CITY OF CHARLOTTESVILLE, VIRGINIA
CITY COUNCIL AGENDA

Agenda Date:	July 21, 2014
Action Required:	Approval of Resolution
Presenter:	James E. Tolbert, AICP, Director
Staff Contacts:	James E. Tolbert, AICP, Director Tony Edwards, City Engineer
Title:	**Belmont Bridge – Alternative Selection**

Background: At the June 16, 2014 City Council meeting, a public hearing was held on the four alternatives for the Belmont Bridge Replacement.

- In-Kind Bridge Replacement
- Enhanced Bridge
- Arch Bridge
- Underpass

Rather than make a decision Council asked for additional information and deferred action until the July 21, 2014 meeting. The discussion section below attempts to answer those questions and provide additional information.

Discussion: There are essentially four alternatives under consideration. Those are:

- In-Kind Bridge Replacement – This is the original project that was to simply replace the bridge using the identical foot print to the existing bridge. It could have more of the surface dedicated for pedestrians and bicycles within its existing section. Plans for this bridge are at 35% complete.

- Enhanced Bridge – This concept shortens the existing bridge span from over 440 feet to approximately 205 feet with a traditional highway bridge with horizontal girders supported by piers. The bridge would have two traditional abutments at each end and two sets of piers to support the bridge in three spans. The traditional steel girders

which flank each face of the bridge below the roadway deck could be hidden from view by providing ornamental treatments or the girders could be wrapped in architectural pre-cast.

- Arch Bridge – This concept shortens the existing bridge span from over 440 feet to approximately 205 feet with a steel network arch bridge. The bridge would have two traditional abutments at each end with no piers and is a single span bridge. The bridge has pre-tensioned floor beams and precast, with stay-in-place deck panels. All the bridge steel would be painted in a high performance paint to minimize maintenance and any staining.

- Underpass – This is the concept presented by Jim Rounsevell and Siteworks. It consists of three bridges going underneath Water Street, the railroad, and the access road south of the tracks. The plan also calls for a pedestrian bridge to the west of the underpass.

Below is a comparison of the alternatives. Also attached is the matrix prepared by Councilor Galvin.

Costs – Independent cost estimates have been prepared by Mr. Chris Weatherford of Barton Malow at the request of City Staff. He took available plans or concept drawings, talked to the designers and prepared the estimates based on his vast experience in construction management. Below are his estimates.

Alternative	**Estimated Cost**
In-Kind Replacement	$15,712,800
Enhanced	$17,209,600
Arch	$18,866,100
Underpass	$27,422,340
Pedestrian Bridge	$3,500,000

There has been confusion around the contingency costs applied to each of the alternatives. The chart below shows the percentage assigned to each alternative as well as the escalation percent used.

	Replacement	Enhanced	Arch	Underpass
Contingency				
Design	5%	10%	10%	16%
Subsurface	2%	2%	2%	2%
Construction	10%	10%	10%	10%
Escalation	5%	8%	8%	8%

The area where there is a difference is design contingency. This is because the bridge designs are further along in the process and there are essentially no unknowns for the bridge in subsurface work.

Long-Term Costs – Several of the public hearing speakers raised the issue of long-term cost associated with the bridge versus underpass option and stated that the long-term cost would be greater for any of the bridge options. Although a study was cited by the staff report and is referenced on Mr. Rounsevell's project web site it is really not a great comparison because it looks at bridges and tunnels as crossings for water bodies. When I spoke to Mr. John Lynch, Culpeper District Administrator with VDOT, his response was that from what he knew of the projects this was really a question of comparing a bridge to bridges. The bridge options are on larger bridge structure while the underpass is simply three smaller bridges, with the addition of a pedestrian bridge. He felt that a reasonable approach would be to consider the life-cycle cost relatively equal based on his project knowledge. Mr. Weatherford has indicated that he concurs with this thinking.

Dedicated Pedestrian Zone

Alternative	On Primary Structure	Secondary Structure
In-Kind	15/10 unobstructed	n/a
Enhanced	15/10 unobstructed	n/a
Arch	15/10 unobstructed	n/a
Underpass	11' – 6"	10' – 15'

While the underpass contains sidewalks there are general concerns from the public about walking under structures. Additionally the grades to Market and Graves Street will be steep and non-ADA compliant.

Bicycle Zones

Alternative	Bicycle Zone Width
In-Kind Bridge Replacement	10’
Enhanced	10’
Arch	10’
Underpass	5’

Again, the very steep grade for bicycles for the underpass option is a concern that must be acknowledged.

Pedestrian Access to the Mall – All three bridge options provide wider sidewalks and maintain the connection currently through the Pavilion. The bridge designs have a possible alternative connection that would wrap around the transit center and connect to the Mall outside the Pavilion leased area. This can be considered if the closure of direct access during paid Pavilion events is an issue.

The Underpass Pedestrian Bridge option is shown to tie into the Pavilion within the leased area. It will not provide access during events. Instead pedestrians will be directed to Water Street and back to the Mall by the steps adjacent to the Transit Center.

Grades – An area that has recently gained some clarity is the grade from the bridge or underpass to both Market and Graves Street. Mr. Rounsevell has provided a drawing that shows that his design can meet AASHTO standard grades of 9%. However, that drawing does not meet other design criteria such as vertical curvature. The standards that must be met for this type of road, a Urban Principal Arterial with a 30 mph design speed are as shown below:

Alternative	Max. Grade	Min. Site Distance	Railroad Clearance	Minimum Radius
Bridges	9%	200’	24’ over	273’
Underpass	9%	200’	16.6 under	273’

City staff as well as MMM engineers have analyzed the grades using the available data provided from Mr. Rounsevell and have prepared drawings showing the bridge grades. There is a slight margin of error with the underpass grades because the drawings are not

as far along, but given the fixed elevations of the roads and the railroad we believe the numbers are very close.

Alternative	Grade to North w/forced tie-in	Grade to Levy w/forced tie-in
In-Kind Replacement Bridge	4.24	5.05
Enhanced or Arch	4.24	5.05
Underpass	12.85	8.81

This shows a forced tie in of the underpass at Market Street and Graves Street. When the correct AASHTO standards are applied so that all standards are met, it appears that Avon/9th Street will tie into grade approximately 158' north of Market Street or adjacent to the Western Union Building leaving a drop of 11' 8" in the Market/9th Street intersection. This would require additional grading of Market Street in both directions and possible regrading of the adjacent businesses. These costs are not included in the underpass estimates.

Mr. Rounsevell had an engineer provide drawings which were presented to you at your last Council meeting. These show that the grade is at 9% for most of the length from the underpass to both Market and Graves. However it is important to note two things when this drawing is analyzed.

- The depth of the structure shown is only 2.7 feet rather than the 4 feet that Mr. Rounsevell has stated would be required to support the railroad. In our own analysis we have accepted the 4 foot depth as a minimum requirement. This difference impacts grades in a way that makes the underpass appear more constructible.

- While the drawing shows the grade at 9% it also indicates that when Avon meets Market Street it will be approximately 3 feet below Market Street and when it meets Graves Street, it will be 6 feet below Graves.

Staff is working to have a series of drawings for you at the meeting that are all at the same scale. Drawings we will provide include site plan, street section, profiles, and elevations.

Community Engagement: There has been a great deal of citizen engagement throughout this project with the three most recent meetings held on:

- September 21, 2013
- April 23, 2014
- May 8, 2014

At the most recent meetings, attendees were asked to provide comments either in writing or through the web site. Additionally a public hearing was held at the June 16, 2014 City Council meeting.

Alignment with City Council Vision and Priorities: This agenda item aligns with the City Council Vision to be a Smart Citizen Focused Government.

Budgetary Impact: The relative cost of the four options was outlined above. While the VDOT budget for the project is approximately $13 million, all options exceed that amount by a range of $2 million to $17 million.

Recommendation: Attached are two resolutions for City Council to consider. One is the staff proposal to proceed with the Enhanced Bridge option. We believe this option addresses the community desires for an enhanced bridge as summarized from our meetings held on November 21, 2013 to ask the question, "What are Your Goals and Expectations of an Enhanced Bridge". Those comments are summarized below:

- Bridge is the Gateway into the City
- Maintain 25 MPH Speed Limit
- Two lanes – one in each direction
- "Should be a Pedestrian Experience"
- Views from the Bridge are Spectacular
- Design Approved – Innovative, entertaining
- Improve North & South Intersections along 9th Street
- Separate Pedestrian zone from vehicle & Bike Zone
- Reduce Span
- Enhance the Replacement Bridge Design
- Create New Approaches to the Design of the Replacement Bridge
- Accent Lighting to showcase Bridge
- Bike Lanes 10.0', Pedestrian Lanes 10.0', Traffic Lanes 11.0'

We also believe this option is cost effective and provides an improved connection to neighborhoods on both sides. It is a responsible use of public funds.

Additionally, we believe the design team should explore the alternative pedestrian connection that goes around the Transit Center to the Mall. There are design considerations that could eliminate this as well as costs but we feel it should be explored.

If City Council agrees with this direction it is staff's intent to convene the Steering Committee and refine the design, gain a Certificate of Appropriateness from the BAR, and proceed to final construction drawings. We will also work to narrow the gap of funding that was discussed at the public hearing.

Although the underpass concept is very compelling we do not believe that it is the appropriate response for the following reasons:

- The underpass option is not a viable alternative for bikes and pedestrians without the pedestrian bridge that is shown in the proposals. The cost of the pedestrian bridge is estimated at $3.5 million by Mr. Rounsevell and is not included in the underpass estimate. Another concern is that the bridge lands within the Pavilion lease area rendering it not useful during Pavilion events.

- The bridge option has a Categorical Exclusion environmental classification. According to the VDOT Culpeper regional office, "Design and construction of an underpass would change the scope of the existing bridge replacement project and would likely result in a change to the current project's Categorical Exclusion environmental classification and increase the project's cost. Any CTB funding requested above the current allocations to the bridge replacement project would be subject to prioritization as required by HB 2. Given that the details of HB 2 have not been worked out, it is unclear how an underpass option would fare in the prioritization process".

- The agreement with LexisNexis contains a required $1 million payment should the tunnel to their building from the downtown mall be closed. The underpass option requires closure of the tunnel.

- The underpass option will require closure of Avon/9th Street for a period of time. Mr. Rounsevell feels that the closure will be for six months. City Staff and Barton Malow believe it will be for much longer. The enhanced bridge can be constructed with no complete closure to traffic.

- The bridge design can be ready to move to construction in approximately 12 months. Given the need for environmental documents, design, and additional funding the underpass will likely require well over 24 months before construction can begin. This is an important issue because of the condition of the bridge. In 2004 the estimate for complete repair was at $1,800,000. Although some work was done repairs were not made to the structure and staff believes that the costs would be at least as great now. In addition, just a few years ago, there was an estimate of $300,000 to repair the sidewalk on the east side of the bridge. That work is still necessary and the west sidewalk is now in poor condition. Additional delay could force closure or substantial repair of both sidewalks and/or weight limiting the bridge.

- The cost estimates for the underpass do not include the pedestrian bridge. It has been admitted that the underpass does not work for pedestrians without the pedestrian bridge and it is of little use to pedestrians traveling north or east. The cost is an estimated additional $3,500,000.

- We do not know the exact requirements of the railroad for an underpass. While we have basic information, until plans are developed their exact requirements are not known. What we do know from experience is that their permit process is lengthy and costly, that they will require the tracks to remain open at all times, that they will most likely require a bypass track which is not in the cost estimate, and that their requirement for flagging will add major costs to the project. None of these are issues for the bridge construction.

- The staff does not believe the underpass can be constructed to meet AASHTO standards and complete the connections to Market Street to the north and Graves or Levy to the south.

- One issue that has not been discussed is concern about increased Pavilion noise. With the bridge the retaining wall behind the stage and the hill on the south side provide some degree of noise protection. With the underpass there is nothing between the Pavilion and the properties to the east, and the hill is lowered which impacts noise spill over to the south. Additionally, the underpass will place vehicles at or just below the stage elevation which would prove to be a problem for performances.

For all these reasons, staff believes we should proceed with the enhanced bridge.

The second resolution is one proposed by Councilor Galvin. This resolution calls for a new design team and a new steering committee to essentially start over the design process. This would require the termination of the MMM Design contact of which approximately $450,000 has been paid.

Alternatives: Essentially all alternatives are outlined in the memo above. One alternative that has been mentioned that has not been discussed is to use the funds allocated for the bridge replacement for the repair of the Belmont Bridge and other bridges. Staff explored this with VDOT and was told that could only happen after opening each bridge repair as a project and then having those go through the state prioritization process. Since the decision has already been made that the Belmont Bridge should be replaced rather than repaired, it is doubtful that VDOT would agree ten years later to fund only repair.

Another alternative as suggested by Councilor Szakos, would be to have MMM Design Group expand their team to include an urban design firm and a community engagement team member. Rather than do like was done before and pick a team member to add, we could require them to add their team member of their choice with our approval. This could avoid the lack of teamwork that occurred previously.

Attachment: Issue Summary Table
Resolutions
Drawings

Resolution

Be It Resolved by the City Council of the City of Charlottesville that staff be directed to proceed with the completion of all construction documents for the

- Enhanced Bridge

Be It Further Resolved that staff be directed to put together a funding plan for closing the gap with VDOT funding and bring it to Council.

Adopted this 21st day of July, 2014

Resolution

Be It Resolved by the Charlottesville City Council that staff be directed to proceed with the completion of all construction documents for a new, Belmont Bridge that will be well-designed, well-functioning, multi-modal, and a memorable addition to the built landscape of Charlottesville.

Be It Further Resolved that the city staff (including but not limited to the urban designer, bike ped. coordinator, engineer, and director of Neighborhood Development Services-NDS) be directed to:

- Terminate the contract with the current engineering firm and its architect in order to make way for a new, well-integrated Design and Engineering Team to design, engineer, draw, engage the public and provide construction administration services for a well-designed, well-functioning, multi-modal, memorable bridge to replace the existing infrastructure;
- Work with five (5) members of the Belmont Bridge Steering Committee appointed by Council (two of whom shall be design professionals from the PLACE Design Task Force) to build upon the extensive research and community feedback collected to date and craft an appropriate project scope and Request for Proposal (RFP) for comprehensive design and engineering services;
- Work with the same five (5) members of the Belmont Bridge Steering Committee cited above to select the most qualified and appropriate team among candidates solicited from the AIA, ASLA, and other professional design and engineering organizations.
- Work with the full Belmont Bridge Steering Committee as a sounding board for the selected Design and Engineering Team, from schematic design phase through construction.
- Put together a plan for closing the gap with VDOT funding and cap project construction cost at $20 million, not including design and engineering fees.

Adopted this 21st day of July, 2014

	Bridge Replacement	Underpass	Enhanced Bridge	Bow Arch Bridge
Schedule/Sequencing	18 months after design & bidding	28 months	18 months after design & bidding	16 months after design & bidding
# Bridges	1 (with 440' span)	3 + 1 pedestrian	1 (with 205' span)	1 (with 205' span)
Zone Dimensions (each direction)	Pedestrian – 7' east side and 10' west side Bike – two at 4.0' Roadway – 3 lanes at 11.0' each plus a 6' median	Requires the pedestrian bridge to accommodate non-vehicles? Non-vehicles can use the underpass.	Pedestrian – 10' Planting/Furnishig-5' Bike – 10' (3" higher than the road surface)	Pedestrian – 10' Planting/Furnishing – 5' Bike – 10' (3" higher than the road surface)
Constructability	Bedrock could affect installation of piers & abutment. Need a geotech report. A heavy duty 42" tall concrete vehicle barrier is included.	Bedrock could affect installation of piers & abutment. Need a geotech report. New road geometry must maintain required clearances from the 3 bridges (for the railroad, Avon and Water).	Two abutments and two sets of piers. Includes a heavy duty 42" tall concrete vehicle barrier ("cathedral" design with 4" wide openings). The "cathedral" barrier is one option.	Two abutments but no piers. Includes a heavy duty 42" tall concrete vehicle barrier ("cathedral" design with 4" wide openings.) The "cathedral" barrier is one option.
Logistics	Allows reconstruction without completely redirecting traffic or changing the railroad schedule	The 3 bridges must be in place before the underpass is built. Rail lines and Water St. will require temporary constructions to reroute traffic. City will be responsible for providing uninterrupted rail service. Avon and parking lot must be closed. Existing bridge must be demolished in 2 phases. Requires closing the Lexus tunnel and extensive regarding.	Allows for construction without completely redirecting traffic or changing the railroad schedule. Construction will be in two segments, first segment, east traffic lanes, second segment west traffic lanes.	Construction will require the rerouting of traffic for 16 months. Will not change the railroad schedule.
Risks & Impacts	Subsurface unknowns and rerouting traffic	Subsurface unknowns and rerouting traffic. Coordination of existing utilities and a large pump station are required.	Subsurface unknowns & rerouting traffic.	Subsurface unknowns & rerouting traffic.

Total Cost	$15,712,800	$27,422,340 +$3,400,000 – ped. bridge	$17,209,600 $795,000 ped. bridge	$18,866,100 $795,000 ped. bridge
City Share	$3.2 million	$14.9 million	$4.7 million	$6.1 million
Contingency (% direct cost)	Design – 5% Subsurface – 2% Construction – 10% Escalation – 5%	Design – 16% Subsurface – 10% Construction – 10% Escalation – 8%	Design – 10% Subsurface – 2% Construction- 10% Escalation – 8%	Design- 10% Subsurface – 2% Construction – 10% Escalation – 8%

This page intentionally left blank.