Appendix A: Project Planning and Development

A-4 Replacement Bridge Alternative Design Criteria

Mainline Design Criteria

Exhibit 3.2.3.2.A Critical Design Elements for I-287			
PIN:	8TZ1.00	NHS (Y/N):	Yes
Route No. & Name:	I-790 & 5,8,12 (North-South Arterial)	Functional Class:	Urban Principal Arterial Interstate
Project Type:	Reconstruction	Design Class:	Mainline Urban Interstate
% Trucks:	12.4%	Terrain:	Rolling
ADT:	218,551	Truck Access/Qualifying Hwy.	Qualifying highway

	Design Element	Standard Thruway Criteria Source	Existing Condition	Specific Project Requirement
1	Design Speed (mph)	HDM §2.7.1.1A; NYSTA	60	70
2	Minimum Lane Width (feet)	HDM §2.7.1.1B	11	12, with suitable transition to existing
3	Minimum Shoulder Width (feet) Left Right	HDM §2.7.1.1C, Exhibit 2-2	0	12 on approaches, 20 over-widened left shoulder on westbound bridge, 25 over-widened left shoulder on eastbound bridge for emergency access on bridge 10
4	Minimum Bridge Roadway Width (feet)	BM §2.3.1 Table 2-1	3 lanes each way with one reversible lane totaling 7 lanes	4 lanes each way 12ft with shoulder width stated above in 3. 5th EB lane at approach to Toll Plaza, min 1000ft length with suitable transition
5	Maximum Grade - Bridge [Rolling] Maximum Grade - Approach [Rolling]	HDM §2.7.1.1E, Exhibit 2-2; NYSTA	3.0% 3.0%	1.3% 3.0%
6	Horizontal Curvature, Minimum Radius (feet)	HDM §2.7.1.1F, Exhibit 2-2		2040
7	Maximum Super-elevation Rate	HDM §2.7.1.1G	-	6%. Note superelevation should not be continuous between the two roadway bounds

	Design Element	Standard Thruway Criteria Source	Existing Condition	Specific Project Requirement
8	Minimum Stopping Sight Distance (feet)	HDM §2.7.1.1H, Exhibit 2-2	472	730
9	Minimum Horizontal Clearance (feet) Without Barrier/Rail With Barrier/Rail	HDM §2.7.1.1I	N/A 1ft	15 Not less than shoulder width
10	Minimum Vertical Clearance (feet) Vehicular Bridges Rehabilitation Replacement Pedestrian Bridges OH Sign Structures & Signs	HDM §2.7.1.1J; BM §2.4.1, Table 2-2	14.5 16 17	Existing Bridges, 16.5 Replacement Bridges, 16.5 OH Signs, 17.5
11	Pavement Cross Slope	HDM §2.7.1.1K	2%	2% max
12	Maximum Rollover Between Lanes Edge of Traveled Way	HDM §2.7.1.1L		4% 8%
13	Minimum Level of Service	HDM §2.6.14, §2.7.1.1N, Heavily Dev Urban Area		C
14	Control of Access	HDM §2.7.1.1O	Full	Full
15	Pedestrian Accommodation	NYS Highway Law 1, §3.2; ADAAG	Prohibited	Prohibited
16	Minimum Median Width (feet)	NYSTA DRM	Governed by moveable barrier system	On approaches minimum median width shall be the width of the central barrier plus the adjacent shoulder widths. On the bridge - Governed by Project Requirement 11-Structures
17	Structural Capacity Rehabilitation Replacement Temporary Bridge	HDM §2.7.1.1M; TSDM §2.1; BM §2.6	1950s Design Standards	Governed by Project Requirement 11-Structures
	Additional River Criteria			
18	Minimum Clearance Over Shipping Channel (feet)	U. S. Coast Guard Provisional Requirement	139	U. S. Coast Guard Provisional Requirement: 139 applied 521 feet from the center of the channel

	Design Element	Standard Thruway Criteria Source	Existing Condition	Specific Project Requirement
19	Minimum Navigation Channel Clearance (feet)	U. S. Coast Guard Provisional Requirement	1042	U. S. Coast Guard Provisional Requirement: 1042
20	Turnarounds between Bridge Roadways – Design Vehicle for turning maneuvers		-	One either side of the main span near the landing. Sized as required to accommodate HL-93 Design Vehicle

Ramp Design Criteria

	Design Element	Standard Thruway Criteria Source	Existing Condition	Specific Project Requirement
1	Design Speed (mph)	HDM §2.7.5.2A; NYSTA	25	Match existing
2	Range of Minimum Lane Widths - Case II D Ramps (feet)	HDM §2.7.5.2B, Exhibit 2-9 (Case IID with shoulders)	Varies 12-15	15 to 25 depending on radius, with suitable transition to existing
3	Minimum Shoulder Width (feet) Left Right	NYSTA DRM	Varies 2 - 6	4 10 With suitable transition to existing
4	Minimum Bridge Roadway Width (feet)	HDM §2.7.5.2D; BM §2.3.1, Table 2-1	-	Match ramp width
5	Maximum Grade [Rolling]	HDM §2.7.5.2E, Exhibit 2-10	5%	5%
6	Horizontal Curvature, Min Radius (feet)	HDM §2.7.5.2F, Exhibit 2-10	230	230
7	Maximum Superelevation Rate	HDM §2.7.5.2G	6%	6%
8	Minimum Stopping Sight Distance (feet)	HDM §2.7.5.2H, Exhibit 2-10	200	200
9	Minimum Horizontal Clearance (feet) Left Right	NSYTA DRM HDM §2.7.5.2I, Exhibit 2-10		Shoulder width but not less than 4 left 6 right. Shoulder width plus 4 Under bridge *with suitable transition to existing
10	Min. Vertical Clearance (feet) Vehicular Bridges Rehabilitation* Replacement**	HDM §2.4.5.2J; BM §2.4.1, Table 2-2 (Exempt Interstate^^);	15.13	Existing Bridges, 16.5 Replacement Bridges, 16.5

	Design Element	Standard Thruway Criteria Source	Existing Condition	Specific Project Requirement
	Pedestrian Bridges OH Sign Str. & Signs			OH Signs, 17.5
11	Pavement Cross Slope	HDM §2.7.5.2K	Varies	1.5% min; 2% max
12	Maximum Rollover Between Lanes Edge of Travel Way	HDM §2.7.5.2L	4% 8%	4% 8%
13	Structural Capacity Rehabilitation* Replacement** Temporary Bridge	HDM §2.7.5.2M; TSDM §2.1; BM §2.6	1950s Design Standard	Governed by Project Requirement 11- Structures
14	Minimum Level of Service	HDM §2.7.5.2N	-	C, D Acceptable with documentation
15	Control of Access	HDM §2.7.5.2O	Full	Full
16	Pedestrian Accommodation	HDM §2.7.5.2P; ADAAG		Prohibited

Urban Collector Design Criteria

	Design Element	Standard Criteria Source	Existing Condition	Specific Project Requirement
1	Design Speed (mph)	HDM §2.7.3.2A	30	30
2	Minimum Lane Width (feet) Travel Lane Curbed Curbed Industrial Uncurbed Turning Lane Continuous Median Turning Lane Parking Lane (if Included) Residential Commercial, Industrial	HDM §2.7.3.2B Exhibits 2-6, 2-5 (ADT > 2000) (Truck Volume > 2%)	16 N/A	Match existing N/A
3	Minimum Shoulder Width (feet) Left Curbed Divided Right Curbed, for Bicycle Use Uncurbed	HDM §2.7.3.2C, Exhibits 2-6, 2-5 (ADT > 2000)	2 7	Match existing
4	Minimum Bridge Roadway Width (feet)	HDM §2.7.3.2D; BM §2.3.1 Table 2-1		Match approach roadway
5	Maximum Grade [Rolling]	HDM §2.7.3.2E, Exhibit 2-6	9%	9%
6	Horizontal Curvature, Minimum Radius @e=4% (feet)	HDM §2.7.3.2F, Exhibit 2-6	Non Standard	125 Non-Standard
7	Maximum Superelevation Rate	HDM §2.7.3.2G	4%	4%
8	Minimum Stopping Sight Distance (feet)	HDM §2.7.3.2H, Exhibit 2-6	200	125 Non-Standard
9	Minimum Horizontal Clearance (feet) Without Barrier/Rail With Barrier/Rail	HDM §2.7.3.2I	1.5	1.5
10	Minimum Vertical Clearance (feet)	HDM §2.7.3.2J; BM §2.4.1, Table 2-2	14.5	14.5
11	Pavement Cross Slope	HDM §2.7.3.2K	2%	1.5% min; 2% max 1.5% to 5% parking lanes
12	Maximum Rollover Between Lanes At edge of Traveled Way	HDM §2.7.3.2L	4% 8%	4% 8%
13	Structural Capacity Rehabilitation Replacement Temporary Bridge	HDM §2.7.3.2M; BM §2.6	1950's Design Standards	Governed by Project Requirement 11- Structures
16	Pedestrian Accommodation (feet)	HDM §2.7.3.2N;	7	7

	Design Element	Standard Criteria Source	Existing Condition	Specific Project Requirement
		HDM Ch 18, ADAAG		Sidewalk

The Urban Collector Specific Project Requirement listed above are applicable to South Broadway and River Road in Rockland County, and if affected, South Broadway in Westchester County.

Maintenance Ramps and Roads Design Criteria

	Design Element	Existing Condition	Maintenance Roads	Maintenance Ramps
1	Design Vehicle	Single Unit Truck	Single Unit Truck	Single Unit Truck
2	Minimum Width (feet)	16	20	20
3	Maximum Grade	20%	10%	10%
4	Minimum Vertical Curve Length (feet)	80	100	100
5	Minimum radius at mainline junction	Not known	NA	Such that design vehicle path does not intrude beyond the right-most mainline lane
6	Sight distance (feet)	Not known	125	200 min. along River Rd.
7	Traffic control	Stops at termini No Left Turn at mainline	Stops at intersections	Stops at termini No Left Turn at mainline