

FINAL DESIGN REPORT

**PROJECT NO. STP-299S(370)EC
PEDESTRIAN SIDEWALK IMPROVEMENTS
SH-51 FROM US-69 TO POLK AVE., ABOUT 1.0 MILE
JOB PIECE NUMBER 36513(04)
WAGONER, OKLAHOMA**

PREPARED FOR:



OKLAHOMA DEPARTMENT OF TRANSPORTATION

PREPARED BY:



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JANUARY, 2025

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Responsible Registrant

Cowan Group Engineering, LLC

CA No. 6414 (Expires 6/30/2026)

Robert Rose, P.E.
Oklahoma P.E. No. 26166

Date

PROJECT SCOPE

Cowan Group Engineering (CGE) was contracted by the Oklahoma Department of Transportation (ODOT) for engineering design assessment services for sidewalk improvements in Wagoner County along SH-51 (Cherokee Street) through the city of Wagoner, Oklahoma. The subject project will include sidewalk placement along SH-51 between Polk Avenue to US-69 (Dewey Avenue). The project will be approximately 0.8 miles long. A project location map can be found in APPENDIX A – PROJECT LOCATION MAP.

Pursuant to our meeting with ODOT, the city of Wagoner, and field reconnaissance, the following scope items will be included in the project. Improvements along the north side of SH-51 from US-69 to Polk Avenue include construction of approximately 3,600 linear feet of sidewalk (5-foot width).

The improvements along the south side of SH-51 from Lincoln Avenue to Polk Avenue include construction of approximately 2,100 linear feet of sidewalk (8-foot width). These improvements include the addition of ADA-compliant ramps.

Improvements along US-69, south of the US-69/SH-51 intersection include construction of approximately 1,700 linear feet of sidewalk (5-foot-width). These improvements include the addition of ADA-compliant ramps.

In addition to the sidewalks along SH-51 right-of-way and US-69, three alternative 8-foot-wide sidewalk alignments will extend along different routes from Lincoln Avenue to the shopping area north of SW 5th Street. Along with the varying alignments, three US-69 crossing alternates were evaluated including a US-69 underpass, a US-69 overpass, and a US-69 at grade crossing.



Figure 1: Existing sidewalk at Filmore Avenue



Figure 1: View of Creek

HISTORY AND JUSTIFICATION

The city of Wagoner is within Wagoner County Oklahoma and lies approximately 40 miles east of Tulsa. There are two primary thoroughfares in Wagoner, SH-51 (Cherokee Street) and US-69 (Dewey Avenue). SH-51 provides connection to the Muskogee Turnpike approximately 10 miles to the west of the city and to Tahlequah 22 miles east. US-69 provides connection between Muskogee approximately 14 miles to the south and to the Cimmaron Turnpike 14 miles to the north. Within the city, many businesses front or directly connect to these highways with residential areas offset to the north and south of the city.

SH-51 is the primary east/west roadway within the city with an Annual Average Daily Traffic (AADT) count of over 10,000 vehicles. Near the west end SH-51 intersects with US-69. This district includes larger stand-alone retail stores, grocery stores, businesses, and the Wagoner Community Hospital. Heading east from the intersection the businesses become smaller retail spaces with small parking lots and driveways connecting to the roadway. Just past the east end of the projects there are two sets of Union Pacific Railroad crossings then it transitions into the downtown area with building frontage and sidewalks directly adjacent to the road.

In 2021, ODOT approved three projects to be Constructed along SH-51.

- Streetscape enhancement to downtown Wagoner east of the railroad tracks (Complete).
- Sidewalk improvements between Fillmore Avenue and the railroad tracks (Complete).
- Asphalt resurfacing between US-69 and McQuarrie Avenue (Not complete).

US-69 is the primary north/south roadway near the west side of the city with an Annual Average Daily Traffic (AADT) count of over 19,000 vehicles. Near the south end of the city the frontage area includes larger commercial businesses, undeveloped lots, and residential lots. Near the intersection of SH-51 the commercial area is prominent with large retail stores and restaurants flanking both sides of the road.

These two highways serve as the primary connection to all aspects of the community. This project will increase safety for pedestrians along the SH-51 connecting the recently completed ODOT sidewalk improvements east of Polk Avenue to a US-69 crossing.

SH-51 (North Side) Existing Conditions

The North side of SH-51, between US-69 and Polk Avenue consists of small commercial properties. There is a newly constructed 5-foot-wide sidewalk at the east end of the project, just west of Polk Avenue. The existing 4-foot-wide sidewalk to the west of Polk Avenue is in a deteriorated condition including cracked and uneven concrete. A variety of utility obstacles exist including fire hydrants, inlets, water meters, power poles, and signs. Many driveways between Polk Avenue and Pierce Avenue run the width of the business with no defined sidewalk space or curbing for separation; this provides limited pedestrian refuge and does not conform to the ADA and PROWAG guidelines. Additionally, many businesses have parking stalls blocking the accessible pathway for the sidewalk and street without physical protection. Street crossings do

not have ADA ramps or striped crossings. There are no existing sidewalks between Pierce Avenue and US-69.



Figure 3: No Defined Sidewalk Space



Figure 4: Deteriorated Sidewalk near Moss Avenue



Figure 5: R/W near Pierce Avenue



Figure 6: View near Hayes Avenue

SH-51 (South Side) Existing Conditions

The south side of SH-51 between US-69 and Polk Avenue consists of small commercial properties as well. The newly constructed 5-foot-wide sidewalk at the east of the project ends just west of Polk Avenue and ties into an existing 3.5-foot-wide sidewalk. In more instances businesses have greenspace separating the road and parking lot with dedicated driveways compared to the north side of the road. While not eliminated, there is less of a need to construct

refuge islands on this side of the road. Many driveways exceed the 35-foot maximum width. Similarly, to the north side, the sidewalk fails to meet ADA and PROWAG guidelines due to conflicts with existing utilities, hardscape elements and signage. Street crossings do not have ADA ramps or striped crossings. There is no sidewalk between Buchanan Avenue and US-69.



Figure 7: RCB Southside of SH-51 at Creek



Figure 8: No ADA Ramp at Street Crossing



Figure 9: Parking Along Sidewalk



Figure 10: Existing Sidewalk

Heading south on US-69, the east side has a variety of restaurants and commercial establishments with parking lots extending to the right-of-way. The west side is commercial as well but has more open space between the parking lot and the right-of-way. Both sides have ditches that take up a majority of the space.

The improvements to the concrete sidewalk throughout the corridor will provide an accessible and compliant route from downtown Wagoner to the US-69 corridor.

PROJECT DESIGN CONSIDERATIONS

PROJECT SCOPE

The City of Wagoner in conjunction with ODOT has provided a conceptual layout for the project area. On the north side of SH-51, the plans suggest replacing the existing 4-foot-wide sidewalk with a 5-foot-wide sidewalk from US-69 to the newly constructed sidewalk at Polk Avenue. Heading south on US-69 there are no existing sidewalks so the plans suggest adding 5-foot-wide sidewalks on both sides of the road.

On the south side the plans suggest replacing the existing 3.5-foot-wide sidewalk with an 8-foot-wide sidewalk to Polk Avenue. The plans suggest taking the 8-foot-wide sidewalk in varying directions to meander towards the US-69 creek crossing near SW 5th Street. CGE has created three options for sidewalk routing towards the southwest.

REFER TO APPENDIX D – CONCEPTUAL PLAN ‘1’

REFER TO APPENDIX E – CONCEPTUAL PLAN ‘2’

REFER TO APPENDIX F – CONCEPTUAL PLAN ‘3’

ROAD CORRIDOR, GRADING, & SLOPES

US-51 has a crown in the center with 6” curbing on each side. Generally, the right-of-way drains towards the road where water flows along the curbs towards the creek near Lincoln Avenue. The longitudinal slopes along SH-51 vary. The west end from US-69 drains to the east at less than 0.5% slope into the creek. The grade then gradually increases to the west at about 0.5% and 1.5% through the project corridor.

Through the project area, US-69 cross section varies. It has a crown south of the creek near SW 5th Street, it is cross sloped to the east north of the creek. In both cases the road is curbed on each side. There are no inlets, driveways are not curbed allowing stormwater to drain into ditches which flow towards the creek. The longitudinal slopes along US-69 vary. The road at the south end drains north to the creek at a 0.6% slope into the creek. North of the creek the roads grade is approximately 1.5% to the intersection at US-69. Ditches can be steep along the east side of the road and may need to be altered to accommodate a sidewalk.

SIDEWALK - TYPICAL SECTION

The new 5-foot-wide sidewalk on the north side will begin on the west side of the US-69 intersection and continue west to Polk Avenue. The new 8-foot-wide sidewalk on the south side of US-51 will begin on the east side of Lincoln Avenue and continue east to Polk Avenue. The sidewalk generally will be located near the R/W but varies in some areas to avoid utility conflicts. Where the sidewalk is adjacent to the creek or any other drop off, a one-to-two-foot level area should be provided to serve as a buffer in accordance with Drop-off & Slope Treatment Guide. Refer to APPENDIX B – DROP-OFF & SLOPE TREATMENT GUIDE.

Sidewalk cross slopes, running grades, and ADA ramp designs will conform to ODOT, ADA, and PROWAG guidelines. CGE proposes the sidewalk cross slope to be less than the maximum slope of 2.0%, typically 1.5%, allowing for construction tolerances. The proposed sidewalk will be 4-inch-thick Portland cement concrete with a 2-inch sand cushion. Refer to APPENDIX C – SIDEWALK TYPICAL SECTIONS.

DRIVEWAY – TYPICAL SECTION

SH-51 slopes gradually between the back-of-curb and R/W and currently only includes a narrow sidewalk. Construction of an 8-foot-wide sidewalk on the south side and a 5-foot- wide sidewalk on the north side may require additional width of driveway to be removed and replaced to ensure the cross slope does not exceed 2%. Areas where driveways will require replacement, a mountable curb should be utilized to construct the driveway and maintain driveway slopes under 8% and sidewalk cross slope under 2%. Sidewalk widths may need to be reduced in some places to accommodate grading and maintain existing R/W constraints. Where driveway replacement and improvements are necessary, the sidewalk will be thickened to 6-inches with 6-inches of aggregate base to support the vehicle load. Refer to APPENDIX C – SIDEWALK TYPICAL SECTIONS.

REFUGE ISLANDS

Many businesses have large expanses of concrete for access, parking areas, or maneuverability. These large open areas create potential hazards for pedestrians. To create a safer pathway for pedestrians, refuge islands should be constructed through these areas. CGE proposes maximum 30-foot-wide driveway openings with raised curb islands placed along the R/W. The island widths vary but should be a minimum 6-foot wide.



Figure 11: Large Expanse of Concrete

RAMPS

Many of the intersections along the corridor do not have ADA ramps. Ramps should be constructed at all intersections according to guidelines and should include truncated domes, crosswalk striping, and a stop bar. Various streets returns may require reconstruction due to pavement condition and slope.

Ramps should conform to ramp counter slope requirements. If the algebraic difference in grade from street to the curb ramp exceeds 11 percent a 2-foot-wide grade transition should be provided. Refer to APPENDIX C – SIDEWALK TYPICAL SECTIONS.

PEDESTRIAN CROSSINGS

There is one signalized intersection at SH-51/US-69. The intersection only includes traffic lighting; it does not accommodate pedestrian crossing in any direction. Providing a pedestrian crossing at the SH-51/US-69 intersection is challenging, the alignment of the highways is skewed, includes a five-lane crossing, and additional designated turn lanes with large islands at all four corners.



Figure 12: US-69 Intersection



Figure 13: US-69 Island at Turn Lane

Along the SH-51 corridor there are no additional signalization or stop signs that fall within the project limits, however; there is one newly constructed crosswalk on the west side of Polk Avenue. At Filmore Avenue there are existing sidewalks extending to SH-51 on the south side of the road with no connection to the north side. CGE suggests removing these sidewalks. At Taylor Avenue there are existing sidewalk extensions to SH-51 at all four corners. CGE suggested removing the east crossing and constructing a new 5-foot- on the west side of the intersection. The new crossing should include ADA ramps, crosswalk striping, and pedestrian signage to denote the pedestrian crossings.

Heading south along US-69 there are no signalized crossings within the project limits.

Modifying and updating these crosswalks will improve safety and walkability for residents of all ages and abilities.



Figure 14: New Sidewalk Crossing at Polk Avenue

Adding an additional crossing on US-69 will improve walkability in the area.

The plans suggest creating a crossing south of the residential and retail shops near the creek. The creek flows under SH-51 through a double cell 8'x7' reinforced concrete box. The creek is never completely dry and always holds approximately 1-foot of water. There are three proposed options for crossing in the area an underpass, an overpass, and an at grade crossing.



Figure 15: RCB at US-69 Creek Crossing.

UNDERPASS - Add an additional 8'x7'x90' RCB to the north of the two existing RCB's creating a highway underpass. The new RCB would be approximately 90-feet long and include a sidewalk that could either be ramped or have slope of less than 5%. To eliminate the need for handrails and landings CGE suggests keeping the sidewalk slope at 5% or less, the west sidewalk up to existing grade would be approximately 230-feet long and the east side would be 170-feet long. Retaining walls will be required to run the length of the ramped walks until the elevation is sufficient to prevent creek stormwater flow from entering the underpass. To manage rainfall which could enter a sump-pump will be required to keep the area dry. Due to the length of the RCB lighting will also be needed along the walls or ceiling to provide light for visibility and safety. REFER TO APPENDIX G – US-69 SIDEWALK UNDERPASS

OVERPASS - Add a Highway Overpass. This would include a 100-foot Prefabricated Pedestrian Gateway Bridge, concrete supports, and retaining walls. A minimum elevation of 17-feet from the road surface to the bottom of the structure would be required. Due to the height above grade and the length required to do a standard sidewalk under 5% slope, CGE suggests using ramps off the overpass. It is expected the ramp on the west side of the road would be approximately 240-feet and the east side would be 275-feet long. The ramps will require a continuous handrail and would include 2% landings every 30 linear feet to conform to ADA and PROWAG requirements. Due to area limitations, the ramps for this option would require additional R/W. REFER TO APPENDIX H – US-69 SIDEWALK OVERPASS

AT GRADE CROSSING – Add an at grade crossing 0.2 miles south of the US-69 and SH-51 intersection. Due to the width of the road and the number of vehicles per day, safety is a priority. The installation of a HAWK pedestrian signal is suggested. This signalization will include a traffic signal with pedestrian pushbuttons. The crossing will also include crosswalk striping side and ADA-ramps on the north side. REFER TO APPENDIX I – US-69 SIDEWALK AT GRADE CROSSING

OBSTRUCTIONS

There are numerous obstructions along SH-51 to be considered for relocation or removal. In addition to traffic control signs, business and city signage may require relocation or removal and coordination with the business and/or the City of Wagoner. Realignment of the sidewalk and reduction in width may be required in some areas if signage is not relocated.



Figure 16: Signage in R/W



Figure 17: Parking in R/W

Consideration should be taken in the placement of the walks, for businesses. In some cases, these are the only parking areas available to the business. CGE recommends keeping the sidewalks near the right-of-way, when possible, to ensure driver awareness and safety of pedestrians. In some areas, parking lots are directly adjacent to the right-of-way and cars may overhang the sidewalk. CGE recommends placing bollards, wheel stops, and/or curbing to prevent vehicles overhanging sidewalks.

Areas along the creek have large mature trees and a variety of vegetation. It is recommended that the sidewalk placement avoids conflicts to keep a nature trail like feel to the area. The creek will require crossings depending on the option chosen. The creek edges are very steep, CGE recommends little work to be performed in this area, so existing vegetation is not disturbed. Where there is no room for a buffer, retaining walls and pipe rail will be required.

Within the commercial and creek areas, businesses may have items with the R/W that may require removal/coordination. These items may include fencing, items for sale, curbing, and landscaping,



Figure 18: Obstructions Along Creek



Figure 19: Steep Grading Along Creek



Figure 20: Ditch Entering Creek at US-69

CONSTRUCTION

To reduce impacts to local businesses and the traveling public, CGE recommends minimizing sidewalk construction to no more than two intersections concurrently. Keeping the construction phases shorter in length and duration will decrease impact on businesses along the roadway during the construction process. When necessary, CGE recommends temporary lane closures during construction.

UTILITIES

Various storm water inlets and drainage structures will need to be avoided or adjusted along the corridor. They are generally located close to the edges of the road and may be difficult to maneuver the sidewalk around. The existing manhole covers, and grates do not conform to ADA and PROWAG guidelines. CGE recommends realigning and or reducing width to avoid these structures where possible.



Figure 21: Storm Structure near Buchanan Avenue



Figure 22: Guardrail, North Side SH-51 at Creek crossing



Figure 23: Culverts Along SH-51 at Lincoln Avenue

There are also water meters, gas meters, utility poles, and deadman anchors, etc. that are within the right-of-way that will need to be avoided. CGE does not expect any relocation of these items.



Figure 24: Gas Meter in R/W



Figure 25: Storm Water Manhole in R/W

RIGHT-OF-WAY

SH-51 from US-69 to Lincoln Street has a varying right-of-way width. Near US-69 the right-of way is 120-foot, 5-lane road consisting of 11-foot-wide lanes, and 28-foot open space from back-of-curb to the right-of-way line. The right-of-way begins to narrow at Grant Street transitioning down to a 100-foot width, 4-lane road consisting of 11-foot-wide lanes, and 28-foot open space from back-of-curb to the right-of-way. This continues the remaining length of the project.



Figure 26: Structure Adjacent to R/W

US-69 from the south side of Wagoner to the north side of SW 5th Street the right-of way is 120-foot with a 5-lane road consisting of 11-foot-wide lanes, and 28-foot open space from back-of-curb to the right-of-way. The right-of-way begins to widen north of SW 5th Street 150-foot width, 5-lane road consisting of 11-foot-wide lanes, two turn lanes, and 28-foot open space to the right-of-way. This continues to the intersection of SH-51.

A right-of-way investigation was completed with this assessment.

The proposed sidewalk is anticipated to be constructed within the existing right-of-way along the SH-51, US-69, and the creek corridor. There are some areas where temporary construction easements are required to facilitate grading operations.

PROBABLE CONSTRUCTION COST ESTIMATE

CGE utilized the latest ODOT bid tabulation from October 2024 to determine the probable construction cost for the project. The sidewalk alignment along SH-51 and US-69 remains the same for Conceptual Plans 1-3. The plans vary from Lincoln Avenue to the creek at US-69. The probable cost estimates for these are:

➤ CONCEPTUAL PLAN '1'	Estimated Cost	\$2,969,892.00	APPENDIX J
○ With US-69 UNDERPASS		\$4,715,844.00	APPENDIX M
○ With US-69 OVERPASS		\$5,909,174.00	APPENDIX N
○ With US-69 AT GRADE		\$3,475,928.00	APPENDIX O
➤ CONCEPTUAL PLAN '2'	Estimated Cost	\$2,608,718.40	APPENDIX K
○ With US-69 UNDERPASS		\$4,354,670.40	APPENDIX M
○ With US-69 OVERPASS		\$5,548,000.40	APPENDIX N
○ With US-69 AT GRADE		\$3,114,754.40	APPENDIX O

➤ CONCEPTUAL PLAN '3'	Estimated Cost	\$3,186,097.20	APPENDIX L
○ With US-69 UNDERPASS		\$4,932,049.20	APPENDIX M
○ With US-69 OVERPASS		\$6,125,379.20	APPENDIX N
○ With US-69 AT GRADE		\$3,692,133.20	APPENDIX O

OPTIONS FOR US-69 CROSSINGS:

➤ US-69 UNDERPASS	\$1,745,952.00	APPENDIX M
➤ US-69 OVERPASS	\$2,939,282.40	APPENDIX N
➤ US-69 AT GRADE	\$506,036.00	APPENDIX O

The estimates include a contingency of twenty percent. The total budget for this project is approximately \$8,750,000.

IMPROVEMENT OPTIONS

The SH-51 sidewalk options to the creek at US-69 are as follows:

- SH-51: Sidewalk from US-69 to Polk Avenue - REFER to APPENDIX D – CONCEPTUAL PLAN '1'
 - Construct a new 5-foot-wide sidewalk on the north side of SH-51 to tie into newly constructed sidewalk.
 - Construct a new 8-foot-wide sidewalk on the south side of SH-51 to tie into newly constructed sidewalk.
 - Construct a new 5-foot-wide sidewalk on the east and west side of US-69 from the SH-51 intersection 0.15 miles south.
 - Add curb ramps and crossing at US-69 with push button signalization.
 - Add one north/south crosswalk at Taylor Avenue with pedestrian crossing signs.
 - Replace existing drives with 6" concrete as necessary to maintain accessible grade. This may include constructing a mountable curb.
 - Construct multiple refuge islands throughout the project.
 - Extend 6'x14' RCB east of Lincoln Street on the north side of the road. To include headwall and pipe rail.
 - Construct ADA ramps at all street crossings.
 - Construct new 8-foot-wide sidewalk along Lincoln Avenue to 1ST Street along the road, then west to run along the creek towards US-69.
 - Construct prefabricated pedestrian bridge (60-foot length).
 - Construct prefabricated pedestrian bridge (80-foot length).
 - Construct prefabricated pedestrian bridge (50-foot length).
 - Construct retaining walls and pipe railing along creek where needed.

- Sidewalk along SH-51, US-69 and commercial area - REFER TO APPENDIX E – CONCEPTUAL PLAN ‘2’
 - Construct a new 5-foot-wide sidewalk on the north side of SH-51 to tie into newly constructed sidewalk.
 - Construct a new 8-foot-wide sidewalk on the south side of SH-51 to tie into newly constructed sidewalk.
 - Construct a new 5-foot-wide sidewalk on the east and west side of US-69 from the SH-51 intersection 0.15 miles south.
 - Add curb ramps and crossing at US-69 with push button signalization.
 - Add one north/south crosswalk at Taylor Avenue with pedestrian crossing signs.
 - Replace existing drives with 6” concrete as necessary to maintain accessible grade. This may include constructing a mountable curb.
 - Construct multiple refuge islands throughout the project.
 - Extend 6’x14’ RCB east of Lincoln Street on the south and north side of the road. To include headwall and pipe rail.
 - Construct ADA ramps at all street crossings.
 - Construct new 8-foot-wide sidewalk along the east side of Hayes Avenue towards the creek and commercial areas towards US-69.
 - Construct curbs and landscaping to provide refuge in commercial areas.

- Sidewalk along creek and commercial area from Lincoln Avenue - REFER TO APPENDIX F – CONCEPTUAL PLAN ‘3’
 - Construct a new 5-foot-wide sidewalk on the north side of the road to tie into newly constructed sidewalk.
 - Construct a new 8-foot-wide sidewalk on the south side of the road to tie into newly constructed sidewalk.
 - Construct a new 5-foot-wide sidewalk on the east and west side of US-69 from the SH-51 intersection 0.15 miles south.
 - Add curb ramps and crossing at US-69 with push button signalization.
 - Add one north/south crosswalk at Taylor Avenue with pedestrian crossing signs.
 - Replace existing drives with 6” concrete as necessary to maintain accessible grade. This may include constructing a mountable curb.
 - Construct multiple refuge islands throughout the project.
 - Extend 6’x14’ RCB east of Lincoln Street on the north side of the road. To include headwall and pipe rail.
 - Construct ADA ramps at all street crossings.
 - Construct new 8-foot-wide sidewalk along Lincoln Avenue to 3rd Street along the road, then west to run along the creek towards US-69.
 - Construct prefabricated pedestrian bridge (50-foot length).
 - Construct retaining walls and pipe railing along creek where needed.

The crossing of US-69 are as follows:

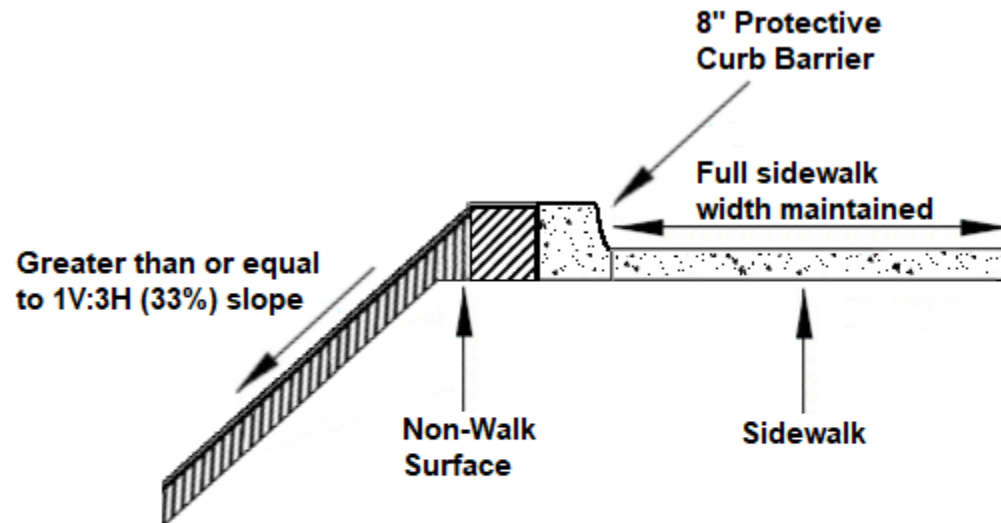
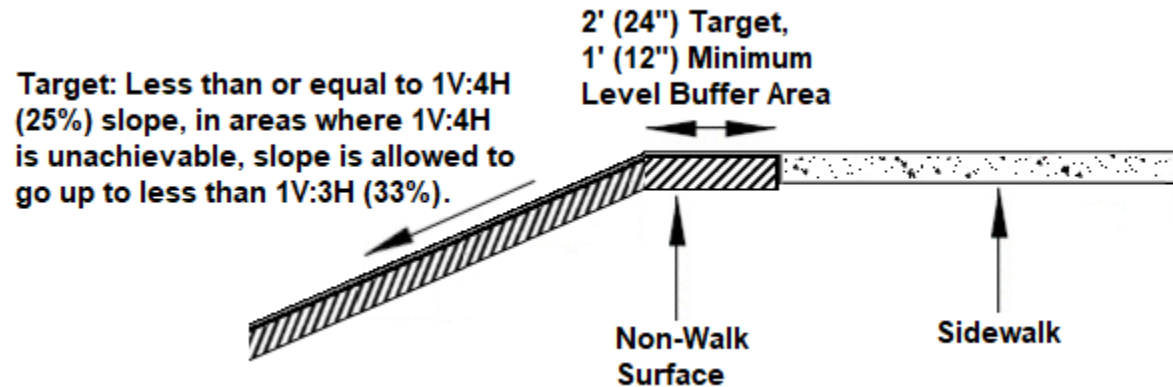
- Sidewalk Underpass - REFER TO APPENDIX G – US-69 SIDEWALK UNDERPASS
 - Construct 8’x7’x90’ RCB underpass.
 - Construct retaining walls and sidewalk ramps.
 - Install submersible pump.

- Sidewalk Underpass - REFER TO APPENDIX H – US-69 SIDEWALK OVERPASS
 - Construct prefabricated gateway pedestrian bridge (100-foot length).
 - Construct structure required for support of bridge.
 - Construct structure, landings, and handrail required for sidewalk ramps.
- Sidewalk at grade crossing - REFER TO APPENDIX I – US-69 SIDEWALK AT GRADING CROSSING
 - Construct a new 8-foot-wide sidewalk to cross US-69.
 - Install HAWK pedestrian signal and crosswalk north of creek.
 - Construct a new 5-foot-wide sidewalk along the west side of US-69 to connect to drive.

There are a variety of options for the sidewalk improvements on SH-51 and US-69. These improvements will be an asset to the City of Wagoner, improving access to the businesses in the area and for future development.

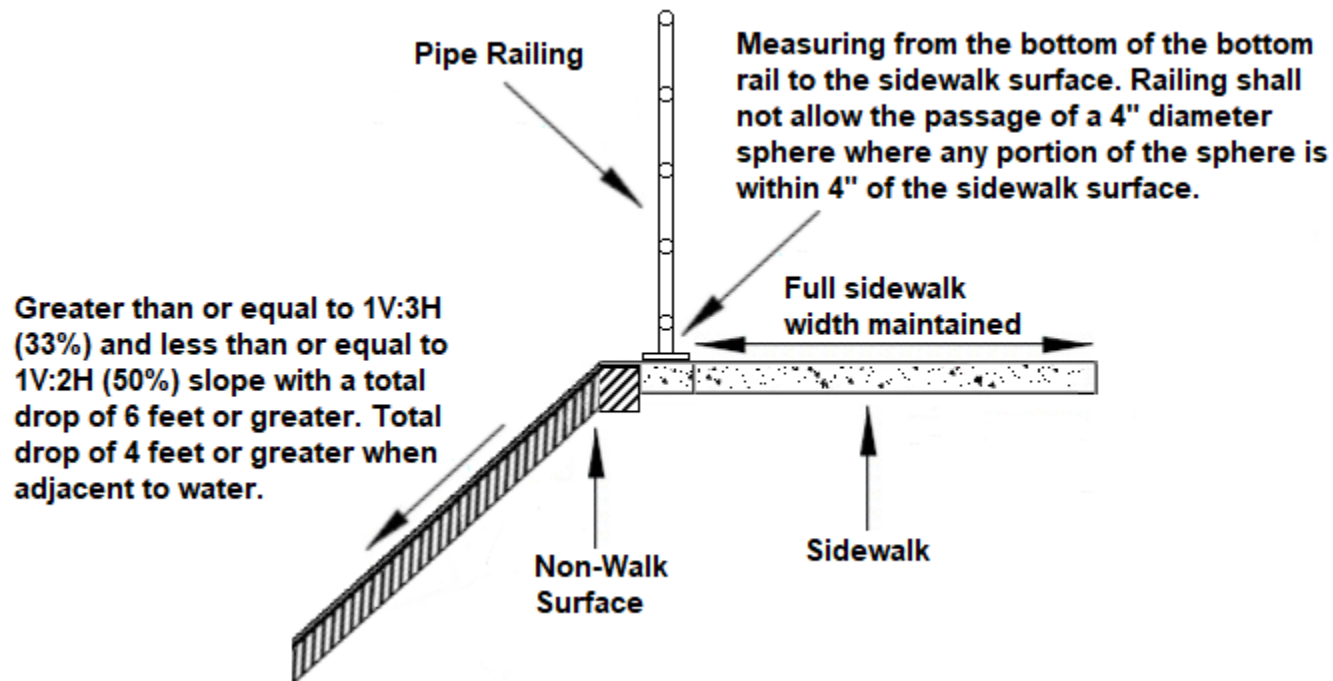
Drop-off & Slope Treatment Diagram Guide

In all of the scenarios listed, if the drop-off or slope occurs within 2' (24") or less of the main sidewalk path, the appropriate protection is recommended based on the characteristics of the site. Note: This does not include building entrance areas that have drop-offs or slopes present.

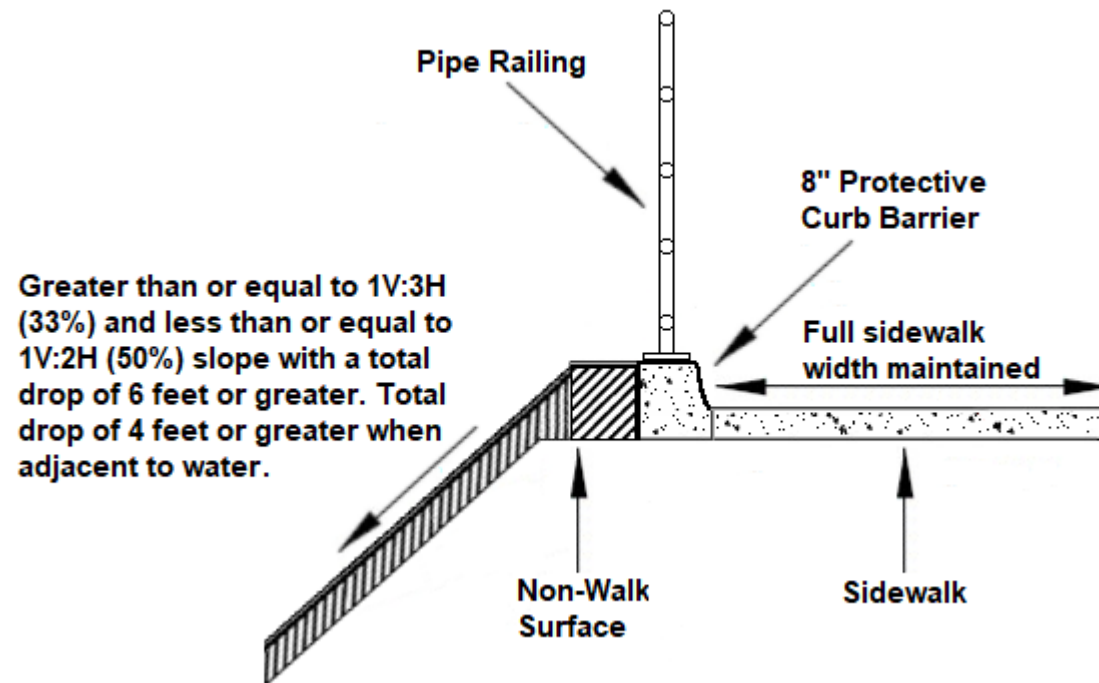


In instances where the total drop height is less than 4 feet, but the slope is greater than or equal to 1V:3H (33%) and adjacent to the sidewalk, engineering judgement shall be used to assess the need for a physical barrier. In some instances a curb barrier can provide the necessary separation.

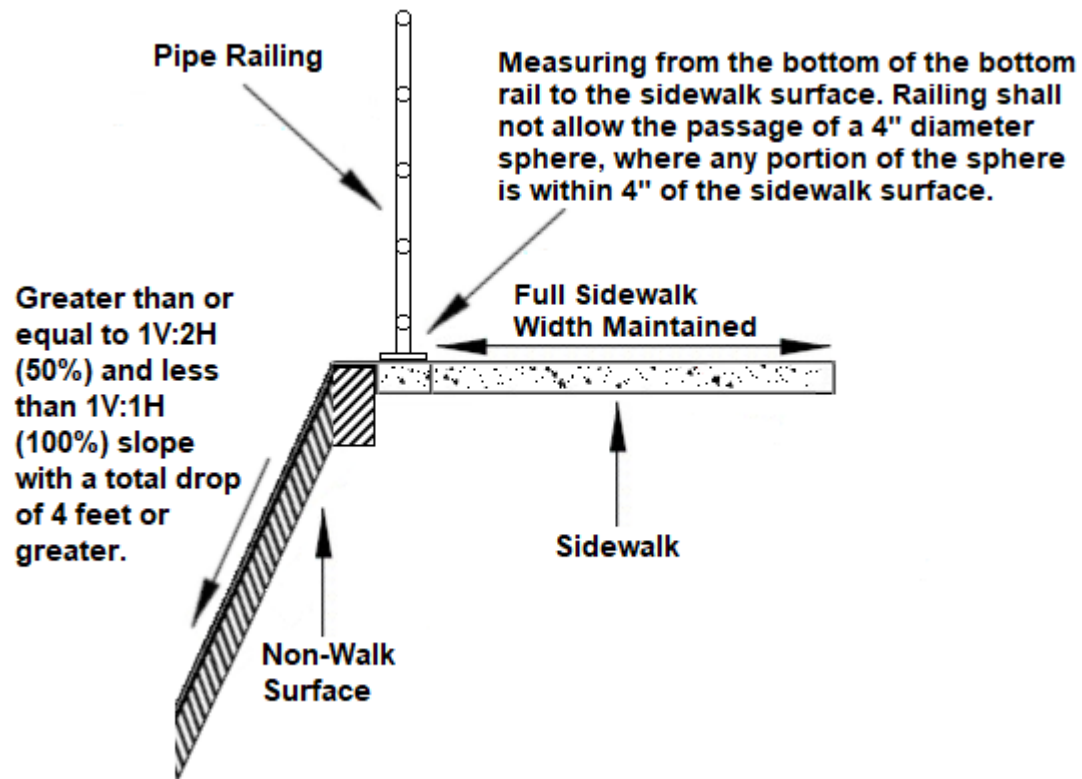
Note: Pipe Railing total height required will be dependent on the characteristics of the site. An area where the railing will function as a barrier and form of assistance in any inclined area will require a total height within the range of 34" minimum to 38" maximum. An area where the railing will only function as a barrier typically uses railing with a total height of 42".



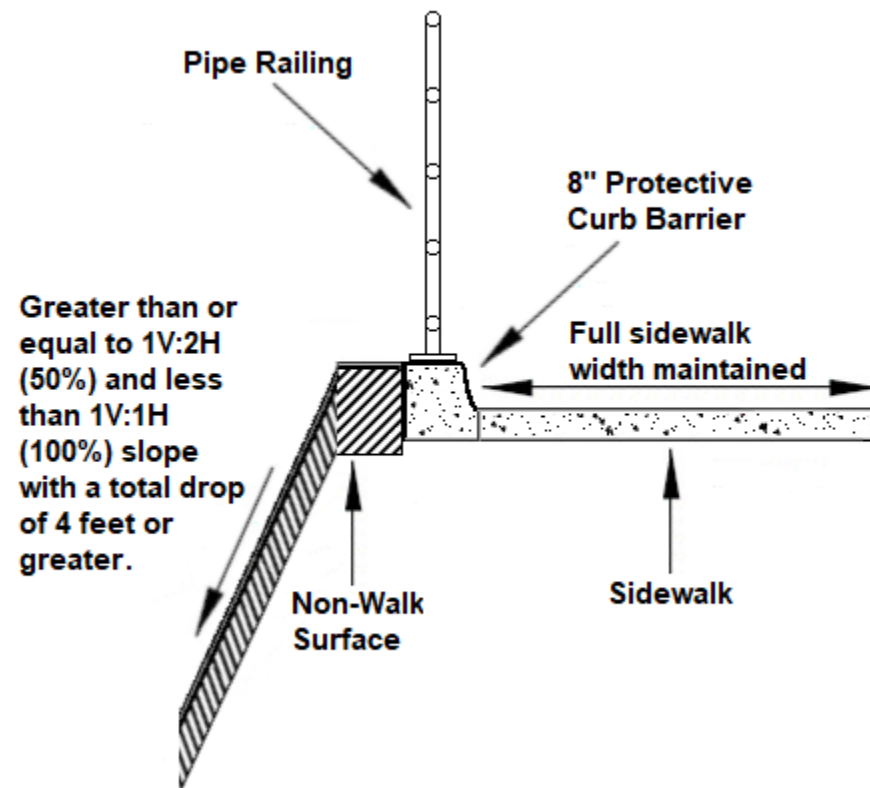
Adjacent Slope Option #1 - Pipe Railing Barrier



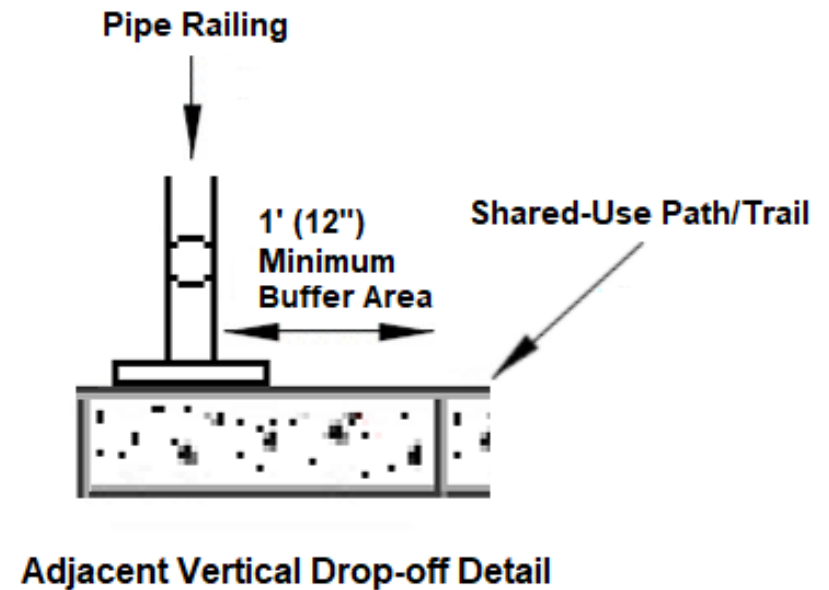
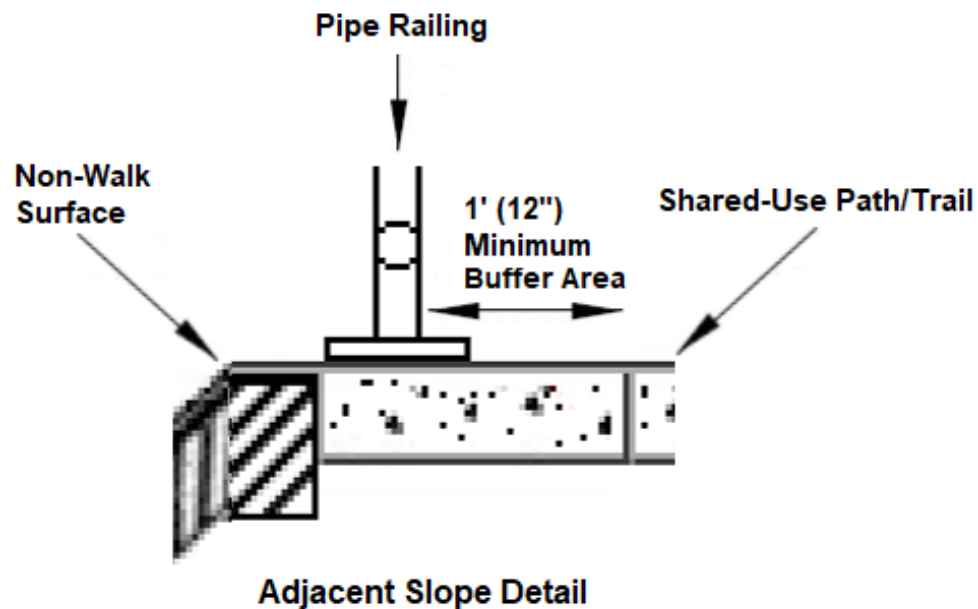
Adjacent Slope Option #2 - Pipe Railing & Curb Barrier



Adjacent Slope Option #1 - Pipe Railing Barrier

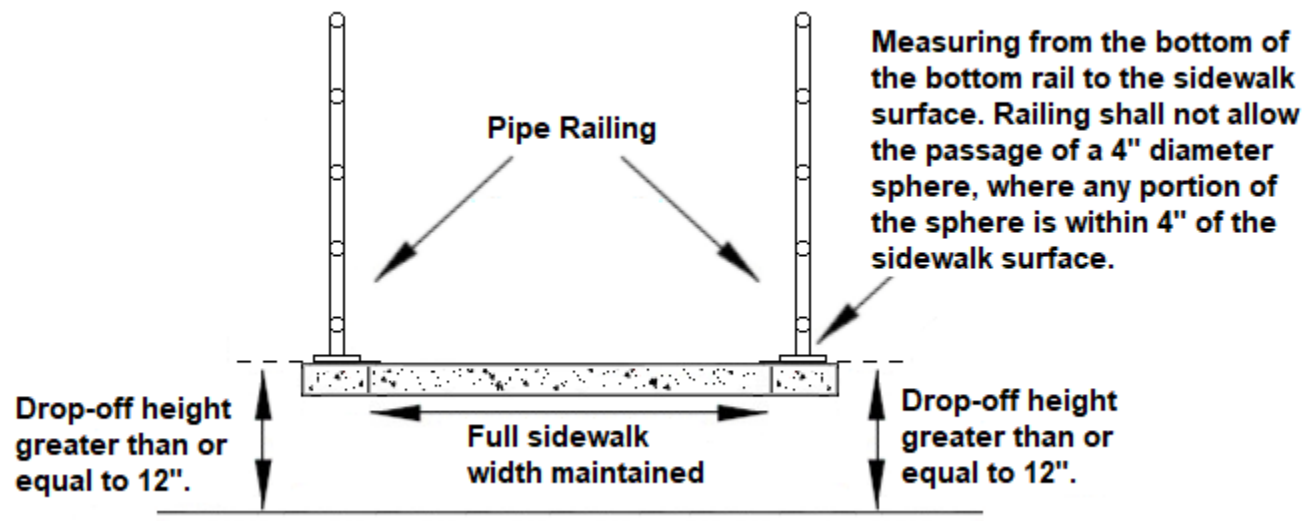


Adjacent Slope Option #2 - Pipe Railing & Curb Barrier

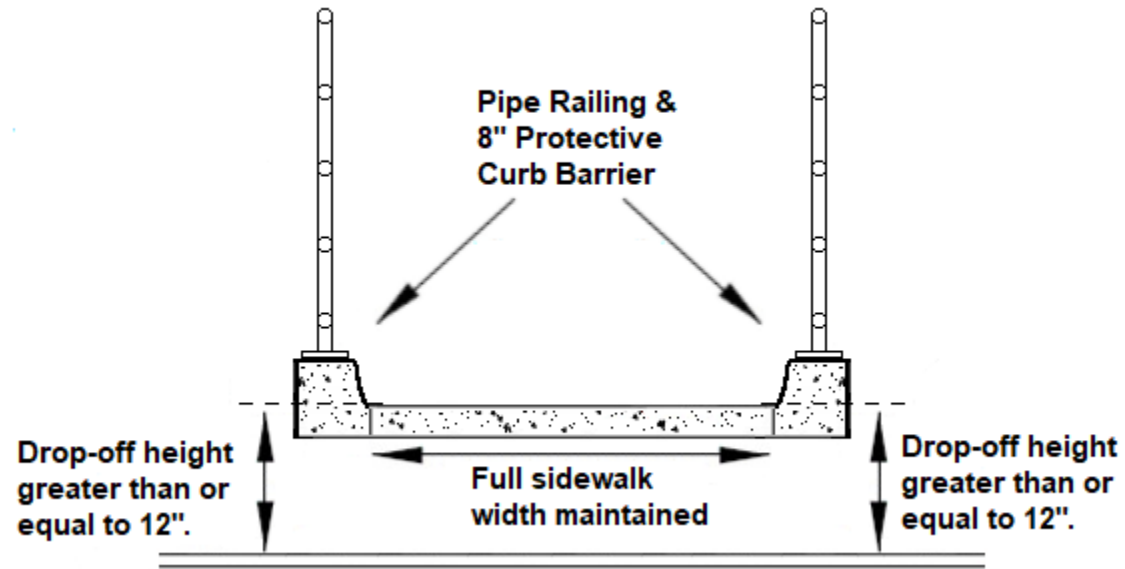


Shared-Use Path/Trail Pipe Railing Placement & Buffer Area Detail

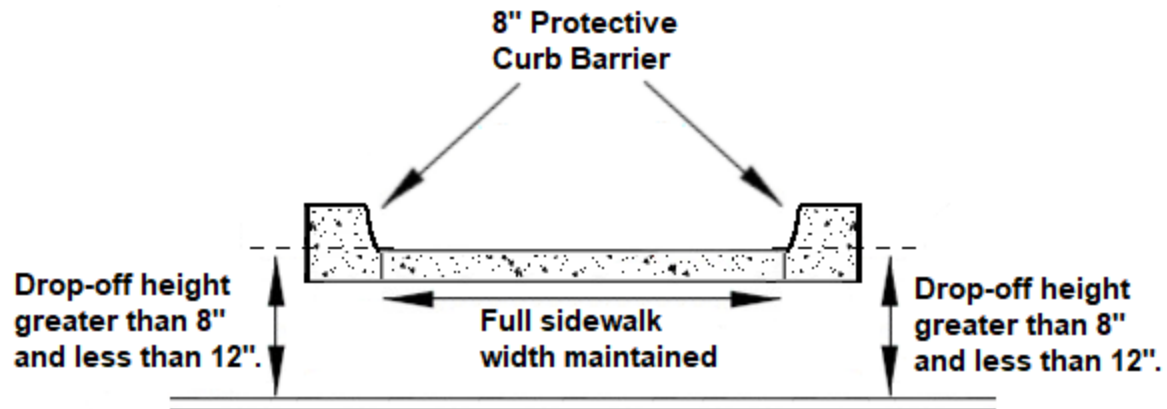
When pipe railing is placed along a Shared-Use Path/Trail that will contain multiple types of traffic separate from motorized vehicles (bicyclists, skaters, pedestrians, and others), the buffer area and pipe railing spacing from the main shared-use path should follow the detail above. Type of pipe railing proposed may differ. The main Shared-Use Path will maintain full width through the affected area. In scenarios where full width is unable to be maintained due to physical constraints for a short distance, the Shared-Use Path/Trail is allowed to be reduced to 8 ft for a short distance. In these areas there shall be a W5-4a warning sign indicating pathway narrows.



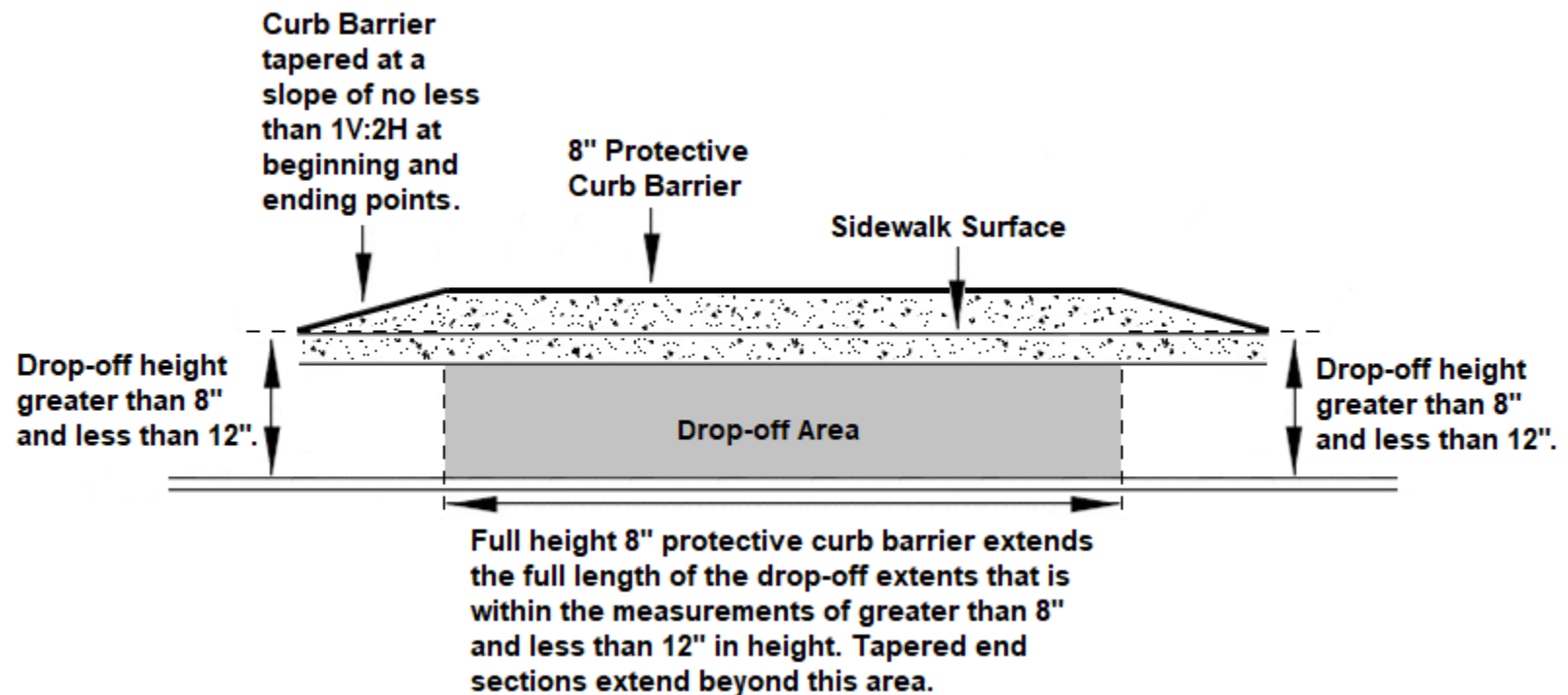
Drop-off Option #1 - Pipe Railing Barrier



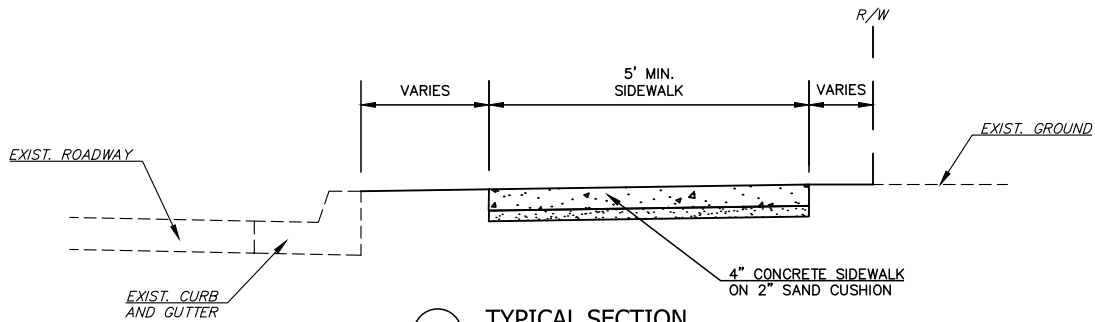
Drop-off Option #2 - Pipe Railing & Curb Barrier



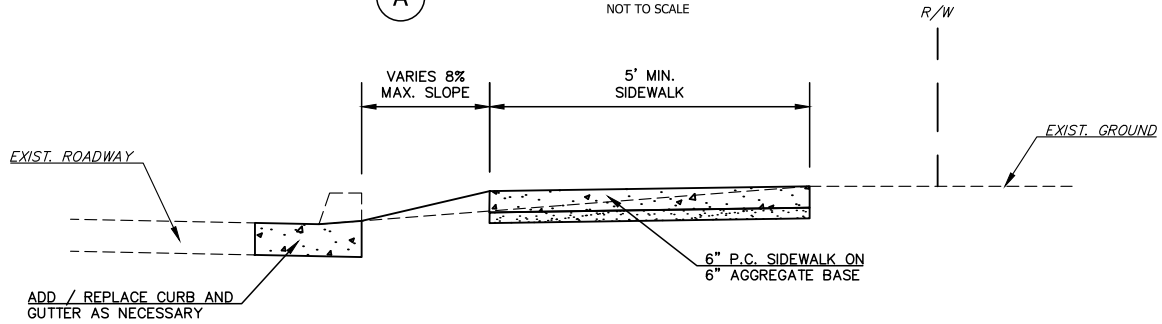
**Drop-off > 8" & < 12" - Curb Barrier
Parallel Cross Section View**



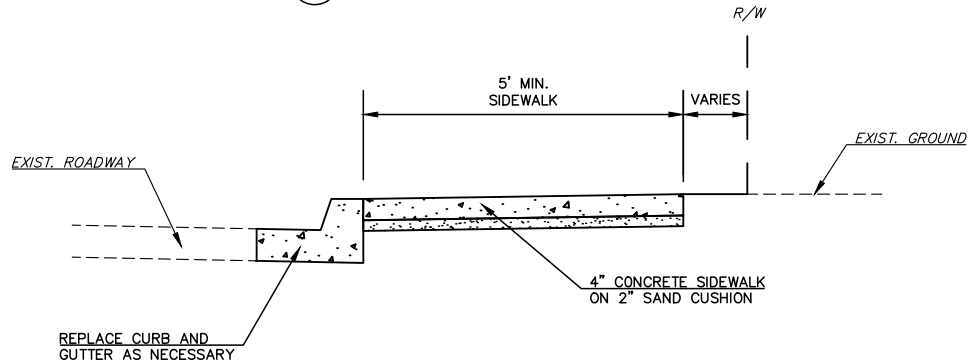
Drop-off > 8" & < 12" - Curb Barrier
Perpendicular Cross Section View



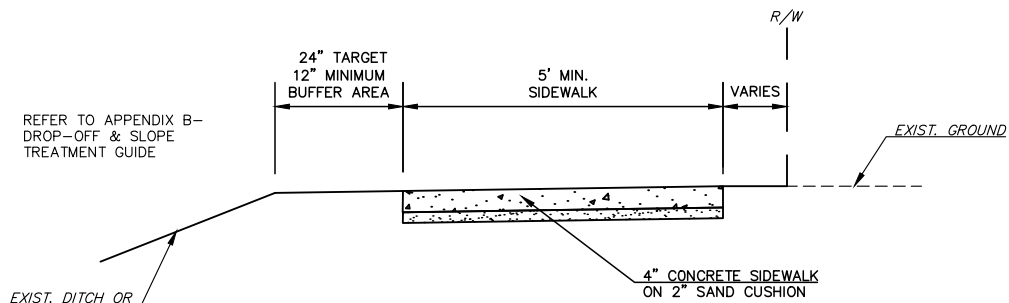
A TYPICAL SECTION
NOT TO SCALE



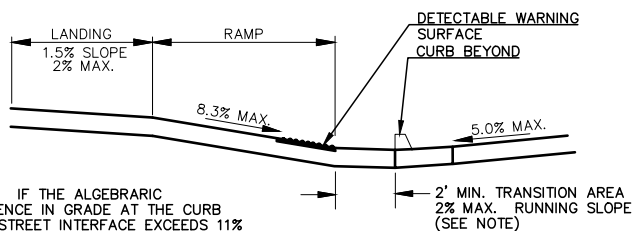
B TYPICAL DRIVEWAY SECTION
NOT TO SCALE



C TYPICAL SECTION AT BACK-OF-CURB
NOT TO SCALE



D TYPICAL SECTION WITH DROP-OFF
NOT TO SCALE



NOTE: IF THE ALGEBRAIC DIFFERENCE IN GRADE AT THE CURB RAMP/STREET INTERFACE EXCEEDS 11% PROVIDE A 2' TRANSITION AREA.

E RAMP COUNTERSLOPE DETAIL
NOT TO SCALE



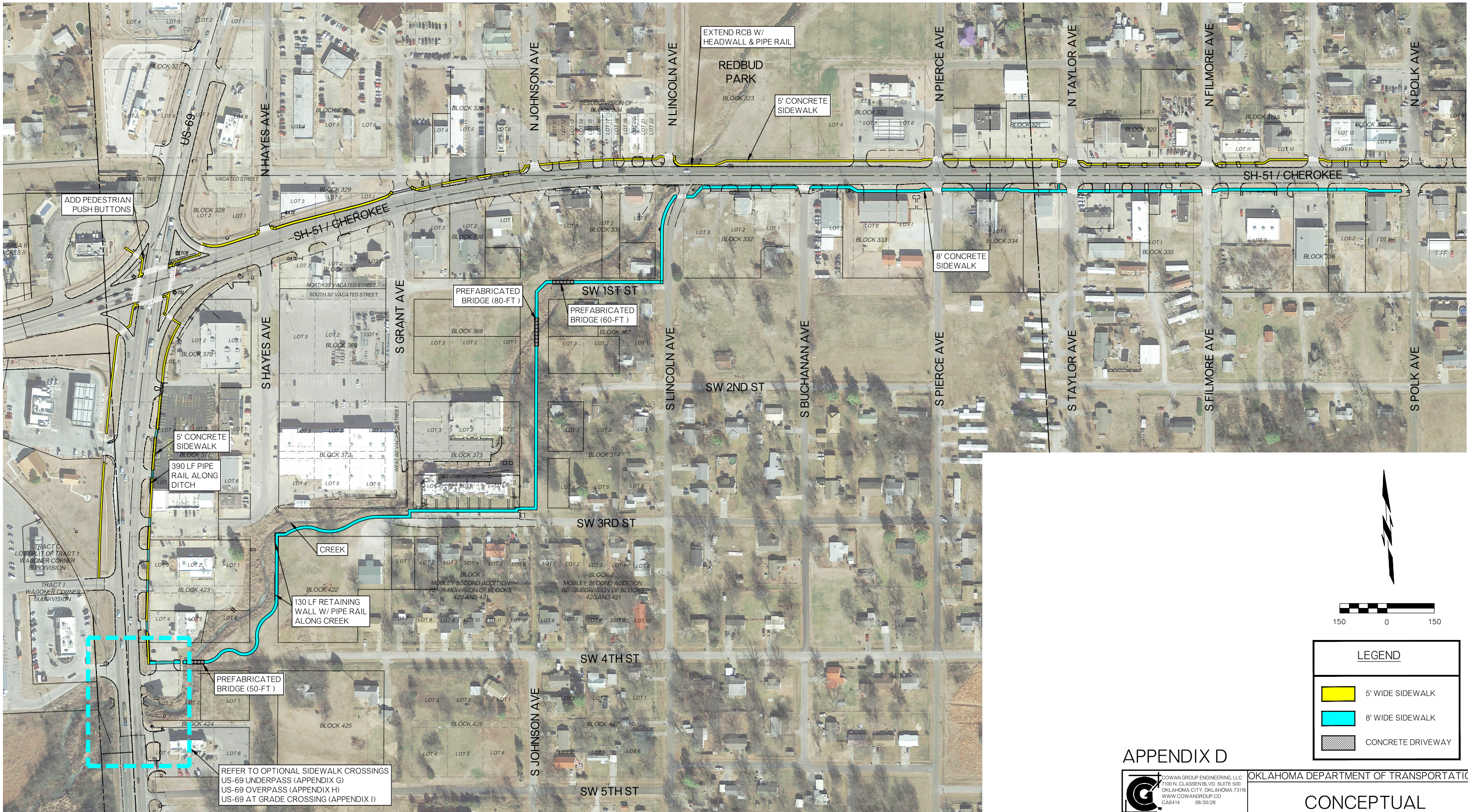
ADA SIDEWALK IMPROVEMENTS
PROJECT TITLE

SIDEWALK TYPICAL SECTIONS
SHEET TITLE


36513(04)
PROJECT NUMBER

JANUARY, 2025
DATE

APPENDIX C
SHEET NUMBER



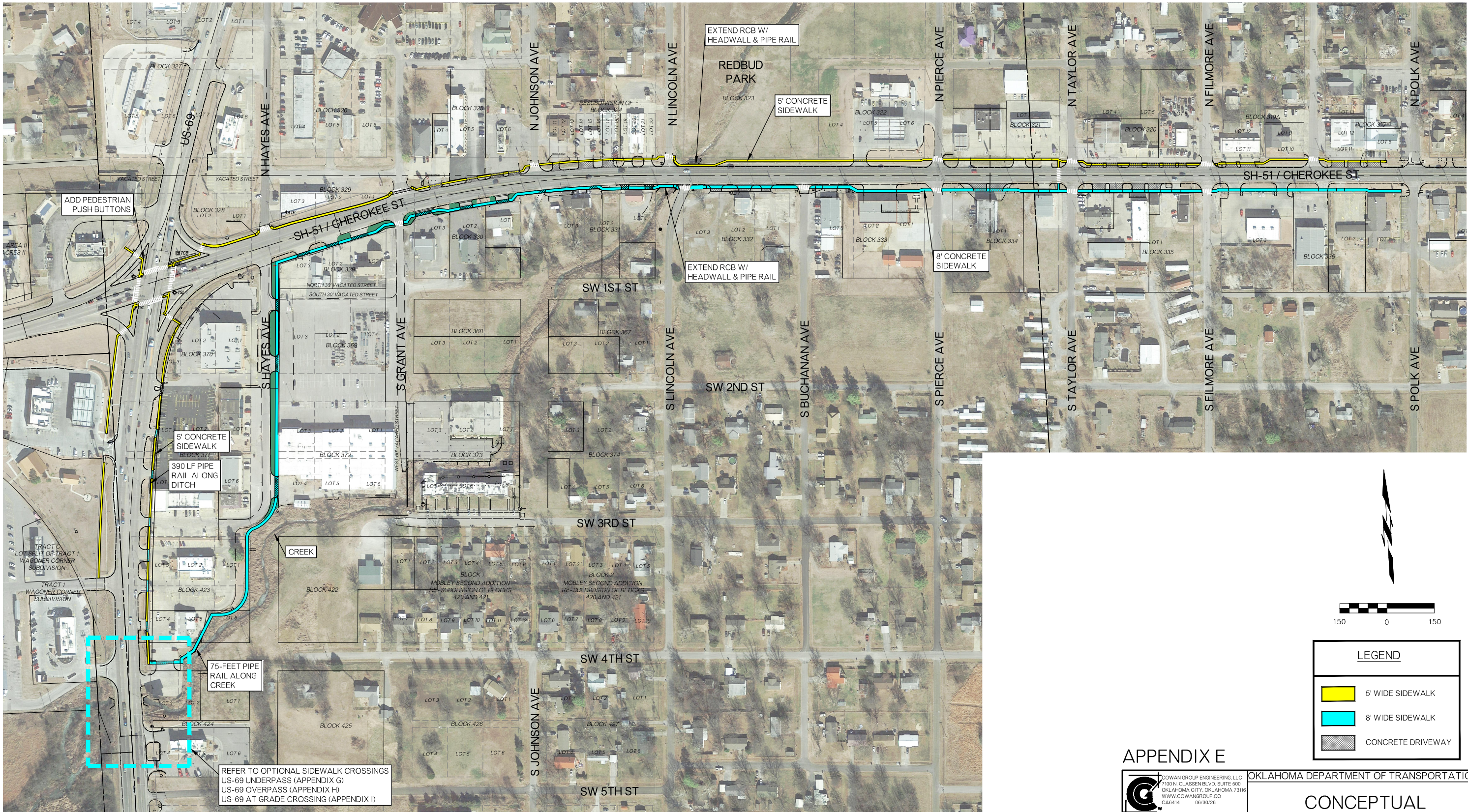
APPENDIX D

 <div>COWAN GROUP ENGINEERING, LLC 7100 N. GLASSEN BLVD., SUITE 500 OKLAHOMA CITY, OKLAHOMA 73116 WWW.COWANGROUP.CO CA6414 06/30/26</div>		
DESIGN	MLP	01/2025
DETAIL	MLP	01/2025
CHECKED	RPR	01/2025
COUNTY	WAGONER	HIGHWAY

OKLAHOMA DEPARTMENT OF TRANSPORTATION

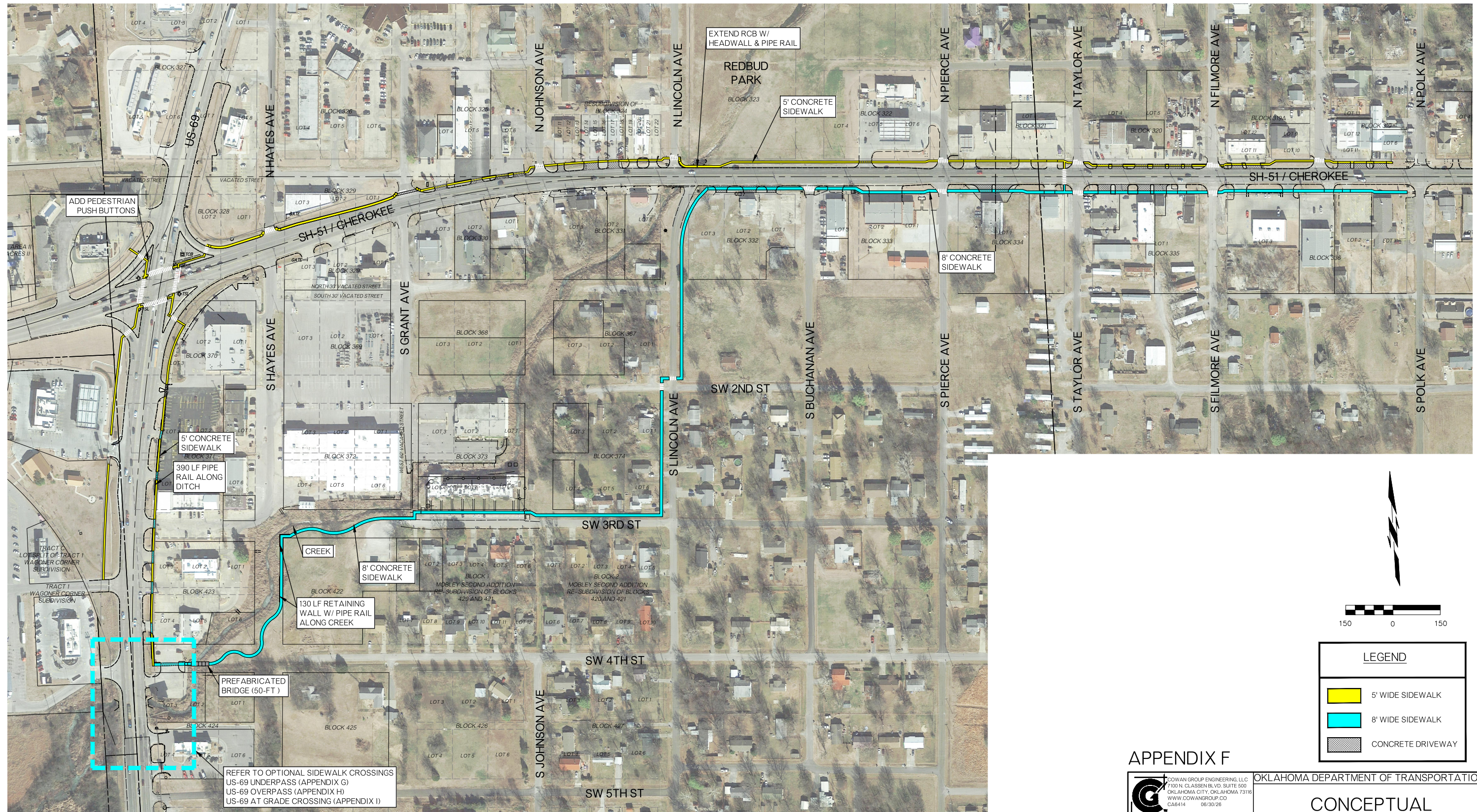
CONCEPTUAL
PLAN '1'

SH-51 STATE JOB NO. 36513(04) SHEET NO. 01



Thursday, January 23, 2025 3:46:07 PM

P.E. NO. : 36499(04)



APPENDIX F

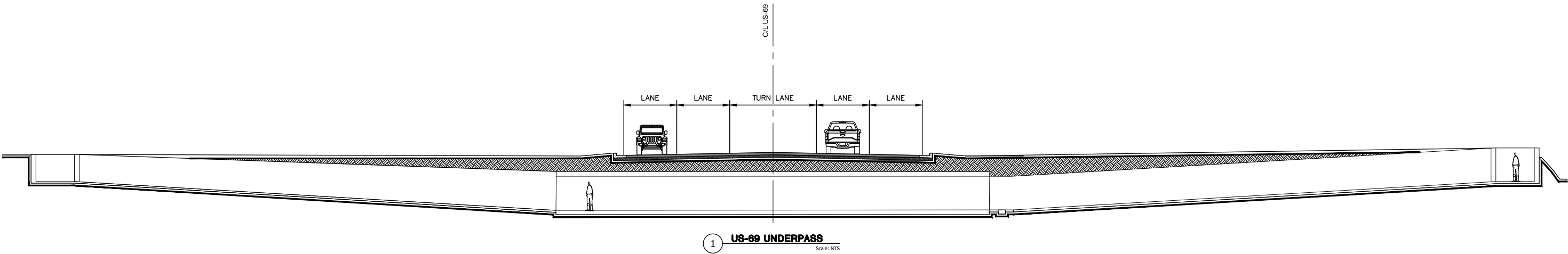
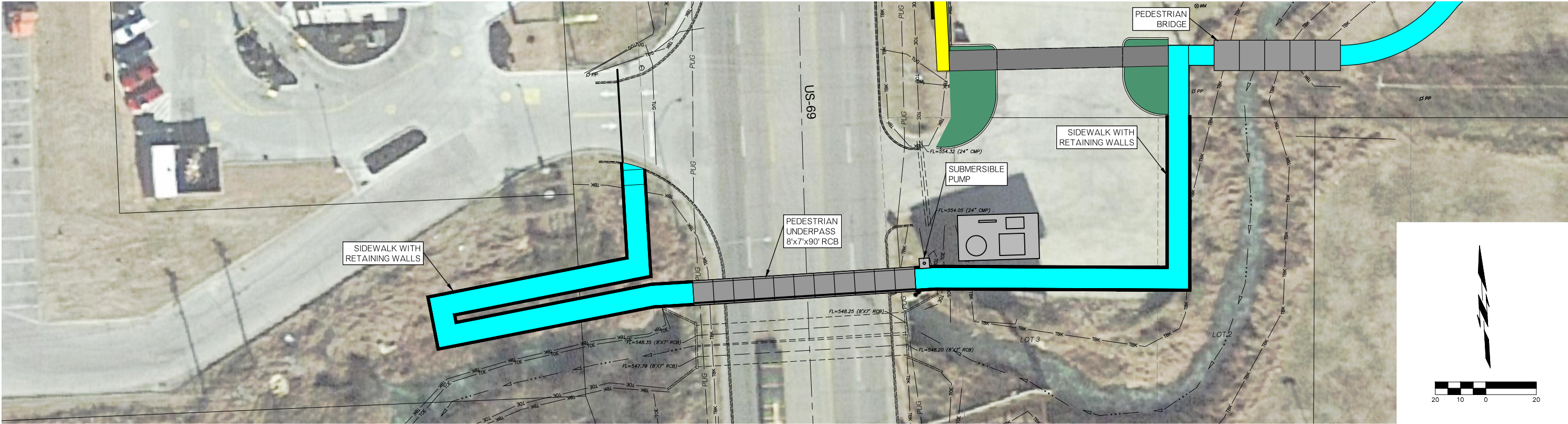


DESIGN	MLP	01/2025
DETAIL	MLP	01/2025
CHECKED	RPR	01/2025


c | OKLAHOMA DEPARTMENT OF TRANSPORTATION

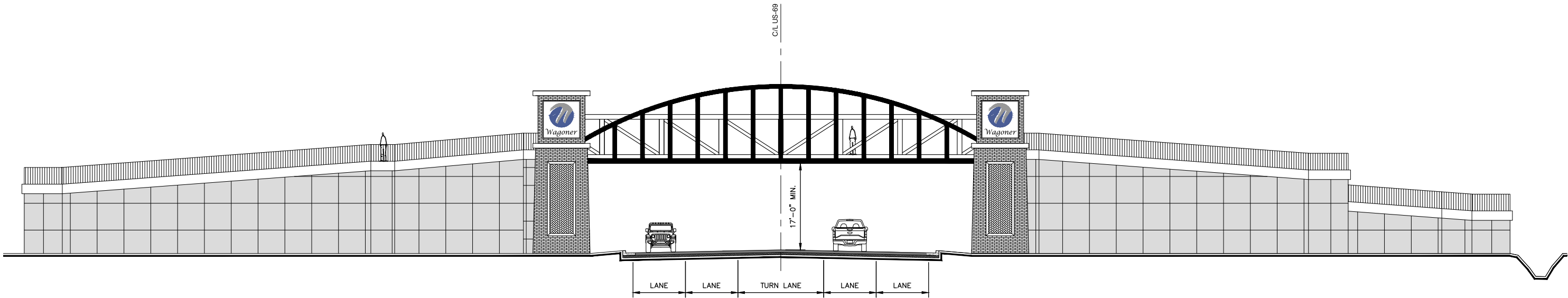
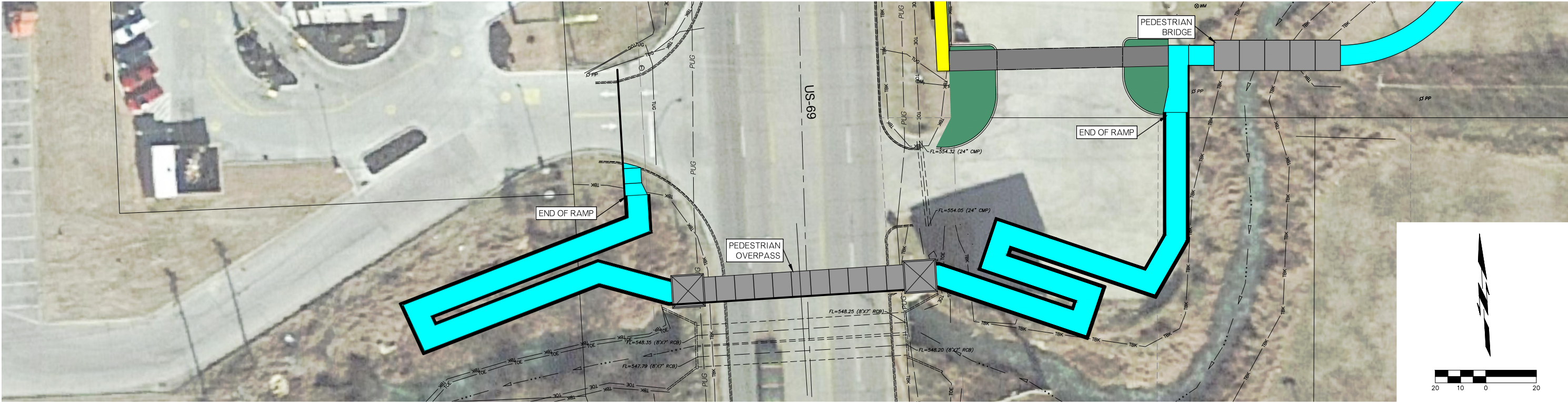
CONCEPTUAL
PLAN '3'

COUNTY WAGONER HIGHWAY SH-51 STATE JOB NO. 36513(04) SHEET NO. 03




APPENDIX G

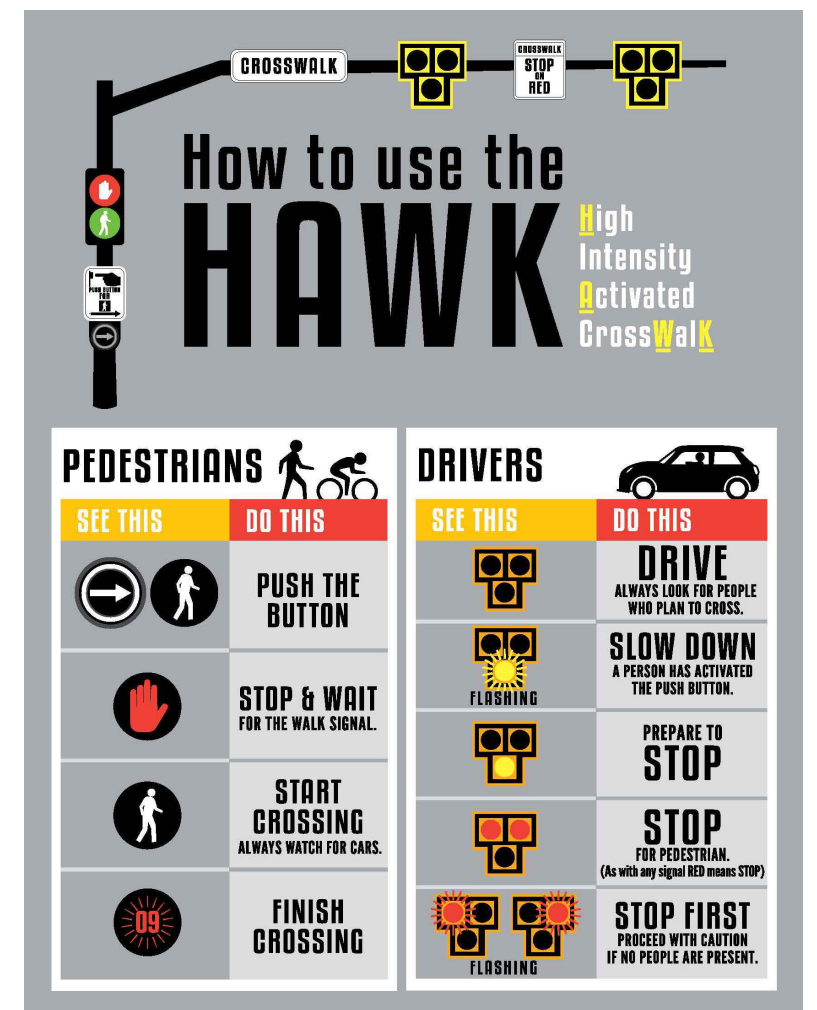
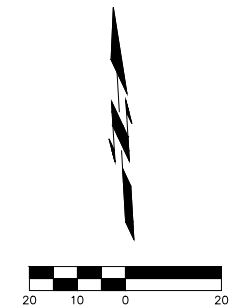
 <div>COWAN GROUP ENGINEERING, LLC 7100 N. GLASSEN BLVD, SUITE 500 OKLAHOMA CITY, OKLAHOMA 73116 WWW.COWANGROUP.CO CA6414 06/30/26</div>			OKLAHOMA DEPARTMENT OF TRANSPORTATION		
DESIGN	MLP	01/2025	US-69 SIDEWALK UNDERPASS		
DETAIL	MLP	01/2025			
CHECKED	RPR	01/2025			
COUNTY WAGONER		HIGHWAY	SH-51	STATE JOB NO.	36513(04)
				SHEET NO.	_05




1 **US-69 OVERPASS**
Scale: NTS

APPENDIX H

 <div>COWAN GROUP ENGINEERING, LLC 7100 N. GLASSEN BLVD, SUITE 500 OKLAHOMA CITY, OKLAHOMA 73116 WWW.COWANGROUP.CO CA6414 06/30/26</div>			OKLAHOMA DEPARTMENT OF TRANSPORTATION		
DESIGN	MLP	01/2025	US-69 SIDEWALK OVERPASS		
DETAIL	MLP	01/2025			
CHECKED	RPR	01/2025			
COUNTY WAGONER HIGHWAY			SH-51	STATE JOB NO. 36513(04)	SHEET NO. 06



APPENDIX I

	COWAN GROUP ENGINEERING, LLC 7100 N. CLASSEN BLVD, SUITE 500 OKLAHOMA CITY, OKLAHOMA 73118 WWW.COWANGROUP.CO CA6414 06/30/26		OKLAHOMA DEPARTMENT OF TRANSPORTATION <h1 style="margin: 0;">US-69 SIDEWALK AT GRADE CROSSING</h1>		
	DESIGN	MLP	01/2025		
	DETAIL	MLP	01/2025		
	CHECKED	RPR	01/2025		
COUNTRY WAGONER HIGHWAY			SH-51	STATE IORN NO. 36513(04)	SHEET NO. 07



APPENDIX J

CONCEPTUAL PLAN '1'

COWAN GROUP ENGINEERING, LLC
7100 N CLASSEN, SUITE 500
OKLAHOMA CITY, OK 73116

405.463.3369 O
405.463.3381 F

PROJECT NAME SIDEWALK IMPROVEMENTS
DESCRIPTION CITY OF WAGONER
SH-51 FROM US-69 TO POLK AVENUE

DATE January, 2025

ITEM NUMBER	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
201(A) 1200	CLEARING AND GRUBBING	1.00	LSUM	\$ 50,000.00	\$ 50,000.00
202(A) 2200	UNCLASSIFIED EXCAVATION	140.00	CY	\$ 18.00	\$ 2,520.00
202(D) 2500	UNCLASSIFIED BORROW	200.00	CY	\$ 20.00	\$ 4,000.00
221(B) 2300	TEMPORARY SILT FENCE	6,813.00	LF	\$ 4.00	\$ 27,252.00
221(C) 2400	TEMPORARY SEDIMENT FILTER	9.00	EA	\$ 10.00	\$ 90.00
221(G) 2800	TEMPORARY FIBER LOG	50.00	LF	\$ 10.00	\$ 500.00
230(A) 7200	SOLID SLAB SODDING	2,742.00	SY	\$ 7.50	\$ 20,565.00
303(A) 1200	AGGREGATE BASE TYPE A	495.00	CY	\$ 80.00	\$ 39,600.00
508 9120	PRECAST REINFORCED CONCRETE BOX (6'x14' EXT.)	1.00	EA	\$ 50,000.00	\$ 50,000.00
535 7170	PREFABRICATED PEDESTRIAN BRIDGE (50) CREEK	1.00	EA	\$ 123,400.00	\$ 123,400.00
535 7170	PREFABRICATED PEDESTRIAN BRIDGE (60) CREEK	1.00	EA	\$ 150,000.00	\$ 150,000.00
535 7170	PREFABRICATED PEDESTRIAN BRIDGE (80) CREEK	1.00	EA	\$ 180,000.00	\$ 180,000.00
510(A) 1200	RETAINING WALL	72.00	SY	\$ 800.00	\$ 57,600.00
609(A) 4230	CONC. CURB (6" BARRIER-INTEGRAL)	2,312.00	LF	\$ 30.00	\$ 69,360.00
610(A) 5200	4" CONCRETE SIDEWALK	6,554.00	SY	\$ 90.00	\$ 589,860.00
610(B) 5300	6" CONCRETE DRIVEWAY (H.E.S.)	2,579.00	SY	\$ 110.00	\$ 283,690.00
610(I) 6000	TACTILE WARNING DEVICE-NEW	470.00	SF	\$ 35.00	\$ 16,450.00
611(G) 7700	SPECIAL INLET DRAIN (FLUME)	1.00	EA	\$ 6,000.00	\$ 6,000.00
613(A) 5216	24" R.C.PIPE CLASS III	95.00	LF	\$ 150.00	\$ 14,250.00
613(L) 6716	24" PREFAB. CULVERT END SEC., ROUND	6.00	EA	\$ 700.00	\$ 4,200.00
619(A) 6200	REMOVAL OF STRUCTURES & OBSTRUCTIONS	1.00	LSUM	\$ 2,000.00	\$ 2,000.00
619(B) 6356	REMOVAL OF CURB AND GUTTER	873.00	LF	\$ 15.00	\$ 13,095.00
619(B) 6360	REMOVAL OF CONCRETE PAVEMENT	1,891.00	SY	\$ 15.00	\$ 28,365.00
619(B) 6384	REMOVAL OF ASPHALT DRIVEWAY	1,625.00	SY	\$ 15.00	\$ 24,375.00
619(B) 6404	REMOVAL OF SIDEWALK	695.00	SY	\$ 15.00	\$ 10,425.00
619(B) 6396	REMOVAL OF GUARDRAIL	133.00	LF	\$ 15.00	\$ 1,995.00
619(C) 6600	SAWING PAVEMENT	4,104.00	LF	\$ 7.00	\$ 28,728.00
622(A) 0200	PIPE RAILING	595.00	LF	\$ 250.00	\$ 148,750.00
805(A) 3252	(PL)REMOVAL OF EXISTING SIGNS	2.00	EA	\$ 225.00	\$ 450.00
805(D) 3528	(PL) REMOVE & RESET EXISTING SIGNS	8.00	EA	\$ 225.00	\$ 1,800.00
823 2100	PEDESTRIAN PUSH BUTTONS (US-69/SH-51)	8.00	EA	\$ 25,000.00	\$ 200,000.00
850(A) 1200	SHEET ALUMINUM SIGNS	153.00	SF	\$ 25.00	\$ 3,825.00
851(C) 2415	2" SQUARE TUBE POST	113.00	LF	\$ 10.00	\$ 1,130.00
856(A) 8216	TRAFFIC STRIPE (MULTI-POLY) (24" WIDE)	1,527.00	LF	\$ 10.00	\$ 15,270.00
880(B) 6300	CONSTRUCTION SIGNS 0 TO 6.25 SF	5,750.00	SD	\$ 1.00	\$ 5,750.00
880(B) 6310	CONSTRUCTION SIGNS 6.26 TO 15.99 SF	5,032.00	SD	\$ 2.00	\$ 10,064.00
880(C) 6410	CONSTRUCTION BARRICADES (TYPE III)	3,162.50	SD	\$ 3.00	\$ 9,488.00
880(C) 6420	WING BARRICADES	2,875.00	SD	\$ 2.00	\$ 5,750.00
880(E) 6607	WARNING LIGHTS (TYPE B)	19,262.50	SD	\$ 1.00	\$ 19,263.00
880(G) 6805	CHANNELIZER CONES	31,050.00	SD	\$ 1.00	\$ 31,050.00
880(I) 7000	FLAGGER	200.00	SD	\$ 300.00	\$ 60,000.00
642(B) 3300	CONSTRUCTION STAKING LEVEL II	1.00	LSUM	\$ 20,000.00	\$ 20,000.00
220 1100	SWPPP DOCUMENTATION AND MANAGEMENT	1.00	LSUM	\$ 5,000.00	\$ 5,000.00
641 2110	MOBILIZATION	1.00	LSUM	\$ 141,800.00	\$ 141,800.00
SUBTOTAL W/ OUT MOBILIZATION					\$ 2,335,910.00
20% CONTINGENCY					\$ 467,182.00
RIGHT-OF-WAY					\$ 25,000.00
UTILITY RELOCATION					\$ 600,000.00
TOTAL					\$ 2,969,892.00

CONCEPTUAL PLAN '1' + US-69 UNDERPASS	\$ 1,745,952.00	\$ 4,715,844.00
CONCEPTUAL PLAN '1' + US-69 OVERPASS	\$ 2,939,282.00	\$ 5,909,174.00
CONCEPTUAL PLAN '1' + US-69 AT GRADE	\$506,036.00	\$ 3,475,928.00



APPENDIX K

CONCEPTUAL PLAN '2'

COWAN GROUP ENGINEERING, LLC
7100 N CLASSEN, SUITE 500
OKLAHOMA CITY, OK 73116

405.463.3369 O
405.463.3381 F

PROJECT NAME SIDEWALK IMPROVEMENTS
DESCRIPTION CITY OF WAGONER
SH-51 FROM US-69 TO POLK AVENUE

DATE January, 2025

ITEM NUMBER	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
201(A) 1200	CLEARING AND GRUBBING	1.00	LSUM	\$ 50,000.00	\$ 50,000.00
202(A) 2200	UNCLASSIFIED EXCAVATION	500.00	CY	\$ 18.00	\$ 9,000.00
202(D) 2500	UNCLASSIFIED BORROW	500.00	CY	\$ 20.00	\$ 10,000.00
221(B) 2300	TEMPORARY SILT FENCE	6,529.00	LF	\$ 4.00	\$ 26,116.00
221(C) 2400	TEMPORARY SEDIMENT FILTER	9.00	EA	\$ 10.00	\$ 90.00
221(G) 2800	TEMPORARY FIBER LOG	50.00	LF	\$ 10.00	\$ 500.00
230(A) 7200	SOLID SLAB SODDING	3,064.00	SY	\$ 7.50	\$ 22,980.00
303(A) 1200	AGGREGATE BASE TYPE A	504.00	CY	\$ 80.00	\$ 40,320.00
508 9120	PRECAST REINFORCED CONCRETE BOX (6'x14' EXT.)	2.00	EA	\$ 50,000.00	\$ 100,000.00
609(B) 4330	1'-8" COMB.CRB.& GUT.(6" BARRIER)	4,616.00	LF	\$ 30.00	\$ 138,480.00
610(A) 5200	4" CONCRETE SIDEWALK	6,186.00	SY	\$ 90.00	\$ 556,740.00
610(B) 5300	6" CONCRETE DRIVEWAY (H.E.S.)	2,628.00	SY	\$ 110.00	\$ 289,080.00
610(I) 6000	TACTILE WARNING DEVICE-NEW	518.00	SF	\$ 35.00	\$ 18,130.00
611(G) 7700	SPECIAL INLET DRAIN (FLUME)	1.00	EA	\$ 6,000.00	\$ 6,000.00
613(A) 5216	24" R.C.PIPE CLASS III	120.00	LF	\$ 150.00	\$ 18,000.00
613(L) 6716	24" PREFAB. CULVERT END SEC., ROUND	8.00	EA	\$ 700.00	\$ 5,600.00
619(A) 6200	REMOVAL OF STRUCTURES & OBSTRUCTIONS	1.00	LSUM	\$ 2,000.00	\$ 2,000.00
619(B) 6300	REMOVAL OF HEADWALL	2.00	EA	\$ 5,000.00	\$ 10,000.00
619(B) 6356	REMOVAL OF CURB AND GUTTER	873.00	LF	\$ 15.00	\$ 13,095.00
619(B) 6360	REMOVAL OF CONCRETE PAVEMENT	1,975.00	SY	\$ 15.00	\$ 29,625.00
619(B) 6384	REMOVAL OF ASPHALT DRIVEWAY	2,113.00	SY	\$ 15.00	\$ 31,695.00
619(B) 6404	REMOVAL OF SIDEWALK	495.00	SY	\$ 15.00	\$ 7,425.00
619(B) 6396	REMOVAL OF GUARDRAIL	133.00	LF	\$ 15.00	\$ 1,995.00
619(C) 6600	SAVING PAVEMENT	5,223.00	LF	\$ 7.00	\$ 36,561.00
622(A) 0200	PIPE RAILING	670.00	LF	\$ 200.00	\$ 134,000.00
805(A) 3252	(PL)REMOVAL OF EXISTING SIGNS	2.00	EA	\$ 225.00	\$ 450.00
805(D) 3528	(PL) REMOVE & RESET EXISTING SIGNS	8.00	EA	\$ 225.00	\$ 1,800.00
823 2100	PEDESTRIAN PUSH BUTTONS (US-69/SH-51)	8.00	EA	\$ 25,000.00	\$ 200,000.00
850(A) 1200	SHEET ALUMINUM SIGNS	153.00	SF	\$ 25.00	\$ 3,825.00
851(C) 2415	2" SQUARE TUBE POST	113.00	LF	\$ 10.00	\$ 1,130.00
856(A) 8216	TRAFFIC STRIPE (MULTI-POLY) (24" WIDE)	1,593.00	LF	\$ 10.00	\$ 15,930.00
880(B) 6300	CONSTRUCTION SIGNS 0 TO 6.25 SF	5,750.00	SD	\$ 1.00	\$ 5,750.00
880(B) 6310	CONSTRUCTION SIGNS 6.26 TO 15.99 SF	5,032.00	SD	\$ 2.00	\$ 10,064.00
880(C) 6410	CONSTRUCTION BARRICADES (TYPE III)	3,162.50	SD	\$ 3.00	\$ 9,488.00
880(C) 6420	WING BARRICADES	2,875.00	SD	\$ 2.00	\$ 5,750.00
880(E) 6607	WARNING LIGHTS (TYPE B)	19,262.50	SD	\$ 1.00	\$ 19,263.00
880(G) 6805	CHANNELIZER CONES	31,050.00	SD	\$ 1.00	\$ 31,050.00
880(I) 7000	FLAGGER	200.00	SD	\$ 300.00	\$ 60,000.00
642(B) 3300	CONSTRUCTION STAKING LEVEL II	1.00	LSUM	\$ 20,000.00	\$ 20,000.00
220 1100	SWPPP DOCUMENTATION AND MANAGEMENT	1.00	LSUM	\$ 5,000.00	\$ 5,000.00
641 2110	MOBILIZATION	1.00	LSUM	\$ 122,400.00	\$ 122,400.00
SUBTOTAL W/ OUT MOBILIZATION					\$ 1,946,932.00
20% CONTINGENCY					\$ 389,386.40
RIGHT-OF-WAY					\$ 150,000.00
UTILITY RELOCATION					\$ 600,000.00
TOTAL					\$ 2,608,718.40

CONCEPTUAL PLAN '2' + US-69 UNDERPASS	\$ 1,745,952.00	\$ 4,354,670.40
CONCEPTUAL PLAN '2' + US-69 OVERPASS	\$ 2,939,282.00	\$ 5,548,000.40
CONCEPTUAL PLAN '2' + US-69 AT GRADE	\$506,036.00	\$ 3,114,754.40



APPENDIX L

CONCEPTUAL PLAN '3'

COWAN GROUP ENGINEERING, LLC
7100 N CLASSEN, SUITE 500
OKLAHOMA CITY, OK 73116

405.463.3369 O
405.463.3381 F

PROJECT NAME SIDEWALK IMPROVEMENTS
DESCRIPTION CITY OF WAGONER
SH-51 FROM US-69 TO POLK AVENUE

DATE January, 2025

ITEM NUMBER	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
201(A) 1200	CLEARING AND GRUBBING	1.00	LSUM	\$ 50,000.00	\$ 50,000.00
202(A) 2200	UNCLASSIFIED EXCAVATION	140.00	CY	\$ 18.00	\$ 2,520.00
202(D) 2500	UNCLASSIFIED BORROW	200.00	CY	\$ 20.00	\$ 4,000.00
221(B) 2300	TEMPORARY SILT FENCE	6,708.00	LF	\$ 4.00	\$ 26,832.00
221(C) 2400	TEMPORARY SEDIMENT FILTER	9.00	EA	\$ 10.00	\$ 90.00
221(G) 2800	TEMPORARY FIBER LOG	78.00	LF	\$ 10.00	\$ 780.00
230(A) 7200	SOLID SLAB SODDING	3,049.00	SY	\$ 7.50	\$ 22,867.50
303(A) 1200	AGGREGATE BASE TYPE A	495.00	CY	\$ 80.00	\$ 39,600.00
508 9120	PRECAST REINFORCED CONCRETE BOX (6'x14' EXT.)	1.00	EA	\$ 50,000.00	\$ 50,000.00
535 7170	PREFABRICATED PEDESTRIAN BRIDGE (60) CREEK	1.00	EA	\$ 152,000.00	\$ 152,000.00
510(A) 1200	RETAINING WALL	72.00	LF	\$ 800.00	\$ 57,600.00
609(A) 4330	1'-8" COMB.CRB & GUT.(6" BARRIER)	2,525.00	LF	\$ 30.00	\$ 75,750.00
610(A) 5200	4" CONCRETE SIDEWALK	6,706.00	SY	\$ 90.00	\$ 603,540.00
610(B) 5300	6" CONCRETE DRIVEWAY (H.E.S.)	2,579.00	SY	\$ 110.00	\$ 283,690.00
610(I) 6000	TACTILE WARNING DEVICE-NEW	518.00	SF	\$ 35.00	\$ 18,130.00
611(G) 7700	SPECIAL INLET DRAIN (FLUME)	1.00	EA	\$ 6,000.00	\$ 6,000.00
613(A) 5216	24" R.C.PIPE CLASS III	95.00	LF	\$ 150.00	\$ 14,250.00
613(L) 6716	24" PREFAB. CULVERT END SEC., ROUND	6.00	EA	\$ 700.00	\$ 4,200.00
619(A) 6200	REMOVAL OF STRUCTURES & OBSTRUCTIONS	1.00	LSUM	\$ 2,000.00	\$ 2,000.00
619(B) 6300	REMOVAL OF HEADWALL	1.00	EA	\$ 5,000.00	\$ 5,000.00
619(B) 6356	REMOVAL OF CURB AND GUTTER	873.00	LF	\$ 15.00	\$ 13,095.00
619(B) 6360	REMOVAL OF CONCRETE PAVEMENT	1,891.00	SY	\$ 15.00	\$ 28,365.00
619(B) 6384	REMOVAL OF ASPHALT DRIVEWAY	1,624.33	SY	\$ 15.00	\$ 24,365.00
619(B) 6404	REMOVAL OF SIDEWALK	494.22	SY	\$ 15.00	\$ 7,414.00
619(B) 6396	REMOVAL OF GUARDRAIL	133.00	LF	\$ 15.00	\$ 1,995.00
619(C) 6600	SAWING PAVEMENT	3,844.00	LF	\$ 7.00	\$ 26,908.00
622(A) 0200	PIPE RAILING	595.00	LF	\$ 200.00	\$ 119,000.00
805(A) 3252	(PL)REMOVAL OF EXISTING SIGNS	2.00	EA	\$ 225.00	\$ 450.00
805(D) 3528	(PL) REMOVE & RESET EXISTING SIGNS	8.00	EA	\$ 225.00	\$ 1,800.00
823 2100	PEDESTRIAN PUSH BUTTONS (US-69/SH-51)	8.00	EA	\$ 25,000.00	\$ 200,000.00
850(A) 1200	SHEET ALUMINUM SIGNS	153.00	SF	\$ 25.00	\$ 3,825.00
851(C) 2415	2" SQUARE TUBE POST	113.00	LF	\$ 10.00	\$ 1,130.00
856(A) 8216	TRAFFIC STRIPE (MULTI-POLY) (24" WIDE)	1,527.00	LF	\$ 10.00	\$ 15,270.00
880(B) 6300	CONSTRUCTION SIGNS 0 TO 6.25 SF	5,750.00	SD	\$ 1.00	\$ 5,750.00
880(B) 6310	CONSTRUCTION SIGNS 6.26 TO 15.99 SF	5,032.00	SD	\$ 2.00	\$ 10,064.00
880(C) 6410	CONSTRUCTION BARRICADES (TYPE III)	3,162.50	SD	\$ 3.00	\$ 9,487.50
880(C) 6420	WING BARRICADES	2,875.00	SD	\$ 2.00	\$ 5,750.00
880(E) 6607	WARNING LIGHTS (TYPE B)	19,262.50	SD	\$ 1.00	\$ 19,263.00
880(G) 6805	CHANNELIZER CONES	31,050.00	SD	\$ 1.00	\$ 31,050.00
880(I) 7000	FLAGGER	200.00	SD	\$ 300.00	\$ 60,000.00
642(B) 3300	CONSTRUCTION STAKING LEVEL II	1.00	LSUM	\$ 20,000.00	\$ 20,000.00
220 1100	SWPPP DOCUMENTATION AND MANAGEMENT	1.00	LSUM	\$ 5,000.00	\$ 5,000.00
641 2110	MOBILIZATION	1.00	LSUM	\$ 126,500.00	\$ 126,500.00
SUBTOTAL W/ OUT MOBILIZATION					\$ 2,028,831.00
20% CONTINGENCY					\$ 405,766.20
RIGHT-OF-WAY					\$ 25,000.00
UTILITY RELOCATION					\$ 600,000.00
TOTAL					\$ 3,186,097.20

CONCEPTUAL PLAN '3' + US-69 UNDERPASS	\$ 1,745,952.00	\$ 4,932,049.20
CONCEPTUAL PLAN '3' + US-69 OVERPASS	\$ 2,939,282.00	\$ 6,125,379.20
CONCEPTUAL PLAN '3' + US-69 AT GRADE	\$506,036.00	\$ 3,692,133.20



APPENDIX M
US-69 UNDERPASS

COWAN GROUP ENGINEERING, LLC
7100 N CLASSEN, SUITE 500
OKLAHOMA CITY, OK 73116

405.463.3369 O
405.463.3381 F

PROJECT NAME SIDEWALK IMPROVEMENTS
DESCRIPTION CITY OF WAGONER
SH-51 FROM US-69 TO POLK AVENUE

DATE January, 2025

ITEM NUMBER	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
201(A) 1200	CLEARING AND GRUBBING	1.00	LSUM	\$ 10,000.00	\$ 10,000.00
202(A) 2200	UNCLASSIFIED EXCAVATION	500.00	CY	\$ 18.00	\$ 9,000.00
202(D) 2500	UNCLASSIFIED BORROW	100.00	CY	\$ 20.00	\$ 2,000.00
221(B) 2300	TEMPORARY SILT FENCE	900.00	LF	\$ 4.00	\$ 3,600.00
230(A) 7200	SOLID SLAB SODDING	300.00	SY	\$ 7.50	\$ 2,250.00
303(A) 1200	AGGREGATE BASE TYPE A	4.00	SY	\$ 80.00	\$ 320.00
307(B) 4200	STABILIZED SUBGRADE	95.00	SY	\$ 7.00	\$ 665.00
407(B) 7300	TACK COAT	57.00	GAL	\$ 5.00	\$ 285.00
411(B) 1330	TYPE S3 ASPHALT (PG 64-22 OK)	32.00	TON	\$ 180.00	\$ 5,760.00
411(C) 1400	TYPE S4 ASPHALT (PG 64-22 OK)	22.00	TON	\$ 250.00	\$ 5,500.00
508 9120	PRECAST REINFORCED CONCRETE BOX (7'x8'x90')	1.00	LSUM	\$ 242,000.00	\$ 242,000.00
	LIGHTING ELECTRICAL FOR RCB	1.00	LSUM	\$ 100,000.00	\$ 100,000.00
510(A) 1200	RETAINING WALL (US-69 RAMPS)	474.00	SY	\$ 800.00	\$ 379,200.00
610(A) 5200	4" CONCRETE SIDEWALK	380.00	SY	\$ 90.00	\$ 34,200.00
619(B) 6384	REMOVAL OF ASPHALT DRIVEWAY	189.00	SY	\$ 15.00	\$ 2,835.00
619(C) 6600	SAWING PAVEMENT	130.00	LF	\$ 7.00	\$ 910.00
648(A) 6210	(SP)SUBMERSIBLE PUMP	1.00	EA	\$ 470,000.00	\$ 470,000.00
880(B) 6300	CONSTRUCTION SIGNS 0 TO 6.25 SF	360.00	SD	\$ 1.00	\$ 360.00
880(B) 6310	CONSTRUCTION SIGNS 6.26 TO 15.99 SF	315.00	SD	\$ 2.00	\$ 630.00
880(C) 6410	CONSTRUCTION BARRICADES (TYPE III)	750.00	SD	\$ 3.00	\$ 2,250.00
880(C) 6420	WING BARRICADES	90.00	SD	\$ 2.00	\$ 180.00
880(E) 6607	WARNING LIGHTS (TYPE B)	225.00	SD	\$ 1.00	\$ 225.00
880(G) 6805	CHANNELIZER CONES	540.00	SD	\$ 1.00	\$ 540.00
880(I) 7000	FLAGGER	30.00	SD	\$ 300.00	\$ 9,000.00
642(B) 3300	CONSTRUCTION STAKING LEVEL II	1.00	LSUM	\$ 10,000.00	\$ 10,000.00
220 1100	SWPPP DOCUMENTATION AND MANAGEMENT	1.00	LSUM	\$ 5,000.00	\$ 5,000.00
641 2110	MOBILIZATION	1.00	LSUM	\$ 89,900.00	\$ 89,900.00
SUBTOTAL W/ OUT MOBILIZATION				\$	1,296,710.00
20% CONTINGENCY				\$	259,342.00
RIGHT-OF-WAY				\$	100,000.00
TOTAL				\$	1,745,952.00



APPENDIX N
US-69 OVERPASS

COWAN GROUP ENGINEERING, LLC
7100 N CLASSEN, SUITE 500
OKLAHOMA CITY, OK 73116

405.463.3369 O
405.463.3381 F

PROJECT NAME SIDEWALK IMPROVEMENTS
DESCRIPTION CITY OF WAGONER
SH-51 FROM US-69 TO POLK AVENUE

DATE January, 2025

ITEM NUMBER	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
201(A) 1200	CLEARING AND GRUBBING	1.00	LSUM	\$ 10,000.00	\$ 10,000.00
202(A) 2200	UNCLASSIFIED EXCAVATION	100.00	CY	\$ 18.00	\$ 1,800.00
202(D) 2500	UNCLASSIFIED BORROW	100.00	CY	\$ 20.00	\$ 2,000.00
221(B) 2300	TEMPORARY SILT FENCE	552.00	LF	\$ 4.00	\$ 2,208.00
230(A) 7200	SOLID SLAB SODDING	300.00	SY	\$ 7.50	\$ 2,250.00
504(F) 5600	HANDRAILING	983.00	LF	\$ 200.00	\$ 196,600.00
535 7170	PREFABRICATED PEDESTRIAN BRIDGE (100) GATEWAY	1.00	LSUM	\$ 360,000.00	\$ 360,000.00
	GATEWAY BRIDGE STRUCTURE SUPPORTS	1.00	LSUM	\$ 1,000,000.00	\$ 1,000,000.00
510(A) 1200	RETAINING WALL (US-69 RAMPS)	1.00	LSUM	\$ 600,000.00	\$ 600,000.00
610(A) 5200	4" CONCRETE SIDEWALK	474.00	SY	\$ 90.00	\$ 42,660.00
619(B) 6360	REMOVAL OF CONCRETE PAVEMENT	432.00	SY	\$ 15.00	\$ 6,480.00
619(C) 6600	SAWING PAVEMENT	152.00	LF	\$ 7.00	\$ 1,064.00
880(B) 6300	CONSTRUCTION SIGNS 0 TO 6.25 SF	360.00	SD	\$ 1.00	\$ 360.00
880(B) 6310	CONSTRUCTION SIGNS 6.26 TO 15.99 SF	315.00	SD	\$ 2.00	\$ 630.00
880(C) 6410	CONSTRUCTION BARRICADES (TYPE III)	135.00	SD	\$ 3.00	\$ 405.00
880(C) 6420	WING BARRICADES	90.00	SD	\$ 2.00	\$ 180.00
880(E) 6607	WARNING LIGHTS (TYPE B)	225.00	SD	\$ 1.00	\$ 225.00
880(G) 6805	CHANNELIZER CONES	540.00	SD	\$ 1.00	\$ 540.00
880(I) 7000	FLAGGER	30.00	SD	\$ 300.00	\$ 9,000.00
642(B) 3300	CONSTRUCTION STAKING LEVEL II	1.00	LSUM	\$ 10,000.00	\$ 10,000.00
220 1100	SWPPP DOCUMENTATION AND MANAGEMENT	1.00	LSUM	\$ 5,000.00	\$ 5,000.00
641 2110	MOBILIZATION	1.00	LSUM	\$ 137,600.00	\$ 137,600.00
SUBTOTAL W/ OUT MOBILIZATION					\$ 2,251,402.00
20% CONTINGENCY					\$ 450,280.40
RIGHT-OF-WAY					\$ 100,000.00
TOTAL					\$ 2,939,282.40



APPENDIX O

US-69 SIDEWALK AT GRADE CROSSING

COWAN GROUP ENGINEERING, LLC

7100 N CLASSEN, SUITE 500
OKLAHOMA CITY, OK 73116

405.463.3369 O
405.463.3381 F

PROJECT NAME SIDEWALK IMPROVEMENTS

DESCRIPTION CITY OF WAGONER
SH-51 FROM US-69 TO POLK AVENUE

DATE January, 2025

ITEM NUMBER	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
201(A) 1200	CLEARING AND GRUBBING	1.00	LSUM	\$ 10,000.00	\$ 10,000.00
202(A) 2200	UNCLASSIFIED EXCAVATION	100.00	CY	\$ 18.00	\$ 1,800.00
202(D) 2500	UNCLASSIFIED BORROW	100.00	CY	\$ 20.00	\$ 2,000.00
221(B) 2300	TEMPORARY SILT FENCE	180.00	LF	\$ 4.00	\$ 720.00
230(A) 7200	SOLID SLAB SODDING	120.00	SY	\$ 7.50	\$ 900.00
610(A) 5200	4" CONCRETE SIDEWALK	151.00	SY	\$ 90.00	\$ 13,590.00
610(I) 6000	TACTILE WARNING DEVICE-NEW	16.00	SF	\$ 35.00	\$ 560.00
	TRAFFIC SIGNAL W/ PUSH BUTTON (HAWK)	1.00	LSUM	\$ 200,000.00	\$ 250,000.00
613(A) 5216	24" R.C.PIPE CLASS III	25.00	LF	\$ 150.00	\$ 3,750.00
613(L) 6716	24" PREFAB. CULVERT END SEC., ROUND	2.00	EA	\$ 700.00	\$ 1,400.00
619(C) 6600	SWAING PAVEMENT	16.00	LF	\$ 10.00	\$ 160.00
856(A) 8216	TRAFFIC STRIPE (MULTI-POLY) (24" WIDE)	112.00	LF	\$ 10.00	\$ 1,120.00
880(B) 6300	CONSTRUCTION SIGNS 0 TO 6.25 SF	240.00	SD	\$ 1.00	\$ 360.00
880(B) 6310	CONSTRUCTION SIGNS 6.26 TO 15.99 SF	210.00	SD	\$ 2.00	\$ 315.00
880(C) 6410	CONSTRUCTION BARRICADES (TYPE III)	90.00	SD	\$ 3.00	\$ 750.00
880(C) 6420	WING BARRICADES	60.00	SD	\$ 2.00	\$ 90.00
880(E) 6607	WARNING LIGHTS (TYPE B)	150.00	SD	\$ 1.00	\$ 225.00
880(G) 6805	CHANNELIZER CONES	240.00	SD	\$ 1.00	\$ 540.00
880(I) 7000	FLAGGER	5.00	SD	\$ 300.00	\$ 1,500.00
642(B) 3300	CONSTRUCTION STAKING LEVEL II	1.00	LSUM	\$ 10,000.00	\$ 10,000.00
220 1100	SWPPP DOCUMENTATION AND MANAGEMENT	1.00	LSUM	\$ 5,000.00	\$ 5,000.00
641 2110	MOBILIZATION	1.00	LSUM	\$ 40,300.00	\$ 40,300.00
SUBTOTAL W/ OUT MOBILIZATION					\$ 304,780.00
20% CONTINGENCY					\$ 60,956.00
RIGHT-OF-WAY					\$ 100,000.00
TOTAL					\$ 506,036.00