Casper

CASPER AREA METROPOLITAN PLANNING ORGANIZATION

CASPER AREA
METROPOLITAN PLANNING ORGANIZATION

INTERSTATE 25 ENTRYWAY BEAUTIFICATION PROJECT

DESIGN MASTER PLAN & GUIDELINES

JUNE 2015

PREPARED BY

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LANDSCAPE ARCHITECTURE / PLANNING / CIVIL ENGINEERING

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Introduction

PROJECT PURPOSE

The Casper Area Metropolitan Planning Organization (MPO) consists of the City of Casper, Towns of Evansville, Bar Nunn, and Mills, Natrona County, and the Wyoming Department of Transportation (WYDOT). Historically, Casper has been a regional hub of energy activity with oil refineries, railway and trucking depots, and secondary industries supporting the energy sector. Development was loosely controlled along major thoroughfares, resulting in blighted areas around town as the boom-and-bust cycle of energy production affected the region. This project focuses on the I-25 corridor between Hat Six Road in Casper and Westwinds Road in Bar Nunn.

I-25 is the only north/south freeway in Wyoming. It travels through Casper from east to west, and then doglegs to the north, parallel to the Town of Bar Nunn. There are currently 11 subjects in the study area. They include (from north to south):

1. Westwinds Road Underpass (near Bar Nunn)
2. Wardwell Road Interchange (at Bar Nunn)
3. Shoshoni Bypass Interchange
4. Poplar Street Interchange
5. Center Street Underpass
6. McKinley Street Underpass
7. Bryan Stock Trail Overpass
8. US Highway 26 (East Yellowstone Highway) Overpass
9. Wyoming Boulevard (Curtis Street) Interchange
10. Blackmore Road Underpass
11. Hat Six Road Interchange

The entire length of the project study area lacks a distinct character that provides difficulty in promoting the urbanized area with a specific identity. The loosely controlled development is amplified due to varied zoning requirements ranging from agricultural to industrial to rural residential. Multiple jurisdictions also make it difficult to create a consistent look with varying levels of government sophistication and resources to implement a common vision. In 2015, the Casper Area Visitors and Convention Bureau released the region's "brand." The brand elements represent the values of the Casper area, reflected in a centralized theme. However, citizens also value the ability to express creativity and individualism that is reflected throughout this document.

PROJECT GOALS & OBJECTIVES

The primary objective for this project is to provide a policy document for shaping the corridor into a visually appealing and cohesive gateway into the community. Adoption of this document by the government entities will provide assurance that whenever opportunities exist to adhere to a cohesive set of standards, the corridor will begin to take shape with a consistent brand. This document also outlines the standards, implementation considerations and maintenance strategies that are common to landscapes.

These design guidelines for improvements within the rights-of-way for Interstate 25 will provide project designers with the tools to apply the design standards to new construction or renovation projects. The design elements are dynamic, and project designers will need to consider changing land uses, public preferences or technological innovations.

The plan examines visual improvements that reflect the latest trends in highway safety, landscape design and structural improvements. Only the future Westwinds Interchange and Walsh Street bridge are in the short-term State Transportation Improvement Program (STIP); therefore, many of the recommendations will apply to retrofits and renovations, thus limiting the ability of the design element illustrated herein to reach its full potential. However, a consistent application of color, form or texture (such as blue girders) carried through each new design can accomplish the Casper area brand without compromising creative opportunities for individual expression.

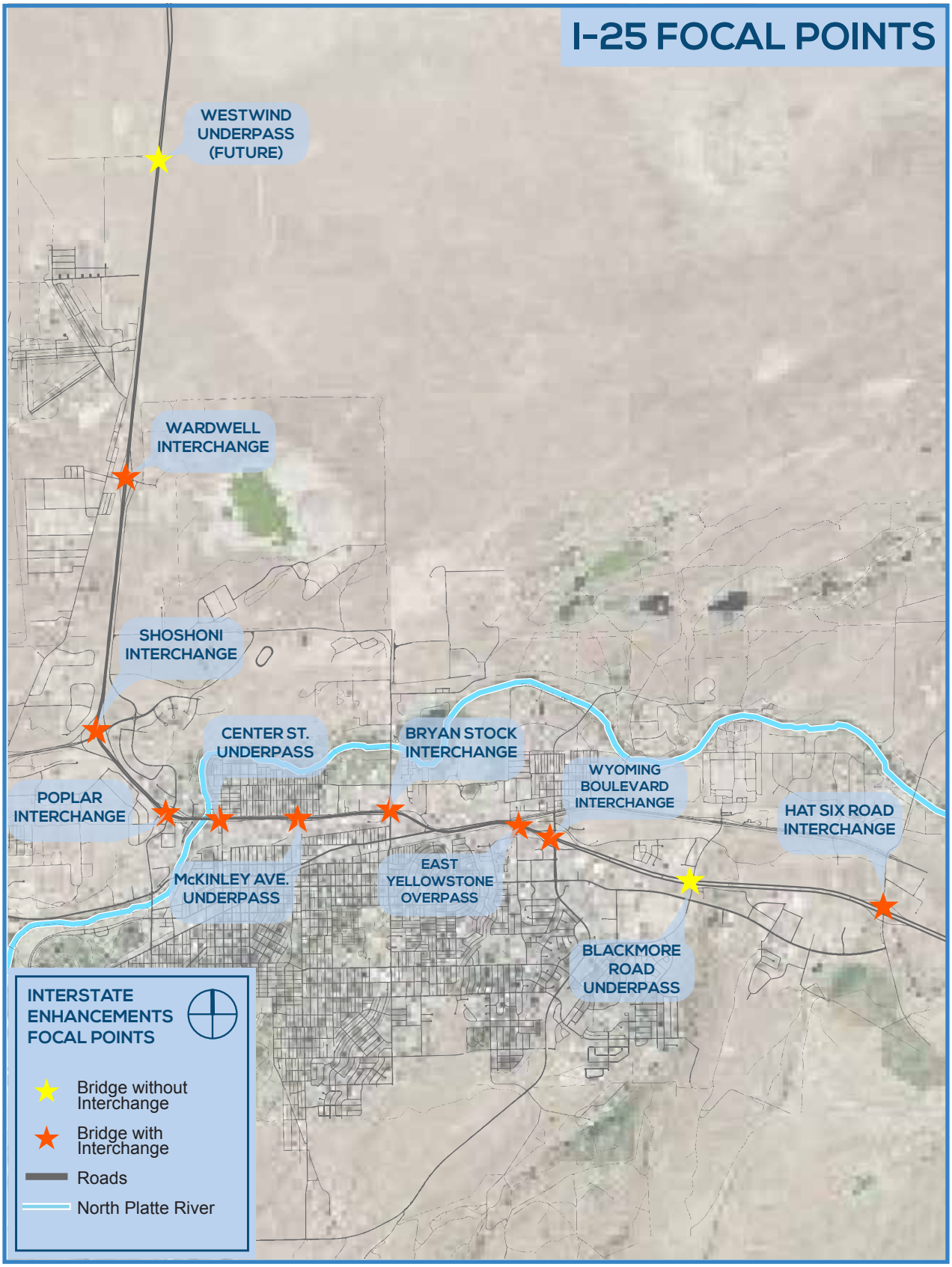

Figure 1: Focal points within study area

METHODOLOGY

The process for the development of the design standards included a significant case study review. FHWA has already embraced the "Context Sensitive Solutions" or CSS methodology, which includes the culture of people and places in highway design. FHWA offers a CSS toolbox that can be found at www.contextsensitivesolutions.org. It also outlines several of these strategies and elements of this website is incorporated herein. Individual State Departments of Transportation have strengthened FHWA's guidelines with state-wide CSS design standards. The project team reviewed several of these documents:

- Nevada DOT. Pattern and Palette of Place: a Landscape and Aesthetics Master Plan for the Nevada State Highway System. (July 2002)
- Utah DOT. UDOT Aesthetics Guidelines. (November 2014)
- Washington DOT. Understanding Flexibility in Transportation Design-Washington. (April 2005)
- Nolte. Interchange Enhancement Design Guide. Cheyenne, Wyoming MPO. (November 2011)
- AASHTO. Bridge Aesthetics Sourcebook. (November 2010)

The premise behind the literature review is to build upon best practices derived from other DOT's. Nearby states such as Nevada and Utah, who have similar climate requirements lend to practices that maximize the use of landscaping as a design element.

The technical advisory committee for the project includes a broad stakeholder review of the opportunities and constraints present throughout the corridor. The TAC's responsibility is to communicate those key items of interest to constituents, agency staff and property owners adjacent to the corridor.

Three community listening sessions were held to allow citizens the opportunity to express their community vision, preferences for colors, archetypes and other elements of design.

Participants were asked to speculate on how the Casper area looked in the year 2040, they generally expressed positive improvements regarding the area's infrastructure and appearance. Likewise, participants expressed a more diverse economic and business community, but also positioned Casper in a place of prominence for commerce.

Figure 2. FHWA Context Sensitive Solutions website

Figure 3. Example of undesirable fencing and ground cover

Attributes of the existing I-25 corridor that participants found appreciative included access to outdoor amenities, view sheds of both natural and built environments, and aesthetically pleasing improvements on Curtis Street interchange.

When asked to name what ideas, attractions and features would entice travelers off the corridor to explore the community, a combination of specific attractions, outdoor recreation, city-center amenities and attractiveness were key themes.

Participants offered three approaches to entice property owners to improve their private lots. It included a combination of policy, standards and regulations ranging from zone changes to tax credits. They recommended offering programs and assistance such as match funds, loan programs and volunteering opportunities and outright purchase for removal of unsightly infrastructure.

In order to improve the corridor, participants offered suggestions for structural improvements, such as removal of jersey barriers and wire fencing, enhancements in vegetation and the use of public art to create distinctive character.

The second half of the listening sessions included a visual preference survey. Participants preferred the light blue, sage green and mauve color pallets over browns and dark green colors. Preferences were strong in texture for the soft, flowing aspects that native and ornamental grasses provide.

The results also showed a strong preference for informality. Random placements of rocky, plant materials and scattered structures won over symmetrical design attributes. Likewise, when quizzed about possible retaining wall types, the participants indicated a desire for randomly formed gunnite concrete walls, constructed to look natural, although walls constructed out of actual stone was the highest preference of all.

Highway bridge design does lend itself to an ornate treatment in terms of visual preference. Decorative abutments, columns parapets and piers are more desirable than other utilitarian highway bridge structures. The preferences also indicated a desire to enhance highway underpasses with LED lighting and public art. In places where underpasses were underutilized, participants indicated a desire to create quality civic spaces.

Public art became a key theme that emerged from the visual preference survey. The opportunity to express the trendy, chic opportunities within the transportation corridor are certainly opportunities that are desired by the community and are missing in the current corridor experience.

Visual impression emerged as the key component for the corridor enhancement. The ability to view the natural features (Casper Mountain, North Platte River) in addition to Casper's urban landscapes (high-rise buildings, people-orientated spaces) were indicated as highly desirable features. However, many noted that way finding should be improved in order to entice travelers from the corridor to these amenities.

Figure 4. Example of desirable textural elements

Figure 5. Example of desirable informal composition

Figure 6. Example of desirable bridge aesthetics

Figure 7. Example of desirable use of light in underpasses

Aesthetics is judged by the viewer and is a seemingly personal interpretation. However, representatives who participated in the public meetings elevated key components of the corridor that establish an area of consensus. In general, almost everyone agrees that the current corridor appears to be neglected. It offers little temptation as to the class of urban culture that often survives within yards of the right-of-way.

Natural features were important to participants. The views of Casper Mountain were indicated as most desirable to stay. Unfortunately, the corridor offers little knowledge (insights) that the North Platte River is easily accessible and provides blue-ribbon trout fishing within seconds of the Interstate exits.

The I-25 marginal was constructed in the 1960s, and unlike other interstate routes, bisected existing development. As a result, the narrow corridor has substandard exit and entry ramps that create a need for absolute driver attention, versus way finding like other urban connections.

While the interstate corridor hosts the largest average daily traffic volumes (ADT) for the community, its status as a federal interstate highway corridor lends itself to challenges for regulatory structure. While WYDOT does allocate a percentage of construction costs to enhancements, the current Casper Area Long Range Transportation Plan identifies very few changes to the I-25 Marginal for the next 20 years. The result is that dedicated funds for enhancements must come from a different source and improvements must be retrofitted to existing facilities.

Once enhancements are applied to a project, it is WYDOT's policy for the local government to maintain the enhancement. An occupancy permit may be required in addition to a formal memorandum of agreement outlining the responsibilities of the parties. Construction, maintenance and recovery actions in terms of major failure are items of consideration. To date, only the City of Casper has such an agreement with WYDOT. The Towns of Bar Nunn, Evansville and Natrona County have not enacted such mechanisms to take place.

Figure 8. Example of desirable public art integrated with infrastructure

Figure 9. Example of desirable landscape treatments

"WYOCITY" – THE CASPER BRAND

In 2015, the Casper Area Visitors & Convention Bureau released the "WYOcity" brand in response to an effort to bring a marketing identity to the area. The principles of the brand encompass the following attributes: WYOcity is short for "Wyoming's City," the blue color represents the vast skies and blue waters of the North Platte River. The essence of the brand is a blend of the natural features or landmarks alongside urban commerce and culture. More information regarding the brand elements is available at www.wyocity.com. These guidelines were developed with those brand promise elements in mind.

Nestled in the North Platte River Valley, at the base of iconic Casper Mountain in Central Wyoming, Casper is blessed with world-class outdoor recreational opportunities, a touch of urban lifestyle and a friendly attitude. Established at the confluence of five historic pioneer trails, the city remains Wyoming's hub of commerce, culture, creativity and competition that beckons the adventurous to immerse themselves in its brilliant blue skies and wide open spaces.

Factors that Affect Design

STANDARD WYDOT REQUIREMENTS

While the Casper Area Metropolitan Planning Organization (MPO) is initiating the Interstate 25 Entryway Beautification project, the Wyoming Department of Transportation (WYDOT) owns and controls the overpasses and right-of-ways.

WYDOT's primary interest is safety; however, aesthetics are acceptable as long as they do not reduce safety. Requirements such as keeping fixed objects out of clear zones, prohibiting items that distract motorists, and other similar items are typical WYDOT safety requirements.

Maintenance also needs to be considered when proposing enhancement projects. The enhancements will require a higher level of maintenance than WYDOT typically provides and another designated organization will be responsible for the increased maintenance. Even so, WYDOT has requested that enhancements are evaluated to avoid people performing maintenance activities within the rights-of-way unless absolutely necessary for safety reasons. For that reason, WYDOT will ultimately need to review and approve all improvements and enhancements in their right-of-way.

VIEWSHED ANALYSIS

What is a Viewshed Analysis?

Viewshed analysis tools are useful in determining how visible an object might be – for example, which locations on the landscape are visible from a particular point on the road. A viewshed is determined by analyzing digital elevation models (DEMs) in a Geographic Information Systems (GIS) program. The program identifies the cells in an input DEM that can be seen from one or more observation locations. Each cell in the viewshed output receives a value that indicates how many observer points can be seen from each location, and all areas that are visible create the viewshed.

Why Analyze the Viewshed?

This viewshed analysis is important because it not only identifies the visual features and characteristics within the study area, but it also establishes the means to preserve and enhance the visual quality within the highway corridor through design. While the results of the viewshed analysis are important and informative, it should be noted that there are inherent inaccuracies due to the inadequacies of the data itself, the sources of data and the review of data.

Viewshed Analysis of the Casper Region

Using a digital elevation model of the Casper region and the eleven (11) key observation points (KOPs) along the Interstate 25 highway centerline between Westwinds Road and Hat Six Road, a viewshed model was produced representing both northbound and southbound travelers. While landscape elevation and observation point data are adequate to run the analysis, the results tend to be relatively broad.

It is possible, however, to produce more realistic results through limiting the region of the DEM that is analyzed by specifying various feature attributes for each observation point, such as vertical offsets and horizontal and vertical scanning angles. The vertical offset is the vertical distance to be added to the elevation value of each observation point. In this analysis, a vertical offset distance of 3.5-feet (Texas DOT, 2014) was used at each observation point to emulate the eye height of the average person sitting in a car. It is suggested that an eye

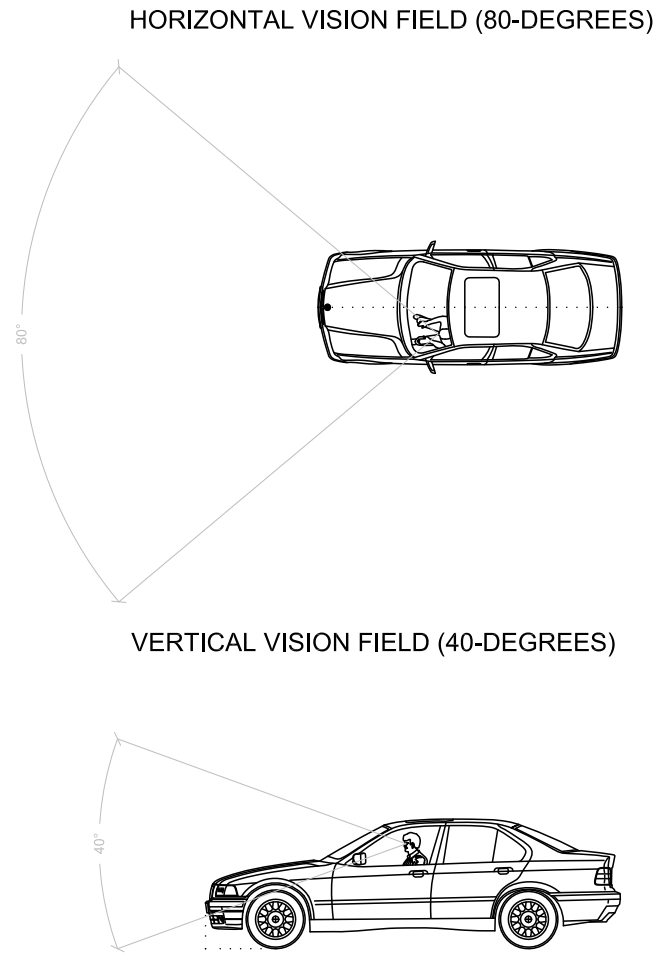

Figure 10: Horizontal and vertical cone of vision

height as low as 3-feet may be used because car fleets are becoming more compact each year. The Texas Department of Transportation (2014) states that, at speed, human vision is rather focused ahead which reduces the visual field in all directions – 40° visual field for vertical plane and 80° for the horizontal plane (including peripheral vision). Figure 10 depicts the constraints used for the purposes of this analysis.

Viewshed Results

The viewshed analysis was conducted along the Interstate 25 corridor from eleven KOPs to identify the visual features. Casper Mountain is the most visible scenic resource from the highway corridor because of the visual contrast it provides to the relatively flat ranch lands that surround it. It provides a fantastic scenic back-drop to the Casper area, and being the most visible feature, it is with no surprise that the community's population best identifies the area with this feature (as indicated in community polling). As such, it is imperative to protect the views of this scenic resource from billboards and other incompatible land uses that could obstruct views and detract from the travel experience.

Conversely, the lower-laying areas are the least visible (or entirely not visible) from the highway corridor. Not all of the KOPs have a view of the scenic resources, especially for northbound travelers. The mid-ground (1/2 mile – 5 miles) and the foreground (0-1/2 miles) become important viewsheds to consider for protection.

Generally speaking the north and east side of the highway corridor is a reasonably safe area to place billboard and informational signs. The south and west side of the corridor requires carefully planning as to not obstruct the view of Casper Mountain. Casper Mountain is most visible heading southbound on I-25 between KOP3 and KOP10 (Shoshoni Interchange and Blackmore Interchange), and views of it between these points should be protected from new obstructions. Corridor enhancements may be applied to further enrich the scenic resource such as scenic vista turn-outs with informational panels.

The most prominent features lie in what is typically known as the background (15+ miles from the viewpoint). While not all of the KOPs can see the prominent features, their viewsheds are as important. Instead of focusing the developing design to enhance the view of the background, the designs will focus on improving the views in the foreground and middle-ground areas.

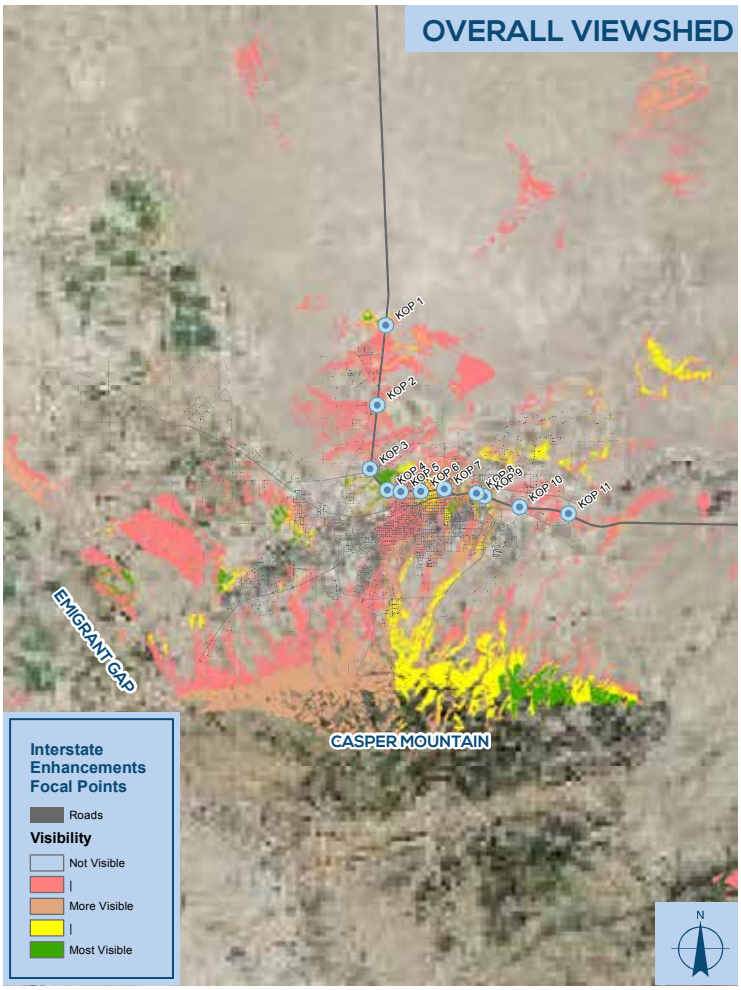

Figure 11: Viewshed analysis of 11 KOPs

Figure 12: Example of foreground, middle ground and background

MICROCLIMATE

Albedo or Reflectivity

Albedo-induced changes in the thermal climate of soil can be substantial, and as a by-product, soil moisture can be affected because of evapo-transpiration changes. Albedo refers to the reflectivity of light from the sun back towards space. Dark-colored surfaces increase heat and reduce moisture, while light-colored surfaces have the opposite effect. In northern climates, the use of albedo methodologies are difficult to include because the hot summers would lend to implementation of light-colored surfaces, but cold winters benefit from dark-colored surfaces. However, noting that albedo-induced design can affect snow cover and soil moisture regimes lends itself to be noted in these guidelines.

The Use of Landscape Mulch

The purpose of mulching is usually to conserve soil moisture by reducing evaporation. The secondary purpose is weed control. Mulch, is often combined with a geotextile fabric to accomplish this goal. Generally, a 3-inch layer of mulch is recommended. While the best mulch for plant stock is bark mulch, its limitations include decay and ease of displacement from wind distribution. A preferred alternative, rock mulch ranging in sizes from 3/4-inch to 1-1/2 inch minus helps prevent weed growth and secures geotextile fabric placed underneath. The disadvantage of rock mulch is its cost in both materials and labor for install. However, for long-term, minimal maintenance installations, rock mulch out performs all other alternatives.

Wind Modification

The desired outcome of wind control is to reduce the horizontal wind speed near the ground in susceptible areas. The climatic effects of wind control are not restricted to a simple reduction of wind speed, but also to wind patterns as to their effect on thermal, moisture and biological systems, most notably snow drifting.

The WYDOT is considered a leader in mitigating snow drifting on transportation corridors. WYDOT's dedicated team has a proven track record of reducing snow distribution up to 60 percent along rural transportation corridors through the use of wood snow fences. However, in urban areas, the use of snow fences is not as practical due to less open land area outside of the rights-of-way.

Therefore, the second best opportunity is to place a low, open plant barrier in a strategic location to serve as a trap for snow. In Casper, the prevailing winds blow from the southwest to the northeast in the months of October through March. The placement of such plant materials within interchanges should consider that factor. In order to provide protection for a transportation route such a barrier should be placed about 10 times the height of the barrier upwind.

In the core area of the I-25 marginal, the depressed road alignment creates a significant snow distribution problem. The solid barriers consisting of buildings, retaining walls and earthen berms create voids of air movements that allow for accumulation to occur on the road surface. Few options are available for mitigating the effects of this geometry.

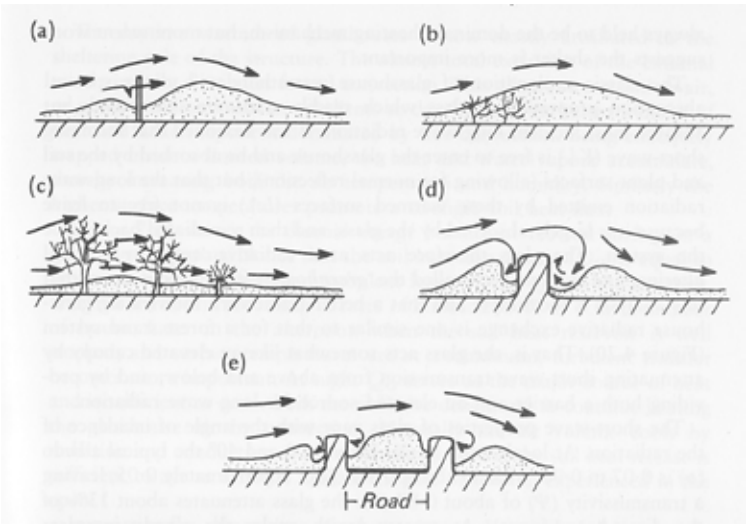

Figure 13: Snow accumulation in the vicinity of (a) a snow fence, (b) an open low plant cover, (c) a wide low density planting, (d) a wall and (e) two solid barriers such as a depressed roadway (Oke,1987)

CLEAR ZONES

The clear zone is a concept in which the desire to have an unencumbered roadside recovery area from the edge of the through traveled way. Most highway agencies try to provide a 30 foot clear zone that provides an unobstructed, traversable area that is free from bridge piers, sign supports, culverts, ditches and other design features on the roadside. The actual distances are recommended in the AASHTO Roadside Design Guide and are dependent on the design speed, average daily traffic counts and slopes. Consult with the project traffic engineer to identify the actual determinations of clear zone extents before starting an enhancement project.

Curbs

In general, curbs are not desirable along high-speed roadways. In other conditions curbs are commonly used for drainage control, pavement edge support and delineation, right-of-way reduction, aesthetics, sidewalk separation and reduction of maintenance operations. When enhancements exist behind curbs, a minimum lateral offset of three (3) feet should be provided beyond the face of the curb to the obstruction at intersections and driveway openings. A minimum lateral offset of 1.5 feet should be used elsewhere. While the AASHTO guide indicates that the lateral offset should not be construed as a clear-zone distance, fixed objects should be located as far away as practical on a project-by-project basis, but in no case closer than 1.5 feet from the face of the curb.

Trees

Single vehicle crashes with trees account for more than 50 percent of all fixed-object fatal crashes annually. Trees are potential obstructions by virtue of their size and their location in relation to vehicular traffic. A tree with an expected mature size greater than 4 inches at stub height is considered a fixed object. The Federal Highway Administration's *Guide to Management of Roadside Trees* (FHWA-IP-86-17, 1986) provides detailed information in identifying and evaluating higher risk roadside environments and provides guidance for implementing roadside tree issues.

Bystanders, Pedestrians and Bicyclists

Bystanders, pedestrians and bicyclists are generally separated from a low volume street by the use of a raised curb. For streets with speeds over 25 mph, separating the sidewalk from the edge of the roadway with a buffer space is encouraged. When sidewalks or multi-use paths are adjacent to the traveled way of high-speed facilities, some provision might be made to shield the sidewalk or path from vehicular traffic. Factors to consider for barrier protection include traffic and pedestrian values, roadway geometry, sidewalk/path offset and cross-section features.

NON-MOTORIZED TRANSPORTATION

Two guiding documents address pedestrian and bicycle facilities within the project area: The Wyoming Bicycle & Pedestrian Transportation Plan (April 2002) and the Casper Trails, Path and Bikeway Plan (2013). Wyoming does allow for bicyclists on the interstate freeways. The Wyoming Bicycle & Pedestrian Transportation Plan provides guidelines regarding the types of facilities and applications for their use. WYDOT policy number 7-4 indicates that WYDOT will consider appropriate facilities for bicyclist and pedestrians on all federal-aid and state-funded highway construction, reconstruction or rehabilitation projects.

Policy number 25-3 indicates that WYDOT will include sidewalks where appropriate in new highway construction, highway reconstruction and major rehabilitation projects within urban boundaries or incorporated areas. Sidewalks may be excluded on portions of highway construction projects through areas where pedestrian traffic is not permitted or anticipated. The exception should be based on analysis of adjacent land uses and the likelihood that pedestrian traffic will not begin using the area within the design life of the project. It should be noted that the construction of sidewalks is contingent on acceptance of maintenance responsibilities by the local government entity.

Policy number 40-2 outlines maintenance responsibilities with Cities and Towns on the State Highway System. It specifically outlines that WYDOT is not responsible for snow removal, including control of snow pushed into the travel-way and sanding ice; cleaning, sweeping and washing streets, cleaning litter between the curb line and the property line or maintaining sidewalks, bike paths, storm sewers, open drain ditches, natural drain channels and the curb and gutter.

The Casper Trails, Path and Bikeway Plan outlines needs assessment by roadway type. Arterial roadways generally indicate that within the City of Casper, sidewalks are generally present, but often times the sidewalks are directly attached to the travel lane. Bicycle facilities include a combination of shared lanes, multi-use paths and bike boulevards. Consider the latest recommendations of the NATCO Urban Bikeway Design Guide as well as AASHTO's latest edition (2012) Guide for the Development of Bicycle Facilities.

Figure 14. Example of on-street bicycle facilities

Design Guidelines

STANDARD BRIDGE ELEMENTS

Figure 15. Typical elements of an overpass bridge

BRIDGE ENHANCEMENTS

The I-25 corridor hosts eleven different bridge or underpass structures. As a result, these dominant elements in the landscape hold the most potential to create a favorable impression for the community. In 2010 the American Association of State Highway and Transportation Officials (AASHTO) released the Bridge Aesthetics Sourcebook that outlines several accepted elements to enhance the look of highway bridges, noting on page 1 that bridge aesthetics does not automatically equate to added costs.

When considering design guidelines the Sourcebook cites ten determinants of appearance:

1. Horizontal & Vertical Geometry
2. Superstructure Type
3. Pier/Support Placement and Span Arrangements
4. Abutment Placement and Height
5. Superstructure Shape (including parpets, overhangs and railings)
6. Pier Shape
7. Abutment Shape
8. Color
9. Texture, Ornamentation and Details
10. Lighting, Signing and Landscaping

Horizontal & Vertical Geometry

The right-of-way constraints of the corridor contribute to difficult clearance requirements and visually impact the experience. Several crossings of the corridor occur on a diagonal, visually and physically expanding the impact of the structure. Narrow rights-of-way require tall, vertical abutments that allow for little or no opportunities for landscape enhancements.

Potential solutions include taking advantage of the large concrete abutments by placing a decorative veneer for visual interest. In opportunities for reconstruction, bridges that are completely on a curve or tangent is more visually consistent than a bridge that transitions.

Superstructure Type

The superstructure type defines the structural systems used to support the bridges' self-weight and applied loads. Most of the bridge spans within the corridor are known as girder systems. Girders are typically horizontal concrete or steel. Some times haunched girders or arches are used in situations where visual appeal is desired.

Figure 16: Example of an underpass with substandard clearance

Figure 17: Example of a concrete girder system bridge

Figure 18: This steel girder features fading paint that may be an opportunity to apply a color that more accurately reflects the brand promise

Steel girders currently in the corridor may have been painted with lead-based paint, which will require remediation; however, environmental funds may be a source of funding to have the bridges repainted with a color that exemplifies the brand promise.

Pier/Support Placement and Span Arrangements

Both the placement of piers and span arrangements are limited in the corridor due to right-of-way constraints. However, as new construction emerges at the north end of the project, these arrangements could become an important element of design.

The ratio of the span to vertical clearance can be an element of design. For many design applications, beyond bridges, a 3:1 ratio is deemed aesthetically pleasing to the eye and may be a consideration. This bridge element is more likely to be dominated by engineering requirements than aesthetics.

Abutment Placement and Height

Beyond its functional use, the abutments frame a bridge within its landscape. They provide some of the best opportunities for enhancements within the existing corridor. In areas with limited right-of-way, abutments are very vertical and dominate the view cone. Abutments can be placed off of the traveled lanes, allowing for landscaping, skewed abutments and use of the facade for the applications of community identity.

There are several opportunities with the corridor to enhance existing abutments to enhance community identity. This includes the application of street art or veneer applications. New construction can utilize form liners to showcase a brand element.

Superstructure Shape

The parapet can be a strong design element and opportunity for design enhancements. Modifications to railings and parapets are often less expensive than modifications to girders or other bridge components. Railings provide opportunities for opening the visual corridor by allowing views through the top of the bridge structure. Even concrete railings can have openings that allow for visual penetration to the substructure below. Fencing attached to parapets can create rhythm and repetition as a low cost alternative to enhanced design.

Local metal artisans may be utilized to create custom laser-cut patterns that reflect the recreational opportunities of the community without compromising functionality.

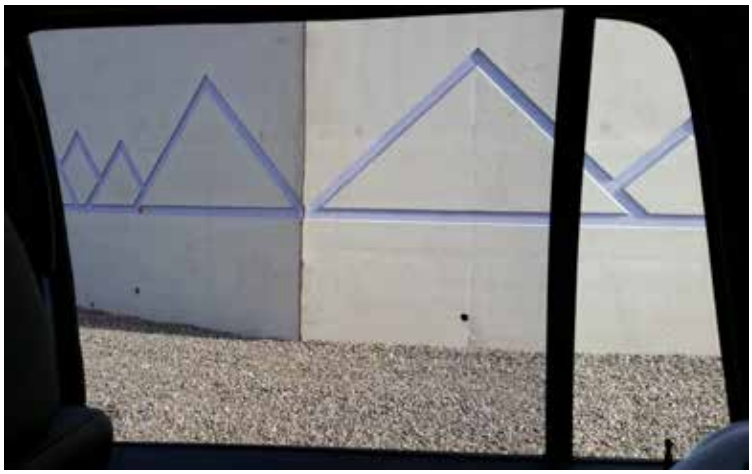

Figure 19: This simple abutment design in Phoenix is an abstract of the mountains surrounding the area

Figure 20: Example of a vertical abutment as a part of a MSE wall that features a 3D form liner within a narrow corridor

Figure 21: This concrete form liner is located along Interstate 5 near Stockton, California. Any brand element can be applied to an abutment.

Pier Shape

Piers are significant structural frames consisting of circular or rectangular columns with a cap beam. Typically, the exterior columns are inset from the girder for structural efficiency; however, they can be placed on the outside edges of the pier cap.

Most of the existing piers within the corridor are round columns. The exception is at the Wyoming Boulevard/Curtis Street Interchange where the piers were modified to include colored, textured concrete with a flat panel type.

Gateway interchanges are designated based on the entrance and exit of the city. They are used to convey the culture of the city and to project a positive feel to the traveler. These types of interchanges are intentionally designed to be more extravagant than other interchanges. Typical features included on gateway interchanges include: monuments and plinths, decorative railings (with decorative panels), colored/stained concrete, decorative lighting fixtures, and additional landscape elements. The use of exterior girder set piers should only be reserved for gateway interchanges or bridges that indicate a special use upon its exit.

Abutment Shape

Terraced abutments allow for the visual break-up on slopes between the underlying road and bridge deck. They also provide an opportunity for landscaping to soften what is typically a hard scape element. While figure 24 represents a good use of color and texture, the lack of landscaping still makes the space appear void of visual interest.

Color

Color can be on the easiest and economical tools to enhance a bridge structure. Multiple opportunities exist on the various structural and functional elements of a bridge. This includes the abutments, girders, railings, parapets and piers. The visual preference survey indicated a desire for sage green, light blue and mauve color pallets over traditional browns and pinks. The light blue matches the Casper area brand, and sage green is typical of the Wyoming landscape. The mauve color is a contrast to the green. However, the absence of color should not be denied as well.

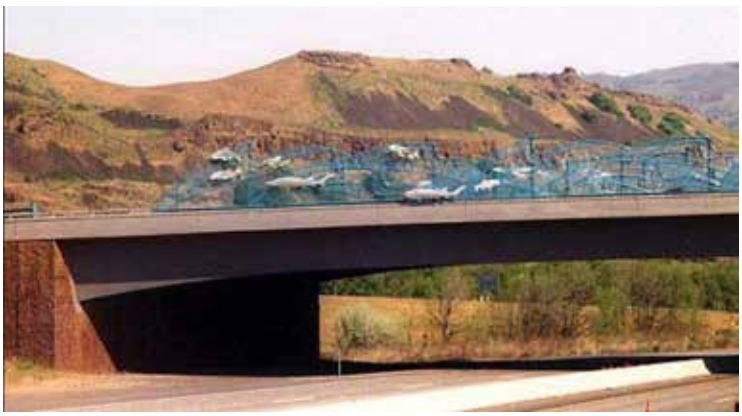

Figure 22: Example of a decorative rail reflecting a local recreational asset, in this case, salmon. Note, however, that better design consideration of background and its influence affects how well this enhancement is viewed.

Figure 23: Example of an intricate, decorative rail

Figure 24: Example of existing round columns that deflect from visual interests within the I-25 corridor.

Figure 25: Wyoming Boulevard/Curtis Street pier with a concrete form liner application and terraced abutments

In general, blues and greens are difficult to integrate into concrete. The pigmentation is inherently expensive and fades quickly. The mauve color is easier to integrate with concrete. The tone of the color is important as well. Light colors provide a distant understatement, while dark colors dominate and visually bring objects into the foreground.

WYDOT's State Bridge Engineer has indicated that there are only four colors that are generally considered for painting a girder structure: blue, green, grey-tan and weathering steel. Federal Standard 585 Paint Specification is a source for the color classification group. The colors in the Federal Standard set have no official names, just five-digit numbers. The first figure indicates the level of sheen. Two (2) indicates a semi gloss sheen, the second figure of the code indicates a general color classification group with zero (0) indicating brown, four (4) indicating green and five (5) indicating blue. The last three digits of the color number are assigned in the approximate order of increasing reflectance.

Due to the acceptance of the blue color palette for the Casper Area brand, it is recommended that the standard color 25053 - Royal Blue is utilized for all bridge girders.

Texture, Ornamentation and Details

Texture can most easily be added through the use of form liners which can project patterns, add visual interest and introduce subtle surface variations and shading. The technology used in concrete form liners is so sophisticated that photo-realistic renderings can be applied to panels. One such consideration for the Casper area may be a depiction of the wagon trails converging to represent historical context. Note, however, that highly detailed imagery can also contribute to driver distraction, therefore placement of such interesting information should be reserved for places of long queuing or roadside rest.

Ornamentation should be used sparingly and only at places of extreme visitor interest. Bronze sculptures are generally more appropriate in urban collector or local street systems that allow for pedestrian enjoyment.

Figure 26: FHWA color 25053 (blue) girder on I-25, located approximately six miles north of Highway 259 exit in Wyoming

Figure 27: Photo-realistic concrete form liner technology

Figure 28: Simple vector art depicts brand value themes and provides a more generic, but resonating message

REGULATORY, WARNING & GUIDE SIGNS

The Manual on Uniform Traffic Control Devices, otherwise referred to as the MUTCD (2004 & 2012), outlines the different types of signs present along highway corridors. Traffic control devices or their supports are not to bear any advertising message or any other message that is not related to traffic control. Tourist-orientated directional signs and specific service signs are not considered advertising; they are classified as motorist service signs.

Regulatory signs are those that generally control the progression of traffic and include, but are not limited to stop and yield, speed limits, turn arrows, and crosswalk indicator signs. Warning signs are those that guide the driver through changing road conditions, construction and hazard potential throughout a corridor. Guide signs include route markers, rest area indicators, cultural points of interest, amenity indicators and mile markers. These signs are all standardized throughout the United States with standard specifications on font, size and color. The supports for these signs are outlined in the AASHTO Roadside Design Guide (2001) and generally include provisions for break away supports that allow the placement of these signs near the traveled way. As such these signs tend to dominate the visual foreground of the highway corridor.

Figure 29: Regulatory and warning signs clutter up about 10 percent of this view approaching the McKinley Street exit

In the Casper Marginal, the right-of-way constraints require the clustering of regulatory, warning and guide signs in such a condensed manner that views beyond the signs and into the communities is impaired. For sign structures, the clear zone is 50 feet.

Active traffic management and managed lanes are becoming increasingly popular in the United States as operators seek new technology that can improve safety without increasing the footprint of existing highways. WYDOT has indicated a desire to consider implementing variable speed limit signs, essentially digital signs that would allow them to adjust speeds according to weather conditions. In addition, several states have placed digital billboard signs to promote traffic safety and to issue general service messages such as Amber Alerts. The increased use of digital technology will further contribute to the impact on the visual landscape.

The Federal-Aid Highway Act of 1958 was the first attempt at control over outdoor advertising signs adjacent to highways. While states control signs under their State laws, it allows for sign control with 660 feet of the nearest edge of the Interstate right-of-way. The act provided a monetary incentives to States who met the criteria. Only certain signs are allowed: directional and official signs; on-premise signs, sale, lease or activity; signs within twelve air miles of advertised activity; and ad signs in the specific interest of the traveling public, i.e. historical sites, natural phenomena, naturally suited for outdoor recreation, and places for camping, lodging, eating and vehicle service and repair.

The Wyoming Department of Transportation, pursuant to W.S. 24-10-105 is authorized to promulgate rules governing outdoor advertising along the interstate, national and former primary highway systems. Chapter 16, Outdoor Advertising, of WYDOT's policies outline the rules within the designated corridors.

The MUTCD (Section 2D.50) discusses community way finding signs. These signs are limited to conventional roads and cannot be installed on interstate main lines or ramps. Regulatory, warning and guide signs have priority over community way finding signs. In addition, the MUTCD indicates that community way finding guide signs are not to be mounted overhead.

WAY FINDING SIGNS AND INFORMATION

Gateways and area identification define the entry into a distinct place with a defined identity. Regional gateways can include government entities, heritage area and economic zones. City gateways are signs and landmarks that identify a city or town. The new Shoshone Interchange welcome sign is an example of a city gateway. The district and neighborhood gateway usually identifies downtowns, historic districts, neighborhoods and large park areas.

Utilizing controlled access road signs along I-25 within the planning area is very limited in the narrow marginal route. However, way finding opportunities increase the further distance from the Casper core area. Therefore, it is recommended to concentrate on an arrival sequence of way finding signage before entering the core area, which could be started as far away as forty miles from the MPO area.

Figure 30: The Casper city gateway sign is destined for the southbound on ramp of I-25 at the Shoshoni Interchange. The sign includes brand promise elements such as natural and modern materials. Its placement within the interstate right-of-way is an exception, not a general FHWA norm.

Figure 31: Early design variation of the gateway sign included LED backlit features. This approach eliminated glare and reflected the brand promise attributes.

The Signage Foundation, Inc. has published a manual that recommends several steps to a successful way finding system that encompasses a multi-layered interstate to on-premise to social media platform to help draw tourists from the interstate route to the neighborhood cores. Charlotte, North Carolina has an extensive way finding system that is considered a benchmark for success.

Stakeholders recommended that signage and way finding be a comprehensive effort, and not only include flat signs. Public art, including sculptures, can help attract interest and should be considered in the arrival sequence to the area.

LIGHTING

The introduction of LED lighting allows for a variety of solutions that serve both functional and aesthetic purposes. The undersides of bridges can be lit to provide 24-hour appreciation of the fine details placed there. Gateway signs can be lit with flood lighting or backlit through LED technologies.

Decorative pole lighting is very expensive in both materials, construction and on-going maintenance requirements. However, in the era of transportation enhancements, decorative light poles and fixtures have been a highly desired commodity in the improvement of community aesthetics. It should be noted; however, that aesthetic value can be increased just by powder coating a utilitarian pole, without upgrades.

Once out of the interstate right-of-way, light poles should reflect local district themes and brands.

LANDSCAPING

Foreground views are mostly focused within the right of way and approximately 300 feet beyond. The viewer's perception of place is influenced by design and maintenance of pavement, fences, lights, railings, signs, guardrails, bridges and architecture of the overpasses and to a lesser degree the landscape qualities. The foreground planting is simple and unremarkable consisting of native grass and a few plantings that generally feel out of scale and context given the scale of the large landscape. Given that WYDOT regulates all development in the right-of-way, limitations on space, concerns about maintenance and safety and availability of water for establishing more plantings severely limit the ability to enhance foreground character and views with plantings. Implementation of these standards will largely be achieved through projects and to a lesser degree through maintenance.

The success of plant material establishment in non-paved areas of right-of-way depends on a variety of factors. Compaction is often an overlooked element as engineers seek to achieve greater than 95 percent compaction on all backfill material. However, success has been shown with landscape material with a compaction rate of approximately 85 percent. This density allows for a better flow of air and water to the plant root zones, resulting in healthier plants. The depth of compaction should range from 6 inches minimum to 24 inches maximum, depending on the plant application.

Soil analysis for texture and nutrient availability is likewise as important. While many specifications do not allow excavated soil to be used as backfill, it often occurs. Quality topsoil should consist of a silty loam, loam or sandy loam quality. The other parameters should be tested for an realize the following nutrient outcomes.

Parameter	Minimum	Maximum	Optimal
pH	5.5	8.4	6.5
Nitrates (mg/kg)	1.0	150	20
Organic Matter (%)	1.0	10.0	>3.0
Olsen Phosphorus (mg/kg)	1.0	150	>50
Potassium (mg/kg)	100	1500	>500
Sodium (meq/100g)	n/a	2.0	<1.0
Calcium (meq/100g)	0.2	5.0	>0.3
Sulfate (mg/kg)	1.0	1500	>20
Conductivity (mmhos/cm)	n/a	2.0	<1.0
Lime (qualitative)	n/a	moderate	slight

Blending soils with compost is a preferred method to address nutrient availability and increase organic matter which increases moisture retention. There have been several test plots of unirrigated grass establishment along highway embankments. Results indicated that those embankments with soils mixed with compost establish ground cover faster and perform better than those without.

BENEFITS OF DRILL VERSUS HYDROSEEDING

Drill seeding is recommended for where it can be done because seeds are placed 0.5 to 0.75 inches into the soil where is has consistent water supply to germinate in a timely manner. Establishment success is substantially higher with drill seeding.

If hydroseeding methodologies must be employed, this should be done in a two-step process. The first step is the application is to apply the full seed rate and fertilizer with about 10 percent of the mulch. Then come back over the top with the remaining 90 percent of the mulch, so that all seeds are under the mulch. The seeding rate should be increased 33 to50 percent more because of a higher seed death loss. Note that hydroseeding usually takes a year longer to become established. Thermoguard's paper mulch has out-performed wood mulch test in agronomist trials in Montana and Wyoming.

Timing is most important with ground cover establishment, with most requiring that the seed is placed before the last frost in the spring and after the consistent frost cycle in the fall. Seeding outside of those time windows should only be done on a case by case basis.

Figure 32: This dry land non-irrigated seed mix was drill seeded just two months earlier at a rest area in north-central Montana. Proper soil management, time of planting and luck with rainfall contributed to the success of the establishment of grass ground cover.

WOODY PLANT STOCK

Plant stock selected for transportation corridors must fit into a variety of disturbed environments in order to survive. Over excavation of holes for planting contributes to the success rate. Plant selection should consider the proximity to the travel lane for clear zone implications, salt and magnesium chloride applications and line of sight requirements. Due to the fact that trees with calipers over 4 inches in size are considered to be hazards, consider planting multi-stemmed trees with smaller trunk sizes. If selected for their size and shape, trees and shrubs should be maintenance free. If placed outside of a planting bed, the plant stock should have a 3-foot minimum diameter mulch ring that allows for mowers to quickly navigate around the plant material without the need for hand trimming.

Consideration should be given for snow drifting, incorporation with drainage patterns and the palette for wildlife attraction. Consideration should be given for four season interest. In general, the industry recommends a 10-20-30 rule for plant selection: no more than 10 percent of plants of the same species, no more than 20 percent of the plants of the same genius and no more of than 30 percent of the plants of the same family. Due to the fact that plant varieties change over time, including the ebb and flow of disease, consult with a landscape architect or horticulturist on the proper plant selection.

HERBACEOUS PLANT STOCK

Herbaceous plant stock includes ornamental grasses, perennials and annuals. In general, annuals should never be used along interstate and arterial road corridors due to their high water and intense maintenance requirements. Perennials should only be used in areas that have adequate space for maintenance personnel as perennials usually require spring and fall plant attention. There are many perennials that have low water requirements, but in most cases, they will require a drip system for establishment.

Ornamental grasses are becoming increasingly popular due to their low cost, maintenance and water requirements. In as little as one growing season, an ornamental grass can achieve its full visual effect. While ornamental grasses can take on substantial neglect, they grow the best when cut back in the spring of each year.

Wildflowers can be added to seed mixes to create a dynamic effect. Wildflower seed can add substantial cost to a project. Wildflowers do not fare well against herbicides commonly applied to grass areas. In this region, wildflowers tend to diminish in quantity and quality only after two years of establishment.

SYNTHETIC GRASS

Technological advances in the artificial turf manufacturing is resulting in more realistic visual results. Synthetic grass is available in a variety of leaf blade and thatch color variations and blade lengths. Synthetic grass applications allow for the infiltration of storm water and minimize wildlife attractants. In 2006, the Federal Aviation Administration conducted several pilot studies on the use of synthetic grass at airport runways. The installations were evaluated for jet blast resistance, environmental and contaminant resistance, safety vehicle load support, skid and fire resistance and access for lighting and utility maintenance. The results of the study indicated no reported disadvantages other than higher installation cost.

CalTrans installed 51,000 square feet of synthetic turf in boulevards and medians in Wasco, California in 2014. While the up front installation costs are higher than traditional sod with irrigation, the on-going maintenance costs related to irrigation water, mowing, fertilizer and weed control saves labor and equipment costs. The cost per square foot is approximately $8.50 installed. Many synthetic lawn manufacturers are guaranteeing their products for 10 to 15 years.

Maintenance

GENERAL MAINTENANCE

On federal-aid roads, the Wyoming Department of Transportation is expected to provide minimum levels of maintenance on all elements considered enhancements. In general, this includes mowing, litter pick up and noxious weed management. Mowing only includes roadside right-of-way for the first 20 feet from the edge of shoulder. Other general maintenance required by WYDOT is solely for purposes of maintaining highway safety.

Maintenance policies and practices that encourage regular maintenance, particularly weed control and litter removal are important to enhancing and preserving the character of the corridor. As examples:

- There may be opportunities to provide higher than customary level of maintenance if the MPO member decides to provide support. Support could include financial assistance or an agreement to share maintenance responsibilities.
- The employment of people incarcerated in the state prison to address litter collection could improve appearance of corridor and reduce costs.
- An “Adopt a Highway” program should also be explored and promoted to service clubs churches and civic groups.

COOPERATIVE AGREEMENTS

For improvements above and beyond the general maintenance requirements, WYDOT’s operating policy 18-14 indicates that prior to design, the participating community or government entity must agree to provide maintenance for any beautification in exchange for not having to furnish matching funds. The MOU’s will designate responsibility for utility costs and maintenance, especially for lighting and irrigation systems. WYDOT’s district engineer may determine whether or not to retain all or portion of required maintenance.

The City of Casper has at least two of these MOU’s for the I-25 corridor. The first is to remove litter, trash and debris and perform vegetation control from the Curtis Street Interchange to the Shoshoni Interchange. This MOU is renewed on an annual basis. In this instance, WYDOT reimburses the City for work performed up to $20,000 per year. This dollar amount for this type of work is considered by WYDOT as to their expense if their own personnel performed the standard level of service.

The second agreement, dated in 2011, outlines the provisions of the I-25 and Curtis Street interchange. Because the enhancements at this interchange are above and beyond the standard design, WYDOT pays no additional funds to the City to maintain this service.

OTHER MPO MEMBER AGREEMENTS

Upon review, the other MPO members participating in this study: Natrona County, Bar Nunn or Evansville currently have no maintenance agreements established within the I-25 corridor with WYDOT. If needed, those communities could contract with the City of Casper, provide their own crews or contract with private companies to provide maintenance on any new enhancements within their jurisdictional area.

Figure 33: New pedestrian plaza at the corner of CY Avenue & Poplar Street, a City of Casper project incorporated into a WYDOT road project

Interchange Enhancements

Introduction

This section reveals a range of improvements and enhancements emphasizing overall highway aesthetics for the eleven focus areas and ranging from small to large in terms of scale. There are several types of interchange configurations/types that can involve connecting local streets with a single ramp to connecting multiple highways. The American Association of State Highway and Transportation Officials (AASHTO) lists the eight basic interchange configurations/types as seen in figure 34. Each configuration has its own merits in regards to overall safety considerations, traffic type and volume, traffic flow, driver familiarization, and maintenance – all of which are considered in interchange design.

In addition to the aforementioned, the physical environment greatly influences overall design. For example, topographical features often dictate whether an interchange is an overpass or underpass. AASHTO advises "a design that fits the existing topography [as it] is the most pleasing to construct and maintain" (Green Book, 2001). Other physical elements that dictate design include: space allotment, the number of legs being connected with the interchange, overall aesthetics, and non-motorized vehicles. AASHTO further advises (Green Book, 2001) that it is generally desirable to have some degree of uniformity along a highway to accommodate driver's expectancy, helping assure roadway safety.

Opportunities for Enhancements

The concepts shown in this section provide creative opportunities for enhancements that address aesthetics, form, and function. The visualizations are merely an expression of potential design ideas that can be applied to individual interchanges, not necessarily defined solutions for each area. The traffic engineering will most certainly dominate the results of the improvements, but working collaboratively with a landscape architect can coordinate design and construction efficiencies.

The Casper brand promise efforts indicated that citizens value a centralized theme, but did also emphasize the originality and creativity of its community, lending itself for unique branding opportunities per interchange. Regulatory requirements evolve over time and manufacturers routinely change their products to reflect market conditions. Plant materials are adapting to evolving climatic conditions and disease outbreaks. Therefore, the intent of the opportunities in this section suggest reflections of the Casper area brand promise.

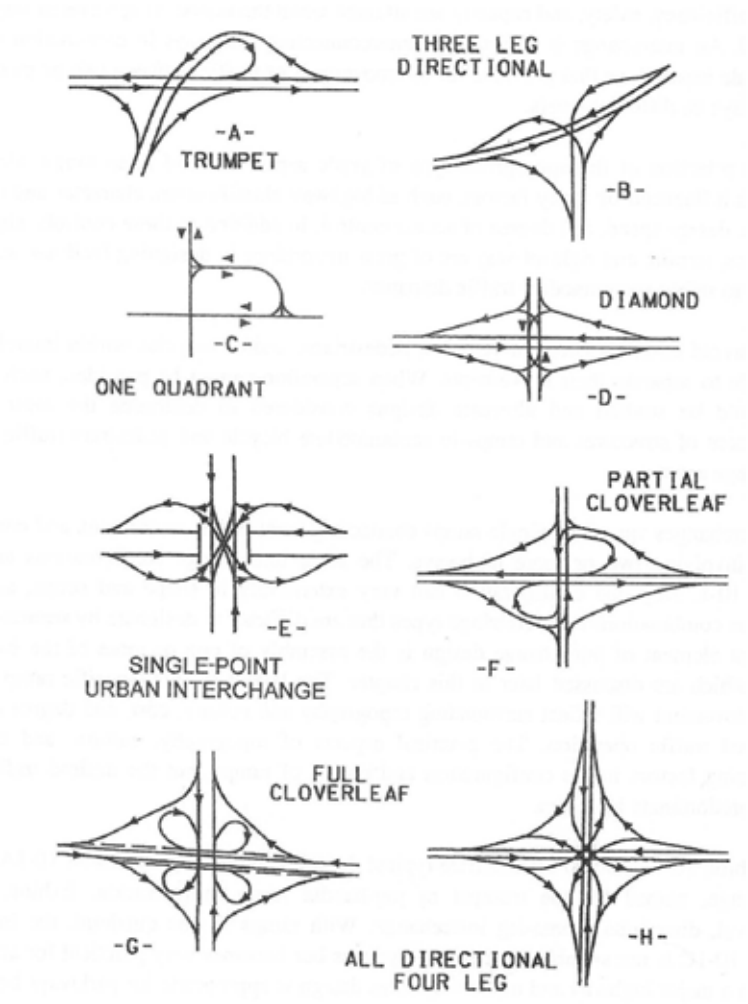

Figure 34: Typical interchange configurations

Figure 35: Westwinds Road in 2014

WESTWINDS ROAD UNDERPASS/FUTURE INTERCHANGE

Opportunities

- Projected population growth of Bar Nunn and the associated economic and development benefits
- North gateway into the Bar Nunn community and into the Casper area, see also Wardwell Road simulation for additional design elements.
- Little restriction for expansion to occur in terms of both development and infrastructure
- "Blank slate" – relatively little currently exists both inside and outside of the right-of-way. This provides for a unique opportunity to guide the implementation of any future infrastructure additions and developments.
- Non-motorized facilities should be planned for full development.

Constraints

- No interchange currently exists. Opportunities for growth and types of infrastructure may not be considered.
- The adjacent land is privately owned and the future development is unknown.
- Responsibility of maintenance and the logistics to complete maintenance tasks
- The existing interstate bridges have a relatively short span which limits the space beneath
- Weather (high winds, snow drifts, etc.)

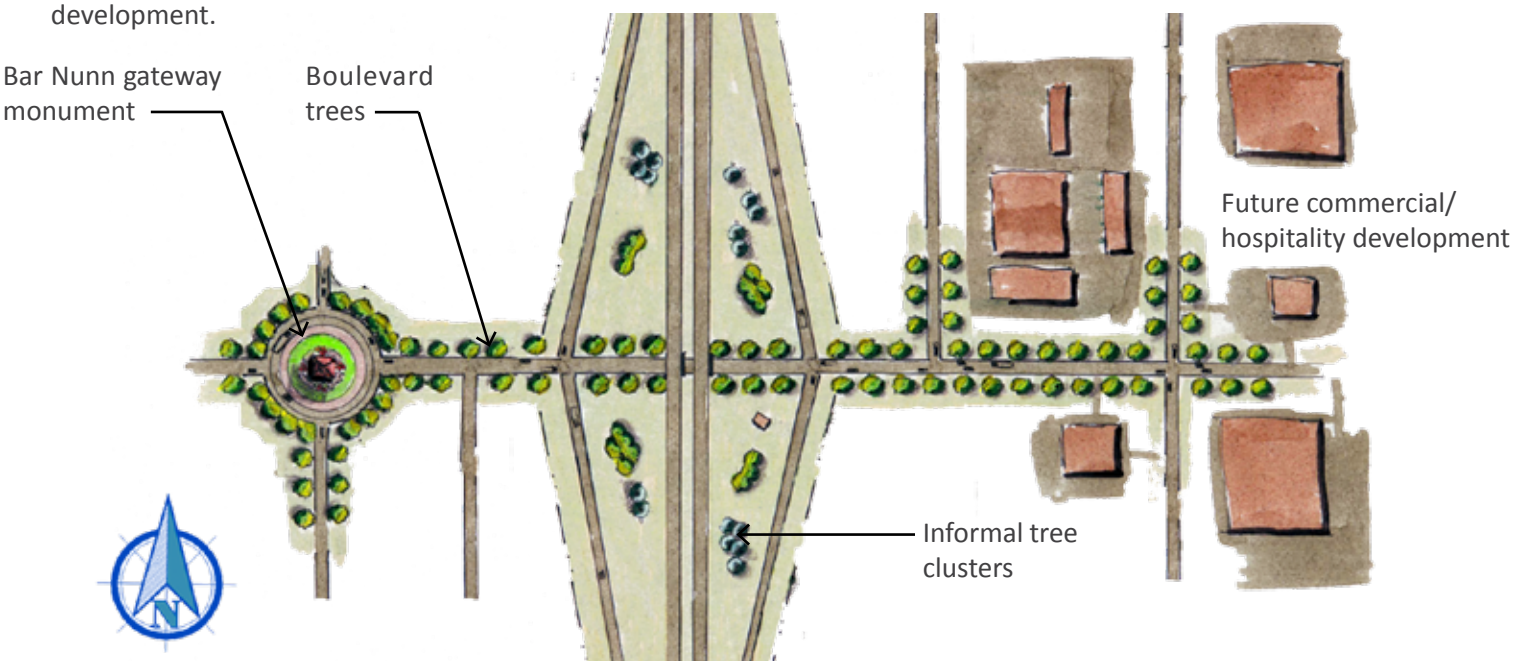

Figure 36: Westwinds Road Interchange Concept

Figure 37: Westwinds Road looking east

WARDWELL ROAD INTERCHANGE

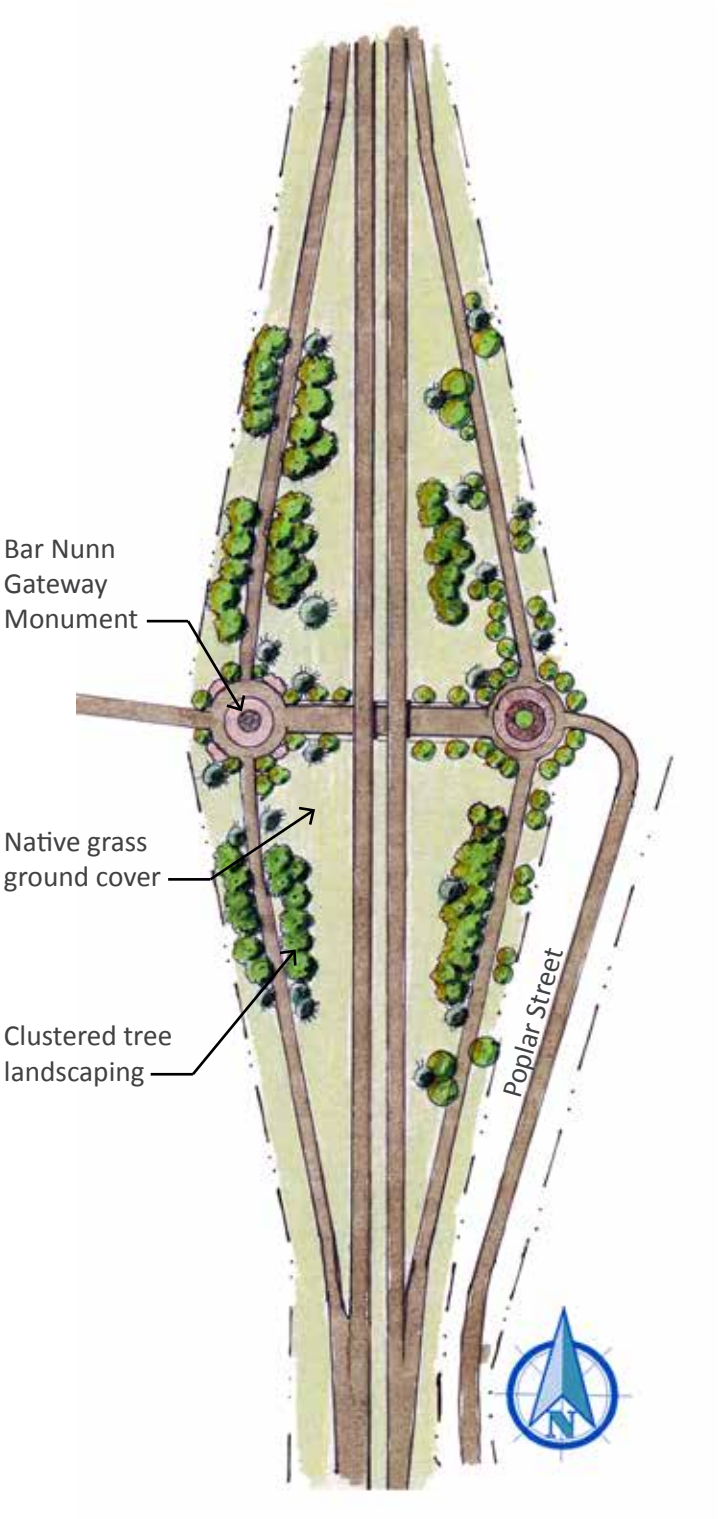

Figure 38: Wardwell Road Interchange Concept

Opportunities

- Future population growth and associated development is expected in this area
- South gateway to Bar Nunn
- Right-of-way area provides adequate space for potential infrastructure modifications
- Little development on the east side of the Interstate 25 allows for additional space for aesthetics and infrastructure modifications (without infringing on neighboring properties)
- Pedestrian and non-motorized vehicle access

Constraints

- Wardwell Road is not located within the interchange area of influence, causing way finding confusion
- Interchange is not located within a metropolitan boundary
- Space is relatively limited on the west side of the Interstate
- Maintenance responsibilities would currently rest with Natrona County
- Weather (high winds, snow drifts, etc.)

Figure 39: Wardwell Road Interchange in 2014

Figure 40: Wardwell Road Interchange looking west. This simulation could also apply to the Westwinds Interchange

SHOSHONI BYPASS INTERCHANGE

Opportunities

- Significant interchange with the convergence of two major highways
- North Casper gateway
- Significant land area to provide enhancements
- City of Casper covers maintenance in this area

Constraints

- Significant reconstruction underway prior to completion of the planning study
- High speed, complex interchange lends itself to minimizing driver distractions

Figure 41: Interstate 25 southbound ramp at Shoshoni Bypass interchange in 2014

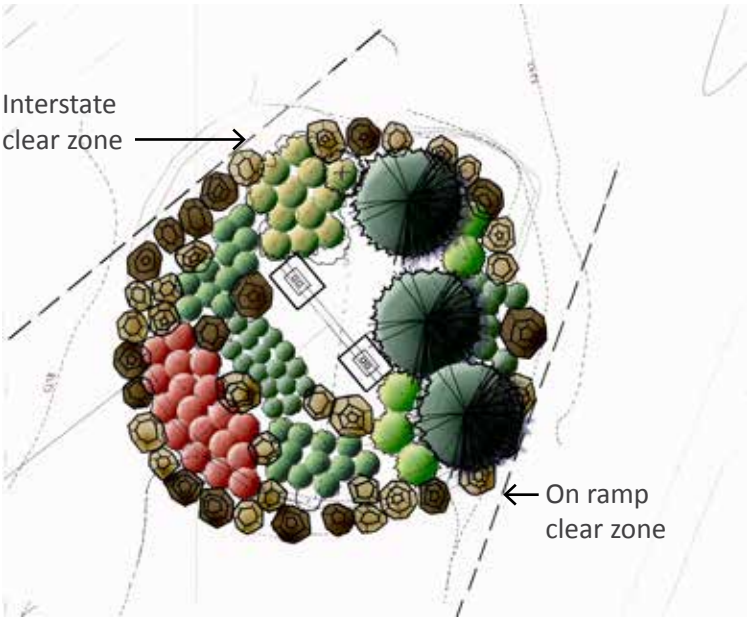

Figure 42: Plan view of proposed enhancement planting plan

Figure 43: Interstate 25 southbound ramp at Shoshoni Bypass interchange with Casper entry sign and pocket landscape plantings

POPLAR STREET INTERCHANGE

Opportunities

- Due to the number of hospitality and restaurants, increase opportunities for multi-modal capabilities
- Increase access and visibility of nearby areas of interest through connectivity, signage, and wayfinding
- Gateway interchange enhancements can be performed with significant structure ornamentation
- Connectivity to many cultural, natural and historic areas of interest
- Preserve existing view corridors of Casper Mountain and the North Platte River

Constraints

- Right-of-way acquisition. The interchange is surrounded by existing development and frontage roads on both sides
- Low level of service capabilities of the multiple roads does not lend to many enhancement opportunities unless changed
- Desirable views are interrupted by multiple high rise buildings
- Signage for items of interest at this interchange are minimized due to the limited right-of-way in both north and south bound exists

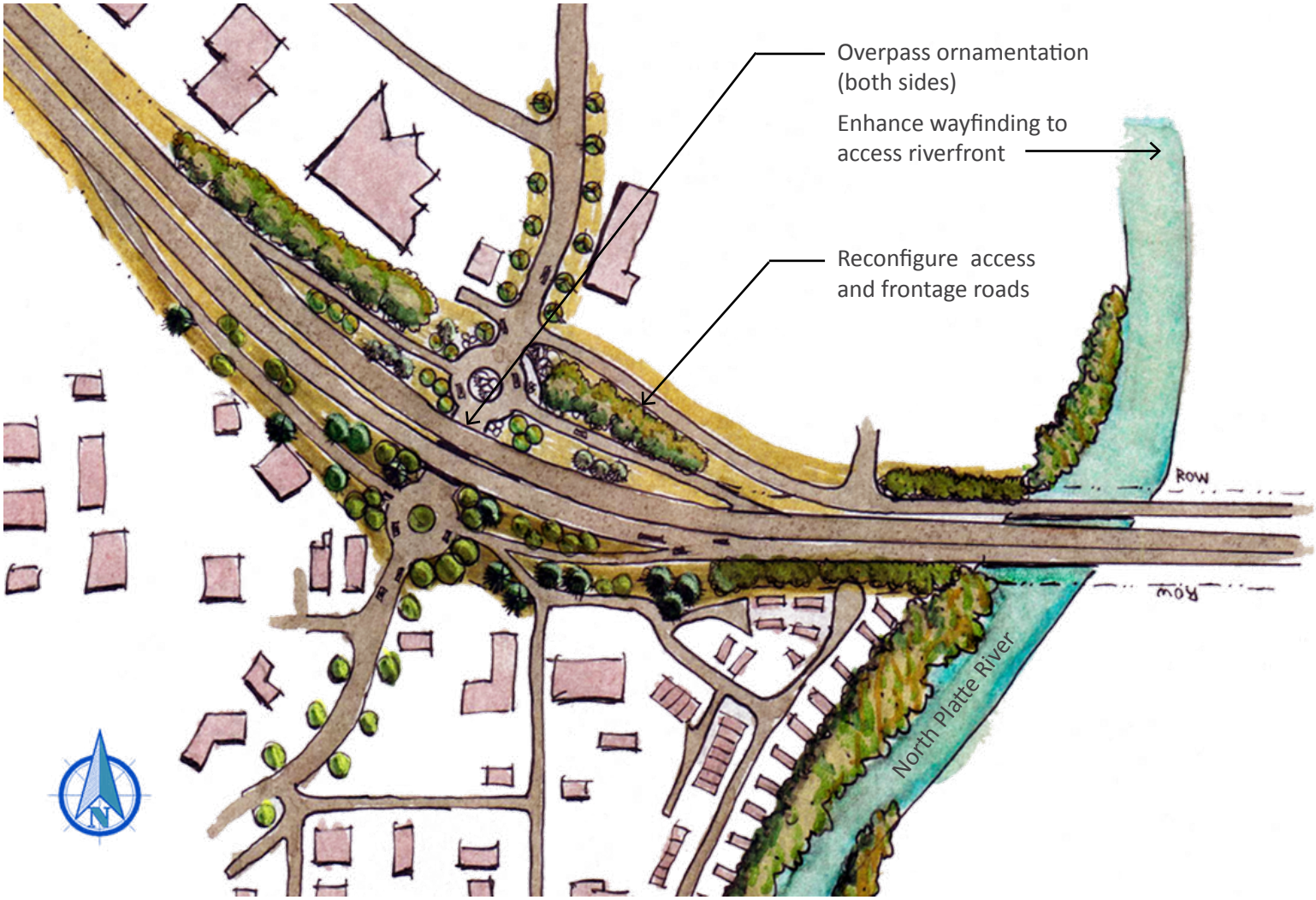

Figure 44: Poplar Street Interchange Concept

Figure 45: Poplar Street Underpass in 2014

Figure 46: Poplar Street looking southwest

CENTER STREET UNDERPASS

Opportunities

- Connectivity to Downtown Business and Civic District
- Center Street underpass (under the railroad) is enhanced and can continue that theme
- Pedestrian facilities are already in-place
- Two convenience store businesses may be an opportunity to direct travelers to explore town
- Existing bridge enhancements are already in-place with the abutments and steel girder.
- Smooth concrete abutment under bridge is a prime opportunity for public art display
- A park/green space exists immediately next to the off ramp

Constraints

- Limited right-of-way does not allow for land-based enhancement solutions
- On/off ramp configurations are short and non-traditional
- Limited clearance on Interstate bridge (14 feet)
- While sidewalks exist, the complex road geometry does not lend itself to pedestrian-scale improvements

Figure 47: Center Street Underpass looking North in 2014

Figure 48: Center Street Underpass with LED lighting enhancements to as a design feature and mural art on the abutments

MCKINLEY STREET UNDERPASS

Opportunities

- Pedestrian facilities are already in-place
- Limited existing development provides opportunity for infill with landscape requirements
- Smooth concrete abutment under bridge is a prime opportunity for public art display
- Linkage to the residential neighborhood to the north can theme this interchange for neighborhood identity

Constraints

- Limited right-of-way does not allow for land-based enhancement solutions
- Aging infrastructure gives the appearance of neglect
- No direct on/off ramps from I-25
- Low clearance interstate bridge (14'-9")

Figure 49: McKinley Street Underpass looking north in 2014

Figure 50: McKinley Street underpass with a theme reflecting neighborhood identity (music is shown as an example)

BRYAN STOCK TRAIL OVERPASS

Opportunities

- Close proximity to the Casper Rail Trail
- Large tracts of industrial land surround the area, possibly allowing for possible landmark and enhancement opportunities in collaboration with private land owners
- Possible private land owner incentives may work in this area
- Aesthetic enhancements to infrastructure (overpasses, abutments, etc.)

Constraints

- This interchange serves more local industrial traffic than tourist traffic, with the exception of the Sports Complex
- The interstate road geometry is very constricted in this area. If additional lane capacity is needed, the road widening enhancement could benefit from vertical sound walls as shown in figure 8.
- The splitter median in the ramp area holds a lot of sand/gravel and the grass does not fare well here. Replace live grass with pilot program with synthetic turf.

Figure 51: Median in 2014

Figure 52: Median enhancement with synthetic turf

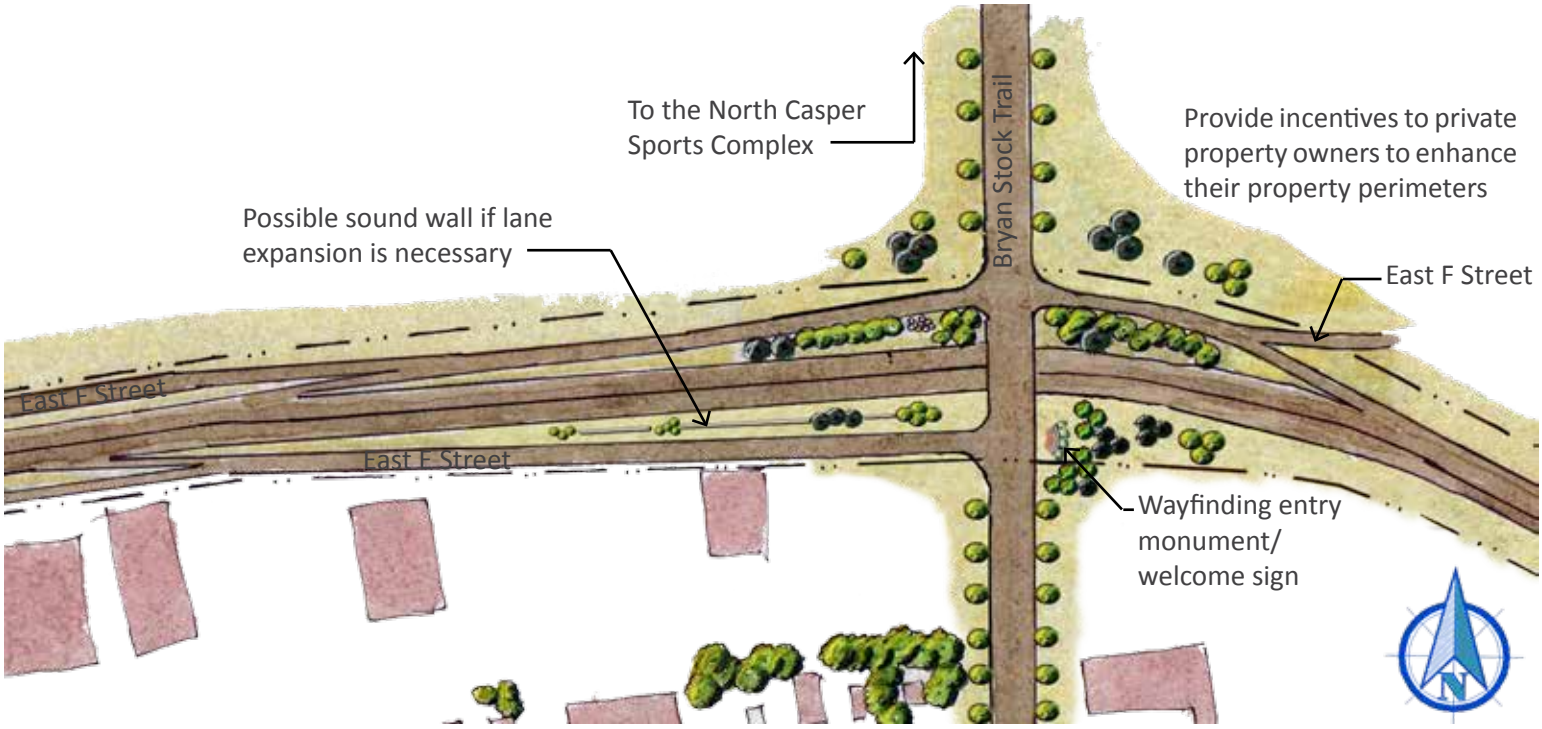

Figure 53: Bryan Stock Trail Interchange Concept

Bryant Stock Trail Overpass, Continued.

Figure 54: Bryan Stock Overpass looking east with rail, plinth, street tree and lighting enhancements

Figure 55: Bryan Stock Trail Overpass in 2014

Figure 56: View to the east looking at Highway 26 (East Yellowstone) in 2014

HIGHWAY 26 (EAST YELLOWSTONE HIGHWAY) OVERPASS

Opportunities

- Close proximity to the Casper Rail Trail and East Dale Park
- Placement of boulevard trees on the south side of Hereford Lane may add visual interest to the landscape
- Long skew of the Highway 26 bridge commands a large visual impact and structural enhancements can contribute to an improved aesthetic
- If additional lane capacity is required, the narrow slopes may be an opportunity for decorative vertical walls as in figure 8.

Constraints

- Skewed bridge alignment over the interstate
- Depressed interstate travel lanes creates a snow tunnel effect
- US Highway 26 lacks any pedestrian facilities
- Adjacent land uses are storage yards and former rail corridors, improvements to these private lands would not have a visual impact on the interstate corridor viewshed due to its depressed road.

Figure 57: View to the east looking at Highway 26 (E. Yellowstone) with bridge enhancements

WYOMING BOULEVARD (CURTIS STREET) INTERCHANGE

Opportunities

- Access and proximity to shopping, lodging, restaurants and fuel increase the suitability as a south gateway to Casper and a main gateway to Evansville
- Close proximity to Casper Rail Trail
- Way finding and signage for nearby interest areas
- Aesthetic improvements to landscape and infrastructure (in addition to existing)
- Elevated interstate allows for extended foreground view sheds and ability to see multiple destinations by a traveler
- Both Casper Mountain and the North Platte River valley are visible from this interchange
- Existing pier and bridge abutment treatments are present on the interstate bridge
- Existing landscaping and retaining walls will provide an enhanced entry to the community
- High probability of pedestrian, bicycle and transit opportunities exist in this area
- Traditional interchange design helps with navigation

Constraints

- Lighting of the interchange is only provided by WYDOT standard light poles
- Large land area between the interstate travel lanes and ramps is a lot of area to enhance. Consider enhancement clusters that have the most visual impact versus covering the large land area.
- Large retail centers have the building's "back" to the interstate and are already established
- Balance business interstate visibility with enhancements
- Lack of identity for Evansville
- The road has two names (Curtis Street and Wyoming Boulevard) which makes it difficult for way finding.
- Identification of maintenance responsibilities between Casper and Evansville, depending on the placement of enhancements

Figure 58: Wyoming Boulevard/Curtis Street Interchange enhancements in 2014

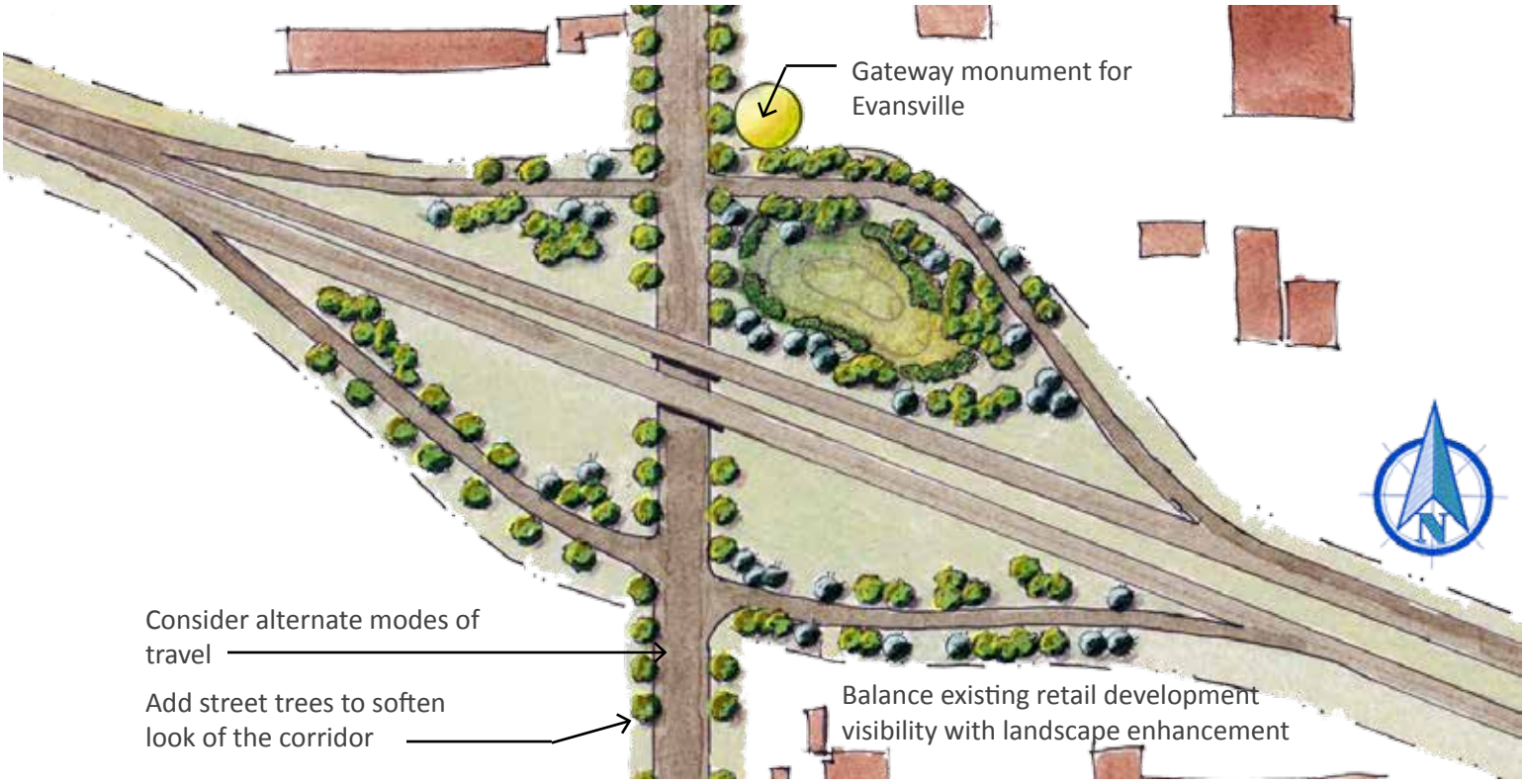

Figure 59: Wyoming Boulevard (Curtis Street) Interchange Concept

Figure 60: Wyoming Boulevard looking north

BLACKMORE ROAD UNDERPASS

Opportunities

- Large undeveloped land area surrounds the rights-of-way for both the interstate and road, which could allow for development regulations that support enhancement
- Due to its rural road profile, a nostalgic theme could be applied to the structure.
- Improvements to fencing and bridge abutments may be all that is necessary to enhance this underpass.

Constraints

- Lack of zoning regulation may affect future development unless change is implemented
- Limited ADT would move the priority to less than the other study areas
- Lack of access to water for irrigation would limit the use of vegetation
- Less demand for non-motorized or multi-modal transportation in this area (unless development occurs)

Figure 61: Blackmore Road in 2014 looking north

Figure 62: Blackmore Road looking north

HAT SIX ROAD INTERCHANGE

Opportunities

- New development to the southwest is an opportunity to reinforce the Casper city edge and create a south gateway to Casper
- Available land area between interstate travel lanes and ramps would allow for gateway monuments
- The use of decorative lighting on Hat 6 Road would signal an entrance into the urban area
- Direct connection to Casper Mountain and other recreational opportunities
- Way finding and signage placement opportunities are available in this area
- The North Platte River is visible on the north bound I-25 lane prior to the interchange
- Casper Mountain is very visible on the south bound I-25
- An art piece exists off of the ramp, but its placement needs to be part of context otherwise it could be missed

Constraints

- The metro area is not visible from the north bound off ramp (exit 182), making it difficult to establish a sense of arrival to an urbanized area at this location
- The slight skew of the bridge structure lends itself to a dominant visual impact on the landscape
- The current rural nature of the interchange does not lend itself to increased landscape treatment

Figure 63: I-25 North looking northwest at Hat Six Road overpass in 2014

Figure 64: I-25 North looking northwest at Hat Six Road overpass

Policy as a Corridor Management Tool

INTRODUCTION

The purpose of this section of the document is to consider policies that shape the physical character of the corridor. The character of the corridor influences travelers' perception of the community. This has an economic impact as the character and attractiveness of a place determines where people and businesses invest and travelers stop and spend money for overnight accommodations, dining, entertainment and other services. Potential policy options are discussed in the chapter. Implementation will require more detailed analysis, planning and community process once the community has provided input on policy priorities and preferences.

Community Values and Preferences

The comprehensive plan includes key policy framework, vision statements and themes. Many of these provide justification for regulation and zoning actions to improve the character of the corridor and interchanges.

- The Comprehensive Plan Key Policy Framework addresses compatibility of development, natural environment and character through thoughtful design of community gateways.
- The Comprehensive Plan's Vision Statements address importance or views of Casper Mountain and the importance of attractive gateways.
- Themes speak to evoking a sense of place and preservation and enhancement of heritage resources.

Community preferences related to the character of the corridor appear to be focused on the following:

- Preservation of views of significant natural features; mountains and rivers;
- Screening of unattractive uses or development including parking, storage, service areas;
- Increasing the quality of development along the corridor including intersections with more landscaping and higher quality buildings; and
- Focusing on design of highway structures and appurtenances to create distinct and context sensitive design vocabulary.

The first three items can be addressed through land use policy and development regulations. The last item is addressed in other sections of this report. A table at the end of this chapter provides a summary of actions and tools as they relate to community priorities.

The Visual Experience

A traveler's perception of place is largely influenced by the visual quality of the corridor which is revealed through the view sequences encountered as one travels the length of the corridor. Views from the corridor consist of foreground, middle-ground and background views. These views are comprised of built environments and natural features, including building, infrastructure plantings and appurtenances (signage, lighting, railings, fencing etc.). The landscape character of the corridor is constantly evolving. Over time, policies influence the form and character.

Land use policy (addressing both conservation and development) will continue to shape the character of the corridor and influence the travelers experience and perception of this "place." The travelers' experience is primarily visual, comprised of a sequence of views. Consistent with FHWA visual resource assessment methodology, views are characterized and discussed as foreground, middle ground and background. The use of policy to manage and shape these views is discussed below.

Viewshed Preservation

Distant or background views may be framed, filtered or blocked by built forms. The community has expressed that preserving views of mountains and rivers is a priority. Intentionally protecting the distant views, is best achieved through land use code that restricts development or the form of development. Relevant policy actions may include:

- Identifying key views and viewpoints and adopting policy and zoning regulations to preserve the views.
- Limiting the location, amount and form/height of buildings, signage and plantings on developed lands through a form code and/or a zoning overlay district. The overlay district will be easier to implement. Form base code may be most appropriate at interchanges and less appropriate along the corridor.
- Preservation of larger open spaces could be linked to farmland preservation policies and/or parkland or open space acquisition policies. There are national and regional examples of open space bonds being used to acquire land and/or purchase development rights and conservation easements. A striking example is the east entrance to the City of Boulder, Colorado. Land on the edge of the City that might have attracted big box retail intentionally remains agrarian in character.

Middle ground views are most complex and are the views that have greatest impact on the traveler's perception of the character of the community. Middle ground views are predominantly of private property whose character (use, form and quality) is directly affected by land use codes. Currently, the middle ground views include open/undeveloped land, agricultural lands, and a variety of developed sites with diverse architectural styles and material, uncoordinated signage, and differing amounts and styles of lighting and landscaping.

Changing the pattern and creating a more cohesive image will require community support for more regulation and changes to zoning. In some instances limiting development or development rights (height, intensity or use) may require landowners be financially compensated. The long term outcome of a more restrictive code and more stringent site development regulations will be a more cohesive and attractive character of the corridor and community. The more restrictive regulations will add cost may be a disincentive to some investors or developers.

REVIEW OF EXISTING REGULATIONS

Zoning and Site Development Regulations

The interstate passes through a number of land uses and zoning districts administered by both the City and the County. Each zoning district intentionally has different development regulations and standards and permitted uses. In order to achieve uniformity of character defining elements, the zoning code in each district will need to be amended. A more pragmatic approach for most of the corridor would be to create an overlay district, where the underlying zoning is retained and additional or different requirements are applied only to the overlay district. The requirements could address landscaping buffering, standardized signage, lighting and furnishings and go as far as regulating building form, height, use and density.

A form code may be applicable at interchange / gateway districts. Form-Based Code (FBC) is a type of zoning intended to regulate land development to achieve a specific urban form. FBC regulates the physical form encourages a mix of land uses and addresses building forms and public realm standards. In contrast, more conventional zoning often focuses on segregation of land uses, describes permitted height and densities. Form codes are based on clear community intentions regarding the character of development.

A form-based code is a regulation, not a mere guideline, adopted into city, town, or county zoning code. They are most commonly used in urban and pedestrian-focused districts where the intent is to deliver predictable built results and a high-quality public and pedestrian realm. Form-based Code addresses the relationship between building facades and the public realm, the form and mass of buildings in relation to one another, and the scale and types of streets and blocks. Conventional zoning regulates development intensity using minimum and maximums area, height, lot coverage, setbacks, parking ratios as well as floor to area ratios and dwelling units per acre. Form based codes may include architectural, landscaping, and environmental resource standards.

Applicability

The corridor passes through multiple City and County Zoning districts with a diversity of land uses. To develop form codes for the length of the corridor would be a huge undertaking requiring extensive rewriting and restructuring of City and County Code. Form based code may be most applicable to interchanges where new or redevelopment is anticipated and the creation of mixed use districts are desired. However, a review of City's brand and community priorities does not suggest the community has a desire to restrict the form and types of development; rather the focus seems to be on celebrating diversity. If the community is interested in regulating development at intersections using a form code or potentially a mixed use zoning district, a master planning process should be embarked upon to gain clarity on community and land owner preferences. Once there is an agreed upon plan, implementation strategies may include special assessments, or perhaps (depending on state statutes) a tax increment finance district.

Buffering

Buffering and screening requirements only pertains to residential land use abutting another use. Buffering could be expanded to include lands abutting the interstate and state highway corridors that are gateways to the community. The current code allows buffers and be planted or architectural. Encouraging some uniformity along the corridor may be desirable. Given the community's preference for diversity in building forms, landscape uniformity may be more feasible to achieve.

Signage

The zoning ordinance accommodates different forms in various districts. An overlay corridor overlay zoning district could define more consistency. Change will be realized over time as properties redevelop and are brought into compliance with current code. New development will be subject to current regulations.

Landscaping

The zoning ordinance outlines different requirements in various districts. A corridor overlay zoning district could require more consistency. As with signage, change will be realized over time as properties redevelop and are brought into compliance with current code. New development will be subject to current regulations.

The City has a fee in lieu program whereby small lots are allowed to pay a fee in lieu of landscaping. These funds are allocated to public parks and street rights of ways. The policy could be amended to prioritize use of these funds at interchange gateways.

Potential Enhancement Strategies and Policies

1. Preservation of views:
   - Policies and supporting regulation to address open space and agricultural land preservation.
     Tools: Zoning, growth boundaries, or purchase of development rights
   - Adopt more restrictive zoning to reduce building heights in key view corridors.
     Tools: Amendments to conventional zoning implemented through an overlay district in the corridor and potentially a form based code near interchanges
   - Signage Restrictions
     Tools: Amendments to signage code to limit amount or heights of signage in critical view corridors

2. Screening of undesirable uses:
   - Amend development regulations to require more buffering and landscaping.
     Tools: Landscape and buffering ordinance
   - Landscaping in ROW to be installed and maintained by private property owners.
     Tools: Cooperative agreement between WYDOT, municipality and property owner; Technical assistance from the municipality to achieve coordinated improvements. Urban forestry plans and programs focused on corridor (Arbor Day, tree city programs, etc.).

3. Increasing the quality of development along the corridor.
   - More restrictive site development regulations along the corridor and at interchanges.
     Tools: Overlay District with additional landscape requirements for landscape and buffering ordinances throughout the corridor.
   - Municipality-initiated master plans for lands near interchanges. Focus on those that will develop as new interchanges are added or those where redevelopment is desired.
     Tools: Master plans and implementation strategies that may be regulated through mixed use zoning districts and/or form based codes
   - Design guidance
     Tools: Design guidelines for corridors, rural interchanges and urban interchanges; Establish a design review board to review and advise on new development
   - Incentives
     Tools: Municipality-sponsored programs including small matching grants, technical assistance or low interest financing to stimulate reinvestment or new investments
   - Property owner investment
     Tools: Create a local assessment district(s) and invest the funds in improving the public realm (sidewalks, way finding, landscape) near intersections. While improvement assessment districts are more common in downtowns and new neighborhoods, this tool could be used for gateway districts.
     An improvement district is less applicable to the length of the corridor; however, a maintenance district may be applicable. Potentially these landowners may support an improvement district for noise or visual buffering.
   - Municipality Investment
     Tools: Allocate fee in lieu funds to interstate corridor and interchange landscape enhancements; Municipality- sponsored master planning process for new and existing interchanges.

- Increase levels of maintenance
  Tools: Joint maintenance agreement between municipalities and State to achieve higher levels of maintenance; Adopt a highway program; employment of people incarcerated in the prison system; Local assessment district with funds applied to corridor maintenance (requires property owner approval).

- Update signage along the corridor
  Tools: Review local sign code revisions to restrict inappropriate signage and support advertising of the community brand; Partnership with WYDOT to identify and update the current natural and cultural heritage sites within the area of influence.

  Local billboard regulations - design standards to improve character and consistency; determining appropriate size, number, materials, illumination, and placement.

- Coordinate messaging and brand promise
  Tools: Further definition of "brand" and how it can be expressed in physical design of the built environment. The propensity toward inclusive, diversity urbanity and nature does not readily reveal what restrictions should placed on the built environment. It does suggest the introduction of more landscaping to highlight the urban / nature interface.

  Contact the other MPO members to determine if they are willing to adopt the "brand" as their own.

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