South Lamar Corridor Project
ENGINEER'S SUMMARY LETTER
C2.003: Barton Springs Road to US 290
November 2021

Texas Firm Registration Number F-1046

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INTRODUCTION

The South Lamar (SOLA) Corridor Project are part of the City of Austin (COA) Corridor Mobility Program, funded by the 2016 Mobility Bond. The improvements consist of transportation and mobility improvements along the 3.5-mile South Lamar Boulevard Corridor from Barton Springs Road to Ben White Boulevard, which is a highly traveled roadway and a primary route to and from downtown Austin. The project Limits of Construction encompasses 47.24 acres. The majority of the project area lies within the West Bouldin Creek Watershed, which is classified as an "urban" watershed, per the COA Land Development Code Section 25-8-2. A smaller area of the project lies within the Barton Creek Watershed, which is also classified as an "urban" watershed.

The project improvements consist of the following:

- Relocation of the existing curb closer to the centerline of the roadway
- New shared-use paths for pedestrians and cyclists on both sides of South Lamar Boulevard that will comply with ADA guidelines
- Access management improvements such as intermittent-raised medians in some locations and driveway modifications
- Multimodal mobility enhancements, including transit, pedestrian, and bicycle lanes
- Storm drain improvements, including replacement and/or relocation of existing infrastructure such as box culverts, piping, and inlets
- Water quality enhancements in the form of small rain gardens
- Utility improvements, such as wastewater pipelines and power reconductoring within the Right of Way
- Substantial temporary traffic controls for construction
- Development of overall health and well-being with the inclusion of public gathering spaces that include art in public places, such as a "pocket green" at SOLA/West Mary St.
- 13 existing traffic signals would be enhanced with upgraded technology
    - Two new traffic signals at Del Curto Road and Evergreen Avenue
    - Two new pedestrian hybrid beacons (mid-block signalized cross-walks) located at West Oak Drive and near the Post Apartments
    - Upgrades to the existing pedestrian hybrid beacons at Oxford Avenue and Dickson Drive
- Intersection improvements at Barton Skyway, Menchaca Road, Bluebonnet Lane, Oltorf Street, and Evergreen Avenue; will include improved crossing conditions and connectivity for pedestrians and cyclists, including enhanced and separated facilities
- Bus stop improvements in partnership with Capital Metro, including a new dedicated transit priority lane northbound through the intersections at Barton Skyway and Menchaca Road

Shared Use Paths/Bike Lanes/Sidewalks

The primary goal of the project is to improve pedestrian mobility within the project limits. The standard improvement process included shifting the existing curb line in towards the center line by 5’ on average to utilize the width of an existing on street bike lane. A landscape buffer, raised bike lane, and sidewalk could then be included behind the curb as shown in figure 1 below.

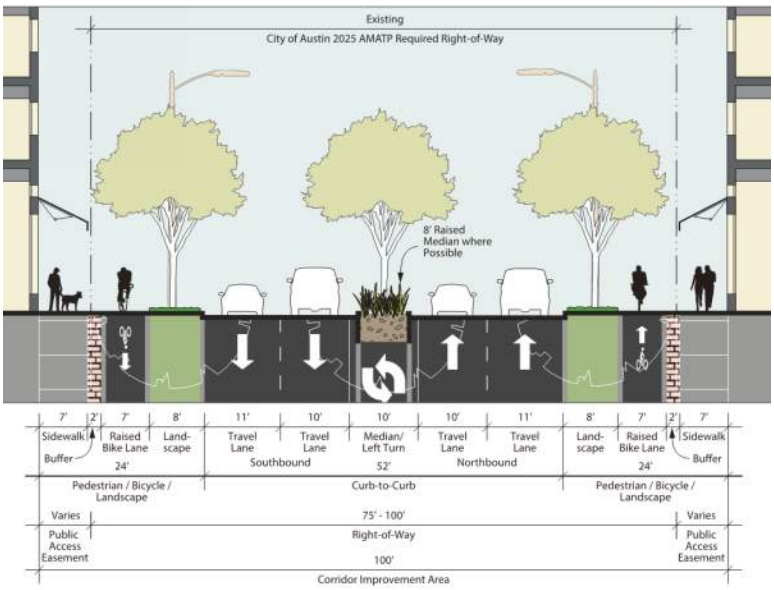

Figure 1: 4-Lane Divided, 52' Curb to Curb

Consequently, due to limited right of way, preservation of existing trees, and utility conflicts, it was necessary to implement alternative sections throughout the corridor to eliminate, or minimize impacts to the existing infrastructure, see figure 2 below.

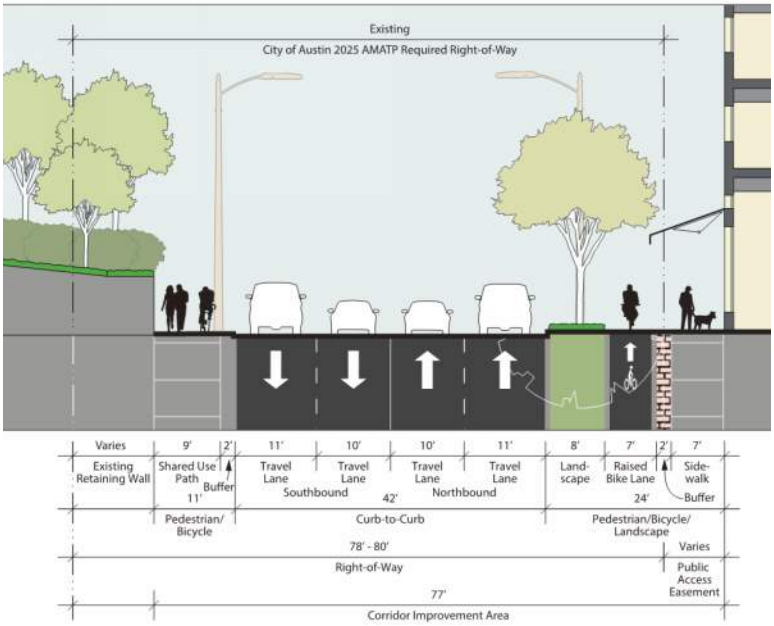

Figure 2: 4-Lane, 42' Curb to Curb

The location, width, and nature (split facility vs. shared use path) were coordinated closely with Austin Transportation Department (ATD), Corridor Program Office (CPO) and various other agencies. The pedestrian facilities were design to meet current ADA standards.

Curb ramp transitions at the intersections were modified from the standard 12:1 (8.33%) slope to 5% to provide a more comfortable riding experience for cyclist. Speed tables were utilized, were applicable, to provide smooth travel for cyclist across driveways and minor cross streets. Concrete stain is proposed to delineate between bike lane and sidewalks as shown in figure 3 below.

Figure 3: Plan View

Typical desired back of curb dimensions were utilized from the South Lamar Design Book in the design of the raised bike lanes, shared use paths and sidewalks as shown in Table 1.

Table 1: Typical Desired back of curb Dimensions

ELEMENT	RECOMMENDED	MINIMUM	NOTES
Sidewalk	8'	7'	As a Core Transit Corridor, combined landscape and sidewalk space must be a minimum of 15'
Landscape With Tree	8'	7'	
Raised Bike Lane/Buffer	7' Clear 2' Buffer	NA	
Shared Use Path	9'	NA	
Two Way Cycle Track	10'	NA	

Landscaping and Trees

Were applicable, landscape buffers were included between the back of curb and raised bike lanes. Due to conflicts with overhead power lines, underground water and waste water lines, and limited right of way, the width of the landscape buffer and location and number of trees were coordinated closely with Complete Communities, the City Arborist Department and Austin Water.

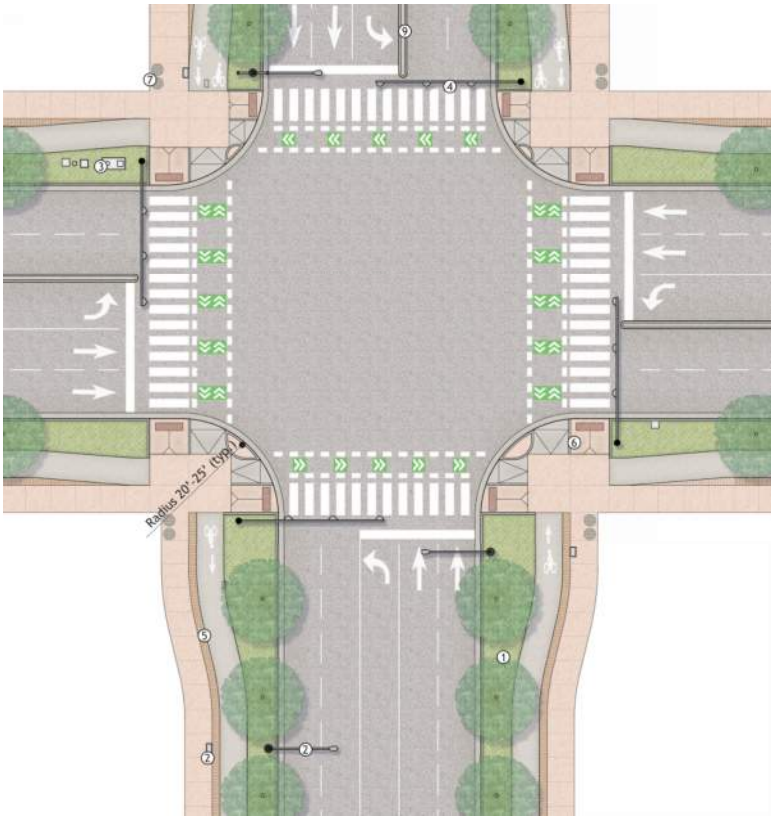

Figure 4: Raise Bike Lane Tree at Curb

Tree species, size and hardscaping were based on the Corridor Program Office Austin Energy Overhead Utility Compatible Trees, Draft Plant List, and standard hardscape materials documentation.

Traffic Control plan

Due to workhour restrictions (9:00 a.m to 4:00 p.m.) a traffic control plan we developed to direct the contractor to work on three (3) sections concurrently. The general sequence of work for the traffic control plan if to begin work on the south side of the roadway, then alternate direction and work on the north side of the roadway so that both sides of the roadway are not being worked on simultaneously. The northbound and southbound starting points are shown in figure 5 and 6 below.

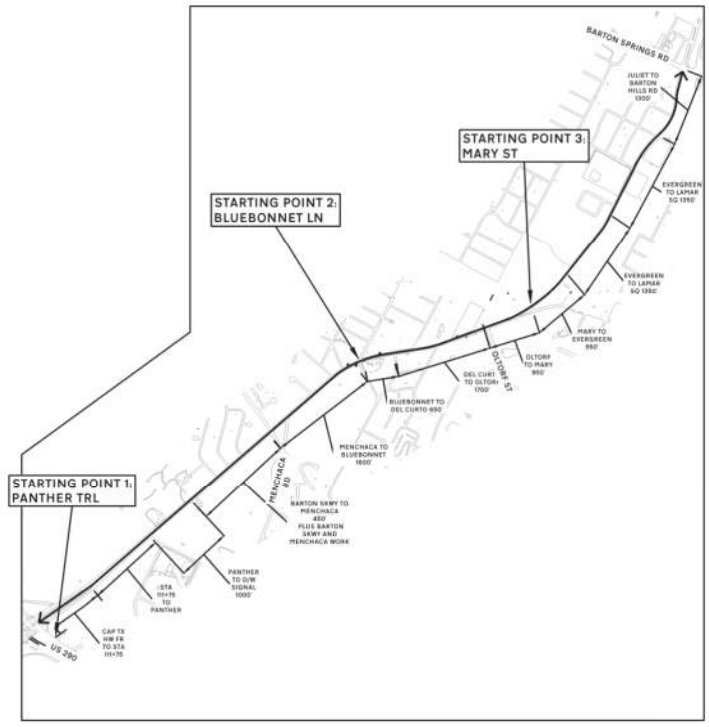

Figure 5: Northbound Traffic Control Start Points

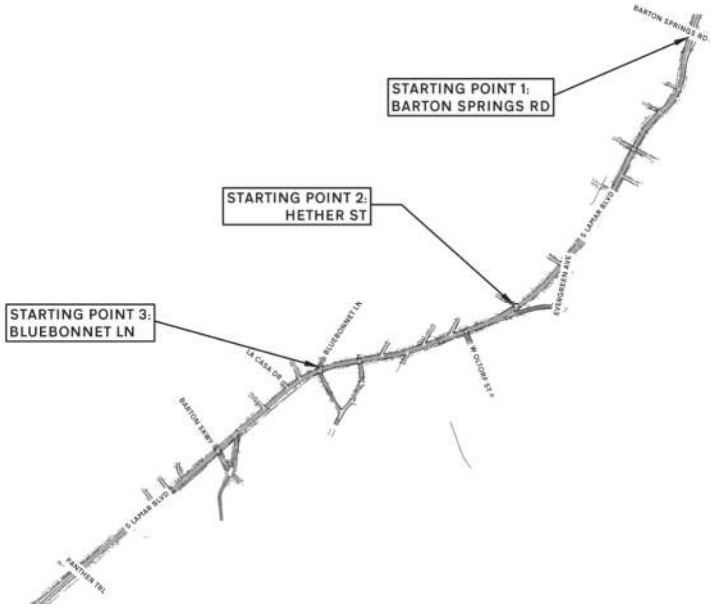

Figure 6: Southbound Traffic Control Start Points

The basis of the traffic control during construction is to close the outside travel lane during the allowed work hours, and work behind barricades. The Contractor will be allowed to work from 7:00 a.m. to 7:00 p.m. but will only be allowed to close lanes and move equipment and supplies into the work zone during the 9:00 a.m. to 4:00 p.m. timeframe.

Pedestrian detours were included in the traffic control plan to provide safe pedestrian access during construction. An example of a pedestrian detour is illustrated in figure 7 below.

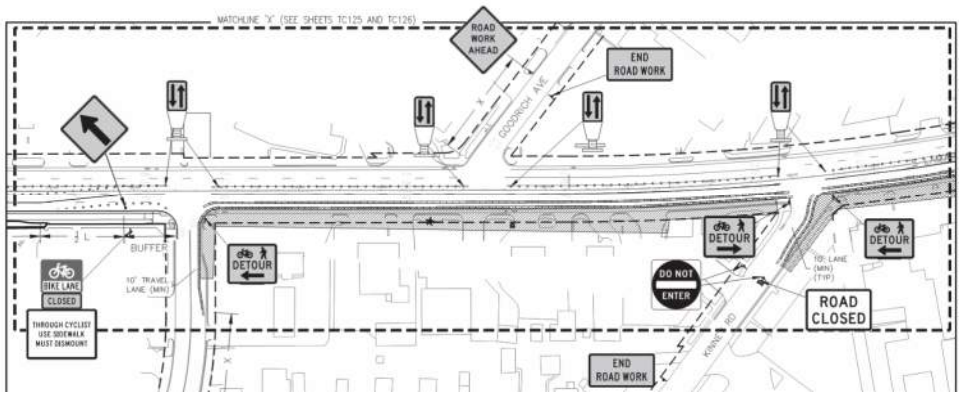

Figure 7: Pedestrian Detour During Construction

In order to provide pedestrian detours during construction, it was necessary to construct the traffic signal and pedestrian hybrid beacon improvements first in order to detour pedestrians to the opposite side of the roadway.

Traffic Signals

Traffic Signal will be relocated and enhanced with upgraded technology at 13 existing traffic signals, and two new traffic signals at Del Curto Road and Evergreen Avenue will be added. Two new pedestrian hybrid beacons (mid-block signalized cross-walks) will be added at West Oak Drive and near the Post Apartments, and the existing pedestrian hybrid beacons at Oxford Avenue and Dickson Drive will be upgraded. The locations of the proposed pedestrian signals are shown in Figure 8 below.

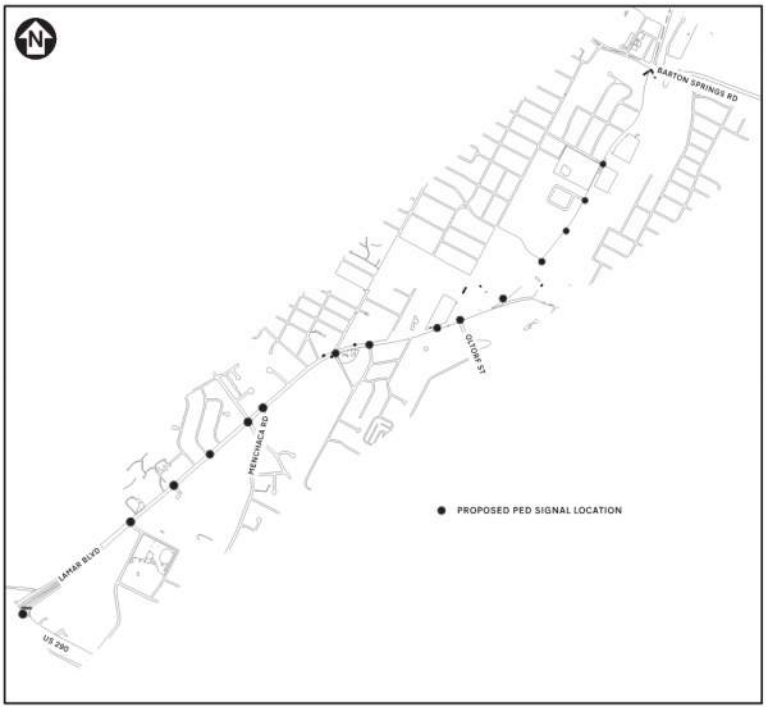

Figure 8: Proposed Pedestrian Signal Locations

Water/Wastewater

Water Improvements

The project drawings are organized as follows:

1. Identification of valves to be adjusted to grade, approximately 44 valves identified.
2. Waiver requests for horizontal separation between proposed SOLA improvements associated with the roadway improvements and existing waterlines within 3- to 5-feet.
3. Waiver requests for horizontal and/or vertical separation between proposed SOLA improvements associated with the roadway improvements and existing wastewater lines within 1- to 3-feet.
4. Proposed water appurtenance relocations to include valves and water meters.
5. Proposed fire hydrant relocations.
6. Proposed water relocations include approximately 2,182 linear feet of 2- to 16-inch waterline.

Within the project limits, the following waterlines will be under the final curb and gutter alignments:

STA BEG	STA END	L / R	LF OF RUN	SIZE / MAT	PROJECT NUMBER
132+34.22	133+59.96	R	125.74	12" PVC	2013-0548
133+83.99	137+31.28	R	347.29	12" PVC	2013-0548
138+82.2	141+98.03	R	315.83	12" PVC	2013+0548
153+14.76	153+64.68	R	49.92	6" CI	1969-0911
172+98.09	173+88.56	R	90.47	16" DI	2007-0035
194+61.5	196+68.22	R	206.72	16" DI	2007-0035
198+16.56	199+18.59	R	102.03	16" DI	2007-0035
201+53.33	202+05.8	R	52.47	16" DI	2007-0035
202+87.34	203+50.71	L	63.37	6" CI	322.1-700-638
222+16.51	222+35.79	R	19.28	6" CI	UNK/ INT 2284
227+60.7	227+79.07	R	18.37	12" PVC	2012-0268
228+64.64	232+78.29	R	413.65	12" PVC	2012-0268
237+83.31	239+43.3	R	159.99	12" PVC	2013-0681
237+94.58	238+32.	L	37.42	6" CI	UNK/ INT 1862
241+64.53	243+22.77	L	158.24	6" CI	UNK
243+83.14	244+32.45	L	49.31	6" CI	UNK/ INT 2342
245+62.84	247+63.63	L	200.79	6" CI	UNK/ INT 2281

STA BEG	STA END	L / R	LF OF RUN	SIZE / MAT	PROJECT NUMBER
247+00.42	247+85.51	R	85.09	2" CI	322.1-700-218
248+97.21	249+03.02	R	5.81	6" CI	UNK/ INT 2281
1201+91.60 BLUEBONNET LN	1205+02.55 BLUEBONNET LN	R	310.95	8" CI	UNK / INT 30383
1900+72.98 HETHER ST	1901+33.47 HETHER ST	R	60.49	24" CI	322.1-1157/ INT 2412
2003+38.50 EVERGREEN AVE	2003+62.12 EVERGREEN AVE	L	23.62	6" CI	2011-0602
2200+34.39 W.GIBSON ST	2200+72.92 W.GIBSON ST	R	38.53	6" CI	322.1-700-848/ INT 2282
2701+16.93 W.MARY ST	2701+64.47 W.MARY ST	R	47.54	16" DI	2007-0035/ INT 32666
2702+06.88 W.MARY ST	2702+47.06 W.MARY ST	R	39.59	24" CI	322.1-1157/ INT 32666
803+13.82 MENCHACA RD	803+94.58 MENCHACA RD	R	80.76	12" CI	322.1-2807/ INT 32659

Wastewater Improvements

1. Identification of manholes to be adjusted to grade, approximately 31 manholes identified.
2. Waiver requests for horizontal separation between proposed SOLA improvements associated with the roadway improvements and existing wastewater lines within 3- to 5-feet.
3. Waiver requests for horizontal and/or vertical separation between proposed SOLA improvements associated with the roadway improvements and existing waterlines within 1- to 3-feet.
4. Proposed wastewater relocations include approximately 1,971 linear feet of 6- to 8-inch wastewater line.

Within the project limits, the following wastewater lines will be under the final curb and gutter alignments:

STA BEG	STA END	L / R	LF OF RUN	SIZE / MAT	PROJECT NUMBER
163+29.22	163+66.07	L	36.85	8" CONC	UNK / A3451
164+05.58	168+42.27	L	436.69	8" CONC	UNK / A3451, A1393
168+82.28	169+15.19	L	32.91	8" PVC	2007-0035
185+77.34	186+37.13	L	59.79	10" PVC	1982-0679
188+88.59	190+71.84	L	183.25	10" PVC	1982-0679
240+78.84	241+13.83	R	34.99	6" CONC	UNK/ A146
242+78.49	243+64.17	R	85.68	6" CONC	UNK/ A145
243+89.08	244+33.07	R	43.99	6" CONC	UNK/ A145
253+98.66	254+71.52	R	72.86	12" PVC	2005+0056

Edwards Aquifer Recharge Zone

Water Improvements within the Edwards Aquifer Recharge Zone (EARZ) are:

Fire Hydrant Relocations	
Station	**Length (lf)**
127+58.27 LT	41
128+05.22 RT	36
158+39.26 RT	14
161+87.67 RT	Existing FH is within EARZ – work includes plugging the existing 16”X6” Tee. Propose FH is outside of the EARZ

Waterline Relocations		
Alignment	**Full or Partial**	**Length (lf)**
WL-A	Full	20
WL-B	Partial	92

Waterline Relocations		
Alignment	**Full or Partial**	**Length (lf)**
WL-H	Full	103
WL-J	Full	112
WL-K	Partial	6

Wastewater improvements withing the EARZ are:

Wastewater Line Relocation		
Alignment	Full or Partial	Length (lf)
WWL-A	Partial	233

Austin Water Worst of the Worst Coordination
The following is a summary of required coordination with CPO and HDR/GarzaEMC for design of Austin Water Worst of the Worst water and wastewater betterments. Depending on the final resolution, modifications to the proposed water and wastewater relocations will be required. It should be noted that proposed WWL-E as shown in the plans does not tie to the wastewater system downstream. The termination point of WWL-E is dependent upon the forthcoming design by HDR/GarzaEMC.

BGE and HDR/GarzaEMC water and wastewater designers, in coordination with the SOLA team, met on November 4, 2021, to discuss areas that will require coordination between relocation of water and wastewater infrastructure due to conflicts with the proposed SOLA roadway improvements and the requested Austin Water (AW) betterments. The following is a summary of potential adjustments to the limits of three betterment segments.

<u>STA 180+00 to 186+50 LT – Wastewater – Bluebonnet</u>

- AW identified an 8-inch vitrified clay (VC) wastewater line (WWL) for replacement as part of the worst of the worst improvements from STA 180+00 to 186+50 LT.
- BGE is relocating the 8-inch VC WWL from the STA 173+25 to STA 176+00 due to conflicts with the proposed roadway improvements.
- The SOLA plans included a waiver request for the 10-inch WWL at STA 178+69:

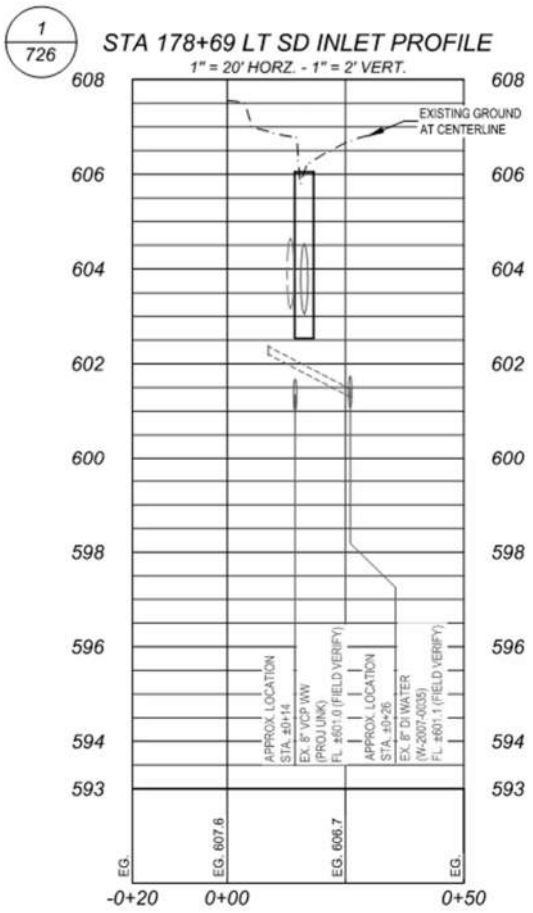

Figure 9 STA 178+69 Storm drain inlet profile

- The recommendation is to include replacement of the existing 8-inch VC WWL from STA 176+00 to STA 180+00 in the AW betterments to provide a more complete wastewater system improvement. Leaving ~300 lf of 8-inch VC WWL between to adjacent replaced sections is not in the best interest of the utility and/or the costumers.

<u>STA 212+50 to 216+50 RT – Water – Collier</u>

- AW identified a 2-inch/4-inch CI water line (WL) for replacement from STA 212+00 to STA 216+50 in the worst of the worst GIS linework.
- Garza relocation alignments provided show replacement of the 4-inch WL extending to STA 217+75 and include replacement of the existing 6-inch CI WL crossing South Lamar at that intersection.
- BGE is relocating the 4-inch WL from STA 216+50 to STA 219+60 (WL T) and the 6-inch CI WL crossing (WL S) due to conflicts with the proposed roadway, signals, and drainage improvements.
- The recommendation is for Garza to end their proposed WL relocation closer to the originally identified termination point of STA 216+50, to the south of the Evergreen/Collier intersection.

- If instead, AW wants Garza to do the relocations through the Collier/Evergreen intersection and to the north, including the crossing 6-inch CI WL, Garza will need to utilize the alignments as designed by BGE to ensure roadway, signal, and drainage conflicts already identified are addressed. If Garza is to do the replacement, the limits of relocation should be extended to STA 217+75.

STA 237+60 to STA 244+50 RT – Wastewater – Treadwell

- AW identified a 6-inch WWL to be replaced from STA 237+60 to STA 244+50 in the Worst of the Worst improvements.
- BGE is relocating the 6-inch WWL from STA 228+50 to STA 237+50.
- The recommendation is to extend the limits of Garza's relocation to meet BGE's relocation at STA 237+50.

Drainage

The project proposes a combination of stormwater conveyance and treatment improvements. The stormwater conveyance improvements were designed under the following objective prioritization:

1. Design the drainage system to full, post Atlas 14 DCM compliance.
2. If objective priority number 1 cannot be met due to engineering feasibility or client preference, then design the drainage system to meet a no adverse condition versus existing conditions, using Atlas 14 rainfall precipitation values.

The construction documents organize the stormwater drainage systems based on exclusive outfalls within their respective watersheds. The systems and their respective watersheds are listed below,

- System B – Hwy 290 to Panther Trail, east side of South Lamar Blvd. (Barton Watershed)
- System C – Panther Trail, from Panther Trail to south of Barton Skyway (West Bouldin Watershed)
- System D – Barton Skyway – Menchaca (Barton Watershed)
- System E – La Casa to Bluebonnet (West Bouldin Watershed)
- System F – Del Curto to Kinney Road (West Bouldin Watershed)
- System G – Kinney Avenue to Oltorf, with specific improvement consideration to the 21- and 30-inch pipe along Oltorf St. from South Lamar Blvd. to West Bouldin Creek. (West Bouldin Watershed)
- System H – Kinney Ave/W. Mary Intersection to UPRR Railroad Channel along W. Mary Street (encompassing the Hether St. residential area) (West Bouldin Watershed)
- System I – Collier St (Evergreen) Intersection (West Bouldin Watershed)
- System J – Treadwell Intersection to UPRR Railroad Channel (West Bouldin Watershed)
- System K – Treadwell Street to Bluff Street (West Bouldin Watershed)
- System L – Bluff Street to Barton Springs Road (West Bouldin Watershed)

From the systems listed above, the City's WPD selected Systems E, F, H, and I to be designed to full, post Atlas 14 DCM compliance. The remaining systems are designed to meet a no adverse impact condition versus existing conditions.

Overall Results – Stormwater Conveyance

This section presents a high-level summary of proposed hard infrastructure, existing versus proposed flows at downstream points of analysis, and existing versus proposed impervious cover for each of the designed systems.

System B

The proposed adjustments to system B include one 10' inlet, six feet of 18" RCP, and 12 feet of 24" RCP. Existing versus proposed flows at system B's point of analysis (POA) are shown below.

Peak Flow POA Table								
	2-YR		10-YR		25-YR		100-YR	
	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)
S-B POA	54.51	54.49	89.40	89.30	114.99	114.89	162.64	162.55

Existing verses proposed impervious cover percentages for system B are show below.

Impervious Cover Calculations						
	Existing			Proposed		
	Impervious Area (acres)	Total Area (acres)	Impervious %	Impervious Area (acres)	Total Area (acres)	Impervious %
S-B POA	2.99	3.86	77%	3.04	3.86	79%

System C

The proposed adjustments to system C include nine 10' inlets, two 20' inlets, one modified wingwall, two 4X4' junction boxes, three 5'X4' junction boxes, one 7'X7' junction box, 560 feet of 18" RCP, 155 feet of 24" RCP, 222 feet of 30" RCP, 390 feet of 36" RCP, and seven feet of 5'X2' CBC. Existing versus proposed flows at system C's point of analysis (POA) are shown below.

Peak Flow POA Table								
	2-YR		10-YR		25-YR		100-YR	
	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)
S-C POA	66.19	64.14	110.46	107.11	140.18	136.46	200.37	195.29

Existing verses proposed impervious cover percentages for system C are show below.

Impervious Cover Calculations						
	Existing			Proposed		
	Impervious Area (acres)	Total Area (acres)	Impervious %	Impervious Area (acres)	Total Area (acres)	Impervious %
S-C POA	16.25	25.57	64%	16.02	25.57	63%

System D

The proposed adjustments to system D include two 10' inlets, eight feet of 18" RCP, and14 feet of 30" RCP. Existing versus proposed flows at system D's point of analysis (POA) are shown below.

Peak Flow POA Table								
	2-YR		10-YR		25-YR		100-YR	
	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)
S-D POA	28.82	28.81	47.71	47.71	66.71	66.70	86.02	86.02

Existing verses proposed impervious cover percentages for system D are show below.

Impervious Cover Calculations						
	Existing			Proposed		
	Impervious Area (acres)	Total Area (acres)	Impervious %	Impervious Area (acres)	Total Area (acres)	Impervious %
S-D POA	7.61	9.87	77%	7.98	9.87	81%

System E

The proposed adjustments to system E include six 10' inlets and 152 feet of 18" RCP. **Proposed system E will be modified in a future submittal.** Existing versus proposed flows at system E's point of analysis (POA) are shown below.

Peak Flow POA Table								
	2-YR		10-YR		25-YR		100-YR	
	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)
S-E POA	87.75	80.47	114.83	103.53	129.82	116.36	151.51	134.91

Existing verses proposed impervious cover percentages for system E are show below.

Impervious Cover Calculations						
	Existing			Proposed		
	Impervious Area (acres)	Total Area (acres)	Impervious %	Impervious Area (acres)	Total Area (acres)	Impervious %
S-E POA	16.02	21.38	75%	15.78	21.38	74%

System F

The proposed adjustments to system F include four 10' inlets, one 20' inlet, and 35 feet of 18" RCP. **Proposed system F will be modified in a future submittal.** Existing versus proposed flows at system F's point of analysis (POA) are shown below.

Peak Flow POA Table								
	2-YR		10-YR		25-YR		100-YR	
	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)
S-F POA	124.23	122.06	189.98	187.14	233.88	230.79	305.95	302.74

Existing verses proposed impervious cover percentages for system F are show below.

Impervious Cover Calculations						
	Existing			Proposed		
	Impervious Area (acres)	Total Area (acres)	Impervious %	Impervious Area (acres)	Total Area (acres)	Impervious %
S-F POA	20.65	31.92	65%	20.69	31.92	65%

System G

The proposed adjustments to system G include one 10' inlet, one 15' inlet, and 48 feet of 18" RCP. Existing versus proposed flows at system G's point of analysis (POA) are shown below.

Peak Flow POA Table								
	2-YR		10-YR		25-YR		100-YR	
	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)
S-G POA	10.69	10.69	15.94	15.94	18.99	18.99	23.7	23.7

Existing verses proposed impervious cover percentages for system G are show below.

Impervious Cover Calculations						
	Existing			Proposed		
	Impervious Area (acres)	Total Area (acres)	Impervious %	Impervious Area (acres)	Total Area (acres)	Impervious %
S-G POA	2.62	2.97	88%	2.61	2.97	88%

System H

The proposed adjustments to system H include four 10' inlets, one 4X4' junction box, one parallel wingwall, 128 feet of 18" RCP, and 24 feet of 4'X4' CBC. Existing versus proposed flows at system H's point of analysis (POA) are shown below.

Peak Flow POA Table								
	2-YR		10-YR		25-YR		100-YR	
	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)
S-H POA	230.04	226.8	387.6	383.58	505.43	500.84	733.72	727.92

Existing verses proposed impervious cover percentages for system H are show below.

Impervious Cover Calculations						
	Existing			Proposed		
	Impervious Area (acres)	Total Area (acres)	Impervious %	Impervious Area (acres)	Total Area (acres)	Impervious %
S-H POA	54.03	89.90	60%	53.81	89.90	60%

System I

The betterment design of system I includes two 5' inlets, eight 10' inlets, one 15' inlet, four 20' inlets, two 4X4' junction boxes, five 5'X11' junction boxes, one 8'X11' junction box, 541 feet of 18" RCP, 907 feet of 24" RCP, 12 feet of 36" RCP, 14 feet of 5'X5' CBC, 37 feet 7'X3' CBC, and 322 feet of 8'X3' CBC. Existing versus proposed flows at system I's point of analysis (POA) are shown below.

Peak Flow POA Table								
	2-YR		10-YR		25-YR		100-YR	
	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)
S-I POA	116.4	103.5	197.81	164.69	259.07	210.02	376.5	294.12

Existing verses proposed impervious cover percentages for system I are show below.

Impervious Cover Calculations						
	Existing			Proposed		
	Impervious Area (acres)	Total Area (acres)	Impervious %	Impervious Area (acres)	Total Area (acres)	Impervious %
S-I POA	22.65	28.05	81%	22.59	28.05	81%

System J

The proposed adjustments to system J include three 10' inlets, two 4X4' junction boxes, 27 feet of 18" RCP, 15 feet of 24" RCP, and six feet of 30" RCP. Existing versus proposed flows at system J's point of analysis (POA) are shown below.

Peak Flow POA Table								
	2-YR		10-YR		25-YR		100-YR	
	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)
S-J POA	24.07	23.97	40	39.93	49.39	49.34	65.49	65.44

Existing verses proposed impervious cover percentages for system J are show below.

Impervious Cover Calculations						
	Existing			Proposed		
	Impervious Area (acres)	Total Area (acres)	Impervious %	Impervious Area (acres)	Total Area (acres)	Impervious %
S-J POA	7.81	8.42	93%	7.79	8.42	93%

System K

The proposed adjustments to system K include one 10' inlet, one 5'X5' junction box, two 6'X6' junction boxes, 33 feet of 18" RCP, and 100 feet of 36" RCP. Existing versus proposed flows at system K's point of analysis (POA) are shown below.

Peak Flow POA Table								
	2-YR		10-YR		25-YR		100-YR	
	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)
S-K POA	60.8	60.17	95.36	95.07	123.47	123.15	177.21	176.83

Existing verses proposed impervious cover percentages for system K are show below.

Impervious Cover Calculations						
	Existing			Proposed		
	Impervious Area (acres)	Total Area (acres)	Impervious %	Impervious Area (acres)	Total Area (acres)	Impervious %
S-K POA	11.67	19.47	60%	11.66	19.47	60%

System L

The proposed adjustments to system L include five 10' inlets, 70 feet of 18" RCP, 26 feet of 30" RCP, and 8 feet of 48" RCP. Existing versus proposed flows at system L's point of analysis (POA) are shown below.

Peak Flow POA Table								
	2-YR		10-YR		25-YR		100-YR	
	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)	Existing Peak Flows (cfs)	Proposed Peak Flow (cfs)
S-L POA	73.23	73.23	122.12	122.12	156.32	156.32	219.23	219.23

Existing verses proposed impervious cover percentages for system L are show below.

Impervious Cover Calculations						
	Existing			Proposed		
	Impervious Area (acres)	Total Area (acres)	Impervious %	Impervious Area (acres)	Total Area (acres)	Impervious %
S-L POA	14.55	19.91	73%	14.61	19.91	73%

Water Quality

Water quality facilities are proposed in both the Edwards Aquifer Recharge Zone (EARZ) and areas outside of the EARZ. For the areas located within the EARZ, BGE adhered to TSS removal requirements established by TCEQ. The increase in impervious cover within the EARZ is solely due to the addition of shared use paths on each side of South Lamar Blvd. Impervious cover from roadway improvements decrease. The table below summarizes the impervious cover totals for areas within the EARZ.

IMPERVIOUS COVER WITHIN EARZ			
IC TYPE	EXISTING IC (SF)	PROPOSED IC (SF)	NET IC (SF)
OVERALL IC WITHIN PROJECT LIMITS (SF)	368,782	386,800	18,019
ROADWAY IC (SF)	290,303	276,058	-14,245
DRIVEWAY IC (SF)	33,129	27,778	-5,351
SUP IC (SF)	45,350	82,965	37,615

Because of the low pollutant load associated shared use paths, vegetative filter strips have been identified by TxDOT as acceptable water quality facilities for shared use paths. The table below shows the filter strip sizing recommended based on the width of the respective shared use path.

Shared Path Width (ft)	**VFS width (ft)**
4	2.1
6	3.1
8	4.2
10	5.2
12	6.3
14	7.3

The table below presents the results of the proposed vegetative filter strip within the EARZ.

TSS REMOVAL CALCUATIONS						
PROPOSED BMP	REMOVAL EFFICIENCY	IC DRAINAGE AREA WITHIN EARZ (AC)*	IC	TSS REMOVAL REQUIREMENT (LBS)	IMPERVIOUS AREA TREATED BY BMP (AC)	TSS REMOVED (LBS)
VFS	85%	0.41	99%	357	0.42	395
*IC DRAINAGE AREA (AC) WITHIN EARZ IS CALCULATED FROM OVERALL NET IC (SF) WITHIN PROJECT LIMITS (18,019/43,560)						

For areas of the project outside of the EARZ, no water quality is required. Based on City of Austin criteria, water quality facilities are not required for full depth reconstruction of roadway below 8,000 square feet. Most of the roadway improvements associated with this project are based on mill and overlay applications. The design team located several locations throughout the corridor that are appropriate for full infiltration rain gardens. Because water quality, based on criteria, is not required for this project all the proposed rain gardens were not designed to meet compliance established by the CoA ECM. In total, 3.19 acres of impervious cover associated with project roadway improvements will be treated by a total of eight (8) full infiltration rain gardens.