Texas Tech University Health Sciences Center El Paso Mobility Study

Texas Department of Transportation (TxDOT) - Rail Division

March 2024

TABLE OF CONTENTS

Introduction **1**
Study Purpose 1
Study Area 1

Existing Conditions **3**
Document Review 3
Campus Land Use and Development 3
Rail Characteristics 6
Multimodal Transportation 13

Site Visit Observations **17**
General Observations 17
Staff Member Comments 18

Concept Development **20**
Crossing Locations 20
Design Criteria 20
Concept Summary 22

Concept Evaluation **25**
Concept Evaluation 26
Benefit-Cost Analysis 32

Other Considerations **33**

Conclusions **34**
Next Steps 34

Appendix A: Document Review
Appendix B: Concept Exhibits (Plan and Profile, Typical Section, and Cost Estimates)
Appendix C: Stakeholder Engagement (Meeting Summaries and Presentations)

INTRODUCTION

The Texas Tech University Health Sciences Center El Paso (TTUHSC El Paso) is a public university located in El Paso, Texas. The campus was founded in 1969 as a TTUHSC branch campus and became a separate institution in 2013. The university includes four schools: Paul L. Foster School of Medicine, Gayle Greve Hunt School of Nursing, L. Fredrick Francis Graduate School of Biomedical Sciences, and Woody L. Hunt School of Dental Medicine. The main goal for the TTUHSC El Paso is to provide quality education and development of academic, research, patient care, and community service programs to meet the growing needs of West Texas and the United States-Mexico border community. The campus population is growing, and the increased growth has amplified interest in providing additional pedestrian and bike safety on the campus.

Study Purpose

The urban university campus is bisected by the double-track Union Pacific Railroad (UPRR) rail corridor. Most of the developed campus is located south of the rail tracks; however, some buildings are located north of the rail corridor. Significant campus growth is anticipated along the north side of the rail tracks. Three buildings are planned for construction north of the UPRR in the near term: Clinical Sciences Building, Imaging Center, and Comprehensive Cancer Center. A new Oral and Medical Comprehensive Health Care Center is also proposed south of the UPRR tracks. Bicyclists and pedestrians primarily cross the rail corridor at the at-grade Rick Francis Street highway-rail crossing to travel between the north and south sides of campus. The study aims to evaluate potential grade separation concepts and other highway-rail crossing improvements to enhance bike and pedestrian safety and mobility between the north and south sides of campus.

Study Area

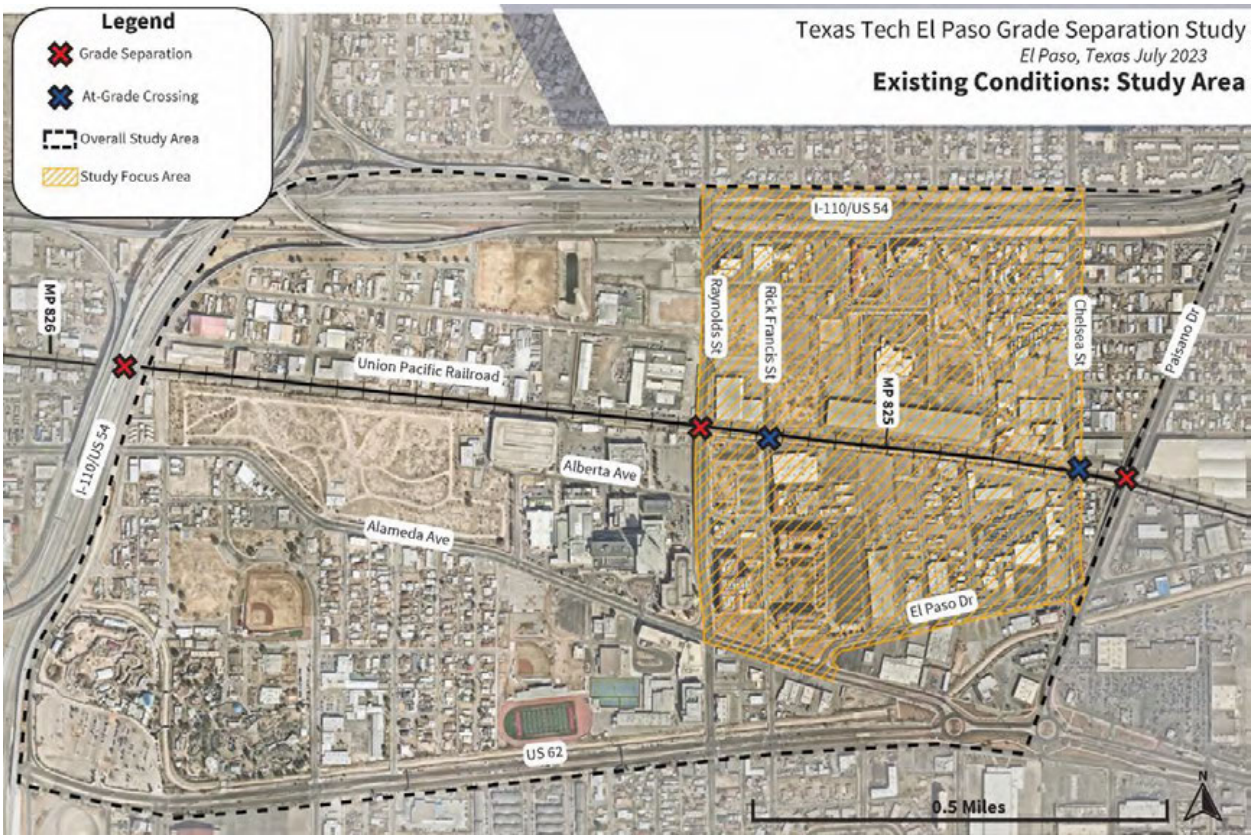
The greater UPRR rail corridor in the City of El Paso was reviewed in this study. However, the analysis and potential improvement concepts within the report focus on the campus area, generally bounded by I-10 (north), Alameda Avenue/El Paso Drive (south), Raynolds Street (west), and Chelsea Street (east), as shown in ***Figure 1.*** This area falls within the Medical Center of the Americas (MCA) campus boundary. The focused study area encompasses the 1.2-mile UPRR corridor between I-110 and Paisano Drive, including five existing highway-rail crossings. The general characteristics of the five crossings are outlined in ***Table 1***.

Table 1: Study Area Highway-Rail Crossings

Street Name	USDOT Number	Rail Milepost	Crossing Position and Warning Device
I 110/US 54	741206V	825.93	Grade Separation *Rail Under Roadway*
Raynolds Street	978296E	825.22	Grade Separation *Rail Under Roadway*
Rick Francis Street	741209R		
Chelsea Street	741212Y	824.77	At-Grade *Four-Quadrant Gates, Lights, Bells*
Paisano Drive	741213F		

Source: U.S. Department of Transportation, Crossing Inventory Reports (2023)

Figure 1: Study Area Map



Source: TranSystems, Nearmap Aerial (2023)

EXISTING CONDITIONS

Existing conditions within the campus study area were reviewed. The following information pertains to relevant information, including a document review, surrounding studies, campus land uses, and rail, roadway, and multimodal characteristics.

Document Review

A comprehensive document review was completed for relevant studies and plans for the TTUHSC El Paso campus. The City of El Paso and MCA have strong support and plans to improve pedestrian and bike access, safety, and mobility within the study area. Key findings of the document review are identified below with a more in-depth document review in ***Appendix A***.

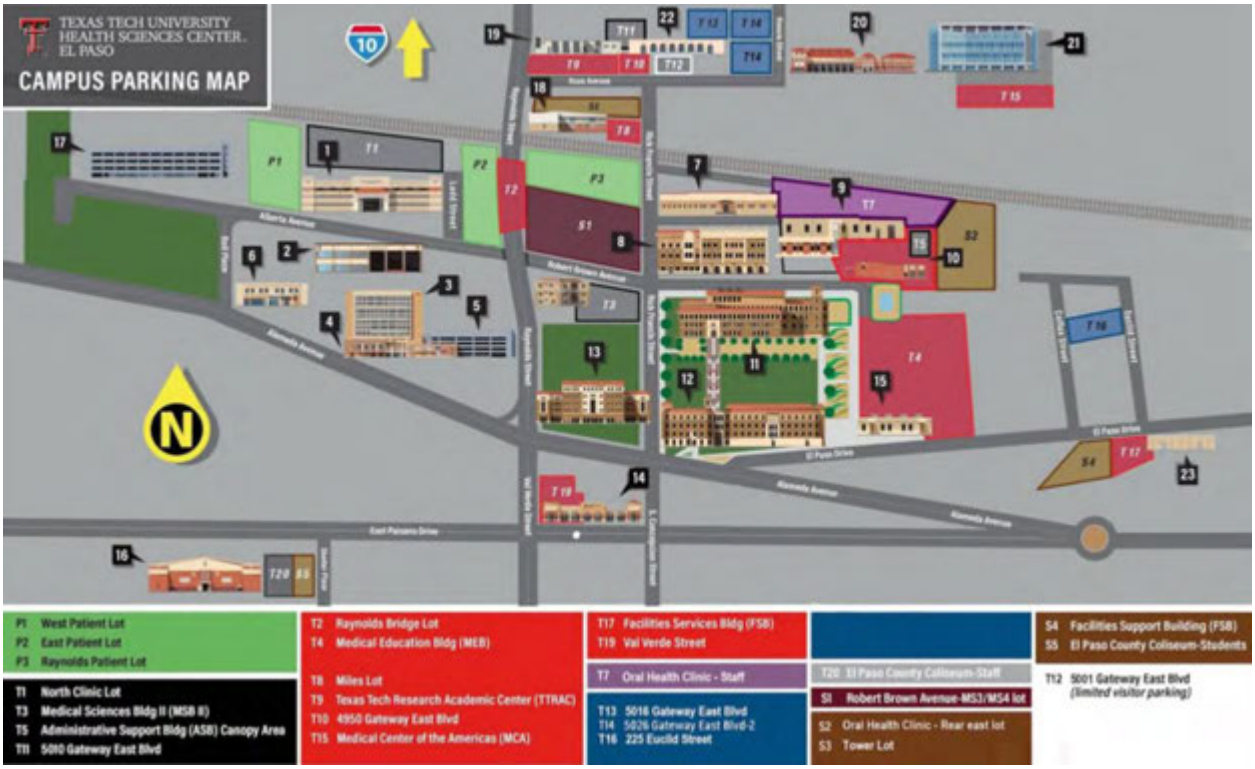
- The project location is identified as a future 'Compact Urban' area where walkability is prioritized with wide sidewalks, shade, alleys, and street-facing access to adjacent land uses.
- The *MCA Master Plan (2018)* identifies Rick Francis Street as a candidate to transition to a limited access, pedestrian-only corridor between Alberta Avenue and Alameda Avenue.
- There are currently no existing dedicated bicycle facilities on campus. There is a proposed bike lane and shared bike lane along Raynolds Street, a proposed buffered bike lane on Alameda Avenue, and a proposed bike boulevard on Rick Francis Street.
- There are two other ongoing studies within the study area that are being conducted by TxDOT: the (1) SH20 (Alameda Avenue) Corridor Study and the (2) Paisano Drive and Montana Avenue Corridor Study. The SH20 (Alameda Avenue) Corridor Study covers a 35-mile corridor. The study will produce a recommended corridor plan to improve corridor safety, mobility, and multimodal access. The Paisano Drive and Montana Avenue Corridor Study covers a 21-mile corridor and will identify short-, mid-, and long-term recommendations that improve multimodal safety, mobility, and connectivity.

Campus Land Use and Development

TTUHSC El Paso is centrally located within the City of El Paso, directly north of the United States-Mexico border. The campus is bounded by I-10 to the north, I-110 to the west, and US-62 to the east and south. The most heavily traveled roadway along the campus is Raynolds Street, which is grade separated over the UPRR tracks. Although most buildings are currently located south of the UPRR tracks, several buildings and parking lots are located to the north. Additionally, there is free street parking along Rosa Avenue where students often park and walk to campus buildings. As a result, many students and campus visitors park north of the tracks and walk across the at-grade highway-rail crossing at Rick Francis Street to access buildings south of the tracks.

Figure 2 displays the existing TTUHSC El Paso campus map. Sixteen (16) buildings and two (2) parking garages are located south of the UPRR tracks. Five (5) buildings, including a fire station, are currently located north of the UPRR tracks.

Figure 2: Existing Campus Map



Source: TTUHSC El Paso (2023)

See below for corresponding map building numbers and names.

Buildings south of the UPRR tracks:

1. Texas Tech Medical Center - Texas Tech Physicians of El Paso
2. Academic Education Center
3. El Paso Children's Hospital (ELCH)
4. University Medical Center (UMC)
5. Parking Garage (ELCH and UMC)
6. El Paso Psychiatric Center
7. Texas Tech Dental Oral Health Clinic
8. Gayle Greve Hunt School of Nursing
9. Administrative Support Building
10. Archer Building
11. Medical Education Building - Paul L. Foster School of Medicine
12. Medical Sciences Building - Graduate School of Biomedical Sciences
13. Medical Sciences Building II (recently opened)
14. Business Affairs
15. Medical Sciences Building Annex
16. El Paso County Coliseum
17. UMC Staff Parking Garage
23. Facilities Services Building

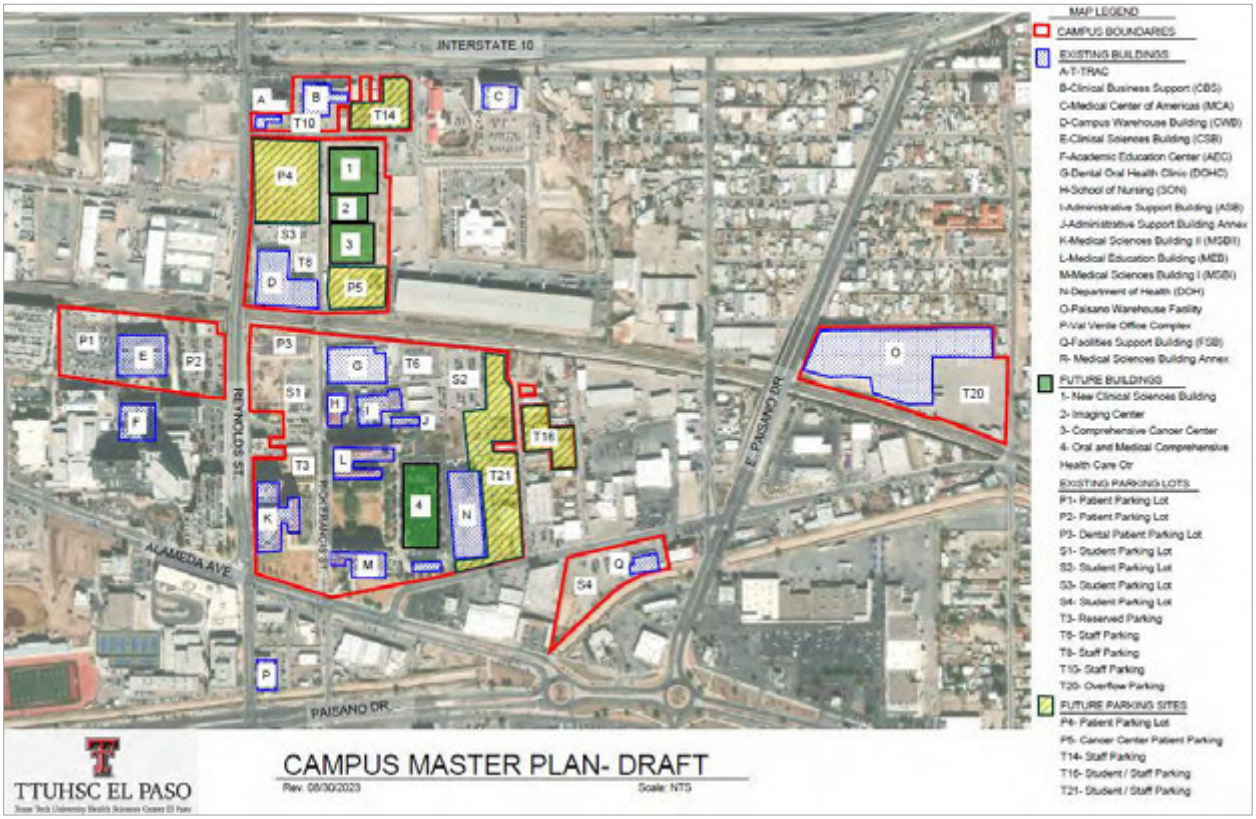
Buildings north of the UPRR tracks:

18. Miles Building
19. Research Academic Center
20. Fire Station 5
21. Medical Center of the Americas - Cardwell Collaborative Building
22. Clinical Support Building

As enrollment continues to grow, improved safety and mobility are a key priority for campus leadership. Overall, there has been a nearly 53 percent increase in student enrollment since the university officially became its own institution in 2013. The enrollment projections for the 2023-2024 academic year are 954 students for the fall semester, 959 students for the spring semester, and 408 students for the summer session. By Fall 2026, campus enrollment is projected to be 1,175 students – a nearly 21 percent increase from Fall 2023.[1] As shown in ***Figure 3***, there are several planned buildings on campus that align with the *Campus Master Plan (August 2023)*.

Three new buildings are planned along the north side of the UPRR tracks: the Clinical Sciences Building (*Building 1*), Imaging Center (*Building 2*), and Comprehensive Cancer Center (*Building 3*). Buildings 1, 2, and 3 have all been approved and funding has been secured. A request for quote (RFQ) is underway for all three buildings, and they are anticipated to open within the next three to four years. Three parking lots are also planned in the northern part of campus in the mid-term period. P5, the cancer center patient parking, has the potential of being a parking garage. The Oral and Medical Comprehensive Health Care Center (*Building 4*) is also proposed near the existing Medical Sciences Building I; however, this building is identified for longer-term planning as funding has not yet been secured.

Figure 3: Proposed Campus Master Plan (August 2023)



Source: TTUHSC El Paso (2023)

[1] Enrollment projections provided by TTUHSC El Paso

Rail Characteristics

The UPRR rail corridor within the study area contains the east-west Valentine Subdivision. The study corridor is a double-track mainline, with an industry spur at Rick Francis Street, that serves approximately 23 trains per day. BNSF Railway and Amtrak also have trackage rights along the rail corridor. The Amtrak Sunset Limited Route operates three days per week between Los Angeles and New Orleans. There are two UPRR railyards nearby. The Alfalfa Yard is located approximately 2.5 miles east of campus and the Dallas Yard is located approximately 2.25 miles west of campus.

The study area encompasses five existing highway-rail crossings: I-110/US-54, Raynolds Street, Rick Francis Street, Chelsea Street, and Paisano Drive. Rick Francis Street and Chelsea Street are at-grade crossings within a quiet zone. A summary of the crossing characteristics is outlined in ***Table 2***. The Boone Street at-grade crossing (741207C) was closed in 2021 and is therefore not included in the review.

Table 2: Highway-Rail Crossing Information

Characteristics		I 110/US 54	Raynolds	Rick Francis	Chelsea	Paisano
Roadway	USDOT Number	741206V	978296E	741209R	741212Y	741213F
	Milepost	825.93	825.22	825.10	824.77	824.70
	Crossing Position	Rail Under	Rail Under	At-Grade	At-Grade	Rail Under
	Warning Device	N/A	N/A	2-Quad Gates, Lights, Bells	4-Quad Gates, Lights, Bells	N/A
	Road Classification	Interstate	Minor Arterial	Local	Major Collector	Principal Arterial
	Lanes	4	4	2	2	6
	Roadway Volume	35,530	21,590	2,201	7,181	18,114
	Posted Speed Limit	60	30	30	30	45
Rail	Subdivision	Valentine	Valentine	Valentine	Valentine	Valentine
	Ownership	UPRR	UPRR	UPRR	UPRR	UPRR
	Trackage Rights	BNSF, Amtrak	BNSF, Amtrak	BNSF, Amtrak	BNSF, Amtrak	BNSF, Amtrak
	Tracks	2	4	3	2	2
	Total Trains[1]	N/A	N/A	23	23	N/A
	Maximum Speed	40	40	40	40	40

[1] Total trains is N/A for highway-rail crossings already grade separated

Source: U.S. DOT Crossing Inventory Reports (2023)

Crashes

The two at-grade crossings, Rick Francis Street and Chelsea Street, were reviewed for highway-rail crashes. No crashes occurred at either crossing within the most recent five years that data is available (2018 - 2022). Two crashes occurred at the Chelsea Street crossing in 1999 and 1994 with no injuries reported.

Trespassing

Trespassing is the act of crossing the railroad right-of-way without permission. It is illegal to access private railroad property anywhere other than at a designated pedestrian or roadway crossing. Trespassing is the leading cause of rail-related deaths in the United States. Within the study area, a chain link fence generally runs along the south side of the tracks to deter trespassing. In addition to the fence, some other areas also have retaining walls or sloped drainage channels. One trespassing incident was reported within the past six years that data is available (2017 - 2022). The 2017 incident occurred just east of I-110 and resulted in a fatality after a person jumped onto the track.

Blocked Crossings

Two blocked crossing incidents were reported within the past 3.5 years that data is available (January 2020 - June 2023). Both incidents occurred at Rick Francis Street in June 2023 with a delay of approximately 30 to 60 minutes each. Both incidents, which were self-reported, noted that blocked crossings can prevent students and healthcare workers from getting to class and shifts on time, and one report indicated that first responders were unable to cross the tracks due to the delay. As freight trains gradually increase in length, this may impact blocked crossing time, especially due to switching operations at the nearby railyards.

Quiet Zone

A quiet zone is an area where the train horn is not routinely sounded before an at-grade crossing. The process to implement a quiet zone in the study area started in 2022. To meet the FRA quiet zone requirements, (a) the at-grade Boone Street crossing was closed, (b) channelization devices were added at Rick Francis Street, and (c) a four-quadrant gate system was implemented at Chelsea Street. The FRA decision is pending for adding a quiet zone without an additional four-quadrant gate system at Rick Francis Street. Campus staff is coordinating with the City of El Paso to install additional railroad equipment to officially designate the corridor as a quiet zone. While a quiet zone may increase the quality of life for the campus area and surrounding neighborhoods, it is important to note that pedestrians would not hear a train horn as a train approaches the area. Bells at the crossing would still alert pedestrians that a train is approaching.

Crossing Sheets

The following pages provide a summary sheet for each crossing in the study area.

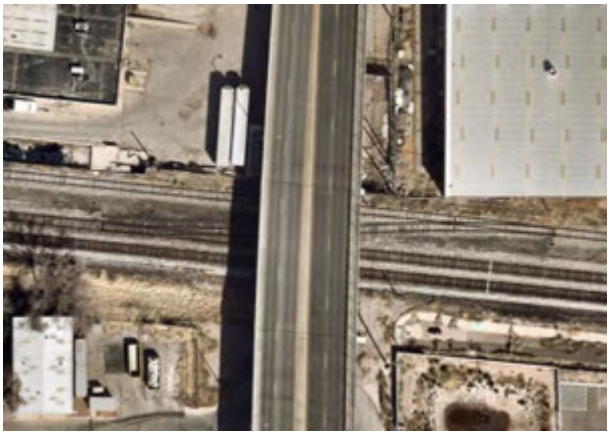
I-110/US 54

Aerial

Street view [southbound]

Characteristics (U.S. DOT Report)		Field Observation (August 2023)	
Street	I-110/US-54	Number of Lanes	9
Crossing Number	741206V	Pedestrian Facilities	No
Railroad Owner	UPRR	Bicycle Facilities	No
Division/Subdivision	Texoma/Valentine	Vehicle Count	N/A - Not Collected
Number of Tracks	1 - Main	Train Count	N/A - Not Counted
Milepost	825.93	Pedestrian Count	N/A - Not Collected
Warning Device	N/A - Grade Separated	Bicycle Count	N/A - Not Collected
Quiet Zone	No		
Train Count Freight	<1/week (2016)		
Train Count Passenger	0 (2016)		
Train Speed (mph)	20 - 40		
Traffic Volume	35,530 (2011)		
Roadway Classification	Interstate		

Raynolds Street

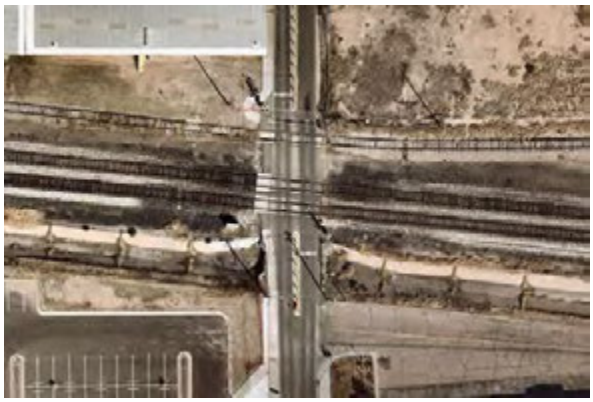


Aerial

Street view [southbound]

Characteristics (U.S. DOT Report)		Field Observation (August 2023)	
Street	Raynolds Street	Number of Lanes	4
Crossing Number	978296E	Pedestrian Facilities	Yes
Railroad Owner	UPRR	Bicycle Facilities	No
Division/Subdivision	Texoma/Valentine	Vehicle Count	14,048
Number of Tracks	2 - Main; 2 - Industry	Train Count	N/A - Not Counted
Milepost	825.22	Pedestrian Count	46
Warning Device	N/A - Grade Separated	Bicycle Count	4
Quiet Zone	No		
Train Count Freight	6 (2021)		
Train Count Passenger	0 (2021)		
Train Speed (mph)	20 - 40		
Traffic Volume	N/A		
Roadway Classification	N/A		

Rick Francis Street



Aerial

Street view [northbound]

Characteristics (U.S. DOT Report)		Field Observation (August 2023)	
Street	Rick Francis Street	Number of Lanes	2
Crossing Number	741209R	Pedestrian Facilities	Yes
Railroad Owner	UPRR	Bicycle Facilities	No
Division/Subdivision	Texoma/Valentine	Vehicle Count	2,054
Number of Tracks	2 - Main; 1 - Industry	Train Count	28
Milepost	825.15	Pedestrian Count	63 [161][1]
Warning Device	Lights, Gates, Bells	Bicycle Count	2
Quiet Zone	Pending		
Train Count Freight	23 (2021)		
Train Count Passenger	1 (2021)		
Train Speed (mph)	20 - 40		
Traffic Volume	2,207 (2017)		
Roadway Classification	Local		

[1] [XX] Pedestrian count for fall semester based on updated estimate

Chelsea Street

Aerial

Street view [northbound]

Characteristics (U.S. DOT Report)	
Street	Chelsea Street
Crossing Number	741212Y
Railroad Owner	UPRR
Division/Subdivision	Texoma/Valentine
Number of Tracks	2 - Main
Milepost	824.77
Warning Device	Lights, Gates, Bells
Quiet Zone	Pending
Train Count Freight	23 (2021)
Train Count Passenger	1 (2021)
Train Speed (mph)	20 - 40
Traffic Volume	7,181 (2019)
Roadway Classification	Major Collector

Field Observation (August 2023)	
Number of Lanes	2
Pedestrian Facilities	Yes
Bicycle Facilities	No
Vehicle Count	3,490
Train Count	28
Pedestrian Count	113
Bicycle Count	10

US-62/East Paisano Drive

Aerial

Street view [southbound]

Characteristics (U.S. DOT Report)	
Street	US-62/East Paisano Drive
Crossing Number	741213F
Railroad Owner	UPRR
Division/Subdivision	Texoma/Valentine
Number of Tracks	1 - Main
Milepost	824.70
Warning Device	N/A - Grade Separated
Quiet Zone	No
Train Count Freight	<1/week (2016)
Train Count Passenger	0 (2016)
Train Speed (mph)	20 - 40
Traffic Volume	18,114 (2019)
Roadway Classification	Principal Arterial

Field Observation (August 2023)	
Number of Lanes	6
Pedestrian Facilities	Yes
Bicycle Facilities	No
Vehicle Count	N/A - Not Collected
Train Count	N/A - Not Collected
Pedestrian Count	N/A - Not Collected
Bicycle Count	N/A - Not Collected

Multimodal Transportation

A multimodal transportation system provides automobile, pedestrian, bicycle, and public transportation facilities. The TTUHSC El Paso campus offers pedestrian facilities and public transportation options on campus. Potential improvements such as enhanced multimodal transportation and grade separated highway-rail crossings may increase the number of multimodal trips taken and enhance safety. Existing bicycle and pedestrian facilities are displayed in ***Figure 4***. Proposed bicycle and pedestrian facilities are shown in ***Figure 5*** and ***Figure 6***.

Pedestrian Facilities

Most of the campus is equipped with existing sidewalk facilities. Sidewalks are generally adjacent to the roadway with no buffer from vehicular traffic. Sidewalk at the three crossings near the campus include:

- *Raynolds Street:* Grade-separated highway-rail crossing with a six-foot sidewalk on one side (east) of the bridge. Due to the grades of the bridge approaches, pedestrians must access the sidewalk approximately 900 feet south of the tracks or 500 feet north of the tracks.
- *Rick Francis Street:* At-grade highway-rail crossing with six-foot sidewalk on one side (west) of the street. The sidewalk was constructed in 2020.
- *Chelsea Street:* At-grade highway-rail crossing with six-foot sidewalk on one side (west) of the street. The sidewalk was constructed in 2020.

There have been conversations regarding converting Rick Francis Street, south of Alberta Street, to a pedestrian-only facility. The *MCA Master Plan (2018)* also designates this as a proposed improvement within the next five to ten years. This would likely be tied to the construction of the new Oral and Medical Comprehensive Health Care Center (*Building 4*). This pedestrian improvement would increase the mobility of campus for non-motorized users, improve safety, and encourage more walking on campus.

Weekday pedestrian counts were collected at the three crossings in May 2023 and are outlined in ***Table 3***. Chelsea Street had the highest pedestrian use with nearly 115 daily users while Rick Francis Street experienced over 60 daily users.

Initial pedestrian counts were collected in May 2023 during the university's summer session. This time of year has significantly less enrollment than the fall and spring semesters. Therefore, data for two additional peak hours (7:00 AM to 8:00 AM and 4:30 PM to 5:30 PM) was collected at Rick Francis Street and Chelsea Street during the fall semester in September 2023 to estimate daily pedestrian counts during a traditional school period. The pedestrian counts at Rick Francis Street indicated a nearly 188% increase in the AM period and a 79% increase in the PM period. The daily pedestrian estimated volumes were increased by 129%, the average of the two peak hour differences. This value aligns with the difference in summer and fall semester enrollment, as provided by the TTUHSC staff. No significant differences in pedestrian volumes at Chelsea Street were identified.

Table 3: 24-Hour Pedestrian Counts

Street	Pedestrian Count			Peak Hours		
	Northbound	Southbound	Total	Morning	Midday	Evening
Raynolds Street	23	23	46	7:30- 8:30a	12:00p - 1:00p	4:30p - 5:30p
Rick Francis Street	32 [82][1]	31 [79][1]	63 [161][1]	7:15a - 8:15	2:00p - 3:00p	4:30p - 5:30p
Chelsea Street	56	57	113	6:45a - 7:45	11:30a - 12:30p	3:15p - 4:15p

[1] [XX] Pedestrian count for fall semester based on updated estimate

Source: CJ Hensch & Associates (collected 5/17/23)

Bicycle Facilities

Bicycle facilities can include designated shared lanes, bike lanes (with or without buffers from vehicular traffic), and shared-use paths. There are no existing dedicated bicycle facilities on the campus. Weekday bicycle counts were collected at the three crossings in May 2023 and are outlined in ***Table 4***. Chelsea Street had the highest bicycle use with ten daily users.

The *El Paso Bike Plan Master Plan (2016)* identified adjacent roadways to be converted to include bicycle facilities, including:

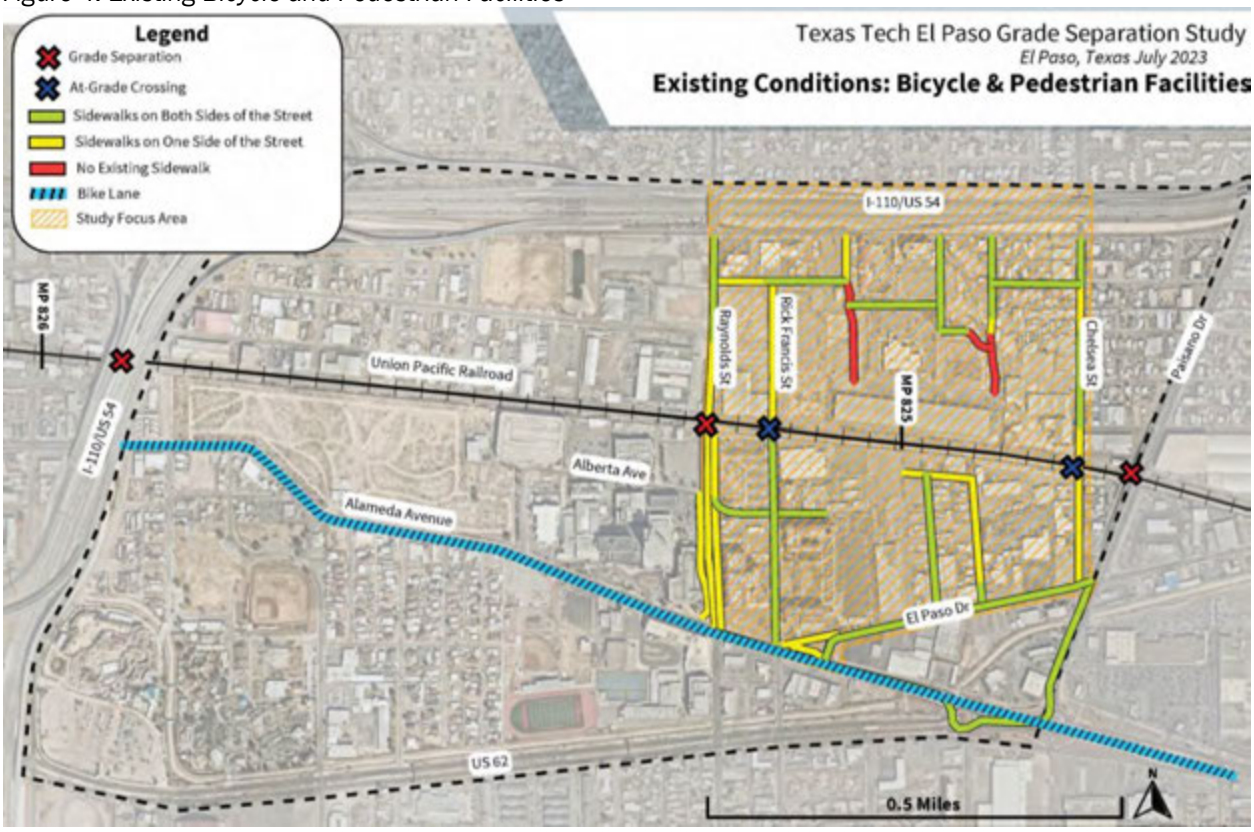
- Raynolds Street: Proposed bike lane between I-10 and US-62
- Durazno Avenue: Proposed shared lanes between Raynolds Street and I-110
- Alameda Avenue: Proposed buffered bike lane between I-110 and Paisano Drive

Table 4: 24-Hour Bicycle Counts

Street Name	Bicycle Count			Peak Hours		
	Northbound	Southbound	Total	Morning	Midday	Evening
Raynolds Street	1	3	4	6:45a - 7:45a	N/A	6:45p - 7:45p
Rick Francis Street	2	0	2	N/A	N/A	N/A
Chelsea Street	4	6	10	6:45a - 7:45a	N/A	4:30p - 5:30p

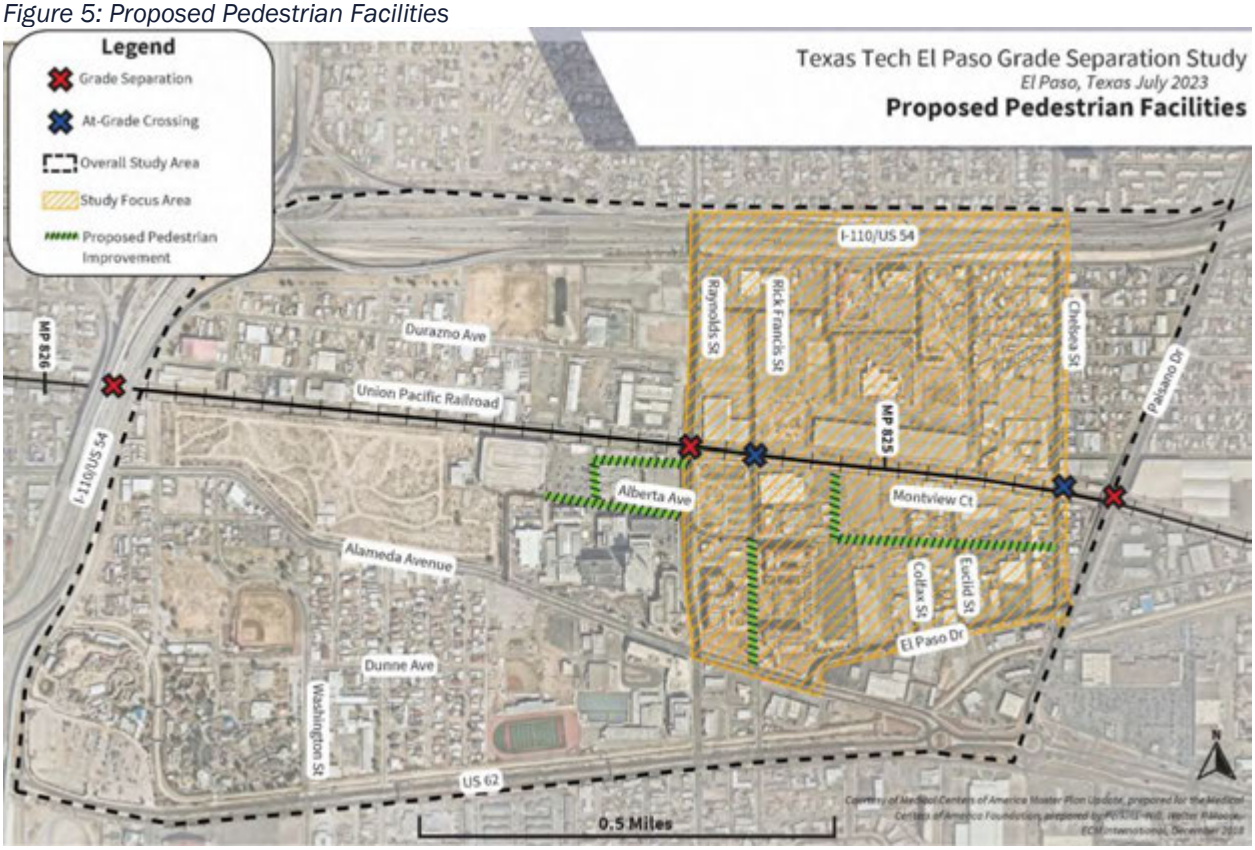
Source: CJ Hensch & Associates (collected 5/17/23)

Figure 4: Existing Bicycle and Pedestrian Facilities



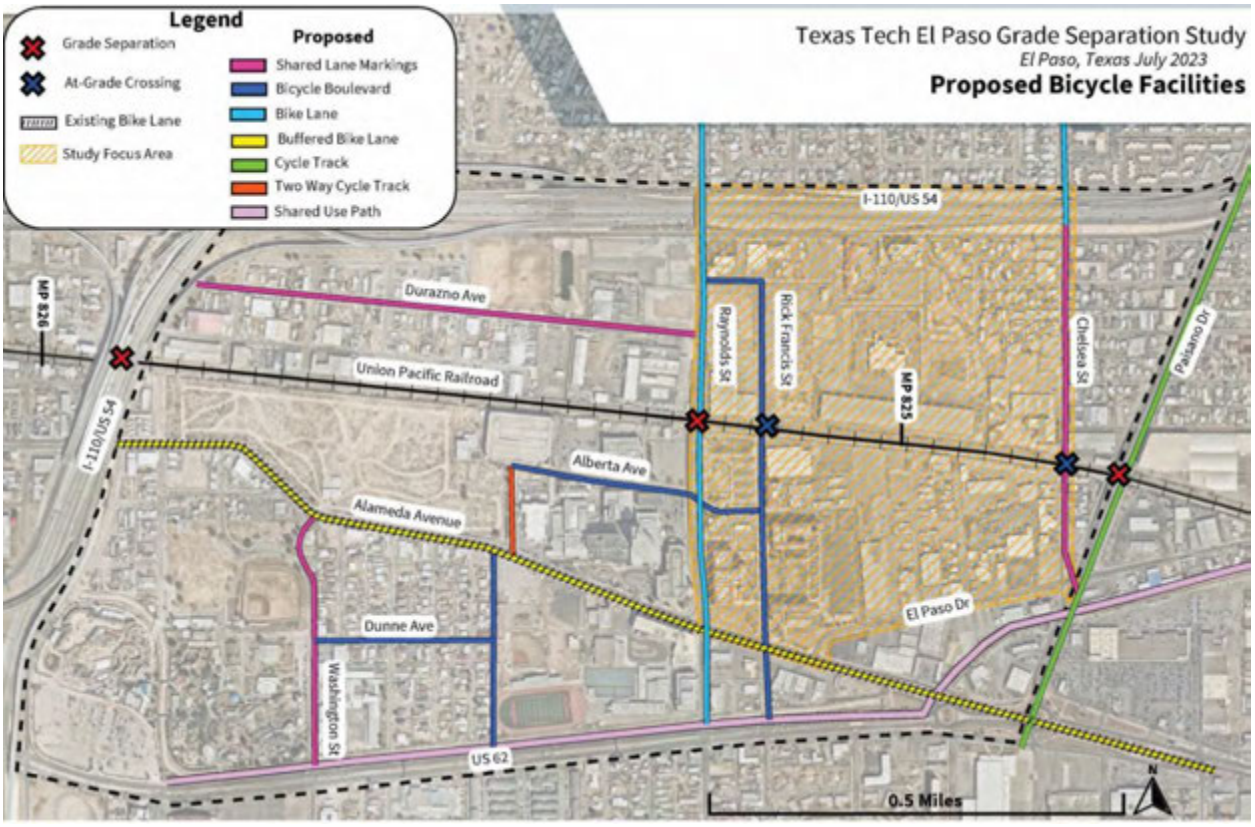
Source: TranSystems, Nearmap Aerial (2023)

Figure 5: Proposed Pedestrian Facilities



Source: TranSystems, Nearmap Aerial, Medical Center of The Americas Master Plan Updates (2023)

Figure 6: Proposed Bicycle Facilities



Source: TranSystems, Nearmap Aerial, Medical Center of The Americas Master Plan Updates, City of El Paso Bike Plan (2023)

Public Transportation

The city's main public transportation system is Sun Metro, which operates 55 routes with approximately 3.6 million riders per year (2021). The transportation system consists primarily of busses and paratransit vehicles with some streetcar service. Several existing bus routes run adjacent to the TTUHSC El Paso campus. The primary routes that access campus operate along Alameda Avenue, Raynolds Street, and Durazno Avenue. The five routes include Route 21 (Chelmont via Raynolds), Route 25 (University Medical/Cielo Vista), Route 26 (Five Points/Alameda Express), Route 61 (DTC via Alameda), and Route 62 (Government District via Lakeside).

The Office of Vehicle Fleet Management at TTUHSC El Paso also provides three shuttle services on campus. The cutaway shuttle vehicle provides efficient access around campus, connecting campus buildings to offsite parking lots, as shown in ***Figure 7***. With the elevated temperatures that El Paso experiences year-round, the shuttle helps provide an air-conditioned transportation mode for staff and students. The Campus Shuttle service operates on weekdays between 6:30 AM and 6:30 PM, with each route's exact run time varying. The north route runs between three parking lots (T14, T12, S3), the Medical Education Building I, and the Academic Education Center (within the University Medical Center Hospital). The south route, which provides the most daily service, runs between two parking lots (T-20/S5, S4), the Medical Education Building I, and the Medical Education Building II. The campus route runs during peak hours and runs between the Medical Education Building I and the Academic Education Center. Students and staff also travel around campus via a covered golf cart, similar to the one shown in ***Figure 7***. The parking lots and building numbers are shown in ***Figure 3***.

Figure 7: Golf Cart (above) and Campus Shuttle (below)

SITE VISIT OBSERVATIONS

The TranSystems team visited the TTUHSC El Paso campus on Wednesday, September 13, 2023. The site visit was conducted on a typical weekday in the fall semester to observe overall campus operations and behaviors. Important information identified during the site visit is listed below.

General Observations

- Most students and staff drive to class, as opposed to taking transit, walking, or biking. Most people park in on-/off-campus parking lots. Some students utilize the free on-street parking along Rosa Avenue.
- El Paso experiences high temperatures year-round. Due to this, many staff and students drive or use the free shuttle to get around campus. Limited students were seen walking long distances to move between buildings and the parking lots. Campus police often travel around campus via covered university golf carts.
- Chelsea Street is wider (generally 40+ feet) and vehicles were seen speeding in the area. Multiple drivers, typically those driving at high speeds, scraped the bottom of their vehicle with the rail crossing surface when driving over the at-grade highway-rail crossing. During the peak hours, limited pedestrians crossed. A visually impaired adult was observed crossing the highway-rail crossing along the side of the roadway without a sidewalk present.
- Rick Francis Street had high pedestrian movements southbound in the AM and northbound in the PM.
- Vehicular queues were lengthy along Rick Francis Street when the at-grade highway-rail crossing was blocked. The median bollards, required for a quiet zone, restrict vehicles from turning around. They also appeared to cause issues for vehicles turning in/out of the parking lot driveway south of the crossings.
- During the two peak hour counts, two trains were observed traveling along the tracks. One train required the gates to be down for two minutes and the second required the gates to be down for five minutes. When trains are switching at one of the two nearby UPRR railyards, the highway-rail crossings are blocked for longer periods.
- Rick Francis Street is narrow (generally 22 feet). Large trucks can get stuck and must turn around.
- Vehicles turn around on Rick Francis Street to Rosa Avenue to access the campus when the highway-rail crossing is blocked. Vehicles had a difficult time turning left onto Raynolds Street. The intersection of Rosa Avenue and Raynolds Street is unsignalized. Visibility is low due to the vertical profile, parked cars, and fixed objects within the sight lines.
- Emergency medical services (EMS) often utilize the Rick Francis Street crossing for quicker access, as shown in ***Figure 8***.

Figure 8: EMS Vehicle Driving Across Rick Francis Street At-Grade Crossing

Staff Member Comments

During the site visit, the TranSystems team met with several campus staff members. Items mentioned by campus staff regarding existing and proposed mobility included:

- The heat can deter students from walking. Implementing heat mitigation strategies, such as a misting water element, may be beneficial in the grade separation design.
- Having elevator access at the grade separation would entice more people to cross.
- Raynolds Street is difficult to access from campus. Drivers cannot make a U-turn from the service road under Raynolds Street. Left turns are not permitted from the service road onto/from Raynolds Street; however, some drivers still make the illegal movement.
- The third track (spur) at Rick Francis Street appears to be out of use. Coordination with the railroad and industry served by the spur track could determine if the track is still needed.
- There is a preference by several campus staff to provide a vehicular-pedestrian overpass along Rick Francis Street. There is a particular preference for an underpass.
- There is an interest in installing sound barriers along the rail track to make the campus more aesthetically pleasing.

Trespassing

Blocked crossings for extended periods of time can cause drivers and pedestrians to become frustrated and potentially make poor decisions. During the site visit, two pedestrians were observed going around the gate to cross the at-grade Rick Francis Street crossing before the gate was raised. Additionally, several pedestrians were seen walking along the railroad right-of-way. An image of a person trespassing on railroad right-of-way is shown in ***Figure 9***. The police chief mentioned students have been seen jumping through parked railcars.

The TTUHSC El Paso Campus Police Department has several mitigation efforts in place to reduce trespassing. They are often in coordination with the UPRR railroad police. When a train is known to be blocking the crossing for an extended period, such as during a switching maneuver, the campus police often place cameras and/or sit by the crossing to reduce illegal behaviors and encourage safe behaviors. Campus police also coordinate with the shuttle bus service to detour shuttles around a blocked crossing by using the adjacent Raynolds Street grade separation.

Figure 9: Pedestrian Trespassing on Railroad Right-of-Way

Drainage

There is an existing drainage channel, as shown in ***Figure 10***, that runs along the south side of the UPRR tracks between Raynolds Street and Paisano Drive (within the study area). According to TTUHSC El Paso staff, the campus does not generally rely on the channel for drainage purposes – it was built after a flooding event destroyed a nearby neighborhood. The drainage channel only has water when the nearby pumping facility (northwest of the site) is pumping water out of the pond. It does not rain often in El Paso, but there was a rainstorm prior to the site visit; therefore, rain was present in the drainage channel in ***Figure 10***. Historically, even small amounts of rainfall can cause flooding in El Paso.

Figure 10: Drainage Channel South of Rail Tracks

CONCEPT DEVELOPMENT

Roadway-railroad grade separations provide safe passage across rail tracks, either via an overpass or underpass, by eliminating vehicle-train and pedestrian-train conflict points. Removing at-grade highway-rail crossings also helps eliminate queuing and wait times for vehicles. Vehicular grade separations are typically utilized along major roadways with higher classification designations and higher traffic volumes. The American Association of State Highway and Transportation Officials (AASHTO) describes conditions to guide the warrant of a grade separation at a site.[2] The applicable conditions include:

- Reduction of bottlenecks or spot congestion
- Reduction of crash frequency and severity
- Road-use benefits
- Eliminate an at-grade highway-rail crossing
- Serve unusual concentrations of pedestrian traffic (i.e., a park developed on both sides of a roadway)
- Serve bikeways and routine pedestrian crossings

Pathway grade separations provide multimodal access designed for pedestrians and eliminate pedestrian-train conflict points. AASHTO also provides a guide for pathway grade separation.[3] Conditions include:

- Facility must be located somewhere with pedestrian need
- Crossing structures must be built with adequate widths based on the perception of safety and volumes
- Bridge must be accessible for all types of users
- Barriers and railings should be provided to increase the pedestrian's sense of safety
- Facility must be well-lit

Overall, grade separations should provide a safe and convenient crossing location between two destinations. Specific to this study, a grade separated crossing should provide improved access between campus buildings and/or parking lots. The route should be the shortest path possible so pedestrians taking the grade separation do not have significantly longer trips. Other notable practices for pathway grade separations include restricting access to railroad right-of-way (ROW) by installing a height-appropriate fence, collecting trespassing rates to understand effectiveness, and combining educational and environmental interventions to reduce trespassing risks.

Crossing Locations

Based on the campus layout, most of the existing and proposed buildings north of the UPRR tracks are along Rick Francis Street. There are some potential connection points between Rick Francis Street and Chelsea Street; however, there is a large logistics warehouse just north of the UPRR tracks that the campus does not plan on purchasing. and it would be more difficult to construct a grade separation away from an existing roadway connection. Chelsea Street is along the eastern part of campus and no existing or proposed buildings are located adjacent. Because it is not connected directly to campus, it would not be an ideal vehicular or pedestrian connection point. All other highway-rail crossings in the study area are existing grade separations. Therefore, all grade separation concepts developed for this study are located along Rick Francis Street.

Design Criteria

Project-specific design criteria were developed in accordance with the *TxDOT Roadway Design Manual* (2020), *El Paso Street Design Manual* (2022), *El Paso Street Design Standards for Construction* (2008), *Texas Accessibility Standards* (2012), and other recommended practices, as applicable. Campus roadways are

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[2] American Association of State Highway and Transportation Officials. *A Policy on Geometric Design of Highways and Streets, 2011.*

[3] https://trespasstoolkit.fra.dot.gov/eLib/Details/L00062

owned by the City of El Paso. Per roadway functional classification, Rick Francis Street is classified as a local roadway. The design speed required by the City of El Paso is 35 mph. The posted speed limit will likely remain the existing speed (20 mph). However, the roadway will be designed for 35 mph design standards. The design criteria for horizontal geometry, vertical geometry, cross-section elements, and other design elements are outlined in ***Table 5***. All concepts will span the UPRR ROW.

Table 5: Design Criteria

Design Element	Rick Francis Street	
Classification	Functional Classification	Local
	Design Speed	35 mph
Horizontal Geometry	Control Line Location	
	Stopping Sight Distance	250’
	Superelevation Rate (max)	
	Minimum Radius (4% Superelevation)	371’
	Minimum Radius (0% Superelevation)	
Vertical Geometry	Max Vertical Grade	8%
	K Value Crest (min)	
	K Value Sag (min)	50
	Grade Change Without Vertical Curve	
	Minimum Vertical Clearance for Overpass	23.5’
	Minimum Vertical Clearance for Underpass	
	Vertical Clearance for Pedestrians	10’
Cross Section Elements	Travel Lane Width	
	Shoulder Width (inside)	N/A
	Shoulder Width (outside)	
	Curb Offset (To nominal face)	1.5’
	Pavement Cross Slope (lanes, shoulder)	
	Horizontal Clearance (Clear Zone)	5’
	Side Slopes (Front)	
	Side Slopes (Back)	1:6 Desired; 1:4 Maximum
	Clear Sidewalk Minimum Width	
American with Disabilities Act (ADA) Requirements	Ramp Slope	1:12 Maximum
	Ramp Rise	
	Ramp Clear Width	36 inches Minimum
	Landing Clear Length	
	Stairway Riser	4 inches to 7 inches
	Stairway Tread Depth	
Other	Minimum Width for Pedestrian Path	6’

Source: TxDOT Roadway Design Manual (2020), El Paso Street Design Manual (2022), El Paso Street Design Standards for Construction (2008), Texas Accessibility Standards (2012)

Overpass and Underpass Options

Overpasses and underpasses both serve as grade separation options to cross existing rail tracks. The following comparisons in ***Table 6*** note some of the primary positives and negatives of each crossing type.

Table 6: Overpass versus Underpass Advantages and Disadvantages

Comparison	Overpass	Underpass
Campus Cohesion	Potential campus barrier and can reduce connectivity under the bridge	Maintains visual cohesion on campus at the street level
Access During Weather Events	More accessible during weather events	Drainage problems may occur and reduce safe access
Pedestrian Path	Longer pedestrian paths with lengthier diversions	
Pedestrian Comfort	Unless covered, does not provide shade from sun or inclement weather	Provides shade cover from the sun and weather elements
Lighting	Provides ambient natural lighting	
Cost	Lower cost than an underpass	Higher cost than an overpass
Other Options	More creative connection options (i.e., sky bridge to building or garage)	

Concept Summary

Based on the crossing location analysis and design criteria, four grade separation concepts were developed at Rick Francis Street with the goal of providing enhanced mobility and safety for campus users. As summarized in ***Table 7***, the concepts include:

- Concept #1: Vehicular/pedestrian overpass
- Concept #2: Vehicular/pedestrian underpass
- Concept #3: Pedestrian bridge
- Concept #4: Pedestrian bridge connecting to a parking garage

Table 7: Rick Francis Street Grade Separation Concepts

Concept		Description	Cost
1	Vehicular/Pedestrian Overpass	Vehicular and pedestrian grade separation of the Rick Francis Street crossing with roadway and sidewalk over the railroad	$15.5 million
2	Vehicular/Pedestrian Underpass	Vehicular and pedestrian grade separation of the Rick Francis Street crossing with a roadway and sidewalk under the railroad	$22.9 million
3	Pedestrian Bridge	A pedestrian (and small motorized vehicle) grade separation of the Rick Francis Street crossing with ramps and a wide pathway over the railroad	$8.7 million
4	Pedestrian Bridge Connecting to a Parking Garage	A pedestrian grade separation of the Rick Francis Street crossing over the railroad by connecting to a potential parking garage north of the tracks	$4.8 million[1]

[1] Concept #4 does not include the cost of the parking garage.

Cost estimates are based on current 2023 TxDOT Bid Item amounts and are in current (2023) dollars. The cost estimates include *structural* (retaining walls, bridge structure, drainage, etc.), *site* (earthwork, paving, etc.), *utilities*, and *design* elements. The pedestrian-only concepts do not include an elevator. Elevators could be added as concept design advances but were not included in this study due to the high added maintenance costs and redundancy of ADA access.

Concept #1: Vehicular/Pedestrian Overpass at Rick Francis Street

The proposed concept raises Rick Francis Street over the existing highway-rail crossing while providing both vehicular and pedestrian access. The overpass structure will be approximately 1,200 feet in length. The entire project length will span from just north of Alameda Avenue to just south of Rosa Avenue. Full vehicular access will remain at Alberta Avenue/Robert Brown Avenue, Driveway 2, and Driveway 3. Pedestrian access at Pedestrian Crossing 2 will remain an option. Driveways 1, 4, and 5, along with Pedestrian Crossing 1, will all need to be closed or relocated. The roadway will have 11.75-foot lanes, 2-foot barriers, and a 6-foot sidewalk. The maximum roadway vertical grades are 7% and -5%. The sidewalk will follow the roadway profile. The cost estimate for Concept #1 is approximately $15.5 million.[4] The full plan and profile and typical section are shown in ***Appendix B***.

Concept #2: Vehicular/Pedestrian Underpass at Rick Francis Street

The proposed concept lowers Rick Francis Street below the existing highway-rail crossing while providing both vehicular and pedestrian access. The underpass profile will span nearly 2,100 feet. The roadway will extend from just north of Alameda Avenue to just south of Rosa Avenue. All existing roadways and pedestrian crossings will be closed. Additional efforts will be required to maintain access across Rick Francis Street. The roadway will have 11.75-foot lanes, curb and gutter, and a 6-foot sidewalk. The maximum roadway vertical grades are -4.5% and 6.5%. The sidewalk will follow the roadway profile. The cost estimate for Concept #2 is approximately $22.9 million.[5] The full plan and profile and typical section are shown in ***Appendix B***.

Stakeholders noted during meetings that they would like to explore a lower vertical clearance height. A high-level estimate, based on UPRR vertical clearance standards, notes a 16.5-foot vertical clearance is required below tracks. This shortest anticipated underpass length is a 1,775-foot underpass profile.[6] Similar access will be impacted; however, the underpass would begin 425 feet north of Alameda Avenue.

Concept #3: Pedestrian Bridge at Rick Francis Street

The proposed concept provides pedestrian and small vehicular access (i.e., golf cart) over the existing highway-rail crossing. The pedestrian bridge will span the entire UPRR ROW. Driveways 3 and 4 will need to be removed or relocated. Access will be provided via ramps. The 15-foot width of the ramps and bridge will be wide enough to accommodate bi-directional pedestrian and golf cart movements. The ramps will be located within the existing roadway to provide exclusive pedestrian/small motorized vehicle access only. The ramps use a series of ADA-accessible switchbacks (4.2% vertical grade) to bring users to the bridge height. The pedestrian bridge is level across the highway-rail crossing. The cost estimate for Concept #3 is approximately $8.7 million. The full plan and profile and typical section are shown in ***Appendix B***.

[4] The theoretical cost for Concept #1 ($15.2) is the anticipated cost of the existing roadway width as an overpass or underpass.
[5] The theoretical cost for Concept #2 ($22.5) is the anticipated cost of the existing roadway width as an overpass or underpass.
[6] https://www.up.com/cs/groups/public/documents/up_pdf_nativedocs/pdf_rr_grade_sep_projects.pdf, page 28

Concept #4: Pedestrian Bridge Connecting to a Parking Garage at Rick Francis Street

The proposed concept provides pedestrian and small vehicular access over the existing highway-rail crossing. The bridge will span the entire UPRR ROW. There are no anticipated impacts to existing roadways or walkways. Access will be provided via ramps, including a connection to a proposed parking garage. The ramp will be south of the highway-rail crossing and the potential parking garage is in the northeast corner. The 15-foot width of the ramps and bridge will be wide enough to accommodate bi-directional pedestrian and golf cart movements. The ramps use a series of ADA-accessible switchbacks (4.2% vertical grade) to bring users to the bridge height. The pedestrian bridge is level across the highway-rail crossing. To meet railroad height requirements, the parking garage must have a minimum of three stories. The cost estimate for Concept #4, not including the potential parking garage, is approximately $4.8 million. The full plan and profile and typical section are shown in ***Appendix B***.

CONCEPT EVALUATION

The four grade separation concepts were evaluated based on three types of feasibility criteria: *technical, financial, and institutional.* A preferred concept was not selected; however, each concept was screened to guide future decision making by TTUHSC and the City of El Paso.

Technical Feasibility

Technical feasibility evaluates how the project meets design criteria and impacts users. ***Table 8*** identifies the technical feasibility criteria used for the concept evaluation. All concepts improve multimodal access; therefore, it was not included in the technical feasibility criteria.

Table 8: Technical Feasibility Criteria

Criteria	Definition
Design Criteria	Meets project specific design criteria
Constructability	Reduces impacts on traffic patterns and students during construction
Right of Way Impacts	Minimizes acquisition of developed/undeveloped properties
Access Impacts	Maintains access to existing roadways and walkways
Environmental Impacts	Mitigates known, high-level environmental concerns
	Aligns with future campus plans

Financial Feasibility

Financial feasibility is based on construction cost and maintenance cost. This information could be used for a future benefit-cost analysis and guide discussions regarding economic impacts and potential funding sources. ***Table 9*** identifies the financial feasibility criteria used for the concept evaluation.

Table 9: Financial Feasibility Criteria

Criteria	Definition
Construction Cost	Project construction and programming cost
Maintenance Cost	Maintenance of capital or operational costs

Institutional Feasibility

Institutional feasibility identifies any support or concerns from key stakeholders. ***Table 10*** identifies the institutional feasibility criteria used for the concept evaluation. The institutional feasibility is based on initial discussions documented during stakeholder meetings. ***Appendix C*** includes presentations and meeting summaries from the three stakeholder meetings.

Table 10: Institutional Feasibility Criteria

Criteria	Definition
Campus Staff Support	Concept generally receives support from campus staff
City of El Paso Support	Concept generally receives support from the City of El Paso staff
UPRR Support	Concept generally receives support from UPRR staff

Concept Evaluation

The evaluation of each concept, based on the outlined feasibility methodology, is summarized in ***Table 11.*** Individual concept evaluations are shown on the following pages in ***Tables 12-15***.

No concept was selected as the preferred alternative in this study as the evaluation determined each of the four concepts to be moderately feasible options. This evaluation is not intended to be a numeric scoring, but a qualitative review of the feasibility of each concept to guide future discussions and decision-making. All concepts were generally technically and financially feasible, but institutional support and interest will be critical to determining next steps for this effort.

Table 11: Rick Francis Street Feasibility Evaluation Summary

Criteria	**Concept #1** Vehicular/Pedestrian Overpass	**Concept #2** Vehicular/Pedestrian Underpass	**Concept #3** Pedestrian Bridge	**Concept #4** Pedestrian Bridge to Parking Garage
Technical	🟡	🟡	🟢	🟢
Financial	🟡	🔴	🟢	🟢
Institutional	🔴	🟡	🟡	🟡
Overall Merit	🟡	🟡	🟡	🟡

🟢 Low Impact or High Interest 🟡 Moderate Impact or Interest 🔴 High Impact or Low Interest

Concept #1: Vehicular/Pedestrian Overpass

Table 12: Concept #1 Feasibility Evaluation

Merit Criteria		Evaluation	Rating
Technical	Design Criteria	This concept meets all design criteria. Sidewalks follow the roadway profile, so pedestrian access would have steeper grades than a pedestrian-only access.	●
	Constructability	As the concept follows the existing roadway alignment, constructability is more difficult due to the need for a temporary crossing closure and detour during construction.	●
	Right-of-Way Impacts		●
	Access Impacts	Three roadway driveways and one pedestrian crossing will need to be closed or relocated.	●
	Environmental Impacts	There are limited known environmental concerns.	●
	Campus Planning	Multimodal access is improved but does not align with the potential pedestrian-only conversion along Rick Francis Street.	●
Financial	Construction Cost		●
	Maintenance Cost	Standard maintenance for an overpass is anticipated.	●
Institutional	Campus Staff		●
	City of El Paso	City staff expressed less interest in this concept due to similarity to adjacent Raynolds Street overpass.	●
	UPRR		●
Overall		Viable option, but less preferred.	●

● Low Impact or High Interest ● Moderate Impact or Interest ● High Impact or Low Interest

Concept #2: Vehicular/Pedestrian Underpass

Table 13: Concept #2 Feasibility Evaluation

Merit Criteria		Evaluation	Rating
Technical	Design Criteria	This concept meets all design criteria. Sidewalks follow the roadway profile, so pedestrian access would have steeper grades than a pedestrian-only access.	●
	Constructability	As the concept follows the existing roadway alignment, constructability is more difficult due to the need for a temporary crossing closure and detour during construction. This concept would take the longest to construct.	●
	Right-of-Way Impacts	Most of the design falls within the existing ROW. Some easements will be needed for construction. Access to proposed buildings and parking will need to be considered and may require buildings to be offset east from the existing roadway.	●
	Access Impacts	All existing driveways and pedestrian crossings will need to be closed or relocated. Robert Brown Road will also be impacted.	●
	Environmental Impacts	Drainage impacts will need to be reviewed further to determine environmental impacts.	●
	Campus Planning	Multimodal access is improved but does not align with the potential pedestrian-only conversion along Rick Francis Street.	●
Financial	Construction Cost	This concept costs approximately $22.9 million, aligning with typical construction and programming costs for an underpass.	●
	Maintenance Cost	Additional maintenance is anticipated due to drainage impacts and a pumping station.	●
Institutional	Campus Staff	Staff would like to maintain vehicular access across the tracks. This concept is more visually appealing than an overpass.	●
	City of El Paso	City staff indicated that this concept advances the city's goal for improved multimodal access	●
	UPRR	A vehicular bridge over the railroad tracks is preferred.	●
Overall		Viable option, but high cost and potential impacts.	●

● Low Impact or High Interest ● Moderate Impact or Interest ● High Impact or Low Interest

Concept #2 Rendering

Based on discussions with stakeholders, a high-level visualization was developed for Concept #2. As shown in ***Figure 11***, the rendering provides a visualization of the underpass design and potential parking lots and buildings on the north side of campus.

Figure 11: Concept #2 Visualization

Concept #3: Pedestrian Bridge

Table 14: Concept #3 Feasibility Evaluation

Merit Criteria		Evaluation	Rating
Technical	Design Criteria	This concept meets all design criteria.	●
	Constructability	The alignment is separate from the existing alignment, which would allow for easier access during construction.	●
	Right-of-Way Impacts		●
	Access Impacts	One pedestrian crossing and two driveways would need to be closed if the pedestrian ramp is located within the existing roadway.	●
	Environmental Impacts		●
	Campus Planning	This concept aligns with improved walkability and the potential pedestrian-only conversion on Rick Francis Street.	●
Financial	Construction Cost		●
	Maintenance Cost	Standard maintenance is anticipated. Adding elevators would require additional cost and maintenance.	●
Institutional	Campus Staff		●
	City of El Paso	City staff indicated that this concept advances the city's goal for improved multimodal access	●
	UPRR		●
Overall		Viable option, but usage may be low	●

● Low Impact or High Interest ● Moderate Impact or Interest ● High Impact or Low Interest

Concept #4: Pedestrian Bridge with a Parking Garage

Table 15: Concept #4 Feasibility Evaluation

Merit Criteria		Evaluation	Rating
Technical	Design Criteria	This concept meets all design criteria.	●
	Constructability	The alignment is separate from the existing alignment, which would allow for easier access during construction.	●
	Right-of-Way Impacts		●
	Access Impacts	No existing or proposed access would be impacted.	●
	Environmental Impacts		●
	Campus Planning	This concept aligns with improved walkability and the potential pedestrian-only conversion on Rick Francis Street. Concept is contingent on the installation of a multi-level parking garage	●
Financial	Construction Cost		●
	Maintenance Cost	Standard maintenance is anticipated. Adding elevators would require additional cost and maintenance.	●
Institutional	Campus Staff		●
	City of El Paso	City staff indicated that this concept advances the city's goal for improved multimodal access	●
	UPRR		●
Overall		Viable option, but contingent on parking garage installation.	●

● Low Impact or High Interest ● Moderate Impact or Interest ● High Impact or Low Interest

Benefit-Cost Analysis

A benefit-cost analysis (BCA) determines the future risk reduction benefits of a hazard mitigation project. BCAs help determine a project's desirability for potential grant funding based on the anticipated cost and potential benefits. Federal grants often require a BCA as they help determine the best projects to select for funding. A benefit-cost ratio (BCR) represents the comparison of project costs to project benefits. For example, if the BCR result is 1.0, the benefits are equal to the cost. Any BCR above 1.0 is considered a cost-effective project, which is generally the required threshold for a project to receive federal grant funding.

Two concepts were evaluated through a screening BCA model. The high-level BCA model considered a limited number of benefits, including vehicle, pedestrian, and rail volumes, safety (crash) data, and travel time savings. Concept #2 (vehicular/pedestrian underpass) and Concept #3 (pedestrian bridge) were evaluated. Concept #1 (vehicular/pedestrian overpass) would likely have a similar BCR to Concept #2 and Concept #4 (pedestrian bridge to parking garage) would likely have a similar BCR to Concept #3.

The following schedule was used for both concepts. While the pedestrian bridge would likely have a shorter timeline, the same schedule was used for both concepts to be conservative for this study. The schedule guides inflation rates for the estimated cost.

- *Project Development:* January 2025 - June 2026 (18 months)
- *Design:* June 2026 - December 2027 (18 months)
- *Construction:* January 2028 - December 2029 (24 months)
- *Operation:* January 2030 (opening)

Results

Concept #2 assumes all vehicle-rail and pedestrian-rail conflicts would be eliminated due to the grade separation of all roadway modes. Concept #3 allows only non-motorized users a grade separated crossing. Based on stakeholder feedback that campus staff would like to maintain vehicular access along Rick Francis Street, the BCA was evaluated assuming the existing at-grade crossing would remain. The benefits of this concept would provide non-motorized users with a crossing when the rail tracks are blocked. However, the vehicular- and pedestrian-rail risks would remain in this analysis.

The results of the high-level BCA are:

- Concept #2 (Vehicular/Pedestrian Underpass): ***0.42***
- Concept #3 (Pedestrian Bridge): ***0.26***

The BCA results indicate both concepts have a cost that exceeds the benefits. Additional and more refined qualitative and quantitative data could be included in future iterations of the BCA which may improve the ratio.

OTHER CONSIDERATIONS

In addition to the grade separation concepts evaluated in this study, other items were identified as potential improvements to consider. These improvements could be considered separate or in conjunction with a grade separation concept.

- Dynamic messaging signs (DMS) may be installed to increase the usage and effectiveness of the crossing. DMS and other information to indicate alternate routes could alleviate concerns about EMS and medical staff being late/delayed from trains blocking the Rick Francis Street at-grade crossing.
- Traffic signal warrants should be reviewed at the intersection of Raynolds Street and Rosa Avenue. This would provide easier access for westbound vehicles onto Raynolds Street, as this intersection is utilized by EMS and has poor sight distance. A DMS could be installed on the traffic signal.
- Consider adding additional, or widening existing, sidewalk connections to improve pedestrian mobility on campus.
- Consider adding heat mitigation strategies, such as water misting, to the grade separation to improve pedestrian comfort.
- A sound barrier between the campus and the railroad may be considered to improve audio and visual aesthetics.
- Coordination with UPRR and the existing industry north of tracks could help determine if a third track spur is still necessary.
- Evaluation of the Chelsea Street highway-rail crossing profile may be completed to determine if grade crossing improvements are warranted.
- Installing additional fencing adjacent to the UPRR tracks may help reduce trespassing. Inclusion of non-trespassing components is important, with or without a grade separation, particularly if the amount of time the crossing is blocked per day increases.
- A grade separation concept should follow MCA design standards and reflect the campus's visual character

CONCLUSION

The TTUHSC campus in El Paso, Texas is bisected by the double-track UPRR rail corridor, which restricts mobility between the north and south sides of campus. The study's purpose is to evaluate potential grade separation concepts to enhance campus safety and mobility, particularly for non-motorized users. Four grade separation concepts were developed and evaluated to provide options for future infrastructure upgrades.

Based on the campus layout, most of the existing and proposed buildings north of the UPPR tracks are along Rick Francis Street. Therefore, four grade separation concepts were developed at Rick Francis Street to provide enhanced mobility and safety for campus users. The concepts include:

- Concept #1: Vehicular/pedestrian overpass
- Concept #2: Vehicular/pedestrian underpass
- Concept #3: Pedestrian bridge
- Concept #4: Pedestrian bridge connecting to a parking garage

As shown in ***Table 16,*** the four concepts were evaluated based on three types of feasibility criteria: technical, financial, and institutional. All four concepts were generally considered technically and financially feasible, but institutional support and interest will be critical to determining next steps for this effort. The study is intended to guide future decision-making and potential next steps.

Table 16: Rick Francis Street Feasibility Evaluation Summary

Criteria	Concept #1	Concept #2	Concept #3	Concept #4
Technical	🟡	🟡	🟢	🟢
Financial	🟡	🔴	🟢	🟢
Institutional	🔴	🟡	🟡	🟡
Overall Merit	🟡	🟡	🟡	🟡

🟢 Low Impact or High Interest 🟡 Moderate Impact or Interest 🔴 High Impact or Low Interest

Next Steps

Based on stakeholder feedback, the following items should continue to be explored and refined as next steps:

- Preference for vehicular and/or pedestrian access
- Potential design criteria negotiations
- Campus cohesion and agreeable impacts to campus

TxDOT has supported the project by providing this initial planning study and TxDOT's role will be complete after this study. TTUHSC and the City of El Paso could explore federal, state, local, and private funding opportunities to advance the project into selection, design, and construction. Potential federal funding opportunities may include:

- *Federal Railroad Administration (FRA):* Railroad Crossing Elimination program (RCE), Consolidated Rail Infrastructure and Safety Improvements program (CRISI)
- *U.S. Department of Housing and Urban Development (HUD):* Community Development Block Grants (CDBG)
- *USDOT:* Rebuilding American Infrastructure with Sustainability and Equity program (RAISE), Reconnecting Communities program

APPENDIX A

Document Review

Plan El Paso: City of El Paso Texas, Comprehensive Plan Volume 1: City Patterns - 2012[7]
Plan El Paso is the most current iteration of the city's Comprehensive Plan. This plan is a framework for guiding economic and physical development in the City of El Paso by providing decision-makers with tools and strategies that align with the city's future vision. Volume 1 is comprised of five sections that each cover one of the established goals of the community. Section Four, Transportation, outlines the city's current transportation conditions and policy interventions for addressing the community's concerns with the overall goal to, "become the least car-dependent city in the Southwest through meaningful travel options and land use patterns that support walkability, livability, and sustainability."

Relevance: The project location is identified as a future 'Compact Urban' area, an overlay designation that signifies an emphasis on multimodal transportation design. Compact Urban areas are intended for both automobile and pedestrian efficiency with narrower lane widths, lower target speeds, on-street parking, and shorter curb radii. In Compact Urban areas, walkability is prioritized with wide sidewalks, shade, alleys, and street-facing access to adjacent land uses. Compact urban area enhances neighborhood character, safety, and walkability using design features such as narrower lane widths, lower target speeds, on-street parking, short curb radii, and pedestrian-centered designs such as wide sidewalks, shade, alleys, and street-facing access to adjacent land uses.

Plan El Paso: City of El Paso Texas Comprehensive Plan Volume II: Community Life - 2012[8]
Volume II is a continuation of the Comprehensive Plan with an emphasis on community life, with six sections focusing on the health, economic well-being, and quality of life of the residents of El Paso. Section Nine, Health, focuses on the community's health concerns and what resources and initiatives can be taken to address those concerns. The MCA Campus, which hosts the Texas Tech University Health Science Center, is a major contributor to the local economy and an important healthcare resource.

Relevance: The plan identifies the lack of safe places to walk or bike as a health concern for residents. Within the plan, Alameda Avenue, a corridor located on the southern edge of the medical campus, was identified by residents as in need of improvement. This prompted the Alameda/Paisano Roundabout improvement project, completed in 2015, which included the addition of shared lane bicycle facilities, sidewalks, and improvements to bus facilities. The ongoing SH20 (Alameda Avenue) Corridor demonstrates a commitment to improve active transportation facilities within the area.

City of El Paso Street Design Manual - 2022[9]
The City of El Paso Street Design Manual is a tool to guide both public and private street design projects. The manual provides core guiding principles and details for street design and considers relevant standards and goals of other various regulatory and planning documents of the City of El Paso. This manual considers street design factors for *'Compact Urban' area* designations.

Relevance: The manual provides design guidelines for bike lanes, sidewalks, and pedestrian crossings within El Paso. Compact Urban areas, which have been identified as the future land use designation for the project area, include a typical lane width of 10 to 11 feet, bicycle and pedestrian facilities such as bike lanes, buffered bike lanes, cycle tracks, and a minimum of eight-foot sidewalk width on arterial or collector streets. Sidewalks along local streets must be a minimum of six feet wide. Other features such as streetscape elements, medians, and on-street parking are generally permitted as well.

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[7] https://www.elpasotexas.gov/assets/Documents/CoEP/Planning-and-Inspections/Plan-El-Paso/Plan-El-Paso_vol1_adopted_for-web.pdf
[8] https://www.elpasotexas.gov/assets/Documents/CoEP/Planning-and-Inspections/Plan-El-Paso/Plan-El-Paso_vol2_adopted_for-web.pdf
[9] https://elpasotexas.legistar.com/View.ashx?M=F&ID=10702091&GUID=CA435E55-39A2-4285-8465-768AF99F97C9

City of El Paso Strategic Plan - 2022[10]

The City of El Paso Strategic Plan outlines eight goals that facilitate four vision statements. These goals align with El Paso's energy and resources and help to prioritize specific initiatives. Goal seven, enhance and sustain El Paso's Infrastructure network, which promotes the 'Safe and Beautiful Neighborhoods' vision statement, and emphasizes the improvement of quality of life through street infrastructure and multimodal transportation projects such as the El Paso Bike Plan implementation.

Relevance: This plan demonstrates the city's future vision of enhancing the current infrastructure network to include improved bicycle and pedestrian networks.

Medical Center of The Americas Master Plan Updates - 2018[11]

The Master Plan of the MCA Campus outlines the future goals and vision of the 440-acre area stretching from IH-10 and Boone Street to Paisano Drive. The purpose of this framework is to guide the future development of the MCA Campus while also considering the surrounding community. This plan includes an analysis of the existing conditions and an analysis that identifies connectivity barriers within the project area. The framework plan identified proposed street improvements that address connectivity issues within the project area and promote bike and pedestrian comfort and safety.

Relevance: This plan identifies the UPRR as a connectivity barrier. The plan proposes a street improvement design on the project corridor to improve connectivity, including the conversion of existing streets to limited access/pedestrian streets. Rick Francis Street is identified as a potential candidate for conversion to a limited access/pedestrian corridor in this plan.

City of El Paso Bike Plan – 2016[12]

The *City of El Paso Bike Plan* is a framework to guide policies and programs that promote a bicycle-friendly community, with the goal of becoming one of the most bicycle-friendly cities in the country. The plan developed goals and objectives for El Paso, evaluated its current bike network, and proposed recommendations for an improved bikeway network. The recommendations included ten different proposed bicycle facilities stretching east past the city's boundary, through downtown, and up into New Mexico.

Relevance: There are currently no existing dedicated bicycle facilities on the campus. This plan identifies three types of bicycle facilities, bicycle boulevard, bike lane, and shared lane markings, which are recommended within the project area. There is a proposed bike lane and shared bike lane along Raynolds Street, a proposed buffered bike lane along Alameda Avenue, and a proposed bike boulevard at Rick Francis Street.

Destino El Paso MPO 2045 Metropolitan Transportation Plan (MTP) - 2018[13]

Destino 2045 is the most recent update to the MTP. This plan is a comprehensive framework for the future transportation needs of El Paso. The plan significantly focused on stakeholder engagement and public participation, considering the needs of all users. The plan identified regional transportation needs in eight different categories, including roadways and active transportation (pedestrian and bicycle travel). Within these categories, regional trends and opportunities for improvement were identified.

Relevance: Paisano Drive and I-10 were identified as emphasis corridors within the plan. There is an increased need for active transportation options within the project area.

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[10] https://www.elpasotexas.gov/assets/Documents/CoEP/Government/Strategic-Planning/2022-Strategic-Plan-Booklet-new.pdf

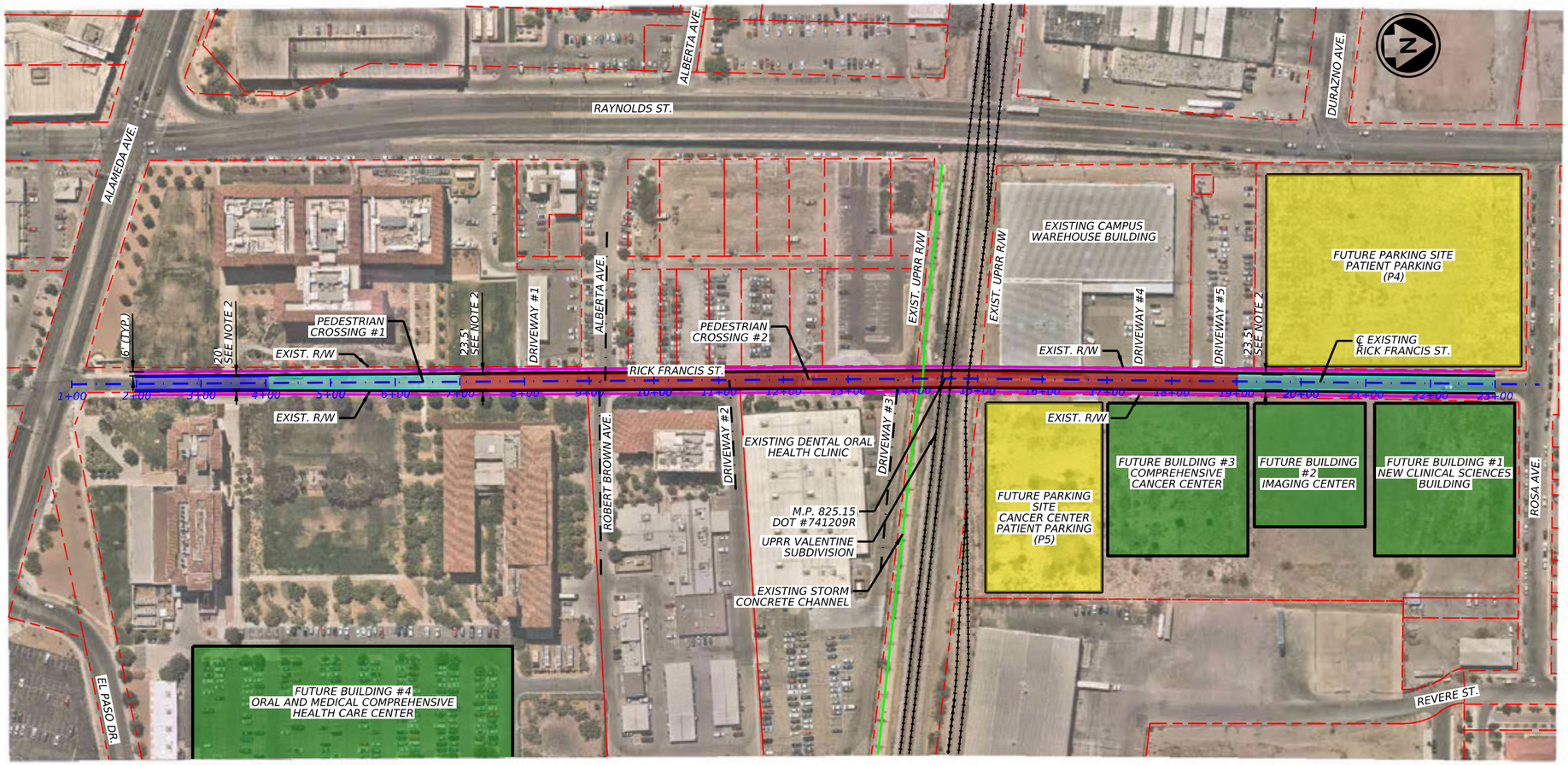
[11] https://mca-foundation-production.s3.amazonaws.com/documents/files/000/000/006/original/MCA_MasterPlan_Final_copy-compressed.pdf?1629740392

[12] https://www.elev8ep.com/mobility/epbp

[13] https://www.elpasompo.org/departments/mtp/Destino2045MTP

APPENDIX B

Concept Exhibits: Plan and Profile, Typical Section, and Cost Estimates



0 100 200
HORIZ. SCALE FEET
1" = 200'

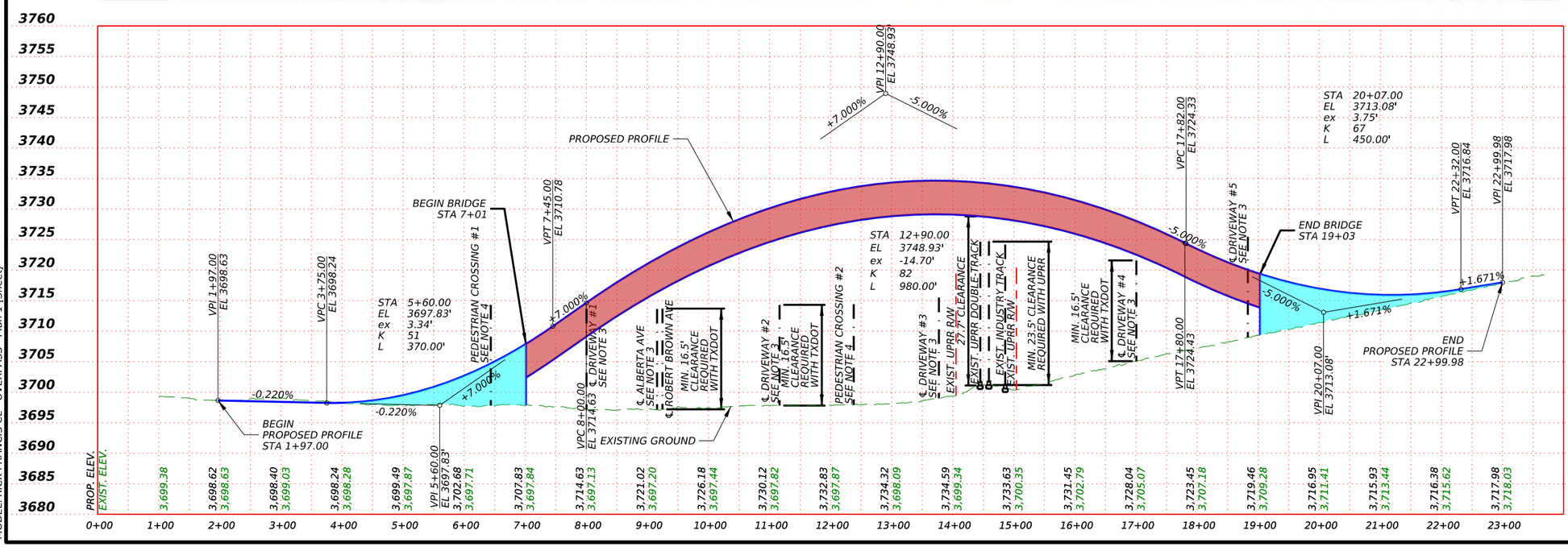
0 10 20
VERT. SCALE FEET
1" = 20'

LEGEND

- PROPOSED ROADWAY
- PROPOSED RETAINING WALL
- PROPOSED BRIDGE
- PROPOSED SIDEWALK
- FUTURE BUILDING
- FUTURE PARKING LOT

NOTES:

1. DESIGN SPEED OF 35MPH FOR RICK FRANCIS STREET.
2. DIMENSIONS OF PROPOSED ROADWAY WIDTH VARIES FROM 20' TO 23.5' DUE TO THE EXISTING ROADWAY WIDTHS. PROPOSED SIDEWALK WIDTH IS 6'.
3. ALBERTA AVE, ROBERT BROWN AVE, DRIVEWAYS #2 AND #3 MAY REMAIN OPEN UNDER THE OVERPASS. DRIVEWAYS #1, #4, AND #5 WILL NEED TO BE CLOSED/RELOCATED.
4. PEDESTRIAN CROSSING #2 MAY REMAIN OPEN UNDER THE OVERPASS. PEDESTRIAN CROSSING #1 TO BE CLOSED/RELOCATED.



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CONCEPT 1: ROADWAY AND SIDEWALK OVERPASS

TTUHSC EL PASO - MOBILITY STUDY EL PASO, TEXAS VALENTINE SUBDIVISION

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
N/A	N/A	N/A	RICK FRANCIS STREET
DIST	COUNTY		SHEET NO.
ELP	EL PASO		1

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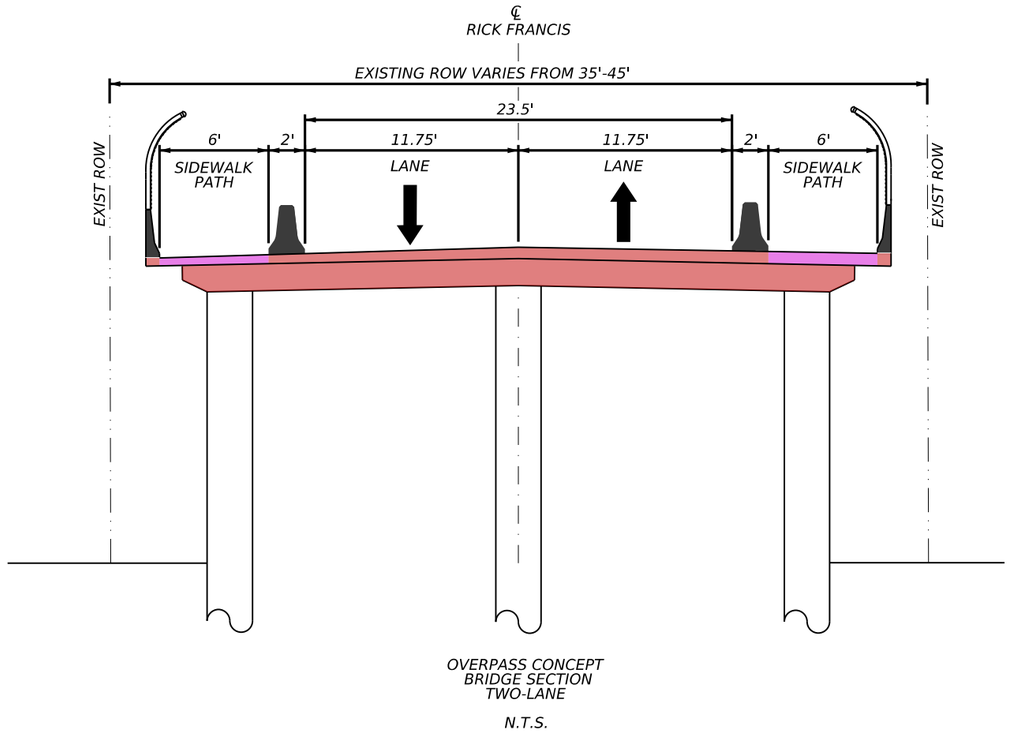
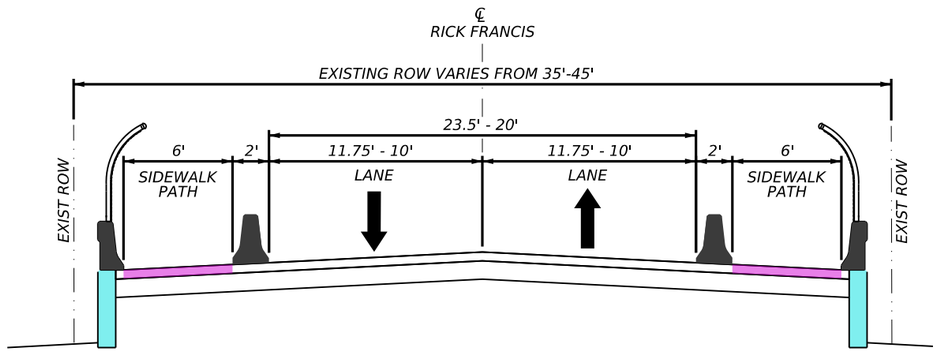


OVERPASS CONCEPT
BRIDGE SECTION
TWO-LANE

N.T.S.



OVERPASS CONCEPT
RETAINING WALL SECTION
TWO-LANE

N.T.S.

LEGEND

- PROPOSED ROADWAY
- PROPOSED RETAINING WALL
- PROPOSED BRIDGE
- PROPOSED SIDEWALK
- FUTURE BUILDING
- FUTURE PARKING LOT

NOTES:

1. DESIGN SPEED OF 35MPH FOR RICK FRANCIS STREET.
2. DIMENSIONS OF PROPOSED ROADWAY WIDTH VARIES FROM 20' TO 23.5' DUE TO THE EXISTING ROADWAY WIDTHS. PROPOSED SIDEWALK WIDTH IS 6'.
3. ALBERTA AVE, ROBERT BROWN AVE, DRIVEWAYS #2 AND #3 MAY REMAIN OPEN UNDER THE OVERPASS. DRIVEWAYS #1, #4, AND #5 WILL NEED TO BE CLOSED/RELOCATED.
4. PEDESTRIAN CROSSING #2 MAY REMAIN OPEN UNDER THE OVERPASS. PEDESTRIAN CROSSING #1 TO BE CLOSED/RELOCATED.

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CONCEPT 1: ROADWAY AND SIDEWALK OVERPASS

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EL PASO, TEXAS
VALENTINE SUBDIVISION

CONT	SECT	JOB	HIGHWAY
N/A	N/A	N/A	RICK FRANCIS STREET
DIST	COUNTY		SHEET NO.
ELP	EL PASO		2

C-TYP-301.dgn

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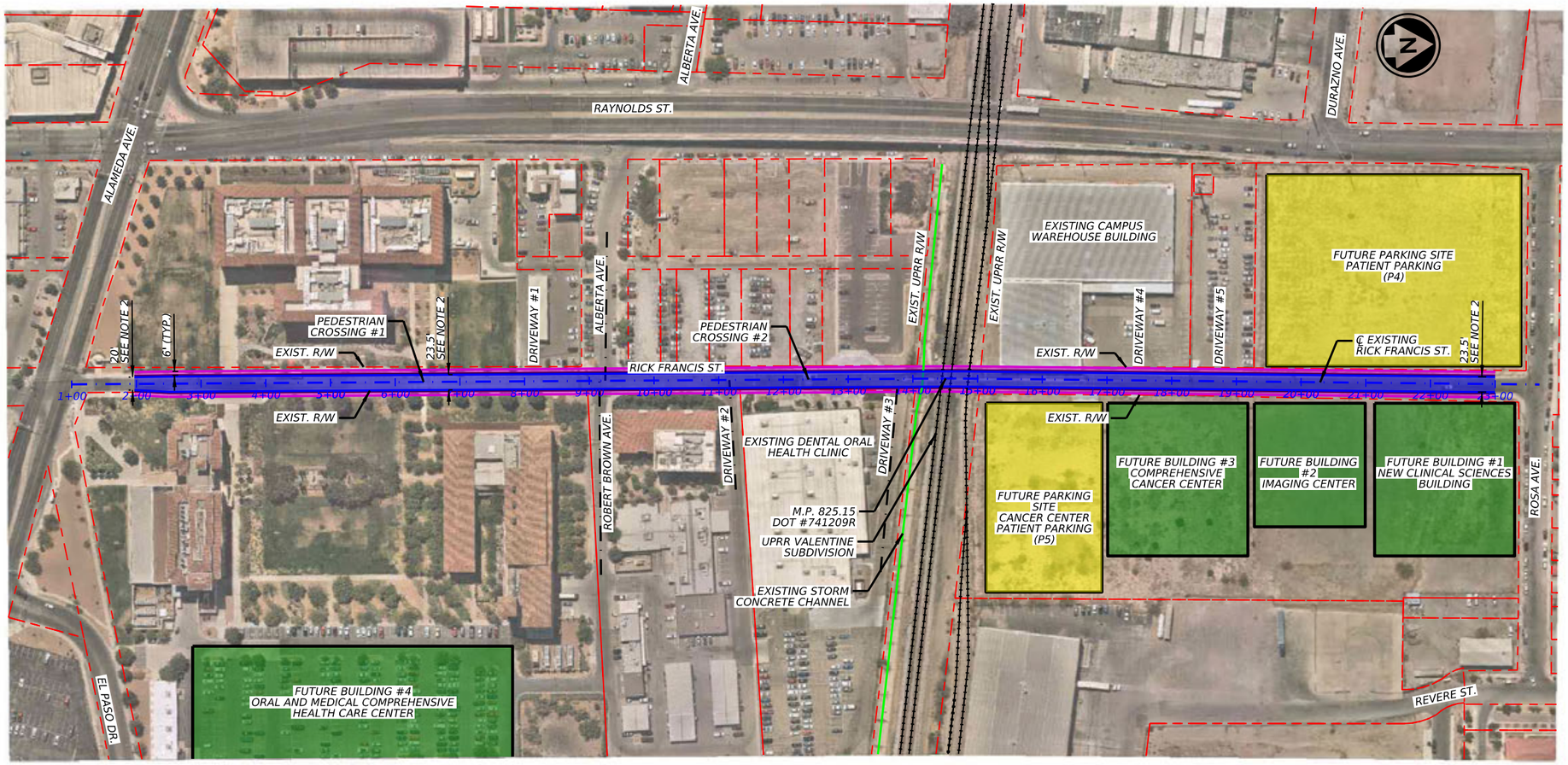


0 100 200
HORIZ. SCALE FEET
1" = 200'

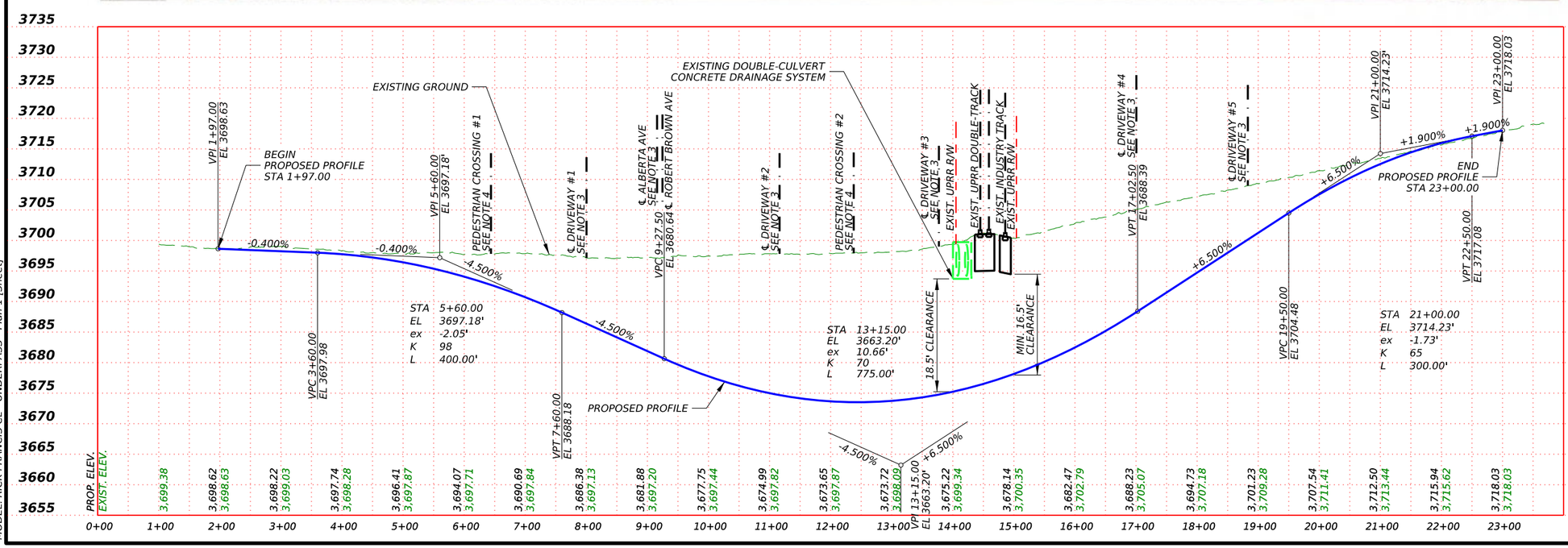
0 10 20
VERT. SCALE FEET
1" = 20'

LEGEND

- PROPOSED ROADWAY UNDERPASS
- PROPOSED SIDEWALK
- FUTURE BUILDING
- FUTURE PARKING LOT

NOTES:

1. DESIGN SPEED OF 35MPH FOR RICK FRANCIS STREET.
2. DIMENSIONS OF PROPOSED ROADWAY WIDTH VARIES FROM 20' TO 23.5' DUE TO THE EXISTING ROADWAY WIDTHS. PROPOSED SIDEWALK WIDTH IS 6'.
3. ALBERTA AVE AND ROBERT BROWN AVE WILL NEED TO BE CLOSED. DRIVEWAYS #1 THROUGH #5 WILL NEED TO BE CLOSED/RELOCATED.
4. PEDESTRIAN CROSSINGS #1 AND #2 TO BE CLOSED/RELOCATED.



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CONCEPT 2: ROADWAY AND SIDEWALK UNDERPASS

TTUHSC EL PASO - MOBILITY STUDY EL PASO, TEXAS VALENTINE SUBDIVISION

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
N/A	N/A	N/A	RICK FRANCIS STREET
DIST	COUNTY		SHEET NO.
ELP	EL PASO		3

C-EXH-102.dgn

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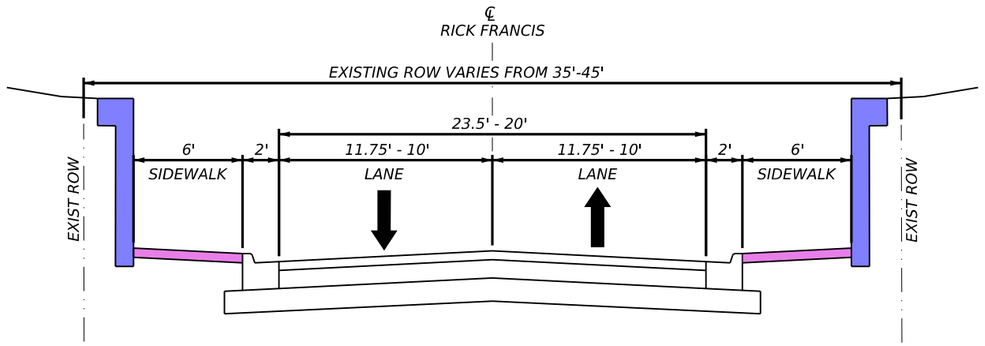

UNDERPASS CONCEPT
RETAINING WALL SECTION
TWO-LANE

N.T.S.

LEGEND

- PROPOSED ROADWAY UNDERPASS
- PROPOSED SIDEWALK
- FUTURE BUILDING
- FUTURE PARKING LOT

NOTES:

1. DESIGN SPEED OF 35MPH FOR RICK FRANCIS STREET.
2. DIMENSIONS OF PROPOSED ROADWAY WIDTH VARIES FROM 20' TO 23.5' DUE TO THE EXISTING ROADWAY WIDTHS. PROPOSED SIDEWALK WIDTH IS 6'.
3. ALBERTA AVE AND ROBERT BROWN AVE WILL NEED TO BE CLOSED. DRIVEWAYS #1 THROUGH #5 WILL NEED TO BE CLOSED/RELOCATED.
4. PEDESTRIAN CROSSINGS #1 AND #2 TO BE CLOSED/RELOCATED.

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CONCEPT 2: ROADWAY AND SIDEWALK UNDERPASS

TTUHSC EL PASO -
MOBILITY STUDY
EL PASO, TEXAS
VALENTINE SUBDIVISION

CONT	SECT	JOB	HIGHWAY
N/A	N/A	N/A	RICK FRANCIS STREET
DIST	COUNTY		SHEET NO.
ELP	EL PASO		4

C-TYP-302.dgn

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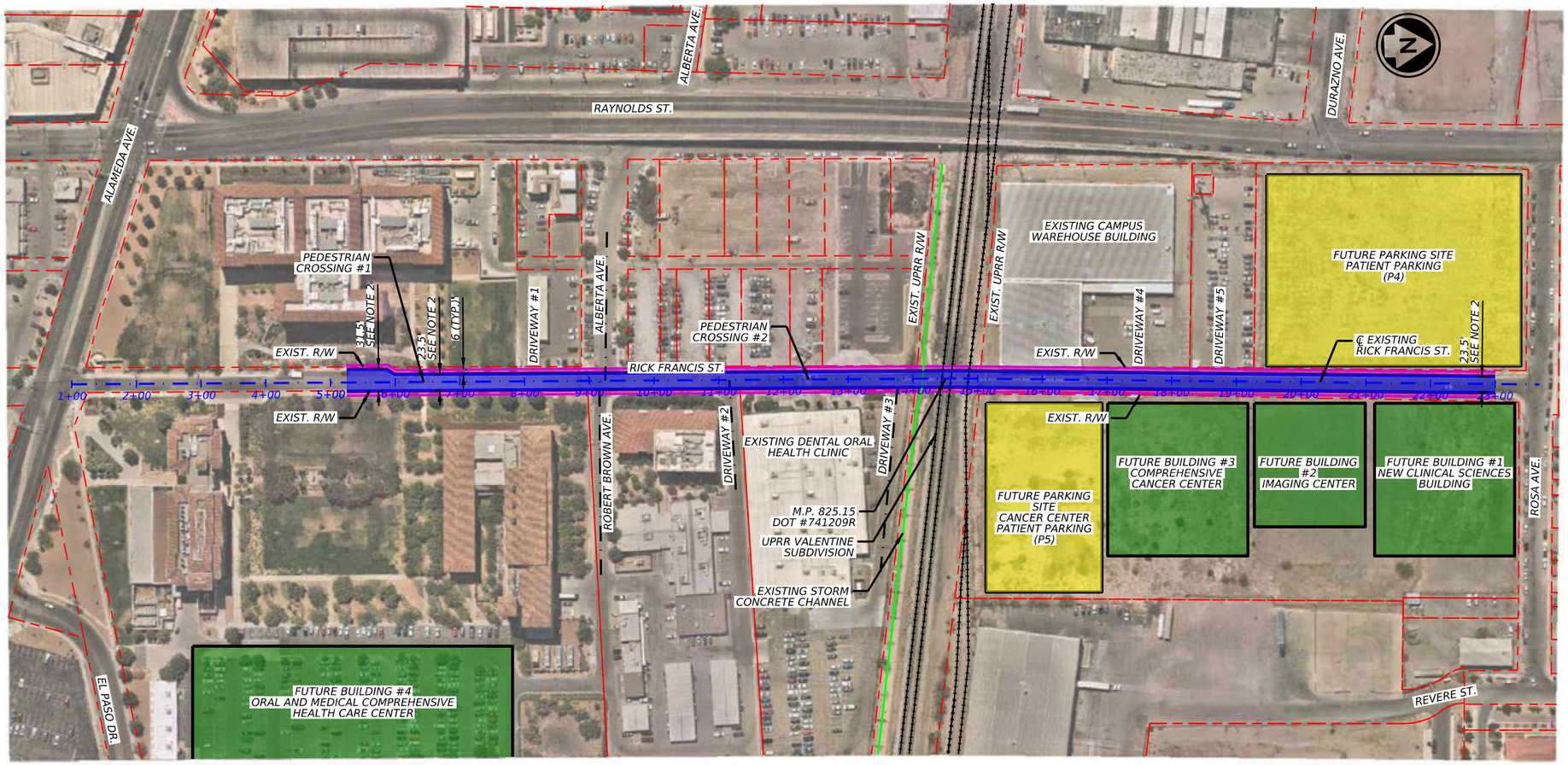


0 100 200
HORIZ. SCALE FEET
1" = 200'

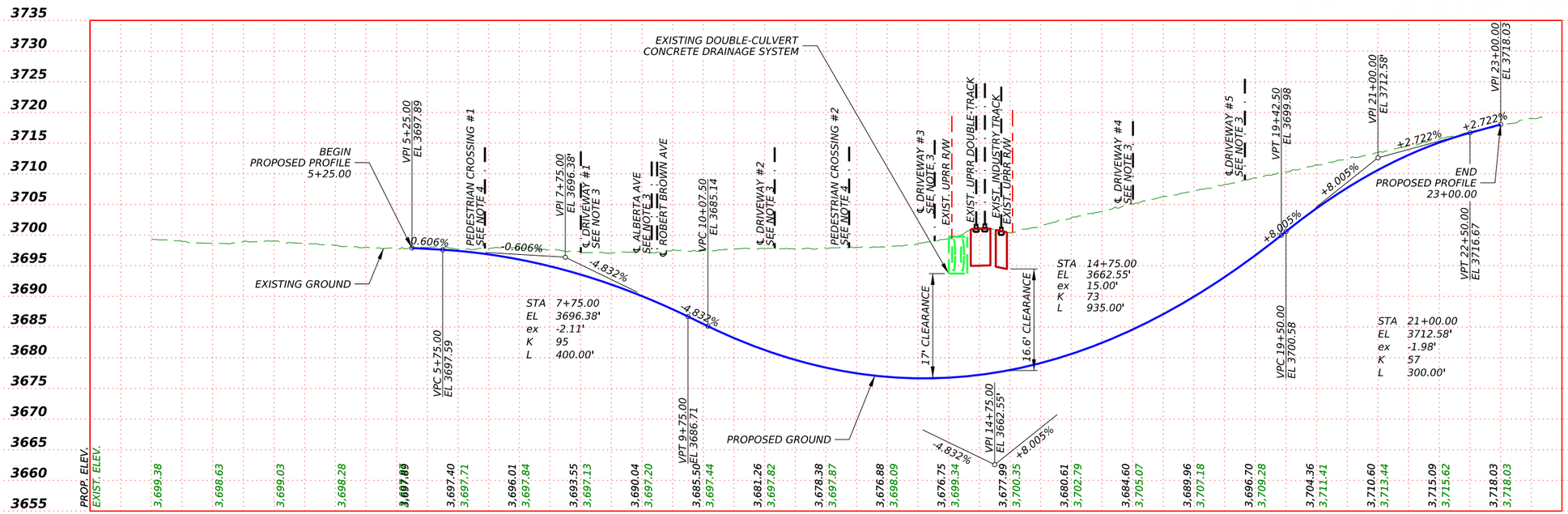
0 10 20
VERT. SCALE FEET
1" = 20'

LEGEND

- PROPOSED ROADWAY UNDERPASS
- PROPOSED SIDEWALK
- FUTURE BUILDING
- FUTURE PARKING LOT

NOTES:

1. DESIGN SPEED OF 35MPH FOR RICK FRANCIS STREET.
2. DIMENSIONS OF PROPOSED ROADWAY WIDTH VARIES FROM 23.5' TO 31.5' DUE TO THE EXISTING ROADWAY WIDTHS. PROPOSED SIDEWALK WIDTH IS 6'.
3. ALBERTA AVE AND ROBERT BROWN AVE WILL NEED TO BE CLOSED. DRIVEWAYS #1 THROUGH #5 WILL NEED TO BE CLOSED/RELOCATED.
4. PEDESTRIAN CROSSINGS #1 AND #2 TO BE CLOSED/RELOCATED.



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CONCEPT 2A: ROADWAY AND SIDEWALK UNDERPASS

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SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
N/A	N/A	N/A	RICK FRANCIS STREET
DIST	COUNTY		SHEET NO.
ELP	EL PASO		5

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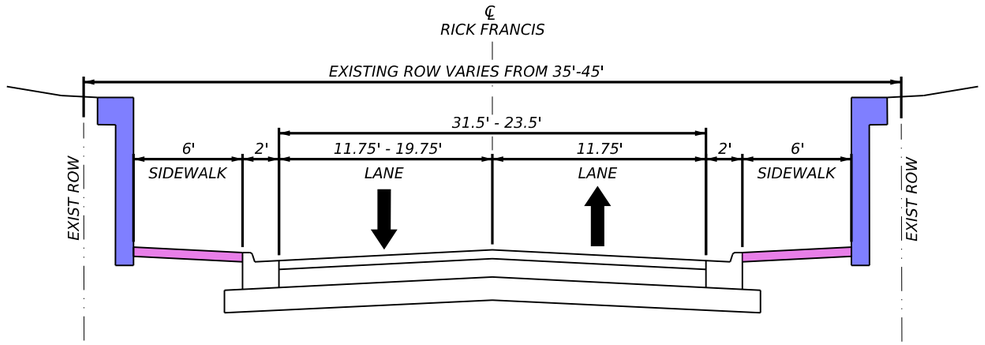

UNDERPASS CONCEPT
RETAINING WALL SECTION
TWO-LANE

N.T.S.

LEGEND

- PROPOSED ROADWAY UNDERPASS
- PROPOSED SIDEWALK
- FUTURE BUILDING
- FUTURE PARKING LOT

NOTES:

1. DESIGN SPEED OF 35MPH FOR RICK FRANCIS STREET.
2. DIMENSIONS OF PROPOSED ROADWAY WIDTH VARIES FROM 23.5' TO 31.5' DUE TO THE EXISTING ROADWAY WIDTHS. PROPOSED SIDEWALK WIDTH IS 6'.
3. ALBERTA AVE AND ROBERT BROWN AVE WILL NEED TO BE CLOSED. DRIVEWAYS #1 THROUGH #5 WILL NEED TO BE CLOSED/RELOCATED.
4. PEDESTRIAN CROSSINGS #1 AND #2 TO BE CLOSED/RELOCATED.

REV NO.	DATE	BY	REVISION

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CONCEPT 2A: ROADWAY AND SIDEWALK UNDERPASS

TTUHSC EL PASO - MOBILITY STUDY
EL PASO, TEXAS
VALENTINE SUBDIVISION

CONT	SECT	JOB	HIGHWAY
N/A	N/A	N/A	RICK FRANCIS STREET
DIST	COUNTY		SHEET NO.
ELP	EL PASO		6

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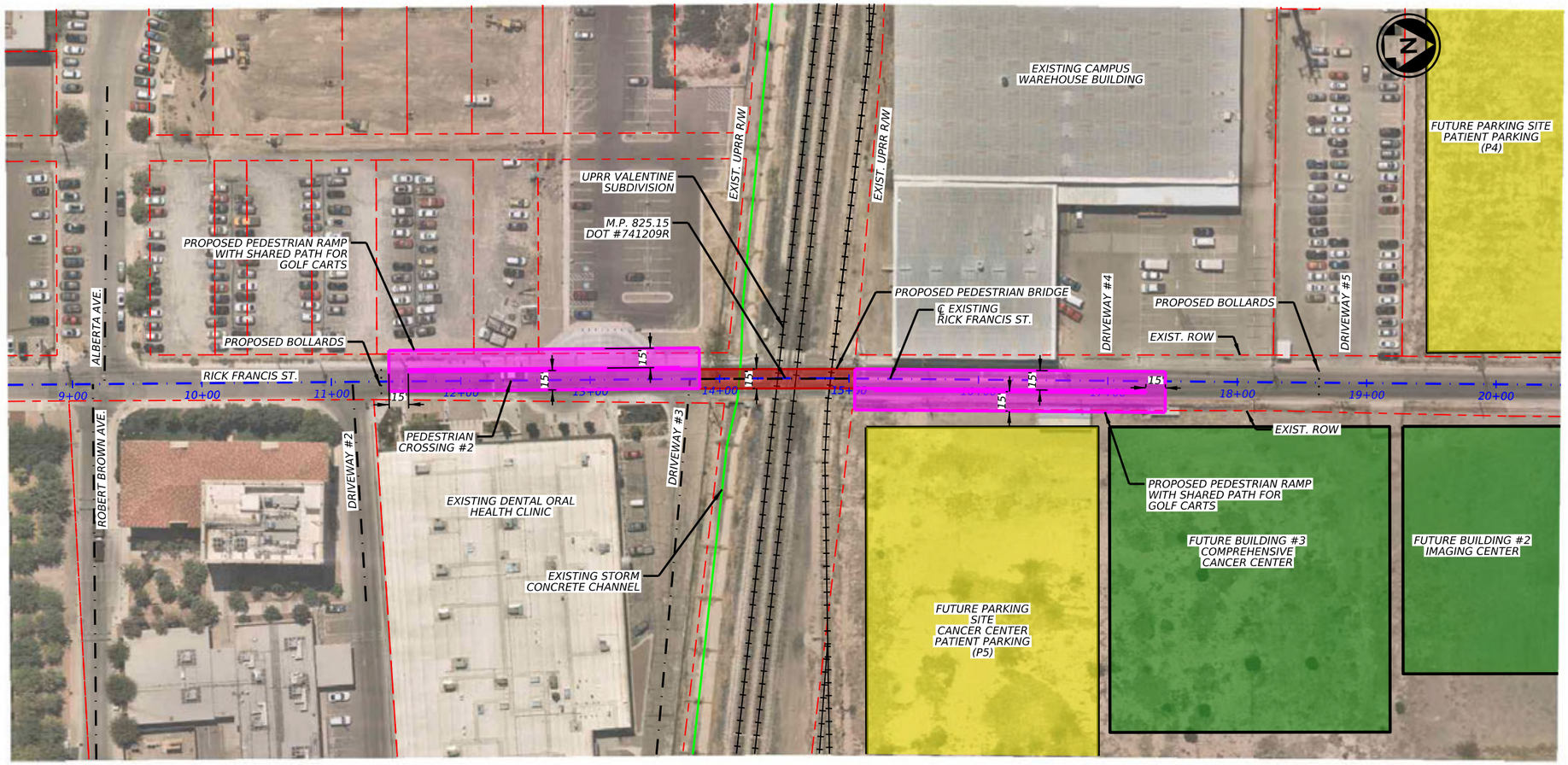

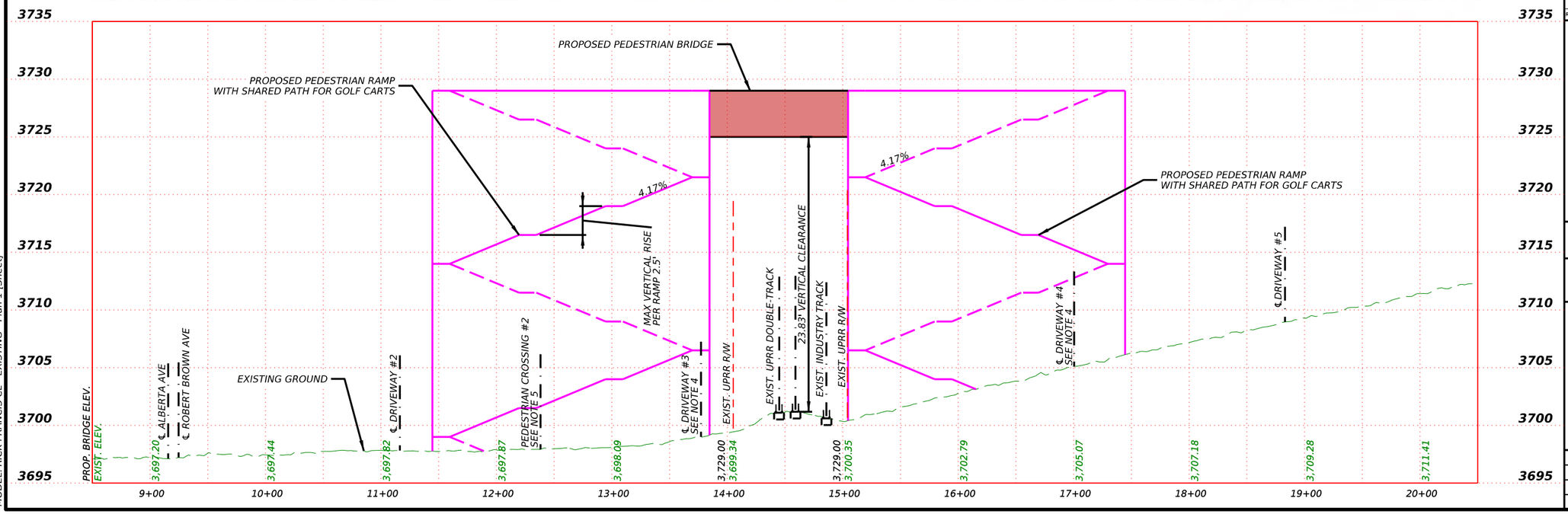

0 50 100
HORIZ. SCALE FEET
1" = 100'

0 5 10
VERT. SCALE FEET
1" = 10'

LEGEND

- PROPOSED PEDESTRIAN RAMP WITH GOLF CART SHARED USE PATH
- PROPOSED PEDESTRIAN BRIDGE
- FUTURE BUILDING
- FUTURE PARKING LOT

NOTES:

1. DESIGN SPEED OF 35MPH FOR RICK FRANCIS STREET.
2. RICK FRANCIS STREET TO REMAIN CLOSED AT LIMITS OF PROPOSED BOLLARDS.
3. DIMENSIONS SHOWN ARE MEASURED FROM EDGE OF RAILING UNLESS SHOWN OTHERWISE.
4. DRIVEWAYS #3 AND #4 WILL NEED TO BE CLOSED/RELOCATED.
5. PEDESTRIAN CROSSING #2 WILL NEED TO BE CLOSED/RELOCATED.

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CONCEPT 3: PEDESTRIAN BRIDGE AND RAMPS

TTUHSC EL PASO - MOBILITY STUDY EL PASO, TEXAS VALENTINE SUBDIVISION

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
N/A	N/A	N/A	RICK FRANCIS STREET
DIST	COUNTY		SHEET NO.
ELP	EL PASO		7

C-EXH-103.dgn

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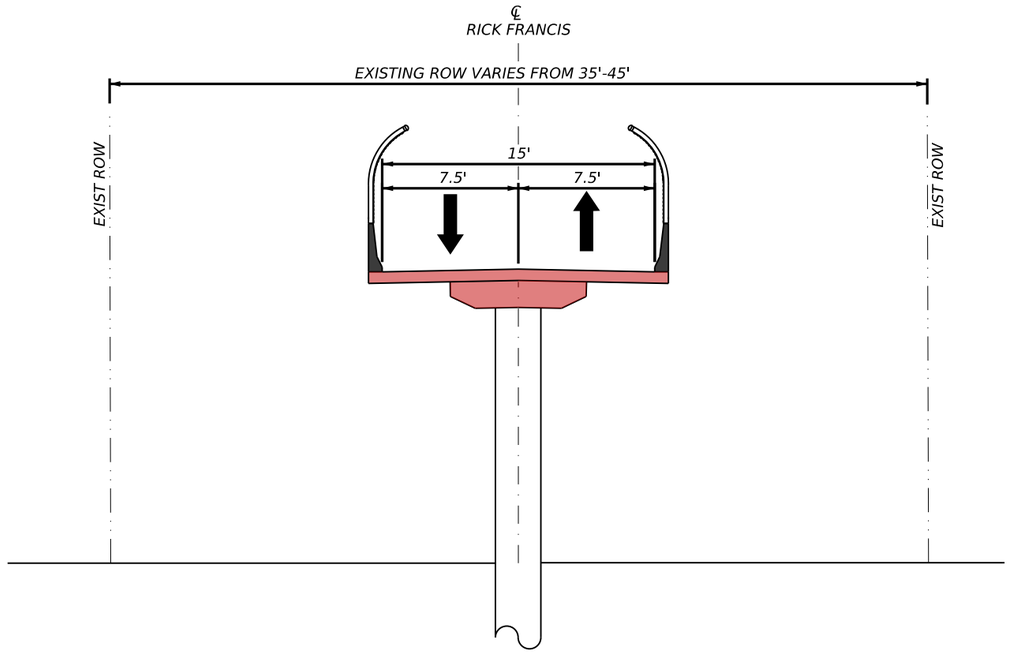

PEDESTRIAN BRIDGE CONCEPT
BRIDGE SECTION

N.T.S.

LEGEND

- PROPOSED PEDESTRIAN RAMP WITH GOLF CART SHARED USE PATH
- PROPOSED PEDESTRIAN BRIDGE
- FUTURE BUILDING
- FUTURE PARKING LOT

NOTES:

1. DESIGN SPEED OF 35MPH FOR RICK FRANCIS STREET.
2. RICK FRANCIS STREET TO REMAIN CLOSED AT LIMITS OF PROPOSED BOLLARDS.
3. DIMENSIONS SHOWN ARE MEASURED FROM EDGE OF RAILING UNLESS SHOWN OTHERWISE.
4. DRIVEWAYS #3 AND #4 WILL NEED TO BE CLOSED/RELOCATED.
5. PEDESTRIAN CROSSING #2 WILL NEED TO BE CLOSED/RELOCATED.

REV NO.	DATE	BY	REVISION

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CONCEPT 3: PEDESTRIAN BRIDGE AND RAMPS

TTUHSC EL PASO -
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EL PASO, TEXAS
VALENTINE SUBDIVISION

CONT	SECT	JOB	HIGHWAY
N/A	N/A	N/A	RICK FRANCIS STREET
DIST	COUNTY		SHEET NO.
ELP	EL PASO		8

C-TYP-303.dgn

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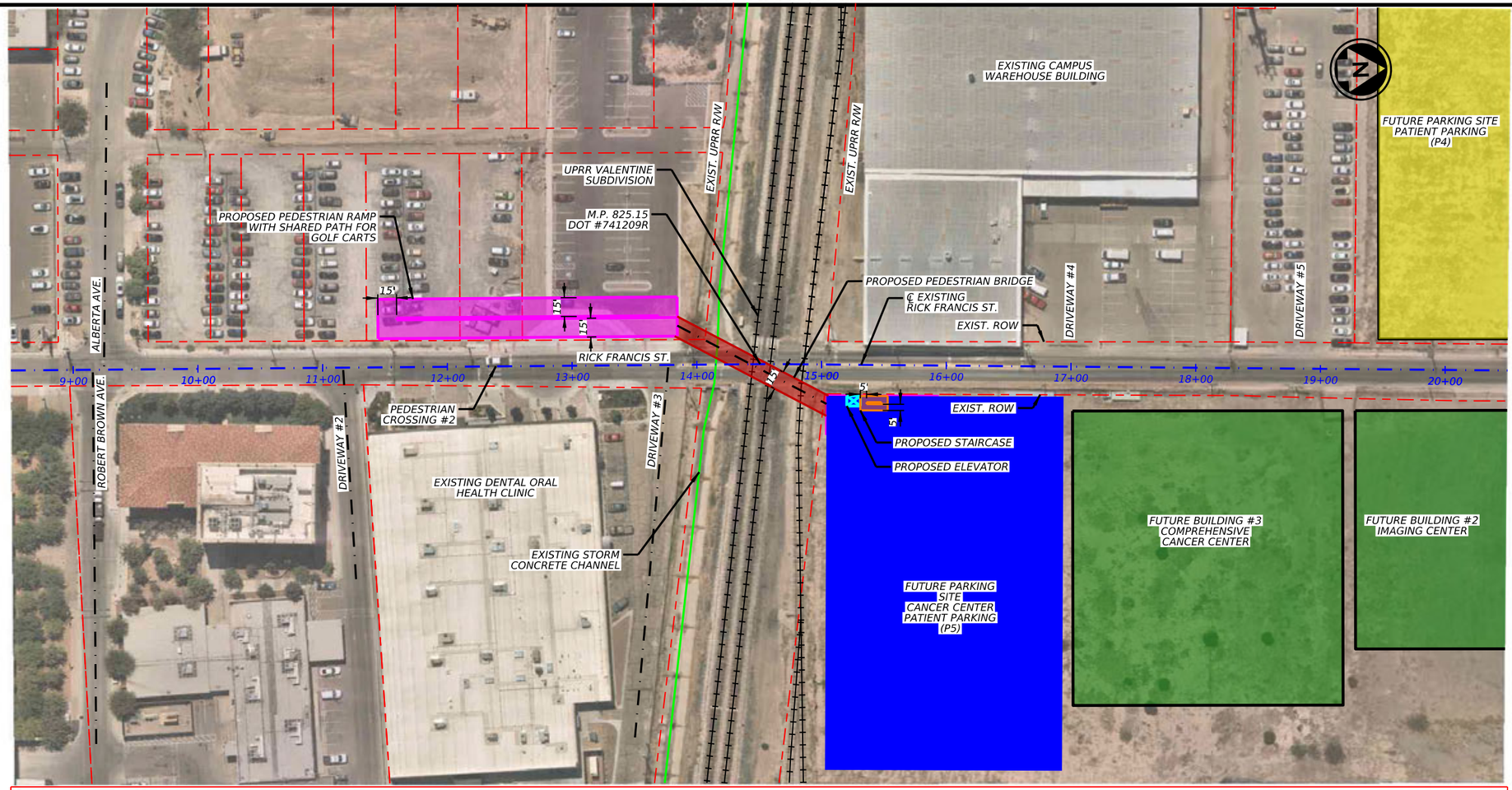


0 50 100
HORIZ. SCALE FEET
1" = 100'

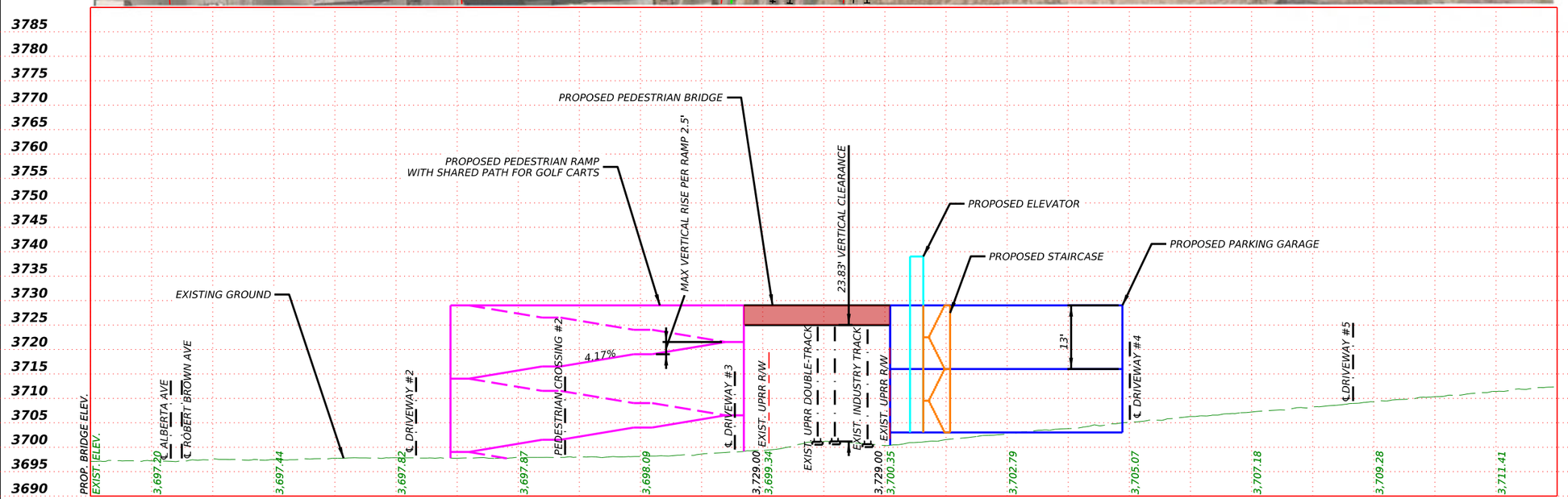
0 12.5 25
VERT. SCALE FEET
1" = 25'

LEGEND

- PROPOSED PEDESTRIAN RAMP WITH GOLF CART SHARED USE PATH
- PROPOSED PEDESTRIAN BRIDGE
- PROPOSED STAIRCASE
- PROPOSED PARKING GARAGE
- PROPOSED ELEVATOR
- FUTURE BUILDING
- FUTURE PARKING LOT

NOTES:

1. DESIGN SPEED OF 35MPH FOR RICK FRANCIS STREET.
2. DIMENSIONS SHOWN ARE MEASURED FROM EDGE OF RAILING UNLESS SHOWN OTHERWISE.
3. 3 LEVELS MINIMUM REQUIRED FOR PARKING GARAGES. MORE LEVELS IN THE PARKING GARAGE MAY BE ADDED IN MORE REFINED DESIGN PHASES.



REV NO.	DATE	BY	REVISION

PRELIMINARY SUBJECT TO CHANGE

This document is incomplete and is released for the purpose of interim review only. It is not to be used for construction, bidding or permit purposes.

TRANSYSTEMS
500 W 7TH ST SUITE 1100
FORT WORTH, TX 76102
(817) 339-8950
FIRM REG. #: 3557

CONCEPT 4: PEDESTRIAN BRIDGE, RAMPS, AND PARKING GARAGE

TTUHSC EL PASO - MOBILITY STUDY EL PASO, TEXAS VALENTINE SUBDIVISION

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
N/A	N/A	N/A	RICK FRANCIS STREET
DIST	COUNTY		SHEET NO.
ELP	EL PASO		9

C-EXH-104.dgn

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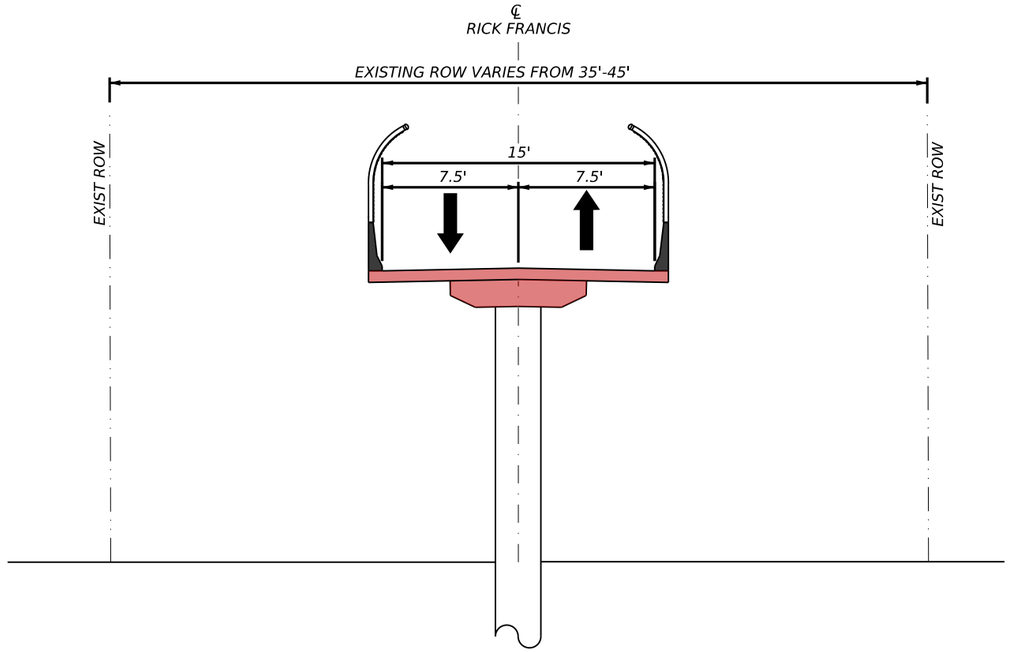

PEDESTRIAN BRIDGE CONCEPT
BRIDGE SECTION

N.T.S.

LEGEND

- PROPOSED PEDESTRIAN RAMP WITH GOLF CART SHARED USE PATH
- PROPOSED PEDESTRIAN BRIDGE
- PROPOSED STAIRCASE
- PROPOSED PARKING GARAGE
- PROPOSED ELEVATOR
- FUTURE BUILDING
- FUTURE PARKING LOT

NOTES:

1. DESIGN SPEED OF 35MPH FOR RICK FRANCIS STREET.
2. DIMENSIONS SHOWN ARE MEASURED FROM EDGE OF RAILING UNLESS SHOWN OTHERWISE.
3. 3 LEVELS MINIMUM REQUIRED FOR PARKING GARAGES. MORE LEVELS IN THE PARKING GARAGE MAY BE ADDED IN MORE REFINED DESIGN PHASES.

REV NO.	DATE	BY	REVISION

PRELIMINARY
SUBJECT TO CHANGE

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TRANSYSTEMS
500 W 7TH ST SUITE 1100
FORT WORTH, TX 76102
(817) 339-8950
FIRM REG. #: 3557

CONCEPT 4: PEDESTRIAN BRIDGE, RAMPS, AND PARKING GARAGE

TTUHSC EL PASO -
MOBILITY STUDY
EL PASO, TEXAS
VALENTINE SUBDIVISION

CONT	SECT	JOB	HIGHWAY
N/A	N/A	N/A	RICK FRANCIS STREET
DIST	COUNTY		SHEET NO.
ELP	EL PASO		10

C-TYP-304.dgn

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Texas Tech University Health Sciences Center El Paso - Mobility Study

Rick Francis Street Concept 1: Roadway and Sidewalk Overpass

Opinion of Probable Construction Cost

TranSystems

1/3/2024

ITEM No.	DESCRIPTION					UNITS	UNIT PRICE	TOTAL AMOUNT
					Estimate			
1a	**Structural**							
		Roadway Bridge Structure						
				Concrete slab/ PreStressed Conc Girder/Support System/Sidewalk	51,085	SF	$ 103.10	$ 5,266,863.50
				Railing	3,790	LF	$ 170.00	$ 644,300.00
				Chain Link Fence	3,790	LF	$ 60.00	$ 227,400.00
		Retaining Wall						
				Retaining Wall	4,866	SF	$ 100.00	$ 486,600.00
		Pedestrian Bridge Structure						
				120'x15' Pedestrian Bridge		SF	$ 150.00	$ -
				135'x15' Pedestrian Bridge		SF	$ 150.00	$ -
		Pedestrian Ramp Structure						
				240'x32' Pedestrian Ramp		EA	$ 2,030,418.00	$ -
		Drainage Channel Bridge Structure						
				Drainage Channel Bridge		SF	$ 250.00	$ -
1b	**Rail Structural**							
		Railway Bridge Structure						
				40' Railway Bridge Structures		LF	$ 20,000.00	$ -
				Railing		LF	$ 170.00	$ -
							Sub-Total	$ 6,625,163.50
							Contingency (25%)	**$ 1,656,290.88**
							Structural Sub-Total	**$ 8,281,454.38**
2a	**Roadways**							
		Concrete Paving						
				Concrete curb and gutter	416	LF	$ 55.00	$ 22,880.00
				4" Sidewalk	2,804	SY	$ 120.00	$ 336,480.00
		Asphalt Paving						
				HMA 2"	446	TON	$ 200.00	$ 89,200.00
				Flex Base 10"	1,126	CY	$ 130.00	$ 146,380.00
		Other						
				Removal of Sidewalks	1,663	SY	$ 40.00	$ 66,520.00
				Removal of asphalt pavement and base (7"-12")	5,220	SY	$ 25.00	$ 130,500.00
				Removal of curb and gutter	4,206	LF	$ 50.00	$ 210,300.00
				Prep ROW	21.03	STA	$ 5,000.00	$ 105,150.00
2b	**Earthwork**							
				Embankment	5,198	CY	$ 50.00	$ 259,900.00
				Excavation		CY	$ 40.00	$ -
							Sub-Total	**$ 1,367,310.00**
							Contingency (25%)	**$ 341,827.50**
							Roadway & Site Sub-Total	**$ 1,709,137.50**
3	**Utilities**							
				Drainage	0.40	MI	$ 750,000.00	$ 298,730.00
				Utilities adjustments (medium)	1	LS	$ 400,000.00	$ 400,000.00
				Pump Station (underpass only)		LS	$ 1,800,000.00	$ -
4	**General**							
				Railroad Flagger	1	LS	$ 100,000.00	$ 100,000.00
				Railroad Insurance	1	LS	$ 50,000.00	$ 50,000.00
				Mobilization	1	LS	$ 1,000,000.00	$ 1,000,000.00
				Traffic Control Plan	1	LS	$ 200,000.00	$ 200,000.00
				Signing & Pavement Marking	0.40	MI	$ 50,000.00	$ 19,920.00
				Storm Water Pollution Prevention Plan	0.40	MI	$ 50,000.00	$ 19,920.00
				Lighting	0.40	MI	$ 150,000.00	$ 59,750.00
							Sub-Total	**$ 2,148,320.00**
							Contingency (25%)	**$ 537,080.00**
							Utilities & General Sub-Total	**$ 2,685,400.00**
5	**Design**						10%	$ 1,267,599.19
6	**Construction Inspection**						8%	$ 1,014,079.35
7	**Contingency**						4%	$ 507,039.68
							Total	**$ 15,464,710.09**

Texas Tech University Health Sciences Center El Paso - Mobility Study

Rick Francis Street Concept 1: Roadway and Sidewalk Overpass

Opinion of Probable Construction Cost

Theoretical Cost Estimate

TranSystems

1/3/2024

ITEM No.	DESCRIPTION				UNITS	UNIT PRICE	TOTAL AMOUNT
				Estimate			
1a	**Structural**						
		Roadway Bridge Structure					
			Concrete slab/ PreStressed Conc Girder/Support System/Sidewalk	51,085	SF	$ 103.10	$ 5,266,863.50
			Railing	3,790	LF	$ 170.00	$ 644,300.00
			Chain Link Fence	3,790	LF	$ 60.00	$ 227,400.00
		Retaining Wall					
			Retaining Wall	4,866	SF	$ 100.00	$ 486,600.00
		Pedestrian Bridge Structure					
			120'x15' Pedestrian Bridge		SF	$ 150.00	$ -
			135'x15' Pedestrian Bridge		SF	$ 150.00	$ -
		Pedestrian Ramp Structure					
			240'x32' Pedestrian Ramp		EA	$ 2,030,418.00	$ -
		Drainage Channel Bridge Structure					
			Drainage Channel Bridge		SF	$ 250.00	$ -
1b	**Rail Structural**						
		Railway Bridge Structure					
			40' Railway Bridge Structures		LF	$ 20,000.00	$ -
			Railing		LF	$ 170.00	$ -
						Sub-Total	$ 6,625,163.50
						Contingency (25%)	**$ 1,656,290.88**
						Structural Sub-Total	**$ 8,281,454.38**
2a	**Roadways**						
		Concrete Paving					
			Concrete curb and gutter	208	LF	$ 55.00	$ 11,440.00
			4" Sidewalk	1,402	SY	$ 120.00	$ 168,240.00
		Asphalt Paving					
			HMA 2"	446	TON	$ 200.00	$ 89,200.00
			Flex Base 10"	1,126	CY	$ 130.00	$ 146,380.00
		Other					
			Removal of Sidewalks	1,663	SY	$ 40.00	$ 66,520.00
			Removal of asphalt pavement and base (7"-12")	5,220	SY	$ 25.00	$ 130,500.00
			Removal of curb and gutter	4,206	LF	$ 50.00	$ 210,300.00
			Prep ROW	21.03	STA	$ 5,000.00	$ 105,150.00
2b	**Earthwork**						
			Embankment	5,198	CY	$ 50.00	$ 259,900.00
			Excavation		CY	$ 40.00	$ -
						Sub-Total	**$ 1,187,630.00**
						Contingency (25%)	**$ 296,907.50**
						Roadway & Site Sub-Total	**$ 1,484,537.50**
3	**Utilities**						
			Drainage	0.40	MI	$ 750,000.00	$ 298,730.00
			Utilities adjustments (medium)	1	LS	$ 400,000.00	$ 400,000.00
			Pump Station (underpass only)		LS	$ 1,800,000.00	$ -
4	**General**						
			Railroad Flagger	1	LS	$ 100,000.00	$ 100,000.00
			Railroad Insurance	1	LS	$ 50,000.00	$ 50,000.00
			Mobilization	1	LS	$ 1,000,000.00	$ 1,000,000.00
			Traffic Control Plan	1	LS	$ 200,000.00	$ 200,000.00
			Signing & Pavement Marking	0.40	MI	$ 50,000.00	$ 19,920.00
			Storm Water Pollution Prevention Plan	0.40	MI	$ 50,000.00	$ 19,920.00
			Lighting	0.40	MI	$ 150,000.00	$ 59,750.00
						Sub-Total	**$ 2,148,320.00**
						Contingency (25%)	**$ 537,080.00**
						Utilities & General Sub-Total	**$ 2,685,400.00**
5	**Design**					10%	$ 1,245,139.19
6	**Construction Inspection**					8%	$ 996,111.35
7	**Contingency**					4%	$ 498,055.68
						Total	**$ 15,190,698.09**

Texas Tech University Health Sciences Center El Paso - Mobility Study

Rick Francis Street Concept 2: Roadway and Sidewalk Underpass

Opinion of Probable Construction Cost

TranSystems

1/3/2024

ITEM No.	DESCRIPTION					UNITS	UNIT PRICE	TOTAL AMOUNT
					Estimate			
1a	**Structural**							
		Roadway Bridge Structure						
			Concrete slab/ PreStressed Conc Girder/Support System/Sidewalk			SF	$ 103.10	$ -
			Railing			LF	$ 170.00	$ -
			Chain Link Fence			LF	$ 60.00	$ -
		Retaining Wall						
			Retaining Wall		48,146	SF	$ 100.00	$ 4,814,600.00
		Pedestrian Bridge Structure						
			120'x15' Pedestrian Bridge			SF	$ 150.00	$ -
			135'x15' Pedestrian Bridge			SF	$ 150.00	$ -
		Pedestrian Ramp Structure						
			240'x32' Pedestrian Ramp			EA	$ 2,030,418.00	$ -
		Drainage Channel Bridge Structure						
			Drainage Channel Bridge		1,350	SF	$ 250.00	$ 337,500.00
1b	**Rail Structural**							
		Railway Bridge Structure						
			(3) 40' Railway Bridge Structures		120	LF	$ 20,000.00	$ 2,400,000.00
			Railing		240	LF	$ 170.00	$ 40,800.00
							Sub-Total	$ 7,592,900.00
							Contingency (25%)	**$ 1,898,225.00**
							Structural Sub-Total	**$ 9,491,125.00**
2a	**Roadways**							
		Concrete Paving						
			Concrete curb and gutter		4,206	LF	$ 55.00	$ 231,330.00
			4" Sidewalk		2,804	SY	$ 120.00	$ 336,480.00
		Asphalt Paving						
			HMA 2"		605	TON	$ 200.00	$ 121,000.00
			Flex Base 10"		1,785	CY	$ 130.00	$ 232,050.00
		Other						
			Removal of Sidewalks		1,663	SY	$ 40.00	$ 66,520.00
			Removal of asphalt pavement and base (7"-12")		5,220	SY	$ 25.00	$ 130,500.00
			Removal of curb and gutter		4,206	LF	$ 50.00	$ 210,300.00
			Prep ROW		21.03	STA	$ 5,000.00	$ 105,150.00
2b	**Earthwork**							
			Embankment		-	CY	$ 50.00	$ -
			Excavation		39,231	CY	$ 40.00	$ 1,569,240.00
							Sub-Total	**$ 3,002,570.00**
							Contingency (25%)	**$ 750,642.50**
							Roadway & Site Sub-Total	**$ 3,753,212.50**
3	**Utilities**							
			Drainage		0.40	MI	$ 750,000.00	$ 298,730.00
			Utilities adjustments (high)		1	LS	$ 500,000.00	$ 500,000.00
			Pump Station (underpass only)		1	LS	$ 1,800,000.00	$ 1,800,000.00
4	**General**							
			Railroad Flagger		1	LS	$ 100,000.00	$ 100,000.00
			Railroad Insurance		1	LS	$ 50,000.00	$ 50,000.00
			Mobilization		1	LS	$ 1,300,000.00	$ 1,300,000.00
			Traffic Control Plan		1	LS	$ 260,000.00	$ 260,000.00
			Signing & Pavement Marking		0.40	MI	$ 50,000.00	$ 19,920.00
			Storm Water Pollution Prevention Plan		0.40	MI	$ 50,000.00	$ 19,920.00
			Lighting		0.40	MI	$ 150,000.00	$ 59,750.00
							Sub-Total	**$ 4,408,320.00**
							Contingency (25%)	**$ 1,102,080.00**
							Utilities & General Sub-Total	**$ 5,510,400.00**
5	**Design**						10%	$ 1,875,473.75
6	**Construction Inspection**						8%	$ 1,500,379.00
7	**Contingency**						4%	$ 750,189.50
							Total	**$ 22,880,779.75**

Texas Tech University Health Sciences Center El Paso - Mobility Study

Rick Francis Street Concept 2: Roadway and Sidewalk Underpass

Opinion of Probable Construction Cost

Theoretical Cost Estimate

TranSystems

1/3/2024

ITEM No.	DESCRIPTION				UNITS	UNIT PRICE	TOTAL AMOUNT
				Estimate			
1a	**Structural**						
		Roadway Bridge Structure					
			Concrete slab/ PreStressed Conc Girder/Support System/Sidewalk		SF	$ 103.10	$ -
			Railing		LF	$ 170.00	$ -
			Chain Link Fence		LF	$ 60.00	$ -
		Retaining Wall					
			Retaining Wall	48,146	SF	$ 100.00	$ 4,814,600.00
		Pedestrian Bridge Structure					
			120'x15' Pedestrian Bridge		SF	$ 150.00	$ -
			135'x15' Pedestrian Bridge		SF	$ 150.00	$ -
		Pedestrian Ramp Structure					
			240'x32' Pedestrian Ramp		EA	$ 2,030,418.00	$ -
		Drainage Channel Bridge Structure					
			Drainage Channel Bridge	1,350	LF	$ 250.00	$ 337,500.00
1b	**Rail Structural**						
		Railway Bridge Structure					
			(3) 40' Railway Bridge Structures	120	LF	$ 20,000.00	$ 2,400,000.00
			Railing	240	LF	$ 170.00	$ 40,800.00
						Sub-Total	$ 7,592,900.00
						Contingency (25%)	**$ 1,898,225.00**
						Structural Sub-Total	**$ 9,491,125.00**
2a	**Roadways**						
		Concrete Paving					
			Concrete curb and gutter	2,103	LF	$ 55.00	$ 115,665.00
			4" Sidewalk	1,402	SY	$ 120.00	$ 168,240.00
		Asphalt Paving					
			HMA 2"	605	TON	$ 200.00	$ 121,000.00
			Flex Base 10"	1,785	CY	$ 130.00	$ 232,050.00
		Other					
			Removal of Sidewalks	1,663	SY	$ 40.00	$ 66,520.00
			Removal of asphalt pavement and base (7"-12")	5,220	SY	$ 25.00	$ 130,500.00
			Removal of curb and gutter	4,206	LF	$ 50.00	$ 210,300.00
			Prep ROW	21.03	STA	$ 5,000.00	$ 105,150.00
2b	**Earthwork**						
			Embankment	-	CY	$ 50.00	$ -
			Excavation	39,231	CY	$ 40.00	$ 1,569,240.00
						Sub-Total	**$ 2,718,665.00**
						Contingency (25%)	**$ 679,666.25**
						Roadway & Site Sub-Total	**$ 3,398,331.25**
3	**Utilities**						
			Drainage	0.40	MI	$ 750,000.00	$ 298,730.00
			Utilities adjustments (high)	1	LS	$ 500,000.00	$ 500,000.00
			Pump Station (underpass only)	1	LS	$ 1,800,000.00	$ 1,800,000.00
4	**General**						
			Railroad Flagger	1	LS	$ 100,000.00	$ 100,000.00
			Railroad Insurance	1	LS	$ 50,000.00	$ 50,000.00
			Mobilization	1	LS	$ 1,300,000.00	$ 1,300,000.00
			Traffic Control Plan	1	LS	$ 260,000.00	$ 260,000.00
			Signing & Pavement Marking	0.40	MI	$ 50,000.00	$ 19,920.00
			Storm Water Pollution Prevention Plan	0.40	MI	$ 50,000.00	$ 19,920.00
			Lighting	0.40	MI	$ 150,000.00	$ 59,750.00
						Sub-Total	**$ 4,408,320.00**
						Contingency (25%)	**$ 1,102,080.00**
						Utilities & General Sub-Total	**$ 5,510,400.00**
5	**Design**					10%	$ 1,839,985.63
6	**Construction Inspection**					8%	$ 1,471,988.50
7	**Contingency**					4%	$ 735,994.25
						Total	**$ 22,447,824.63**

Texas Tech University Health Sciences Center El Paso - Mobility Study

Rick Francis Street Concept 3: Pedestrian Bridge and Ramps

Opinion of Probable Construction Cost

TranSystems

1/3/2024

ITEM No.	DESCRIPTION				Estimate	UNITS	UNIT PRICE	TOTAL AMOUNT
1a	**Structural**							
		Roadway Bridge Structure						
				Concrete slab/ PreStressed Conc Girder/Support System/Sidewalk		SF	$ 103.10	$ -
				Railing		LF	$ 170.00	$ -
				Chain Link Fence		LF	$ 60.00	$ -
		Retaining Wall						
				Retaining Wall		SF	$ 100.00	$ -
		Pedestrian Bridge Structure						
				120'x15' Pedestrian Bridge	1,800	SF	$ 150.00	$ 270,000.00
				135'x15' Pedestrian Bridge		SF	$ 150.00	$ -
		Pedestrian Ramp Structure						
				(2) 240'x32' Pedestrian Ramp	2	EA	$ 2,030,418.00	$ 4,060,836.00
		Drainage Channel Bridge Structure						
				Drainage Channel Bridge		SF	$ 250.00	$ -
1b	**Rail Structural**							
		Railway Bridge Structure						
				(3) 40' Railway Bridge Structures		LF	$ 20,000.00	$ -
				Railing		LF	$ 170.00	$ -
							Sub-Total	$ 4,330,836.00
							Contingency (25%)	**$ 1,082,709.00**
							Structural Sub-Total	**$ 5,413,545.00**
2a	**Roadways**							
		Concrete Paving						
				Concrete curb and gutter		LF	$ 55.00	$ -
				4" Sidewalk		SY	$ 120.00	$ -
		Asphalt Paving						
				HMA 2"		TON	$ 200.00	$ -
				Flex Base 10"		CY	$ 130.00	$ -
		Other						
				Removal of Sidewalks	120	SY	$ 40.00	$ 4,800.00
				Removal of asphalt pavement and base (7"-12")	1,025	SY	$ 25.00	$ 25,625.00
				Removal of curb and gutter	910	LF	$ 50.00	$ 45,500.00
				Prep ROW	8.00	STA	$ 5,000.00	$ 40,000.00
2b	**Earthwork**							
				Embankment		CY	$ 50.00	$ -
				Excavation		CY	$ 40.00	$ -
							Sub-Total	**$ 115,925.00**
							Contingency (25%)	**$ 28,981.25**
							Roadway & Site Sub-Total	**$ 144,906.25**
3	**Utilities**							
				Drainage	0.15	MI	$ 750,000.00	$ 113,640.00
				Utilities adjustments (small)	1	LS	$ 220,000.00	$ 220,000.00
				Pump Station (underpass only)		LS	$ 1,800,000.00	$ -
4	**General**							
				Railroad Flagger	1	LS	$ 100,000.00	$ 100,000.00
				Railroad Insurance	1	LS	$ 50,000.00	$ 50,000.00
				Mobilization	1	LS	$ 600,000.00	$ 600,000.00
				Traffic Control Plan	1	LS	$ 110,000.00	$ 110,000.00
				Signing & Pavement Marking	0.15	MI	$ 50,000.00	$ 7,580.00
				Storm Water Pollution Prevention Plan	0.15	MI	$ 50,000.00	$ 7,580.00
				Lighting	0.15	MI	$ 150,000.00	$ 22,730.00
							Sub-Total	**$ 1,231,530.00**
							Contingency (25%)	**$ 307,882.50**
							Utilities & General Sub-Total	**$ 1,539,412.50**
5	**Design**						10%	$ 709,786.38
6	**Construction Inspection**						8%	$ 567,829.10
7	**Contingency**						4%	$ 283,914.55
							Total	**$ 8,659,393.78**

Texas Tech University Health Sciences Center El Paso - Mobility Study

Rick Francis Street Concept 4: Pedestrian Bridge, Ramps, and Parking Garage

Opinion of Probable Construction Cost

TranSystems

1/3/2024

ITEM No.	DESCRIPTION				Estimate	UNITS	UNIT PRICE	TOTAL AMOUNT
1a	**Structural**							
		Roadway Bridge Structure						
				Concrete slab/ PreStressed Conc Girder/Support System/Sidewalk		SF	$ 103.10	$ -
				Railing		LF	$ 170.00	$ -
				Chain Link Fence		LF	$ 60.00	$ -
		Retaining Wall						
				Retaining Wall		SF	$ 100.00	$ -
		Pedestrian Bridge Structure						
				120'x15' Pedestrian Bridge		SF	$ 150.00	$ -
				135'x15' Pedestrian Bridge	2,025	SF	$ 150.00	$ 303,750.00
		Pedestrian Ramp Structure						
				(1) 240'x32' Pedestrian Ramp	1	EA	$ 2,030,418.00	$ 2,030,418.00
		Drainage Channel Bridge Structure						
				Drainage Channel Bridge		SF	$ 250.00	$ -
1b	**Rail Structural**							
		Railway Bridge Structure						
				(3) 40' Railway Bridge Structures		LF	$ 20,000.00	$ -
				Railing		LF	$ 170.00	$ -
							Sub-Total	$ 2,334,168.00
							Contingency (25%)	**$ 583,542.00**
							Structural Sub-Total	**$ 2,917,710.00**
2a	**Roadways**							
		Concrete Paving						
				Concrete curb and gutter		LF	$ 55.00	$ -
				4" Sidewalk		SY	$ 120.00	$ -
		Asphalt Paving						
				HMA 2"		TON	$ 200.00	$ -
				Flex Base 10"		CY	$ 130.00	$ -
		Other						
				Removal of Sidewalks	60	SY	$ 40.00	$ 2,400.00
				Removal of asphalt pavement and base (7"-12")	853	SY	$ 25.00	$ 21,333.33
				Removal of curb and gutter		LF	$ 50.00	$ -
				Prep ROW	8.00	STA	$ 5,000.00	$ 40,000.00
2b	**Earthwork**							
				Embankment		CY	$ 50.00	$ -
				Excavation		CY	$ 40.00	$ -
							Sub-Total	**$ 63,733.33**
							Contingency (25%)	**$ 15,933.33**
							Roadway & Site Sub-Total	**$ 79,666.67**
3	**Utilities**							
				Drainage	0.15	MI	$ 750,000.00	$ 113,640.00
				Utilities adjustments (small)	1	LS	$ 100,000.00	$ 100,000.00
				Pump Station (underpass only)		LS	$ 1,800,000.00	$ -
4	**General**							
				Railroad Flagger	1	LS	$ 100,000.00	$ 100,000.00
				Railroad Insurance	1	LS	$ 50,000.00	$ 50,000.00
				Mobilization	1	LS	$ 300,000.00	$ 300,000.00
				Traffic Control Plan	1	LS	$ 60,000.00	$ 60,000.00
				Signing & Pavement Marking	0.15	MI	$ 50,000.00	$ 7,580.00
				Storm Water Pollution Prevention Plan	0.15	MI	$ 50,000.00	$ 7,580.00
				Lighting	0.15	MI	$ 150,000.00	$ 22,730.00
							Sub-Total	**$ 761,530.00**
							Contingency (25%)	**$ 190,382.50**
							Utilities & General Sub-Total	**$ 951,912.50**
5	**Design**						10%	$ 394,928.92
6	**Construction Inspection**						8%	$ 315,943.13
7	**Contingency**						4%	$ 157,971.57
							Total	**$ 4,818,132.78**

APPENIDIX C

Stakeholder Engagement: Meeting Summaries and Presentations

Texas Department of Transportation
125 EAST 11TH STREET | AUSTIN, TEXAS 78701-2483 | (512) 463-8588 | WWW.TXDOT.GOV

El Paso - Texas Tech University Health Sciences Center
Mobility Study
Stakeholder Meeting #1

July 17, 2023
10:00 AM CST / 9:00 AM MST

Virtual Meeting
Microsoft Teams

Agenda

I. **Introduction**
   a. Project Team
   b. Safety Briefing

II. **Project Purpose and Background**
   a. Project Purpose
   b. Study Area
   c. Scope of Services

III. **Existing Conditions**
   a. Campus Land Use and Development
   b. Rail Characteristics
   c. Bicycle and Pedestrian Characteristics

IV. **Concept Development**
   a. Potential Considerations
   b. Case Study Examples

V. **Next Steps**
   a. Schedule
      i. Meeting #2: Concept Alternatives Review
      ii. Meeting #3: Final Concept and Next Steps
   b. Conceptual Layouts for Improvement Options

Texas Department of Transportation
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El Paso - Texas Tech University Health Sciences Center
Mobility Study
Stakeholder Meeting #1

July 17, 2023
10:00 AM CST / 9:00 AM MST

Virtual Meeting
Microsoft Teams

Summary

Meeting Overview

A stakeholder meeting was held virtually on July 17, 2023. The meeting provided an opportunity for relevant stakeholder groups to be introduced to the project, review existing conditions data and analysis, and have initial discussions regarding concept development.

Meeting Attendees

Name	Agency	Title
Jose (Joe) Madrid	TxDOT - El Paso District	Rail Coordinator
Marty Boyd	TxDOT - El Paso District	Transportation Planning
Jess Geray	TxDOT - Rail Division	Planner
Al Flores	Texas Tech Health Sciences Center	Managing Director of Physical Plant
Jessica Fisher	Texas Tech Health Sciences Center	Interim VP for Finance and Administration
Rick Lange	Texas Tech Health Sciences Center	University President
Joaquin Rodriguez	City of El Paso	Transportation Planning Administrator
Anna Zendt	City of El Paso	Bicycle and Pedestrian Manager
Tyson Moeller	Union Pacific Railroad (UPRR)	General Director of Network Development
Deanne Winkelmann	TranSystems	Project Manager
Emma Martin	TranSystems	Engineer/Planner
Payton Smith	TranSystems	Planner
Hunter McGahan	TranSystems	Engineer
Sara Clark	TranSystems	Senior Advisor

I. Introduction

Each attendee provided their name and organization. Deanne Winkelmann (TranSystems) conducted a safety briefing.

II. Project Purpose and Background

Deanne Winkelmann (TranSystems) provided an introduction to the study. The study propose is to develop and evaluate grade separation concepts across the Union Pacific Railroad (UPRR)

corridor to safely connect the Texas Tech University Health Sciences Center campus. The I.2-mile rail corridor from I-110 to Paisano Drive includes five existing rail crossings – three (3) grade-separated crossings and two (2) at-grade crossings at Rick Francis Street and Chelsea Street.

The study scope generally includes an analysis of existing multimodal condition, concept development, and feasibility evaluation of concepts. Concept development will be looking at grade separation options that include vehicular traffic, options for bicyclists and/or pedestrians only, and other safety considerations.

III. Existing Conditions

Deanne Winkelmann (TranSystems) and Emma Martin (TranSystems) reviewed existing conditions include campus land use, rail characteristics, and bicycle and pedestrian characteristics.

Rail Characteristics

- Tyson Moeller (UPRR) emphasized the importance of preserving space for potential triple track expansion within the existing rail corridor.
- Joaquin Rodriguez (City of El Paso) noted a City Council member for the area has expressed interest in reopening the crossing at Boone Street, which was closed in 2021, to accommodate commercial growth north of the railroad. It is important to note the Boone Street crossing was closed due to the recent quiet zone agreement.
- Al Flores (TTUHSC) noted that the self-reported blocked crossing data seemed low based on his observations and the experience of other people on campus. He estimated that some trains travel slowly and may take 5 to 15 minutes to clear the crossings and there are intervals where trains are stopped on the tracks at Rick Francis Street and Chelsea Street. He expressed concern with students and staff attempting to crawl between railcars when stopped on the tracks, mostly at Rick Francis Street. There have been other reports of loitering near the tracks in the neighborhoods.
- To better help the public understand why blocked crossings take place in this area, Tyson Moeller (UPRR) suggested adding context by showing the proximity of the project area to the two railroad yards in the area: Alfalfa Rail Yard (approximately 2.7 miles east of campus) and the Dallas Rail Yard (approximately 1.7 miles west of campus). Most trains operating along this corridor are approximately 10,000 feet and crew changes occur within the yards.

Bicycle and Pedestrian Characteristics

- Marty Boyd (TxDOT - El Paso District) encouraged the project team to coordinate with TxDOT on two relevant studies within the project area: (1) Alameda Avenue SH20 Corridor Study and (2) US-85 Paisano Corridor Study. The SH20 Corridor Study (Jacobs) is currently being completed by a consultant and the US-85 Corridor Study (Kimley-Horn) has some improvements that may be relevant to campus.
- Rick Lange (TTUHSC) made a comment about the bicycle and pedestrian counts being an under representation of the normal traffic, as the counts were conducted during the summer period when school is not in session.
- Joaquin Rodriquez (City of El Paso) encouraged the project team to review the Texas Tech Medical Campus of America (MCA) regulating plan for more detail regarding potential improvements and campus developments. He also inquired about projecting bicycle and pedestrian traffic counts for future consideration.

IV. Concept Development

Deanne Winkelmann (TranSystems) described design considerations that would be explore during concept development including potential crossing locations (existing crossing vs. alternate location), crossing positions (overpass vs. underpass), and users (vehicular vs. bicycle/pedestrian only). Upon initial review, a significant concrete drainage channel is located on the south side of the tracks and may limit feasibility of an underpass. For brainstorming purposes, grade separation examples from other campuses or similar situations were shared as case studies.

Stakeholder Discussion

- Tyson Moeller (UPRR) expressed that the UPRR structures group will encourage overpass concept design due to significant associated maintenance cost for underpasses. If an underpass is proven as a better option, the city or university may be responsible for maintenance costs.
- Al Flores (TTUHSC) asked who would take ownership of the structure. The project team indicated that ownership would likely be included in an agreement between the university, city, and UPRR. The project team will continue to look into this item and provide more information at a later time. The group briefly discussed the need for a Memorandum of Understanding (MOU) regarding maintenance as well.
- Al Flores (TTUHSC) had concerns with the walking distance of an overpass due to the required grades, as a current challenge with the Raynolds Street grade separated crossing is that it is underutilized because of the longer distance. His initial concern regarding an overpass option on Rick Francis Street is that the required grades would be too extensive and could not be accommodate within the campus configuration, street right-of-way, and/or it would be underutilized by pedestrians.
- Al Flores (TTUHSC) emphasized the university's preference of accommodating all modes including vehicular traffic in concept designs. The university needs to serve vehicles, pedestrians, and shuttles/trains to meet the needs of all students.
- Rick Lange (TTUHSC) explained current campus development plans which include relocation of a Cancer Center and a Campus Clinic north of the railroad on Rick Francis Street (see map for approximate location). It will be important to ensure patient care and facility access for staff and students. The RFQ for building design was recently released and the university received funding that will require the university to break ground within the next two years. Until there is a permanent dental building, there are no plans for structured parking.

IV. Next Steps

Deanne Winkelmann (TranSystems) shared the study schedule and timeframe for the next stakeholder meetings. The project team anticipates conducting an on-site visit in August and may follow-up with individual stakeholders for more detailed questions.

Rick Lange (TTUHSC) and Al Flores (TTUHSC) mentioned they would be willing to meet with project team staff during the site visit as their schedule allows. TranSystems will follow-up with them to coordinate.

Action Items

- TranSystems to coordinate with TxDOT - El Paso District to review (1) Alameda Avenue SH20 Corridor Study and (2) US-85 Paisano Corridor Study.
- TranSystems to coordinate with City of El Paso to review Texas Tech MCA regulation plan.
- TranSystems to follow-up with TTUHSC staff for further detail regarding campus plans for buildings, planned infrastructure improvements, and other related development.
- TranSystems to coordinate with TTUHSC staff regarding plans for the site visit. TTUHSC staff has expressed an interest in meeting with the project as their schedule allows.

EL PASO

Texas Tech University Health Sciences Center

Mobility Study

Existing Conditions Overview

Stakeholder Meeting #1

July 17, 2023

Agenda

1. Introduction
2. Safety Briefing
3. Project Purpose and Background
4. Existing Conditions
5. Concept Development and Case Studies
6. Next Steps

Introduction

Consultant Team - TranSystems

- Deanne Winkelmann, AICP *Project Manager*
- Emma Martin, EI *Traffic Engineer/Planner*
- Payton Smith *Planner*
- Hunter McGahan *Engineer*
- Sara Clark, PE *Senior Advisor*

Texas Department of Transportation - Rail Division

- Jess Geray, AICP, EDFP *Planner*

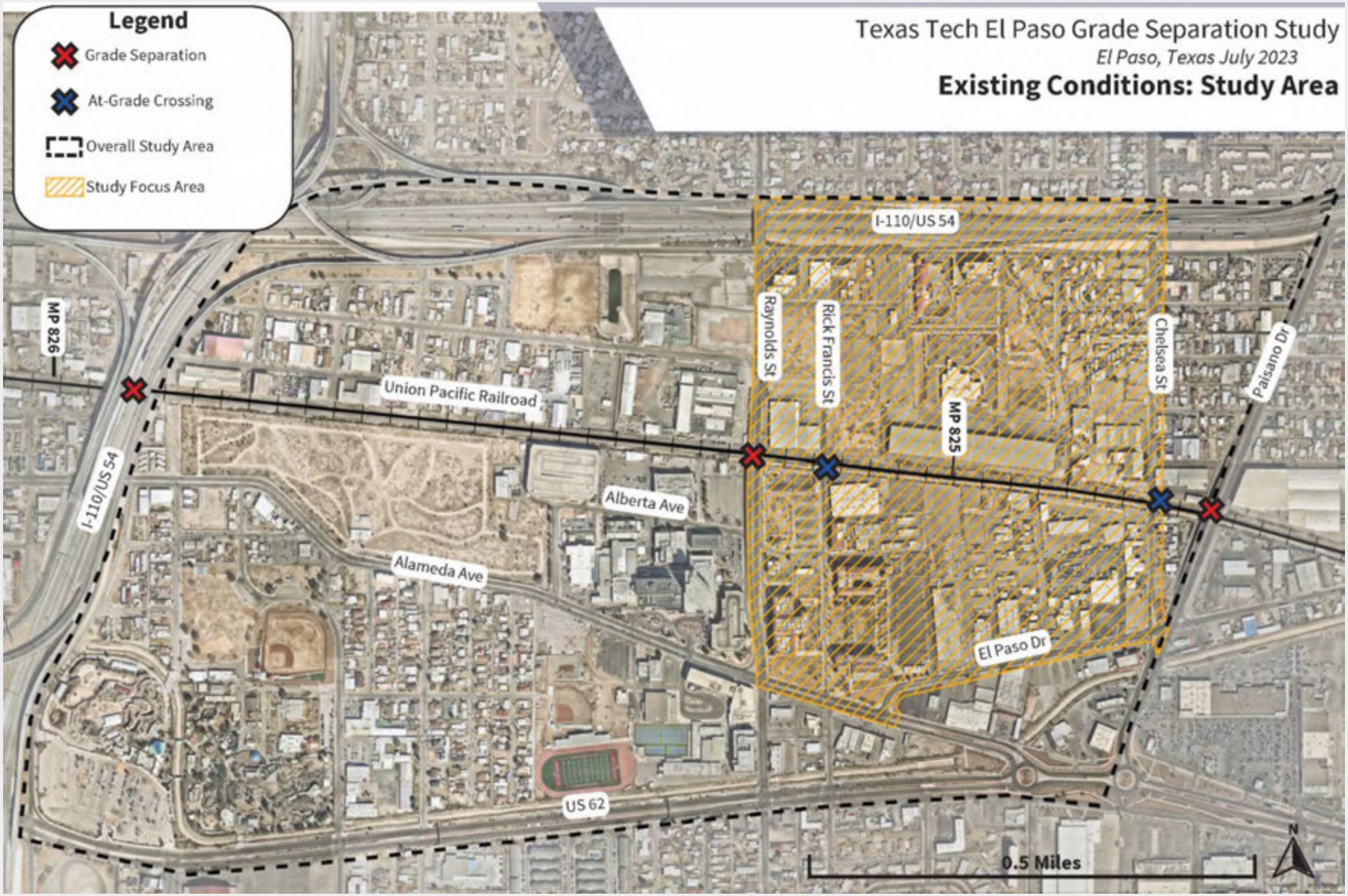
Safety Briefing

- Railroad tracks are private property and it is illegal to photograph on railroad tracks.
- It can take a mile or more for a train to stop and trains may not sound the horn at all crossings (ex: Quiet Zone).
- The only safe place to cross a railroad track is at a designated public roadway or pedestrian crossing.
- Recommend using alternate locations such as trails with elements such as bridges and tunnels. Educate friends, family, and photographers on safety regulations.

Project Purpose

To conduct a feasibility study to *develop and evaluate pedestrian grade separation concepts* across the Union Pacific Railroad (UPRR) corridor on the Texas Tech University Health Sciences Center campus in El Paso that enhances connectivity for multimodal users and improves campus safety.

Study Area


Legend
Grade Separation
At-Grade Crossing
Overall Study Area
Study Focus Area
Texas Tech El Paso Grade Separation Study
El Paso, Texas July 2023
Existing Conditions: Study Area
I-110/US 54
Raynolds St
Rick Francis St
MP 825
Chelsea St
Paisano Dr
MP 826
Union Pacific Railroad
I-110/US 54
Alberta Ave
Alameda Ave
El Paso Dr
US 62
0.5 Miles
N

Scope of Services

Data Collection for Existing Multimodal Conditions

Traffic Operations Railroad Operations Campus Development Site Visit

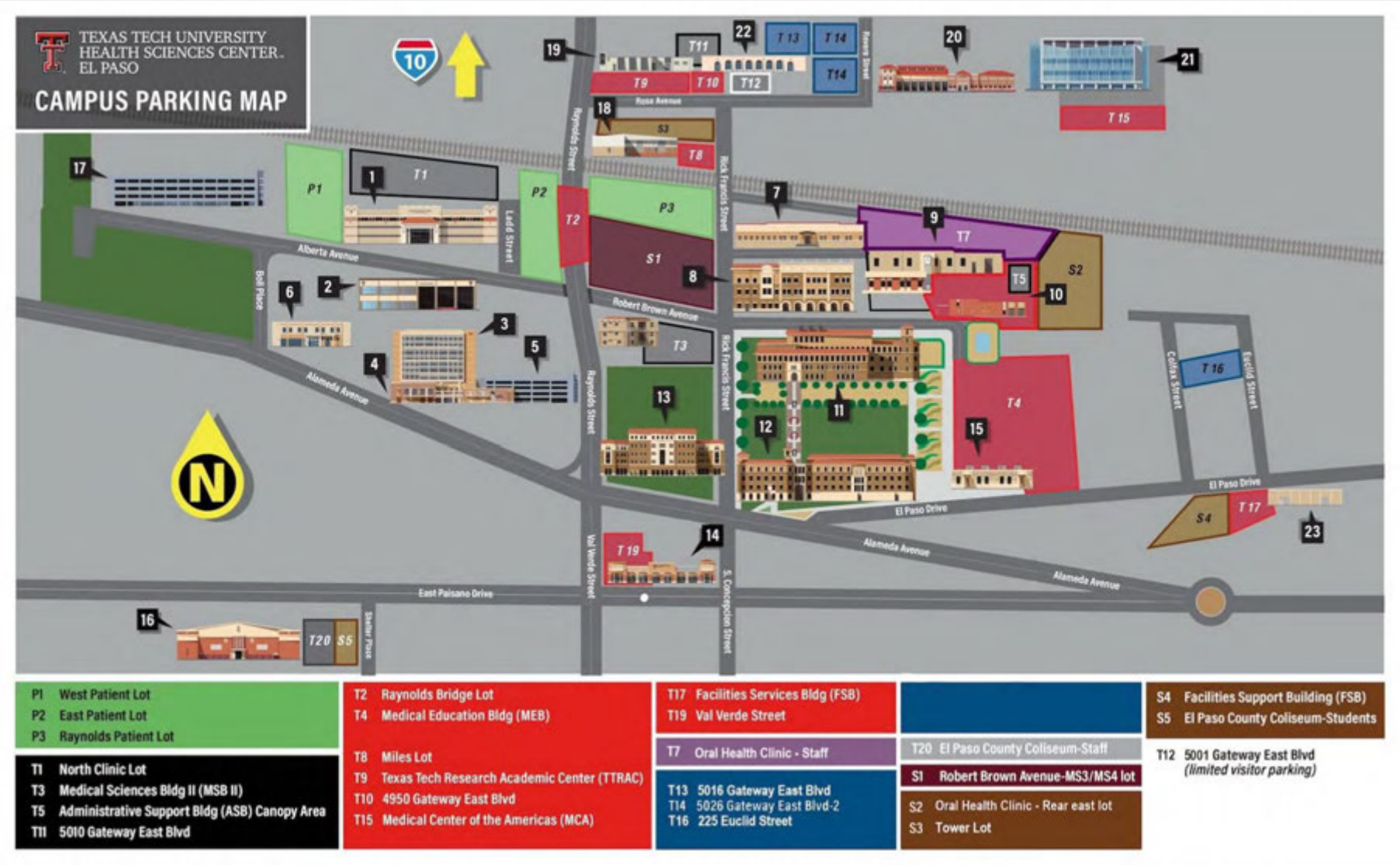
Concept Development + Stakeholder Input

Highway-Rail Grade Separation Options	Non-Vehicular (Pedestrian) Grade Separation Options	Other Multimodal Crossing Improvements

Feasibility Evaluation

Technical Operational Economic Institutional

Campus Land Use and Development



P1 West Patient Lot P2 East Patient Lot P3 Raynolds Patient Lot	T2 Raynolds Bridge Lot T4 Medical Education Bldg (MEB) T8 Miles Lot T9 Texas Tech Research Academic Center (TTRAC) T10 4950 Gateway East Blvd T15 Medical Center of the Americas (MCA)	T17 Facilities Services Bldg (FSB) T19 Val Verde Street T7 Oral Health Clinic - Staff T13 5016 Gateway East Blvd T14 5026 Gateway East Blvd-2 T16 225 Euclid Street	T20 El Paso County Coliseum-Staff S1 Robert Brown Avenue-MS3/MS4 lot S2 Oral Health Clinic - Rear east lot S3 Tower Lot	S4 Facilities Support Building (FSB) S5 El Paso County Coliseum-Students T12 5001 Gateway East Blvd *(limited visitor parking)*
T1 North Clinic Lot T3 Medical Sciences Bldg II (MSB II) T5 Administrative Support Bldg (ASB) Canopy Area T11 5010 Gateway East Blvd				

Rail Characteristics: Union Pacific Railroad (UPPR)

- UPPR Double-Track
- *Texoma* Division/*Valentine* Subdivision
  - *Amtrak Sunset Limited route*
- *Train Information - FRA*
  - 23 trains per day
  - 20 – 40 mph speed
- Quiet Zone *(2022)*

Study encompasses five highway-rail crossings

- I-110/US 54
- Raynolds Street
- Rick Francis Street
- Chelsea Street
- Paisano Drive

Data	Study At Grade Crossings	
	Rick Francis St	Chelsea St
Blocked Crossing (Jan. 2020 June 2023)	2	0
Crashes (2018 2022)	0	0
Trespassing (2018 2022)	0	0

Rail Crossings: Raynolds Street

Raynolds Street (DOT #978296E)

Division/Subdivision: *Texoma/Valentine*

Crossing Type: *Grade Separated*

Number of Tracks: *2 Main; 2 Industry*

Trains per Day: *6 (2021)*

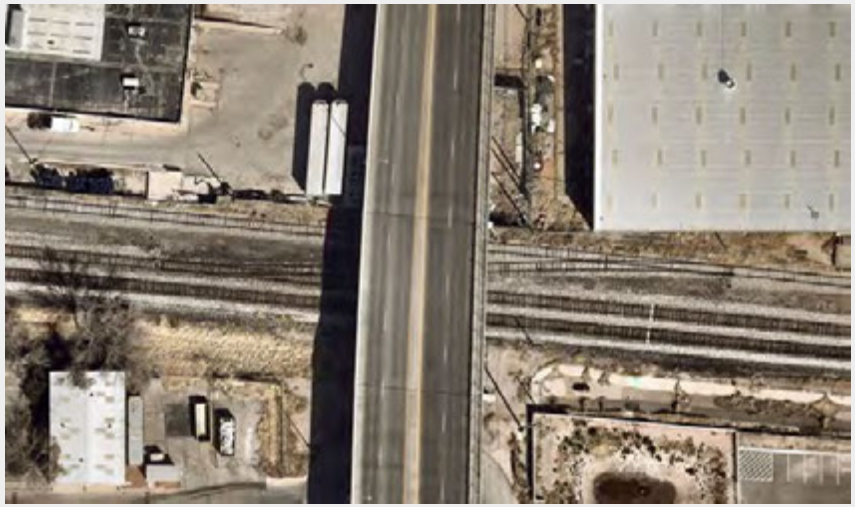
Passenger Trains per Day: *0 (2021)*

Roadway Classification: *Minor Arterial*

Number of Lanes: *4*

Vehicles per Day: *14,000 (2023)*

Streetview (southbound)



Aerial View

Rail Crossings: Rick Francis Street

Rick Francis Street (DOT #741209R)

Division/Subdivision: *Texoma/Valentine*

Crossing Type: *Active At-Grade*

Number of Tracks: *2 Main; 1 Industry*

Trains per Day: *23 (2021)*

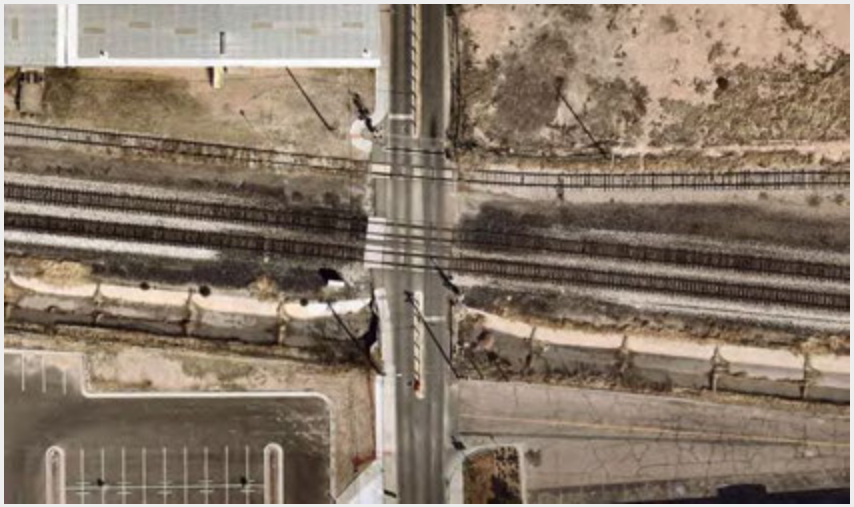
Passenger Trains per Day: *1 (2021)*

Roadway Classification: *Local*

Number of Lanes: *2*

Vehicles per Day: *2,207 (2017)*

Streetview (northbound)



Aerial View

Rail Crossings: Chelsea Street

Chelsea Street (DOT #741212Y)

Division/Subdivision: *Texoma/Valentine*

Crossing Type: *Active At-Grade*

Number of Tracks: *2 Main*

Trains per Day: *23 (2021)*

Passenger Trains per Day: *1 (2021)*

Roadway Classification: *Major Collector*

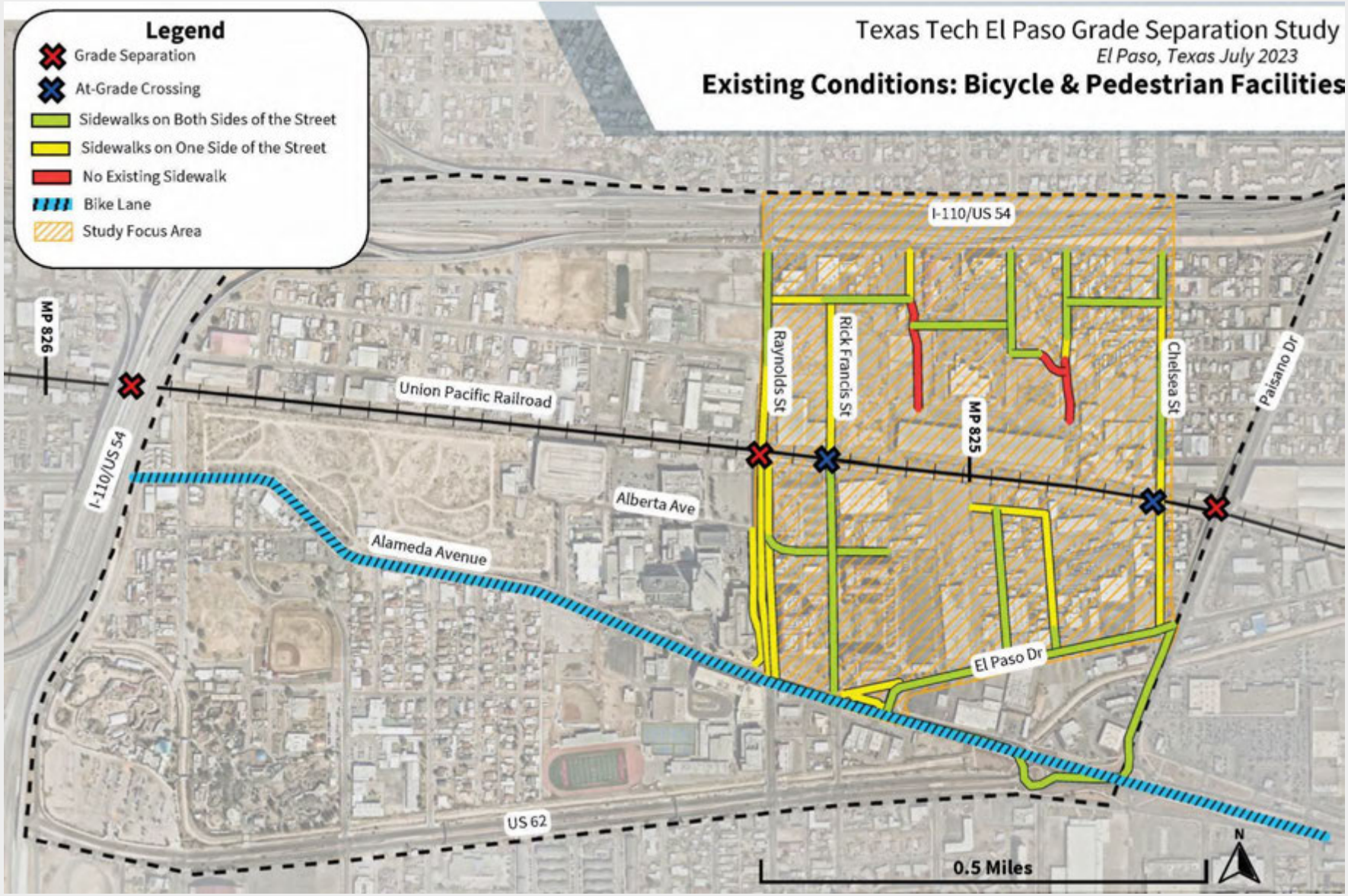
Number of Lanes: *2*

Vehicles per Day: *7,181 (2019)*

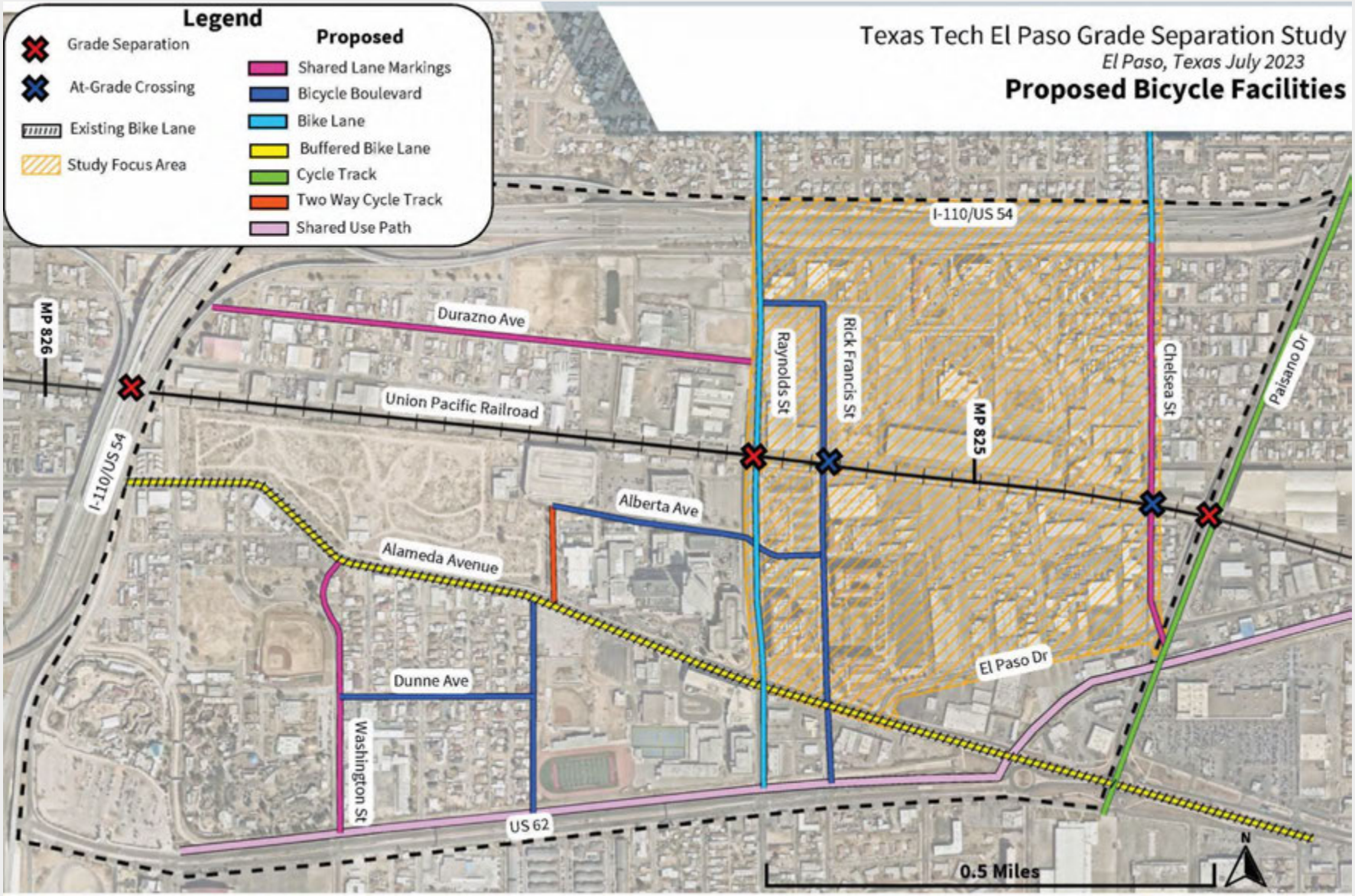
Streetview (northbound)

Aerial View

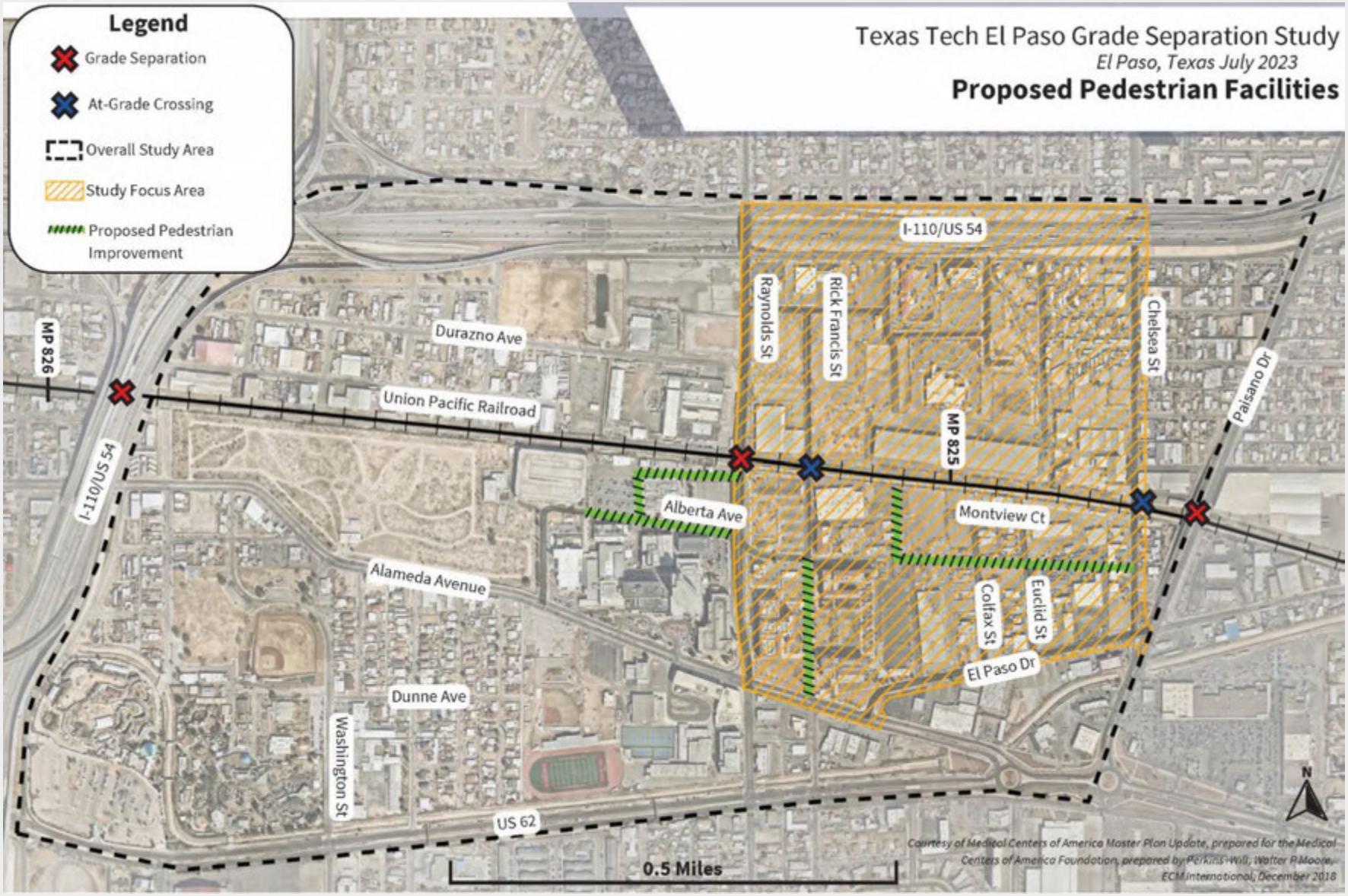
Bicycle and Pedestrian Facilities: Existing



Bicycle Facilities: Proposed



Pedestrian Facilities: Proposed



Bicycle and Pedestrian Characteristics

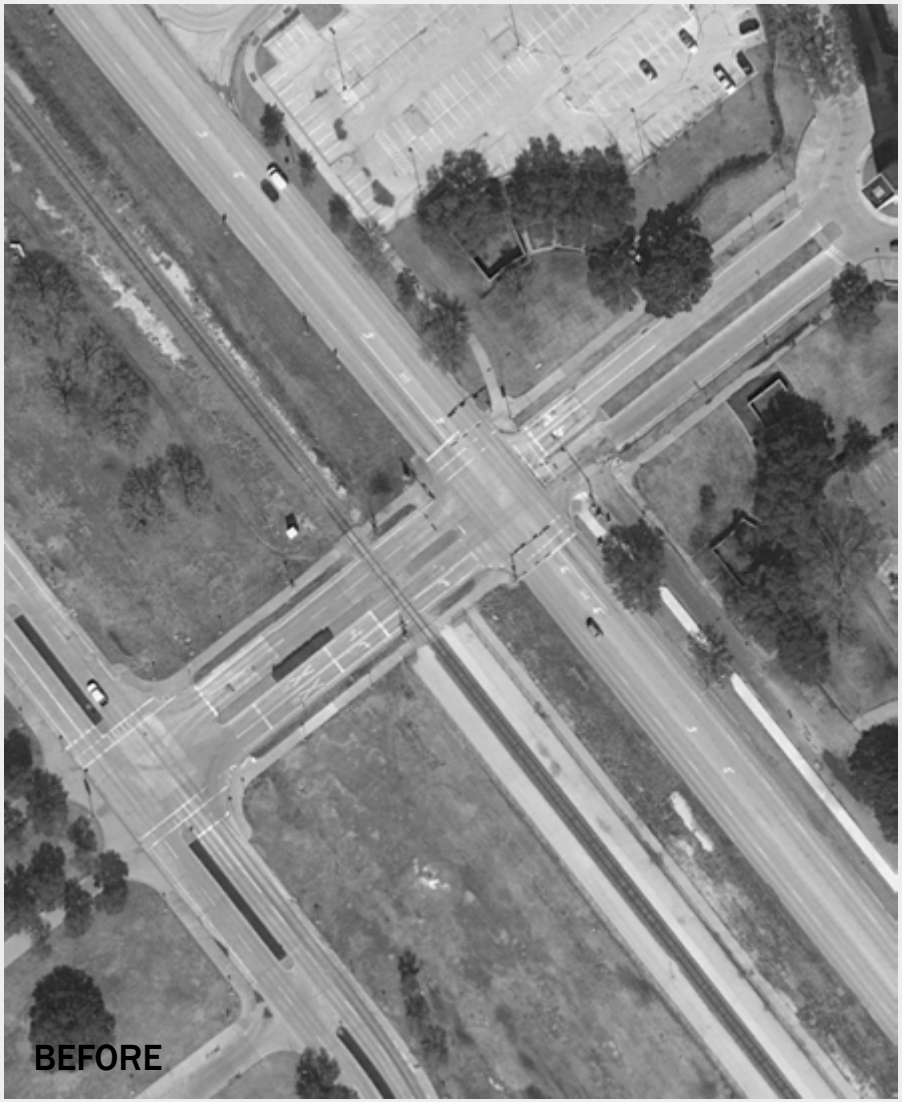
Street	Pedestrians			Bicyclists		
	Northbound	Southbound	**Total**	Northbound	Southbound	**Total**
Raynolds St.	23	23	**46**	1	3	**4**
Rick Francis St.	32	31	**63**	2	0	**2**
Chelsea St.	56	57	**113**	4	6	**10**

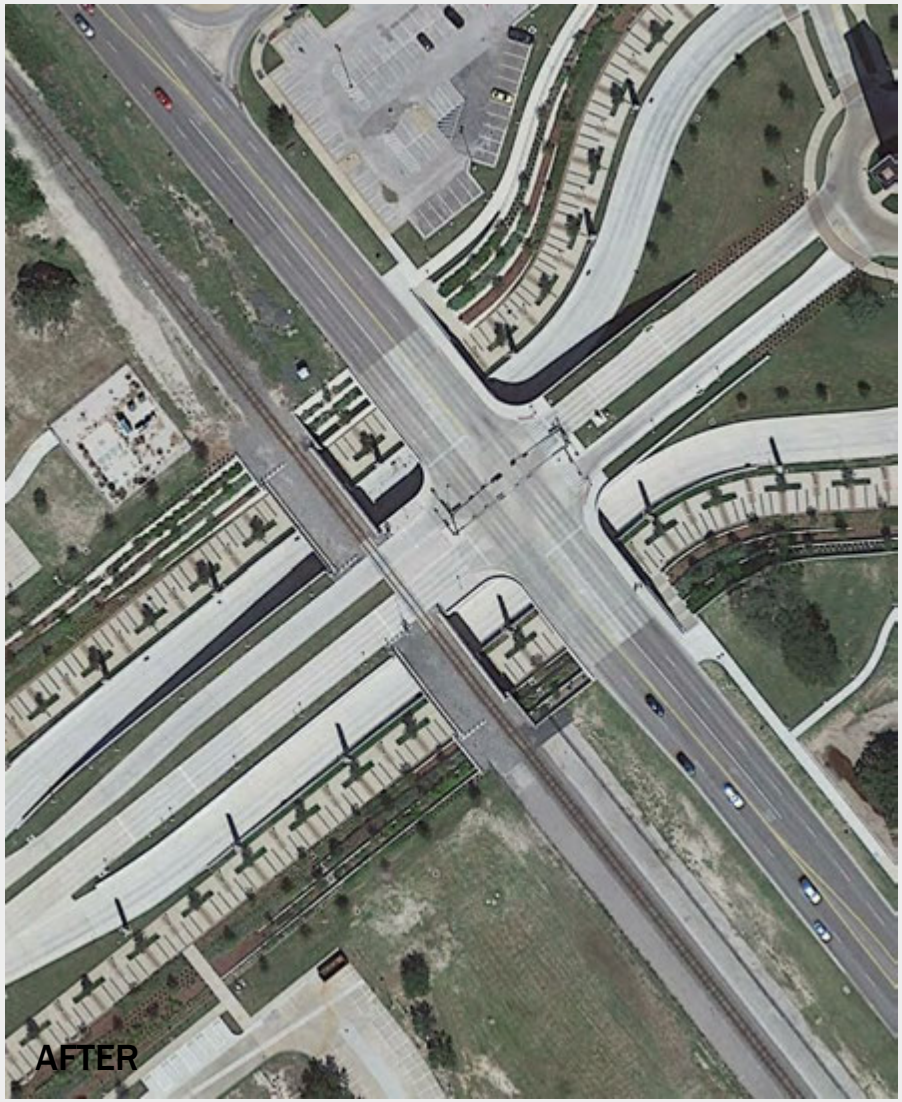
Source: Data collection on Wednesday May 17, 2023

Concept Development

- Design Considerations
  - Crossing at Existing Roadway Location vs. Alternate Location
    Explore location(s) that are not an existing highway-rail crossing?
  - Overpass vs. Underpass
    Feasibility based on terrain, drainage, campus development plans?
  - Vehicular vs. Bike/Pedestrian Only Grade Separation
    Benefit, cost, and feasibility considerations for non-vehicular options?
  - Other Alternatives
    Elevated walkway between buildings? At-grade safety improvements?

Case Study: Texas A&M Wellborn Underpass



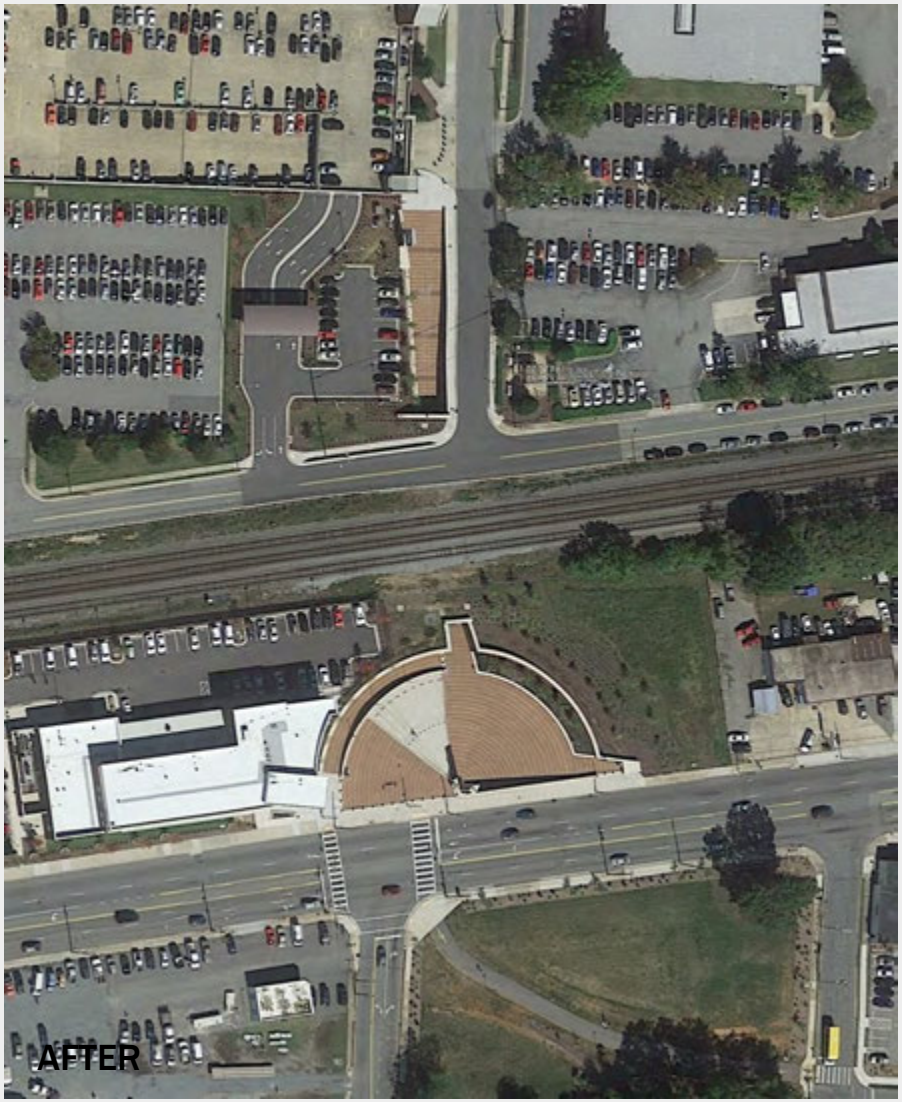


Case Study: Texas A&M Wellborn Underpass

Case Study: Texas A&M Pickard Pass

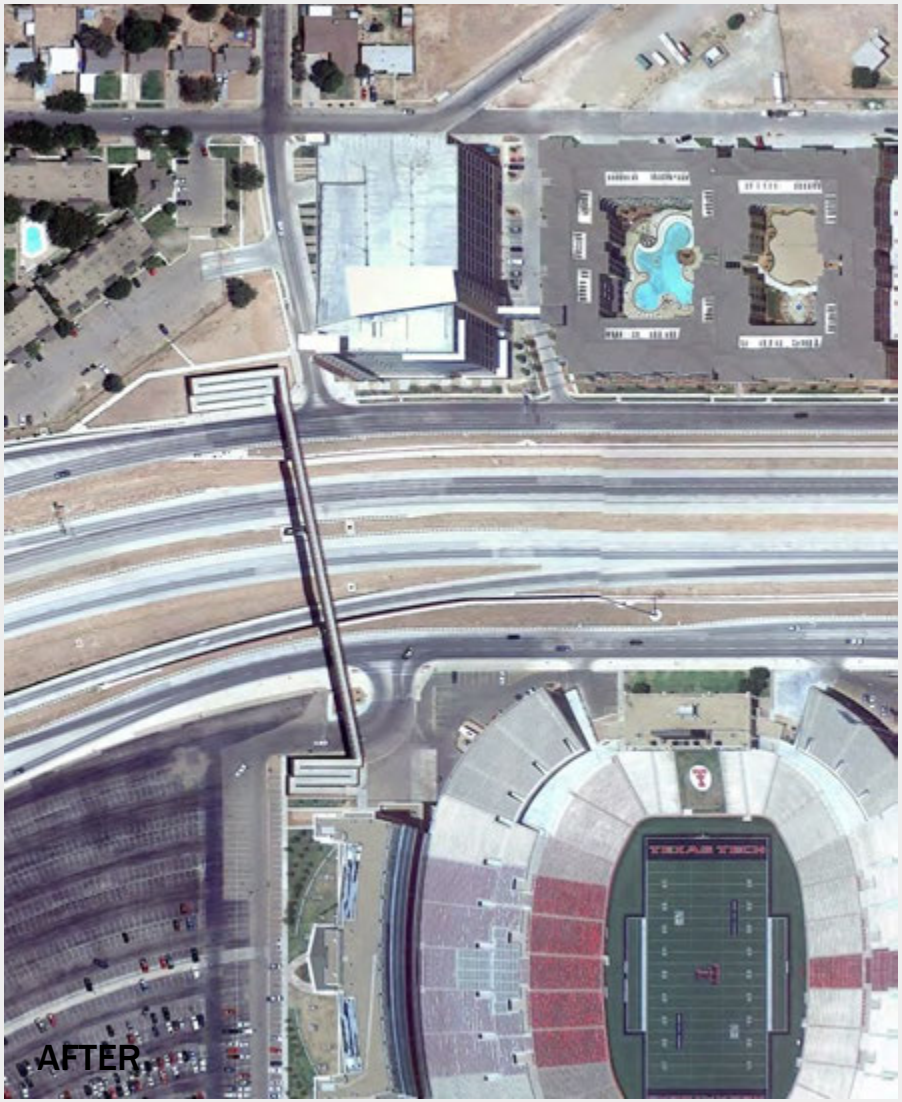
Case Study: Texas A&M Pickard Pass

Case Study: UNC-Greensboro Pedestrian Underpass



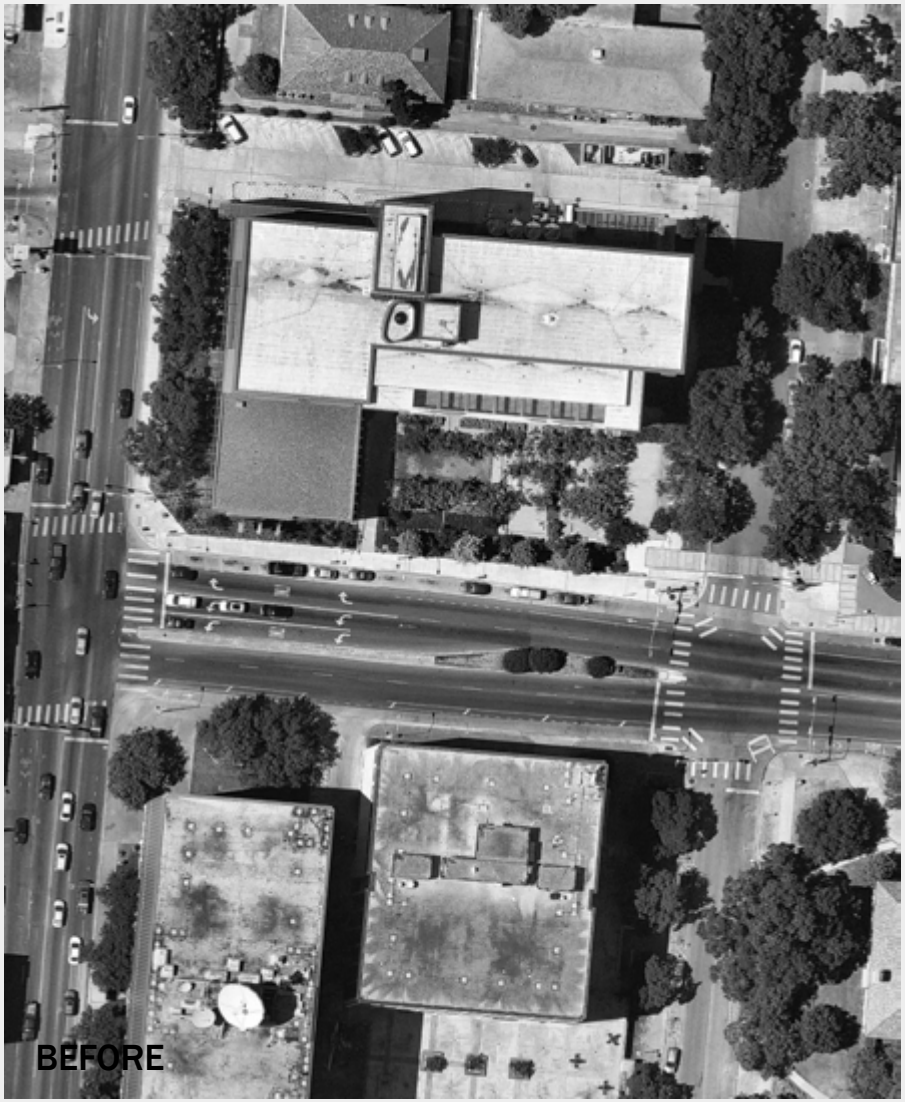
Case Study: UNC-Greensboro Pedestrian Underpass

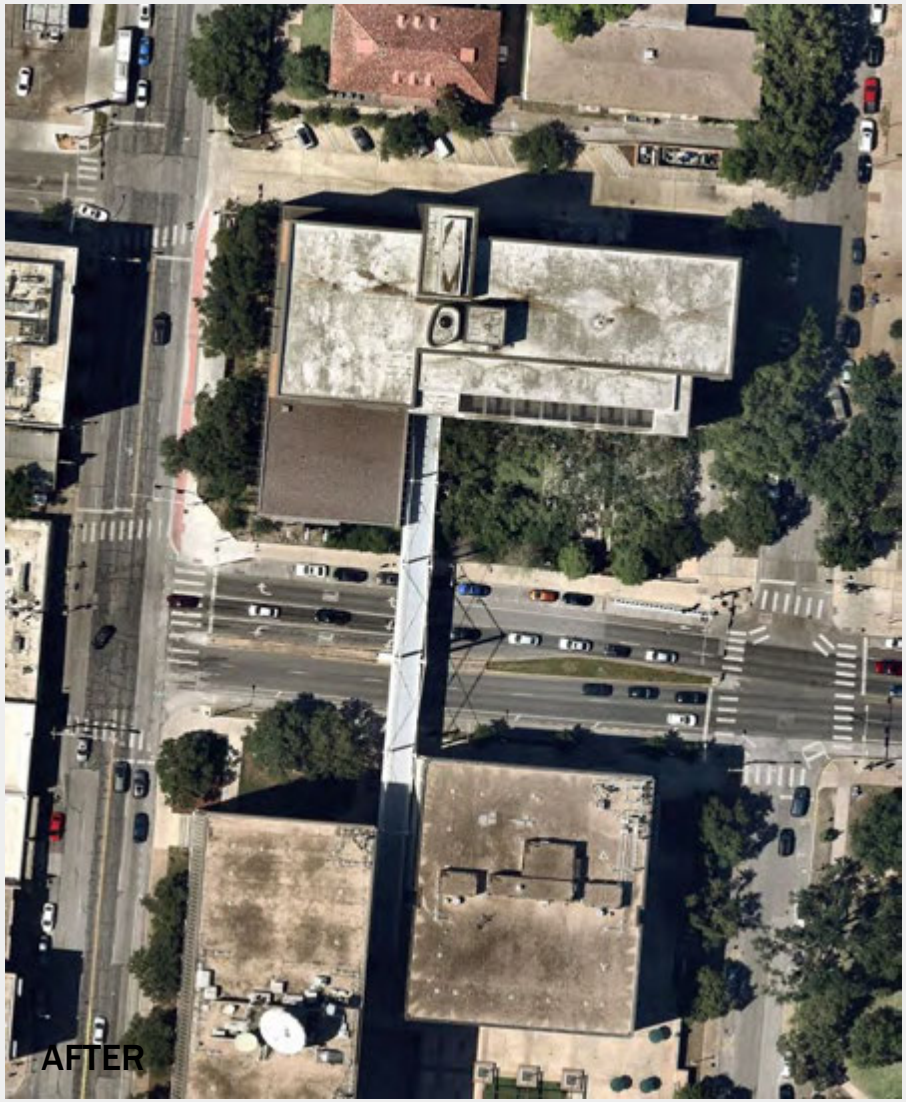
Case Study: Texas Tech Pedestrian Bridge



Case Study: Texas Tech Pedestrian Bridge

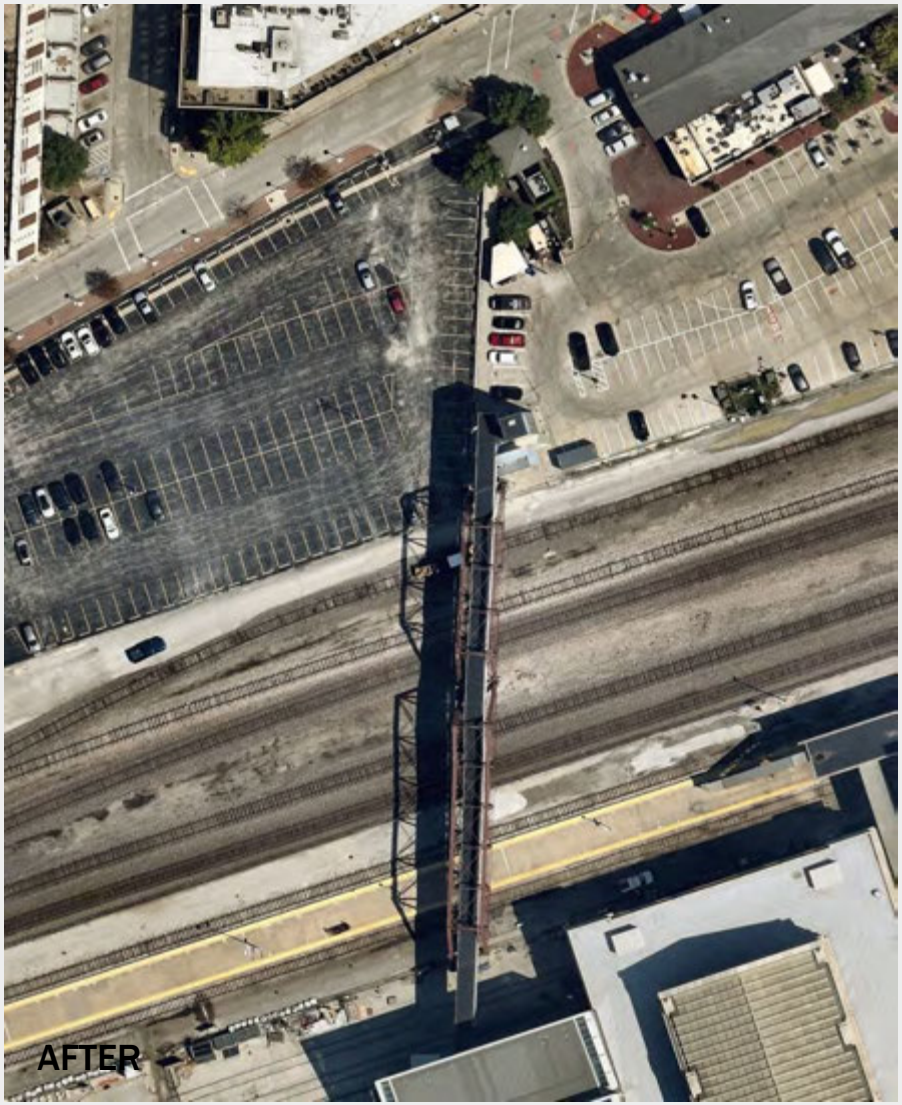
Case Study: UT Austin Moody Pedestrian Bridge



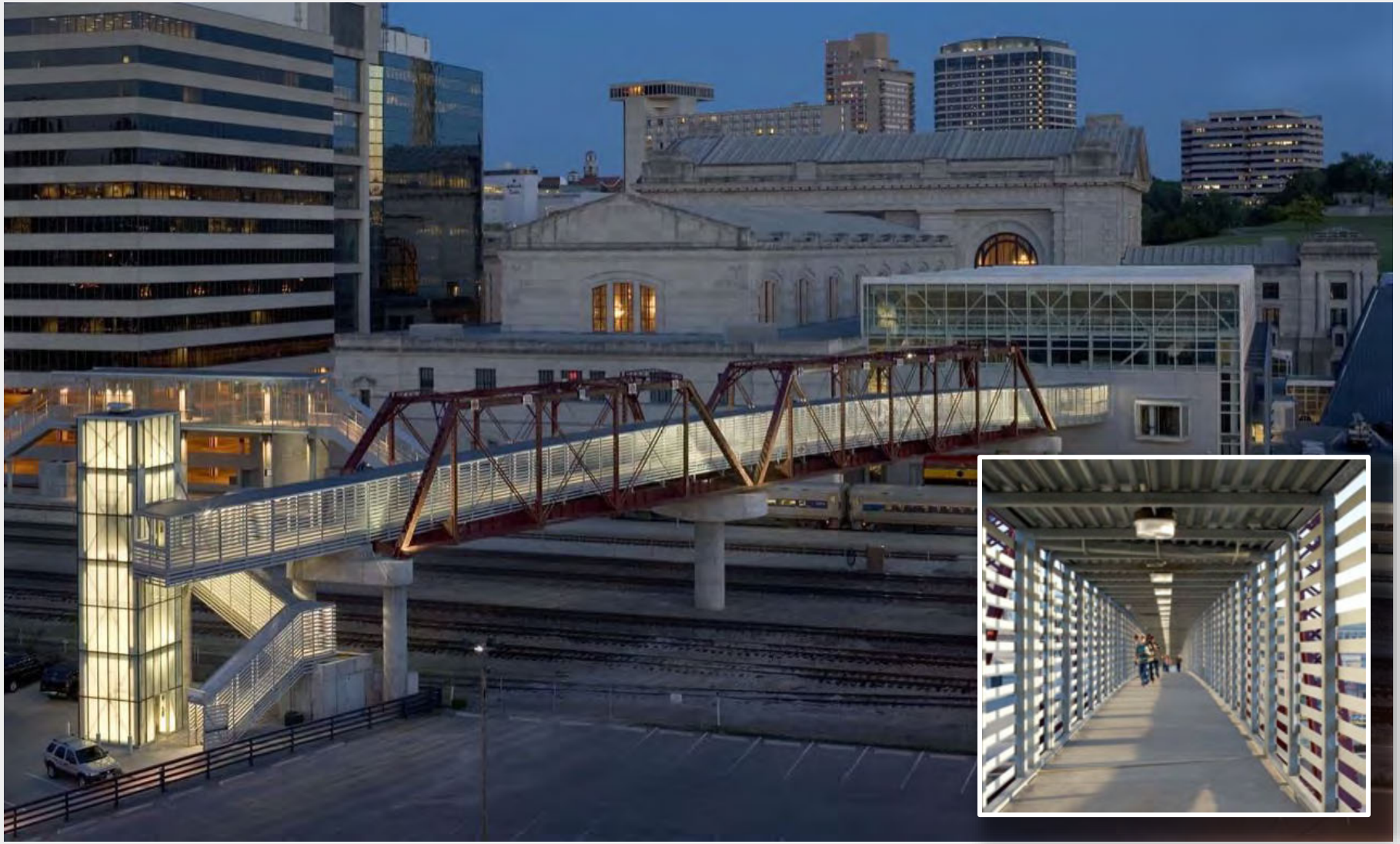


Case Study: UT Austin Moody Pedestrian Bridge

Case Study: KC Union Station Freight House Pedestrian Bridge



Case Study: KC Union Station Freight House Pedestrian Bridge



Stakeholder Discussion

Multimodal Behaviors

- Does the data collection align with your observations?
- How do students and staff travel to campus? Within campus?
- Do you have any specific safety, trespassing, or delay concerns?

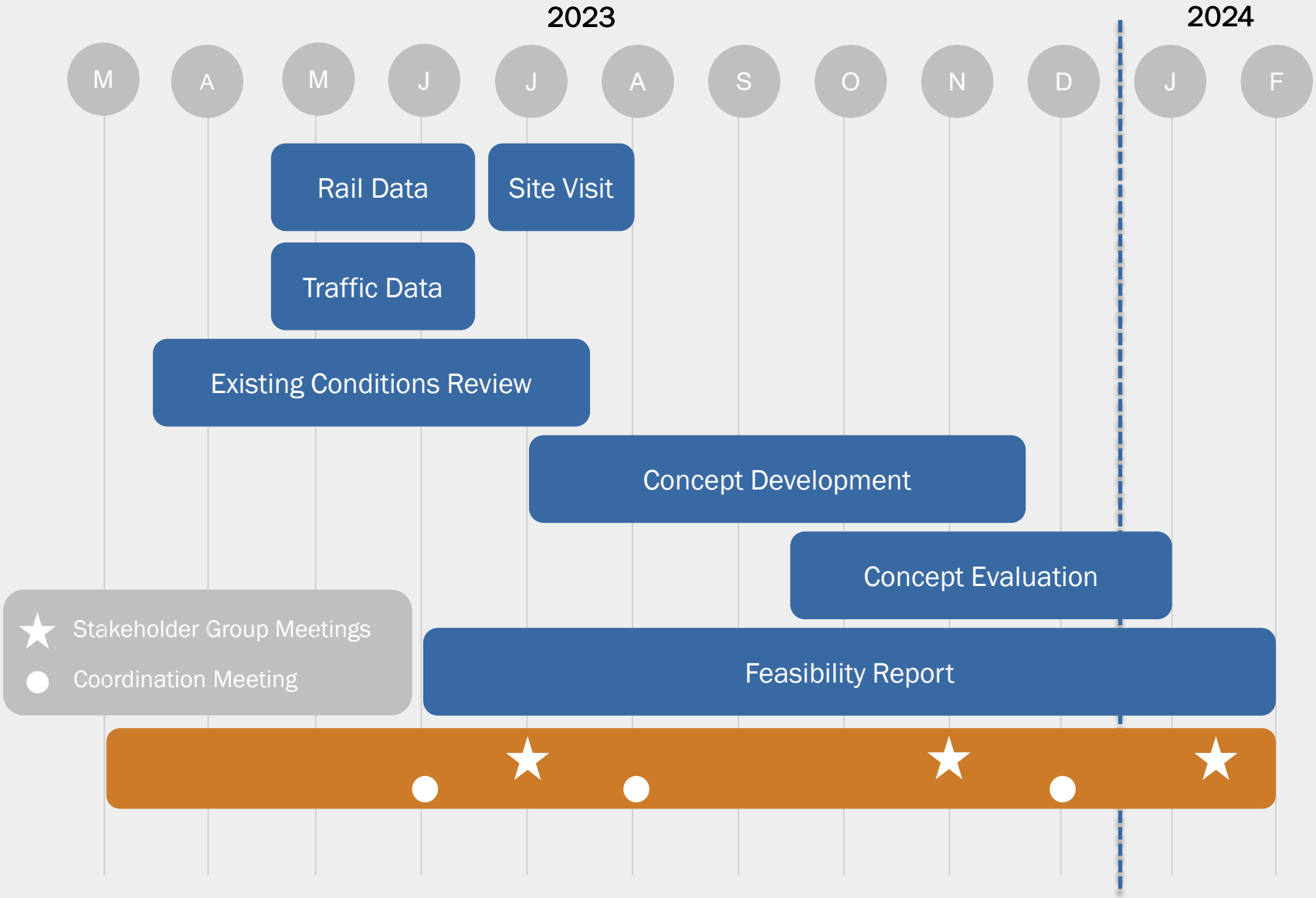
Campus Development

- What are the development plans adjacent to and north of the tracks?
- What is the timeline for proposed developments?

Concept Brainstorm

- Are there specific locations that would be most utilized by pedestrians?
- Are there any improvements that could enhance emergency services?
- What elements would make the grade separation more comfortable for users?

Schedule


2023
2024
M
A
M
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D
J
F
Rail Data
Site Visit
Traffic Data
Existing Conditions Review
Concept Development
Concept Evaluation
Stakeholder Group Meetings
Coordination Meeting
Feasibility Report

Next Steps

- Site Visit
  - Observe multimodal traffic patterns, topography, geometric conditions, and other physical features to support conceptual design
  - Discuss existing and planned campus developments in further detail
- Conceptual Layouts
  - Develop up to four (4) layouts for grade separation concepts
  - Concepts include plan, profile, typical section, and cost estimate
- Coordination Meetings
  - Potential to organize coordination meetings with individual stakeholders

Next Meeting | Stakeholder Meeting #2 | Concept Alternatives Review

Texas Department of Transportation
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El Paso - Texas Tech University Health Sciences Center
Mobility Study
Stakeholder Meeting #2

November 13, 2023
12:00 AM CST / 11:00 AM MST

Virtual Meeting
Teams

Agenda

I. Introduction
- a. Project Team
- b. Safety Briefing

II. Project Review
- a. Project Purpose
- b. Scope of Services
- c. Bicycle and Pedestrian Characteristics

III. Site Visit Observations
- a. General
- b. Trespassing

IV. Concept Review
- a. Concept #1 - Vehicular/Pedestrian Overpass
- b. Concept #2 - Vehicular/Pedestrian Underpass
- c. Concept #3 - Pedestrian Bridge
- d. Concept #4 - Pedestrian Bridge with a Parking Garage

V. Scoring Criteria
- a. Technical Feasibility
- b. Financial Feasibility
- c. Institutional Feasibility

VI. Concept Discussion

VII. Next Steps
- a. Schedule
  - i. Meeting #3: Final Concept and Next Steps
- b. Conceptual Layouts and Final Report

Texas Department of Transportation
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El Paso - Texas Tech University Health Sciences Center
Mobility Study
Stakeholder Meeting #2

November 13, 2023
12:00 AM CST / 11:00 AM MST

Virtual Meeting
Teams

Summary

Meeting Overview

A stakeholder meeting was held virtually on November 13, 2023. The meeting provided an opportunity for relevant stakeholder groups to review site visit observations, discuss four concept reviews, and have initial discussions regarding scoring criteria.

Meeting Attendees

Name	Agency	Title
Jose (Joe) Madrid	TxDOT - El Paso District	Rail Coordinator
Marty Boyd	TxDOT - El Paso District	Transportation Planning
Chad Coburn	TxDOT - Rail Division	Planner
Lisa Badillo	Texas Tech Health Sciences Center	Managing Director
Tracy Yellen	Paso del Norte Community Foundation	Chief Executive Officer
Rick Lange	Texas Tech Health Sciences Center	University President
Joaquin Rodriguez	City of El Paso	Transportation Planning Administrator
Anna Zendt	City of El Paso	Bicycle and Pedestrian Manager
Tyson Moeller	Union Pacific Railroad (UPRR)	General Director of Network Development
Ted Houghton	Houghton Financial	Principal
Emma Martin	TranSystems	Engineer/Planner
Andrew Young	TranSystems	Planner
Hunter McGahan	TranSystems	Engineer
Sara Clark	TranSystems	Senior Advisor

Project Purpose and Background

The study propose is to develop and evaluate grade separation concepts across the Union Pacific Railroad (UPRR) corridor to safely connect the Texas Tech University Health Sciences Center campus. The I.2-mile rail corridor from I-110 to Paisano Drive includes five existing rail crossings – three (3) grade-separated crossings and two (2) at-grade crossings at Rick Francis Street and Chelsea Street.

The study scope generally includes an analysis of existing multimodal conditions, concept development, and feasibility evaluation of concepts. Concept development will be looking at grade separation options that include vehicular traffic, options for bicyclists and/or pedestrians only, and other safety considerations.

The project team discussed revised pedestrian counts at Rick Francis Street and site observations. The team provided a background on the four concepts and the scoring criteria proposed to select the preferred concept.

Concept Review Discussion

Four concepts were developed. All concepts include pedestrian access and two include vehicular access. The following provides information about the discussion surrounding each concept. The following points include discussion from the stakeholders.

Concept #1 - Vehicular/Pedestrian Overpass

- The group discussed impacts to Rick Francis Street and future building(s) access.
    - Access to three driveways and one walkway would be impacted.
    - Future buildings would need to take into account access impacts, potentially shifting buildings to fit access in the front or back.
    - Rosa Avenue would need to be utilized more for building access.
- Concerns about impacts to East-West pedestrian access limit feasibility within the campus, essentially cutting the campus in half.
- Questions arose about access and considered how access could be retained under the bridge. Robert Brown Avenue can stay open, however, locations at the proposed retaining walls would need to be removed.
- University representatives expressed this concept as the least preferred.
- TxDOT staff discussed the potential of adding frontage roads to Rick Francis Street, similar to Raynolds Street. Although possible, this would take up additional right-of-way.

Concept #2 - Vehicular/Pedestrian Underpass

- The length of the underpass is longer than the campus staff anticipated. Potential ways to accommodate a shorter underpass were discussed.
    - The drainage dictates some of the design because the drainage must be taken into consideration in depth.
    - There may be modifications to the design, including reducing the clearance from 18’ 6” to 14’ 6”, and other future design considerations could reduce project length.
    - The city would advise following a local design standard; however, if the project ends up being funded by Federal money, Federal standards may be required.
    - TxDOT does have concerns about retaining standards when roadways go under rail.
    - UP prefers overpasses to underpasses due to the additional maintenance (railroad would require a bridge over the roadway). They are transitioning away from road under rail projects.

- Water events could negatively impact connectivity. El Paso systems are not designed for high flood events. Flooding could cut off roadway access. An underpass may require a pumping system, which requires additional maintenance.
- UP is more concerned with access under their property as opposed to over and would need more time to review such concepts.
- From an aesthetic perspective, an underpass would be preferred to an overpass.

Concept #3 - Pedestrian Bridge

- The group discussed whether vehicle access would continue at Rick Francis Steet in this concept. If an underpass/overpass impacts access, there were concerns about traffic being re-routed onto Raynolds Street. Campus and City of El Paso staff were concerned with eliminating the roadway connection on Rick Francis Street.
    - This proposal is intended to remove the crossing for vehicles and promote improved pedestrian mobility on campus.
    - If desired, pedestrian access could be shifted out of the roadway to keep additional roadway access open.
- TxDOT staff is excited about making the crossing safer but shares concerns about eliminating Rick Francis Street.
- This university has a high percentage of patients, many of whom have limited mobility. Vehicle access is critical for them. Access for patients is key to review when looking at campus mobility.
- There is concern about students bypassing the bridge and trespassing the railroad ROW even with a pedestrian bridge. Proper trespassing mitigations would need to be in place to ensure students cannot trespass.
- Shade and other heat mitigation strategies would be necessary to make this a pedestrian corridor and combat the heat.

Concept #4 - Pedestrian Bridge with a Parking Garage

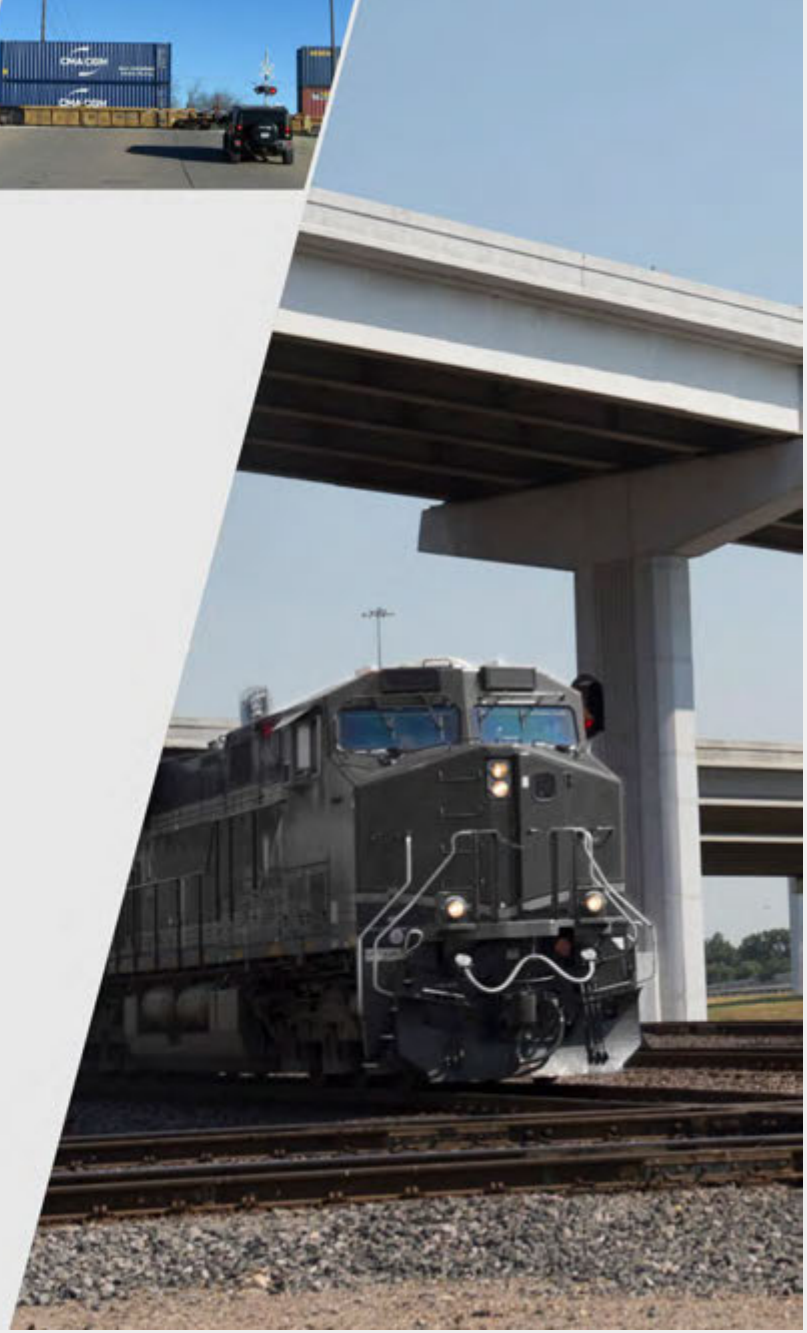
- The group discussed whether vehicle access would continue at Rick Francis Steet in this concept. Stakeholders would like to maintain vehicular access along Rick Francis Street.
    - Maintaining vehicular access to the existing railroad crossing would need to be determined with UPPR coordination. UPPR may want to close the crossing because a type of grade separation would be provided.
- Stakeholders reiterated the desire to keep Rick Francis Street open to vehicles, regardless of the concept selected.
- The group discussed how blocked crossings restrict all access.
- A TxDOT staff member asked if the crossing could become “private” for the university staff and EMS only.
    - The team was not aware of existing technology that pairs access with signal warning devices. Potential technology ideas may be included, such as a key-fob or other access technology.

EL PASO
Texas Tech University Health Sciences Center

Mobility Study
Concept Review

Stakeholder Meeting #2

November 13, 2023



Agenda

1. Introduction
2. Safety Briefing
3. Project Review
4. Site Visit Observations
5. Concept Review
6. Scoring Criteria
7. Concept Discussion
8. Next Steps

Introduction

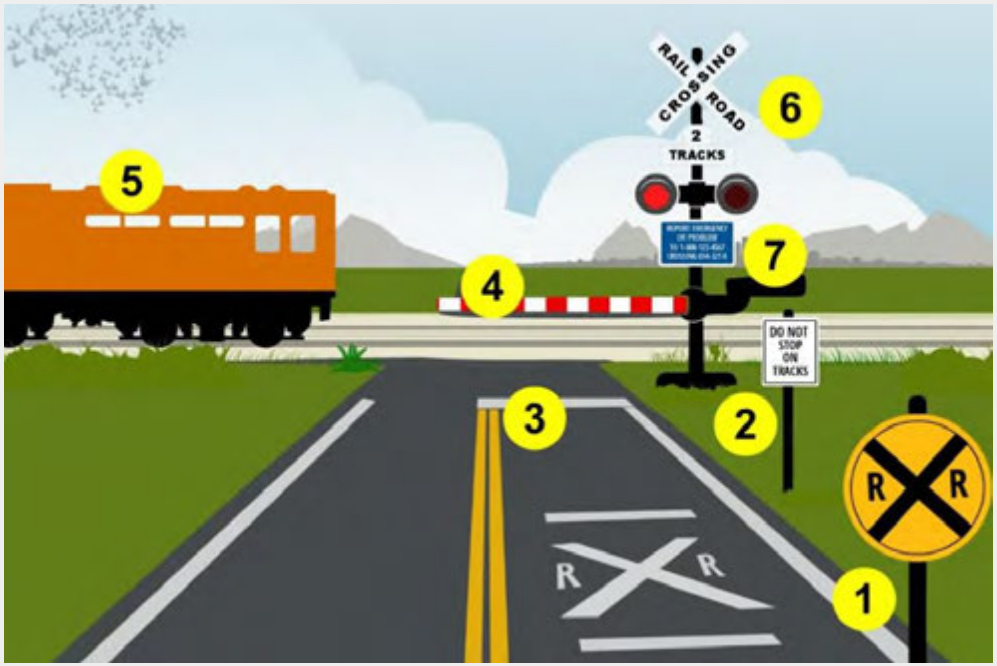
Consultant Team - TranSystems

- Deanne Winkelmann, AICP *Project Manager*
- Emma Martin, PE *Traffic Engineer/Planner*
- Hunter McGahan *Engineer*
- Sara Clark, PE *Senior Advisor*

Texas Department of Transportation - Rail Division

- Jess Geray, AICP, EDFP *Planner*
- Chad Coburn *Rail Planning and Programming Section Director*

Safety Briefing



https://www.nhtsa.gov/campaign/railroad-crossing

1. Stop, look both ways and listen. Know that trains always have the right of way.
2. Don't stop on the tracks. Make sure you have room to get across. Once you enter the crossing, keep moving.
3. Stop 15 feet away from flashing red lights, lowered gates, a signaling flagman, or a stop sign.
4. Never drive around a lowering gate or ignore signals.
5. After a train passes, wait for gates to rise fully and all lights to stop flashing before you cross.
6. Never assume that there is only one train coming from a single direction.
7. If your car stalls on a track, quickly get everyone out — even if you don't see a train coming. Run away from the tracks and your car to avoid being hit by flying debris. Call the number on the blue emergency notification system sign. If the sign is not visible to you, call 911.

Project Review – Project Purpose

To conduct a feasibility study to *develop and evaluate pedestrian grade separation concepts* across the Union Pacific Railroad (UPRR) corridor on the Texas Tech University Health Sciences Center campus in El Paso that enhances connectivity for multimodal users and improves campus safety.

Project Review – Scope of Services

Data Collection for Existing Multimodal Conditions

Traffic Operations Railroad Operations Campus Development Site Visit

Concept Development + Stakeholder Input

Highway-Rail Grade Separation Options	Non-Vehicular (Pedestrian) Grade Separation Options	Other Multimodal Crossing Improvements

Feasibility Evaluation

Technical Financial Institutional

Project Review – Bicycle and Pedestrian Characteristics

Street	Pedestrians			Bicyclists		
	Northbound	Southbound	**Total**	Northbound	Southbound	**Total**
Raynolds St.	23	23	**46**	1	3	**4**
Rick Francis St.	32 [82]	31 [79]	**63** [161]	2	0	**2**
Chelsea St.	56	57	**113**	4	6	**10**

Source: Data collection on Wednesday, May 17, 2023
[#]: Estimates based on recount at Rick Francis Street on Wednesday, September 13, 2023

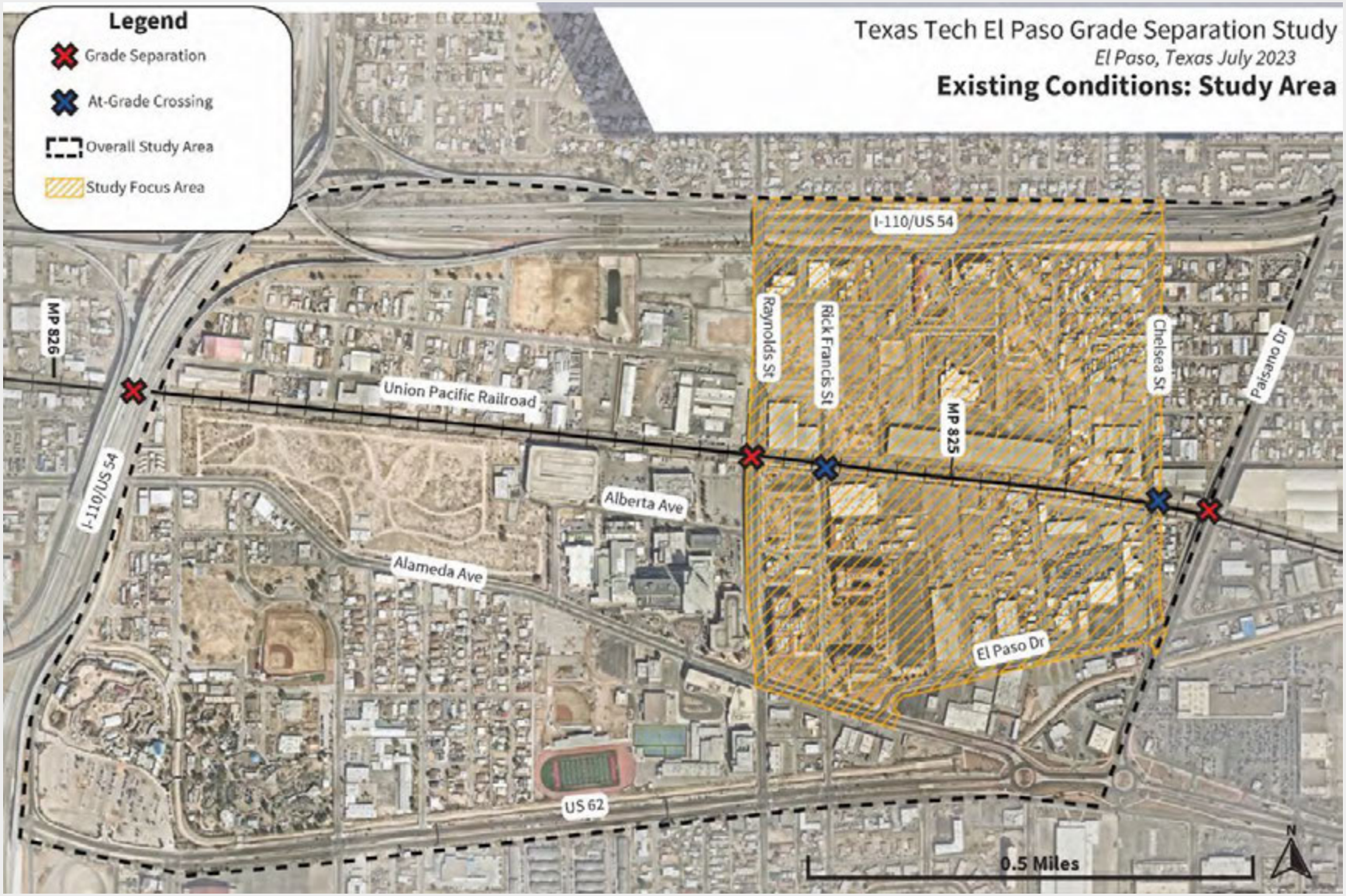
Site Visit Observations - General

- Students/staff movements
- High temperatures
- Chelsea Street speed
- Rick Francis observations
- Train crossing times
- Rosa Avenue Visibility
- EMS access

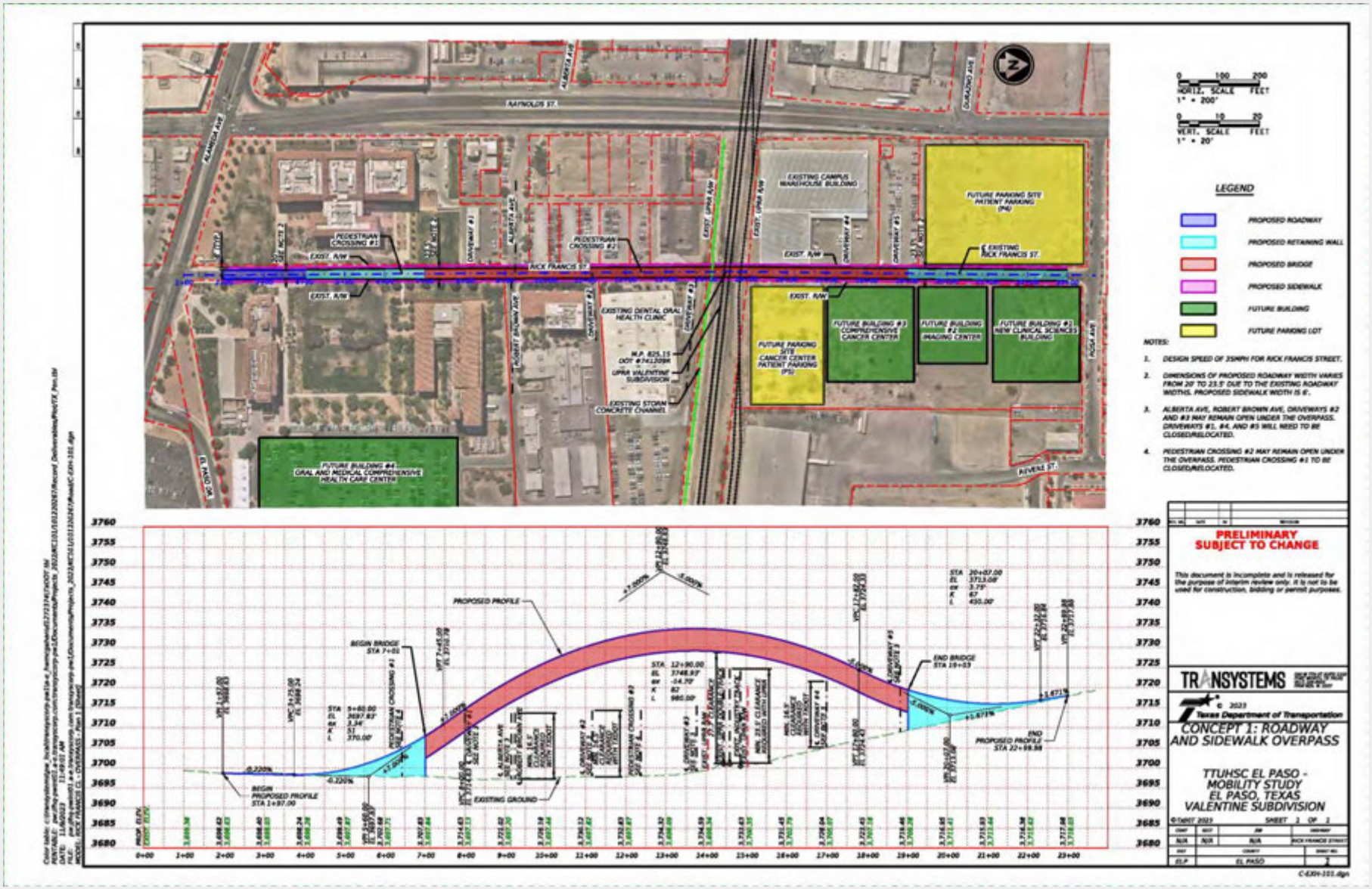
Site Visit Observations – Trespassing

- Poor behavior witnessed during the site visit
  - Walking along railroad ROW
  - Crossing before gate up
- Two locations along tracks with fencing missing

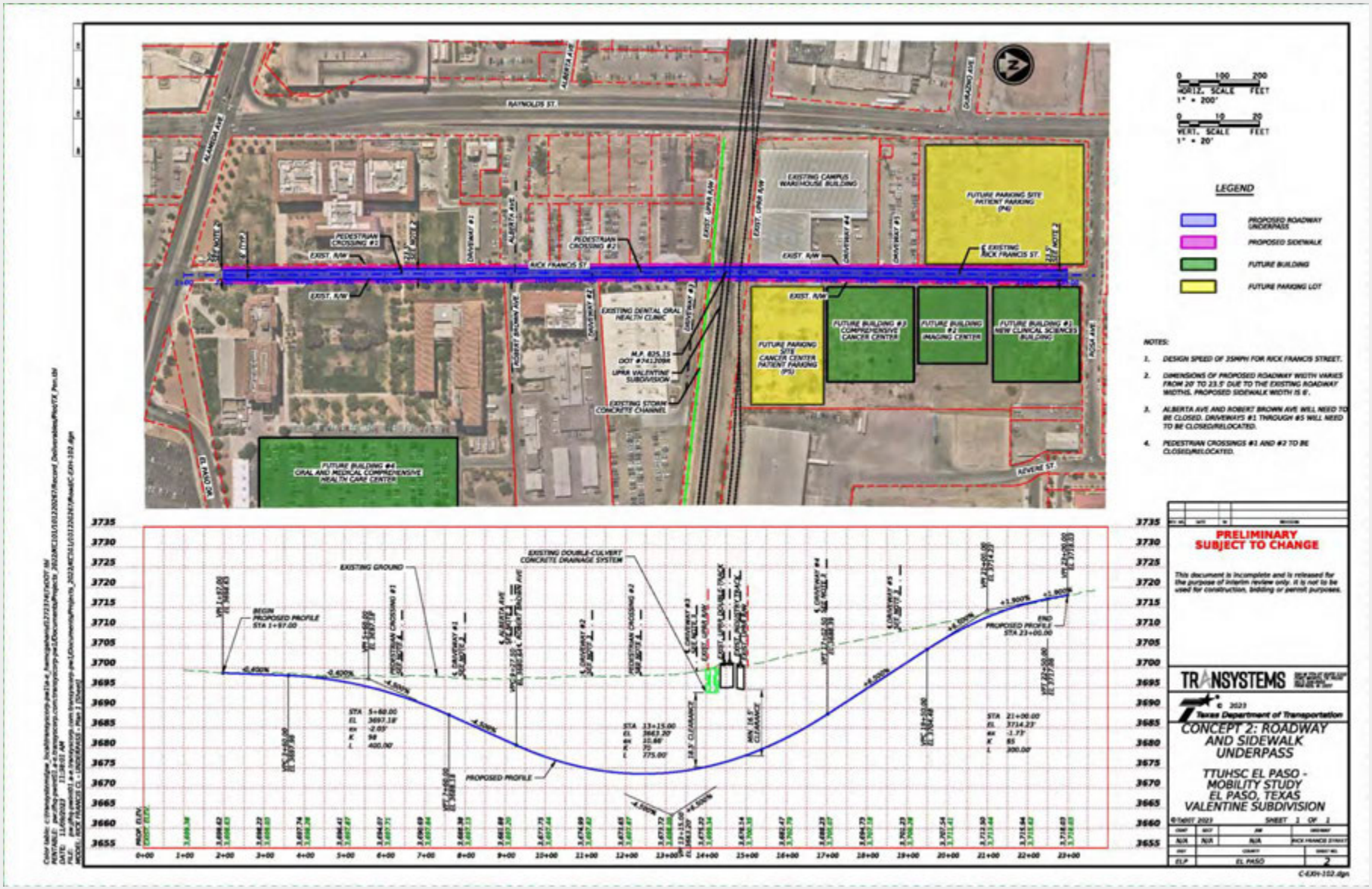
Concept Review



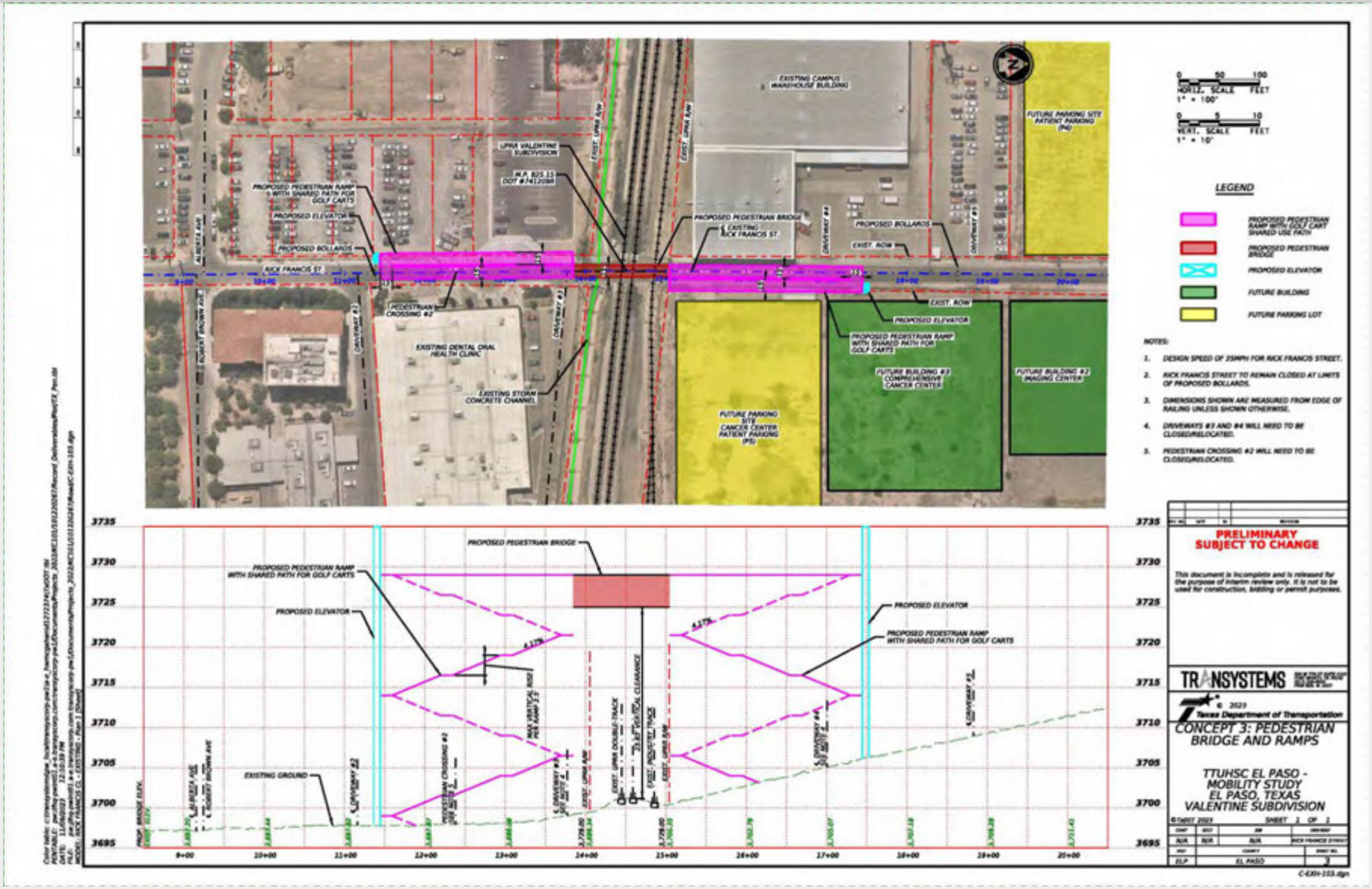
Concept #1: Vehicular/Pedestrian Overpass



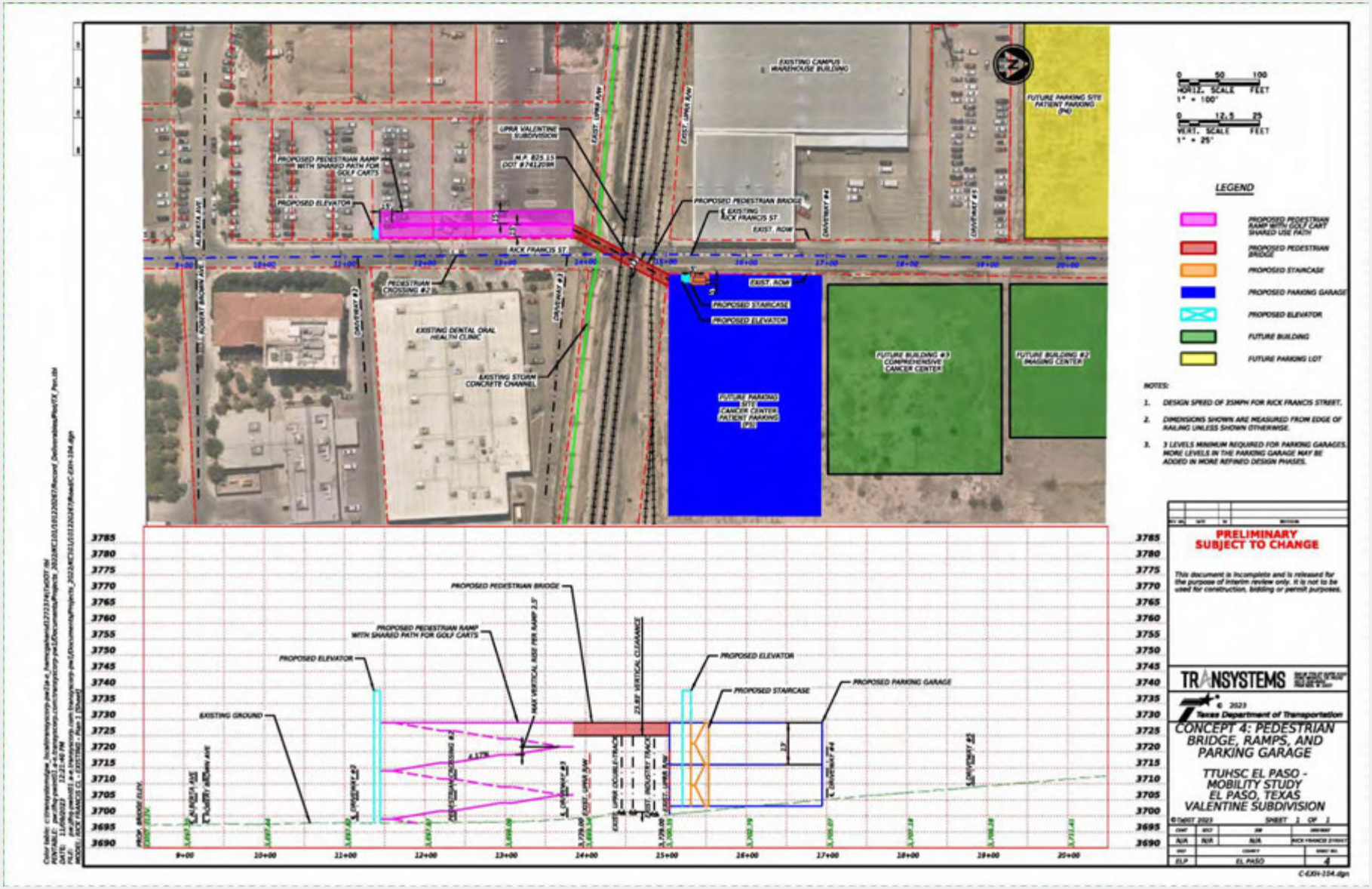
Concept #2: Vehicular/Pedestrian Underpass



Concept #3: Pedestrian Bridge



Concept #4: Pedestrian Bridge with a Parking Garage



Scoring Criteria

- Feasibility
  - Technical Feasibility
  - Financial Feasibility
  - Institutional Feasibility
- General Scoring
  - High
  - Medium
  - Low

Technical Feasibility - Criteria	Definition
Design Criteria	Meets project specific design criteria
Constructability	Reduces impacts on traffic patterns during construction while minimizing student impacts
Right of way Impacts	Minimizes acquisition of developed/undeveloped properties
Access Impacts	Maintains access to existing properties
Environmental Impacts	Mitigates known, high-level environmental concerns
Campus Planning	Aligns with future campus plans

Scoring Criteria

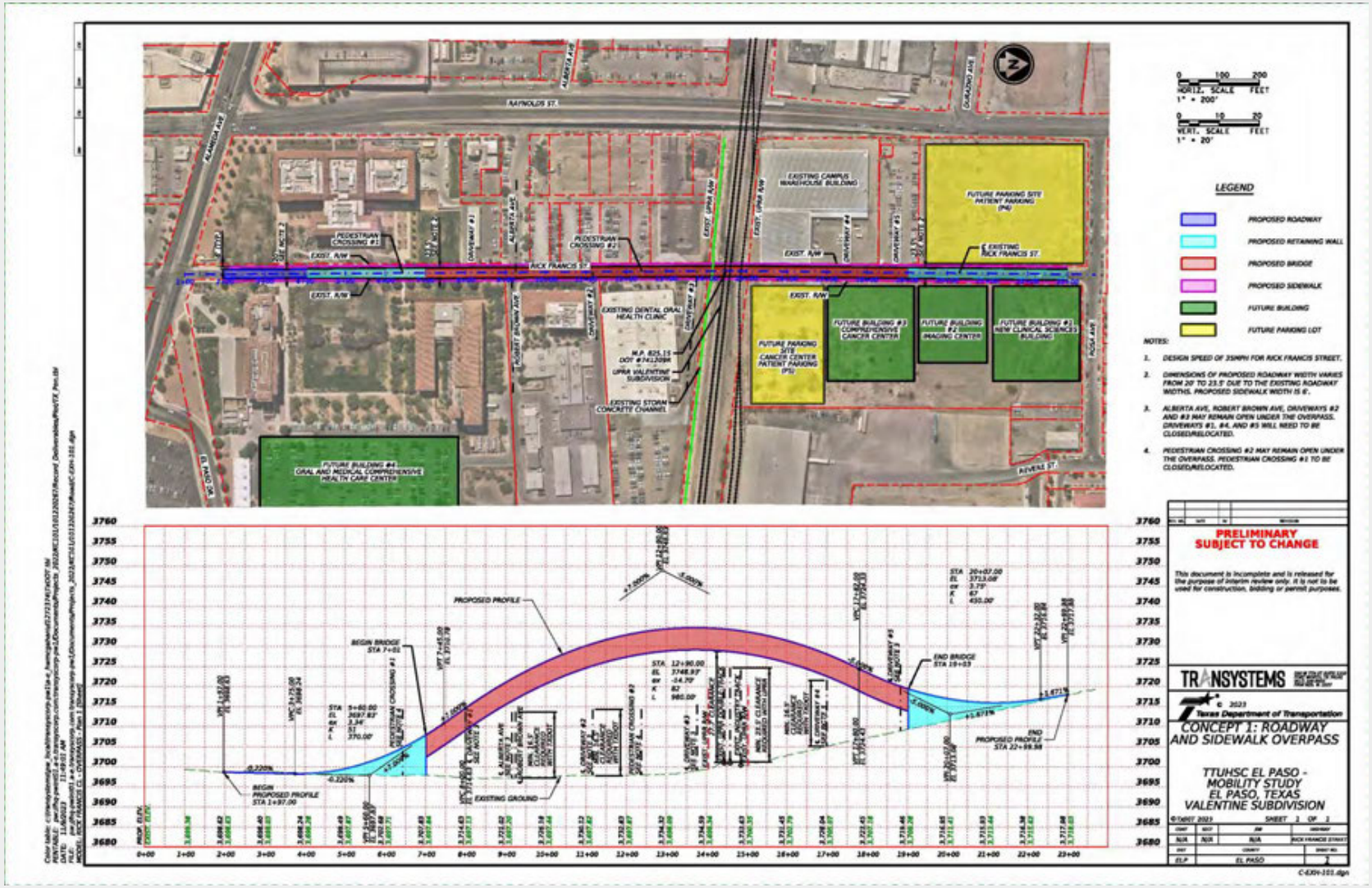
Financial Feasibility - Criteria	Definition
Construction Cost	Minimizes project construction and programming cost
Funding Availability	Project has a potential funding source
Cost Reasonability	Cost estimate within a reasonable range
Maintenance	Minimizes maintenance of capital or operational costs

Institutional Feasibility - Criteria	Definition
Campus Staff Support	Concept generally receives support from campus staff
TxDOT Support	Concept generally receives support from TxDOT staff
City of El Paso Support	Concept generally receives support from the City of El Paso staff
UPPR Support	Concept generally receives support from UPPR staff

Concept #1 Discussion

- Initial Thoughts
  - Visual
  - Access
  - Positives
  - Negatives
  - Overall

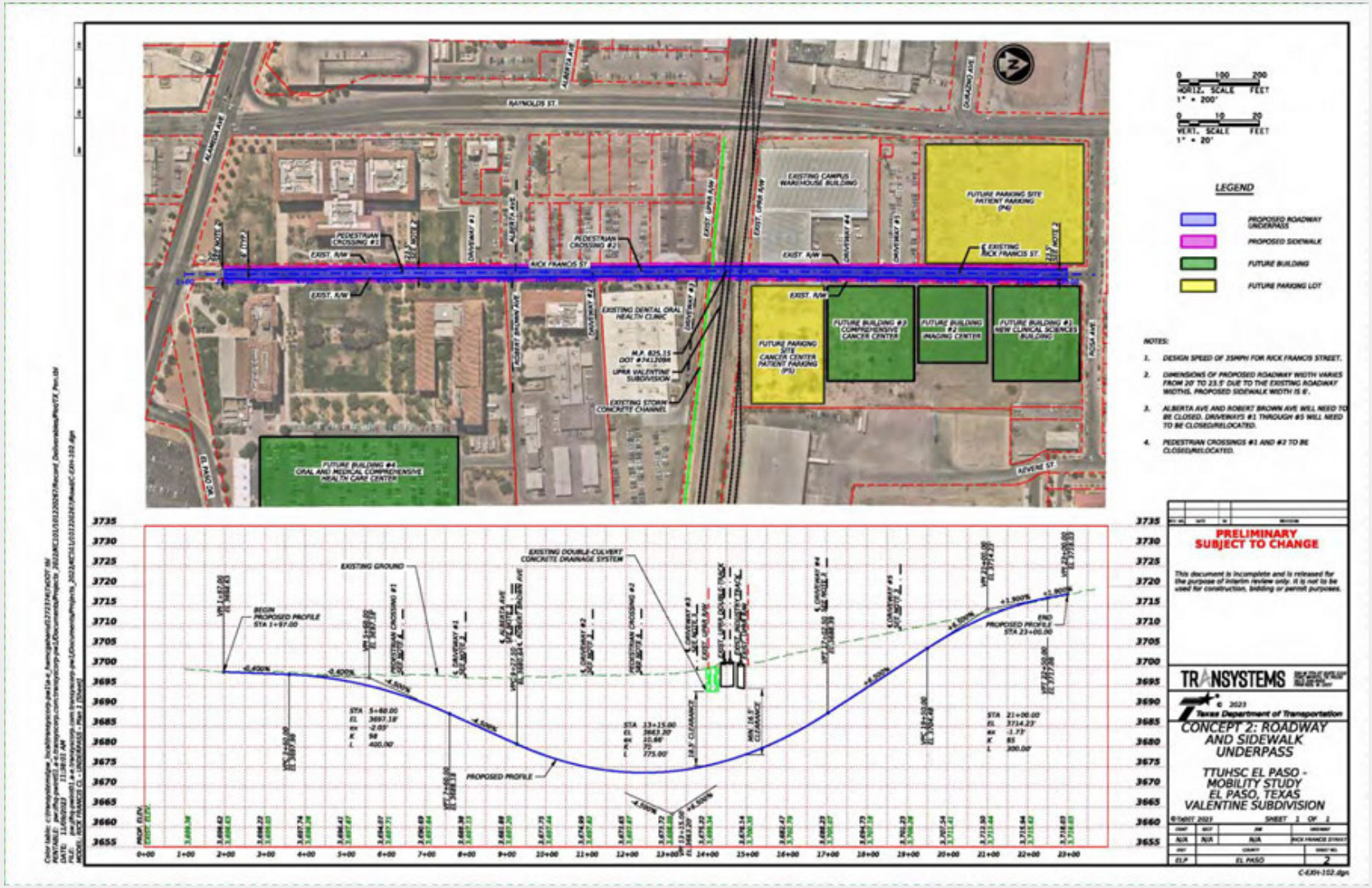
Concept #1: Vehicular/Pedestrian Overpass



Concept #2 Discussion

- Initial Thoughts
  - Visual
  - Access
  - Positives
  - Negatives
  - Overall

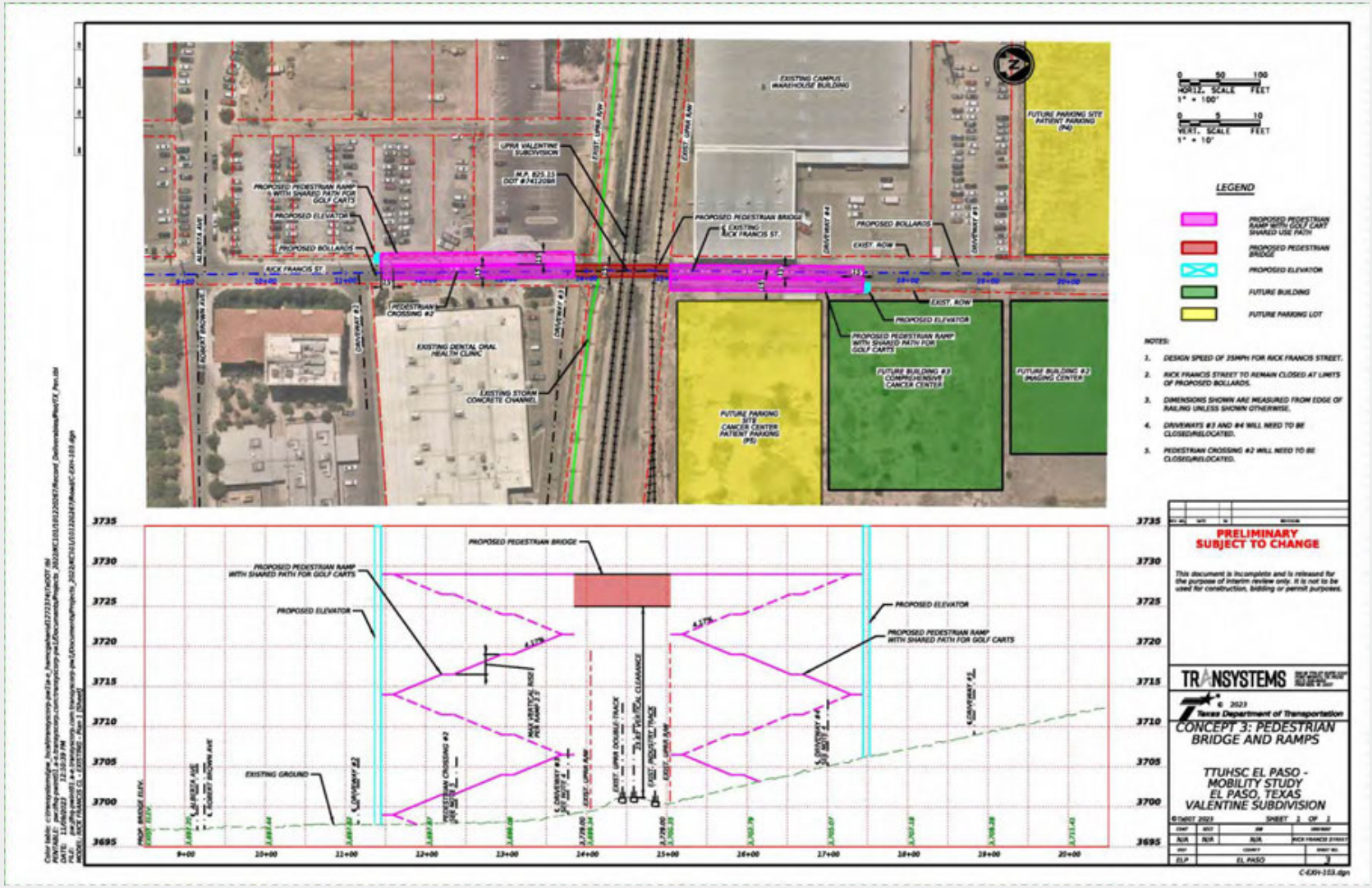
Concept #2: Vehicular/Pedestrian Underpass



Concept #3 Discussion

- Initial Thoughts
  - Visual
  - Access
  - Positives
  - Negatives
  - Overall
- Pedestrian only street
- Curvature connection

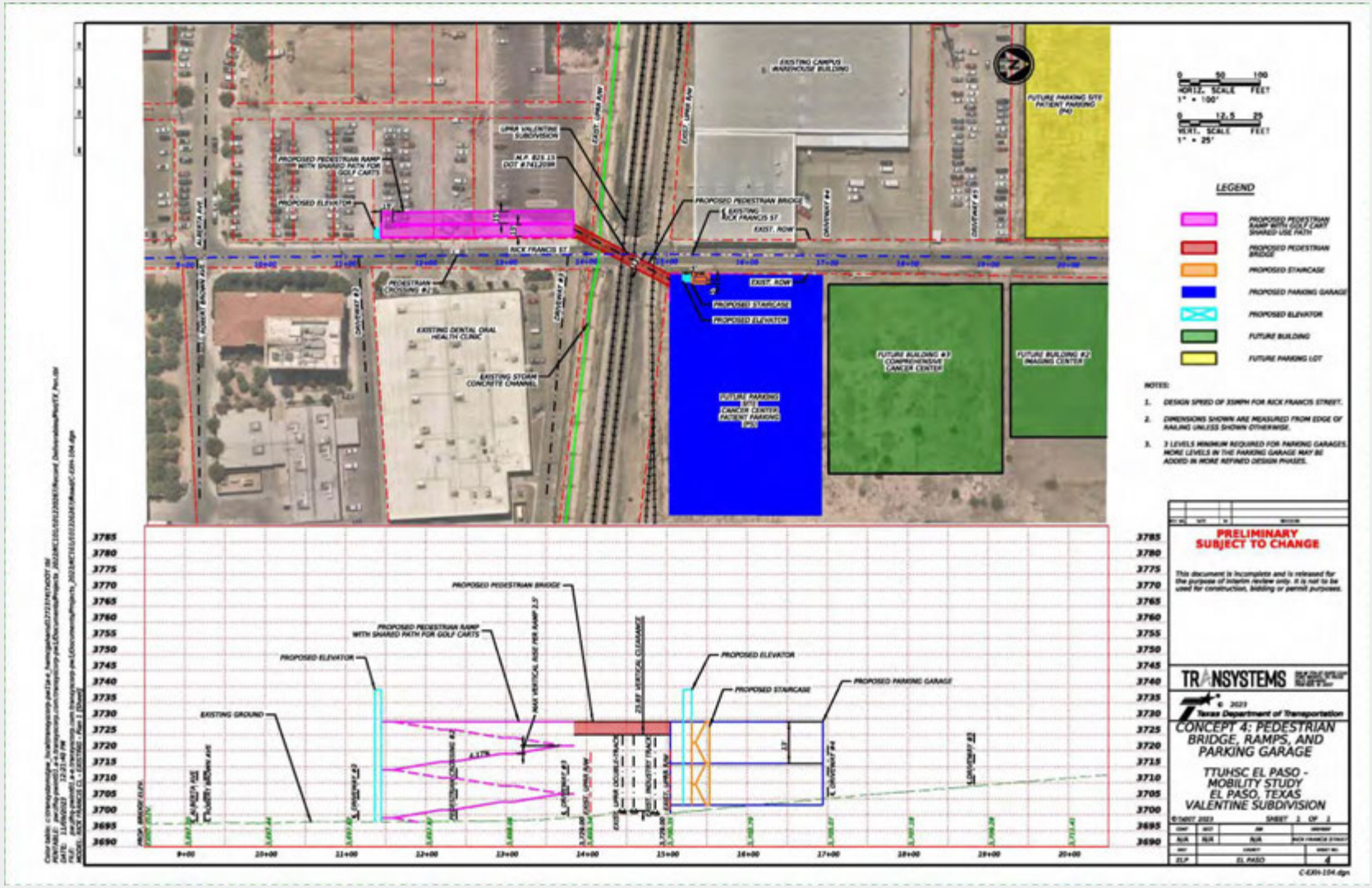
Concept #3: Pedestrian Bridge



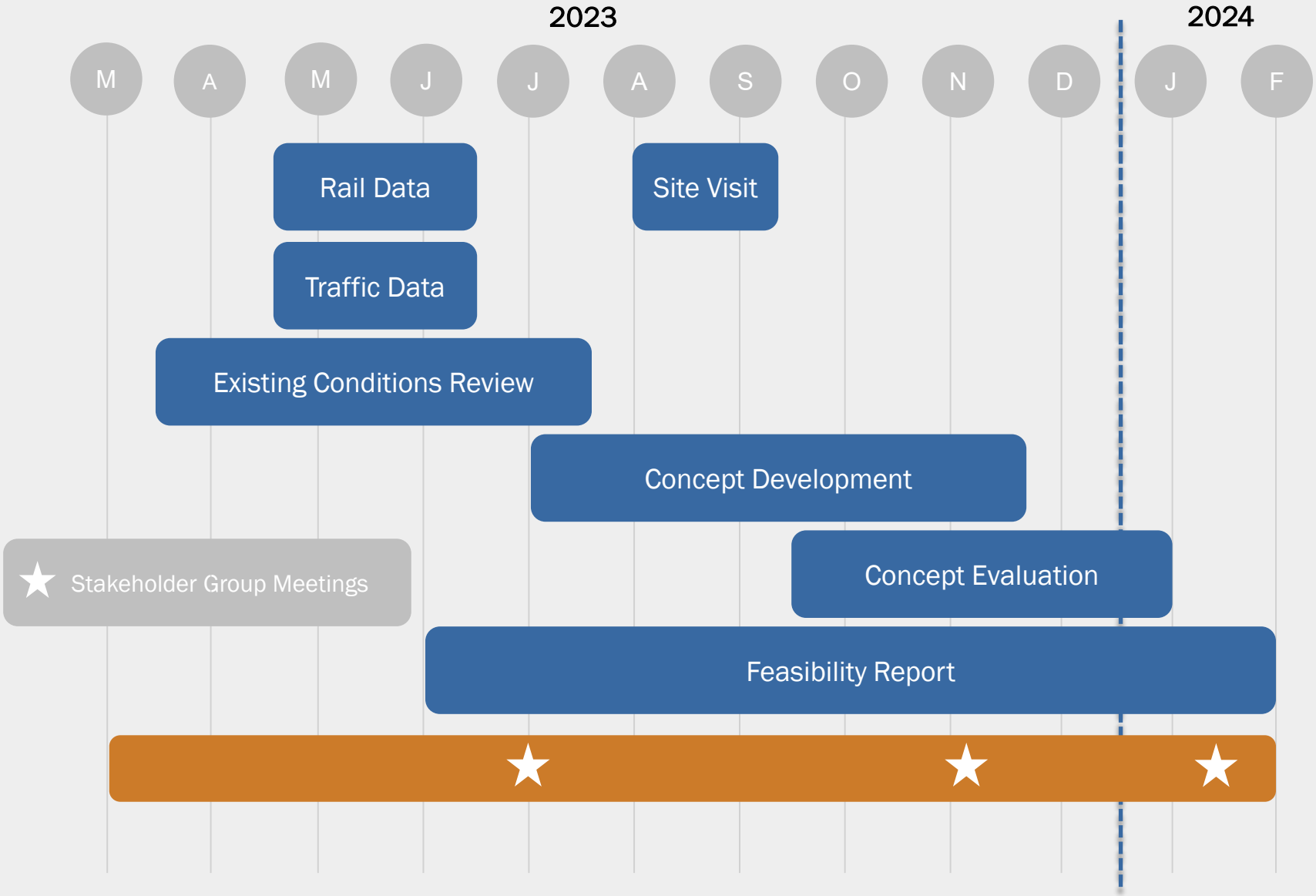
Concept #4 Discussion

- Initial Thoughts
  - Visual
  - Access
  - Positives
  - Negatives
  - Overall
- Interest in a parking garage?

Concept #4: Pedestrian Bridge with a Parking Garage



Schedule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Rail Data
Site Visit
Traffic Data
Existing Conditions Review
Concept Development
Concept Evaluation
Stakeholder Group Meetings
Feasibility Report

Next Steps

- Conceptual Layouts
  - Finalize the four (4) grade separation layouts (plan, profile, typical section)
  - Complete cost estimates
  - Evaluate each concept based on scoring criteria

- Final Report

Next Meeting | Stakeholder Meeting #3 | Preferred Alternatives Review

Texas Department of Transportation
125 EAST 11TH STREET | AUSTIN, TEXAS 78701-2483 | (512) 463-8588 | WWW.TXDOT.GOV

El Paso - Texas Tech University Health Sciences Center
Mobility Study
Stakeholder Meeting #3

January 16, 2024
12:00 PM CST / 11:00 AM MST

Virtual Meeting
Teams

Agenda

I. **Introduction**
   a. Project Team
   b. Safety Briefing

II. **Project Review**
   a. Project Purpose
   b. Scope of Services

III. **Concept Review**

IV. **Costs + Benefit-Cost Analysis**

V. **Overpass versus Underpass: Advantages and Disadvantages**

VI. **Concept Scoring**
   a. Concept #1 - Vehicular/Pedestrian Overpass
   b. Concept #2 - Vehicular/Pedestrian Underpass
   c. Concept #3 - Pedestrian Bridge
   d. Concept #4 - Pedestrian Bridge with a Parking Garage
   e. Overall Scoring

VII. **Other Study Recommendations**

VIII. **Next Steps**

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El Paso - Texas Tech University Health Sciences Center
Mobility Study
Stakeholder Meeting #3

January 16, 2024
12:00 PM CST / 11:00 AM MST

Virtual Meeting
Teams

Summary

Meeting Overview
A stakeholder meeting was held virtually on January 16, 2024. The meeting allowed relevant stakeholder groups to review four concepts and cost estimates, concept scoring, and other study recommendations.

Meeting Attendees

Name	Agency	Title
Rick Lange	Texas Tech Health Sciences Center	University President
Jessica Fisher	Texas Tech Health Sciences Center	Chief Financial Officer
Lisa Badillo	Texas Tech Health Sciences Center	Managing Director
Anna Zendt	City of El Paso	Bicycle and Pedestrian Manager
Joaquin Rodriguez	City of El Paso	Transportation Planning Administrator
Jose (Joe) Madrid	TxDOT - El Paso District	Traffic Section/Rail Coordinator
Marty Boyd	TxDOT - El Paso District	Transportation Planning
Art Estrada Jr	TxDOT - El Paso District	Transportation Planning
Chad Coburn	TxDOT - Rail Division	Planner
Tracy Yellen	Paso del Norte Community Foundation	Chief Executive Officer
Ted Houghton	Houghton Financial	Principal/El Paso Mobility Commission Chair
Tyson Moeller	Union Pacific Railroad (UPRR)	General Director of Network Development
Deanne Winkelmann	TranSystems	Planner/Project Manager
Emma Habosky	TranSystems	Engineer/Planner
Hunter McGahan	TranSystems	Engineer
Sara Clark	TranSystems	Senior Advisor

Project Purpose and Background

The study purpose is to develop and evaluate grade separation concepts across the Union Pacific Railroad (UPRR) corridor to safely connect the Texas Tech University Health Sciences Center campus. The 1.2-mile rail corridor from I-110 to Paisano Drive includes five existing rail crossings – three (3) grade-separated crossings and two (2) at-grade crossings at Rick Francis Street and Chelsea Street.

The study scope included an analysis of existing multimodal conditions, concept development, and feasibility evaluation of concepts. Concept development considered grade separation options that included vehicular traffic, options for bicyclists and/or pedestrians only, and other safety considerations.

The project team (TranSystems) shared cost estimates for all four concepts and high-level benefit-cost analysis results. They also discussed the advantages and disadvantages of an overpass and an underpass. The team provided the screening for all four concepts and discussed overall study recommendations.

Concept Review Discussion

Four concepts were discussed. All concepts include pedestrian access, and two concepts include vehicular access. The following was discussed during the concept review:

Concept #2 - Vehicular/Pedestrian Underpass

- Ted Houghton asked if the vertical clearance of the underpass could be reduced. He noted the distance on the underpass seems long and destructive to campus cohesion.
    - TranSystems noted the concept uses standard design criteria to provide a conservative design. Refinements could be made as potential design advances beyond this study.
- Ted Houghton noted Raynolds Avenue carries most of the truck traffic in the area. He asked if the vertical clearance could be reduced if truck traffic is restricted on Rick Francis Street.
    - TranSystems noted vertical clearance may be reduced based on future conversations outside of the study if all parties can agree. There should be some consideration for emergency services to access the underpass.
- TranSystems noted there is a large, open culvert along the south side of the UPRR tracks. This requires a larger depth for the underpass. Drainage concerns and potential design adjustments will need to be further addressed as next steps beyond this study.
- Another consideration (not explored within this study) may be an exclusive pedestrian-only underpass. An example is located at Texas A&M University with an at-grade vehicular crossing and an adjacent pedestrian underpass.

General Discussion

- TranSystems reminded stakeholders this study is a feasibility study to identify potential concepts. The most conservative designs are shown. Further refinements could be discussed in a future study. Some of the next steps to consider will be outlined in the report.

Costs and Benefit-Cost Analysis

Estimated costs were provided for each concept. The costs are inclusive of construction and programming costs. A high-level benefit-cost analysis was provided for Concept #2 and Concept #3. The benefit-cost ratios were 0.42 and 0.26, respectively. The calculations were based on high-level information from the US Department of Transportation (DOT) benefit-cost analysis guidance.

Concept Screening

All four concepts were screened based on three feasibility criteria: technical, financial, and institutional. The rankings are high, medium, and low and are not indicative of a raw number score. The scores are intended to guide future decision-making by campus staff and the City of El Paso. Overall, the analysis deemed all projects to be considered moderate, feasible options.

General Discussion

- The elevators were removed from the concepts due to the higher cost of maintenance and redundancy of ADA access. The cost is approximately $160,000 per elevator. Elevators may be added in during further design iterations beyond this study.
- TranSystems described that a reduction in vertical clearance would essentially shift the vertical curve up five feet. TranSystems will provide brief information on a lower vertical clearance, including length and driveway access. UPRR guidance will be used.[1]
- Ted Houghton asked if it was possible to bury or re-route the drainage channel. He suggested working with the Public Services Board to review possible options. Further drainage channel review will be needed beyond this study before alternative options may be considered.
- UPRR is averse to additional structures, particularly those related to underpasses. Tyson Moeller noted that UPRR may not allow for an underpass at this location. Therefore, further discussions are necessary before additional design iterations should be considered.

Other Study Recommendations

In addition to the grade separation concepts, several other recommendations were suggested. These included exploring dynamic messaging signs on Raynolds Street to advise drivers if the at-grade Rick Francis crossing is blocked, installing/widening the sidewalk on campus, improving the pedestrian experience by installing heat mitigation strategies, and installing additional fencing along UPRR tracks to reduce trespassing risk.

Next Steps

The final report is anticipated to be completed in February 2024. No concept will be identified as the preferred alternative. The study is an initial screening to guide future decision-making and potential next steps. All four concepts have been deemed technically and financially feasible from an engineering perspective. The institutional perspective (stakeholder discussions and support) is critical to guide any next steps beyond this study.

Further Considerations

- Is the preference for vehicular and pedestrian access or just pedestrian access?
  - Vehicular access was noted as important during meetings. However, this contradicts the potential pedestrian-only Rick Francis Street concept in campus plans.
- Are there potential design criteria negotiations?
  - If an underpass design is moved forward, an agreement on the reduction in vertical clearance will be required by all parties.
  - Any drainage channel changes will need to be reviewed and agreed upon by all parties and will require consideration of impacts beyond the immediate study area.
- How important is campus cohesion?
  - This is difficult to show quantitatively within the benefit-cost analysis. This should be discussed more internally among campus and city staff to determine preferences.

[1] https://www.up.com/cs/groups/public/documents/up_pdf_nativedocs/pdf_rr_grade_sep_projects.pdf, page 28

EL PASO

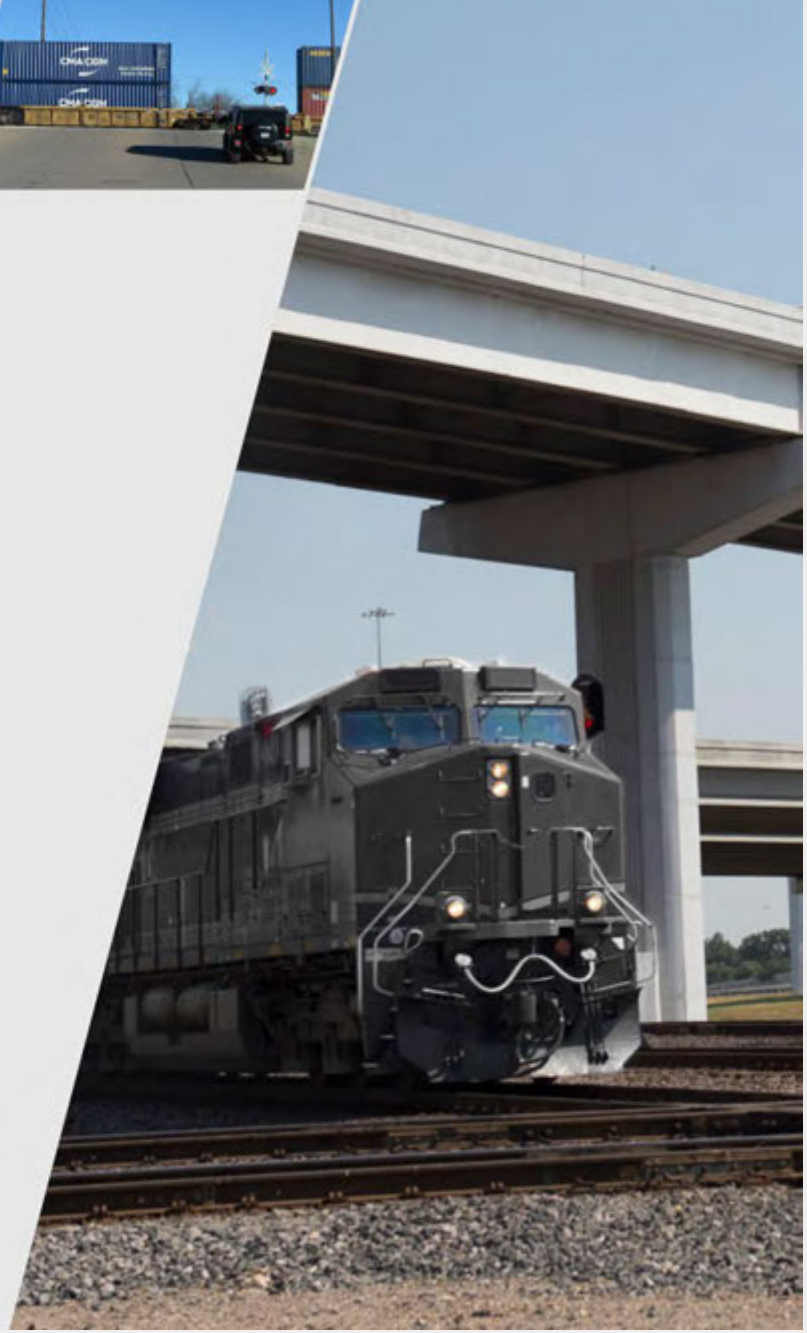
Texas Tech University Health Sciences Center

Mobility Study

Concept Screening & Next Steps

Stakeholder Meeting #3

January 16, 2024



Agenda

1. Introduction & Safety Briefing
2. Project Review
3. Concept Review & Cost Estimates
4. Benefit-Cost Analysis
5. Overpass vs. Underpass: Advantages and Disadvantages
6. Concept Scoring
7. Other Study Recommendations
8. Next Steps

Introduction

Consultant Team - TranSystems

- Deanne Winkelmann, AICP *Project Manager*
- Emma Martin, PE *Traffic Engineer/Planner*
- Hunter McGahan, PE *Engineer*
- Sara Clark, PE *Senior Advisor*

Texas Department of Transportation - Rail Division

- Jess Geray, AICP, EDFP *Planner*
- Chad Coburn *Rail Planning and Programming Section Director*

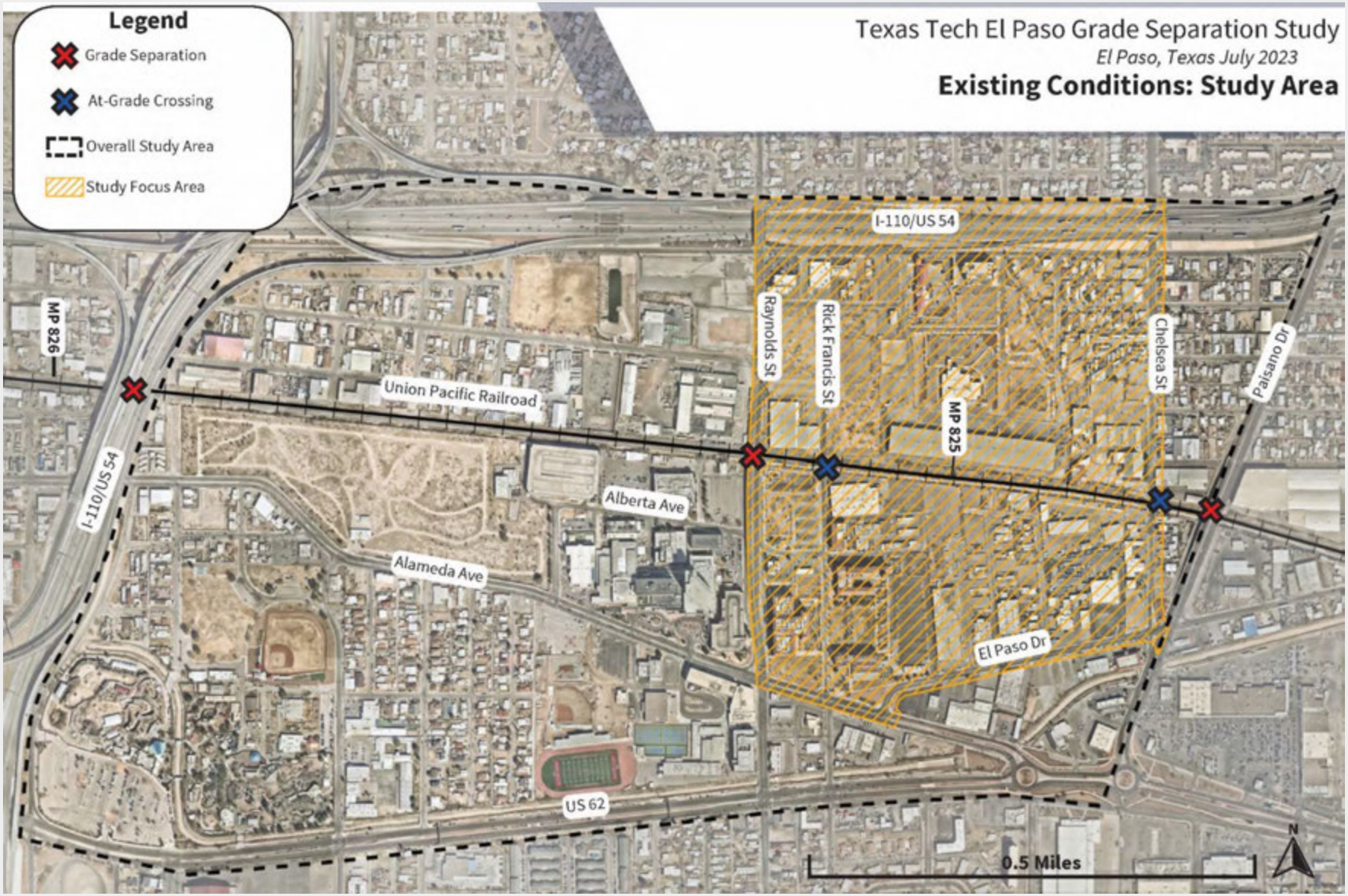
Safety Briefing

- Texas had 5,766 crashes involving pedestrians in 2022
  - 830 deaths and 1,526 injuries
- Drivers should:
  - Yield to pedestrians
  - Don’t text and drive!
  - Be cautious when passing stopped buses or other vehicles
  - Follow the posted speed limit and drive to the conditions

Project Review: Project Purpose

To conduct a feasibility study to *develop and evaluate pedestrian grade separation concepts* across the Union Pacific Railroad (UPRR) corridor on the Texas Tech University Health Sciences Center campus in El Paso that enhances connectivity for multimodal users and improves campus safety.

Project Review: Study Area



Project Review: Scope of Services

Data Collection for Existing Multimodal Conditions

Traffic Operations Railroad Operations Campus Development Site Visit

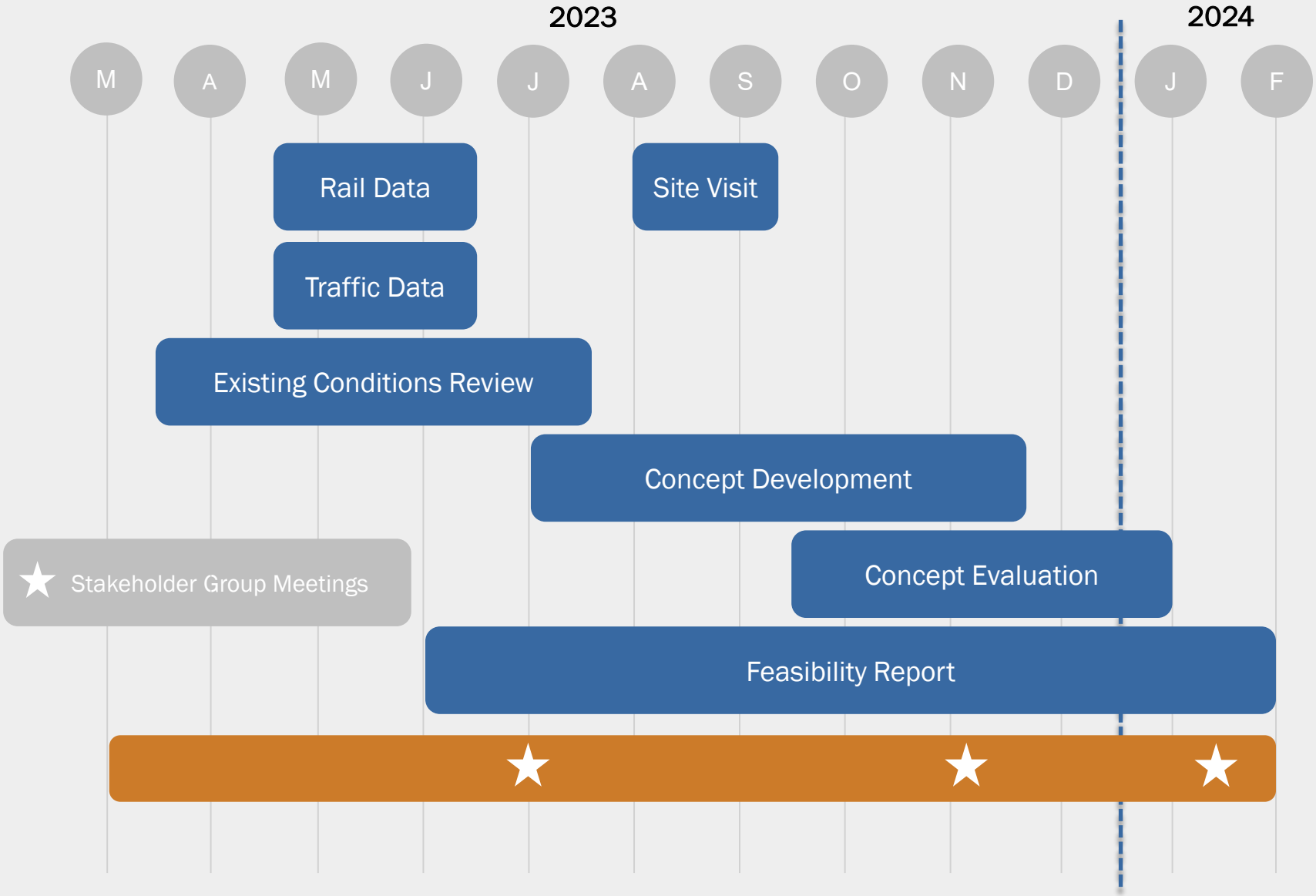
Concept Development + Stakeholder Input

Highway-Rail Grade Separation Options	Non-Vehicular (Pedestrian) Grade Separation Options	Other Multimodal Crossing Improvements

Feasibility Evaluation

Technical Financial Institutional

Schedule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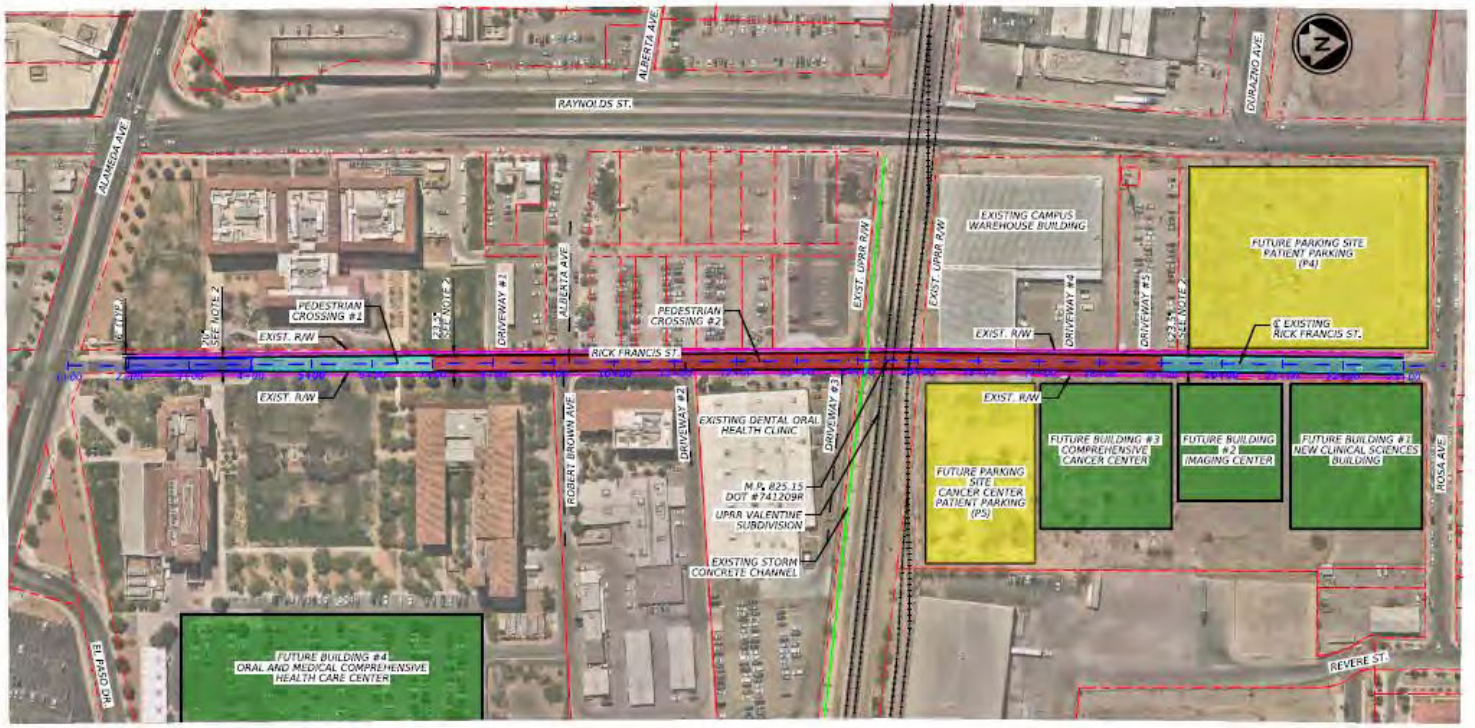
Feasibility Report

Concept #1: Vehicular/Pedestrian Overpass



HORIZ. SCALE 1" = 200' — 0 100 200 FEET

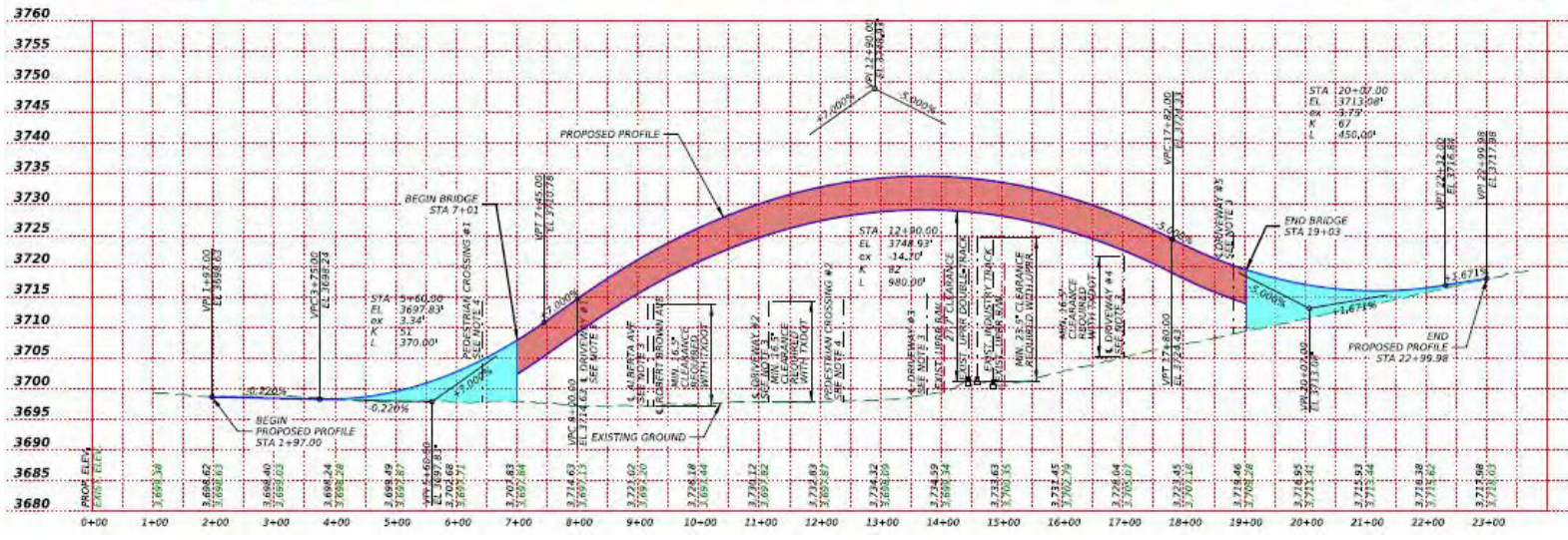
VERT. SCALE 1" = 20' — 0 10 20 FEET

LEGEND

- PROPOSED ROADWAY
- PROPOSED RETAINING WALL
- PROPOSED BRIDGE
- PROPOSED SIDEWALK
- FUTURE BUILDING
- FUTURE PARKING LOT

NOTES:

1. DESIGN SPEED OF 35MPH FOR RICK FRANCIS STREET.
2. DIMENSIONS OF PROPOSED ROADWAY WIDTH VARIES FROM 20' TO 23.5' DUE TO THE EXISTING ROADWAY WIDTHS. PROPOSED SIDEWALK WIDTH IS 6'.
3. ALBERTA AVE, ROBERT BROWN AVE, DRIVEWAYS #2 AND #3 MAY REMAIN OPEN UNDER THE OVERPASS. DRIVEWAYS #1, #4, AND #5 WILL NEED TO BE CLOSED/RELOCATED.
4. PEDESTRIAN CROSSING #2 MAY REMAIN OPEN UNDER THE OVERPASS. PEDESTRIAN CROSSING #1 TO BE CLOSED/RELOCATED.



PRELIMINARY
SUBJECT TO CHANGE

This document is incomplete and is released for the purpose of interim review only. It is not to be used for construction, bidding or permit purposes.

TRANSYSTEMS

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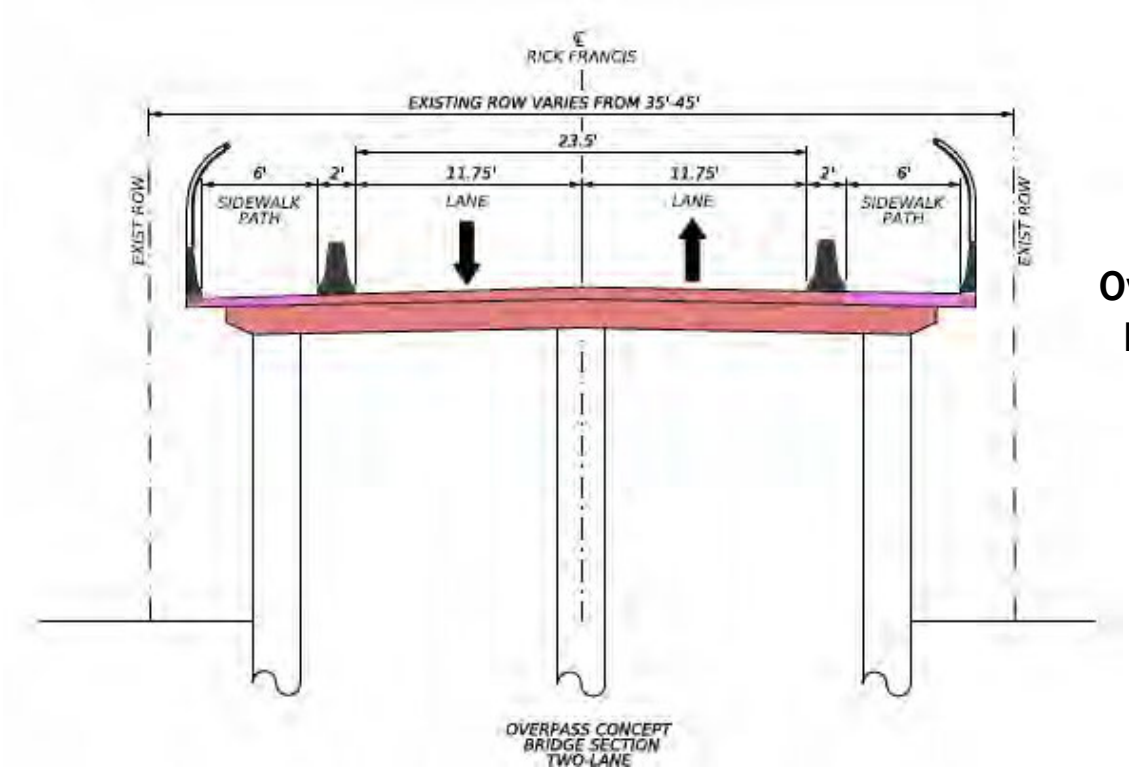
CONCEPT 1: ROADWAY AND SIDEWALK OVERPASS

TTUHSC EL PASO - MOBILITY STUDY
EL PASO, TEXAS
VALENTINE SUBDIVISION

©TxDOT 2024 SHEET 1 OF 2

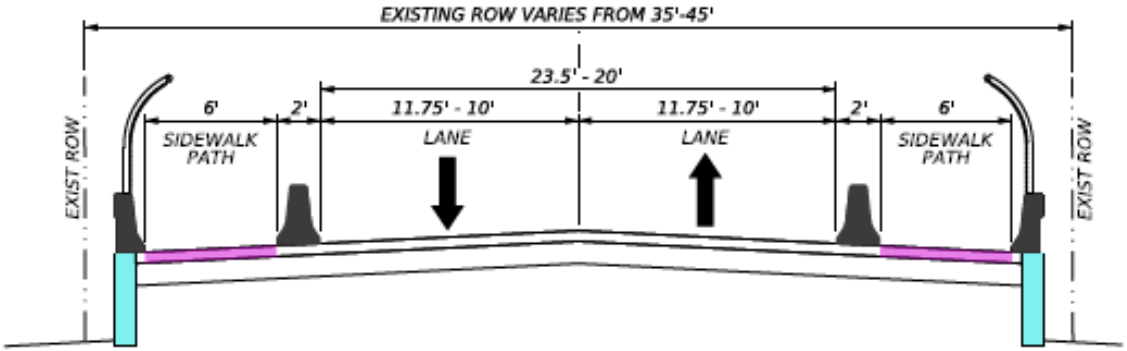
CONT	SECT	JOB	HIGHWAY
N/A	N/A	N/A	RICK FRANCIS STREET
DIST	COUNTY		SHEET NO
ELP	EL PASO		1

Concept #1: Vehicular/Pedestrian Overpass



OVERPASS CONCEPT
BRIDGE SECTION
TWO-LANE

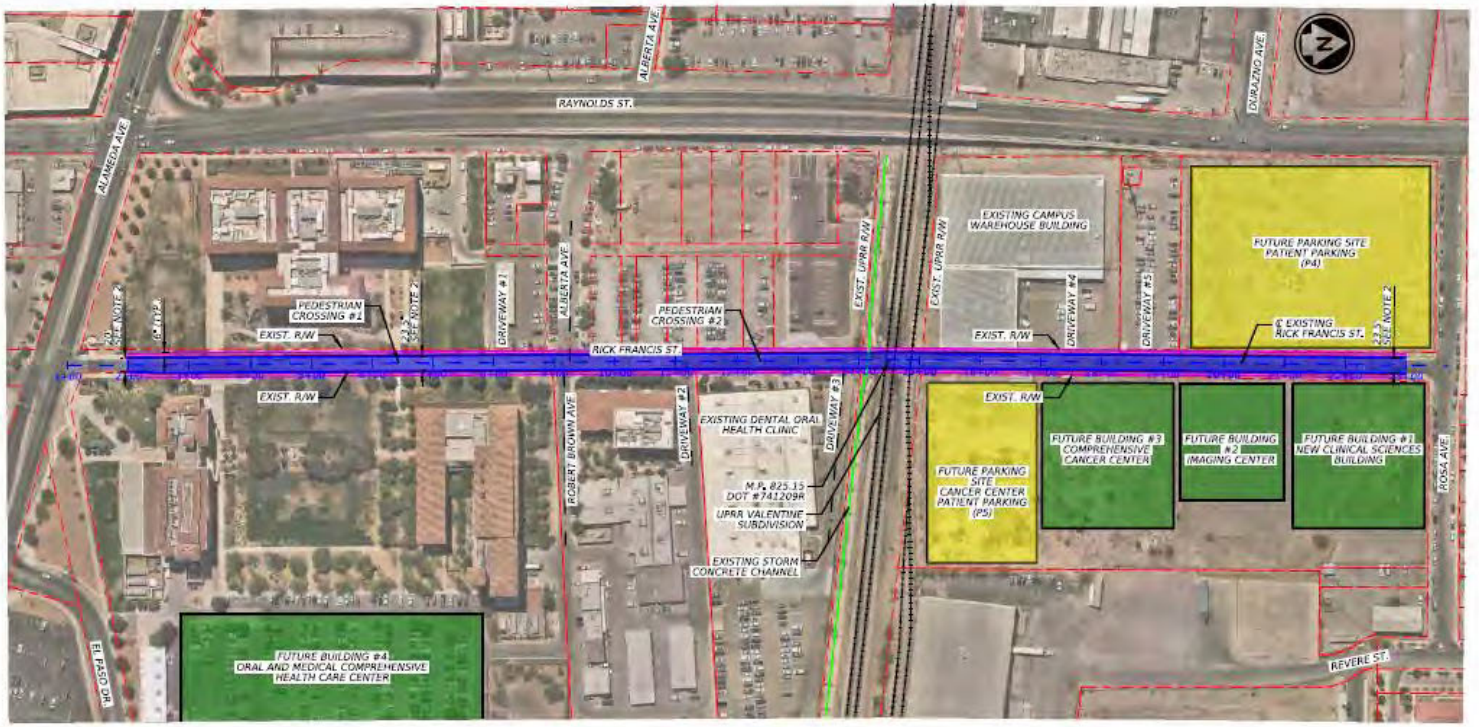
Overpass Bridge



OVERPASS CONCEPT
RETAINING WALL SECTION
TWO-LANE

Overpass Roadway

Concept #2: Vehicular/Pedestrian Underpass



HORIZ. SCALE 1" = 200' — 0, 100, 200 FEET

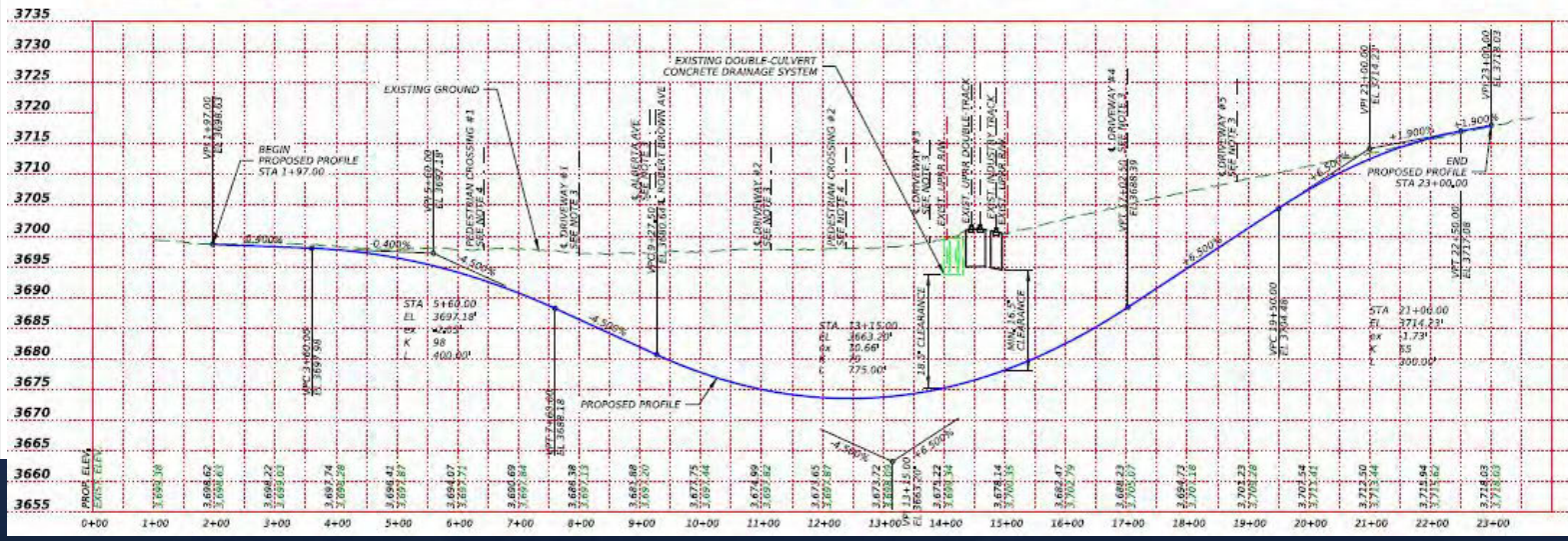
VERT. SCALE 1" = 20' — 0, 10, 20 FEET

LEGEND

- PROPOSED ROADWAY UNDERPASS
- PROPOSED SIDEWALK
- FUTURE BUILDING
- FUTURE PARKING LOT

NOTES:

1. DESIGN SPEED OF 35MPH FOR RICK FRANCIS STREET.
2. DIMENSIONS OF PROPOSED ROADWAY WIDTH VARIES FROM 20' TO 23.5' DUE TO THE EXISTING ROADWAY WIDTHS. PROPOSED SIDEWALK WIDTH IS 6'.
3. ALBERTA AVE AND ROBERT BROWN AVE WILL NEED TO BE CLOSED, DRIVEWAYS #1 THROUGH #5 WILL NEED TO BE CLOSED/RELOCATED.
4. PEDESTRIAN CROSSINGS #1 AND #2 TO BE CLOSED/RELOCATED.



PRELIMINARY SUBJECT TO CHANGE

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TRANSYSTEMS

CONCEPT 2: ROADWAY AND SIDEWALK UNDERPASS

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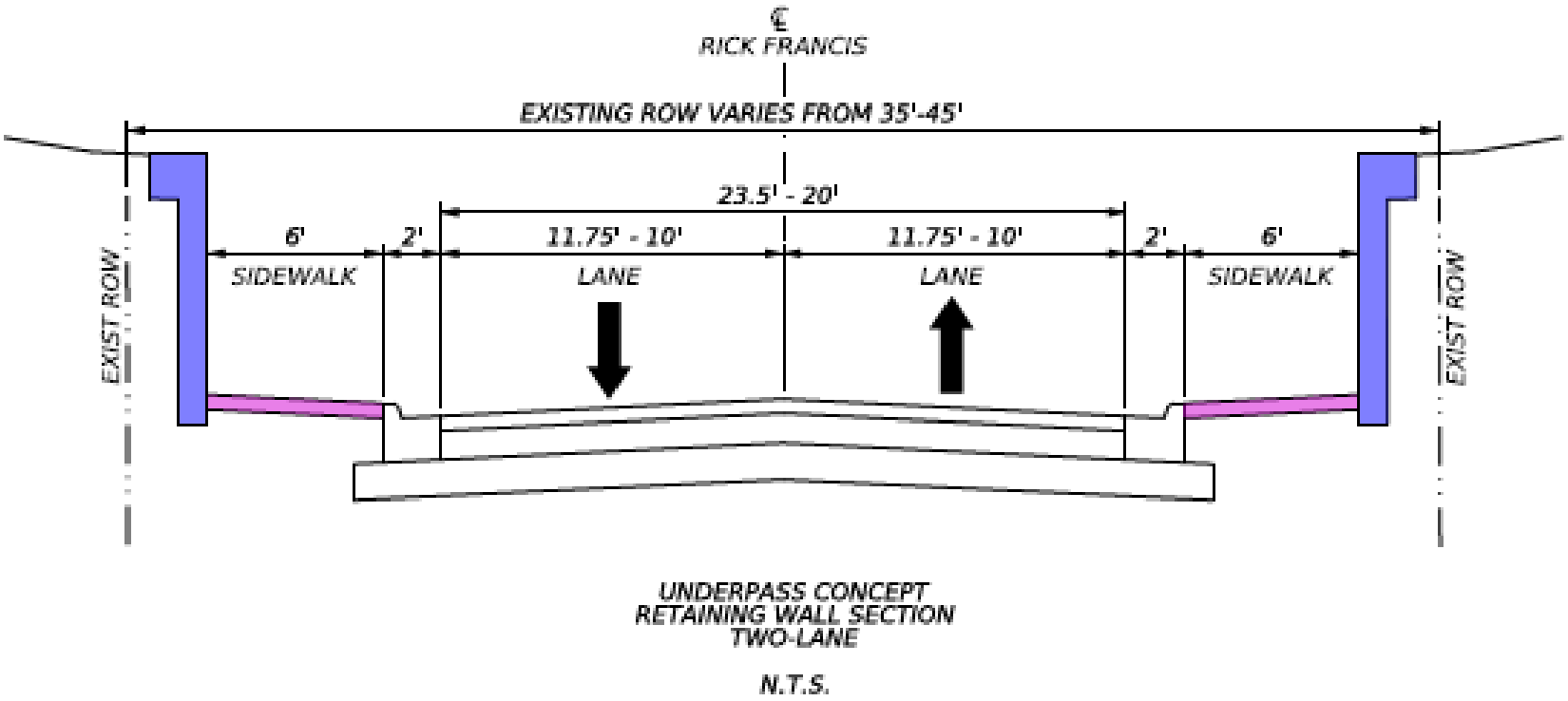
EL PASO, TEXAS
VALENTINE SUBDIVISION

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
N/A	N/A	N/A	RICK FRANCIS STREET
DIST	COUNTY		SHEET NO
ELP	EL PASO		3

Concept #2: Vehicular/Pedestrian Underpass

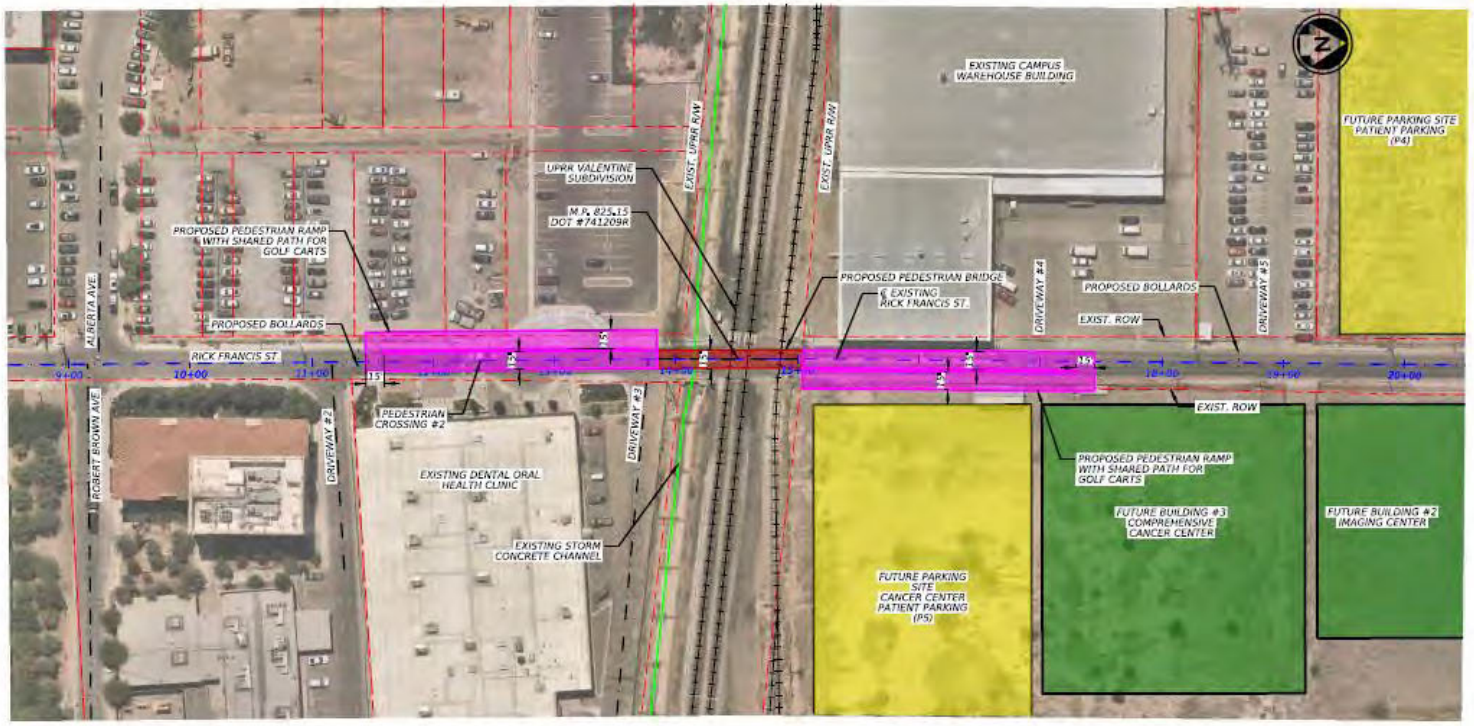


UNDERPASS CONCEPT
RETAINING WALL SECTION
TWO-LANE

N.T.S.

Concept #2: Vehicular/Pedestrian Underpass

Concept #3: Pedestrian Bridge



0 50 100
HORIZ. SCALE FEET
1" = 100'

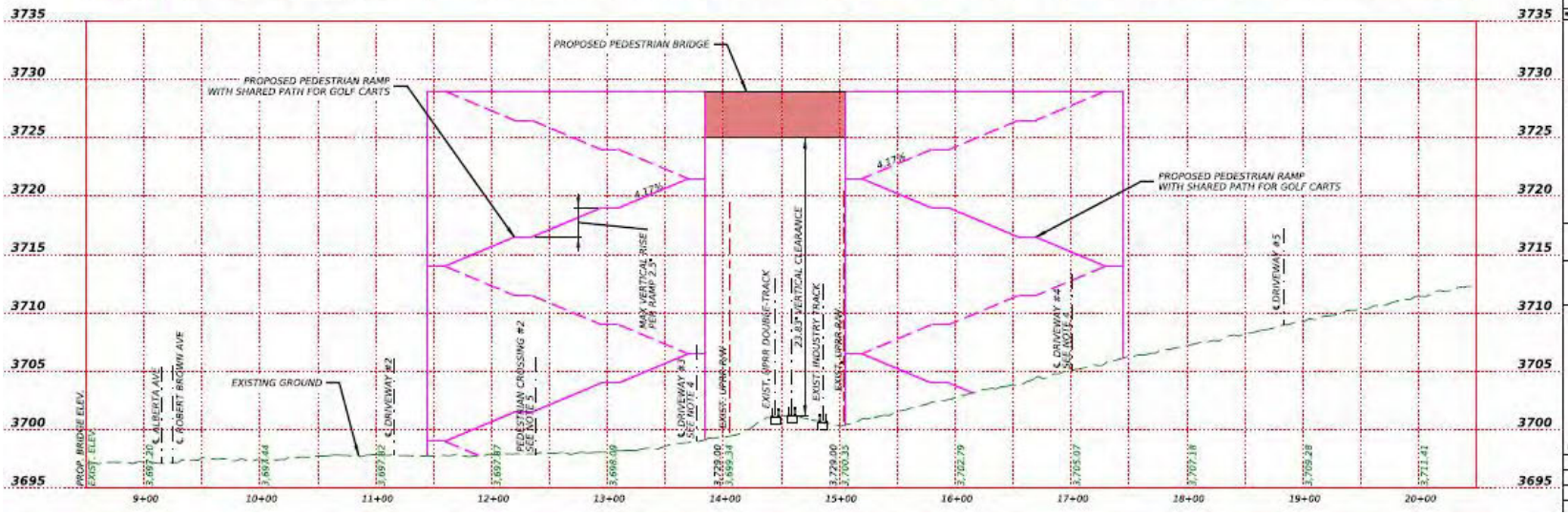
0 5 10
VERT. SCALE FEET
1" = 10'

LEGEND

- PROPOSED PEDESTRIAN RAMP WITH GOLF CART SHARED USE PATH
- PROPOSED PEDESTRIAN BRIDGE
- FUTURE BUILDING
- FUTURE PARKING LOT

NOTES:

1. DESIGN SPEED OF 35MPH FOR RICK FRANCIS STREET.
2. RICK FRANCIS STREET TO REMAIN CLOSED AT LIMITS OF PROPOSED BOLLARDS.
3. DIMENSIONS SHOWN ARE MEASURED FROM EDGE OF RAILING UNLESS SHOWN OTHERWISE.
4. DRIVEWAYS #3 AND #4 WILL NEED TO BE CLOSED/RELOCATED.
5. PEDESTRIAN CROSSING #2 WILL NEED TO BE CLOSED/RELOCATED.



PRELIMINARY
SUBJECT TO CHANGE

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TRANSYSTEMS

CONCEPT 3: PEDESTRIAN BRIDGE AND RAMPS

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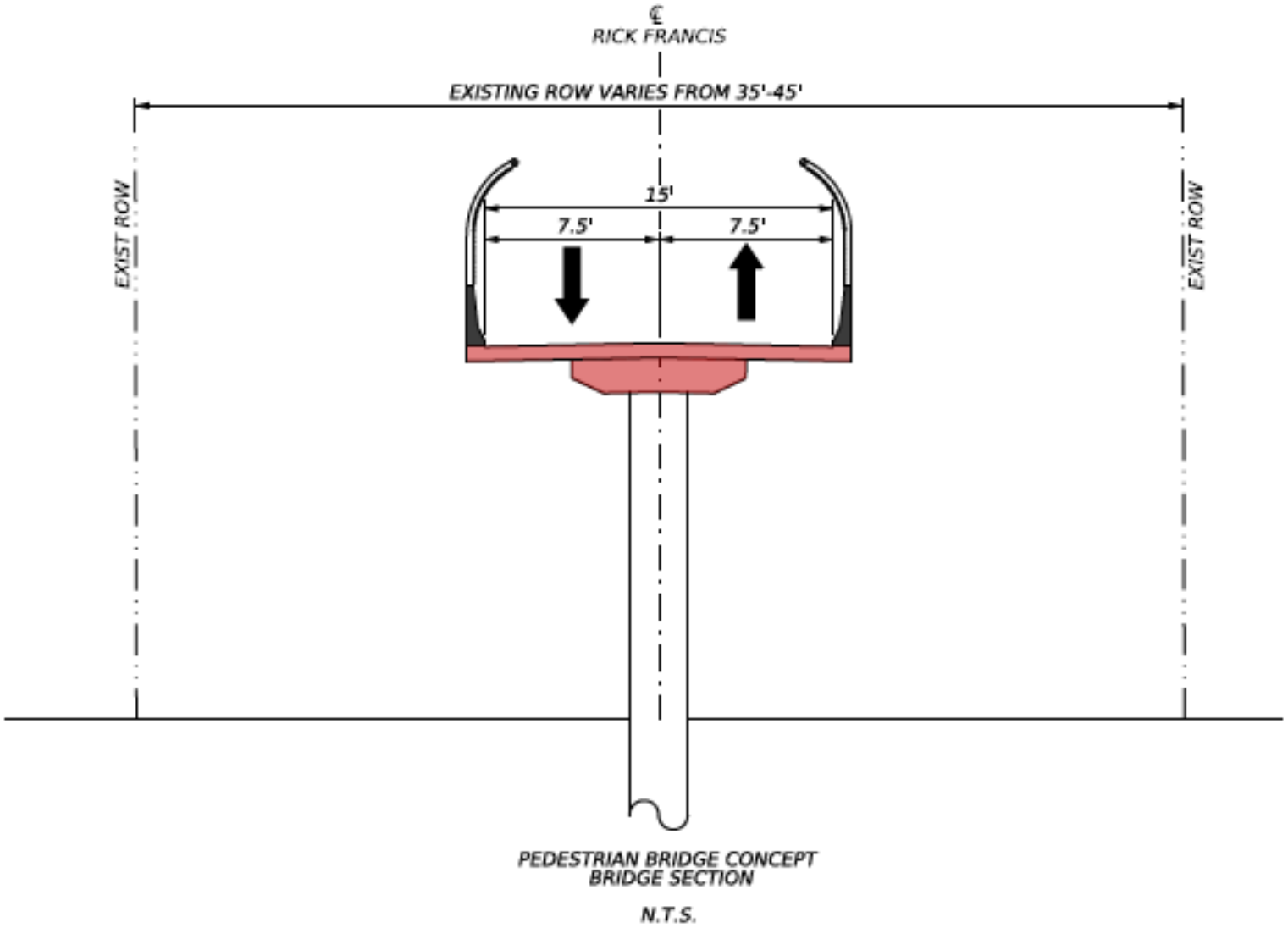
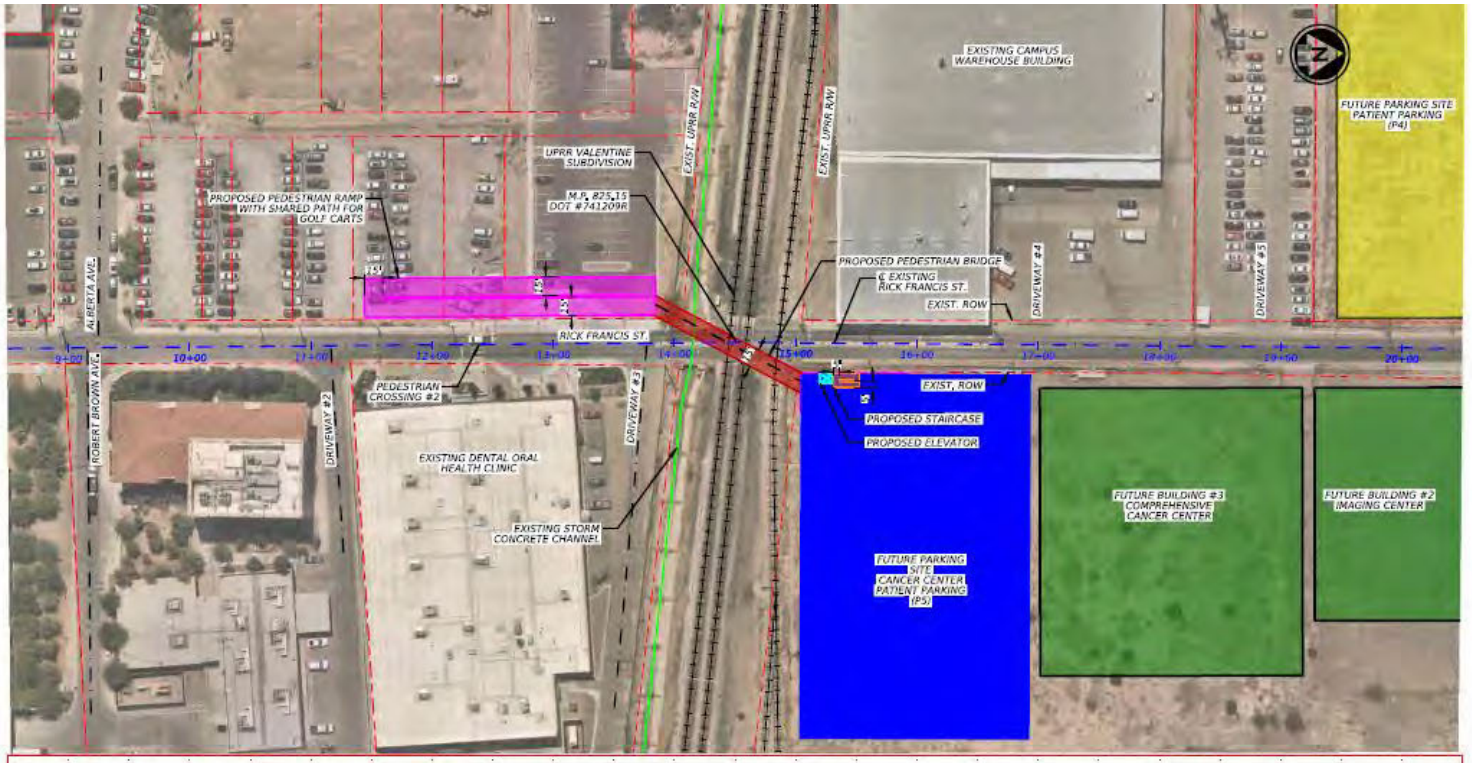
CONT	SECT	JOB	HIGHWAY
N/A	N/A	N/A	RICK FRANCIS STREET
DIST	COUNTY		SHEET NO.
ELP	EL PASO		5

Concept #3: Pedestrian Bridge



Concept #4: Pedestrian Bridge with a Parking Garage



0 50 100
HORIZ. SCALE FEET
1" = 100'

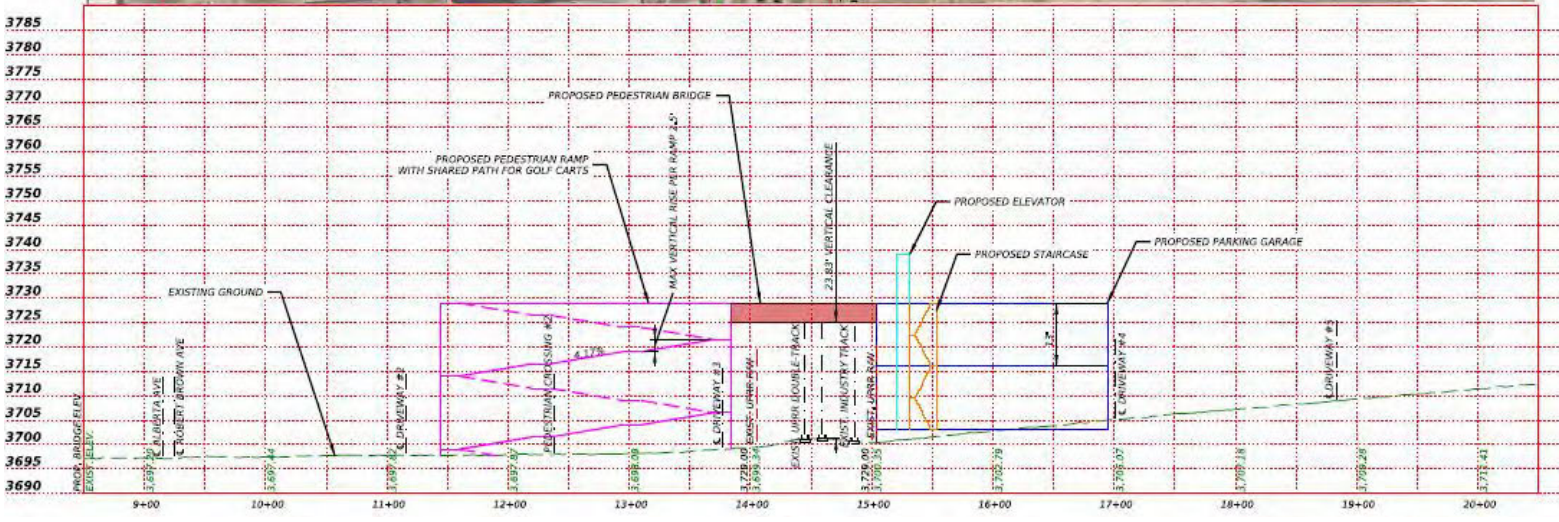
0 12.5 25
VERT. SCALE FEET
1" = 25'

LEGEND

- PROPOSED PEDESTRIAN RAMP WITH GOLF CART SHARED USE PATH
- PROPOSED PEDESTRIAN BRIDGE
- PROPOSED STAIRCASE
- PROPOSED PARKING GARAGE
- PROPOSED ELEVATOR
- FUTURE BUILDING
- FUTURE PARKING LOT

NOTES:

1. DESIGN SPEED OF 35MPH FOR RICK FRANCIS STREET.
2. DIMENSIONS SHOWN ARE MEASURED FROM EDGE OF RAILING UNLESS SHOWN OTHERWISE.
3. 3 LEVELS MINIMUM REQUIRED FOR PARKING GARAGES. MORE LEVELS IN THE PARKING GARAGE MAY BE ADDED IN MORE REFINED DESIGN PHASES.



PRELIMINARY SUBJECT TO CHANGE

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TRANSYSTEMS

CONCEPT 4: PEDESTRIAN BRIDGE, RAMPS, AND PARKING GARAGE

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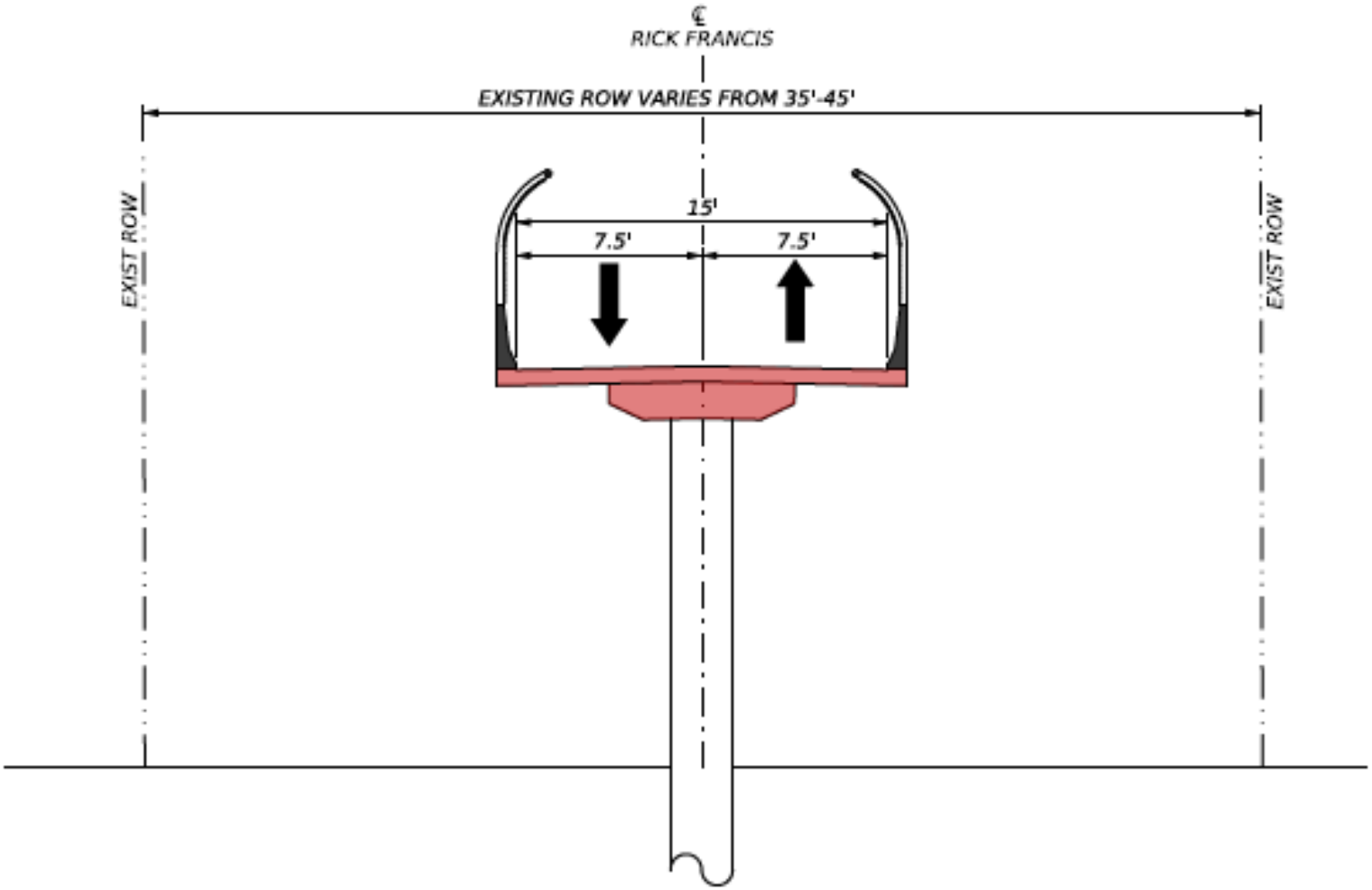
CONT	SECT	JOB	HIGHWAY
N/A	N/A	N/A	RICK FRANCIS STREET
DIST.	COUNTY		SHEET NO.
ELP	EL PASO		7

Concept #4: Pedestrian Bridge with a Parking Garage



Cost Estimates

Alternative	Concept	Cost Estimate
1	Vehicular/Pedestrian Overpass	$15.5 million
2	Vehicular/Pedestrian Underpass	$22.9 million
3	Pedestrian Bridge	$8.7 million
4	Pedestrian Bridge Connecting to Parking Garage	$4.8 million*

Cost estimates indicate 2023 dollars.

Cost estimate includes construction cost and programming cost (design, inspection, contingency).

*Concept #4 does not include the cost of the parking garage. The garage would be constructed by others.

Benefit-Cost Analysis

Benefit-Cost Analysis (BCA)

- Determines future risk reduction benefits of a hazard mitigation project
- Benefit-cost ratio > 1.0: cost-effective
- High-level BCA model considered items such as:
  - Vehicle, pedestrian, and rail volumes
  - Crossing safety (crashes)
  - Travel time savings

Results

- Vehicular/Pedestrian Underpass (Alternative #2): **0.42**
- Pedestrian Bridge (Alternative #3): **0.26**

Overpass vs. Underpass

Comparison	Overpass	Underpass
Campus Cohesion	Potential campus barrier and can reduce connectivity under bridge	Maintains visual cohesion on campus at street level
Access During Weather Events	More accessible during weather events	Drainage problems may occur and reduce safe access
Pedestrian Path	Longer pedestrian path with lengthier diversions	Shorter pedestrian path with more direct access
Pedestrian Comfort	Does not provide shade sun or weather elements (unless covered)	Provides shade cover from the sun and weather elements
Lighting	Provides ambient natural lighting	Lighting, security, and graffiti removal are potential concerns
Cost	Lower cost	Higher cost
Other Options	More creative connection options (ex: skybridge to building or garage)	Fewer connection options

Concept Screening

Feasibility Criteria

- Technical
- Financial
- Institutional

Methodology

- Concepts are ranked as high, medium, or low for each criteria
- Ranking is not intended to be a quantitative score but rather a high-level screening to guide future decision-making by TTUHSC and City of El Paso

Concept Screening

Criteria		Definition
Technical	Design Criteria	Meets project-specific design criteria
	Constructability	Reduces traffic and student impacts during construction
	Right of Way Impacts	Minimizes acquisition of developed/undeveloped properties
	Access Impacts	Maintains access to existing properties and buildings
	Environmental Impacts	Mitigates known high-level environmental concerns
	Campus Planning	Aligns with future campus plans
Financial	Construction Cost	Project construction and programming costs
	Maintenance Cost	Maintenance of capital or operational costs
Institutional	Campus Staff Support	Generally receives support from campus staff
	City of El Paso Support	Generally receives support from the City of El Paso staff
	UPRR Support	Generally receives support from UPRR staff

Concept #1: Vehicular/Pedestrian Overpass

Criteria		Definition	Rating
Technical	Design Criteria	Meets design criteria and sidewalk follows roadway profile	🟢
	Constructability	Requires temporary crossing closure and detour.	🟡
	Right of Way Impacts	Majority within ROW with some easements needed	🟡
	Access Impacts	Three (3) driveways and (1) pedestrian crossing impacted	🔴
	Environmental Impacts	Limited environmental concerns	🟢
	Campus Planning	Multimodal access but does not align with ped-only plans	🟡
Financial	Construction Cost	$15.5 million	🟡
	Maintenance Cost	Standard maintenance	🟡
Institutional	Campus Staff Support	Least preferred concept as it bisects campus	🔴
	City of El Paso Support	Less interest due to adjacent Raynolds Street overpass	🔴
	UPRR Support	Vehicular bridge over railroad is preferred	🟢

🟢 Low Impact or High Interest 🟡 Moderate Impact or Interest 🔴 High Impact or Low Interest

Concept #2: Vehicular/Pedestrian Underpass

Criteria		Definition	Rating
Technical	Design Criteria	Meets design criteria and sidewalk follows roadway profile	🟢
	Constructability	Requires temporary closure, detour, and lengthy construction	🔴
	Right of Way Impacts	Majority within ROW with some easements needed	🟡
	Access Impacts	All driveways and Robert Brown Avenue will be impacted	🔴
	Environmental Impacts	Drainage impacts will need further review	🟡
	Campus Planning	Multimodal access but does not align with ped-only plans	🟡
Financial	Construction Cost	$22.9 million	🔴
	Maintenance Cost	Maintenance associated with drainage is anticipated	🔴
Institutional	Campus Staff Support	Prefer vehicular access; More appealing than overpass	🟢
	City of El Paso Support	Advances city's goal for multimodal access	🟡
	UPRR Support	Vehicular bridge over railroad is preferred	🔴

🟢 Low Impact or High Interest 🟡 Moderate Impact or Interest 🔴 High Impact or Low Interest

Concept #3: Pedestrian Bridge

Criteria		Definition	Rating
Technical	Design Criteria	Meets design criteria	🟢
	Constructability	Separate alignment allows for easier construction	🟢
	Right of Way Impacts	Portion of existing parking lot would be impacted	🟡
	Access Impacts	Two (2) driveways and one (1) ped crossing and impacted	🟡
	Environmental Impacts	Limited environmental concerns	🟢
	Campus Planning	Improve walkability and aligns with potential ped-only plans	🟢
Financial	Construction Cost	$8.7 million	🟢
	Maintenance Cost	Standard maintenance (elevators would increase costs)	🟢
Institutional	Campus Staff Support	Prefer crossing remains for vehicles; Pedestrian ramp usage	🟡
	City of El Paso Support	Advances city's goal for multimodal access	🟡
	UPRR Support	Maintaining access to roadway crossing needs discussion	🟡

🟢 Low Impact or High Interest 🟡 Moderate Impact or Interest 🔴 High Impact or Low Interest

Concept #4: Pedestrian Bridge with Parking Garage

Criteria		Definition	Rating
Technical	Design Criteria	Meets design criteria	🟢
	Constructability	Separate alignment allows for easier construction	🟢
	Right of Way Impacts	Portion of existing parking lot would be impacted; requires multi-story parking garage	🟡
	Access Impacts	No existing or proposed access would be impacted	🟢
	Environmental Impacts	Limited environmental concerns	🟢
	Campus Planning	Improves walkability and aligns with potential ped-only plans; Concept is contingent on a new of a multi-level parking garage	🟡
Financial	Construction Cost	$4.8 million* (excluding parking garage)	🟢
	Maintenance Cost	Standard maintenance (elevators would increase costs)	🟢
Institutional	Campus Staff Support	Prefer crossing remains for vehicles; Pedestrian ramp usage	🟡
	City of El Paso Support	Advances city's goal for multimodal access	🟡
	UPRR Support	Maintaining access to roadway crossing needs discussion	🟡

🟢 Low Impact or High Interest 🟡 Moderate Impact or Interest 🔴 High Impact or Low Interest

Concept Screening

Screening Criteria	#1 Vehicular/ Pedestrian Overpass	#2 Vehicular/ Pedestrian Underpass	#3 Pedestrian Bridge	#4 Pedestrian Bridge with Parking Garage
Technical	🟡	🟡	🟢	🟢
Financial	🟡	🔴	🟢	🟢
Institutional	🔴	🟡	🟡	🟡
Overall Merit	🟡	🟡	🟡	🟡

🟢 Low Impact or High Interest 🟡 Moderate Impact or Interest 🔴 High Impact or Low Interest

Other Study Recommendations

- Dynamic message signs to advise alternate routes when crossing is blocked
- Additional and widened sidewalk to improve pedestrian mobility
- Improve pedestrian experience with heat mitigation strategies and landscaping to increase comfort and reduce sound
- Install additional fencing along UPRR tracks to reduce trespassing risk

Next Steps

- Project Schedule and Remaining Tasks
  - This is the final Stakeholder Meeting for the study
  - Draft report to be completed in late January
  - Anticipate final report completion in February

  No concept will be identified as the preferred alternative. The study is an initial screening to guide future decision-making and potential next steps.

- Other Opportunities
  - TTUHSC and City of El Paso staff to continue discussion if desired
  - Consideration of grant opportunities after study completion