

TABLE OF CONTENTS

INTRODUCTION	i
EXECUTIVE SUMMARY	S-1
1. PURPOSE AND NEED.....	1-1
1.1 Study Area	1-1
1.2 Project History	1-1
1.3 Purpose and Goals.....	1-2
1.4 Project Need.....	1-3
2. ALTERNATIVES.....	2-1
2.1 Alternatives Development	2-1
2.2 Alternatives Eliminated from Detailed Study.....	2-1
2.3 Alternatives Retained for Detailed Study (ARDS).....	2-12
2.4. Transit-Only Alternative.....	2-28
2.5. Refinement of Alternatives during the Current Preliminary Engineering Phase	2-31
2.6 Cost Estimates.....	2-36
2.7. Future Decision on a Preferred Alternative	2-37
3. TRANSPORTATION COMPARISON OF THE ALTERNATIVES.....	3-1
3.1 The MD 355/ I-270 Technology Corridor	3-1
3.2 Expansion of the Technology Corridor within the Project Study Area.....	3-4
3.3 Planned Development and Transportation.....	3-6
3.4 Ability to Satisfy the Purpose and Need.....	3-7
3.5 Summary	3-40
3.6 Conclusion	3-45
4. SOCIOECONOMIC RESOURCES	4-1
4.1 Existing Land Use.....	4-6
4.2 Social Environment.....	4-7
4.3 Social Impacts.....	4-12
4.4 Environmental Justice.....	4-26
4.5 Economic Environment	4-34
4.6 Economic Impacts.....	4-37
4.7 Support for Master Planned Economic Growth.....	4-43
4.8 Maryland Smart Growth Initiatives	4-45



5.	Natural Resources	5-1
5.1	Geology.....	5-1
5.2	Soils.....	5-1
5.3	Wildlife, Including Rare, Threatened, and Endangered Species	5-3
5.4	Farmland	5-11
5.5	Water Quality and Aquatic Habitat.....	5-12
5.6	Waters of the U.S., Including Wetlands	5-17
5.7	Floodplains.....	5-57
5.8	Terrestrial Habitat and Forests.....	5-60
5.9	Special Protection Areas	5-72
5.10	Biodiversity Areas	5-73
5.11	Green Infrastructure	5-74
5.12	Hazardous Materials	5-76
6.	AIR QUALITY	6-1
6.1	Existing Conditions.....	6-1
6.2	Air Quality Impacts.....	6-6
7.	INDIRECT AND CUMULATIVE EFFECTS	7-1
7.1	Indirect Effects.....	7-1
7.2	Cumulative Effects.....	7-5
8.	HISTORIC ARCHITECTURAL AND ARCHEOLOGICAL RESOURCES	8-1
8.1	Potentially Eligible Historic Architectural Resources	8-2
8.2.	Properties Determined Not Individually Eligible along Northern Terminus Option D.....	8-9
8.3.	Archeological Resources	8-10
8.4.	Rustic Roads	8-12
9.	PUBLIC INVOLVEMENT	9-1
9.1	Public Meetings and Workshops	9-1
9.2	Meetings with Environmental Agencies.....	9-3
9.3	Newsletters.....	9-9
9.4	Project Website	9-10

APPENDICES

- Agency Correspondence
- Alternatives Mapping



LIST OF TABLES

Table S-1: Transportation Effectiveness of Each Alternative	S-4
Table S-2: Lane-Miles of New Highway Capacity Provided by Each Alternative	S-5
Table S-3: Summary of Environmental and Socioeconomic Impacts	S-7
Table 2-1: Year 2030 Programmed Roadway Improvements in the Study Area	2-13
Table 2-2: Proposed Improvements Evaluated under Alternative 2	2-15
Table 2-3: Estimated Cost	2-36
Table 3-1: Relationship Between CLV and LOS	3-8
Table 3-2: 2030-Build Condition Congestion Analysis	3-15
Table 3-3: Major Intersections Having Acceptable Operation during Peak Hours	3-16
Table 3-4: Projected Crash Rates Along the Build Alignments in 2030	3-21
Table 3-5: Lane-Miles of New Highway Capacity Provided by Each Alternative	3-27
Table 3-6: Amount of Traffic Reduction on MD 355	3-28
Table 3-7: Range of Projected Changes in 2030 Traffic Volumes on MD 355	3-29
Table 3-8: Comparison of Travel Time	3-38
Table 3-9: Transportation Effectiveness of Each Alternative	3-45
Table 4-1: Regional Population and Population Growth	4-8
Table 4-2: Racial Characteristics (2010)	4-8
Table 4-3: Income Characteristics	4-9
Table 4-4: Regional and Study Area Household Demographics	4-10
Table 4-5: Community Facilities Located Along Alternative 4 Modified	4-10
Table 4-6: Community Facilities Located Along Alternative 5	4-11
Table 4-7: Community Facilities Located Along Alternative 8	4-11
Table 4-8: Community Facilities Located Along Alternative 9	4-11
Table 4-9: Alternatives with Residential and Business Displacements	4-12
Table 4-10: Number of Residential Properties Affected	4-14
Table 4-11: Number of Residential Properties Potentially Impacted by Noise	4-21
Table 4-12: Impacts to Parkland	4-26
Table 4-13: Study Area Census Tracts that Meet or Exceed Environmental Justice Minority Population Thresholds (Shaded)	4-28
Table 4-14: Study Area Census Tracts that Meet or Exceed Environmental Justice Low-Income Population Thresholds (Shaded)	4-29
Table 4-15: Employment Rates	4-36



Table 4-16: Employment by Industry.....	4-36
Table 4-17: Existing, Approved, Pipeline,&1994 Clarksburg Master Plan Development	4-37
Table 4-18: Germantown Employment Area Existing and Proposed Development.....	4-37
Table 4-19: City of Gaithersburg Existing and Proposed Development.....	4-38
Table 4-20: Pipeline Dwelling Units and Commercial Space Approved in the Study Area.....	4-38
Table 5-1: FIDS Impacts within ARDS	5-8
Table 5-2: Bird Species along Alternatives 8 and 9	5-9
Table 5-3: Farmland Impact Summary.....	5-11
Table 5-4: Water Quality Criteria Specific to Designated Stream Uses	5-12
Table 5-5: Benthic Index of Biotic Integrity Narratives	5-14
Table 5-6: Summary of Benthic Index of Biotic Integrity within the Study Area	5-15
Table 5-7: Fish Index of Biotic Integrity Narratives	5-15
Table 5-8: Summary of Fish Index of Biotic Integrity within the Study Area.....	5-16
Table 5-9: Impacts - WUS 15, WUS 16, W17, W18, W19	5-19
Table 5-10: Impacts - WUS 20, WUS 21, W23, WUS 24, WUS 25, W26	5-21
Table 5-11: Impacts - WUS 27, W28.....	5-24
Table 5-12: Impacts - WUS 31.....	5-25
Table 5-13: Impacts - WUS 32, WUS 34, W35	5-27
Table 5-14: Impacts - WUS 36.....	5-28
Table 5-15: Impacts - WUS 37, W41	5-29
Table 5-16: Impacts - WUS 46, WUS 52, WUS 81	5-32
Table 5-17: Impacts - WUS 52, WUS 53, W59, W63, W64, WUS 82.....	5-34
Table 5-18: Impacts - W63.....	5-38
Table 5-19: Impacts - WUS 76, W77	5-39
Table 5-20: Impacts - WUS 78, W79	5-41
Table 5-21: Impacts - W72, WUS 73	5-43
Table 5-22: Impacts - WUS 69, W70, WUS 71, W72, WUS 73	5-45
Table 5-23: Impacts - WUS 1, WUS 69, W72, WUS 73	5-48
Table 5-24: Impacts - WUS52, WUS66, W67, WUS68, WUS53, W57A.....	5-49
Table 5-25: Impacts - WUS53, W57, W58, W61/W62, W63, W64	5-54
Table 5-26: Permanent Wetland Impacts	5-57



Table 5-27: Permanent Waters Impacts	5-57
Table 5-28: Temporary Wetland Impacts of Construction Access	5-57
Table 5-29: Permanent Impacts of Stream Relocation.....	5-58
Table 5-30: FEMA Floodplain Impacts*	5-58
Table 5-31: Forest Retention Value Rating Characteristics	5-62
Table 5-32: Forest and Park Impact Summary	5-71
Table 5-33: Range of DEP’s Water Quality Data Collected Along Wildcat Branch.....	5-72
Table 5-34: Increased Impervious Surface within the SPA	5-73
Table 5-35: Hazardous Waste Site Databases	5-77
Table 5-36: Sites of Potential Hazmat Concern Along Each Alternative	5-79
Table 6-1: National Ambient Air Quality Standards Representative Ambient Air Quality Monitoring Data.....	6-2
Table 6-2: Representative Ambient Air Quality Monitoring Data.....	6-3
Table 6-3: Modeled Maximum Existing Peak CO Concentrations in the Vicinity of the Midcounty Corridor Project	6-5
Table 6-4: Modeled Maximum Existing Peak PM _{2.5} Concentrations in the Vicinity of the Midcounty Corridor Project	6-5
Table 6-5: Modeled Maximum Existing Peak NO ₂ Concentrations in the Vicinity of the Midcounty Corridor Project	6-6
Table 6-6: Modeled Maximum 1-Hour CO Concentrations for Alternatives Retained for Detailed Study	6-7
Table 6-7: Modeled Maximum 8-Hour CO Concentrations for Alternatives Retained for Detailed Study	6-7
Table 6-8: Modeled Maximum 24-Hour PM _{2.5} Concentrations for Alternatives Retained for Detailed Study	6-8
Table 6-9: Modeled Maximum Annual PM _{2.5} Concentrations for Alternatives Retained for Detailed Study	6-8
Table 6-10: Modeled Maximum Annual NO ₂ Concentrations for Alternatives Retained for Detailed Study	6-10
Table 6-11: Annual Average Daily Traffic (Design Year 2030)	6-11

LIST OF FIGURES

Figure 1-1: Midcounty Corridor Study Area	1-2
Figure 2-1: Alternative 3 – Brink-Wightman-Montgomery Village Ave-Midcounty Highway	2-2



Figure 2-2: Alternative 4 – Brink-Wightman-Goshen.....	2-2
Figure 2-3: Alternative 6 – Master Plan Alignment-Watkins Mill- MD 355- Montgomery Village Ave-Midcounty Highway	2-4
Figure 2-4: Alternative 7 – Master Plan Alignment-Middlebrook- MD 355- Montgomery Village Ave-Midcounty Highway	2-4
Figure 2-5: Alternative 10 – Brink-Wightman-Snouffer School-Muncaster Mill.....	2-8
Figure 2-6: Alternative 11–Master Plan Alignment-Watkins Mill- Stedwick- Montgomery Village Ave-Midcounty Highway	2-8
Figure 2-7: Original Northern Terminus Options.....	2-11
Figure 2-8: Alternative 1 – No Build.....	2-14
Figure 2-9: Alternative 2–Transportation Systems Management/Travel Demand Management	2-16
Figure 2-10: Alternative 4 Modified – Brink-Wightman-Snouffer School-Muncaster Mill Roads	2-18
Figure 2-11: Alternative 4 Modified, 4-lane and 6-lane Typical Sections	2-19
Figure 2-12: Alternative 5 – MD 355 with Service Roads	2-21
Figure 2-13: Alternative 5, Typical Sections.....	2-22
Figure 2-14: Master Plan Alignment Truncated at Watkins Mill Road	2-24
Figure 2-15: Alternatives 8 & 9, Open and Closed Typical Sections.....	2-25
Figure 2-16: Alternative 9 – Master Plan Alignment	2-27
Figure 2-17: CCT.....	2-30
Figure 3-1: MD 355/I-270 Technology Corridor	3-5
Figure 3-2: Alternative 1 Intersection Operation.....	3-9
Figure 3-3: Alternative 2 Intersection Operation.....	3-10
Figure 3-4: Alternative 4 Modified Intersection Operation.....	3-11
Figure 3-5: Alternative 5 Intersection Operation.....	3-12
Figure 3-6: Alternative 8 Intersection Operation.....	3-13
Figure 3-7: Alternative 9 Intersection Operation.....	3-14
Figure 3-8: Screenline Locations	3-24
Figure 3-9: 2030 Traffic Projected to Cross Screenlines A, B, C in Peak Hour/Peak Direction.....	3-26
Figure 3-10: Existing Bikeways	3-31
Figure 3-11: Travel Time Corridors	3-36
Figure 3-12: AM and PM Peak Hour Travel Times Along Four Different Corridors.....	3-37
Figure 4-1: Montgomery County's 27 Planning Areas	4-2



Figure 4-2: Project Area Census Tracts.....	4-5
Figure 4-3: Comparison of Daily Traffic Volumes - Alt 4 Mod	4-15
Figure 4-4: Census Tracts with Concentrated Low-Income or Minority Population	4-30
Figure 4-5: Priority Funding Areas.....	4-46
Figure 5-1: Soil Associations.....	5-2
Figure 5-2: Heron Colony Protection Zones.....	5-5
Figure 5-3: Environmental Features Map - AMT Report.....	5-7
Figure 5-4: Wetlands and Waters of the U.S. Location Map	5-13
Figure 5-5: Location WUS 15, WUS 16, W17, W18, W19	5-20
Figure 5-6: Location WUS20, WUS21, WUS22, W23, WUS24, WUS25, W26	5-22
Figure 5-7: Location WUS 27, W28.....	5-25
Figure 5-8: Location WUS 31	5-26
Figure 5-9: Location WUS 32, WUS 34, W35.....	5-28
Figure 5-10: Location WUS 36	5-29
Figure 5-11: Location WUS 37, Feature 38, W41.....	5-30
Figure 5-12: Location WUS 46	5-32
Figure 5-13: Location WUS 52	5-33
Figure 5-14: Location WUS 81	5-34
Figure 5-15: Location WUS 53, WUS 54, W59, W63, W64	5-35
Figure 5-16: Location WUS 82	5-37
Figure 5-17: Location WUS 53, W63, Feature 74, Feature 75.....	5-39
Figure 5-18: Location WUS 76, W77.....	5-40
Figure 5-19: Location WUS 78, W79.....	5-42
Figure 5-20: Location W72, WUS 73.....	5-44
Figure 5-21: Location WUS 69, W70.....	5-46
Figure 5-22: Location WUS 71	5-47
Figure 5-23: Location WUS 1	5-48
Figure 5-24: Location WUS 69	5-49
Figure 5-25: Location WUS 52 west of Goshen Road	5-50
Figure 5-26: Location WUS 52 under Goshen Road.....	5-51
Figure 5-27: Location WUS 66, W67, WUS 68.....	5-52
Figure 5-28: Location WUS 53, W57A.....	5-53
Figure 5-29: Widened Bridge on Watkins Mill Road over Whetstone Run.....	5-55



Figure 5-30: Location WUS 53, W57, W58, W61/62, W63, W64 5-56
Figure 5-31: Archeological Investigation of Mitigation Site SC-21 5-59
Figure 5-32: Forest Stand Location Map..... 5-61
Figure 5-33: Green Infrastructure Map..... 5-75
Figure 5-34: Hazardous Materials Sites..... 5-78
Figure 8-1: Potential Eligible Historic Architectural Resources 8-3