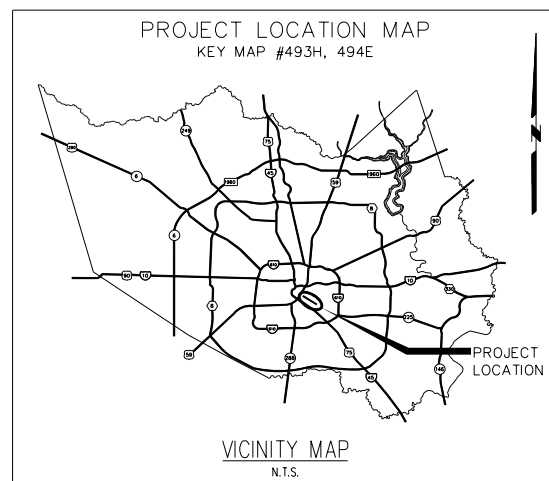


HARRIS COUNTY ENGINEERING DEPARTMENT

ON-STREET BIKEWAY SIGNING AND PAVEMENT MARKINGS POLK STREET FROM EMANCIPATION AVE TO CULLEN BLVD

UPIN: 19101MFOZG01



RODNEY ELLIS

COMMISSIONER

PRECINCT 1

ADRIAN GARCIA

COMMISSIONER

PRECINCT 2

MICHAEL POST, CPA

COUNTY AUDITOR

STEVE RADACK

COMMISSIONER

PRECINCT 3

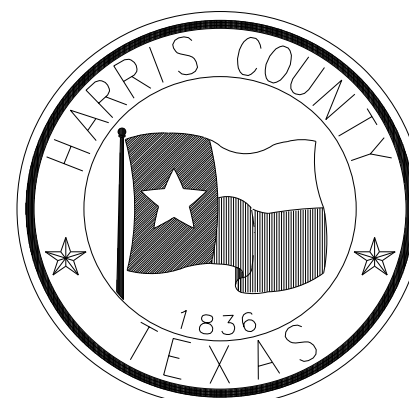
R. JACK CAGLE

COMMISSIONER

PRECINCT 4

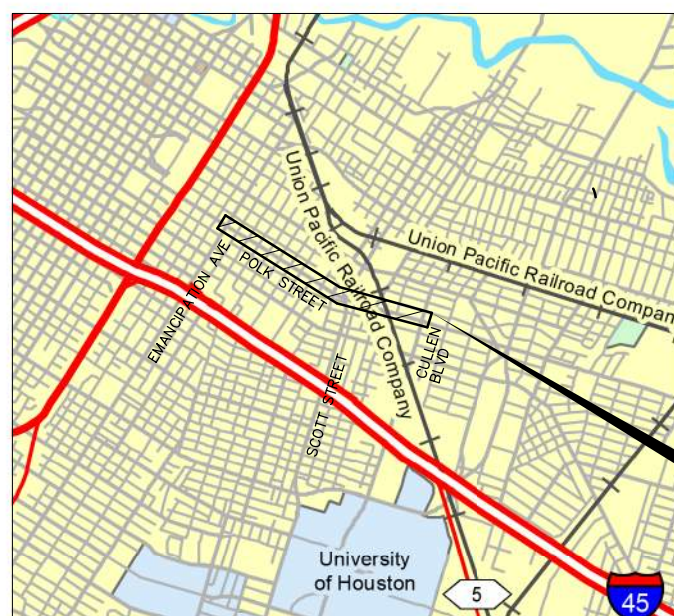
JOHN R. BLOUNT, P.E.

COUNTY ENGINEER

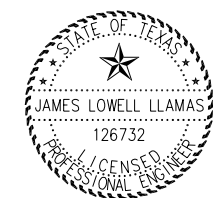


APRIL 2019
PRECINCT 1

Harris County, Texas



APPROVED: _____
City of Houston
Houston Public Works
Director



James Lowell Llamas
04/12/2019

TEI **TRAFFIC ENGINEERS, INC.**
INNOVATIVE TRANSPORTATION SOLUTIONS

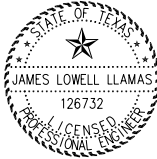
801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158


DATE: 4/12/2019 12:44:36 PM USER: /USER/ FILE: E:\Dropbox (Traffic Engineers)\Clients\Harris County\Precinct 1 Design 2018\Bikeways\04 Polk Cullen\Design\101 Polk Index.dgn PENTABLE: HC-Bikeways.tbl

INDEX OF SHEETS

Page	Sheet Title
100	Cover Sheet
101	Index of Sheets
102	Project Layout Polk Street
103	General Notes
104	Review Sheet
	<u>Quantity Summary Sheets</u>
105	Basis of Estimate
106	Quantity Summary - Signing, Pvmt Marking, & Sidewalk
107	Quantity Summary - Pavement Repair
108	Summary of Traffic Signal Quantities
	<u>Traffic Control Plan</u>
109	One Lane, Two-Way Operation
	<u>Signing and Pavement Marking Plans</u>
200	Signing and Pavement Marking Plan Sheet 1 of 8
201	Signing and Pavement Marking Plan Sheet 2 of 8
202	Signing and Pavement Marking Plan Sheet 3 of 8
203	Signing and Pavement Marking Plan Sheet 4 of 8
204	Signing and Pavement Marking Plan Sheet 5 of 8
205	Signing and Pavement Marking Plan Sheet 6 of 8
206	Signing and Pavement Marking Plan Sheet 7 of 8
207	Signing and Pavement Marking Plan Sheet 8 of 8
	<u>Signing and Pavement Marking Details</u>
208	Signing and Pavement Marking Legend
209	Houston Bikeways Sign Details
210	Standard Small Sign Details
211	Signing and Pavement Marking Detail Sheet 1 of 4
212	Signing and Pavement Marking Detail Sheet 2 of 4
213	Signing and Pavement Marking Detail Sheet 3 of 4
214	Signing and Pavement Marking Detail Sheet 4 of 4
215	Sidewalk Details
216	Curb Ramp Details
217	Detectable Warning Details
218	Directional Tactile Surface-Applied Detail
219	METRO Bus Stop Detail Sheet 1 of 2
220	METRO Bus Stop Detail Sheet 2 of 2
221	Project Sign Details
222	Special Sign Details Sheet 1 of 2
223	Special Sign Details Sheet 2 of 2


	Paving Sheets
300	Pavement Removals and Repairs Plan Sheet 1 of 8
301	Pavement Removals and Repairs Plan Sheet 2 of 8
302	Pavement Removals and Repairs Plan Sheet 3 of 8
303	Pavement Removals and Repairs Plan Sheet 4 of 8
304	Pavement Removals and Repairs Plan Sheet 5 of 8
305	Pavement Removals and Repairs Plan Sheet 6 of 8
306	Pavement Removals and Repairs Plan Sheet 7 of 8
307	Pavement Removals and Repairs Plan Sheet 8 of 8
308	Polk at St. Charles EB Bus Stop Paving Detail
309	Polk at St. Charles Removal & Paving
310	Polk at St. Charles WB Bus Stop Paving Detail
311	Polk at Live Oak Removal
312	Polk at Live Oak Paving
313	Polk at Nagle Removal
314	Polk at Nagle Paving
315	Polk at Delano Removal & Paving
316	Polk at Delano WB Bus Stop Paving Detail
317	Polk at Paige Removal & Paving
318	Polk at Ennis Removal
319	Polk at Ennis Paving
320	Polk at Palmer Removal
321	Polk at Palmer Paving
322	Polk at Palmer EB Bus Stop Paving Detail
323	Polk at Palmer WB Bus Stop Paving Detail
324	Polk at Velasco Removal
325	Polk at Velasco Paving
326	Polk at Roberts Removal
327	Polk at Roberts Paving
328	Polk at Scott EB Bus Stop Paving Detail
329	Polk at Scott WB Bus Stop Paving Detail
330	Polk at Scott Paving
331	Polk at Milby Removal
332	Polk at Milby Paving
333	Polk at Cullen EB Bus Stop Paving Detail
334	Polk at Cullen WB Bus Stop Paving Detail
335	Bus Platform Section A-A
336	Bus Platform Section B-B
337	Bus Platform Section C-C
338	Bus Platform Section D-D
339	Bus Platform Section E-E
340	Bus Platform Section F-F
	<u>Signal Design Sheets</u>
400	Polk St at Scott St Existing Traffic Signal Layout
401	Polk St at Scott St Proposed Traffic Signal Layout
402	Polk St at Scott St Proposed Signal Elevation Sheet 1 of 2
403	Polk St at Scott St Proposed Signal Elevation Sheet 2 of 2
404	Loop Detector Installation Details
405	COH Signal General Notes Sheet 1 of 2
406	COH Signal General Notes Sheet 2 of 2





04/12/2019


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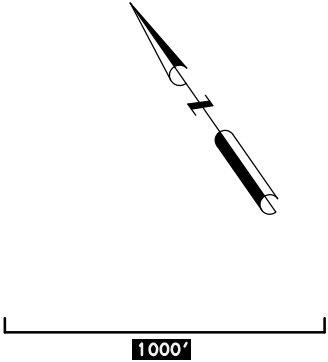
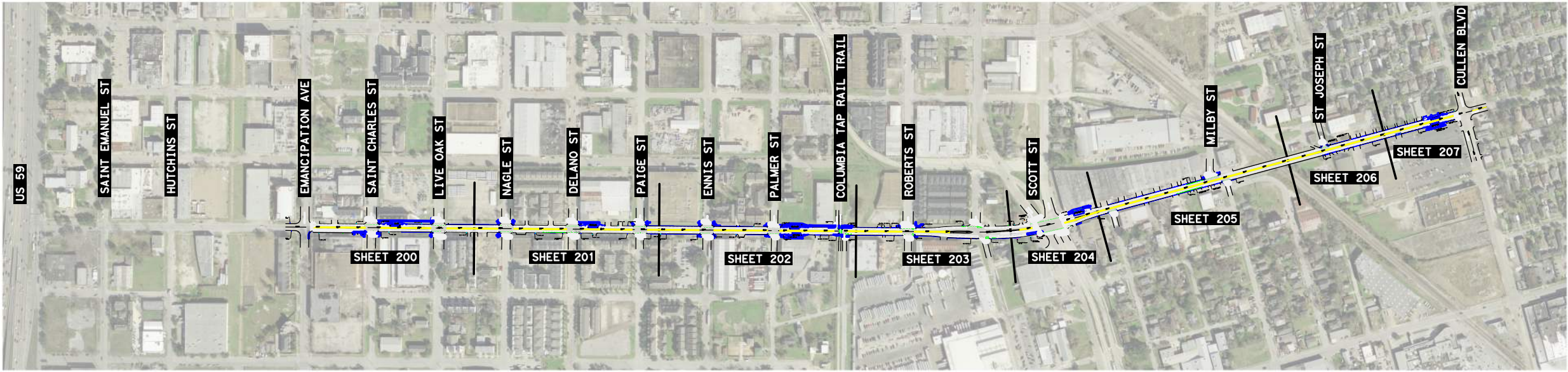
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HARRIS COUNTY

ENGINEERING DEPARTMENT

PROJECT TITLE:	
POLK STREET ON-STREET BIKEWAY	
DRAWN BY:	SHEET DESCRIPTION:
GB	INDEX OF SHEETS
CK'D BY:	
JL	
SCALE:	
NONE	
DATE:	APPROVED BY:
4/12/2019	
SHEET NO:	
101	









04/12/2019

NO.	REVISIONS	DATE	NAME



TRAFFIC ENGINEERS, INC.
innovative transportation solutions

801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158

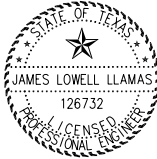


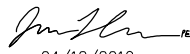
HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE:	
POLK STREET ON-STREET BIKEWAY	
DRAWN BY:	SHEET DESCRIPTION:
GB	PROJECT LAYOUT
CK'D BY:	
JL	
SCALE:	
NONE	
DATE:	APPROVED BY:
4/12/2019	

	SHEET NO: 102
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ITEM NO	DESCRIPTION	UNIT	PROJECT TOTAL
4	Remove and Dispose of Existing Concrete Pavement, All Depths including sawcut	SY	1,354
7	Place, Maintain and Remove Project Identification Signs	EA	2
10	Remove & Relocate Traffic Signs, Mail Boxes and Roadway Signs	EA	2
19	Concrete Pavement (10" Depth) including saw cut and doweling into Existing Pavement	SY	65
20	Concrete Pavement (7" Depth) (High-Early Strength) including saw cut and doweling into Existing Pavement	SY	101
24	Concrete Esplanades, Medians and Directional Islands (6" Depth)	SY	330
29	Concrete ADA Ramp (up to Six (6) feet wide (inclusive), All Types, Complete in Place)	EA	48
31	Reinforced Concrete Sidewalks (4-1/2" thick) (#3 Bar @ 18" Center to Center)	SY	1,568
32	Six Inch Reinforced Concrete Curb and Gutter (Monolithic)	LF	946
33	Six Inch Reinforced Concrete Curb (Doweled)	LF	586
73	Traffic Control - Barricades, Barriers, Barrels, Cones, and Signing	EA	1
75	Aluminum Signs - Furnish & Install	EA	259
77	Remove Existing Ground Mounted Sign and Post Assembly	EA	52
78	Flexible Post Delineators (Surface Mounted, All Styles, All Heights)	EA	17
82	Reflectorized Pavement Markings Type I - 4" Solid Yellow	LF	9,291
83	Reflectorized Pavement Markings Type I - 6" Solid White	LF	18,029
84	Reflectorized Pavement Markings Type I - 6" Guide White	LF	1,530
85	Reflectorized Pavement Markings Type I - 8" Yield Triangles White	EA	28
86	Reflectorized Pavement Markings Type I - 12" Solid White	LF	2,491
89	Reflectorized Pavement Markings Type I - 24" Solid White	LF	594
92	Reflectorized Pavement Markings Type I - Solid Green	SF	2,961
94	Reflectorized Pavement Markings - Type I (W) (WORD, SYMBOL, ARROW, RR Crossing "X", Sharrow, Etc.)	EA	58
95	Methyl Methacrylate Pavement Markings (All Widths, All Colors)	SF	1,220
99	Reflectorized Pavement Markers - Type II-AA	EA	121
134	3 Section Bicycle Signal Head (Vertical) (B3)	EA	2
147	7/C-#14 AWG XHHW Solid Cable	LF	1,000
178	Cycle Lane Separator - Zicla Zebra13 Black/White "Armadillo"	EA	1,002
190	Pedestrian Railing (TxDOT PR-1)	LF	195
202	Checker Steel Culvert Plate and Support Irons (Furnish & Install)	LF	350
207	Reflective PM TY C Preform (BUS) (GREEN/WHITE)	EA	4
209	Reflective PM TY C Preform (STRAIGHT ARROW) (GREEN/WHITE)	EA	15
210	Reflective PM TY C Preform (TURN BOX) (GREEN/WHITE)	EA	2
213	Reflective PM TY C Preform (BIKE MAN) (GREEN/WHITE)	EA	15
216	Surface-Applied Detectable Warning Material	SF	76
224	Surface-Applied Directional Tactile Material, 12" width	LF	365
226	Cast-In-Place Detectable Warning Material	SF	296
TBD	Reflective PM TY C Preform (BIKE DETECTOR) (GREEN/WHITE)	EA	2






04/12/2019

NO.	REVISIONS	DATE	NAME



TRAFFIC ENGINEERS, INC.
innovative transportation solutions

801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158

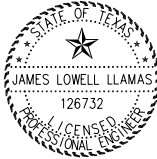



HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: BASIS OF ESTIMATE
CK'D BY: JL	
SCALE: NONE	
DATE: 4/12/2019	APPROVED BY:

SHEET NO:
105


ITEM NO.	DESCRIPTION	POLK ON-STREET BIKEWAY									TOTAL SHEETS 1-8
		UNIT	SHEET 1 OF 8	SHEET 2 OF 8	SHEET 3 OF 8	SHEET 4 OF 8	SHEET 5 OF 8	SHEET 6 OF 8	SHEET 7 OF 8	SHEET 8 OF 8	
4	Remove and Dispose of Existing Concrete Pavement, All Depths including sawcut	SY	332	263	463	57	68	30	-	141	1,354
7	Place, Maintain and Remove Project Identification Signs	EA	1	-	-	-	-	-	-	1	2
10	Remove & Relocate Traffic Signs, Mail Boxes and Roadway Signs	EA	-	-	-	1	-	-	-	1	2
19	Concrete Pavement (10" Depth) including saw cut and doweling into Existing Pavement	SY	22	9	17	-	-	-	-	17	65
20	Concrete Pavement (7" Depth) (High-Early Strength) including saw cut and doweling into Existing Pavement	SY	-	-	11	-	60	-	-	30	101
24	Concrete Esplanades, Medians and Directional Islands (6" Depth)	SY	34	34	77	-	118	-	-	67	330
29	Concrete ADA Ramp (up to Six (6) feet wide (inclusive), All Types, Complete in Place)	EA	10	12	16	5	1	2	-	2	48
31	Reinforced Concrete Sidewalks (4-1/2" thick) (#3 Bar @ 18" Center to Center)	SY	375	235	508	50	152	12	-	236	1,568
32	Six Inch Reinforced Concrete Curb and Gutter (Monolithic)	LF	200	115	298	-	115	-	-	218	946
33	Six Inch Reinforced Concrete Curb (Doweled)	LF	80	70	140	-	50	-	-	246	586
73	Traffic Control - Barricades, Barriers, Barrels, Cones, and Signing	EA	1	-	-	-	-	-	-	-	1
75	Aluminum Signs - Furnish & Install	EA	36	48	58	36	26	30	13	12	259
77	Remove Existing Ground Mounted Sign and Post Assembly	EA	7	9	16	8	3	3	2	4	52
78	Flexible Post Delineators (Surface Mounted, All Styles, All Heights)	EA	2	2	7	-	2	-	-	4	17
82	Reflectorized Pavement Markings Type I - 4" Solid Yellow	LF	1,315	1,348	1,528	800	550	2,030	980	740	9,291
83	Reflectorized Pavement Markings Type I - 6" Solid White	LF	3,100	2,461	3,031	2,892	1,460	2,660	1,373	1,052	18,029
84	Reflectorized Pavement Markings Type I - 6" Guide White	LF	142	292	211	224	80	305	176	100	1,530
85	Reflectorized Pavement Markings Type I - 8" Yield Triangles White	EA	4	4	8	-	4	-	-	8	28
86	Reflectorized Pavement Markings Type I - 12" Solid White	LF	450	503	307	360	600	225	46	-	2,491
89	Reflectorized Pavement Markings Type I - 24" Solid White	LF	108	118	91	74	130	45	12	16	594
92	Reflectorized Pavement Markings Type I - Solid Green	SF	470	620	440	385	500	400	66	80	2,961
94	Reflectorized Pavement Markings - Type I (W) (WORD, SYMBOL, ARROW, RR Crossing "X", Sharrow, Etc.)	EA	10	16	10	4	6	4	4	4	58
95	Methyl Methacrylate Pavement Markings (All Widths, All Colors)	SF	350	300	-	-	-	570	-	-	1,220
99	Reflectorized Pavement Markers - Type II-AA	EA	18	19	21	8	9	25	12	9	121
134	3 Section Bicycle Signal Head (Vertical) (B3)	EA	-	-	-	-	2	-	-	-	2
147	7/C-#14 AWG XHHW Solid Cable	LF	-	-	-	-	1,000	-	-	-	1,000
178	Cycle Lane Separator - Zicla Zebra13 Black/White "Armadillo"	EA	147	146	104	170	66	190	106	73	1,002
190	Pedestrian Railing (TxDOT PR-1)	LF	27	27	54	-	33	-	-	54	195
202	Checker Steel Culvert Plate and Support Irons (Furnish & Install)	LF	50	50	100	-	50	-	-	100	350
207	Reflective PM TY C Preform (BUS) (GREEN/WHITE)	EA	1	1	0	0	0	2	0	0	4
209	Reflective PM TY C Preform (STRAIGHT ARROW) (GREEN/WHITE)	EA	3	1	1	2	4	2	0	2	15
210	Reflective PM TY C Preform (TURN BOX) (GREEN/WHITE)	EA	0	0	0	0	2	0	0	0	2
213	Reflective PM TY C Preform (BIKE MAN) (GREEN/WHITE)	EA	3	1	1	2	4	2	0	2	15
216	Surface-Applied Detectable Warning Material	SF	0	0	40	0	36	0	0	0	76
224	Surface-Applied Directional Tactile Material, 12" width	LF	49	45	82	-	30	-	-	159	365
226	Cast-In-Place Detectable Warning Material	SF	48	48	56	-	48	-	-	96	296
TBD	Reflective PM TY C Preform (BIKE DETECTOR) (GREEN/WHITE)	EA	-	-	-	-	2	-	-	-	2





04/12/2019


NO.	REVISIONS	DATE	NAME



801 Congress Avenue, Suite 325, Houston, TX 77002

TEL (713) 270-8145/FAX (281) 809-0807

TBPE Registration No. F-3158



HARRIS COUNTY

ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: SIGNING, PVMT MARKING, & SIDEWALK
CK'D BY: JL	QUANTITY SUMMARY
SCALE: NONE	
DATE: 4/12/2019	APPROVED BY:

SHEET NO:
106

DATE: 4/12/2019 12:46:28 PM USER: /USER/ FILE: E:\Dropbox (Traffic Engineers)\Clients\Harris County\Precinct 1 Design 2018\Bikeways\04 Polk Cullen\Design\107 Polk Quantities by Sheet Repair.dgn PENTABLE: HC-Bikeways.tbl

ITEM NO.	DESCRIPTION	POLK ON-STREET BIKEWAY									TOTAL SHEETS 1-8
		UNIT	SHEET 1 OF 8	SHEET 2 OF 8	SHEET 3 OF 8	SHEET 4 OF 8	SHEET 5 OF 8	SHEET 6 OF 8	SHEET 7 OF 8	SHEET 8 OF 8	
3	Removing Old Concrete (All Type Curb)	LF	444	246	919	831	98	1,204	639	712	5,093
4	Removing Old Concrete (Pavement W/Curb and Driveway, All Depths including sawcut)	SY	-	-	-	-	-	52	26	-	78
5	Roadway Excavation Including 3" Topsoil	CY	-	-	0	-	-	-	-	-	0
8	Remove & Relocate Traffic Signs, Mail Boxes and Roadway Signs	EA	-	-	1	-	-	-	-	-	1
9	HMAC Base Course (Black Base) (Depth per Plan)	TON	-	-	23	-	-	-	-	-	23
10	Milling Existing Asphalt Pavement (1" to 3" Depth per Plan or Directed by Engineer)	SY	3,450	4,330	4,005	3,950	160	2,600	1,190	1,280	20,965
12	HMAC Surface Course (Depth per Plan)	TON	380	476	452	435	18	286	131	141	2,318
13	Tack Coat (0.1 Gal/SY)	GAL	345	433	401	395	16	260	119	128	2,097
14	Concrete Pavement (7" to 10") including saw cut and doweling into Existing Pavement	SY	-	-	20	-	-	62	26	-	108
20	ADA Ramp (All Types)	EA	-	-	4	-	-	-	-	-	4
21	Reinforced Concrete Sidewalks (4-1/2" thick) (#3 Bar @ 18" Center to Center)	SY	-	-	66	-	-	-	-	-	66
22	Concrete Curb and Gutter (Monolithic)	LF	444	246	1,050	831	98	1,204	639	712	5,224



James Lowell Llamas
04/12/2019

NO.	REVISIONS	DATE	NAME

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innovative transportation solutions

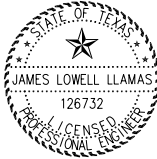
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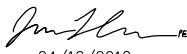


HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: PAVEMENT REPAIR
CK'D BY: JL	QUANTITY SUMMARY
SCALE: NONE	
DATE: 4/12/2019	APPROVED BY:
SHEET NO: 107	


		POLK ON-STREET BIKEWAY										TOTAL
ITEM NO.	DESCRIPTION	UNIT	SHEET 1 OF 8	SHEET 2 OF 8	SHEET 3 OF 8	SHEET 4 OF 8	SHEET 5 OF 8	SHEET 6 OF 8	SHEET 7 OF 8	SHEET 8 OF 8	SHEETS 1-8	
75	ALUMINUM SIGNS - FURNISH & INSTALL	EA	-	-	-	-	2	-	-	-	2	
134	3 SECTION BICYCLE SIGNAL HEAD (VERTICAL) (B3)	EA	-	-	-	-	2	-	-	-	2	
147	7/C-#14 AWG XHHW SOLID CABLE	LF	-	-	-	-	1000	-	-	-	1000	





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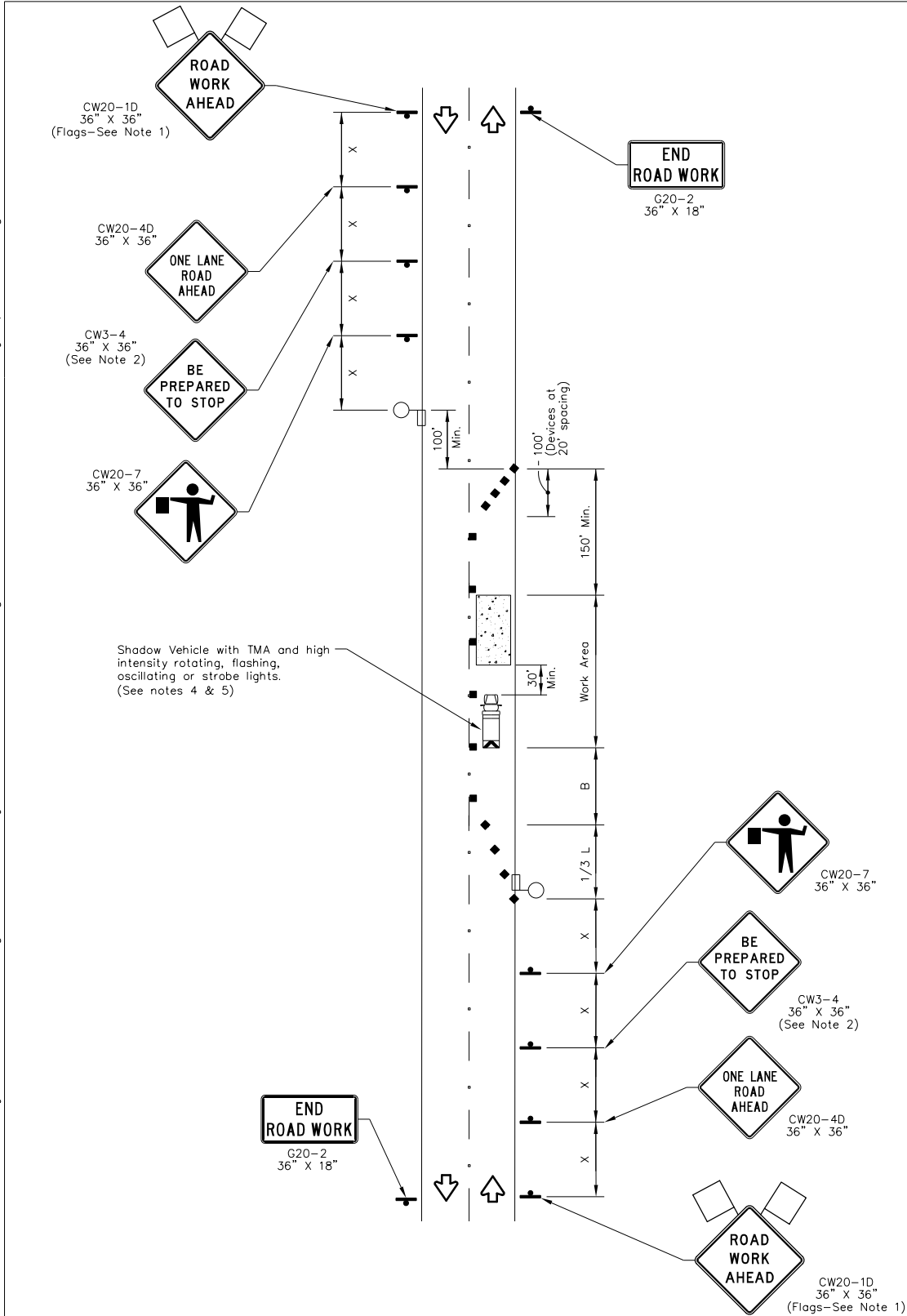


HARRIS COUNTY
ENGINEERING DEPARTMENT

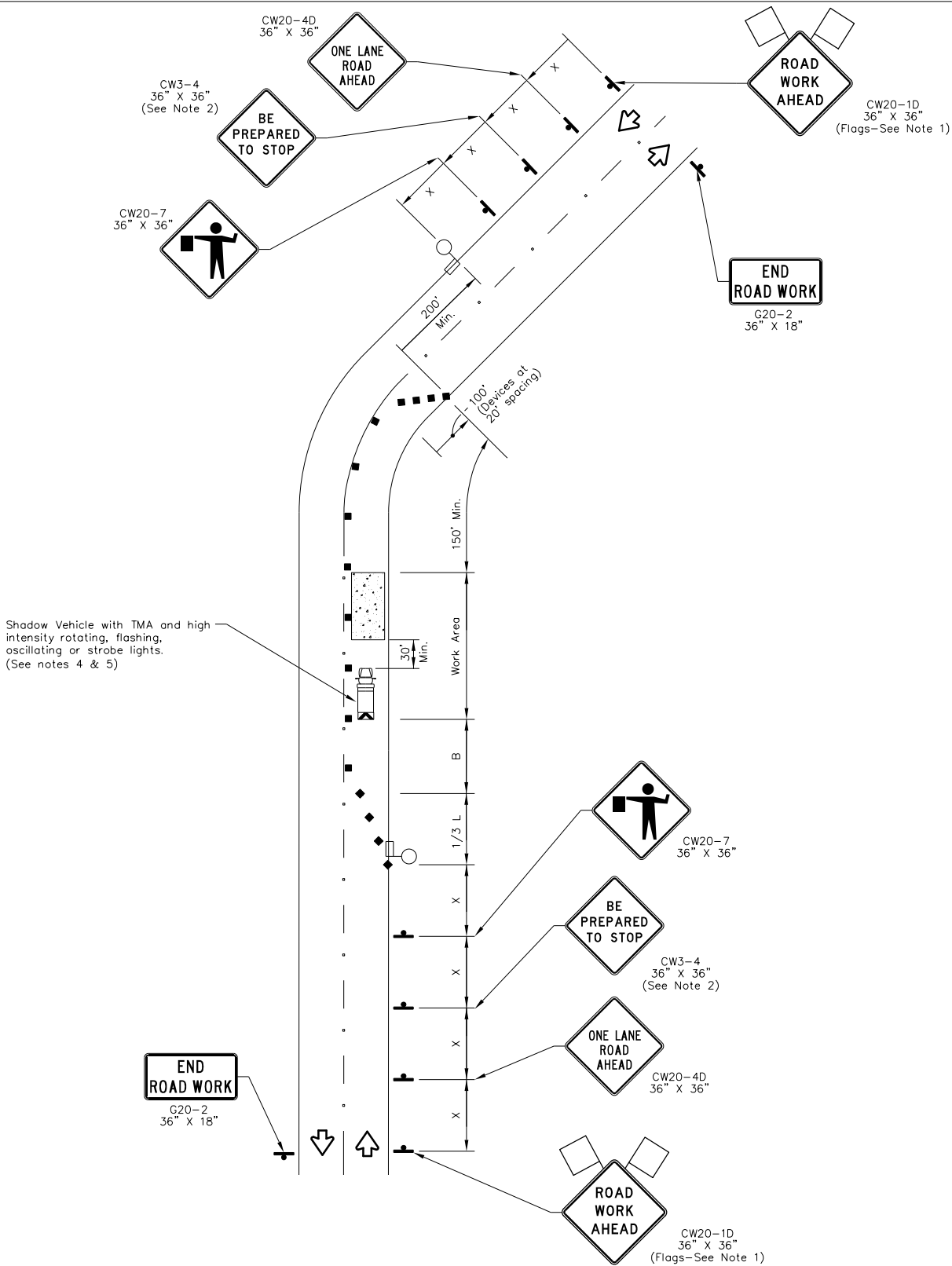
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DRAWN BY: GB	SHEET DESCRIPTION: SUMMARY OF
CK'D BY: JL	TRAFFIC SIGNAL QUANTITIES
SCALE: NONE	
DATE: 4/12/2019	APPROVED BY:

SHEET NO:
108

DATE: 4/12/2019 12:46:29 PM
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ONE-LANE TWO-WAY SINGLE LANE CLOSURE
CONTROL WITH FLAGGERS
(ON STRAIGHT SECTION OF ROADWAY)



ONE-LANE TWO-WAY SINGLE LANE CLOSURE
CONTROL WITH FLAGGERS
(ON CURVED SECTION OF ROADWAY)

TRAFFIC CONTROL PLAN SECTION SHALL BE
COMPLETED BY ENGINEER

ROADWAY	POSTED SPEED	TAPER LENGTH	SPACING CHANNELIZING DEVICES		SIGN SPACING	BUFFER SPACE
			TAPER	TANGENT		
HARDY STREET	35 MPH	225'	35'	70'	160'	120'
ELYSIAN STREET	35 MPH	225'	35'	70'	160'	120'
MAURY STREET	30 MPH	165'	30'	60'	120'	90'
HARRINGTON STREET	30 MPH	165'	30'	60'	120'	90'

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths "L"			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L=WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only
** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

GENERAL NOTES

- Flags attached to signs where shown are OPTIONAL.
- All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol are OPTIONAL.
- Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
- A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
- Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
- Contractor shall provide and install traffic control devices in conformance with part VI of Texas Manual on Uniform Traffic Control Devices (TMUTCD - Latest edition with revisions) during construction.
- Flaggers should use two-way radios or other methods of communication to control traffic.
- Length of work space should be based on the ability of flaggers to communicate.
- If the work space is located near horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distances to the flagger and a queue of stopped vehicles (see table above).
- Channelizing devices on the center-line may be omitted when a pilot car is leading traffic and approved by the Engineer.
- Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.
- No lanes shall be blocked from 7am to 9am and 4pm to 6:30pm Monday thru Friday.
- Off duty police officers required to direct traffic when applicable.
- If project is within 400 feet from a signalized intersection, the Contractor shall contact Harris County Engineering Department, Traffic Signal Maintenance at (713) 881-3210 five (5) days prior to the start of construction.

NO.	REVISIONS	DATE	NAME
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HARRIS COUNTY
ENGINEERING DEPARTMENT



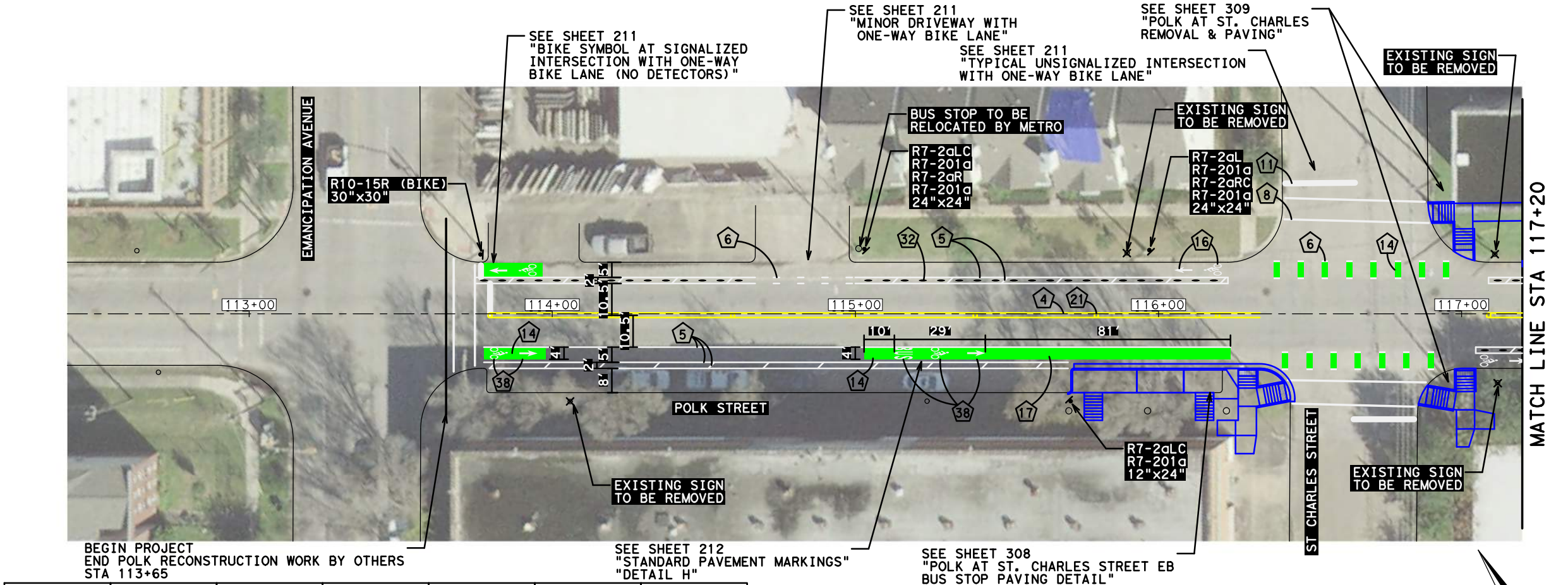
TEI **TRAFFIC ENGINEERS, INC.**
INNOVATIVE TRANSPORTATION SOLUTIONS
801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158



James Lowell Llamas
04/12/2019

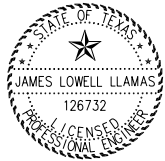
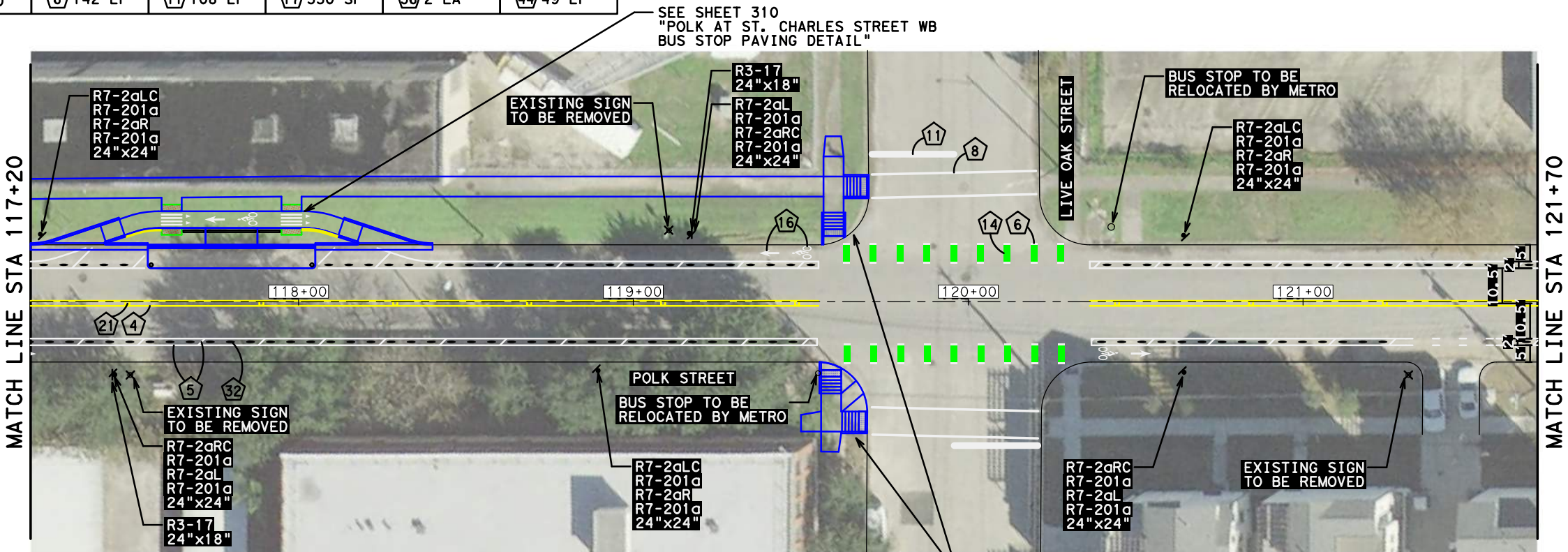
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DRAWN BY:			HCED STANDARD
CK'D BY:	SHEET DESCRIPTION: TRAFFIC CONTROL PLAN		
SCALE: NONE	ONE LANE, TWO-WAY OPERATION		SHEET NO: 109
DATE: 4/12/2019	APPROVED BY:		

DATE: 4/12/2019 12:46:31 PM USER: /USER/ FILE: E:\Dropbox (Traffic Engineers)\Clients\Harris County\Precinct 1 Design 2018\Bikeways\04 Polk Cul len\Design\200 Polk SPM 1 of 8.dgn PENTABLE: HC-Bikeways.tbl



PAVEMENT MARKING QUANTITIES START TO 121+70	4	1315 LF	7	4 EA	14	470 SF	21	18 EA	38	7 EA	45	27 LF
	5	3100 LF	8	450 LF	16	10 EA	32	147 EA	43	48 SF		
	6	142 LF	11	108 LF	17	350 SF	36	2 EA	44	49 LF		

- NOTES:
- 1) SEE SHEET 103 - GENERAL NOTES
 - 2) SEE SHEET 208 - SIGNAGE AND PAVEMENT MARKING LEGEND
 - 3) SEE SHEET 212 - ARMADILLO BARRIERS
 - 4) SEE SHEET 212 - CENTERLINE MARKINGS



04/12/2019

NO.	REVISIONS	DATE	NAME



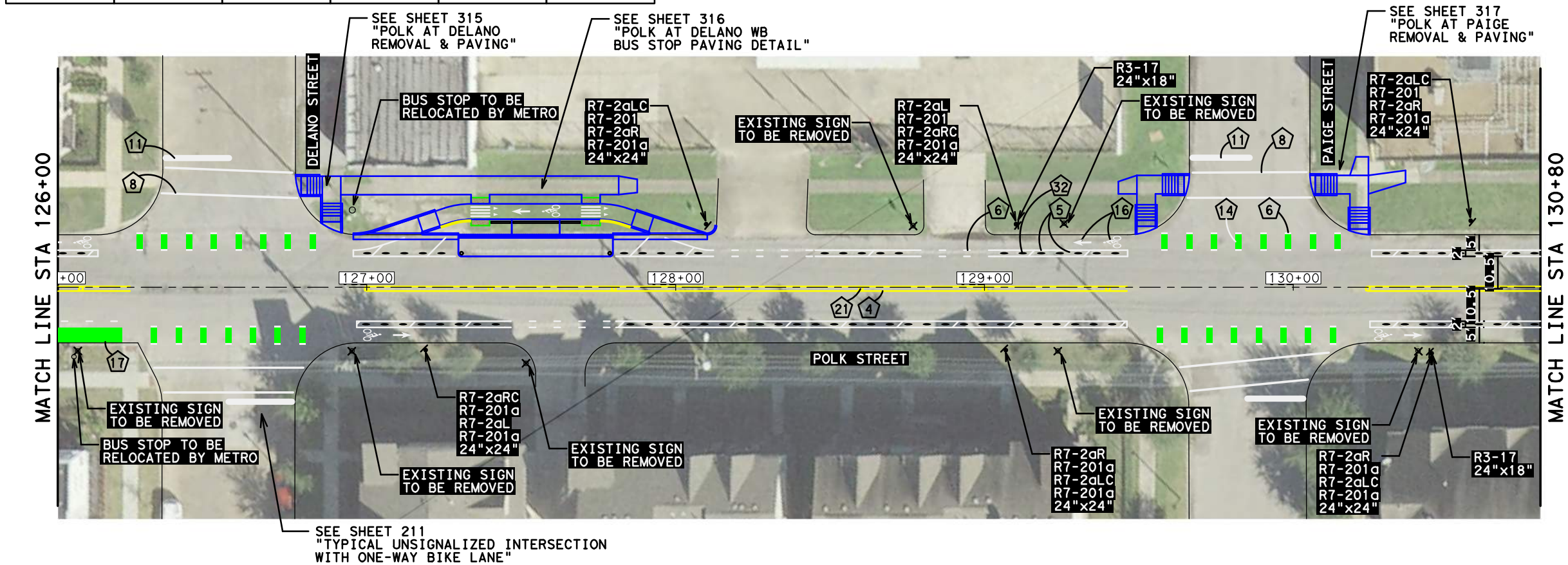
801 Congress Avenue, Suite 325, Houston, TX 77002
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TBPE Registration No. F-3158



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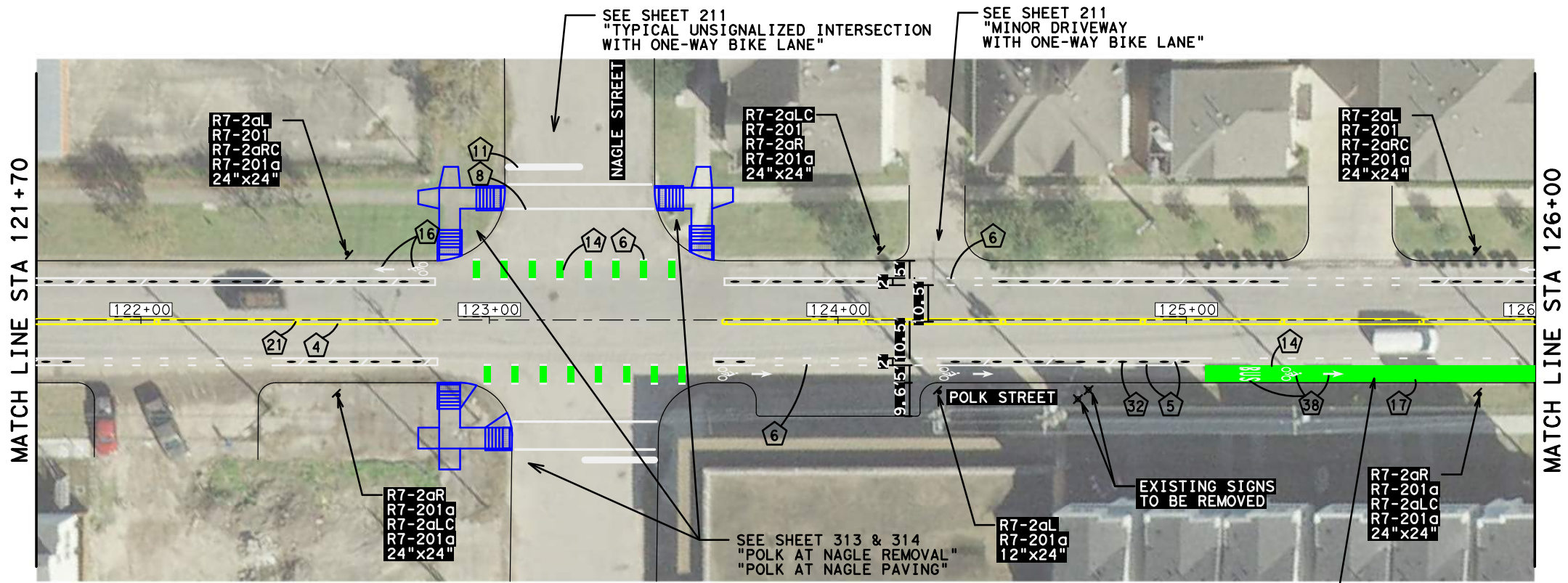
PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: SIGNING & PAVEMENT MARKING LAYOUT
CK'D BY: JL	SHEET 1 OF 8
SCALE: 1"=40'	
DATE: 4/12/2019	APPROVED BY:
	SHEET NO: 200

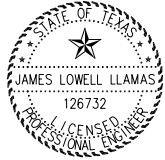
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PAVEMENT MARKING QUANTITIES STA. 121+70 TO 130+80	4	1348 LF	7	4 EA	14	620 SF	21	19 EA	38	3 EA	45	27 LF
	5	2461 LF	8	503 LF	16	16 EA	32	146 EA	43	48 SF		
	6	292 LF	11	118 LF	17	300 SF	36	2 EA	44	45 LF		

- NOTES:
- 1) SEE SHEET 103 - GENERAL NOTES
 - 2) SEE SHEET 208 - SIGNAGE AND PAVEMENT MARKING LEGEND
 - 3) SEE SHEET 212 - ARMADILLO BARRIERS
 - 4) SEE SHEET 212 - CENTERLINE MARKINGS






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PROJECT TITLE:
POLK STREET ON-STREET BIKEWAY

DRAWN BY:
GB

CK'D BY:
JL

SCALE:
1"=40'

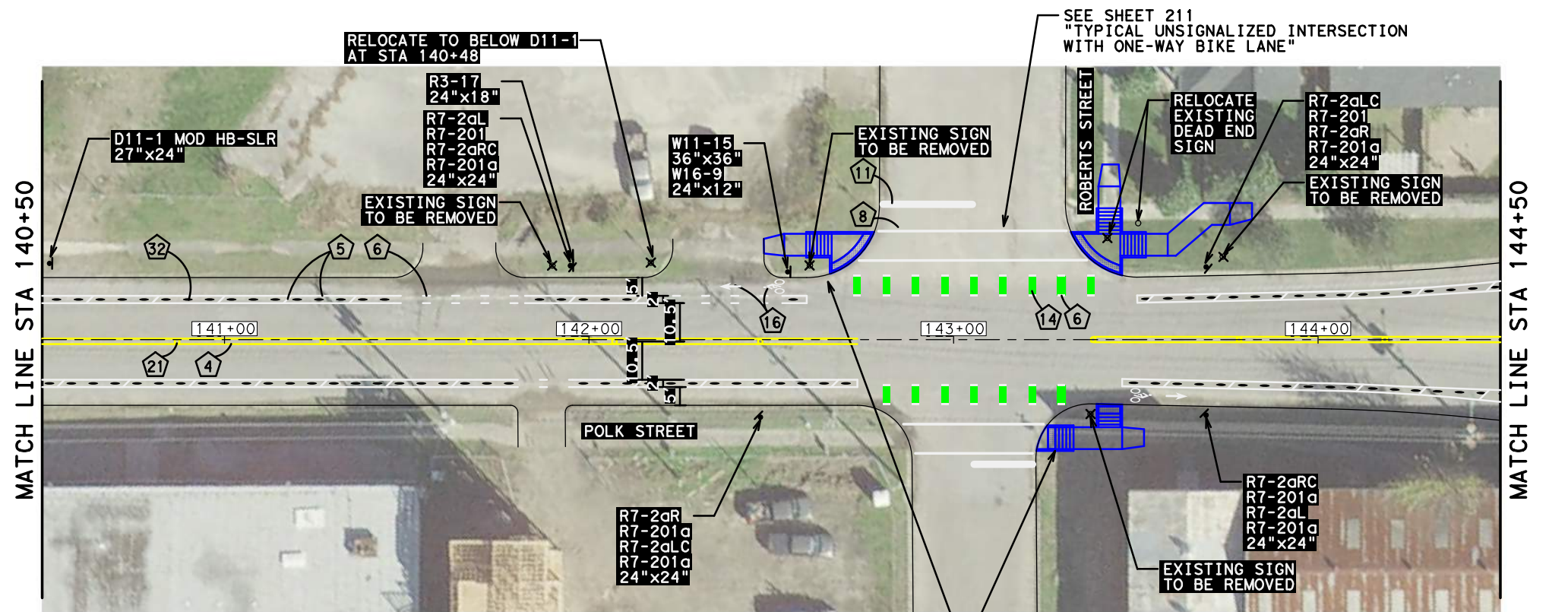
DATE:
4/12/2019

SHEET DESCRIPTION:
SIGNING & PAVEMENT MARKING LAYOUT

SHEET 2 OF 8

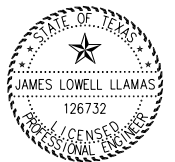
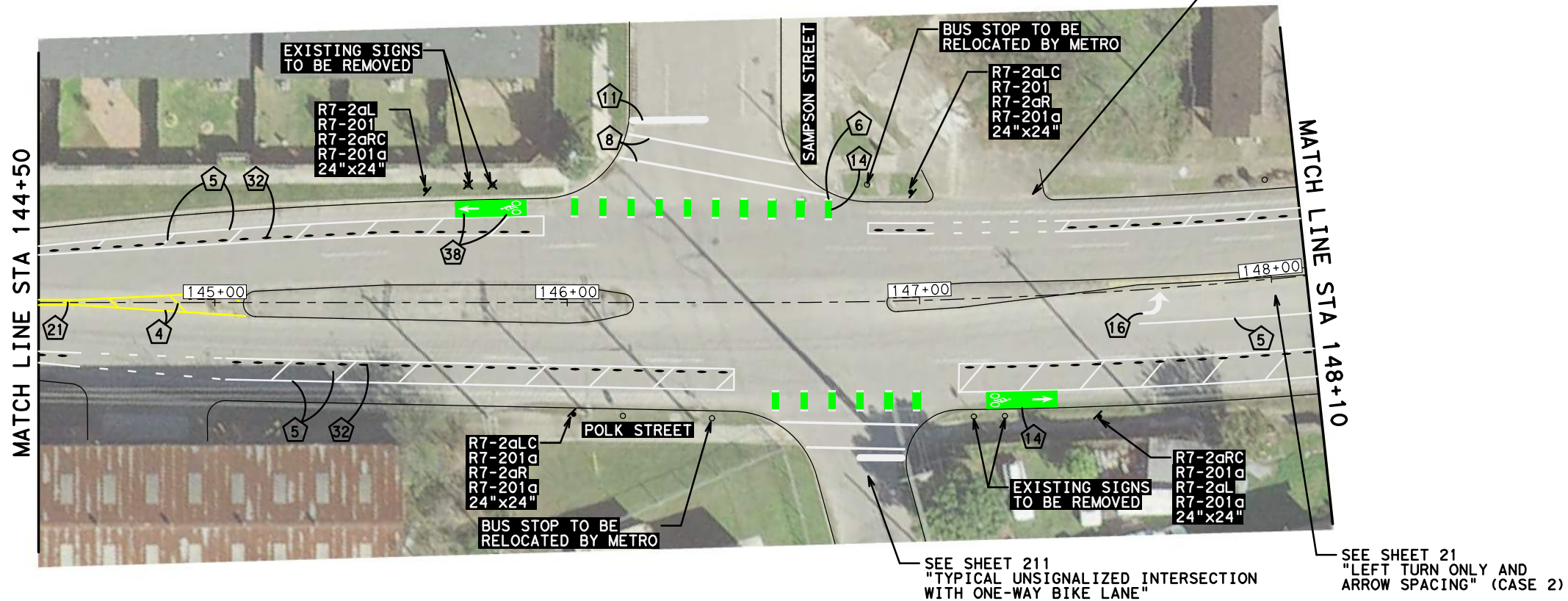
APPROVED BY:

SHEET NO:
201



PAVEMENT MARKING QUANTITIES STA. 140+50 TO 148+10	④ 800 LF	⑧ 360 LF	⑩ 4 EA	③⑧ 4 EA
	⑤ 2892 LF	⑪ 74 LF	②① 8 EA	
	⑥ 224 LF	⑭ 385 SF	③② 170 EA	

- NOTES:
- 1) SEE SHEET 103 - GENERAL NOTES
 - 2) SEE SHEET 208 - SIGNAGE AND PAVEMENT MARKING LEGEND
 - 3) SEE SHEET 212 - ARMADILLO BARRIERS
 - 4) SEE SHEET 212 - CENTERLINE MARKINGS



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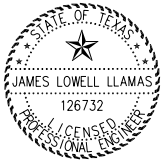
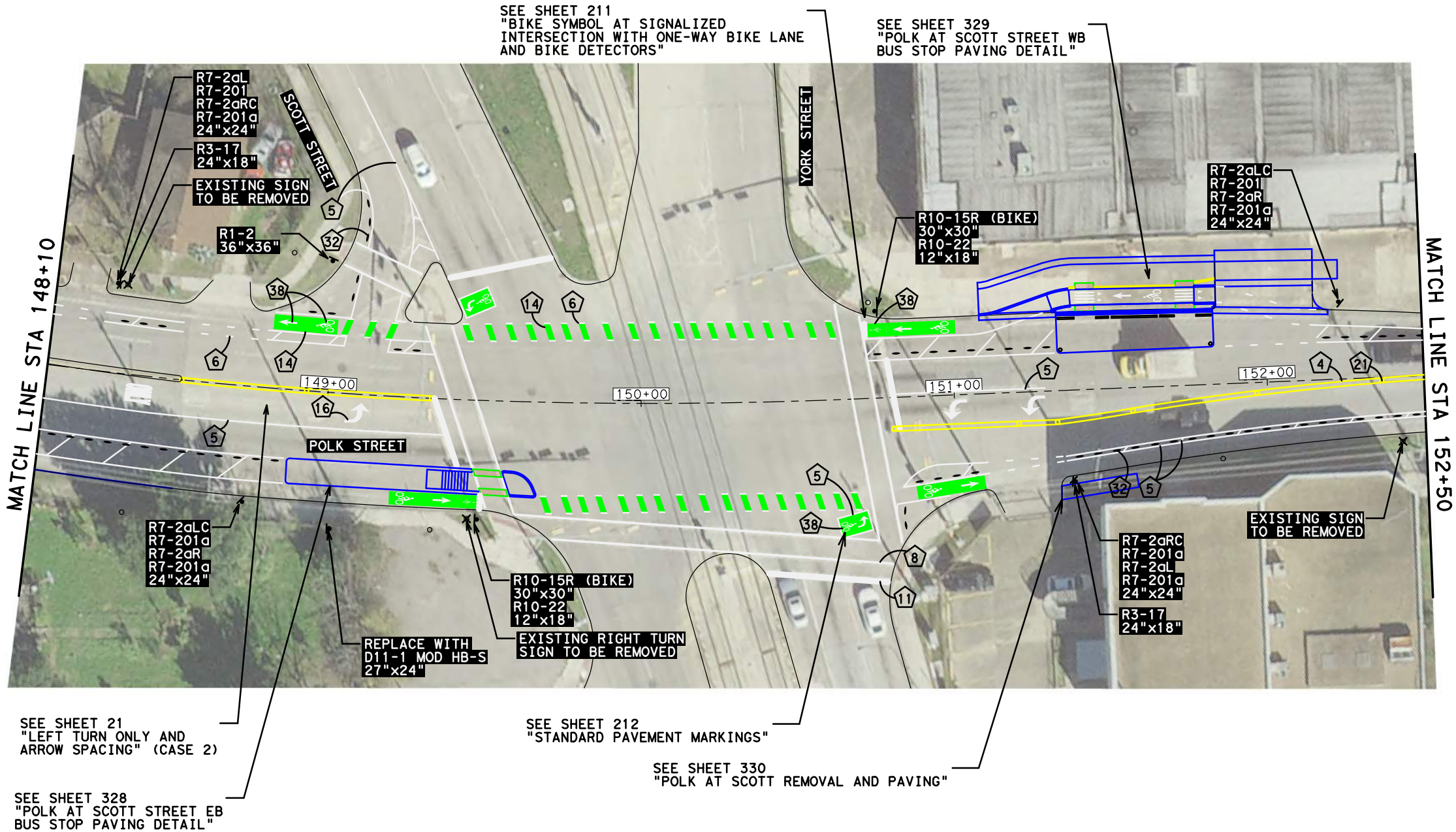
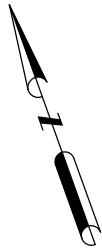
HARRIS COUNTY
 ENGINEERING DEPARTMENT

PROJECT TITLE:	
POLK STREET ON-STREET BIKEWAY	
DRAWN BY:	SHEET DESCRIPTION:
GB	SIGNING & PAVEMENT MARKING LAYOUT
CK'D BY:	
JL	SHEET 4 OF 8
SCALE:	
1"=40'	
DATE:	APPROVED BY:
4/12/2019	
	SHEET NO: 203

DATE: 4/12/2019 12:47:00 PM USER: /USER/ FILE: E:\Dropbox (Traffic Engineers)\Clients\Harris County\Precinct 1 Design 2018\Bikeways\04 Polk Cul len\Design\204 Polk SPM 5 of 8.dgn PENTABLE: HC-Bikeways.tbl

PAVEMENT MARKING QUANTITIES STA. 148+10 TO 152+50	<div>4</div> 550 LF	<div>7</div> 4 EA	<div>14</div> 500 SF	<div>32</div> 66 EA	<div>43</div> 48 SF
	<div>5</div> 1460 LF	<div>8</div> 600 LF	<div>16</div> 6 EA	<div>36</div> 2 EA	<div>44</div> 30 LF
	<div>6</div> 80 LF	<div>11</div> 130 LF	<div>21</div> 9 EA	<div>38</div> 12 EA	<div>45</div> 33 LF

- NOTES:
1) SEE SHEET 103 - GENERAL NOTES
2) SEE SHEET 208 - SIGNAGE AND PAVEMENT MARKING LEGEND
3) SEE SHEET 212 - ARMADILLO BARRIERS
4) SEE SHEET 212 - CENTERLINE MARKINGS



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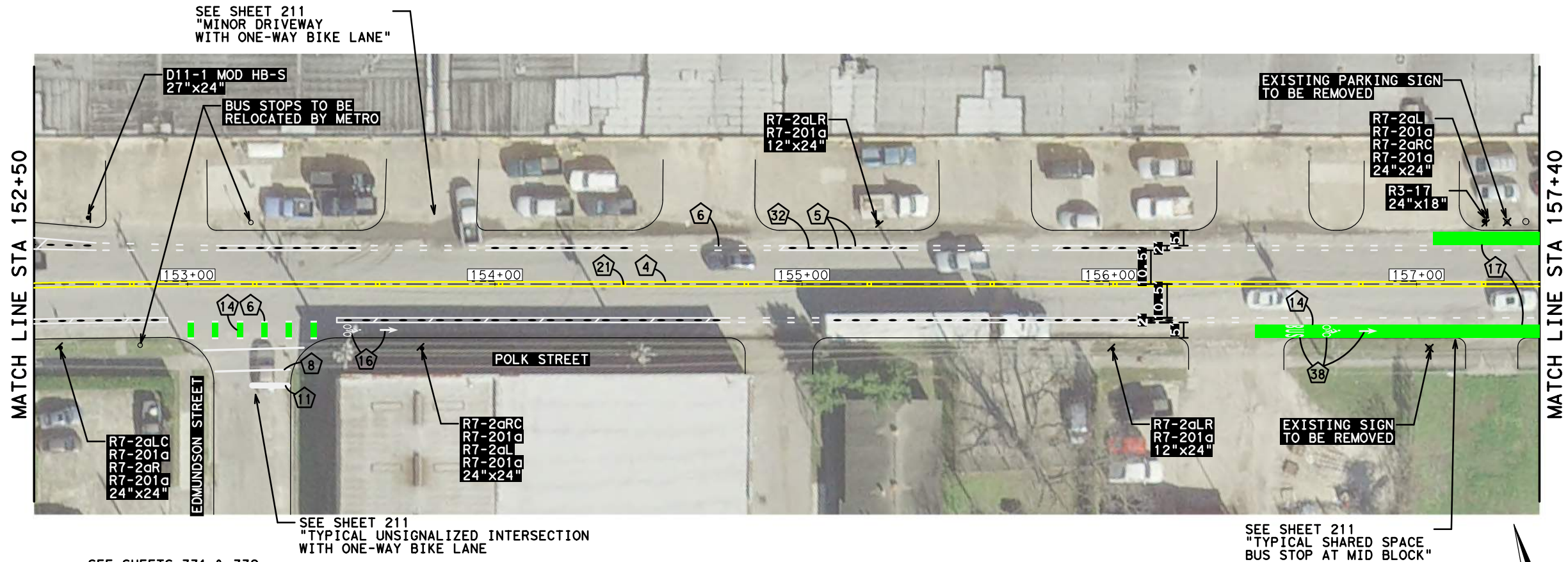


HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: SIGNING & PAVEMENT MARKING LAYOUT
CK'D BY: JL	SHEET 5 OF 8
SCALE: 1"=40'	
DATE: 4/12/2019	APPROVED BY:

SHEET NO:
204

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SEE SHEET 211
"TYPICAL UNSIGNALIZED INTERSECTION
WITH ONE-WAY BIKE LANE"

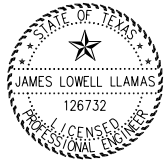
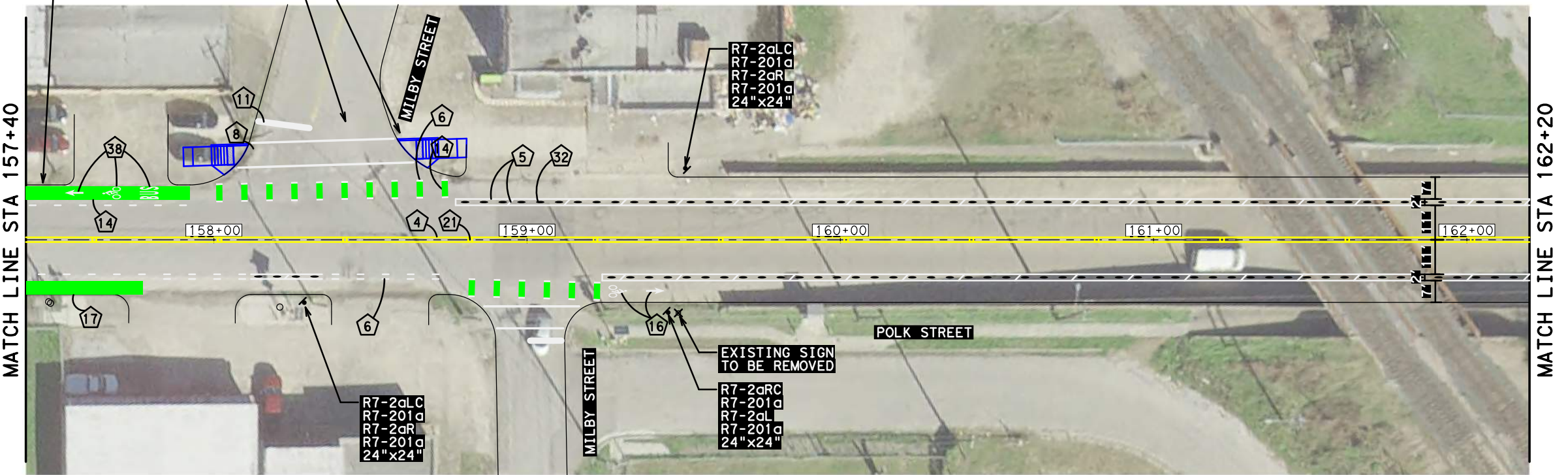
SEE SHEETS 331 & 332
"POLK AT MILBY REMOVAL"
"POLK AT MILBY PAVING"

SEE SHEET 211
"TYPICAL SHARED SPACE
BUS STOP AT MID BLOCK"

SEE SHEET 211
"TYPICAL UNSIGNALIZED INTERSECTION
WITH ONE-WAY BIKE LANE"

PAVEMENT MARKING QUANTITIES STA. 152+50 TO 162+20	4	2030 LF	8	225 LF	16	4 EA	32	190 EA
	5	2660 LF	11	45 LF	17	570 SF	38	6 EA
	6	305 LF	14	400 SF	21	25 EA		

NOTES:
1) SEE SHEET 103 - GENERAL NOTES
2) SEE SHEET 208 - SIGNAGE AND PAVEMENT MARKING LEGEND
3) SEE SHEET 212 - ARMADILLO BARRIERS
4) SEE SHEET 212 - CENTERLINE MARKINGS



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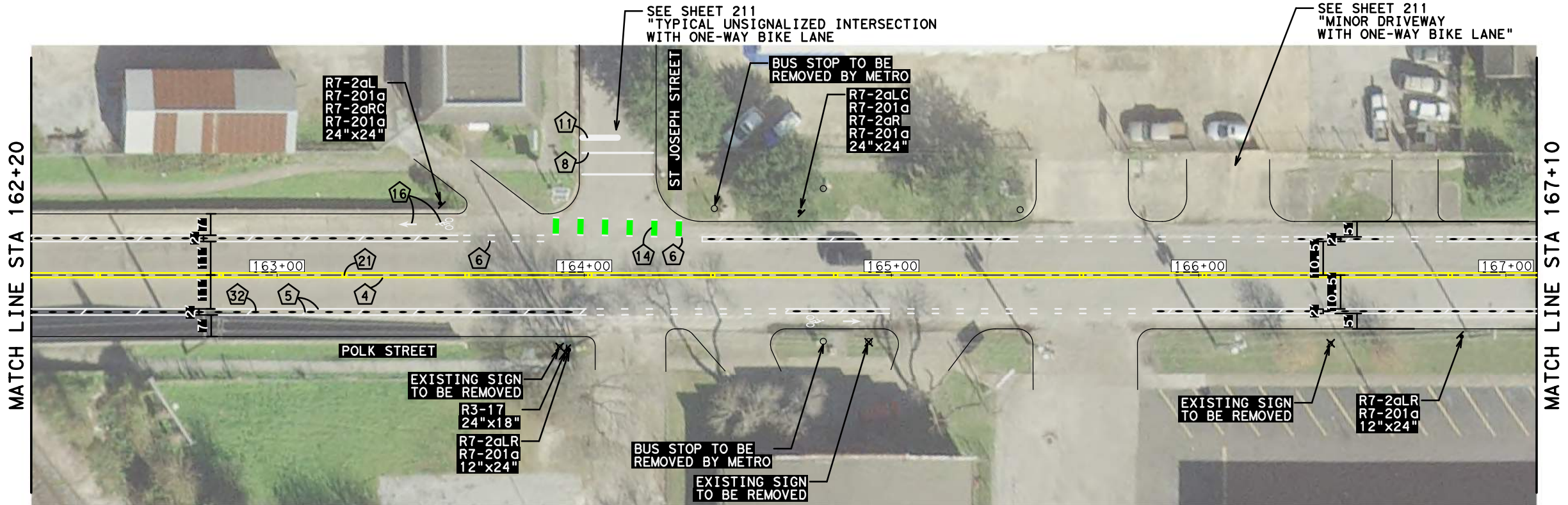


HARRIS COUNTY
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PROJECT TITLE:	POLK STREET ON-STREET BIKEWAY
DRAWN BY:	GB
CK'D BY:	JL
SCALE:	1"=40'
DATE:	4/12/2019
SHEET DESCRIPTION:	SIGNING & PAVEMENT MARKING LAYOUT
	SHEET 6 OF 8
APPROVED BY:	

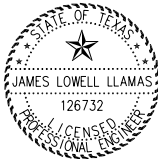
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PAVEMENT MARKING QUANTITIES STA. 162+20 TO 167+10	<div>4</div> 980 LF	<div>8</div> 46 LF	<div>16</div> 4 EA
	<div>5</div> 1373 LF	<div>11</div> 12 LF	<div>21</div> 12 EA
	<div>6</div> 176 LF	<div>14</div> 66 SF	<div>32</div> 106 EA

- NOTES:
- 1) SEE SHEET 103 - GENERAL NOTES
 - 2) SEE SHEET 208 - SIGNAGE AND PAVEMENT MARKING LEGEND
 - 3) SEE SHEET 212 - ARMADILLO BARRIERS
 - 4) SEE SHEET 212 - CENTERLINE MARKINGS



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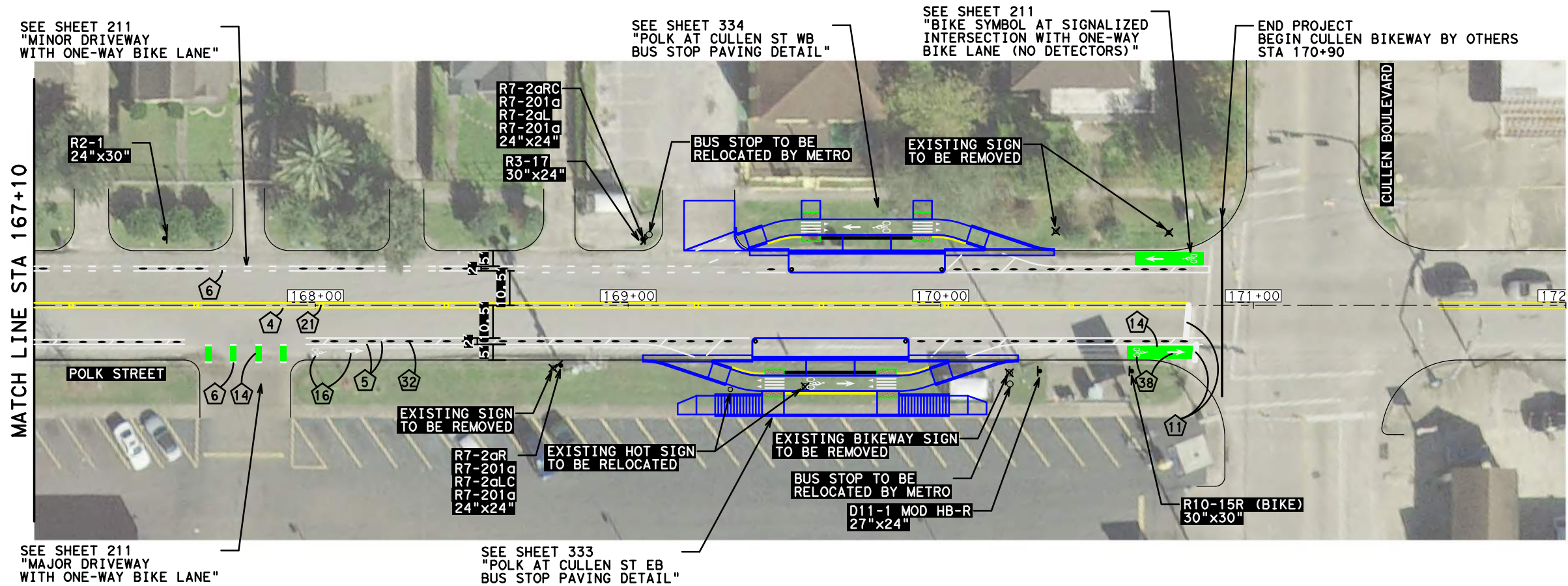


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PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: SIGNING & PAVEMENT MARKING LAYOUT
CK'D BY: JL	SHEET 7 OF 8
SCALE: 1"=40'	
DATE: 4/12/2019	APPROVED BY:

SHEET NO:
206

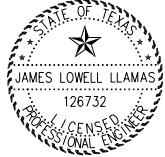
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PAVEMENT MARKING QUANTITIES STA. 167+10 TO 170+90 END OF PROJECT	4	740 LF	14	80 SF	38	4 EA
	5	1052 LF	16	6 EA	43	96 SF
	6	110 LF	21	9 EA	44	159 LF
	7	8 EA	32	73 EA	45	54 LF
	11	16 LF	36	4 EA		

- NOTES:
- 1) SEE SHEET 103 - GENERAL NOTES
 - 2) SEE SHEET 208 - SIGNAGE AND PAVEMENT MARKING LEGEND
 - 3) SEE SHEET 212 - ARMADILLO BARRIERS
 - 4) SEE SHEET 212 - CENTERLINE MARKINGS









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ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: SIGNING & PAVEMENT MARKING LAYOUT
CK'D BY: JL	SHEET 8 OF 8
SCALE: 1"=40'	
DATE: 4/12/2019	APPROVED BY:
	SHEET NO: 207



R10-15L(BIKE)(MOD)
30x30
SEE DETAIL SHEET 222



R10-15R(BIKE)(MOD)
30x30
SEE DETAIL SHEET 222



R1-6
36x12



R4-4
36x30



R1-5L (COH MOD)
36x36
SEE DETAIL SHEET 222



R4-11
30x30



R3-17
30x24



R5-1
36x36



R5-1a
36x24



R10-10b
18x24



R7-2aL
R7-201a
12x24



R7-2aR
R7-201a
12x24



R7-2aLR
R7-201a
12x24



R7-2aLC
R7-201a
12x24



R7-2aRC
R7-201a
12x24



R5-1b
12x18



W11-1
30x30



R2-1
24x30



D11-1 (MOD)
24x27
SEE DETAIL SHEET 209



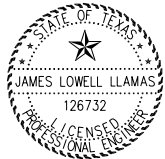
R10-5L
30x36



W11-15
36x36

PROPOSED SIGNING & PAVEMENT MARKING LEGEND

- 1 TYPE I - 4" BROKEN WHITE
- 2 TYPE I - 4" SOLID WHITE
- 3 TYPE I - 4" BROKEN YELLOW
- 4 TYPE I - 4" SOLID YELLOW
- 5 TYPE I - 6" SOLID WHITE
- 6 TYPE I - 6" GUIDE WHITE
- 7 TYPE I - 8" YIELD TRIANGLES WHITE
- 8 TYPE I - 12" SOLID WHITE
- 9 TYPE I - 12" SOLID YELLOW
- 10 TYPE I - 18" YIELD TRIANGLES WHITE
- 11 TYPE I - 24" SOLID WHITE
- 12 TYPE I - 24" SOLID YELLOW
- 13 TYPE I - 36" YIELD TRIANGLES WHITE
- 14 REFLECTIVE PM TY C PREFORM SOLID GREEN
- 15 TYPE II - MEDIAN NOSE CURB YELLOW
- 16 TYPE I - WHITE WORD, SYMBOL, ARROW, RR CROSSING OR SHARROW
- 17 METHYL METHACRYLATE PAVEMENT MARKING
- 18 EPOXY PAVEMENT MARKING
- 19 RESIN BONDED AGGREGATE SURFACING
- 20 REFL PAV MRKR - TYPE I-C
- 21 REFL PAV MRKR - TYPE II-A-A
- 22 REFL PAV MRKR - TYPE II-C-R
- 23 TRAFFIC BUTTON WHITE
- 24 TRAFFIC BUTTON WHITE (METRO BUTTONS)
- 25 TRAFFIC BUTTON YELLOW
- 26 TRAFFIC BUTTON YELLOW (METRO BUTTONS)
- 27 RUBBER SPEED CUSHION
- 28 ASPHALT SPEED CUSHION - ASPHALT PAVEMENT
- 29 ASPHALT SPEED CUSHION - CONCRETE PAVEMENT
- 30 CHANNELIZATION DEVICE SEPARATORS
- 31 FLEXIBLE POST DELINEATORS
- 32 CYCLE LANE SEPARATOR "ARMADILLO"
- 33 COLLAPSABLE BOLLARD
- 34 CONCRETE PLANTER
- 35 OMITTED
- 36 FLEXIBLE DELINEATOR POST
- 37 OMITTED
- 38 REFLECTIVE PM TY C PREFORM SYMBOL (WHITE/GREEN)
- 39 OMITTED
- 40 OMITTED
- 41 TYPE I - 6" SOLID YELLOW
- 42 TYPE I - 6" GUIDE YELLOW
- 43 CAST-IN-PLACE DETECTABLE WARNING MATERIAL
- 44 SURFACE-APPLIED DIRECTIONAL TACTILE MATERIAL
- 45 PEDESTRIAN RAILING
 - ▣ PROPOSED RAISED MARKERS
 - PROPOSED BUTTONS
 - PROPOSED PAVEMENT MARKINGS
 - EXISTING SIGN (TO REMAIN)
 - × EXISTING SIGN (TO BE REMOVED)
 - ‡ PROPOSED SIGN
 - PROPOSED CURB AND PAVEMENT REPAIR
 - PROPOSED CURB AND CONCRETE
 - PROPOSED REMOVAL



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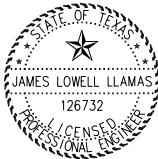
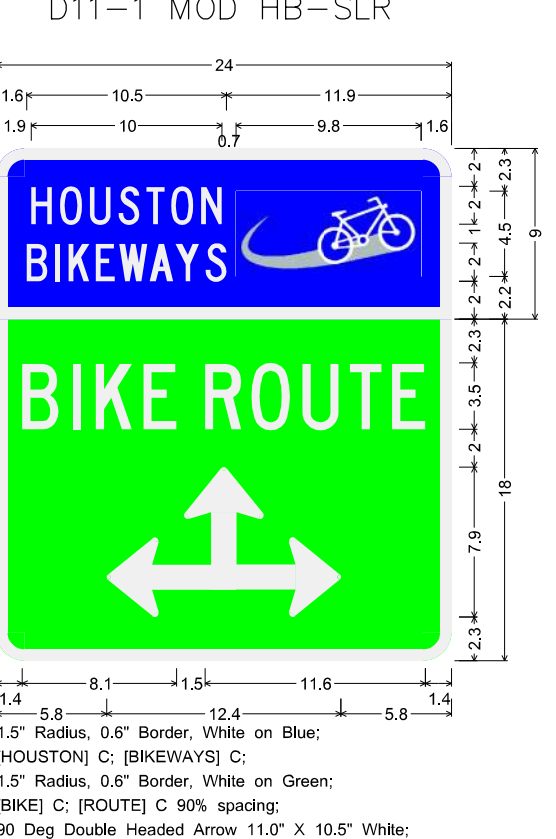
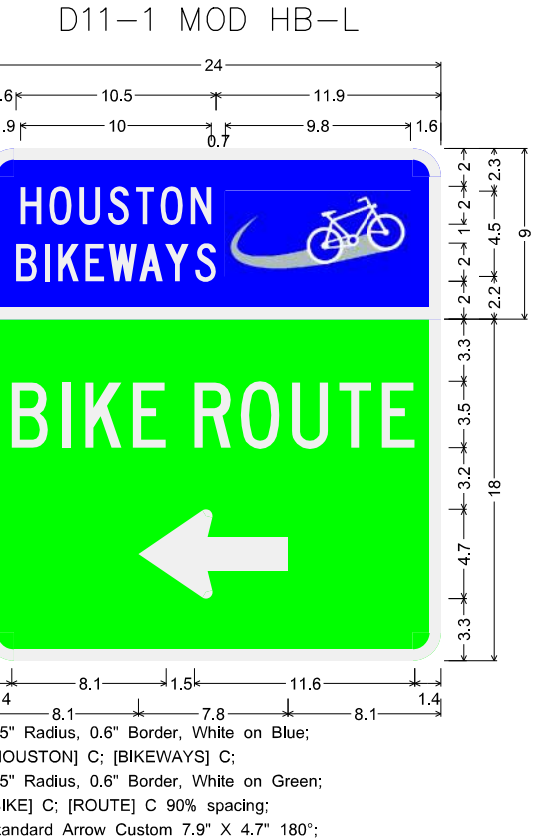


HARRIS COUNTY ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: SIGNING AND PAVEMENT MARKING
CK'D BY: JL	LEGEND
SCALE: NONE	
DATE: 4/12/2019	APPROVED BY:

SHEET NO:
208

DATE: 4/12/2019 12:47:23 PM USER: /USER/ FILE: E:\Dropbox (Traffic Engineers)\Clients\Harris County\Precinct 1 Design 2018\Bikeways\04 Polk Cul len\Design\209 Houston Bikeways Sign Details.dgn PENTABLE: HC-Bikeways.tbl



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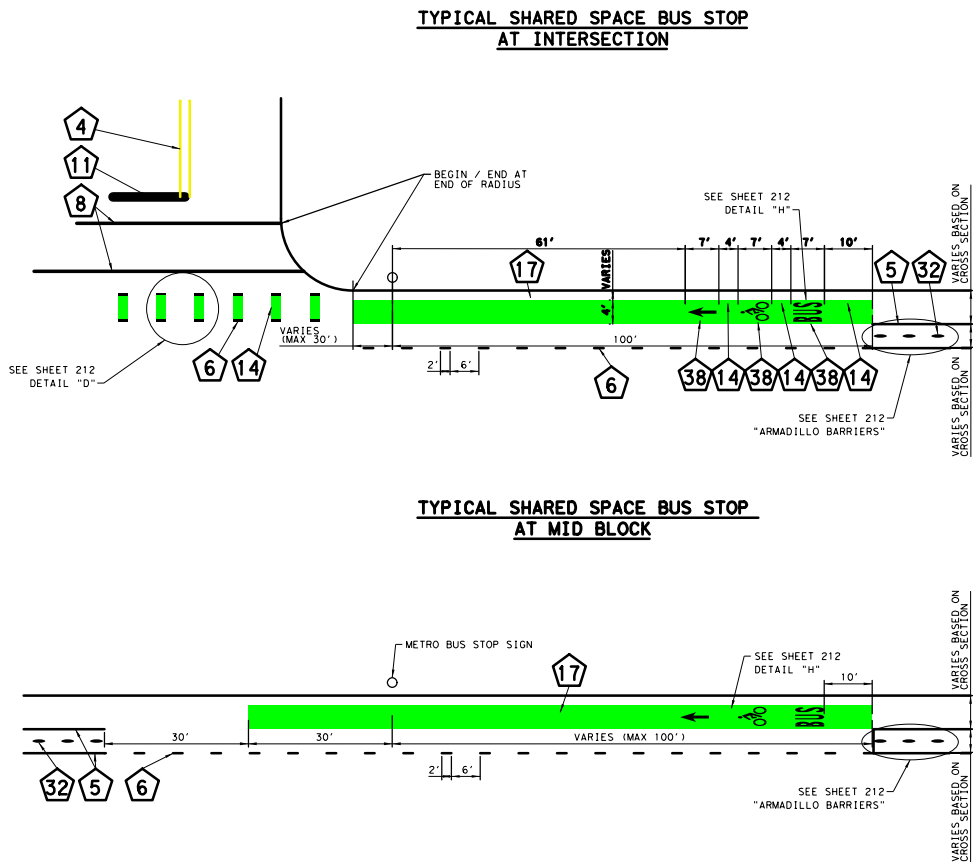
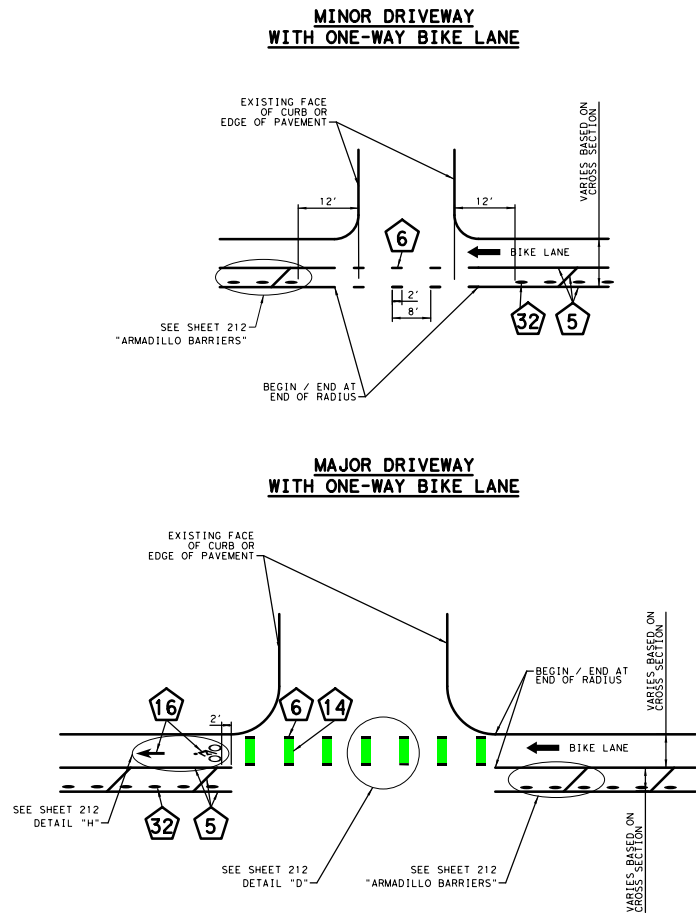
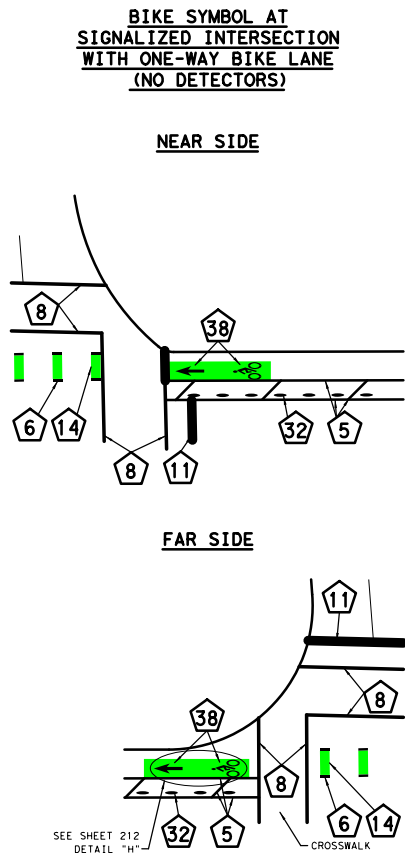
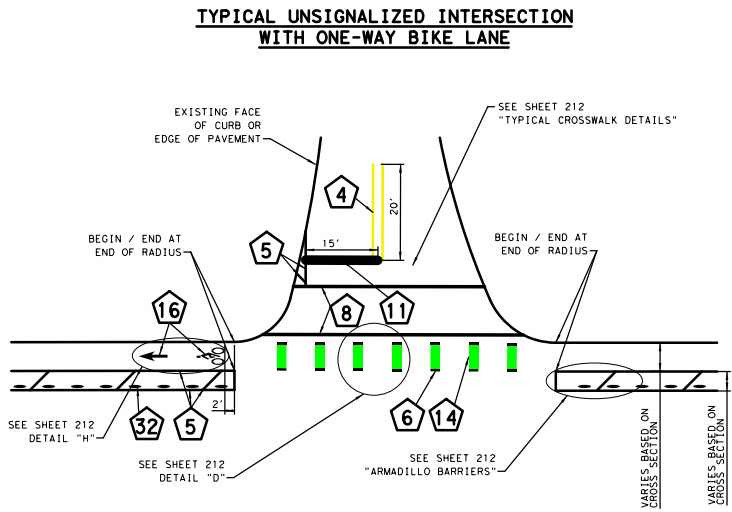


HARRIS COUNTY
ENGINEERING DEPARTMENT

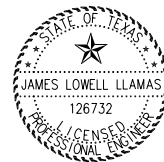
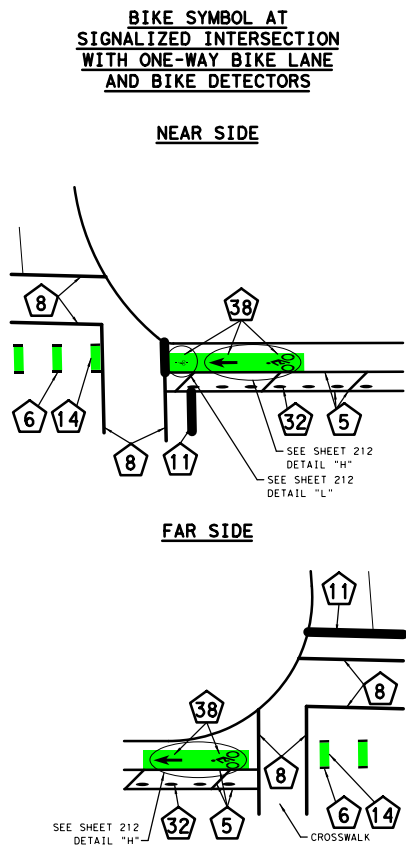
PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: HOUSTON BIKEWAYS
CK'D BY: JL	SIGN DETAILS
SCALE: NONE	SHEET 1 OF 1
DATE: 4/12/2019	APPROVED BY:
SHEET NO: 209	

NO.	REVISIONS	DATE	NAME
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DATE: 4/12/2019 12:47:26 PM USER: /USER/ FILE: E:\Dropbox (Traffic Engineers)\Clients\Harris County\Precinct 1 Design 2018\Bikeways\04 Polk Cul len\Design\211 S&PM Detail Sheet 1.dgn PENTABLE: HC-Bikeways.tb1



NOTE: GREEN PAVEMENT MARKINGS SHOULD BE ADJACENT TO THE BUFFER LANE LINE



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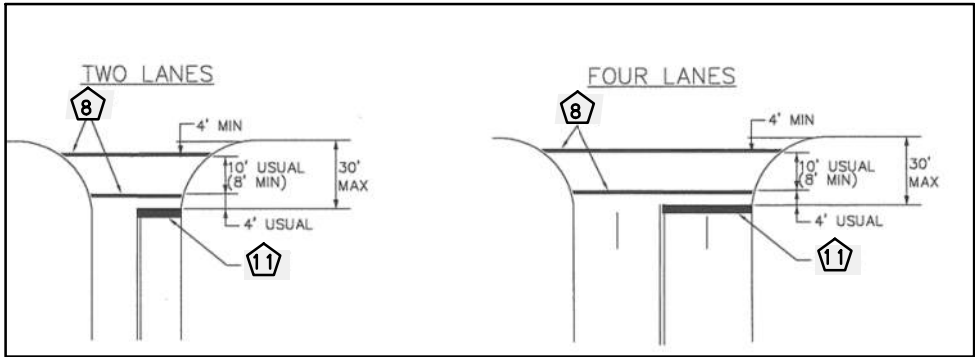
HARRIS COUNTY ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: SIGNING & PAVEMENT MARKING
CK'D BY: JL	DETAIL
SCALE: NONE	SHEET 1 OF 4
DATE: 4/12/2019	APPROVED BY:

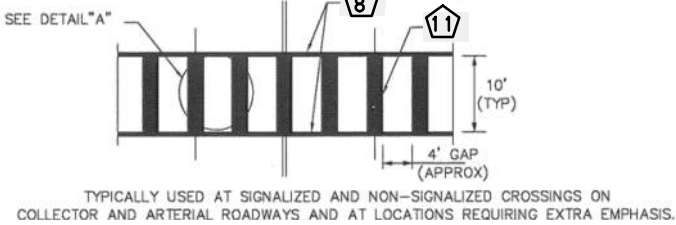
SHEET NO:
211

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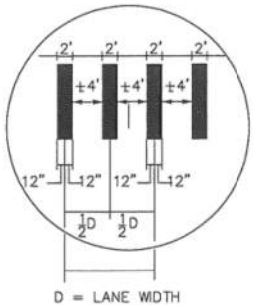
TYPICAL CROSSWALK DETAILS



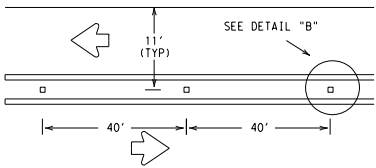
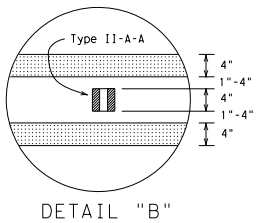
HIGH VISIBILITY CROSSWALK DETAIL



DETAIL "A"

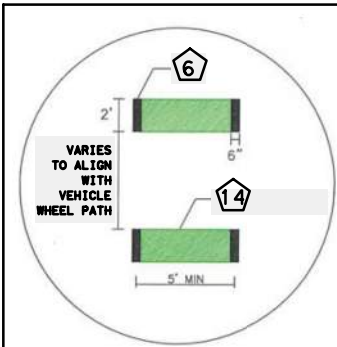


CENTERLINE MARKINGS

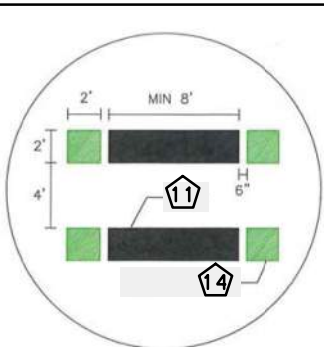


BIKE LANE CONFLICT MARKINGS

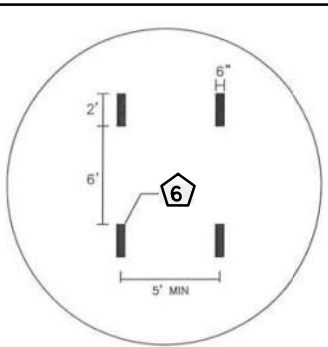
DETAIL "D"



DETAIL "E"

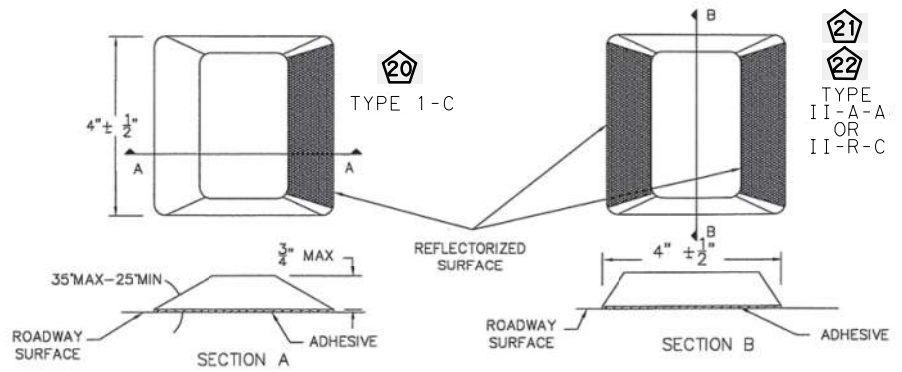


DETAIL "F"

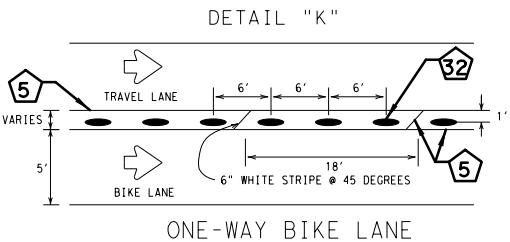


- NOTE:
- 6 EDGE LINES ARE IN LINE WITH BIKE LANE EDGE
 - 14 RUNS BETWEEN THE VEHICLE WHEEL PATH

REFLECTIVE RAISED PAVEMENT MARKERS

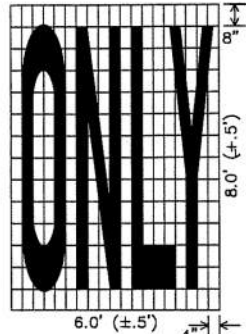
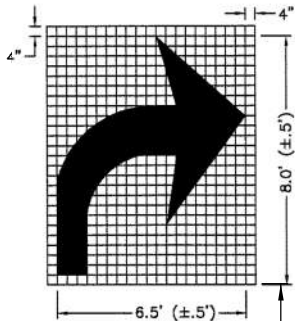


ARMADILLO BARRIERS

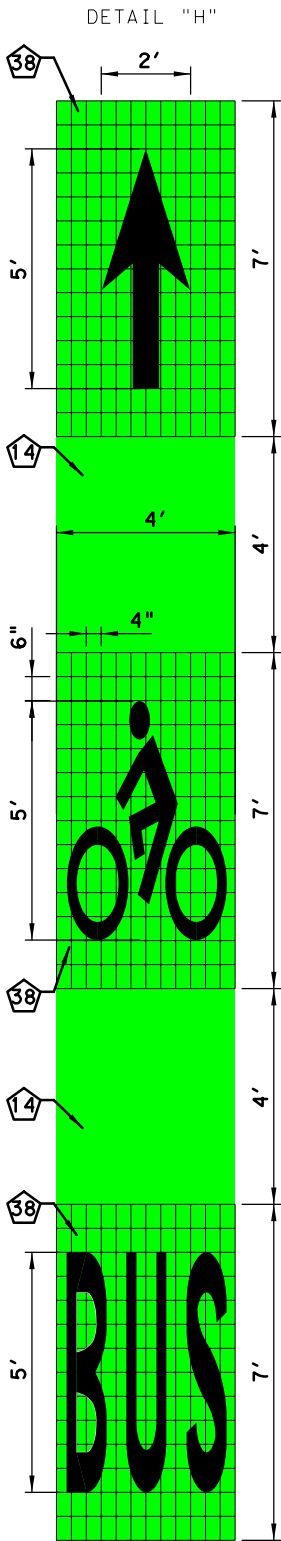
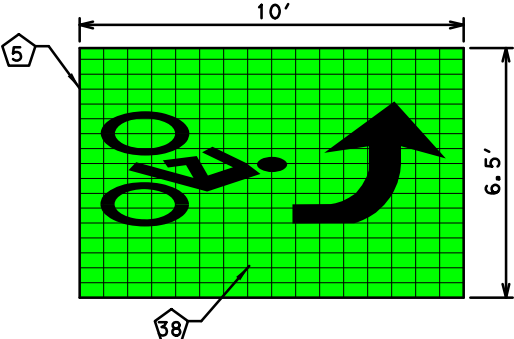
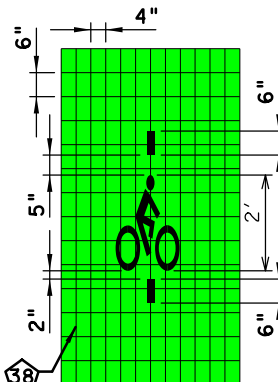


STANDARD PAVEMENT MARKINGS

DETAIL "I"



DETAIL "L"



04/12/2019

NO.	REVISIONS	DATE	NAME

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TBPE Registration No. F-3158

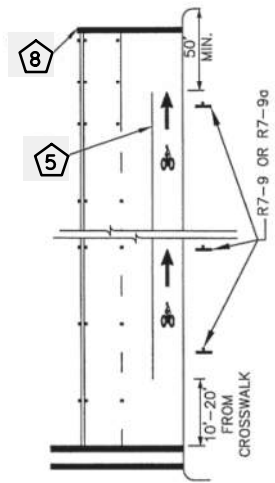


HARRIS COUNTY
ENGINEERING DEPARTMENT

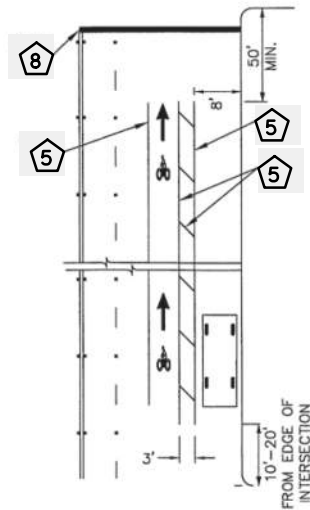
PROJECT TITLE:	POLK STREET ON-STREET BIKEWAY
DRAWN BY:	GB
CK'D BY:	JL
SCALE:	NONE
DATE:	4/12/2019
SHEET DESCRIPTION:	SIGNING & PAVEMENT MARKING
DETAIL	SHEET 2 OF 4
APPROVED BY:	

SHEET NO:
212

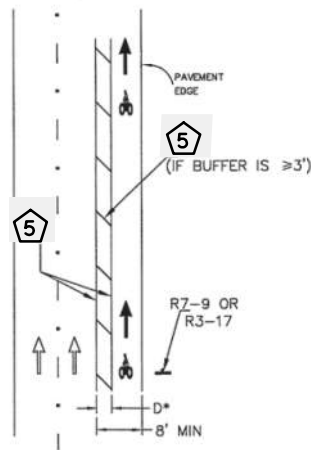
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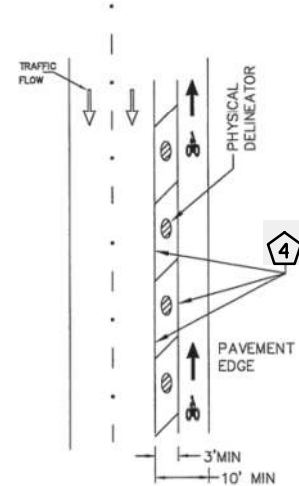
STANDARD BIKE LANES
NO ON-STREET PARKING
ALONG BICYCLE LANE



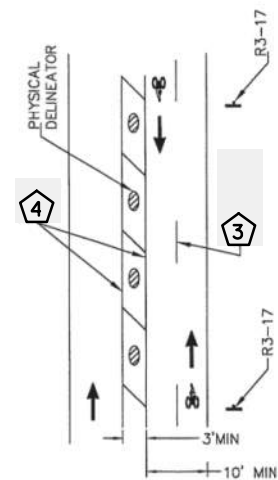
STANDARD BIKE LANES
ON-STREET PARKING
ALONG BICYCLE LANE



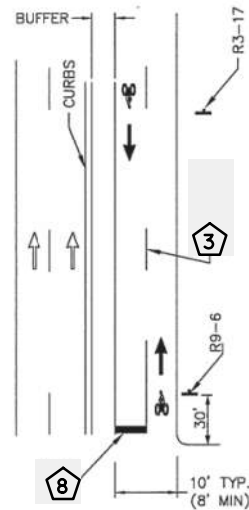
BUFFERED BIKE LANES
*DELINEATOR REQUIRED IF D < 2'



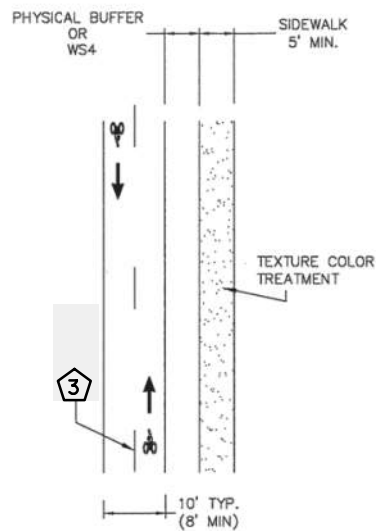
SEPARATED BIKE LANES
ONE-WAY (CONTRA-FLOW)



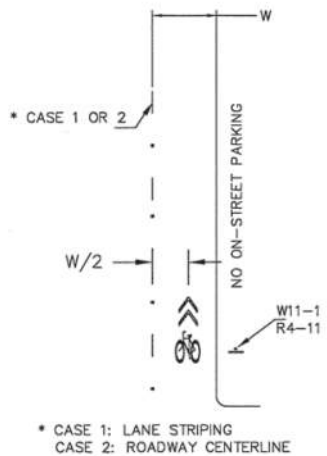
SEPARATED BIKE LANES
TWO-WAY



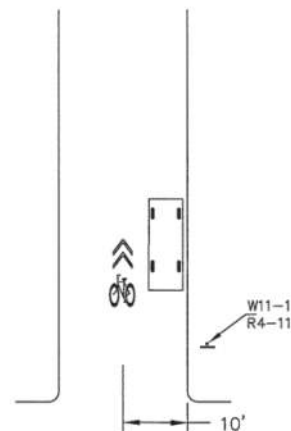
TWO-WAY SIDE PATH



SIDEPATH WITH DEDICATED
SIDEWALK



ROADWAY WITH SHARED LANE
• NEIGHBORHOOD BIKEWAY
• COLLECTOR/ THOROUGHFARE
• NO ON-STREET PARKING

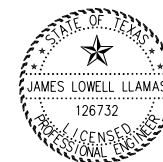


ROADWAY WITH SHARED LANE
• NEIGHBORHOOD STREET
• NO CENTER LINE OR LANE MARKING
• ON STREET PARKING

NOTES:

1. ALL PAVEMENT MARKINGS SHALL BE WHITE EXCEPT WHEN NOTED OTHERWISE ON PLANS.
2. PAVEMENT MARKINGS SHALL BE OF THE MATERIALS SPECIFIED AND SHALL BE IN CONFORMANCE WITH MATERIAL SPECIFICATIONS AS SPECIFIED BY CITY OF HOUSTON STANDARD SPECIFICATIONS.
3. EXACT SIGN PLACEMENT AND DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.
4. ADDITIONAL REFERENCES: TMUTCD (TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL) GUIDE FOR THE DEVELOPMENT OF BICYCLES FACILITIES, AASHTO, LATEST EDITION.
5. SHARED LANE MARKING SHALL BE IMPLEMENTED ONLY ON ROADWAY SEGMENT BUT NOT WITHIN THE FUNCTIONAL LIMITS OF AN INTERSECTION.

CITY OF HOUSTON HOUSTON PUBLIC WORKS	
BICYCLE LANE PAVEMENT MARKINGS (NOT TO SCALE)	
 CITY ENGINEER	 DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2018	DWG NO: 01510-09



04/12/2019

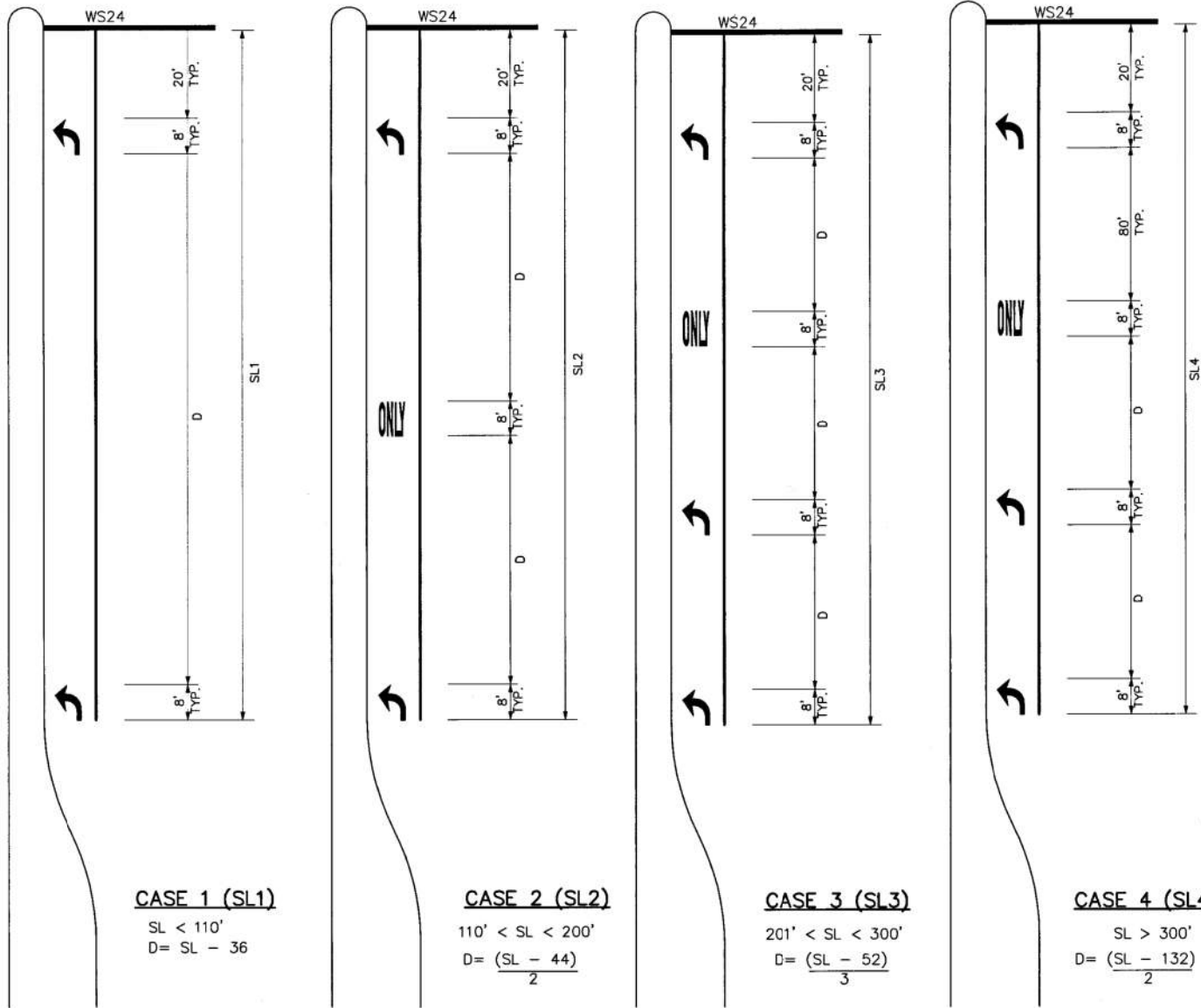
NO.	REVISIONS	DATE	NAME

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801 Congress Avenue, Suite 325, Houston, TX 77002
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TBPE Registration No. F-3158



HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: SIGNING & PAVEMENT MARKING
CK'D BY: JL	DETAIL
SCALE: NONE	SHEET 3 OF 4
DATE: 4/12/2019	APPROVED BY:
	SHEET NO: 213



KEY (FOR TURN LANES ONLY):
SL - STORAGE LENGTH (FEET)
D - DISTANCE BETWEEN ARROWS AND/OR WORDS (FEET)

- GENERAL NOTES:
1. ALL CASES AND DETAILS ALSO APPLY TO RIGHT-TURN LANES.
 2. FOR DUAL-TURN LANES, DIMENSIONS SHALL BE THE SAME FOR EACH LANE.
 3. SL DIMENSION IS FROM BACK OF STOP LINE TO END OF TURN LANE. NOTE: DO NOT INCLUDE TAPER LENGTH.
 4. PAVEMENT ARROWS AND "ONLY" LEGEND MARKINGS ARE TYPICALLY USED AT ALL SIGNALIZED INTERSECTIONS AND AT ALL UNSIGNALIZED INTERSECTIONS THAT HAVE TURN LANES.
 5. MINIMUM SL = 100'. SL MAY BE LESS THAN 100 FEET ONLY BY APPROVAL OF THE CITY TRAFFIC ENGINEER.

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
LEFT/RIGHT-TURN "ONLY" AND ARROW SPACING (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JUL-01-2012	DWG NO: 01510-02

04/12/2019

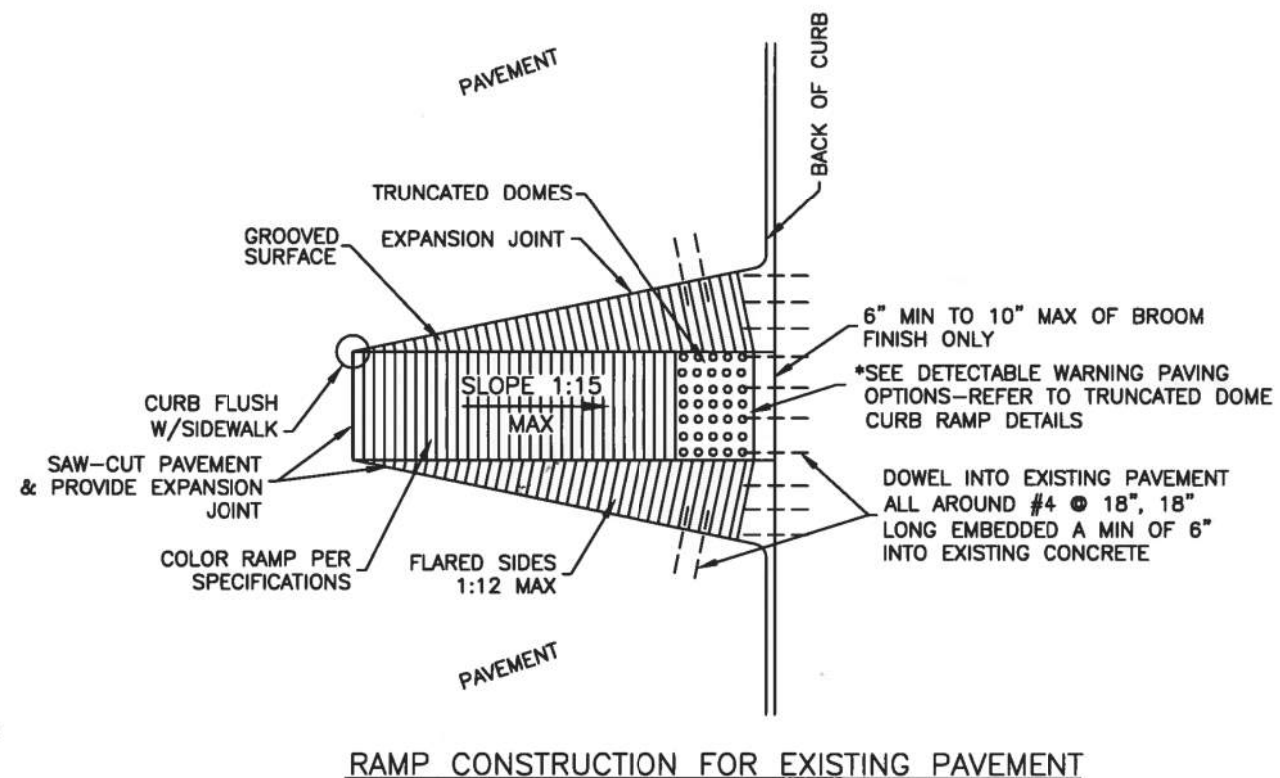
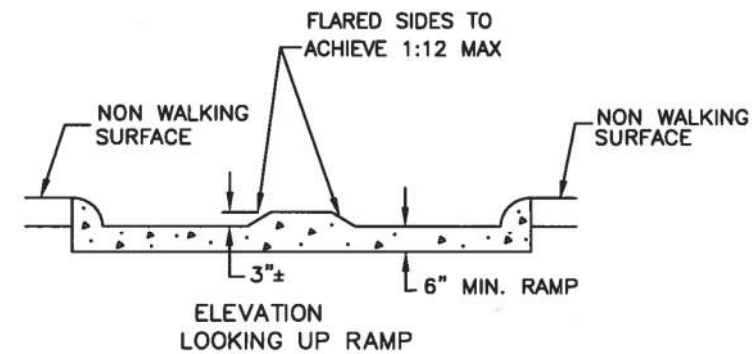
NO.	REVISIONS	DATE	NAME

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innovative transportation solutions
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TBPE Registration No. F-3158

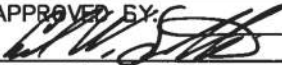

HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: SIGNING & PAVEMENT MARKING
CK'D BY: JL	DETAIL
SCALE: NONE	SHEET 4 OF 4
DATE: 4/12/2019	APPROVED BY:
SHEET NO: 214	

SHEET NO:
215



1. REPLACE EXISTING SIDEWALK FROM LEVEL LANDING AS NECESSARY TO ACHIEVE 1:20 SLOPE
2. SLOPES GREATER THAN 1:20 BUT LESS THAN 1:15 (MAX) REQUIRE GROOVES AND COLORING
3. BROOM FINISH IS MEASURED FROM FACE OF CURB.

<p align="center">CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING</p>	
<p align="center">WHEEL CHAIR RAMP DETAILS</p>	
<p align="center">(NOT TO SCALE)</p> <p>APPROVED BY: </p> <p align="center">CITY ENGINEER</p>	<p>APPROVED BY: </p> <p align="center">DIRECTOR OF PUBLIC WORKS AND ENGINEERING</p>
EFF DATE: JULY-01-2012	DWG NO: 02775-02



04/12/2019

NO.	REVISIONS	DATE	NAME



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TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158



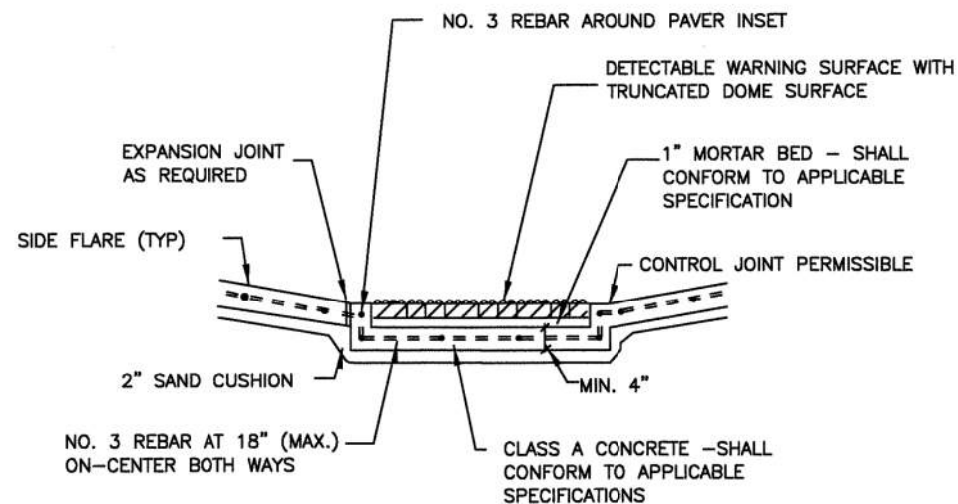
HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE:	
POLK STREET ON-STREET BIKEWAY	
DRAWN BY:	SHEET DESCRIPTION:
GB	CURB RAMP DETAILS

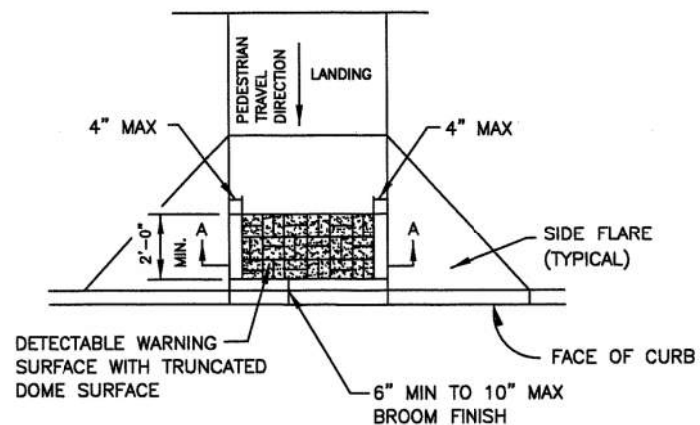
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SCALE: NONE	
DATE: 4/12/2019	APPROVED BY

SHEET NO:	216
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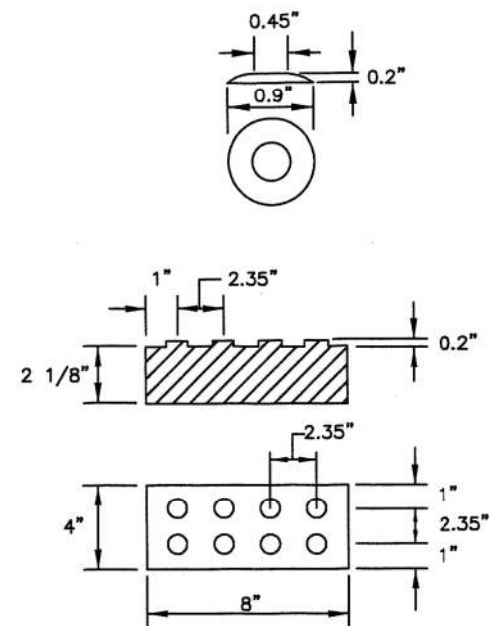
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PAVER SECTION A



DETECTABLE WARNING SURFACE



PAVER DETECTABLE WARNING SURFACE DETAIL

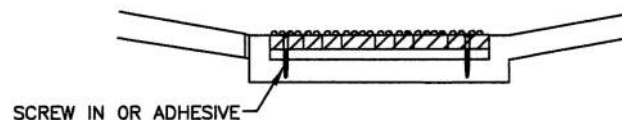
GENERAL NOTES

PAVERS

1. FURNISH DETECTABLE WARNING SURFACE UNITS MEETING ALL REQUIREMENTS OF ASTM C-936, C-33. LAY IN A TWO BY TWO UNIT BASKET WEAVE PATTERN OR AS DIRECTED.
2. LAY FULL-SIZE UNITS FIRST FOLLOWED BY CLOSURE UNITS CONSISTING OF AT LEAST 25 PERCENT OF A FULL UNIT. CUT DETECTABLE WARNING SURFACE UNITS USING A POWER SAW.

PADS

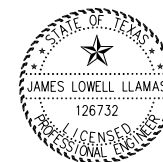
1. FURNISH REQUIREMENTS OF ADAAG (MARCH 2003).
2. OTHER MATERIALS MAY BE USED IF APPROVED BY THE CITY ENGINEER.



POLYMER CONCRETE

1. DETECTABLE WARNING TILES SHALL BE MADE OF POLYMER CONCRETE MATERIALS.
2. DETECTABLE WARNING TILES SHALL BE INSTALLED INTO FRESH CONCRETE (CAST-IN-PLACE) UTILIZING AN ANCHORING SYSTEM.
3. DETECTABLE WARNING TILES SHALL BE OF TERRACOTTA (BRICK-RED) COLOR AND COLORED THROUGHOUT TO GUARANTEE THE ADA REQUIRED COLOR CONTRAST.
4. DETECTABLE WARNING TILES SHALL MEET OR EXCEED THE FOLLOWING ASTM-BASED "STANDARDS" FOR CONCRETE MATERIALS;
A. COMPRESSION STRENGTH > 12,500PSI PER ASTM C 39-04
B. WATER ABSORPTION < 0.25% PER ASTM C 97-09

CITY OF HOUSTON HOUSTON PUBLIC WORKS	
DETECTABLE WARNING SURFACE (OPTIONS)	
(NOT TO SCALE)	
 CITY TRAFFIC ENGINEER CITY ENGINEER	 DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2018	DWG NO: 02775-07



04/12/2019

NO.	REVISIONS	DATE	NAME

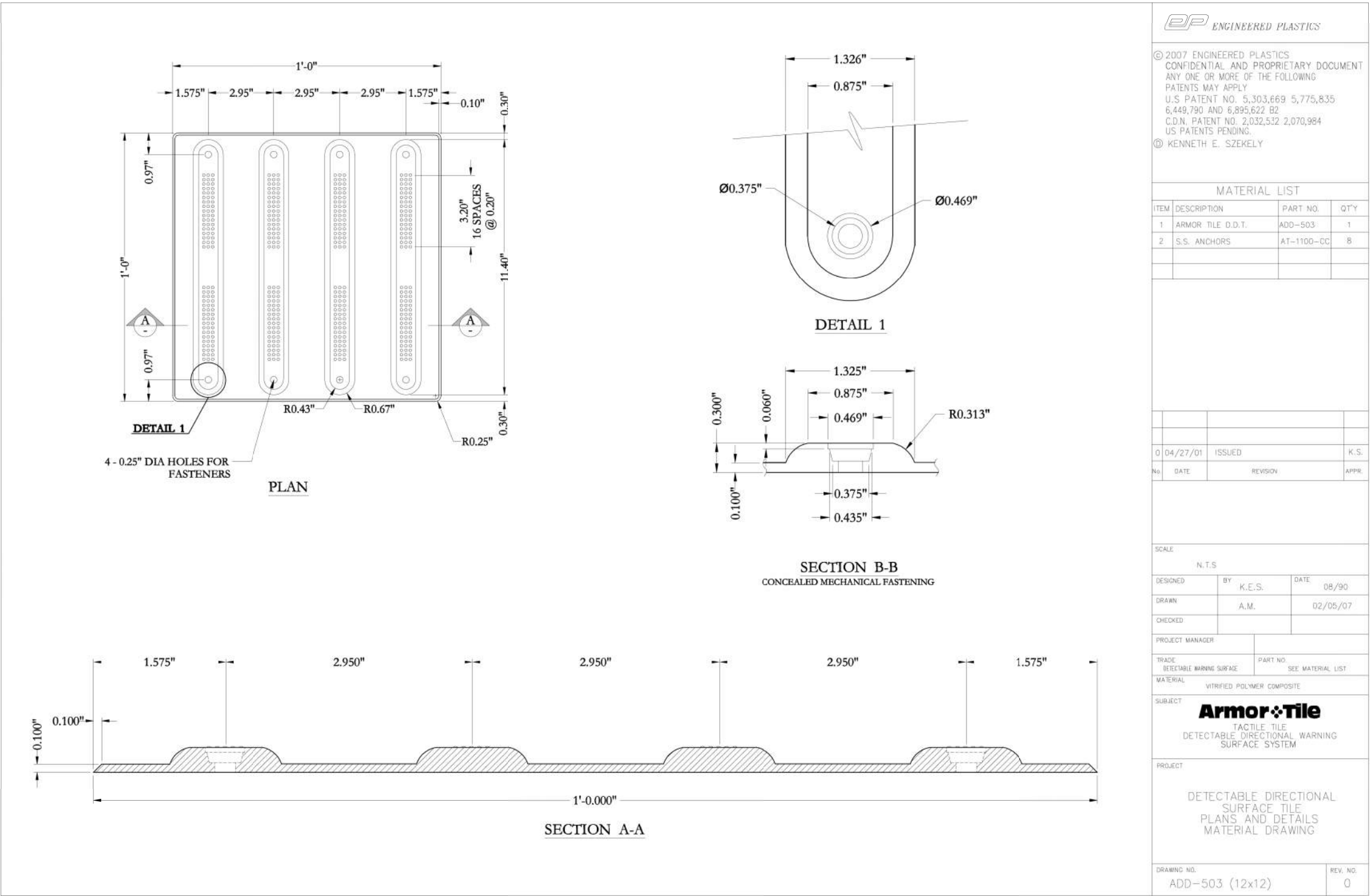
TEI **TRAFFIC ENGINEERS, INC.**
innovative transportation solutions
801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158



HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY
DRAWN BY: GB
CK'D BY: JL
SCALE: NONE
DATE: 4/12/2019
SHEET DESCRIPTION: DETECTABLE WARNING DETAILS
APPROVED BY:

SHEET NO:
217



EP ENGINEERED PLASTICS

© 2007 ENGINEERED PLASTICS
CONFIDENTIAL AND PROPRIETARY DOCUMENT
ANY ONE OR MORE OF THE FOLLOWING
PATENTS MAY APPLY
U.S. PATENT NO. 5,303,669 5,775,835
6,449,790 AND 6,895,622 B2
C.D.N. PATENT NO. 2,032,532 2,070,984
US PATENTS PENDING.
© KENNETH E. SZEKELY

MATERIAL LIST

ITEM	DESCRIPTION	PART NO.	QTY
1	ARMOR TILE D.D.T.	ADD-503	1
2	S.S. ANCHORS	AT-1100-CC	8

NO.	DATE	REVISION	APPR.
0	04/27/01	ISSUED	K.S.

SCALE

N.T.S.

DESIGNED	BY	K.E.S.	DATE	08/90
DRAWN		A.M.		02/05/07
CHECKED				

PROJECT MANAGER

TRADE	PART NO.
DETECTABLE WARNING SURFACE	SEE MATERIAL LIST

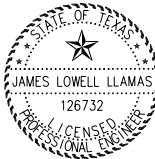
MATERIAL VITRIFIED POLYMER COMPOSITE

ArmorTile
TACTILE TILE
DETECTABLE DIRECTIONAL WARNING
SURFACE SYSTEM

PROJECT

DETECTABLE DIRECTIONAL
SURFACE TILE
PLANS AND DETAILS
MATERIAL DRAWING

DRAWING NO.	REV. NO.
ADD-503 (12x12)	0



04/12/2019

NO.	REVISIONS	DATE	NAME

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TBPE Registration No. F-3158



HARRIS COUNTY
ENGINEERING DEPARTMENT

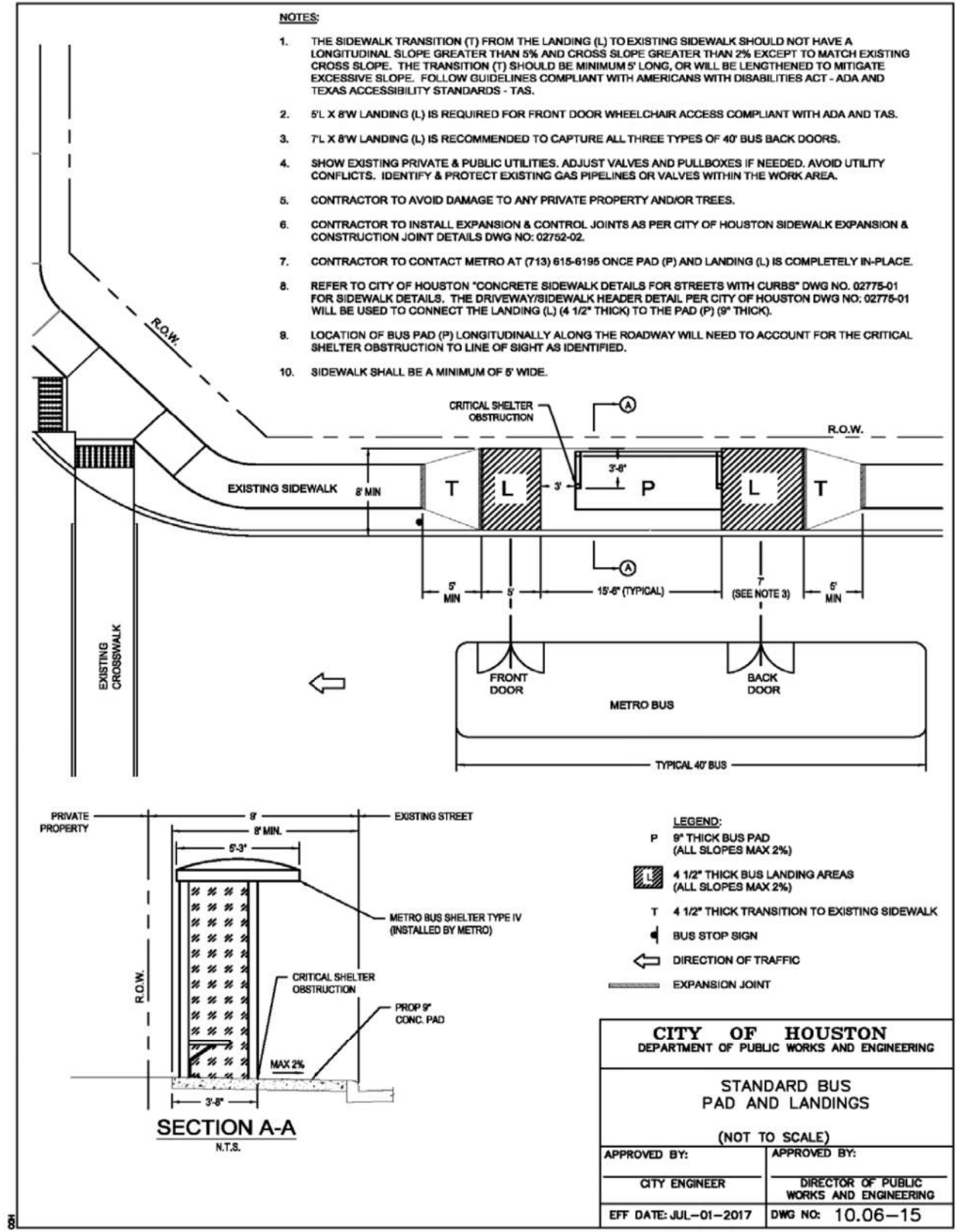
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DRAWN BY:	GB
CK'D BY:	JL
SCALE:	NONE
DATE:	4/12/2019
SHEET DESCRIPTION:	DIRECTIONAL TACTILE SURFACE-APPLIED
DETAIL	
APPROVED BY:	

SHEET NO:
218

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CITY OF HOUSTON
Department of Public Works & Engineering

DESIGN MANUAL
Street Paving Design Requirements



10-60
07-01-2017

NO.	REVISIONS	DATE	NAME

TRAFFIC ENGINEERS, INC.
innovative transportation solutions

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TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158

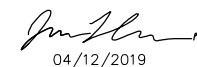
HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: METRO BUS STOP DETAIL
CK'D BY: JL	SHEET 1 OF 2
SCALE: NONE	
DATE: 4/12/2019	APPROVED BY:

	SHEET NO: 219
--	------------------



1. SEE SITE PLAN FOR VALUES OF 'A' AND 'B'.
2. US 1" CHAMFER STRIP AROUND EXPOSED EDGES OF RETAINING WALL.
3. FOR THICKNESS SEE SPECIFIC SITE DRAWING.



NO.	REVISIONS	DATE	NAME



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TBPE Registration No. F-3158



HARRIS COUNTY ENGINEERING DEPARTMENT

PROJECT TITLE:	POLK STREET ON-STREET BIKEWAY
----------------	-------------------------------

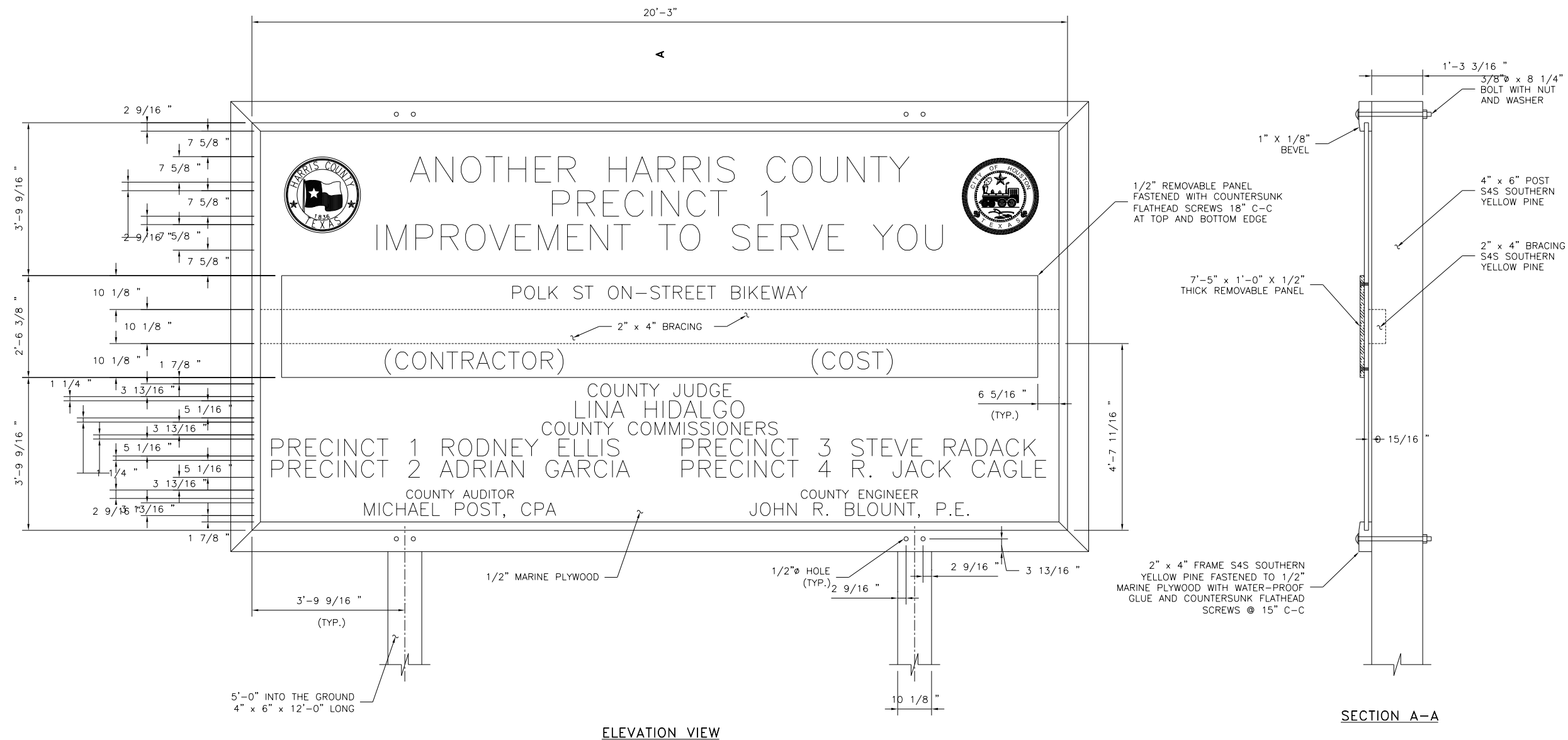
DRAWN BY: GB	SHEET DESCRIPTION: METRO BUS STOP DETAIL
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CK'D BY: JL	SHEET 2 OF 2
----------------	--------------

SCALE:	
NONE	



DATE:	APPROVED BY
4/12/2019	


SHEET NO: 220



GENERAL NOTES:

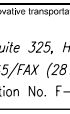
1. THE SIGN SHALL HAVE BLACK LETTERS WITH WHITE BACKGROUND.
2. SIGN SHALL BE MOUNTED ON 4" x 6" POSTS AND LOCATED BY THE ENGINEER.
3. REMOVABLE PANEL SHALL BE 1/2" MARINE PLYWOOD.
4. ALL BOLTS, SCREWS, NAILS, NUTS AND WASHERS SHALL BE GALVANIZED OR CADMIUM PLATED.
5. ALL POST SHALL BE GALVANIZED OR PENTACHLOROPHENOL TREATED.
6. ALL WOOD SURFACES SHALL HAVE PRIME COAT AND TWO (2) COATS OF SHERWIN-WILLIAMS KEM-LUSTRA ENAMEL OR EQUAL.

 <div style="display: inline-block; text-align: right; vertical-align: middle;">  04/12/2019 </div>			
NO.	REVISIONS	DATE	NAME



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innovative transportation solutions

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 TBPE Registration No. F-3158

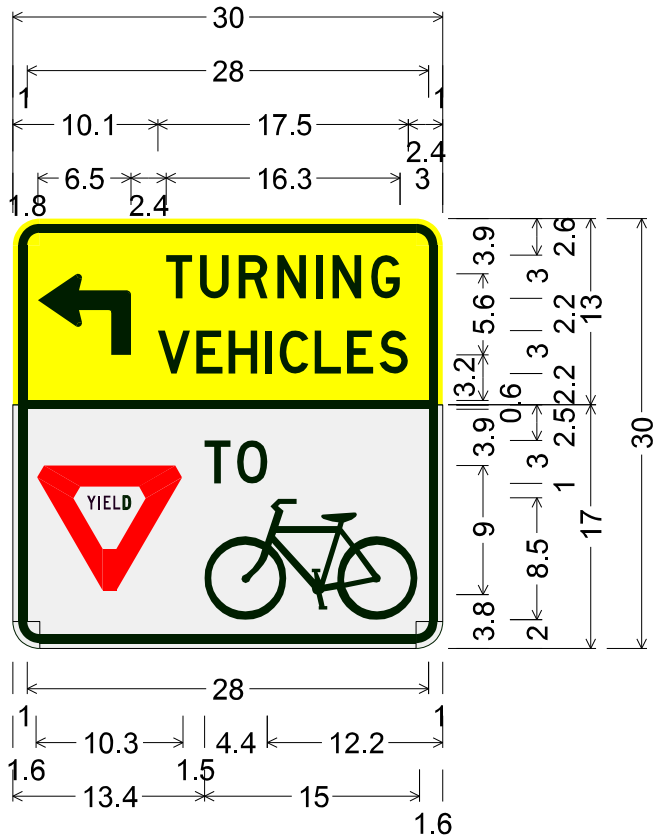


HARRIS COUNTY

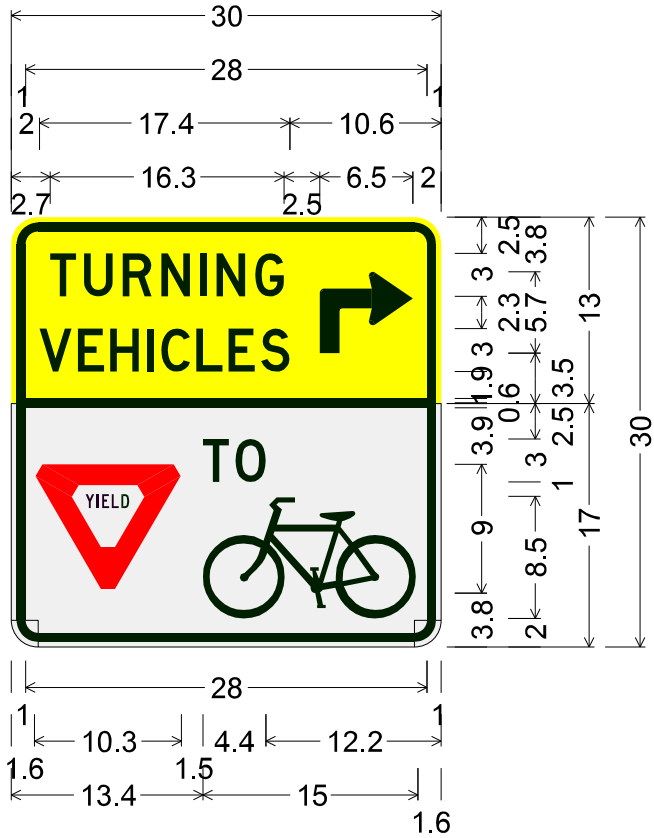
ENGINEERING DEPARTMENT

PROJECT TITLE:	
POLK STREET ON-STREET BIKEWAY	
DRAWN BY:	SHEET DESCRIPTION:
GB	PROJECT SIGN DETAIL
CK'D BY:	
JL	
SCALE:	
NONE	
DATE:	APPROVED BY:
4/12/2019	

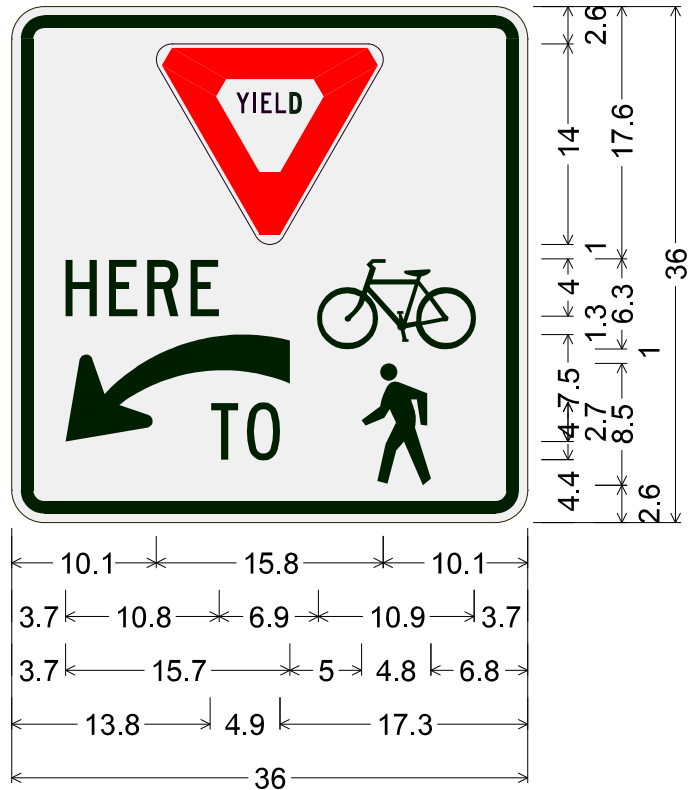
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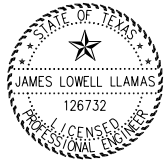
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90 Deg Advance Turn Arrow Custom 6.5" X 5.7";
[TURNING] D specified length;
[VEHICLES] D specified length;
1.9" Radius, 0.6" Border, 0.4" Indent, Black on White;
[TO] D specified length;
Symbol RG025;



Identifier : R10-15R(BIKE)(MOD);
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[TURNING] D specified length;
[VEHICLES] D specified length;
90 Deg Advance Turn Arrow Custom 6.5" X 5.7";
1.9" Radius, 0.6" Border, 0.4" Indent, Black on White;
[TO] D specified length;
Symbol RG025;



Identifier : R1-5L(BIKE)(MOD);
2.3" Radius, 0.9" Border, 0.6" Indent, Black on White;
[HERE] C specified length;
[TO] C specified length;
Symbol RG025 White;



Signature of James Lowell Llamas
04/12/2019

NO.	REVISIONS	DATE	NAME



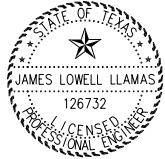
801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158

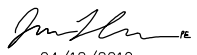


HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: SPECIAL SIGN DETAILS
CK'D BY: JL	SHEET 1 OF 2
SCALE: NONE	
DATE: 4/12/2019	APPROVED BY:
	SHEET NO: 222









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TBPE Registration No. F-3158

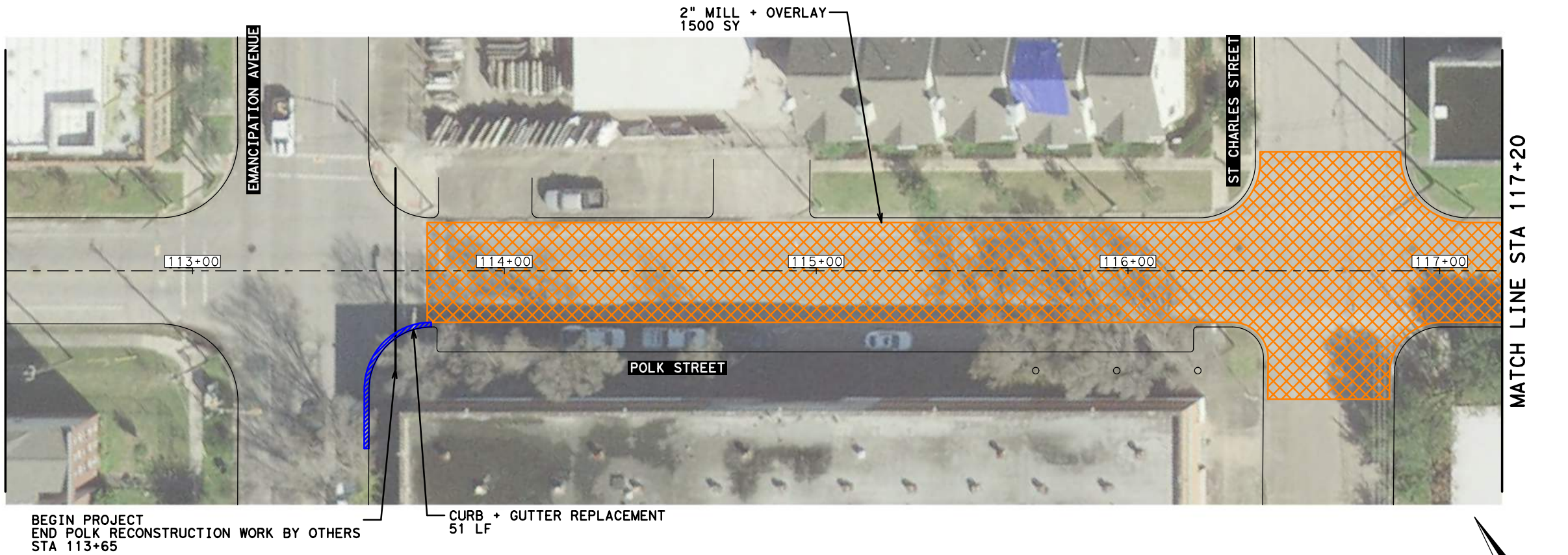


HARRIS COUNTY
ENGINEERING DEPARTMENT

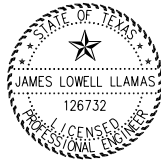
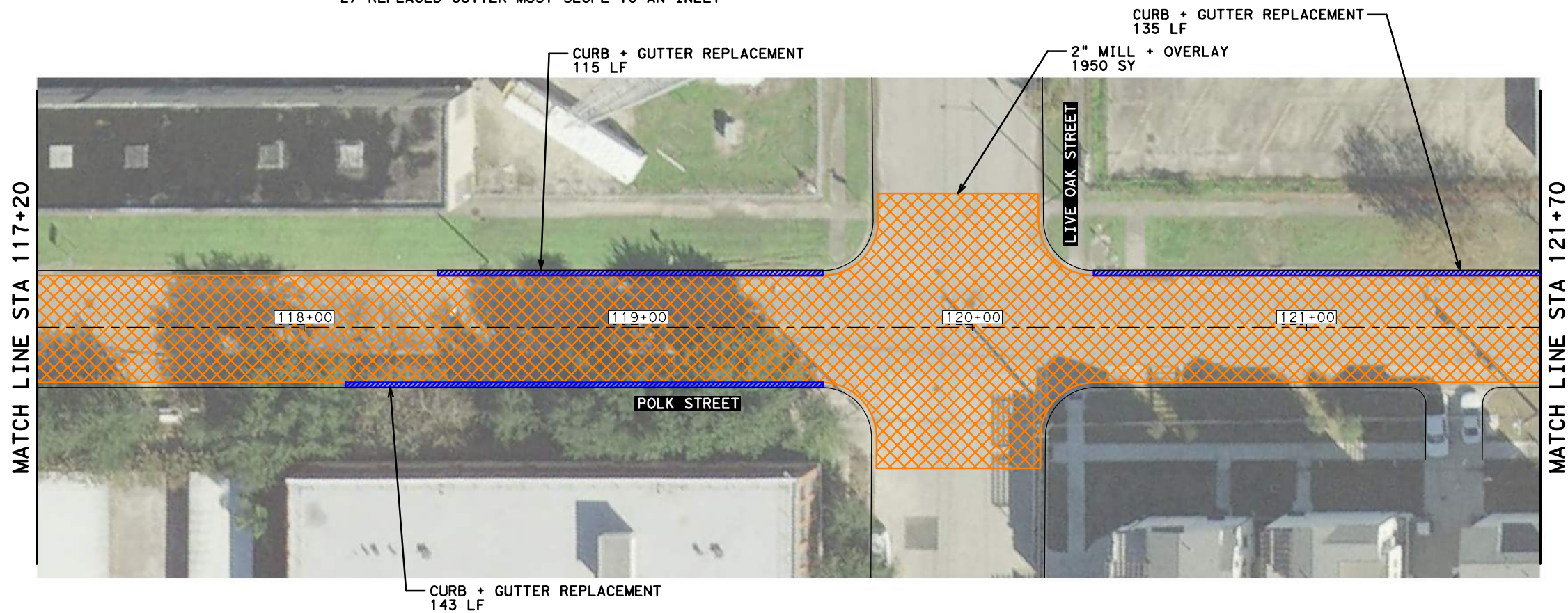
PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: SPECIAL SIGN DETAILS
CK'D BY: JL	SHEET 2 OF 2
SCALE: NONE	
DATE: 4/12/2019	APPROVED BY:

SHEET NO:
223

DATE: 4/12/2019 12:51:47 PM USER: /USER/ FILE: E:\Dropbox (Traffic Engineers)\Clients\Harris County\Precinct 1 Design 2018\Bikeways\04 Polk Cul len\Design\300 Polk Repair Plan 1 of 8.dgn



- NOTES:
1) SEE SHEET 103 - GENERAL NOTES
2) REPLACED GUTTER MUST SLOPE TO AN INLET



James Lowell Llamas
04/12/2019

NO.	REVISIONS	DATE	NAME



801 Congress Avenue, Suite 325, Houston, TX 77002
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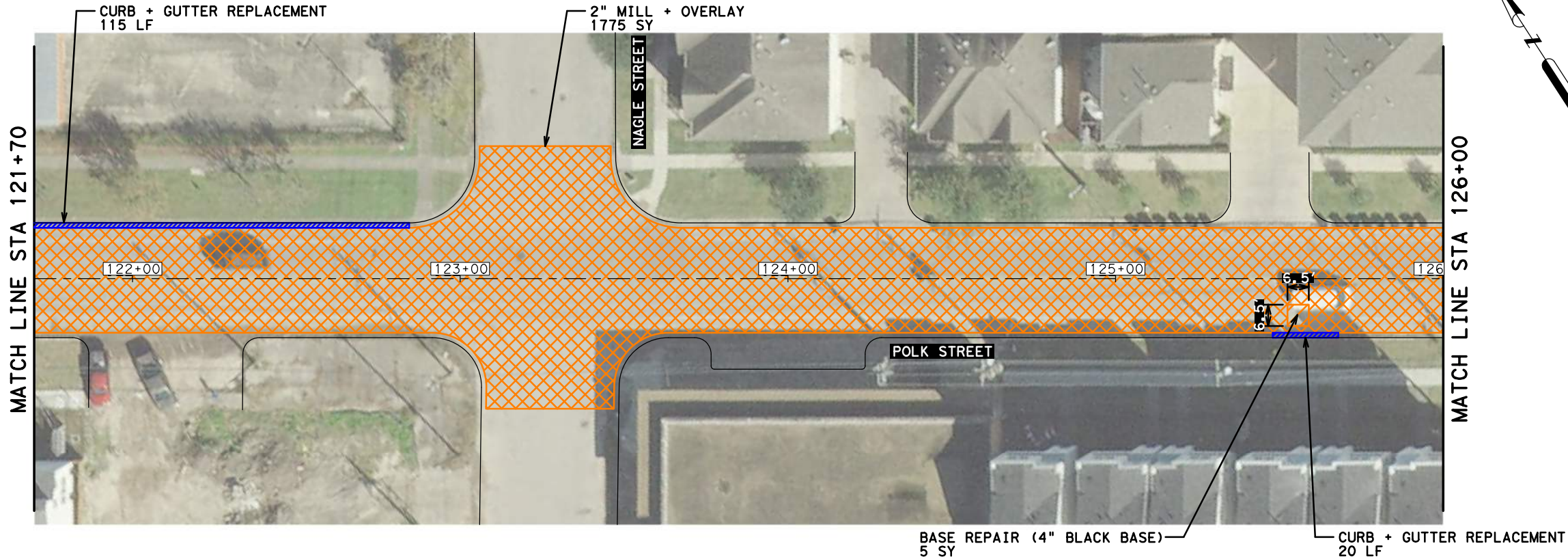
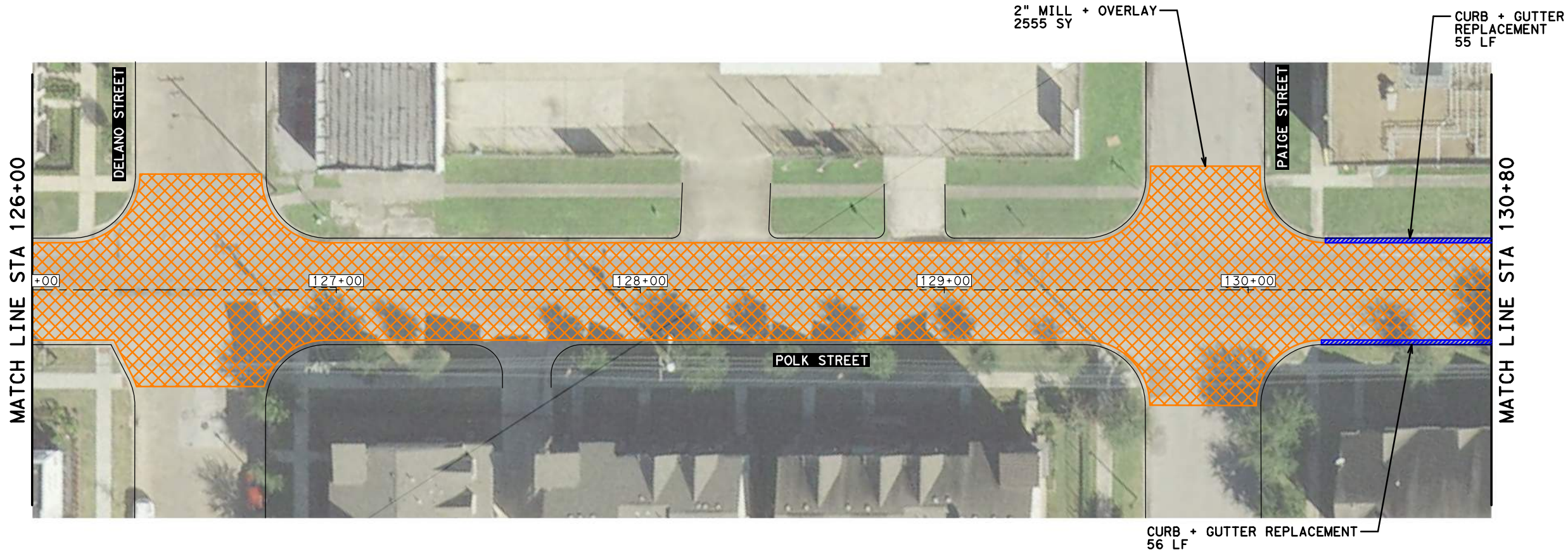


HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: PAVEMENT REPAIR + REMOVAL LAYOUT
CK'D BY: JL	SHEET 1 OF 8
SCALE: 1"=40'	
DATE: 4/12/2019	APPROVED BY:

SHEET NO:
300

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- NOTES:
1) SEE SHEET 103 - GENERAL NOTES
2) REPLACED GUTTERS MUST SLOPE TOWARD AN INLET



04/12/2019

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innovative transportation solutions
801 Congress Avenue, Suite 325, Houston, TX 77002
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TBPE Registration No. F-3158

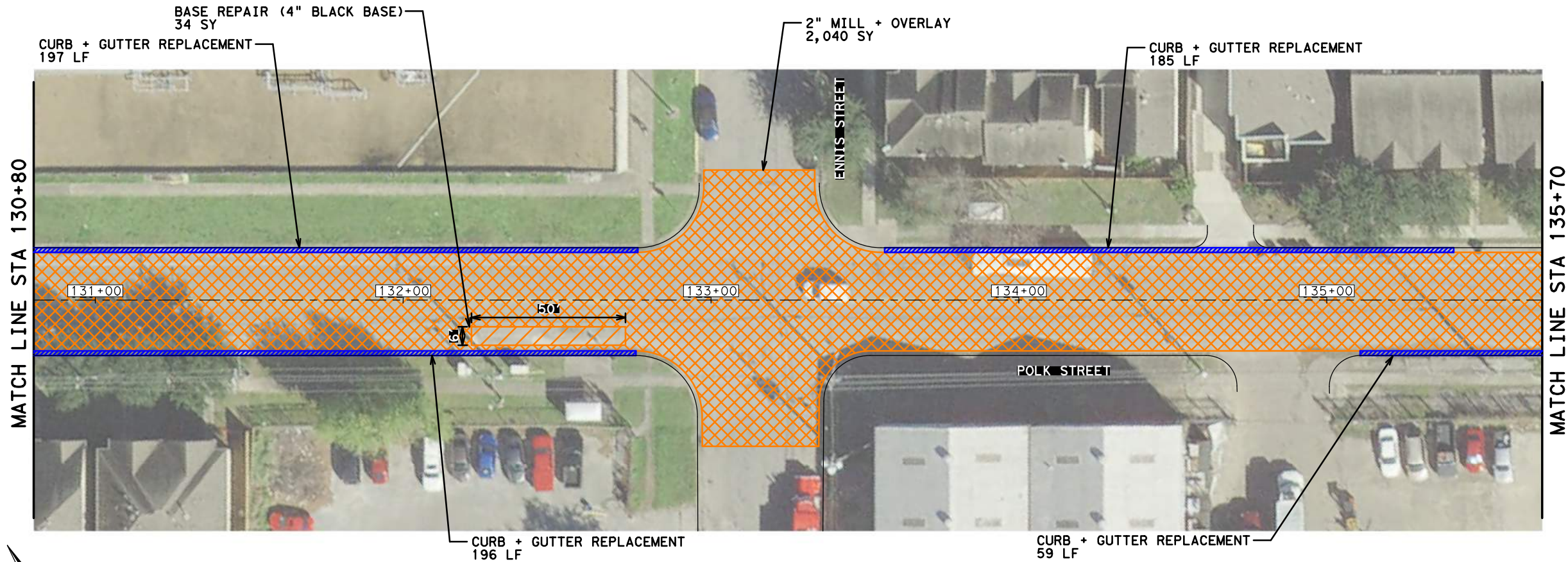


HARRIS COUNTY
ENGINEERING DEPARTMENT

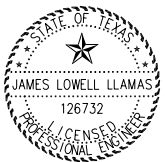
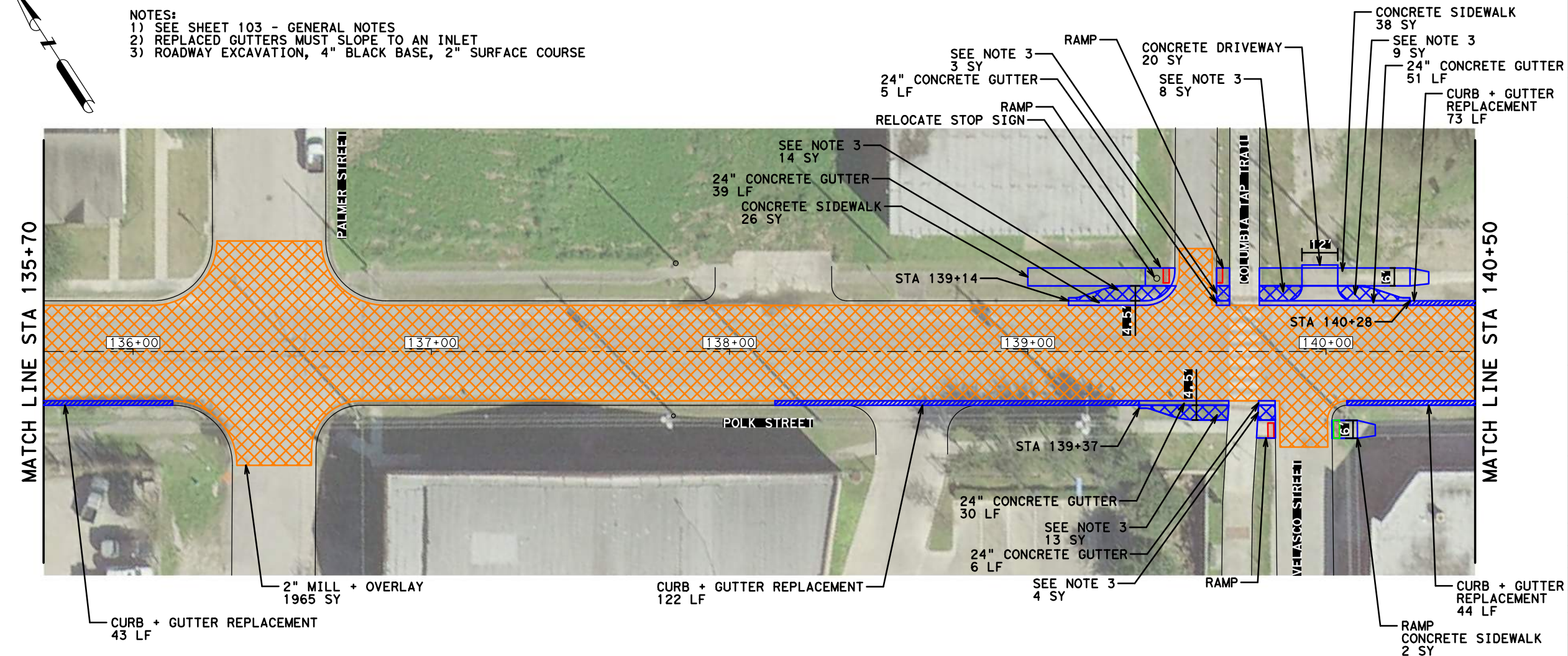
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DRAWN BY:	GB
CK'D BY:	JL
SCALE:	1"=40'
DATE:	4/12/2019
SHEET DESCRIPTION:	PAVEMENT REPAIR + REMOVAL LAYOUT
SHEET 2 OF 8	
APPROVED BY:	

SHEET NO:
301

DATE: 4/12/2019 12:52:01 PM USER: USER/ FILE: E:\Dropbox (Traffic Engineers)\Clients\Harris County\Precinct 1 Design 2018\Bikeways\04 Polk Cul len\Design\302 Polk Repair Plan 3 of 8.dgn



- NOTES:
- 1) SEE SHEET 103 - GENERAL NOTES
 - 2) REPLACED GUTTERS MUST SLOPE TO AN INLET
 - 3) ROADWAY EXCAVATION, 4" BLACK BASE, 2" SURFACE COURSE



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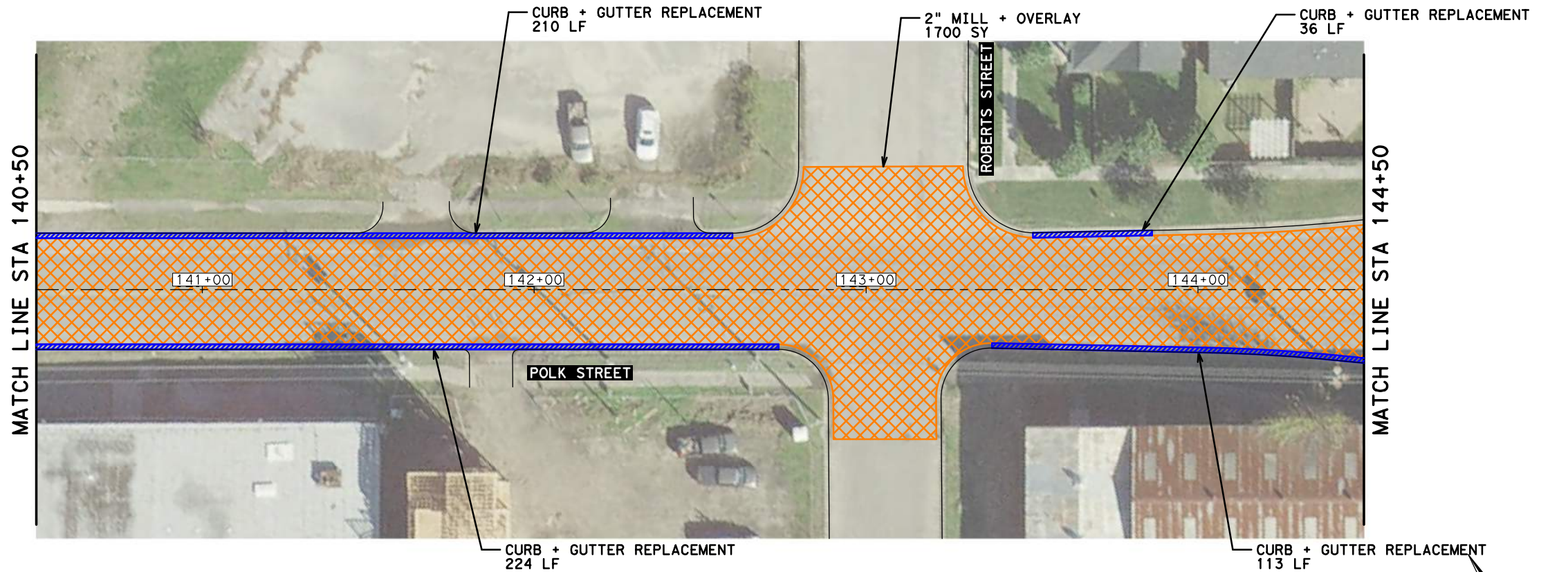
801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158



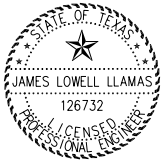
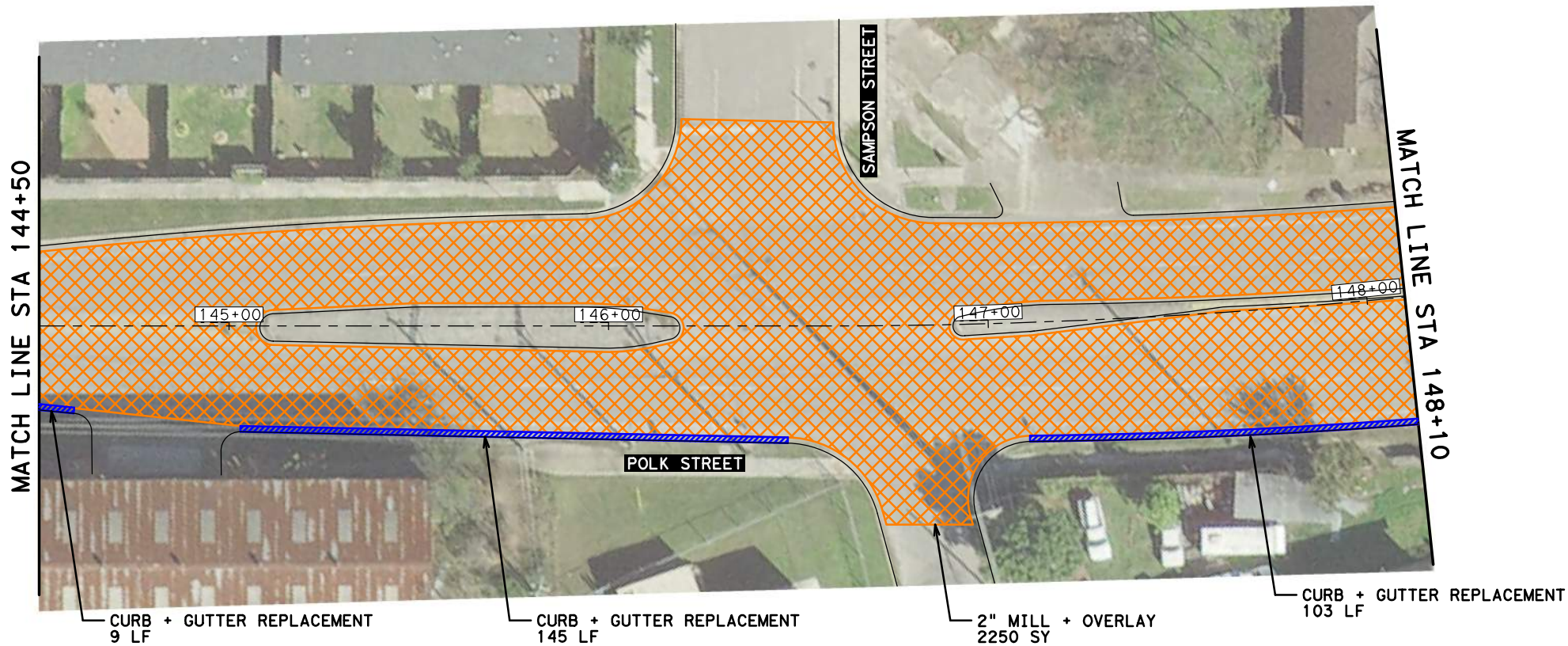
HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE:	POLK STREET ON-STREET BIKEWAY
DRAWN BY:	GB
CK'D BY:	JL
SCALE:	1" = 40'
DATE:	4/12/2019
APPROVED BY:	
SHEET NO:	302

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NOTES:
1) SEE SHEET 103 - GENERAL NOTES
2) REPLACED GUTTERS MUST SLOPE TO AN INLET



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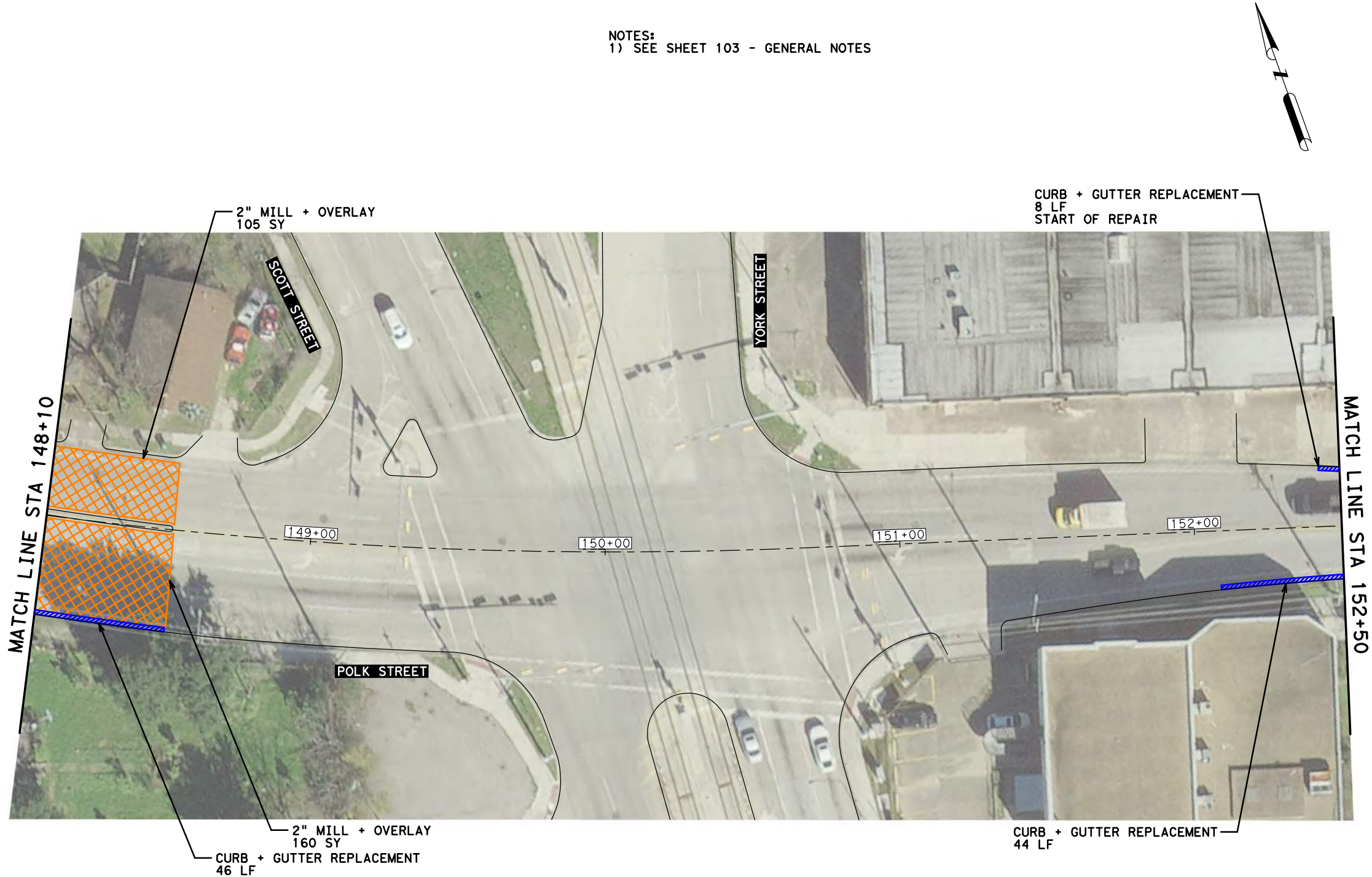
801 Congress Avenue, Suite 325, Houston, TX 77002
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TBPE Registration No. F-3158



HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: PAVEMENT REPAIR + REMOVAL LAYOUT
CK'D BY: JL	SHEET 4 OF 8
SCALE: 1"=40'	
DATE: 4/12/2019	APPROVED BY:
	SHEET NO: 303

DATE: 4/12/2019 12:52:16 PM USER: /USER/ FILE: E:\Dropbox (Traffic Engineers)\Clients\Harris County\Precinct 1 Design 2018\Bikeways\04 Polk Cul len\Design\304 Polk Repair Plan 5 of 8.dgn



James Lowell Llamas
04/12/2019

NO.	REVISIONS	DATE	NAME



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TBPE Registration No. F-3158

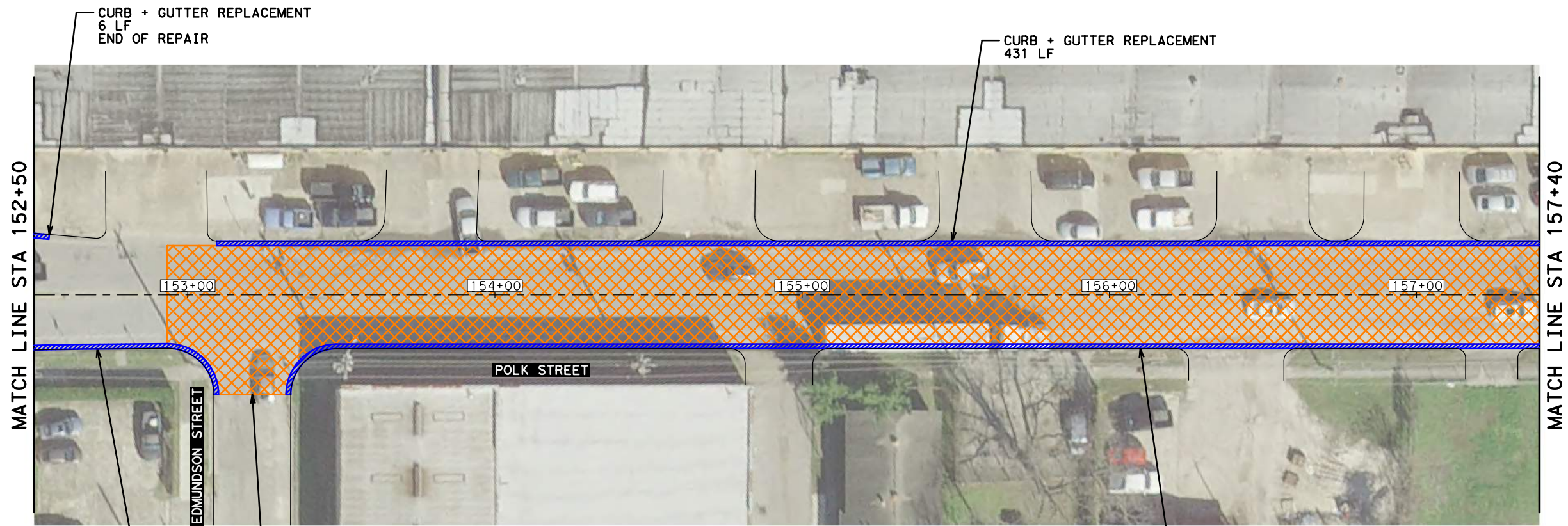


HARRIS COUNTY
ENGINEERING DEPARTMENT

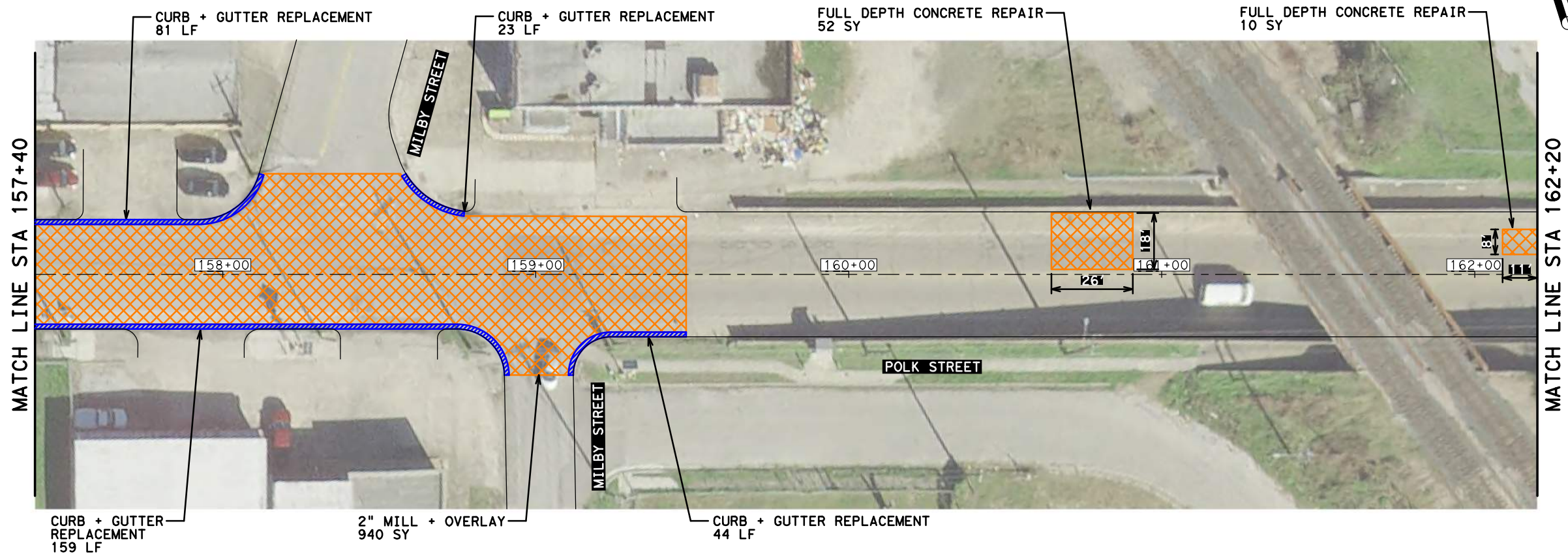
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DRAWN BY: GB	SHEET DESCRIPTION: PAVEMENT REPAIR + REMOVAL LAYOUT
CK'D BY: JL	SHEET 5 OF 8
SCALE: 1"=40'	
DATE: 4/12/2019	APPROVED BY:

SHEET NO:
304

DATE: 4/12/2019 12:52:21 PM USER: USER\ / DESIGN: 2018\Bikeways\04 Polk Cul len\Design\305 Polk Repair Plan 6 of 8.dgn



- NOTES:
1) SEE SHEET 103 - GENERAL NOTES
2) REPLACED GUTTERS MUST SLOPE TO AN INLET



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NO.	REVISIONS	DATE	NAME



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TBPE Registration No. F-3158

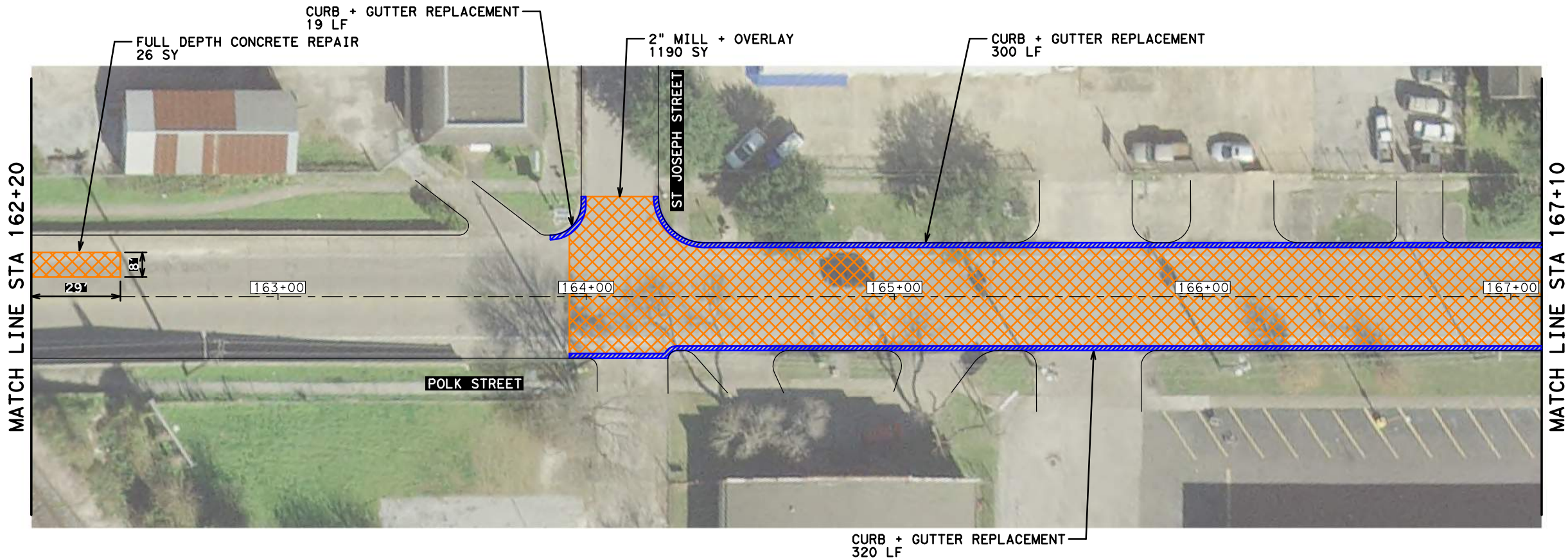


HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: PAVEMENT REPAIR + REMOVAL LAYOUT
CK'D BY: JL	SHEET 6 OF 8
SCALE: 1"=40'	
DATE: 4/12/2019	APPROVED BY:

SHEET NO:
305

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NOTES:
1) SEE SHEET 103 - GENERAL NOTES
2) REPLACED GUTTERS MUST SLOPE TO AN INLET



04/12/2019

NO.	REVISIONS	DATE	NAME



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TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158

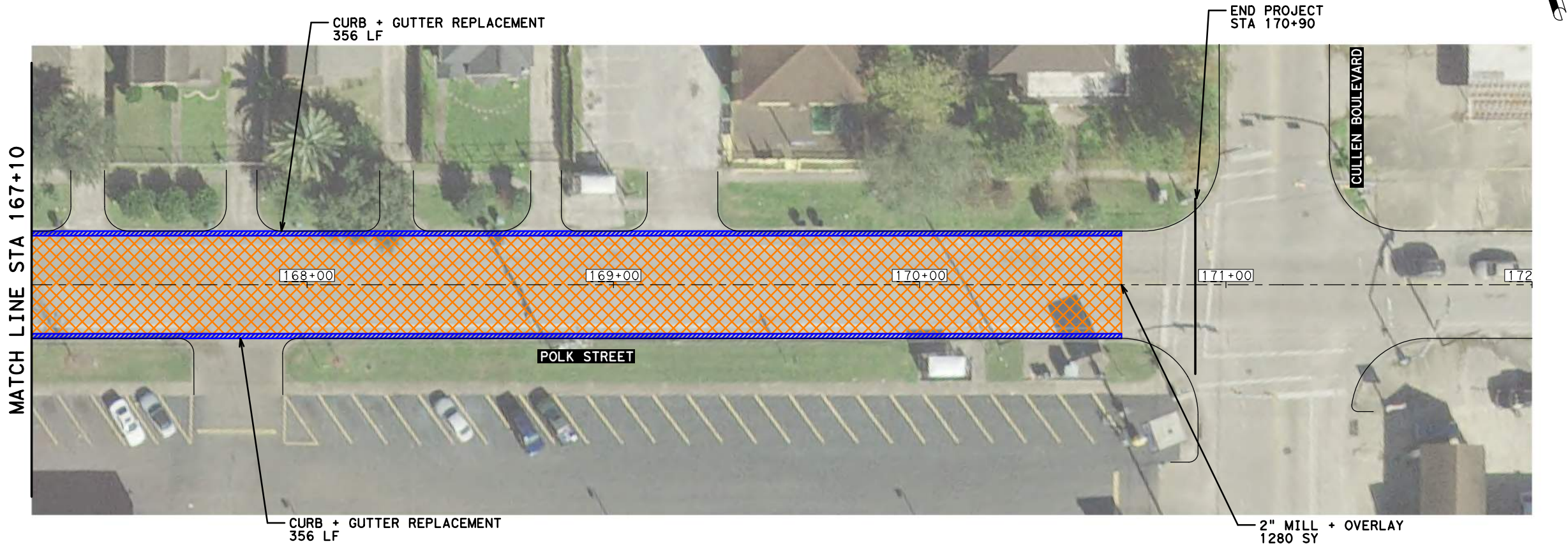


HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: PAVEMENT REPAIR + REMOVAL LAYOUT
CK'D BY: JL	SHEET 7 OF 8
SCALE: 1"=40'	
DATE: 4/12/2019	APPROVED BY:

SHEET NO:
306

DATE: 4/12/2019 12:52:33 PM USER: /USER/ FILE: E:\Dropbox (Traffic Engineers)\Clients\Harris County\Precinct 1 Design 2018\Bikeways\04 Polk Cul len\Design\307 Polk Repair Plan 8 of 8.dgn



- NOTES:
1) SEE SHEET 103 - GENERAL NOTES
2) REPLACED GUTTERS MUST SLOPE TO AN INLET



04/12/2019

NO.	REVISIONS	DATE	NAME



801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158



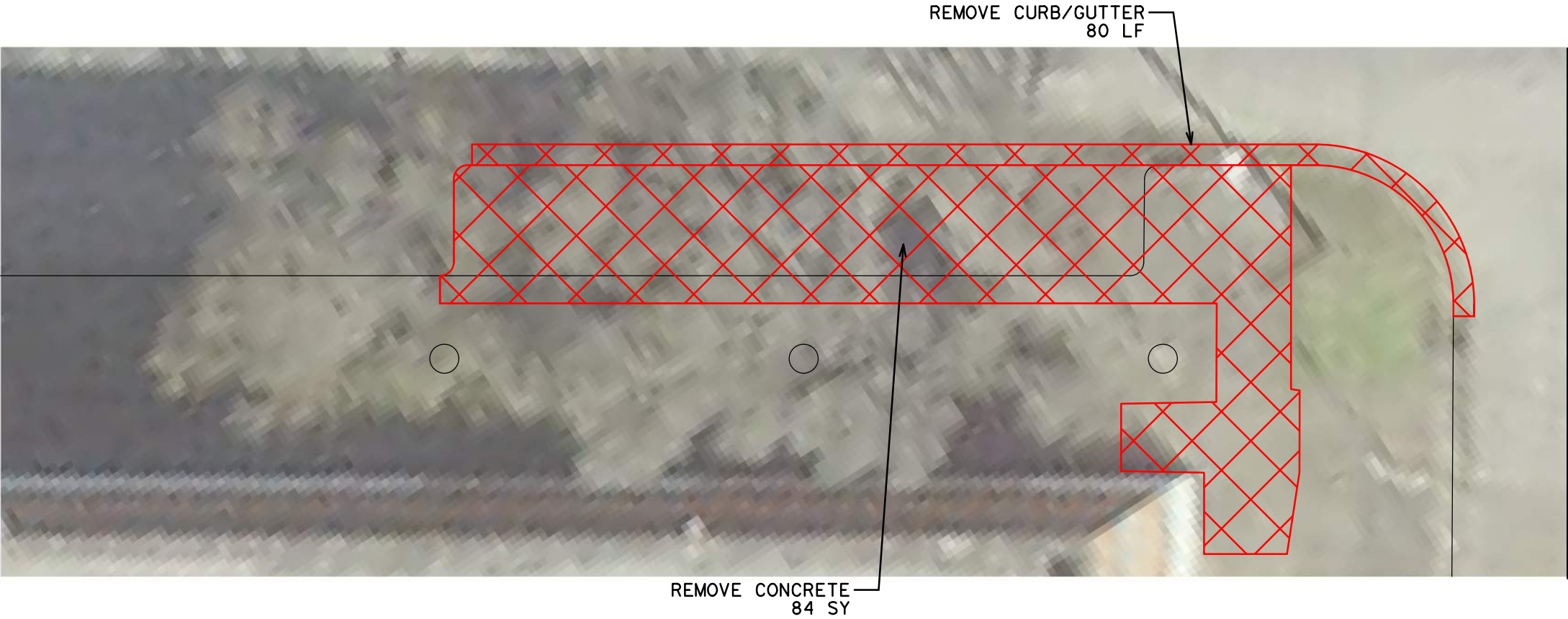
HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: PAVEMENT REPAIR + REMOVAL LAYOUT
CK'D BY: JL	SHEET 8 OF 8
SCALE: 1"=40'	
DATE: 4/12/2019	APPROVED BY:

SHEET NO:
307

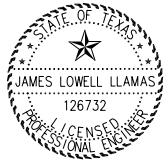
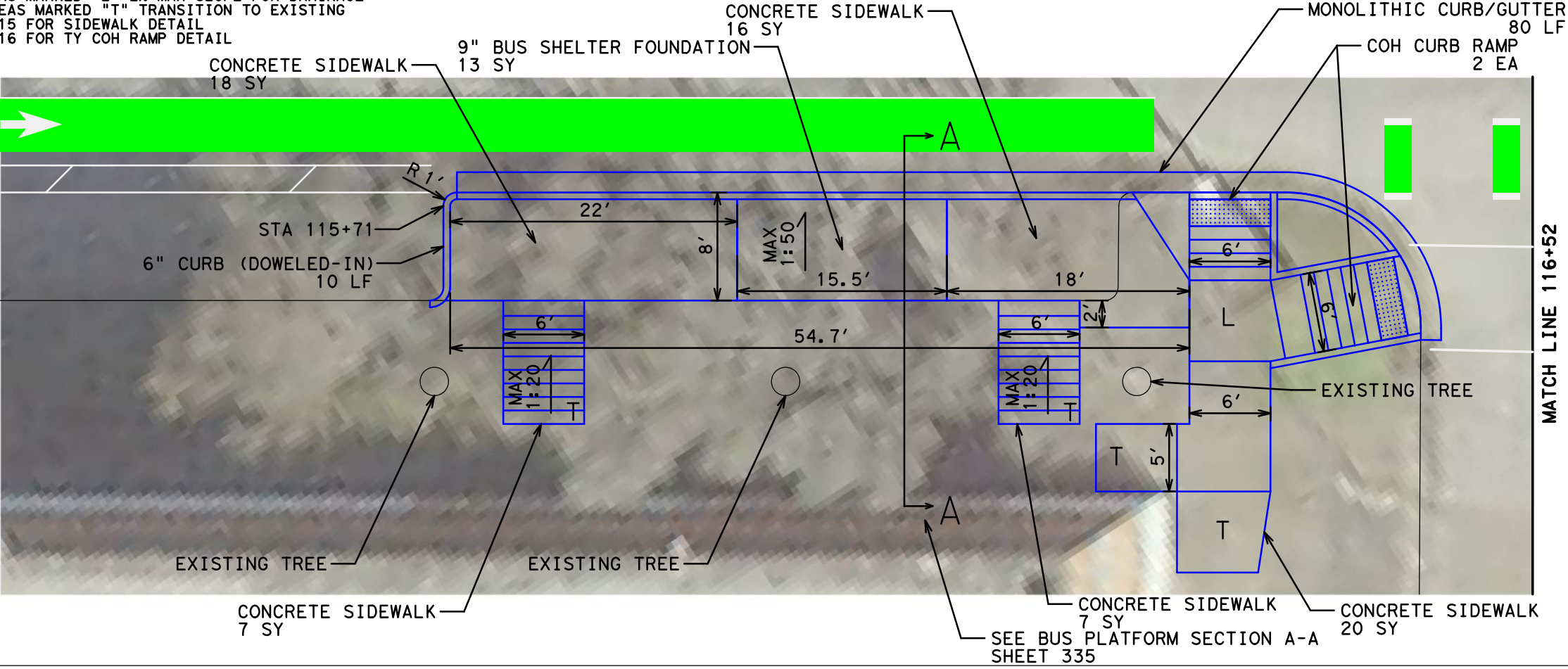
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CONCRETE REMOVAL



- NOTES:
1) LANDING AREAS MARKED "L" 2% MAX SLOPE FOR DRAINAGE
2) SIDEWALK AREAS MARKED "T" TRANSITION TO EXISTING
3) SEE SHEET 215 FOR SIDEWALK DETAIL
4) SEE SHEET 216 FOR TY COH RAMP DETAIL

PAVING



04/12/2019

NO.	REVISIONS	DATE	NAME



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TBPE Registration No. F-3158



HARRIS COUNTY
ENGINEERING DEPARTMENT

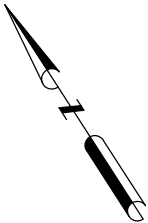
PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: POLK @ ST. CHARLES EB BUS STOP
CK'D BY: JL	
SCALE: 1"=10'	
DATE: 4/12/2019	APPROVED BY:
	SHEET NO: 308

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CONCRETE REMOVAL



PAVING



- NOTES:
- 1) LANDING AREAS MARKED "L" 2% MAX SLOPE FOR DRAINAGE
 - 2) SIDEWALK AREAS MARKED "T" TRANSITION TO EXISTING
 - 3) SEE SHEET 215 FOR SIDEWALK DETAIL
 - 4) SEE SHEET 216 FOR TY COH RAMP DETAIL



04/12/2019

NO.	REVISIONS	DATE	NAME



801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158

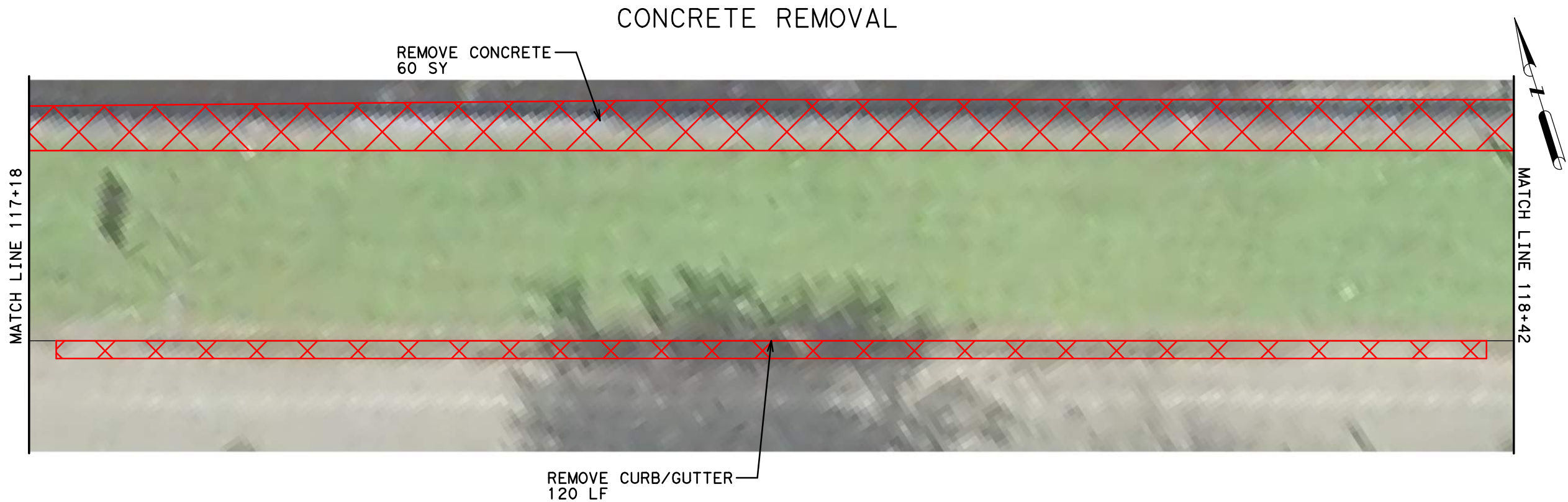


HARRIS COUNTY
ENGINEERING DEPARTMENT

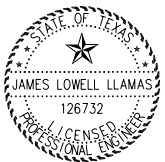
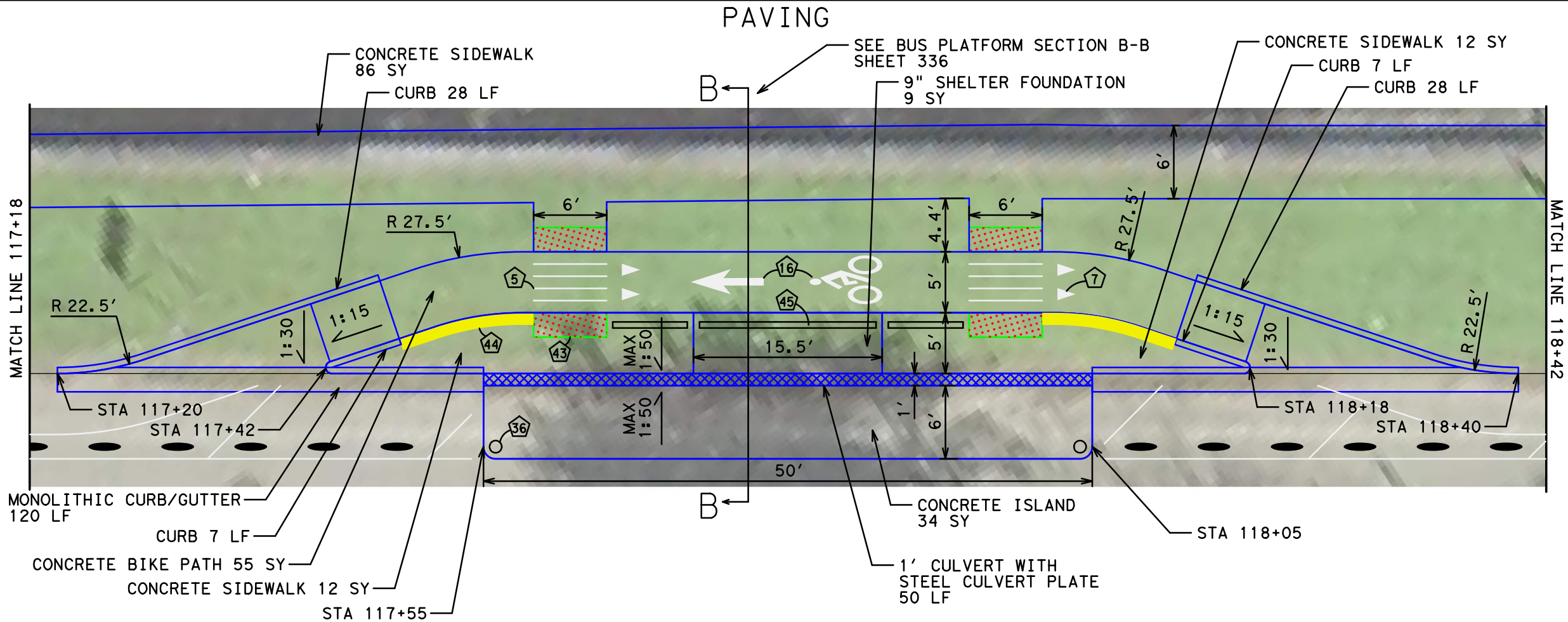
PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: POLK @ ST. CHARLES
CK'D BY: JL	CONCRETE REMOVAL & PAVING
SCALE: 1"=20'	
DATE: 4/12/2019	APPROVED BY:

SHEET NO:
309

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- NOTES:
- 1) LANDING AREAS MARKED "L" 2% MAX SLOPE FOR DRAINAGE
 - 2) SIDEWALK AREAS MARKED "T" TRANSITION TO EXISTING
 - 3) SEE SHEET 215 FOR SIDEWALK DETAIL
 - 4) SEE SHEET 216 FOR TY COH RAMP DETAIL
 - 5) SEE SHEET 208 - SIGNAGE AND PAVEMENT MARKING LEGEND



04/12/2019

NO.	REVISIONS	DATE	NAME

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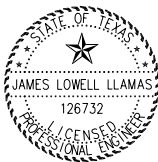
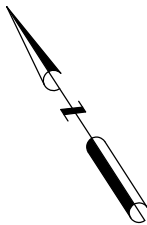
801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158



HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: POLK @ ST. CHARLES WB BUS STOP
CK'D BY: JL	
SCALE: 1"=10'	
DATE: 4/12/2019	APPROVED BY:

SHEET NO:
310



James Lowell Llamas
04/12/2019

NO.	REVISIONS	DATE	NAME



801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158



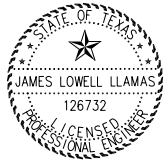
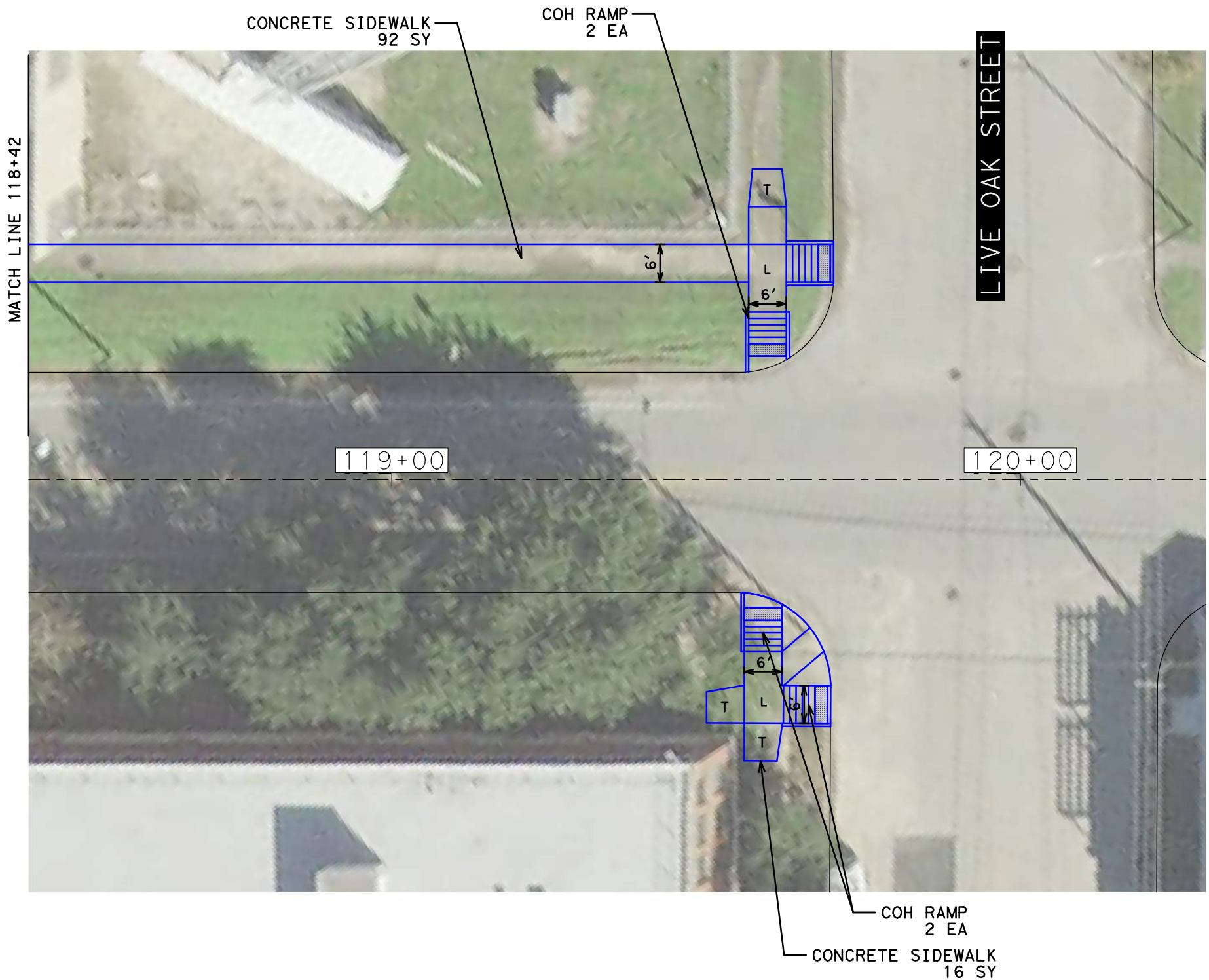
HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: POLK @ LIVE OAK
CK'D BY: JL	CONCRETE REMOVAL
SCALE: 1"=20'	
DATE: 4/12/2019	APPROVED BY:

SHEET NO:
311

DATE: 4/12/2019 12:52:54 PM USER: /USER/ PENTABLE: HC-Bikeways.tb1
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- NOTES:
1) LANDING AREAS MARKED "L" 2% MAX SLOPE FOR DRAINAGE
2) SIDEWALK AREAS MARKED "T" TRANSITION TO EXISTING
3) SEE SHEET 215 FOR SIDEWALK DETAIL
4) SEE SHEET 216 FOR TY COH RAMP DETAIL



James Lowell Llamas
04/12/2019

NO.	REVISIONS	DATE	NAME



801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158

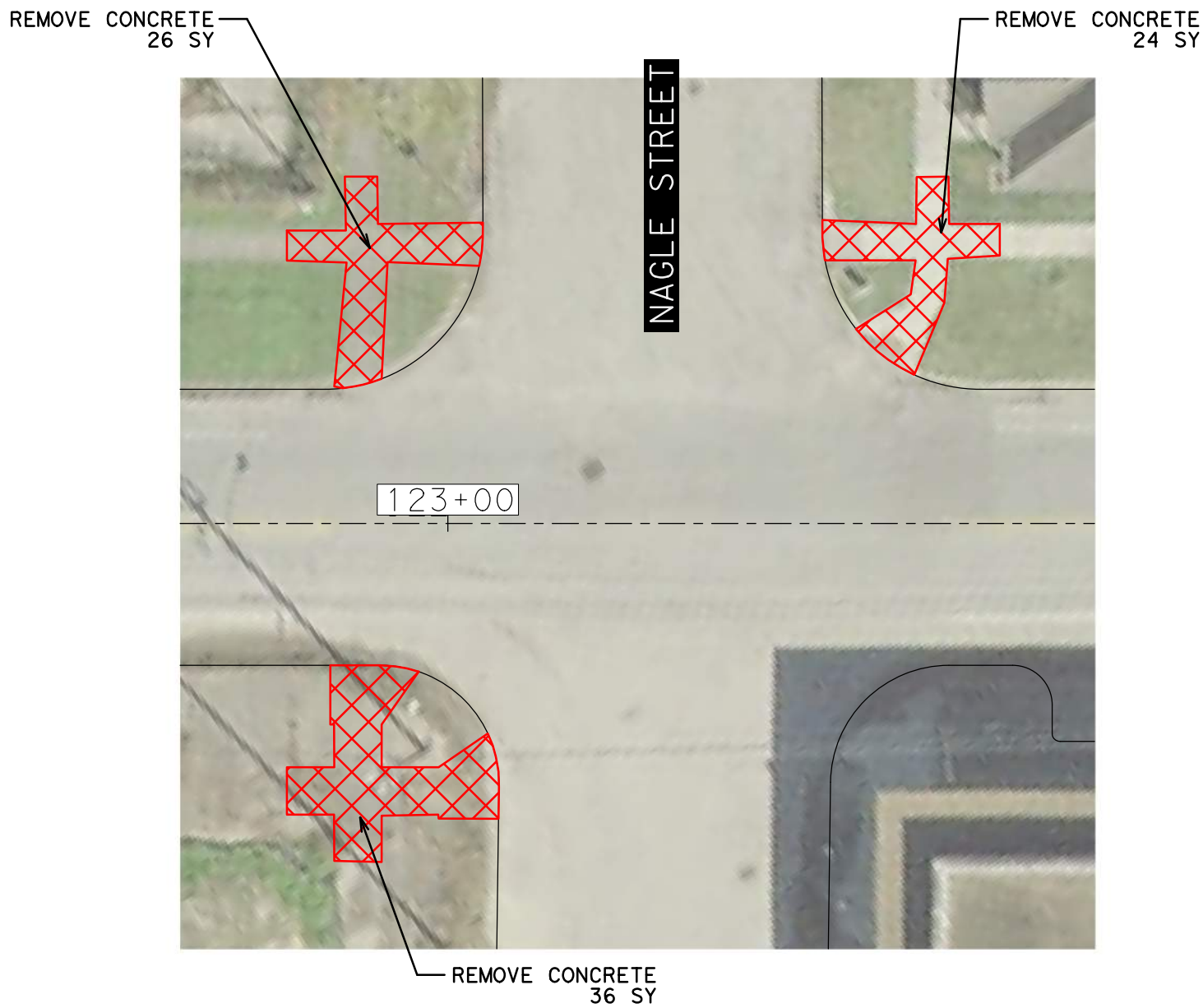


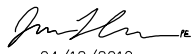
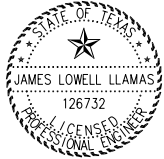
HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: POLK @ LIVE OAK
CK'D BY: JL	PAVING
SCALE: 1"=20'	
DATE: 4/12/2019	APPROVED BY:

SHEET NO:
312


DATE: 4/12/2019 12:52:57 PM USER: /USER/ PENTABLE: HC-Bikeways.tb1
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innovative transportation solutions

801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158

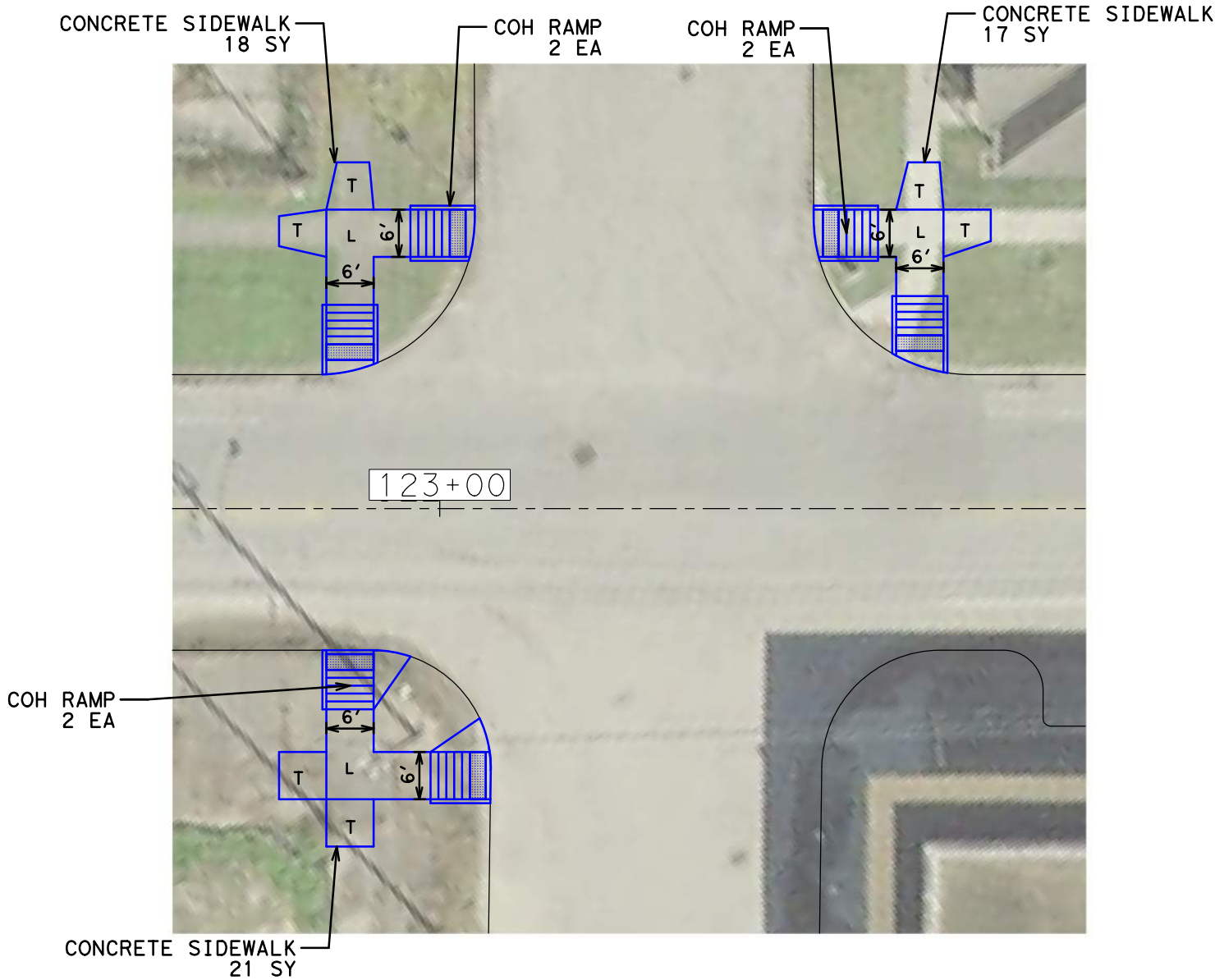
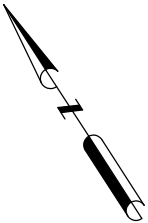


HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: POLK @ NAGLE
CK'D BY: JL	CONCRETE REMOVAL
SCALE: 1"=20'	
DATE: 4/12/2019	APPROVED BY:
SHEET NO: 313	

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- NOTES:
- 1) LANDING AREAS MARKED "L" 2% MAX SLOPE FOR DRAINAGE
 - 2) SIDEWALK AREAS MARKED "T" TRANSITION TO EXISTING
 - 3) SEE SHEET 215 FOR SIDEWALK DETAIL
 - 4) SEE SHEET 216 FOR TY COH RAMP DETAIL



James Lowell Llamas
04/12/2019

NO.	REVISIONS	DATE	NAME



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TEL (713) 270-8145/FAX (281) 809-0807
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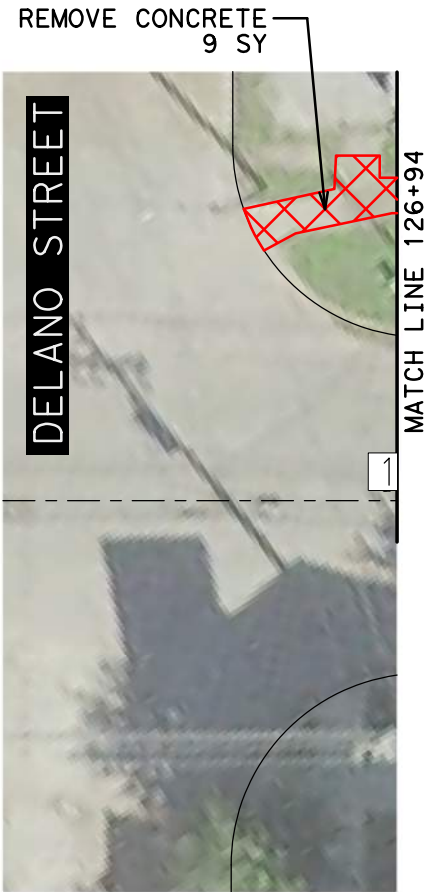
HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: POLK @ NAGLE
CK'D BY: JL	PAVING
SCALE: 1"=20'	
DATE: 4/12/2019	APPROVED BY:

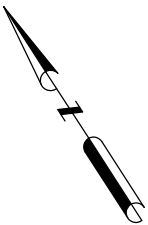
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314

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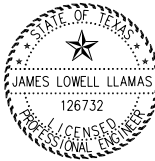
CONCRETE REMOVAL



PAVING



- NOTES:
1) LANDING AREAS MARKED "L" 2% MAX SLOPE FOR DRAINAGE
2) SIDEWALK AREAS MARKED "T" TRANSITION TO EXISTING
3) SEE SHEET 215 FOR SIDEWALK DETAIL
4) SEE SHEET 216 FOR TY COH RAMP DETAIL



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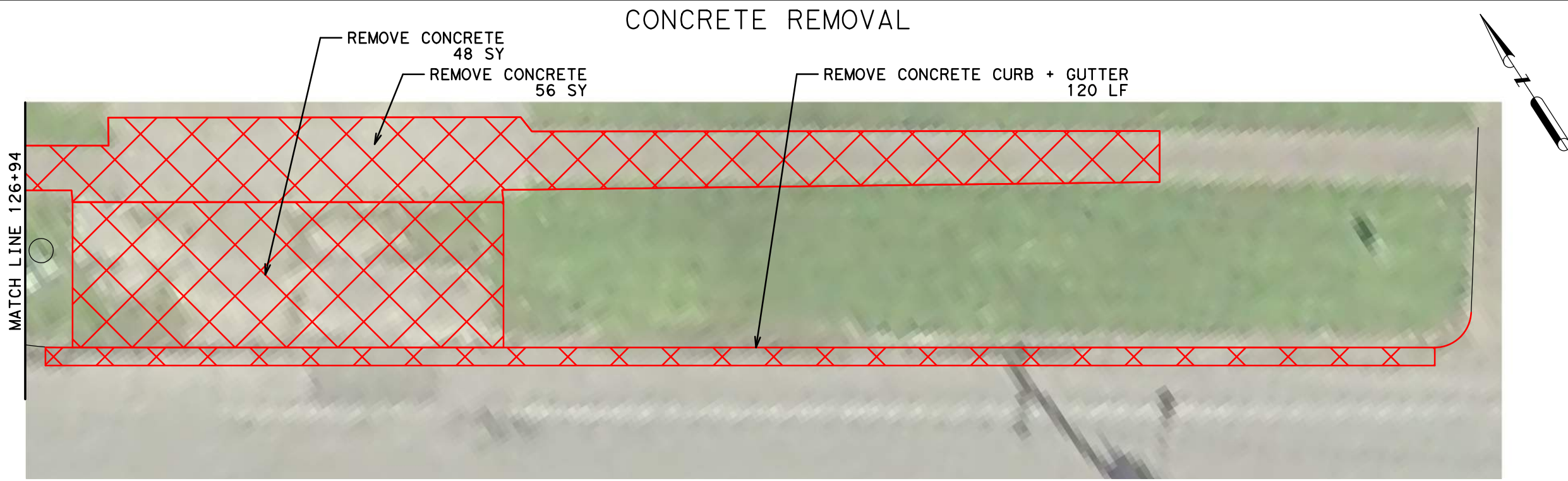


HARRIS COUNTY
ENGINEERING DEPARTMENT

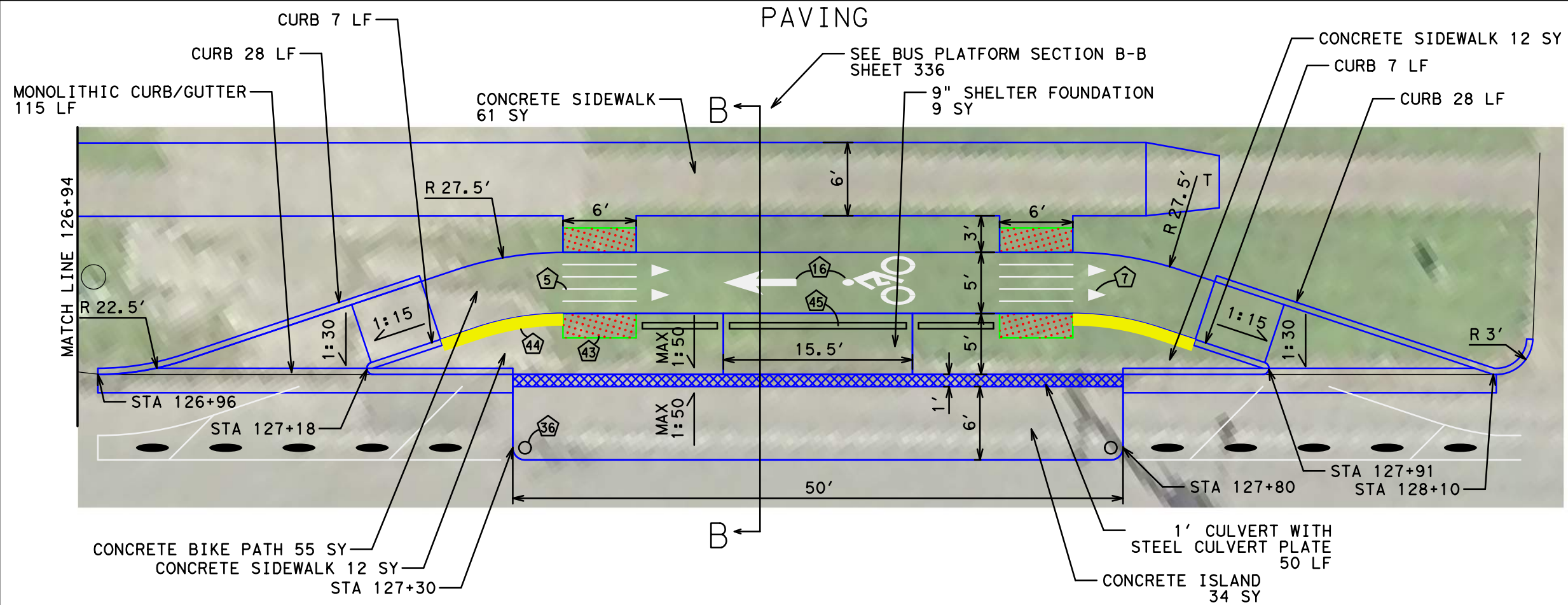
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DRAWN BY: GB	SHEET DESCRIPTION: POLK @ DELANO
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SCALE: 1"=20'	
DATE: 4/12/2019	APPROVED BY:

SHEET NO:
315

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- NOTES:
- 1) LANDING AREAS MARKED "L" 2% MAX SLOPE FOR DRAINAGE
 - 2) SIDEWALK AREAS MARKED "T" TRANSITION TO EXISTING
 - 3) SEE SHEET 215 FOR SIDEWALK DETAIL
 - 4) SEE SHEET 216 FOR TY COH RAMP DETAIL
 - 5) SEE SHEET 208 - SIGNAGE AND PAVEMENT MARKING LEGEND







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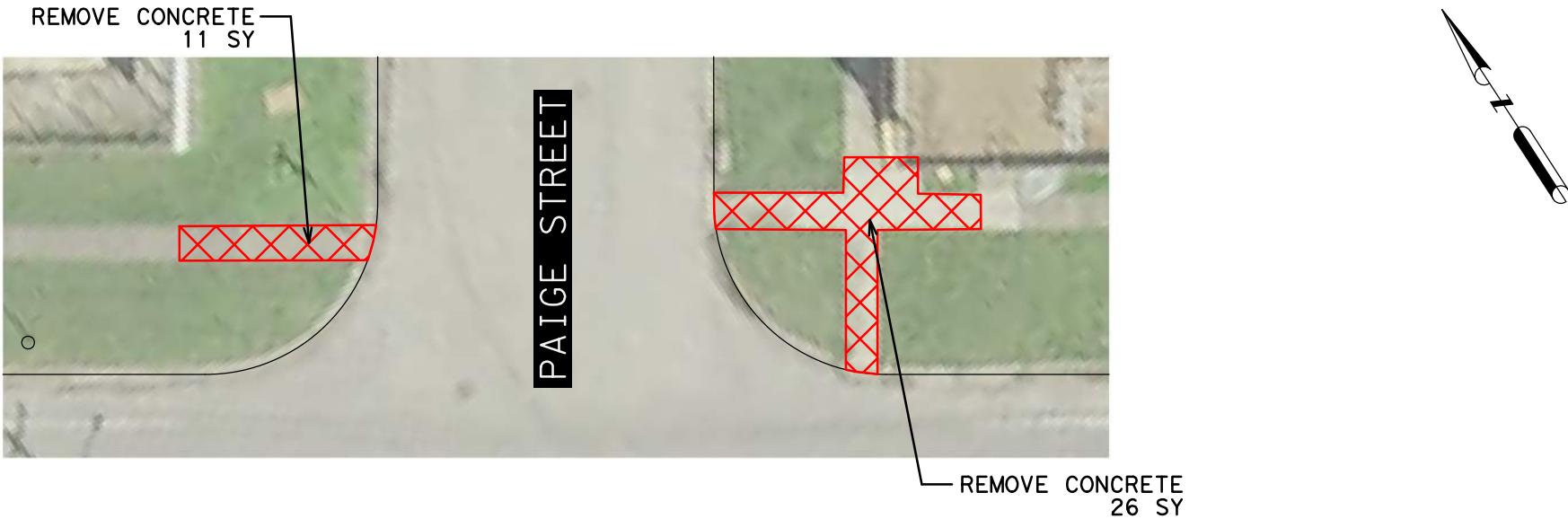
801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158



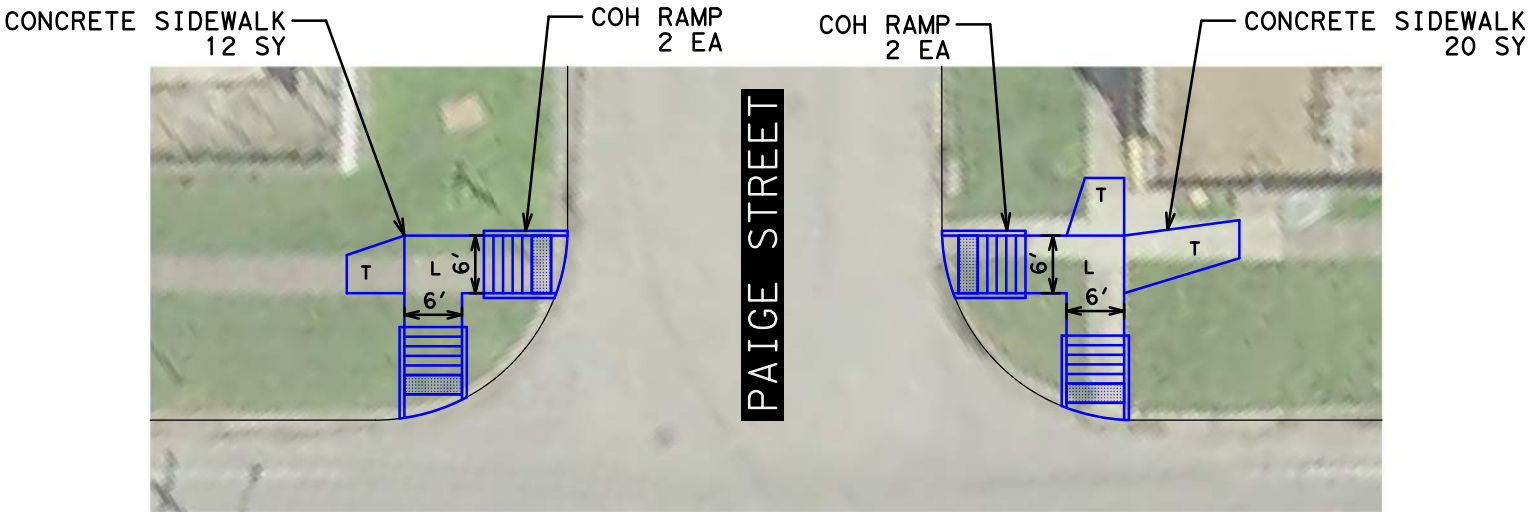
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DRAWN BY: GB	
SHEET DESCRIPTION: POLK @ DELANO WB BUS STOP	
CK'D BY: JL	
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DATE: 4/12/2019	APPROVED BY:
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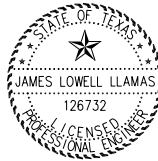
CONCRETE REMOVAL



PAVING



- NOTES:
- 1) LANDING AREAS MARKED "L" 2% MAX SLOPE FOR DRAINAGE
 - 2) SIDEWALK AREAS MARKED "T" TRANSITION TO EXISTING
 - 3) SEE SHEET 215 FOR SIDEWALK DETAIL
 - 4) SEE SHEET 216 FOR TY COH RAMP DETAIL



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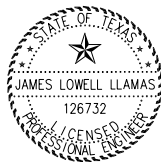
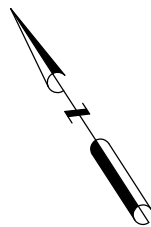
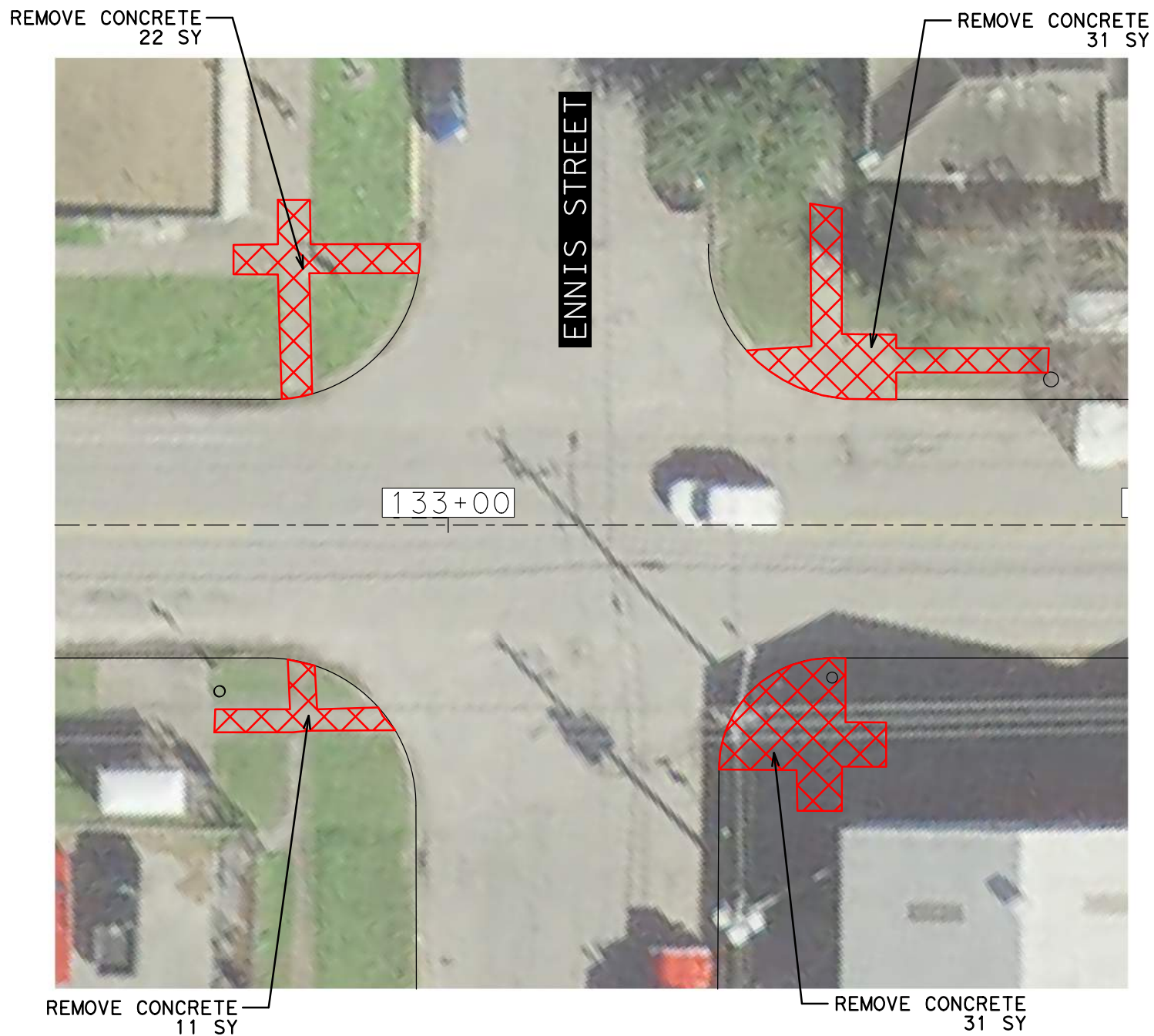
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TBPE Registration No. F-3158



HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: POLK @ PAIGE
CK'D BY: JL	CONCRETE REMOVAL & PAVING
SCALE: 1"=20'	
DATE: 4/12/2019	APPROVED BY:
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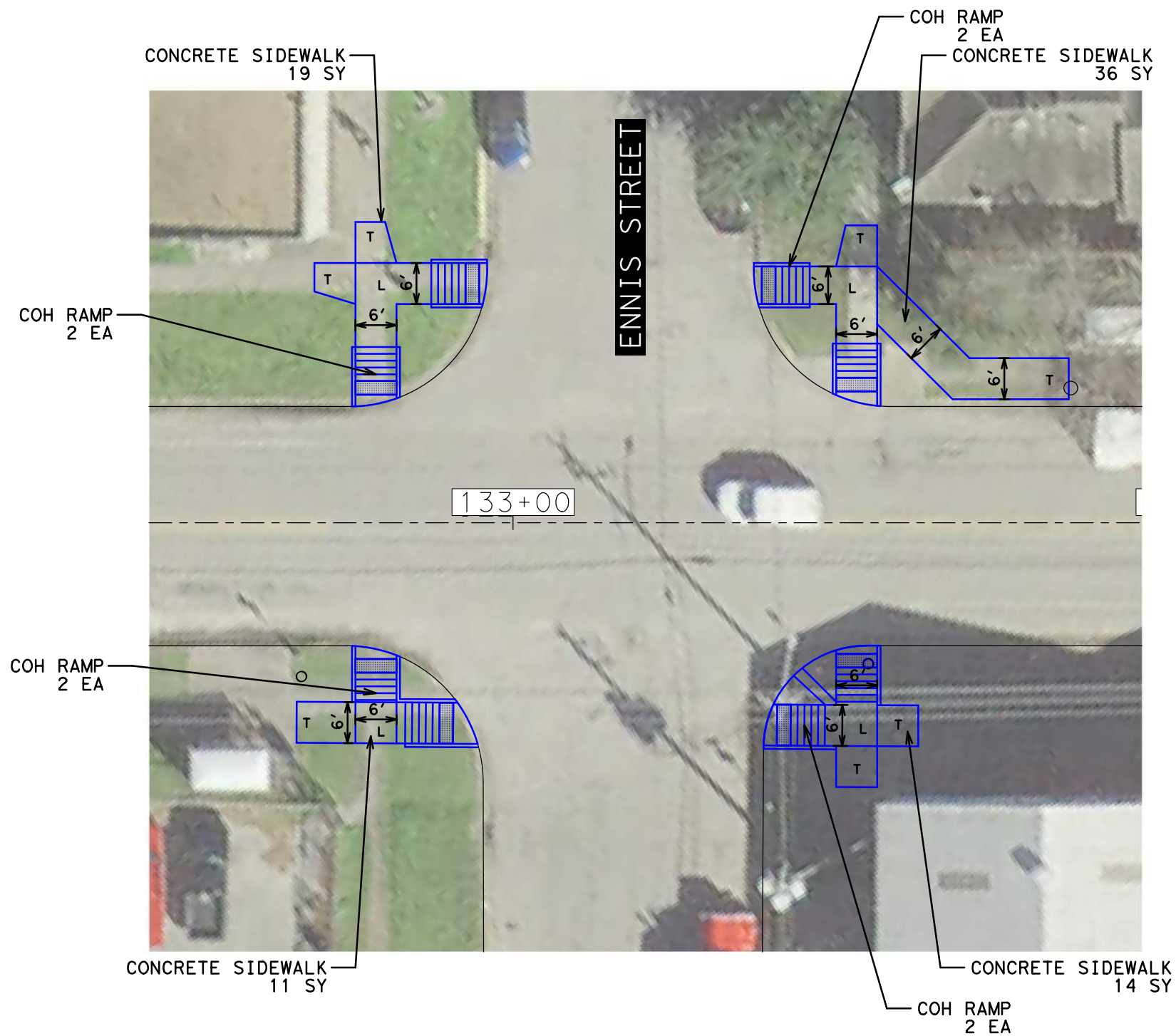


HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: POLK @ ENNIS
CK'D BY: JL	CONCRETE REMOVAL
SCALE: 1"=20'	
DATE: 4/12/2019	APPROVED BY:

SHEET NO:
318

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- NOTES:
- 1) LANDING AREAS MARKED "L" 2% MAX SLOPE FOR DRAINAGE
 - 2) SIDEWALK AREAS MARKED "T" TRANSITION TO EXISTING
 - 3) SEE SHEET 215 FOR SIDEWALK DETAIL
 - 4) SEE SHEET 216 FOR TY COH RAMP DETAIL





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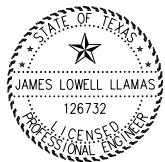
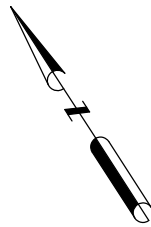
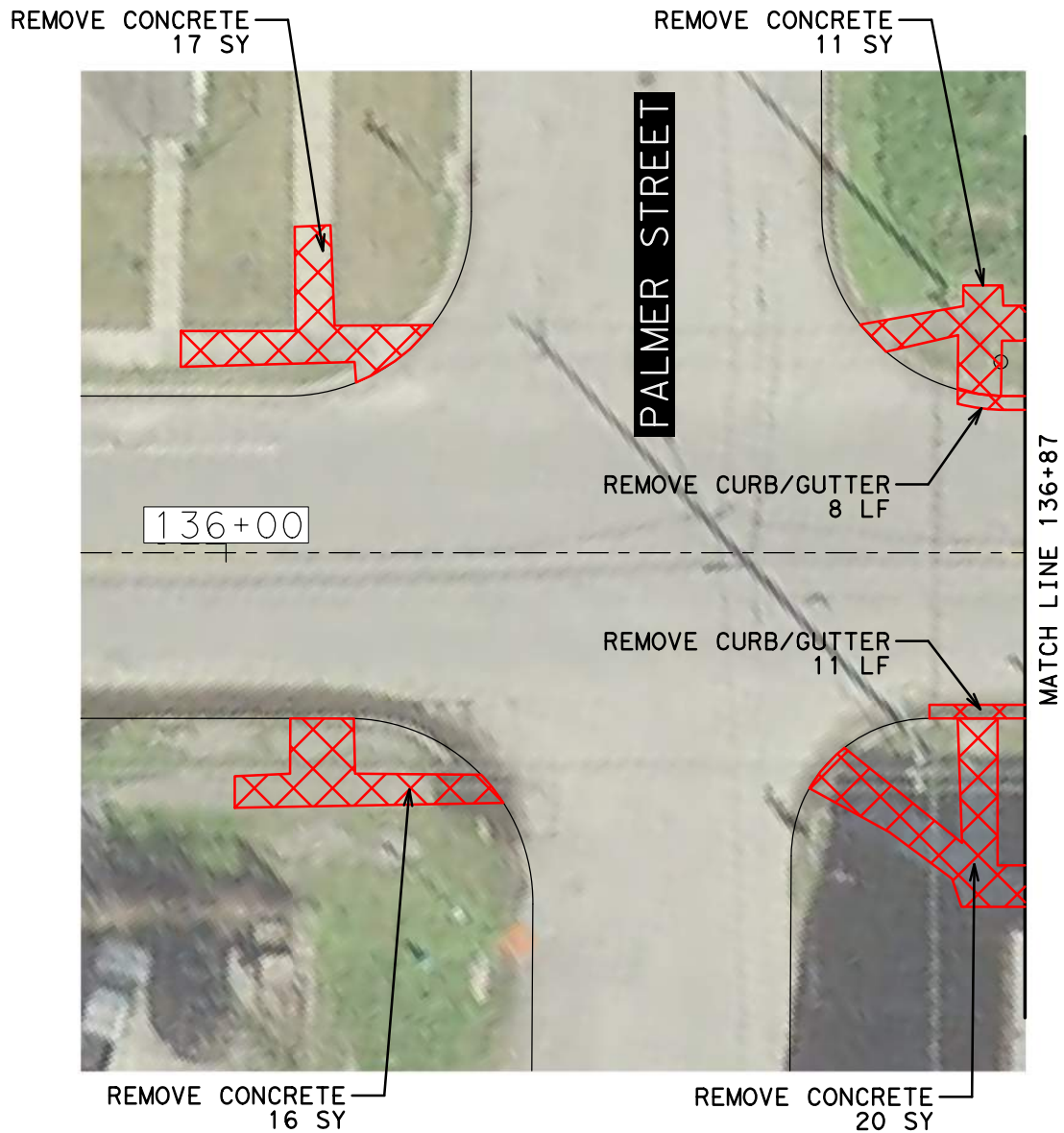
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TBPE Registration No. F-3158



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PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: POLK @ ENNIS
CK'D BY: JL	PAVING
SCALE: 1"=20'	
DATE: 4/12/2019	APPROVED BY:
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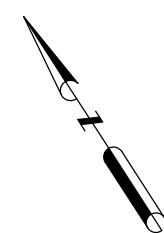
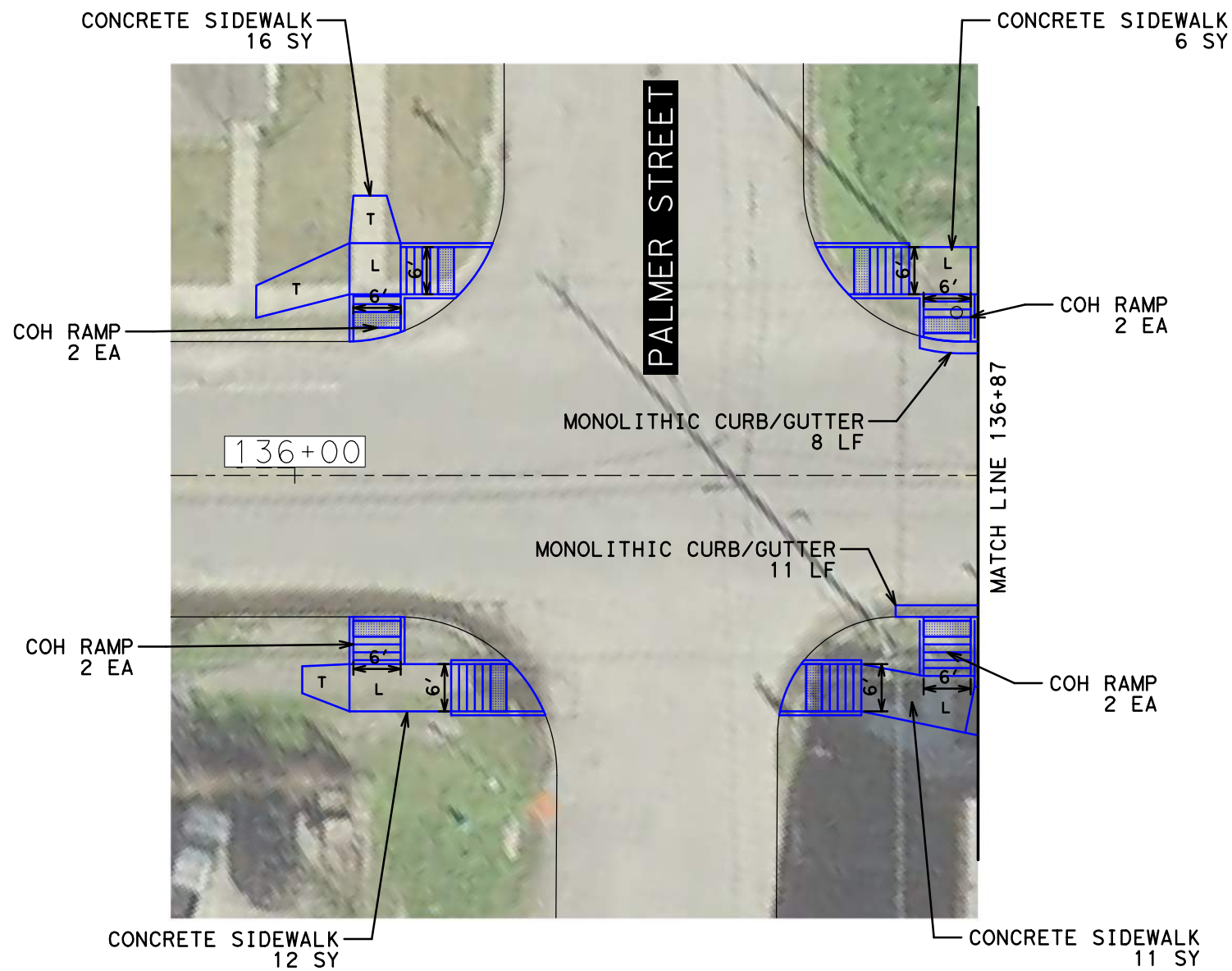


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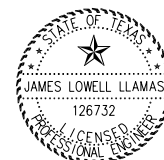
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DRAWN BY: GB	SHEET DESCRIPTION: POLK @ PALMER
CK'D BY: JL	CONCRETE REMOVAL
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DATE: 4/12/2019	APPROVED BY:

SHEET NO:
320

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- NOTES:
- 1) LANDING AREAS MARKED "L" 2% MAX SLOPE FOR DRAINAGE
 - 2) SIDEWALK AREAS MARKED "T" TRANSITION TO EXISTING
 - 3) SEE SHEET 215 FOR SIDEWALK DETAIL
 - 4) SEE SHEET 216 FOR TY COH RAMP DETAIL



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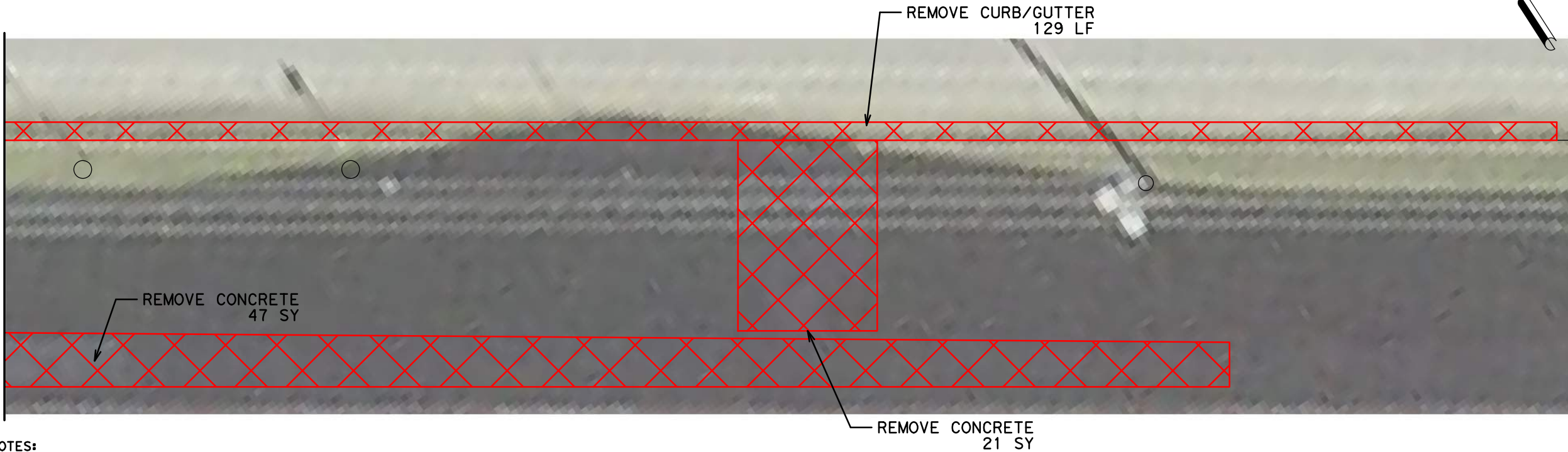
HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: POLK @ PALMER
CK'D BY: JL	PAVING
SCALE: 1"=20'	
DATE: 4/12/2019	APPROVED BY:
	SHEET NO: 321

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DATE: 4/12/2019 12:53:29 PM
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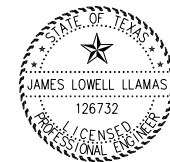
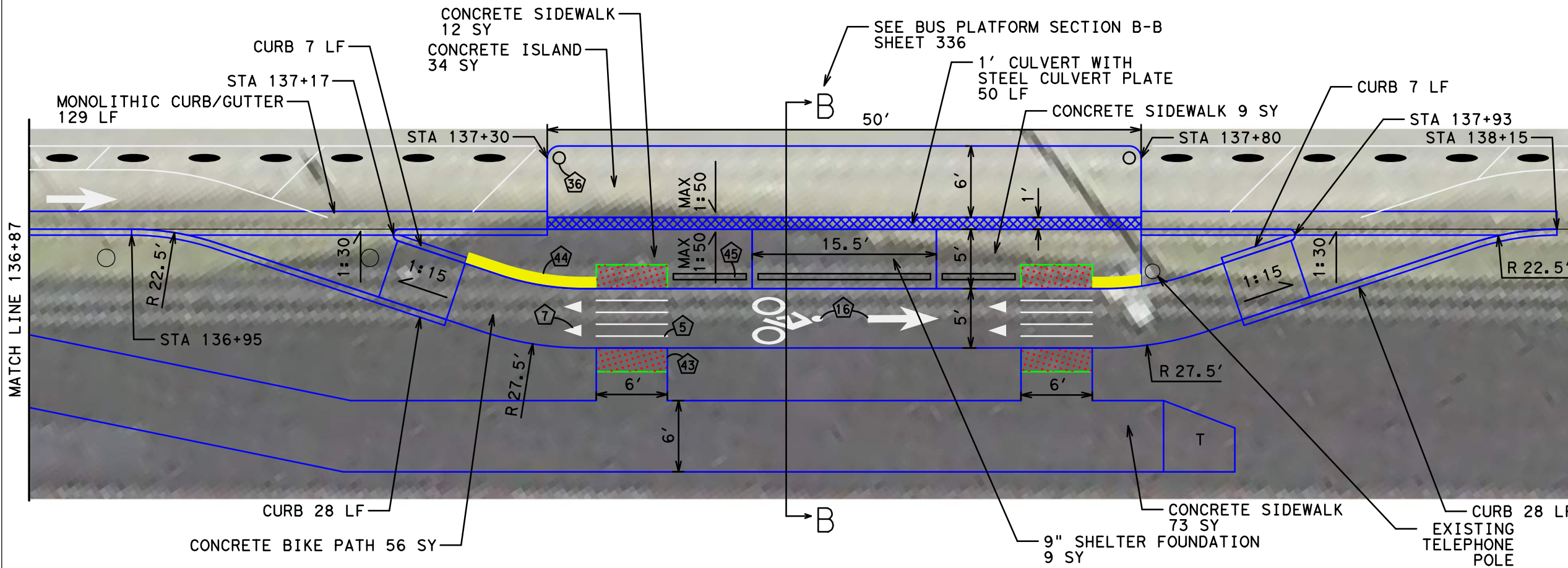
MATCH LINE 136+87

CONCRETE REMOVAL



- NOTES:
- 1) LANDING AREAS MARKED "L" 2% MAX SLOPE FOR DRAINAGE
 - 2) SIDEWALK AREAS MARKED "T" TRANSITION TO EXISTING
 - 3) SEE SHEET 215 FOR SIDEWALK DETAIL
 - 4) SEE SHEET 216 FOR TY COH RAMP DETAIL
 - 5) SEE SHEET 208 - SIGNAGE AND PAVEMENT MARKING LEGEND

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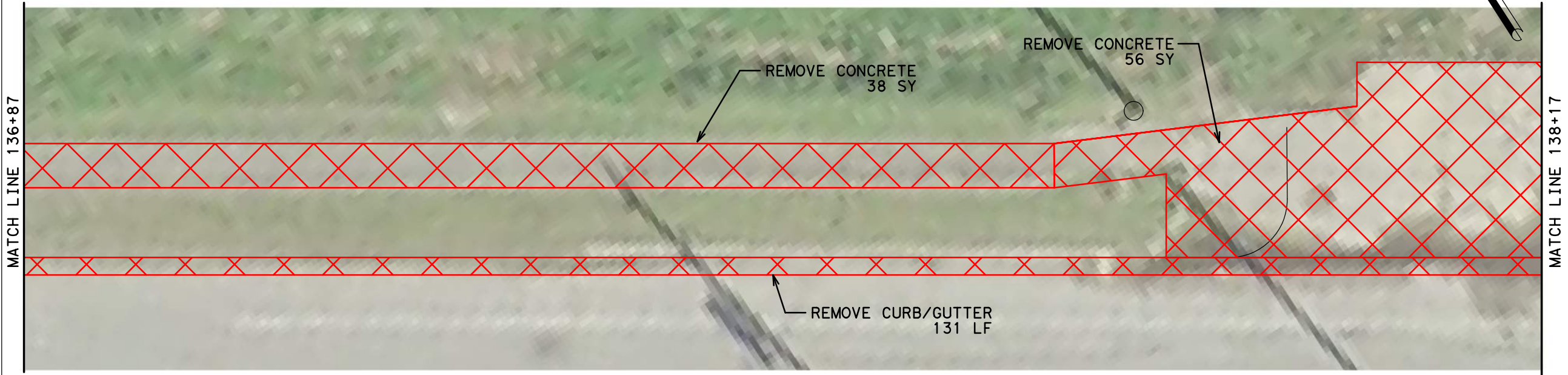


HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE:	POLK STREET ON-STREET BIKEWAY
DRAWN BY:	GB
CK'D BY:	JL
SCALE:	1"=10'
DATE:	4/12/2019
APPROVED BY:	
SHEET NO:	322

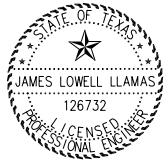
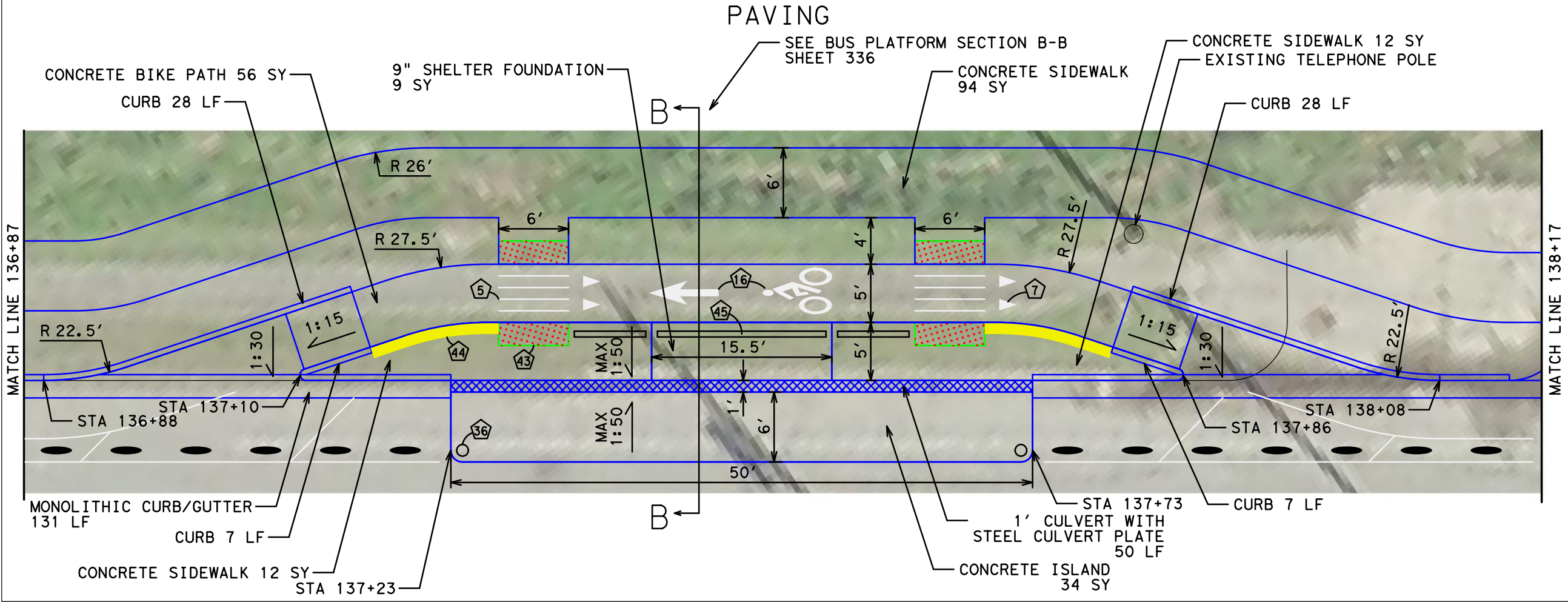
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CONCRETE REMOVAL



NOTES:
1) SEE SHEET 215 FOR SIDEWALK DETAIL
2) SEE SHEET 216 FOR TY COH RAMP DETAIL
3) SEE SHEET 208 - SIGNAGE AND PAVEMENT MARKING LEGEND

PAVING



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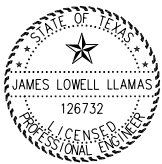
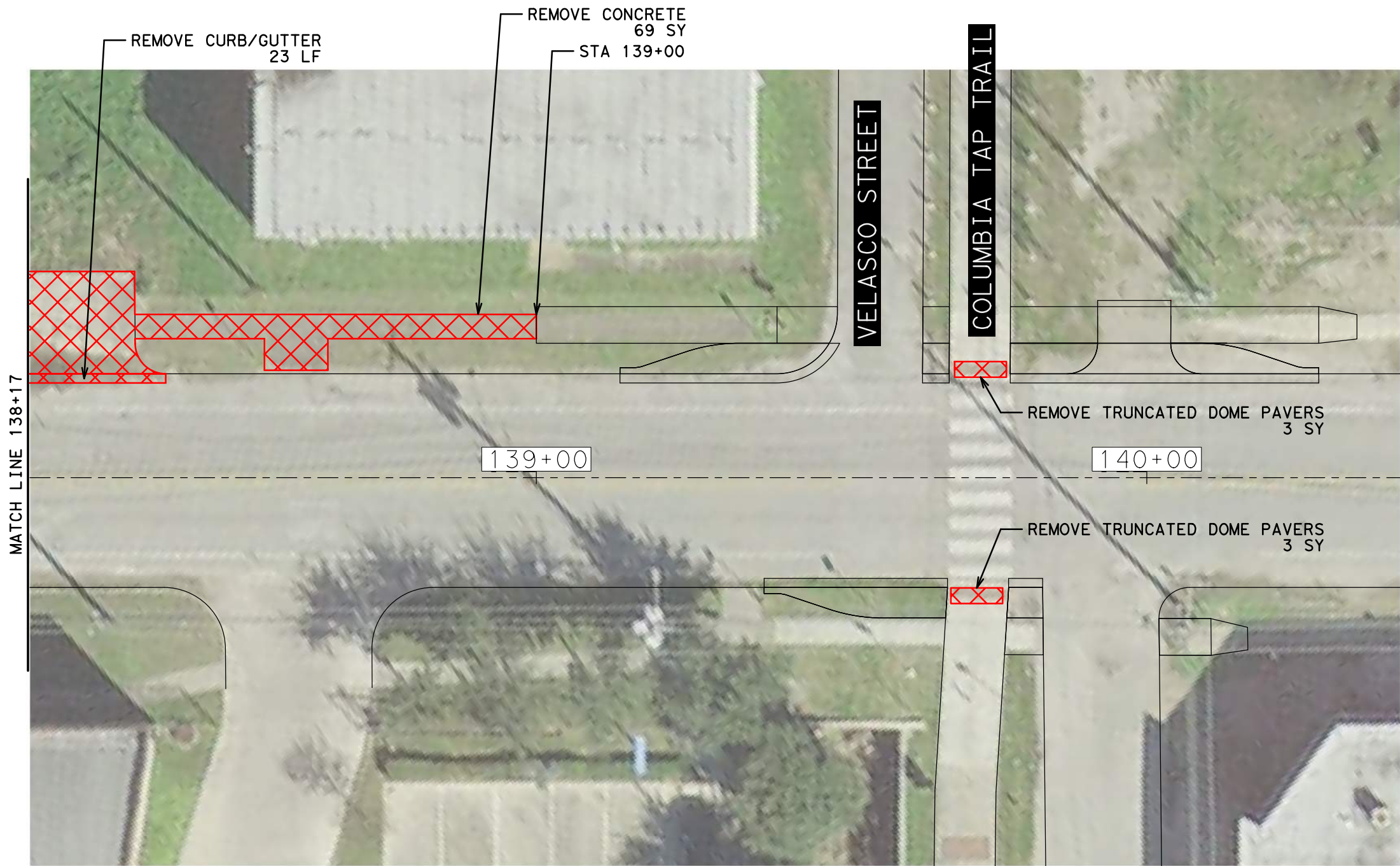
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TBPE Registration No. F-3158



HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: POLK @ PALMER WB BUS STOP
CK'D BY: JL	
SCALE: 1"=10'	
DATE: 4/12/2019	APPROVED BY:
	SHEET NO: 323

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TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158

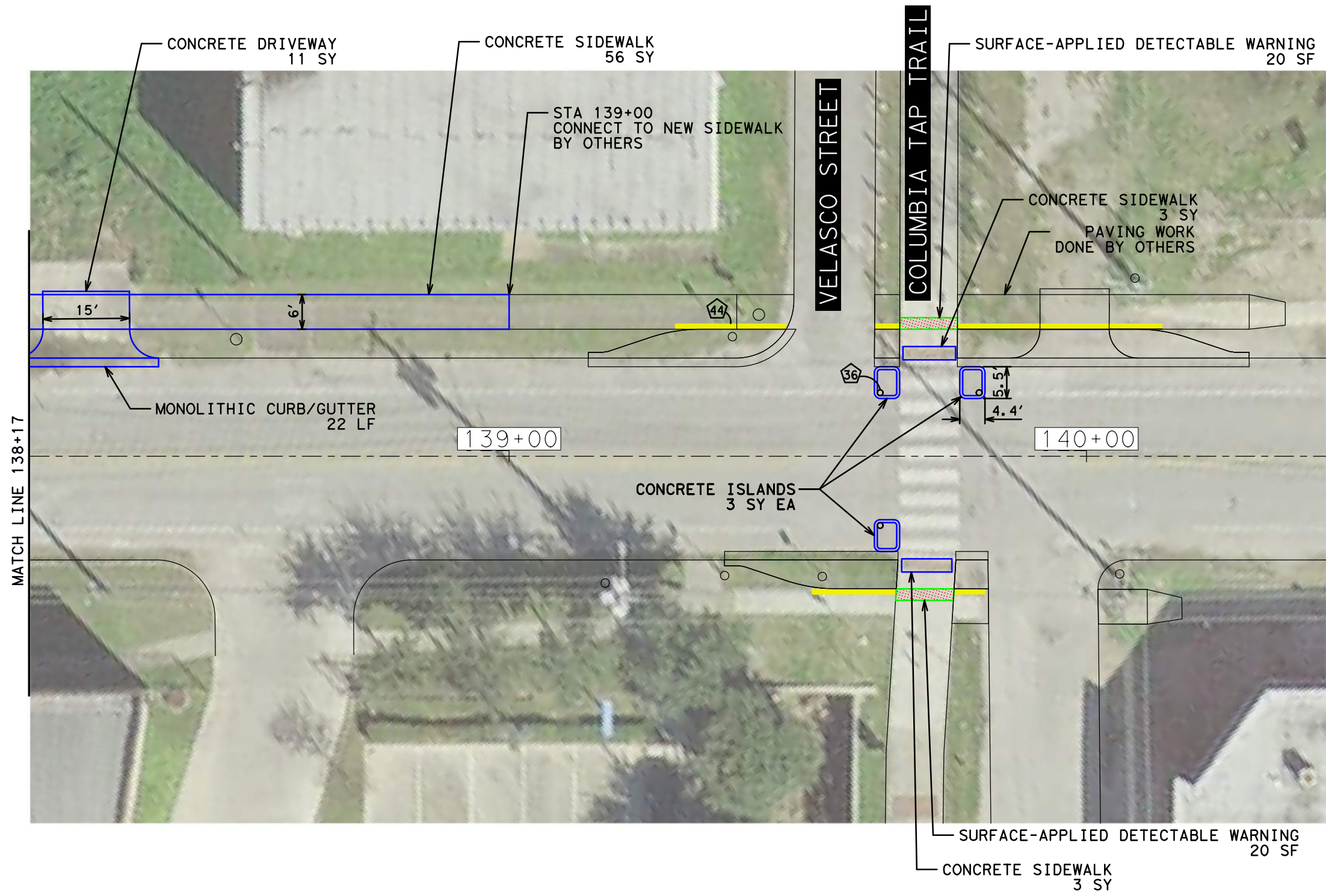


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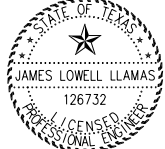
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DRAWN BY: GB	SHEET DESCRIPTION: POLK @ VELASCO
CK'D BY: JL	CONCRETE REMOVAL
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DATE: 4/12/2019	APPROVED BY:

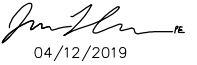
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- NOTES:
- 1) LANDING AREAS MARKED "L" 2% MAX SLOPE FOR DRAINAGE
 - 2) SIDEWALK AREAS MARKED "T" TRANSITION TO EXISTING
 - 3) SEE SHEET 215 FOR SIDEWALK DETAIL
 - 4) SEE SHEET 216 FOR TY COH RAMP DETAIL






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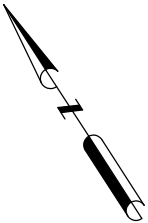
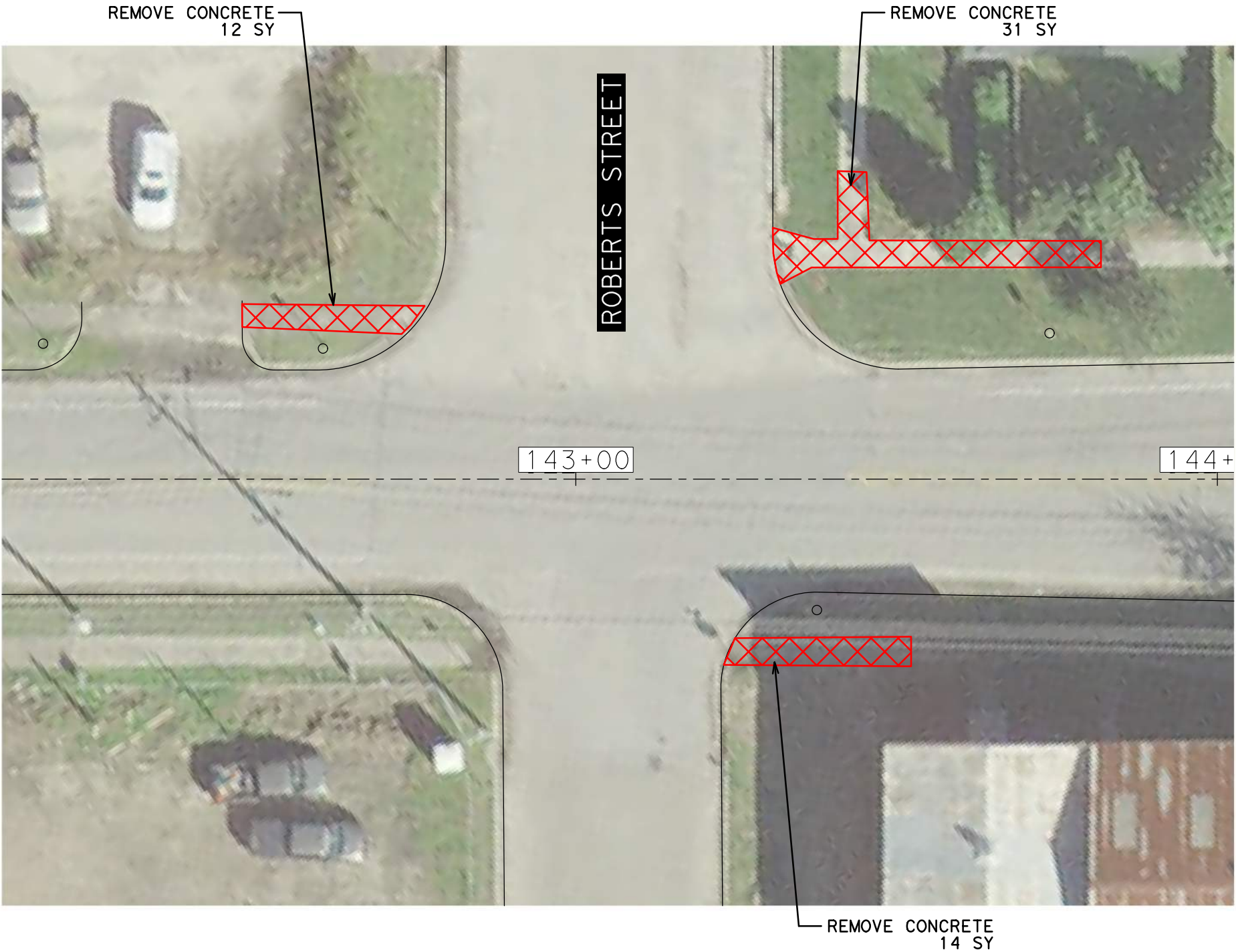
801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158

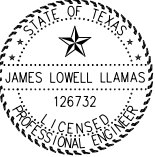


HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: POLK @ VELASCO PAVING
CK'D BY: JL	
SCALE: 1"=20'	
DATE: 4/12/2019	APPROVED BY:
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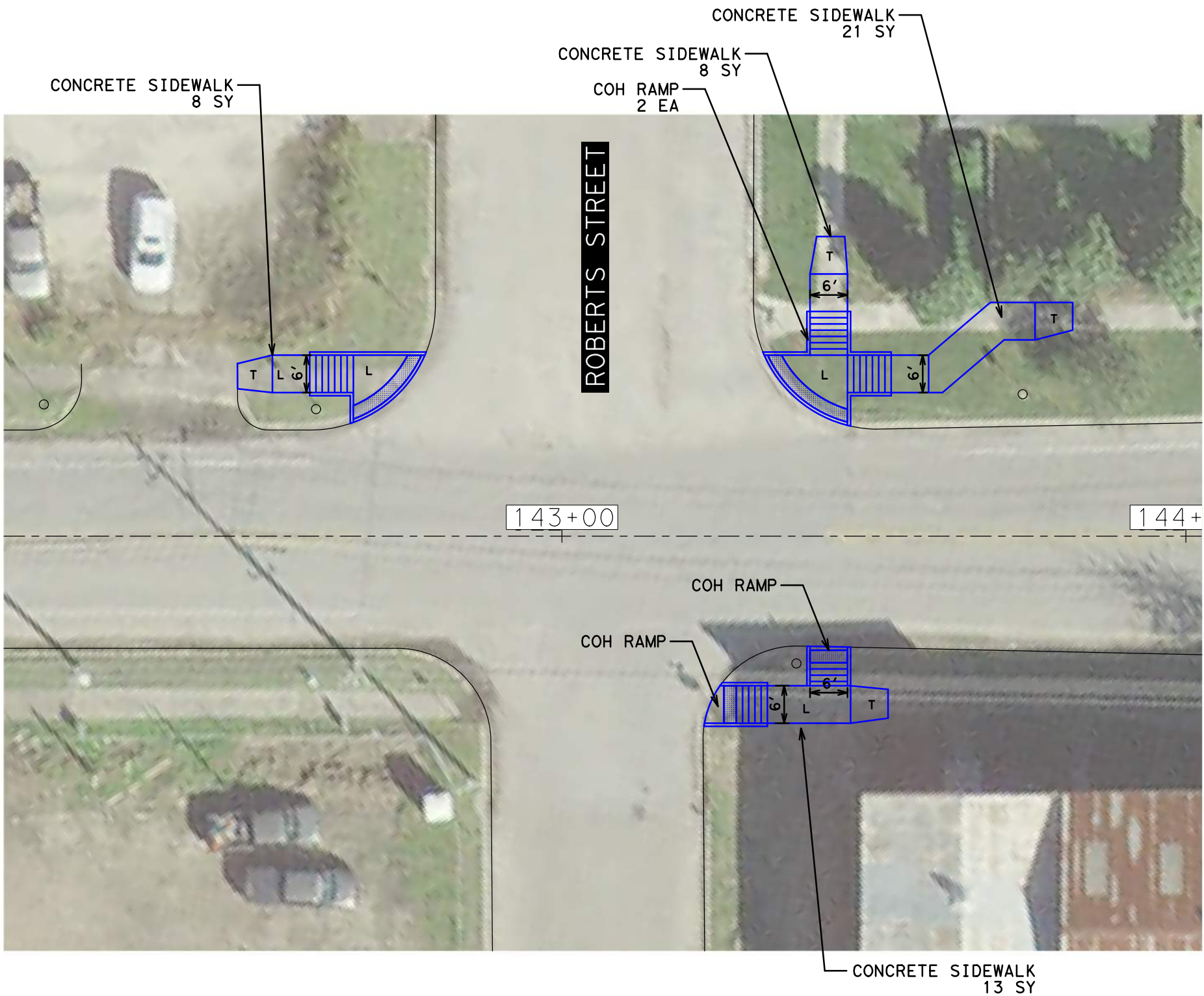


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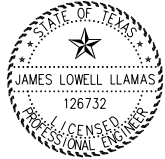
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DRAWN BY: GB	SHEET DESCRIPTION: POLK @ ROBERTS
CK'D BY: JL	CONCRETE REMOVAL
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DATE: 4/12/2019	APPROVED BY:

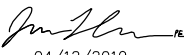
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- NOTES:
1) LANDING AREAS MARKED "L" 2% MAX SLOPE FOR DRAINAGE
2) SIDEWALK AREAS MARKED "T" TRANSITION TO EXISTING
3) SEE SHEET 215 FOR SIDEWALK DETAIL
4) SEE SHEET 216 FOR TY COH RAMP DETAIL






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TBPE Registration No. F-3158



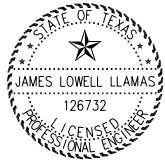
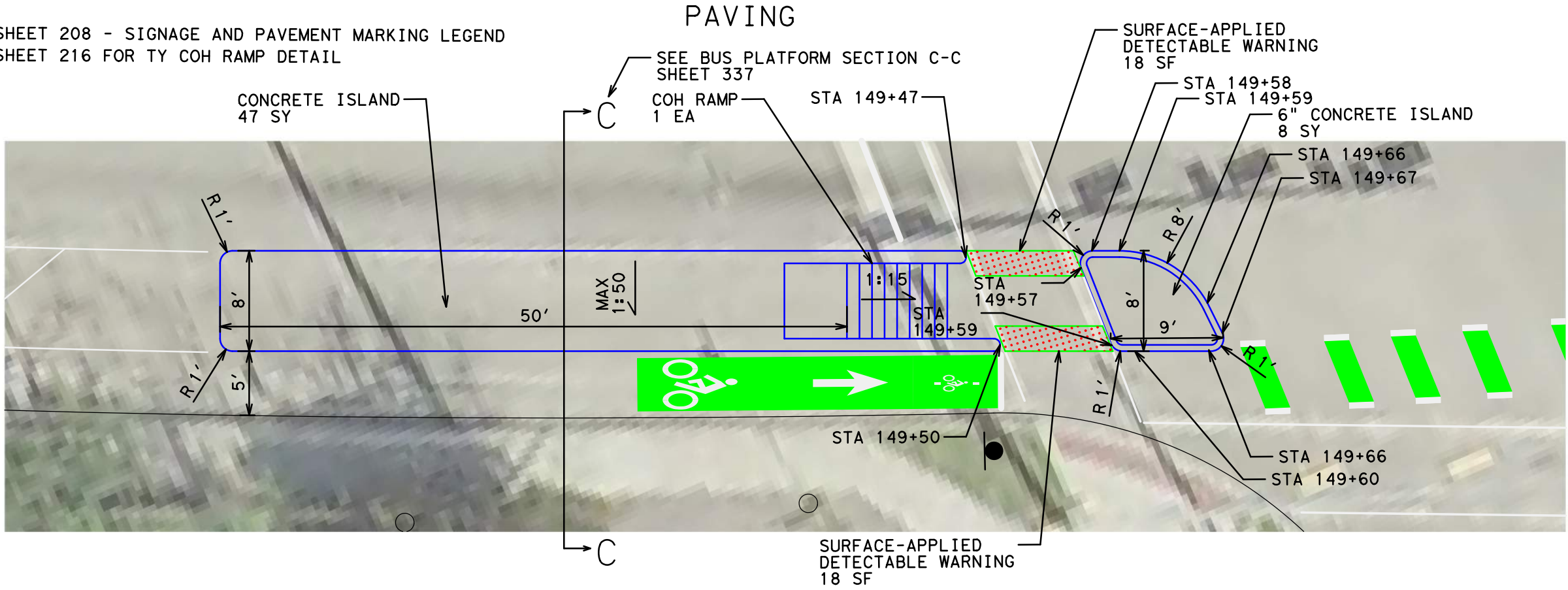
HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
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CK'D BY: JL	PAVING
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- NOTES:
- 1) SEE SHEET 208 - SIGNAGE AND PAVEMENT MARKING LEGEND
 - 2) SEE SHEET 216 FOR TY COH RAMP DETAIL



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NO.	REVISIONS	DATE	NAME



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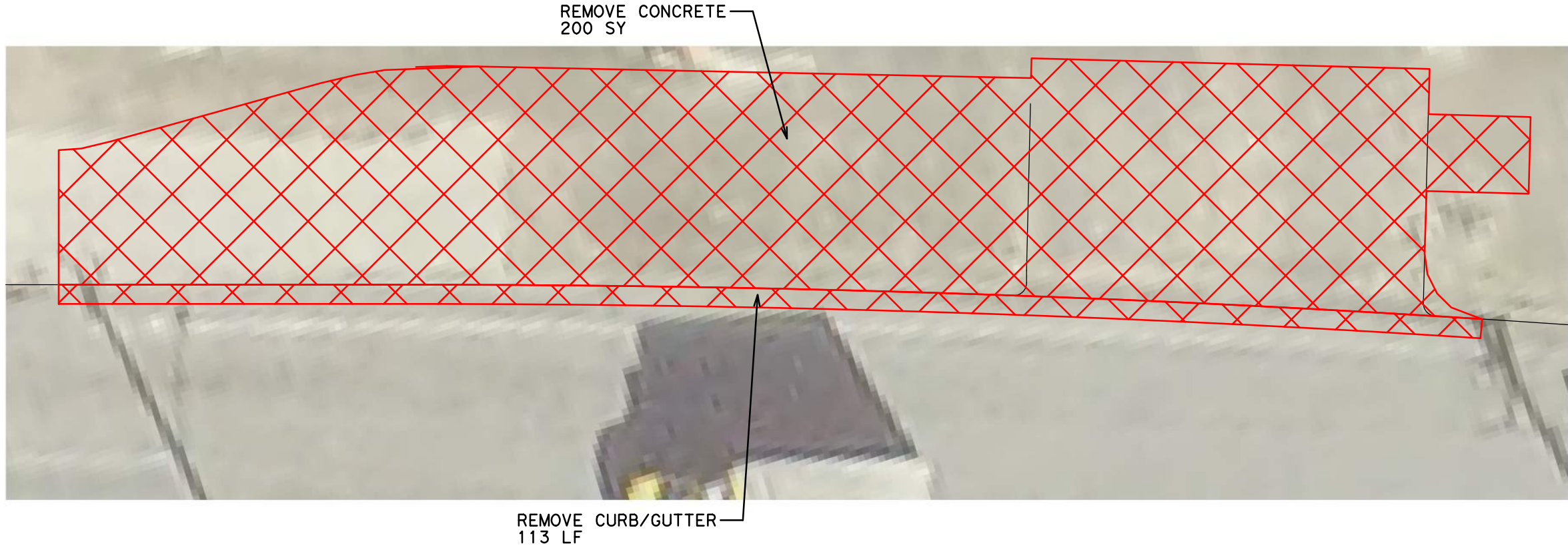


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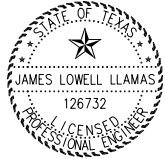
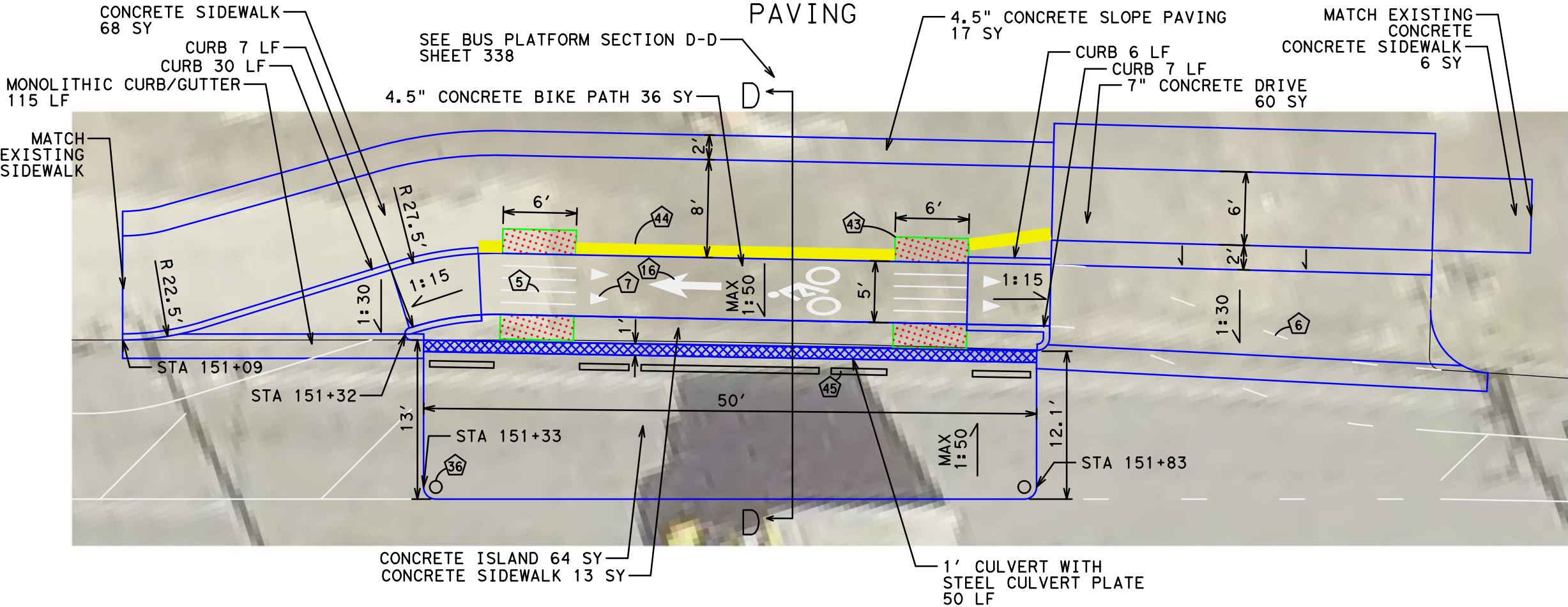
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DRAWN BY: GB	SHEET DESCRIPTION: POLK @ SCOTT EB BUS STOP
CK'D BY: JL	PAVING DETAIL
SCALE: 1"=10'	
DATE: 4/12/2019	APPROVED BY:
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FILE: E:\Dropbox (Traffic Engineers)\Clients\Harris County\Bikeways\04 Polk Culien\Design\329 Polk at Scott WB Bus Stop Paving.dgn

CONCRETE REMOVAL



NOTES:
1) SEE SHEET 208 - SIGNAGE AND PAVEMENT MARKING LEGEND



04/12/2019

NO.	REVISIONS	DATE	NAME



801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158



HARRIS COUNTY
ENGINEERING DEPARTMENT

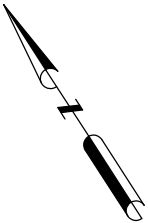
PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: POLK @ SCOTT WB BUS STOP
CK'D BY: JL	PAVING DETAIL
SCALE: 1"=10'	
DATE: 4/12/2019	APPROVED BY:
	SHEET NO: 329

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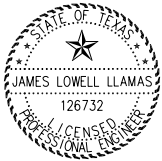


CONCRETE SIDEWALK
12 SY

- NOTES:
1) LANDING AREAS MARKED "L" 2% MAX SLOPE FOR DRAINAGE
2) SIDEWALK AREAS MARKED "T" TRANSITION TO EXISTING
3) SEE SHEET 215 FOR SIDEWALK DETAIL
4) SEE SHEET 216 FOR TY COH RAMP DETAIL



THIS SPACE INTENTIONALLY LEFT BLANK



James Lowell Llamas
04/12/2019

NO.	REVISIONS	DATE	NAME

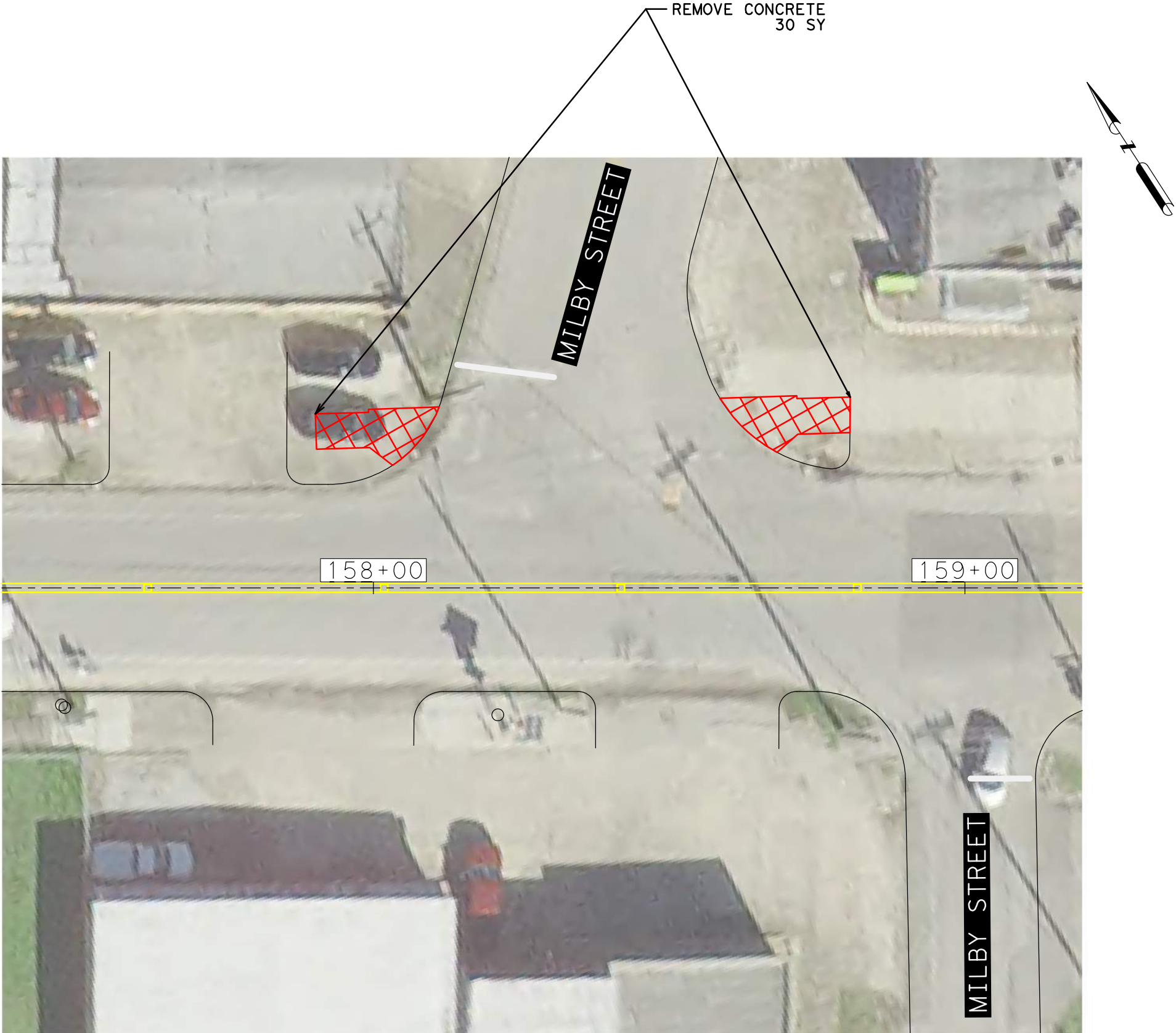


801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158



HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: POLK @ SCOTT
CK'D BY: JL	PAVING
SCALE: 1"=20'	
DATE: 4/12/2019	APPROVED BY:
	SHEET NO: 330



NO.

REVISIONS

DATE

NAME

TRAFFIC ENGINEERS, INC.

innovative transportation solutions

801 Congress Avenue, Suite 325, Houston, TX 77002

TEL (713) 270-8145/FAX (281) 809-0807

TBPE Registration No. F-3158

HARRIS COUNTY

ENGINEERING DEPARTMENT

PROJECT TITLE:

POLK STREET ON-STREET BIKEWAY

DRAWN BY:

GB

SHEET DESCRIPTION:

POLK @ MILBY

CK'D BY:

JL

CONCRETE REMOVAL

SCALE:

1"=20'

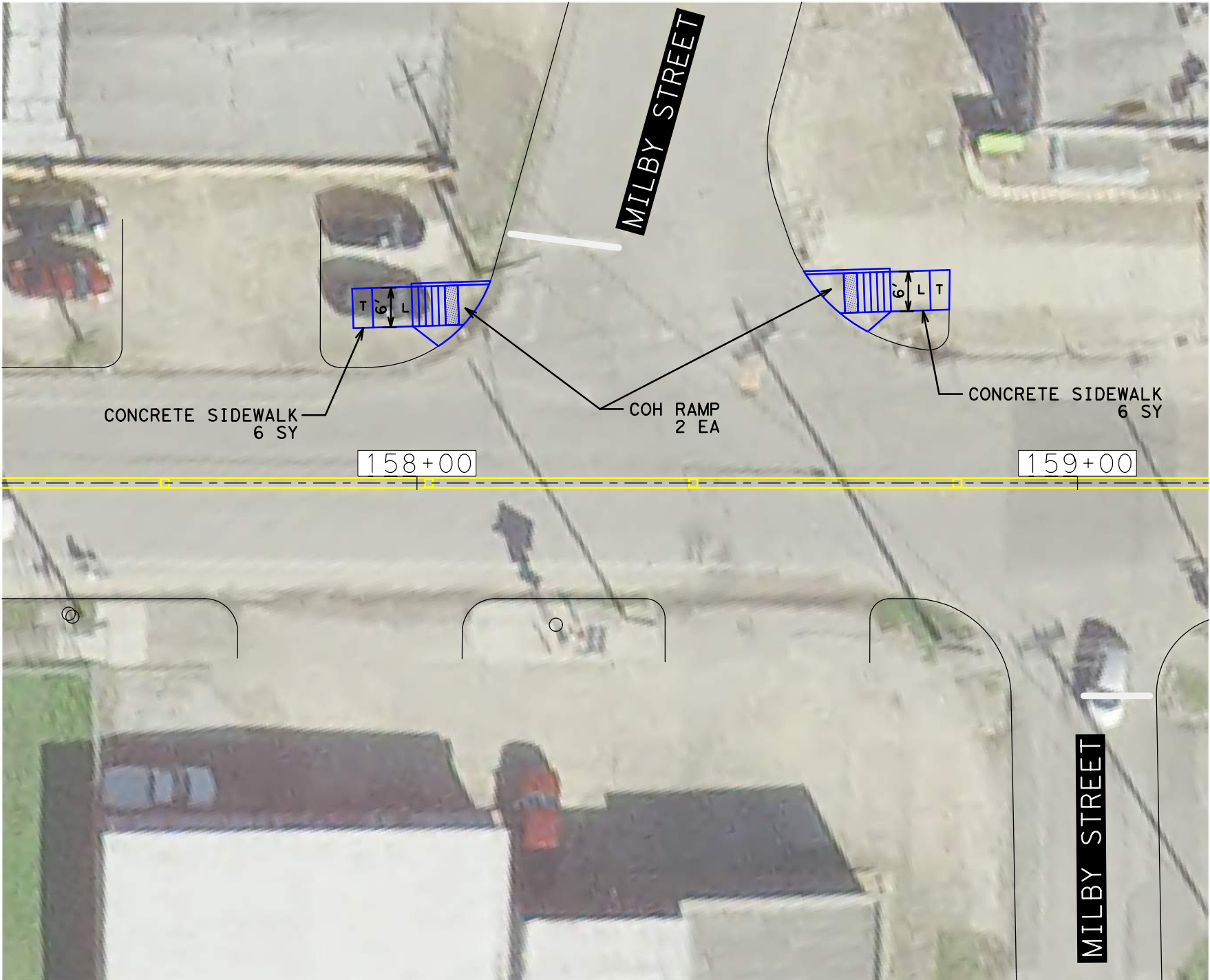
DATE:

4/12/2019

APPROVED BY:

SHEET NO:

331



- NOTES:
- 1) LANDING AREAS MARKED "L" 2% MAX SLOPE FOR DRAINAGE
 - 2) SIDEWALK AREAS MARKED "T" TRANSITION TO EXISTING
 - 3) SEE SHEET 215 FOR SIDEWALK DETAIL
 - 4) SEE SHEET 216 FOR TY COH RAMP DETAIL

James Lowell Llamas

04/12/2019

NO.	REVISIONS	DATE	NAME

TRAFFIC ENGINEERS, INC.
innovative transportation solutions

801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158

HARRIS COUNTY

ENGINEERING DEPARTMENT

PROJECT TITLE:
POLK STREET ON-STREET BIKEWAY

DRAWN BY:
GB

SHEET DESCRIPTION:
POLK @ MILBY

CK'D BY:
JL

PAVING

SCALE:
1"=20'

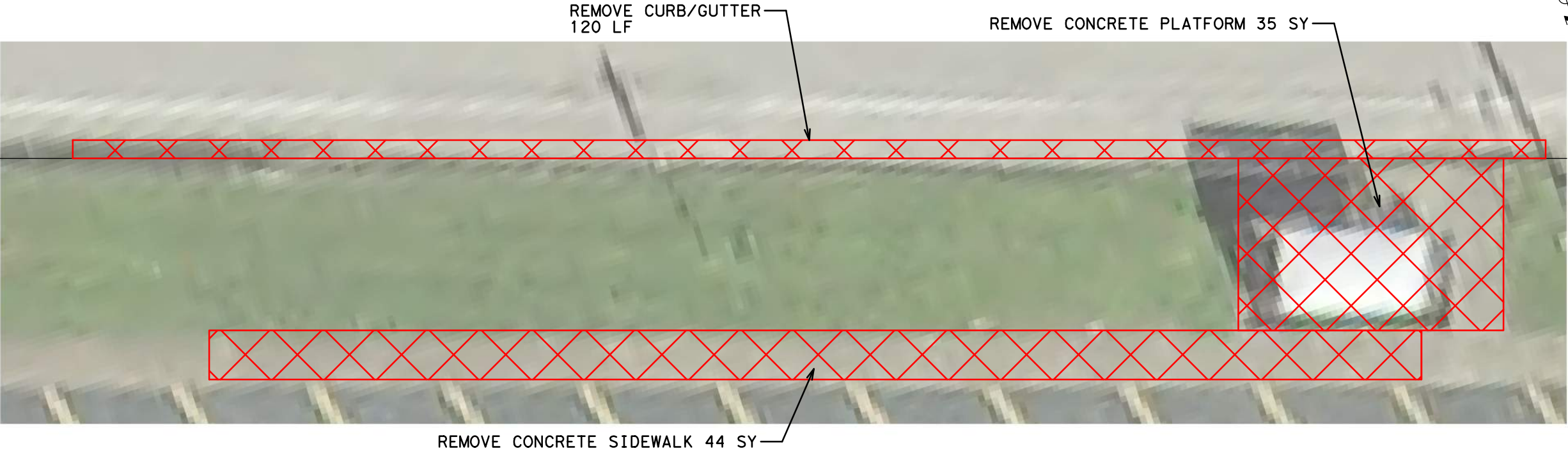
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4/12/2019

APPROVED BY:

SHEET NO:
332

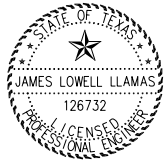
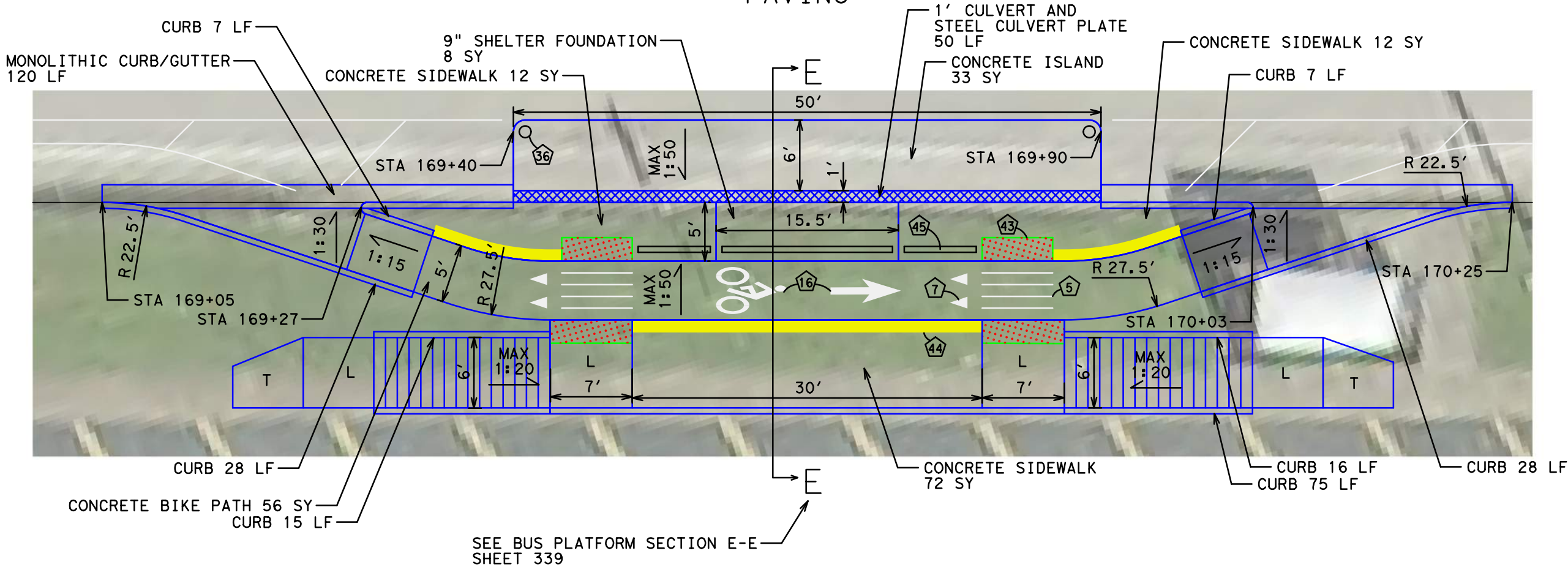
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USER: USER\

CONCRETE REMOVAL



- NOTES:
- 1) LANDING AREAS MARKED "L" 2% MAX SLOPE FOR DRAINAGE
 - 2) SIDEWALK AREAS MARKED "T" TRANSITION TO EXISTING
 - 3) SEE SHEET 215 FOR SIDEWALK DETAIL
 - 4) SEE SHEET 216 FOR TY COH RAMP DETAIL
 - 5) SEE SHEET 208 - SIGNAGE AND PAVEMENT MARKING LEGEND

PAVING



04/12/2019

NO.	REVISIONS	DATE	NAME



801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158



HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: POLK @ CULLEN EB BUS STOP
CK'D BY: JL	PAVING DETAIL
SCALE: 1"=10'	
DATE: 4/12/2019	APPROVED BY:
	SHEET NO: 333

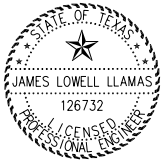
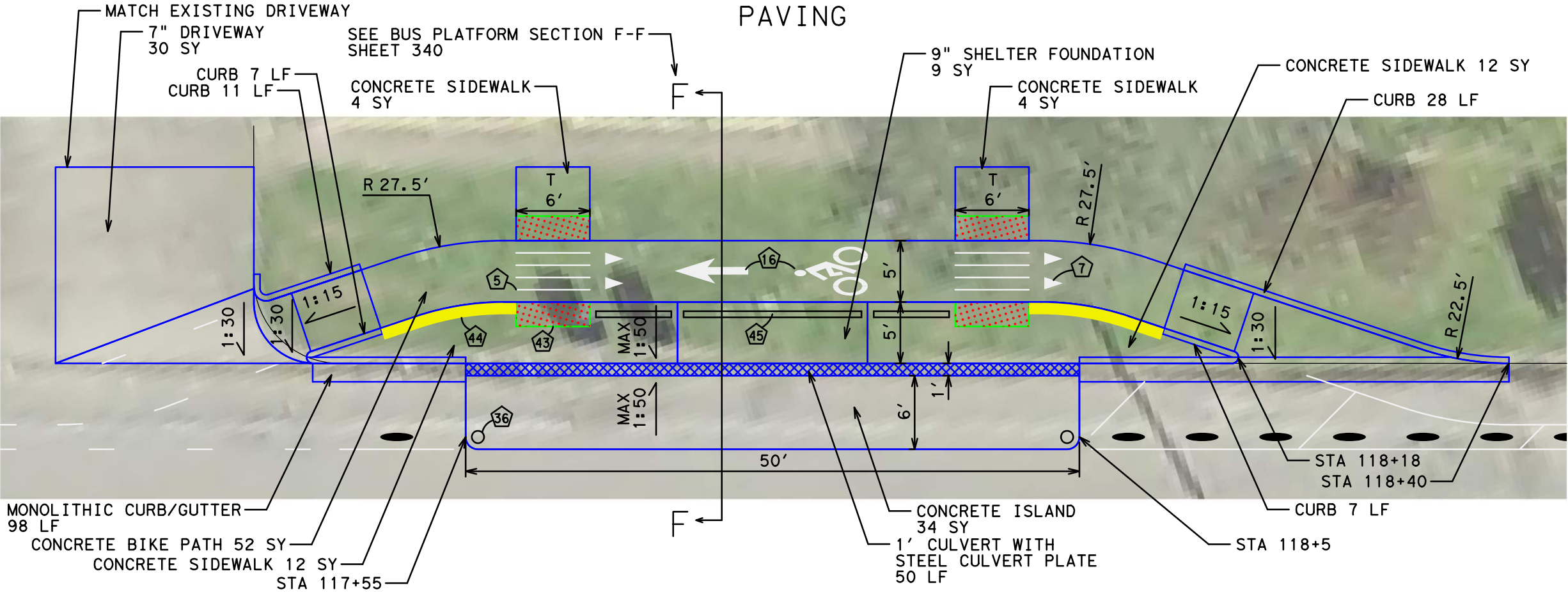
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CONCRETE REMOVAL



- NOTES:
- 1) SIDEWALK AREAS MARKED "T" TRANSITION TO EXISTING
 - 2) SEE SHEET 215 FOR SIDEWALK DETAIL
 - 3) SEE SHEET 216 FOR TY COH RAMP DETAIL
 - 4) SEE SHEET 208 - SIGNAGE AND PAVEMENT MARKING LEGEND

PAVING



04/12/2019

NO.	REVISIONS	DATE	NAME



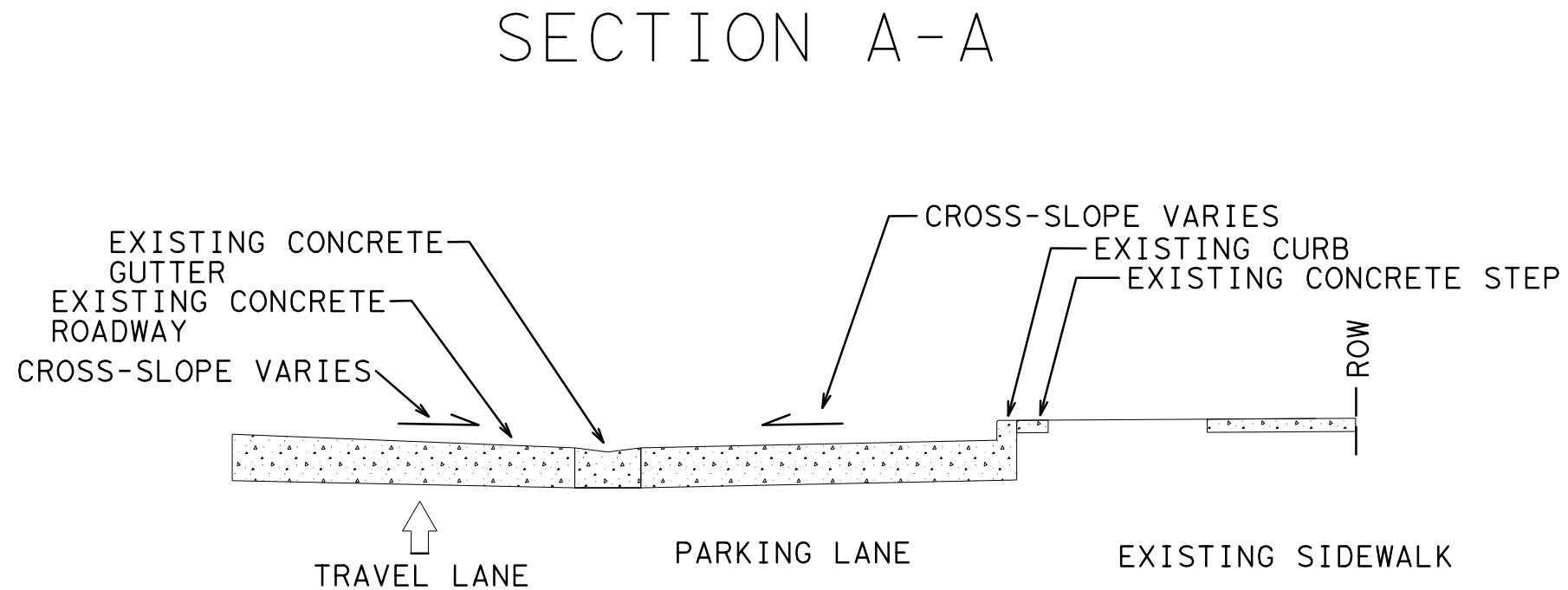
801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158



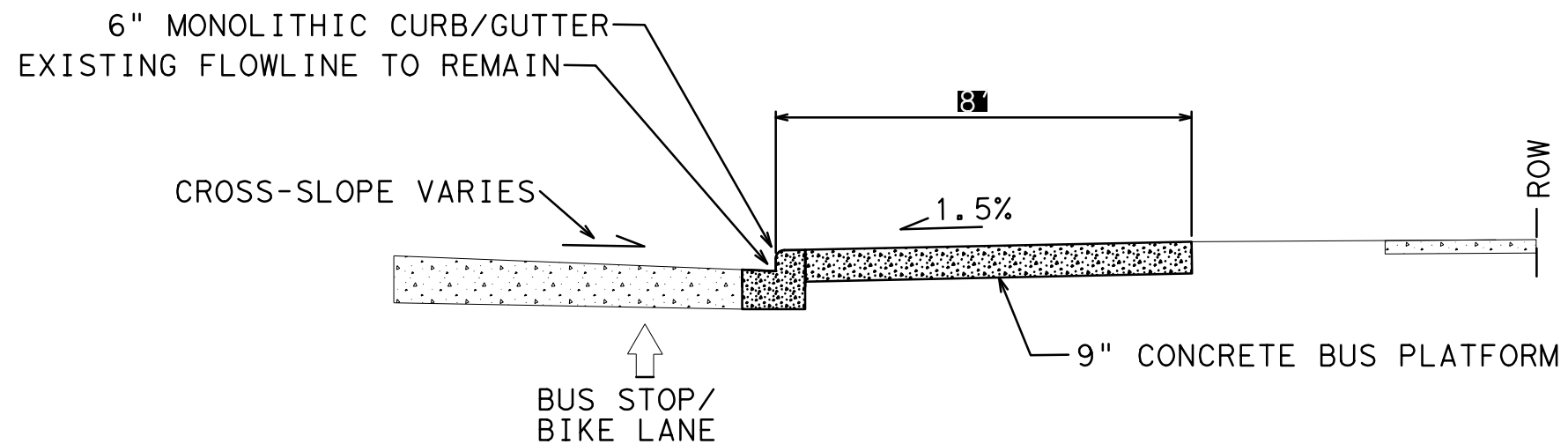
HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: POLK @ CULLEN WB BUS STOP
CK'D BY: JL	PAVING DETAIL
SCALE: 1"=10'	
DATE: 4/12/2019	APPROVED BY:
	SHEET NO: 334

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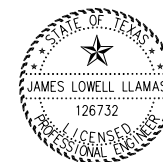


EXISTING SECTION
N. T. S.



ST. CHARLES EB BUS PLATFORM
N. T. S.

NOTE: SEE PAVING SHEETS FOR DIMENSIONS



James Lowell Llamas
04/12/2019

NO.	REVISIONS	DATE	NAME



801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158

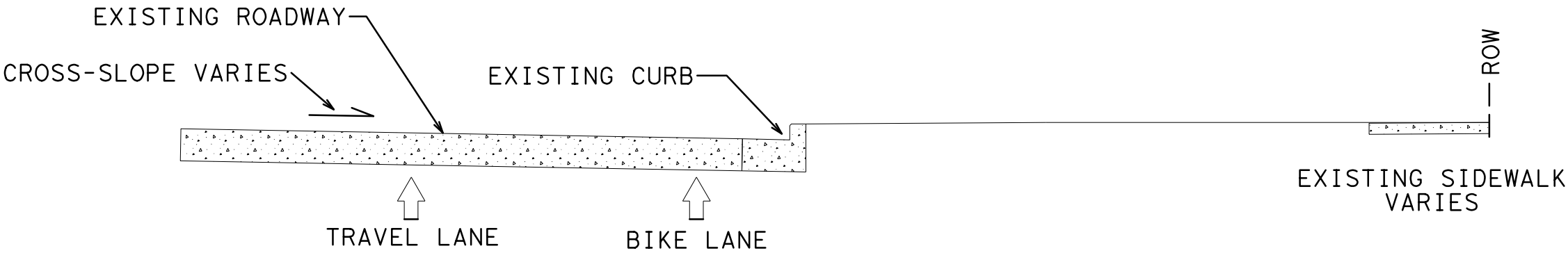


HARRIS COUNTY
ENGINEERING DEPARTMENT

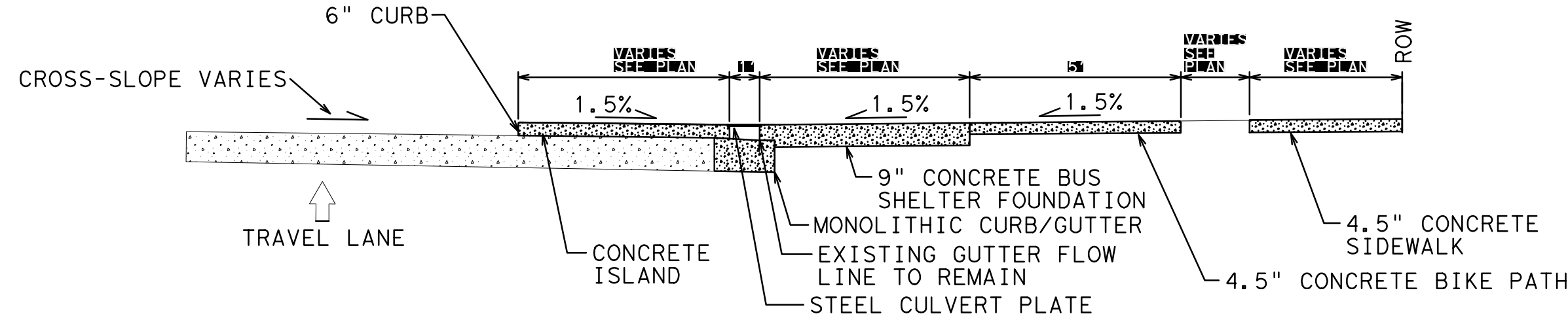
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CK'D BY: JL	
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DATE: 4/12/2019	APPROVED BY:
	SHEET NO: 335

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SECTION B-B

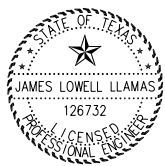


EXISTING SECTION
N. T. S.



TYPICAL BUS PLATFORM
N. T. S.

NOTE: SEE PAVING SHEETS FOR DIMENSIONS



James Lowell Llamas
04/12/2019

NO.	REVISIONS	DATE	NAME



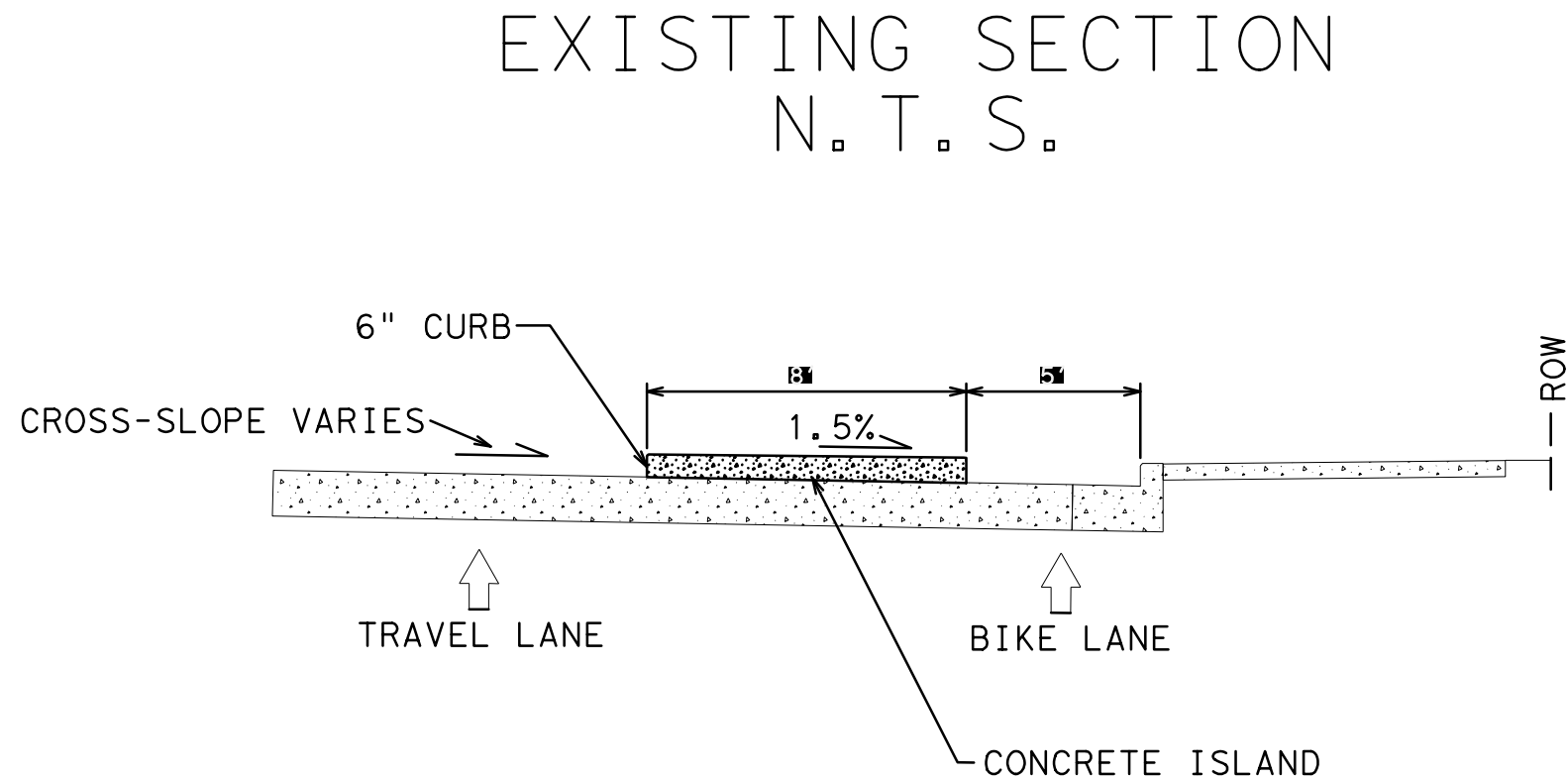
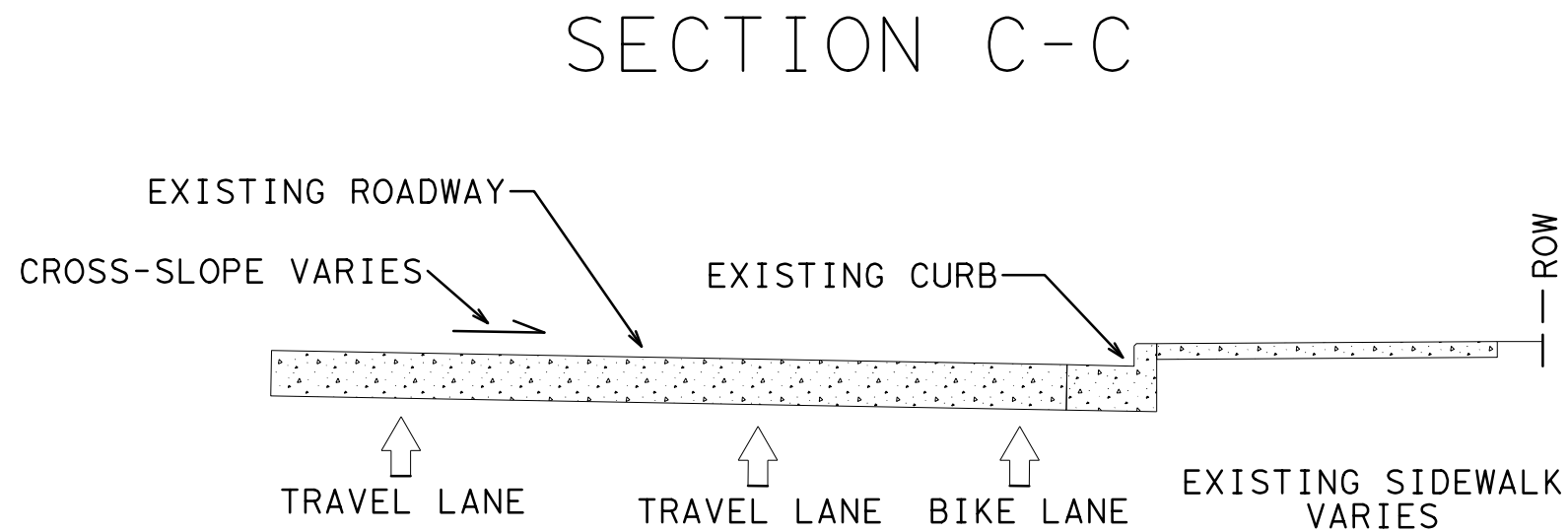
801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158



HARRIS COUNTY
ENGINEERING DEPARTMENT

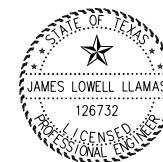
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CK'D BY: JL	
SCALE: NONE	
DATE: 4/12/2019	APPROVED BY:
SHEET NO: 336	

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SCOTT EB BUS PLATFORM
N.T.S.

NOTE: SEE PAVING SHEETS FOR DIMENSIONS



James Lowell Llamas
04/12/2019

NO.	REVISIONS	DATE	NAME



801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158

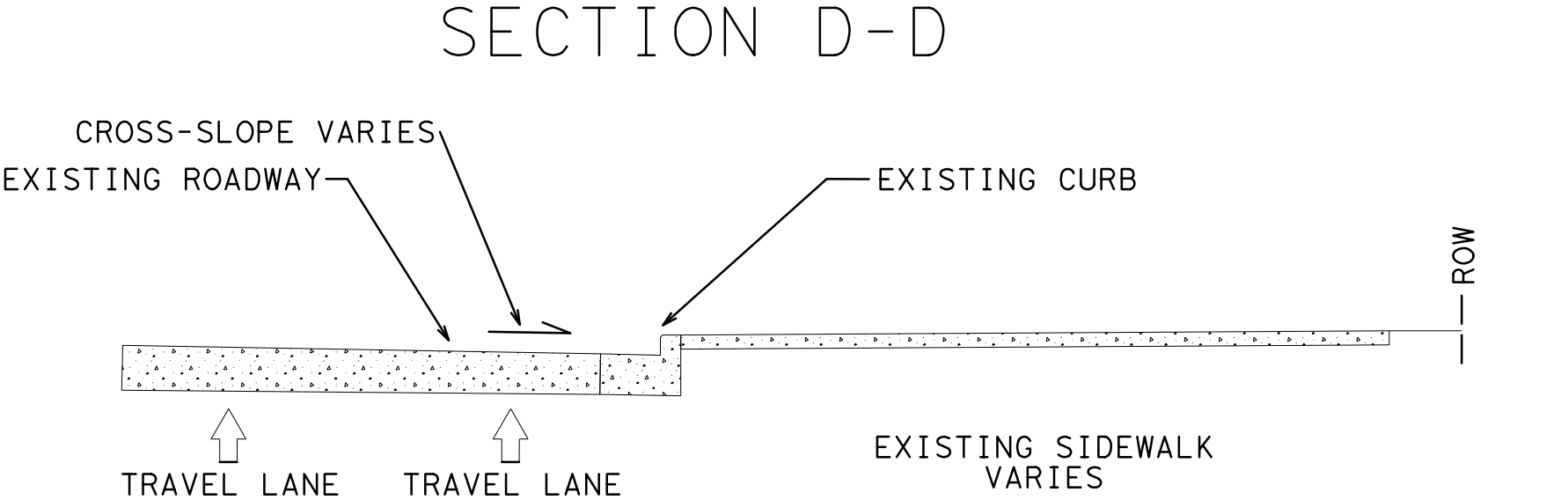


HARRIS COUNTY
ENGINEERING DEPARTMENT

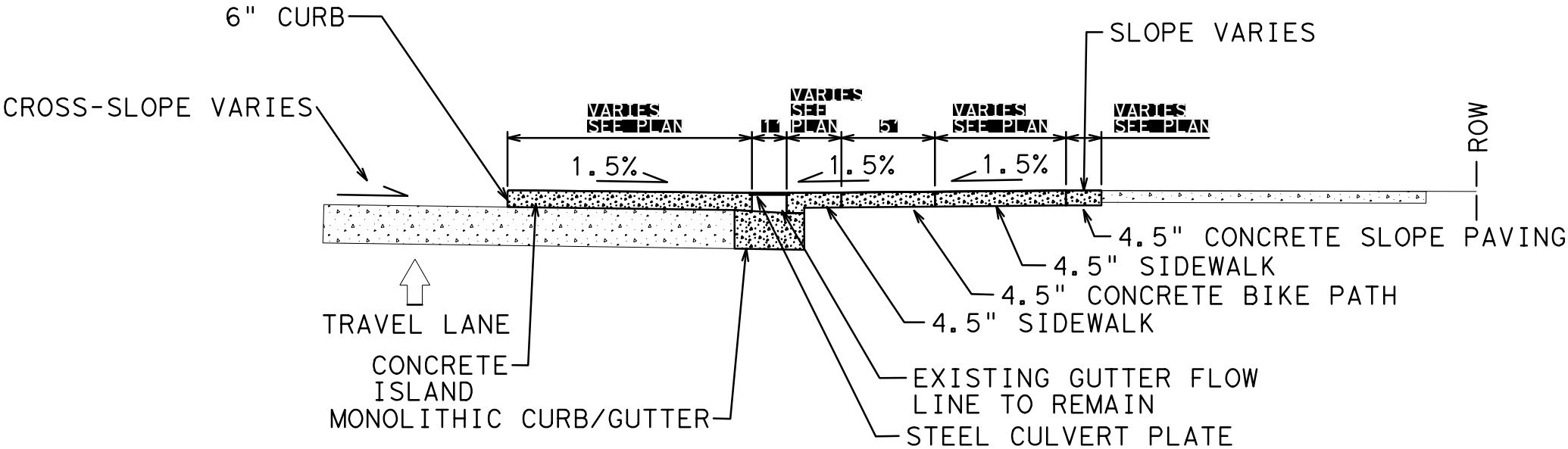
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CK'D BY: JL	
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DATE: 4/12/2019	APPROVED BY:

SHEET NO:
337

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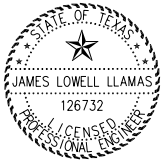


EXISTING SECTION
N. T. S.



SCOTT WB BUS PLATFORM
N. T. S.

NOTE: SEE PAVING SHEETS FOR DETAILS



James Lowell Llamas
04/12/2019

NO.	REVISIONS	DATE	NAME



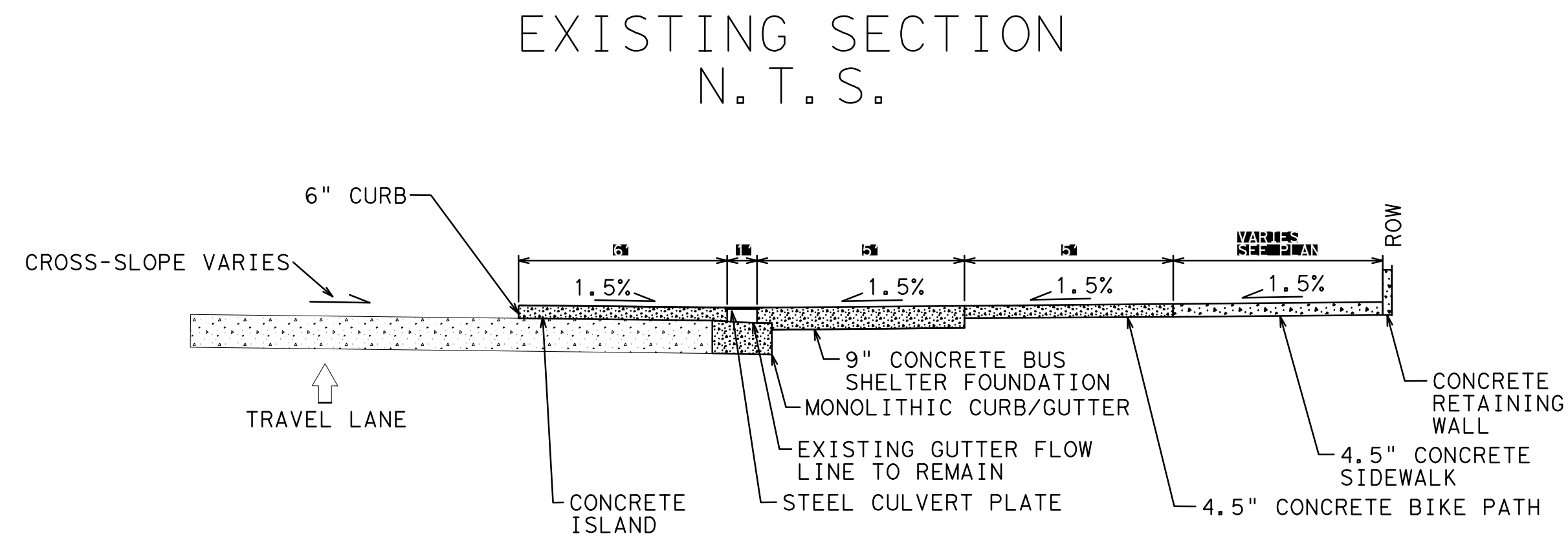
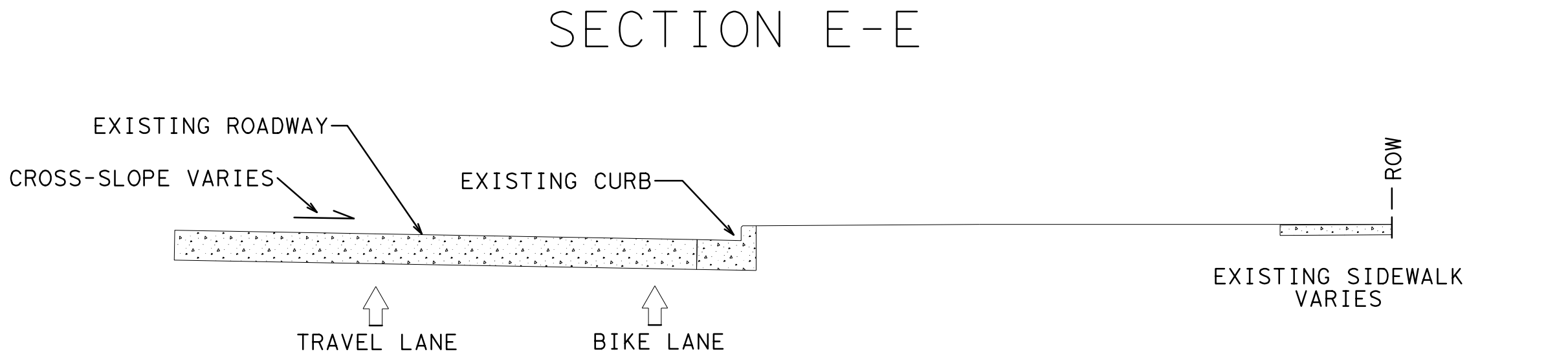
801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158



HARRIS COUNTY
ENGINEERING DEPARTMENT

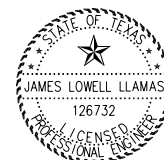
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DRAWN BY: GB	SHEET DESCRIPTION: BUS PLATFORM SECTION D-D
CK'D BY: JL	
SCALE: NONE	
DATE: 4/12/2019	APPROVED BY:
	SHEET NO: 338

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CULLEN EB BUS PLATFORM
N.T.S.

NOTE: SEE PAVING SHEETS FOR DIMENSIONS



James Lowell Llamas
04/12/2019

NO.	REVISIONS	DATE	NAME



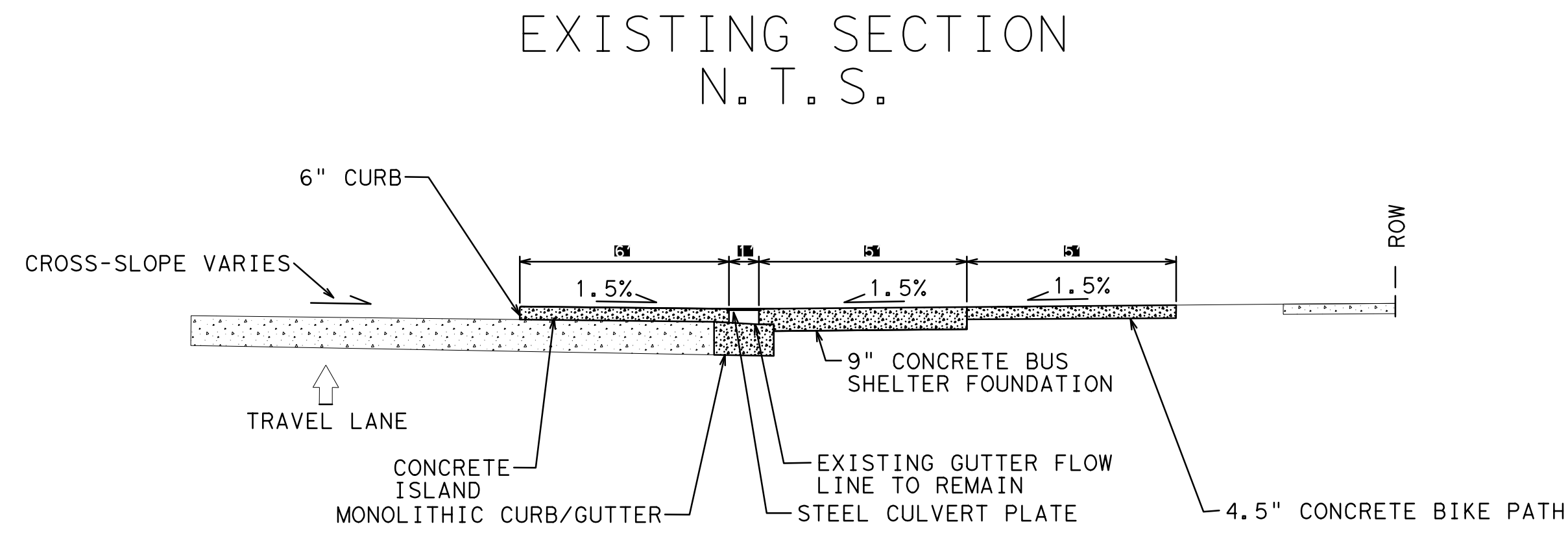
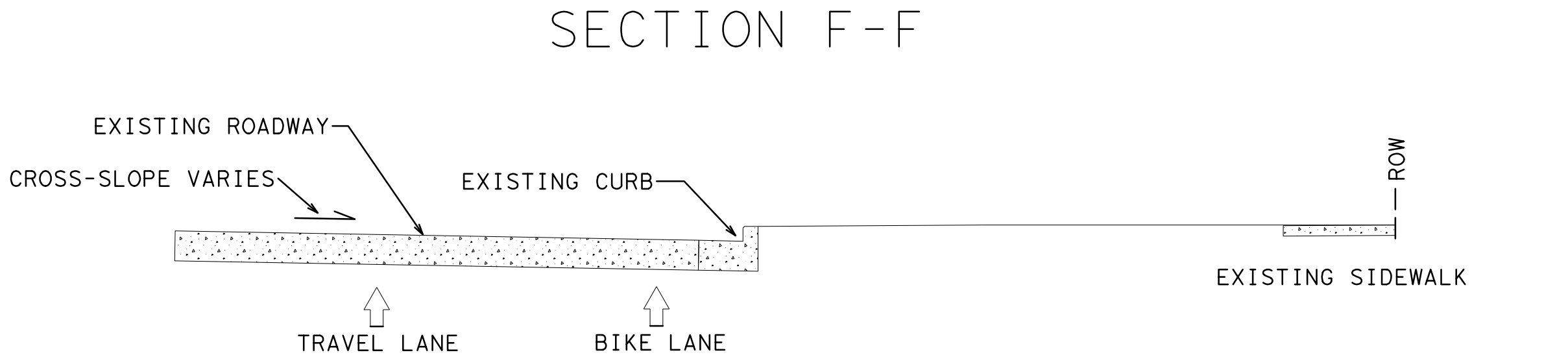
801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158



HARRIS COUNTY
ENGINEERING DEPARTMENT

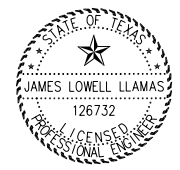
PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: BUS PLATFORM SECTION E-E
CK'D BY: JL	
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DATE: 4/12/2019	APPROVED BY:
	SHEET NO: 339

DATE: 4/12/2019 12:54:27 PM USER: /USER/ FILE: E:\Dropbox (Traffic Engineers)\Clients\Harris County\Precinct 1 Design 2018\Bikeways\04 Polk Cul len\Design\340 Bus Platform Section F-F.dgn



CULLEN WB BUS PLATFORM N.T.S.

NOTE: SEE PAVING SHEETS FOR DIMENSIONS



04/12/2019

NO.	REVISIONS	DATE	NAME

TEI **TRAFFIC ENGINEERS, INC.**
innovative transportation solutions
801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158

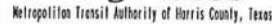


HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: BUS PLATFORM SECTION F-F
CK'D BY: JL	
SCALE: NONE	
DATE: 4/12/2019	APPROVED BY:
	SHEET NO: 340



LAN Lockwood, Andrews
& Newnam, Inc.
A LEO A DALY COMPANY



CONTRACT SHEET NO 105 OF 214
METRO SOLUTIONS SOUTHEAST CORRIDOR - 3E
TRAFFIC SIGNAL LAYOUT
SCOTT STREET AT POLK
(1 OF 2)
CONTRACT C10800120 DRAWING 104-1-0012

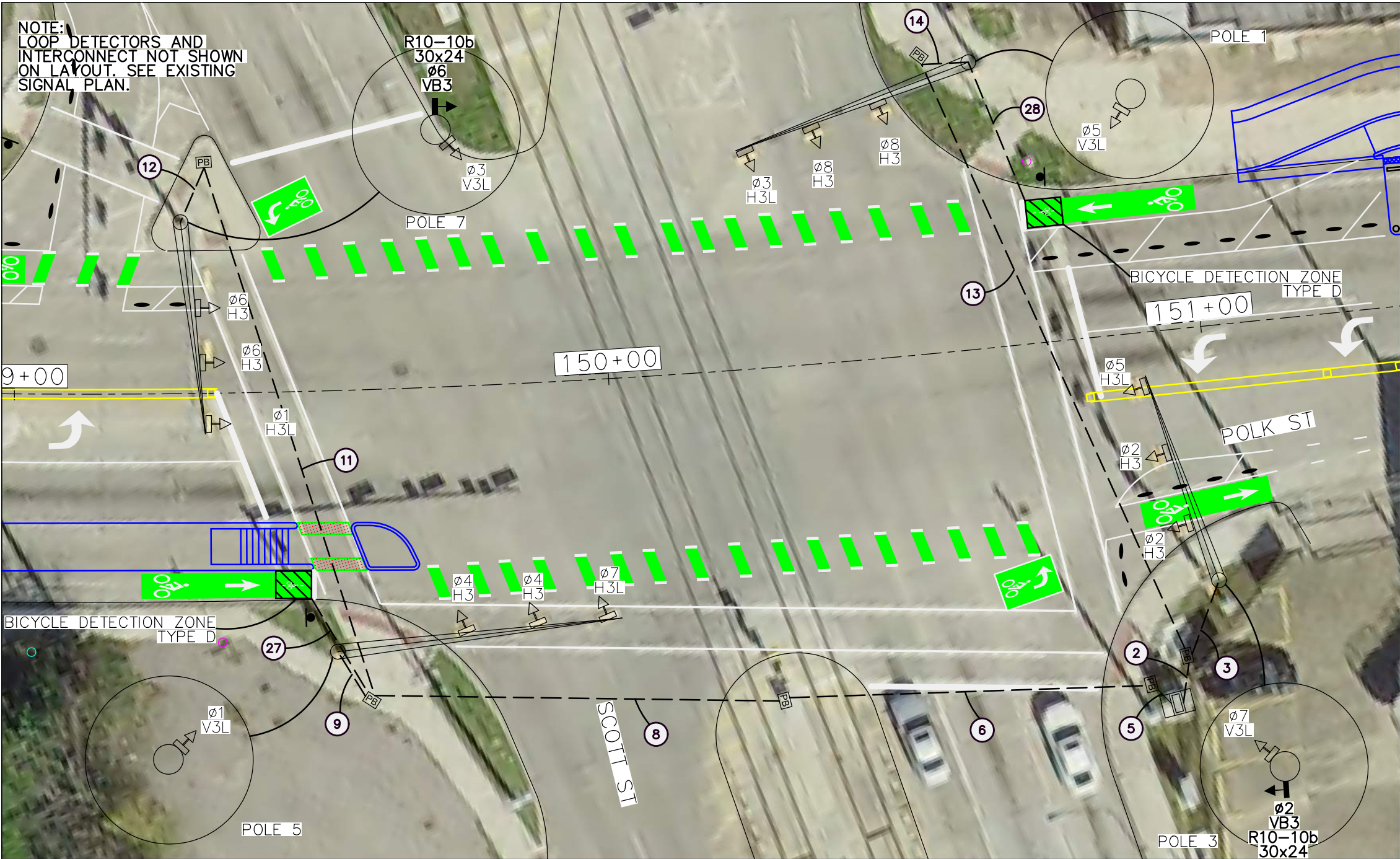
Justin W. Danks
PE, PTOE
04/12/2019

TEI TRAFFIC ENGINEERS, INC.
innovative transportation solutions



SHEET NO:
400

DATE: 4/12/2019 12:54:36 PM USER: /USER/ FILE: E:\Dropbox (Traffic Engineers)\Clients\Harris County\Harris County\Design\401 Polk at Scott Proposed Layout.dgn



POLE SCHEDULE

- POLE 1 – EXISTING 42’ STEEL MAST ARM & POLE
POLE 3 – EXISTING 36’ STEEL MAST ARM & POLE
POLE 5 – EXISTING 48’ STEEL MAST ARM & POLE
POLE 7 – EXISTING 36’ STEEL MAST ARM & POLE

ITS NOTES

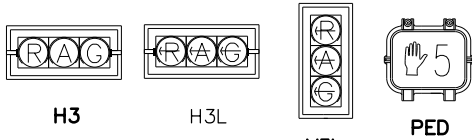
ANY INTERRUPTION OF ITS OPERATIONS REQUIRES CITY OF HOUSTON TRANSPORTATION & DRAINAGE OPERATIONS / ITS SECTION APPROVAL AT A MINIMUM OF ONE (1) WEEK IN ADVANCE AT 713-881-3172 OR 713-881-3179.

ALL EXISTING ITS INFRASTRUCTURE AND TRAFFIC SIGNAL COMMUNICATIONS SHALL BE KEPT OPERATIONAL DURING CONSTRUCTION.

ANY QUESTIONS OR CONCERNS RELATED TO DEPLOYMENT OF ANY ITS DEVICE SHALL CALL CITY OF HOUSTON TRANSPORTATION AND DRAINAGE OPERATIONS / ITS SECTION AT 713-881-3172 OR 713-881-3179.

ALL ITS DEVICES REMOVED SHALL BE GIVEN TO TRANSPORTATION & DRAINAGE OPERATIONS / ITS SECTION STAFF IMMEDIATELY UPON REMOVAL.

EXISTING SIGNAL HEAD SCHEDULE



PROPOSED SIGNAL HEAD SCHEDULE



ELECTRICAL CHART

	ITEM	RUN NUMBER	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	
EXISTING																															
	POWER	#6 TXHHW	5	5																											
	GROUND	#8 BARE COPPER	1	2	1	1	2	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	PED. PUSH BUTTON	3/C #14		3	1	1	3	3		3	1	1	1	1	1		1														
	PED./TAIN/BLINK.-OUT	5/C #14		5	2		4	4		4	3		1	1	3	3															
	VEHICLE SIGNAL	7/C #14		8	3		8	8	2	6	3		3	3	5	3		2	2												
	VIVIDS CABLE	RG-59 COAX																													
	VIVIDS POWER	3/C-#16																													
	EMER. PRE-EMPTION	3/C SHIELDED		2	1		2	2		2	1		1	1	1	1															
	LOOP DETECTOR	#14																			12				4	12			4	16	16
		2/C-#14 SHIELDED		8			24	16		16			8		8						8		2		2	2			1		
	CONDUIT	1" PVC (SCHD. 80)																													
		2" PVC (SCHD. 80)		1			1			1			1					1			1	1				1			1	1	
		2" RMC (BORE)																													
		3" PVC (SCHD. 80)		2	1		2				1			1		1				1						1					
3" RMC (BORE)							2		2			1		1				1													
4" PVC (SCHD. 80)																															
	2" RMC (BORE)																														
PROPOSED	VEHICLE SIGNAL	7CC		1	1		2	1		1			1	1																	
	14 AWG IMSA 51-5-1985			1			1	1		1					1	1													1	1	

NOTE:
EXISTING WIRING SHOWN IN ELECTRICAL CHART IS PER RECORD DRAWINGS.
THE EXISTING WIRING HAS NOT BEEN FIELD VERIFIED.



Dustin W. Qualls
PE, #97337
04/12/2019



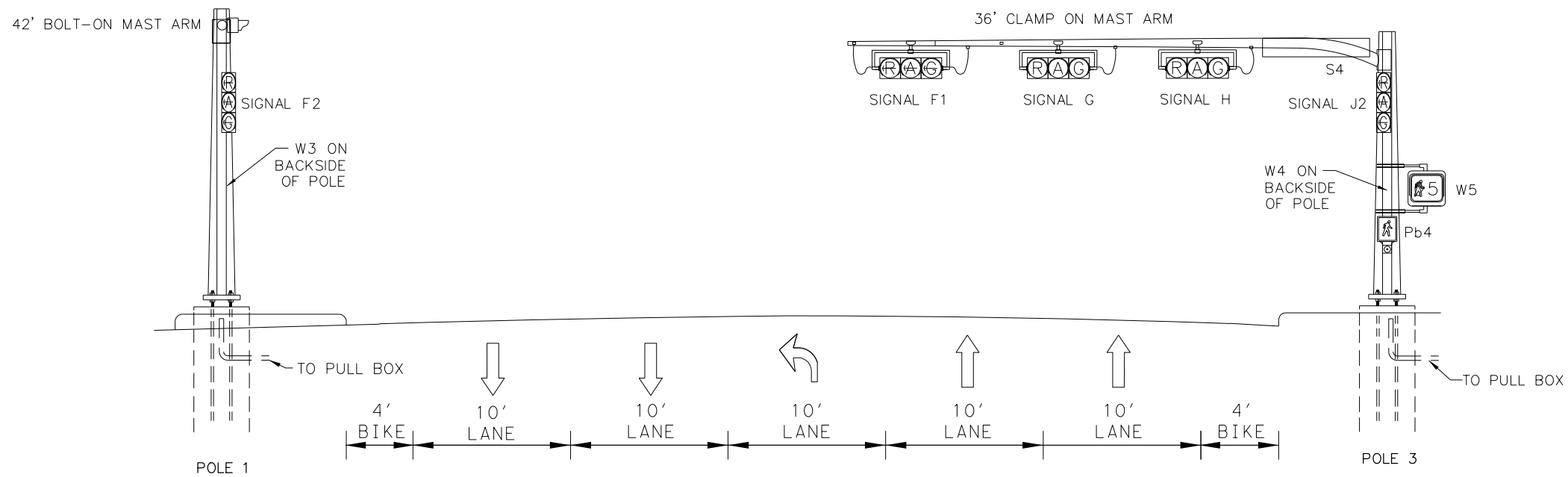
801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158



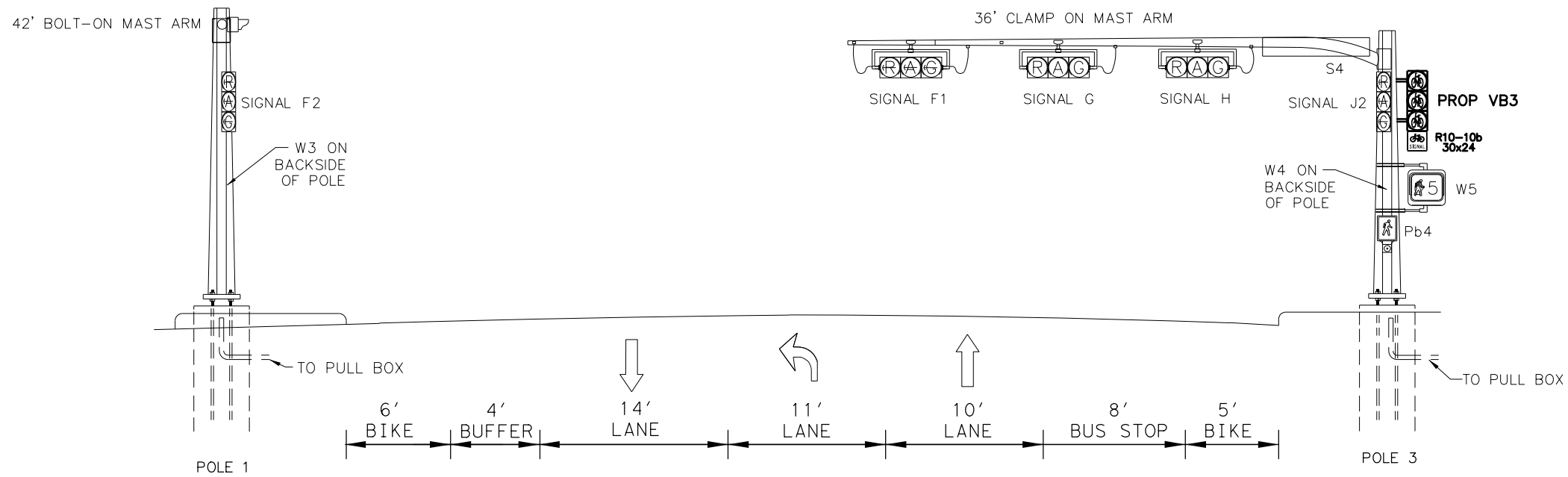
HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY
DRAWN BY: DQ SHEET DESCRIPTION: POLK ST AT SCOTT ST
CK'D BY: JL PROPOSED TRAFFIC SIGNAL LAYOUT
SCALE: 1"=20' SHEET 1 OF 1
DATE: 4/12/2019 APPROVED BY:

SHEET NO:
401



EXISTING EASTBOUND POLK ST AT SCOTT ST



PROPOSED EASTBOUND POLK ST AT SCOTT ST



Dustin W. Qualls
PE, No. 97337
04/12/2019

NO.	REVISIONS	DATE	NAME



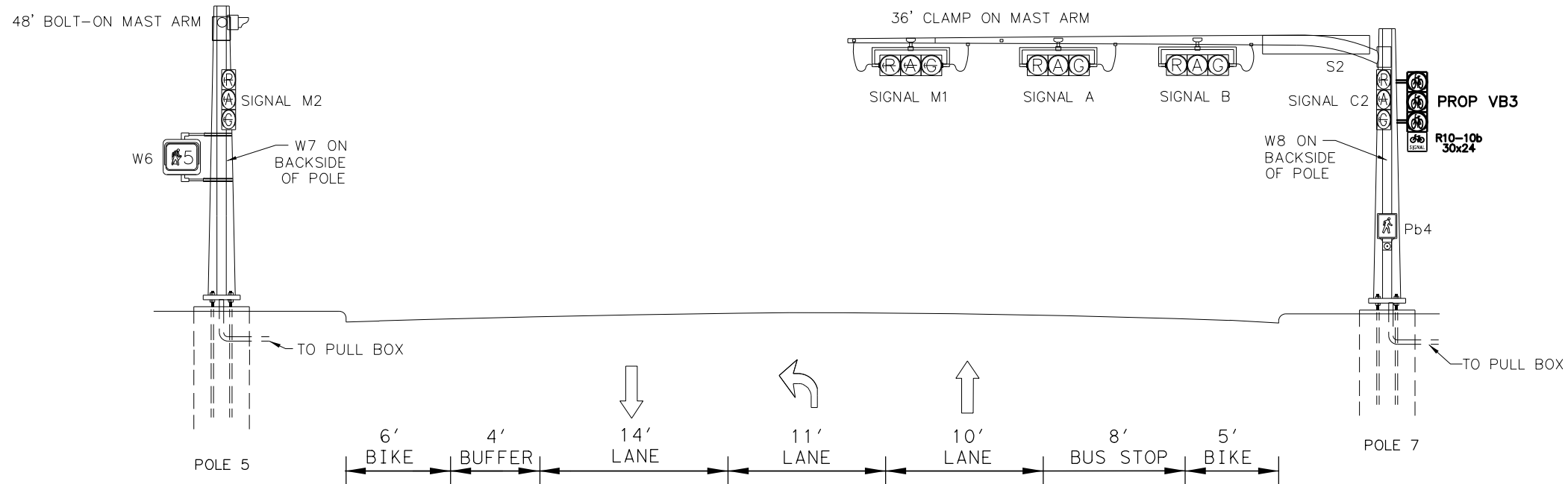
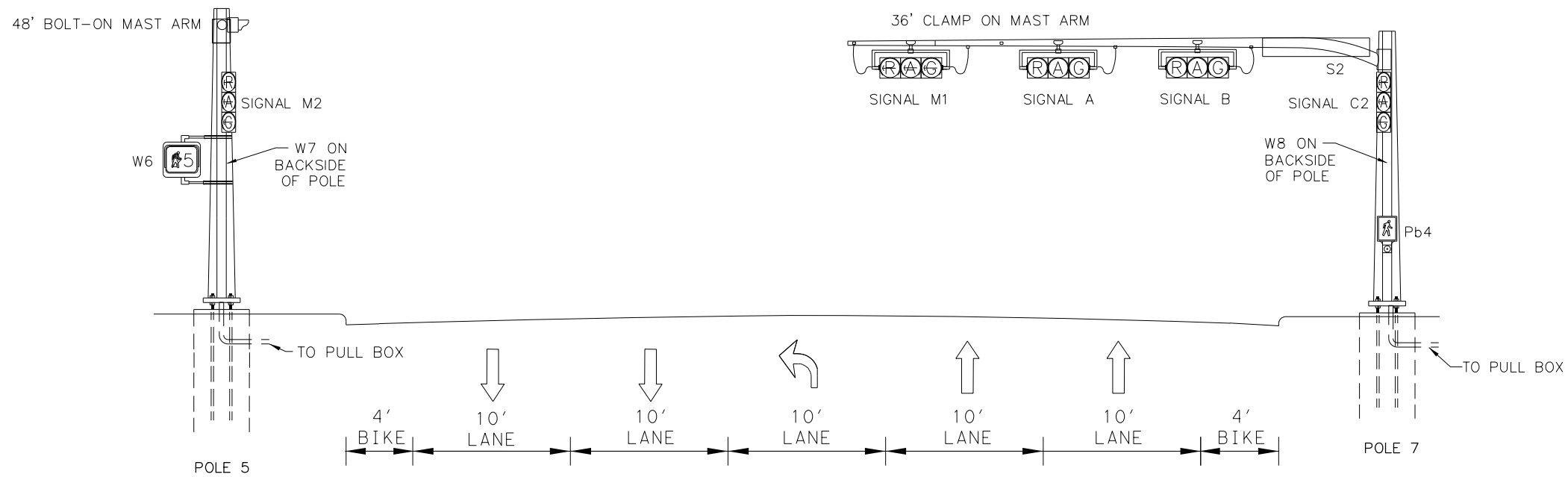
801 Congress Avenue, Suite 325, Houston, TX 77002
TEL (713) 270-8145/FAX (281) 809-0807
TBPE Registration No. F-3158



HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: DQ	SHEET DESCRIPTION: POLK ST AT SCOTT ST
CK'D BY: JL	PROPOSED SIGNAL ELEVATION
SCALE: 1"=10'(H), NTS(V)	SHEET 1 OF 2
DATE: 4/12/2019	APPROVED BY:

SHEET NO:
402



Dustin W. Qualls
PE, #1706
04/12/2019

NO.	REVISIONS	DATE	NAME



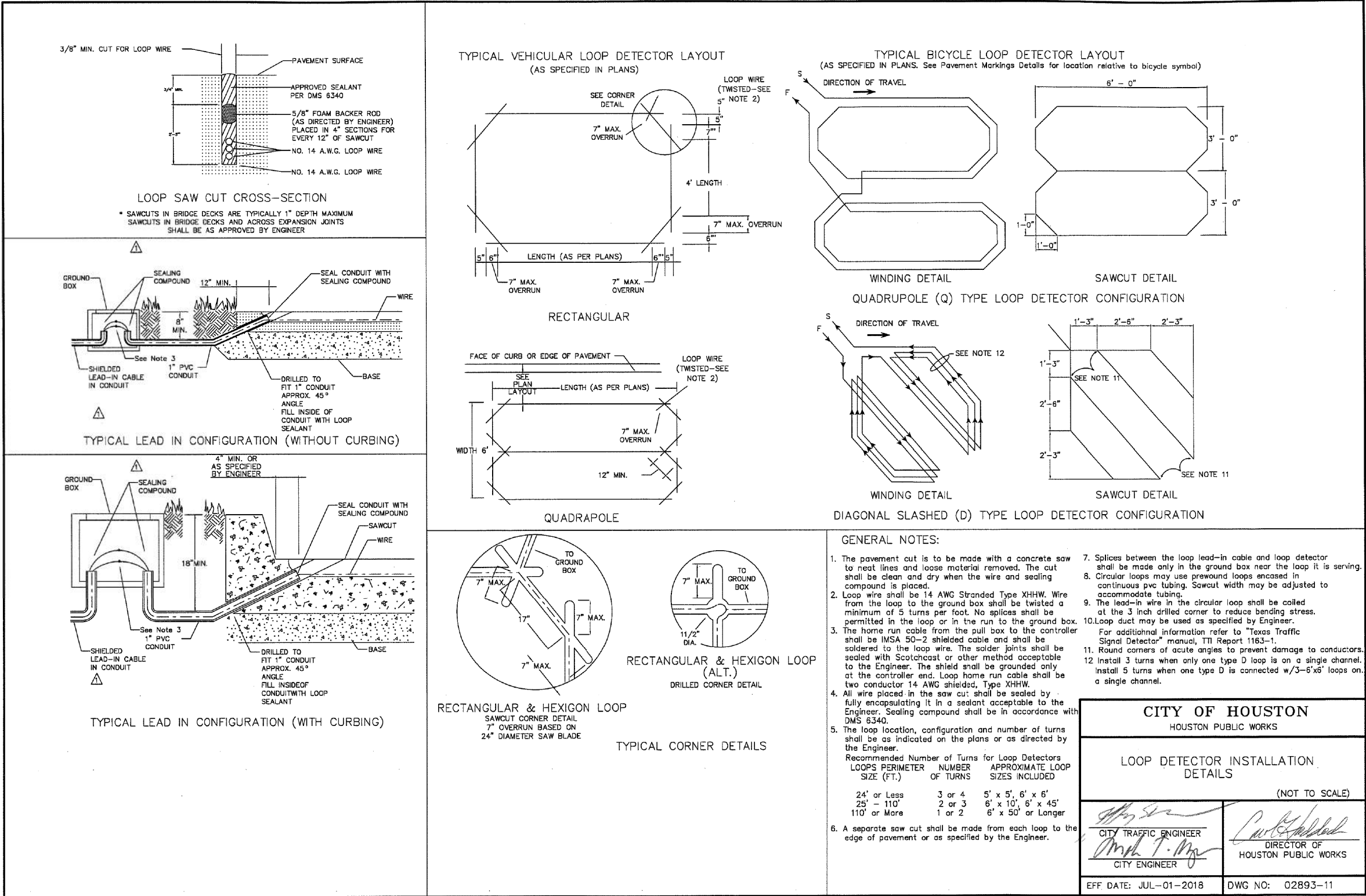
801 Congress Avenue, Suite 325, Houston, TX 77002
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TBPE Registration No. F-3158



HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: DQ	SHEET DESCRIPTION: POLK ST AT SCOTT ST
CK'D BY: JL	PROPOSED SIGNAL ELEVATION
SCALE: 1"=10'(H),NTS(V)	SHEET 2 OF 2
DATE: 4/12/2019	APPROVED BY:

SHEET NO:
403



Dustin W. Qualls
PE, PTOE
04/12/2019

NO.	REVISIONS	DATE	NAME



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HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE:	POLK STREET ON-STREET BIKEWAY
DRAWN BY:	GB
CK'D BY:	JL
SCALE:	NONE
DATE:	4/12/2019
APPROVED BY:	

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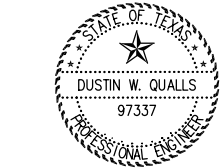
DATE: 4/12/2019 12:54:43 PM USER: general
FILE: 405 COH Signal General Notes/SHEET 1.dgn

TRAFFIC SIGNAL GENERAL NOTES:

1. ALL EQUIPMENT / MATERIALS AND CONSTRUCTION SHALL MEET OR EXCEED THE REQUIREMENTS CONTAINED IN THE CURRENT CITY OF HOUSTON STANDARD SPECIFICATIONS AND STANDARD DRAWINGS, THE PROJECT SPECIFIC SPECIFICATIONS AND THE PLANS.
2. ALL ELECTRICAL WORK SHALL BE IN CONFORMANCE WITH THE PROVISIONS AND REQUIREMENTS OF THE CITY ELECTRICAL CODE.
3. ALL SIGNS SHALL BE MANUFACTURED IN ACCORDANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
4. THE CONTRACTOR SHALL ARRANGE THE INSTALLATION OF SIGNALS, POLES AND CONDUIT SO AS TO PERMIT THE CONTINUOUS MOVEMENT OF TRAFFIC IN ALL DIRECTIONS AT ALL TIMES. THE CONTRACTOR SHALL NOT CLOSE MORE THAN ONE LANE OF A ROADWAY AT ONE TIME WITHOUT PRIOR APPROVAL OF THE CITY.
5. THE CONTRACTOR SHALL CLEAN UP AND REMOVE FROM THE WORK AREA ALL LOOSE MATERIAL RESULTING FROM CONTRACT OPERATIONS EACH DAY PRIOR TO WORK BEING SUSPENDED FOR THAT DAY.
6. THE CONTRACTOR SHALL CONTACT THE ENGINEER AND/OR THE APPROVED CITY OF HOUSTON REPRESENTATIVE TO ARRANGE FOR METER AND ELECTRICAL SERVICE CONNECTION FROM THE POWER COMPANY.
7. ALL PEDESTRIAN PUSH BUTTON ASSEMBLIES SHALL MEET ADA REQUIREMENTS. THE SIGNS THAT SHALL BE USED ARE IDENTIFIED IN THE TMUTCD AS R10-3E. CITY OF HOUSTON STANDARDS FOR PEDESTRIAN FACILITIES SHALL BE MET IN ADDITION TO ANY TEXAS ACCESSIBILITY STANDARDS BY THE TEXAS DEPARTMENT OF LICENSING AND REGULATION (TDLR).
8. PEDESTRIANS PUSH BUTTONS SHALL BE SEPARATED BY A MINIMUM OF 10 FEET. EXCEPTIONS ONLY AS SPECIFIED BY THE ENGINEER WITH AUTHORIZATION FROM THE APPROVED CITY OF HOUSTON REPRESENTATIVE.
9. OVERHEAD STREET NAME SIGNS SHALL BE INSTALLED SUCH THAT THE BOTTOM OF THE SIGN IS NO LESS THAN 17 FEET ABOVE THE ROADWAY PAVEMENT OR NO LESS THAN 16 FEET ABOVE THE FINISHED GRADE BEYOND THE SHOULDER.
10. THE LOCATION OF EACH NEW POLE FOUNDATION, PULL BOX, CONTROLLER CABINET FOUNDATION, UPS CABINET FOUNDATION AND ELECTRIC SERVICE PEDESTAL FOUNDATION SHALL BE MARKED IN THE FIELD AS SHOWN ON THE PLANS. THE EXACT LOCATION SHALL BE APPROVED BY THE ENGINEER AND/OR THE APPROVED CITY OF HOUSTON REPRESENTATIVE PRIOR TO BEGINNING INSTALLATION OF THE FOUNDATION.
11. NO POLES SHALL BE LOCATED IN WHEELCHAIR RAMPS OR SUCH THAT THEY ARE AN OBSTRUCTION TO PEDESTRIANS OR WHEELCHAIRS.
12. THE TOP OF THE POLE FOUNDATION SHALL BE LEVELED WITH THE FINISHED GRADE. IF THE SLOPE OR SHOULDER DROPS OFF FROM FINISHED GRADE, THE CONTRACTOR SHALL GRADE AROUND POLE FOUNDATION. THE TOP OF THE FOUNDATION SHALL EXTEND NO MORE THAN 4 INCHES ABOVE SURROUNDING GRADE. GROUTING SHALL BE USED TO FILL ANY GAP BETWEEN THE POLE BASE AND FOUNDATION.
13. POLES SHALL BE LOCATED SUCH THAT ALL PORTIONS OF THE POLES AND ATTACHED EQUIPMENT HAVE CLEARANCES FROM OVERHEAD UTILITIES IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL UTILITY AND THE NATIONAL ELECTRICAL SAFETY CODE (NESC).
14. ALL CONCRETE USED FOR TRAFFIC SIGNAL POLE AND CABINET FOUNDATIONS SHALL BE CLASS "A"(REFER TO THE CITY OF HOUSTON SPECIFICATION FOR CONCRETE).
15. MAST ARM AND STRAIN POLES SHALL NOT BE INSTALLED ON THE FOUNDATIONS LESS THAN SEVEN DAYS AFTER THE PLACEMENT OF THE CONCRETE FOR THE FOUNDATION.
16. ANCHOR BOLTS FOR SIGNAL POLES SHALL BE SET SO THAT TWO ARE IN COMPRESSION AND TWO ARE IN TENSION. PRIOR TO THE INSTALLATION OF THE NUT, THE THREADS OF THE ANCHOR BOLT SHALL BE COATED WITH PIPE JOINT COMPOUND.


17. ALL UNDERGROUND CONSTRUCTION (CONDUIT, FOUNDATIONS AND PULL BOXES) FOR THE INTERSECTION SHALL BE COMPLETED PRIOR TO THE INSTALLATION OF POLES, SIGNALS AND CABINETS. THE CONTRACTOR SHALL NOT PROCEED TO ABOVE GROUND WORK UNTIL THE ENGINEER AND/OR APPROVED CITY OF HOUSTON REPRESENTATIVE HAD CONFIRMED THAT THE MATERIALS FOR A COMPLETE INSTALLATION ARE AVAILABLE.
18. UNDERGROUND CONDUIT FOR SIGNAL CABLE SHALL BE EITHER RIGID STEEL, HOT-DIPPED GALVANIZED CONDUIT OR SCHEDULE 80 ELECTRICAL PVC CONDUIT OF THE DIAMETER SHOWN ON THE PLANS, UNLESS OTHERWISE NOTED. ALL COUPLINGS AND CONNECTIONS SHALL BE TIGHT AND WATERPROOF.
19. ALL ABOVE GROUND CONDUIT FOR SIGNAL CABLE AND INTERCONNECT MEDIA SHALL BE HOT DIPPED GALVANIZED STEEL RIGID METAL CONDUIT OF THE DIAMETERS SHOWN ON THE PLANS, UNLESS OTHERWISE NOTED. ALL COUPLINGS AND CONNECTIONS SHALL BE TIGHT AND WATERPROOF.
20. ONLY NEW CONDUIT AND CABLE SHALL BE INSTALLED.
21. CONDUIT INSTALLED UNDER EXISTING PAVED DRIVEWAYS, ROADWAYS OR SIDEWALKS, WHICH ARE NOT SCHEDULED TO BE RECONSTRUCTED AS PART OF THIS PROJECT, SHALL BE INSTALLED BY MEANS OF BORING. THE CONTRACTOR SHALL NOT CUT OPEN ANY STREET OR DRIVEWAY FOR CONDUIT INSTALLATION WITHOUT THE PRIOR APPROVAL OF THE ENGINEER AND/OR THE APPROVED CITY OF HOUSTON REPRESENTATIVE.
22. CONDUIT NOT PLACED UNDER PAVED DRIVEWAYS, ROADWAY PAVEMENT OR SIDEWALK MAY BE PLACED BY CUTTING A TRENCH, INSTALLING THE CONDUIT AND BACKFILLING. ANY TRENCHING FOR CONDUIT WIDER THAN THREE (3) INCHES SHALL BE RESODDED.
23. PULL BOXES SHALL NOT BE INSTALLED WITHIN CONCRETE CURB ACCESS RAMPS. IN ADDITION, ANY PULL BOXES INSTALLED BEHIND CURBS SHALL BE INSTALLED BETWEEN THE CURB AND THE PROPOSED / FUTURE SIDEWALK OR BEYOND THE PROPOSED / FUTURE SIDEWALK. AN EXCEPTION TO THIS NOTE WOULD BE PULL BOXES INSTALLED IN A MEDIAN. ANY PULL BOXES INSTALLED ALONG AN UNCURBED ROADWAY SHALL BE INSTALLED ADJACENT TO, BUT NOT WITHIN, THE SHOULDER. DRAINAGE AREAS SHOULD BE AVOIDED WHEN PLACING JUNCTION BOXES.
24. A 5/8 IN. X 10 FT. GROUND ROD SHALL BE INSTALLED IN THE NO. 7 PULL BOX LOCATED ON EACH CORNER. TWO GROUND ROD CLAMPS SHALL BE FURNISHED FOR GROUNDING THE GROUND WIRE.
25. ALL CONDUITS SHALL BE CLEANED BY COMPRESSED AIR AND A PROPERLY SIZED CONDUIT PISTON OR MANDREL SHALL BE PULLED THROUGH THE CONDUIT PRIOR TO CABLE INSTALLATION.
26. WHEN PULLING TRAFFIC SIGNAL SYSTEM CABLES THROUGH CONDUIT, THE CABLES SHALL BE LUBRICATED WITH A LUBRICANT NORMALLY USED FOR THIS PURPOSE. ANY ABRASION TO ANY CONDUCTOR INSULATION WHICH OCCURS WHILE PULLING CABLE FOR THE TRAFFIC SIGNAL SYSTEM WILL BE CAUSE FOR THE IMMEDIATE REJECTION OF THE CABLE. IF THIS OCCURS, THE CONTRACTOR SHALL REMOVE AND REPLACE THE ENTIRE CABLE RUN AT THEIR EXPENSE.
27. A MINIMUM OF THREE (3) FEET OF EACH WIRE AND CABLE MEASURED FROM THE TOP OF THE PULL BOX SHALL BE LEFT IN EACH PULL BOX AND AT EACH POLE BASE.
28. ALL CABLES SHALL BE STRIPPED, FORMED AND TERMINATED IN A NEAT AND UNIFORM MANNER WHETHER IN THE SIGNAL HEAD OR CONTROLLER CABINET. ALL CABLE SHALL BE BROUGHT INTO THE TERMINAL HOUSING OF SIGNALS AND/OR CONTROLLER CABINETS AND A SUFFICIENT LENGTH OF CABLE SHALL BE LEFT SO THAT ALL TERMINAL CONNECTIONS MAY BE MADE WITHOUT THE NECESSITY OF SPLICING THE CABLE.
29. THE HIGH VOLTAGE CABLES SHOULD BE SEPARATED FROM THE LOW VOLTAGE CABLES AS MUCH AS POSSIBLE.
30. NO LOOP DETECTOR SHALL BE CUT IN A PARALLEL EXPANSION JOINT. LOOPS CUT ACROSS EXPANSION JOINTS SHALL HAVE A SLACK IN THE CABLE FOR EXPANSION.
31. ALL VEHICLE ROADWAY DETECTION LOOP CABLES SHALL BE #14 AWG IMSA 51-5-1985 CABLE. LEAD-IN CABLES SHALL BE #16 AWG IMSA 50-2-1984 CABLE. NO SPLICES SHALL BE ALLOWED IN THE ROADWAY DETECTION LOOP CABLE EXCEPT AT THE PULL BOX ADJACENT TO LOOP. THE DETECTOR LEAD-IN CABLE SHALL NOT BE SPLICED.

32. DETECTION LOOP SAW CUTS SHALL BE FLUSHED WITH WATER UNDER PRESSURE AND THEN DRIED WITH AIR UNDER PRESSURE.
33. THERE SHALL BE NO SPLICING IN CONDUCTORS EXCEPT FOR THE NECESSARY SPLICE BETWEEN ROADWAY LOOP WIRE AND DETECTOR LEAD-IN CABLE IN THE PULL BOX ADJACENT TO THE DETECTOR. THESE SPLICES SHALL BE WATERPROOF AND SHALL BE IN COMPLIANCE WITH THE CITY OF HOUSTON STANDARD DRAWINGS FOR TRAFFIC SIGNAL CONSTRUCTION. THESE SPLICES SHALL BE MADE BY THE CONTRACTOR. DO NOT GROUND THE CABLE SHIELD AT THE PULL BOX.
34. TWO #10 AWG-XHHW CONDUCTORS SHALL BE INSTALLED FROM EACH LUMINAIRE TO THE CONTROLLER CABINET, LEAVING THREE FEET OF SLACK FOR EACH CONDUCTOR (MEASURED FROM THE TOP OF THE PULL BOX) IN EACH PULL BOX. ROUTE FOUR CONDUCTORS TO THE LUMINAIRE WITH THE PHOTOELECTRIC CELL. AN IN-LINE FUSE SHALL BE INSTALLED FOR EACH LUMINAIRE IN THE ASSOCIATED PULL BOX.
35. THE EMERGENCY VEHICLE PRE-EMPTION SENSOR CABLE SHALL BE OPTICOM DETECTOR CABLE MODEL NO. 138. THE CABLE SHALL NOT BE SPLICED.
36. ALL VEHICLE AND PEDESTRIAN INDICATIONS SHALL BE LED.
37. THE CONTRACTOR SHALL BAG ALL NEWLY INSTALLED VEHICULAR AND/OR PEDESTRIAN TRAFFIC SIGNAL HEADS WITH BURLAP OR OTHER APPROVED MATERIAL UNTIL THE FINAL INSPECTION AND ACCEPTANCE BY THE CITY TRAFFIC ENGINEER AND/OR APPROVED CITY OF HOUSTON REPRESENTATIVE. THE BURLAP OR OTHER APPROVED MATERIAL/DEVICE SHALL COMPLETELY COVER THE TRAFFIC SIGNAL HEAD AND SHALL OBSCURE THE VIEW OF THE TRAFFIC SIGNAL INDICATIONS SO THAT THEY CANNOT BE SEEN UNTIL THE TRAFFIC SIGNAL IS PLACED IN OPERATION. DURING CONSTRUCTION, THE TRAFFIC SIGNAL WILL BE DE-ENERGIZED WHILE NOT IN USE FOR TESTING.
38. THE TRAFFIC SIGNAL OPERATION AT EXISTING SIGNALIZED INTERSECTIONS SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT.
39. ALL STRIPING AND PAVEMENT MARKINGS ARE TO BE DONE UNDER THIS CONTRACT AND SHALL BE IN PLACE PRIOR TO THE ACTIVATION OF THE TRAFFIC SIGNAL. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL STOP LINES PRIOR TO THE INSTALLATION OF LOOP DETECTORS.
40. ALL CROSSWALK MARKINGS SHALL BE 10-FT. WIDE FOLLOWING CITY OF HOUSTON STANDARD DETAILS
41. ALL CONSTRUCTION SIGNING AND CONSTRUCTION TRAFFIC CONTROL DEVICES SHALL BE IN CONFORMANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.



Dustin W. Qualls
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04/12/2019

NO.	REVISIONS	DATE	NAME

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innovative transportation solutions

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HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: POLK STREET ON-STREET BIKEWAY	
DRAWN BY: GB	SHEET DESCRIPTION: CITY OF HOUSTON
CK'D BY: JL	TRAFFIC SIGNAL GENERAL NOTES
SCALE: NONE	SHEET 1 OF 2
DATE: 4/12/2019	APPROVED BY:
SHEET NO: 405	

PRIVATE UTILITY NOTES
CAUTION: SBC CABLES

- THE LOCATION OF SBC FACILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.
- THE CONTRACTOR SHALL CALL 1-800-344-8477 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND UTILITY LINES FIELD LOCATED.
- WHEN EXCAVATING WITHIN EIGHTEEN (18) INCHES OF THE INDICATED LOCATION OF SBC FACILITIES, ALL EXCAVATIONS MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES. WHEN BORING, THE CONTRACTOR SHALL EXPOSE THE SBC FACILITIES.
- WHEN SBC FACILITIES ARE EXPOSED, THE CONTRACTOR SHALL PROVIDE SUPPORT TO PREVENT DAMAGE TO THE CONDUIT DUCTS OR CABLES. WHEN EXCAVATING NEAR TELEPHONE POLES, THE CONTRACTOR SHALL BRACE THE POLE FOR SUPPORT.

CAUTION: UNDERGROUND GAS FACILITIES

- LOCATIONS OF CENTERPOINT ENERGY GAS MAIN LINES (TO INCLUDE UNIT GAS TRANSMISSION AND/OR INDUSTRIAL GAS SUPPLY CORPORATION WHERE APPLICABLE) ARE SHOWN IN AN APPROXIMATE LOCATION ONLY. SERVICE LINES ARE USUALLY NOT SHOWN. THE CONTRACTOR SHALL CONTACT LONE STAR NOTIFICATION CENTER AT (713) 223-4567 OR 1-800-669-8344 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO MAIN AND SERVICE LINES FIELD LOCATED.
- WHEN CENTERPOINT ENERGY GAS PIPE LINE MARKINGS ARE NOT VISIBLE, CALL (713) 967-8037 (7:00 AM TO 4:30 PM) FOR STATUS OF LINE LOCATION REQUESTS BEFORE EXCAVATION BEGINS.
- WHEN EXCAVATING WITHIN EIGHTEEN (18) INCHES OF THE INDICATED LOCATION OF CENTERPOINT ENERGY GAS FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NONMECHANIZED EXCAVATION PROCEDURES.
- WHEN CENTERPOINT ENERGY GAS FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING.
- THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.

WARNING: OVERHEAD ELECTRICAL FACILITIES

- OVERHEAD LINES MAY EXIST ON THE PROPERTY. WE HAVE NOT ATTEMPTED TO MARK THOSE LINES SINCE THEY ARE CLEARLY VISIBLE, BUT YOU SHOULD LOCATE THEM PRIOR TO BEGINNING ANY CONSTRUCTION. TEXAS LAW SECTION 752, HEALTH & SAFETY CODE, FORBIDS ALL ACTIVITIES IN WHICH PERSONS OR THINGS MAY COME WITHIN SIX (6) FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES. PARTIES RESPONSIBLE FOR THE WORK, INCLUDING CONTRACTORS, ARE LEGALLY RESPONSIBLE FOR THE SAFETY OF CONSTRUCTION WORKERS UNDER THIS LAW. THIS LAW CARRIES BOTH CRIMINAL AND CIVIL LIABILITY. TO ARRANGE FOR LINES TO BE TURNED OFF OR REMOVED, CALL CENTERPOINT ENERGY ELECTRIC AT (713) 207-7777.
- CONTRACTOR TO NOTIFY LONE STAR NOTIFICATION CENTER AT (713) 223-4567, 48 HOURS BEFORE STARTING WORK IN STREET RIGHTOF-WAY OR EASEMENTS.

RESPONSIBILITIES:

- THE CONTRACTOR SHALL SUPPLY AND INSTALL THE FOLLOWING EQUIPMENT AND MATERIALS AS SPECIFIED IN THE PLANS: STEEL POLE ANCHOR BOLTS (WITH NUTS AND WASHERS), CONCRETE POLE FOUNDATIONS WITH REINFORCEMENT (WHERE SPECIFIED), TRAFFIC SIGNAL CONTROLLER CABINET(S) WITH CONTROLLER(S) AND ALL AUXILIARY EQUIPMENT, CONTROLLER CABINET CONCRETE FOUNDATION(S), CONCRETE PULL BOXES, ELECTRICAL CONDUIT, GROUND RODS AND CONNECTORS, BARE BOND WIRE AND ALL OTHER CONDUCTORS, POLES, MAST ARMS, TRAFFIC SIGNALS AND MOUNTING ASSEMBLIES, PEDESTRIAN SIGNALS AND MOUNTING ASSEMBLIES, PEDESTRIAN PUSH BUTTON STATIONS WITH SIGNS, LUMINARIES, PHOTOCELLS, ELECTRIC SERVICE PEDESTAL(S) AND CONCRETE FOUNDATION(S), VIDEO DETECTION SYSTEM EQUIPMENT, VEHICLE DETECTION LOOPS, AND ALL OTHER APPURTENANCES NECESSARY FOR THE OPERATION OF THE TRAFFIC SIGNAL INSTALLATION(S), EXCEPT AS MODIFIED IN THE PLANS.
- THE CITY OF HOUSTON WILL SUPPLY AND THE CONTRACTOR SHALL INSTALL THE FOLLOWING EQUIPMENT AND MATERIALS AS SPECIFIED IN THE PLANS:

NONE
- THE CONTRACTOR SHALL DELIVER THE CONTROLLER CABINET(S) WITH THE CONTROLLER(S) AND AUXILIARY EQUIPMENT SPECIFIED IN THE PLANS TO THE CITY OF HOUSTON TRAFFIC OPERATIONS CENTER, 2200 PATTERSON STREET FOR TESTING, A MINIMUM OF THREE WEEKS PRIOR TO THE INSTALLATION(S) AT THE INTERSECTION(S). CONTACT THE TRAFFIC MAINTENANCE BRANCH AT LEAST 2 WORKING DAYS PRIOR TO THE DELIVERY OF THE CONTROLLER CABINET(S) TO THE CITY OF HOUSTON. THE CONTRACTOR SHALL PICK UP AND TRANSPORT THE CONTROLLER CABINET(S) FROM THE CITY OF HOUSTON TRAFFIC OPERATIONS CENTER TO THE INTERSECTION(S) AFTER CITY OF HOUSTON STAFF HAS TESTED THE EQUIPMENT AND APPROVED IT FOR INSTALLATION.

- THE CONTRACTOR SHALL INSTALL EACH TRAFFIC CONTROLLER CABINET ON ITS FOUNDATION AND ROUTE ALL OF THE CONDUCTORS INTO THE CONTROLLER CABINET. CONDUCTORS SHALL BE TERMINATED IN THE CABINET BY THE CONTRACTOR UNDER THE OBSERVATION OF AN APPROVED CITY OF HOUSTON REPRESENTATIVE.
- THE CONTRACTOR SHALL CAREFULLY DISASSEMBLE AND SALVAGE ALL EXISTING TRAFFIC SIGNAL AND STREET LIGHTING EQUIPMENT THAT IS NOT TO REMAIN OR BE RELOCATED. ALL OF THE EQUIPMENT TO BE INSPECTED BY TRAFFIC MAINTENANCE STAFF TO IDENTIFY SALVAGE ITEMS. ITEMS TO BE SALVAGED SHALL BE RETURNED TO THE CITY OF HOUSTON TRAFFIC OPERATIONS CENTER, 2200 PATTERSON STREET AND UNLOADED BY THE CONTRACTOR. CONTACT THE TRAFFIC MAINTENANCE BRANCH AT LEAST 2 WORKING DAYS PRIOR TO RETURNING THE EQUIPMENT. ALL NON-SALVAGE ITEMS TO BE DELIVERED BY THE CONTRACTOR TO AN APPROVED CITY OF HOUSTON RECYCLE FACILITY.
- THE CONTRACTOR SHALL SALVAGE AND REPLANT ANY LANDSCAPING VEGETATION THAT MAY BE DAMAGED BY CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL OBTAIN PRIOR APPROVAL FROM AN APPROVED CITY OF HOUSTON REPRESENTATIVE BEFORE ANY PLANTS ARE MOVED.
- THE CONTRACTOR SHALL REPAIR/RESTORE ANY LANDSCAPE IRRIGATION COMPONENTS DAMAGED BY CONSTRUCTION ACTIVITY TO THEIR ORIGINAL CONDITION.

- THE LOCATION OF PUBLIC AND PRIVATE UTILITIES IS SHOWN IN AN APPROXIMATE LOCATION ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATIONS BEFORE COMMENCING WORK. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES TO UTILITIES THAT ARE THE RESULT OF HIS FAILURE TO EXACTLY LOCATE AND PRESERVE UNDERGROUND FACILITIES.



Dustin W. Qualls
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SHEET NO: 406	