Hill Studio, PC – Vinton, Virginia

Downtown Vinton Revitalization Plan

Preliminary Engineering Report

Wiley|Wilson Comm. No. 210020.00

August 10, 2010

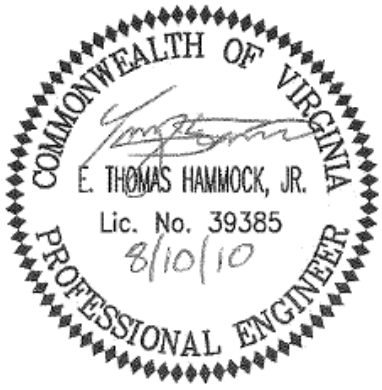
Hill Studio, PC – Vinton, Virginia

Downtown Vinton Revitalization Plan

Preliminary Engineering Report

Wiley|Wilson Comm. No. 210020.00

August 10, 2010



Contact:
E. Thomas Hammock, Jr., P.E.
Senior Civil Engineer
434.947.1632 .direct
434.947.1659 .fax
thammock@wileywilson.com

TABLE OF CONTENTS

Page

This report was prepared solely for the use of the Town of Vinton for this project. It is a statement of professional opinion based on information available at the time of preparation. It represents conditions at a specific time which is identified in the report and these conditions may change. To develop this report, the standard of care applicable to professional services was used.

PROJECT BACKGROUND AND INTRODUCTION

The following report was prepared to analyze potential downtown improvements discussed in the Vinton Downtown Master Plan prepared by Hill Studio, PC. The master plan was prepared to evaluate the downtown area and define various physical improvements to reduce traffic congestion and encourage the economic revitalization of Downtown Vinton. Five priority areas are identified within the master plan: the Washington Avenue Corridor, the Walnut Avenue Corridor and Farmer's Market area, the Vinton Motors property, the Dunman Floral warehouse property, and the Virginia Avenue/Pollard Street downtown gateway. Below is a summary of the possible improvements and the potential impacts to the Town's infrastructure.

EVALUATION OF POTENTIAL IMPROVEMENTS

Washington Avenue Corridor

Washington Avenue is a heavily travelled four lane road on the northern side of Vinton's core downtown area. The improvements as described in the master plan include inserting a landscaped median between the West and East bound traffic lanes, installing pedestrian crosswalks at the intersections, and planting street trees along this corridor. Washington Avenue contains existing public water and sewer lines. These lines are located close to the center of the right of way. The exact location of these lines needs to be verified to avoid the lines being damaged during the installation of the median trees. In addition, the installation of the landscaped medians will require that the travel lanes be narrowed. Minimum median width, according to VDOT Road Design Manual, is 4 feet with 1 foot on either side to the edge of the through lane. This would require a total of six feet of roadway be taken away from the current road width. Washington Avenue is considered an Urban Minor Arterial Street and has a posted speed limit of 25 MPH. VDOT Road Design Manual, Appendix A, page A-13 lists minimum lane widths as 11 feet. The Road Design Manual states that lane widths should be 12 feet at all interchanges or if the design year ADT Exceeds 2000. Making the total required width of the roadway 54 feet. The width of the existing roadway should be verified prior to the design of these improvements. Because of the requirements of the VDOT Road Design Manual, the Town may have to fill in the gutters with asphalt to offset the median and shrink the lane widths to 11 feet from their current 12 feet. This will most likely lead to a series of meetings between, the Town and the Consultant Team.

Based on a review of both street view photos and mapping provided by Hill Studios, this roadway appears to have a crown at the center. This directs storm water runoff to the existing inlets located on both sides of the road. The installation of a center median should not affect existing drainage patterns and will not require additional inlets to be installed within the proposed median. A field survey should be performed prior to the design of these improvements to verify existing drainage patterns and adequacy of the existing storm water system. As with any streetscape improvement project, all underground utility size, age, and condition should be verified within the project area. Once verified, any required utility replacements could be incorporated into the planned improvements for the Washington Avenue corridor.

Walnut Avenue Corridor and Farmer's Market

The Walnut Avenue Corridor and Farmer's Market improvements include expansion of the farmer's market and increased parking, realignment of the intersection of Walnut and Lee Avenue, and removal of the post office entrance near the intersection of Lee Avenue and Pollard Street. The farmer's market property has access to public sewer and an 8-inch waterline located in Lee Avenue. Depending on the building and parking lot layout chosen for this property, the existing 1 ½-inch waterline may need to be relocated to avoid being under proposed buildings or structures. Any new building will likely require a 6-inch fire line to supply the fire suppression system. With the removal of the existing residences located at the western end of Lee Avenue, the existing sewer in this portion of the road could be abandoned. Storm water quantity and quality issues will have to be addressed during the design of these improvements with a 10% pollutant removal being required. Various best management practices will be evaluated including landscaping, bioretention basin, extended detention basin, grassed swales, and manufactured BMP systems. The realignment of the intersection and the removal of the post office entrance will improve traffic flow in the area and will reduce the congestion within the intersection of Lee Avenue and Pollard Street.

Also discussed in the master plan immediate implementation section is a less expensive approach to addressing immediate concerns for this area. It includes placing the "winter market" in the existing storefront at the corner of Washington and Pollard, realigning some of the parking area around the farmers market, and keeping the parking open between the post office and Lee Avenue, but making this an exit instead of an entrance. This option will also reduce traffic congestion in the intersection and enhance the aesthetics by providing streetscape improvements and landscaped/grassed islands within the parking areas.

Vinton Motor's Property and Dunman Floral Warehouse Property

The Vinton Motor's Property and Dunman Floral Warehouse properties have been identified by the master plan as being prime properties for renovation and/or redevelopment. Portions of Downtown Vinton have reported experiencing water supply issues that deterred development. The issue has not been water pressure, but water volume. The average static pressure is 90 psi, which is adequate for most uses. However, 4 and 6 inch diameter waterlines located throughout the downtown area reduce the ability to supply large volumes of water while maintaining adequate system pressure. Friction losses within the smaller lines can be significant at high flow rates, thereby limiting the volume delivered to a specific site. In 2001, an 8-inch waterline was installed along Pollard Street from Cleveland to Washington Avenue alleviating some concerns regarding available flow rates. This waterline is adjacent to both properties and should be capable of supplying the water demands that will be associated with renovation and/or redevelopment. It is recommended that the existing water system be modeled using WaterCAD or equivalent modeling software. Based on the results, additional models should be created using estimated water demands for the renovated properties. Once a firm design concept is established, water demands can be calculated and system adequacy verified.

Fire flow requirements vary, depending on the planned use, and may limit redevelopment opportunities. Should modeling outputs indicate inadequate flow availability, several system improvement options should be considered. Initial recommendations include extending the existing 6-inch line on South Maple Street approximately 100 feet, and connect to the existing 6-inch line at the intersection of Washington Avenue. Approximately 360 feet of new 8-inch waterline should be installed along Jackson Street from Maple Street to Pollard Street. Both would create a full waterline loop around the project areas and could be completed as part of the site improvements to the Vinton Motors and Dunman Floral Warehouse properties respectively. These scenarios should be incorporated into the water model during the preliminary design phases to verify that required fire flows can be achieved by the improved water system. If the fire flow demand exceeds the capacity of the improved system, additional system upgrades would be required. Because the largest diameter line supplying the downtown area is 8 inch, the line would need to be upgraded back to the tank. The cost associated with upgrades of this magnitude would make that type of property use impractical. Both properties are served by a recently replaced public sanitary sewer line located within the adjacent right of way of Pollard Street. It is anticipated that most developments would not exceed its capacity.

However, this should be verified during the planning phase of a renovation or redevelopment project.

These sites have a significant amount of existing impervious area comprised of rooftops and asphalt paving. Storm water quantity will not have a major impact on the site improvements as the impervious area footprint will remain the same or may be reduced depending on the final planned improvements. However, storm water quality must be addressed when site renovations are being designed. Various best management practices to accomplish water quality initiatives are listed in the previous section. The existing public storm sewer system that will most likely be connected with the development of the Dunman Warehouse property will need to be located and its condition and capacity verified during the design of this development. The storm system begins at the intersection of Cleveland Avenue and Pollard Street and flows across private property to the Walnut Avenue and First Street intersection. From this point the system continues across private property, perhaps under building additions, to its discharge location along the railroad. This system has been noted as having numerous pipe failures/repairs and overflows during past rain events.

Virginia Avenue/Pollard Street

Virginia Avenue is the most heavily traveled four-lane road in the Town of Vinton. Improvements indicated for this corridor include adding signage to inform commuters of the downtown area and the realignment of the intersection of Pollard Street with Virginia Avenue. This intersection is listed in the Town's comprehensive plan as one of three key intersections in the Town. Two options for the realignment are described in the master plan. Each will require the Town to acquire additional right of way. As part of the roadway realignment project the existing 4-inch waterline located within Pollard Street should be replaced with an 8-inch line. This line should be located within the new right of way and extend from Cedar Avenue to Virginia Avenue.

REPORT SUMMARY/COST GUIDELINES

The master plan identifies five locations for physical improvements within Vinton's core downtown area. Each location was chosen for its potential impact to the downtown area in reducing traffic congestion and/or encouraging economic revitalization. Because these projects are in close proximity to one another, the design for each project should consider improvements to vehicular traffic flow, parking, and pedestrian foot traffic and how each project can be designed to benefit the other while improving the downtown area. Impacts to the Town's utility infrastructure vary with each area. During the design of each improvement the public utility infrastructure in the vicinity of the project should be located, inspected, and its capacity to serve the project needs would be verified. This will include surveying to determine location, modeling and flow testing of the existing waterlines, CCTV inspection of existing storm and sanitary sewer lines. Estimating project costs prior to determining needed improvements would be difficult. Once the improvements move forward from a conceptual stage to engineering design, a more specific estimate can be prepared. Provided below is a guide to typical costs for these types of improvements. Unit costs include a 25 percent markup for project related cost (survey, design, easements, construction administration, shop drawing review, inspection, and Record Drawings) and a 15 percent project contingency cost.

Table 1: Costs for Typical Civil Construction Items

Item No.	Description	Unit	Unit Cost
1.	8-INCH PVC SEWER - IN ROAD	LF	$185.00
2.	8-INCH PVC SEWER - OFF ROAD	LF	$160.00
3.	15-INCH CLASS III RCP - IN ROAD	LF	$200.00
4.	18-INCH CLASS III RCP - IN ROAD	LF	$210.00
5.	24-INCH CLASS III RCP - IN ROAD	LF	$250.00
6.	STORM INLET - IN ROAD	EA	$8,200.00
7.	15-INCH CLASS III RCP - OFF ROAD	LF	$185.00
8.	18-INCH CLASS III RCP - OFF ROAD	LF	$195.00
9.	24-INCH CLASS III RCP - OFF ROAD	LF	$240.00
10.	STORM INLET - OFF ROAD	EA	$4,310.00
11.	6-INCH WATERLINE – IN ROAD	LF	$180.00
12.	8-INCH WATERLINE - IN ROAD	LF	$190.00
13.	8-INCH WATERLINE - OFF ROAD	LF	$175.00
14.	2-FOOT COMBINED CURB AND GUTTER	LF	$85.00
15.	CONCRETE DRIVEWAYS AND ENTRANCES	LF	$75.00
16.	CONCRETE SIDEWALK	LF	$45.00
17.	HANDICAP RAMP, R-20	EA	$450.00
18.	PAVEMENT PROFILING, 1-1/2 INCH THICKNESS	SY	$5.00
19.	PAVEMENT OVERLAY, 1-1/2 INCH THICKNESS	TN	$125.00

FINANCIAL ALTERNATIVES

The improvements discussed will require a capital funding source. Projects can be financed through bonding, low-interest loans, or grants. There are various federal, state, and private entities that provide funding for these types of projects. The more typical sources are the state revolving loan funds and/or community development block grants (CDBG). The clean water and drinking water revolving funds, CWRLF and DWRLF, usually require a more detailed PER than what is required for CDBG funding. In development of a capital improvement and financing plan all sources should be considered.

Wiley|Wilson®
Constant Progress

LYNCHBURG
127 Nationwide Drive
Lynchburg, Virginia 24502-4272
434.947.1901

RICHMOND
6606 West Broad Street, Suite 500
Richmond, Virginia 23230-1717
804.254.7242

ALEXANDRIA
2550 Huntington Avenue, Suite 310
Alexandria, Virginia 22303-1410
703.329.3200

wileywilson.com