

Camino del Rio Pedestrian/Bicycle Crossing Study



Preliminary Report Submitted April 10, 2020

Prepared for:



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I. EXECUTIVE SUMMARY

The heart of historic downtown Durango extends from 5th Street to 14th Street, from Camino del Rio (Camino) to East 3rd Avenue. This area was developed during an era when walking was a primary mode of transport, and even today walking and bicycling are favored modes in the corridor for short to medium-length trips. Camino also serves as a primary north/south highway corridor in the State and accommodates a steadily increasing amount of freight and motorist traffic. Therefore, the Camino corridor itself is largely vehicle centric.

Running parallel to Camino throughout the downtown corridor, the Animas River Trail (ART) is the centerpiece of the City of Durango trail system. It stretches nearly 7 miles through the Durango Animas River Greenway. The ART serves as the spine of the City's overall trail network and provides easy access to a variety of community facilities, parks, open spaces and natural surface trails. The ART is a recreational trail as well as an important component of the City's transportation network. The ART is used extensively by area residents and visitors alike and is consistently rated as one of the top amenities in Durango.

The City of Durango (City) recognizes the need to provide a safe and convenient crossing for pedestrians and cyclists between the ART and downtown Durango from 6th to 12th Streets. With a focus on safety and connectivity, this study furthers City Council goals to supply mobility (4.C), and enhance quality of life in Durango (2) (see Appendix A). These connections could also spur responsible in-fill growth and re-development along the Animas River corridor.

The purpose of this Camino Pedestrian/Bicycle Crossing Study is to evaluate opportunities to provide safe pedestrian and bicycle crossings of Camino linking downtown Durango to the Animas River Trail. This study evaluated the feasibility of crossings of Camino between 6th Street and 12th Street.

The recommendations of this study include the following:

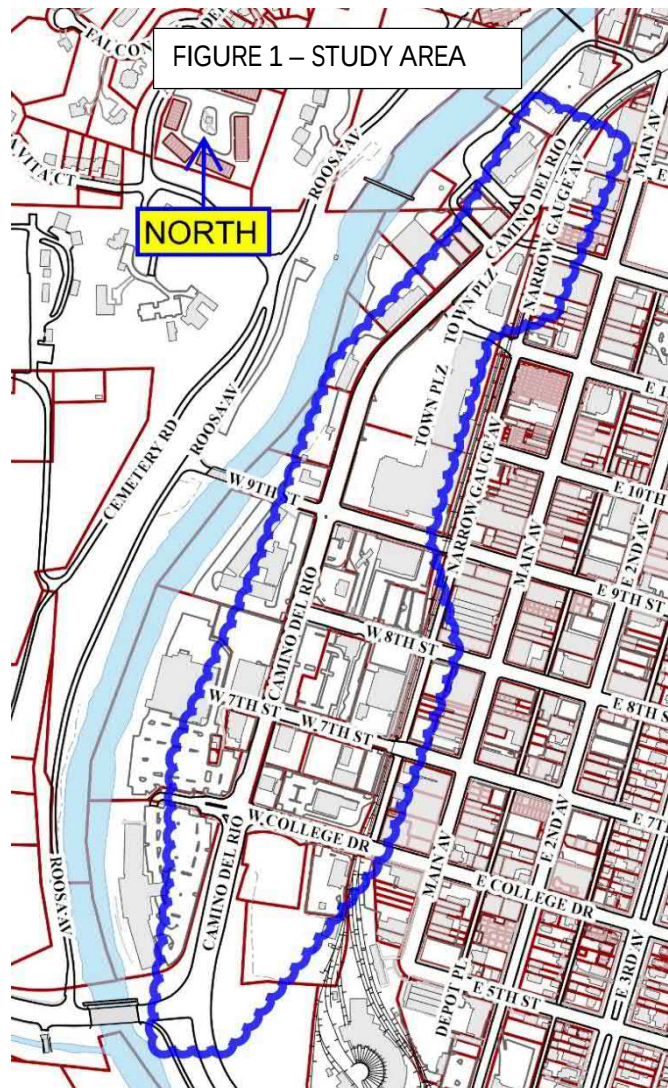
1. Short Term Solution – Investigate a standard traffic signal at the 12th Street and Camino intersection in collaboration with the Colorado Department of Transportation (CDOT). CDOT currently has a project scheduled for construction in 2021 that includes replacement of the span wire Pedestrian Hybrid Beacon (PHB) at 12th Street with a standard mast arm PHB configuration. This configuration will allow for future conversion of the PHB to a standard traffic signal at a relatively nominal cost (\$60,000 +/-). City staff has ordered a traffic signal warrant analysis for this intersection to see if it is possible to construct the standard traffic signal with the 2021 project.
2. Mid- to Long Term Solutions:
 - a. As the planning for the SMART 160 Trail West progresses, further investigate the future anticipated demand and possible design options for an overpass or underpass at/near 6th Street on Camino in collaboration with CDOT, Durango & Silverton Narrow Gauge Railroad, and the Doubletree Hotel. Conceptual estimates for these improvements are \$3.2 million for the overpass option and \$3.9 million for the underpass option (excluding any costs associated with right-of-way acquisition).

- b. As redevelopment occurs, explore an underpass at 11th or 12th Street on Camino in collaboration with CDOT, Durango & Silverton Narrow Gauge Railroad, and several adjacent private property owners. Conceptual estimates for these improvements are \$3.4 million for the 11th St underpass option, \$3.4 million for the Veteran's Way/12th St option, and \$3.0 million for the 12th St/River City Hall option (excluding any costs associated with right-of-way acquisition).

II. STUDY BACKGROUND, PURPOSE, AND NEED

The City of Durango is a vibrant, growing community located in Southwest Colorado. As occurs in many growing communities, traffic congestion prompted the diversion of traffic around downtown, in this case via Camino del Rio (Camino). As traffic has increased on Camino, the bypass has created a physical barrier for pedestrians and bicyclists between Main Avenue and the Animas River/Animas River Trail (ART). According to CDOT, Average Annual Daily Trips (AADT) on Camino within this corridor range from 26,000 to 36,000 vehicles per day.

Multiple planning and engineering studies have been prepared over the past 20 years that include recommendations on how to best bridge this gap as well as suggested future land uses for the areas on either side of Camino. The common theme among these studies was the need for safe and convenient pedestrian/bicycle connections between the Durango downtown core and the Animas River/ART. With this need in mind, the purpose of this study is to identify and evaluate existing surface crossing improvements as well as potential new grade separated crossing location(s).



The official study area begins at the 6th St (College Dr.) & Camino intersection and extends north to the 12th Street/ Camino intersection. However, additional information that is relevant to the overall pedestrian and bicycle patterns throughout the City has been presented for several intersections outside of the study area.

III. PREVIOUSLY PREPARED STUDIES/PLANS

The previously prepared studies cover a broad range of topics and include significant public participation and input from numerous private consultants, agencies, and City staff. The previous studies reviewed and considered prior to the preparation of this study include the following:

Table 1 – Previous Study/Plan Summary

	Study Title	Study Abbreviation
1	2004 Design Guidelines for the Downtown Overlay District	2004 Design Guidelines
2	2006 Downtown Durango Vision and Strategic Plan	2006 Strategic Plan
3	2009 Camino del Rio - State Highway 550 Bike /Pedestrian Underpass Feasibility Study	2009 UP Study
4	2010 US 550 Camino del Rio Access Control Plan (ACP)	2010 Camino ACP
5	2012 City of Durango Multimodal Transportation Master Plan	2012 MTMP
6	2013 US 550 Camino del Rio Access Control Plan Amendment 1	2013 Camino Amended ACP
7	2015 Steam Cultural Park Feasibility Study	2015 Steam Park Study
8	2015 CDOT Region 5 Intersection Priority Study	2015 CDOT Intersection Study
9	2016 City of Durango Multimodal Transportation Plan	2016 MTP
10	2017 Independent Professionals Proposed Alternative 12th Street Alignment Power Point	2017 Independent UP Alternative
11	2017 City of Durango Comprehensive Plan	2017 Comp Plan
12	2018 Camino Del Rio Character District Plan	2018 Camino Character Plan

These planning and engineering studies all generally recommend improved pedestrian and bicycle connections from Main Avenue across Camino to the Animas River and ART via surface crossings in the shorter term and grade-separated crossings in the long-term. A summary of the more relevant content from these studies is included as Appendix B.

IV. PEDESTRIAN/BICYCLIST CURRENT ROUTES TO/FROM DOWNTOWN

The existing transportation network in Durango consists of streets, bridges, trails, sidewalks, bike lanes, and designated bike routes. The existing transportation network and existing physical barriers such as the Animas River and Camino have been used to divide the City into “Ped/Bike Zones by Route.” These zones are based on the likely bicycle/pedestrian routes that the majority of residents/visitors within these zones would utilize when coming to and departing from downtown Durango.

There are essentially six primary access points with pedestrian/bicycle crossing accommodations that the bicyclists and pedestrians who have to cross Camino, 15th St, or Florida Road can use to access downtown (see Appendix C). From south to north, these locations include:

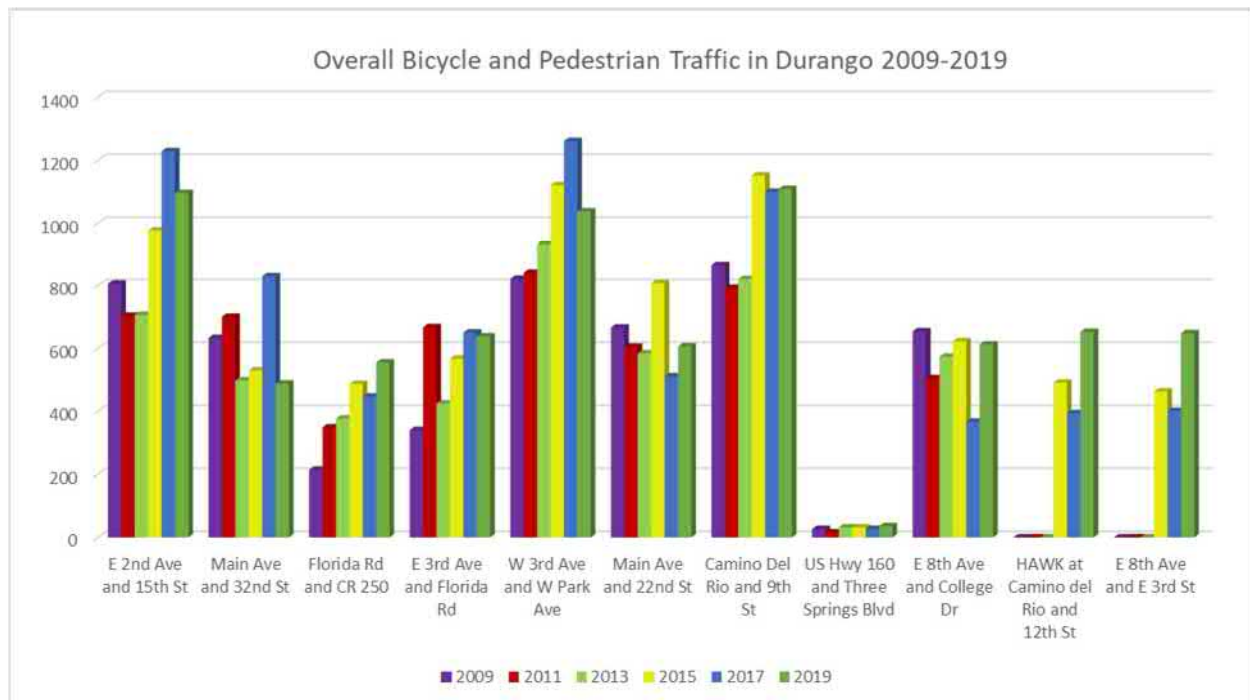
1. Camino & 6th St
2. Camino & 7th St
3. Camino & 9th St
4. Camino & 12th St
5. 2nd Ave & 15th St
6. 3rd Ave & Florida Road

The zone delineations and the route description for each zone are shown in Appendix C.

V. EXISTING PEDESTRIAN/BICYCLE COUNTS

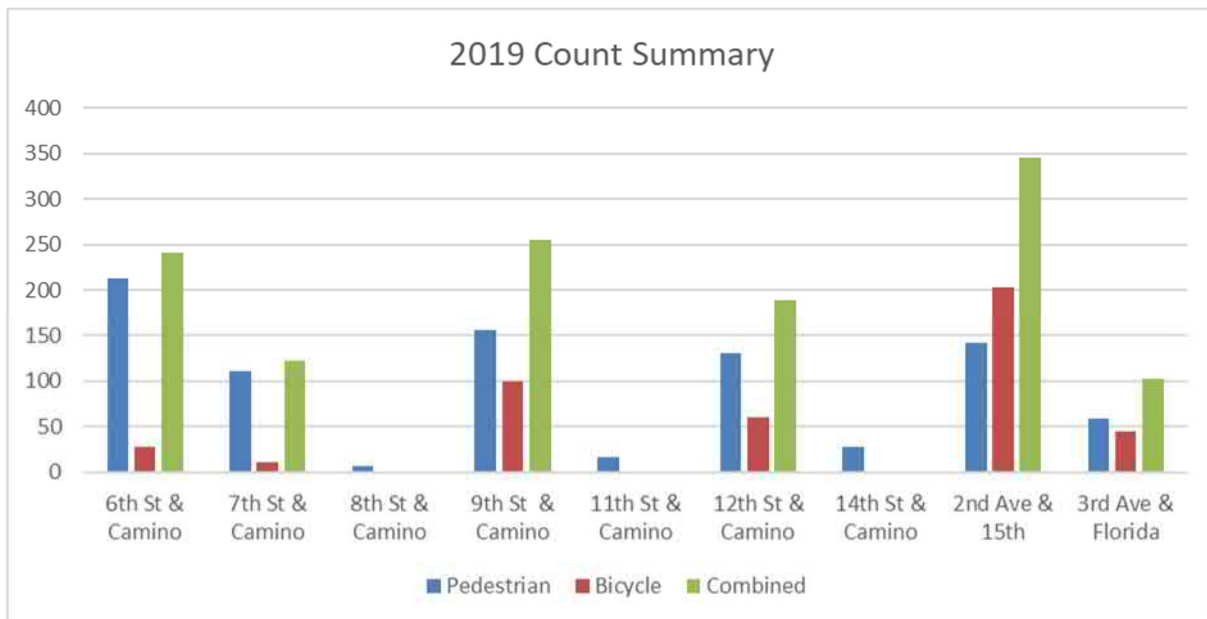
The “Ped/Bike Zones by Route” are estimated/assumed. Therefore, count data was collected to determine the extent to which each of the six identified crossing locations are currently being utilized. The City of Durango and CDOT each provided count data. The City of Durango pedestrian and bicycle counts are useful in determining overall pedestrian and bicycle activity trends and volumes all over the City. Figure 2 shows a summary of all counts from 2009 - 2019. However, the count documentation follows the *National Bicycle and Pedestrian Documentation Project* counting standards and does not include recording of the specific movement/crossing direction. Note the trend is generally upward with 2019 counts approximately 50% higher than 2009 counts. The 2017 Comp Plan reinforced the importance/prevalence of bicycle/pedestrian travel in Durango by referencing previous census data as follows “In 1990 and 2000, the Census reported that over 15% of Durango's population commuted to work by foot or on bicycle, which is a much higher proportion than on the State or National level.”

Figure 2 – 2009-2019 City Ped/Bike Count Summary



Similarly, the CDOT counts recorded pedestrian and bicycle crossings in the crosswalk and the associated leg/direction of each crossing, but did not distinguish between pedestrians and bicyclists or record bike traffic in the bike lanes or road travel lanes separately. Therefore, primary ped/bike intersections were video recorded by SET Engineering between September 25th through October 9th, 2019 between 7:00am and 6:30pm, with one day of counts conducted at each intersection. Counts were then tabulated for the time periods of 7:00am – 9:00am, 11:00am-1:00pm, and 4:00pm-6:00pm. CDOT pedestrian count data was also added for several of the intersections that were not recorded as the data was readily available. A summary of the totals is shown in Figure 3 below:

Figure 3 – 2019 Count Summary



NOTE: NO BICYCLE DATA WAS AVAILABLE AT 8TH, 11TH, & 14TH STREETS.

The large amount of pedestrian traffic at 6th St & Camino is likely due to the patrons of the Doubletree Hotel and to a lesser extent pedestrian traffic from Highway 160 West and the Albertsons supermarket. However, this location would also provide connectivity to the future SMART 160 Trail West.

The 9th St & Camino and 2nd Ave & 15th St intersections rank #1 and #2 in combined bike and pedestrian crossings. These results generally support the “Ped/Bike Zone by Route” assumptions presented in Appendix C as Zones D, E, and F represent the largest percentage of the overall physical area delineated. A more detailed summary is provided in Table 2.

Table 2 - Count Totals and Percentages (7am-9am, 11am-12pm, & 4pm-6pm)

Intersection	Ped Xings			Bike Xings			Combined Xings		
	Total	%	Rank	Total	%	Rank	Total	%	Rank
6th St & Camino	213	24.7%	1	28	6.3%	5	241	19.2%	3
7th St & Camino	111	12.9%	5	11	2.5%	6	122	9.7%	5
8th St & Camino	7	0.8%	9	no data available					
9th St & Camino	156	18.1%	2	100	22.4%	2	256	20.4%	2
11th St & Camino	17	2.0%	8	no data available					
12th St & Camino	130	15.1%	4	60	13.4%	3	190	15.1%	4
14th St & Camino	28	3.3%	7	no data available					
2nd Ave & 15th	141	16.4%	3	204	45.6%	1	345	27.5%	1
3rd Ave & Florida	58	6.7%	6	44	9.8%	4	102	8.1%	6
	861			447			1256		

VI. ACCIDENT HISTORY

Accident data was provided by CDOT for the Camino intersections within the study area and by the Durango Police Department for 2nd Ave/15th Street. The table below summarizes the accidents that involved pedestrians and bicyclists within this time period:

Table 3 - Accident History (only accidents involving bikes and pedestrians) 2013- 2018 (full years)

Accident Type	Camino del Rio Intersections				2nd Ave/ 15th St
	6th	7th	9th	12th	
# of Pedestrian Related Accidents	0 total	3 total (INJ 2013) (INJ 2014) (INJ 2015)	4 total (1 INJ 2013) (2 INJ 2016) (1 INJ 2018)	3 total (INJ 2014) (INJ 2015) (PDO 2017)	0 total
# of Bicycle Related Accidents	0 total	1 total (INJ 2014)	0 total	4 total (1 INJ 2013) (1 INJ 2016) (2 INJ 2017)	0 total

The volume of pedestrian and bicycle activity varies at each of these intersections. Therefore, it is beneficial to “standardize” this data based on the number of crossings. As the data collected is limited, this exercise should not be taken as a statistically accurate evaluation. But it can be useful for comparison purposes. Tables 4 and 5 were created based on the following assumptions/simplifications:

- 1) The vehicular traffic volumes are essentially the same at each intersection.
- 2) The pedestrian and bicycle counts collected between 7am-9am, 11am-12pm, and 4pm-6pm represent 70% of the total crossings for the entire day. Therefore, the total values from Table 2 will be divided by 0.70 to get a daily total.
- 3) The daily pedestrian and bicycle totals calculated in item 2 above for late September and early October are representative of the average daily volumes throughout the year (the theory being pedestrian and bicycle traffic is likely heavier in the summer months and lighter in the winter months, therefore a fall count should be close to the daily average for the year).
- 4) The pedestrian and bicycle crossing volumes at each location were consistent over the past six years (2013-2018).

Table 4 - Estimated Number of Pedestrian and Bicycle Crossings per Year By Location

	Camino del Rio Intersections				2nd Ave/ 15th St	Total
	6th	7th	9th	12th		
# of Pedestrian Crossings	111,064	57,879	81,343	67,786	73,521	391,593
# of Bicycle Crossings	14,600	5,736	52,143	31,286	106,371	210,136
# of Combined Crossings	125,664	63,614	133,486	99,071	179,893	601,729

Table 5 - Approximate Accidents per 100,000 crossings 2013- 2018

Accident Type	Camino del Rio Intersections				2nd Ave/ 15th St
	6th	7th	9th	12th	
Pedestrian Related Accidents	0	0.9	0.8	0.7	0
Bicycle Related Accidents	0	2.9	0.0	2.1	0
Combined Accidents	0	3.8	0.8	2.9	0
Rank (1 being best)	1A	4	2	3	1B

The highest accident rates appear to occur at the 7th St and 12th St intersections. These two crossing locations utilize alternative crossing treatments (alternative to a traditional traffic signal or simple marked/signed crosswalk), consisting of a Rectangular Rapid Flashing Beacon (RRFB) at 7th St and a Pedestrian Hybrid Beacon (PHB) at 12th St. These higher accident rates are discussed in more detail under Section VII of this report.

One additional detail to point out regarding the accident data. There was only 1 bicycle related accident at 7th St in this six-year period and the number of bicycle crossings is relatively low at this location when compared to the others. If this one accident were just an anomaly, the combined rate at the 7th St intersection would go down to 0.9 accidents per 100,000 crossing, on par with the 9th St traffic signal. Additionally, there have been three upgrades completed at the 7th Street crossing in the past 8 years, one in 2012, one in 2014, and one in 2017. Table 3 indicates there was only one accident since the 2014 improvements and no accidents since the 2017 improvements. The 7th St improvements are discussed in more detail later in this study.

VII. ADDITIONAL CONSIDERATIONS

1. Ongoing/Upcoming Relevant Projects

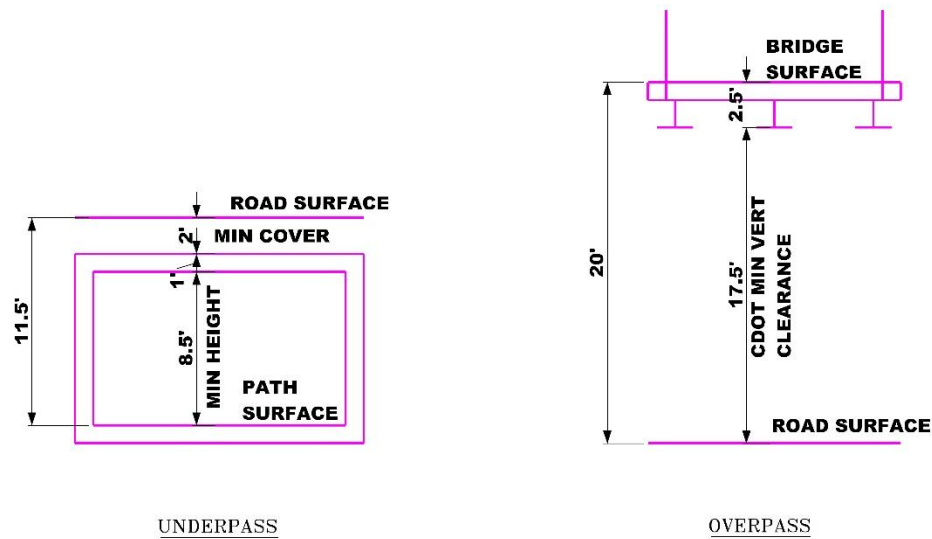
There are three projects currently under construction, waiting for funding, or in the design phase along this corridor. Overviews of the projects are included below. The currently proposed improvements at each affected intersection are discussed in more detail in the following sections of this report.

- A. In 2015, CDOT Region 5 had an Intersection Priority Study completed. This study resulted in the US 550/11th St and US 550/12th St intersections ranking 6th on the priority list out of 96 intersections analyzed in CDOT Region 5. Based on this study and the 2013 Camino Amended ACP, CDOT is currently in the early design stages (at 30% FIR design progress at the time of preparation of this study) for improvements along Camino from 8th St to 12th St. These plans are referenced as the CDOT 30% US 550 Plans in the remainder of this study. CDOT has indicated construction is anticipated in 2021.
- B. The 1111 Camino Hotel Project is currently under construction. This project includes access modifications, median installation on Camino, construction of an ART spur, and sidewalk installation.

- C. Design for the 13th St & Camino del Rio Storm Drain Replacement Project were completed in 2014. These plans include upsizing of an existing 18" storm drain under Camino to a 30" storm drain along with water quality treatment facilities between River City Hall and the Discovery Museum Science Classroom. These proposed improvements are north of 12th Street and have been determined to be outside of the limits of this study.
2. Overpass vs Underpass General Information

As Camino (US 550) is a state highway, vertical clearances are dictated by CDOT standards. Figure 4 shows the approximate overall grade differences between a highway surface and an overpass/underpass surface.

FIGURE 4 – VERTICAL CLEARANCES



The Americans with Disabilities Access Board's ADA Accessibility Guidelines (ADAAG), Section R305.5.1 states "Pedestrian overpasses and underpasses shall contain a pedestrian access route complying with R301." Section R301 goes into great detail laying out the requirements for a pedestrian route. However, in general a pedestrian route has a minimum width of 4' with a longitudinal slope of either less than 5% (with no additional considerations) or between 5% to 8.33% (but conforming to the ADA requirements of a ramp). An alternate approach would be the installation of some type of elevator or platform lift. Based on the vertical clearances above and assuming the grades adjacent to the highway are level with the highway, the resulting minimum ramp lengths would be as follows:

Table 6 - Minimum ADA Approach Ramp Lengths			
Crossing Type	Grade Difference	Slope	Min Length
Overpass	20	5%	400
	20	7.1%	282
Underpass	11.5	5%	230
	11.5	7.1%	162

NOTE: 7.1% IS BASED ON USING THE MAX SLOPE OF 8.33% WITH A 5' LONG LANDING EVERY 2.5' OF VERTICAL GRADE CHANGE, PER ADA RAMP REQUIREMENTS.

Within the study limits, the Camino corridor does not have any significant grade advantages for an overpass. Therefore, users would have to climb the equivalent of two flights of stairs to use an overpass. Additionally, the required overpass ramp lengths would be approximately 75% longer than those required for an underpass, resulting in additional right-of-way or a switch-back/spiral type ramp configuration that would be difficult to maneuver on a bicycle. Users tend to take the most efficient routes possible as supported by past research. Figure 5 is an excerpt from the Institute of Transportation Engineer's 1998 *Design and Safety of Pedestrian Facilities*.

Figure 5 – Excerpt from ITE's 1998 Design and Safety of Pedestrian Facilities

The effectiveness of grade-separated crossings depends on their perceived ease of accessibility by pedestrians, because an overpass or underpass will not necessarily be used simply because it improves safety. Instead, pedestrians tend to weigh the perceived safety of using the facility against the extra effort and time required.²

The ITE literature goes on to provide an example based on the statistics from previous studies as follows:

- 1) "95 percent of pedestrians would likely use an underpass and 70 percent would likely use an overpass if the travel time were equal to the crossing time at-grade."
- 2) "Virtually no one would use an overpass if it took 50 percent longer to cross than an at-grade crossing."

Therefore, except for the locations near the 6th Street and 8th Street intersections, for reasons explained in later sections, overpasses are not discussed at length within this study.

3. Mine Tailings

In the mid 1900's, uranium tailings from the mill at the base of Smelter Mountain were apparently used for fill material for various construction projects within and around the City of Durango. Appendix D contains a simple map showing the approximate limits of known or assumed tailings locations within the study area.

Referencing the map, there appears to be the potential for encountering uranium tailings under Camino from 6th St to 14th St. Therefore, this constraint/cost will be included in the evaluation of

the short-listed locations, but will not be considered during the “Initial” evaluations. The City has recently become aware of a Colorado Department of Local Affairs (DOLA) grant opportunity for transport of mill tailings to the Cheney Site near Grand Junction, CO. The grant is for up to \$50,000 per year, but the application cannot be speculative. This funding could help to offset some or all of the transportation costs associated with disposal of mine tailings should an underpass be pursued. The City intends to explore this and other grant opportunities if/when a Camino underpass option moves forward.

4. Utility Conflicts

Water, sewer, gas, storm drain, electric, and communication lines are located under Camino from 6th St to 14th St. Non-city owned utilities such as electrical, communication, and gas are required to relocate their facilities within the CDOT/City right-of-way at their own expense if they are conflicting with a public project. Additionally, while there is a cost associated with the relocation of publicly owned non-gravity lines such as water and fiber optic, the engineering solutions to these conflicts are generally more straightforward than their gravity counterparts. Therefore, this study will focus on impacts to gravity lines.

PST Engineering has been coordinating with the City of Durango Engineering and Utility Divisions to evaluate potential sanitary sewer solutions at the shortlisted locations. These efforts are discussed further in Section IX of this study.

5. Alternative At-Grade Crossing Treatments

Grade separated crossings are generally expensive, operationally there are practical limits to the number of traffic signals that can be installed in a given length of roadway, and the MUTCD requires traffic signal warrants are met prior to the installation of a traffic signal. Therefore, within the past 20 years alternative treatments for providing safe pedestrian/bicycle crossings of busy roadways have been developed and implemented across the country. These treatments are generally not as effective as a standard traffic signal or grade separated crossing. But overall, studies indicate that pedestrian safety at alternative treatment locations is significantly increased when compared to a simple signed/stripped pedestrian crosswalk configuration. Figure 6 shows statistics provided on the Federal Highway Administration (FHWA) website. With both safety and funding availability in mind, CDOT and the City of Durango implemented a Rapid Rectangular Flashing Beacon RRFB crossing at 7th St in 2011 and a Pedestrian Hybrid Beacon (PHB) crossing at 12th St in 2012.

FIGURE 6 – PHB Statistics



As the accident data along Camino indicates, these crossings do not appear to perform as well as nearby signalized crossings. Once these alternative treatments started getting installed at various locations around the United States, multiple studies were conducted on their effectiveness. These studies reinforce some of the behaviors observed at 7th St and 12th St crossings that ultimately reduce their effectiveness in the Camino corridor. Generally, there appear to be two known issues reported in several of these studies:

- 1) The lack of RRFB/PHB activation by pedestrians and bicyclists. This can be particularly prevalent for the median activation in a two-stage crossing application. In a 2014 case study titled “*Evaluating Driver and Pedestrian Behaviors at Enhanced, Multilane, Midblock Pedestrian Crossings*”, researchers in Portland, Oregon observed driver and pedestrian behavior at two enhanced mid-block pedestrian crossings and found that activation rates varied from 83% to 90%.
- 2) According to the same study, driver yield rates at these types of crossings are typically around 90%. This is potentially due to driver un-familiarity with these alternative traffic control devices as they are relatively new and only now becoming widespread in their application.

How these particular factors apply to the 7th St and 12th St intersections are discussed further in the next section of this study.

VIII. INTERSECTION DESCRIPTIONS AND INITIAL EVALUATIONS

1. Between Camino/US 160 and Camino/College Drive

This location is technically outside of the limits of this study. However, there are several characteristics of this location that make it worth mentioning as presented below. The intersection of US 550 & US 160 sees some of the highest vehicular traffic volumes in southwest Colorado and is therefore largely designed to promote the safe and efficient movement of vehicles. There are some bicycle accommodations (such as bike lanes) but no pedestrian facilities as current pedestrian demand is low and pedestrian use is discouraged.

At-Grade Crossing Improvements:

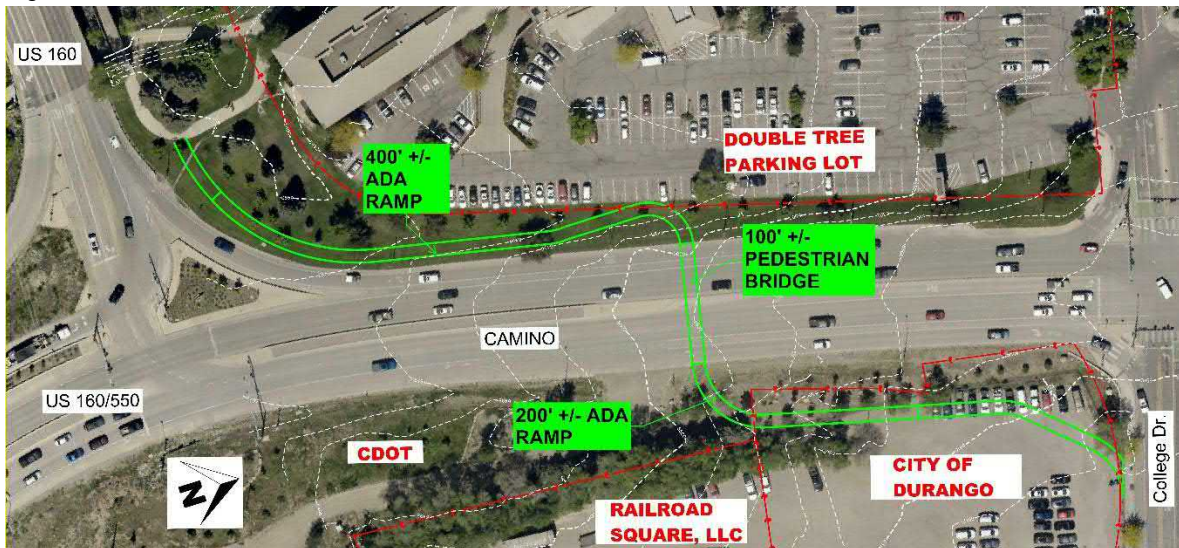
Not applicable at this time.

Underpass or Overpass of Camino (US 550)

Currently, there is minimal demand for a crossing at this location. However, once the SMART 160 Trail West extension from the ART is realized, the area north of the US 160/550 intersection may be worth investigating for an underpass or overpass as there is substantial public right-of-way on both sides of the highway.

A conceptual overpass option is shown in Figure 7. With no grade advantage for an overpass, the ramp lengths required to meet ADA requirements are significant, with a 400’+/- ramp required on the southbound approach and a 200’+/- ramp required on the northbound approach.

Figure 7 – US 160/US 550 Intersection

Recommendations:

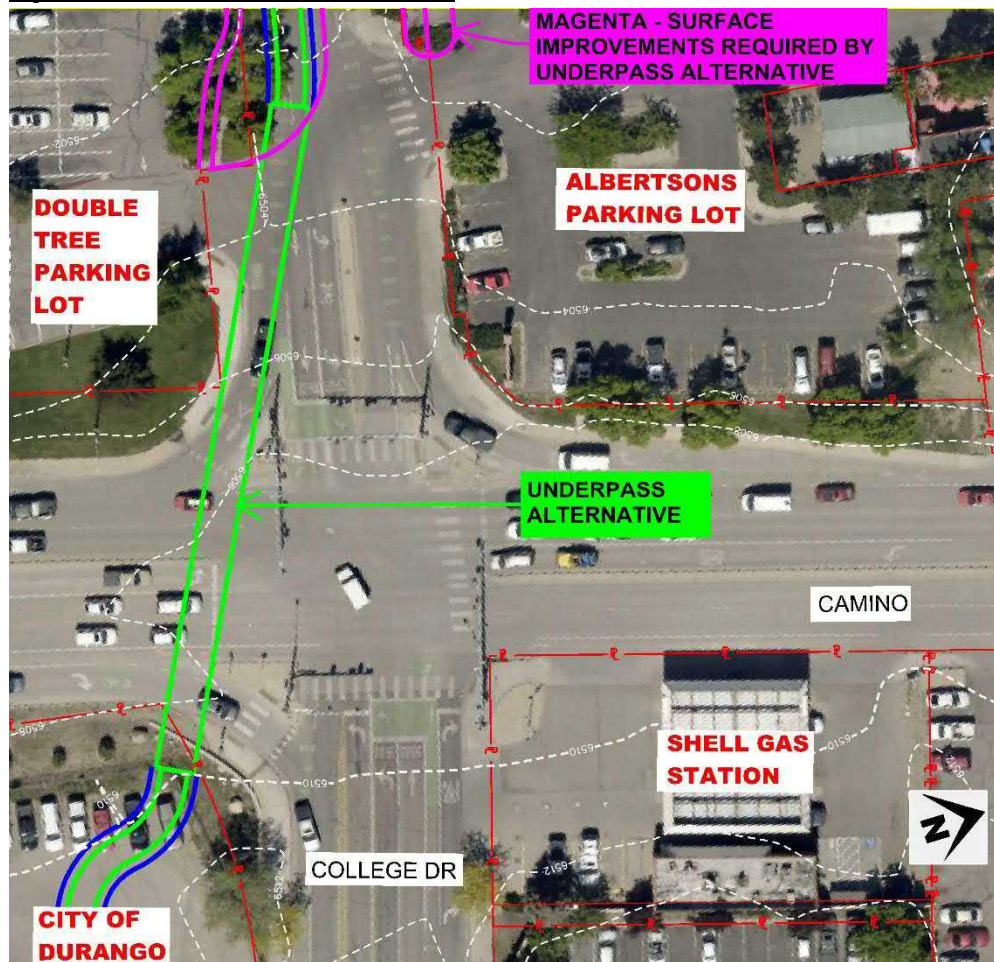
While an underpass or overpass at this location would not currently serve enough users, this location should be re-evaluated when planning for the SMART 160 Trail West moves forward. However, to aid in future planning exercises, this location has been included for additional consideration in this study.

2. Camino & 6th St

This intersection is a four-leg, signalized intersection. In 2014 CDOT made significant improvements to this intersection including a raised central median in Camino (per the 2013 Camino Amended ACP), pedestrian refuge islands, and consolidation of all pedestrian crossings of Camino to the north leg of the intersection to increase the capacity of WB left turns from College to Camino. Of the intersections studied, this intersection had the highest number of pedestrian crossings and the third highest combined crossings.

At-Grade Crossing Improvements:

None appear to be necessary. It is a well-used crossing with no pedestrian or bicycle related accidents in the past 6 years from 2013-2018. Neither CDOT or the City have any pending plans for improvements to this intersection.

Figure 8 – 6th St/Camino IntersectionUnderpass or Overpass:

On the north side of the intersection, both parcels on either side are privately owned, there are no grade advantages, and there is conflict with a large sanitary sewer line. Therefore, this location has been eliminated from further consideration in this study.

On the south side of the intersection, the eastern parcel is publicly owned and there are minimal “wet” utility conflicts (a single water main and a sanitary sewer force main per City GIS). While the western parcel is privately owned, there is City right-of-way along College Drive that could accommodate the majority of the improvements. However, some right-of-way acquisition and easements would likely be required. Therefore, the property owners on the west side of the highway should be contacted to see if they feel there is benefit in a grade-separated connection across the highway and if there is some opportunity for partnership. There is only a slight grade advantage on the west side requiring relatively long ADA ramps. This location is out of the way for the majority of residential commuters coming from the north but would provide a convenient connection to the future SMART 160 Trail West and to developments that are occurring to the west on Highway 160.

Recommendations:

The pedestrian crossings at the traffic signal are heavily used with no accidents reported in the past 6 years. Therefore, no at grade improvements are proposed at this time. While a grade separated crossing closer to 6th St is more likely to be utilized by the current users of the 6th Street traffic signal crossing, it is likely not feasible at this time unless the current property owner on the southwest corner has shown interest or the property is planned for re-development. This location should be re-evaluated when planning for the SMART 160 Trail West moves forward. However, to aid in future planning exercises, this location has been included for additional consideration in this study.

3. Camino & 7th St

This intersection is a four-leg, un-signalized intersection. In 2014 CDOT made significant improvements to this intersection including a raised central median in Camino and converting the RRFB crossing on the north leg of Camino into a two-stage crossing with a central median refuge. The median restricted left turns in all but the NB direction requiring an amendment to the 2010 Camino ACP. Of the crossing locations studied, this intersection ranked 5 out of 8 for pedestrian crossing volumes and 5 out of 6 for combined crossing volumes.

Figure 9 – 7th St/Camino Intersection



At-Grade Crossing Improvements:

Following the 2014 CDOT improvements, there was one reported pedestrian related accident at this crossing from 2015-2016. In 2017, CDOT re-evaluated the crossing and identified the lack of median crossing activation as an issue. Therefore, in 2017 CDOT re-programmed the RRFB so the 2nd stage of the crossing would trigger automatically several seconds after the initial curbside activation. Since this improvement was completed, there have been no accidents reported in 2018 (2019 data is not yet available). While the duration of accident data collection is not long enough to make any final determinations, so far it appears that this modification has improved the safety of this crossing. Therefore, for the crossing itself, no additional improvements are recommended at this time. However, accident data at this location should be monitored for the next few years to verify that safety has improved.



FIGURE 10 – RRFB CROSSING AT 7TH ST

Additionally, there are several pedestrian/bicycle connectivity issues at this location that should be addressed in the future including:

- 1) Missing sidewalk on the west side of Camino from Commons building to 9th St.
- 2) There is no direct, designated bicycle or pedestrian connection between this crossing and the ART.
- 3) There are no pedestrian facilities on the west leg of 7th Street as 7th Street is currently dominated by access and parking needs.

Neither CDOT nor the City have any current plans for improvements to this intersection.

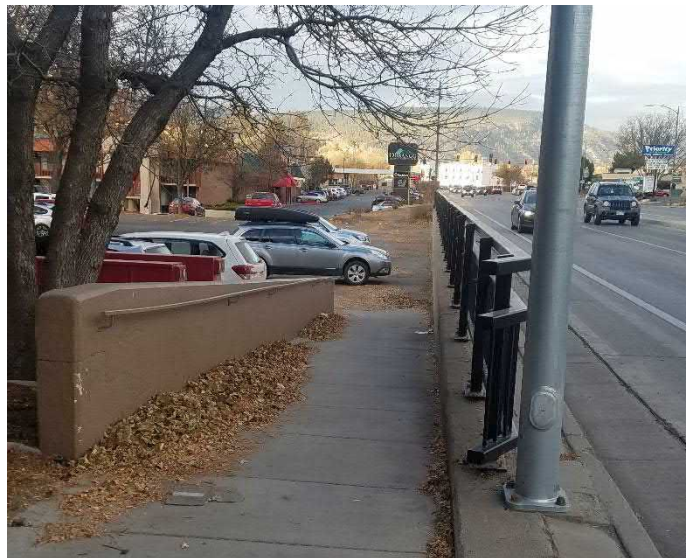


FIGURE 11 – GRADE AND R-O-W CONSTRAINTS FOR SIDEWALK INSTALLATION FROM 7TH ST TO 9TH ST

Underpass or Overpass:

This crossing location currently only serves approximately 10% of combined pedestrian and bicycle traffic. Without a dedicated connection to the ART and re-development of the riverside parcels to uses that generate more of a demand, an underpass or overpass at this location would likely not serve enough users to be justified at this time. Additionally, there are physical and right-of-way constraints as follows:

- On the south side of the intersection, both parcels on either side of Camino are privately owned, there is no existing public/defined connection to the ART, and there are no grade advantages.
- On the north side of the intersection, the City owns the property on the north-east corner of the intersection (the parking area adjacent to the Transit Center). However, the property on the west side is privately owned and the Commons Building is situated directly adjacent to the intersection corner.
- The City owns the ROW for the west leg of 7th Street. However, the existing access and parking configuration of 7th Street would be challenging to accommodate, there is no existing public/defined connection to the ART, and with minimal grade advantages the impacts to the Transit Center parking lot would be substantial. The eastern ADA ramp would be approximately 170' long for an underpass or 290' for an overpass.

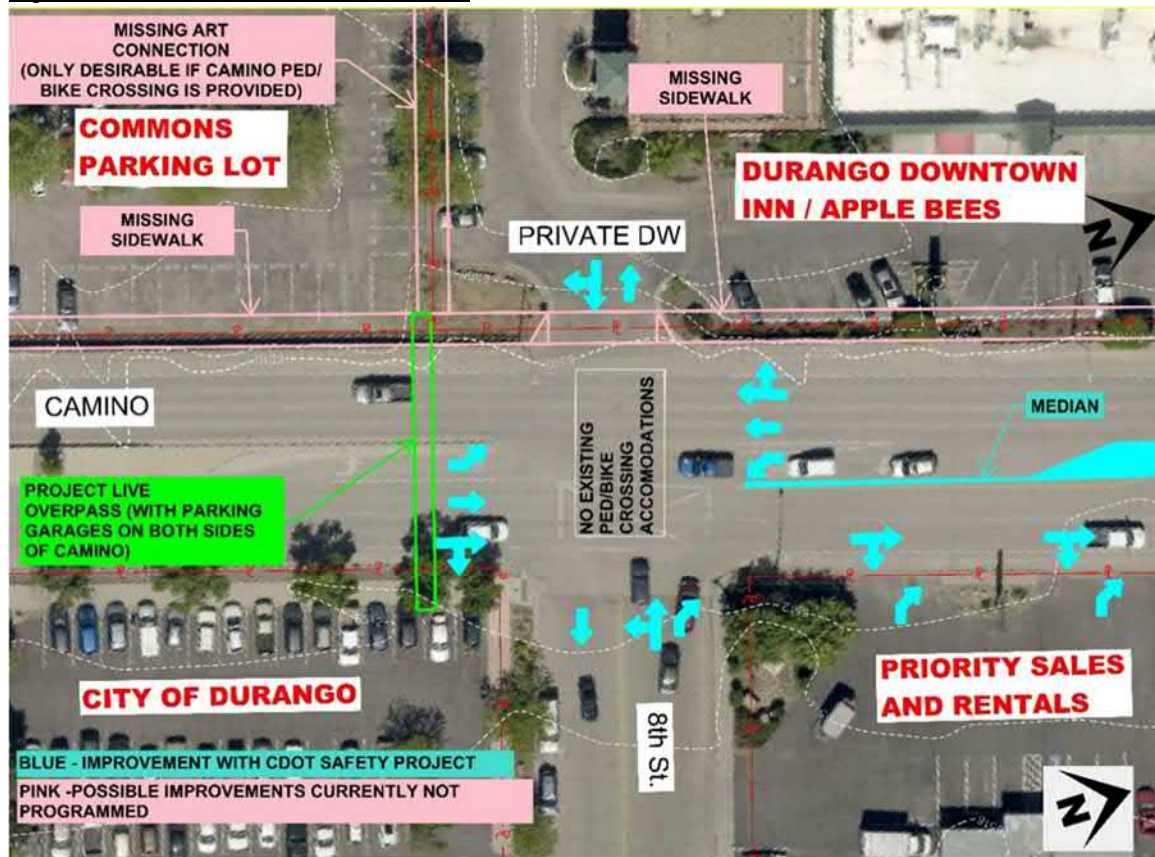
Recommendation:

Currently a grade separated crossing at this location is impractical due to right-of-way constraints, would not serve enough users, and is eliminated from additional consideration in this study. However, re-development of the surrounding parcels could make this location more attractive in the future.

4. Camino & 8th St

This intersection is a four-leg intersection (3 public legs and one private driveway). The side streets are stop sign controlled, with the private driveway signed for no left turn. There are no accommodations for pedestrian crossings as they are currently discouraged at this location. The 2014 CDOT improvements extended the raised median up to the southern leg of this intersection.

Of the crossing locations studied, this intersection was 9 out of 9 for pedestrian crossing volumes with only 7 crossings in the peak 6 hours (bicycle crossing data was not collected at this intersection). The 2013 Camino Amended ACP has no proposed changes to the 8th Street and Private Drive existing access configuration, except reserves the possibility of implementing turning movement restrictions “based on future traffic conditions.”

Figure 12 – 8th St/Camino Intersection

At-Grade Crossing Improvements:

Based on the 30% CDOT US 550 Plans, improvements at the 8th St intersection will be limited to continuation of the raised center median in Camino, with no additional access, pedestrian, or bicycle improvements. The proposed raised median is shown (approximate size and location) in Figure 12.

There are currently no accommodations for pedestrians at this intersection. The Commons building is directly served by the RRFB at 7th Street and Applebee's/Durango Downtown Inn are adjacent to the 9th St traffic signal. Additionally, there were only 7 pedestrian crossings during the peak 6 hours of the day. Therefore, there are currently no plans to add a pedestrian crossing at this location.

However, there is missing sidewalk on the west side of Camino from the Commons building to 9th Ave that should be addressed at some point in the future. This may help to further discourage crossings at this location by providing safe and convenient crossing alternatives via the 7th St RRFB or the 9th St traffic signal.

Underpass or Overpass:

On the south side of the intersection, the City owns the property on the south-east corner of the intersection (the parking area adjacent to the Transit Center). The property on the west side is

privately owned. However, the property owners have shown interest in a grade separated crossing in the past. In the *2012 MTMP*, there was reference to Project LIVE, which included "...connecting the proposed City intermodal facility at the existing Transit Center to a future private intermodal facility at the Commons Building..." via a pedestrian bridge. There has been little discussion of Project LIVE in the past several years and it does not show up in the *2016 MTP*. In discussions with City staff, the project is on hold indefinitely.

Additionally, the *2016 MTP* included a Parking Analysis section. Regarding the future parking structure at the Transit Center, the study concluded "The Transit Center was originally designed to have a parking structure nested into the building for future parking growth, which has not shown to be justifiable to date." Therefore, it does not appear that a parking structure is imminent. The Parking Analysis text from the *2016 MTP* is included in Appendix E.

An overpass could be constructed at this location without the intermodal facilities and potentially be incorporated into the intermodal facility designs in the future. However, current pedestrian/bicycle crossing demand between 6th St and 9th St is fairly limited and an overpass/underpass at this location would likely be too far out of the way of current user routes to change user behavior.

As both properties on the north side of the intersection are privately owned, the north side has been eliminated from further consideration in this study.

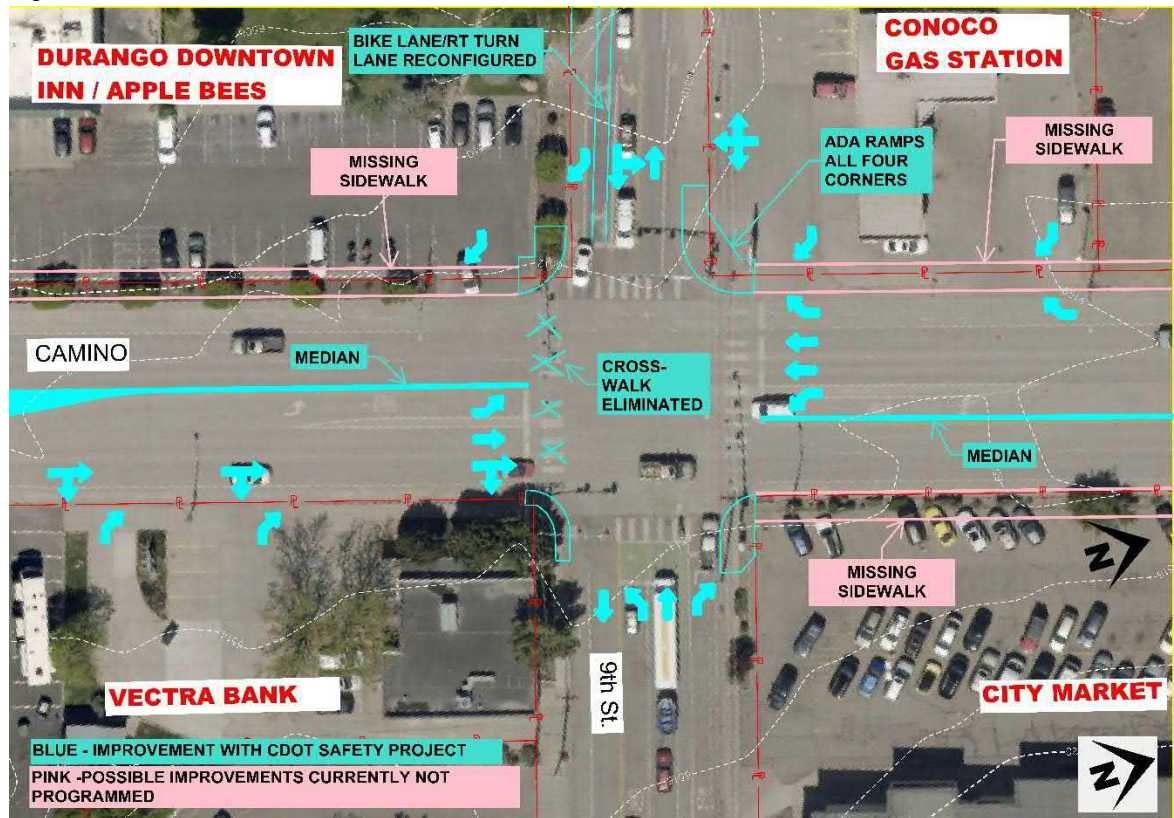
Recommendation:

Currently a grade separated crossing at this location would not serve enough users and is eliminated from additional consideration in this study. However, re-development of the surrounding parcels could make this location more attractive in the future.

5. Camino & 9th St

This intersection is a four-leg, signalized intersection with crosswalks and pedestrian push buttons on all four legs of the intersection. In 2013, the City of Durango completed signing and striping improvements which delineated bike lanes and added bike boxes to the eastern leg of the intersection.

Of the intersections studied, this intersection had the 2nd highest number of pedestrian and bicycle crossings. The approximate accident rate at this location over the past 6 years is 0.8 per 100,000 crossings, which is more than the 6th St rate of 0 per 100,000 crossings, but less than 30% of the rate for the 12th Street RRFB crossing of 2.9 per 100,000 crossings.

Figure 13 – 9th St/Camino Intersection

At-Grade Crossing Improvements:

Based on the 30% CDOT US 550 Plans, improvements at the 9th St intersection will consist of a raised central median in Camino (per the 2013 Camino Amended ACP), ADA ramp installation, signage and striping updates, and consolidation of all Camino pedestrian crossings to the north leg of Camino del Rio presumably to increase capacity of the WB left turn from 9th Street onto Camino.

While navigating this intersection by bicycle over the past several years, we observed that the traffic signal bicycle detection on the west leg currently does not appear to recognize bicyclists waiting on the stop bar within the bike lane. Additionally, the bicycle lane/vehicular right turn only lane currently conflict with one another. However, these issues appear to be addressed with the proposed CDOT improvements.

In addition to the improvements listed above, there is a lack of sidewalk on several approaches to this intersection including:

- 1) The southern side of the west leg of 9th St from the ART to Camino. This was an identified improvement in the 2016 MTP, but there are currently right-of-way constraints at this location. Therefore, the sidewalk is not included in the 30% CDOT US 550 Plans. This improvement will likely be made in the future when the Downtown Durango Inn parcel redevelops.

- 2) Along the west side of Camino from the Commons Building to 9th St (as previously mentioned).
- 3) Along both sides of Camino from 9th St to 12th St, except for the Natural Grocer's frontage where sidewalk already exists and the 1111 Camino Hotel frontage which is currently being constructed.

Underpass or Overpass:

On both the north and south sides of the intersection all adjacent property is privately owned. Additionally, the adjacent ground is more or less level with the roadway and provides no grade advantage for either an underpass or an overpass necessitating long ramps and extensive retaining walls.

Recommendation:

An underpass or overpass at this location is impractical at this time as the impacts to adjacent properties, property access, and parking are too significant. Additionally, there are no grade advantages for an underpass or overpass on any corner of this intersection. Therefore, this location is eliminated from further consideration in this study. The upcoming CDOT project remedies some of the current at grade crossing deficiencies. Other recommended improvements such as sidewalk connectivity will require right-of-way, which may prevent construction of these improvements until redevelopment is proposed.

6. Camino & 10th St (projected)

There is currently not a public/defined intersection at this location as 10th Street (and the associated City right-of-way) end at Narrow Gauge Avenue and the existing Ace Hardware building is situated directly in the path of any type of 10th Street extension. Therefore, with the current Town Plaza configuration, any pedestrian and bicycle connection to Main Avenue would have to go around the primary Town Plaza row of buildings (which includes City Market to Walgreens extending from 9th St to 11th St). This would require significant impacts to the Town Plaza parking area and result in an inefficient route for path users.

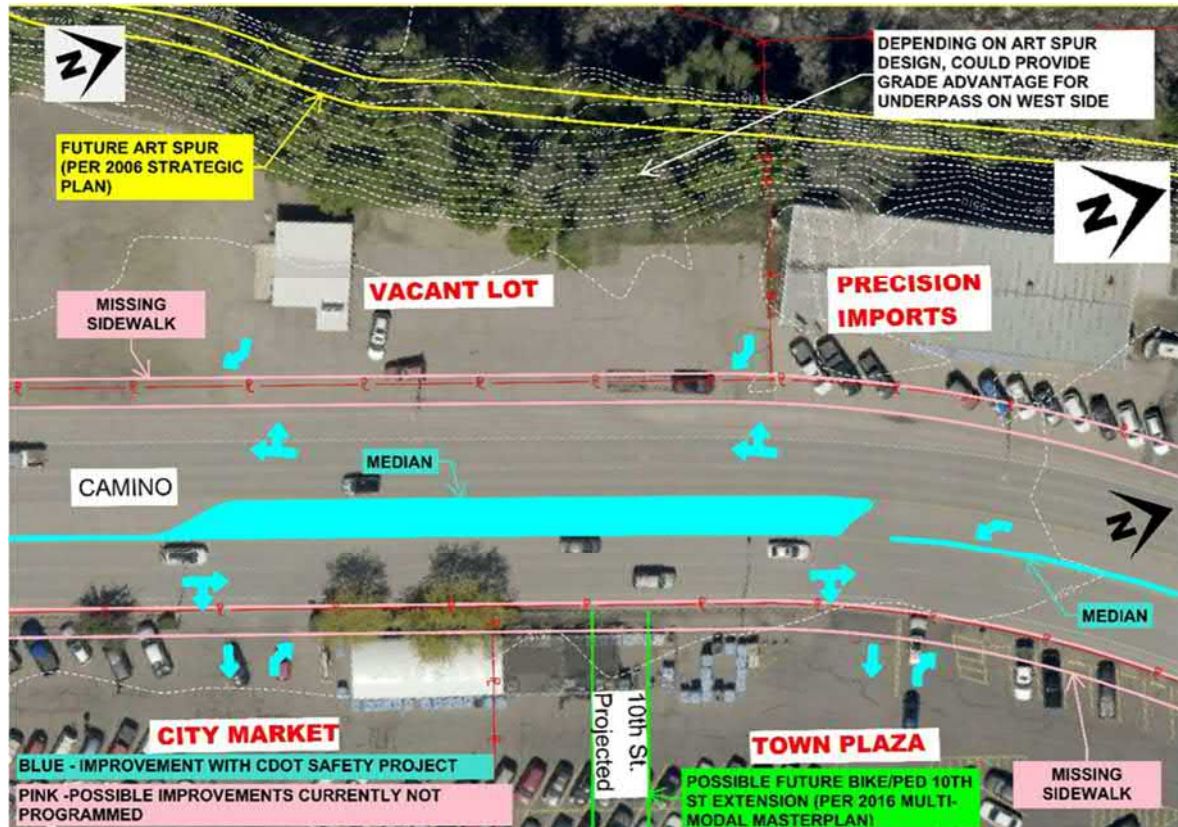
This location does have the highest likelihood of attracting the existing 9th St crossing users as it is close to their existing route. However, the lack of a dedicated ART connection across the Animas River bridge at 9th St would require bicyclists using the bike lane in the EB direction to cross traffic at the ART connection on the east side of the bridge.

Based on the 30% CDOT US 550 Plans, improvements at this location will consist of a raised central median in Camino (per the *2013 Camino Amended ACP*) which will restrict several access points to right-in/right-out only. The plans do not contain any pedestrian/bicycle crossing accommodations at this time.

However, the *2006 Strategic Plan* and *2016 MTP* present the possibility of a future pedestrian/bicycle extension of 10th Street to and/or through the Town Plaza site from Narrow Gauge Ave to Camino. Additionally, previous studies recommend an extension of the ART on the east side of the River from 9th Street to the pedestrian bridge behind Veterans Way. A portion of this extension is being constructed with the 1111 Camino Hotel project. If the remainder of the

extension were ever constructed, depending on the design it could create a significant grade advantage for an underpass on the west side of Camino.

Figure 14 – 10th St/Camino “Intersection”



Recommendation:

Due to significant private property impacts on the east side of Camino, this location is removed from further consideration in this study. However, if redevelopment plans are initiated for the Town Plaza site, it may be worth re-evaluating a pedestrian/bicycle extension of 10th Street to Camino and a possible bicycle/pedestrian crossing of Camino (either at grade or grade separated). This is particularly true if the properties on the west side of the highway develop into high pedestrian generating uses, such as high density residential, hotels, or mixed-use developments.

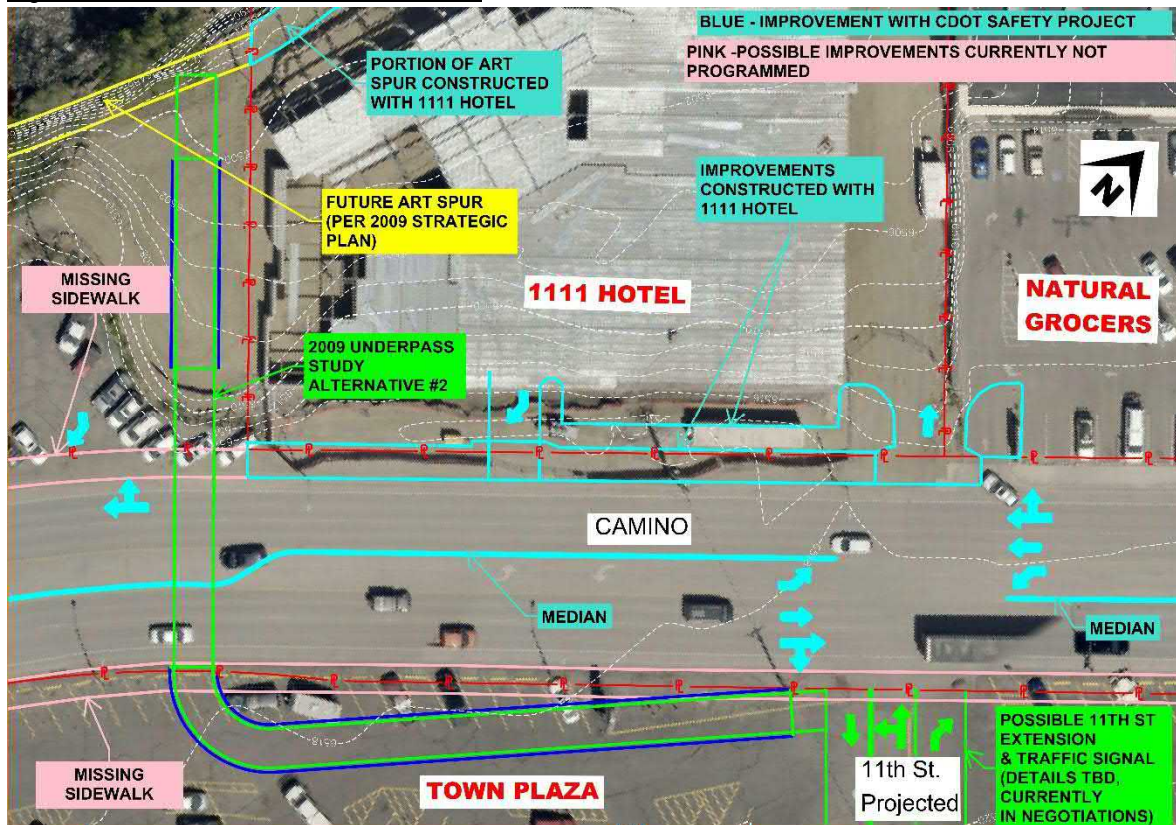
7. Camino & 11th St

This intersection is a four-leg unsignalized intersection with private access to Town Plaza on the east side and private access to Natural Grocers and the 1111 Camino Hotel project (which is currently being constructed) on the west side. The east access is stop signed controlled, the west accesses are ingress only, and there are currently no accommodations for pedestrian or bicycle crossings of Camino.

Of the intersections studied, this intersection ranked 8 out of 9 for number of pedestrian crossings based on the 2019 counts. However, this is likely to increase significantly once the 1111 Camino

Hotel project is up and running, as demonstrated by the high number of pedestrian crossings at 6th St.

Figure 15 – 11th St/Camino Intersection



At-Grade Crossing Improvements:

Based on the 30% CDOT US 550 and 1111 Camino Hotel Plans, improvements at the 11th St intersection will consist of a raised central median in Camino with a break at 11th Street, allowing for full movement at the Town Plaza east access. The approximate median configuration is shown in Figure 15.

The 2006 *Strategic Plan* calls for 11th Street to be extended through Town Plaza to Camino and dedicated as a public street. Additionally, both the 2006 *Strategic Plan* and the 2013 *Camino Amended ACP* call for the eventual signalization of this intersection.

With the increased demand created by the 1111 Camino Hotel project, providing a safe/convenient crossing at this location will be important. If plans for a traffic signal at this location move forward, the signal could provide this crossing. If not, hotel patrons would currently be expected to use the 12th St PHB crossing located 550' +/- to the north or the 9th St signal located 800' +/- to the south. While some may follow these patterns, based on these distances it is possible that some pedestrians may cross Camino directly in front of the hotel creating a potential safety issue. The hotel developer is required to install medians so this may inhibit some illegal pedestrian movements. The hotel developer was also required to dedicate public access through

the hotel site to facilitate a pedestrian connection to the river trail so the legal groundwork for this connection is in place. In the short to mid-term, a signalized intersection with accessible, at-grade pedestrian connections may be the best solution for this location.

Underpass or Overpass:

In the 2009 Underpass Study, an underpass was considered south of 11th Street. The approximate location is shown on Figure 15. From an engineering standpoint, this location was found to be favorable in the 2009 UP Study as there are significant grade advantages on the west side of Camino. Additionally, an ART spur will be extended behind the hotel with the 1111 Camino project, providing a convenient connection to the ART and the pedestrian bridge over the Animas River.

However, the possible dedication of public right-of-way for the extension of 11th St would result in the loss of multiple parking spaces in the Town Plaza complex and could inhibit desirable redevelopment of the site. Daylighting of the underpass on the east side of Camino would require substantial ramps as there are minimal grade advantages on this side. Therefore, the underpass would result in even more parking space and right-of-way loss in the Town Plaza site.

On the north side of 11th St several closely spaced buildings on the west side of Camino make this location impractical for an underpass or overpass at this time.

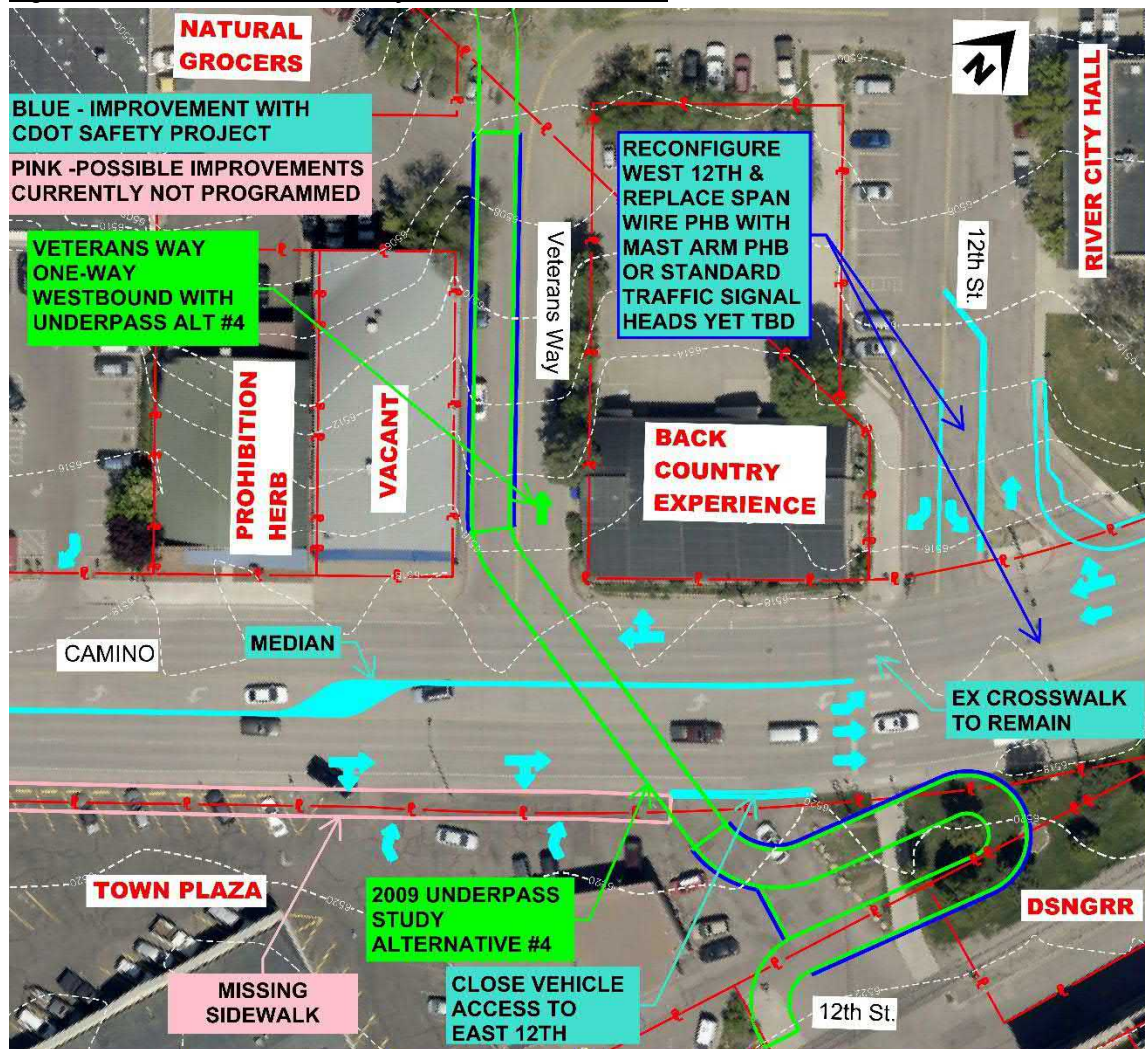
Recommendation:

Based on the findings of the 2009 UP Study, from an engineering standpoint an underpass is technically feasible at the location shown in Figure 15. With existing site constraints and the likelihood of a signalized intersection with pedestrian facilities being constructed in the future, this location should be re-evaluated when/if Town Plaza redevelops. However, to aid in future planning exercises, this location has been included for additional consideration in this study.

Surface improvement recommendations are contingent on the outcome of negotiations between the City of Durango, CDOT, and the Town Plaza owners. If a traffic signal is constructed at this location, the pedestrian demand created by the new hotel will be accommodated. If not, alternative surface treatments will likely be required.

8. Camino, 12th St, & Veterans Way

The Camino/Veterans Way intersection is a four-leg unsignalized intersection with private access to Town Plaza on the east side and Veterans Way on the west. The side accesses are stop signed controlled, with no left turn out of Veterans Way. There are currently no accommodations for pedestrian or bicycle crossings of Camino. No count or accident data was collected for this location.

Figure 16 – 12th St/Veterans Way/Camino Intersection

The Camino/12th St intersection is essentially an atypical four-leg intersection, with the east and west legs of 12th St offset by approximately 90' +/- . The side accesses are stop signed controlled, with no left turn out of the west leg of 12th St. In 2011, the City of Durango installed a 10-ft wide concrete shared-use path beginning at the railroad tracks and extending to the Iris Park spur of the ART. The project also included a pedestrian crosswalk with a pedestrian hybrid beacon (PHB) on the southern leg of the intersection. Since then there have not been any significant improvements to this intersection.

Of the crossing locations studied, the 12th St intersection was 4th highest out of 8 for pedestrian and combined crossing volumes and 3rd highest out of 6 for bicycle crossing volumes. Based on the accident data from the past six years, this crossing has the 2nd highest rate of accidents (or possibly the 1st if 7th St data were adjusted as discussed in Section VI above) and the highest total number of accidents in the six-year span. The accidents consisted of three pedestrian related accidents and four bicycle related accidents, six of which resulted in injuries.

At-Grade Crossing Improvements:

Based on 30% CDOT US 550 Plans, improvements at these locations will consist of a raised central median in Camino from 11th Street to 12th Street, restriction of the eastern leg of 12th St to a right-in/right-out, reconfiguration of the west leg of 12th St, and removal/replacement of the span wire PHB with a standard pole and mast arm PHB. The approximate median configuration is shown in Figure 16. There are no current plans for pedestrian accommodations at the Veterans Way intersection.

FIGURE 17 – PHB Span Wire Signal at 12th Street



PHB and RRFB crossings are relatively new traffic countermeasures, receiving the first FHWA approvals for use around 2008. The FHWA website offers the following guidance “PHBs are not widely implemented, so agencies should consider an education and outreach effort when implementing a PHB within a community.” Education outreach can help with local traffic. However, this section of US 550 sees a significant amount of tourist and regional traffic that outreach efforts would likely fail to reach. Having used this crossing frequently over the past 7 years, we would estimate that the 90% +/- yield rate cited in several studies is applicable for the PHB at this location. This driver behavior requires pedestrians and bicyclists to take an extra few seconds to confirm that all approaching drivers have stopped before proceeding into the crosswalk.

FIGURE 18 – Standard Signal



While the pole and mast arm PHB configuration may help increase motorist compliance, the more desirable/effective solution would be to install a standard traffic signal. Replacement of the PHB signal heads with conventional traffic signal heads would result in a crossing configuration more familiar to drivers as the upgraded signal would look and function like any other traffic signal. This would likely increase driver yield rates and decrease accidents at this crossing. However, CDOT is required to follow the traffic signal warrants contained in the Manual of Uniform Traffic Control Devices (MUTCD) and cannot support a traffic signal at this location until the signal warrants are met. Therefore, the City of Durango is in the process of ordering a traffic signal warrant analysis for the 12th Street intersection to see if a standard traffic signal can be installed with the 2021 project.

Underpass:

In the 2009 UP Study, an underpass was considered from the east leg of 12th Street to Veterans Way and determined to be the preferred option.

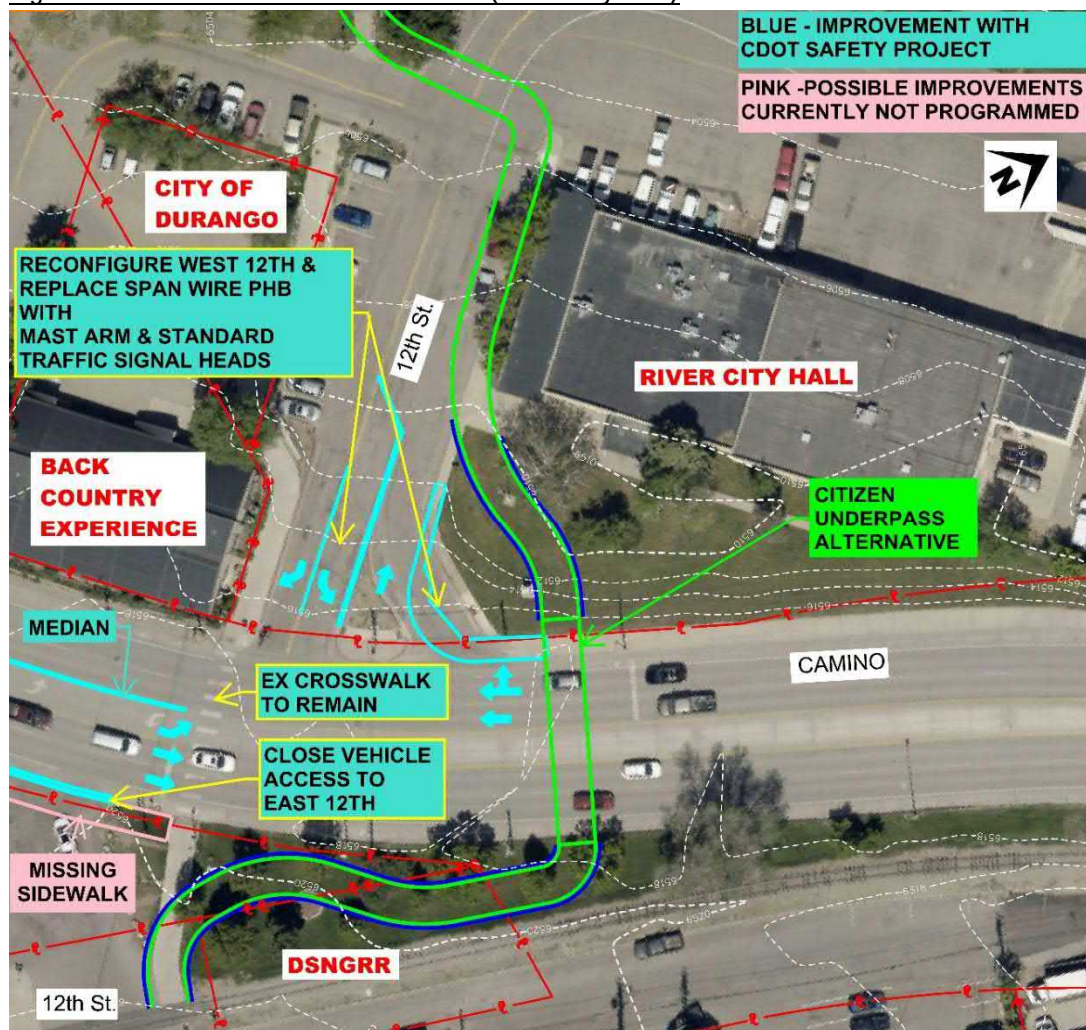
Recommendation:

In the 2009 UP Study, the 12th St to Veterans Way location was found to be the preferred option. Therefore, it will be included in the list of locations for additional consideration in this study. Regarding at-grade improvements, the addition of a conventional traffic signal could help with motorist yield rates and may help to increase pedestrian and bicyclist use of the push buttons. However, this improvement is contingent on the results of a City requested traffic signal warrant analysis at this location.

9. Camino, 12th St, & River City Hall

The existing and planned surface improvements for the Camino & 12th St intersection are discussed at length under item #8 above.

Figure 19 – 12th St/Camino Intersection (River City Hall)



Underpass:

In 2016, a group of local professionals proposed an alternative configuration from the east leg of 12th Street to a location in front of River City Hall. The approximate location is shown in Figure 19. Based on a conceptual level re-creation of this alternative, the grades on the east side are tight but close enough to merit additional consideration.

Recommendations:

The 12th St to River City Hall option was found to have enough merit to warrant additional consideration in this study. Regarding at-grade improvements, the addition of a conventional traffic signal could help with motorist yield rates and may help to increase pedestrian and bicyclist use of the push buttons. However, this improvement is contingent on the results of a City requested traffic signal warrant analysis at this location.

IX. Shortlisted Options

1. Shortlisted Option List & Exhibits

- a. Alternative #1 - Camino/ 6th St Overpass
- b. Alternative #2 - Camino/6th St Underpass
- c. Alternative #3 – Camino/11th St Underpass
- d. Alternative #4 -Camino / East 12th St / Veterans Way Underpass
- e. Alternative #5 - Camino / East 12th St/ River City Hall Underpass
- f. Alternative #6 - Camino/12th St Standard Traffic Signal

See Attachments 1A – 5 for plan and profile sheets corresponding to each of the alternatives (except Alternative #6).

2. Comparison of Shortlisted Options

- a. Conceptual Cost Estimates – A summary of estimated overall costs has been provided in Table 7 below. For more detailed cost estimates, see Attachments 6 - 11.

Table 7 - Estimated Overall Cost of Each Alternative						
Alternatives	Alternative #1 - Overpass South of 6th Street	Alternative #2 - Underpass at 6th Street	Alternative #3 - Underpass at 11th Street	Alternative #4 - Underpass from E 12th Street to Veterans Way	Alternative #5 - Underpass from E 12th Street to River City Hall	Alternative #6 - Conversion of PHB at 12th to Standard Traffic Signal
Estimated Overall Cost	\$3,200,000	\$3,900,000	\$3,400,000	\$3,400,000	\$3,000,000	\$62,500

b. Assessment Criteria for Shortlisted Options:

- i. Safety
- ii. Estimated Cost (Conceptual Level)
- iii. Convenience/Likely Usage
- iv. Right-of-way Acquisitions/Limitations
- v. CDOT Concurrence
- vi. Additional Considerations (Parking, aesthetics, future development, etc)
- vii. Consistency with Previous Planning Reports & Studies
- viii. Improvement Satisfies the Need
- ix. Trail Geometry

The detailed assessments are presented in Attachments 12 & 13 in an “opportunities and constraints” matrix format that allows for easy comparison of the shortlisted alternatives with additional considerations below:

1) Alternative #1 – Camino Overpass South of 6th St (College Drive)

If re-visited, future designs should investigate moving the bridge over Camino north as close as possible to the 6th Street intersection to encourage use, but without interfering with the safety of the signalized intersection.

2) Alternative #2 – Camino Underpass at 6th St (College Drive)

If re-visited, future designs should investigate shortening the length of the underpass. This could potentially be accomplished by relocating the west portal to the landscaped area at the northeast corner of the Doubletree parking lot and splitting the underpass into two segments, with a second, shorter underpass under the eastern driveway into the Doubletree parking lot.

3) Alternative #3 – Camino Underpass south of 11th St

If re-visited, a separate sanitary sewer feasibility study would need to be conducted to verify the assumptions/costs assigned to the sanitary sewer conflicts within this study. These costs are currently estimated at \$1,000,000. With sewer modifications of this magnitude, it may be prudent to look at these sanitary sewer conflicts in the Camino corridor at a master planning level and coordinate future sewer project designs with the goal of allowing for a future underpass.

4) Alternative #4 -Camino Underpass from East 12th St to Veterans Way

If re-visited, possible design modifications could include creating a sump condition outside of the western portal. This would require additional storm drains, but could reduce the western ramp and wall lengths, and reduce impacts to the private parking lot entrance near Iris Park. Additionally, sanitary sewer impacts would need to be investigated further as described under Alternative #3 above. The current estimate for sanitary sewer modifications for this option is approximately \$500,000.

- 5) Alternative #5 - Camino Underpass from East 12th St to River City Hall
If design efforts resume, sanitary sewer impacts would need to be investigated further as described under Alternative #3 above. The current estimate for sanitary sewer modifications for this option is approximately \$500,000.
- 6) Alternative #6 – Upgrade Pole/Mast Arm PHB to Standard Traffic Signal at 12th St
CDOT cannot allow a standard traffic signal installation at this location until MUTCD traffic signal warrants are met. Therefore, the City has ordered a traffic signal warrant analysis. CDOT has plans to upgrade to a pole and mast arm PHB at this location in 2021, allowed for easy conversion to a standard traffic signal at some point in the future when warrants are met.

X. Public Input

Original plans for a public comment period have been impacted due to the State of Colorado's Stay at Home public Health Order 20-24 in response to COVID-19 in March 2020. However, the community will still be provided an opportunity to review and comment prior to finalization of the study.

XI. Conclusions

1. From an engineering standpoint, all short-listed options investigated were feasible.
2. Options at 6th Street are likely too far south to attract current trail users, but with the construction of the Smart 160 Trail West connection to the ART the demand will increase.
3. There are on-going discussions regarding traffic signal installations at 11th and 12th Streets. These surface improvements could satisfy the need of providing safe and convenient access between downtown Durango and the ART in the short to mid-terms.
4. Implementing surface improvements as short-term solutions could allow time for the re-development picture to become clearer for the private and public parcels between 9th and 12th Streets. Future grade separated design efforts could be a collaboration between developers and the City, opening up new opportunities/configurations that are not currently being considered.
5. Based on existing conditions, 12th Street is the most appropriate location for a mid- to long-term solution. However, additional opportunities may be created by ongoing redevelopment within the corridor in the short-term. If the decision is made to advance these 12th St options, the first steps would be to approach the impacted property owners, secure CDOT's concurrence, and verify the sanitary sewer conflict solutions.

XII. Recommendations

1. Short Term Solution – Investigate a standard traffic signal at the 12th Street and Camino intersection in collaboration with the Colorado Department of Transportation (CDOT). CDOT currently has a project scheduled for construction in 2021 that includes replacement of the span wire Pedestrian Hybrid Beacon (PHB) at 12th Street with a standard mast arm PHB configuration. This configuration will allow for future conversion of the PHB to a standard traffic signal at a relatively nominal cost (\$60,000 +/-). City staff has ordered a traffic signal warrant

analysis for this intersection to see if it is possible to construct the standard traffic signal with the 2021 project.

2. Mid- to Long Term Solutions

- a. As the planning for the SMART 160 Trail West progresses, further investigate the future anticipated demand and possible design options for an overpass or underpass at/near 6th Street on Camino in collaboration with CDOT, Durango & Silverton Narrow Gauge Railroad, and the Doubletree Hotel. Conceptual estimates for these improvements are \$3.2 million for the overpass option and \$3.9 million for the underpass option (excluding any costs associated with right-of-way acquisition).
- b. As redevelopment occurs, explore an underpass at 11th or 12th Street on Camino in collaboration with CDOT, Durango & Silverton Narrow Gauge Railroad, and several adjacent private property owners. Conceptual estimates for these improvements are \$3.4 million for the 11th St underpass option, \$3.4 million for the Veteran's Way/12th St option, and \$3.0 million for the 12th St/River City Hall option (excluding any costs associated with right-of-way acquisition).

ADOPTED 9.3.19

	<p>1. Continue to address Durango's affordable/attainable housing, including options for homeless population, as evidenced by:</p> <p>A. Implementing Durango's Housing Plan, with measurable outcomes and milestones:</p> <ol style="list-style-type: none">1. Appropriate resources to ensure adequate city staff to focus on increasing affordable housing inventory through a variety of mechanisms, including land acquisition/bank, changes to code, and public/private incentives, among other activities2. Present models for a local/regional housing authority with potential service areas3. Explore funding options for a regional housing authority or similar model4. Review existing implementation plan, and potential alternatives, for use of anticipated \$1 million in Fair Share funding;5. Integrate housing plan with Urban Renewal Authority and character districts <p>B. Implementing the Strategic Plan for Homeless (developed by The Athena Group):</p> <ol style="list-style-type: none">1. Appropriate resources identified as City contributions in the homeless strategy2. Consider homeless strategy being part of any proposed regional housing authority <p>C. Determine if an Urban Renewal Authority (URA) supports the goals of Durango and if so:</p> <ol style="list-style-type: none">1. Appropriate resources to create URA2. Examine integration of Durango's Housing implementation plan with URA development and character districts
	<p>2. Expand Durango's unique identity as a driver of enhanced quality of life and sense of place, as evidenced by:</p> <p>A. Determining if an Urban Renewal Authority (URA) supports the goals of Durango and if so:</p> <ol style="list-style-type: none">1. Appropriate funding mechanisms to create URA2. Prioritize funding for mobility/transit features that may be part of URA3. Engage community on URA, including location boundaries4. Develop incentives for public/private partnerships <p>B. Aligning support for a robust creative economy, parks and recreation system, and public library:</p> <ol style="list-style-type: none">1. Explore feasibility of a creative district2. Explore feasibility of a performing arts and convention center3. Maintain and enhance quality of existing Parks & Recreation facilities4. Maintain and expand soft and hard-surface trail systems5. Improve underfunded amenities, including Durango Public Library and Creative Economy Commission <p>C. Identifying an iconic feature (physical structure or activity) that becomes symbol of Durango</p>
	<p>3. Improve environmental resiliency and encourage responsible stewardship of natural resources, as evidenced by:</p> <p>A. Implementing a crosscutting Sustainable Action Plan in which all departments have key performance indicators (KPIs):</p> <ol style="list-style-type: none">1. Appropriate funds for departments to achieve KPIs and hold accountable for progress2. Commit to establishing a goal of either reducing the City's carbon footprint and/or increasing its use of renewable energy3. Focus on improving air quality, water resources, fire mitigation, transportation, land use, food systems and interactions with wildlife

4. Require & support effective utilization of resources to supply the following, as evidenced by:



- A. Safety: police, fire, emergency services
 - 1. Police: Identify possible locations, design options and funding sources for an adequate police station
 - 2. Fire: Fire impact fee decision
- B. Sanitation: water, sewer, stormwater, solid waste, recycling
 - 1. Water: Progress with development of water treatment capabilities
 - 2. Stormwater: Adopt Stormwater Management Plan
 - 3. Waste/recycling: Review costs, needed improvements and options for providing service
- C. Mobility: roads, transportation (airport & transit)
 - 1. Roads: Establish an Infrastructure Committee, possibly combining with Utilities Commission, to provide oversight to 2019 ½ cent sales tax funds as well as
 - 2. Ensure effective communication channel between Infrastructure Commission and Multimodal Advisory Board to ensure efficient & effective use of resource
 - 3. Airport: Adopt modified Airport Master Plan
 - 4. Transit: Explore transit sustainability options with creative funding mechanisms and tie to housing & business development

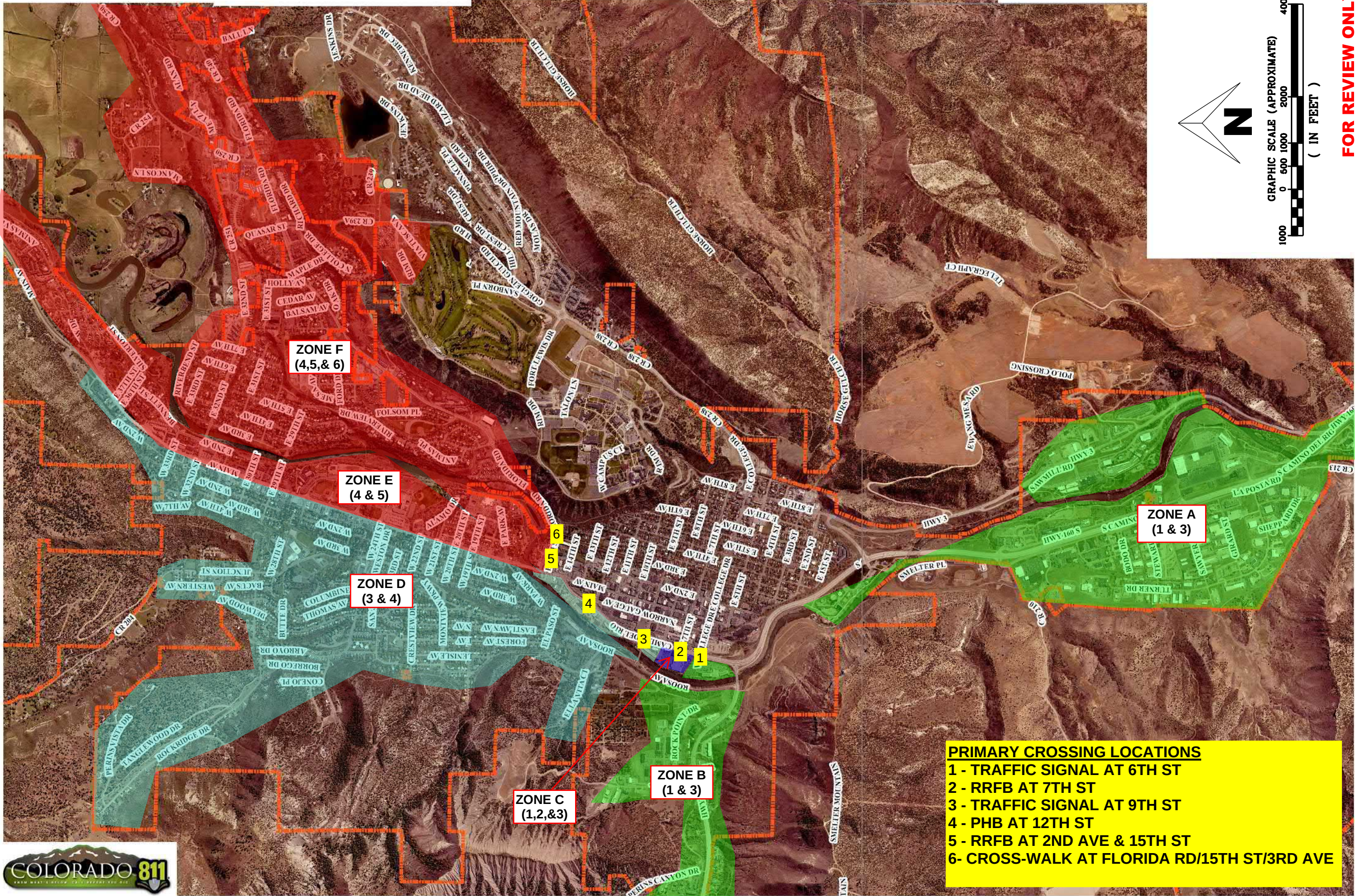
5. Advance fiscal sustainability and resiliency, as evidenced by:



- A. Address structural financial imbalance in the General Fund:
 - 1. Determine appropriate reserve balances and develop initiatives to fund them
- B. Establish Strategic Initiatives Committee to advise Council on resiliency & sustainability
- C. Continue to develop Financial Management Tools, including Key Performance Indicators (KPIs)
- D. Expand economic development opportunities in collaboration with regional stakeholders
- E. Support an effective organization with a high-performance workforce
- F. Foster community trust by demonstrating open & transparent governance
- G. Create a high-quality communications program to foster awareness in the community

Previous Completed Studies/Plans	Information/Recommendations Particularly Relevant to the Crossing of Camino del Rio between 6th and 12th Streets
2004 Design Guidelines for the Downtown Overlay District	Design Goals for Camino del Rio include strengthening "the pedestrian network of sidewalks, plazas and paths, including connections to the Animas River."
2006 Downtown Durango Vision and Strategic Plan	1. Recommends raised medians and access closures/restrictions along Camino del Rio between 6th and 14th Streets to improve safety and pedestrian and bicycle access across Camino del Rio.
	2. Recommends development of 11th Street as a dedicated Street between Narrow Gauge Avenue and Camino del Rio.
	3. Shows bike/pedestrian underpass on Camino del Rio between 10th and 11th Streets (long term plan).
	4. Recommends constructing at grade crossing of Camino del Rio at 12th Street.
	5. Recommends paired signals at 11th Street and 12th Street with elimination of WB leg of 12th Street upon signalization.
	6. Recommends a pedestrian/bicycle connection to Town Plaza property from 10th Street when Town Plaza re-develops.
	7. Recommends improving wayfinding signage throughout downtown.
2009 Camino del Rio - State Highway 550 Bike/Pedestrian Underpass Feasibility Study (2009 UP Feasibility Study)	1. Looked at four underpass alignments between 9th and 14th Streets.
	i) Alternative #1 - East Leg of 12th Street to Discovery Museum (not recommended because of excessive length).
	ii) Alternative #2 - East leg of 11th Street (Town Plaza) to area between 1111 Camino hotel property and the car dealer (not recommended due to lack of staff/public support & extensive right-of-way impacts to Town Plaza).
	iii) Alternative #3 - East leg of 12th Street to just north of River City Hall (not recommended due to excessive length and grade).
	iv) Alternative #4 - East leg of 12th Street to Veteran's Way (recommended location with some concerns regarding sharp horizontal curves and impacts to private parking areas).
2010 US 550 Camino del Rio Access Control Plan (ACP)	1. Created an intergovernmental agreement between CDOT and the City of Durango essentially documenting/refining the recommendations of the 2006 Downtown Durango Vision and Strategic Plan regarding future Camino del Rio median installations, access modifications, pedestrian/bicycle crossing locations, and traffic signal locations.
	2. This is a legally binding agreement. Therefore, any proposed improvements must comply with the ACP or the will require amendments to the ACP. The ACP amendment process is outlined in the inter-governmental agreement.
	3. Recommends "A landscaped median with substantial pedestrian refuges at the intersections of 6th, 7th,9th, 11th, 12th, and 14th Streets should be implemented on Camino del Rio between 6th and 14th Streets. This is the most cost-effective way to improve pedestrian and bicycle access across Camino del Rio from Downtown to the Animas River."
2012 City of Durango Multi-Modal Transportation Master Plan	1. Discusses a possible overpass at 8th Street connecting and expanded Transit Center/Public Parking Structure facility on City property on the east side of Camino del Rio to a private parking structure on the Commons Building property on the west side of Camino del Rio. Overpass Cost with Trail Connection to ART estimated at \$730,000 (2012 dollars). Intermodal Facility estimated at \$11,500,000 (2012 dollars).
	2. Narrative includes this text in reference to the 2009 Underpass Study "While this study was completed, it was shelved, with a determination that the cost, engineering constraints, and lack of support by neighboring business owners made the proposal largely infeasible."
2013 US 550 Camino del Rio Access Control Plan Amendment 1	Amendment 1 was required to change the access configuration at 7th Street for CDOT's 2014 Continuous Flow Intersection project that installed a median from the US 160/550 intersection to 8th Street.
2015 Steam Cultural Park Feasibility Study	This study links the grade separated crossing to the STEAM Cultural Center project as follows "CDOT has acknowledged that installation of a grade-separated pedestrian crossing would be required as part of the corridor modifications discussed previously."
2015 CDOT Region 5 Intersection Priority Study	1) CDOT Region 5 & Local Communities chose 96 intersections within Region 5 to be evaluated using Crash data, ADT, % Truck Traffic, sight distance, etc.
	2) US 550/11 th St & US 550/12 th St intersections ranked 6 th on the priority list in Region 5 based on this study.
	3) There are entering sight distance issues on the WB legs of both 11th and 12th. Therefore, study recommends closing 12th St WB leg and limiting 11th St WB leg to Ingress Only, both of which are consistent with the ACP.
	4) 11 th Street intersection meets the eight hour, four hour, peak hour, and crash experience signal warrants. Therefore, a traffic signal is recommended.
	5) This study recommends replacing span wire Ped Hybrid Beacon with mast arm Ped Hybrid Beacon (designed to be easily converted to full traffic signal).
	6) Cost of improvements \$756,000.
2016 Multi-Modal Transportation Master Plan	1) "The vision of the plan is to create a fully-connected transportation network that provides for an outstanding transit, bicycling and walking community in Durango. A measure of achieving this vision is that a middle-school aged child is able to safely and conveniently access transit and bike or walk independently throughout Durango and its environs. "
	2) One of the issues identified in zone 6:Historic Downtown and Camino Del Rio Corridor: "The Animas River Trail (ART) traverses the western edge of the zone and provides ADA access, but connections to and from the trail are missing or are non ADA-compliant."
	3) One other proposed improvements in Zone 6: Provide "A safe pedestrian and bicycle crossing of Camino del Rio between 9th and 12th Streets...." It goes on to reference a possible grade separated crossing between 9th and 12th, but also reiterates that the idea was shelved in 2009 for various reasons cited in the 2012 Multi-Modal Transportation Master Plan.
	4) The study summarizes the results of the City's Parking Division parking analyses that had been conducted between 2012 and 2016 and offer the following summary "The results of the parking analyses continually conclude that vacancy rates vary from 40 to 80% occupancy in the CBD during operational hours. This infers that Durango does not have a parking availability problem in the CBD during the week from 8:00am to 6:00pm." However, "these on-going counts indicated that free parking available in the neighborhood immediately east of the CBD consistently hits critical levels of occupancy with almost no availability during the typical work hours of 8:00am to 5:00pm in several blocks...." This information may be relevant in regards to the likelihood/timeline of potential, future parking structures.
2017 Independent Professionals Alternative 12th Street Underpass Alignment Power Point	1. A local group of professionals independtnly critiqued and expanded on the 2009 UP Feasiblity Study, providing an additional option to the four proposed in the 2009 UP Study.
	2. The groups preferred location has the west portal just north of the west leg of 12th Street and the east portal approximately 170' north of the east leg of 12th Street.

2017 City of Durango Comprehensive Plan	Objective 22.2: Enhance non-motorized access between Downtown Durango and the Animas River, and elsewhere in the City.
	Objective 22.2.1 : Develop safe and accessible pedestrian/bicycle linkages across Highways 550, 160 and 160/550)
	"In 1990 and 2000, the Census reported that over 15% of Durango's population commuted to work by foot or on bicycle, which is a much higher proportion than on the State or National level."
	All references to the SMART 160 trail appear to be in regards to the connection to Grandview, with no mention of connection to Lightner Creek Road.
2018 Camino Del Rio Character District Plan	"Assets in this area {Camino Del Rio Character District} were noted as the opportunity to gain better connection to downtown, reveal views of the river, increase the variety of uses, emphasize walking, and add trees and public spaces. This area was viewed as appropriate for hosting higher density urban patterns with parking accommodated within structures to support greater building height and walkability. Creating safe walking connections across Camino to the river was also frequently requested."
	Character defining goal "Achieve connectivity from Main Street and adjacent neighborhoods throughout the Camino Del Rio district to the Animas River."
	Physical Improvement 4.3: River Trail Connections - Plan for and build more connections to river trail (Mobility Study implementation). Pursue greater connectivity across the corridor especially from downtown across Camino Del Rio to the Animas River.
	Physical Improvement 4.5: Accessibility & Connectivity - The potential for grade-separated crossings should continue to be explored, but safe at-grade crossings should also be added. Investigate options for greater connectivity across the corridors and with the adjacent neighborhoods.



- PRIMARY CROSSING LOCATIONS**
- 1 - TRAFFIC SIGNAL AT 6TH ST
 - 2 - RRFB AT 7TH ST
 - 3 - TRAFFIC SIGNAL AT 9TH ST
 - 4 - PHB AT 12TH ST
 - 5 - RRFB AT 2ND AVE & 15TH ST
 - 6- CROSS-WALK AT FLORIDA RD/15TH ST/3RD AVE

REVISIONS:

#	Date	Description	Sheet

Date: 8-13-2019
Drawn By: BC
Chkd By: SP

**CITY OF DURANGO
AERIAL IMAGES**

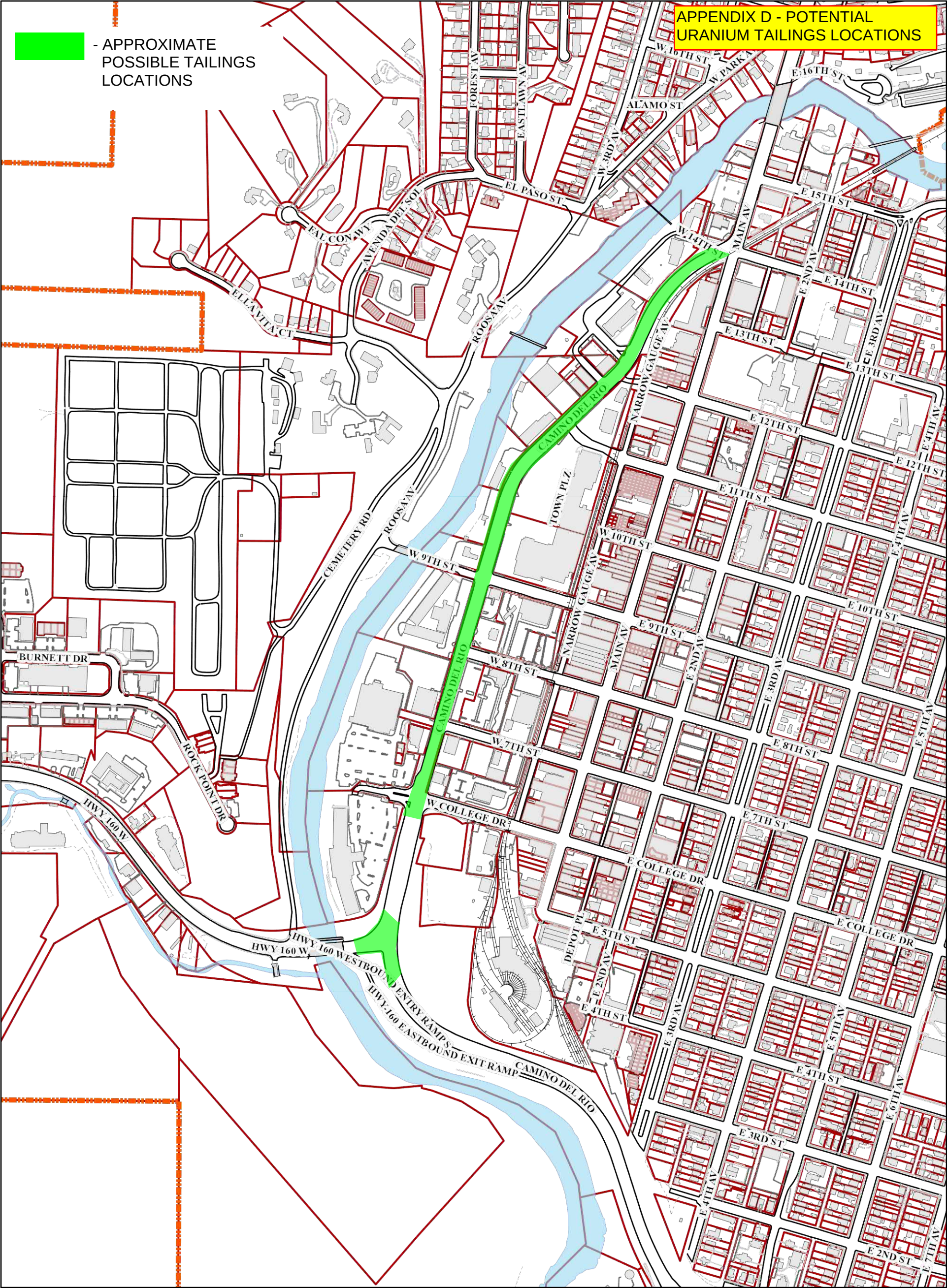


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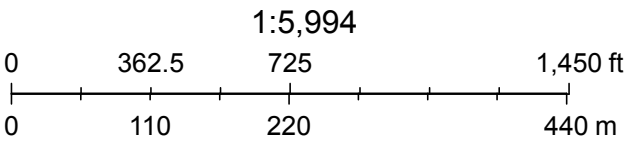
FOR REVIEW ONLY

SHEET
1 OF 1

City of Durango, CO



March 6, 2020



Disclaimer: Map and parcel data are believed to be accurate, but accuracy is not guaranteed. This is not a legal document and should not be substituted for a title search, appraisal, survey, or for



SIGNAL TIMING

Traffic signals along Main Avenue in the CBD are timed for pedestrian traffic to allow for continuous crossing opportunities across every side street. This measure involves timing the phasing of adjacent traffic signals along the downtown Main Avenue corridor to control the speeds of motor vehicles. The sequence of green signal cycles is timed to the speed of an average pedestrian.

PARKING

The CBD has approximately 1,000 metered on-street parking spaces and in excess of 350 parking spaces in off-street permitted municipal parking lots. Parking meters are enforced year-round from 8:00 am to 6:00 pm, Monday through Friday. There is no parking enforcement on holidays or weekends. The 30-minute, 3-hour, and 10-hour meters provide downtown parking options, along with the permitted municipal parking lots.

The City provides four municipal parking lots: one at the Transit Center and three along East 2nd Avenue. The use of these lots from 7:00 am to 5:00 pm requires a pre-purchased permit, sold on a weekly or monthly basis with multi-month discounts available. Overnight parking and weekend parking is available at any of the municipal parking lots free of charge. The City has adopted parking regulations in its Municipal Code. Violations are subject to citations and fines.

ACCESSIBILITY

To monitor and advocate for accessibility projects, the City has an appointed ADA Coordinator. The City's ADA Coordinator supports equitable transportation planning and outreach in the community by advocating for access and mobility for persons with disabilities.

ADA TRANSITION PLAN

The City of Durango was awarded an FTA section 5304 planning grant to fund the development of an ADA Transition Plan and Self Evaluation, focused on Durango Transit facilities, services and programs. The grant was awarded in 2014, and RAC Associates were hired in 2015 to complete an ADA Transition Plan and Self Evaluation. The ADA Transition Plan identified roughly 1,948 total projects totaling \$20 million to bring the City's transit system and pedestrian access within 0.2 mile leading up to every bus stop into compliance with the Americans with Disabilities Act. In the ADA Transition Plan, work is recommended in three tiers and the projects are integrated with the plan's proposed improvements which are detailed in project lists in Chapter 3.

HANDICAPPED PARKING

The City of Durango has 29 designated parking spaces in the CBD for vehicles displaying a valid handicap placard. All vehicles parked in these designated spaces must have a valid handicap plate or placard properly displayed. These spaces have designated limits on the sign which must be obeyed for turnover and access. Drivers with a properly displayed handicap placard or plate may park for an unlimited time in any 3-hour or 10-hour metered spaces without paying the meter (this does not include 30 minute meters). This same courtesy is applied to patrons driving a government plate or markings on official business (see City's Parking Policy).

PARKING ZONES

Yellow zones. The yellow-painted curbs are Durango's commercial loading zones. During the hours of 7:00 am to 6:00 pm, Monday through Saturday, these zones are reserved for commercial vehicles which need to actively load or unload freight. Commercial loading zones are open for free public parking after 6:00 pm, Monday through Saturday, and all day Sunday.

Green zones. Curbs painted green are Durango Transit loading zones for the buses and trolleys. These zones must be kept clear at all times. When vehicles block bus/trolley zones, riders are forced to load and unload in driving lanes, making unsafe conditions for both pedestrians and drivers. Please help us keep everyone safe by leaving these zones open for the Transit system.

Red zones. Red-painted curb areas are non-parking areas placed for traffic and fire safety. No one is allowed to park in a Red Zone except for emergency vehicles in an active emergency.

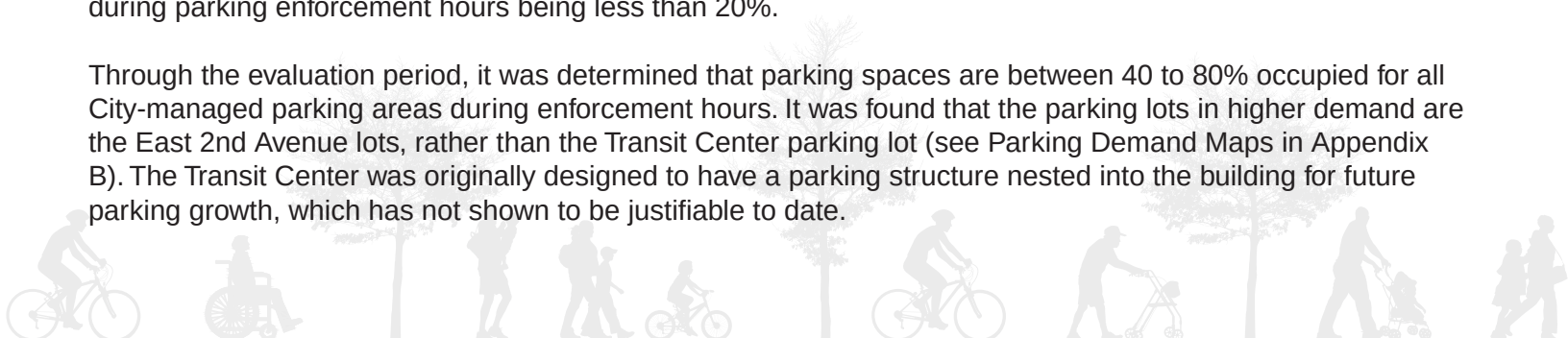
PARKING ANALYSES

In order to better understand how to incorporate parking into the plan process, the City's Parking Division conducts parking analyses to determine vacancy rates in metered parking spaces and municipal parking lots twice a week from 2012 to present day. The results of the parking analyses continually conclude that vacancy rates vary from 40 to 80% occupancy in the CBD during operational hours. This infers that Durango does not have a parking availability problem in the CBD during the week from 8:00 am to 6:00 pm. Based on Donald Shoupe's research, a parking problem is indicated by less than 20% vacancy rates in parking spaces.

Weekly occupancy counts. The weekly occupancy counts continue and new ways of presenting the data are being analyzed. These ongoing counts have indicated that the free parking available in the neighborhood immediately east of the CBD consistently hits critical levels of occupancy with almost no availability during the typical work hours of 8:00 am to 5:00 pm in several blocks (see Appendix B. Parking Demand Maps for further detail).

Transportation demand management (TDM) group. A TDM group made up of local citizens was formed in 2012 to evaluate parking meter rates, on-street parking and municipal parking lots to determine if the current available parking had reached peak demand. Peak demand for parking is determined by vacancy rates during parking enforcement hours being less than 20%.

Through the evaluation period, it was determined that parking spaces are between 40 to 80% occupied for all City-managed parking areas during enforcement hours. It was found that the parking lots in higher demand are the East 2nd Avenue lots, rather than the Transit Center parking lot (see Parking Demand Maps in Appendix B). The Transit Center was originally designed to have a parking structure nested into the building for future parking growth, which has not shown to be justifiable to date.



TRAFFIC CALMING FEATURES

Traffic calming features, such as Complete Streets, road diets, neighborhood traffic circles, roundabouts and protected bike lanes, may be introduced one at a time to make spot improvements street-by-street, or they may be implemented on an area-wide basis, with multiple streets treated at the same time with suitable traffic calming treatments. Spot treatments are not as effective as area-wide improvements, according to the Institute of Transportation Engineers (ITE) Traffic Engineering Handbook, because they tend to simply shift traffic problems from one neighborhood street to another (2009, p.534).

The City of Durango is investigating the implementation of traffic calming features in order to provide a safer environment for all users by enhancing drivers' ability to see, increasing the available time needed to react, diminishing severity of crashes and reducing incidence of drivers overtaking cyclists. If it is determined that traffic calming features are appropriate as a multimodal transportation enhancement, the City will host public processes to determine where and how they can be implemented.

Traffic calming features can have the following benefits:

- Decrease motor vehicle speed.
- Decrease the likelihood that crashes will occur, by increasing drivers' response time and minimizing motor vehicles overtaking movements.
- Decrease likelihood of an injury resulting from a crash.
- Improve bicyclist level of comfort and benefit pedestrians and residents by reducing traffic speeds along the corridor.
- Establish and reinforce bicycle priority on bicycle boulevards by discouraging vehicle travel.
- Provide opportunities for landscaping and other community features such as benches, message boards, and colored pavement at an intersection, benefiting all roadway users and residents.
- See Appendix C for a description of the various traffic calming features, in alphabetical order.



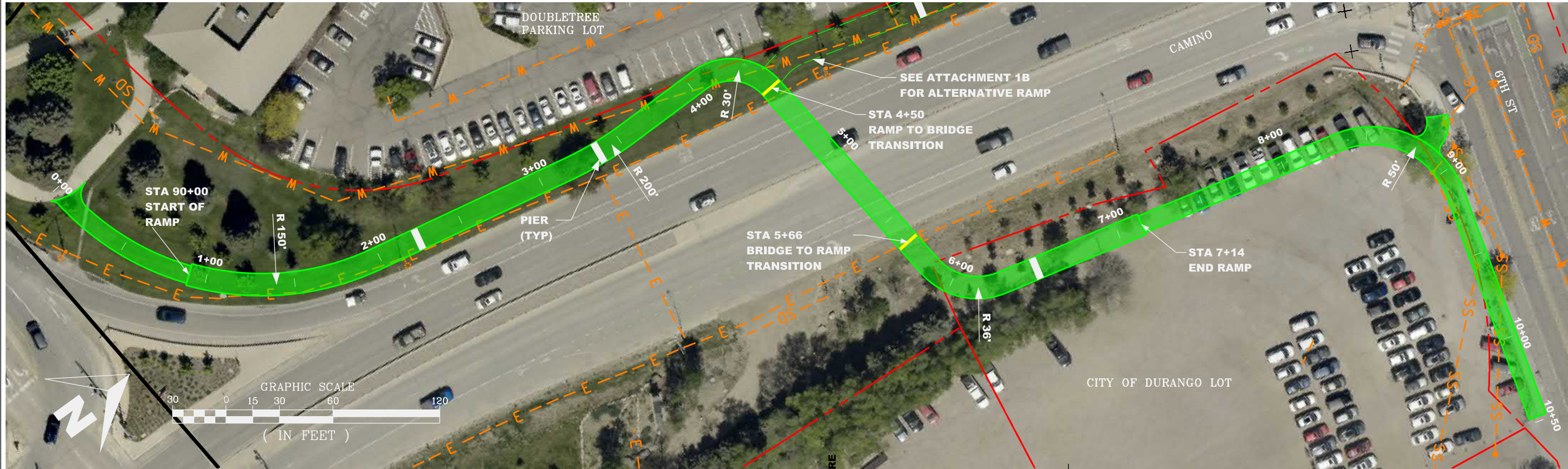
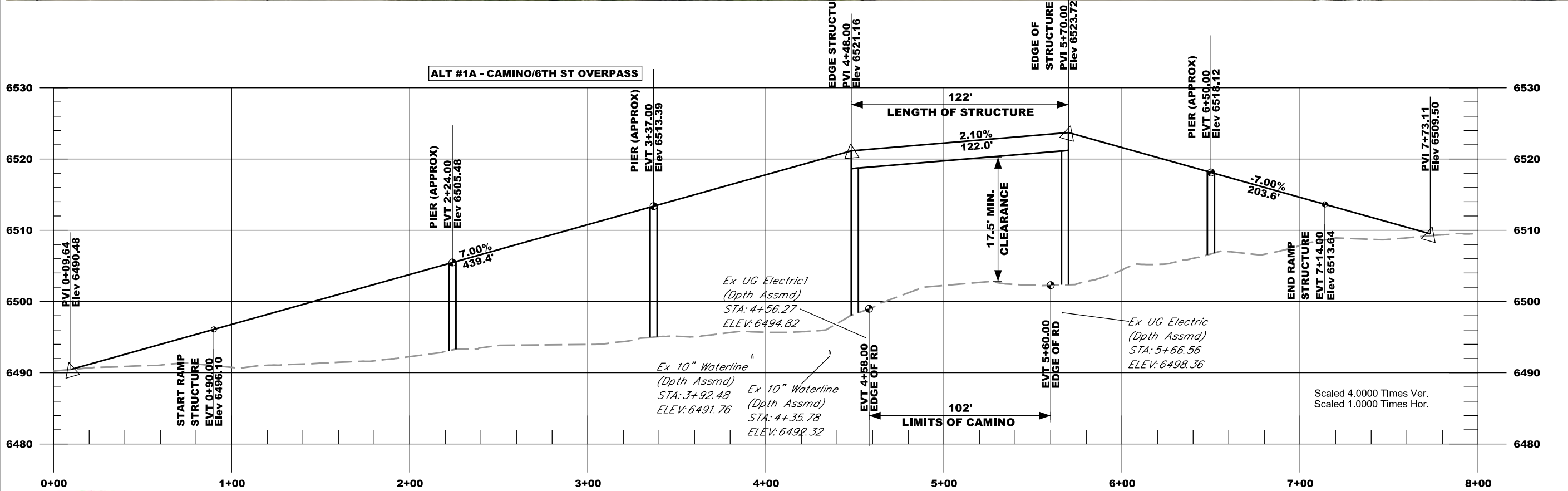


Free parking pilot program. In 2013, a free parking pilot project was held for two weeks while new parking meters were installed in the CBD. The free parking pilot program demonstrated that city-provided parking spaces in the CBD would be fully occupied, with 0% vacancy, if parking was free-of-charge. The results, however, were not favored by business owners as it was determined that employees made up the vast majority of downtown parkers during the free days. Customers were forced to find parking elsewhere and walk further to get to desired business locations, facing a significant inconvenience.

Residential permit parking program. At the request of the Boulevard Neighborhood Association, a public meeting was held on April 9, 2015 to discuss a proposed residential permit parking program. The neighborhood meeting and subsequent public comments tallied 38 citizens who were in support of a residential permit parking program, 67 citizens who were against a parking program, and 24 citizens who did not state whether they were for or against a parking program. Since a larger number of citizens were against a parking program, the program investigation was put on hold to enable the citizen group to do further research.

Narrow Gauge Avenue permit parking. At the request of citizens, the City initiated a pilot program for passes along Narrow Gauge Avenue to provide a monthly permit in an area considered distant from the existing municipal lots. The pilot program ran from May of 2016 to April of 2017. This program has had moderate success with 19 permits actively used as of September 2016. These permits are priced at \$75 to replace the average revenue at the meters along Narrow Gauge. The success of this program has led to extending the pilot program through 2017.





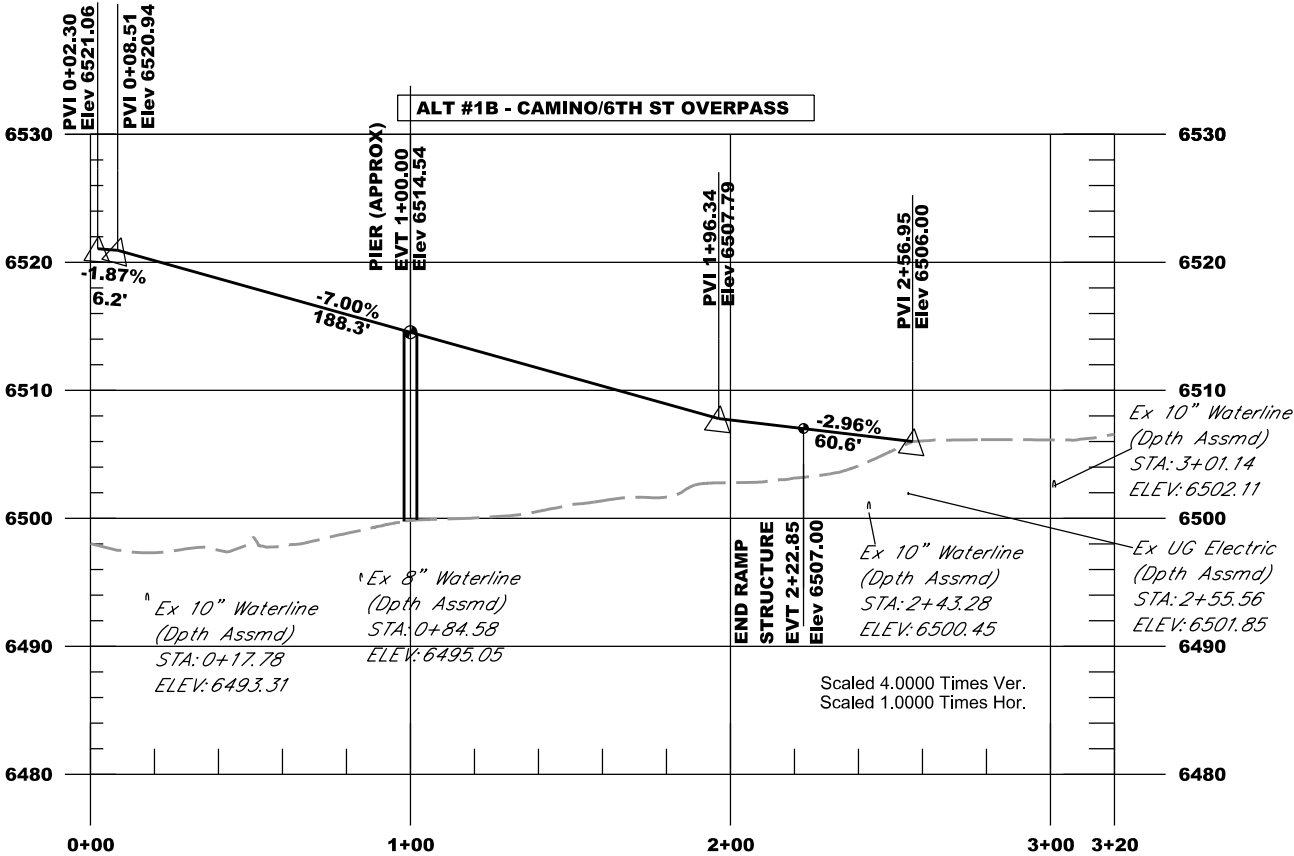
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970-235-1072



CAMINO CROSSING STUDY
CAMINO/6TH ST OVERPASS
ATTACHMENT 1A
DURANGO, CO 81301
ALTERNATIVE #1

REVISIONS:	
#	Date
Description	By

Date: 3-10-2020
Drawn By: BC
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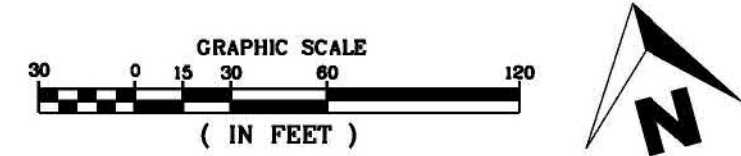
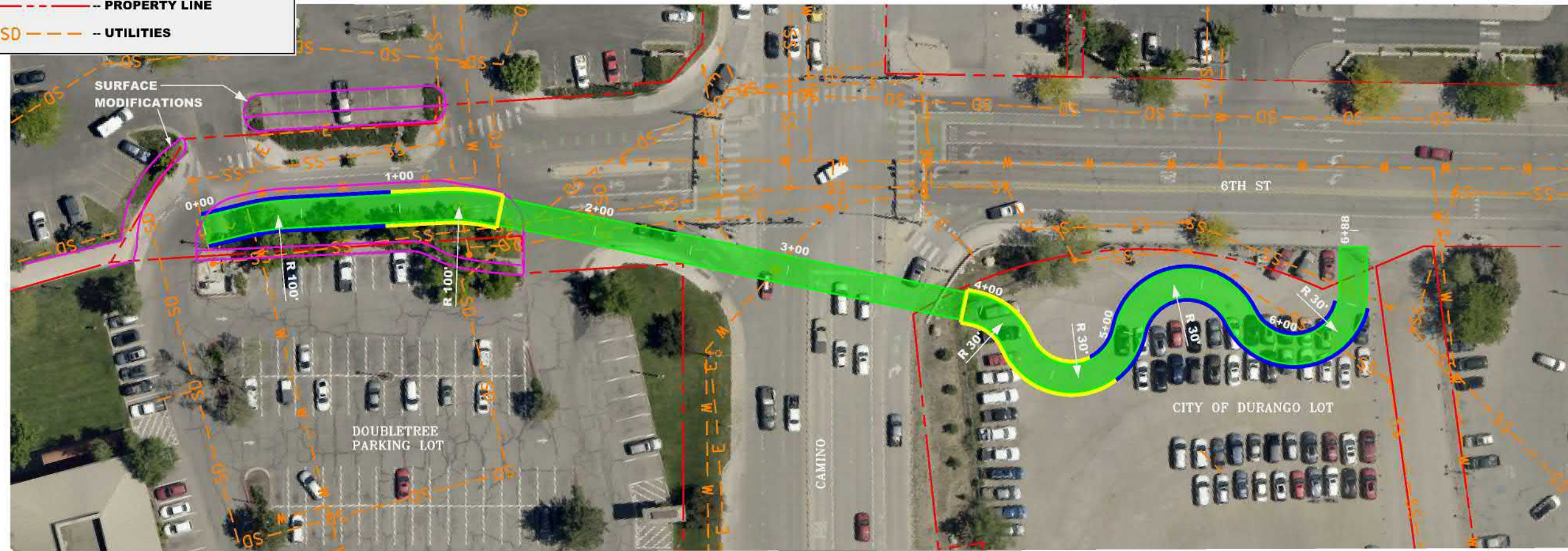
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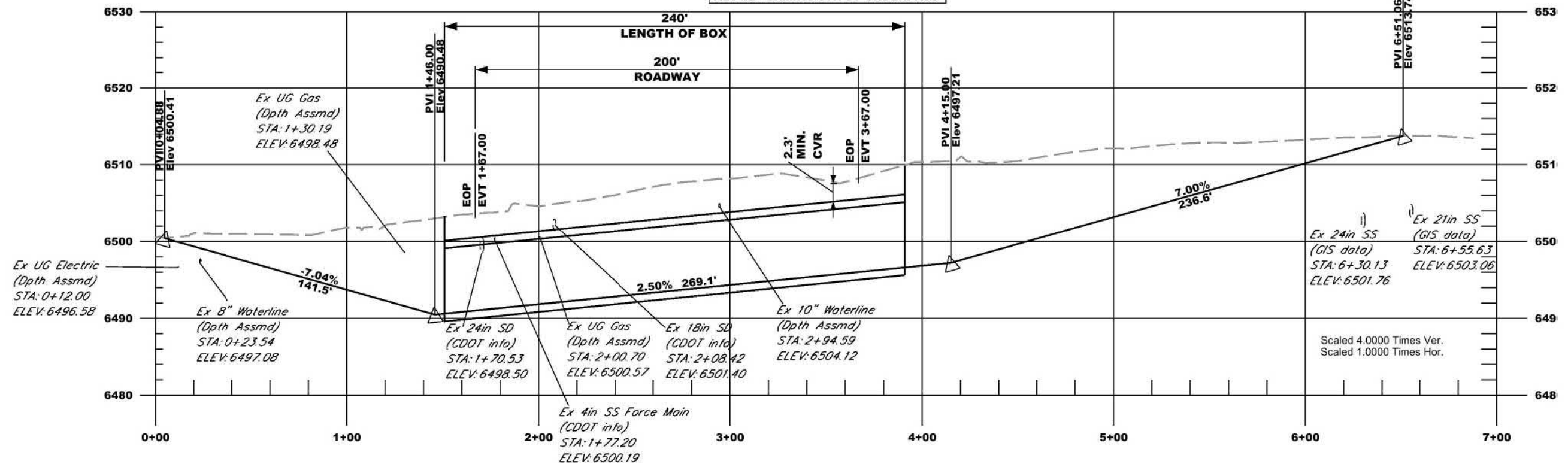
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Drawn By: BC
Chkd By: SP

LEGEND

- GRAVITY/CONCRETE WALL
- SOIL NAIL/MICRO-PILE WALL
- PROPERTY LINE
- SD -- UTILITIES



ALT #2 - CAMINO/6TH ST UNDERPASS



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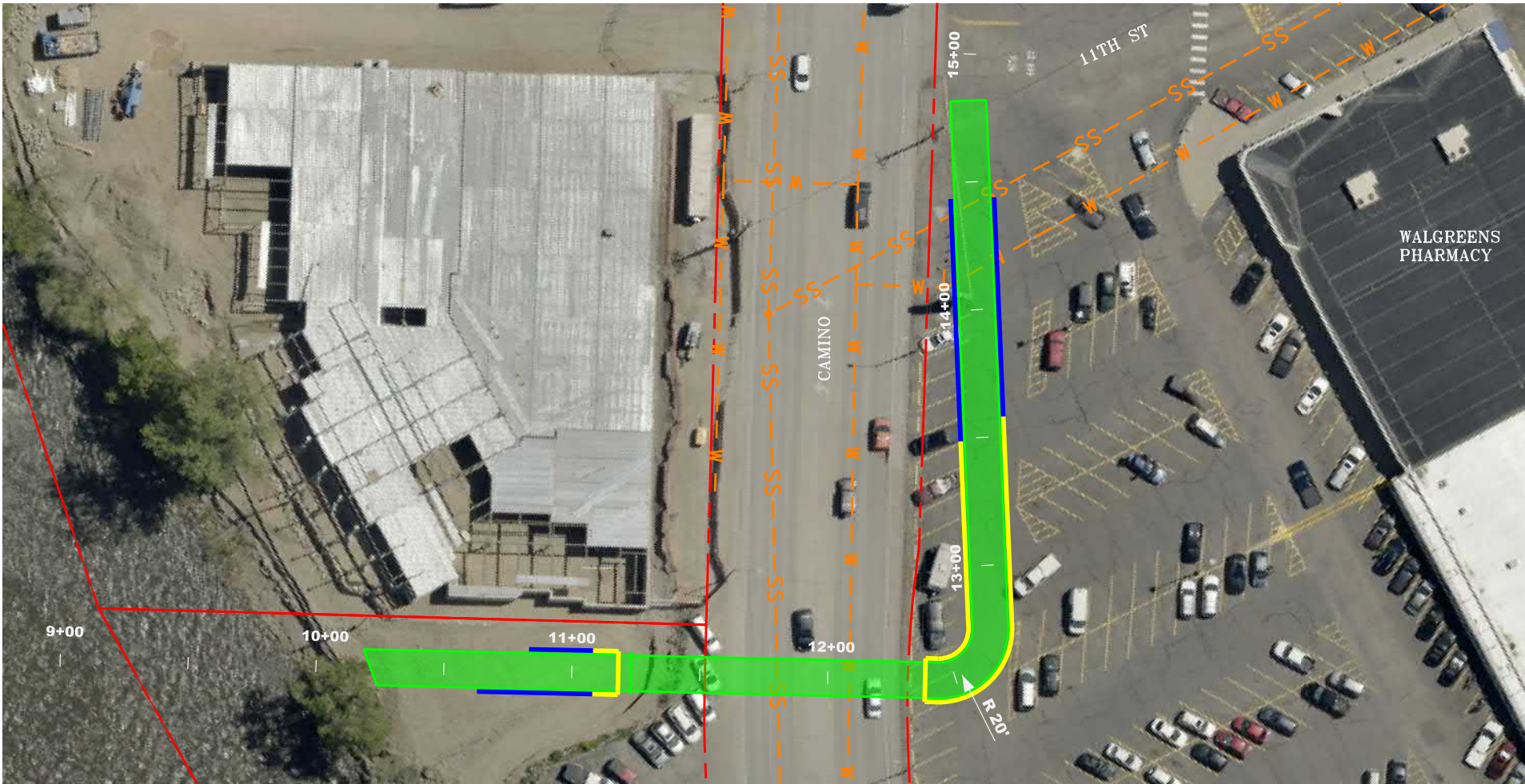
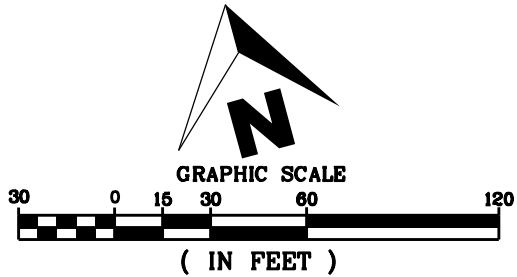
ENGINEERING

CAMINO CROSSING STUDY
CAMINO/6TH ST UNDERPASS
ATTACHMENT 2
DURANGO, CO 81301
ALTERNATIVE #2

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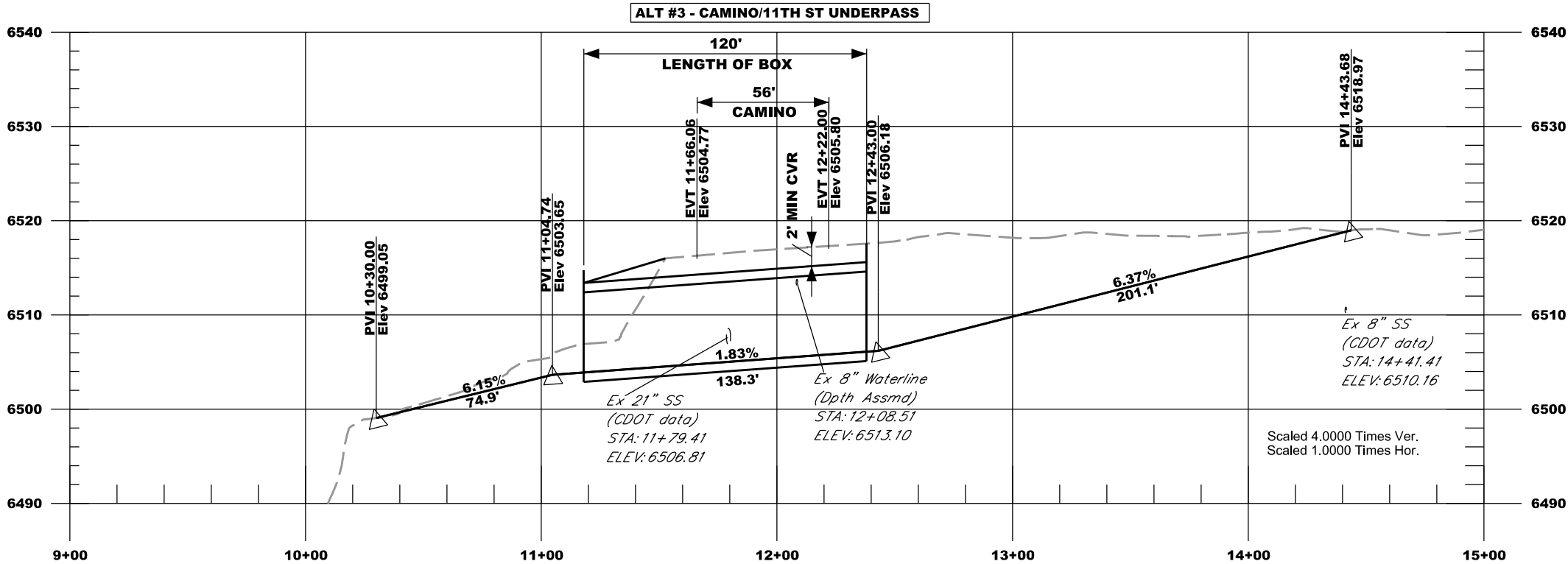
#	Date	Description	By

Date: 3-10-2020
Drawn By: BC
Chkd By: SP



NOTES:
1. THIS PLAN AND PROFILE WAS DEVELOPED USING
AN ALTERNATIVE ORIGINALLY PRESENTED IN THE
2009 UP STUDY BY SHORT ELLIOT HENDRICKSON INC.

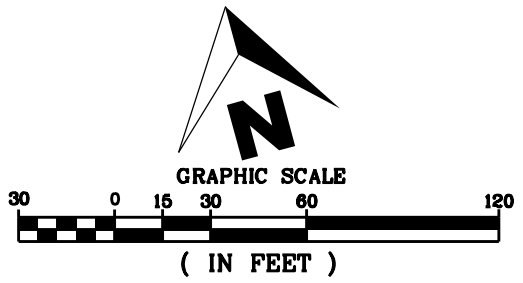
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—	-- SOIL NAIL/MICRO-PILE WALL
---	-- PROPERTY LINE
--- SD ---	-- UTILITIES



CAMINO CROSSING STUDY
CAMINO/11TH ST UNDERPASS
ATTACHMENT 3
DURANGO, CO 81301
ALTERNATIVE #3

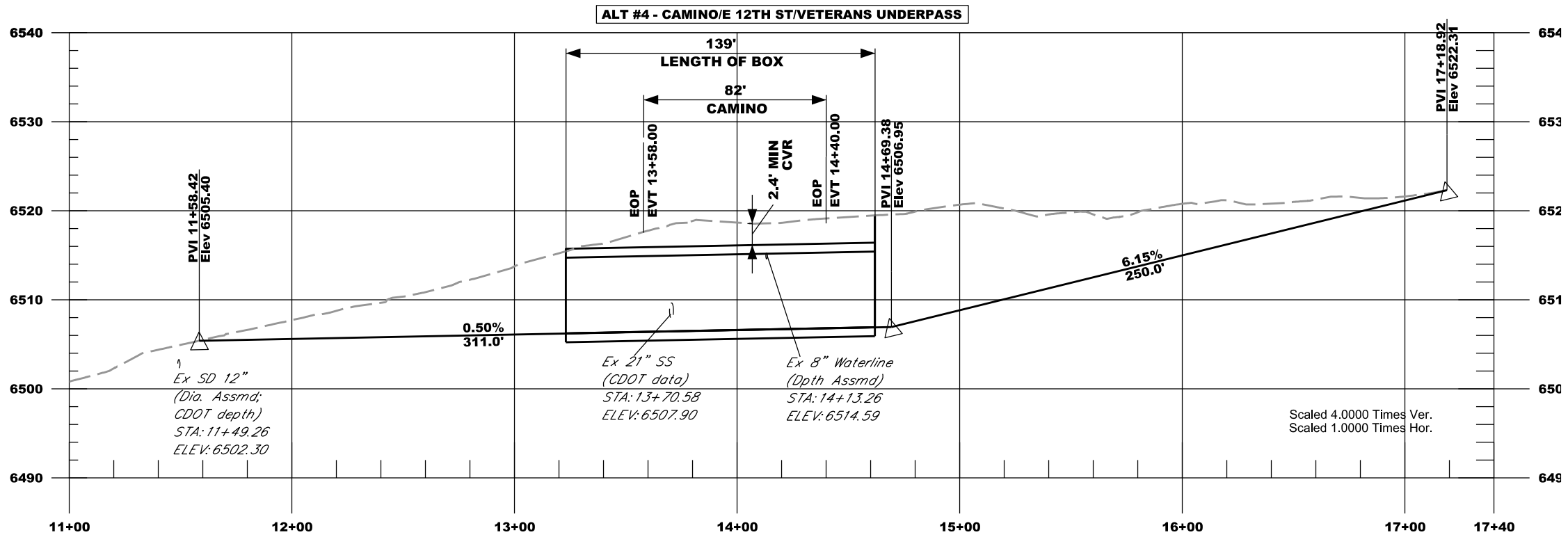
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Date: 3-10-2020
Drawn By: BC
Chkd By: SP



NOTES:
1. THIS PLAN AND PROFILE WAS DEVELOPED USING AN ALTERNATIVE ORIGINALLY PRESENTED IN THE 2009 UP STUDY BY SHORT ELLIOT HENDRICKSON INC.

LEGEND	
	-- GRAVITY/CONCRETE WALL
	-- SOIL NAIL/MICRO-PILE WALL
	-- PROPERTY LINE
	-- UTILITIES



SHEET

1 OF 1

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CAMINO CROSSING STUDY
CAMINO/EAST 12TH ST/
VETERANS WAY UNDERPASS
ATTACHMENT 4
DURANGO, CO 81301
ALTERNATIVE #4

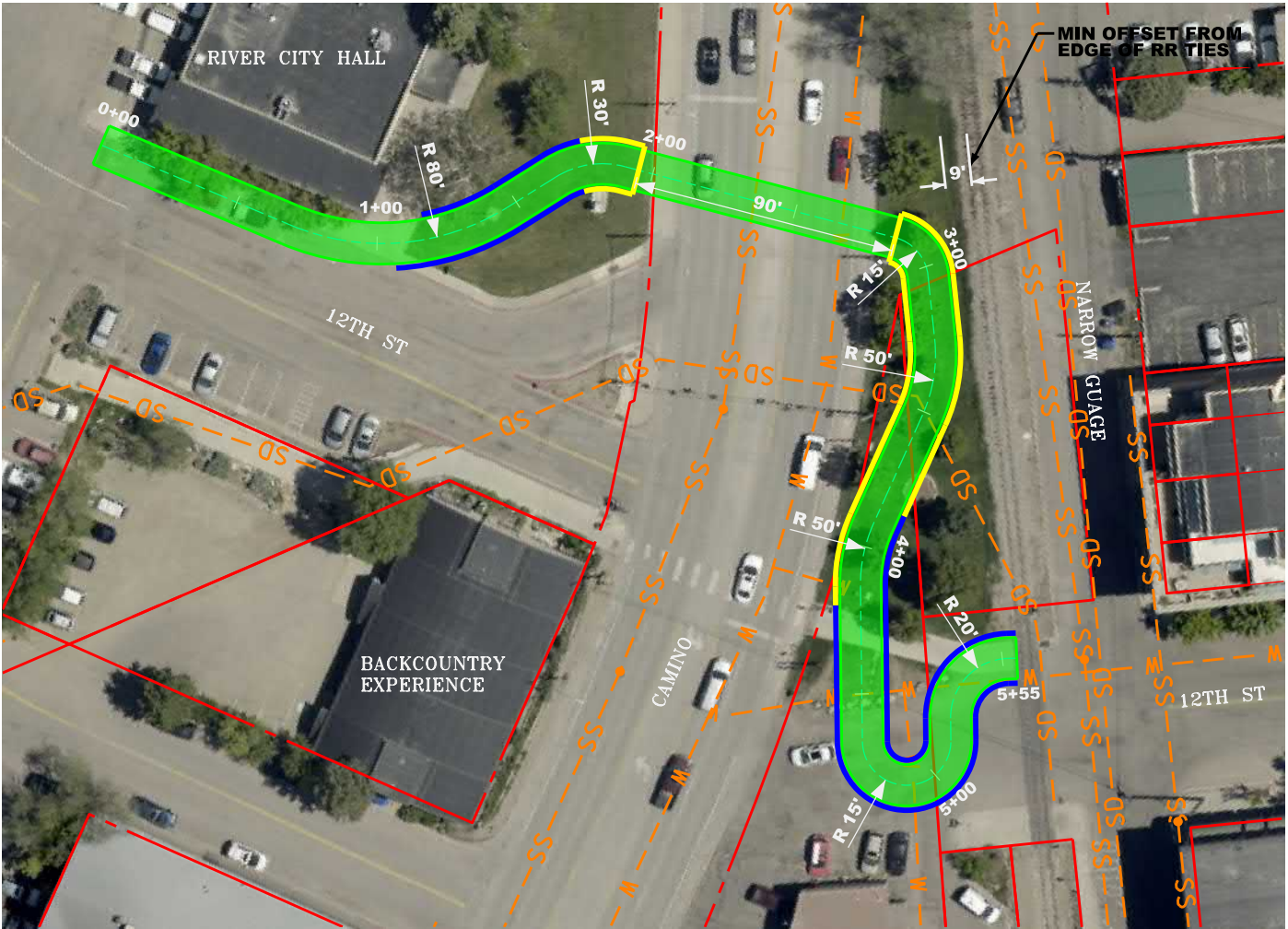
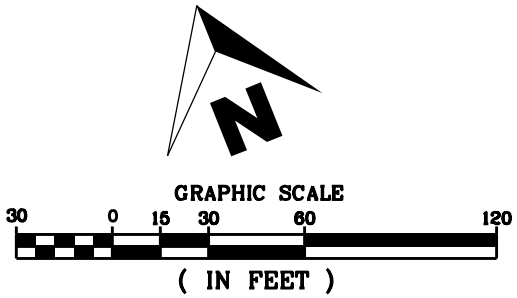
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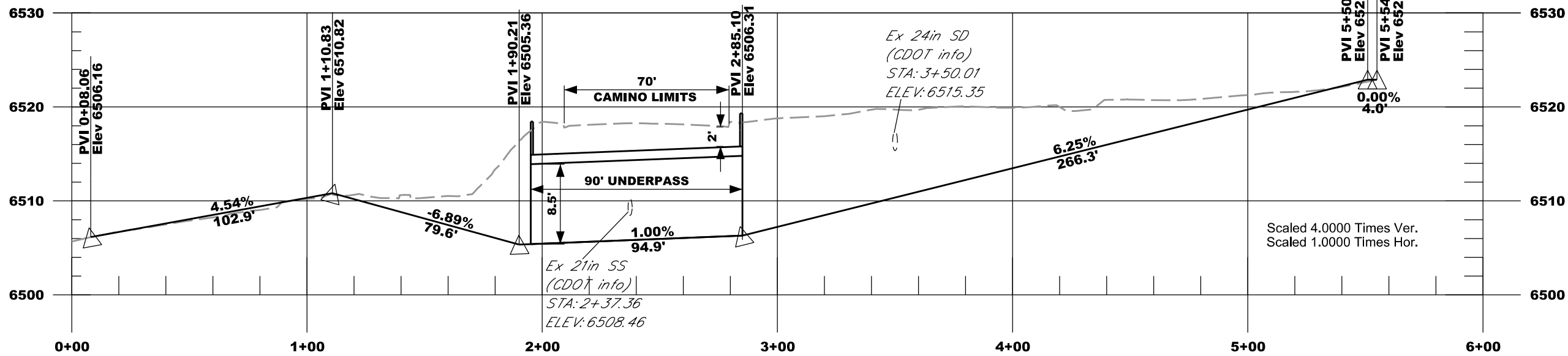
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LEGEND	
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---	SOIL NAIL/MICRO-PILE WALL
---	PROPERTY LINE
--- SD ---	UTILITIES

ALT #5 - CAMINO/EAST 12TH ST/RIVER CITY HALL UNDERPASS



REVISIONS:		Sheet
#	Date	Description

Date: 3-10-2020
Drawn By: BC
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1 OF 1



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CAMINO CROSSING STUDY
CAMINO/EAST 12TH ST/
RIVER CITY HALL UNDERPASS
ALTERNATIVE #5
DURANGO, CO 81301
ALTERNATIVE #5

Attachment 6 -
Camino del Rio Pedestrian/Bicycle Crossing Study
Overpass South of College Drive (Alternative #1)

Opinion of Probable Construction Cost
Prepared By: PST Engineering, LLC
March 9, 2020



<u>Contract Item</u>	<u>Unit</u>	<u>Quantity</u>	<u>Unit Cost</u>	<u>Total Cost</u>
SECTION 1: APPROACH RAMP: 160/ 550 INTERSECTION TO OVERPASS				
Structure	LS	1	\$ 775,000.00	\$ 775,000.00
Demolition, Resets, Removals, Modifications	LS	1	\$ 4,000.00	\$ 4,000.00
Shared Use Path	SY	23	\$ 90.00	\$ 2,070.00
12" Storm Drain	LF	20	\$ 60.00	\$ 1,200.00
10" Waterline	LF	124	\$ 85.00	\$ 10,540.00
Guardrail	LF	340	\$ 50.00	\$ 17,000.00
				\$ 809,810.00
SECTION 2: APPROACH RAMP: COLLEGE DR TO OVERPASS- WEST SIDE				
Structure	LS	1	\$ 500,000.00	\$ 500,000.00
Demolition, Resets, Removals, Modifications	LS	1	\$ 5,000.00	\$ 5,000.00
Shared Use Path	SY	100	\$ 90.00	\$ 9,000.00
10" Waterline	LF	220	\$ 85.00	\$ 18,700.00
Guardrail	LF	200	\$ 50.00	\$ 10,000.00
Guardrail End Treatment	EA	1	\$ 3,000.00	\$ 3,000.00
				\$ 545,700.00
SECTION 3: OVERPASS BRIDGE OVER CAMINO				
Structure	LS	1	\$ 375,000.00	\$ 375,000.00
Guardrail	LF	60	\$ 50.00	\$ 3,000.00
Guardrail End Treatment	EA	1	\$ 3,000.00	\$ 3,000.00
				\$ 381,000.00
SECTION 4: APPROACH RAMP FROM COLLEGE DRIVE TO OVERPASS- EAST SIDE				
Structure	LS	1	\$ 410,000.00	\$ 410,000.00
Demolition, Resets, Removals, Modifications	LS	1	\$ 5,000.00	\$ 5,000.00
Shared Use Path	SY	395	\$ 90.00	\$ 35,550.00
				\$ 450,550.00
Traffic Control	LS	1	\$ 100,000.00	\$ 100,000.00
			Total Estimated Construction Cost	\$ 2,287,060.00
			25% Contingency	\$ 571,765.00
			Construction Management (8%)	\$ 182,964.80
			Engineering Design (8%)	\$ 182,964.80
			Right of Way Acquisition	Not included
			Aesthetic Treatments	Not included
			Grand Total (rounded)	\$ 3,200,000.00

Attachment 7 -
Camino del Rio Pedestrian/Bicycle Crossing Study
Underpass at College Drive (Alternative #2)



Opinion of Probable Construction Cost
Prepared By: PST Engineering, LLC
March 9, 2020

<u>Contract Item</u>	<u>Unit</u>	<u>Quantity</u>	<u>Unit Cost</u>	<u>Total Cost</u>
Demolition, Resets, Removals, Modifications	LS	1	\$ 139,000.00	\$ 139,000.00
Excavation (Complete in Place)	CY	4300	\$ 35.00	\$ 150,500.00
Structure Backfill (Class 1)	CY	700	\$ 60.00	\$ 42,000.00
10' x 14' Conc Arch or Box Culvert (Precast) Supply Only	LF	240	\$ 2,000.00	\$ 480,000.00
10' x 14' Conc Arch or Box Culvert (Precast) Install Only	LF	240	\$ 2,000.00	\$ 480,000.00
Retaining Wall (Micro-pile or Soil Nail Wall)	SF	3000	\$ 175.00	\$ 525,000.00
Retaining Wall (Gravity Wall or Concrete Wall)	SF	2245	\$ 60.00	\$ 134,700.00
Storm Drain Improvements Associated with Structure	LS	1	\$ 53,000.00	\$ 53,000.00
Concrete Bikeway (6 inch)	SY	1057	\$ 95.00	\$ 100,415.00
Hot Mix Asphalt (Patching)	Ton	240	\$ 250.00	\$ 60,000.00
Concrete Pavement (8 inch)	SY	500	\$ 150.00	\$ 75,000.00
Concrete Wall Railing (Type 7)	LF	140	\$ 150.00	\$ 21,000.00
Guardrail	LF	60	\$ 50.00	\$ 3,000.00
End Anchorage (Flared)	EA	1	\$ 3,000.00	\$ 3,000.00
Fence Chainlink (42 inch)	LF	600	\$ 35.00	\$ 21,000.00
Traffic Control	LS	1	\$ 250,000.00	\$ 250,000.00
Mine Tailings Removal ¹	LS	1	\$ 174,000.00	\$ 174,000.00
Ex Sanitary Sewer Modifications	LS	1	\$ 10,000.00	\$ 10,000.00
Ex Storm Sewer Modifications	LS	1	\$ 33,000.00	\$ 33,000.00
Ex Water Line Modifications	LS	1	\$ 8,000.00	\$ 8,000.00
	Total Estimated Construction Cost			\$ 2,762,615.00
	25% Contingency			\$ 690,653.75
	Construction Management (8%)			\$ 221,009.20
	Engineering Design (8%)			\$ 221,009.20
	Right of Way Acquisition			Not included
	Aesthetic Treatments			Not included
	Grand Total (rounded)			\$ 3,900,000.00

Notes:

1. Cost based on assumed cost for Alternative 4 adjusted for amount of excavation.

Attachment 8 -
Camino del Rio Pedestrian/Bicycle Crossing Study
11th Street Underpass (Alternative #3)



Opinion of Probable Construction Cost
Prepared By: PST Engineering, LLC
March 9, 2020

Contract Item	Unit	Quantity	Unit Cost	Total Cost
Demolition, Resets, Removals, Modifications	LS	1	\$ 50,000.00	\$ 50,000.00
Excavation (Complete in Place)	CY	2000	\$ 35.00	\$ 70,000.00
Structure Backfill (Class 1)	CY	300	\$ 60.00	\$ 18,000.00
10' x 14' Conc Arch or Box Culvert (Precast) Supply Only	LF	120	\$ 2,000.00	\$ 240,000.00
10' x 14' Conc Arch or Box Culvert (Precast) Install Only	LF	120	\$ 2,000.00	\$ 240,000.00
Retaining Wall (Micro-pile or Soil Nail Wall)	SF	2080	\$ 175.00	\$ 364,000.00
Retaining Wall (Gravity Wall or Concrete Wall)	SF	665	\$ 60.00	\$ 39,900.00
Storm Drain Improvements Associated with Structure	LS	0	\$ -	\$ -
Concrete Bikeway (6 inch)	SY	720	\$ 95.00	\$ 68,400.00
Hot Mix Asphalt (Patching)	Ton	15	\$ 250.00	\$ 3,750.00
Concrete Pavement (8 inch)	SY	340	\$ 150.00	\$ 51,000.00
Concrete Wall Railing (Type 7)	LF	0	\$ 150.00	\$ -
Guardrail	LF	230	\$ 50.00	\$ 11,500.00
End Anchorage (Flared)	EA	1	\$ 3,000.00	\$ 3,000.00
Fence Chainlink (42 inch)	LF	510	\$ 35.00	\$ 17,850.00
Traffic Control	LS	1	\$ 150,000.00	\$ 150,000.00
Mine Tailings Removal ¹	LS	1	\$ 81,000.00	\$ 81,000.00
Ex Sanitary Sewer Modifications	LS	1	\$ 1,000,000.00	\$ 1,000,000.00
Ex Storm Sewer Modifications	LS	0	\$ -	\$ -
Ex Water Line Modifications	LS	1	\$ 3,000.00	\$ 3,000.00
	Total Estimated Construction Cost			\$ 2,411,400.00
	25% Contingency			\$ 602,850.00
	Construction Management (8%)			\$ 192,912.00
	Engineering Design (8%)			\$ 192,912.00
	Right of Way Acquisition			Not included
	Aesthetic Treatments			Not included
	Grand Total (rounded)			\$ 3,400,000.00

Notes:

1. Cost based on assumed cost for Alternative 4 adjusted for amount of excavation.

Attachment 9 -
Camino del Rio Pedestrian/Bicycle Crossing Study
Underpass from 12th Street to Veterans Way (Alternative #4)

Opinion of Probable Construction Cost
Prepared By: PST Engineering, LLC
March 9, 2020



Contract Item	Unit	Quantity	Unit Cost	Total Cost
Demolition, Resets, Removals, Modifications	LS	1	\$ 71,000.00	\$ 71,000.00
Excavation (Complete in Place)	CY	3100	\$ 35.00	\$ 108,500.00
Structure Backfill (Class 1)	CY	400	\$ 60.00	\$ 24,000.00
10' x 14' Conc Arch or Box Culvert (Precast) Supply Only	LF	140	\$ 2,000.00	\$ 280,000.00
10' x 14' Conc Arch or Box Culvert (Precast) Install Only	LF	140	\$ 2,000.00	\$ 280,000.00
Retaining Wall (Micro-pile or Soil Nail Wall)	SF	3525	\$ 175.00	\$ 616,875.00
Retaining Wall (Gravity Wall or Concrete Wall)	SF	550	\$ 60.00	\$ 33,000.00
Storm Drain Improvements Associated with Structure	LS	0	N/A	N/A
Concrete Bikeway (6 inch)	SY	1030	\$ 95.00	\$ 97,850.00
Hot Mix Asphalt (Patching)	Ton	55	\$ 250.00	\$ 13,750.00
Concrete Pavement (8 inch)	SY	400	\$ 150.00	\$ 60,000.00
Concrete Wall Railing (Type 7)	LF	180	\$ 150.00	\$ 27,000.00
Guardrail	LF	115	\$ 50.00	\$ 5,750.00
End Anchorage (Flared)	EA	1	\$ 3,000.00	\$ 3,000.00
Fence Chainlink (42 inch)	LF	620	\$ 35.00	\$ 21,700.00
Traffic Control	LS	1	\$ 150,000.00	\$ 150,000.00
Mine Tailings Removal ¹	LS	1	\$ 125,000.00	\$ 125,000.00
Ex Sanitary Sewer Modifications	LS	1	\$ 471,000.00	\$ 471,000.00
Ex Storm Sewer Modifications	LS	1	N/A	N/A
Ex Water Line Modifications	LS	1	\$ 28,000.00	\$ 28,000.00
	Total Estimated Construction Cost			\$ 2,416,425.00
	25% Contingency			\$ 604,106.25
	Construction Management (8%)			\$ 193,314.00
	Engineering Design (8%)			\$ 193,314.00
	Right of Way Acquisition			Not included
	Aesthetic Treatments			Not included
	Grand Total (rounded)			\$ 3,400,000.00

Notes:

1. Prorated price based on assumed price from 2009 UP Study (assumed by City staff).

Attachment 10 -
Camino del Rio Pedestrian/Bicycle Crossing Study
Underpass from 12th Street to River City Hall (Alternative #5)



Opinion of Probable Construction Cost
Prepared By: PST Engineering, LLC
March 9, 2020

Contract Item	Unit	Quantity	Unit Cost	Total Cost
Demolition, Resets, Removals, Modifications	LS	1	\$ 89,000.00	\$ 89,000.00
Excavation (Complete in Place)	CY	2300	\$ 35.00	\$ 80,500.00
Structure Backfill (Class 1)	CY	300	\$ 60.00	\$ 18,000.00
10' x 14' Conc Arch or Box Culvert (Precast) Supply Only	LF	90	\$ 2,000.00	\$ 180,000.00
10' x 14' Conc Arch or Box Culvert (Precast) Install Only	LF	90	\$ 2,000.00	\$ 180,000.00
Retaining Wall (Micro-pile or Soil Nail Wall)	SF	2585	\$ 175.00	\$ 452,375.00
Retaining Wall (Gravity Wall or Concrete Wall)	SF	1090	\$ 60.00	\$ 65,400.00
Storm Drain Improvements Associated with Structure	LS	1	\$ 11,000.00	\$ 11,000.00
Concrete Bikeway (6 inch)	SY	1000	\$ 95.00	\$ 95,000.00
Hot Mix Asphalt (Patching)	Ton	17	\$ 250.00	\$ 4,250.00
Concrete Pavement (8 inch)	SY	360	\$ 150.00	\$ 54,000.00
Concrete Wall Railing (Type 7)	LF	0	\$ 150.00	\$ -
Guardrail	LF	265	\$ 50.00	\$ 13,250.00
End Anchorage (Flared)	EA	2	\$ 3,000.00	\$ 6,000.00
Fence Chainlink (42 inch)	LF	440	\$ 35.00	\$ 15,400.00
Traffic Control	LS	1	\$ 150,000.00	\$ 150,000.00
Mine Tailings Removal ¹	LS	1	\$ 93,000.00	\$ 93,000.00
Ex Sanitary Sewer Modifications	LS	1	\$ 501,000.00	\$ 501,000.00
Ex Storm Sewer Modifications	LS	1	\$ 66,000.00	\$ 66,000.00
Ex Water Line Modifications	LS	1	\$ 20,000.00	\$ 20,000.00
	Total Estimated Construction Cost			\$ 2,094,175.00
	25% Contingency			\$ 523,543.75
	Construction Management (8%)			\$ 167,534.00
	Engineering Design (8%)			\$ 167,534.00
	Right of Way Acquisition			Not included
	Aesthetic Treatments			Not included
	Grand Total (rounded)			\$ 3,000,000.00

Notes:

1. Cost based on assumed cost for Alternative 4 adjusted for amount of excavation.

Attachment 11 -
Camino del Rio Pedestrian/Bicycle Crossing Study
12th Street Upgrade Signal from PHB to Standard Signal (Alternative #6)

Opinion of Probable Construction Cost
Prepared By: PST Engineering, LLC
March 9, 2020



<u>Contract Item</u>	<u>Unit</u>	<u>Quantity</u>	<u>Unit Cost</u>	<u>Total Cost</u>
Mobilization	LS	1	\$ 5,000.00	\$ 5,000.00
Removal of PHB Traffic Signal Heads	Each	4	\$ 250.00	\$ 1,000.00
Sign Panels	Each	8	\$ 500.00	\$ 4,000.00
Signal Head Backplates	Each	6	\$ 300.00	\$ 1,800.00
Traffic Signal Face	Each	6	\$ 1,500.00	\$ 9,000.00
Traffic Signal Vehicle Detector	Each	3	\$ 8,000.00	\$ 24,000.00
Telemetry	Each	1	\$ 500.00	\$ 500.00
Traffic Control	LS	1	\$ 10,000.00	\$ 10,000.00
	Total Estimated Construction Cost			\$ 55,300.00
		25% Contingency		\$ 2,500.00
		Grand Total (rounded)		\$ 62,500.00

Criteria	Alternative #1 - Overpass South of 6th Street	Alternative #2 - Underpass at 6th Street	Alternative #3 - Underpass at 11th Street	Alternative #4 - Underpass from E 12th Street to Veterans Way	Alternative #5 - Underpass from E 12th Street to River City Hall	Alternative #6 - 12th St Convert PHB to Standard Traffic Signal
Safety	Overpass would eliminate all at-grade bike/ped accidents (assuming 100% usage)	Underpass would eliminate all at-grade bike/ped accidents (assuming 100% usage)	Underpass would eliminate all at-grade bike/ped accidents (assuming 100% usage)	Underpass would eliminate all at-grade bike/ped accidents (assuming 100% usage)	Underpass would eliminate all at-grade bike/ped accidents (assuming 100% usage)	Potential to reduce accidents to levels similar to other traffic signals in the corridor
Estimated Cost (Conceptual Level)	\$3,200,000 (rank #3)	\$3,900,000 (rank #6)	\$3,400,000 (rank #4/5)	\$3,400,000 (rank #4/5)	\$3,000,000 (rank #2)	\$60,000 (rank #1)
Convenience/Likely Usage	Likely to be used by Smart 160 West Trail commuters, recreational trail users, and some Doubletree patrons.	Likely to be used by Smart 160 West Trail commuters, recreational trail users, Doubletree patrons, and some Albertsons patrons.	11th Street option could attract current commuters (relatively central location between 9th St and Florida/3rd Ave where 70% of current crossings to downtown occur)	12th Street options could attract current commuters (relatively central location between 9th St and Florida/3rd Ave where 70% of current crossings to downtown occur)	12th Street option could attract current commuters (relatively central location between 9th St and Florida/3rd Ave where 70% of current crossings to downtown occur)	12th Street option could attract current commuters (relatively central location between 9th St and Florida/3rd Ave where 70% of current crossings to downtown occur)
Right-of-Way Acquisitions/Limitations (Note 1)	Minimal for this option as almost all of the property is City/CDOT owned. Anticipated acquisition 0.01 acres	Minimal for this option as almost all of the land is City/CDOT owned. Anticipated acquisition 0.05 acres	Property acquisition will be required on both sides of highway. See constraints.	On west side of highway, no impacts to private property. On East side, impacts are limited to 0.2 acres.	On west side of highway, no impacts to private property. On East side, impacts are limited to 0.2 acres.	No property acquisition or easements are anticipated.
CDOT Concurrence	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review	Pending results of traffic signal warrant analysis
Additional Considerations (parking, aesthetics, future development, etc.)	On west side of highway, minimal impact on future private development options as improvements are largely within/adjacent to City/CDOT ROW, could serve as a gateway/entry feature into the City.	On west side of highway, minimal impact on future private development options as improvements are largely within/adjacent to City/CDOT ROW.	<ul style="list-style-type: none">• Connection to Animas River Pedestrian Bridge is convenient.• At 120', relatively short underpass length.• Trail extension behind 1111 Camino hotel is being constructed by hotel.• 11th Street is more central to the downtown core versus other options.• Constant positive slope towards river simplifies storm drainage.	<ul style="list-style-type: none">• Lines up directly with Animas River Pedestrian Bridge.• Impacts to future development options are minimal.• Provides convenient access to the Discovery Museum.• Constant positive slope towards river simplifies storm drainage.	<ul style="list-style-type: none">• Connection to Animas River Pedestrian Bridge is convenient.• At 90', shortest underpass of all options considered.• Provides convenient access to the Discovery Museum.	<ul style="list-style-type: none">• Connection to Animas River Pedestrian Bridge is convenient.• CDOT funding is in place for most of the necessary improvements in 2021.• Provides improved access to the Discovery Museum.
Consistency with Previous Planning Reports & Studies	While a crossing as far south as 6th St is not specifically mentioned in most of the previous planning studies, the Smart 160 West Trail has been discussed at least since the 2010 Parks, Open Space, Trails, and Recreation Master Plan.	While a crossing as far south as 6th St is not specifically mentioned in most of the previous planning studies, the Smart 160 West Trail has been discussed at least since the 2010 Parks, Open Space, Trails, and Recreation Master Plan.	Previous studies included underpass options between 10th Street and 12th Street.	Previous studies included underpass options between 10th Street and 12th Street.	Previous studies included underpass options between 10th Street and 12th Street.	Previous studies included at-grade improvements at 12th Street.
Improvement Satisfies the Need	Yes, at south end of corridor with the construction of Smart 160 West Trail.	Yes, at south end of corridor with the construction of Smart 160 West Trail.	Yes, at the northern end of corridor. Most central of locations of shortlisted options.	Yes, at the northern end of corridor.	Yes, at the northern end of corridor.	Yes, at northern end of corridor for the short to mid-term allowing the re-development plans for various private and public parcels in the corridor to become clearer.
Utility Conflicts (Note 2)	Wet utility impacts include a 10" water main depending on where piers land. 2nd lowest impacts to utilities of shortlisted alternatives.	Wet utility impacts include 6" & 10" water mains, 24" storm drain line, and 4" sanitary sewer force main. 3rd lowest impacts to utilities of shortlisted alternatives.	Utility impacts are significant, see constraints.	Utility impacts are significant, see constraints.	Utility impacts are significant, see constraints.	No additional utility conflicts are anticipated following the CDOT 2021 project improvements.
Trail Geometry	Except on either end of bridge segment over Camino, horizontal geometry is relatively straight with large radii curves.	West side approach has a straight horizontal geometry, ADA compliance will be more easily achieved on this side.	<ul style="list-style-type: none">• Significant grade advantage on west side, results in shorter approach ramp and retaining walls versus some other options.• Except at east portal, horizontal geometry is relatively straight.	West side approach has a straight geometry, ADA compliance will be more easily achieved on this side.	Significant grade advantage on west side, results in shorter approach ramp and retaining walls versus some other options.	Crossing remains unchanged with a direct route across Camino at 12th. Significantly shorter crossing distance than grade separated options.

Notes: 1. Acreages are based on City GIS property line information and conceptual designs.
2. Anticipated costs of utility relocations are included in the overall estimated costs.

Criteria	Alternative #1 - Overpass South of 6th Street	Alternative #2 - Underpass at 6th Street	Alternative #3 - Underpass at 11th Street	Alternative #4 - Underpass from E 12th Street to Veterans Way	Alternative #5 - Underpass from E 12th Street to River City Hall	Alternative #6 - 12th St Convert PHB to Standard Traffic Signal
Safety	Only achieves safety goals if people use the overpass. (see convenience/likely usage)	Only achieves safety goals if people use the underpass. (see convenience/likely usage)	Only achieves safety goals if people use the underpass. (see convenience/likely usage)	Only achieves safety goals if people use the underpass. (see convenience/likely usage)	Only achieves safety goals if people use the underpass. (see convenience/likely usage)	Eventually vehicular traffic demand may exceed capacity for at-grade crossings.
Estimated Cost (Conceptual Level)	\$3,200,000 (rank #3)	\$3,900,000 (rank #6)	\$3,400,000 (rank #4/5)	\$3,400,000 (rank #4/5)	\$3,000,000 (rank #2)	\$60,000 (rank #1)
Convenience/Likely Usage	<ul style="list-style-type: none">Far southern end of downtown, possibly too far south for most current ART users.6th Street at-grade crossing is a safe crossing with no ped/bike accidents reported in the past 6 years.Users have to climb the equivalent of two flights of stairs to use overpass.	<ul style="list-style-type: none">Southern end of downtown, possibly too far south for most current ART users.6th Street at-grade crossing is a safe crossing with no ped/bike accidents reported in the past 6 years.Tunnel is long at 240'. Safety concerns and comfort level of potential users may reduce usage.	Expectations on usage should be realistic. For example, commuters crossing at 2nd Ave/15th Street would have to travel an extra 0.3 miles to use an underpass at 11th St to get downtown.	Expectations on usage should be realistic. For example, commuters crossing at 2nd Ave/15th Street would have to travel an extra 0.2 miles to use an underpass at 12th St to get downtown.	Expectations on usage should be realistic. For example, commuters crossing at 2nd Ave/15th Street would have to travel an extra 0.2 miles to use an underpass at 12th St to get downtown.	Expectations on usage should be realistic. For example, commuters crossing at 2nd Ave/15th Street would have to travel an extra 0.2 miles to use an underpass at 12th St to get downtown.
Right-of-Way Acquisitions/Limitations (Note 1)	Impacts (0.30 acres +/-) to City parcel on east side of highway.	<ul style="list-style-type: none">Two separate private property owners.Impacts (0.40 acres +/-) to City parcel on east side of highway.	<ul style="list-style-type: none">Two separate private property owners.Largest private property acquisition (0.45 acres +/-).	<ul style="list-style-type: none">Two separate private property owners.Significant private property acquisition (0.2 acres +/-).	<ul style="list-style-type: none">Two separate private property owners.Significant private property acquisition (0.2 acres +/-).	None
CDOT Concurrence	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review	Pending results of traffic signal warrant analysis
Additional Considerations (parking, aesthetics, future development, etc.)	<ul style="list-style-type: none">Loss of between 18-30 parking spaces on City parcel.Creates redundant trails encircling the Double Tree.As an entry feature, will require more funding for aesthetics versus other options (Note 3).Future land use of the City parcel in unknown, impacts could restrict future land use options.	<ul style="list-style-type: none">Loss of up to 60 parking spaces on the City owned parcel.Future land use of this City parcel in unknown, impacts could restrict future land use options.	<ul style="list-style-type: none">Loss of 24-30 parking spaces at Town Plaza.Future land use of Town Plaza is unknown, impacts could restrict future land use options.11th Street is currently not a public street. Converting 11th Street to a public street would require additional impacts to Town Plaza ROW & parking.	<ul style="list-style-type: none">Loss of 12 parking spaces along Veterans Way.Loss of 4-6 parking spaces in Town Plaza (Durango Joes).Potential impacts to Iris Park to provide access to private parking off of Veterans Way (for the King Center) (Note 4).Veterans Way will be a tight corridor with a confined feel.Closure of east leg of 12th Street (Note 5).	<ul style="list-style-type: none">Loss of 3 parking spaces at River City Hall.Loss of 4-6 parking spaces at Durango Joes.Future land use of this City parcel in unknown, impacts could restrict future land use options.Closure of east leg of 12th Street (Note 5).Fire department expressed concerns about increasing pedestrian and bicycle traffic across the access point to the River City Hall Fire Station.	This option would provide only a short to mid-term solution.
Consistency with Previous Planning Reports & Studies	While a crossing as far south as 6th St is not specifically mentioned in most of the previous planning studies, Smart 160 West Trail has been discussed since the 2010 Parks, Open Space, Trails, and Recreation Master Plan.	While a crossing as far south as 6th St is not specifically mentioned in most of the previous planning studies, Smart 160 West Trail has been discussed since the 2010 Parks, Open Space, Trails, and Recreation Master Plan.	Consistent, but lack of public connection at 11th Street is challenging.	Consistent	Consistent	Consistent
Improvement Satisfies the Need	Location of crossing is a concern, see "Convenience/Likely Usage"	Location of crossing is a concern, see "Convenience/Likely Usage"	Yes, but at-grade improvement may produce similar results in the short and mid-term.	Yes, but at-grade improvement may produce similar results in the short and mid-term.	Yes, but at-grade improvement may produce similar results in the short and mid-term.	This could satisfy the need in the short to mid-term.
Utility Conflicts (Note 2)	Relatively minimal	Relatively minimal	Wet utility impacts include an 8" waterline, a 21" gravity sewer line, a 8" sanitary sewer siphon line (indirectly), and a 4" sanitary sewer force main(indirectly). The gravity sewer line impacts are significant (Note 7).	Wet utility impacts include 6" & 8" waterlines, a 21" gravity sewer line, an 8" sanitary sewer siphon line (indirectly), and a 4" sanitary sewer force main (indirectly). The gravity sewer line impacts are significant (Note 6).	Wet utility impacts include 6" & 8" waterlines, a 24" stormdrain line, a 21" gravity sewer line, an 8" sanitary sewer siphon line (indirectly), and a 4" sanitary sewer force main (indirectly). The gravity sewer line impacts are significant (Note 6).	No Conflicts
Trail Geometry	<ul style="list-style-type: none">No grade advantage for overpass on either side. Results in long ramps and a long elevated structure.In the option shown, grades will be close to ADA maximums or the approach ramp structure will need to be lengthened.	<ul style="list-style-type: none">Minimal grade advantages on west side, no grade advantages on east side. Results in long approach ramps and retaining walls.Due to space constraints on both sides, approach ramps will be near ADA maximums. Reconfiguration is possible on the east side, but would require more impact to City parcel.	<ul style="list-style-type: none">No grade advantages on east side. Results in long approach ramps and retaining walls.Due to space constraints on east side, approach ramp will be near ADA maximums.Trail tie-in to 11th St (which is not yet a public street) is challenging.	<ul style="list-style-type: none">Minimal grade advantages on west side, no grade advantages on east side. Results in long approach ramps and retaining walls.Due to space constraints on east side, approach ramp will be near ADA maximums and will require a switchback style design.	<ul style="list-style-type: none">No grade advantages on east side. Results in long approach ramp and retaining walls.Due to space constraints on east side, approach ramp will be near ADA maximums and will require a switchback style design.	Not applicable

Notes:

1. Acreages are based on City GIS property line information and conceptual designs.

2. Anticipated costs of utility relocations are included in the overall estimated costs.

3. Cost for aesthetic treatments are not included in conceptual estimates.

4. The 2009 design had the underpass daylighting on the west side at a 0.5% slope. Stormdrains could potentially be added to shorten walls heights and tie to grade prior to impacts to the parking access.

5. While this is included in the 2013 Camino Amended ACP, access closures require a change in land use or agreement by property owners.

6. The 21" gravity sewer line impacts are significant and the solution is not straightforward. A potential solution has been proposed for this feasibility study. However, field survey and additional design work will need to be conducted to verify that it is a practical option. The conceptual cost has been estimated at \$500,000 +/- based on currently available data. Additionally, the City Public Works and Utility Departments need to review and approve this option.

7. The 21" gravity sewer line impacts are significant and the solution is not straightforward. A potential solution has been proposed for this feasibility study. However, field survey and additional design work will need to be conducted to verify that it is a practical option. The conceptual cost has been estimated at \$1,000,000 +/- based on currently available data. Additionally, the City Public Works and Utility Departments need to review and approve this option.