VILLAGE OF MARVIN

Engineering Standards and Procedures Manual

January 26, 2017

Table of Contents

I. Administrative Procedures:

II. Design Criteria:

III. Specifications and Special Provisions:

IV. Standard Drawings:

100 Series - Miscellaneous Concrete Infrastructure

200 Series - Street Section Details

300 Series - Storm Drain Standards

400 Series – RESERVED

500 Series – RESERVED

600 Series – RESERVED

700 Series - Miscellaneous Standards

Standard	Description
700.1	Typical Handrail
701.1	Handrail Warrants
702.1	Non Thoroughfare Street Name Sign
703.1	Thoroughfare Street Name Sign
704.1	Street Name Sign Installation Locations
705.1	End of Roadway Marker
706.1	End of Roadway Street Barricade
707.1	End of Roadway Marker Guard Rail Clamp Installation
708.1	Street Connectivity Sign for End of Roadway Barricade
709.1	End of Roadway Street Barricade General Notes
710.1	RESERVED
711.1	Parking Standards (Other)
712.1	Accessible Parking and Signage Standards
713.1	Supplemental Van Accessible Sign
714.1	Supplemental Maximum Penalty Sign
716.1	Emergency Vehicle Median Crossover
717.1	Inverted "U" Rack for Bicycle Parking
718.1	Wave Rack for Bicycle Parking
719.1	Bicycle Lockers
720.1	Pavement Patching Detail

V. Appendix:

- Plan Review Checklist (forthcoming)
- Driveway Permit Application
- Encroachment Permit Application
- NCDOT Driveway Permit Application
- PE Certification for Subdivision Streets (forthcoming)
- Subdivision Prefinal Checklist
- Common Punch List Items
- Final Inspection Request Form
- Street Acceptance Application

Engineering Standards and Procedures Manual

The Village of Marvin's Engineering Standards and Procedures Manual (ESAPM) is provided as a resource that will assist in ensuring compliance with all Village requirements related to proposed land development activities.

It is the Village's goal that the ESAPM present clear and concise technical requirements, policies, and procedures while providing the guidance and details necessary for an effective and efficient process.

The ESAPM is intended as a supplement to the Village Zoning Ordinance and Subdivision Ordinance. County, State, and Federal agencies may also have additional requirements not provided for or referenced within this manual. This manual does not relieve the design professional of the responsibility to correctly incorporate the provided information. It is the Village Engineer's responsibility to provide technical adequacy of the design using engineering judgment, experience, and sufficient knowledge in providing all related design elements.

The Village Engineer shall be responsible for incorporating revisions as deemed appropriate based on a continual review of the ESAPM. The ESAPM is available for on-line viewing on the Village of Marvin website www.marvinnc.org.

Where discrepancies exist between this manual and any adopted Village Ordinance, the Ordinance shall govern. The latest revision of the "NCDOT Standard Specifications for Roads and Structures" and the "NCDOT Design Manual" shall apply to all roadway and storm drainage construction unless otherwise specified herein this manual.

This manual was created to capture most, but not all, scenarios related to development within the Village of Marvin. The Village Engineer reserves the right to enforce standards not included within this manual, which uphold the Village's initiative to maintain a safe environment for its citizens.

I. Administrative Procedures

A. Introduction

Processes and procedures for various plan review and development standards are discussed in this section. Each section provides information on the process, standard, or the plan review agency to contact regarding that process.

B. Application

An application for plan review is required. For plan review applications, contact the Village of Marvin at 704-843-1680 or www.marvinnc.org

C. Engineering Plan Review Checklist

The engineering plan review checklist is a detailed list of the items to be reviewed by the Village Engineering or designee. The plans must include, at a minimum, the information described in the Village's Subdivision Ordinance and/or other applicable ordinances. A copy of the engineering plan review checklist is included in the Appendix.

Note: The Zoning Administrator maintains a plan review checklists in addition to the Appendix. Additionally, the duration of the plan review varies by review agency.

D. Fees - per the adopted Fee Schedule

E. Driveway Permits

Village Driveway Permit

A Village Driveway Permit is required for all new or proposed modifications to connections to Village streets except an individual single family residence. A copy of the Village Driveway Permit Application is in the Appendix. The Village fee for a driveway permit is $200. If a property owner is proposing to do work within Village maintained right-of-way, an Encroachment Permit may be required. Contact the Village Engineering to confirm if a permit is needed.

Note: Two signed original copies of the driveway permit application along with two sets of plans are required for submission to the Village. A separate encroachment permit is not needed if a driveway permit has been obtained.

NCDOT Driveway Permit

When accesses and/or driveways to North Carolina Department of Transportation (NCDOT) maintained facilities are proposed or are proposed to be modified, contact the NCDOT. Forms are available on the web at http://www.ncdot.gov/. The Village will review the NCDOT driveway permit applications for accesses proposed within the Village of Marvin.

F. Encroachment Permits

The Village requires that an encroachment permit be obtained when construction activity, including installation of temporary or permanent structures, is proposed under, on, or over property in which the Village has property rights. Property rights include but are not limited to street rights of way, utility easements, or other owned property. An Encroachment Permit is required regardless of any other approvals (excluding a driveway permit), such as building permits.

Encroachment Permit applications are processed through the Village. A copy of the Village Encroachment Agreement is included in the Appendix.

G. PE Certification Process for Subdivisions and Streets

The Village requires that all streets proposed to be taken over by the Village for maintenance be reviewed, inspected, and certified by a licensed professional engineer registered in the state of North Carolina for adequate construction. A pre-construction meeting with the Village Engineer is required.

Review of street construction by the certifying Engineer is required throughout the construction process. PE Certification is required for all developments in which the first submittal of the Village sketch plan or construction plans (if no sketch plan was submitted) occurred after the adoption of this manual on January 26, 2017. A copy of the PE Certification requirements is included in the Appendix.

All sketch plans and construction plans submitted to the Village for subdivision approval must have the following statement on the cover sheet of the plan set:

The Village of Marvin requires that all streets proposed to be taken over by the Village for maintenance be reviewed, inspected, and certified by a licensed professional engineer registered in the state of North Carolina for adequate construction. Review of street construction by the certifying Engineer is required throughout the construction process. Refer to the Village of Marvin Engineering Standards and Procedures Manual for additional information including the required certification form.

H. Bonding

The following list contains information regarding the bonding process including minimum amounts, duration, and security type.

1. Release of the final subdivision plat will not occur until the improvements required for the area of the final plat are constructed and a final inspection has been performed and found to be in conformance with the plans approved by the Village, or a security has been posted and all required documents are received in their entirety.

2. Securities shall be posted for a minimum of one year with a two year maximum. The security shall be posted and remain in force until the construction is complete and found to be in conformance with the plans approved by the Village. The security will be reevaluated when an extension to the security is being considered.

3. Upon receipt of a notice from the bond holder, a final inspection will be made by the Village Engineer to check completeness of the project.

4. One type of security may be replaced by another type of security in certain situations. The amount of the replacement security will be based on the Village's Engineer Estimate of the work remaining. If the estimate of work results in a lower amount, the replacement security will be treated as a reduction. Certain situations will require an increase in a security and in such cases the replacement security shall be required to equal the higher amount.

5. A one-time reduction in security will be allowed if requested in writing by the principal party of the security. Additional reductions may be approved at the discretion of the Village Engineer. However, the security shall never be less than 15 percent of the total bond or $20,000 for the Village unless approved by the Village Engineer.

6. The applicant will be required to post a maintenance bond per Village requirements before the security for completion of subdivision is released.

I. Final Inspection

A final inspection of all streets to be turned over to the Village for Maintenance must be inspected by the Village or Village designated inspector. Contact the Village Engineer for scheduling of final inspections.

J. Street Maintenance Acceptance

When a phase/map of a subdivision reaches 80% occupancy, the phase/map will be considered eligible for acceptance by the Village. The procedures for requesting a final inspection are as follows:

1. Submit an executed "Request for Final Inspection Form", along with a "PE Certification for Subdivisions and Streets" form. (refer to Appendix).

2. A representative from the Village will proceed with the Final Inspection.

3. Necessary repairs will be marked in the field, and indicated on a punchlist, which shall be valid period of thirty days.

4. When the necessary repairs have been completed, the Village should be contacted to verify the repairs have been completed.

5. When all conditions have been met, the developer may proceed following the Village of Marvin Road Acceptance Policy.

The road acceptance policy includes streets, curbs, gutters, sidewalks, and all items located within the right-of-way. A copy of the Road Acceptance Policy and application form are found in the Appendix.

II. Design Criteria

A. Introduction

The following sections present minimum design criteria for the design of public streets, storm drainage, street lighting, street and roadway signage for traffic regulation and street identification, and landscaping.

B. Road Design

For use in designing Residential and Retail/Mixed-Use Public Streets

Posted Speed Limit	**25**	**30**	**35**	**40**	**45**
Stopping Sight Distance* (feet)	155	225	285	350	415
Intersection Sight Distance - Left-Turn Movement From Stop*and ** (feet)	280	365	425	485	545
Intersection Sight Distance - Right-Turn From Stop*and ** (feet)	240	315	370	420	475
Minimum Horizontal Radius (Normal Crown) (feet)	200	430	675	980	1470
Minimum K value for Crest Vertical Curves	11	24	37	56	81
Minimum K value for Sag Vertical Curves	25	43	58	75	94
Maximum Longitudinal Grade	10 percent				
Maximum Longitudinal Grade within 125 feet of intersection (measured from intersecting street nearest edge of pavement of travel way)	5 percent				
Intersection Angle Range	75 to 105 degrees				

* Values will need to be adjusted for grades of more than +/- 3 percent

** Values to be adjusted for streets with more than two total lanes; measurements to be taken 14.5' from travel lane

Lower posted speed limits may be permitted by the Village Engineer on a case by case basis.

Provisions of adequate stopping sight distance may require use of larger K values than the minimums listed above. The Village of Marvin reserves the right to prescribe more stringent sight distance standards and/or means to achieve adequate sight distance than those listed above. Recordation of sight distance easements may be required on plats prior to approval.

The minimum distance between two horizontal curves is 50 feet. Longer distances may be needed based on the specifics of the roadway design.

Minimum curb and right-of-way radius measured from face of curb (when intersecting streets have different classification, use the more restrictive):

- Residential Local Street – 20 feet
- Residential Local Street to Residential Alley – 10 feet
- Residential Collector – 25 feet
- Retail/Mixed-Use Local – 25 feet
- Retail/Mixed-Use Collector – 25 feet
- Industrial Local and Collector – 35 feet

For minimum intersection separation, refer to block length minimums in the Subdivision Ordinance. NCDOT shall determine minimum lengths/seperation along thoroughfares, at signalized intersections, or at intersections that may become signalized in the future on a case-by-case basis.

Design criteria for arterial streets shall be established jointly by the Village Engineer and the NCDOT on a case-by-case basis using the latest edition of the American Association of State Highway and Transportation Officials (AASHTO) A Policy on Geometric Design of Highway and Streets and/or NCDOT Roadway Design Manual.

Intersection corner easements – A minimum 35 x 35 foot triangular maintenance easement (measured along right-of-way lines) shall be provided at each intersection corner where any street type intersects a collector or thoroughfare. A minimum 15 x 15 foot triangular maintenance easement (measured along right-of-way lines) shall be provided at each intersection corner where two local streets intersect. An additional 10 x 70 foot triangular maintenance easement shall be provided at intersections connecting to NCDOT maintained roadways (measured along right-of-way lines). Driveways (no formal right-of-way) to serve a single project may be required to provide triangular maintenance easements as determined on a case by case basis. Other triangular maintenance easements or sight distance requirements may be required by the NCDOT or the Village at all intersections.

Sidewalks and Driveways

1. Planting strip adjacent to sidewalk shall be graded to one quarter inch per foot (min.) up to one and one quarter inch per foot (max.), except where excessive natural grades make this requirement impractical. In such cases, the Village Engineer may authorize a suitable grade.

2. Sidewalk widths shall be a minimum of five feet unless otherwise specified.

3. Accessible ramps are required where sidewalks intersect curbing at any street intersection and curbed driveway connections.

Roundabouts

Refer to the Manual on Uniform Traffic Control Devices (MUTCD) for roundabout signage and pavement markings.

C. Storm Drainage

1. In addition to this manual, all storm drainage design shall conform to the standards and specifications as provided in the Charlotte-Mecklenburg Storm Water Design Manual, and NCDOT Standards Specifications for Roads and Structures. If conflicts occur, the more restrictive standard shall govern.
2. Reinforced concrete pipe may be used in all storm drain applications. High Density Polyethylene Pipe (HDPE) may be substituted for pipe diameters of 48 inches or less as approved by the Village Engineer. Culverts 60 inches in diameter or greater may be Corrugated Aluminized Metal Pipe (CAMP) or aluminum with a minimum 14 gauge metal subject to approval of the Village Engineer.

3. The minimum cover for all pipes is two feet measured from the final surface. Special applications for less than two feet of cover will be reviewed and approved by the Village Engineer individually. The maximum cover for storm drainage pipes shall at a minimum comply with the requirements of the NCDOT Roadway Design Manual, Part I, Section 5, and "Drainage Design". Storm pipe design that exceeds these criteria may be approved at the discretion of the Village Engineer.

4. All storm drain structures over three feet six inches in height must have steps in accordance with standard details set forth in this manual.

5. All graded creek banks and slopes shall be at a maximum of two feet horizontal to one foot vertical (2:1) and not to exceed ten feet without terracing or the slopes shall be designed by a Professional Geotechnical Engineer and approved by the Village Engineer on a case by case basis.

6. Adequate storm drainage shall be provided throughout the development by means of storm drainage pipes or properly graded channels. All pipes shall be of adequate size and capacity, as approved by the Village Engineer, to carry all storm water in its drainage area.

7. In accordance with the Village Subdivision Ordinance, the Village Engineer or duly authorized designee shall review the drainage plan for compliance with the standards contained in the current edition of the Village of Marvin Engineering Standards and Procedures Manual and the Charlotte-Mecklenburg Storm Water Design Manual and all other relevant and appropriate standards established by the Village Engineer.

8. Sub-surface drainage shall be provided where the ground water level is likely to be near the surface. In capillary soils, the water level should be four to six feet below the surface to prevent the rise of moisture into the subgrade. Subdrains shall be used to lower ground water in low areas in the street.

9. All Storm Drainage Easements must extend down stream of flared end sections to an appropriate property line or buffer. Overlapping of storm drainage easements shall be approved by the Village Engineer on a case by case basis.

10. Storm Drainage Easements shall be provided for all storm drainage pipes and shown on site plans, construction plans and plats with widths specified in detail 314.1. The following note shall be placed on all grading plans and plats; "The purpose of the storm drainage easement (SDE) is to provide storm water conveyance. Buildings are not permitted in the easement area. Any other objects which impede storm water flow or system maintenance are also prohibited."

11. In areas where the Floodway Regulations are applicable, the Future Conditions Flood Fringe Line, FEMA Flood Fringe Line, Community Encroachment Line, and FEMA Encroachment Line shall be shown on the preliminary plan and the final plat.

D. Utilities

1. Avoid placement of sewer manholes in gutter pans, the crown of the road, wheel paths, wheelchair ramps, and over stormwater lines.

2. Avoid placement of water lines under roadway pavement.

3. Water valves shall not be placed in curbing.

E. Signage

All regulatory, warning, and guide roadway signage shall be consistent with the Manual on Uniform Traffic Control Devices (MUTCD), the North Carolina Supplement to the MUTCD or as specified in this manual. All street name markers are also to be designed in accordance with 700 series standard drawings. All street name markers shall be nine inch tall extruded aluminum blades and utilize high intensity white prismatic reflective sheeting.

Street name markers within the Village limits shall include the Village logo.

F. Cluster Box Units (CBU's)

Mail cluster box units shall be placed outside of the line of sight (determined by intersection sight distance measurements), sight distance triangles and intersection corner easements. They shall not be placed between the subdivision entrance and its first street intersection. It is best to avoid placing CBU's on the main entrance road to a subdivision, however, special cases may apply.

When locating CBU's near on-street parking, do not place units directly adjacent to the on-street parking. CBU's shall be behind the sidewalk in such cases.

When placing CBU's within the green zone, units shall be oriented perpendicular to the street.

Access easements shall be required for all CBU's located outside of the right-of-way and/or common open space.

The ultimate goal in determining locations for mail cluster box units is to avoid placing the CBU in any way which encourages driving on the wrong side of the street and/or hinders handicap accessibility.

III. Specifications and Special Provisions

A. General Notes

The following specifications and special provisions are intended to be used in conjunction with Village of Marvin Standard Drawings, NCDOT Roadway Standard Drawings, and NCDOT Standard Specifications for Roads and Structures for all development within the Village of Marvin unless otherwise directed by the Village Engineer.

1. Unless otherwise specified in this manual, **all work and materials shall conform to the latest edition of the North Carolina Department of Transportation Standard Specifications for Roads and Structures.**

2. All backfill material shall be non-plastic in nature, free from roots, vegetative matter, waste, construction material or other objectionable material. Said material shall be capable of being compacted by mechanical means and the material shall have no tendency to flow or behave in a plastic manner under the tamping blows or proof rolling.

3. Materials deemed by the inspector as unsuitable for backfill purposes shall be removed and replaced with select backfill material.

4. Compaction requirements shall be attained by the use of mechanical compaction methods. Each six inch layer of backfill shall be placed loose and thoroughly compacted into place.

5. ALL concrete used in the public right-of-way for streets, curb and gutter, sidewalks and drainage structures, etc. shall have a minimum compressive strength of 3600 PSI at 28 days. This requirement shall be provided regardless of any lesser compressive strength specified in the North Carolina Department of Transportation Standard Specifications for Roads and Structures. The contractor shall prepare concrete test cylinders in accordance with Section 1000 of the North Carolina Department of Transportation Standard Specifications for Roads and Structures at the direction of the project inspector. All equipment and cylinder molds shall be furnished by the contractor. It shall be the responsibility of the contractor to protect the cylinders until such time as they are transported for testing. Testing for projects shall be performed by an independent testing lab, at no cost to the Village. The contractor shall provide equipment and perform tests on concrete for a maximum slump and air content as defined in Section 1000 of the North Carolina Department of Transportation Standard Specifications for Roads and Structures. These tests shall be performed at a frequency established by the inspector. Materials failing to meet specifications shall be removed by the contractor.

6. Concrete or asphalt shall not be placed until the air temperature measured at the location of the paving operation is at 35 degrees Fahrenheit and rising by 10:00 a.m. Concrete or paving operations should be suspended when the air temperature is 40 degrees Fahrenheit and descending. The contractor shall protect freshly placed concrete or asphalt in accordance with Sections 420 (Concrete Structures), 600 (Asphalt Bases And Pavements), and 700 (Concrete Pavements And Shoulders) of the North Carolina Department of Transportation Standard Specifications for Roads and Structures when the air temperature is at or below 35 degrees Fahrenheit and the concrete has not obtained an age of 72 hours.

7. Plant all street trees in the middle of the planting strip unless otherwise noted on the standard detail.

Grading

1. Proposed street rights-of-way shall be graded to their full width for ditch type streets and a minimum of eight feet behind the curb for curb and gutter sections.

2. Fill embankments shall be constructed in accordance with section 235 of the North Carolina Department of Transportation Standard Specifications for Roads and Structures and placed in successive lifts not to exceed more than six inches in depth for the full width of the cross-section, including the width of the slope area. No stumps, trees, brush, rubbish or other unsuitable materials or substances shall be placed in the right-of-way. Each successive six inch layer shall be thoroughly compacted by the sheepsfoot tamping roller, 10-ton power roller, pneumatic-tired roller, or other methods approved by the Village Engineer. Embankments over and around all pipe culverts shall be of select material, placed and thoroughly tamped and compacted as directed by the Village Engineer or his representative.

Roadway Base

1. All roadways shall be constructed with a base course as detailed on the applicable Village of Marvin Standard Detail Drawing.

2. The material for the aggregate base course (ABC) shall be in conformance with Section 520 – Aggregate Base Course of the North Carolina Department of Transportation Standard Specifications for Roads and Structures.

3. An asphalt concrete base course, as detailed on the Standard Detail Drawing may be substituted in lieu of an aggregate base course and shall be in accordance with all applicable articles of the North Carolina Department of Transportation Standard Specifications for Roads and Structures.

4. Asphalt concrete base course (ACBC) shall be used for widening strips less than five feet in width.

Roadway Intermediate and Surface Course

1. Plant mixed asphalt shall conform in all respects to Section 610 of the NCDOT Standard Specifications for Roads and Structures.

2. The final one and one half inch lift of asphalt surface course for residential subdivision streets shall be withheld until a minimum 80 percent of the development is occupied (occupied means a certificate of occupancy has been issued) (All documentation to be provided by the developer and approved by the Village Engineer or designee). All known base failures shall be repaired prior to application of the final one and one half inch lift of asphalt surface course.

3. The Village Engineer shall be given at least a 48 hour notification to inspect the first lift of surface course deficiencies. Prior to application of the final layer of asphalt, all deficiency repairs are to be monitored and accepted by the Village Engineer or designee.

4. The Village Engineer shall be notified prior to using recycled plant mixes.

5. Failure to meet any of the requirements of this manual may result in the delay or prevention of street acceptance by the Village of Marvin or NCDOT.

Sidewalks and Driveways

1. Sidewalks shall be constructed with concrete having a minimum compressive strength of not less than 3600 P.S.I. concrete. The sidewalk shall be at least six inches thick where sidewalk crosses a driveway and at least four inches thick in all other locations. The subgrade shall be compacted to 95 percent of the maximum density obtainable with the Standard Proctor Test. The surface of the sidewalk shall be steel trowel and light broom finished and cured with an acceptable curing compound. Tooled joints shall be provided at intervals of not less than five feet and expansion joints at intervals of not more than 45 feet. The sidewalk shall have a lateral or cross slope of one-quarter inch per foot.

2. Planting strip adjacent to sidewalk shall be graded to ¼ inch per foot (min.) up to 1 ¼ inch per foot maximum, except where excessive natural grades make this requirement impractical. In such cases, the Village Engineer may authorize a suitable grade.

3. Sidewalk widths shall be a minimum of five feet unless otherwise specified.

4. Approval of sidewalk construction plans must be obtained as part of the plan review process. A recorded permanent public sidewalk easement is required for all sidewalk located outside public right-of-way; the width of the easement shall be specified by the Village. The sidewalk easement must be recorded with the Union County Register of Deeds prior to issuance of a certificate of occupancy for the corresponding building(s).

5. Accessible ramps are required where sidewalks intersect curbing at all street intersections and curbed driveway connections.

B. 100 Series Drawings – Miscellaneous Concrete Infrastructure

Drawings in this series include details for curb and gutter, sidewalks, driveways, accessible ramps, culvert crossings, and street tapers. The following list provides information in addition to that included in the standard drawings in this series.

1. All curb and gutter shall be backfilled with soil approved by the Inspector within 48 hours after construction to prevent erosion.

2. All concrete shall be cured with 100 percent Resin Base, white pigmented curing compound which meets ASTM Specifications C-309, Type 1, applied at a uniform rate at one gallon to 400 square feet within 24 hours of placement of the concrete.

3. Straight forms shall not be used for forming curb and gutter in curves.

4. All excess concrete on the front edge (lip) of gutter shall be removed when curb and gutter is poured with a machine.

C. 200 Series Drawings – Street Sections

Drawings in this series include details for street typical sections including pavement design, cul-de-sacs, parallel parking space location/layout, alleys, and hammerheads.

1. All asphalt cuts shall be made with a saw when preparing street surfaces for patching or widening strips.

2. All subgrade shall be compacted to 100% of the maximum density obtainable with the Standard Proctor Test to a depth of twelve (12) inches, and a density of 95% Standard Proctor for depths greater than twelve (12) inches. All tests shall be performed by developer at no cost to the Village.

3. Paper joints shall be used to seal the ends of an asphalt pour so that future extensions can be made without causing rough joints.

4. When placing asphalt against existing surfaces, a straight edge shall be used to prevent "humping" at that location.

5. Stone shall be primed if paving is not complete within seven days following stone base approval.

6. Surfaces shall be tacked when asphalt is being placed over existing asphalt streets or adjoining concrete, storm drain and sanitary sewer structures.

7. Sweeping of the stone base and/or application of a tack coat may be required near intersections. These requirements will be established by the Village/NCDOT Inspector based on field conditions.

8. A canvas cover or other suitable cover shall be required for transporting plant mix asphalt during cool weather when the following conditions are present:

    a. Air temperature is below 60 degrees Fahrenheit.
    b. Length of haul from plant to job is greater than five (5) miles.
    c. Other occasions at the Inspector's discretion when a combination of factors indicates that material should be covered in order to assure proper placement temperature.

9. Roadside ditches shall conform to NCDOT standards unless otherwise specified by Village along Village maintained roads.

D. 300 Series Drawings – Storm Drainage

Drawings in this series include NCDOT standards approved for use, catch basins, wingwalls, riprap aprons, flared end section pipe, riprap plunge pools, trench drains, paved ditches, subdrains, overlapping of easements, minimum drainage easements, and grading at drop inlets. The following list provides information in addition to that included in the standard drawings in this series.

1. All concrete shall be at least 3600 PSI. Prior approval from the Village Engineer shall be obtained in order to use pre-cast storm drainage structures in any street right-of-way.

2. Concrete pipe used within the street right-of-way shall be a minimum of Class III Reinforced Concrete Pipe, with a minimum diameter of fifteen inches (eighteen inches minimum on cross drain culverts). Installation of Class IV or higher concrete pipe shall be identified on the As-Built Plan and the Village Inspector shall be given documentation and notification of this information prior to construction.

3. Concrete mortar joints shall be used for joining all concrete pipes. The pipe shall be clean and moist when mortar is applied. The lower portions of the bell or groove shall be filled with mortar sufficient to bring the inner surface flush and even when the next joint is fitted into place. The remainder of the joint shall then be filled with mortar and a bead or ring of mortar formed around the outside of the joint. The application of mortar may be delayed until fill is completed when the pipe is larger than thirty inches.

4. Performed joint sealer, which conforms to AASHTO specification M-198 for Type B flexible plastic gaskets, may be used in lieu of the mortar joining method.

5. Under no circumstances shall water be permitted to rise in un-backfilled trenches after the pipe has been placed.

<u>High Density Polyethylene Pipe (HDPE)</u>

1. All trenches in the street right-of-way shall be backfilled with suitable material immediately after the pipe is laid. The fill around all pipes shall be placed in layers not to exceed six inches and each layer shall be compacted thoroughly.

2. Any installation within the maintenance limits of the Village is subject to the approval of the Village Engineer.

3. The product used shall be corrugated exterior/smooth interior pipe (Type S), conforming to the requirements of AASHTO Specification M294 (latest edition) for Corrugated Polyethylene Pipe.

4. Bell and spigot joints shall be required on all pipes inside the right-of-way. Bells shall cover at least two full corrugations on each section of pipe. The bell and spigot joint shall have an “O” ring rubber gasket meeting ASTM F477 with the gasket factory installed, placed on the spigot end of the pipe. Pipe joints shall meet all requirements of AASHTO M294.

5. All HDPE pipe installed must be inspected and approved by the Village's Inspector prior to any backfill being placed. The Village Engineer or his designee must be present during the backfilling operation.

6. Backfill material used to install HDPE pipe within the street right-of-way shall be Select Material, Class II-IV, as defined by Section 1016-3 of the North Carolina Department of Transportation Standard Specifications for Roads and Structures. Upon submittal of written certification of material suitability by a licensed geotechnical engineer, NCDOT Class I Select Material may be used. All backfill material shall be approved by the Village inspector prior to placement of the material within the Village street right-of-way.

7. The minimum length of HDPE pipe permitted for use shall be four feet. HDPE flared end sections are not allowed.

8. All HDPE pipe installed shall be third party certified and shall bear the Plastic Pipe Institute's (PPI) certificate sticker.

Installation of Reinforced Concrete and Corrugated Metal Pipe

1. All backfill shall be non-plastic in nature, free from roots, vegetative matter, waste, construction material or other objectionable material. Said material shall be capable of being compacted by mechanical means and shall have no tendency to flow or behave in a plastic manner under the tamping blows or proof rolling.

2. Materials deemed by the Engineer as unsuitable for backfill purposes shall be removed and replaced with select backfill material.

3. Backfilling of trenches shall be accomplished immediately after the pipe is laid. The fill around the pipe shall be placed in layers not to exceed eight inches, each layer shall be thoroughly compacted to 95 percent of the maximum density obtainable with the Standard Proctor Test (a density of 100 percent Standard Proctor is required for the top eight inches).

4. Compaction requirements shall be attained by the use of mechanical compaction methods. Each layer of backfill shall be placed loose and thoroughly compacted in place.

E. 400 Series Drawings – RESERVED

F. 500 Series Drawings – RESERVED

G. 600 Series Drawings – RESERVED

H. 700 Series Drawings – Miscellaneous

Drawings in this series include concrete control monuments, handrails, street name signs, end of road devices and markers, parking standards, accessible parking signage, roundabout signage, emergency vehicle median crossovers, bicycle racks and bicycle lockers.

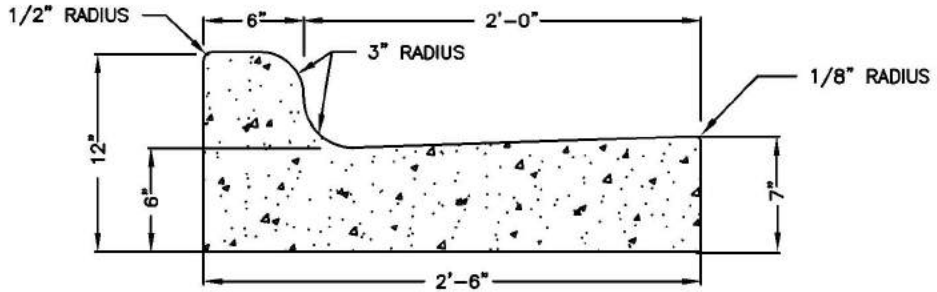
I. Traffic Control

The contractor shall maintain two-way traffic at all times when working within existing streets. The contractor shall place and maintain signs, danger lights, and barricades and furnish watchmen or flagmen to direct traffic in accordance with the latest edition Work Area Traffic Control Handbook (WATCH), Work in the right-of-way of State System Streets may require additional traffic control provisions.

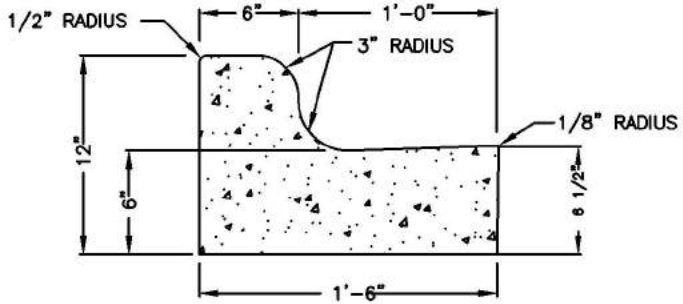
Refer to the Work Area Traffic Control Handbook (WATCH) for traffic control needs for work within the road right-of-way.

References

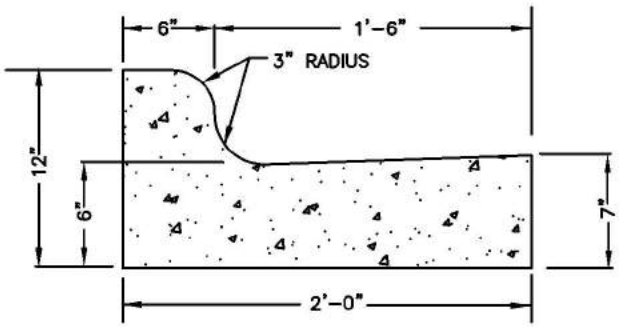
1. North Carolina Department of Transportation, most recent edition, Standard Specifications for Roads and Structures.
2. North Carolina Department of Transportation, most recent edition, Roadway Standards Drawings.
3. City of Charlotte Department of Transportation, most recent edition, Work Area Traffic Control Handbook (WATCH).
4. City of Charlotte Storm Water Services-Mecklenburg County Storm Water Services most recent edition, Charlotte-Mecklenburg Storm Water Design Manual.
5. American Association of State Highway and Transportation Officials most recent edition, A Policy on Geometric Design of Highways and Streets.
6. North Carolina Department of Transportation, Roadway Design Manual, latest edition.
7. North Carolina Department of Environment and Natural Resources most recent edition, Erosion and Sediment Control Planning and Design Manual.
8. Charlotte-Mecklenburg BMP Design Manual, latest edition.
9. Mecklenburg County Storm Water Services, most recent edition, Administrative Manual for Implementation of the Post-Construction Storm Water Ordinance.
10. Mecklenburg County Board of County Commissioners, most recent edition, Mecklenburg County Soil and Sedimentation Control Ordinance.
11. Manual of Uniform Traffic Control Devices for Streets and Highways, Federal Highway Administration, latest edition.



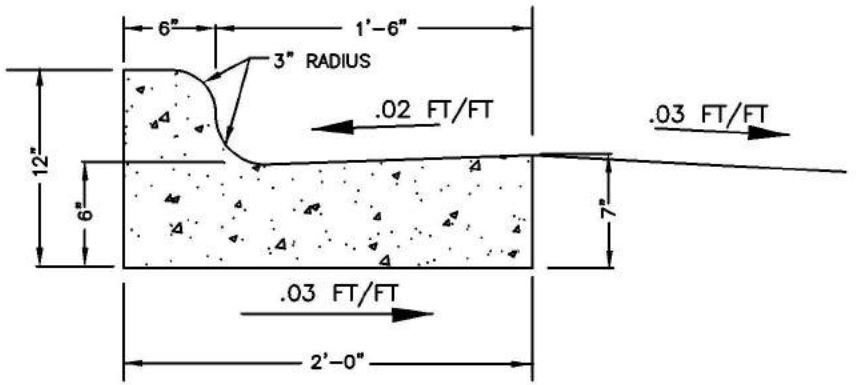
STANDARD 2'-6" CURB AND GUTTER



1'-6" STANDARD CURB AND GUTTER



2'-0" STANDARD CURB & GUTTER

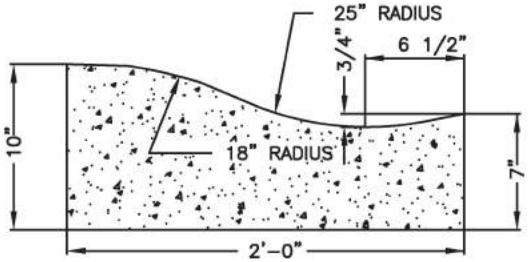


SLOPE FOR VARIABLE
SUPERELEVATION RATES

NOT TO SCALE

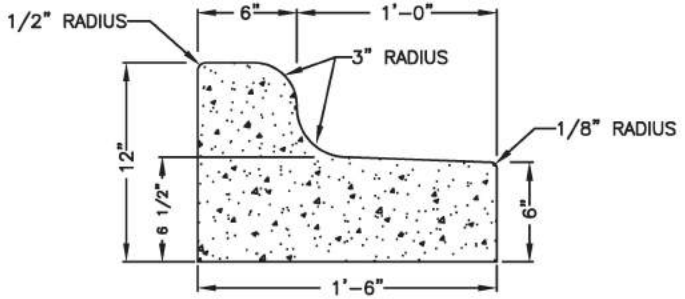
VILLAGE OF MARVIN STANDARD DRAWING	STANDARD CURB AND GUTTER	REV. DATE
		STD. NO. 100.1

2'–0" VALLEY GUTTER



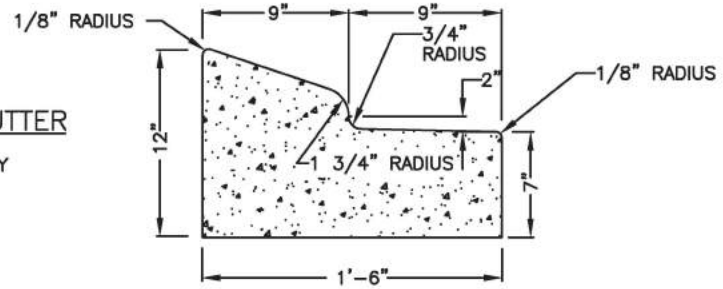
1'–6" MEDIAN CURB AND GUTTER

TO BE USED IN MEDIANS WHEN LANES ARE SLOPED FROM ISLAND OR AS SPECIFIED BY THE ENGINEER.



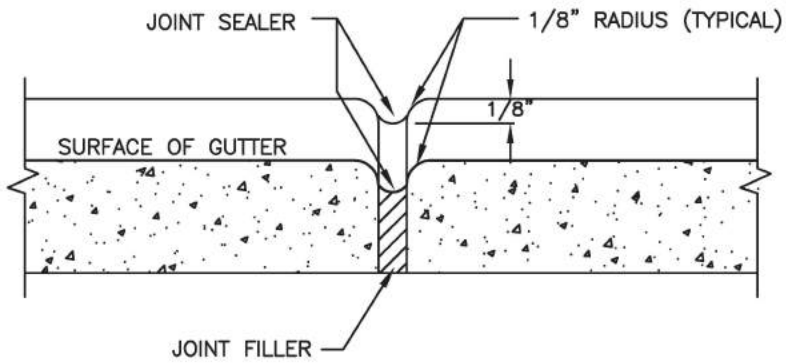
1'–6" MOUNTABLE CURB AND GUTTER

TO BE USED IN MEDIANS ONLY: WHEN SPECIFIED BY THE ENGINEER.



NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	OTHER CURB AND GUTTER	REV. DATE STD. NO. 101.1



TRANSVERSE EXPANSION JOINT

NOTES:

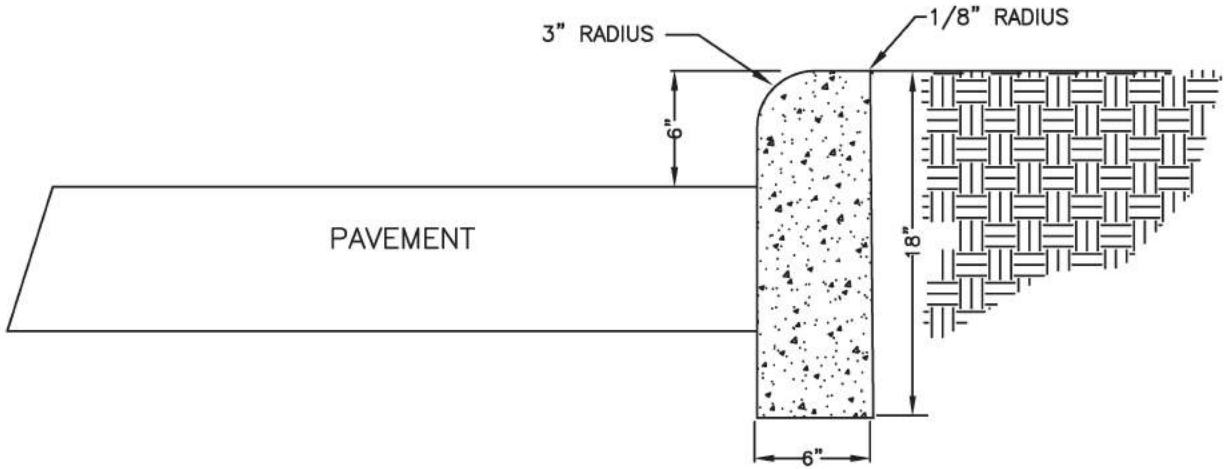
1. CONTRACTION JOINTS SHALL BE SPACED AT 10–FOOT INTERVALS. FOR VALLEY GUTTER, A 10–FOOT SPACING MAY BE USED WHEN A MACHINE IS USED. JOINT SPACING MAY BE ALTERED BY THE VILLAGE ENGINEER TO PREVENT UNCONTROLLED CRACKING.
2. CONTRACTION JOINTS MAY BE INSTALLED BY THE USE OF TEMPLATES OR FORMED BY OTHER APPROVED METHODS. WHERE SUCH JOINTS ARE NOT FORMED BY TEMPLATES, A MINIMUM DEPTH OF 1 1/2" SHALL BE OBTAINED.
3. ALL EXPANSION JOINTS SHALL BE SPACED AT 90–FOOT INTERVALS, AND ADJACENT TO ALL RIGID OBJECTS. JOINTS SHALL MATCH LOCATIONS WITH JOINTS IN ABUTTING SIDEWALK.
4. CONCRETE COMPRESSIVE STRENGTH SHALL BE 3600 P.S.I. IN 28 DAYS.
5. CURB SHALL BE DEPRESSED AT INTERSECTIONS TO PROVIDE FOR FUTURE ACCESSIBLE RAMPS.
6. TOP 6" OF SUBGRADE BENEATH THE CURB AND GUTTER SHALL BE COMPACTED TO 100% STANDARD PROCTOR DENSITY.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	CONCRETE CONTRACTION JOINT	REV. DATE STD. NO. 102.1

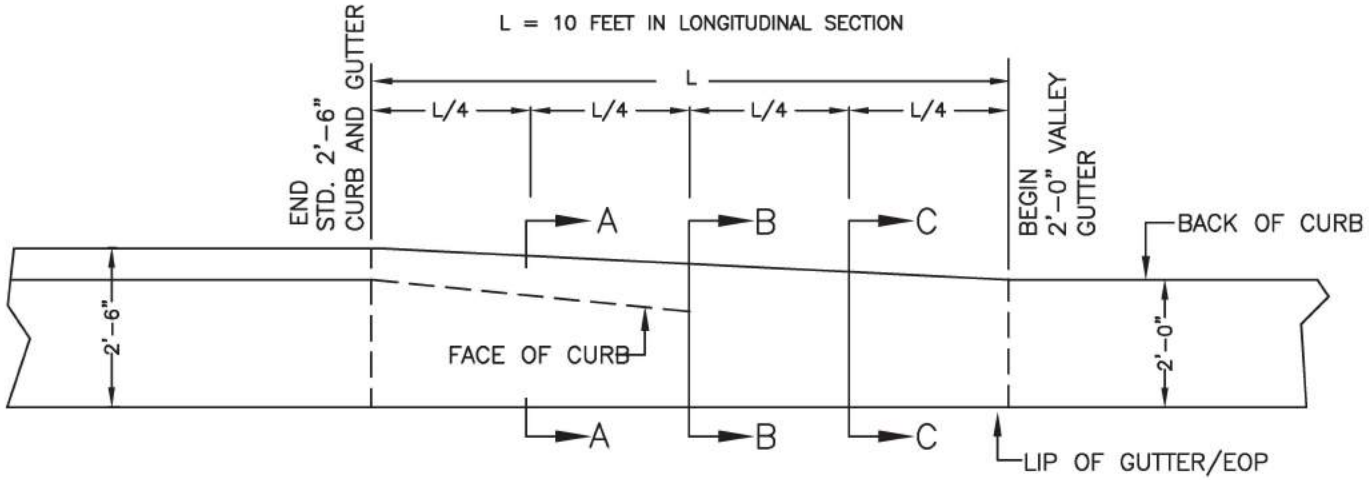
NOTES:

1. CONTRACTION JOINTS SHALL BE SPACED AT 10–FOOT INTERVALS. JOINT SPACING MAY BE ALTERED BY THE ENGINEER TO PREVENT UNCONTROLLED CRACKING.
2. CONTRACTION JOINTS MAY BE INSTALLED BY THE USE OF TEMPLATES OR FORMED BY OTHER APPROVED METHODS. WHERE SUCH JOINTS ARE NOT FORMED BY TEMPLATES, A MINIMUM DEPTH OF 1 1/2" SHALL BE OBTAINED.
3. ALL EXPANSION JOINTS SHALL BE SPACED AT 90–FOOT INTERVALS, AND ADJACENT TO ALL RIGID OBJECTS. JOINTS SHALL MATCH LOCATIONS WITH JOINTS IN ABUTTING SIDEWALK.
4. CONCRETE COMPRESSIVE STRENGTH SHALL BE 3600 P.S.I. IN 28 DAYS.
5. CURB SHALL BE DEPRESSED AT INTERSECTIONS TO PROVIDE FOR FUTURE ACCESSIBLE RAMPS.
6. TOP 6" OF SUBGRADE BENEATH THE CURB SHALL BE COMPACTED TO 100% STANDARD PROCTOR DENSITY.
7. DETAIL MAY BE USED FOR PRIVATE DRIVES, PARKING LOTS, AND INTERIOR CIRCULATION DRIVE.

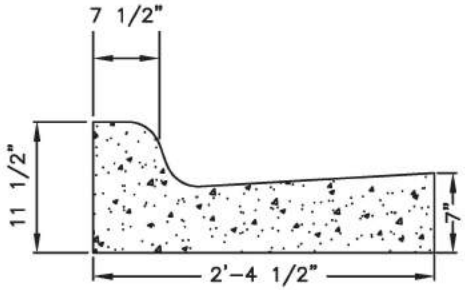


NOT TO SCALE

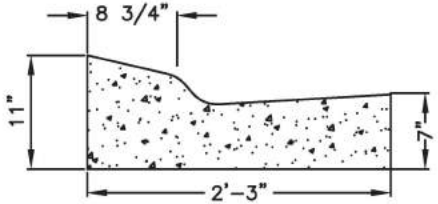
VILLAGE OF MARVIN STANDARD DRAWING	18" VERTICAL CURB	REV. DATE
		STD. NO. 103.1



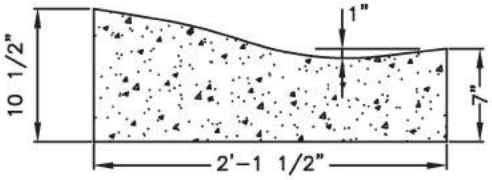
PLAN VIEW



SECTION A–A



SECTION B–B



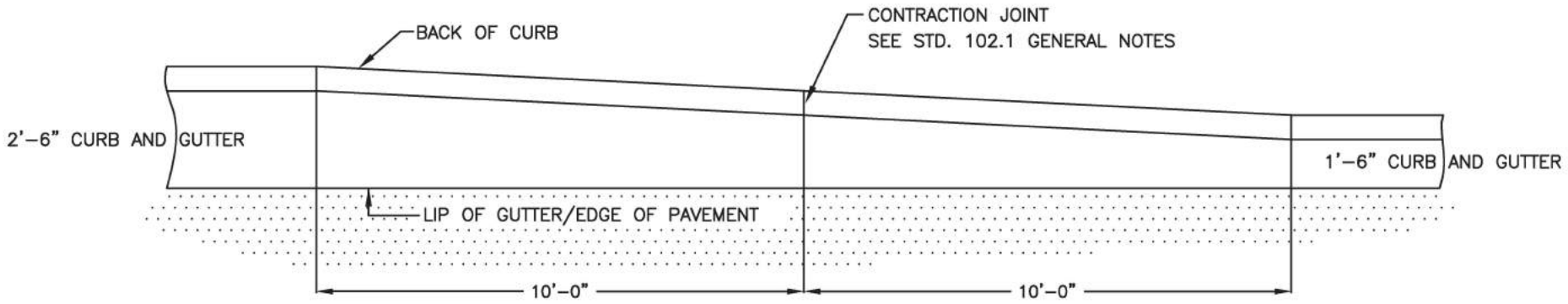
SECTION C–C

NOTES:

1. TRANSITION IS NOT TO BE LOCATED WITHIN THE CURB RADIUS.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	CURB TRANSITION 2'–6" CURB AND GUTTER TO 2'–0" VALLEY GUTTER	REV. DATE STD. NO. 104.1



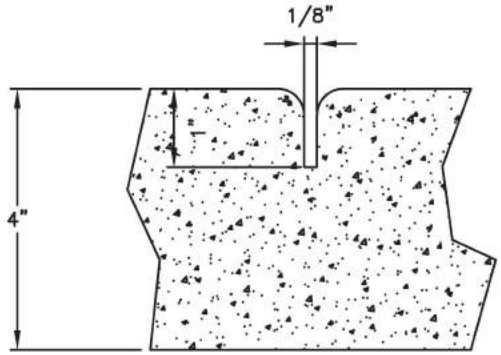
PLAN VIEW

NOTES:

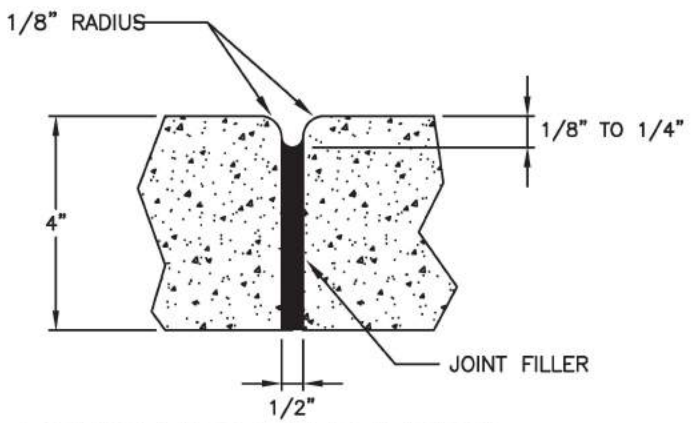
1. TRANSITION TO BE ALONG BACK OF CURB.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	CURB TRANSITION 2'–6" CURB AND GUTTER TO 1'–6" CURB AND GUTTER	REV. DATE STD. NO. 105.1



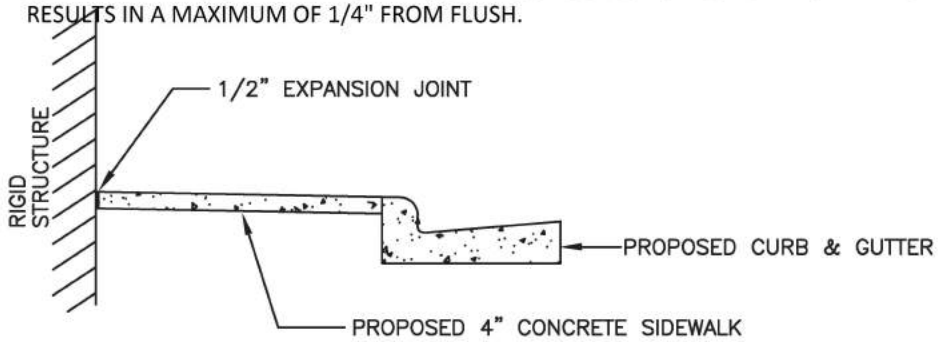
GROOVE JOINT IN SIDEWALK



TRANSVERSE EXPANSION JOINT IN SIDEWALK

GENERAL NOTES:

1. A GROOVE JOINT 1" DEEP WITH 1/8" RADII SHALL BE REQUIRED IN THE CONCRETE SIDEWALK AT 5' INTERVALS. ONE 1/2" EXPANSION JOINT WILL BE REQUIRED AT 45' INTERVALS NOT TO EXCEED 50' AND MATCHING EXPANSION/CONSTRUCTION JOINT IN ADJACENT CURB. A SEALED 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.
2. SIDEWALK AT DRIVEWAY ENTRANCES TO BE 6" THICK.
3. WIDTH OF SIDEWALK ON RESIDENTIAL STREETS SHALL BE A MINIMUM OF 5'.
4. WIDTH OF SIDEWALKS A PART OF THE LOOP AND GREENWAY MASTER PLAN SHALL BE A MINIMUM OF 8'.
5. SIDEWALK TO BE CONSTRUCTED TO END OF RADIUS AT INTERSECTING STREETS.
6. CONCRETE COMPRESSIVE STRENGTH SHALL BE 3600 PSI. IN 28 DAYS.
7. ZONING CONDITIONS MAY REQUIRE ADDITIONAL WIDTH SIDEWALKS WHICH SHALL SUPERSEDE THESE STANDARD DIMENSIONS SHOWN.
8. LIDS FOR JUNCTION BOXES AND UTILITY VAULTS SHALL BE NON-SKID AS SPECIFIED BY THE VILLAGE ENGINEER.
9. JOINT MATERIALS SHALL LIMIT SHRINK/SWELL SO POST CONSTRUCTION INSTALLATION RESULTS IN A MAXIMUM OF 1/4" FROM FLUSH.



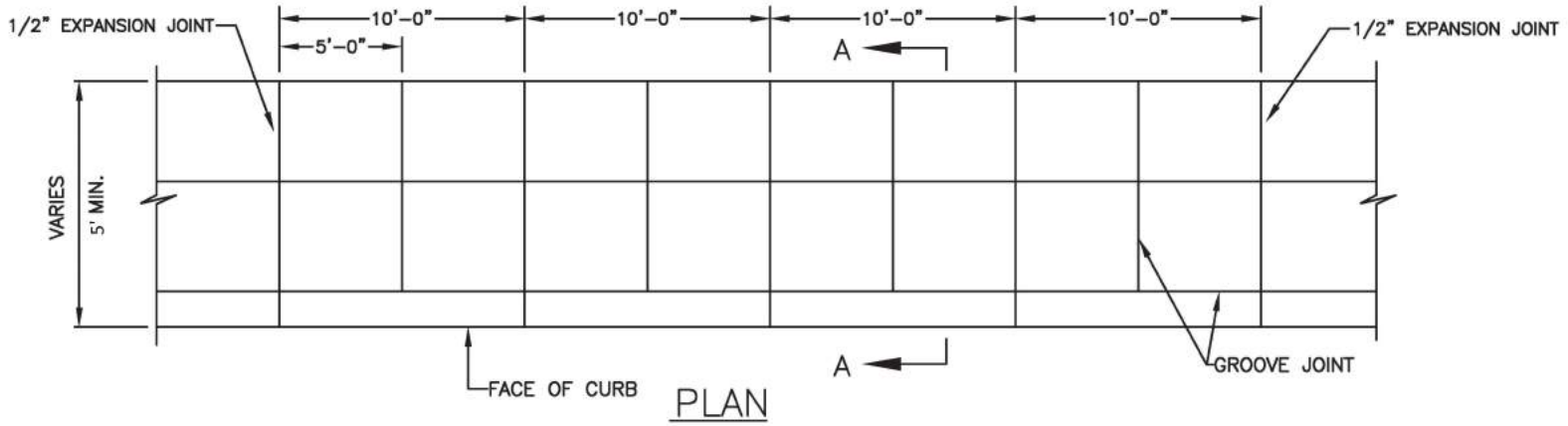
DETAILS SHOWING EXPANSION JOINTS FOR CONCRETE SIDEWALK

NOT TO SCALE

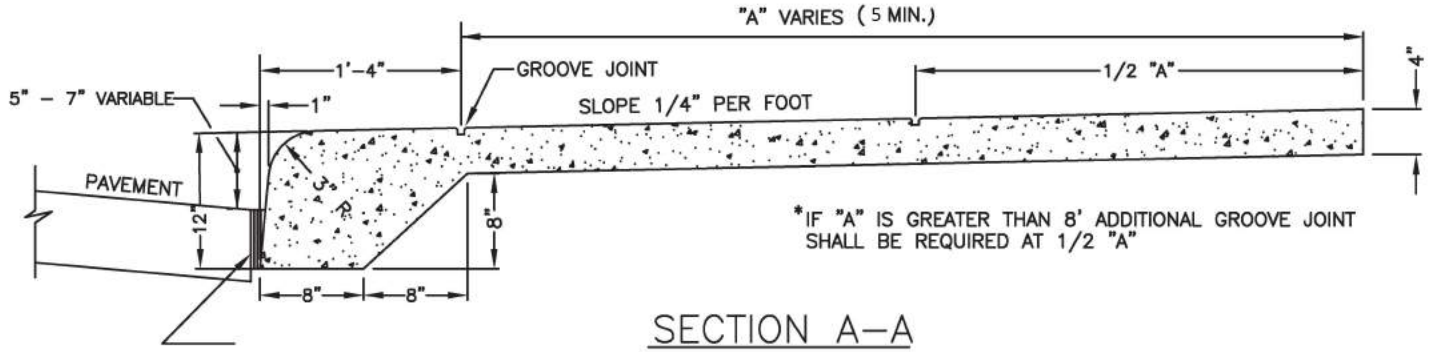
VILLAGE OF MARVIN STANDARD DRAWING

CONCRETE SIDEWALKS DETAILS AND NOTES

REV. DATE
STD. NO.
106.1



PLAN



SECTION A–A

TWO 1/2" THICK PIECES BITUMINOUS FIBER REQUIRED IF SUBBASE IS CONCRETE. MUST BE SEALED WITH APPROVED JOINT SEALER.

GENERAL NOTES:

1. A GROOVE JOINT 1" DEEP WITH 1/3" RADII SHALL BE REQUIRED IN THE CONCRETE SIDEWALK AT 5' INTERVALS. ONE 1/2" EXPANSION JOINT WILL BE REQUIRED AT 40' INTERVALS. A 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.
2. ALL CONCRETE TO BE 3600 P.S.I. COMPRESSIVE STRENGTH.
3. SEE STANDARD 106.1 FOR DETAIL OF EXPANSION JOINT AND GROOVE JOINT.
4. SEE STANDARD 117.1 FOR DETAIL OF DRIVEWAY.
5. MONOLITHIC CURB AND SIDEWALK TO BE CONSTRUCTED ONLY WHEN REPLACING GRANITE CURB OR AT LOCATIONS APPROVED BY THE APPROPRIATE ENGINEER.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	MONOLITHIC CONCRETE CURB AND SIDEWALK	REV. DATE
		STD. NO. 107.1

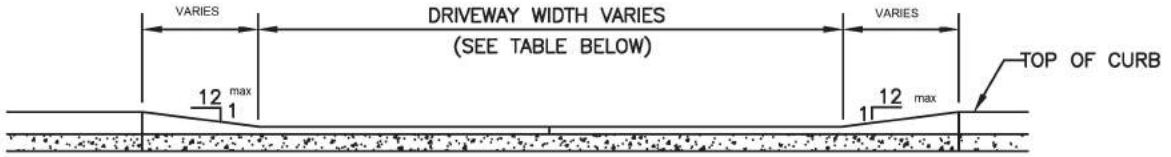
NOTE:

1. 1/2" EXPANSION JOINTS REQUIRE INSTALLATION OF ONE 1/2" THICK PIECE OF BITUMINOUS FIBER THROUGH THE ENTIRE SLAB.
2. TO LIMIT STORM WATER FLOW DOWN DRIVEWAYS, USE STANDARD 110.1 FOR DRIVEWAYS NEAR LOW POINTS.
3. ALL DRIVEWAYS MUST MEET THE CURRENT VILLAGE DRIVEWAY REGULATIONS AND NCDOT REQUIREMENTS FOR SPACING, SIGHT DISTANCE AND OFFSETS FROM PROPERTY LINES AND INTERSECTIONS.
4. "A" BREAKOVER SHALL BE 8% OR LESS (A = ALGEBRAIC DIFFERENCE).
5. PRIOR APPROVAL IS REQUIRED ON GRADES EXCEEDING WHAT ARE SHOWN.
6. * PER NC IFC SECTION D103.2 FIRE APPARATUS ACCESS ROADS SHALL NOT EXCEED 10 PERCENT IN GRADE.

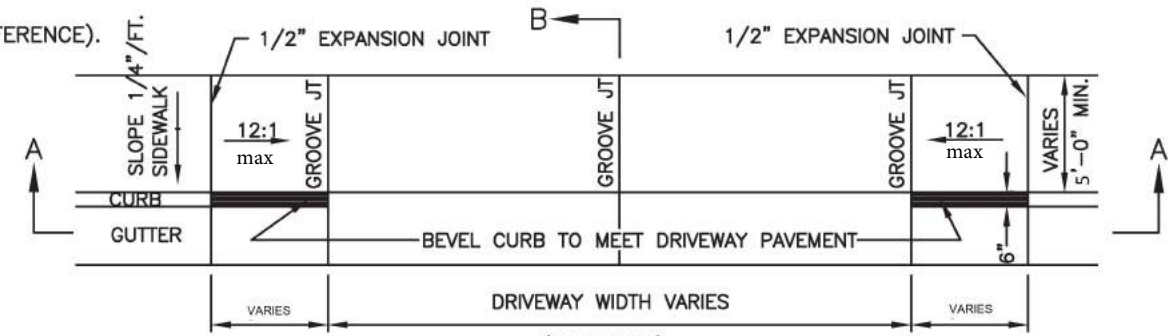
GENERAL NOTES:

ALL CONCRETE TO BE 3600 P.S.I. COMPRESSIVE STRENGTH.

ALL CURB, CURB AND GUTTER AND SIDEWALKS ARE TO BE REMOVED TO THE NEAREST JOINT BEYOND NEW CONSTRUCTION OR CUT WITH A SAW AND REMOVED. SAW CUT OR JOINT TO BE PERPENDICULAR TO EDGE OF EXISTING PAVEMENT. SEE STD. NO 102.1 FOR DETAIL OF EXPANSION JOINT AND GROOVE JOINT.



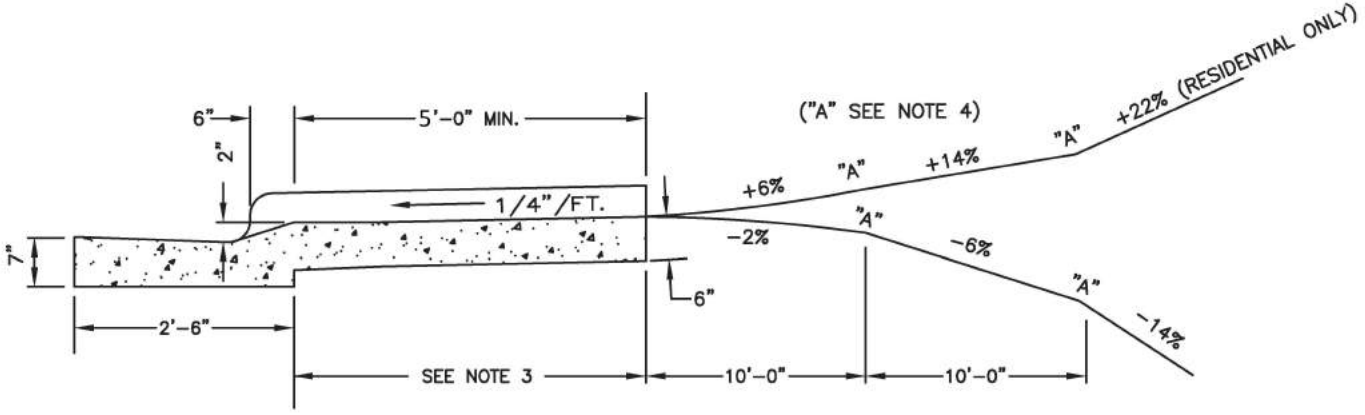
SECTION A – A



PLAN

DRIVEWAY CLASSIFICATION		
TYPE DRIVEWAY	MINIMUM	MAXIMUM
TYPE I–RESIDENTIAL LOCAL/COLLECTOR	10'	30'
TYPE I–RESIDENTIAL THOROUGHFARE*	15'	30'
ONE–WAY TYPE II COMMERCIAL	20'	30'
TWO–WAY TYPE II COMMERCIAL	26'	50'

*MUST PROVIDE ON-SITE TURNAROUND



SECTION B – B

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

COMMERCIAL TYPE II AND RESIDENTIAL TYPE I DROP CURB DRIVEWAY WITH SIDEWALK ABUTTING CURB (2'–6" CURB AND GUTTER)

REV. DATE	
STD. NO.	108.1

NOTE:

1. 1/2" EXPANSION JOINTS REQUIRE INSTALLATION OF ONE 1/2" THICK PIECE OF BITUMINOUS FIBER MATERIAL THROUGH THE ENTIRE SLAB.
2. TO LIMIT STORM WATER FLOW DOWN DRIVEWAYS, USE STANDARD 110.1 FOR DRIVEWAY LOWPOINT.
3. ALL DRIVEWAYS MUST MEET THE CURRENT VILLAGE DRIVEWAY REGULATIONS AND NCDOT REQUIREMENTS FOR SPACING, SIGHT DISTANCE AND OFFSETS FROM PROPERTY LINES AND INTERSECTIONS.
4. "A" BREAKOVER SHALL BE 8% OR LESS (A = ALGEBRAIC DIFFERENCE).
5. PRIOR APPROVAL IS REQUIRED ON GRADES EXCEEDING WHAT ARE SHOWN.
6. *PER NC IFC SECTION D103.2, FIRE APPARATUS ACCESS ROADS SHALL NOT EXCEED 10 PERCENT IN GRADE.

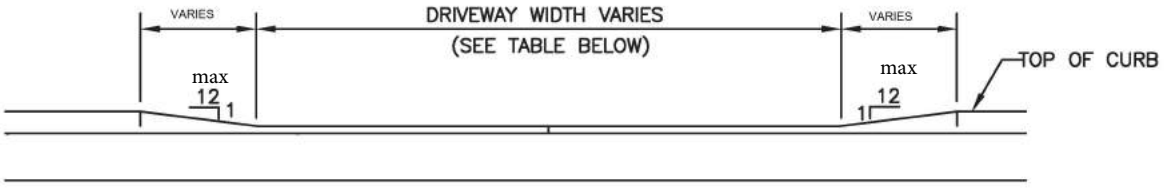
GENERAL NOTES:

ALL CONCRETE TO BE 3600 P.S.I. COMPRESSIVE STRENGTH.

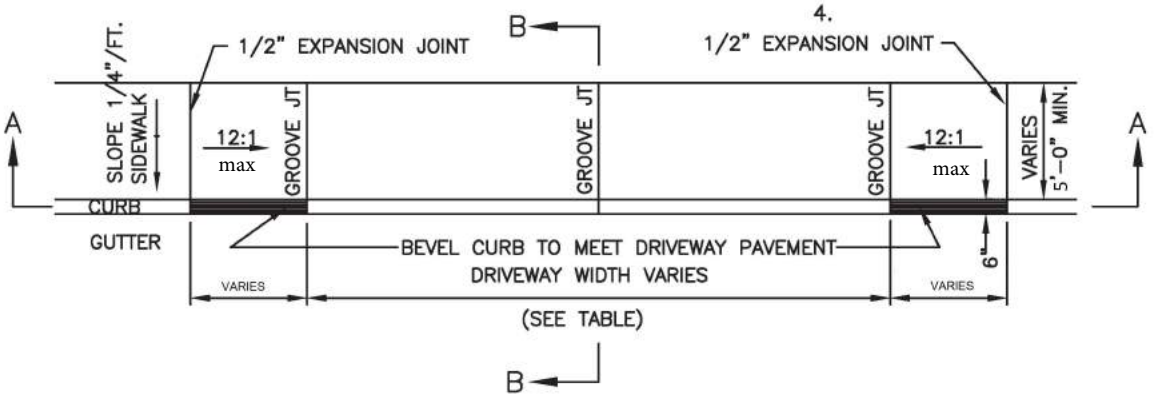
ALL CURB OR CURB AND GUTTER AND SIDEWALKS ARE TO BE REMOVED TO THE NEAREST JOINT BEYOND NEW CONSTRUCTION OR CUT WITH A SAW AND REMOVED. SAW CUT OR JOINT TO BE PERPENDICULAR TO EDGE OF EXISTING PAVEMENT. SEE STD. NO 102.1 FOR DETAIL OF EXPANSION JOINT AND GROOVE JOINT.

DRIVEWAY CLASSIFICATION		
TYPE DRIVEWAY	MINIMUM	MAXIMUM
TYPE I–RESIDENTIAL LOCAL/COLLECTOR	10'	30'
TYPE I–RESIDENTIAL * THOROUGHFARE	15'	30'
ONE–WAY TYPE II COMMERCIAL	20'	30'
TWO–WAY TYPE II COMMERCIAL	26'	50'

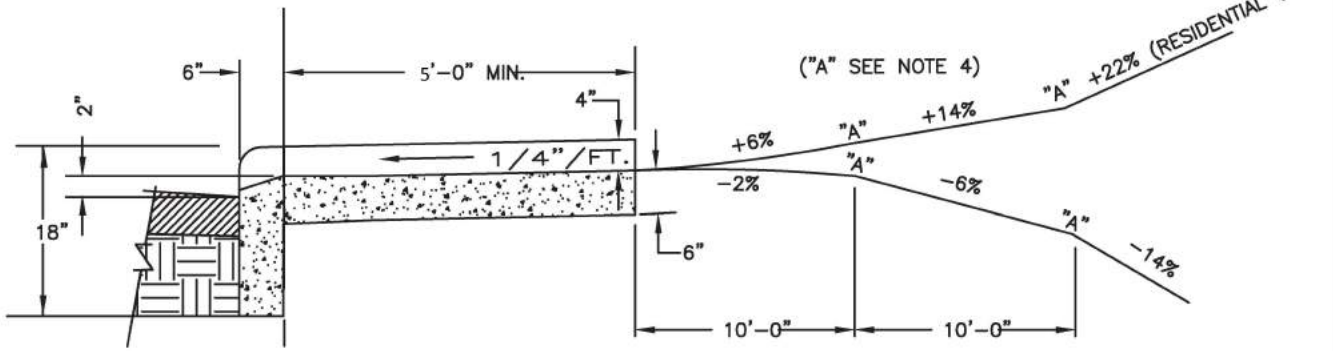
*MUST PROVIDE ON-SITE TURNAROUND



SECTION A – A



PLAN



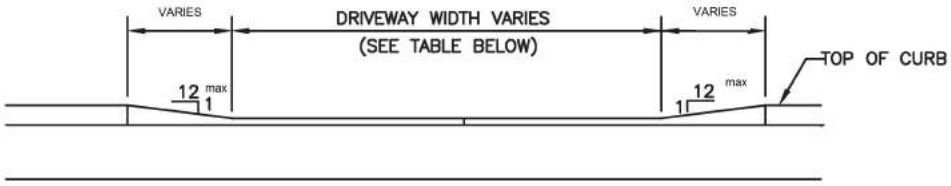
SECTION B – B

NOT TO SCALE

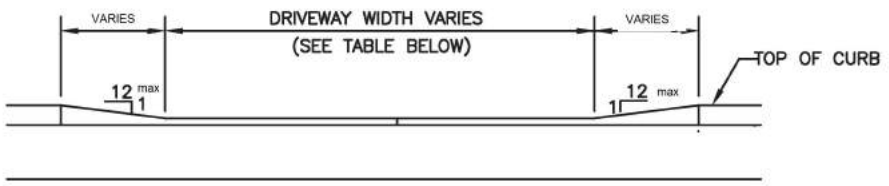
VILLAGE OF MARVIN STANDARD DRAWING

COMMERCIAL TYPE II AND RESIDENTIAL TYPE I DROP CURB DRIVEWAY WITH SIDEWALK ABUTTING CURB (6" X 18" VERTICAL CURB)

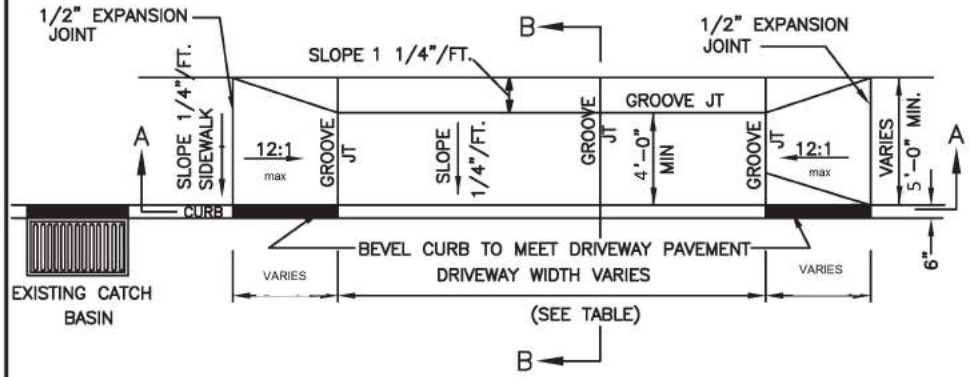
REV. DATE	
STD. NO.	109.1



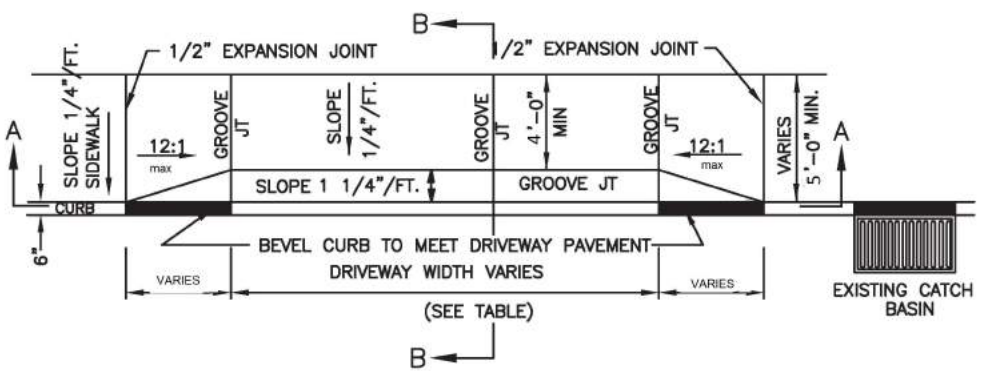
SECTION A – A



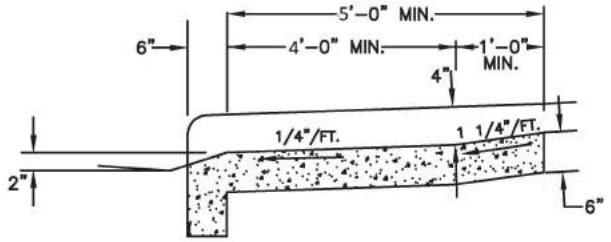
SECTION A – A



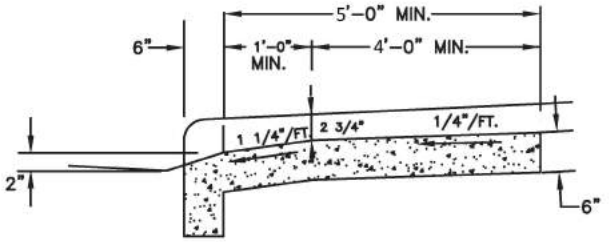
PLAN



PLAN



SECTION B – B



SECTION B – B

NOTES

1. USED AT LOW POINTS IN ROADWAYS WITH 2'–6" CURB AND GUTTER OR 6" X 18" CURB AS DIRECTED BY ENGINEER.
2. SEE STANDARDS 108.1 & 109.1 FOR ADDITIONAL DETAILS.
3. ALL DRIVEWAYS MUST MEET THE CURRENT VILLAGE DRIVEWAY REGULATIONS AND NCDOT REQUIREMENTS FOR SPACING, SIGHT DISTANCE AND OFFSETS FROM PROPERTY LINES AND INTERSECTIONS.

DRIVEWAY CLASSIFICATION		
TYPE DRIVEWAY	MINIMUM	MAXIMUM
TYPE I–RESIDENTIAL LOCAL/COLLECTOR	10'	30'
TYPE I–RESIDENTIAL * THOROUGHFARE	15'	30'
ONE–WAY TYPE II COMMERCIAL	20'	30'
TWO–WAY TYPE II COMMERCIAL	26'	50'

*MUST PROVIDE ON-SITE TURNAROUND

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

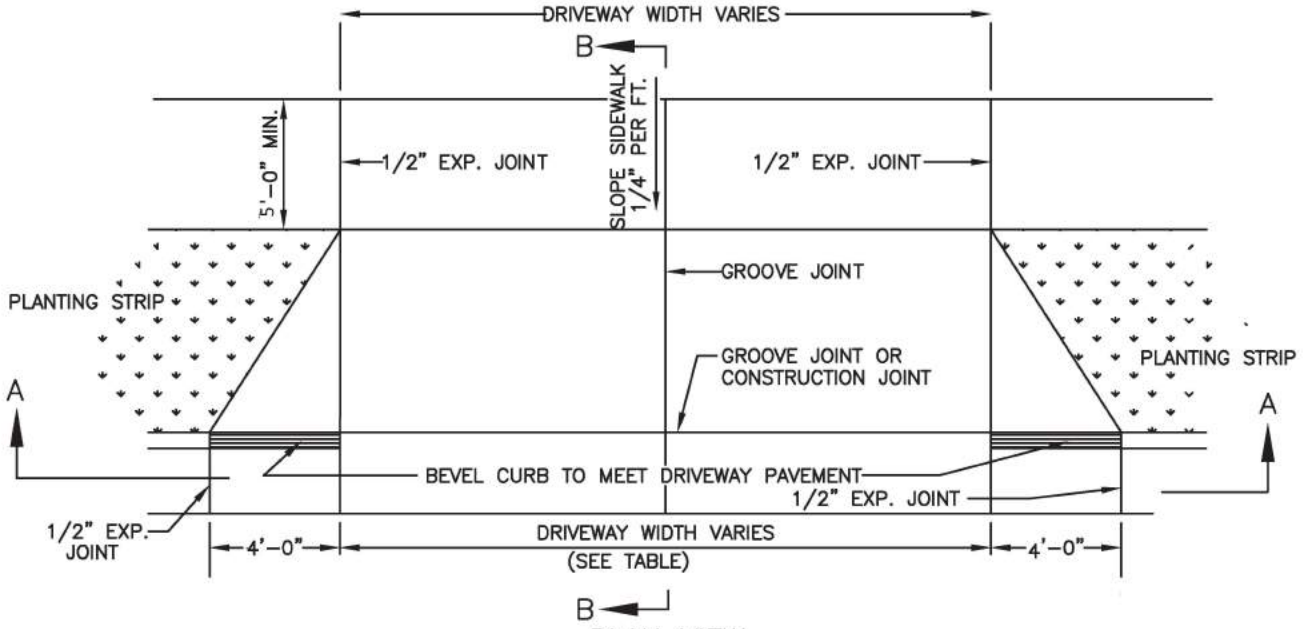
COMMERCIAL TYPE II AND RESIDENTIAL TYPE I DROP CURB DRIVEWAY WITH SIDEWALK ABUTTING CURB

REV. DATE
STD. NO.
110.1

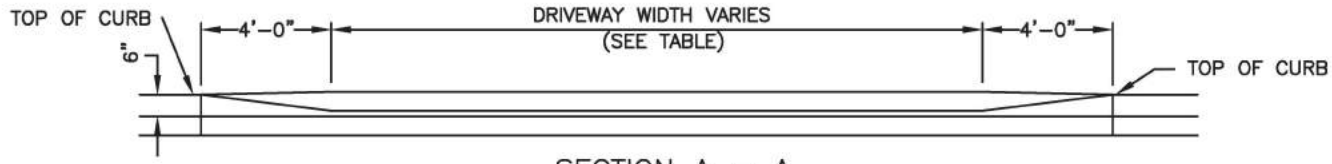
NOTES:

1. ALL CONCRETE TO BE 3600 P.S.I.
2. ALL CURB OR CURB AND GUTTER AND SIDEWALK ARE TO BE REMOVED TO THE NEAREST JOINT BEYOND NEW CONSTRUCTION OR CUT WITH A SAW AND REMOVED. SAW CUT OR JOINT TO BE PERPENDICULAR TO EDGE OF EXISTING PAVEMENT. SEE STD. NO. 102.1 FOR JOINT DETAIL.
3. ALL DRIVEWAYS MUST MEET THE CURRENT VILLAGE DRIVEWAY REGULATIONS AND NCDOT REQUIREMENTS FOR SPACING, SIGHT DISTANCE AND OFFSETS FROM PROPERTY LINES AND INTERSECTIONS.
4. "A" BREAKOVER SHALL BE 8% OR LESS (A = ALGEBRAIC DIFFERENCE).
5. PRIOR APPROVAL IS REQUIRED ON GRADES EXCEEDING WHAT ARE SHOWN.

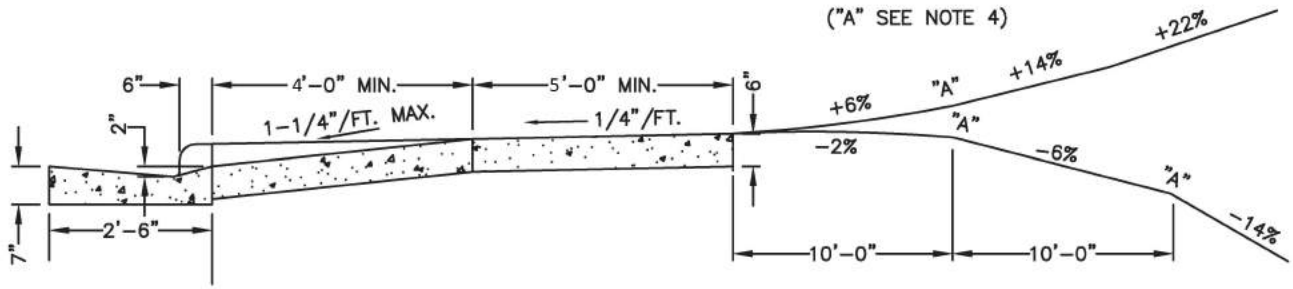
DRIVEWAY CLASSIFICATION		
TYPE DRIVEWAY	MINIMUM	MAXIMUM
TYPE I – RESIDENTIAL LOCAL/COLLECTOR	10'	30'
TYPE I – RESIDENTIAL THOROUGHFARE*	15'	30'



PLAN VIEW



SECTION A – A



SECTION B – B

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

RESIDENTIAL DROP CURB TYPE I DRIVEWAY WITH PLANTING STRIP (2'-6" CURB AND GUTTER)

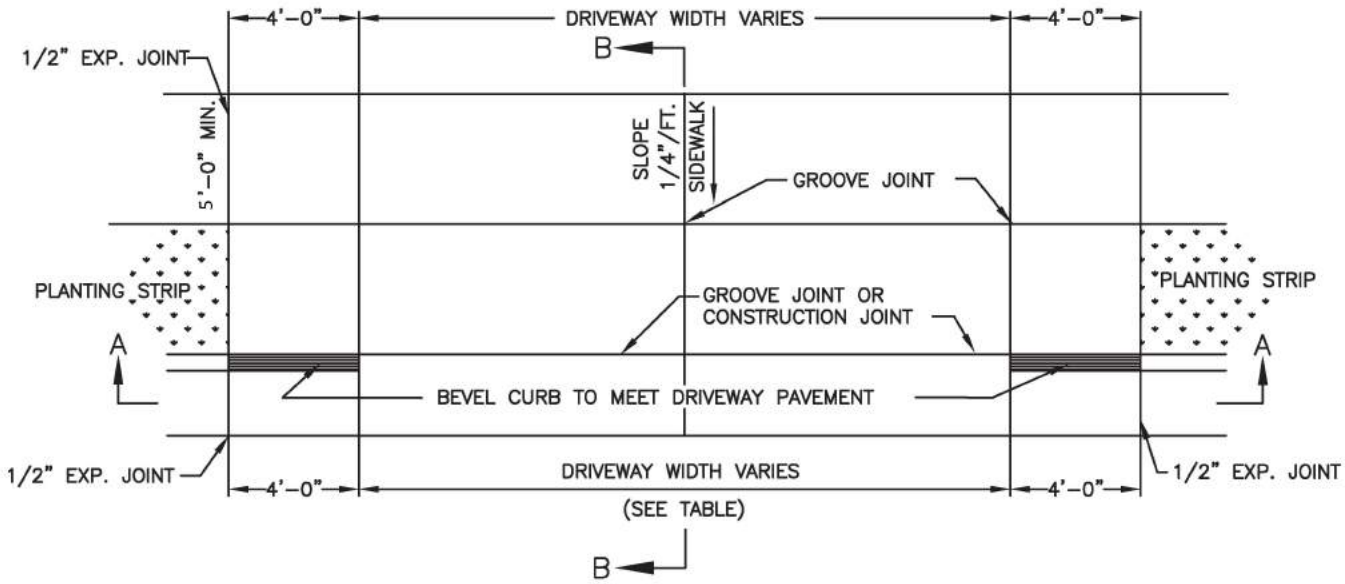
REV. DATE
STD. NO.
111.1

NOTES:

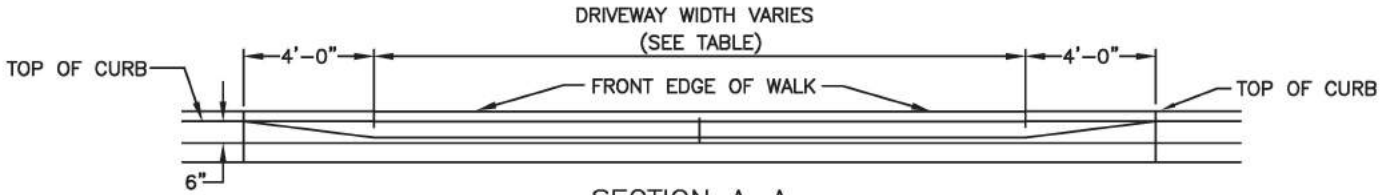
1. ALL CONCRETE TO BE 3600 P.S.I.
2. ALL CURB OR CURB AND GUTTER AND SIDEWALK ARE TO BE REMOVED TO THE NEAREST JOINT BEYOND NEW CONSTRUCTION OR CUT WITH A SAW AND REMOVED. SAW CUT OR JOINT TO BE PERPENDICULAR TO EDGE OF EXISTING PAVEMENT. SEE STD. NO. 102.1 FOR JOINT DETAIL.
3. ALL DRIVEWAYS MUST MEET THE CURRENT VILLAGE DRIVEWAY REGULATIONS AND NCDOT REQUIREMENTS FOR SPACING, SIGHT DISTANCE AND OFFSETS FROM PROPERTY LINES AND INTERSECTIONS.
4. "A" BREAKOVER SHALL BE 8% OR LESS (A = ALGEBRAIC DIFFERENCE).
5. PRIOR APPROVAL IS REQUIRED ON GRADES EXCEEDING WHAT ARE SHOWN.

DRIVEWAYS CLASSIFICATION		
TYPE DRIVEWAYS	MINIMUM	MAXIMUM
ONE–WAY TYPE II – COMMERCIAL	20'	30'
TWO–WAY TYPE II – COMMERCIAL	26'	50'*

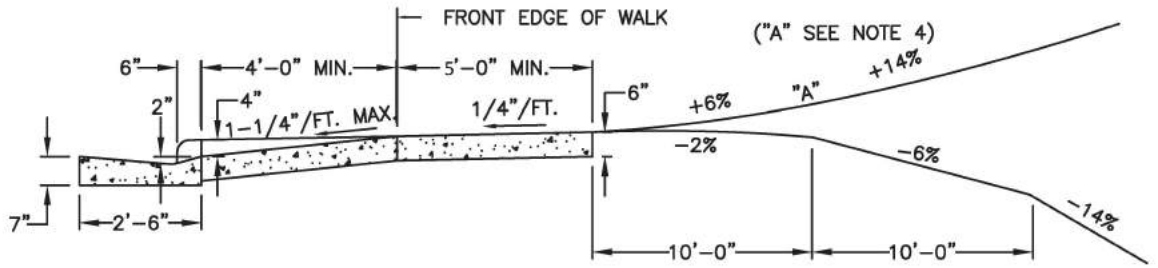
* NEED MORE THAN ONE CONTRACTION JOINT IN CENTER.



PLAN VIEW



SECTION A–A



SECTION B–B

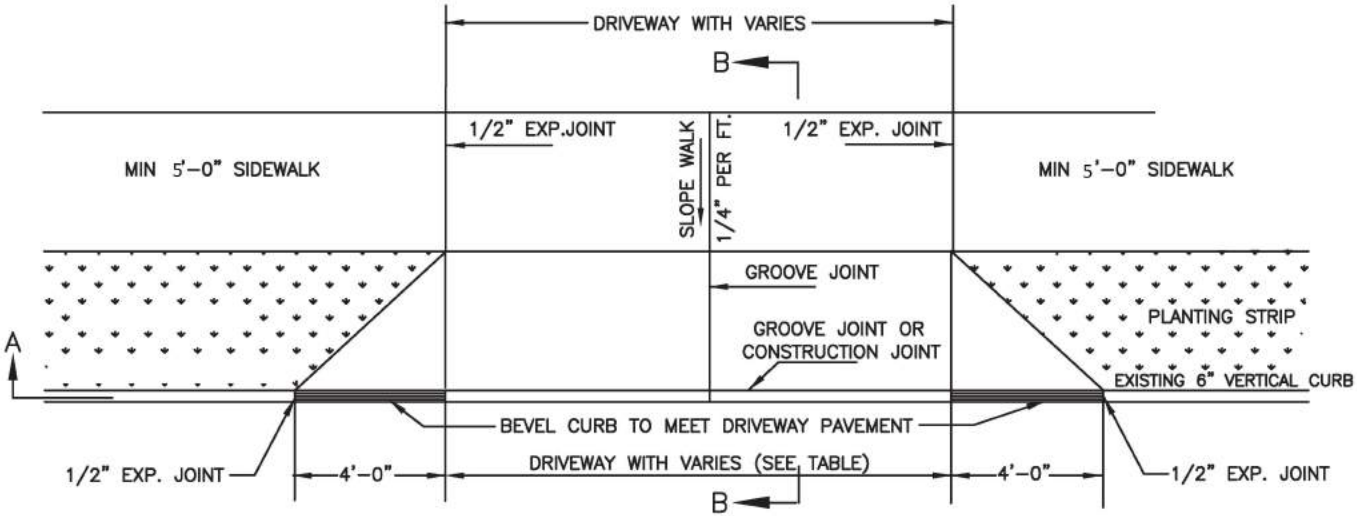
NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	COMMERCIAL DROP CURB TYPE II DRIVEWAY WITH PLANTING STRIP (2'–6" CURB AND GUTTER)	REV. DATE
		STD. NO. 112.1

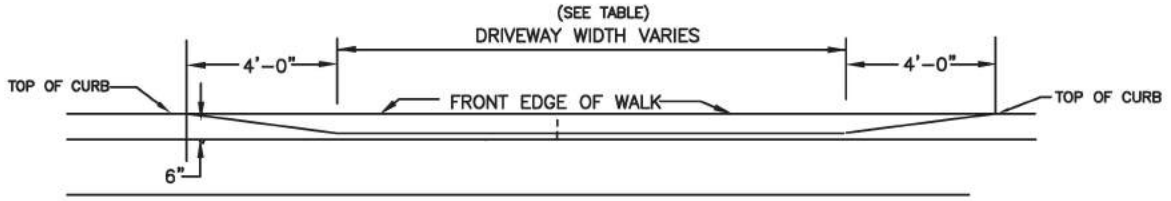
NOTES:

1. ALL CONCRETE TO BE 3600 P.S.I.
2. ALL CURB OR CURB AND GUTTER AND SIDEWALK ARE TO BE REMOVED TO THE NEAREST JOINT BEYOND NEW CONSTRUCTION OR CUT WITH A SAW AND REMOVED. SAW CUT OR JOINT TO BE PERPENDICULAR TO EDGE OF EXISTING PAVEMENT. SEE STD. NO. 102.1 FOR JOINT DETAIL.
3. ALL DRIVEWAYS MUST MEET THE CURRENT VILLAGE DRIVEWAY REGULATIONS AND NCDOT REQUIREMENTS FOR SPACING, SIGHT DISTANCE AND OFFSETS FROM PROPERTY LINES AND INTERSECTIONS.
4. "A" BREAKOVER SHALL BE 8% OR LESS.
5. PRIOR APPROVAL IS REQUIRED ON GRADES EXCEEDING WHAT ARE SHOWN.

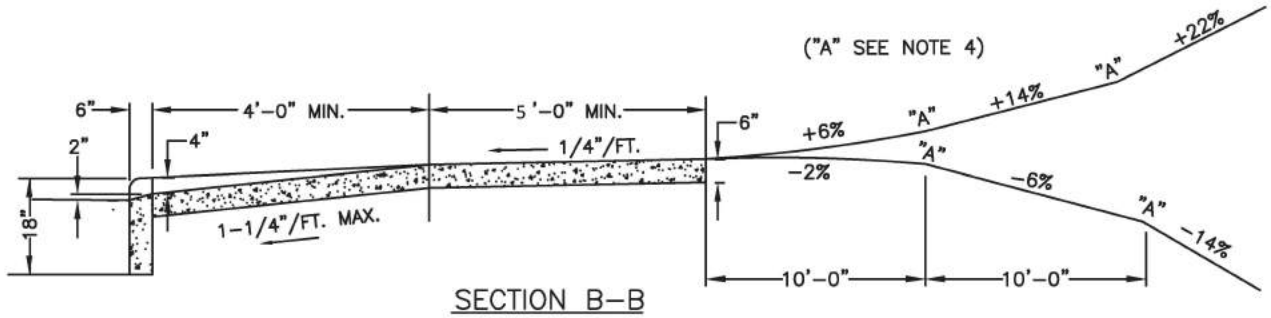
DRIVEWAY CLASSIFICATION		
TYPE DRIVEWAY	MINIMUM	MAXIMUM
TYPE I – RESIDENTIAL LOCAL/COLLECTOR	10'	30'
TYPE I – RESIDENTIAL THOROUGHFARE*	15'	30'



PLAN VIEW



SECTION A–A (ALONG FLOW LINE)



SECTION B–B

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

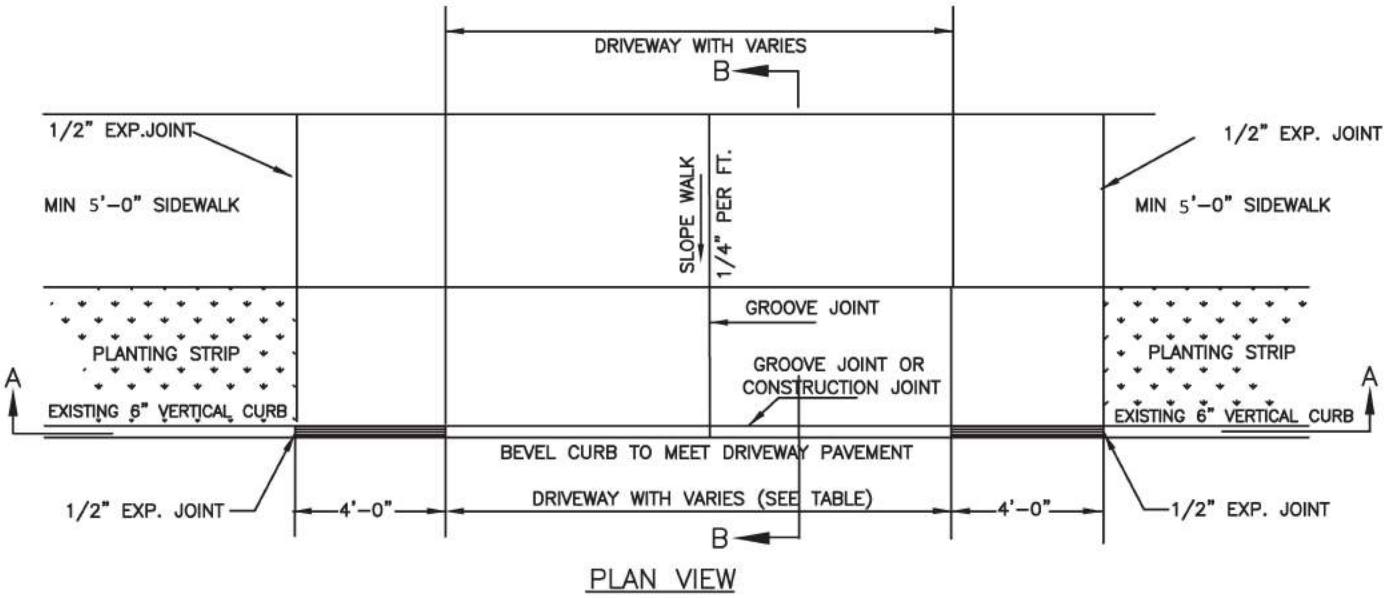
RESIDENTIAL DROP CURB TYPE I DRIVEWAY WITH PLANTING STRIP (6" x 18" VERTICAL CURB)

REV. DATE	
STD. NO.	113.1

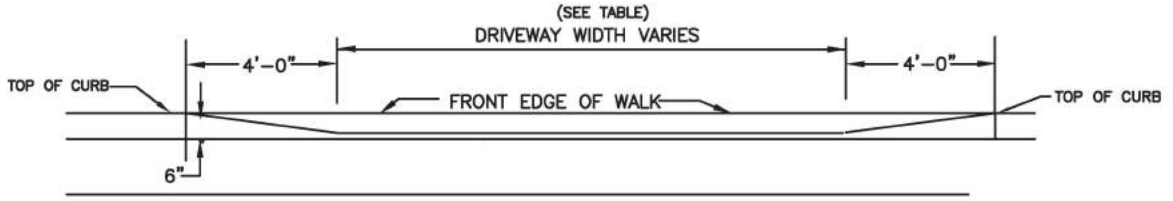
NOTES:

1. ALL CONCRETE TO BE 3600 P.S.I.
2. ALL CURB OR CURB AND GUTTER AND SIDEWALK ARE TO BE REMOVED TO THE NEAREST JOINT BEYOND NEW CONSTRUCTION OR CUT WITH A SAW AND REMOVED. SAW CUT OR JOINT TO BE PERPENDICULAR TO EDGE OF EXISTING PAVEMENT. SEE STD. NO. 102.1 FOR JOINT DETAIL.
3. ALL DRIVEWAYS MUST MEET THE CURRENT VILLAGE DRIVEWAY REGULATIONS AND NCDOT REQUIREMENTS FOR SPACING, SIGHT DISTANCE AND OFFSETS FROM PROPERTY LINES AND INTERSECTIONS.
4. "A" BREAKOVER SHALL BE 8% OR LESS (A = ALGEBRAIC DIFFERENCE).
5. PRIOR APPROVAL IS REQUIRED ON GRADES EXCEEDING WHAT ARE SHOWN.

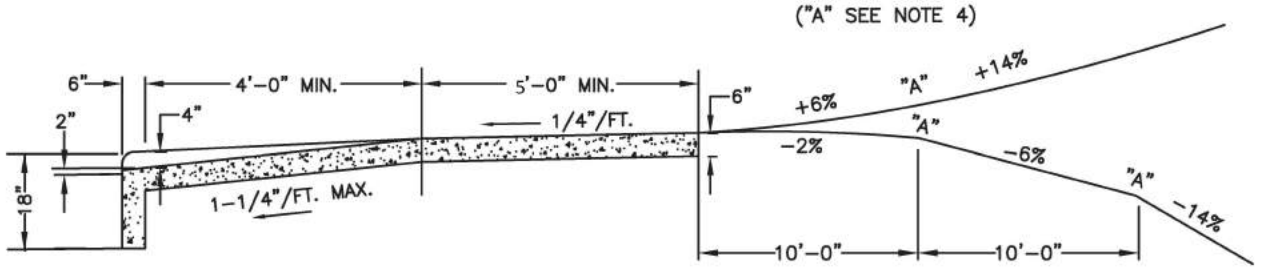
DRIVEWAYS CLASSIFICATION		
TYPE DRIVEWAYS	MINIMUM	MAXIMUM
ONE–WAY TYPE II–COMMERCIAL	20'	30'
TWO–WAY TYPE II–COMMERCIAL	26'	50'*



PLAN VIEW



SECTION A–A (ALONG FLOW LINE)



SECTION B–B

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

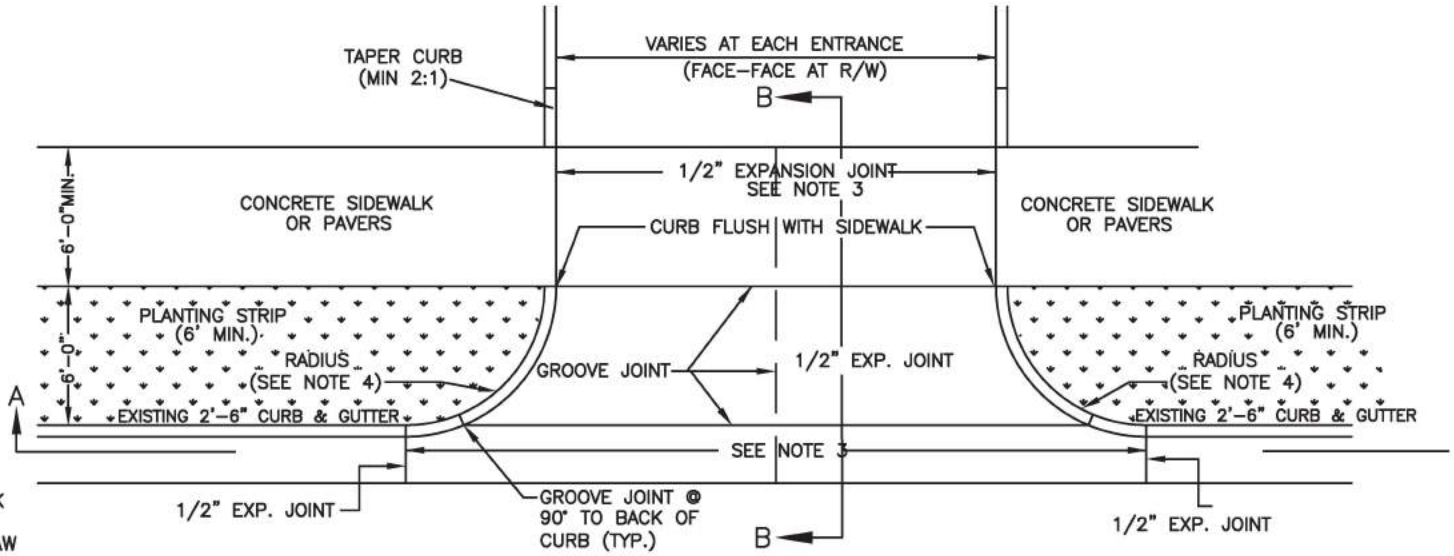
COMMERCIAL DROP CURB TYPE II DRIVEWAY WITH PLANTING STRIP (6" X 18" VERTICAL CURB)

REV. DATE	
STD. NO.	114.1

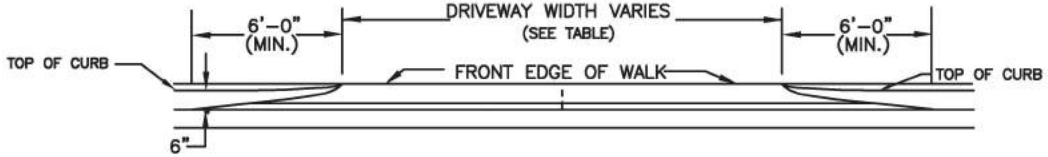
DRIVEWAY DIMENSIONS		
OPERATION/RADIUS	MINIMUM	MAXIMUM
ONE–WAY WITH 6–12 FT. RADII	20'	30'
ONE–WAY WITH 13+ FT. RADII	15'	25'
TWO–WAY WITH 6–12 FT. RADII	26'	50'
TWO–WAY WITH 13+ FT. RADII	22'	40'

NOTES:

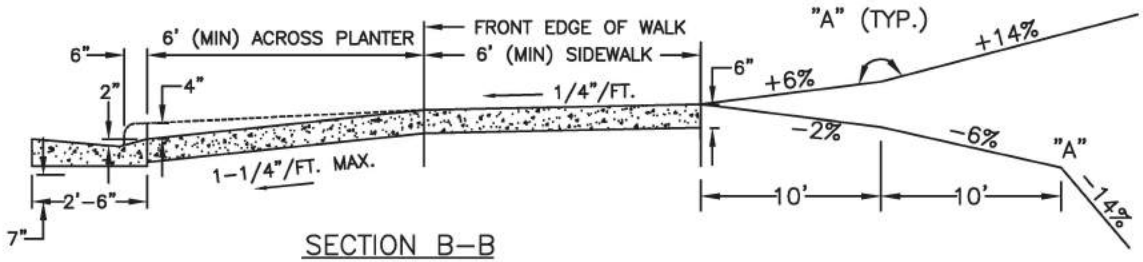
1. ALL CONCRETE TO BE 3600 P.S.I.
2. ALL CURB OR CURB AND GUTTER AND SIDEWALK ARE TO BE REMOVED TO THE NEAREST JOINT BEYOND NEW CONSTRUCTION OR CUT WITH A SAW AND REMOVED. SAW CUT OR JOINT TO BE PERPENDICULAR TO EDGE OF EXISTING PAVEMENT. SEE STD. NO. 102.1 FOR JOINT DETAIL.
3. ALL DRIVEWAYS MUST MEET THE CURRENT VILLAGE DRIVEWAY REGULATIONS AND NCDOT REQUIREMENTS FOR SPACING, SIGHT DISTANCE AND OFFSETS FROM PROPERTY LINES AND INTERSECTIONS.
4. RADII MUST BE MINIMUM 6 FEET OR THE WIDTH OF THE PLANTING STRIP, WHICHEVER IS GREATER. RADII GREATER THAN THESE MINIMUMS MAY BE REQUIRED ON A CASE–BY–CASE BASIS. FOR RADII GREATER THAN 6 FEET, THE RADII ARE TO CONTINUE AS A BAND AT–GRADE THROUGH THE SIDEWALK.
5. PAVERS USED IN DRIVEWAY MUST HAVE A THICKNESS OF 3 INCHES.
6. "A" BREAKOVER SHALL BE 8% OR LESS (A = ALGEBRAIC DIFFERENCE).
7. PRIOR APPROVAL IS REQUIRED ON GRADES EXCEEDING WHAT ARE SHOWN.



PLAN VIEW



SECTION A–A (ALONG FLOW LINE)



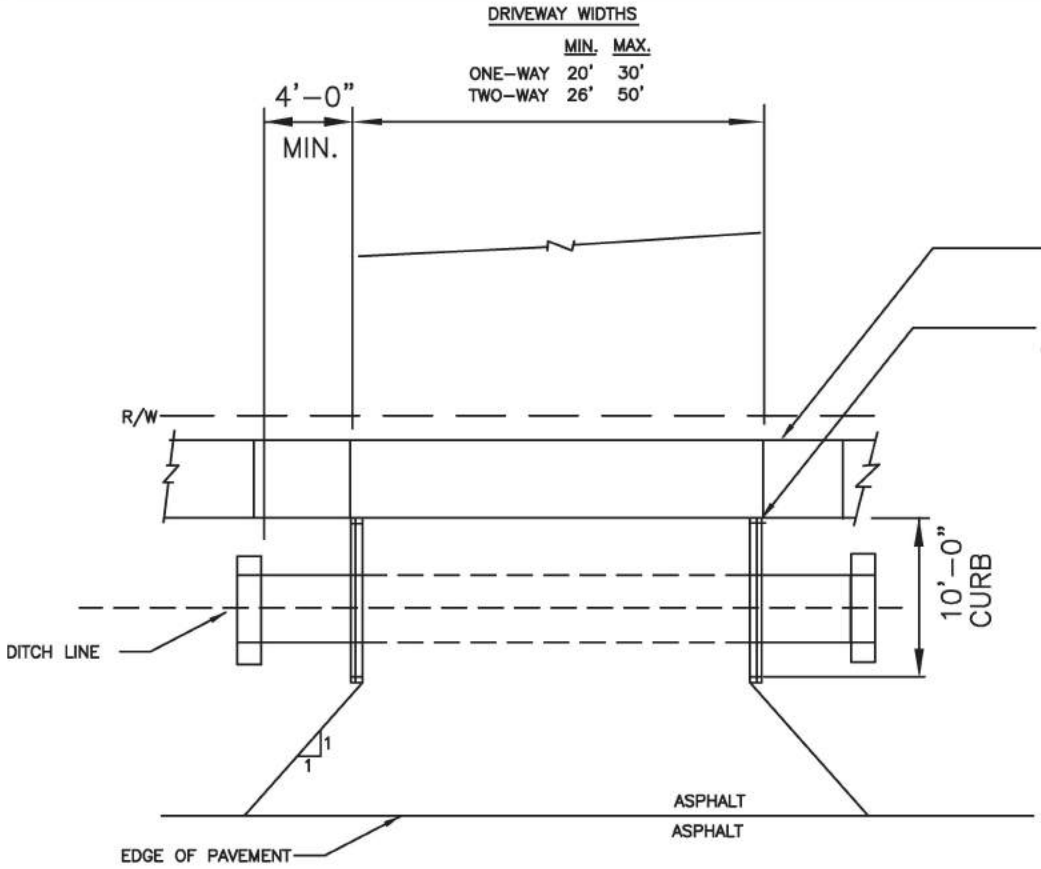
SECTION B–B

NOT TO SCALE

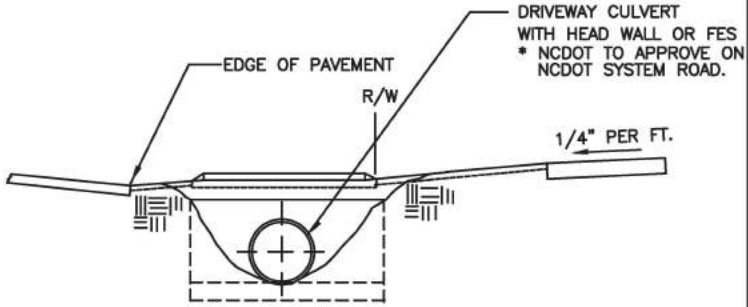
VILLAGE OF MARVIN STANDARD DRAWING

TYPE II–MODIFIED DRIVEWAY DETAIL WITH WIDE PLANTING STRIP AND STANDARD CURB

REV. DATE
STD. NO.
115.1



PLAN



SECTION

NOTE:

1. TO BE USED ON ROADS WITHOUT CURB AND GUTTER AND WHERE CURB AND GUTTER IS NOT BEING INSTALLED (MUST MEET BOTH CRITERIA).
2. ALL CONCRETE TO BE 3600 P.S.I. COMPRESSIVE STRENGTH.
3. USE OF THIS STANDARD FOR RESIDENTIAL DRIVEWAY CONSTRUCTION AT THE DISCRETION OF THE VILLAGE ENGINEER ONLY.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	COMMERCIAL TYPE IV DRIVEWAY STANDARD	REV. DATE STD. NO. 116.1

GENERAL NOTES:

ALL CONCRETE TO BE 3600 P.S.I. COMPRESSIVE STRENGTH.

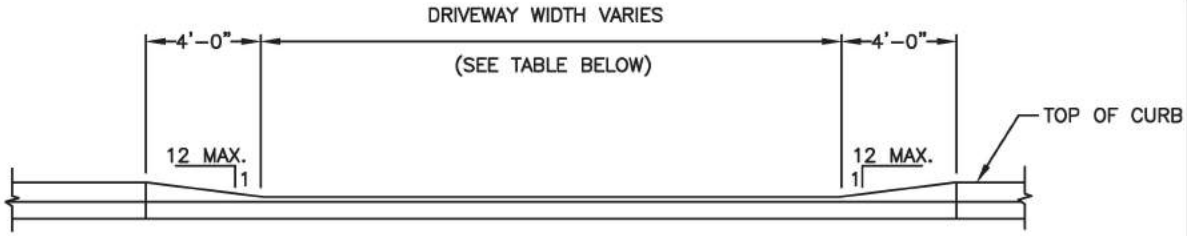
A 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE. SEE STANDARD 106.1.

THIS DETAIL TO BE USED ONLY IN CONJUNCTION WITH MONOLITHIC SIDEWALK AS ON STANDARD NO. 107.1

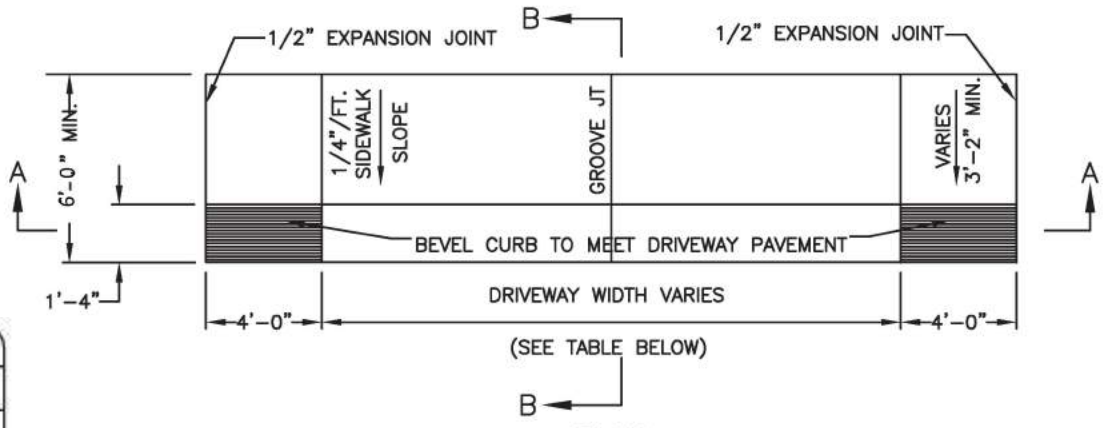
NOTES:

1. ALL DRIVEWAYS MUST MEET THE CURRENT VILLAGE DRIVEWAY REGULATIONS AND NCDOT REQUIREMENTS FOR SPACING, SIGHT DISTANCES, AND OFFSETS FROM PROPERTY LINES AND INTERSECTIONS.

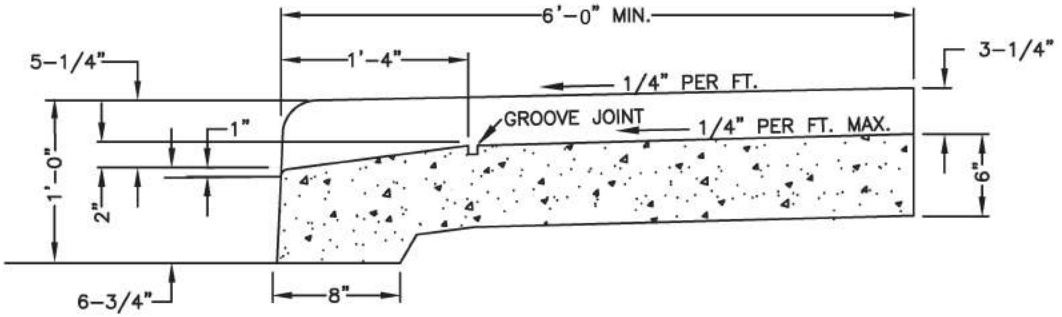
DRIVEWAY CLASSIFICATION		
TYPE DRIVEWAY	MINIMUM	MAXIMUM
TYPE I–RESIDENTIAL LOCAL/COLLECTOR	10'	30'
TYPE I–RESIDENTIAL THOROUGHFARE	15'	30'
ONE–WAY TYPE II COMMERCIAL	20'	30'
TWO–WAY TYPE II COMMERCIAL	26'	50'



SECTION A–A



PLAN



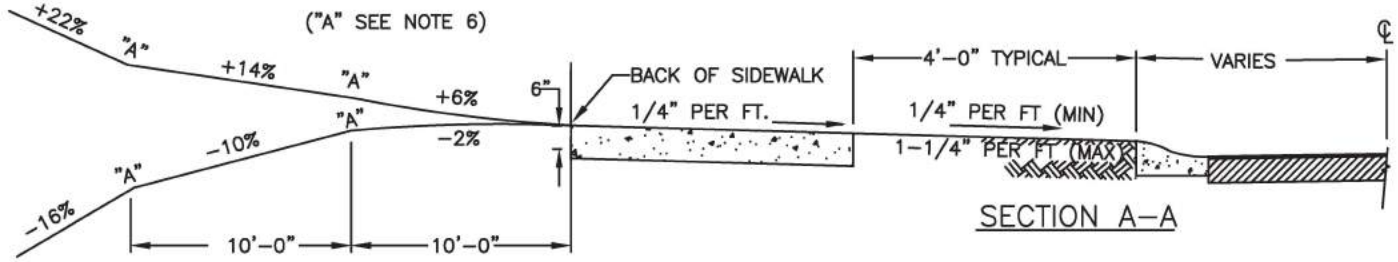
SECTION B–B

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

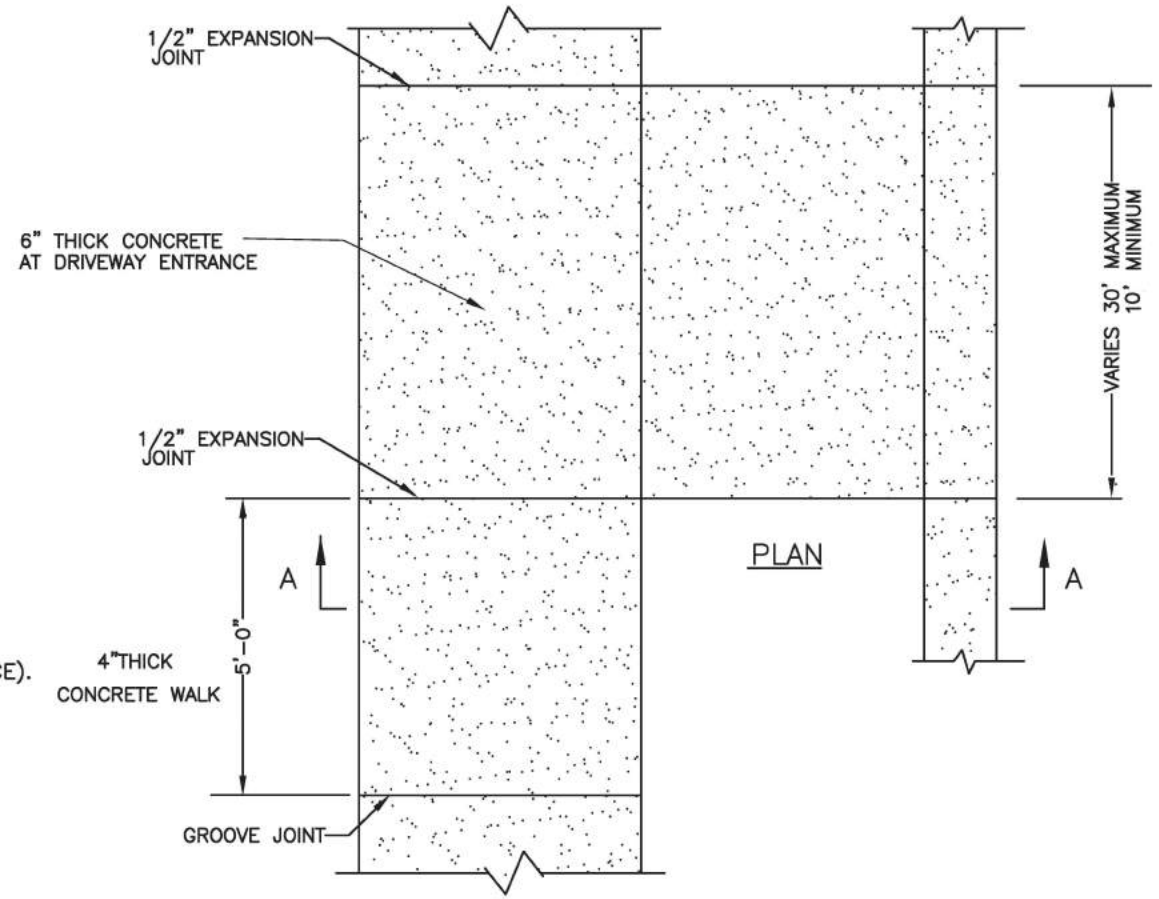
DROP CURB DRIVEWAY MONOLITHIC CONCRETE CURB AND SIDEWALK

REV. DATE
STD. NO.
117.1



NOTES:

1. THE ELEVATION OF THE SIDEWALK SHALL BE NOT LESS THAN SIX INCHES OR MORE THAN EIGHTEEN INCHES ABOVE THE ROADWAY CROWN. THIS ELEVATION DIFFERENTIAL SHALL BE CONSISTENT WITHIN EACH BLOCK.
2. ALL CONCRETE TO BE 3600 PSI STRENGTH.
3. ALL CONSTRUCTION PRACTICES, INCLUDING COMPACTION, CURING, FINISHING, ETC. SHALL BE IN ACCORDANCE WITH THIS MANUAL.
4. PLANTING STRIP SHALL BE GRADED WITH A CROSS SLOPE BETWEEN 1/2 IN. PER FOOT AND 1 1/4 IN. PER FOOT EXCEPT WHERE EXCESSIVE NATURAL GRADES MAKE THIS REQUIREMENT IMPRACTICAL. IN SUCH CASES, THE ENGINEER MAY AUTHORIZE A SUITABLE GRADE.
5. ALL DRIVEWAYS MUST MEET THE CURRENT VILLAGE DRIVEWAY REGULATIONS AND NCDOT REQUIREMENTS, INCLUDING BUT NOT LIMITED TO SPACING, SIGHT DISTANCE, AND OFFSETS FROM PROPERTY LINES AND INTERSECTIONS.
6. "A" BREAKOVER SHALL BE 8% OR LESS (A = ALGEBRAIC DIFFERENCE).
7. PRIOR APPROVAL IS REQUIRED ON GRADES EXCEEDING WHAT ARE SHOWN.

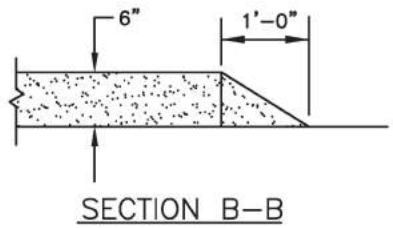


NOT TO SCALE

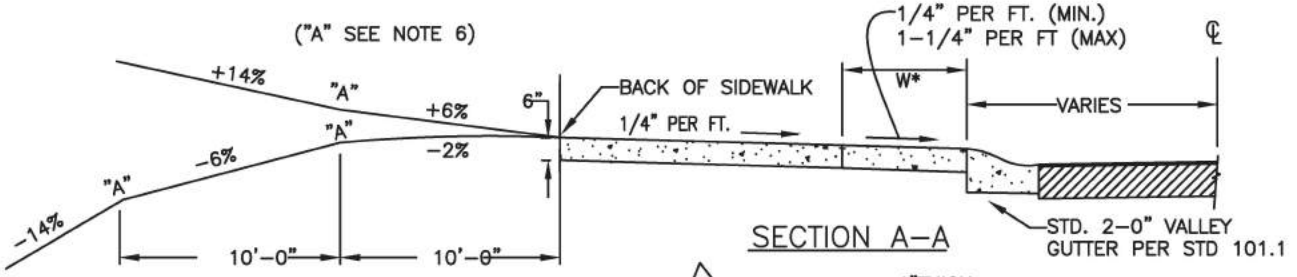
VILLAGE OF MARVIN STANDARD DRAWING

RESIDENTIAL DRIVEWAY (TYPE I) FOR VALLEY GUTTER

REV. DATE
STD. NO.
118.1



SECTION B–B



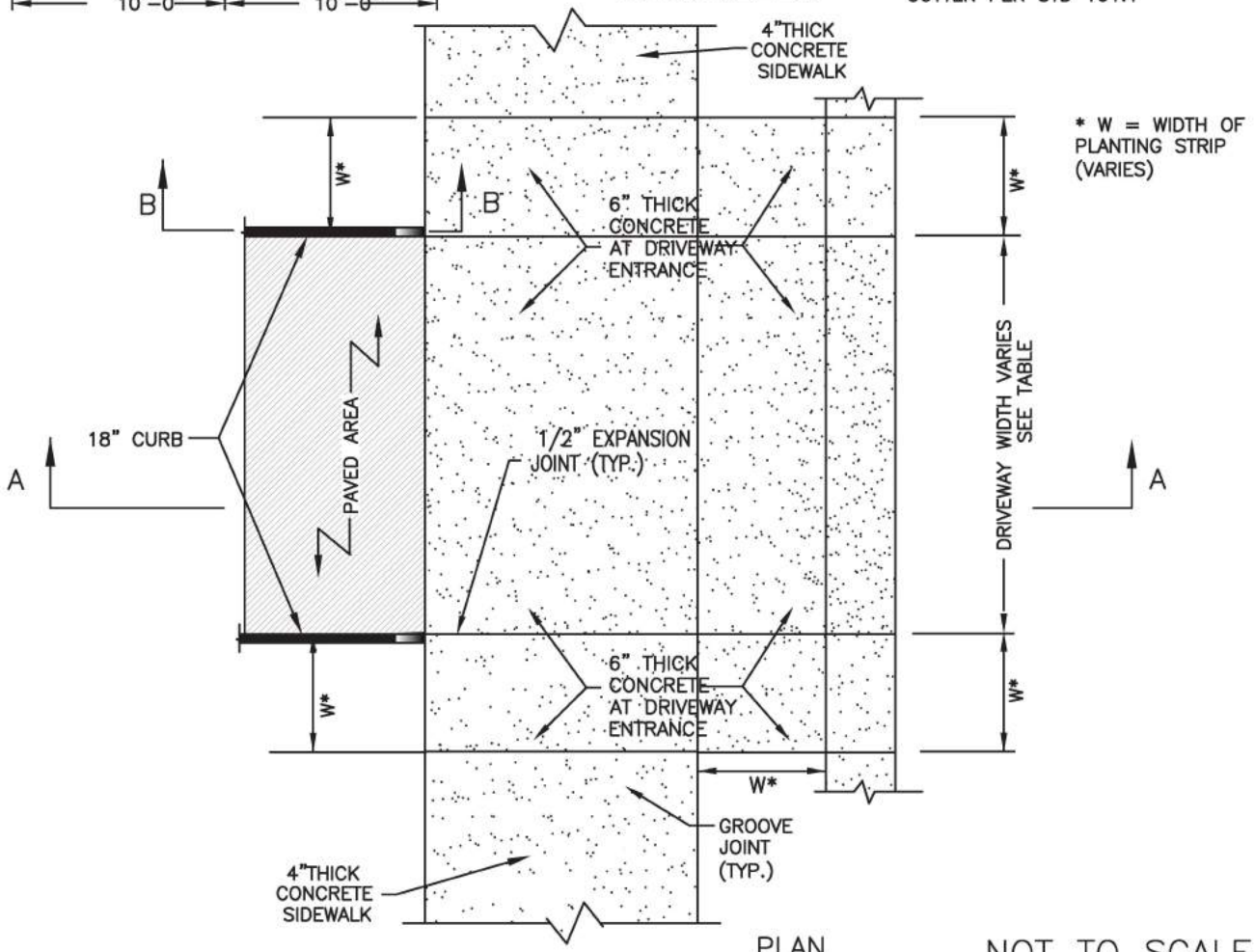
SECTION A–A

NOTES:

1. THE ELEVATION OF THE SIDEWALK SHALL NOT BE LESS THAN SIX INCHES OR MORE THAN EIGHTEEN INCHES ABOVE THE ROADWAY CROWN. THIS ELEVATION DIFFERENTIAL SHALL BE CONSISTENT WITHIN EACH BLOCK.
2. ALL CONCRETE TO BE 3600 PSI STRENGTH.
3. ALL CONSTRUCTION PRACTICES, INCLUDING COMPACTION, CURING, FINISHING, ETC. SHALL BE IN ACCORDANCE WITH THE VILLAGE OF MARVIN ENGINEERING STANDARDS AND PROCEDURES MANUAL.
4. PLANTING STRIP SHALL BE GRADED WITH A CROSS SLOPE BETWEEN 1/2 IN. PER FOOT AND 1 1/4 IN. PER FOOT EXCEPT WHERE EXCESSIVE NATURAL GRADES MAKE THIS REQUIREMENT IMPRACTICAL. IN SUCH CASES, THE VILLAGE ENGINEER MAY AUTHORIZE A SUITABLE GRADE
5. ALL DRIVEWAYS MUST MEET THE CURRENT VILLAGE DRIVEWAY REGULATIONS AND NCDOT REQUIREMENTS, INCLUDING BUT NOT LIMITED TO SPACING, SIGHT DISTANCE, AND OFFSETS FROM PROPERTY LINES AND INTERSECTIONS.
6. "A" BREAKOVER SHALL BE 8% OR LESS (A=ALGEBRAIC DIFFERENCE).
7. PRIOR APPROVAL IS REQUIRED ON GRADES EXCEEDING WHAT ARE SHOWN.
8. PER NC IFC SECTION D103.2, FIRE APPARATUS ACCESS ROADS SHALL NOT EXCEED 10 PERCENT IN GRADE

DRIVEWAY WIDTH		
TYPE DRIVEWAY	MINIMUM	MAXIMUM
ONE–WAY TYPE II COMMERCIAL	20'	30'
TWO–WAY TYPE II COMMERCIAL	26'	50'

* MUST PROVIDE ON–SITE TURNAROUND



PLAN

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

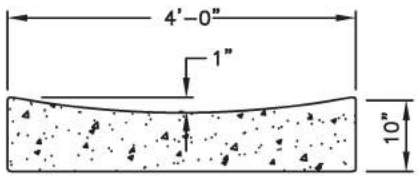
COMMERCIAL TYPE II DRIVEWAY FOR 2'–0" VALLEY GUTTER

REV. DATE
STD. NO.
119.1

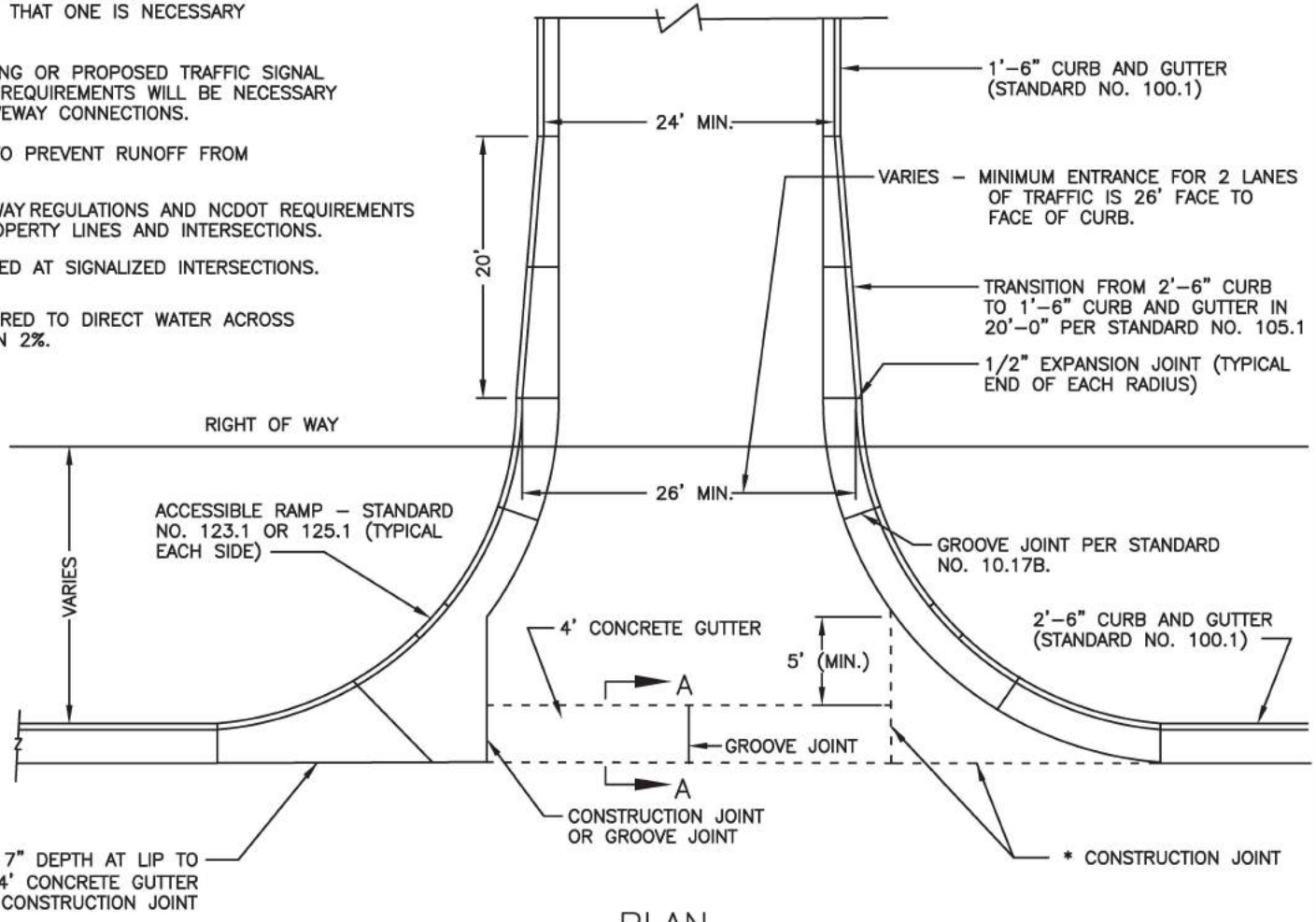
NOTES:

1. WHERE A TYPE III DRIVEWAY IS APPROVED BY THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT) THAT CONNECTS TO AN EXISTING SIGNALIZED INTERSECTION, OR AT A LOCATION WHERE A TRAFFIC SIGNAL INSTALLATION IS PROPOSED BY NCDOT BASED ON A TRAFFIC IMPACT/SIGNAL WARRANT STUDY, A FULL DEPTH ASPHALT PAVEMENT (2–1/2" S–9.5 B/C AND 6" B–25.0 B/C) IS REQUIRED. THIS PAVEMENT DESIGN IS REQUIRED IN THE DRIVEWAY EASEMENT (100–FOOT MINIMUM) TO MAINTAIN DETECTOR LOOPS AND PAVEMENT MARKINGS. A TRAFFIC SIGNAL WILL BE INSTALLED ONLY IF NCDOT DETERMINES THAT ONE IS NECESSARY BASED ON A TRAFFIC STUDY OF CURRENT CONDITIONS.
2. A CONCRETE GUTTER IS TO BE USED EXCEPT AT EXISTING OR PROPOSED TRAFFIC SIGNAL LOCATIONS. AT THESE LOCATIONS ADDITIONAL DRAINAGE REQUIREMENTS WILL BE NECESSARY TO ELIMINATE THE NEED FOR GUTTER ACROSS THE DRIVEWAY CONNECTIONS.
3. THE DRIVEWAY MUST RISE 6" FROM THE GUTTER LINE TO PREVENT RUNOFF FROM ENTERING DRIVEWAY.
4. ALL DRIVEWAYS MUST MEET THE CURRENT VILLAGE DRIVEWAY REGULATIONS AND NCDOT REQUIREMENTS FOR SPACING, SIGHT DISTANCE, AND OFFSETS FROM PROPERTY LINES AND INTERSECTIONS.
5. TWO (2) ACCESSIBLE RAMPS PER CURB RETURN REQUIRED AT SIGNALIZED INTERSECTIONS.

* FOUR (4) FOOT GUTTER AND WINGS WILL NOT BE REQUIRED TO DIRECT WATER ACROSS DRIVE IF THE DRIVEWAY GUTTER SLOPE IS GREATER THAN 2%.



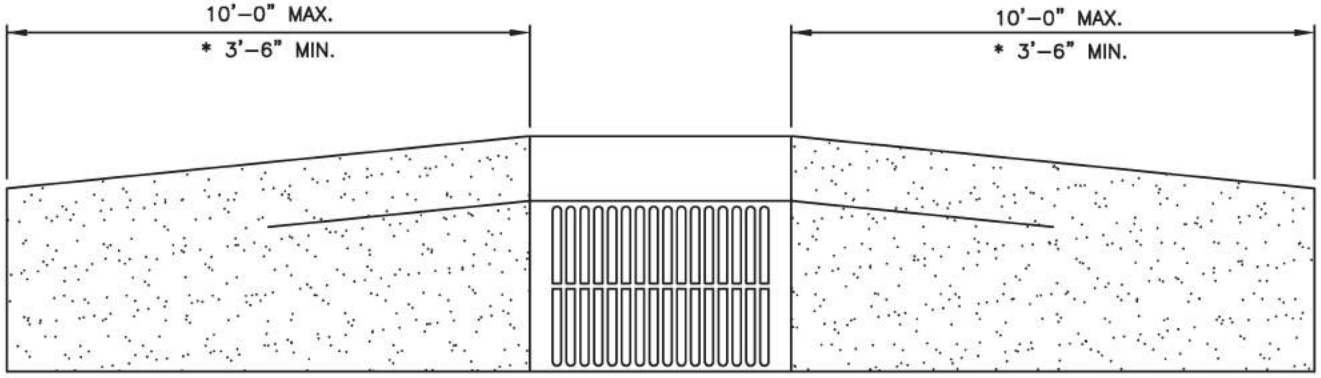
SECTION A–A



PLAN

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	TYPE III DRIVEWAY ENTRANCE	REV. DATE
		STD. NO. 120.1



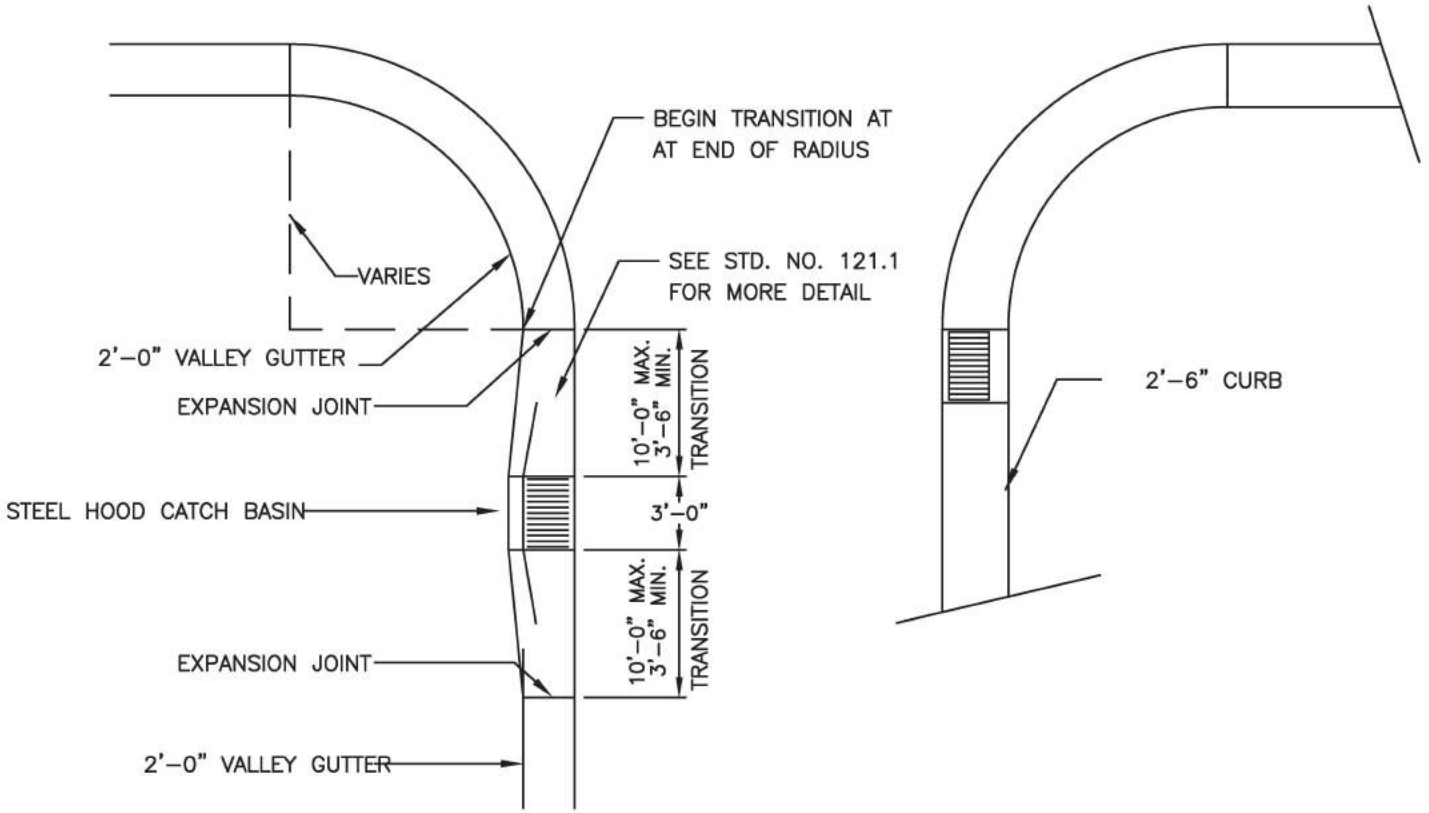
PLAN

NOTE:

* TRANSITION FROM 2'–6" STANDARD CURB TO VALLEY CURB AT A DRAINAGE INLET ONLY.
SEE STANDARD 104.1 FOR CROSS SECTION GEOMETRY.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	CATCH BASIN FRAME IN VALLEY GUTTER	REV. DATE STD. NO. 121.1

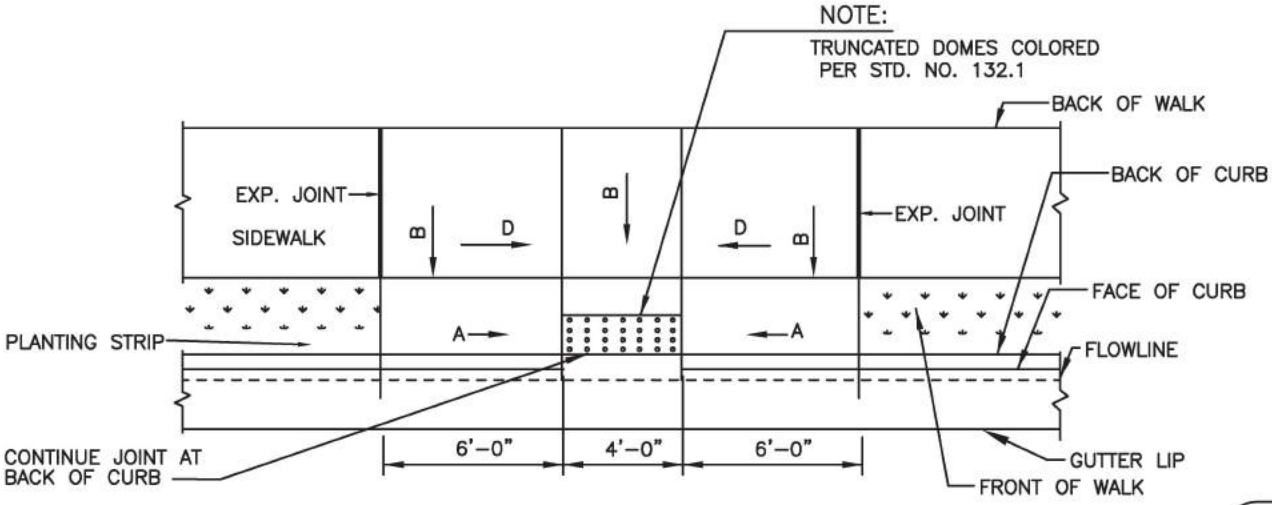


NOTE:

1. WHERE 2'–6" CURB AND GUTTER IS USED, CATCH BASINS MAY BE LOCATED AT END OF RADIUS.
2. RADIUS AT INTERSECTION MAY VARY.

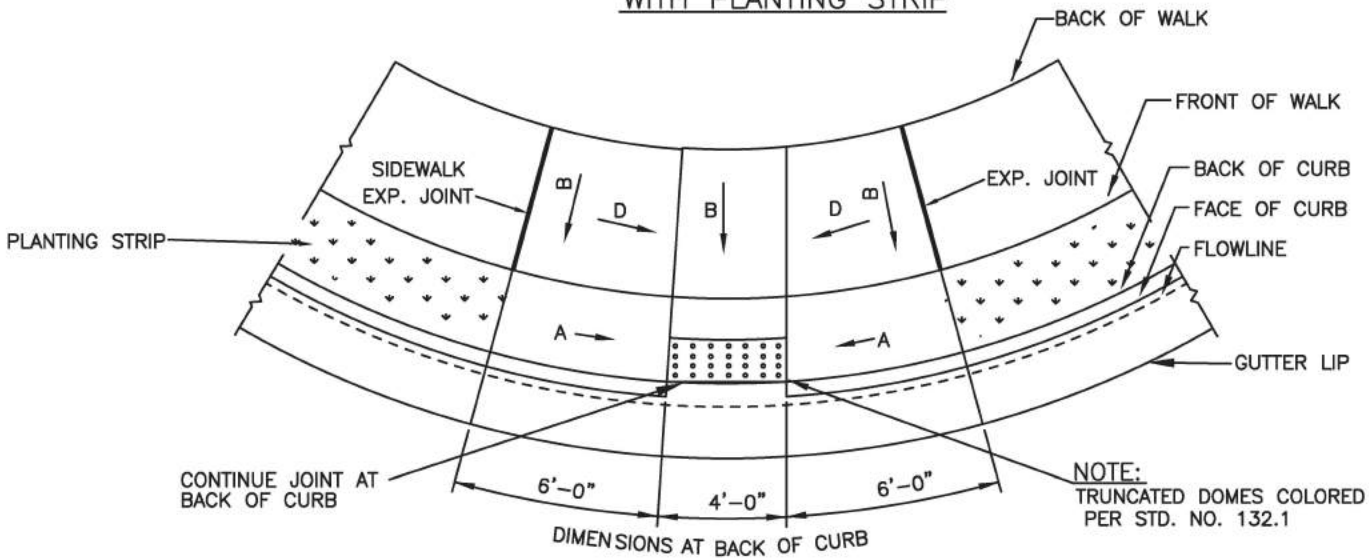
NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	CATCH BASIN PLACEMENT AT INTERSECTIONS	REV. DATE STD. NO. 122.1



PLAN VIEW–PARALLEL RAMP
WITH PLANTING STRIP

SLOPE "A"	12:1
SLOPE "B"	1/4"/FT
SLOPE "D"	3/8"/FT



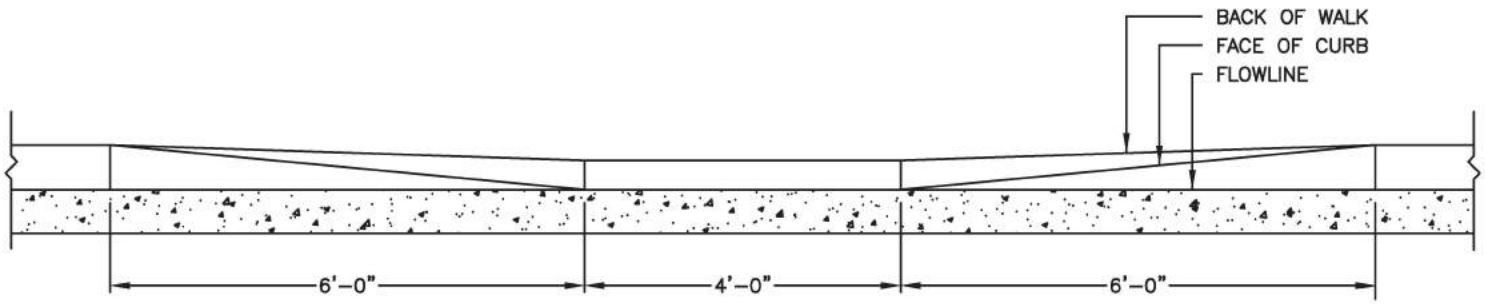
PLAN VIEW–DIAGONAL RAMP WITH PLANTING STRIP

NOT TO SCALE

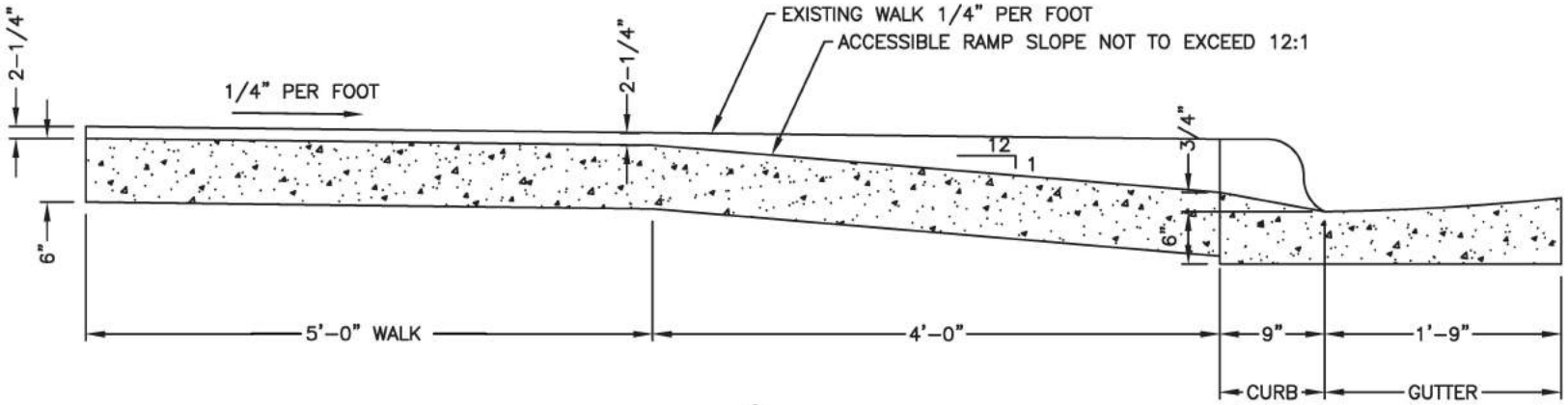
VILLAGE OF MARVIN STANDARD DRAWING

ACCESSIBLE RAMP STANDARD WITH PLANTING STRIP AND 2'–6" CURB AND GUTTER

REV. DATE
STD. NO.
123.1



ELEVATION



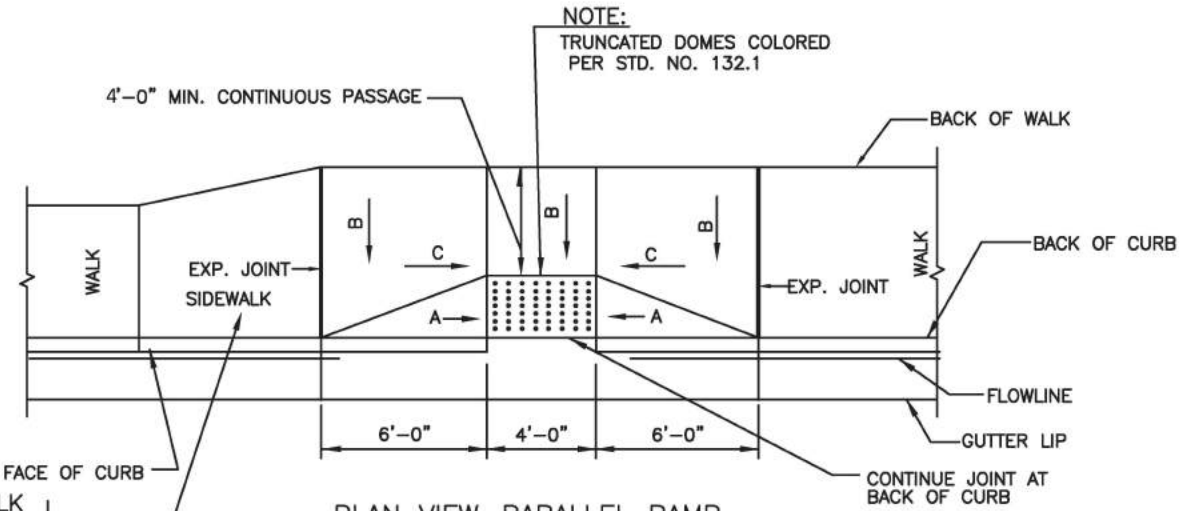
TYPICAL RAMP ℄ SECTION

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	ACCESSIBLE RAMP SECTIONS WITH PLANTING STRIP AND 2'-6" CURB AND GUTTER	REV. DATE STD. NO. 124.1

NOTES:

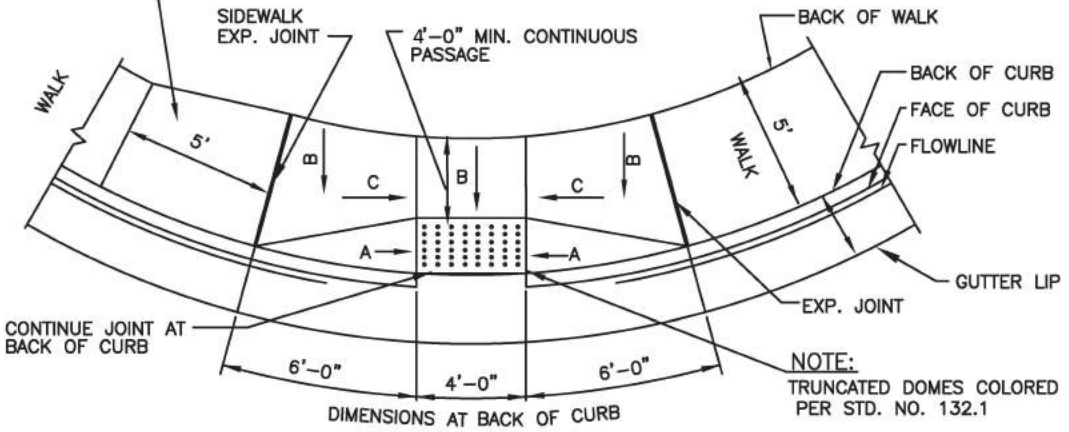
1. IF TURNING SPACE IS CONFINED BY CURB OR VERTICAL SURFACE AT BACK OF THE TURNING SPACE, THE MINIMUM WIDTH MUST INCREASE TO 5'-0" MIN.
2. ENSURE FLUSH CONDITIONS AT CURB RAMP TO GUTTER TRANSITION.



PLAN VIEW–PARALLEL RAMP WITHOUT PLANTING STRIP

5' TRANSITION FROM 6' WALK ALL WALKS MUST BE A MIN. 5' WIDTH AT RAMP.

SLOPE "A"	12:1
SLOPE "B"	1/4"/FT
SLOPE "C"	5/8"/FT



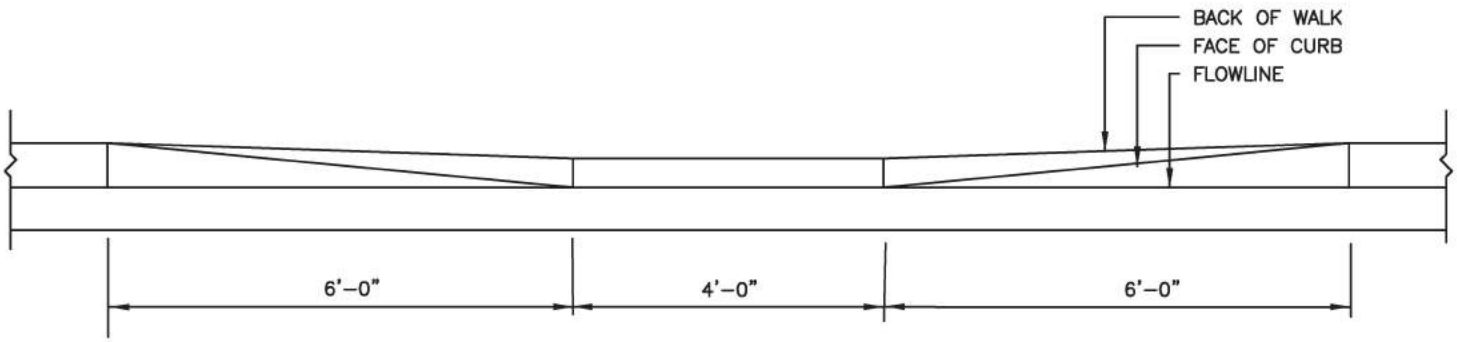
PLAN VIEW–DIAGONAL RAMP WITHOUT PLANTING STRIP

NOT TO SCALE

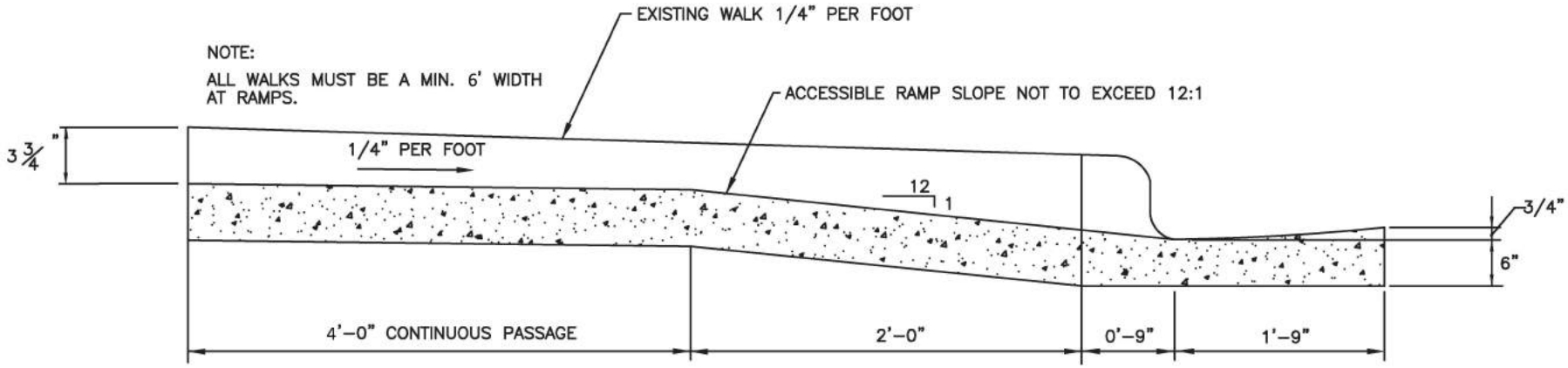
VILLAGE OF MARVIN STANDARD DRAWING

ACCESSIBLE RAMP STANDARD WITHOUT PLANTING STRIP AND 2'–6" CURB AND GUTTER

REV. DATE
STD. NO.
125.1



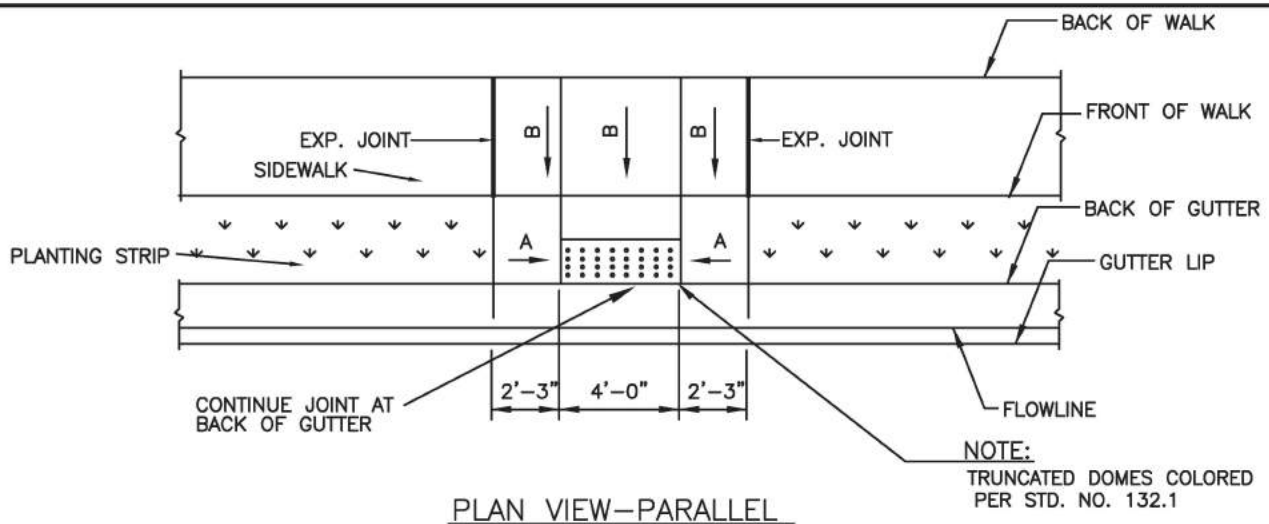
SECTION THROUGH FLOWLINE



TYPICAL RAMP L SECTION

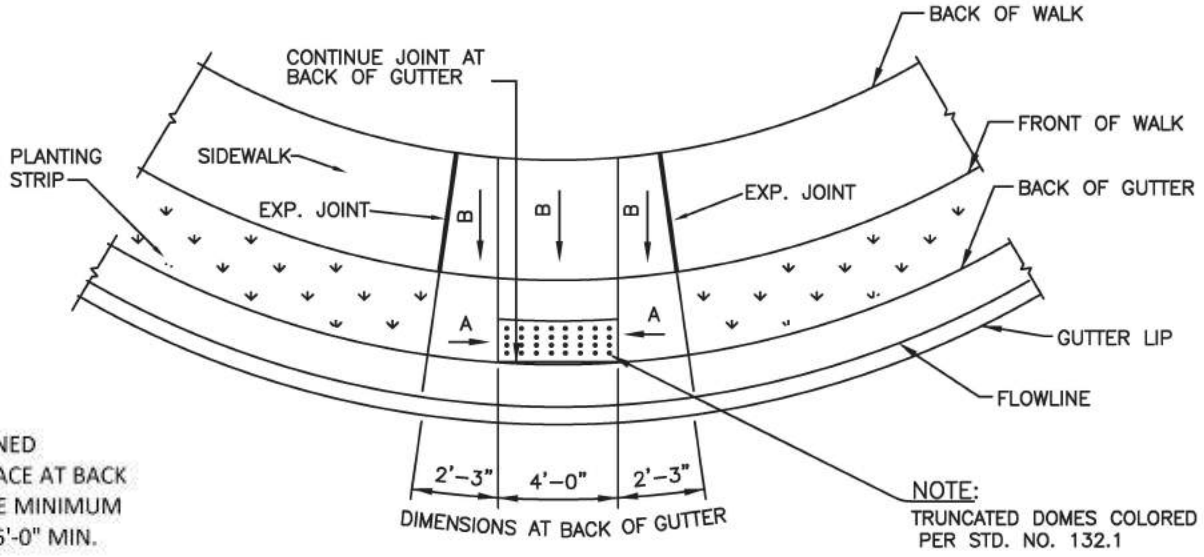
NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	ACCESSIBLE RAMP SECTIONS WITHOUT PLANTING STRIP AND 2'–6" CURB AND GUTTER	REV. DATE STD. NO. 126.1



PLAN VIEW–PARALLEL
RAMP WITH PLANTING STRIP

SLOPE "A"	12:1
SLOPE "B"	1/4"/FT



PLAN VIEW–DIAGONAL RAMP
WITH PLANTING STRIP

NOTES:

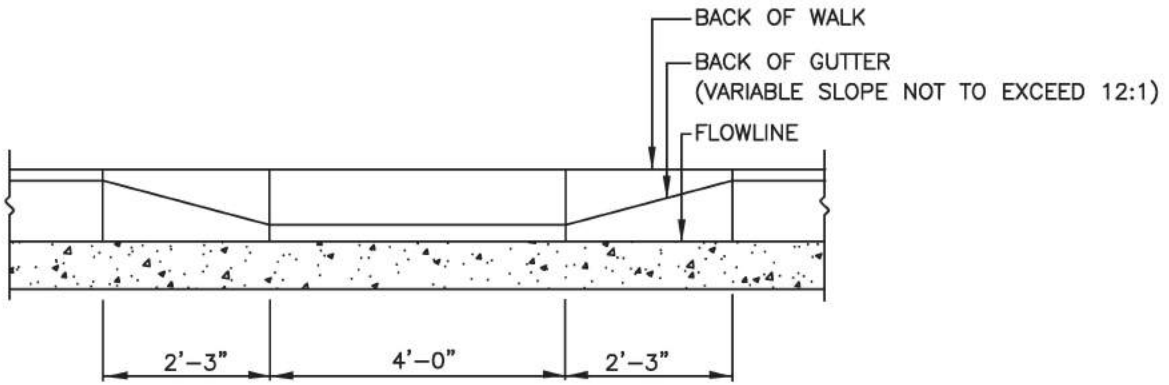
1. IF TURNING SPACE IS CONFINED BY CURB OR VERTICAL SURFACE AT BACK OF THE TURNING SPACE, THE MINIMUM WIDTH MUST INCREASE TO 5'-0" MIN.
2. ENSURE FLUSH CONDITIONS AT CURB RAMP TO GUTTER TRANSITION.

NOT TO SCALE

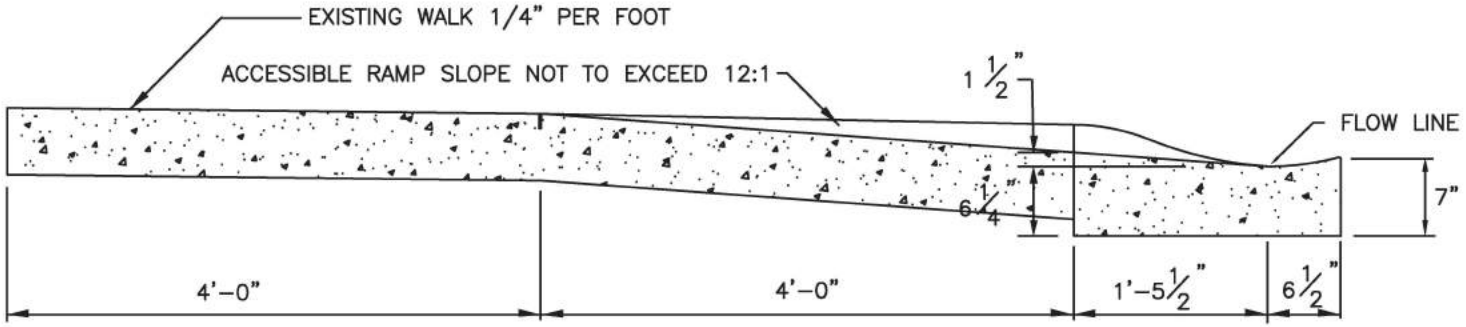
VILLAGE OF MARVIN STANDARD DRAWING

ACCESSIBLE RAMP STANDARD
2'–0" VALLEY GUTTER

REV. DATE
STD. NO.
127.1



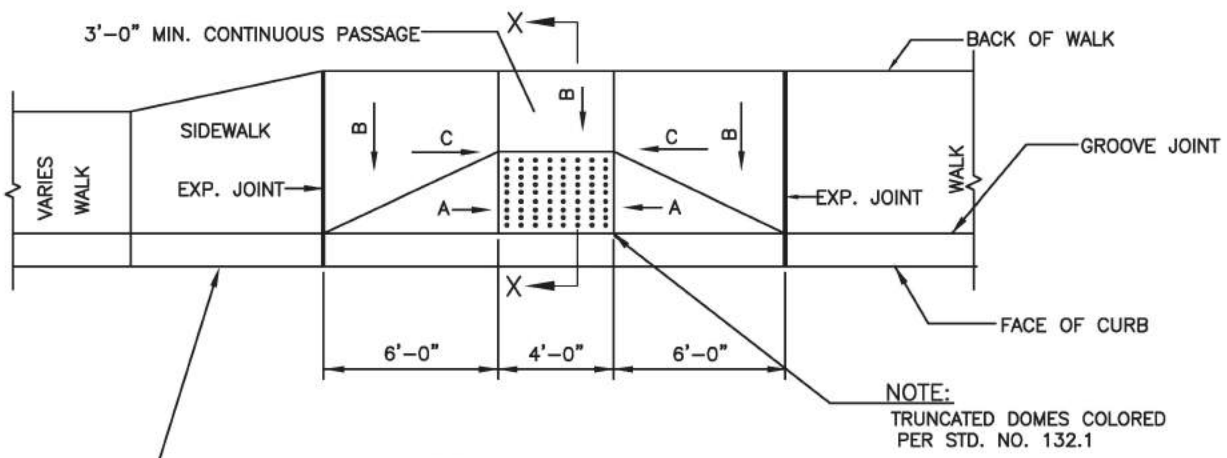
SECTION THROUGH FLOWLINE



TYPICAL RAMP ℄ SECTION

NOT TO SCALE

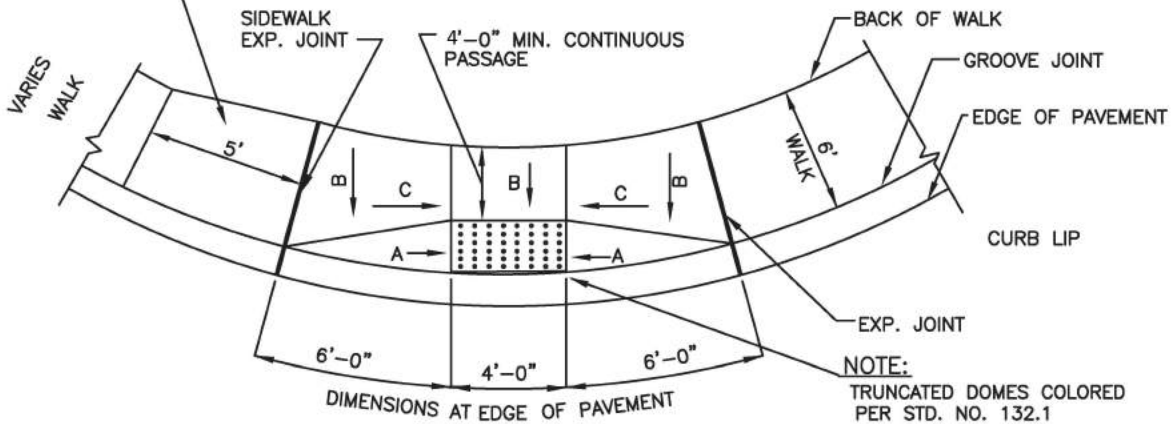
VILLAGE OF MARVIN STANDARD DRAWING	ACCESSIBLE RAMP SECTIONS 2'–0" VALLEY GUTTER	REV. DATE STD. NO. 128.1



PLAN VIEW–PARALLEL RAMP

5' TRANSITION FROM 6' WALK. ALL WALKS MUST BE A MIN. 6' WIDTH AT RAMP.

SLOPE "A"	12:1
SLOPE "B"	1/4"/FT
SLOPE "C"	1/2"/FT



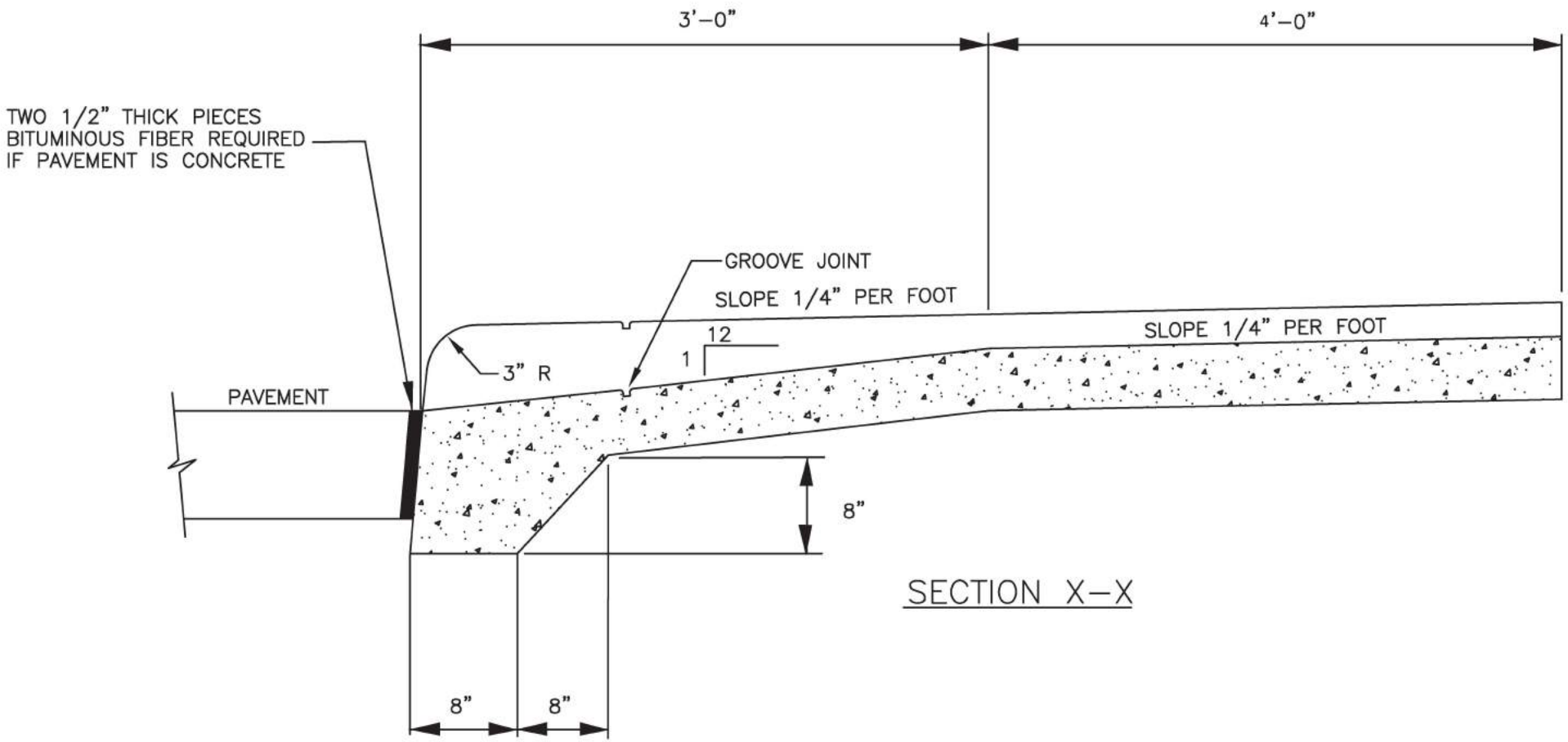
PLAN VIEW–DIAGONAL RAMP

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

ACCESSIBLE RAMP STANDARD MONOLITHIC CURB AND SIDEWALK

REV. DATE
STD. NO.
129.1



SECTION X–X

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	ACCESSIBLE RAMP SECTIONS MONOLITHIC CURB AND SIDEWALK	REV. DATE STD. NO. 130.1

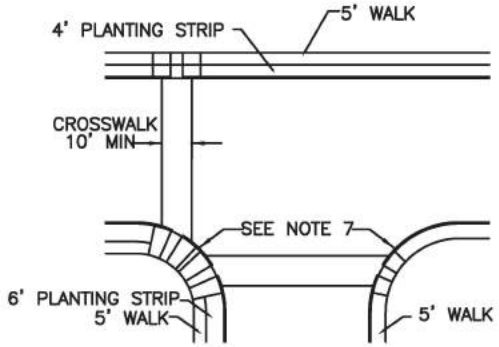
NOTES:

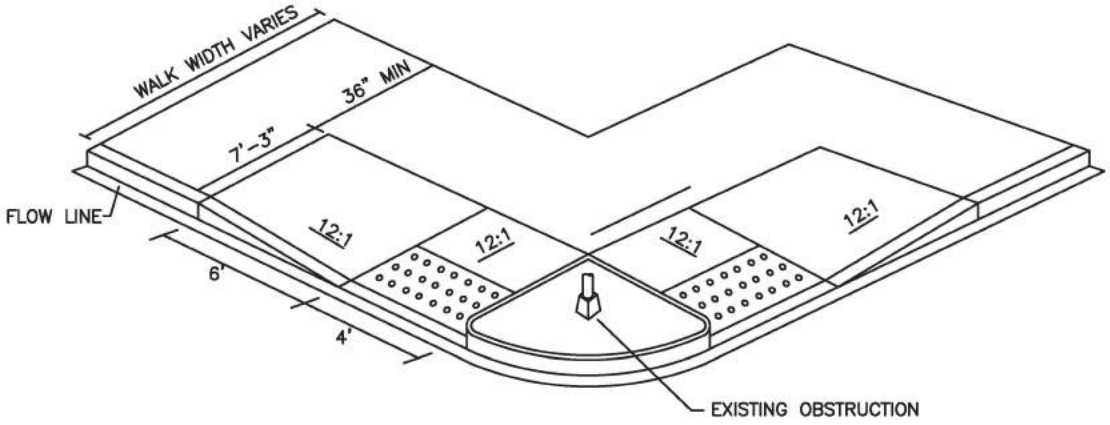
1. RAMP AND WING SLOPES SHALL NOT BE STEEPER THAN 12:1.
2. GUTTER FLOW LINE AND PLAN PROFILE SHALL BE MAINTAINED THROUGH THE RAMP AREA.
3. THE SURFACE OF THE RAMP SHALL BE FLUSH WITH THE FLOWLINE OF THE CURB AND GUTTER.
4. THE RAMP OPENING (AT THE FULLY DEPRESSED CURB) SHALL BE LOCATED WITHIN THE PARALLEL BOUNDARIES OF THE CROSSWALK MARKINGS. THE RAMP CENTERLINE SHALL BE LOCATED AT THE CORNER RADIUS CENTERLINE UNLESS OTHERWISE DIRECTED BY THE ENGINEER. DIAGONAL CURB RAMPS SHALL HAVE A SEGMENT OF STRAIGHT CURB AT LEAST 24 INCHES LONG LOCATED ON EACH SIDE OF THE WING SLOPE AND WITHIN THE CROSSWALK MARKINGS.
5. THE WING AND RAMP SURFACES SHALL BE 3600 PSI CONCRETE WITH A SIDEWALK FINISH IN ACCORDANCE WITH CURRENT EDITION NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.
6. DRAINAGE STRUCTURES, MAST ARMS, LIGHT POLES AND OTHER OBSTRUCTIONS SHALL NOT BE PLACED IN LINE WITH RAMPS. LOCATION OF THE RAMP SHALL TAKE PRECEDENCE OVER LOCATION OF OBSTRUCTIONS EXCEPT WHERE EXISTING OBSTRUCTIONS ARE BEING UTILIZED IN THE NEW CONSTRUCTION.
7. AT ALL LOCATIONS, NOT LESS THAN 2 FEET OF FULL HEIGHT CURB SHALL BE PLACED BETWEEN THE RAMPS.
8. SEE STANDARD DRAWING 132.1 FOR DETECTABLE WARNING INSTALLATION.

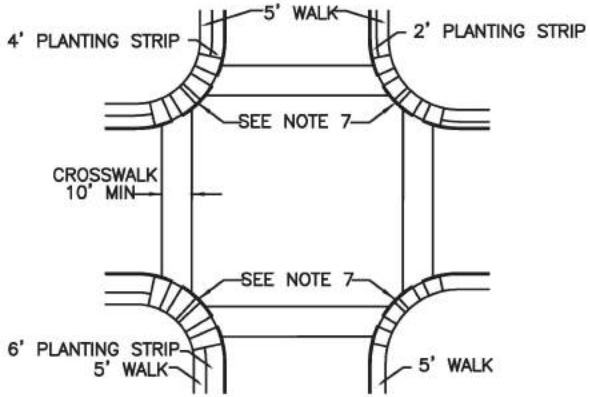
ROADWAY PLAN SYMBOL

(ACC)

FOR PROPOSED ACCESSIBLE RAMP



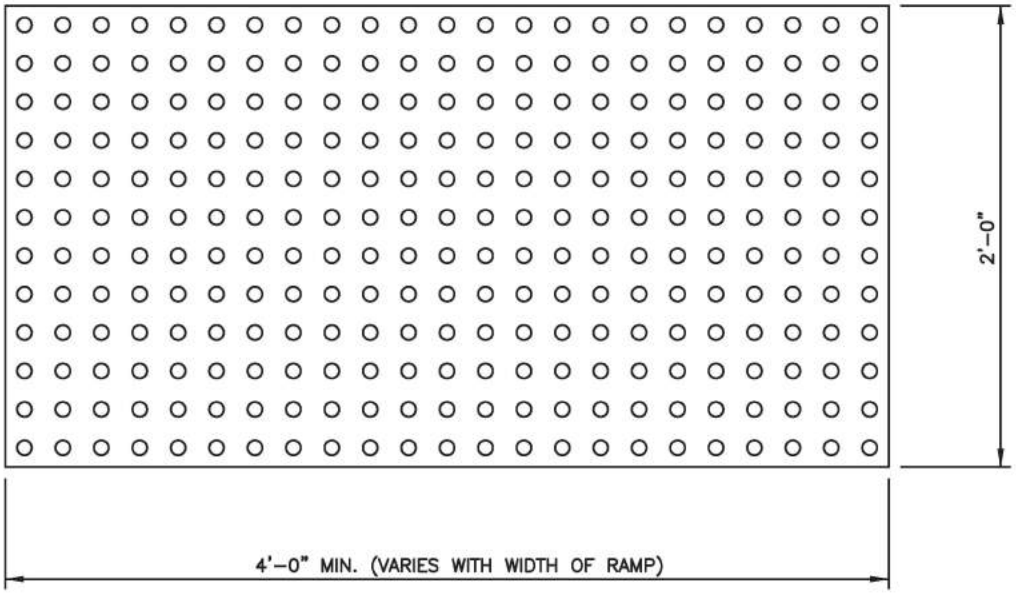




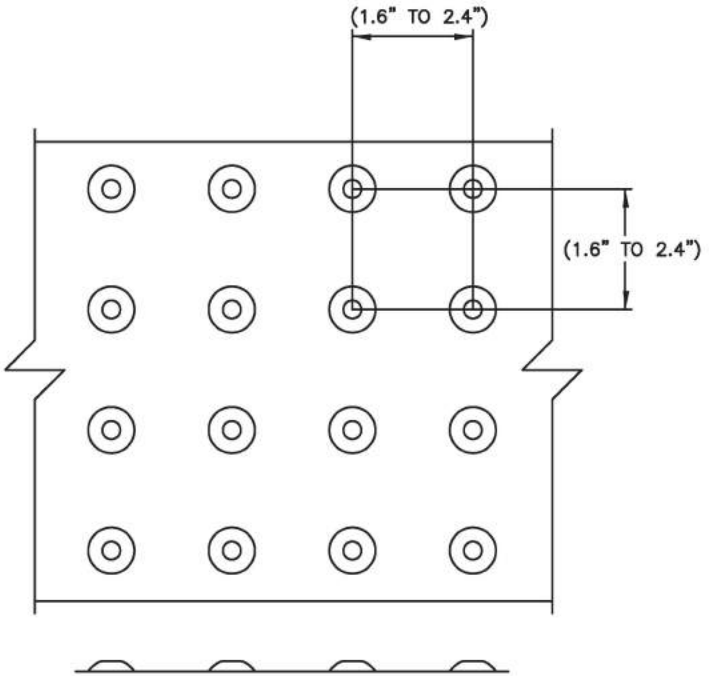
TYPICAL LOCATION OF ACCESSIBLE RAMPS AND PEDESTRIAN CROSSWALKS ON

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	STANDARD PLACEMENT OF ACCESSIBLE RAMP AND GENERAL NOTES	REV. DATE
		STD. NO. 131.1



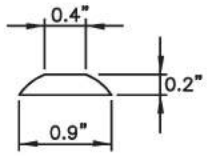
TRUNCATED DOME PLAN VIEW



TRUNCATED DOME SPACING

NOTES:

1. ALL DETECTABLE WARNING DEVICES USED IN NEW CONSTRUCTION SHALL BE OF A RIDGID PRECAST OR EMBEDDED PRODUCT APPROVED BY THE ENGINEER. RETRO FIT MATS WILL ONLY BE ALLOWED ON EXISTING RAMPS WITH PRIOR APPROVAL OF THE ENGINEER FOR MATERIAL TYPE AND INSTALLATION (IE. RESURFACING).
2. WIDTH OF DETECTABLE WARNING AREA SHALL BE A MINIMUM OF 4 FEET AND VARY WITH WIDTH OF RAMP.
3. LENGTH OF DETECTABLE WARNING AREA SHALL BE 2 FEET REGARDLESS OF SECTION WIDTH.
4. DETECTABLE WARNING AREA CAN BE SQUARE WHERE USED IN A CURB RADIUS.
5. DETECTABLE WARNING DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT DIRECTION OF OF TRAVEL TO PERMIT WHEELS TO ROLL BETWEEN DOMES.
6. DECTECTABLE WARNING AREA SHALL BE COLORED BLACK IN ALL LOCATIONS.
7. IF PAVERS ARE TO BE USED, PAVERS SHALL BE 6" THICK AND CAST FROM 5000 psi CONCRETE.
8. MATS ARE TO BE RIGID WITH TURN DOWN EDGES EMBEDDED IN CONCRETE TO ELIMINATE TRIP HAZARD.



TRUNCATED DOME SECTION

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	TRUNCATED DOMES PLAN AND CROSS SECTION	REV. DATE STD. NO. 132.1

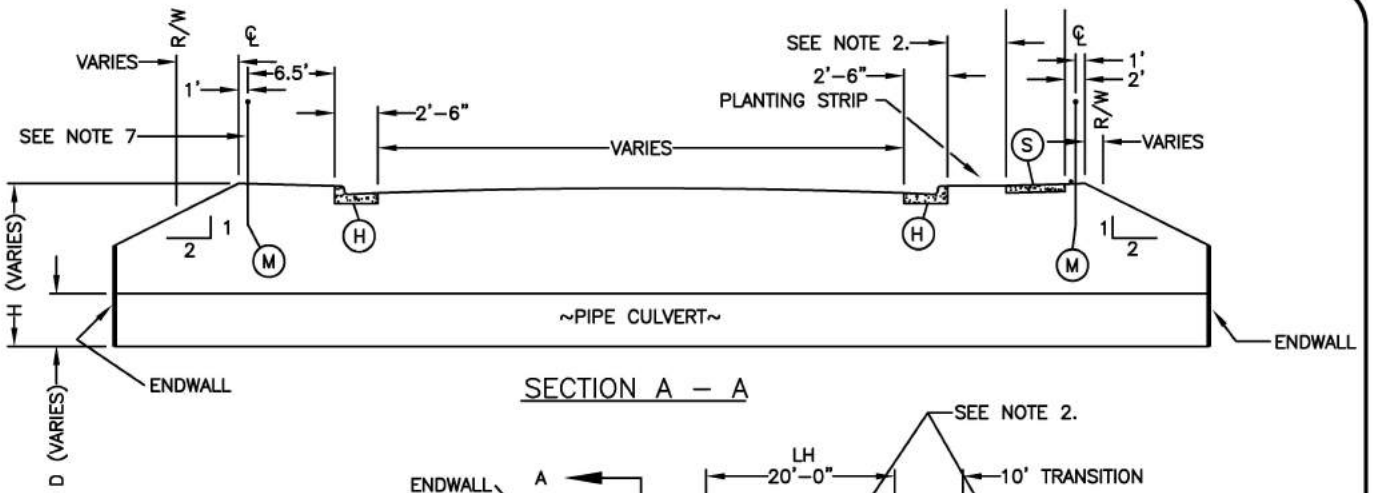
(H) 2'–6" CURB AND GUTTER, STD. 100.1

(M) HANDRAIL, STD. 700.1 & 701.1

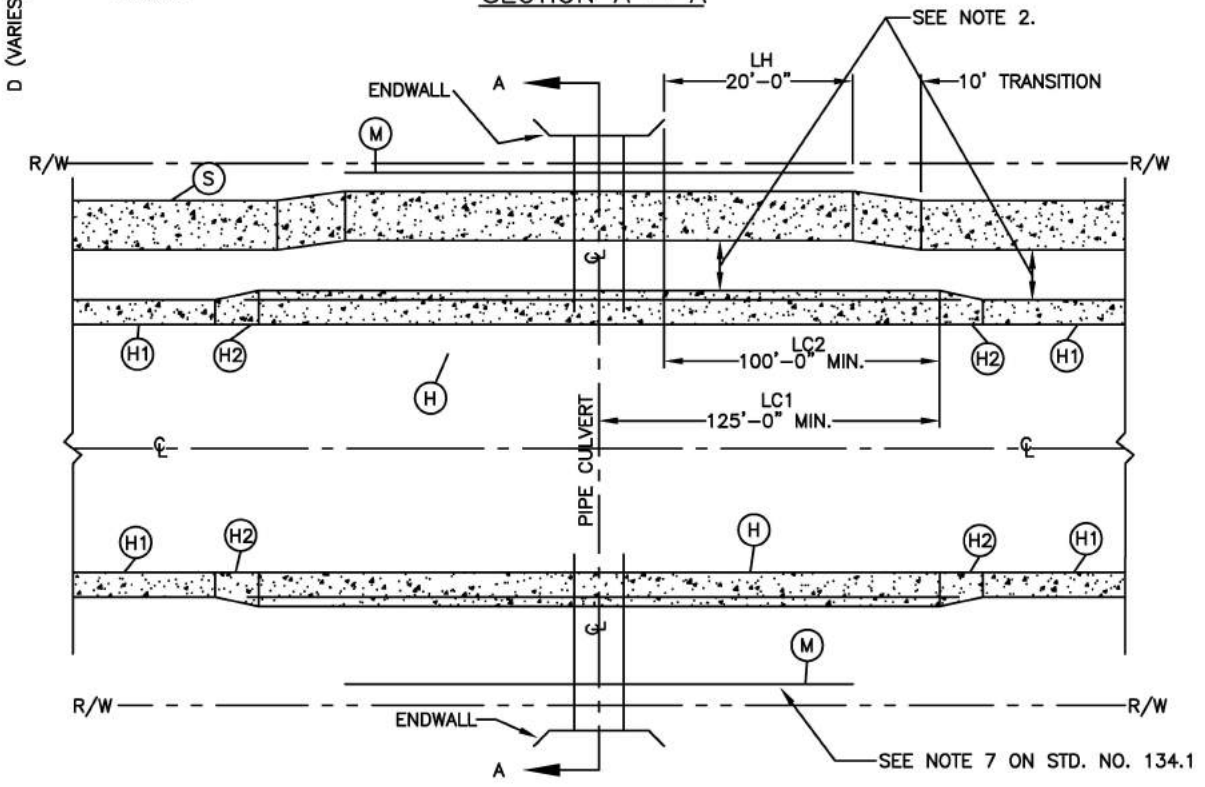
(S) 5'–0" SIDEWALK

(H1) 2'–0" VALLEY GUTTER. STD. 101.1

(H2) CURB TRANSITION 2'–6" CURB AND GUTTER TO 2'–0" VALLEY GUTTER, STD. 104.1



SECTION A – A



LH = DISTANCE FROM END OF WINGWALL TO END OF HANDRAIL.

LC1 = DISTANCE FROM ℄ OF CULVERT TO END OF 2'–6" CURB AND GUTTER GUTTER.

LC2 = DISTANCE FROM END OF WINGWALL TO END OF 2'–6" CURB AND GUTTER.

NOTES:

1. SEE STD. NO. 134.1 FOR GENERAL NOTES AND CLEAR ZONE DISTANCES
2. PLANTING STRIP WIDTH TO BE IN ACCORDANCE WITH CROSS SECTION PER VILLAGE REQUIREMENTS.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

CULVERT CROSSINGS ON RESIDENTIAL AND COMMERCIAL STREETS

REV. DATE
STD. NO.
133.1

GENERAL NOTES:

1. UNLESS OTHERWISE DETERMINED BY THE VILLAGE ENGINEER, THE MEASURES ILLUSTRATED SHALL BE USED WHEN CULVERT DIAMETER, D, IS GREATER THAN OR EQUAL TO 24 INCHES AND WHEN THE DIFFERENCE IN ELEVATION BETWEEN THE CULVERT INVERT AND THE TOP OF SLOPE, H, IS GREATER THAN OR EQUAL TO 5 FEET.
2. INSTALLATION OF 2'–6" CURB AND GUTTER MAY NOT BE REQUIRED WHEN AN ADEQUATE CLEAR ZONE IS PROVIDED FOR VEHICLES WITH A MAXIMUM OF 6:1 SLOPE (SEE TABLE 1).
3. INSTALLATION OF HANDRAIL MAY NOT BE REQUIRED WHEN A 10–FOOT PEDESTRIAN CLEAR ZONE IS PROVIDED BEHIND THE SIDEWALK WITH A MAXIMUM OF 6:1 SLOPE. WHERE NO SIDEWALK IS REQUIRED, INSTALLATION OF HANDRAIL MAY NOT BE REQUIRED WHEN A 15–FOOT PEDESTRIAN CLEAR ZONE IS PROVIDED BEHIND THE CURB WITH A MAXIMUM OF 6:1 SLOPE.
4. FOR CULVERT CROSSINGS WITHOUT ENDWALLS, LH AND LC2 SHALL BE MEASURED FROM THE OUTSIDE OF THE NEAREST WALL OF THE CULVERT BARREL.
5. FOR MULITIPLE BARREL CULVERT CROSSINGS, LC1 SHALL BE MEASURED FROM THE CENTERLINES OF THE OUTBOARD CULVERT BARRELS.
6. WHEN NECESSARY, AS DETERMINED BY THE VILLAGE ENGINEER, ADDITIONAL MEASURES MAY BE REQUIRED.
7. INSTALLATION OF HANDRAIL IS REQUIRED ON BOTH SIDES OF STREET IF SIDEWALK IS REQUIRED ON BOTH SIDES.
8. INSTALLATION OF HANDRAIL IS REQUIRED ON BOTH SIDES OF STREET IF NO SIDEWALK IS REQUIRED EXCEPT WHEN A 15–FOOT PEDESTRIAN CLEAR ZONE IS PROVIDED BEHIND THE CURB WITH A MAXIMUM OF 6:1 SLOPE.
9. INSTALLATION OF HANDRAIL IS REQUIRED ON THE SIDEWALK SIDE OF STREET IF SIDEWALK IS ONLY REQUIRED ON ONE SIDE OF STREET. PROVIDE HANDRAIL OR 15 FOOT CLEAR ZONE ON SIDE WITHOUT SIDEWALK.
10. DESIGN ADT IS CALCULATED ASSUMING A TRIP GENERATION OF 10 DAILY TRIPS PER SINGLE FAMILY DWELLING UNIT.

TABLE 1.
CLEAR ZONE DISTANCES
LOCAL, COLLECTOR, AND COMMERCIAL STREETS

DESIGN ADT	CLEAR ZONE FROM EDGE OF PAVEMENT	
	TANGENT SECTION	CURVE (WITHIN 125' OF CULVERT)
UNDER 750	10'	15'
750 – 1500	12'	18'
1501 – 6000	14'	21'
OVER 6000	16'	24'

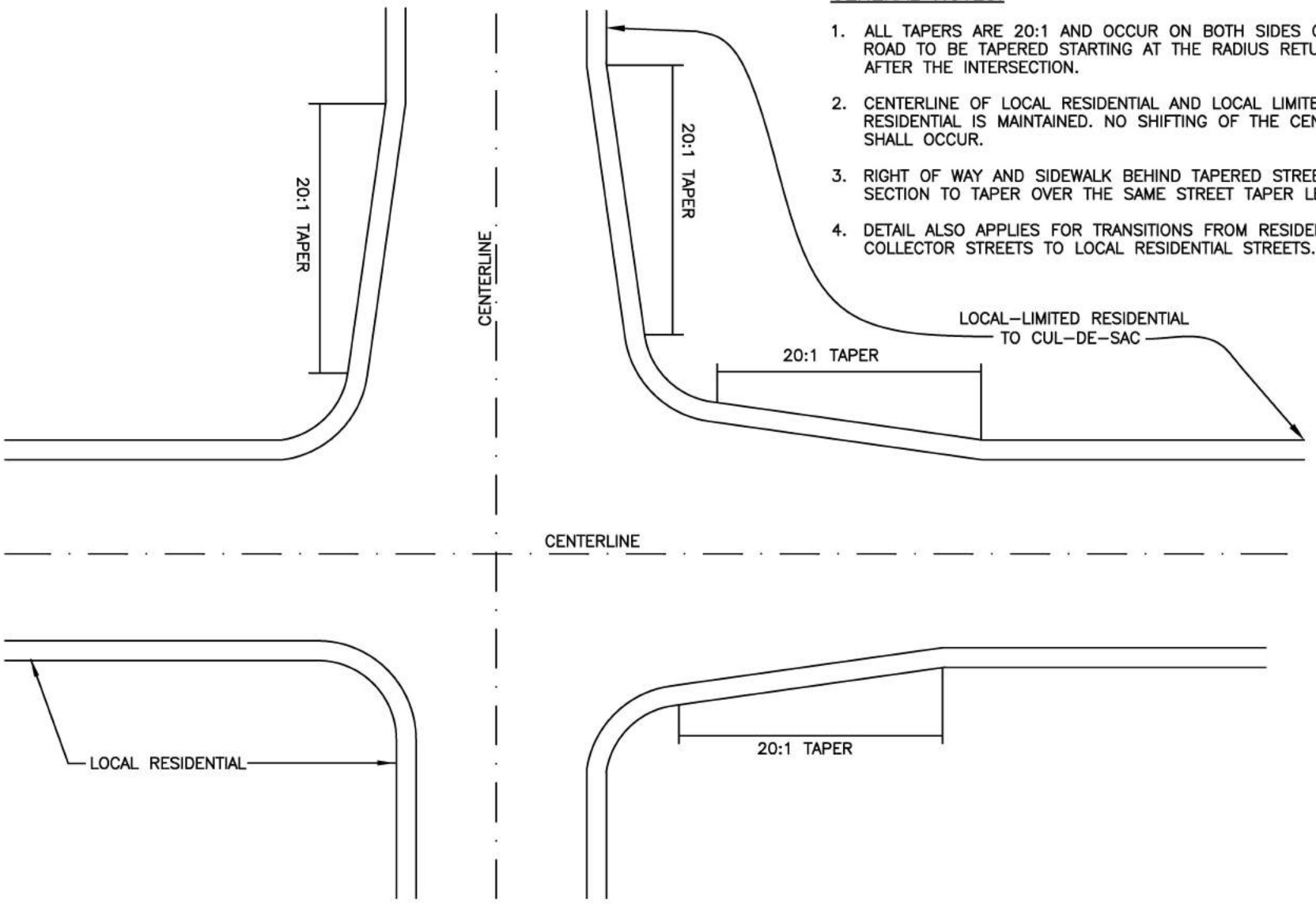
SEE STD. NO. 133.1 FOR PLAN AND CROSS SECTIONAL SCHEMATICS.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

CULVERT CROSSINGS ON RESIDENTIAL AND COMMERCIAL STREETS

REV. DATE
STD. NO.
134.1



GENERAL NOTES:

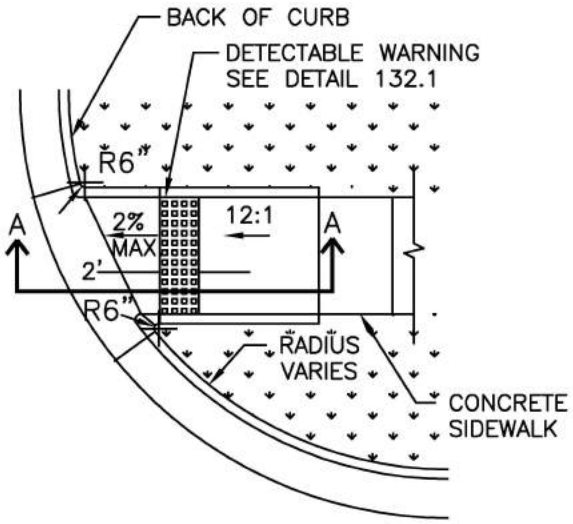
1. ALL TAPERS ARE 20:1 AND OCCUR ON BOTH SIDES OF THE ROAD TO BE TAPERED STARTING AT THE RADIUS RETURN AFTER THE INTERSECTION.
2. CENTERLINE OF LOCAL RESIDENTIAL AND LOCAL LIMITED RESIDENTIAL IS MAINTAINED. NO SHIFTING OF THE CENTERLINE SHALL OCCUR.
3. RIGHT OF WAY AND SIDEWALK BEHIND TAPERED STREET SECTION TO TAPER OVER THE SAME STREET TAPER LENGTH.
4. DETAIL ALSO APPLIES FOR TRANSITIONS FROM RESIDENTIAL COLLECTOR STREETS TO LOCAL RESIDENTIAL STREETS.

NOT TO SCALE

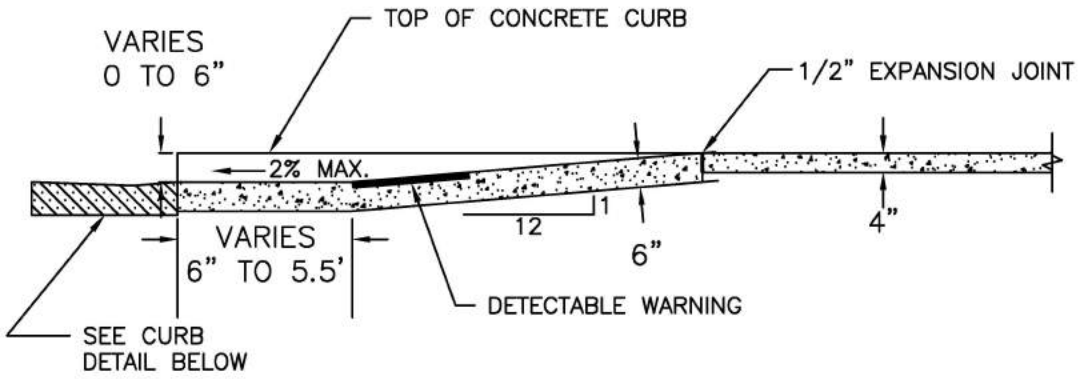
VILLAGE OF MARVIN STANDARD DRAWING

TYPICAL LOCAL RESIDENTIAL TO LOCAL LIMITED RESIDENTIAL STREET TAPER

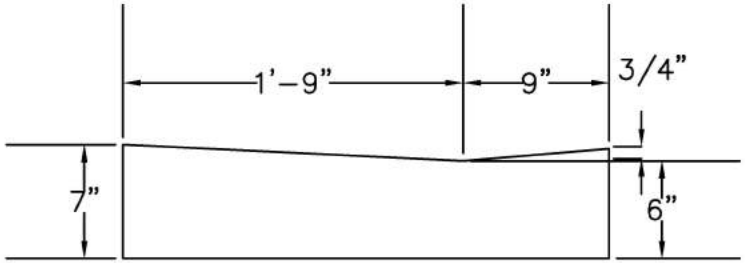
REV. DATE
STD. NO.
135.1



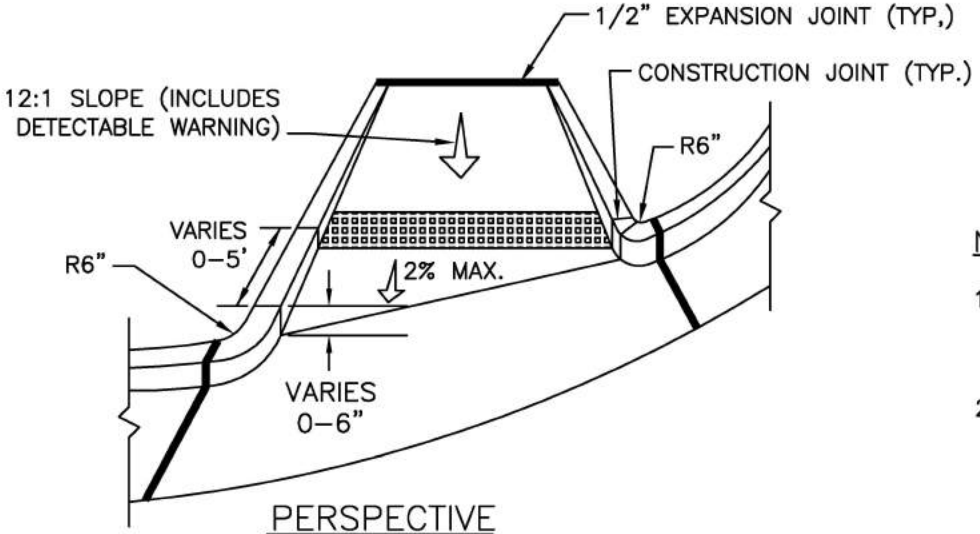
PLAN



SECTION A–A



CURB DETAIL



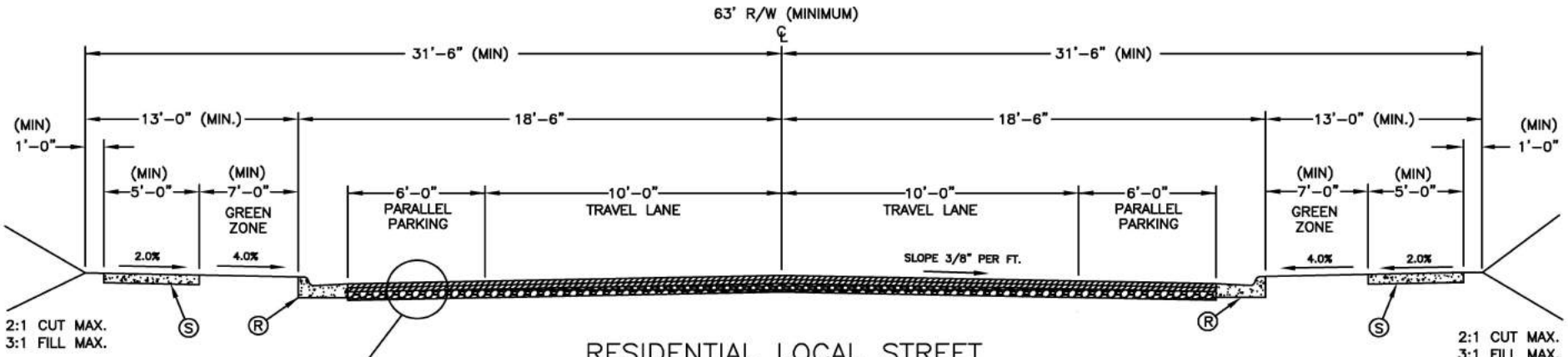
PERSPECTIVE

NOTES:

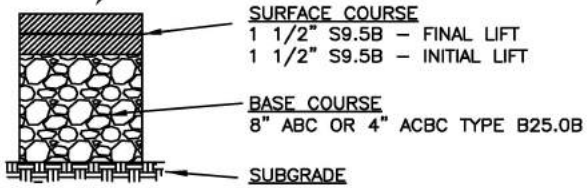
1. DIRECTIONAL RAMPS MAY BE USED WHEN A PLANTING STRIP IS PROVIDED. DO NOT USE THIS DETAIL IF THERE IS HARDSCAPE INSTEAD OF A PLANTING STRIP.
2. ALL CONCRETE SHALL BE AT LEAST 3600 PSI.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	DIRECTIONAL ACCESSIBLE RAMP	REV. DATE
		STD. NO. 136.1



RESIDENTIAL LOCAL STREET



TYPICAL PAVEMENT SECTION

NOTES:

1. SIDEWALK SHALL BE PROVIDED ON BOTH SIDES OF THE STREET.

2. SEE SECTION II. B. FOR ADDITIONAL DESIGN CRITERIA.

3. REFER TO STANDARD DRAWING 285.1 FOR PARALLEL PARKING LAYOUT.

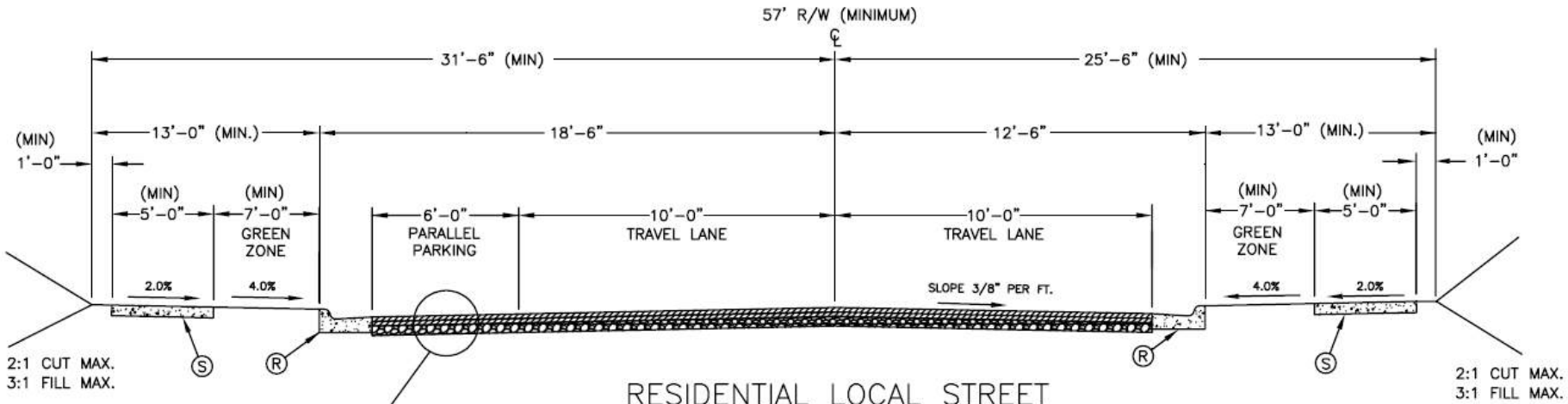
KEY

Ⓡ 2'–6" STD. CURB AND GUTTER

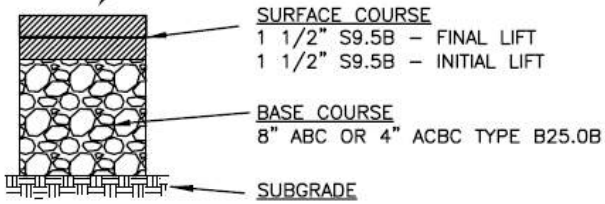
Ⓢ 4" CONCRETE SIDEWALK

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	RESIDENTIAL LOCAL STREET PARKING ON BOTH SIDES OF STREET TYPICAL SECTION	REV. DATE STD. NO. 200.1



RESIDENTIAL LOCAL STREET



TYPICAL PAVEMENT SECTION

KEY

Ⓡ 2'-6" STD. CURB AND GUTTER

Ⓢ 4" CONCRETE SIDEWALK

NOTES:

1. SIDEWALK SHALL BE PROVIDED ON BOTH SIDES OF THE STREET.

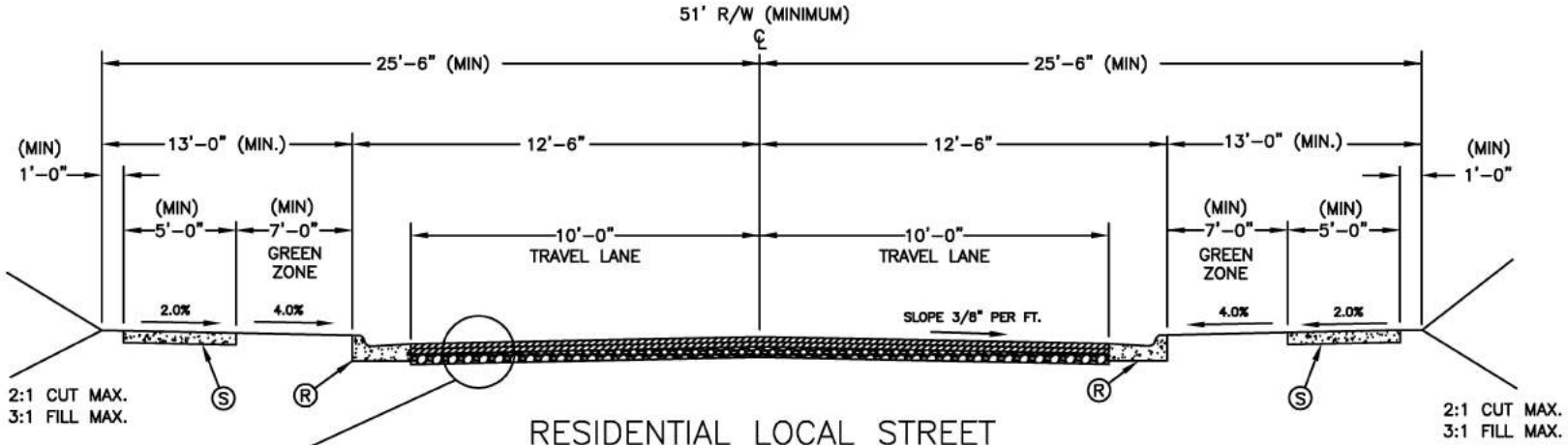
2. SEE SECTION II. B. FOR ADDITIONAL DESIGN CRITERIA.

3. 2'-0" VALLEY GUTTER MAY BE SUBSTITUTED FOR 2'-6" CURB AND GUTTER ON THE SIDE OF THE STREET WITHOUT PARALLEL PARKING. THIS REDUCES THE MINIMUM RIGHT-OF-WAY BY SIX INCHES. 2'-0" VALLEY GUTTER MAY NOT BE SUBSTITUTED FOR 2'-6" CURB AND GUTTER ON THE SIDE OF THE STREET WITH PARALLEL PARKING.

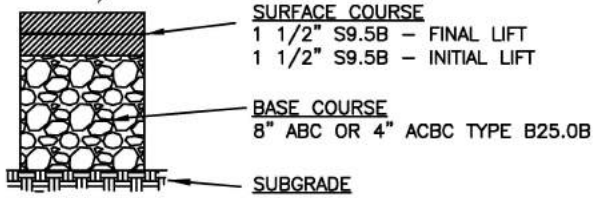
4. REFER TO STANDARD DRAWING 285.1 FOR PARALLEL PARKING LAYOUT.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	RESIDENTIAL LOCAL STREET PARKING ON ONE SIDE OF STREET TYPICAL SECTION	REV. DATE STD. NO. 200.2



RESIDENTIAL LOCAL STREET



TYPICAL PAVEMENT SECTION

NOTES:

1. SIDEWALK SHALL BE PROVIDED ON BOTH SIDES OF THE STREET.

2. SEE SECTION II. B. FOR ADDITIONAL DESIGN CRITERIA.

3. 2'–0" VALLEY GUTTER MAY BE SUBSTITUTED FOR 2'–6" CURB AND GUTTER. THIS REDUCES THE MINIMUM RIGHT–OF–WAY BY ONE FOOT.

KEY

Ⓡ 2'–6" STD. CURB AND GUTTER

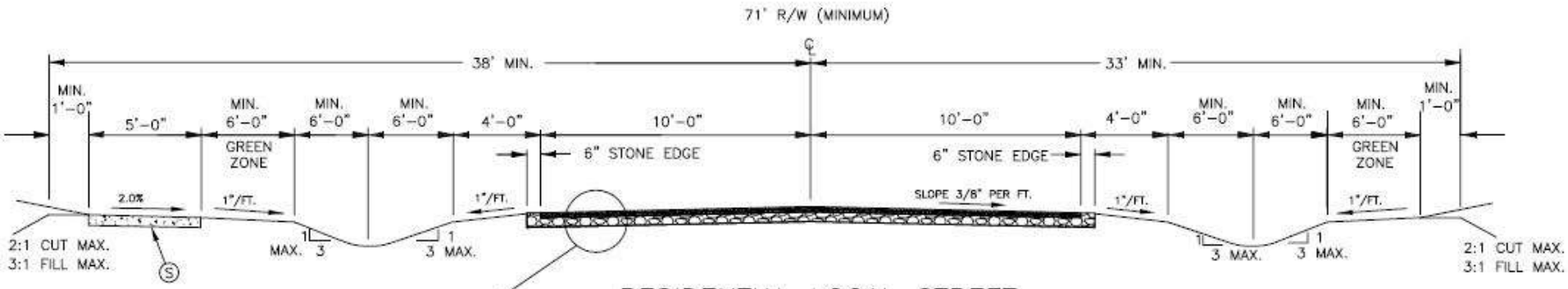
Ⓢ 4" CONCRETE SIDEWALK

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

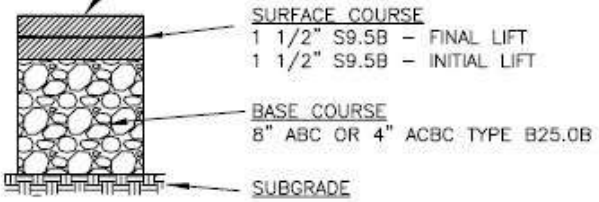
RESIDENTIAL LOCAL STREET NO ON STREET PARKING TYPICAL SECTION

REV. DATE
STD. NO.
200.3



RESIDENTIAL LOCAL STREET

(DITCH TYPE)



TYPICAL PAVEMENT SECTION

NOTES:

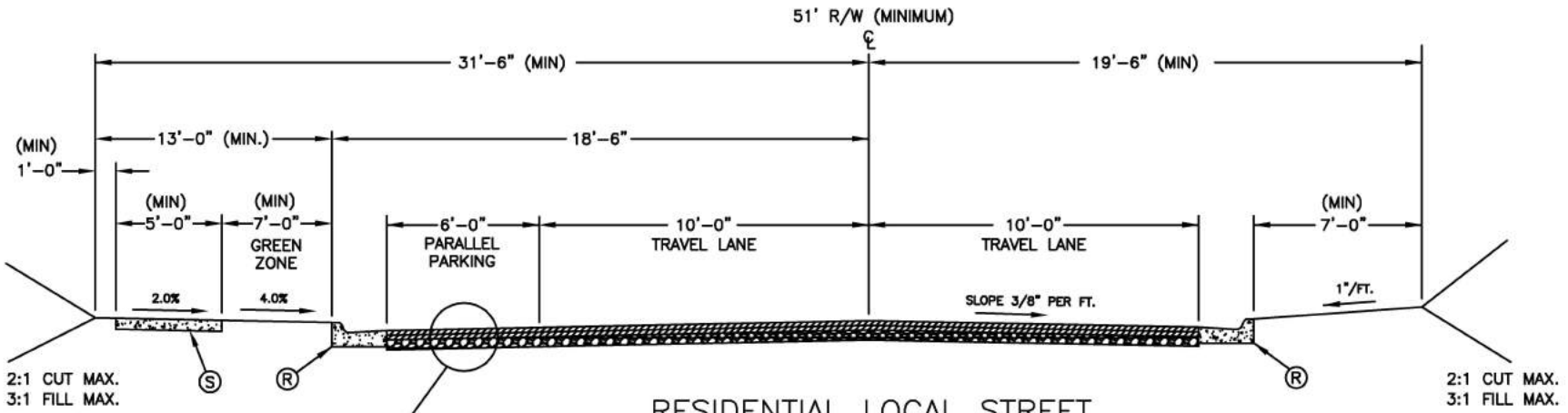
1. APPROVAL BY THE ENGINEER IS REQUIRED PRIOR TO USING DITCH TYPE SECTION.
2. SEE SECTION II. B. FOR ADDITIONAL DESIGN CRITERIA.
3. TREES TO BE PLACED IN THE GREEN ZONE 3.5 FEET FROM EDGE OF SIDEWALK.

KEY

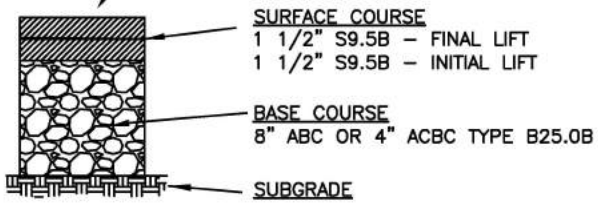
(S) 4" CONCRETE SIDEWALK

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	RESIDENTIAL LOCAL STREET DITCH TYPE TYPICAL SECTION	REV. DATE STD. NO. 200.4



RESIDENTIAL LOCAL STREET



TYPICAL PAVEMENT SECTION

KEY

Ⓡ 2'–6" STD. CURB AND GUTTER

Ⓢ 4" CONCRETE SIDEWALK

NOTES:

1. SIDEWALK SHALL BE PROVIDED ON THE BUILDING SIDE OF STREET.

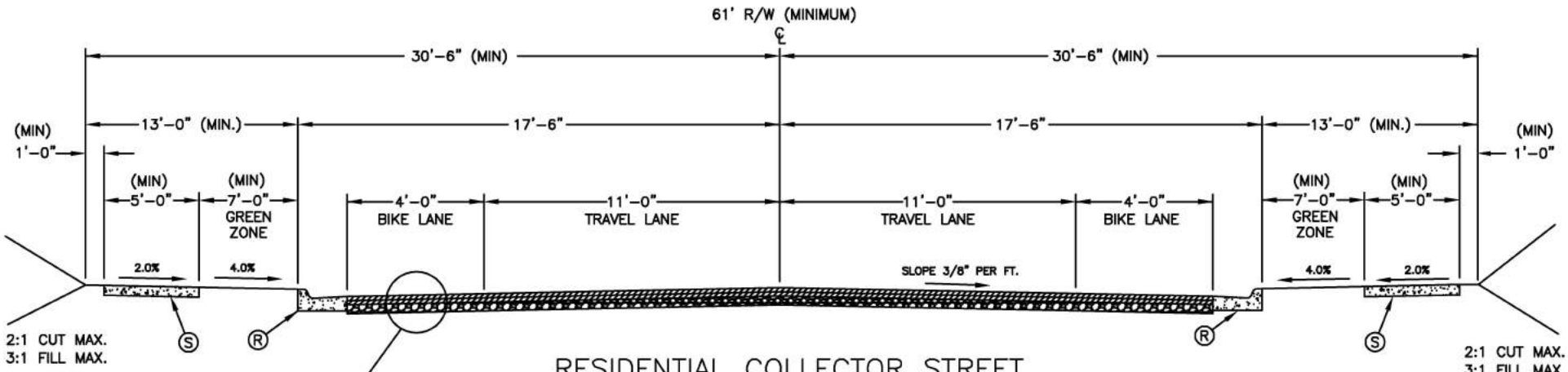
2. SEE SECTION II. B. FOR ADDITIONAL DESIGN CRITERIA.

3. 2'–0" VALLEY GUTTER MAY BE SUBSTITUTED FOR 2'–6" CURB AND GUTTER ON THE SIDE OF THE STREET WITHOUT PARALLEL PARKING. THIS REDUCES THE MINIMUM RIGHT–OF–WAY BY SIX INCHES. 2'–0" VALLEY GUTTER MAY NOT BE SUBSTITUTED FOR 2'–6" CURB AND GUTTER ON THE SIDE OF THE STREET WITH PARALLEL PARKING.

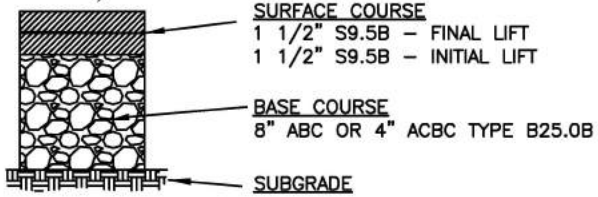
4. REFER TO STANDARD DRAWING 285.1 FOR PARALLEL PARKING LAYOUT.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	RESIDENTIAL LOCAL STREET PARKING ON ONE SIDE/OPEN SPACE ON OTHER TYPICAL SECTION	REV. DATE STD. NO. 200.5



RESIDENTIAL COLLECTOR STREET



TYPICAL PAVEMENT SECTION

NOTES:

1. SIDEWALK SHALL BE PROVIDED ON BOTH SIDES OF THE STREET.
2. SEE SECTION II. B. FOR ADDITIONAL DESIGN CRITERIA.
3. BIKE LANE TO BE STRIPED.

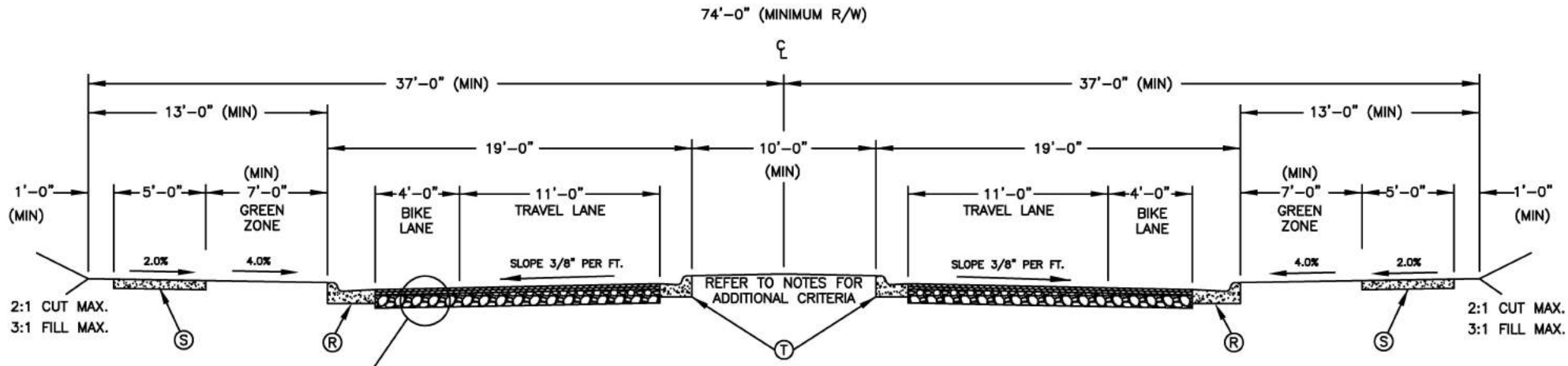
KEY

Ⓡ 2'–6" STD. CURB AND GUTTER

Ⓢ 4" CONCRETE SIDEWALK

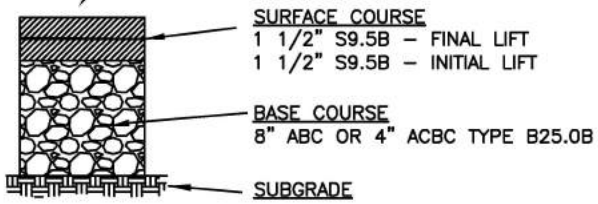
NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	# RESIDENTIAL COLLECTOR STREET WITH BIKE LANES TYPICAL SECTION	REV. DATE STD. NO. 210.1



RESIDENTIAL DIVIDED COLLECTOR STREET

(TWO LANE SECTION)



TYPICAL PAVEMENT SECTION

KEY

- Ⓡ 2'–6" STD. CURB AND GUTTER
- Ⓢ 4" CONCRETE SIDEWALK
- Ⓣ 1'–6" MEDIAN CURB AND GUTTER

NOTES:

1. CURB RETURN RADIUS DIMENSIONS AT INTERSECTIONS MAY VARY DEPENDING ON MEDIAN WIDTH AND WILL BE APPROVED ON A CASE BY CASE BASIS.

2. SUBDRAINS ARE REQUIRED ON ALL MEDIANS. (TO BE TIED INTO STORM DRAINAGE SYSTEM.) REFER TO SUBDRAIN STANDARD DETAIL 312.1.

3. MEDIAN PLANTINGS SHALL NOT OBSTRUCT INTERSECTION SIGHT DISTANCE REQUIREMENTS.

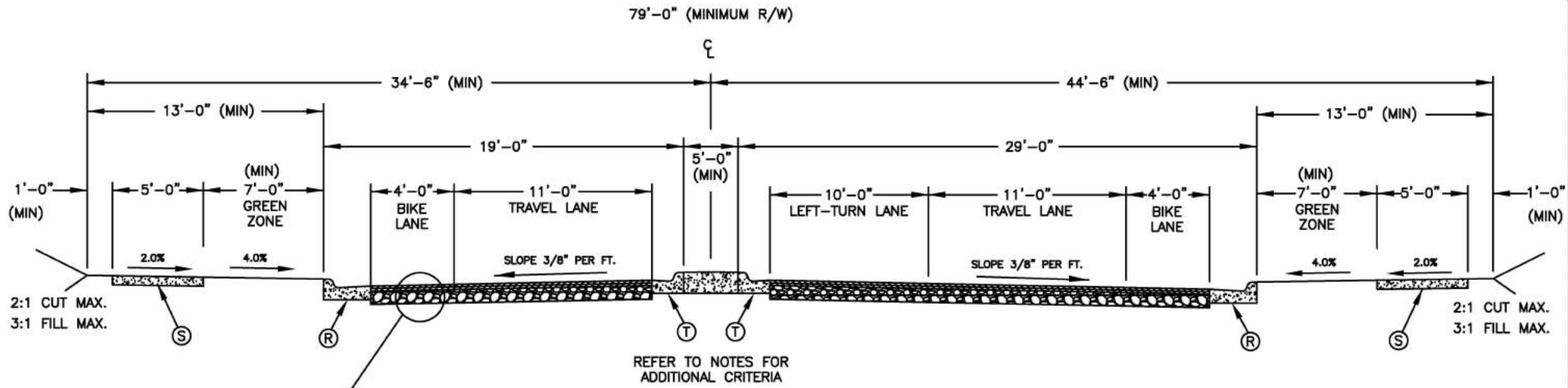
4. A TEN (10) FOOT WIDE MEDIAN IS REQUIRED FOR SMALL MATURING TREES. A TWENTY (20) FOOT WIDE MEDIAN IS REQUIRED FOR LARGE MATURING TREES.

5. BIKE LANE TO BE STRIPED.

6. SEE SECTION II. B. FOR ADDITIONAL DESIGN CRITERIA.

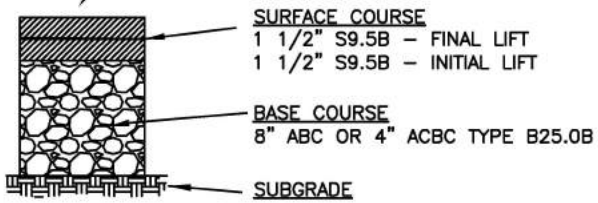
NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	RESIDENTIAL DIVIDED COLLECTOR STREET TYPICAL SECTION	REV. DATE
		STD. NO. 210.2



RESIDENTIAL DIVIDED COLLECTOR STREET

(TWO LANE SECTION)



TYPICAL PAVEMENT SECTION

KEY

Ⓡ 2'–6" STANDARD CURB AND GUTTER

Ⓢ 4" CONCRETE SIDEWALK

Ⓣ 1'–6" MEDIAN CURB AND GUTTER

NOTES:

1. CURB RETURN RADIUS DIMENSIONS AT INTERSECTIONS MAY VARY DEPENDING ON MEDIAN WIDTH AND WILL BE APPROVED ON A CASE BY CASE BASIS.

2. SUBDRAINS ARE REQUIRED ON ALL MEDIANS. (TO BE TIED INTO STORM DRAINAGE SYSTEM.) REFER TO SUBDRAIN STANDARD DETAIL 312.1.

3. MEDIAN PLANTINGS SHALL NOT OBSTRUCT INTERSECTION SIGHT DISTANCE REQUIREMENTS.

4. TEN (10) FOOT WIDE MEDIANS CAN ACCOMMODATE SMALL MATURING TREES. TWENTY (20) FOOT WIDE MEDIAN IS REQUIRED FOR LARGE MATURING TREES.

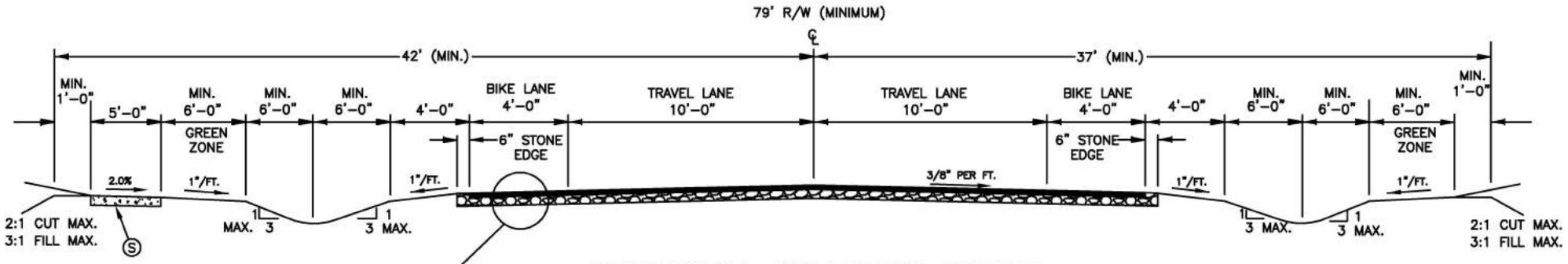
5. MONOLITHIC CONCRETE MEDIANS WITH BEVELED EDGES AND A MINIMUM WIDTH OF 6 FEET CAN BE USED IN LIEU OF LANDSCAPED MEDIANS.

6. BIKE LANE TO BE STRIPED.

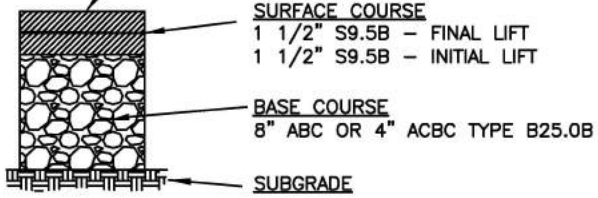
7. SEE SECTION II. B. FOR ADDITIONAL DESIGN CRITERIA.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	RESIDENTIAL DIVIDED COLLECTOR STREET WITH LEFT–TURN LANE TYPICAL SECTION	REV. DATE STD. NO. 210.3



RESIDENTIAL COLLECTOR STREET
(DITCH TYPE)



TYPICAL PAVEMENT SECTION

NOTES:

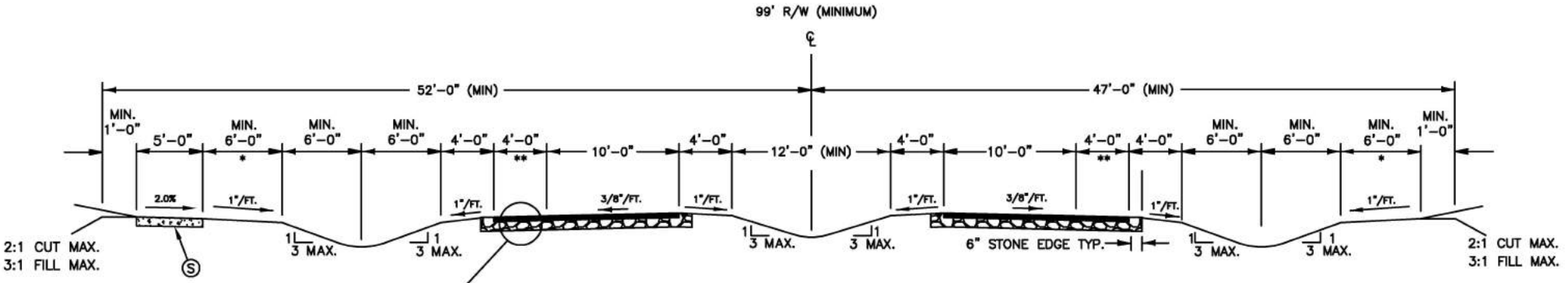
1. SIDEWALK LOCATED OUTSIDE OF STREET RIGHT–OF–WAY SHALL BE LOCATED IN A PERMANENT SIDEWALK EASEMENT EXTENDING 1 FOOT BEYOND BACK OF SIDEWALK.
2. SEE SECTION II. B. FOR ADDITIONAL DESIGN CRITERIA.
3. TREES TO BE PLACED IN GREEN ZONE 3.5 FEET FROM FACE OF SIDEWALK.
4. BIKE LANE TO BE STRIPED.

KEY

Ⓢ 4" CONCRETE SIDEWALK

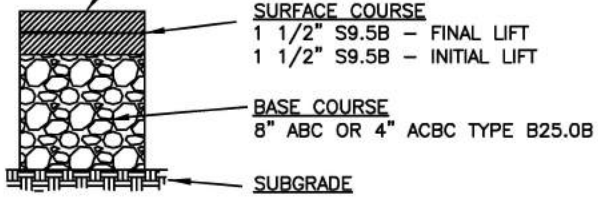
NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	RESIDENTIAL COLLECTOR STREET DITCH TYPE TYPICAL SECTION	REV. DATE STD. NO. 210.4



DIVIDED RESIDENTIAL COLLECTOR STREET

(DITCH TYPE)



TYPICAL PAVEMENT SECTION

NOTES:

1. SIDEWALK LOCATED OUTSIDE OF STREET RIGHT–OF–WAY SHALL BE LOCATED IN A PERMANENT SIDEWALK EASEMENT EXTENDING 1 FOOT BEYOND BACK OF SIDEWALK.

2. SEE SECTION II. B. FOR ADDITIONAL DESIGN CRITERIA.

3. TREES TO BE PLACED IN GREEN ZONE 3.5 FEET FROM FACE OF SIDEWALK.

4. BIKE LANE TO BE STRIPED.

KEY

Ⓢ 4" CONCRETE SIDEWALK

* GREEN ZONE

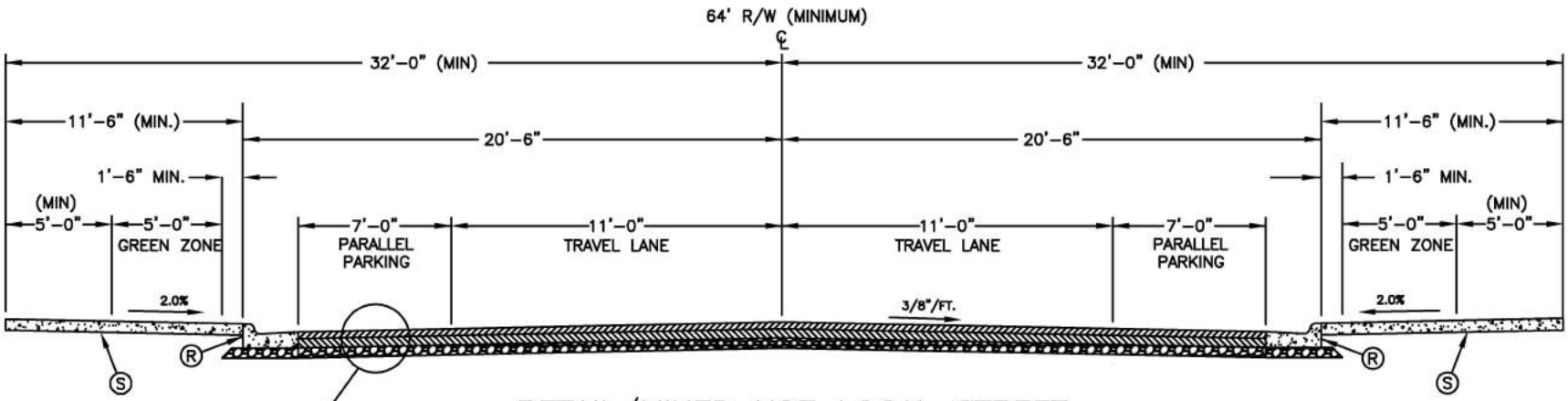
** BIKE LANE

NOT TO SCALE

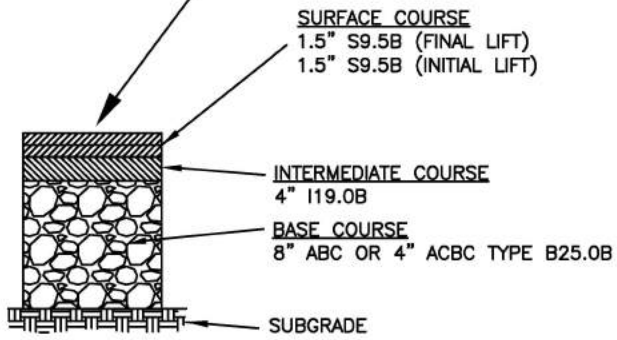
VILLAGE OF MARVIN STANDARD DRAWING

RESIDENTIAL DIVIDED COLLECTOR STREET DITCH TYPE WITH MEDIAN DITCH TYPICAL SECTION

REV. DATE
STD. NO.
210.5



RETAIL/MIXED USE LOCAL STREET



TYPICAL PAVEMENT SECTION

KEY

Ⓡ 2'–6" STD. CURB AND GUTTER

Ⓢ 4" CONCRETE SIDEWALK

NOTES:

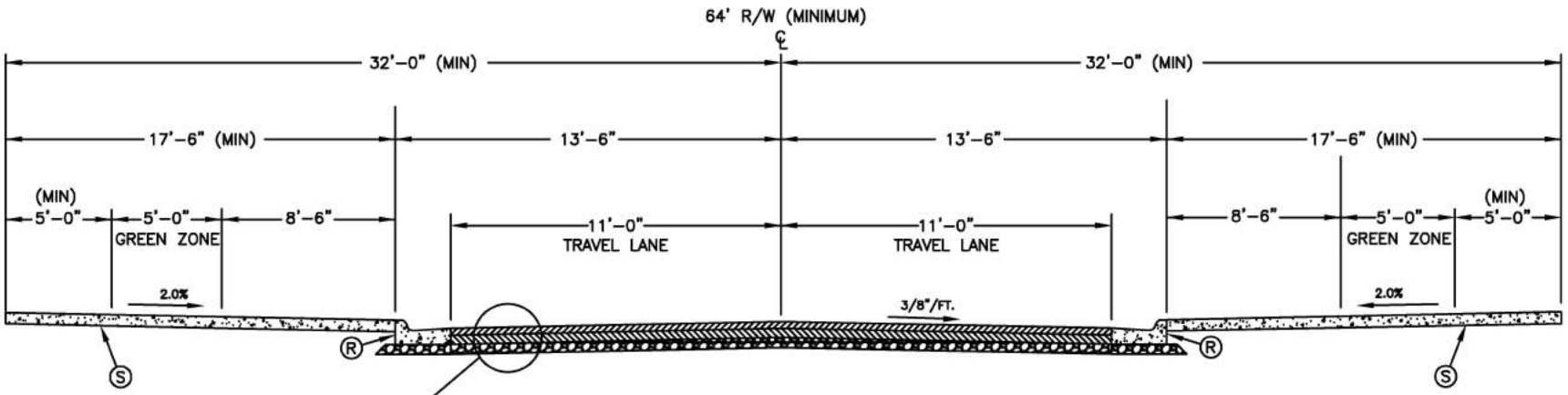
1. SIDEWALK SHALL BE PROVIDED ON BOTH SIDES OF THE STREET.
2. SEE SECTION II. B. FOR ADDITIONAL DESIGN CRITERIA.
3. TREE GRATES SHALL BE PROVIDED WHEN TREES ARE LOCATED IN THE GREEN ZONE.
4. BASE COURSE TO EXTEND SIX INCHES BEYOND BACK OF CURB THEN TAPER OUT AT A FORTY–FIVE DEGREE ANGLE.
5. REFER TO STANDARD DRAWING 285.1 FOR PARALLEL PARKING LAYOUT.

NOT TO SCALE

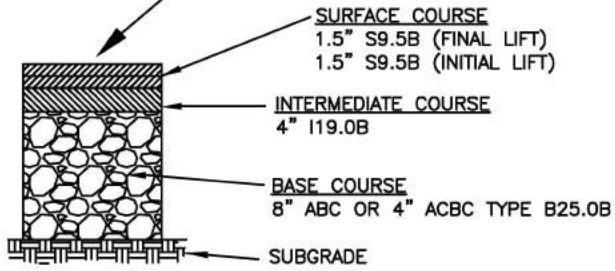
VILLAGE OF MARVIN STANDARD DRAWING

RETAIL/MIXED USE LOCAL STREET PARKING ON BOTH SIDES OF STREET TYPICAL SECTION

REV. DATE
STD. NO.
220.1



RETAIL/MIXED USE LOCAL STREET



TYPICAL PAVEMENT SECTION

KEY

Ⓡ 2'-6" STD. CURB AND GUTTER

Ⓢ 4" CONCRETE SIDEWALK

NOTES:

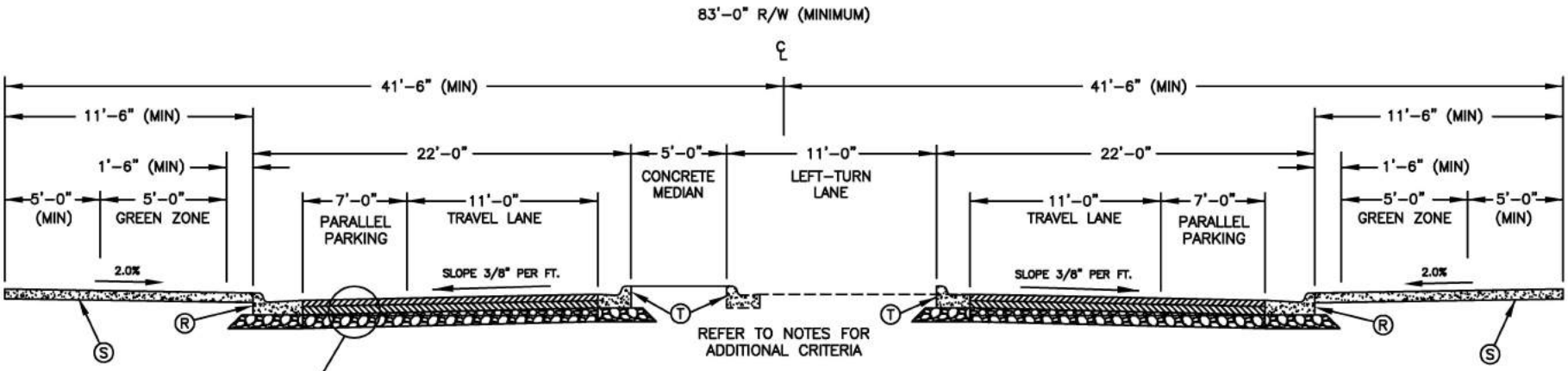
1. SIDEWALK SHALL BE PROVIDED ON BOTH SIDES OF THE STREET.
2. SEE SECTION II. B. FOR ADDITIONAL DESIGN CRITERIA.
3. TREE GRATES SHALL BE PROVIDED WHEN TREES ARE LOCATED IN THE GREEN ZONE.
4. BASE COURSE TO EXTEND SIX INCHES BEYOND BACK OF CURB THEN TAPER OUT AT A FORTY-FIVE DEGREE ANGLE.
5. DRAWING TO BE USED IN CONJUNCTION WITH STANDARD 220.1 AND 285.1.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

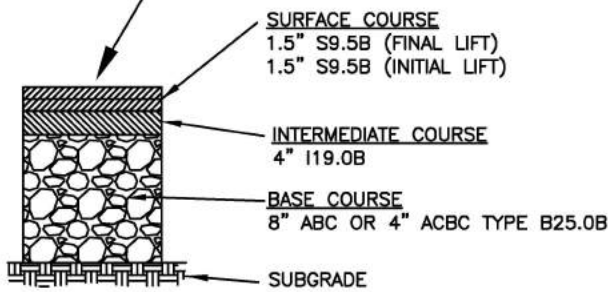
RETAIL/MIXED USE LOCAL STREET NO PARKING TYPICAL SECTION

REV. DATE
STD. NO.
220.2



RETAIL/MIXED USE LOCAL STREET

(TWO LANE SECTION)



TYPICAL PAVEMENT SECTION

NOTES:

1. SIDEWALK SHALL BE PROVIDED ON BOTH SIDES OF THE STREET.
2. SEE SECTION II. B. FOR ADDITIONAL DESIGN CRITERIA.
3. TREE GRATES SHALL BE PROVIDED WHEN TREES ARE LOCATED IN THE GREEN ZONE.
4. FOR MEDIAN DIVIDED FACILITIES, A MINIMUM SIXTEEN (16) FOOT WIDE MEDIAN WITH ONE FOOT SIX INCH CURB AND GUTTER IS NEEDED. WHERE A LEFT-TURN LANE IS NOT INSTALLED, THE MEDIAN SHALL BE LANDSCAPED.
5. BASE COURSE TO EXTEND SIX INCHES BEYOND BACK OF CURB THEN TAPER OUT AT A FORTY-FIVE DEGREE ANGLE.
6. REFER TO STANDARD DRAWING 285.1 FOR PARALLEL PARKING LAYOUT.

KEY

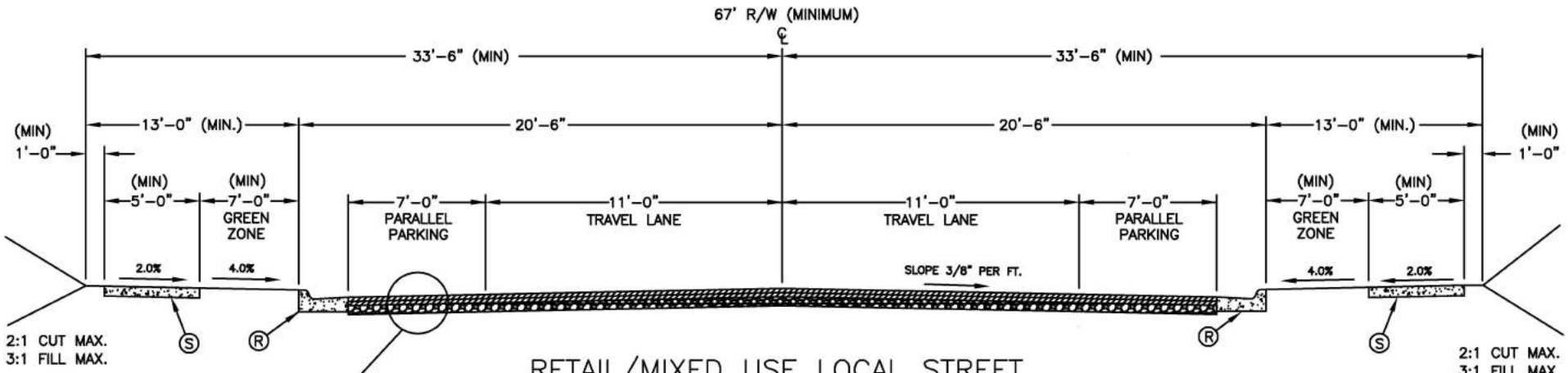
Ⓡ 2'-6" STANDARD CURB AND GUTTER
Ⓢ 4" CONCRETE SIDEWALK
Ⓣ 1'-6" MEDIAN CURB AND GUTTER

NOT TO SCALE

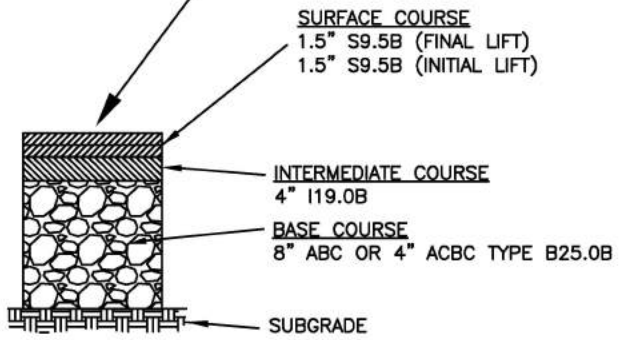
VILLAGE OF MARVIN STANDARD DRAWING

RETAIL/MIXED USE LOCAL STREET WITH MEDIAN AND PARKING TYPICAL SECTION

REV. DATE
STD. NO.
220.3



RETAIL/MIXED USE LOCAL STREET



TYPICAL PAVEMENT SECTION

NOTES:

1. SIDEWALK SHALL BE PROVIDED ON BOTH SIDES OF THE STREET.

2. SEE SECTION II. B. FOR ADDITIONAL DESIGN CRITERIA.

3. BASE COURSE TO EXTEND SIX INCHES BEYOND BACK OF CURB THEN TAPER OUT AT A FOURTY–FIVE DEGREE ANGLE.

4. REFER TO STANDARD DRAWING 285.1 FOR PARALLEL PARKING LAYOUT.

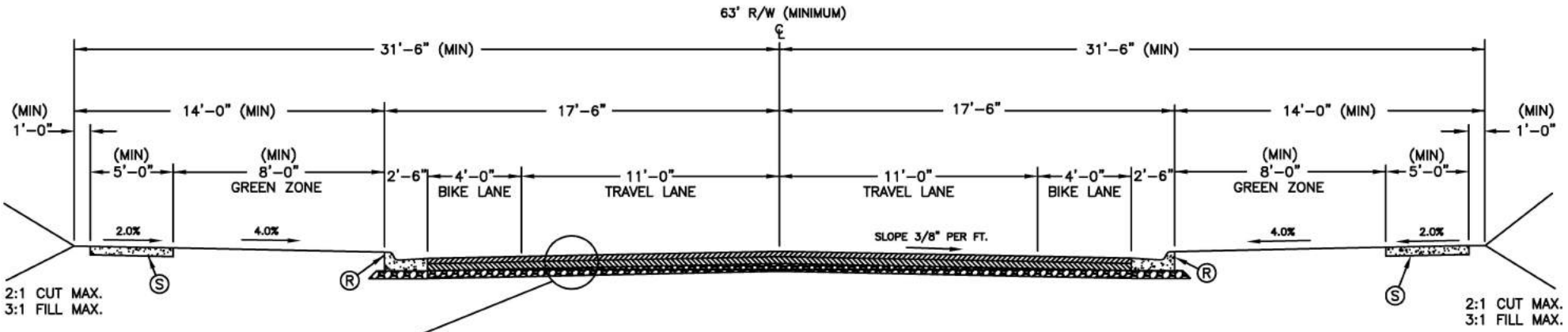
KEY

Ⓡ 2'–6" STD. CURB AND GUTTER

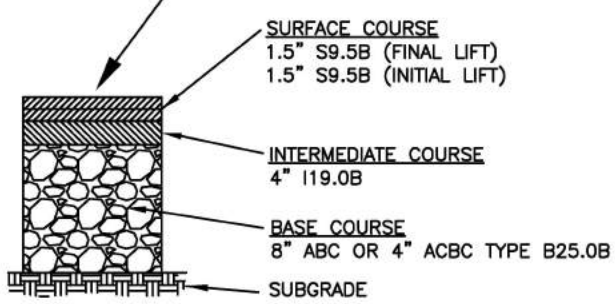
Ⓢ 4" CONCRETE SIDEWALK

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	RETAIL/MIXED USE LOCAL STREET PARKING AND GREEN ZONE ON BOTH SIDES TYPICAL SECTION	REV. DATE STD. NO. 220.4



RETAIL/MIXED USE COLLECTOR STREET



TYPICAL PAVEMENT SECTION

NOTES:

1. SIDEWALK SHALL BE PROVIDED ON BOTH SIDES OF THE STREET.

2. SEE SECTION II. B. FOR ADDITIONAL DESIGN CRITERIA.

3. BASE COURSE TO EXTEND SIX INCHES BEYOND BACK OF CURB THEN TAPER OUT AT A FORTY–FIVE DEGREE ANGLE.

KEY

Ⓡ 2'–6" STANDARD CURB AND GUTTER

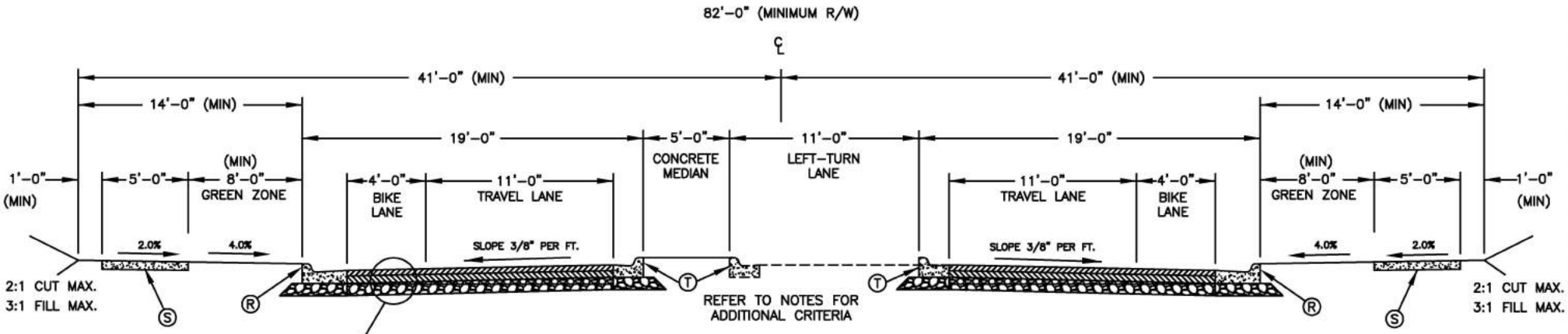
Ⓢ 4" CONCRETE SIDEWALK

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

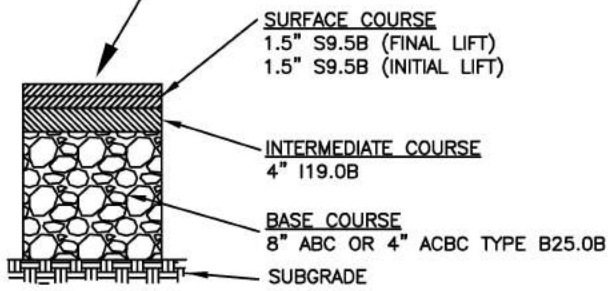
RETAIL/MIXED USE COLLECTOR STREET WITH BIKE LANES TYPICAL SECTION

REV. DATE
STD. NO.
230.1



RETAIL/MIXED USE COLLECTOR STREET

(TWO LANE SECTION)



TYPICAL PAVEMENT SECTION

KEY

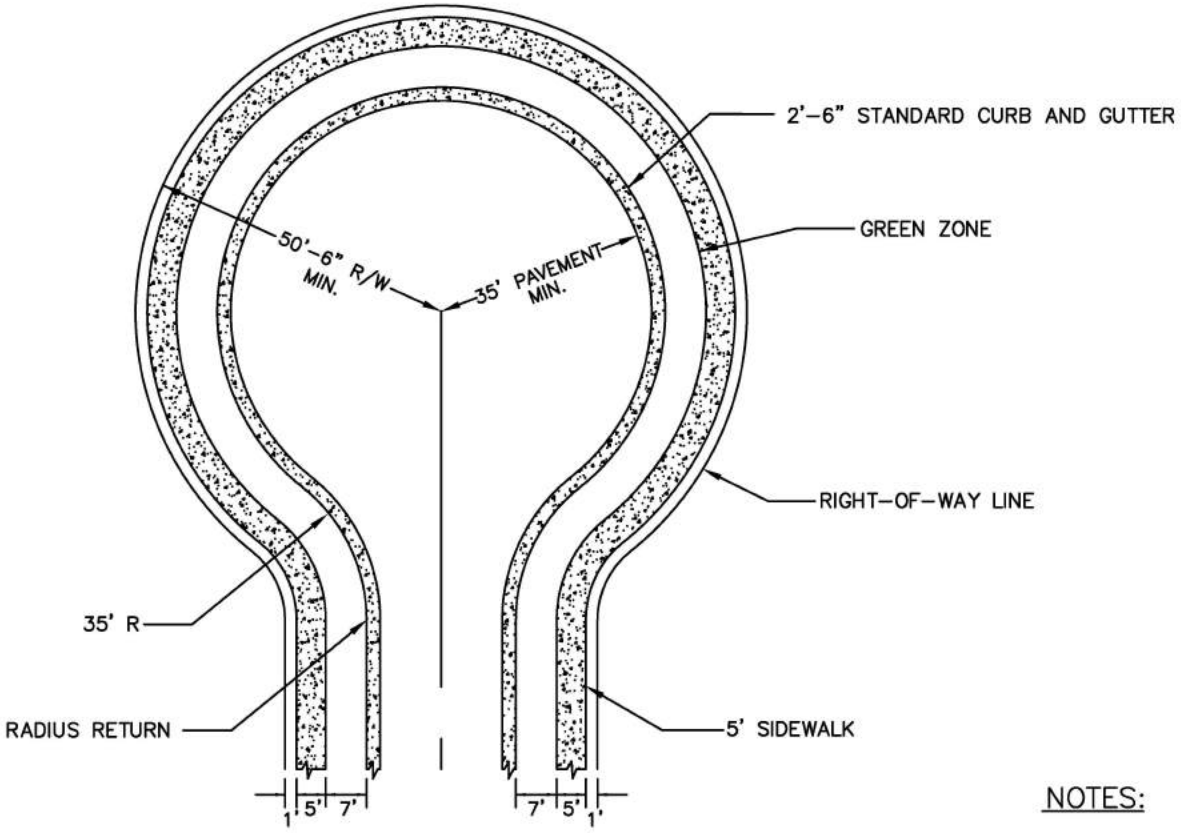
- Ⓡ 2'-6" STANDARD CURB AND GUTTER
- Ⓢ 4" CONCRETE SIDEWALK
- Ⓣ 1'-6" MEDIAN CURB AND GUTTER

NOTES:

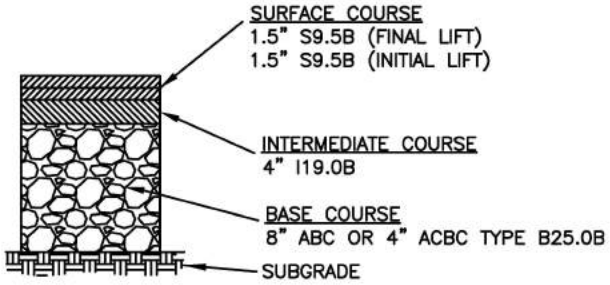
1. SIDEWALK SHALL BE PROVIDED ON BOTH SIDES OF THE STREET.
2. SEE SECTION II. B. FOR ADDITIONAL DESIGN CRITERIA.
3. FOR MEDIAN DIVIDED FACILITIES, A MINIMUM SIXTEEN (16) FOOT WIDE MEDIAN WITH ONE FOOT SIX INCH CURB AND GUTTER IS NEEDED. IF A LEFT-TURN LANE IS NOT NEEDED, THE MEDIAN SHALL BE LANDSCAPED.
4. BASE COURSE TO EXTEND SIX INCHES BEYOND BACK OF CURB THEN TAPER OUT AT A FORTY-FIVE DEGREE ANGLE.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	RETAIL/MIXED USE COLLECTOR STREET WITH MEDIAN AND BIKE LANES TYPICAL SECTION	REV. DATE
		STD. NO. 230.2



RESIDENTIAL LOCAL STREET



TYPICAL PAVEMENT SECTION

NOTES:

1. VALLEY GUTTER MAY BE USED INSTEAD OF STANDARD CURB AND GUTTER.

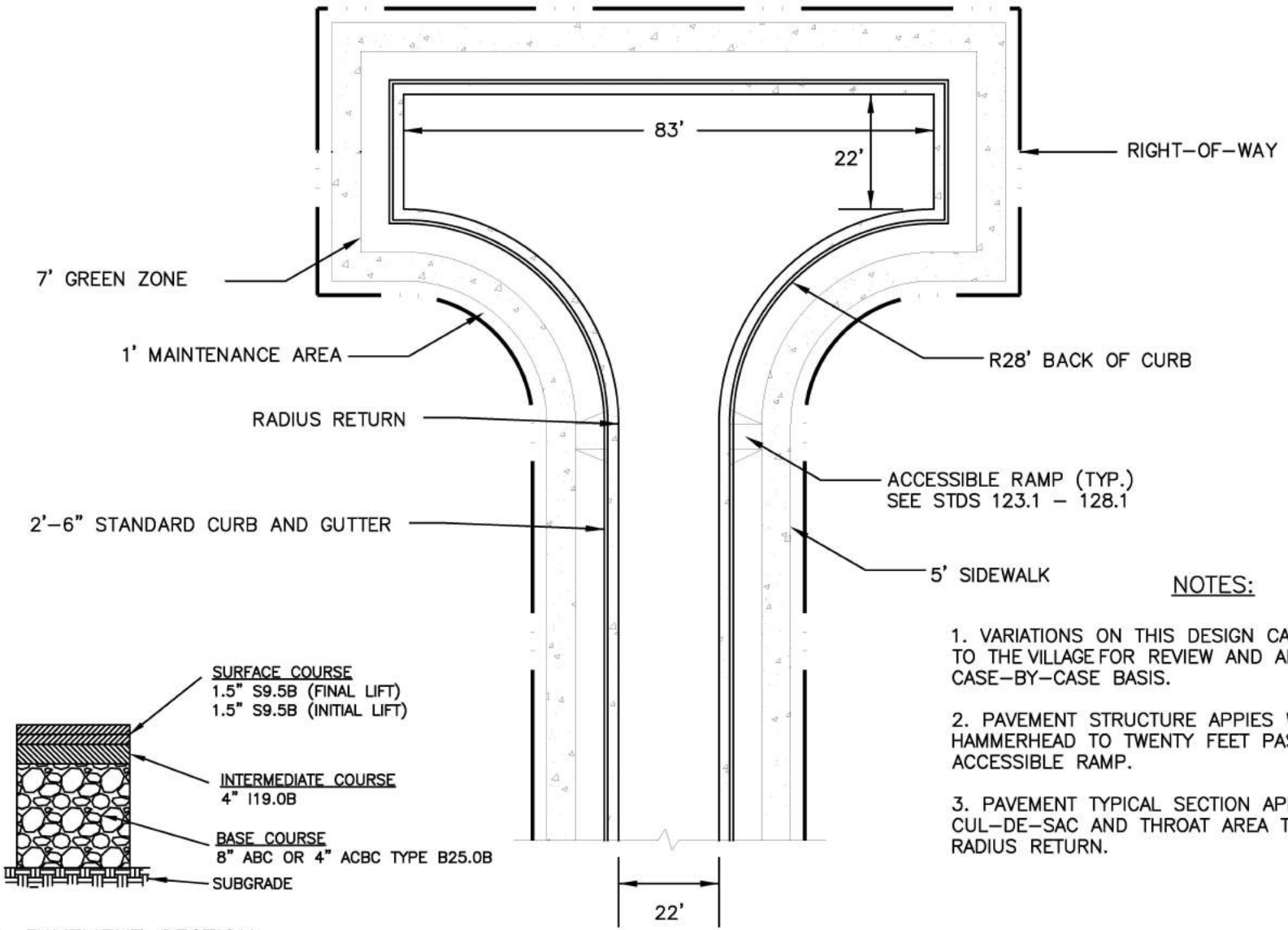
2. CENTRAL ISLANDS ARE PERMITTED AS LONG AS A B-40 (DESIGN VEHICLE) STAYS ON THE PAVEMENT WHILE TRAVERSING THE CUL-DE-SAC.

3. THE CROWN FOR THE PAVEMENT SHALL BE 1/4" PER FOOT FROM THE CENTER OF THE CUL-DE-SAC.

4. PAVEMENT TYPICAL SECTION APPLIES TO CUL-DE-SAC AND THROAT AREA TO 25 FEET PAST RADIUS RETURN.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	RESIDENTIAL LOCAL STREET CUL-DE-SAC DETAIL	REV. DATE STD. NO. 280.1



TYPICAL PAVEMENT SECTION

NOTES:

1. VARIATIONS ON THIS DESIGN CAN BE SUBMITTED TO THE VILLAGE FOR REVIEW AND APPROVAL ON A CASE-BY-CASE BASIS.

2. PAVEMENT STRUCTURE APPIES WITHIN THE HAMMERHEAD TO TWENTY FEET PAST THE ACCESSIBLE RAMP.

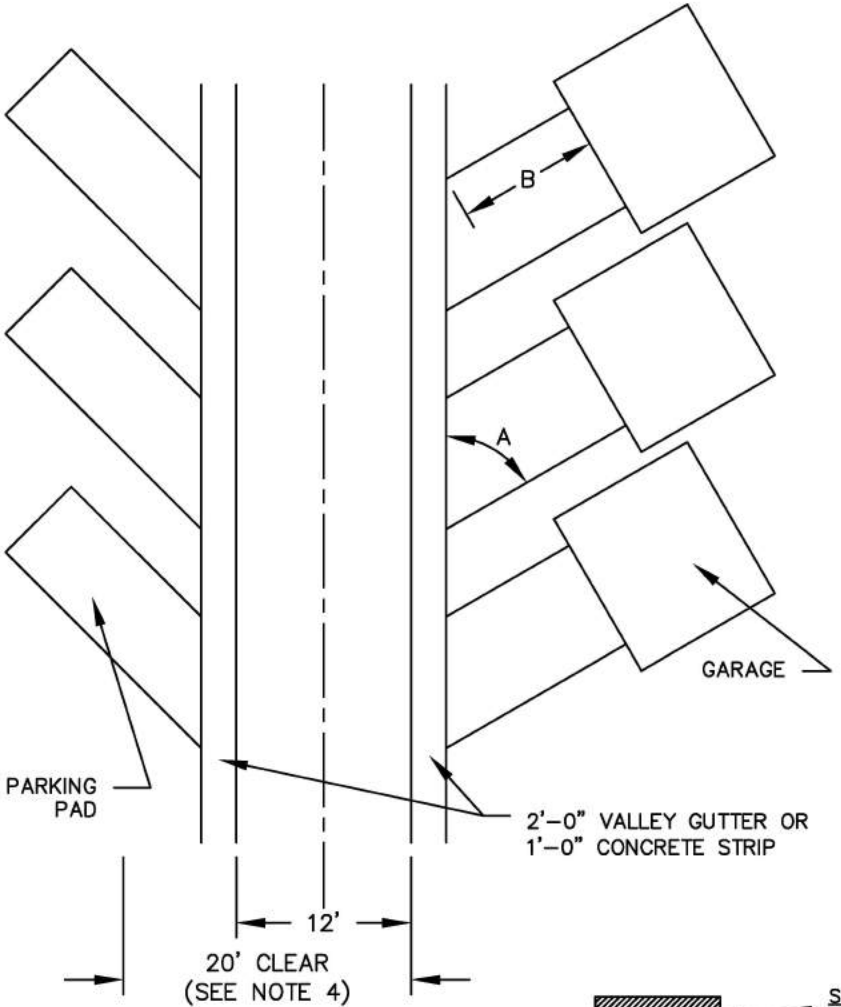
3. PAVEMENT TYPICAL SECTION APPLIES TO CUL-DE-SAC AND THROAT AREA TO 25 FEET PAST RADIUS RETURN.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

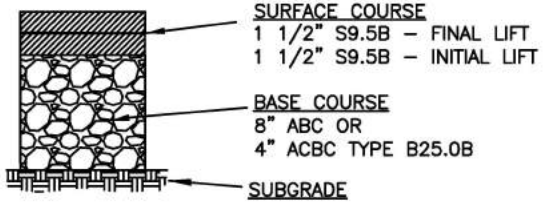
RETAIL/MIXED USE LOCAL STREET HAMMERHEAD DETAIL

REV. DATE
STD. NO.
280.2

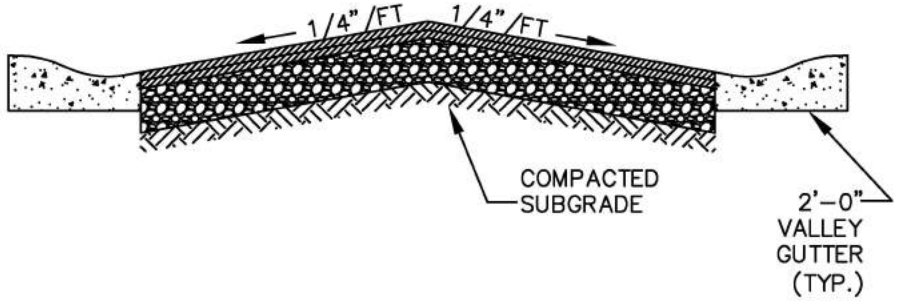


PLAN

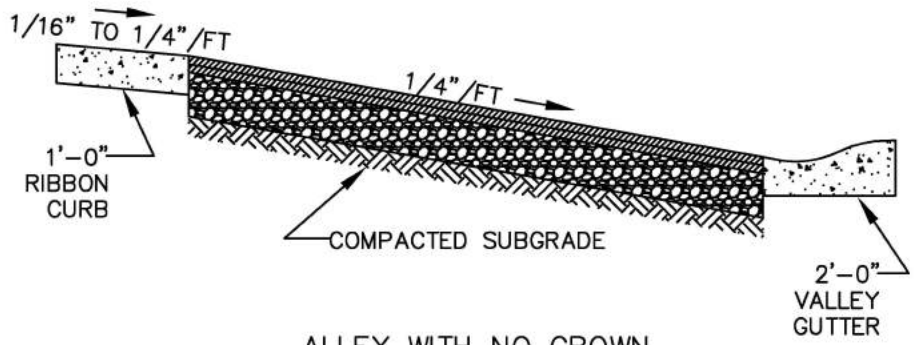
A – LESS THAN 60 DEGREES
B – LESS THAN 3 FEET OR GREATER THAN 20 FEET



TYPICAL PAVEMENT SECTION



ALLEY WITH NORMAL CROWN



ALLEY WITH NO CROWN

NOTES:

1. ALLEYS SHALL BE CONSIDERED PRIVATE EASEMENTS AND WILL NOT BE ACCEPTED FOR MAINTENANCE.

2. SUBGRADE SHALL BE COMPACTED TO PUBLIC STREET STANDARDS.

3. STORM DRAINAGE (NOT SHOWN) SHALL BE PROVIDED AS NECESSARY.

4. DETAIL APPLIES TO SINGLE- OR DOUBLE-LOADED ALLEYS. FOR SINGLE-LOADED ALLEYS, THERE SHALL BE A 20-FOOT CLEAR ZONE FREE OF CUT SLOPES, OBSTRUCTIONS, HEDGES, ETC. FROM THE LOADED SIDE EDGE OF PAVEMENT.

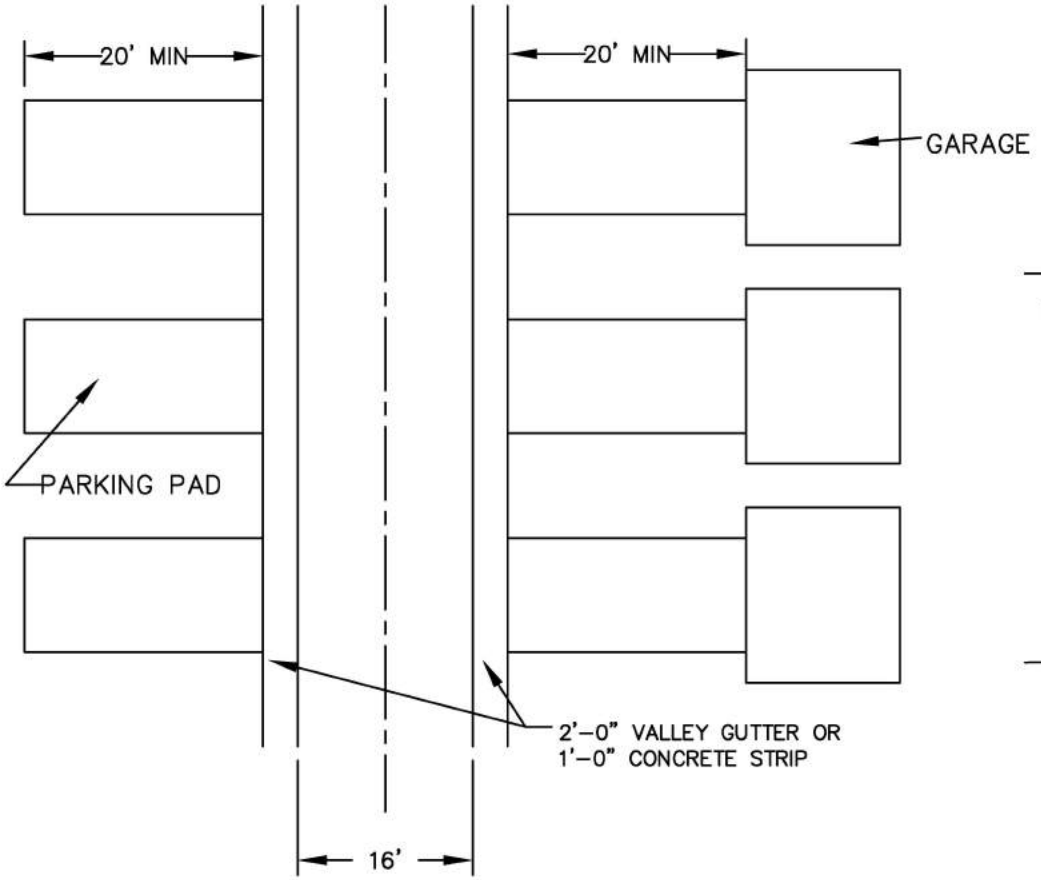
5. RIBBON CURB TO BE TEN INCHES THICK.

NOT TO SCALE

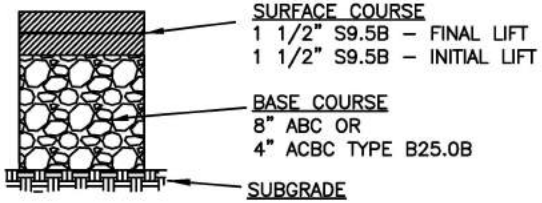
VILLAGE OF MARVIN STANDARD DRAWING

RESIDENTIAL ALLEY ONE–WAY OPERATION TYPICAL SECTION

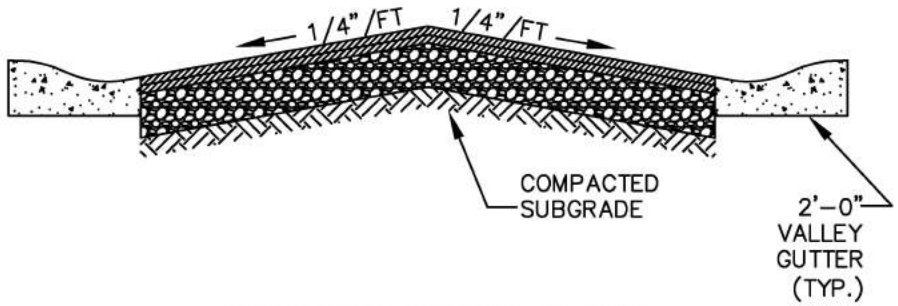
REV. DATE
STD. NO.
280.3



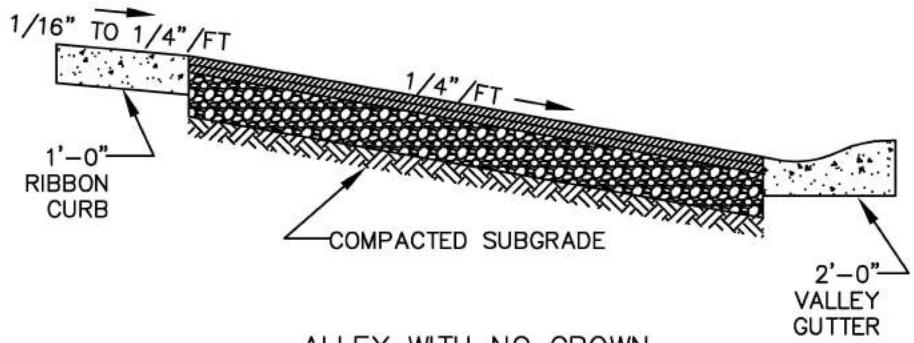
PLAN



TYPICAL PAVEMENT SECTION



ALLEY WITH NORMAL CROWN



ALLEY WITH NO CROWN

NOTES:

1. ALLEYS SHALL BE CONSIDERED PRIVATE EASEMENTS AND WILL NOT BE ACCEPTED FOR MAINTENANCE.

2. SUBGRADE SHALL BE COMPACTED TO PUBLIC STREET STANDARDS.

3. STORM DRAINAGE (NOT SHOWN) SHALL BE PROVIDED AS NECESSARY.

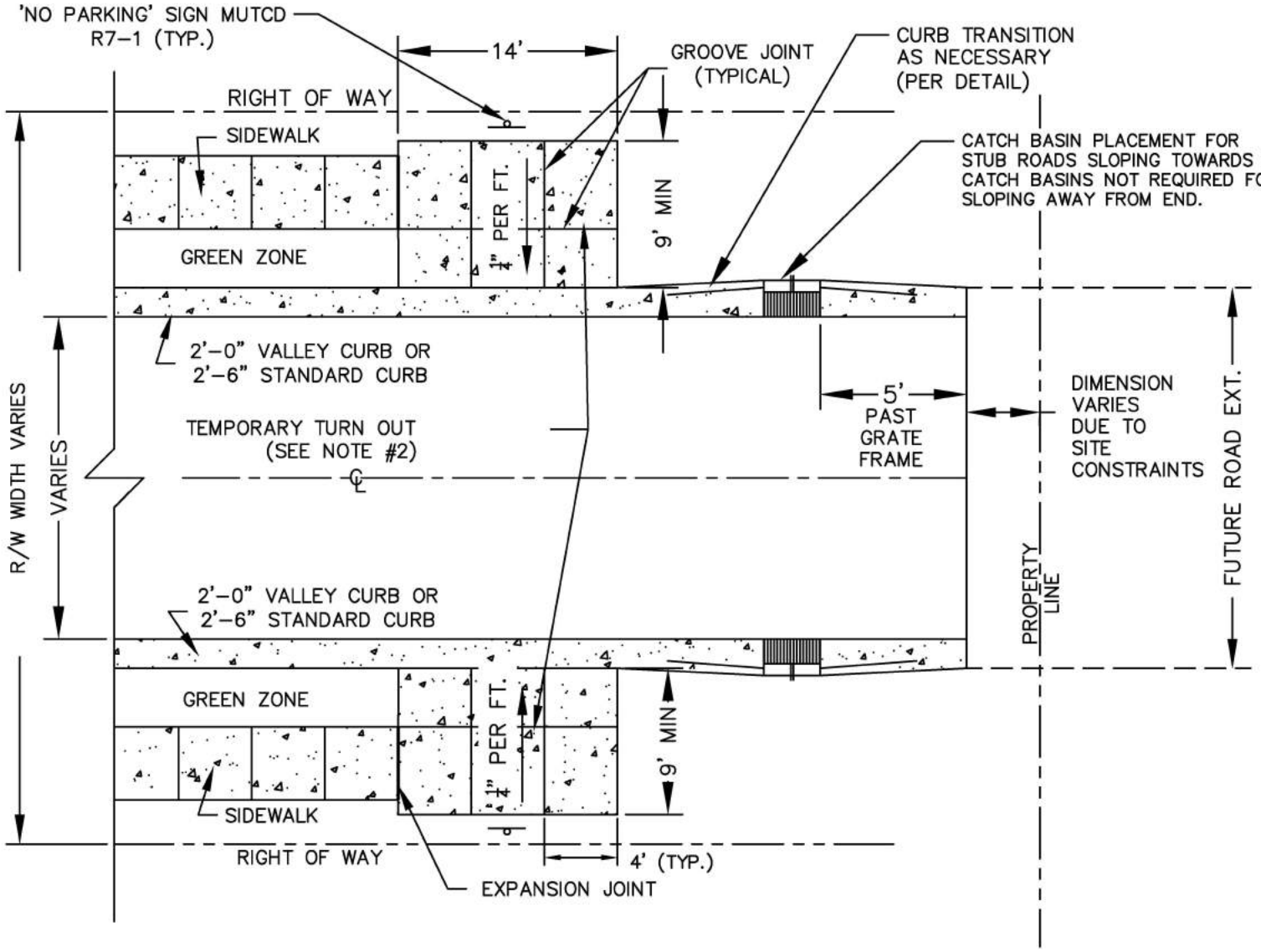
4. RIBBON CURB TO BE TEN INCHES THICK.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

RESIDENTIAL ALLEY TWO-WAY OPERATION TYPICAL SECTION

REV. DATE
STD. NO.
280.4



NOTES

1. TEMPORARY TURNAROUND MATERIAL SHALL BE MIN. 3600 PSI CONCRETE, 6" THICK.

2. TEMPORARY INSTALLATION ONLY – TO BE REMOVED WHEN FUTURE DEVELOPMENT CONNECTS TO STREET. "SIDEWALK" PORTION OF TURNAROUND MAY BE LEFT IN PLACE IF NOT DAMAGED.

3. NOT TO BE USED AS A PRIVATE DRIVEWAY.

4. END OF ROADWAY BARRICADE AND END OF ROADWAY MARKER PER STANDARDS 706.1 THROUGH 709.1 ARE REQUIRED.

NOT TO SCALE

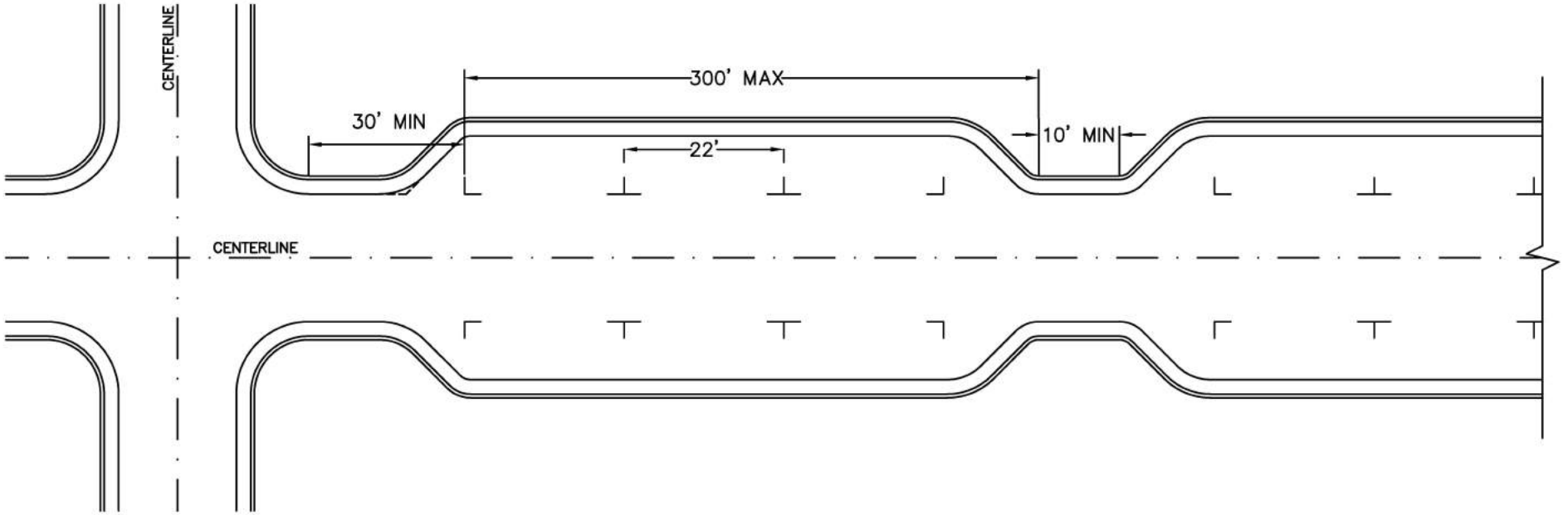
VILLAGE OF MARVIN STANDARD DRAWING

RESIDENTIAL LOCAL STREET TEMPORARY TURNAROUND

REV. DATE
STD. NO.
280.5

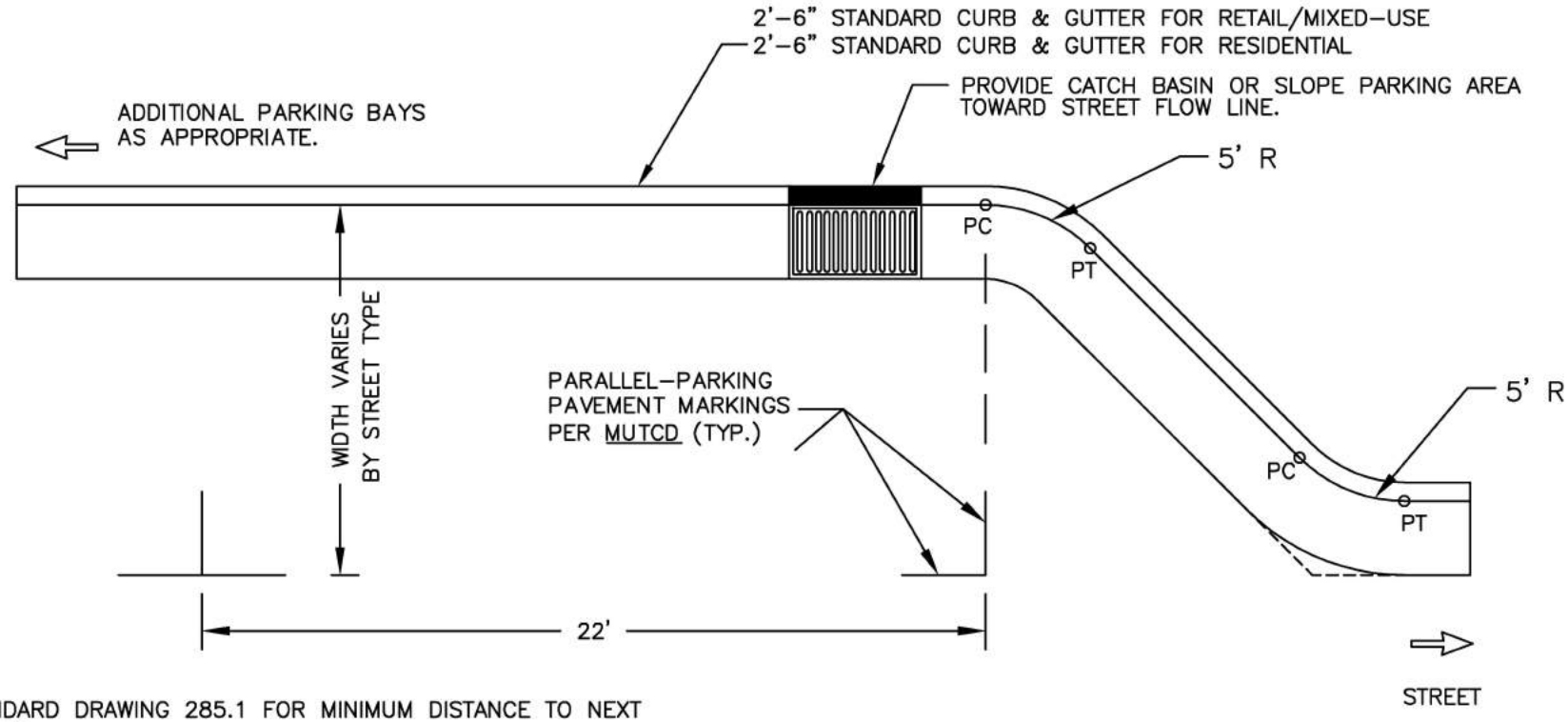
NOTES:

1. REFER TO STANDARD DRAWINGS 285.2, 285.3, AND 285.4 FOR ADDITIONAL INFORMATION.
2. PARKING STALLS MAY BE ON ONE OR BOTH SIDES OF THE STREET.
3. PAVEMENT MARKINGS TO BE THERMOPLASTIC ON RETAIL/OFFICE/MIXED–USE STREETS.
4. 30' MINIMUM DISTANCE TO FIRST PARKING STALL TO BE MEASURED FROM END OF INTERSECTION RADIUS POINT.



NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	LOCAL STREET PARALLEL PARKING LAYOUT	REV. DATE
		STD. NO. 285.1



NOTES:

1. REFER TO STANDARD DRAWING 285.1 FOR MINIMUM DISTANCE TO NEXT INTERVENING STREET.

2. PARALLEL ACCESSIBLE SPACES AND LOADING ZONES TO BE REVIEWED ON A CASE-BY-CASE BASIS.

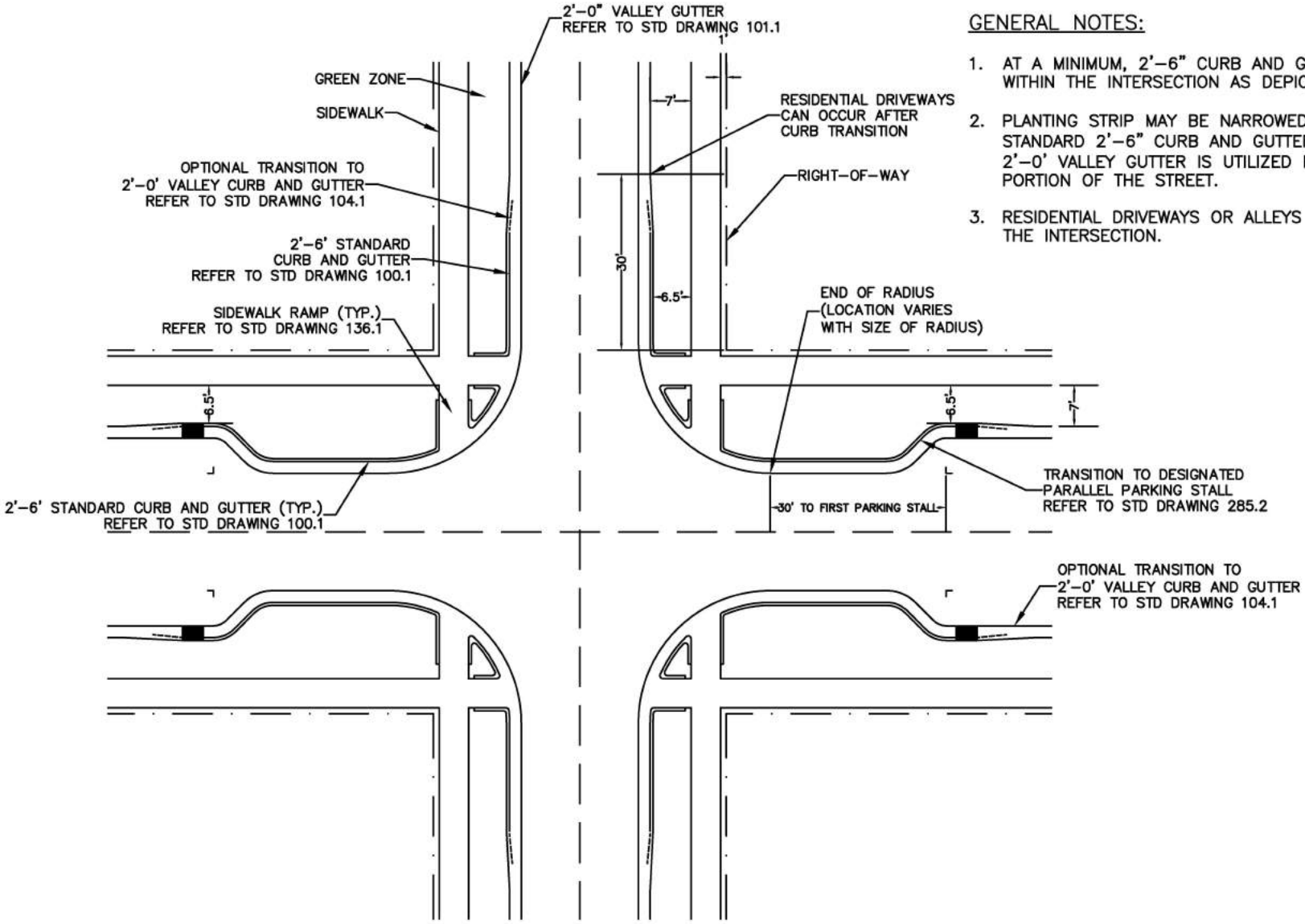
3. FOR PARKING BAYS THAT ARE 6 FEET IN WIDTH OR GREATER, THE PAVEMENT MARKINGS SHALL BE SET AT ONE (1) FOOT LESS THAT THE STALL WIDTH.

4. GREATER SEPARATION FROM INTERVENING STREETS THAN 30 FEET MAY BE REQUIRED AT ENGINEER'S DISCRETION.

5. POSITIVE DRAINAGE SHALL BE PROVIDED EITHER BY INSTALLATION OF APPROPRIATE DRAINAGE STRUCTURES OR SLOPE PARKING AREA TO STREET FLOW LINE.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	PARALLEL PARKING STANDARDS	REV. DATE
		STD. NO. 285.2



GENERAL NOTES:

1. AT A MINIMUM, 2'-6" CURB AND GUTTER IS REQUIRED WITHIN THE INTERSECTION AS DEPICTED.
2. PLANTING STRIP MAY BE NARROWED TO 6.5' WITHIN THE STANDARD 2'-6" CURB AND GUTTER SECTION AS SHOWN IF 2'-0' VALLEY GUTTER IS UTILIZED FOR THE REMAINING PORTION OF THE STREET.
3. RESIDENTIAL DRIVEWAYS OR ALLEYS ARE NOT ALLOWED WITHIN THE INTERSECTION.

NOT TO SCALE

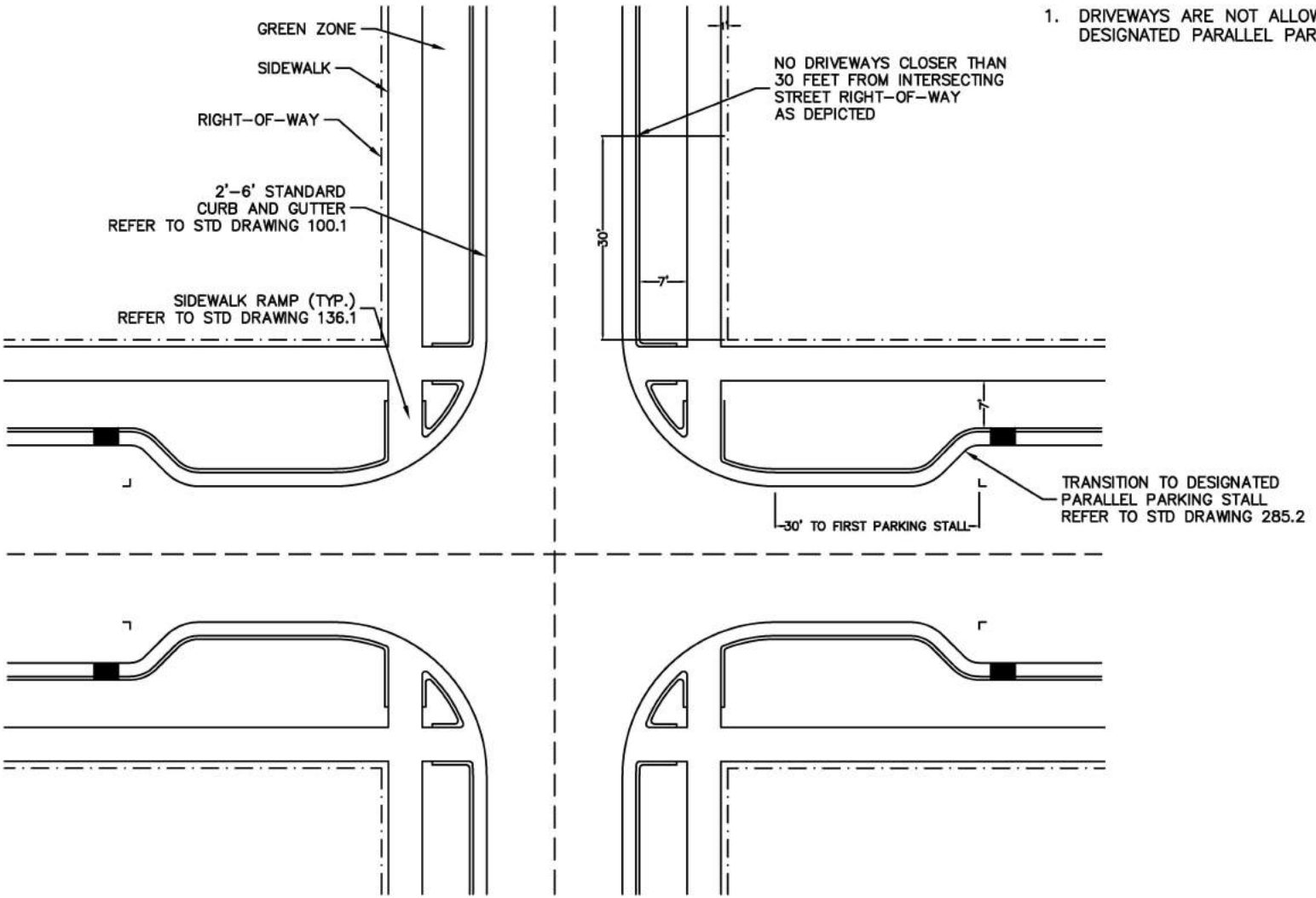
VILLAGE OF MARVIN STANDARD DRAWING

PARKING, SIDEWALK, AND CURB AND GUTTER TRANSITIONS AT RESIDENTIAL INTERSECTIONS

REV. DATE
STD. NO.
285.3

GENERAL NOTES:

1. DRIVEWAYS ARE NOT ALLOWED WITHIN THE INTERSECTION OR DESIGNATED PARALLEL PARKING AREAS.



NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	PARKING, SIDEWALK, AND CURB AND GUTTER TRANSITIONS AT RETAIL/MIXED USE INTERSECTIONS	REV. DATE STD. NO. 285.4

DWG	SHEET TITLE	SPECIAL REQUIREMENTS AND NOTES
300.01	METHOD OF PIPE INSTALLATION – METHOD A	
310.02	PARALLEL PIPE END SECTION–PRECAST CONCRETE FOR 15" TO 24" PIPE	
310.03	CROSS PIPE END SECTION–PRECAST CONCRETE FOR 18" TO 30" PIPE	
310.10	DRIVEWAY PIPE CONSTRUCTION USING NO SPECIAL END SECTIONS	ONLY AT LOCATIONS APPROVED BY THE VILLAGE ENGINEER
815.03	PIPE UNDERDRAIN AND BLIND DRAIN	
816.03	GEOCOMPOSITE SHOULDER DRAIN	
838.01	CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS	NOTE 1
	15" THRU 48" PIPE 90° SKEW	
838.02	CONCRETE ENDWALL AND SLUICE GATE 15" THRU 36" PIPE–90° SKEW	NOTE 1
838.04	CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS	NOTE 1
	17"X13" THRU 71"X47" PIPE ARCH 90° SKEW	
838.05	CONCRETE "L" ENDWALL FOR SINGLE PIPE CULVERTS 15" THRU 48" PIPE	NOTE 1
838.06	CONCRETE "L" ENDWALL FOR SINGLE PIPE CULVERTS 17"X13" THRU 71"X47"	NOTE 1
	PIPE ARCH	
838.07	CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS	NOTE 1
	40"X31" THRU 66"X51" PIPE ARCH 90° SKEW	
838.08	CONCRETE "L" ENDWALL FOR SINGLE PIPE CULVERTS 40"X31"	NOTE 1
	THRU 66"X51" PIPE ARCH	
838.10	CONCRETE ENDWALL FOR OUTFALL 4", 6" OR 8" PIPE	NOTE 1
838.11	BRICK ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS	
	15" THRU 48" 90° SKEW	
838.14	BRICK ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS 17"X13"	
	THRU 71"X47" PIPE ARCH 90° SKEW	
838.15	BRICK "L" ENDWALL FOR SINGLE PIPE CULVERTS 15" THRU 48" PIPE	
838.16	BRICK "L" ENDWALL FOR SINGLE PIPE CULVERTS 17"X13" THRU	
	71"X47" PIPE ARCH	
838.17	BRICK ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS 40"X31"	
	THRU 66"X51" PIPE ARCH 90° SKEW	
838.18	BRICK ENDWALL FOR SINGLE PIPE CULVERTS 40"X31" THRU	
	66"X51" PIPE ARCH	
838.20	BRICK ENDWALL FOR OUTFALL 4", 6" OR 8" PIPE	
838.21	REINFORCED CONCRETE ENDWALL FOR SINGLE 54" PIPE 90° SKEW	NOTE 1 SEE STANDARD 304.1 & 305.1 FOR SPLASH PAD
838.22	REINFORCED CONCRETE ENDWALL FOR DOUBLE & TRIPLE 54" PIPES 90° SKEW	NOTE 1 SEE STANDARD 304.1 & 305.1 FOR SPLASH PAD
838.27	REINFORCED CONCRETE ENDWALL FOR SINGLE 60" PIPE 90° SKEW	NOTE 1 SEE STANDARD 304.1 & 305.1 FOR SPLASH PAD
838.28	REINFORCED CONCRETE ENDWALL FOR DOUBLE & TRIPLE 60" PIPES 90° SKEW	NOTE 1 SEE STANDARD 304.1 & 305.1 FOR SPLASH PAD
838.33	REINFORCED CONCRETE ENDWALL FOR SINGLE 66" PIPE 90° SKEW	NOTE 1 SEE STANDARD 304.1 & 305.1 FOR SPLASH PAD
838.34	REINFORCED CONCRETE ENDWALL FOR DOUBLE & TRIPLE 66" PIPES 90° SKEW	NOTE 1 SEE STANDARD 304.1 & 305.1 FOR SPLASH PAD
838.39	REINFORCED CONCRETE ENDWALL FOR SINGLE 72" PIPE 90° SKEW	NOTE 1 SEE STANDARD 304.1 & 305.1 FOR SPLASH PAD
838.40	REINFORCED CONCRETE ENDWALL FOR DOUBLE & TRIPLE 72" PIPES 90° SKEW	NOTE 1 SEE STANDARD 304.1 & 305.1 FOR SPLASH PAD

NOTE 1: FOR ALL STRUCTURES – NCDOT REQUIRES CLASS B CONCRETE (2500PSI). THE VILLAGE REQUIRES 3600 PSI CONCRETE STRENGTH @ 28 DAYS. 3600 PSI CONCRETE SHALL BE USED IN ALL PROJECTS.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

NCDOT STANDARDS APPROVED FOR USE

REV. DATE

STD. NO.

300.1

DWG	SHEET TITLE	SPECIAL REQUIREMENTS AND NOTES
838.45	NOTES FOR REINFORCED CONCRETE ENDWALL STANDARD DRAWINGS	NOTE 1 SEE STANDARDS 304.1 AND 305.1 FOR SPLASH PAD
	838.21 THRU 838.40	
838.51	REINFORCED BRICK ENDWALL FOR SINGLE 54" PIPE 90° SKEW	SEE STANDARDS 304.1 AND 305.1 FOR SPLASH PAD
838.52	REINFORCED BRICK ENDWALL FOR DOUBLE & TRIPLE 54" PIPES 90° SKEW	SEE STANDARDS 304.1 AND 305.1 FOR SPLASH PAD
838.57	REINFORCED BRICK ENDWALL FOR SINGLE 60" PIPE 90° SKEW	SEE STANDARDS 304.1 AND 305.1 FOR SPLASH PAD
838.58	REINFORCED BRICK ENDWALL FOR DOUBLE & TRIPLE 60" PIPES 90° SKEW	SEE STANDARDS 304.1 AND 305.1 FOR SPLASH PAD
838.63	REINFORCED BRICK ENDWALL FOR SINGLE 66" PIPE 90° SKEW	SEE STANDARDS 304.1 AND 305.1 FOR SPLASH PAD
838.64	REINFORCED BRICK ENDWALL FOR DOUBLE & TRIPLE 66" PIPES 90° SKEW	SEE STANDARDS 304.1 AND 305.1 FOR SPLASH PAD
838.69	REINFORCED BRICK ENDWALL FOR SINGLE 72" PIPE 90° SKEW	SEE STANDARDS 304.1 AND 305.1 FOR SPLASH PAD
838.70	REINFORCED BRICK ENDWALL FOR DOUBLE & TRIPLE 72" PIPES 90° SKEW	SEE STANDARDS 304.1 AND 305.1 FOR SPLASH PAD
838.75	NOTES FOR REINFORCED BRICK ENDWALL STANDARD DRAWINGS 838.51 THRU 838.70	SEE STANDARDS 304.1 AND 305.1 FOR SPLASH PAD
838.80	PRECAST CONCRETE ENDWALLS FOR SINGLE 12" THRU 72" PIPE 90° SKEW	
840.00	CONCRETE BASE PAD FOR DRAINAGE STRUCTURES	
840.01	BRICK CATCH BASIN 12" THRU 54" PIPE	
840.02	CONCRETE CATCH BASIN 12" THRU 54" PIPE	
840.03	FRAME, GRATES AND HOOD FOR USE ON STANDARD BASIN 12" THRU 54" PIPE	TYPE F AND G GRATES ARE OPTIONAL
840.04	CONCRETE OPEN THROAT CATCH BASIN 12" THRU 48" PIPE	NOTE 1 – OPENINGS PERMITTED IN 4 SIDES OUTSIDE OF STREET R/W
		MANHOLE RING AND COVER REQUIRED IN TOP SLAB SEE STD. 840.54
840.05	BRICK OPEN THROAT CATCH BASIN 12" THRU 48" PIPE	OPENINGS PERMITTED IN 4 SIDES OUTSIDE OF STREET R/W
		MANHOLE RING AND COVER REQUIRED IN TOP SLAB SEE STD. 840.54
840.14	CONCRETE DROP INLET 12" THRU 30" PIPE	NOTE 1
840.15	BRICK DROP INLET 12" THRU 30" PIPE	
840.16	DROP INLET FRAME AND GRATES FOR USE WITH STANDARD DWGS. 840.14 & 840.15	
840.17	CONCRETE GRATED DROP INLET TYPE "A" 12" THRU 72" PIPE	NOTE 1
840.18	CONCRETE GRATED DROP INLET TYPE "B" 12" THRU 36" PIPE	NOTE 1
840.19	CONCRETE GRATED DROP INLET TYPE "D" 12" THRU 36" PIPE	NOTE 1
840.20	FRAMES AND WIDE SLOT FLAT GRATES	NOT FOR USE IN PEDESTRIAN AREAS
840.22	FRAMES AND WIDE SLOT SAG GRATES	NOT FOR USE IN PEDESTRIAN AREAS
840.24	FRAMES AND NARROW SLOT SAG GRATES	
840.25	ANCHORAGE FOR FRAMES BRICK OR CONCRETE	
840.26	BRICK GRATED DROP INLET TYPE "A" 12" THRU 72" PIPE	
840.27	BRICK GRATED DROP INLET TYPE "B" 12" THRU 36" PIPE	
840.28	BRICK GRATED DROP INLET TYPE "D" 12" THRU 36" PIPE	
840.29	FRAMES AND NARROW SLOT FLAT GRATES	
840.30	DRIVEWAY DROP INLET	

NOTE 1: FOR ALL STRUCTURES – NCDOT REQUIRES CLASS B CONCRETE (2500PSI). THE VILLAGE REQUIRES 3600 PSI CONCRETE STRENGTH @ 28 DAYS. 3600 PSI CONCRETE SHALL BE USED IN ALL PROJECTS.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

NCDOT STANDARDS APPROVED FOR USE

REV. DATE
STD. NO.
301.1

DWG	SHEET TITLE	SPECIAL REQUIREMENTS AND NOTES
840.31	CONCRETE JUNCTION BOX (WITH OPTIONAL MANHOLE) 12" THRU 66" PIPE	NOTE 1 OPTIONAL MANHOLE IS REQUIRED
840.32	BRICK JUNCTION BOX 12" THRU 66" PIPE	OPTIONAL MANHOLE IS REQUIRED
840.34	TRAFFIC BEARING JUNCTION BOX FOR USE WITH PIPES 42" AND UNDER	NOTE 1 OPTIONAL MANHOLE IS REQUIRED
840.35	TRAFFIC BEARING DROP INLET FOR CAST IRON DOUBLE FRAME AND GRATES	NOTE 1 OPTIONAL MANHOLE IS REQUIRED
840.36	TRAFFIC BEARING DROP INLET FOR STEEL (840.37) DOUBLE FRAME AND GRATES	NOT FOR USE IN PEDESTRIAN AREAS
840.37	STEEL GRATE AND FRAME	NOT FOR USE IN PEDESTRIAN AREAS
840.41	SPRING BOX CONCRETE OR BRICK	NOTE 1
840.45	PRECAST DRAINAGE STRUCTURE (SOLID AND WAFFLE WALL)	WAFFLE WALL IS NOT PERMITTED. OPENINGS SHALL BE PRECAST
840.46	TRAFFIC BEARING PRECAST DRAINAGE STRUCTURE	
840.51	BRICK MANHOLE 12" THRU 36" PIPE	
840.52	PRECAST MANHOLE 4', 5' AND 6' DIAMETER 12" THRU 42" PIPE	
840.53	PRECAST MANHOLE WITH MASONRY BASE 12" THRU 42" PIPE	
840.54	MANHOLE FRAME AND COVER	
840.66	DRAINAGE STRUCTURE STEPS	
840.71	CONCRETE AND BRICK PIPE PLUG	
840.72	PIPE COLLAR	
850.01	CONCRETE PAVED DITCHES	
852.04	METHODS FOR PLACEMENT OF DROP INLETS IN GRASSED MEDIAN (USING 1'-6" CURB AND GUTTER)	
852.05	MEDIAN CURB FOR CATCH BASIN (FOR USE WITH 1'-6" CURB AND GUTTER)	
852.06	METHOD OF PLACEMENT OF DROP INLETS IN CONCRETE ISLANDS	
876.01	RIP RAP IN CHANNELS	
876.03	DRAINAGE DITCHES WITH CLASS "A" RIP RAP	
876.04	DRAINAGE DITCHES WITH CLASS "B" RIP RAP	

NOTE 1: FOR ALL STRUCTURES – NCDOT REQUIRES CLASS B CONCRETE (2500PSI). THE VILLAGE REQUIRES 3600 PSI CONCRETE STRENGTH @ 28 DAYS. 3600 PSI CONCRETE SHALL BE USED IN ALL PROJECTS.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

NCDOT STANDARDS APPROVED FOR USE

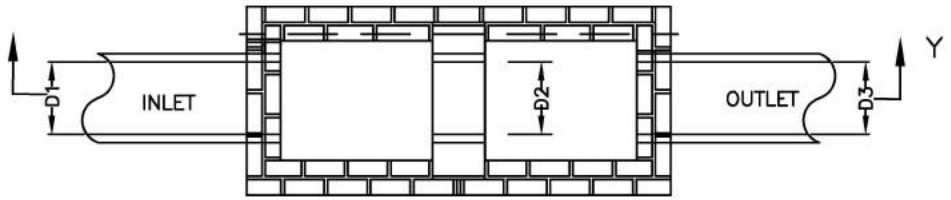
REV. DATE

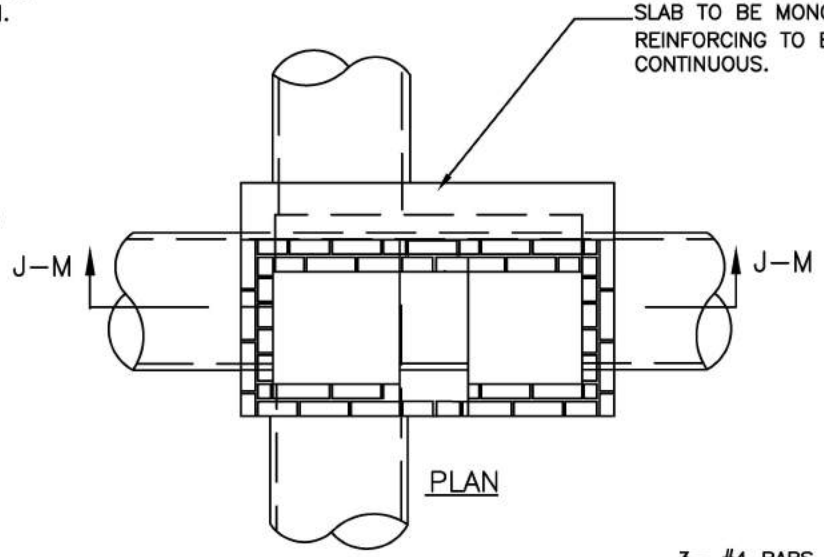
STD. NO.

302.1

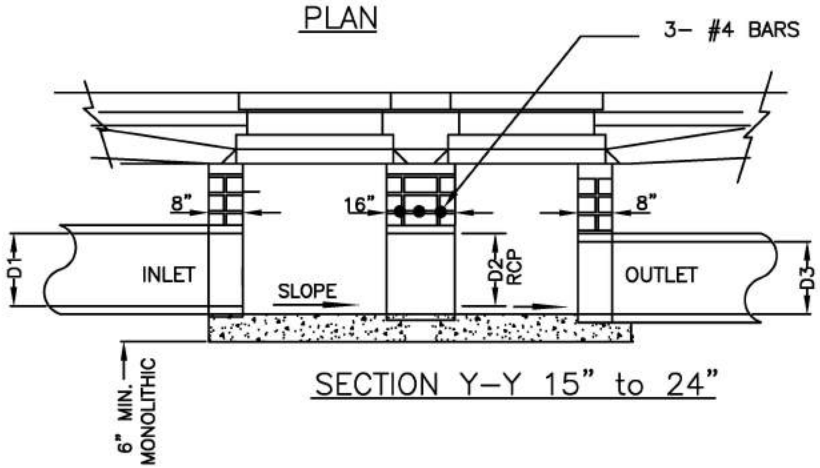
GENERAL NOTES:

1. DOUBLE CATCH BASIN ONLY FOR USE WITHIN VILLAGE MAINTAINED STREETS. INSTALLATION ON STREETS WITHIN EXISTING/FUTURE NCDOT MAINTAINED RIGHT OF WAY REQUIRES A MINIMUM OF ONE 4 FOOT LONG SECTION OF REINFORCED CONCRETE PIPE BETWEEN CATCH BASINS.
2. SEE NCDOT STANDARD 840.01 FOR DETAILS BASED ON PIPE SIZE PER CROSS–SECTION.
3. CONSTRUCT TWO SINGLE BASINS PER NCDOT STANDARD WITH DOUBLE INTERIOR WALL.
4. ALL CONCRETE TO BE 3600 P.S.I COMPRESSIVE STRENGTH.
5. BASE SLAB SHALL BE MONOLITHIC.
6. SEE STANDARD NUMBERS 120.1 AND 121.1 FOR PLACEMENT OF CATCH BASIN.
7. RCP PIPE SECTION D2 CONNECTING CATCH BASINS SHALL HAVE A MINIMUM DIAMETER SAME AS OF OUTLET PIPE D3.
8. ALL REINFORCING STEEL SHOWN ON NCDOT STANDARDS IS TO BE PROVIDED AS CONTINUOUS MEMBERS. (NO LAPS, USED AS A SINGLE CONTINUOUS BAR IN THE SLAB)

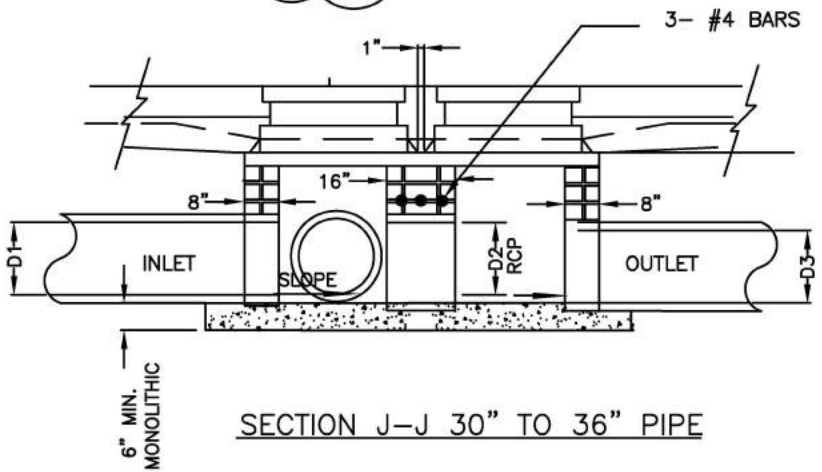




PLAN



SECTION Y–Y 15" to 24"

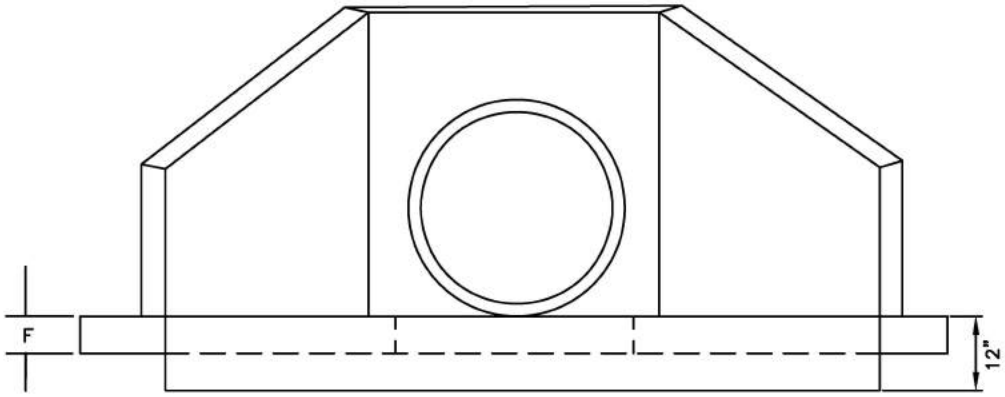


SECTION J–J 30" TO 36" PIPE

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	BRICK DOUBLE CATCH BASIN 15" THRU 36" PIPE	REV. DATE STD. NO. 303.1

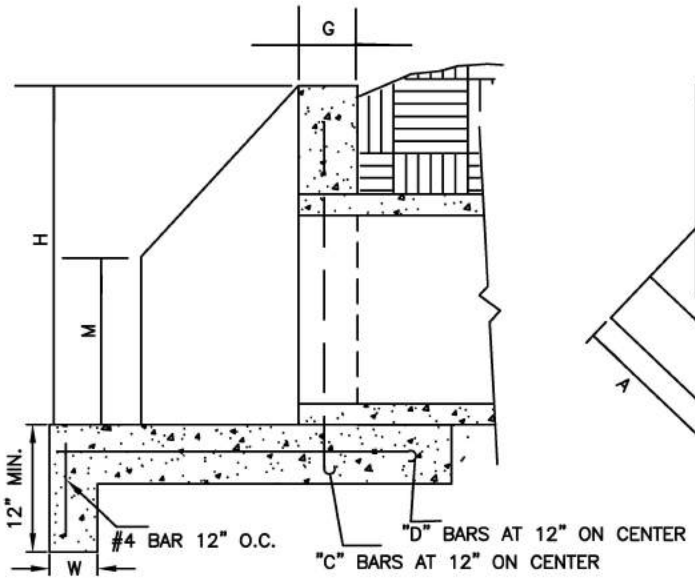
CONCRETE PIPE			DIMENSIONS									
WALL THK.	OUT DIA.	IN DIA.	MIN. H	A	B	C	E	F	G	W	K	M
2 1/4"	19 1/2"	15"	27 1/2"	20"	24"	8"	7 1/2"	4"	4"	8"	17"	10"
2 1/2"	23"	18"	31"	20"	24"	8"	9"	4"	4"	8"	17"	12"
3"	30"	24"	38"	20"	30"	8"	12"	4"	4"	8"	21"	15"
3 1/2"	37"	30"	45"	20"	44"	12"	15"	6"	8"	8"	31"	18"
4"	44"	36"	52"	32"	44"	12"	18"	6"	8"	8"	31"	22"
4 1/2"	51"	42"	59"	32"	48"	12"	21"	6"	8"	8"	34"	26"
5"	58"	48"	66"	32"	48"	12"	24"	6"	8"	8"	34"	29"
5 1/2"	65"	54"	73"	32"	54"	12"	27"	6"	8"	8"	38"	33"
6"	72"	60"	80"	36"	66"	12"	30"	8"	12"	12"	46"	36"
6 1/2"	79"	66"	87"	36"	72"	12"	33"	8"	12"	12"	51"	40"
7"	86"	72"	94"	36"	78"	12"	36"	8"	12"	12"	56"	43"



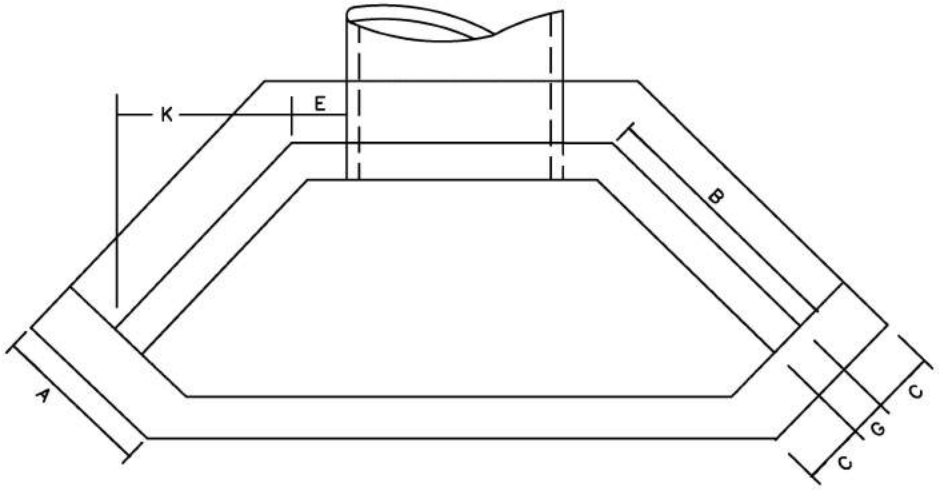
FRONT VIEW

REINFORCING

DIA.	"C" BAR		"D" BAR	
	NO.	LGT.	NO.	LGT.
15"	4	2'-0"	4	1'-11"
18"	4	2'-3"	4	2'-2"
24"	4	2'-9"	4	2'-8"
30"	4	3'-3"	4	3'-2"
36"	4	3'-9"	4	3'-8"
42"	4	4'-3"	4	4'-2"
48"	4	4'-9"	4	4'-8"
54"	4	5'-3"	4	5'-2"
60"	4	5'-9"	4	5'-8"
66"	4	6'-3"	4	6'-2"
72"	4	6'-9"	4	6'-8"



SIDE VIEW



TOP VIEW

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

CONCRETE WINGWALL WITH SPLASH PAD

REV. DATE
STD. NO.
304.1

GENERAL NOTES:

1. ALL CORNERS TO BE CHAMFERED 1" IF CONCRETE.
2. THE CONTRACTOR WILL BE REQUIRED TO PLACE 2–#6 BARS "Y" IN THE TOP OF ALL ENDWALL FOR PIPE CULVERTS 42" AND OVER WITH A MINIMUM 3" COVER AND A LENGTH OF 6" LESS THAN ENDWALL.
3. FORMS ARE TO BE USED FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
4. WALL THICKNESS (T) SHOWN IS NOT TO BE INTERPRETED TO MEAN THE THICKNESS ACCEPTABLE, BUT IS USED ONLY IN COMPUTING ENDWALL QUANTITIES.
5. IF CONTRACTOR ELECTS TO USE CONSTRUCTION JOINT AT BOTTOM OF PIPE, AND POURS BASE SEPARATELY, THE TOP OF BASE SHALL BE LEFT ROUGH.
6. ALL CONCRETE TO BE 3600 P.S.I COMPRESSIVE STRENGTH.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	CONCRETE WINGWALL WITH SPLASH PAD	REV. DATE
		STD. NO. 305.1

NOTES:

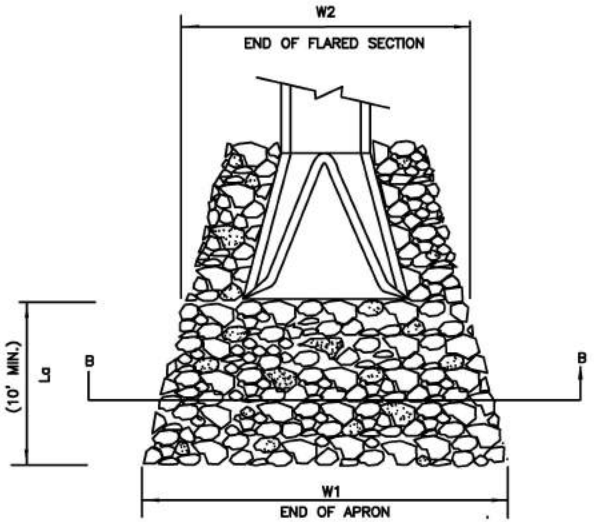
1. CLASS OR MEDIAN SIZE OF RIPRAP AND LENGTH, WIDTH AND DEPTH OF APRON TO BE DESIGNED BY THE ENGINEER.
2. REFER TO THE CHARLOTTE MECKLENBURG STORM WATER DESIGN MANUAL FOR RIPRAP APRON DESIGN STANDARDS.
3. RIPRAP SHOULD EXTEND UP BOTH SIDES OF THE APRON AND AROUND THE END OF THE PIPE OR CULVERT AT THE DISCHARGE OUTLET AT A MAXIMUM SLOPE OF 2:1 AND A HEIGHT NOT LESS THAN TWO THIRDS THE PIPE DIAMETER OR CULVERT HEIGHT.
4. THERE SHALL BE NO OVERFLOW FROM THE END OF THE APRON TO THE SURFACE OF THE RECEIVING CHANNEL. THE AREA TO BE PAVED OR RIPRAPPED SHALL BE UNDERCUT SO THAT THE INVERT OF THE APRON SHALL BE AT THE SAME GRADE (FLUSH) WITH THE SURFACE OF THE RECEIVING CHANNEL. THE APRON SHALL HAVE A CUTOFF OR TOE WALL AT THE DOWNSTREAM END.
5. THE WIDTH OF THE END OF THE APRON SHALL BE EQUAL TO THE BOTTOM WIDTH OF THE RECEIVING CHANNEL. MAXIMUM TAPER TO RECEIVING CHANNEL 5:1.
6. ALL SUBGRADE FOR STRUCTURE TO BE COMPACTED TO 95% OR GREATER.
7. THE PLACING OF FILL, EITHER LOOSE OR COMPACTED IN THE RECEIVING CHANNEL SHALL NOT BE ALLOWED.
8. NO BENDS OR CURVES IN THE HORIZONTAL ALIGNMENT OF THE APRON WILL BE PERMITTED.
9. FILTER FABRIC SHALL BE INSTALLED ON COMPACTED SUBGRADE PRIOR TO PLACEMENT OF RIP RAP.
10. ANY DISTURBED AREA FROM END OF APRON TO RECIEVING CHANNEL MUST BE STABILIZED.

USE USDA NOMOGRAPH FROM NC SEDIMENT AND EROSION CONTROL MANUAL OR CHARLOTTE MECKLENBURG STORM WATER DESIGN MANUAL FOR DESIGN DATA.

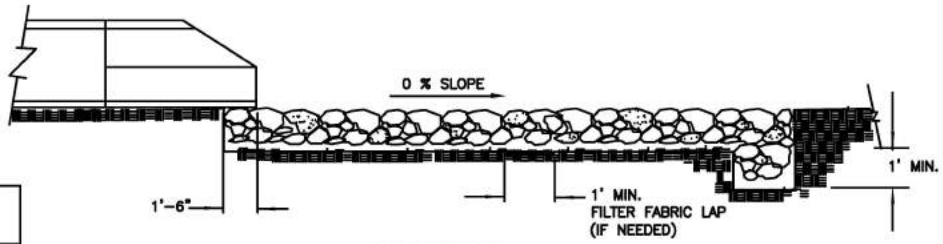
RIPRAP SUMMARY CHART

OUTLET	La	W1	W2	*T	H

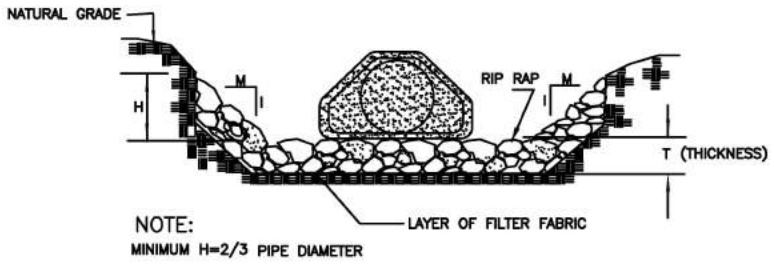
* d50 (see fig 8.06 a&b "NC SEDIMENT AND EROSION CONTROL MANUAL"
dmax = 1.5 x d50
T = 1.5 X dmax.



PLAN



ELEVATION



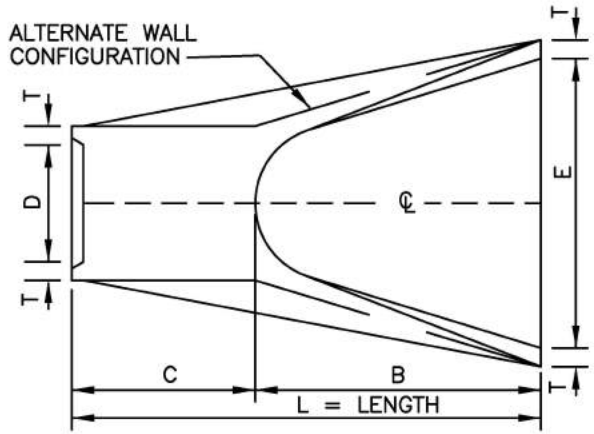
SECTION B–B

NOT TO SCALE

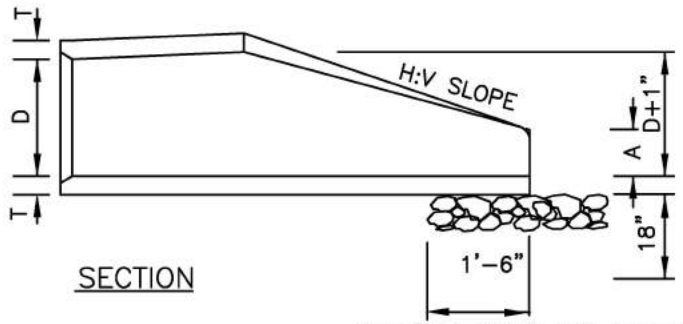
VILLAGE OF MARVIN STANDARD DRAWING

RIPRAP APRON AT PIPE OUTFALLS OTHER THAN SWIM

REV. DATE
STD. NO.
306.1

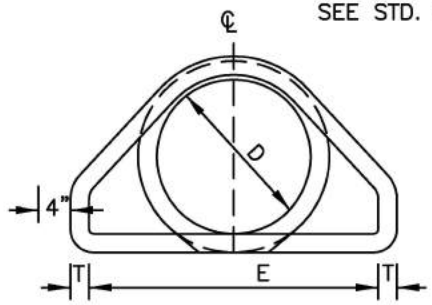


PLAN



SECTION

SEE STD. 20.23 AND 20.24



END VIEW

TABLE OF DIMENSIONS								
D	T	A	B	C	E	L	H:V	WT.
12"	2-1/4"	4"	2'-0"	4'-1"	2'-0"	6'-1"	3:1	730
15"	2-1/4"	6"	2'-3"	3'-10"	2'-0"	6'-1"	3:1	730
18"	2-1/2"	9"	2'-3"	3'-10"	3'-0"	6'-1"	3:1	1190
24"	3"	10"	3'-8"	2'-6"	4'-0"	6'-2"	3:1	1770
30"	3-1/2"	1'-0"	4'-6"	1'-8"	5'-0"	6'-2"	3:1	2380
36"	4"	1'-3"	5'-3"	2'-11"	6'-0"	8'-2"	3:1	5320
42"	4-1/2"	1'-9"	5'-3"	2'-11"	6'-6"	8'-2"	3:1	5920
48"	5"	2'-0"	6'-0"	2'-2"	7'-0"	8'-2"	3:1	7470
54"	5-1/2"	2'-3"	5'-6"	2'-10"	7'-6"	8'-4"	3:1	8810
60"	6"	2'-6"	5'-0"	3'-3"	8'-0"	8'-3"	3:1	11180
66"	6-1/2"	3'-0"	6'-0"	2'-3"	8'-6"	8'-3"	3:1	12530
72"	7"	3'-0"	6'-6"	1'-9"	9'-0"	8'-3"	3:1	13980

GENERAL NOTES:

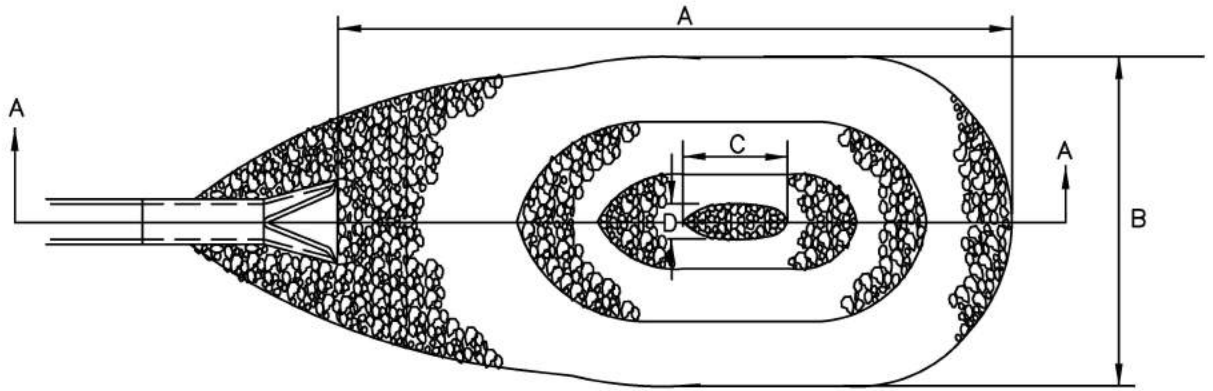
1. SEE FORMER NCDOT STANDARD 310.01 FOR DETAILS.
2. REINFORCEMENT SHALL CONFORM TO THE REQUIREMENTS OF REINFORCED CONCRETE PIPE OF LIKE DIAMENTER PER AASHTO M170, TABLE 2, WALL B.
3. ALL CONCRETE TO BE 4000 P.S.I COMPRESSIVE STRENGTH.
4. PROVIDE TONGUE OR SPIGOT JOINT AT INLET END SECTION.
5. PROVIDE GROOVE OR BELL JOINT AT OUTLET END SECTION.
6. THE DIMENSIONS FOR END SECTIONS SHALL SUBSTANTIALLY AGREE WITH THE TABLE. MINOR VARIATIONS WILL BE PERMITTED BASED ON THE MANUFACTURER'S STANDARD FORMS AND TEMPLATES.
7. NOT TO BE USED IN NCDOT MAINTAINED RIGHT OF WAY.

NOT TO SCALE

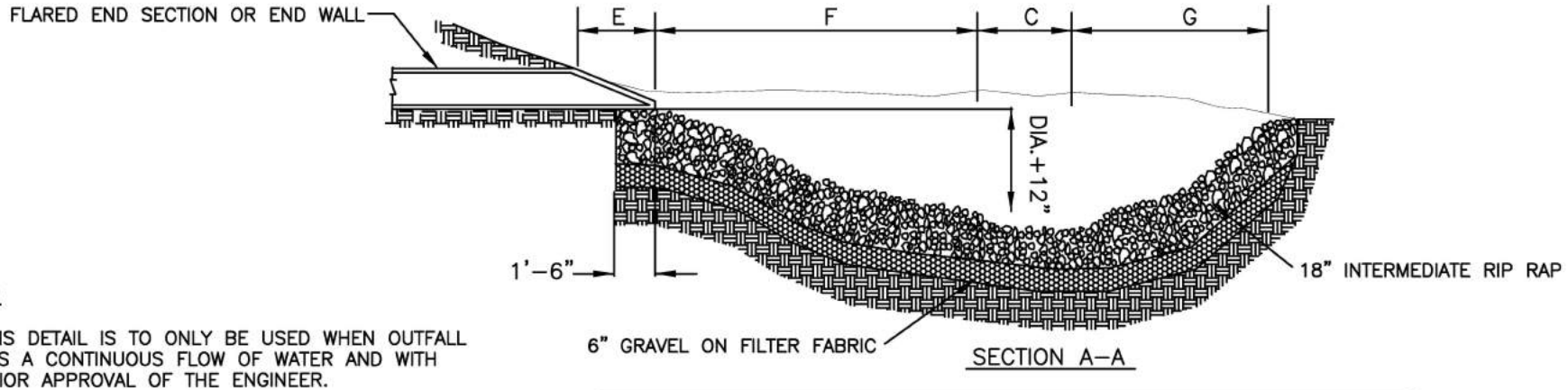
VILLAGE OF MARVIN STANDARD DRAWING

FLARED END SECTION
12" THRU 72" PIPE

REV. DATE
STD. NO.
307.1



PLAN



SECTION A–A

NOTE:

1. THIS DETAIL IS TO ONLY BE USED WHEN OUTFALL HAS A CONTINUOUS FLOW OF WATER AND WITH PRIOR APPROVAL OF THE ENGINEER.

PIPE SIZE	A	B	C	D	E	F	G	WT. RIP RAP IN TONS
15"	10'	7'	1 1/2'	1'	1'	4 1/2'	3'	6
18"	12'	8'	2'	1'	1'	5'	4'	8
21"	15'	9'	2 1/2'	1 1/2'	1'	7'	4 1/2'	12
24"	17'	10'	2 1/2'	1 1/2'	1'	8'	5 1/2'	15
30"	20'	13'	3'	2'	2'	9'	6'	22
36"	24'	16'	3 1/2'	2'	2'	9 1/2'	7'	33

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

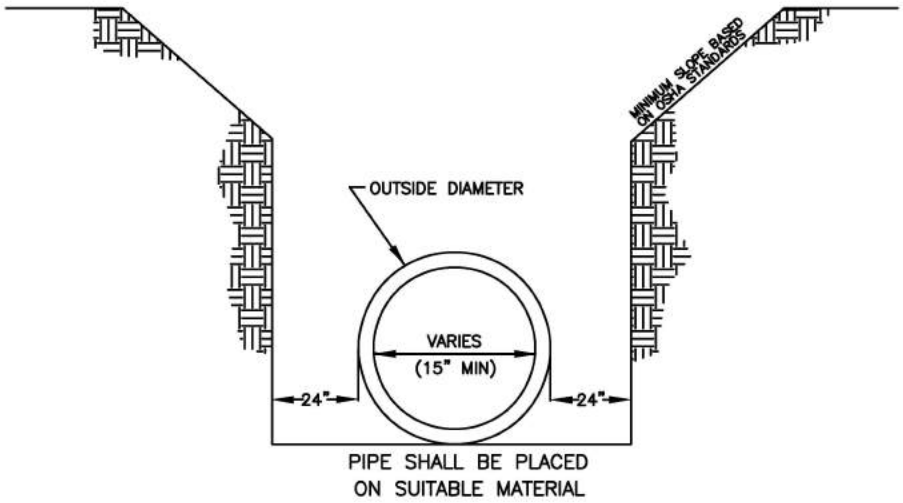
RIPRAP PLUNGE POOL

REV. DATE

STD. NO.
308.1

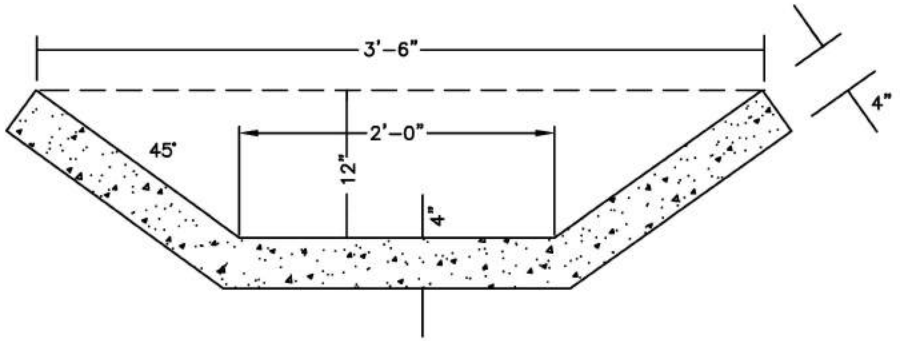
NOTES:

1. A MINIMUM OF 24" FROM OUTSIDE DIAMETER OF PIPE TO SIDE OF TRENCH MUST BE ALLOWED FOR COMPACTION OF FILL MATERIAL. BACKFILLING OF TRENCHES SHALL BE ACCOMPLISHED IMMEDIATELY AFTER THE PIPE IS LAID. THE FILL AROUND THE PIPE SHALL BE PLACED IN LAYERS NOT TO EXCEED 6". UNDER NO CIRCUMSTANCES SHALL WATER BE PERMITTED TO RISE IN UNBACKFILLED TRENCHES AFTER THE PIPE HAS BEEN PLACED. COMPACTION REQUIREMENTS SHALL BE ATTAINED BY THE USE OF MECHANICAL TAMPS ONLY. EACH AND EVERY LAYER OF BACKFILL SHALL BE PLACED LOOSE AND THOROUGHLY COMPACTED INTO PLACE.
2. ALL BACKFILL MATERIAL SHALL HAVE AN IN PLACE COMPACTED DENSITY OF 95%.
3. STANDARD PROCTOR. THE FINAL 2' BELOW FINISHED GRADE SHALL BE 100%.
4. ALL TRENCHING OPERATIONS SHALL MEET OSHA STANDARDS.
5. BACKFILL MATERIAL BENEATH ROADWAY SHALL BE SELECT BACKFILL MATERIAL.



NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	TRENCH DETAIL FOR STORM DRAIN	REV. DATE
		STD. NO. 309.1



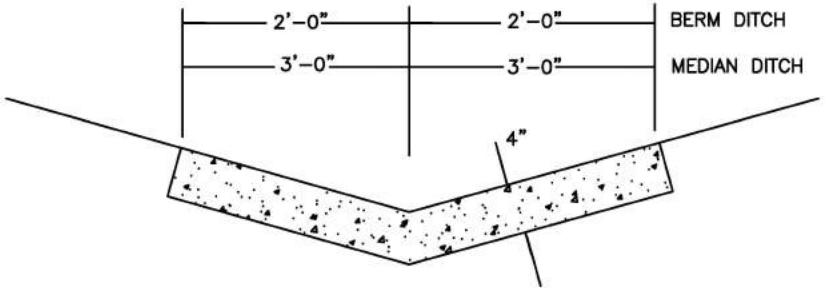
SLOPE DRAIN, BASE DITCH OR BERM DRAINAGE OUTLET DITCH

GENERAL NOTES:

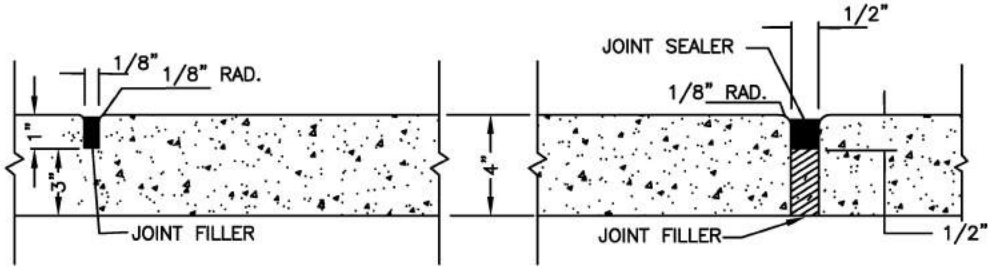
IN THE 4" CONCRETE PAVED DITCHES PLACE 1/2" EXPANSION JOINT AT 30 FT INTERVALS AND AT ALL OTHER POINTS WHERE PROPOSED DITCHES ABUT RIGID OBJECTS. PLACE GROOVED JOINTS 1" DEEP AT 10' INTERVALS BETWEEN EXPANSION JOINTS.

WIDTH AND SHAPE OF PROPOSED 4" CONCRETE PAVED DITCHES SHALL BE AS SHOWN OR AS DIRECTED BY THE ENGINEER.

ALL CONCRETE TO BE 3600 P.S.I. COMPRESSIVE STRENGTH.

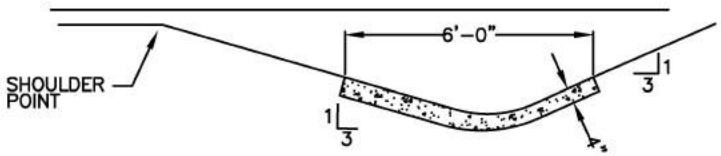


MEDIAN OR BERM DITCH

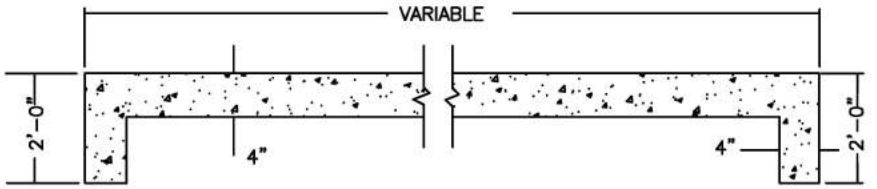


SHOWING GROOVED JOINT

SHOWING EXPANSION JOINT



SIDE DITCH

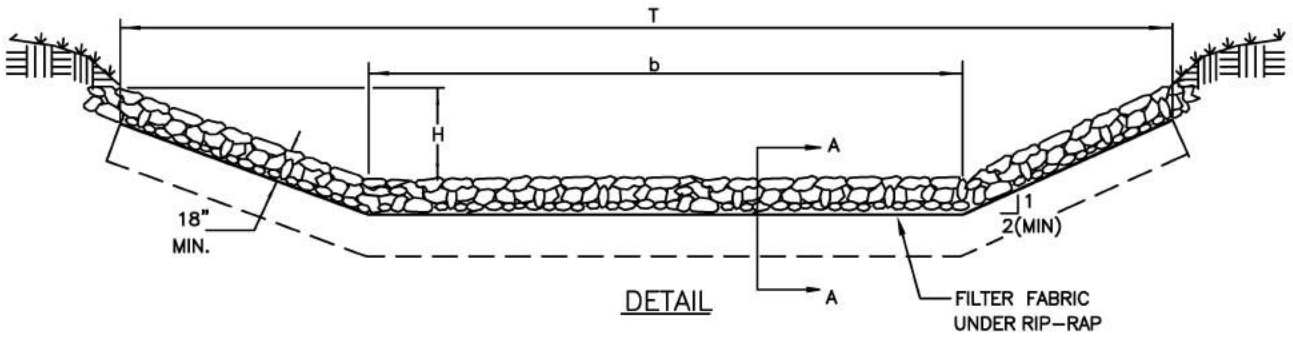


LONGITUDINAL SECTION OF PAVED DITCH

SHOWING 2'–0" CURTAIN WALL REQUIRED AT EACH END

NOT TO SCALE

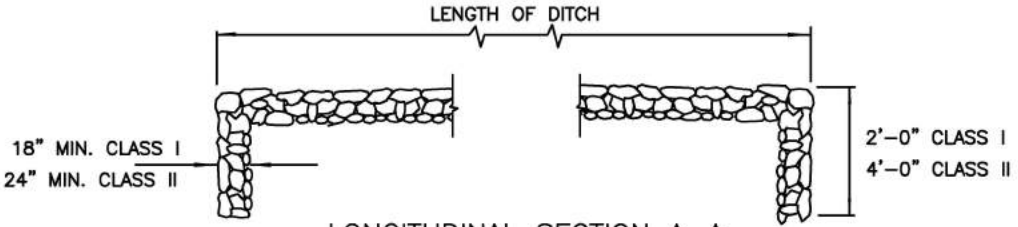
VILLAGE OF MARVIN STANDARD DRAWING	CONCRETE PAVED DITCHES	REV. DATE STD. NO. 310.1



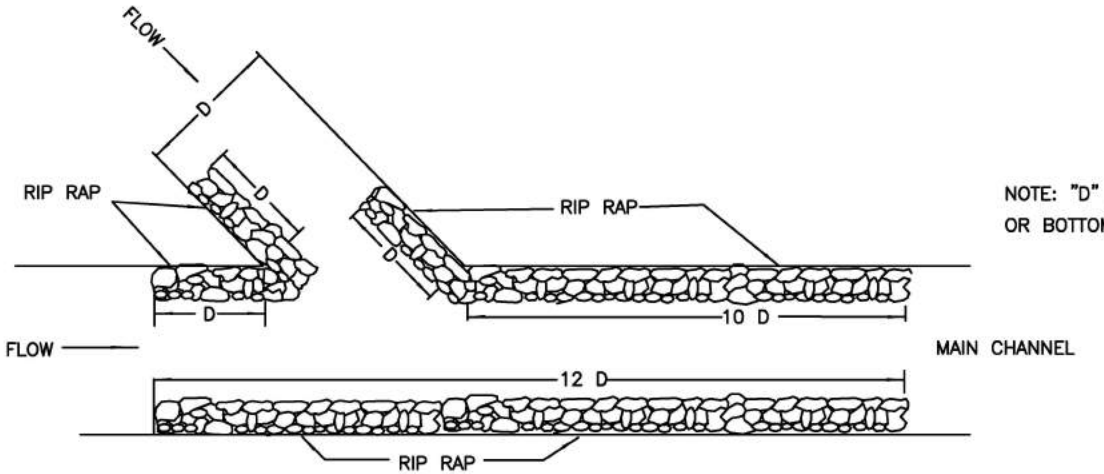
DETAIL

GENERAL NOTES:

1. IF BEDROCK IS ENCOUNTERED WITHIN THE LIMITS OF THE TOEWALL, BEGIN TOEWALL ON THE BEDROCK OR AS DIRECTED BY THE ENGINEER.
2. WHERE ONLY ONE SIDE REQUIRES RIP RAP CLASS I OR II, LIST STATION AND SIDE OF SAME.
3. CHANNEL AND RIP RAP SIZE TO BE DESIGNED BY THE ENGINEER.
4. DEPENDING ON SOIL CONDITIONS, WASHED STONE AND FILTER FABRIC MAY BE NECESSARY UNDER RIP RAP.
5. CHANNEL DEPTH "H" SHALL INCLUDE A MINIMUM 6" OF FREEBOARD.



LONGITUDINAL SECTION A–A



NOTE: "D" EQUALS DIAMETER OF PIPE OR BOTTOM WIDTH OF CHANNEL.

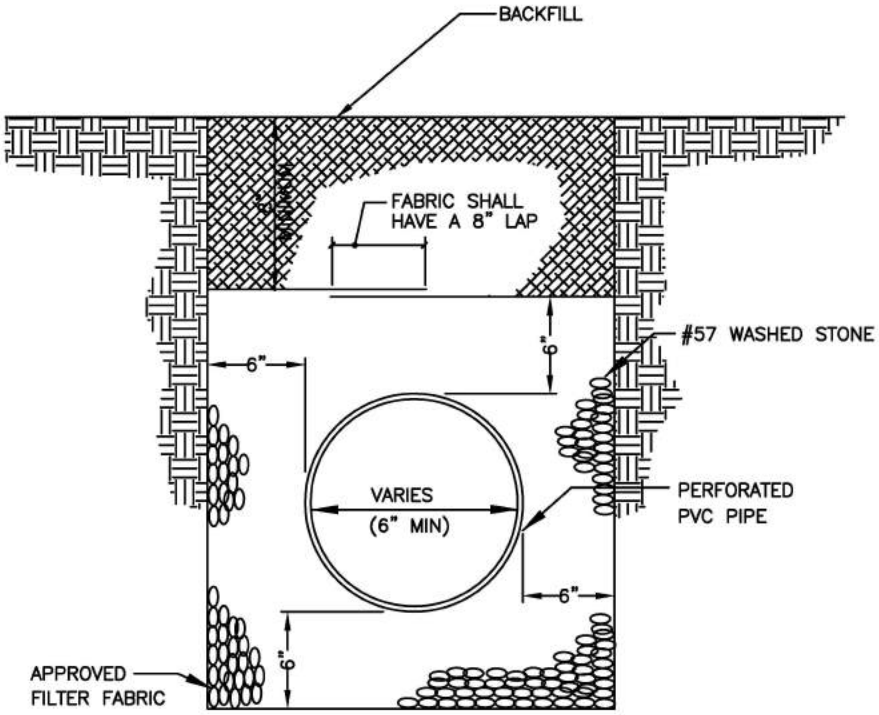
CHANNEL INTERSECTIONS

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	RIPRAP DITCHES	REV. DATE
		STD. NO. 311.1

NOTES:

1. A MINIMUM OF 6" FROM OUTSIDE DIAMETER OF PIPE TO SIDE OF TRENCH MUST BE ALLOWED FOR WASHED STONE. THE METHOD OF COMPACTING BACKFILL MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER.
   AN APPROVED FILTER FABRIC SHALL BE PLACED AROUND STONE AND OVERLAPPED 8" AT TOP WITHIN STREET RIGHT OF WAY. PIPE SIZE TO BE SHOWN ON PLAN (MINIMUM 6" PIPE). PIPE TO BE SCHEDULE 20 OR 40 PERFORATED PVC.
2. OUTLET PIPE FROM SUBDRAIN SHALL BE NON–PERFORATED UNDER PAVEMENT (INCLUDING SIDEWALKS AND DRIVEWAYS)
3. THE OUTLET PIPES SHALL BE SCHEDULE 80 UNDER ROADWAYS.
4. SEE SITE PLAN FOR SLOPE OF SUBDRAIN AND TIE IN TO STORM DRAINAGE.
5. FILTER FABRIC SHALL BE AN APPROVED, TYPE 2 WATER PERMEABLE, SYNTHETIC FABRIC.

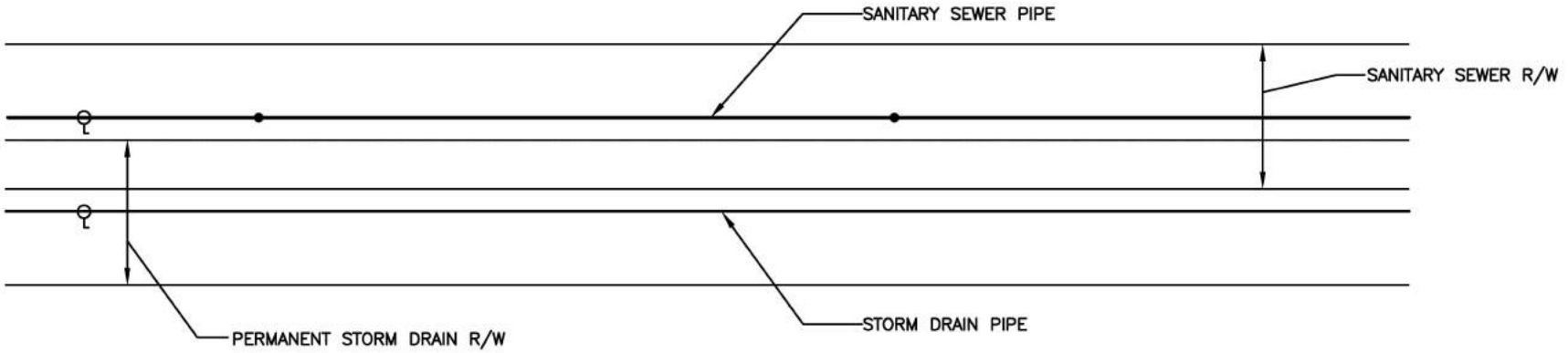


SPECIAL NOTE:

PREFABRICATED DRAINAGE MAY BE USED WITH APPROVAL OF VILLAGE ENGINEER.

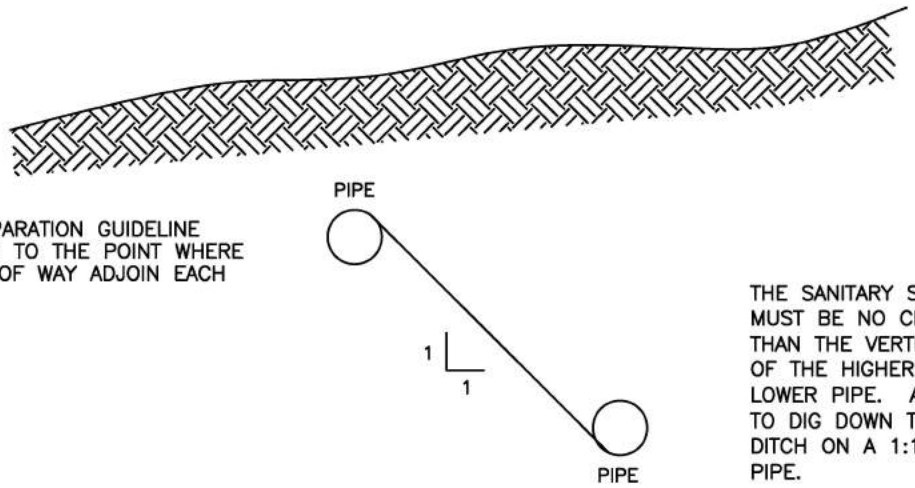
NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	SUBDRAIN DETAIL	REV. DATE
		STD. NO. 312.1



THE SANITARY SEWER AND STORM DRAINAGE RIGHTS OF WAY MAY OVERLAP; HOWEVER THE PIPE AND ASSOCIATED STRUCTURES MUST NOT BE IN THE OTHER UTILITY'S RIGHT OF WAY. THE SANITARY SEWER RIGHT OF WAY WIDTHS SHALL BE AS OUTLINED IN C.M.U.D.'S DESIGN MANUAL. THIS DETAIL DOES NOT APPLY TO STORM DRAINAGE UTILIZING OPEN CHANNEL FLOW.

PLAN VIEW



THE VERTICAL SEPARATION GUIDELINE WILL BE USED UP TO THE POINT WHERE THE TWO RIGHTS OF WAY ADJOIN EACH OTHER.

THE SANITARY SEWER AND STORM DRAINAGE PIPES MUST BE NO CLOSER TOGETHER HORIZONTALLY THAN THE VERTICAL DISTANCE BETWEEN THE TOP OF THE HIGHER PIPE AND THE BOTTOM OF THE LOWER PIPE. A MAINTENANCE CREW MUST BE ABLE TO DIG DOWN TO THE LOWER PIPE SLOPING THE DITCH ON A 1:1 SLOPE AND NOT EXPOSE THE HIGHER PIPE.

PROFILE VIEW

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	OVERLAPPING STORM DRAINAGE/ SANITARY SEWER EASEMENTS	REV. DATE
		STD. NO. 313.1

GENERAL NOTES:

1. FOR STREAMS CARRYING 500 ACRES OR MORE OF SURFACE RUNOFF, THE EASEMENT REQUIREMENT IS TO BE THE WIDTH OF THE STREAM FROM TOP OF BANK TO TOP OF BANK, PLUS (+) 10' ON EACH SIDE OF STREAM. (40' MINIMUM WIDTH)
2. FOR OPEN CHANNELS THE MINIMUM EASEMENT MUST CONTAIN THE WIDTH OF THE STREAM FROM TOP OF BANK TO TOP BANK.
3. WIDER EASEMENT WIDTHS MAY BE REQUIRED FOR PIPE DEPTHS GREATER THAN TEN FEET.
4. PIPE SYSTEMS AND OPEN CHANNELS ON PRIVATE PROPERTY SHALL BE PLACED IN A STORM DRAINAGE EASEMENT.

Easement Requirements for
Open Storm Drainage Channels

Area in Acreage	Easement Requirement
0–45 ac.	20'
45–120 ac.	30'
120–500 ac.	40'
500 ac.+	see note

Easement Requirements for Storm Drain Pipe

Pipe Size	Easement Requirement
15"	15'
18"	15'
24"	15'
30"	20'
36"	20'
42"	25'
48"	25'
54"+	30'MIN (VARIES)

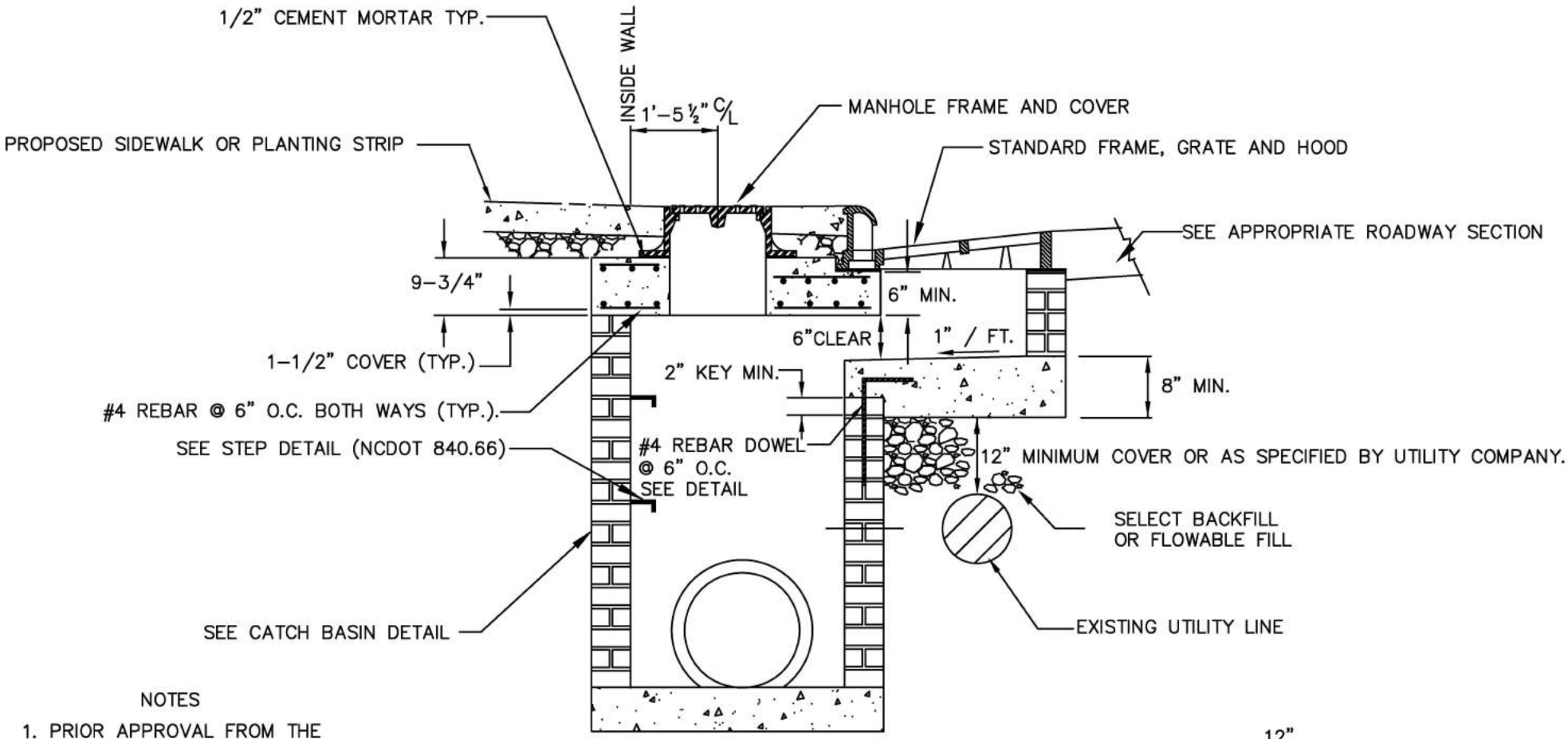
NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

MINIMUM DRAINAGE EASEMENT REQUIREMENTS FOR STORM DRAIN PIPES AND OPEN CHANNELS

REV. DATE

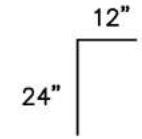
STD. NO. 314.1



NOTES

1. PRIOR APPROVAL FROM THE ENGINEER IS REQUIRED.
2. THIS STRUCTURE IS TO ONLY BE USED ON VILLAGE MAINTAINED STREETS AND NOT ON NCDOT STREETS WITHOUT THEIR PERMISSION.

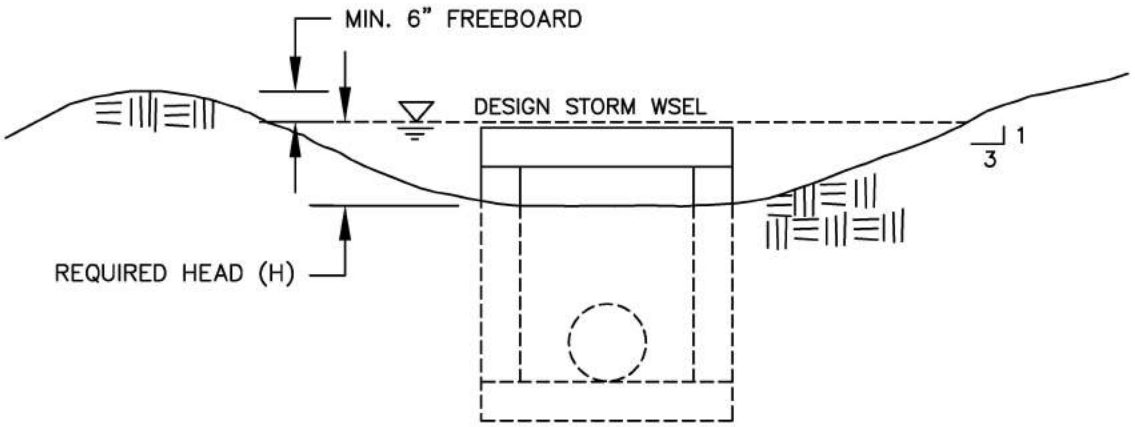
OFFSET CATCH BASIN EXISTING UTILITY CONFLICT

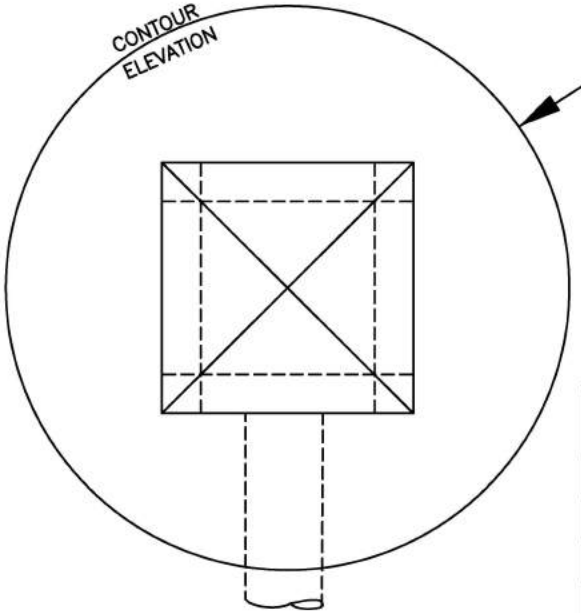


DOWEL DETAIL

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	OFFSET CATCH BASIN	REV. DATE
		STD. NO. 315.1





YARD INLET SUMMARY CHART				
YARD INLET	AREA (AC.)	CFS	HEAD H (FT.)	COMMENT

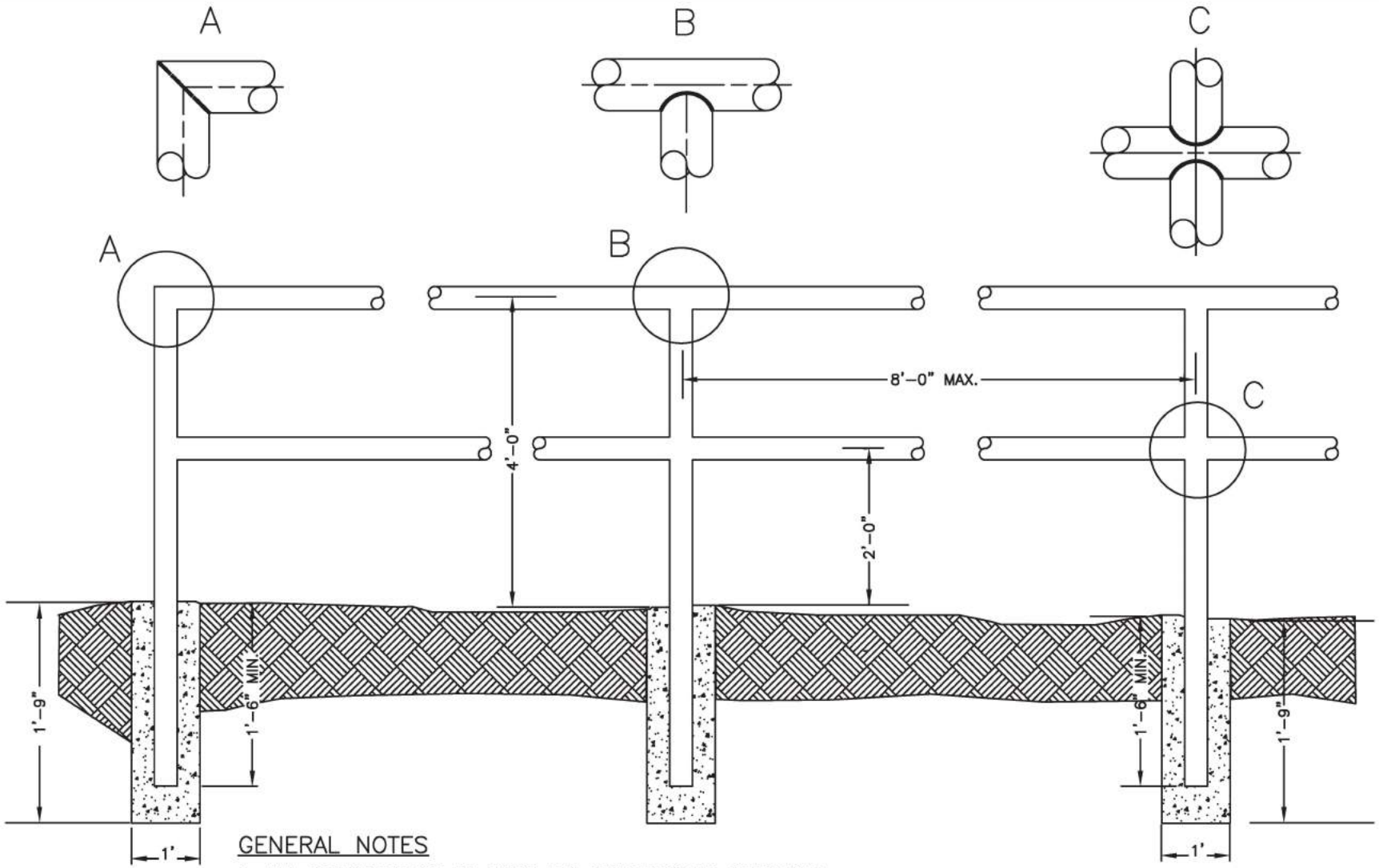
NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

GRADING AT DROP INLET

REV. DATE

STD. NO.
316.1



GENERAL NOTES

1. ALL CONCRETE TO BE 3600 PSI COMPRESSIVE STRENGTH.
2. TYPE OF PIPE TO BE USED IS $1\frac{5}{8}$ INCH MAXIMUM OUTER DIAMETER BLACK IRON, LOW CARBON PIPE OR GALVANIZED.
3. ALL JOINTS TO HAVE A $\frac{1}{2}$ INCH FILLED WELD AT ALL JOINTS.
4. AFTER INSTALLATION, PAINT ASSEMBLY WITH BLACK ALL WEATHER ENAMEL.
5. ALTERNATIVE HANDRAIL DESIGNS TO BE SUBMITTED TO THE VILLAGE ENGINEER FOR REVIEW.
6. REFER TO DETAIL 701.1 FOR WARRANTS.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

TYPICAL HANDRAIL

REV. DATE
STD. NO.
700.1

WARRANTS

HANDRAIL SHALL BE INSTALLED UNDER ANY OF THE FOLLOWING CIRCUMSTANCES IN BOTH NEW CONSTRUCTION AND IN RETROFITTING OR RECONSTRUCTION OF EXISTING ROADWAYS OR SITES:

1. WHEN THE CULVERT–CROSSING DETAIL (STD. 133.1 & 134.1) APPLIES.

2. IN ANY OF THE FOLLOWING COMBINATIONS OF DROPOFF AND OFFSET FROM SIDEWALK:
   a. 18" OR LARGER DROPOFF WITHIN 2 FEET OF THE EDGE OF THE SIDEWALK
   b. 36" OR LARGER DROPOFF WITHIN 4 FEET OF THE EDGE OF THE SIDEWALK
   c. 60" OR LARGER DROPOFF WITHIN 6 FEET OF THE EDGE OF THE SIDEWALK

   THESE CLEARANCES ASSUME THAT THE CROSS–SLOPE OF THE BERM BETWEEN THE SIDEWALK AND THE DROPOFF IS 6:1 OR FLATTER.

3. AT THE TOP OF ANY DROPOFF WHERE PEDESTRIANS CAN REASONABLY BE EXPECTED IN THE VICINITY.

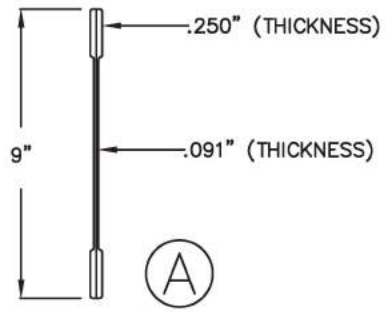
4. AT THE DIRECTION OF VILLAGE ENGINEER BASED ON FIELD CONDITIONS.

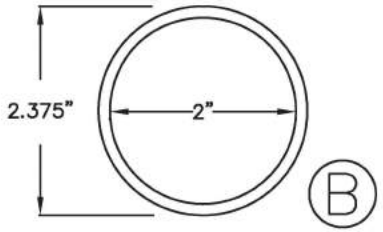
FOR PURPOSES OF THIS STANDARD, THE TERM "SIDEWALK" IS USED GENERICALLY AND SHALL MEAN ANY SEPARATE PATH OR SURFACE TO BE USED FOR BICYCLE AND/OR PEDESTRIAN TRANSPORTATION. EXAMPLES INCLUDE, BUT ARE NOT LIMITED TO, SIDEWALKS, BIKE PATHS, SHARED–USE PATHS, PEDESTRIAN PATHS, AND GREENWAYS.

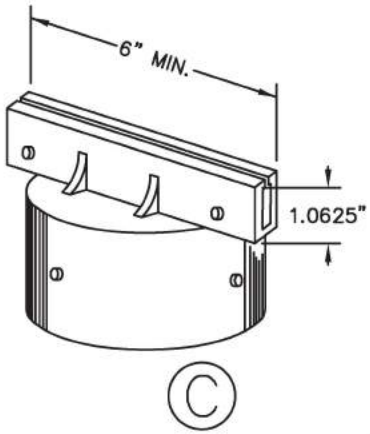
DEFINITIONS

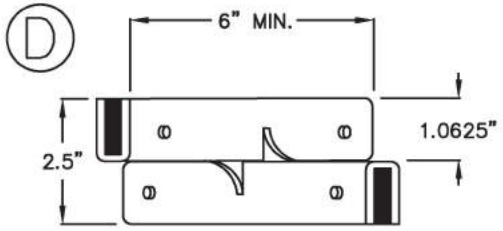
– DROPOFF –– A SLOPE OF 2:1 OR STEEPER. EXAMPLES INCLUDE HEADWALLS, RETAINING WALLS, AND CULVERTS, ETC.

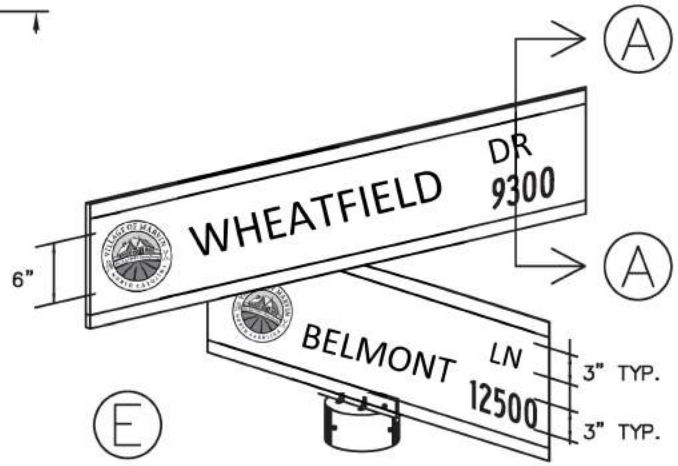
VILLAGE OF MARVIN STANDARD DRAWING	HANDRAIL WARRANTS	REV. DATE STD. NO. 701.1











NOTES:

1. BLADES SHALL BE EXTRUDED ALUMINUM 6063T5 OR 6063T6 ALLOY .080" THICK. (SEE DETAIL A) POST SHALL BE 10'–0" IN LENGTH, TUBULAR 2.375 O.D. GLOSS GALVANIZED STEEL CONTINUOUS MILL DIPPED, WITH NO RAW ENDS; OR 40, 1540 WALL ALUMINUM (SEE DETAIL B).
2. CAP TO BE ALUMINUM #380 ALLOY OR EQUAL SLOTTED FOR .25" EXTRUDED BLADE; 2.375" I.D. BASE, DIE CAST AND POLISHED. CAP SHALL BE TAPPED TO RECEIVE AND INCLUDE 3 STAINLESS STEEL SET SCREWS FOR POST MOUNTING AND 2 STAINLESS STEEL SET SCREWS FOR BLADE MOUNTING. SET SCREWS TO HAVE ALLEN HEADS (SEE DETAIL C).
3. BLADE SPACER BRACKET SHALL MEET SAME SPECIFICATIONS AS THE CAP WITH 2 SCREWS TO EACH BLADE MOUNTING (SEE DETAIL D).
4. THE FACE OF ALL BLADES SHALL HAVE WHITE LETTERS WITH GREEN BACKGROUND WITH RETROREFLECTIVE CHARACTERISTICS MEETING MINIMUM ASTM D–4956 TYPE III STANDARDS. THE PRIMARY LETTERS SHALL BE MIXED CASE WITH 6" FHWA SERIES B FONT AND PREFIX/SUFFIX LETTERS AND BLOCK NUMBERS SHALL BE 3" MIXED CASE FHWA SERIES B FONT. (SEE DETAIL E)
5. PREFERRED MATERIALS:
   –WHITE: 3M HIGH INTENSITY GRADE PRISMATIC SERIES 3930 (3930 WHITE)
   –GREEN: 3M ELECTROCUT FILM SERIES 1170 (1177C GREEN)
6. ALL LETTERS SHALL BE SERIES B–2000 FROM THE 2004 STANDARD HIGHWAY SIGNS MANUAL (AND ANY REVISION THERETO) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION.
7. ALL STREET NAME SIGNS ARE SUBJECT TO APPROVAL BY THE VILLAGE ENGINEER. BLOCK NUMBERS SHALL BE PROVIDED ON SIGNS AND CORRESPOND TO OFFICIALLY APPROVED ADDRESSES.
8. REFER TO DRAWING 703.1 FOR MARVIN LOGO REQUIREMENTS.
9. FOR SIGNS LONGER THAN 48 INCHES IN LENGTH, THE 6 INCH MINIMUM IN C AND D IS TO BE 12 INCHES.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

NON THOROUGHFARE STREET NAME SIGN

REV. DATE
STD. NO.
702.1

NOTES:

1. THE VILLAGE OF MARVIN LOGO SHALL BE USED ON STREETNAME MARKERS LOCATED ON VILLAGE MAINTAINED STREETS.

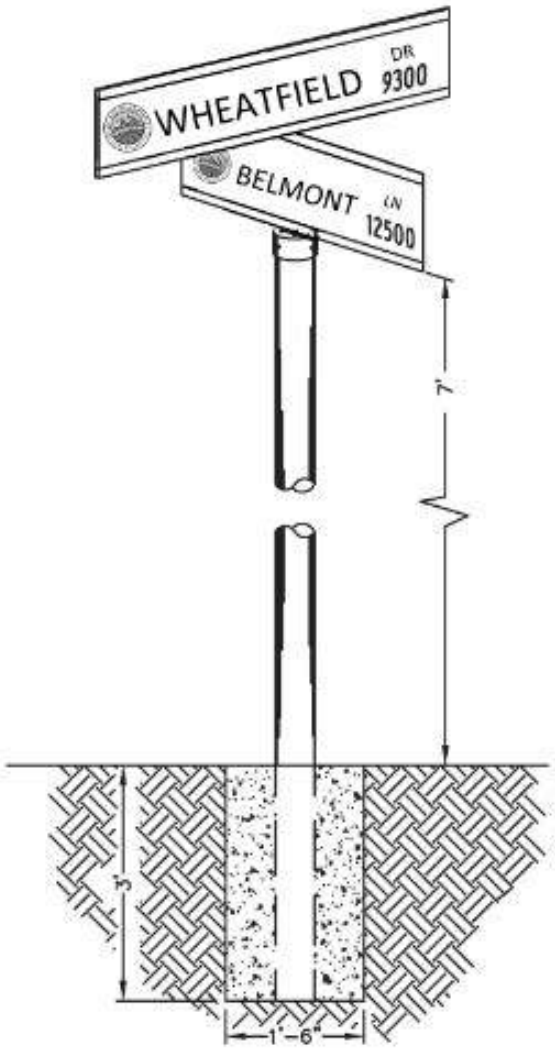
2. THE LOGO SHALL BE WHITE WITH A GREEN BACKGROUND WITH RETROREFLECTIVE CHARACTERISTICS MEETING MINIMUM ASTM D-4956 TYPE III STANDARDS.

3. PREFERRED MATERIALS:
   -WHITE: 3M HIGH INTENSITY GRADE PRISMATIC SERIES 3930 (3930 WHITE)
   -GREEN: 3M ELECTROCUT FILM SERIES 1170 (1177C GREEN)

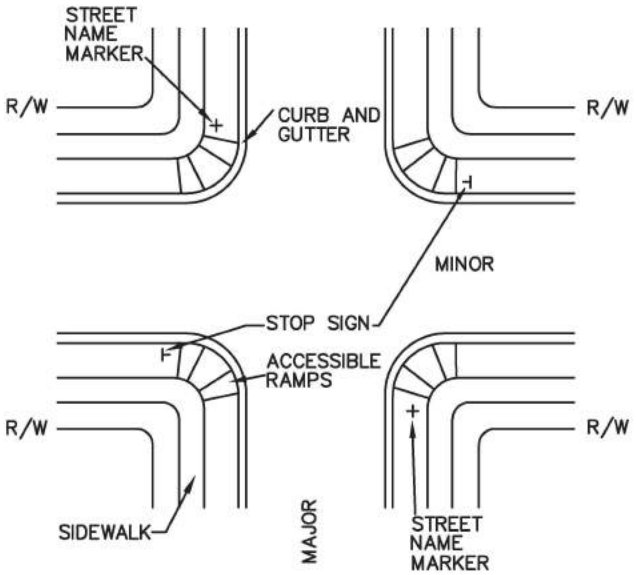
4. THE DECORATIVE LOGO SHALL BE ACQUIRED FROM THE VILLAGE OF MARVIN.

VILLAGE OF MARVIN STANDARD DRAWING	STREET NAME SIGN	REV. DATE
		STD. NO. 703.1

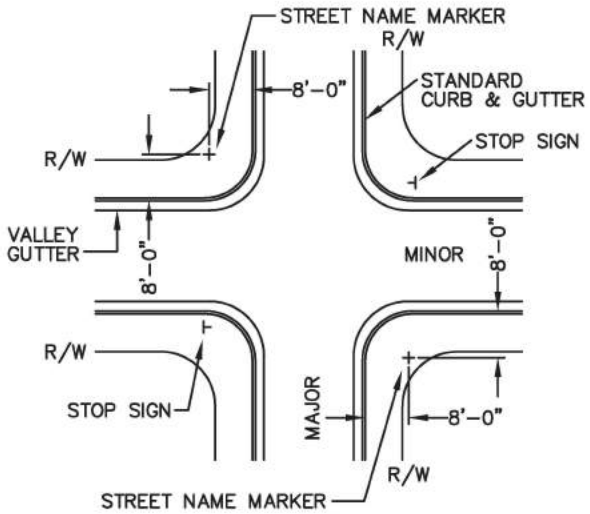
INSTALLATION OF STREET NAME SIGN



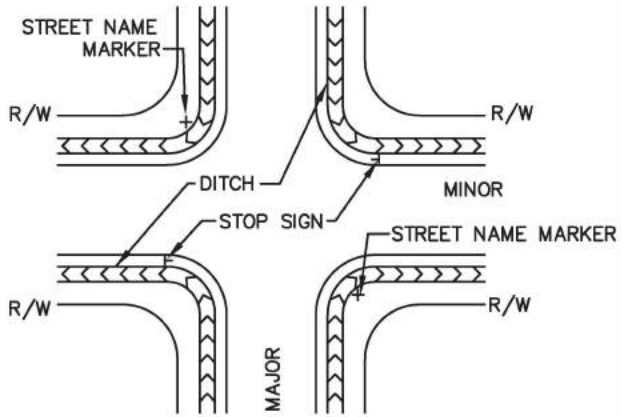
INTERSECTION with SIDEWALK, CURB, and GUTTER



INTERSECTION with CURB and GUTTER



INTERSECTION with DITCHES, and NO CURB and GUTTER



NOTES

1. TWO STREET NAME MARKERS ARE REQUIRED IF THE MAJOR STREET HAS 3 OR MORE LANES.

2. ANY VARIANCE FROM THIS STANDARD MUST BE APPROVED BY THE VILLAGE ENGINEER.

NOT TO SCALE

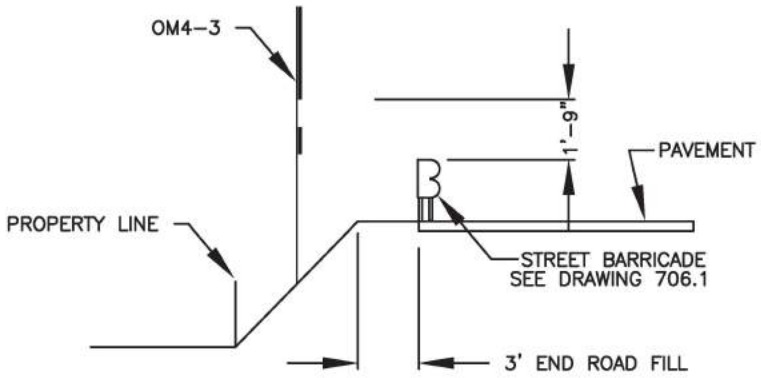
VILLAGE OF MARVIN STANDARD DRAWING

STREET NAME SIGN INSTALLATION LOCATIONS

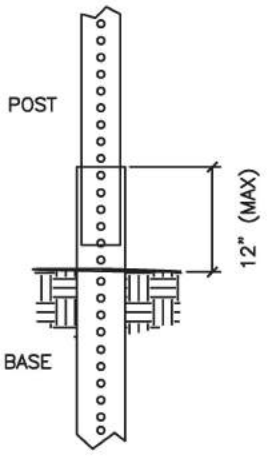
REV. DATE
STD. NO.
704.1

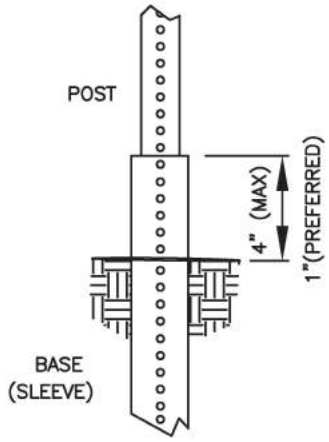
NOTES:

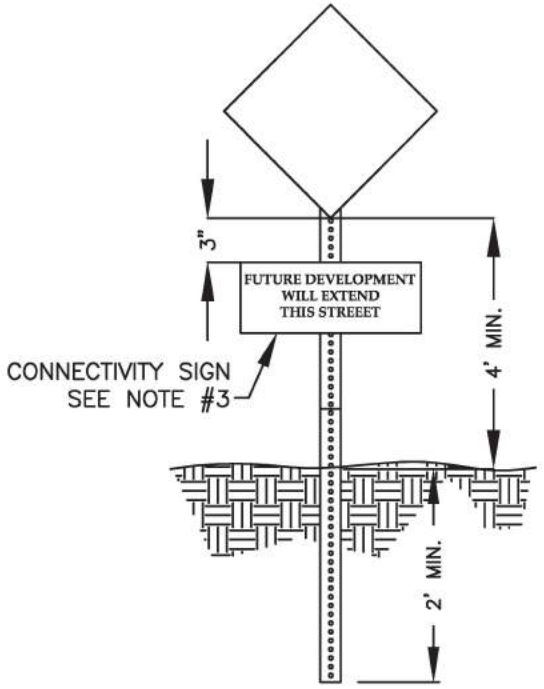
1. WHEN AN END OF ROADWAY OR STUBBED STREET REQUIRES A GUARDRAIL SECTION, END OF ROADWAY MARKER SIGNS (MUTCD OM4–3, 24"x24", SOLID RED) SHALL BE PROVIDED.
2. SIGNS ARE TO BE PLACED BEHIND THE BARRICADE (SEE DRAWINGS 707.1 & 708.1), EVENLY SPACED WITH ONE SIGN PLACED AT THE CENTERLINE LOCATION AND ADDITIONAL SIGNS AT 6' O.C. (MINIMUM OF 3 SIGNS, MAXIMUM OF 5 SIGNS).
3. WHEN BARRICADE IS USED ON A STREET STUB, THE SIGN AT THE CENTERLINE SHALL BE SUPPLEMENTED WITH A STREET CONNECTIVITY SIGN. SEE DRAWING 708.1.
4. ALL SIGNS/MARKERS SHALL MEET OR EXCEED MUTCD STANDARDS FOR RETROREFLECTIVITY.



SIGN LOCATION DETAIL

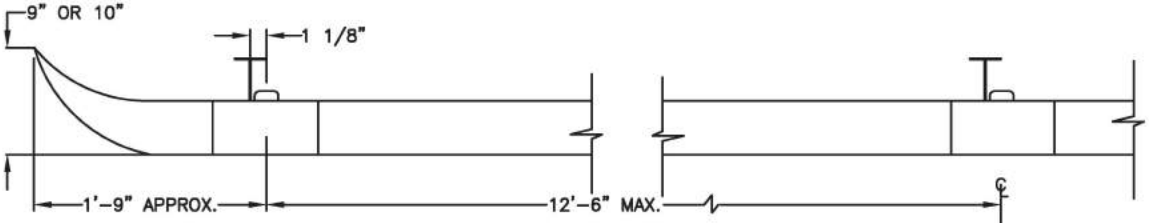




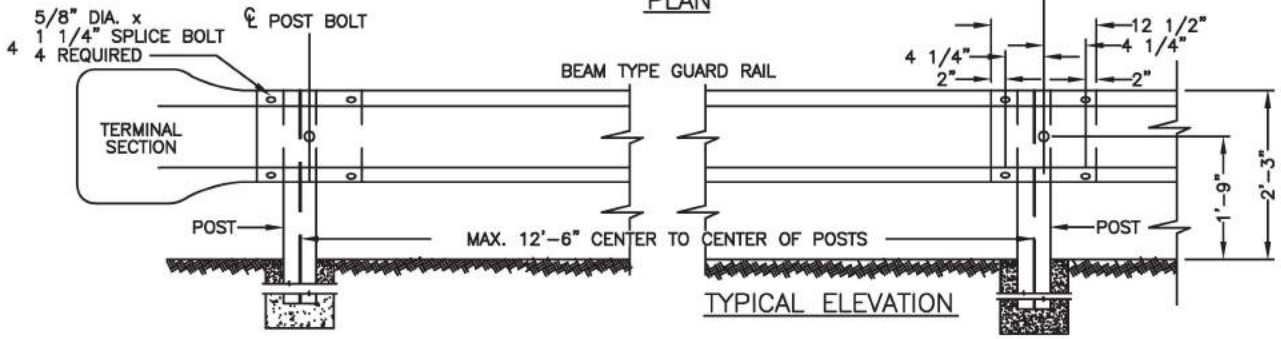


NOT TO SCALE

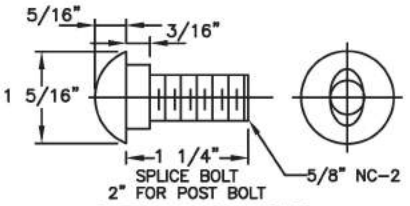
VILLAGE OF MARVIN STANDARD DRAWING	END OF ROADWAY MARKER	REV. DATE STD. NO. 705.1



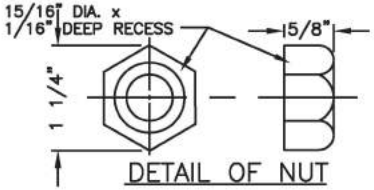
PLAN



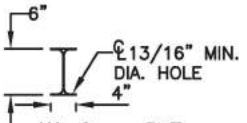
TYPICAL ELEVATION



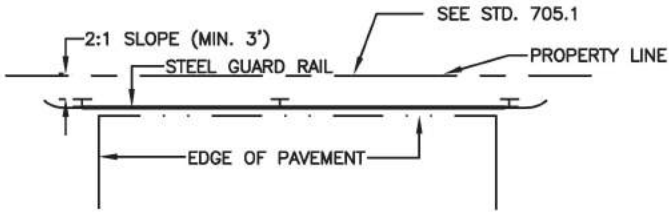
DETAIL OF BOLT



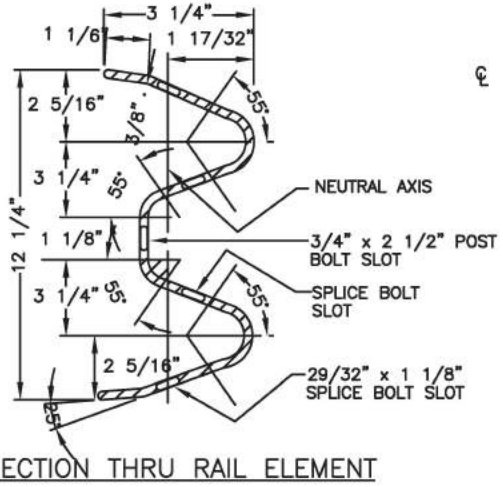
DETAIL OF NUT



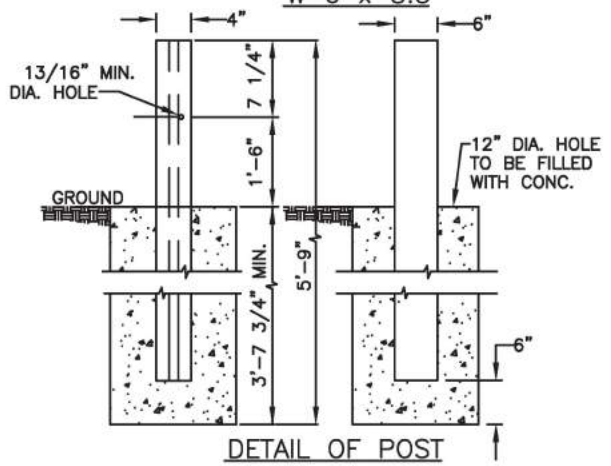
W 6 x 8.5



END OF ROADWAY STREET BARRICADE



SECTION THRU RAIL ELEMENT



DETAIL OF POST

NOTES:

– THIS DETAIL IS NOT A GUARDRAIL DETAIL. FOR ROADSIDE GUARDRAIL, REFER TO NCDOT STANDARD DRAWINGS 862.01–862.03

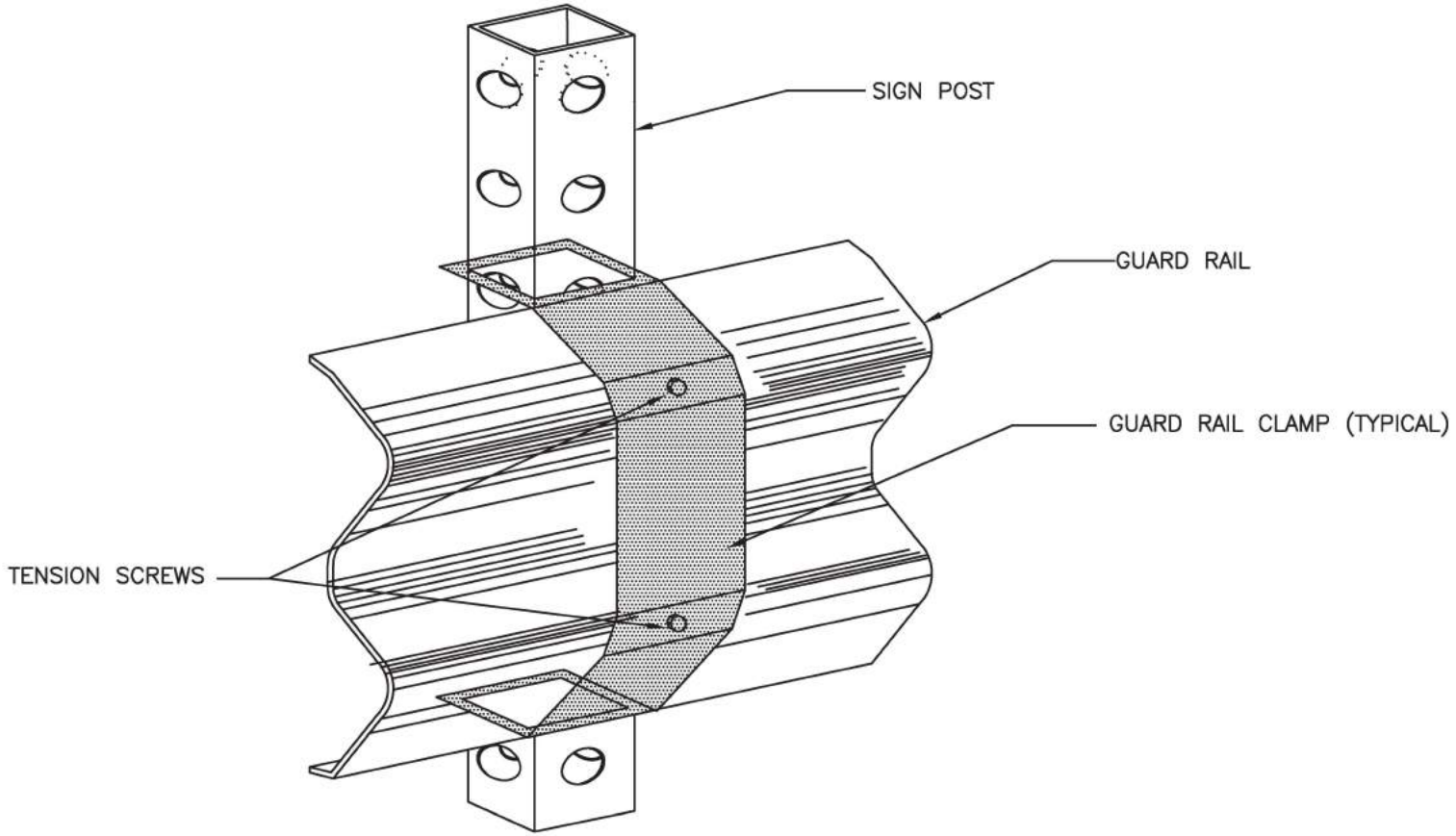
– REFER TO STANDARD DRAWINGS 705.1 AND 707.1 FOR ADDITIONAL INFORMATION.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

END OF ROADWAY STREET BARRICADE

REV. DATE
STD. NO.
706.1

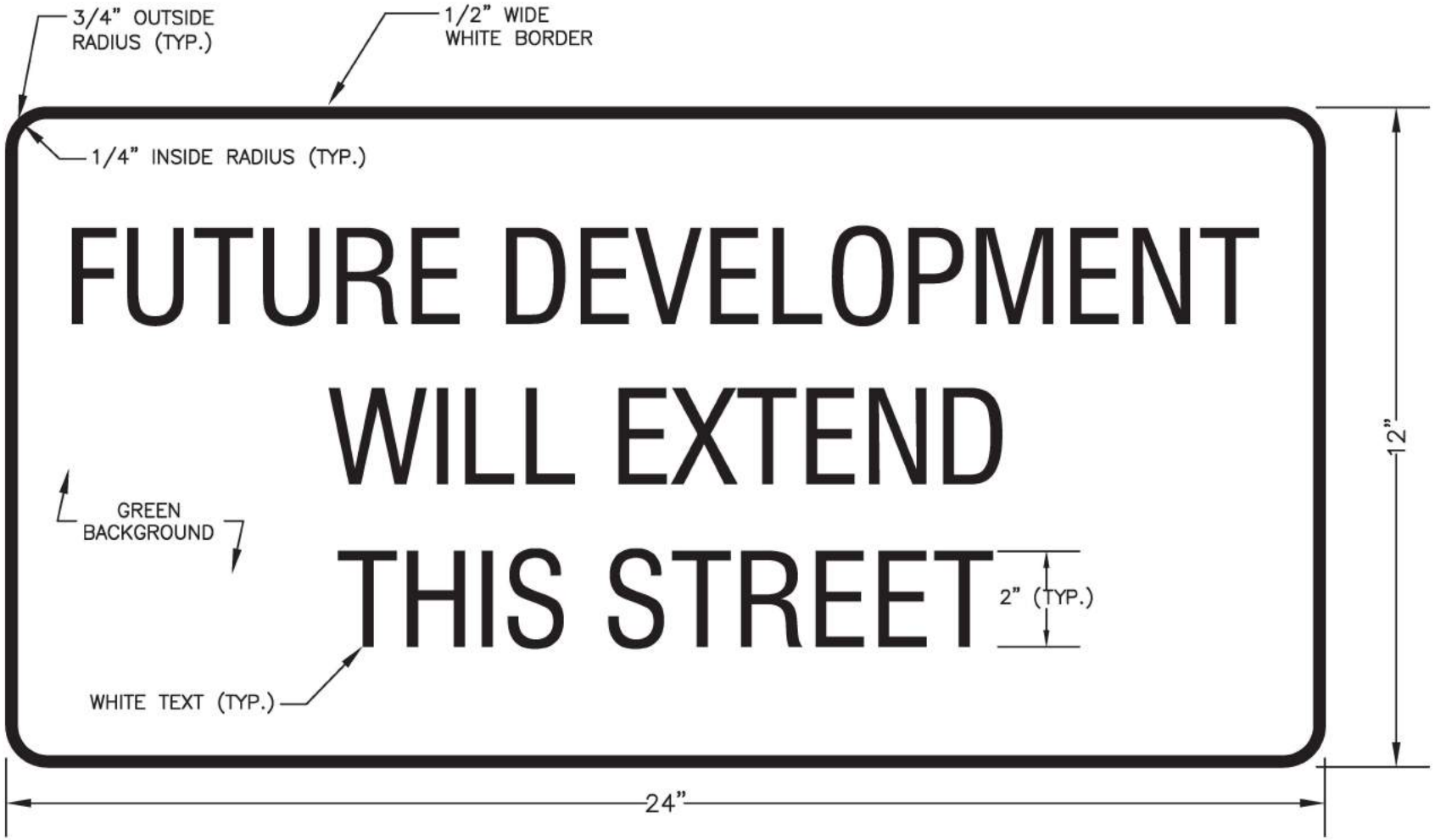


NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

END OF ROADWAY MARKER
GUARD RAIL CLAMP INSTALLATION

REV. DATE
STD. NO.
707.1



NOTES:

1. SIGN SHALL MEET OR EXCEED MUTCD STANDARDS FOR RETROREFLECTIVITY
2. SIGN MATERIAL SHALL BE 0.080" THICK ALUMINUM
3. ALL LETTERS SHALL BE SERIES B–2000 FROM THE 2004 STANDARD HIGHWAY SIGNS MANUAL (AND ANY REVISION THERETO) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	STREET CONNECTIVITY SIGN FOR END OF ROADWAY BARRICADE	REV. DATE
		STD. NO. 708.1

GENERAL NOTES:

1.STEEL BEAM TYPE GUARD RAILS SHALL BE INSTALLED AT THE END OF ALL DEAD–END STREETS, EXCEPT CUL–DE–SAC STREETS WHICH HAVE BEEN APPROVED WITH A PERMANENT TURNAROUND.

2. FOR STREETS 28' IN WIDTH, THE GUARD RAIL SHALL CONSIST OF TWO (2) 12'–8" SECTIONS OR ONE (1) 25' SECTION, THREE (3) STEEL POSTS, AND TWO (2) TERMINAL SECTIONS. FOR STREETS GREATER THAN 25' IN WIDTH, THE GUARD RAIL SHALL SPAN THE ENTIRE WIDTH OF THE STREET.

3. GUARD RAIL SHALL CONSIST OF RAIL ELEMENTS FABRICATED TO DEVELOP CONTINUOUS BEAM STRENGTH AND INSTALLED AS SHOWN.

4. MINIMUM THICKNESS OF GUARD RAIL SHALL BE 12 GAGE U.S. STANDARD. THE RAIL ELEMENT INCLUDING SPLICES SHALL HAVE A MINIMUM ULTIMATE TENSILE STRENGTH OF 80,000 LBS. GUARD RAIL PARTS FURNISHED SHALL BE INTERCHANGEABLE WITH SIMILAR PARTS REGARDLESS OF THE SOURCE OF MANUFACTURER. THE HOLES FOR CONNECTING BOLTS SHALL BE PUNCHED OR DRILLED. BURNING OF THE HOLES FOR CONNECTING BOLTS SHALL NOT BE PERMITTED.

5. THE GUARD RAIL, BOLTS, NUTS, STEEL POSTS, AND ALL OTHER METAL PARTS SHALL BE GALVANIZED TO CONFORM TO THE REQUIREMENTS FOR THE COATING CLASS, (2.5 OUNCES PER SQUARE FOOT) OF THE CURRENT SPECIFICATIONS FOR ZINC–COATED (GALVANIZED) IRON, AND STEEL SHEETS, COILS, AND CUT LENGTHS, IN ACCORDANCE WITH ASTM 123A.

6. IF THE AVERAGE SPELTER COATING AS DETERMINED FROM THE REQUIRED SAMPLES IS LESS THAN TWO (2) OUNCES OF SPELTER PER SQUARE FOOT, OR IF ANY ON SPECIMEN HAS LESS THAN 1.8 OUNCES OF SPELTER PER SQUARE FOOT OF DOUBLE EXPOSED SURFACE, THE LOT SAMPLED SHALL BE REJECTED. THE FINISHED SHEETS SHALL BE OF FIRST CLASS COMMERCIAL QUALITY, FREE FROM INJURIOUS DEFECTS SUCH AS BLISTERS, FLUX, AND UNCOATED SPOTS.

7. THE GUARD RAIL SHALL BE INSPECTED TO DETERMINE THAT THE MATERIAL, DIMENSIONS, AND WORKMANSHIP ARE IN ACCORDANCE WITH THIS PLAN.

8. WHERE AN END OF ROADWAY REQUIRES GUARD RAIL, END OF ROADWAY MARKER SIGNS SHALL ALSO BE REQUIRED. (REFER TO DRAWINGS 705.1 – 708.1)

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	END OF ROADWAY STREET BARRICADE GENERAL NOTES	REV. DATE STD. NO. 709.1

THIS PAGE IS INTENTIONALLY LEFT BLANK

NOTES:

1. FOR ACCESSIBLE PARKING STANDARDS/SIGNAGE SEE STDS. 712.1, 713.1, AND 714.1.

2. PAVEMENT MARKINGS SHALL BE 4" WHITE PAINT.

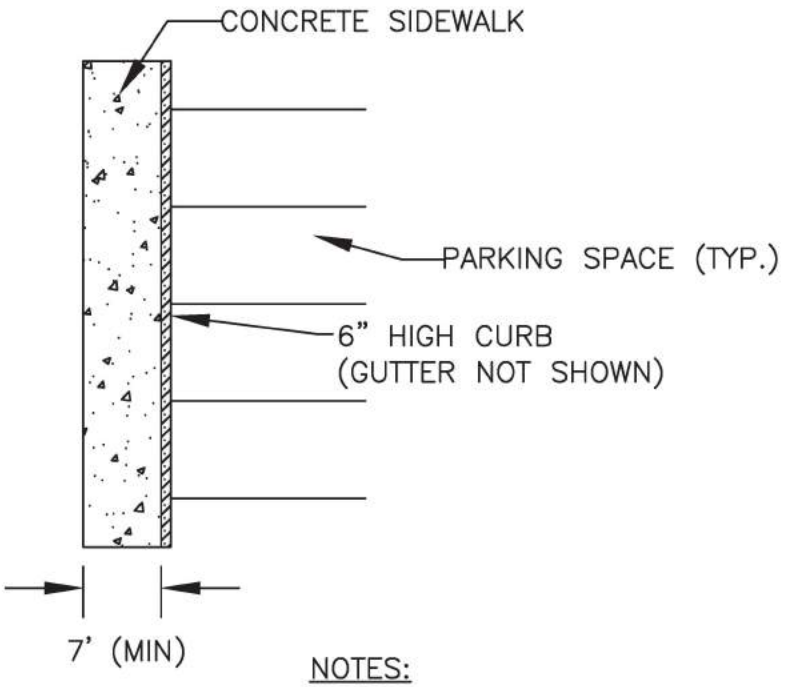
3. ALTERNATIVE PARKING ANGLES, AISLE WIDTHS, AND OPERATION (TWO-WAY ANGLED PARKING OR REVERSE-ANGLE PARKING) WILL BE CONSIDERED ON A CASE-BY-CASE BASIS.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	PARKING STANDARDS	REV. DATE
		STD. NO. 710.1

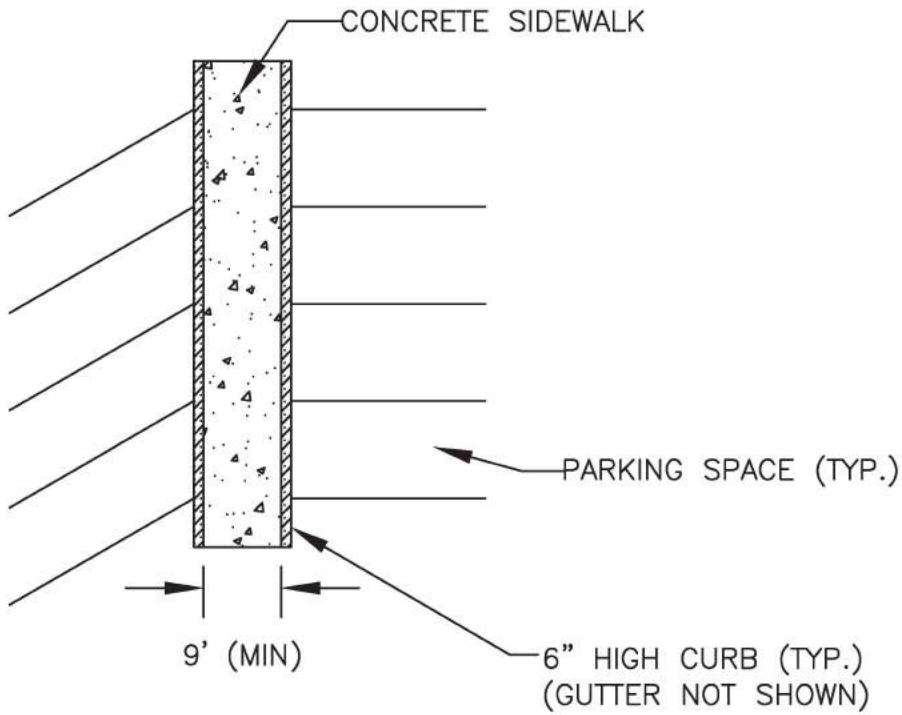
SIDEWALK ADJACENT TO HEAD–IN OR BACK–IN PARKING SHALL BE AT LEAST 7 FEET WIDE.

PARKING ON ONE SIDE OF A SIDEWALK



SIDEWALK BETWEEN TWO ROWS OF HEAD–IN OR BACK–IN PARKING SHALL BE AT LEAST 9 FEET WIDE.

PARKING ON BOTH SIDES OF A SIDEWALK



NOTES:

1. A 2–FOOT–WIDE GRASS PLANTED AREA LOCATED AT THE BACK OF CURB CAN BE USED IN LIEU OF 2 FEET OF SIDEWALK WIDTH.
2. PARKING AT ANY ANGLE OTHER THAN PARALLEL SHALL BE SUBJECT TO THIS STANDARD.
3. IF MONOLITHIC CURB & SIDEWALK IS USED, ADD 6" TO ALL DIMENSIONS (1' IF PARKING ON BOTH SIDES).
4. WHEELSTOPS IN LIEU OF ADDITIONAL SIDEWALK WIDTH SHALL BE CONSIDERED ON A CASE–BY–CASE BASIS.

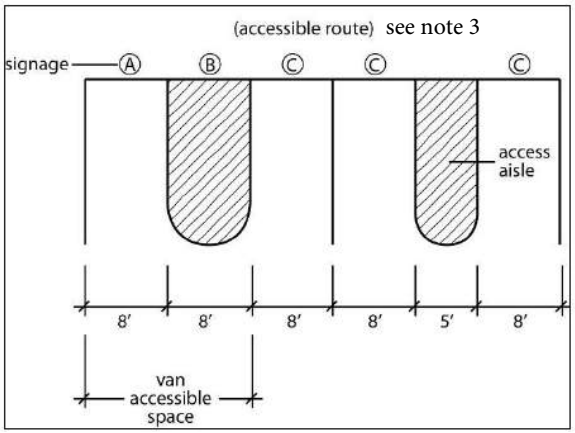
NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	PARKING STANDARDS (CONTINUED)	REV. DATE
		STD. NO. 711.1

ACCESSIBLE PARKING REQUIREMENTS

Total Parking Spaces Provided	Min. No. of Accessible Spaces Required	Minimum Number Required By Type		
		Regular (8 ft. + 5 ft.)	Van (8 ft. + 8 ft.)	Side-Loading Van
001 to 025	1	0	1	0
026 to 050	2	1	1	0
051 to 075	3	2	1	0
076 to 100	4	3	1	0
101 to 150	5	3	2	0
151 to 200	6	4	2	0
201 to 300	7	5	2	0
301 to 400	8	6	2	0
401 to 500	9	6	2	1
501 to 1000	2% of total	Required total less van spaces	1 in 4 total accessible spaces	1 for every 3 van spaces
1001 and Over	20 plus 1 for each 100 over 1000	Required total less van spaces	1 in 4 total accessible spaces	1 for every 3 van spaces

Refer to 4.1.2(5) of the Americans with Disabilities Act (ADA) and 4.1.2(5)(d) for medical care facilities



Ⓐ

R7-8A 12"x6"

MUTCD R7-8 12"x18"

12"x9"

Ⓑ

12"x18"

ACCESSIBLE RESERVED PARKING SIGN (OPTIONAL)

Ⓒ

MUTCD R7-8 12"x18"

12"x9"

SEE STANDARD NO. 714.1 FOR SUPPLEMETAL SIGN DETAIL

SEE STANDARD NO. 713.1 & 714.1 FOR SUPPLEMENTAL SIGN DETAIL

NOTES:

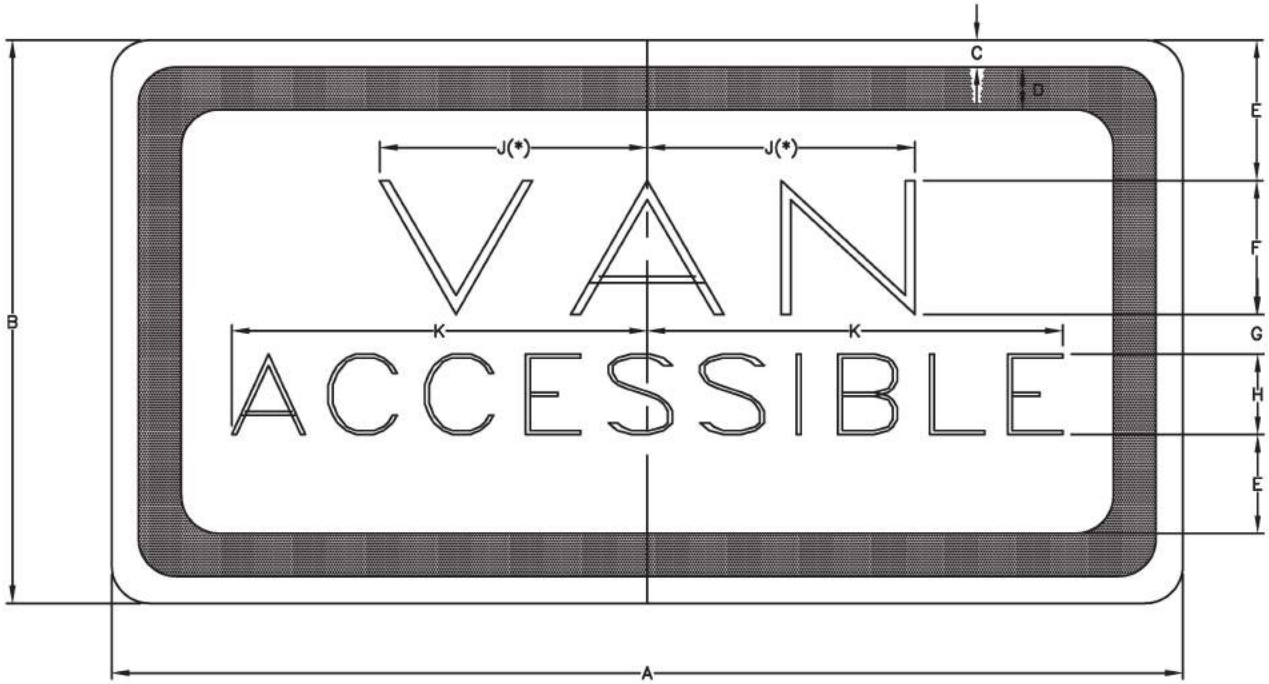
1. ALL 12"x18" ACCESSIBLE SIGNS SHALL BE MOUNTED AT SEVEN FEET FROM GRADE TO BOTTOM EDGE OF SIGN FACE (MUTCD). MOUNTING HEIGHT CAN BE REDUCED TO FIVE FEET IF PLACED IN AN AREA BETWEEN SIDEWALK AND BUILDING FACE IN WHICH PEDESTRIANS ARE NOT EXPECTED TO USE.
2. REFER TO MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, (MUTCD) U.S. DEPARTMENT OF TRANSPORTATION AND NORTH CAROLINA DEPARTMENT OF TRANSPORTATION SUPPLEMENT.
3. IF ACCESSIBLE ROUTE IS A RAISED SIDEWALK AREA, THEN RAMPS ARE REQUIRED AT LOADING ZONE AREA.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

ACCESSIBLE PARKING AND SIGNAGE STANDARDS

REV. DATE
STD. NO.
712.1

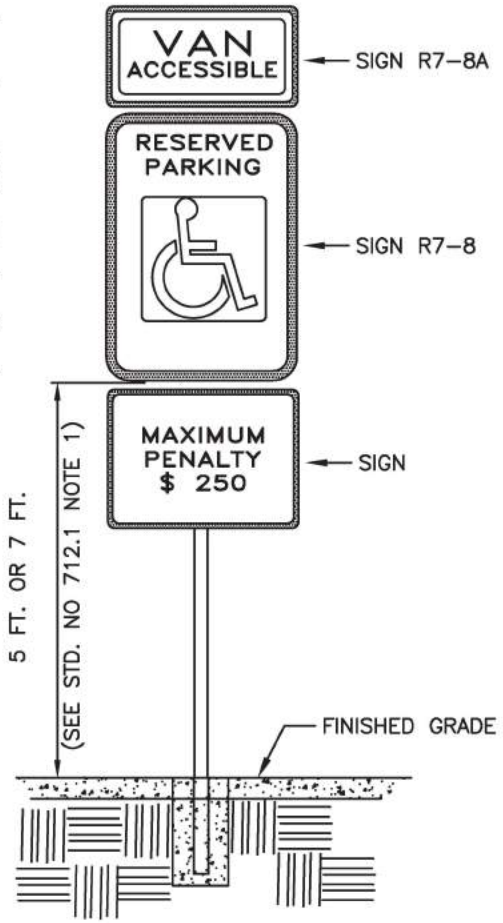


R7–8A

DIMENSIONS (INCHES)										
A	B	C	D	E	F	G	H	J	K	L
12	6	3/8	3/8	1–1/2	1–1/2D	1/2	1D	2–1/2	4	1–1/2

* INCREASE SPACING 50%
D–FHWA (FEDERAL HIGHWAY ADMINISTRATION/USDOT)
SERIES D LETTERS

LEGEND AND BORDER – GREEN
BACKGROUND – WHITE
PRISMATIC SHEETING PREFERRED



NOT TO SCALE

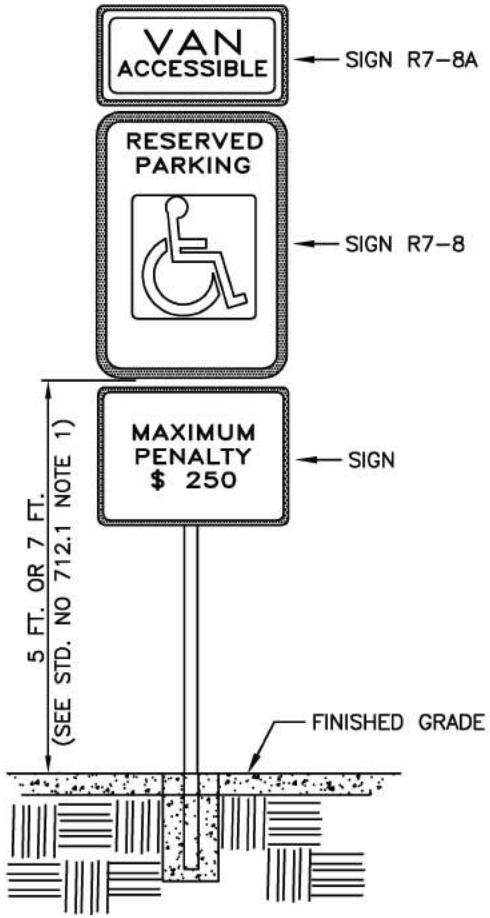
VILLAGE OF MARVIN STANDARD DRAWING

SUPPLEMENTAL VAN ACCESSIBLE SIGN

REV. DATE
STD. NO.
713.1

NOTE:

SUPPLEMENTAL ACCESSIBLE SIGN USED IF THERE IS ONLY ONE REQUIRED ACCESSIBLE PARKING SPACE (MUST BE VAN ACCESSIBLE) AND AT EACH ADDITIONAL REQUIRED VAN ACCESSIBLE SPACE. (SEE STD. NO. 712.1)



LEGEND AND BORDER – GREEN
BACKGROUND – WHITE

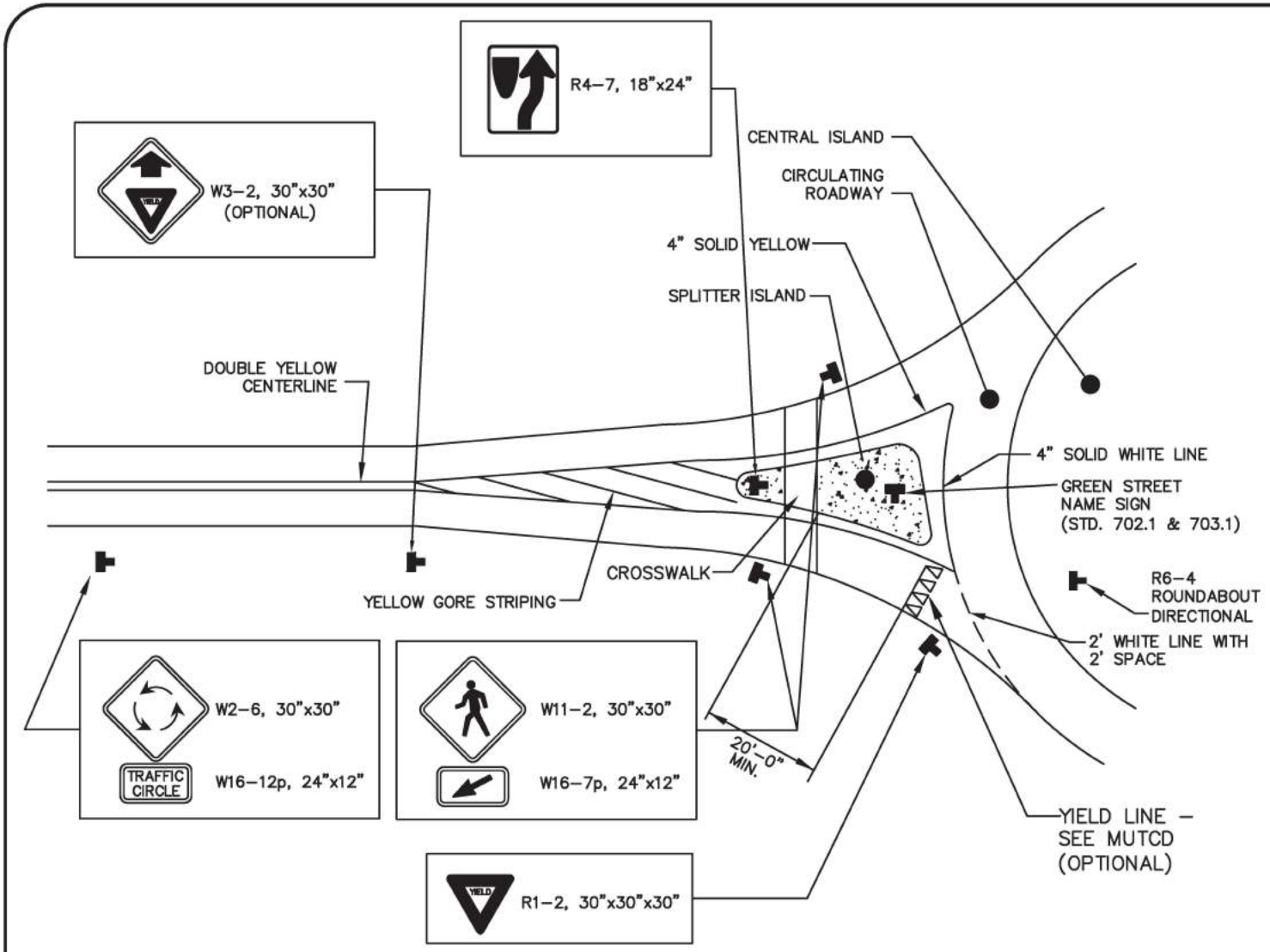
SIGN APPROVED FOR USE
UNDER GENERAL STATUTE 20-37.6

MAXIMUM PENALTY SIGNS ARE REQUIRED TO ACCOMPANY ALL R7-8 PARKING SIGNS

SIGN LETTERING TO BE FHWA D SERIES LETTERS 1.5 INCHES TALL

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	SUPPLEMENTAL MAXIMUM PENALTY SIGN	REV. DATE STD. NO. 714.1



NOTES:

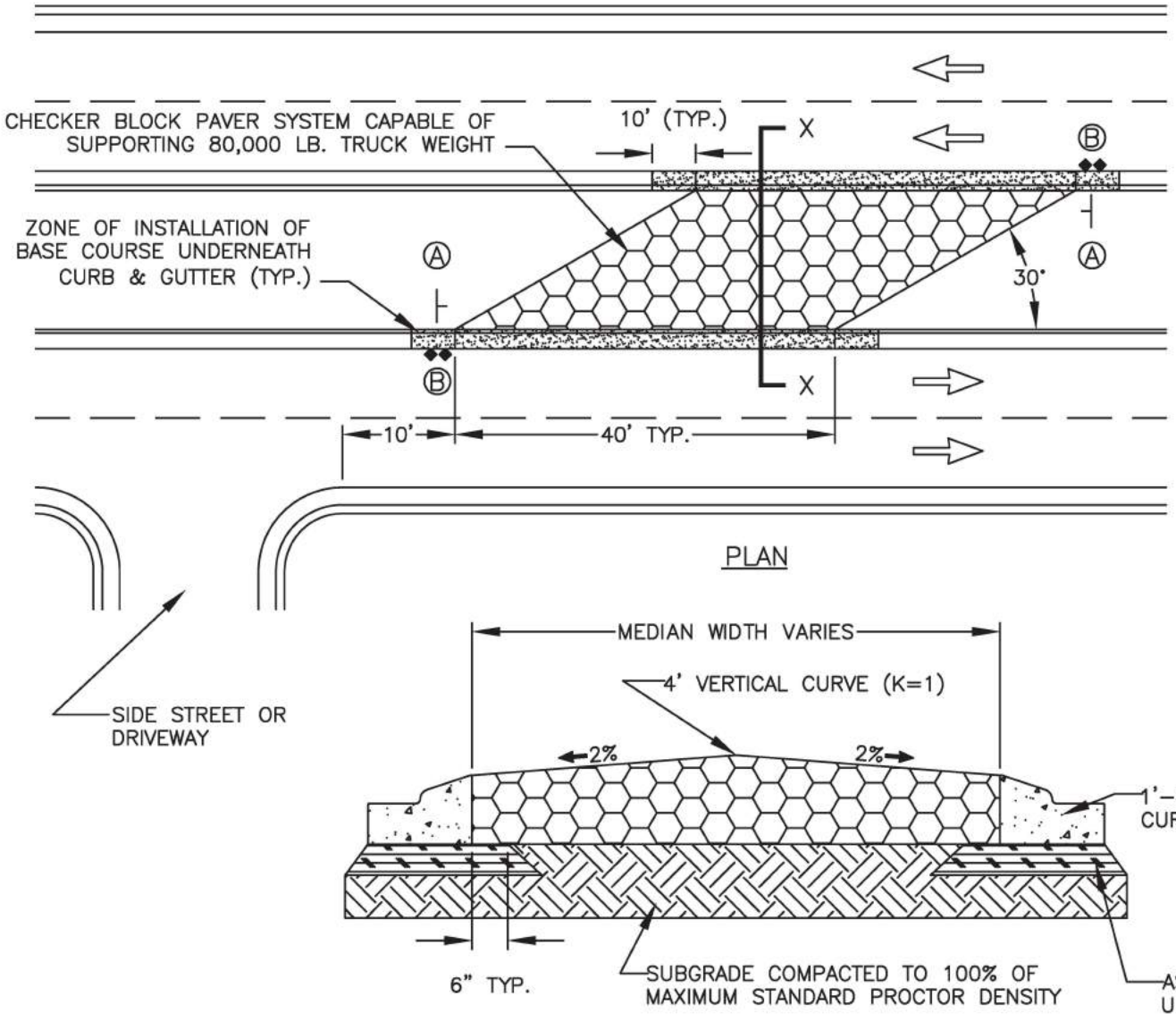
1. PAVEMENT MARKINGS TO BE PER LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
2. SIGNS TO BE LOCATED/SPACED PER MUTCD REQUIREMENTS.
3. "CIRCULAR INTERSECTION" AND "TRAFFIC CIRCLE" SUBPLATE SIGNS, AND KEEP RIGHT SIGN ARE REQUIRED ON THOROUGHFARES. NCDOT AND/OR VILLAGE WILL DETERMINE IF ONE OR MORE OF THESE ARE NECESSARY ON LOCAL OR COLLECTOR STREETS.
4. "PEDESTRIAN CROSSING" AND ARROW SUBPLATE SIGNS ARE REQUIRED WHEREVER THERE IS A MARKED CROSSWALK OR ON A THOROUGHFARE.
5. "YIELD" SIGNS ARE ALWAYS REQUIRED.
6. PAVEMENT MARKINGS, SPLITTER ISLAND DESIGNS, CROSSWALK, ETC., ARE SHOWN FOR CONTEXT ONLY. REFER TO THE MUTCD AND/OR THE FEDERAL HIGHWAY ADMINSITRATION'S MANUAL ROUNDABOUTS: AN INFORMATIONAL GUIDE FOR MORE DETAIL OR DESIGN INFORMATION.
7. ADDITIONAL SIGNS MAY BE NEEDED ON A CASE-BY-CASE BASIS.
8. ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING

SIGNAGE AND PAVEMENT MARKINGS AT ROUNDABOUTS

REV. DATE
STD. NO.
715.1



Ⓐ "NO LEFT TURN" (R3-2, 24"x24")

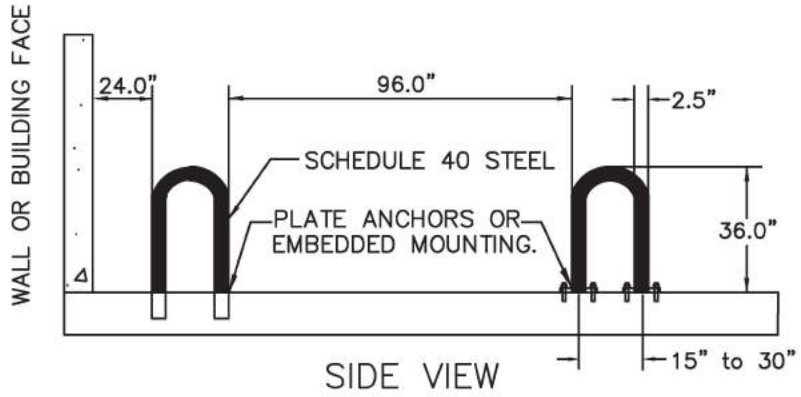
Ⓑ YELLOW/YELLOW RAISED PVMT. MARKER 1' O.C. SEE NCDOT STD. #1250.01.

NOTES:

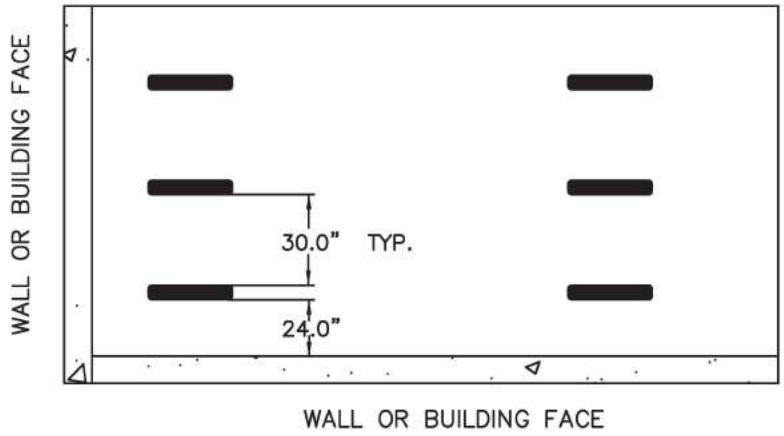
1. CROSSOVER TO BE OFFSET 10' FROM ANY INTERSECTING STREET OR DRIVEWAY OTHER THAN A FIRE DEPARTMENT DRIVEWAY.
2. ASPHALT BASE COURSE UNDERNEATH MOUNTABLE CURB AND GUTTER SHALL EXTEND AT LEAST 10 FEET BEYOND CROSSOVER.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	# EMERGENCY VEHICLE MEDIAN CROSSOVER	REV. DATE STD. NO. 716.1



SIDE VIEW



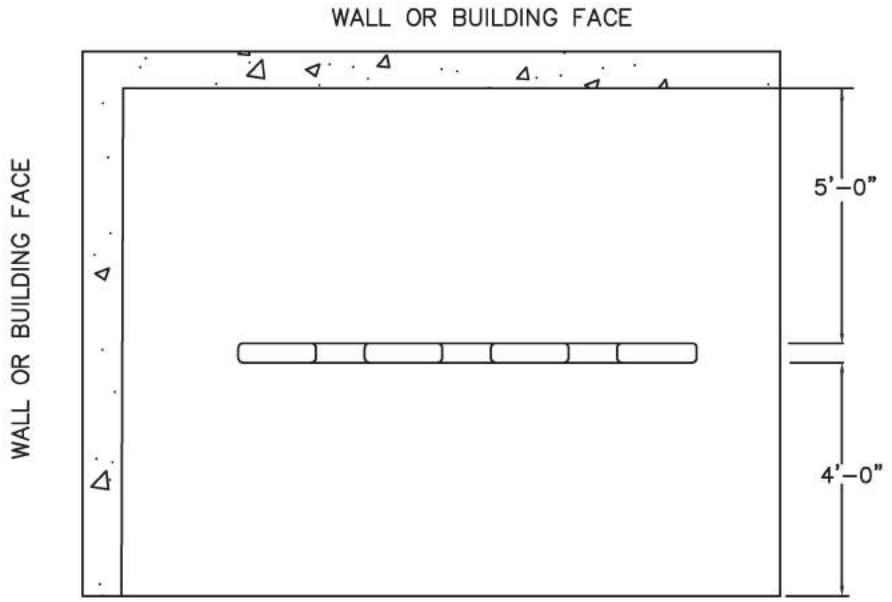
PLAN VIEW

NOTES:

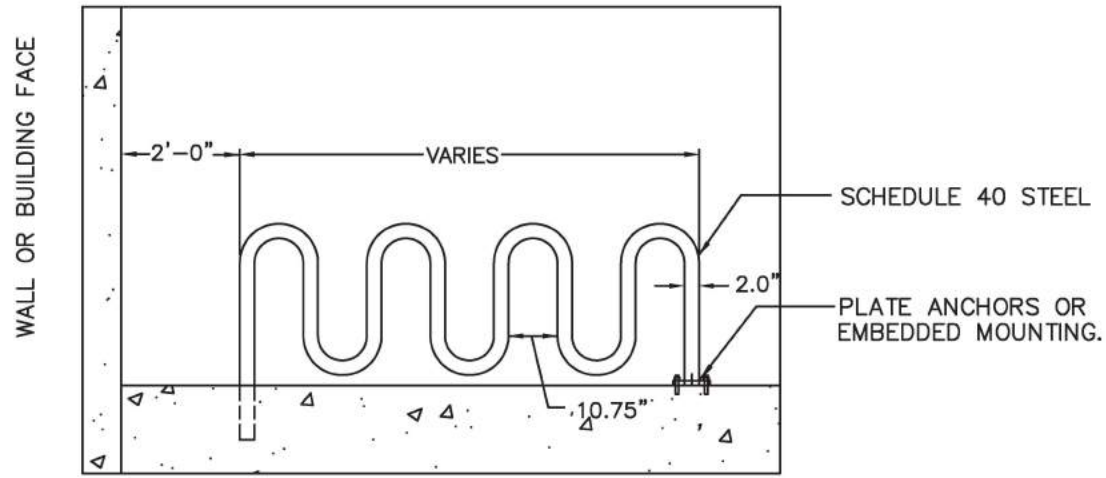
1. BIKE RACKS SHOULD BE INSTALLED AS PER MANUFACTURER'S RECOMMENDED INSTALLATION PROCEDURES.
2. ALTERNATIVE BIKE RACKS OR LOCKERS MAY BE USED BUT ARE SUBJECT TO APPROVAL BY THE ENGINEER.
3. ALL DIMENSIONS SHOWN ARE MINIMUM.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	INVERTED "U" RACK FOR BICYCLE PARKING	REV. DATE STD. NO. 717.1



PLAN VIEW



SIDE VIEW

NOTES:

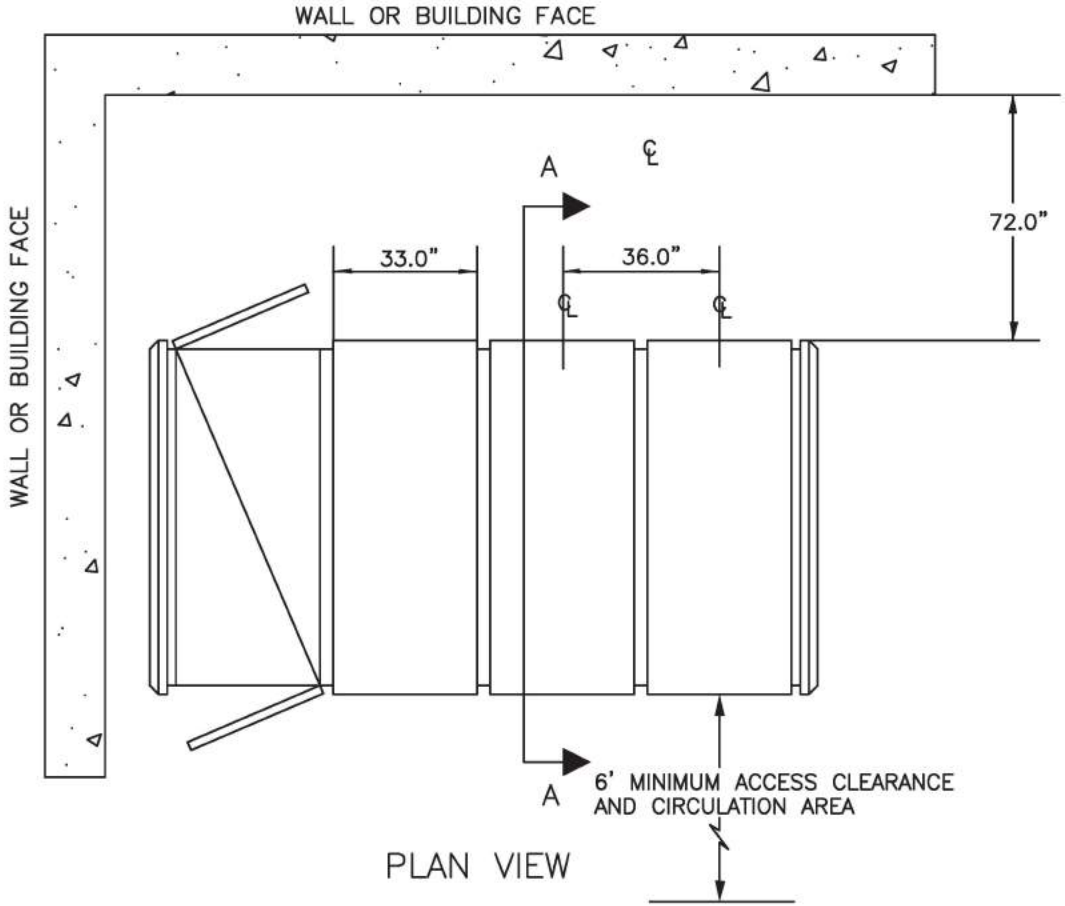
1. BIKE RACKS SHOULD BE INSTALLED AS PER MANUFACTURER'S RECOMMENDED INSTALLATION PROCEDURES.
2. ALTERNATIVE BIKE RACKS OR LOCKERS MAY BE USED BUT ARE SUBJECT TO APPROVAL BY THE ENGINEER.
3. ALL DIMENSIONS SHOWN ARE MINIMUM.

NOT TO SCALE

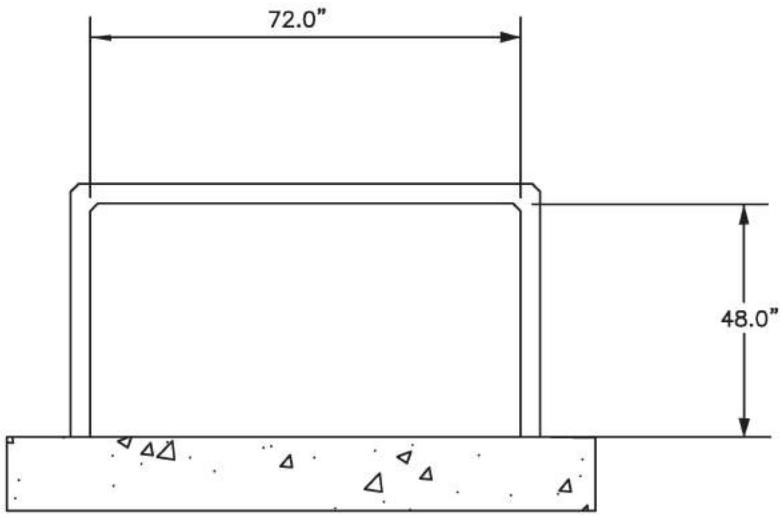
VILLAGE OF MARVIN STANDARD DRAWING	WAVE RACK FOR BICYCLE PARKING	REV. DATE
		STD. NO. 718.1

NOTES:

1. BIKE RACKS SHOULD BE INSTALLED AS PER MANUFACTURER'S RECOMMENDED INSTALLATION PROCEDURES.
2. ALTERNATIVE BIKE RACKS OR LOCKERS MAY BE USED BUT ARE SUBJECT TO APPROVAL BY THE ENGINEER.
3. ALL DIMENSIONS SHOWN ARE MINIMUM.
4. ALLOW FOR POSITIVE DRAINAGE AWAY FROM LOCKERS.



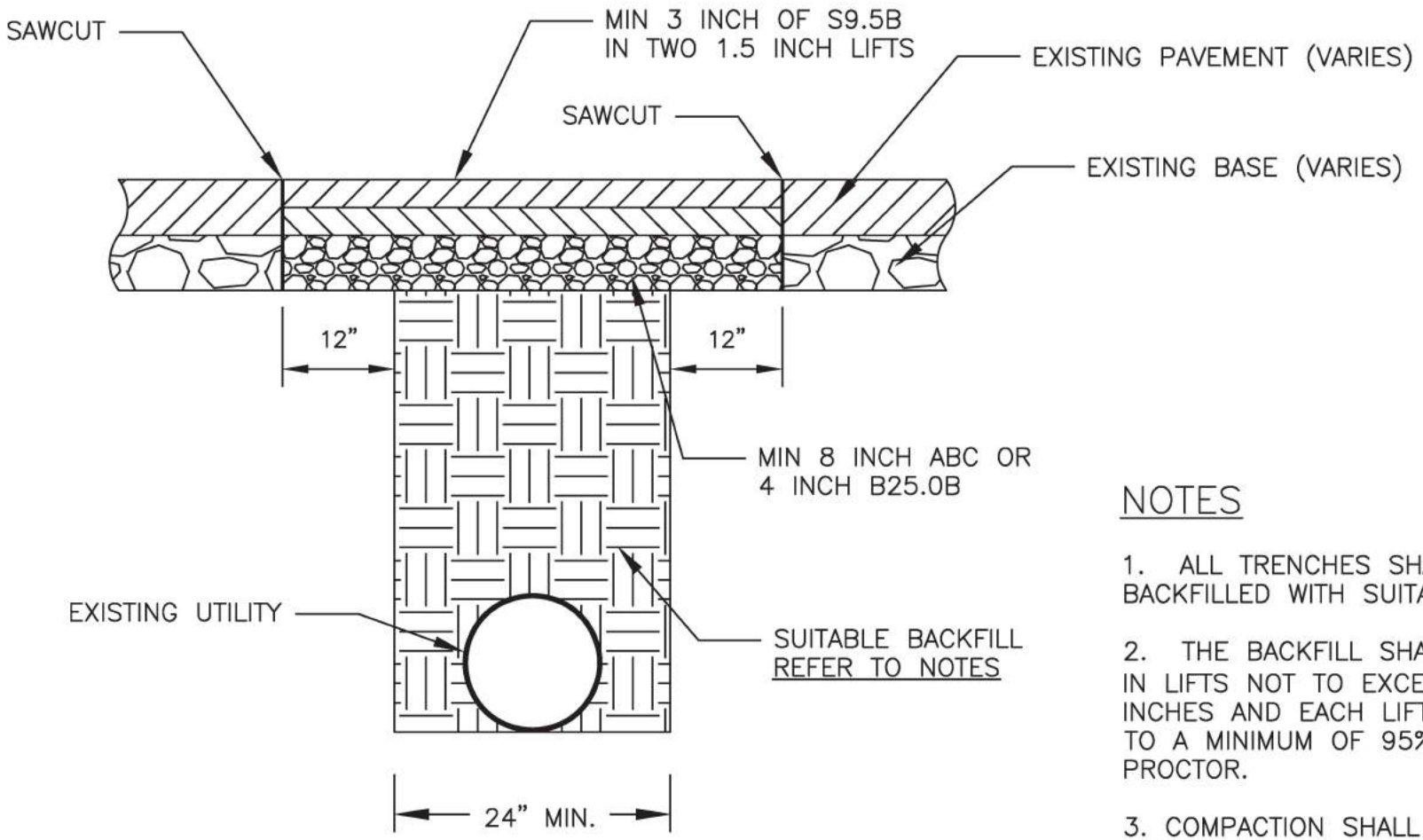
PLAN VIEW



SECTION A–A

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	BICYCLE LOCKERS	REV. DATE
		STD. NO. 719.1



NOTES

1. ALL TRENCHES SHALL BE BACKFILLED WITH SUITABLE MATERIAL.

2. THE BACKFILL SHALL BE PLACED IN LIFTS NOT TO EXCEED SIX (6) INCHES AND EACH LIFT COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR.

3. COMPACTION SHALL BE BY MECHANICAL METHODS.

4. WHEN THE EXISTING PAVEMENT DEPTH IS GREATER THAN THREE (3) INCHES, CONTACT THE ENGINEER FOR THE MINIMUM REQUIRED PAVEMENT DESIGN.

NOT TO SCALE

VILLAGE OF MARVIN STANDARD DRAWING	# PAVEMENT PATCHING DETAIL	REV. DATE STD. NO. 720.1