

# Appendix B. Missile Drive Corridor Plan

## Purpose and Need

Missile Drive is a four-lane minor arterial, which serves as a major transportation connection from downtown Cheyenne and West Lincolnway to I-25, F.E. Warren Air Force Base, and developments west of town along Old Happy Jack Road and Roundtop Road. Currently this roadway and its access points are in poor condition and in need of reconstruction in some areas.

The pavement along Missile Drive is broken and uneven along most of the corridor; many of the curbs along the corridor are damaged or missing and need to be replaced. The median along Missile Drive, which varies from 4 to 17 feet wide, is in very poor condition. The features in need of reconstruction include medians, traffic lanes, shoulders, access points, and intersections along the corridor.

With reconstruction of the corridor, it became appropriate to examine such issues as whether to maintain the current cross section, consolidate access, and modify intersection geometries. The intersection at Old Happy Jack Road and 19<sup>th</sup> Street is at an obscure angle and does not meet current intersection design standards. Reconstruction of this intersection to current safety and intersection design standards would increase the safety for drivers, pedestrians, and cyclists. Old Happy Jack Road provides access to the backside of IKON and future developments north of the Hitching Post.

Bicycle and pedestrian facilities along Missile Drive is currently only provided along MLK Park. The park has two paved multiuse pathways and a pedestrian bridge across Crow Creek. Missile Drive is lacking pedestrian and bicycle facilities along the rest of the corridor. This corridor is a major transportation connection; the addition of bicycle and pedestrian facilities would provide a key service for multi-modal access and connectivity.

## Issues

The Missile Drive roadway is approximately 86 feet wide throughout the entire length of the corridor. The cross section is not uniform for the length of the corridor. The Primary Arterial Urban Street Standard calls for a roadway width of 76 feet with additional landscaped parkway and sidewalk of 14 feet on each side, for a total of 104 feet.



MLK Park multi-use path adjacent to Missile Drive

The Principal Arterial Urban Street Standard design cross section is applicable to the present Missile Drive corridor with the exception of the railroad crossing. At the crossing, a 16-foot median supports a railway bridge with a maximum width of 84 feet between the bridge supports. The cross section was therefore modified at the bridge such that the bicycle lane would be shared for a short distance with the pedestrian walk.

Currently there are an excessive number of access points along Missile Drive at the intersection with 24<sup>th</sup> Street. Typically, only one access point per parcel is recognized for primary arterials. Parcels on three of the four corners of Missile Drive and 24<sup>th</sup> Street have two accesses each along Missile Drive. In addition, these parcels have access on 24<sup>th</sup> Street. Traffic flow and safety increase in performance along primary arterials when the number of access points are limited and marked appropriately. It is therefore proposed that with reconstruction, the number of access points be reduced to improve service along Missile Drive.



Railway crossing over Missile Drive

The intersection at Old Happy Jack Road and 19<sup>th</sup> Street with Missile Drive is an elongated diagonal connector resulting in a nonconforming right angle intersection. The current geometry can be difficult to understand and prohibits ease of vision for drivers due to the angles of the intersection. Creating conventional right angle intersections at 19<sup>th</sup> Street and Old Happy Jack Road would improve traffic operations and safety. This solution would require two separate intersections. The difference in access points is substantial enough that two different intersections would be required to increase the safety and functionality of this intersection. The distances between these intersections would permit left turn bays along Missile Drive.

Existing bicycle and pedestrian connections with the facilities at MLK Park are off-street, and the proposed greenway plan would provide another off-street option. The greenway plan could incorporate a pathway from MLK Park to the north. At the railroad, the off-street path is planned to cross underneath the tracks by Crow Creek. As stated previously, on-street pedestrian and bicycle facilities would need to be combined at the railroad crossing.

## Planning Process

Numerous alternatives were proposed and analyzed to explore the design options for the intersection of Old Happy Jack Road and 19<sup>th</sup> Street with Missile Drive. Roundabouts, new bridge structures over Crow Creek, and multiple intersection geometries were considered and are illustrated in Figure B-1.

The roundabout alternative did not solve the issue of separation between Old Happy Jack Road and 19<sup>th</sup> Street. Constructing a new bridge extending from 20<sup>th</sup> Street or replacing the 19<sup>th</sup> Street bridge

would increase the expense of the reconstruction. Various intersection geometries were developed and analyzed in order to create an option that would increase the safety and functionality of the intersection. The final design for the intersection would split the current intersection into two different intersections. This option was selected based upon reviews of safety, efficiency, and cost effectiveness.

## Proposed Missile Drive Plan

Missile Drive shall be constructed to the Principal Arterial Urban Street Standard with the exception of the modification at the railroad crossing. Applying the Primary Arterial Urban Street Standard, shown on Figure B-2, will create continuity and an attractive corridor for vehicles, pedestrians, and cyclists. The railroad cross-section, shown on Figure B-3, will taper to provide two travel lanes and a shared pedestrian and bicycle path. The shared path will travel adjacent to the vehicular traffic under the railway section of the corridor.

Medians will be built to ensure proper construction for vegetation and safety, as shown on Figure B-4. The reconstruction will permit left turn bays at intersections to enhance the flow of traffic and increase safety. The railway median will remain 16 feet wide and the structure will not be modified.

Two intersections will replace the Old Happy Jack Road and 19<sup>th</sup> Street intersection with Missile Drive. The access points are planned to be 400 feet apart, yielding sufficient length for left turn bays in both directions along Missile Drive. Old Happy Jack Road will access Missile Drive via the extension of Stinson Avenue. 19<sup>th</sup> Street will be realigned to the south of the existing intersection to form a conventional right angle intersection ( $\pm 10$  degrees) with Missile Drive, shown on Figure B-5. Special landscaping should be used to mark the intersection of 19<sup>th</sup> Street and Missile Drive as an important gateway to downtown Cheyenne.

Access has been limited along the corridor to the minimal number of access points to serve all parcels along the corridor. Figure B-5 demonstrates the plan and shows where access will be permitted.

The Principal Arterial Urban Street Standard calls for on-street bicycle and pedestrian facilities. On-street facilities provide uniform flow routes for commuters and other users to travel adjacent to the roadway. All intersections will be marked appropriately with bike lanes and crosswalks. An off-street facility along the greenway corridor would provide another option. Off-street facilities are often used as multi-use paths. These paths incorporate the landscape and contours of the land to provide an enjoyable alternative to on-street facilities. Whether on- or off-street, pedestrian and bicycle facilities will be designed to provide an enjoyable and safe mode of travel.

Figure B-1. Missile Drive Intersection Alternatives



19th Street/Washington Avenue Spilt Intersection Alternative



Roundabout Alternative



19th/20th Street Bridge Alternative (Option A)



19th/20th Street Bridge Alternative (Option B)



West Missile/19th Street Alternative



West Missile/20th Street Alternative

Figure B-2. Urban Street Standard

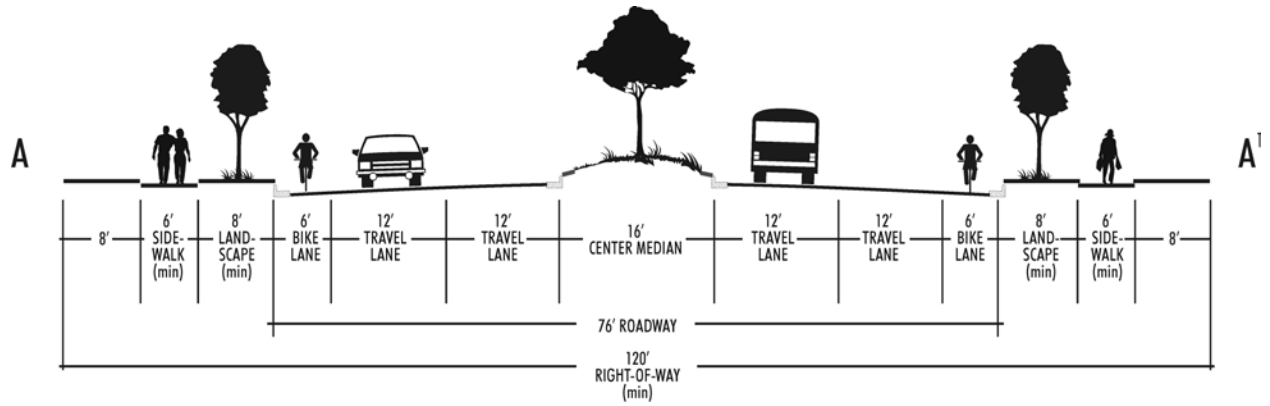


Figure B-3. Modified Design for Railway

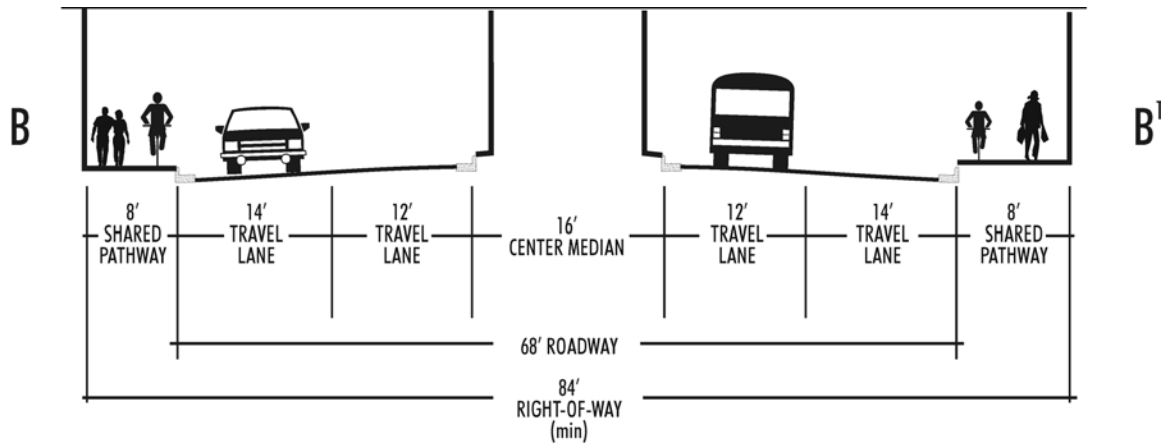
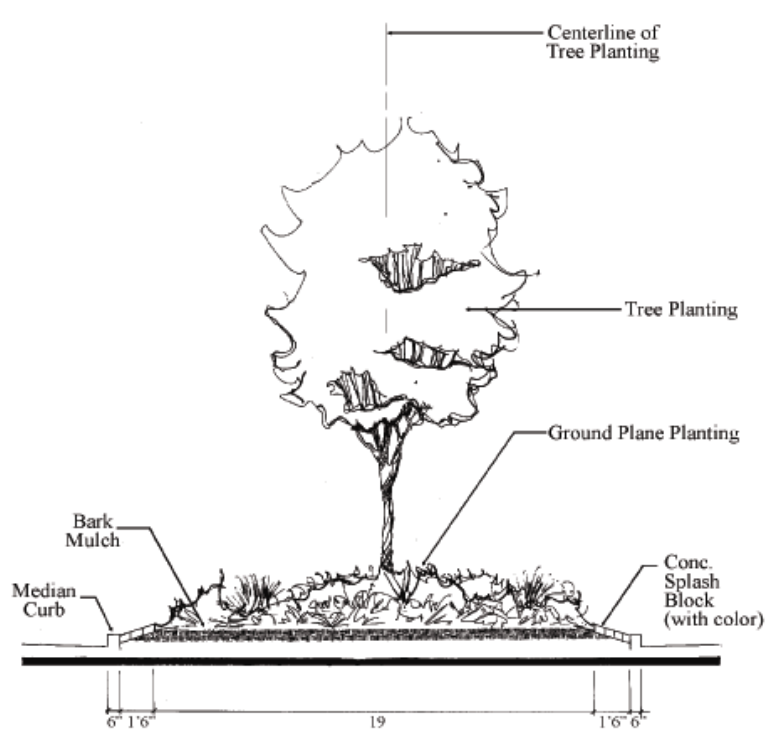
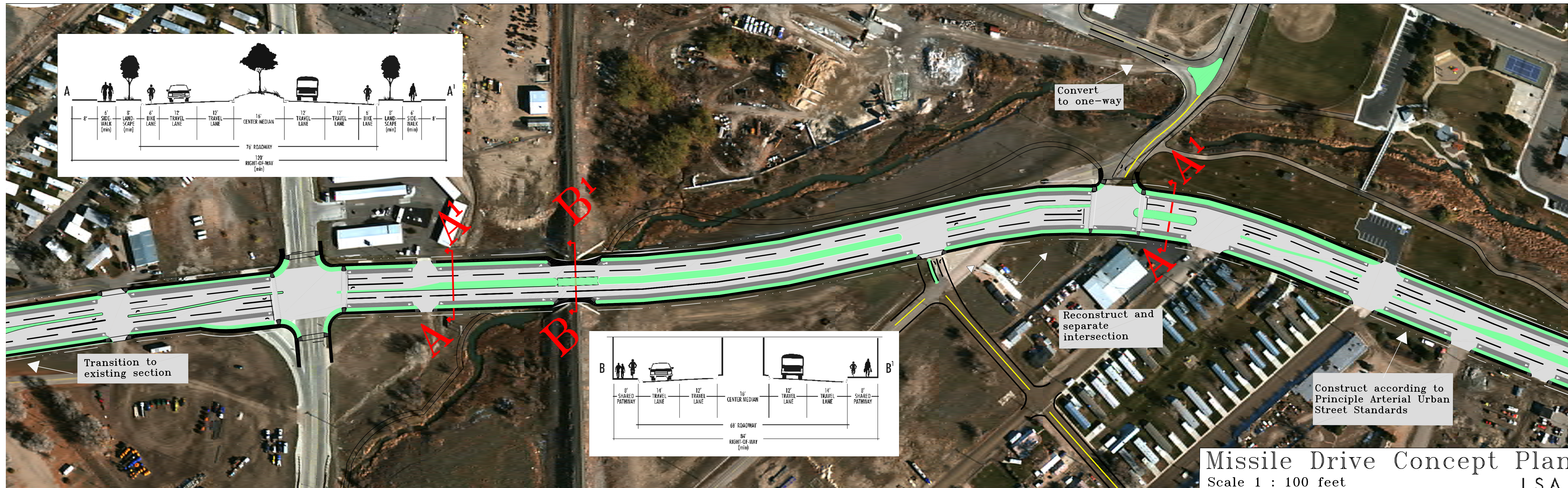
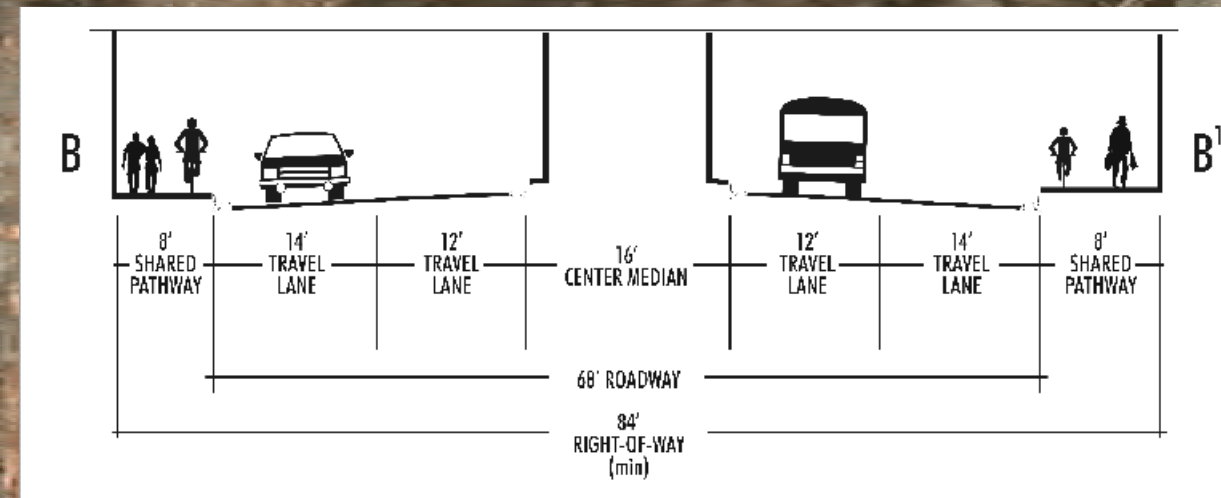
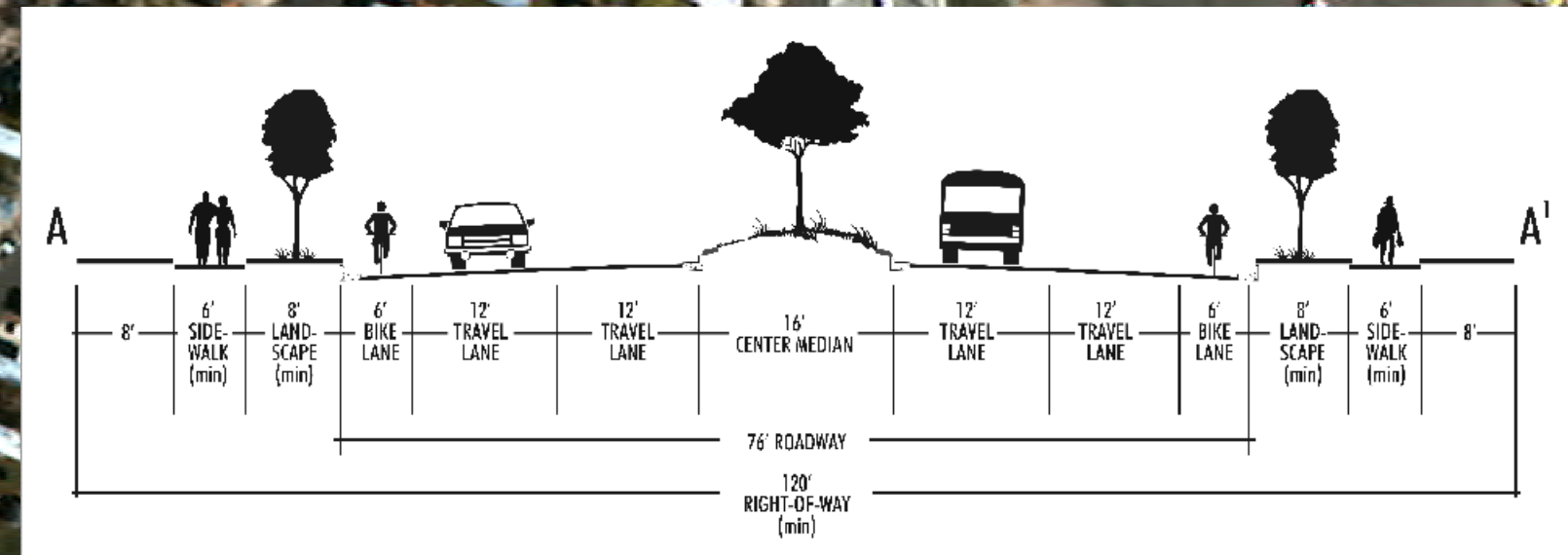


Figure B-4. Median Design Standard







Missile Drive Concept Plan  
 Scale 1 : 100 feet  
 LSA