway border area shall be developed in the following manner: the area beyond the roadway shall be graded at the required design slope, normally 2%, toward the roadway on curbed or bermed sections, and 8% sloping away from the roadway on non-curbed or non-bermed sections. The graded roadway border area shall extend a minimum of 10' beyond the proposed roadway and shall then be sloped at a maximum rate of three horizontal to one vertical (3:1) to existing grade. If any portion of the graded roadway border area extends beyond the County's right-of-way line, a slope easement shall be obtained from the adjacent property owner. If a roadside drainage swale is developed along the toe of slope, and all or a portion of the swale is beyond the County's right-of-way line, then a drainage easement or road easement, as determined by the County Engineer, shall be acquired from the adjacent property owner.

   b. Where any work is performed within or along the roadway border area, the area disturbed shall be stabilized with topsoil, a minimum compacted thickness of 4", fertilized, seeded and mulched. All materials and methods of construction shall comply with the current edition of the New Jersey Department of Transportation Standard Specifications for Roads and Bridges.

   c. Road profile plans shall be submitted for review, showing existing elevations along the centerline of the County road, that shall conform to centerline County stationing, every 50' extending a minimum of 100' beyond the property lines of the site or to the end of road improvements, whichever is greater, and shall extend far enough to demonstrate adequate sight distance requirements from any proposed site access point. The pipe sizes, slope, type, inverts and grate or rim elevations of any existing or proposed drainage and sanitary sewage facilities shall also be shown on the profiles.

d. All improvements to County roads shall maintain positive gutter flow at the new curbline (0.5% minimum grade), and a uniform cross-slope (within the range of 2% to 4%, normal cross-slope 2%). Monolithic curb and gutter shall be required in any area where the gutterline slope is equal to or less than 0.5%. Proposed gutterline elevations and top of curb grades shall be determined by the applicant's engineer, and shown on the plans for review and approval by the County Engineer.

e. Full cross-sections every 50' and at critical points along the County road, which shall conform to the established centerline stationing, shall be provided. The cross-sections shall give the elevations for the existing centerline and edge of road, the proposed gutterline and top of curb grades, and the cross-slope of any widened section of pavement along the County road. These sections shall be extended to the proposed right-of-way line to show any regrading (cut or fill) required within the right-of-way.

f. Pavement Section. (Refer to Figure T and U).

(1) All Development applications requiring approval from the County approving authority shall be required to install paving in the area between the edge of existing pavement and curbing along the County road in accordance with standards and specifications set forth by the County Engineer.

(2) The offset and limits of curb and pavement widening requirements shall be determined by the reviewing authority per the recommendations of the Office of the County Engineer.

(3) The minimum pavement section to be used on a County road shall be as follows: Hot Mix Asphalt 12.5M64 Surface Course, 2" thick on a Hot Mix Asphalt 19M64 Base Course 4" thick on a Dense Graded Aggregate Base Course, 6" thick.

g. Any area along a County road that requires guide rail, the design thereof shall be in strict conformance with all provisions of the New Jersey Department of Transportation Roadway Design Manual or the AASHTO Roadside Design Guide. Design calculations signed and sealed by a New Jersey licensed Professional Engineer for the County Engineer's approval shall be submitted for any guide rail installation necessary. Additional right-of-way and extended embankment sections shall be provided by the applicant, if necessary, for guide rail end treatments or any other portion of the guide rail system. It shall be the developer's responsibility to insure that the area between the cartway and guide rail is clear of utility poles or any other non-breakaway above ground structures.

3. Municipal Roads. The following criteria are offered as official recommendations for the design of municipal roads within a site which is the subject of a development application:

   a. The road layout should be in conformity with the advantageous development of the area covered by the plan submitted and of the entire neighboring area.

   b. The arrangement of streets within a site shall provide for the continuation of the street system in abutting developments or for their proper extension when abutting property has not been developed, so far as in the judgment of the municipal agency, such continuations or extensions are necessary for fire protection, for the proper movement of traffic or for the construction or extension, presently or when required, of needed utilities and public services such as sewer, water and drainage facilities.

   c. When a cul-de-sac is proposed, it should be designed and constructed such that the maximum length and minimum radius of the turn-round comply with the standard set forth by the municipality. A dead-end street for the purpose of future development of abutting property may be permitted or required by the municipal agency. In such a case, a turnaround may be required by said agency.

O. Setback Requirements

1. The setback requirements for buildings and structures along a County road right-of-way shall be determined by the land development ordinance of the municipality within which the site is located.

2. All setback requirements shall be determined from existing or proposed County road right-of-way.

P. Sidewalks

1. Each application for development subject to County approval shall provide concrete sidewalks within the County road right-of-way, if such is required by the municipal agency of the municipality within which the site is located, unless the County Engineer determines that sidewalk would promote unsafe pedestrian movements or create a drainage problem. Sidewalk shall be replaced when existing sidewalk is removed or disturbed as part of the site development work. When sidewalk is to constructed within the County right-of-way, the construction of concrete vertical curb is required.

2. When the municipal agency does not require the installation of sidewalks in the right-of-way of a County road, the County approving authority may require the installation of sidewalk in the County right-of-way in order to accommodate and protect pedestrian traffic while facilitating vehicular traffic.

3. If sidewalk is required by the County approving authority or by the municipal agency, such sidewalk shall be designed, located and constructed in accordance with the following specifications.

a. Alignment and Grade. Alignment and grade are to be determined by the established or existing grade in the area, as determined by the County Engineer.

b. Concrete Specifications.

(1) Sidewalks shall be constructed with Class B, air-entrained, Portland cement concrete, and shall be constructed on a suitable base.

(2) The sidewalk shall be constructed to a thickness of not less than 4". Where the sidewalk crosses over a driveway, it shall be 6" (non-reinforced concrete).

c. Longitudinal Joints. Longitudinal joints, ¼" wide, shall be provided between curbs and abutting sidewalk, and shall be filled with premolded bituminous type joint filler.

d. Slope. The standard slope of sidewalk or sidewalk area shall be ¼" per foot rising from the top of the curb (or 2%).

e. Transverse Expansion Joints. Transverse expansion joints ½" wide shall be provided at intervals of not more than 20', and filled with prefabricated bituminous cellular type joint filler.

f. Transverse Surface Grooves. Transverse surface grooves shall be cut in sidewalk between expansion joints at intervals equal to the sidewalk width.

Q. Signs

1. No sign shall be erected, altered, constructed, reconstructed, placed, replaced or otherwise displayed which is not in accordance with the standards and requirements established in this Specification Manual

2. Signs, whether permanent or temporary, other than signs of the municipal, county, state or federal governments, official traffic control devices or signs designating the ingress and egress to a site which have been issued a permit by the County Engineering Division, shall not be erected, altered, constructed, reconstructed, placed, replaced or otherwise displayed within or overhang a County right-of-way, easement or any sight triangle area, nor shall any sign be located so as to constitute a traffic safety hazard.

3. No sign, or structure supporting same, shall be attached to natural objects, trees, stumps, fences, fence posts, utility poles or towers, or other signs, which are within a County right-of-way, easement or sight triangle area.

4. Devices illuminating a sign, including but not limited to, floodlights or spotlights, shall be placed and shielded so as to prevent the rays of illumination and glare thereof from being cast into neighboring buildings or constituting a safety hazard to the public traveling along County roads.

5. No sign shall be erected, altered, constructed, reconstructed, placed, replaced or otherwise displayed that, by its size, location, color, shape, lighting, message or nature, may be confused with or obstruct the view of an official traffic sign or traffic control device by pedestrians or operators of bicycles or motor vehicles.

6. No sign shall be erected, altered, constructed, reconstructed, placed, replaced or otherwise displayed that uses admonitions, including, but not limited to, "Stop", "Go", "Slow", "Danger", "Caution", etc., which may be confused with, resembles, or is an imitation of an official traffic sign or signal.

7. All sign posts shall be constructed using the latest standard breakaway treatments in accordance with NJDOT standards.

8. Sign facing shall be Type VIII or IX Retroreflective Sheeting.

R. Solid Waste Storage Areas

No solid waste storage area shall be placed within a County right-of-way, easement or sight triangle area.

S. Traffic Control Devices and Signals

1.

Reference	Source
Manual on Uniform Traffic Control Devices for Streets And Highways (MUTCD), latest revision	USDOT FHWA
"Trip Generation", latest revision	ITE
"A Policy on Geometric Design Of Highways and Streets", 1190	AASHTO
"Parking Generation", latest edition	ITE
"Highway Capacity Manual", Latest edition	Highway Research Board (HRB)
Highway Research Record 211	HRB
"Transportation & Traffic Engineering Handbook", latest edition	ITE
Motor Vehicles and Traffic Regulations	Title 39

All of the above shall be current editions with all subsequent amendments thereto.

2. Traffic Control Devices

a. Signs and Pavement Markings.

(1) The County approving authority may require the installation of specified traffic directional, regulatory, control, warning or advisory signs or pavement markings on the subject site or within the County right-of-way. All traffic control signs and sign supports shall conform with NJDOT standard specifications for road and bridge construction, 2001, Section 916, sign materials. All regulatory and warning signs shall be Type VIII or IX retroreflective sheeting. All "R" and "W" series signing shall be in accordance with the current manual on uniform traffic control devices.

(2) No traffic sign may be erected, altered, constructed, reconstructed, placed, replaced or otherwise displayed without approval being issued by the County.

(3) Signs designating the ingress and egress to a site may be placed in the county road right-of-way, with the approval of the County Engineer. A permit, issued by the County Engineering Division, shall be required prior to all signs being erected within the County right-of-way.

(4) All signs erected by the property owner must conform with provisions of Section 39:4-183.3 of Title 39 "Motor Vehicles and Traffic Regulation", which states: "No person shall place, maintain, or display upon or in view of any road any unauthorized traffic sign, device or other contrivance which purports to be or is an imitation of, or of such a nature as to be mistaken for an official traffic sign or which attempts to direct the movement of traffic which hides from view or interferes with the effectiveness of any official sign and no person shall place or maintain, nor shall any public authority permit upon any road any traffic sign or signal bearing thereon or its supports, any commercial advertising".

(5) The County Engineer may permit the relocation of existing County owned signs, provided an adequate site can be obtained which is satisfactory to the County and/or the New Jersey Department of Transportation (NJDOT). These signs will be relocated by the County at the expense of the developer.

(6) All traffic signs and sign supports shall conform with NJDOT Standard Specifications for Road and Bridge Construction, 2001, Section 916, Sign Materials.

(7) All traffic striping on the county road, the 24 inch stop lines, arrows, symbols and words on the County road and intersecting roads and driveways shall be hot thermoplastic material (3mm. thick). Traffic striping must conform to NJDOT standards for the item Traffic Stripes, Long Life, Epoxy Resin. The general contractor shall have the striping subcontractor submit proposed specifications, conforming to the Institute of Transportation Engineers specifications for the thermoplastic materials, to the County Engineer for approval. All existing traffic striping and pavement markings not conforming to this plan shall be removed by water blasting or grinding, as approved by the County Engineer.

b. Traffic Control Islands.

(1) The County Engineer may recommend that the developer prepare plans and specifications for, and construct a traffic control island in accordance with current editions of the MUTCD and NJDOT Design Manual and all subsequent amendments thereto, subject to the approval of NJDOT.

(2) The County Engineer may permit the relocation, extension, reduction or elimination of an existing traffic control island, at the developer's expense, if such work is approved by the NJDOT.

c. Traffic Signals.

(1) Where an application for development is expected to generate an amount of traffic, or creates a traffic safety hazard which would warrant the installation of traffic signals, the developer will pay for the design and installation of such traffic signals. This shall include the cost for the entire approval process through NJDOT. The developer shall also hire a licensed professional engineer to provide final certification of the traffic signal to the NJDOT.

(2) Where a traffic signal is warranted with a signal planned or where a signal may be warranted in the near future and the development will contribute future trips through the intersection, the developer shall place a cash contribution with the County for the future installation of a traffic signal.

(3) No traffic signal shall be installed unless it meets the warrants as specified in the MUTCD, and is authorized by the NJDOT and the County of Gloucester.

T. Traffic Impact Study

1. A traffic Impact Study shall be submitted with any application for development, located along or affecting a County road, which shall result in the construction of 48 or more lots, or which involves five acres or more, or which proposed 2,000 square feet or more of on-site parking, driveway, aisle and loading areas.

2. The study shall be prepared, signed and sealed by a professional engineer licensed to practice in the State of New Jersey, and who is qualified in traffic engineering to the satisfaction of the County Engineer.

3. Where a Traffic Impact Study is required, three copies of the report shall be submitted to the County Planning Department

4. The Traffic Impact Study shall include, but not be limited to all of the following:

a. Project Description

1. Location Map

2. A description of the proposed project, including:

(a) purpose and scope of the project;

(b) suitability of the site for the intended project;

(c) the estimated resident population, if applicable, and;

(d) use quantities of the project, which shall be compatible with the Institute of Transportation Engineers (ITE) Trip Generation Manual. The ITE land use codes used shall be cited in all figures, tables or other exhibits in which they appear.

3. Site plan showing the following for each phase of development of the project;

(a) access points;

(b) site use;

(c) building sites

(d) parking layout and number of spaces;

(e) property lines of the site;

(f) internal circulation and control;

(g) joint access with other developments;

(h) existing building sites and driveways for all properties within 200' of the subject site, and all driveways accessing a County or State road within 500' of any proposed or existing access to the subject site.

(4) Project phasing identifying the year of operation, and development activities per phase and proposed access schemes.

(5) Unique functional or operational activities which relate to a typical trip making activity (i.e. ridesharing participation, bus intercept or recreational or ancillary use facilities).

(6) Transportation System Inventory. A description of the physical, functional and operational characteristics of the study area roadway system, and, where appropriate, local transit service. The description should provide, where pertinent, data on peak hour volumes, number of lanes, cross-sections, intersection signalization and configurations, signal progressions, percentage of heavy-duty vehicles, grades, jurisdiction, transit routes, frequency and any other pertinent data.

(7) Copies of joint access agreements, if any.

(8) Status of review and/or permit applications necessary from other regulatory agencies, including, but not limited to: the New Jersey Department of Transportation; the Pinelands Commission; the New Jersey Department of Environmental Protection and Energy; the municipality within the site is located; and any other agency retaining jurisdiction.

(9) Proposed transportation improvements.

b. Traffic

(1) Trip Generation.

(a) The ITE trip generation rates are the standard. Use of other rates must be fully justified and documented. The applicant must seek prior approval from the County Engineering Division for the use of trip generation rates other than ITE

rates. The exact ITE rate used must be cited in the text.

(b) The peak hour traffic analysis shall identify site, roadway and coincidental peak hour conditions. Peak hour shall generally be the AM and PM weekday peak period. Depending on project characteristics, the County Engineering Division may consider the traffic study to include information during other peak periods, such as Saturday afternoon or evening.

(c) "Pass by" trips shall be calculated on the basis of current ITE literature; except, however, along low volume roads, the number of "pass by" trips considered shall not exceed 10% of the existing and year of build-out traffic counts. Thereby no credit will then be permitted.

(2) Trip Distribution.

(a) The procedure and rational should be clearly documented, and the results presented as a percentage of total site traffic. Gravity models must be utilized for commercial sites over 50,000 square feet of GLA (gross leasable area).

(b) Trip distribution shall be graphically provided.

(3) Assignment. Peak hour traffic volumes covering the analysis area shall be depicted graphically, and shall specifically identify background, site generated and total traffic.

(4) General

(a) The analysis area should extend to any point on the adjacent road system which could be significantly impacted. The limits of the traffic study should be preliminarily defined through either a pre-application conference or early consultation with the County Engineering Department.

(b) Traffic counts performed outside the seasonal peak period must be adjusted to the peak period. Reasonable current traffic count data is required. All count material shall be attached to the traffic study as an appendix.

c. Impact Analysis

(1) Conditions at all access points onto the County system, or any point along the County system where it is conceivable that problems may be generated by the proposed development, should be considered and addressed in the traffic study, regardless of distance from the site.

(2) Traffic volumes must be prepared for the base year of operation and tenth year, or such other years as may be appropriate due to project phasing or programmed highway improvements. The County will provide background growth rates for highways under County jurisdiction, exclusive of other specifically proposed developments. Other major developments must be specifically addressed. These developments will be preliminarily identified at the pre-application conference or through early discussion with the County Engineering Division.

(3) The current Highway Capacity Manual (HCM) is the standard for capacity analysis. Deviation from the default values or use of other procedures must be justified and documented. Capacity work sheets must be provided as an appendix to the analysis. Use of computer analysis is encouraged. Long form HCS runs must be submitted.

(4) Capacity analysis shall be performed at each access to the County road system and adjacent intersections, or any other locations as necessary within the analysis area. The study shall discuss how traffic will get to and from the site, both short term and long term, for a sufficient off-site distance to permit merging unnoticeably with the traffic stream.

(5) Impacts analysis should be evaluated with the without development traffic, and with and without any proposed transportation improvements. The information shall also be graphically provided.

(6) It is to be recognized that the County's principle concern is not how long it takes vehicles to exit a parking lot or to access a road from a facility. Priority is given to the

County road. Any measurable degradation in the quality of the flow of traffic on the County roadway must be mitigated at the expense of the Applicant.

(7) Traffic studies are to address improvements within the above limits that would be needed to obtain level of service "B" for rural roads and level of service "C" for urban roads segments and for intersections. In cases where such improvements are considered by the County to be unrealistic, less burdensome requirements may be imposed.

(8) Left turn lane warrant analyses must be provided at all accesses and impacted County intersections as per HRR 211.

d. Traffic Plan.

(1) All proposed transportation improvements must be shown in schematic form.

(2) The New Jersey Department of Transportation will rule on the treatment of proposed State highway projects in the project's impact area.

(3) In cases where off-site improvements are needed, the Traffic Impact Study shall consider and discuss such improvements sufficiently to insure that the off-site improvements are feasible.

5. The Traffic Impact Study, as outlined herein, shall include full documentation of existing highway inventory and conditions. Sources and dates of traffic counts must be noted. Intersections must be addressed in comparison with traffic signal warrants of the Manual on Uniform Traffic Control Devices for Streets and Highway. Highway capacity calculations must be provided in an appendix along with copies of traffic count summaries and accident history summaries. For large developments, the total build-out, as well as each stage, should be fully addressed in the report. Safety considerations such as sight distance, parking lot design and supply adequacy, ingress and egress, etc. should be addressed.

6. The applicant may request a waiver from submitting a Traffic Impact Study if he can demonstrate, in writing, that the development will not have a significant impact on a County road. The County approving authority may grant the waiver requested based on the documentation submitted and testimony provided by the applicant before said authority. As such a fair share contributing towards general impacts

to the County road system still may be required as calculated through the Land Development Review Committee where a waiver for Traffic Impact Study has been granted.

U. Utilities

1. When improvements are required, pursuant to this Specification Manual, the Land Development Resolution or by the County approving authority, which result in existing utility poles, light standards, fire hydrants, or other above-ground utility structures being relocated along a County road, the applicant shall be responsible for the relocation.
2. It is the policy of Gloucester County that utilities running parallel to all County roads shall be located outside of the proposed cartway of all such roadways. In order to accomplish this, it may be necessary, in some cases, for the applicant to acquire additional easements on adjacent land. The only exceptions to this policy shall be where the County Engineer, or his designated representative, determines that it is not feasible in that particular situation to locate the utility outside of the proposed cartway. In those instances, the County Engineer, or his designated representative, shall direct the location for the utility.

3. An acknowledgement of the applicant's responsibility for relocating such above-ground facilities shall be required prior to the granting of final approval and shall also be noted on the final construction plans to be reviewed by the County Engineering Division.

4. The applicant shall notify any authority, company or municipality owning any affected utility that a development application has received approval from the County approving authority.

V. Wetlands

1. As a minimum, the applicant shall submit to the County a Letter of Interpretation from the New Jersey Department of Environmental Protection confirming the presence of absence of wetlands on the subject site.

2. If wetlands are present on the site, all areas shall be delineated by a qualified professional and shown on the applicant's plan. The applicant shall submit copies of all approved wetlands permits to the County approving authority prior to final approval being granted.

3. The applicant shall demonstrate to the County that proposed or future County road widening has been taken into consideration when obtaining wetlands permits.

    a. All calculations regarding the allowable filling of wetlands shall include filling of wetlands required for proposed or future roadway widening within the County's right-of-way.

    b. Under certain circumstances, it may be necessary to deed restrict areas within the subject site that are pre-approved by

the Department of Environmental Protection for wetlands mitigation purposes to accommodate future road widening. Proposed or future road widening shall be in accordance with the specifications shown on the Official County Map.

IV. POLICIES

A. Proposed Additions to Existing Facilities

1. In the event that a site plan for an addition to an existing building is submitted to the County approving authority for review and decision, the following policy shall be adhered to:

   a. Affidavit forms relating to traffic generation and stormwater runoff shall be submitted by the applicant. Affidavits must be signed by the applicant, notarized, and signed and sealed by the applicant's engineer or architect.

2. The following statement will be incorporated into the letter of approval. "Approval of this site plan is hereby given based on the assumption that no substantial additional traffic will be generated by the proposed addition and/or no additional surface drainage is directed to a County drainage facility. In the event that use of this addition causes a substantial increase in traffic or additional surface drainage to the County drainage facility, then the standard traffic and drainage improvements will be required from the developer or his assignees and heirs".

B. Performing Work on a County Road

1. The following shall apply to all persons, firms, utility companies or municipalities performing work on a County road, and shall be considered a part and condition of a Road Opening Permit:

   a. The maintenance and protection of vehicular traffic shall be the responsibility of the person, firm, or municipality obtaining the Road Opening Permit.

   b. All signs, barricades, cones, drums and flashing lights, etc. shall be installed and maintained in accordance with the Manual on Uniform Traffic Control Devices for Streets and Highways by the Federal Highway Administration with respect to legend, size, shape, color, and location.

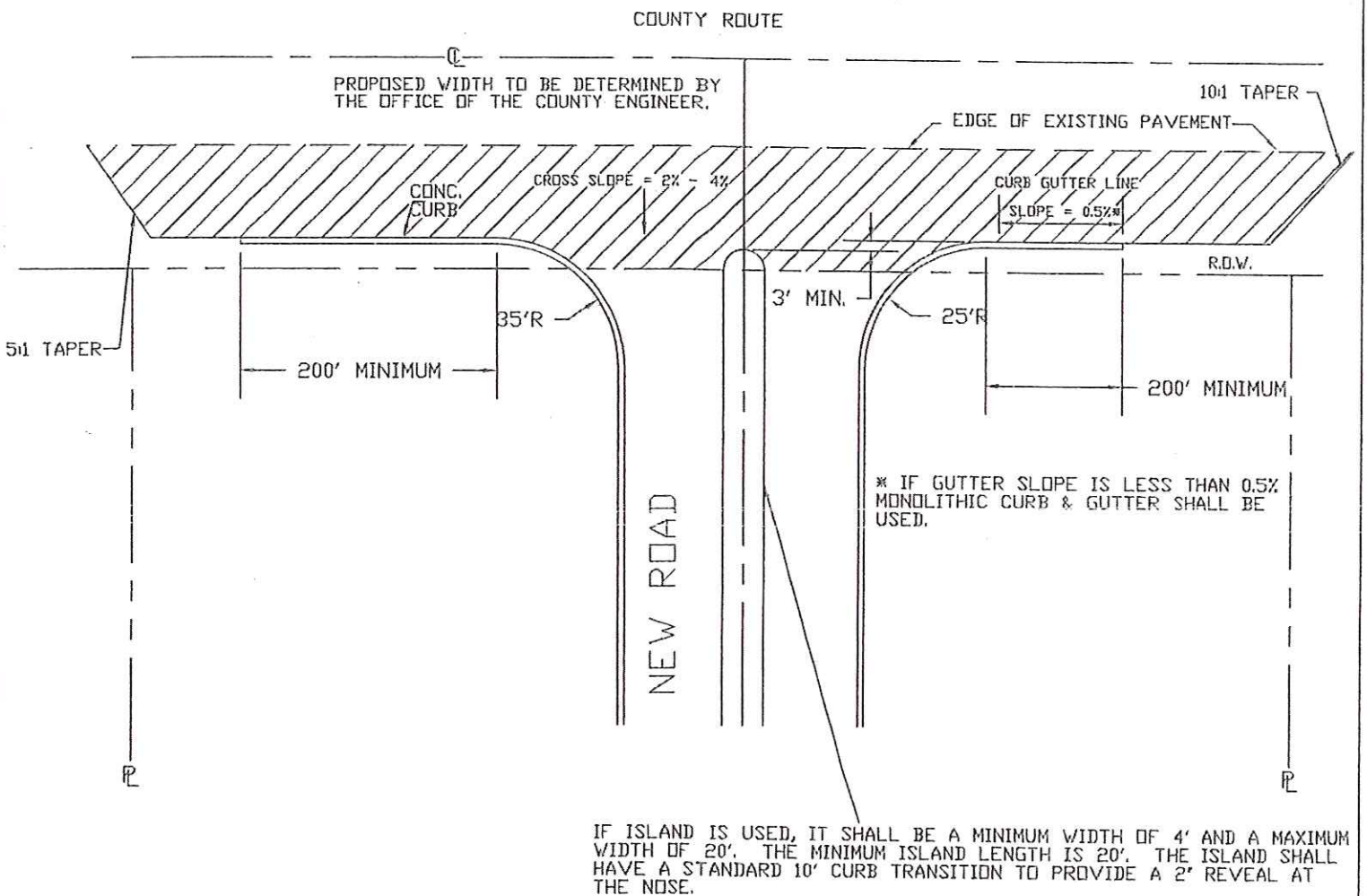
c. Traffic must be maintained at all times during the work operation. Signs, flashing lights, and barricades, etc. shall be installed by the persons performing the work, and removed at the end of the operation. When one lane of a two lane highway is closed, uniformed police traffic directors shall be provided at each end of the operation. When one lane of a two lane highway is closed, uniformed police traffic directors shall be provided at each end of the closed lane to direct traffic. Signs as shown in the MUTCD shall be erected to indicate one lane and flagman condition. Part-time signs shall be covered or removed when not applicable, i.e., "Flagman Ahead" signs should be covered when a flagman is not needed.

d. No flares, torches, or open flames shall be allowed.

e. Signs shall be mounted in a vertical position on barricades, sign posts, or temporary supports, a minimum of 1' above the roadway, and shall be visible to oncoming traffic.

APPENDIX A

DESIGN FIGURES



NOTES:

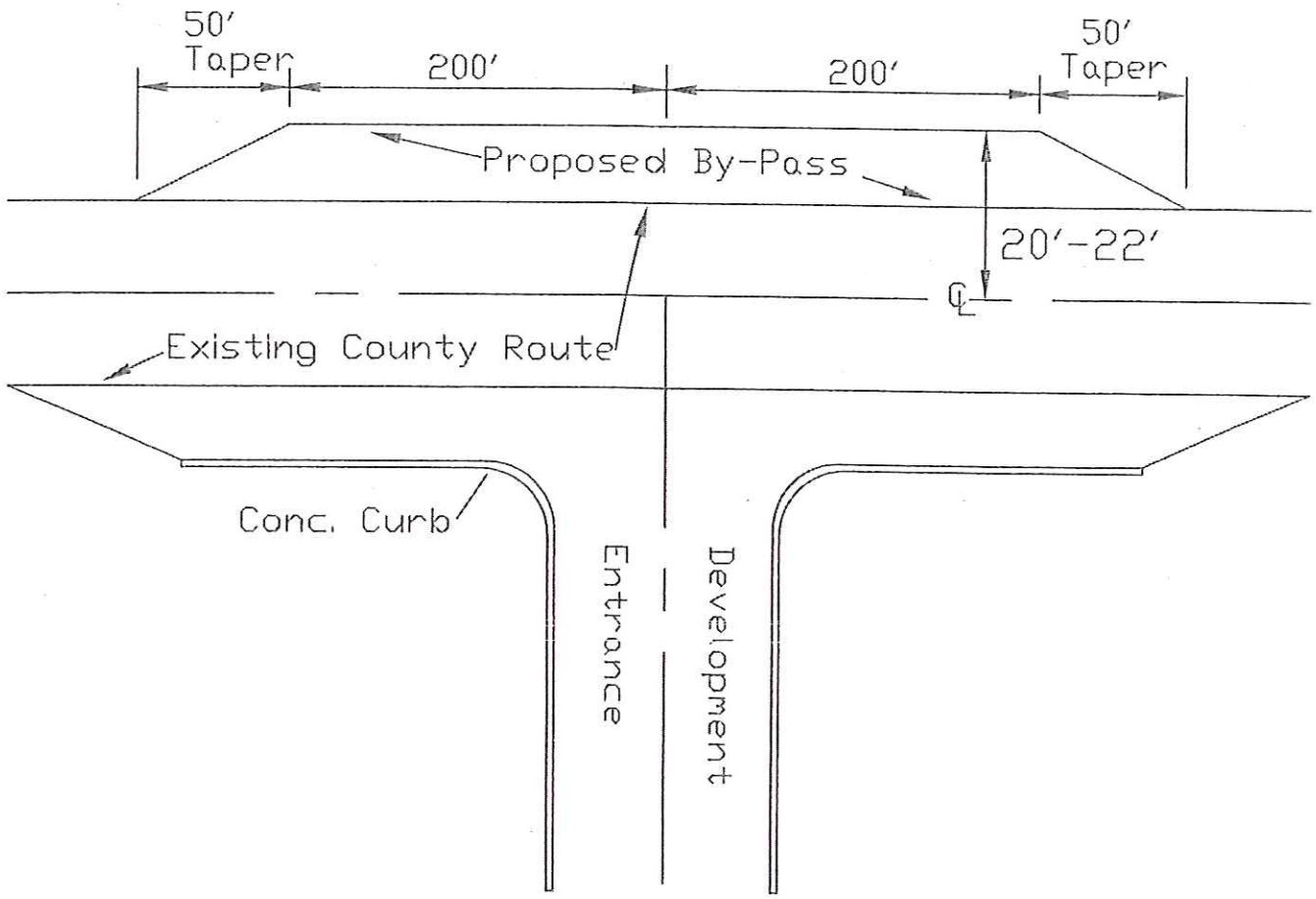
1. EXISTING CENTERLINE AND EXISTING EDGE OF PAVEMENT ELEVATIONS MUST BE PROVIDED AT 50' INTERVALS AND MUST BE EXTENDED 100' BEYOND THE PROPERTY LINE OR LIMITS OF THE REQUIRED PAVEMENT WIDENING AS DETERMINED BY THE COUNTY.
2. PROPOSED GUTTER AND TOP OF CURB GRADES MUST BE PROVIDED AT 50' INTERVALS BASED ON THE CENTERLINE STATIONING. DESIGN GRADES AT 25' INTERVALS MAY BE REQUIRED IN AREAS WHERE THE PROPOSED GUTTERLINE SLOPE IS LESS THAN 0.40%.
3. INLETS TYPE "B" SHALL BE PLACED AT LOW POINTS IN THE GUTTERLINE AND SPACED AT 400' INTERVALS ALONG THE COUNTY RD.
4. THE PAVEMENT TAPERS SHALL BE GRADED TO ENSURE PROPER DRAINAGE FLOW.

OFFICE OF THE COUNTY ENGINEER
N. Delsea Drive, Clayton, NJ 08312-1012

STANDARD INTERSECTION IMPROVEMENT PLAN

Drawn By: S.M.
Date: July 2006

Scale: Not to Scale
Figure A

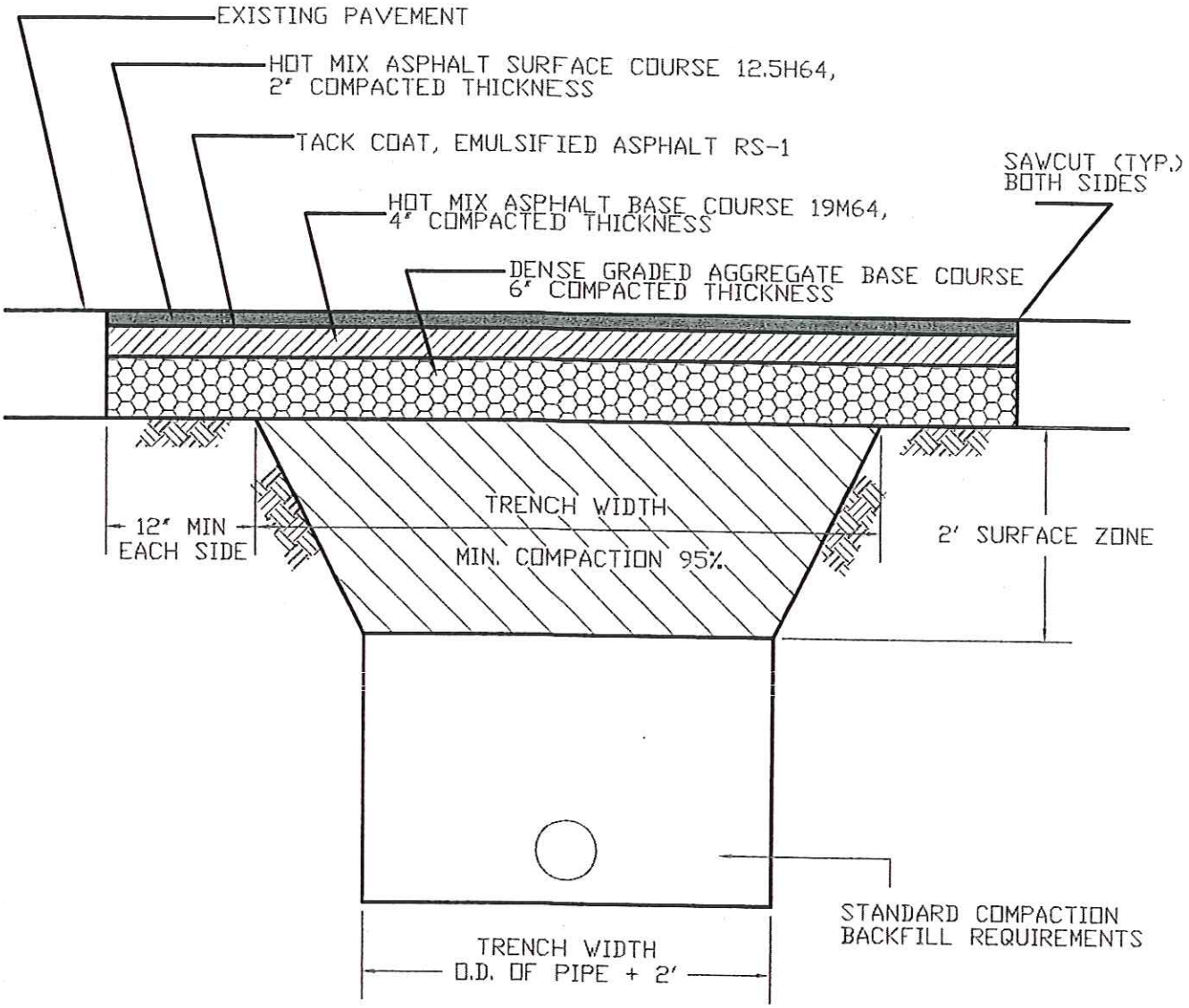


OFFICE OF THE COUNTY ENGINEER
N. Delsea Drive, Clayton, NJ 08312-1012

LEFT TURN BY-PASS SHOULDER WIDENING

Drawn By: S.M.
Date: July 2006

Scale: Not to Scale
Figure B



REPLACEMENT OF BITUMINOUS PAVEMENT IN COUNTY ROADWAYS

N.T.S.

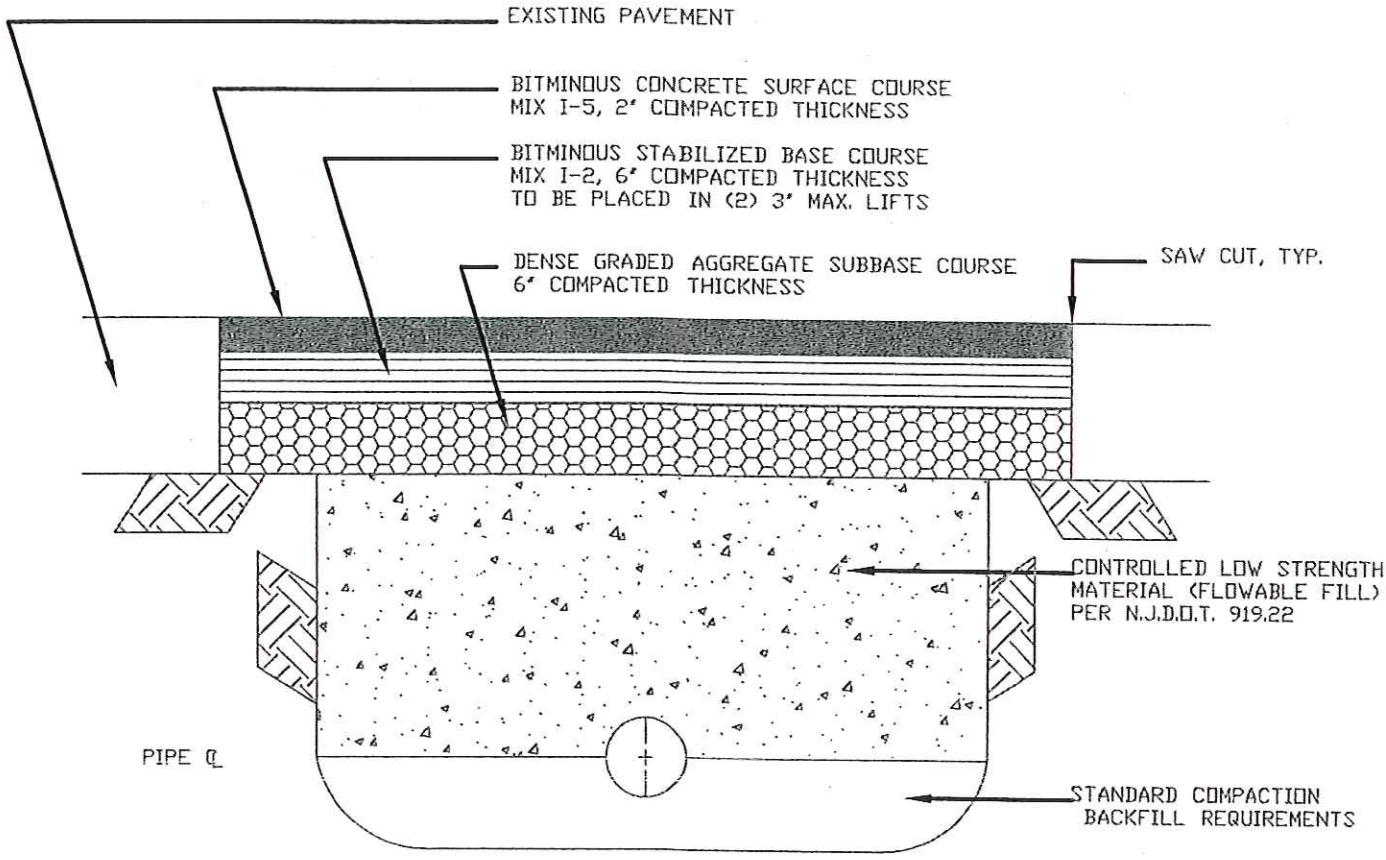
NOTE: ALL MATERIALS PER N.J.D.O.T. SPECIFICATIONS

OFFICE OF THE COUNTY ENGINEER
N. Delsea Drive, Clayton, NJ 08312-1012

TRENCH RESORATION DETAIL

Drawn By: S.M.
Date: July 2006

Scale: Not to Scale
Figure C



PAVEMENT RESTORATION DETAIL USING FLOWABLE FILL

N.T.S.

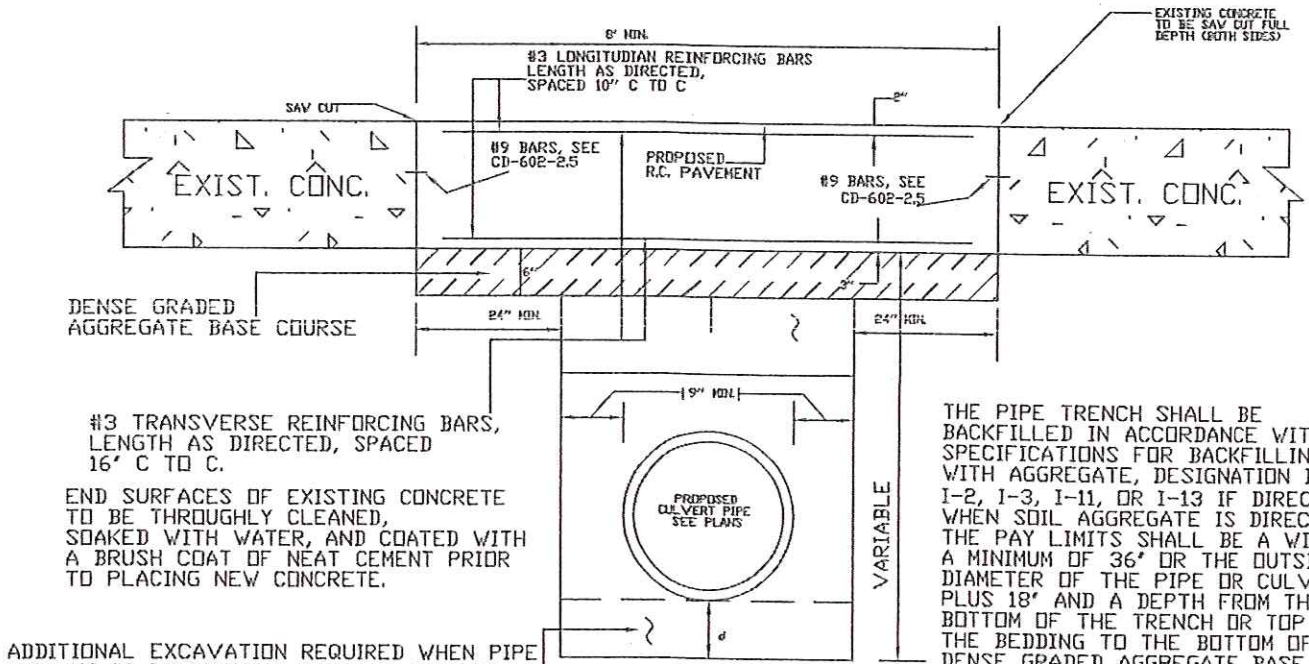
NOTE: WHEN FLOWABLE FILL IS UTILIZED IN THE TRAVELED WAY, THE AREA MUST BE STEEL PLATED TO SET FOR A PERIOD OF AT LEAST 24 HOURS.

OFFICE OF THE COUNTY ENGINEER
N. Delsea Drive, Clayton, NJ 08312-1012

PAVEMENT RESTORATION DETAIL USING FLOWABLE FILL

Drawn By: S.M.
Date: July 2006

Scale: Not to Scale
Figure D



CONCRETE SURFACE COURSE REPLACEMENT AT CROSS DRAIN TRENCH

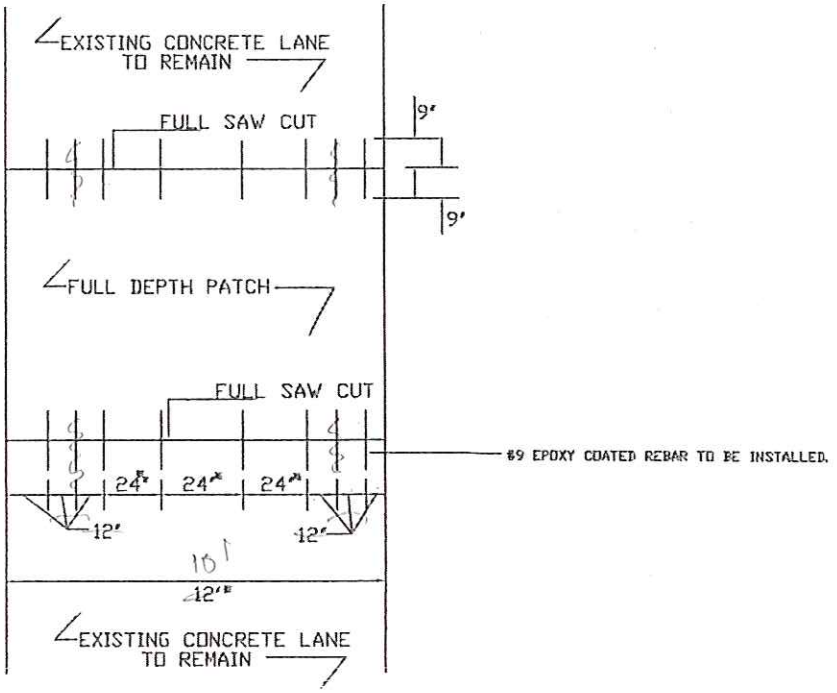
OFFICE OF THE COUNTY ENGINEER
N. Delsea Drive, Clayton, NJ 08312-1012

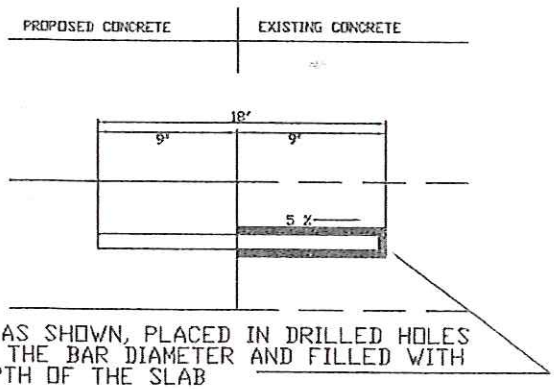
CONCRETE SURFACE COURSE REPLACEMENT
AT CROSS DRAIN TRENCH

Drawn By: S.M.
Date: July 2006

Scale: Not to Scale
Figure E

✳ FOR LANE WIDTHS OTHER THAN 12' THE 24" CENTER SPACING SHALL BE SET AT 24" MAXIMUM AND VARIABLE.





#9 EPOXY COATED REBAR SPACED AS SHOWN, PLACED IN DRILLED HOLES 1/4" DIA. LARGER (MAXIMUM) THAN THE BAR DIAMETER AND FILLED WITH EPOXY GROUT. PLACE AT MID DEPTH OF THE SLAB

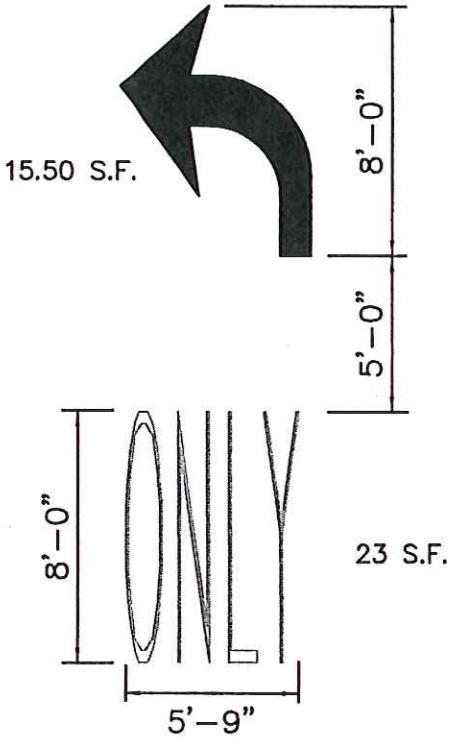
BAR EMBEDMENT DETAIL

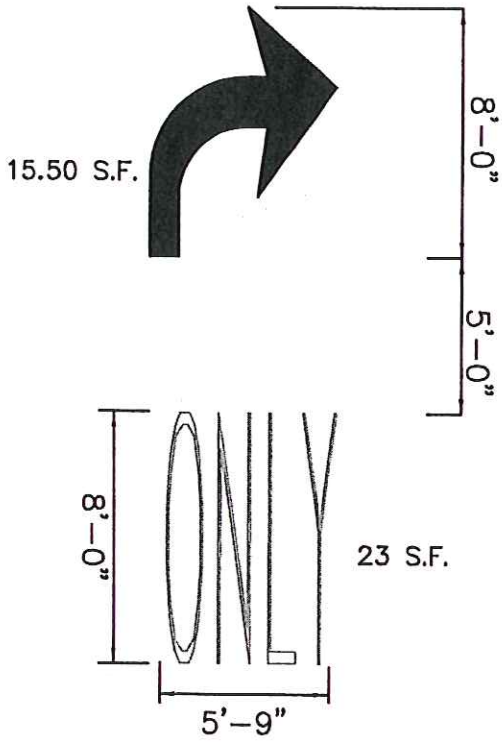
OFFICE OF THE COUNTY ENGINEER
N. Delsea Drive, Clayton, NJ 08312-1012

TRANSVERSE JOINT TIE IN CONCRETE SURFACE COURSE FOR CONDUIT OR CROSS DRAIN TRENCHES

Drawn By: S.M.
Date: July 2006

Scale: Not to Scale
Figure F





PAVEMENT MARKINGS

38.50 S.F.

N.T.S.

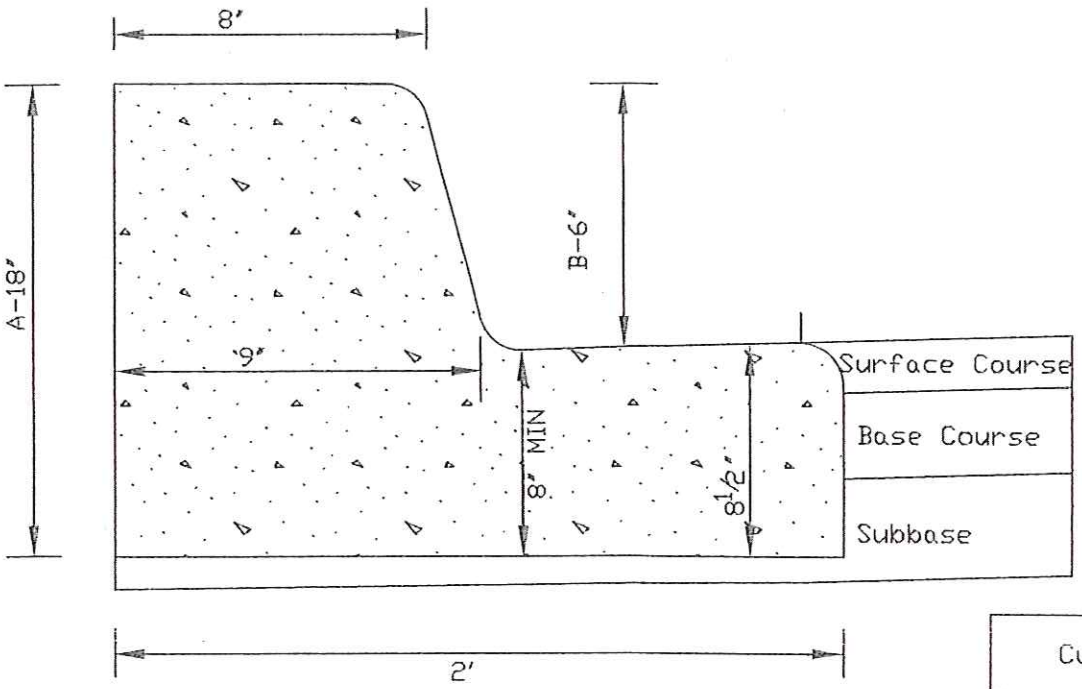
NOTE: ALL STRIPED AUXILIARY TURNING LANES MUST BE PROVIDED WITH A MINIMUM OF (2) TWO R3-7 SERIES SIGNS.

OFFICE OF THE COUNTY ENGINEER
N. Delsea Drive, Clayton, NJ 08312-1012

PAVEMENT MARKINGS

Drawn By: S.M.
Date: July 2006

Scale: Not to Scale
Figure G



Curb Size		
SPEED LIMIT	DIM. A	DIM. B
50	12"	4"
BELOW 50	14"	6"

MONOLITHIC CURB MAY BE REQUIRED WHERE THE GUTTERLINE GRADE IS LESS THAN 0.5%

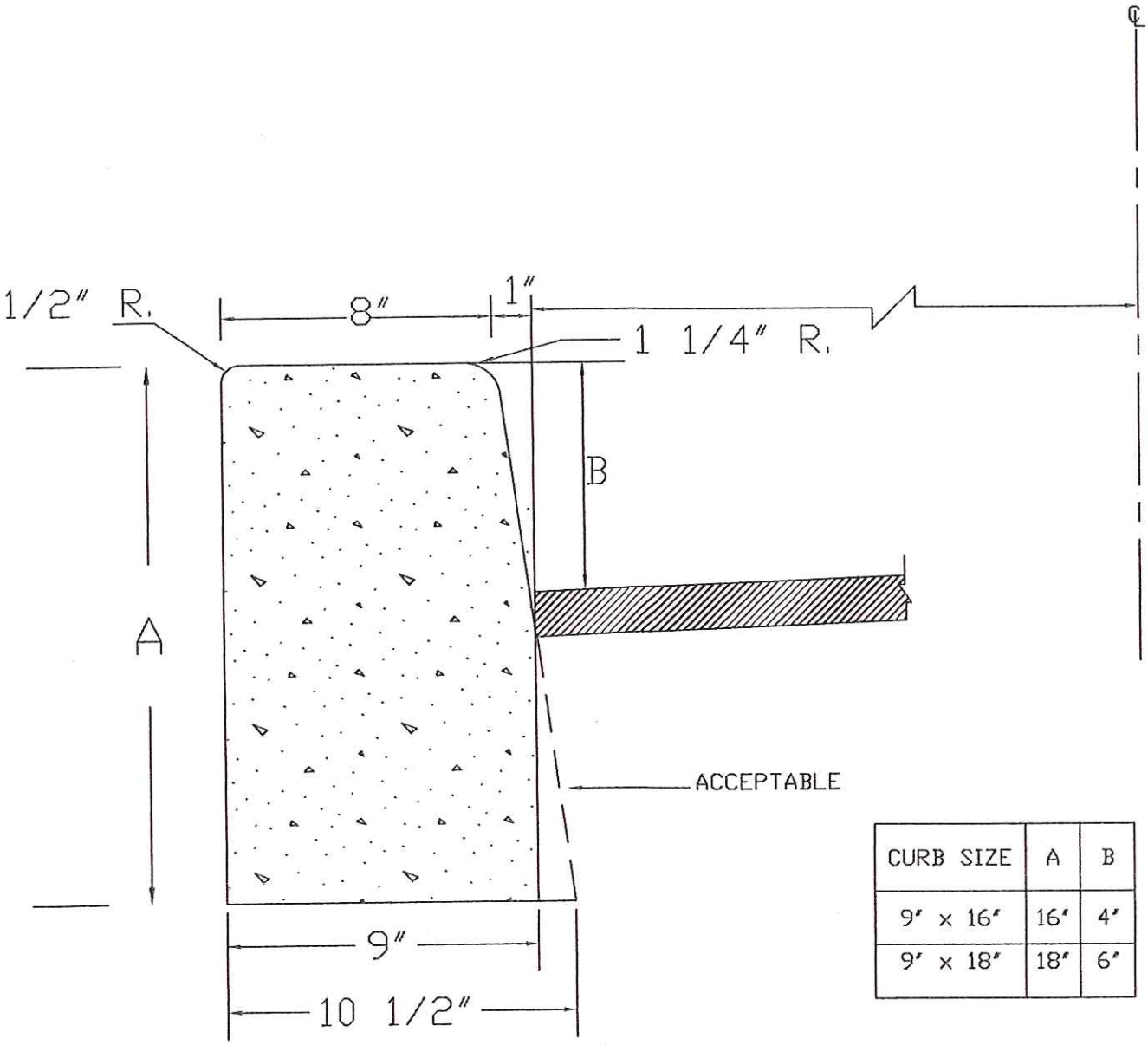
MINIMUM GUTTER GRADE THAT IS ALLOWABLE TO USE WITH MONOLITHIC CURB IS 0.3%

OFFICE OF THE COUNTY ENGINEER
N. Delsea Drive, Clayton, NJ 08312-1012

CONCRETE MONOLITHIC CURB DETAIL

Drawn By: S.M.
Date: July 2006

Scale: Not to Scale
Figure H



CURB SIZE	A	B
9" x 16"	16"	4"
9" x 18"	18"	6"

TRANSVERSE JOINTS 1/2" WIDE SHALL BE INSTALLED IN THE CURB 20'-0" APART AND SHALL BE FILLED WITH PREFORMED BITUMINOUS IMPREGNATED FIBER JOINT FILLER COMPLYING WITH REQUIREMENTS FOR TYPE III FILLER IN AASHTO SPEC. M-213, RECESSED 1/4" IN FROM FACE AND TOP OF CURB. EXPANSION JOINTS THRU AND ADJACENT TO THE CURB SHALL BE INCLUDED IN THE UNIT-PRICE BID FOR CURB.

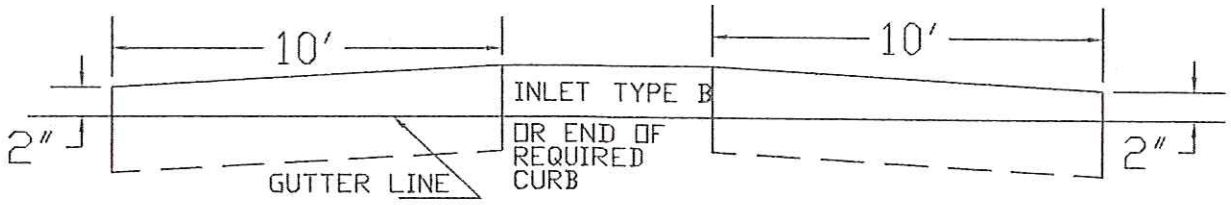
NOTE: SEE PARAGRAPH F-6 ON PAGE 18

OFFICE OF THE COUNTY ENGINEER
N. Delsea Drive, Clayton, NJ 08312-1012

CONCRETE VERTICAL CURB

Drawn By: S.M.
Date: July 2006

Scale: Not to Scale
Figure I



CURB TREATMENT AT INLET, TYPE B AND ALL CURB ENDS

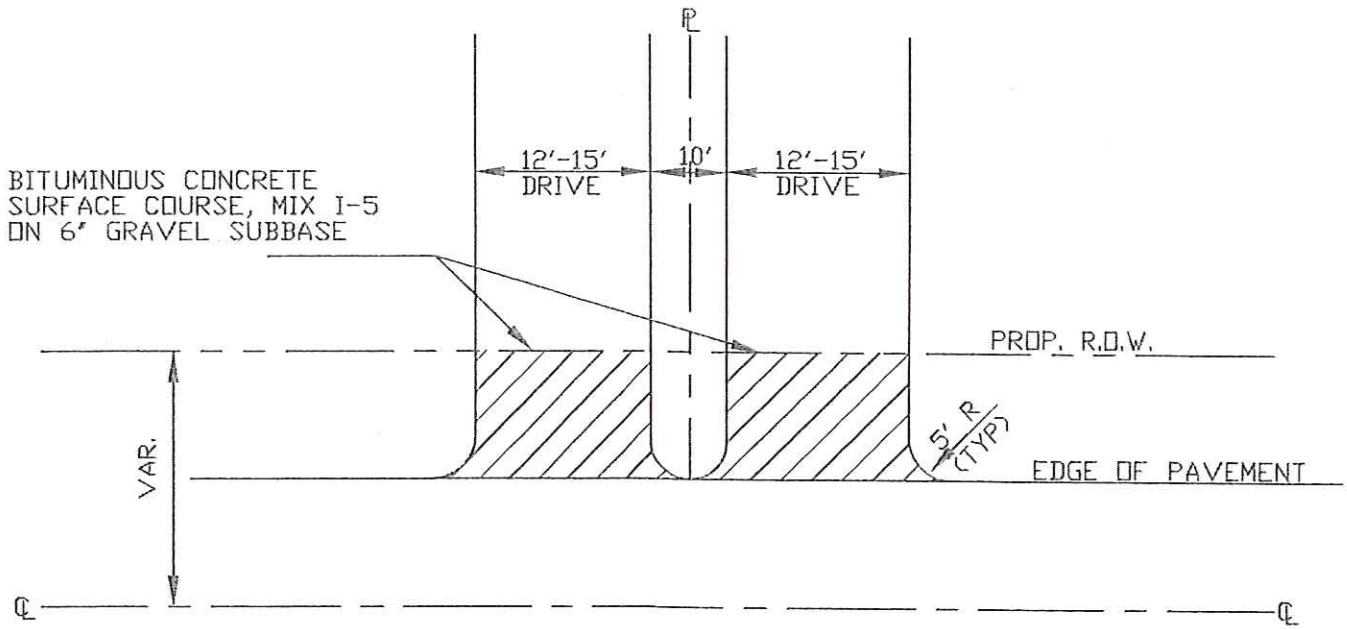
N.T.S.

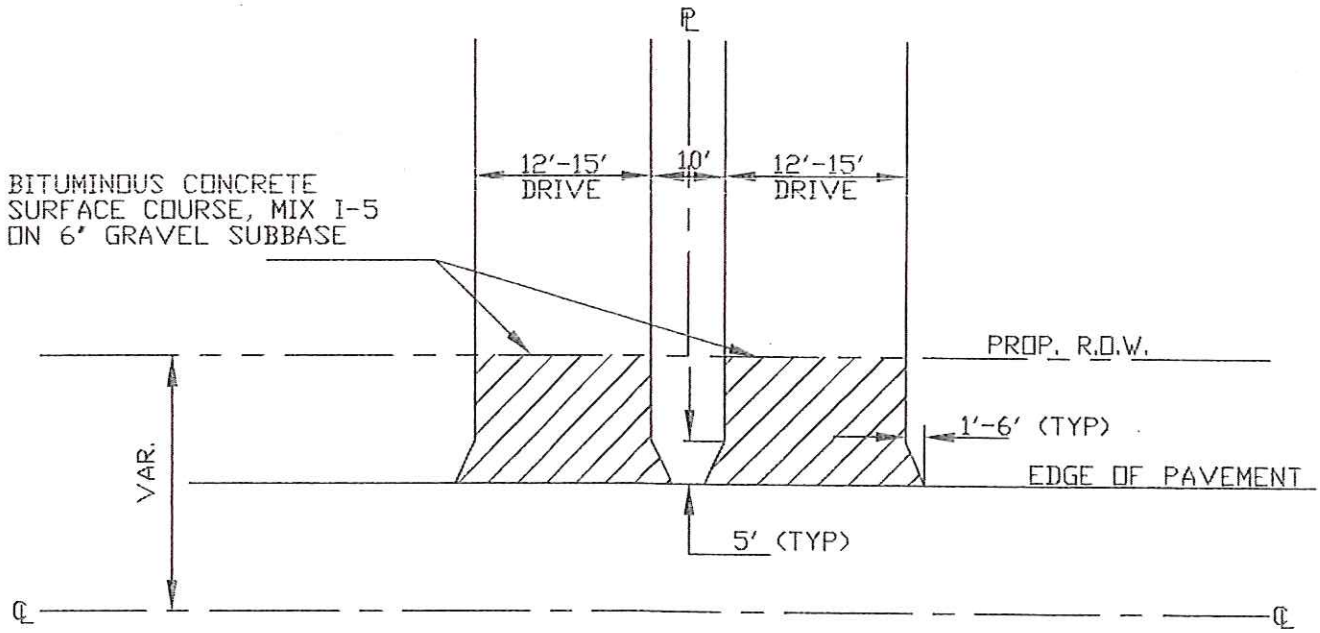
OFFICE OF THE COUNTY ENGINEER
N. Delsea Drive, Clayton, NJ 08312-1012

10' LONG TAPERED CURB END

Drawn By: S.M.
Date: July 2006

Scale: Not to Scale
Figure J



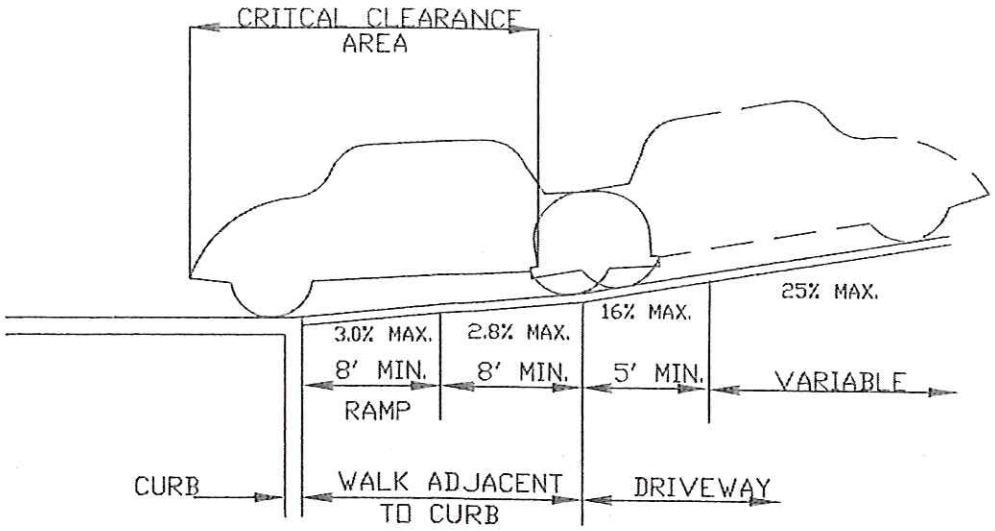


OFFICE OF THE COUNTY ENGINEER
N. Delsea Drive, Clayton, NJ 08312-1012

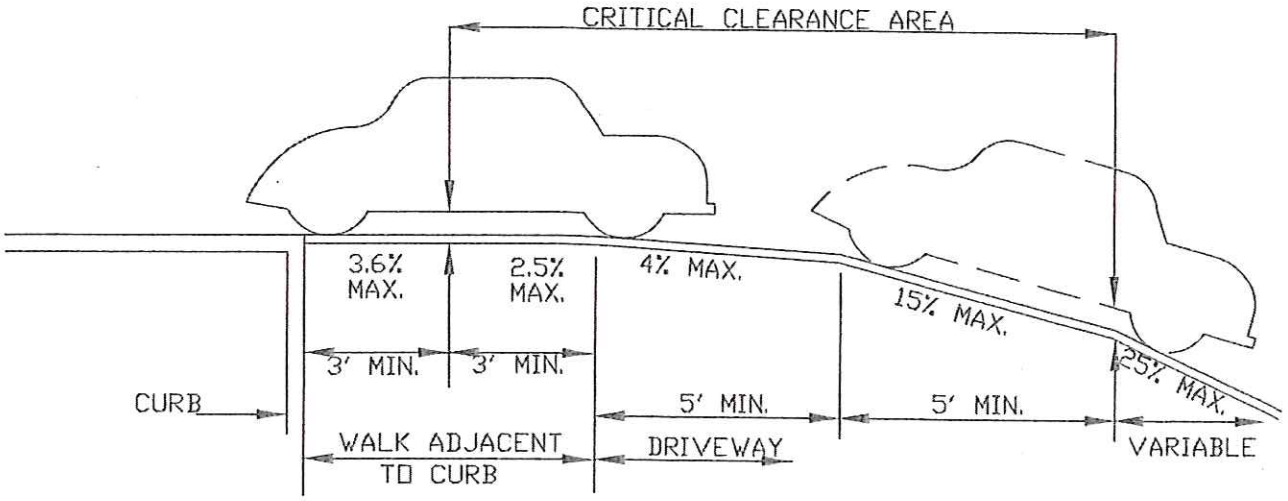
SIDE-BY-SIDE DRIVEWAY
ACCESS DETAIL

Drawn By: S.M.
Date: July 2006

Scale: Not to Scale
Figure K



SIDEWALK WITHIN 8' OF CURB
UPHILL DRIVE



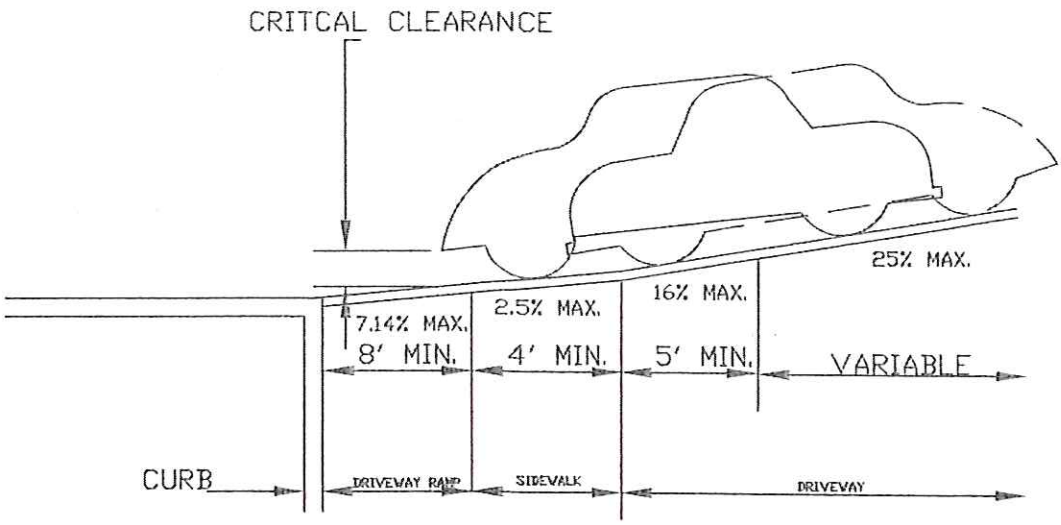
SIDEWALK WITHIN 8' OF CURB
DOWNHILL DRIVE

OFFICE OF THE COUNTY ENGINEER
N. Delsea Drive, Clayton, NJ 08312-1012

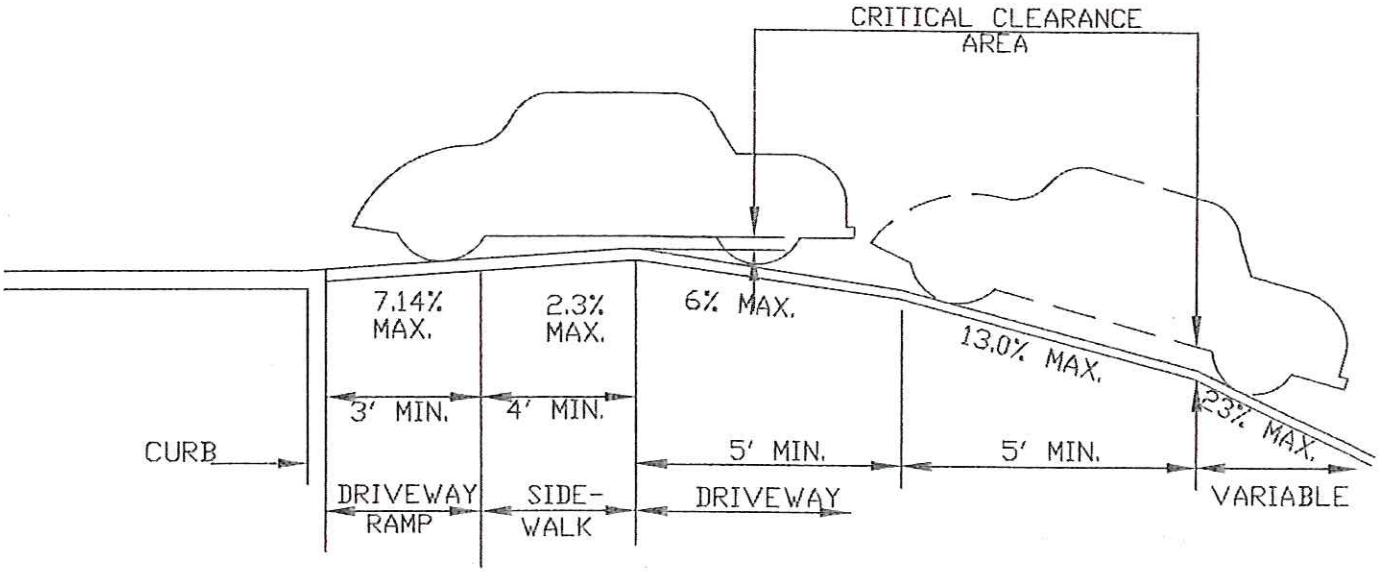
DRIVEWAY PROFILES

Drawn By: S.M.
Date: July 2006

Scale: Not to Scale
Figure L



SIDEWALK 8' OR MORE FROM CURB-
UPHILL DRIVE



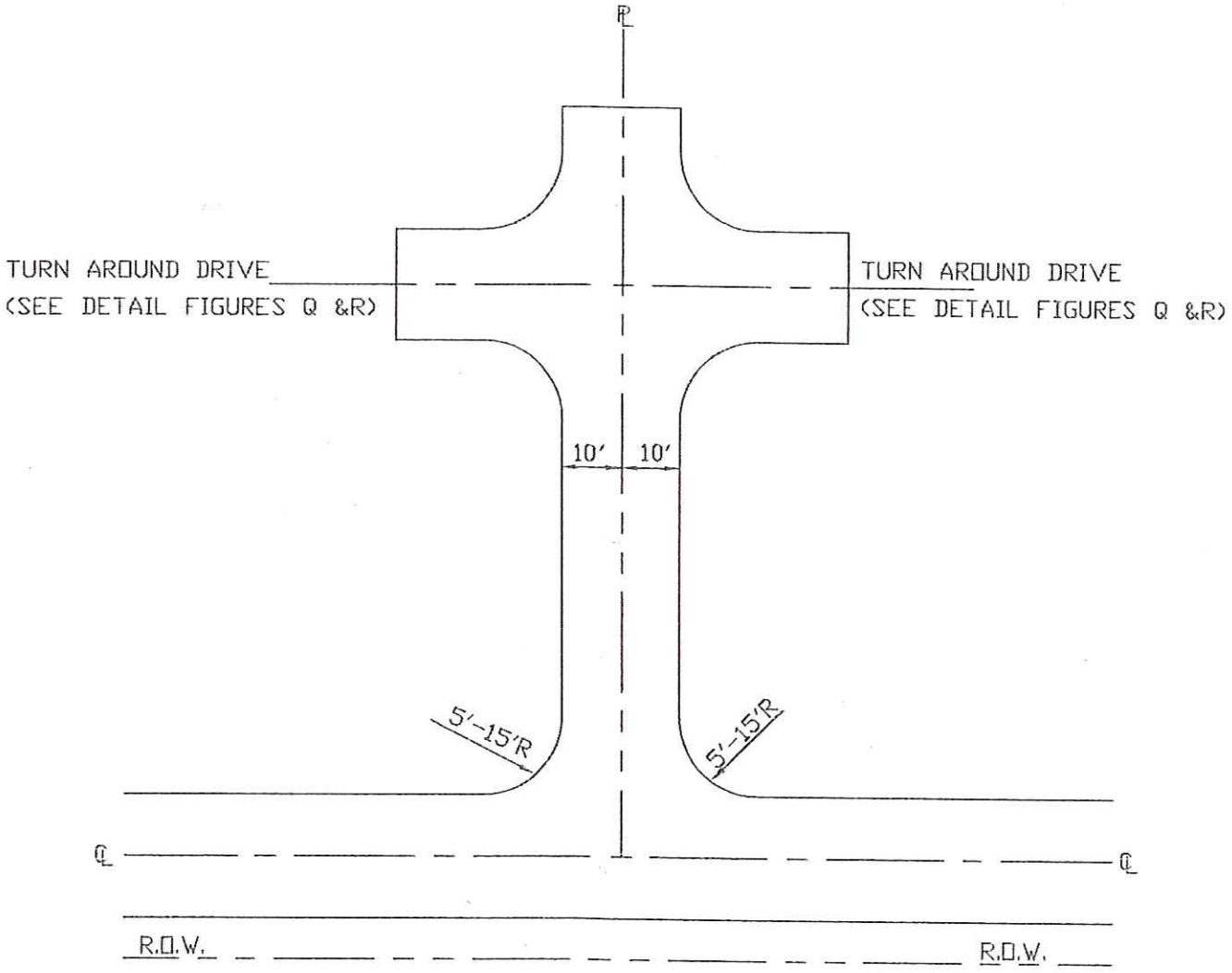
SIDEWALK 8' OR MORE FROM CURB-
DOWNHILL GRADE

OFFICE OF THE COUNTY ENGINEER
N. Delsea Drive, Clayton, NJ 08312-1012

DRIVEWAY PROFILES 8' OR
MORE FROM CURB

Drawn By: S.M.
Date: July 2006

Scale: Not to Scale
Figure M



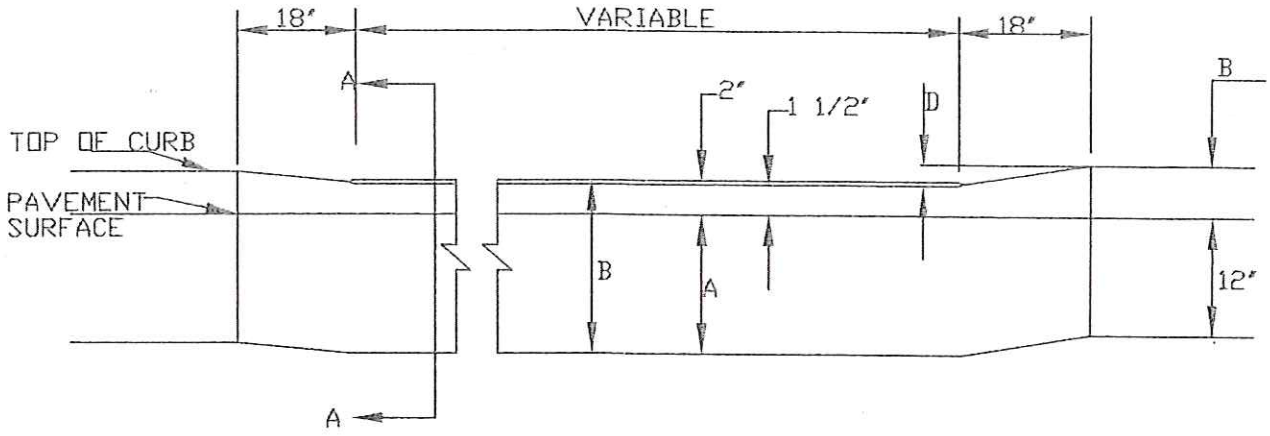
NOTE: TURN AROUNDS DO NOT HAVE TO BE PLACED BACK TO BACK.

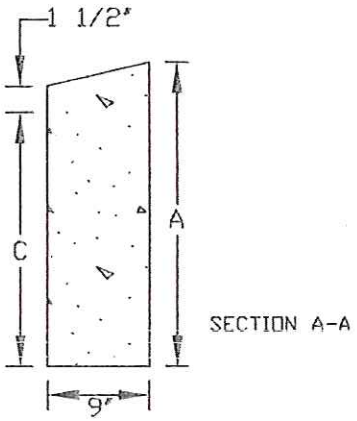
OFFICE OF THE COUNTY ENGINEER
N. Delsea Drive, Clayton, NJ 08312-1012

COMMON DRIVEWAYS

Drawn By: S.M.
Date: July 2006

Scale: Not to Scale
Figure N

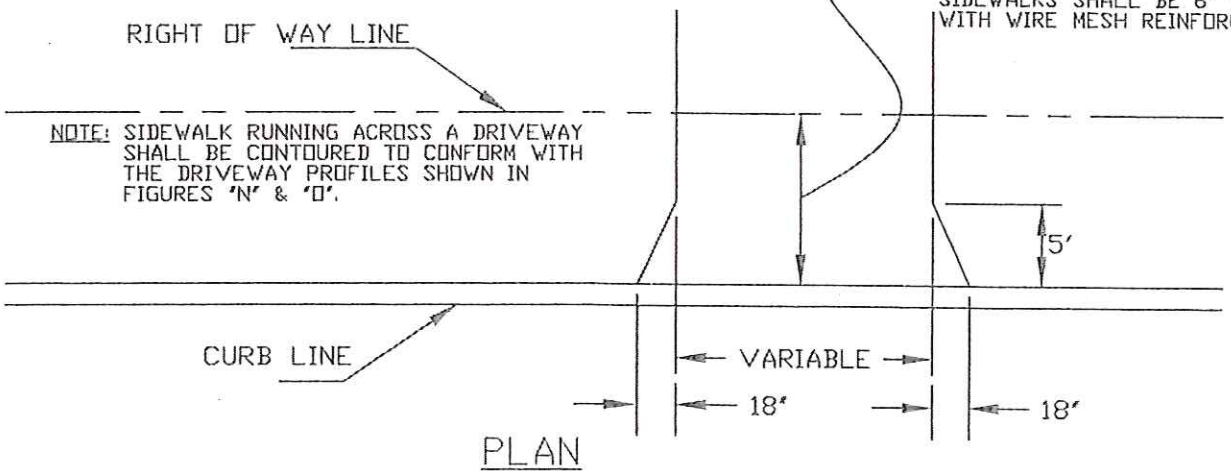




CURB SIZE	A	B	C	D
9" x 16"	16"	4"	14"	2"
9" x 18"	18"	6"	16"	4"

DRIVEWAYS SHALL BE PAVED WITH CLASS B CONCRETE OR BITMINOUS CONCRETE PER COUNTY SPECIFICATIONS BETWEEN THE CURB AND RIGHT OF WAY LINE. IN NO CASE SHALL THE PAVING BE LESS THAN 5 FEET

CONCRETE DRIVEWAYS AND SIDEWALKS SHALL BE 6" THICK WITH WIRE MESH REINFORCEMENT.



PLAN

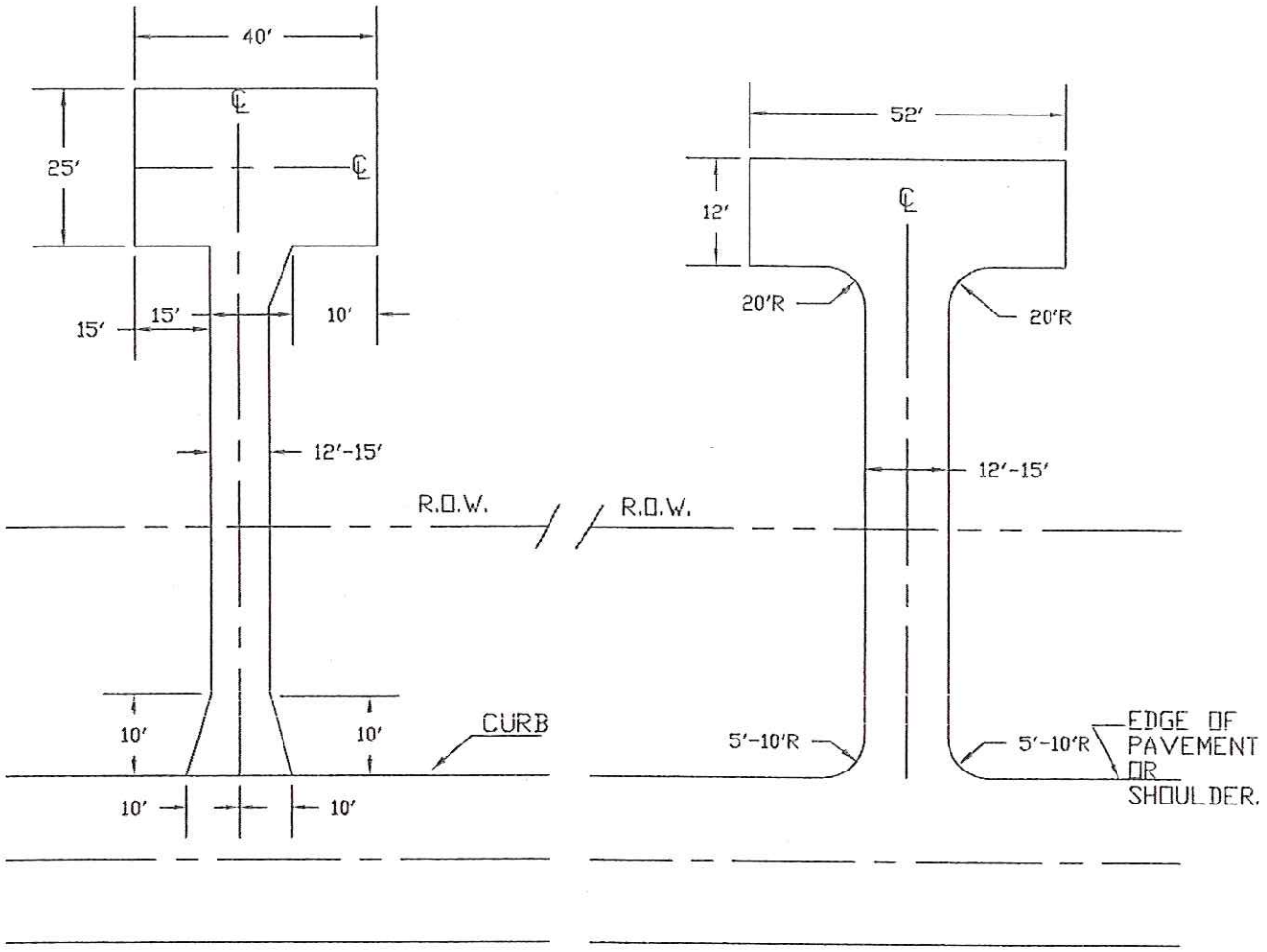
NOTE: CONCRETE DRIVEWAY APRONS AND SIDEWALK IMMEDIATELY BEHIND THE APRON SHALL BE CONSTRUCTED WITH CLASS B CONCRETE, 6" THICK, AND SHALL BE REINFORCED WITH STEEL WIRE FABRIC AS FOLLOWS:
LONGITUDINAL WIRE SHALL BE SIZE NO. W8.6 SPACED 6" ON CENTER.
TRANSVERSE WIRE SHALL BE SIZE NO. W4.7 SPACED 12" ON CENTER.

OFFICE OF THE COUNTY ENGINEER
N. Delsea Drive, Clayton, NJ 08312-1012

METHODS OF DEPRESSING CURBS AT DRIVEWAYS

Drawn By: S.M.
Date: July 2006

Scale: Not to Scale
Figure D



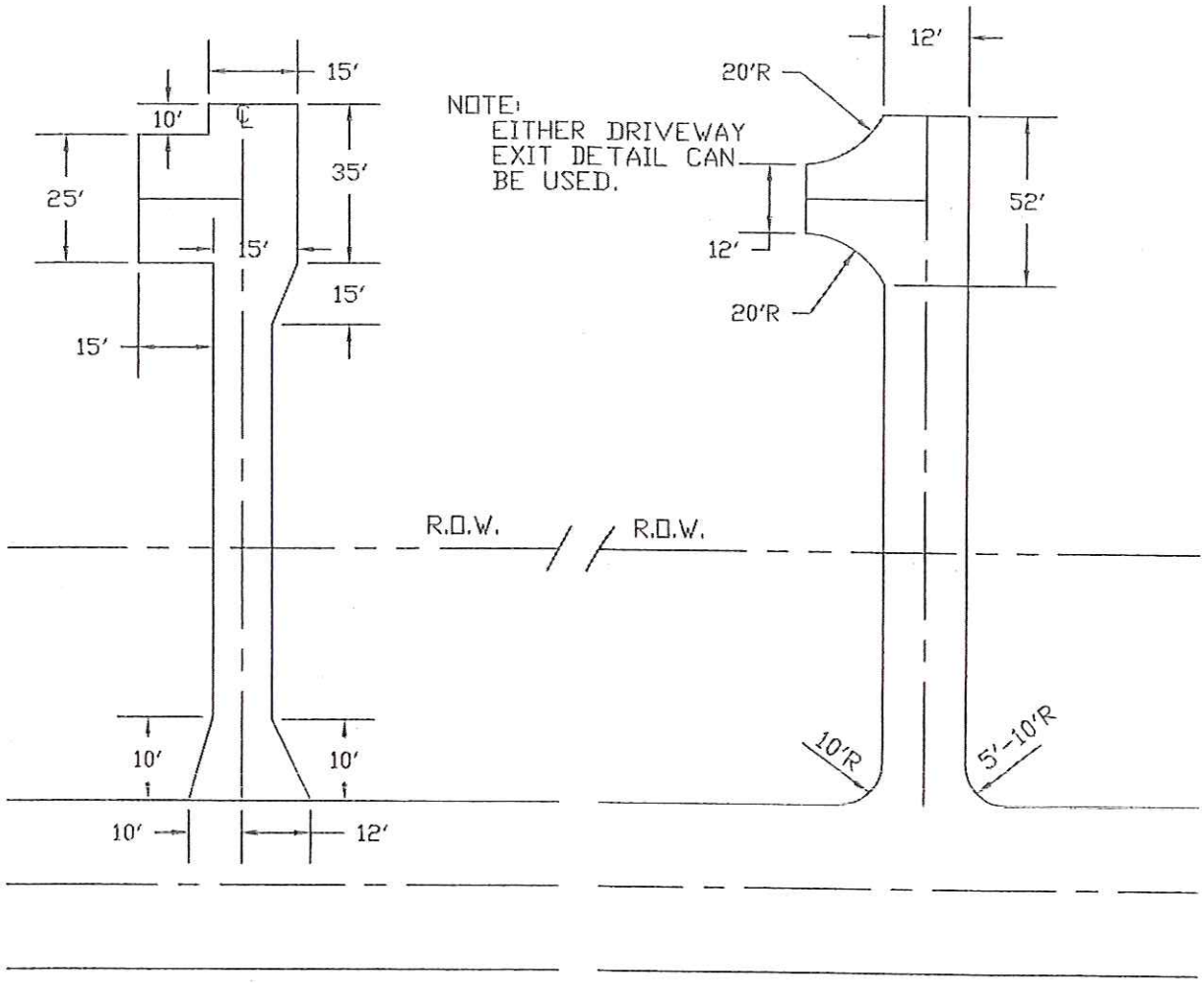
NOTES:
1. EITHER DRIVEWAY EXIT DETAIL CAN BE USED.
2. DRIVEWAY APRONS WITHIN COUNTY RIGHT OF WAY TO BE PAVED IN ACCORDANCE WITH COUNTY STANDARDS.
3. EDGE CLEARANCE OF OUTSIDE LONGITUDINAL WIRE SHALL BE 3 INCHES
4. EDGE CLEARANCE OF THE LAST TRANSVERSE WIRE SHALL NOT BE GREATER THAN 11 INCHES.
5. END CLEARANCE OF THE LONGITUDINAL WIRE SHALL NOT BE LESS THAN 1 INCH NOR MORE THAN 3 INCHES.
6. LONGITUDINAL WIRES SHALL BE LAPPED A MINIMUM OF 12 INCHES.

OFFICE OF THE COUNTY ENGINEER
N. Delsea Drive, Clayton, NJ 08312-1012

TURNAROUND DRIVEWAY DETAILS

Drawn By: S.M.
Date: July 2006

Scale: Not to Scale
Figure P



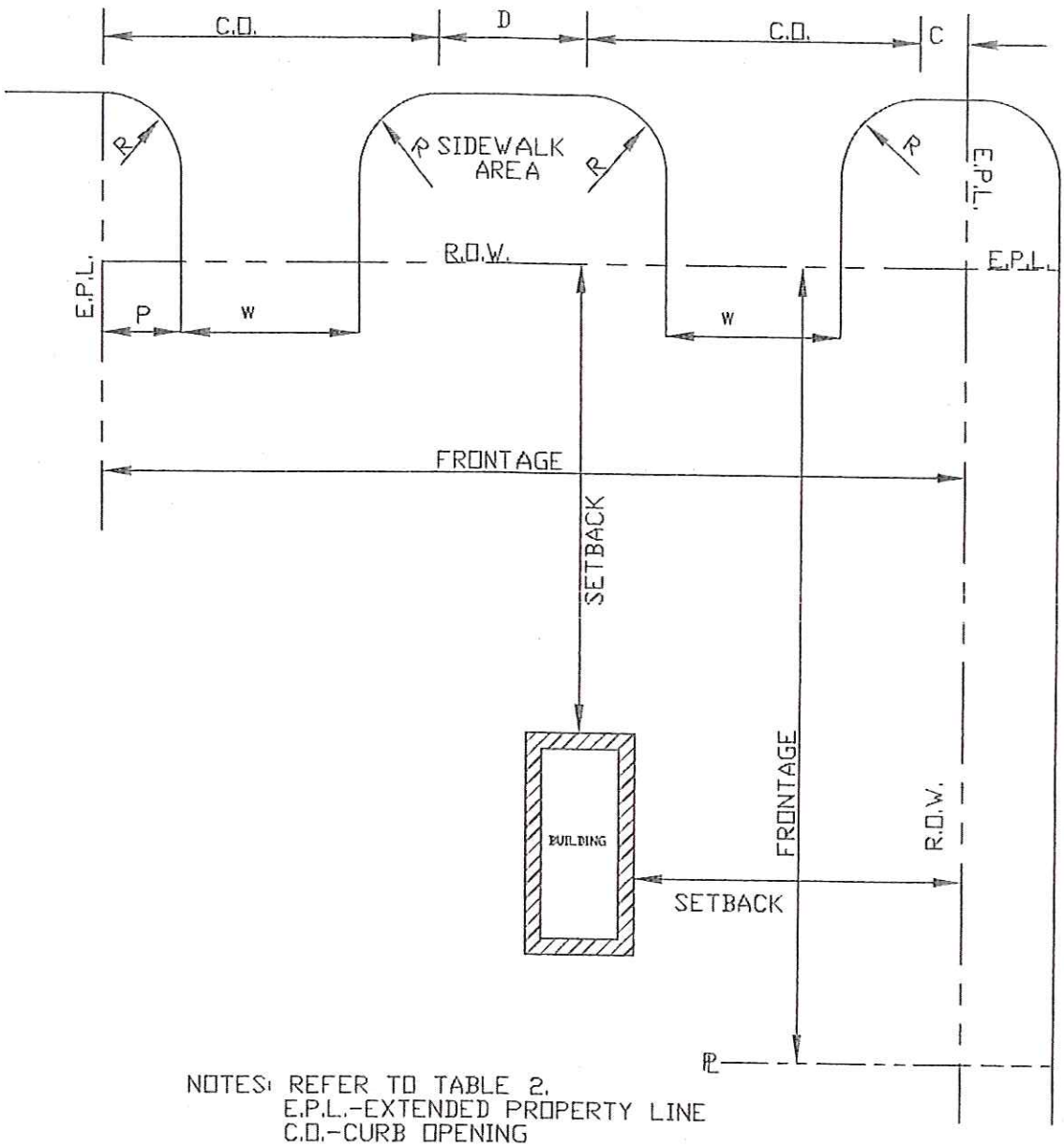
NOTES: 1. EITHER DRIVEWAY EXIT DETAIL CAN BE USED.
2. DRIVEWAY APRONS WITHIN COUNTY RIGHT OF WAY TO BE PAVED IN ACCORDANCE WITH COUNTY STANDARDS.

OFFICE OF THE COUNTY ENGINEER
N. Delsea Drive, Clayton, NJ 08312-1012

TURNAROUND DRIVEWAY DETAILS

Drawn By: S.M.
Date: July 2006

Scale: Not to Scale
Figure Q



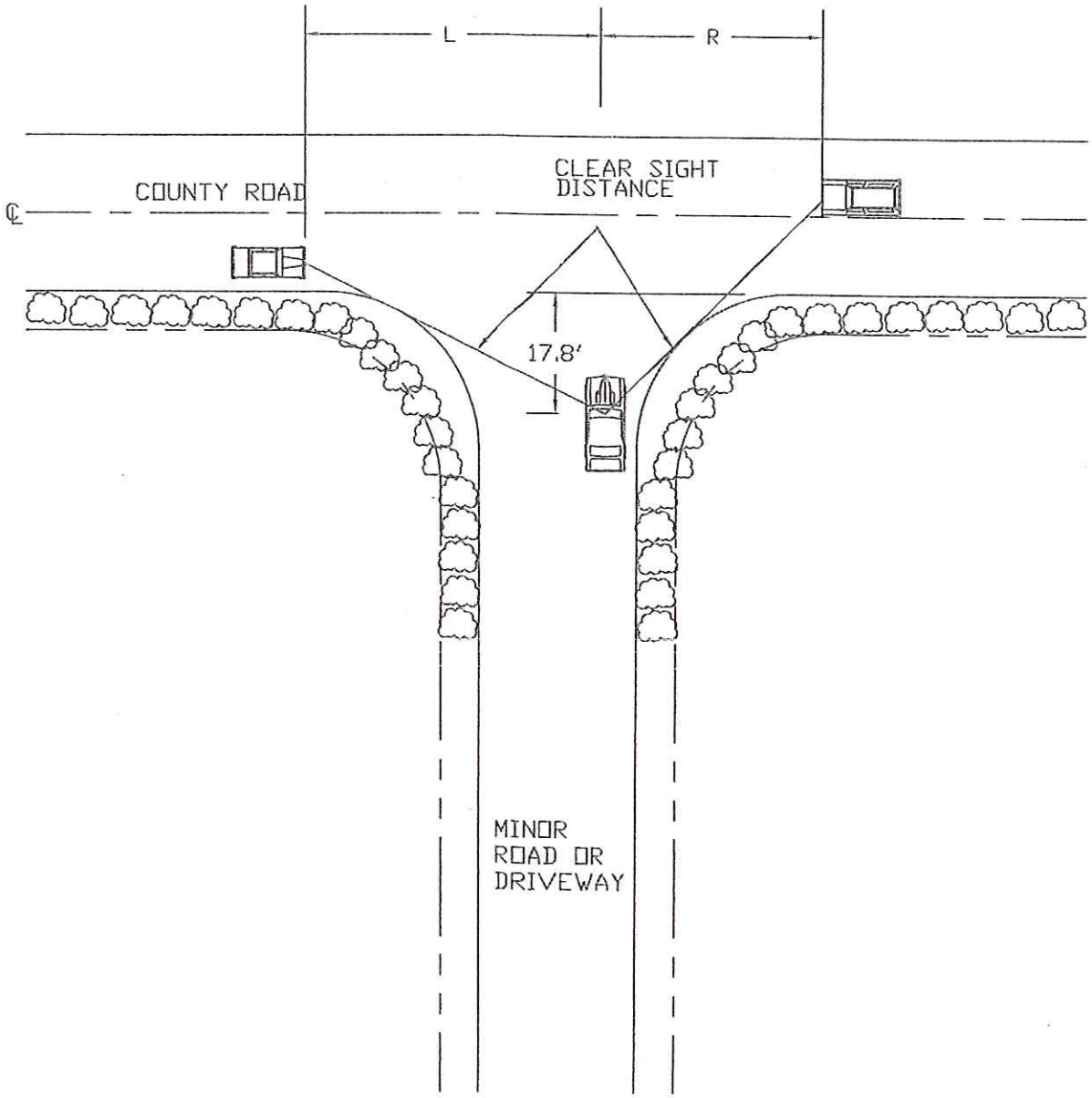
NOTES: REFER TO TABLE 2.
E.P.L.-EXTENDED PROPERTY LINE
C.O.-CURB OPENING

OFFICE OF THE COUNTY ENGINEER
N. Delsea Drive, Clayton, NJ 08312-1012

DRIVEWAY STANDARDS AND DIMENSIONS

Drawn By: S.M.
Date: July 2006

Scale: Not to Scale
Figure R



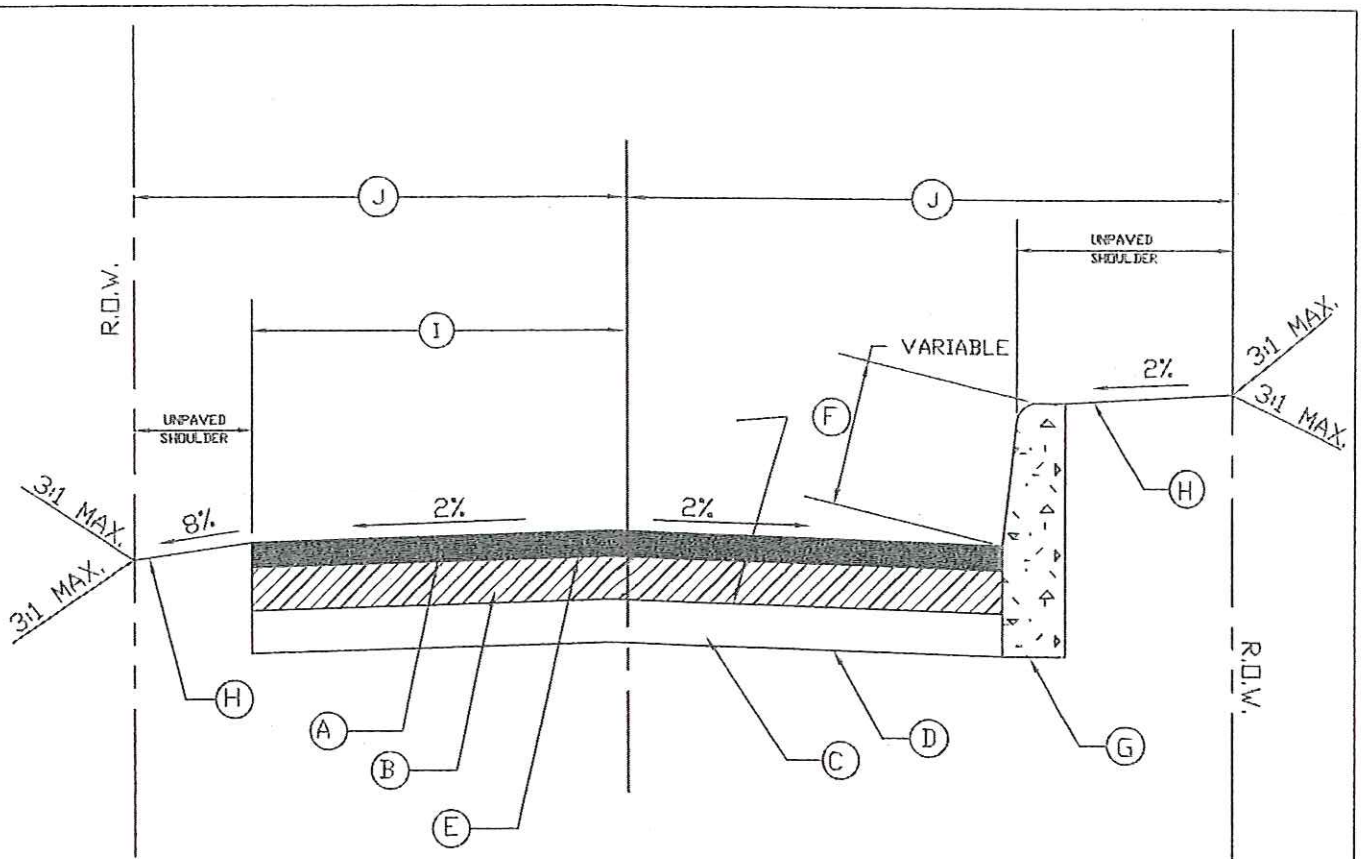
REFER TO TABLES 3-4

OFFICE OF THE COUNTY ENGINEER
N. Delsea Drive, Clayton, NJ 08312-1012

SAFE SIGHT DISTANCE FOR
EXITING VEHICLES

Drawn By: S.M.
Date: July 2006

Scale: Not to Scale
Figure 5



CROSS SECTION SPECIFICATIONS:

(A) HOT MIX ASPHALT 12.5M64 SURFACE COURSE, 2" THICK

(B) HOT MIX ASPHALT 19M64 BASE COURSE, 4" THICK

(C) SOIL AGGREGATE BASE COURSE
DENSE GRADED AGGREGATE MAY BE SUBSTITUTED FOR SOIL AGGREGATE

(D) PAVEMENT COURSES TO BE PLACED ON FIRM SUBGRADE, IF UNSUITABLE MATERIAL IS ENCOUNTERED, THE ROADBED SHALL BE UNDERCUT TO A DEPTH NECESSARY TO REACH GOOD MATERIAL AND FILLED TO GRADE WITH DENSE GRADED AGGREGATE. SOIL STABILIZATION FABRIC SHALL BE PLACED AT THE BOTTOM LIMIT OF UNDERCUT AREAS PRIOR TO PLACING NEW MATERIAL.

(E) TACK COAT

(F) PRIME COAT

(G) CONCRETE VERTICAL CURB

(H) ROADSIDE BORDER AREA INCLUDING CUT AND FILL SLOPES SHALL BE STABILIZED WITH 4 INCH THICK TOPSOIL, FERTILIZED, SEEDED AND MULCHED OR SODDED. TYPES AND APPLICATION RATES SHALL BE AS DIRECTED BY THE COUNTY ENGINEER.

(I) PROPOSED CARTWAY WIDTH PER OFFICIAL COUNTY MAP OR AS DETERMINED BY THE OFFICE OF THE COUNTY ENGINEER.

(J) RIGHT OF WAY WIDTHS PER OFFICIAL COUNTY MAP OR AS DIRECTED BY THE COUNTY ENGINEER.

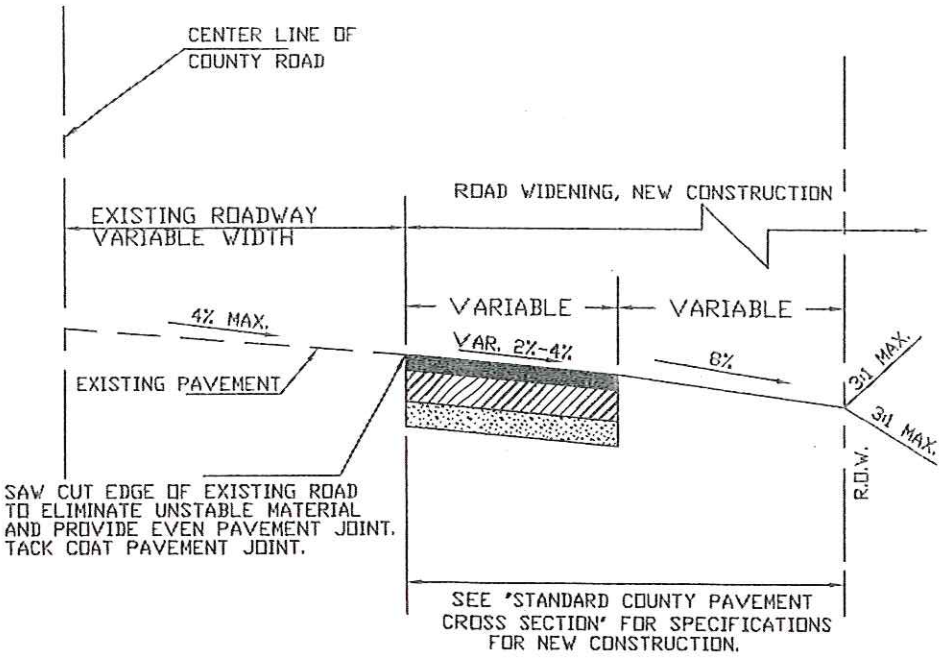
ALL ABOVE MATERIALS AND METHODS OF CONSTRUCTION SHALL CONFORM WITH ALL PROVISIONS OF THE CURRENT NEW JERSEY DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION WITH ALL AMENDMENTS THERETO TO APPLY.

OFFICE OF THE COUNTY ENGINEER
N. Delsea Drive, Clayton, NJ 08312-1012

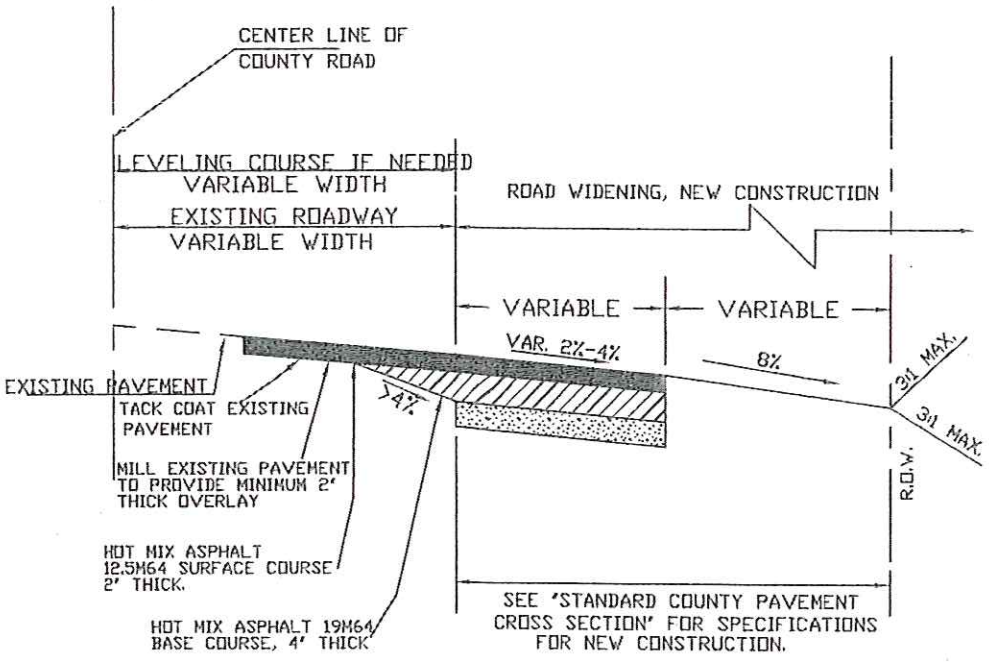
STANDARD COUNTY PAVEMENT
CROSS SECTION

Drawn By: S.M.
Date: July 2006

Scale: Not to Scale
Figure 1



NORMAL ROADWAY CROWN



SEVERE ROADWAY CROWN

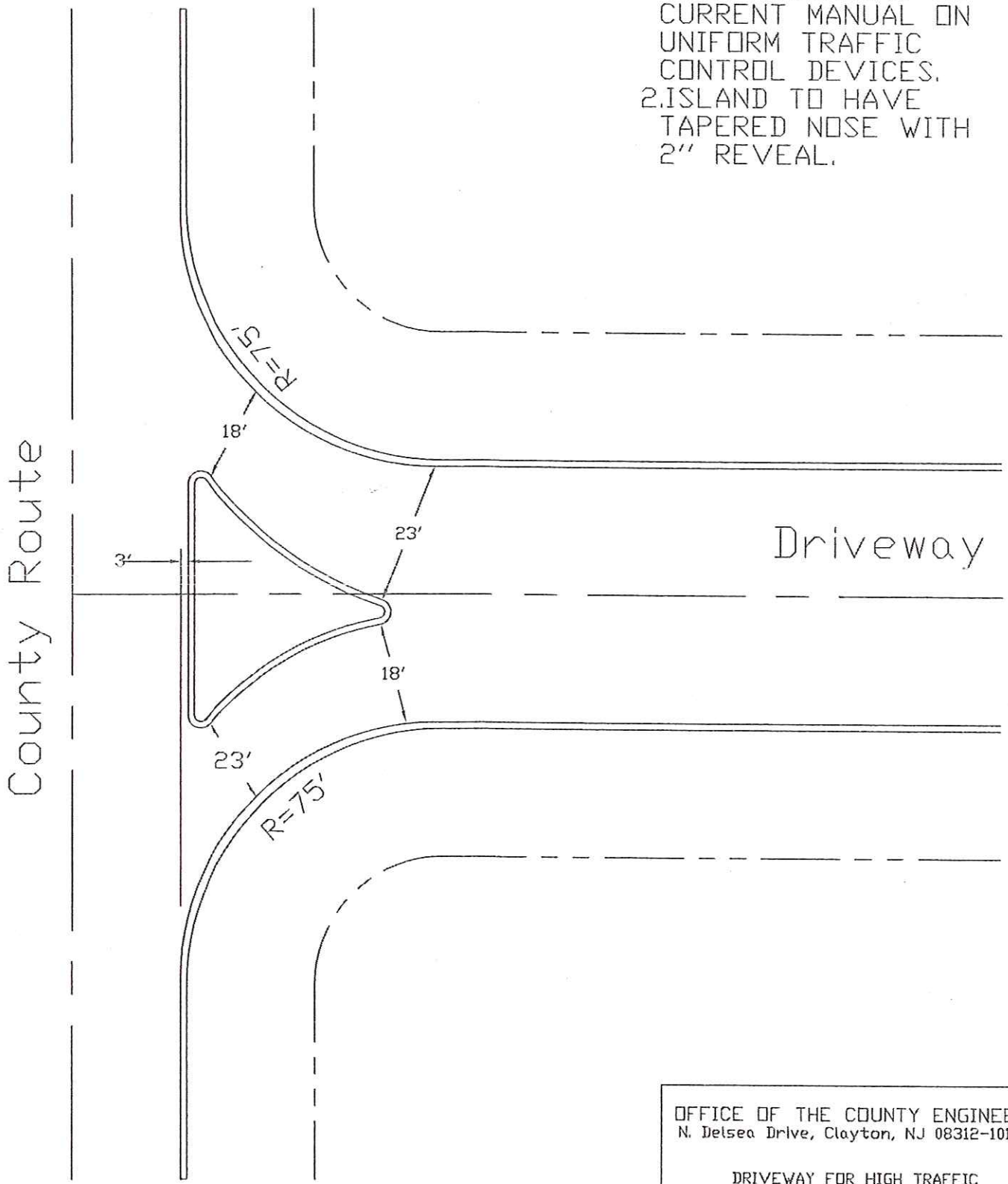
OFFICE OF THE COUNTY ENGINEER
N. Delsea Drive, Clayton, NJ 08312-1012

TYPICAL SECTIONS, WIDENING
EXISTING ROAD

Drawn By: S.M.
Date: July 2006

Scale: Not to Scale
Figure U

NOTES: 1. SIGN ACCORDING TO CURRENT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
2. ISLAND TO HAVE TAPERED NOSE WITH 2" REVEAL.

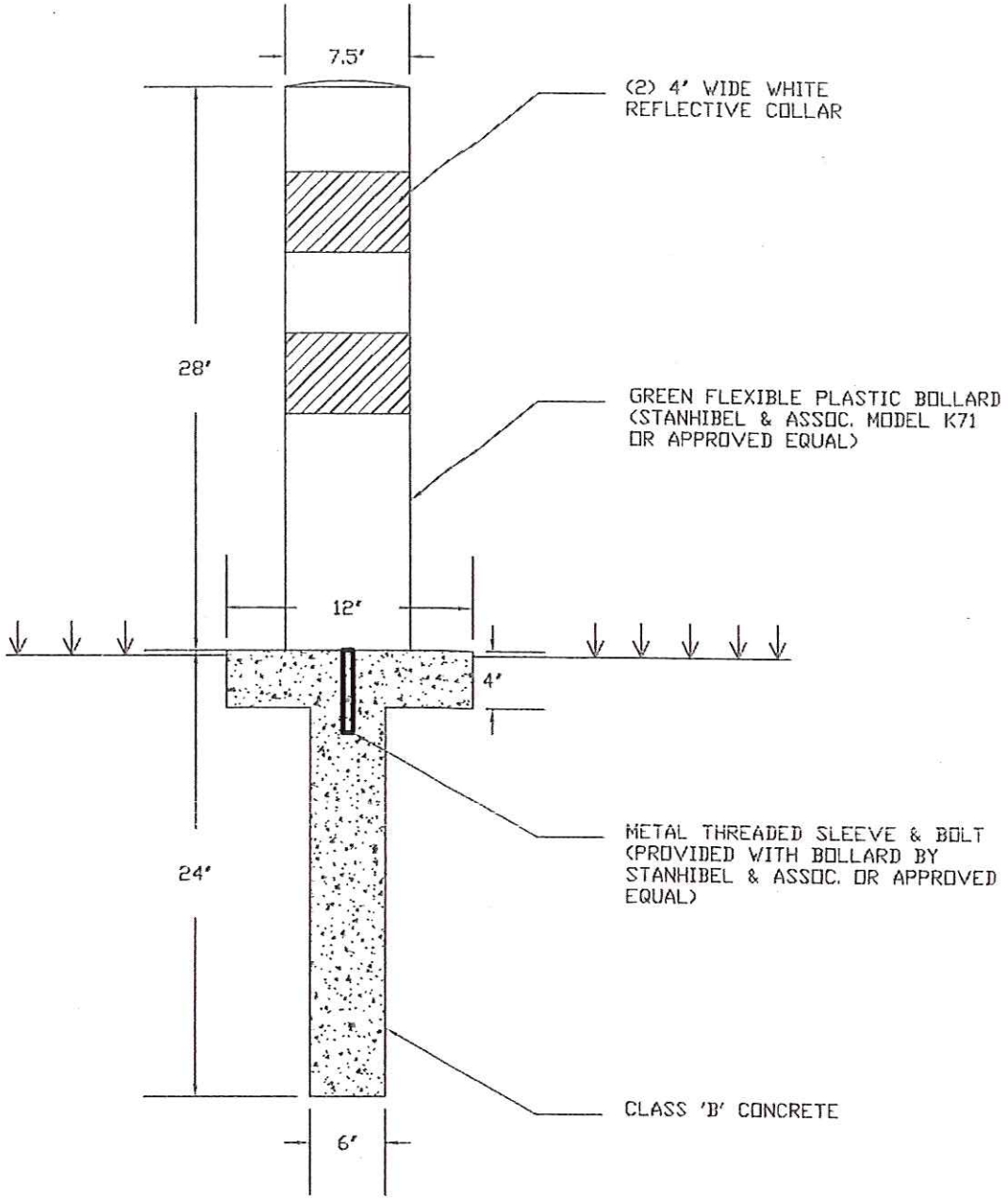


OFFICE OF THE COUNTY ENGINEER
N. Delsea Drive, Clayton, NJ 08312-1012

DRIVEWAY FOR HIGH TRAFFIC GENERATORS (NO LEFT TURN)

Drawn By: S.M.
Date: July 2006

Scale: Not to Scale
Figure V



FLEXIBLE BOLLARD AT EMERGENCY ACCESS DETAIL

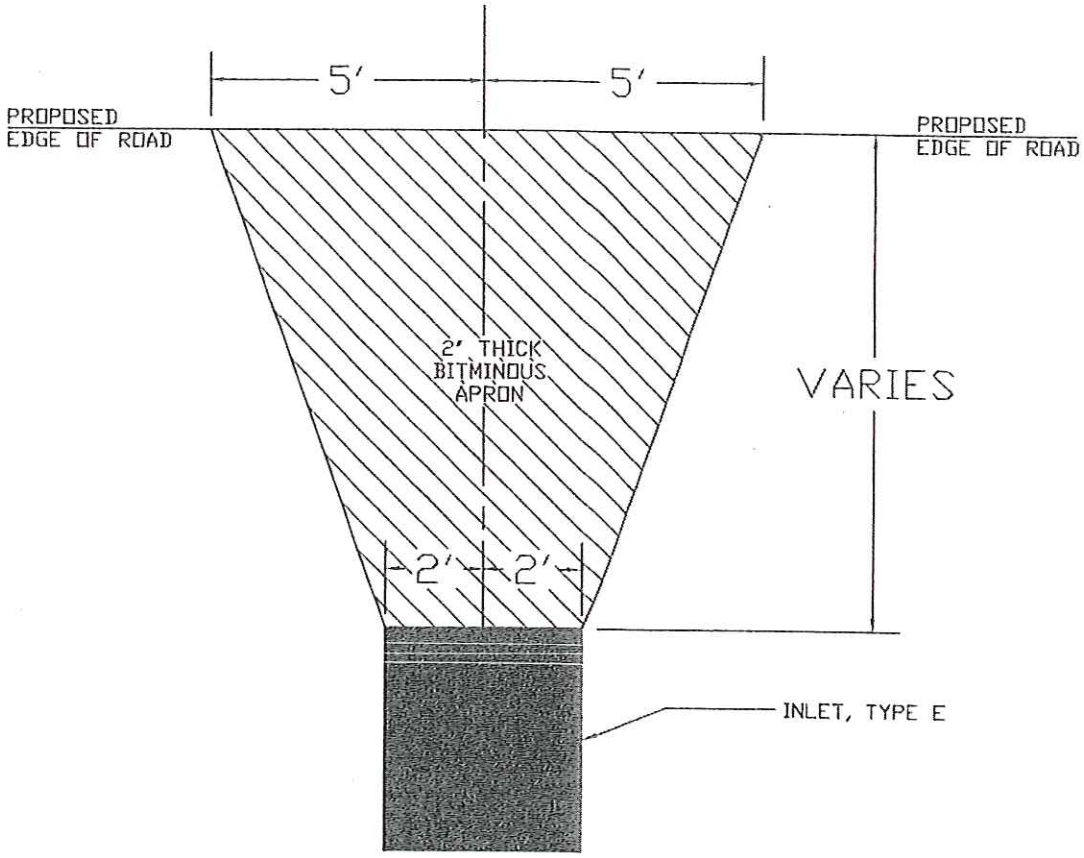
N.T.S.

OFFICE OF THE COUNTY ENGINEER
N. Delsea Drive, Clayton, NJ 08312-1012

FLEXIBLE BOLLARD AT EMERGENCY ACCESS DETAIL

Drawn By: S.M.
Date: July 2006

Scale: Not to Scale
Figure W



BITMINOUS APRON DETAIL

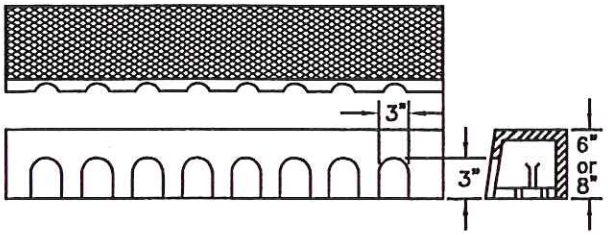
N.T.S.

OFFICE OF THE COUNTY ENGINEER
N. Delsea Drive, Clayton, NJ 08312-1012

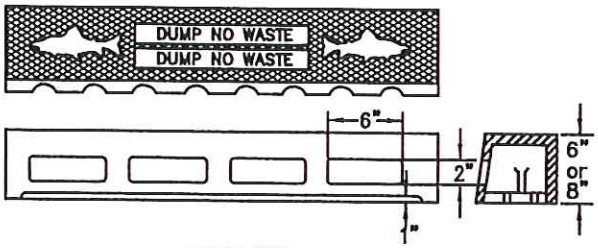
BITUMINOUS APRON DETAIL

Drawn By: S.M.
Date: July 2006

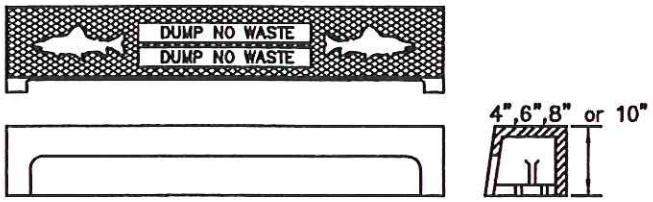
Scale: Not to Scale
Figure X



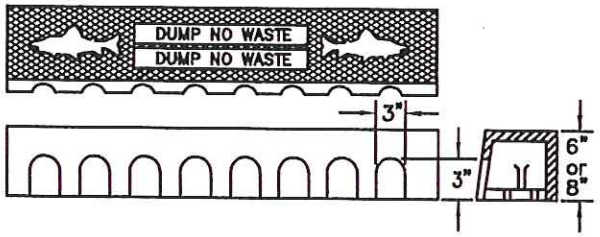
TYPE "J"



TYPE "N"

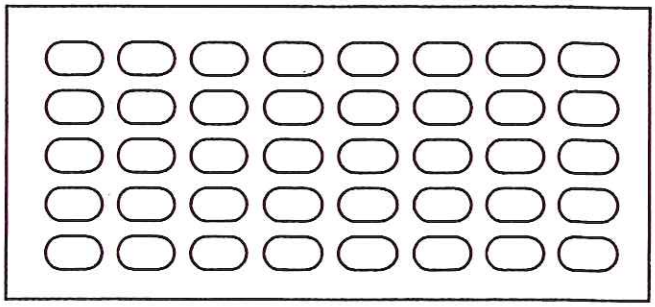


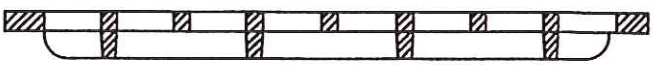
TYPE "F"



TYPE "E"

OVAL HOLE FLAT GRATE





NAME PLATES OPTIONS

DUMP NO WASTE
DRAINS TO WATERWAYS

DRAINS TO BAY

DRAINS TO RIVER

DRAINS TO WATERWAYS

BICYCLE SAFE GRATE

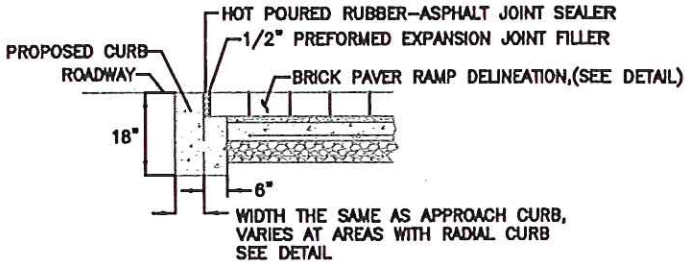
PATTERN #2511 BY BRIDGESTATE FOUNDRY

OFFICE OF THE COUNTY ENGINEER
N. Delsea Drive, Clayton, NJ 08312-1012

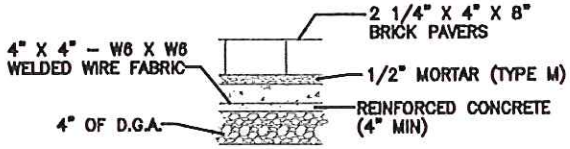
CURB INLET WITH BICYCLE SAFE GRATE AND ECO CURB PIECES FOR NJDOT TYPE 'B' INLET

Drawn By: S.M.
Date: July 2006

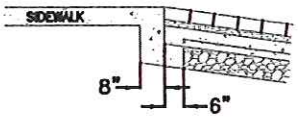
Scale: Not to Scale
Figure Y



DROPPED CURB AND CRADLE



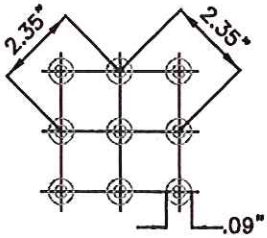
PAVER INSTALLATION



EDGE RESTRAINT

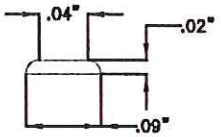
PAVER CONSTRUCTION DETAILS

(ALL RAMP TYPES)



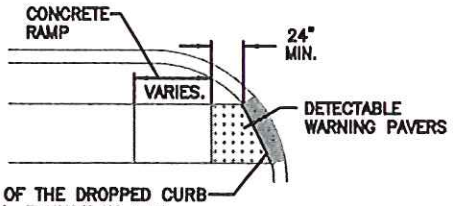
SQUARE PATTERN

PARALLEL ALIGNMENT OF TRUNCATED DOMES COMPRISING THE ADAAG DETECTABLE WARNING.



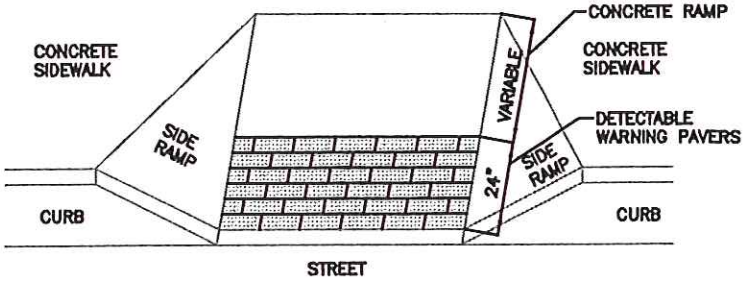
HEIGHT AND DIAMETER OF TRUNCATED DOMES USED IN ADAAG DETECTABLE WARNING.

DETECTABLE WARNINGS



THE INSIDE PORTION OF THE DROPPED CURB SHALL BE NON RADIAL, TRUNCATING THE DETECTABLE WARNING AREA ALLOWING FOR STRAIGHT CUT AND FLUSH FIT OF PAVERS

TREATMENT OF DROPPED CURB & PAVERS AT RADIAL SECTIONS OF CURB



TYPICAL DETAIL OF BRICK PAVER RAMP DELINEATION

DETECTABLE WARNING PAVERS

PAVER TYPE - ADA DETECTABLE WARNING
PAVER SIZE - 4" X 8" X 2" OR 12"X 12"X 2"
PAVER COLOR - RED BLEND

NOTES:

1. ALL CONCRETE SHALL BE CLASS "B" 3500 PSI, GREY.
2. LANDING AREA, APPROACH SIDEWALK TRANSITIONS, AND CURB RAMP SHA BE KEPT CLEAR OF OBSTRUCTIONS.
3. CURB (DROPPED CURB) GUTTERLINE TO BE FLUSH WITH ROADWAY PAVEMENT A MINIMUM OF 4 FEET AT ALL CURB RAMPS.
4. LAYOUT AND CONSTRUCTION OF RAMPS SHAL BE IN ACCORDANCE WTH NJDOT 2001 OR LATER STANDARD ROADWAY CONSTRUCTION DETAILS ANC ADA STANDARDS FOR ACCESSIBLE DESIGN

FIGURE Z

CURB RAMP BRICK PAVER DELINEATION DETAIL

APPENDIX B

TECHNICAL TABLES

TABLE 1

DESIGN STORM FREQUENCY

APPLICATION	DESIGN STORM FREQUENCY
Retention/Detention Basin-Residential, Non-Residential or Mixed Use Development	25 year
Emergency Flood Spillway	100 year
Open Channels	25 year
Swales	10 year
Arterial Storm Sewers	25 year
Bridges or Culverts (except in floodplains)	25 year
Bridges and Structures near floodplains	100 year
Roadway Storm Drainage	25 year
Stream Encroachment with Drainage Area 320 Acres (1/2 square mile)	100 year

NOTE: Municipal requirements should be followed where they are more stringent.

TABLE 2

RECOMMENDED BASIC DRIVEWAY DIMENSIONS

		Dimension Reference (See Figure R)	RESIDENTIAL	COMMERICAL	INDUSTRIAL
Width (in feet)	One Way	W			
Minimum			12	15	15
Maximum			12	30	30
Width (in feet)	Two Way				
Minimum			12	25	25
Maximum			20	30	40
Right Turn Radius (in feet)		R			
Minimum, Inbound			5	35	35
Maximum, Inbound			10	*	35*
Minimum, Outbound			5	25	25
Maximum, Outbound			10	*	25*
Minimum Spacing (in feet)					
From property line		P	**	**	**
From street corner		C	50	100	100
Between driveways		D	--	200	200
Minimum Angle (in degrees)	Two Way		90	90	90

NOTES: *To be determined on a case by case basis by the Office of the County Engineer.
**No minimum other than between driveways, municipal standards will prevail.

TABLE 3

SAFE SIGHT DISTANCE FOR EXITING VEHICLES (B)

TWO-LANE ROAD WITH NO MEDIAN AND GRADES 3% OR LESS

PASSENGER VEHICLES

DESIGN SPEED (in miles/hour)	SAFE SIGHT DISTANCE TO LEFT AND RIGHT (in feet) (C)
25	280
30	335
35	390
40	445
45	500
50	555
55	610

NOTES:

(A) Refer to Figure S.

(B) For other conditions, the time gap must be adjusted and required sight distance recalculated.

(C) Measured from a vehicle 18′ back (10′ for residential driveways) of the pavement edge from a height of eye of 3.50′ to the top of an object 3.5′ above the pavement surface.

(D) Developed from A Policy on Geo metric Design of Highways and Streets, 2004 edition, prepared by the American Association of State Highway and Transportation Officials (AASHTO)

(E) For four- and six-lane roads, proper sight distances shall be calculated in conformance with current AASHTO criteria.

TABLE 4

SAFE SIGHT DISTANCE FOR EXITING VEHICLES (B)

TWO LANE ROADS – SEMI TRAILER TRUCKS

OPERATING SPEED (in miles/hour)	SAFE SIGHT DISTANCE TO LEFT AND RIGHT (in feet) (C)
25	430
30	510
35	590
40	680
45	770
50	850
55	940

NOTES:

(A) Refer Figure S.

(B) Distances cited are for urban conditions. On rural highways, distances should be increased by 10% to allow for longer driver reaction time.

(C) Measured from a vehicle 18′ back of the pavement edge from a height of eye of 7.6′ to the top of an object 3.5′ above the pavement.

(D) Developed from A Policy on Geometric Design of Highways and Streets, 2004 edition, prepared by the American Association of State Highway and Transportation Officials (AASHTO).

(E) For four- and six-lane roads, proper sight distances shall be calculated in conformance with current AASHTO criteria.