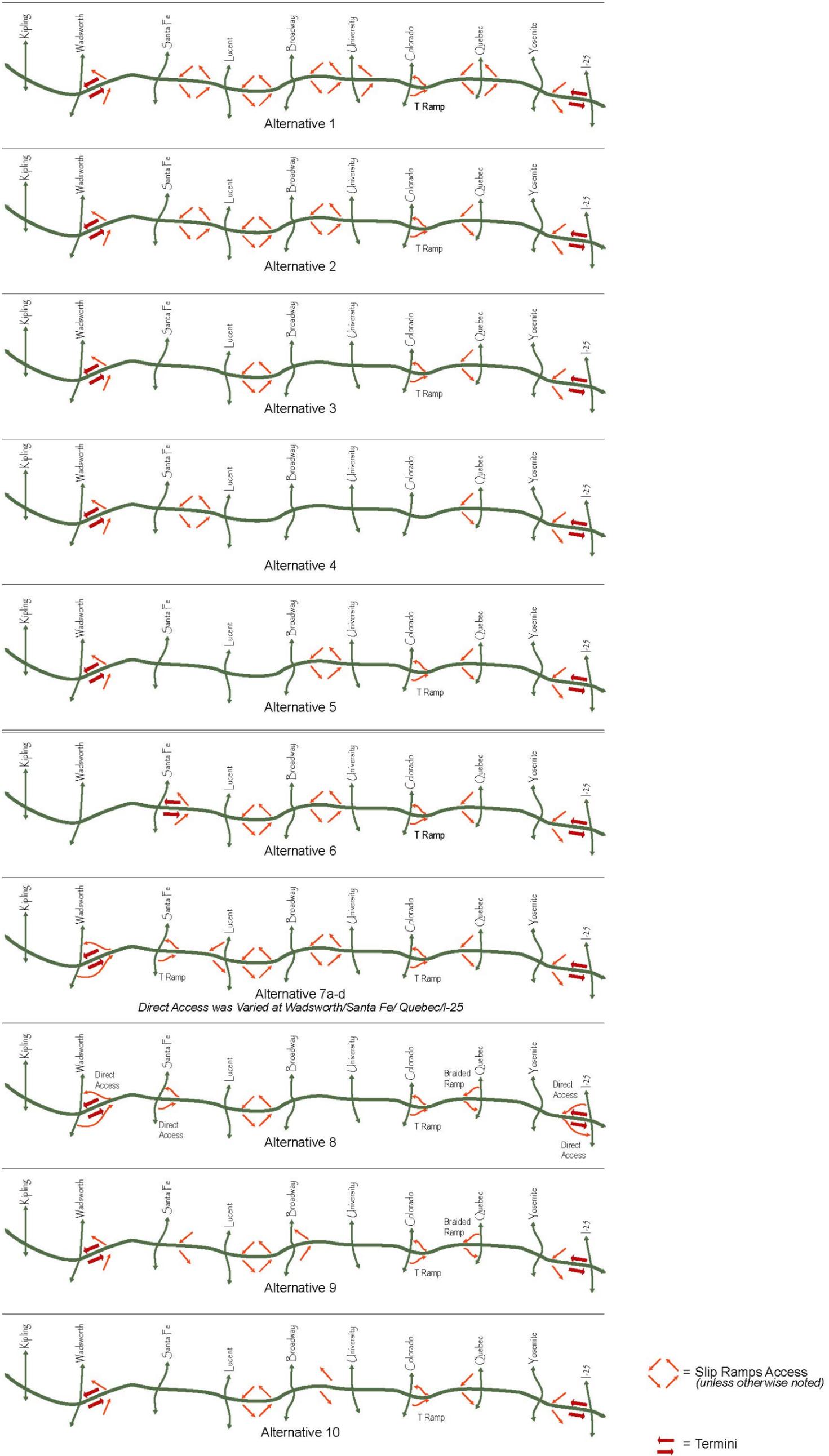


Figure 8.4
Access Configuration for Alternatives 1 through 10



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8.4.2 Direct Access

Because of the potential increased demand and potential operational problems at the high-volume locations of Wadsworth Boulevard, Santa Fe Drive, Quebec Street, and I-25, direct access was considered at these locations. In Alternatives 7a through d, direct access was alternated at the four locations, while in Alternative 8, direct access was provided at all four locations. It was anticipated that the direct access would provide a more attractive ramp configuration due to the elimination of the required weave in slip ramps, and would allow for easier access to and from the express lanes. The projected ramp volumes at these locations were evaluated with slip and direct access ramps to determine the difference in volume and thus potential revenue. A cost benefit analysis was then performed to determine the difference in revenue compared to the anticipated difference in construction cost of direct and slip ramps. Overall, little increase in traffic volumes was experienced by providing direct access at these locations. Direct access was therefore considered only in locations where operations necessitated providing such access. Locations that were recommended for direct access are discussed in Chapter 9.

8.4.3 Fourth Level Screening Criteria

The final screening of access locations considered several criteria. While each criterion was initially evaluated individually, the final decision as to whether an access point was eliminated was based on the overall performance of the following criteria:

- Projected traffic volume using the access location
- Interchange reserve capacity
- Geometric constraints
- Express lane and general purpose lane operations
- Access spacing
- Financial Feasibility Factor

8.4.4 Projected Traffic Volumes

The locations of I-25, Quebec Street, Colorado Boulevard, Broadway, and Wadsworth Boulevard had the highest demand. Lucent Boulevard and University Boulevard had slightly less demand, and Santa Fe Drive showed the lowest traffic volumes. The most probable reason for Santa Fe Drive's volumes decreasing from what the travel demand model projected was the overall interchange operations under its current configuration. The existing diamond operates well over capacity during the current AM and PM peak hours, ultimately restricting access to and from potential express lanes. With the AIMSUN micro-simulation model being more sensitive to congestion, the model is rerouting trips to other locations to avoid congestion. To determine the impact of improving the intersection operations, the recommended Santa Fe Drive Interchange improvements from the C-470 EA were modeled in Alternative 7b. Overall, the volume using the Santa Fe Drive access was shown to increase by approximately 200 vehicles.

This volume was compared to the projected volume at Lucent Boulevard to determine the overall benefit to the express lane facility by providing a direct access at Santa Fe Drive. The Santa Fe Drive volume was shown to be similar to the Lucent Boulevard access. A cursory cost estimate of \$25 to \$30 million to construct direct access ramps at Santa Fe Drive further reinforced the lack of benefit in providing access at that location.

8.4.5 Interchange Reserve Capacity

The interchange reserve capacity analysis sought to identify which interchanges currently had additional capacity to accommodate projected express lane traffic. The ratio of V/C was used as the criterion in the analysis. Throughout the public involvement process, many community stakeholders were concerned about the potential implications that providing an express lane access would have on the overall interchange operations. Therefore, interchange locations where reserve capacity was available were considered preferable to locations that potentially degraded operations to the point where the interchange began to fail. In the analysis, locations that operated at a LOS C/D were considered as providing adequate reserve capacity, while locations that operated at a LOS D/E had inadequate reserve capacity. University Boulevard, Broadway, and Santa Fe Drive were identified as having low reserve capacity, while the remaining locations had acceptable reserve capacity.

8.4.6 Geometric Constraints

The level of geometric constraints considered the ease of providing access in relation to constructability, anticipated costs, and environmental impacts. I-25 and Santa Fe Drive were shown to have the most constraints. I-25 constraints involve the complexity of providing full movement access to all directions from both the express lane and general purpose lane facilities.

Another constraint was the braided ramp that would be required on westbound C-470 to access the Santa Fe Drive Interchange. At Santa Fe Drive, the 7 percent grade east of the interchange, the connection to the proposed southbound Santa Fe Drive to the eastbound C-470 flyover, and the connection to the northbound Santa Fe Drive to eastbound C-470 from two separate access points all contributed to the geometric constraints. Several environmental concerns were identical in the area, including the historic Highline Canal east of the interchange and the pedestrian and bicycle trail south of the interchange. As mentioned earlier, the associated cost of providing access to and from C-470 to Santa Fe Drive far outweighs the additional revenue generated by providing a direct access. Given the geometric constraints and the operational problems they create, access is not being recommended at Santa Fe Drive. Many, if not all, of the challenges could theoretically be overcome with diligent engineering; however, the economic and environmental costs would be prohibitive or undesirable.