

Tempe Grade Separated Railroad Crossing Between Broadway and Apache at Union Pacific Railroad

MAG Project No. 0600-0145-23-E001-11317A-OJ.000013

City of Tempe Project No. TMP-23-DA-001

Submittal 2.2 on September 13, 2023, email recipients:

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SHEET NO. & DESCRIPTION

1	COVER SHEET
2	PROJECT LIMITS MAP
3	APACHE BLVD - PLAN VIEW CONCEPT
4	APACHE BLVD - HALF STREET SECTION ALTERNATIVES/CONCEPTS 1 & 2
5	APACHE BLVD - HALF STREET SECTION ALTERNATIVES/CONCEPT 3
6	APACHE POLICE SUBSTATION DRIVEWAY RECONSTRUCTION
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DESIGN CRITERIA SOURCES

CITY OF TEMPE PUBLIC WORKS DEPT ENGINEERING DESIGN CRITERIA
 CITY OF MINNEAPOLIS, MN DESIGN GUIDANCE - SIDEWALK-LEVEL PROTECTED BIKE LANES
 NACTO URBAN STREET DESIGN GUIDE
 GUIDELINES FOR RAILROAD GRADE SEPARATION PROJECTS / UPRR + BNSF
 PUBLIC RIGHT-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG)

ADDITIONAL CONTENT

PROJECT ASSESSMENT REPORT
 CONCEPT 1 - VIDEO shared separately
 CONCEPT 1 - GOOGLE EARTH MODEL shared separately



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PROJECT CONCEPT LIMITS



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APACHE PROTECTED BIKE LANE PLAN
SCALE: 1" = 100'



APACHE PROTECTED BIKE LANE PLAN ISOMETRIC
PREFERRED APACHE CONCEPT
NTS





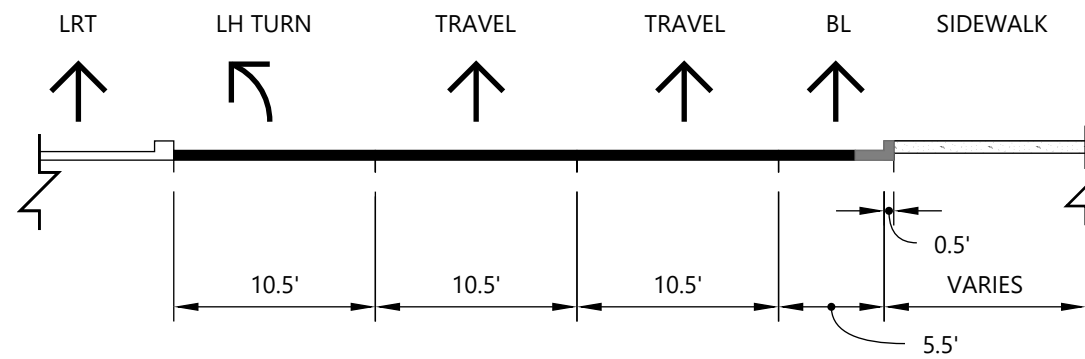
**EXAMPLE LOCATION OF SECTION
CONSTRAINTS OF PROPOSED SECTION PRESENT
BASED ON EXISTING ROW WIDTHS (ESTIMATED)**



Various streetscape treatments and design aesthetics are currently found throughout the 0.33 mile of the Apache corridor observed.

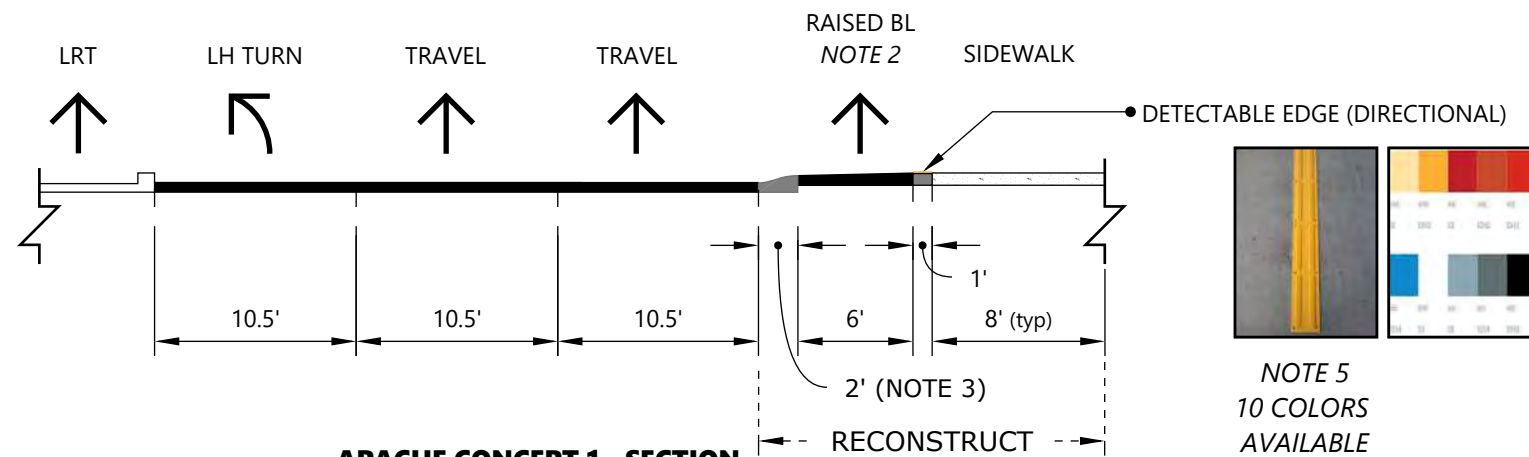
NOTES:

- (1) DATA FROM MEASURING AERIAL USED FOR THIS CONCEPT
- (2) FOR PREFERRED WIDTH OF 6-FT BIKE LANE, RECONSTRUCTING CURB IS REQUIRED
- (3) 2' ROLL CURB
- (4) RIGHT OF WAY ACQUISITION REQUIREMENTS NOT COMPLETED
- (5) AVAILABLE COLORS FOR DIRECTIONAL DETECTABLE EDGE NOTED TO THE RIGHT FROM <https://accesstile.com/wayfinding/>
- (6) LOW PROFILE TRAFFIC SEPARATOR CURB INFO AT <https://ntsigns.com/construction-and-work-zone/flexible-delineators/channelizer-curb/low-profile-traffic-posts-separator-curb/>



EXISTING SECTION (MOST CONSTRAINED, ESTIMATED)

NOTE 1
SCALE: 1" = 10'

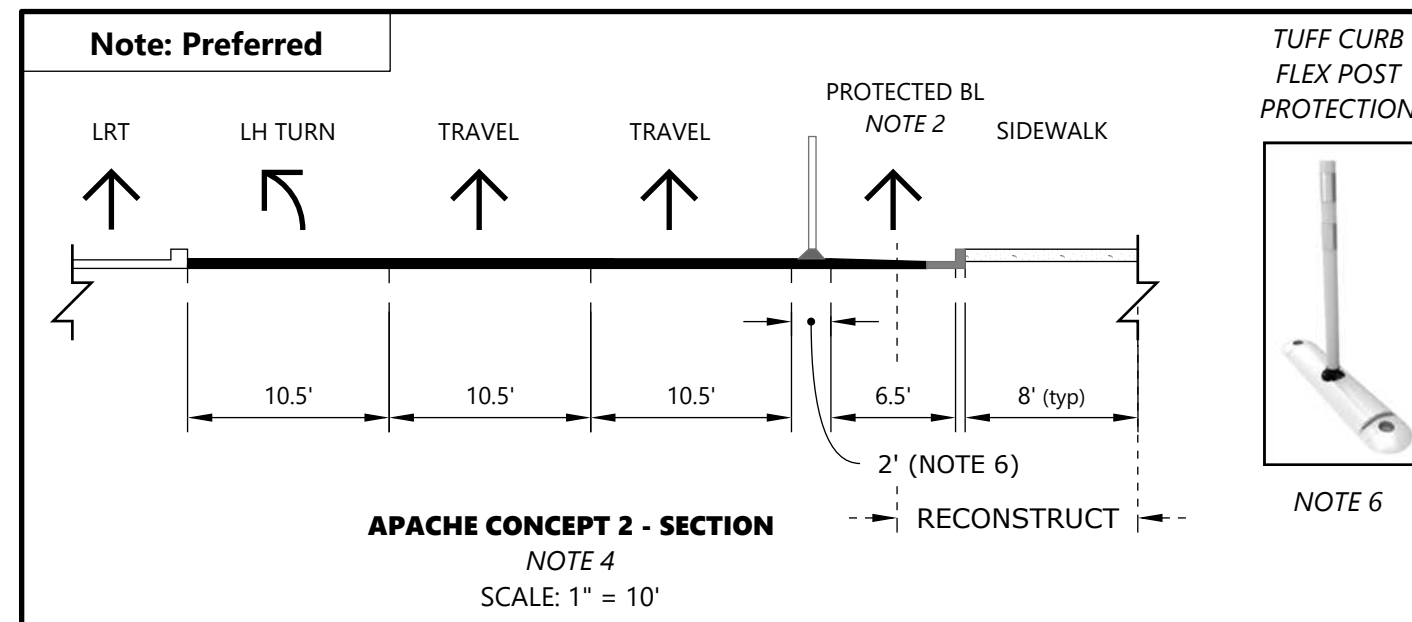


APACHE CONCEPT 1 - SECTION

NOTE 4
SCALE: 1" = 10'



NOTE 5
10 COLORS AVAILABLE



APACHE CONCEPT 2 - SECTION

NOTE 4
SCALE: 1" = 10'

TUFF CURB
FLEX POST
PROTECTION



NOTE 6



**EXAMPLE LOCATION OF SECTION
CONSTRAINTS OF PROPOSED SECTION PRESENT
BASED ON EXISTING ROW WIDTHS (ESTIMATED)**

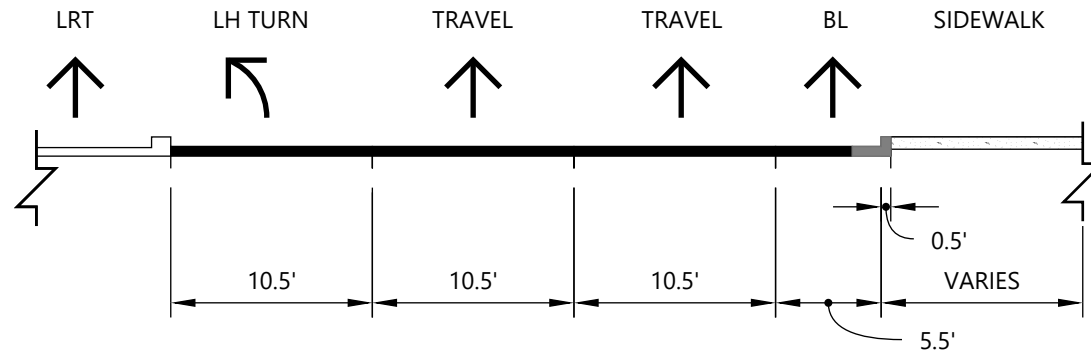


Various streetscape treatments and design aesthetics are currently found throughout the 0.33 mile of the Apache corridor observed.



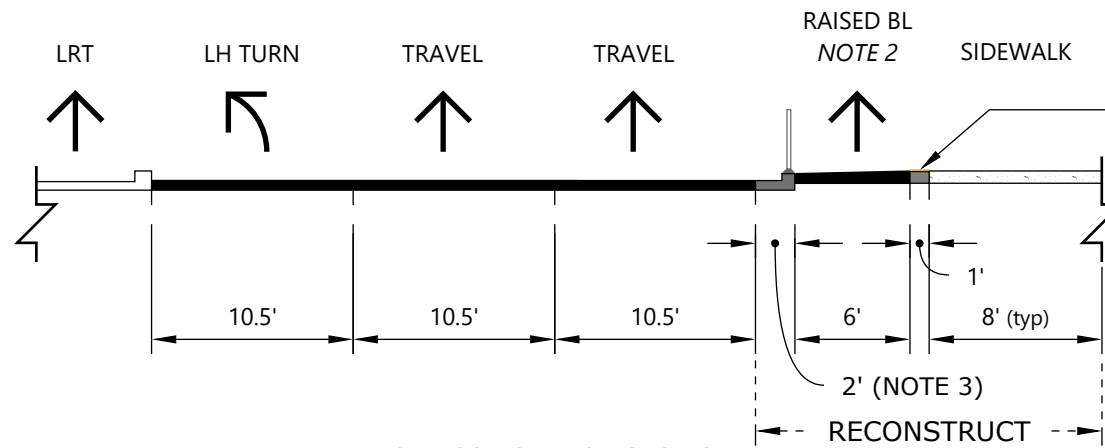
NOTES:

- (1) DATA FROM MEASURING AERIAL USED FOR THIS CONCEPT
- (2) FOR PREFERRED WIDTH OF 6-FT BIKE LANE, RECONSTRUCTING CURB IS REQUIRED
- (3) CUSTOM CURB DESIGNED TO SUPPORT TUFF CURB XLP (OR EQUIVALENT)
- (4) RIGHT OF WAY ACQUISITION REQUIREMENTS NOT COMPLETED
- (5) AVAILABLE COLORS FOR DIRECTIONAL DETECTABLE EDGE NOTED TO THE RIGHT FROM <https://accesstile.com/wayfinding/>
- (6) LOW PROFILE TRAFFIC SEPARATOR CURB INFO AT <https://ntsigns.com/construction-and-work-zone/flexible-delineators/channelizer-curb/low-profile-traffic-posts-separator-curb/>



EXISTING SECTION (MOST CONSTRAINED, ESTIMATED)

NOTE 1
SCALE: 1" = 10'



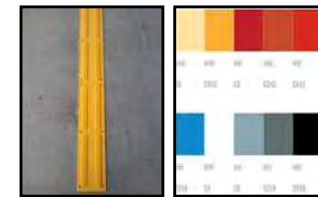
APACHE CONCEPT 3 - SECTION

NOTE 4
SCALE: 1" = 10'

TUFF CURB XLP
FLEX POST
PROTECTION



NOTE 6



NOTE 5
10 COLORS
AVAILABLE



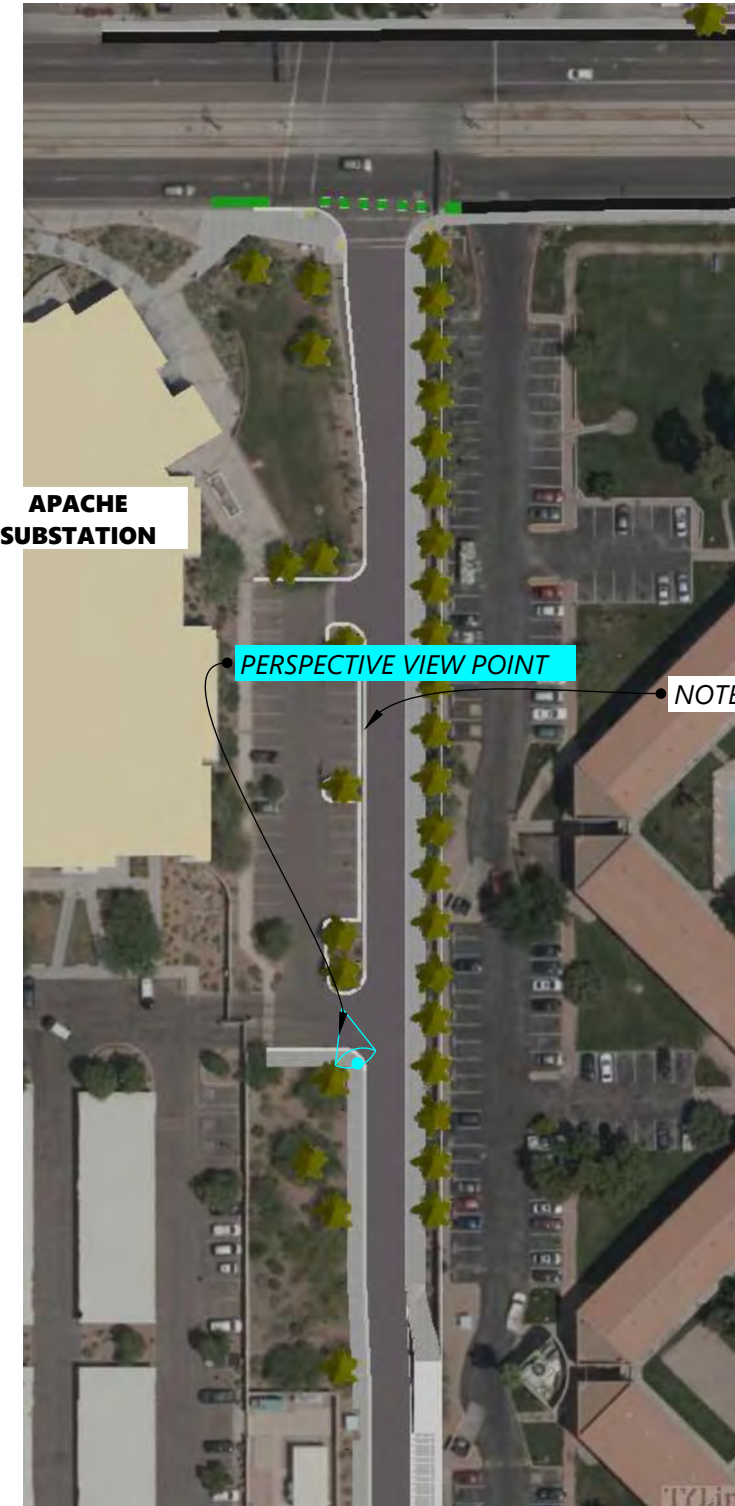
**PERSPECTIVE VIEW
RENDERING**



**EXISTING APACHE POLICE STATION
LOOKING SOUTH**



**EXISTING APACHE POLICE STATION
LOOKING NORTH**



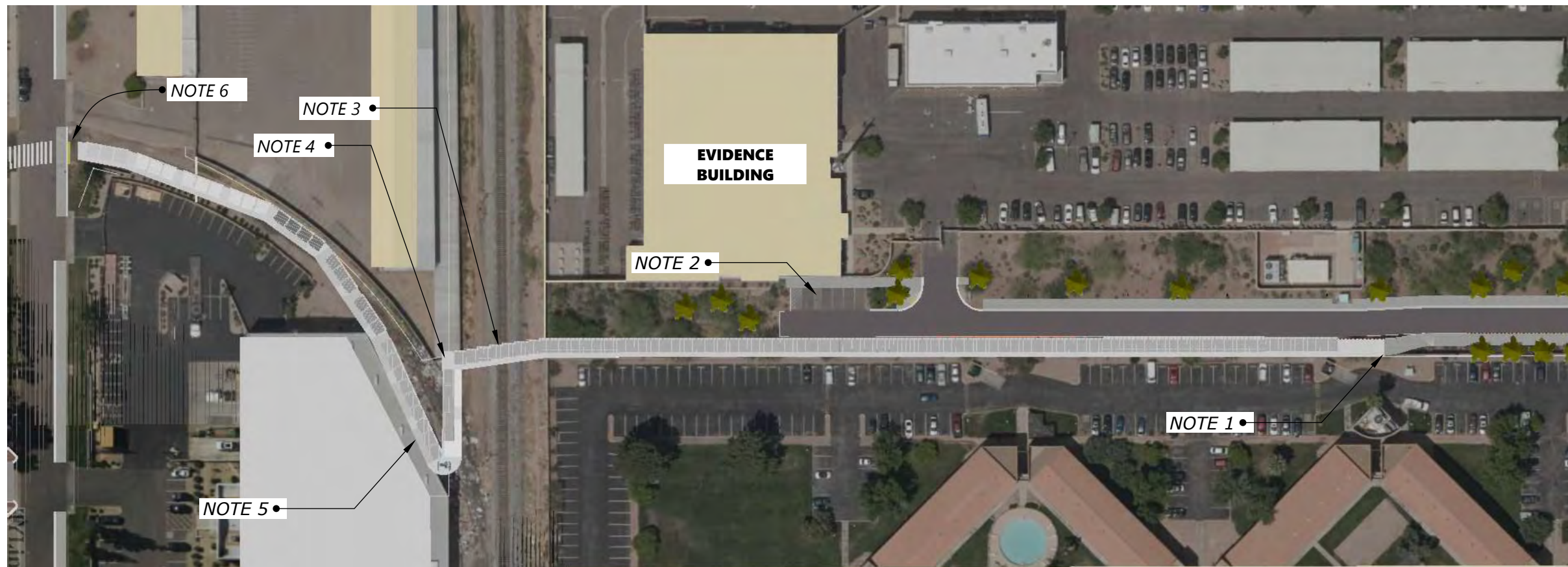
SUBSTATION DRIVE ENTRY - PLAN VIEW

SCALE: 1" = 100'



NOTES:

(1) LOSS OF LANDSCAPE TRACT AT PARKING STALLS; MAINTAINS 20-FT MAIN DRIVE LANE FOR VEHICULAR ACCESS



GRADE SEPARATION STRUCTURES / BRIDGE PLAN VIEW

SCALE: 1" = 100'



NOTES:

- (1) AT-GRADE NORTH SIDE APPROACH
- (2) RECONSTRUCT PARKING
- (3) SCREENED FROM POLICE EVIDENCE YARD
- (4) AERIAL EASEMENT POSSIBILITY, PENDING SPECIFICS OF DESIGN, WIDTH, BUILDING SEPARATION, AND UPRR REQUIREMENTS
- (5) CITY TO ADVISE ON SEPARATION REQUIREMENTS BETWEEN BRIDGE AND EXISTING BUILDING
- (6) AT-GRADE SOUTH SIDE APPROACH (SIGNED STOP-CONTROLLED PATH/STREET INTERSECTION PREFERRED)



PERMANENT VERTICAL CLEARANCE
MIN. 23'-4" UPRR DESIGN GUIDELINE, SEC. 5.2.1



SOUTH SIDE APPROACH - PERSPECTIVE VIEW
NTS



PERMANENT VERTICAL CLEARANCE
MIN. 23'-4" UPRR DESIGN GUIDELINE, SEC. 5.2.1

NOTES:

- (1) DESIGNED TO BLOCK ACCESS TO UPRR DISCONTINUED USE OF RAIL SPUR BEYOND THIS POINT (30-FT IN WIDTH)
- (2) OVERHEAD ELECTRIC FOR FINAL DESIGN CONSIDERATIONS
- (3) SIGNIFICANT GRAFFITI/VANDALISM
- (4) LOCATION OF POTENTIAL AERIAL EASEMENT (NOTE 2)
- (5) PRESENCE OF PEOPLE EXPERIENCING HOMELESSNESS AND SIGNIFICANT DEBRIS DURING SITE REVIEW (JUNE 20, 2023)
- (6) UPRR MAPS INDICATE UNION PACIFIC RETAINS OWNERSHIP OF SPUR; PROJECT ASSESSMENT REPORT FOR FURTHER DATA.



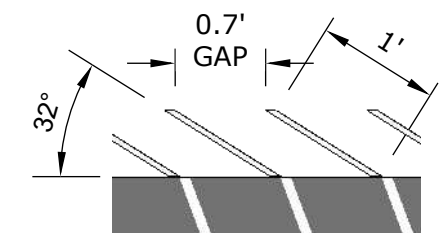
NORTH SIDE APPROACH - PERSPECTIVE VIEW
 NOT TO SCALE - POINT OF VIEW NOTED IN PLAN

NOTES:

- (1) SEEKING TO MAINTAIN LOCATION OF UTILITY BOX WITH A 4-FT WIDE SECTION OF SIDEWALK FOR APPROX 12 - 16 FEET LENGTH (REDUCED COST)
- (2) 14 FT WIDE PATH MAINTAINED ALONG APPROACH AND BRIDGE
- (3) SHADE DESIGNED TO OPTIMIZE FOR SUMMER SOLSTICE (100% SHADE MID-DAY) AND WINTER SOLSTICE (MINIMUM SHADE MID-DAY)

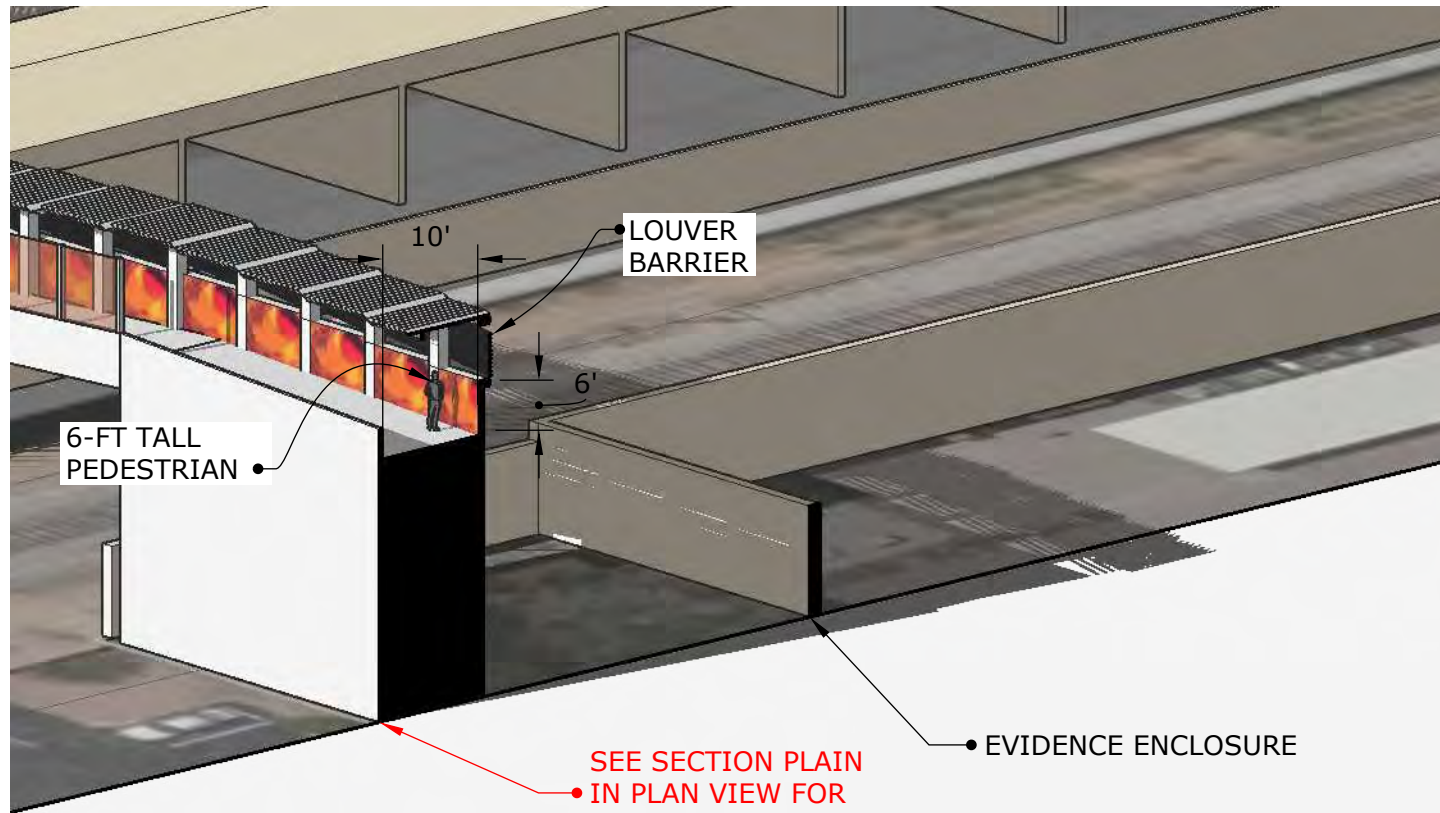


SHADE DETAIL (NTS)

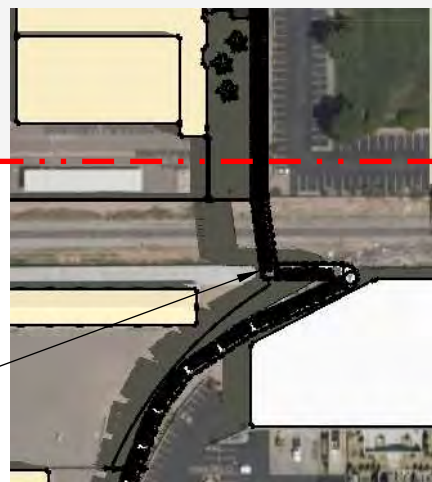


SCHEMATIC EXAMPLE FOR SHADE
 ANGLES AND RATIO FOR SEASONAL SHADE





SECTION OF MODEL
SCALE: 1" = 200'

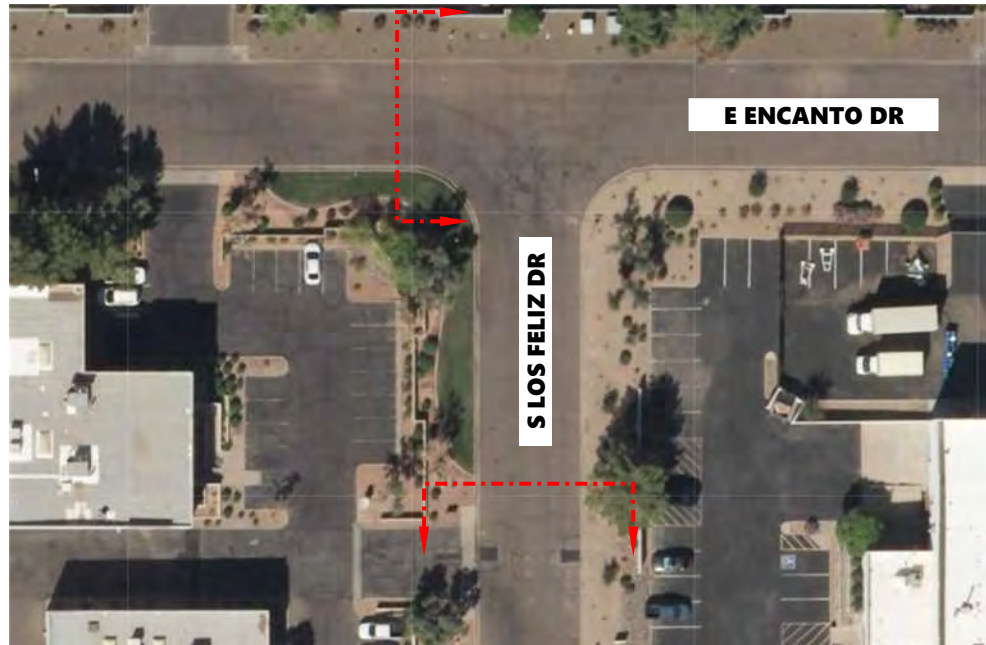


SECTION PLAIN - PLAN VIEW
SCALE: 1" = 200'

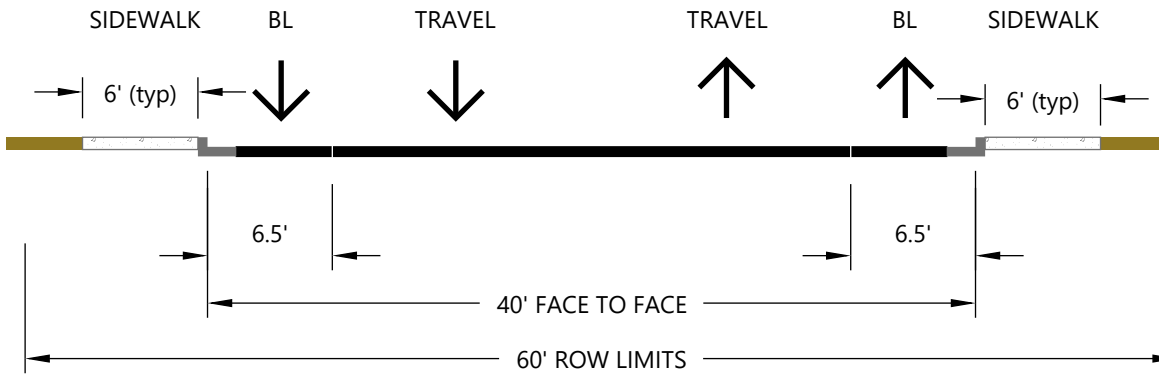


RELATED RENDERINGS
NTS

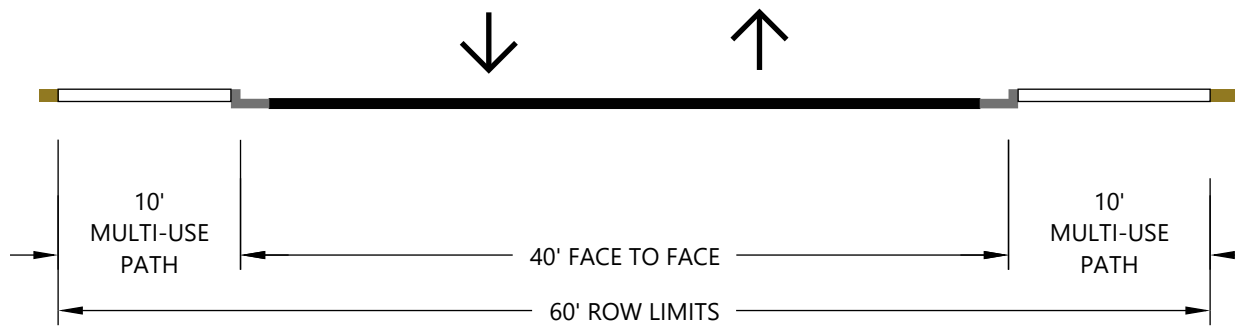
EXHIBIT INTENDED TO FACILITATE DECISION ON SCREENING REQUIREMENTS



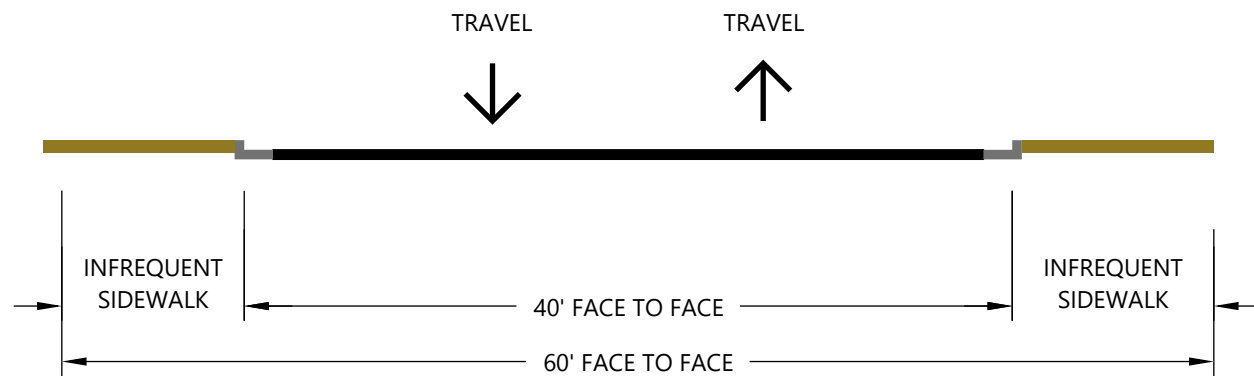
**EXAMPLE LOCATIONS OF SECTION
ALL INDUSTRIAL STREETS
APPEAR TO HAVE THE SAME SECTION WITH
INCONSISTENT SIDEWALKS THROUGHOUT**



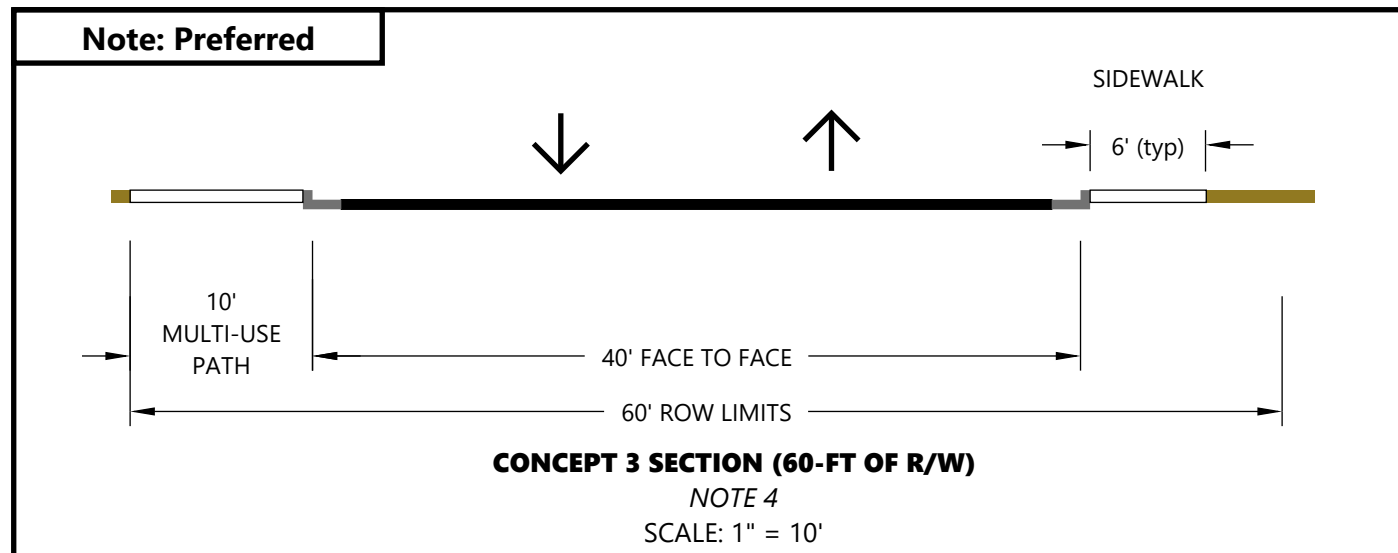
CONCEPT 1 SECTION (60-FT OF R/W)
NO PAVEMENT OR CURB RECONSTRUCTION REQUIRED
ELIMINATED DUE TO CONCERNS ABOUT STAGING TRUCKS AT CURBS
SCALE: 1" = 10'



CONCEPT 2 SECTION (60-FT OF R/W)
NOTE 3 AND 4
SCALE: 1" = 10'



EXISTING SECTION (60-FT OF R/W)
NOTES 1 AND 2
SCALE: 1" = 10'



NOTES:

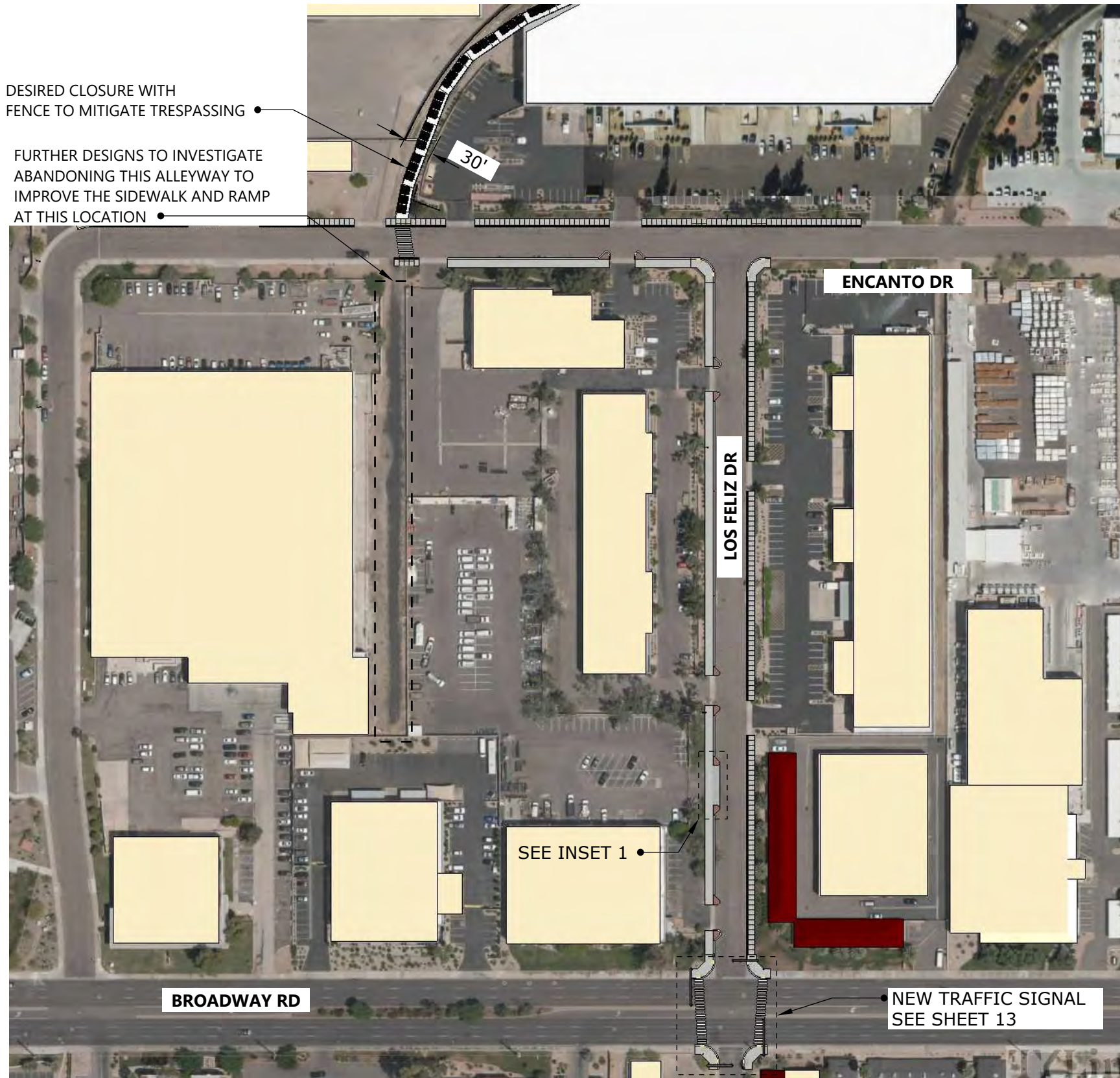
- (1) DATA COLLECTED FROM AERIAL IMAGES AND COUNTY PARCEL GIS MEASUREMENTS FOR THIS CONCEPT
- (2) BUSINESS STAKEHOLDERS NOTE THE IMPORTANCE FOR STAGING TRUCKS IN PARKING LANES ALONG CURBS
- (3) MULTIUSE PATHS ON BOTH SIDES MAY BE EXCESSIVE FOR THE DEMANDS OF THE CORRIDOR IN THE NEAR-TERM
- (4) MULTIUSE PATHS CONFLICTS WITH UTILITY POLES AND DRIVEWAY CROSSINGS*

* SAFE PATH OFFSETS AT DRIVEWAYS DEPICTED IN INSET 1 ON SHEET 12



DESIRED CLOSURE WITH FENCE TO MITIGATE TRESPASSING

FURTHER DESIGNS TO INVESTIGATE ABANDONING THIS ALLEYWAY TO IMPROVE THE SIDEWALK AND RAMP AT THIS LOCATION



SCALE: 1" = 150'



CURB EXTENSION CONCEPT - PERSPECTIVE VIEW

INSET 1
NOT TO SCALE



**RENDERED LOS FELIZ DR CONCEPT - PERSPECTIVE VIEW
LOOKING SOUTH**

INSET 2
NOT TO SCALE

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**IMPROVED AND SIGNALLED INTERSECTION
LOS FELIZ DRIVE AT BROADWAY ROAD**

SCALE: 1" = 20"

FUTURE DESIGN TO CONSIDER FULL PROWAG COMPLIANCE
AND MEDIAN REDESIGN/RECONSTRUCTION



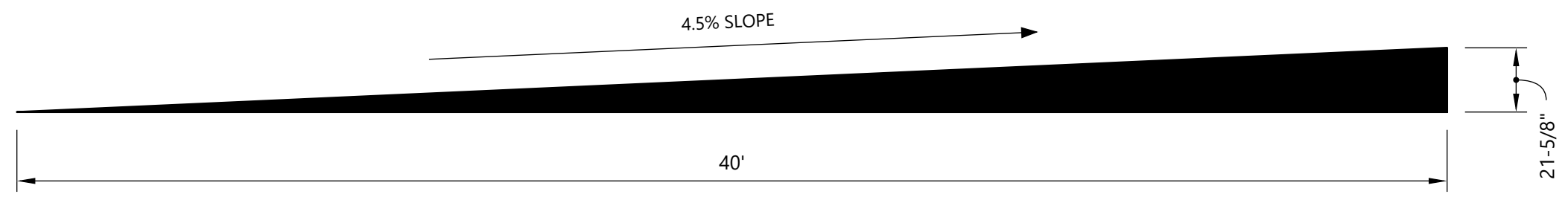
CONCEPTUAL
SHADE ELEMENT
TO BE FUTHER
ASSESSED

**IMPROVED INTERSECTION VIEW
LOS FELIZ DRIVE AT BROADWAY ROAD LOOKING NORTH**
NTS

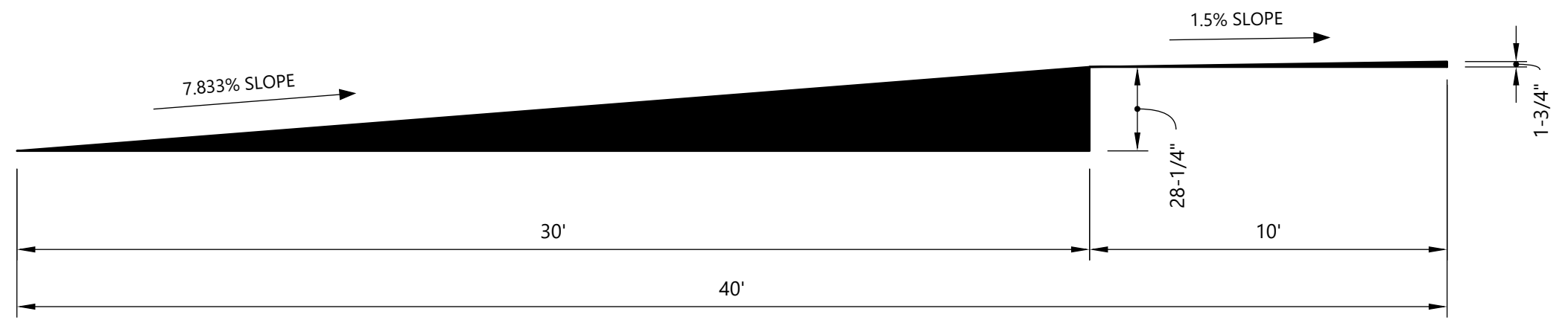
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4.5% SLOPED APPROACH



7.8% + 1.5% SLOPED APPROACH



APPROACH SLOPES - SECTION VIEW
SCALE: 1/4" = 1'-0"

	NORTH-SIDE APPROACH	SOUTH-SIDE APPROACH
SELECTED CONCEPT	4.5%	7.8% + 1.5%

4.5% SLOPED APPROACH - DESIGN GUIDANCE

PROWAG R302.5
A GRADUAL AND STEADY SLOPE TO THE VERTICAL CLEARANCE OVER THE RAILROAD IS OFFERED ON THE NORTH-SIDE APPROACH DESIGNED AT LESS THAN THE ACCESSIBILITY GUIDELINES MAXIMUM SLOPE OF 5%. THIS APPROACH IS PROVIDED WHERE THE LENGTH OF THE GEOMETRY ALLOWS. A 40-FOOT SAMPLE IS PROVIDED ABOVE.

7.8% + 1.5% SLOPED APPROACH - DESIGN GUIDANCE

PROWAG R407.5, R407.5, R407.6
A STEEPER SLOPE WITH PERIODIC LANDINGS ARE USED ON THE SOUTH-SIDE OF UPRR BRIDGED CROSSING. SLOPES USED ARE LESS THAN THE MAXIMUMS OF ACCESSIBILITY GUIDELINES OF MAXIMUMS OF 8.33% SLOPES SHALL HAVE LANDINGS FOR EVERY 30-INCHES OF RISE, AND LANDINGS SHALL HAVE A MAXIMUM OF 2% SLOPES AND MINIMUM OF 5-FEET OF LENGTH. FURTHER REFINEMENT OF THIS APPROACH COULD ROUND THE EDGES WHERE THE SLOPES MEET FOR SMOOTHER ROLLING.





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DESIGN ASSISTANCE
TEMPE GRADE SEPARATED RAILROAD CROSSING
0600-0145-23-E001-11317A-0J.000013 / TMP-23-DA-001

RENDERING

DATE: 07/18/2023
BY: RYAN W.
SHEET: 16 OF 19

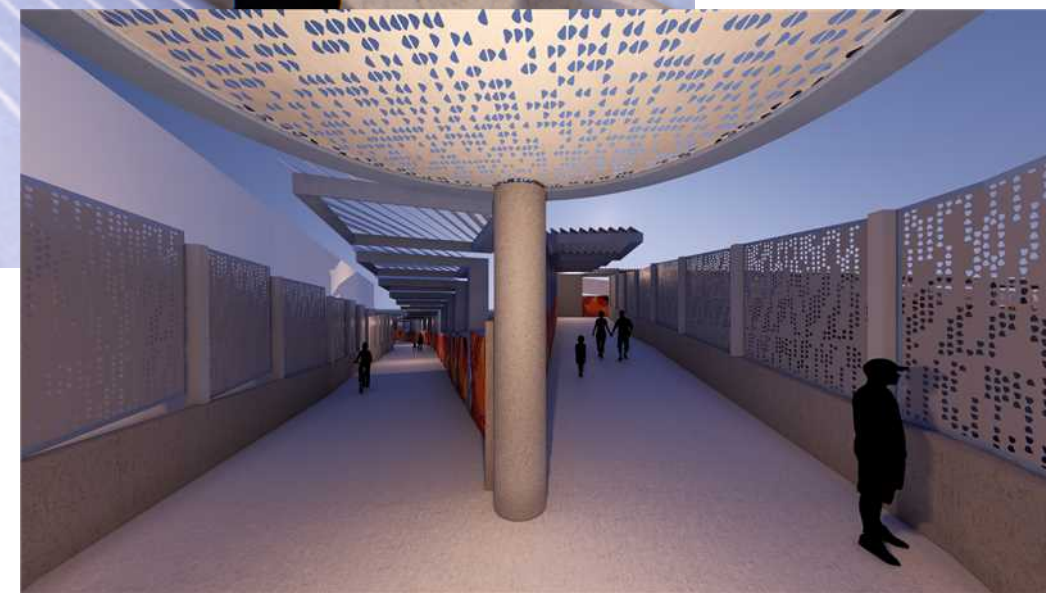


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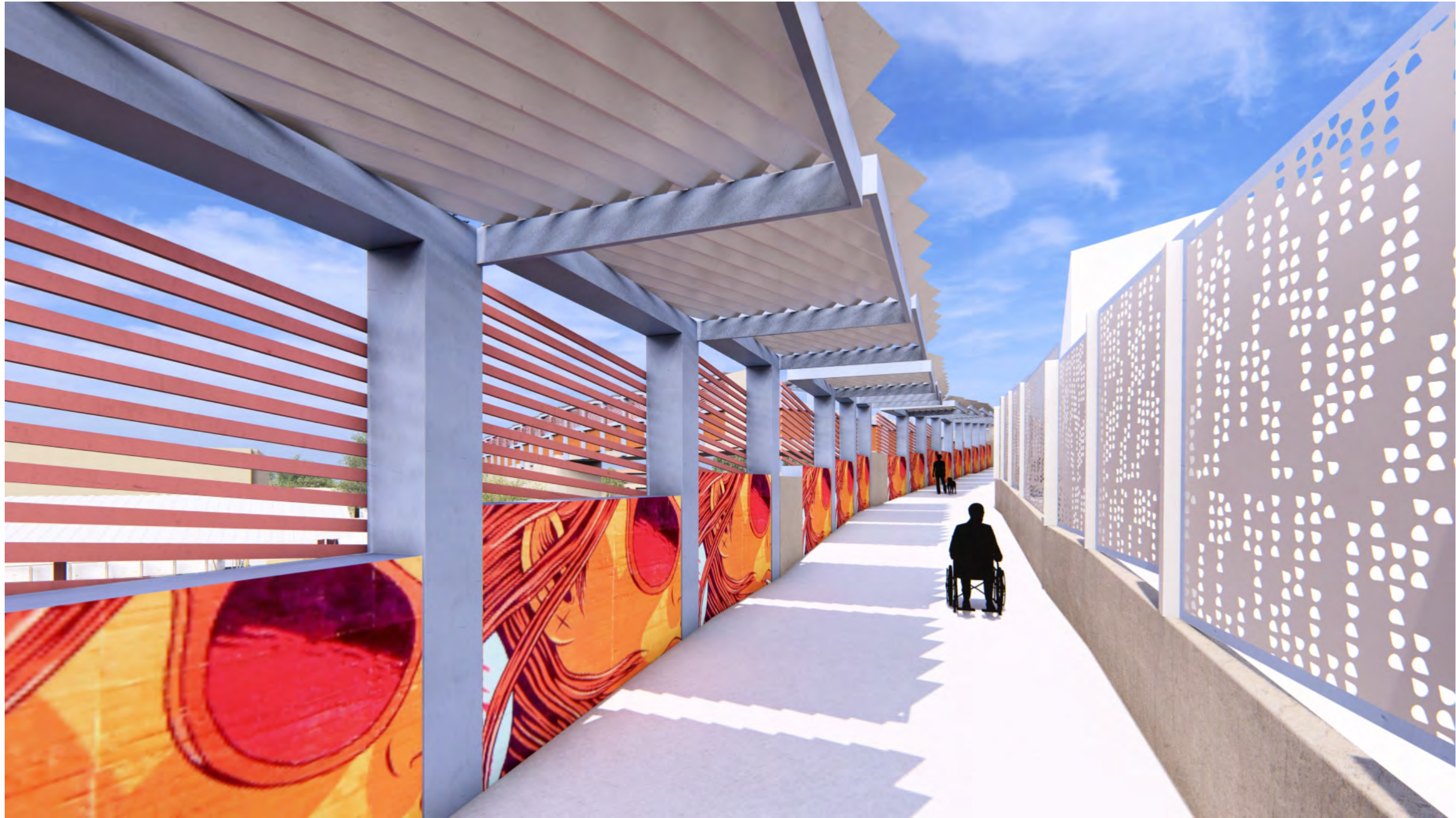


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Additional Design Elements to be considered during final design:

