

## Purpose and Need

The Interstate 80 Section 17M project extends from west of Exit 303 in Stroud Township to east of Exit 307 and the Brodhead Creek bridge in East Stroudsburg Borough. The purpose of this project is to provide a safe and efficient transportation system on this National Highway System component for both local and regional connections in the area by reducing future congestion on I-80 in the 2045 design year to Level of Service (LOS) E or better, improving safety, and bringing the I-80 roadway and structures up to current design standards with no or minimal design exceptions.

The following Project Needs have been identified:

### ➤ **Safety**

Recent crash data showing rates above the statewide average (see attached **Crash Summary**) indicates a high percentage of rear-end, side swipe, and hit fixed object crashes which can be attributed to the congestion (see below) and geometric deficiencies within this Safety Corridor.

Geometric deficiencies include:

- The acceleration and deceleration lane lengths for 9 of the 14 existing movements within the project limits are below PennDOT/AASHTO design criteria. See **Table 1** for existing versus criteria lengths. Lack of sufficient length contributes to safety issues throughout the corridor, as indicated by the collision types and numbers shown in the Crash Analysis Map in the Crash Summary.
- The Westbound I-80 to SR 209 ramp at Exit 304 and the Main Street to Westbound I-80 ramp at Exit 305 also have an entrance / exit weave which requires a total of 2000 feet based on PennDOT/AASHTO criteria. The available length is 1000 feet. This contributes to the high number of rear-end and hit fixed object collisions in this roadway section.
- I-80 has varying inside and outside shoulder widths below minimum design criteria. Existing inside shoulders range from 1 foot to 4 feet, with 10 feet to 12 feet minimum required. Outside shoulders are 10 feet, where 12 feet is required. This results in reduced access for emergency vehicles during incidents, as well as the potential for disabled vehicles to impact the travel lanes.
- Deteriorated roadway and bridge components cause hazardous conditions under normal use as well requiring frequent lane closures for ongoing maintenance issues. The I-80 corridor in the project area was constructed in the 1950s and early 1960s. The roadway pavement has reached the end of its useful life and is in poor condition. In addition, the I-80 bridge over SR 2009 (Bridge Street) is structurally deficient, with a sufficiency rating of 30.7 and a substructure condition rating of 3.

### ➤ **Congestion**

Existing and projected future high traffic volumes, as well as the geometric deficiencies detailed above, contribute to congestion in the project area.

- Current volumes on I-80 average approximately 47,300-70,500 vehicles per day (2013) with 12% heavy vehicles (trucks). Both overall and truck volumes increase from approximately Exit 305 eastward; overall, truck volumes tend to be heavier eastbound. Design year projections (2045) show volumes of approximately 89,200-132,800 vehicles per day. The additional future traffic will increase congestion, with the entire mainline from Exit 304 to Exit 307 and most ramps operating at LOS F in the No-Build scenario. This will also then increase the potential for conflicts at the interchange acceleration and deceleration ramps, as congested conditions make movements more difficult. See **Tables 2 - 5**.
- Lack of sufficient length for acceleration and deceleration lanes also contributes to the congestion throughout the corridor. This is reflected in the LOS shown in **Tables 2-5**.

➤ **Mobility**

- System continuity is lacking. PennDOT and AASHTO design requirements for interstate systems call for all traffic movements to be available at each interchange. In addition, drivers generally expect full movement availability. Exits 303, 304, and 306 provide only some of the connections available (see **Table 6**), which contributes to congestion and safety issues in the region, such as the illegal left hand turns made on SR 611 at Exit 303 by exiting eastbound traffic.
- The project corridor services both local and through traffic, creating conflicts between the types of traffic and deviating from the intent of the Interstate system to facilitate long range travel. A significant portion of the project area traffic is local use that both enters and exits I-80 within the project area. For example, 48% of the traffic entering at the 307 interchange westbound exits at either the 306, 305, or 304 interchanges.
- Four lanes of traffic, two in each direction, must be maintained on I-80 at all times during construction, except for short term closures necessary for the safe execution of specific construction activities.
- The Strategic Highway Network (STRAHNET) system is the system of roads deemed necessary to support the Department of Defense’s operations. As a component of this system, I-80 should include minimum vertical clearances of 16’0”, particularly to facilitate freight mobility. PennDOT requires an additional 6 inches of vertical clearance to accommodate future pavement overlay. The existing Exit 303 ramp bridge over I-80 provides 16’0” vertical clearance, the existing Exit 304 ramp bridge over I-80 provides 16’4”, and the existing SR 0191 structure over I-80 provides only 15’0” vertical clearance.

**Table 1: Criteria Lengths**

Exit	Movement	Existing Length (feet)	Posted Speed (mph)	Required Length (feet)*
303	EB to 611	715	35	342
303	611 to WB	930	35	490
304	209 to EB	700	40	130
304	WB to 209	500	35	285
305	WB to Main St.	150	25	355
305	Main St. to WB	500	25	550
305	EB to Main St.	180	25	355
305	Main St. to EB	195	25	550
306	Dreher Ave. to EB	280	35	350
306	WB to Dreher Ave.	170	35	285
307	EB to Park Ave.	180	35	285
307	Park Ave. to EB	260	15	660
307	WB to Main St.	500	35	285
307	Main St. to WB	225	35	350
*Based on 50MPH for Existing Posted Speed				
Movements which provide less than required length are shaded.				

**Table 2: FREEWAY SEGMENTS PEAK HOUR LEVELS OF SERVICE (LOS)**

Location	Existing 2013 A.M. Peak Hour LOS	Existing 2013 P.M. Peak Hour LOS	No Build 2045 A.M. Peak Hour LOS	No Build 2045 P.M. Peak Hour LOS
I-80 EB between Int. 303 and 304	B	B	C	E
I-80 EB between Int. 304 and 305	C	C	F	F
I-80 EB between Int. 305 and 306	C	C	F	F
I-80 EB between Int. 306 and 307	C	C	F	F
I-80 WB between Int. 303 and 304	A	C	C	F
I-80 WB between Int. 304 and 305	B	E	D	F
I-80 WB between Int. 305 and 306	B	E	D	F
I-80 WB between Int. 306 and 307	B	E	E	F

**Table 3: RAMP MERGES PEAK HOUR LEVELS OF SERVICE (LOS)**

Location	Existing 2013 A.M. Peak Hour LOS	Existing 2013 P.M. Peak Hour LOS	No Build 2045 A.M. Peak Hour LOS	No Build 2045 P.M. Peak Hour LOS
I-80 EB Int. 304 from Rt. 209	C	C	F	F
I-80 EB Int. 305 from W. Main St.	C	D	F	F
I-80 EB Int. 306 from Dreher Ave.	D	D	F	F
I-80 EB Int. 307 from Park Ave.	C	C	F	F
I-80 WB Int. 303 from Rt. 611	B	C	C	F
I-80 WB Int. 307 from Broad St.	C	E	E	F

**Table 4: RAMP DIVERGES PEAK HOUR LEVELS OF SERVICE (LOS)**

Location	Existing 2013 A.M. Peak Hour LOS	Existing 2013 P.M. Peak Hour LOS	No Build 2045 A.M. Peak Hour LOS	No Build 2045 P.M. Peak Hour LOS
I-80 EB Int. 303 to Rt. 611	B	B	D	F
I-80 EB Int. 305 to W. Main St.	D	D	F	F
I-80 EB Int. 307 to Park Ave.	D	D	F	F
I-80 WB Int. 305 to W. Main St.	C	E	E	F
I-80 WB Int. 306 to Dreher Ave.	C	E	E	F
I-80 WB Int. 307 to Broad St.	C	E	E	F

**Table 5: WEAVING SEGMENT PEAK HOUR LEVELS OF SERVICE (LOS)**

Location	Existing 2013 A.M. Peak Hour LOS	Existing 2013 P.M. Peak Hour LOS	No Build 2045 A.M. Peak Hour LOS	No Build 2045 P.M. Peak Hour LOS
I-80 WB Int. 305 to 304	B	D	D	F

**Table 6: Movements**

Exit	Available Movement			
	EB On	EB Off	WB On	WB Off
<b>303</b>		X	X	
<b>304</b>	X			X
<b>305</b>	X	X	X	X
<b>306</b>	X			X
<b>*307</b>	X	X	X	X

\*Exit 307 movements are split: eastbound connect to SR 611, westbound to SR 191.

## **I-80 Reconstruction – Crash Data Summary**

Five-year crash data records (2008-2012) were obtained from the Pennsylvania Department of Transportation for the I-80 main line sections within the project area. Crash reports in the identified sections have been evaluated and presented in graphic form following this summary. The following is a summarization of information taken from the crash data records.

A total of 239 crashes were reported over the 3.45 mile reconstruction segment during the five year period (2008-2012), including 43% Hit Fixed Object and 31% Rear-End collisions. These types of crashes on an interstate are typical where congestion and geometry deficiencies exist.

Crash rates for seven (7) separate segments were calculated for each direction (see tables attached) to compare average crash rates with the current Statewide Accident Average for similar road type, which was obtained from PennDOT Accident Records Systems Homogeneous Report.

The majority of segments display average crash rates that exceed the current statewide average for urban interstates (0.56). The highest average crash rate for crashes grouped by segment within the project area (obtained from PennDOT crash data) occurred in segment 3050/3051 (US 209 ramps at Exit 304), with the crash rates reaching 0.84 (westbound) and 1.09 (eastbound).

### **I-80 between Interchange 303 to Interchange 304**

Immediately west of Interchange 303 (PA Route 611) approaching the eastbound exit and westbound entrance ramps, no crash clusters are observed at the acceleration and deceleration areas to the interchange. Some rear-end collisions were reported on the mainline section, suggesting at least some drivers in this area are reacting to speed variation in traffic flow created by accelerating or decelerating traffic. One fatality accident occurred in the eastbound direction just past the ramp exit gore area.

Within the I-80 segment from Interchange 303 (PA Route 611) to Interchange 304 (US209), the number of crashes increases with the majority reported as fixed object collisions (motorists hitting median barrier or guiderail). A number of small accident crash clusters (3 accidents or less) are shown in this area. Some rear-end collisions are evident in this section, suggesting possible driver reaction to the reduced speed limit signage heading eastbound.

### **I-80 between Interchange 304 to Interchange 305**

The area immediately east of Interchange 304 shows the highest number of crashes within the project area on I-80. The majority of eastbound crashes within this segment are fixed object collisions with motorists hitting median barrier or guiderail in the curve section. Some rear end collisions are shown within the eastbound deceleration ramp area to exit at Interchange 305, suggesting the possibility of insufficient deceleration lengths affecting mainline free flow in this area. Crash cluster data from PennDOT also indicates a "Hit Barrier" cluster in this area.

A significant number of westbound crashes are rear-end collisions, suggesting driver reaction to the weave section involving traffic merging from the Interchange 305 entrance ramp and traffic exiting for the Interchange 304 westbound exit to US209.

### **I-80 between Interchange 305 to Interchange 306**

The area between Interchange 305 (W. Main Street) and Interchange 306 (Dreher Ave) contains no noticeable crash clusters. No operational issues are evident from crash data in this section.

### **I-80 between Interchange 306 to Interchange 307**

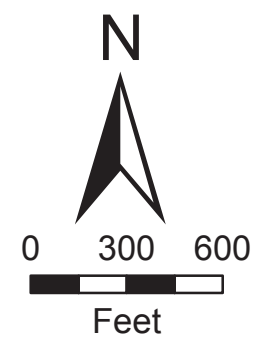
Within the I-80 segment between Interchange 306 (Dreher Ave) and Interchange 307 (Park Ave), the majority of crashes reported are fixed object collisions involving motorists hitting median barrier or guiderail.

Some westbound crashes are same direction sideswipe collisions approaching the Interchange 306 westbound exit ramp, suggesting a possible driver reaction to combination of the roadway curve section and exiting vehicles at Interchange 306.

A small cluster of rear-end collision crashes is noted within the Interchange 307 (Park Avenue) eastbound section, suggesting driver reaction to oncoming traffic from the eastbound entrance ramp at this interchange. A sideswipe accident was also reported within this section. A small cluster of rear-end and side-swipe collision crashes is also evident at Interchange 307 (Broad Street) in the westbound section, suggesting driver reaction to decelerating (diverging) or accelerating (merging) vehicles in the westbound direction.

Within this section, one fatality accident occurred in the eastbound direction within the curve approaching Exit 307 (Park Avenue), and one fatality accident occurred in the eastbound direction at the Park Avenue overpass location.



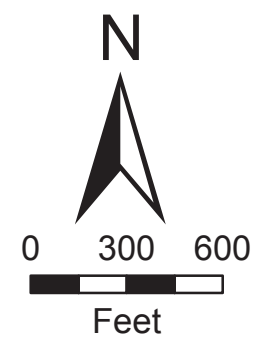











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|---|--|---|
| <span style="color: red;">+</span> Fatality (3)   | <span style="color: blue;">▣</span> Hit Fixed Object (103) | <span style="color: yellow;">▣</span> Same Direction Sideswipe (16) |
| <span style="color: pink;">▴</span> Angle (14)    | <span style="color: green;">●</span> Non-Collision (16)    | <span style="color: orange;">▣</span> Pedestrian (1)                |
| <span style="color: purple;">▣</span> Head-On (2) | <span style="color: brown;">●</span> Rear-End (74)         | <span style="color: red;">●</span> Unknown (13)                     |

**I-80 RECONSTRUCTION**  
 Crash Analysis Map  
 1/1/08 - 12/31/12  
 Sheet 1 of 2

Note: 239 crashes in the study area with 3 being fatal.





- |  |   |   |
|--|---|---|
|  Fatality (3) |  Hit Fixed Object (103) |  Same Direction Sideswipe (16) |
|  Angle (14)   |  Non-Collision (16)     |  Pedestrian (1)                |
|  Head-On (2)  |  Rear-End (74)          |  Unknown (13)                  |

**I-80 RECONSTRUCTION**  
 Crash Analysis Map  
 1/1/08 - 12/31/12  
 Sheet 2 of 2

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