

Woodrow Wilson Bridge Project

Implementation of Noise Abatement Recommendations

William Bowlby, Ph.D., P.E.
Bowlby & Associates, Inc.

June 25, 2007
City of Alexandria



Bowlby Work Scope

- Hired by City in November 2000 to review initial VDOT noise analysis, effect of reducing width of Washington Street Urban Deck, and effects on Jones Point Park
- Raised some questions and recommended re-analysis in some areas
- Briefed city officials in public forum in November 2000
- Met with WWB Neighborhood Task Force in December 2000
- Reviewed noise barriers approved by VDOT chief engineer, and recommended changes



Bowlby Work Scope (cont.)

- Convinced VDOT to reclassify Yates Gardens area
 - Impacted by proposed project's noise
 - Noise barrier is feasible and reasonable in accordance with VDOT noise policy
- Advocated barrier on part of bridge structure to protect Yates Gardens area, supporting concept of transparent acrylic barrier to maintain view
- Met with Federal Highway Administration, City and Project consultant's officials and staff in May 2001 to review Bowlby recommendations for revised abatement plans

Bowlby Work Scope (cont.)

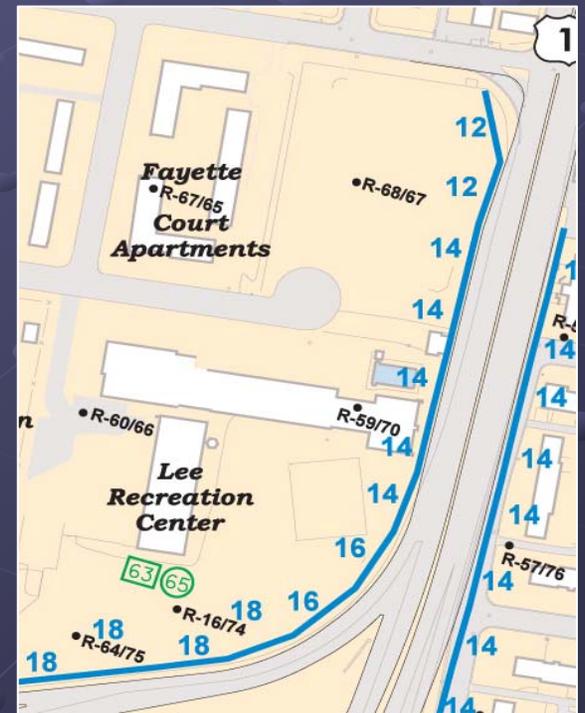
- Met with Neighborhood Task Force in May 2001
- Met with VDOT officials and staff in June 2001 to appeal decision for no barrier on the bridge
- Provided alternative acoustical designs for bridge noise barrier
- Reviewed some construction noise measurement data and provided construction noise control ideas to the City
- Recently reviewed VDOT noise barrier construction plans

Main Noise Barrier Recommendations

- Based on May 2001 meeting of City and Bowlby with Project consultants and Federal Highway Administration officials
- Recommendations and subsequent VDOT actions are summarized on the following slides

Route 1, West Side - Lee Recreation Center, Pool, Recreational Fields and Courts, and Fayette Court Apartments

- **Recommendation:** *Increase planned barrier height near baseball field and pool from 8 feet to 14 feet.*
- **✓ VDOT action:** Done. Heights greater than shown on north end.
- **Recommendation:** *Increase barrier height near tennis court and basketball court from 14 feet to 18 feet.*
- **✓ VDOT action:** Done.





**View looking northwest across Route 1 toward recreational fields
and Fayette Court Apartments**

Route 1, East Side along Patrick St.

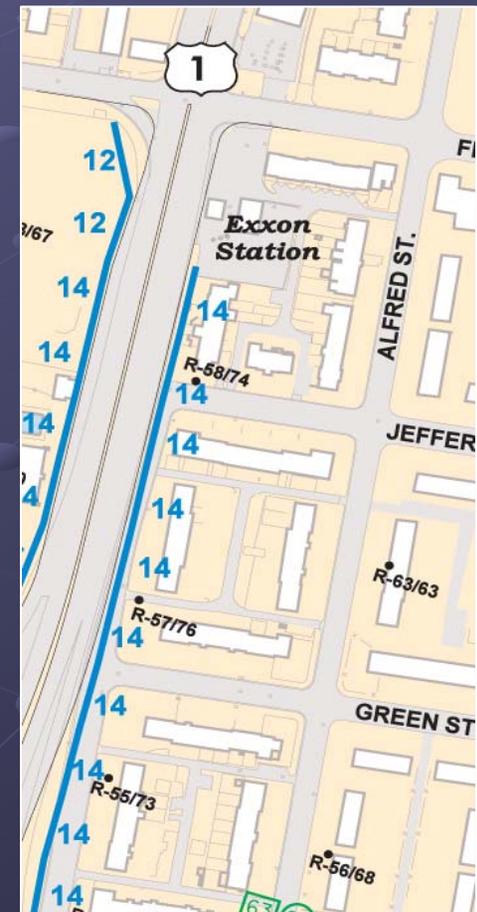
Church Street Exit Ramp

Northwest Trail (Freedmen's Cemetery Park)



Route 1, East Side along Patrick Street

- **Recommendation:** *Increase height of barrier along Patrick Street by 2 to 6 feet, resulting in total height of 14 feet above U.S. 1 pavement.*
- **✓ VDOT action:** Done.
- **Recommendation:** *At north end, consider extending barrier eastward 30 feet off state right-of-way along property line between Exxon station and townhouses.*
- **✓ VDOT action:** Not done. Many issues, relatively small benefit.





View looking north along Patrick Street on east side of Route 1



Highway side of Patrick Street noise barrier showing yet-to-be-stained sound-absorbing brick pattern

Church Street Exit Ramp

- **Recommendation:**
Extend barrier on west side of ramp farther north and east along edge of ramp to help minimize noise coming through gap to homes along Church Street.
- ✓ VDOT action: Done. Eastern end is taller in height and shorter in length than shown to accommodate construction needs.





View looking southwest at Church Street noise barrier



View looking south at bend in barrier along Church Street



View looking southwest at east end of Church Street barrier near top of westbound exit ramp



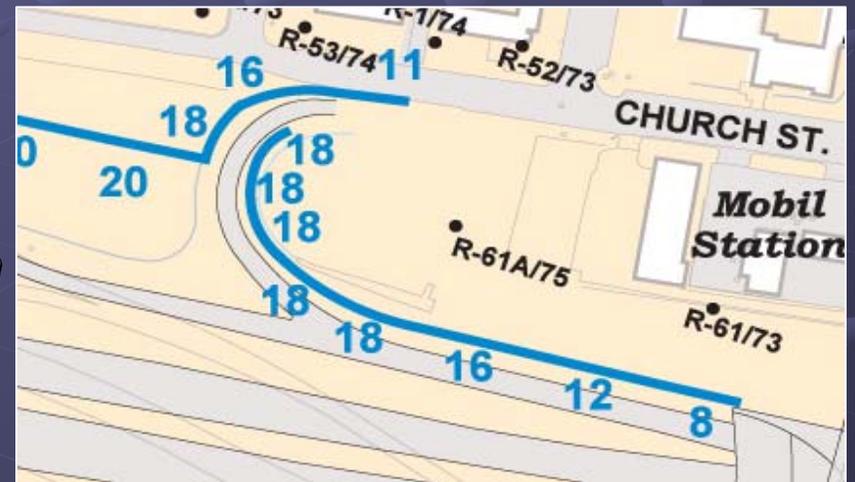
**Temporary wooden noise barrier along south edge of Church Street
by exit ramp**

Northwest Trail (Freedmen's Cemetery Park)

● Recommendation:

- *Planned barrier along south side of Church Street does not protect planned Freedmen's Cemetery Park.*
- *Shift noise barrier to atop retaining wall for park, starting at Washington Street deck.*
- *Extend barrier west and north to protect planned park path and to minimize size of gap in barrier system for ramp.*

- ✓ VDOT action: Done. Heights on western half greater than recommended (not shown).





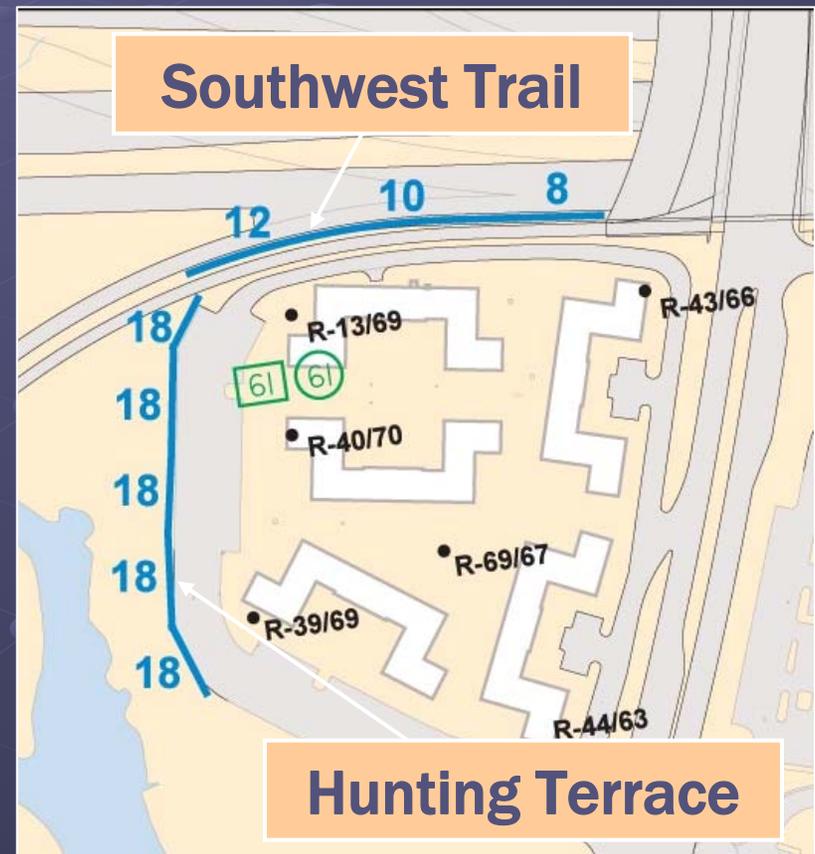
View looking south at yet-to-be-completed barrier system for Freedmen's Cemetery park and westbound exit ramp



View looking west from Washington Street along Freedmen's Cemetery Park noise barrier

South Side, Hunting Terrace

- **Recommendation:** Consider reducing length of overlap of the two barriers.
- **✓ VDOT action:** Done. Western end taller than recommended (not shown).
- **Recommendation:** Consider reducing height of barrier along parking lot from 20 feet to 18 feet; consider eliminating southern-most segment.
- **✓ VDOT action:** Left height and length as designed (not shown).





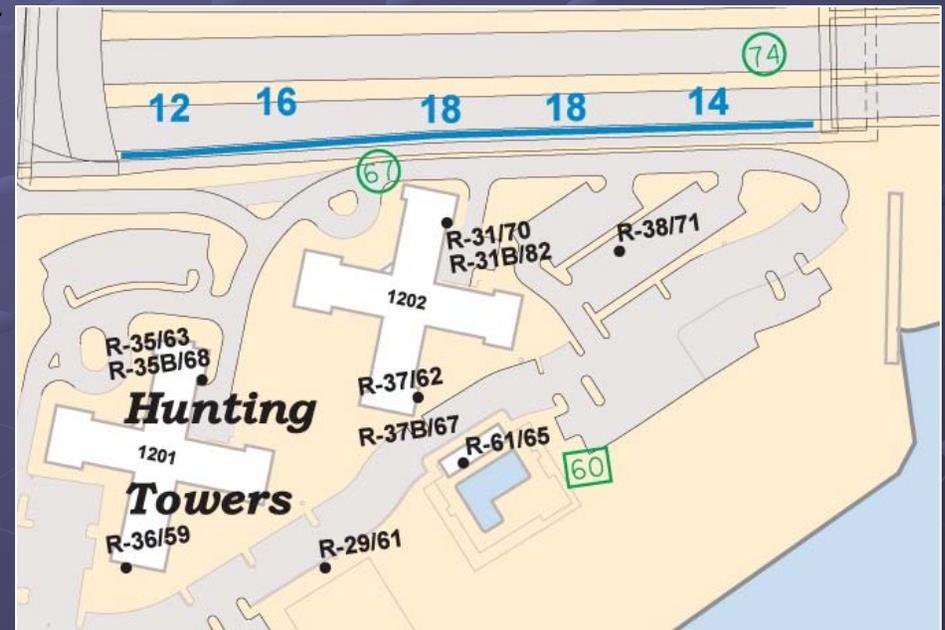
View looking north at Hunting Terrace barriers (parking lot and Southwest Trail)



View looking northeast at Southwest Trail barrier for Hunting Terrace

Southeast Trail (Hunting Towers)

- **Recommendation:** *Consider sound insulation for apartments that will still have interior noise impacts, such as windows, balcony doors, balcony enclosures.*
- **✓ VDOT action:** Not done. Not allowed in VDOT noise policy. Ineligible for Federal funding.
- **✓ VDOT action:** Made center parts of barrier taller than Bowlby recommended.
- **✓ VDOT action:** Made highway sides of retaining walls to be sound-absorbing (all four quadrants).





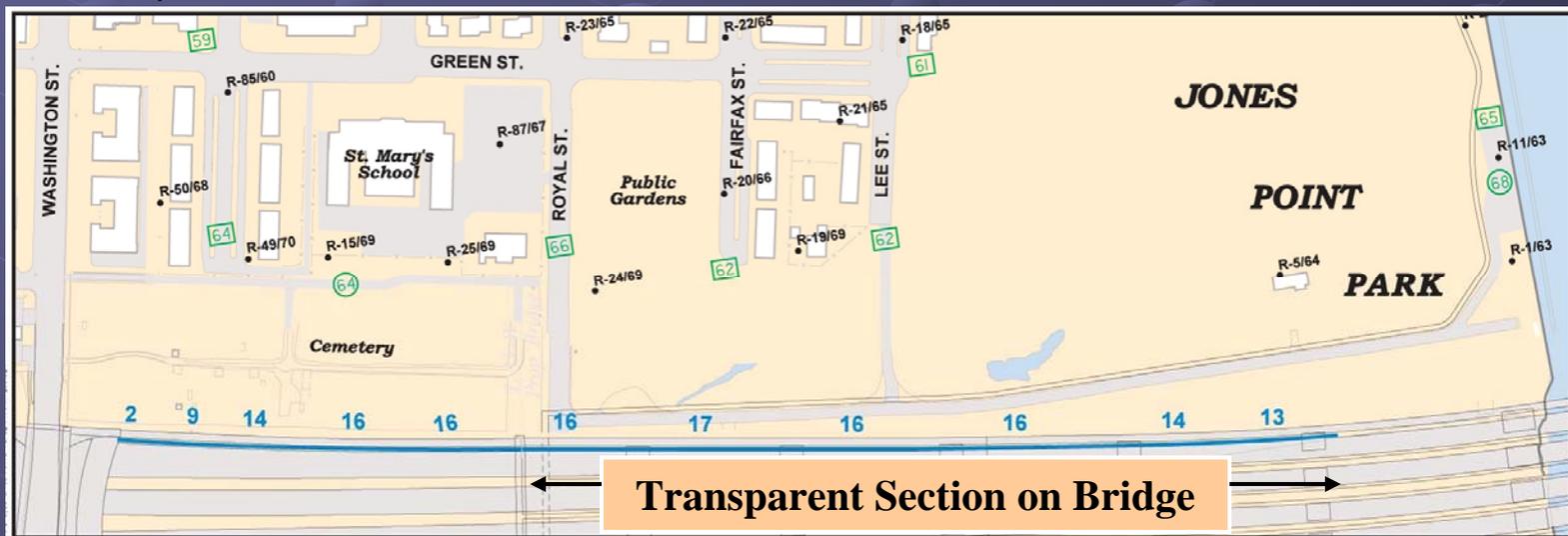
**View looking west near east end of Southeast Trail barrier for
Hunting Towers**



View looking east at Southeast Trail barrier for Hunting Towers with sound-absorbing retaining wall

Northeast Trail

- **Recommendation:** *Extend planned noise barrier from proposed end at Royal Street eastward for approximately 1,300 feet on bridge, with height ranging from 14 feet near Royal Street to 8 feet at eastern end, using transparent, acrylic noise barrier material.*
- **✓ VDOT action:** Done, actually longer and taller (not shown).





View looking east from Washington Street deck at Northeast Trail barrier under construction



Artist's rendering looking south from Jones Point, with Bowlby's addition of transparent noise barrier framing

Summary

- VDOT responded positively to almost all of Bowlby's recommendations
- VDOT exceeded Bowlby's recommendations in some areas –
 - Added height on Southwest and Southeast Trail barriers
 - Sound absorption on highway retaining walls in all four quadrants near deck
- Noise barrier plans met or exceeded recommendations, and appear to have been built as designed