h. I-95/MD 543 Interchange Option 4: Partial Cloverleaf – Single Loop

This option was dropped due to the combination of commercial displacements and traffic. *(see Figure 62)*

- The proposed loop ramp and outer connection ramp in the northeast quadrant of the interchange will require one commercial displacement.
- This option provides a similar LOS as other retained interchange options having fewer impacts.

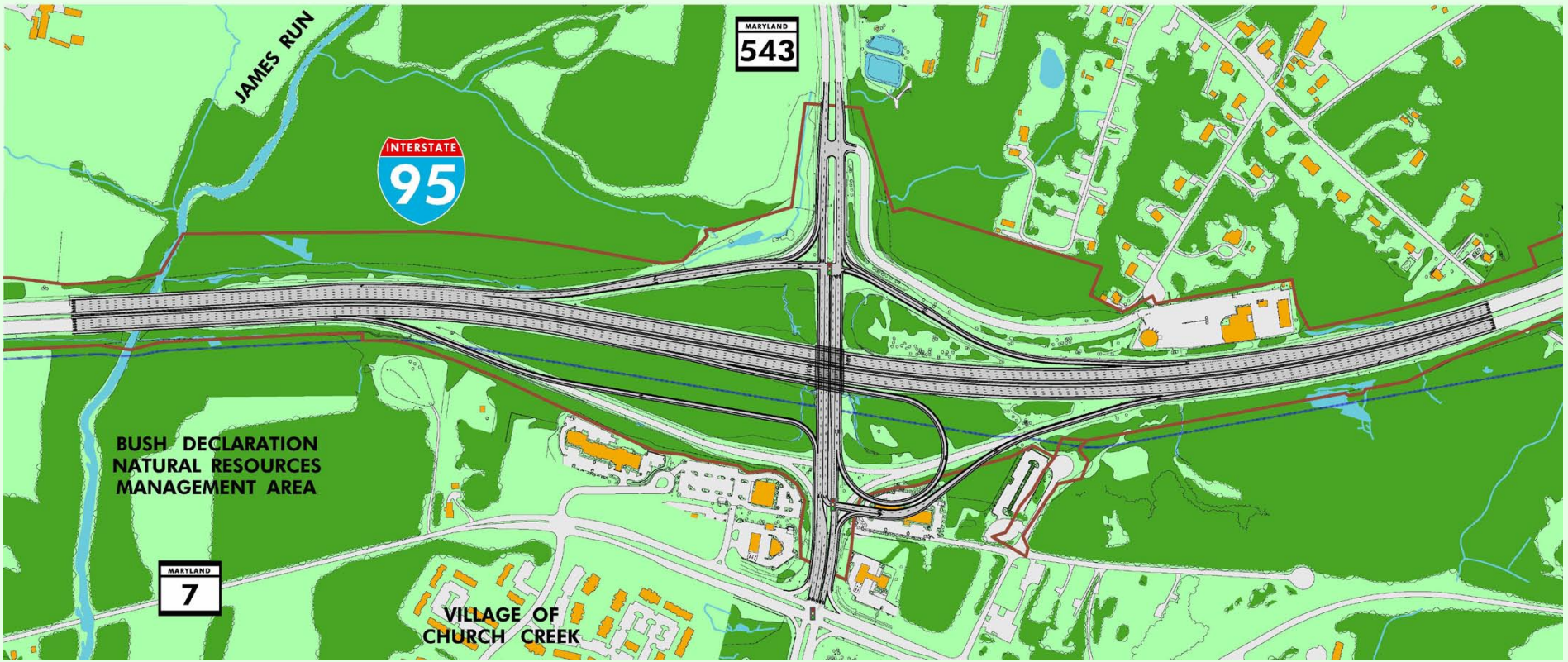

FIGURE 62 - GENERAL PURPOSE LANE - I-95 AT MD 543 INTERCHANGE
OPTION 4: PARTIAL CLOVERLEAF - SINGLE LOOP

i. I-95/MD 543 Interchange Option 5: Partial Cloverleaf - Triple Loop

This option was dropped due to the combination of environmental impacts, commercial displacements and traffic. *(see Figure 63)*

- The loop ramp and outer connection ramp in the southwest quadrant of this interchange had significant stream and forest impacts.
- The loop ramp and outer connection ramp in the northeast quadrant of the interchange will require one commercial displacement.
- It was determined after further traffic studies that the loop ramp in the southwest quadrant was not necessary for this interchange to function at an acceptable LOS in 2030.
- The movement from I-95 southbound to MD 543 southbound has relatively low traffic volumes that could operate acceptably in combination with the outer directional ramp. This would eliminate a weave along I-95 southbound.

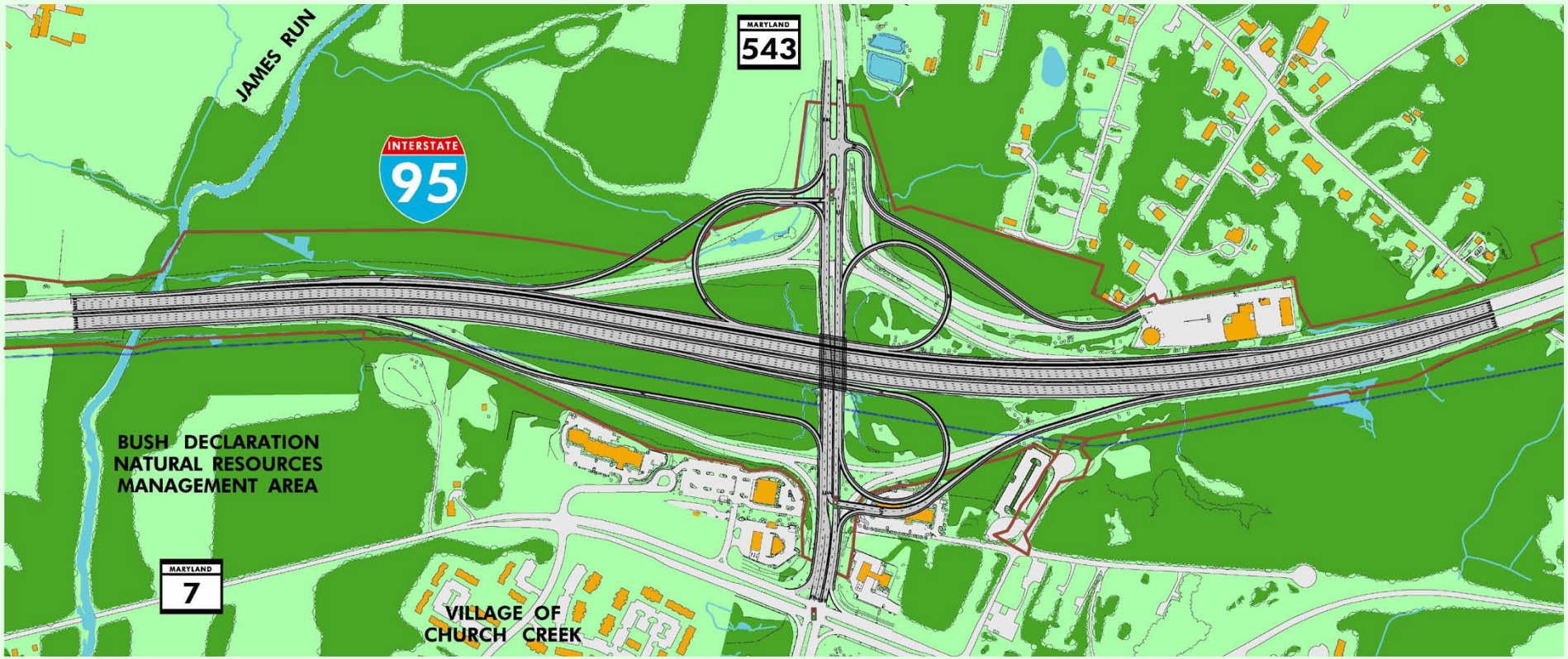

FIGURE 63 - GENERAL PURPOSE LANE - I-95 AT MD 543 INTERCHANGE
OPTION 5: PARTIAL CLOVERLEAF - TRIPLE LOOP WITH CD ROADS

j. I-95/MD 543 Interchange Option 6: Partial Cloverleaf – Double Loop

This option was dropped due to the combination of commercial displacements and traffic. *(see Figure 64)*

- The proposed loop ramp and outer connection ramp in the northeast quadrant of the interchange will require one commercial displacement.
- It was determined after further traffic studies that loop ramp in the northeast quadrant was not necessary for this interchange to function at an acceptable LOS in 2030. Also, a weave section would be eliminated along MD 543 northbound.

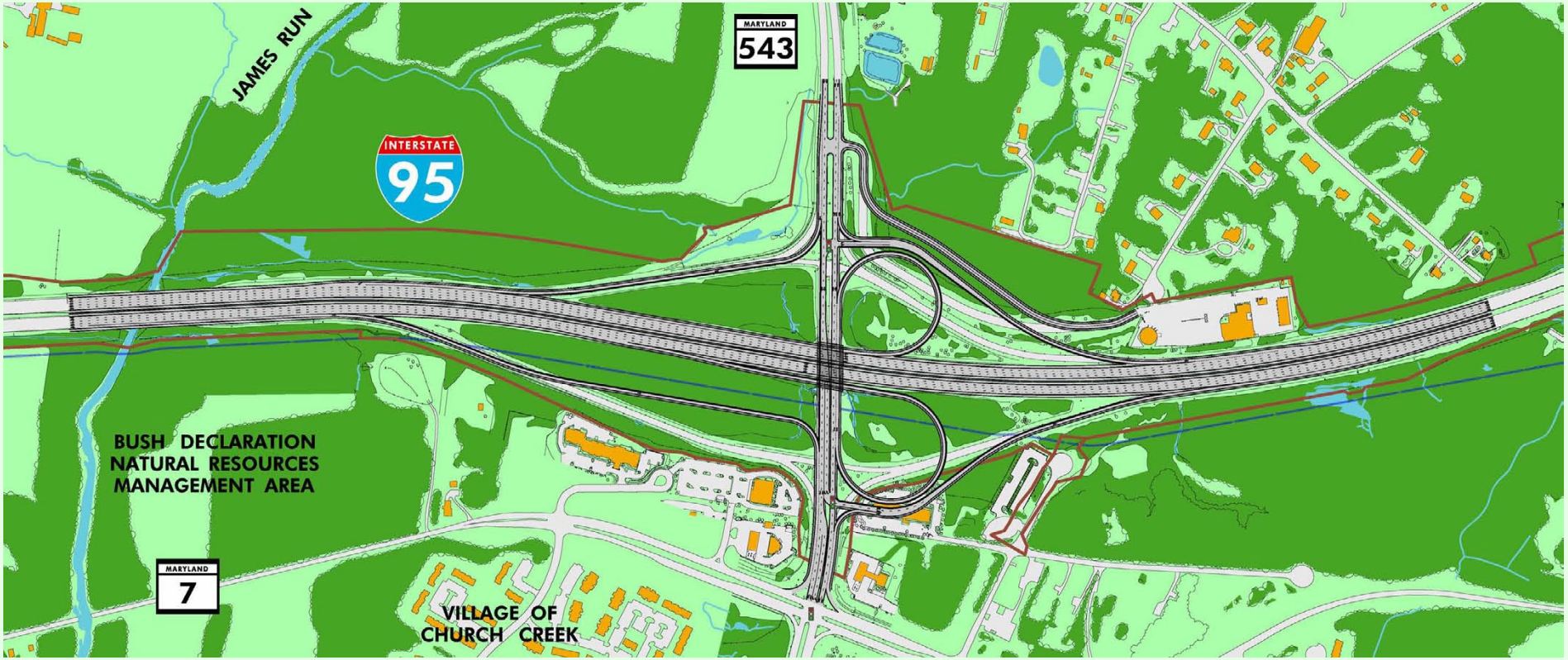

FIGURE 64 - GENERAL PURPOSE LANE - MD 543 INTERCHANGE
OPTION 6: PARTIAL CLOVERLEAF - DOUBLE LOOP

2. Express Toll Lanes Alternate

a. Mainline

The master plan alternate provided a combination of General Purpose Lanes (GPLs) and Express Toll Lanes (ETLs) that would be added to I-95 to accommodate the projected increase in traffic. Under this alternate, I-95 in each direction would have two ETLs and four GPLs from north of MD 43 to north of MD 543, four GPLs from MD 543 to project limits north of MD 22. This option was dropped/modified for several reasons. Results of the traffic analysis indicated that in order to meet the desired LOS under this alternate it was necessary to add only the ETLs while maintaining the same number of GPLs that exist today. Therefore, we were able to reduce impacts since it was not necessary to add an additional GPL between MD 24 and MD 543. In addition, this two ETL and three GPL section in both directions to MD 543 provides a better lane balance as the lanes are transitioned into 4 GPLs in the vicinity of MD 543.

b. I-95/MD 152 Interchange Option 1B: Diamond with ETL Flyover Access Ramps

This option has been dropped due to issues involving environmental impact, residential displacement, and traffic. *(see Figure 65)*

- The flyover ramps have extensive environmental impacts (forest, stream and wetland) along both northbound and southbound I-95.
- The flyover ramp in the northwest quadrant of the interchange impacts Clayton Road Conservation Area (Section 4(f) resource).
- The flyover ramps require additional ROW and several residential displacements.
- This option provides a lower LOS than Option 1A which has been retained for detailed study.

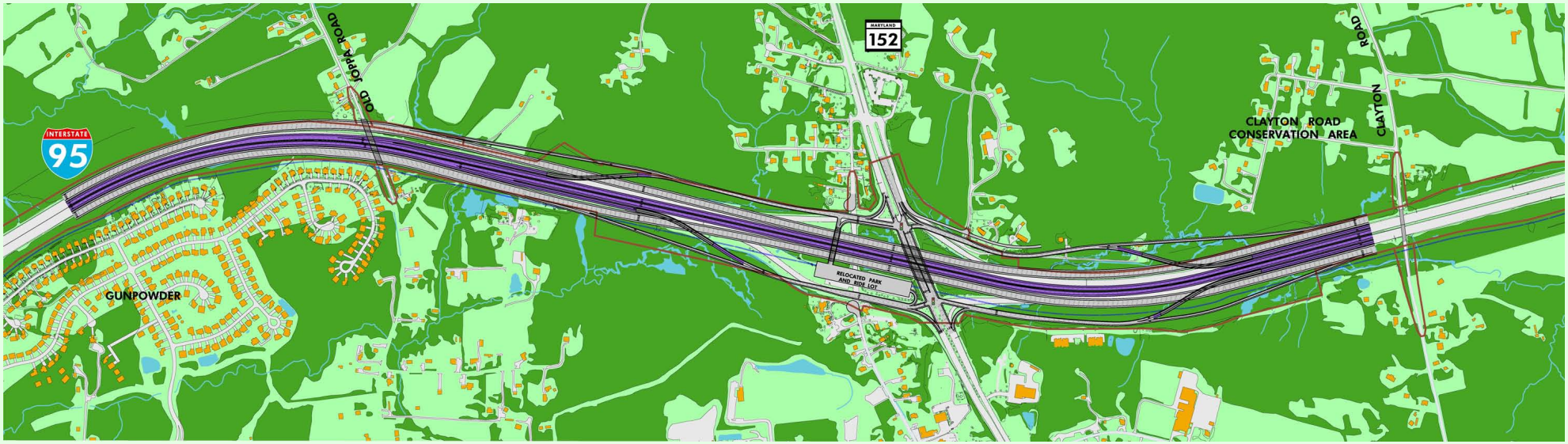

FIGURE 65 - EXPRESS TOLL LANE - MD 152 INTERCHANGE
OPTION 1B: DIAMOND WITH ETL FLYOVER ACCESS RAMPS

c. I-95/MD 152 Interchange Option 2: Tight Diamond with ETL Flyover Access Ramps

This option has been dropped due to issues involving environmental impact, residential displacement, and traffic. *(see Figure 66)*

- The flyover ramps have extensive environmental impacts (forest, stream and wetland) along both northbound and southbound I-95.
- The flyover ramp in the northwest quadrant of the interchange impacts Clayton Road Conservation Area (Section 4(f) resource).
- The flyover ramps require additional ROW and several residential displacements.
- This option provides a failing level of service (LOS F) for the year 2030.

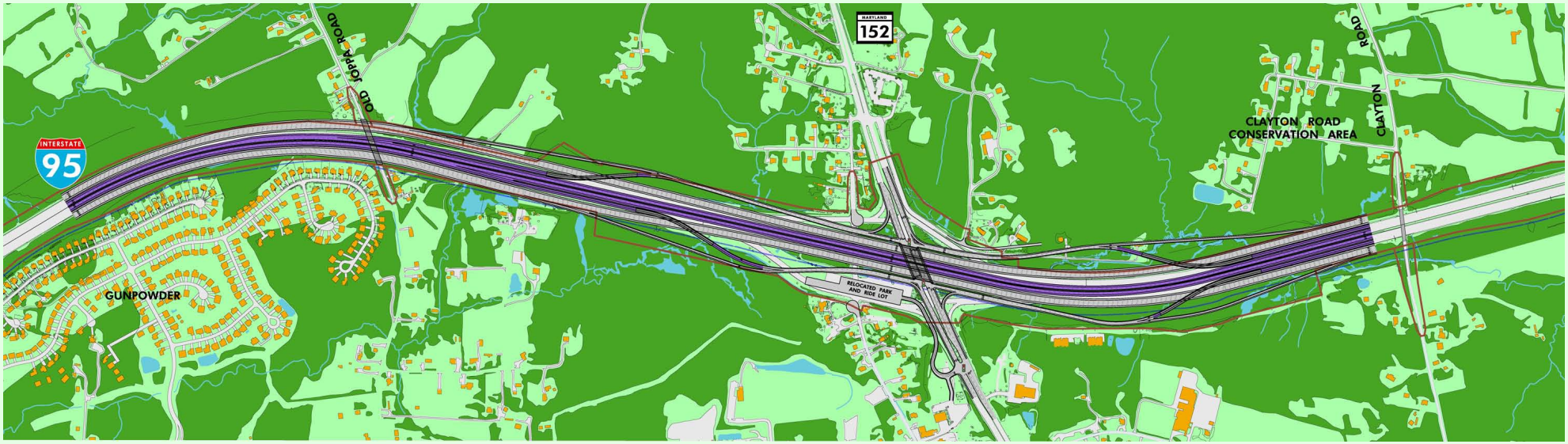

FIGURE 66 - EXPRESS TOLL LANE - MD 152 INTERCHANGE
OPTION 2: TIGHT DIAMOND WITH ETL FLYOVER ACCESS RAMPS

d. I-95/MD 152 Interchange Option 3: Single Point Urban Diamond with ETL Flyover Access Ramps

This option was dropped due to issues involving environmental impacts, traffic, engineering and maintenance. *(see Figure 67)*

- The flyover ramps have extensive environmental impacts (forest, stream and wetland) along both northbound and southbound I-95. The flyover ramp in the northwest quadrant of the interchange impacts Clayton Road Conservation Area (Section 4(f) resource). The flyover ramps require additional ROW and several residential displacements.
- The 2030 interchange volumes are not compatible with a single point urban diamond due to unbalanced left turning volumes. The northbound I-95 off ramp will experience significant delays operating at LOS E with a v/c ratio greater than 1.
- Due to the extreme geometry (skew and long span lengths) of the interchange, a disproportionate span to length ratio results in inefficient girder design (deep girders and thick flanges). The required girder depth would require raising the profile significantly in comparison to the other options resulting in additional impacts to the surrounding area.
- During future re-decking of the bridge in this option, it would not be possible to maintain the operation of the single point urban diamond. The interchange would have to be converted to a tight diamond, which was shown to have insufficient capacity under option 2 and would require significant temporary pavement.

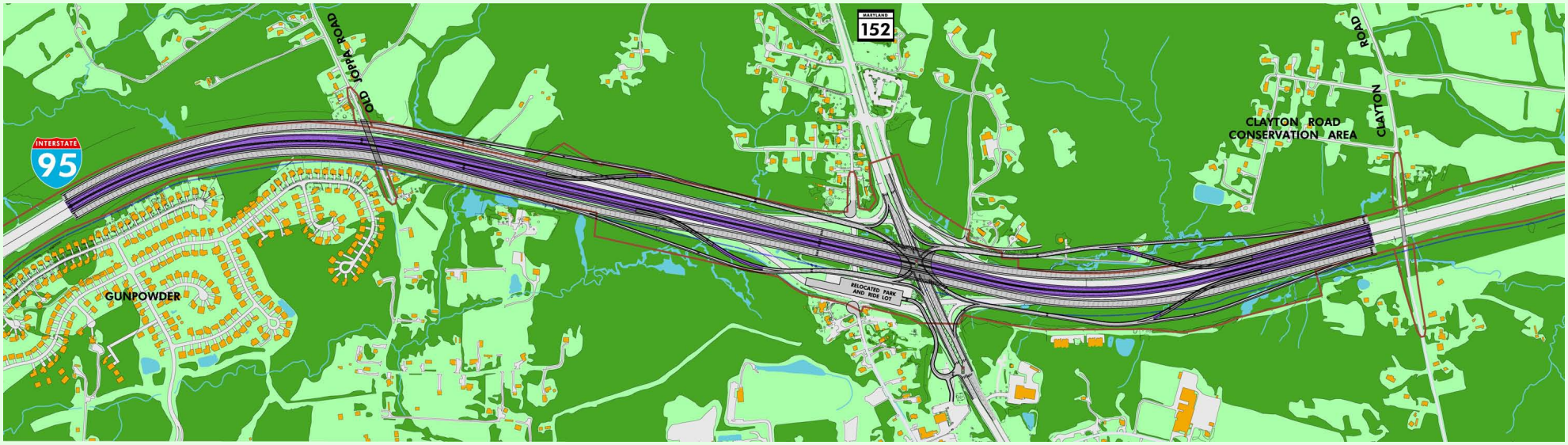

FIGURE 67 - EXPRESS TOLL LANE - MD 152 INTERCHANGE
OPTION 3: SINGLE POINT URBAN DIAMOND WITH ETL FLYOVER ACCESS RAMPS

e. I-95/MD 152 Interchange Option 4B: Partial Cloverleaf – Single Loop with ETL Flyover Access Ramps

This option has been dropped due to issues involving environmental impact, residential displacement, and traffic. *(see Figure 68)*

- The flyover ramps have extensive environmental impacts (forest, stream and wetland) along both northbound and southbound I-95.
- The flyover ramp in the northwest quadrant of the interchange impacts Clayton Road Conservation Area (Section 4(f) resource).
- The flyover ramps require additional ROW and several residential displacements.
- This option provides a lower LOS than Options 1A and 4A which has been retained for detailed study.

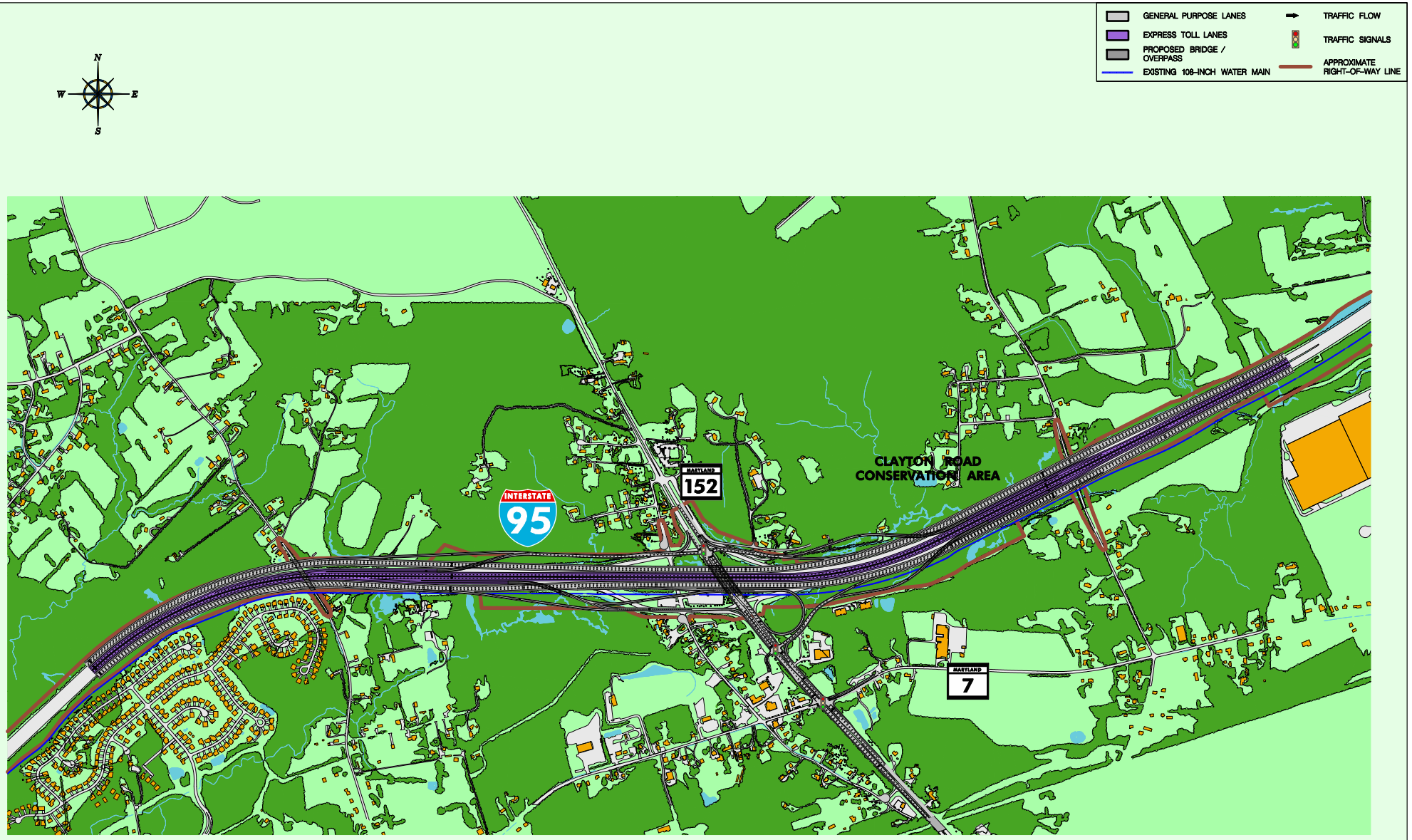

FIGURE 68 - EXPRESS TOLL LANE - I-95 AT MD 152 INTERCHANGE OPTION 4B: PARTIAL CLOVERLEAF - SINGLE LOOP WITH ETL FLYOVER ACCESS RAMPS

f. I-95/MD 152 Interchange Option 5A: Partial Cloverleaf – Double Loop with ETL Median Access Ramps

This option was dropped due to the combination of environmental impacts, residential displacements and traffic. *(see Figure 69)*

- The proposed loop ramp and outer connection ramp in the northwest quadrant of the interchange will require considerable streams and wetland impacts.
- The proposed loop ramp and outer connection ramp in the northwest quadrant of the interchange will require two residential displacements, a significant amount of additional right-of-way (ROW), and alteration of residential access to MD 152. The proposed loop ramp and outer connection ramp in the northeast quadrant of the interchange will require a significant amount of additional ROW.
- This option provides a similar LOS as other retained interchange options having fewer impacts.

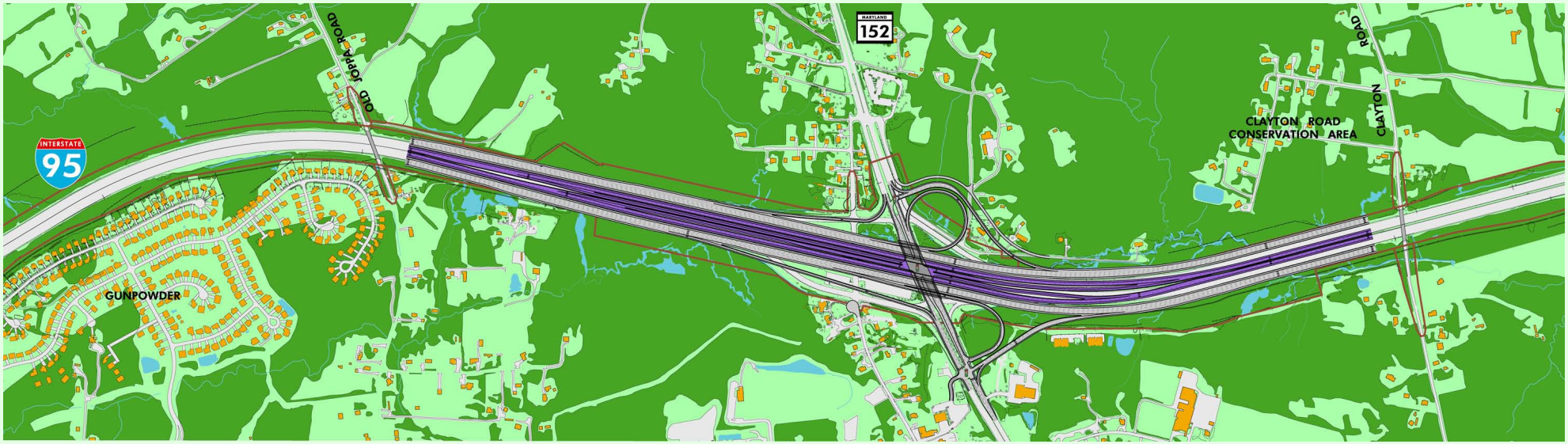

FIGURE 69 - EXPRESS TOLL LANE - MD 152 INTERCHANGE
OPTION 5A: PARTIAL CLOVERLEAF - DOULBE LOOP WITH ETL MEDIAN ACCESS RAMPS

g. I-95/MD 152 Interchange Option 5B: Double Loop with ETL Flyover Access Ramps

This option was dropped due to the combination of environmental impacts and residential displacements caused by the double loop and outer connection ramps. *(see Figure 70)*

- The proposed loop ramp and outer connection ramp in the northwest quadrant of the interchange will require considerable streams and wetland impacts.
- The flyover ramps have extensive environmental impacts (forest, stream and wetland) along both northbound and southbound I-95.
- The proposed loop ramp and outer connection ramp in the northwest quadrant of the interchange will require two residential displacements, a significant amount of additional right-of-way (ROW), and alteration of residential access to MD 152. The proposed loop ramp and outer connection ramp in the northeast quadrant of the interchange will require a significant amount of additional ROW.
- This option provides a similar LOS as other retained interchange options having fewer impacts.

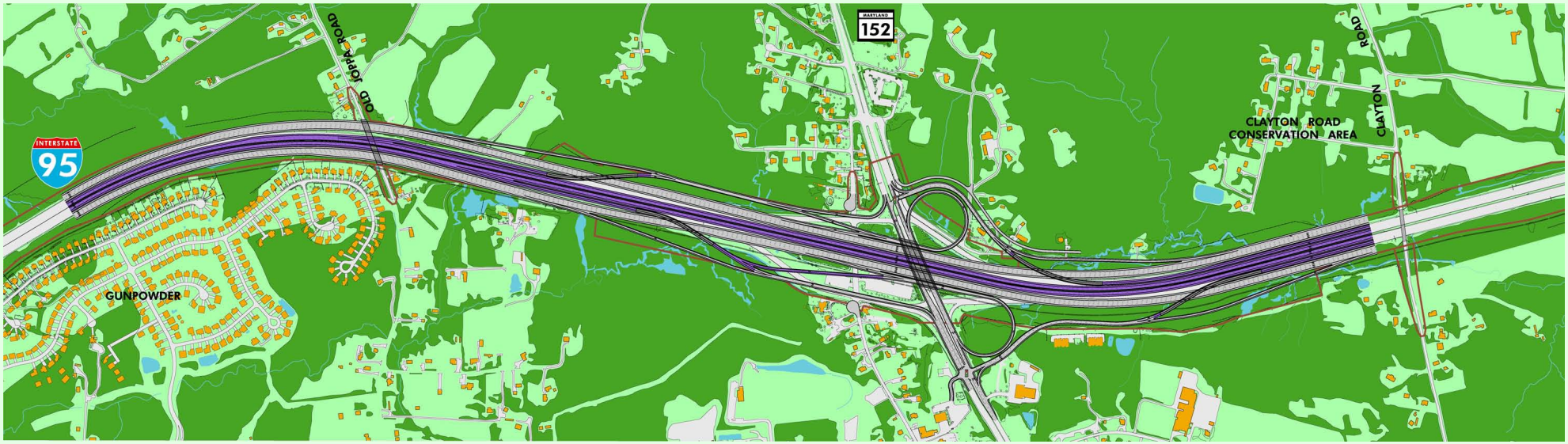

FIGURE 70 - EXPRESS TOLL LANE - MD 152 INTERCHANGE
OPTION 5B: PARTIAL CLOVERLEAF - DOULBE LOOP WITH ETL FLYOVER ACCESS RAMPS

h. I-95/MD24 Interchange Option 1: Double Loop with ETL Flyover Access Ramps

This option was dropped due to the significant environmental impacts associated with the ETL flyover access ramps. This option was developed assuming that the Phase 1 Improvements previously designed for the I-95/MD 24/MD 924 interchange would be constructed prior to the Section 200 project. The I-95/MD 24/MD 924 improvements in combination with the 2030 traffic volumes and the close proximity of the MD 152 interchange required the use of extensive flyover access ramps to provide ETL access to MD 24 and dictated the location of these ramps.

- The ramps proposed south of MD 24, required four additional structures crossing over Winters Run and a significant amount of additional ROW.
- The flyover ramps to the north would require a significant amount of forest impacts due to clearing and a significant amount of additional ROW.

Modifications to Phase 1 of the I-95/MD 24/MD 924 interchange improvement project were implemented as a result of the coordination between these two projects. These modifications would accommodate the use of median access ramps for ETLs. Another interchange option was developed with significantly less environmental impact. *(see Figure 71)*

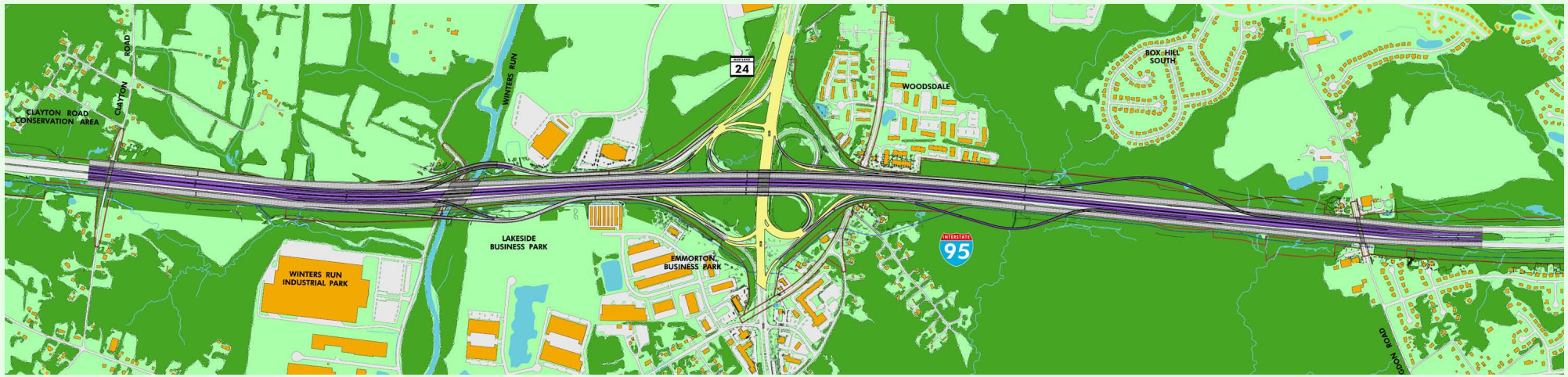

FIGURE 71 - EXPRESS TOLL LANE - MD 24 INTERCHANGE
OPTION 1: PARTIAL CLOVERLEAF - DOUBLE LOOP WITH ETL FLYOVER ACCESS RAMPS