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**Subject:** RE: MASH Implementation Coordination Effort - Virginia

Below are the VDOT research needs.

**Research:**

- 1) Standard terminal wall at each test level.
- 2) Design of an optimized terminal wall to accept 31" w-beam to three-beam stiffness transition.
- 3) Confirm that Railings passing TL-4 NCHRP can be treated as crash tested railings under MASH where TL-3 railing is warranted.
- 4) BR27: update and modification of the following barriers in Part 3 of FHWA memo dated 5/30/1997:
  - 3-16 BR27D-two steel rails on 18" concrete parapet w/ curb and sidewalk TL-2 (modify rails to meet AASHTO spacing requirements for pedestrian railings)
  - 3-17 BR27D-flush-mounted TL-2
  - 3-18 BR27C-single steel rail on 24" concrete parapet w/ curb and sidewalk TL-4 (modify rails to meet AASHTO spacing requirements for pedestrian railings)
  - 3-19 BR27C-flush-mounted TL-4
- 5) Extend railings BR27 to 54" to make them suitable for use as combination traffic and bicycle railings on bridges.
- 6) Standardized Corral Style railing at TL-4 (with and without curb)
- 7) Standardized Corral Style railing at TL-2 (with and without curb)
- 8) the following barriers in Part 3 of FHWA memo dated 5/30/1997:
  - a. 2-19 Illinois 2399 2 rail on curb
  - b. 2-10 Texas C411 Aesthetic Concrete Barrier
- 9) Massachusetts Aesthetics Steel Post Bridge Rail (FHWA Letter B-66)
- 10) Side mount Thrie beam on prestressed concrete box and voided slab
- 11) Top mount Thrie beam on prestressed concrete box and voided slab
- 12) Side mount Texas T-6 on prestressed concrete box and voided slab
- 13) Top mount Texas T-6 on prestressed concrete box and voided slab
- 14) Side mount Thrie beam rail on steel girder
- 15) Side mount Texas T-6 on steel girder
- 16) Railings for transverse Glulam deck
- 17) Railings for longitudinal glulam
- 18) 54" California ST-20S railing with Bicycle railing attachment.

Sincerely,

**Charles W. Patterson, P.E.**

Standards / Special Design Section Manager

Location and Design Division

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