



ANNUAL STREET MAINTENANCE PLAN UPDATE

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ANNUAL STREET MAINTENANCE PLAN UPDATE

PREVENTATIVE/PRESERVATION ACTIVITIES

Slurry Seal

- A slurry seal is the application of a mixture of water, asphalt emulsion, aggregate (very small crushed rock), and additives to an existing asphalt pavement surface.
- A slurry seal is an emulsion with aggregates as part of the mixture.
- The placement of this mixture on existing pavement is the “seal” of the pavement surface.



ANNUAL STREET MAINTENANCE PLAN UPDATE

PREVENTATIVE/PRESERVATION ACTIVITIES

Fog Seal

- Fog seal is a single application, typically light, of emulsified asphalt to an existing asphalt surface.
- This type of maintenance treatment can be valuable aid to renew weathered (oxidized) asphalt surfaces and improve the surface appearance, seal minor cracks and surface voids, and inhibit raveling as well as preventing moisture from penetrating into the hot mix.



ANNUAL STREET MAINTENANCE PLAN UPDATE

REHABILITATION/RECONSTRUCTION ACTIVITIES

Mill & Overlay

- A “mill & overlay” is a street rehabilitation technique that requires the removal of the top layer (typically 2") of a street by the grinding action of a large milling machine. After the top layer is removed, a new layer of asphalt pavement is put in its place.
- Well-designed pavements with a strong base and adequate thickness to support traffic loads will deteriorate from the surface down. Therefore, mill and overlays are an important part of the pavement lifecycle as they replace deteriorated surfaces with fresh new asphalt.



ANNUAL STREET MAINTENANCE PLAN UPDATE

PCI SCORING VISUAL

Pavement Condition
86 - 100 (Good)



Pavement Condition
71 - 85 (Satisfactory)



Pavement Condition
56 - 70 (Fair)



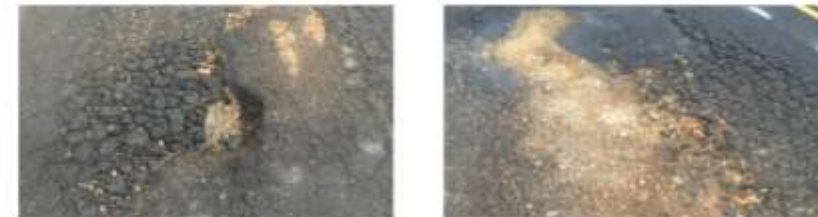
Pavement Condition
41 - 55 (Poor)



Pavement Condition
11 - 40 (Very Poor/Serious)

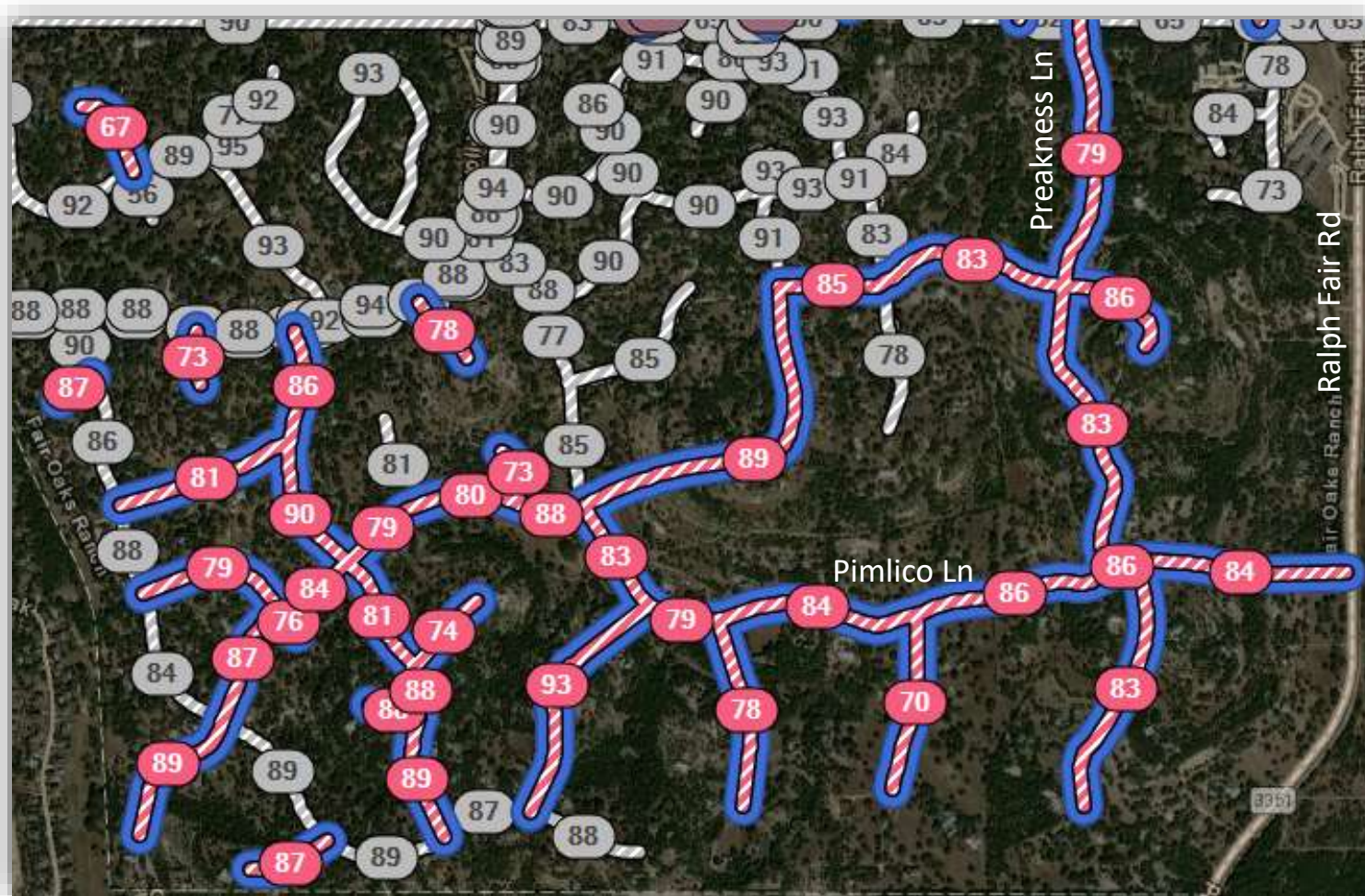


Pavement Condition
0 - 10 (Failed)



ANNUAL STREET MAINTENANCE PLAN UPDATE

PCI SCORING VISUAL



For roads in generally satisfactory condition (PCI 71-85) the appropriate treatment is fog seal to preserve pavement life span



ANNUAL STREET MAINTENANCE PLAN UPDATE

PCI SCORING VISUAL



For roads in generally fair condition (PCI 56-70) the appropriate treatment is slurry or micro-seal

For roads in generally poor condition (PCI 41-55) the appropriate treatment is mill & overlay

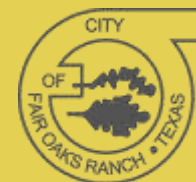
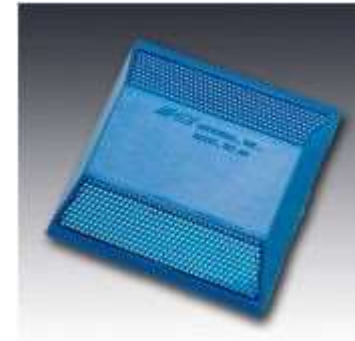
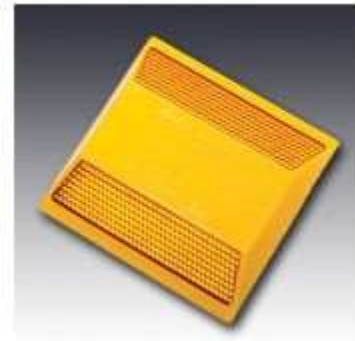


ANNUAL STREET MAINTENANCE PLAN UPDATE

SAFETY ENHANCEMENTS

Curve Safety Treatments

- Proposed Raised Pavement Markings (RPM's)
 - ❖ ~ 30' Spacing on Straightaways
 - ❖ ~ 20' Spacing on Curves
- Install / Adjust Chevron Signs
- Supplemental Safety Signage
- Initial Roadways:
 - ❖ Rolling Acres Trail
 - ❖ Post Oak Trail
 - ❖ Meadow Creek Trail



ANNUAL STREET MAINTENANCE PLAN UPDATE

SAFETY ENHANCEMENTS

Curve Safety Treatments

Raised Pavement Markings (RPMs)

Rolling Acres Trail

- Straightaways ~ 530 RPMs
 - Curves ~ 270 RPMs
- Total ~ 800 RPMs

Post Oak Trail

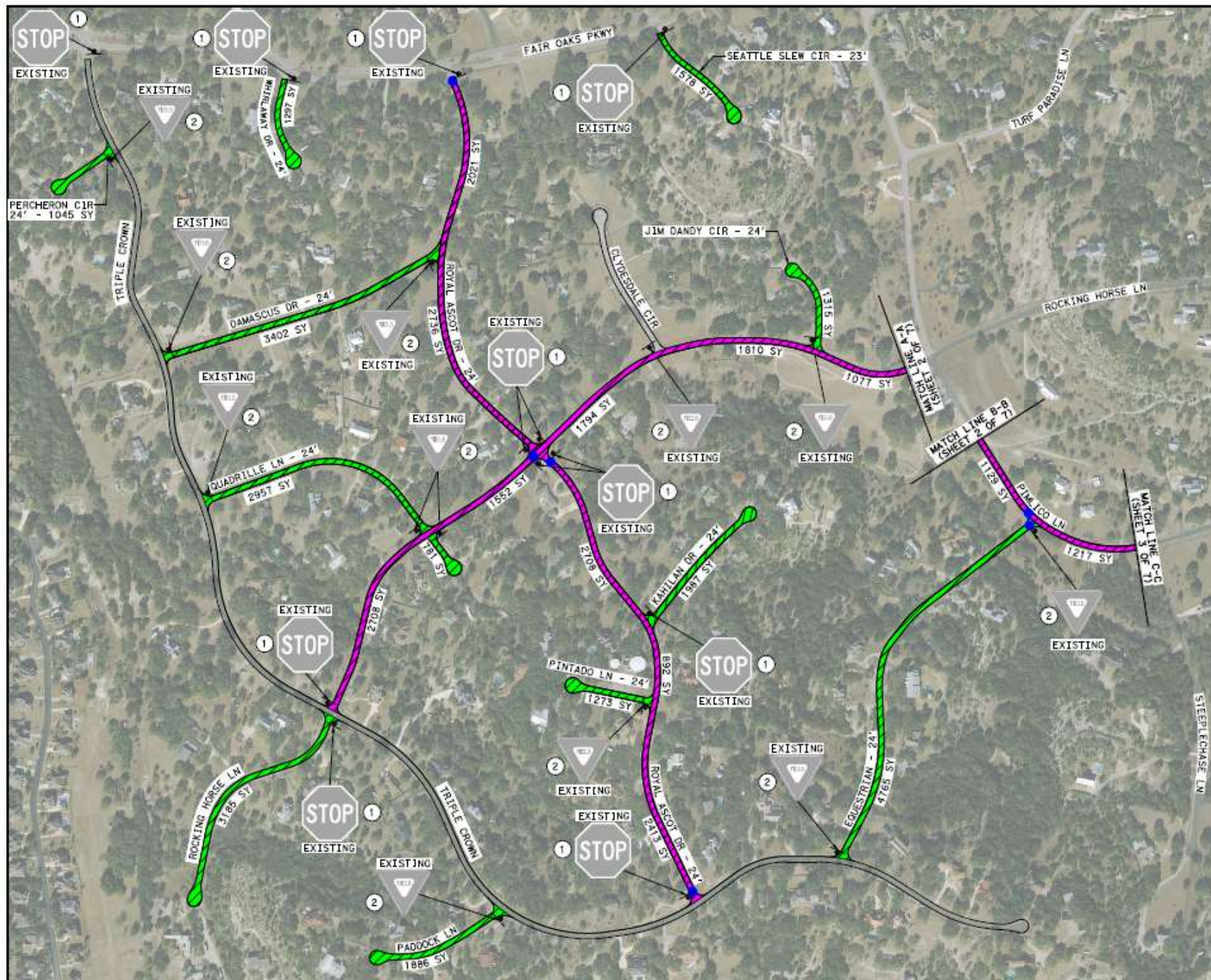
- Straightaways ~ 150 RPMs
 - Curves ~ 50 RPMs
- Total ~ 200 RPMs

Meadow Creek Trail

- Straightaways ~ 150 RPMs
 - Curves ~ 100 RPMs
- Total ~ 250 RPMs



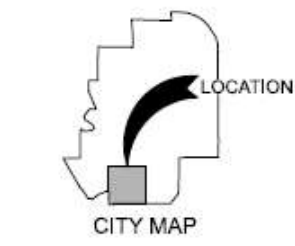
PRODUCT	EST QUANTITIES	COST PER UNIT	TOTAL COST	SCHEDULE
Micro-seal	151,305 SY	\$4.30	\$650,355	Currently scheduled for July/August time frame
Mill and Overlay	786 SY	\$34.11	\$26,810	Currently scheduled for Mid-May
Fog seal	102,331 SY	\$1.70	\$174,065	Bids received 5/13 and under review
RPM	Blue – 138 EA Yellow – 2298 EA Mobilization	\$5.00 \$5.00 \$10,000.00	\$22,180	Will be scheduled to be done after road work, includes roads treated last year
Striping	White lines – 24,496 LF Stop bars – 1,116 LF Yellow lines – 22,952 LF	\$0.32 \$14.00 \$0.32	\$30,807	Will be scheduled to be done after road work, includes roads treated last year
Signage – chevron, golf cart and street names	Chevron – 86 signs total Cart Path – 2 Street signs - 55	\$76.10 \$373.20 \$38 avg. cost	\$9381	Signs will be installed by City staff
Contingency:			\$86,402	
TOTAL:			\$1M	



0 200 400
SCALE: 1"=400'

LEGEND

- FOG SEAL
- FOG SEAL/RAISED PAVEMENT MARKERS
- EXISTING SIGN TO REMAIN PROPOSED 24" STOP BAR
- EXISTING YIELD TO REMAIN
- PROPOSED 24" STOP BAR
- PROPOSED YIELD TO REMAIN



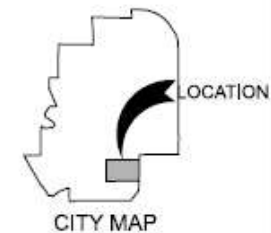
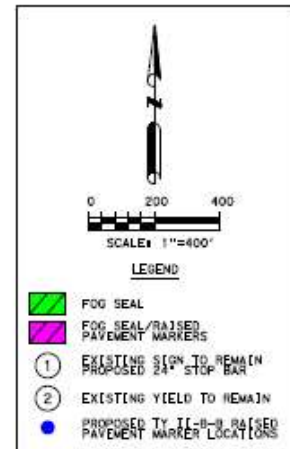
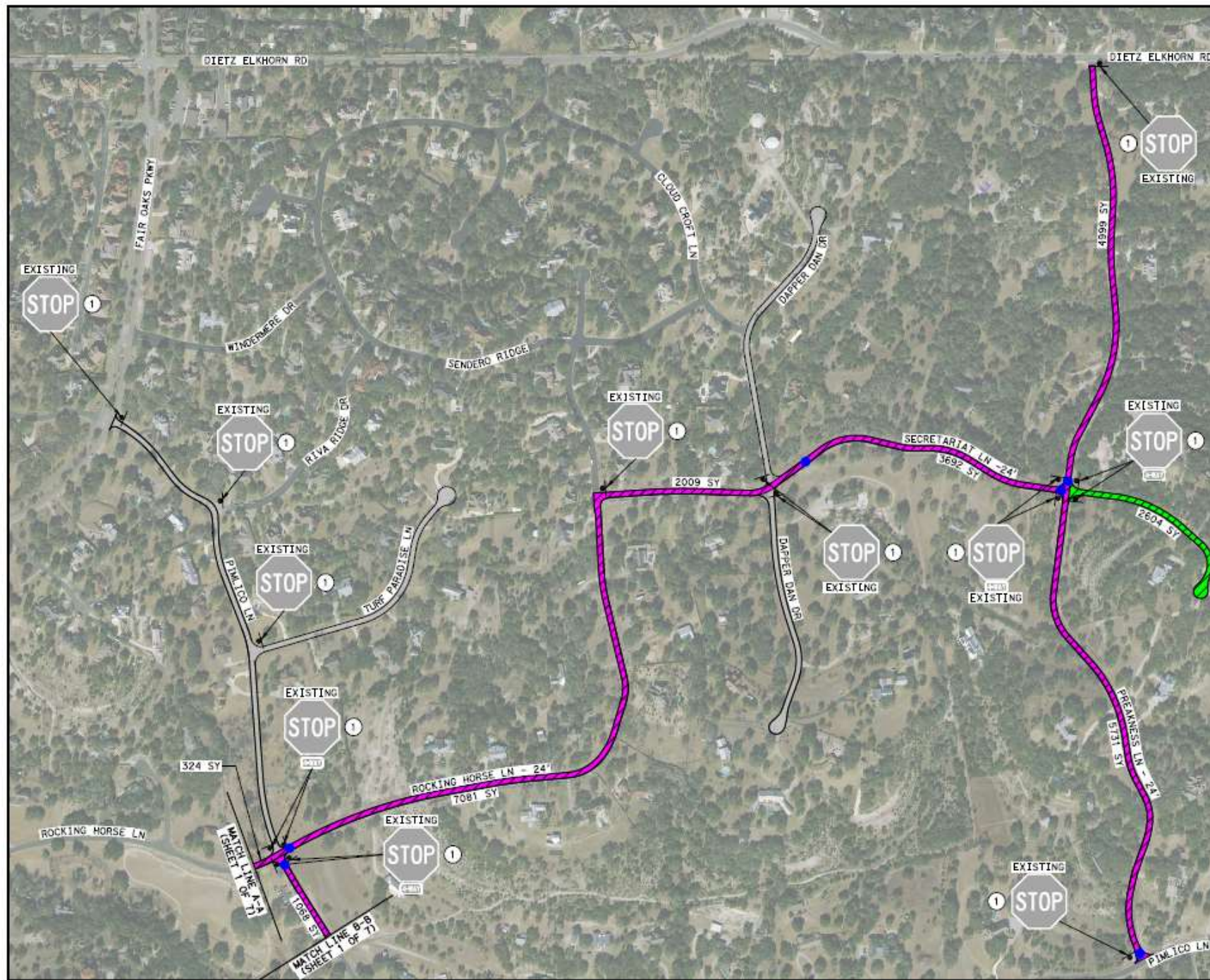
- NOTES**
1. RPM'S 20' SPACING ON CURVES AND 30' SPACING ON STRAIGHT AWAYS.
 2. FOR SPACING OF CHEVRONS FOLLOW TXDOT STANDARD D & OM(3)-20.
 3. FOR STOP LINE PLACEMENT FOLLOW TXDOT STANDARD PM(4)-20.

LEGACY ENGINEERING GROUP
Legacy Engineering Group, PLLC
7800 W. Interstate 10, Ste. 600, San Antonio, Texas 78220, 210.455.3700
TxDOT Firm Registration No. 20553

**FAIR OAKS RANCH
PAVEMENT RESTORATION
(FOG SEAL)**

SHEET 1 OF 7

PROJECT NO.		SHEET	
1		4	
STATE	CITY	COUNTY	
TEXAS	SAN ANTONIO	BEXAR, COMAL & KENDALL	
DATE	REV.	APP.	ROADWAY
-	-	-	VARIOUS



- NOTES**
1. RPM'S 20' SPACING ON CURVES AND 30' SPACING ON STRAIGHT AWAYS.
 2. FOR SPACING OF CHEVRONS FOLLOW TXDOT STANDARD D & OM(3)-20.
 3. FOR STOP LINE PLACEMENT FOLLOW TXDOT STANDARD PM(4)-20.

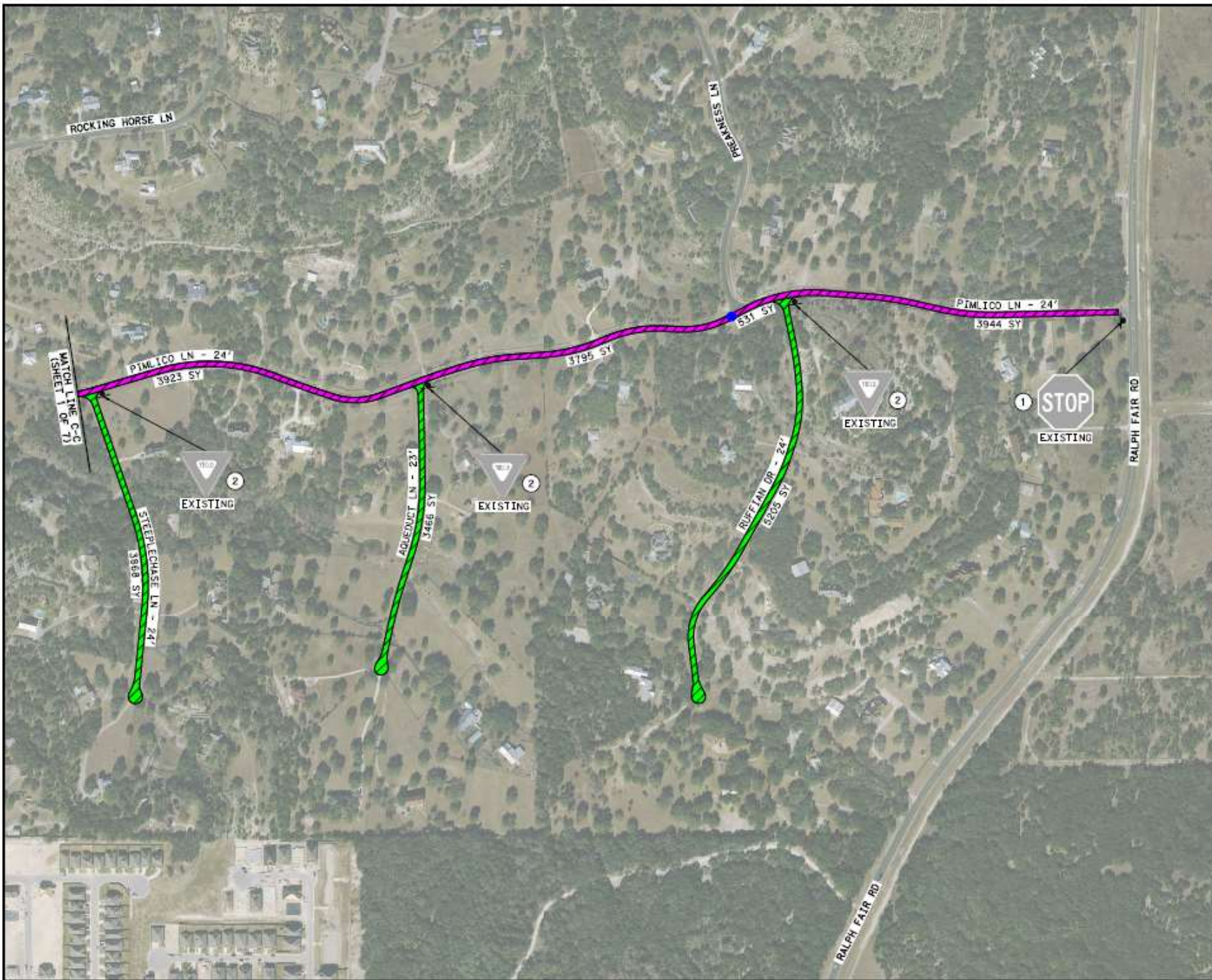


Legacy Engineering Group, PLLC
7800 W Yonderlane 10, Ste. 300, San Antonio, Texas 78230, 210.493.3700
TDP: Firm Registration No. 30623

**FAIR OAKS RANCH
PAVEMENT RESTORATION
(FOG SEAL)**

SHEET 2 OF 7

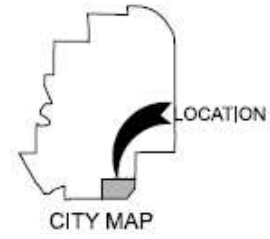
STATE	DEST.	COUNTY	PROJECT NO.	SHEET
TEXAS	SAT	BEXAR, COMAL & KENDALL	5	5
CONTRACT	DEST.	NO.	ROADWAY	
-	-	-	VARIOUS	



0 200 400
SCALE: 1"=400'

LEGEND

- FOG SEAL
- FOG SEAL/RAISED PAVEMENT MARKERS
- 1 EXISTING SIGN TO REMAIN PROPOSED 24" STOP BAR
- 2 EXISTING YIELD TO REMAIN
- PROPOSED TY II-II-III RAISED PAVEMENT MARKER LOCATIONS



- NOTES
1. RPM'S 20' SPACING ON CURVES AND 30' SPACING ON STRAIGHT AWAYS.
 2. FOR SPACING OF CHEVRONS FOLLOW TXDOT STANDARD D & OM(3)-20.
 3. FOR STOP LINE PLACEMENT FOLLOW TXDOT STANDARD PM(4)-20.

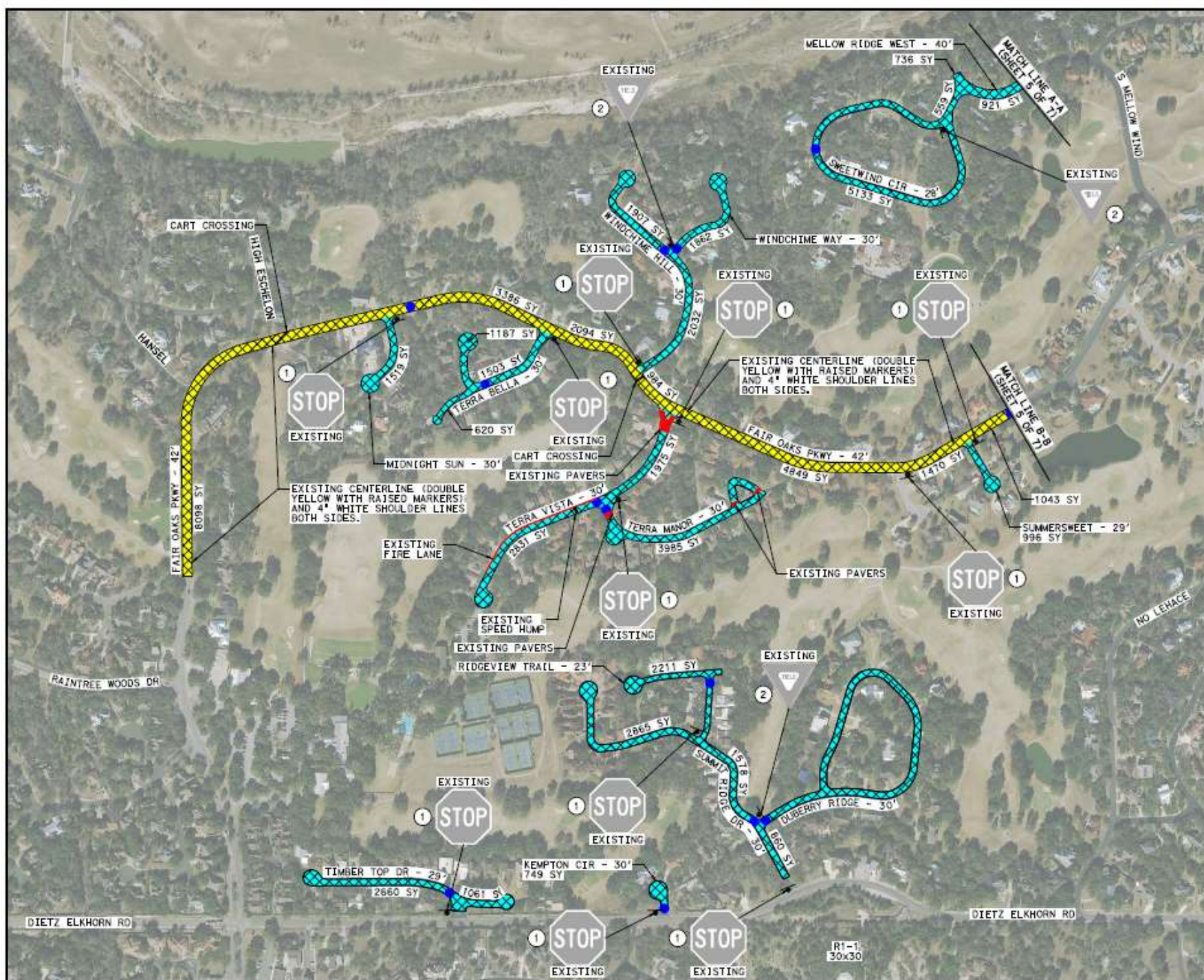
LEGACY
ENGINEERING GROUP

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TSP# Firm Registration No. 20623

**FAIR OAKS RANCH
PAVEMENT RESTORATION
(FOG SEAL)**

SHEET 3 OF 2

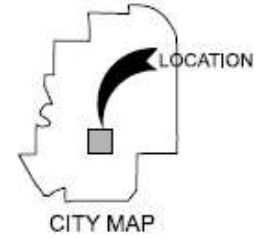
PROJECT NO.	WEST	
STATE	COUNTY	
TEXAS	BEXAR, COMAL & KENDALL	
DATE	BY	REVISION
-	-	VARIOUS



0 200 400
SCALE: 1"=400'

LEGEND

- SLURRY SEAL
- SLURRY SEAL/STRIPE & RAISED PAVEMENT MARKERS
- EXISTING SIGN TO REMAIN PROPOSED 24" STOP BAR
- EXISTING YIELD TO REMAIN
- PROPOSED TY II-B-8 RAISED PAVEMENT MARKER LOCATIONS



- NOTES**
1. RPM'S 20' SPACING ON CURVES AND 30' SPACING ON STRAIGHT AWAYS.
 2. FOR SPACING OF CHEVRONS FOLLOW TXDOT STANDARD D & OM(31)-20.
 3. FOR STOP LINE PLACEMENT FOLLOW TXDOT STANDARD PM(4)-20.

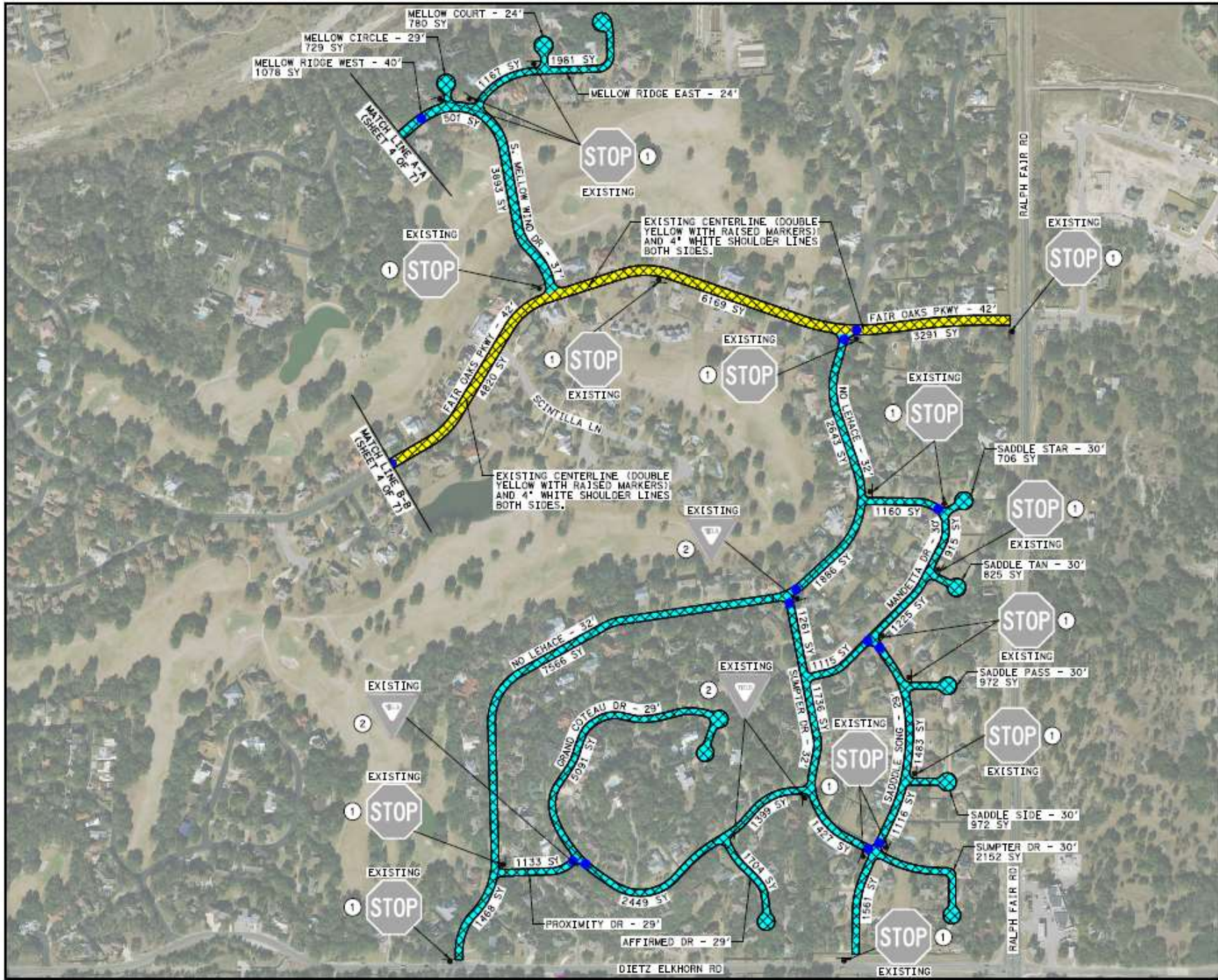
LEGACY ENGINEERING GROUP

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TDEC Firm Registration No. 30623

**FAIR OAKS RANCH
PAVEMENT RESTORATION
(SLURRY SEAL)**

SHEET 4 OF 7

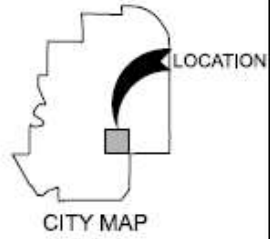
PROJECT NO.	PROJECT NAME	PROJECT LOCATION
10-10-10	FAIR OAKS RANCH PAVEMENT RESTORATION (SLURRY SEAL)	FAIR OAKS RANCH, BEXAR, COMAL & KENDALL COUNTIES, TEXAS
DATE	DESIGNER	QUANTITY
10/10/10	LEGACY ENGINEERING GROUP	VARIOUS
DATE	REVIEWER	APPROVED
10/10/10	LEGACY ENGINEERING GROUP	VARIOUS



0 200 400
SCALE: 1"=400'

LEGEND

- SLURRY SEAL
- SLURRY SEAL/STRIPING & RAISED PAVEMENT MARKERS
- EXISTING SIGN TO REMAIN PROPOSED 24" STOP BAR
- EXISTING YIELD TO REMAIN
- PROPOSED TYPED-ON RAISED PAVEMENT MARKER LOCATIONS



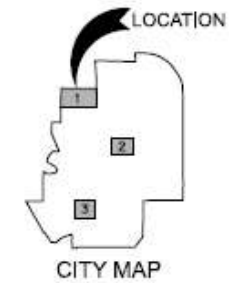
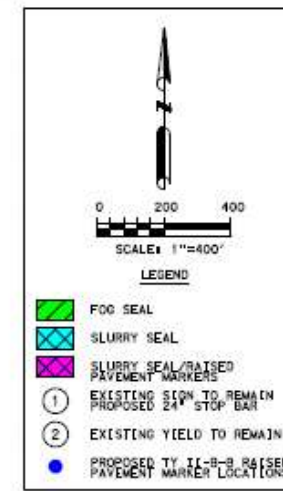
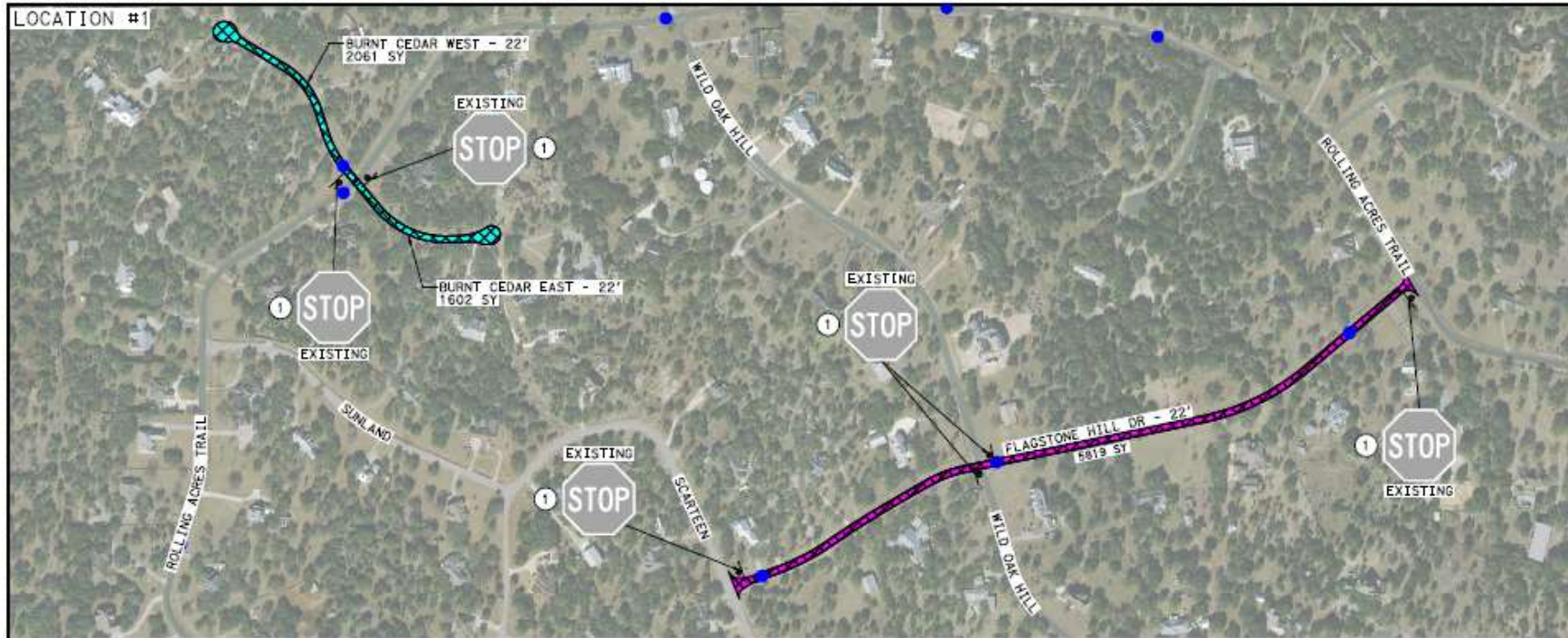
- NOTES:
1. R/W'S 20' SPACING ON CURVES AND 30' SPACING ON STRAIGHT AWAYS.
 2. FOR SPACING OF CHEVRONS FOLLOW TXDOT STANDARD D & CM(31)-20.
 3. FOR STOP LINE PLACEMENT FOLLOW TXDOT STANDARD PW(4)-20.

LEGACY ENGINEERING GROUP
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TSPC Firm Registration No. 200623

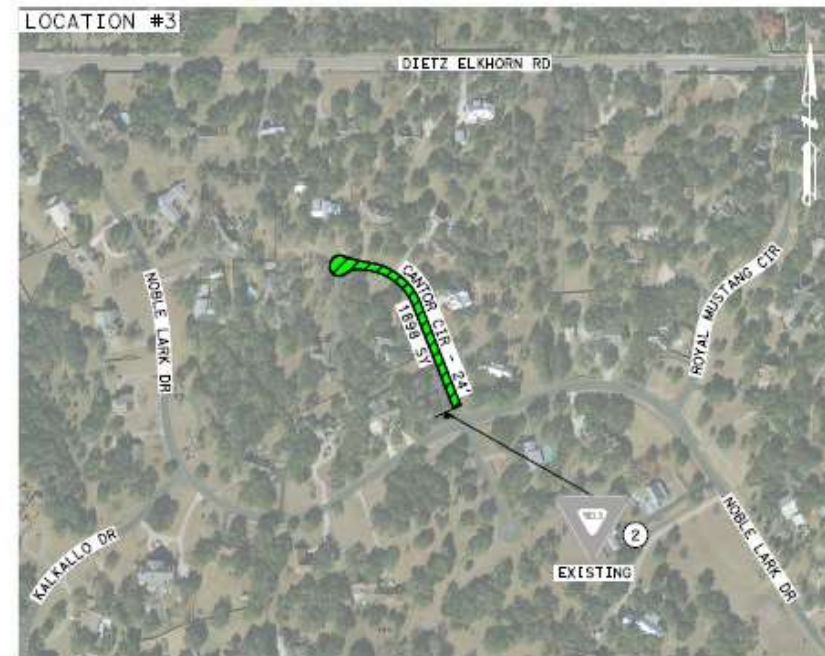
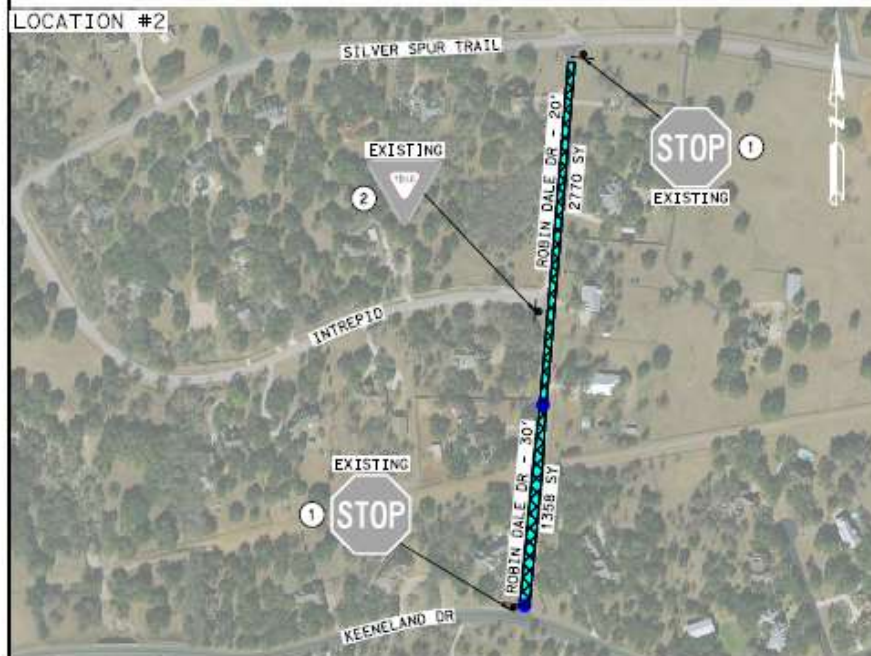
**FAIR OAKS RANCH
PAVEMENT RESTORATION
(SLURRY SEAL)**

SHEET 5 OF 7

DATE	08/24	PROJECT NO.	18-001	SHEET	5
STATE	TEXAS	CITY	BEXAR, COMAL & KENDALL		
COUNTY	BEXAR	ROADWAY	VARIOUS		



- NOTES:**
1. RPM'S 20' SPACING ON CURVES AND 30' SPACING ON STRAIGHT AWAYS.
 2. FOR SPACING OF CHEVRONS FOLLOW TXDOT STANDARD D & DM(31)-20.
 3. FOR STOP LINE PLACEMENT FOLLOW TXDOT STANDARD PM(4)-20.

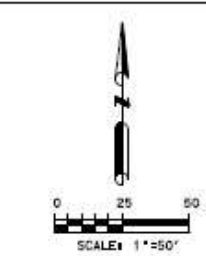


Legacy Engineering Group, P.L.L.C.
7800 W Interstate 10, Ste. 620, San Antonio, Texas 78230, 210.493.3700
TSP# Firm Registration No. 20623

**FAIR OAKS RANCH
PAVEMENT RESTORATION
(FOG & SLURRY SEAL)**

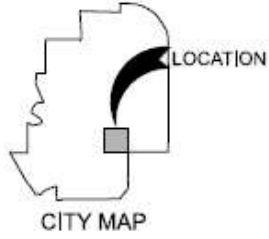
SHEET 6 OF 7

PROJECT NO.	PROJECT NAME	INVEST
6		9
STATE	COUNTY	CITY
TEXAS	BEXAR, COMAL, & KENDALL	
ROUTE	SECTION	SECTION
-	-	VARIOUS



LEGEND

⊗ MILL & OVERLAY



GENERAL NOTES:

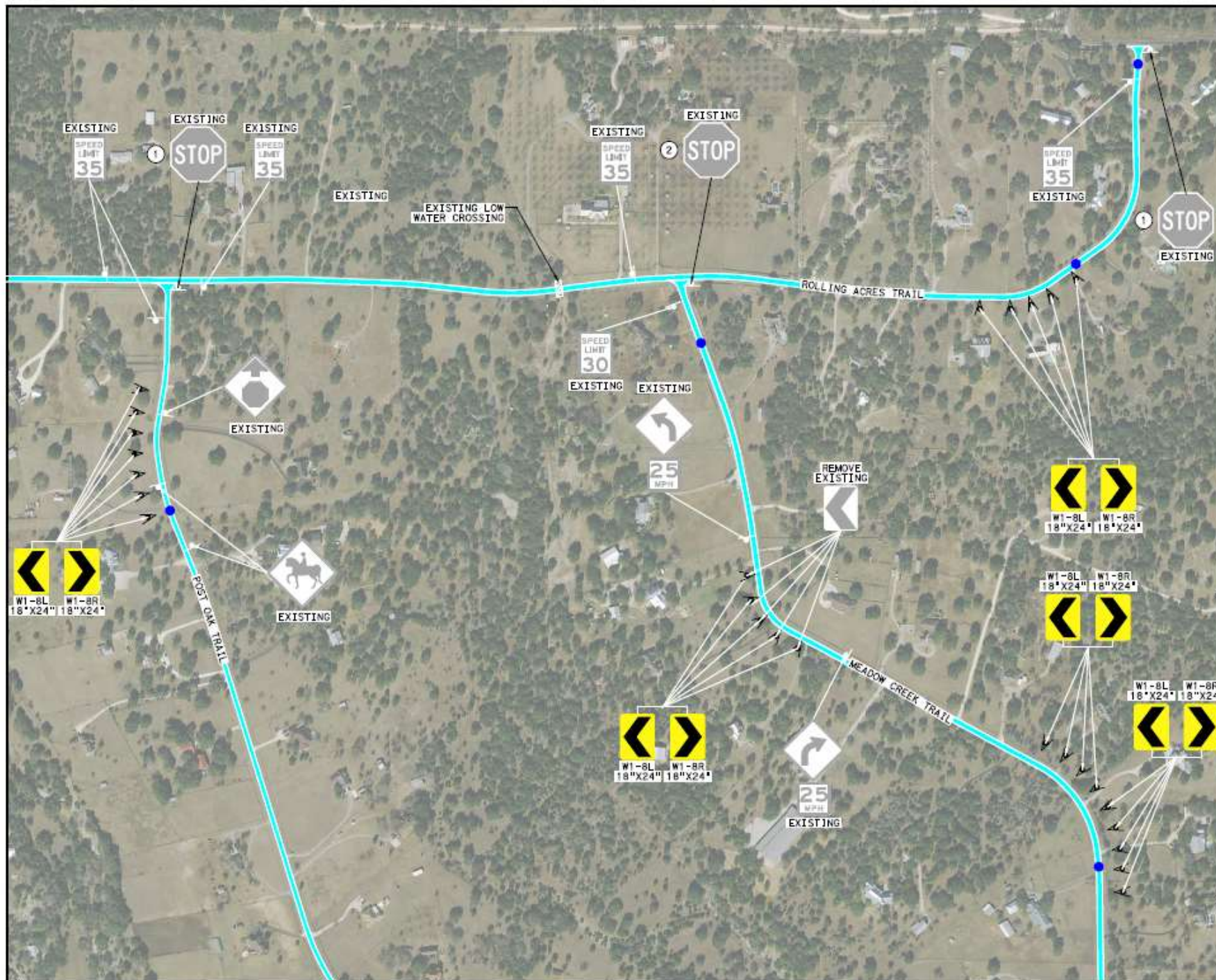
1. CONTRACTOR SHALL PROVIDE ACCESS TO ALL RESIDENCES DURING CONSTRUCTION.
2. ALL TEMPORARY TRAFFIC CONTROL DEVICES, ETC., SHALL BE PROVIDED BY THE CONTRACTOR WITHOUT DIRECT PAYMENT, UNLESS OTHERWISE NOTED OR STATED.



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TxDOT Firm Registration No. 20622

FAIR OAKS RANCH
PAVEMENT RESTORATION
(MILL & OVERLAY)

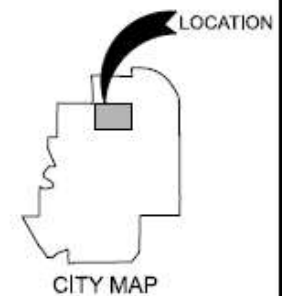
SHEET 7 OF 7			
PROJECT NO.	10		
STATE	DIST.	COUNTY	
TEXAS	SAT	BEXAR, COMAL & KENDALL	
CDOT	SECTION	AN	ROADWAY
-	-	-	VARIOUS



0 200 400
SCALE: 1"=400'

LEGEND

- EXISTING LOW WATER CROSSING
- PROPOSED RAISED PAVEMENT MARKERS TY 11-A-A
- PROPOSED TY 11-B-B RAISED PAVEMENT MARKER LOCATIONS
- EXISTING SIGN TO REMAIN PROPOSED 24" STOP BAR
- EXISTING SIGN AND STRIPING TO REMAIN
- EXISTING SIGN (WHITE)
- PROPOSED SIGN (BLACK)



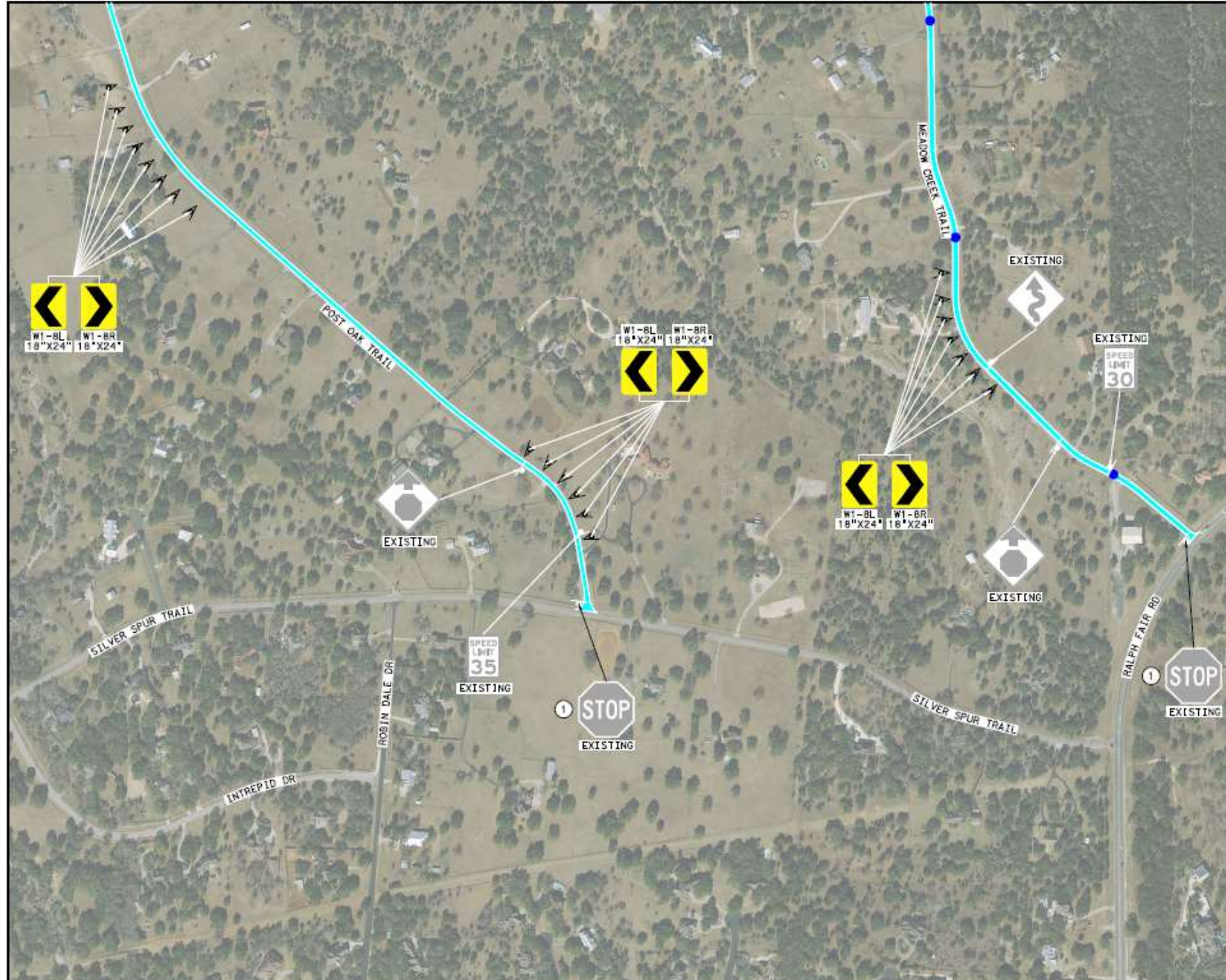
- NOTES:
1. RPM'S 20' SPACING ON CURVES AND 30' SPACING ON STRAIGHT AWAYS.
 2. FOR SPACING OF CHEVRONS FOLLOW TXDOT STANDARD D & CM(3)-20.
 3. REMOVE ANY EXISTING SIGNING IN CONFLICT WITH PROPOSED.




Legacy Engineering Group, PLLC
7800 W Interstate 10, Ste. 830, San Antonio, Texas 78230, 210.493.1700
TSP# Firm Registration No. 208523








FAIR OAKS RANCH
PROPOSED SIGNING LAYOUT

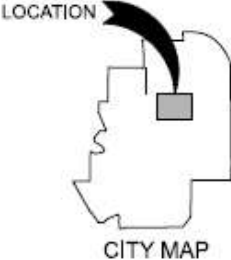
PROJECT NO.				SHEET	
18-24				11	
STATE	CDOT	COUNTY		ROADWAY	
TEXAS	SAT	BEXAR, COMAL & KENDALL		ROADWAY	
CDOT	CDOT	AS		VARIOUS	




0 200 400
SCALE: 1"=400'

LEGEND

-  LOW WATER CROSSING
-  PROPOSED RAISED PAVEMENT MARKERS TY 11-A-A
-  PROPOSED TY 11-B-B RAISED PAVEMENT MARKER LOCATIONS
-  EXISTING SIGN TO REMAIN PROPOSED 24" STOP BAR
-  EXISTING STOP SIGN AND STRIPING TO REMAIN
-  EXISTING SIGN (WHITE)
-  PROPOSED SIGN (BLACK)



- NOTES**
1. RPM'S 20' SPACING ON CURVES AND 30' SPACING ON STRAIGHT AWAYS.
 2. FOR SPACING OF CHEVRONS FOLLOW TxDOT STANDARD D & OM(31)-20.
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LEGACY
ENGINEERING GROUP

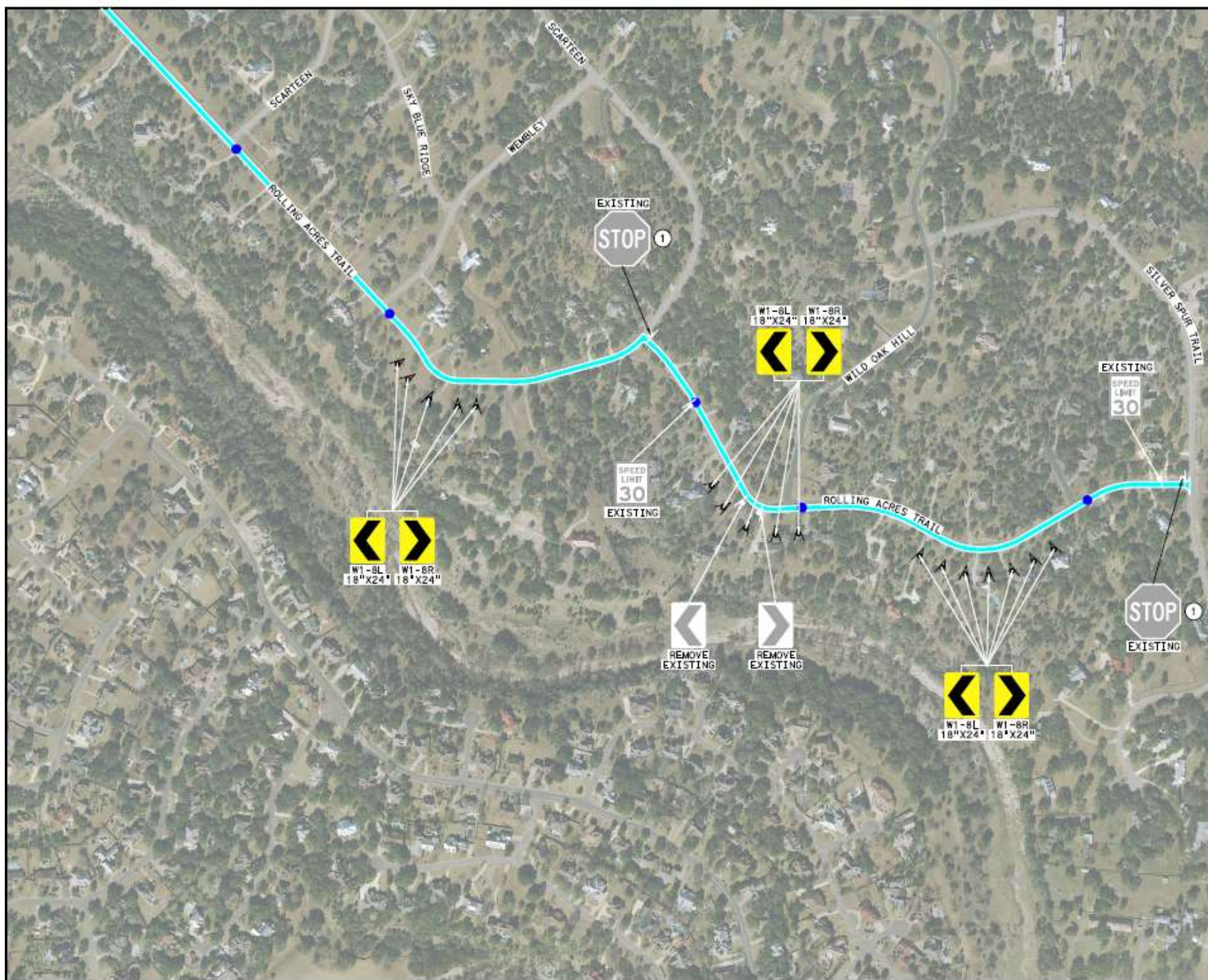
Legacy Engineering Group, PLLC
7800 W Interstate 10, Ste. 630, San Antonio, Texas 78230, 210.493.1700
TDP# Favr-Registration No. 208623

FAIR OAKS RANCH

PROPOSED SIGNING LAYOUT

SHEET 2 OF 4

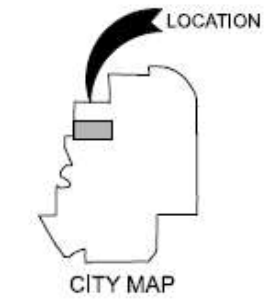
PROJECT No.		SHEET
1		12
STATE	DEST.	QUANTITY
TEXAS	SAT	BEKAR, COMAL & KENDALL
DATE	REV#	JOB
-	-	VARIOUS



0 200 400
SCALE: 1"=400'

LEGEND

- LOW WATER CROSSING
- PROPOSED RAISED PAVEMENT MARKERS TY II-A-A
- PROPOSED TY II-B-B RAISED PAVEMENT MARKER LOCATIONS
- EXISTING SIGN TO REMAIN PROPOSED 24" STOP BAR
- EXISTING STOP SIGN AND STRIPING TO REMAIN
- EXISTING SIGN (WHITE)
- PROPOSED SIGN (BLACK)



- NOTES:**
1. RHW'S 20' SPACING ON CURVES AND 30' SPACING ON STRAIGHT AWAYS.
 2. FOR SPACING OF CHEVRONS FOLLOW TxDOT STANDARD D & OM(37)-20.
 3. REMOVE ANY EXISTING SIGNING IN CONFLICT WITH PROPOSED.

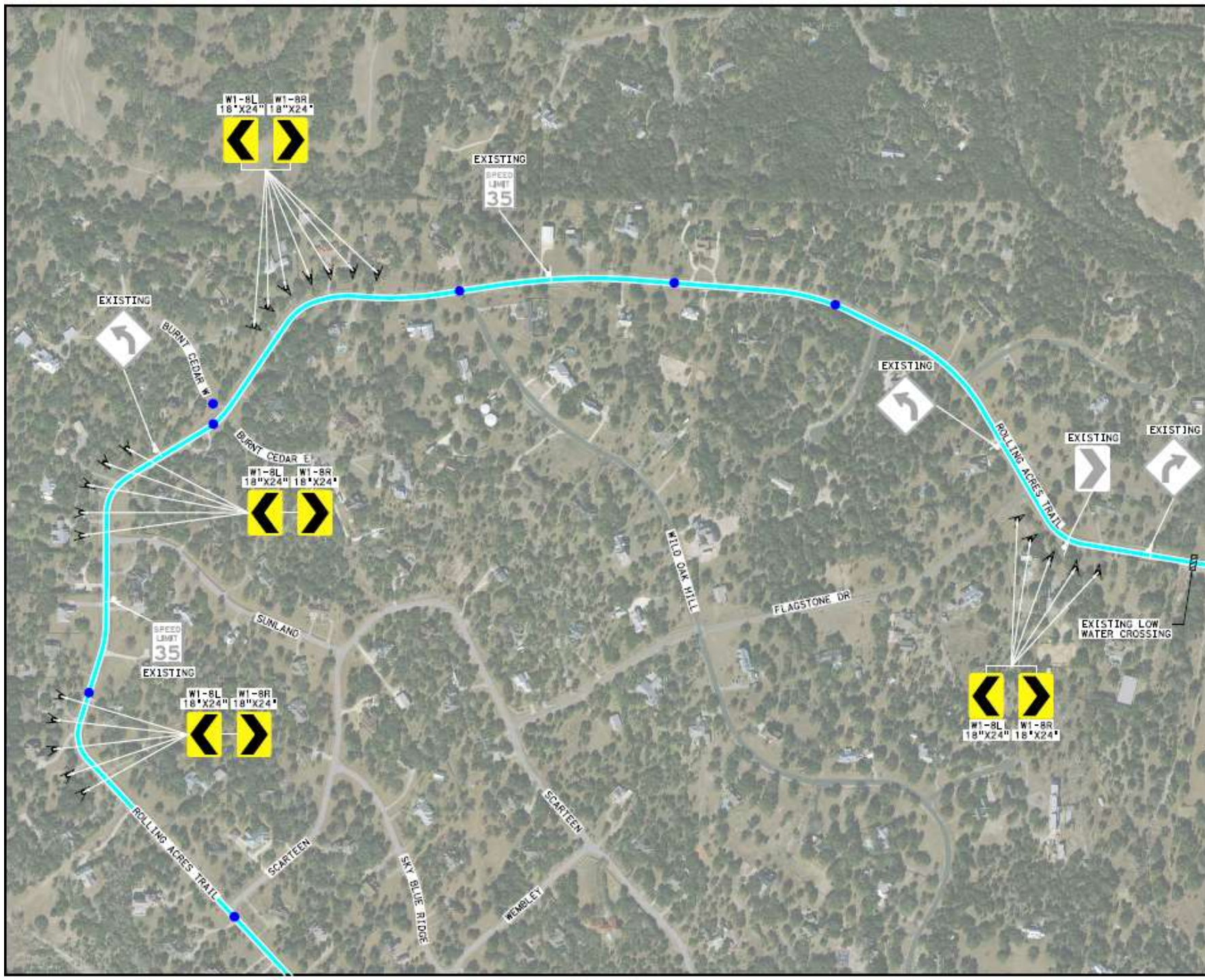
LEGACY
ENGINEERING GROUP

Legacy Engineering Group, P.L.L.C.
7600 W. Interstate 30, Ste. 520, San Antonio, Texas 78230, 210.493.3700
TSP# Firm Registration No. 20623

FAIR OAKS RANCH
PROPOSED SIGNING LAYOUT

SHEET 3 OF 4

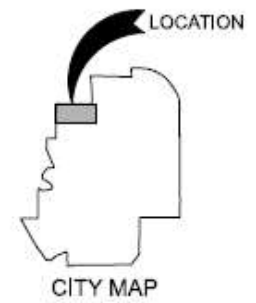
PROJECT NO.	13	
STATE	COUNTY	URBANITY
TEXAS	BAT	BEXAR, COMAL, & KENDALL
ROUTE	ADJ	ROADWAY
-	-	VARIOUS



0 200 400
SCALE: 1"=400'

LEGEND

- LOW WATER CROSSING
- PROPOSED RAISED PAVEMENT MARKERS TY II-A-A
- PROPOSED TY II-B-B RAISED PAVEMENT MARKER LOCATIONS
- EXISTING SIGN TO REMAIN
- EXISTING STOP SIGN AND STRIPING TO REMAIN
- EXISTING SIGN (WHITE)
- PROPOSED SIGN (BLACK)



- NOTES:
1. RPM'S 20' SPACING ON CURVES AND 30' SPACING ON STRAIGHT AWAYS.
 2. FOR SPACING OF CHEVRONS FOLLOW TXDOT STANDARD D & CM(3)-20.
 3. REMOVE ANY EXISTING SIGNING IN CONFLICT WITH PROPOSED.

LEGACY
ENGINEERING GROUP

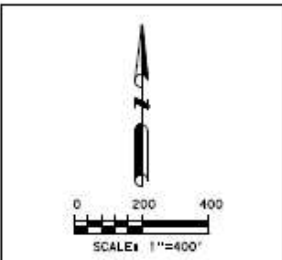
Legacy Engineering Group, P.L.L.C.
7500 W Interstate 10, Ste. 630, San Antonio, Texas 78230, 210.493.3700
TSP# Firm Registration No. 20823

FAIR OAKS RANCH

PROPOSED SIGNING LAYOUT

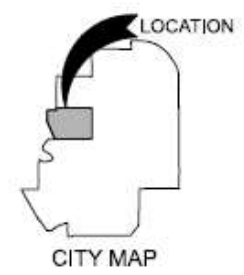
SHEET 4 OF 4

PROJECT NO.	14		
STATE	DEST.	COUNTY	
TEXAS	SAT	BEXAR, COMAL & KENDALL	
CITY	DEST.	JOB	ROADWAY
-	-	-	VARIOUS



LEGEND

- PROPOSED STRIPING & RAISED PAVEMENT MARKERS T11-A-A
- EXISTING SIGN TO REMAIN PROPOSED 24" STOP BAR
- PROPOSED T11-B-B RAISED PAVEMENT MARKER LOCATIONS



- NOTES:**
1. 8PM'S 20' SPACING ON CURVES AND 30' SPACING ON STRAIGHT AWAYS.
 2. FOR SPACING OF CHEVRONS FOLLOW TXDOT STANDARD D & GM(3)-20.
 3. FOR STOP LINE PLACEMENT FOLLOW TXDOT SAN ANTONIO DISTRICT STANDARD TGD-05.
 4. FOR TRANSITION PAVEMENT MARKINGS FOLLOW TXDOT STANDARD FM(3)-20.



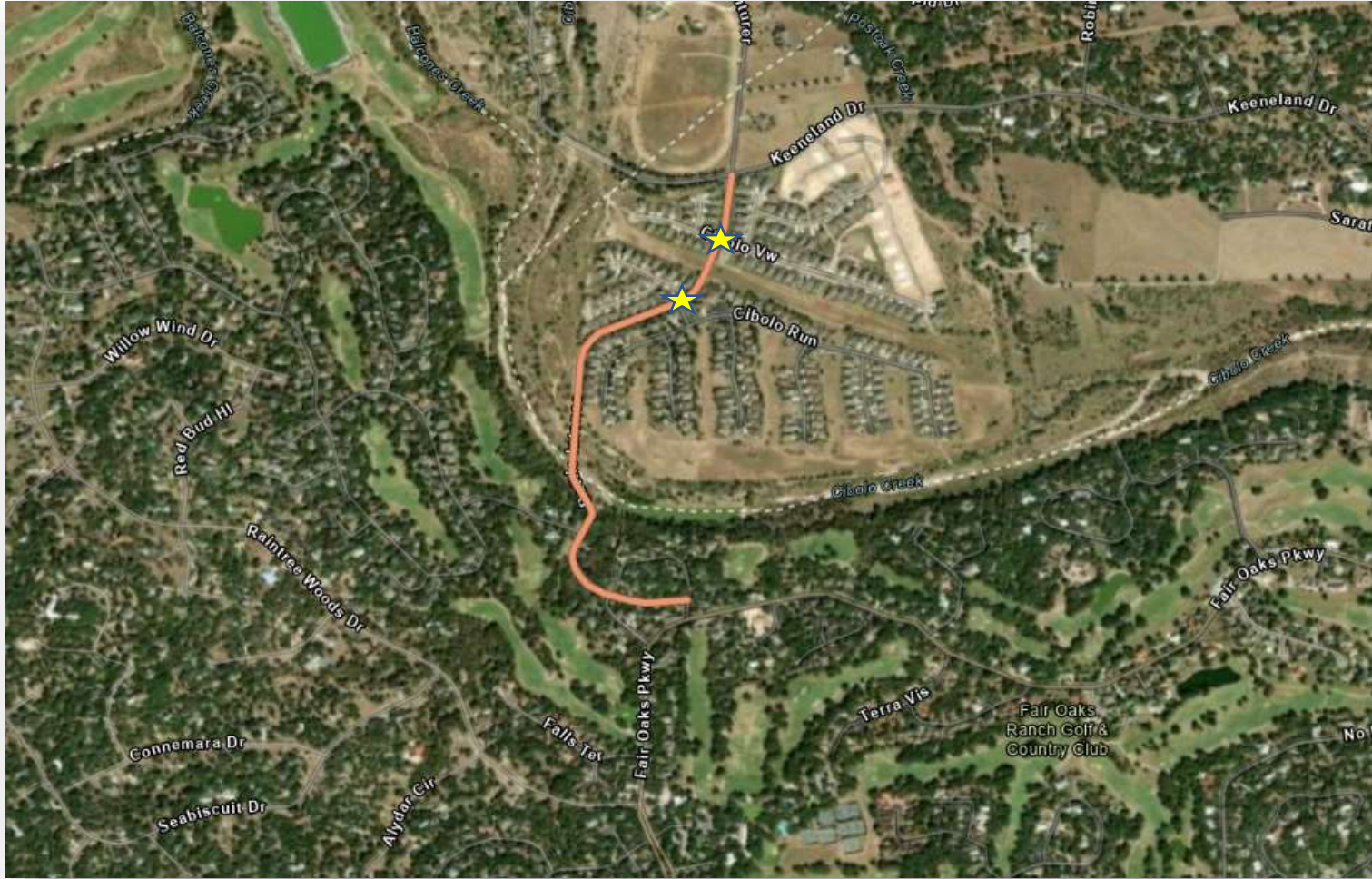
Legacy Engineering Group, P.L.L.C.
7800 W Interstate 10, Ste. 600, San Antonio, Texas 78220, 210.493.5100
TSP# Firm Registration No. 20623

**FAIR OAKS RANCH
DEER MEADOW
PROPOSED PAVEMENT MARKINGS**

SHEET 1 OF 1			
DATE	PROJECT #	SHEET	
8		15	
STATE	CDOT	COUNTY	
TEXAS	SAT	BEXAR, COMAL & KENDALL	
CDOT	CDOT	AR	ROADWAY
-	-	-	VARIOUS

ANNUAL STREET MAINTENANCE PLAN UPDATE

SCHOOL BUS STOP SAFETY IMPROVEMENTS

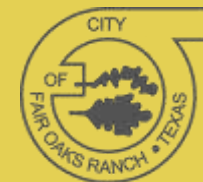


Battle Intense has two School Bus stops:

- Cibolo View
- Cibolo Valley/Cibolo Run

Complaints include:

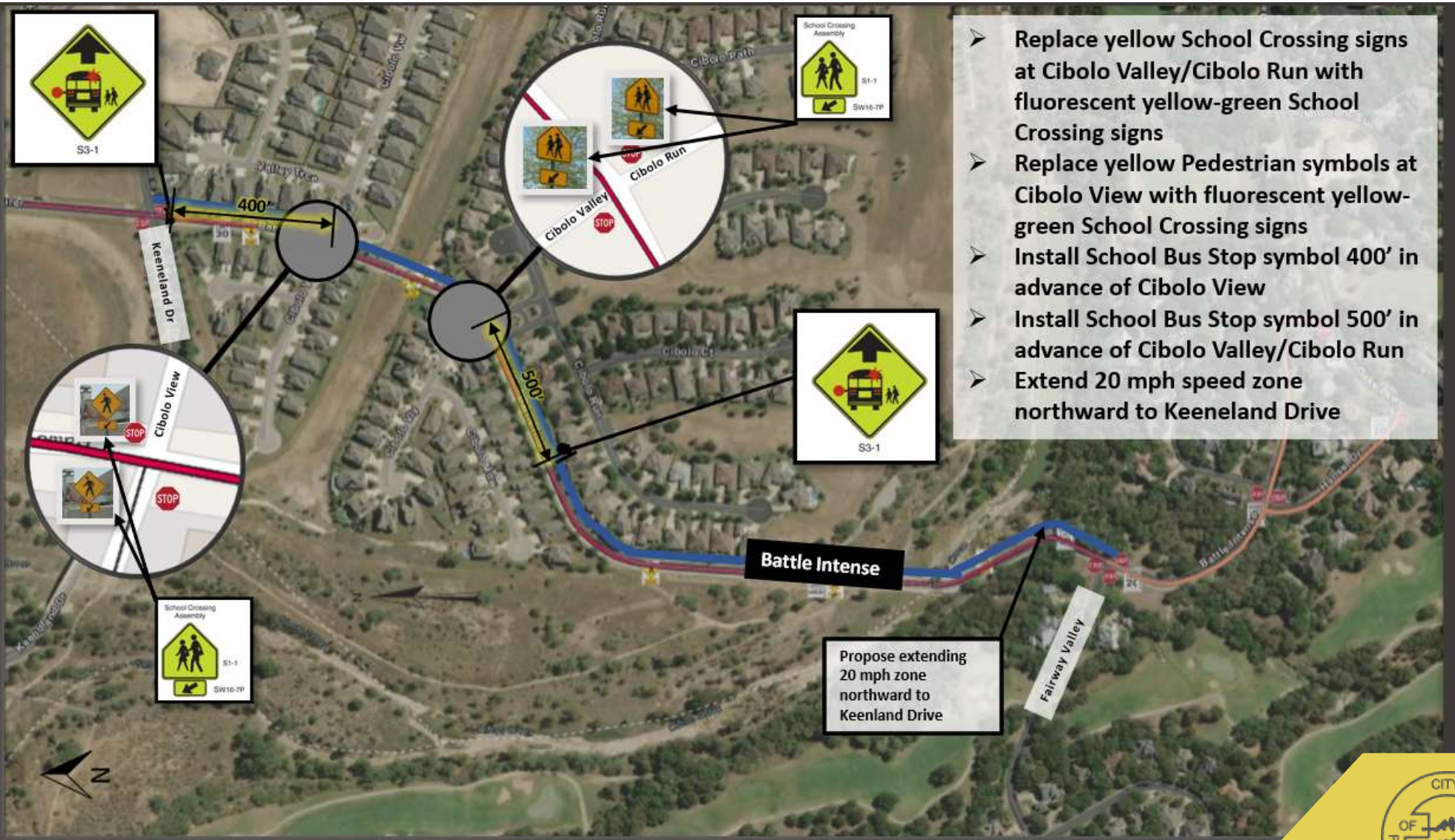
- Speeding
- Passing stopped school bus




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SCHOOL BUS STOP SAFETY IMPROVEMENTS


Speed Zone Revision and Signing




- Replace yellow School Crossing signs at Cibolo Valley/Cibolo Run with fluorescent yellow-green School Crossing signs
- Replace yellow Pedestrian symbols at Cibolo View with fluorescent yellow-green School Crossing signs
- Install School Bus Stop symbol 400' in advance of Cibolo View
- Install School Bus Stop symbol 500' in advance of Cibolo Valley/Cibolo Run
- Extend 20 mph speed zone northward to Keenland Drive




x 2



x 4



x 2



x 1

Materials Estimate: \$2,000 (covered by contingency)



QUESTIONS / DISCUSSION

JULIO COLUNGA – ASSISTANT DIRECTOR OF PUBLIC WORKS

MICHAEL GARZA, PE, PTOE, RSP₁ – LEGACY ENGINEERING GROUP (GEC)

