

Purpose of the Meeting

- **To formally present the results of the detailed engineering and environmental studies**
- **To receive your input!**

Project Purpose

- **Improve capacity and traffic operations along MD 180 and MD 351 from Greenfield Drive to Corporate Drive**
- **Support existing and planned development**

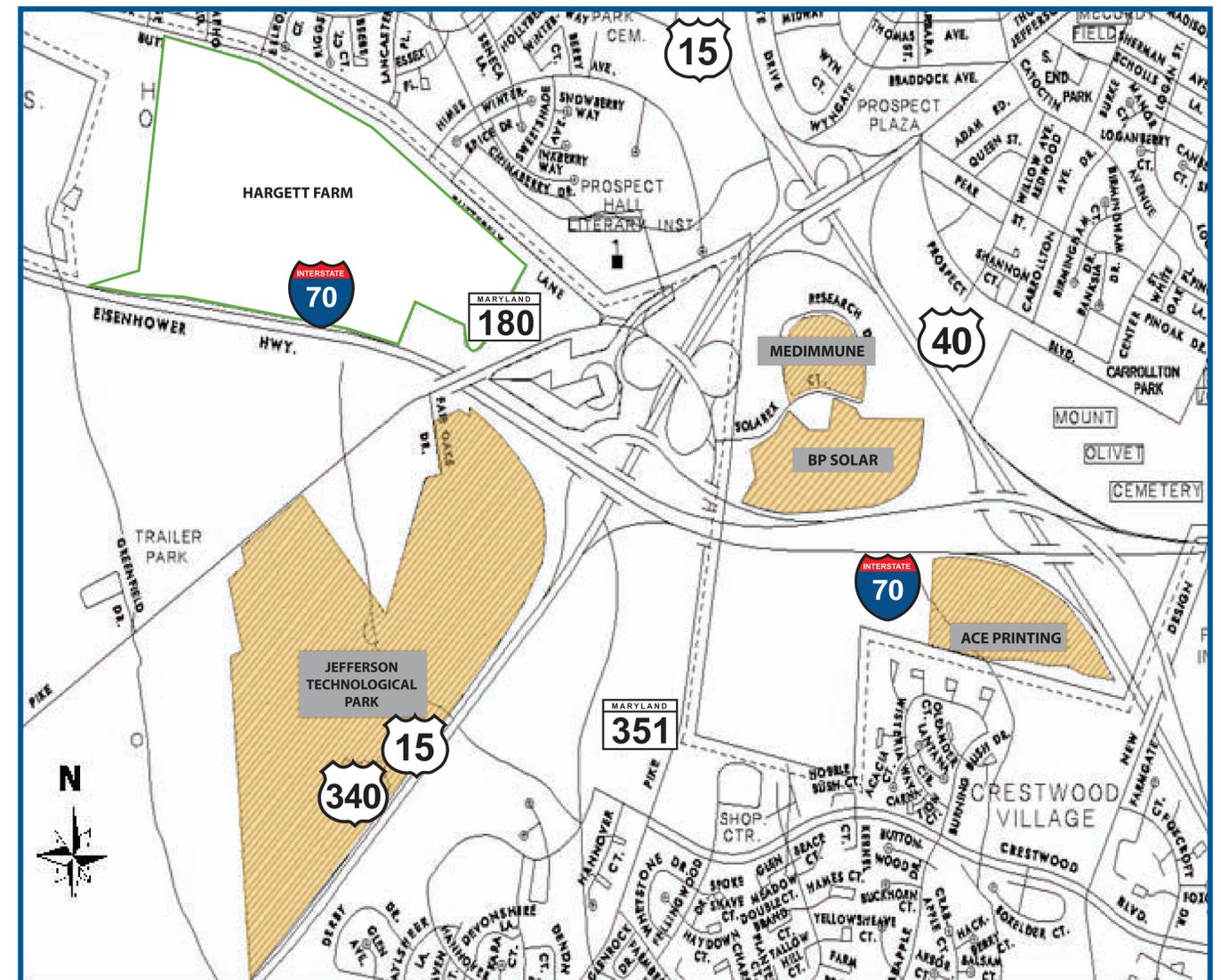
Project Need

- **Corridor is inadequate to handle existing traffic**
- **Development in and around the study area contributes to operational and safety deficiencies**
- **Congestion and high traffic volumes create problems during peak hours**



Land Use and Development

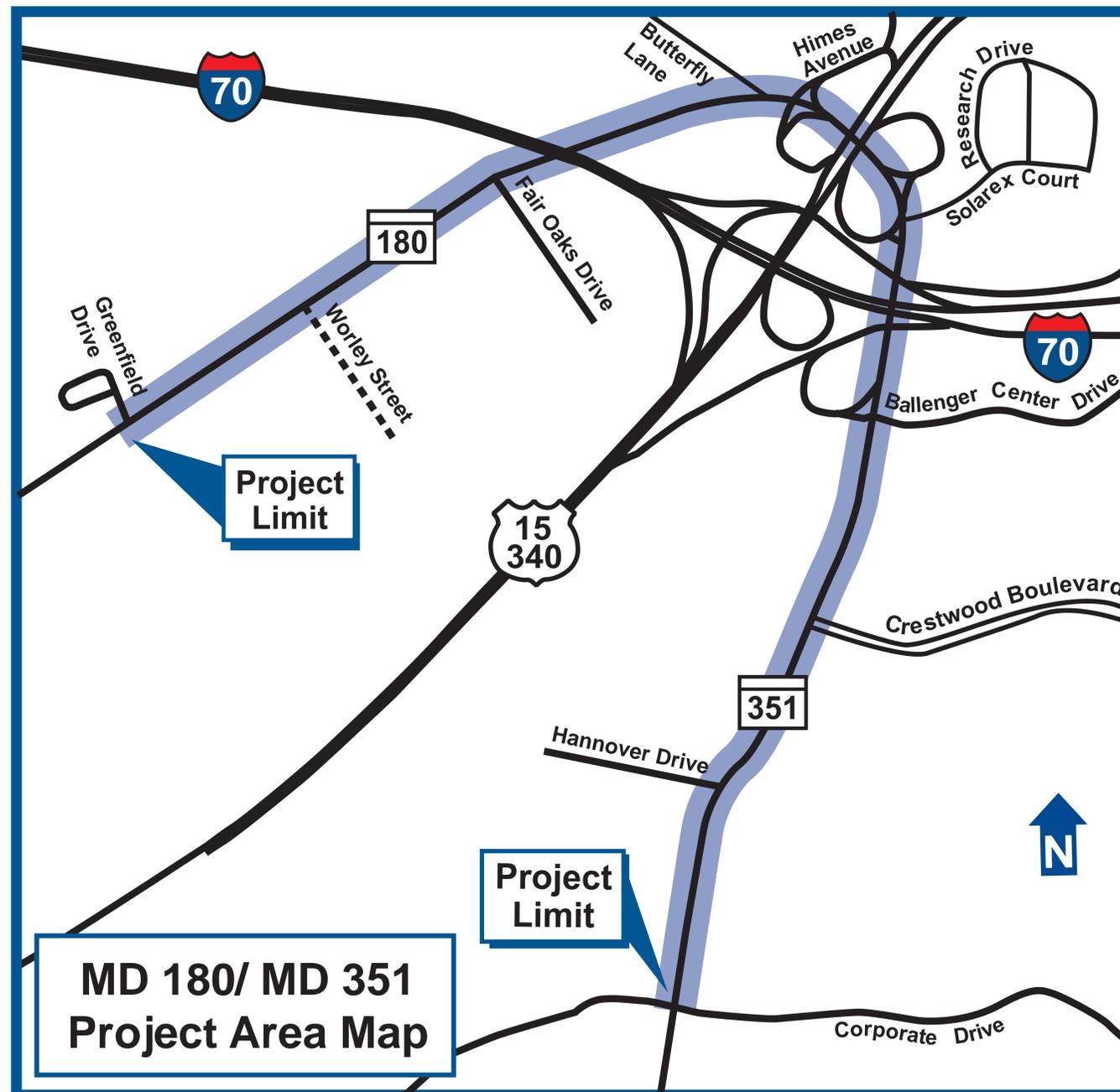
- MD 180 segment – agricultural, industrial, and residential
- MD 351 segment – residential and commercial
- Project located within a planned development area
- Several proposed developments to occur within the study area



Existing Conditions

- **MD 180 is currently a two-lane roadway**
- **MD 351 between Ballenger Center Drive and Solarex Court is a two-lane roadway**
- **MD 351 between Solarex Court and Corporate Drive is a three-lane roadway**
- **The MD 180/MD 351 Corridor has five signalized intersections**

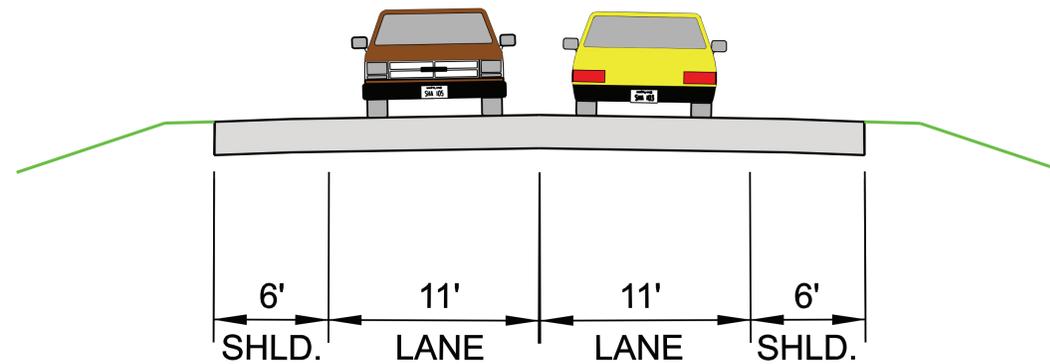
Project Location Map



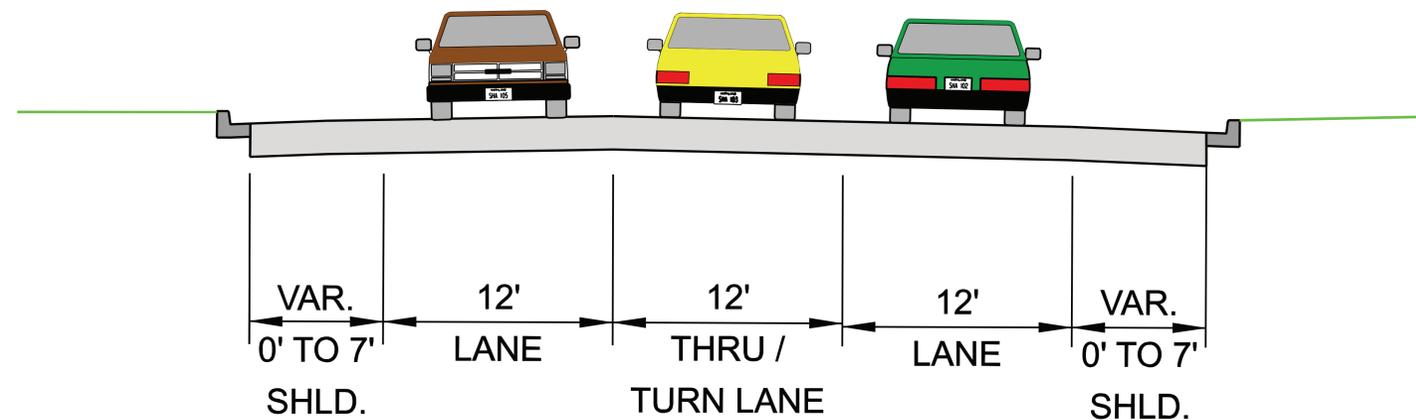
Project Background

- **The MD 180 / MD 351 study corridor is a 2.7 mile Urban Connector road extending from Greenfield Drive to Corporate Drive**
- **The roadways provide access to residential, commercial, and industrial developments. The project area is located within a Frederick County Priority Funding Area**
- **The 2002 Frederick Region Plan has designated the corridor for significant planned growth consisting of residential, commercial, and office development**

Existing Typical Sections



**MD 180 TWO LANE
FROM GREENFIELD DRIVE TO SOLAREX COURT**



**MD 180/MD 351 THREE LANE
FROM SOLAREX COURT TO CORPORATE DRIVE**

Crash Summary

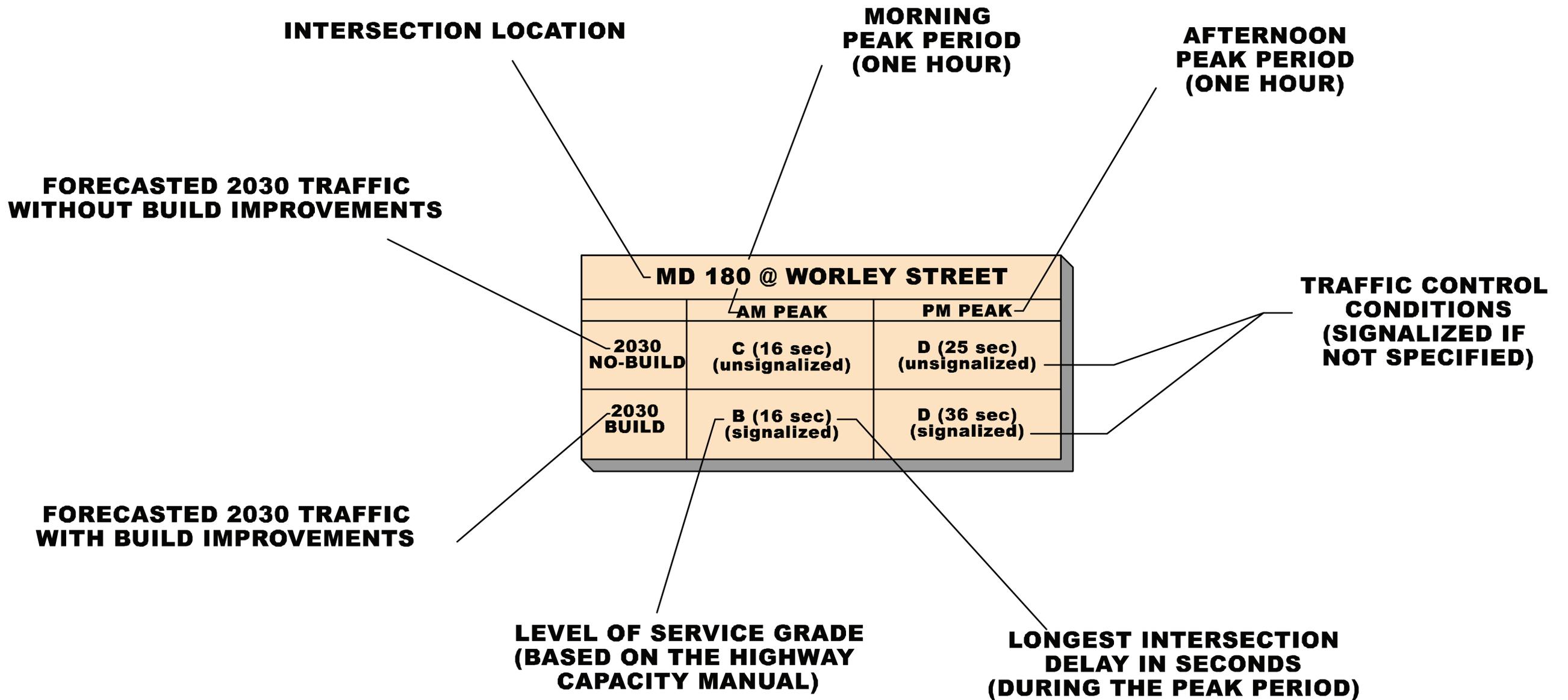
Crash data for MD 180/MD 351 collected from 2003 through 2006 indicates that:

- MD 180 (Jefferson Pike) experienced left-turn and angle collisions at a rate significantly higher than the statewide average for similar types of roadways
- MD 351 (Ballenger Creek Pike) experienced opposite-direction, left-turn and angle collisions slightly higher than the statewide average

Crashes	MD 180 (Jefferson Pike)							MD 351 (Ballenger Creek Pike)						
	2003	2004	2005	2006	Total	Study Rate	State Rate	2003	2004	2005	2006	Total	Study Rate	State Rate
Fatal	-	-	-	-	-	0.0	1.2	-	-	-	-	-	0.0	1.0
Injury	6	5	3	13	27	53.4	83.3	9	9	-	3	21	92.2	122.6
Persons Injured	15	16	9	27	67	-	-	18	11	-	7	36	-	-
Property Damage	7	10	6	10	33	77.0	98.1	8	16	1	8	33	144.9	153.3
Total Crashes	13	15	9	23	60	130.25	182.6	17	25	1	11	54	237.1	276.9
Left Turn	4	2	2	8	16	31.0*	14.4	5	1	-	4	10	43.9	26.6
Angle	4	9	2	7	22	50.7*	31.6	2	7	1	2	12	52.7	48.9
Opposite Direction	-	1	1	-	2	5.9	10.8	-	4	-	-	4	17.6	12.1

* Significantly higher than the statewide average for similar types of roadways

Traffic Key



Level of Service Analysis

MD 180/MD 351 EXISTING (2006) & FORECASTED (2030) LOS ANALYSES RESULTS																	
MD 180/MD 351 Intersection LOS [Peak Hours]																	
Intersection	Existing Condition	Alt. 1 No-Build		Alt. 2 TSM/TDM		Alt.3 Four-lane Divided		Alt.3 MD 351 Five-lane Section Option		Alt.3 US 340 Interchange Option A		Alt.3 US 340 Interchange Option B		Alt.3 US 340 Interchange Option B Modified Butterfly Lane Relocated			
		Year 2006		Year 2030		Year 2030		Year 2030		Year 2030		Year 2030		Year 2030			
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
MD 180	Greenfield Drive (U)	A (10)	B (11)	E (40)	F (197)	C (21)	E (40)	D (29)	E (49)	D (29)	E (49)	D (29)	E (49)	D (29)	E (49)	D (29)	E (49)
	Walking Stick (U)	N/A	N/A	F (>300)	F (>300)	B (13)	C (17)	C (16)	C (22)	C (16)	C (22)	C (16)	C (22)	C (16)	C (22)	C (16)	C (22)
	Worley Street ^	N/A	N/A	C (16)	D (25)	B (16)	D (36)	C (26)	E (77)	C (26)	E (77)	C (26)	E (76)	C (32)	E (76)	C (32)	E (78)
	Vincent Valley (U)	N/A	N/A	C (15)	E (39)	B (11)	C (20)	C (19)	E (48)	C (19)	E (48)	C (19)	E (48)	C (19)	E (48)	C (19)	E (45)
	Fair Oaks Drive ^	B (10)	B (10)	F (>300)	F (>300)	B (11)	D (50)	B (12)	B (17)	B (12)	B (17)	A (8)	B (18)	B (16)	A (6)	A (7)	A (4)
	Butterfly Lane (S)	B (12)	A (8)	D (39)	F (185)	B (15)	F (128)	B (12)	F (117)	B (12)	F (117)	B (18)	F (120)	B (14)	F (104)	B (13)	B (13)
	Himes Ave. / Ramp from SB US 15/ 340 (S)	E (70)	C (33)	F (>300)	F (>300)	F (>300)	F (>300)	C (29)	F (108)	C (29)	F (108)	C (30)	F (107)	C (21)	F (125)	B (18)	E (61)
	Ramp from NB US 15/US 340 ^	F (>300)	F (164)	F (>300)	F (>300)	F (154)	F (221)	F (186)	F (206)	F (186)	F (206)	F (99)	F (112)	C (22)	E (78)	C (22)	E (78)
Solarex Drive (S)	E (72)	E (79)	F (182)	F (188)	F (172)	F (185)	F (107)	F (159)	F (107)	F (159)	F (95)	F (154)	E (56)	E (77)	E (56)	E (77)	
MD 351	Ballenger Center Drive/ Ramps to I-70 (S)	B (18)	B (14)	F (113)	E (77)	D (52)	D (35)	E (72)	D (41)	E (72)	D (41)	E (55)	D (41)	E (72)	E (58)	E (72)	E (59)
	Crestwood Boulevard (S)	D (40)	D (42)	F (205)	F (235)	F (174)	F (208)	E (63)	E (72)	E (63)	E (72)	E (63)	E (72)	E (63)	E (72)	E (63)	E (66)
	Hannover Road (S)	A (10)	A (7)	E (74)	E (73)	E (66)	E (71)	C (26)	C (34)	C (26)	C (34)	C (26)	C (34)	C (26)	C (34)	C (26)	C (30)
	Corporate Drive ^	F (161)	F (74)	F (>300)	F (>300)	F (117)	F (106)	E (72)	D (52)	E (72)	D (52)	E (72)	D (52)	E (72)	D (52)	E (72)	D (51)

06/23/2009

U - Unsignalized
 S - Signalized
 ^ - Unsignalized under existing and no-build; Signalized under build
 (#) - Traffic delay in seconds



MARYLAND
180

MARYLAND
351

Annual Average Daily Traffic

MD 180/MD 351 EXISTING (2006) & FORECASTED (2030) AADT

MD 180/MD 351 Annual Average Daily Traffic Data

Roadway Segments		2006	2030 No-Build	% ¹ Increase	2030 Build	% ² Increase
MD 180	South of Greenfield Dr.	3,800	15,320	303	21,320	461
	Between Greenfield Dr. and Fair Oaks Dr.	3,900	15,420	295	21,420	449
	Between Fair Oaks Dr. and Butterfly Ln.	3,950	15,500	292	21,500	444
	Between Butterfly Ln. and Himes Ave.	12,000	30,500	154	36,500	204
	Between Himes Ave. and Solarex Ct.	22,650	47,450	110	53,450	136
MD 351	Between Solarex Ct. and Ballenger Center Dr.	24,550	45,850	87	47,450	93
	Between Ballenger Center Dr. and Crestwood Blvd.	23,500	35,700	52	39,700	69
	Between Crestwood Blvd. and Hannover Dr.	14,100	20,400	45	32,400	130
	Between Hannover Dr. and Corporate Dr.	12,250	23,000	88	29,000	137
	South of Corporate Dr.	8,250	20,400	147	26,400	220

%¹ = percent increase from 2006 to 2030 no-build

%² = percent increase from 2006 to 2030 build

Alternatives Under Consideration

- **Alternative 1: No-Build**
- **Alternative 2: TSM/TDM**
- **Alternative 3: Four-Lane Divided**
 - **MD 351 Five-Lane Section Option**
 - **US 15/US 340 Interchange Option A**
 - **US 15/US 340 Interchange Option B**
 - **US 15/US 340 Interchange Option B-Modified**

Alternative 1: No-Build

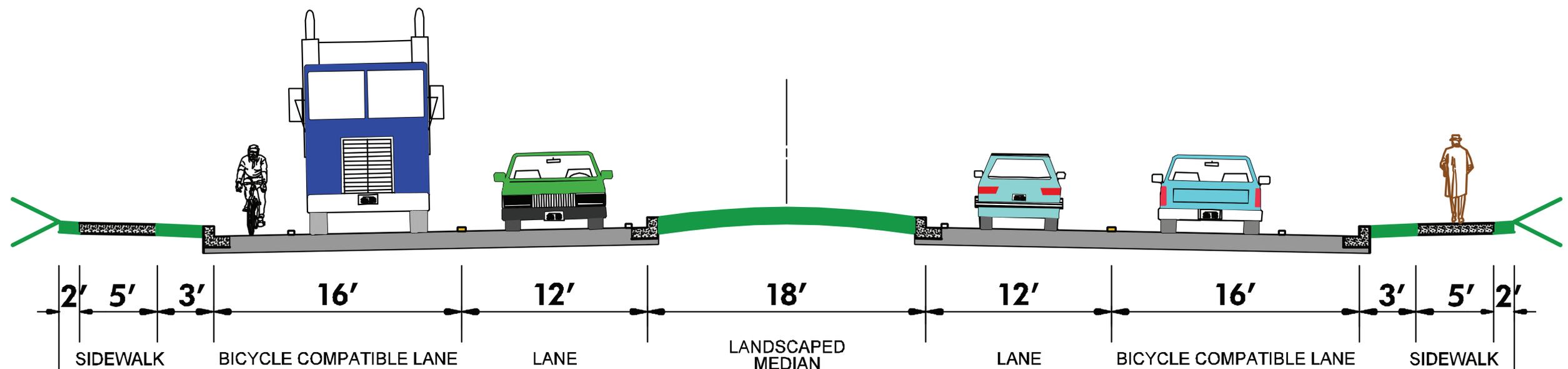
- **Aside from the addition of new traffic signals there are no substantial improvements other than normal maintenance.**
 - **This alternative does include required developer improvements.**
- **Serves as a baseline for comparing impacts and benefits associated with the Build Alternatives.**

Alternative 2: TSM/TDM

- **This alternative provides intersection improvements along the corridor, synchronizes the existing signals and proposes new signals.**
- **This alternative will restripe the section of roadway to four lanes between the I-70 bridges from north of Fair Oaks Drive to Ballenger Center Drive while accommodating a seven-foot sidewalk under the bridges.**
- **Loop ramps at the US 15/US 340 interchange will be widened to accommodate an additional lane as well as widening the bridge over US 15/US 340 and access management will be implemented to improve safety and operations. All of the TSM/TDM improvements are included in the other build alternatives.**

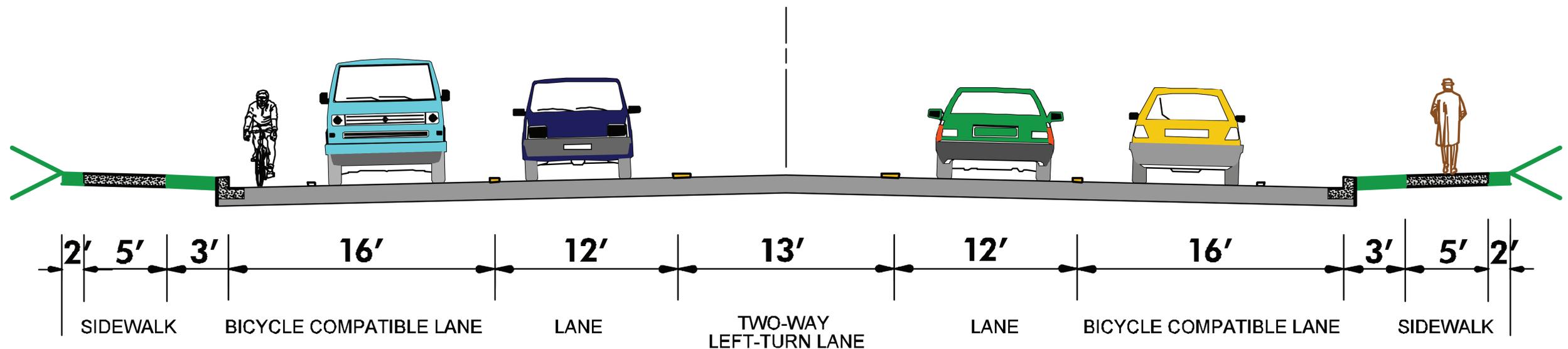
Alternative 3: Four Lane Divided

- Alternative 3 is a four-lane divided curbed section which includes an 18-foot-wide landscaped median, with 12-foot-wide inside travel lanes and 16-foot-wide bicycle-compatible outside travel lanes and five-foot-wide sidewalks on both sides. Additional intersection improvements beyond Alternative 2 are proposed at key intersections.
- There are four options associated with this alternative.



MD 351 Five-Lane Option

- Widen MD 351 from Crestwood Boulevard to Corporate Drive to a five-lane roadway with two through lanes in each direction and a 13-foot center-turn lane



US 15/US 340 Interchange Option A

- **Two additional southbound auxiliary lanes and one northbound auxiliary lane between Himes Avenue and the northbound US 15/US 340 off-ramp**
- **Three existing loop ramps widened**
- **An auxiliary lane along northbound US 15/US 340 ties into the I-70 exit ramp**
- **The auxiliary lane along the southbound US 15/US 340 collector-distributor road is carried through the interchange**

US 15/US 340 Interchange Option B

- **Includes the improvements of Option A**
- **Removes two loop ramps and replaces with ramps to form a half-diamond interchange on northbound side of US 15/US 340**

US 15/US 340 Interchange Option B-Modified

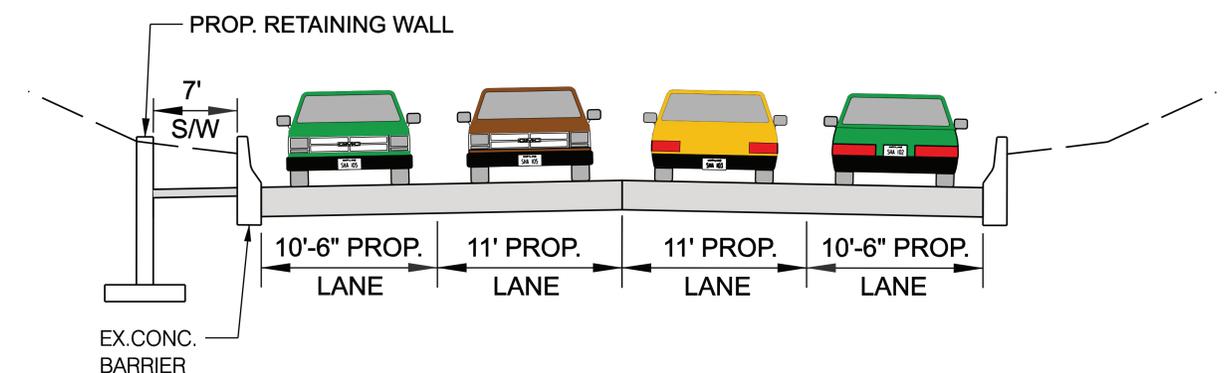
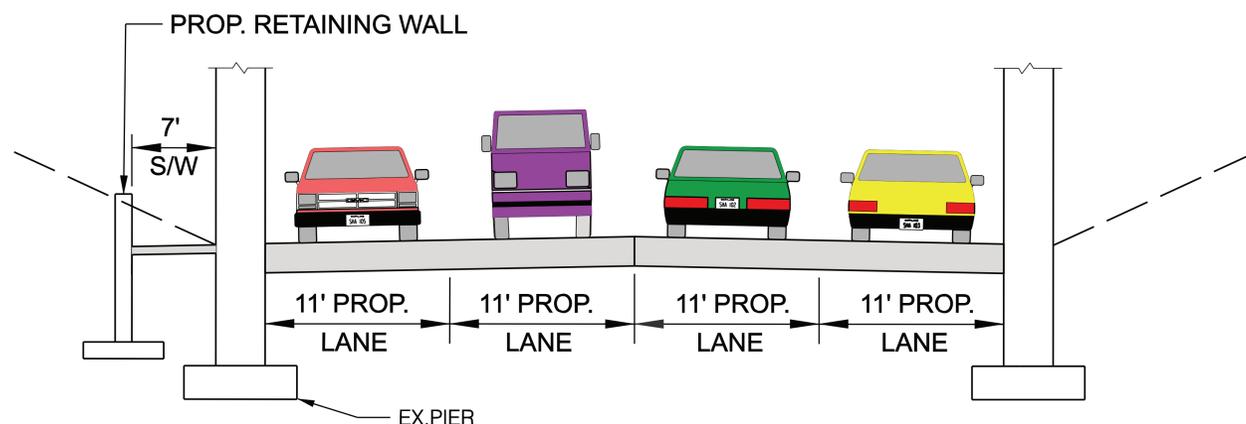
- **Relocated intersection of Butterfly Lane with MD 180 approximately 800 feet west of current location**
- **New traffic signal, with 4-legged intersection incorporating various access to adjacent properties**
- **Additional access modifications**
- **Triple left-turn lanes at SB US 15/US 340 off-ramp**

Short Term Improvements

- **Incorporates all of the improvements from Alternative 2: TSM/TDM with the exception of the bridge widening at US 15/US 340. These improvements were analyzed based on 2015 traffic volumes, resulting in only two failing intersections during the morning peak hour.**
- **Does not fully improve roadway capacity along the entire corridor.**
- **Developed based on stakeholder and public comment.**

Short Term Improvements Overview

- MD 180 and MD 351 from Solarex Court to Ballenger Center Drive will be restriped to a four-lane roadway with a sidewalk on the east side of the roadway. In order to avoid reconstructing the four bridges at I-70, retaining walls will be placed under the bridges next to the proposed seven-foot sidewalk.**





Environmental Impacts

Summary of Impacts MD 180/MD 351 - Planning Study

Natural Environment	Alt 1: No-Build	Alt 2: TSM/TDM	Alt 3: Four-Lane Divided	Alt 3: Five-Lane Option	US 15 Interchange Option A	US 15 Interchange Option B	US 15 Interchange Option B Mod Butterfly Lane Realignment
Stream (linear feet)	0	650	870	870	870	870	870
Wetland (acres)	0	0	0.1	0.1	0.1	0.1	0.1
Forest (acres)	0	1.8	2.0	2.0	2.0	2.0	2.0
Floodplain (acres)	0	0	1.7	1.7	1.7	1.7	1.7

Cultural Resources	Alt 1:	Alt 2:	Alt 3:	Alt 3: Five-Lane	Option A	Option B	Option B Mod
Historic Site (acres)	0	0	0.05	0.05	0.05	0.05	0.05
Archeological Site (acres)	0	0	0	0	0	0	0

Socio-Economic	Alt 1:	Alt 2:	Alt 3:	Alt 3: Five-Lane	Option A	Option B	Option B Mod
Park (acres)	0	0	0.8	0.8	0.8	0.8	0.8
Total Impacted Properties (#)	0	20	73	73	73	73	73
Total ROW Required (acres)	0	4.2	19.1	19.1	19.1	19.1	19.6
Business Displacements (#)	0	0	0	0	0	0	0
Residential Relocations (#)	0	0	7	7	7	7	7

Cost Summary	Alt 1:	Alt 2:	Alt 3:	Alt 3: Five-Lane	Option A	Option B	Option B Mod
Total Cost Range	0	\$65-113 M	\$228-400 M	\$228-400 M	\$237-416 M	\$256-450 M	\$268-471 M

Total Costs inflated to 2015-2030 at 4%

Related Projects

- **I-70 Improvement Projects (SHA)**
- **I-270/US 15 Multi-Modal Corridor Study (SHA)**
- **Butterfly Lane (City of Frederick)**

Next Steps

- **Evaluate and address public and agency input received at the Location/Design Public Hearing (Summer 2009)**
- **Receive the State Highway Administrator's concurrence on a Preferred Alternative (Winter 2009)**
- **Receive Location Approval from the FHWA and Design Approval from the State Highway Administrator for the Selected Alternative (Spring 2010)**