Appendix A-3
Nonstandard Features Justification Forms

VIADUCT ALTERNATIVE

Exhibit A-3-1-01
Nonstandard Feature Justification

PIN:	3501.60	Route No. & Name:	I-81 Northbound
Project Type:	New Construction	Design Classification:	Interstate
ADT (2050)	51,700	Design Speed	60 MPH
DHV (2050)	5,046	% Trucks:	16%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Horizontal Stopping Sight Distance		
Location:	I-81 Northbound (RM 2043 – RM 2046; Curve#1; inner lane of curve only, see Note 1)		Viaduct Alternative
Standard Value:	570 FT (HSSD)	Design Speed	60 MPH
Existing Value:	270 FT (HSSD)		
Proposed Value:	438 FT (HSSD) Note 2		

2. Accident Analysis

Current Accident Rate:	acc/mvm or acc/mev (Note 3) 3.21 acc/mvm	Statewide Accident Rate:	acc/mvm or acc/mev (Note 3) 1.06 acc/mvm
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☒		NO ☐
If YES, describe how the feature contributes to accidents	During the three-year analysis period from July 1, 2010 through June 30, 2013, a total of 66 accidents occurred within this curve segment – of which 1 accident was identified to be potentially related to the existing non-standard sight distance feature. The number of accidents potentially related to the existing non-standard feature equates to 1.5% of total accidents, and an accident rate of 0.05 acc/mvm. See Note 4		

3. Cost Estimates

Cost to Fully Meet Standards:	$ 10.1 M (based on additional over-widening of the inner shoulder along the length of the curve. See Note 5).
Cost(s) For Incremental Improvements:	$ 6.9 M based on widening left shoulder from 4 ft. to 12 ft. (see note 5).

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

Appropriate curve warning signs will be posted, and the Advisory Speed (W13-1P) plaque may be used as supplement of warning signs to indicate the non-standard HSSD condition. An open rail system was also considered and dismissed because it would be difficult to maintain, result in long term operational issues, and would be inconsistent with the Department's bridge rail policy in Chapter 6 (Section 6.3.3.1) of the Bridge Manual.

5. Compatibility with Future Plans for Adjacent Segments

Over-widening of the inside shoulder to a maximum of 12 feet to increase HSSD is consistent with other curves in the area and there are no future plans for adjacent segments.

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Two approaches were evaluated to fully meet standards:

1) Additional over-widening of the inner side shoulder (from 12ft to 25ft) would increase construction costs approximately $10.1 M , potentially encouraging unauthorized use of the wider shoulder as a travel lane, create snow removal and de-icing logistical issues during winter weather and increased long term maintenance costs. This curve is just one of five curves within the interchange area and the total cost to over-widen the shoulder of all five curves is estimated to be $26.0 M. (see Note 5).
2) Increasing the proposed curve radii from 1330ft to 2260ft would require realignment of the entire interchange area, resulting in a design similar to Alternative Option V-2 and significantly increasing the number of building impacts (twelve (12) additional buildings, nine (9) of which are on or eligible for listing on the National Register of Historic Places). The additional ROW impact costs that would be associated with fully meeting the HSSD criteria are estimated to be $20.0 M. In addition, several of these acquisitions would present unique relocation challenges. See Note 7.

7. Recommendation

The accident study (see Note 4) only identified 1 accident that may have been attributable to the existing non-standard HSSD for this curve and the proposed design includes an incremental improvement (shoulder widened to 12') which would increase the HSSD approximately 62 % above the existing HSSD and also achieve nearly 77 % of the design criteria standard. In addition, the proposed design has corrected all other non-standard features and the non-standard HSSD applies only to the inner most lane (the other travel lanes meet HSSD criteria). See Figure 1. Further increasing HSSD would increase costs and/or property impacts and provide little to no additional accident reduction benefit. It is recommended that the nonstandard HSSD be retained for this curve, by including an incremental improvement to provide a 12 foot inside shoulder width along the length of the curve.

SEE ATTACHED CONTINUATION SHEET

Continuation - Non-Standard Feature Justification, Viaduct Alternative, Curve #1

1. Non-Standard Horizontal Stopping Sight Distance (HSSD) condition applies to the inside travel lane only as sight distance is controlled by the concrete bridge barrier that is located at edge of proposed shoulder (See Figure 1).

2. Proposed minimum HSSD of 438 feet (inner lane) is based on providing a widened 12' shoulder on the inside of the curve for the length of the curve. If a standard 4 foot shoulder were provided, the minimum HSSD would be 379 feet.

3. Rate reported is accidents per million vehicle miles (acc/mvm) for linear highway segments. The Statewide Accident Rate is from the published *Average Accident Rates for State Highways By Facility Type* (Based on accident data August 1, 2012 to July 31, 2014), based on an Urban, Divided 4 lane highway.

4. For more detailed accident report information, refer to Table 2 (copy attached) included in the Technical Memorandum titled I-81 Viaduct Project – Syracuse, New York, Non-Standard and Non-Conforming Features Evaluation, S-Curve and Slalom Area, dated September 5, 2014.

5. The cost estimate is based on one potential approach to fully meet the standard for HSSD, which is providing additional widening of the inner side shoulder width from 12 ft to 25 ft along the length of the curve. (See note 7 for another potential approach). While widening the inside shoulder an additional 13 feet would satisfy the HSSD criteria for this curve, there are other concerns that this would introduce. Additional concerns include; potentially encouraging unauthorized use of the wider shoulder as a travel lane, snow removal and de-icing logistics during winter weather and increased long term maintenance costs. The estimated cost to over-widen the shoulder of this curve is $10.1 M, but this curve is just one of five curves within the interchange area that would need to be widened to meet HSSD criteria. The total cost to over-widen the shoulder of all five curves is estimated to be $26.0 M.

6. The design criterion for the left shoulder along this segment of I-81 is 4 feet. If a 4 foot wide left shoulder were provided, the resultant HSSD would be 379 feet (inner lane). By increasing the left shoulder width to 12 feet, the resultant HSSD increases to 438 feet, which is a significant improvement over the existing HSSD and represents an improvement to 77%, of the Design Criteria standard.

7. A second potential approach to fully meeting the HSSD for this curve (see note 5) would be to provide a flatter horizontal curve. By increasing the radius of the proposed curve from the current design of 1330 ft to 2260 ft., HSSD for this curve would meet design criteria. However, because of the complex geometry through the main I-81/I-690 Interchange, it is not possible to modify the alignment of the curve without modifying the geometry of I-81 southbound, I-690 westbound, I-690 eastbound and many of the interconnect ramps. This level of modification would essentially mimic alternative option V-2, which would result in approximately twelve (12) additional building impacts, nine (9) of which are on or eligible for listing on the National Register of Historic Places. The additional ROW impact costs that would be associated with fully meeting the HSSD criteria are estimated to be $20.0 M. In addition, several of these building could also present additional social and economic impacts as well as unique relocation challenges. For example:
    a. Nettleton Commons is a large building having both commercial and residential uses. As this building contains approximately 60 apartments and several businesses, acquisition of the building would impact a large number of residents and businesses in the core downtown area.
    b. Samaritan Center is located in the former St. John the Evangelist church and currently serves approximately 300 meals a day to those in need as part of their breakfast and dinner service. Acquisition of this building could cause a disruption to these critical services and negatively impact those that depend on this critical service. In addition, prior to their opening at this location, they had encountered overwhelming neighborhood opposition at another proposed location, so if impacted, it is anticipated this would be a difficult and sensitive relocation.
    c. The Community Reentry Center is operated by the Federal Bureau of Prisons as a halfway house for helping to transition released federal prisoners back into society. Recent attempts to relocate this facility proved to be controversial as community concerns included proximity to churches, homes, libraries and schools, so if this building is impacted by this project, it is anticipated this would present difficult and unique relocation challenges.
    d. Snowden Apartments is a very large apartment building with nearly 200 apartments and 350 residents. But this building is also very unique in that nearly 80% of the residents are under the supervision of the NYS Department of Corrections and Community Service as parolees' who are registered sex offenders. If this building is impacted, it is anticipated that it would present unique and difficult relocation challenges.

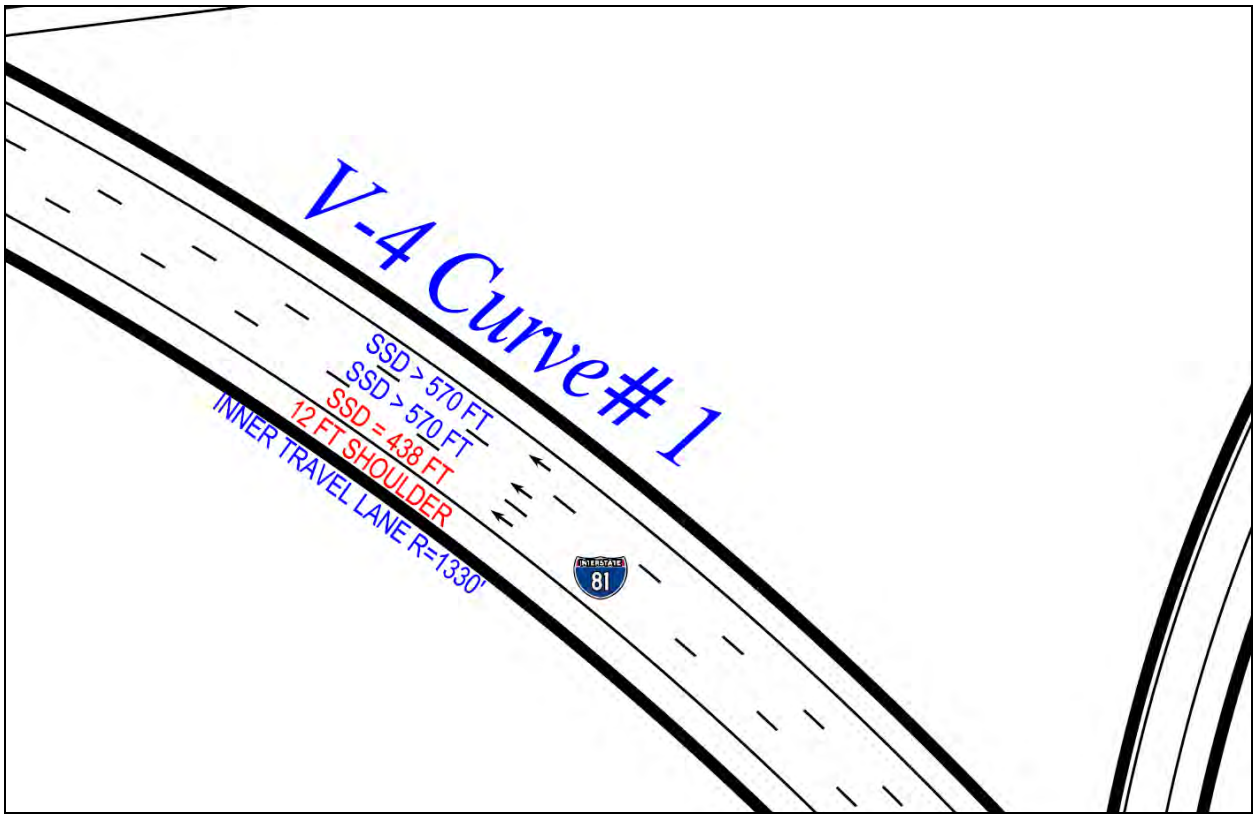

V-4 Curve#1
SSD > 570 FT
SSD > 570 FT
SSD = 438 FT
12 FT SHOULDER
INNER TRAVEL LANE R=1330'
INTERSTATE
81
Figure 1

Table 2 – Non-Standard and Non-Conforming Features Analysis and Design Improvements for Alternatives V-3 and V-4

I-81

I = Existing Non-standard/Non-conforming feature is improved
E = Existing Non-standard/Non-conforming feature is eliminated

Curve 1 (I-81 Northbound, Curve to West)

Reference Marker	Accidents Related to Potential Non-Standard/Non-Conforming Feature?				How Many Accidents Were Related to Each Non-Standard/Non-Conforming Feature? Design Status of Non-Standard/Non-Conforming Feature?								Horizontal Stopping Sight Distance (HSSD)							
															Alternative V-3			Alternative V-4		
	N(o)	Y(es)	U(nknown)	Y/U	Shoulder	Median	Sight Distance	Curve Radius	Super-elevation	Grade	Accel/Decel Length	Ramp Spacing	Existing	Standard (60 mph)	Proposed	Increase over Existing	Percent of Standard	Proposed	Increase over Existing	Percent of Standard
2043	5	21	3	24	0		0	0			0	24	270	570	509	89%	89%	438	62%	77%
					E		I	E			E	E								
2044	3	8	3	11	0		0	4			0	7								
					E		I	E			E	E								
2045	5	4	3	7	0		0	7												
					E		I	E												
2046	3	8	0	8	0		1	7												
					E		I	E												
Total	16	41	9	50	0	0	1	18	0	0	0	31								

Curve 2 (I-81 Northbound, Curve to North)

Reference Marker	Accidents Related to Potential Non-Standard/Non-Conforming Feature?				How Many Accidents Were Related to Each Non-Standard/Non-Conforming Feature? Design Status of Non-Standard/Non-Conforming Feature?								Horizontal Stopping Sight Distance (HSSD)							
															Alternative V-3			Alternative V-4		
	N(o)	Y(es)	U(nknown)	Y/U	Shoulder	Median	Sight Distance	Curve Radius	Super-elevation	Grade	Accel/Decel Length	Ramp Spacing	Existing	Standard (60 mph)	Proposed	Increase over Existing	Percent of Standard	Proposed	Increase over Existing	Percent of Standard
2047	3	2	0	2	0		0	2					270	570	533	97%	94%	445	65%	78%
					E		I	E												
2048	5	7	0	7	0		0	7		0										
					E		I	E		E										
2049	8	15	3	18	1		1	9	0	0		7								
					E		I	E	E	E		E								
Total	16	24	3	27	1	0	1	18	0	0	0	7								

Curve 3 (I-81 Southbound, Curve to East)

Reference Marker	Accidents Related to Potential Non-Standard/Non-Conforming Feature?				How Many Accidents Were Related to Each Non-Standard/Non-Conforming Feature? Design Status of Non-Standard/Non-Conforming Feature?								Horizontal Stopping Sight Distance (HSSD)							
															Alternative V-3			Alternative V-4		
	N(o)	Y(es)	U(nknown)	Y/U	Shoulder	Median	Sight Distance	Curve Radius	Super-elevation	Grade	Accel/Decel Length	Ramp Spacing	Existing	Standard (60 mph)	Proposed	Increase over Existing	Percent of Standard	Proposed	Increase over Existing	Percent of Standard
2047	1	1	1	2	0		0	2					270	570	507	88%	89%	507	88%	89%
					E		I	E												
2048	1	2	1	3	0		0	3												
					E		I	E												
2049	7	9	1	10	0		1	3	0	0	6									
					E		I	E	E	E	E									
Total	9	12	3	15	0	0	1	8	0	0	6	0								

Curve 4 (I-81 Southbound, Curve to South)

Reference Marker	Accidents Related to Potential Non-Standard/Non-Conforming Feature?				How Many Accidents Were Related to Each Non-Standard/Non-Conforming Feature? Design Status of Non-Standard/Non-Conforming Feature?								Horizontal Stopping Sight Distance (HSSD)							
															Alternative V-3			Alternative V-4		
	N(o)	Y(es)	U(nknown)	Y/U	Shoulder	Median	Sight Distance	Curve Radius	Super-elevation	Grade	Accel/Decel Length	Ramp Spacing	Existing	Standard (60 mph)	Proposed	Increase over Existing	Percent of Standard	Proposed	Increase over Existing	Percent of Standard
2043	7	7	2	9	0		1	0				8	280	570	497	78%	87%	443	78%	78%
					E		I	E				E								
2044	0	6	0	6	0		0				0	6								
					E		I				E	E								
2045	0	14	0	14	0		3	4			5	2								
					E		I	E			E	E								
2046	4	4	0	4	0		0	4												
					E		I	E												
Total	11	31	2	33	0	0	4	8	0	0	5	16								

I-690

Curve 5 (I-690 Eastbound, Curve to South)

Reference Marker	Accidents Related to Potential Non-Standard/Non-Conforming Feature?				How Many Accidents Were Related to Each Non-Standard/Non-Conforming Feature? Design Status of Non-Standard/Non-Conforming Feature?								Horizontal Stopping Sight Distance (HSSD)							
															Alternative V-3			Alternative V-4		
	N(o)	Y(es)	U(nknown)	Y/U	Shoulder	Median	Sight Distance	Curve Radius	Super-elevation	Grade	Accel/Decel Length	Ramp Spacing	Existing	Standard (60 mph)	Proposed	Increase over Existing	Percent of Standard	Proposed	Increase over Existing	Percent of Standard
2023	4	6	0	6				1			5		290	570	506	74%	89%	445	53%	78%
								E			E									
2024	3	1	0	1			1	0			0									
							I	E			E									
2025	2	2	0	2	0		2	0	0											
					E		I	E	E											
Total	9	9	0	9	0	0	3	1	0	0	5	0								

Curve 6 (I-690 Eastbound, Curve to East)

Reference Marker	Accidents Related to Potential Non-Standard/Non-Conforming Feature?				How Many Accidents Were Related to Each Non-Standard/Non-Conforming Feature? Design Status of Non-Standard/Non-Conforming Feature?								Horizontal Stopping Sight Distance (HSSD)							
															Alternative V-3			Alternative V-4		
	N(o)	Y(es)	U(nknown)	Y/U	Shoulder	Median	Sight Distance	Curve Radius	Super-elevation	Grade	Accel/Decel Length	Ramp Spacing	Existing	Standard (60 mph)	Proposed	Increase over Existing	Percent of Standard	Proposed	Increase over Existing	Percent of Standard
2025	2	2	0	2	0		2	0	0				300	570	509	70%	89%	509	70%	89%
					E		I	E	E											
2026	2	1	1	2	0		0	2	0											
					E		I	E	E											
2027	10	7	2	9	1		3	5	0											
					E		I	E	E											
2028	13	2	0	2	0		2													
					E		I													
Total	27	12	3	15	1	0	7	7	0	0	0	0								

Curve 7 (I-690 Westbound, Curve to West)

Reference Marker	Accidents Related to Potential Non-Standard/Non-Conforming Feature?				How Many Accidents Were Related to Each Non-Standard/Non-Conforming Feature? Design Status of Non-Standard/Non-Conforming Feature?								Horizontal Stopping Sight Distance (HSSD)							
															Alternative V-3			Alternative V-4		
	N(o)	Y(es)	U(nknown)	Y/U	Shoulder	Median	Sight Distance	Curve Radius	Super-elevation	Grade	Accel/Decel Length	Ramp Spacing	Existing	Standard (60 mph)	Proposed	Increase over Existing	Percent of Standard	Proposed	Increase over Existing	Percent of Standard
2023	3	4	2	6	0		0					6	320	570	525	64%	92%	441	38%	77%
					E		I					E								
2024	4	1	4	5	0		0					5								
					E		I					E								
2025	14	3	3	6	0		0	0	0			6								
					E		I	E	E			E								
Total	21	8	9	17	0	0	0	0	0	0	0	17								

Exhibit A-3-1-02
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	I-81 Northbound
Project Type:	New Construction	Design Classification:	Interstate
ADT (2050)	50,000	Design Speed	60 MPH
DHV (2050)	4,885	% Trucks:	16%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Horizontal Stopping Sight Distance		
Location:	I-81 Northbound (RM 2047 – RM 2049; Curve#2; curve inner-most lane only; see Note 1)		Viaduct Alternative
Standard Value:	570 FT (HSSD)	Design Speed	60 MPH
Existing Value:	270 FT (HSSD)		
Proposed Value:	495 FT (HSSD) Note 2		

2. Accident Analysis

Current Accident Rate:	acc/mvm or acc/mev (Note 3) 2.88 acc/mvm	Statewide Accident Rate:	acc/mvm or acc/mev (Note 3) 1.06 acc/mvm
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☒		NO ☐
If YES, describe how the feature contributes to accidents	During the three-year analysis period from July 1, 2010 through June 30, 2013, a total of 43 accidents occurred in this curve segment – of which 1 accident was identified to be potentially related to the existing non-standard sight distance feature. The number of accidents potentially related to the existing non-standard feature equates to 2.3% of total accidents, and an accident rate of 0.07 acc/mvm). See Note 4		

3. Cost Estimates

Cost to Fully Meet Standards:	$ 0.8 M (based on additional over-widening of the inner shoulder along the length of the curve. See Note 5)
Cost(s) For Incremental Improvements:	$ 1.1 M based on widening right shoulder from 10 ft. to 12 ft. (see note 5).

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

Appropriate curve warning signs will be posted, and the Advisory Speed (W13-1) plaque may be used as supplement of warning signs to indicate the non-standard HSSD condition. An open rail system was also considered and dismissed because it would be difficult to maintain, result in long term operational issues, and would be inconsistent with the Department's bridge rail policy in Chapter 6 (Section 6.3.3.1) of the Bridge Manual.

5. Compatibility with Future Plans for Adjacent Segments

Over-widening of the inside shoulder to a maximum of 12 feet to increase HSSD is consistent with other curves in the area and there are no future plans for adjacent segments.

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Two approaches were evaluated to fully meet standards:

1) Additional over-widening of the inner side shoulder (from 12ft to 18ft) would increase construction costs approximately $0.8 M , potentially encouraging unauthorized use of the wider shoulder as a travel lane, create snow removal and de-icing logistical issues during winter weather and increased long term maintenance costs. This curve is just one of five curves within the interchange area and the total cost to over-widen the shoulder of all five curves is estimated to be $26.0 M. (see Note 5).
2) Increasing the proposed curve radii from 1693ft to 2260ft would require realignment of the entire interchange area, resulting in a design similar to Alternative Option V-2 and significantly increasing the number of building impacts (twelve (12) additional buildings, nine (9) of which are on or eligible for listing on the National Register of Historic Places). The additional ROW impact costs that would be associated with fully meeting the HSSD criteria are estimated to be $20.0 M. In addition, several of these present unique relocation challenges. See Note 7.

7. Recommendation

The accident study (see Note 4) only identified 1 accident that may have been attributable to the existing non-standard HSSD for this curve and the proposed design includes an incremental improvement (shoulder widened to 12') which would increase the HSSD approximately 83 % above the existing HSSD and also achieve nearly 87 % of the design criteria standard. In addition, the proposed design has corrected all other non-standard features and the non-standard HSSD applies only to the inner most lane (the other travel lane meets HSSD criteria). See Figure 1. Further increasing HSSD would increase costs and/or property impacts and provide little to no additional accident reduction benefit. It is recommended that the nonstandard HSSD be retained for this curve, by including an incremental improvement to provide a 12 foot inside shoulder width along the length of the curve.

SEE ATTACHED CONTINUATION SHEET

Continuation - Non-Standard Feature Justification, Viaduct Alternative, Curve #2

1. Non-Standard Horizontal Stopping Sight Distance (HSSD) condition applies to inside travel lane only as sight distance is controlled by the concrete bridge barrier that is located at edge of proposed shoulder (See Figure 1).

2. Proposed minimum HSSD of 495 feet is based on providing a widened 12' shoulder on the inside of the curve for the length of the curve. If a standard 10 foot shoulder were provided, the minimum HSSD would be 466ft.

3. Rate reported is accidents per million vehicle miles (acc/mvm) for linear highway segments. The Statewide Accident Rate is from the published *Average Accident Rates for State Highways By Facility Type* (Based on accident data August 1, 2012 to July 31, 2014), based on an Urban, Divided 4 lane highway.

4. For more detailed accident report information, refer to Table 2 (copy attached to Exhibit A-3-1-01) included in the Technical Memorandum titled I-81 Viaduct Project – Syracuse, New York, Non-Standard and Non-Conforming Features Evaluation, S-Curve and Slalom Area, dated September 5, 2014.

5. The cost estimate is based on one potential approach to fully meet the standard for HSSD, which is providing additional widening of the inner side shoulder width from 12 ft to 18ft along the length of the curve. (See note 7 for another potential approach). While widening the inside shoulder an additional 6ft would satisfy the HSSD criteria for this curve, there are other concerns that this would introduce. Additional concerns include; potentially encouraging unauthorized use of the wider shoulder as a travel lane, snow removal and de-icing logistics during winter weather and increased long term maintenance costs. The estimated cost to over-widen the shoulder of this curve is $0.8 M, but this curve is just one of five curves within the interchange area that would need to be widened to meet HSSD criteria. The total cost to over-widen the shoulder of all five curves is estimated to be $26.0 M.

6. The design criterion for the right shoulder along this segment of I-81 is 10 feet. If a 10 foot wide right shoulder were provided, the resultant HSSD would be 466ft. By increasing the right shoulder width to 12 feet, the resultant HSSD increases to 495 feet, which is a significant improvement over the existing HSSD and represents an improvement to 87% of the Design Criteria standard.

7. A second potential approach to fully meeting the HSSD for this curve (see note 5) would be to provide a flatter horizontal curve. By increasing the radius of the proposed curve from the current design of 1693ft to 2260 ft., HSSD for this curve would meet design criteria. However, because of the complex geometry through the main I-81/I-690 Interchange, it is not possible to modify the alignment of the curve without modifying the geometry of I-81 southbound, I-690 westbound, I-690 eastbound and many of the interconnect ramps. This level of modification would essentially mimic alternative option V-2, which would result in approximately twelve (12) additional building impacts, nine (9) of which are on or eligible for listing on the National Register of Historic Places. The additional ROW impact costs that would be associated with fully meeting the HSSD criteria are estimated to be $20.0 M. In addition, several of these building could also present additional social and economic impacts as well as unique relocation challenges. For example:
    a. Nettleton Commons is a large building having both commercial and residential uses. As this building contains approximately 60 apartments and several businesses, acquisition of the building would impact a large number of residents and businesses in the core downtown area.
    b. The Community Reentry Center is operated by the Federal Bureau of Prisons as a halfway house for helping to transition released federal prisoners back into society. Recent attempts to relocate this facility proved to be controversial as community concerns included proximity to churches, homes, libraries and schools, so if this building is impacted by this project, it is anticipated this would present difficult and unique relocation challenges.
    c. Snowden Apartments is a very large apartment building with nearly 200 apartments and 350 residents. But this building is also very unique in that nearly 80% of the residents are under the supervision of the NYS Department of Corrections and Community Service as parolees' who are registered sex offenders. If this building is impacted, it is anticipated that it would present unique and difficult relocation challenges.

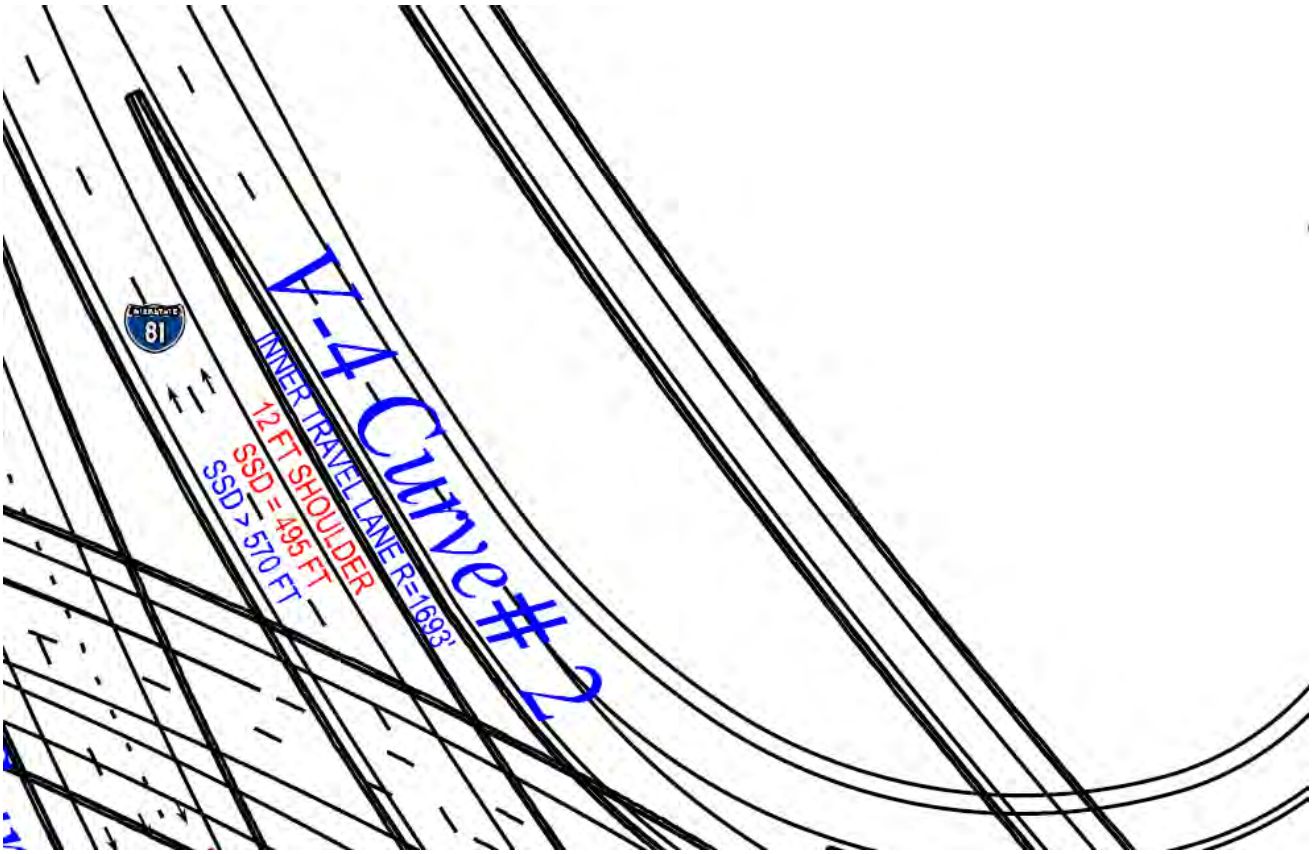

V-4 Curve#2
INNER TRAVEL LANE R=1693'
12 FT SHOULDER
SSD = 495 FT
SSD > 570 FT
81
Figure 1

Exhibit A-3-1-03
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	I-81 Southbound
Project Type:	New Construction	Design Classification:	Interstate
ADT (2050)	48,100	Design Speed	60 MPH
DHV (2050)	4,692	% Trucks:	16%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Horizontal Stopping Sight Distance		
Location:	I-81 Southbound (RM 2047 – RM 2049; Curve#3; curve inner-most lane only; see Note 1)		Viaduct Alternative
Standard Value:	570 FT (HSSD)	Design Speed	60 MPH
Existing Value:	270 FT (HSSD)		
Proposed Value:	507-509 FT (HSSD) Note 2		

2. Accident Analysis

Current Accident Rate:	acc/mvm or acc/mev (Note 3) 1.67 acc/mvm	Statewide Accident Rate:	acc/mvm or acc/mev (Note 3) 1.06 acc/mvm
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☒		NO ☐
If YES, describe how the feature contributes to accidents	During the three-year analysis period from July 1, 2010 through June 30, 2013, a total of 24 accidents occurred in this curve segment – of which 1 accident was identified to be potentially related to the existing non-standard sight distance feature. The number of accidents potentially related to the existing non-standard feature equates to 4.2% of total accidents and an accident rate of 0.07 acc/mvm). See Note 4		

3. Cost Estimates

Cost to Fully Meet Standards:	$ 2.5 M (based on additional over-widening of the inner shoulder along the length of the curve. See Note 5)
Cost(s) For Incremental Improvements:	$ 5.1 M based on widening left shoulder from 4 ft. to 12 ft. (see note 5).

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

Appropriate curve warning signs will be posted, and the Advisory Speed (W13-1) plaque may be used as supplement of warning signs to indicate the non-standard HSSD condition. An open rail system was also considered and dismissed because it would be difficult to maintain, result in long term operational issues, and would be inconsistent with the Department's bridge rail policy in Chapter 6 (Section 6.3.3.1) of the Bridge Manual.

5. Compatibility with Future Plans for Adjacent Segments

Over-widening of the inside shoulder to a maximum of 12 feet to increase HSSD is consistent with other curves in the area and there are no future plans for adjacent segments.

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Two approaches were evaluated to fully meet standards:

1) Additional over-widening of the inner side shoulder (from 12ft to 17ft) would increase construction costs approximately $2.5 M , potentially encouraging unauthorized use of the wider shoulder as a travel lane, create snow removal and de-icing logistical issues during winter weather and increased long term maintenance costs. This curve is just one of five curves within the interchange area and the total cost to over-widen the shoulder of all five curves is estimated to be $26.0 M. (see Note 5).
2) Increasing the proposed curve radii from 1788/1800ft to 2260ft would require realignment of the entire interchange area, resulting in a design similar to Alternative Option V-2 and significantly increasing the number of building impacts (twelve (12) additional buildings, nine (9) of which are on or eligible for listing on the National Register of Historic Places). The additional ROW impact costs that would be associated with fully meeting the HSSD criteria are estimated to be $20.0 M. In addition, several of these acquisitions would present unique relocation challenges. See Note 7.

7. Recommendation

The accident study (see Note 4) only identified 1 accident that may have been attributable to the existing non-standard HSSD for this curve and the proposed design includes an incremental improvement (shoulder widened to 12') which would increase the HSSD approximately 88 % above the existing HSSD and also achieve nearly 89 % of the design criteria standard. In addition, the proposed design has corrected all other non-standard features and the non-standard HSSD applies only to the inner most lane (the other travel lanes meet HSSD criteria). See Figure 1. Further increasing HSSD would increase costs and/or property impacts and provide little to no additional accident reduction benefit. It is recommended that the nonstandard HSSD be retained for this curve, by including an incremental improvement to provide a 12 foot inside shoulder width along the length of the curve.

SEE ATTACHED CONTINUATION SHEET

Continuation - Non-Standard Feature Justification, Viaduct Alternative, Curve #3

1. Non-Standard Horizontal Stopping Sight Distance (HSSD) condition applies to inside travel lane only as sight distance is controlled by the concrete bridge barrier that is located at edge of proposed shoulder (See Figure 1).

2. Proposed minimum HSSD of 507ft/509ft is based on providing a widened 12' shoulder on the inside of the curve for the length of the curve. If a standard 4 foot shoulder were provided, the minimum HSSD would be 378 feet.

3. Rate reported is accidents per million vehicle miles (acc/mvm) for linear highway segments. The Statewide Accident Rate is from the published *Average Accident Rates for State Highways By Facility Type* (Based on accident data August 1, 2012 to July 31, 2014), based on an Urban, Divided 4 lane highway.

4. For more detailed accident report information, refer to Table 2 (copy attached to Exhibit A-3-1-01) included in the Technical Memorandum titled I-81 Viaduct Project – Syracuse, New York, Non-Standard and Non-Conforming Features Evaluation, S-Curve and Slalom Area, dated September 5, 2014.

5. The cost estimate is based on one potential approach to fully meet the standard for HSSD, which is providing additional widening of the inner side shoulder width from 12 ft to 17 ft along the length of the curve. (See note 7 for another potential approach). While widening the inside shoulder an additional 5 feet would satisfy the HSSD criteria for this curve, there are other concerns that this would introduce. Additional concerns include; potentially encouraging unauthorized use of the wider shoulder as a travel lane, snow removal and de-icing logistics during winter weather and increased long term maintenance costs. The estimated cost to over-widen the shoulder of this curve is $2.5 M, but this curve is just one of five curves within the interchange area that would need to be widened to meet HSSD criteria. The total cost to over-widen the shoulder of all five curves is estimated to be $26.0 M.

6. The design criterion for the left shoulder along this segment of I-81 is 4 feet. If a 4 foot wide left shoulder were provided, the resultant HSSD would be 378 feet. By increasing the left shoulder width to 12 feet, the resultant HSSD increases to 507ft/509ft, which is a significant improvement over the existing HSSD and represents an improvement to 89% of the Design Criteria standard.

7. A second potential approach to fully meeting the HSSD for this curve (see note 5) would be to provide a flatter horizontal curve. By increasing the radius of the proposed curve from the current design of 1788/1800 ft to 2260 ft., HSSD for this curve would meet design criteria. However, because of the complex geometry through the main I-81/I-690 Interchange, it is not possible to modify the alignment of the curve without modifying the geometry of I-81 northbound, I-690 westbound, I-690 eastbound and many of the interconnect ramps. This level of modification would essentially mimic alternative option V-2, which would result in approximately twelve (12) additional building impacts, nine (9) of which are on or eligible for listing on the National Register of Historic Places. The additional ROW impact costs that would be associated with fully meeting the HSSD criteria are estimated to be $20.0 M. In addition, several of these building could also present additional social and economic impacts as well as unique relocation challenges. For example:
    a. Nettleton Commons is a large building having both commercial and residential uses. As this building contains approximately 60 apartments and several businesses, acquisition of the building would impact a large number of residents and businesses in the core downtown area.
    b. The Community Reentry Center is operated by the Federal Bureau of Prisons as a halfway house for helping to transition released federal prisoners back into society. Recent attempts to relocate this facility proved to be controversial as community concerns included proximity to churches, homes, libraries and schools, so if this building is impacted by this project, it is anticipated this would present difficult and unique relocation challenges.
    c. Snowden Apartments is a very large apartment building with nearly 200 apartments and 350 residents. But this building is also very unique in that nearly 80% of the residents are under the supervision of the NYS Department of Corrections and Community Service as parolees' who are registered sex offenders. If this building is impacted, it is anticipated that it would present unique and difficult relocation challenges.

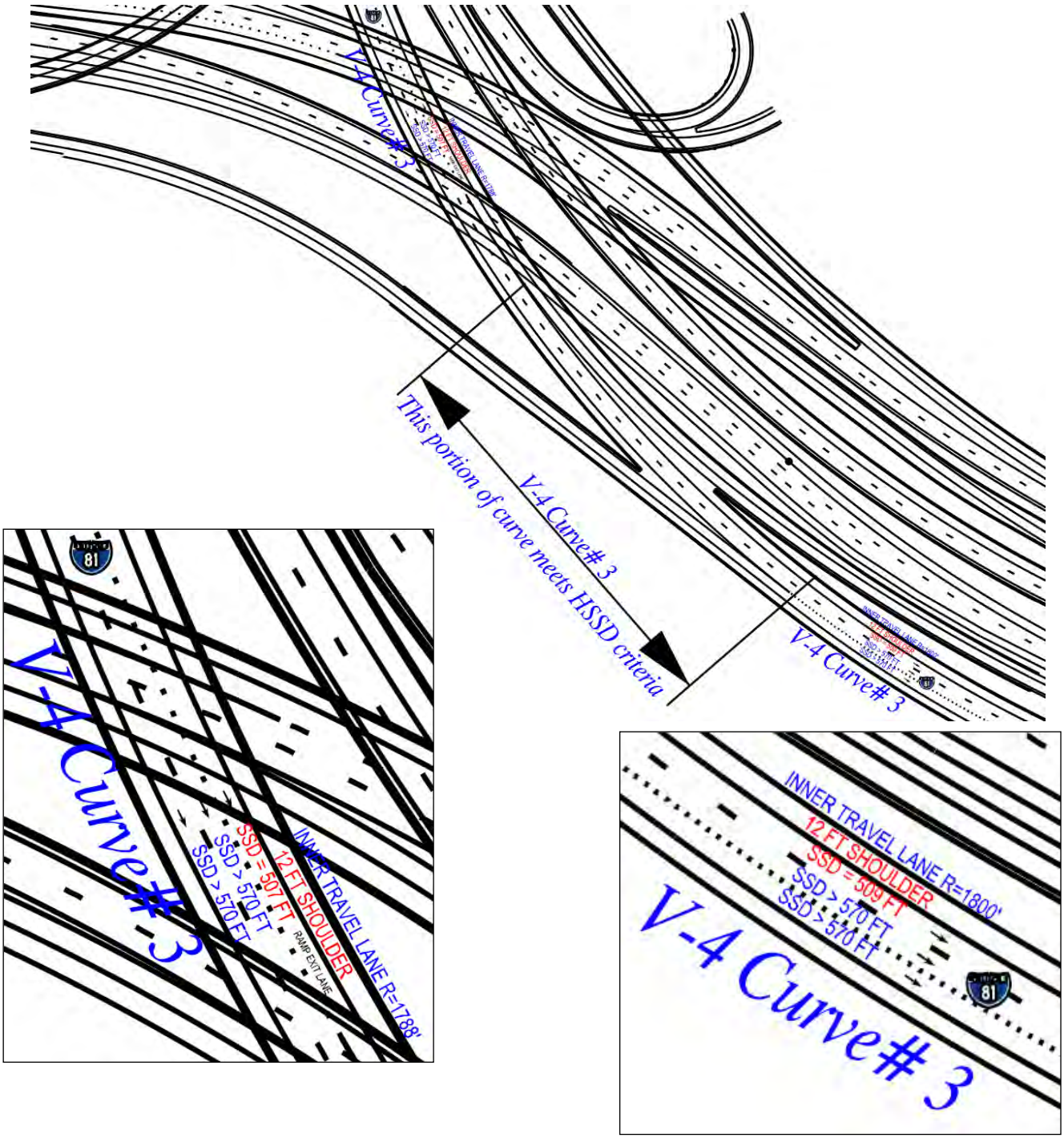

V-4 Curve#3
This portion of curve meets HSSD criteria
V-4 Curve# 3
V-4 Curve# 3
V-4 Curve#-3
INNER TRAVEL LANE R=1788'
12 FT SHOULDER
SSD = 507 FT
SSD > 570 FT
SSD > 570 FT
RAMP EXIT LANE
INNER TRAVEL LANE R=1800'
12 FT SHOULDER
SSD = 509 FT
SSD > 570 FT
SSD > 570 FT
V-4 Curve# 3

Figure 1

Exhibit A-3-1-04
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	I-81 Southbound
Project Type:	New Construction	Design Classification:	Interstate
ADT (2050)	48,100	Design Speed	60 MPH
DHV (2050)	4,692	% Trucks:	16%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Horizontal Stopping Sight Distance		
Location:	I-81 Southbound (RM 2043 – RM 2046; Curve#4; curve inner-most lane, and partial middle lane, only; see Note 1)		Viaduct Alternative
Standard Value:	570 FT (HSSD)	Design Speed	60 MPH
Existing Value:	270 FT (HSSD)		
Proposed Value:	426-553 FT (HSSD) Note 2		

2. Accident Analysis

Current Accident Rate:	acc/mvm or acc/mev (Note 3) 2.30 acc/mvm	Statewide Accident Rate:	acc/mvm or acc/mev (Note 3) 1.06 acc/mvm
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☒		NO ☐
If YES, describe how the feature contributes to accidents	During the three-year analysis period from July 1, 2010 through June 30, 2013, a total of 44 accidents occurred in this curve segment – of which 4 accidents were identified to be potentially related to the existing non-standard sight distance feature. The number of accidents potentially related to the existing non-standard feature equates to 9.1% of total accidents, and an accident rate of 0.21 acc/mvm). See Note 4		

3. Cost Estimates

Cost to Fully Meet Standards:	$ 8.6 M (based on additional over-widening of the inner shoulder along the length of the curve. See Note 5)
Cost(s) For Incremental Improvements:	$ 1.4 M based on widening right shoulder from 10 ft. to 12 ft. (see note 5).

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

Appropriate curve warning signs will be posted, and the Advisory Speed (W13-1) plaque may be used as supplement of warning signs to indicate the non-standard HSSD condition. An open rail system was also considered and dismissed because it would be difficult to maintain, result in long term operational issues, and would be inconsistent with the Department's bridge rail policy in Chapter 6 (Section 6.3.3.1) of the Bridge Manual.

5. Compatibility with Future Plans for Adjacent Segments

Over-widening of the inside shoulder to a maximum of 12 feet to increase HSSD is consistent with other curves in the area and there are no future plans for adjacent segments.

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Two approaches were evaluated to fully meet standards:

1) Additional over-widening of the inner side shoulder (from 12ft to 24t/27ft) would increase construction costs approximately $8.6 M , potentially encouraging unauthorized use of the wider shoulder as a travel lane, create snow removal and de-icing logistical issues during winter weather, increase long term maintenance costs and reduce the offset to one other building. This curve is just one of five curves within the interchange area and the total cost to over-widen the shoulder of all five curves is estimated to be $26.0 M. (see Note 5).
2) Increasing the proposed curve radii from 1364/1260ft to 2260ft would avoid direct impacts to six (6) buildings impacted by the current configuration but would require the acquisition of six (6) other buildings and substantially reduce the offset to three (3) buildings). The additional ROW impact costs that would be associated with fully meeting the HSSD criteria for all five curves within the interchange area are estimated to be $20.0 M. See Note 7.

7. Recommendation

The accident study (see Note 4) identified 4 accident (9.1%) that may have been attributable to the existing non-standard HSSD for this curve and the proposed design includes an incremental improvement (shoulder widened to 12') which would increase the HSSD approximately 58-84 % above the existing HSSD and also achieve nearly 75-78 % of the design criteria standard. In addition, the proposed design has corrected all other non-standard features and the non-standard HSSD applies only to the inside "Exit Only" lane and the middle decision lane as it pertains to traffic that is exiting to Harrison Street. Traffic in the two southbound thru lanes, including the middle decision lane that is continuing southbound on I-81, meets HSSD criteria. See Figure 1. Further increasing HSSD would increase costs and/or property impacts and provide little additional accident reduction benefit. It is recommended that the nonstandard HSSD be retained for this curve, by including an incremental improvement to provide a 12 foot inside shoulder width along the length of the curve.

SEE ATTACHED CONTINUATION SHEET

Continuation - Non-Standard Feature Justification, Viaduct Alternative, Curve #4

1. Non-Standard Horizontal Stopping Sight Distance (HSSD) condition applies to the inside “Exit Only” lane and the middle decision lane as it pertains to traffic that is exiting to the Harrison Street Exit Ramp as sight distance is controlled by the concrete bridge barrier that is located at edge of proposed shoulder. Traffic in the two southbound thru lanes, including the middle decision lane that is continuing southbound on I-81 meets HSSD criteria. (See Figure 1).

2. Proposed minimum HSSD of 443/426 feet (inner “Exit Only" lane) and the proposed minimum HSSD of 570/553 feet (middle decision lane for exiting traffic only), is based on providing a widened 12’ shoulder on the inside of the curve for the length of the curve. Thru traffic in the middle decision lane that is continuing southbound on I-81 SB would meet HSSD design criteria. If a standard 10 foot shoulder were provided, the minimum HSSD would be 418/402 feet (inner “Exit Only” lane) and 560/534 feet (middle decision lane for exiting traffic only).

3. Rate reported is accidents per million vehicle miles (acc/mvm) for linear highway segments. The Statewide Accident Rate is from the published *Average Accident Rates for State Highways By Facility Type* (Based on accident data August 1, 2012 to July 31, 2014), based on an Urban, Divided 4 lane highway.

4. For more detailed accident report information, refer to Table 2 (copy attached to Exhibit A-3-1-01) included in the Technical Memorandum titled I-81 Viaduct Project – Syracuse, New York, Non-Standard and Non-Conforming Features Evaluation, S-Curve and Slalom Area, dated September 5, 2014.

5. The cost estimate is based on one potential approach to fully meet the standard for HSSD, which is providing additional widening of the inner side shoulder width from 12 ft to 24ft/27ft along the length of the curve. (See note 7 for another potential approach). While widening the inside shoulder an additional 12ft/15ft would satisfy the HSSD criteria for this curve, there are other concerns that this would introduce. Additional concerns include; potentially encouraging unauthorized use of the wider shoulder as a travel lane, snow removal and de-icing logistics during winter weather, increased long term maintenance costs and a reduced offset to one (1) building. As shown on Figure 2, over widening of the shoulder to meet HSSD would potentially increase impacts to building #12B by reducing the offset from the building to the elevated highway from 24’ to12’. The estimated cost to over-widen the shoulder of this curve is $8.6 M, but this curve is just one of five curves within the interchange area that would need to be widened to meet HSSD criteria. The total cost to over-widen the shoulder of all five curves is estimated to be $26.0 M.

6. The design criterion for the right shoulder along this segment of I-81 is 10 feet. If a 10 foot wide left shoulder were provided, the resultant HSSD would be 402-418 feet (inner lane), 534 feet (middle lane). By increasing the right shoulder width to 12 feet, the resultant HSSD increases to 426-443 feet (inner lane), 553 feet (middle lane), which is a significant improvement over the existing HSSD and represents an improvement to 75-78% (inner lane), 97% (middle lane) of the Design Criteria standard.

7. A second potential approach to fully meeting the HSSD for this curve (see note 5) would be to provide a flatter horizontal curve. By increasing the radius of the proposed curve from the current design of 1364/1260 ft to 2260 ft. and retaining a standard tangent length between curves 3 and 4 (see Figure 3), HSSD for through lanes of this curve would meet 60 MPH design criteria but the HSSD for a limited length of the ramp exit only lane would meet 50 MPH design criteria (see Figure 4). Use of this flatter curve would avoid direct impacts to six (6) buildings impacted by the current configuration but would require the acquisition of six (6) other buildings and substantially reduce the offset to three (3) buildings as noted below. In addition, this is one of five curves in the interchange area and the additional ROW impact costs that would be associated with fully meeting the HSSD criteria for all five curves is estimated to be $20.0 M. The follow summarizes the specific ROW impacts of realigning only this one curve.
    a. Buildings 10, 12A, 13, 14, 31 and 32 would no longer be directly impacted, but buildings 3, 12B, 12C, 12D, 35 and 36 would be directly impacted by flattening the curve. As buildings 12A, 12B and 12D are on or eligible for listing on the National Register of Historic Places, the net effect of the realignment is one (1) additional eligible resource would be directly impacted.
    b. While buildings 10, 12A and 13 would no longer be directly impacted by the flatter curve, they would still be relatively close (22’, 50’ and 3’), respectively to the edge of the realigned highway.
    c. The offset from the highway to the building on the NW corner of Washington/Townsend would be reduced from 120’ to 63’.
    d. The offset from the highway to the building on the SE corner of Washington/Townsend would be reduced from 80’ to 26’.
    e. The offset from the highway to the building on the NW corner of Genesee/McBride would be reduced from 60’ to 38’.

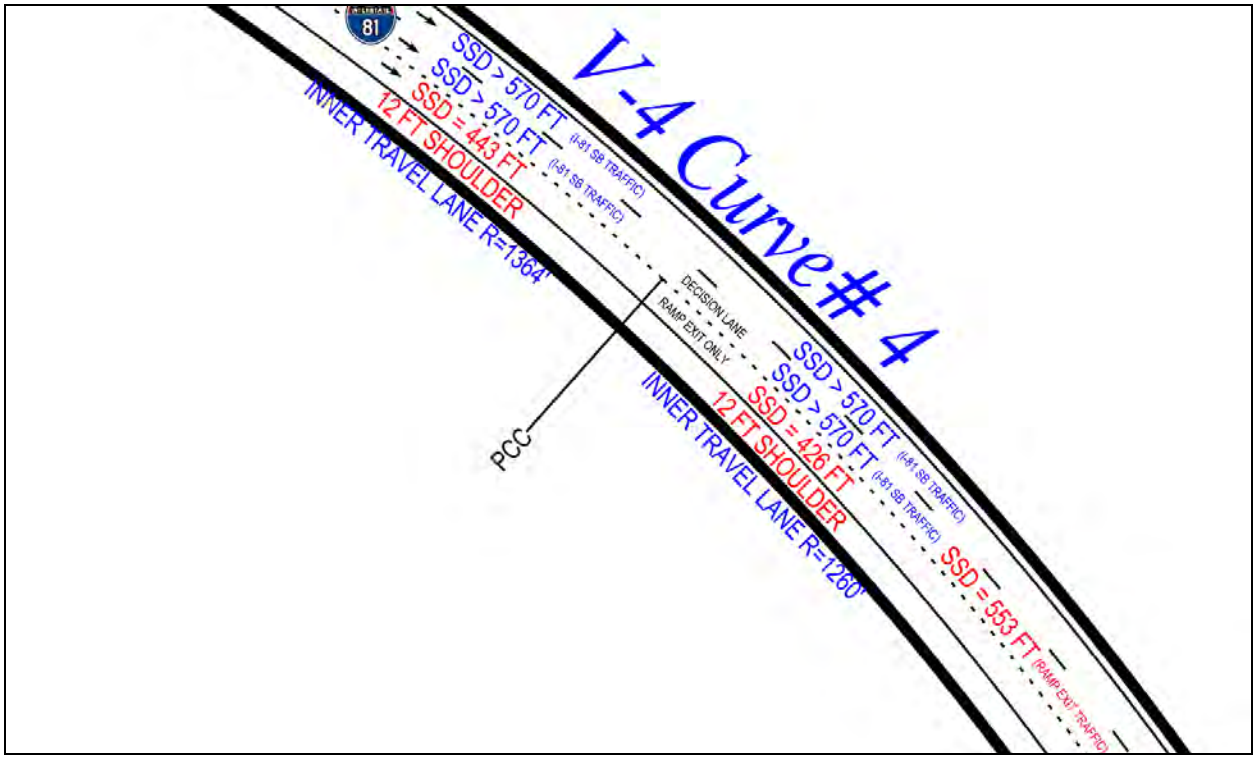


Figure 1

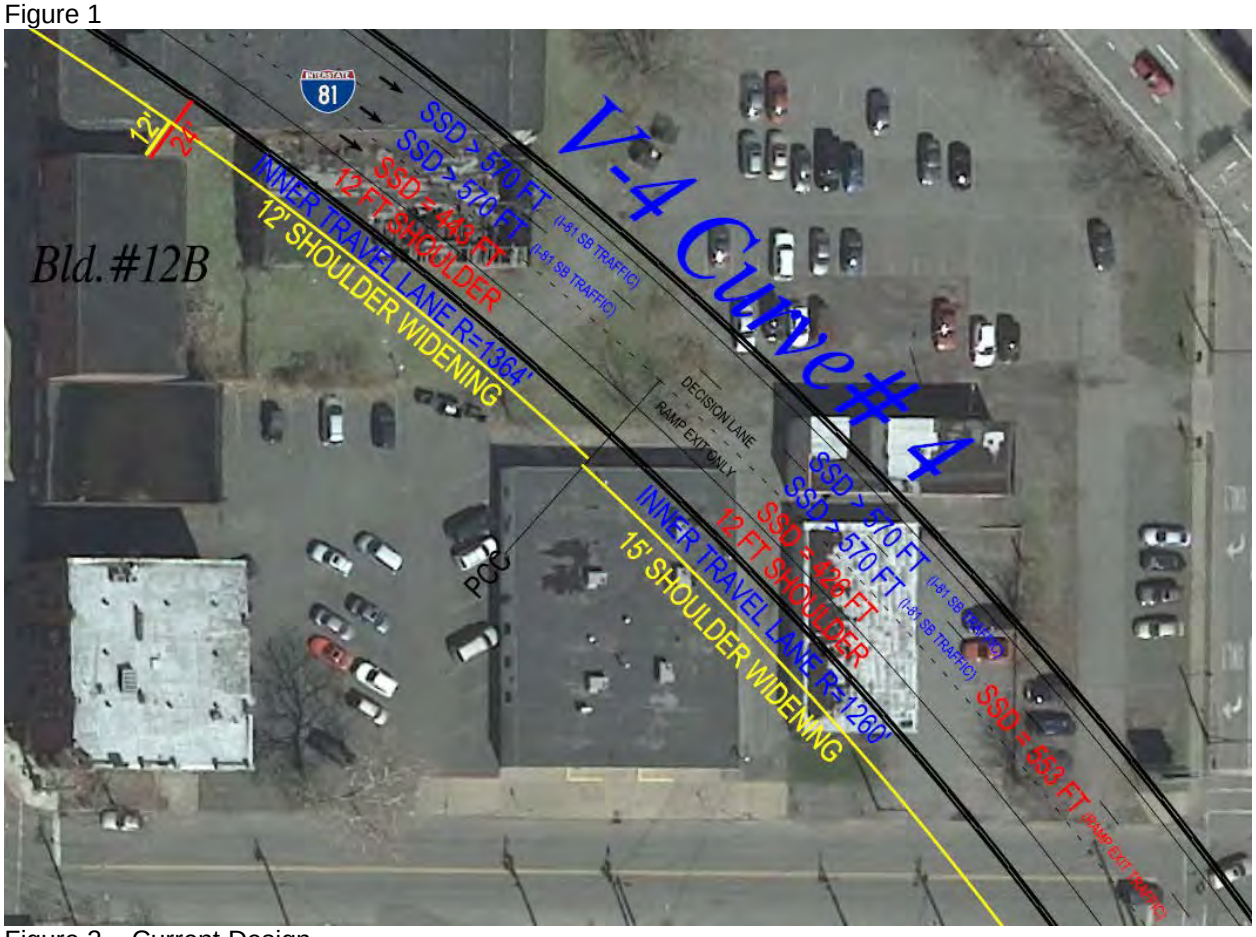


Figure 2 – Current Design

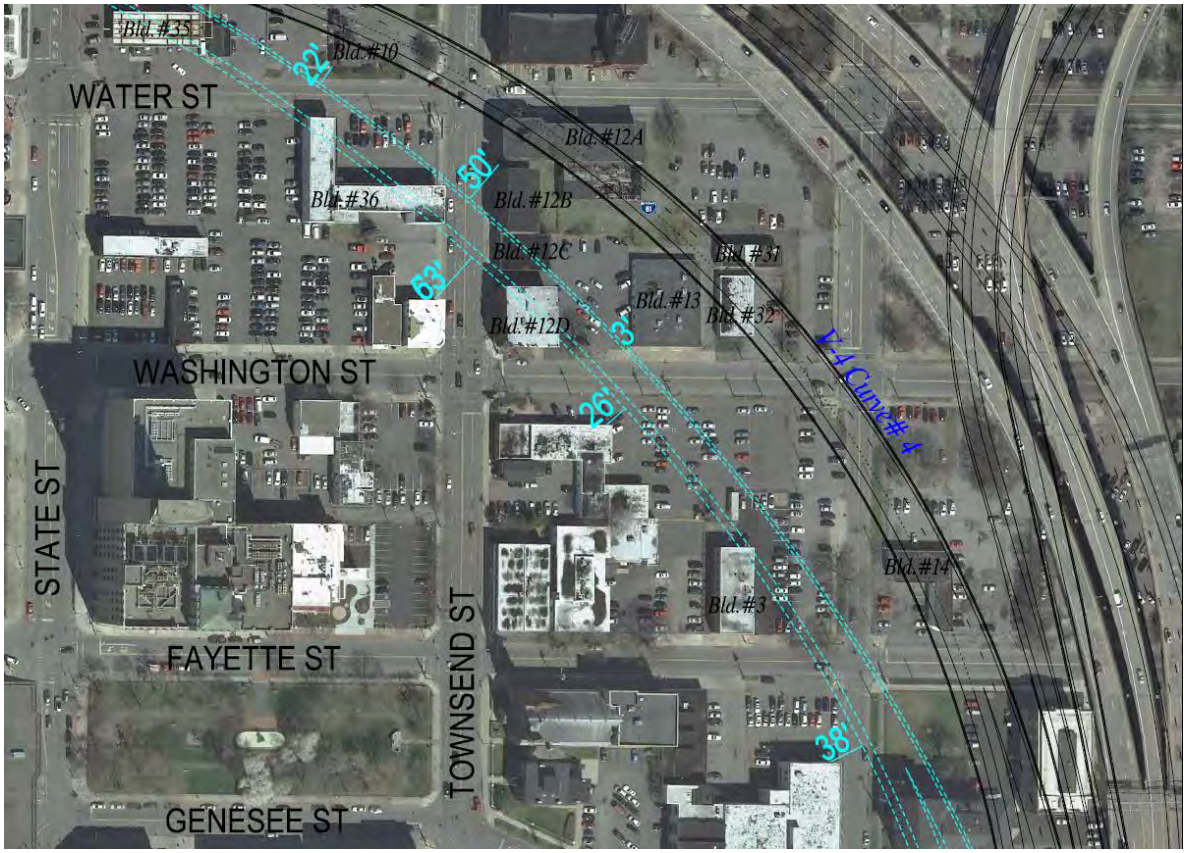


Figure 3

Figure 4 – Flatter Curve

Exhibit A-3-1-05
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	I-690 Eastbound
Project Type:	New Construction	Design Classification:	Interstate
ADT (2050)	44,600	Design Speed	60 MPH
DHV (2050)	4,348	% Trucks:	16%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Horizontal Stopping Sight Distance		
Location:	I-690 Eastbound (RM 2025 – RM 2028; Curve#6; curve inner-most lane only; see Note 1)		Viaduct Alternative
Standard Value:	570 FT (HSSD)	Design Speed	60 MPH
Existing Value:	300 FT (HSSD)		
Proposed Value:	509 FT (HSSD) Note 2		

2. Accident Analysis

Current Accident Rate:	acc/mvm or acc/mev (Note 3) 2.37 acc/mvm	Statewide Accident Rate:	acc/mvm or acc/mev (Note 3) 1.06 acc/mvm
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☒		NO ☐
If YES, describe how the feature contributes to accidents	During the three-year analysis period from July 1, 2010 through June 30, 2013, a total of 42 accidents occurred in this curve segment – of which 7 accidents were identified to be potentially related to the existing non-standard sight distance feature. The number of accidents potentially related to the existing non-standard feature equates to 16.7% of total accidents, and an accident rate of 0.40 acc/mvm). See Note 4		

3. Cost Estimates

Cost to Fully Meet Standards:	$ 4.0 M (based on additional over-widening of the inner shoulder along the length of the curve. See Note 5)
Cost(s) For Incremental Improvements:	$ 7.0 M based on widening left shoulder from 4 ft. to 12 ft. (see note 5).

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

Appropriate curve warning signs will be posted, and the Advisory Speed (W13-1) plaque may be used as supplement of warning signs to indicate the non-standard HSSD condition. An open rail system was also considered and dismissed because it would be difficult to maintain, result in long term operational issues, and would be inconsistent with the Department's bridge rail policy in Chapter 6 (Section 6.3.3.1) of the Bridge Manual.

5. Compatibility with Future Plans for Adjacent Segments

Over-widening of the inside shoulder to a maximum of 12 feet to increase HSSD is consistent with other curves in the area and there are no future plans for adjacent segments.

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Two approaches were evaluated to fully meet standards:

1) Additional over-widening of the inner side shoulder (from 12ft to 17ft) would increase construction costs approximately $4.0 M , potentially encouraging unauthorized use of the wider shoulder as a travel lane, create snow removal and de-icing logistical issues during winter weather and increased long term maintenance costs. This curve is just one of five curves within the interchange area and the total cost to over-widen the shoulder of all five curves is estimated to be $26.0 M. (see Note 5).
2) Increasing the proposed curve radii from 1800ft to 2260ft would require realignment of the entire interchange area, resulting in a design similar to Alternative Option V-2 and significantly increasing the number of building impacts (twelve (12) additional buildings, nine (9) of which are on or eligible for listing on the National Register of Historic Places). The additional ROW impact costs that would be associated with fully meeting the HSSD criteria are estimated to be $20.0 M. In addition, several of these acquisitions would present unique relocation challenges. See Note 7.

7. Recommendation

The accident study (see Note 4) identified 7 accidents that may have been attributable to the existing non-standard HSSD for this curve and the proposed design includes an incremental improvement (shoulder widened to 12') which would increase the HSSD approximately 70 % above the existing HSSD and also achieve nearly 89 % of the design criteria standard. In addition, the proposed design has corrected all other non-standard features and the non-standard HSSD applies only to the inner most lane (the other travel lanes meet HSSD criteria). See Figure 1. Further increasing HSSD would increase costs and/or property impacts and provide little to no additional accident reduction benefit. It is recommended that the nonstandard HSSD be retained for this curve, by including an incremental improvement to provide a 12 foot inside shoulder width along the length of the curve.

SEE ATTACHED CONTINUATION SHEET

Continuation - Non-Standard Feature Justification, Viaduct Alternative, Curve #6

1. Non-Standard Horizontal Stopping Sight Distance (HSSD) condition applies to inside travel lane only as sight distance is controlled by the concrete bridge barrier that is located at edge of proposed shoulder (See Figure 1).

2. Proposed minimum HSSD of 509 feet is based on providing a widened 12' shoulder on the inside of the curve for the length of the curve. If a standard 4 foot shoulder were provided, the minimum HSSD would be 379 feet.

3. Rate reported is accidents per million vehicle miles (acc/mvm) for linear highway segments. The Statewide Accident Rate is from the published *Average Accident Rates for State Highways By Facility Type* (Based on accident data August 1, 2012 to July 31, 2014), based on an Urban, Divided 4 lane highway.

4. For more detailed accident report information, refer to Table 2 (copy attached to Exhibit A-3-1-01) included in the Technical Memorandum titled I-81 Viaduct Project – Syracuse, New York, Non-Standard and Non-Conforming Features Evaluation, S-Curve and Slalom Area, dated September 5, 2014.

5. The cost estimate is based on one potential approach to fully meet the standard for HSSD, which is providing additional widening of the inner side shoulder width from 12 ft to 17 ft along the length of the curve. (See note 7 for another potential approach). While widening the inside shoulder an additional 5 feet would satisfy the HSSD criteria for this curve, there are other concerns that this would introduce. Additional concerns include; potentially encouraging unauthorized use of the wider shoulder as a travel lane, snow removal and de-icing logistics during winter weather and increased long term maintenance costs. The estimated cost to over-widen the shoulder of this curve is $4.0 M, but this curve is just one of five curves within the interchange area that would need to be widened to meet HSSD criteria. The total cost to over-widen the shoulder of all five curves is estimated to be $26.0 M.

6. The design criterion for the left shoulder along this segment of I-81 is 4 feet. If a 4 foot wide left shoulder were provided, the resultant HSSD would be 379 feet. By increasing the left shoulder width to 12 feet, the resultant HSSD increases to 509 feet, which is a significant improvement over the existing HSSD and represents an improvement to 89% of the Design Criteria standard.

7. A second potential approach to fully meeting the HSSD for this curve (see note 5) would be to provide a flatter horizontal curve. By increasing the radius of the proposed curve from the current design of 1800 ft to 2260 ft., HSSD for this curve would meet design criteria. However, because of the complex geometry through the main I-81/I-690 Interchange, it is not possible to modify the alignment of the curve without modifying the geometry of I-690 westbound, I-81 northbound, I-81 southbound and many of the interconnect ramps. This level of modification would essentially mimic alternative option V-2, which would result in approximately twelve (12) additional building impacts, nine (9) of which are on or eligible for listing on the National Register of Historic Places. The additional ROW impact costs that would be associated with fully meeting the HSSD criteria are estimated to be $20.0 M. In addition, several of these building could also present additional social and economic impacts as well as unique relocation challenges. For example:
    a. Nettleton Commons is a large building having both commercial and residential uses. As this building contains approximately 60 apartments and several businesses, acquisition of the building would impact a large number of residents and businesses in the core downtown area.
    b. The Community Reentry Center is operated by the Federal Bureau of Prisons as a halfway house for helping to transition released federal prisoners back into society. Recent attempts to relocate this facility proved to be controversial as community concerns included proximity to churches, homes, libraries and schools, so if this building is impacted by this project, it is anticipated this would present difficult and unique relocation challenges.
    c. Snowden Apartments is a very large apartment building with nearly 200 apartments and 350 residents. But this building is also very unique in that nearly 80% of the residents are under the supervision of the NYS Department of Corrections and Community Service as parolees' who are registered sex offenders. If this building is impacted, it is anticipated that it would present unique and difficult relocation challenges.

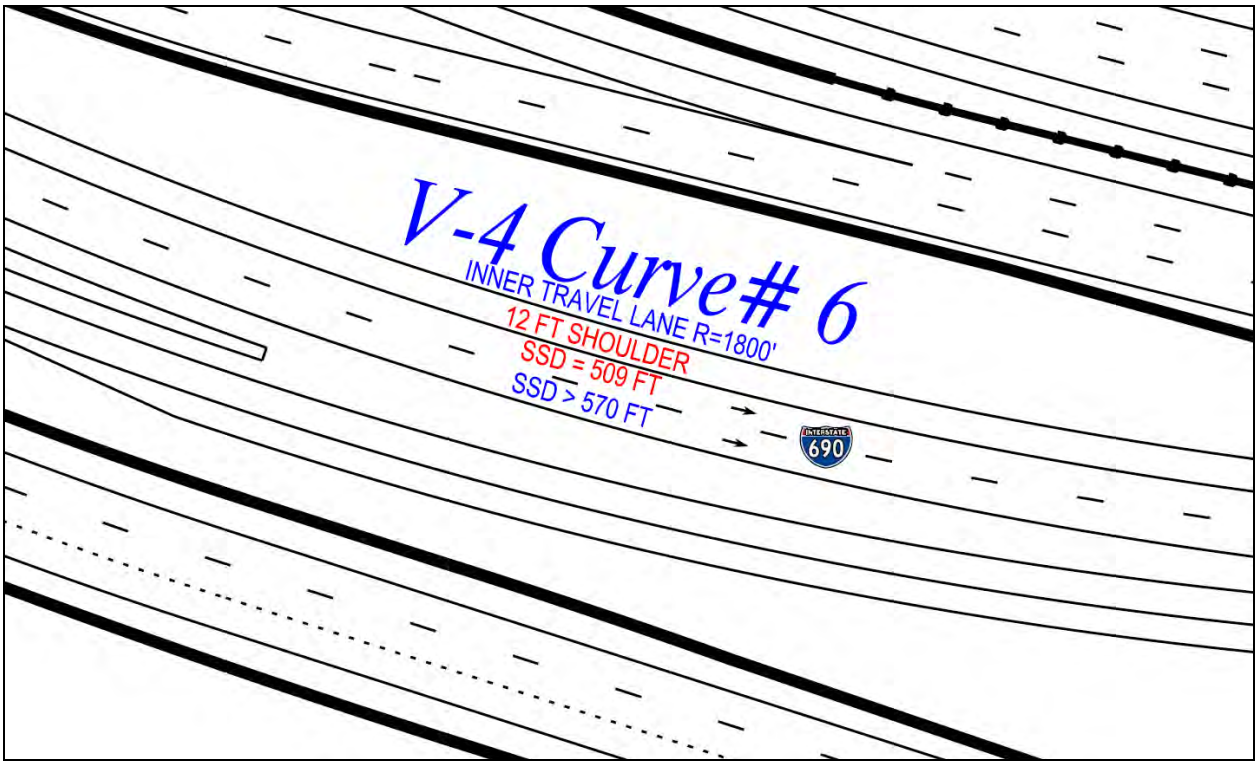

V-4 Curve# 6
INNER TRAVEL LANE R=1800'
12 FT SHOULDER
SSD = 509 FT
SSD > 570 FT
INTERSTATE
690
Figure 1

Exhibit A-3-1-06
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	Eastbound I-690 to Northbound I-81
Project Type:	Reconstruction	Design Classification:	Interstate Ramp
ADT (2050)	12,300	Design Speed	40 mph
DHV (2050)	1290	% Trucks:	7.4%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Sight Distance (Headlight)		
Location:	STA 18+55 TO STA 21+78		Viaduct Alternative
Standard Value:	305 ft	Design Speed	40 mph
Existing Value:	N/A		
Proposed Value:	268 ft		

2. Accident Analysis

Current Accident Rate:	N/A New Ramp	Statewide Accident Rate:	1.03 acc/mvm
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐		NO ☒
If YES, describe how the feature contributes to accidents	Not Applicable, this is a new ramp		

3. Cost Estimates

Cost to Fully Meet Standards:	$575,000 (Construction Cost)
Cost(s) For Incremental Improvements:	This is a new ramp. There are no incremental costs

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

Fixed source lighting will mitigate the non-standard headlight sight distance.

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Providing standard headlight sight distance would require a longer sag vertical curve which would increase grades along the section of the ramp which is directly under the proposed Butternut Street bridge. The proposed Butternut St. bridge would in turn need to be raised about 1' above its proposed design to achieve the minimum vertical clearance over the ramp. Raising Butternut Street to meet the minimum clearance over the raised ramp would require additional reconstruction of the Butternut Street and State Street intersection and approaches as well as exacerbate another non-standard headlight sight distance which is located at the Butternut St./State Street intersection (see separate Non-Standard Feature Justification Form). In addition, maintaining the shorter sag vertical curve on the ramp as currently proposed, would allow the ramp to merge with the mainline sooner, thereby maximizing the weaving distance between this ramp and the Court Street off-ramp.

7. Recommendation

Maintain proposed non-standard headlight sight distance on the sag vertical curve in the vicinity of the Butternut Street Bridge and mitigate the condition with fixed source lighting of the ramp.

Exhibit A-3-1-07
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	Butternut Street
Project Type:	Reconstruction	Design Classification:	Urban Minor Arterial
ADT (2050)	4,700	Design Speed	30 mph
DHV (2050)	520	% Trucks:	3.0%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Sight Distance (Headlight)		
Location:	STA 109+00 TO STA 111+00		Viaduct Alternative
Standard Value:	200 ft	Design Speed	30 mph
Existing Value:	N/A		
Proposed Value:	132 ft		

2. Accident Analysis

Current Accident Rate:	N/A New Location	Statewide Accident Rate:	1.03 acc/mvm
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐	NO ☒	
If YES, describe how the feature contributes to accidents	Not Applicable, this is a new location		

3. Cost Estimates

Cost to Fully Meet Standards:	$575,000 (Construction Cost)
Cost(s) For Incremental Improvements:	This is a new location. There are no incremental costs

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

Fixed source lighting will mitigate the non-standard headlight sight distance.

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Providing standard headlight sight distance would increase the elevations along the sag vertical curve about 2'. This would require additional reconstruction of the State St. and Butternut St. intersection and the approaches.

7. Recommendation

Propose non-standard headlight sight distance with fixed source lighting

Exhibit A-3-1-08
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	Almond Street/Van Buren Street
Project Type:	Reconstruction	Design Classification:	Urban Principal Arterial - Other
ADT (2050)	11,600	Design Speed	35 mph
DHV (2050)	700	% Trucks:	3%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Horizontal Curve Radius		
Location:	STA 108+30 TO STA 111+35		Viaduct Alternative
Standard Value:	371 ft	Design Speed	35 mph
Existing Value:	150 ft		
Proposed Value:	160 ft		

2. Accident Analysis

Current Accident Rate:	3.88 acc/mvm	Statewide Accident Rate:	3.52 acc/mvm
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐		NO ☒
If YES, describe how the feature contributes to accidents	During the three-year analysis period from August 1, 2013 through July 31, 2016, a total of two accidents occurred on this segment, of which none of the accidents were identified to be potentially related to the existing non-standard horizontal curve west of Renwick Avenue. The number of accidents potentially related to the existing non-standard feature equates to 0% of the total accidents, and an accident rate of 0.00 acc/mvm.		

3. Cost Estimates

Cost to Fully Meet Standards:	$1,700,000 (Construction Cost) plus parking garage demolition, permanent land acquisition and temporary easements
Cost(s) For Incremental Improvements:	Assuming a 250' Radius (30 mph design). $1,500,000 (Construction Cost) plus permanent land acquisition and temporary easements

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

Curve warnings signs and delineation will be installed on both the southbound and westbound approaches to the curve. In addition, the implementation of signalized control at the Almond Street/Van Buren Street/Renwick Avenue intersection is anticipated to slow vehicles approaching the curve from the westbound direction. The existing intersection induces speeding in the westbound direction due to the lack of traffic control.

5. Compatibility with Future Plans for Adjacent Segments

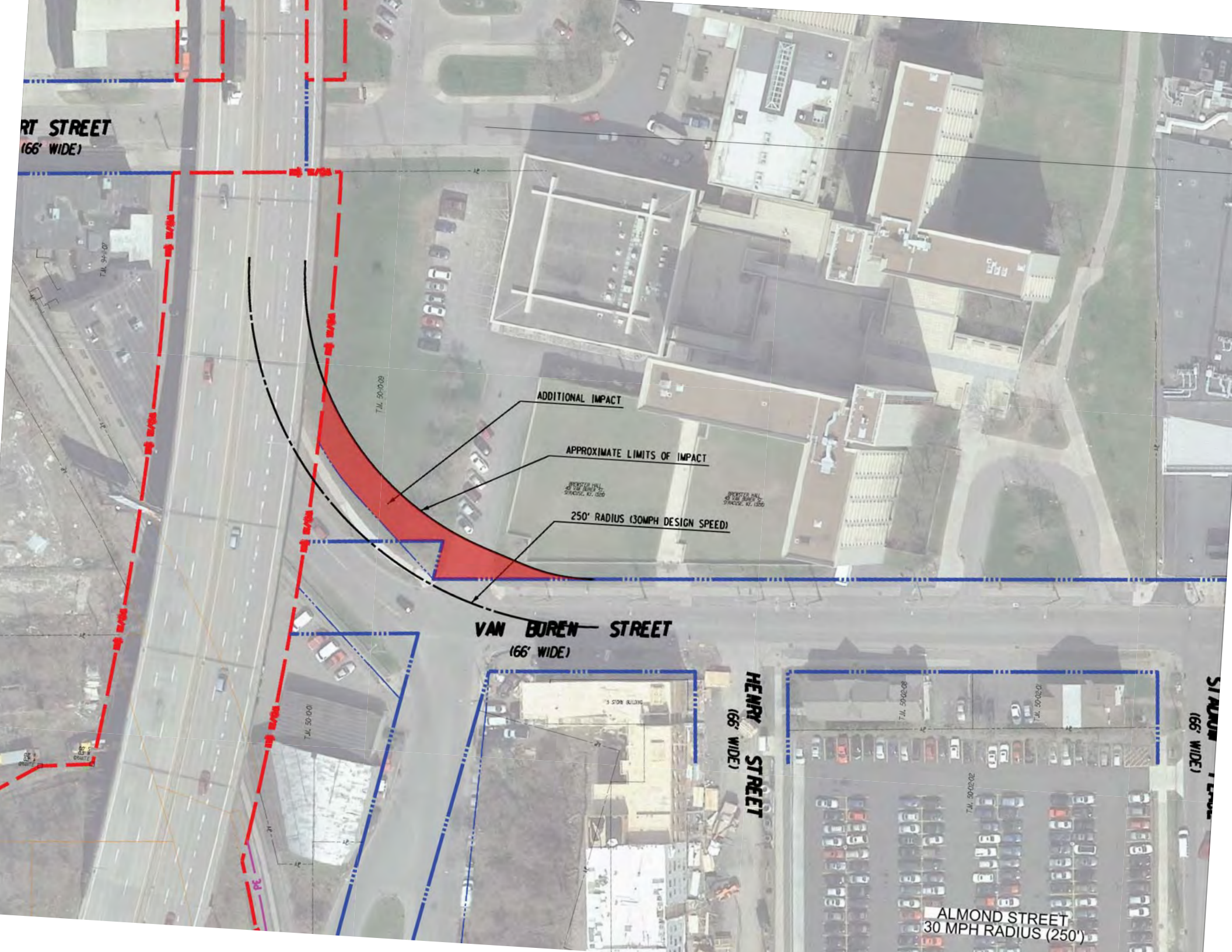
No future plans for adjacent segments

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Providing a standard curve radii would impact the Syracuse University Parking Garage to the north of Van Buren Street requiring demolition and acquisition of adjacent property.

7. Recommendation

Retain proposed non-standard curve radii with Curve Warning signs and delineation.


RT STREET
(66' WIDE)
ADDITIONAL IMPACT
APPROXIMATE LIMITS OF IMPACT
250' RADIUS (30MPH DESIGN SPEED)
VAN BUREN STREET
(66' WIDE)
HENRY STREET
(66' WIDE)
ALMOND STREET
30 MPH RADIUS (250')

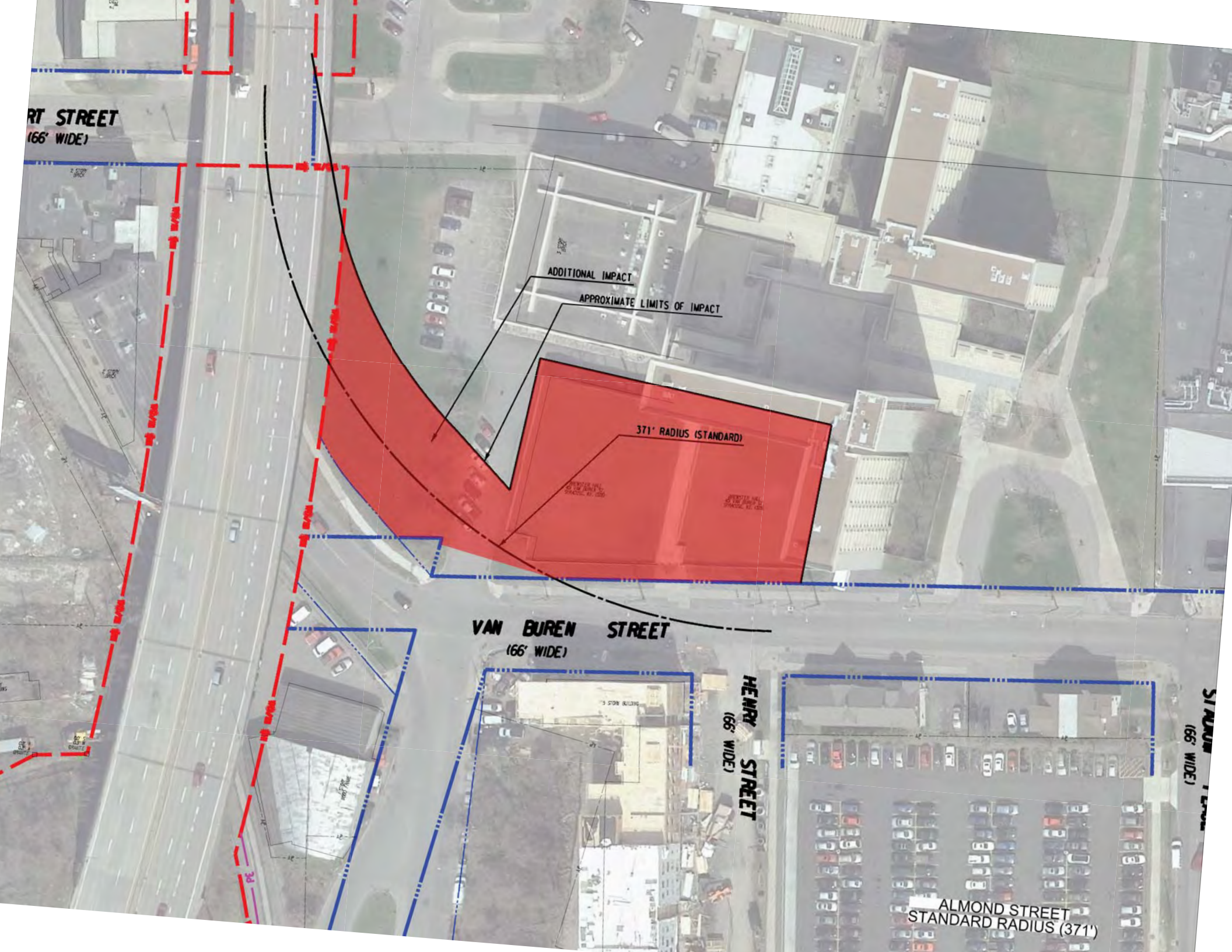

RT STREET
(66' WIDE)
ADDITIONAL IMPACT
APPROXIMATE LIMITS OF IMPACT
371' RADIUS (STANDARD)
VAN BUREN STREET
(66' WIDE)
HENRY STREET
(66' WIDE)
ALMOND STREET
STANDARD RADIUS (371')

Exhibit A-3-1-09
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	Fineview Place
Project Type:	Reconstruction	Design Classification:	Urban Local
ADT (2050)	8,900	Design Speed	30 mph
DHV (2050)	590	% Trucks:	3%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Horizontal Curve Radius		
Location:	STA 101+08 TO 101+73 (At intersection with Renwick Ave)		Viaduct Alternative
Standard Value:	250 ft	Design Speed	30 mph
Existing Value:	12 ft		
Proposed Value:	40 ft		

2. Accident Analysis

Current Accident Rate:	7.05 acc/mvm	Statewide Accident Rate:	3.52 acc/mvm
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☒	NO ☐	
If YES, describe how the feature contributes to accidents	During the three-year analysis period from August 1, 2013 through July 31, 2016, a total of five accidents occurred on the segment of Renwick Ave, between MLK East and Van Buren St. Only one of the accidents was identified to be potentially related to the existing non-standard Horizontal Curve Radius on Fineview Place near the intersection with Renwick Avenue. The number of accidents potentially related to the existing non-standard features equates to 20% of the total accidents, and an accident rate of 1.41 acc/mvm.		

3. Cost Estimates

Cost to Fully Meet Standards:	N/A – Due to geographic constraints, it is infeasible to fit a standard curve or to improve on the recommended curve. The only way to eliminate the non-standard curve radius is to close Fineview Pl. See note 6
Cost(s) For Incremental Improvements:	No incremental improvements are feasible due to geographic constraints.

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

Curve warning signs and delineation may be installed on the northbound approach to the curve. Since the curve is located adjacent to the intersection with Renwick Ave., mitigation in the southbound direction is not warranted since vehicles will be turning into the curve from Renwick Avenue at turning speeds.

5. Compatibility with Future Plans for Adjacent Segments

Proposed configuration is compatible with adjacent segments. There are no future plans to modify adjacent segments

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Due to geographic constraints, it is infeasible to fit a standard curve radius or to improve on the recommended curve. Due to the close proximity of the railroad, Renwick Ave., and the Syracuse University Housing building, even a modest increase would require realigning Renwick Ave. to the east, This would result in severe property impacts to the east. In addition, providing the proposed radius, would allow Fineview Place to intersect with Renwick Ave. at a near right angle and provide sufficient separation between the Almond St./Van Buren St./Renwick Ave. and the Renwick Ave./Fineview Pl. intersections. The increase in traffic along Renwick Ave. warrants additional separation between these 2 intersections to minimize conflicts.

7. Recommendation

Provide non-standard horizontal curve radius with curve warning signs and delineation on the northbound approach to the curve.

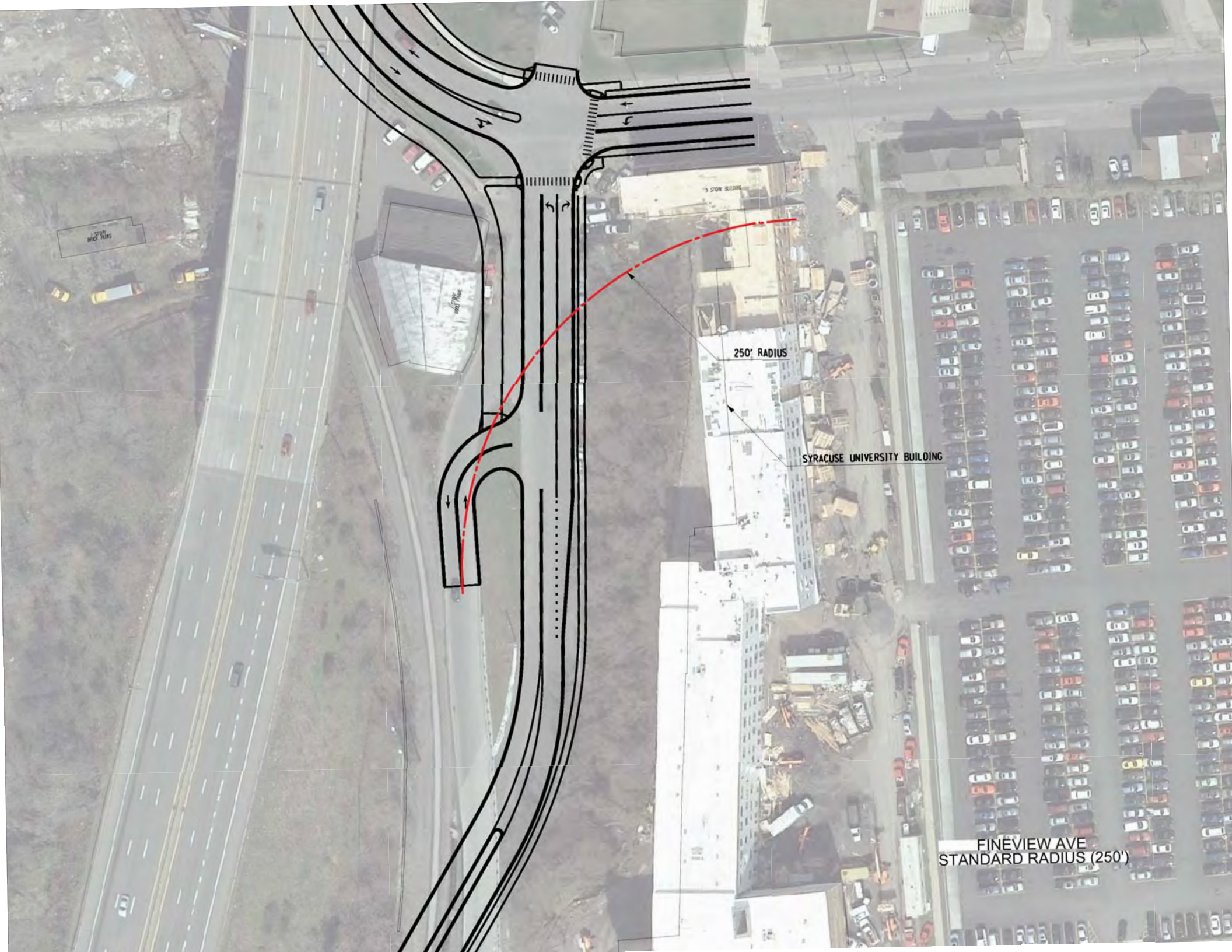

250' RADIUS
SYRACUSE UNIVERSITY BUILDING
FINEVIEW AVE
STANDARD RADIUS (250')

Exhibit A-3-1-10
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	Renwick Ave
Project Type:	Reconstruction	Design Classification:	Urban Minor Arterial
ADT (2050)	14,700	Design Speed	35 mph
DHV (2050)	930	% Trucks:	3%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Sight Distance (Headlight)		
Location:	STA 105+50 TO STA 106+50 (Under Fineview Pl. Bridge)		Viaduct Alternative
Standard Value:	250 ft	Design Speed	35 mph
Existing Value:	116 ft		
Proposed Value:	116 ft		

2. Accident Analysis

Current Accident Rate:	7.05 acc/mvm	Statewide Accident Rate:	3.52 acc/mvm
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☒	NO ☐	
If YES, describe how the feature contributes to accidents	During the three-year analysis period from August 1, 2013 through July 31, 2016, a total of five accidents occurred on this segment, of which one of the accidents were identified to be potentially related to the existing non-standard Headlight Sight Distance in both directions of the railroad overpass. The number of accidents potentially related to the existing non-standard features equates to 20% of the total accidents, and an accident rate of 1.41 acc/mvm.		

3. Cost Estimates

Cost to Fully Meet Standards:	$15,000,000 (Construction Cost)
Cost(s) For Incremental Improvements:	No incremental improvements. The existing sight distance is being maintained

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

Fixed source lighting will mitigate the non-standard headlight sight distance.

5. Compatibility with Future Plans for Adjacent Segments

Proposed configuration is compatible with adjacent segments. There are no future plans to modify adjacent segments

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Providing standard headlight sight distance would increase the elevations along Renwick Ave and therefore reducing the clearance underneath the NYS&W railroad bridge and the Fineview Place bridge.

7. Recommendation

Retain existing non-standard headlight sight distance and add fixed source lighting.

Exhibit A-3-1-11
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	Renwick Ave (Viaduct Alternative)
Project Type:	Reconstruction	Design Classification:	Urban Minor Arterial
ADT (2050)	14,700	Design Speed	35 mph
DHV (2050)	930	% Trucks:	3%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Sight Distance (Horizontal)		
Location:	STA 107+00 TO STA 109+00, Southbound Direction Only (Near Fineview Place bridge)		
Standard Value:	250 ft	Design Speed	35 mph
Existing Value:	190 ft		
Proposed Value:	190 ft		

2. Accident Analysis

Current Accident Rate:	7.05 acc/mvm	Statewide Accident Rate:	3.52 acc/mvm
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☒	NO ☐	
If YES, describe how the feature contributes to accidents	During the three-year analysis period from August 1, 2013 through July 31, 2016, a total of five accidents occurred on this segment, of which one of the accidents were identified to be potentially related to the existing non-standard Horizontal Sight Distance in the southbound direction. The number of accidents potentially related to the existing non-standard features equates to 20% of the total accidents, and an accident rate of 1.41 acc/mvm.		

3. Cost Estimates

Cost to Fully Meet Standards:	$15,000,000 (Construction Cost)
Cost(s) For Incremental Improvements:	No incremental improvement. The existing stopping sight distance is being maintained

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

Curve warning signs will be installed.

5. Compatibility with Future Plans for Adjacent Segments

Proposed configuration is compatible with adjacent segments. There are no future plans to modify adjacent segments

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Sight distance restriction only applies to the Southbound lane of Renwick Avenue. Providing standard stopping sight distance would require reconstruction of the Fineview Place and Railroad bridges and retaining walls. The Fineview place bridge and retaining walls are less than 10 years old.

7. Recommendation

Retain existing non-standard stopping sight distance.

Exhibit A-3-1-12
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	Van Buren Street
Project Type:	Reconstruction	Design Classification:	Urban Minor Arterial
ADT (2050)	17,200	Design Speed	35 mph
DHV (2050)	1,000	% Trucks:	3%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Grade (Two-Way traffic)		
Location:	Between Almond Street and Henry Street		Viaduct Alternative
Standard Value:	8%	Design Speed	35 mph
Existing Value:	15.52%		
Proposed Value:	15.52%		

2. Accident Analysis

Current Accident Rate:	17.47 acc/mvm	Statewide Accident Rate:	3.52 acc/mvm
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☒	NO ☐	
If YES, describe how the feature contributes to accidents	During the three-year analysis period from August 1, 2013 through July 31, 2016, a total of 20 accidents occurred on this segment, of which five of the accidents were identified to be potentially related to the existing non-standard grade (>8%) of Van Buren Street. The number of accidents potentially related to the existing non-standard grade equates to 25% of the total accidents, and an accident rate of 4.36 acc/mvm.		

3. Cost Estimates

Cost to Fully Meet Standards:	$1,300,000 (Construction Cost) plus temporary easement cost
Cost(s) For Incremental Improvements:	No incremental improvements. Existing grade being maintained.

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

A W7-1a (Hill with Grade) sign will be placed near the top of the non-standard grade to warn drivers in the downhill direction.

5. Compatibility with Future Plans for Adjacent Segments

Proposed configuration is compatible with adjacent segments. There are no future plans to modify adjacent segments

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Providing a standard grade would raise elevations about 11' near the intersection of Van Buren/Almond/Renwick, requiring raising the grade of Renwick Ave and Almond Street to a max grade of 8% to meet Van Buren St. Raising elevations at this intersection would also require relocating the driveway leading to the Syracuse University Parking Garage, on the north side of Van Buren St.

7. Recommendation

Retain existing non-standard grade of 15.52%

NOTES:

Exhibit A-3-1-13
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	I-81 Northbound Entrance Ramp at Pearl Street
Project Type:	Reconstruction	Design Classification:	Interstate Ramp
ADT (2050)	7,900	Design Speed	30 mph
DHV (2050)	1,030	% Trucks:	2.5%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Control of Access		
Location:	Driveway at 400 Pearl St.		Viaduct Alternative
Standard Value:	50 ft	Design Speed	30 mph
Existing Value:	20 ft		
Proposed Value:	20 ft		

2. Accident Analysis

Current Accident Rate:		Statewide Accident Rate:	
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐	NO ☒	
If YES, describe how the feature contributes to accidents			

3. Cost Estimates

Cost to Fully Meet Standards:	None
Cost(s) For Incremental Improvements:	No Incremental improvement. Maintaining existing condition

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

None. Driveway is expected to generate very few trips and therefore little risk of conflicts near the ramp terminal.

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Closing the driveway would require acquisition of the business.

7. Recommendation

Retain existing non-standard control of access.

Exhibit A-3-1-14
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	I-81 Northbound Exit Ramp at Adams Street
Project Type:	Reconstruction	Design Classification:	Interstate Ramp
ADT (2050)	7,185	Design Speed	30 mph
DHV (2050)	861	% Trucks:	5%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Control of Access		
Location:	Almond St.		Viaduct Alternative
Standard Value:	50 ft	Design Speed	30 mph
Existing Value:	20 ft		
Proposed Value:	20 ft		

2. Accident Analysis

Current Accident Rate:		Statewide Accident Rate:	
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐	NO ☒	
If YES, describe how the feature contributes to accidents			

3. Cost Estimates

Cost to Fully Meet Standards:	None
Cost(s) For Incremental Improvements:	No incremental improvement. Maintaining existing condition

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

None. Northbound Almond Street and exit ramp traffic are on the same signal phase and proceed into their respective lanes reducing the risk of any conflicts.

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Elimination of northbound Almond Street is not in keeping with the project objectives of enhancing connectivity.

7. Recommendation

Retain existing non-standard control of access.

I-81 NORTHBOUND EXIT RAMP
ALMOND ST. NORTHBOUND

Exhibit A-3-1-15
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	I-690 Eastbound Entrance Ramp at Catherine Street
Project Type:	Reconstruction	Design Classification:	Interstate Ramp
ADT (2050)	10,547	Design Speed	30 mph
DHV (2050)	1,402	% Trucks:	4%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Control of Access		
Location:	Erie Boulevard		Viaduct Alternative
Standard Value:	100 ft	Design Speed	30 mph
Existing Value:	N/A		
Proposed Value:	40 ft		

2. Accident Analysis

Current Accident Rate:	N/A New Ramp	Statewide Accident Rate:	
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐	NO ☒	
If YES, describe how the feature contributes to accidents			

3. Cost Estimates

Cost to Fully Meet Standards:	None
Cost(s) For Incremental Improvements:	No incremental improvement. New Ramp

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

None.

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

There is insufficient width between Burnet Ave. and Erie Boulevard to provide the required distances to achieve Control of Access while accommodating the 2 ramps along Catherine St. and I-690. Closure of Erie Blvd. is not in keeping with the project objectives of enhancing connectivity.

7. Recommendation

Provide non-standard control of access.

Exhibit A-3-1-16
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	I-690 Westbound Exit Ramp at Catherine St.
Project Type:	Reconstruction	Design Classification:	Interstate Ramp
ADT (2050)	8,928	Design Speed	30 mph
DHV (2050)	1,120	% Trucks:	3%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Control of Access		
Location:	Burnet Avenue		Viaduct Alternative
Standard Value:	100 ft	Design Speed	30 mph
Existing Value:	N/A		
Proposed Value:	40 ft		

2. Accident Analysis

Current Accident Rate:	N/A New Ramp	Statewide Accident Rate:	
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐	NO ☒	
If YES, describe how the feature contributes to accidents			

3. Cost Estimates

Cost to Fully Meet Standards:	None
Cost(s) For Incremental Improvements:	No incremental improvement. New Ramp

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

None.

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

There is insufficient width between Burnet Ave. and Erie Boulevard to provide the required distances to achieve Control of Access while accommodating the 2 ramps along Catherine St. and I-690. Closure of Burnet Ave. is not in keeping with the project objectives of enhancing connectivity.

7. Recommendation

Provide non-standard control of access.

Exhibit A-3-1-17
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	I-81 Northbound Entrance Ramp at Sunset Ave.
Project Type:	Reconstruction	Design Classification:	Interstate Ramp
ADT (2050)	2,528	Design Speed	30 mph
DHV (2050)	291	% Trucks:	3%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Control of Access		
Location:	Several driveways from 147 Court St. to 310 Sunset Ave.		Viaduct Alternative
Standard Value:	100 ft	Design Speed	30 mph
Existing Value:	0 ft		
Proposed Value:	0 ft		

2. Accident Analysis

Current Accident Rate:		Statewide Accident Rate:	
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐		NO ☒
If YES, describe how the feature contributes to accidents			

3. Cost Estimates

Cost to Fully Meet Standards:	None
Cost(s) For Incremental Improvements:	No incremental improvement. Maintaining existing condition

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

None. These driveways service several residences and generate very few trips.

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Closing these driveways would impact several residences.

7. Recommendation

Retain existing non-standard control of access.

Exhibit A-3-1-18
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	I-81 Northbound Exit Ramp at Sunset Ave.
Project Type:	Reconstruction	Design Classification:	Interstate Ramp
ADT (2050)	5,620	Design Speed	30 mph
DHV (2050)	476	% Trucks:	3%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Control of Access		
Location:	Several driveways from 220 Sunset Ave. to 201 Danforth St.		Viaduct Alternative
Standard Value:	100 ft	Design Speed	30 mph
Existing Value:	0 ft		
Proposed Value:	0 ft		

2. Accident Analysis

Current Accident Rate:		Statewide Accident Rate:	
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐		NO ☒
If YES, describe how the feature contributes to accidents			

3. Cost Estimates

Cost to Fully Meet Standards:	None
Cost(s) For Incremental Improvements:	No incremental improvement. Maintaining existing condition

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

None. These driveways service several residences and generate very few trips.

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Closing these driveways would impact several residences.

7. Recommendation

Retain existing non-standard control of access.

Exhibit A-3-1-19
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	I-81 Southbound Entrance Ramp at Genant Drive
Project Type:	Reconstruction	Design Classification:	Interstate Ramp
ADT (2050)	8,659	Design Speed	30 mph
DHV (2050)	870	% Trucks:	2%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Control of Access		
Location:	Bear Street		Viaduct Alternative
Standard Value:	100 ft	Design Speed	30 mph
Existing Value:	80 ft		
Proposed Value:	0 ft		

2. Accident Analysis

Current Accident Rate:		Statewide Accident Rate:	
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐		NO ☒
If YES, describe how the feature contributes to accidents			

3. Cost Estimates

Cost to Fully Meet Standards:	None
Cost(s) For Incremental Improvements:	No Incremental improvement. Maintaining existing condition

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

None. Signing in advance of and at the Bear St./Genant Dr. intersection will guide vehicles into the correct lanes for either the I-81 southbound entrance ramp or Genant Drive.

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Placing the ramp to southbound I-81 further along Genant Drive would reduce the weaving distance to the exit ramp to Spencer St. It would also further reduce the non-conforming ramp spacing.

7. Recommendation

Retain non-standard control of access.

Exhibit A-3-1-20
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	I-81 Southbound Exit Ramp at Spencer Street
Project Type:	Reconstruction	Design Classification:	Interstate Ramp
ADT (2050)	3,630	Design Speed	30 mph
DHV (2050)	499	% Trucks:	3%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Control of Access		
Location:	800 North Clinton St. Driveway		Viaduct Alternative
Standard Value:	100 ft	Design Speed	30 mph
Existing Value:	N/A		
Proposed Value:	90 ft		

2. Accident Analysis

Current Accident Rate:	N/A New Ramp	Statewide Accident Rate:	
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐	NO ☒	
If YES, describe how the feature contributes to accidents	Not applicable. New ramp.		

3. Cost Estimates

Cost to Fully Meet Standards:	None
Cost(s) For Incremental Improvements:	No incremental improvement. New Ramp

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

None. A 10ft reduction in distance from the driveway is not expected to produce adverse effects

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Relocating driveway would impact the property and require elimination of parking spaces. There is also insufficient space to locate the ramp further away from the driveway.

7. Recommendation

Provide non-standard control of access.

COMMUNITY GRID ALTERNATIVE

Exhibit A-3-2-01
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	I-81 Northbound at South Interchange
Project Type:	Reconstruction	Design Classification:	Urban Principal Arterial - Interstate
ADT (2050)	8,700	Design Speed	70 mph
DHV (2050)	1,030	% Trucks:	10%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Stopping Sight Distance (Horizontal)		
Location:	STA 32+50 TO STA 44+00		Community Grid Alternative
Standard Value:	730 ft	Design Speed	70 mph
Existing Value:	N/A, New Construction		
Proposed Value:	679 ft (Left Lane) (65 mph) 524 ft (Right Lane) (55 mph)		

2. Accident Analysis

Current Accident Rate:	N/A, New Construction	Statewide Accident Rate:	1.08 acc/mvm
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐	NO ☐	
If YES, describe how the feature contributes to accidents	Not applicable. New construction		

3. Cost Estimates

Cost to Fully Meet Standards:	$ 3.2 million construction cost based on further widening of bridge shoulder from 12 feet to 29 feet and tapering approach shoulder.
Cost(s) For Incremental Improvements:	$ 0.4 million construction cost based on widening bridge shoulder from 10 foot standard to 12 feet and tapering approach shoulder.

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

Right side shoulder will be constructed using a width of 12', instead of the minimum 10', on the bridge and approach to maximize sight distance around the bridge barrier. Highway guiderail to be box beam or cable to avoid sight line restrictions other than at bridge. R8-7 signs (Emergency Stopping Only) will be used on the bridge to discourage any voluntary stopping on the bridge that may create a hazard.

5. Compatibility with Future Plans for Adjacent Segments

Proposed configuration is compatible with adjacent segments. There are no future plans to modify adjacent segments

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Trucks with a higher sightline, which compose of 10% of total traffic, will not be subjected to the restricted sight distance since they will be able to see over the barrier. Providing standard stopping sight distance would require a 29' inside (right) shoulder on the bridge using the proposed curve radius. This 29' wide shoulder may be mistaken for an additional travel lane and increase the risk of additional accidents. Flattening the radius to accommodate the required sight distance using a 12' shoulder would create severe impacts in the southeast quadrant of the interchange. This would require acquisition of over 40 acres of property and demolition of numerous residences and high rise buildings and was determined infeasible.

7. Recommendation

Provide non-standard stopping sight distance with a 12' inside (right) shoulder on bridge and bridge approaches. Provide highway guiderail that will not cause sight line restrictions other than at the bridge.

INTERSTATE 81

H3 140+00

H3 141+00

H3 142+00

H3 143+00

H3 144+00

GRID NORTH

R2A

R2A 26+00

R2A 25+00

R2A 24+00

R2A 23+00

R2A 22+00

SSD = 679 FT

SSD = 524 FT

12 FT SHOULDER

R = 1912'

H2 41+00

H2 42+00

H2 43+00

H2 44+0

INTERSTATE 81

H2 40+00

H2 39+00

Exhibit A-3-2-02
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	I-81 Southbound at South Interchange
Project Type:	Reconstruction	Design Classification:	Urban Principal Arterial - Interstate
ADT (2050)	9,100	Design Speed	70 mph
DHV (2050)	1,220	% Trucks:	8%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Sight Distance (Horizontal)		
Location:	STA 145+50 TO STA 152+50		Community Grid Alternative
Standard Value:	730 ft	Design Speed	70 mph
Existing Value:	N/A, New Construction		
Proposed Value:	542 ft (Left Lane) (55 mph) 703 ft (Right Lane) (65 mph)		

2. Accident Analysis

Current Accident Rate:	N/A, New Construction	Statewide Accident Rate:	1.08 acc/mvm
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐		NO ☐
If YES, describe how the feature contributes to accidents	Not applicable. New Construction		

3. Cost Estimates

Cost to Fully Meet Standards:	$ 1.7 million construction cost based on further widening of bridge shoulder from 12 feet to 27 feet and tapering approach shoulder.
Cost(s) For Incremental Improvements:	$ 1.5 million construction cost based on widening bridge shoulder from 4 foot standard to 12 feet and tapering approach shoulder.

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

The left side shoulder will be constructed using a width of 12', instead of the minimum 4', on the curve/bridge to maximize sight distance around the bridge barrier. The additional shoulder width also serves as extra space for any evasive maneuvering around obstructions in the left lane. Highway guiderail to be box beam or cable to avoid sight line restrictions other than at bridge. R8-7 signs (Emergency Stopping Only) will be used on the bridge to discourage any voluntary stopping on the bridge that may create a hazard.

5. Compatibility with Future Plans for Adjacent Segments

Proposed configuration is compatible with adjacent segments. There are no future plans to modify adjacent segments

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Trucks with a higher sightline, which compose of 8% of total traffic, will not be subjected to the restricted sight distance since they will be able to see over the barrier .Providing standard stopping sight distance would require a 27' inside (left) shoulder on the bridge using the proposed curve radius. This 27' wide shoulder may be mistaken for an additional travel lane and increase the risk of additional accidents. Flattening the radius to accommodate the required sight distance using a 12' shoulder would create severe impacts in the southeast quadrant of the interchange. This would require acquisition of over 40 acres of property and demolition of numerous residences and high rise buildings and was determined infeasible.

7. Recommendation

Provide non-standard stopping sight distance with a 12' inside (left) shoulder. Provide highway guiderail that will not cause sight line restrictions other than at the bridge.

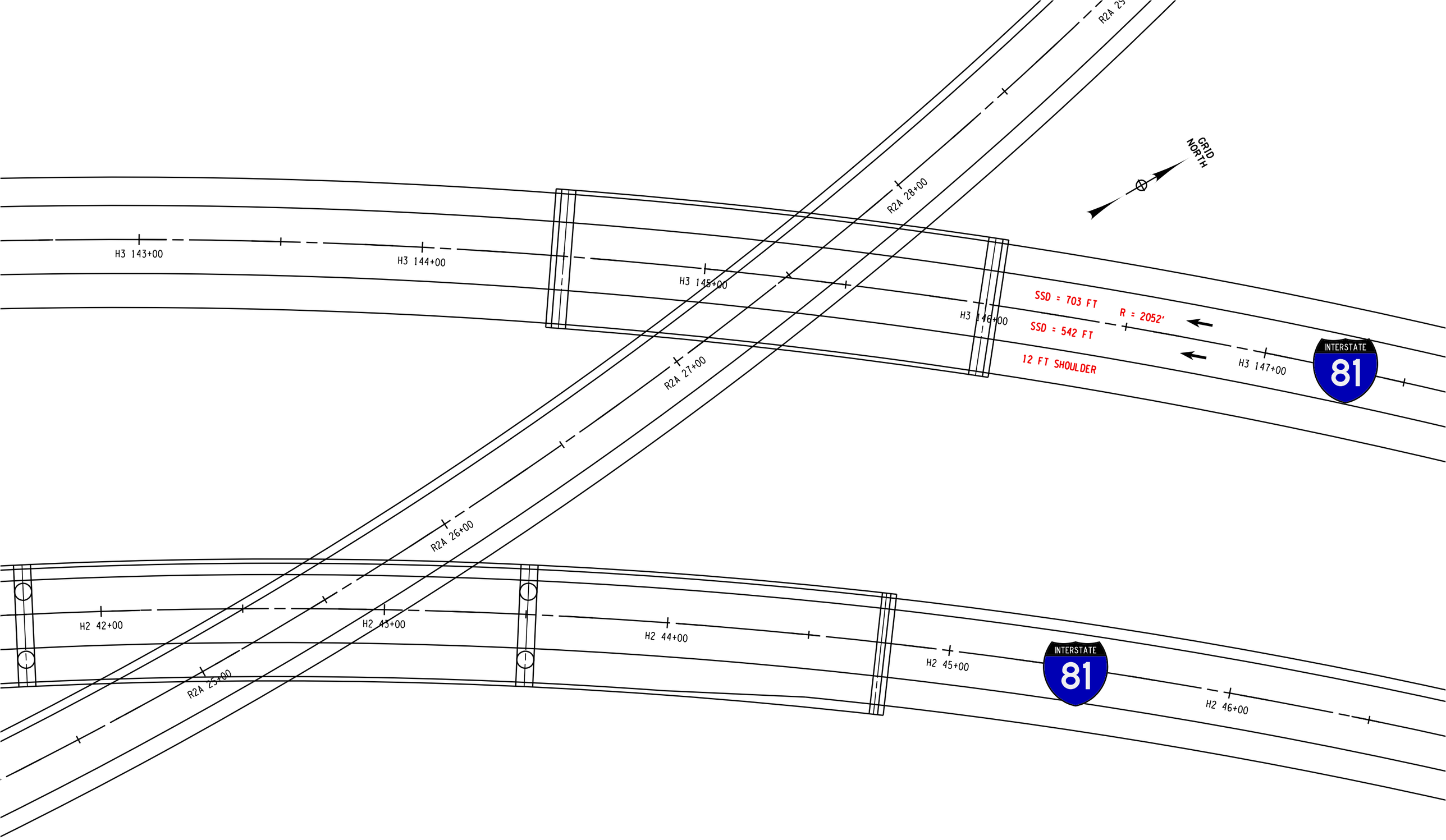

GRID NORTH
R2A 23+00
R2A 28+00
R2A 27+00
R2A 26+00
R2A 25+00
H3 143+00
H3 144+00
H3 145+00
H3 146+00
H3 147+00
H2 42+00
H2 43+00
H2 44+00
H2 45+00
H2 46+00
SSD = 703 FT
R = 2052'
SSD = 542 FT
12 FT SHOULDER
INTERSTATE
81
INTERSTATE
81

Exhibit A-3-2-03
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	I-81 Southbound at North Interchange
Project Type:	Reconstruction	Design Classification:	Urban Principal Arterial - Interstate
ADT (2050)	13,800	Design Speed	70 mph
DHV (2050)	1,320	% Trucks:	12.7%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Sight Distance (Horizontal)		
Location:	STA H8 121+50 TO STA H8 152+00		Community Grid Alternative
Standard Value:	730 ft	Design Speed	70 mph
Existing Value:	N/A, New Construction		
Proposed Value:	542 ft (Left Lane) (55 mph) 703 ft (Right Lane) (65 mph)		

2. Accident Analysis

Current Accident Rate:	N/A, New Construction	Statewide Accident Rate:	1.08 acc/mvm
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐		NO ☐
If YES, describe how the feature contributes to accidents	Not applicable. New Construction		

3. Cost Estimates

Cost to Fully Meet Standards:	$ 8.7 million construction cost based on further widening of bridge shoulder from 12 feet to 27 feet and tapering approach shoulder.
Cost(s) For Incremental Improvements:	$ 4.5 million construction cost based on widening bridge shoulder from 4 foot standard to 12 feet and tapering approach shoulder.

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

The left side shoulder will be constructed using a width of 12', instead of the minimum 4', on the curve/bridge to maximize sight distance around the bridge barrier. The additional shoulder width also serves as extra space for any evasive maneuvering around obstructions in the left lane. Highway guiderail to be box beam or cable to avoid sight line restrictions other than at bridge. R8-7 signs (Emergency Stopping Only) will be used on the bridge to discourage any voluntary stopping on the bridge that may create a hazard.

5. Compatibility with Future Plans for Adjacent Segments

Proposed configuration is compatible with adjacent segments. There are no future plans to modify adjacent segments

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Trucks with a higher sightline, which compose of 12.7% of total traffic, will not be subjected to the restricted sight distance since they will be able to see over the barrier. Providing standard stopping sight distance would require a 27' inside (left) shoulder on the bridges using the proposed curve radius. This 27' wide shoulder may be mistaken for an additional travel lane and increase the risk of additional accidents. Flattening the radius to accommodate the required sight distance using a 12' shoulder would create severe impacts in the northeast quadrant of the interchange. This would require acquisition of 20+ acres of property and demolition of 30+ residences in the Brigadier Drive neighborhood and was determined infeasible.

7. Recommendation

Provide non-standard stopping sight distance with a 12' inside (left) shoulder. Provide highway guiderail that will not cause sight line restrictions other than at the bridge.

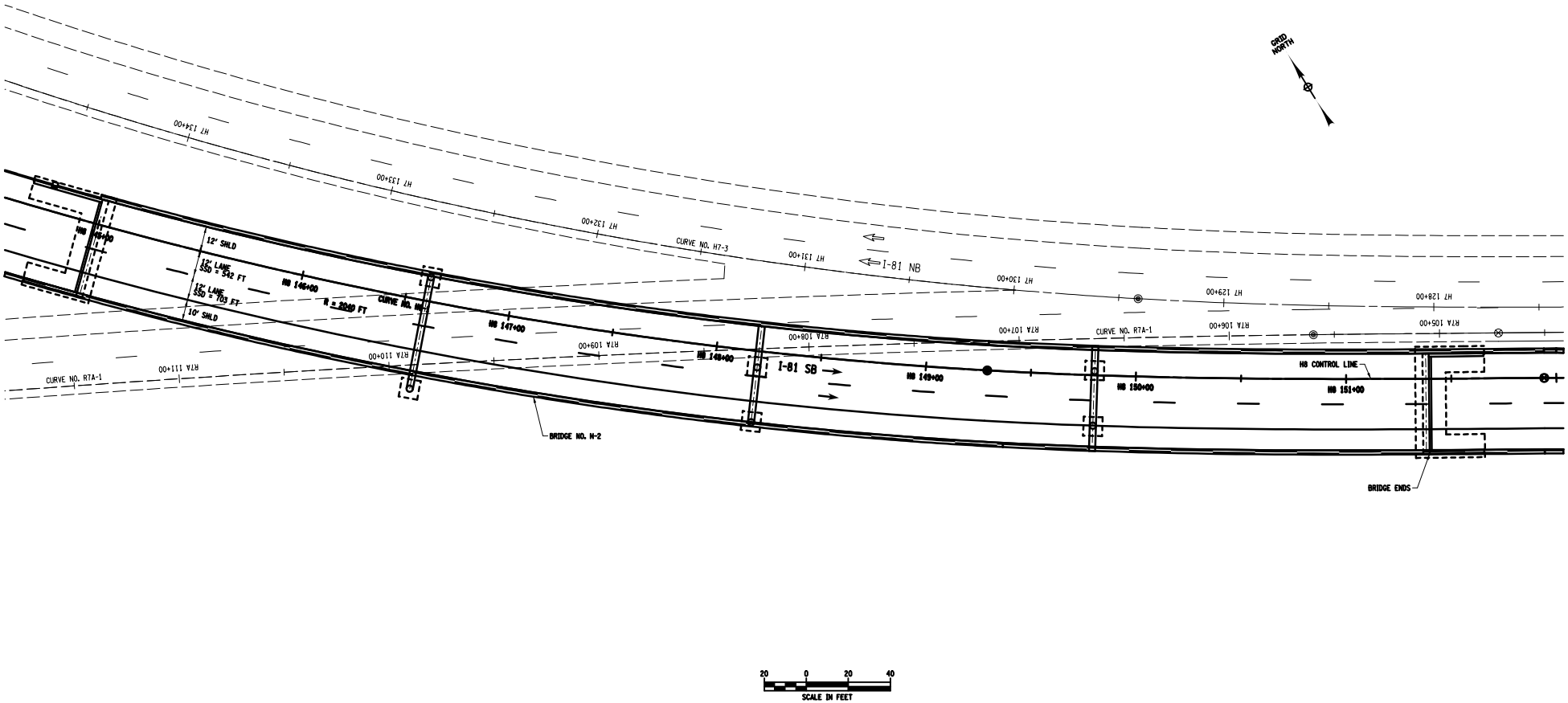

GRID NORTH
I-81 NB
I-81 SB
CURVE NO. H7-3
CURVE NO. R7A-1
CURVE NO. R7A-1
12' SHLD
12' LANE
550 = 542 FT
12' LANE
550 = 709 FT
10' SHLD
R = 2050 FT
NB CONTROL LINE
BRIDGE NO. N-2
BRIDGE ENDS
20 0 20 40
SCALE IN FEET

Exhibit A-3-2-04
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	Eastbound I-690 to Northbound Former I-81
Project Type:	Reconstruction	Design Classification:	Interstate Ramp
ADT (2050)	12,900	Design Speed	40 mph
DHV (2050)	1,350	% Trucks:	7.4%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Grade (One-Way Down)		
Location:	STA 119+25 TO STA 126+45		Community Grid Alternative
Standard Value:	-6%	Design Speed	40 mph
Existing Value:	N/A		
Proposed Value:	-6.42%		

2. Accident Analysis

Current Accident Rate:	N/A New Ramp	Statewide Accident Rate:	1.03 acc/mvm
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐		NO ☐
If YES, describe how the feature contributes to accidents	Not applicable. New construction		

3. Cost Estimates

Cost to Fully Meet Standards:	$1,500,000 (Construction Cost) plus demolition and acquisition of 2, possibly 3 buildings
Cost(s) For Incremental Improvements:	No incremental improvement. This is new construction.

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

No mitigation is proposed. The non-standard downgrade is not anticipated to produce adverse effects due to its location on the ramp, length of grade and the relatively small increase from the standard value. The limits of the downgrade are located almost entirely within the limits of a horizontal curve, which would limit any increase in speed, to some extent. In addition, any increase in speed would aid in acceleration of vehicles entering the mainline, downstream from the location of the downgrade. Stopping sight distance is also generous at the bottom of the downgrade

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

A standard grade of 6% would require raising the Butternut Street bridge about 3' from the proposed design to achieve the minimum vertical clearance over the ramp. Raising Butternut Street would exacerbate the proposed non-standard headlight sight distance near the intersection with State St. and would impact access to several businesses located along Butternut Street and near the Butternut Street and State Street intersection.

7. Recommendation

Provide non-standard grade of 6.42%

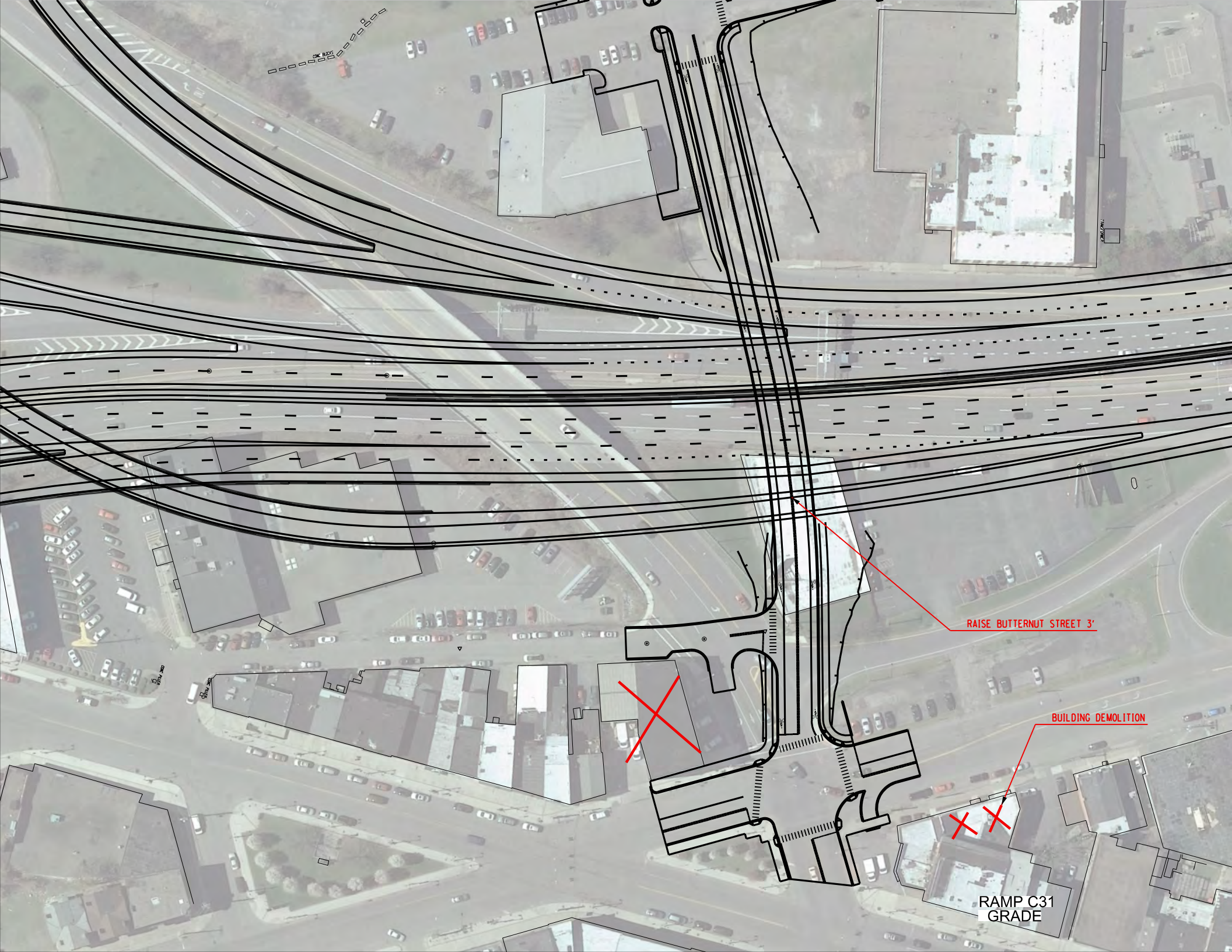

RAISE BUTTERNUT STREET 3'
BUILDING DEMOLITION
RAMP C31
GRADE

Exhibit A-3-2-05
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	Eastbound I-690 to Northbound Former I-81
Project Type:	Reconstruction	Design Classification:	Interstate Ramp
ADT (2050)	12,900	Design Speed	40 mph
DHV (2050)	1,350	% Trucks:	7.4%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Sight Distance (Headlight)		
Location:	STA 126+45 TO STA 129+93		Community Grid Alternative
Standard Value:	305 ft	Design Speed	40 mph
Existing Value:	N/A		
Proposed Value:	270 ft		

2. Accident Analysis

Current Accident Rate:	N/A New Ramp	Statewide Accident Rate:	1.03 acc/mvm
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐		NO ☐
If YES, describe how the feature contributes to accidents	Not applicable. New construction		

3. Cost Estimates

Cost to Fully Meet Standards:	$575,000 (Construction Cost)
Cost(s) For Incremental Improvements:	No incremental improvement. This is new construction.

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

Fixed source lighting will mitigate the non-standard headlight sight distance.

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Providing standard headlight sight distance would require raising the proposed Butternut St. bridge about 1' above its proposed design to achieve the minimum vertical clearance over the ramp. Raising Butternut Street would exacerbate the proposed non-standard headlight sight distance near the intersection with State St. and would require additional reconstruction of the State St. and Butternut St. intersection and the approaches. In addition, a shorter sag vertical curve would allow the ramp to merge with the mainline sooner, therefore maximizing the weaving distance between this ramp and the Court Street off-ramp.

7. Recommendation

Propose non-standard headlight sight distance with fixed source lighting

Exhibit A-3-2-06
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	Eastbound I-690 to Irving Ave. Ramp
Project Type:	Reconstruction	Design Classification:	Interstate Ramp
ADT (2050)	16,100	Design Speed	30 mph
DHV (2050)	1,370	% Trucks:	7.4%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Horizontal Curve Radius		
Location:	STA 111+84 TO STA 114+37		Community Grid Alternative
Standard Value:	231 ft	Design Speed	30 mph
Existing Value:	N/A		
Proposed Value:	150 ft		

2. Accident Analysis

Current Accident Rate:	N/A (New Ramp)	Statewide Accident Rate:	1.43 acc/mvm
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐		NO ☐
If YES, describe how the feature contributes to accidents	Not applicable. New construction		

3. Cost Estimates

Cost to Fully Meet Standards:	No additional construction cost. Additional acquisition of property listed on the National Register of Historic Places
Cost(s) For Incremental Improvements:	There are no incremental improvements. This is new construction

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

Available sight distance to the curve is slightly below the decision sight distance needed for drivers to adjust their speeds for this type of maneuver, as per AASHTO. Overhead curve warning and signal ahead signs will be placed in advance of the curve. Chevron alignments signs will be placed along the curve, as per the MUTCD.

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp.

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Providing a standard curve radii would create additional impacts to historic property and create a skewed intersection at Erie Boulevard. Traffic analysis has determined that the majority of trips on this ramp are destined for University Hill, therefore resulting in the proposed design of the ramp curve onto Irving Ave.

7. Recommendation

Propose non-standard curve radii with curve warning signs, signal ahead signs and chevron alignment signs.

Exhibit A-3-2-07
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	Eastbound I-690 to Irving Ave. Ramp
Project Type:	Reconstruction	Design Classification:	Interstate Ramp
ADT (2050)	16,100	Design Speed	30 mph
DHV (2050)	1,370	% Trucks:	7.4%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Stopping Sight Distance (Horizontal)		
Location:	STA 110+50 TO STA 112+00		Community Grid Alternative
Standard Value:	200 ft	Design Speed	30 mph
Existing Value:	N/A		
Proposed Value:	135 ft (Right Lane Only)		

2. Accident Analysis

Current Accident Rate:	N/A (New Ramp)	Statewide Accident Rate:	1.43 acc/mvm
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐		NO ☐
If YES, describe how the feature contributes to accidents	Not applicable. New construction		

3. Cost Estimates

Cost to Fully Meet Standards:	No additional construction cost. Additional acquisition of property listed on the National Register of Historic Places
Cost(s) For Incremental Improvements:	No incremental improvements. New construction.

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

The non-standard curve radius coupled with the proposed warning signs in this area is expected to reduce vehicle speeds below the design speed.

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp.

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

To eliminate the need for roadside barrier, which obstructs the sight line, additional property would have to be acquired to install recoverable side slopes. This would increase impacts to the historic property adjacent to the ramp. This property is listed on the National Register of Historic Places. In addition, this sight restriction only applies to cars in the right lane. Heavy vehicles with a higher sightline are not affected.

7. Recommendation

Propose non-standard horizontal stopping sight distance.

Exhibit A-3-2-08
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	Irving Ave. to Westbound I-690 Ramp
Project Type:	Reconstruction	Design Classification:	Interstate Ramp
ADT (2050)	16,300	Design Speed	30 mph
DHV (2050)	1,270	% Trucks:	7.4%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Horizontal Curve Radius		
Location:	North of Erie Blvd.		Community Grid Alternative
Standard Value:	231 ft	Design Speed	30 mph
Existing Value:	N/A		
Proposed Value:	158 ft		

2. Accident Analysis

Current Accident Rate:	N/A (New Ramp)	Statewide Accident Rate:	1.43 acc/mvm
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐	NO ☐	
If YES, describe how the feature contributes to accidents	Not applicable. New construction		

3. Cost Estimates

Cost to Fully Meet Standards:	No additional construction cost. See note 6.
Cost(s) For Incremental Improvements:	No incremental improvement. New construction

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

The location of this curve is shortly after a signalized intersection. Vehicles turning onto this ramp are expected to remain at near turning speeds and therefore drive through the curve below the ramp design speed of 30mph. Vehicles approaching the curve from Irving Ave. have available sight distance that is slightly below the decision sight distance needed for drivers to adjust their speeds for this type of maneuver, as per AASHTO. Curve warnings signs as well as Chevron alignments signs will be placed along the curve, as per the MUTCD.

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp.

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Providing a standard curve radii would reduce the available distance to tie in with the mainline, requiring the gore to shift further west along westbound I-690. This would result in a reduction of the weaving distance on the mainline therefore impacting operations on the mainline. This would also be a further reduction of a non-conforming ramp spacing.

7. Recommendation

Propose non-standard curve radii with curve warning signs and chevron alignment signs.

Exhibit A-3-2-09
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	Van Buren Street
Project Type:	Reconstruction	Design Classification:	Urban Minor Arterial
ADT (2050)	21,770	Design Speed	35 mph
DHV (2050)	1,300	% Trucks:	3%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Sight Distance (Headlight)		
Location:	Between Almond Street and Henry Street		Community Grid Alternative
Standard Value:	250 ft	Design Speed	35 mph
Existing Value:	N/A, new configuration		
Proposed Value:	76 ft		

2. Accident Analysis

Current Accident Rate:	N/A, new configuration	Statewide Accident Rate:	3.52 acc/mvm
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐	NO ☐	
If YES, describe how the feature contributes to accidents	Not applicable. New configuration.		

3. Cost Estimates

Cost to Fully Meet Standards:	$7,000,000 (Construction Cost) plus acquisition of SHA Administration Building and potential access impacts to the Steam Plant
Cost(s) For Incremental Improvements:	No incremental improvements. New configuration

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

Fixed source lighting will mitigate the non-standard headlight sight distance. In addition, the proposed signalized T-intersection at Almond Street and Van Buren Street is anticipated to slow vehicles below the design speed as compared to the existing condition.

5. Compatibility with Future Plans for Adjacent Segments

Proposed configuration is compatible with adjacent segments. There are no future plans to modify adjacent segments

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Providing standard headlight sight distance will require raising the Van Buren/Almond intersection about 15'-20'. This would require raising the proposed railroad bridge in addition to reprofiling several hundred feet of additional railroad track. Raising the grade of Almond street will lead to property impacts along Burt Street, adjacent to the Steam Plant and the Syracuse Housing Authority Administrative Building

7. Recommendation

Propose non-standard headlight sight distance with fixed source lighting

NOTES:

Exhibit A-3-2-10
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	Van Buren Street
Project Type:	Reconstruction	Design Classification:	Urban Minor Arterial
ADT (2050)	21,770	Design Speed	35 mph
DHV (2050)	1,300	% Trucks:	3%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Grade (Two-Way traffic)		
Location:	Between Almond Street and Henry Street		Community Grid Alternative
Standard Value:	8%	Design Speed	35 mph
Existing Value:	15.52%		
Proposed Value:	15.52%		

2. Accident Analysis

Current Accident Rate:	17.47 acc/mvm	Statewide Accident Rate:	3.52 acc/mvm
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☒	NO ☐	
If YES, describe how the feature contributes to accidents	During the three-year analysis period from August 1, 2013 through July 31, 2016, a total of 20 accidents occurred on this segment, of which five of the accidents were identified to be potentially related to the existing non-standard grade (>8%) of Van Buren Street. The number of accidents potentially related to the existing non-standard grade equates to 25% of the total accidents, and an accident rate of 4.36 acc/mvm.		

3. Cost Estimates

Cost to Fully Meet Standards:	$7,000,000 (Construction Cost) plus acquisition of SHA Administration Building and potential access impacts to the Steam Plant
Cost(s) For Incremental Improvements:	No incremental improvements. Existing grade being maintained.

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

A W7-1a (Hill with Grade) sign will be placed near the top of the non-standard grade to warn drivers in the downhill direction.

5. Compatibility with Future Plans for Adjacent Segments

Proposed configuration is compatible with adjacent segments. There are no future plans to modify adjacent segments

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Providing a standard grade would raise the proposed elevations about 11' near the intersection of Van Buren St. and Almond St. This would require raising the grade of Almond Street to a max grade of 8% to meet Van Buren St. Raising elevations at this intersection would also require relocating the driveway leading to the Syracuse University Parking Garage, on the north side of Van Buren St.

7. Recommendation

Maintain existing non-standard grade of 15.52%

NOTES:

Exhibit A-3-2-11
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	Butternut Street
Project Type:	Reconstruction	Design Classification:	Urban Minor Arterial
ADT (2050)	6,650	Design Speed	30 mph
DHV (2050)	5,70	% Trucks:	3%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Sight Distance (Headlight)		
Location:	STA 109+00 TO STA 111+00		Community Grid Alternative
Standard Value:	200 ft	Design Speed	30 mph
Existing Value:	N/A		
Proposed Value:	132 ft		

2. Accident Analysis

Current Accident Rate:	N/A New Location	Statewide Accident Rate:	1.03 acc/mvm
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐	NO ☒	
If YES, describe how the feature contributes to accidents	Not Applicable, this is a new location		

3. Cost Estimates

Cost to Fully Meet Standards:	$575,000 (Construction Cost
Cost(s) For Incremental Improvements:	This is a new location. There are no incremental costs

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

Fixed source lighting will mitigate the non-standard headlight sight distance.

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Providing standard headlight sight distance would increase the elevations along the sag vertical curve about 2'. This would require additional reconstruction of the State St. and Butternut St. intersection and the approaches.

7. Recommendation

Propose non-standard headlight sight distance with fixed source lighting

Exhibit A-3-2-12
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	Northbound Former I-81
Project Type:	New Construction	Design Classification:	Interstate
ADT (2050)	31,720	Design Speed	70 MPH
DHV (2050)	4,455	% Trucks:	7%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Level of Service		
Location:	Weave between Interchange 29N (NY 481) on- and off- ramps. See Note 1		Community Grid Alternative
Standard Value:	LOS D	Design Speed	70 MPH
Existing Value:	LOS C		
Proposed Value:	LOS C (2020), LOS F (2050)		

2. Accident Analysis

Current Accident Rate:	acc/mvm or acc/mev (Note 1) 4.93 acc/mvm	Statewide Accident Rate:	acc/mvm or acc/mev (Note 1) 1.09 acc/mvm
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☒	NO ☐	
If YES, describe how the feature contributes to accidents	During the three-year analysis period from July 1, 2010 through June 30, 2013, a total of 47 accidents occurred in this weaving segment – of which 29 accident was identified to be potentially related to the existing level of service. The number of accidents potentially related to the existing level of service equates to 62% of total accidents, and an accident rate of 3.0 acc/mvm). See Note 1.		

3. Cost Estimates

Cost to Fully Meet Standards:	N/A
Cost(s) For Incremental Improvements:	N/A

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

None. Level of service is within standard for build year 2020 and degrades over time. If/when the level of service becomes unacceptable, mitigation measures can be taken.

5. Compatibility with Future Plans for Adjacent Segments

Would be compatible with future plans for adjacent segments.

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Remove loop ramp from southbound S.R. 481 to northbound I-81, convert the 4 lane weaving section to a 3 lane diverge with lane one forming an exit only lane to northbound S.R 481. This would reduce the number of lane changes for vehicles exiting the interstate and remove the weaving caused by vehicles entering the interstate from southbound S.R 481. Connectivity in the area would be reduced as a consequence of removing an existing ramp.
Traffic traveling from the west to the north in the area would be diverted to Rt 31.
Only marginal improvements in LOS would be achieved.

7. Recommendation

Given that the LOS in the PM peak hour of build year 2020 is within acceptable ranges, it is recommended to construct the interchange as proposed and pursue the mitigation measures at which time they are deemed necessary to delay the associated impacts.

NOTES:

1. This NSF justification form also applies to the BFS on NB Former I-81 between Exit 29S (former I-481 South) and Interchange 29N (NY 481) on- ramp which operates at LOS E during the design year PM peak hour. That location is immediately downstream of, and is capacity constrained by, the weave that is the subject of the form and therefore the NSF would also be mitigated by undertaking the same measures outlined herein.
2. Use accidents per million vehicle miles (acc/mvm) for linear highway segments; use accidents per million entering vehicles (acc/mev) for intersections.

Exhibit A-3-2-13
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	I-690 Eastbound Entrance Ramp at Crouse Ave.
Project Type:	Reconstruction	Design Classification:	Interstate Ramp
ADT (2050)	9,780	Design Speed	30 mph
DHV (2050)	1,390	% Trucks:	4%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Control of Access		
Location:	Canal St.		Community Grid Alternative
Standard Value:	50 ft	Design Speed	30 mph
Existing Value:	N/A, New Construction		
Proposed Value:	0 ft		

2. Accident Analysis

Current Accident Rate:	N/A, New Construction	Statewide Accident Rate:	
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐	NO ☐	
If YES, describe how the feature contributes to accidents	Not applicable. New construction		

3. Cost Estimates

Cost to Fully Meet Standards:	None
Cost(s) For Incremental Improvements:	There are no incremental improvements. This is new construction

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

Right-in, Right-out access only will be implemented on Canal Street.

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Canal Street is a dead end street that provides access to 2 properties. Severing Canal St. would require acquisition of these properties.

7. Recommendation

Provide non-standard control of access with right-in, right-out access only off of Canal Street.

Exhibit A-3-2-14
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	I-690 Eastbound Entrance Ramp at Crouse Ave.
Project Type:	Reconstruction	Design Classification:	Interstate Ramp
ADT (2050)	9,780	Design Speed	30 mph
DHV (2050)	1,390	% Trucks:	4%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Control of Access		
Location:	Erie Blvd.		Community Grid Alternative
Standard Value:	100 ft	Design Speed	30 mph
Existing Value:	N/A, New Construction		
Proposed Value:	40 ft		

2. Accident Analysis

Current Accident Rate:	N/A, New Construction	Statewide Accident Rate:	
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐	NO ☐	
If YES, describe how the feature contributes to accidents	Not applicable. New construction		

3. Cost Estimates

Cost to Fully Meet Standards:	None
Cost(s) For Incremental Improvements:	There are no incremental improvements. This is new construction

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

None

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

There is insufficient width between Burnet Ave. and Erie Boulevard to provide the required distances to achieve Control of Access while accommodating the 2 ramps along Crouse Ave. and I-690. Closure of Erie Blvd. is not in keeping with the project objectives of enhancing connectivity.

7. Recommendation

Provide non-standard control of access.

Exhibit A-3-2-15
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	I-690 Westbound Exit Ramp at Crouse Ave.
Project Type:	Reconstruction	Design Classification:	Interstate Ramp
ADT (2050)	10,150	Design Speed	30 mph
DHV (2050)	1,040	% Trucks:	5.5%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Control of Access		
Location:	Burnet Avenue		Community Grid Alternative
Standard Value:	100 ft	Design Speed	30 mph
Existing Value:	N/A		
Proposed Value:	50 ft		

2. Accident Analysis

Current Accident Rate:	N/A New Ramp	Statewide Accident Rate:	
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐	NO ☒	
If YES, describe how the feature contributes to accidents			

3. Cost Estimates

Cost to Fully Meet Standards:	None
Cost(s) For Incremental Improvements:	No incremental improvement. New Ramp

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

None.

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

There is insufficient width between Burnet Ave. and Erie Boulevard to provide the required distances to achieve Control of Access while accommodating the 2 ramps along Crouse Ave. and I-690. Closure of Burnet Ave. is not in keeping with the project objectives of enhancing connectivity.

7. Recommendation

Provide non-standard control of access.

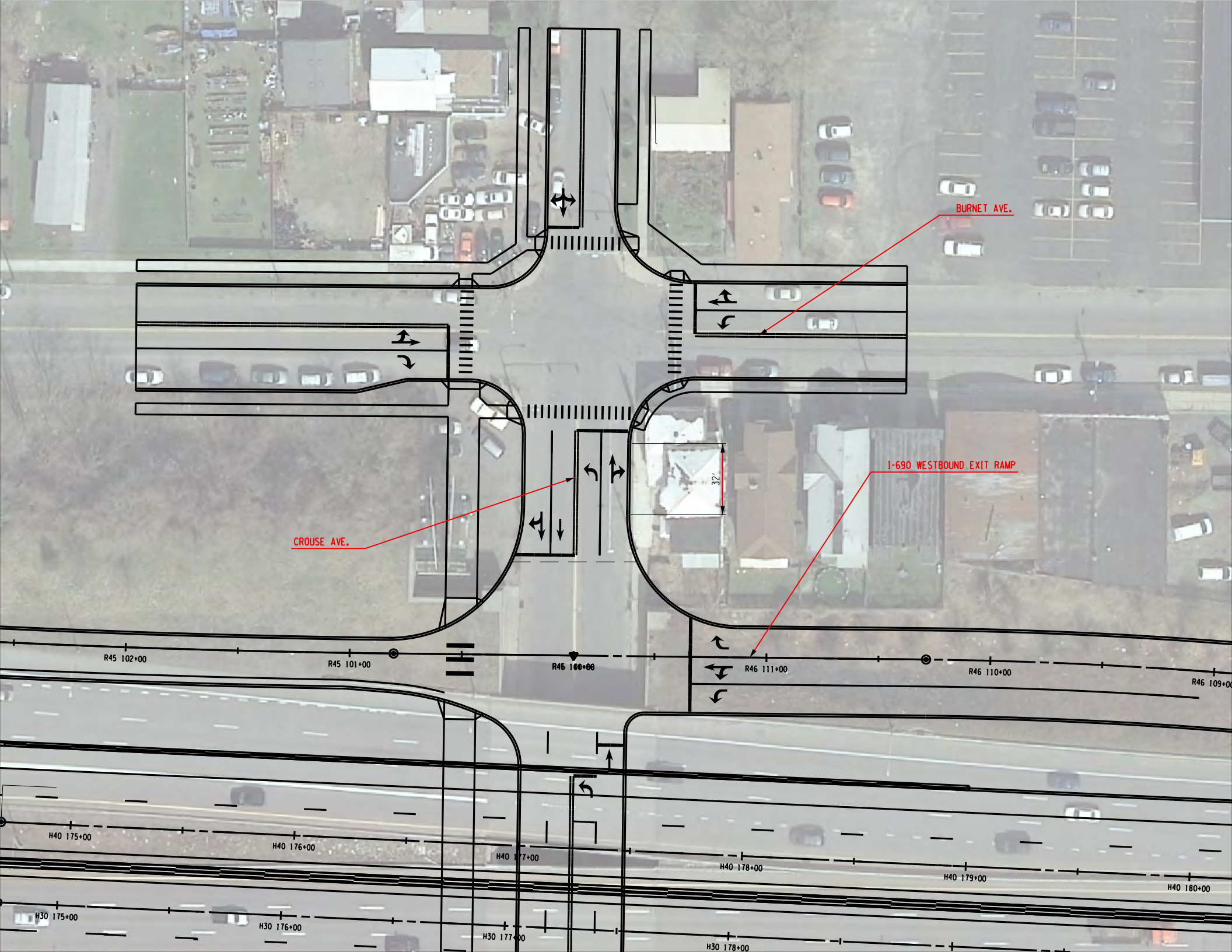

BURNET AVE.
I-690 WESTBOUND EXIT RAMP
CROUSE AVE.
32'
R45 102+00
R45 101+00
R45 100+00
R46 111+00
R46 110+00
R46 109+00
H40 175+00
H40 176+00
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Exhibit A-3-2-16
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	Former I-81 Southbound Exit Ramp at Willow St.
Project Type:	Reconstruction	Design Classification:	Interstate Ramp
ADT (2050)	10,890	Design Speed	30 mph
DHV (2050)	1,270	% Trucks:	2.5%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Control of Access		
Location:	Driveway at 123-29 Willow St.		Community Grid Alternative
Standard Value:	100 ft	Design Speed	30 mph
Existing Value:	N/A, New Construction		
Proposed Value:	70 ft		

2. Accident Analysis

Current Accident Rate:	N/A, New Construction	Statewide Accident Rate:	
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐	NO ☐	
If YES, describe how the feature contributes to accidents	Not applicable. New construction		

3. Cost Estimates

Cost to Fully Meet Standards:	None
Cost(s) For Incremental Improvements:	There are no incremental improvements. This is new construction

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

None.

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Closing the driveway would eliminate parking access to the garage on the associated property which would have a negative impact on the business and the property.

7. Recommendation

Provide non-standard control of access.

Exhibit A-3-2-17
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	Former I-81 Southbound Exit Ramp at Willow St.
Project Type:	Reconstruction	Design Classification:	Interstate Ramp
ADT (2050)	10,890	Design Speed	30 mph
DHV (2050)	1,270	% Trucks:	2.5%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Control of Access		
Location:	Warren St.		Community Grid Alternative
Standard Value:	50 ft	Design Speed	30 mph
Existing Value:	N/A, New Construction		
Proposed Value:	0 ft		

2. Accident Analysis

Current Accident Rate:	N/A, New Construction	Statewide Accident Rate:	
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐	NO ☐	
If YES, describe how the feature contributes to accidents	Not applicable. New construction		

3. Cost Estimates

Cost to Fully Meet Standards:	None
Cost(s) For Incremental Improvements:	There are no incremental improvements. This is new construction

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

None.

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Elimination of the non-standard control of access would require installation of a turn-around at Warren St. to sever access to Willow St. Severing city streets is not in keeping with the project objective of enhancing connectivity.

7. Recommendation

Provide non-standard control of access.

Exhibit A-3-2-18
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	Former I-81 Northbound Entrance Ramp at Pearl St.
Project Type:	Reconstruction	Design Classification:	Interstate Ramp
ADT (2050)	10,100	Design Speed	30 mph
DHV (2050)	1,350	% Trucks:	

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Control of Access		
Location:	Driveway at 320 Pearl Street..		Community Grid Alternative
Standard Value:	100 ft	Design Speed	30 mph
Existing Value:	N/A, New Construction		
Proposed Value:	0 ft		

2. Accident Analysis

Current Accident Rate:	N/A, New Construction	Statewide Accident Rate:	
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐	NO ☐	
If YES, describe how the feature contributes to accidents	Not applicable. New construction		

3. Cost Estimates

Cost to Fully Meet Standards:	None
Cost(s) For Incremental Improvements:	There are no incremental improvements. This is new construction

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

None. This driveway is not expected to produce adverse effects due to its limited use.

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

This driveway provides access to an alleyway that serves as maintenance access (dumpster storage, etc.) for the property. Driveway access is important to the operations of the building.

7. Recommendation

Provide non-standard control of access.

Exhibit A-3-2-19
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	Former I-81 Southbound Exit Ramp at Spencer Street
Project Type:	Reconstruction	Design Classification:	Interstate Ramp
ADT (2050)	3,161	Design Speed	30 mph
DHV (2050)	439	% Trucks:	5%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Control of Access		
Location:	800 North Clinton St. Driveway		Community Grid Alternative
Standard Value:	100 ft	Design Speed	30 mph
Existing Value:	N/A		
Proposed Value:	90 ft		

2. Accident Analysis

Current Accident Rate:	N/A New Ramp	Statewide Accident Rate:	
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐	NO ☒	
If YES, describe how the feature contributes to accidents	Not applicable. New ramp		

3. Cost Estimates

Cost to Fully Meet Standards:	None
Cost(s) For Incremental Improvements:	No incremental improvement. New Ramp

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

None. A 10ft reduction in distance from the driveway is not expected to produce adverse effects

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Relocating driveway would impact the property and require elimination of parking spaces. There is also insufficient space to locate the ramp further away from the driveway.

7. Recommendation

Provide non-standard control of access.

Exhibit A-3-2-20
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	Former I-81 Northbound Exit Ramp at Sunset Ave.
Project Type:	Reconstruction	Design Classification:	Interstate Ramp
ADT (2050)	3,185	Design Speed	30 mph
DHV (2050)	336	% Trucks:	3%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Control of Access		
Location:	Several driveways from 220 Sunset Ave. to 201 Danforth St.		Community Grid Alternative
Standard Value:	100 ft	Design Speed	30 mph
Existing Value:	0 ft		
Proposed Value:	0 ft		

2. Accident Analysis

Current Accident Rate:		Statewide Accident Rate:	
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐		NO ☒
If YES, describe how the feature contributes to accidents			

3. Cost Estimates

Cost to Fully Meet Standards:	None
Cost(s) For Incremental Improvements:	No incremental improvement. Maintaining existing condition

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

None. These driveways service several residences and generate very few trips.

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Closing these driveways would impact several residences.

7. Recommendation

Retain existing non-standard control of access.

Exhibit A-3-2-21
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	Former I-81 Northbound Entrance Ramp at Sunset Ave.
Project Type:	Reconstruction	Design Classification:	Interstate Ramp
ADT (2050)	2,757	Design Speed	30 mph
DHV (2050)	306	% Trucks:	3%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Control of Access		
Location:	Several driveways from 147 Court St. to 310 Sunset Ave.		Community Grid Alternative
Standard Value:	100 ft	Design Speed	30 mph
Existing Value:	0 ft		
Proposed Value:	0 ft		

2. Accident Analysis

Current Accident Rate:		Statewide Accident Rate:	
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐		NO ☒
If YES, describe how the feature contributes to accidents			

3. Cost Estimates

Cost to Fully Meet Standards:	None
Cost(s) For Incremental Improvements:	No incremental improvement. Maintaining existing condition

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

None. These driveways service several residences and generate very few trips.

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Closing these driveways would impact several residences.

7. Recommendation

Retain existing non-standard control of access.

Exhibit A-3-2-22
Nonstandard Feature Justification

PIN:	3501.6	Route No. & Name:	I-81 Southbound Entrance Ramp at Genant Drive
Project Type:	Reconstruction	Design Classification:	Interstate Ramp
ADT (2050)	8,659	Design Speed	30 mph
DHV (2050)	870	% Trucks:	2%

1. Description of Nonstandard Feature

Type of Feature (e.g., horizontal curve radius):	Control of Access		
Location:	Bear Street		Viaduct Alternative
Standard Value:	100 ft	Design Speed	30 mph
Existing Value:	80 ft		
Proposed Value:	0 ft		

2. Accident Analysis

Current Accident Rate:		Statewide Accident Rate:	
Is the NSF a contributing feature to identified accidents? Choose YES or NO	YES ☐		NO ☒
If YES, describe how the feature contributes to accidents			

3. Cost Estimates

Cost to Fully Meet Standards:	None
Cost(s) For Incremental Improvements:	No Incremental improvement. Maintaining existing condition

4. Measures to Mitigate the Potential Adverse Effects of the NSF (e.g., curve warning signs for a non-standard horizontal curve; ITS for non-standard LOS, etc.)

None. Signing in advance of and at the Bear St./Genant Dr. intersection will guide vehicles into the correct lanes for either the I-81 southbound entrance ramp or Genant Drive.

5. Compatibility with Future Plans for Adjacent Segments

No future plans for adjacent segments of this ramp

6. Social, Economic & Environmental factors that weigh in the decision to retain or propose the NSF

Placing the ramp to southbound I-81 further along Genant Drive would reduce the weaving distance to the exit ramp to Spencer St. It would also further reduce the non-conforming ramp spacing.

7. Recommendation

Retain non-standard control of access.