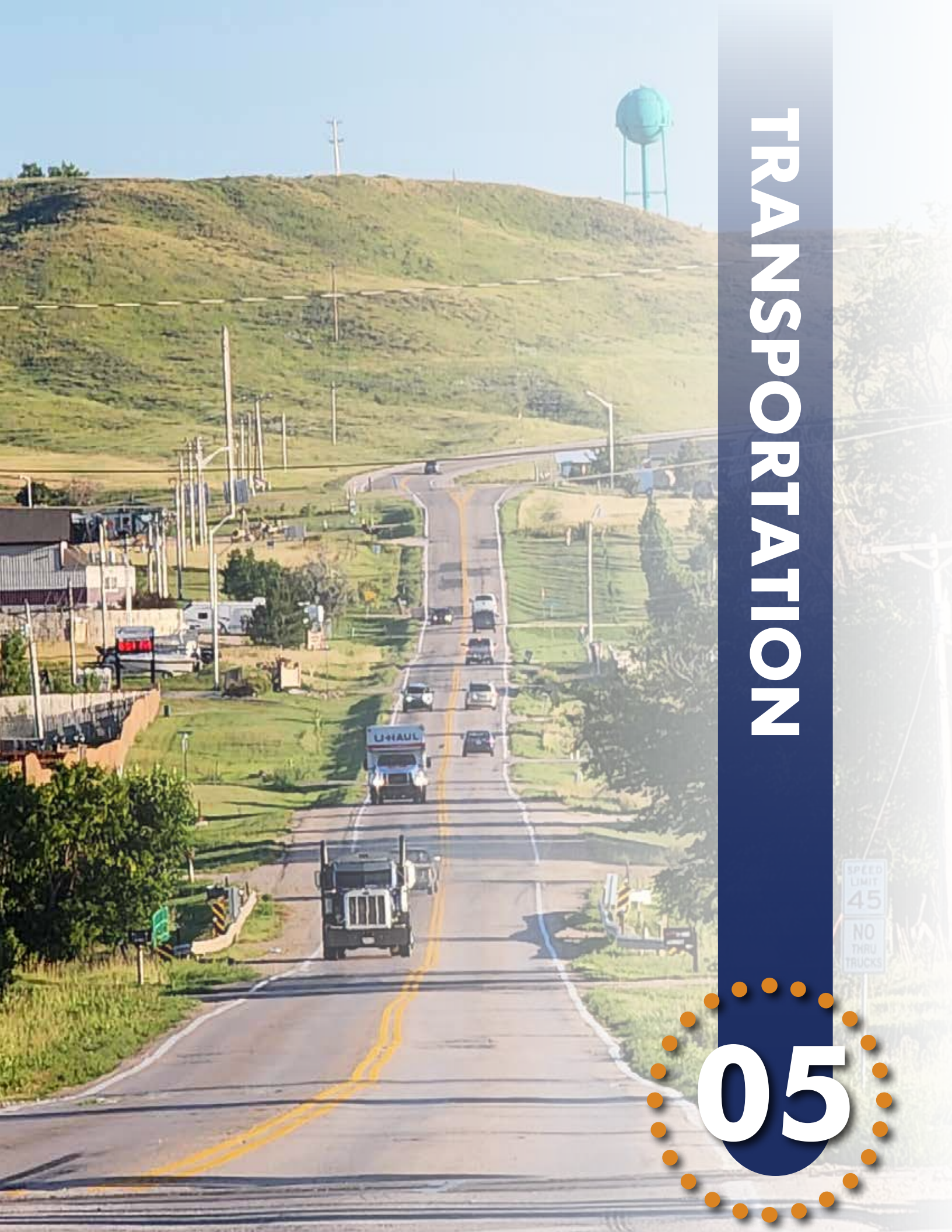


# TRANSPORTATION

05





# TRANSPORTATION 05.

As Box Elder grows from a small rural town into one of the larger cities in South Dakota, one of its biggest challenges is updating the infrastructure that is both necessary for economic development, community growth, and public safety. Street infrastructure is one of the most costly capital investments of a municipality and, when a community is growing, is dependent on last year's tax base to fund infrastructure for future growth making it a necessary but challenging cost burden as the community grows.

The Transportation Chapter of the Comprehensive Plan addresses all modes of transportation in Box Elder, including vehicles, pedestrians, and bicycles. Transportation issues are closely connected to land use and economic development because of the higher development potential of lands adjacent to transportation corridors.

## EXISTING CONDITIONS

Box Elder's transportation system could be described as a patchwork of street types ranging from paved rural roads with ditches to fully developed urban streets and everything in between.

Streets in many of Box Elder's older neighborhoods were originally constructed under county subdivision ordinances prior to annexation of each specific area. Streets in these neighborhoods are typically two lane



streets with stormwater ditches and no sidewalks. Streets are accidentally multi-modal providing safe places for all transportation types and include "green infrastructure" (ditches) that clean and slow storm water, reducing urban impacts on Box Elder Creek. Vehicle speeds are generally slow by design because the streets are narrow and shared with pedestrians, bicycles, and parked vehicles.



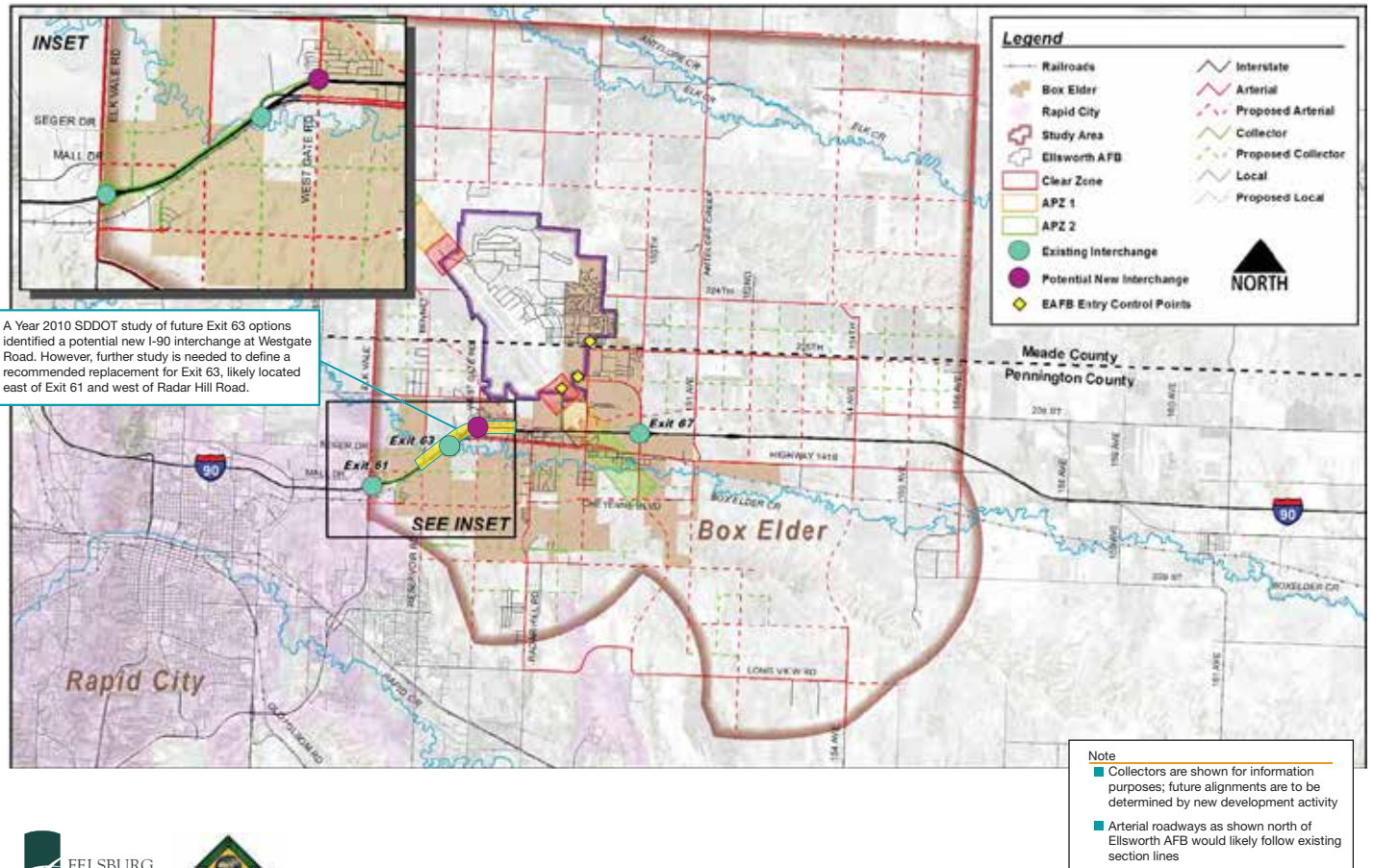
New developments constructed under updated Box Elder ordinances include a typical urban street section with streets wide enough for two driving lanes and on-street parking, curbs, and sidewalks within the development. Vehicle speeds are posted to be slow, but the design allows for faster traffic. Streets within the neighborhoods are still conducive to some shared use. Storm water typically flows to the ditch system outside the subdivision or is managed internally with swales. Sidewalks in these subdivisions typically end at the edge of the subdivision with no community-wide sidewalk or trail system to connect to.

Most collector streets and some older arterial streets retain rural street characteristics - two lane roads with ditches - including Radar Hill Road, South Box Elder Road, some portions of North Box Elder Road, 225th Street, 151st Avenue and Tower Road.

# PAST TRANSPORTATION PLANNING

Past transportation planning efforts include the 2014 Comprehensive Plan and the 2014 Box Elder Strategic Transportation (BEST) Plan. The Comprehensive Plan provides broad goals providing for safe, efficient, orderly transportation systems. The BEST plan is an in-depth transportation planning document that provides an inventory of existing conditions, growth forecasts, long range transportation planning, plan implementation goals, a Major Street Plan (*below*) and recommended transportation standards.

Recommended projects of the BEST plan were prioritized based on the values and goals of the community, including: neighborhood connectivity, economic development, congestion relief, safety, Liberty exchange usage, regional connectivity, and cost.



The most recent transportation planning effort impacting Box Elder is the Rapid City Area Transportation Improvement Program (TIP) for fiscal years 2024-2027. This was a collaborative effort between The Cities of Rapid City, Box Elder, Summerset and Piedmont, Meade County and Pennington County, Rapid City Regional Airport, Ellsworth Air Force Base, Rapid City Area School District, the Rapid City Long Range Planning Division, and the South Dakota Department of Transportation. The Program has been Adopted by the Executive Policy Committee of the Rapid City Area Metropolitan Planning Organization, which the Mayor of Box Elder serves on.

*A Transportation Improvement Program (TIP) is a staged, multi-year program of transportation improvements including highway and transit projects. The TIP is a four (4) year priority list, including a financial plan. The Rapid City Area Metropolitan Planning Organization (MPO) and the State Department of Transportation (SDDOT) cooperate in project selection. All projects funded by the Fixing America’s Surface Transportation Act (FAST Act) must be included in the TIP.*

*FAST Act projects in urbanized areas must be included in a TIP that is based on a continuing, comprehensive planning process carried on cooperatively by the state and local communities. The rationale for requiring a TIP can be summarized in three (3) key points.*

- 1. Transportation issues should be approached in a comprehensive fashion with participation from all affected parties;*
- 2. A systematic, comprehensive approach to planning and initiating transportation improvements assists decision-makers in determining the location, timing and financing of needed improvements; and,*
- 3. A cooperatively developed program of transportation improvements should facilitate the coordination of public and private improvements thereby eliminating duplication of effort and expense. The TIP development provides local officials and the general public the opportunity to identify, evaluate, and select short-range community transportation improvements.*

*The Rapid City Area TIP includes all identifiable transportation related improvement projects that may be undertaken in the planning area over the next four (4) years. Emphasis has been on area needs stated in the MTP, called RapidTRIP 2045, the Box Elder Strategic Transportation Plan, the Pennington County Transportation Plan, and the Meade County Transportation Plan. The guiding principle used in developing the Rapid City Area TIP was that “the document should be a comprehensive transportation planning and fiscal management tool designed to assist state and local officials in the task of matching needed transportation improvements with available resources.”<sup>1</sup>*

The TIP provides guidelines for project selection and prioritization, funding sources, safety performance and other performance measures. Transportation projects identified in the TIP in Box Elder include:

Year	Location
2024	Prairie Road Phase 2 Reconstruction
2026	Tower Road Reconstruction
2027	Briggs Street Reconstruction
2027	Line Road Repaving
2027	West Gate Road Improvements

Other projects identified in the TIP that will impact Box Elder include:

- the planned reconstruction of Highway 1416 and Radar Hill Road (currently seeking funding for design)
- the Interchange Reconstruction at exit 63 / West Gate Road (SDDOT), and a project in development on I-90 from exit 63 to east of exit 67

Projects not included in the current TIP but are either planned or in design in Box Elder:

- Creekside Drive connection to Freud Drive
- Cheyenne Boulevard from Elkvale Road to Radar Hill Road
- Bennet Bridge Project and East Mall extension project
- Cimarron Drive extension between North Ellsworth and Liberty Boulevard

1 Rapid City Area Transportation Improvement Program (for fiscal years 2024-2027), 2023

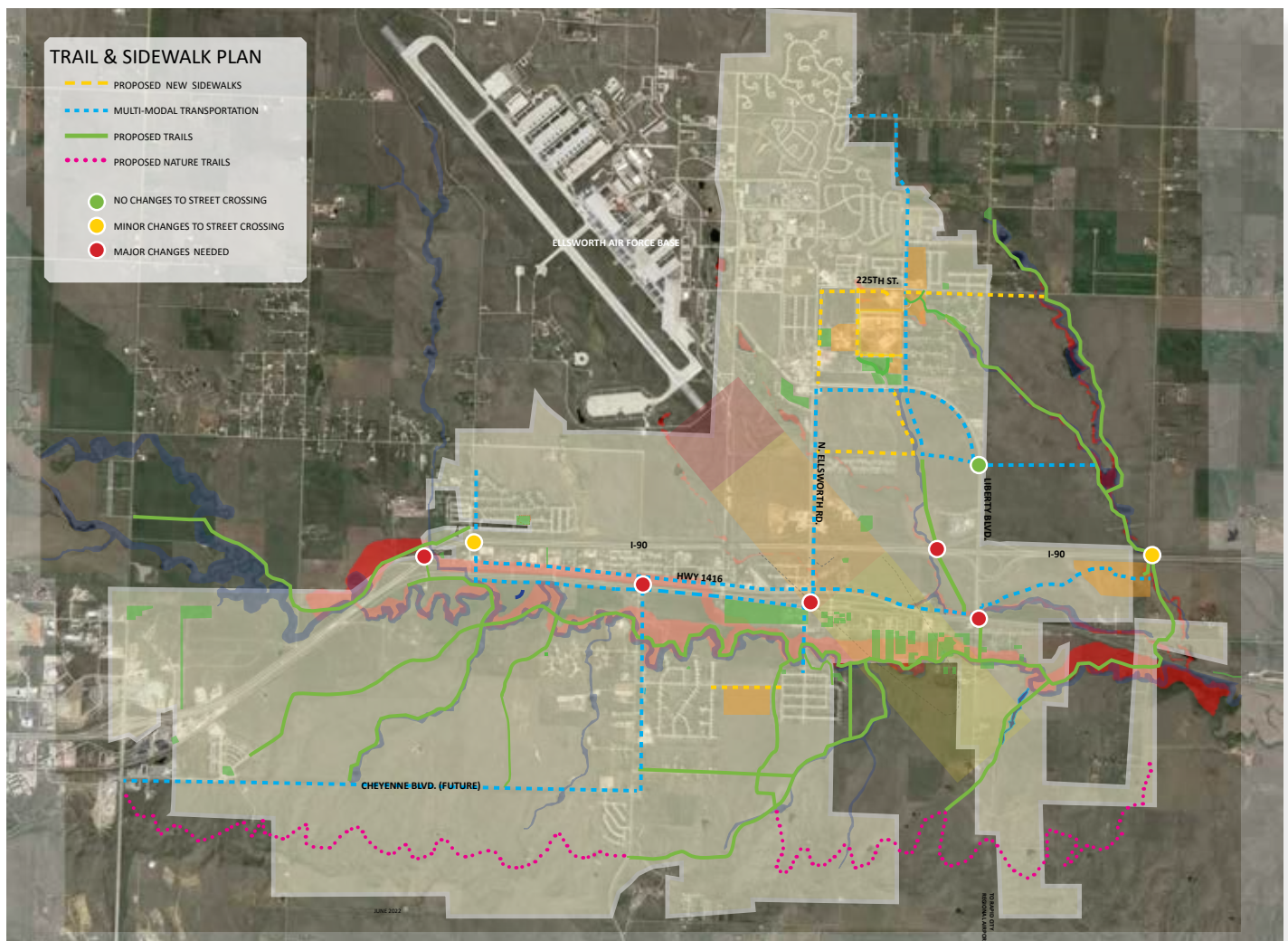
- Various Non-motorized trail and sidewalk projects as identified in the Box Elder Parks Master Plan.

The TIP serves as a tool to help state and local agencies match their needs with resources. TIP Projects are prioritized in part using FAST Act Planning Factors:

## MULTI-MODAL TRANSPORTATION

In the 2021 Box Elder Parks Master Plan, sidewalk and trail connections for transportation, recreation, and connectivity throughout Box Elder were a prime directive from residents and city officials. Sidewalks and trails help provide better connectivity between north and south Box Elder, are more accessible for school children and those who are unable to drive, and promotes a healthier community by providing safe, comfortable facilities for physical activity. A continuous network of sidewalks, bicycle facilities, and trails are essential components of multimodal transportation systems.

**Sidewalks** are concrete walkways and generally are within neighborhoods and connect to multi modal trails. Sidewalks should be buffered from vehicle traffic, should be 6’ wide to accommodate two-way pedestrian use, and provide clear access to building entrances from public rights-of-way. The most critical sidewalks and trails in Box



Elder are those used by school children to get to and from school within 1/2 mile of the school campus. The current hodgepodge of incomplete sidewalks leaves children walking in streets or in ditches. Completing these sidewalks to make safe walking routes, particularly along collector and arterial streets, should be the highest priority sidewalk or trail projects.

**Multimodal Transportation routes** are paved trails for both bicycles and pedestrians should be a minimum of 8' wide. They are the arterial streets of the non-motorized vehicle world and connect neighborhoods to important community sites, to other neighborhoods and to the community trail systems. Multimodal systems may also include dedicated bicycle lanes or, if roads are not wide enough, provide "Share the Road" signage indicating a shared street.

**Trails** are for multi modal use. They are typically gravel and should be a minimum of 12' wide. Trails are located along preserved natural drainageways and might be built on top of underground utilities so may serve a secondard use for utility maintenance access in addition to helping to preserve delicate prairie drainageways that help the community clean and manage stormwater. Layering these uses help to to protect important natural corridors and gets the most out of infrastructure spending while meeting community connectivity and transportation needs.

**Nature Trails** are narrow rustic single track hiking trails that are shown in the steep shale hills south of Box Elder in locations that are incompatible with other types of development but could provide a unique outdoor experience with wide-open views to the north.

**Street Crossings** are critical locations that need careful safety considerations. Critical trail street / road crossing locations are noted on the trail map and include I-90 underpasses and overpasses and Hwy 1416 intersections. These intersections are the primary barriers for pedestrians and bicyclists between north and south Box Elder and must be addressed for trail system to provide the connectivity desired by the community. The Trail Plan proposes an underpass west of Liberty Boulevard where a culvert passes under I-90. SD DOT is redesigning exit 63 which may include a trail or sidewalk overpass. The highway 1416 redesign is intended to address multimodal use by incorporating roundabouts at major street intersections.

Adapted from the Parks and Open Space Master Plan (2022) new sidewalks and multi modal trails are indicated primarily in areas where most children are walking to school and are walking in or along busy streets to get to school. Priority areas include:

- Tower Road from Liberty Boulevard to the Antelope Ridge housing development (multi modal)
- Liberty Boulevard (multi modal)
- 225th Street
- North Ellsworth Road to 225th Street
- South Ellsworth Road from I-90 to the Prairie View Estates development (multi modal)
- Radar Hill Road to 228th Street (multi modal)

Multi-modal transportation should be included in future transportation planning as a critical part of the overall community transportation plan. Wherever possible, implementing projects that provide the multitude of benefits of non-vehicular transportation and recreational trails provide will improve the livability and connectivity of the community.

## COMPLETE STREETS

According to the U.S. Department of Transportation, *“Complete Streets are streets designed and operated to enable safe use and support mobility for all users. Those include people of all ages and abilities, regardless of whether they are travelling as drivers, pedestrians, bicyclists, or public transportation riders. The concept of Complete Streets encompasses many approaches to planning, designing, and operating roadways and rights of way with all users in mind to make the transportation network safer and more efficient. Complete Street policies are set at the state, regional, and local levels and are frequently supported by roadway design guidelines.*

*Complete Streets approaches vary based on community context. They may address a wide range of elements, such as sidewalks, bicycle lanes, bus lanes, public transportation stops, crossing opportunities, median islands, accessible pedestrian signals, curb extensions, modified vehicle travel lanes, streetscape, and landscape treatments. Complete Streets reduce motor vehicle-related crashes and pedestrian risk, as well as bicyclist risk when well-designed bicycle-specific infrastructure is included (Reynolds, 2009). “*

Traditional street design is generally the result of a process that fails to consider the needs of all people and utilizes outdated measures of what makes a street successful. The end product is a street that is uncomfortable at best and deadly at worst for non-vehicular users. Complete Streets is a process and approach that responds to community context instead of a ‘one size fits all’ transportation design approach.

Complete Streets approaches should be discussed in future transportation planning to determine if adopting Complete Streets policies would be a good fit for Box Elder. More information about Complete Streets can be found at Smart Growth America ([www.smartgrowthamerica.org](http://www.smartgrowthamerica.org)).



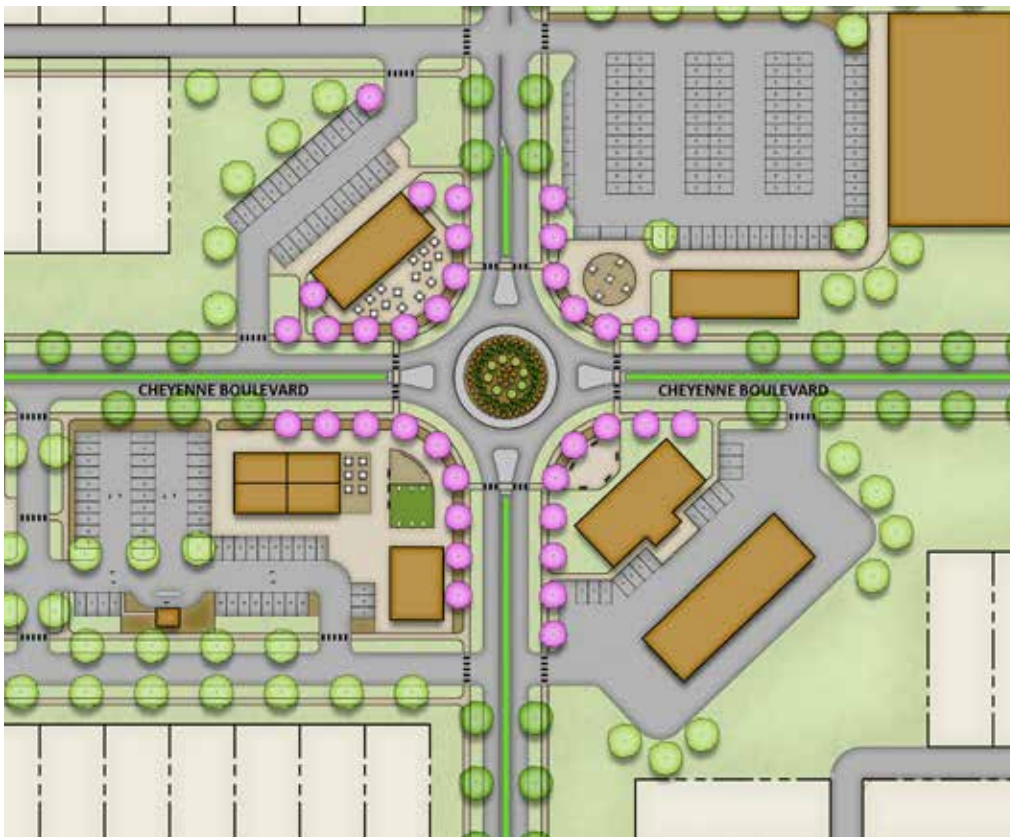


# MAJOR STREET PLAN 05.

## MAJOR STREET PLAN

The Major Street Plan in this Comprehensive Plan document is intended to inform future transportation planning efforts with the community's vision for safer, more pedestrian and bicycle-friendly roadways in Box Elder. It is a high-level overview of roadway connections anticipated in the next 20-30 years presented in broad roadway classifications.

The classifications indicated are not intended to direct roadway speeds or traffic volumes, but suggest that the character of the roadway is as important as the function of the roadway. For instance, the Cheyenne Boulevard extension in the Major Street Plan proposes roundabouts at intersections with North-South arterial streets.



The community's desire for a pedestrian and bike friendly community that preserves its quiet rural feel should impact the design of a major arterial like the Cheyenne Boulevard extension.

As described in Chapter 2 - Land Use & Placemaking the Cheyenne Boulevard intersection with a N-S arterial would be the location of a neighborhood commercial development. This intersection should feel safe for all transportation types, walkable from surrounding neighborhoods, and should fit with the character of the community.

In the example, above, Cheyenne Boulevard is shown as a three lane arterial street with turn lanes sharing space in the center of the road with planted medians. In this arrangement, bicycle lanes could either be in a dedicated bike lane as part of the street section or part of a wide multi-modal trail. It is anticipated that development abutting the street would be residential with Neighborhood Commercial development focused at intersections only.

This configuration is a more pedestrian-friendly street with opportunity for refuge islands, bike lanes, on street parking, and transit stops; reduces traffic speeds; and is a more user-friendly environment that meets the needs of all road-users. It provides a strong placemaking opportunity and is a hub for economic development that fits the desired character of the community.

Roundabouts are preliminarily planned at Highway 1416 major intersections. A corridor study for Hwy 1416 is complete and the City is seeking funding in 2025 for the design and environmental permitting for the roadway.

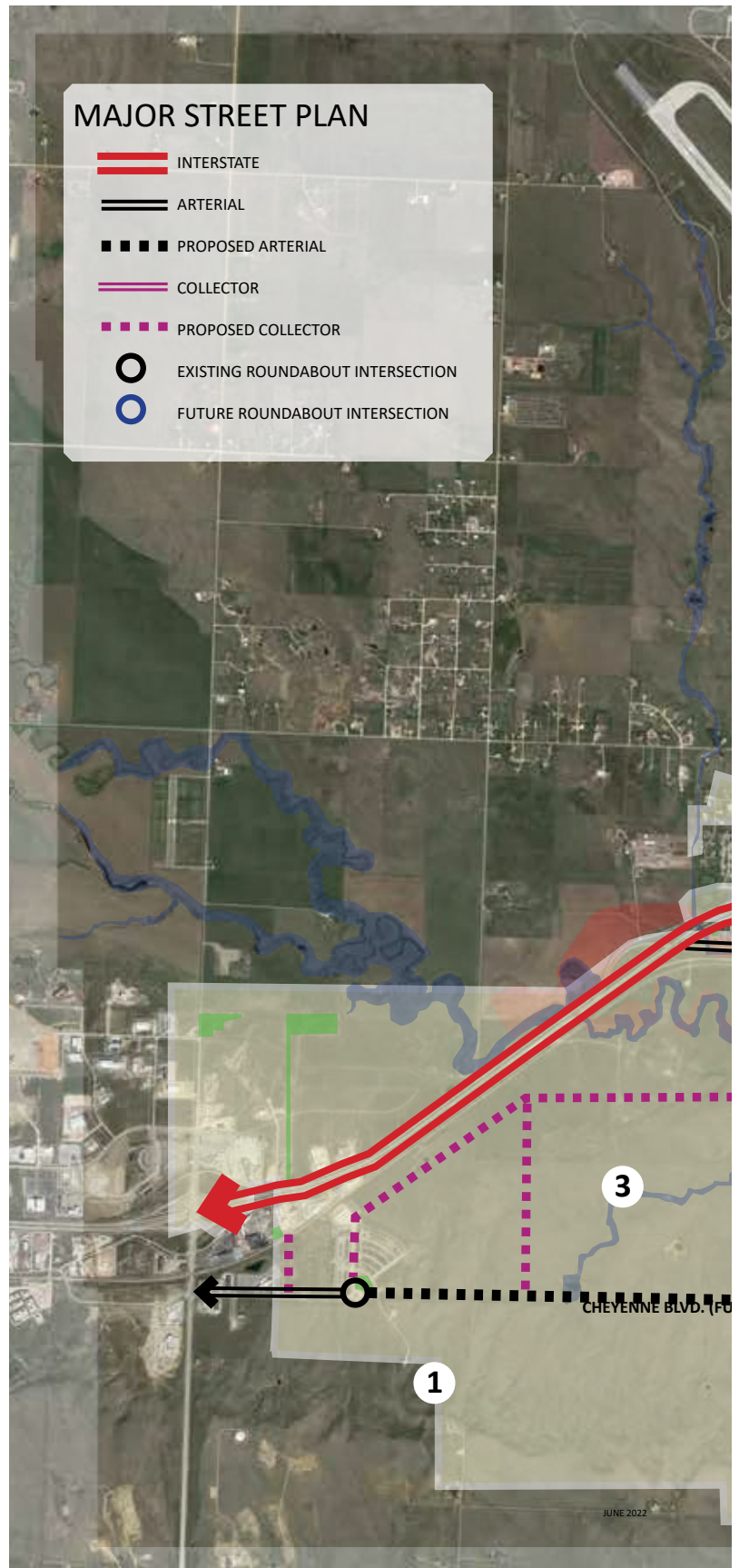
According to the Federal Highway Administration, “The modern roundabout is an intersection with a circular configuration that safely and efficiently moves traffic. Roundabouts feature channelized, curved approaches that reduce vehicle speed, entry yield control that gives right-of-way to circulating traffic, and counterclockwise flow around a central island that minimizes conflict points. The net result of lower speeds and reduced conflicts at roundabouts is an environment where crashes that cause injury or fatality are substantially reduced.”

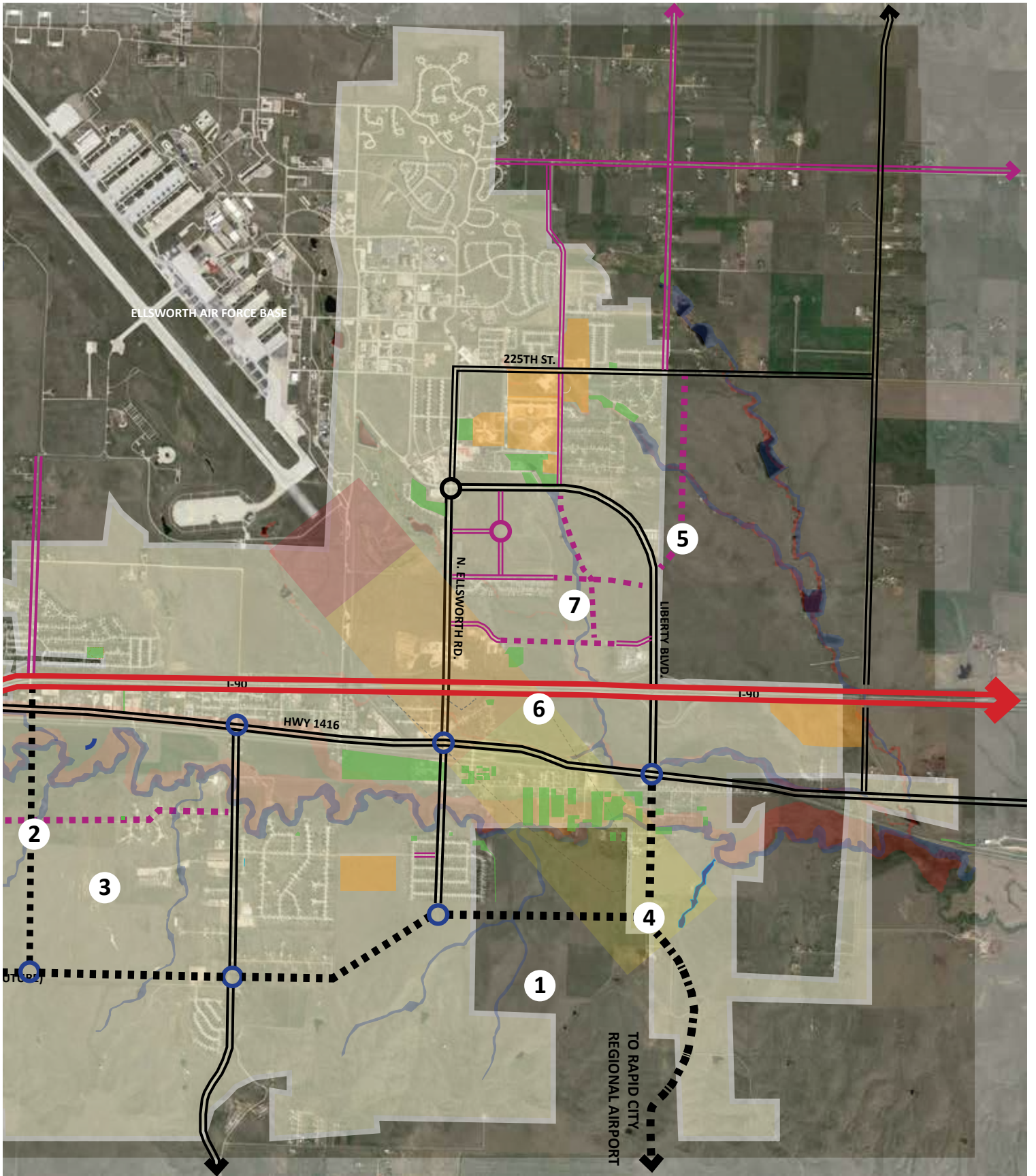
The Major Street Plan focuses on the primary transportation routes that will be needed to serve the future Box Elder city limits.

Future streets shown on this plan include:

1. Cheyenne Boulevard east extension
2. south West Gate Road to Cheyenne Boulevard extension
3. Northern Lights Boulevard (west Sunnyside Drive)
4. Spruce Drive / Liberty Boulevard south extension
5. Liberty Boulevard to 225th Street collector
6. Cimarron Drive extension
7. Tower Road extension

The Spruce Drive / Liberty Boulevard south extension could provide an important direct community and truck route connection from I-90 to Rapid City Regional Airport and Highway 44.



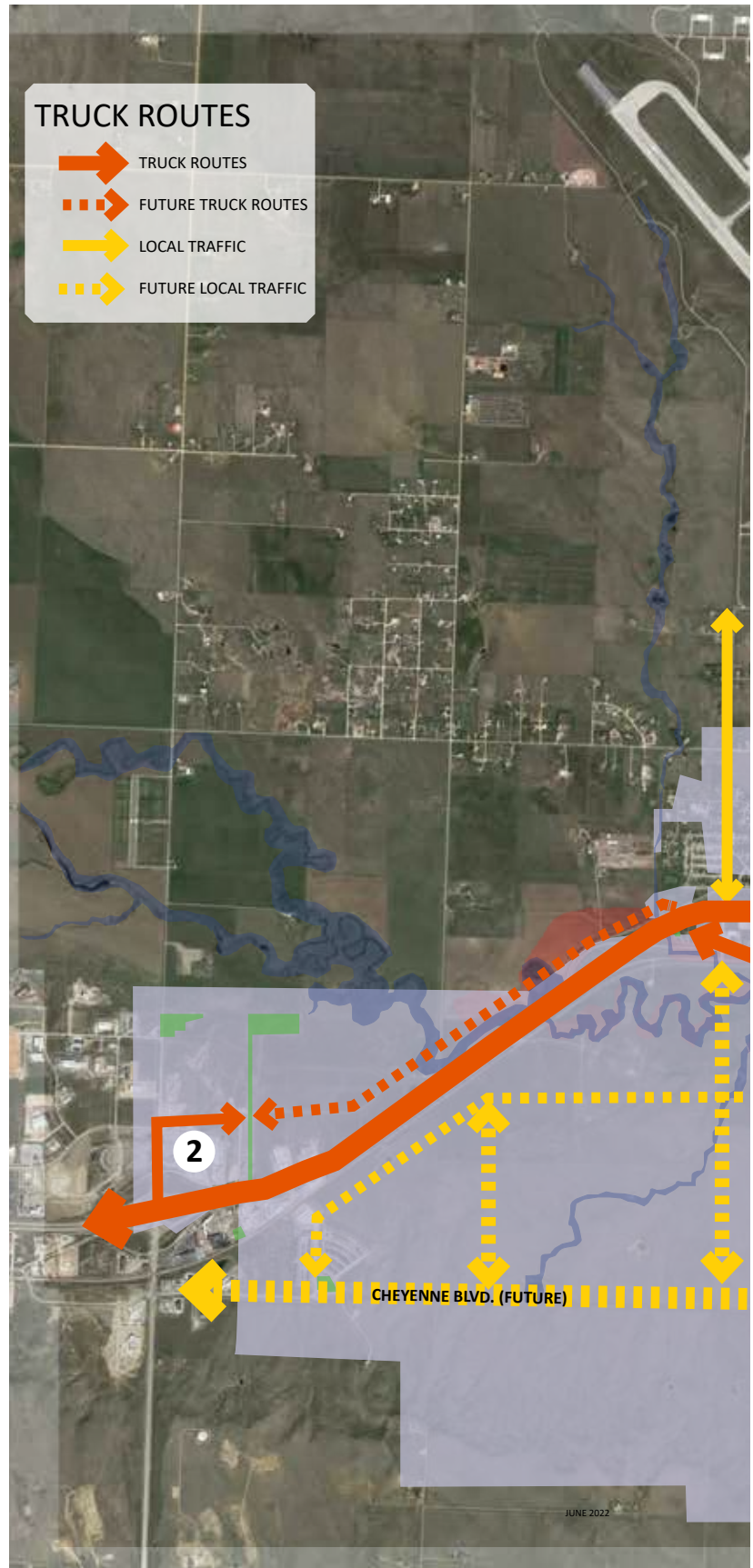


The Truck Routes map illustrates ease of commercial vehicle access to:

1. the Opportunity Corridor
2. Seger Road business park
3. future connection to Highway 44 / Rapid City Regional Airport
4. trucking connection to the Windy Flats rubble site

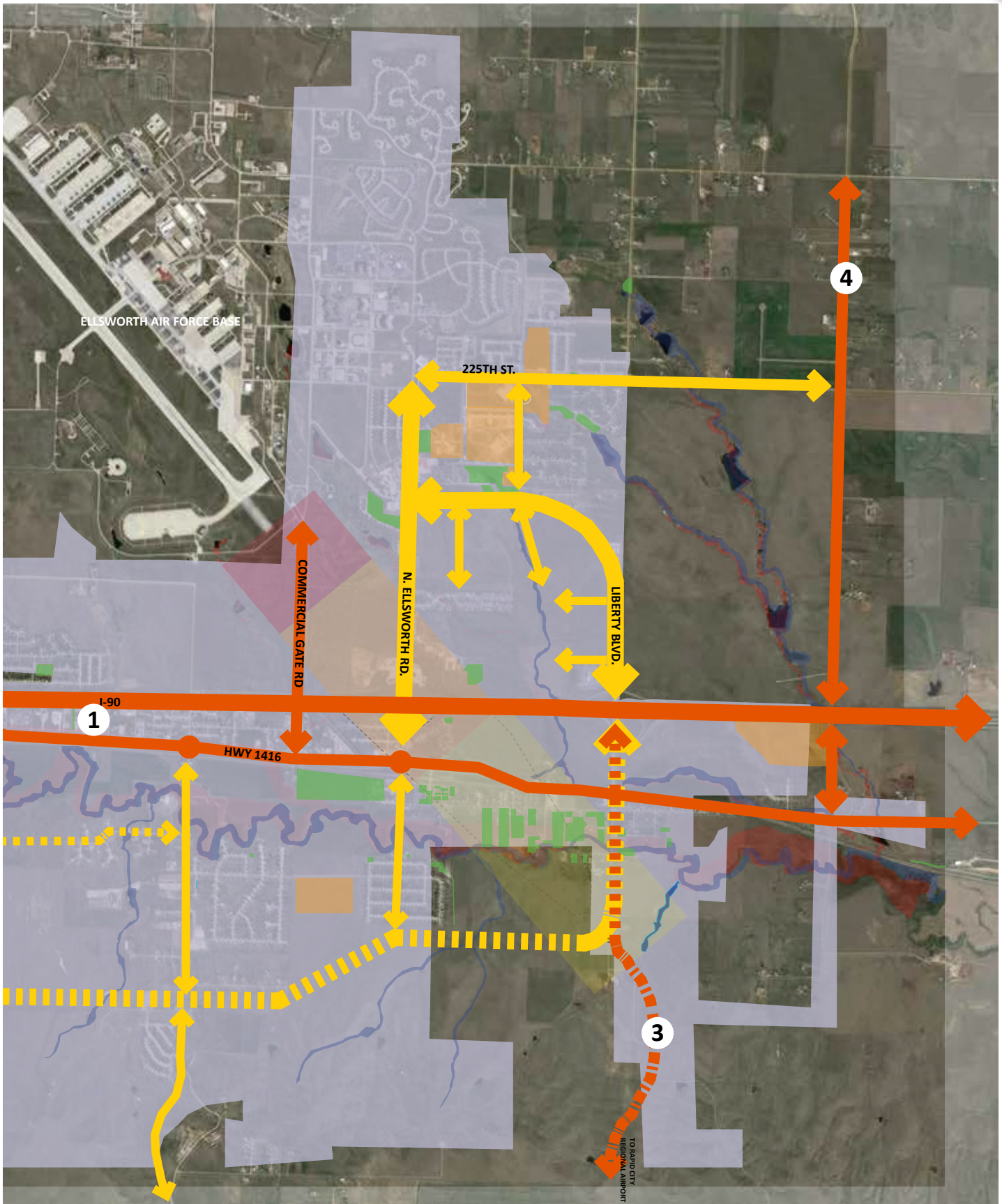
With the Cheyenne Boulevard to Liberty Boulevard arterial connection, local and multi-modal traffic could largely avoid the commercial truck traffic on Highway 1416 reducing traffic conflicts.

The Overall Transportation Plan synthesizes the Major Street Plan with the Trail & Sidewalk Plan to create a network that works for all transportation types.



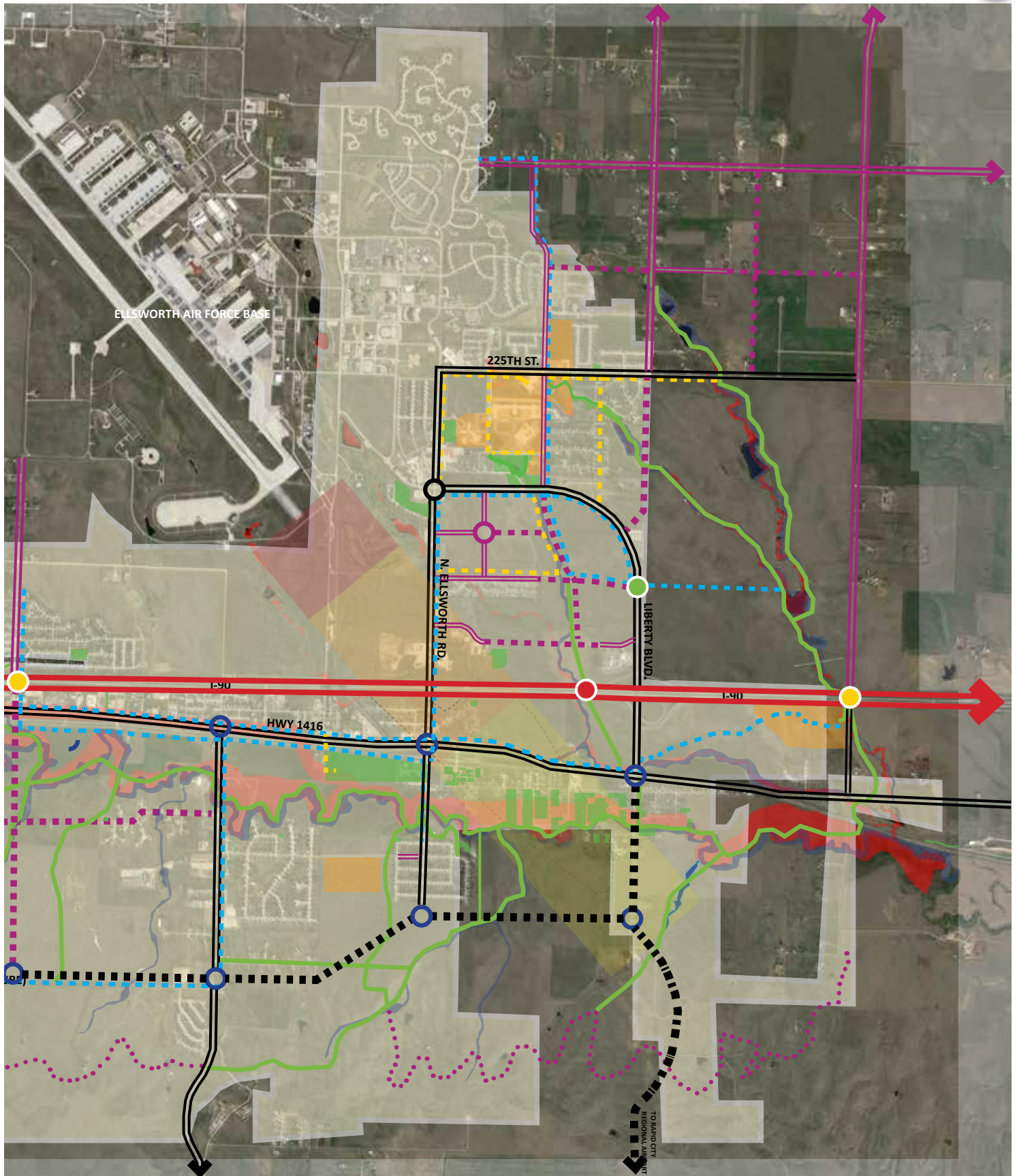
# TRUCK ROUTES

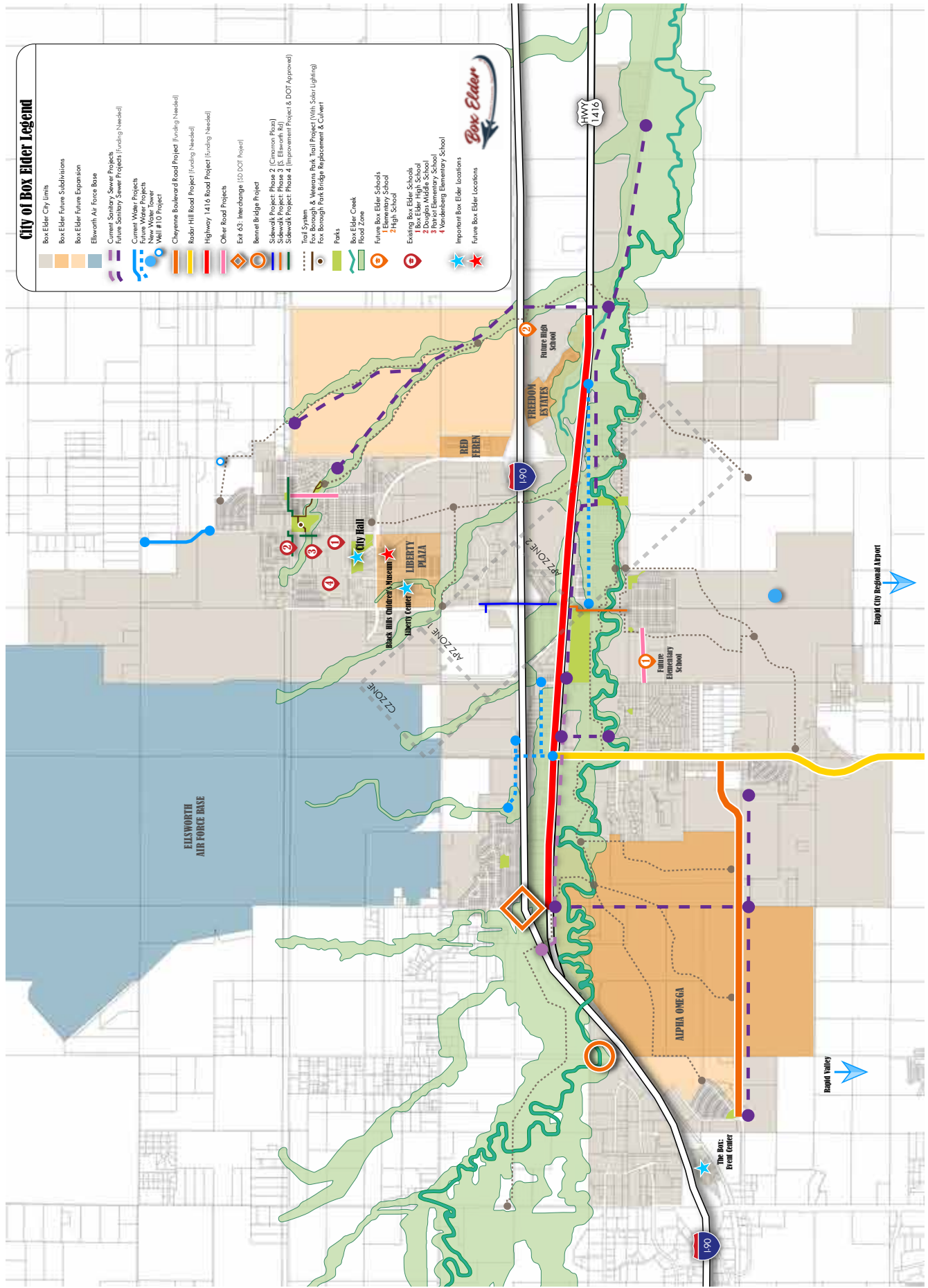
# 05.





# TRANSPORTATION PLAN 05.







## CAPITOL IMPROVEMENT PLAN

The Capital Improvement Plan (CIP) is a community planning and budgeting tool used to coordinate the identification, timing, and financing of capital improvements and major, non-recurring physical expenditures. This includes streets and other infrastructure projects such as water and sanitary sewer. The CIP includes priority ranking, schedules of project funding, and an estimate of project costs and financing sources. The CIP is updated annually to reflect changes in community needs and priorities. Transportation projects planned in the 2025-2029 CIP are prioritized below:

### Local Streets

1	2025	Cottonwood and Oak Street RR Crossing Closures
2	2026	Thunderbird Neighborhood Streets & Drainage Recon
3	2027	Cardinal Heights Streets and Drainage (Spot Utility Repairs)
4	2028	Old Town Box Elder
5	2028	S Ellsworth Road
6	2029	Prairie View Streets & Spot Utility Repairs
7	2026	Main Street Lights

### Collector Streets

1	2025	W Sunnysdale Road (Northern Lights Blvd East)
2	2026	Tower Road (Liberty to 225th)
3	2026	225th (Tower to 150th)
4	2028	Westgate Road - South
5	2025	Cimarron/Chisholm Road Improvement
6	2026	Cimarron/Reagan Connection
7	2027	Spruce (1416 to Harmony)
8	2028	Tower Road (225th to 224th)
9	2028	Repair Haul Roads
10	2028	Spruce and S Ellsworth Active Rail Crossings
11	2029	Creekside Connector (to Prairie View Estates)
12	2025	Cimarron Drive Extension
13	2029	Spruce (Harmony, Longview) Northern Lights Blvd ( Cheyenne to Kenai) Cheyenne Blvd (Rapid City line through round about)

### Arterial Streets

1	2028	1416 Highway/Radar Hill Road Reconstruction
2	2027	Cheyenne Boulevard - Street
3	2025	Bennet Road Bridge Replacement
4	2026	East Mall Drive - Bennet Road Extension
5	2026	Liberty Boulevard - Reagan Avenue Intersection
6	2026	N Ellsworth Intersections (Liberty and 225 St)
7	2027	N Ellsworth Reconstruction (Liberty - 225th St.)
8	2028	N. Elk Vale/East Mall Traffic Signal Liberty/Main Street Crossing/Signal

**T1c** Preserve existing and abandoned rail rights-of-way and examine their potential for future commercial-industrial use or recreational trail uses. Acquire or control, when the opportunity arises, through sale, donation, or land-use action, parcels of land that may be needed in the future for any transportation purpose.

# TRANSPORTATION GOALS

## Land Use Goal: Require Better Connectivity

*Connect people through a multimodal transportation system that weaves the community together and overcomes barriers between north and south Box Elder*

Each Goal correlates to the guiding principles of this document, which is indicated by the symbol for each principle. The guiding principles are:



**ECONOMIC  
PROSPERITY  
& RESILIENCE**



**INFRASTRUCTURE  
INVESTMENT &  
MAINTENANCE**



**SUSTAINABLE  
GROWTH &  
DEVELOPMENT**



**QUALITY OF LIFE  
& COMMUNITY  
WELL-BEING**



**RESPONSIBLE  
RESOURCE  
MANAGEMENT**



**PLACEMAKING**



### **T1 Conduct necessary studies to identify transportation needs in the community.**



#### **T1.1** Update the Box Elder Strategic Transportation Plan to include:

**T1.1a** Recommend design standards for all development types and road classifications with an emphasis on safety and connectivity for all transportation types.

**T1.1b** Provide community engagement opportunities and regular updates to inform and educate the community about transportation planning and projects.

**T1.1c** Recommend ordinances, policies, and land use needs to incorporate multimodal transportation strategies throughout the community.

**T1.1d** Identify transportation grants and other funding opportunities relevant to priority projects and provide data and analysis to support grant applications.

**T1.1e** Identify opportunities to coordinate with regional partners for street and multimodal transportation project implementation.

**T1.1f** Review and analyze options for incorporating green infrastructure into roadway design standards throughout the community taking into account cost savings, stormwater conveyance, management, and treatment and vehicular and multimodal uses

**T1.2** Conduct a sidewalk audit to identify deficiencies and priorities in the sidewalk system.

**T1.3** Conduct traffic counts and reclassify roads if necessary every 5 years.

**T1.4** Maintain a GIS dashboard showing hot spots with the highest rate of traffic incidents.





**T2 Develop transportation design standards for development types (Commercial, Housing, Industrial) and road classifications (arterial, collector, local, rural) that include requirements for safe pedestrian and bicycle transportation.**



**T2a** Prioritize routes for children to safely walk and bike to school and to access parks and neighborhood amenities

**T2b** Invest in a comprehensive trail system that connects neighborhoods to community spaces and amenities



**T2c** Consider adopting form-based code or Complete Streets policies and ordinances that incorporates complete street design; Vision Zero (zero traffic deaths) strategies, traffic calming elements, street trees, wide sidewalks, and pedestrian, bicycle, and transit access throughout Box Elder, considering the safety needs of people of all ages and abilities.



**T2d** Adopt an ordinance requiring commercial development to include sidewalk access from the public right-of-way to the public entrance of commercial buildings.



**T3 Work with state and regional organizations to facilitate better connectivity for multimodal trails.**



**T3a** increase the quantity and capacity of north-south multimodal crossings across I-90 and 1416

**T3b** coordinate with regional partners for multimodal transportation implementation

**T3c** xx

**T3d** xxx

