March 11, 1999 Refer to: HMHS-B50

Mr. James M. Sime
Assistant Manager for Research
Connecticut Department of Transportation
280 West Street
Rocky Hill, CT 06067

Dear Mr. Sime:

In your January 25, 1999, letter to the Director of the Federal Highway Administration's Office of Engineering, you requested acceptance of two bridge rail designs that were developed and tested for use on the National Highway System (NHS) by the New England Transportation Consortium (NETC).

The first design is the NETC 2-Bar Curb-Mounted Bridge Railing shown as Enclosure 1. This design was tested to Performance Level 2 (PL-2) in accordance with the AASHTO Guide Specifications for Bridge Railings and was effectively accepted as an NCHRP Report 350 Test Level 4 (TL-4) railing by its inclusion in the summary listings attached to my May 30, 1997 memorandum on crash testing of bridge railings.

The second design is the NETC 4-Bar Sidewalk-Mounted Bridge Railing shown as Enclosure 2, and documented in four publications, FHWA-RD-99-027, FHWA-RD-99-028, FHWA-RD-99-029, and FHWA-RD-99-030, each entitled "Full-Scale Crash Evaluation of Sidewalk-Mounted Steel Bridge Railing". Review of each crash test report showed that the 4-Bar Bridge Railing met all appropriate evaluation criteria for an NCHRP Report 350 traffic barrier at TL-4. Summary sheets on each of the three tests that were conducted are attached as Enclosure 3.

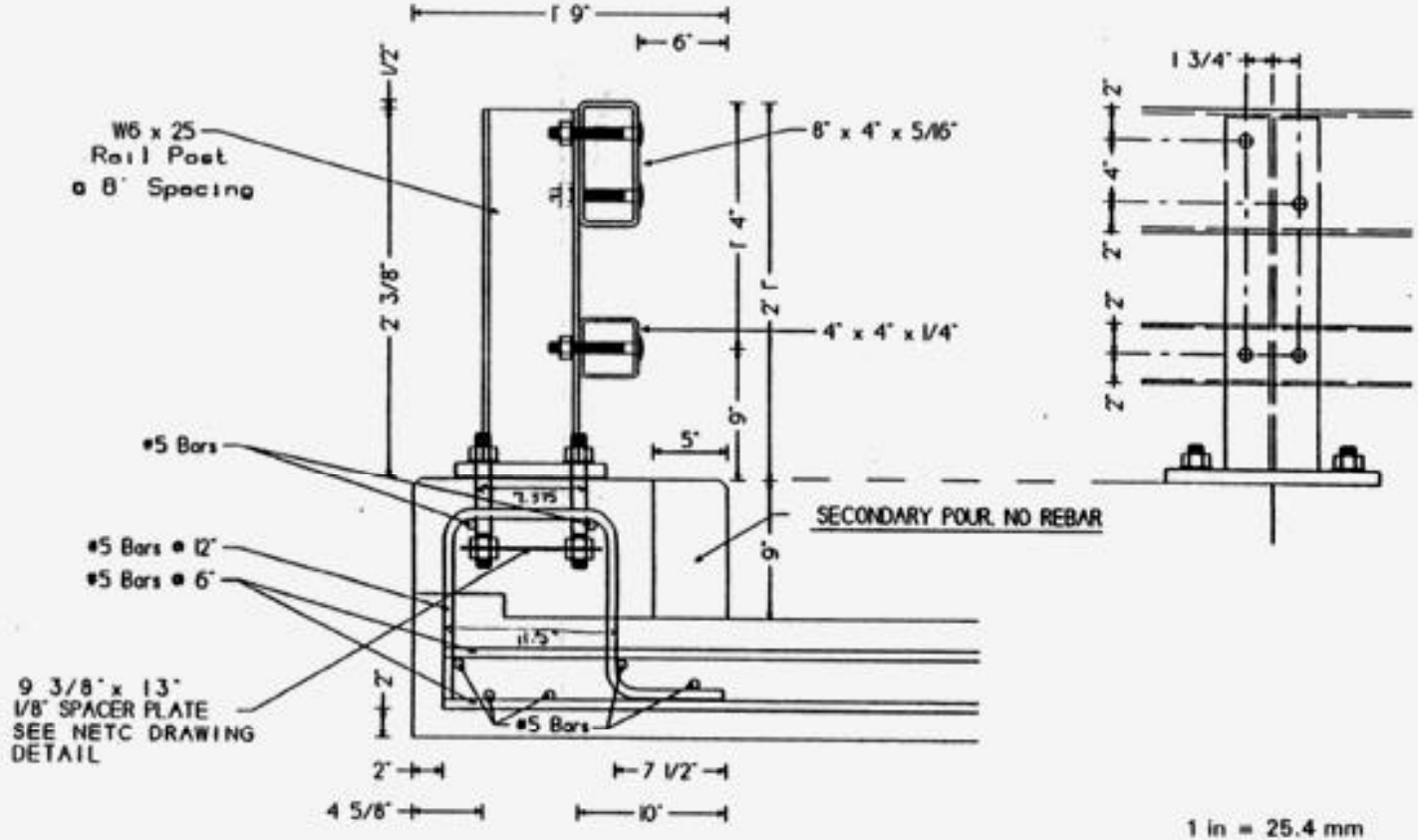
Based on the information you provided for our review, we conclude that both the NETC 2-Bar Curb-Mounted Bridge Rail and the 4-Bar Sidewalk-Mounted Bridge Rail are acceptable as TL-4 designs and may be used on the NHS when selected by a transportation agency. We understand that neither design is proprietary and that anyone wishing to obtain detailed plans and specifications may contact you by telephone at (860) 258-0309 or via e-mail at james.simes@po.state.ct.us. We further understand that the NETC is currently developing transitions to be tested in the near future for use with these two bridge railings.

Sincerely yours,

(original signed by Dwight A. Horne)

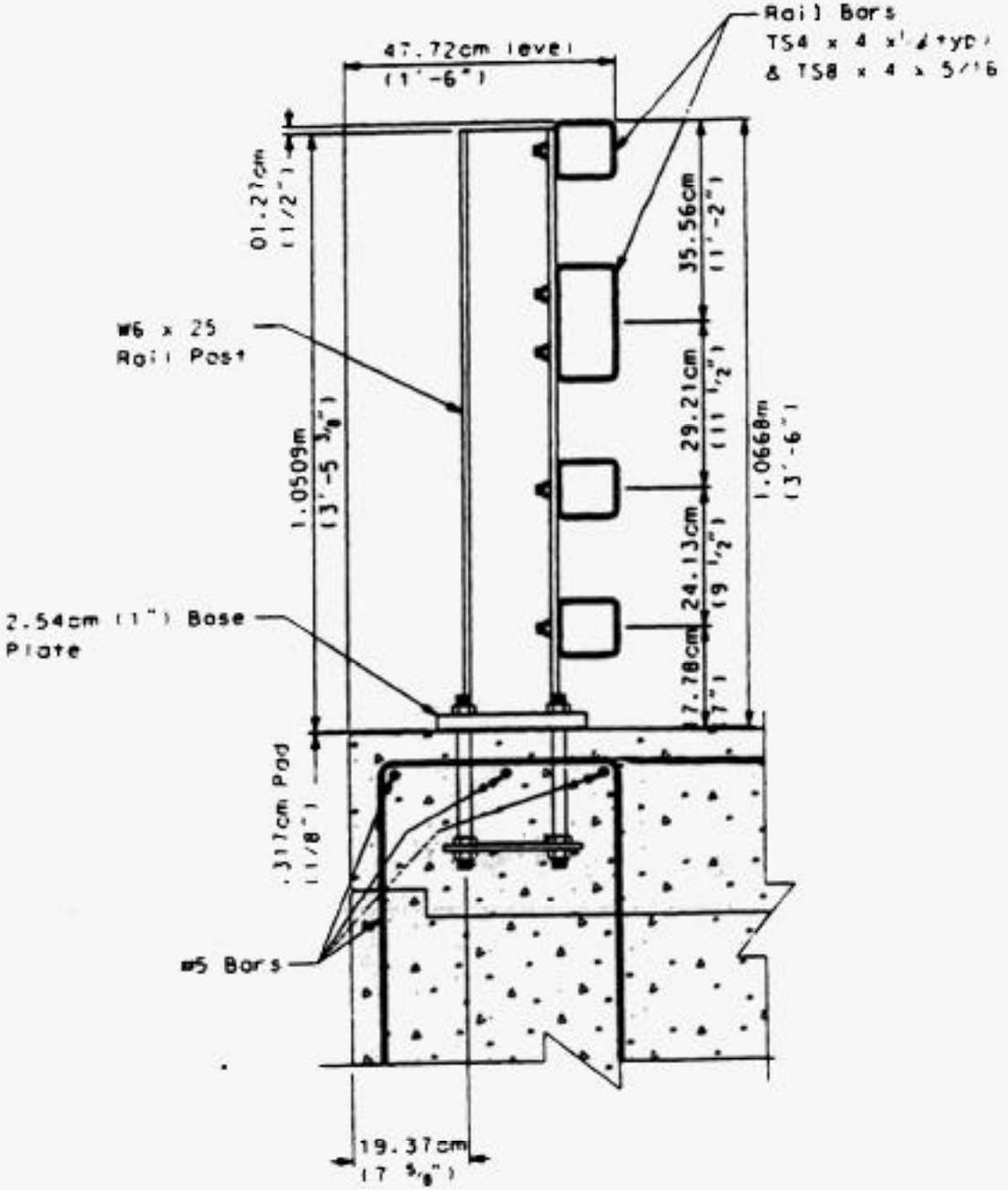
Dwight A. Horne
Director, Office of Highway Safety Infrastructure

3 Enclosures



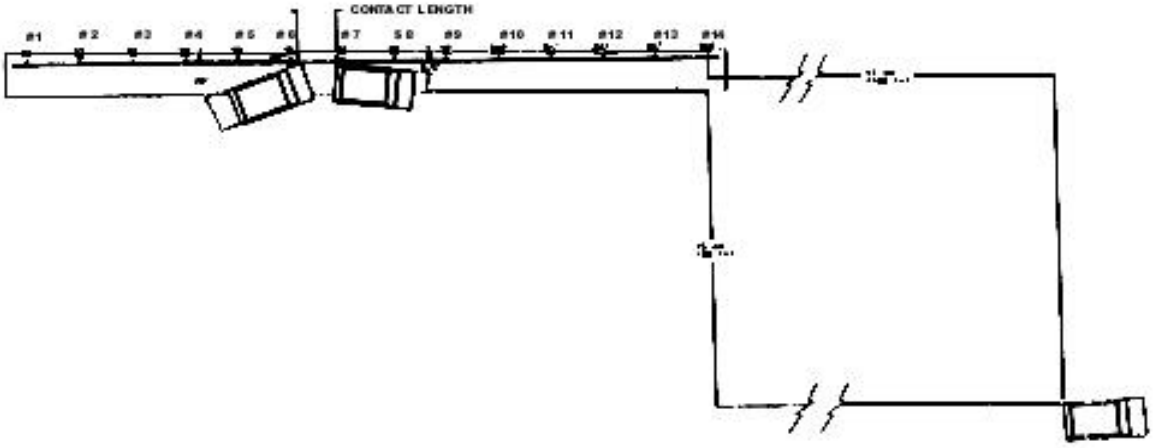
SECTION AT RAIL POST

Figure 1. Schematic of the test installation for test 471470-18.



TYPICAL SECTION

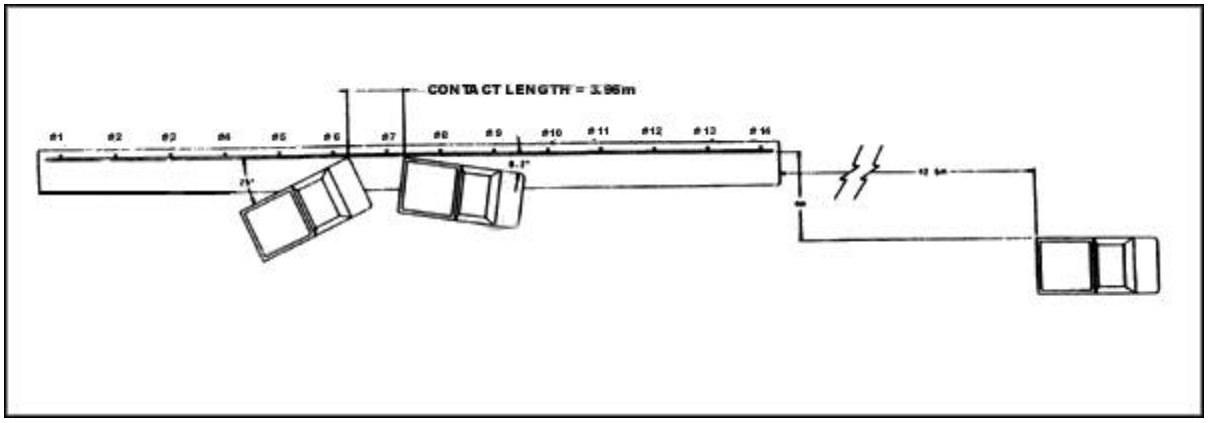
Figure 8. Impact sequence and summary of test conditions and results - Test NETC-1



4. General Information		**7. Test Vehicle (Continued)**		**10. Ridedown Acceleration (g's)**	
Test Agency	Southwest Research Institute	Mass (kg) Dummy(s)	75	y-direction	-
Test Number	NETC-1	Mass (kg) Gross Static	902	**11. Test Article Deflection (m)**	
Test Date	11/18/97	**8. Impact Conditions**		Dynamic	0
5. Test Article		Speed (km/h)	100.0	Permanent	0
Type	Bridge Rail	Angle (deg)	20.0	**12. Vehicle Damage**	
Installation Length (m)	32.9	**9. Exit Conditions**		Exterior	
Barrier	4 Steel Rails	Speed (km/h)	18.3	VDS	11-FL-2
6. Soil Type and Condition	N/A	Angle (deg)	6.6	CDC	11FLEE2
7. Test Vehicle		**10. Occupant Risk Values**		Interior	
Type	Production	Impact Velocity (m/s)		OCDI	LF0000000
Designation	820C	x-direction	-	**13. Post-Impact Vehicular Behavior**	
Model	1991 Ford Festiva	y-direction	-	Maximum Roll Angle (deg)	10 Approximate
Mass (kg) Curb	827	Ridedown (g's)		Maximum Pitch Angle (deg)	5 Approximate
Mass (kg) Test Inertial	827	X-direction	-	Maximum Yaw Angle (deg)	34 Approximate

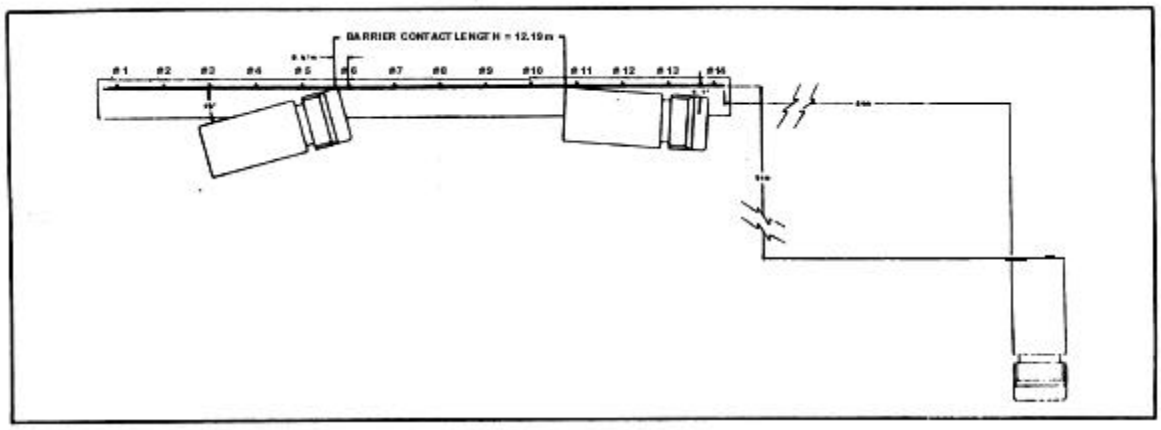
* No occupant risk data - lateral accelerometer malfunctioned during test

Figure 11. Impact sequence and summary of test conditions and results - Test NETC-2.



4. General Information		**7. Test Vehicle (Continued)**		**10. Ridedown Acceleration (g's)**	
Test Agency	Southwest Research Institute	Mass (kg) Dummy(s)	N/A	y-direction	14.30
Test Number	NETC-3	Mass (kg) Gross Static	8,108	**11. Test Article Deflection (m)**	
Test Date	12/18/97	**8. Impact Conditions**		Dynamic	25
5. Test Article		Speed (km/h)	80.0	Permanent	13
Type	Bridge Rail	Angle (deg)	15.0	**12. Vehicle Damage**	
Installation LEngth (m)	34.1	**9. Exit Conditions**		Exterior	
Barrier	4 Rails, Sidewalk-Mounted	Speed (km/h)	57,6	VDS	N/A
6. Soil Type and Condition	N/A	Angle (deg)	4.1	CDC	N/A
7. Test Vehicle		**10. Occupant Risk Values**		Interior	
Type	Production	Impact Velocity (m/s)		OCDI	N/A
Designation	8000S	x-direction	1.65	**13. Post-Impact Vehicular Behavior**	
Model	1993 International 4600 LP	y-direction	-2.89	Maximum Roll Angle (deg)	20 Approximate
Mass (kg) Curb	8,108	Ridedown (g's)		Maximum Pitch Angle (deg)	5 Approximate
Mass (kg) Test Inertial	8,108	X-direction	-8.95	Maximum Yaw Angle (deg)	N/A

Figure 11. Impact sequence and summary of test conditions and results - Test NETC-3



4. General Information		**7. Test Vehicle (Continued)**		**10. Ridedown Acceleration (g's)**	
Test Agency	Southwest Research Institute	Mass (kg) Dummy(s)	75	y-direction	-
Test Number	NETC-2	Mass (kg) Gross Static	2,109	**11. Test Article Deflection (m)**	
Test Date	11/20/97	**8. Impact Conditions**		Dynamic	25 (est.)
5. Test Article		Speed (km/h)	100.0	Permanent	13
Type	Bridge Rail	Angle (deg)	25.0	**12. Vehicle Damage**	
Installation LEngth (m)	34.1	**9. Exit Conditions**		Exterior	
Barrier	4 Bar, Sidewalk Mounted	Speed (km/h)	17	VDS	11-FL-3
6. Soil Type and Condition	N/A	Angle (deg)	8.2	CDC	11FLEE3
7. Test Vehicle		**10. Occupant Risk Values**		Interior	
Type	Production	Impact Velocity (m/s)		OCDI	LF0000000
Designation	2000P	x-direction	3,99	**13. Post-Impact Vehicular Behavior**	
Model	1991 Ford F-250	y-direction	-	Maximum Roll Angle (deg)	20 Approximate
Mass (kg) Curb	2,034	Ridedown (g's)		Maximum Pitch Angle (deg)	15 Approximate
Mass (kg) Test Inertial	2,034	X-direction	-2.55	Maximum Yaw Angle (deg)	N/A