



To: Samer S. Beidas, P.E., CCM

Organization/Company: The Town of Purcellville

From: Douglas R. Kennedy, P.E., Fred D. Ameen Jr., P.E., B. T. Nivas, P.E.

Date: July 16, 2008

Project Name/Subject: **Purcellville Southern Collector – Plan Review – Final Report**

PHR+A Project file Number: 15546-1-0

cc: Sue Wolford

PHR+A has reviewed the Plan and Profile of the Proposed Roadway Improvements for the Purcellville Southern Collector (PSC) prepared by The Louis Berger Group, Inc., for completeness and consistency with current VDOT design criteria. This plan is labeled as Field Inspection (F.I.) Plans and is not dated. Plans at the Field Inspection stage are considered to be 30% complete. In general, the plans need to be revised to meet the current Geometric Design Standards for an Urban Collector Street System (GS-7) of the VDOT Road Design Manual and Standard TC-5.04ULS for a design speed of 40 MPH of the VDOT Road and Bridge Standards. This review is limited to the portions of the PSC between the property owned by Catocin Meadows, LC and Business Route 7, and does not include the review of the round about design at the intersection of Business Route 7.

The following summarizes the design elements that require revisions:

- **Road Design:**

- The beginning of construction per the F.I. plans is at Station 48+66.72, at a proposed centerline elevation of 472.0. However, per the as-built plans (prepared by Zicht Engineering Ltd., dated 7-18-07) for the recently built Purcellville Southern Collector Road, the construction ends at Station 48+11.79 at a centerline elevation of 476.3. The current road design needs to be revised to begin construction at Station 48+11.7 and at an elevation of 476.3. This will result in raising the road by approximately 4.3 ft, which will result in additional fill over the proposed box culvert at \pm Station 53+40, thereby potentially impacting additional stream channel or wetlands in the vicinity of the box culvert. Furthermore the departing grade on the constructed portion of the PSC is at 1.1% whereas the FI plans show a grade of 3.9%. The result of this will further aggravate the additional fill required as well as impact to the stream channel.
 - The super elevation design needs to be revised to reflect current VDOT standards and additional super elevation design parameters need to be included in both road profiles and road cross-sections.
 - The width of the shoulder should be increased to 8 ft, and at locations requiring guard rails the shoulder width should be a minimum of 11 ft.
 - Culvert and storm sewer crossings are not shown on the road profiles.
 - The plans do not contain existing or proposed contours. Although, this may be in accordance with VDOT methodology for plan preparation without that information it would not be possible to go to final design without providing new topography.
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- The typical road section and plan view do not show ditches on both sides of the road. There are cut slopes proposed on both sides of the road, which will require ditches to provide adequate drainage. This will require additional right of way.
 - The Cut/Fill lines are not accurately represented and require revisions.
 - The pavement section is not shown on the typical sections. A pavement section can be determined based on an assumed design CBR value of 6 for preliminary design. However, prior to construction pavement design based on actual CBR values obtained from field run tests of subgrade shall be submitted to VDOT for approval.
 - PHR+A has performed a preliminary design of the road to meet the as-built plans and current Geometric Design Standards for Urban Collector Street System (GS-7) of the VDOT Road Design Manual. The revised horizontal alignment, right of way limits, proposed grading, limits of clearing and grading and typical road section are shown on the attached Exhibits B & C. A preliminary analysis on acreage of right-of-way and easements to be acquired from adjacent property owners is provided. Note that the easement requirements for utilities and stormwater management can only be determined upon final engineering design.
- **Drainage, Storm Sewer & Culvert Design:**
 - We did not find any drainage study report or computations to show the adequacy of drainage systems proposed to convey runoff from 10-year storm event, per the requirements of the VDOT Drainage Manual.
 - No ditch computations were provided to prove the adequacy of the ditches to convey runoff from 10-year storm events, and to propose adequate channel lining to prevent erosion.
 - Without a report or sizing computations all of that work would have to be performed to finish the design
- **Erosion & Sediment Control Design:**
 - The plan does not propose any Erosion & Sediment Control measures or a narrative during construction activities. These measures have to be designed per the Virginia Erosion & Sediment Control Handbook.
- **SWM/BMP:**
 - The plan proposes a SWM Basin on Cole's property, but there are no drainage computations to evaluate whether this proposed pond meets SWM and BMP requirements for this project. It should be noted a SWM/BMP pond associated with the development of Cole's property has been proposed in the same location. This is per the Preliminary Site Plan (TP07-07) for Purcellville Gateway, prepared by Walter L. Philips, Inc. and dated 10-19-07.
 - The SWM/BMP requirements for this portion of PSC can be met by proposing SWM/BMP facilities on both sides of the proposed box culvert. Potential location of these facilities are shown on the attached exhibit, and the size shall be determined upon final engineering design.
- **Roundabout, Business Route 7 & Route 287:**
 - The Preliminary Site Plan (TP07-07) for Purcellville Gateway proposes improvements to Business Route 7, Route 287 and a Roundabout at the intersection of these streets with the
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proposed Southern Collector. The number of lanes proposed at the intersection on the Purcellville Gateway plans is not in conformance with the roundabout design shown on the F.I. plans. This intersection design and improvements to Business Route 7 & Route 287 needs to be coordinated between the two plans.

- **Pedestrian Access /Trail System:**

- The current F.I. plans propose an 8 ft trail within the right of way. The width of the trail needs to be increased to 10 ft to meet the current standards. The trail proposed by the plans for the Purcellville Southern Collector, prepared by Zicht Engineering (IP-2001-0025) shows a 6 ft trail outside the right of way. The trail shown on the F.I. plans need to be revised to connect to this existing 6 ft trail. Further, trail design at the intersection with Business Route 7 needs to be coordinated with the 10 ft trail proposed with Purcellville Gateway plans. Additional planning will be required to provide trail/side walk connectivity to developing properties.

- **Right of Way Data:**

- The right of way data sheet needs to be updated to reflect the acreages of easements and right of way required based on the final design for Purcellville Southern Collector road.

Following are the Exhibits attached with this report:

- **Exhibit A** – PSC from Maple Avenue to Business Route 7 (Scale 1" = 150')
- **Exhibit B** – New construction PSC from Catoctin Meadows to Business Route 7 (Scale 1"=50')
- **Exhibit C** - New construction PSC from Catoctin Meadows to Business Route 7 (Scale 1"=100') on a 11 " x 17" sheet.