City of Rawlins
Non-Motorized Rail Yard
Grade-Separated Crossing
Study Report

Produced by
AVI Professional Corporation
In association with
CTL Thompson

engineering planning surveying a.v.i. p.c.

CTL | THOMPSON INCORPORATED

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Introduction

The City of Rawlins Non-Motorized Rail Yard Crossing Option Study was developed as a planning tool for the City of Rawlins to use in reviewing the existing non-motorized crossing infrastructure, to evaluate possible improvements or modifications to existing infrastructure and to establish the need and demand for future non-motorized grade crossings of the railway and highway systems bisecting the City.

This report is outlined according to the following five (5) tasks. These tasks will facilitate planning, direct or drive development and assist in acquisition of funding to implement study recommendations. These tasks are:

- Task 1: Assess current and future recommended rail yard grade-separated crossings
- Task 2: Assess feasibility of rehabilitation of existing structures
- Task 3: Assess feasibility of retrofitting 6th Street Bridge
- Task 4: Assess need and feasibility of pedestrian crossing options at U.S. 287 Bypass.
- Task 5: Recommendations and Financing Options

The narrator addressing these tasks also explores possible solutions and/or recommendations for all items of concern within the scope of the study. The recommendation will address possible next steps and funding sources. The last portion of the report takes the recommended improvements and packages them into possible construction projects. The projects are accompanied by best estimate cost opinions.

In an effort to garner public opinion on each of the tasks, the project team provided the following opportunities for citizens of Rawlins to participate:

- Open house at the Rawlins Depot on November 10, 2009
- Written survey comment sheet collected from November 11, 2009 through December 31, 2009
- Online electronic survey collected from January 18, 2010 to February 23, 2010
- Preliminary draft report to citizens at City council meeting on March 16, 2010

The public survey and survey responses can be found in Appendix A at the end of the report. Public comments and responses can be found in Appendix B.

Task 1: Assess current and future recommended rail yard grade-separated crossings

Task 1 identified the existing non-motorized rail crossings: the 6th Street Underpass and the Washington Street Underpass. The 6Th Street Bridge overpass was also addressed but is discussed in Section Task 3 of this report. Inspection of the existing crossing structures and identification of possible future crossings were also included under Task 1.

Inspections of existing structures were conducted by AVI and CTL Thompson in the fall of 2009. The inspections evaluated safety and security issues; handicap/ADA accessibility and compliance; structural integrity; maintenance problems and overall aesthetics. The purpose of the inspection was to determine what portions of the existing structures warrant improvements or renovations. The inspections will help the City prioritize rehabilitation activities. The recommendations for improvements, renovations and enhancements are outlined in Section Task 2.

Introduction

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6th Street Underpass

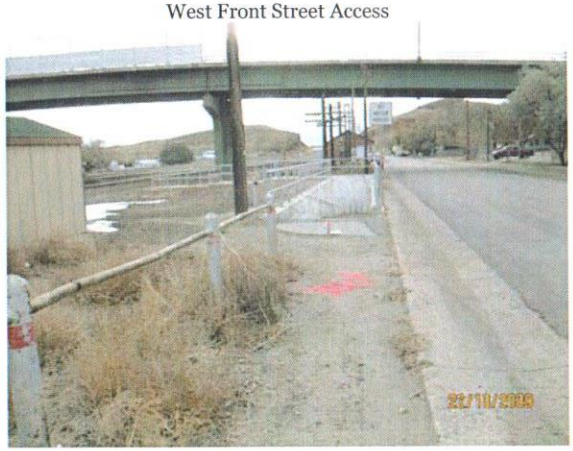
The 6th Street structure was built in 1951 to provide safe pedestrian access from the south side of Rawlins to the downtown commercial area. The tunnel structure measures 8' wide by 7' 8"' tall by 235' long and is flanked on either side by concrete wing walls and access ramps.

Assessment of the existing 6th Street Underpass by AVI and CTL Thompson was conducted in the fall of 2009. The assessment consisted of review of the WYDOT Bridge and Structure annual report, a topographic survey and a visual inspection of the structure. The team found the current underpass has good structural integrity but has inadequacies in the areas of safety, security, ADA accessibility, maintenance and aesthetics.

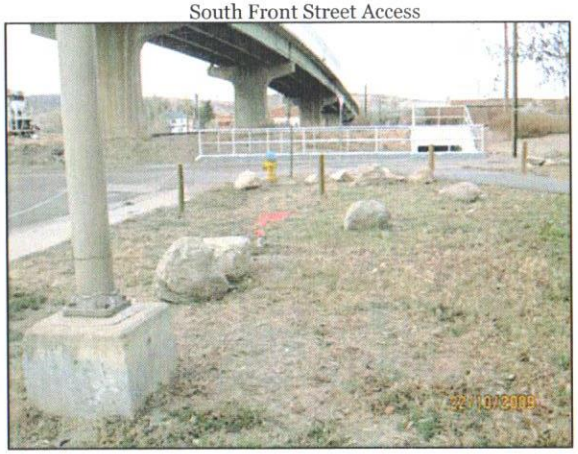
Access

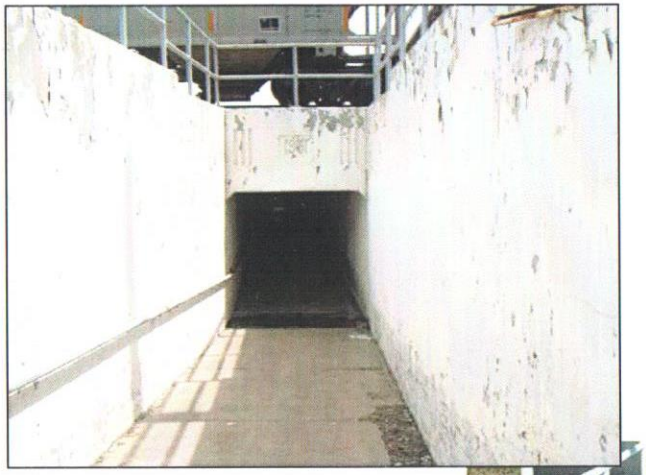
Accesses to the underpass are off Front Street on the south side of the rail yard and West Front Street Drive on the north. The West Front Street ramp access is not marked well and is dimly lit at night especially when accessing from east of tunnel. A light pole just west of the entrance does not adequately illuminate the ramp area. The picture below is a view from 6th Street vicinity facing west. The south side access is not marked well; it does appear to have better lighting in the evening hours. This is due to the additional lighting of the nearby rail yard. Both entrances are connected to the City of Rawlins pedestrian/bike path.

West Front Street Access



South Front Street Access

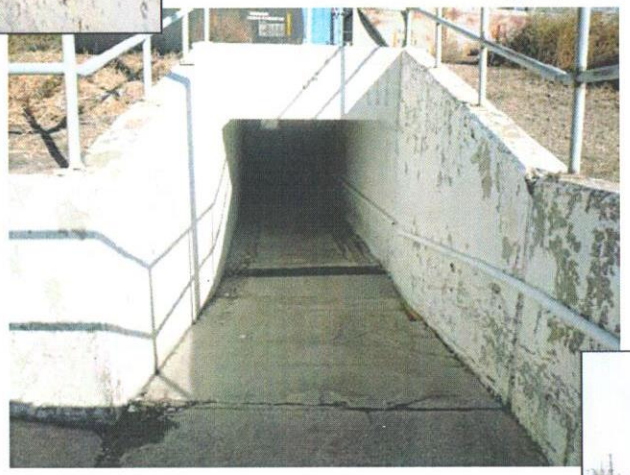




Public Safety

Safety and security in the ramps and tunnel are the most important aspects of the structures in terms of public opinion and use. During the study period, the community was asked to complete surveys (Appendix A) regarding the existing underpasses and possible future crossing of the 287 Bypass. The number one item expressed by over 80% of those surveyed was concern for safety in the structure. The visual inspection by AVI and CTL Thompson confirmed public concerns. Safety issues included:

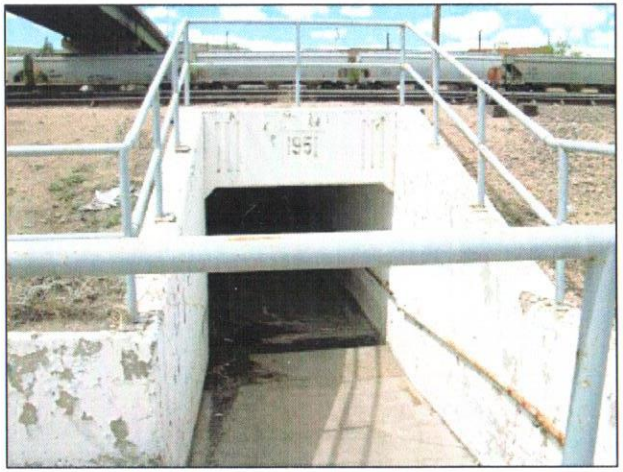
- interior / exterior lighting
- line of sight in the ramps
- lack of sight from roadways



Limitations of the 6th Street Underpass include: the lighting at the entrances into the tunnel, as seen in the top photo; line of sight restrictions due to the 90 degree bends in both access ramps as seen in the middle photos; and lack of sight into the structures from the street, as shown in the bottom photo.

Interior tunnel safety concerns also include the handrails attached to the access ramps and the tunnel. Hand rails can be seen in the top and middle photos. Handrails currently do not meet ADA requirements in Section 4.8.5 of 28 CFR Part 36 (Appendix C) as given below:

- railings are not securely fixed to the walls
- rail sections are missing
- gripping clearance between the rail and wall is inadequate
- hand rail is present on only one side of ramp and should be on both sides

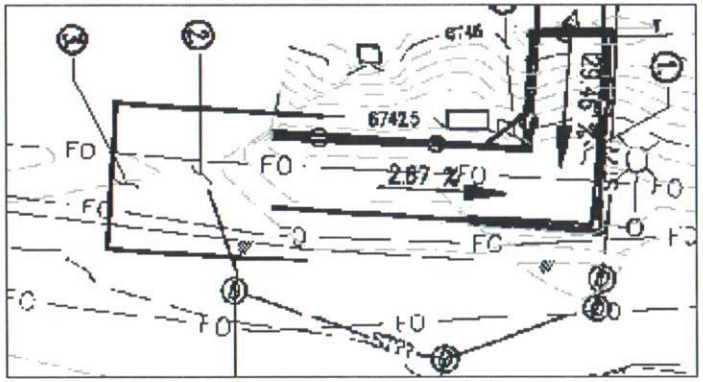


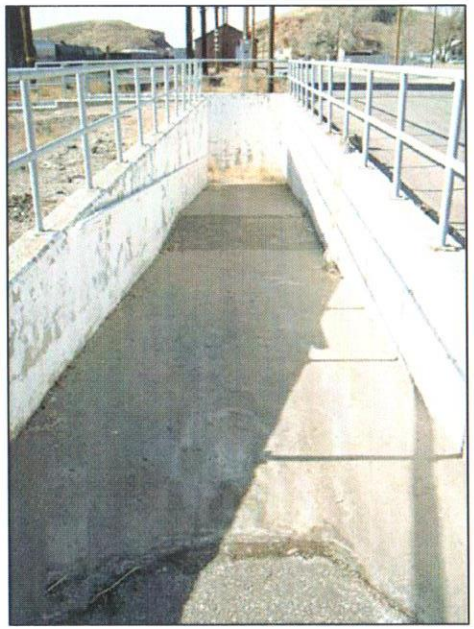
View of South Front Street Ramp with uneven concrete panels

ADA Compliance with 28 CFR Part 36 (Appendix C)

Portions of both access ramps for the 6th Street Underpass meet ADA slope requirements. Ramps are continuous entities and the whole structure must comply with slope requirements before it is in compliance with the Section 4.8 of 28 CFR part 36. Portions of the ramp exceeding 8.33% slope violate ADA specifications.

The South Front Street ramp starts at a -2.67 percent decline for 36' until the 90 degree corner and 5' landing area then declines at a -29.46 percent slope for 14' into the tunnel. Total ramp distance is 55 feet.

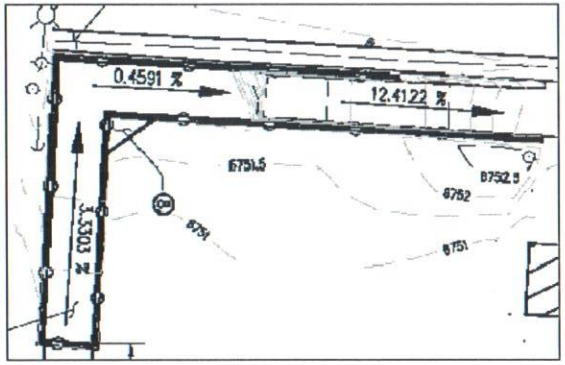




View of West Front Street Ramp with changing grade

The West Front Street ramp starts at a -12.41 percent decline for 38' then moves to 5' landing area where the grade changes to less than 1 percent slope for a distance of 30' until the 5' landing area at the 90 degree corner from there the ramp declines -3.33 percent over 39' into the tunnel body.

The ramps leading into the tunnel have varying grade changes with multiple tripping hazards. Tripping hazards are un-beveled vertical changes in the floor surface greater than 1/4". Concrete slabs have either sunken or protruded over time due to cracking or joint displacement. Per ADA 28 CFR Part 36, these tripping hazards violate ADA requirements.



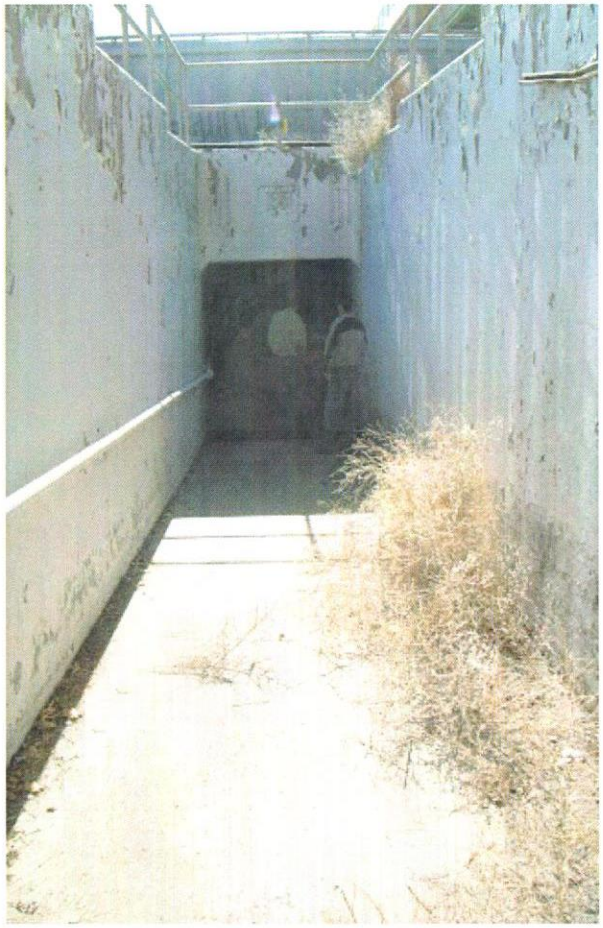
Topographic Survey of the West Front Street Ramp

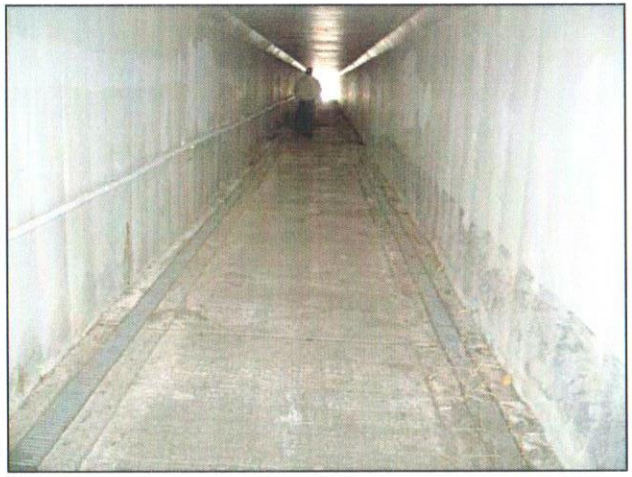
Maintenance and Aesthetics

The AVI Team inspections included maintenance and aesthetics in the assessment process, these two items are a major obstacle for the City to overcome. Lack of protection from the elements and maintenance of the structure directly affect the overall aesthetics. Elements include wind, rain, snow, and falling material from the rail yard.

The weather in Rawlins is harsh on exposed surfaces. Regular wind speeds exceeding 30 mph, which leads to sandblasting and scouring of exposed structures. The lower left photo shows the affects of the weather on the structure. Notice the paint is pealing and weathering of the underlying concrete. Since the tunnel and access ramps are unprotected from the elements, they often fill with tumbleweeds and other debris causing additional maintenance for the City. The quantity of debris trapped in the structure can also cause unsafe conditions in the tunnel

Ramp with pealing paint and exposed concrete





Tunnel Interior vandalism that has been painted over and slotted drains

The picture on the left shows how the City has dealt with both the vandalism and the drainage problems inside the tunnel. The City of Rawlins has repeatedly painted over the graffiti as shown in the picture.

Drainage has been a maintenance problem for the City for many years. As such, the slotted drains along the sides were installed to attempt to combat the reoccurring water problems. There have been multiple construction efforts made to remedy this issue such as installation of under-slab electrical heating lines and French drains. These efforts have not been successful in resolving the drainage and freezing problems.

Washington Street Underpass

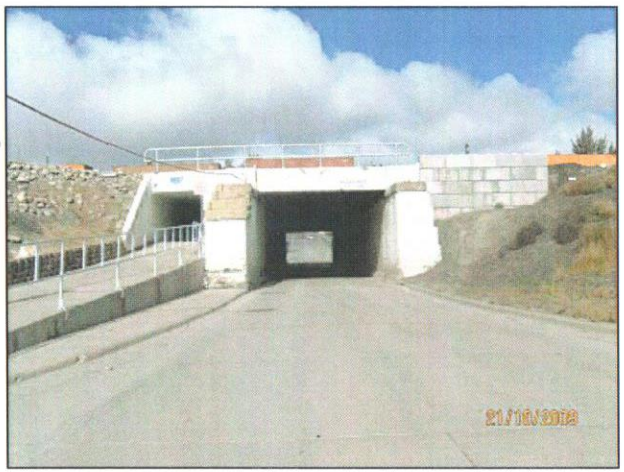
The Washington Street Underpass was erected in 1951. The non-motorized portion of the underpass measures 8' wide by 7' 6" -8' tall and is 167' long. Assessment of the existing Washington Street Underpass was conducted by AVI and CTL Thompson in the fall of 2009 to identify structural deficiencies and possible improvements. The team found the underpass had no critical findings regarding structural integrity, as reported in WYDOT Bridge and Underpass Inspection (Appendix D), safety, security, ADA accessibility, maintenance and aesthetics. The assessment consisted of review of WYDOT Bridge and Structure annual report, a topographic survey and a visual inspection of the structure.

Aerial photograph of the Bridge and Underpass

Access

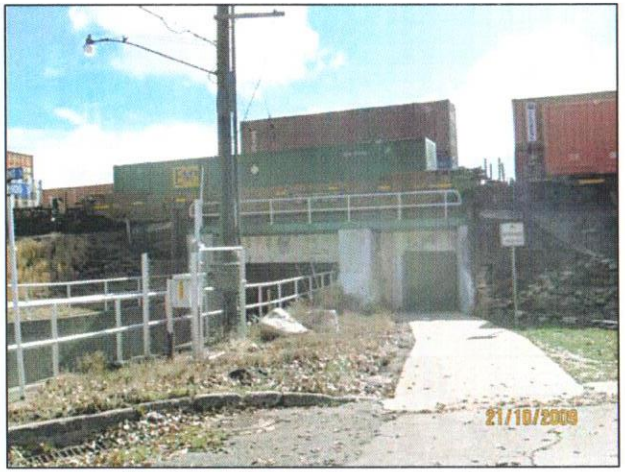
The entrances to the underpass are at the intersection of east Front Street on the north and just north of Rail Road Street on the South. The Washington Street Underpass differs from the 6th Street Underpass in the style of structure. The Washington Street crossing is considered a below grade rail yard crossing but is at a similar elevation as the roadway. The underpass is directly adjacent to the street as seen in the photo below. Alignment of the structure at a similar grade to adjoining roadway means the access ramps are open to drain and less likely to collect debris.

Washington Street Underpass

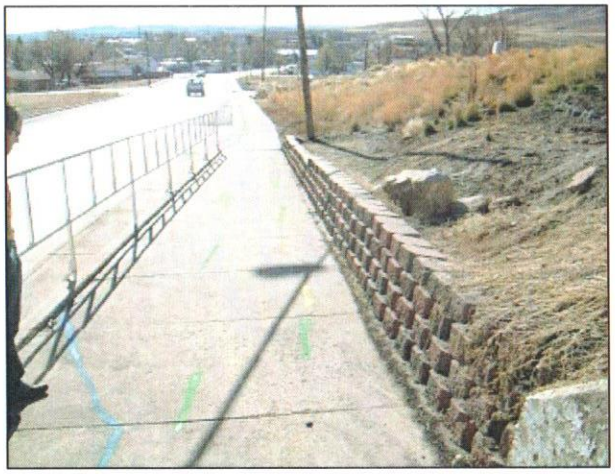


The underpass has been adopted by local residents who have worked on the surrounding landscape and performed minor maintenance on the structure. The south side entrance ramp has a brick retaining wall with plantings behind. In the spring of 2010, the City installed a French drain system behind the retaining wall to help keep drainage off the walkway.

These changes have increased the aesthetics of the entrance ramps. The Washington Street Underpass has some deficiencies terms of safety, ADA compliance, maintenance and aesthetics.



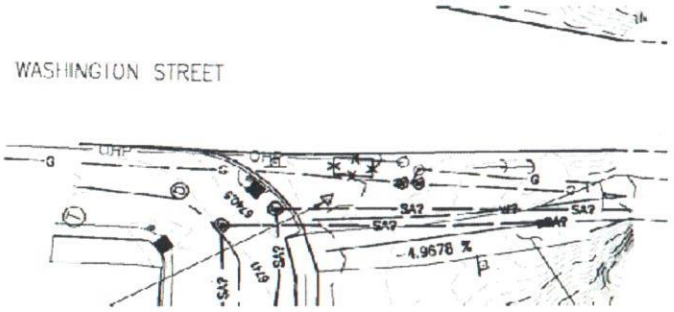
Washington Street Underpass north side



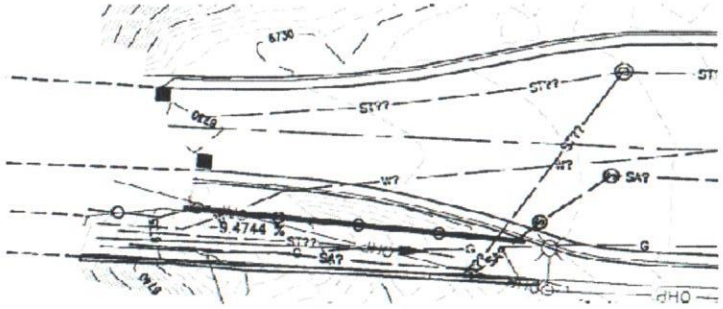
Washington Street Underpass south side

ADA Compliance with 28 CFR Part 36

The Washington Street Underpass does meet ADA slope requirements for the access ramps into the tunnel on the north side. The ramp is at an approximate 4.9 percent decline into the tunnel. The ramp into the tunnel is in good shape except for slight grade changes across the pavement.



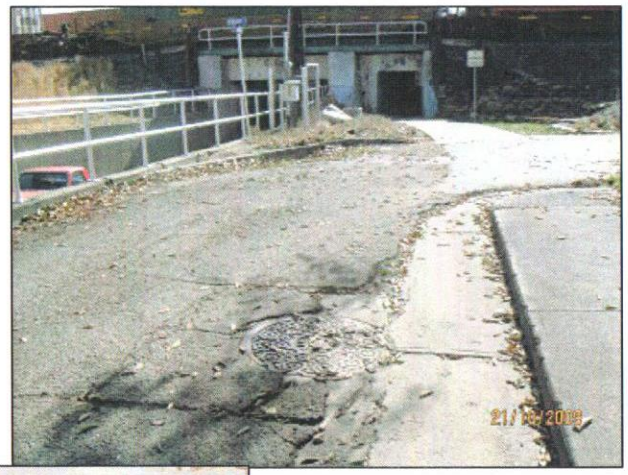
The Washington Street Underpass south side access ramp does not meet ADA grade requirements. The ramp is approximate 73' long and at a 9.4 percent increase into the tunnel. The ramp into the tunnel appears to be recently placed and is in good condition except for ADA non-compliance of the access ramp.



Public Safety

The Washington Street Underpass safety concern issues include:

- line of sight into the tunnel from the north is very limited
- interior finished concrete floor is not level
- access ramps have uneven concrete surfaces, which present tripping hazards as described in the previous section.
- hand rails need to be updated and brought into compliance with ADA requirements.

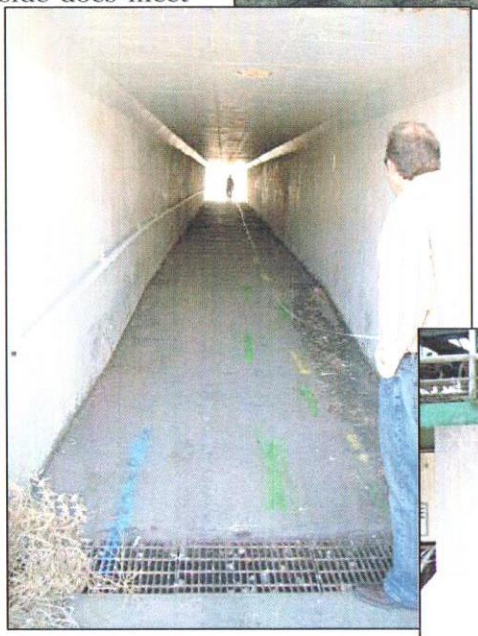


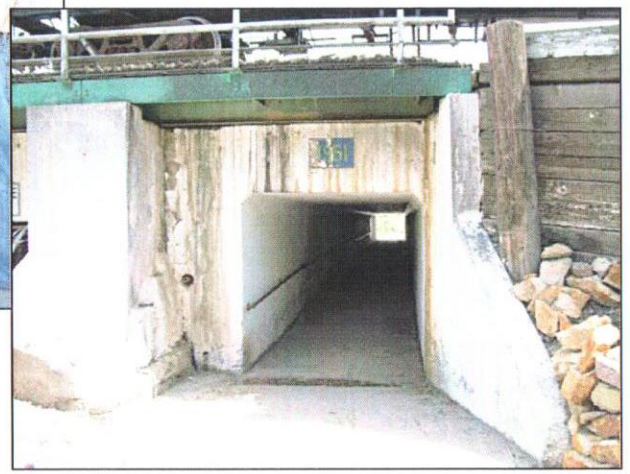
Hand rails for the Washington Street Underpass are missing from the north side access ramp into the tunnel. The rail inside the tunnel is loose in areas. A second hand rail on the south side is required due to the steep grade of the ramp. The existing hand rail on the south side does meet compliance of the Section 4.8.5 of the 28 CFR Part 36.

Exposure to rail yard drainage and harsh weather has degraded the aesthetics of the Washington Street Underpass.

The bottom photo shows the exposure to rail yard runoff onto the face of the north side tunnel entrance. The opening is stained from the runoff. The paint on the exterior of the entrance is peeling due to exposure to the weather.

Vandalism and graffiti has been observed at a few places within the structure.





Additional Grade Separated Crossing and Future Right-of-Way Acquisition

Recommendations for possible future rail yard separated-grade crossing locations and (railroad right-of-way procurement) are also addressed under Task 1. New crossing and associated property row acquisition could be necessary if the following conditions exist:

- poor structural integrity of existing structures required costly repairs
- heavy pedestrian crossing at grade resulted in unsafe crossing at a specific locations
- distance between crossing locations resulting in unsafe crossing of the rail
- other considerations to be determined

The two existing crossings allow pedestrian access to the downtown areas and are located at the end of the commercial corridor. At this time there is no expressed need for additional crossings because the existing tunnels provide adequate pedestrian/non-motorized access to the downtown. The public survey (Appendix A) also showed that less than 1% of those surveyed cross the tracks at locations other than the underpasses. Therefore, an additional crossing is not warranted.

No additional railroad right-of-way will be required to upgrade the existing grade separated crossings. Changes in right-of-way may be sought later to improve transitions to existing greenway or bike paths. Conveyance and flow into these paths are very important when building a connected non-motorized network.

Existing Non-motorized Transportation Network

The non-motorized transportation network in the City of Rawlins consists of approximately 20 miles of bike or walking paths throughout the City. The system is a complete loop but does not extend into the adjacent subdivisions.

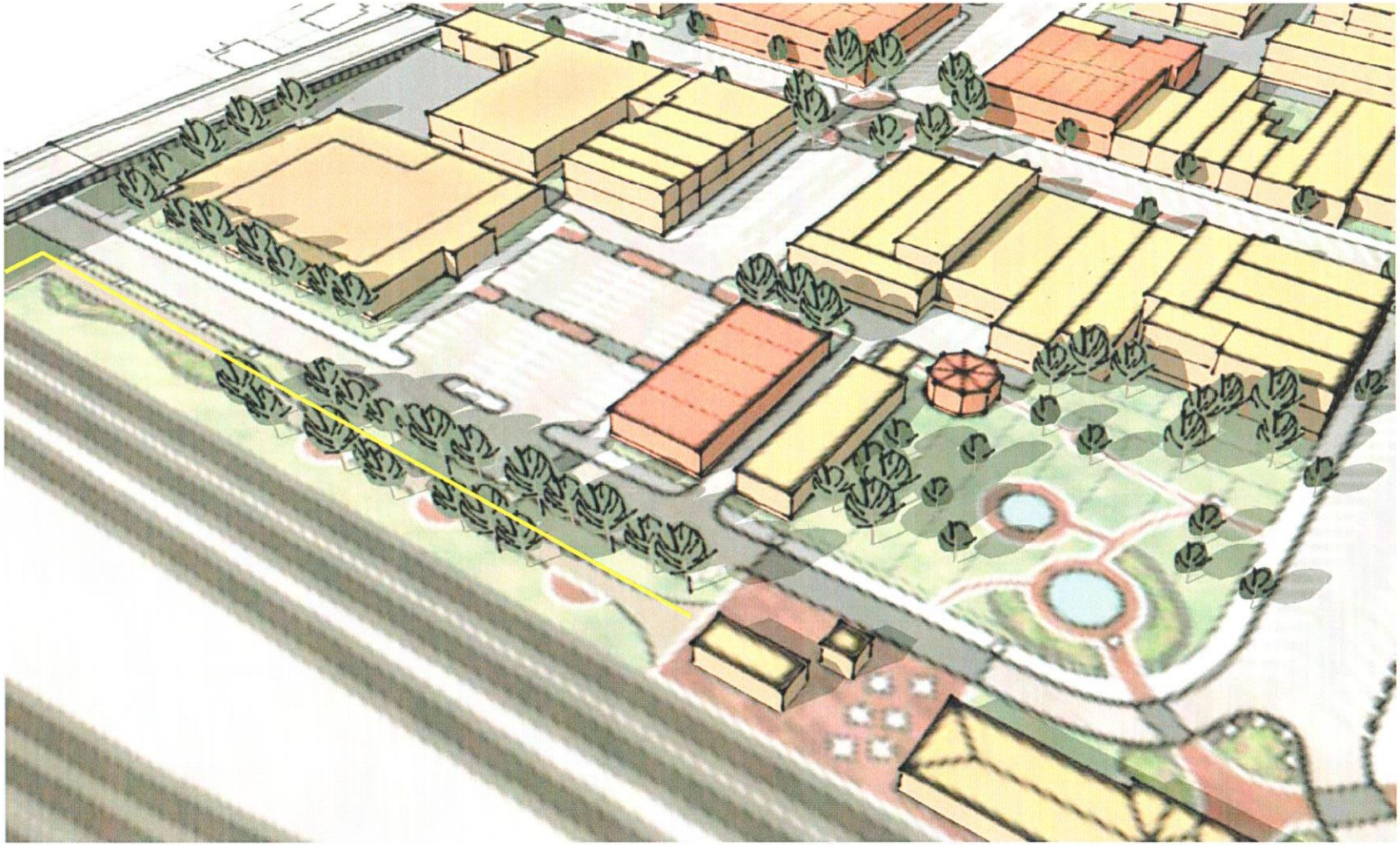
As improvements are considered, future pathways should connect neighborhoods to destinations such as parks, the commercial activity center and recreation facilities thereby making the City walk-able and less dependent on vehicles. It is recommended that access points from outlying subdivisions to the non-motorized network be considered. An examination of a grade separated crossing of the 287 Bypass will be discussed later in this report.

Accesses to destination locations along the system are better on the north side of the City than on the south side. The north side is tied to the high school, soccer and baseball diamonds along with commercial areas. The south side path runs through a more residential area with connections to perimeter downtown and commercial areas via the underpasses.

The network is extensive but is not well marked and hard to follow throughout the City. It is recommended that the path system be marked with way markers or additional bike path signage. Maps of the entire trail system and mile markers should be added for public use while traveling the network.

The downtown conveyance and flow was reviewed by RDG, a planning consultant who completed a Downtown Development Study in the spring of 2010. A depiction of the flow and future flow of pedestrian and non-motorized traffic in the downtown area and destination locations are shown over the next few pages.

Downtown connections to the surrounding community are very important and in many cases downtowns are still considered the heart of a City for local commercial businesses. Revitalization of downtown starts with drawing the community into this area. Pedestrian pathways are a great way to achieve this. Downtown connections to the non-motorized path would be easy to develop. Below is a depiction of a pathway lined with small decorative trees and lighting linking the existing underpass to the depot and depot plaza.



Depiction courtesy of RDG planning and Design

Task 2: Assess feasibility of rehabilitation of existing structures:

Task 2 will address the possible repairs, modifications and enhancements of the existing structures as identified by the inspections. Inspection of the existing structures, as described above in Task 1, encompassed evaluation for:

- safety and security issues
- handicap/ADA accessibility and compliance
- structural integrity concerns
- maintenance problems
- overall aesthetics

The AVI team has provided recommendations and preliminary cost opinions at the end of this section for improvements to the structures for the purpose of budgeting, planning and future funding source development.

Safety and Security

Safety and security within the structures is of paramount importance. The survey revealed that over 80% of those surveyed feel the underpasses are not safe. The lighting and line of site into the tunnels were indentified as top priority items that should be changed if renovations of the underpasses occurred. Of those people surveyed over 45% percent would use the underpasses more often, if safety and security were improved. The AVI team's recommendation to improve the overall safety of the structure is:

List of Recommended Options

- improve lighting outside of entrances (pole mounted)
- improve interior lighting
- improve exterior mounted lights on tunnel entrances
- provide emergency phone outside entrances or inside tunnel
- add mirrors to provide line of sight around 90 degree bends into tunnels

In the future, the City of Rawlins should consider installing camera surveillance system linked to law enforcement. AVI is not recommending this system now because of the lack of known criminal activities in the underpass. A surveillance system could be justified to increase public confidence when using the underpasses. Public perception can be very import in increasing use of non-motorized routes.

Structural issues and handicap Accessibility

The structural integrity of the underpasses is good according to the most recent Wyoming Department of Transportation Inspection Reports. These reports are attached in Appendix D as supplemental information. Therefore, the structural issues will focus on the changes to the access ramps. The crucial point of the recommendation will be to achieve adequate grade along the ramps that provides a handicap accessible route through the underpasses. The requirements for ADA compliance would also make the structures safer for the public. AVI's recommendations for the structural issues are as follows:

- increase lengths of ramps providing adequate ADA compliance
- ramp grades not to exceed 8.33%
- refinish of concrete on ramps to provide a smooth walk way
- grinding of interior walk ways to maintain a smooth walk way
- upgrade hand rail system

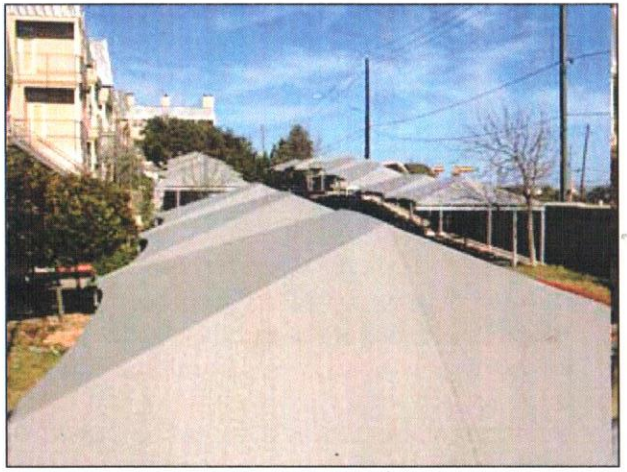
Maintenance issues

Maintenance issues for the underpasses are due mainly to the exposure of the ramps and tunnels to the elements. The access ramps have a variety of problems from peeling and flaking of paint to debris filled tunnels. The recommendations by AVI are to protect the underpass from harsh weather and drainage from the rail yard. These recommendations include:

- provide weather proof covering for the tunnel entrance walkways
- modify entrance to avoid prevailing winds
- coat exterior entrances with weather and graffiti resistant paint/coatings

Recommended coverings include: metal, glass or fabric roofing system as pictured below. The material should be very weather resistant, able to withstand 70 mph wind gusts, snow loads including snow plowed from the Union Pacific Rail above and be able to withstand scouring. It is recommended that the material be specifically designed for the conditions in the City of Rawlins. Coverings, framing and metal work could be designed and built by the Rawlins High School welding classes pending selection of materials.

Clear Plastic Tubing style covered Walkway



Fabric Covered Walkway

Fabric Covered Walkway

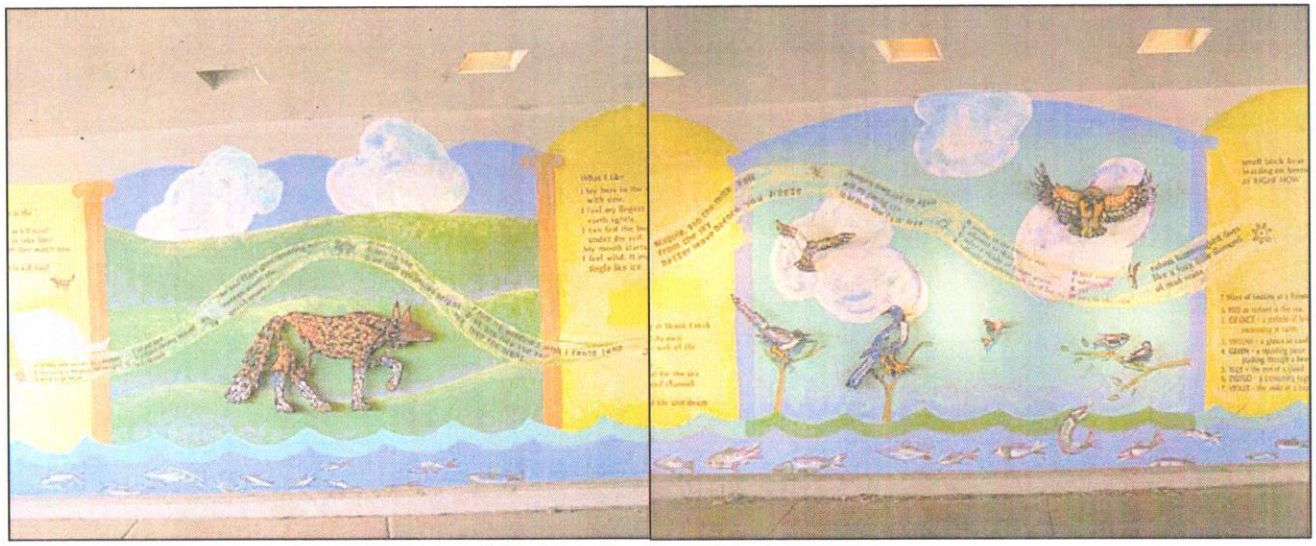
Metal Covered Entryway

Aesthetics

The atmosphere of the structure is based on the aesthetics of the structure perceived by the public. The more inviting the structure, the more use it will get. Aesthetic enhancements could include:

- provide welcoming lighting
- provide plantings and other landscaping
- paint the exterior of underpass entrances
- remodel exterior of underpass entrances
- paint interior of the tunnels
- involve the community to enhance the structures

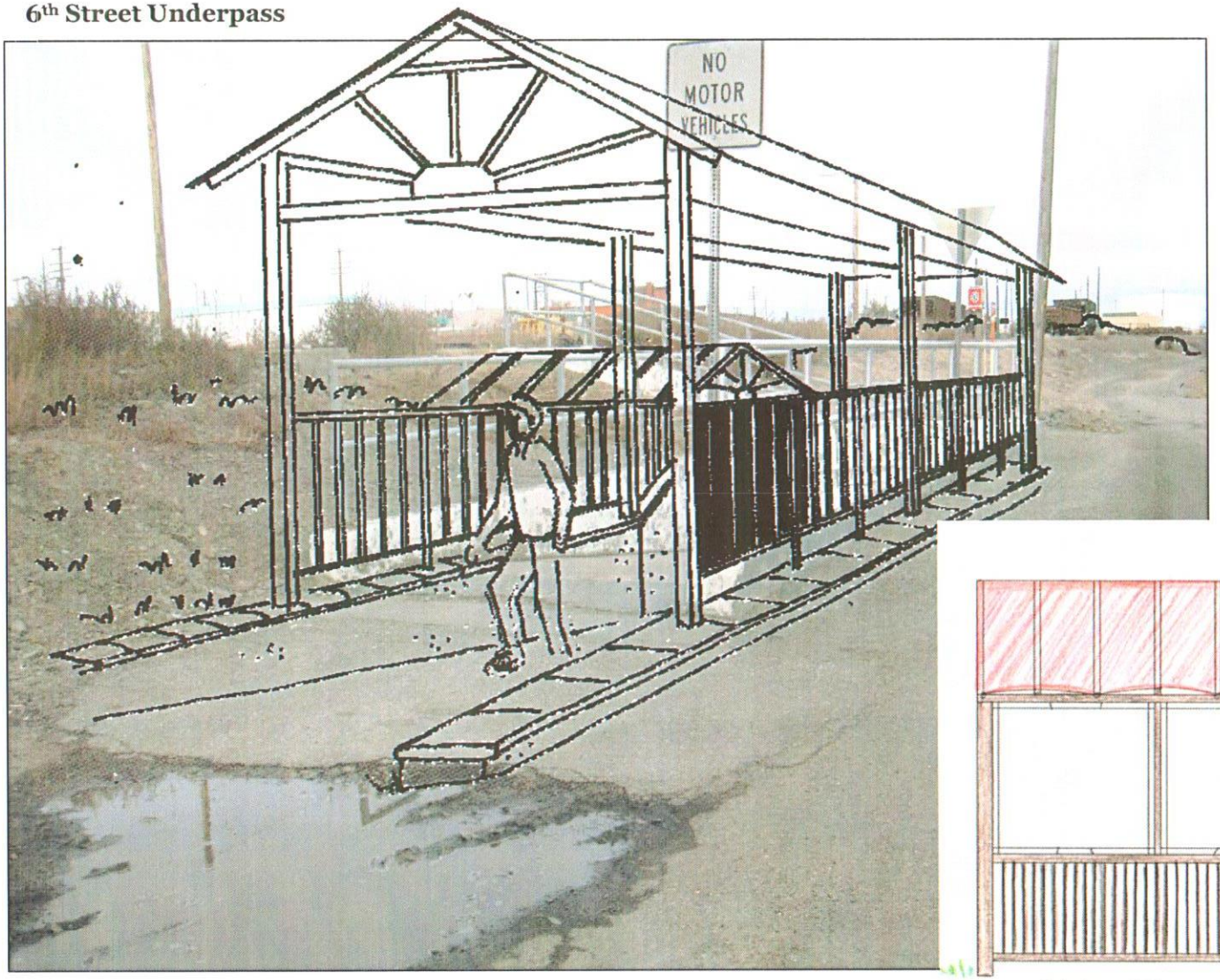
Community involvement is a big part of how the public will view the upgrades and improvements to the underpasses. One way to get the public involved and interested in the structure is to paint large murals inside the tunnels or encourage gardens/ planters around the entrances maintained or sponsored by volunteers. The murals could be part of a regional artist event or school art class project. Plantings could be provided by area businesses, service groups such as a Rotary Club or even a Boy Scout troop.

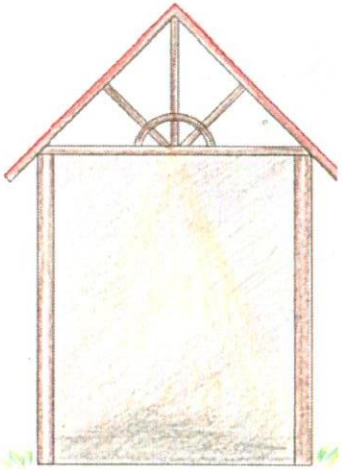


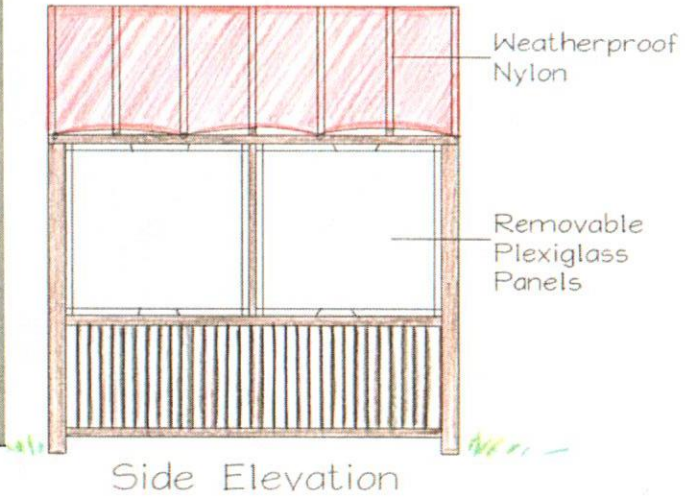
Painted mural inside a underpass

Renderings and Examples of Improvement and Enhancements

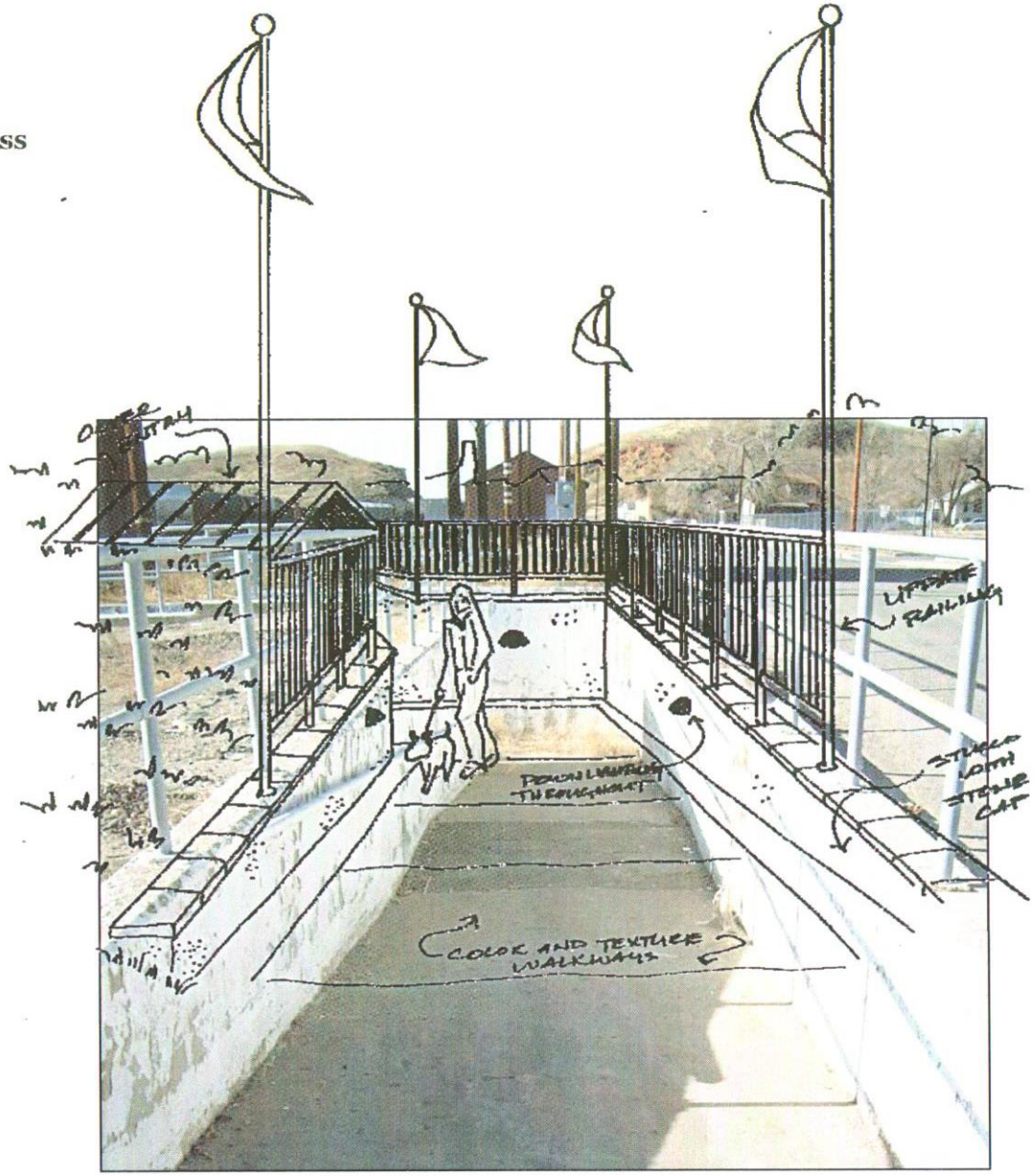
6th Street Underpass



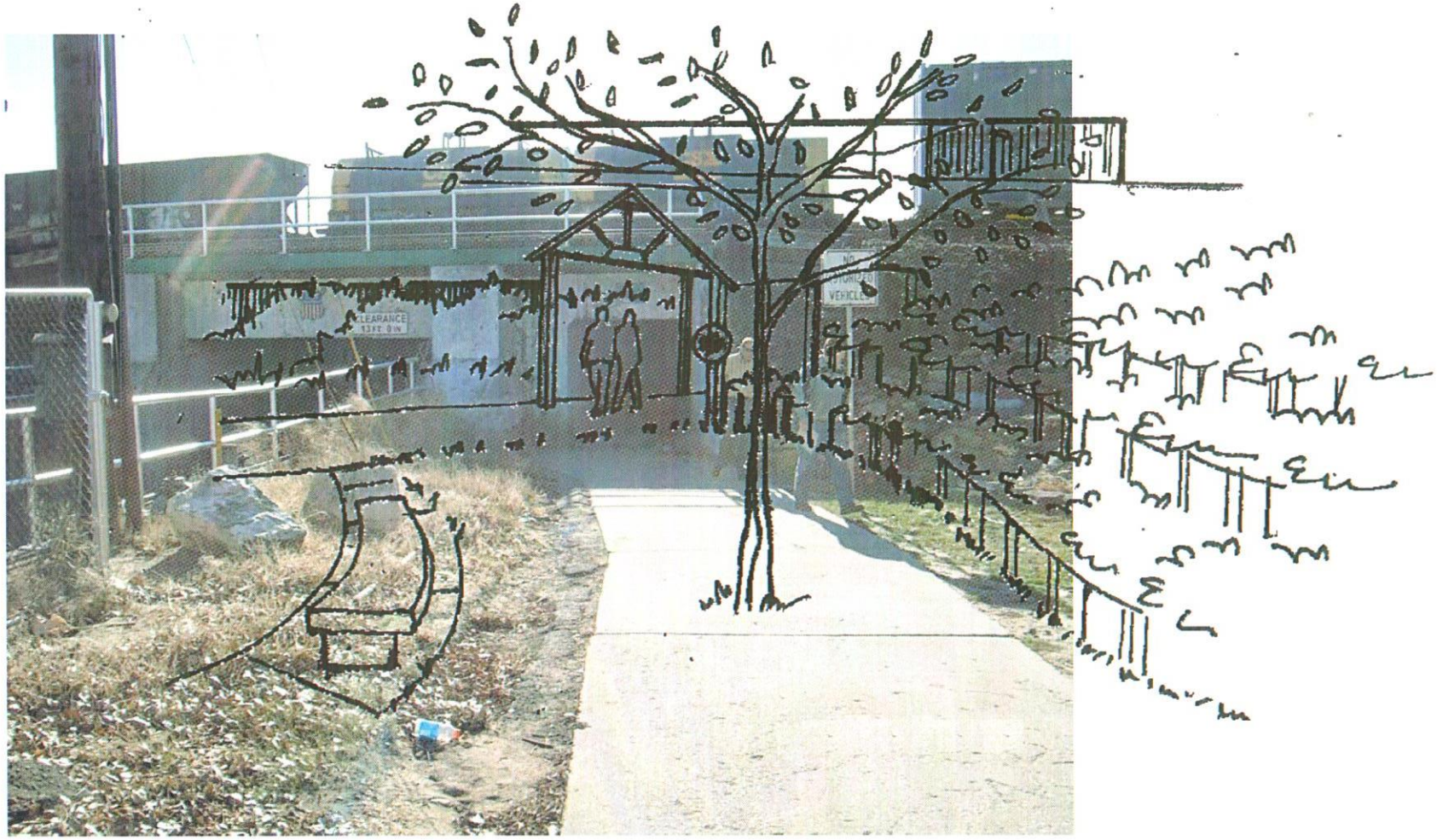




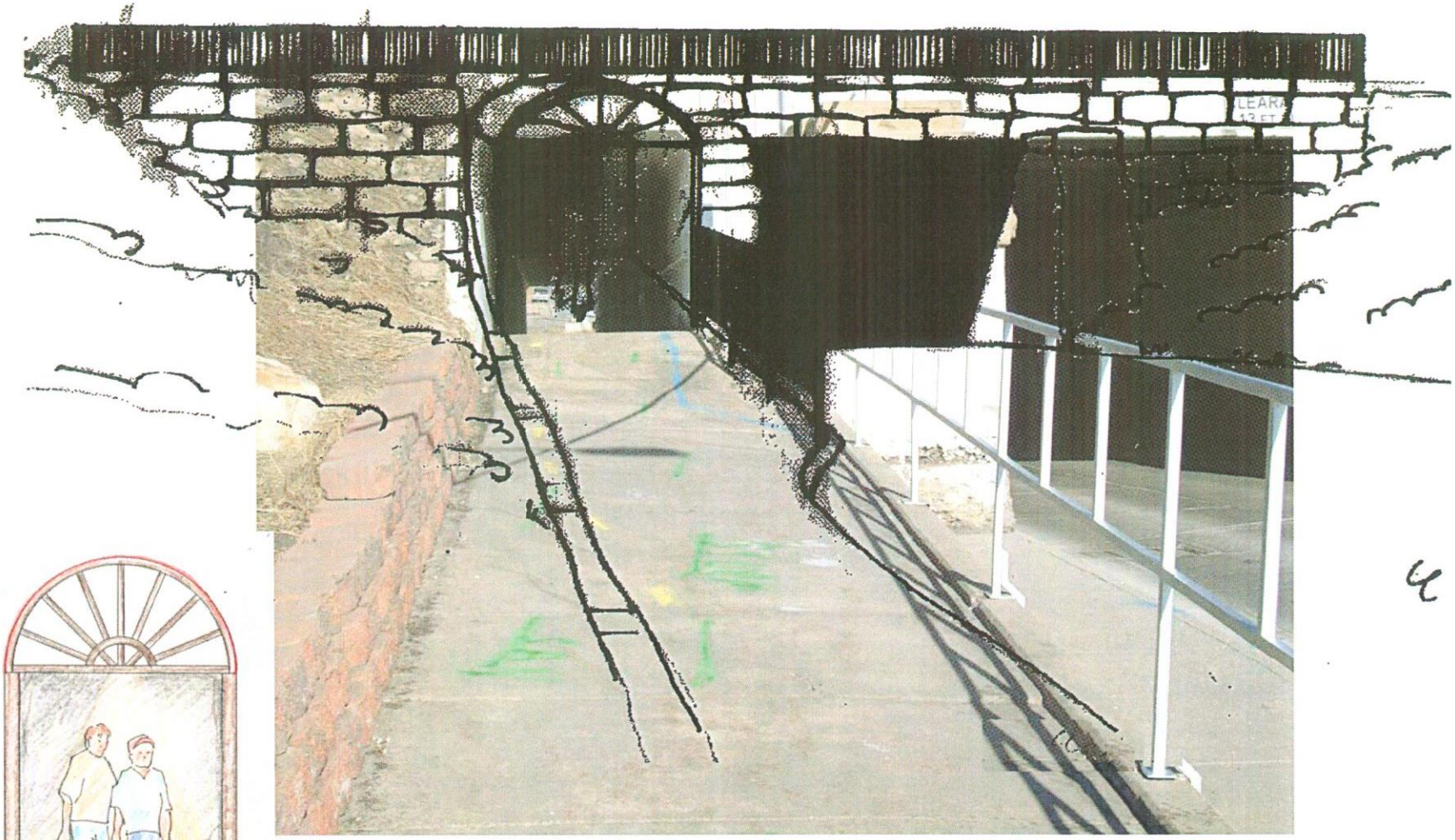
6th Street Underpass

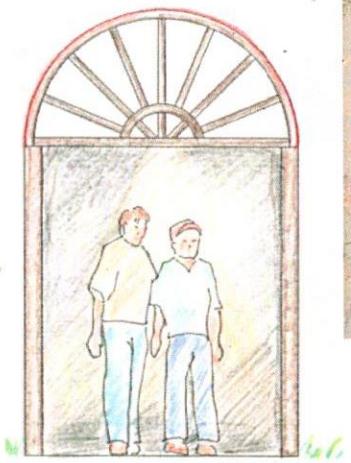


Washington Street Underpass

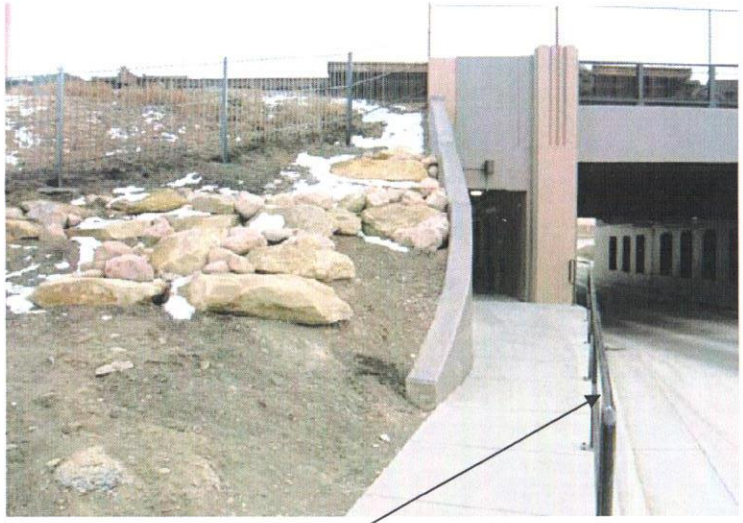


Washington Street Underpass





Recent renovations of grade separated non-motorized crossings in the City of Rock Springs



Aesthetic Enhancement

Pedestrian Lighting

ADA Handrail

Landscaping Terrace

These renovations were completed in conjunction with the adjacent roadway improvement project and paid for with a TEAL grant from WYDOT. Cost for the improvements to the pedestrian underpass was approximately $250,000.

Cost Opinions for Improvements

Line item cost opinions are provided for all the possible improvements and enhancements. In the recommendation section of the report the improvements are discussed in terms of necessary projects and desires. Here the recommendations are group and packaged for future fiscal planning and projects for the City. Any items that were seen as distant future costs were not as detailed.

6th Street Underpass

Description of Work	Unit Price	Number of Units	Total Cost
Lighting			
Interior	$275 EA	20	$5,500
Exterior	$375 EA	2	$750
Pole	$3500 EA	1	$3,500
Mirrored corners/Domes	$2500 EA	2	$5,000
Handrails	$125LF	300	$42,750
Concrete Grinding	$6 SY	300	$1,800
Concrete Remove &Replace	$75 SY	400	$30,000
Ramp angle adjustments	$15000EA	2	$30,000
Paint/Coating**	$8000-25000 LS	1	$ 8000-25,000
Covered Walkway			
Fabric	$700-1200SY	150	$105,000-180,000
Metal	$1000SY	150	$150,000
Glass/plexi	$650-1000SY	150	$97,500-$150,00
Landscaping			
Plantings	$10,000 LS	1	$10,000
Retaining Wall/Planters	$20,000 LS	1	$20,000

** Coating includes up to a textured façade

Washington Street Underpass

Description of Work	Unit Price	Number of Units	Total Cost
Lighting			
Interior	$275 EA	10	$2,750
Exterior	$375 EA	2	$750
Pole	$3500 EA	1	$3500
Mirrored corners/Domes	$2500 EA	0	0
Handrails	$250 LF	500	$11,000
Concrete Grinding	$6 SY	300	$1800
Concrete Remove &Replace	$75 SY	400	$30,000
Ramp angle adjustments	$15000EA	2	$30,000
Paint/Coating**	$4000-25000 LS	1	$ 4000-25,000
Covered Walkway			
Structurally Engineered Fabric	$700-1200 SY	50	$35,00-60,000
Metal	$1000 SY	50	50,000
Glass/plexi	$650-1000SY	0	NA
Landscaping			
Plantings	$5,000-10,000 LS	1	$5,000-10,000 LS
Retaining Wall/Planters	$15,000 LS	1	$15,000 LS

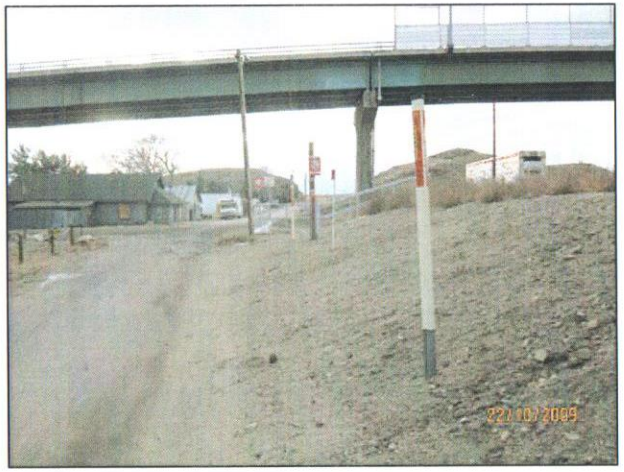
** Coating includes up to a textured façade

Task 3: Assess the feasibility of retrofitting 6th Street Bridge

Task 3 was an investigation of retrofitting the 6th Street Bridge to provide pedestrian and bicycle facilities on the existing structure. This investigation was conducted exclusively by CTL Thompson. Review of recent Wyoming Department of Transportation Bridge Inspection reports found in Appendix D was completed and no major repairs or structural deficiencies have been noted in the reports. It was noted that minor repairs were performed during the last deck modification.

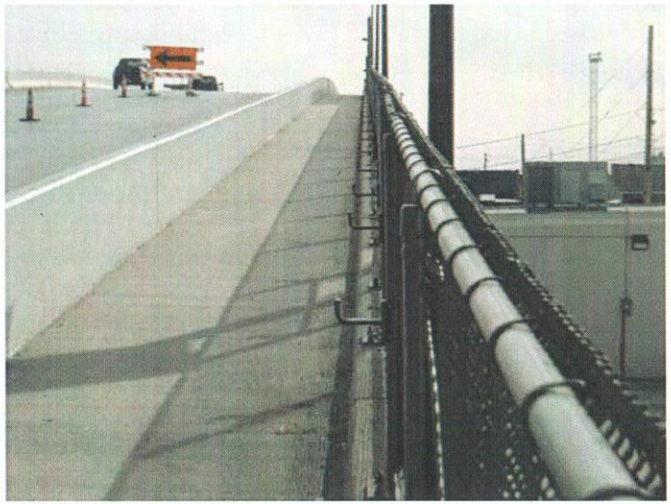
The bridge at one time included a pedestrian sidewalk however; the walkway was eliminated during recent deck modifications. The bridge currently has two 17 foot lanes and is not considered safe for traffic other than motorized vehicles. Accommodating pedestrian or bike traffic would entail a new walkway. This would require a retrofitting of the current bridge deck configuration. Modifications would be necessary on bridge piers, bridge beams, and the deck itself. The walkway would be attached to the side of the existing deck. This would be a very extensive and costly option to retrofit.

After the full review and investigations were completed it was determined the bridge could be retrofitted for pedestrian use. However, the AVI Team is not recommending that the bridge be retrofitted due to the extreme cost.



Cost Opinion for Bridge Retrofitting

Bridge retrofits are highly dependent on the existing structure and if modifications to the foundation system are required. The price range for this type of retrofit is broad due to these design requirements. AVI estimates that the retrofitting would cost in the range of $2,000,000 to $4,000,000. AVI would recommend that preliminary designs be developed and accurate cost estimates be developed before committing to this option.



Task 4: Assess need and feasibility of pedestrian crossing options at U.S. 287 Bypass

AVI analyzed the possibility of a future non-motorized or pedestrian crossing along the 287 Bypass. The Bypass area best suited for a pedestrian crossing runs from Daley Street on the south (below Murray Street) to Higley Lane on the north.

The analysis process for Task 4 was governed by objectives. The first objective was to determine if there was a need or desire by the public for a crossing along the 287 Bypass. This was facilitated through open meetings and a public survey. The next objective, based on public desire for a crossing, was to establish the ideal locations and potential types of crossings. The last step or objective was to give recommendations and cost estimates.

Establishing a need or want for a crossing was determined through the use of surveys and public comment (Appendix A and B). Of those surveyed, 97% wanted a crossing. Public comment from residents living in Highland Hills, the subdivision to the east of the bypass, was more than favorable. The community does not cross the Bypass due to the unsafe crossing conditions of higher speed and heavy truck traffic.

Residents believe that the City's continued to growth to the east has created the necessity for a safe pedestrian crossing. Continued development near Highland Hills and a new Elementary School on the east with recreational facilities to the west is expected to create a greater need to cross the Bypass.

No matter the location or type of crossing additional public amenities should be incorporated at the crossing access points. Amenities such as a plaza, skate park or spray park will increase uses of the existing non motorized network and connection throughout the community.

The survey asked residents to rate the different streets based on their opinion of the ideal location of a crossing. The table below shows the results of the survey. Higley Lane was ranked the best location street while Daley Street was ranked the least favorable location. However, Aberdeen was the best location based on a weighted average and Inverness Blvd was a close second for best location.

City of Rawlins Pedestrian Crossing Survey

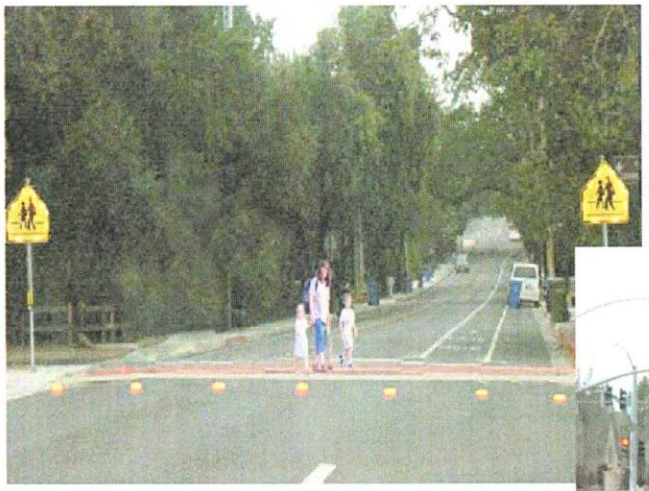
Please rate the following locations for a pedestrian crossing along the 287 Bypass if there is only one location.

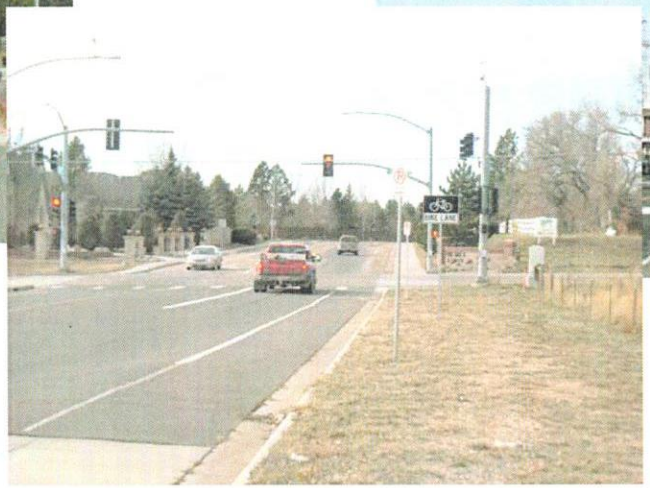
	Best Location	2nd Best Location	3rd Best Location	4th Best Location	Worst Location	Rating Average	Response Count
At Higley Road	**32.8% (65)**	16.7% (33)	13.6% (27)	6.6% (13)	30.3% (60)	2.85	198
At Aberdeen Blvd	21.1% (42)	30.7% (61)	**33.7% (67)**	6.5% (13)	8.0% (16)	2.50	199
At Inverness Blvd	16.7% (33)	32.3% (64)	**38.4% (76)**	2.0% (4)	10.6% (21)	2.58	198
At Murray Street	**28.4% (56)**	16.8% (33)	9.1% (18)	20.8% (41)	24.9% (49)	2.97	197
At Daley Street	9.0% (7)	9.0% (7)	11.5% (9)	11.5% (9)	**59.0% (46)**	4.03	78
					answered question		**205**
					skipped question		**0**

The best location for a crossing depends on the type of crossing to be installed. The different types of crossings considered were:

- at grade crossing
- underpass
- overpass

At Grade Crossings

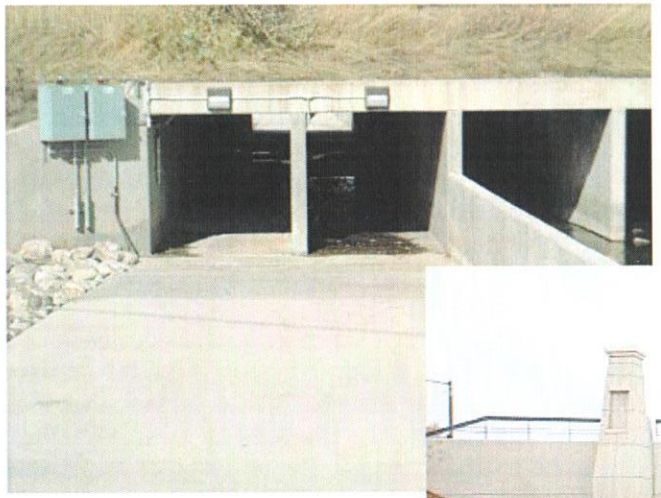




At grade crossings can differ considerably from the standard stop signal light to a pedestrian activated crossing signal. The type of crossing are determined by consideration of: speed of traffic, type of traffic, amount of traffic along with the amount of pedestrian crossing, time of day (does pedestrian use follow the traffic patterns) and what entity governs the roadway. In this case the roadway is governed by WYDOT. WYDOT recently completed a signalization study for this corridor (Appendix E) and determined signals could be placed at Daley Street, Inverness Boulevard and Aberdeen Blvd without hampering traffic flow. The amount of cross traffic and pedestrian use does not warrant a signal under WYDOT standards for any type of crossing. The speed of traffic does not allow for a pedestrian activated crossing on the 287 Bypass as outlined in the WYDOT Pedestrian and School Traffic Control Manual (Appendix E). Therefore, if an at-grade crossing was to be established along the Bypass the City would be required to pay for the signal. Cost opinions for a full signal are between $320,000 and $380,000.

Underpass Crossings

There are different styles of underpass type crossings from very plain and to very elaborate. Both are shown in the pictures below. There are some types that double as drainage ways during large storm events. An underpass on the Rawlins 287 bypass could be feasible depending on location but may be cost prohibitive. An underpass may also be achieved by raising the 287 bypass to accommodate a tunnel without creating a drainage concern. The cost opinions are between $480,000 and $550,000 for the underpass itself to construct. The limitations for this type of underpass include elevation changes and presence of groundwater. If an underpass was to be selected it would best if the crossing was near grade and the Bypass roadway rose to accommodate the structure below as suggested by WYDOT. This would elevate drainage concerns and make the underpass more appealing to pedestrians. An example of this type is on page 33.



Bicycle and Pedestrian Underpass and Tunnels Design Considerations

A bikeway underpass should be considered if there is no safe and direct on-street crossing, if the facility to be crossed is elevated, if an existing motor vehicle under-crossing is too narrow for a bicycle facility, and when the underpass would not require bicyclists to negotiate significant elevation changes. Underpass cost may be lower than those for overpasses.

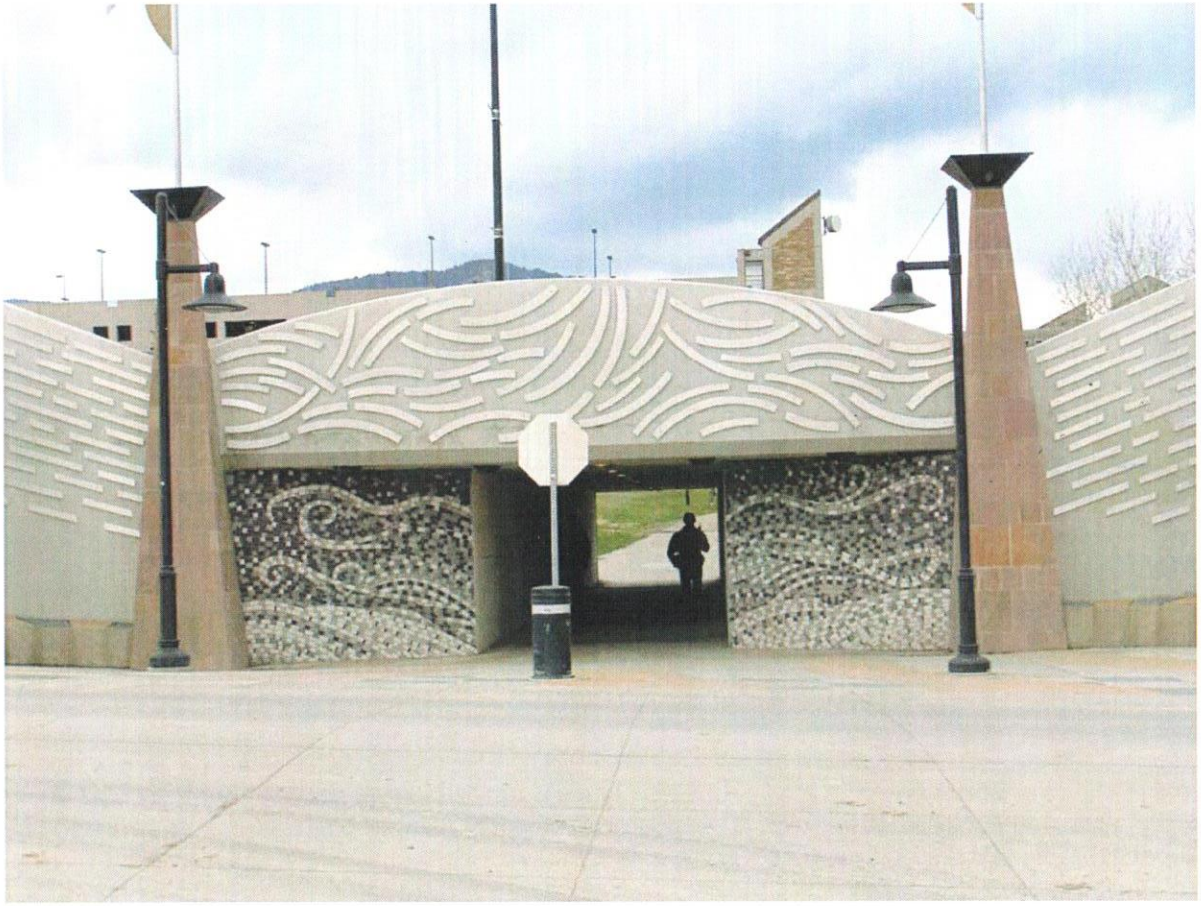
An underpass may have less grade change for a bicyclist to negotiate than an overpass because a typical overpass requires a 17 ft vertical clearance over the highway. A disadvantage is that unless it is well located and openly designed, it may be intimidating and avoided by bicyclists and pedestrians. Providing adequate drainage may also be a problem; providing a surface that does not become excessively slippery when wet is important. Proper drainage design is a key element to prevent wet silt deposits that are a common hazard for bicyclists using underpasses. The inclusion of gutters at the edge of the underpass and the base of a retaining wall are good design elements to ensure a clear riding surface.

Underpasses are usually constructed of pre-cast concrete in a shape having the proper vertical and horizontal clearances.

The horizontal and vertical alignments in an underpass should be straight for the full length and for an adequate distance on each approach. The minimum width of an underpass for bicyclists and pedestrians should be 12 ft, or the paved width of the approach path plus 2 ft, whichever is greater. The recommended width of an underpass is 14 ft, which allows several users to pass one another safely. Greater width may be justified in areas with many potential users or at a location where there is an event-clearing peak demand. The recommended vertical clearance is 10 ft for a pedestrian/bicycle underpass. If access for emergency vehicles is not required, vertical clearance for bicyclists shall be at least 8 ft.

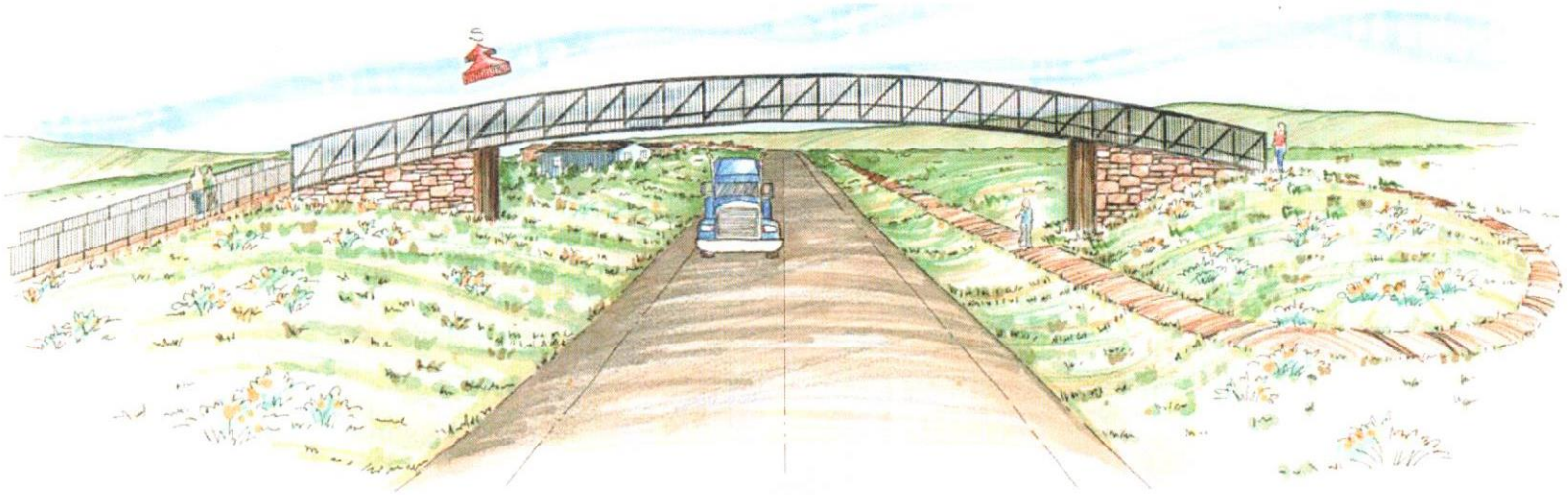
Underpass design and layout should carefully consider its location and user safety. Visibility through a tunnel and adequate lighting enhance users' perception of personal safety. When the underpass is long (e.g., when traversing a four-lane road), wider or flared openings are recommended to improve natural lighting and visibility. Channeling with fences or walls into a tunnel should be evaluated for safety. If it is likely that bicyclists and pedestrians will avoid the underpass and try to cross the road or railway in unsafe conditions, barrier fencing or visual screening with dense vegetation may be needed to help direct users to the underpass. Approaches and grades should provide the maximum possible field and range of vision toward the underpass, for both bicyclist and pedestrian.

For short underpasses or tunnels, modest lighting may be all that is required. General, the longer the structure, the greater the need for illumination, in certain cases, lighting may be required on a daily, 24-hour basis. For tunnels longer than 50 ft, constant illumination is recommended. All lighting should be recessed and vandal resistant.



Example of a raised underpass opening to a public common area

Overpass/Bridge Crossings



Just as underpasses the overpasses come in many different types and styles from very elaborate bridge deck with facades to simple spans and even prefabricated enclosed structures. The most cost effective bridges based on recent project bids have been simple steel spans with wood decking as pictured on page 36. For the Rawlins 287 Bypass, the bridge option, depending on location could be a feasible but may be cost prohibitive. The cost opinions are between $450,000 and $520,000 to construct. The limitations for this type of structure are governed by WYDOT as to determine the distance from on and off ramps, corners, adjoining streets, and line of site issues. The bypass is a deviated fixed route for oversized vehicle which also needs special consideration in design. Construction of a bridge would need to be completed to accommodate any widening of the roadway for the future 5-lane section and oversized vehicles. The future 5-lane section dimensions can be found in Exhibit 1.

Bicycle and Pedestrian Overpasses Design Considerations

A shared-use bridge structure allows bicyclists and pedestrians to cross-busy roadways to reach popular destinations. Preferred applications for bicycle/pedestrian overpasses include:

- Locations that would otherwise be difficult or impossible to cross (freeways, rivers, railroads, etc).
- Connecting schools to neighborhoods over high-volume, high-speed arterial roadways where signalized crossing are more than 450 ft apart.
- When a reasonable direct on-road alignment is not available, or the direct on-road connection is perceived by the public to be unsafe.
- When bicyclists and pedestrians would otherwise be required to negotiate a significant change in elevation.
- When vehicular bridges do not provide bicycle route continuity and directness.

The design of a bicycle and pedestrian overpass shall consider requirements for grade, turning radius, width, cross slope and speed. In some cases, for the safety of all types of traffic, the bicycle design speed may need to be reduced from the approaching bikeway. The profile across a bridge should follow a smooth line without sharp changes in grade over the piers.

To ensure the safety of users of all ability and skill level, bicycle and pedestrian overpasses should be designed in accordance with the AASHTO Guide for Development of Bicycle Facilities (1999) and the AASHTO Standard Specification for Highway Bridges. ADA standards for accessible design area also applicable, but for the most part, those have been incorporated into AASHTO standards, since accessible design benefits bicyclists and able-bodied pedestrians as well as those with mobility impairments.

The recommended minimum width of an overpass for bicyclists and pedestrians is 12 ft, or the paved width of the approach path plus 2 ft, whichever is greater. The desirable width of an overpass is the width of the approach path plus 4 ft. The bridge width is measured from the face of handrail to face of handrail.

Carrying the clear areas across the structure provides necessary horizontal shy distance from the railing and provides maneuvering space to avoid conflicts with pedestrian and oncoming bicyclists. Access by emergency, patrol, and maintenance vehicles should be considered when establishing vertical and horizontal clearances. The path's shoulder width should taper as necessary to match the overpass width (if applicable).

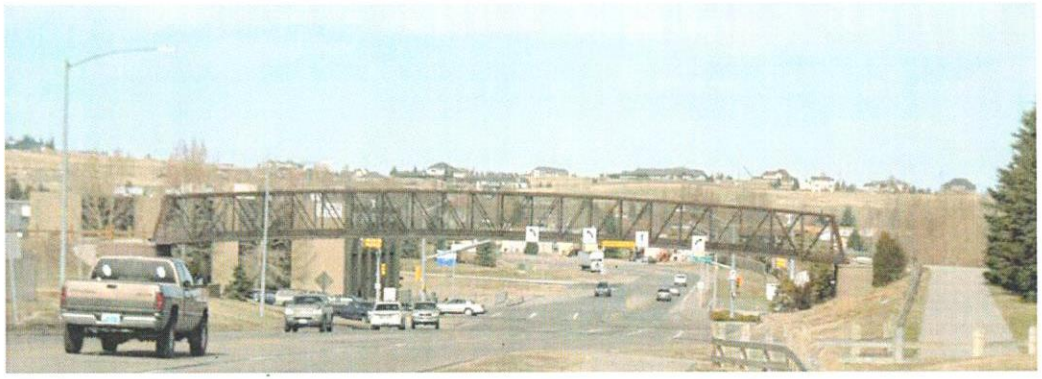
When physical constraints limit the width of a bicycle/pedestrian overpass, it may be necessary to provide a substandard width. In very rare instances, a reduced width of 8 ft may use, but only where all of the following conditions occur:

- Bicycle traffic is expected to be low, even of peak days of during peak hours.
- Only occasional pedestrian use of the facility is expected.
- Horizontal and vertical alignment will provide safe and frequent passing opportunities.

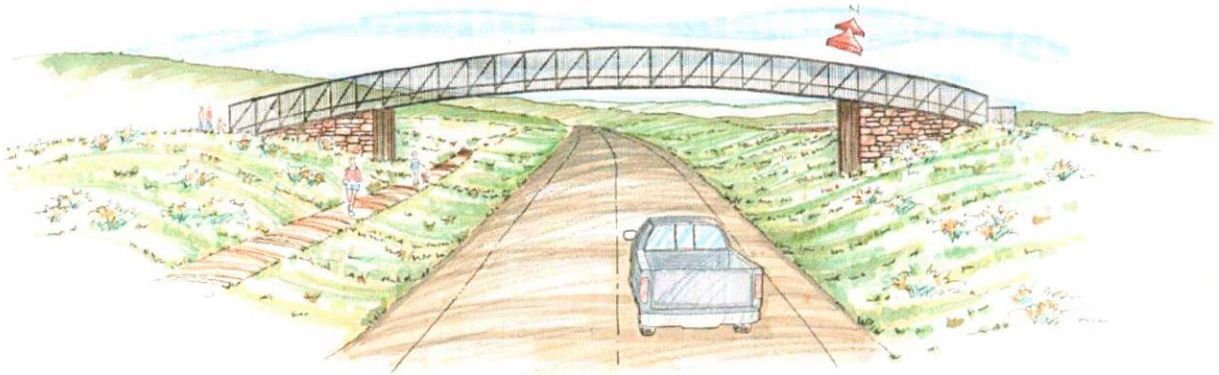
The vertical clearance from the pavement to any overhead object on an overpass shall be a minimum of 8 ft for bicyclists, but 10 ft vertical clearance may be appropriate to accommodate occasional maintenance of security vehicles using the overpass. The vertical clearance of the bottom of the overpass structure over a street or highway is typically at least 17 ft, bur requirements must be verified on a case-by-case basis.

The access ramps for bicycle/pedestrian overpasses must meet ADA design standards, for which the preferred maximum grade is 5 percent (20:1). However, grades up to 8.33 percent (12:1) are permitted if a platform 5 ft long is provided between each 2.5 ft change in elevation. A 6 ft clear flat platform is to be provided at the bottom of each ramp.

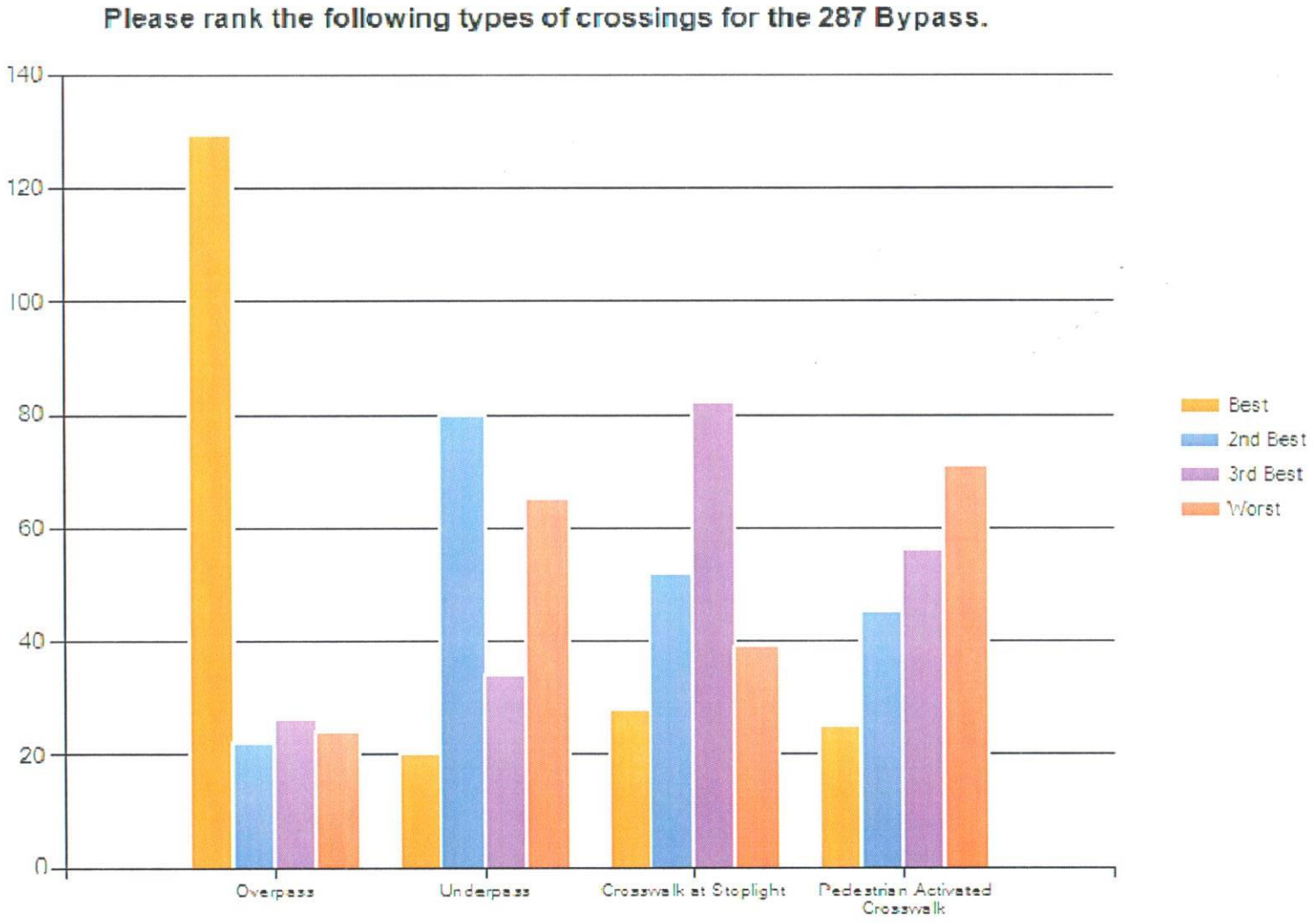
Overpasses require railing for both bicyclists and pedestrians. The railing height for bicyclists shall be 4.5 ft from the overpass deck, with a pedestrian handrail at a height of 3.5 ft. Where a bicycle/pedestrian overpass crosses a roadway or railway, 8 ft high protective screening shall be used to prevent objects from being thrown of the bridge.



Greenway overpass located in Cheyenne, Wyoming



The bar chart below depicts the surveyed answers regarding the type of crossing proposed for the 287 Bypass. As you will note the Overpass was ranked the best choice and the pedestrian activated crosswalk was ranked the worst choice. Please note the at-grade crossing was the most selected for overall choice.



TASK 5: RECOMMENDATIONS and FINANCING OPTIONS

AVI recommends that the City establish a priority list of improvements and projects. The list will help the City develop a long term funding and budgeting plan. Once a list of priorities is specified, then the City can move ahead and explore the different funding options available. To increase the funding opportunities the City of Rawlins should pursue a Safe Routes to School Plan, a Greenway Master Plan and develop a City Transportation Master Plan. Below is a list of possible funding sources.

Funding Sources

- Transportation Enhancement Activities/Local-- TEAL Grant
- Safe Routes to School--SRTS Grants
- Congestion Mitigation/Air Quality—CMAQ (Federally Funded)
- Highway Safety Improvement Program—HSIP Grant (Federally Funded)
- Transportation Enhancement Activities/State--TEA-S Grant
- Recreational Trails Program—RTP Grant
- Transportation, Community, and System Preservation Program—TCSP Grant
- National Highway Traffic Safety Administration--NHTSA Section 402 Funds
- Government Grants

Community Sources

- 6th Penny
- Developer Driven (required on Site Plans)
- Road Projects
- Public Works Projects
- Community Organizations

AVI recommends a pedestrian crossing along the 287 Bypass based on the public survey results, nearby schools, and adjacent youth recreational activities in the area. The location and type of crossing shall be determined at a later date by the City of Rawlins due to the follow factors:

- Timing of the 287 Bypass Widening
- Cost or possible funding sources
- Immediacy of the need
- Future traffic loading and connections due to new school opening
- Future subdivisions
- Community input involvement

Depending on the above factors the crossing project may qualify for many funding sources or may be cost shared with developers, community investors or WYDOT.

The best overall crossing would be to raise the 287 Bypass and create an underpass that would tie to existing pedestrian trails. Raising the roadway would allow for the tunnel to function as an at-grade crossing by eliminating grade changes but would be better served by separating the users from vehicular traffic. Pedestrians would be able to see thru the tunnel when approaching easing concerns for safety and security within the tunnel structure. This type of crossing is the most costly and would need to coincide with WYDOT's reconstruction and widening of the 287 Bypass. Additional survey and design work would need to be completed to ensure all existing intersections would still function properly when the 287 Bypass is raised. In between Inverness Boulevard and Aberdeen Boulevard would be the primary location for this type of structure.

An at grade crossing with traffic signal is recommended for the City of Rawlins if a crossing is to be placed within the next few years. It is not as costly as the raised underpass and can be located in three different locations according to WYDOT. Signals can be placed at the intersections of Aberdeen Boulevard, Inverness Boulevard, and Daley Street. At this time, the 287 Bypass vehicular and pedestrian traffic do not warrant a traffic signal by WYDOT standards. If the City decided to put one in it would have to install and maintain signal at the City's cost. Aberdeen would be the first choice based on the location of the schools and recreation center. If Brooks Street is ever extended to Inverness it may warrant a full signal with pedestrian crossing on this intersection because of the increased traffic; which would be maintained by WYDOT.

An overpass on the 287 Bypass could occur just south of Aberdeen Boulevard but is not recommended for the following reasons. Due to the fact that the 287 Bypass is an oversize truck route special consideration would need to be made to ensure all vehicles could still use the road. This could make the overpass quite costly. Costs to keep the structure passable in the winter were also a concern. This option is the least likely choice for the 287 Bypass.

The AVI recommendations for underpass improvements are based on necessity, desire and aspiration. Necessity would be public safety and protection of the structure itself. These items encompass lighting, hand railings, sight, exterior coatings and improve access ramps. Enhancement of access landscaping, drainage reconfigurations and minor aesthetic changes would be a desire. Aspiration would be all enhancements to the structure that improve visual appeal. AVI has grouped the underpass improvements together to provide a better idea of cost analysis and funding choices for certain improvements. The groups are packaged together in possible future construction projects. The next section provides a breakdown of projects and cost opinions for the improvements.

FUTURE IMPROVEMENT PROJECT AND COST OPINIONS

The first recommended projects to be completed by the City were determined based upon improving public safety and maintenance protection of the structure. The necessary projects as described above are further broken down into more manageable project size based on structure changes to the underpasses.

Necessity Project #1A 6th Street Underpass–Non Structural Changes

Description of Work	Unit Price	Number of Units	Total Cost
Lighting			
Interior	$275 EA	20	$5,500
Exterior	$375 EA	2	$750
Pole	$3500 EA	1	$3,500
Mirrored corners/Domes	$2500 EA	2	$5,000
Handrails	$125LF	300	$42,750
Epoxy Paint	$8,000 LS	1	$8,000
Sand blasting and surface prep	$4,000LS	1	$4,000
		COST OPINION TOTAL	**$69,500**

Necessity Project #1B Washington Street Underpass–Non Structural Changes

Description of Work	Unit Price	Number of Units	Total Cost
Lighting			
Interior	$275 EA	10	$2,750
Exterior	$375 EA	2	$750
Pole	$3500 EA	1	$3500
Handrails (wall attached)	$125LF	170	$21,250
Handrails (free standing)	$200LF	150	$30,000
Epoxy Paint	$4000-25000 LS	1	$4,000
Sand blasting and surface prep	$1,000LS	1	$1,000
		COST OPINION TOTAL	**$63,250**

Unit Prices were based on weighted average bid prices by WYDOT in the year 2009 and costs obtained from local suppliers. Lighting prices also include cost of new wiring and conduit throughout the ramp and tunnels.

The next recommended projects would be to comply with ADA compliance. These projects include changes to the assess ramp structures themselves and may require a permit by the rail road to work in the right-of-way area.

Necessity Project #2A 6th Street Underpass–Minor Structural Changes

Description of Work	Unit Price	Number of Units	Total Cost
Concrete Removal	$30/LF	250	$7500
Concrete Replacement	$50 SY	225	$11,250
Grading in Ramps	$12 SY	225	$2,700
Base material	$20 SY	225	$4,500
Concrete Grinding	$6 SY	260	$1,560
Concrete floor inside tunnel	$65 SY	260	$16,900
		COST OPINION TOTAL	**$44,410**

Necessity Project #2B Washington Street Underpass–Minor Structural Changes

Description of Work	Unit Price	Number of Units	Total Cost
Concrete Removal	$30/LF	80	$2,400
Concrete Replacement	$50 SY	75	$3,750
Grading in Ramps	$12 SY	75	$900
Base material	$20 SY	75	$1,500
Concrete Grinding	$6 SY	60	$360
Concrete floor inside tunnel	$65 SY	80	$5,200
		COST OPINION TOTAL	**$14,110**

Unit Prices were based on weighted average bid prices by WYDOT in the year 2009 and costs obtained from local suppliers. Lighting prices also include cost of new wiring and conduit throughout the ramp and tunnels.

Major structural changes and additions of coverings will require a work permit for the rail road right-of-way and approval by Union Pacific Rail Road. These modifications were not estimated due to the number of uncertainties that may be required by the railroad such as increased insurance, track safety personal, and approved materials to be used.

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Appendix and Exhibits

Appendix A: Survey Questions and Responses
Appendix B: Citizen Responses
Appendix C: Excerpt from ADA Design Requirements
Appendix D: Bridge and Underpass WYDOT Inspection and Inventory
Appendix E: Excerpt From 2003 Wydot Pedestrian And School Traffic Control Manual
Exhibit 1: Excerpt from WYDOT Standard Details, Roadway Width

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APPENDIX A

SURVEY QUESTIONS AND RESPONSES

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City of Rawlins Pedestrian Crossing Survey

1. In the past year, have you or a household member used the 6th Street Underpass?

	Response Percent	Response Count
Never	44.4%	91
Yearly (1 or 2 Times)	18.0%	37
Monthly (1 or 2 Times)	12.7%	26
Weekly (1 or 2 Times)	7.3%	15
Daily (3 or more days per week)	17.6%	36
answered question		205
skipped question		0

2. In the past year, have you or a household member used the Washington Street Underpass?

	Response Percent	Response Count
Never	34.1%	70
Yearly (1 or 2 Times)	16.6%	34
Monthly (1 or 2 Times)	13.7%	28
Weekly (1 or 2 Times)	10.2%	21
Daily (3 or more days a week)	25.4%	52
answered question		205
skipped question		0

3. In the past year, have you or a household member walked across the UP railroad tracks?

	Response Percent	Response Count
Never	**87.8%**	**180**
Yearly (1 or 2 Times)	8.3%	17
Monthly (1 or 2 Times)	2.0%	4
Weekly (1 or 2 Times)	0.5%	1
Daily (3 or more days a week)	1.5%	3
	answered question	**205**
	skipped question	**0**

4. Identify the following changes you would like to see to the two underpasses?

	6th Street Underpass	Washington/Colorado Underpass	Response Count
Improved Interior Lighting	84.9% (158)	**88.2% (164)**	186
Improved Exterior Lighting	83.6% (117)	**87.1% (122)**	140
Increased Protection from the Weather (Wind, Rain, Snow)	78.2% (79)	**90.1% (91)**	101
Repainting	85.5% (106)	**88.7% (110)**	124
Walking Surface Condtions smoothness and eveness of walkway)	82.5% (80)	**86.6% (84)**	97
Better Visibility through tunnel (Eliminate 90 degree turns or allow pedestrian to see around corners)	**81.5% (110)**	78.5% (106)	135
No Changes Needed	**76.2% (32)**	54.8% (23)	42
		answered question	**205**
		skipped question	**0**

5. With the above listed improvements, would you or a household member use the underpasses?

	Response Percent	Response Count
Never	19.0%	39
Yearly (1 or 2 Times)	21.0%	43
Monthly (1 or 2 Times)	19.0%	39
Weekly (1 or 2 Times)	14.6%	30
Daily (3 or more days a week)	**26.3%**	**54**
	answered question	**205**
	skipped question	**0**

6. Prior to the 6th Street Overpass reconstruction (that removed the walkway) did you or a household member use the overpass?

	Response Percent	Response Count
Never	**51.2%**	**105**
Yearly (1 or 2 Times)	21.5%	44
Monthly (1 or 2 Times)	5.9%	12
Weekly (1 or 2 Times)	13.2%	27
Daily (3 or more days a week)	8.3%	17
	answered question	**205**
	skipped question	**0**

7. If the 6th street Underpass was improved and a walkway was added to the 6th street overpass, which one would you prefer to use?

	Response Percent	Response Count
Underpass	37.6%	77
Overpass	**62.4%**	**128**
answered question		**205**
skipped question		**0**

8. Why did you choose the option in the previous question

	Response Count
	205
answered question	**205**
skipped question	**0**

9. In the past year, you or a household member crossed the 287 Bypass on foot or bicycle?

	Response Percent	Response Count
Never	**43.4%**	**89**
Yearly (1 or 2 Times)	22.0%	45
Monthly (1 or 2 Times)	15.6%	32
Weekly (1 or 2 Times)	8.8%	18
Daily (3 or more days a week)	10.2%	21
answered question		**205**
skipped question		**0**

10. If you or a household member crossed the 287 Bypass at what locations have you crossed?

	Response Percent	Response Count
At Highley Road	18.5%	38
At Aberdeen Boulevard	22.4%	46
At Inverness Boulevard	33.2%	68
At Murray Street	**45.9%**	**94**
At Daley Street	22.4%	46
Not at an Intersection	22.4%	46
	answered question	**205**
	skipped question	**0**

11. What location do you cross the 287 Bypass most often?

	Response Percent	Response Count
At Higley Road	10.7%	22
At Aberdeen Boulevard	12.7%	26
At Inverness Booulevd	17.1%	35
At Murray Street	**34.6%**	**71**
At Daley Street	9.3%	19
Not at a Intersection	15.6%	32
	answered question	**205**
	skipped question	**0**

12. How often would you or a household member cross the 287 Bypass with a dedicated pedestrian crossing (Overpass, Underpass, crosswalk at a stoplight, pedestrian activated crosswalk)?

	Response Percent	Response Count
Never	19.5%	40
Yearly (1 or 2 Times)	19.0%	39
Monthly (1 or 2 Times)	19.0%	39
Weekly (1 or 2 Times)	19.0%	39
Daily (3 or more days a week)	**23.4%**	**48**
	answered question	**205**
	skipped question	**0**

13. Please rate the following locations for a pedestrian crossing along the 287 Bypass if there is only one location.

	Best Location	2nd Best Location	3rd Best Location	4th Best Location	Worst Location	Rating Average	Response Count
At Higley Road	**32.8% (65)**	16.7% (33)	13.6% (27)	6.6% (13)	30.3% (60)	2.85	198
At Aberdeen Blvd	21.1% (42)	30.7% (61)	**33.7% (67)**	6.5% (13)	8.0% (16)	2.50	199
At Inverness Blvd	16.7% (33)	32.3% (64)	**38.4% (76)**	2.0% (4)	10.6% (21)	2.58	198
At Murray Street	**28.4% (56)**	16.8% (33)	9.1% (18)	20.8% (41)	24.9% (49)	2.97	197
At Daley Street	9.0% (7)	9.0% (7)	11.5% (9)	11.5% (9)	**59.0% (46)**	4.03	78
					answered question		**205**
					skipped question		**0**

14. Please rank the following types of crossings for the 287 Bypass.

	Best	2nd Best	3rd Best	Worst	Rating Average	Response Count
Overpass	**64.2% (129)**	10.9% (22)	12.9% (26)	11.9% (24)	1.73	201
Underpass	10.1% (20)	**40.2% (80)**	17.1% (34)	32.7% (65)	2.72	199
Crosswalk at Stoplight	13.9% (28)	25.9% (52)	**40.8% (82)**	19.4% (39)	2.66	201
Pedestrian Activated Crosswalk	12.7% (25)	22.8% (45)	28.4% (56)	**36.0% (71)**	2.88	197
				answered question		**205**
				skipped question		**0**

15. Do you believe that a pedestrian/bicycle crossing is needed on the 287 Bypass?

	Response Percent	Response Count
Yes	**93.7%**	**192**
No	6.3%	13
answered question		**205**
skipped question		**0**

16. Please provide any additional comments on any of the existing or proposed pedestrian crossings.

	Response Percent	Response Count
6th Street Bridge	26.8%	15
6th Street Underpass	39.3%	22
Washington/Colorado Underpass	35.7%	20
287 Bypass Crossing	**80.4%**	**45**
answered question		**56**
skipped question		**149**

NEEDS EXTREME IMPROVEMENT
LARGER SIDE WALKS
LIKE IT'S NEW CONDITION
NEEDS TO BE IMPROVED
VISIBILITY IS AN ISSUE
LARGE SIDEWALKS
I really enjoy using this location, however the city does not do a good job maintaining it in the winter or summer. In the summer months it is full of trash and vomit and in the winter months it is full of ice.

Washington/Colorado Underpass

very important part of the community
All of the walkways had damage and were and still have tripping hazards that nobody ever pays attention to.
bad idea - it's been there forever & I've never liked that underpass... ever since I was "approached" by an older man in the tunnel when I was 10 years old. I don't know if it's true now, but when I was a child my friends & I would routinely see men - usually drunk - urinating in the underpass. Not a pretty site for a child. How about installing security cameras in the underpasses.
Not improvements needed
Upgrades to lighting, surface treatments, and modifications to the geometry/configuration to allow for better visibilty are a good short term strategy.
Tremendously in need of upgrading. If everyone drove VWs, it wouldn't need to be widened, but guys in big trucks roar through there.
widen
needs lots of lighting
It works but be even better if it was wider.
this underpass is a hazard! It is narrow, most often people wait for traffic to clear before going threw. Emergency vehicles were much smaller when this wider
BEAUTIFY AREA AROUND THE ENTRANCES
POSSIBILITY OF ONE WAY
PAINT $20.00 A GALLON
NEEDS SOME IMPROVEMENT
LARGER SIDE WALKS
NEEDS LOTS OF IMPROVEMENTS HOWEVER THE EXTERIOR IS LOOKING BETTER
NEEDS TO BE IMPROVED
LARGE SIDEWALKS
I am able to navigate this underpass suffiently, but there are many people that are scared of this underpass and slow down all the trafic at this location

287 Bypass Crossing

very much needed
Extreme danger to cross due to speed and volume of traffic
It would be the safest for kids to have a nice underpass so they won't have to cross the highway.
with a new school across town-important

Would this happen to our new one also after 3-5 years down the road? We that have lived here all our live know what Wyoming weather does to any walkways all the time.
With the new elementary school and the current recreation facilitiies and middle school and high school on the other side of 287, it makes sense to help our students and families to be safe and to assist in providing a way to cross such a road.
something need to be done at this location before someone get seriously hurt or killed
New Elementary school on one side and all other activites on the other side of bypass. Need some way to cross.
Will be needed even more when the school gets built.
wheelchairs can not get over 287 and on walking path
Where I may cross and where children may need to cross are 2 separate subjects and there is no mention of a focus for this survey. I cross 287 (not the bypass) daily on warmer days and don't feel the need for a crossing. I cross the bypass 2x a year, at the most, and don't use it enough to feel the need for a crossing. Note that #13-15 were answered as an adult without children. If we are discussing the need for a crossing for students then I think one is good idea... especially after the school is built.
Very important for the school students
Short term strategies could be to install some crosswalks at a couple of locations, but there needs to be some emphasis on a long term strategy for a overpass/underpass in this area. With the recreation and school expansions in this area there are large increases of potential conflicts with the high speeds of this road.
Due to high traffic volume, over/underpass is needed
More than one crossing would be best ~ the bypass is over a mile long.
In my opinion, the 287 Bypass needs both a SAFE pedestrian crossing, as well as at least a stop light at the Murray Street intersection. I have seen school children run across the street to get either to or from school from the Highland Hills housing area. It is terrifying to be driving 40 mph on that specific section of road (between Aberdeen and Murray) and have a child or group of children run across the Bypass, which generally is well traveled by motorized vehicles. I would STRONGLY suggest that there be two (2) non-motorized crossings placed on the 287 Bypass to ensure the safety of children school crossing and location should be first priority, not adult corssing.
Long, long overdue.
With new school being built there will definately be need
It's been needed for a long time for the safety of our residents. Anyone on foot risks being run over nearly every time they cross.
The bypass needs a stoplight at Murray to break traffic
Will really be needed when new school is completed!!! Can we put a price tag on the saving of one life?
Walking across 287 is very dangerous there are no lights at any intersection and it is hard to even cross traffic in a vehicle. I feel an intersectioin should be available on or near Murray street for traffic leaving the shopping area around City Market. severa times I left this parking lot and drove to Colorado street to take another route home to Highland Hills
very much needed
This is a necessity and always has been
PEDESTRIAN CROSSING WOULD BE GOOD
A CROSSING IS GOING TO BE NEEDED FOR THE 287 BYPASS
FOR OUR KIDS SAFETY WE NEED A CROSSWALK WITH A STOPLIGHT
OVERPASS IS GREATLY NEEDED SINCE THE NEW ELEMENTARY SCHOOL IS BEING BUILT

PAINT $20.00 A GALLON
A CROSSING IS GOING TO BE NEEDED FOR THE 287 BYPASS
I HAVE SEEN SO MANY CHILDREN TRYING TO CROSS THE 287 BYPASS AFTER SCHOOL. THAT IS SCARY BECAUSE THEY RUNN ACROSS AT ANY BREAK IN TRAFFIC.
NEEDED DUE TO NEW SCHOOL
NEEDS SOMETHING MORE SAFER
LARGER SIDE WALKS
UNDER OR OVER PASS
IT WOULD BENIFIT HAVING A CROSSWALK
WHEN THE SCOOL IS BUILT
A CROSSING IS GOING TO BE NEEDED FOR THE 287 BYPASS
TO MANY PEOPLE ALMOST GET INTO ACCIDENTS
LARGE SIDEWALKS
NEEDED DUE TO NEW SCHOOL
we need one desperatly
Very dangerous, traffic very heavy, cars exceeding speed by over 10 mph often, no yield to pedestrians, no marked crosswalk now.

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APPENDIX B

CITIZEN RESPONSES

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Non-Motorized Rail Yard Grade-Seperated Crossing Options Comment Sheet

The 6th Street Bridge
The 6th Street Pedestrian Underpass
The Washington Street Underpass I live on the N (Colo.) side of the underpass/tunnel. I am the 1st house to N. My comments are attached.
The 287 Bypass Pedestrian Location

Please respond to Brad Emmons at AVI in any of the following formats by December 31, 2009:

1103 Old Town Lane #101
Cheyenne, WY 82009
emmons@avipc.com
phone – 637-6017
fax – 632-9326

The City of Bowlus does minimal maintenance now and wants to do less! Amazing!

I have lived about 100' from the east (Wash./Colo.) tunnel for nearly 20 years. The lighting problem can probably be solved with a change of bulbs. I mentioned to my councilman that I thought the City should install LED or compact fluorescent a couple of years ago. I have a 7 watt CF porch light that puts out more light by far, than their dusty yellow incandescents.

I haven't seen much of a vandalism problem here. 7 or 8 years ago kids sprayed graffiti. They were caught and made to paint over it. I haven't seen the whole thing (inside & ends) painted since I have been here. A volunteer group painted the entrance. 2 years ago but they painted over dirt and it soon started peeling.

The drainage is the only problem I see that isn't strictly maintenance. I think the water is meant to drain 2 ways. It comes down from the W and the curb and gutter dips to allow it to drain alongside the E side of the walkway but it dips too soon and goes across part of the walkway. This wouldn't be a big problem except when the water gets to the grate the grate is full of rocks and debris about a foot in so flows across and in to the tunnel. The first section of paving coming N needs to be raised so the NE corner is high enough that water runs into the gully as meant. The other way to fix it is to lower the street paving so the majority of water will flow into the drain at the corner of Colorado and Front. This is more difficult because there is a manhole very close to the gutter that is very high. I would like to see the street fixed. There needs to be a crosswalk there especially since

Finally, I don't think there is much that can be done about the snow. As we (Louis Espinoza, Councilman) plant farther to the West it should create a snowfence and hold some snow back from the walkway.

I have lived in several cities (I am 66) in Calif, Colo & NY & Canada and I have never seen a City do so little maintenance. If they expect to do even less I don't even know what to say.

I think they should leave the street underpass alone. Other cities are narrowing their streets. It needs to be kept clean. Quirky! I like it.

Nancy E. Davis
221 E. Front St
Rawlins WY 82301

Non-Motorized Rail Yard Grade-Seperated Crossing Options Comment Sheet

The 6th Street Bridge

They did not save money by leaving the sidewalk off, because it is extremely important and it does not need to meet ADA requirements.

The 6th Street Pedestrian Underpass

They deserve a big thank you for putting the handrails on. The handrails have saved my butt many time already this year. They are doing a much better job of maintance in the tube lately.

The Washington Street Underpass

A way of preventing the snow and ice from building up in front of the North end of the tube is the main issue that need to be addressed.

The 287 Bypass Pedestrian Location

This location should be placed between the schools and the Rec Center, and avoid the busy streets and intersections.

Please respond to Brad Emmons at AVI in any of the following formats by December 31, 2009:

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Cheyenne, WY 82009
emmons@avipc.com
phone – 637-6017
fax – 632-9326

Non-Motorized Rail Yard Grade-Seperated Crossing Options Comment Sheet

The 6th Street Bridge
The 6th Street Pedestrian Underpass To be Cleaned
The Washington Street Underpass Widen
The 287 Bypass Pedestrian Location Stop light and overpass for pedestrian, 287 + Underpass

Non-Motorized Rail Yard Grade-Seperated Crossing Options Comment Sheet

The 6th Street Bridge Needs walkway added
The 6th Street Pedestrian Underpass Needs lights, straightened or curved, paint, surveillence camera to police or sheriff's office
The Washington Street Underpass This one is in pretty good shape, but it could really use enlarging for all the trucks!
The 287 Bypass Pedestrian Location Needs a secure, covered, heated overpass walkway with surveillence cameras A stoplight at Inverness & 287 would be very helpful.

632-9326

Non-Motorized Rail Yard Grade-Seperated Crossing Options Comment Sheet

The 6th Street Bridge
The 6th Street Pedestrian Underpass
The Washington Street Underpass
The 287 Bypass Pedestrian Location * Overpass with fence to prevent walkers, bikers from falling off - @ Inverness. There is a foot path along the south end of 287 on the west side of 287 - crossover @ Inverness would be logical. as the city seems to be running out of budget, and they might be able to do only 1 project this is the primary, most important project - especially in light of the new school. Also although a stoplight would be great, I cannot see truckers/travelers being joyful about stopping @ Inverness

Brad Emmons

From: Mike Daly [hoghead7@msn.com]

Sent: Wednesday, January 27, 2010 1:06 PM

To: emmons@avipc.com

Subject: Daly st. Crosswalk

Mr. Emmons,
My name is Mike Daly and am the Chairman of the Union Pacific Railroad Cheyenne Safety Committee. I am contacting you about the concerns that this committee has in regards to our crews staying at the Oak Tree in at Rawlins. We feal that there is a real danger for our crews trying to cross Highway 287 to acess various business at that location. The need for proper protection for our crews to cross this highway is at the top of our safety concerns. Any measure that can be addressed to eliminate a potential accident would be greatly appreciated. Thank you for your attention on this matter.

Mike Daly
Chairman Cheyenne Safety Committee
970 222 2079
hoghead7@msn.com

Brad Emmons

From: Larry Wessel [lgwessel@hotmail.com]
Sent: Thursday, January 21, 2010 11:26 AM
To: emmons@avipc.com
Subject: crosswalk rawlins

BRAD.

I WOULD LIKE TO SEE A CROSSWALK AT DALY STREET AND HIGHWAY 287 BYPASS IN RAWLINS WY. I STAY AT THE OAK TREE INN SEVERAL TIMES A MONTH AND I TRY TO CROSS THE HIGHWAY AND YOU NEED TO BE A SPRINTER TO CROSS. I HAVE SEEN MANY CHILDERN TRY TO CROSS. I THINK THE SPEED LIMIT IS FORTY HOWEVER THE TRAFFIC LOOKS TO BE MUCH FASTER.

LARRY WESSEL
307-631-9139

Brad Emmons

From: Tony Leichtweis [aleichtweis@gmail.com]
Sent: Friday, January 22, 2010 1:55 PM
To: emmons@avipc.com
Subject: Rawlins Crosswalk

Brad Emmons,

I am the writing you in reference to the crosswalk in Rawlins at Daly Street and 287 Bypass. I am a Peer Trainer for Union Pacific Railroad. I have worked out of Rawlins and have walked across 287 Bypass to get to the business on the west side of the highway. It's not just railroaders crossing the highway at this intersection residents of Rawlins including children cross this highway. What is it going to take to get something done here, someone getting hit by a car? Lets try to get this matter resolved before someone gets hurt or killed.

Thank You,
Tony Leichtweis

Brad Emmons

From: Tcbosworth@aol.com
Sent: Tuesday, January 26, 2010 7:05 AM
To: emmons@avipc.com
Subject: RAWLINS CROSSWALK

Mr. Emmons,

I am writing in regards to the need of a crosswalk (or something) at Daly St and 287 bypass in Rawlins, WY. I am the chairman of the Cheyenne Safety Committee for the Brotherhood of Locomotive Engineers Division 103, the United Transportation Workers Division 446 and Union PacificRailroad and have walked across the street at this location numerous times. I personally feel that it is only a matter of time until someone gets seriously hurt or killed at this location. It is not only railroaders that walk across the street at this location, I' ve seen families with small children and guest of the Oaktree Inn at Rawlins try to walk across the street, at this location, and I personally feel that something needs to be done. Is a crosswalk the answer? I'm not sure. But, I think its obvious that a proactive approach is the answer to the situation and not a reactive approach. Let's not get someone seriously injured before something is done.

Thank you for your time and attention to this safety issue.

Sincerely,

Terry Cooke

Brad Emmons

From: CheyenneTSC [cheyennetsc@gmail.com]
Sent: Friday, January 22, 2010 11:05 AM
To: emmons@avipc.com
Subject: Crosswalk @ Daly Street & 287 Bypass- Rawlins

Mr. Emmons,

I am writing in regards to the need of a crosswalk (or something) at Daly St and 287 bypass in Rawlins, WY. I am a Total Safety Culture-Facilitator for the Union Pacific and have walked across the street at this location numerous times. I personally feel that it is only a matter of time until someone gets seriously hurt or killed at this location. It is not only railroaders that walk across the street at this location, I' ve seen families with small children try to walk across the street, at this location, and I personally feel that something needs to be done. Is a crosswalk the answer? I'm not sure. But, I think its obvious that a proactive approach is the answer to the situation and not a reactive approach. Let's not get someone seriously injured before something is done.

Thank you for your time and attention to this safety issue.

Sincerely,

Jamie Schaffer

(307) 421-5681

2507 E. 10th St
Cheyenne, WY
82001

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APPENDIX C

EXCERPT FROM

ADA DESIGN REQUIREMENTS

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EXCERPT FROM THE ADA DESIGN REQUIREMENTS

PART 36 -- NONDISCRIMINATION ON THE BASIS OF DISABILITY BY PUBLIC ACCOMMODATIONS AND IN COMMERCIAL FACILITIES

Appendix A to Part 36 -- Standards for Accessible Design

4.8 Ramps.

4.8.1* General. Any part of an accessible route with a slope greater than 1:20 shall be considered a ramp and shall comply with 4.8.

4.8.2* Slope and Rise. The least possible slope shall be used for any ramp. The maximum slope of a ramp in new construction shall be 1:12. The maximum rise for any run shall be 30 in (760 mm) (see Fig. 16). Curb ramps and ramps to be constructed on existing sites or in existing buildings or facilities may have slopes and rises as allowed in 4.1.6(3)(a) if space limitations prohibit the use of a 1:12 slope or less.

4.8.3 Clear Width. The minimum clear width of a ramp shall be 36 in (915 mm).

4.8.4* Landings. Ramps shall have level landings at bottom and top of each ramp and each ramp run. Landings shall have the following features:

(1) The landing shall be at least as wide as the ramp run leading to it.

(2) The landing length shall be a minimum of 60 in (1525 mm) clear.

(3) If ramps change direction at landings, the minimum landing size shall be 60 in by 60 in (1525 mm by 1525 mm).

(4) If a doorway is located at a landing, then the area in front of the doorway shall comply with 4.13.6.

4.8.5* Handrails. If a ramp run has a rise greater than 6 in (150 mm) or a horizontal projection greater than 72 in (1830 mm), then it shall have handrails on both sides. Handrails are not required on curb ramps or adjacent to seating in assembly areas. Handrails shall comply with 4.26 and shall have the following features:

(1) Handrails shall be provided along both sides of ramp segments. The inside handrail on switchback or dogleg ramps shall always be continuous.

(2) If handrails are not continuous, they shall extend at least 12 in (305 mm) beyond the top and bottom of the ramp segment and shall be parallel with the floor or ground surface (see Fig. 17).

(3) The clear space between the handrail and the wall shall be 1 - 1/2 in (38 mm).

(4) Gripping surfaces shall be continuous.

(5) Top of handrail gripping surfaces shall be mounted between 34 in and 38 in (865 mm and 965 mm) above ramp surfaces.

(6) Ends of handrails shall be either rounded or returned smoothly to floor, wall, or post.

(7) Handrails shall not rotate within their fittings.

4.8.6 Cross Slope and Surfaces. The cross slope of ramp surfaces shall be no greater than 1:50. Ramp surfaces shall comply with 4.5.

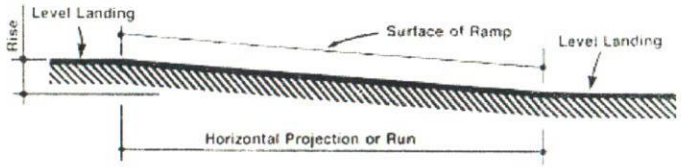
4.8.7 Edge Protection. Ramps and landings with drop-offs shall have curbs, walls, railings, or projecting surfaces that prevent people from slipping off the ramp. Curbs shall be a minimum of 2 in (50 mm) high (see Fig. 17).

4.8.8 Outdoor Conditions. Outdoor ramps and their approaches shall be designed so that water will not accumulate on walking surfaces

4.26 Handrails, Grab Bars, and Tub and Shower Seats.

4.26.1* General. All handrails, grab bars, and tub and shower seats required to be accessible by 4.1, 4.8, 4.9, 4.16, 4.17, 4.20 or 4.21 shall comply with 4.26.

4.26.2* Size and Spacing of Grab Bars and Handrails. The diameter or width of the gripping surfaces of a handrail or grab bar shall be 1-1/4 in to 1-1/2 in (32 mm to 38 mm), or the shape shall provide an equivalent gripping surface. If handrails or grab bars are mounted adjacent to a wall, the space between the wall and the grab bar shall be 1-1/2 in (38 mm) (see Fig. 39(a), (b), (c), and (e)). Handrails may be located in a recess if the recess is a maximum of 3 in (75 mm) deep and extends at least 18 in (455 mm) above the top of the rail (see Fig. 39(d)).



	Maximum Rise		Maximum Horizontal Projection	
Slope	in	mm	ft	m
1:12 to < 1:16	30	760	30	9
1:16 to < 1:20	30	760	40	12

[D]

Fig. 16
Components of a Single Ramp Run and Sample Ramp Dimensions

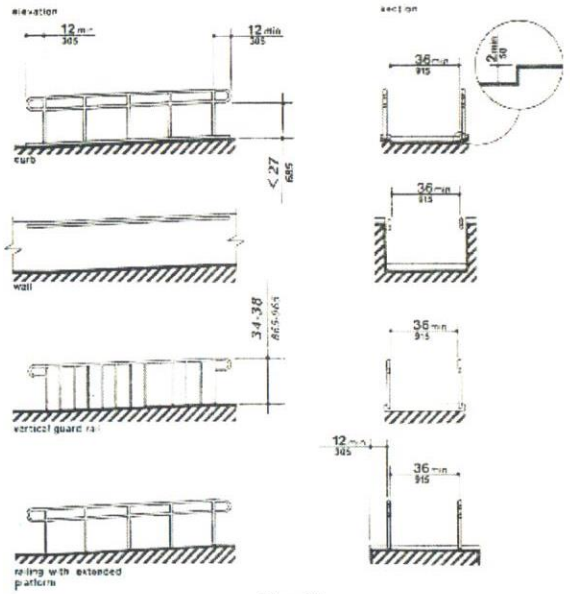


Fig. 17
Examples of Edge Protection and Handrail Extensions

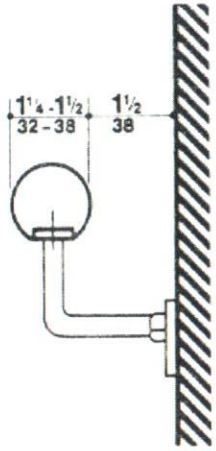


Fig. 39(a)
Handrail

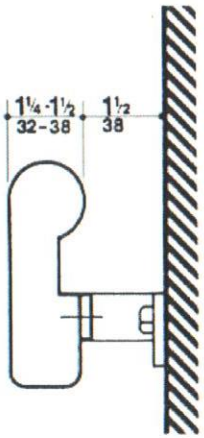


Fig. 39(b)
Handrail

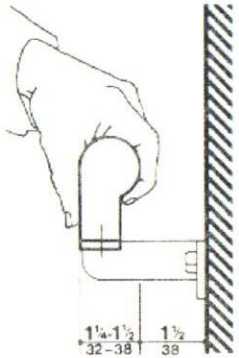


Fig. 39(c)
Handrail

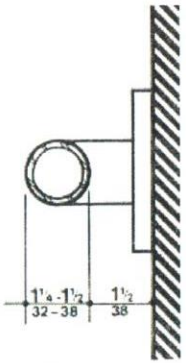


Fig. 39(e)
Grab Bar

APPENDIX D

BRIDGE AND UNDERPASS

WYDOT INSPECTION AND INVENTORY

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Department of Transportation

State of Wyoming

Dave Freudenthal
Governor

John F. Cox
Director

October 17, 2007

Project 0007107
Off-System Bridge
Inspection and Inventory
Statewide

Mr. Duane Stolns
Public Works Director
P.O. Box 953
Rawlins, WY 82301

Dear Mr. Stolns:

As part of the on-going project referenced above, we are forwarding a copy of the inspection report for Structure Number CLV over the Union Pacific Railroad in the City of Rawlins. WYDOT personnel inspected this bridge in March of this year and again in October. The first inspection was performed without the benefit of a lift truck. Since some areas of the bridge required closer examination, the second inspection was performed utilizing an under-bridge inspection vehicle.

This bridge inspection report and the accompanying sheets of inspection notes should identify all deficiencies in a clear and thorough manner. As such, it is generally our practice in forwarding these reports to the governing agency to specifically identify only those deficiencies classified as critical findings. Critical findings are defined as those items requiring some type of immediate action to allow the bridge to safely maintain an acceptable level of service. No such deficiencies were identified in the recent inspections of this bridge. However, since extensive rehabilitation work was recently performed on the structure, we will highlight certain items from the report which may be of significance.

- There are loose and/or missing bolts in girder splices and crossframe connections in most of the spans.
- In the 10th and 11th spans from the north, the inspectors identified 83 locations where the top girder flange is bent downward and the web is somewhat buckled directly beneath. This damage is consistent with impact from above as could occur with equipment used to remove the deck as was done on the recent rehabilitation project.

5300 Bishop Boulevard
Cheyenne, Wyoming 82009-3340

- The west exterior girder in the first span from the north has been damaged and repaired. In the repaired condition, the girder is still deflected as much as 1-15/16 inches longitudinally and bowed 5/8 inches at the center of the web. Areas of damaged paint are still visible, presumably at locations where the contractor heated the steel with torches in the straightening process.

- A large amount of concrete rubble from the deck removal operations remains on top of the bottom flange of the steel girders.

- Many areas of corrosion on the steel girders. Some of these areas that were painted on the recent rehabilitation project were improperly prepared and the rust is showing through.

As stated earlier, none of the deficiencies are considered critical at this time, but are included here for your information. This notwithstanding, we have scheduled another inspection of this bridge for the Fall of 2008. The main purpose of this inspection will be to re-examine the locations of girder web buckling in Spans 10 and 11. If this damage has not gotten worse, we will return this structure to a standard two-year inspection interval.

If you have any questions, please contact this office at (307) 777-4427.

Sincerely,

Gregg C. Fredrick, P.E.
State Bridge Engineer

GCF/JLE/slj

Enclosures

cc: Philip E. Miller, P.E., Division Administrator, FHWA, Wyoming Division, Cheyenne
Jay S. Gould, P.E., District Engineer, WYDOT, Laramie
The Honorable Ken Klouda, Mayor, City of Rawlins, P.O. Box 953, Rawlins, WY 82301

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Department of Transportation

State of Wyoming

Dave Freudenthal
Governor

John F. Cox
Director

December 29, 2008

Project IS09002
Off-System Bridge
Inspection and Inventory
Statewide

Ms. Kelly Abaray
UPRR Public Projects Coordinator
1400 West 52nd Avenue
Denver, CO 80221

Dear Ms. Abaray:

As part of the on-going project referenced above, personnel from this office recently inspected Structures DKI owned by the Union Pacific Railroad. Structure DKI, US-DOT No. 810-465X, intersects Washington Street (U-4563) at UPRR milepost 682.52 in Rawlins, Wyoming. The inspectors reported problems that we want to bring to your attention.

Structure Number: **DKI** Feature Intersected: **U-4563 UNDERPASS**
Structure Type: **Steel Girder**
System Number: **U-4563** Milepost: **0.05**
Township **21 North**, Range **78 West**, Section **16**
PROBLEMS FOUND: **Both of the concrete walls have several large cracks and areas of spalling with exposed reinforcing steel. One of the girders has severe collision damage. Most of the other girders have scrapes and bends from collision damage.**

Enclosed for your information is a copy of the Railroad Bridge Inspection Report for these structures. Railroad structures over public roads are inspected for structural integrity by the Wyoming Department of Transportation for the safety of the traveling public.

If you have any questions, please contact this office at (307) 777-4427.

Sincerely,

Keith R Fulton
for Gregg C. Fredrick, P.E.
State Bridge Engineer

GCF/PGC/slj

5300 Bishop Boulevard
Cheyenne, Wyoming 82009-3340

Enclosures

cc: Philip E. Miller, P.E., Division Administrator, FHWA, Wyoming Division, Cheyenne
Jay S. Gould, P.E., District Engineer, WYDOT, Laramie
The Honorable Kenneth C. Klouda, Mayor, P.O. Box 953, Rawlins, WY 82301

G:\BRIDGE\Operations\Department 6172 - Cortez\City & County Transmittals 08\Carbon Co UPRR Transmittal 08.wpd

Subject: Fwd: Washington Street Underpass Inspection DKI
From: "Jake Lonn" <Jake.Lonn@dot.state.wy.us>
Date: Tue, 19 Aug 2008 08:11:37 -0600
To: <pbworks@rawlins-wyoming.com>

Duane:

Bridge has set the date for the Washington Street Underpass Inspection for August 28, Thursday of next week. Will your crews still be able to help with the closure for this date. Please advise if this date does not work.

Thanks.

Jake

>>> Marilee Manalo 7/24/2008 9:59 AM >>>
Jake,
Thanks for taking time away from your paving duties to answer my phone call. Here are the details relating to the Washington Street Underpass DKI.

Michael Paterson from WYDOT bridge (777-4255) called to let us know that the Washington Underpass Bridge structure will be inspected in the next month or so, some time between mid to late August - early September. The inspection report currently shows a sufficiency rating of Zero because a complete inspection of the structure requires diversion of traffic for at least 1/2 day. Michael would like to work with the City and the District to set a date for the inspection which ideally will include closing of the road to traffic. The bridge inspection report will provide needed information to the city and selected consultants for the Non-Motorized rail crossing study that will be undertaken in the near future.

Dave Derragon was made aware of this (see email below), and agreed to work with WYDOTs schedule and close the bridge to traffic. Is this something that your crew would help with, or will the city need to make these arrangements independently? Duane Stolns may not have been aware of this issue prior to Dave Derragon leaving his position with the City.

Do you want to contact Michael after visiting with Duane?

Thanks,
Marilee

SOME HISTORY:
Email to April 2007 to Dave Derragon:
Dave,
I have attached two inspection reports for the bridge structure over Washington and Colorado streets. The cooperative agreement said we would provide the inspection report. I have a 2006 and 2004 report that I plan to provide to the consultant that is selected.
The next bridge inspection will be scheduled in August of 2008. Tom Hammer does all the scheduling for the off system bridge inspections. If the City of Rawlins is willing to shut down the traffic for about 1/2 a day, Tom's team can perform a more comprehensive inspection of the structure. I wonder if there is a way to mark your 2008 schedule for July 2008 so we make sure that you and Tom connect to schedule a closure of the underpass.

The township and range legal description is not correct on this copy (R78W should be R87W). It has been changed in the database so it should be corrected on the next inspection report.
Let me know if you have any questions, and if you would be willing to work with Tom Hammer to shut the traffic down for 1/2 a day.

Thanks,
Marilee

OTHER NOTES:
Kevin Deaver let me know that if the City of Rawlins shut down traffic for 1/2 day, a more complete inspection can be done (scheduled for August 2008). Tom Hammer is the contact on this, and the City Manager is also aware of this. The sufficiency rating of 0 (Zero) is because the inspection only included the underpass. Mark Wingate checked with Bridge and found out improvements to the pedestrian walkway (DKI) would not be eligible for BROS, but could possibly be eligible for TEAL. I am sure the selected consultant will want to know this answer when looking for ways to fund their suggested improvements.

Marilee Ohnstad Manalo, MP
5300 Bishop Blvd.
Cheyenne, WY 82009-3340
307-777-4941

BRIDGESCANNER_20070405.pdf

Bridge 2004 report.pdf

WYOMING DEPARTMENT OF TRANSPORTATION
RAILROAD INSPECTION REPORT

Structure Number: DKI

STRUCTURE DATA

Feature Intersected: U-4563 UNDERPASS Maintenance Jurisdiction: 4

Structure Type: SIMPLE SPAN WF GIRDER

System Number: U-4563 MP: 0.05 Lane: SS

District: 1 County: CARBON Maint. Section: CITY

Township: 21N Range: 78 W Section: 16

	OLD	NEW
118. Sufficiency Rating:	.0	.0

Current Inspector: TJH/MWP Date Inspected: 08/15/2006

Prev Inspector: RJW/TJH Date of Previous Inspection: 8/26/2004

	OLD	NEW
103. Temporary Structure:	–	

RECORD MEASUREMENTS

Route Under The Structure	OLD	NEW
10: Minimum Vertical Clearance (If no restrictions, code 99 Ft 99 In)	13 Ft 04 In	13 ft 04 in
47: Total Horizontal Clearance (In Feet and tenths of Feet)	19.2	19.2

ADDITIONAL REMARKS

THERE ARE SEVERAL LARGE CRACKS IN BOTH CONC WALLS. THERE ARE AREAS OF SPALLING ALSO. DECK DRAINS ARE PLUGGED.ONE GIRDER HAS SEVERE COLLISION DAMAGE. MOST OTHERS HAVE MINOR SCRAPES AND BENDS FROM COLLISION DAMAGE. TO THOROUGHLY INSPECT BRIDGE, TRAFFIC NEEDS TO BE SHUT DOWN AS THIS IS A VERY NARROW UNDERPASS. SOME OF THE UTILITY LINES ARE BROKEN ALSO.

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WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE INSPECTION REPORT

Structure Number: DKI

STRUCTURE DATA

Feature Intersected: U-4563 UNDERPASS
Maintenance Jurisdiction: 4 County
Structure Type: SIMPLE SPAN WF GIRDER
System Number: U-4563 MP: 0.05 Lane: SS
District: 01 County: CARBON Maint. Section: CITY
Township: 21N Range: 78 W Section: 16 Drawing Number: UNKNOWN

118. Sufficiency Rating: 0

Lead Inspector: RJW/TJH
Date Inspected: 8/26/2004

103. Temporary Structure:

RECORD MEASUREMENTS

Route On the Structure

10: Minimum Vertical Clearance (If no restrictions, code 99 Ft 99 In)		1304
47: Total Horizontal Clearance (In Feet and tenths of Feet)		19.2
53: Minimum Vertical Clearance Over Bridge Rdwy (If no restrictions, code 99 Ft 99 In)		99.99
54: Minimum Vertical Underclearance (H) Highway under Structure (R) R/R under Structure (N) Neither Highway nor R/R, (Code N 0000)	H	13.25
55: Minimum Lateral Underclearance on Right On Right (Ft and tenths of Feet) H, R, or N ((f neither, code N00.0)	H	0
56: Minimum Lateral Underclearance On Left (Ft and tenths of Feet) **Divided Highways, 1-Way-Streets and Ramps**		0

Route Under The Structure

10: Minimum Vertical Clearance (If no restrictions, code 99 Ft 99 In)	13 Ft 5 In
47: Total Horizontal Clearance (In Feet and tenths of Feet)	19.2

SAFETY FEATURES

Railing

36. Rail Ratings

Col 1: Bridge Rail Acceptable

Col 2: Guardrail Transition Acceptable

Col 3: Guardrail Acceptable

Col 4: Guardrail Ends Acceptable

Signing

41. Open, Posted or Closed:	
66.01. Sign Legibility:	N
66.02. Sign Visibility:	N
66a. Max Posted Load (Tons):	N

66. Signing Remarks

Current Load Posting	
TYPE 3	Tons
TYPE 3S2	Tons
TYPE 3-3	Tons

APPROACH ROADWAY

841.01 Guardrail Remarks

CONDUIT IN UNDERPASS COMING APART AT JOINTS. ALSO LARGE CRACKS WITH REBAR EXPOSED, 1 DAMAGED GIRDER DUE TO COLLISION

841.02 Pavement Remarks

DAMAGE ALSO NOTICED 1 X-GIRDER HAD SEVERE RUST ABOUT 50% OF GIRDER RUSTED THROUGH. DRAINS PLUGGED. IN ORDER TO CHECK UNDER

841.03 Shoulders Remarks

PASS GOOD, IT WOULD HAVE TO BE SHUT DOWN FOR A 1/2 DAY IN ORDER TO CHECK ALL GIRDERS THROUGHOUT STRUCTURE. SOME LIGHTING

841.04 Embankment Remarks

OUT IN TUNNEL

DECK

840.06 Lighting Remarks

SOME OF THE LIGHTING OUT OF ORDER

840.07 Other Utilities Remarks

CONDIUT FALLING APART AT JOINT

58a. Asphalt/Cover Depth (Inches):	0
107. Deck Structure Type:	1
108a. Type of Deck Wearing Surface:	N

SUPERSTRUCTURE

59.04 Diaphragms Remarks

59.07 Bracing Remarks

SUMMARY RATINGS

For Inventory Engineer's use only. Do not change ratings in field.

58. Deck Rating
59. Superstructure Rating
60. Substructure Rating

CHANNEL AND CHANNEL PROTECTION

61.01 Channel (Streambed and Banks)	N
61.02 Embankment (Berm Slope)	N
61.03 Waterway Constrictions, Debris	N
61.04 Channel Bank Protection	N
61.05 Bridge Embankment Protection	N
61.06 River Control Devices	N

61. Channel Overall Rating:	
61a. Channel Material Code:	N
61b. Bank/Embankment Protection Code:	N
61c. Freeboard from Highwater mark, (ft):	N
61d. Streambed to Bottom of Girder (ft):	

INSPECTOR APPRAISAL

71. Waterway Adequacy

72. Approach Roadway Alignment

PROPOSED IMPROVEMENTS (Rehabilitation or Repair Only)

75a. Type of Proposed Work: 38
Remarks:
GIRDER NEEDS TO BE STRAIGHTEN OR REPLACED

75b. Work Done By . . 1
76. Length of Improvement -1
94. Bridge Improvement Cost
95. Roadway Improvement Cost
96. Total Project Cost
97. Year of Improvement Cost Estimate

FOLLOW-UP INSPECTIONS

889. Underwater

890. Snooper

891. Other

ADDITIONAL REMARKS

THERE ARE SEVERAL LARGE CRACKS IN BOTH CONC WALLS. THERE ARE AREAS OF SPALLING ALSO. DECK DRAINS ARE PLUGGED.ONE GIRDER HAS SEVERE COLLISION DAMAGE. MOST OTHERS HAVE MINOR SCRAPES AND BENDS FROM COLLISION DAMAGE. SOME OF THE LIGHTS ARE OUT. TO THOROUGHLY INSPECT BRIDGE, TRAFFIC NEEDS TO BE SHUT DOWN AS THIS IS A VERY NARROW UNDERPASS. SOME OF THE UTILITY LINES ARE BROKEN ALSO.

BRIDGE ELEMENTS

DKI

Element Number: 0 0 Units:

STATUS	ENV	QUANTITY	COND 1	COND 2	COND 3	COND 4	COND 5
I			0	0	0	0	0

Remarks:

Structure Inventory and Appraisal Form 9/14/2005

System: U-4563 Lane: Mp: 0.05 Structure No: DKI
Feature Intersected: U-4563 UNDERPASS District: 01

**********IDENTIFICATION********** **********CLASSIFICATION**********

(3) County	CARBON	(26) Functional Classification	URBAN COLLECTOR
(4) City/Town	RAWLINS		
(5) Inventory Route	2 5 1 045630		
(7) Facility Carried by Structure	UPRR		
(9) Location	COLORADO STREET;RAWLINS		
(10) Vertical Clearance (Under Rt))	13 5		
(21) Custodian:	RAILROAD		
(22) Owner:	RAILROAD		
(892) Project Number			

**********STRUCTURE DATA**********

(42) Type Service On/Under	RAILROAD HIGHWAY, W/WO PEDESTRIAN
(805) Main Structure Type	SIMPLE SPAN WF GIRDER
(47) Total Horiz Clearance (Under Rt)	19.2
(48) Max Span Length	24

**********WYDOT DATA**********

(802) Drawing Number	UNKNOWN
(803) Station	.00

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APPENDIX E

EXCERPT FROM 2003 WYDOT PEDESTRIAN AND SCHOOL TRAFFIC CONTROL MANUAL

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