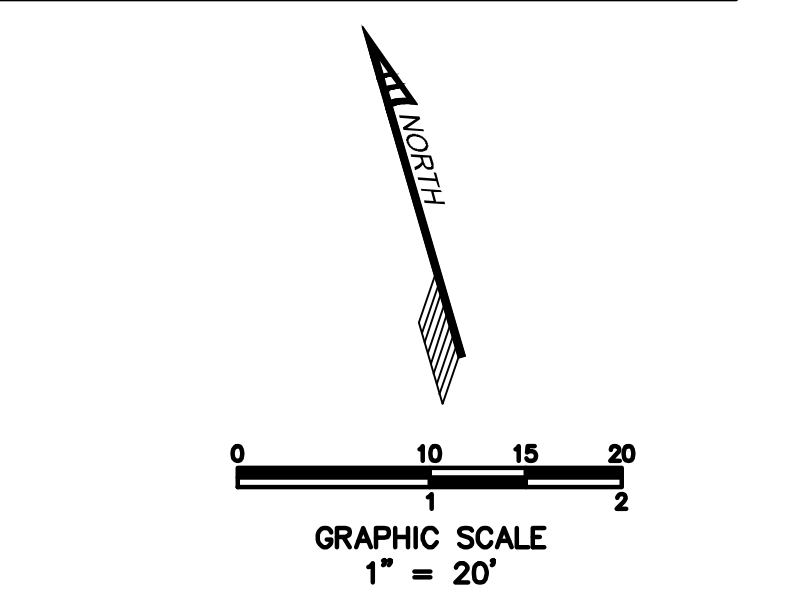
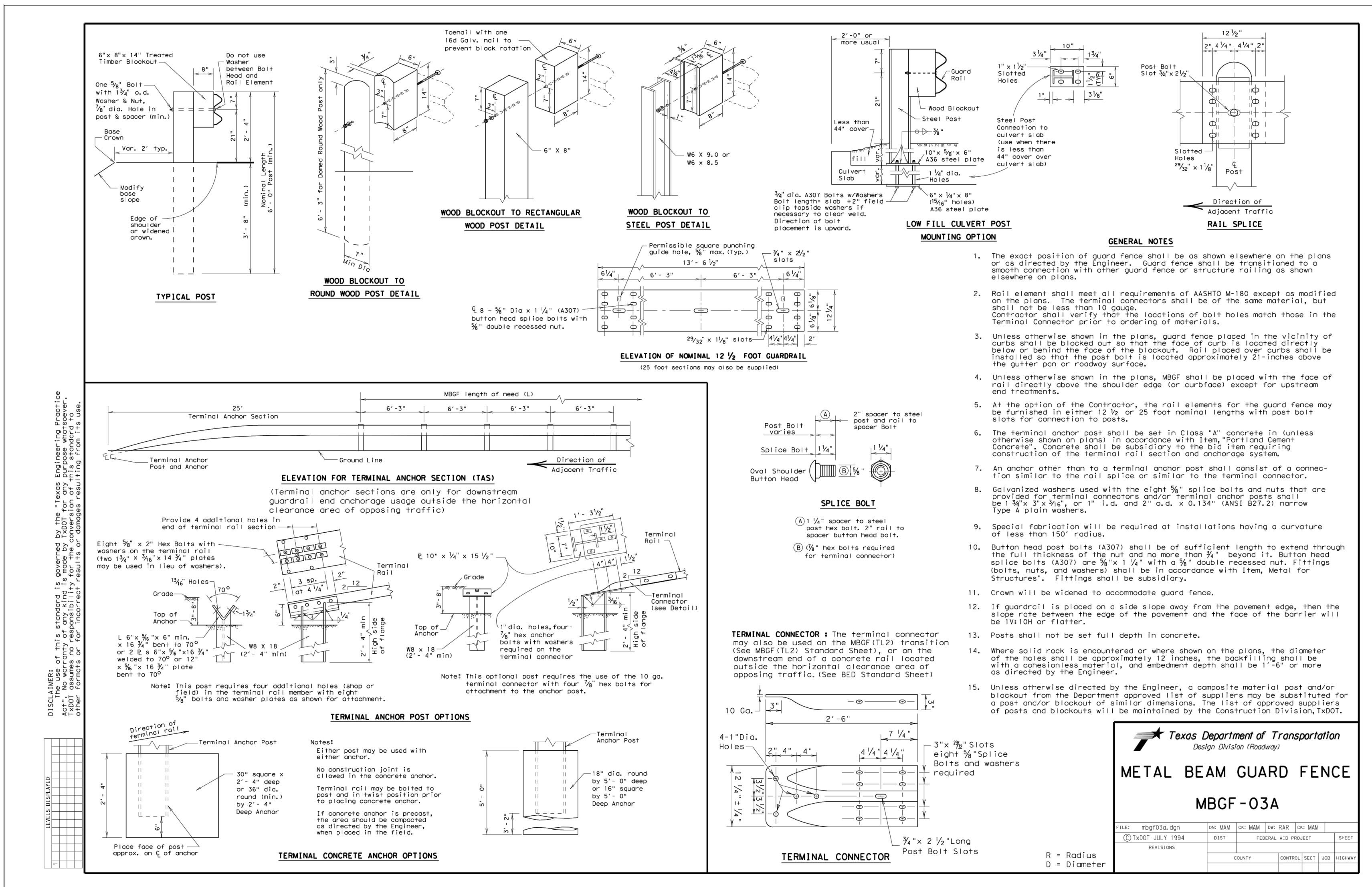
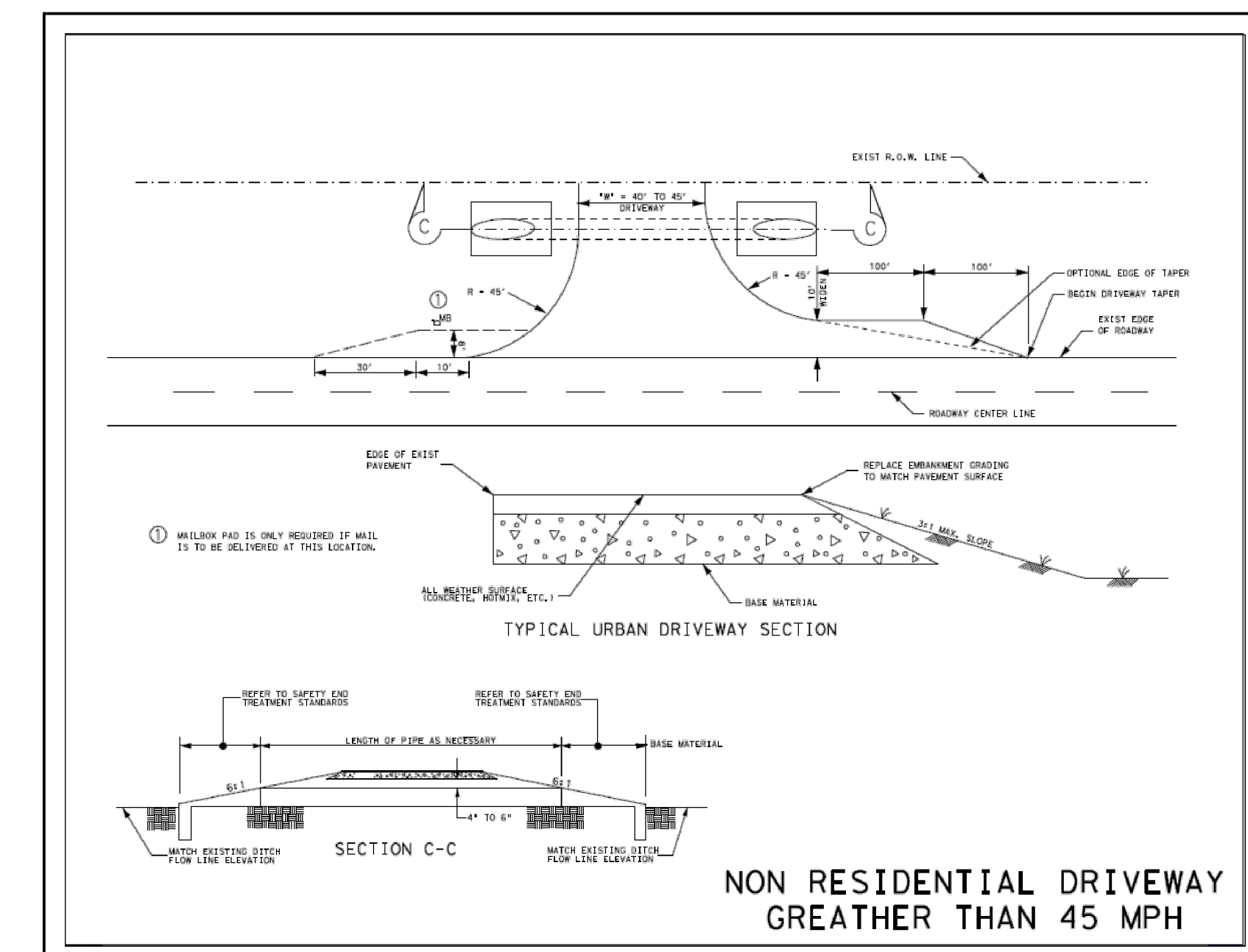


- NOTES:
- CONTRACTOR SHALL COORDINATE WITH TXDOT REPRESENTATIVE PRIOR CONSTRUCTION.
 - TRAFFIC CONTROL PLAN NOT PART OF THESE PLANS. NEW ASPHALT MATERIAL SHALL BE PER TXDOT STANDARD SPECIFICATIONS. SEE DETAIL THIS SHEET.
 - CONTRACTOR SHALL RE-STRIPE ALL PAVEMENT MARKINGS AFTER CONSTRUCTION AND APPROVED BY TXDOT REPRESENTATIVE. SEE PAVEMENT MARKING DETAIL THIS SHEET.



| LEGEND | | DESCRIPTION |
|----------|----------|---------------------------|
| EXISTING | PROPOSED | SUBJECT PROPERTY BOUNDARY |
| --- | --- | ADJACENT PROPERTY LINES |
| --- | --- | CURB |
| --- | --- | EDGE OF PAVEMENT |
| --- | --- | WIRE FENCE |
| --- | --- | SILT FENCE |
| --- | --- | LANE STRIPPING |
| --- | --- | TURNING LANE STRIPPING |
| --- | --- | NEW ASPHALT |
| --- | --- | CONCRETE |
| --- | --- | CONTOUR |
| --- | --- | SPOT ELEVATION |
| --- | --- | TREE TO BE REMOVED |
| --- | --- | TREE TO BE SAVED |
| --- | --- | LIMITS OF CONSTRUCTION |
| --- | --- | PROPOSED GUARDRAIL |

Texas Department of Transportation
Design Division (Roadways)

METAL BEAM GUARD FENCE
MBGF-03A

FILE: 1907035_001
DATE: 10/07/2019
REV: 10/07/2019

PROJECT MGR: JS
DESIGNER: SM
DRAWN BY: DC

SHEET
1
1 OF 4

PROPOSED DRIVEWAY
2350 W. HWY 290
DRIPPING SPRINGS, TX 78620

DRIVEWAY PLAN

PROJECT # 1219-100

ISSUE DATE 03-09-21

DRIP DEVELOPMENT PARTNERS, LLC

TDI Engineering LLC
5905 Old Fredericksburg Road, Suite 300
Austin, TX 78749
512-301-3389 | www.tdi-llc.net

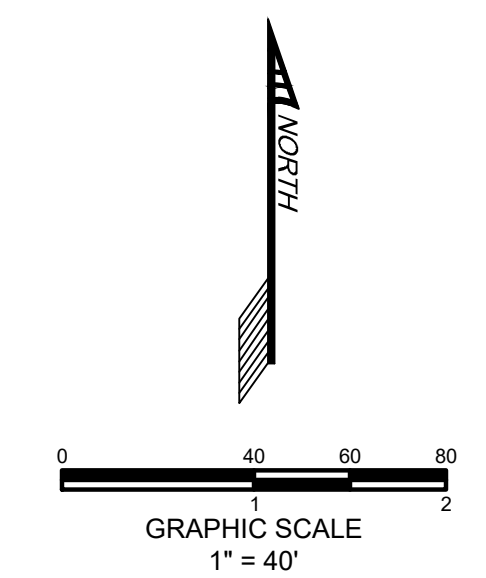
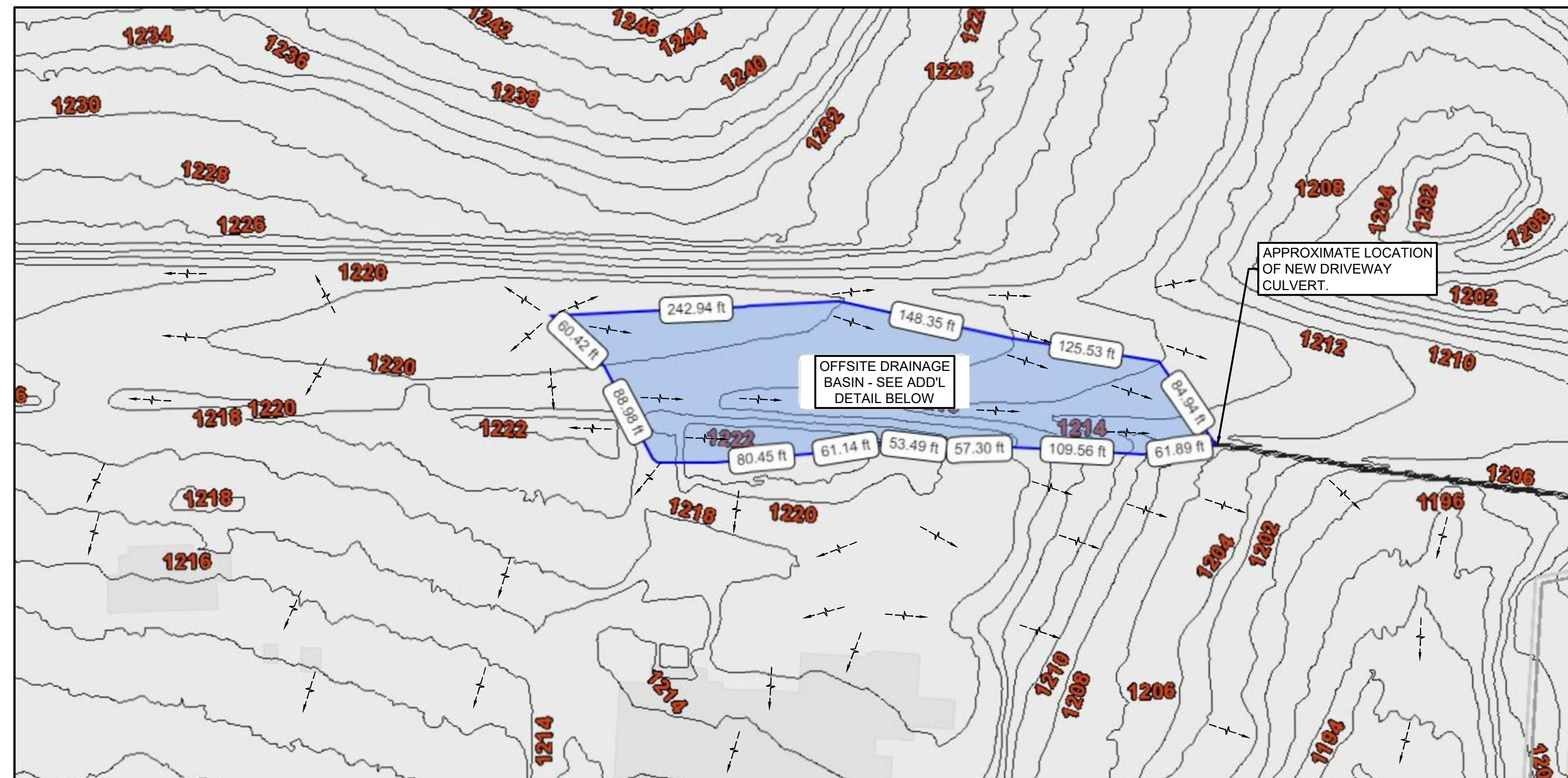
TDI ENGINEERING

JEFFREY B. SHINDLER
91160
LICENSED PROFESSIONAL ENGINEER
2018-2021
FIRM REG. # F-8601

THINK DESIGN innovate, integrate, implement...

OFFSITE DRAINAGE AREA MAP

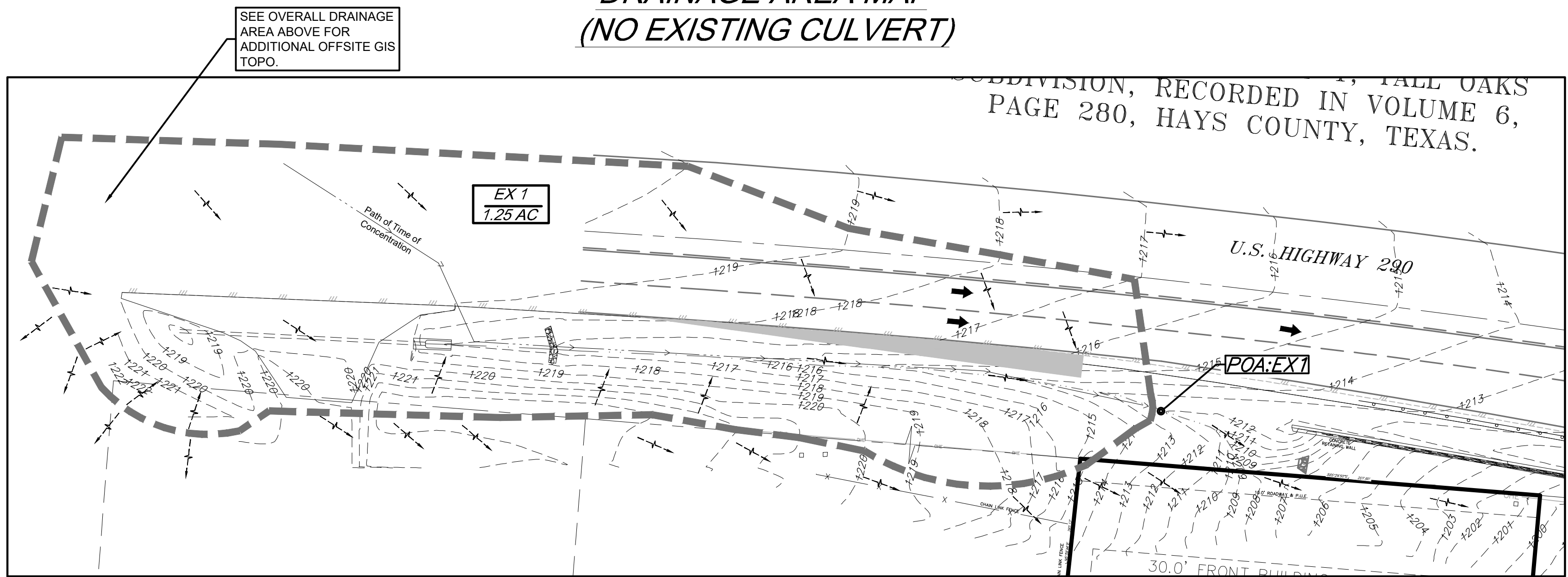
SCALE: 1"=80'



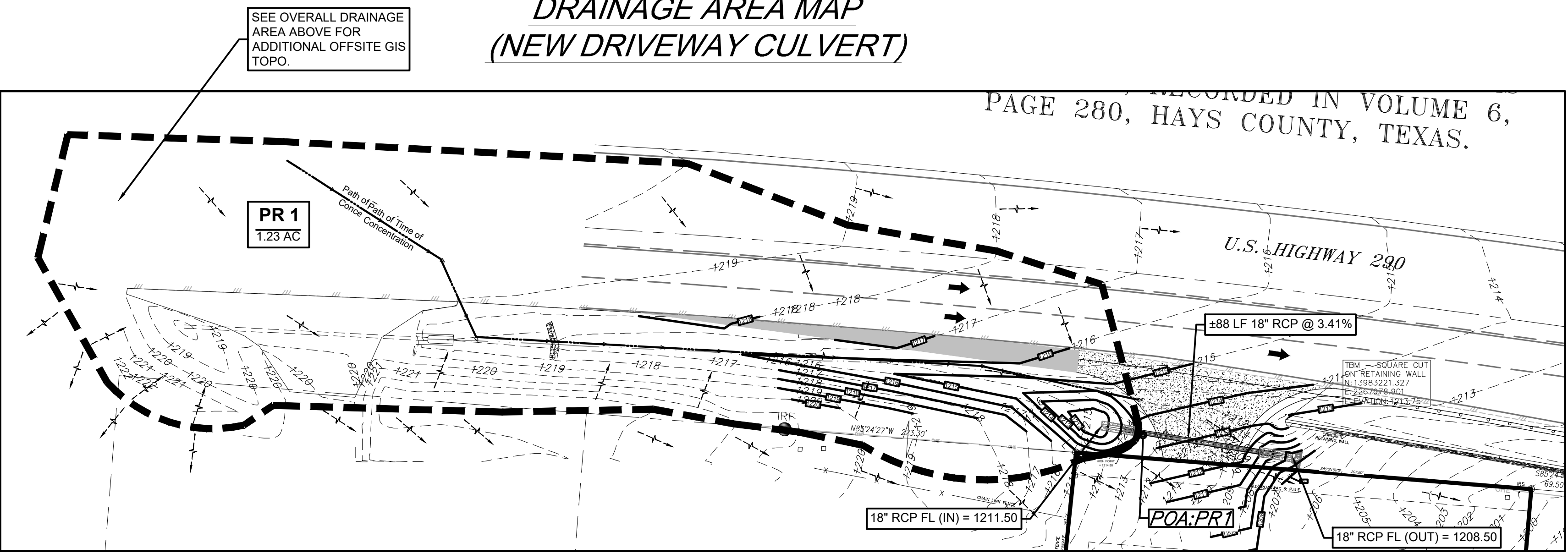
LEGEND

| EXISTING | PROPOSED | DESCRIPTION |
|----------|----------|---|
| | | SUBJECT PROPERTY BOUNDARY |
| | | ADJACENT PROPERTY LINES |
| | | BUILDING SETBACK EASEMENT |
| | | GRATE INLET |
| | | CURB INLET (SIZE VARIES) |
| | | CONTOUR |
| | | DRAINAGE AREA BOUNDARY |
| | | ON-SITE DRAINAGE AREA LABEL |
| | | FLOW DIRECTION |
| | | EXISTING TIME OF CONCENTRATION (DIM & PATH) |
| | | POINT OF ANALYSIS |

DRAINAGE AREA MAP (NO EXISTING CULVERT)



DRAINAGE AREA MAP (NEW DRIVEWAY CULVERT)



DRAINAGE CALCULATIONS

Rainfall Intensity-Duration-Frequency Coefficients for Texas

Based on "National Oceanic and Atmospheric Administration's (NOAA) Atlas 14 Precipitation-Frequency Atlas of the United States, Volume 11 Version 2.0: Texas" (Perica et al. 2018)

Parameter Selection:
 1. Select Units: English
 2. Select Methodology: Annual Maximum Series (AMS)
 3. Select County: Hays
 4. Select County Zone: Zone-1
 5. Select Time of Concentration (Tc): 8.81 Minute

| Coefficient | Design Annual Exceedance Probability (Design Annual Recurrence Interval) | | | | | | |
|-------------------------|--|--------------|---------------|--------------|--------------|---------------|-----------------|
| | 50% (2-year) | 20% (5-year) | 10% (10-year) | 4% (25-year) | 2% (50-year) | 1% (100-year) | 0.2% (500-year) |
| a | 0.8209 | 0.8038 | 0.7954 | 0.7873 | 0.7830 | 0.7795 | 0.7741 |
| b | 59.8061 | 76.6244 | 90.9590 | 112.2113 | 130.5711 | 152.1280 | 216.1928 |
| d (min) | 12.8128 | 12.7586 | 13.1270 | 13.9470 | 14.8364 | 16.1074 | 20.2311 |
| Intensity (inches/hour) | 4.80 | 6.49 | 7.80 | 9.58 | 10.97 | 12.41 | 15.93 |

Note: Hays County has 1 rainfall zone.

Rainfall Intensity-Duration-Frequency Coefficients for Texas

Based on "National Oceanic and Atmospheric Administration's (NOAA) Atlas 14 Precipitation-Frequency Atlas of the United States, Volume 11 Version 2.0: Texas" (Perica et al. 2018)

Parameter Selection:
 1. Select Units: English
 2. Select Methodology: Annual Maximum Series (AMS)
 3. Select County: Hays
 4. Select County Zone: Zone-1
 5. Select Time of Concentration (Tc): 9.15 Minute

| Coefficient | Design Annual Exceedance Probability (Design Annual Recurrence Interval) | | | | | | |
|-------------------------|--|--------------|---------------|--------------|--------------|---------------|-----------------|
| | 50% (2-year) | 20% (5-year) | 10% (10-year) | 4% (25-year) | 2% (50-year) | 1% (100-year) | 0.2% (500-year) |
| a | 0.8209 | 0.8038 | 0.7954 | 0.7873 | 0.7830 | 0.7795 | 0.7741 |
| b | 59.8061 | 76.6244 | 90.9590 | 112.2113 | 130.5711 | 152.1280 | 216.1928 |
| d (min) | 12.8128 | 12.7586 | 13.1270 | 13.9470 | 14.8364 | 16.1074 | 20.2311 |
| Intensity (inches/hour) | 4.74 | 6.41 | 7.71 | 9.47 | 10.85 | 12.28 | 15.79 |

Note: Hays County has 1 rainfall zone.

Time of Concentration - Existing & Developed Conditions

| DRAINAGE AREA | SHEET FLOW | | | | SHALLOW CONCENTRATED FLOW | | | | CHANNEL VELOCITY - (1.49/n)R ^{48.5} S ^{1.48} | | | | Tc (Min) | | | | | | |
|---------------|-------------------|-------------------------------|-----------|-----------|---------------------------|-----------|-------------------|---------|--|-------------|-----------------|---------------------------|----------|--------|-----------|------|-----|------|------|
| | Manning's n-Value | P ₂ Zone 1 (in/hr) | S (ft/ft) | Tt1 (Min) | L (ft) | Tt2 (Min) | Manning's n-Value | Area sf | P ₂ ft | Slope ft/ft | S ₁₂ | V _{CHANNEL} ft/s | | L (ft) | Tt3 (Min) | | | | |
| EX1 | 0.011 | 100 | 5.62 | 0.011 | 1.16 | 0.011 | 2.15 | 21 | 0.16 | 0.15 | 6.00 | 12.12 | 0.49 | 0.017 | 0.13 | 0.65 | 290 | 7.49 | 8.81 |
| PR1 | 0.011 | 100 | 5.62 | 0.011 | 1.16 | 0.011 | 2.15 | 21 | 0.16 | 0.15 | 6.00 | 12.12 | 0.49 | 0.017 | 0.13 | 0.65 | 303 | 7.82 | 9.15 |

Note: Drainage areas with a Tc < 5 min. are assumed a minimum Tc = 5 min.
 Note: A combination of short grass cover and/or smooth surfaces (i.e. asphalt pavement) is used for determining a composite C-value.

MANNING'S RATIONAL METHOD - Existing & Developed Conditions - TxDOT HDM - ZONE 1

| Drainage Area (Ac) | Size (Ac) | Impervious Cover (%) | C | | | | | Tc (min) | Intensity, "I" (in/hr) I = a/(Tc+b) ^c | | | | | | | | | | Runoff, "Q" (cfs) | | | | | | | | | |
|--------------------|-----------|----------------------|-----------|-------|------|-------|-------|----------|--|--------|------|------|-------|-------|-------|--------|-------|------|-------------------|-------|-------|--------|------|--|--|--|--|--|
| | | | Perv (Ac) | 2-Yr | 5-Yr | 10-Yr | 25-Yr | | 50-Yr | 100-Yr | 2-Yr | 5-Yr | 10-Yr | 25-Yr | 50-Yr | 100-Yr | 2-Yr | 5-Yr | 10-Yr | 25-Yr | 50-Yr | 100-Yr | | | | | | |
| EX1 | 1.25 | 60.2% | 0.751 | 0.497 | 0.57 | 0.61 | 0.64 | 0.68 | 0.72 | 0.77 | 8.81 | 4.80 | 6.49 | 7.80 | 9.58 | 10.97 | 12.41 | 3.4 | 4.9 | 6.2 | 8.2 | 9.9 | 11.9 | | | | | |
| PR1 | 1.23 | 62.7% | 0.773 | 0.461 | 0.58 | 0.62 | 0.65 | 0.70 | 0.73 | 0.78 | 9.15 | 4.74 | 6.41 | 7.71 | 9.47 | 10.85 | 12.28 | 3.4 | 4.9 | 6.2 | 8.1 | 9.8 | 11.8 | | | | | |

Note: A combination of short grass cover and/or smooth surfaces (i.e. asphalt pavement) is used for determining a composite C-value.
 Note: Rainfall intensities are calculated using TxDOT EDBLKUP-2019-C.6.2.10

- DRAINAGE NOTES:**
- AREA WITHIN THE OVERALL DRAINAGE AREA MAP IS GIS DATA (2017 CONTOURS) FROM THE CITY OF AUSTIN PROPERTY PROFILE VIEWER.
 - DRAINAGE FOR THIS DEVELOPMENT DOES NOT DRAIN TO TXDOT ROW, DOES NOT CAUSE TXDOT DRAINAGE TO BE BLOCKED AND HAS BEEN DESIGNED SUCH THAT THERE WILL BE NO ADVERSE IMPACTS ON THE CAPACITY, FUNCTION OR INTEGRITY OF TEXAS DEPARTMENT OF TRANSPORTATION RIGHT OF WAY DRAINAGE FACILITIES.

CIVIL & STRUCTURAL ENGINEERING AUSTIN / HOUSTON

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 5906 Old Fredericksburg Road, Suite 300
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 512-301-3389 | www.tdi-llc.net

TDI ENGINEERING

JEFFREY B. SHINDLER
 LICENSED PROFESSIONAL ENGINEER
 91160
 FIRM REG. # F-8601

PROPOSED DRIVEWAY
 2350 W. HWY 290
 DRIPPING SPRINGS, TX 78820

290 DEVELOPMENT PARTNERS, LLC

EXISTING & DEVELOPED DRIVEWAY CULVERT DRAINAGE PLAN

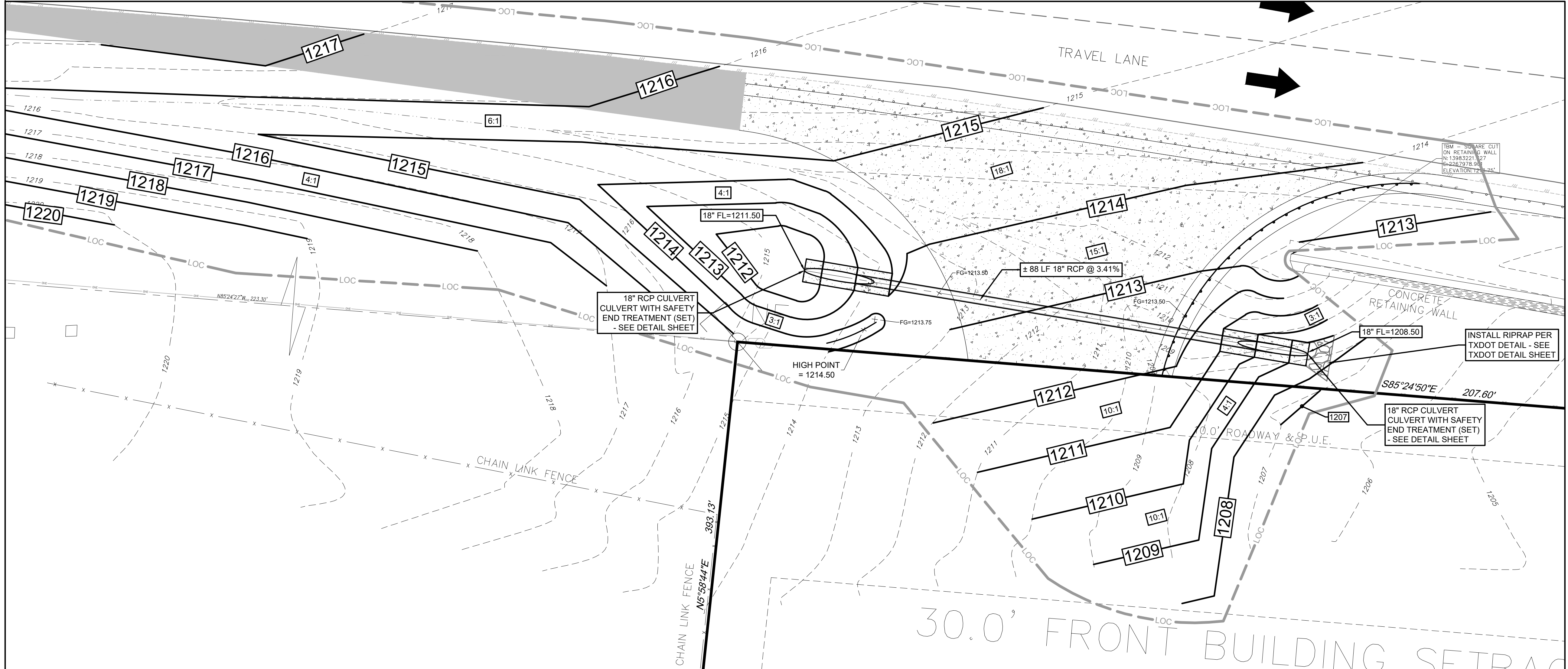
PROJECT # 1219-100

ISSUE DATE 03-09-21

SHEET 2

2 OF 4

Drawing: \\N001\AN\del-tdi\Projects\1219 - 290 Development Partners\100 - 2350 W Hwy 290 Driveway\Civil\Drawings\Sheet\1219-100_2350 Hwy 290.dwg
 User: GABRIELGABRIEL
 Last Modified: May 19, 2021 10:28
 Plot Date/Time: May 19, 2021 10:28:31



| LEGEND | | DESCRIPTION |
|--------|-----|--|
| --- | --- | SUBJECT PROPERTY BOUNDARY |
| --- | --- | ADJACENT PROPERTY LINES |
| --- | --- | BUILDING SETBACK |
| --- | --- | EASEMENT |
| --- | --- | UNDERGROUND ELECTRIC LINE |
| --- | --- | UNDERGROUND TELEPHONE |
| --- | --- | GAS LINE |
| □ | □ | GRATE INLET |
| --- | --- | STORM SEWER LINE (<18') |
| --- | --- | STORM SEWER LINE (>18') |
| ○ | ○ | STORMSEWER MANHOLE |
| --- | --- | CURB & GUTTER EDGE OF PAVEMENT SIGN (AS NOTED) |
| --- | --- | CONCRETE |
| --- | --- | ROCK RIP-RAP/ GABION |
| --- | --- | RETAINING WALL |
| --- | --- | CONTOUR |
| + | + | SPOT ELEVATION |
| + | + | HIGH POINT |
| --- | --- | FLOW DIRECTION |
| ○ | ○ | TREE TO BE SAVED 1/2 CRZ |
| --- | --- | LIMITS OF CONSTRUCTION |

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PROPOSED DRIVEWAY
 2350 W. HWY 290
 DRIPPING SPRINGS, TX 78620

290 DEVELOPMENT PARTNERS, LLC

**CULVERT GRADING
 PLAN & DETAILS**

PROJECT #
 1219-100

ISSUE DATE
 03-09-21

SHEET
 3
 3 OF 4

Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, May 14 2021

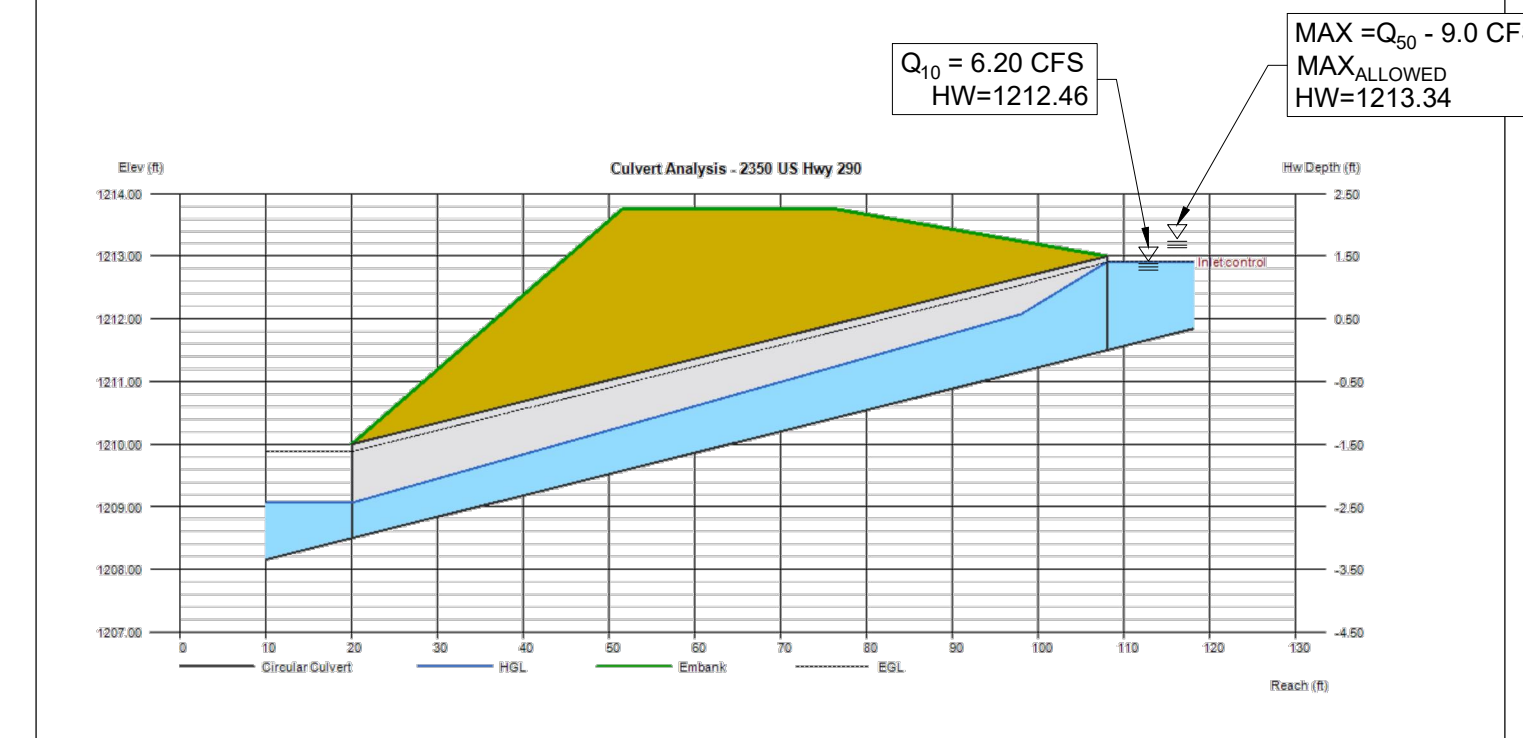
Culvert Analysis - 2350 US Hwy 290

| | | | |
|---------------------|--------------------------------|---------------------|-----------------|
| Invert Elev Dn (ft) | = 1208.50 | Calculations | |
| Pipe Length (ft) | = 88.00 | Qmin (cfs) | = 2.20 |
| Slope (%) | = 3.41 | Qmax (cfs) | = 12.20 |
| Invert Elev Up (ft) | = 1211.50 | Tailwater Elev (ft) | = 0.00 |
| Rise (in) | = 18.0 | | |
| Shape | = Circular | Highlighted | |
| Span (in) | = 18.0 | Qtotal (cfs) | = 6.20 |
| No. Barrels | = 1 | Qpipe (cfs) | = 6.20 |
| n-Value | = 0.012 | Qoverflow (cfs) | = 0.00 |
| Culvert Type | = Circular Concrete | Qvertop (cfs) | = 10.21 |
| Culvert Entrance | = Groove end projecting (C) | Veloc Dn (ft/s) | = 5.18 |
| Coeff. K,M,c,y,k | = 0.0045, 2, 0.0317, 0.69, 0.2 | HGL Dn (ft) | = 1209.06 |
| | | HGL Up (ft) | = 1212.46 |
| | | Hw Elev (ft) | = 1212.91 |
| | | Hw/D (ft) | = 0.94 |
| | | Flow Regime | = Inlet Control |
| Embankment | | | |
| Top Elevation (ft) | = 1213.75 | | |
| Top Width (ft) | = 25.00 | | |
| Crest Width (ft) | = 25.00 | | |

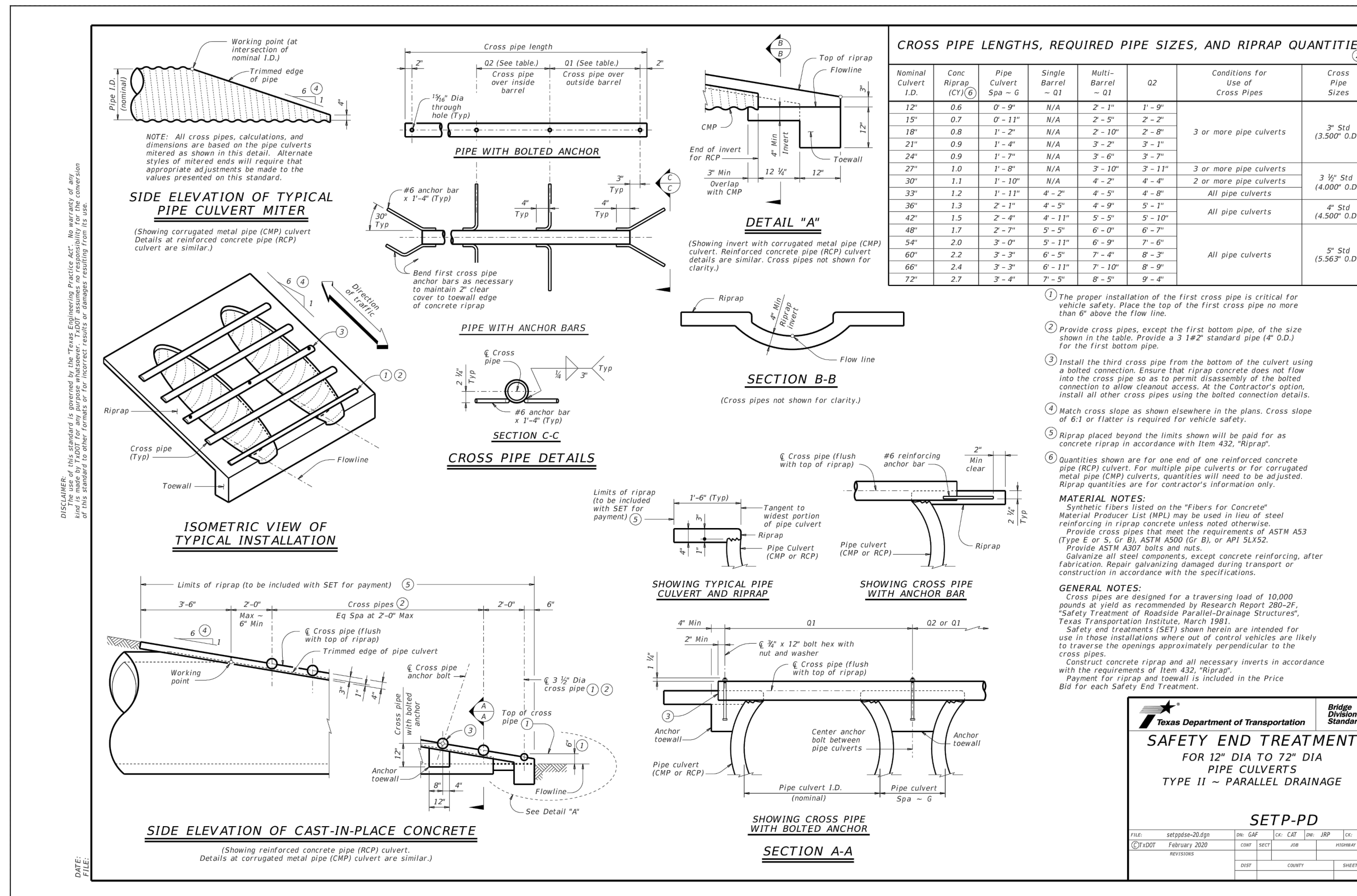
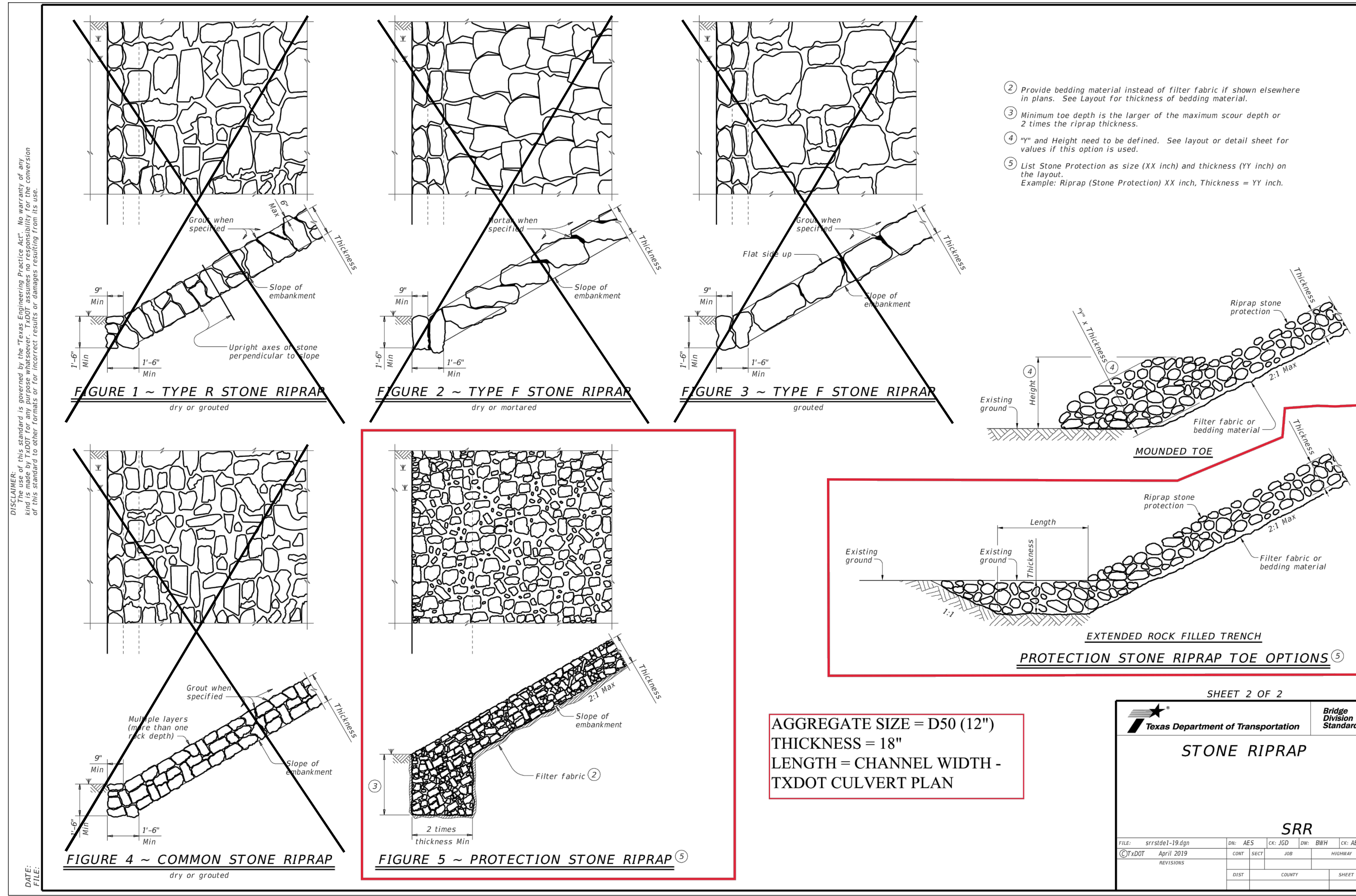
RIP-RAP LENGTH CALCULATION

L_a - APRON LENGTH (FT)
 V - CHANNEL VELOCITY (FT/S)
 D - CULVERT PIPE DIAMETER (FT)

$L_a = 0.5 \cdot V \cdot D$ $0.5 \cdot 5.18 \text{ ft/s} \cdot 1.5 \text{ ft} = 3.88 \text{ ft MINIMUM}$



Drawing: \\N0701AN\del\del\Project\1219 - 290 Development Partners\1219 - 2350 W Hwy 290 Driveway\Civil Drawings\Sheet\1219-100_2350 Hwy 290.dwg
 User: GABRIELGALLES
 Last Modified: May 19, 21 10:28
 Plot Date/Time: May 19, 21 10:28:40



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 91160
 PROFESSIONAL ENGINEER
 FIRM REG. # F-8601

PROPOSED DRIVEWAY
 2350 W. HWY 290
 DRIPPING SPRINGS, TX 78620

290 DEVELOPMENT PARTNERS, LLC

DETAILS (2)

PROJECT #
 1219-100

ISSUE DATE
 03-09-21

PROJECT MGR: JS
 DESIGNER: GM
 DRAWN BY: DC

SHEET
4
 4 OF 4