

HARRIS COUNTY ENGINEERING DEPARTMENT

ON-STREET BIKEWAY SIGNING AND PAVEMENT MARKINGS

HUTCHINS STREET
FROM CLEBURNE STREET TO GRAY STREET

CLEBURNE STREET
FROM LA BRANCH STREET TO HUTCHINS STREET

UPIN NO. 19101MF0ZG01

RODNEY ELLIS
COMMISSIONER PRECINCT 1

ADRIAN GARCIA
COMMISSIONER PRECINCT 2

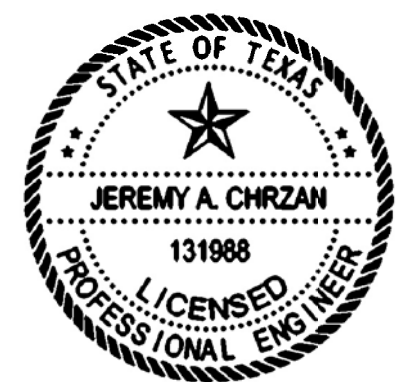
MICHAEL POST, CPA
COUNTY AUDITOR

LINA HIDALGO
COUNTY JUDGE

STEVE RADACK
COMMISSIONER PRECINCT 3

R. JACK CAGLE
COMMISSIONER PRECINCT 4

JOHN R. BLOUNT, P.E.
COUNTY ENGINEER



Jeremy A. Chrzan, P.E.
04/12/2019

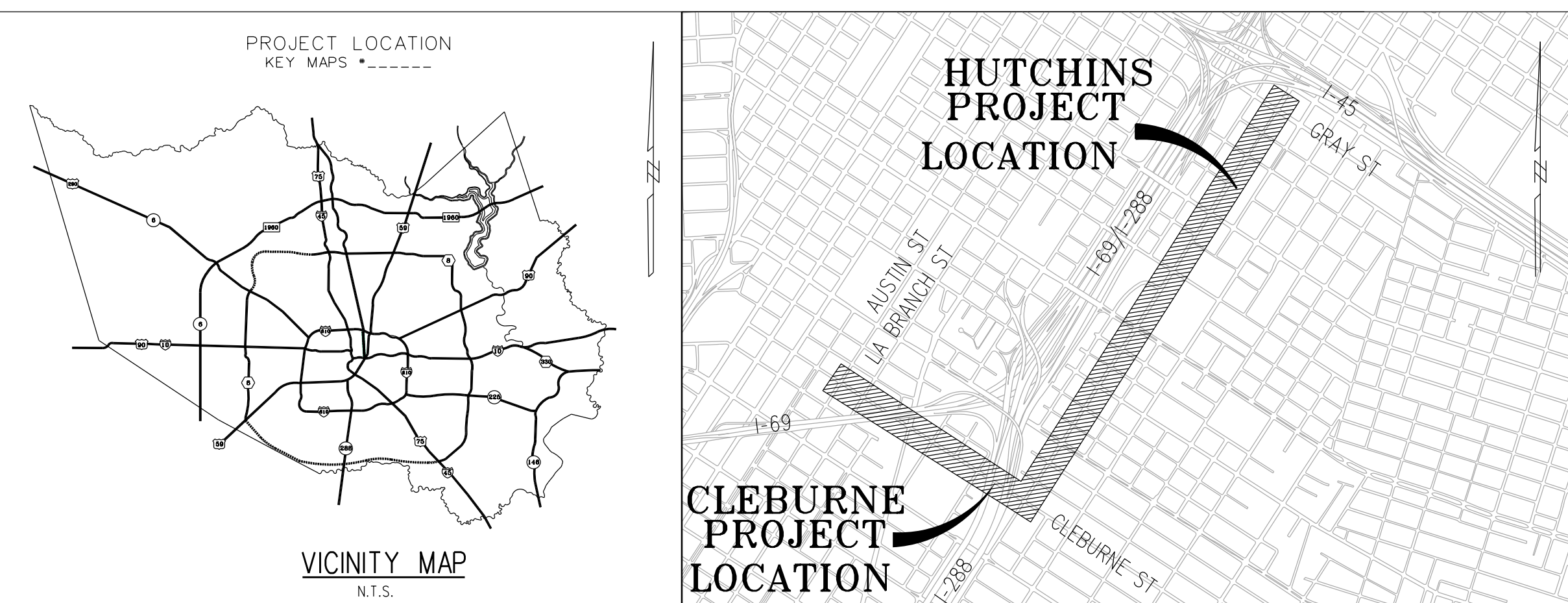
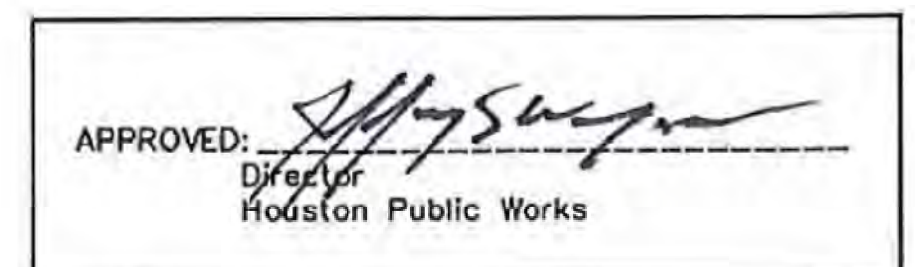


APRIL 2019
PRECINCT 1
Harris County, Texas



**TOOLE
DESIGN**

8484 Georgia Avenue, Suite 800, Silver Spring, MD 20910
TEL (301) 927-1900
TBPE Registration No. 14667



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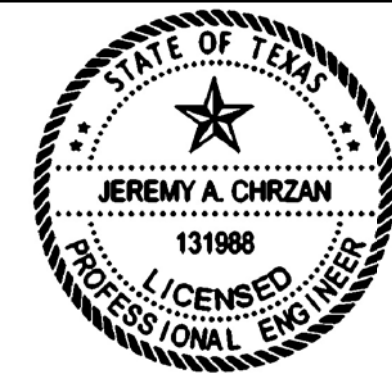
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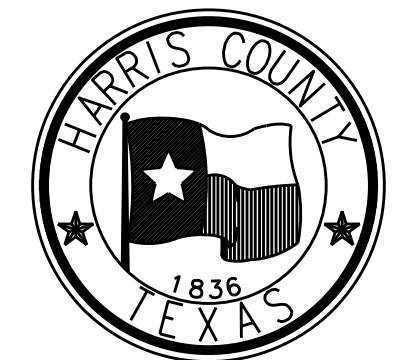


Jeremy A. Chrzan, PE
04/12/2019

NO.	REVISIONS	DATE	NAME
1	ISSUED FOR CONSTRUCTION	7/15	JAC

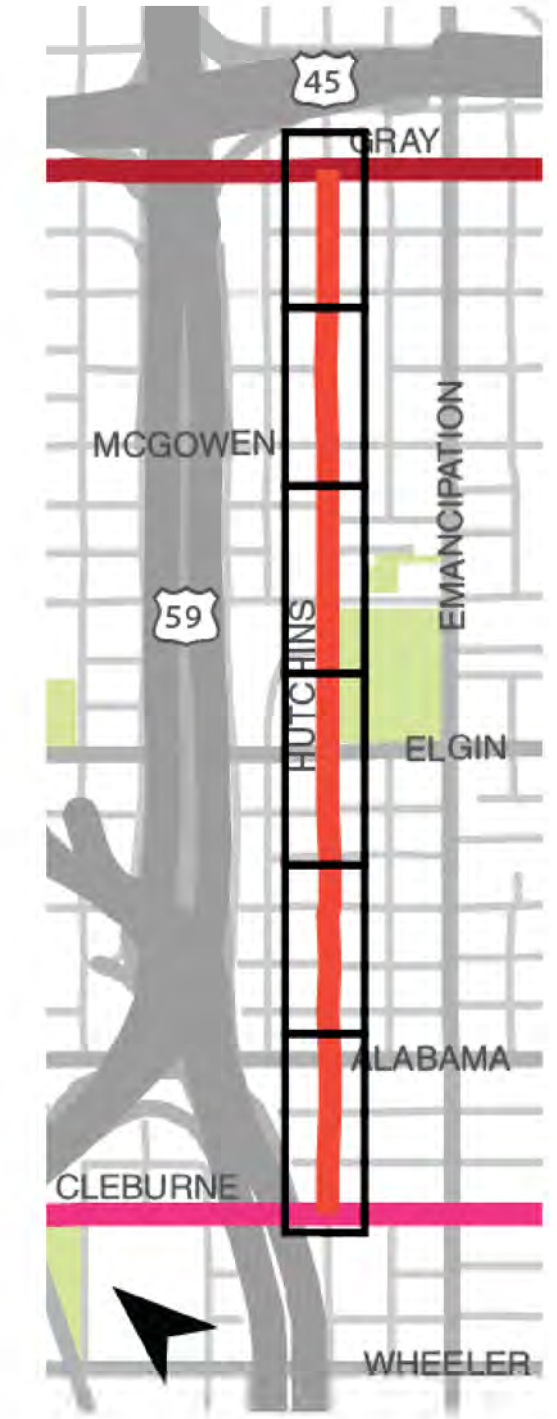
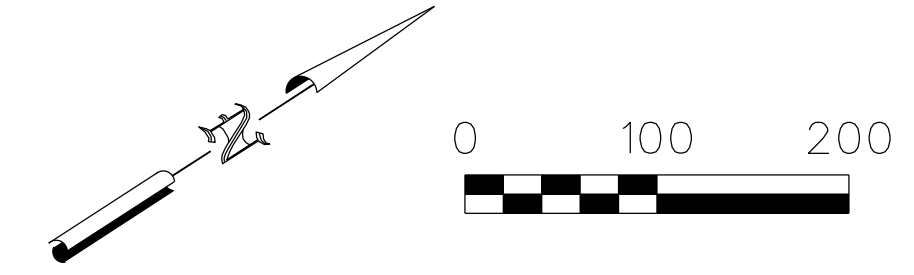
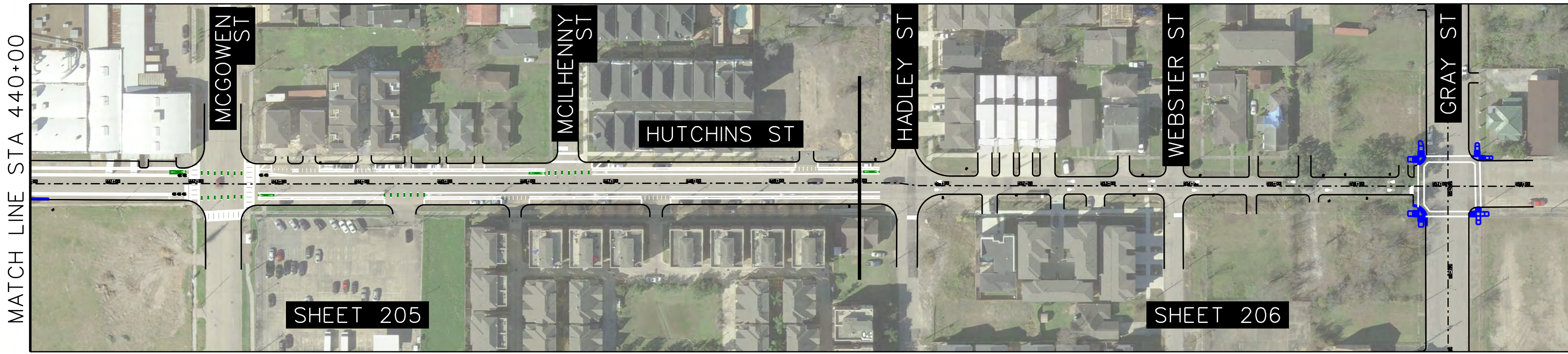
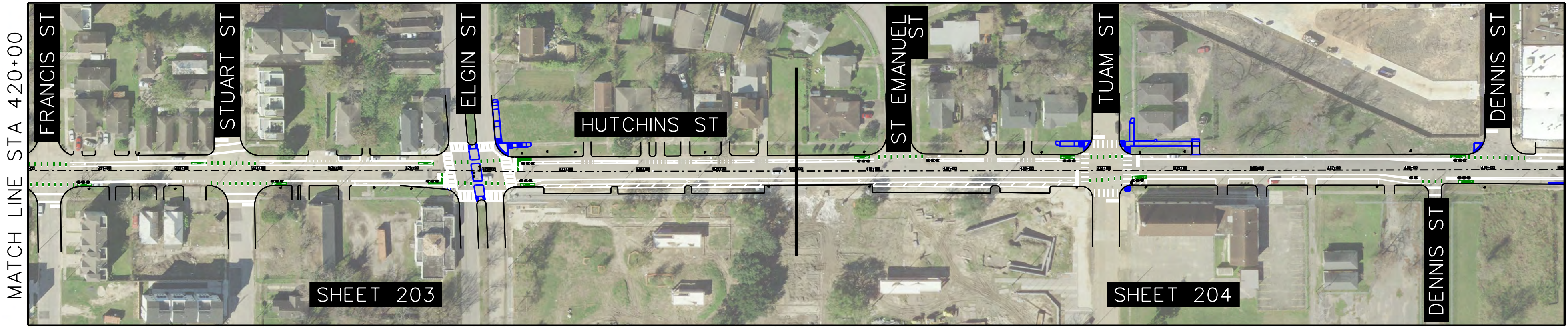
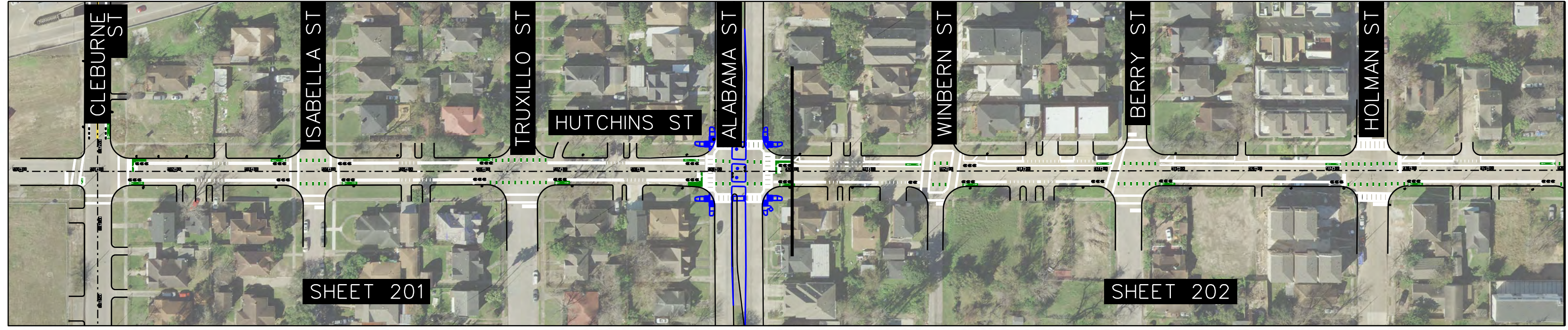
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HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: INDEX OF SHEETS
CK'D BY: JC	SHEET 1 OF 1
DATE: 04/12/19	APPROVED BY:
SHEET NO: 101	

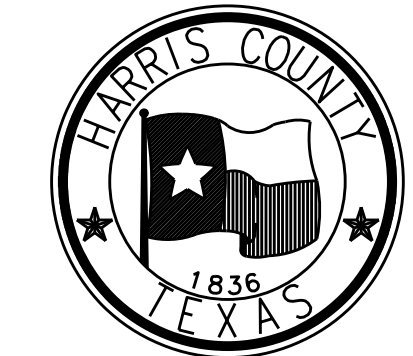


Jeremy A. Chrzan PE
04/12/2019

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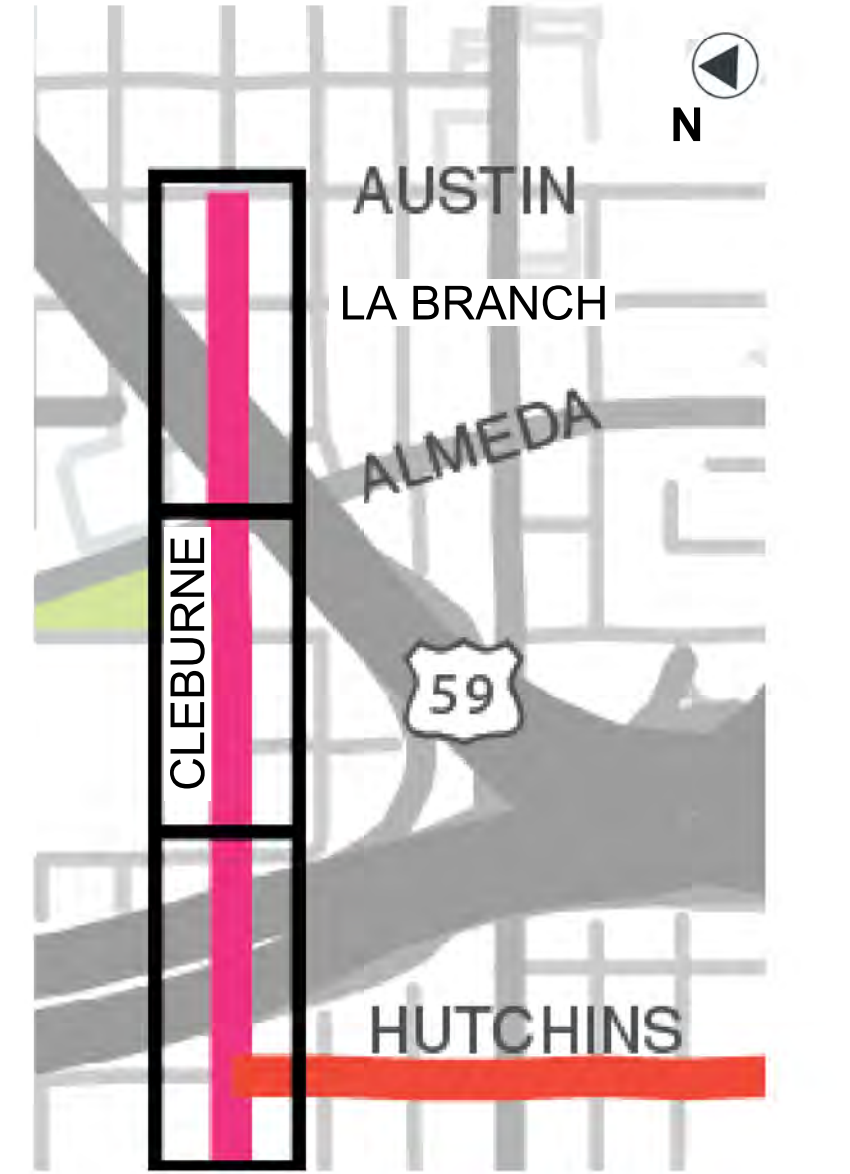
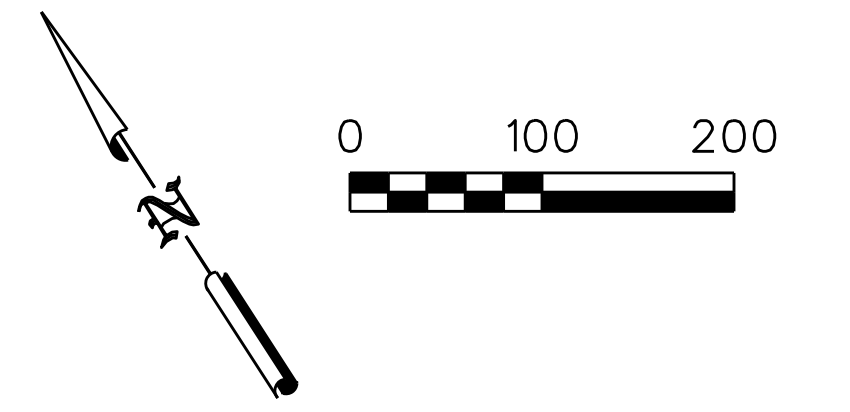
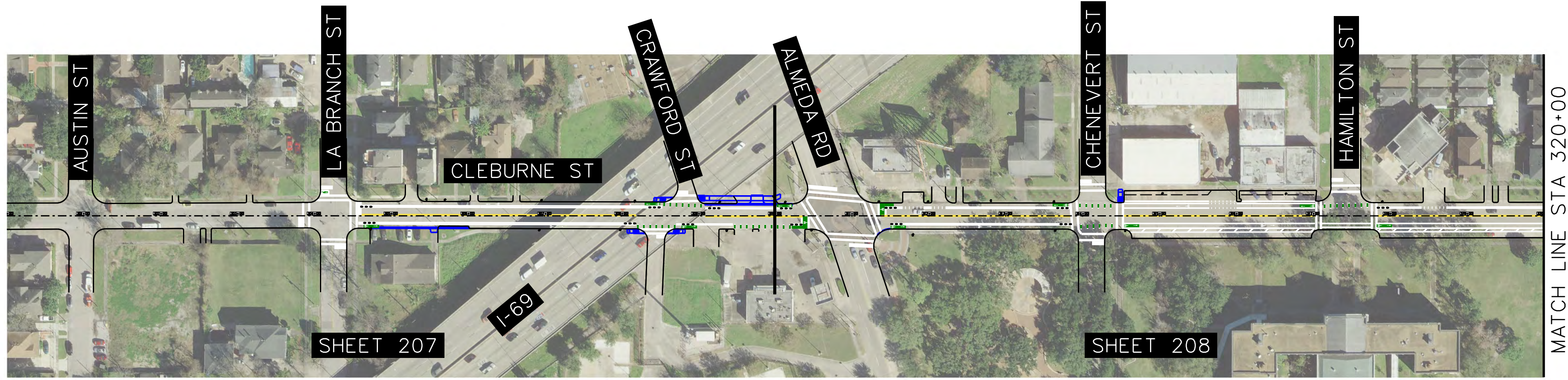
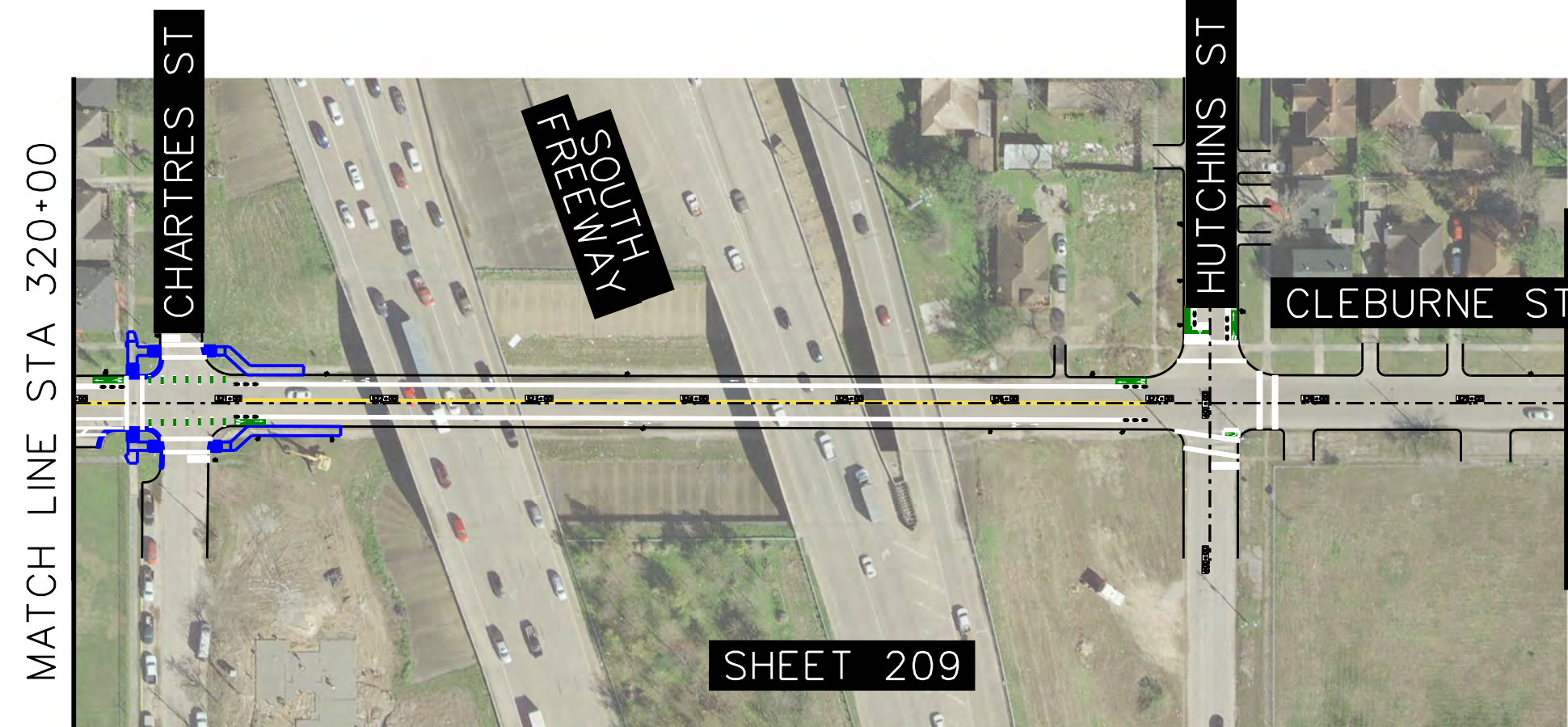
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HARRIS COUNTY
 ENGINEERING DEPARTMENT

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY
 DRAWN BY: CB/FL SHEET DESCRIPTION: PROJECT LAYOUT HUTCHINS STREET
 CK'D BY: JC
 SCALE: 1"=100' SHEET 1 OF 2
 DATE: 04/12/19 APPROVED BY:

SHEET NO:
102



NO.	REVISIONS	DATE	NAME

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HARRIS COUNTY
 ENGINEERING DEPARTMENT

PROJECT TITLE:
 HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY
 DRAWN BY: CB/FL SHEET DESCRIPTION:
 PROJECT LAYOUT CLEBURNE STREET
 CK'D BY: JC
 SCALE: 1"=100' SHEET 2 OF 2
 DATE: 04/12/19 APPROVED BY:

SHEET NO:
 103

GENERAL

1. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS BEFORE BEGINNING CONSTRUCTION.
2. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING SECURITY TO PROTECT THE PROJECT SITE, CONTRACTOR PROPERTY, EQUIPMENT, AND WORK.
3. THE CONTRACTOR IS RESPONSIBLE FOR CLEANING STREETS OF CONSTRUCTION DIRT AND DEBRIS AT CLOSE OF EACH WORK DAY.
4. THE CONDITION OF THE ROAD AND/OR RIGHT-OF-WAY, UPON COMPLETION OF THE JOB SHALL BE AS GOOD AS OR BETTER THAN PRIOR TO STARTING WORK.
5. PRIOR TO CONSTRUCTION, THE CONTRACTOR, ALONG WITH CONCURRENCE FROM THE FIELD ENGINEER, SHALL DETERMINE HIS/HER LAY-DOWN AND/OR STAGING AREA LOCATIONS.
6. THE CONTRACTOR SHALL NOTIFY ALL PROPERTY OWNERS A MINIMUM OF 24 HOURS PRIOR TO BLOCKING DRIVEWAYS OR ENTERING UTILITY EASEMENTS.
7. TRAFFIC INGRESS AND EGRESS FOR DRIVEWAYS AND PEDESTRIAN ACCESS FACILITIES SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
8. THE CONTRACTOR SHALL REMOVE ANY FENCES, POSTS, MAILBOXES, PLANTERS, PERMANENT TRASH CONTAINERS, CULVERTS, ETC. OR SECTIONS THEREOF, THAT ENCROACH WITHIN THE COUNTY'S RIGHT-OF-WAY. NOTE: PRIOR TO CONSTRUCTION, THE PROPERTY OWNER WAS PAID TO RELOCATE OR REPLACE THESE ITEMS OUTSIDE OF THE COUNTY'S RIGHT-OF-WAY.

 IF THE OWNER HAS FAILED TO DO SO, THE CONTRACTOR WILL REPLACE THEM WITH THE MINIMUM LEVEL OF QUALITY NEEDED TO SECURE THE PROPERTY AND/OR MAINTAIN MAIL DELIVERY. IN THAT CASE, PAYMENT FOR THESE INSTALLATIONS WILL BE INCLUDED AS EXTRA WORK ITEMS OR AS OVERRUNS TO EXISTING PAY ITEMS.

 ANY DAMAGE CAUSED BY THE CONTRACTOR TO SUCH ITEMS LOCATED OUTSIDE OF THE COUNTY'S RIGHT-OF-WAY, SHALL BE REPLACED WITH LIKE-KIND OR BETTER AT THE CONTRACTOR'S EXPENSE.

 ALSO, IF THESE ITEMS ARE LOCATED WITHIN THE PROJECT RIGHT-OF-WAY AND ARE DESIGNATED TO REMAIN, ANY DAMAGE CAUSED BY THE CONTRACTOR TO SUCH ITEMS, SHALL BE REPLACED WITH LIKE-KIND OR BETTER AT THE CONTRACTOR'S EXPENSE.

 TREES, BUSHES, SHRUBBERY AND OTHER DAMAGED PLANTINGS DESIGNATED TO REMAIN SHALL BE REPLACED WITHIN 72 HOURS OF REMOVAL AND ARE TO BE THOROUGHLY WATERED-IN. NO SEPARATE PAY.
9. PAVED SURFACES, PAVEMENT MARKERS AND MARKINGS SHALL BE PROTECTED FROM DAMAGE BY TRACKED EQUIPMENT.
10. IRON RODS DISTURBED DURING CONSTRUCTION ARE TO BE REPLACED BY A REGISTERED PROFESSIONAL LAND SURVEYOR FOR THE ORIGINAL PROPERTY OWNER AT NO SEPARATE PAY.
11. CONSTRUCTION STAKING WILL BE PROVIDED BY THE CONTRACTOR. TWO COPIES OF STAKING NOTES TO BE PROVIDED TO THE ENGINEER PRIOR TO CONSTRUCTION.
12. THE COUNTY OR THE COUNTY'S SURVEYOR SHALL PROVIDE A BENCHMARK OR TEMPORARY BENCHMARK AND SURVEY CONTROLS.
13. THE CONTRACTOR SHALL MAINTAIN UPDATED RED-LINED RECORD DRAWINGS ON SITE FOR INSPECTION BY THE ENGINEER.
14. MOWING, MAINTENANCE, AND CLEAN-UP OF THE PROJECT SHALL MEET THE REQUIREMENT OF SPECIFICATION ITEM 560 (NO SEPARATE PAY). MOWING, MAINTENANCE, AND CLEAN-UP IS REQUIRED FOR THE PROJECT LIMITS AND DURATION, REGARDLESS OF THE CONTRACTOR'S SCOPE OF ACTIVITIES WITHIN THE PROJECT LIMITS.
15. THE REMOVAL OF ANY ABANDONED UTILITIES REQUIRED TO COMPLETE THE WORK SHALL BE INCIDENTAL AND NO SEPARATE PAYMENT SHALL BE MADE.
16. IT IS THE CONTRACTOR'S RESPONSIBILITY TO STOCKPILE NECESSARY MATERIAL ON-SITE OR AT A SECURED OFF-SITE LOCATION AT NO ADDITIONAL EXPENSE TO HARRIS COUNTY. ANY SUITABLE EXCAVATED MATERIAL ON THE PROJECT WHICH IS AVAILABLE AT THE TIME OF NEED: WHETHER FROM STORM SEWER, ROADWAY, AND/OR CHANNEL EXCAVATION, SHALL BE USED BEFORE BORROW IS BROUGHT ON-SITE.
17. MANHOLES, JUNCTION BOXES, INLETS, AND RISERS ARE TO BE PRE-CAST OR CAST IN PLACE.

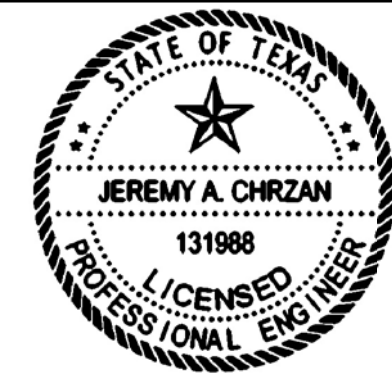
TRAFFIC CONTROL

1. THE CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VIOF THE MOST RECENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND THE APPROVED TRAFFIC CONTROL PLAN.
2. THE CONTRACTOR SHALL MAINTAIN AT LEAST ONE LANE OF TRAFFIC IN EACH DIRECTION DURING WORKING HOURS EXCEPT DURING FLAGGING OPERATION OR PROVIDE DETOURS AROUND THE CONSTRUCTION SITE AND PROVIDE PUBLIC NOTIFICATION.
3. LANE CLOSURES SHALL BE DURING OFF-PEAK HOURS ONLY (MONDAY THROUGH FRIDAY 9 A.M. TO 4 P.M.) UNIFORMED PEACE OFFICERS OR FLAGGERS IN RADIO CONTACT ARE REQUIRED TO DIRECT TRAFFIC DURING LANE CLOSURES.
4. DETOURS REQUIRE PRIOR APPROVAL OF THE FIELD ENGINEER AND PRECINCT. DETOUR PLANS, IF ALLOWED, MUST INCLUDE APPROPRIATE DETOUR SIGNAGE, PUBLIC NOTICE VIA SIGNAGE TWO WEEKS IN ADVANCE STATING THE DATES OF THE AGREED UPON DATE OF CLOSURE AND DATE THE ROAD WILL RE-OPEN TO TRAFFIC. CONTRACTOR TO USE (WITH PRIOR APPROVAL OF THE FIELD ENGINEER) HIGH EARLY STRENGTH CONCRETE AND OTHER RELATED CONSTRUCTION METHODS TO MINIMIZE THE DURATION OF THE DETOUR AND TO ENSURE THAT THE ROADWAY IS OPEN ON, OR PRIOR TO, THE AGREED UPON DATE.
5. ONE DAY PRIOR TO THE IMPLEMENTATION OF A TRAFFIC CONTROL PLAN PHASE OR STEP, OR THE IMPLEMENTATION OF AN ADDITIONAL, REVISED, OR NEW TRAFFIC CONTROL ELEMENT, THE CONTRACTOR SHALL MEET WITH THE ENGINEER TO GIVE A DETAILED DESCRIPTION OF THE CONTRACTOR'S PLAN AND PREPARATIONS. THE CONTRACTOR SHALL OBTAIN WRITTEN CONCURRENCE FROM THE ENGINEER THAT ADEQUATE PROJECT PROGRESS HAS BEEN ACHIEVED AND THAT ADEQUATE PREPARATIONS ARE IN PLACE PRIOR TO SWITCHING TRAFFIC. IF, IN THE OPINION OF THE ENGINEER, REQUIRED PROGRESS AND ADEQUATE PREPARATIONS ARE NOT COMPLETE, THE CONTRACTOR SHALL NOT IMPLEMENT THE NEXT PHASE, STEP, OR ELEMENT OF TRAFFIC CONTROL UNTIL INCOMPLETE CONSTRUCTION ITEMS OR PREPARATIONS ARE COMPLETED. TIME EXTENSIONS WILL NOT BE GRANTED FOR DELAYS CAUSED BY THE INCOMPLETE CONSTRUCTION ITEMS OR INADEQUATE CONTRACTOR PREPARATIONS REQUIRED TO IMPLEMENT TRAFFIC CONTROL.
6. TRAFFIC CONTROL PER THE CONTRACT IS REQUIRED FOR THE ENTIRE DURATION OF THE PROJECT, INCLUDING THE PUNCHLIST PERIOD. PAYMENT FOR TRAFFIC CONTROL THAT IS PROPERLY INSTALLED FOR LESS THAN A FULL MONTH SHALL BE BASED ON A PERCENTAGE BASIS OF THE TIME INSTALLED. TRAFFIC CONTROL PAYMENTS TO THE CONTRACTOR SHALL END 10 DAYS AFTER SUBSTANTIAL COMPLETION, ALTHOUGH PROPER TRAFFIC CONTROL MUST BE MAINTAINED UNTIL PUNCHLIST COMPLETION.
7. THE PURPOSE OF THE CONSTRUCTION SEQUENCE AND TRAFFIC HANDLING OUTLINED HEREIN IS TO DOCUMENT A VIABLE TCP THAT CAN BE UTILIZED TO CONSTRUCT THE PROJECT. IT IS THE BASIS OF ESTIMATION FOR THE TRAFFIC CONTROL BID ITEMS, AND IS TO BE UTILIZED AND IMPLEMENTED, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

 IF THE CONTRACTOR CHOOSES TO USE A DIFFERENT TCP, HE/SHE SHALL PREPARE AND SUBMIT THE ALTERNATIVE TCP TO THE COUNTY FOR APPROVAL NO LESS THAN 10 WORKING DAYS PRIOR TO THE PROPOSED IMPLEMENTATION DATE. THE TCP SHALL BE DRAWN TO SCALE AND SIGNED & SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS. UPON APPROVAL BY HARRIS COUNTY, THE ALTERNATIVE PLAN SHALL BECOME THE BASIS FOR A "CHANGE IN CONTRACT" TO REVISE THE TRAFFIC CONTROL BID ITEMS ACCORDINGLY AND BECOME PART OF THE CONTRACT DOCUMENTS.

PROJECT-SPECIFIC NOTES

1. CONTRACTOR SHALL LOCATE EXISTING EDGE OF PAVEMENT & SIDEWALK AND REMOVE ANY DIRT, DEBRIS, VEGETATION, OR OTHER IMPEDIMENTS TO PROVIDE CLEAR SURFACE AND 8' VERTICAL CLEARANCE. TO BE PAID AS CLEARING AND GRUBBING.
2. EXISTING SIGNAGE TO REMAIN UNLESS NOTED.
3. NEW CROSSWALKS AND STOP BARS TO BE CONSTRUCTED ON ALL SIDE STREETS. STOP SIGNS SHALL BE RELOCATED TO ALIGN WITH NEW STOP BARS.
4. SIGHT DISTANCES OF 80-FEET SHALL BE VERIFIED BETWEEN VEHICLES ON SIDE STREET AND BICYCLISTS ON THE BIKE LANE. VEGETATION OR OTHER SIGHT DISTANCE OBSTRUCTIONS SHOULD BE REMOVED UNDER CLEARING AND GRUBBING.
5. CONTRACTOR SHALL INSTALL/REFRESH ALL PAVEMENT MARKINGS SHOWN ON PLANS.
6. CONTRACTOR SHALL INSTALL GREEN PAVEMENT MARKING BEFORE WHITE PAVEMENT MARKINGS WHERE ABUTTING.

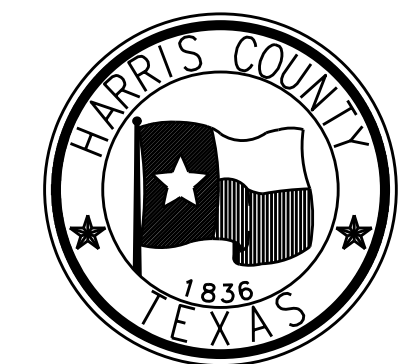


Jeremy A. Chrzan, PE
04/12/2019

NO.	REVISIONS	DATE	NAME

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HARRIS COUNTY
 ENGINEERING DEPARTMENT

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: GENERAL NOTES
CK'D BY: JC	
SCALE: NONE	SHEET 1 OF 1
DATE: 04/12/19	APPROVED BY:
	SHEET NO: 104

1. PAVING, 2. RESIDENTIAL / SUBDIVISION DRAINAGE, 3. COMMERCIAL / OTHER SITE DRAINAGE, 4. WATER AND WASTEWATER, 5. DESCRIPTION OF PROPERTY, 6. STORMWATER QUALITY

DESIGN THICKNESS OF PAVING (IN.), STABILIZED SUBGRADE DEPTH (IN.), DESIGN STRENGTH OF CONCRETE (PSI), STEEL SPACING LONG (IN.), TRANS. (IN.), REINFORCE STEEL SIZE (#4 MIN.). DRIVEWAYS (in H.C. ROW only). I. NUMBER OF DRIVEWAY APPROACHES PROPOSED INCLUDING WIDENINGS OR REPAVING EXISTING DRIVEWAYS AS WELL AS NEW DRIVEWAYS. II. HARRIS COUNTY STANDARD DRIVEWAY DETAIL APPEARS ON SHEET 'FIRE APPARATUS ACCESS ROAD'. III. ISLANDS AND MEDIANS REQUIRE STANDARD 6" CURBING. IV. STANDARD 6" CURBING PROPOSED. V. 4" x 12" CURBING PROPOSED EXCEPT AT MEDIANS AND ISLANDS. VI. TRAFFIC CONTROL PLAN. VII. TRAFFIC SIGNAL. VIII. TRAFFIC IMPACT ANALYSIS.

I. PROPOSED DRAINAGE SYSTEM TYPE. II. DESIGN METHOD USED. III. DRAINAGE SYSTEM OUTFALLS DIRECTLY TO EXISTING. IV. H.C. OUTFALL CALCULATIONS. V. DETENTION PROVIDED BY. VI. FLOOD RESTRICTOR SIZE. VII. OFFSHEET FLOW: (100 YEAR). VIII. OFFSITE SHEET FLOW MAPPING, TOTAL DISCHARGE CALCULATIONS, AND DESIGN ACCOMMODATIONS ARE SHOWN ON SHEET OR, AS PRESENTED IN THE APPROVED DRAINAGE STUDY ENTITLED.

I. PROPOSED DRAINAGE AREA. II. DETENTION VOLUME. III. OUTFALL. IV. PUMPED DETENTION FACILITIES. V. FLOW RESTRICTOR SIZE. VI. BENCHMARK REQUIREMENTS FOR PROPOSED BRIDGES AND OR NEW RESIDENTIAL SUBDIVISIONS.

I. COMMERCIAL PROJECTS. II. SUBDIVISION PROJECTS. III. JURISDICTIONS. IV. HCAD ACCOUNT NOS. (ALL). V. UNOBSTRUCTED VISIBILITY EASEMENT (U.V.E.). VI. CONFORMING SUBDIVISION, NON-CONFORMING SUBDIVISION, PARTIALLY NON-CONFORMING SUBDIVISION.

I. LEGAL DESCRIPTION. II. PLATTING. III. JURISDICTIONS. IV. HCAD ACCOUNT NOS. (ALL). V. UNOBSTRUCTED VISIBILITY EASEMENT (U.V.E.). VI. CONFORMING SUBDIVISION, NON-CONFORMING SUBDIVISION, PARTIALLY NON-CONFORMING SUBDIVISION.

I. SWPPP: CONSTRUCTION MEASURES. II. APPLICABILITY FOR PERMANENT FEATURES. III. STORMWATER QUALITY MANAGEMENT PLAN. IV. PERMANENT SWQ FEATURES. V. H.C.E.D. SIGNATURE BLOCK.

7. FLOOD CONTROL DISTRICT CRITERIA. I. DETENTION SUMMARY. II. DETENTION BASIN ROUTING TABLE. III. ADDITIONAL CRITERIA FOR PUMPED DETENTION BASINS. IV. STORMWATER DRAINAGE DESIGN REPORT.

8. FLOOD PLAIN STATUS. I. GENERAL INFORMATION. II. FLOOD PLAIN DETERMINATION BASED ON GROUND ELEVATION. III. FLOODPLAIN STORAGE SUMMARY. IV. LOMR REQUIRED, CLOMR REQUIRED.

9. WORK IN HCFCO RIGHT-OF-WAY. I. TYPE OF WORK TO BE PERFORMED IN CHANNEL. II. USAGE ENVIRONMENTAL PERMIT. III. REFERENCE / BASIS OF DETERMINATION. IV. BENCHMARK REQUIREMENTS FOR PROPOSED BRIDGES AND OR NEW RESIDENTIAL SUBDIVISIONS.

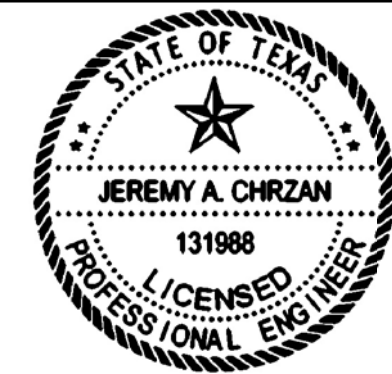
10. PERMITS REQUIRED. I. DOES THE PROPERTY HAVE ANY VIOLATIONS? II. TO BE FILLED OUT BY HARRIS COUNTY. III. WORK IN HARRIS COUNTY R.O.W. IV. NOTES.

11. CURB RAMPS. 12. LANDSCAPING. HARRIS COUNTY FLOOD CONTROL DISTRICT. ENGINEER'S CERTIFICATION. REVISIONS. HARRIS COUNTY ENGINEERING DEPARTMENT REVIEW SHEET.

QUANTITY SUMMARY

SIGNING AND PAVEMENT MARKING ALONG THE HUTCHINS AND CLEBURNE CORRIDORS
 PAVING AND CONCRETE WORK ALONG THE HUTCHINS CORRIDOR

ITEM NO	DESCRIPTION	UNIT	QUANTITY
2	Remove and Dispose of Existing Concrete (Curb, Sidewalk, Island, Median, All Depths including sawcut)	SY	441
3	Remove and Dispose of Existing Asphaltic Surface and Base (All Depths) including sawcut	SY	154
4	Remove and Dispose of Existing Concrete Pavement, All Depths including sawcut	SY	393
7	Place, Maintain and Remove Project Identification Signs	EA	4
10	Remove & Relocate Traffic Signs, Mail Boxes and Roadway Signs	EA	4
11	HMAC Base Course (Black Base) (Depth per Plan)	TON	34
12	Milling Existing Asphalt Pavement (1" to 3" Depth per Plan or Directed by Engineer)	SY	998
14	HMAC Surface Course (Depth per Plan)	TON	112
15	Tack Coat (0.1 Gal/SY)	GAL	100
18	Concrete Pavement (7" Depth) including saw cut and doweling into Existing Pavement	SY	31
23	Full Depth Repair/Replacement of Concrete Pavement (8"-10" Depth)	SY	457
24	Concrete Esplanades, Medians and Directional Islands (6" Depth)	SY	173
29	Concrete ADA Ramp (up to Six (6) feet wide (inclusive), All Types, Complete in Place)	EA	23
31	Reinforced Concrete Sidewalks (4-1/2" thick) (#3 Bar @ 18" Center to Center)	SY	247
32	Six Inch Reinforced Concrete Curb and Gutter (Monolithic)	LF	86
33	Six Inch Reinforced Concrete Curb (Doweled)	LF	698
47	Adjust Manhole Frame and Cover to New Grade	EA	3
52	Type B-B Inlet (Stage II)	EA	1
73	Traffic Control - Barricades, Barriers, Barrels, Cones, and Signing	EA	1
75	Aluminum Signs - Furnish & Install	EA	97
77	Remove Existing Ground Mounted Sign and Post Assembly	EA	3
79	Reflectorized Pavement Markings Type I- 4" Broken White	LF	-
81	Reflectorized Pavement Markings Type I- 4" Broken Yellow	LF	-
82	Reflectorized Pavement Markings Type I- 4" Solid Yellow	LF	3,211
83	Reflectorized Pavement Markings Type I- 6" Solid White	LF	25,609
84	Reflectorized Pavement Markings Type I- 6" Guide White	LF	1,600
86	Reflectorized Pavement Markings Type I- 12" Solid White	LF	4,998
89	Reflectorized Pavement Markings Type I- 24" Solid White	LF	2,213
92	Reflectorized Pavement Markings Type I- Solid Green	SF	3,076
94	Reflectorized Pavement Markings - Type I(W) (WORD, SYMBOL, ARROW, RR Crossing "X", Sharrow, Etc.)	EA	89
95	Methyl Methacrylate Pavement Markings (All Widths, All Colors)	SF	1,384
164	Sodding	SY	569
167	Inlet Protection Barrier (Stage II Inlets, Gravel Bags; 60% of unit cost for furnish & installation, and 40% of unit cost for removal)	EA	6
178	Cycle Lane Separator - Zicla Zebra13 Black/White "Armadillo"	EA	160
195	Bus Shelter Foundations (METRO Type 4 Shelter)	EA	1
200	Sweeping	MI	1.6
TBD	Reflective PM TY C Preform (BIKE DETECTION) (GREEN/WHITE)	EA	4
209	Reflective PM TY C Preform (STRAIGHT ARROW) (GREEN/WHITE)	EA	39
210	Reflective PM TY C Preform (TURN BOX) (GREEN/WHITE)	EA	2
213	Reflective PM TY C Preform (BIKE MAN) (GREEN/WHITE)	EA	46
216	Surface-Applied Detectable Warning Material	SF	80
225	Precast Curb (12") (Ty A, B, C)	LF	166



Jeremy A. Chrzan, PE
04/12/2019

NO.	REVISIONS	DATE	NAME

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 TBPE Registration No. 14667



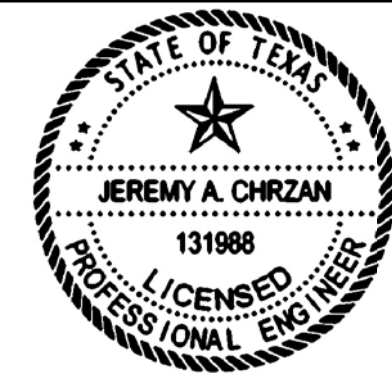
HARRIS COUNTY
 ENGINEERING DEPARTMENT

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: BASIS OF ESTIMATE
CK'D BY: JC	HUTCHINS/CLEBURNE
SCALE:	SHEET 1 OF 2
DATE: 04/12/19	APPROVED BY:
	SHEET NO: 106

QUANTITY SUMMARY

PAVING AND CONCRETE WORK ALONG THE CLEBURNE CORRIDOR

ITEM NO	DESCRIPTION	UNIT	QUANTITY
3	Removing Old Concrete (All Type Curb)	LF	189
4	Removing Old Concrete (Pavement W/Curb and Driveway, All Depths including sawcut)	SY	516
5	Roadway Excavation Including 3" Topsoil	CY	3
9	HMAC Base Course (Black Base) (Depth per Plan)	TON	10
10	Milling Existing Asphalt Pavement (1' to 3' Depth per Plan or Directed by Engineer)	SY	8190
12	HMAC Surface Course (Depth per Plan)	TON	906
13	Tack Coat (0.1 Gal/SY)	GAL	819
14	Concrete Pavement (7" to 10") including saw cut and doweling into Existing Pavement	SY	26
20	Concrete ADA Ramp (up to Six (6) feet wide (inclusive), All Types, Complete in Place)	EA	11
21	Reinforced Concrete Sidewalks (4-1/2" thick) (#3 Bar @ 18" Center to Center)	SY	200
22	Six Inch Reinforced Concrete Curb and Gutter (Monolithic)	LF	321
23	Six Inch Reinforced Concrete Curb (Doweled)	LF	25
27	Type A Inlet	EA	1
51	Saw Cut and Install Loop Detectors including Loop Wire In Asphalt Pavement	LF	72
52	Saw Cut and Install Loop Detectors including Loop Wire In Concrete	LF	216



Jeremy A. Chrzan, PE
04/12/2019

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TOOLE DESIGN

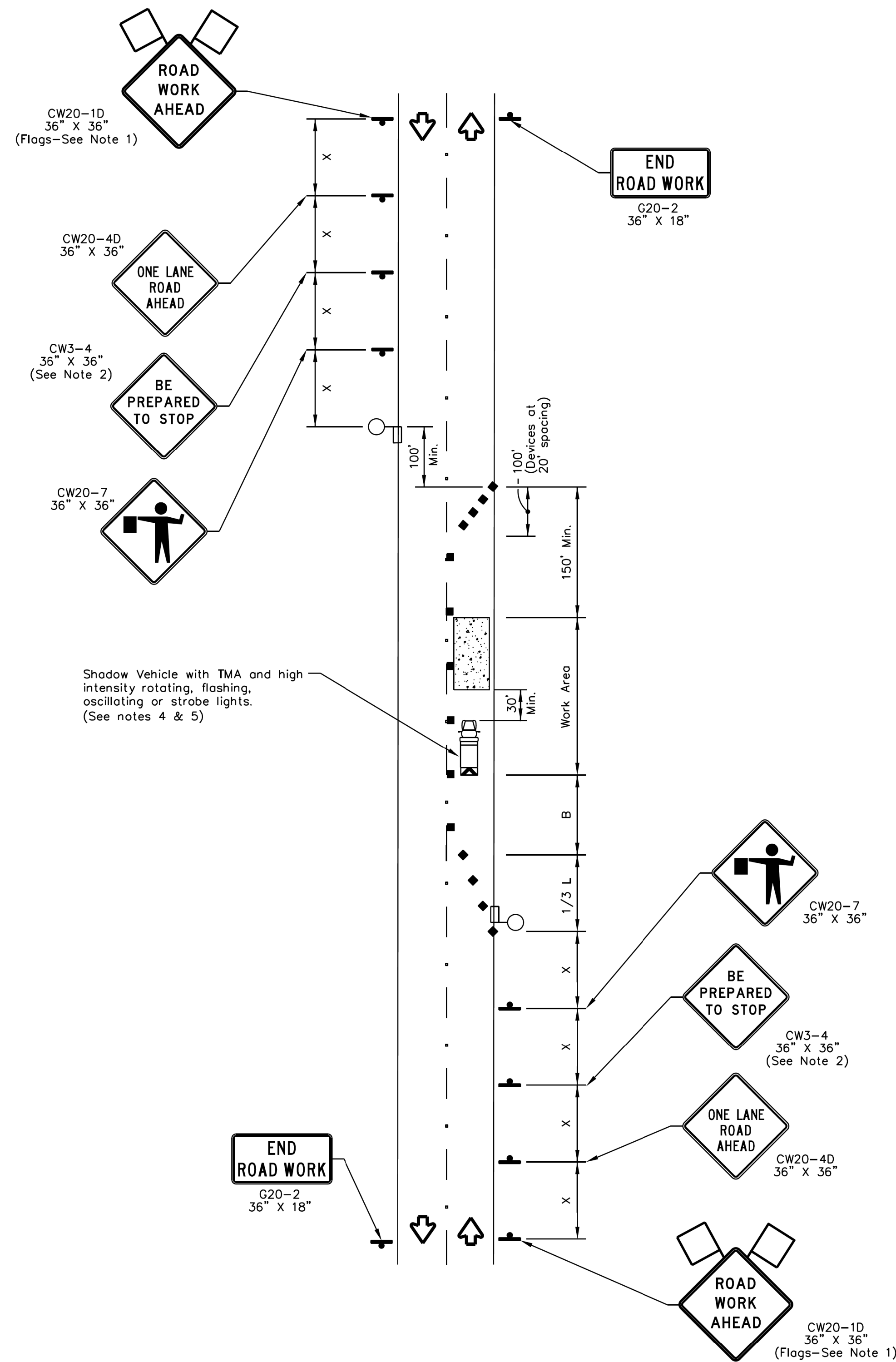
8484 Georgia Avenue, Suite 800, Silver Spring, MD 20910
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 TBPE Registration No. 14667



HARRIS COUNTY ENGINEERING DEPARTMENT

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: BASIS OF ESTIMATE
CK'D BY: JC	CLEBURNE ST PAVING ONLY
SCALE:	SHEET 2 OF 2
DATE: 04/12/19	APPROVED BY:

SHEET NO:
107



**ONE-LANE TWO-WAY SINGLE LANE CLOSURE
 CONTROL WITH FLAGGERS
 (ON STRAIGHT 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		
HUTCHINS ST	30 MPH	165'	30'	60'	120'	90'
CLEBURNE ST	30 MPH	165'	30'	60'	120'	90'

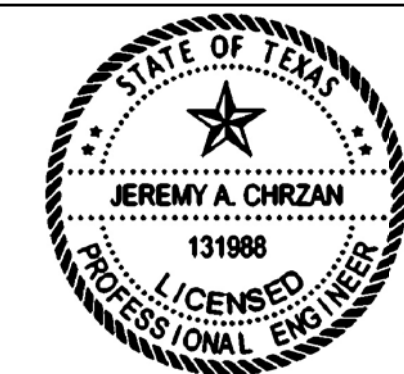
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

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 = $\frac{WS}{60} \cdot 2$	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.

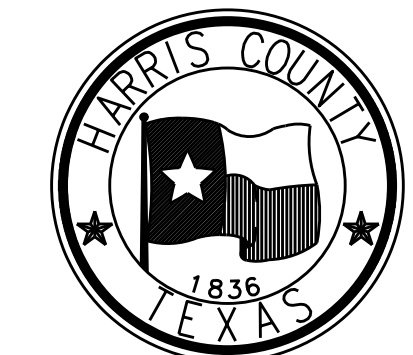


Jeremy A. Chrzan, PE
 04/12/2019

NO.	REVISIONS	DATE	NAME

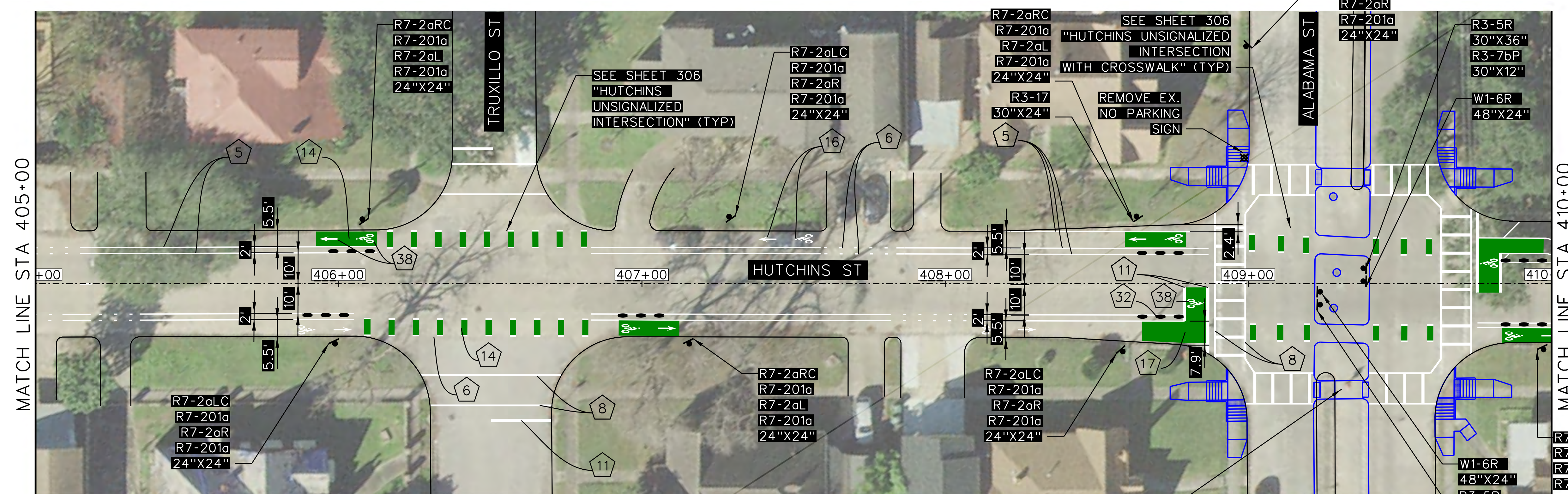
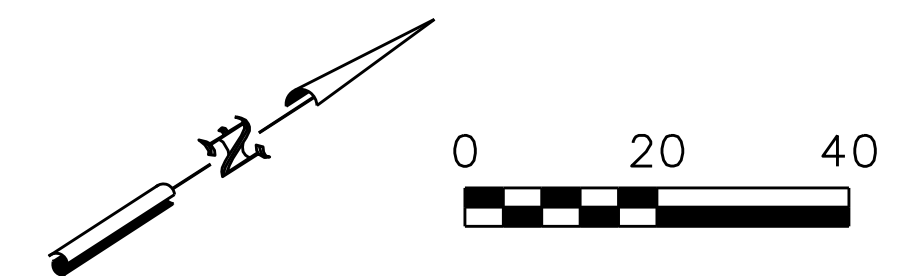
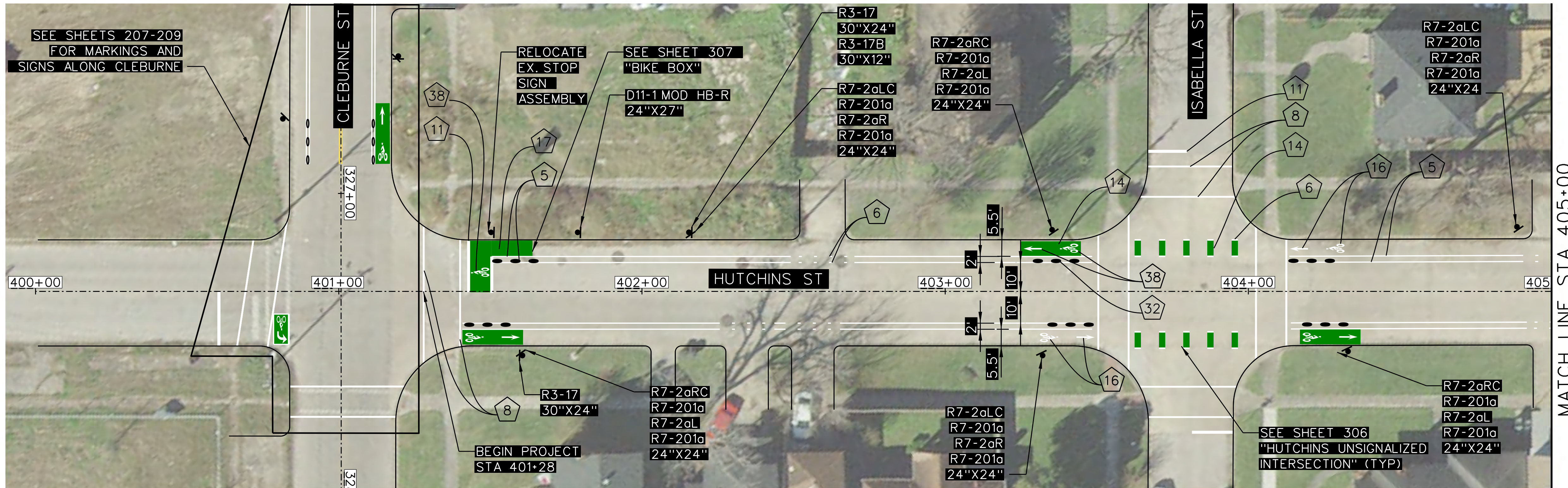
**TOOLE
 DESIGN**

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 TBPE Registration No. 14667



**HARRIS COUNTY
 ENGINEERING DEPARTMENT**

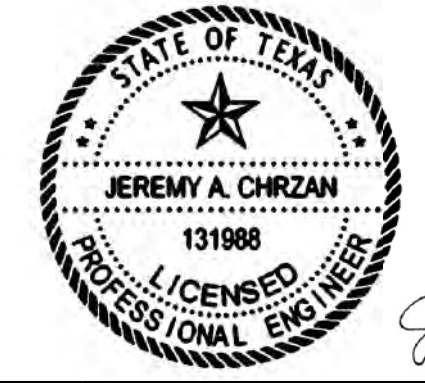
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DRAWN BY: CB/FL	SHEET DESCRIPTION: TRAFFIC CONTROL PLAN
CK'D BY: JC	SINGLE LANE CLOSURE
SCALE:	SHEET 1 OF 1
DATE: 04/12/19	APPROVED BY:



- NOTES:
1. CONTRACTOR SHALL ERADICATE ALL EXISTING CONFLICTING PAVEMENT MARKINGS
 2. SEE SHEET 302 FOR SIGNING AND PAVEMENT MARKING LEGEND
 3. FOR PROPOSED WORK AT THE INTERSECTION OF HUTCHINS STREET AND CLEBURNE STREET, SEE SHEETS 207-209.
 4. SEE SHEETS 401-409 FOR PAVEMENT REPAIR AND CONCRETE WORK.

SEE SHEET 407,
**EXTENDED CONCRETE
 AND SODDED
 MEDIAN WITH 6" CURB
 CUTS FOR BICYCLES
 AND PEDESTRIANS.**

PAVEMENT MARKING QUANTITIES STA. 401+28 TO 410+00	4	0 LF	11	484 LF	32	39 EA
	5	2167 LF	14	522 SF	38	17 EA
	6	251 LF	16	10 EA		
	8	1114 LF	17	532 SF		



NO.	REVISIONS	DATE	NAME

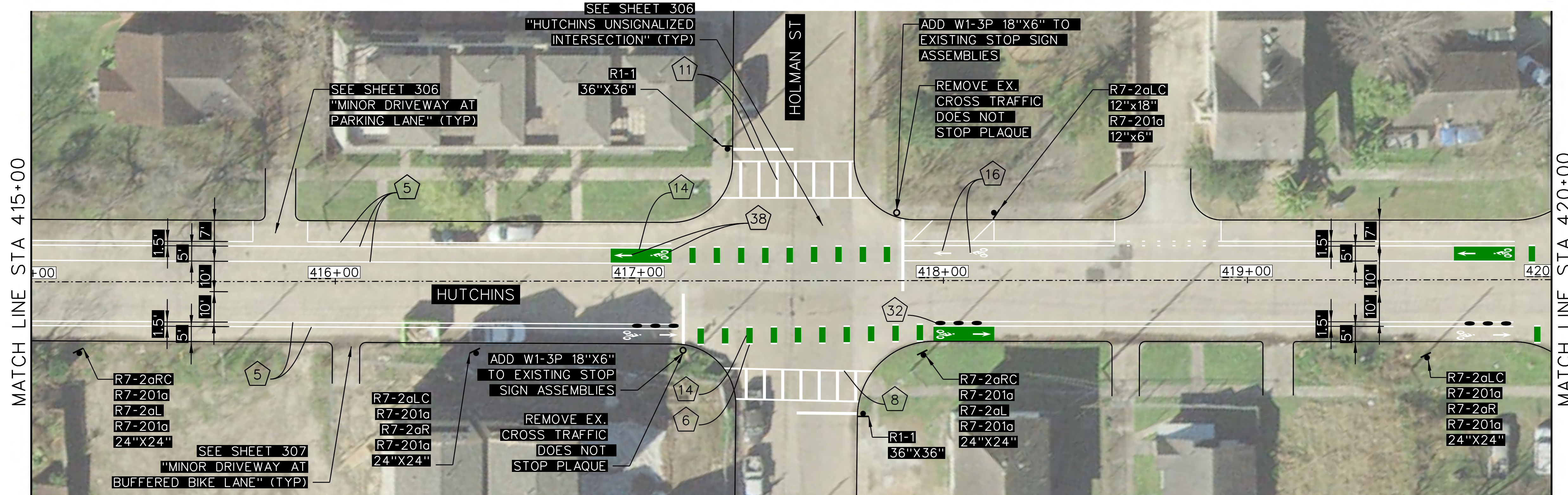
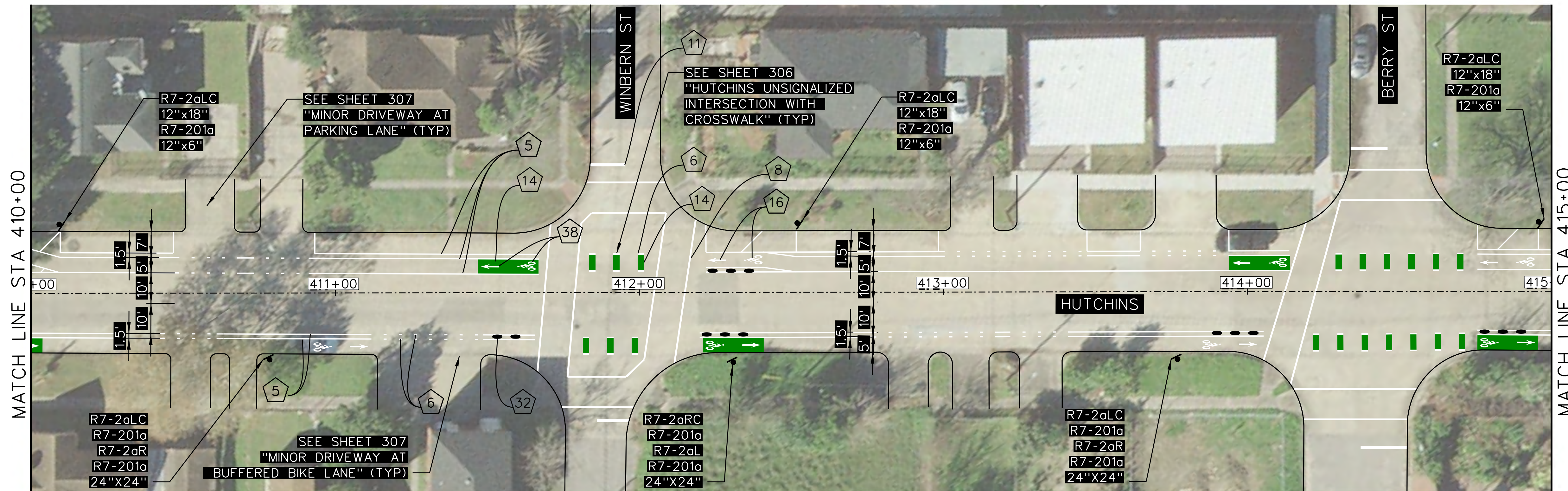


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HARRIS COUNTY
 ENGINEERING DEPARTMENT

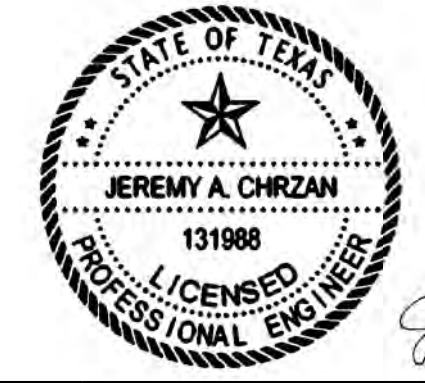
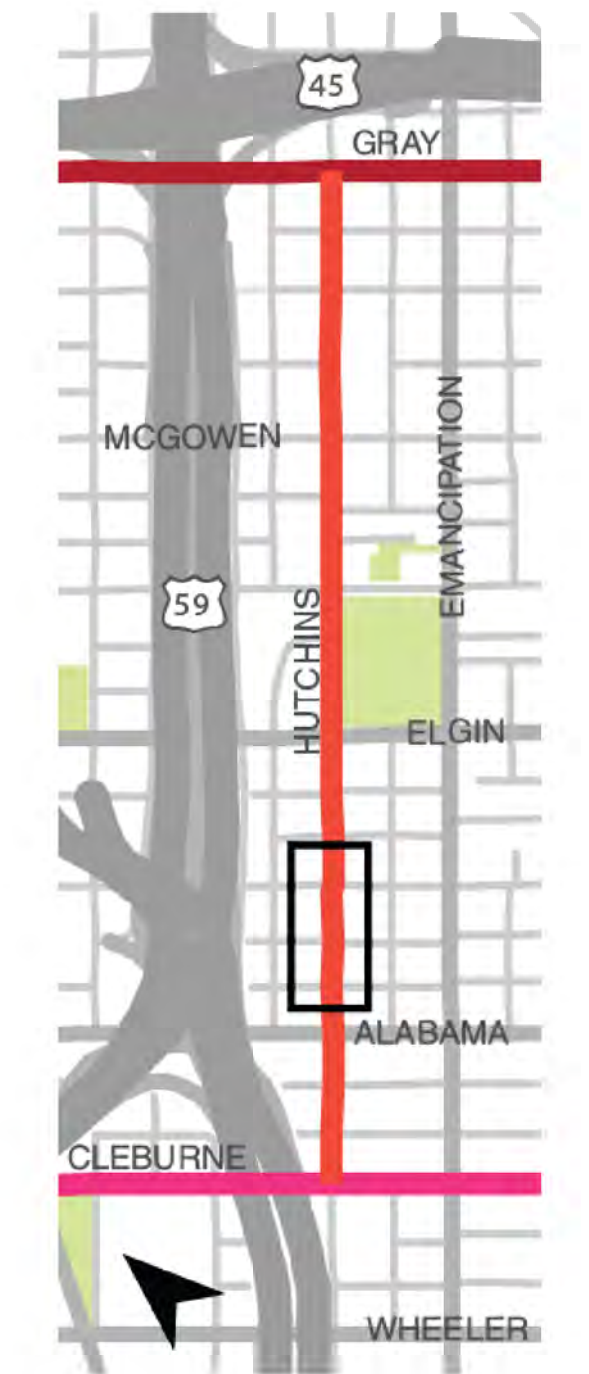
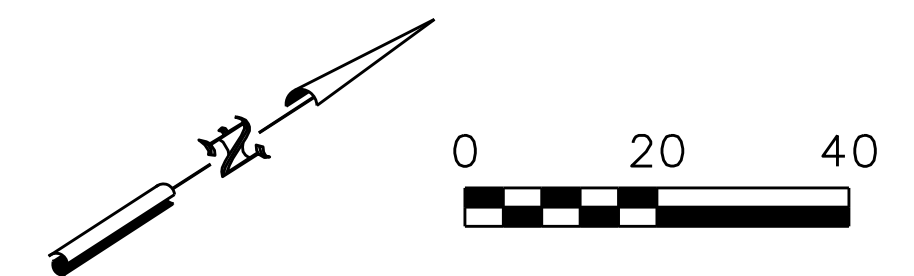
PROJECT TITLE:
 HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY
 DRAWN BY: CB/FL SHEET DESCRIPTION: SIGNING AND PAVEMENT MARKING LAYOUT
 CK'D BY: JC
 SCALE: 1"=20' SHEET 1 OF 9
 DATE: 04/12/19 APPROVED BY:
 SHEET NO: 201



NOTES:

1. CONTRACTOR SHALL ERADICATE ALL EXISTING CONFLICTING PAVEMENT MARKINGS
2. SEE SHEET 302 FOR SIGNING AND PAVEMENT MARKING LEGEND
3. SEE SHEETS 401-409 FOR PAVEMENT REPAIR AND CONCRETE WORK.

PAVEMENT MARKING	QUANTITIES	STA. 410+00 TO 420+00
4	0 LF	
5	3536 LF	
6	291 LF	
8	727 LF	
11	275 LF	
14	512 SF	
16	14 EA	
17	0 SF	
32	23 EA	
38	14 EA	



NO.	REVISIONS	DATE	NAME



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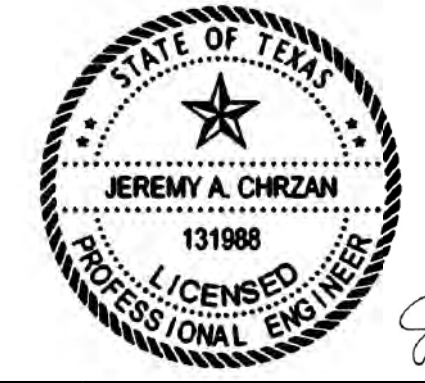
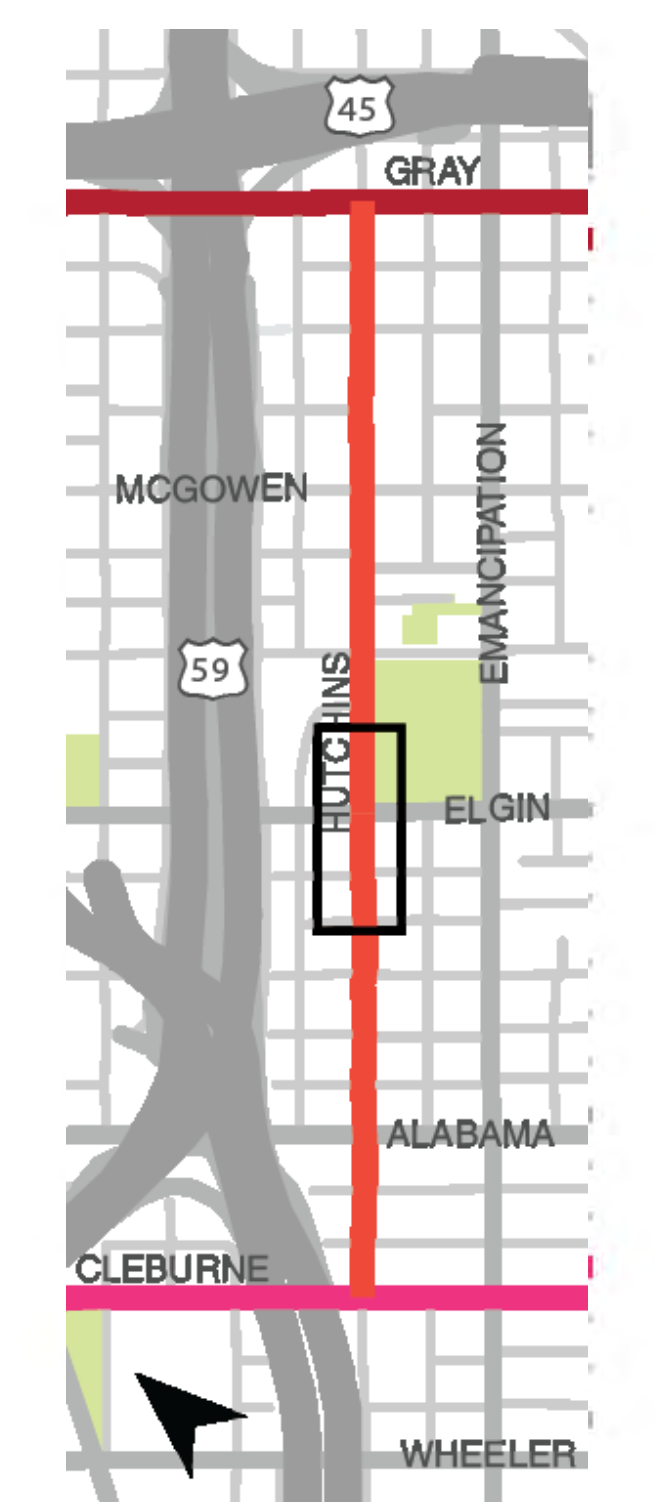
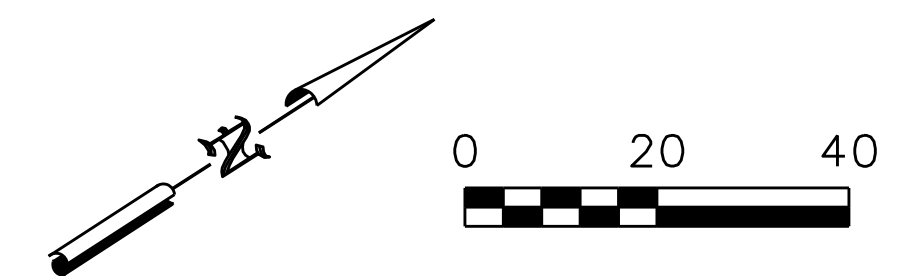
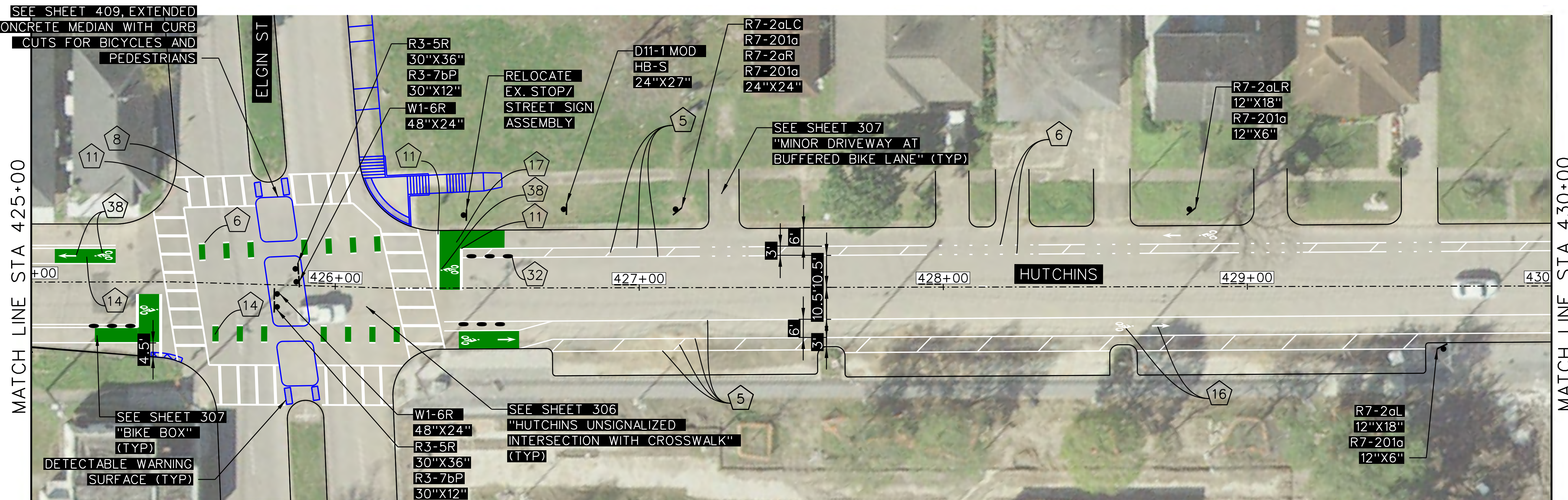
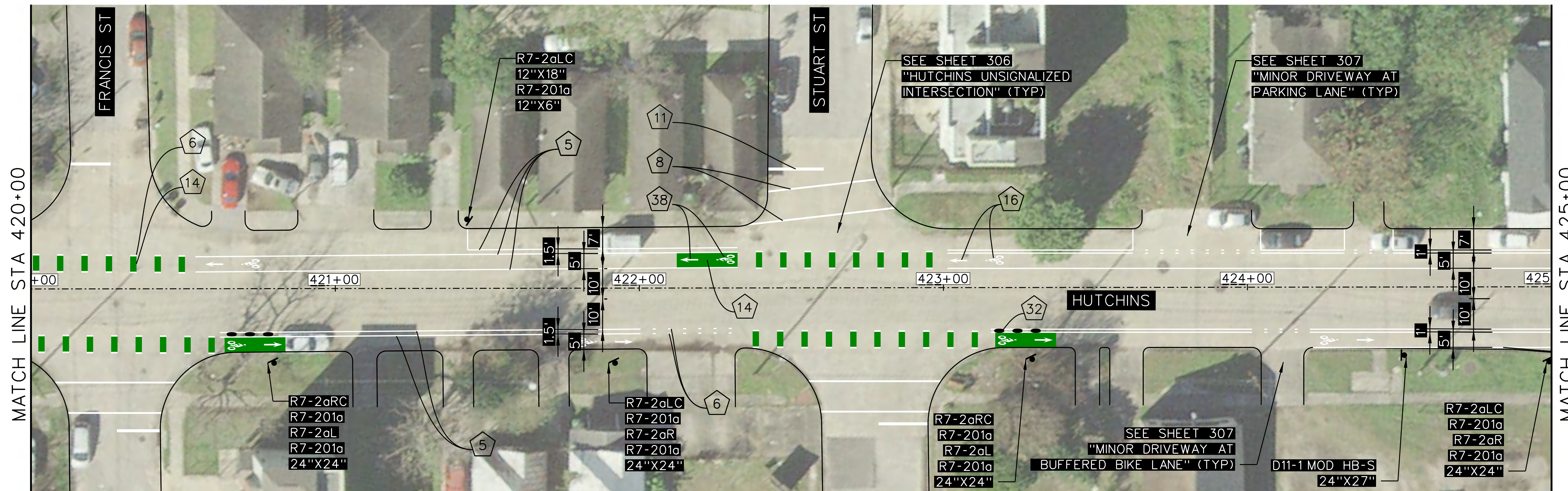


HARRIS COUNTY
 ENGINEERING DEPARTMENT

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	DRAWN BY: CB/FL	SHEET DESCRIPTION: SIGNING AND PAVEMENT MARKING LAYOUT
CK'D BY: JC	SHEET 2 OF 9	
SCALE: 1"=20'	APPROVED BY:	
DATE: 04/12/19	SHEET NO: 202	

PENTABLE: HC-BikewaysP_CB.tbi

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NO.	REVISIONS	DATE	NAME

TOOLE DESIGN

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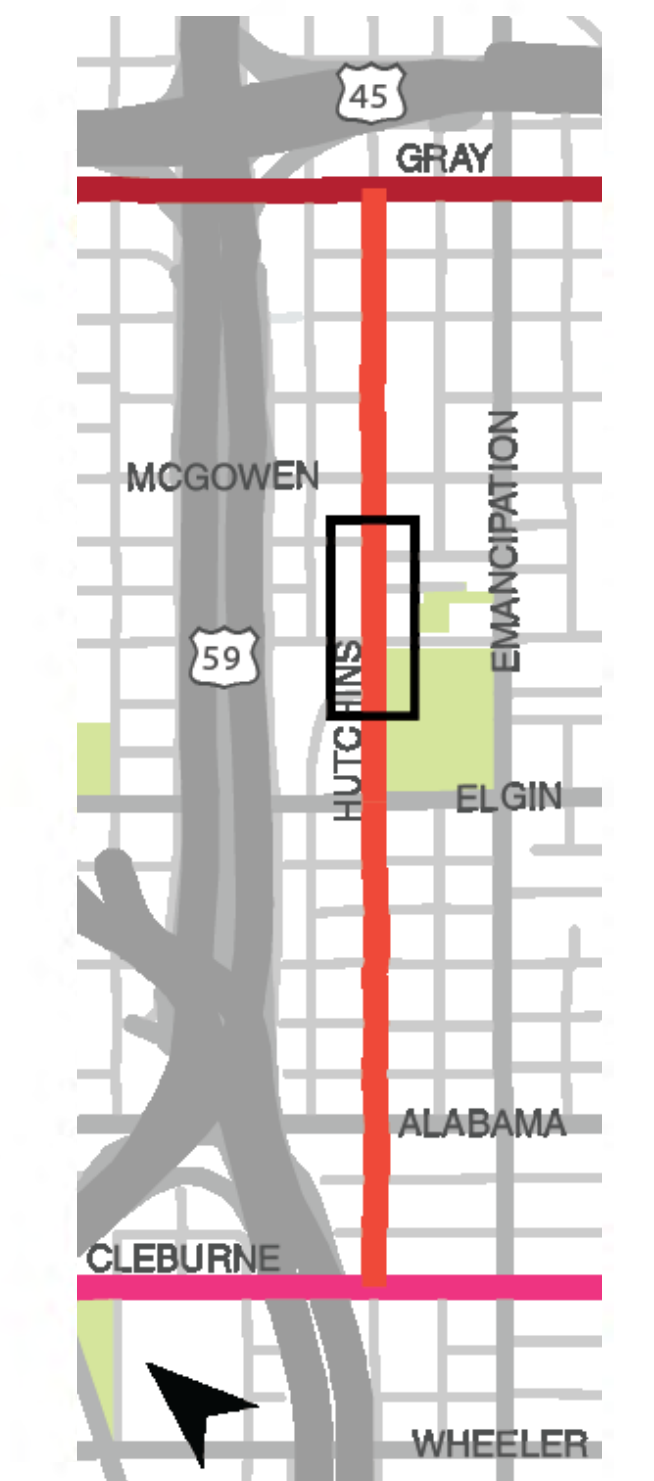
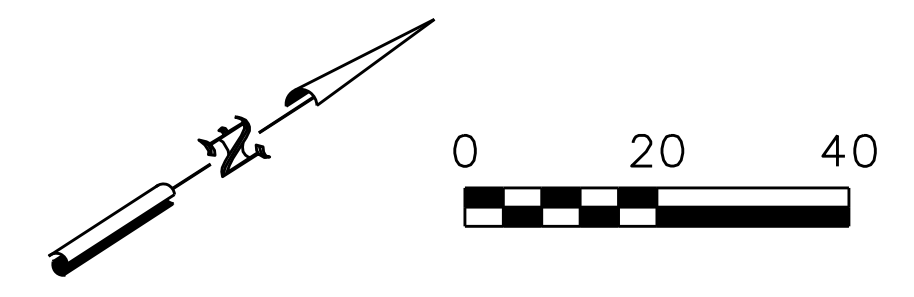
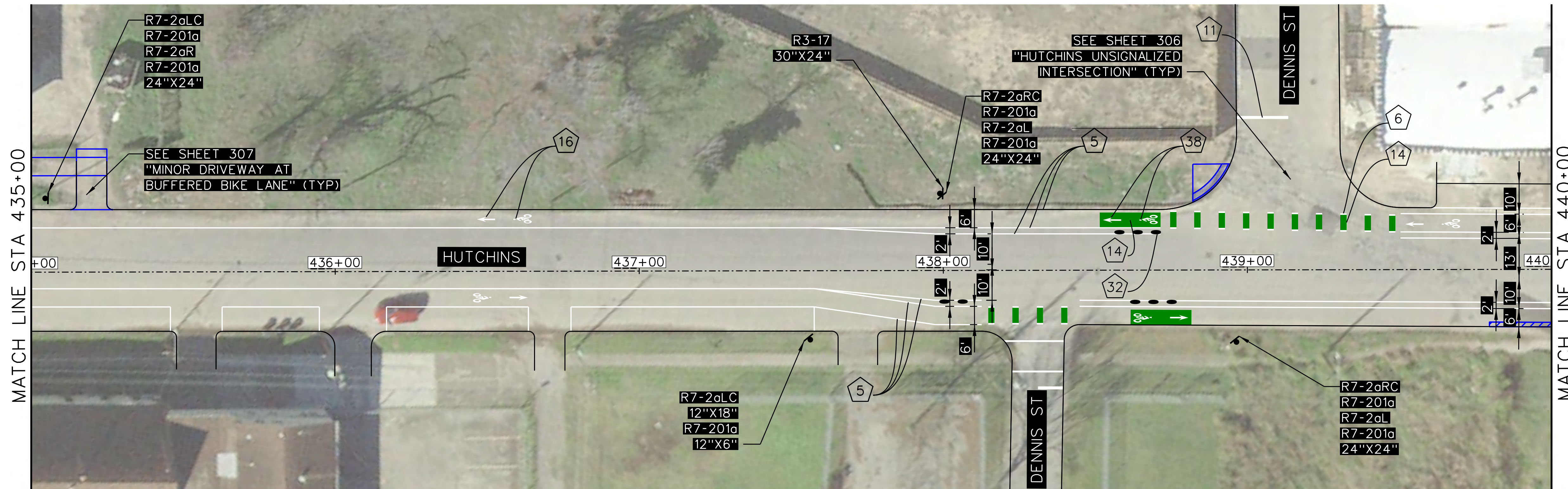
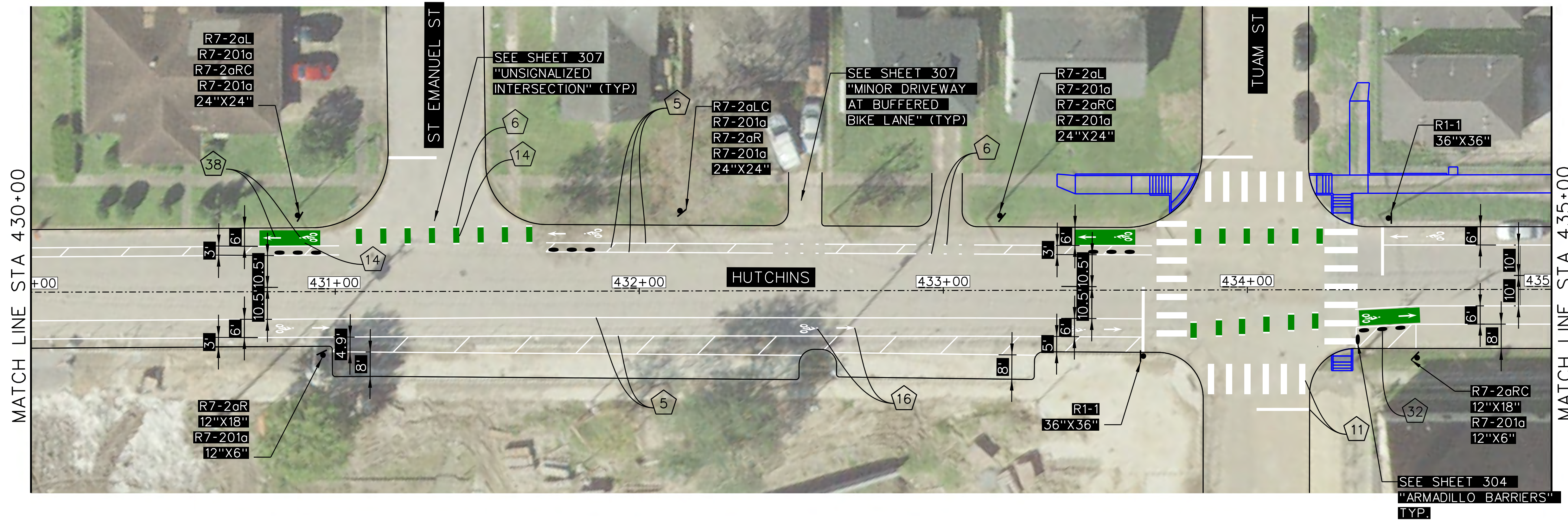


HARRIS COUNTY
 ENGINEERING DEPARTMENT

- NOTES:
1. CONTRACTOR SHALL ERADICATE ALL EXISTING CONFLICTING PAVEMENT MARKINGS
 2. SEE SHEET 302 FOR SIGNING AND PAVEMENT MARKING LEGEND
 3. SEE SHEETS 401-409 FOR PAVEMENT REPAIR AND CONCRETE WORK.

PAVEMENT MARKING QUANTITIES STA. 420+00 TO 430+00	4	0 LF	11	479 LF	32	15 EA
	5	3335 LF	14	550 SF	38	12 EA
	6	298 LF	16	12 EA		
	8	626 LF	17	360 SF		

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: SIGNING AND PAVEMENT MARKING LAYOUT
CK'D BY: JC	
SCALE: 1"=20'	SHEET 3 OF 9
DATE: 04/12/19	APPROVED BY:
	SHEET NO: 203



NO.	REVISIONS	DATE	NAME

TOOLE DESIGN

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 TBPE Registration No. 14667



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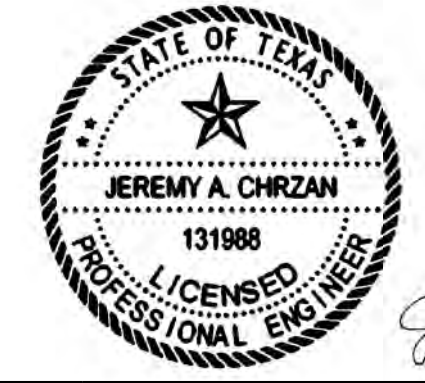
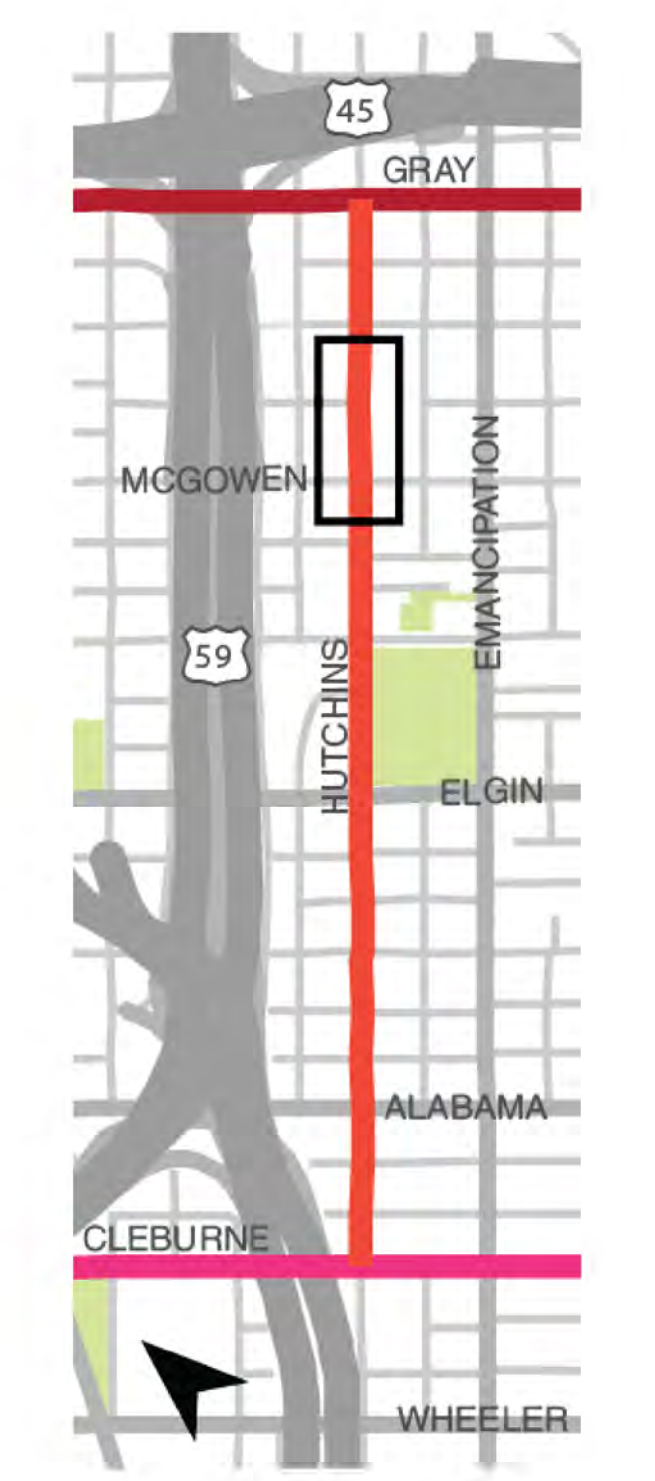
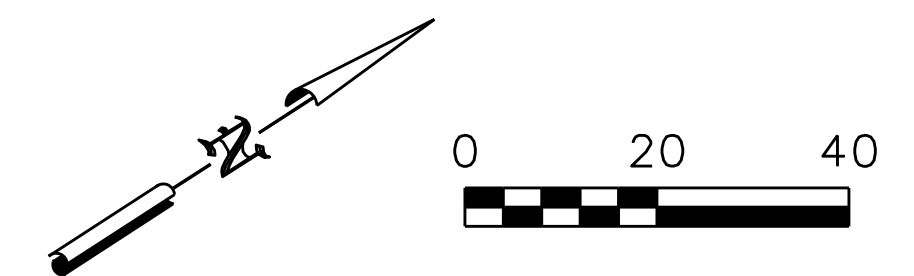
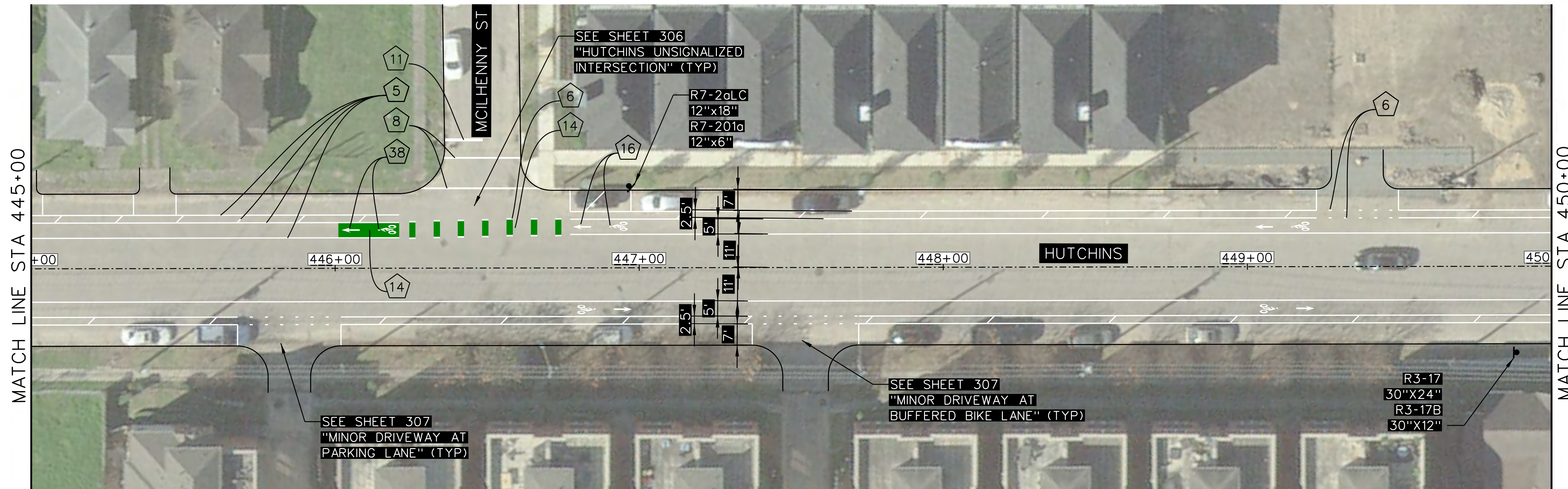
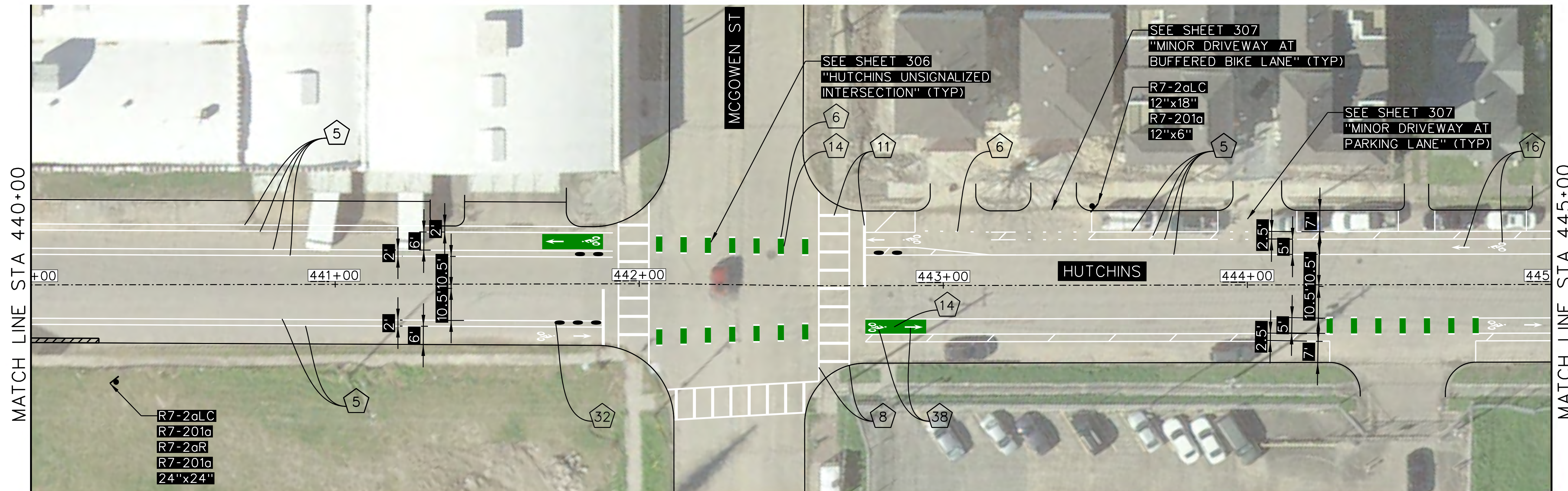
- NOTES:
1. CONTRACTOR SHALL ERADICATE ALL EXISTING CONFLICTING PAVEMENT MARKINGS
 2. SEE SHEET 302 FOR SIGNING AND PAVEMENT MARKING LEGEND
 3. SEE SHEETS 401-409 FOR PAVEMENT REPAIR AND CONCRETE WORK.

PAVEMENT MARKING QUANTITIES STA. 430+00 TO 440+00	4	0 LF	11	362 LF	32	21 EA
	5	3495 LF	14	404 SF	38	8 EA
	6	158 LF	16	14 EA		
	8	37 LF	17	0 SF		

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	SHEET DESCRIPTION: SIGNING AND PAVEMENT MARKING LAYOUT
DRAWN BY: CB/FL	CK'D BY: JC
SCALE: 1"=20'	SHEET 4 OF 9
DATE: 04/12/19	APPROVED BY:
	SHEET NO: 204

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Jeremy A. Chrzan PE
 04/12/2019

NO.	REVISIONS	DATE	NAME

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HARRIS COUNTY
 ENGINEERING DEPARTMENT

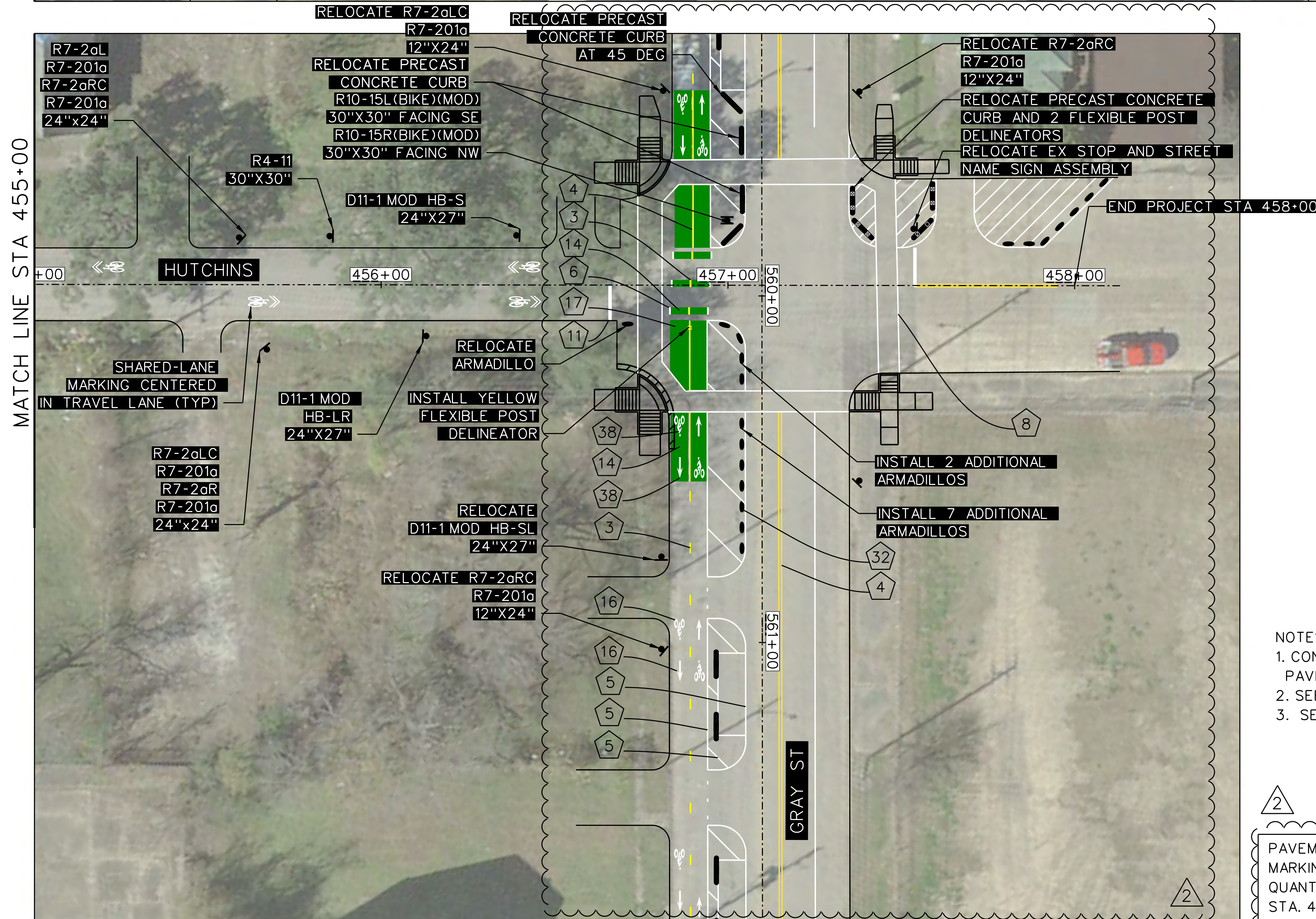
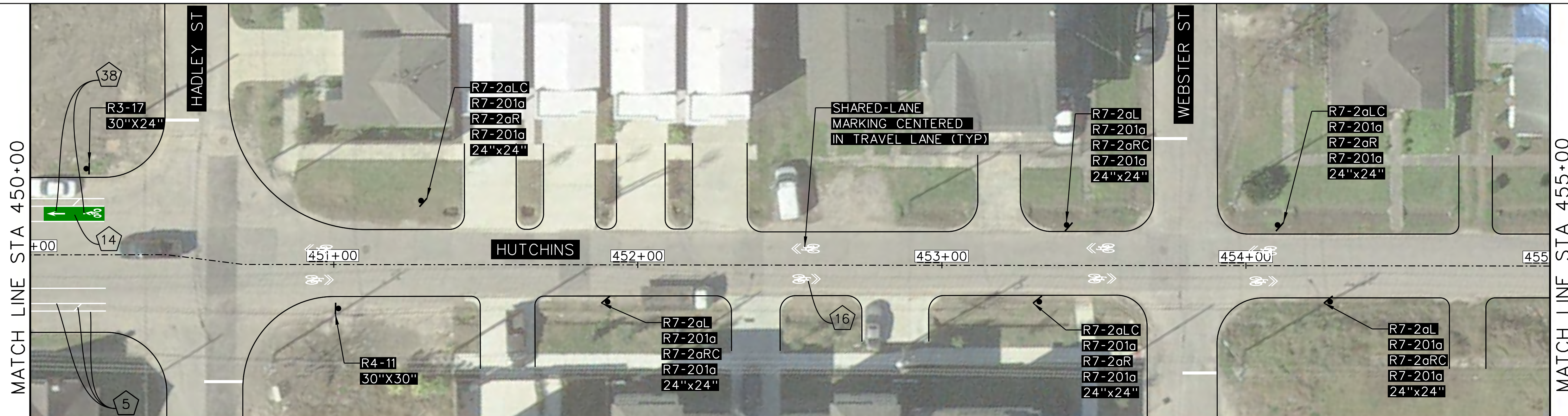
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 DRAWN BY: CB/FL SHEET DESCRIPTION: SIGNING AND PAVEMENT MARKING LAYOUT
 CK'D BY: JC
 SCALE: 1"=20' SHEET 5 OF 9
 DATE: 04/12/19 APPROVED BY:
 SHEET NO: 205

- NOTES:
1. CONTRACTOR SHALL ERADICATE ALL EXISTING CONFLICTING PAVEMENT MARKINGS
 2. SEE SHEET 302 FOR SIGNING AND PAVEMENT MARKING LEGEND
 3. SEE SHEETS 401-409 FOR PAVEMENT REPAIR AND CONCRETE WORK.

PAVEMENT MARKING QUANTITIES STA. 440+00 TO 450+00	4	0 LF	11	297 LF	32	8 EA
	5	5147 LF	14	328 SF	38	6 EA
	6	198 LF	16	16 EA		
	8	367 LF	17	0 SF		

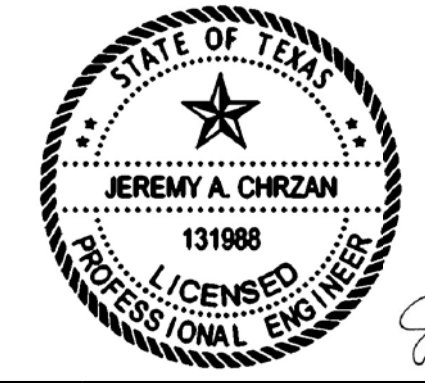
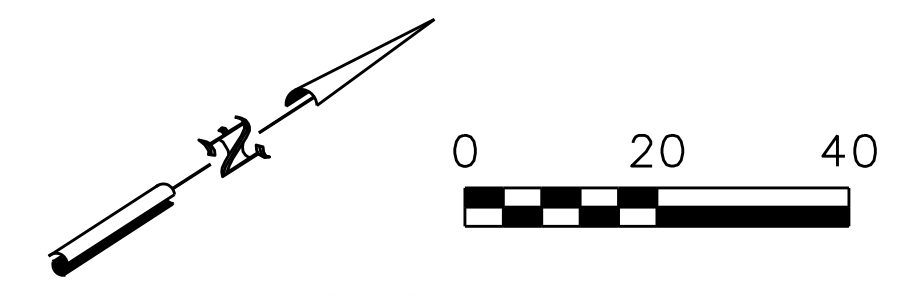
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- NOTES:
1. CONTRACTOR SHALL ERADICATE ALL EXISTING CONFLICTING PAVEMENT MARKINGS
 2. SEE SHEET 302 FOR SIGNING AND PAVEMENT MARKING LEGEND
 3. SEE SHEETS 401-409 FOR PAVEMENT REPAIR AND CONCRETE WORK.

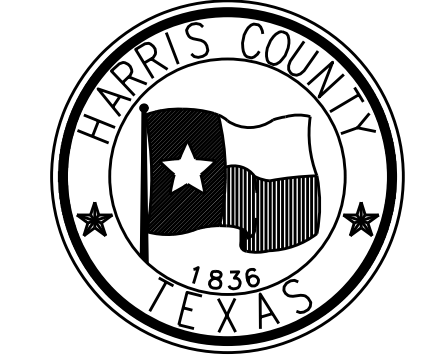
PAVEMENT MARKING QUANTITIES STA. 450+00 TO 458+00	4	80 LF	11	69 LF	32	12 EA
	5	798 LF	14	80 SF	38	10 EA
	6	24 LF	16	18 EA		
	8	437 LF	17	375 SF	3	30 LF



NO.	REVISIONS	DATE	NAME
2	ADD PROPOSED FOR GRAY	10/17	CCB

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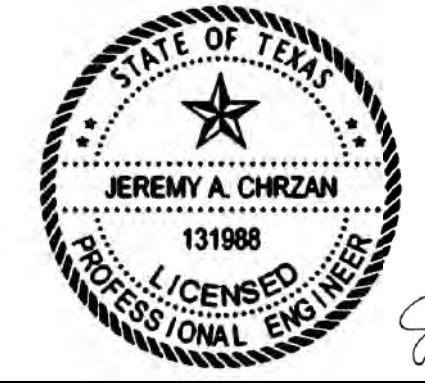
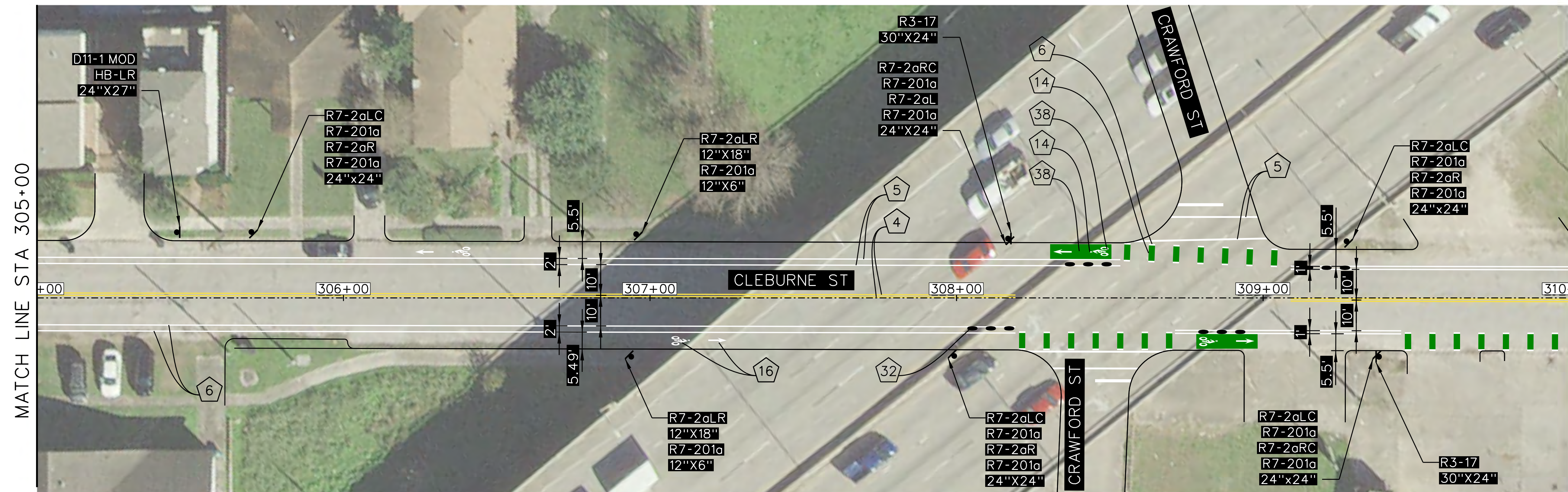
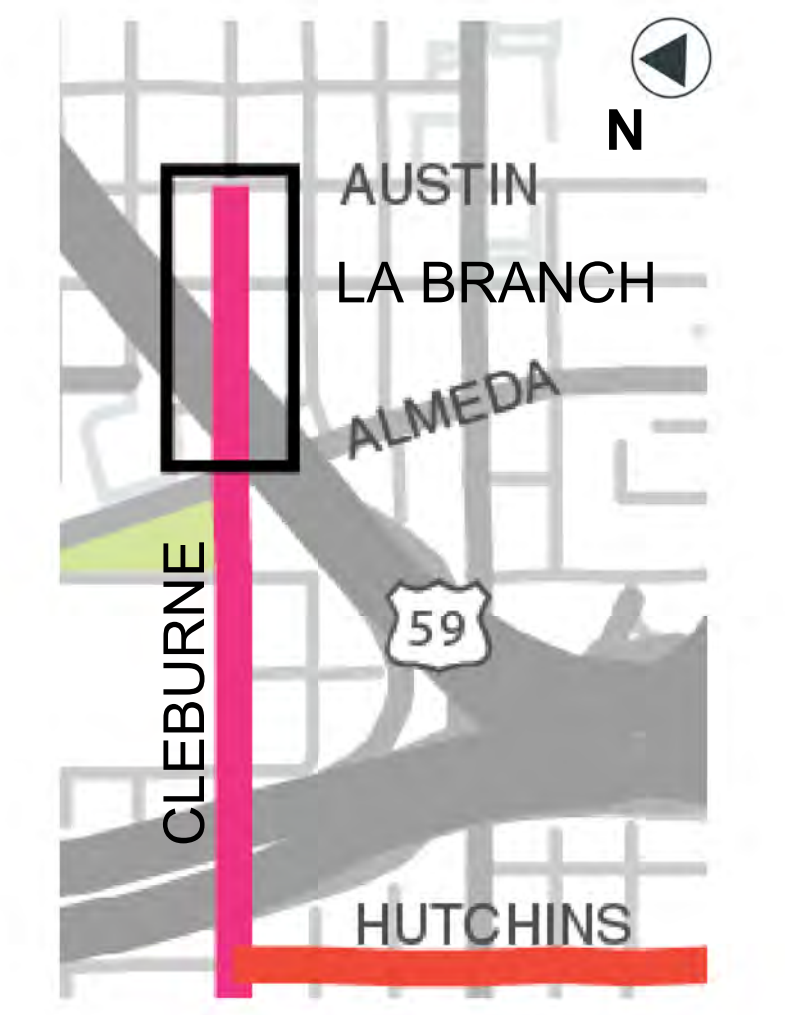
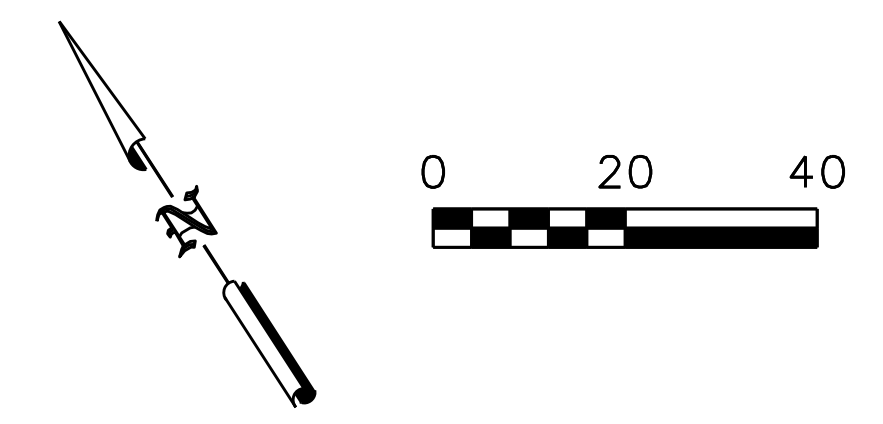


HARRIS COUNTY
 ENGINEERING DEPARTMENT

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	SHEET DESCRIPTION: SIGNING AND PAVEMENT MARKING LAYOUT
DRAWN BY: CB/FL	CK'D BY: JC
SCALE: 1"=20'	SHEET 6 OF 9
DATE: 04/12/19	APPROVED BY:
	SHEET NO: 206

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NO.	REVISIONS	DATE	NAME

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 TEL (301) 927-1900
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 ENGINEERING DEPARTMENT

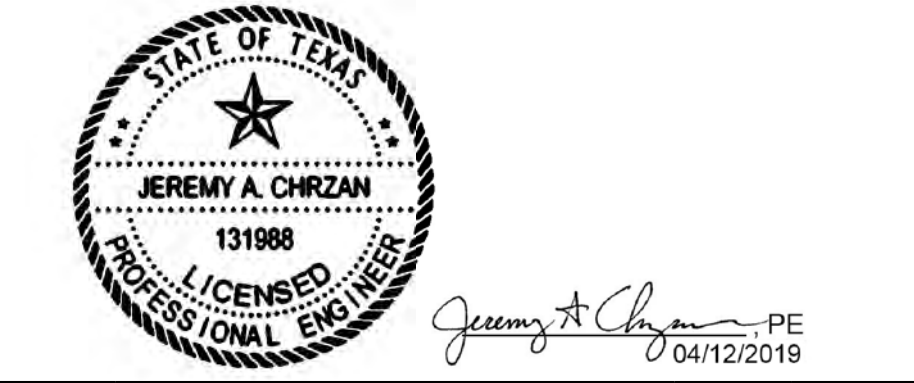
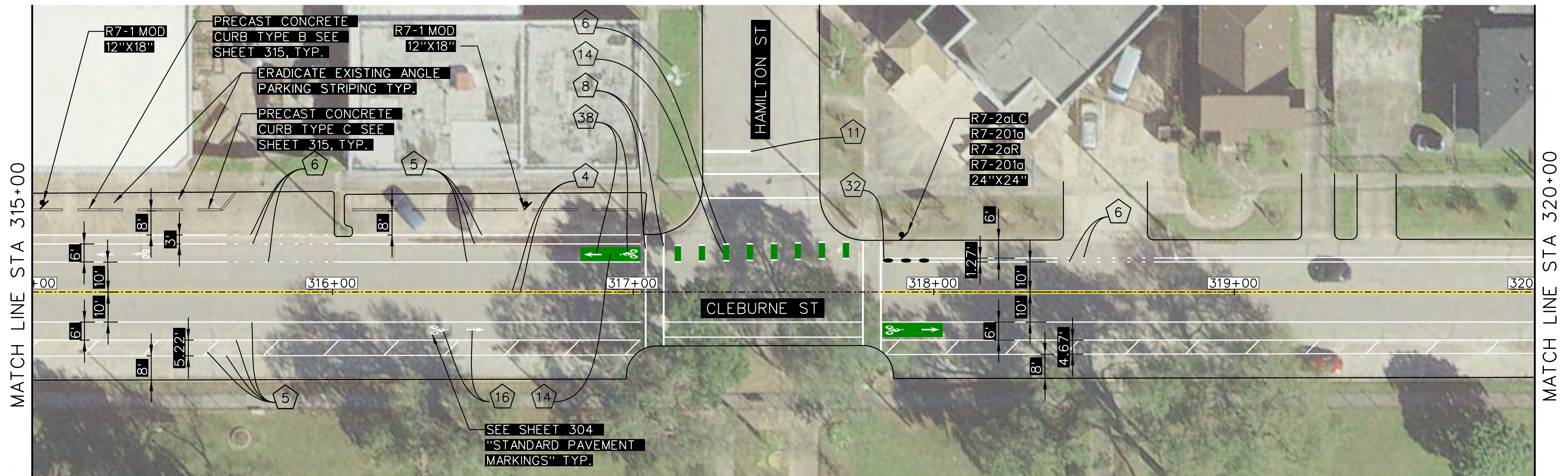
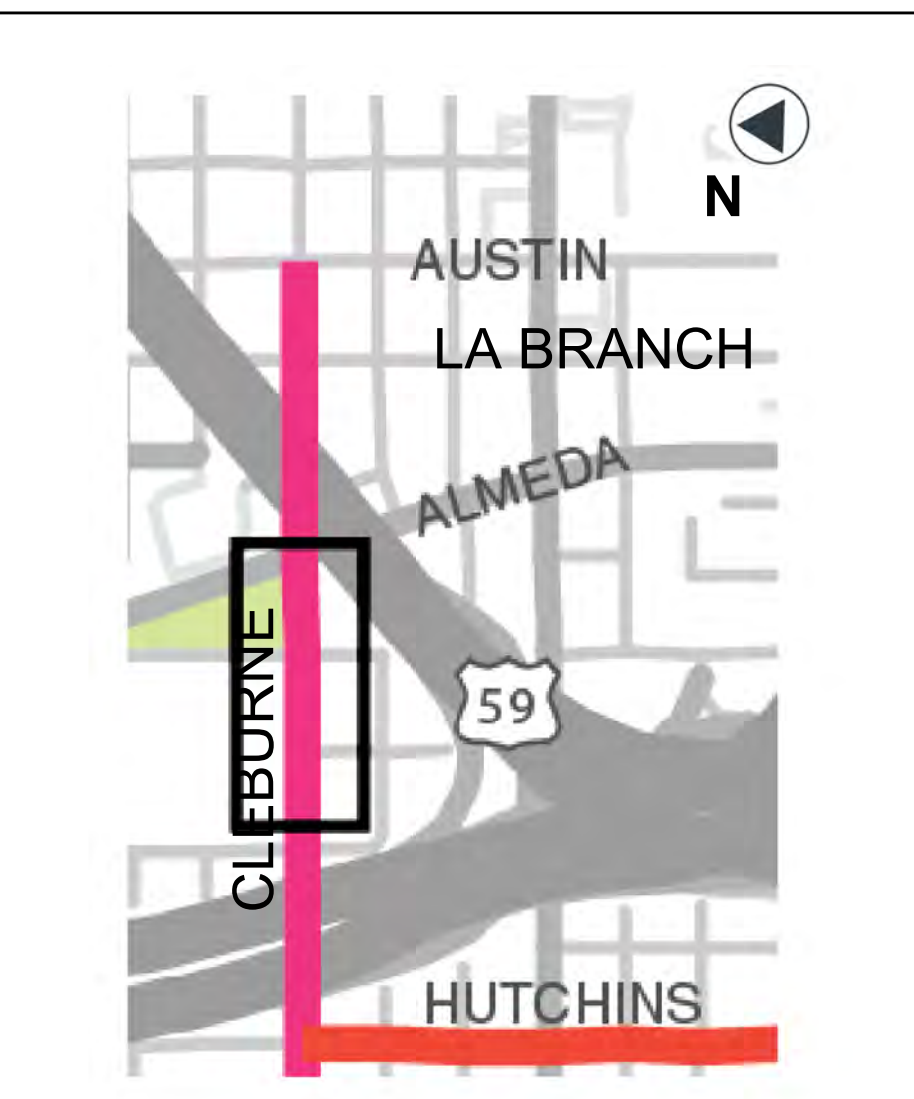
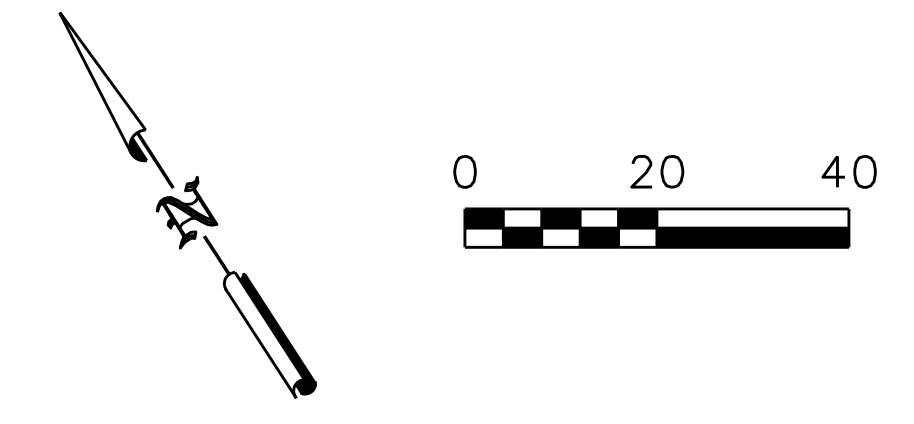
PROJECT TITLE:
 HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY
 DRAWN BY: CB/FL SHEET DESCRIPTION: SIGNING AND PAVEMENT MARKING LAYOUT
 CK'D BY: JC
 SCALE: 1"=20' SHEET 7 OF 9
 DATE: 04/12/19 APPROVED BY:
 SHEET NO: 207

- NOTES:
1. CONTRACTOR SHALL ERADICATE ALL EXISTING CONFLICTING PAVEMENT MARKINGS
 2. SEE SHEET 208 FOR SIGNING AND PAVEMENT MARKING LEGEND
 3. FOR PROPOSED WORK AT THE INTERSECTION OF CLEBURNE STREET AND LA BRANCH STREET, SEE PLANS FOR AUSTIN STREET

PAVMENT MARKING QUANTITIES STA. 303+75 TO 310+00	4	5	6	8	11	14	16	17	32	38
	453 LF	1708 LF	40 LF	376 LF	94 LF	258 SF	4 EA	16 SF	18 EA	7 EA

PENTABLE: HC-Bikeways50%.tbi

DATE: 12-Apr-2019 04:35 PM: 35:39 PM
 USER: _USER_
 FILE: \\dca-file01\50000\5653.06_S_Third Ward Corridors Bikeway Design\03_Cleburne\5653.06_Cle_IP_001.dgn



NO.	REVISIONS	DATE	NAME

TOOLE DESIGN
 8484 Georgia Avenue, Suite 800, Silver Spring, MD 20910
 TEL (301) 927-1900
 TBPE Registration No. 14667



HARRIS COUNTY
 ENGINEERING DEPARTMENT

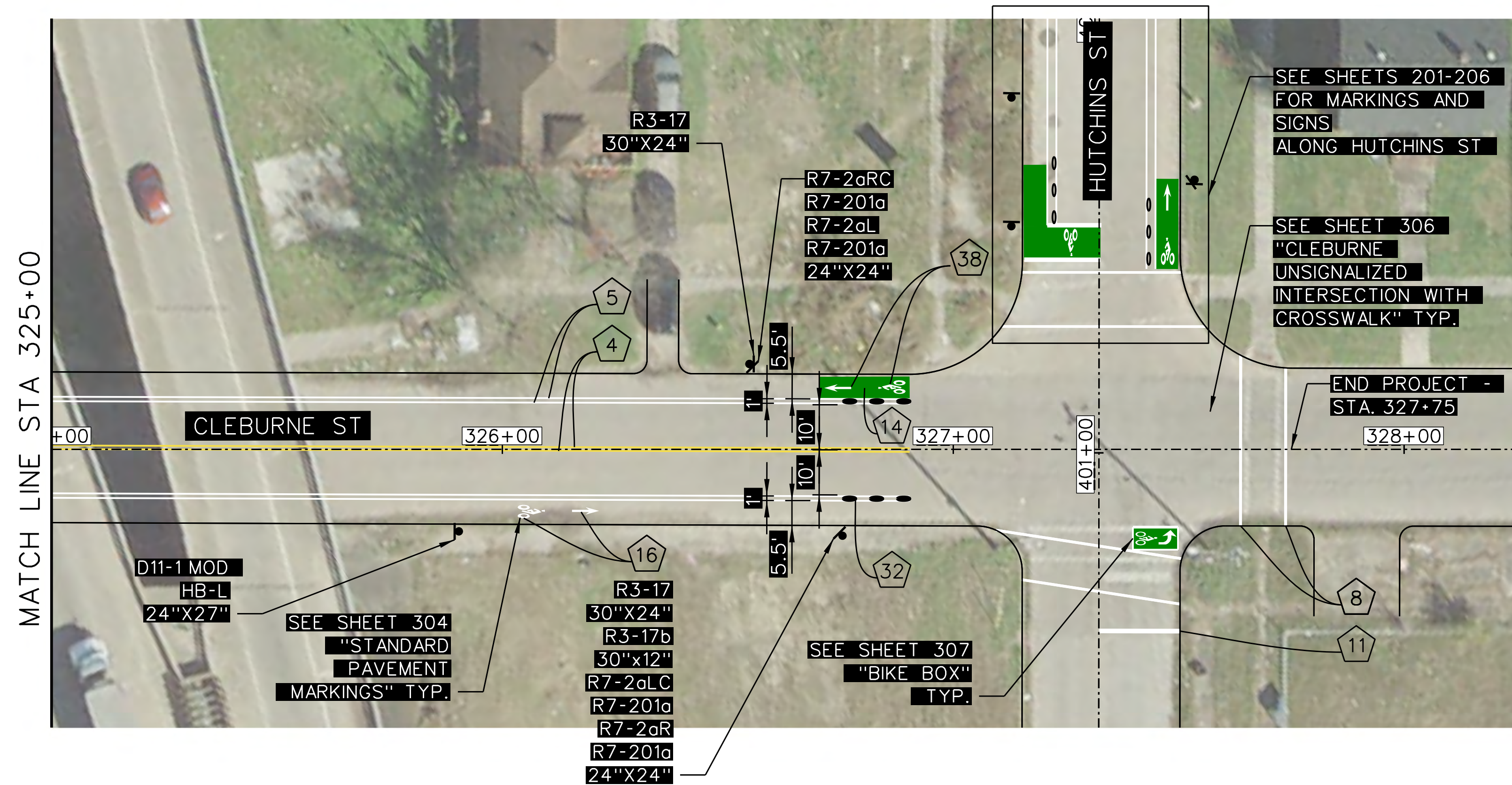
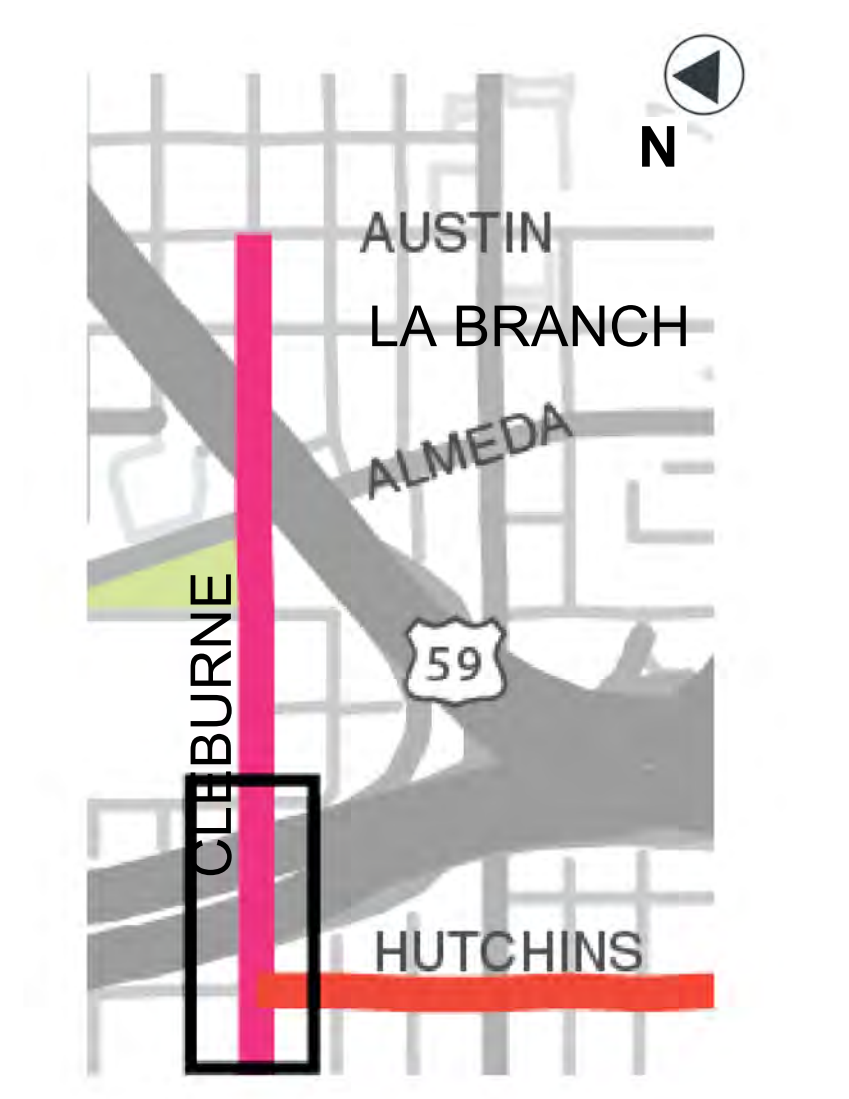
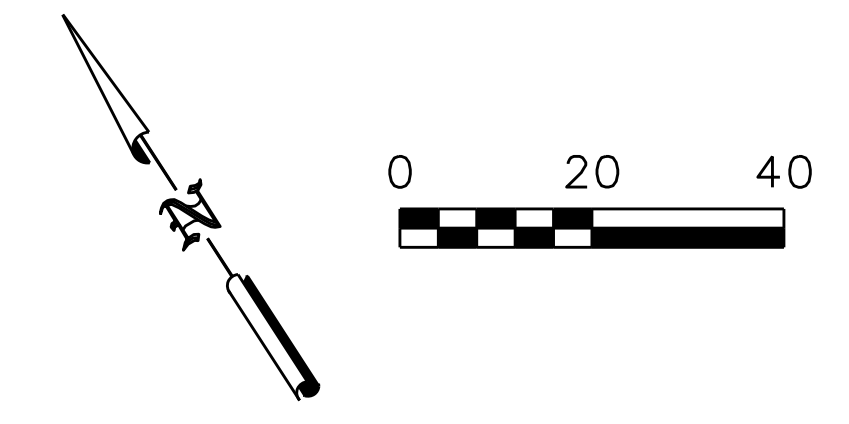
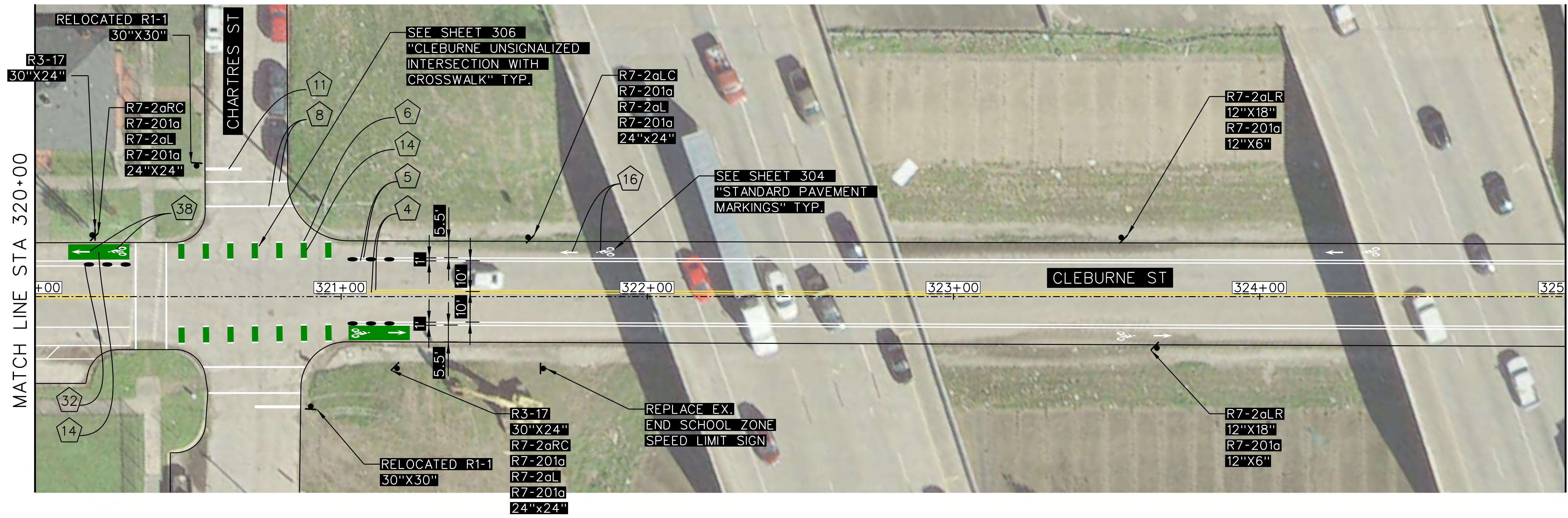
PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY
 DRAWN BY: CB/FL
 CK'D BY: JC
 SCALE: 1"=20'
 DATE: 04/12/19
 SHEET DESCRIPTION: SIGNING AND PAVEMENT MARKING LAYOUT
 SHEET 8 OF 9
 APPROVED BY:
 SHEET NO: 208

- NOTES:
 1. CONTRACTOR SHALL ERADICATE ALL EXISTING CONFLICTING PAVEMENT MARKINGS
 2. SEE SHEET 208 FOR SIGNING AND PAVEMENT MARKING LEGEND

PAVMENT MARKING QUANTITIES STA. 310+00 TO 320+00	4	11	32
	1520 LF	120 LF	21 EA
	3543 LF	314 SF	18 EA
	309 LF	6 EA	
	965 LF	460 SF	

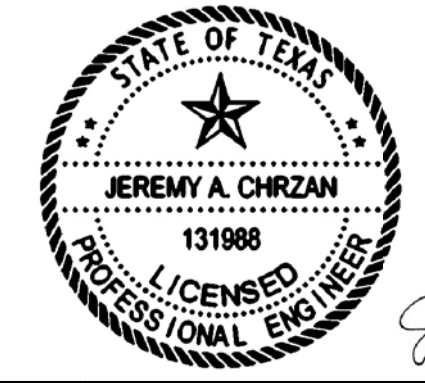
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- NOTES:
1. CONTRACTOR SHALL ERADICATE ALL EXISTING CONFLICTING PAVEMENT MARKINGS
 2. SEE SHEET 208 FOR SIGNING AND PAVEMENT MARKING LEGEND
 3. FOR PROPOSED WORK ON HUTCHINS STREET, SEE SHEETS 201 THROUGH 206.

PAVMENT MARKING QUANTITIES STA. 320+00 TO 328+00	4	5	6	8	11	14	16	17	32	38
	1238 LF	2523 LF	55 LF	349 LF	45 LF	172 SF	6 EA	16 SF	15 EA	7 EA



Jeremy A. Chrzan, PE
04/12/2019

NO.	REVISIONS	DATE	NAME

TOOLE DESIGN

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 TBPE Registration No. 14667



HARRIS COUNTY
 ENGINEERING DEPARTMENT

PROJECT TITLE:
 HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY
 DRAWN BY: CB/FL
 CK'D BY: JC
 SHEET DESCRIPTION:
 SIGNING AND PAVEMENT MARKING LAYOUT
 SCALE:
 1" = 20'
 DATE: 04/12/19
 SHEET 9 OF 9
 APPROVED BY:
 SHEET NO:
 209

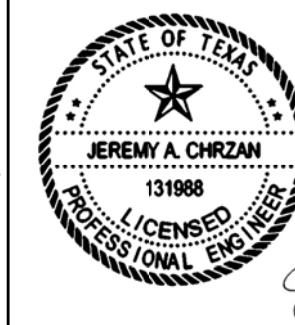
	<small>* MINIMUM SIZE OF 36X36 SHALL BE USED FOR STOP SIGNS THAT FACE MULTI-LANE APPROACHES</small>										
TMUTCD/SHSD ID	R1-1	R1-2	R1-3P	R2-1	R3-4	R3-5R (L)	R3-7L (R)	R3-8	R4-7	R6-1R, R6-1L	R6-2R (L)
LOCAL	30x30*	30x30	18x6	24x30	24x24	30x36	30x30	Varies x 30	24x30	36x12	24x30
COLLECTOR	36x36	36x36	18x6	24x30	30x30	30x36	36x36	Varies x 30	24x30	36x12	30x36
THOROUGHFARE	36x36	36x36	18x6	24x30	30x30	30x36	36x36	Varies x 36	24x30	36x12	30x36
	<small>* SIGNALIZED LOCATIONS ONLY WHERE APPROVED BY HCD</small>										
TMUTCD/SHSD ID	NO PARKING (ALL TYPES)	R8-8	R10-6R (L)	R10-17T	W1-1R (L)	W1-2R (L)	W1-3R (L)	W1-4R (L)	W1-6R (L), W1-7	W1-7T	W1-8R (L)
LOCAL	18x24	24x30	24x36	30x30	30x30	30x30	30x30	30x30	48x24	48x24	18x24
COLLECTOR	18x24	24x30	24x36	30x30	36x36	36x36	36x36	36x36	48x24	48x24	18x24
THOROUGHFARE	18x24	24x30	24x36	30x30	36x36	36x36	36x36	36x36	48x24	48x24	30x36
TMUTCD/SHSD ID	W2-1	W2-2R (L)	W3-1	W3-3	W4-2R (L)	W6-2	W6-3	W8-13aT	W9-1R (L)	W9-2R (L)	W10-1
LOCAL	30x30	30x30	30x30	30x30	36x36	36x36	36x36	36x36	36x36	36x36	30 dia.
COLLECTOR	30x30	30x30	30x30	30x30	36x36	36x36	36x36	36x36	36x36	36x36	30 dia.
THOROUGHFARE	36x36	36x36	36x36	36x36	36x36	36x36	36x36	36x36	36x36	36x36	30 dia.
TMUTCD/SHSD ID	W11-1 through W11-12	W13-1P	W14-1	W14-2	W16-2aP	W16-7PL (PR)	W16-9	S1-1	S4-3P		I-3
LOCAL	30x30	18x18	30x30	24x24	24x12	30x18	24x12	36x36	24x8		VARIES X 18
COLLECTOR	36x36	18x18	36x36	24x24	24x12	30x18	24x12	36x36	24x8		VARIES X 18
THOROUGHFARE	36x36	18x18	36x36	N/A	24x12	30x18	24x12	36x36	24x8		VARIES X 30
		2" TYP. 6" CLEARVIEW 2-W FONT 3" CLEARVIEW 2-W FONT 4" TYP.	2" TYP.	Reflective Material Post							
TMUTCD/SHSD ID	OM-3R, OM-3L	GROUND MOUNTED STREET NAME SIGN		TYPES D-DY, D-DW							
LOCAL	12x36	VARIES X 8		36" TALL							
COLLECTOR	12x36	VARIES X 8		36" TALL							
THOROUGHFARE	12x36	VARIES X 8		36" TALL							

NO.	REVISIONS	DATE	NAME
▲			
▲			
▲			
▲			

HARRIS COUNTY
ENGINEERING DEPARTMENT



TOOLE DESIGN
8484 Georgia Avenue, Suite 800, Silver Spring, MD 20910
TEL (301) 927-1900
TBPE Registration No. 14667



PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY		TRAFFIC STANDARD
SHEET DESCRIPTION: SMALL SIGN DETAILS		DATE: 03/19/19
DRAWN BY: CB/FL	SHEET 1 OF 1	CHECKED BY: JC
SCALE: NTS		SHEET NO: 301



R10-15L(BIKE)
30x30
SEE DETAIL SHEET 314



R10-15R(BIKE)
30x30
SEE DETAIL SHEET 314



R1-6
36x12



R4-4
36x30



R1-5L (COH MOD)
36x36
SEE DETAIL SHEET 314



R4-11
30x30



R3-17
30x24



R3-17b
30x12



R5-1
36x36



R5-1a
36x24



R5-1b
12x18



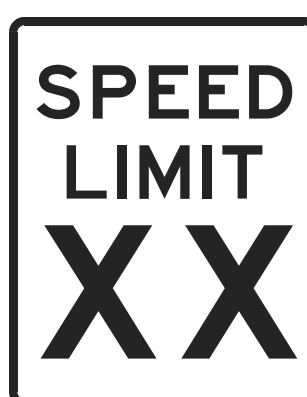
R3-7bP
30x12



W11-1
30x30



R7-1 MOD
12x18



R2-1
24x30



R10-22
12x18



D11-1 (MOD)
24x27
SEE DETAIL SHEET 303



R7-2aL
R7-201a
12x24



R7-2aR
R7-201a
12x24



R7-2aLR
R7-201a
12x24



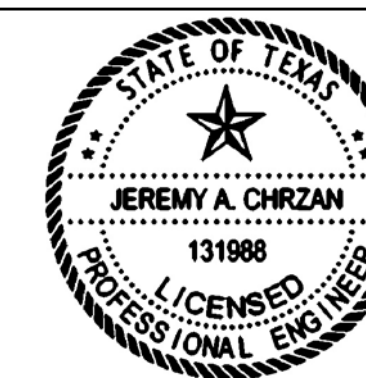
R7-2aLC
R7-201a
12x24



R7-2aRC
R7-201a
12x24

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 CONCRETE WHEEL STOP (PAID FOR AS ITEM 178)
- 36 28" SHORT SQUEEZE 2.375" HIGH PERFORMANCE FLEXIBLE CHANNELIZER POST
- 37 GREEN TUFF CURB XLP
- 38 REFLECTIVE PM TY C PREFAB SYMBOL (WHITE/GREEN)
- 39 OMITTED
- 40 OMITTED
- 41 TYPE I - 6" SOLID YELLOW
- 42 TYPE I - 6" GUIDE YELLOW
- 43 TRUNCATED DOME
- 44 DIRECTIONAL TACTILE MARKING
- 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



Jeremy A. Chrzan, PE
04/12/2019

NO.	REVISIONS	DATE	NAME

TOOLE DESIGN

8484 Georgia Avenue, Suite 800, Silver Spring, MD 20910
TEL (301) 927-1900
TBPE Registration No. 14667



HARRIS COUNTY ENGINEERING DEPARTMENT

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: SIGNING AND PAVEMENT MARKING
CK'D BY: JC	LEGEND
SCALE: NTS	SHEET 1 OF 1
DATE: 04/12/19	APPROVED BY:

D11-1 MOD HB-R



1.5" Radius, 0.6" Border, White on Blue; [HOUSTON] C; [BIKEWAYS] C; 1.5" Radius, 0.6" Border, White on Green; [BIKE] C; [ROUTE] C 90% spacing; Standard Arrow Custom 7.9" X 4.7" 0°;

D11-1 MOD HB-S



1.5" Radius, 0.6" Border, White on Blue; [HOUSTON] C; [BIKEWAYS] C; 1.5" Radius, 0.6" Border, White on Green; [BIKE] C; [ROUTE] C 90% spacing; Standard Arrow Custom 7.9" X 4.7" 90°;

D11-1 MOD HB-SL



1.5" Radius, 0.6" Border, White on Blue; [HOUSTON] C; [BIKEWAYS] C; 1.5" Radius, 0.6" Border, White on Green; [BIKE] C; [ROUTE] C 90% spacing; 90 Deg Double Headed Arrow 11.0" X 10.5" White;

D11-1 MOD HB-L



1.5" Radius, 0.6" Border, White on Blue; [HOUSTON] C; [BIKEWAYS] C; 1.5" Radius, 0.6" Border, White on Green; [BIKE] C; [ROUTE] C 90% spacing; Standard Arrow Custom 7.9" X 4.7" 180°;

D11-1 MOD HB-SLR

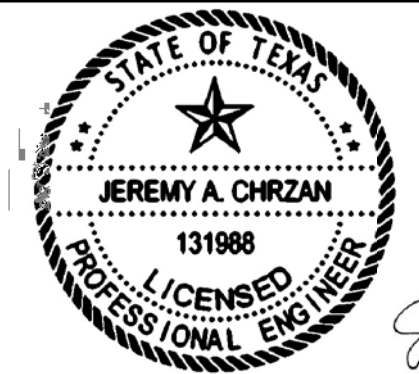


1.5" Radius, 0.6" Border, White on Blue; [HOUSTON] C; [BIKEWAYS] C; 1.5" Radius, 0.6" Border, White on Green; [BIKE] C; [ROUTE] C 90% spacing; 90 Deg Double Headed Arrow 11.0" X 10.5" White;

D11-1 MOD HB-SR



1.5" Radius, 0.6" Border, White on Blue; [HOUSTON] C; [BIKEWAYS] C; 1.5" Radius, 0.6" Border, White on Green; [BIKE] C; [ROUTE] C 90% spacing; 90 Deg Double Headed Arrow 11.0" X 10.5" White;



Signature of Jeremy A. Chrzan, PE, dated 04/12/2019.

NO.	REVISIONS	DATE	NAME

TOOLE DESIGN

8484 Georgia Avenue, Suite 800, Silver Spring, MD 20910
TEL (301) 927-1900
TBPE Registration No. 14667



HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: HOUSTON BIKEWAYS SIGN DETAILS
CK'D BY: JC	
SCALE: NTS	SHEET 1 OF 1
DATE: 04/12/19	APPROVED BY:

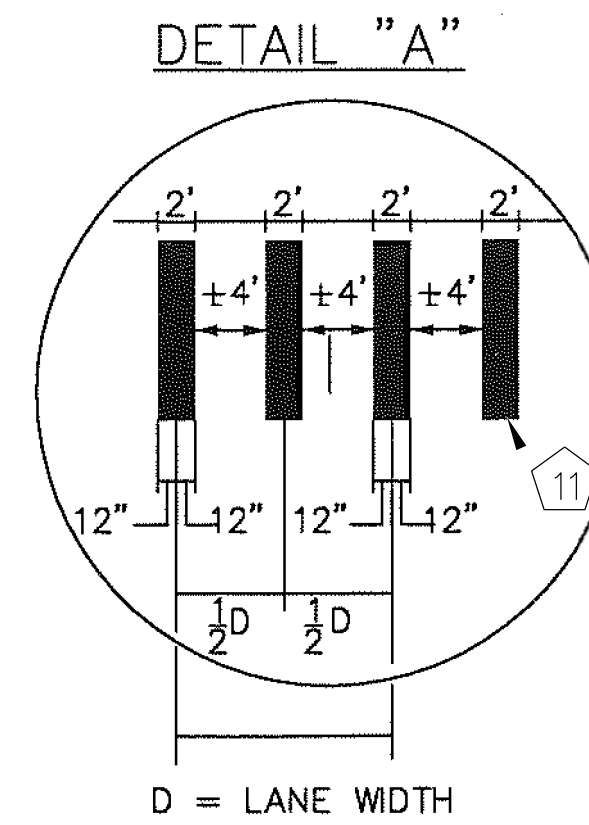
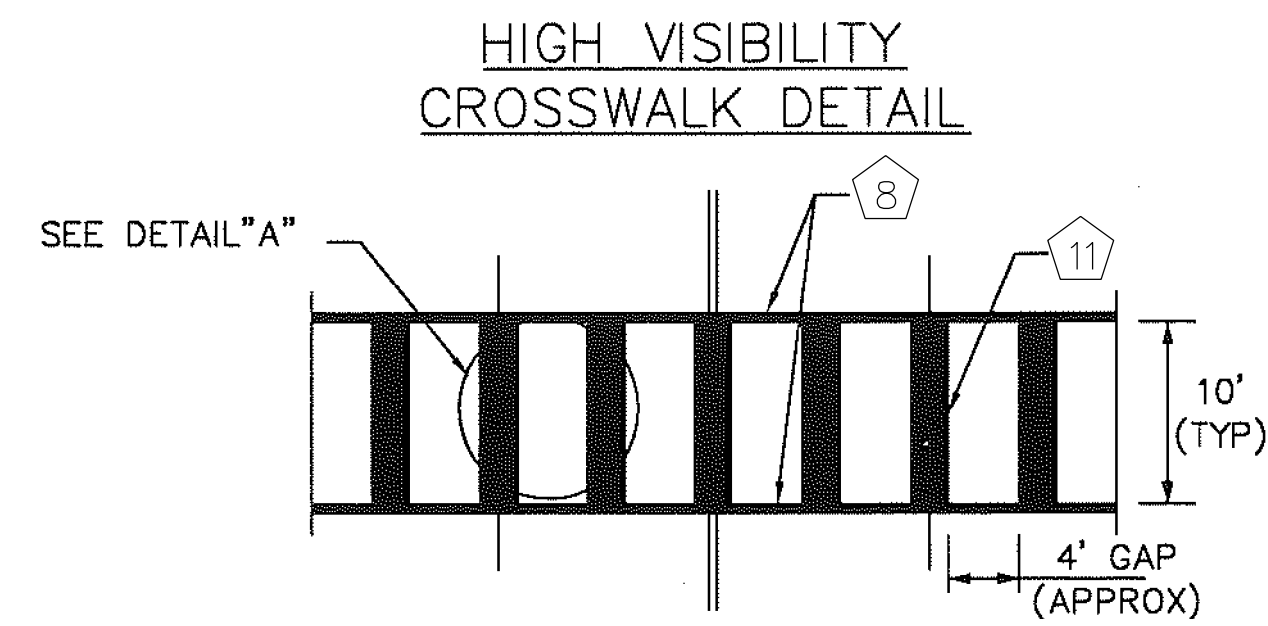
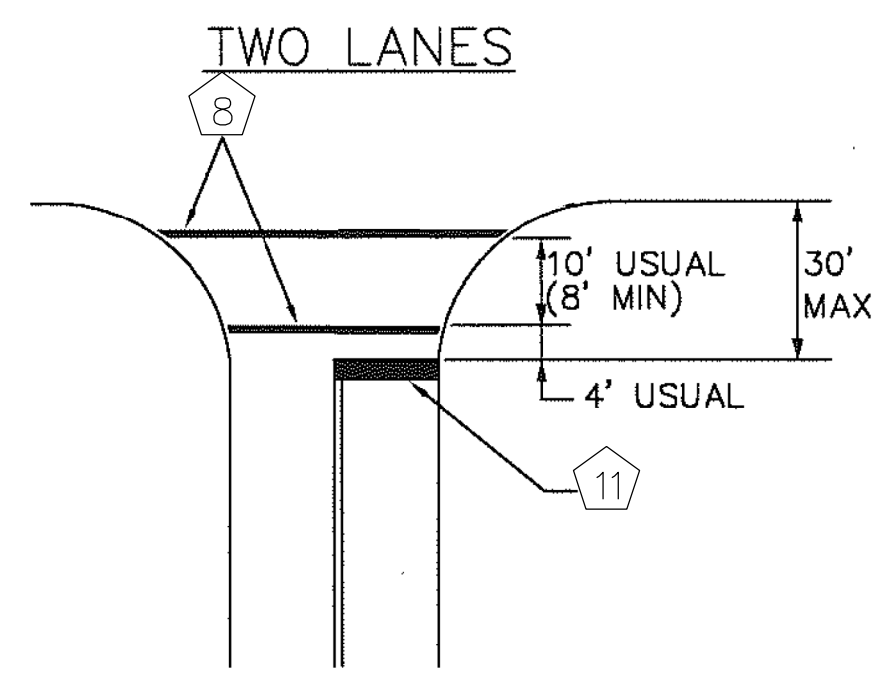
SHEET NO:
303

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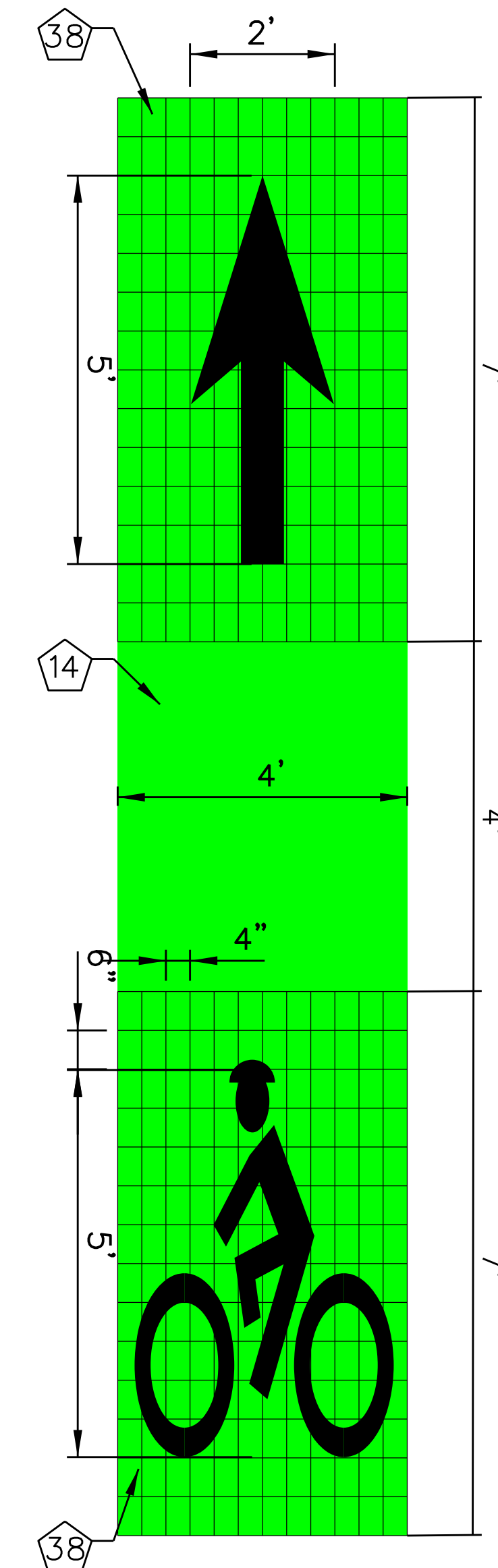
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DATE: 12-Apr-2019 04:37 PM: 37:23 PM FILE: \\dco-file01\50000\5653.06_S_Third Ward Corridors Bikeway Design\04 Hutchins\5653.06_Hut_G_Notes_Details_Tabs.dgn

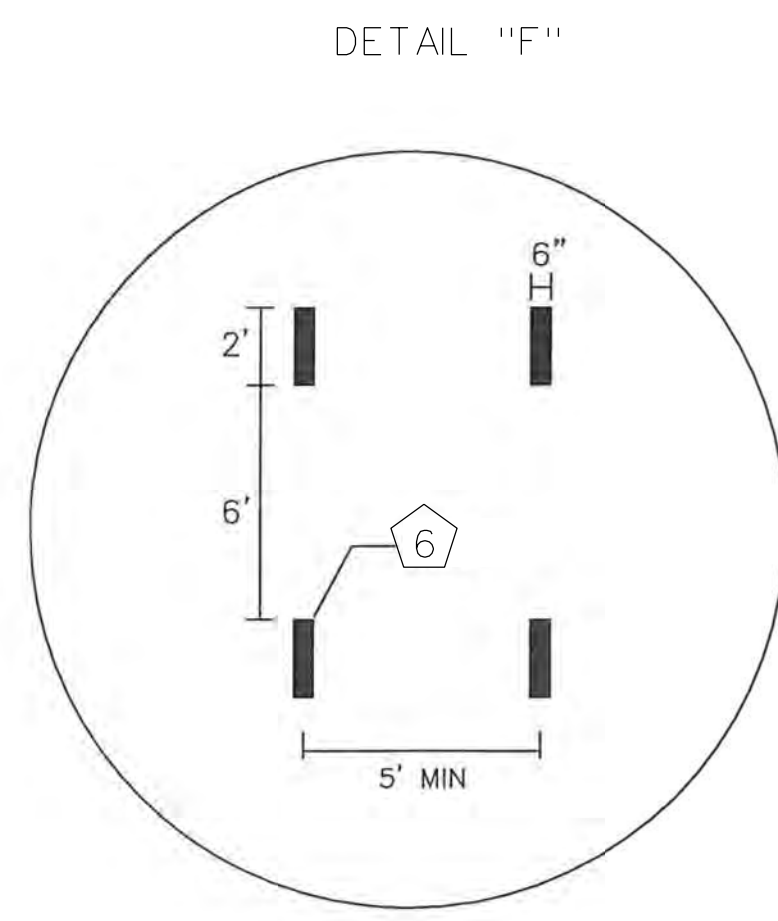
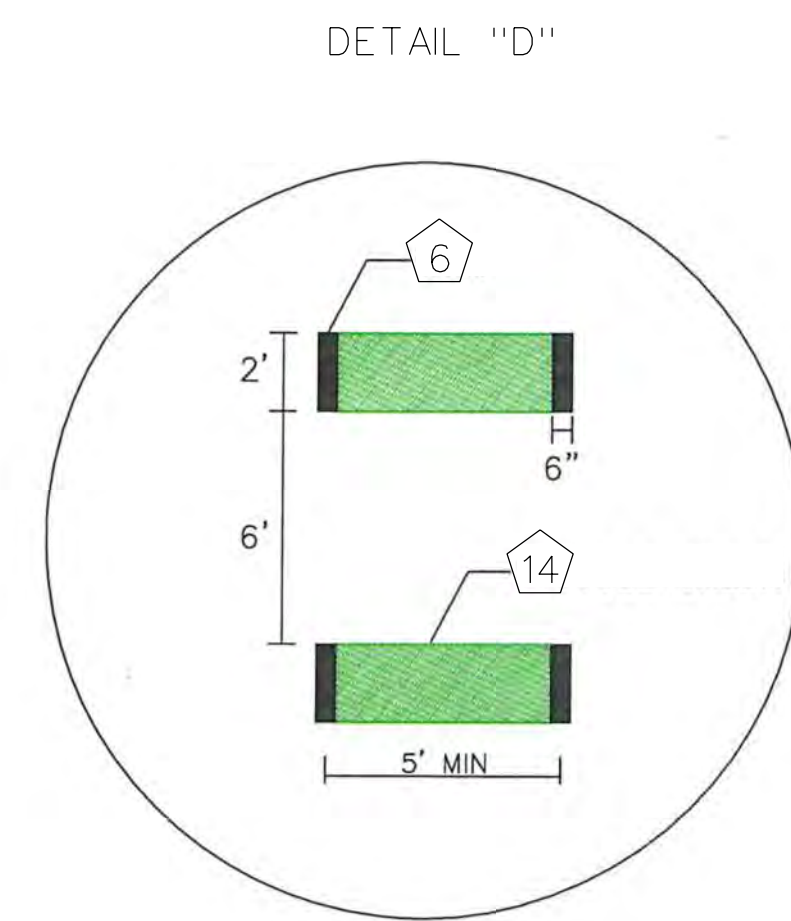
TYPICAL CROSSWALK DETAILS



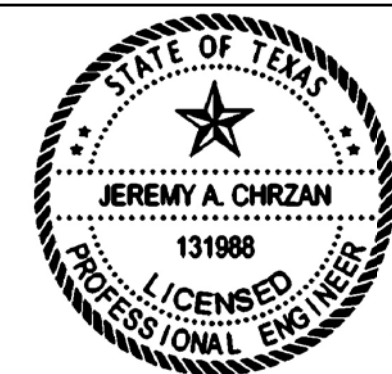
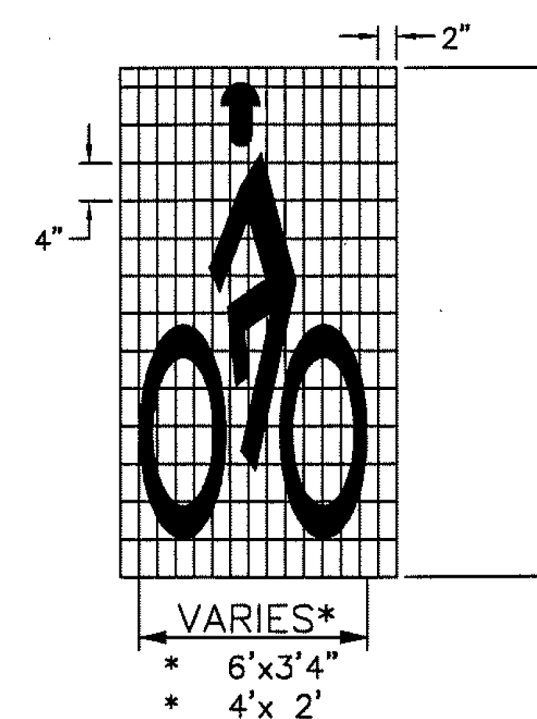
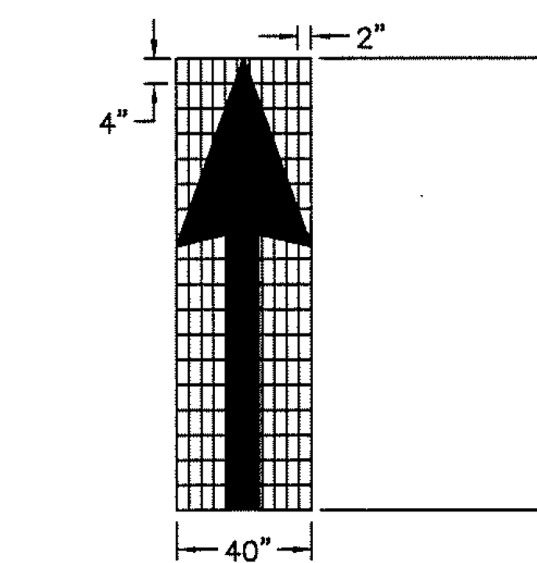
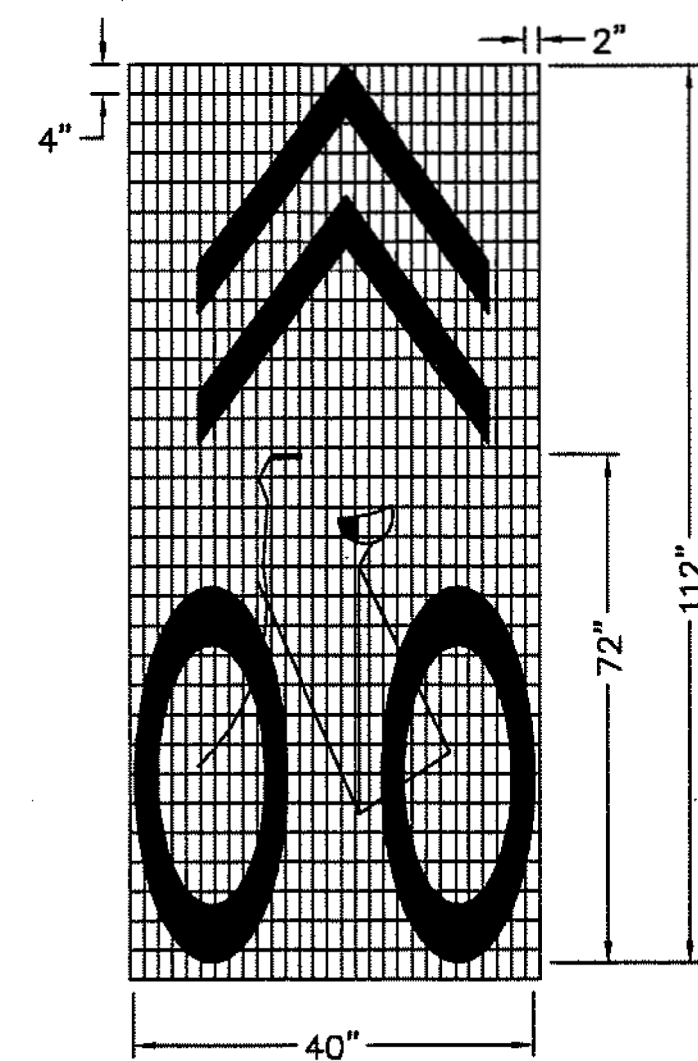
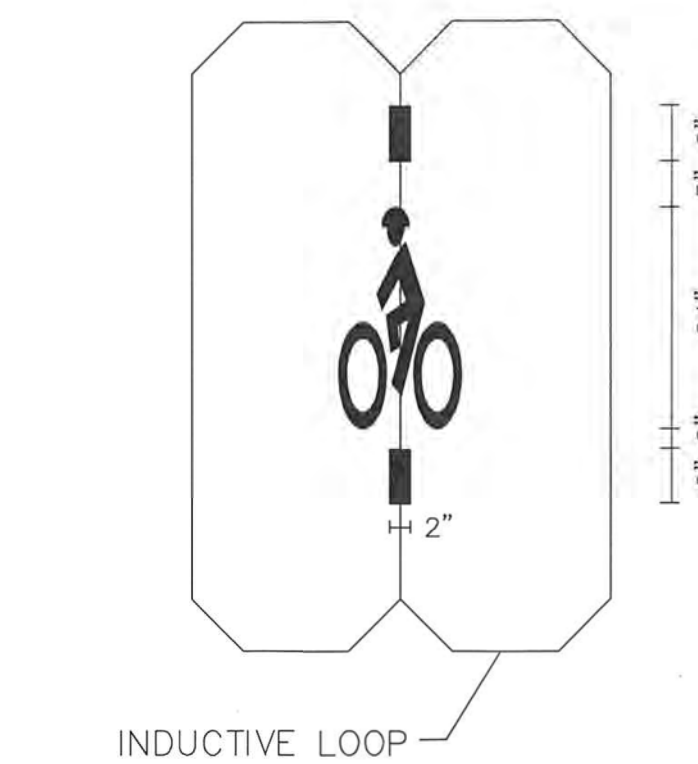
STANDARD PAVEMENT MARKINGS



TYPICAL CONFLICT MARKINGS



BICYCLE DETECTION MARKING

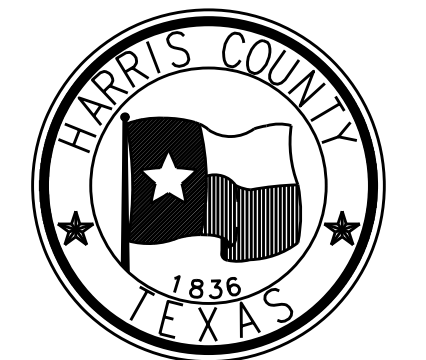


Jeremy A. Chrzan, PE
04/12/2019

NO.	REVISIONS	DATE	NAME

TOOLE DESIGN

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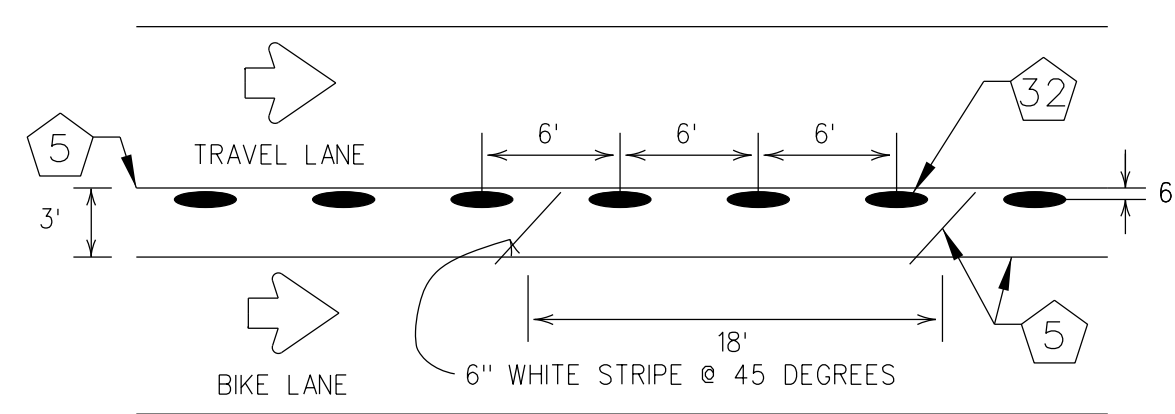


HARRIS COUNTY ENGINEERING DEPARTMENT

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY
DRAWN BY: CB/FL SHEET DESCRIPTION: PAVEMENT MARKING DETAILS
CK'D BY: JC
SCALE: NTS SHEET 1 OF 4
DATE: 04/12/19 APPROVED BY:

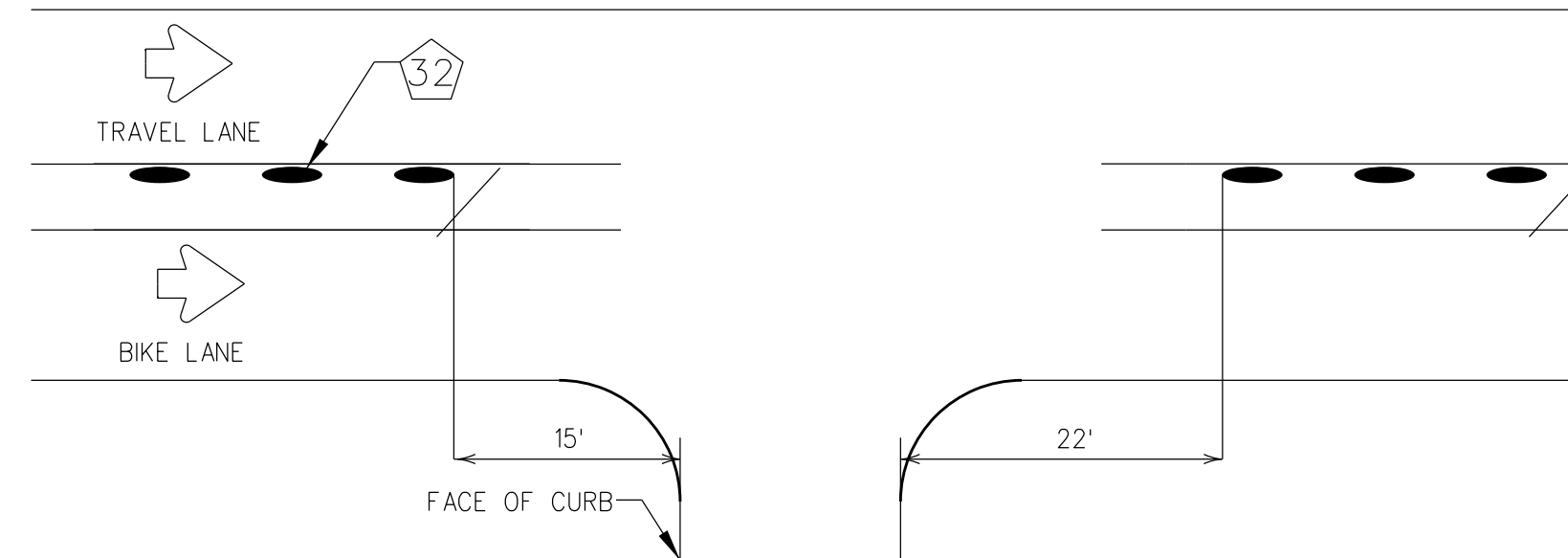
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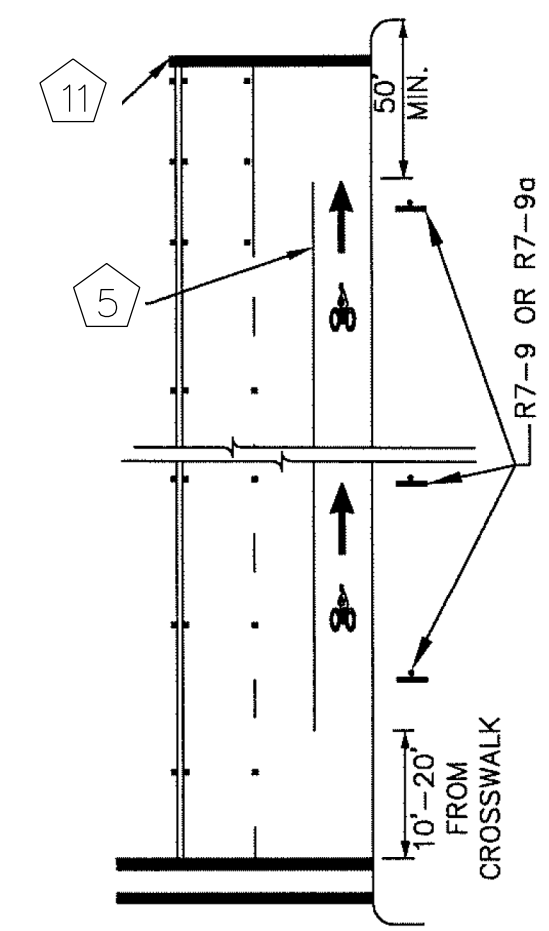
ARMADILLO BARRIERS



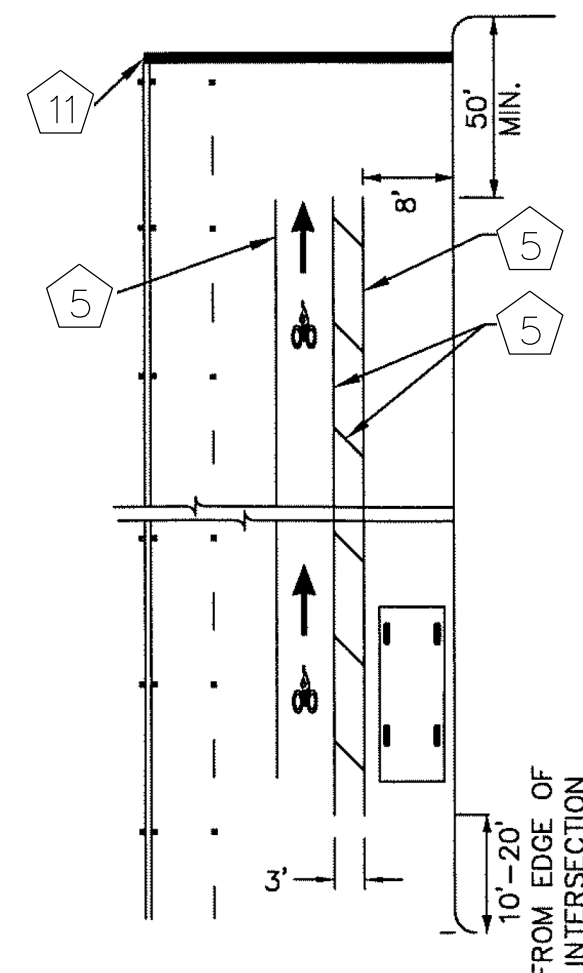
3 FT ARMADILLO BARRIER

ARMADILLO BARRIERS AT INTERSECTIONS

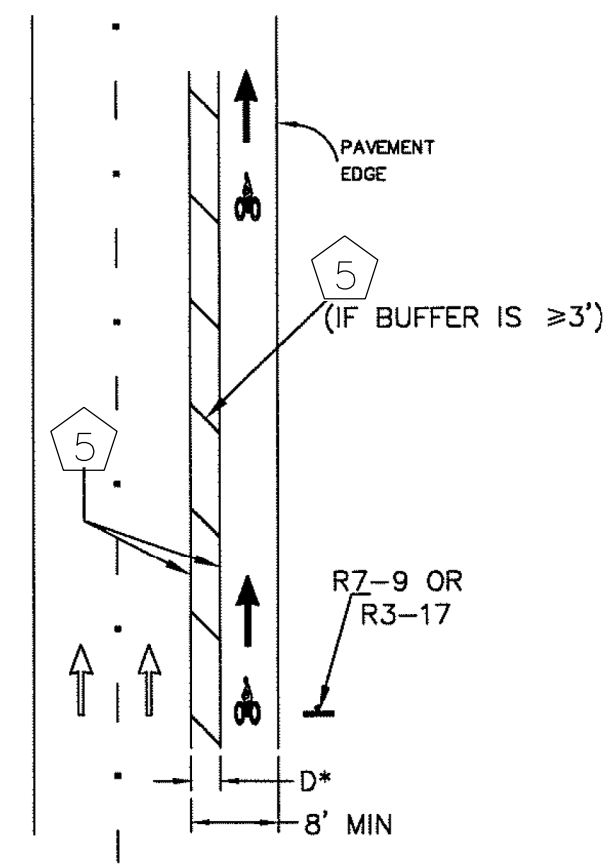




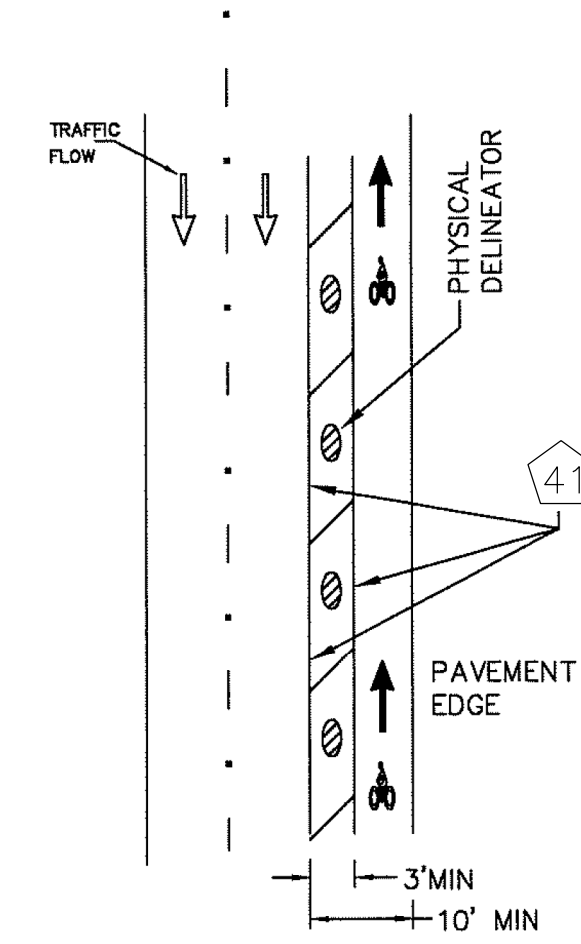
STANDARD BIKE LANES
 NO ON-STREET PARKING
 ALONG BICYCLE LANE



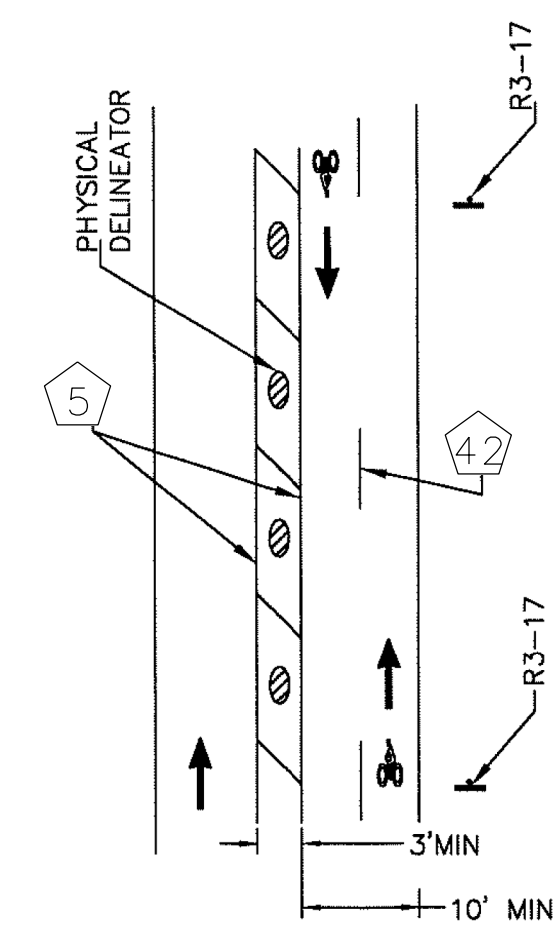
STANDARD BIKE LANES
 ON-STREET PARKING
 ALONG BICYCLE LANE



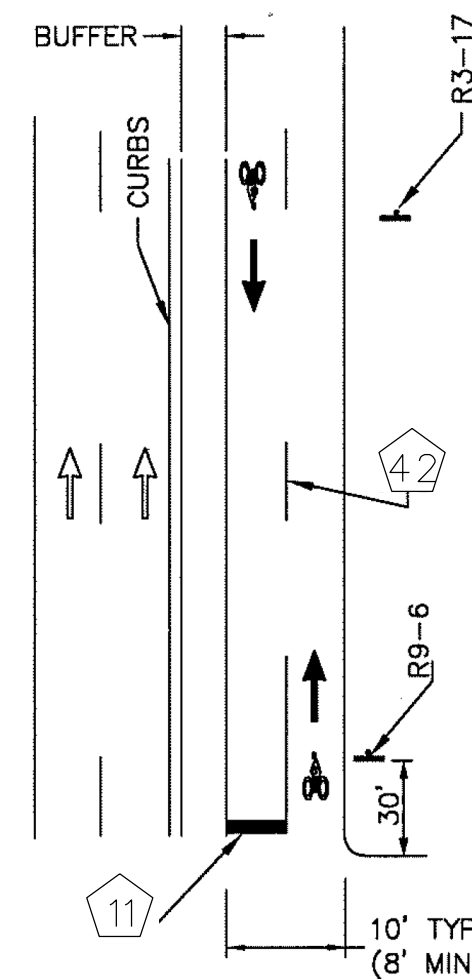
BUFFERED BIKE LANES
 *DELINEATOR REQUIRED IF $D < 2'$



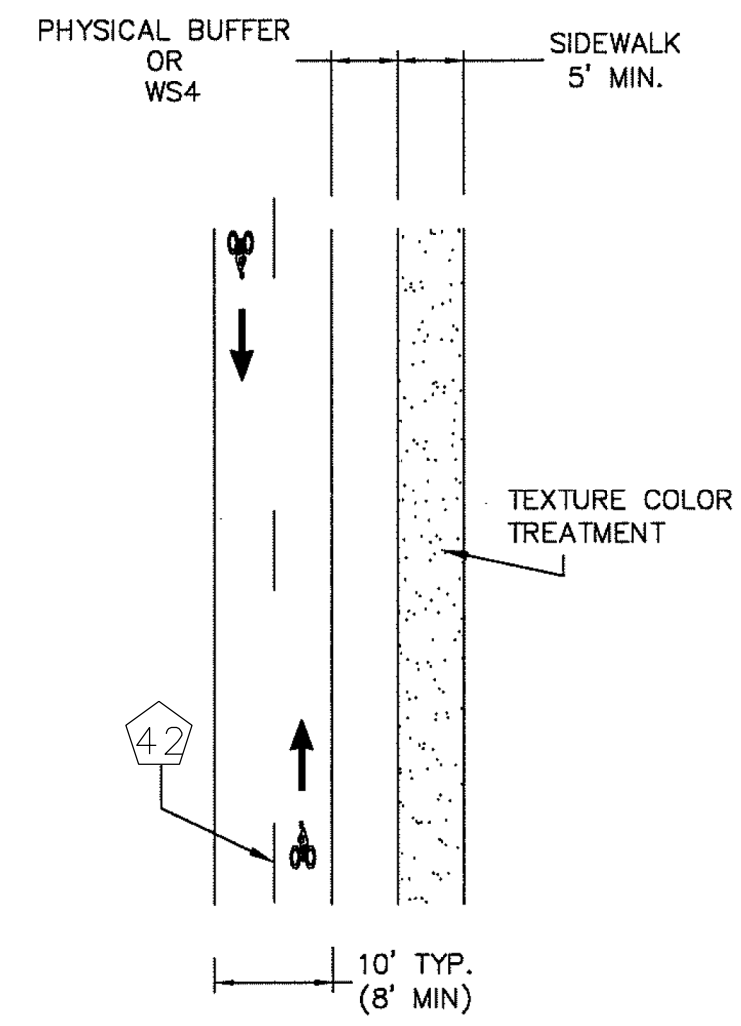
SEPARATED BIKE LANES
 ONE-WAY (CONTRA-FLOW)



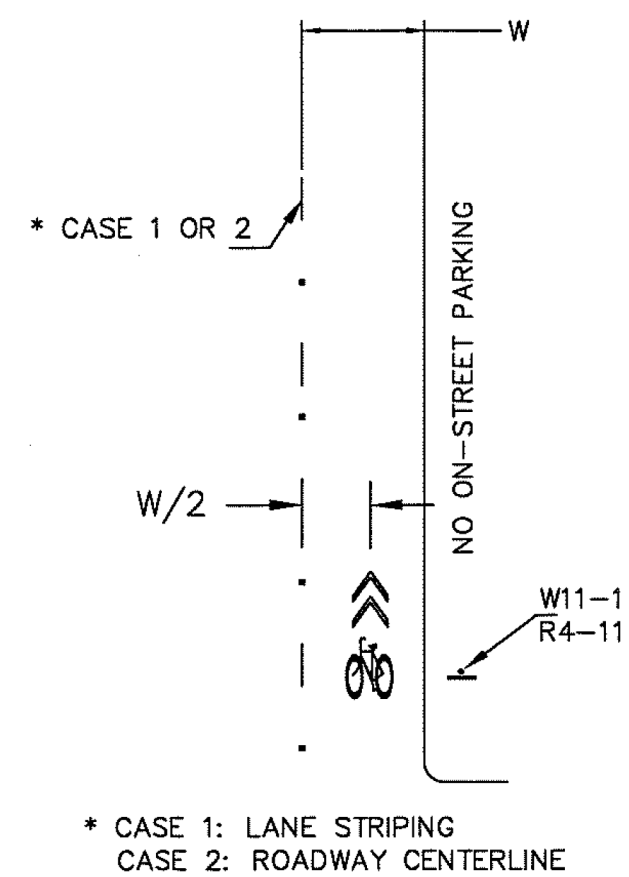
SEPARATED BIKE LANES
 TWO-WAY



TWO-WAY SIDE PATH

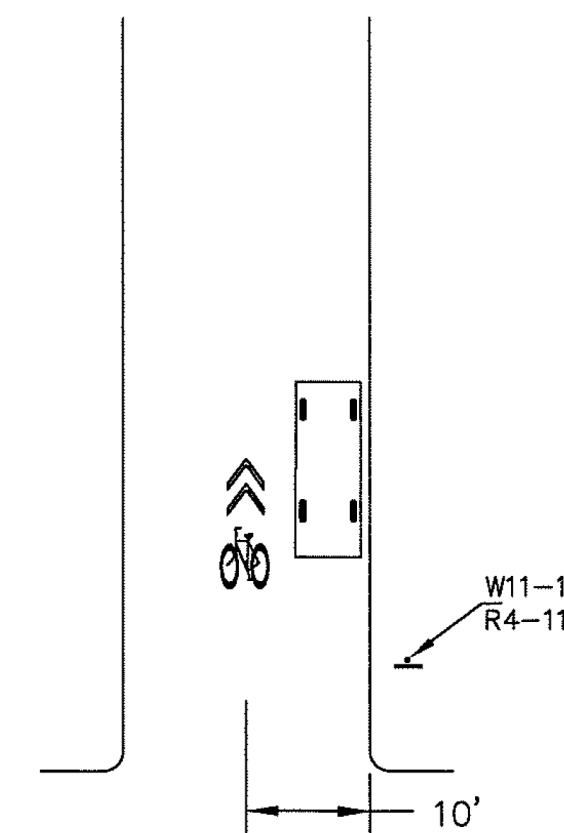


SIDEPATH WITH DEDICATED
 SIDEWALK



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:

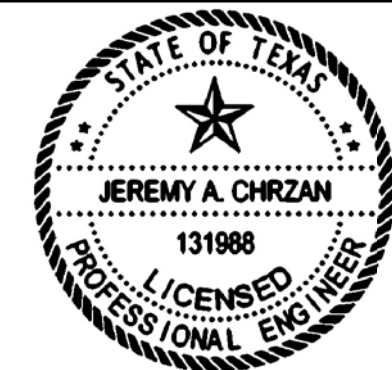
1. ALL PAVEMENT MARKINGS SHALL BE WHITE EXCEPT WHEN NOTED OTHERWISE ON PLANS.
2. PAVEMENT MARKINGS SHALL BE OF THE MATERIALS SPECIFIED AND SHALL BE IN CONFORMANCE WITH MATERIAL SPECIFICATIONS AS SPECIFIED BY CITY OF HOUSTON STANDARD SPECIFICATIONS.
3. EXACT SIGN PLACEMENT AND DETAILS ARE SHOWN ELSEWHERE 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 TRAFFIC ENGINEER CITY ENGINEER	 DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2018	DWG NO: 01510-09



Jeremy A. Chrzan, PE
 04/12/2019

NO.	REVISIONS	DATE	NAME

**TOOLE
 DESIGN**

8484 Georgia Avenue, Suite 800, Silver Spring, MD 20910
 TEL (301) 927-1900
 TBPE Registration No. 14667



**HARRIS COUNTY
 ENGINEERING DEPARTMENT**

PROJECT TITLE:
 HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY
 DRAWN BY: CB/FL SHEET DESCRIPTION:
 PAVEMENT MARKING DETAILS
 CK'D BY: JC
 SCALE: NTS SHEET 2 OF 4
 DATE: 04/12/19 APPROVED BY:

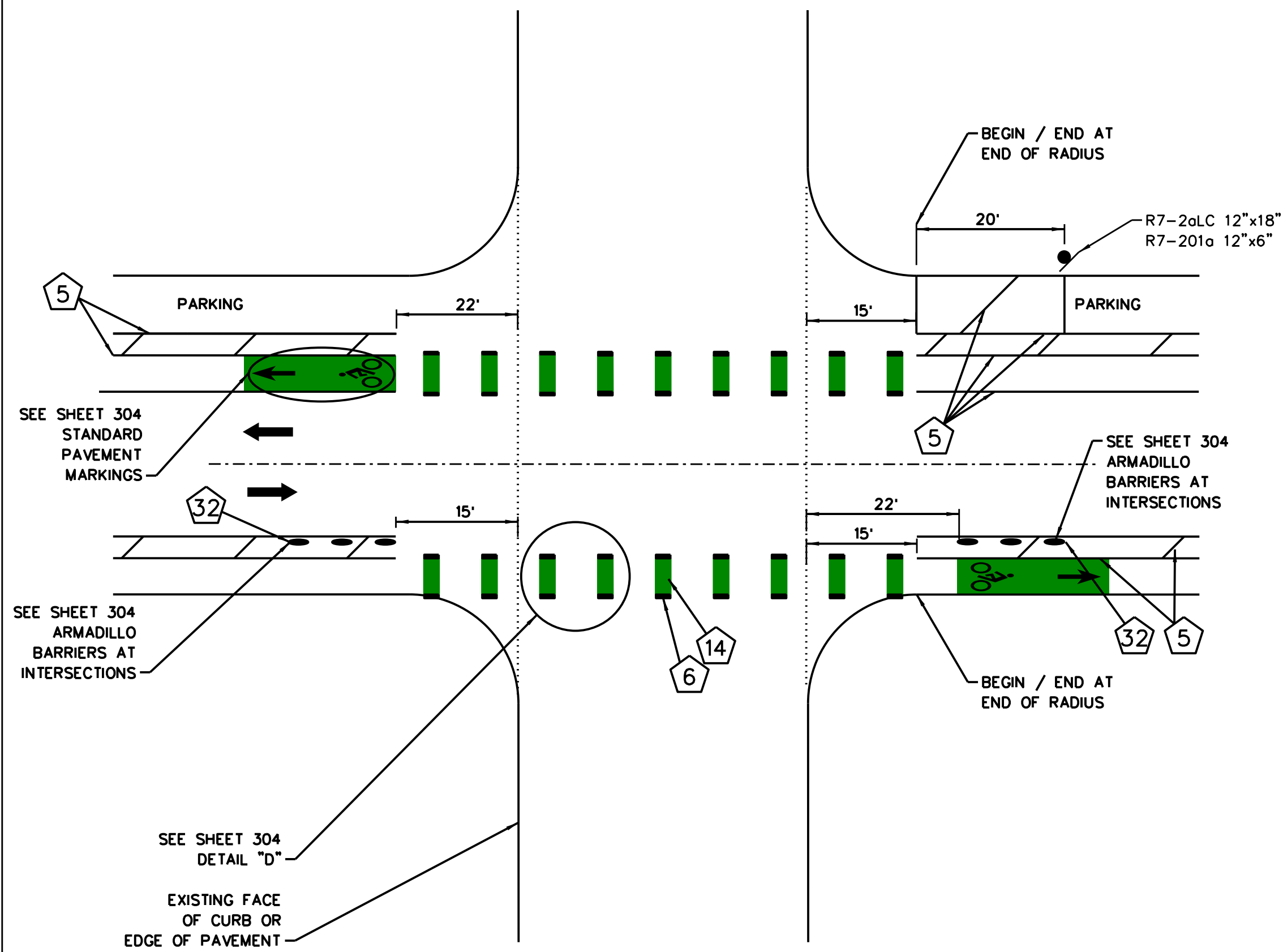
SHEET NO:
 305

PENTABLE: HC-BikewaysP_CB.tbi

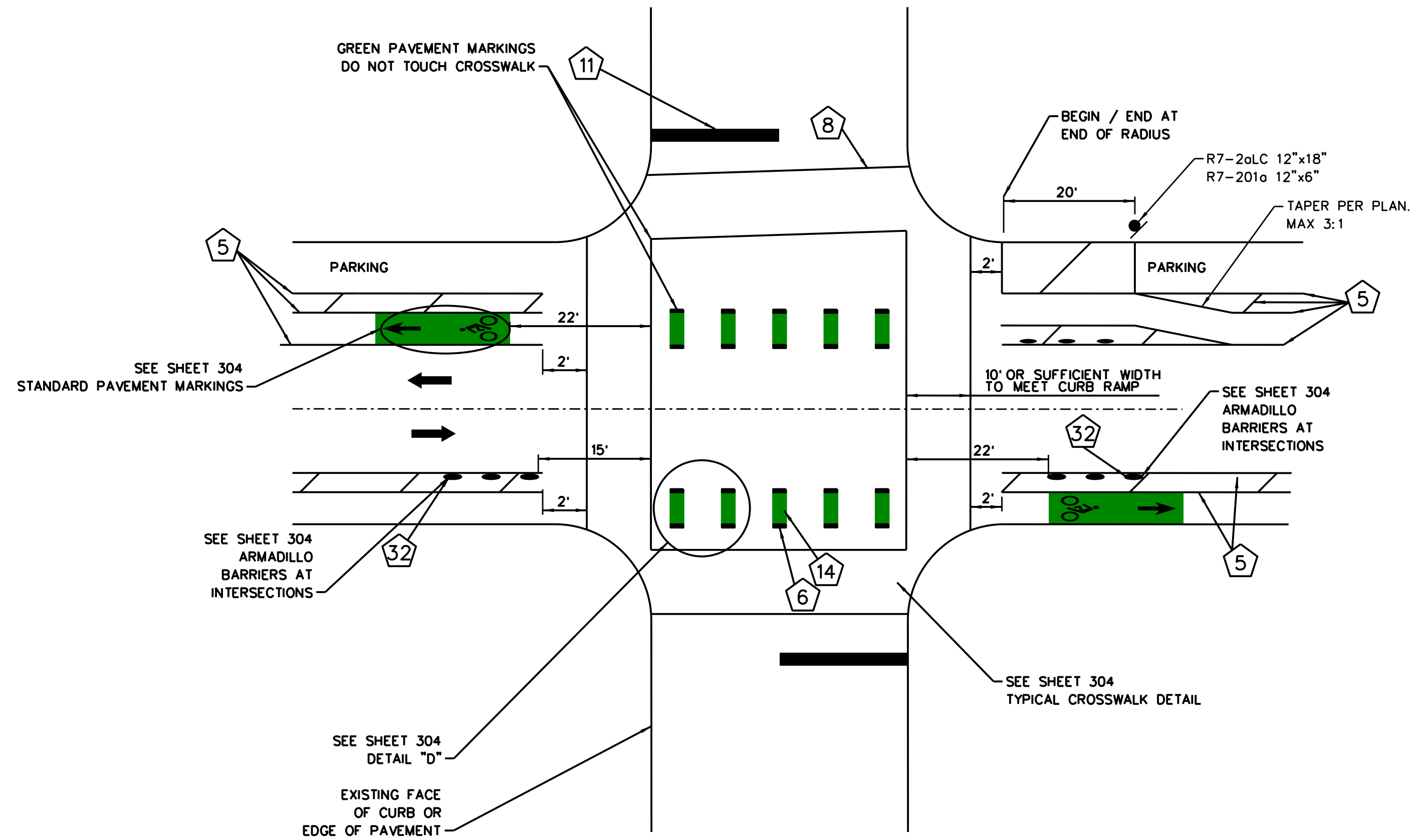
USER: _USER_ Corridors Bikeway Design\04_Hutchins\5653.06_Hut_G_Notes_Details_Tabs.dgn

DATE: 12-Apr-2019 04:39 PM: 39:32 PM FILE: \\dco-file01\50000\5653.06_S_Third Ward

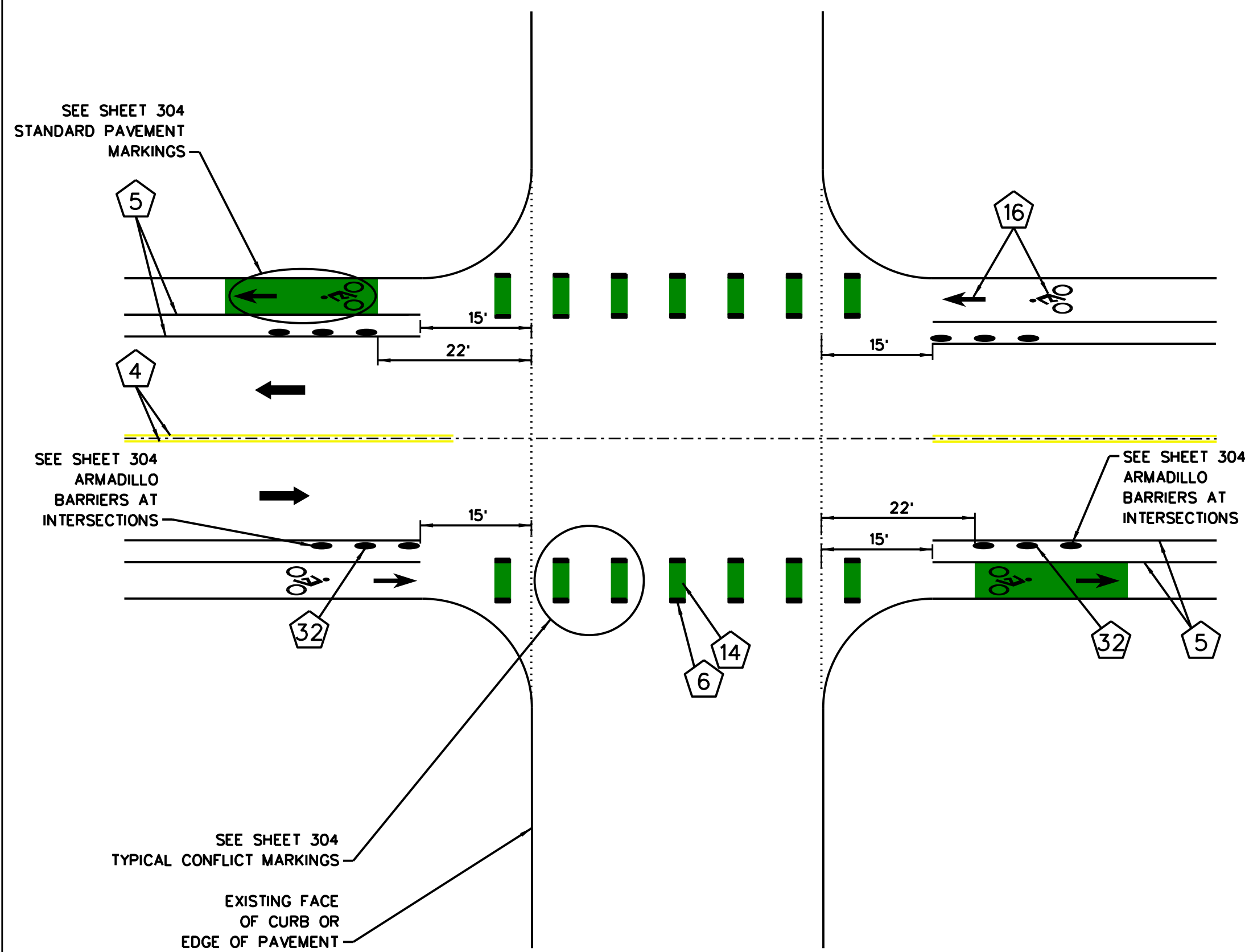
TYPICAL HUTCHINS STREET UNSIGNALIZED INTERSECTION



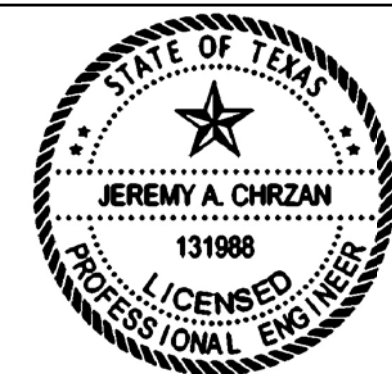
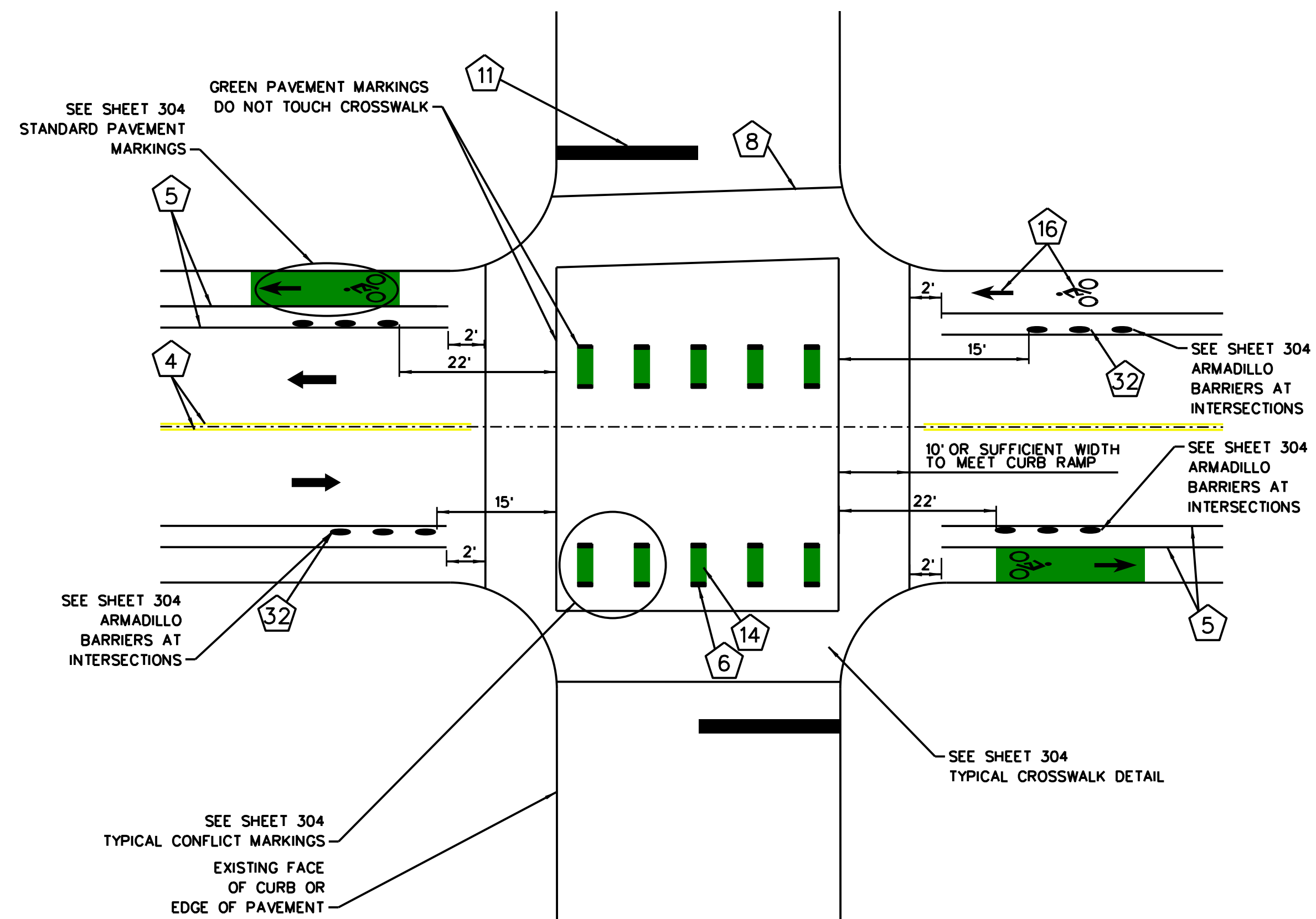
TYPICAL HUTCHINS STREET UNSIGNALIZED INTERSECTION WITH CROSSWALK



TYPICAL CLEBURNE UNSIGNALIZED INTERSECTION



TYPICAL CLEBURNE UNSIGNALIZED INTERSECTION WITH CROSSWALK



Jeremy A. Chrzan, PE
04/12/2019

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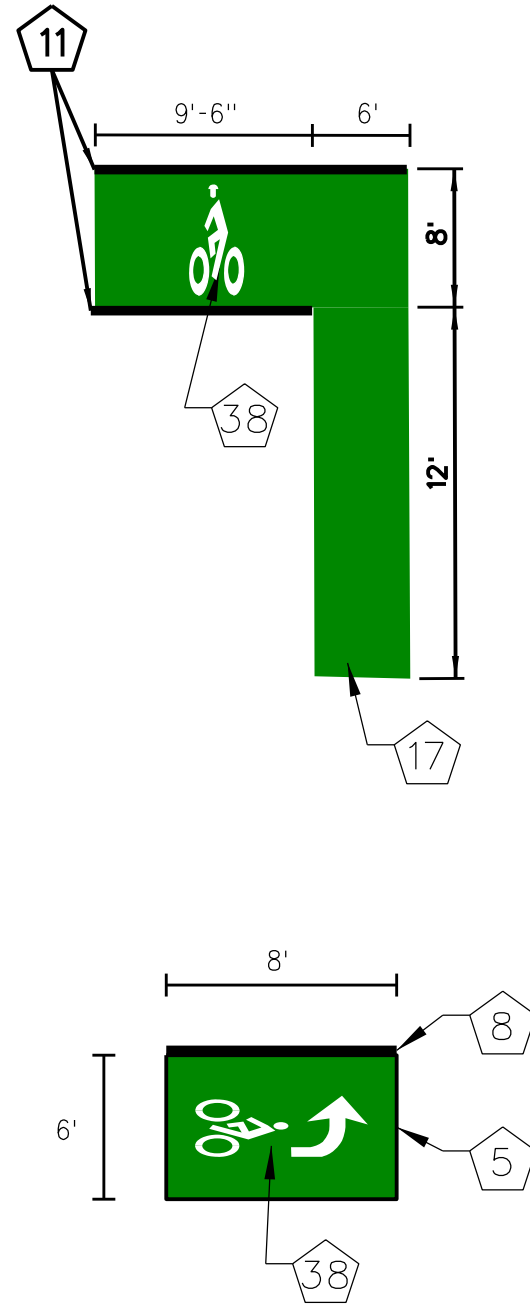


HARRIS COUNTY ENGINEERING DEPARTMENT

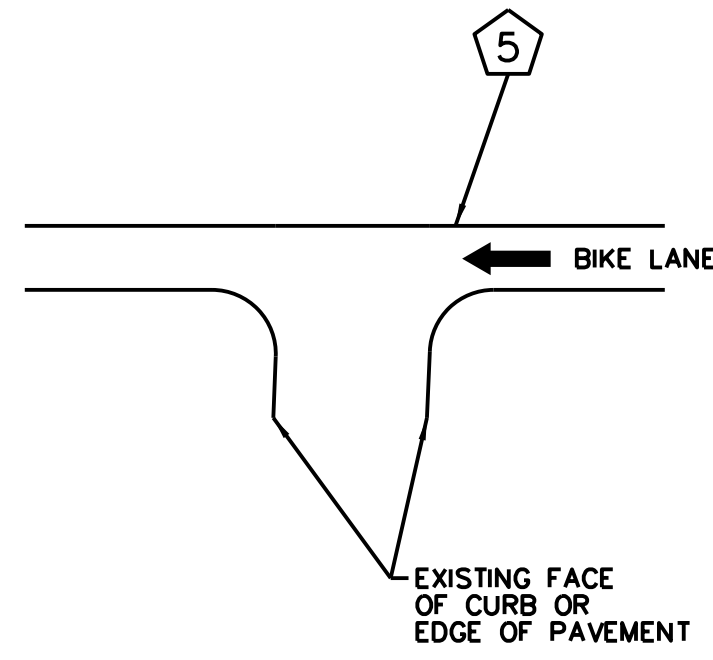
PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: PAVEMENT MARKING DETAILS
CK'D BY: JC	
SCALE: NTS	SHEET 3 OF 4
DATE: 04/12/19	APPROVED BY:

SHEET NO:
306

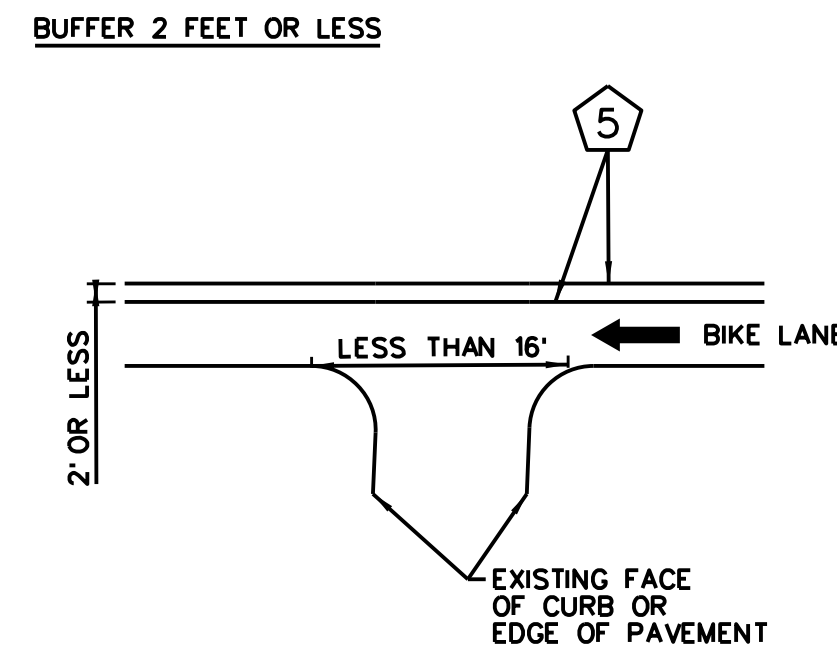
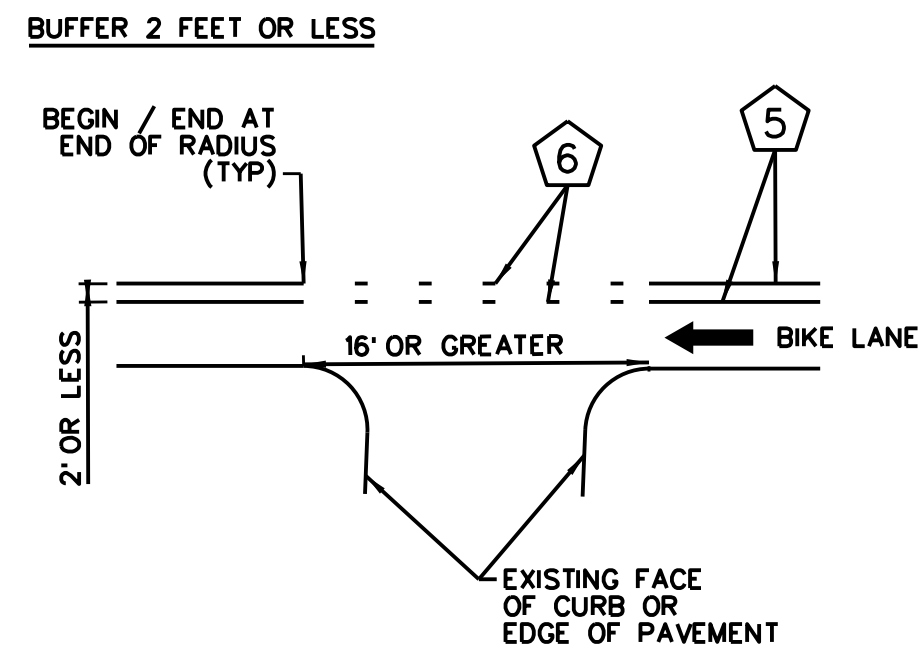
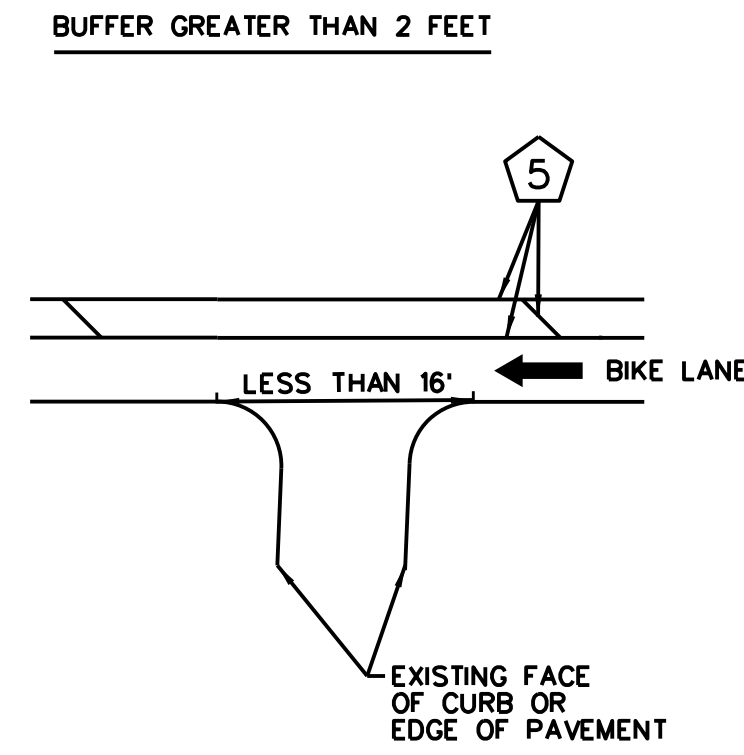
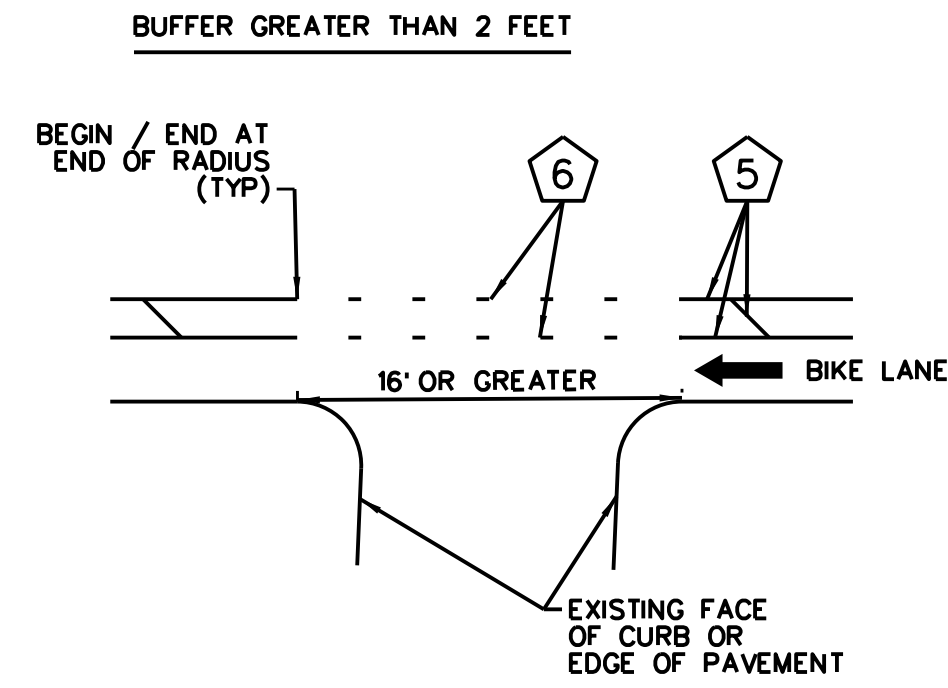
BIKE BOX



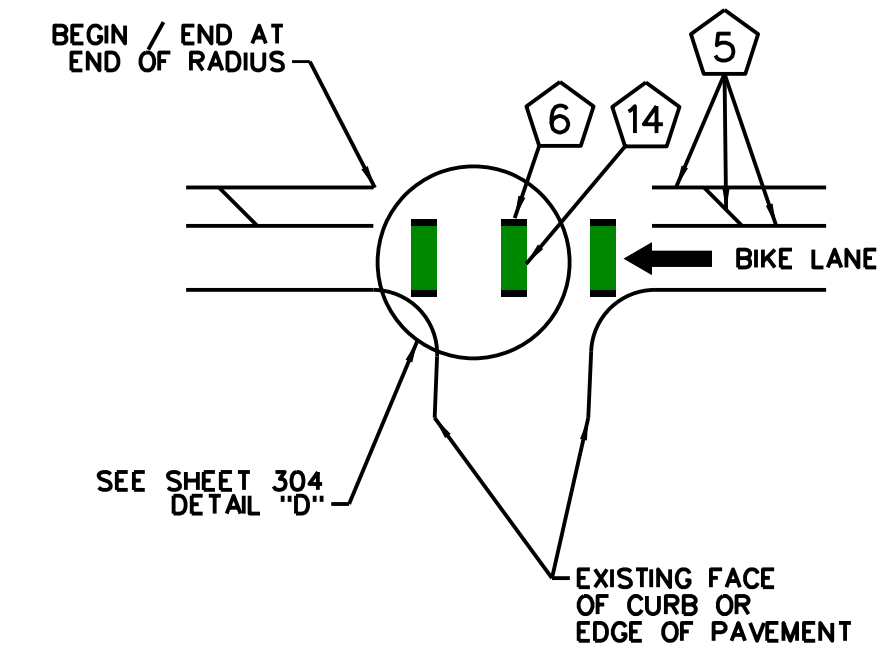
MINOR DRIVEWAY AT BIKE LANE



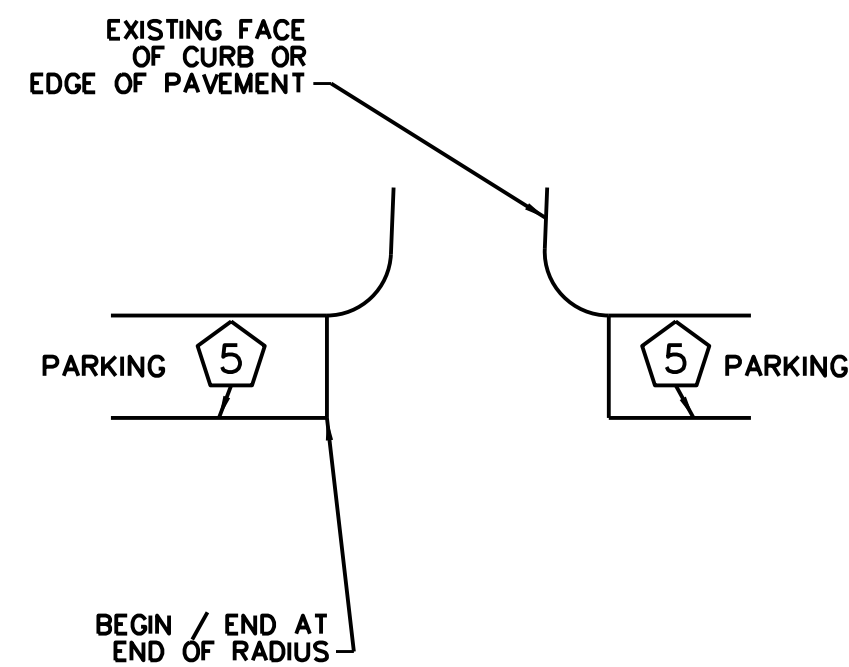
MINOR DRIVEWAY AT BUFFERED BIKE LANE



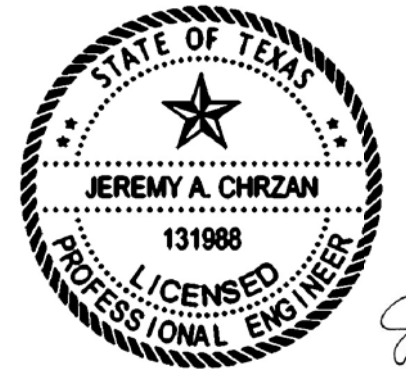
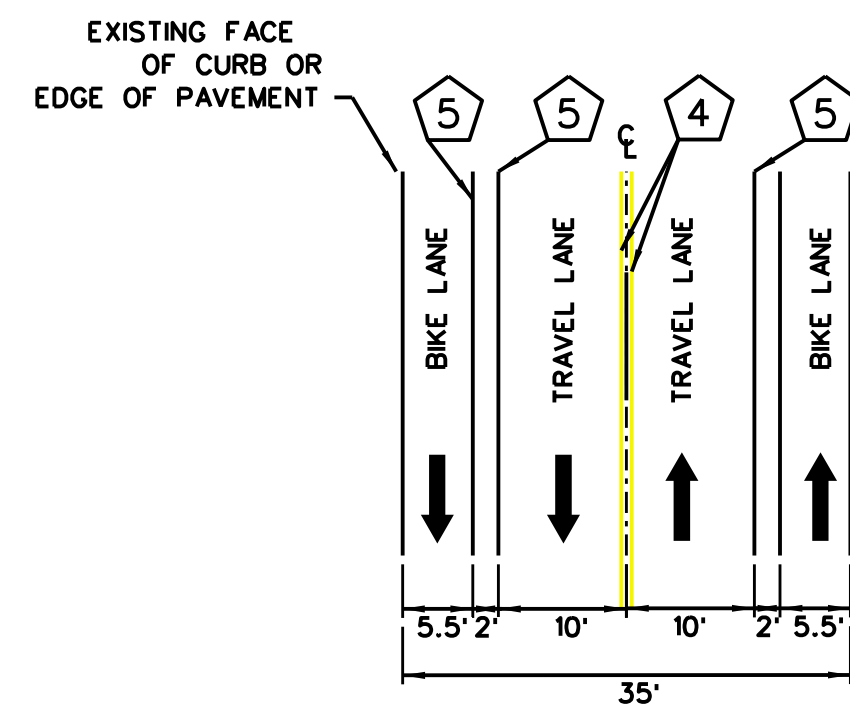
MAJOR DRIVEWAY AT BUFFERED BIKE LANE



MINOR DRIVEWAY AT PARKING LANE



TYPICAL SECTION CLEBURNE STREET



Jeremy A. Chrzan
 04/12/2019

NO.	REVISIONS	DATE	NAME

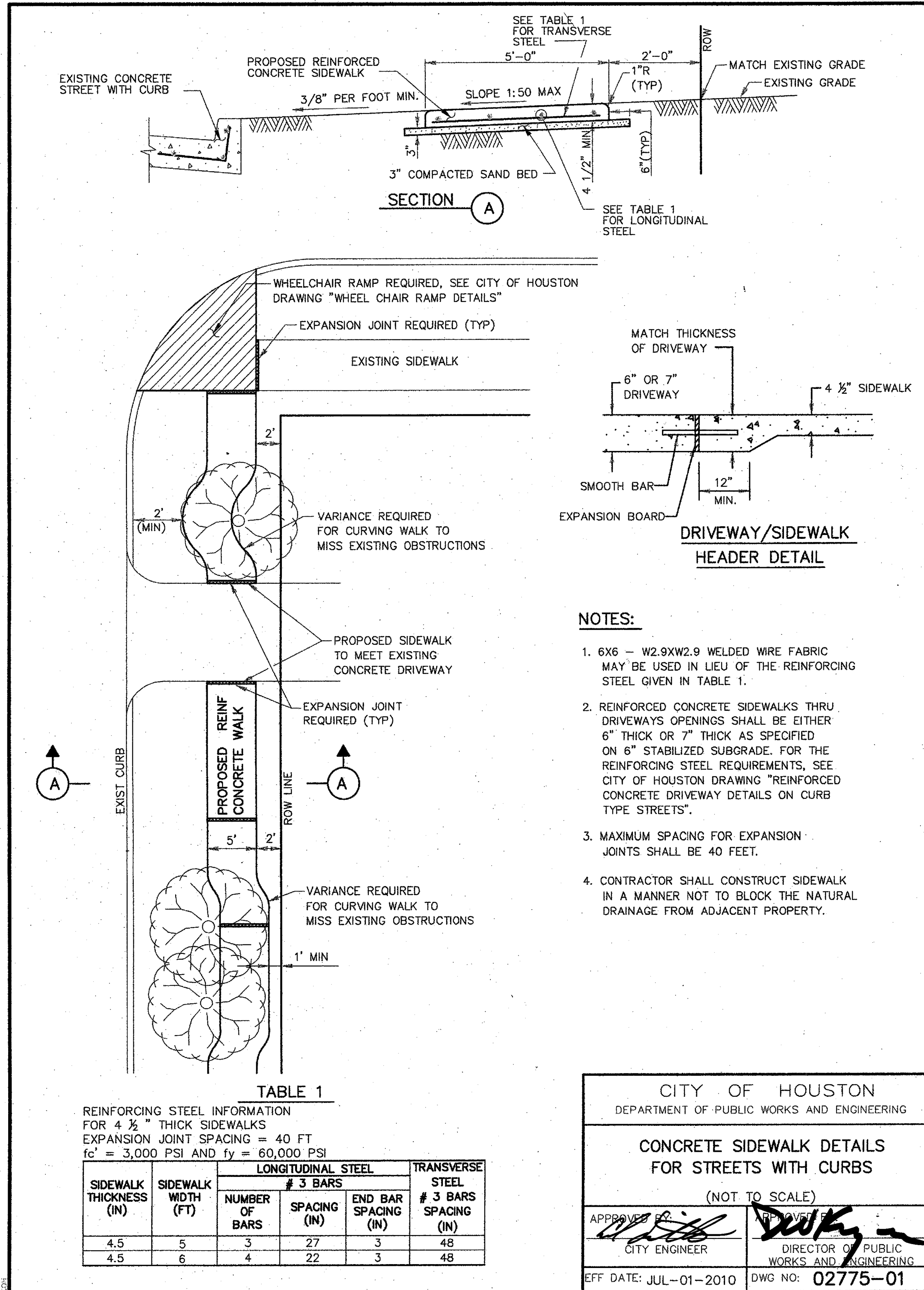
TOOLE DESIGN

8484 Georgia Avenue, Suite 800, Silver Spring, MD 20910
 TEL (301) 927-1900
 TBPE Registration No. 14667



HARRIS COUNTY ENGINEERING DEPARTMENT

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY
 DRAWN BY: CB/FL SHEET DESCRIPTION: PAVEMENT MARKING DETAILS
 CK'D BY: JC
 SCALE: NTS SHEET 4 OF 4
 DATE: 04/12/19 APPROVED BY:



NOTES:

1. 6X6 - W2.9XW2.9 WELDED WIRE FABRIC MAY BE USED IN LIEU OF THE REINFORCING STEEL GIVEN IN TABLE 1.
2. REINFORCED CONCRETE SIDEWALKS THRU DRIVEWAYS OPENINGS SHALL BE EITHER 6" THICK OR 7" THICK AS SPECIFIED ON 6" STABILIZED SUBGRADE. FOR THE REINFORCING STEEL REQUIREMENTS, SEE CITY OF HOUSTON DRAWING "REINFORCED CONCRETE DRIVEWAY DETAILS ON CURB TYPE STREETS".
3. MAXIMUM SPACING FOR EXPANSION JOINTS SHALL BE 40 FEET.
4. CONTRACTOR SHALL CONSTRUCT SIDEWALK IN A MANNER NOT TO BLOCK THE NATURAL DRAINAGE FROM ADJACENT PROPERTY.

TABLE 1
 REINFORCING STEEL INFORMATION
 FOR 4 1/2" THICK SIDEWALKS
 EXPANSION JOINT SPACING = 40 FT
 fc' = 3,000 PSI AND fy = 60,000 PSI

SIDEWALK THICKNESS (IN)	SIDEWALK WIDTH (FT)	LONGITUDINAL STEEL # 3 BARS			TRANSVERSE STEEL # 3 BARS SPACING (IN)
		NUMBER OF BARS	SPACING (IN)	END BAR SPACING (IN)	
4.5	5	3	27	3	48
4.5	6	4	22	3	48

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

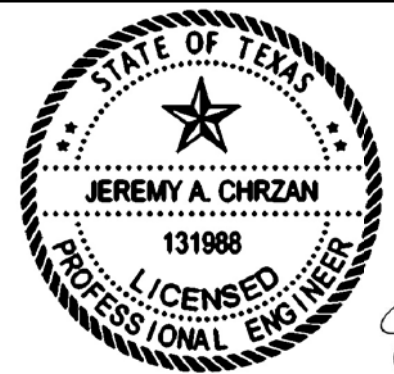
CONCRETE SIDEWALK DETAILS FOR STREETS WITH CURBS

(NOT TO SCALE)

APPROVED BY: *[Signature]* CITY ENGINEER

APPROVED BY: *[Signature]* DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: JUL-01-2010 DWG NO: 02775-01



Jeremy A. Chrzan, PE
 04/12/2019

NO.	REVISIONS	DATE	NAME

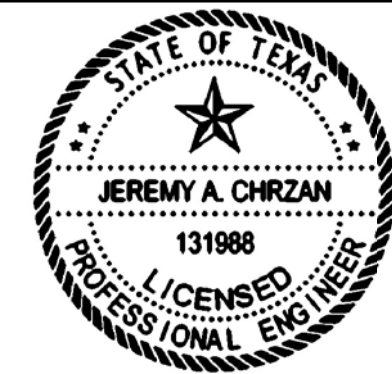
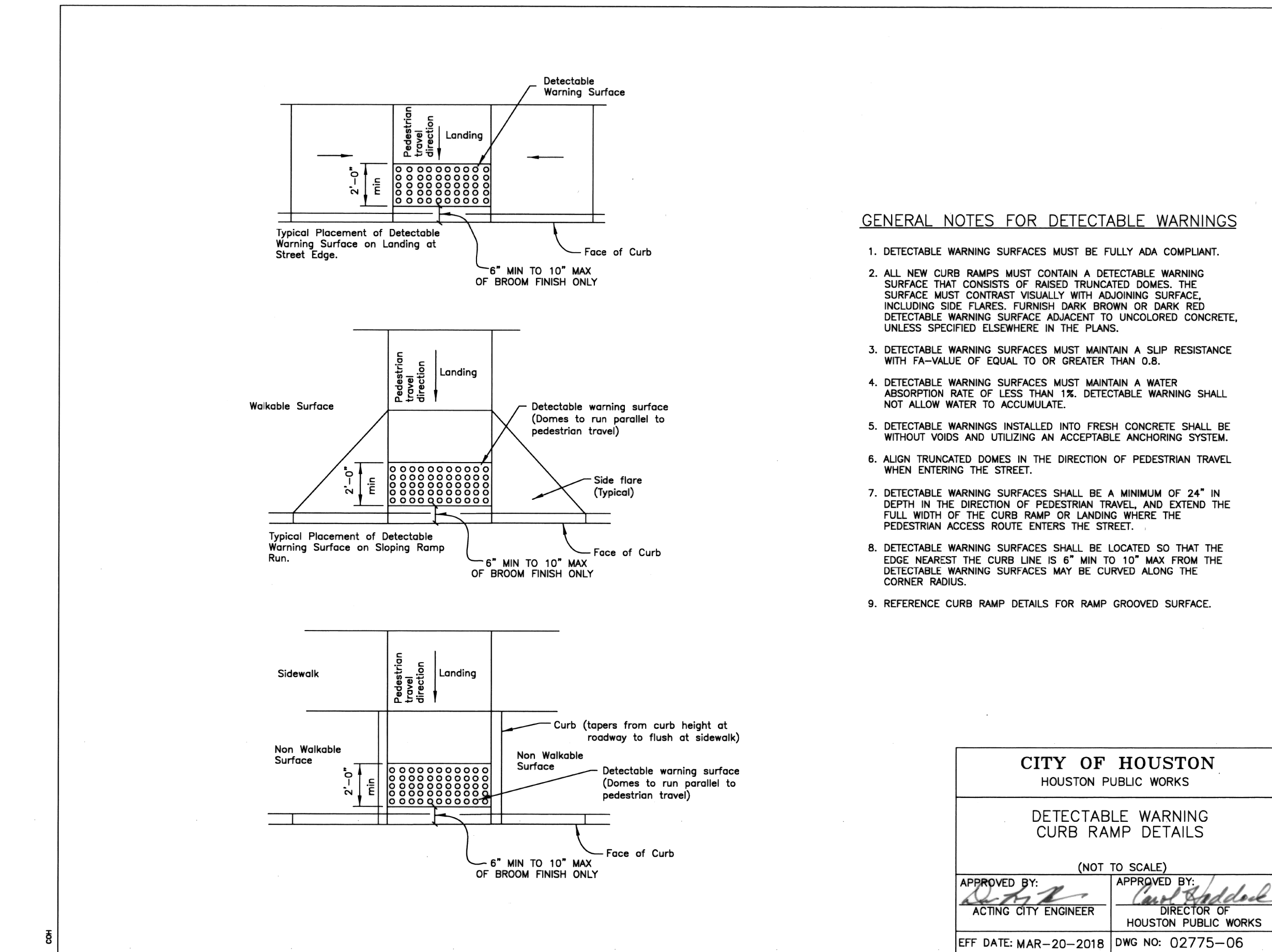
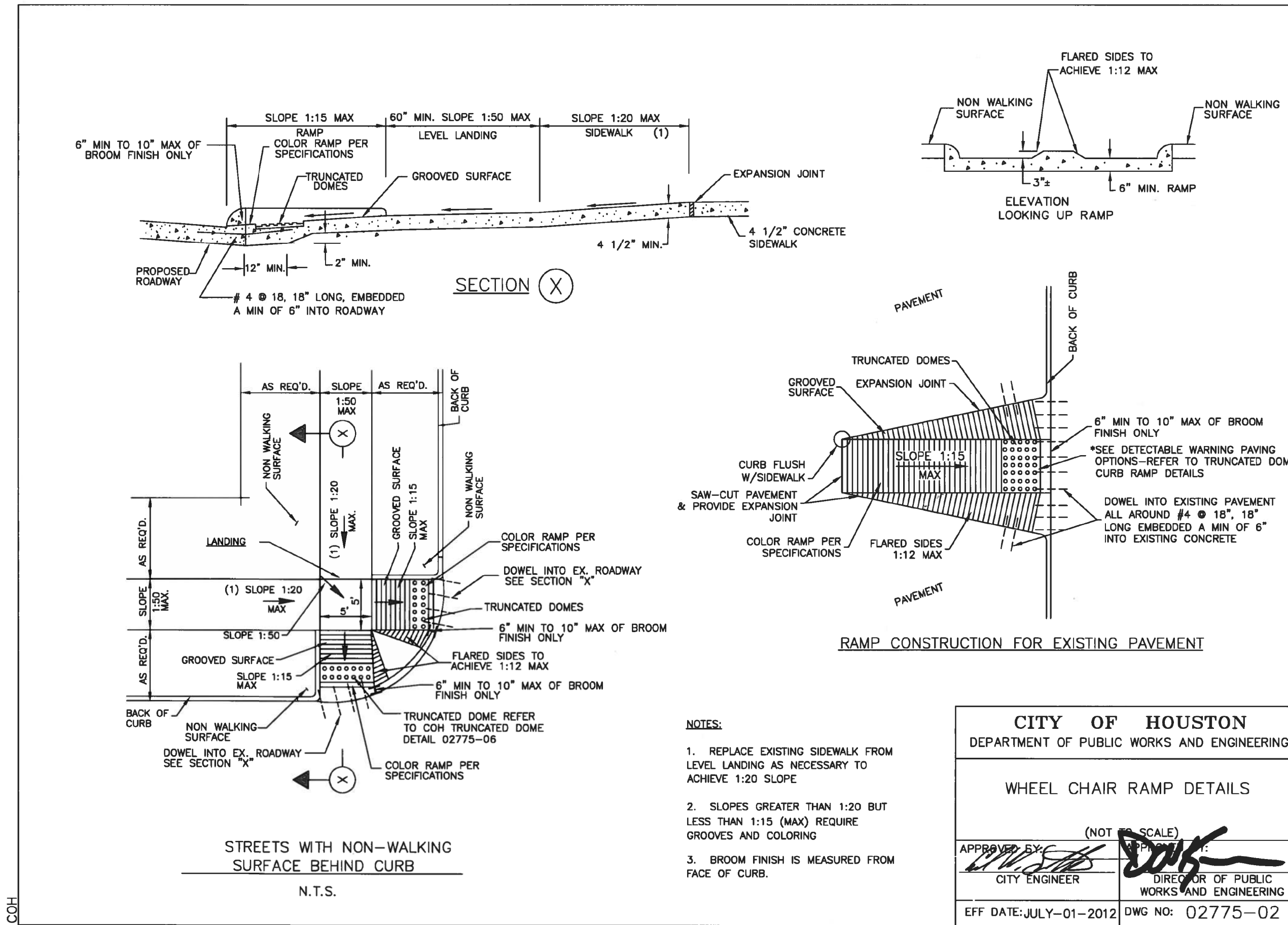
TOOLE DESIGN

8484 Georgia Avenue, Suite 800, Silver Spring, MD 20910
 TEL (301) 927-1900
 TBPE Registration No. 14667



HARRIS COUNTY
 ENGINEERING DEPARTMENT

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY
 DRAWN BY: CB/FL SHEET DESCRIPTION: CONCRETE SIDEWALK DETAILS
 CK'D BY: JC
 SCALE: NTS SHEET 1 OF 1
 DATE: 04/12/19 APPROVED BY:

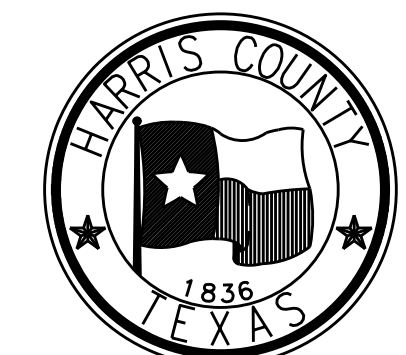


Jeremy A. Chrzan, PE
 04/12/2019

NO.	REVISIONS	DATE	NAME

TOOLE DESIGN

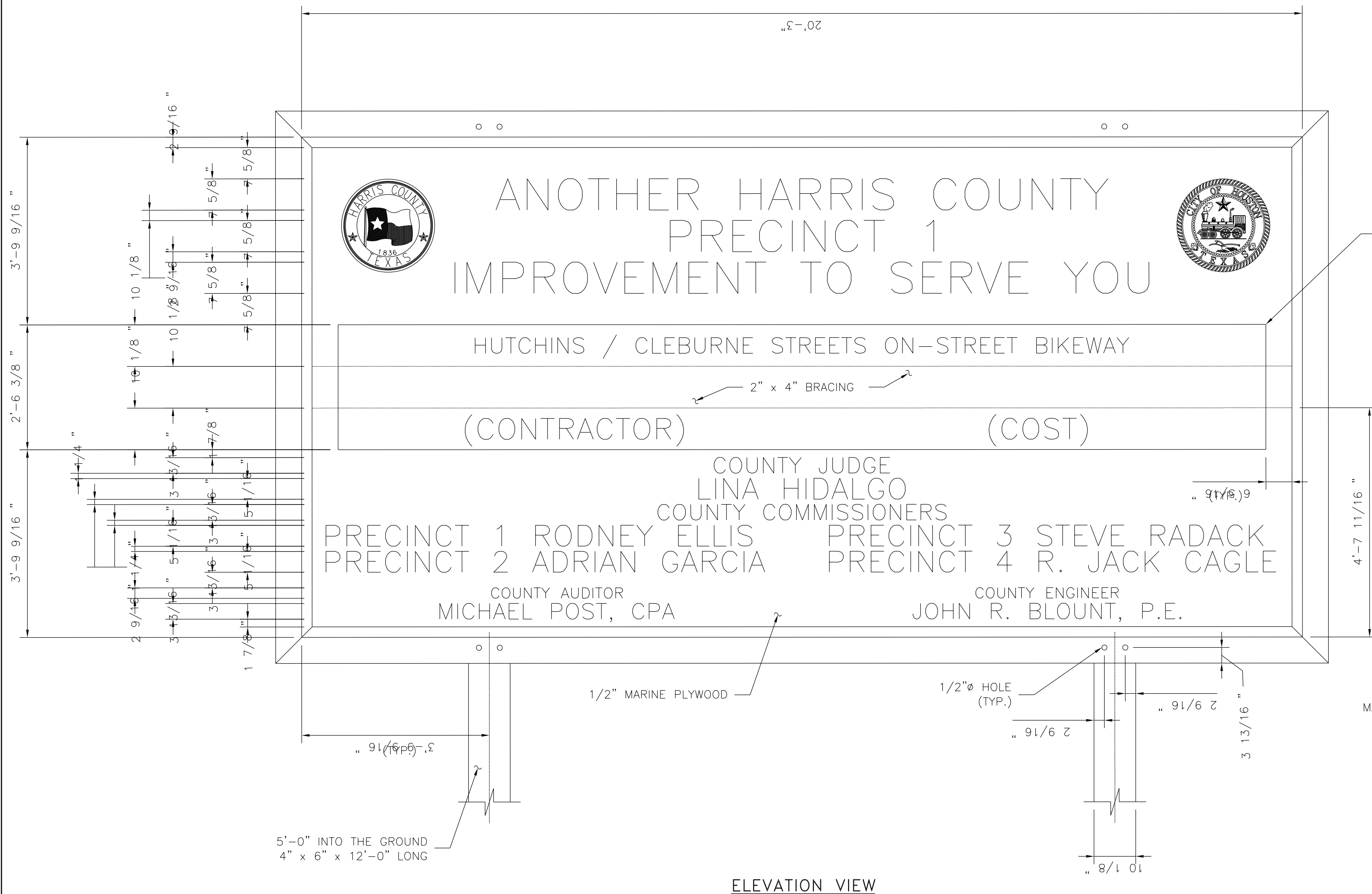
8484 Georgia Avenue, Suite 800, Silver Spring, MD 20910
 TEL (301) 927-1900
 TBPE Registration No. 14667



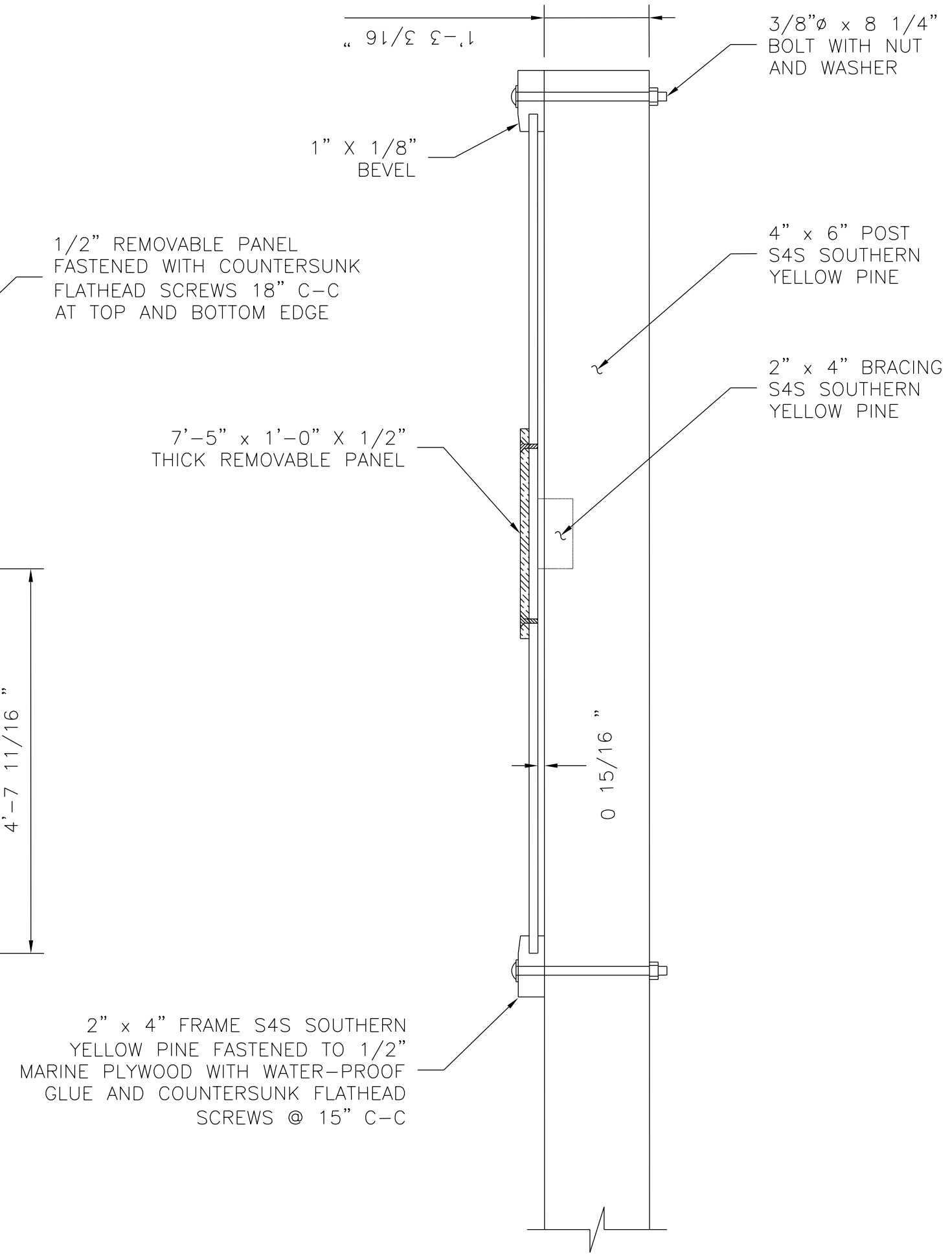
HARRIS COUNTY ENGINEERING DEPARTMENT

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY
 DRAWN BY: CB/FL SHEET DESCRIPTION: CURB RAMP DETAILS
 CK'D BY: JC
 SCALE: NTS SHEET 1 OF 1
 DATE: 04/12/19 APPROVED BY:

SHEET NO: 309



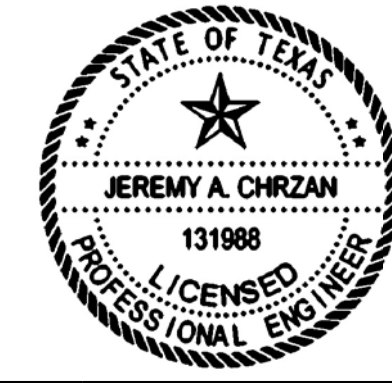
ELEVATION VIEW



SECTION A-A

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. 4" x 6" POST SHALL BE WOLMANIZED OR PENTACHLOROPHENOL TREATED.
6. ALL WOOD SURFACES SHALL HAVE PRIME COAT AND TWO (2) COATS OF SHERWIN-WILLIAMS KEM-LUSTRA ENAMEL OR EQUAL.

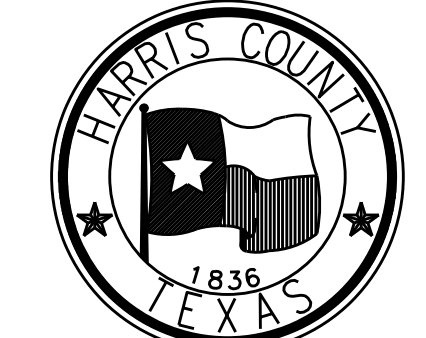


Jeremy A. Chrzan, PE
 04/12/2019

NO.	REVISIONS	DATE	NAME

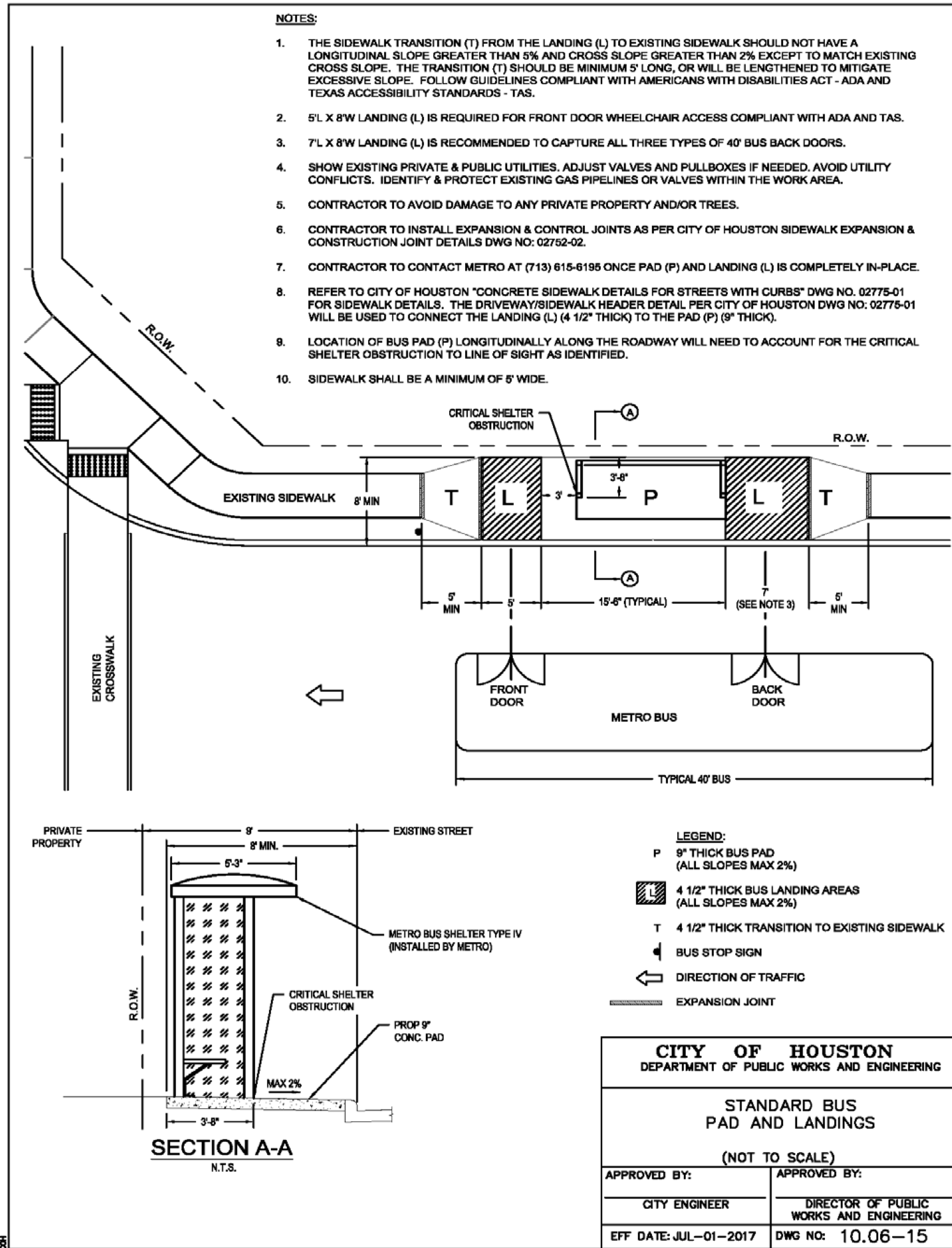
TOOLE DESIGN

8484 Georgia Avenue, Suite 800, Silver Spring, MD 20910
 TEL (301) 927-1900
 TBPE Registration No. 14667



HARRIS COUNTY
 ENGINEERING DEPARTMENT

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: PROJECT SIGN DETAIL
CK'D BY: JC	SHEET 1 OF 1
SCALE:	APPROVED BY:
DATE: 04/12/19	
	SHEET NO: 310



NOTES:

1. THE SIDEWALK TRANSITION (T) FROM THE LANDING (L) TO EXISTING SIDEWALK SHOULD NOT HAVE A LONGITUDINAL SLOPE GREATER THAN 5% AND CROSS SLOPE GREATER THAN 2% EXCEPT TO MATCH EXISTING CROSS SLOPE. THE TRANSITION (T) SHOULD BE MINIMUM 5' LONG, OR WILL BE LENGTHENED TO MITIGATE EXCESSIVE SLOPE. FOLLOW GUIDELINES COMPLIANT WITH AMERICANS WITH DISABILITIES ACT - ADA AND TEXAS ACCESSIBILITY STANDARDS - TAS.
2. 5'L X 8'W LANDING (L) IS REQUIRED FOR FRONT DOOR WHEELCHAIR ACCESS COMPLIANT WITH ADA AND TAS.
3. 7'L X 8'W LANDING (L) IS RECOMMENDED TO CAPTURE ALL THREE TYPES OF 40' BUS BACK DOORS.
4. SHOW EXISTING PRIVATE & PUBLIC UTILITIES. ADJUST VALVES AND PULLBOXES IF NEEDED. AVOID UTILITY CONFLICTS. IDENTIFY & PROTECT EXISTING GAS PIPELINES OR VALVES WITHIN THE WORK AREA.
5. CONTRACTOR TO AVOID DAMAGE TO ANY PRIVATE PROPERTY AND/OR TREES.
6. CONTRACTOR TO INSTALL EXPANSION & CONTROL JOINTS AS PER CITY OF HOUSTON SIDEWALK EXPANSION & CONSTRUCTION JOINT DETAILS DWG NO: 02752-02.
7. CONTRACTOR TO CONTACT METRO AT (713) 615-6195 ONCE PAD (P) AND LANDING (L) IS COMPLETELY IN-PLACE.
8. REFER TO CITY OF HOUSTON "CONCRETE SIDEWALK DETAILS FOR STREETS WITH CURBS" DWG NO. 02775-01 FOR SIDEWALK DETAILS. THE DRIVEWAY/SIDEWALK HEADER DETAIL PER CITY OF HOUSTON DWG NO: 02775-01 WILL BE USED TO CONNECT THE LANDING (L) (4 1/2" THICK) TO THE PAD (P) (9" THICK).
9. LOCATION OF BUS PAD (P) LONGITUDINALLY ALONG THE ROADWAY WILL NEED TO ACCOUNT FOR THE CRITICAL SHELTER OBSTRUCTION TO LINE OF SIGHT AS IDENTIFIED.
10. SIDEWALK SHALL BE A MINIMUM OF 5' WIDE.

LEGEND:

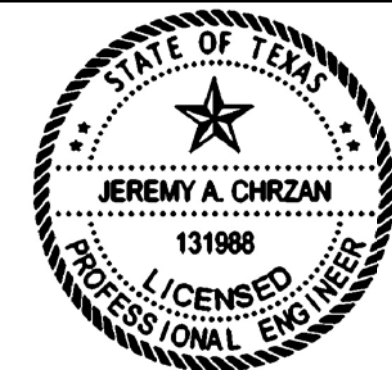
- P 9" THICK BUS PAD (ALL SLOPES MAX 2%)
- 4 1/2" THICK BUS LANDING AREAS (ALL SLOPES MAX 2%)
- T 4 1/2" THICK TRANSITION TO EXISTING SIDEWALK
- BUS STOP SIGN
- DIRECTION OF TRAFFIC
- EXPANSION JOINT

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STANDARD BUS PAD AND LANDINGS

(NOT TO SCALE)

APPROVED BY:	APPROVED BY:
CITY ENGINEER	DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JUL-01-2017	DWG NO: 10.06-15



Jeremy A. Chrzan
 PE
 04/12/2019

NO.	REVISIONS	DATE	NAME

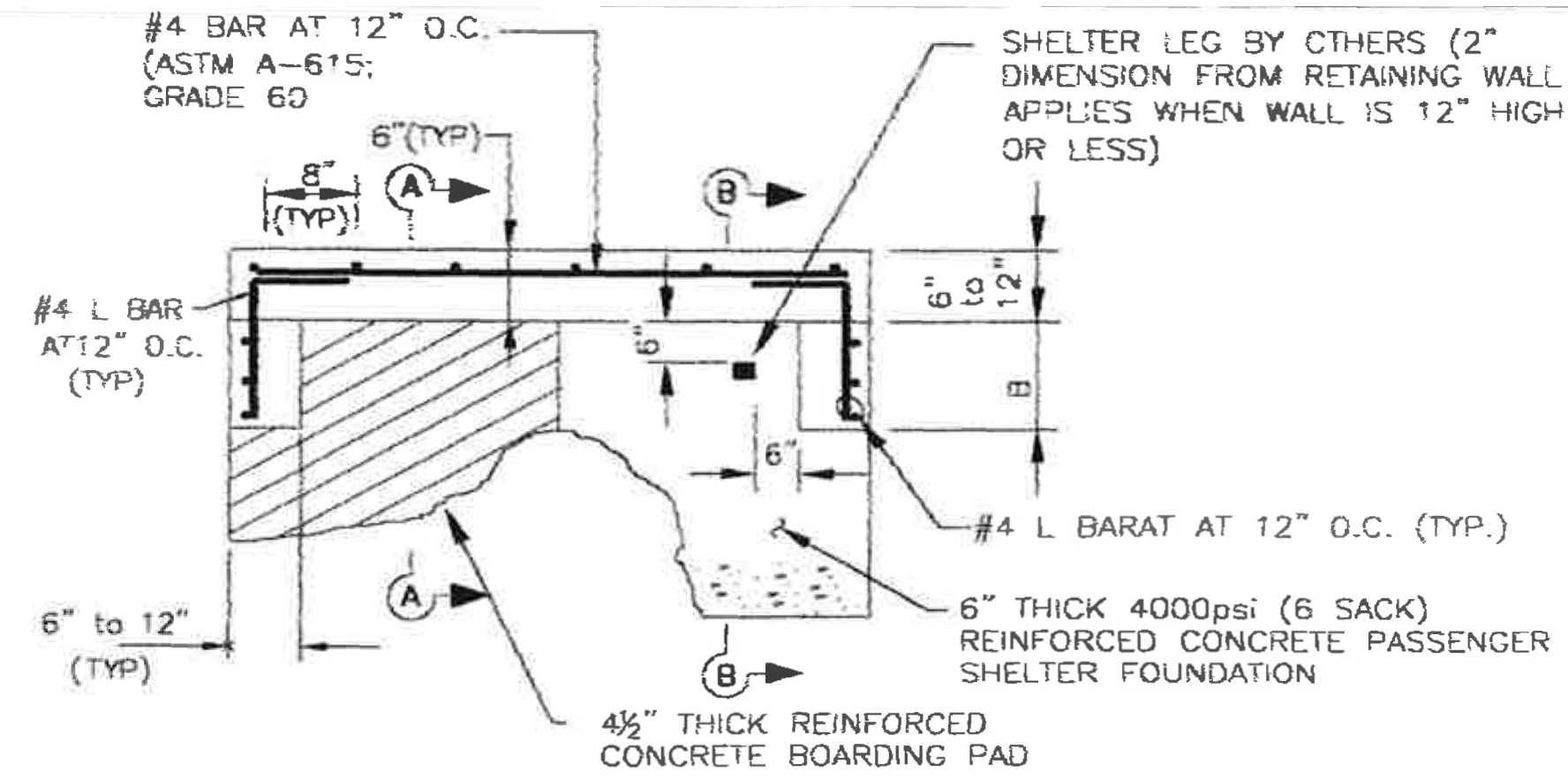
TOOLE DESIGN

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 TEL (301) 927-1900
 TBPE Registration No. 14667

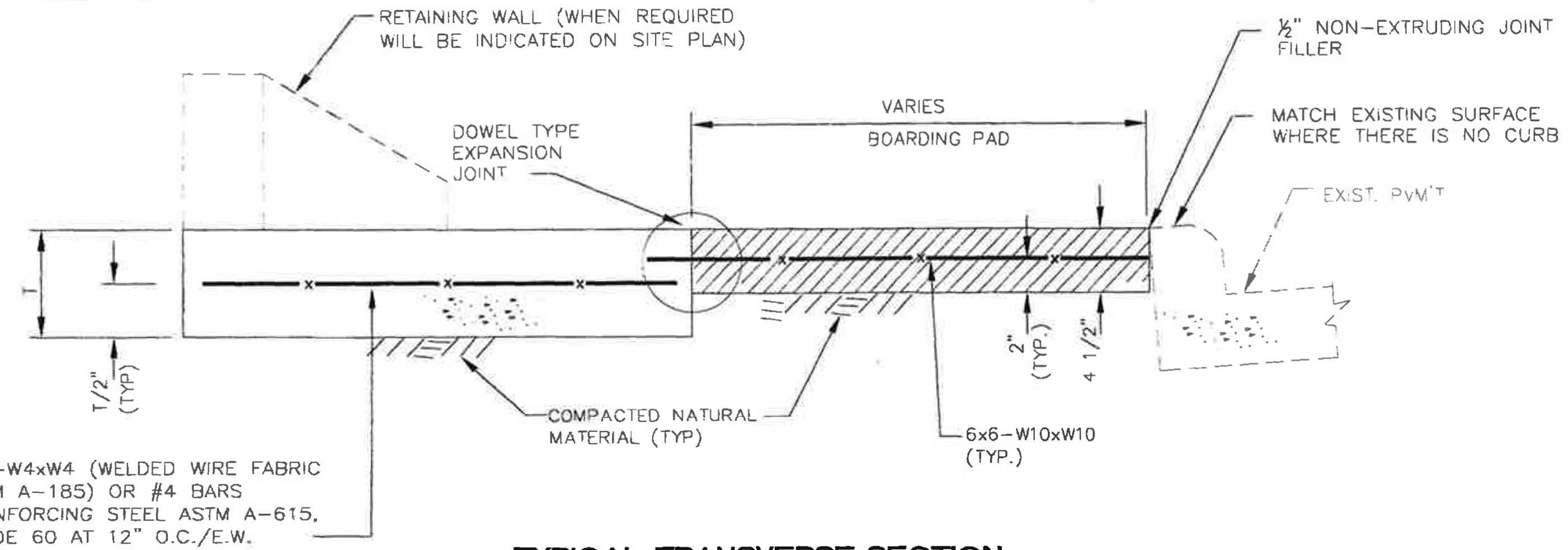


HARRIS COUNTY ENGINEERING DEPARTMENT

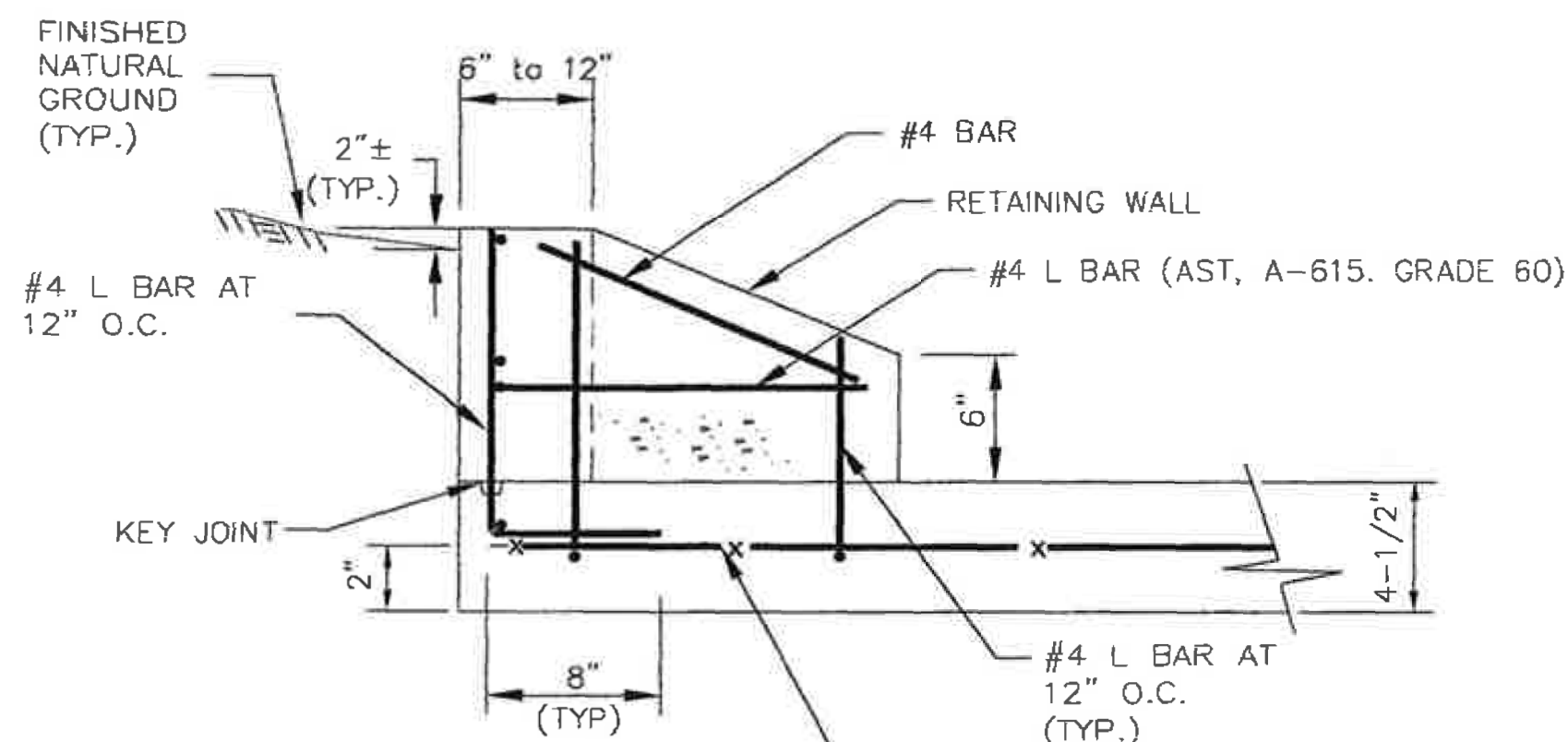
PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: BUS PAD AND LANDING DETAILS
CK'D BY: JC	
SCALE:	SHEET 1 OF 1
DATE: 04/12/19	APPROVED BY:



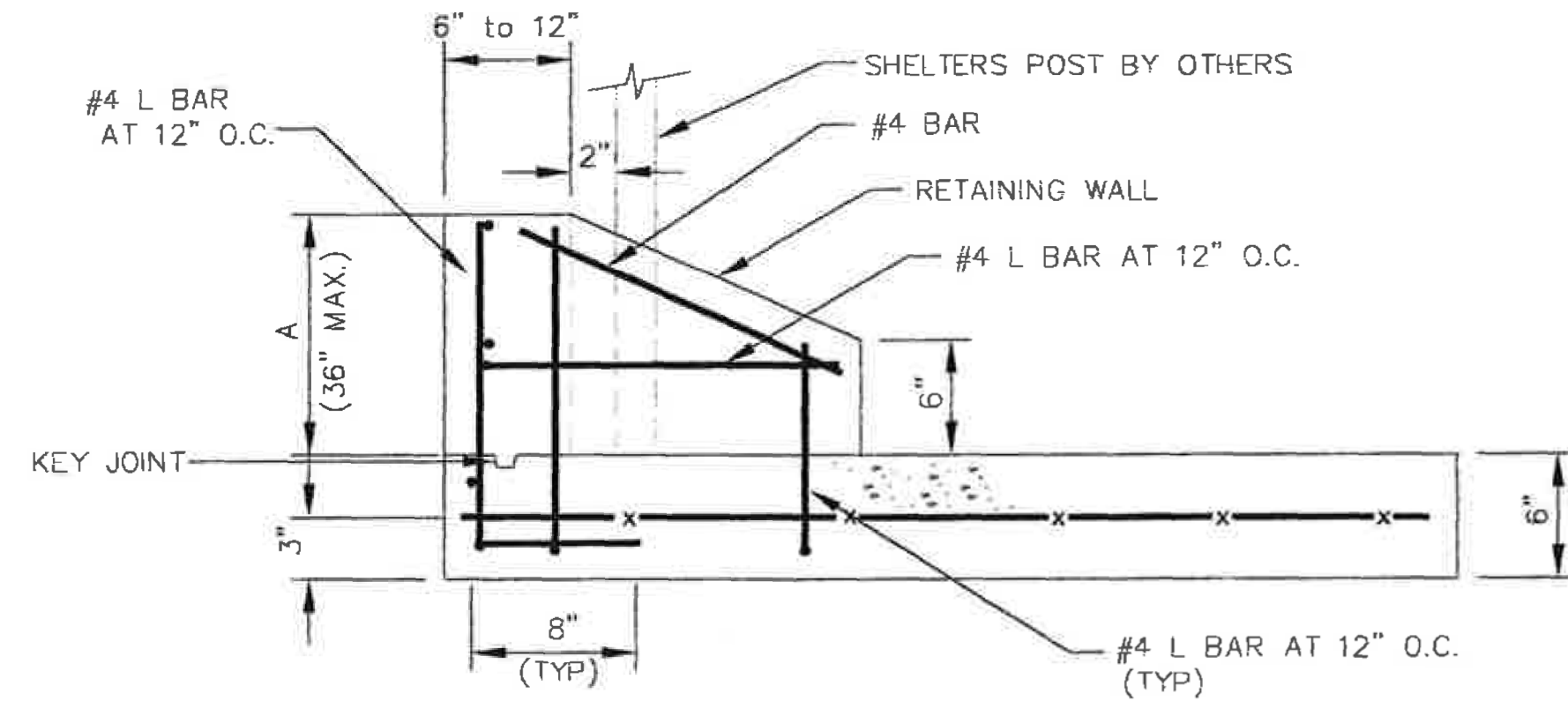
**PLAN
RETAINING WALL DETAIL**



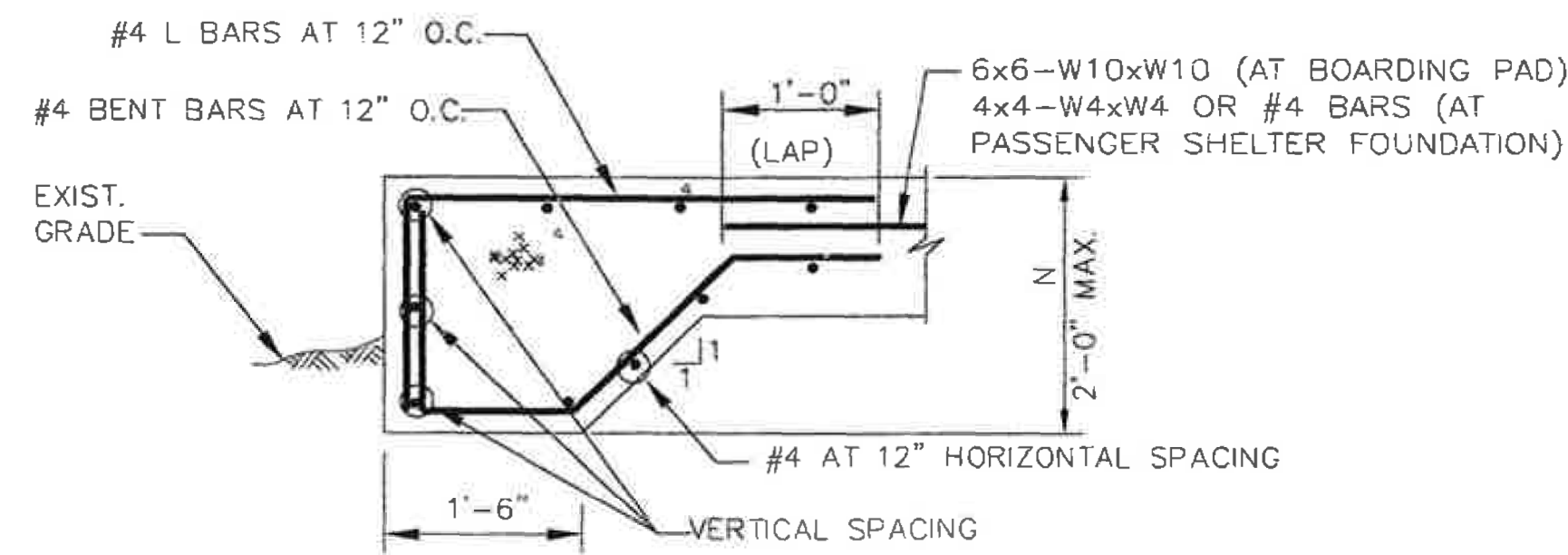
**TYPICAL TRANSVERSE SECTION
PERPENDICULAR TO ROADWAY**



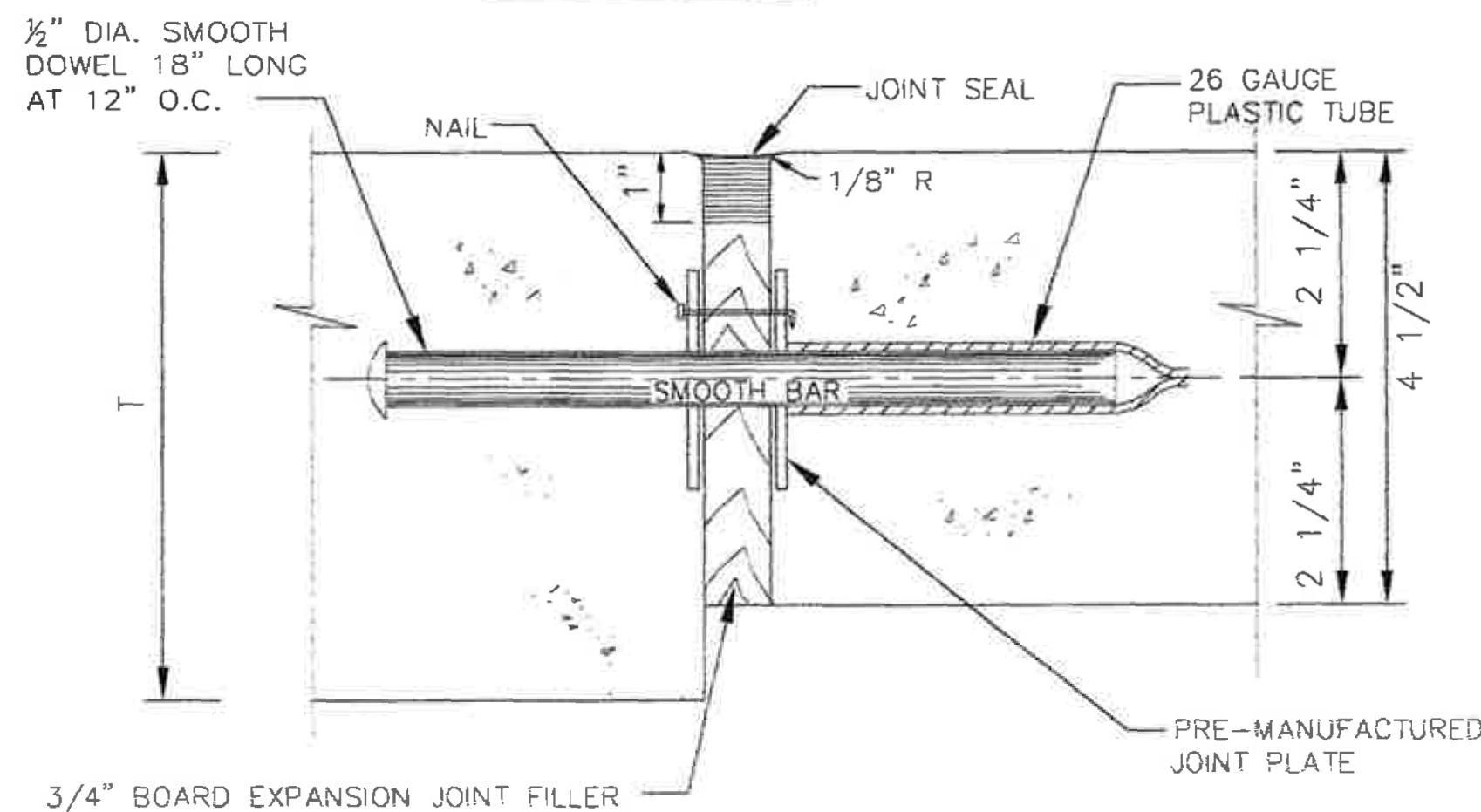
SECTION A-A



SECTION B-B



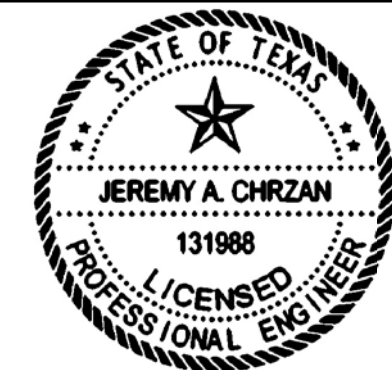
GRADE BEAM DETAIL (TYP)



DOWEL TYPE EXPANSION JOINT

NOTES FOR RETAINING WALL

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.



Jeremy A. Chrzan, PE
04/12/2019

NO.	REVISIONS	DATE	NAME

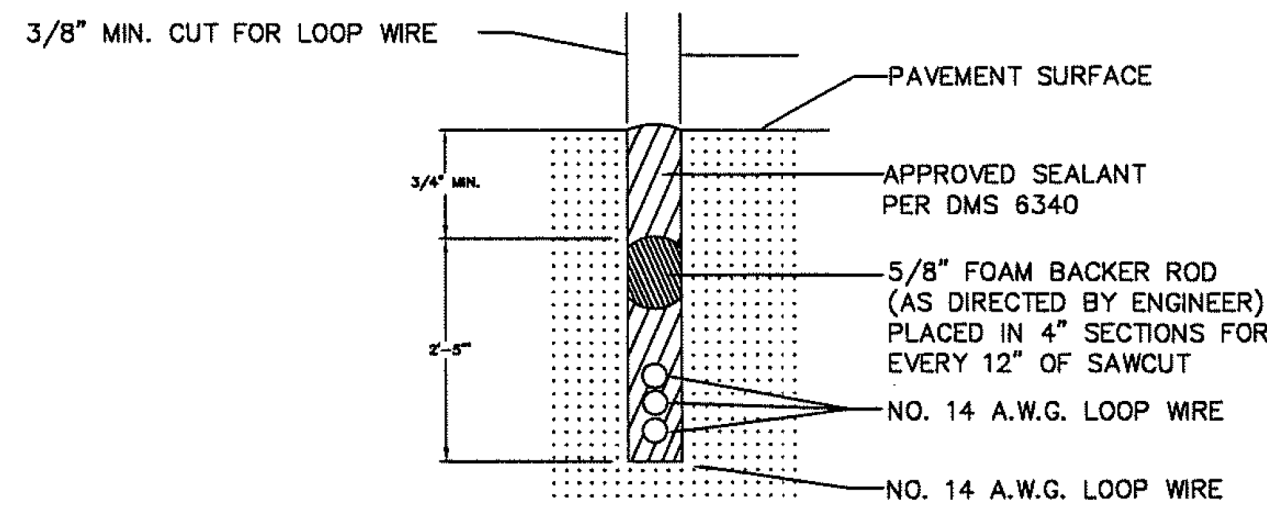
**TOOLE
DESIGN**

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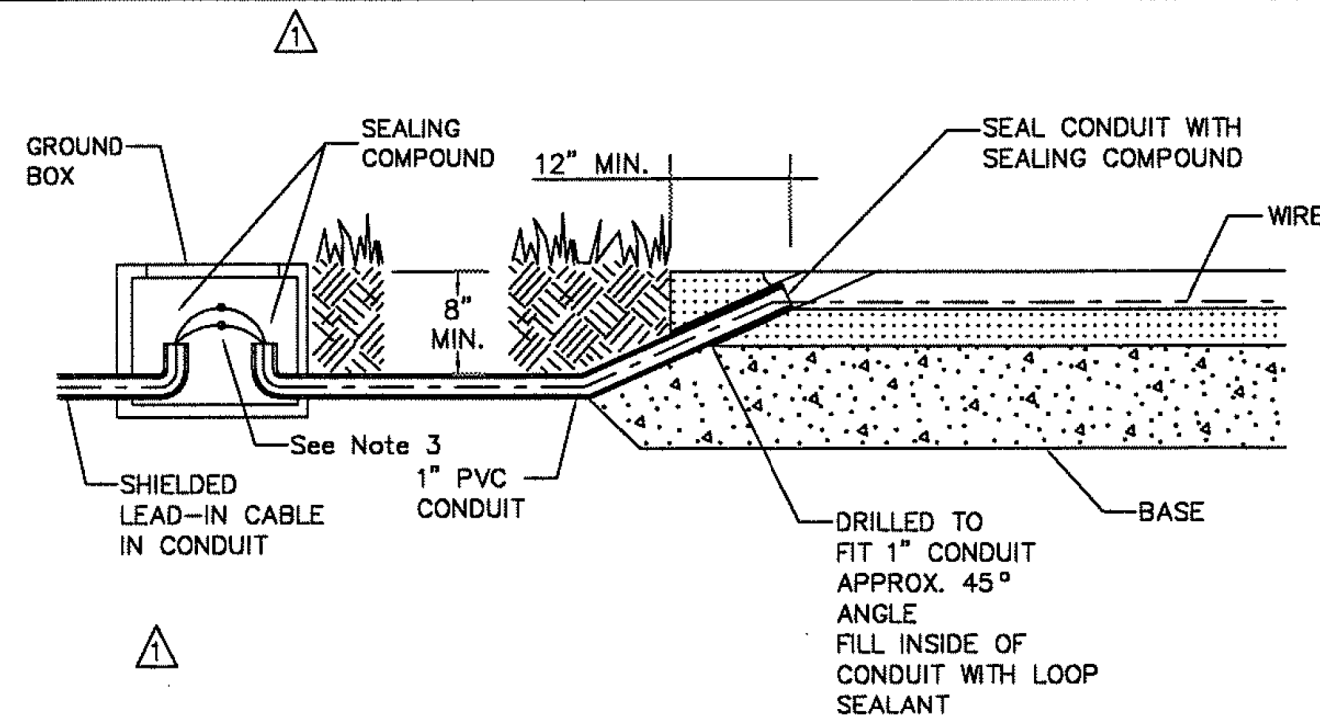
**HARRIS COUNTY
ENGINEERING DEPARTMENT**

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: PASSENGER SHELTER FOUNDATION
CK'D BY: JC	DETAILS TYPE I, II, AND IV
SCALE: NTS	SHEET 1 OF 1
DATE: 04/12/19	APPROVED BY:

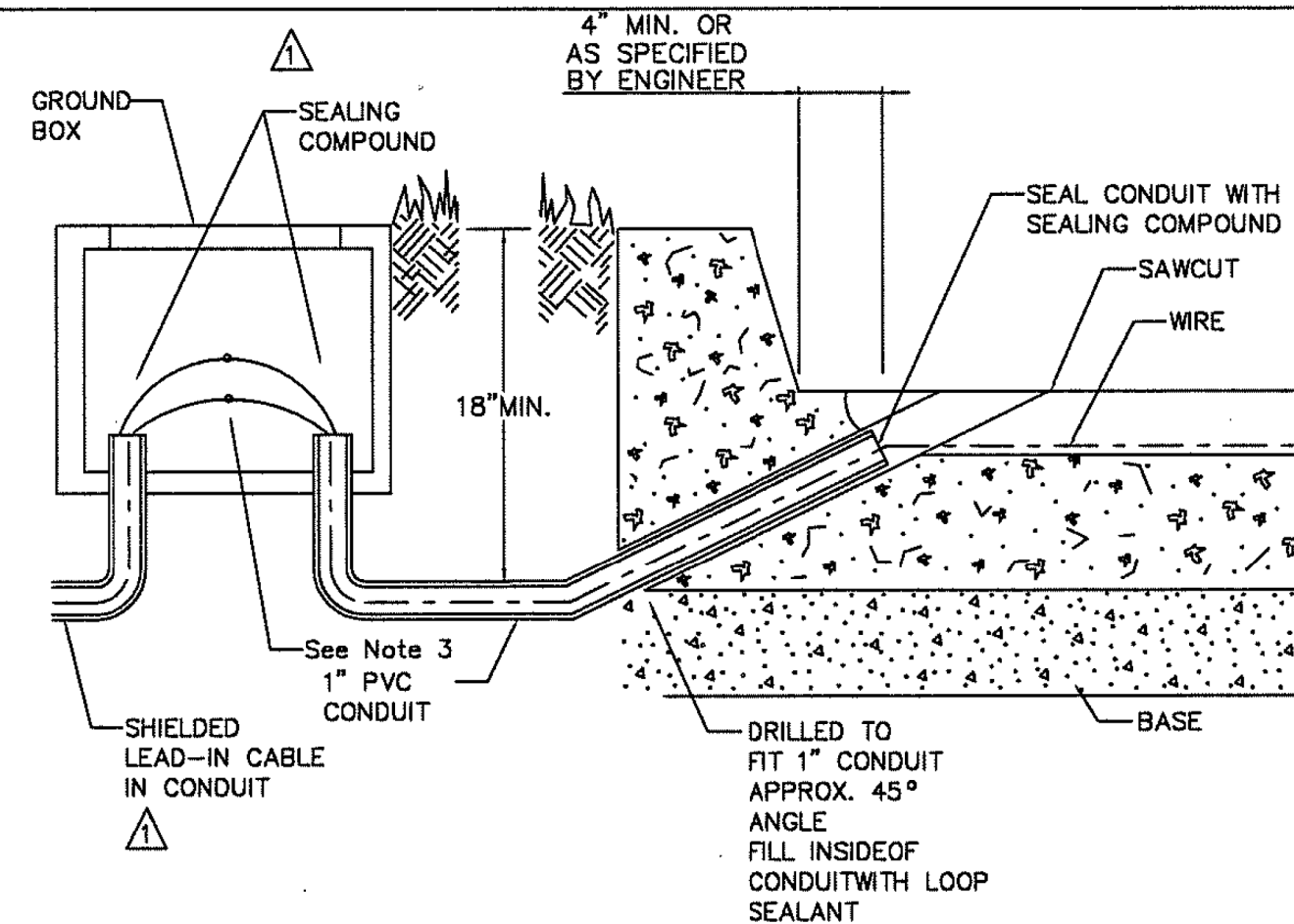


LOOP SAW CUT CROSS-SECTION

* SAWCUTS IN BRIDGE DECKS ARE TYPICALLY 1" DEPTH MAXIMUM
 SAWCUTS IN BRIDGE DECKS AND ACROSS EXPANSION JOINTS SHALL BE AS APPROVED BY ENGINEER

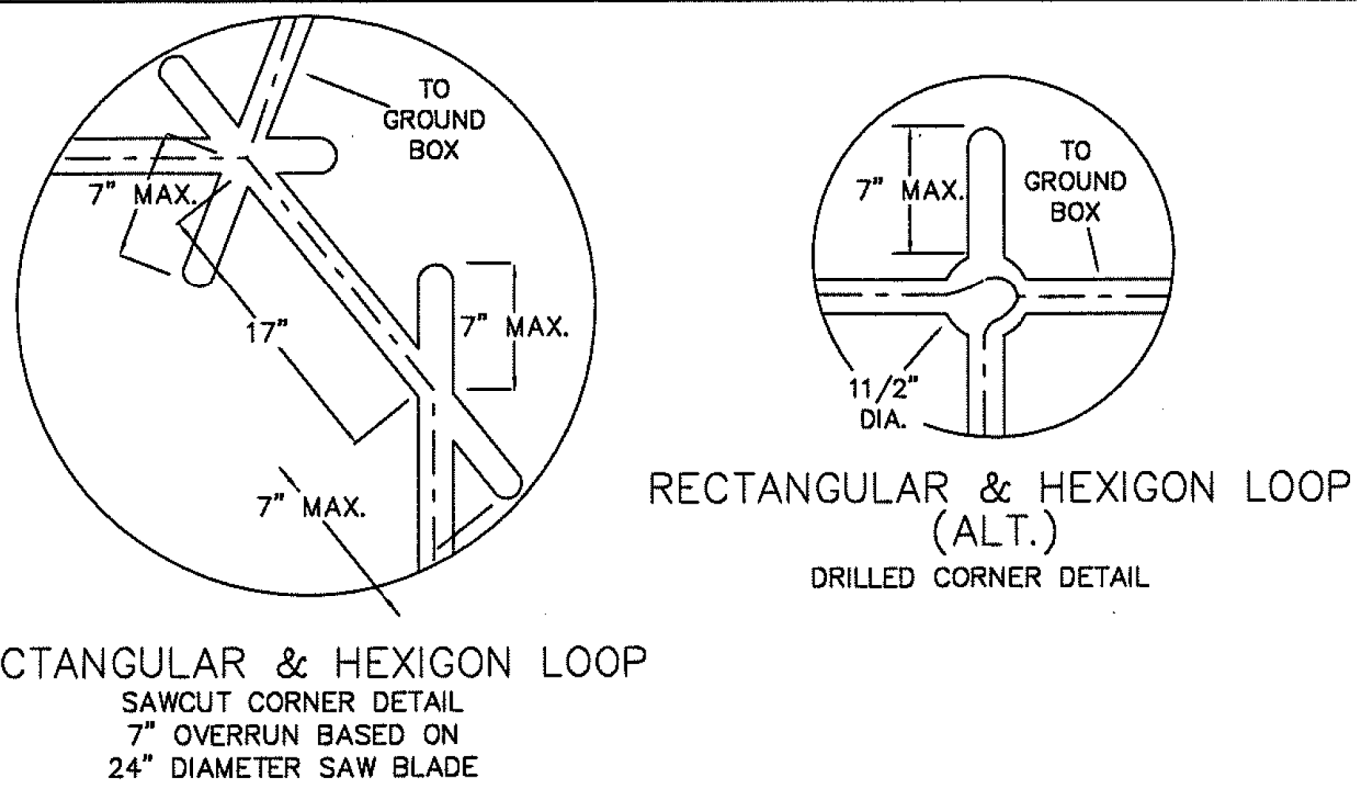
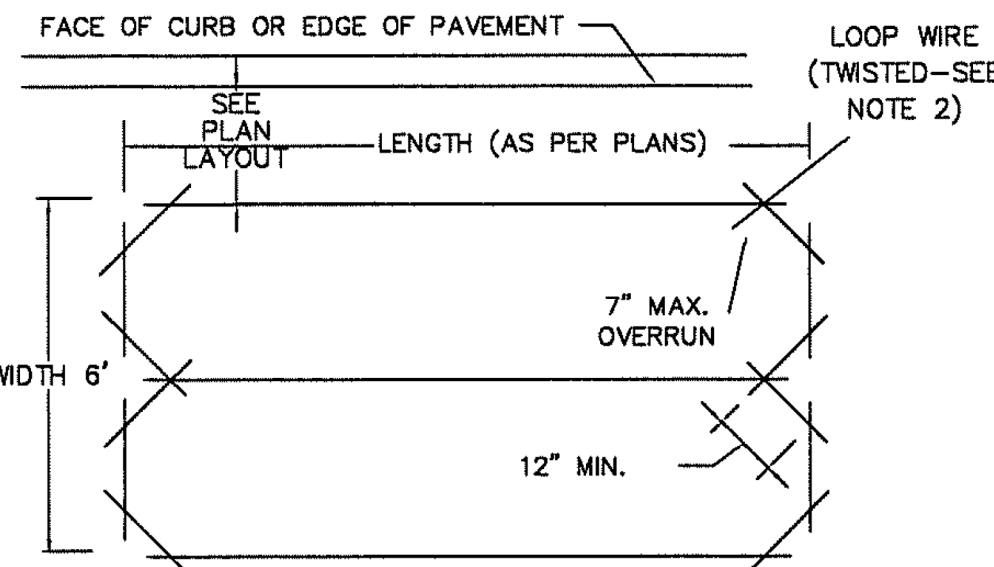
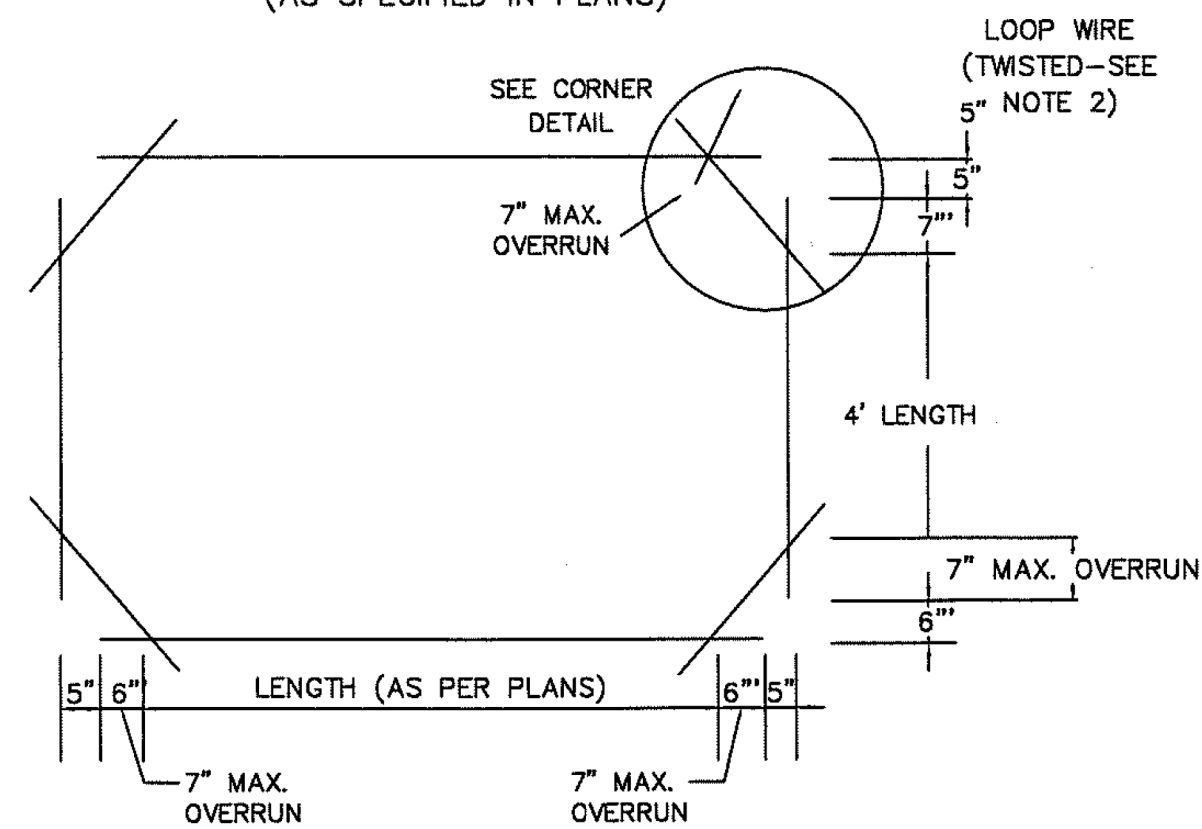


TYPICAL LEAD IN CONFIGURATION (WITHOUT CURBING)

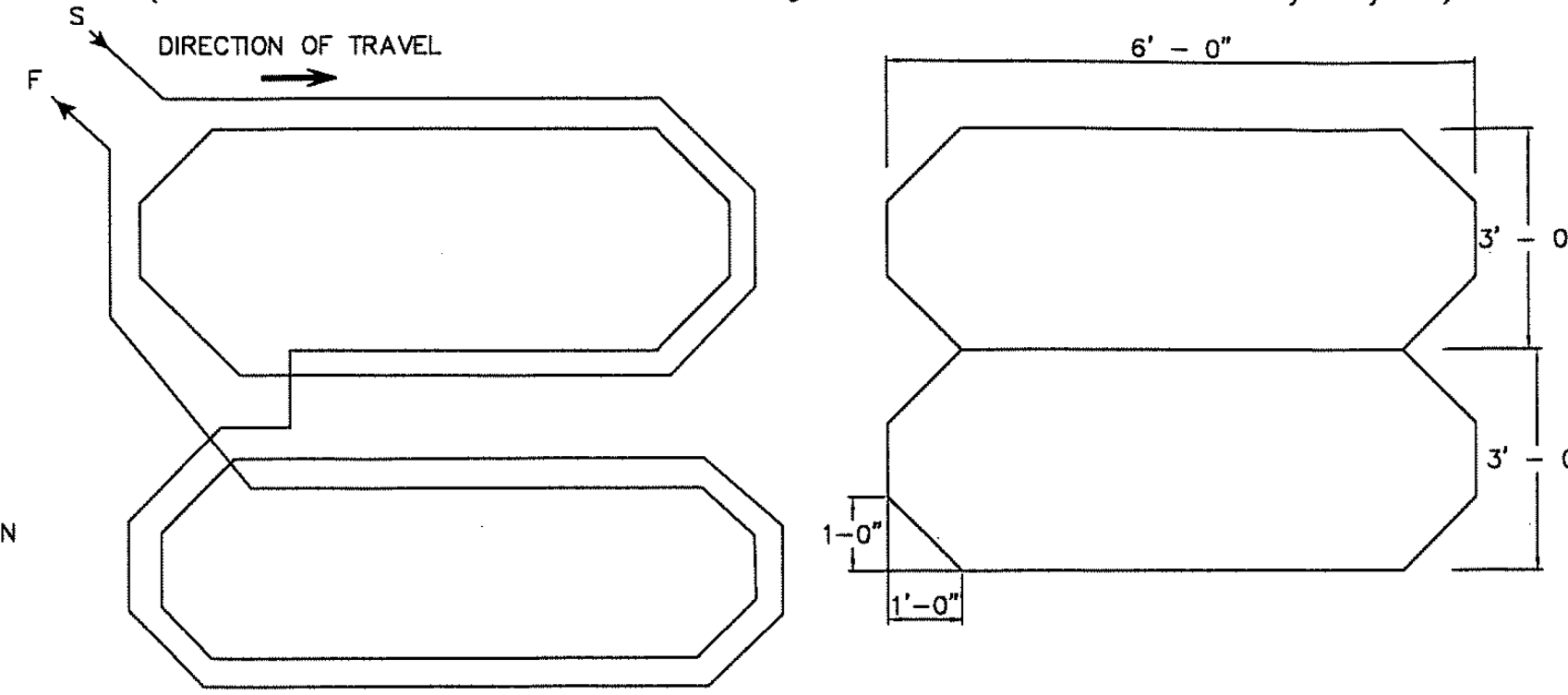


TYPICAL LEAD IN CONFIGURATION (WITH CURBING)

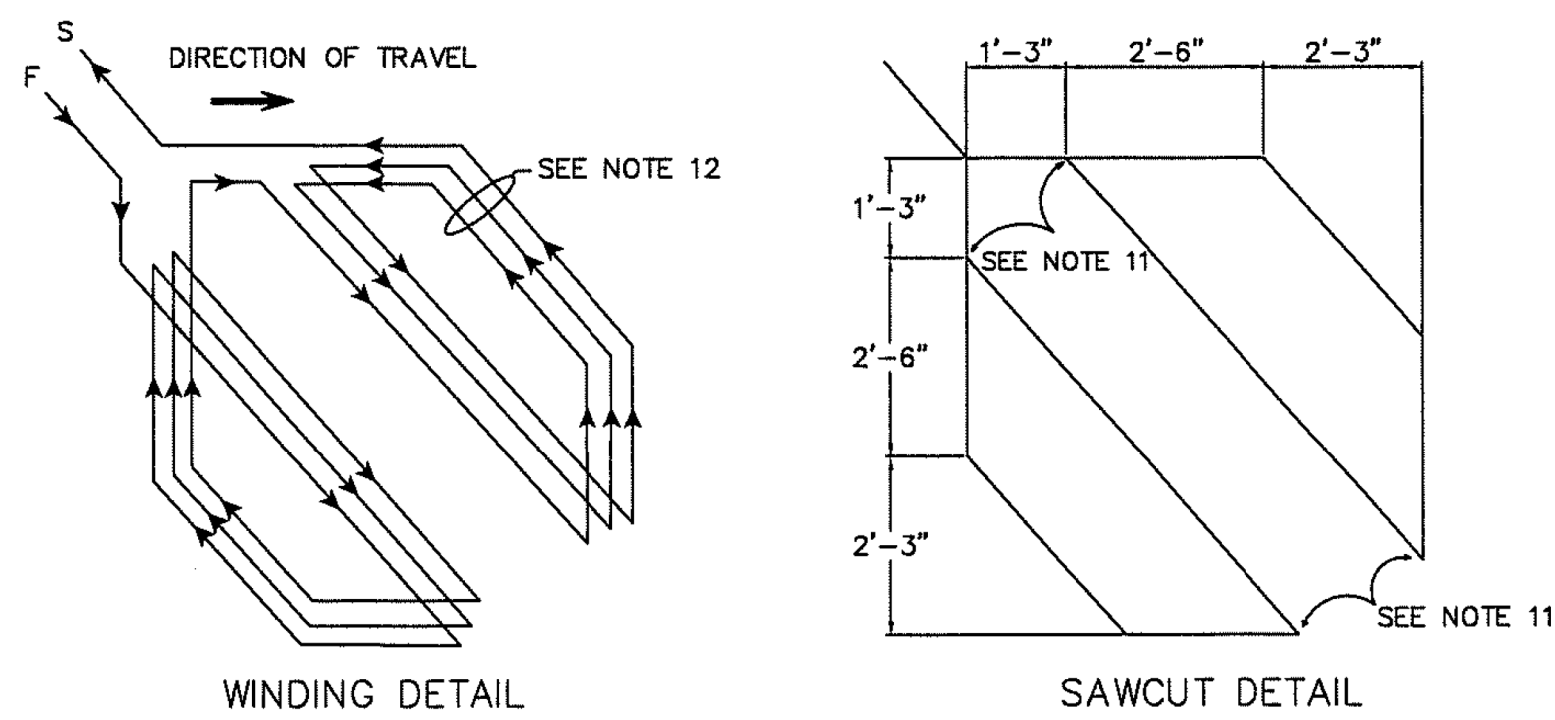
TYPICAL VEHICULAR LOOP DETECTOR LAYOUT (AS SPECIFIED IN PLANS)



TYPICAL BICYCLE LOOP DETECTOR LAYOUT (AS SPECIFIED IN PLANS. See Pavement Markings Details for location relative to bicycle symbol)



QUADRUPOLE (Q) TYPE LOOP DETECTOR CONFIGURATION



DIAGONAL SLASHED (D) TYPE LOOP DETECTOR CONFIGURATION

GENERAL NOTES:

- The pavement cut is to be made with a concrete saw to neat lines and loose material removed. The cut shall be clean and dry when the wire and sealing compound is placed.
- Loop wire shall be 14 AWG Stranded Type XHHW. Wire from the loop to the ground box shall be twisted a minimum of 5 turns per foot. No splices shall be permitted in the loop or in the run to the ground box.
- The home run cable from the pull box to the controller shall be IMSA 50-2 shielded cable and shall be soldered to the loop wire. The solder joints shall be sealed with Scotchcast or other method acceptable to the Engineer. The shield shall be grounded only at the controller end. Loop home run cable shall be two conductor 14 AWG shielded, Type XHHW.
- All wire placed in the saw cut shall be sealed by fully encapsulating it in a sealant acceptable to the Engineer. Sealing compound shall be in accordance with DMS 6340.
- The loop location, configuration and number of turns shall be as indicated on the plans or as directed by the Engineer.

Recommended Number of Turns for Loop Detectors	LOOPS PERIMETER SIZE (FT.)	NUMBER OF TURNS	APPROXIMATE LOOP SIZES INCLUDED
3 or 4	24' or Less	3 or 4	5' x 5', 6' x 6'
2 or 3	25' - 110'	2 or 3	6' x 10', 6' x 45'
1 or 2	110' or More	1 or 2	6' x 50' or Longer
- A separate saw cut shall be made from each loop to the edge of pavement or as specified by the Engineer.
- Splices between the loop lead-in cable and loop detector shall be made only in the ground box near the loop it is serving.
- Circular loops may use prewound loops encased in continuous pvc tubing. Sawcut width may be adjusted to accommodate tubing.
- The lead-in wire in the circular loop shall be coiled at the 3 inch drilled corner to reduce bending stress.
- Loop duct may be used as specified by Engineer. For additional information refer to "Texas Traffic Signal Detector" manual, TTI Report 1163-1.
- Round corners of acute angles to prevent damage to conductors.
- Install 3 turns when only one type D loop is on a single channel. Install 5 turns when one type D is connected w/3-6'x6' loops on a single channel.

CITY OF HOUSTON
 HOUSTON PUBLIC WORKS

LOOP DETECTOR INSTALLATION
 DETAILS

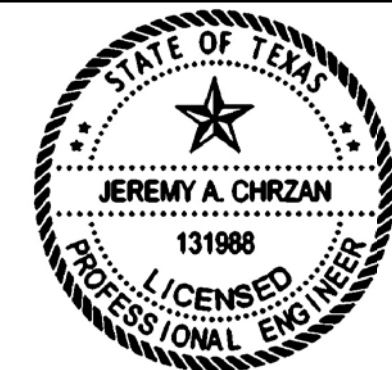
(NOT TO SCALE)

[Signature]
 CITY TRAFFIC ENGINEER

[Signature]
 DIRECTOR OF HOUSTON PUBLIC WORKS

EFF DATE: JUL-01-2018

DWG NO: 02893-11

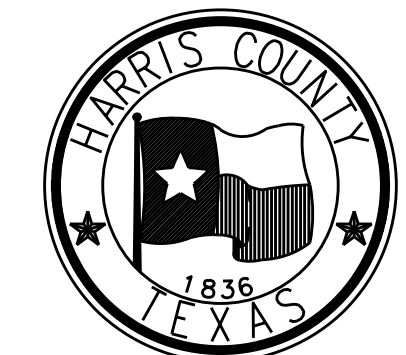


[Signature] PE
 04/12/2019

NO.	REVISIONS	DATE	NAME

TOOLE DESIGN

8484 Georgia Avenue, Suite 800, Silver Spring, MD 20910
 TEL (301) 927-1900
 TBPE Registration No. 14667



HARRIS COUNTY
 ENGINEERING DEPARTMENT

PROJECT TITLE:
 HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY

DRAWN BY:
 CB/FL

CK'D BY:
 JC

SCALE:
 NTS

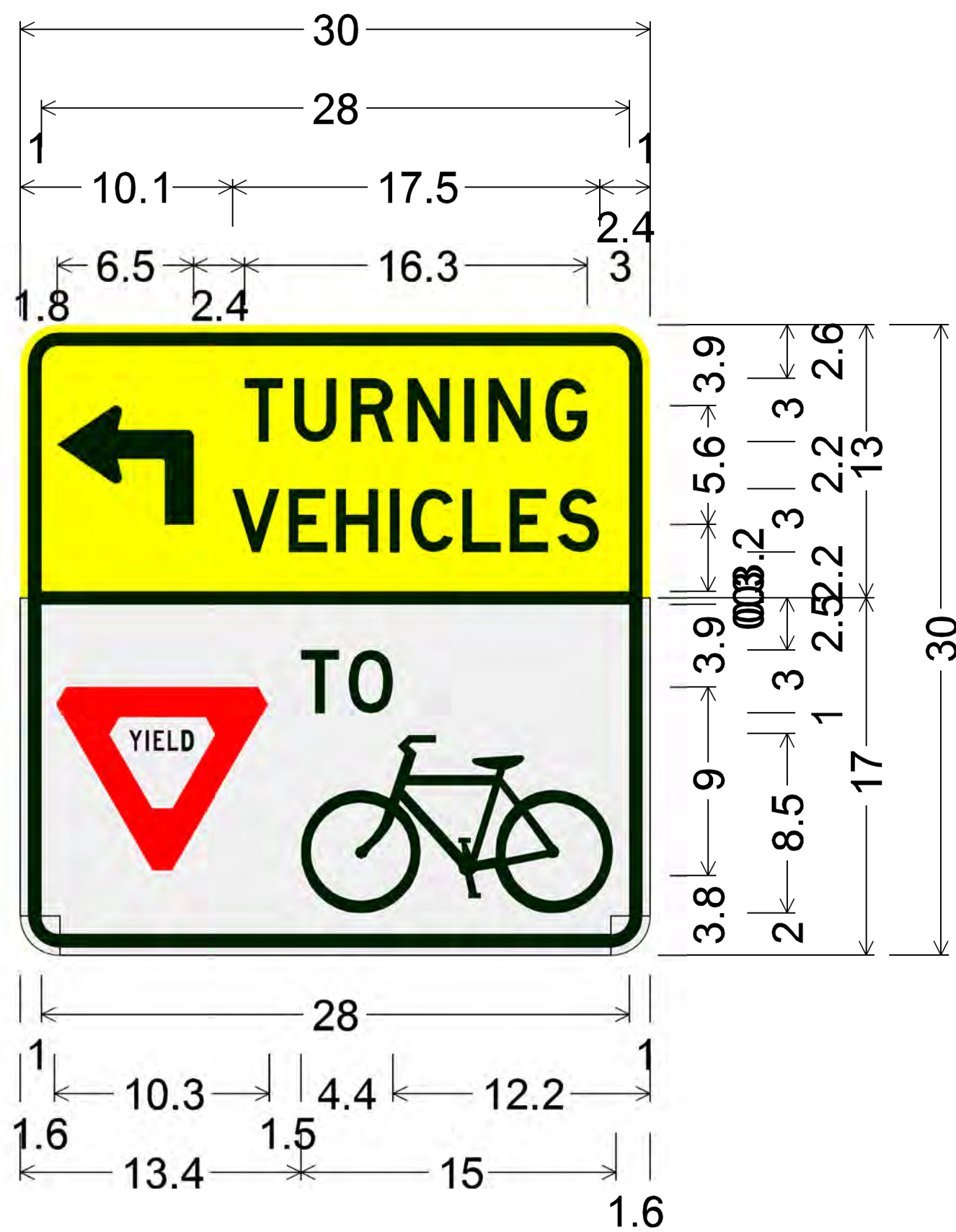
DATE:
 04/12/19

SHEET DESCRIPTION:
 LOOP DETECTOR INSTALLATION DETAILS

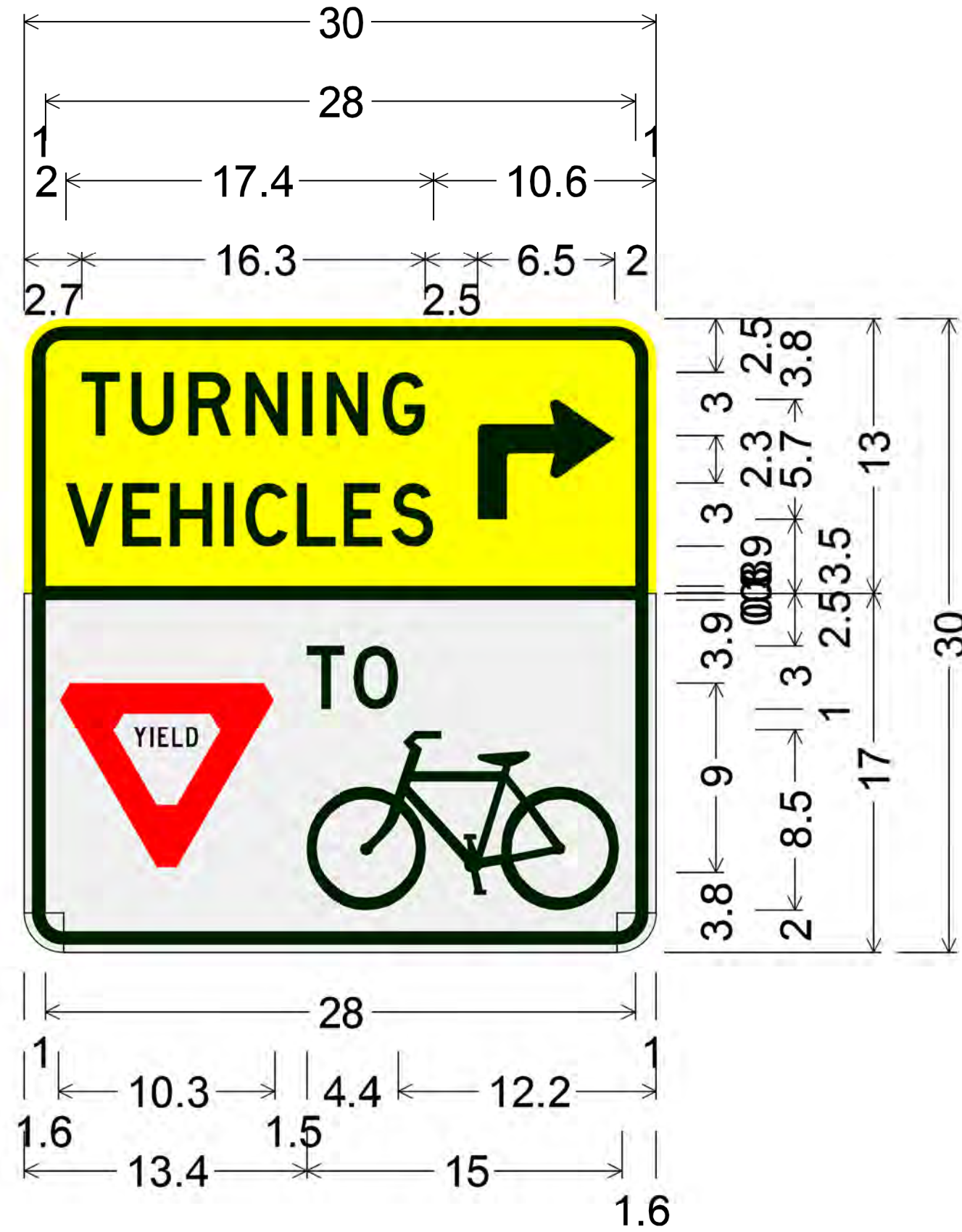
SHEET 1 OF 1

APPROVED BY:

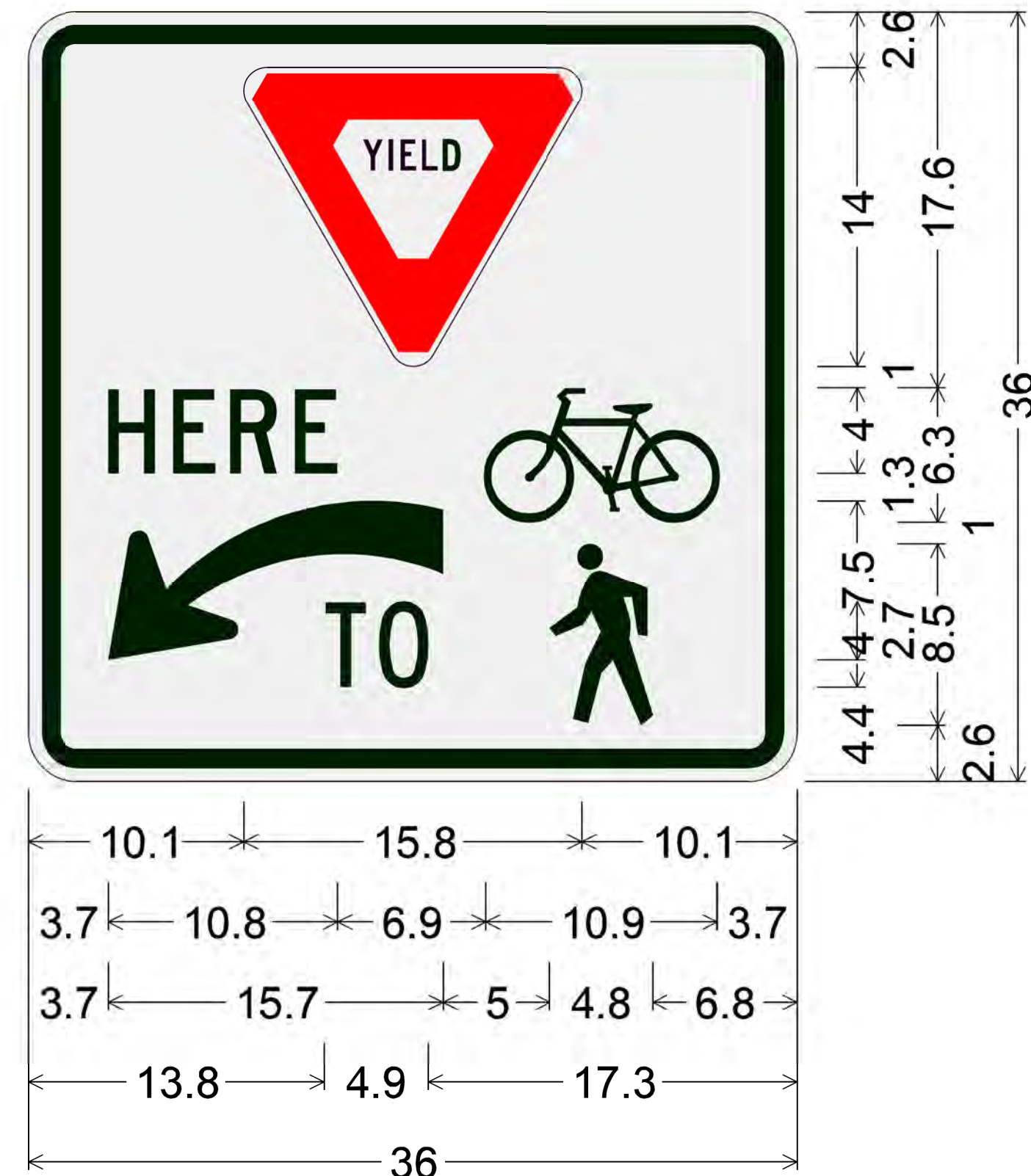
SHEET NO:
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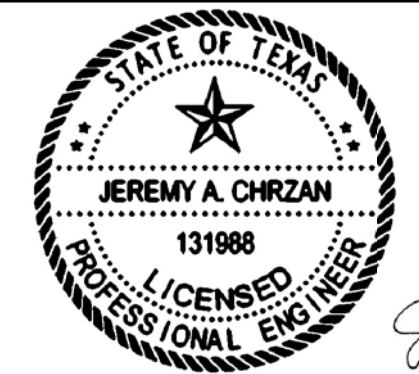
Identifier : R10-15L(BIKE) (MOD);
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 90 Deg Advance Turn Arrow Custom 6.5" X 5.7";
 [TURNING] D specified length;
 [VEHICLES] D specified length;
 1.9" Radius, 0.6" Border, 0.4" Indent, Black on White;
 [TO] D specified length;
 Symbol RG025;



Identifier : R10-15L(BIKE)(MOD);
 1.9" Radius, 0.6" Border, 0.4" Indent, Black on Yellow;
 [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);
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 [TO] C specified length;
 Symbol RG025 White;

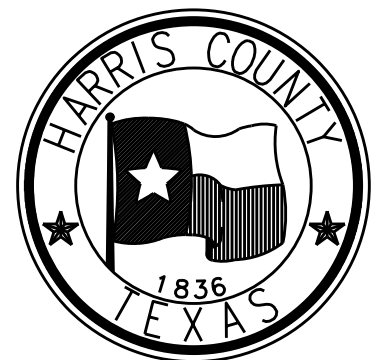


Jeremy A. Chrzan, PE
 04/12/2019

NO.	REVISIONS	DATE	NAME

TOOLE DESIGN

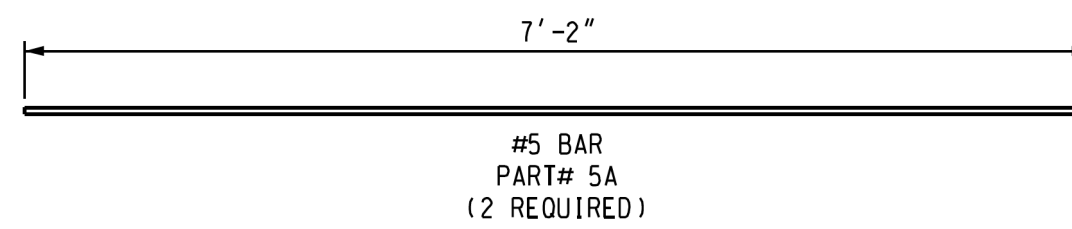
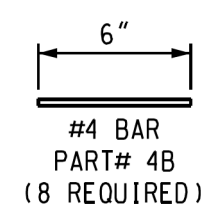
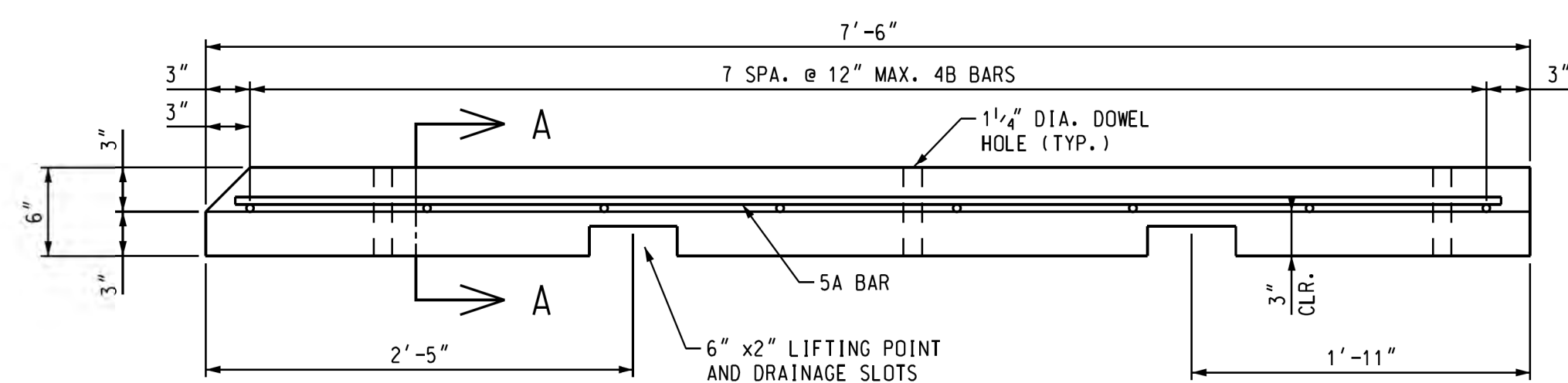
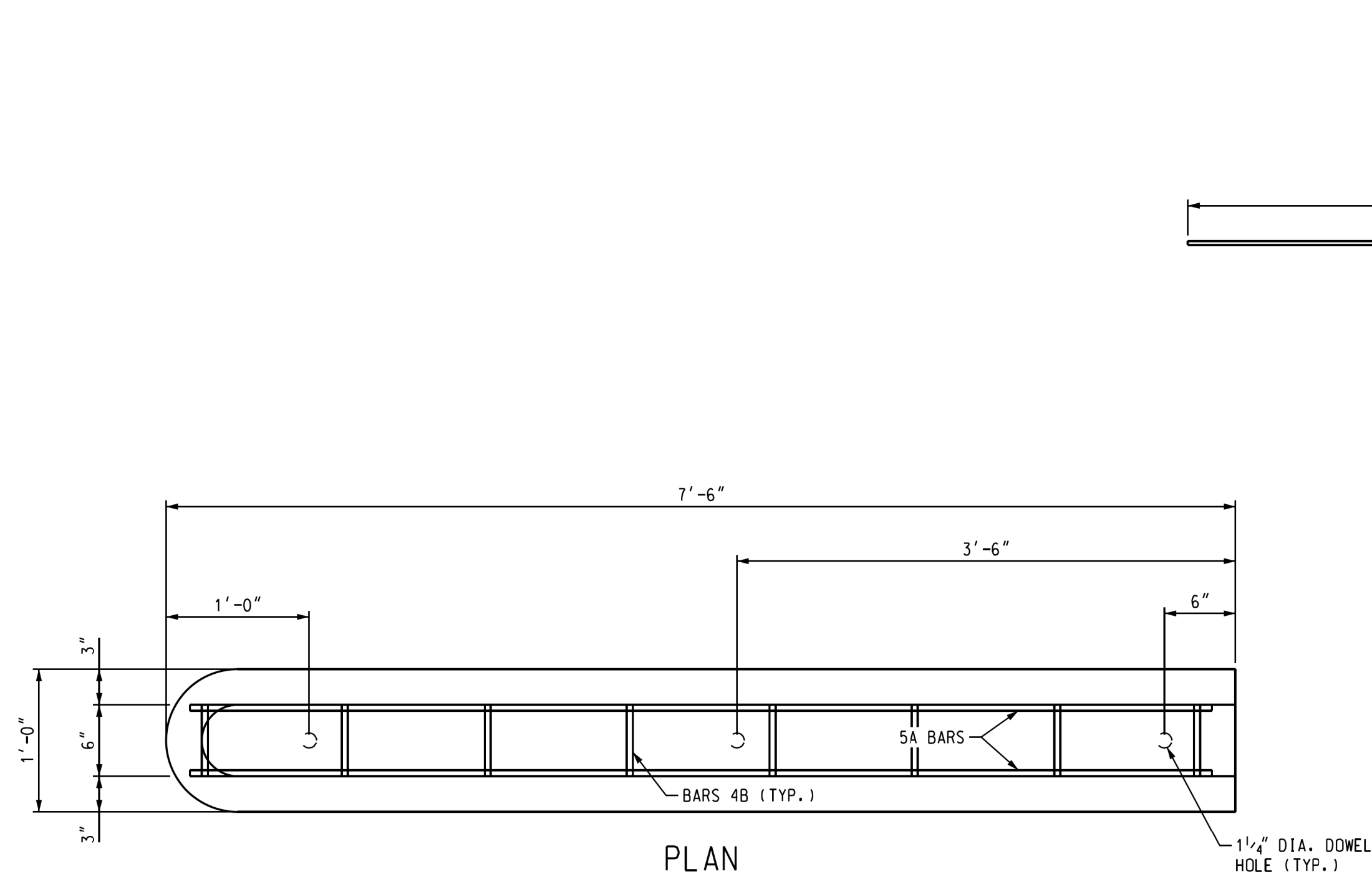
8484 Georgia Avenue, Suite 800, Silver Spring, MD 20910
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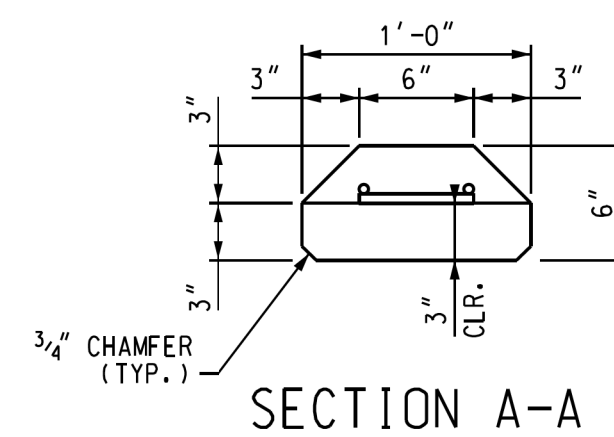
HARRIS COUNTY
 ENGINEERING DEPARTMENT

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: ADDITIONAL SIGN DETAILS
CK'D BY: JC	
SCALE: NTS	SHEET 1 OF 1
DATE: 04/12/19	APPROVED BY:

ONE END ROUNDED CAP PRECAST CONCRETE CURB SEGMENT QUANTITIES		
REBAR		
PART NAME	QTY	WEIGHT (lbs)
5A	2	15.0
4B	8	2.7
TOTAL STEEL		17.6
CONCRETE (cyd)	0.12	472
TOTAL WEIGHT		489



REBAR DETAILS



ONE END ROUNDED CAP PRECAST CONCRETE CURB SEGMENT
ELEVATION

These drawings have been sealed on Apr 09 2019



ENGINEER:

NOTICE:

THE DESIGN CONTAINED IN THESE DRAWINGS IS BASED ON THE TRICON PRECAST, LTD. SPECIFICATIONS AND THE INFORMATION PROVIDED BY THE OWNER. TEC ENGINEERING, LLC, IS ONLY RESPONSIBLE FOR THE INTERNAL AND EXTERNAL STABILITY OF THE MSE WALL SYSTEM. GLOBAL STABILITY AND BEARING CAPACITY IS NOT THE RESPONSIBILITY OF TEC ENGINEERING, LLC. THESE DRAWINGS ARE FURNISHED ONLY FOR THE USE OF THIS PROJECT. THE PROPRIETARY INFORMATION SHOWN HEREIN IS NOT TO BE TRANSMITTED TO ANY OTHER ORGANIZATION WITHOUT AUTHORIZATION FROM TRICON PRECAST, LTD.



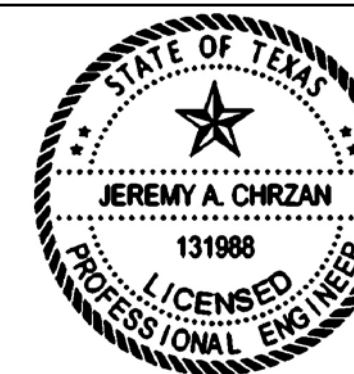
REVIEWING ENGINEER:

HARRIS COUNTY

DRAWN BY: KC	PROJECT NO.:	CSJ NO.:
DESIGNED BY: ZS	STRUCTURE NO.:	DATE:
CHECKED BY: CT	TRICON JOB NO.:	SHEET 2 of 3

NOTES

1. CONCRETE FOR PRECAST CURB: MINIMUM 3,000 PSI IN 28 DAYS
2. REINFORCED STEEL: PER ASTM A615, GRADE 60
3. ATTACHMENT PIN #4 X 12 LING GRADE 60 REBAR (TYP)
4. ATTACHMENT PIN SHALL HAVE 7 INCH EMBEDMENT



04/12/2019

NO.	REVISIONS	DATE	NAME

TOOLE DESIGN

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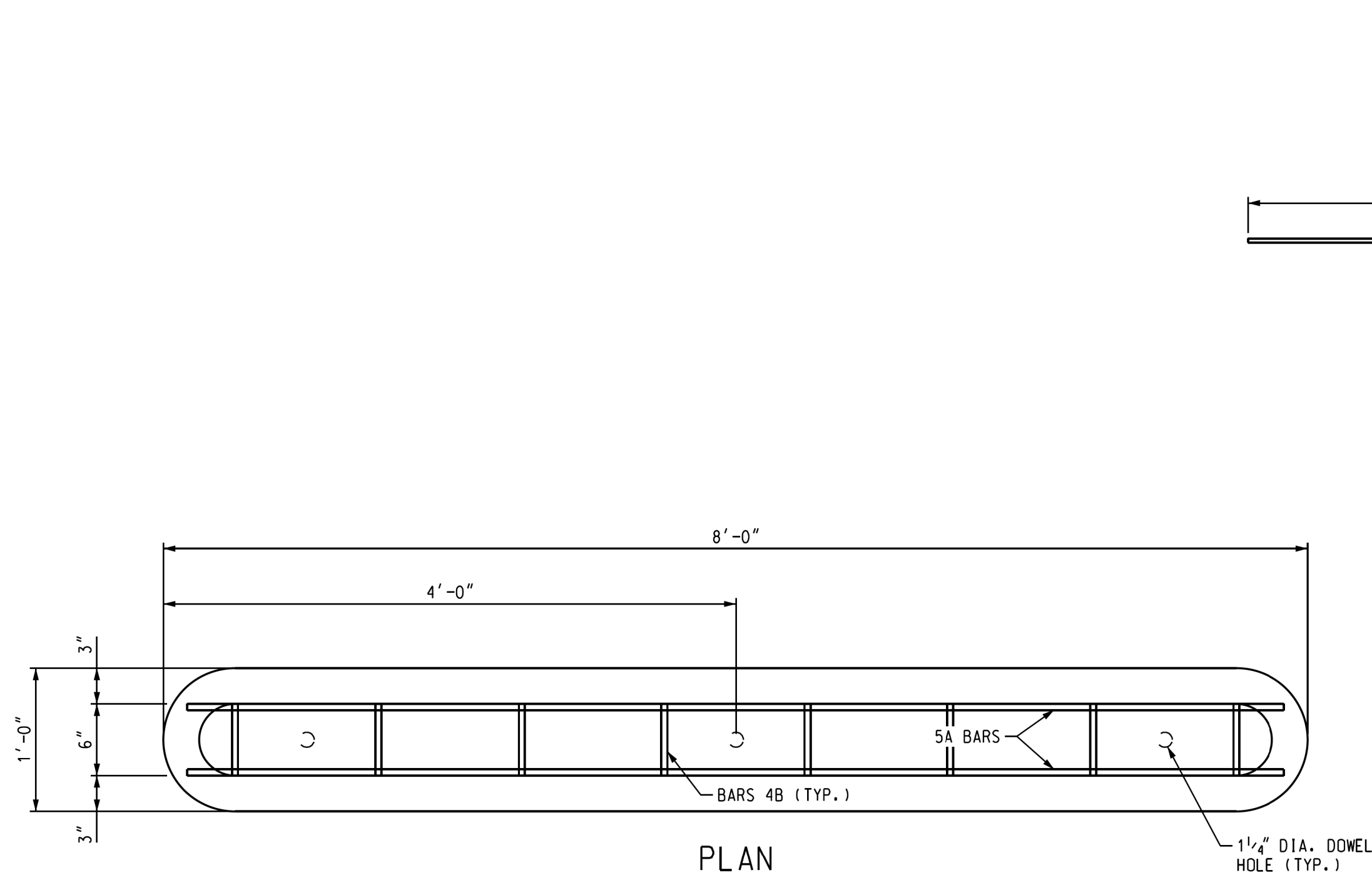
HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	SHEET DESCRIPTION: PRECAST CONCRETE CURB SEGMENT
DRAWN BY: CB/FL	TYPE B - ONE END ROUNDED CAP
CK'D BY: JC	SHEET 1 OF 2
SCALE: NTS	APPROVED BY:
DATE: 04/12/19	

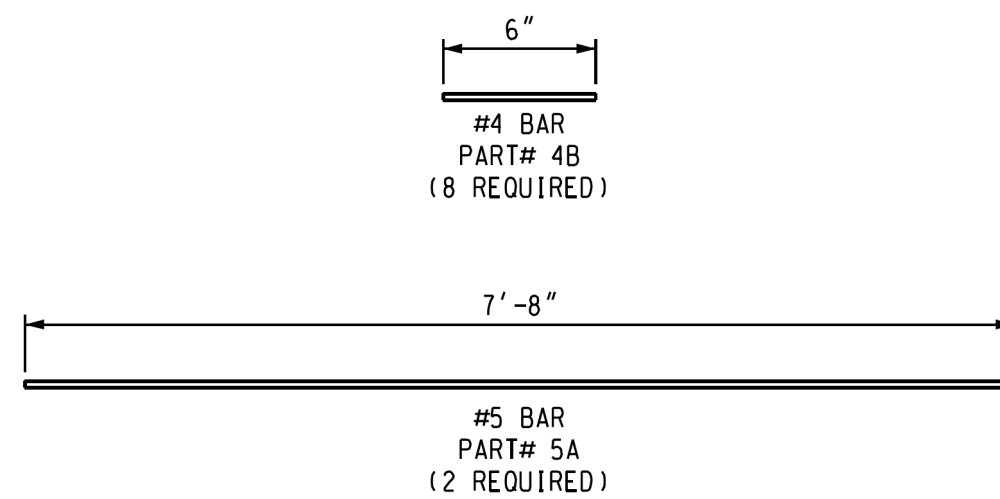
SHEET NO:
315

TEC REGISTRATION NUMBER: 10564

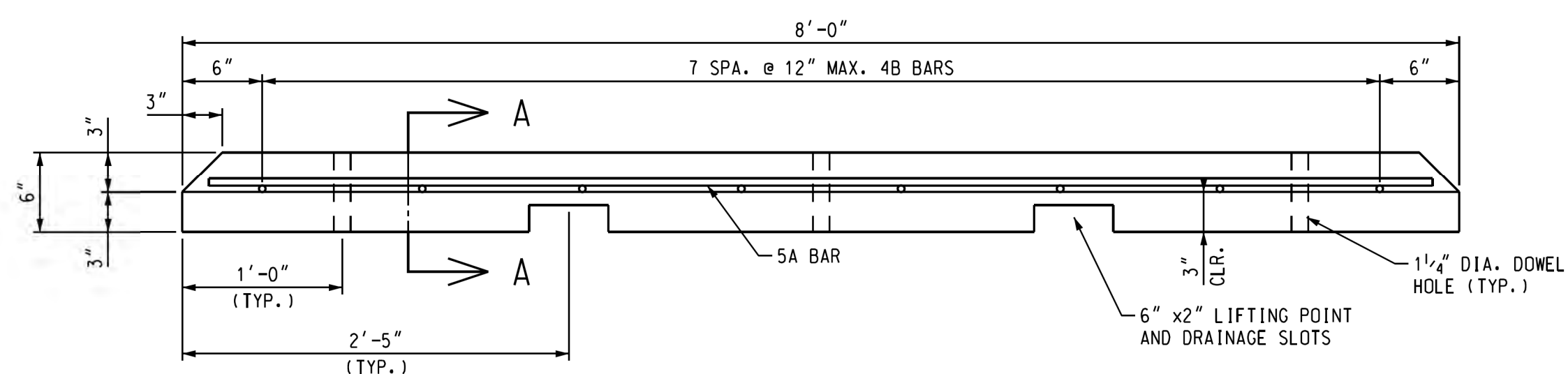
TWO END ROUNDED CAP PRECAST CONCRETE CURB SEGMENT QUANTITIES		
PART NAME	REBAR	
	QTY	WEIGHT (lbs)
5A	2	16.0
4B	8	2.7
TOTAL STEEL		18.7
CONCRETE (cyd)	0.13	503
TOTAL WEIGHT		522



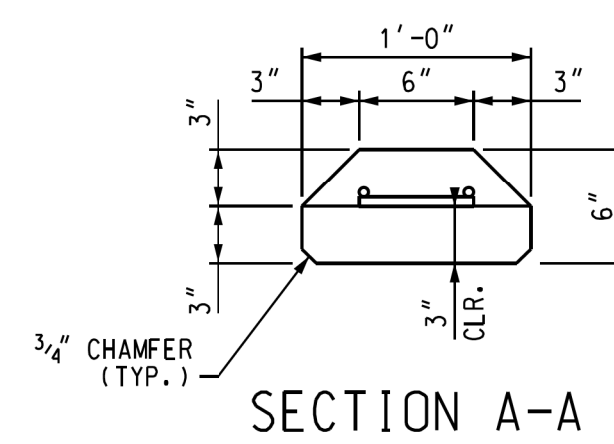
PLAN



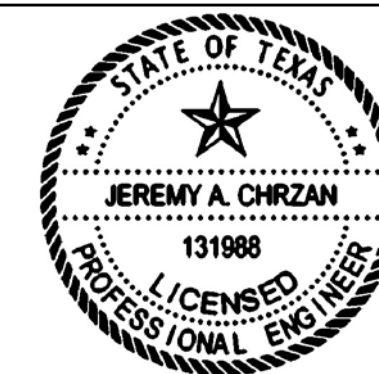
REBAR DETAILS



TWO END ROUNDED CAP PRECAST CONCRETE CURB SEGMENT ELEVATION



SECTION A-A



Jeremy A. Chrzan, PE
04/12/2019

NO.	REVISIONS	DATE	NAME

TOOLE DESIGN

8484 Georgia Avenue, Suite 800, Silver Spring, MD 20910
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 TBPE Registration No. 14667



HARRIS COUNTY
 ENGINEERING DEPARTMENT

HARRIS COUNTY				
DRAWN BY:	PROJECT NO.:	TRICON JOB NO.:	DATE:	SHEET
KC	--	--	--	3 of 3
DESIGNED BY: ZS	STRUCTURE NO.:	TRICON JOB NO.:	DATE:	SHEET
CHECKED BY: CT	--	--	--	3 of 3



ENGINEER:

NOTICE:

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TEC
 CIVIL STRUCTURAL ENGINEERING
 1525 4th STREET, SUITE B
 WYOMING, MI 48099
 PH. (616) 261-8630

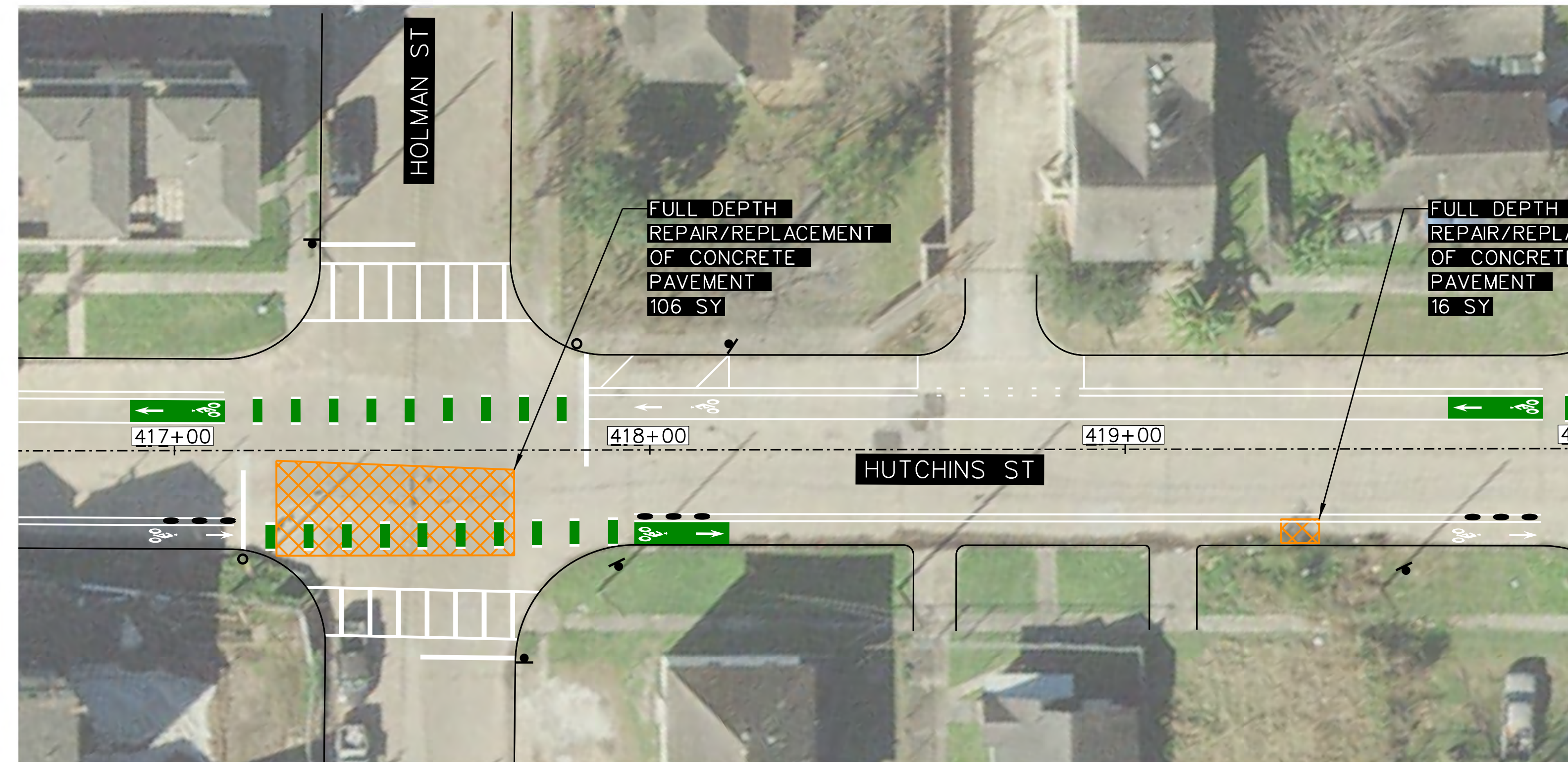
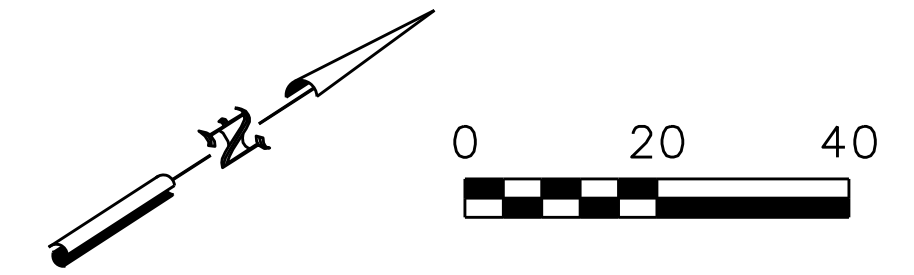
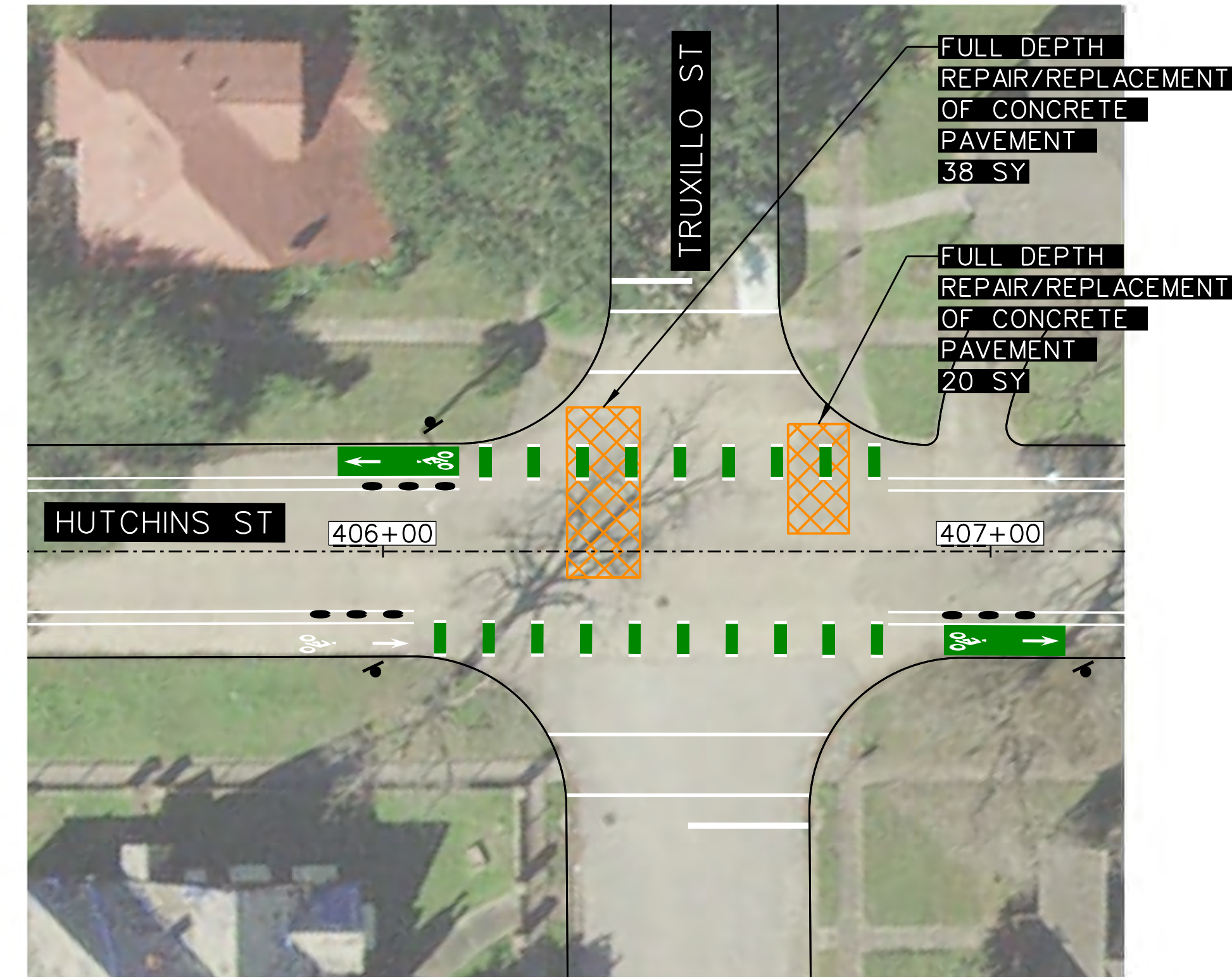
REVIEWING ENGINEER:

NOTES

1. CONCRETE FOR PRECAST CURB: MINIMUM 3,000 PSI IN 28 DAYS
2. REINFORCED STEEL: PER ASTM A615, GRADE 60
3. ATTACHMENT PIN #4 X 12 LING GRADE 60 REBAR (TYP)
4. ATTACHMENT PIN SHALL HAVE 7 INCH EMBEDMENT

XXXXX

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	SHEET DESCRIPTION: PRECAST CONCRETE CURB SEGMENT
DRAWN BY: CB/FL	TYPE C - TWO END ROUNDED CAP
CK'D BY: JC	SHEET 2 OF 2
SCALE: NTS	APPROVED BY:
DATE: 04/12/19	SHEET NO: 316

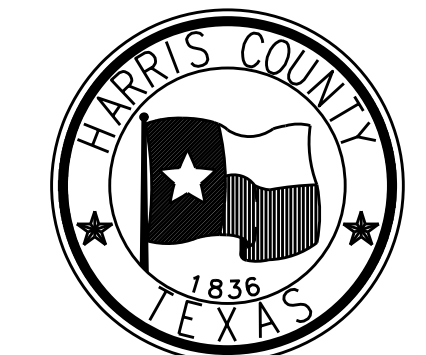


Jeremy A. Chrzan, PE
04/12/2019

NO.	REVISIONS	DATE	NAME

TOOLE DESIGN

8484 Georgia Avenue, Suite 800, Silver Spring, MD 20910
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 TBPE Registration No. 14667



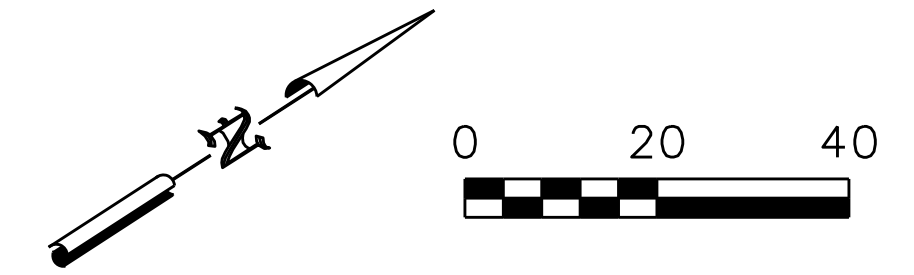
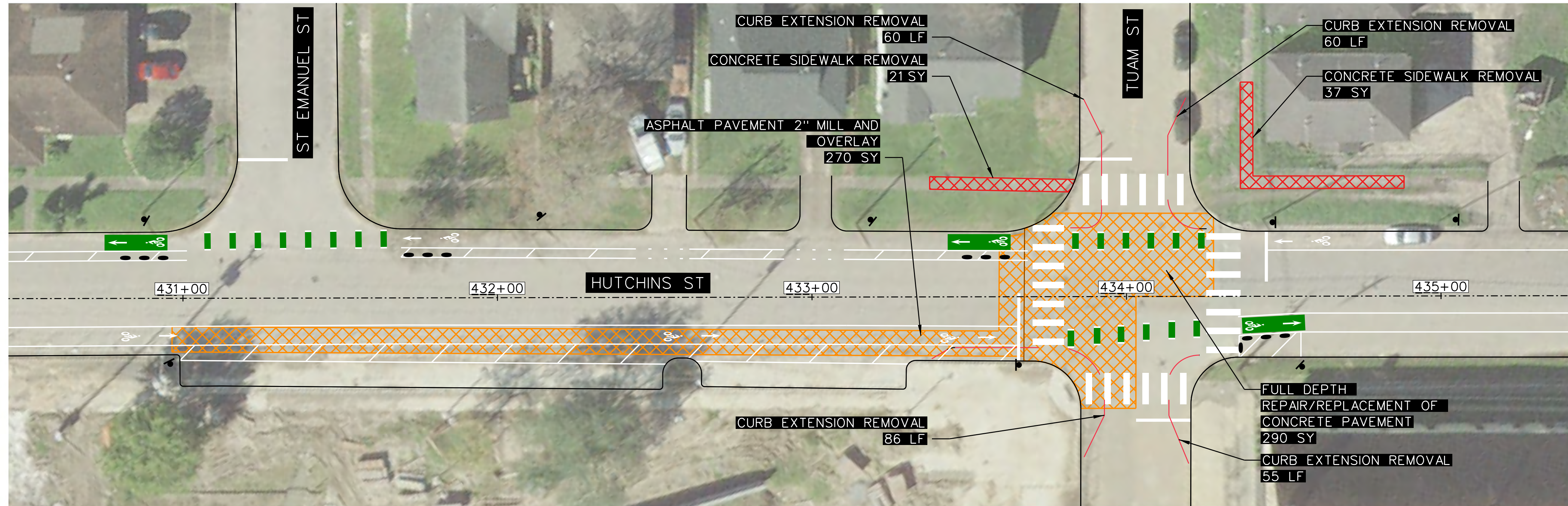
HARRIS COUNTY
 ENGINEERING DEPARTMENT

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: PAVING SHEETS
CK'D BY: JC	HUTCHINS ST PAVING REPAIR AT TRUXILLO ST AND HOLMAN ST
SCALE: 1"=20'	SHEET 1 OF 1
DATE: 04/12/19	APPROVED BY:

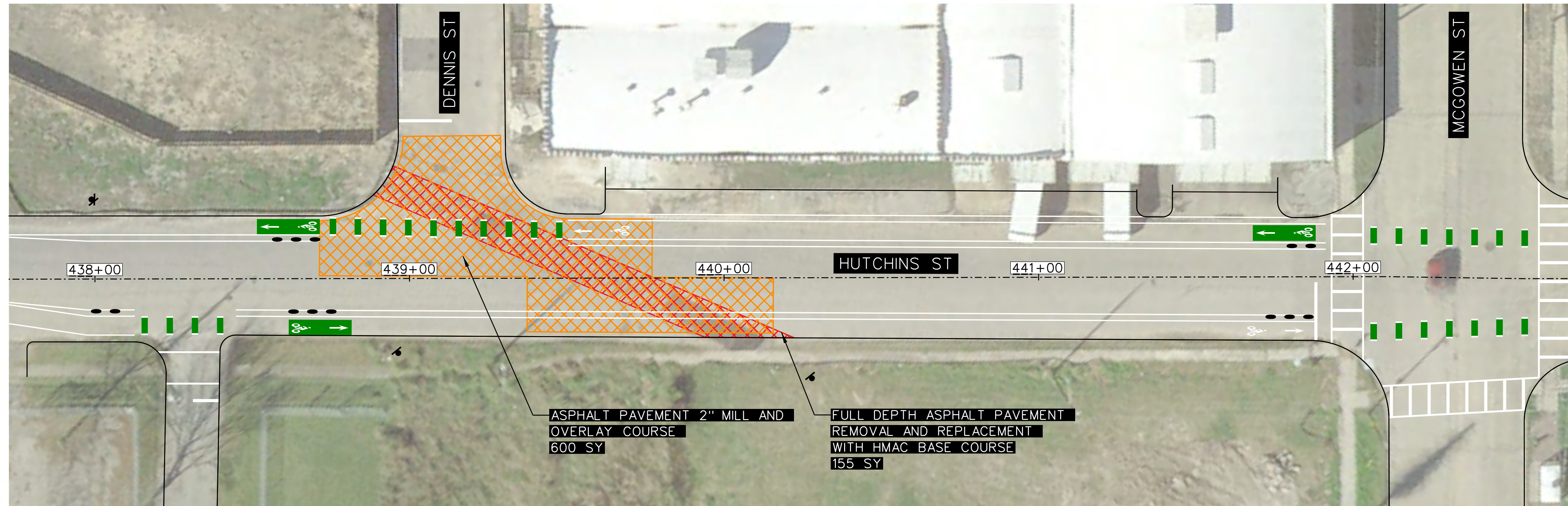
QUANTITIES (THIS SHEET ONLY)

180 SY FULL DEPTH REPAIR/REPLACEMENT OF CONCRETE PAVEMENT

PENTABLE: HC-Bikeways50%.tbi

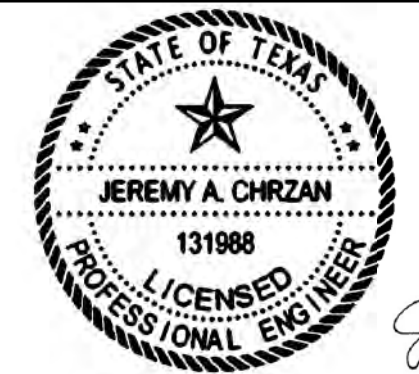


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 FILE: \\dca-file01\50000\5653.06_S_Third Ward Corridors Bikeway Design\04 Hutchins\5653.06_Hut_TP_001.dgn



QUANTITIES (THIS SHEET ONLY)

290 SY	FULL DEPTH REPAIR/REPLACEMENT OF CONCRETE PAVEMENT	155 SY	FULL DEPTH ASPHALT PAVEMENT REMOVAL AND REPLACEMENT WITH HMAC BASE COURSE
58 SY	CONCRETE SIDEWALK REMOVAL	261 LF	CURB EXTENSION REMOVAL
870 SY	2" MILL AND OVERLAY OF ASPHALT PAVEMENT		

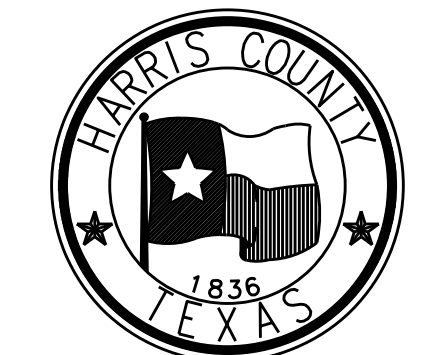


Jeremy A. Chrzan PE
04/12/2019

NO.	REVISIONS	DATE	NAME

TOOLE DESIGN

8484 Georgia Avenue, Suite 800, Silver Spring, MD 20910
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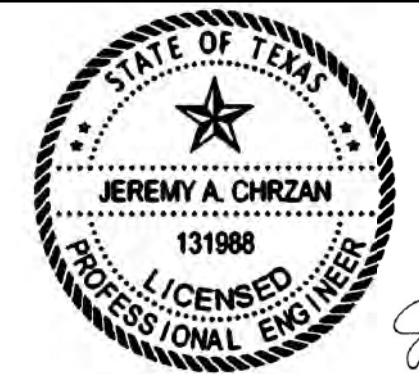
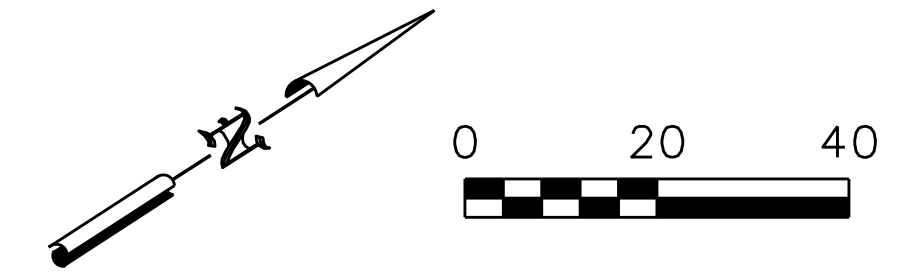
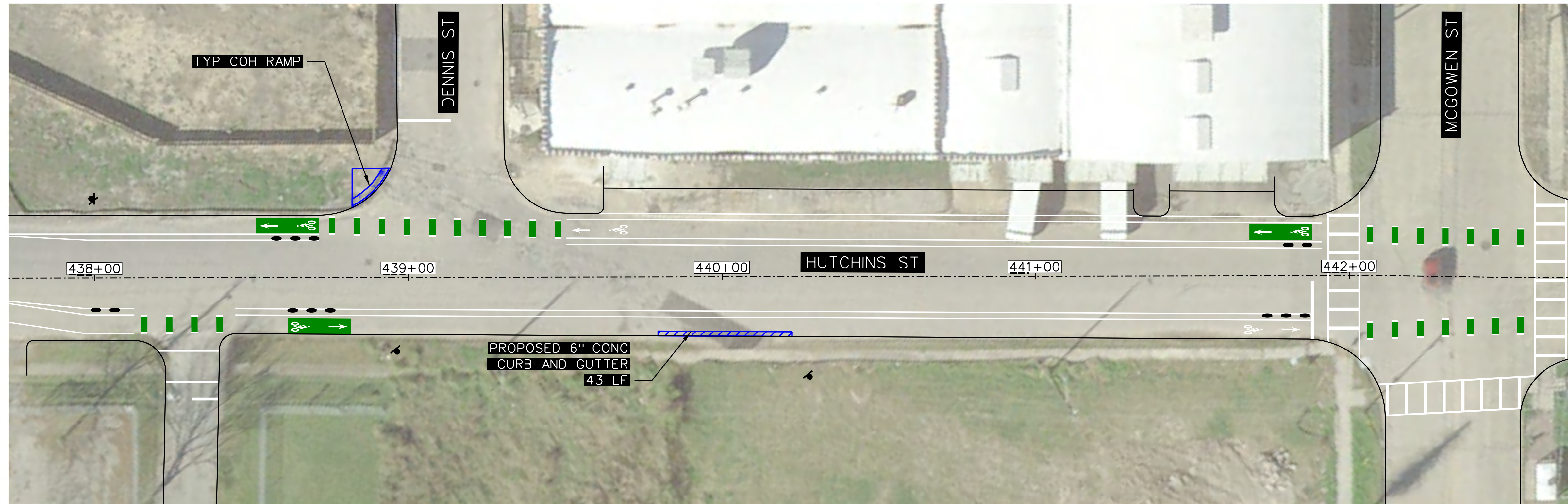
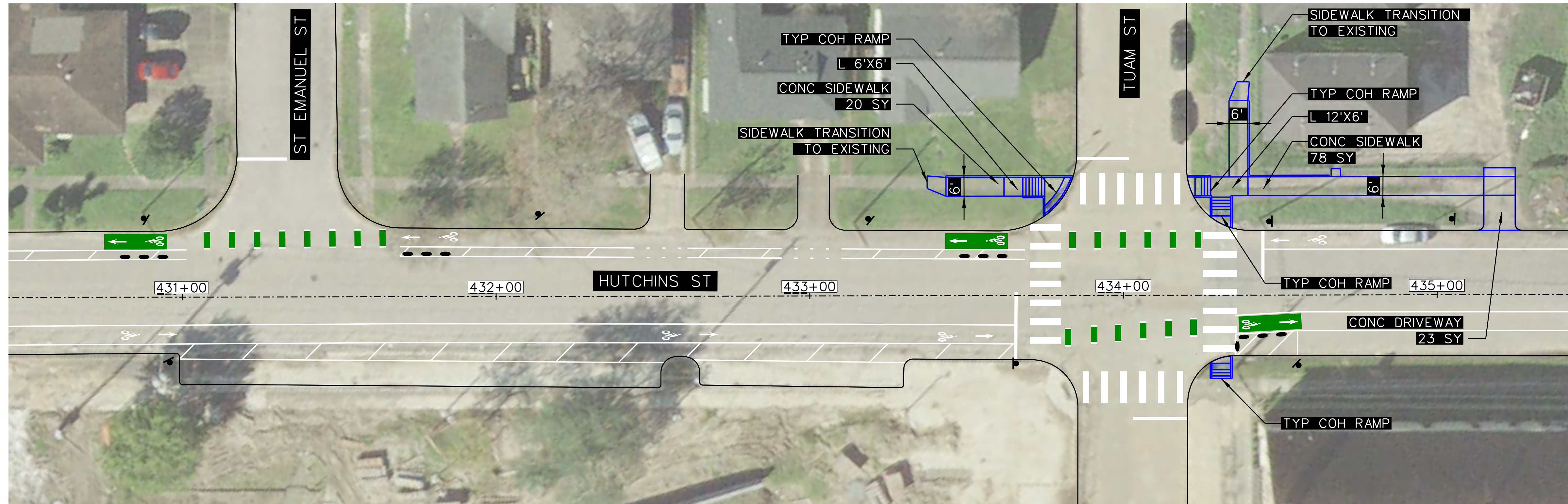
HARRIS COUNTY
 ENGINEERING DEPARTMENT

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: PAVING SHEETS
CK'D BY: JC	HUTCHINS ST PAVING REMOVAL AND REPAIR AT DENNIS ST AND TUAM ST
SCALE: 1"=20'	SHEET 1 OF 1
DATE: 04/12/19	APPROVED BY:

SHEET NO:
402

PENTABLE: HC-BikewaysP_CB.tbi

DATE: 12-Apr-2019 05:20 PM; USER: _USER_ \\dca-file01\50000\5653.06_S_Third Ward Corridors Bikeway Design\04 Hutchins\5653.06_Hut_TP_001.dgn

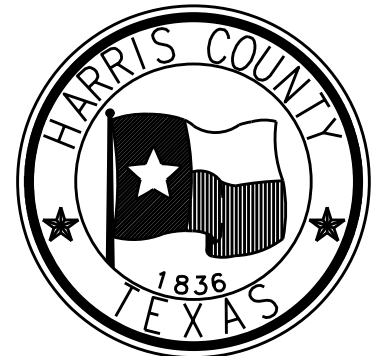


Jeremy A. Chrzan PE
04/12/2019

NO.	REVISIONS	DATE	NAME

TOOLE DESIGN

8484 Georgia Avenue, Suite 800, Silver Spring, MD 20910
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HARRIS COUNTY
ENGINEERING DEPARTMENT

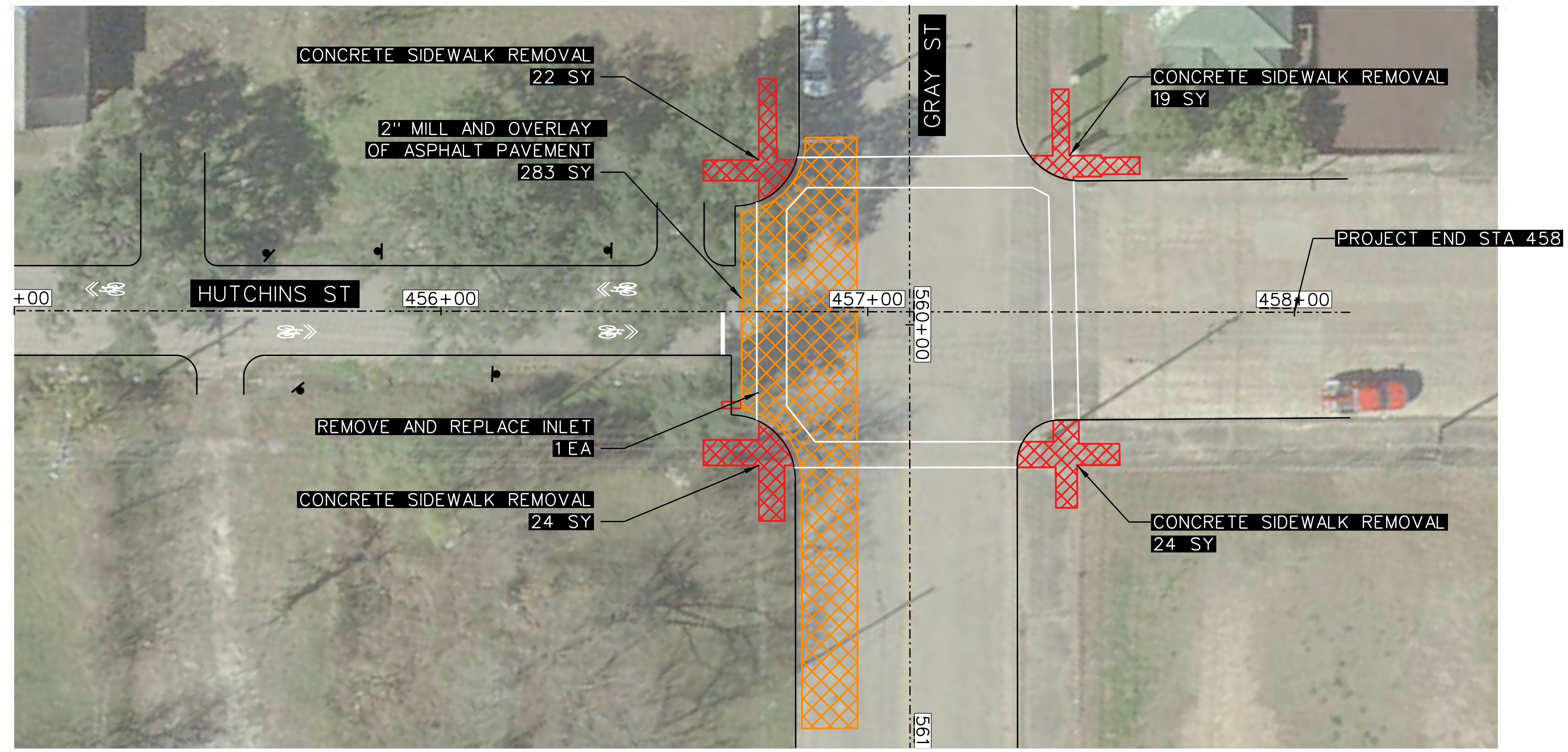
PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: PAVING SHEETS
CK'D BY: JC	HUTCHINS ST PAVING LAYOUT AT DENNIS ST AND TUAM ST
SCALE: 1"=20'	SHEET 1 OF 1
DATE: 04/12/19	APPROVED BY:

SHEET NO:
403

QUANTITIES (THIS SHEET ONLY)

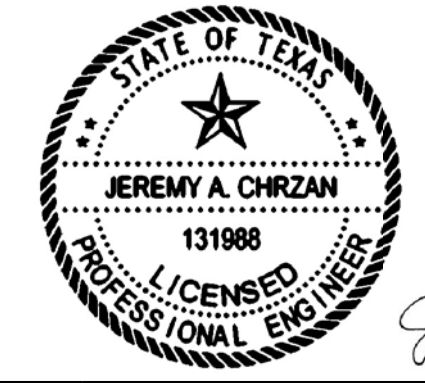
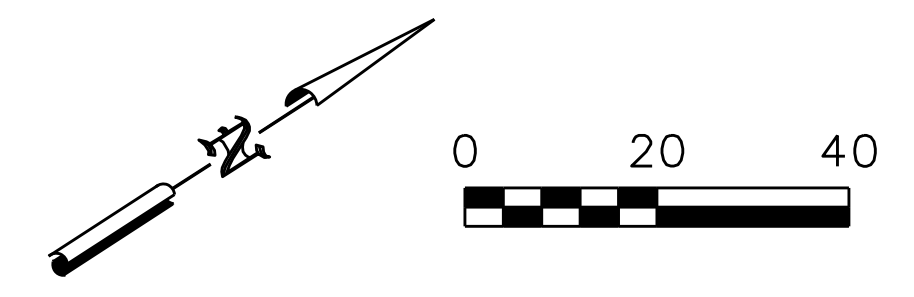
98 SY	CONCRETE SIDEWALK
43 LF	CONCRETE CURB AND GUTTER
23 SY	CONCRETE DRIVEWAY

- NOTES:
1. CURB RAMP LANDING AREAS MARKED "L" 2% MAX SLOPE FOR DRAINAGE
 2. SEE SHEET 308 FOR SIDEWALK DETAILS.
 3. SEE SHEET 309 FOR TYP COH RAMP DETAILS.



QUANTITIES (THIS SHEET ONLY)

283 SY	2" MILL AND OVERLAY OF ASPHALT PAVEMENT
89 SY	CONCRETE SIDEWALK REMOVAL
1 EA	REMOVE AND REPLACE INLET



Jeremy A. Chrzan, PE
04/12/2019

NO.	REVISIONS	DATE	NAME

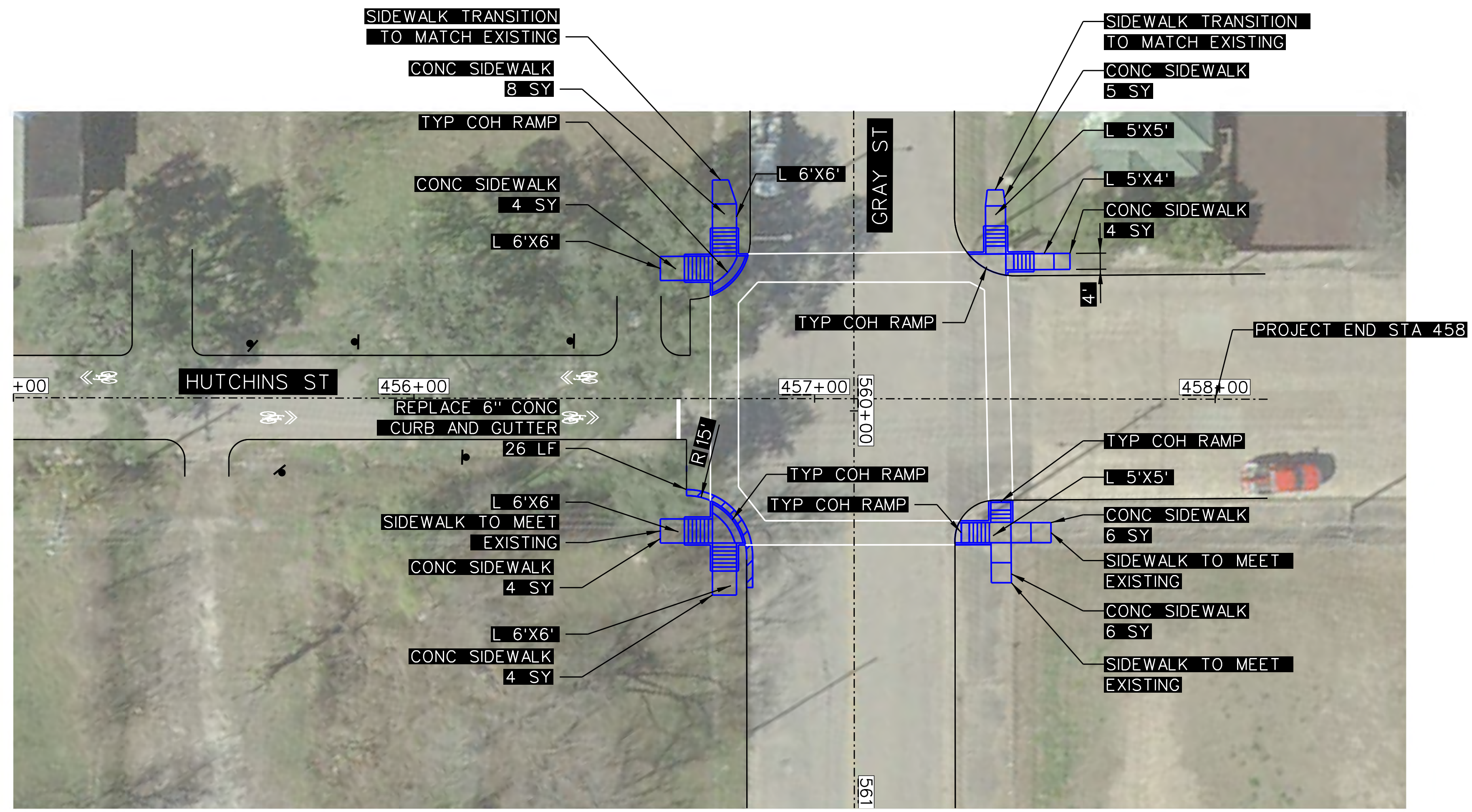
TOOLE DESIGN

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HARRIS COUNTY
 ENGINEERING DEPARTMENT

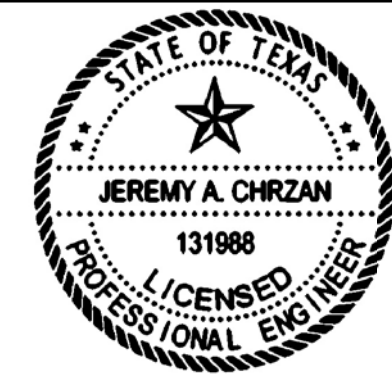
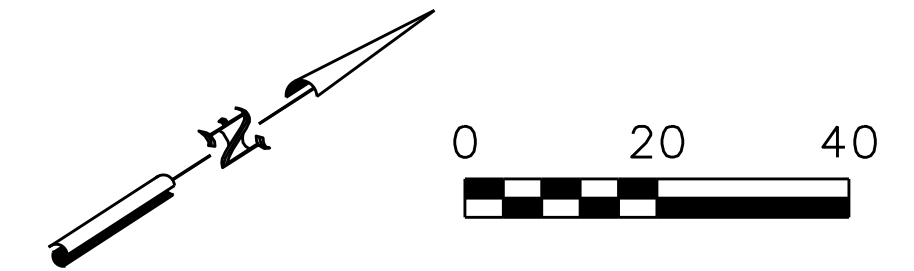
PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: PAVING SHEETS
CK'D BY: JC	HUTCHINS ST PAVING REMOVAL AND REPAIR AT GRAY ST
SCALE: 1"=20'	SHEET 1 OF 1
DATE: 04/12/19	APPROVED BY:
	SHEET NO: 404



- NOTES:
1. CURB RAMP LANDING AREAS MARKED "L" 2% MAX SLOPE FOR DRAINAGE
 2. SEE SHEET 308 FOR SIDEWALK DETAILS.
 3. SEE SHEET 309 FOR TYP COH RAMP DETAILS.

QUANTITIES (THIS SHEET ONLY)

- 41 SY CONCRETE SIDEWALK
- 26 LF CONCRETE CURB AND GUTTER

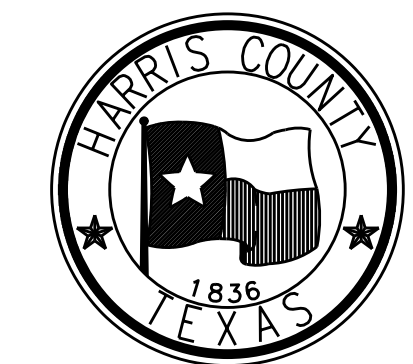


Jeremy A. Chrzan
 PE
 04/12/2019

NO.	REVISIONS	DATE	NAME

TOOLE DESIGN

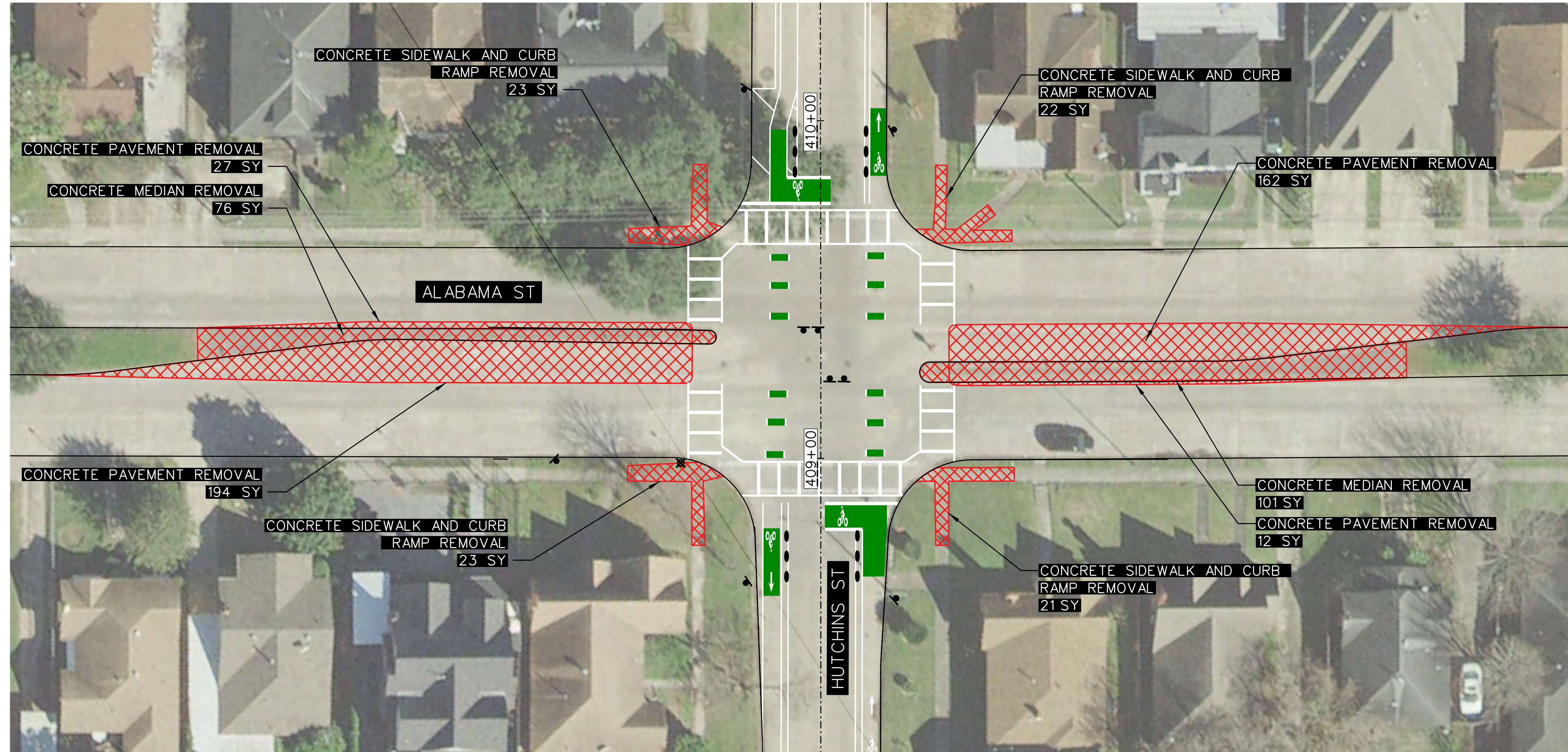
8484 Georgia Avenue, Suite 800, Silver Spring, MD 20910
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HARRIS COUNTY
 ENGINEERING DEPARTMENT

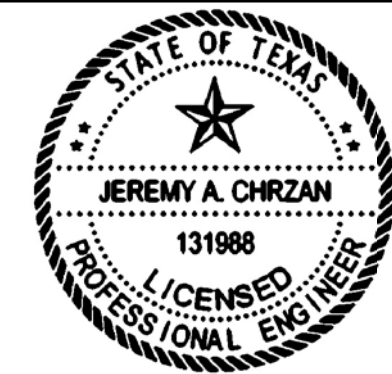
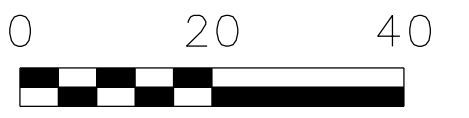
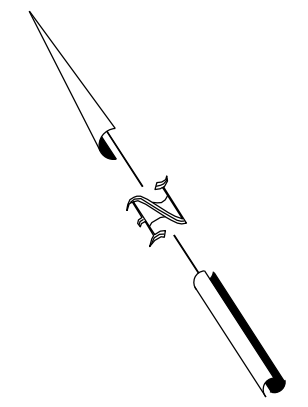
PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: PAVING SHEETS
CK'D BY: JC	HUTCHINS ST PAVING LAYOUT AT GRAY ST
SCALE: 1"=20'	SHEET 1 OF 1
DATE: 04/12/19	APPROVED BY:

SHEET NO:
405



QUANTITIES (THIS SHEET ONLY)

- 395 SY CONCRETE PAVEMENT REMOVAL
- 177 SY CONCRETE MEDIAN REMOVAL
- 89 SY CONCRETE SIDEWALK AND CURB RAMP REMOVAL

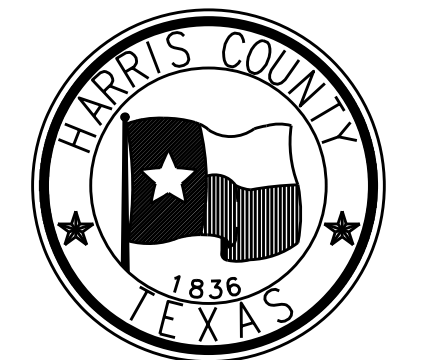


Jeremy A. Chrzan, PE
04/12/2019

NO.	REVISIONS	DATE	NAME

TOOLE DESIGN

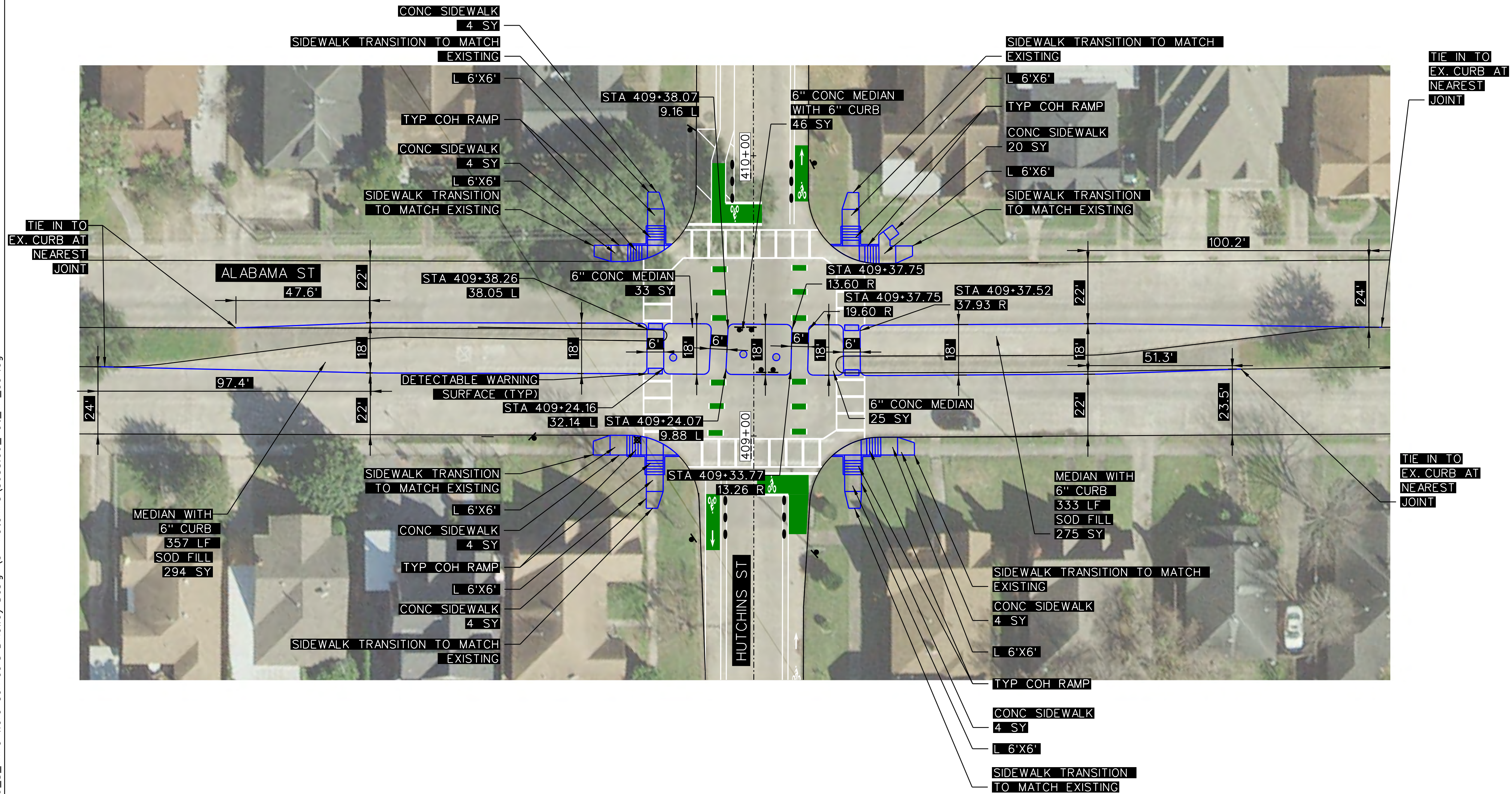
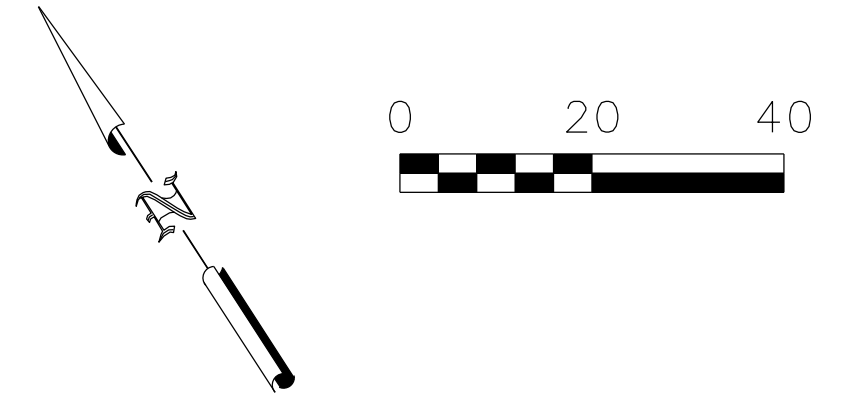
8484 Georgia Avenue, Suite 800, Silver Spring, MD 20910
TEL (301) 927-1900
TBPE Registration No. 14667



HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: PAVING SHEETS
CK'D BY: JC	HUTCHINS ST PAVING REMOVAL AND REPAIR AT ALABAMA ST
SCALE: 1"=20'	SHEET 1 OF 1
DATE: 04/12/19	APPROVED BY:

SHEET NO:
406

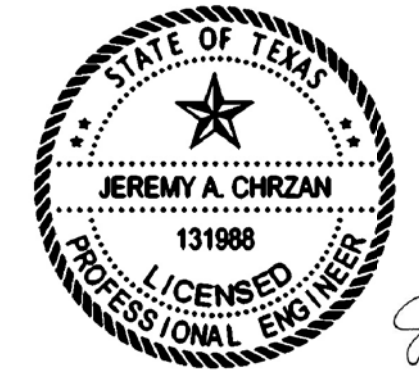


NOTES:

1. CURB RAMP LANDING AREAS MARKED "L" 2% MAX SLOPE FOR DRAINAGE
2. SEE SHEET 308 FOR SIDEWALK DETAILS.
3. SEE SHEET 309 FOR TYP COH RAMP DETAILS.

QUANTITIES (THIS SHEET ONLY)

44 SY	CONCRETE SIDEWALK
104 SY	CONCRETE MEDIAN
569 SY	SOD FILL

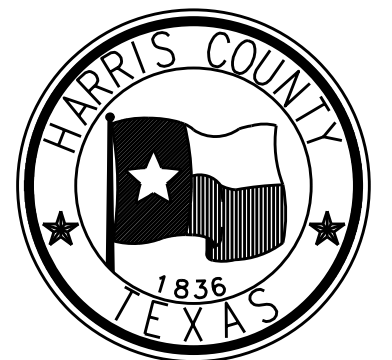


Jeremy A. Chrzan, PE
 04/12/2019

NO.	REVISIONS	DATE	NAME

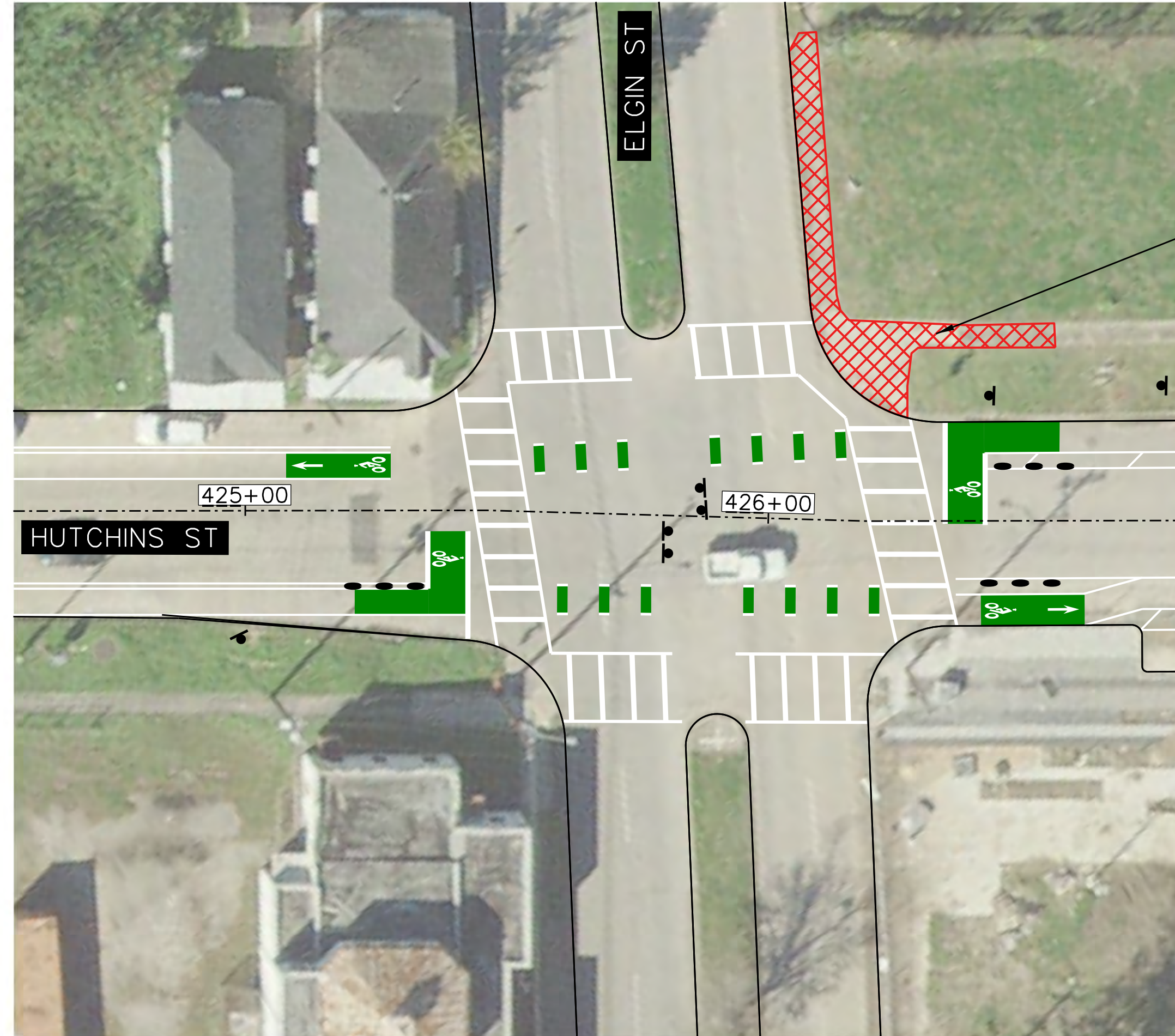
TOOLE DESIGN

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 TEL (301) 927-1900
 TBPE Registration No. 14667

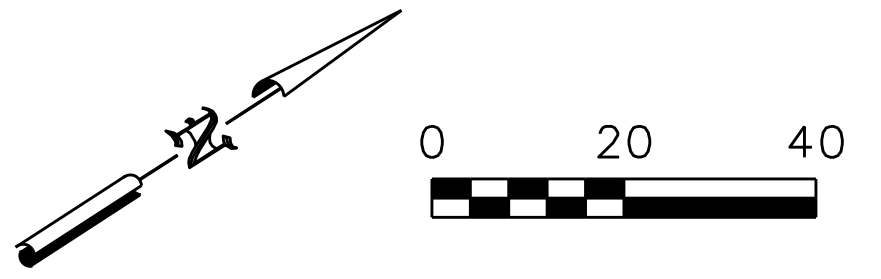


HARRIS COUNTY ENGINEERING DEPARTMENT

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: PAVING SHEETS
CK'D BY: JC	HUTCHINS ST PAVING LAYOUT AT ALABAMA ST
SCALE: 1"=20'	SHEET 1 OF 1
DATE: 04/12/19	APPROVED BY:

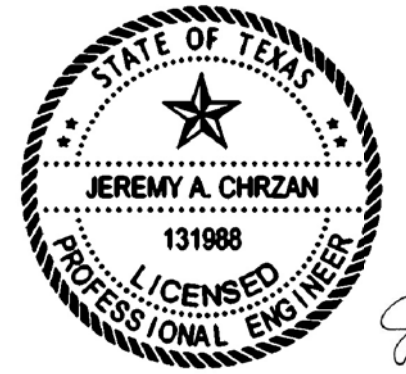


CONCRETE SIDEWALK
 AND CURB RAMP
 REMOVAL
 73 SY



QUANTITIES (THIS SHEET ONLY)

73 SY CONCRETE SIDEWALK AND CURB RAMP REMOVAL

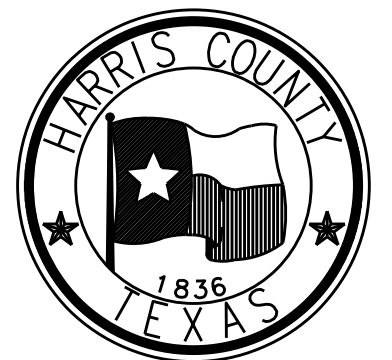


Jeremy A. Chrzan, PE
 04/12/2019

NO.	REVISIONS	DATE	NAME

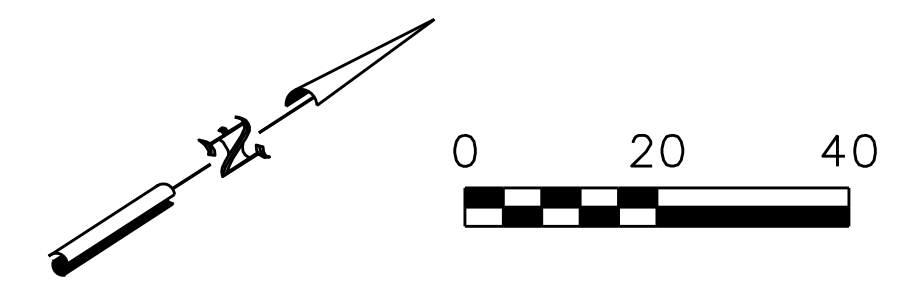
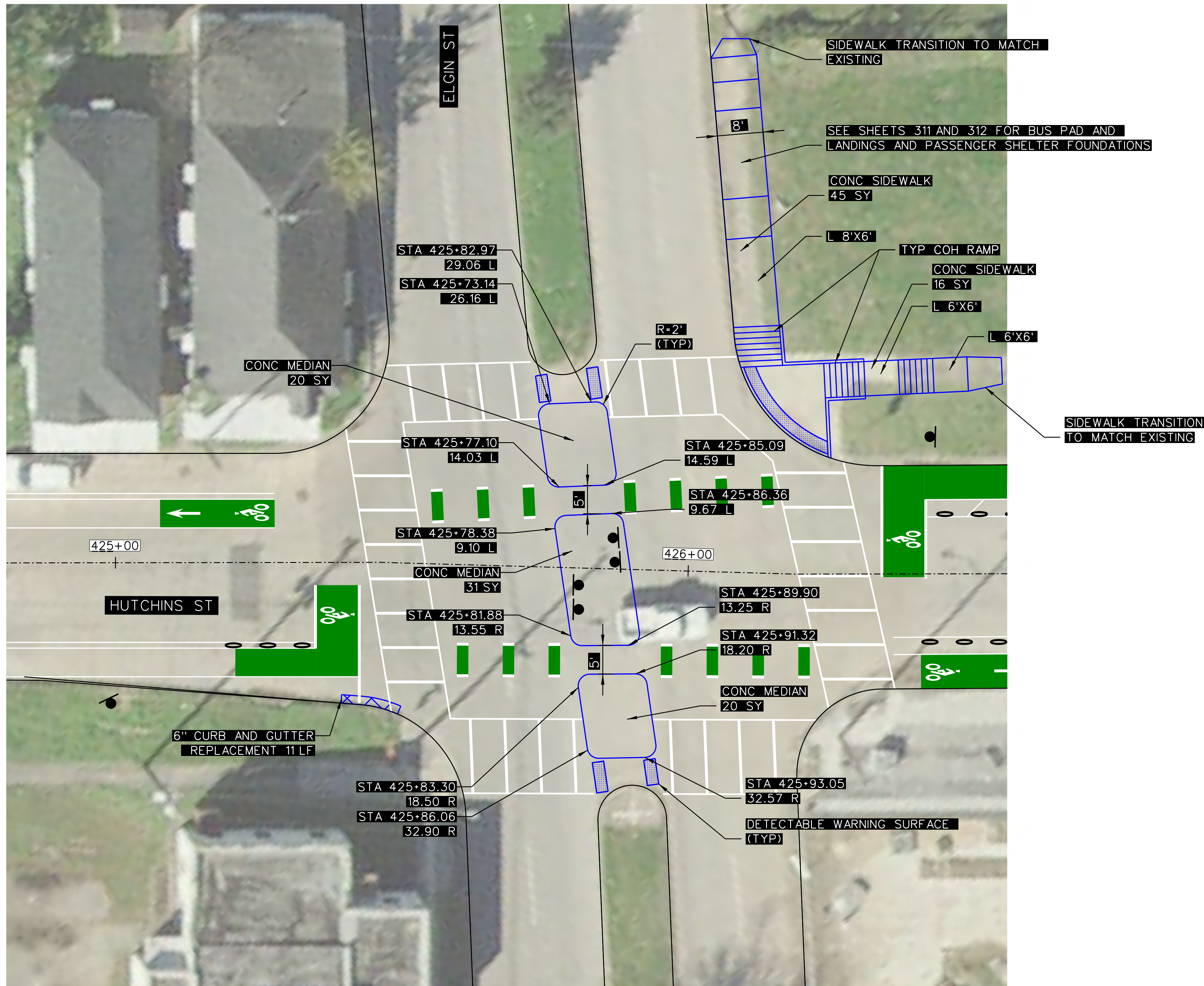
**TOOLE
 DESIGN**

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HARRIS COUNTY
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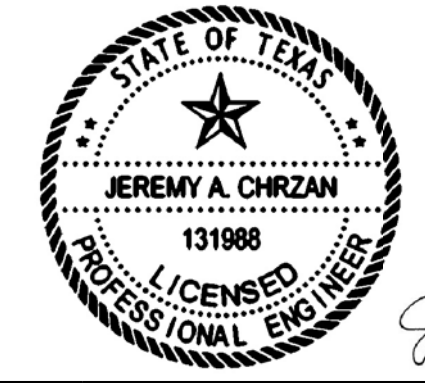
PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: PAVING SHEETS
CK'D BY: JC	HUTCHINS ST PAVING REMOVAL AND REPAIR AT ELGIN ST
SCALE: 1"=20'	SHEET 1 OF 1
DATE: 04/12/19	APPROVED BY:
	SHEET NO: 408



- NOTES:
1. CURB RAMP LANDING AREAS MARKED "L" 2% MAX SLOPE FOR DRAINAGE
 2. SEE SHEET 308 FOR SIDEWALK DETAILS.
 3. SEE SHEET 309 FOR TYP COH RAMP DETAILS.

QUANTITIES (THIS SHEET ONLY)

61 SY	CONCRETE SIDEWALK
51 SY	CONCRETE MEDIAN
11 LF	CURB AND GUTTER REPLACEMENT



Jeremy A. Chrzan, PE
04/12/2019

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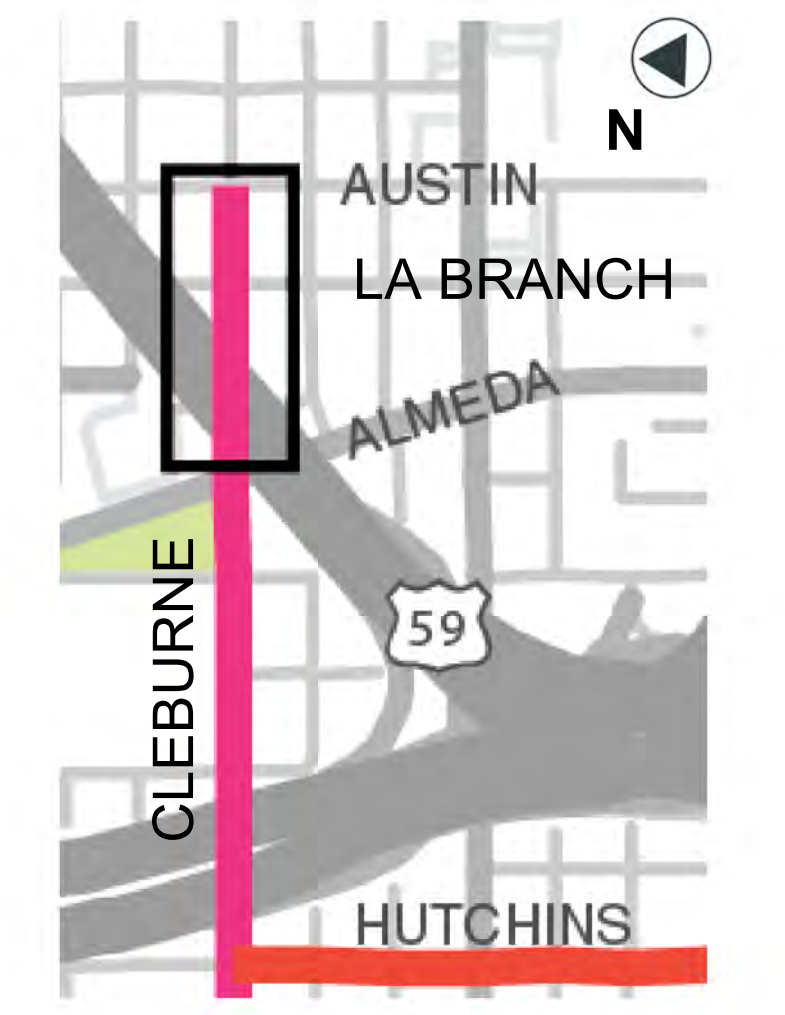
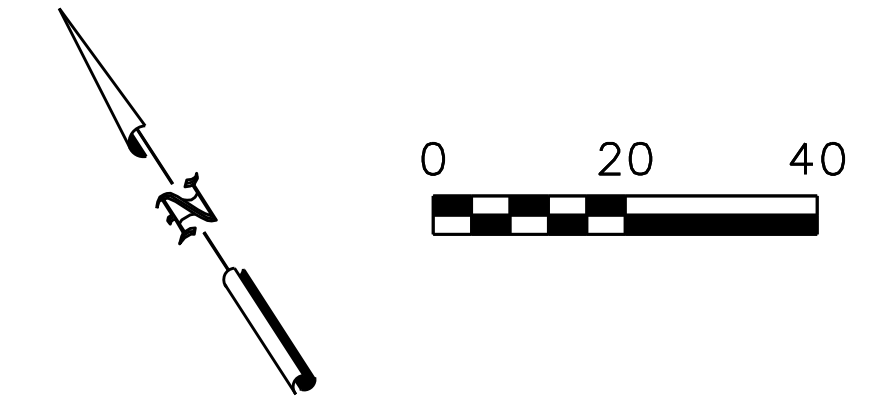
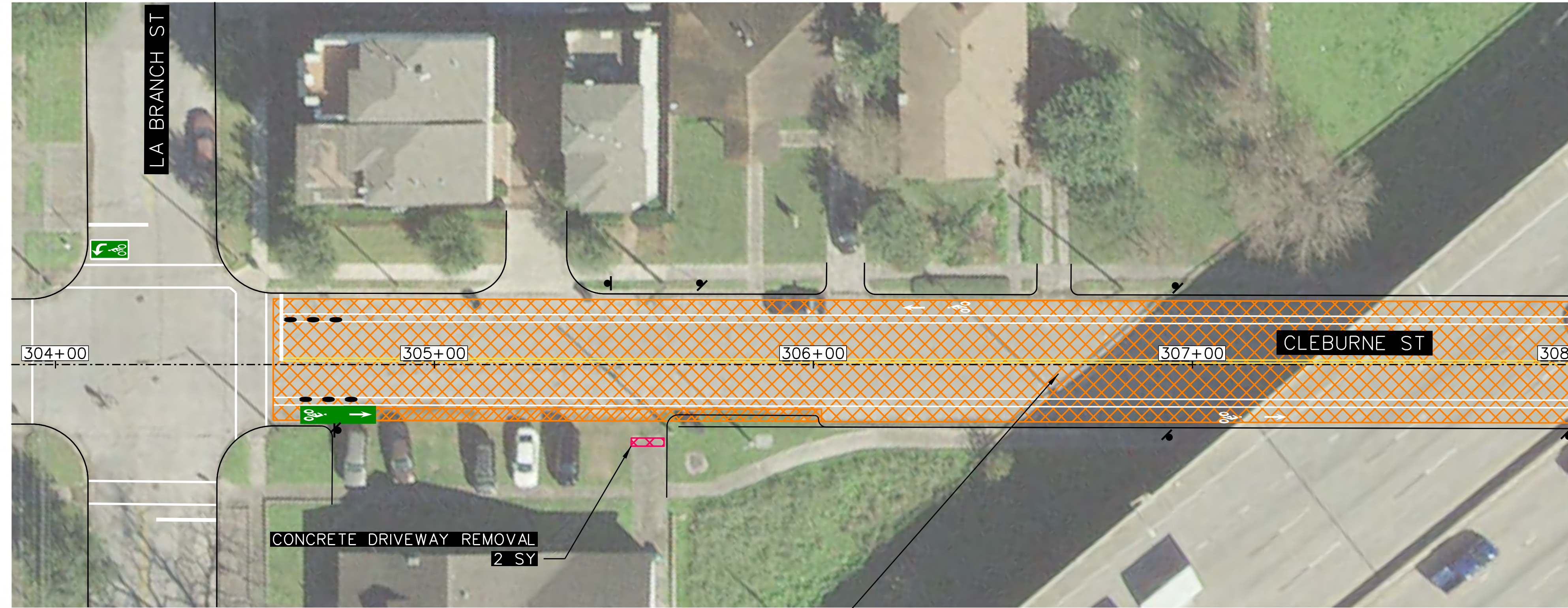
PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: PAVING SHEETS
CK'D BY: JC	HUTCHINS ST PAVING LAYOUT AT ELGIN ST
SCALE: 1"=10'	SHEET 1 OF 1
DATE: 04/12/19	APPROVED BY:
	SHEET NO: 409

PENTABLE: HC-BikewaysP_CB.tbi

USER: _USER_

DATE: 4/12/2019 5:46:26 PM

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2" MILL AND OVERLAY
REPAIR/REPLACEMENT OF ASPHALT
PAVEMENT
2027 SF THIS SHEET

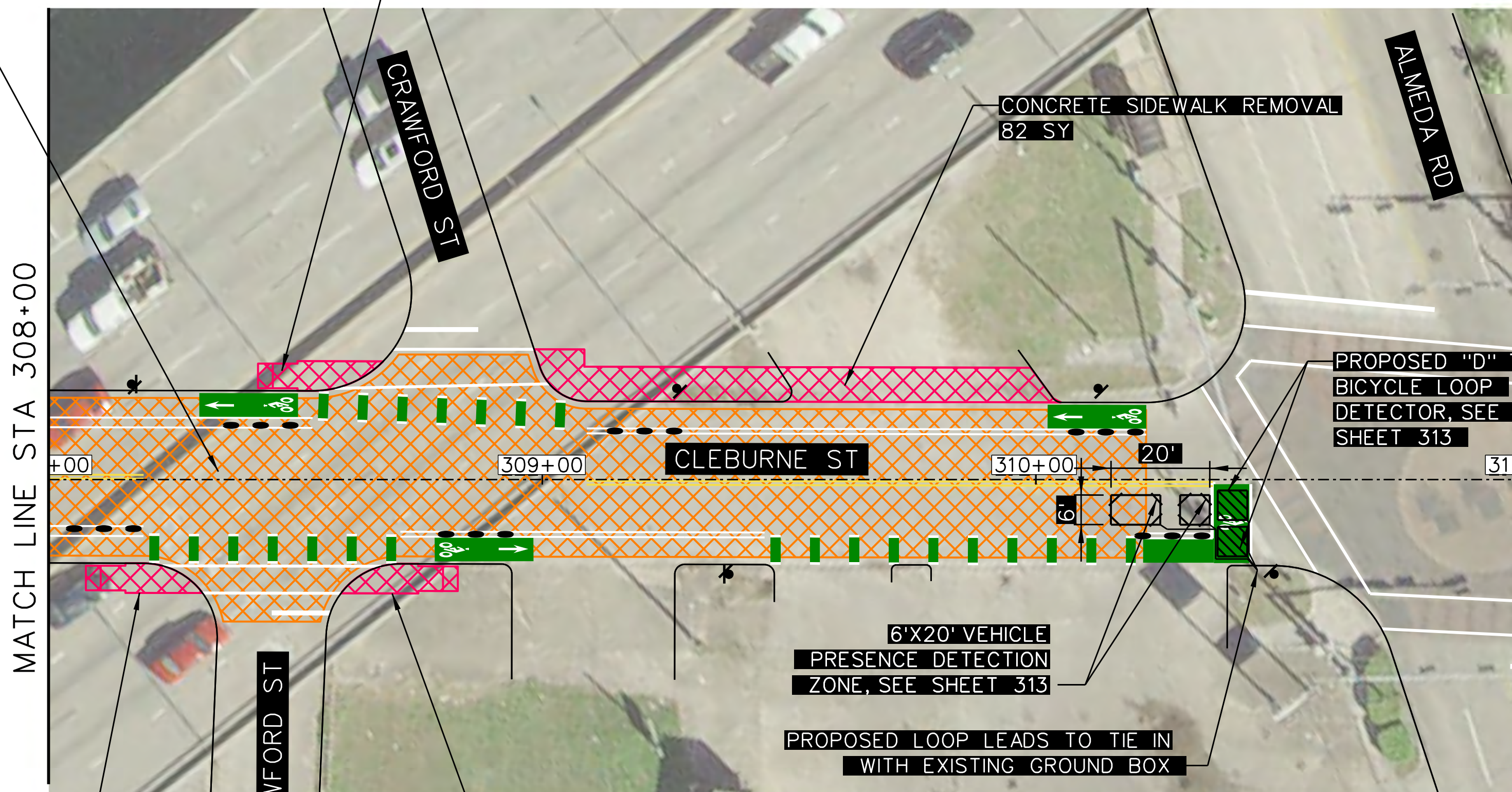
CONCRETE SIDEWALK REMOVAL
12 SY

CONCRETE SIDEWALK REMOVAL
82 SY

QUANTITIES (THIS SHEET ONLY)

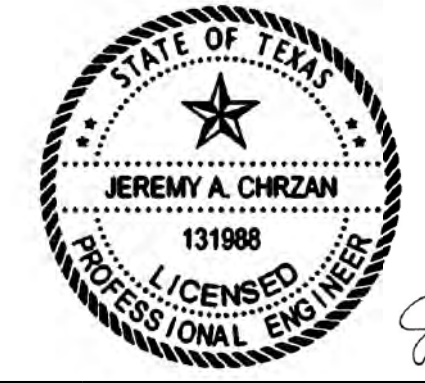
- 2027 SY 2" MILL AND OVERLAY REPAIR/REPLACEMENT OF ASPHALT PAVEMENT
- 116 SY CONCRETE SIDEWALK REMOVAL
- 2 SY CONCRETE DRIVEWAY REMOVAL
- 1240 LF STREET LOOP WIRE (14 AWG IMSA 51-5-1985)
- 144 LF LOOP DETECTOR SAW CUT

NOTE:
1. A 6' X 20' PRESENCE DETECTION ZONE SHALL CONSIST OF ONE (1) 6' X 6' DETECTOR LOOP PLACED IN EACH LANE BEGINNING AT THE STOP LINE, AND ONE (1) 6' X 10' DETECTOR LOOP PLACED 4 FEET UPSTREAM OF THE TRAILING EDGE OF THE FIRST DETECTOR.



CONCRETE SIDEWALK REMOVAL
11 SY

CONCRETE SIDEWALK REMOVAL
11 SY

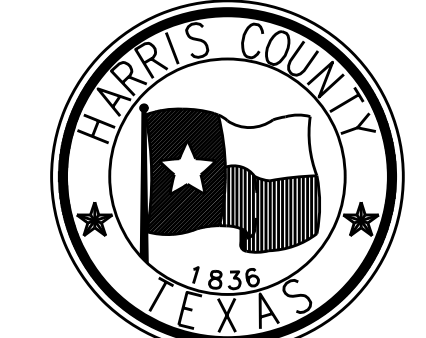


Jeremy A. Chrzan PE
04/12/2019

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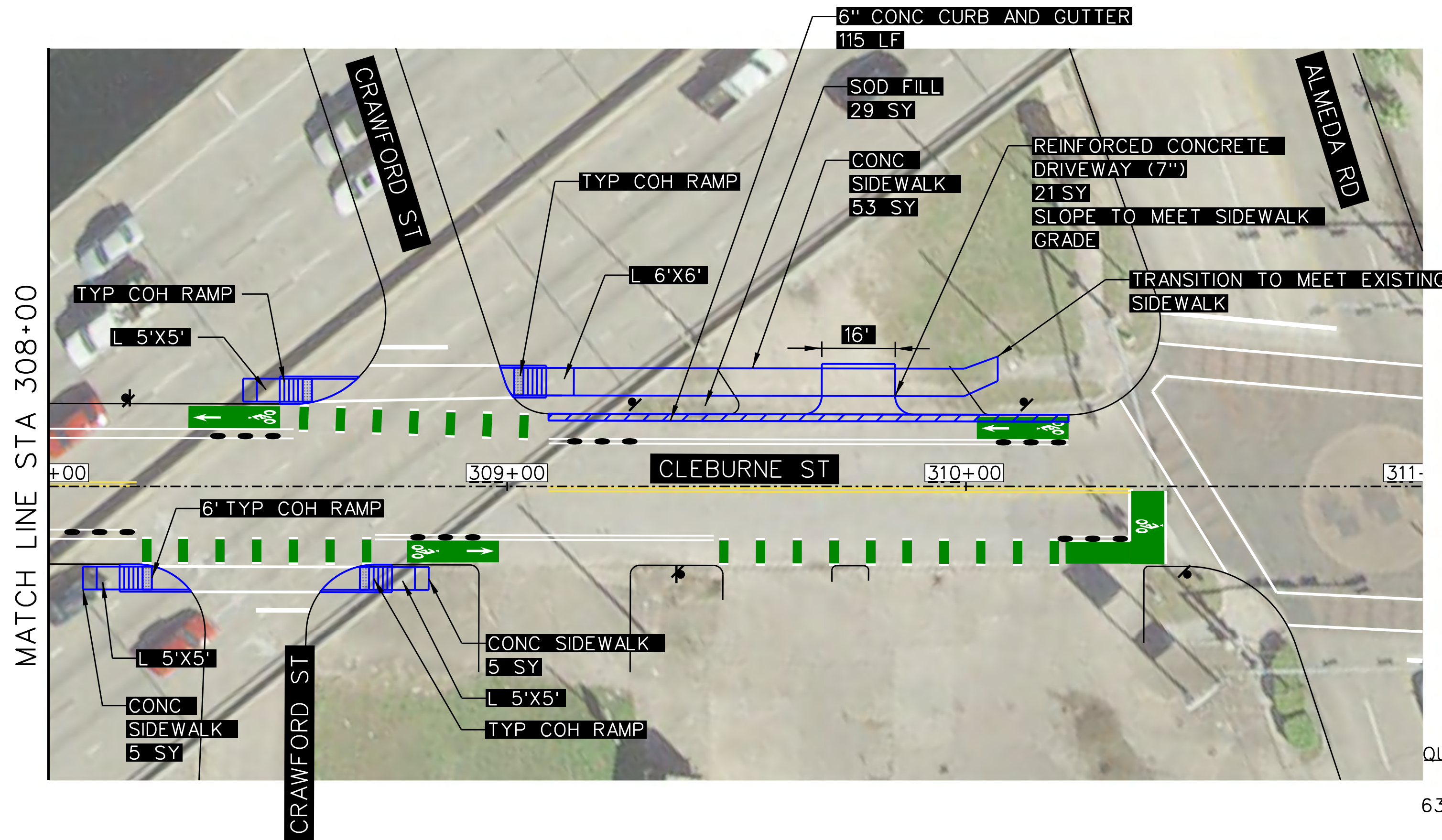
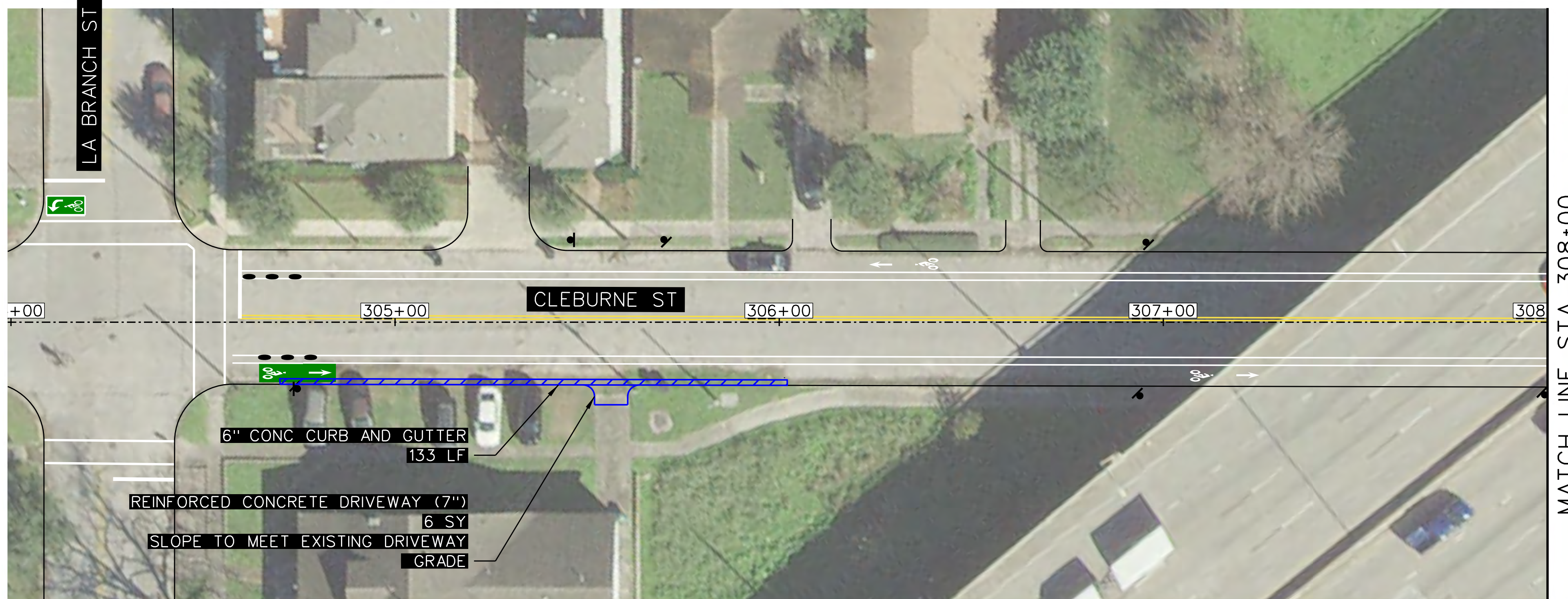


**HARRIS COUNTY
ENGINEERING DEPARTMENT**

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: PAVING SHEETS
CK'D BY: JC	DESCRIPTION: CLEBURNE ST PAVING REMOVAL AND REPAIR BETWEEN LA BRANCH ST AND ALMEDA ST
SCALE: 1" = 20'	SHEET 1 OF 1
DATE: 04/12/19	APPROVED BY:
	SHEET NO: 410

PENTABLE: HC-BikewaysP_CB.tbl

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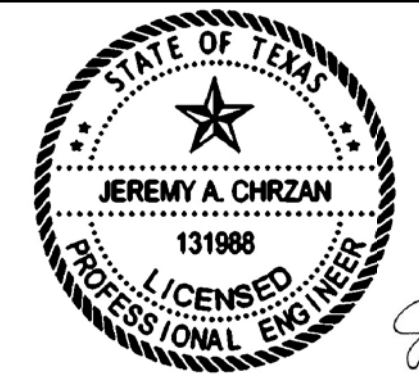
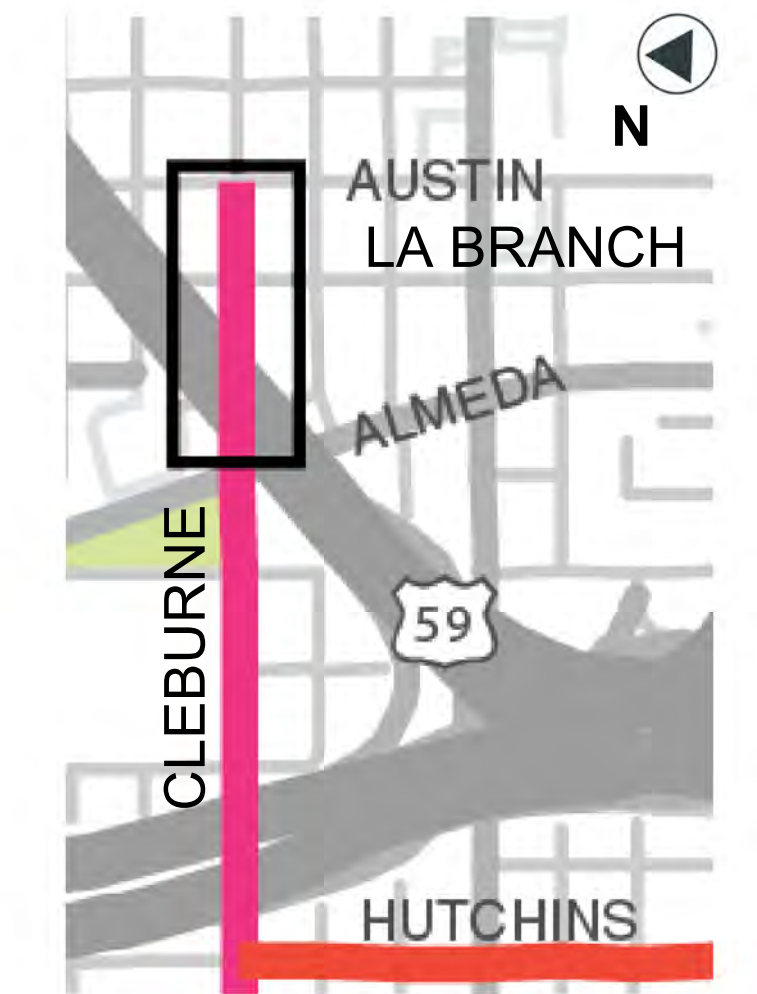
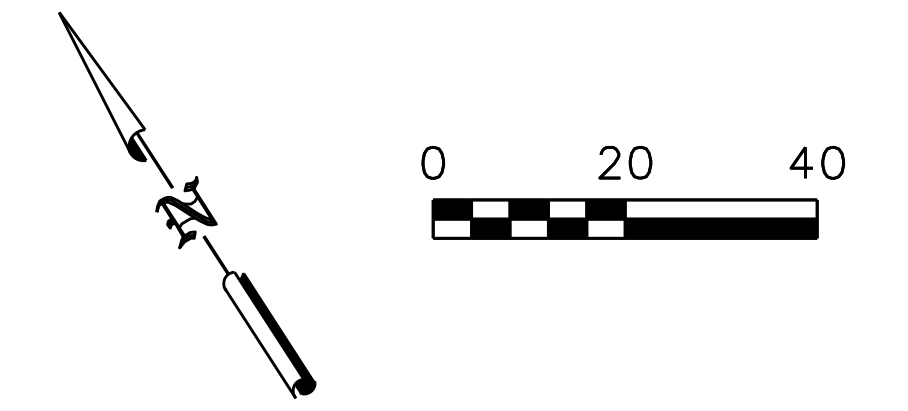


NOTES:

1. CURB RAMP LANDING AREAS MARKED "L" 2% MAX SLOPE FOR DRAINAGE
2. SEE SHEET 308 FOR SIDEWALK DETAIL
3. SEE SHEET 309 FOR 6' TYP COH RAMP DETAIL

QUANTITIES (THIS SHEET ONLY)

63 SY	CONCRETE SIDEWALK
250 LF	CONCRETE CURB AND GUTTER
27 SY	REINFORCED CONCRETE DRIVEWAY
29 SY	SOD FILL

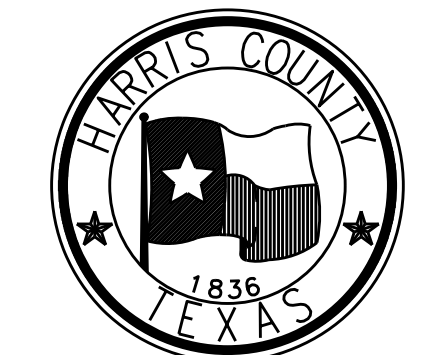


Jeremy A. Chrzan, PE
04/12/2019

NO.	REVISIONS	DATE	NAME

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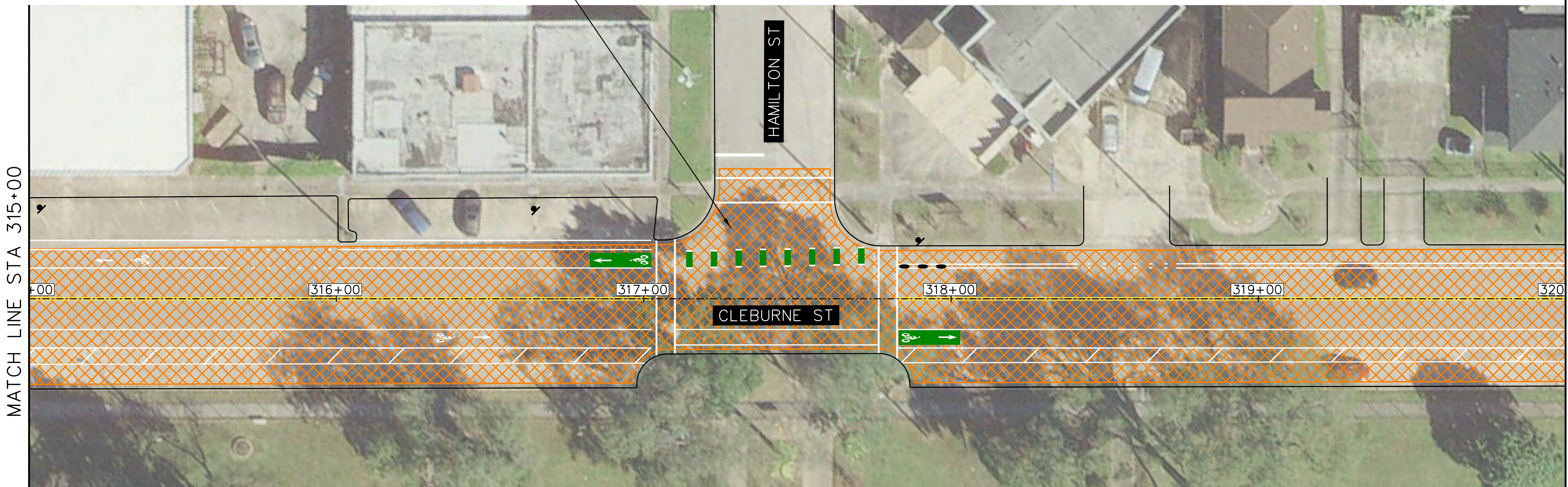
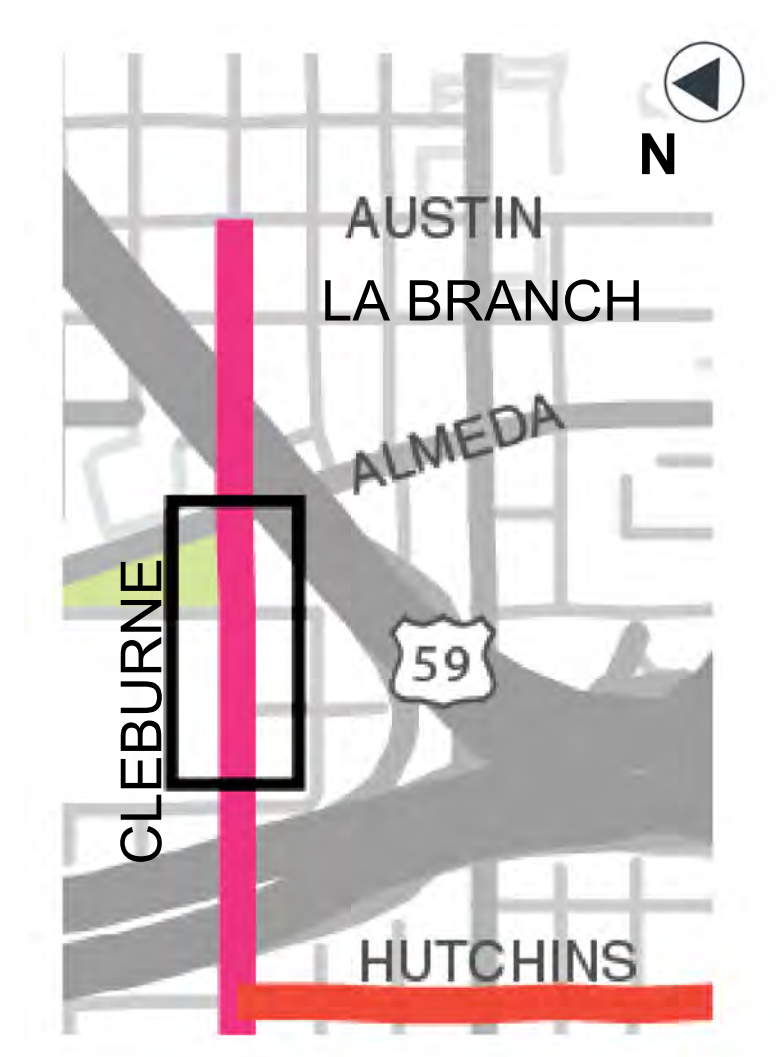
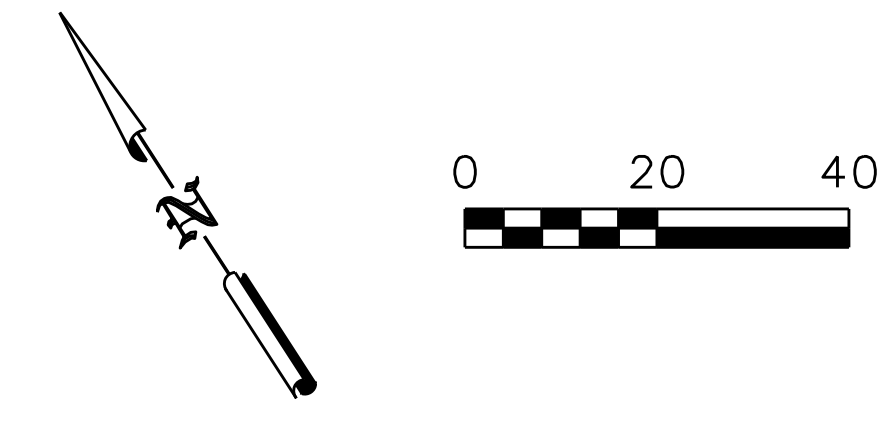
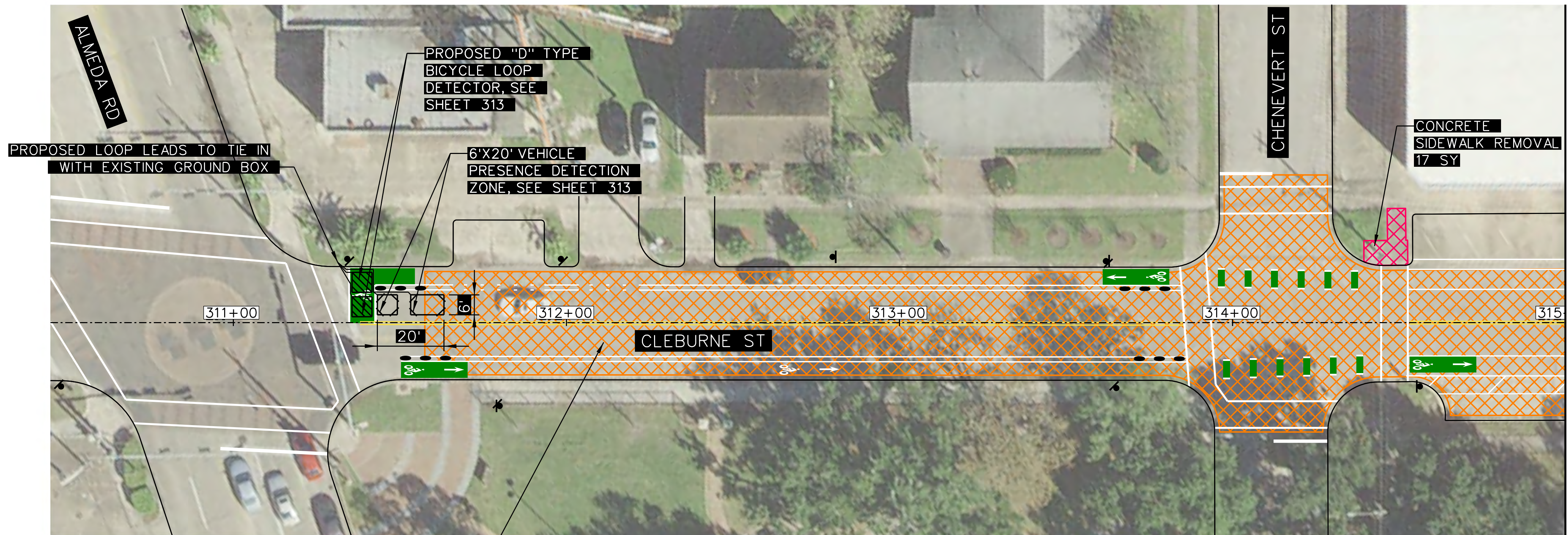
HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: PAVING SHEETS
CK'D BY: JC	CLEBURNE ST PAVING LAYOUT BETWEEN LA BRANCH ST AND ALAMEDA ST
SCALE: 1" = 20'	SHEET 1 OF 1
DATE: 04/12/19	APPROVED BY:

SHEET NO:
411

PENTABLE: HC-BikewaysP_CB.tbi

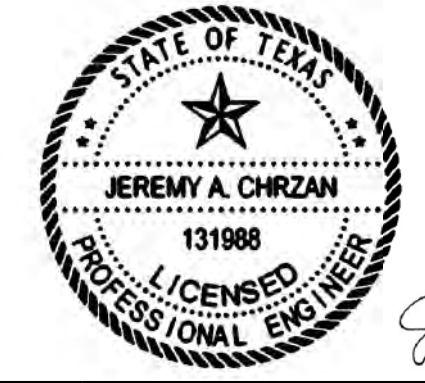
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NOTE:
 1. A 6' X 20' PRESENCE DETECTION ZONE SHALL CONSIST OF ONE (1) 6' X 6' DETECTOR LOOP PLACED IN EACH LANE BEGINNING AT THE STOP LINE, AND ONE (1) 6' X 10' DETECTOR LOOP PLACED 4 FEET UPSTREAM OF THE TRAILING EDGE OF THE FIRST DETECTOR.

QUANTITIES (THIS SHEET ONLY)

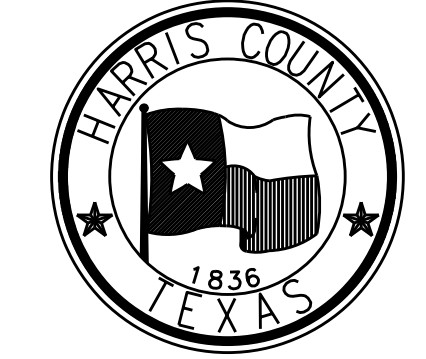
3814 SY	2" MILL AND OVERLAY REPAIR/REPLACEMENT OF ASPHALT PAVEMENT
17 SY	CONCRETE SIDEWALK REMOVAL
744 LF	STREET LOOP WIRE (14 AWG IMSA 51-5-1985)
144 LF	LOOP DETECTOR SAW CUT



NO.	REVISIONS	DATE	NAME



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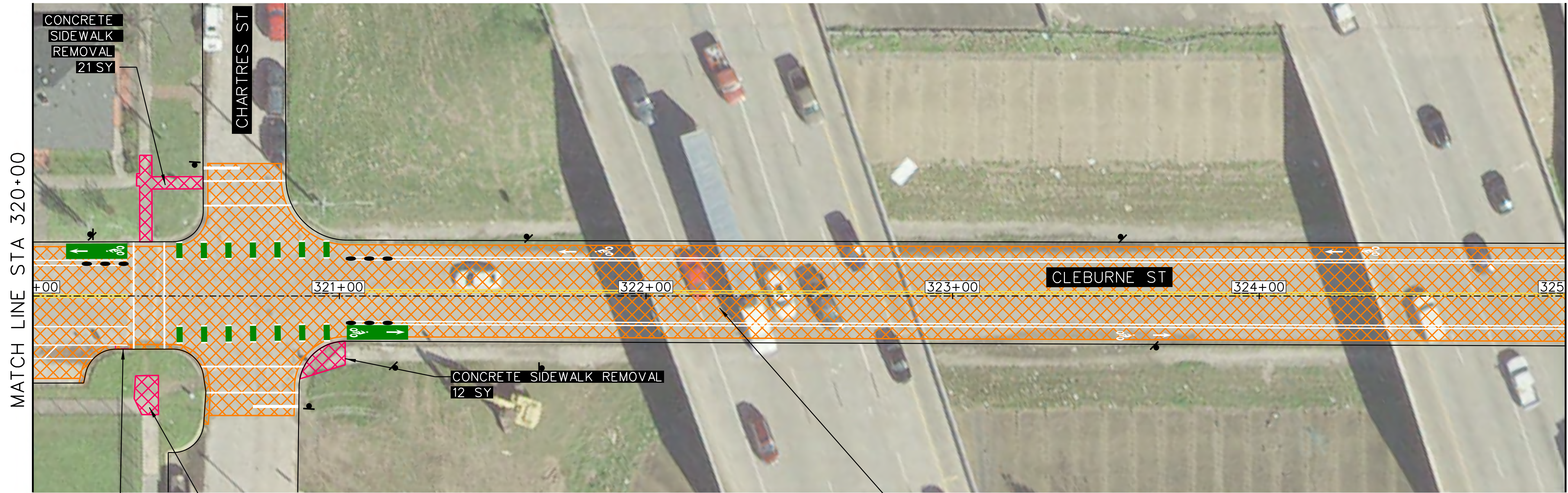


HARRIS COUNTY
 ENGINEERING DEPARTMENT

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: PAVING SHEETS
CK'D BY: JC	CLEBURNE ST PAVING REMOVAL AND REPAIR BETWEEN ALMEDA ST AND HUTCHINS ST
SCALE: 1" = 20'	SHEET 1 OF 2
DATE: 04/12/19	APPROVED BY:
	SHEET NO: 412

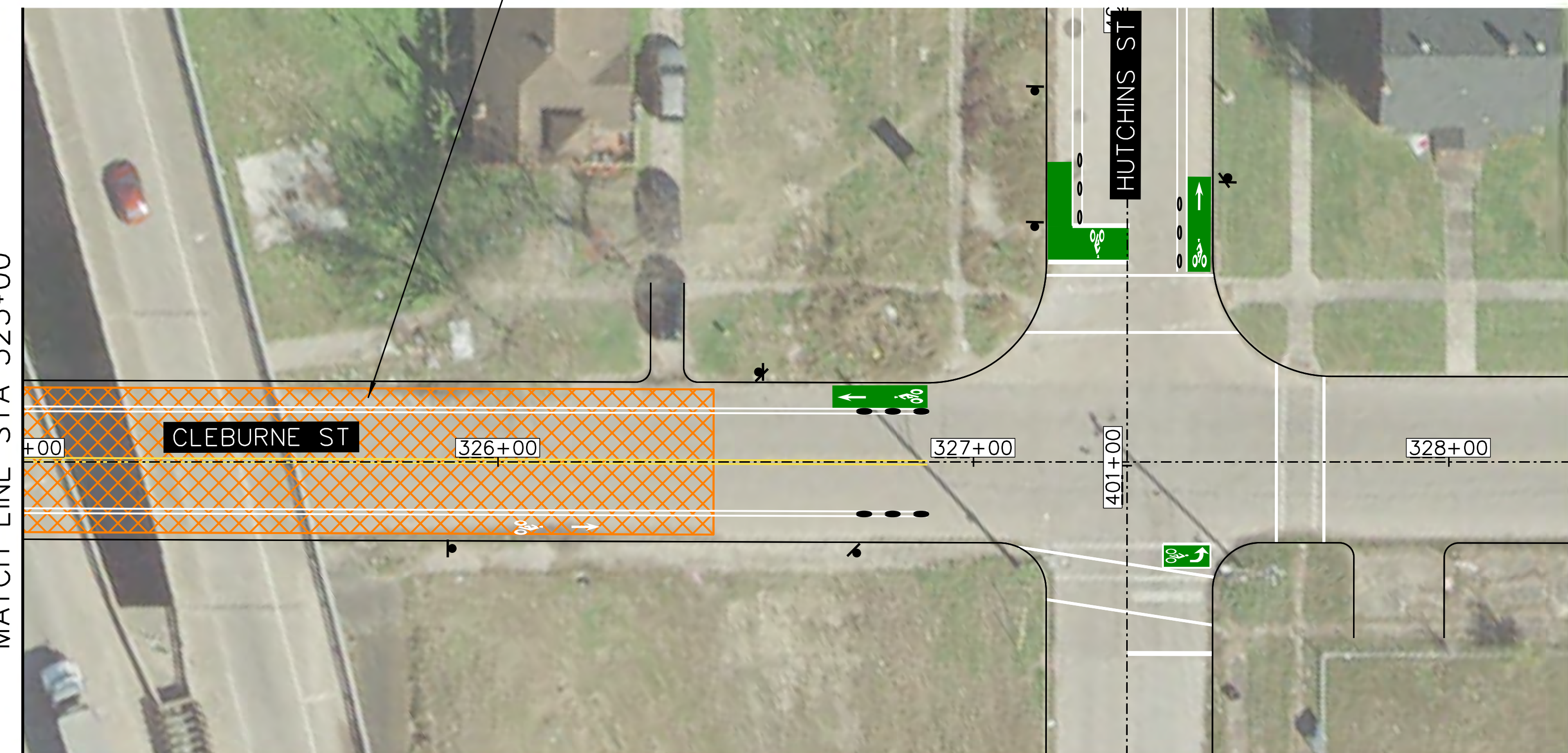
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MATCH LINE STA 320+00

MATCH LINE STA 325+00



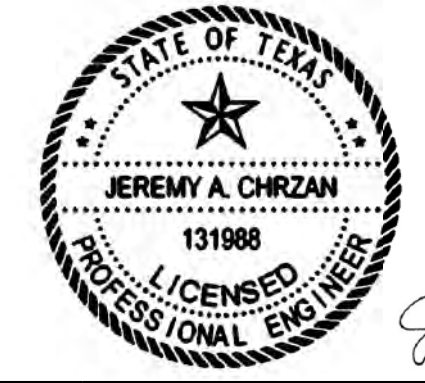
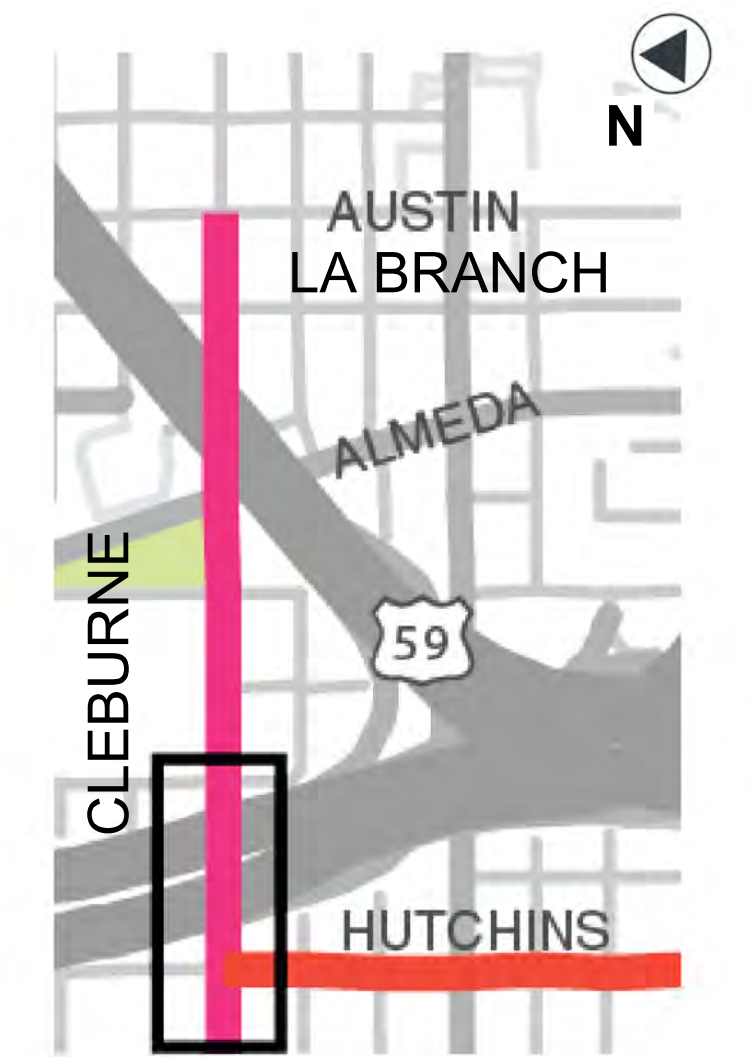
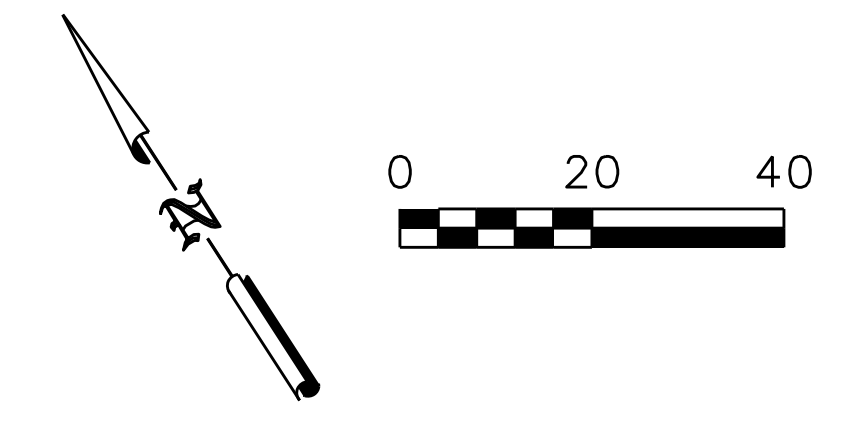
MATCH LINE STA 325+00

2" MILL AND OVERLAY
REPAIR/REPLACEMENT OF
ASPHALT PAVEMENT
2429 SY THIS SHEET

QUANTITIES (THIS SHEET ONLY)

2429 SY 2" MILL AND OVERLAY REPAIR/REPLACEMENT OF ASPHALT PAVEMENT

44 SY CONCRETE SIDEWALK REMOVAL



Jeremy A. Chrzan, PE
04/12/2019

NO.	REVISIONS	DATE	NAME

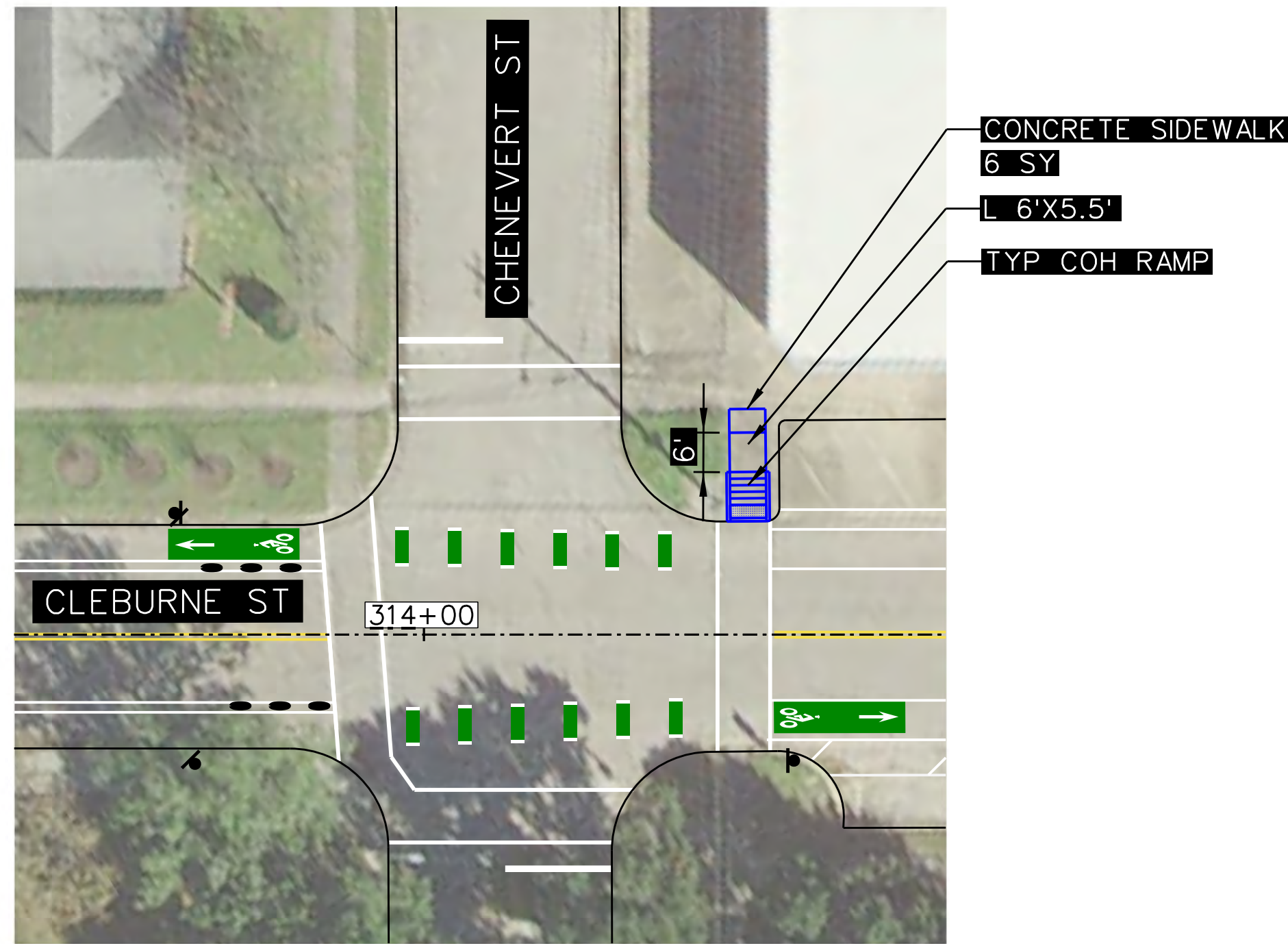
TOOLE DESIGN

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HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: PAVING SHEETS
CK'D BY: JC	CLEBURNE ST PAVING REMOVAL AND REPAIR BETWEEN ALMEDA ST AND HUTCHINS ST
SCALE: 1" = 20'	SHEET 2 OF 2
DATE: 04/12/19	APPROVED BY:
	SHEET NO: 413

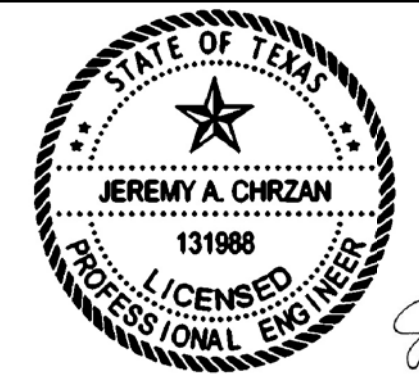
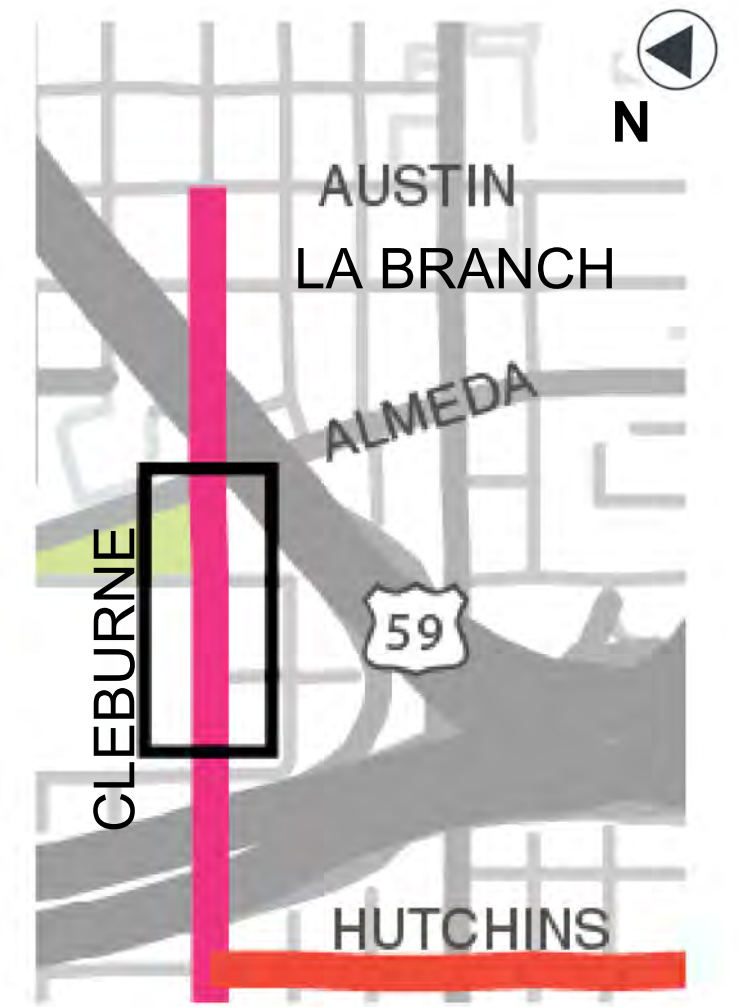
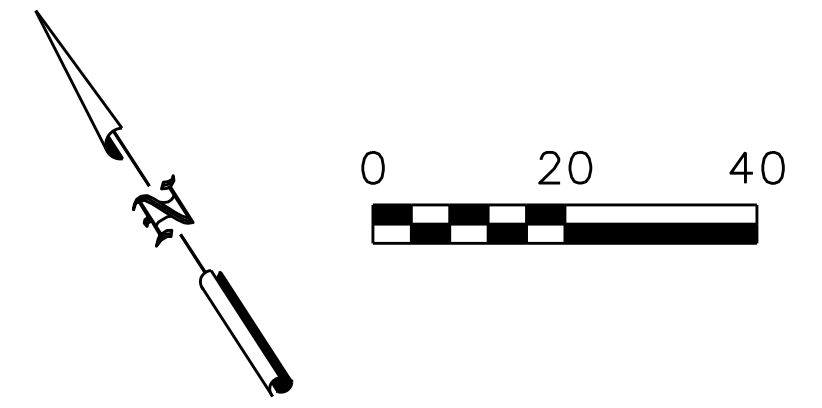
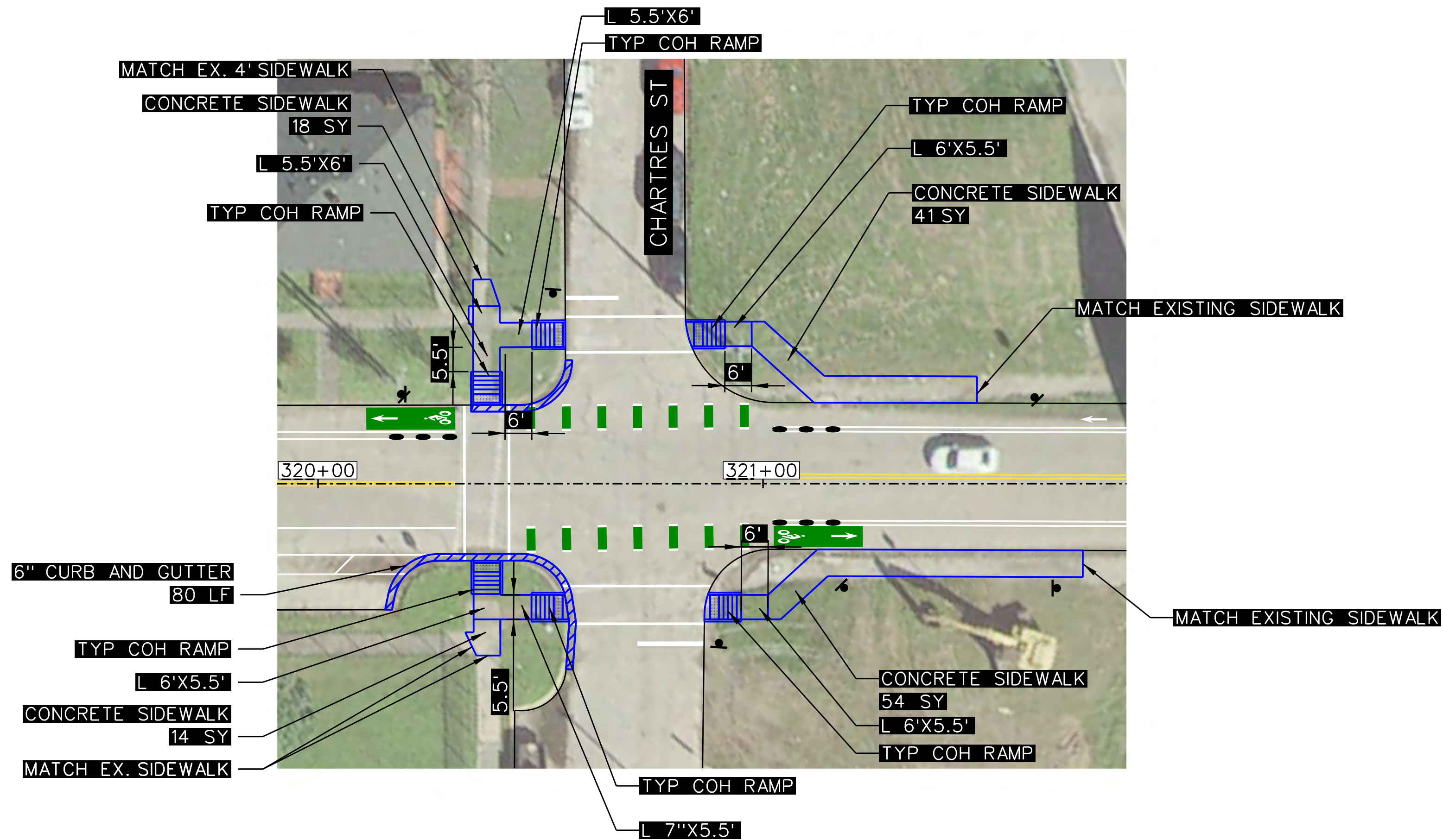


QUANTITIES (THIS SHEET ONLY)

- 133 SY CONCRETE SIDEWALK
- 80 LF CONCRETE CURB AND GUTTER

NOTES:

1. CURB RAMP LANDING AREAS MARKED "L" 2% MAX SLOPE FOR DRAINAGE
2. SEE SHEET 308 FOR SIDEWALK DETAILS.
3. SEE SHEET 309 FOR TYP COH RAMP DETAILS.

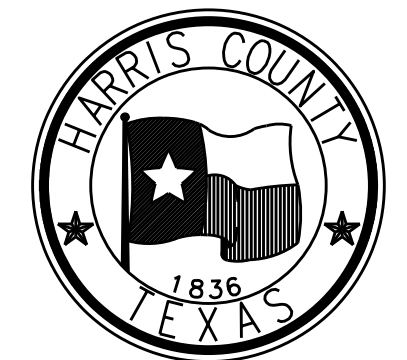


Jeremy A. Chrzan PE
04/12/2019

NO.	REVISIONS	DATE	NAME

TOOLE DESIGN

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HARRIS COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE: HUTCHINS/CLEBURNE STREETS ON-STREET BIKEWAY	
DRAWN BY: CB/FL	SHEET DESCRIPTION: PAVING SHEETS
CK'D BY: JC	CLEBURNE ST PAVING LAYOUT AT CHENEVERT ST AND CHARTRES ST
SCALE: 1" = 20'	SHEET 1 OF 1
DATE: 04/12/19	APPROVED BY: