Athens-Clarke County Unified Government

TRANSPORTATION & PUBLIC WORKS DEPARTMENT

TECHNICAL STANDARDS

DECEMBER 2023

PREFACE

Athens-Clarke County Unified Government's (ACCGov) Technical Standards Manual defines the design requirements for transportation infrastructure. The design requirements outlined in this manual offer standards and criteria for planning, design and coordination of applicable facilities within Athens-Clarke County (ACC).

The criteria presented in the standards provide a foundation or starting point for engineering design decisions. It is the intent for the manual to be used by ACCGov staff and private sector professionals in applying a consistent approach to street design, particularly for new streets and right-of-way planning. The manual is also intended to provide guidance for street design in constrained right-of-way with flexible design criteria to fit existing situations that make the preferred design unobtainable. In the redesign of existing streets, additional engineering design work and public engagement may result in design features outside of the scope of this manual. Highly constrained scenarios may vary from minimums or maximums presented in this manual with approval of the applicable director or their designee. In addition, Capital Improvement Projects (CIP) or Corridor Construction Program Standards may supersede the requirements of this manual to align with highly localized contextual design, subject to final approval by the Traffic Engineer or applicable Director. Within any of these contexts, these standards apply a consistent and predictable approach to street design.

The standards contained herein are based largely upon the standards, guidelines and policies set forth by the American Association of State Highway and Transportation (AASHTO), National Association of City Transportation Officials (NACTO), the Institute of Transportation Engineers (ITE), and the Georgia Department of Transportation (GDOT), Manual on Uniform Traffic Control Devices (MUTCD), and various design guidelines published by Federal Highway Administration (FHWA). The criteria presented are intended to meet TPW's mission of maintaining a high quality of life for current and future generations of people traveling through the community, providing safe access to opportunity for all.

The criteria established in the standards affect the review and approval of subdivision plats, zoning change applications, right-of-way requirements, site plans, preliminary plans, final development plans, and capital improvement plans within ACC. To achieve consistency between design practices, the manual applies to all projects that impact the public right-of-way along all ACC streets. Additional engineering design work will be required to safely transition streets between jurisdictional boundaries that do not adopt the same criteria. Inconsistencies between references shall be resolved by the Director of Transportation & Public Works or designee for all aspects related to transportation operations. Deviations and waivers from the criteria in this manual will be at the discretion of the Director.

The technical standards presented herein reflect the current policies and practices of the Transportation & Public Works Department. They cannot be considered comprehensive and cannot address all possible situations. For standards not specifically covered here, the Department will rely on those found in the following sources:

- *A Policy on Geometric Design of Highways and Streets,* most current edition, published by The American Association of State Highway and Transportation Officials
(AASHTO)

- *Roadside Design Guide,* most current edition, published by the American Association of State Highway and Transportation Officials (AASHTO)

- *Guide for the Development of Bicycle Facilities*, most current edition, published by the
American Association of State Highway and Transportation Officials (AASHTO)

- *Urban Bikeway Design Guide*, most current edition, published by the National Association of City Transportation Officials (NACTO)

- *Manual on Uniform Traffic Control Devices,* most current edition, published by the
U.S. Department of Transportation, Federal Highway Administration
(FHWA)

- *Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way,* most current edition, published by the United States Access Board

- *Standard Specifications Construction of Transportation Systems,* most current edition, published by the Georgia Department of Transportation

- *Regulations for Driveway and Encroachment Control,* most current edition, published by the Georgia Department of Transportation

- *Pedestrian and Streetscape Guide,* most current edition, published by the Georgia Department of Transportation

- *Manual for Erosion and Sediment Control in Georgia,* most current edition, published by the Georgia Soil and Water Conservation Commission

- *Georgia Stormwater Management Manual,* most current edition, published by the Atlanta Regional Commission

- *North Carolina DEQ Stormwater Design Manual – Part C-2, (Bioretention Cell),* most current edition, published by the North Carolina Department of Environmental Quality

- GDOT Utility Accommodation Policy and Standards (most recent addition)

Contents

ARTICLE 1 ROADWAYS

1.1 ROADWAY DESIGN

1.1.1 FUNCTIONAL CLASSIFICATION

Existing arterials and collectors are identified in the MACORTS Metropolitan Transportation Plan, most current edition. All determinations of functional classification are subject to approval by the Transportation & Public Works Director. Estimated daily traffic volumes and zoning of the surrounding properties are key considerations.

1.1.2 RIGHT-OF-WAY & PAVEMENT

a. Widths

Right-of-way width for all roadway classifications and pavement width for local residential streets shall be in conformance with **Section 9-26-3** of the Athens-Clarke County Code of Ordinances. Pavement width and curb & gutter requirements for all other classifications are as identified in Table 1. Context should be taken into account when determining lane width, for example, where a development ties-into, or extends existing roadway lanes, the T&PW Director or their designee may require that the roadway lane width match the existing roadway width.

Table 1 Lane Width by Roadway Classification

ROADWAY CLASSIFICATION	Pavement Width per Lane (feet)	Travel Lane Width* (feet)	Curb & Gutter Required
Arterial	12	11	Yes
Major Collector	12	11	Yes
Minor Collector	12	10	Yes
Local Urban Street Non-Residential* **	11	10	Yes
Residential* **	**	**	Yes
Local Rural Road Non-Residential* **	12	11	No
Residential* **	11	10	No

* Travel lane width does not include curb and gutter width. **See Section 9-26-3 of the Athens-Clarke County Code of Ordinances.
***See T&PW Standard Detail 1-010.

b. Turnarounds

Dead-end streets designed to have one end permanently closed shall provide a turnaround. Cul-de-sac design for new streets or extensions of existing streets shall conform to the layout and dimensional requirements shown in T&PW Standard Detail 1-020, and require a right-of-way radius of 60 feet and a pavement radius of 45 feet. When turnaround provisions are required on existing streets, improvements that permit vehicles to turn around by backing only once may be permitted. Designs shall accommodate the turning movements of school buses and emergency vehicles in accordance with the standards of *A Policy on Geometric Design of Highways and Streets*, published by the American Association of State Highway and Transportation Officials (AASHTO), most current edition. See T&PW Standard Detail 1-021.

c. Pavement Structure

The following table shall be used to determine the required minimum pavement structure, based on the roadway functional classification; refer to **Section 1.1.1** for information on roadway classification. The pavement structure for development entrances shall be based on the functional classification of the adjacent mainline roadway.

PAVEMENT COURSE	**ROADWAY CLASSIFICATION**				
	INDUSTRIAL/ COMMERCIAL	**ARTERIAL**	**MAJOR COLLECTOR**	**MINOR COLLECTOR**	**LOCAL STREET**
Graded Aggregate Base Course	10”	10”	8”	8”	8”
Asphaltic Concrete Base Course 25 mm Superpave	6”	4”	4”		
Asphaltic Concrete Intermediate Course 19 mm Superpave	3”	2”	2”	2.5”	2.5”
Asphaltic Concrete Surface Course 12.5 mm Superpave	1.5”	1.5”`	1.5”	1.5”	___
Asphaltic Concrete Surface Course 9.5 mm Superpave	____	____	____	____	1.5”

Pavement lifts shall not exceed 4 inches in thickness. Two or more lifts shall be applied when the specified course thickness exceeds 4 inches.

Additional requirements may apply for roadways with unusual or poor subgrade conditions, or to accommodate anticipated traffic loading. Said structures shall be designed by a registered professional engineer, licensed in Georgia, in accordance with AASHTO and GDOT design policies and procedures. Design data and calculations shall be provided with any alternative design. The design professional shall consult with the Transportation & Public Works Department on the appropriate design methodology and considerations.

d. Pavement Cross-Slope

All road surfaces shall have a normal crown with a 2% slope to the edge-of-pavement as shown on Detail 1-010 unless an alternate cross-slope is approved by the Transportation & Public Works Director or designee.

e. Curb & Gutter

All proposed streets or street widening sections shall be provided with curb and gutter except where noted otherwise within these standards, or where not required by zoning.

The residential typical minimum curb and gutter section shall be a 6" x 24" x 12" vertical curb and gutter. A 6" x 30" x 12" or 8" x 30" x 14" vertical curb and gutter section may be required to accommodate gutter spread and/or traffic loading.

Roll-back curb and gutter may be allowed in special situations upon approval by the Transportation & Public Works Director. Required dimensions are 6" x 24" x 9" with a minimum 4" rise from the flow line to back-of-curb.

Where a development ties-in to, or extends existing improvements, the curb and gutter section shall match the existing type and dimensions. In situations where the existing street pavement has been overlaid, new curb & gutter elevations shall conform to those of the existing. Existing asphalt shall be removed as necessary to accommodate the work. See T&PW Standard Detail 1-030.

1.1.3 INTERSECTIONS

a. Roundabouts

Among the various intersection control strategies available, roundabouts and traffic circles stand out as the leading alternative for addressing safety and

operational needs.[1] Intersection requirements will be based on findings of the TIA as necessary.[2]

Refer to GDOT's Roundabout Design Guide for design guidelines. In addition, chapter 6 of NCHRP Report 672 can be used when traffic circles or mini-roundabouts are considered and or required.[3] Key criteria that should be met include fastest path entry speeds, design vehicle movements, path overlap for entry and exit tangents, entry angles, entry and exit radii, maximum and minimum slopes and several other factors. It is not preferred to apply signalized treatments to roundabouts.

b. Pedestrian Accommodations

Pedestrians should be considered and accommodated at all intersections. Pedestrian accommodations should include cut-throughs on splitter islands, two-stage perpendicular crossings, curb ramps, and accessibility features such as detectable warning surfaces. Pedestrian activated signals should be considered for multi-lane traffic with high pedestrian traffic volumes.[4]

c. Cyclist Accommodations

The design of intersections and interchanges should accommodate bicyclists in a manner that addresses the need to safely cross roadways, as well as to travel along them.[5]

d. Horizontal Alignment

1. Centerline Offset
   Roadway centerlines shall be aligned across intersections in accordance with **Section 9-26-3 (E)** of the Athens-Clarke County Code of Ordinances.

2. Angle

[1] Section 8.1 GDOT's Design Policy Manual
[2] Refer to the Plans Review Handbook (https://www.accgov.com/DocumentCenter/View/276/Plans-Review-Handbook-2022?bidId)
[3] https://nacto.org/docs/usdg/nchrprpt672.pdf
[4] Further information on the design of pedestrian accommodations is provided in Chapter 4 of the GDOT RBDG (https://www.dot.ga.gov/PartnerSmart/DesignManuals/Alternative%20Intersections/GDOTRoundaboutDesignGuide.pdf) and Section 6.8.1 of NCHRP 672.
[5] Section 9.1.1. of GDOT's Design Policy Manual

Intersection angles shall meet the requirements of **Section 9-26-3 (G)** of the Athens-Clarke County Code of Ordinances.

3. Intersection Miter
Property lines at street intersections shall have a minimum miter in accordance with **Section 9-26-3 (G)** of the Athens-Clarke County Code of Ordinances. See T&PW Standard Detail 1-040.

e. Vertical Alignment

1. General
Street intersections should be designed with flat grades not exceeding 2%. In no case should the grade exceed 4% in topographic hardship situations on local streets.

2. Grades of 6% or Less
For intersections involving local or minor collector streets with approach grades of 6% or less, an intersection landing at a grade not exceeding 2% is required.[6] The vertical curve effecting the transition from the approach grade to the landing grade may end at the edge-of-pavement of the intersecting street but must have a minimum length of 100 feet. See T&PW Standard Detail 1-040.

3. Grades Above 6%
For intersections involving local or minor collector streets with approach grades exceeding 6%an intersection landing at a grade not exceeding 2% is required. The vertical curve affecting the transition from the approach grade to the landing grade must have a minimum length of 100 feet, and must end so as to provide a minimum tangent length of 25 feet for the landing, as measured from the point of vertical tangency to the edge-of-pavement of the intersecting street. See T&PW Standard Detail 1-040.

[6] O.C.G.A. 40-14-9

f. Radii

Intersection pavement radii shall be measured at back-of-curb on urban roadways. Minimum radii shall be as follows:

Major Collector	40 feet
Minor Collector	35 feet
Local Street	25 feet

Larger radii will be required if channelized right-turn lanes are proposed, or if the angle of intersection is less than 85 degrees. See T&PW Standard Detail 1-040.

g. Turn Lanes

Auxiliary lanes to provide for deceleration and storage of vehicles waiting to turn right or left shall be provided in accordance with the requirements of the Georgia Department of Transportation's (GDOT) *Regulations for Driveway and Encroachment Control* manual, most current edition.

h. Visibility

1. Stopping Sight Distance

   All roadways shall maintain sufficient stopping sight distance as determined in accordance with *A Policy on Geometric Design of Highways and Streets,* most current edition, published by AASHTO.

2. Intersection Sight Distance

   All intersections shall maintain sufficient intersection sight distance as determined in accordance with *A Policy on Geometric Design of Highways and Streets,* most current edition published by AASHTO.

3. Obstructions

   A clear sight triangle shall be maintained free of any sight obstructions in conformance with **Section 7-2-7** and **Section 9-15-2** of the Athens-Clarke County Code of Ordinances.

1.14 ALIGNMENT

a. Design Speed

Alignments shall be designed using design speed as the overall control. Design speeds shall be as follows:

Major Collector	45 mph
Minor Collector	35 mph
Local Street	25 mph

b. Horizontal Alignment

1. Minimum Horizontal Curve Radius

The minimum horizontal curve radius shall be in accordance with the standards in *A Policy on Geometric Design of Highways and Streets*, published by AASHTO, most current edition. No superelevation will be allowed in residential subdivisions.

2. Reverse Curves

The minimum length tangent between reverse curves shall be in accordance with the standards in *A Policy on Geometric Design of Highways and Streets*, published by AASHTO, most current edition. Compound radii curves are prohibited.

c. Vertical Alignment

See **Section 1.1.3 (e)** for further vertical alignment requirements at street intersections.

1. Minimum grade for all roadways shall be 1½ %.

Grades of less than 1½ % may be approved by the Transportation & Public Works Director, based on adequate engineering design, where 1½ % cannot be reasonably achieved due to topographical limitations imposed by the land. In such cases, an as-built drawing and such computations as necessary shall be provided after construction to establish that the street will drain in accordance with these regulations. Street sections where unacceptable pooling, excessive gutter spread, or other hazardous conditions occur shall be reconstructed or otherwise improved to eliminate such conditions. See **Section 1.1.6** for parking bay drainage standard.

2. Maximum roadway grades shall be in accordance with **Section 9-26-3 (N)** of the Athens-Clarke County Code ofOrdinances.

3. All transitions in profile grade, between successive vertical tangents having an algebraic difference greater than 1%, shall be by means of a parabolic curve.

Minimum vertical curve lengths shall be determined in accordance with *A Policy on Geometric Design of Highways and* Streets published by AASHTO, most current edition. A minimum profile grade of 0.30% should be achieved within 50 feet of the level point of all vertical curves to provide adequate pavement drainage. This corresponds to a maximum K value of 167 feet for all vertical curve design.

1.15 GRADING & STABILIZATION

a. General Requirements

Roadway design and construction is to be accomplished with minimal earth moving and disruption to the natural topography. All construction shall provide positive drainage away from the road bed. Natural or man- made slopes shall be modified or designed so as to minimize the potential for erosion and to maximize ease of maintenance. All development shall be in conformance with the Athens-Clarke County Soil Erosion and Sedimentation Control Ordinance and the *Manual for Erosion and Sediment Control in Georgia*, most current edition.

Roadway shoulders and slopes shall be designed according to these standards; see T&PW Standard Detail 1-010. The extent of roadway grading shall not exceed the limitations imposed by the requirements of **Section 9-26-2 (A) (6) (d)**, Athens-Clarke County Code of Ordinances for the applicable zoning classification.

b. Shoulders

Roadway shoulders shall have a minimum width of 8 feet. Where curb & gutter is not required, the shoulder shall slope away from the pavement at a slope of six percent (6%). Where curb & gutter is required, the shoulder shall slope toward the curb at a slope of four percent (4%).

c. Cut & Fill Slopes

No existing or proposed cut or fill slope shall exceed three horizontal units to one vertical unit within 11 feet of the roadway shoulder as specified above. Beyond referenced 11 feet, the slope may increase to a maximum of two horizontal units to one vertical unit (2 : 1) until intersecting existing grade. All cut and fill must be confined to the right-of-way or slope easements.

Retaining walls may be utilized to facilitate site grading but all construction, including footings, must be located a minimum of one foot outside the right-of-way.

Retaining walls in areas of roadway fill proposed to support the roadway are discouraged and shall only be considered when site conditions dictate. Said retaining walls shall be located within the right-of-way. Additional right-of-way may be required to provide maintenance access.

All retaining walls, in areas of roadway, over three (3) feet high should include a handrail or fence affixed to the top of the retaining wall and those above four (4) feet high shall be designed by a professional engineer licensed in the State of Georgia. Complete construction plans and details bearing the engineer's seal and signature shall be provided in the construction plan set.

d. Guardrail

Guardrail shall be placed in accordance with the requirements of the *Roadside Design Guide* published by AASHTO, most current edition, and with the current policies and standards of Georgia Department of Transportation.

e. Stabilization

The standards in Section 3.3 of these Technical Standards shall be applied.

1.1.6 ON-STREET PARKING

a. Location & Dimensions

On-street parking shall be provided in accordance with **Section 9-26-3** and **Section 9-26-4** of the Athens-Clarke County Code of Ordinances. All improvements must be entirely contained within the right-of-way. The minimum offset of parking bays from street intersections is 50 feet, as measured from the end of the intersection radius to the beginning of the parking bay taper. See T&PW Standard Detail 1-050.

b. Drainage

If the slope of the corresponding roadway centerline profile is less than 5% in front of a parking bay taper that is receiving runoff from the parking bay, then a curb inlet shall be provided in the bay before the taper begins. See T&PW Standard Detail 1-050.

1.1.7 SIDEWALKS

Sidewalks shall be provided in conformance with **Section 9-25-8 (C) (2)** and **Section 9-26-3** of the Athens-Clarke County Code of Ordinances.

a. ADA Compliance

Sidewalks shall be designed and constructed in accordance with the Accessibility Guidelines of the Americans with Disabilities Act (ADA). Detectable warning surface treatment shall be a wet set bolt-down replaceable brick red truncated dome. In particular, refer to special detail A-3 and A-4 of GDOT Special Details for detailed drawings.

b. Dimensions & Cross Slope

The minimum sidewalk width shall be 5 feet unobstructed, and the standard cross-slope shall be ¼ inch per foot maximum, and 1/8 inch per foot minimum toward the curb or ditch, as applicable.

c. Location

1. General

Sidewalk alignment shall parallel the roadway pavement in line and grade as much as possible.

2. Urban Roadway

For an urban street the desirable sidewalk offset, back-of-curb, is 5 feet in order to maintain a grass strip between. The minimum allowable offset for a grass strip is 3 feet. If a 3-foot offset cannot be obtained, then a 2-foot offset is required, and the offset must be paved to the same specification as the sidewalk, but in a contrasting finish and color. If street trees are to be located between the curb and the sidewalk, then the required minimum offset is 6 feet. See T&PW Standard Detail 1-060 for sidewalk guidelines and **Section 8-7-14** for street trees.

3. Rural Roadway

For a rural roadway, the sidewalk shall be located behind the ditch line wherever possible. When it must be located on the shoulder, the minimum allowable offset from edge-of-pavement is 7 feet. See T&PW Standard Detail 1-060.

1.1.8 BICYCLE LANES & MULTI-USE PATHS

Bicycle facilities shall be designed and constructed in accordance with the *Guide for the Development of Bicycle Facilities*, published by AASHTO, most current edition for rural roads, or with the most current edition of the *NACTO Urban Bikeway Design Guide*[7] for urban roads. In the case of conflicting guidance between these manuals, discretion will fall to the TPW Director or their designee. See T&PW Standard Detail 1-080.

1.2 ROADWAY CONSTRUCTION

Materials, methods, and procedures for roadway construction not addressed in this document shall be in accordance with the Georgia Department of Transportation (GDOT) *Standard Specifications Construction of Transportation Systems*, most current edition, with supplements and revisions.

1.2.1 TESTING REQUIREMENTS

a. General

All testing shall be scheduled with the Public Works Inspector no less than 24 hours in advance. Compaction testing shall not be performed until the surface conforms with the lines, grades, and cross-sections shown on the plans. Once an embankment, subgrade, or base course has been certified, then that material shall not be disturbed, or additional testing shall be required. All areas or sections of embankments, subgrade or base course which do not pass compaction testing shall be corrected. When corrections have been made, it shall be the Developer's responsibility to schedule any and all subsequent tests. In addition to the required compaction testing described hereafter, the Public Works Inspector may require that a roll test be performed as described below.

b. Roll Testing

Both the subgrade and the base course, including those portions supporting curb & gutter, shall be load-tested when required by the Public Works Inspector with a minimum 18-ton hauling capacity, fully loaded tandem dump truck or equivalent. The test shall cover the material thoroughly to assure a maximum tolerance of ½ inch settling and the absence of any cracking or pumping, prior to paving. The test shall be witnessed by the Public Works Inspector.

1.2.2 GRADING & EMBANKMENTS

[7] https://nacto.org/publication/urban-bikeway-design-guide/

a. Clearing & Grubbing

All streets and roads shall be cleared and graded according to the approved cross-sections. The entire area within the graded cross-section shall be cleared and grubbed of all vegetation and debris. All such waste shall be disposed of in a lawful manner and shall not be buried in the right-of-way or within the project limits.

b. Fill

All fill shall be of suitable material and free of organic matter. Fill shall be placed in uniform eight-inch layers and compacted to at least 98% percent of maximum dry density within +/- 3% of the optimum moisture content throughout. Compaction testing shall be required. Compaction shall be tested according to the ASTM D698 standard. Compaction tests shall be taken at a rate of one test per four vertical feet of fill per 1,000 lineal feet of roadway, or one test per road, or as directed by the Public Works Inspector. Successive layers of material shall not be placed over previous layers that exhibit excessive pumping under construction equipment, regardless of compaction.

The backfill of all storm drain and other underground utilities installed under the roadbed and the backfill in ditches shall be compacted to at least 95% of maximum dry density. Backfill compaction tests shall be taken at a minimum interval of not less than one (1) between any two structures. Compaction test results shall be reported to Athens-Clarke County immediately.

c. Shoulders

Roadway shoulders shall have a minimum width of eight (8) feet and shall be compacted to at least 95% of maximum dry density within +/- 3% of the optimum moisture content. Top soil depth shall not exceed 6 inches unless approved by the Public Works Inspector. Temporary and permanent grassing must be applied per the *Manual for Erosion and Sediment Control in Georgia,* most current edition. Where curb & gutter is not required, the shoulder shall slope away from the pavement at a slope of six percent (6%). Where curb & gutter is required, the shoulder shall slope toward the curb at a slope of four percent (4%). See T&PW Standard Detail 1-010.

d. Slopes

No existing or proposed cut or fill slope shall exceed three (3) horizontal units to one (1) vertical unit within eleven (11) feet of the roadway shoulder as specified above. Beyond said eleven feet, the slope may increase to a maximum of two (2) horizontal units to one (1) vertical unit until intersecting existing grade.

e. Temporary Drainage

If paving is delayed at any point during roadway construction, provision shall be made to drain low points in the roadway. If curb has not been installed, a break

in any berm section may be provided. If curb is in place, four (4) inch pipe sections shall be used to provide drainage under the curb to the side slope, or to a drainage structure. These pipe sections shall be removed or capped prior to paving.

f. Certification

The developer shall provide the following:

- A statement of inspection completed by a professional engineer, licensed in the State of Georgia, that all construction requirements for roadway grading and embankments have been met. The statement must include certified copies of all compaction tests results.
- A certification completed by a professional land surveyor or engineer, licensed in the State of Georgia, that grading has been completed and conforms to the lines and grades of the approved plans within a tolerance of six (6) inches.
- Staking of the roadway centerline and/or the edge-of-pavement in conjunction with the above certification for verification by the Public Works Inspector.

All roadway grading and embankments must be approved by Athens- Clarke County prior to preparation of the subgrade.

1.2.3 SUBGRADE PREPARATION

a. Material

All boulders, organic material, soft clay, spongy material, and any other unsuitable material shall be removed and replaced with approved material.

b. Construction & Surface Tolerance

The subgrade shall be properly shaped, rolled, and uniformly compacted with a vibratory "sheep's foot" roller to conform to the lines, grades, and typical cross-sections shown on the approved plans. The subgrade centerline profile shall conform to the established elevations with an acceptable tolerance of +/- ½-inch. The acceptable tolerance under a template conforming to the design cross-section shall be +/- ¼-inch.

c. Compaction

The subgrade shall be compacted to 100% of maximum dry density, within +/- 3% of the optimum moisture content.

Compaction testing shall be required. In areas of fill, subgrade compaction shall be determined by field testing at intervals not to exceed 1000 lineal feet,

or one test per road, or as directed by the Public Works Inspector. Compaction testing in areas of fill shall be accomplished according to the ASTM D698 standard.[8] Compaction test results shall be reported to T&PW immediately after results are obtained. In addition, all areas of the graded roadway must pass Roll Testing, as specified in Section 1.2.1 (b). The Transportation &Public Works Department retains the right to have any areas of fill scarified and re-compacted, as determined and directed by the Public Works Inspector.

In areas of cut, the subgrade shall be scarified to a depth of six (6) inches and inspected by the Public Works Inspector and a certified Geotechnical Technician. All unsuitable or non-structural soils shall be removed and replaced with suitable material. Following any such removal and replacement, compaction shall be achieved and tested in accordance with the procedures specified for areas of fill. In addition, all areas of the graded roadway must pass Roll Testing as specified in Section 1.2.1 (b).

d. Certification

The Developer shall provide to Athens-Clarke County a Statement of Inspection, sealed and signed by a professional engineer licensed in the State of Georgia, that all construction requirements have been met for roadway subgrade preparation. The statement must include certified copies of all compaction tests results. Successive layers of material shall not be placed over previous layers that exhibit excessive pumping under construction equipment, regardless of compaction. Upon approval by Athens-Clarke County, roadway construction may continue.

e. Time Limit

If the required graded aggregate base (GAB) course is not placed within 72 hours of subgrade approval, or if rainfall of ½-inch or more occurs prior to GAB placement, the Public Works Inspector shall be notified, and additional compaction testing and deficiency correction may be required.

[8] https://www.astm.org/standards/d698

1.2.4 GRADED AGGREGATE BASE

a. Material & Placement

Graded aggregate base material shall meet the requirements of the GDOT specification for Group 2 aggregate. All base course material shall be deposited and spread by means of spreader boxes, or approved mechanical equipment, or from moving vehicles equipped to distribute the material in a uniform layer. The maximum allowable thickness to be placed in one course is eight (8) inches. No graded aggregate base shall be placed on muddy or frozen subgrade.

b. Construction

Immediately following spreading of the aggregate, all material placed shall be compacted to the full width by rolling with a smooth-wheel power roller of adequate size and weight to achieve compaction. Any irregularities, areas of segregation, or depressions that develop under such rolling shall be corrected by loosening the material at these places and adding or removing material until the surface is smooth and uniform. The application of water, applied uniformly over the base course, may be required to achieve adequate compaction. Moisture content shall be uniformly distributed. Shaping and rolling shall be performed alternately as required to maintain a uniform compacted base until a surface has been applied to the base. Along curbs, headers, and walls, and at all places not accessible to the roller, the base course material shall be tamped thoroughly with mechanical tampers or approved hand tampers.

c. Compaction

Compaction testing shall be required. After the material has been shaped to line, grade, and cross-section, it shall be rolled until the course is uniformly compacted to 100% of the maximum dry density, within +/- 3% of the optimum moisture content. Compaction shall be determined by field testing at intervals not to exceed 1000 lineal feet, or one test per road, or as directed by the Public Works Inspector. Compaction test results shall be reported to Athens-Clarke County immediately after results are obtained.

d. Thickness & Surface Tolerance

Thickness testing shall be required and shall be tested at intervals not to exceed 1000 linear feet, or one test per road, or as directed by the Public Works Inspector. Any area found to be deficient in thickness by more than ½-inch shall be corrected to the design thickness. The finished surface acceptable tolerance under a template conforming to the design cross-section shall be ¼-inch.

e. Certification

The Developer will provide to Athens-Clarke County a Statement of Inspection, sealed and signed by a professional engineer licensed in the State of Georgia, that all construction requirements have been met for roadway aggregate base preparation. Upon approval by Athens-Clarke County, roadway construction may continue.

1.2.5 ASPHALTIC CONCRETE

a. Time Limit

If more than 48 hours elapses from successful completion of the aggregate base construction, or if rainfall of ½-inch or more occurs prior to placement of asphalt, then the moisture content must be retested and determined to be within +/- 3% of optimum. If so determined by the Public Works Inspector, the aggregate base must be reshaped to conform with designated line, grade, and cross-section.

b. Material

Paving material shall consist of a conventional bituminous plant mix. The use of a "Superpave" mix design is required. Material, equipment, seasonal and weather limitations, preparation of road surface, material application, and construction methods shall be as specified in GDOT's *Standard Specifications Construction of Transportation Systems*, most current edition, with supplements and revisions. Mix designs, including roll pattern analysis to achieve required compaction shall be provided to ACCGov for approval a minimum of 2 weeks prior to paving operations. One asphaltic concrete extraction and gradation test per mix design is required. Test results shall be reported to Athens-Clarke County immediately after results are obtained.

c. Compaction

All asphaltic courses shall be compacted, and compaction testing shall be required. Compaction testing shall be accomplished in accordance with the appropriate standardized protocols of the GDOT *Sampling, Testing, and Inspection Manual*. Compaction tests for each mix shall be performed by nuclear gauge testing or by taking 6-inch core samples. Tests shall be taken at intervals not exceeding 1000 linear feet per one lane of roadway, or one test per lane per roadway, or as directed by the Public Works Inspector. All asphalt core holes shall be filled with hot mix asphalt of similar grade prior to final acceptance. The maximum in-place pavement mean air voids should not exceed 7.8%. In-place pavement mean air voids in the range of 8.3% to 13.5% will require a specific and separate three year Maintenance Bond in the amount of 50% of the total base and paving cost of the affected roadway. Alternatively, the deficient pavement may be removed and replaced. Any asphaltic concrete construction whose in-place mean air voids exceed 13.5% shall be removed

and replaced for the full width of the affected lane and the length of the affected area. Additional core samples may be required.

d. Thickness

Thickness testing of asphaltic concrete course construction shall be required. Thickness tests for each mix shall be 6-inch core samples taken at intervals not exceeding 1000 lineal feet per one lane of roadway, or one test per lane per roadway, or as directed by the Public Works Inspector. All asphalt core holes shall be filled with hot mix asphalt of similar grade prior to final acceptance.

e. Tack

Prepare the existing surface and, prior to placement of any asphaltic concrete course, apply Bituminous Tack Coat according to Section 400 of GDOT's *Standard Specifications Construction of Transportation Systems*, most current edition, with supplements and revisions.

f. Base Course

Base courses shall be 25 mm Superpave. Surface irregularities exceeding 3/16-inch in 10 longitudinal feet shall be corrected. Deficiencies in thickness greater than ½-inch shall be corrected. Additional core samples may be required.

g. Intermediate Course

Intermediate courses shall be 19 mm Superpave. Surface irregularities exceeding 3/16-inch shall be corrected. Deficiencies in thickness greater than ½-inch shall be corrected. Excess thickness greater than ½-inch shall be milled to correct, or shall be sawcut, removed, and replaced. Additional core samples may be required.

Streets classified as either Local or Minor Collector shall receive their final surface course of asphaltic concrete no earlier than nine months and no later than twelve months after the intermediate course is placed, or when the project is 90% built-out, whichever occurs first.

Manhole covers and valve boxes projecting above the intermediate course shall have temporary ramps of cold mix asphalt placed at a five-foot radius. Prior to application of the surface course, the cold mix asphalt shall be removed. The elevation of the top-of-structure shall be checked by the Public Works Inspector and any needed adjustment to match the final pavement elevation shall be made.

The intermediate asphalt course shall be checked by the Public Works Inspector to determine surface uniformity and integrity. Any settlement or other deficiencies found shall be repaired to the Inspector's satisfaction before placement of the surface course.

h. Surface Course

All roadway surface courses shall be 12.5 mm Superpave, except on those roadways classified as "Local Street" which shall be 9.5 mm Superpave. Surface irregularities exceeding 1/8-inch in 10 longitudinal feet shall be corrected. Deficiencies in thickness exceeding ¼-inch shall be removed and replaced. All removal and replacement of the surface course shall be from roadway intersection to intersection, or to the end-of-roadway, as applicable, and shall be for the entire lane width.

i. Certification

The Developer will provide to Athens-Clarke County a statement of inspection, sealed and signed by a professional engineer licensed in the state of Georgia, that all construction requirements have been met for roadway asphaltic concrete construction. Upon approval by Athens- Clarke County, roadway construction will be considered complete.

1.2.6 CURB & GUTTER

a. Material

Curb & gutter material shall be Portland Cement Concrete, Class "A" as defined by GDOT, and shall have a minimum break strength of 3,000 psi at 28 days. All construction shall be in conformance with Section 430, GDOT *Standard Specifications Construction Of Transportation Systems*, most current edition, with supplements and revisions. The use of calcium chloride is prohibited in all concrete placement associated with roadway construction.

b. Base

Roadway aggregate base 6 inches thick shall extend under the curb and gutter for a distance of 6 inches beyond the back-of-curb.

c. Joints

½-inch asphalt-impregnated expansion joints shall be provided at all structures and radius points, and at intervals not to exceed 100 feet in the remainder. Contraction joints shall be provided at intervals not to exceed 10 feet.

d. Conform To Plans

Curb and gutter shall be set true to the line and grade of the street and finished to the section shown on the plans. Line and grade shall be field staked and set by the developer's engineer or surveyor. Forms and string lines to control the placement of concrete shall be set to the exact line and grade shown on the approved plans. Finished curb & gutter shall not deviate from the line and grade shown on the approved plans by more than 0.04 feet (1/2 inch). Deviations exceeding this tolerance will result in rejection of the work and require replacement of the non-conforming curb & gutter.

All gutters shall drain positively with no areas of ponding. All gutters shall slope to the curb at a 1 inch per foot minimum slope unless a different pavement cross-section is approved.

e. Workmanship

Inferior workmanship or unprofessional construction methods resulting in unacceptable curb and gutter will be cause for rejection of the finished work. Unacceptable construction shall be removed and replaced from joint to joint. Disturbed areas along all curbing shall be backfilled, stabilized, and grassed.

1.2.7 SIDEWALKS

a. Material

Sidewalks shall be constructed of Portland Cement Concrete, Class "A," as defined by GDOT, and shall have a minimum break strength of 3,000 psi at 28 days. The minimum thickness shall be 4 inches except at roadway intersections where the minimum thickness shall be 6 inches for all sidewalk construction within the pavement tangent points. Base material shall consist of 4" of compacted #57 stone. All construction shall be in conformance with Section 430, GDOT *Standard Specifications Construction Of Transportation Systems*, most current edition, with supplements and revisions.

b. Cross Slope

The finished sidewalk cross slope shall be between a minimum of 1/8 inch per foot and a maximum of ¼ inch per foot toward the curb or the ditch, as applicable.

c. Joints

Contraction joints shall be placed on a 5-foot interval. Expansion joints shall be placed on a 50-foot interval and at all intersections with curbs, ramps, driveways, and other structures. Sidewalk construction shall be in accordance with Section 430 of the GDOT *Standard Specifications Construction of Transportation Systems*, most current edition.

d. Conform To Plans

Sidewalk shall be set true to the line and grade of the street and finished to the section shown on the plans. Line and grade shall be field staked and set by the developer's engineer or surveyor. All sidewalk shall drain positively with no areas of ponding.

e. Workmanship

Inferior workmanship or unprofessional construction methods resulting in unacceptable sidewalk will be cause for rejection of the finished work. Disturbed areas along all sidewalk shall be backfilled, stabilized, and grassed.

1.2.8 UTILITY INSTALLATION

Pavement Cuts

Cutting and removing roadway and/or sidewalk pavements can significantly disrupt and interfere with public use of the right-of-way. It disrupts traffic flow, creates hazards for pedestrians and cyclists to navigate, and degrades the pavement. Local roads and sidewalks are a valuable public asset which the Unified Government holds in trust for the residents of Athens-Clarke County. The Transportation & Public Works Department (Department) therefore discourages cutting and removing them for any reason.

Pavement cuts will not be permitted unless approved by the Transportation & Public Works Director (Director) or designee for making a service tap on a line under pavement when no other distribution line is available in the area, or for where it is demonstrated that there is no other practical alternative. In no event will an open cut be permitted when it is reasonably practical to bore, tunnel, etc. under the roadway. The Director or designee may require test holes in the pavement for the purpose of investigating the location of nearby utilities or performing repairs or taps to existing facilities.

Requests for open pavement cuts to the Director must be in writing, supported by detailed reasons why another method is not practical and include details relative to the maintenance history and service life of the facility. The Department requires (1) that backfill and repaving be performed under its direction at the expense of the utility, and (2) that the utility remain liable for the cost of repair if the backfill subsides or the patched pavement fails. The Department requires an inlay or overlay beyond the cut limits for the full width of the lane, lanes, or road surface to improve the road smoothness and appearance, depending on the age of the last paving operation as follows:

- Existing roadway pavement up to 4 years old – mill and/or overlay 100 feet each side of the cut;
- Existing roadway pavement 4 years to 7 years old – mill and/or overlay 50 feet each side of the trench;
- Existing roadway pavement over 7 years old – pavement restoration shall be made in kind using construction procedures in accordance with the Department's Technical Standards, current edition.
- Existing sidewalk pavement removal and restoration shall be based on the existing joint pattern. Only whole sidewalk panels shall be removed and replaced.

If conditions warrant per the above, milling may be required prior to repaving roadways. When the Director or designee approves a pavement cut, the work shall be accomplished in accordance with the following:

1. The trench edges in paved areas shall be saw cut to neat lines before starting to remove the pavement slab;
2. Materials and methods of compaction shall be adopted to achieve prompt restoration of traffic service:
    a. In trenching across the roadway, only one-half of the paved surface is to be opened at one time. The open half shall be completely backfilled before opening the other half.
    b. Closure of intersecting streets, road approaches or other access points for trenching operations will not be permitted. Upon trenching within any road pavement the Utility shall install steel running plates in conformance with the Department's standards, of sufficient thickness to support traffic loads, and provide satisfactory methods for traffic entering or leaving the road or adjacent properties. Immediately after the utility facility authorized by the permit has been placed, the intersecting street, road approaches, or other access point shall be restored to a condition similar to that which existed before such open cut was made, and in a manner satisfactory to the Department. Spot resurfacing may be required.
3. Roadway and sidewalk pavement cuts must occasionally remain open for a time. A roadway pavement cut larger than 2-feet by 2-feet must be protected with steel running plates in accordance with these standards. Any pavement cut that is 2-feet by 2-feet or smaller must be filled with temporary cold patch. The following controls shall apply to the use of steel plates:
    a. The plates shall completely cover the pavement cut or excavation;
    b. The plates shall be adequately secured and shall provide a safe and reasonable transition to the adjoining roadway surface by:
        i. Applying mastic around the entire underside perimeter of the plate, and by
        ii. Applying cold patch around the entire outside edge of the plate.
    c. Placement of the plates shall be limited to 4 consecutive days unless written approval is granted by the Director or designee;

d. The plates shall be clearly identified with the name or initials of the Utility.
e. Temporary traffic control warning signs shall be posted in accordance with the MUTCD warning motorists in advance of plates in the roadway:
    i. 'STEEL PLATE AHEAD' signs must be installed in advance of the plate per the MUTCD;
    ii. 'BUMP AHEAD' signs must be installed adjacent to the plate per the MUTCD.

Sidewalk removal shall require temporary backfill with GAB (crusher run) until the pavement is replaced. The Utility shall monitor the condition of the placed backfill and ensure it's surface remains smooth and without trip hazards until the pavement is restored.

If the Utility fails to adhere to the above controls, the Unified Government of Athens-Clarke County retains the right to remove the plates and perform the necessary work to restore the roadway. All costs associated with said work shall be paid by the Utility.

Restoration of the Right of Way:

This shall be performed with great care and attention to detail to ensure that the structural strength and surface quality of the road or sidewalk and the condition of other public infrastructure affected by the work is restored. In all cases, the Utility shall restore the infrastructure in accordance with current Athens-Clarke County standards and regulations, even if the previously existing condition did not meet current requirements.

For trenches over 4 feet wide, the subbase, base, and paving shall be replaced in kind using construction procedures in accordance with GDOT's Standard Specifications, current edition.

For trenches up to 4 feet wide, the repaired area should be acceptable if the following procedure is used:

Asphaltic Concrete Pavements – All operations involving roadway pavement removal and restoration shall conform to T&PW Standard Detail 1-070 and the following work sequence:

1. Sawcut existing pavement for necessary trench width only, and excavate trench.
2. Complete utility installation.
3. After the utility facility and any necessary bedding has been placed, the backfill and overfill material shall be placed up to the subbase. Backfill trench by placing suitable material and compacting in 6-inch lifts.to at least 95% theoretical maximum dry density. At this point the pavement shall be cut back at least 12 inches on each side of the trench or to visible overbreaks, whichever is greater, to a depth of 2 inches with a concrete saw. This will ensure a straight vertical edge for the patch and provide an undisturbed shoulder for the concrete cap.
4. After making the saw cut, the pavement to be removed should be broken into small pieces and removed. The broken edge below the saw cut is left fairly rough and irregular, but is

approximately a vertical plane to provide an aggregate interlock between the patch and the existing pavement.

5. The subbase material shall be carefully placed and shaped. Water shall be added as necessary to provide a damp, but not wet, subbase before the concrete base is placed. The vertical face of the existing pavement shall be sprayed with a fine mist of water to moisten the surface. To further improve the probability of obtaining a bond between the old pavement and the concrete base to be placed, the vertical face of the old pavement shall be painted with a solution of Portland Cement and water mixed to the consistency of heavy paint.
6. The new 8-inch thick Class B concrete base shall then be placed before this surface dries out. Screed and level concrete to a consistent depth of 2 inches for subsequent asphalt inlay. Do not apply a smooth trowel finish. The base shall be placed with care, making sure it is worked back into all corners and into the rough surface of the existing pavement. This must be done to provide interlocking between the old pavement and new base being placed.
7. Plate or otherwise protect from traffic for a 7-day cure time.*
8. After the concrete base has cured, the surface of the concrete base and vertical edges of the existing paving must be clean and dry before the tack coat is applied. A tack coat shall be applied to the surface of the new concrete base and brushed into the corners and onto the vertical edges of the old pavement to provide a bond and to seal out water. The hot asphaltic plant mix surface material shall be immediately placed after the surface of the tack coat has dried to the point that it is sticky to the touch.
9. Place Asphalt Type 'F' (Superpave 9.5 mm) 2 inches thick and compact.

*GDOT twenty-four hour accelerated strength concrete (GDOT *Standard Specifications Construction of Transportation Systems,* 2021 Edition, Section 504) may be substituted for 3000 psi concrete. A six hour cure time is applicable under this condition.

Flowable Fill – Commonly used as a fill or backfill in utility construction, flowable fill is a low strength, slurry=like fill material primarily used in below grade applications such as utility trenches, where low strength and ease of placement are required. It is typically placed using conventional ready-mix concrete trucks. This mixture is capable of filling all voids in irregular excavations and hard-to-reach places (such as under and around pipes), is self-leveling, and hardens in a matter of a few hours. It can be placed in one lift with minimal labor without the need for compaction in layers. In many cases these materials are designed so that they are comparable in strength to the surrounding soil after hardening, facilitating future excavation. It requires no vibration or tamping and reaches 95% or more compaction within a few hours of placement. It is generally made from a blend of cement, fly ash, sand and water. While flowable fill's initial costs may be higher than most soil or granular backfill materials, by the time labor and other costs are added in, flowable fill may be the best and most economical choice.

Acceptable materials and construction with flowable fill within the right-of-way shall conform to the current specifications of GDOT's Standard Specifications, current edition, Section 600, Controlled Low Strength Flowable Fill.

Test Holes – The Director or designee may routinely permit test holes in the pavement for the purpose of investigating the location of nearby utilities. The Director or designee may require the utility to consider other locations for pavement crossing to reduce or eliminate the number of test holes necessary. Test holes shall be shown on the permit plans and shall not exceed 12 inches in diameter. In the event multiple test holes are required to locate existing facilities as per O.C.G.A § 25-9, if three or more test holes per lane are required, the lane shall be open cut and repaired as per these standards.

ARTICLE 2 ACCESS

A driveway is an access constructed within a public right-of-way, connecting a public roadway with adjacent property. This connection functions as a low-volume intersection. These standards address the design and construction of driveway access in order to promote the safe and efficient movement of vehicular and pedestrian traffic.

2.1 GENERAL DESIGN STANDARDS

The standards presented in this section apply to access design for all properties.

2.1.1 NUMBER

The number of driveways permitted to access a property is given in **Chapter 7-2** of the Athens-Clarke County Code of Ordinances. This number shall not vary unless the Traffic Engineer deems it necessary that more be allowed to provide reasonable access to the property and that such allowance can be made without jeopardizing the safety, convenience, and maintenance of the public roadway.

When, in the judgement of the Traffic Engineer, it is necessary for safety purposes, a driveway may be designated as Entrance-Only or Exit-Only.

2.1.2 LOCATION

a. <u>General</u>
A driveway shall be located and its dimensions restricted so that the entire design is contained within the property being served. A driveway shall not encroach upon right-of-way areas deemed necessary for effective traffic control, highway signs, or signals. A driveway shall be located and designed so that adequate sight distance is provided in either direction.

b. <u>Spacing</u>
A driveway serving a corner lot shall not provide direct access into the street intersection, but shall be located away from the intersection. Adequate separation between driveways and street intersections, and between adjacent driveways, shall be provided and maintained in conformance with **Section 7-2-7** of the Athens-Clarke County Code of Ordinances.

Required separation distances are measured from the end of radius or taper of the existing street or driveway intersection, along the edge-of-pavement, to the end of the nearest radius or taper of the proposed driveway intersection. See T&PW Standard Detail 2-010.

In general a new driveway should be located to align with any existing driveway that may be located on the opposite side of the roadway, provided that other requirements can be met.

c. Restricted Areas

A driveway shall maintain adequate offset from any side property line, in accordance with **Section 7-2-7** of the Athens-Clarke County Code of Ordinances. See T&PW Standard Details 2-010 and 2-020.

The area within the right-of-way between successive driveways shall be left unimproved for vehicular travel or parking. This restricted area shall be graded down to grades approved by the Transportation & Public Works Director only if necessary to improve sight distance.

2.1.3 ANGLE

The angle of intersection with the public roadway shall be 90 degrees wherever possible. Acute angles of intersection create clear sight limitations that should be avoided.

In those cases where a 90 degree intersection cannot be achieved, the angle of intersection shall conform with the standards contained in the Georgia Department of Transportation's (GDOT) *Regulations for Driveway and Encroachment Control*, most current edition.

When the angle of intersection is less than 90 degrees, the driveway radii shall be determined by the Traffic Engineer.

When, in the judgment of the Traffic Engineer, it is necessary for safety purposes, a driveway may be designated as Entrance-Only or Exit-Only.

2.1.4 GRADE

Driveway grade shall be in conformance with **Section 9-15-13** of the Athens-Clarke County Code of Ordinances and these standards.

2.1.5 VISIBILITY

a. Clear Sight Triangles

A driveway connection to a public roadway functions as an intersection, and adequate sight distance must be provided. Clear sight triangles are therefore required in both directions at the roadway intersection. Sight triangle dimensions shall be 35 feet by 25 feet and defined as: 35 feet along the property line from the intersecting point of the driveway centerline and the

right-of-way or property line, and 25 feet along the driveway centerline from the intersecting point of the driveway centerline and the right-of-way or property line toward the interior of the property. See T&PW Standard Details 2-010 and 2-020. Further information about Clear Sight Triangles may be found in **Section 7-2-7 (L)** of the Athens- Clarke County Code of Ordinances.

b. Obstructions
A clear sight triangle shall be maintained free of any sight obstructions in conformance with **Section 7-2-7 (K)** and **Section 9-15-2 (C)** of the Athens-Clarke County Code of Ordinances.

2.1.6 ENTRANCE APRON

All driveway construction shall include a paved entrance apron to connect to the public roadway pavement. The apron shall serve to delineate and control access to the roadway, to maintain roadway runoff within the right-of-way, and to protect the roadway edge-of-pavement.

a. Urban Roadway
Urban roadways are characterized by the provision of curb & gutter and storm sewer systems to convey storm water runoff.

Driveways shall not obstruct or impede drainage in the street gutter. Driveway apron radius or taper construction shall terminate a minimum distance of 5 feet from the nearest end of any storm drain inlet, as measured along the gutter flow line.

The maximum algebraic change in driveway centerline valley grade shall be 15 percent, and the maximum algebraic change in break-over grade shall be 12 percent. There shall be a minimum horizontal distance of 10 feet between grade changes. See T&PW Standard Detail 2-010.

b. Rural Roadway
Rural roadways are characterized by the provision of ditches and culverts to convey storm water runoff.

Driveways shall not obstruct or impede drainage in roadside ditches or roadside drainage areas. Driveway culverts shall be provided, shall be sized to convey the 25-year return frequency storm event, and shall in no case be less than 15 inches in diameter. Driveway culvert material, design, and construction shall conform with the standards of **Article 4**. Minimum pipe cover shall be 12 inches. Driveway culverts shall be of sufficient length and their installation shall not result in slopes steeper than 3H:1V. Existing roadside ditches shall be extended, relocated, and/or improved as necessary to accommodate driveway culvert installation in conformance with these standards and those of **Section 1.1.5**. The horizontal distance between culverts under successive driveways shall be not less than 30 feet.

The maximum algebraic change in driveway centerline valley grade shall be 15 percent, and the maximum algebraic change in break-over grade shall be 12 percent. There shall be a minimum horizontal distance of 10 feet between grade changes. See T&PW Standard Detail 2-020.

c. Pedestrians

All driveway construction shall provide for the safety of pedestrians. Whenever a driveway with curb intersects a pedestrian sidewalk or walkway, the driveway curb shall be handicap modified in conformance with the standards established by the Americans with Disabilities Act (ADA). All construction shall be in conformance with GDOT Special Details A1, A2, A3, and A4 as applicable.

2.2 SPECIFIC DESIGN STANDARDS

2.2.1 SINGLE-FAMILY & TWO-FAMILY RESIDENTIAL

a. Driveway Width

Minimum	8 feet
Maximum	12 feet*

*Single- and Two-Family residential construction that locates a front-loaded, two-car garage door within 30 feet of the Right-of-Way may increase the driveway width to 16 feet maximum at the Right-of-Way.

b. Entrance Apron

1. Urban Street (curb & gutter)

   The design shall conform with the standards contained in the Georgia Department of Transportation's (GDOT) *Regulations for Driveway and Encroachment Control Manual*, latest edition and shall incorporate a tapered entrance valley gutter in accordance with T&PW Standard Detail 2-010.

2. Rural Roadway (ditches and culverts)

   The design shall conform with the standards contained in the Georgia Department of Transportation's (GDOT) *Regulations for Driveway and Encroachment Control Manual*, latest edition. A tapered entrance may be utilized, rather than radii, upon the approval of the Transportation & Public Works Director. See T&PW Standard Detail 2-020.

   Apron construction shall extend from the roadway edge-of-pavement the greater of:

   - 10 horizontal feet
   - To the back-of-sidewalk
   - To a point that is 5 horizontal feet beyond the centerline of the

driveway culvert

The driveway centerline profile shall maintain a negative slope of ½-inch per foot or steeper, from the roadway edge-of-pavement to a low point at the centerline of the driveway culvert. Thereafter the centerline profile shall transition to a positive slope and achieve a minimum rise of 6 inches above the low point within the right-of- way.

3. Radii

Minimum:	5 feet
Maximum:	15 feet

Where right-of-way is inadequate for complete construction of driveway radii within the right-of-way, the property owner shall allow completion of the radii on the property being accessed.

c. Parking

A driveway shall provide access to parking improvements on private property, such as a parking pad or garage. No parking shall be allowed within five feet of the right-of-way.

2.2.2 MULTIFAMILY, COMMERCIAL, OFFICE-INSTITUTIONAL, INDUSTRIAL

a. Driveway Width

	One-Way	*Two-Way*
Minimum	12 feet	24 feet
Maximum	16 feet	36 feet

When, in the judgment of the Traffic Engineer, it is necessary for safety purposes, a driveway may be designated as entrance-only, exit-only, or right-in/right-out. When implementing a right-in/right-out driveway, pedestrian accommodations must include a raised island with concrete curb and gutter.

b. Entrance Apron

1. Urban Street (curb & gutter)

The design shall conform with the standards contained in the Georgia Department of Transportation's (GDOT) *Regulations for Driveway and Encroachment Control Manual*, latest edition and incorporate either a tapered entrance valley gutter or one with radii, in accordance with GDOT Special Detail Drawings A1 or A2, as approved.

Apron construction shall extend from the roadway edge-of-pavement to the end of the entrance radii or to the back-of-sidewalk, whichever distance is greater.

2. Rural Roadway (ditches & culverts)

The design shall conform with the standards contained in the Georgia

Department of Transportation's (GDOT) *Regulations for Driveway and Encroachment Control Manual*, latest edition, and these standards. A tapered entrance may be utilized, rather than radii, upon the approval of the Transportation & Public Works Director.

Apron construction shall extend from the roadway edge-of-pavement the greater of:

- 10 horizontal feet
- To the back-of-sidewalk
- To a point that is 5 horizontal feet beyond the centerline of the driveway culvert

The driveway centerline profile shall maintain a negative slope of ½-inch per foot or steeper, from the roadway edge-of-pavement to a low point at the centerline of the driveway culvert. Thereafter the centerline profile shall transition to a positive slope and achieve a minimum rise of 6 inches above the low point within the right-of- way.

3. Radii

Minimum:	15 feet
Maximum	35 feet

Where right-of-way is inadequate for complete construction of driveway radii within the right-of-way, the property owner shall allow completion of the radii on the property being accessed.

c. Parking

A driveway shall provide access to parking improvements on private property. Parking shall be provided off the right-of-way and located so as to prevent the storage of vehicles in the driveway and the backup of traffic into the street. No parking shall be allowed within five feet of the right-of-way.

d. Driveway Island Areas (Channelization)

1. Treatment Of Islands As Buffer Areas

The unimproved island areas defined by the limits of roadway pavement, driveway pavement, and onsite parking pavement function as buffer areas that are necessary for safe and effective traffic control. If site development necessitates the re-grading of buffer areas, such work shall be done in a manner to ensure:

- Adequate visibility clearance for traffic operations as defined in **Section 2.1.5** above;
- Proper drainage of all affected areas;
- Suitable slopes for maintenance operations and good appearance in accordance with **Section 1.1.5 (c)**.

Buffer areas shall be treated as necessary to prevent use by vehicles.

This may be accomplished by grading or by the placement of curbs, rails, posts, low walls, or low shrubs in such a manner that will not impair clear sight across the area and meets the requirements of **Section 2.1.5**.

2. Minimum Island Dimensions
The minimum distance between entrance and exit driveways shall be 5 feet at the narrowest point, as measured between the tangent points of the inside radii.

The minimum distance between two one-way driveways, or between the drive aisles of a single two-way divided driveway, shall be 5 feet, as measured at the narrowest point of separation.

The minimum island depth to extend beyond the right-of-way for both driveway and parking islands is 5 feet.

e. Auxiliary Lanes
Auxiliary lanes (left-turn, right-turn, acceleration, deceleration) shall be provided in accordance with the standards contained in the Georgia Department of Transportation's (GDOT) *Regulations for Driveway and Encroachment Control*, most current edition.

2.3 CONSTRUCTION STANDARDS

2.3.1 MATERIAL

All apron construction shall be Portland Cement Concrete with a break strength of 3,000 psi at 28 days. Minimum concrete thickness:

Single- and Two-family Residential Properties:	6 inches
All Other Properties:	8 inches

2.3.2 ROADWAY PAVEMENT REMOVAL

Urban entrance apron construction shall require complete removal of the existing curb and gutter for the entire width of the apron, including flares or radii. To accommodate forms for apron construction on all roadways, the roadway pavement shall be sawcut in a neat line and removed for the entire width of the apron at a minimum offset of one foot from the edge-of-pavement. See T&PW Standard Detail 2-010.

2.3.3 SUBGRADE PREPARATION

All unsuitable material shall be removed and replaced with suitable soil or aggregate. Subgrade material shall be compacted to 95 percent of maximum dry density. Compaction testing may be required by the Public Works Inspector, and test results shall be reported immediately. The subgrade shall be wetted before placing concrete within forms. Concrete shall not be placed on a muddy or frozen surface.

2.3.4 CONCRETE WORK

The excavation, construction of concrete forms, placing, finishing, and curing of concrete shall be performed by a concrete finisher, skilled in the trade. All construction shall be conducted so as to produce an impervious stone, having a uniform texture throughout and true to the specified shape, line, dimensions, and surface finish.

Membrane-forming curing compound shall be placed immediately after the surface finish is applied and shall continue for five days. Compound shall be applied at a rate not less one gallon per 300 square feet of surface area. No vehicular traffic shall be allowed on the surface for five days, unless the surface is protected by one-inch thick plywood. This protection shall not be placed within 12 hours of application of the curing compound. Concrete judged to be improperly cured by the Public Works Inspector shall be removed and replaced.

No concrete shall be placed when the atmospheric temperature is below 35 degrees Fahrenheit. If the temperature drops below 35 degrees after concrete has been placed, the Contractor shall provide sufficient canvas and frame work, or other type of housing, to enclose and protect the work, and shall maintain the enclosed air at a temperature not less than 45 degrees Fahrenheit for a period of five days. The Contractor shall assume all risks associated with placing concrete in cold weather, and concrete judged to be improperly cured by the Public Works Inspector shall be removed and replaced.

2.3.5 CLEANUP & BACKFILL

All materials used in driveway construction shall be removed from the site upon completion of the work. Backfilling, dressing, and final stabilization of all disturbed areas shall be completed immediately and before final acceptance of the work.

ARTICLE 3 SITE GRADING

3.1 GENERAL

The standards in this section apply to any land disturbance operation, regardless of size.

Land development is to be accomplished with minimal earth moving and alteration of natural topography. Modifications to existing natural or man-made slopes should be designed in such a way as to minimize potential for erosion and to maximize ease of maintenance. Grading and drainage design shall be in accordance with all provisions of the Athens-Clarke County Code of Ordinances, including **Chapter 5-4 Stormwater Management, Chapter 8-2 Flood Protection**, **Chapter 8-3 Soil Erosion and Sedimentation Control**, **Chapter 8-6 Protected Environmental Areas**, the ***Manual for Erosion and Sediment Control in Georgia,*** most current edition, and the ***Georgia Stormwater Management Manual***, most current edition..

All fill of a structural nature must be entirely confined to the property under development.

No grading shall be allowed to encroach any environmental buffer established by the State of Georgia or by the Unified Government of Athens-Clarke County, unless the specified activity is exempt from any variance requirement, or else all required variances have been obtained.

All infrastructure grading associated with a development shall conform to the requirements of **Section 9-26-2 (A) (6) (d) (2)** of the Athens-Clarke County Code of Ordinances.

Grading shall be accomplished in accordance with the lines and grades shown on the approved Grading & Drainage Plan.

3.2 SLOPES

No proposed cut or fill slopes shall exceed three (3) horizontal units to one (1) vertical unit within nineteen (19) feet of the edge-of-pavement or back-of-curb of any roadway.

Maximum cut and fill slopes shall be 2H:1V, except within and adjacent to all open drainage facilities where maximum slopes shall be 3H:1V.

Flatter slopes than those described in the foregoing paragraph may be required when the general nature of the soil warrants a flatter slope. If a slope steeper than 3H:1V shows evidence of shearing, non-cohesiveness, sliding, or inability to maintain compaction, the slope shall be stabilized at 3H:1V or by using mechanical methods such as retaining walls, or “grow mats” stapled in place. To control surface drainage on existing and proposed slopes, berms and/or diversion channels shall be required at the top-of-slope for every 15-foot change in elevation, and at the intersection of the slope with existing ground. The engineer shall provide velocity calculations, based on the design storm, for all channel flows to determine whether a

paved or vegetative surface is appropriate. Permanent down-drain or grade stabilization structures shall be required.

All retaining walls over four feet in height shall be designed by a professional engineer, licensed in the State of Georgia, with complete construction plans and details bearing the engineer's seal and signature provided in the site construction plan set. No portion of any retaining wall structure, including the footing, may encroach any existing or proposed right-of-way.

3.3 STABILIZATION

All slopes, created or existing, within any land development project shall be planted or otherwise protected form erosion and failure. Such planting or other protection shall be undertaken immediately upon creation of any slope steeper than 3H:1V and shall be completed without delay. Graded slopes of 3H:1V or steeper shall receive mat blanket treatment.

Subdivision developers shall not in any event transfer title, sell, or otherwise divest themselves of the land without making any such transfer subject to the subdivider's right to re-enter the land to carry out the foregoing provisions. In addition, the subdivider may be required to provide a fence, guardrail, or other protective device specified by the Director, along slopes in excess of 2H:1V, or elevation changes greater than three feet.

3.4 FLOOD PROTECTION

All proposed development shall be in accordance with **Chapter 8-2 Flood Protection**, of the Athens-Clarke County Code of Ordinances.

No structure shall be located within ten horizontal feet of any Area of Special Flood Hazard, as defined in Chapter 8-2 of the Code.

The lowest finished floor, including basement, of any structure shall be elevated a minimum of 2 feet above the base flood elevation.

Proposed lowest finished floor elevations and existing lowest floor elevations shall be shown for all structures within or adjacent to any Area of Special Flood Hazard.

The limits of any Areas of Special Flood Hazard, as well as any FEMA-identified Floodway, shall be delineated on the plans, and the Base Flood Elevation noted. Any plan citing FEMA data shall reference the current Flood Insurance Rate Map (FIRM) and cite the appropriate community panel number.

If site development encroaches into a FEMA-regulated Area of Special Flood Hazard which has been studied by detailed methods and includes a regulatory Floodway, it will be necessary to perform a hydraulic HEC-2 analysis to demonstrate a "No-Rise" condition. A Conditional Letter of Map Revision (CLOMR) from FEMA is required in order to obtain development permits, and an approved Letter of Map Revision (LOMR) will be

required prior to issuance of any Certificate of Occupancy.

Any grading proposed within an Area of Special Flood Hazard to accommodate development requires a compensatory grading plan and associated calculations. A Conditional Letter of Map Revision based on Fill (CLOMR-F) will be required to obtain development permits, and a Letter of Map Revision based on Fill (LOMR-F) will be required prior to issuance of any Certificate of Occupancy.

No development will be permitted downstream of a lake, pond, or reservoir dam unless documented approval is provided from the Georgia Safe Dams Program and/or a dam break analysis is provided. The resulting water surface from the dam break analysis shall be shown on the plans.

ARTICLE 4 STORMWATER MANAGEMENT

4.1 GENERAL

The standards in this article apply to any land development activity that causes a change in stormwater runoff characteristics from previously existing conditions.

Post-development stormwater runoff must be managed so as to prevent damage to public and private property and infrastructure; safeguard public health, safety, and general welfare; and protect the environment, including water and aquatic resources. Pre-development surface runoff characteristics should be maintained to the maximum practical extent. Stormwater management shall be accomplished in accordance with all applicable provisions of the Athens-Clarke County Code of Ordinances including, but not limited to, **Chapter 5-4 Stormwater Management**, **Chapter 8-2 Flood Protection**, **Chapter 8-3 Soil Erosion and Sedimentation Control**, and **Chapter 8-6 Protected Environmental Areas**.

Stormwater management design shall utilize the policy, criteria, and technical standards and specifications of the ***Georgia Stormwater Management Manual*** (GSMM), most current edition, the ***Manual for Erosion & Sediment Control in Georgia***, most current edition, and this document, including any addenda or updates. Wherever these documents overlap, the more stringent requirement or guideline shall apply.

4.2 MINIMUM STANDARDS

The following standards are the minimum performance requirements for new development or redevelopment as defined in **Chapter 5-4** of the Athens Clarke County Code of Ordinances:

4.2.1 BETTER SITE DESIGN PRACTICES

Site designs should preserve the natural drainage and treatment systems and reduce the generation of additional stormwater runoff and pollutants to the fullest extent practicable.

4.2.2 WATER QUALITY (WQ)

All developed area runoff resulting from a rainfall depth of 1.2 inches must receive water quality treatment. No impervious area runoff may bypass treatment. Water quality treatment requires reduction of the post-development total suspended solids (TSS) loadings by 80%, as measured on an average annual basis.

Water quality volume and peak flow rate shall be calculated according to the guidelines and procedures of the *Georgia Stormwater Management Manual*. Where development results in multiple drainage areas, water quality volume and peak flow rate shall be calculated and treated separately for each drainage area. Where the Athens-Clarke County Code of Ordinances allows a reduction in water quality volume based on a percentage of site impervious area, the reduction shall be taken in the impervious area calculation and then the water quality volume calculated accordingly.

Water quality treatment shall be provided utilizing one or more of the structural controls described in the GSMM to demonstrate the required TSS reduction in post-development runoff. All controls shall be designed in conformance with the guidelines and recommendations of the GSMM. TSS removal capacity, including the capability credited to each control, the evaluation of controls in series (treatment train approach), and the application of any site design credits shall be in strict accordance with GSMM guidelines and recommendations.

The use of any proprietary stormwater treatment technology will be considered only after the following minimum requirements have been met:

- Performance claims have been verified by field testing, performed according to Georgia Technology Assessment Protocols (GTAP);
- Satisfactory performance with respect to maintenance requirements, potential for failure, and durability has been demonstrated;
- The technology has been reviewed by the Technology Review Committee of the Metropolitan North Georgia Water Planning District and the results, including any recommended use restrictions, have been made publicly available on the District website (www.northgeorgiawater.org).

In all cases, the Department will make the final determination as to credited performance and application suitability.

4.2.3 CHANNEL PROTECTION (CP)

Steam channel protection shall be provided by using all of the following:

1. 24-hour extended detention storage of the 1-year, 24-hour return frequency storm;
2. Erosion prevention measures such as energy dissipation and velocity control;
3. Preservation of all applicable stream buffers.

All developed area runoff resulting from the 1-year, 24-hour rainfall event must be captured and detained for a minimum 24-hour period. The channel protection volume must be calculated and the required release rate provided separately for each drainage area.

Storage and release rate requirements should be determined according to the methods of the GSMM. Routing of the 1-year event through the facilities must be provided to verify capacity and release rate.

4.2.4 OVERBANK FLOOD PROTECTION (Q_{p25})

Downstream overbank flood protection shall be provided by controlling the post-development peak discharge rate to the pre-development rate for the 25-year, 24- hour return frequency storm. This requirement shall be met at every location along the site boundary where runoff leaves the site unless a downstream hydrologic assessment, performed in accordance with the GSMM, demonstrates that such control will increase the peak flow at the prescribed downstream tributary junctions.

4.2.5 EXTREME FLOOD PROTECTION (Q_f)

All stormwater management facilities must be designed to safely handle the post-development runoff from the 100-year, 24-hour return frequency storm. This is accomplished by:

- Controlling developed runoff to the pre-developed rate; or
- Sizing onsite conveyances to safely pass the developed peak runoff and discharging it to a receiving system that is demonstrated to be sufficiently sized to convey the increased flows without causing damage or increasing flood heights or widths.

4.3 HYDROLOGY

4.3.1 RUNOFF ESTIMATION

a. Water Quality Volume (WQ_v) and Peak Flow Rate (Q_{wq}) shall each be calculated according to the methods of Section 2.1.7 of the GSMM.

b. Channel Protection Volume (CP_v) may be calculated according to the method in Section 2.2.5 of the GSMM. The SCS Method or USGS Method shall be used to verify the routing.

c. The Rational Method may be used to estimate peak runoff rates for the design of gutters, storm drain inlets, storm drain pipe, culverts, and small ditches. Runoff coefficients shall be consistent with those in the GSMM. Use of the appropriate frequency factor for the 25-year and less-frequent events, per the GSMM, is required. The method shall not be applied to any drainage area over 25 acres, and it shall not be used for storage design or any application that requires routing.

d. The Soil Conservation Service (SCS) Hydrologic Method may be used to estimate peak runoff rates and to generate hydrographs for the purpose of designing storage facilities and routing runoff flows. It is applicable to drainage areas up to 2000 acres. This method may be used for the design of all drainage structures except water quality facilities. Runoff curve numbers shall be consistent with those in the GSMM.

e. The U.S. Geological Survey (USGS) Peak Flow and Hydrograph Method may be used to estimate peak runoff rates and hydrographs. It's application must be in conformance with the all limitations and guidelines specified in the GSMM. This method may be used for the design of all drainage structures except water quality facilities.

4.3.2 PRECIPITATION

All runoff calculations shall utilize the rainfall data for Athens found in Table A-3, Appendix A, of the GSMM, or as updated. The 24-hour values are as follows:

Return Period (year)	24-Hour Precipitation (inches)
1	3.12
2	3.60
5	4.80
10	5.28
25	6.24
50	7.20
100	7.68

4.4 COLLECTION & CONVEYANCE

4.4.1 GENERAL

Storm water collection and conveyance facilities include, but are not limited to, swales, channels, ditches, headwalls, street gutters, catch basins, drop inlets, storm drainage pipes, junction boxes, and culverts. These improvements shall be provided to protect the public right-of-way, as well as private properties adjoining project sites or public right-of-way. Existing natural drainage channels shall be improved as deemed necessary by the Director to prevent erosion, flooding, or other hazard.

The Transportation & Public Works Director may require that any spring or surface water that may previously exist or result from development be intercepted and conveyed by pipe or open channel. Such drainage facilities shall be located in the right-of-way where feasible, or in perpetual drainage easements of appropriate width.

Collection and conveyance facilities shall be large enough to accommodate the runoff from their entire contributing drainage areas, including offsite. Offsite runoff rates shall be determined based on the maximum potential development density

allowed by the zoning ordinance.

Major and minor drainage system design shall be in accordance with the recommendations, guidelines, procedures, and methodologies presented in Chapter 4 of the GSMM and the standards and specifications of this document. Wherever these documents overlap, the more stringent requirement or guideline shall apply.

4.4.2 GUTTER SPREAD

Gutter spread shall be measured from face-of-curb, and all calculations shall utilize a Manning's roughness coefficient ("n" value) of 0.016. Inlets shall be placed to limit flow spread to the following:

a. Local Streets
12 feet total at any given section, but in no case more than 9 feet on one side of the street.

b. Collector & Arterial Roadways
One-half of the travel lane on a 2-lane roadway or one travel lane on a 4- lane roadway.

4.4.3 INLETS

a. Inlets On Grade shall be designed and spaced so that gutter spread is within the allowable limits specified in 4.4.2 for the 25-year return frequency storm.

b. Inlets In Sag shall be designed so that gutter spread is maintained within the limits specified in 4.4.2 for the 50-year return frequency storm.

4.4.4 STORM DRAIN PIPE

These include minor drainage system pipe, including lateral system pipe, and driveway pipe, and do not function to convey flows under public roadways.

a. Capacity
Storm drain pipes shall be designed to convey the 25-year discharge without being placed under pressure head. The Manning Formula should be used for capacity calculations. For the design flow, the hydraulic grade line may not exceed any of the following:
- one foot below ground elevation
- the top-of-pipe
- the gutter flow line

b. Slope & Velocity
Storm drain pipes shall be designed so that flow velocities are a minimum of 2.5 feet per second when the pipe is flowing full. The minimum allowable pipe slope is 1.0% for corrugated pipe, and 0.5% for smooth- wall (n = 0.012),

provided the minimum velocity standard is met.

The maximum flow velocity in any pipe of any material shall be 15 feet per second or the manufacturer's recommendation, whichever is less. Velocities over 8 feet per second in any pipe or culvert shall require additional attention to the following:

- Pipe or structure invert protection
- Increasing the ability of the receiving waterway or facility to accept the flow without damage
- Improvements to increase fill slope, stream bed, and/or stream bank stability

The maximum allowable slope for concrete pipe is 10% and for corrugated metal and polyethylene pipe is 14%. Corrugated metal pipe on any slope greater than 10% requires a paved invert.

4.4.5 ROADWAY CULVERTS

These are cross drain facilities that convey flows through roadway embankments.

a. Live Stream Flow

A culvert conveying a live stream shall be aligned with the natural channel, both horizontally and vertically. Open-bottom culvert designs are preferred. In a curved stream section, the culvert shall be aligned with the upstream channel. Closed-bottom culvert design shall require additional capacity allowance for siltation.

b. Capacity

Roadway culverts shall be designed to convey the 100-year return frequency storm. The maximum allowable headwater is that which meets all of the following criteria:

- Headwater causes no damage to upstream properties
- For local streets, the maximum ponding elevation does not encroach a travel lane at any point
- For collector and arterial roadways, the maximum ponding elevation results in a minimum 18-inch freeboard to the low point of the roadway pavement.
- Maximum ponding elevation does not result in any flow diverting around the culvert
- Maximum ponding elevation does not exceed the FEMA base flood elevation

c. Slope & Velocity

Roadway culverts shall be designed so that flow velocities are a minimum of 2.5 feet per second for the 2-year discharge. The minimum allowable pipe slope is 1.0% for corrugated pipe, and 0.5% for smooth-wall (n = 0.012), provided the minimum velocity standard is met.

The maximum allowable flow velocity is 15 feet per second or the manufacturer's recommendation, whichever is less. Velocities over 8 feet per second shall require additional attention to the following:

- Pipe or structure invert protection
- Increasing the ability of the receiving waterway or facility to accept the flow without damage

- Improvements to increase fill slope, stream bed, and stream bank stability

The maximum slope using concrete pipe is 10% and for corrugated pipe is 14%. Steeper slopes may be considered if installation is in accordance with manufacturer's recommendations and pipe restraining measures are provided.

d. Headwalls are required at both the inlet and outlet of all roadway culverts.

4.4.6 OPEN CHANNELS

These include drainage ditches, grass channels, dry and wet enhanced swales, riprap channels, and concrete-lined channels. These shall be designed to convey the 25-year return frequency storm and in accordance with the criteria, methodologies, and guidelines of Section 4.4 of the GSMM.

4.4.7 ENERGY DISSIPATION

Storm drain outlet protection (St) shall be provided for all concentrated discharges and shall be designed to accommodate the 25-year return frequency storm. The design shall be in accordance with the guidelines of both the *Manual for Erosion and Sediment Control in Georgia*, most current edition, and the GSMM. In cases where these documents differ, the more stringent requirement shall prevail.

4.4.8 CONSTRUCTION STANDARDS

Storm drain system material and construction shall be in accordance with these standards and those of the Georgia Department of Transportation's *Standard Specifications Construction of Transportation Systems*, most current edition with supplements and revisions. Wherever these documents overlap, the more stringent requirement or guideline shall apply.

a. Inlets and Junctions

In order to facilitate maintenance, inlet design for existing or proposed publicly-maintained roadways shall normally utilize GDOT 1033 or 1034 series standard catch basins, unless otherwise approved. If a bicycle lane is located adjacent to the curb, then GDOT 1033-F/1034-F standard inlets should be used. GDOT 1019 inlets with slotted grates may be used on steeper grades if increased interception is demonstrated.

All inlets, junction boxes, and outlet control structures shall have manhole frames and lids for access. These shall bear the Athens-Clarke County Stormwater logo and shall be of U.S. manufacture only. See T&PW Standard Detail 4-010.

All structures shall have paved inverts. b.

Reinforced Concrete Box Culverts

Culvert construction shall be in complete accordance with the Georgia Department of Transportation's *Standard Specifications Construction of*

Transportation Systems, most current edition with supplements and revisions.

c. Pipe and Pipe Arch

The minimum pipe diameter allowed in any publicly-maintained right-of- way is 15 inches.

Reinforced Concrete Pipe (RCP) shall conform with AASHTO-M170 and/or ASTM C-76 with installation in accordance with GDOT Standard 1030D, Table 1. Minimum class of pipe shall be Class III. All joints shall be bell and spigot type with o-ring gaskets conforming to ASTM C-443.

Bituminous Coated Corrugated Steel Pipe (BCCSP) and Pipe Arch shall be in accordance with AASHTO M-36 Type I or II with a minimum zinc coating of two ounces per square foot and bituminous coated in accordance with AASHTO M190. Minimum wall thickness is 12 gauge.

Aluminized Corrugated Steel Pipe (ACSP) and Pipe Arch shall be in accordance with AASHTO M274. Minimum wall thickness is 14 gauge.

Corrugated Aluminum Alloy Pipe (CAAP) and Pipe Arch shall be in accordance with AASHTO M196.

High Density Polyethylene Pipe (HDPEP) through 48-inch diameter shall be in accordance with AASHTO M294. Use of HDPE over 48-inch diameter is not permitted.

d. Installation

All storm drain installations shall be in accordance with the Georgia Department of Transportation's *Standard Specifications Construction of Transportation Systems*, most current edition with supplements and revisions. Use of the above-listed culvert and pipe construction is restricted by location as follows:

1. Local street rights-of-way and drainage easements: All referenced materials are acceptable when outside the limits of roadway pavement. When roadway crossings are made at substantially right angles, all referenced materials, except steel pipe, are acceptable. Essentially longitudinal (parallel to roadway) installations should be outside the pavement limits. Longitudinal installations under roadway pavement require reinforced concrete pipe.

2. Collector, arterial, commercial, and industrial street rights-of-way: All referenced materials are acceptable when outside the limits of roadway pavement. At roadway crossings and under roadway pavement, reinforced concrete pipe or box culvert is required.

3. Conveying perennial or intermittent streams (state waters): Open-bottom culvert, embedded reinforced concrete box culvert, or embedded reinforced concrete pipe are the only allowable installations.

4. Principal spillway pipe: Reinforced concrete construction with anti-seep collar is required.

5. Driveway pipe: All referenced materials are acceptable.

4.5 TREATMENT & CONTROL FACILITIES

4.5.1 GENERAL

Structural stormwater controls are necessary, both to remove pollutants from stormwater runoff and to mitigate the effects of increased runoff peak rate, volume, and velocity caused by land development. All structural controls shall be designed in conformance with Volume 2 of the *Georgia Stormwater Management Manual* (GSMM) and these design standards. Chapter 3 of the GSMM defines three categories of structural controls, according to applicability and ability to meet stormwater management requirements:

a. General Application Structural Controls are recommended for a wide variety of land uses and development types. They are credited with the ability to remove 80% of the average annual total suspended solids (TSS) when designed, constructed, and maintained in accordance with the recommended specifications. Several of these can be designed to also provide runoff rate control. General application structural controls are the recommended facilities to use wherever possible.

b. Limited Application Structural Controls are those recommended only for limited use or for special site or design conditions. These practices generally:

- Cannot alone achieve the 80% TSS removal standard
- Are intended to address hotspot or specific land-use constraints or conditions
- May have high or special maintenance requirements that may preclude their use

These controls are typically used for *water quality treatment only*. Some of them can be used as a pretreatment measure or in series with other structural controls to meet the pollutant removal standard. Limited application structural controls should be considered primarily for commercial, industrial, or institutional developments.

c. Detention Facilities may be used to provide runoff rate control (CP, Q_{p25}, and/or Q_f) only and are typically used downstream of a general or limited application structural control providing water quality treatment.

d. Access

Driveable access from a public right-of-way shall be provided to all structural control facilities. Twenty-foot wide Access Easements shall be provided for all route segments on private property. The maximum driveable slope along any unimproved portion of the route shall be 10%.

For all impoundment facilities, driveable access shall extend along the top-of-dam or around the outside of a retaining wall to the location nearest the Outlet Control Structure. Driveable access must also be provided into the facility.

4.5.2 DESIGN CRITERIA

a. Ponds

1. Application

The minimum allowable drainage area for a wet pond is 5 acres. Any drainage area less than 10 acres requires a water balance analysis and justification, and requires an impervious liner design for the permanent pool.

Permanent pool volume shall be at least 30% of the WQ_v, and its minimum depth shall be 4 feet.

2. Grading

See T&PW Standard Detail 4-020.

All pond grading, including dam toe-of-slope and/or retaining wall construction must terminate a minimum of 10 horizontal feet from any property line.

Maximum cut and fill slopes shall be 3H:1V.

Minimum top-of-dam width is 10 feet for driveable access. The

permanent pool of all water quality ponds shall have an aquatic bench (shallow littoral zone) extending a minimum distance of 15-feet into the pool at a maximum slope of 10%. The subsequent maximum slope to the bottom of the pool shall be 3H:1V. The bench shall completely surround the deeper portion of the pool. See T&PW Standard Detail 4-020.

Pond safety benches shall be provided in accordance with the guidelines of the *Georgia Stormwater Management Manual*. Dams for impoundment of shall be earthen construction and, at minimum, any retaining wall construction associated with a pond providing water quality treatment shall lie a minimum distance of 15 horizontal feet beyond the permanent pool design water surface contour.

3. Principal Spillway
Principal spillway construction shall be reinforced concrete throughout. See T&PW Standard Detail 4-020.

Outlet control risers shall have solid tops with manhole access. Manhole covers shall be lockable, shall bear the A-CC Stormwater logo, and shall be of U.S. manufacture. Pedestal top supports shall be cast into the top and mechanically secured to the riser in an acceptable manner. Ladder rungs shall be provided both outside and inside the riser to facilitate access. Inside rungs shall be located conveniently with respect to the manhole location and safely away from all outlet structure control devices. See T&PW Standard Detail 4-020.

All spillway pipe shall be reinforced concrete with anti-seep collars to protect against piping failure. See T&PW Standard Detail 4-020.

Permanent pool facilities shall be provided with a gravity flow emergency drain capable of completely draining the pool within 24 hours. See T&PW Standard Detail 4-020.

All Water Quality Extended Detention volumes shall be discharged through a reverse-slope pipe attached to the riser with its inlet submerged one foot below the permanent pool water surface elevation. The inlet of the reverse-slope pipe shall be adequately supported. See T&PW Standard Detail 4-020.

All adjustable valves associated with discharge control or emergency drain functions shall be ductile iron gate valves located inside the riser structure. A gate wrench extension stem to the top of the structure with adequate supports is required for the emergency drain. See T&PW Standard Detail 4-020.

Adequate anti-clogging design shall be provided for all outlet control devices and emergency drains. See T&PW Standard Detail 4-020.

4. Emergency Spillway
An emergency spillway is required for all ponds and must be completely separate from the principal spillway structure. The entire flow area of the emergency spillway should be constructed in undisturbed ground (not fill) wherever possible. If any part of the spillway must be located on fill, then all spillway construction shall be reinforced concrete. Emergency spillways shall be trapezoidal in cross-section with a minimum bottom width of eight (8) feet. The spillway channel shall have a straight control section at least twenty (20) feet in length, and a straight outlet section for a minimum

distance of twenty-five (25) feet.

5. Safety Fence
A minimum 4-foot high chain-link fence is required to surround stormwater management ponds if slopes exceeding 4H:1V are permitted. The fence must be located outside the driveable access around the facility, including along the top-of-dam. A 12-foot wide vehicular access gate located appropriately to access the facility interior is required.

b. Bioretention Facilities
These shall be designed and constructed in complete accordance with all guidelines and recommendations of Section 3.2.3, Volume 2, of the GSMM. Adequate pretreatment, per the GSMM, is always required. The maximum contributing drainage area for offline design shall be 5 acres. Online designs shall be limited to a maximum contributing drainage area of 0.5 acres. The maximum ponding depth in all cases shall be limited to 6 inches.

c. Porous Pavements
These may be utilized to reduce impervious site coverage and the volume of runoff that must be controlled. They require a minimum runoff curve number of 61in hydrologic calculations. Porous pavements shall be designed in accordance with the guidelines and information found in the publication entitled *Porous Pavements,* by Bruce K. Ferguson, most current edition.

d. Underground Detention Facilities
Underground storage facilities may be provided to satisfy release rate requirements, but not water quality treatment requirements. Design shall be in conformance with the guidelines and recommendations of Section 3.4.3, Volume 2, of the GSMM. Standard manhole access with ladder rungs extending to the invert is required for all storage chambers. Pipe storage construction must utilize watertight joints throughout the system.

4.6 LANDSCAPING

Landscaping shall be provided for all stormwater facilities, as necessary to adequately address the following functions:

- Prevent the erosion of bare soil
- Slow and retard flows by increasing hydraulic roughness
- Enhance infiltration of runoff into the soil
- Provide pollutant removal through vegetative uptake
- Contribute to wildlife and fish habitat
- Improve the overall appearance of the facilities

All landscaping designs, including choice of plant species, for facilities providing water quality treatment shall be in accordance with Appendix F, Volume 2, of the GSMM. The

following guidelines from Appendix F, pertaining to any stormwater control or conveyance facility, shall apply. Do not:

- Plant trees, scrubs, or any woody vegetation on any fill embankment that functions as an impoundment
- Plant trees and shrubs within 15 feet of the toe-of-slope of a dam
- Plant trees or shrubs known to have long tap roots within the vicinity of an earthen dam or embankment, or subsurface drainage facilities
- Plant trees and shrubs within 25 feet of any principal spillway structure
- Plant trees and shrubs within 25 feet of perforated pipes
- Block maintenance access to structures with trees or shrubs

4.7 DISCHARGE

4.7.1 OFFSITE DRAINAGE FACILITIES

Where the offsite, receiving drainage system is determined to be inadequate to accommodate the project design discharge in accordance with the standards of **Section 4.4**, the receiving system shall be improved to the extent necessary to meet these standards. The project developer shall bear all costs associated with providing such offsite improvements and shall acquire any necessary temporary or permanent easements.

4.7.2 ENERGY DISSIPATION

For open channel or surface flows, the maximum developed condition flow velocity at any discharge location along the project site boundary shall not exceed the maximum pre-developed flow velocity. In all cases, the post-developed flow velocity shall be non-erodeable, and improvements to the existing condition will be required if downstream areas have erosion problems.

Energy dissipation design for concentrated discharges of the 25-year return frequency storm shall be provided in accordance with the *Georgia Stormwater Management Manual*, as well as the *Manual for Erosion and Sediment Control in Georgia*.

4.7.3 SURFACE DISCHARGE INTO ROADWAYS

The discharge of concentrated stormwater flows into public roadways shall be avoided. In no case shall such flows, including those from swales, ditches, draws, driveways, or pipe systems, exceed 1.0 cfs in the 25-year return frequency event or cause any increase in gutter spread.

4.7.4 RESIDENTIAL SUBDIVISION LOTS

In residential subdivisions, the drainage area contributing to the flow along any property line between lots, where the flow is within 50 feet of the building setback line of either lot, shall not exceed 2 acres unless contained within a piped drainage system or maintained in a natural watercourse. The stormwater conveyance shall be contained within a drainage easement.

4.8 EASEMENTS

4.8.1 CONVEYANCE

Where it is impossible or impractical to include a drainage conveyance within road rights-of-way, a perpetual unobstructed Drainage Easement, at least twenty (20) feet in width, shall be provided to accommodate the facilities. Stormwater Drainage Easements shall be separate and independent of any Sanitary Sewer Easements and shall be shown and dedicated on the Site Plan and Final Plat. Where a development project is traversed by a watercourse, drainage way, channel, or stream, a Drainage Easement shall be provided conforming substantially to the lines of such watercourse, and of width that is adequate for the purpose.

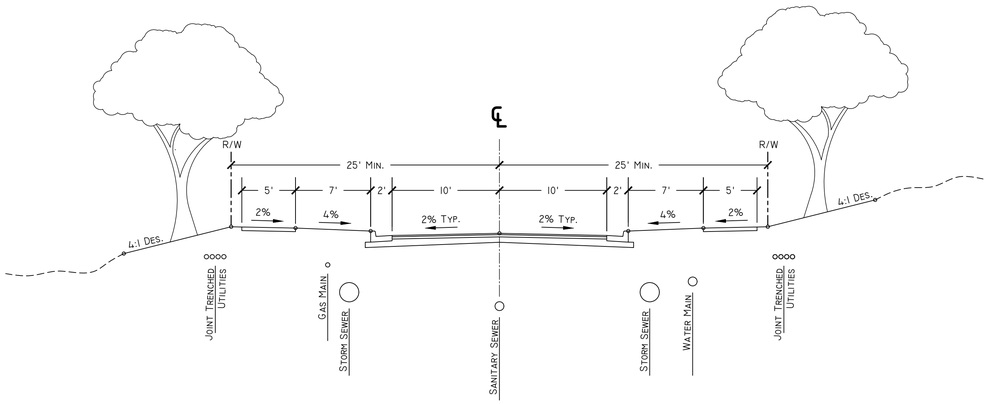
4.8.2 FACILITY

All structural control facilities shall be contained within a Stormwater Management Facility Inspection & Maintenance Easement. The easement shall extend a minimum distance of 10 horizontal feet beyond the toe-of-slope of any dam, the footing of any retaining wall, and the 100-year water surface contour.

4.8.3 ACCESS

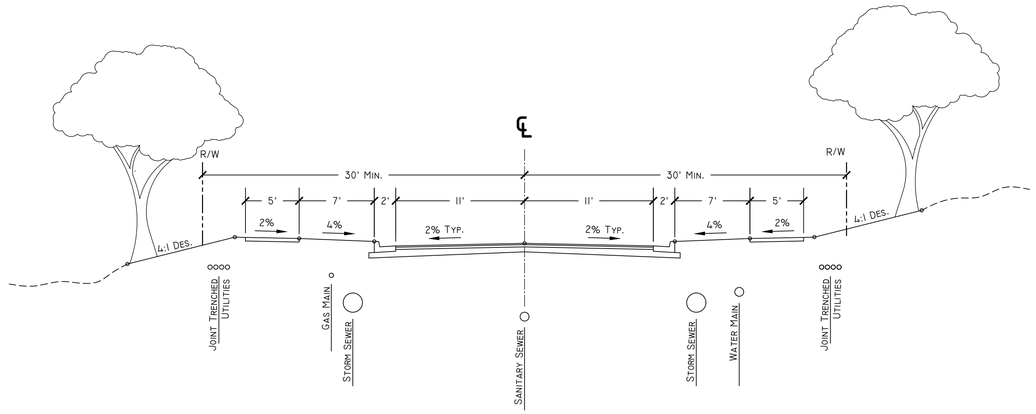
Driveable access to all structural control facilities shall be provided by a 20-foot wide Stormwater Management Facility Access Easement from Athens-Clarke County right-of-way to the Inspection & Maintenance Easement described above. Any slopes proposed to be driveable that exceed 10% must have an improved all- weather surface.

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA			



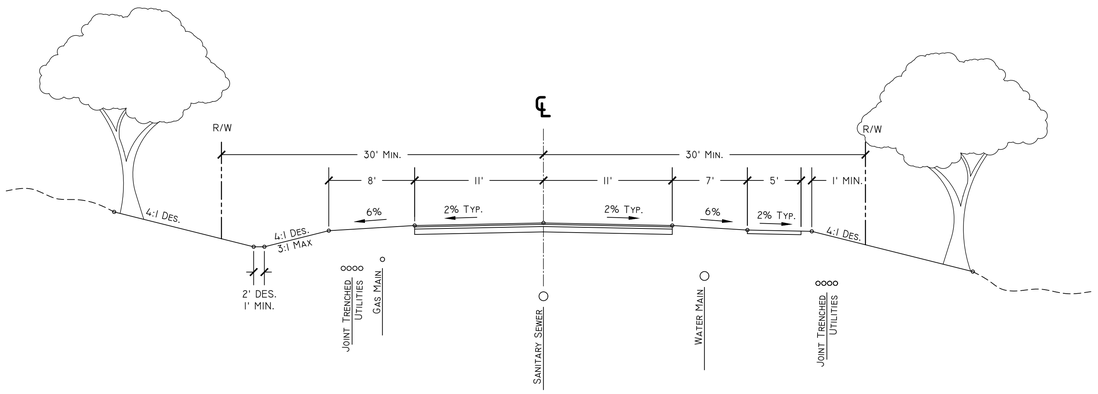
Notes:
1. See On-Street Parking Bay Detail for Typical Section through on Street Parking.
2. See Department Standards 1.1.2.c. for required paving section.

Typical Section
Local Urban Residential
Streets
NTS



Notes:
1. See On-Street Parking Bay Detail for Typical Section through on Street Parking.
2. See Department Standards 1.1.2.c. for required paving section.

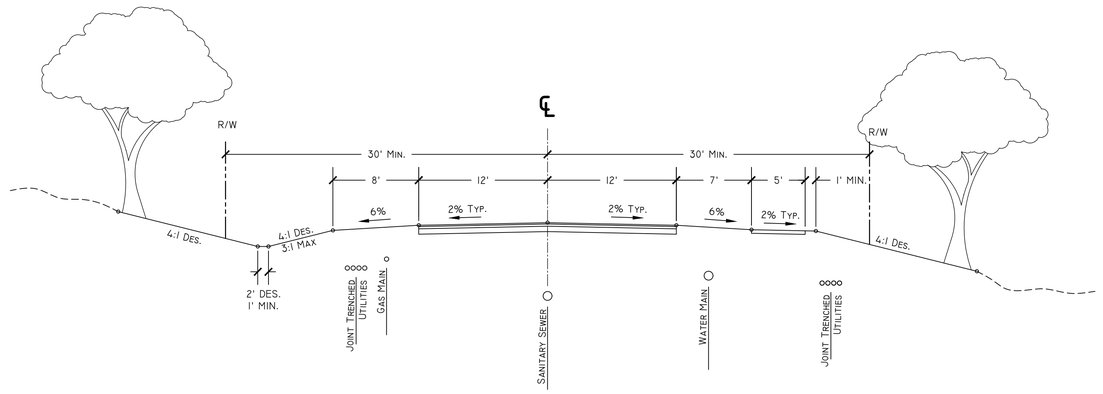
Typical Section
Local Urban Non-Residential
Streets
NTS



Notes:
1. See Department Standards 1.1.2.c. for required paving section.

Typical Section
Rural Residential Streets
NTS

General Notes:
1. Retaining walls to be installed must be placed 1' minimum outside right-of-way
2. For street trees and canopy requirements - consult Planning Dept. Standards and relevant Ordinance - [need Ordinance info on this]



Notes:
1. See Department Standards 1.1.2.c. for required paving section.

Typical Section
Rural Non-Residential Streets
NTS

REVISIONS:			
NO.	BY	DATE	DESCRIPTION
1	JRA	5/7/2024	Changed Travel Lane Width on Local Urban Residential and Rural Non-Residential Streets From 11' to 10'
2			
3			
4			
5			
6			
7			
8			

SURVEYED BY: NA
DESIGNED BY: JMJ
DRAWN BY: JMJ
CHECKED BY: JMJ
APPROVED BY: RAK

THE UNIFIED GOVERNMENT OF ATHENS-CLARKE COUNTY
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
ENGINEERING DIVISION

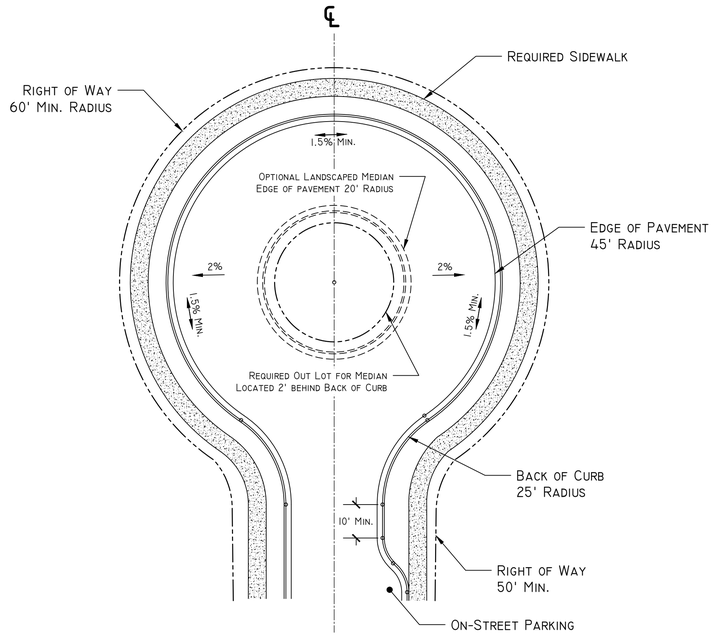
120 WEST DOUGHERTY STREET
ATHENS, GEORGIA 30603

PHONE 706.613.3440
FAX 706.613.3444

PROJECT:
CONSTRUCTION STANDARDS AND DETAILS
DATE: DECEMBER 2023

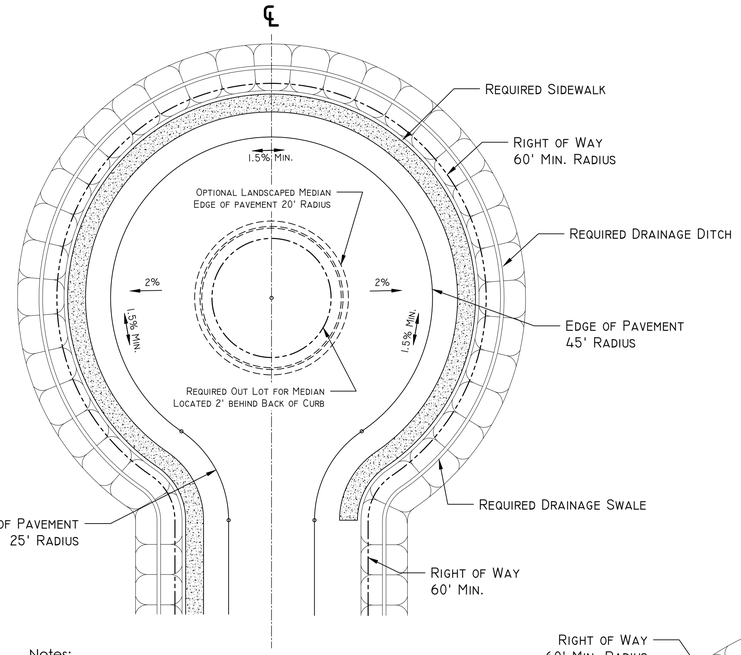
SHEET:
LOCAL ROADS
TYPICAL SECTIONS
SHEET: I-010

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA			



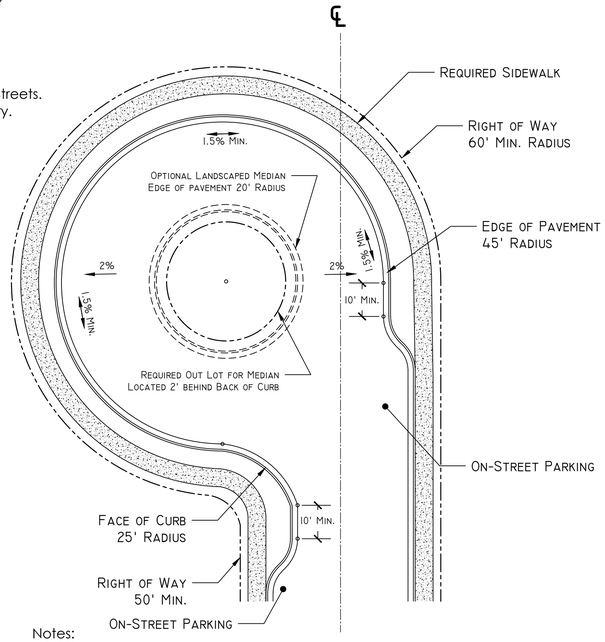
Notes:
1. This detail to be used on designated Urban Residential and Non-Residential Streets.
2. See "On-Street Parking Detail" for On-Street Parking Dimensions and Geometry.
3. On-Street Parking shall not be placed inside Cul-de-Sac.
4. Drainage Inlets to be placed per Engineer's Drawings.
5. All shoulder widths, pavement sections, sidewalk, and slopes to conform to designated typical road section.

Typical Cul-de-Sac
Type #1 - For Urban Road Typical Section
NTS



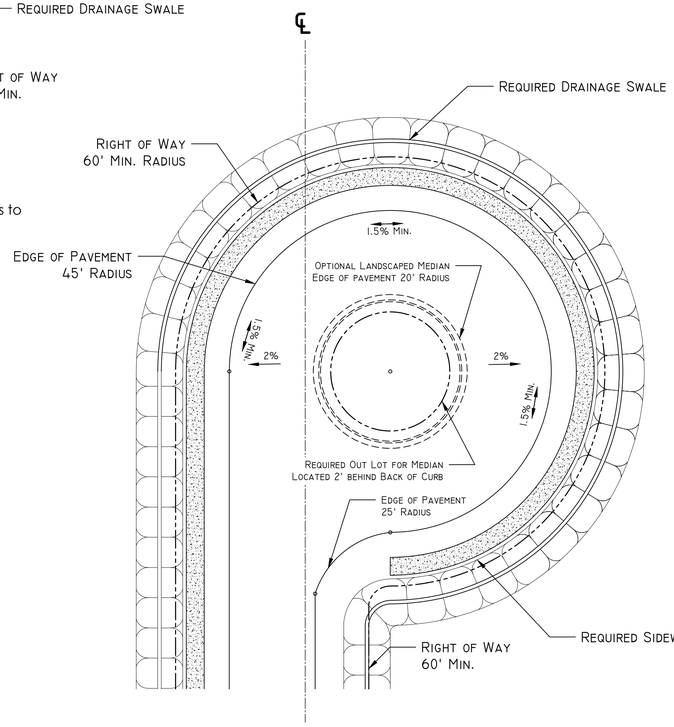
Notes:
1. This detail to be used on designated Rural Residential and Non-Residential Streets.
2. All shoulder widths, pavement sections, sidewalk, and slopes to conform to designated typical road section.

Typical Cul-de-Sac
Type #3 - For Rural Road Typical Section
NTS



Notes:
1. This detail to be used on designated Urban Residential and Non-Residential Streets.
2. See "On-Street Parking Detail" for On-Street Parking Dimensions and Geometry.
3. On-Street Parking shall not be placed inside Cul-de-Sac.
4. Drainage Inlets to be placed per Engineer's Drawings.
5. All shoulder widths, pavement sections, sidewalk, and slopes to conform to designated typical road section.

Typical Cul-de-Sac
Type #2 - For Urban Road Typical Section
NTS



Notes:
1. This detail to be used on designated Rural Residential and Non-Residential Streets.
2. All shoulder widths, pavement sections, sidewalk, and slopes to conform to designated typical road section.

Typical Cul-de-Sac
Type #4 - For Rural Road Typical Section
NTS

REVISIONS:			
NO.	BY	DATE	DESCRIPTION
1			
2			
3			
4			
5			
6			
7			
8			

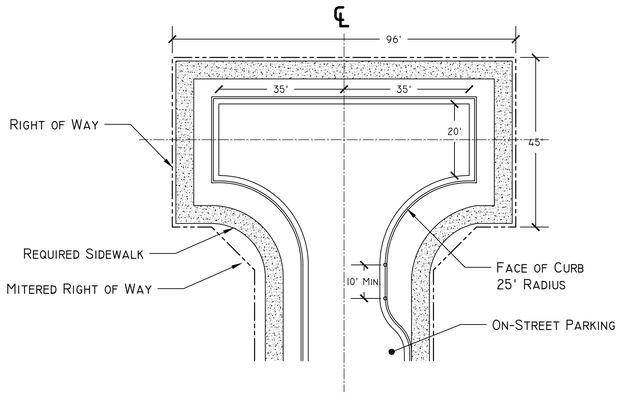
SURVEYED BY: NA
DESIGNED BY: BCB
DRAWN BY: BCB
CHECKED BY: BCB
APPROVED BY: RAK

The Unified Government of Athens-Clarke County
Department of Transportation and Public Works
Engineering Division
120 West Dougherty Street
Athens, Georgia 30603
Phone 706.613.3440
Fax 706.613.3444

PROJECT:
CONSTRUCTION STANDARDS AND DETAILS
DATE: DECEMBER 2023

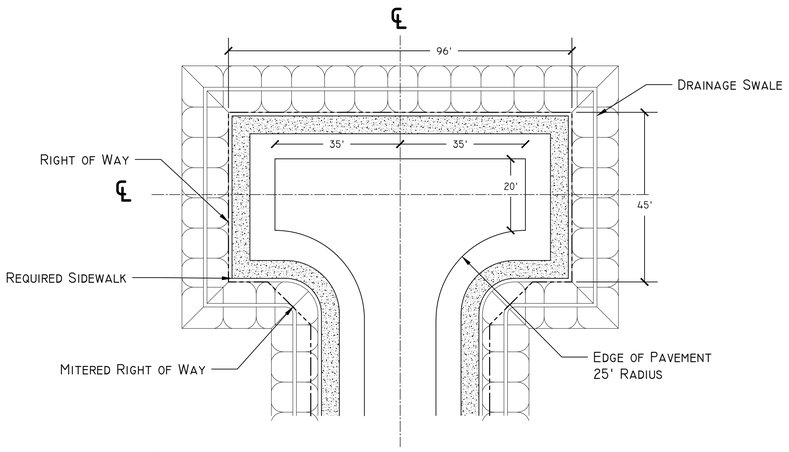
SHEET:
CUL-DE-SAC DETAIL
SHEET: I-020

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA			



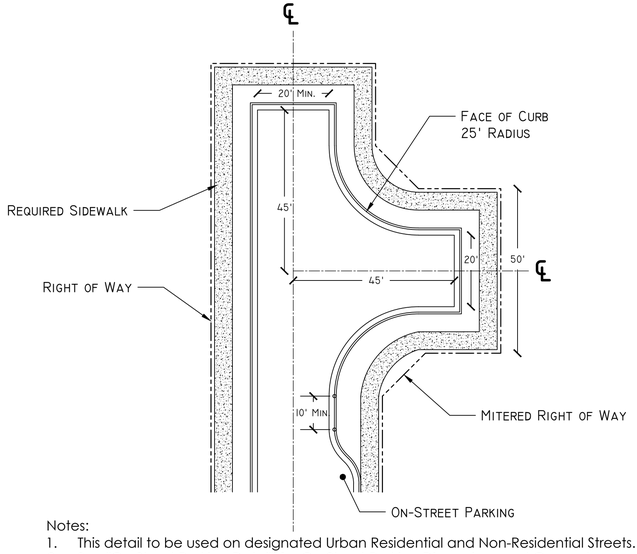
Notes:
1. This detail to be used on designated Urban Residential and Non-Residential Streets.
2. See "On-Street Parking Detail" for On-Street Parking Dimensions and Geometry.
3. On-Street Parking shall not be placed inside Turn-Around.
4. Drainage Inlets to be placed per Engineer's Drawings.
5. All shoulder widths, pavement sections, sidewalk, and slopes to conform to designated typical road section.

TYPICAL TURN-AROUND
TYPE #1 - URBAN RESIDENTIAL
NTS



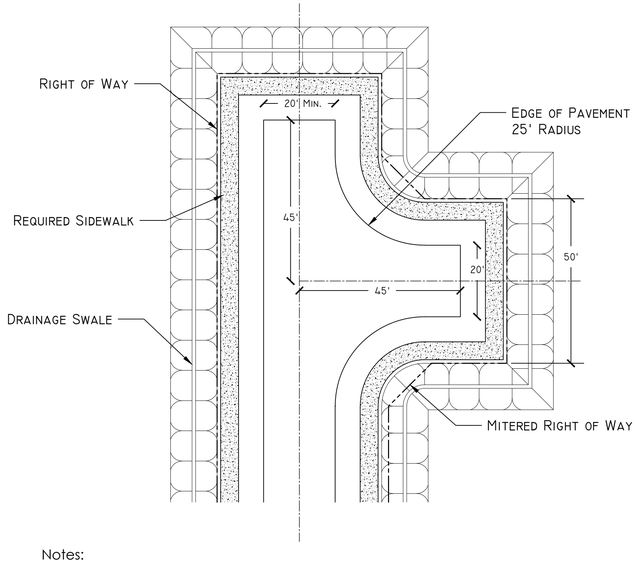
Notes:
1. This detail to be used on designated Rural Residential and Non-Residential Streets.
2. All shoulder widths, pavement sections, sidewalk, and slopes to conform to designated typical road section.

TYPICAL TURN-AROUND
TYPE #4 - RURAL RESIDENTIAL
NTS



Notes:
1. This detail to be used on designated Urban Residential and Non-Residential Streets.
2. See "On-Street Parking Detail" for On-Street Parking Dimensions and Geometry.
3. On-Street Parking shall not be placed inside Turn-Around.
4. Drainage Inlets to be placed per Engineer's Drawings.
5. All shoulder widths, pavement sections, sidewalk, and slopes to conform to designated typical road section.

TYPICAL TURN-AROUND
TYPE #2 - URBAN RESIDENTIAL
NTS



Notes:
1. This detail to be used on designated Rural Residential and Non-Residential Streets.
2. All shoulder widths, pavement sections, sidewalk, and slopes to conform to designated typical road section.

TYPICAL TURN-AROUND
TYPE #3 - RURAL RESIDENTIAL
NTS

REVISIONS:			
NO.	BY	DATE	DESCRIPTION
1			
2			
3			
4			
5			
6			
7			
8			

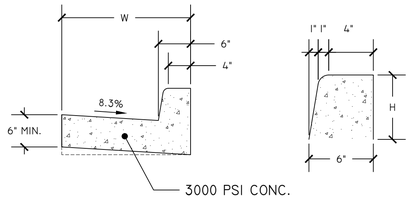
SURVEYED BY: NA
DESIGNED BY: BCB
DRAWN BY: BCB
CHECKED BY: BCB
APPROVED BY: RAK

THE UNIFIED GOVERNMENT OF ATHENS-CLARKE COUNTY
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
ENGINEERING DIVISION
120 WEST DOUGHERTY STREET
ATHENS, GEORGIA 30603
PHONE 706.613.3440
FAX 706.613.3444

PROJECT:
CONSTRUCTION STANDARDS AND DETAILS
DATE: DECEMBER 2023

SHEET:
TURN AROUND DETAIL
SHEET: I-021

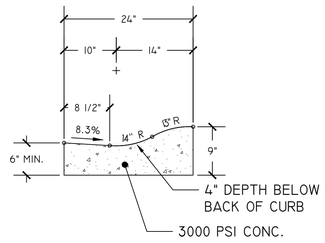
STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA			



TYPE	H	W	DESIGNATION
2-A	6"	24"	6"x24"x12"
2-B	6"	30"	6"x30"x12"
3	8"	30"	8"x30"x14"

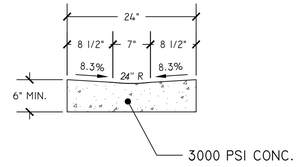
Notes:
1. ½" Asphalt Impregnated Expansion Joints to be placed every 100 L.F., at all structures, and at radius points.
2. Construction Joints to placed every 10 L.F.
3. Graded Aggregate Base to be placed under curb at a minimum thickness of 6" and extend beyond the back of curb a minimum of 6".
4. All exposed surfaces to be broom finished.
5. Gutter thickness may be increased to match paving course.

HIGH BACK CURB & GUTTER
NTS



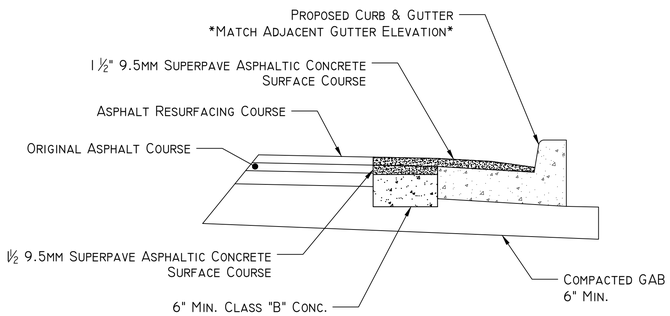
Notes:
1. Use of Rollover Curb requires the approval of the Director of Transportation and Public Works.
2. ½" Asphalt Impregnated Expansion Joints to be placed every 100 L.F., at all structures, and at radius points.
3. Construction Joints to placed every 10 L.F.
4. Graded Aggregate Base to be placed under curb at a minimum thickness of 6" and extend beyond the back of curb a minimum of 6".
5. All exposed surfaces to be broom finished.
6. Gutter thickness may be increased to match paving course.

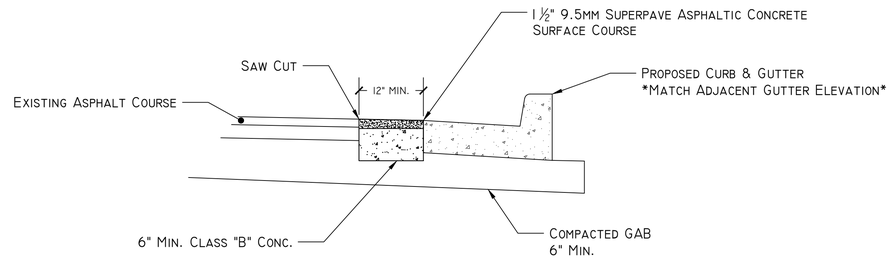
ROLLOVER CURB
NTS



Notes:
1. For use along on-street parking when approved by the Department Director.
2. ½" Asphalt Impregnated Expansion Joints to be placed every 100 L.F., at all structures, and at radius points.
3. Construction Joints to placed every 10 L.F.
4. Graded Aggregate Base to be placed under curb at a minimum thickness of 6" and extend beyond the back of curb a minimum of 6".
5. All exposed surfaces to be broom finished.
6. Gutter thickness may be increased to match paving course.

VALLEY GUTTER
NTS





Notes:
1. For installation of curb and gutter along existing streets with excavated area width is less than 5'.
2. Use typical section detail for excavated areas wider than 5'.
3. Graded Aggregate Base to be placed under curb at a minimum thickness of 6" and extend beyond the back of curb a minimum of 6".

CLASS "B" CONCRETE BASE
NTS

REVISIONS:

NO.	BY	DATE	DESCRIPTION
1			
2			
3			
4			
5			
6			
7			
8			

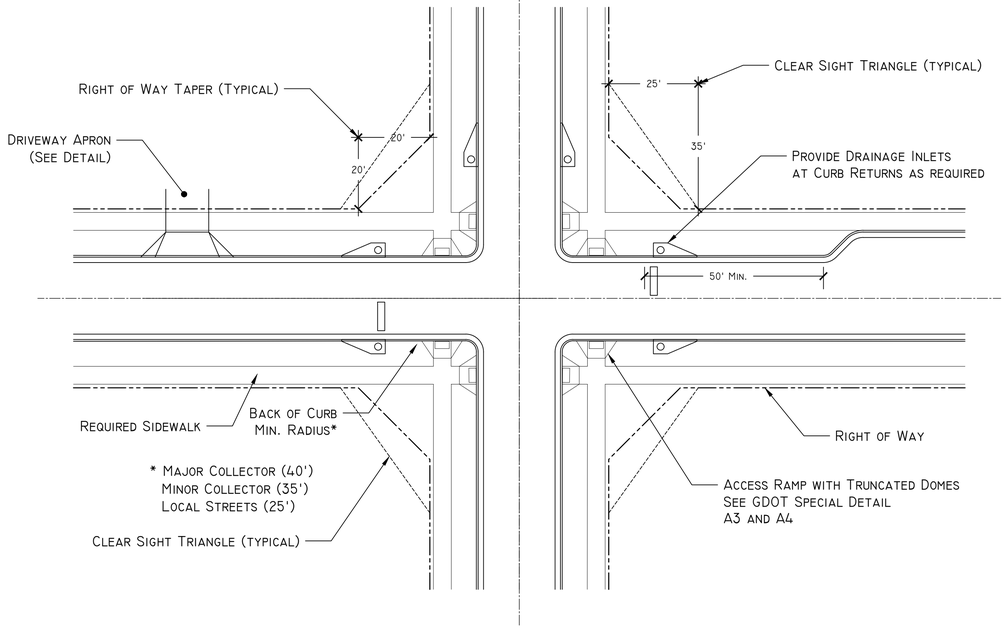
SURVEYED BY: NA
DESIGNED BY: BCB
DRAWN BY: BCB
CHECKED BY: BCB
APPROVED BY: RAK

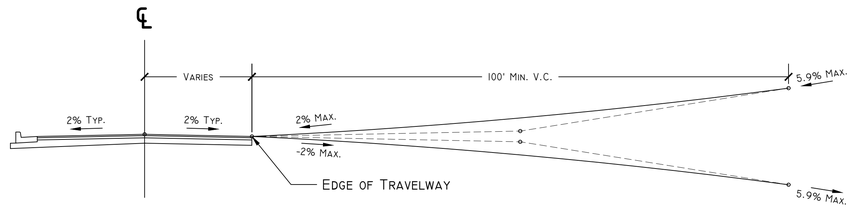
THE UNIFIED GOVERNMENT OF ATHENS-CLARKE COUNTY
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
ENGINEERING DIVISION
120 WEST DOUGHERTY STREET
ATHENS, GEORGIA 30603
PHONE 706.613.3440
FAX 706.613.3444

PROJECT:
CONSTRUCTION STANDARDS AND DETAILS
DATE: DECEMBER 2023

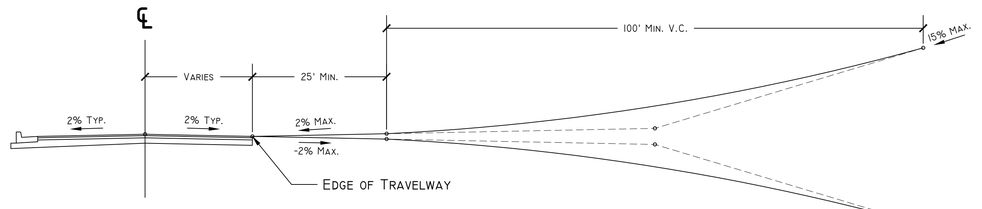
SHEET:
CURB & GUTTER DETAIL
SHEET: I-030

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA			





PROFILE
LANDING REQUIREMENTS FOR
GRADES SMALLER THAN 6%



PROFILE
LANDING REQUIREMENTS FOR
GRADES 6% OR LARGER

REVISIONS:

NO.	BY	DATE	DESCRIPTION
1			
2			
3			
4			
5			
6			
7			
8			

SURVEYED BY: NA
DESIGNED BY: JMJ
DRAWN BY: JMJ
CHECKED BY: JMJ
APPROVED BY: RAK

THE UNIFIED GOVERNMENT OF ATHENS-CLARKE COUNTY
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
ENGINEERING DIVISION

120 WEST DOUGHERTY STREET
ATHENS, GEORGIA 30603

PHONE 706.613.3440
FAX 706.613.3444

PROJECT:

CONSTRUCTION STANDARDS AND DETAILS

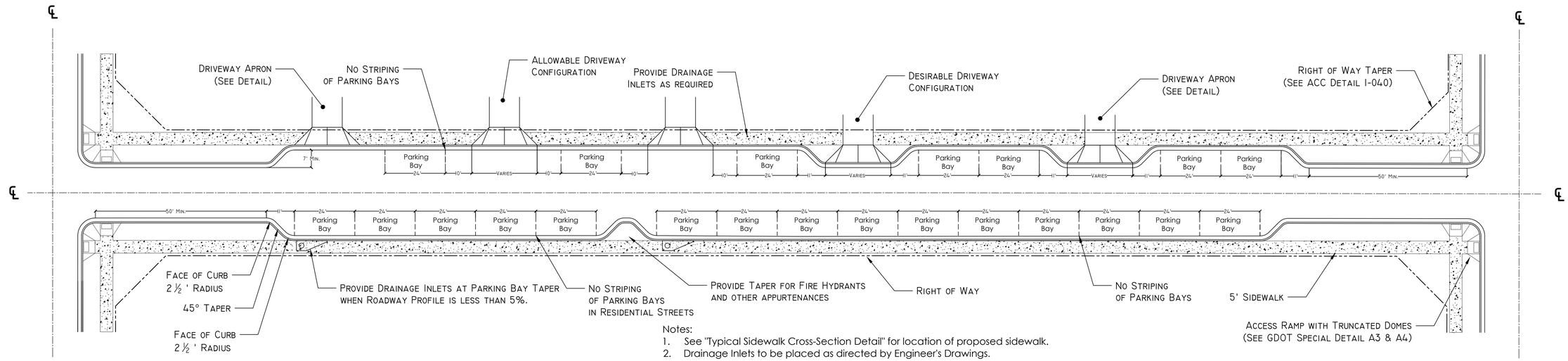
DATE: DECEMBER 2023

SHEET:

TYPICAL INTERSECTION DETAIL

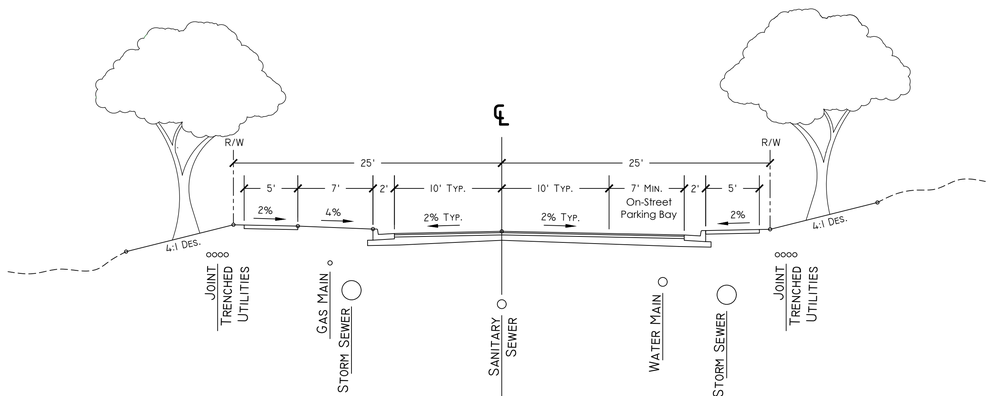
SHEET: I-040

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA			



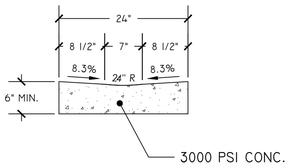
Notes:
1. See "Typical Sidewalk Cross-Section Detail" for location of proposed sidewalk.
2. Drainage Inlets to be placed as directed by Engineer's Drawings.
3. See ACC Ordinance 7-2-7(b)i for driveway separation.
4. See ACC Ordinance 7-2-7(b)ii for driveway and intersection separation.

Typical On-Street Parking Bay
NTS



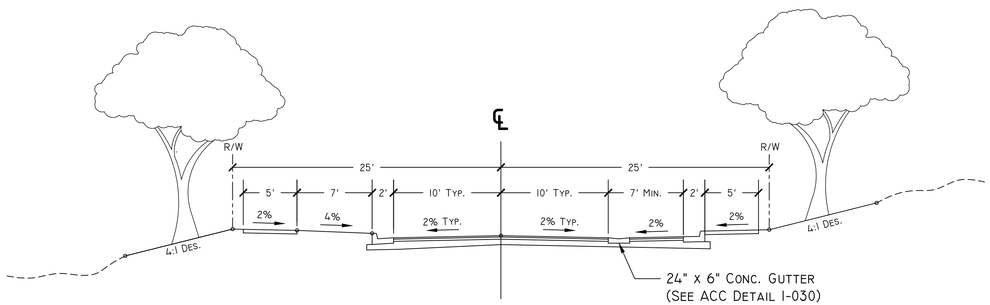
Notes:
1. See "Typical Sidewalk Cross-Section Detail" for location of proposed sidewalk.
2. Drainage Inlets to be placed as directed by Engineer's Drawings.

Typical Section Type #1 for On-Street Parking Bays
NTS



Notes:
1. Use of Valley Gutter requires the approval of the Director of Transportation and Public Works.
2. ½ " Asphalt Impregnated Expansion Joints to be placed every 100 L.F., at all structures, and at radius points.
3. Construction Joints to placed every 10 L.F.
4. Graded Aggregate Base to be placed under curb at a minimum thickness of 6" and extend beyond the back of curb a minimum of 6".
5. All exposed surfaces to be broom finished.
6. Gutter thickness may be increased to match paving course.
7. Refer to Class "B" Concrete Base Detail 1-030.

Valley Gutter
NTS



Notes:
1. This Typical Section to be used on exisitng streets and requires the approval of the Director.
2. See "Typical Sidewalk Cross-Section Detail" for location of proposed sidewalk.

Typical Section Type #2 for On-Street Parking Bays
NTS

REVISIONS:			
NO.	BY	DATE	DESCRIPTION
1			
2			
3			
4			
5			
6			
7			
8			

SURVEYED BY: NA
DESIGNED BY: JMJ
DRAWN BY: JMJ
CHECKED BY: JMJ
APPROVED BY: RAK

The Unified Government of Athens-Clarke County
Department of Transportation and Public Works
Engineering Division

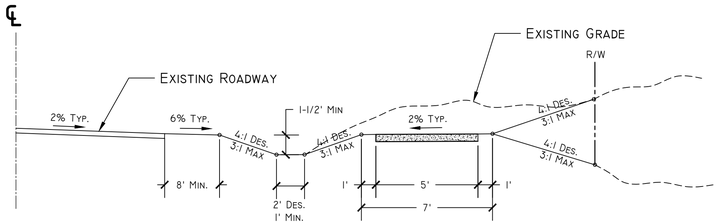
120 West Dougherty Street
Athens, Georgia 30603

Phone 706.613.3440
Fax 706.613.3444

PROJECT:
CONSTRUCTION STANDARDS AND DETAILS
DATE: DECEMBER 2023

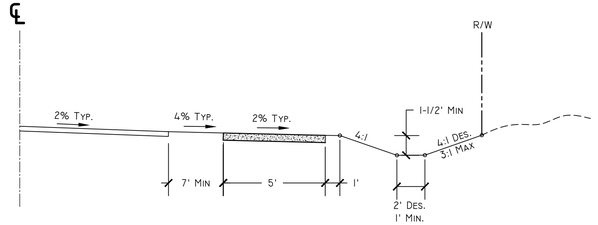
SHEET:
ON-STREET PARKING BAY DETAIL AND TYP. SECTION
SHEET: I-050

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA			



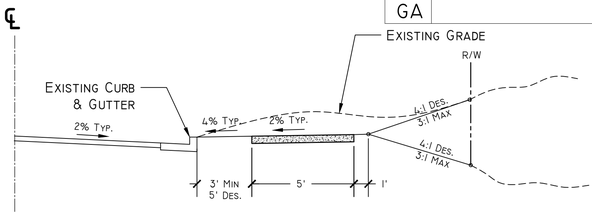
Notes:
1. This typical section to be used when right of way and terrain will allow the sidewalk to be constructed between the ditch and right of way.
2. The centerline profile of the sidewalk should conform to the centerline profile of the roadway whenever possible.
3. Longitudinal slope should not exceed 1:12 or 8.33% except where centerline profile of roadway exceeds 8.33%
4. All fill areas should be compacted to 95% standard proctor.

Typical Sidewalk Cross-Section Type #1
NTS



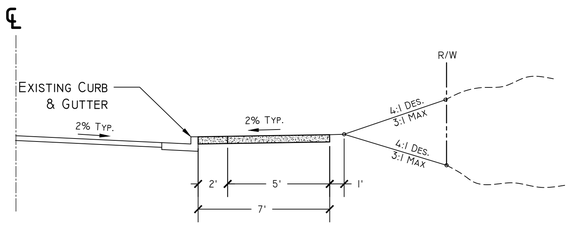
Notes:
1. This detail to be used on ditch sections where the construction of sidewalks behind the ditch is not practical or feasible.
2. The centerline profile of the sidewalk should conform to the centerline profile of the roadway whenever possible.
3. Longitudinal slope should not exceed 1:12 or 8.33% except where centerline profile of roadway exceeds 8.33%
4. All fill areas should be compacted to 95% standard proctor.

Typical Sidewalk Cross-Section Type #2
NTS



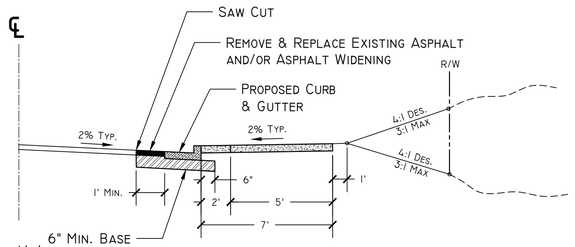
Notes:
1. This detail to be used on streets with existing or proposed curb and gutter.
2. The centerline profile of the sidewalk should conform to the centerline profile of the roadway whenever possible.
3. Longitudinal slope should not exceed 1:12 or 8.33% except where centerline profile of roadway exceeds 8.33%
4. All fill areas should be compacted to 95% standard proctor.

Typical Sidewalk Cross-Section Type #3
NTS



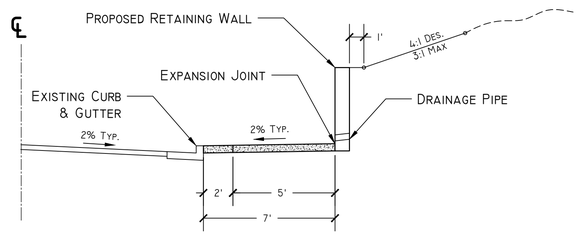
Notes:
1. This detail to be used on streets with existing curb and gutter.
2. See "7' Sidewalk Joint Pattern and Finish Detail".
3. All fill areas should be compacted to 95% standard proctor.

Typical Sidewalk Cross-Section Type #4
NTS



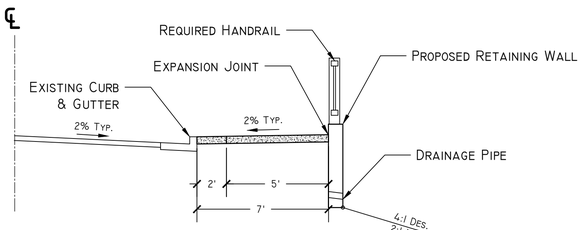
Notes:
1. This detail to be used on streets with proposed curb & gutter or limited right of way. (e.g. - decelaration lane, bike lanes, etc)
2. See "7' Sidewalk Joint Pattern and Finish Detail".
3. All fill areas should be compacted to 95% standard proctor.

Typical Sidewalk Cross-Section Type #5
NTS



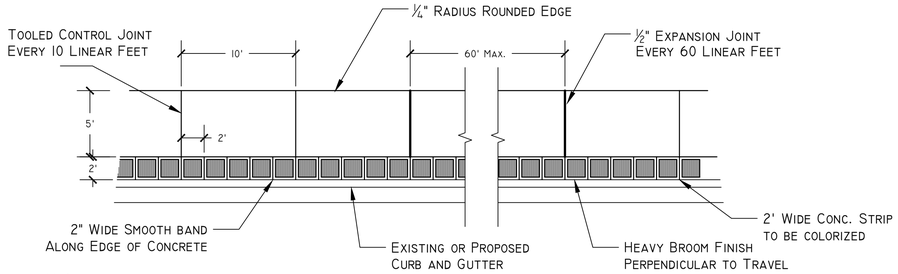
Notes:
1. This detail to be used on existing streets that require substantial cut to construct the proposed sidewalk.
2. Handrails may be required along the top of the proposed wall.
3. See GDOT Standard 9031L.
4. All fill areas should be compacted to 95% standard proctor.

Typical Sidewalk Cross-Section Type #6
NTS



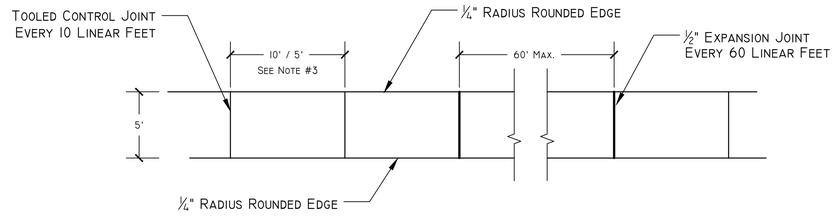
Notes:
1. This detail to be used on existing streets that require substantial fill to construct the proposed sidewalk.
2. Handrails may be required along the top of the proposed wall.
3. See GDOT Standard 9031L.
4. All fill areas should be compacted to 95% standard proctor.

Typical Sidewalk Cross-Section Type #7
NTS



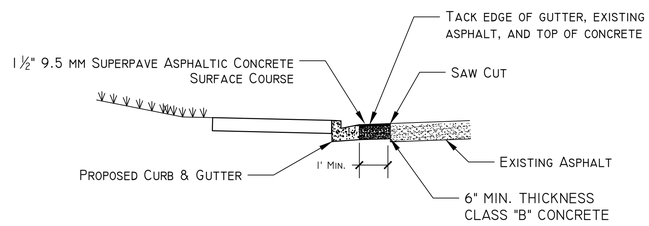
Notes:
1. ½" Expansion Joints to be placed every 60' L.F., where sidewalks abut structures, at driveways, driveway aprons and curb cut ramps.
2. This detail substitutes "Concrete Sidewalk Detail" from GDOT Detail Sheet A3.
3. Proposed Curb & Gutter and Concrete Sidewalk must be formed and poured seperate.
4. Concrete to be placed 4" (except where otherwise specified) thick with tamps, wood floats and stiff bristle brooms to achieve a type 5 sidewalk finish acceptable to Athens-Clarke County Department of Transportation and Public Works.
5. Sidewalk Joints shall be tooled to match curb joints whenever possible.
6. Maximum cross-slope not to exceed 2.00%.
7. 2' wide concrete strip to be colorized concrete per Department direction.

7' Sidewalk Joint Pattern and Finish Detail
NTS



Notes:
1. ½" Expansion Joints to be placed every 60' L.F., where sidewalks abut structures, at driveways, driveway aprons and curb cut ramps.
2. This detail substitutes "Concrete Sidewalk Detail" from GDOT Detail Sheet A3.
3. Contraction joints shall be placed every 5' in an Urban Section (Curb and Gutter Section) and every 10' in a Rural Section (Shoulder and Ditch Section).
4. Concrete to be placed 4" (except where otherwise specified) thick with tamps, wood floats and stiff bristle brooms to achieve a type 5 sidewalk finish acceptable to Athens-Clarke County Department of Transportation and Public Works.
5. Maximum running slope not to exceed 8.33%.
6. Maximum cross-slope not to exceed 2.00%.

5' Sidewalk Joint Pattern and Finish Detail
NTS



Notes:
1. Class "B" concrete base or pavement widening item code 500-9999 - cu yds
2. In excavated areas between the existing paving and new curb and gutter that are 5'-0" or less in width, class "B" concrete shall be placed in lieu of the base and paving specified by the typical section.
3. In excavated areas greater that 5'-0" in width, the contractor shall place base and paving as specified on the typical section.
4. See plans for details of curb and gutter construction.

Class "B" Concrete Base or Widening Detail
NTS

REVISIONS:

NO.	BY	DATE	DESCRIPTION
1			
2			
3			
4			
5			
6			
7			
8			

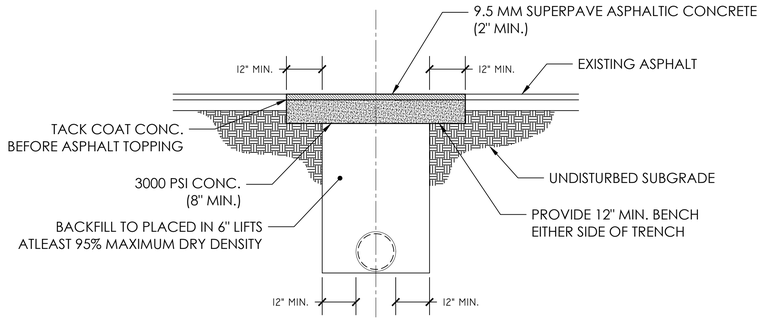
SURVEYED BY: NA
DESIGNED BY: BCB
DRAWN BY: BCB
CHECKED BY: BCB
APPROVED BY: RAK

THE UNIFIED GOVERNMENT OF ATHENS-CLARKE COUNTY
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
ENGINEERING DIVISION
120 WEST DOUGHERTY STREET
ATHENS, GEORGIA 30603
PHONE 706.613.3440
FAX 706.613.3444

PROJECT:
CONSTRUCTION STANDARDS AND DETAILS
DATE: DECEMBER 2023

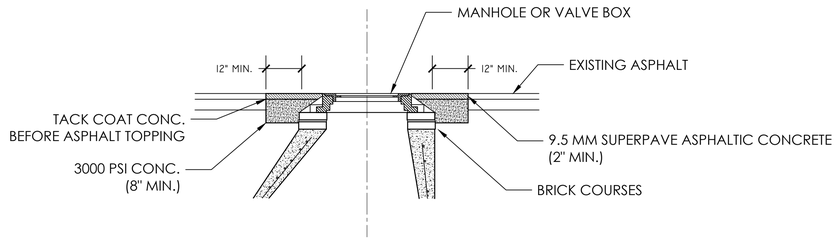
SHEET: TYPICAL SIDEWALK CROSS-SECTIONS (EXISTING STREETS)
SHEET: I-060

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA			



Notes:
1. Fill material to be placed in 6" lifts to 95% Standard Proctor Density.
2. Asphalt topping must be in place with in 7 calender daysof concrete pour.
3. All Longitudinal Cuts exceeding 150 L.F. will require the resurfacing of the entire road width for the length of the cut.
4. Succesive Lateral Cuts having a separation distance less than 50 L.F., as measured along the lane centerline, will require the resurfacing of the entire road width throughout the length of the successive lateral cuts.
5. All saw cuts to be straight, with smooth, even edge.

PAVEMENT REPLACEMENT
DETAIL
NTS

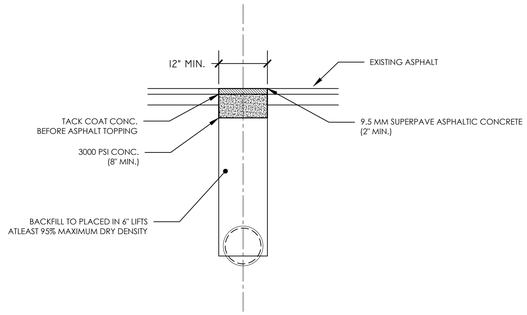


Notes:
1. Fill material to be placed in 6" lifts to 95% Standard Proctor Density.
2. All Street Cuts must be covered with a steel plate of suffecient thickness to span the cut without noticeable deflection. Steel plates must remain in placeuntil concrete has sufficient strength to withstand traffic loads, a mimimum of 24 hours.
3. Asphalt topping must be in place with in 7 calender days of concrete pour.
4. Ring and Cover must be adjusted flush with asphalt.
5. All saw cuts to be straight, with smooth, even edge.

STRUCTURE ADJUSTMENT
DETAIL
NTS

Procedural Notes:
1. Sawcut existing pavement for the necessary trench width only, and perform trench excavation.
2. Complete the utility installation.
3. Backfill trench by placing and compacting in 6-inch lifts to at least 95% theoretical maximum dry density.
4. Sawcut, in a neat straight line, an additional one-foot pavement width on each side of the trench to provide an undisturbed shoulder for the concrete trench cap. Excavate trench and shoulder to proper depth for installation of concrete trench cap and asphalt inlay, per detail.
5. Place 8-inch thick, 3000 PSI, high early strenght portland cement concrete trench cap, screed and level concrete to a consistent depth of 2 inches for subsequent installation of asphalt inlay. Do not apply a smooth trowel finish.
6. Plate or otherwise protect, and restrict traffic for 7 days cure time.*
7. Apply asphalt tack coat to edges of existing pavement and top of concrete trench cap.
8. Place asphalt Type "F" (Superpave 9.5 mm) 2 inches thick and compact.

* Note: GDOT twenty-four hour accelerated strength concrete (GDOT Standard Specifications Construction of Transportation Systems, 2001 Edition, Section 504) may be substituted for 3000PSI concrete. A six (6) hour cure time will be applicable under this condition.



Notes:
1. Fill material to be placed in 6" lifts to 95% Standard Proctor Density.
2. All Street Cuts must be covered with a steel plate of suffecient thickness to span the cut without noticeable deflection. Steel plates must remain in placeuntil concrete has sufficient strength to withstand traffic loads, a mimimum of 24 hours.
3. Asphalt topping must be in place with in 7 calender days of concrete pour.
4. All saw cuts to be straight, with smooth, even edge.

STRUCTURE ADJUSTMENT
DETAIL
NTS

REVISIONS:

NO.	BY	DATE	DESCRIPTION
1	JRA	5/7/2024	CHANGED BACKFILL DENSITY FROM 98% TO 95% DRY DENSITY
2			
3			
4			
5			
6			
7			
8			

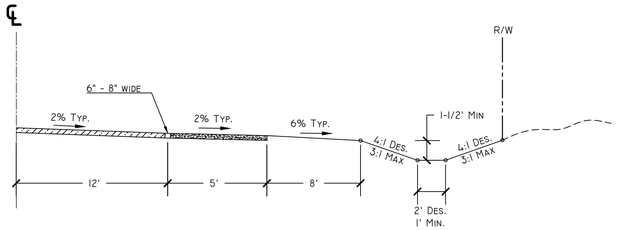
SURVEYED BY: NA
DESIGNED BY: BCB
DRAWN BY: BCB
CHECKED BY: BCB
APPROVED BY: RAK

THE UNIFIED GOVERNMENT OF ATHENS-CLARKE COUNTY
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
ENGINEERING DIVISION
120 WEST DOUGHERTY STREET
ATHENS, GEORGIA 30603
PHONE 706.613.3440
FAX 706.613.3444

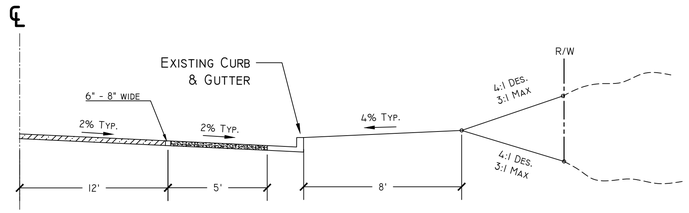
PROJECT:
CONSTRUCTION STANDARDS AND DETAILS
DATE: DECEMBER 2023

SHEET:
UTILITY CUT AND ADJUSTMENT DETAIL
SHEET: I-070

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA			



TYPICAL BIKE LANE CROSS-SECTION TYPE #1
NTS

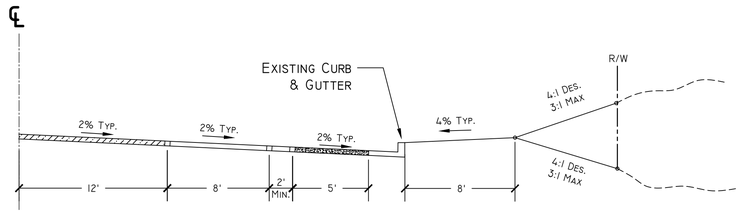


TYPICAL BIKE LANE CROSS-SECTION TYPE #2
NTS

BICYLCE LANE GENERAL NOTES:
1. Bicycle lane width is to be measured from the center of the pavement marking to the edge of the pavement.

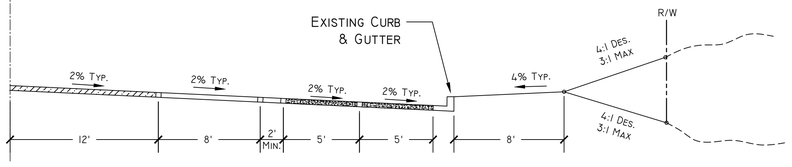
Bicycle Facility General Notes:
1. **In situations with existing conditions which are limited in capability to implement proper facilities - TPW Director or designee shall coordinate with designer to reach best-fit solution.**
2. **All pavement markings shall be installed in accordance with the most recent edition of MUTCD.**
3. **For rural roads with rumble strips, edge of bicycle facility should begin at the outside edge of the rumble strips.**

LEGEND
- BIKE LANE
- TRAVEL LANE
- PARKING LANE



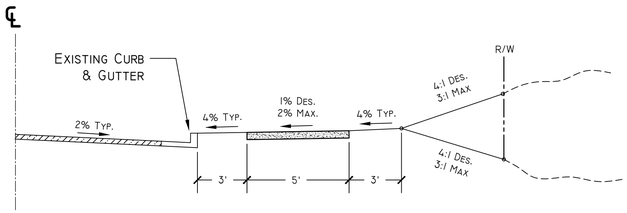
Notes:
1. This detail to be used on streets with 2 travel lanes, 1 parking lane, and curb & gutter.
2. Bicycle lane width is to be measured from the center of the pavement marking to the edge of the pavement.

TYPICAL CYCLE TRACK CROSS-SECTION TYPE #1
NTS



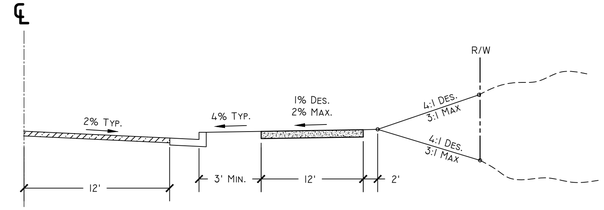
Notes:
1. This detail to be used on streets with 2 travel lanes, 1 parking lane, and curb & gutter.
2. Bicycle lane width is to be measures from the center of the pavement marking to the edge of the pavement.

TYPICAL CYCLE TRACK CROSS-SECTION TYPE #2
NTS

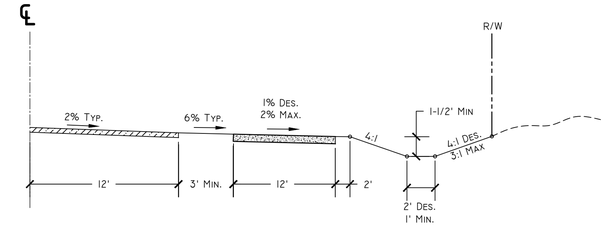


Notes:
1. This detail to be used where street widths cannot accommodate bicycle facility within roadway.
2. When using this detail, only use high back curb and gutters (Use of rollover curbs or valley gutters is prohibited in this detail).

RAISED CYCLE TRACK CROSS-SECTION TYPE #3
NTS

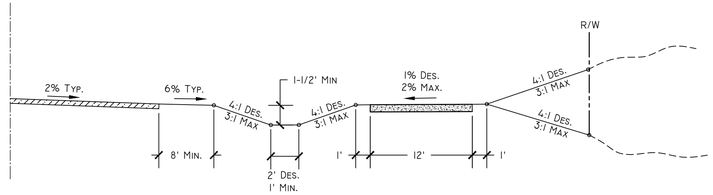


TYPICAL MULTI-USE PATH CROSS-SECTION TYPE #1
NTS



Notes:
1. This detail to be used on ditch sections where the construction of multi-use paths behind the ditch is not practical or feasible.

TYPICAL MULTI-USE PATH CROSS-SECTION TYPE #2
NTS



Notes:
1. This typical section to be used when right of way and terrain will allow the multi-use path to be constructed between the ditch and right of way.

TYPICAL MULTI-USE PATH CROSS-SECTION TYPE #3
NTS

Multi-Use Paths
General Notes:
1. The centerline profile of the multi-use path should conform to the centerline profile of the roadway whenever possible.
2. Longitudinal slope should not exceed 1:20 or 5% except where centerline profile of roadway exceeds 5%. In this case, the path grade shall be less than or equal to the roadway grade.
2.1. For steeper downhill grades, consider widening the path an additional 4-6 ft in width.
3. The distance between the roadway and the multi-use path is measured from the face of curb, if present, or the edge of the traveled way, if curb is not present.
3.1. Where a paved shoulder is present, the separation distance begins at the outside edge of the shoulder.
4. All fill areas should be compacted to 95% standard proctor.

REVISIONS:

NO.	BY	DATE	DESCRIPTION
1			
2			
3			
4			
5			
6			
7			
8			

SURVEYED BY: NA
DESIGNED BY: JMJ, HAPK
DRAWN BY: JMJ, HAPK
CHECKED BY: RAK
APPROVED BY: NA

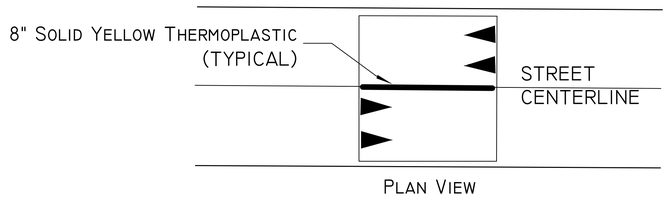
THE UNIFIED GOVERNMENT OF ATHENS-CLARKE COUNTY
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
ENGINEERING DIVISION
120 WEST DOUGHERTY STREET
ATHENS, GEORGIA 30603
PHONE 706.613.3440
FAX 706.613.3444

PROJECT:
CONSTRUCTION STANDARDS AND DETAILS
DATE: DECEMBER 2023

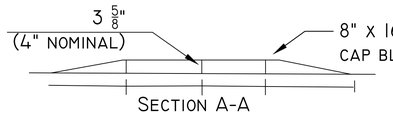
SHEET: TYPICAL BICYCLE FACILITY CROSS SECTIONS
SHEET: I-080

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA			

TYPICAL SPEED TABLE
NTS

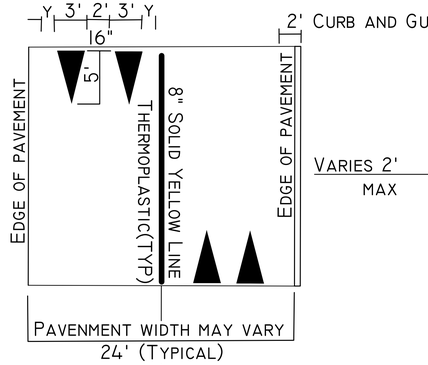


PLAN VIEW



SECTION A-A

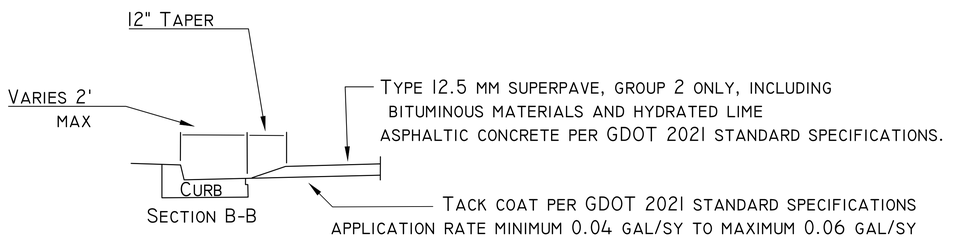
NOTES:
1. SPEED TABLES MAY ONLY BE PLACED ON STREETS WITH GRADES LESS THAN 8%.
2. SPEED TABLES SHALL BE INSTALLED ON "TWO-PASS" STREETS ONLY TO ENSURE RESIDENTIAL TRAFFIC ONLY WILL TRAVERSE THEM.



TAPER SHALL BE 6" FOR ROAD WIDTHS OF 22' OR LESS

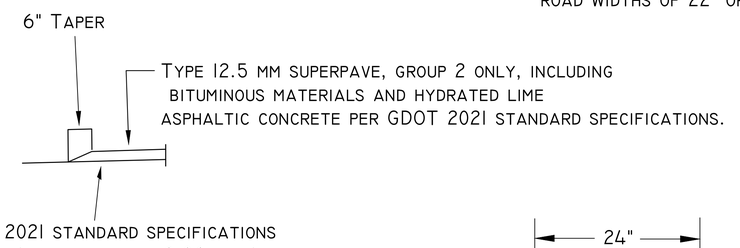
HALF LAYOUT WITHOUT CURB AND GUTTER

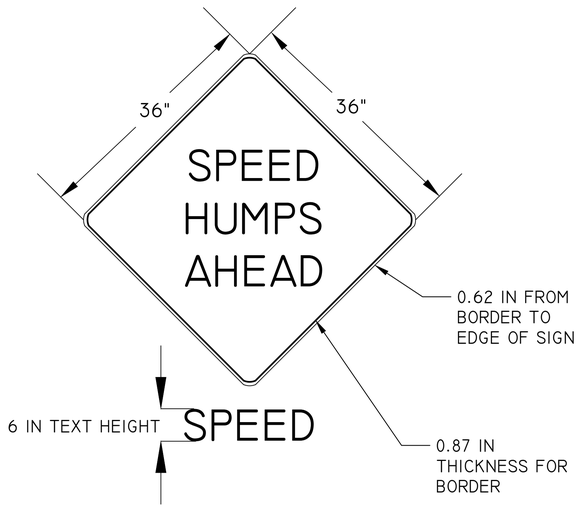
HALF LAYOUT WITH CURB AND GUTTER

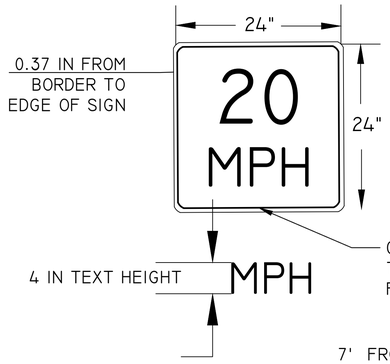


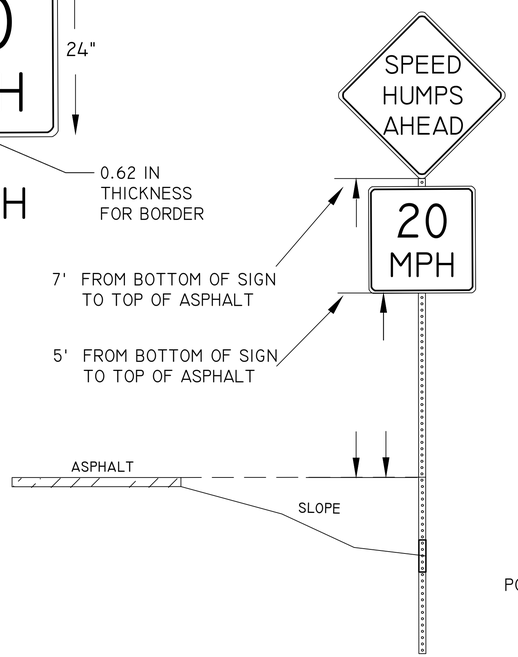
SECTION B-B

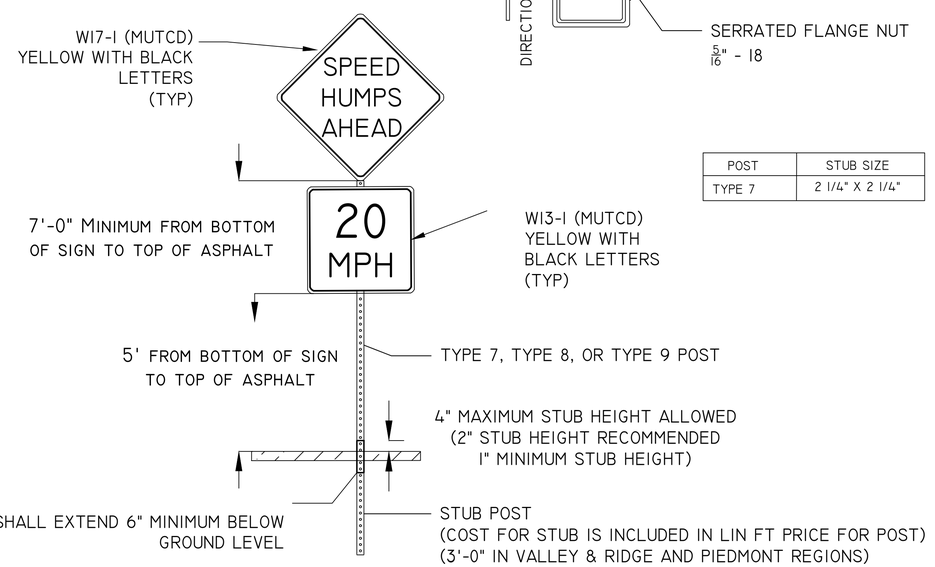
SPECIAL NOTE:
ON ALL ROADWAYS WHICH HAVE PROPOSED OR EXISTIING BICYCLE FACILITIES, THE DESIGNER AND/OR CONTRACTOR SHALL CONTACT ATHENS-CLARKE COUNTY TRANSPORTATION AND PUBLIC WORKS REGARDING THE PLACEMENT OF PROPOSED SPEED TABLES PRIOR TO DESIGN AND/OR INSTALLATION.

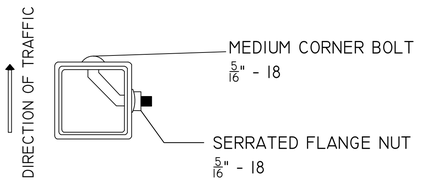












POST	STUB SIZE
TYPE 7	2 1/4" X 2 1/4"

REVISIONS:

NO.	BY	DATE	DESCRIPTION
1			
2			
3			
4			
5			
6			
7			
8			

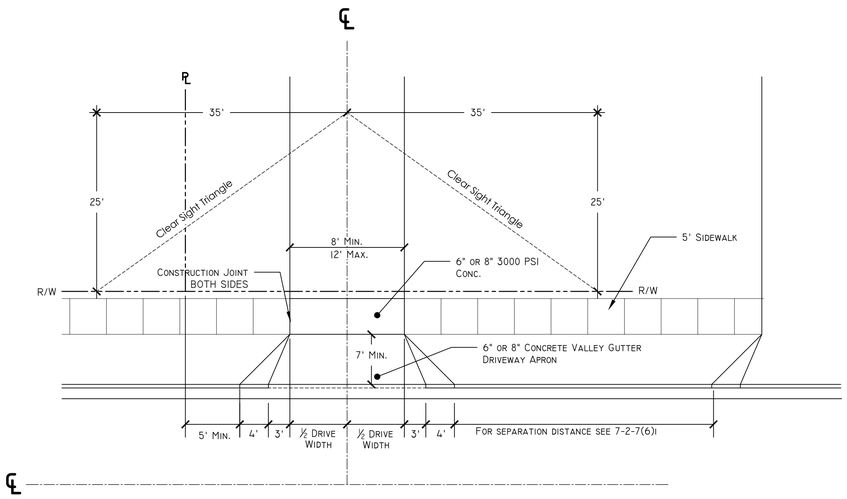
SURVEYED BY: NA
DESIGNED BY: JRA, JDG
DRAWN BY: JRA, JDG
CHECKED BY: TMM
APPROVED BY: RAK

THE UNIFIED GOVERNMENT OF ATHENS-CLARKE COUNTY
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
ENGINEERING DIVISION
120 WEST DOUGHERTY STREET
ATHENS, GEORGIA 30603
PHONE 706.613.3440
FAX 706.613.3444

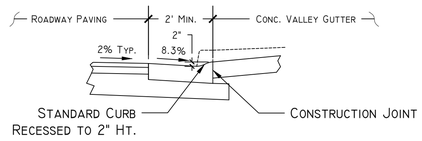
PROJECT:
CONSTRUCTION STANDARDS AND DETAILS
DATE: DECEMBER 2023

SHEET:
SPEED HUMP DETAIL
SHEET: I-090

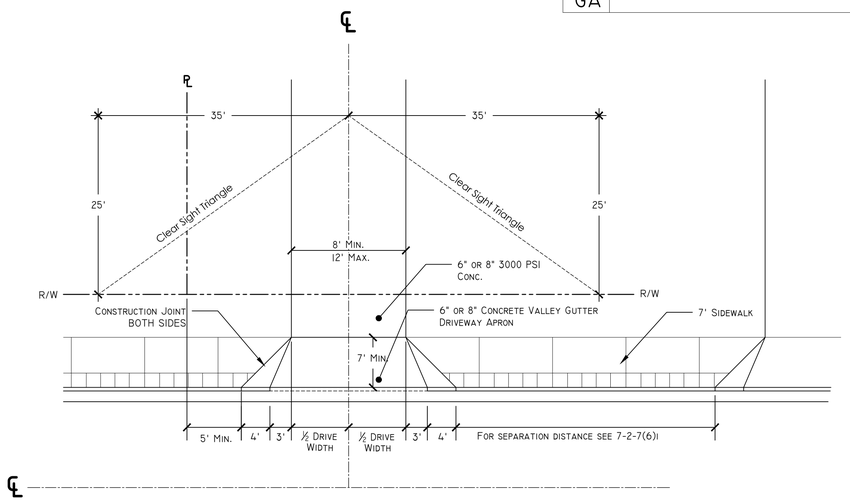
STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA			



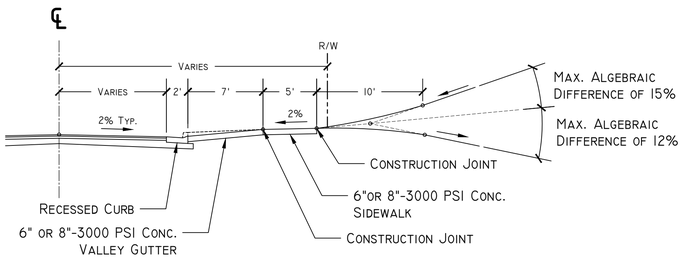
Notes:
1. Sidewalk must be the same thickness of the driveway (6" or 8") through the first full segment of sidewalk.
2. See Typical Intersection Detail 1-040 and 7-2-7(6)ii of Athens-Clarke County Code of Ordinances for driveway separation from intersections.
3. See 7-2-7(6)i of the Athens-Clarke County Code of Ordinance for separation between driveways.
4. If a structure is within 30' of right-of-way, then the driveway width may be permitted up to 16' wide.

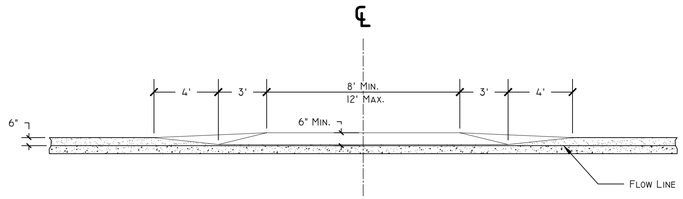


RECESSED CURB



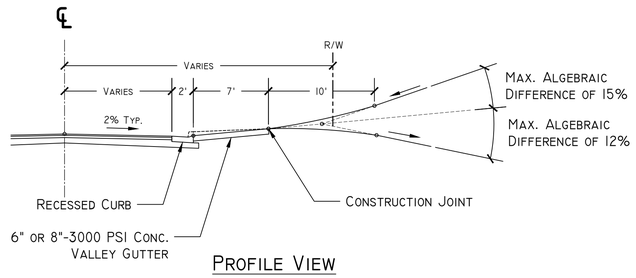
PLAN VIEW



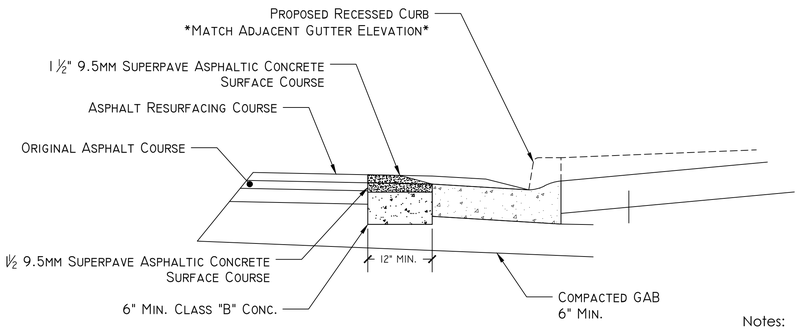


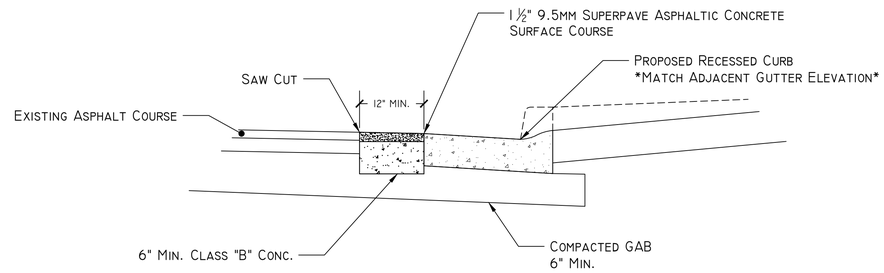
SECTION VIEW AT FLOW LINE

PLAN VIEW



PROFILE VIEW





PROFILE VIEW

Notes:
1. For installation of curb and gutter along existing streets where excavated area with a width less than 5'.
2. Use typical section detail for excavated areas wider than 5'.
3. Graded Aggregate Base to be placed under curb at a minimum thickness of 6" and extend beyond the back of curb a minimum of 6".

CLASS "B" CONCRETE BASE
NTS

REVISIONS:

NO.	BY	DATE	DESCRIPTION
1			
2			
3			
4			
5			
6			
7			
8			

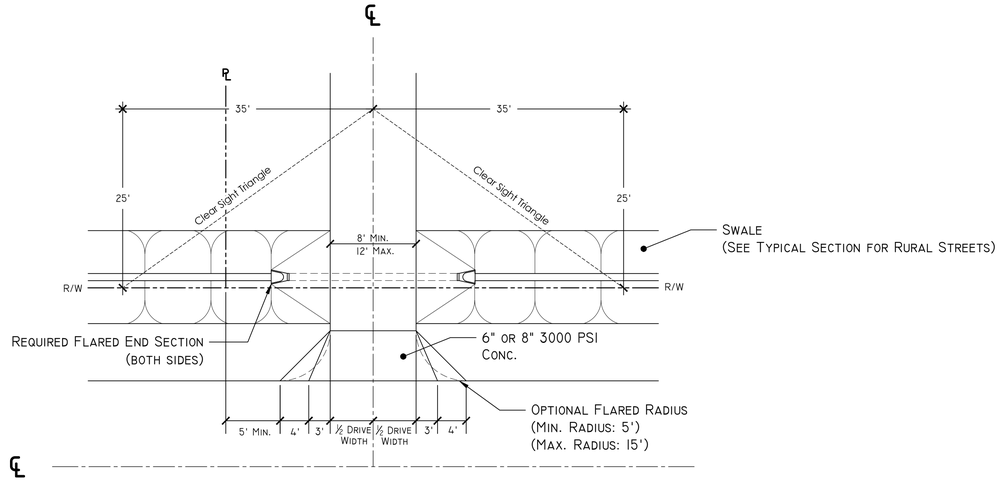
SURVEYED BY: NA
DESIGNED BY: BCB
DRAWN BY: BCB
CHECKED BY: BCB
APPROVED BY: RAK

THE UNIFIED GOVERNMENT OF ATHENS-CLARKE COUNTY
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
ENGINEERING DIVISION
120 WEST DOUGHERTY STREET
ATHENS, GEORGIA 30603
PHONE 706.613.3440
FAX 706.613.3444

PROJECT:
CONSTRUCTION STANDARDS AND DETAILS
DATE: DECEMBER 2023

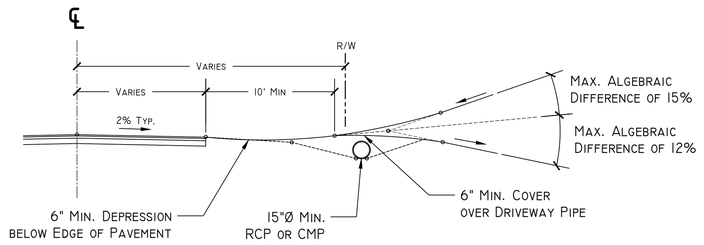
SHEET:
URBAN RESIDENTIAL DRIVEWAY APRON DETAIL
SHEET: 2-010

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA			

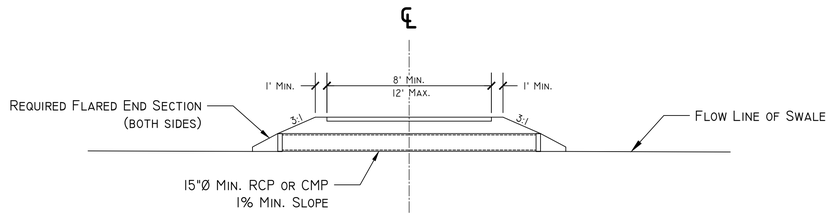


PLAN VIEW

Notes:
1. Sidewalk placement per Typical Section for Rural Streets, (See Detail 1-010).
2. Sidewalk must be the same thickness of the driveway (6" or 8") through the first full segment of sidewalk.



PROFILE



CROSS-SECTION

REVISIONS:

NO.	BY	DATE	DESCRIPTION
1			
2			
3			
4			
5			
6			
7			
8			

SURVEYED BY: NA
DESIGNED BY: BCB
DRAWN BY: BCB
CHECKED BY: BCB
APPROVED BY: RAK

THE UNIFIED GOVERNMENT OF ATHENS-CLARKE COUNTY
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
ENGINEERING DIVISION

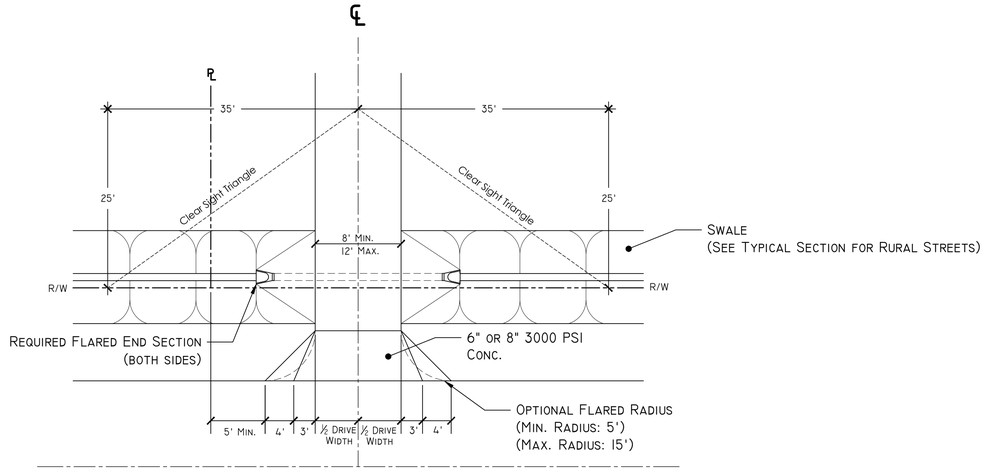
120 WEST DOUGHERTY STREET
ATHENS, GEORGIA 30603

PHONE 706.613.3440
FAX 706.613.3444

PROJECT:
CONSTRUCTION STANDARDS AND DETAILS
DATE: DECEMBER 2023

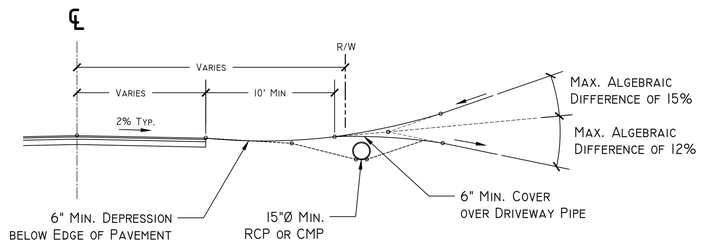
SHEET:
RURAL RESIDENTIAL DRIVEWAY DETAIL
SHEET: 2-020

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA			

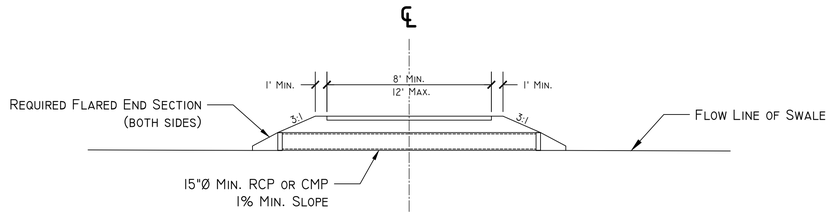


Plan View

Notes:
1. Sidewalk placement per Typical Section for Rural Streets, (See Detail 1-010).
2. Sidewalk must be the same thickness of the driveway (6" or 8") through the first full segment of sidewalk.



Profile



Cross-Section

REVISIONS:

NO.	BY	DATE	DESCRIPTION
1			
2			
3			
4			
5			
6			
7			
8			

SURVEYED BY: NA
DESIGNED BY: BCB
DRAWN BY: BCB
CHECKED BY: JMJ
APPROVED BY: RAK

The Unified Government of Athens-Clarke County
Department of Transportation and Public Works
Engineering Division

120 West Dougherty Street
Athens, Georgia 30603

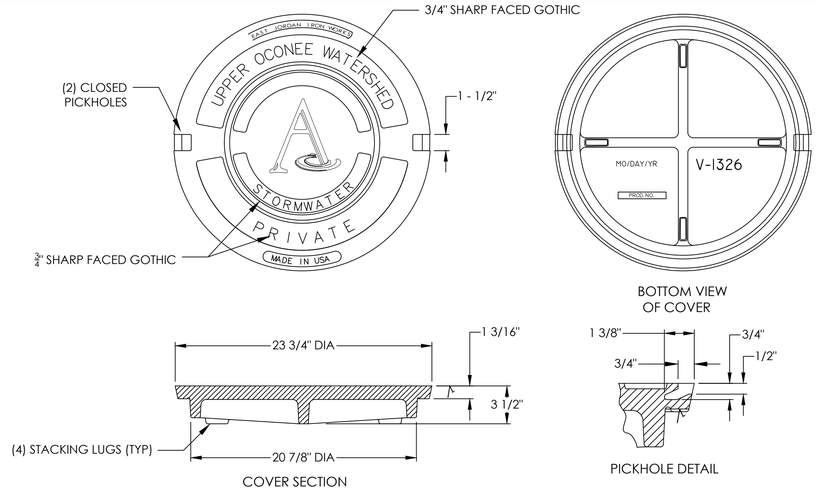
Phone 706.613.3440
Fax 706.613.3444

PROJECT:
CONSTRUCTION STANDARDS AND DETAILS
DATE: DECEMBER 2023

SHEET:
COMMERCIAL AND INSTITUTIONAL DRIVEWAY
SHEET: 2-030

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA			

FOR USE ON PRIVATE PROPERTY:



NOTES:
1. ALL MATERIALS TO BE GRAY IRON (CL35B), ASTM A48
2. DESIGN LOAD HEAVY DUTY
3. EAST JORDAN IRON WORKS PRODUCT NUMBER 41326059, V-1326 OR EQUIVALENT.
4. MANUFACTURED IN THE USA.
5. ESTIMATED WEIGHT 180 LBS.

STORMWATER MANHOLE COVER DETAIL
FOR PRIVATELY OWNED (NON A-CC) STORMWATER SYSTEMS
HEAVY DUTY
NTS

Athens-Clarke County Stormdrain Cover

MANHOLE COVER

LOAD RATING:
HEAVY DUTY

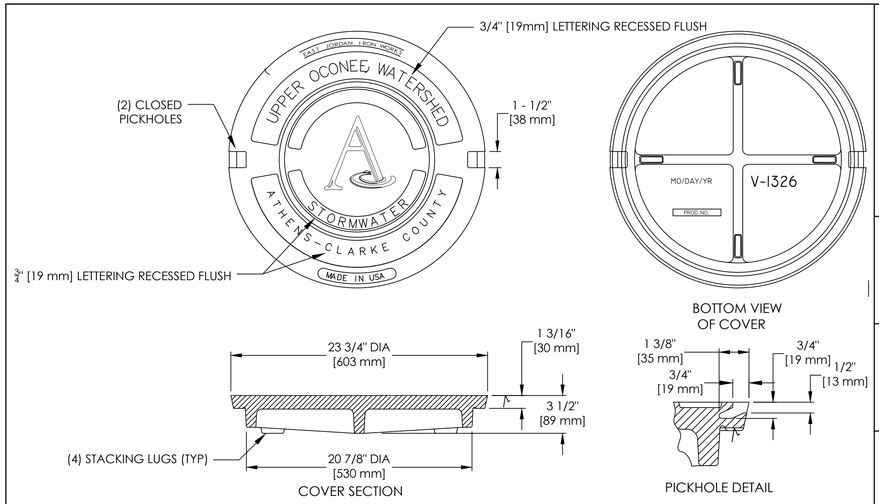
COATING:
UNDIPPED

ESTIMATED WEIGHT:
180 LBS
82 KG

MATERIAL ESPECIFICATION:
-
GRAY IRON
ASTM A48 CL35B

OPEN AREA
N/A

FOR USE ON ATHENS-CLARKE COUNTY PROPERTY:



NOTES:
1. ALL MATERIALS TO BE GRAY IRON (CL35B), ASTM A48
2. DESIGN LOAD HEAVY DUTY
3. EAST JORDAN IRON WORKS PRODUCT NUMBER 41326057A01, V-1326 OR EQUIVALENT.
4. ESTIMATED WEIGHT 180 LBS.
5. MANUFACTURED IN THE USA.

STORMWATER MANHOLE COVER DETAIL
FOR ATHENS-CLARKE COUNTY STORMWATER SYSTEMS
HEAVY DUTY
NTS

Athens-Clarke County Stormdrain Cover

MANHOLE COVER

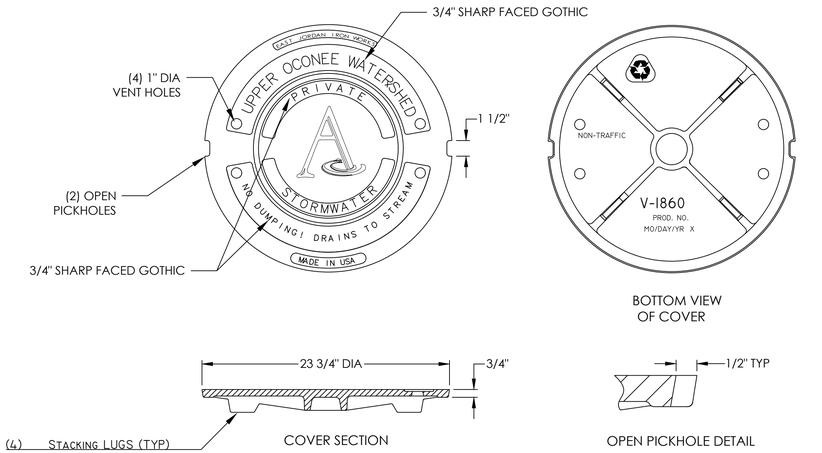
LOAD RATING:
HEAVY DUTY

COATING:
UNDIPPED

ESTIMATED WEIGHT:
180 LBS
82 KG

MATERIAL ESPECIFICATION:
-
GRAY IRON
ASTM A48 CL35B

OPEN AREA
N/A



NOTES:
1. ALL MATERIALS TO BE GRAY IRON (CL35B), ASTM A48
2. DESIGN LOAD NON-TRAFFIC
3. EAST JORDAN IRON WORKS PRODUCT NUMBER 41860083, V-1860 OR EQUIVALENT.
4. MANUFACTURED IN THE USA.
5. ESTIMATED WEIGHT 70 LBS.

STORMWATER MANHOLE COVER DETAIL
FOR PRIVATELY OWNED (NON A-CC) STORMWATER SYSTEMS
NON-TRAFFIC
NTS

Athens-Clarke County Stormdrain Cover

MANHOLE COVER

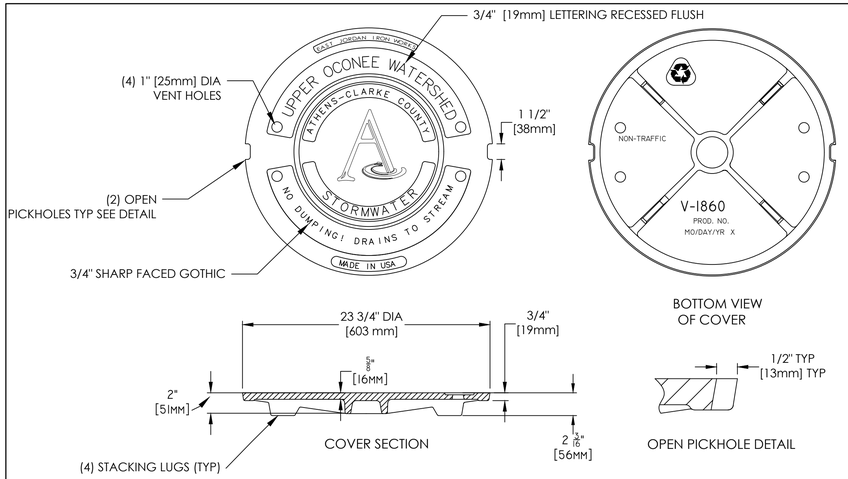
LOAD RATING:
NON TRAFFIC

COATING:
UNDIPPED

ESTIMATED WEIGHT:
70 LBS
32 KG

MATERIAL ESPECIFICATION:
-
GRAY IRON
ASTM A48 CL35B

OPEN AREA
N/A



NOTES:
1. ALL MATERIALS TO BE GRAY IRON (CL35B), ASTM A48
2. DESIGN LOAD NON-TRAFFIC
3. EAST JORDAN IRON WORKS PRODUCT NUMBER 41860055, V-1860 OR EQUIVALENT.
4. MANUFACTURED IN THE USA.
5. ESTIMATED WEIGHT 70 LBS.

STORMWATER MANHOLE COVER DETAIL
FOR ATHENS-CLARKE COUNTY STORMWATER SYSTEMS
NON-TRAFFIC
NTS

Athens-Clarke County Stormdrain Cover

MANHOLE COVER

LOAD RATING:
NON TRAFFIC

COATING:
UNDIPPED

ESTIMATED WEIGHT:
70 LBS
32 KG

MATERIAL ESPECIFICATION:
-
GRAY IRON
ASTM A48 CL35B

OPEN AREA
N/A

REVISIONS:

NO.	BY	DATE	DESCRIPTION
1			
2			
3			
4			
5			
6			
7			
8			

SURVEYED BY: NA
DESIGNED BY: JRA
DRAWN BY: JDG
CHECKED BY: TMM
APPROVED BY: RAK

THE UNIFIED GOVERNMENT OF ATHENS-CLARKE COUNTY
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
ENGINEERING DIVISION

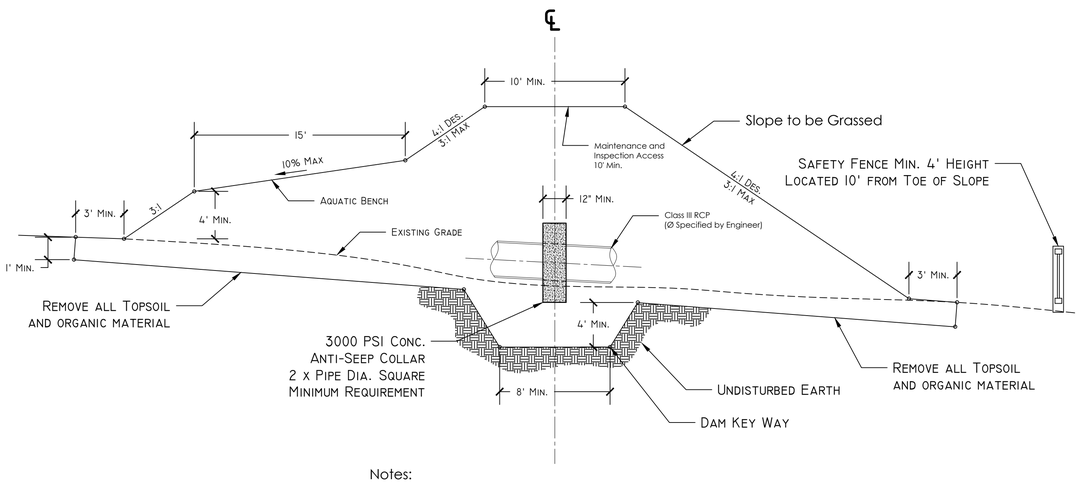
120 WEST DOUGHERTY STREET
ATHENS, GEORGIA 30603

PHONE 706.613.3440
FAX 706.613.3444

PROJECT:
CONSTRUCTION STANDARDS AND DETAILS
DATE: DECEMBER 2023

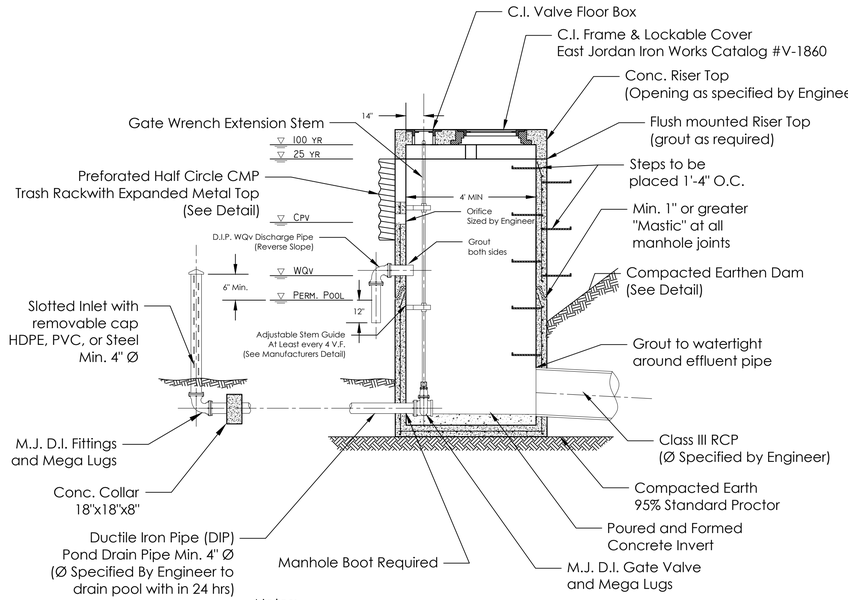
SHEET:
STORMWATER MANHOLE COVER LOGO
SHEET: 4-010

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA			



Notes:
1. Fill material to be placed in 6" lifts to 98% Standard Proctor Density.
2. All Woody Vegetation to be removed within 10' of Toe of Slope.
3. A minimum 5' wide Safety Bench must be provided on either side of the embankment every 15 V.F. of embankment height to be measured from the top of the embankment.
4. Final design of all Earthen Dams shall be the responsibility of the Owner's / Developer's Engineer.

Earthen Dam Typical Section
NTS



Notes:
1. Use Mega Lugs on all ends.
2. All DIP fittings and valves per Department of Public Utilities approved materials list.
3. Do not orient steps directly over influent or effluent openings.
4. Steps must be oriented on thesame side of structure.
5. All invert and inlet sizes to be constructed per approved plans.
6. All invert and inlet elevations to be constructed per approved plans.
7. Inlets and Valve Stem Extension must be oriented on differing sides of structure.

Combination Outlet Control Structure Detail
NTS

REVISIONS:

NO.	BY	DATE	DESCRIPTION
1			
2			
3			
4			
5			
6			
7			
8			

SURVEYED BY: NA
DESIGNED BY: BCB
DRAWN BY: BCB
CHECKED BY: BCB
APPROVED BY: RAK

The Unified Government of Athens-Clarke County
Department of Transportation and Public Works
Engineering Division

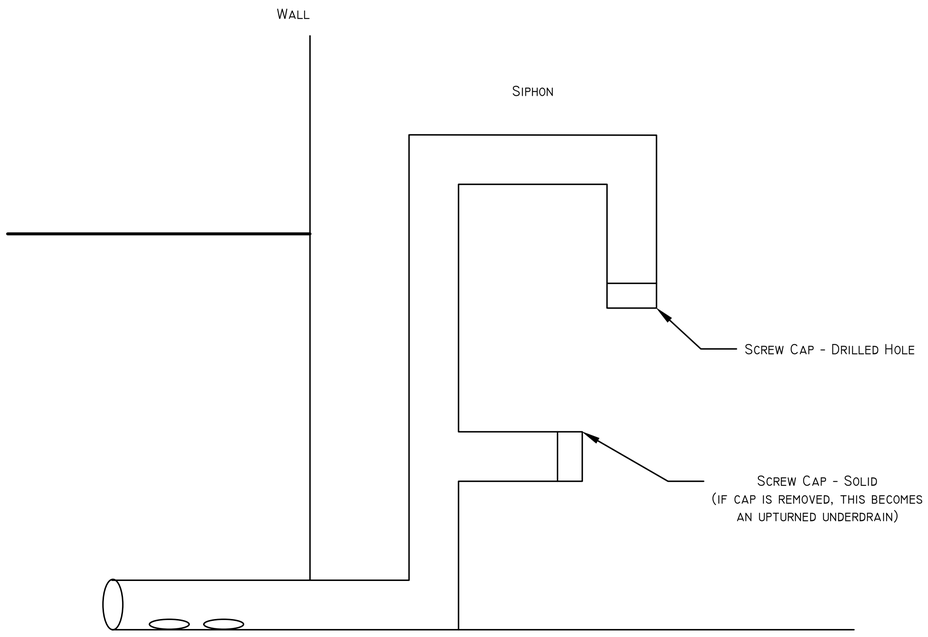
120 West Dougherty Street
Athens, Georgia 30603

Phone 706.613.3440
Fax 706.613.3444

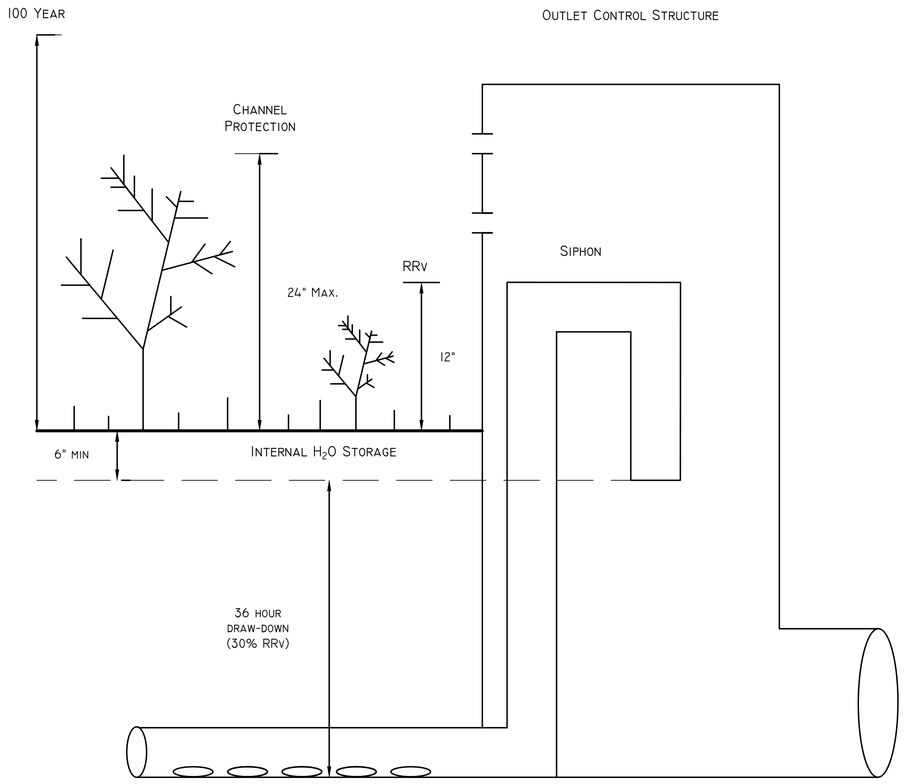
PROJECT:
CONSTRUCTION STANDARDS AND DETAILS
DATE: DECEMBER 2023

SHEET:
DETENTION POND STANDARDS AND DETAILS
SHEET: 4-020

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA			



SYPHON TYPICAL
NTS



SUPER BIORETENTION
STRUCTURE DETAIL
NTS

REVISIONS:			
NO.	BY	DATE	DESCRIPTION
1			
2			
3			
4			
5			
6			
7			
8			

SURVEYED BY: N/A
DESIGNED BY: TS
DRAWN BY: HAPK
CHECKED BY: JMJ
APPROVED BY: RAK

THE UNIFIED GOVERNMENT OF ATHENS-CLARKE COUNTY
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
ENGINEERING DIVISION

120 WEST DOUGHERTY STREET
ATHENS, GEORGIA 30603

PHONE 706.613.3440
FAX 706.613.3444

PROJECT:
CONSTRUCTION STANDARDS AND DETAILS
DATE: DECEMBER 2023

SHEET:
SIPHON
STANDARDS AND DETAILS
SHEET: 4-030