
Purpose and Need Statement

County Road J/I-35E Interchange Project

Ramsey County, Minnesota

Date: May 23, 2022

State Aid Project (SAP) No. 062-593-009 and SAP 062-660-012

Project Setting

The CR J/I-35E Project is in Ramsey and Anoka counties and the cities of Lino Lakes, North Oaks as well as White Bear Township. . The County Road J/I-35E partial interchange was built in 1967 as a partial access diamond configuration with access ramps to and from the south onto I-35E. The interchange does not provide access from southbound I-35E or access onto northbound I-35E. Access to I-35E for traffic originating or destined to the north is provided via the Hiway 96 interchange approximately three miles to the south and the CSAH 14 interchange approximately three miles to the north. The logical termini for the project extends from the western project terminus at Centerville Road (Ramsey CSAH 59/Anoka CSAH 21) in the cities of North Oaks, Lino Lakes and White Bear Township to the eastern terminus at Otter Lake Road (Ramsey CSAH 60/Anoka CSAH 84) in White Bear Township and the City of Lino Lakes. The total length of the project corridor is approximately 0.5 miles. Figure 1 (attached) illustrates the project location

Project Need

Primary Needs

The primary needs section of this document discusses the primary transportation problem(s) to be solved, i.e., the real/main problem(s) that led to initiation of the project, which is mobility.

Mobility

System Connectivity

A primary issue associated with the partial connectivity at the existing interchange is increased travel times for interstate system users that originate from, or are destined to, locations north of the County Road J interchange. These users are required to enter and exit I-35E via the CSAH 14 (Main Street) interchange three miles to the north and use the local road network to connect to the County Road J interchange area.

To determine whether and to what extent existing regional trips are using the parallel minor arterial roadway network, the Twin Cities Regional Travel Demand Model (TCRTDM) was utilized to conduct a select link analysis. Regional trips were defined as traffic originating from or destined to locations beyond the next adjacent interchanges. Specifically, the select link analysis used the existing northern ramp connections at I-35E/Main Street and I-35E/CR 96. At the Main Street interchange, approximately 37% of the southbound exit ramp volume is destined to the CR J area or further south; approximately 36% of the northbound entrance ramp volume originates near the CR J corridor and further south. Based on the existing ramp demands (2021 daily volume), the Main Street interchange services approximately 2,300 daily trips surrounding the CR J study corridor. At the CR 96 interchange, approximately 6% of the southbound exit ramp volume is destined north of the interchange towards CR J; approximately 5% of the northbound entrance ramp volume originates near north of the interchange towards CR J. Based on the existing ramp demands, the CR 96 interchange has approximately 500 daily trips surrounding the CR J study corridor.

The select link analysis results in approximately 2,750 daily trips that originate or are destined beyond the next adjacent interchange, indicating a regional trip purpose. On the existing three parallel north-south arterials, the total daily traffic demands are approximately 16,000 vehicles; the regional trips using these corridors is approximately 17% of the total traffic volumes. This value indicates the minimum regional trip volume as it only accounts for existing users of the two adjacent interchanges; additional regional trips may be present that do not currently utilize the interstate due to limited access at the CR J interchange.

Existing Conditions (Year 2021)

The recent traffic signal control change, installed in 2020, at the I-35E ramp intersections has improved the interchange operations from the previous traffic control. Formerly, the interchange control included all-way stop control at the northbound exit ramp and minor stop control at the southbound entrance ramp.



However, as illustrated in the map above, there are still queueing issues that spill between the closely-spaced intersections around the existing I-35E ramp terminals and Otter Lake Road (Anoka CSAH 84/Ramsey CSAH 60). With essentially no turn lanes provided, the single lane approaches quickly build queues that impact upstream intersections. Very long queues also occur for southbound Centerville Road traffic at the CR J intersection.

In the AM peak hour, two intersections have poor approach delays and one intersection has failing operations; all other intersections operate at a LOS B or better.

- The southbound approach from Otter Lake Road (Anoka CSAH 84/Ramsey CSAH 60) to County Road J (Ash Street) operates at a LOS E during the AM peak hour. This delay is created by the high directional southbound volume and worsened by downstream queues spilling into the intersection from the northbound I-35E signalized intersection.
- The eastbound approach from North Ash Street (Anoka CSAH 32) to Centerville Road (Anoka CSAH 21) operates at a LOS F during the AM peak hour; there are limited gaps along Centerville Road (Anoka CSAH 21) to adequately serve the high volume of traffic on this approach.
- The intersection of Centerville Road (Anoka CSAH 21/Ramsey CSAH 59) at County Road J (Ash Street) has failing operations due to the high delays for the southbound approach. The single southbound approach lane cannot handle the directional volume during the AM peak hour.

Table 1 shows the existing intersection approach and intersection delay/LOS for the AM and PM peak hours at all study intersections.

Table 1 – Existing (2021) Traffic Operations

Intersection (Traffic Control)	Approach	AM Peak		PM Peak	
		Approach Delay (sec/veh / LOS)	Intersection Delay (sec/veh / LOS)	Approach Delay (sec/veh / LOS)	Intersection Delay (sec/veh / LOS)
CR J (Ash St) at Otter Lake Rd (Anoka CSAH 84/Ramsey CSAH 60) (All-Way Stop)	EB	6.7 / A	27.2 / D	15.3 / C	16.2 / C
	NB	14.1 / B		20.4 / C	
	SB	37.7 / E		11.8 / B	
CR J (Ash St) at I-35E NB Ramp (Signal Control)	EB	5.4 / A	12.3 / B	10.6 / B	19.4 / B
	WB	12.4 / B		12.6 / B	
	NB	13.9 / B		23.9 / C	
CR J (Ash St) at I-35E SB Ramp (Signal Control)	EB	8.1 / A	12.4 / B	20.8 / C	12.6 / B
	WB	11.8 / B		5.9 / A	
	SB	25.1 / C		23.4 / C	
CR J (Ash St) at Business Access (Minor Stop)	EB	0.0 / A	0.4 / A	2.0 / A	3.0 / A
	WB	0.5 / A		2.5 / A	
	NB	10.1 / B		15.8 / C	
CR J (Ash St) at Centerville Rd (Anoka CSAH 21/Ramsey CSAH 59) (All-Way Stop)	EB	10.5 / B	76.6 / F	10.6 / B	15.7 / C
	WB	14.5 / B		13.8 / B	
	NB	11.7 / B		14.4 / B	
	SB	130.9 / F		18.9 / C	
Centerville Rd (Anoka CSAH 21) at N Ash St (Anoka CSAH 32) (Minor Stop)	EB	54.5 / F	16.9 / C	12.4 / B	4.4 / A
	NB	3.6 / A		2.5 / A	
	SB	8.8 / A		0.9 / A	
Centerville Rd (Ramsey CSAH 59) at CR H2 (Ramsey CSAH 5) (All-Way Stop)	WB	5.4 / A	7.6 / A	4.7 / A	9.1 / A
	NB	5.9 / A		10.0 / B	
	SB	10.5 / B		10.3 / B	

Year 2045 Forecast Conditions

As traffic demands continue to grow, the existing minor and all-way stop-controlled intersections will begin to have substantial delays in both peak hours as queues lengthen and spill between many of the intersections.

It should be noted that the intersection of Centerville Road (Ramsey CSAH 59) and County Road H2 (Ramsey CSAH 5) includes a new eastbound approach leg. This new intersection approach and traffic volumes were developed based on the 2021 Intersection Control Evaluation (ICE) report at the study intersection which included new development to the west.

During the AM peak hour, three of the study intersections operate at a LOS F. The heavy southbound directional traffic along Otter Lake Road (Anoka CSAH 84) and Centerville Road (Anoka CSAH 21) substantially increases delay for both respective southbound approaches. The southbound approach of Centerville Road (Anoka CSAH 21) to County Road J (Ash Street) develops a queue that spills well over 1/4-mile upstream to impact the Centerville Road (Anoka CSAH 21) at North Ash Street (Anoka CSAH 32) intersection, creating gridlock at the intersection. Intersection operations during the PM peak hour are substantially worse than the existing conditions. Four of the study intersections have substantial delay issues created by the increased future volumes, closely spaced intersections, and queue spillback.

The signalized northbound I-35E exit ramp terminal intersection has failing operations for the northbound approach as the right turn is blocked from the downstream all-way stop controlled intersection at Otter Lake Road

(Anoka CSAH 84/Ramsey CSAH 60). Simultaneously, the northbound approach of Otter Lake Road (Ramsey CSAH 60) to County Road J (Ash Street) also has downstream queue issues from the I-35E intersection that block northbound traffic from entering the intersection at times. The short distance, just over 150 feet of storage, between the two intersections plays a major role in the increase delays at both intersections. The northbound I-35E exit ramp has a maximum queue that will spill upstream to impact the freeway mainline traffic, creating a considerable safety concern.

The eastbound single lane approach has queue issues as the total approach volume is over 800 vehicles in the peak hour. The eastbound queue extends through the business access and can reach over 1,000 feet; this creates added delays for the business access.

The increased volumes at the Centerville Road (Anoka CSAH 21/Ramsey CSAH 59) and County Road J (Ash Street) intersection are well over the capacity of the all-way stop controlled intersection. Three of the four approaches all have failing operations during the PM peak hour. Similar to the AM peak, the southbound approach in the PM peak hour has an extensive queue that spills upstream to impact the North Ash Street (Anoka CSAH 32) intersection.

Table 2 shows the 2040 No Build approach and intersection delay/LOS for the AM and PM peak hours.

Table 2 – No Build (2045) Traffic Operations

Intersection (Traffic Control)	Approach	AM Peak		PM Peak	
		Approach Delay (sec/veh / LOS)	Intersection Delay (sec/veh / LOS)	Approach Delay (sec/veh / LOS)	Intersection Delay (sec/veh / LOS)
CR J (Ash St) at Otter Lake Rd (Anoka CSAH 84/Ramsey CSAH 60) (All-Way Stop)	EB	8.5 / A	201.3 / F	36.6 / E	81.1 / F
	NB	17.2 / C		199.0 / F	
	SB	339.6 / F		33.5 / D	
CR J (Ash St) at I-35E NB Ramp (Signal Control)	EB	7.7 / A	12.2 / B	62.1 / E	74.3 / E
	WB	12.2 / B		15.2 / B	
	NB	13.3 / B		102.9 / F	
CR J (Ash St) at I-35E SB Ramp (Signal Control)	EB	8.4 / A	13.5 / B	48.0 / D	26.1 / C
	WB	10.7 / B		9.3 / A	
	SB	30.6 / C		28.8 / C	
CR J (Ash St) at Business Access (Minor Stop)	EB	0.1 / A	0.6 / A	27.7 / D	21.3 / C
	WB	0.6 / A		3.4 / A	
	NB	10.6 / B		136.4 / F	
CR J (Ash St) at Centerville Rd (Anoka CSAH 21/Ramsey CSAH 59) (All-Way Stop)	EB	11.2 / B	118.3 / F	13.5 / B	132.0 / F
	WB	33.8 / D		45.0 / E	
	NB	15.3 / C		102 / F	
	SB	230.5 / F		260.3 / F	
Centerville Rd (Anoka CSAH 21) at N Ash St (Anoka CSAH 32) (Minor Stop)	EB	810.5 / F	231.9 / F	1433.7 / F	233.4 / F
	NB	4.3 / A		4.3 / A	
	SB	217.0 / F		256.9 / F	
Centerville Rd (Ramsey CSAH 59) at CR H2 (Ramsey CSAH 5) (All-Way Stop)	EB	5.3 / A	9.4 / A	4.2 / A	10.4 / B
	WB	6.2 / A		5.9 / A	
	NB	8.2 / A		11.8 / B	
	SB	12.8 / B		10.9 / B	

Secondary Needs

Secondary needs describes other transportation problems or opportunities for improvements within the project study area that may be able to be addressed, if feasible, at the same time that the primary needs are addressed. These include walkability/bikeability and safety.

Walkability/Bikeability

Non-motorized accommodations are limited along County Road J (Ash Street) between Centerville Road (Anoka CSAH 21/Ramsey CSAH 59) and Otter Lake Road (Anoka CSAH 84/Ramsey CSAH 60). Currently, pedestrians and bicyclists traveling along the project corridor must utilize roadway shoulders. The conditions are especially constrained on the County Road J (Ash Street) bridge which has only two-foot shoulders and an approximate two-foot raised sidewalk. A preliminary MMLOS assessment indicated a pedestrian LOS E along all but one study segment and a bicycle LOS F at five of the seven study segments. The project corridor is a busy roadway with approximately 12,000 vehicles per day (2019) and a speed limit of 40 miles per hour and the existing roadway shoulders provide minimal separation from motorists.

Safety

County Road J (Ash Street) Intersection Analysis

Crashes at the six study intersections were evaluated from January 1, 2015 to June 30, 2021. Within that time period, there were a total of 52 crashes within the project area that are related to local intersections. In addition, the intersection of County Road J (Ash Street) at the business access, west of I-35E, experienced two crashes. Along County Road J (Ash Street), two additional segment crashes occurred including a rear-end collision and a single vehicle running off road.

Of the 52 total crashes, 18 were right-angle or left turn crashes, of which 15 occurred at only three of the study intersections.

- County Road J (Ash Street) at Centerville Road (Anoka CSAH 21/Ramsey CSAH 59): 75 percent rear-end collisions, well below critical rate
- County Road J (Ash Street) at Business Access: one rear end and one right angle, well below critical rate
- County Road J (Ash Street) at I-35E Southbound/20th Avenue (Anoka CSAH 54): Control change to traffic signal in 2020, below critical rate:
 - 2015 to 2019: 80 percent right angle
 - 2020 to June 2021: no crashes reported
- County Road J (Ash Street) at I-35E Northbound Ramp: Control change to traffic signal in 2020, below critical rate:
 - 2015 to 2019: 33 percent right-angle and 30 percent single vehicle lane departures
 - 2020 to June 2021: one rear-end and one right angle due to mechanical failure
- County Road J (Ash Street) at Otter Lake Road (Anoka CSAH 84/Ramsey CSAH 60): one sideswipe due to ice, one ran off road, well below critical rate
- Centerville Road (Anoka CSAH 21) at North Ash Street (Anoka CSAH 32): 42 percent right angle, approaching critical rate
- Centerville Road (Ramsey CSAH 59) at County Road H2 (Ramsey CSAH 5): 57 percent rear-end collisions, below critical rate

The intersection crash information is summarized in Tables 5 and 6. None of the local intersections have an existing crash rate that is above the calculated critical rate.

Table 5 – Intersection Crash Rate History (January 2015 to June 2021)

Intersections	Crash Severity						Intersection Crash Rate Information			
	Fatal	A	B	C	Property	Total	Crash Rate	Critical Crash Rate	Critical Index Rate	MnDOT Average Crash Rate
CR J (Ash St) at Centerville Rd (Anoka CSAH 21/Ramsey CSAH 59)	0	0	0	2	6	8	0.23	0.63	0.37	0.35
CR J (Ash St) at Business Access	0	0	0	0	2	2	0.08	0.52	0.15	0.25
CR J (Ash St) at I-35E SB Ramp/20th Ave S (Anoka CSAH 54)	0	0	1	1	8	10	0.35	0.51	0.68	0.25
CR J (Ash St) at I-35E NB Ramp	0	0	0	2	9	11	0.33	0.63	0.52	0.35
CR J (Ash St) at Otter Lake Rd (Anoka CSAH 84/Ramsey CSAH 60)	0	0	1	0	1	2	0.13	0.78	0.17	0.35
Centerville Rd (Anoka CSAH 21) at North Ash St (Anoka CSAH 32)	0	0	1	3	8	12	0.46	0.53	0.87	0.25
Centerville Rd (Ramsey CSAH 59) at CR H2 (Ramsey CSAH 5)	0	0	0	0	7	7	0.38	0.73	0.52	0.35
Total	0	0	3	8	41	52	--	--	--	--

NOTES:

Crash Rates - Number of crashes per million entering vehicles

Exceeding the Calculated Critical Rates indicated a sustained crash problem.

Ramp Intersections are signalized as of 2020; analysis on previous control types.

MnDOT Crash Mapping Software Information

Critical Index ≥ 0.85 Average Rate Exceeded

Table 6 – Intersection Crash History (January 2015 to June 2021)

Intersections	Crash Type							Pedestrian / Bicycle Crashes	
	Rear End	Right Angle	Sideswipe	Head On	Single Vehicle	Other	Total	Pedestrian	Bicycle
CR J (Ash St) at Centerville Rd (Anoka CSAH 21/Ramsey CSAH 59)	6	1	0	0	1	0	8	0	0
CR J (Ash St) at Business Access	1	1	0	0	0	0	2	0	0
CR J (Ash St) at I-35E SB Ramp/20th Ave S (Anoka CSAH 54)	1	6	0	0	0	3	10	0	0
CR J (Ash St) at I-35E NB Ramp	2	4	0	1	3	1	11	0	0
CR J (Ash St) at Otter Lake Rd (Anoka CSAH 84/Ramsey CSAH 60)	0	0	1	0	1	0	2	0	0
Centerville Rd (Anoka CSAH 21) at North Ash St (Anoka CSAH 32)	1	5	2	0	1	3	12	0	0
Centerville Rd (Ramsey CSAH 59) at CR H2 (Ramsey CSAH 5)	4	1	0	1	0	1	7	0	0
Total	15	18	3	2	6	8	52	0	0

MnDOT Crash Mapping Software Information

Additional Considerations

Additional Considerations are other desirable project elements or effects that are not central to the purpose and need, but are nonetheless important considerations to the selection of the preferred alternative. These include the FHWA Interstate Access policy points, compatibility with local land use plans, and asset management.

FHWA Interstate Access Policy Points

Recent federal regulations now require the National Environmental Policy Act (NEPA) process to address FHWA's Interstate Access Policy Points 1, 2, 5, 6, and 7. These policy points are described in detail in the document attached at the end of this memorandum. Since the project has modifications that have potential impact on the interstate system the alternates will also have evaluation criteria to insure that the operation and safety impact on the interstate are not negatively impacted, this will result in additional Interstate access considerations in the evaluation process.

Compatibility with Local Land Use Planning

Substantial growth in residential and commercial development in areas adjacent to County Road J (Ash Street) is planned to continue into the foreseeable future based on the comprehensive plans for White Bear Township and

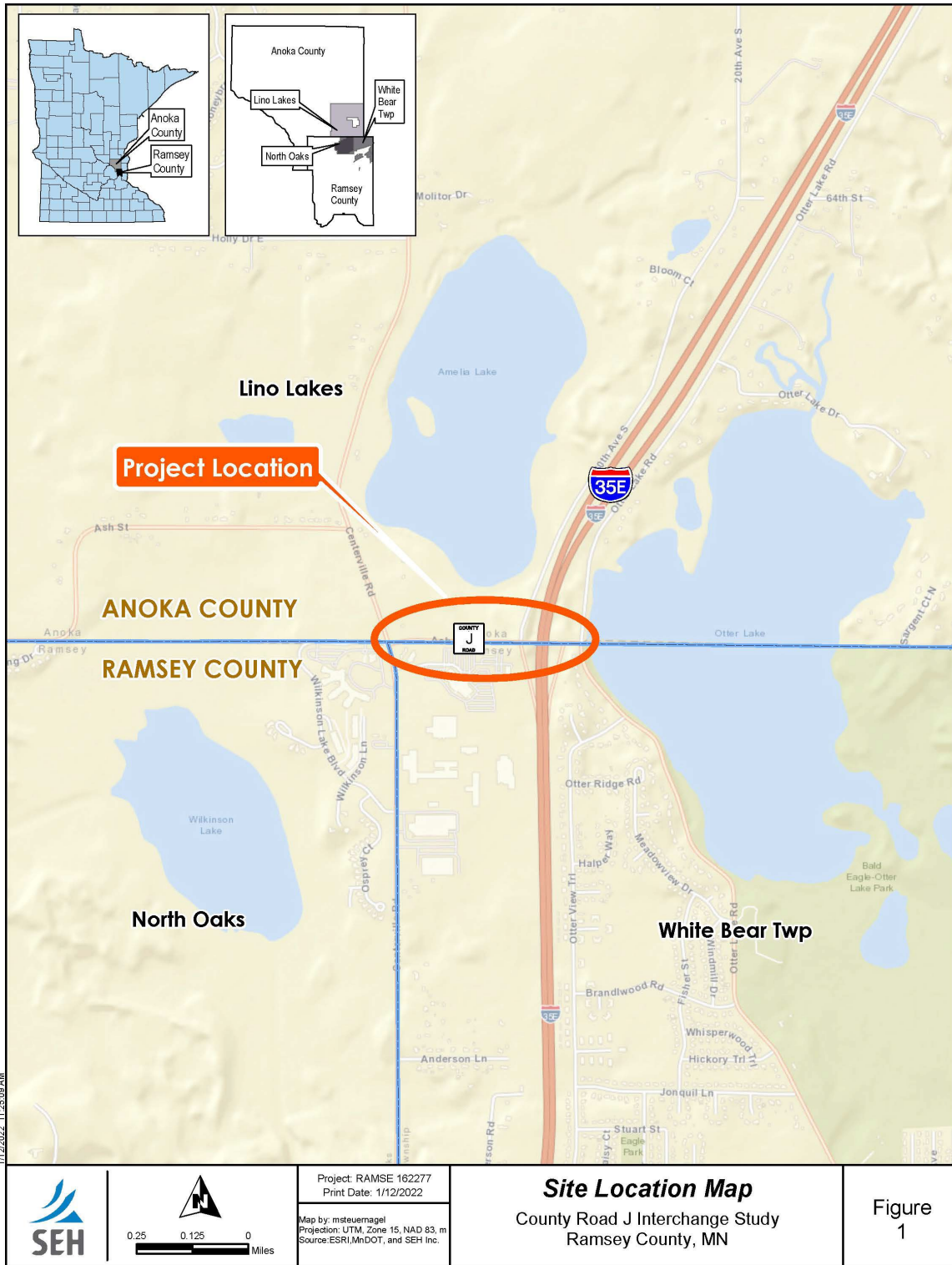
Lino Lakes. Development and redevelopment of the area surrounding the County Road J (Ash Street)/I-35E interchange is partially dependent on improving traffic operations and providing better access to the regional transportation system.

Asset Management

Ongoing maintenance and preservation of transportation infrastructure represents a significant portion of the total resources applied to the surface transportation system. It is important when considering expansion of the infrastructure to account for the additional resource commitments that will be required for ongoing maintenance and preservation of expanded facilities.

Project Purpose

The purpose of the project is to improve mobility as well as walkability/bikeability, safety, and pavement conditions along County Road J (Ash Street) and at the I-35E interchange for all users.



Documentation		FHWA Interstate Access Policy Points
Technical Report	NEPA Doc.	
	X	Policy Point 1: The need being addressed by the request cannot be adequately satisfied by existing interchanges to the Interstate, and/or local roads and streets in the corridor can neither provide the desired access, nor can they be reasonably improved (such as access control along surface streets, improving traffic control, modifying ramp terminals and intersections, adding turn bays or lengthening storage) to satisfactorily accommodate the design-year traffic demands (23 CFR 625.2(a)).
	X	Policy Point 2: The need being addressed by the request cannot be adequately satisfied by reasonable transportation system management (such as ramp metering, mass transit, and HOV facilities), geometric design, and alternative improvements to the Interstate without the proposed change(s) in access (23 CFR 625.2(a)).
X		Policy Point 3: An operational and safety analysis has concluded that the proposed change in access does not have a significant adverse impact on the safety and operation of the Interstate facility (which includes mainline lanes, existing, new, or modified ramps, ramp intersections with crossroad) or on the local street network based on both the current and the planned future traffic projections. The analysis shall, particularly in urbanized areas, include at least the first adjacent existing or proposed interchange on either side of the proposed change in access (23 CFR 625.2(a), 655.603(d) and 771.111(f)). The crossroads and the local street network, to at least the first major intersection on either side of the proposed change in access, shall be included in this analysis to the extent necessary to fully evaluate the safety and operational impacts that the proposed change in access and other transportation improvements may have on the local street network (23 CFR 625.2(a) and 655.603(d)). Requests for a proposed change in access must include a description and assessment of the impacts and ability of the proposed changes to safely and efficiently collect, distribute and accommodate traffic on the Interstate facility, ramps, intersection of ramps with crossroad, and local street network (23 CFR 625.2(a) and 655.603(d)). Each request must also include a conceptual plan of the type and location of the signs proposed to support each design alternative (23 U.S.C. 109(d) and 23 CFR 655.603(d)).
X		Policy Point 4: The proposed access connects to a public road only and will provide for all traffic movements. Less than "full interchanges" may be considered on a case-by-case basis for applications requiring special access for managed lanes (e.g., transit, HOVs, HOT lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d)).
	X	Policy Point 5: The proposal considers and is consistent with local and regional land use and transportation plans. Prior to receiving final approval, all requests for new or revised access must be included in an adopted Metropolitan Transportation Plan, in the adopted Statewide or Metropolitan Transportation Improvement Program (STIP or TIP), and the Congestion Management Process within transportation management areas, as appropriate, and as specified in 23 CFR part 450, and the transportation conformity requirements of 40 CFR parts 51 and 93.
	X	Policy Point 6: In corridors where the potential exists for future multiple interchange additions, a comprehensive corridor or network study must accompany all requests for new or revised access with recommendations that address all of the proposed and desired access changes within the context of a longer-range system or network plan (23 U.S.C. 109(d), 23 CFR 625.2(a), 655.603(d), and 771.111).

Documentation		FHWA Interstate Access Policy Points
Technical Report	NEPA Doc.	
	X	<u>Policy Point 7:</u> When a new or revised access point is due to a new, expanded, or substantial change in current or planned future development or land use, requests must demonstrate appropriate coordination has occurred between the development and any proposed transportation system improvements (23 CFR 625.2(a) and 655.603(d)). The request must describe the commitments agreed upon to assure adequate collection and dispersion of the traffic resulting from the development with the adjoining local street network and Interstate access point (23 CFR 625.2(a) and 655.603(d)).
		<u>Policy Point 8:</u> The proposal can be expected to be included as an alternative in the required environmental evaluation, review and processing. The proposal should include supporting information and current status of the environmental processing (23 CFR 771.111).