Appendix A: Nonstandard and Non-Conforming Features, and Structural Conditions

Table 1
I-787 Existing Nonstandard Features

Critical Criteria	Nonstandard Feature
Design Speed	Existing northbound and southbound I-787 and associated ramps do not meet the current design criteria for all eleven critical design elements required for their posted speed, respectively.
Maximum Grade	A section of mainline I-787 southwest of Interchange 2 from South Pearl Street to Southern Boulevard is at 5% grade, exceeding the required criteria of 4% maximum grade
Shoulder Width	Substandard shoulder width is generally observed through the study corridor along I-787 mainline, for both sides, from the Interchange 1 area north through Interchange 7. The I-787 existing mainline 1960s design typically included 2-foot left shoulders and 8-foot right shoulders. Current design criteria for interstate mainline with two lanes each bound requires 4-foot left shoulder and 10-foot right shoulder. For three or more lanes each bound it requires 10-foot wide shoulders on both sides. Substandard shoulder width is observed within Interchanges 2, 3, 3A, 3B, 4B and 5. Current design criteria for interstate ramps require 6-foot wide right shoulders and 4-foot wide left shoulders. Existing ramps designed in the 1960s included a 2-foot to 4-foot wide right shoulder and a 2-foot wide left shoulder.
Vertical Clearance	Thirteen bridges have insufficient vertical clearance. BIN – 1022479, 109298C, 7092960, 1004279, 1092390, 109288C, 1092371, 1092250, 1092269, 7092300, 1092281, 109294A, 1092422
Horizontal Curve Radius	Mainline I-787 over South Pearl Street does not meet the standard minimum criteria of a 1,200-foot horizontal curve radius
Design Loading Structural Capacity	Six bridges (BIN 1074940, 109297A, 109298D, 1092360, 1092940, 1093029) are classified as “Poor” condition with general recommendation equal 4; The remainder are “Fair” or “Better” condition with a general recommendation of 5 or higher.
Superelevation	I-787 mainline superelevation on horizontal curves is substandard through the study corridor. The 1960s design criteria equate to a current day design speed of 50 mph to 55 mph versus 60 mph design speed. Existing superelevation does not meet current design criteria for their posted speed, respectively, at the following ramp locations: Interchange 3 northbound off ramp, Interchange 4 northbound off ramp, Interchange 4B northbound on ramp, Interchange 3B southbound off ramp, Interchange 4B southbound off ramp, Interchange 4A southbound off ramp.
Stopping Sight Distance (SSD)	The following locations are non-standard for SSD: • Horizontal Stopping Sight Distance – – Northbound I-787 - Nutgrove Lane to South Pearl Street, John Street to Herkimer Street, Broadway, Albany Avenue to 27th Street, Albany Avenue to 27th Street, – Southbound I-787 - Nutgrove Lane to South Pearl Street, Broadway, NY Route 7 to off-ramp, NY Route 7 to Interchange 9W off-ramp, southbound I-787 off ramp to Dunn Memorial Bridge, southbound I-787 on-\rRamp from Water Street • Vertical Stopping Sight Distance – – Northbound I-787 - Hoffman Avenue, Interchange 1, 4th Avenue, Broadway, Columbia to Colonie Street

	– Southbound I-787 - Hoffman Avenue, Interchange 1, 4th Avenue, Basset Street, Broadway, Columbia to Colonie Street

Definitions
Design Speed: target speed at which drivers are intended to travel on the street
Maximum Grade: the maximum steepness a roadway is allowed to be
Shoulder Width: width of shoulder
Vertical Clearance: the measurement from the ground to an overpass or bridge
Horizontal Curve Radius: the length of the curve on a roadway
Design Loading Structural Capacity: the ability for a roadway to hold weight, including the weight of the structure itself, vehicles, wind loads, seismic loads, and other forces
Superelevation: roadway design where the outer edge of the pavement is raised above the inner edge, effectively creating a bank. This reduces the force on the car and occupant
Stopping Sight Distance: the distance needed for drivers to see an object on the roadway ahead and bring their vehicles to a safe stop before colliding with the object

Table 2
I-787 Existing Non-conforming Features

Recommended Design Parameters	Non-conforming Feature
Median Width	Two segments along the PEL study area have insufficient median width: I-787 over South Pearl Street and I-787 over Colonie Street, where the median width ranges from 8 feet to 10 feet (10 feet is recommended minimum)
Ramp Spacing	Two locations do not meet the minimum ramp spacing distance of 1,600 feet: southbound I-787 on-ramp from NY Route 7 and off-ramp to 23rd Street, with a ramp spacing of 1,425 feet +/-, and northbound I-787 on-ramp from 23rd Street and off-ramp to NY Route 7 with a ramp spacing of 1,150 ft +/-
Acceleration/Deceleration Lane Length	The acceleration lane for the northbound I-787 on-ramp from Quay Street has insufficient length (1,260 feet versus the minimum required of 1,365 feet)

Definitions
Median width: width of the median
Ramp Spacing: the distance between the painted tips of successive ramps
Acceleration/Deceleration Lane Length: allowable length of acceleration and deceleration lanes. These lanes allow drivers to speed up or slow down in space not used by high-speed traffic

Table 3
Structurally Deficient and Nonstandard Bridges in the I-787 Corridor

Recommended Design Parameters	Length (ft)	FHWA Structurally Deficient Rating
Quay St. over Hudson River Shore	834	Poor
I-787 over Little River	500	Poor
Dunn Memorial Ramp - I-787 NB	1,311	Poor
I-787 SB to South Mall Expressway WB	845	Poor
On-Ramp to South Mall Expressway EB	678	Poor
I-787 over South Pearl St. (Rt. 32)	289	Fair
I-787 over I-787 (Cohoes Blvd.)	142	Fair
Rte. 7 over I-787-9W	170	Fair -
Rte. 7 WB over I-787	95	Fair -
Rte. 7 EB over I-787	95	Fair -
I-787 over Albany Ave.-25th St.	98	Fair
378 WB over I-787	179	Fair
378 EB over I-787	216	Fair
I-90 WB over I-787 NB	320	Fair
I-90 EB over I-787 NB	320	Fair
I-90 Patroon Island Bridge over Hudson River	1,797	Fair -
I-787 SB over Albany Skyway	2,191	Fair
I-787 NB over Albany Skyway	2,182	Fair
Water St. over Delaware and Hudson RR	718	Fair -
I-787 SB to 9 & 20 EB over Broadway	1,854	Fair -
Empire State Plaza Artery WB	2,310	Fair
Empire State Plaza Artery EB	2,310	Fair -
I-787 SB over Broadway	2,278	Fair
I-787 NB over Broadway	2,286	Fair -
Pedestrian Bridge over on-ramp to I-787 NB	542	Closed[1]
South Mall Expressway WB over Eagle St.	69	Fair -
South Mall Expressway EB over Eagle St.	69	Fair
City St. over Beaver Relief Sewer	47	Fair
Former D&H RR over I-787	160	Fair
Delaware & Hudson RR over Broadway-Quay St. Conn.	75	Fair
Delaware & Hudson RR over Broadway	79	Fair
Ramp I-787 SB to Clinton St.	856	Fair
Clinton Ave. to I-787 Ramp	1,719	Fair
Clinton Ave. Ramp over Water St.	567	Fair
Dunn Memorial WB to I-787 SB	1,850	Poor
South Mall Expressway WB Off	689	Fair
South Mall Expressway EB to I-787 SB	1,698	Fair
South Mall Expressway EB to I-787 NB	1,848	Fair
I-787 NB to South Mall Expressway WB	2,910	Fair
I-787 NB to Quay St.-Broadway	797	Fair
Pumpkin House Access Rd.	35	Good
Rte. 7 over Rte. 32 (Cohoes Rd.)	117	Good
I-787 over 23rd St.-Hudson Ave.	134	Good
378 EB over 378 WB-I787	140	Fair
I-787 to I-90 EB	699	Good

Table 3
Structurally Deficient and Nonstandard Bridges in the I-787 Corridor

I-787 to I-90 WB	705	Fair
I-90 WB over Erie Blvd.	301	Fair
I-90 EB over Erie Blvd.	295	Good
I-787 over Broadway - Quay St. Conn.	74	Fair
I-787 over Broadway - Quay St. Conn.	75	Fair
Riverwalk over I-787	570	Fair
378 to I787 NB over Hudson River	153	Good
Hoosick St. Ramp A over Former D&H RR	179	Good
1-787 over Former D&H RR	248	Good
I-90 Ramp off Patron Island Bridge	223	Good
I-90 Ramp on Patron Island Bridge	223	Good
Albany Skyway Pedestrian over Water St.	886	Fair
I-90 WB to I-787 SB	250	Good

Note: [1] The pedestrian bridge has been replaced by an interim detour that will remain in place until the construction of a full replacement of the Dunn Memorial Bridge is implemented.