BOARD OF COUNTY COMMISSIONERS
FOR ST. MARY’S COUNTY MARYLAND

ST. MARY’S COUNTY • MD

DPW&T
Serving the Community

MANUAL OF DESIGN
AND CONSTRUCTION STANDARDS

DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
P. O. BOX 508
CALIFORNIA, MARYLAND 20619

Adopted: April 19, 2017
Effective: May 1, 2017
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<td>SUBMERGED GRAVEL WETLAND TYPICAL PLAN/PROFILE</td>
</tr>
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Notes:
1) Surface course and base course pavement to be according to Job Mix Formula as approved by DPW&T.
2) Compacted Sub-Base must consist of a minimum of 9” of Bankrun Gravel (BRG). R/5, R/10 requires a minimum of 10” of BRG. Equal thickness of Graded Aggregate Base (GAB) may be substituted for BRG whenever BRG is specified.
3) A driveway entrance and shoulder treatment schedule is required on each plan view.
4) Roadways classified as Minor Collector or above shall have full width and depth, paved shoulder treatment on both sides of the roadway.
<table>
<thead>
<tr>
<th>Road Classification</th>
<th>Road Type</th>
<th>Travel Width (T)</th>
<th>R/W Width (R)</th>
<th>Min. Posted Speed/Max. Design Speed</th>
<th>Minimum Horizontal Radius</th>
<th>Min. - Max. Longitudinal Grade</th>
<th>Pavement Section (See Note #1)</th>
<th>Shoulder Width (S)</th>
<th>Number of Lots</th>
<th>Min. Sight Distance Stop/Int.</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cul-De-Sac (R/1)</td>
<td>Place</td>
<td>18’</td>
<td>40’</td>
<td>25/25</td>
<td>165’</td>
<td>0.75-10%</td>
<td>1 1/2” Surface 2 1/2” Base</td>
<td>2’</td>
<td>1-5 Lots</td>
<td>150/260</td>
<td>(A)</td>
</tr>
<tr>
<td>Local Road (R/2)</td>
<td>Court</td>
<td>18’</td>
<td>45’</td>
<td>25/25</td>
<td>200’</td>
<td>0.75-10%</td>
<td>1 1/2” Surface 2 1/2” Base</td>
<td>4’</td>
<td>6-50 Lots</td>
<td>150/260</td>
<td>(B)</td>
</tr>
<tr>
<td></td>
<td>Street</td>
<td>20’</td>
<td>45’</td>
<td>30/30</td>
<td>275’</td>
<td>0.75-10%</td>
<td>1 1/2” Surface 2 1/2” Base</td>
<td>4’</td>
<td>6-100 Lots</td>
<td>200/310</td>
<td>(C)</td>
</tr>
<tr>
<td>Minor Collector (R/3)</td>
<td>Drive</td>
<td>20’</td>
<td>50’</td>
<td>35/35</td>
<td>375’</td>
<td>0.75-8%</td>
<td>1 1/2” Surface 2 1/2” Base</td>
<td>6’</td>
<td>501-2,000 ADT</td>
<td>250/360</td>
<td>(D)</td>
</tr>
<tr>
<td>Major Collector (R/4)</td>
<td>Road</td>
<td>22’</td>
<td>60’</td>
<td>35/45</td>
<td>625’</td>
<td>0.75-8%</td>
<td>1 1/2” Surface 4” Base</td>
<td>8’</td>
<td>2,001-6,000 ADT</td>
<td>400/460</td>
<td>(E)</td>
</tr>
<tr>
<td>Arterial (R/5)</td>
<td>Boulevard</td>
<td>12’ Lanes AASHTO</td>
<td>80-100’</td>
<td>45/55</td>
<td>AASHTO</td>
<td>0.75-8%</td>
<td>1 1/2” Surface 5” Base</td>
<td>8’-10’</td>
<td>6,001-12,000 ADT</td>
<td>500/560</td>
<td>(F)</td>
</tr>
</tbody>
</table>

**Remarks:**

(A) Minimum/maximum road length is 250’/1,320’. Two (2) off-street parking spaces/lot required. Parking on one side and staggered parking on alternate sides is allowed. Minor acceleration/deceleration lanes may be required. Single or shared rural entrances may be required.

(B) Applies only to dead-end roads that shall have a maximum length of 1,320’. At a minimum, minor acceleration/deceleration lanes shall be required.

(C) Applies only to loop streets with two (2) outlets onto a higher classification road, parking one side is allowed. Acceleration/deceleration lane may be required. For lengths less than 1/2 mile, travel width may be reduced by two (2) feet.

(D) On-street parking is not encouraged. Acceleration/deceleration lane may be required.

(E) Individual lot access will be restricted. Acceleration/deceleration lane may be required. On-street parking may be prohibited.

(F) AASHTO guidelines are to be followed. Specific design criteria shall be approved by DPW&T. On-street parking is prohibited.

**Notes:**

1) Surface course and base course pavement to be according to Job Mix Formula as approved by DPW&T. Pavement to be placed on 3” Graded Aggregate Base (GAB) (4” for Arterial Sections) on top of 6” Bank Run Gravel. Use of recycled materials may be considered on a case-by-case basis.
Notes:

1) Surface course and base course pavement to be according to Job Mix Formula as approved by DPW&T.

2) Compacted Sub-Base must consist of a minimum of 10" of Bankrun Gravel (BRG). R/1–R/4, R/6–R/9 require a minimum of 9" of BRG. Equal thickness of Graded Aggregate Base (GAB) maybe substituted for BRG whenever BRG is specified.

3) Sidewalk concrete shall be a minimum of 3000psi @ 4 inches thick. Underdrains may be required in accordance with Detail U-6 at the discretion of DPW&T.
<table>
<thead>
<tr>
<th>Road Classification</th>
<th>Road Type</th>
<th>Travel Width (T)</th>
<th>R/W Width (R)</th>
<th>Min. Post/Max. Design Speed</th>
<th>Minimum Horizontal Radius</th>
<th>Min. - Max Longitudinal Grade (G)</th>
<th>Pavement Section (See Note #1)</th>
<th>Sidewalk Width (W) # of Sides</th>
<th>Landscape Width (L)</th>
<th>Number of Lots/ADT</th>
<th>Min. Sight Distance Stop/Int.</th>
<th>Remarks (See Below)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cui-De-Sac (R/6)</td>
<td>Place Circle</td>
<td>20'</td>
<td>40'</td>
<td>25/25</td>
<td>165'</td>
<td>0.50-10%</td>
<td>1 1/2&quot; Surface 2 1/2&quot; Base</td>
<td>5&quot; Two</td>
<td>4&quot;</td>
<td>1-5 Lots</td>
<td>150/260</td>
<td>(A)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local Road (R/7)</td>
<td>Court</td>
<td>24'</td>
<td>45'</td>
<td>25/25</td>
<td>200'</td>
<td>0.50-10%</td>
<td>1 1/2&quot; Surface 2 1/2&quot; Base</td>
<td>5&quot; Two</td>
<td>4.5&quot;</td>
<td>6-30 Lots</td>
<td>150/260</td>
<td>(B)</td>
</tr>
<tr>
<td></td>
<td>Street</td>
<td>26'</td>
<td>45'</td>
<td>30/30</td>
<td>275'</td>
<td>0.50-10%</td>
<td>1 1/2&quot; Surface 2 1/2&quot; Base</td>
<td>5&quot; Two</td>
<td>4.5&quot;</td>
<td>6-60 Lots</td>
<td>200/310</td>
<td>(C)</td>
</tr>
<tr>
<td>Minor Collector (R/8)</td>
<td>Drive</td>
<td>30'</td>
<td>50'</td>
<td>35/35</td>
<td>375'</td>
<td>0.50-8%</td>
<td>1 1/2&quot; Surface 2 1/2&quot; Base</td>
<td>5&quot; Two</td>
<td>4&quot;</td>
<td>250-1,500 ADT</td>
<td>250/360</td>
<td>(D)</td>
</tr>
<tr>
<td>Major Collector (R/9)</td>
<td>Road</td>
<td>36'</td>
<td>60'</td>
<td>45/45</td>
<td>625'</td>
<td>0.50-8%</td>
<td>1 1/2&quot; Surface 4&quot; Base</td>
<td>5&quot; Two</td>
<td>6&quot;</td>
<td>1,501-6,000 ADT</td>
<td>400/460</td>
<td>(E)</td>
</tr>
<tr>
<td>Arterial (R/10)</td>
<td>Boulevard</td>
<td>48'</td>
<td>80-100'</td>
<td>45/55</td>
<td>AASHTO</td>
<td>0.50-8%</td>
<td>1 1/2&quot; Surface 5&quot; Base</td>
<td>5&quot; Two</td>
<td>Varies</td>
<td>6,001-12,000 ADT</td>
<td>550/560</td>
<td>(F)</td>
</tr>
</tbody>
</table>

**Remarks:**

- **(A)** Minimum/maximum road length is 250’/1,320’. Two (2) off-street parking spaces/lot required. Parking on one side is allowed. Minor acceleration/deceleration lane may be required. Single or shared urban entrances may be required.
- **(B)** Applies only to dead-end roads that shall have a maximum length of 1,320’. Parking on one side is allowed. Single or shared urban entrances may be required. At a minimum, minor acceleration/deceleration lanes shall be required.
- **(C)** Applies only to loop streets with two (2) outlets onto a higher classification road. Parking on one side is allowed. Acceleration/deceleration lane may be required. For lengths less than 1/2 mile, travel width may be reduced by two (2) feet.
- **(D)** Acceleration/deceleration lane is required. Parking on one side is allowed.
- **(E)** Individual lot access will be restricted. Acceleration/deceleration lane is required. On-street parking may be prohibited.
- **(F)** AASHTO guidelines to be followed. Specific design criteria shall be approved by DPW&T. On-street parking is prohibited.
- **(G)** Valley gutters shall be used across intersections for street grades of less than one-percent (1%).

**Notes:**

1) Surface course and base course pavement to be according to Job Mix Formula as approved by DPW&T. Pavement to be placed on 3" Graded Aggregate Base (GAB) (4" for Arterial Sections) on top of 6" Bank Run Gravel. Use of recycled materials may be considered on a case-by-case basis.
R.O.W.: Additional R.O.W. if required on owners side, shall be dedicated to the Commissioners of St. Mary's County.

Encroachments are prohibited within this area. Area to remain free of obstructions

Notes:

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

(2) Design shall be based on a height of eye of 3.50 to a top of object of 4.25 feet. These are suggested design guides and all sight distances shall be in accordance with AASHTO and subject to review and approval by the County.

(3) Values shown represent flat roadway conditions and adjustments may be required based on grade of major road.

(4) Sight distance values in table above are minimum and should be used under constrained conditions only. The design engineer shall strive to achieve longer sight distances, especially under high volume and speed conditions.

<table>
<thead>
<tr>
<th>Road Classification</th>
<th>Design Speed M.P.H.</th>
<th>Minimum Required Sight Distance Feet *</th>
</tr>
</thead>
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<tr>
<td>Private, R/1, R/6</td>
<td>25</td>
<td>260</td>
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<tr>
<td>R/2, R/7(Court)</td>
<td>25</td>
<td>260</td>
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<tr>
<td>R/7(Street)</td>
<td>30</td>
<td>310</td>
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<td>R/3, R/8</td>
<td>35</td>
<td>360</td>
</tr>
<tr>
<td>R/4, R/9</td>
<td>45</td>
<td>460</td>
</tr>
<tr>
<td>R/5, R/10</td>
<td>55</td>
<td>560</td>
</tr>
</tbody>
</table>

Minimum Standards for Sight Distance
St. Mary's County
Department of Public Works & Transportation

Revised: Approved
John J. Groeger, P.E. Date
Interim Director of DPW&T
Notes:

1. Acceleration lanes minimum length
   25’ full pavement width (widening)
   50’ taper width
2. An overlay of the existing road may be
   required for proper construction of
   a standard roadway section thru the
   area of accel/decel lanes.
3. The minimum recommended width for a
   shoulder bypass lane is 10 feet with a
   width of 12 feet desirable.
4. Curb and Gutter is required
   in urban areas and may be
   requested by the design
   engineer for rural application.

<table>
<thead>
<tr>
<th>Design Speed m.p.h.</th>
<th>Full Pavement Width 'fp'</th>
<th>Taper Width 't'</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>150’</td>
<td>100’</td>
</tr>
<tr>
<td>35</td>
<td>185’</td>
<td>125’</td>
</tr>
<tr>
<td>40</td>
<td>220’</td>
<td>150’</td>
</tr>
<tr>
<td>45</td>
<td>270’</td>
<td>165’</td>
</tr>
<tr>
<td>50</td>
<td>320’</td>
<td>180’</td>
</tr>
<tr>
<td>55</td>
<td>350’</td>
<td>200’</td>
</tr>
</tbody>
</table>

5. All pavement striping and markings shall
   be in accordance with the Maryland Manual
   on Uniform Traffic Control Devices (MMUTCD).
6. Contractor shall sawcut the edge of the existing
   roadway along the area of widening.

<table>
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<th>Typical Design Length for Bypass Lanes (ft.)</th>
</tr>
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<tr>
<td>Approach Taper</td>
</tr>
<tr>
<td>50–100</td>
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</tbody>
</table>
Notes:
1. Design and installation of entrance culverts, end sections and velocity dissipaters shall be in accordance with approved Standards and Specifications.
2. Street name signs shall be in accordance with standard details R/24 for Public and Private roads.
3. A Construction Permit for work within the County Right-of-way is required when an entrance is proposed onto an existing county road. Additional curb and gutter may be required for continuity with adjacent sites and/or drainage as determined by the Department of Public Works & Transportation (DPW&T).
4. Face of curb on urban entrances must align with the outer edge of shoulder, or existing curb.
5. Contractor shall sawcut the edge of the existing roadway along the area of widening.
6. An overlay of the existing road may be required for proper construction of a standard roadway section thru the area of accel/decel lanes.
7. The requirements shown hereon are minimums for Commercial Development and Major Subdivisions. Specifications beyond the minimums may be required at the discretion of DPW&T.
Note: Standard cul-de-sac paving radii must be increased to 50' where length of road exceeds 1/2 mile to accommodate school buses.
Erect MSHA W Beam Traffic Barrier (605.27) with Std. W Beam Section (605.22)

End of road marker OM4–3 (2)

Easement lines as determined by the design engineer.

Subdivision Section Boundary

R.O.W. Line

30' Min. Rad.

70'

36'

45' Rad. Min.

30' Min. Rad.

30' Min. Rad.

R.O.W.

T

R

R.O.W.

T

R

R.O.W.

Denotes revertible grading and construction easement which shall be shown on the design plans and record plat.

(TYPE A) TEMPORARY T–TURNAROUND

(TYPE B) TEMPORARY CIRCULAR TURNAROUND

Minimum Dimensions for Temporary Turnarounds

St. Mary’s County
Department of
Public Works & Transportation

R/15

Revised: Approved

John J. Groeger, P.E.  Date
Interim Director of DPW&T

4/19/17
**Notes:**

1. Driveway surface shall be 2" minimum Asphalt (Surface Course) on 6" of Bank Run Gravel and shall extend a minimum of 15' beyond the edge of travel lane.

2. A minimum of 20 lin. ft. of A.C.M.P.A. (16 gauge min.) to be installed (17"x13" min.) with end sections. Installation shall be in accordance with approved standards and specifications.

3. Channel protection and velocity dissipaters to be provided as required. Flows in excess of 5 c.f.s. require submission of design computations by the applicant.

4. Adjust dimensions slightly if necessary to conform to maximum grades and minimum cover as shown hereon.

5. Builder/Contractor will be responsible for any damage to area within the County right-of-way.

6. The Department of Land Use and Growth Management shall be contacted 48 hours prior to beginning any work.

7. Driveway pipe schedules are required to be shown on all road plan submissions.

8. See MD SHA Detail MD 655.03 for depressed curb standard.
1. Where curb and gutter is existing remove remove to nearest joint beyond this point if joint is more than 4' beyond, cut existing curb to next line.

2. Builder/Contractor will be responsible for any damage to area within the County right-of-way.

3. The Department of Land Use and Growth Management shall be contacted 48 hours prior to beginning any work.

4. Where sidewalk abuts top of curb, transition shall be at 12:1.

5. See MD SHA Detail MD 655.03 for depressed curb standard.

Street name signs must be installed in accordance with Private Street Sign Location detail R/25.
Notes: 1. A minimum of 17" x 13" of C.M.P.A. (16 gauge min.) to be installed with end sections. Design and installation shall be in accordance with approved standards and specifications.

2. Ditch flow in excess of 5 c.f.s. requires submission of design computations by the applicant. Channel protection and/or velocity dissipaters, if required are to be installed and stabilized prior to final permit release.

3. Entrance details for all other open sections to be similar. Adjust dimensions to conform to maximum grades and minimum cover as shown hereon.

4. Builder/Contractor will be responsible for any damage to area within the County right-of-way.

5. The Dept. of Public Works and Transportation (DPW&T) shall be contacted 48 hours prior to beginning any work.

6. Driveway pipe schedules are required to be shown on all road plan submissions.

7. Driveway surface shall conform to the typical paving section and shall extend a min. of 10’ beyond the R/W.

8. Private Street name signs, if required, must be in compliance with detail R/24 and installed in accordance with detail R/23.
Notes
1. Minimum storage length must be provided to accommodate peak hour queues.
2. Provide accel/decel lanes as may be required. Min. width shall be 20' for 1 lane of travel and 24' for 2 lanes. Additional lanes, channelization and signalization shall be provided if warranted.
3. Raised medians < 6" in width shall be monolithic concrete.
4. The fillet radius shall be sized to accommodate large vehicle turning movements. The design vehicle template shall conform to the prevailing truck size expected to access the facility with consideration for occasional use by WB-50 vehicles.
5. Design shall accommodate pedestrian movements.

Shopping Center or Other Large Urban Traffic Generator

20'-24' 4'-10' (Typ.) 20'-24'

6" Curb and Gutter (Typ.)

Right-of-Way

Provide R/26 Curb Cut Ramp, both sides

Existing Roadway

R = 20'-35'
(See note #4)

1/2 R

2' Minimum radius

Monumental Entrance
Typical Standard
St. Mary's County
Department of
Public Works & Transportation
Urban Road Application

Rural Road Application

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

All traffic signs are to be installed prior to or during the process of paving the streets with the base course of asphalt. See detail R24 for street name sign sizes.

Shorter name plate shall be mounted above the longer name plate in the assembly.

In subdivisions where no curb and gutter is placed, the street name sign shall be erected in such a manner that the longer name plate is a minimum of 2 feet back of the ditch line and is safe from damage from traffic.
Private Way

Blue Background
White Lettering

Note: Street name signs shall be extruded aluminum with high intensity reflective sheeting, beaded legend and border, 6 inch or 8 inch Clearview Font Series characters with letters and background colors as specified. Std. cap and cross brackets shall be used for cross street signage.

County Road

Green Background
White Lettering

*Minimum Letter Heights On Street Name Signs

<table>
<thead>
<tr>
<th>Speed Limit</th>
<th>Initial Upper Case</th>
<th>Lower Case</th>
<th>Sign Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-lane and more than 40 mph</td>
<td>8 inches</td>
<td>6 inches</td>
<td>10 inches</td>
</tr>
<tr>
<td>Multi-lane and 40 mph or less</td>
<td>6 inches</td>
<td>4.5 inches</td>
<td>8 inches</td>
</tr>
<tr>
<td>2-lane at all speed limits</td>
<td>6 inches</td>
<td>4.5 inches</td>
<td>8 inches</td>
</tr>
</tbody>
</table>

Revised:

Approved

John J. Groeger, P.E. Date
Interim Director of DPW&T

Typical Street Signage
Public / Private Roads

St. Mary's County
Department of
Public Works & Transportation

R/24
NOTES (CONT’D ON R/26)

1. PLAN A TO BE USED ON WIDE SIDEWALKS OR SIDEWALKS WITH SIGNIFICANT SEPARATION FROM THE ROADWAY WHERE THE GEOMETRY SPECIFIED IN THE DETAILS ABOVE CAN BE SATISFIED. MAY BE MODIFIED TO SUIT A PARTICULAR LOCATION.

2. WHERE 60° SIDEWALK CAN NOT BE PROVIDED, A DESIGN WAIVER MUST BE REQUESTED

3. NO TRAVERSABLE SLOPE ON THE RAMP OR SIDEWALK SHALL EXCEED 12:1 IN THE DIRECTION OF PEDESTRIAN TRAVEL, OR 48:1 PERPENDICULAR TO THE DIRECTION OF PEDESTRIAN TRAVEL.

4. EXPANSION JOINT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH MARYLAND STATE HIGHWAY STD. MD-655.01.

5. SIDEWALK RAMPS TO BE SHOWN ON PLANS SYMBOLICALLY AND REFERENCED WITH THE CENTER OF THE RAMP ALIGNED TO A STATION ON THE CONSTRUCTION CENTERLINE. SEPARATE DETAILS SHALL BE SHOWN WHERE PROPOSED RAMP VARIES FROM STANDARD CASES.

6. REFER TO DETAIL R/26 FOR ELEVATIONS AND SECTIONS.

Curb Cut Handicap Ramp
Typical Detail A

St. Mary’s County
Department of
Public Works & Transportation

R/25

Approved

John J. Groeger, P.E.
Interim Director of DPW&T

Date: 4/19/17
ELEVATION A

SECTION A-A

- H = HEIGHT OF CURB
- B = BUFFER WIDTH (BACK OF CURB TO FRONT OF SIDEWALK)
- T = TRANSITION LENGTH (LENGTH OF RAMP FROM SIDEWALK TO LANDING)

T = (1/2 x H) - B

ALL MEASUREMENTS IN INCHES

ELEVATION B

SECTION B-B

NOTES (CON’T FROM R/25)

7. NO TRAVERSABLE SLOPE ON THE RAMP OR SIDEWALK SHALL EXCEED 12:1 IN THE DIRECTION OF PEDESTRIAN TRAVEL, OR 48:1 PERPENDICULAR TO THE DIRECTION OF PEDESTRIAN TRAVEL. THE CROSS-SLOPE OF THE LANDING AREA CANNOT EXCEED GRADE OF ROADWAY.

8. SIDEWALK RAMPS TO BE SHOWN ON PLANS SYMBOLICALLY AND REFERENCED WITH THE CENTER OF THE RAMP ALIGNED TO A STATION ON THE CONSTRUCTION CENTERLINE. SEPARATE DETAILS SHALL BE SHOWN WHERE PROPOSED RAMP VARIES FROM STANDARD CASES.

9. PLAN C TO BE USED WHERE AT LEAST 2'-0" EXISTS BETWEEN THE BACK OF CURB AND THE BACK OF SIDEWALK. THIS STANDARD MAY BE MODIFIED TO SUIT A PARTICULAR LOCATION.

10. FOR BUFFER WIDTHS LESS THAN 24", WIDEN SIDEWALK TO BACK OF CURB AS SHOWN FOR THE SPECIAL CASE, THEN BUILD PARALLEL RAMP USING STANDARD MD-655.12. PLAN B TO BE USED WHERE SIDEWALK IS ADJACENT TO THE CURB. THIS STANDARD MAY BE MODIFIED TO SUIT A PARTICULAR LOCATION.

11. IF THE BUFFER AREA IS GREATER THAN OR EQUAL TO 4' THE LANDING AREA MUST BE 2% X 2%. IF THE BUFFER AREA IS LESS THAN 4' THE LANDING AREA CROSS-SLOPE CANNOT EXCEED THE GRADE OF THE ROAD.

12. REFER TO DETAIL R/26 FOR PLAN VIEWS.
PHV = Peak Hour Volume
ADT = Average Daily Traffic
AADT = Annual Average Daily Traffic

- Full Accel/Decel Lanes
  R/12 Entrance Required

- Minor Accel/Decel Lanes
  R/13 Entrance Required

- Standard Entrance Required (No Road Plans Required)

If PHV is not known, use:

\[ \text{PHV} = \text{ADT} \times K \times D \]

- \( K = \% \) AADT in peak hr.
- \( D = \% \) traffic in peak direction

Note: An average of 12\% for \( K \times D \) will suffice
  (i.e. PHV = ADT x 12\%)

- 8
- 5
- 1 - (Use R/16 & R/17 Driveway Entr.)
Note: These guidelines are not intended to replace the safety standards specified in the Unified Code.
Notes:
1. All members are of extruded aluminum.
2. All seat and backrests to be capped on ends. There shall be no rough edges.
3. Finish of aluminum to be smooth.
4. Solar lighting is to be provided in areas having adequate sun exposure.
5. Concrete shall be SHA Mix No. 3 @ 4 inches thick.

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Dimensions

| "A" | 8'-1 1/4" |
| "B" | 4'-4 1/4" |
| "C" | 7'-9 1/2" |
| "D" | 4'-0 1/2" |
| "E" | 7'-0" |
| "F" | 8'-6" |

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Plan - Bench

Plan - Shelter

Concrete Pad

Front Elevation - Shelter

Side Elevation - Shelter

Length & number of supports varies with model

Elevation - Bench

Clip anchor W/5/16" bolt, lock washer and nut
2"x8" extruded alum. backrest
3"x2" extruded alum. angle
2"x12" extruded alum. bench seat

3"x1/4" extruded alum. brake formed base, 2 supports used up to 9'-6", 3 supports used on longer benches.

1/2" x 1 1/4" JS-12C Red Head concrete expansion anchors, 2 per base support.

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Roadway

- ADA Compliant Tactile warning Strips and Ramps are required.

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Bus Shelter & Bench Standard / Typical

St. Mary's County
Department of Public Works & Transportation

Revised: 4/19/17

Approved: John J. Groeger, P.E.
Interim Director of DPW&T
BASIC CRITERIA

1. SPEED LIMIT ≤ 45 MPH.
2. ADEQUATE STOPPING SIGHT DISTANCE.
3. FOR MIDBLOCK PREFERRED BLOCK LENGTH ≥ 600’.
4. CROSSWALK ADEQUATELY ILLUMINATED.
5. MINIMAL CONFLICTING ATTENTION DEMANDS.

INSTALLED CROSSWALK

> 4-LANE WITHOUT MEDIAN

2-LANE OR 4-LANE WITH MEDIAN

DO NOT INSTALL CROSSWALK

LOCATION WITH PREDOMINANTLY YOUNG, ELDERLY OR HANDICAPPED PEDESTRIANS

OTHER LOCATIONS

*FOR STREETS WITH A MEDIAN, USE ONE-WAY VOLUME.

SOURCE: FIGURE 23, FHWA PUBLICATION "PLANNING, DESIGN AND MAINTENANCE OF PEDESTRIAN FACILITIES".
20' Drainage Easement (Min.)

Top Width Shall Contain The Design Flow Depth

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

4" Topsoil

Variable depth 'D' of lining to be specified on plans (1' Min. channel depth). Depths should be limited to preclude saturation of the subgrade. The maximum desirable grade for unpaved channels should be based upon a tolerable velocity for vegetation.

Width 'W' varies based on drainage design computations, to specified on plans (1.5' Min.)

Notes: (1) In areas where grass will grow, grass is usually the most economical channel lining except on steep slopes where the velocity of flow exceeds the permissible velocities for grass protection.
(2) The use of erosion control matting may be required.
(3) Grade stabilization structures and/or additional measures may be required where runoff is directed to highly erodible soils.

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

4" Topsoil

Variable depth 'D' based on drainage design computations (1' Min.)
20' Drainage Easement (Min.)

Top Width Shall Contain The Flow Depth

Rip Rap

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

1_max. 3

W

max. 1_3

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

Variable depth 'D' of lining to be specified on plans (1' Min.). Depths should be limited to preclude saturation of the subgrade. The maximum desirable grade for unpaved channels should be based upon a tolerable velocity for vegetation.

Notes: (1) Provision must be made to dissipate the energy of the high-velocity flow before it is released to a natural channel to avoid scour at the outlet and damage to the proposed channel lining.

(2) The use of erosion control matting is preferred in lieu of rip-rap within County right-of-ways.

(3) Grade stabilization structures and/or additional measures may be required where runoff is directed to highly erodible soils.

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

MSHA approved Filter Cloth

Width 'W' varies based on drainage design computations, to specified on plans (1.5' Min.)

3:1 max.

D

3:1

Variable depth 'D' based on drainage design computations (1' Min.)

Rip Rap Outfall Channel
Typical Sections

St. Mary's County
Department of
Public Works & Transportation

Revised: Approved

John J. Groeger, P.E. Date
Interim Director of DPW&T

D/2
Concrete Pier at nearest joint each side.

Concrete Pier to be built on undisturbed earth. Concrete to be class 'A'.

Expansion material may be required by The Metropolitan Commission.

Concrete Pier

Storm Sewer

Water and/or Sanitary Sewer

2" Min.

Storm Sewer

Concrete Pier

Water and/or Sanitary Sewer

2" Min.
Pipe Bedding

1. Permission must be granted by a DPW inspector prior to backfilling areas to be tamped with approved material(s). Soils having maximum dry density of less than 100 lb/ft³ shall be considered unsatisfactory and shall not be used.

2. Material(s) shall be placed in horizontal layers not to 6 inches in loose depth over the entire area and uniformly compacted in accordance with the Maryland DOT standards. Each layer shall be filled and compacted before the next layer is placed.

3. When a trench is located within the paving section of the shoulder area, it is to be backfilled in compliance with the above to within one foot of the top of the sub-grade; the remaining depth of the trench shall be backfilled with thoroughly compacted crusher run stone or gravel to be at the option and approval by the Director of Public Works.

4. The minimum width (W) of the trench shall be 20D or OD+3 whichever is less, unless otherwise approved by the Director of Public Works.

Pipe Bedding Alternative

- Compact to not less than 95% of the maximum density.
- Select backfill – Hand placed to 95% compaction in accordance with MDOT specs.
- Crushed stone MDOT size 57 in accordance with MDOT specs.
For use where ponding is occurring on the roadway or where intersection slopes are less than or equal to 0.5%.

Minimum Strength 3000 lbs. Concrete Non-Reinforced, Air Entrained Variable

Concrete Valley Gutter
Typical Sections
St. Mary’s County
Department of Public Works & Transportation
Note: Backfill in trenches shall be in accordance with MSHA specifications and shall be thoroughly compacted in 6" layers for the full depth of the trenches by tamping or by some other approved method to within 1' of the top of subgrade. The remaining depth of the trench shall be filled with thoroughly compacted crushed stone, slag or gravel. Whenever shoring or shoring is required to prevent cave-ins or bellying due to the depth of the trench or type of material encountered, the shoring, wherever found necessary, shall remain in place but cut off 1' below the bottom of the replaced surfacing. All backfill replaced shall be compacted to at least 95% of maximum density in accordance with MSHA specifications and certified by an approved geotechnical testing contractor. In lieu of controlled fill, flowable fill in accordance with MSHA specifications may be utilized.

<table>
<thead>
<tr>
<th>UTILITY</th>
<th>COVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>telephone &amp; cable t.v.</td>
<td>24&quot; min.</td>
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<tr>
<td>electric cable</td>
<td>36&quot; ±½</td>
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<tr>
<td>sewer line</td>
<td>48&quot; min.</td>
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<tr>
<td>water line</td>
<td>42&quot; min.</td>
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<tr>
<td>concrete, steel pipes</td>
<td>12&quot; min.</td>
</tr>
<tr>
<td>½ frost depth</td>
<td>18&quot; min.</td>
</tr>
</tbody>
</table>
PROFILE

Notes:
1. SMECO requests, prior to the start of construction of the road, a final record plat (with bearings and distances for all lots) be submitted to the St. Mary's District Office for design of the electrical system. If possible, please submit on disk (contact SMECO for format) to expedite the process. Installation shall conform to SMECO's proposed underground electric distribution design and specifications, and is subject to SMECO inspection.
2. If a final record plat cannot be provided by the developer, conduit will be required at all intersections and at 100 feet intervals along each county road. Intervals between conduit crossings may be changed at SMECO discretion and a written request from the Developer.
3. Conduit, plugs and placement will be at the expense of the developer.
4. SMECO will provide the marking material, but must be notified of placement. (No markers will be considered, no placement)
5. Conduit is to be 4 inch Schedule 40 PVC.
6. Conduit is to be placed a minimum 36 inches and a maximum 42 inches below final grade and is to extend the complete right-of-way width (see profile above)
7. If any conduit road crossings are not placed, SMECO will place the conduit and charge the Developer all associated costs, including restoration.
Notes:
1) Contact SMECO for overhead lighting specifications, manufacturer, bracket length and light placement guidelines.
2) DPW&T to approve locations proposed within public rights-of-way.
3) Required Illumination levels to be determined on a case-by-case basis but in any case shall not be less than 0.75 candle power along roadways and 1.00 candle power at street intersections.

Residential and Multi-Family

Commercial and Village Centers

Revised: Approved

John J. Groeger, P.E. Date
Interim Director of DPW&T

Street Lighting
Typical Ornamental

St. Mary's County
Department of
Public Works & Transportation

U/4
3/8" Ø 16" Eye Bolts

Non-motorized Access
Trail Type & Size Varies

6"x6" Wood Bollard

3"x9" Silver Reflective Aluminum Markers – 4 Per Post (2 Per Side)

3'-0" Wood Post

2 - 3" Reflectors

2-6" Min. 3'-0" Max.

1/2" Ø Fabric Core With Rope

Authorized Motorized Vehicle Access

Finished Grade

Undisturbed Earth

Compacted Backfill

#4 Rebar (Typ.)

NOTES:
1. COUNTERSUNK NUT AND WASHER ON 3/8" Ø X 6" EYE BOLTS.
   PEEN END OF ALL EXPOSED THREADS.
2. MOUNT 3" RED REFLECTORS WITH 1/2" CABLE CLAMPS.
3. CABLE LOOP FORMED WITH 2-1/2" CABLE CLAMPS; 3" SPACING.
   PEEN ENDS OF ALL EXPOSED THREADS.
4. CABLE LOOP FASTENED TO EYE BOLT WITH LOCK SUPPLIED.
5. STANDARD SIGNING AND MARKINGS FROM THE MANUAL OF UNIFORM
   TRAFFIC CONTROL DEVICES (MUTCD) SHALL BE INCLUDED IN THE DESIGN
   AND CONSTRUCTION OF THE TRAIL TO ALERT USERS OF POTENTIAL HAZARDS
   AND TO CONVEY MESSAGES (i.e. "MOTORIZED VEHICLES PROHIBITED").

Revised:

Approved

John J. Groeger, P.E.
Interim Director of DPW&T

Cable Barricade
Typical Detail

St. Mary's County
Department of
Public Works & Transportation

U/5
Sidewalk underdrain is to be used when the sidewalk longitudinal gradient is 3% or more and when the underlying soil has 34% or more passing the No. 200 sieve and has a PI of 13 or less.

2. Underdrain runs must not exceed 1,000 feet in length without discharging into the storm drain system or into discharging into the storm drain or into an open drain. The length of run may be increased up to an additional 1,000 feet if 8" diameter pipe is used in the downstream 1,000 feet section of the run.

3. All pipe to be 6" unless otherwise noted on plans. Minimum grade of pipe shall be 0.5%. 45° bends may be used to permit connection to drainage structures. Plastic pipes will not be permitted under street pavement sections. The pipe used in the pavement section shall be adequate to support street pavement loadings.

4. When the street section has been rough graded and the CBR tests are made for street pavement design, sieve and PI analysis will be included with the CBR tests. If these tests indicate that underdrains are required, additional classification tests will be made of the sidewalk subgrade to determine if sidewalk underdrains are required. These tests will be made at all changes of subgrade material and not more than 500 feet apart. Plan revisions based on these tests will then be prepared by the design consultant and submitted to DPW&T for review and approval.

5. Compaction tests on natural subgrade must be made and approved after the subgrade has been shaped and prior to the placing of sidewalks.

6. Where required, sidewalk underdrains shall be used for all walkways which are to be maintained by DPW&T.

7. All materials and construction of this design in a public right-of-way to be maintained by St. Mary’s DPW&T shall conform to current DPW&T standards.

John J. Groeger, P.E.
Interim Director of DPW&T

4/19/17
**Notes:**

1. On ditch section streets, face of mailbox to be in line with back edge of shoulder.
2. On ditch section streets in cut, support for mailbox to be minimum 2 feet to the outside of the ditch line.
3. On curb and gutter section streets, face of mailbox to be in line with back edge of curb line.
4. Mailbox height shall be:
   - Ditch Section: 41" to 45" from shoulder grade to bottom of box.
   - Curb and Gutter Section: 41" to 45" from top of curb to bottom of box.
5. The face of the mailbox and post shall be set, as shown on the fill section detail.
Brass Right-of-Way Marker
N.T.S.

Dimensions
A = 3.2" (81 mm)
B = 1.3" (33 mm)
C = 3.4" (86 mm)
D = 1.25" (32 mm)

Notes:
1) A minimum of two (2) monuments shall be placed in each site/subdivision. Location shall be shown on the recorded record plat with the corresponding reach descriptions.
2) Monuments shall be located on street right-of-way lines, at street intersections, angle point of curve and block corners. They shall be spaced as far as possible but that both are within sight of a single point, the sight lines being contained wholly within the street limits.
3) Such permanent reference markers shall be set flush with the ground, and in areas least likely to be disturbed by anticipated construction activity.

Monument W/Brass Marker – Plan
N.T.S.

Monument W/Brass Marker – Elevation
N.T.S.

Brass Marker
(Tap into wet concrete)

Concrete Monument
(Concrete mix No. 2, 3,000 psi)

St. Mary’s County
Department of
Public Works & Transportation
SECTION

PLANTING DEPRESSION:
A or B soil, depress by 3".
C or D soil, depress by 1" to 2".

PLAN VIEW

Note:
Trees shall be located a minimum of:
5' from Water Meter
5' from Gas Box
5' from Inlet or Manhole
10' from Fire Hydrant
10' from Driveway Entrance
15' from Light Post
35' from intersection PC

Approved
John J. Groeger, P.E. Date
Interim Director of DPW&T

Street Tree Planting Typical
St. Mary's County
Department of
Public Works & Transportation
<table>
<thead>
<tr>
<th>Botanical Name</th>
<th>Common Name</th>
<th>Type</th>
<th>Note</th>
<th>Size Table</th>
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<tbody>
<tr>
<td>Acer rubrum “Armstrong”</td>
<td>Armstrong Red Maple</td>
<td>1+</td>
<td>Street Tree</td>
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<tr>
<td>Acer rubrum “Autumn Flame”</td>
<td>Armstrong Flame Red Maple</td>
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<td>Acer rubrum “Bowhall”</td>
<td>Bowhall Red Maple</td>
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<tr>
<td>Acer rubrum &quot;October Glory&quot;</td>
<td>October Glory Red Maple</td>
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<tr>
<td>Amelanchier Canadensis</td>
<td>Shadbush Serviceberry</td>
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<tr>
<td>Betula nigra</td>
<td>River Birch</td>
<td>1*</td>
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<td>Carpinus caroliniana</td>
<td>American Hornbeam</td>
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<td>Chionanthus virginicus</td>
<td>Fringe Tree</td>
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<td>Cladrastis kentukea</td>
<td>Yellow Wood</td>
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<tr>
<td>Cornus alternifolia</td>
<td>Pagoda Dogwood</td>
<td>4*</td>
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<td>Cornus florida</td>
<td>American Flowering Dogwood</td>
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<tr>
<td>Ginkgo biloba</td>
<td>Male Ginko – Male cultivators only</td>
<td>1</td>
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<tr>
<td>Gleditsia triacanthos (imperial)</td>
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<tr>
<td>“Shademaster”, “Skyline”</td>
<td>Honeylocust</td>
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<td>Street Tree</td>
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<tr>
<td>Robina pseudoacacia</td>
<td>Black Locust</td>
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<tr>
<td>Ilex &quot;opaca tree form&quot;</td>
<td>Tree form American Holly</td>
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<td>Juglans nigra</td>
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<td>Juniperus virginiana</td>
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<td>Liquidambar styraciflua</td>
<td>Sweetgum</td>
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<td>Magnolia grandiflora</td>
<td>Southern Magnolia</td>
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<td>Ostrya virginiana</td>
<td>American Hornbeam</td>
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<tr>
<td>Platanus acerifolia</td>
<td>London Planetree</td>
<td>1+</td>
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<td>Plantanus acerifolia “Bloodgood Strain”</td>
<td>Bloodgood London Planetree</td>
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<td>Platanus occidentalis</td>
<td>Sycamore</td>
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<td>Quercus bicolor</td>
<td>White Oak, Swamp</td>
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<tr>
<td>Quercus palustris</td>
<td>Pin Oak</td>
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<td>Street Tree</td>
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<td>Quercus phellos</td>
<td>Willow Oak</td>
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<td>Quercus rubra</td>
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<td>Robina pseudoacacia</td>
<td>Black Locust</td>
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<tr>
<td>Taxodium distichum</td>
<td>Bald Cypress</td>
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<tr>
<td>Tilia americana</td>
<td>American Linden</td>
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<td>Ulmus hybrids</td>
<td>Hybrid Elm</td>
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<tr>
<td>Ulmus parvifolia</td>
<td>Lacebark Elm</td>
<td>1+</td>
<td>Street Tree</td>
<td></td>
</tr>
</tbody>
</table>

Notes: 1. * designates a multi-stem tree, which shall have a minimum of 4 stems with an average caliper of 1".
2. + indicates a wide tree box (over 6') is req.
Submerged Gravel Wetland
Typical Plan/Profile

St. Mary’s County
Department of
Public Works & Transportation

SWM M-2A

Approved

John J. Groeger, P.E.
Interim Director of DPW&T

4/19/17
1. **Minimum Drainage Area 1 Acre**, address ground water recharge separately.

2. Temporary ponding provided for 100% (including pre-treatment).

3. Of the ESDv with orifice sized to drain to the permanent ponding level in 24-48 hrs. Water level not to exceed plant tolerance.

4. Minimum length = 15' (length to width ratio = 2:1).

5. A dense stand of plants shall be created by planting wetland shrubs at a ratio of at least 400 shrubs per acre of surface area, with wetland grass plugs at a ratio of one plug per four (4) square foot.

6. Refer to bioretention specifications for planting soil mix specifications.

**Underdrain Detail Notes:**
1. All piping / couplings to be schedule 40 PVC, use 4" (four) inch piping unless 6" (six) inch is needed.
2. Cement all fittings to create water tight connection.
3. Wrap perforated portions with 1/4" Hardware cloth. (NOT SHOWN)
4. Minimum connection materials needed:
   - A. 2 (two) 90° 4" or 6" PVC - elbows
   - B. 2 (two) 4" or 6" PVC - tee
   - C. 3 (three) 4" or 6" - couplings
   - D. 3 (three) 4" or 6" PVC cleanout adapters
   - E. 3 (three) 4" or 6" PVC cleanout plugs, with 3/4" air hole

**Observation Well Detail Notes:**
1. All piping / couplings to be schedule 40 PVC and 6" (six) inches in diameter.
2. Cement all fittings to create water tight connection.
3. Wrap perforated portion with 1/4" Hardware cloth (NOT SHOWN)
4. Minimum materials needed:
   - Q. 2 (two) 6" PVC - couplings
   - R. 1 (one) 6" PVC cleanout adapters
   - S. 1 (one) 6" PVC cleanout plugs, with 3/4" air hole
   - T. Foot plate, 12" x 12" aluminum, 3/8" thick or other solid, non corrosive material

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Submerged Gravel Wetland Typical Plan/Profile

St. Mary's County
Department of
Public Works & Transportation

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John J. Groeger, P.E.
Interim Director of DPW&T

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