# ALTERNATIVE 1 - PREFERRED

**100%** SUBMITTAL

Scale: 0' 50' 100' 200'

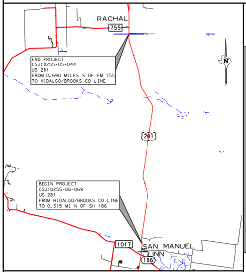
Date:

**CSJ: 0255-06-069, ETC.**

**US 281**

Texas Department of Transportation © 2019

FILE: N:\0024-15-101\CADD\DGN\SCHEMATIC ALTERNATIVES\ALTERNATIVE 1 WITH PROFILES\PLOTTING FILES NO*CONT FRTG RDS*PREFERRED ALTERNATIVE\P&P*PREFERRED*US281*SEG*2*ALT*1*ROLLPLOT*100-5.dgn
DATE: 6/18/2019 6:17:04 PM


RACHAL
755
END PROJECT
CSJ:0255-05-044
US 281
FROM 0.690 MILES S OF FM 755
TO HIDALGO/BROOKS CO LINE
N
281
BEGIN PROJECT
CSJ:0255-06-069
US 281
FROM HIDALGO/BROOKS CO LINE
TO 0.315 MI N OF SH 186
1017
SAN MANUEL
LINN
186

## COLOR LEGEND

| | |
|---|---|
| 🟨 | PROPOSED MAINLANES |
| 🟦 | FRONTAGE ROADS |
| 🟪 | RAMPS |
| 🟩 | EXISTING STRUCTURES |
| 🟥 | PROPOSED BRIDGE STRUCTURES |
| ― | PROPOSED RETAINING WALL |
| ➡ | PROPOSED LANE INDICATOR |
| –·– | PROPOSED RIGHT-OF-WAY |
| –┼– | PROPOSED CONTROL OF ACCESS (COA) |
| –·–·– | EXISTING RIGHT-OF-WAY |
| ⇨ | EXISTING LANE INDICATOR |
| - - - | ULTIMATE PAVEMENT WIDTH |
| ▨ | REMOVE EXIST PAV |

## PROFILE

| | |
|---|---|
| ――― | MAINLANE PGL |
| - - - | EXISTING GROUND AT PGL |
| ――― | NBFR PGL |
| ――― | SBFR PGL |
| –·–·– | NB ROW |
| - - - | SB ROW |
| - - - | 100 YR. WSE |

Texas Department of Transportation © 2019

ENTECH CIVILENGINEERS, INC
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

## TEXAS DEPARTMENT OF TRANSPORTATION
## PRELIMINARY DESIGN SCHEMATIC
## US 281
## HIDALGO/BROOKS COUNTY

LIMITS: From: 0.690 MILES SOUTH OF FM 755
To: 0.315 MILES NORTH OF SH 186

C-S-J-: 0255-06-069, etc.
FED. AID PROJECT NO.:
LENGTH: CSJ 0255-06-069 15.522 MILES
CSJ 0255-05-044 7.220 MILES
Existing Posted Speed: 75 MPH - MAINLANES

OFFICE OF DISTRICT ENGINEER
PHARR DISTRICT

DESIGN SPEED: 75 MPH - Mainlane; 50 MPH Frontage Roads & Ramps
Functional Classification: Principal Arterial
Chapter 3, Section 6 Freeways
Superelevation Rate $e_{max} = 6\%$

6/18/2019

APPROVED: DESIGN DIVISION LETTER DATED

APPROVED: FHWA LETTER DATED
FED. RD. DIV. NO. 6

APPROVED:
__________, 2019
DISTRICT ENGINEER

CORRECT:
__________, 2019
AREA ENGINEER

RECOMMENDED FOR APPROVAL:
__________, 2019
DIRECTOR OF TRANSPORTATION PLANNING AND DEVELOPMENT

## AVERAGE DAILY TRAFFIC VOLUMES

CSJ 0255-06-069
US 281 MAINLANES
From: HIDALGO/BROOKS COUNTY LINE
To: 0.315 MILES NORTH OF SH 186

CSJ 0255-05-044
US 281 MAINLANES
From: 0.690 MILES SOUTH OF FM 755
To: HIDALGO/BROOKS COUNTY LINE IN BROOKS COUNTY

| EXIST | FUTURE |
|---|---|
| 2025-ADT | 2045-ADT |
| 17,935 | 24,145 |

ENTECH
PRELIMINARY
Document Incomplete: not intended for permit, bidding or construction.
Engineer: OCTAVIO N. GUERRA, P.E.
P.E. Serial No. 95688
Date: 6/18/2019

# US 281-SEGMENT 2
# ALTERNATIVE 1 - PREFERRED

STA. 1794+00 TO STA. 2004+00

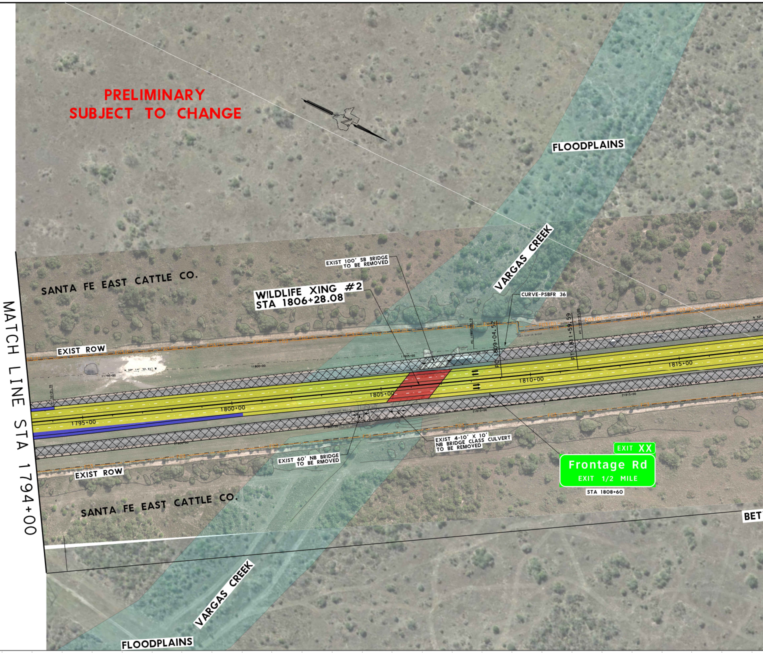
ROLL 5 OF 6

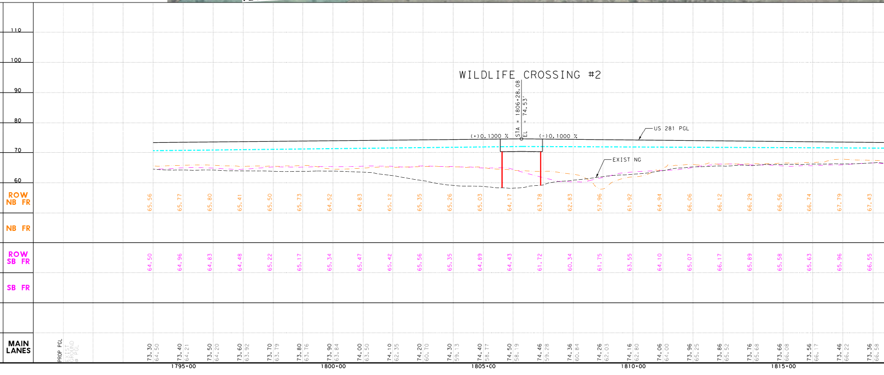
🔴 EXISTING CROSSOVER

UTILITY LEGEND FOR US 281
HIDALGO, TEXAS

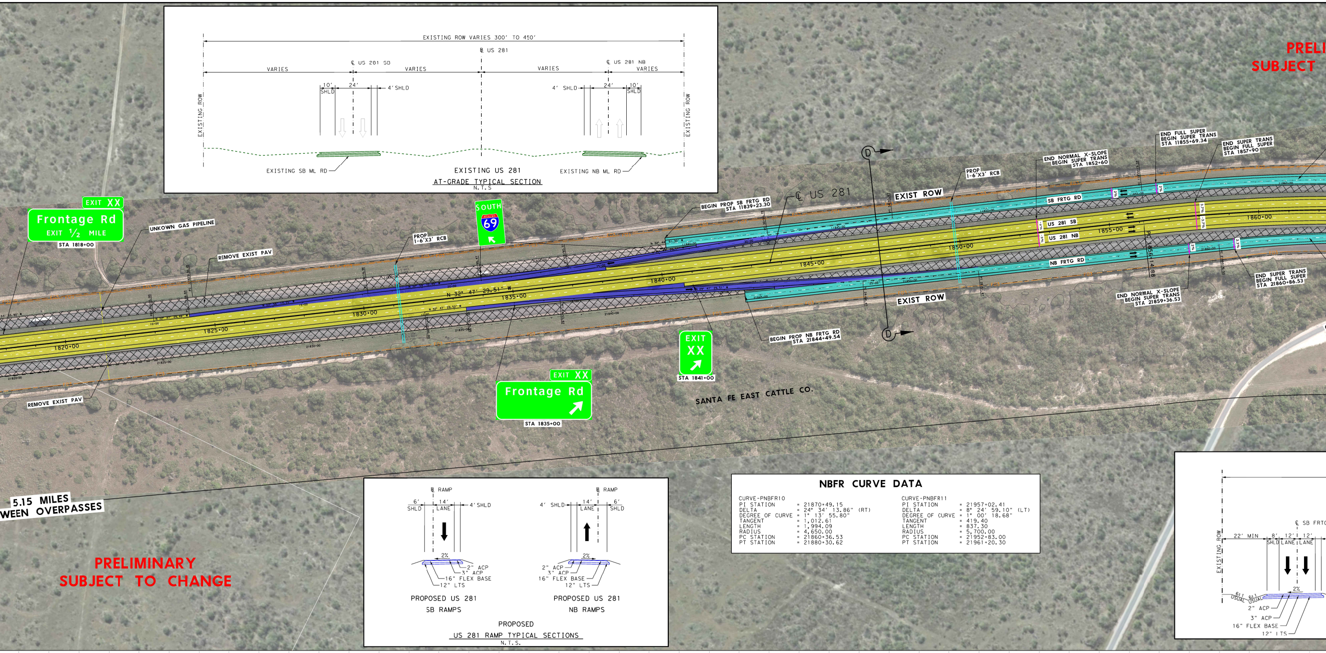
| UTILITY | LINE STYLE |
|---|---|
| ATT TELEPHONE | FO1 |
| ATT TELEPHONE | FO1 (D) |
| FIBERLIGHT | FO2 |
| FIBERLIGHT | FO2 (D) |
| VALLEY | FO3 |
| VALLEY | FO3 (D) |
| OH TRANSMISSION | OHE1 (D) |
| AEP ELECTRIC | OHE2 (C) |
| MAGIC ELECTRIC COOP | OHE3 (C) |
| TEXDOT ILLUMINATION | E4 |
| DCP MIDSTREAM | G1 |
| DCP MIDSTREAM | G1 (C) |
| ENTERPRISE PRODUCTS | G2 |
| EXXONMOBIL | G3 |
| KINDER MORGAN | G4 |
| UNKNOWN | G5 |
| CITY OF FALFURIAS | W1 (D) |
| TXDOT SEWER | ― |

1. ALL SUE LEVEL B UTILITIES ARE OBTAINED BY GEOPHYSICAL METHODS.
2. ALL SUE LEVEL C UTILITIES WERE DRAWN FROM TOPOGRAPHIC SURVEY.
3. ALL SUE LEVEL D UTILITIES WERE DRAWN FROM UTILITY RECORDS.


PRELIMINARY
SUBJECT TO CHANGE
FLOODPLAINS
VARGAS CREEK
SANTA FE EAST CATTLE CO.
EXIST 100' SB BRIDGE TO BE REMOVED
WILDLIFE XING #2
STA 1806+28.08
CURVE-PSBFR 36
PC 1809+04.52
PT 1811+59.59
EXIST ROW
1795+00
1800+00
1805+00
1810+00
1815+00
11795+00
11800+00
11805+00
11810+00
21805+00
21810+00
21815+00
FO3
FO3 (D)
EXIST 4-10' X 10' NB BRIDGE CLASS CULVERT TO BE REMOVED
EXIST 60' NB BRIDGE TO BE RMOVED
EXIST ROW
SANTA FE EAST CATTLE CO.
EXIT XX
Frontage Rd
EXIT 1/2 MILE
STA 1808+60
MATCH LINE STA 1794+00
VARGAS CREEK
FLOODPLAINS
BET

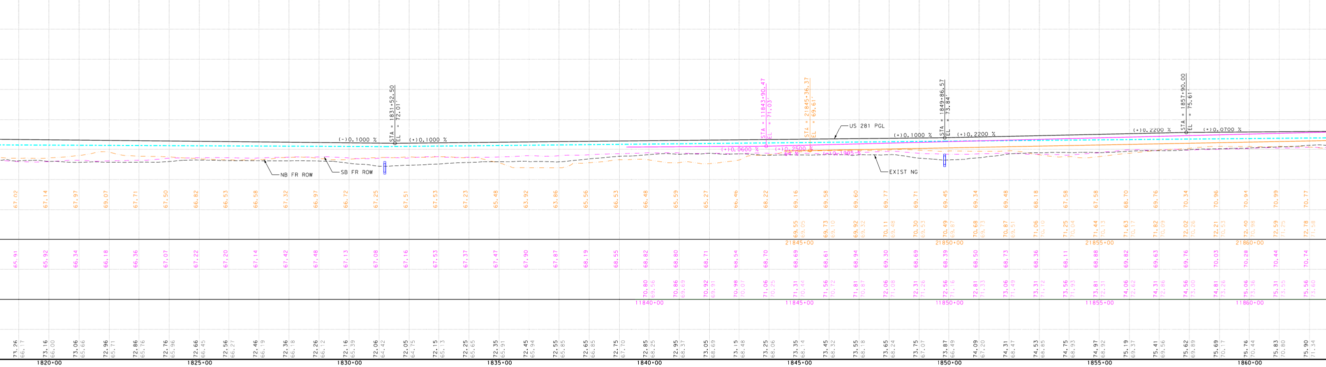


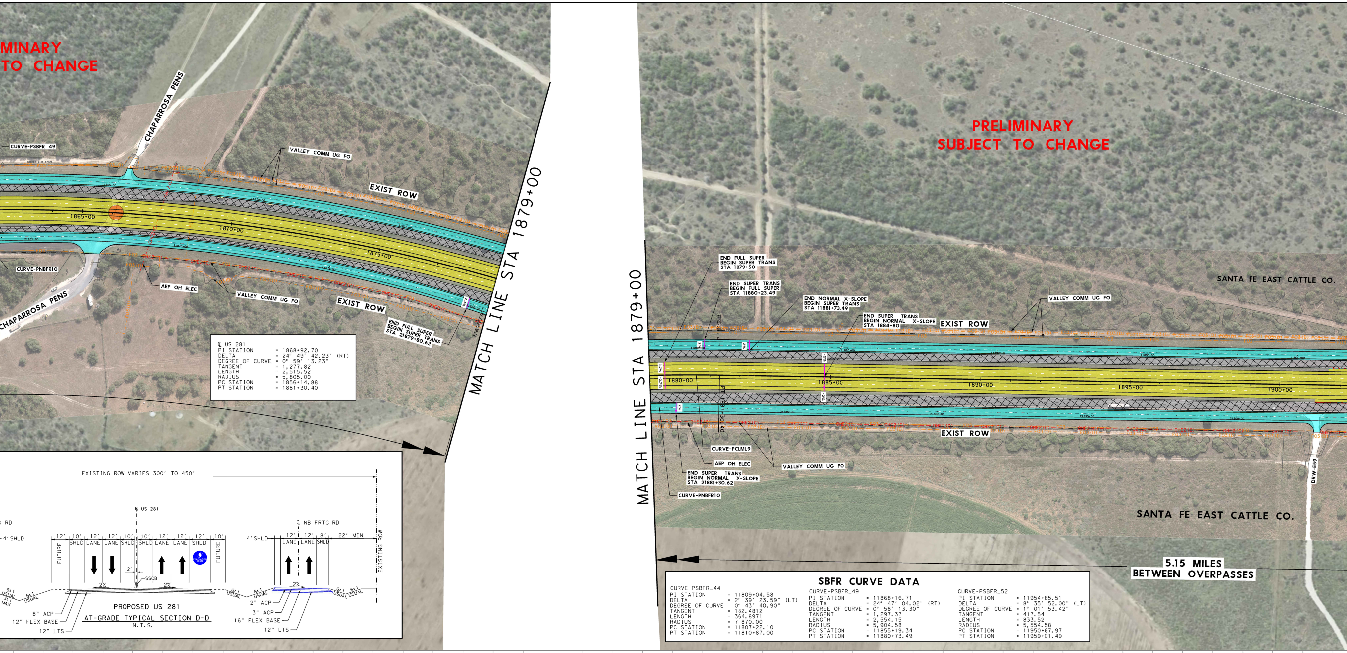
| | ROW NB FR | ROW SB FR | MAIN LANES PROP PGL | MAIN LANES EXIST GROUND @ PGL |
|---|---|---|---|---|
| | 65.56 | 64.50 | 73.30 | 64.50 |
| 1795+00 | 65.77 | 64.96 | 73.40 | 64.21 |
| | 65.80 | 64.83 | 73.50 | 64.20 |
| | 65.41 | 64.48 | 73.60 | 63.92 |
| | 65.50 | 65.22 | 73.70 | 63.79 |
| | 65.73 | 65.17 | 73.80 | 63.76 |
| 1800+00 | 64.52 | 65.34 | 73.90 | 63.84 |
| | 64.83 | 65.47 | 74.00 | 63.50 |
| | 65.12 | 65.42 | 74.10 | 62.35 |
| | 65.35 | 65.56 | 74.20 | 60.70 |
| | 65.26 | 65.35 | 74.30 | 59.13 |
| 1805+00 | 65.03 | 64.89 | 74.40 | 58.77 |
| | 64.17 | 64.43 | 74.50 | 58.19 |
| | 63.78 | 61.72 | 74.46 | 59.28 |
| | 62.83 | 60.34 | 74.36 | 60.84 |
| | 57.96 | 61.75 | 74.26 | 62.03 |
| 1810+00 | 61.92 | 63.55 | 74.16 | 62.80 |
| | 64.94 | 64.10 | 74.06 | 64.00 |
| | 66.06 | 65.07 | 73.96 | 65.25 |
| | 66.12 | 66.17 | 73.86 | 65.52 |
| | 66.29 | 65.89 | 73.76 | 65.68 |
| 1815+00 | 66.56 | 65.58 | 73.66 | 66.08 |
| | 66.74 | 65.63 | 73.56 | 66.17 |
| | 67.79 | 65.96 | 73.46 | 66.22 |
| | 67.43 | 66.55 | 73.36 | 66.58 |


EXISTING ROW VARIES 300' TO 450'
℄ US 281
℄ US 281 SB
℄ US 281 NB
VARIES
10' SHLD
24'
4' SHLD
EXISTING ROW
EXISTING SB ML RD
EXISTING US 281
EXISTING NB ML RD
AT-GRADE TYPICAL SECTION
N.T.S.
EXIT XX
Frontage Rd
EXIT ½ MILE
STA 1818+00
UNKOWN GAS PIPELINE
REMOVE EXIST PAV
PROP 1-6'X3' RCB
SOUTH
69
℄ US 281
BEGIN PROP SB FRTG RD STA 11839+23.30
EXIST ROW
N 32° 47' 29.51" W
1820+00
1825+00
1830+00
1835+00
1840+00
1845+00
1850+00
1855+00
1860+00
SB FRTG RD
US 281 SB
US 281 NB
NB FRTG RD
END NORMAL X-SLOPE BEGIN SUPER TRANS STA 1852+60
END FULL SUPER BEGIN SUPER TRANS STA 11855+69.34
END SUPER TRANS BEGIN FULL SUPER STA 1857+90
END NORMAL X-SLOPE BEGIN SUPER TRANS STA 21859+36.53
END SUPER TRANS BEGIN FULL SUPER STA 21860+86.53
PC 1856+14.88
BEGIN PROP NB FRTG RD STA 21844+49.54
EXIT XX
STA 1841+00
Frontage Rd
STA 1835+00
SANTA FE EAST CATTLE CO.
REMOVE EXIST PAV
5.15 MILES
WEEN OVERPASSES
PRELIMINARY
SUBJECT TO CHANGE
PRELI
SUBJECT
℄ RAMP
6' SHLD
14' LANE
4' SHLD
2%
2" ACP
3" ACP
16" FLEX BASE
12" LTS
PROPOSED US 281 SB RAMPS
PROPOSED US 281 NB RAMPS
PROPOSED
US 281 RAMP TYPICAL SECTIONS
N.T.S.
EXISTING ROW
22' MIN
℄ SB FRTG
8' SHLD
12' LANE
12' LANE
6:1 USUAL
2" ACP
3" ACP
16" FLEX BASE
12" LTS

## NBFR CURVE DATA

| CURVE-PNBFR10 | | CURVE-PNBFR11 | |
|---|---|---|---|
| PI STATION | = 21870+49.15 | PI STATION | = 21957+02.41 |
| DELTA | = 24° 34' 13.86" (RT) | DELTA | = 8° 24' 59.10" (LT) |
| DEGREE OF CURVE | = 1° 13' 55.80" | DEGREE OF CURVE | = 1° 00' 18.68" |
| TANGENT | = 1,012.61 | TANGENT | = 419.40 |
| LENGTH | = 1,994.09 | LENGTH | = 837.30 |
| RADIUS | = 4,650.00 | RADIUS | = 5,700.00 |
| PC STATION | = 21860+36.53 | PC STATION | = 21952+83.00 |
| PT STATION | = 21880+30.62 | PT STATION | = 21961+20.30 |


STA = 1831+52.50
EL = 72.01
(-)0.1000 %
(+)0.1000 %
NB FR ROW
SB FR ROW
STA = 11843+90.47
EL = 71.03'
STA = 21845+36.37
EL = 69.61'
(+)0.0600 %
(+)0.2500 %
(+)0.1995 %
US 281 PGL
STA = 1849+86.57
EL = 73.84'
(+)0.1000 %
(+)0.2200 %
EXIST NG
STA = 1857+90.00
EL = 75.61'
(+)0.2200 %
(+)0.0700 %
21845+00
21850+00
21855+00
21860+00
11840+00
11845+00
11850+00
11855+00
11860+00
1820+00
1825+00
1830+00
1835+00
1840+00
1845+00
1850+00
1855+00
1860+00


MINARY
TO CHANGE
PRELIMINARY
SUBJECT TO CHANGE
CHAPARROSA PENS
CURVE-PSBFR 49
VALLEY COMM UG FO
EXIST ROW
1865+00
1870+00
1875+00
CURVE-PNBFR10
AEP OH ELEC
CHAPARROSA PENS
END FULL SUPER
BEGIN SUPER TRANS
STA 21879+80.62
MATCH LINE STA 1879+00
END FULL SUPER
BEGIN SUPER TRANS
STA 1879+50
END SUPER TRANS
BEGIN FULL SUPER
STA 11880+23.49
END NORMAL X-SLOPE
BEGIN SUPER TRANS
STA 11881+73.49
END SUPER TRANS
BEGIN NORMAL X-SLOPE
STA 1884+80
1880+00
1885+00
1890+00
1895+00
1900+00
PT 1881+30.40
CURVE-PCLML9
END SUPER TRANS
BEGIN NORMAL X-SLOPE
STA 21881+30.62
SANTA FE EAST CATTLE CO.
DRW-E59
5.15 MILES
BETWEEN OVERPASSES
EXISTING ROW VARIES 300' TO 450'
℄ US 281
℄ NB FRTG RD
4' SHLD
12' 10' 12' 12' 10' 10' 12' 12' 12' 10'
FUTURE
SHLD LANE LANE SHLD SHLD LANE LANE SHLD
2'
SSCB
2%
6:1 USUAL
3:1 MAX
12' 12' 8' 22' MIN
LANE LANE SHLD
EXISTING ROW
8" ACP
12" FLEX BASE
12" LTS
2" ACP
3" ACP
16" FLEX BASE
12" LTS

℄ US 281
PI STATION = 1868+92.70
DELTA = 24° 49' 42.23" (RT)
DEGREE OF CURVE = 0° 59' 13.23"
TANGENT = 1,277.82
LENGTH = 2,515.52
RADIUS = 5,805.00
PC STATION = 1856+14.88
PT STATION = 1881+30.40

PROPOSED US 281

AT-GRADE TYPICAL SECTION D-D

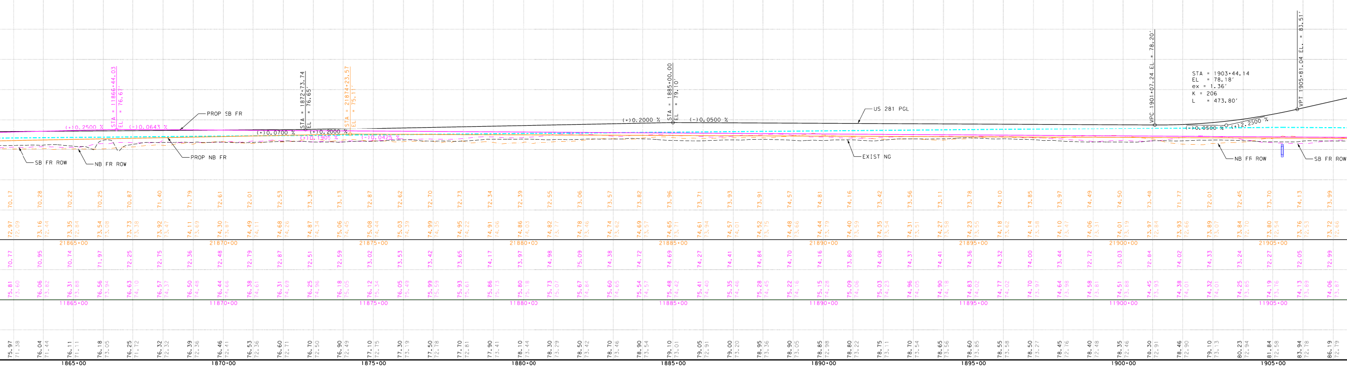
N.T.S.

## SBFR CURVE DATA

CURVE-PSBFR_44
PI STATION = 11809+04.58
DELTA = 2° 39' 23.59" (LT)
DEGREE OF CURVE = 0° 43' 40.90"
TANGENT = 182.4812
LENGTH = 364.8971
RADIUS = 7,870.00
PC STATION = 11807+22.10
PT STATION = 11810+87.00

CURVE-PSBFR_49
PI STATION = 11868+16.71
DELTA = 24° 47' 04.02" (RT)
DEGREE OF CURVE = 0° 58' 13.30"
TANGENT = 1,297.37
LENGTH = 2,554.15
RADIUS = 5,904.58
PC STATION = 11855+19.34
PT STATION = 11880+73.49

CURVE-PSBFR_52
PI STATION = 11954+85.51
DELTA = 8° 35' 52.00" (LT)
DEGREE OF CURVE = 1° 01' 53.42"
TANGENT = 417.54
LENGTH = 833.52
RADIUS = 5,554.58
PC STATION = 11950+67.97
PT STATION = 11959+01.49


STA = 11866+44.03
EL = 76.67'
(+)0.2500 %
(-)0.0643 %
PROP SB FR
STA = 1872+73.74
EL = 76.65'
(+)0.0700 %
(+)0.2000 %
(-)0.1905 %
STA = 21874+23.57
EL = 75.11'
(-)0.0425 %
(+)0.2000 %
STA = 1885+00.00
EL = 79.10'
(-)0.0500 %
US 281 PGL
VPC 1901+07.24 EL = 78.20'
STA = 1903+44.14
EL = 78.18'
ex = 1.36'
K = 206
L = 473.80'
VPT 1905+81.04 EL. = 83.51'
(-)0.0500 %
(+)2.2500 %
SB FR ROW
NB FR ROW
PROP NB FR
EXIST NG
21865+00
21870+00
21875+00
21880+00
21885+00
21890+00
21895+00
21900+00
21905+00
11865+00
11870+00
11875+00
11880+00
11885+00
11890+00
11895+00
11900+00
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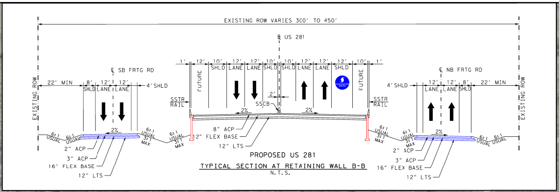
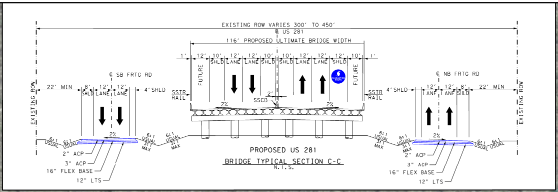
1890+00
1895+00
1900+00
1905+00


EXISTING ROW VARIES 300' TO 450'
℄ US 281
℄ SB FRTG RD
22' MIN
8' SHLD
12' LANE
12' LANE
4' SHLD
EXISTING ROW
FUTURE
SHLD LANE LANE SHLD SHLD LANE LANE SHLD
SSCB
SSTR RAIL
2%
6:1 USUAL
3:1 MAX
2" ACP
3" ACP
16" FLEX BASE
12" LTS
8" ACP
12" FLEX BASE
℄ NB FRTG RD
EXISTING ROW

PROPOSED US 281

TYPICAL SECTION AT RETAINING WALL B-B

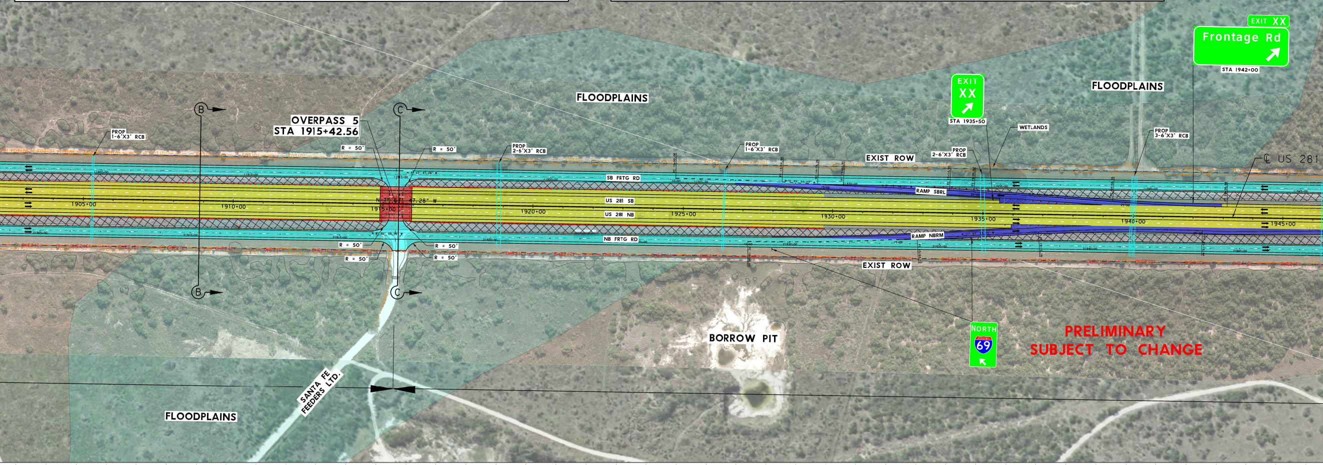
N.T.S.

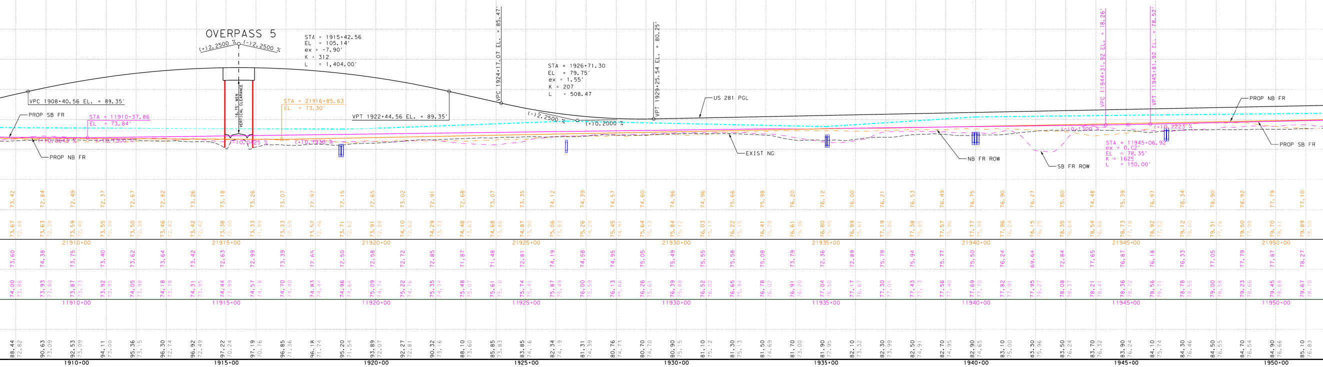

EXISTING ROW VARIES 300' TO 450'
℄ US 281
116' PROPOSED ULTIMATE BRIDGE WIDTH
℄ SB FRTG RD
22' MIN
8' SHLD
12' LANE
12' LANE
4' SHLD
EXISTING ROW
FUTURE
SHLD LANE LANE SHLD SHLD LANE LANE SHLD
SSCB
SSTR RAIL
2%
6:1 USUAL
3:1 MAX
2" ACP
3" ACP
16" FLEX BASE
12" LTS
℄ NB FRTG RD
EXISTING ROW

PROPOSED US 281

BRIDGE TYPICAL SECTION C-C

N.T.S.


EXIT XX
Frontage Rd
STA 1942+00
EXIT XX
STA 1935+50
FLOODPLAINS
FLOODPLAINS
OVERPASS 5
STA 1915+42.56
B
C
PROP 1-6'X3' RCB
R = 50'
PROP 2-6'X3' RCB
PROP 1-6'X3' RCB
PROP 2-6'X3' RCB
WETLANDS
PROP 3-6'X3' RCB
EXIST ROW
℄ US 281
SB FRTG RD
US 281 SB
US 281 NB
NB FRTG RD
RAMP SBRL
RAMP NBRM
1905+00
1910+00
1915+00
1920+00
1925+00
1930+00
1935+00
1940+00
1945+00
EXIST ROW
BORROW PIT
NORTH
69
PRELIMINARY
SUBJECT TO CHANGE
SANTA FE FEEDERS LTD.
FLOODPLAINS


OVERPASS 5
(+)2.2500 %
(-)2.2500 %
STA = 1915+42.56
EL = 105.14'
ex = -7.90'
K = 312
L = 1,404.00'
VPC 1908+40.56 EL. = 89.35'
PROP SB FR
STA = 11910+37.86
EL = 73.84'
PROP NB FR
STA = 21916+85.63
EL = 73.30'
VPT 1922+44.56 EL. = 89.35'
VPC 1924+17.07 EL. = 85.47'
STA = 1926+71.30
EL = 79.75'
ex = 1.55'
K = 207
L = 508.47
(-)2.2500 %
(+)0.2000 %
VPT 1929+25.54 EL. = 80.25'
US 281 PGL
EXIST NG
NB FR ROW
SB FR ROW
VPC 11944+31.92 EL. = 78.26'
VPT 11945+81.92 EL. = 78.52'
STA = 11945+06.92
ex = 0.02'
EL = 76.35'
K = 1625
L = 150.00'
PROP NB FR
PROP SB FR
21910+00
21915+00
21920+00
21925+00
21930+00
21935+00
21940+00
21945+00
21950+00
11910+00
11915+00
11920+00
11925+00
11930+00
11935+00
11940+00
11945+00
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1920+00
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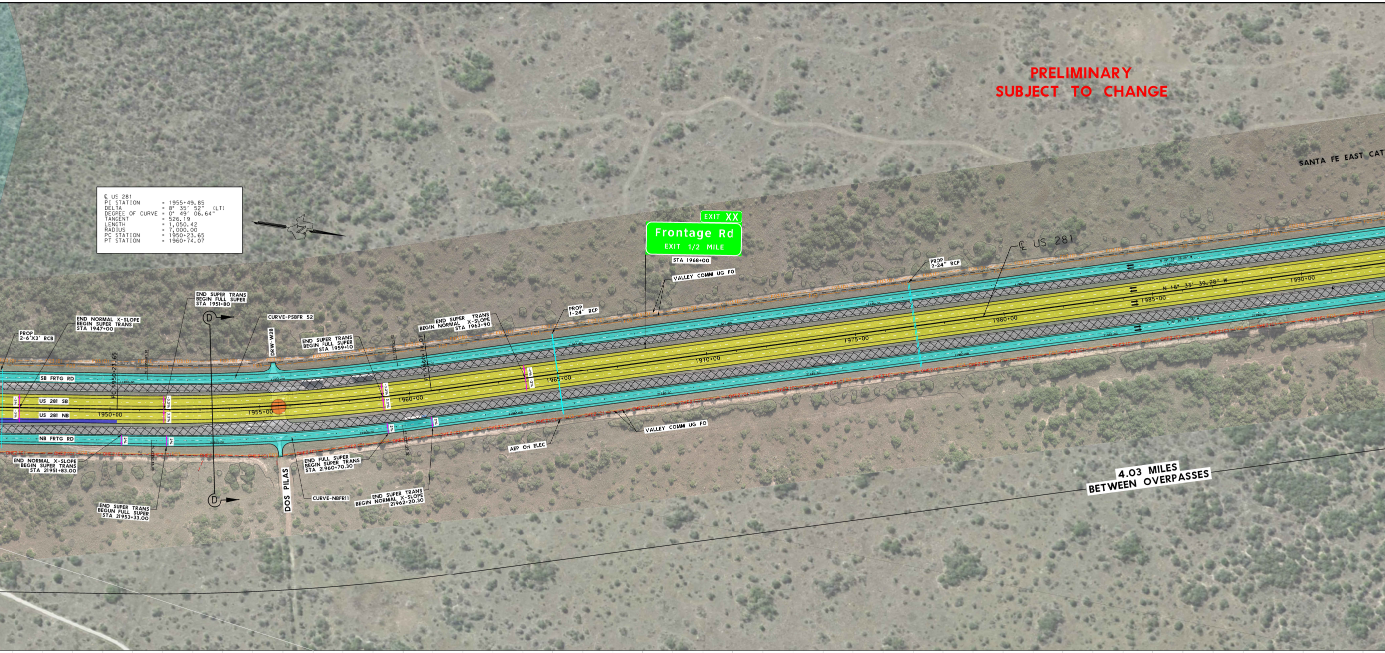
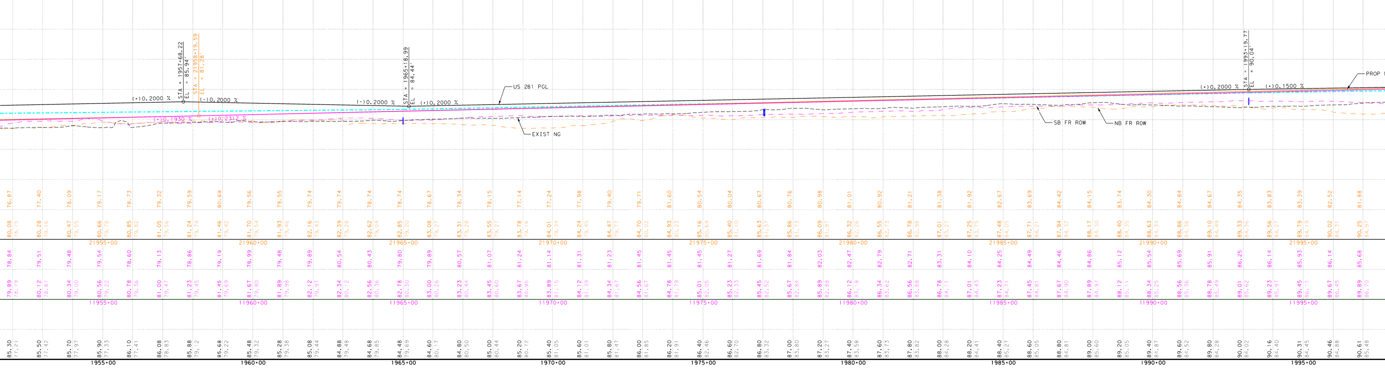
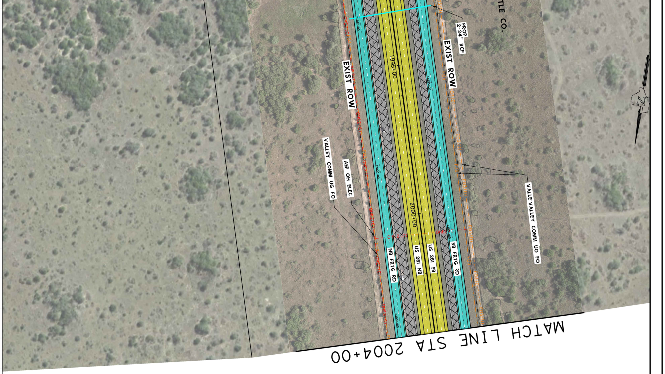
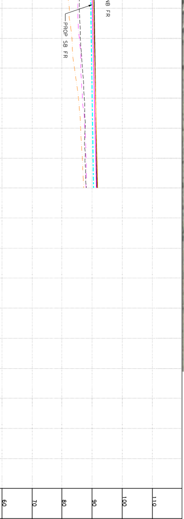
1930+00
1935+00
1940+00
1945+00
1950+00


PRELIMINARY
SUBJECT TO CHANGE
SANTA FE EAST CAT
EXIT XX
Frontage Rd
EXIT 1/2 MILE
STA 1968+00
VALLEY COMM UG FO
℄ US 281
PROP 2-24" RCP
PROP 1-24" RCP
N 16° 33' 39.28" W
1990+00
1985+00
1980+00
1975+00
1970+00
1965+00
1960+00
1955+00
1950+00
END SUPER TRANS BEGIN NORMAL X-SLOPE STA 1963+90
END SUPER TRANS BEGIN FULL SUPER STA 1959+10
PT 1960+74.07
DRW-W28
CURVE-PSBFR 52
END SUPER TRANS BEGIN FULL SUPER STA 1951+80
END NORMAL X-SLOPE BEGIN SUPER TRANS STA 1947+00
PROP 2-6'X3' RCB
PC 1950+23.65
SB FRTG RD
US 281 SB
US 281 NB
NB FRTG RD
-3.2%
3.2%
2%
END NORMAL X-SLOPE BEGIN SUPER TRANS STA 21951+83.00
END SUPER TRANS BEGUN FULL SUPER STA 21953+33.00
DOS PILAS
CURVE-NBFR11
END FULL SUPER BEGIN SUPER TRANS STA 21960+70.30
END SUPER TRANS BEGIN NORMAL X-SLOPE 21962+20.30
AEP OH ELEC
VALLEY COMM UG FO
4.03 MILES BETWEEN OVERPASSES
D
D

℄ US 281
PI STATION = 1955+49.85
DELTA = 8° 35′ 52″ (LT)
DEGREE OF CURVE = 0° 49′ 06.64″
TANGENT = 526.19
LENGTH = 1,050.42
RADIUS = 7,000.00
PC STATION = 1950+23.65
PT STATION = 1960+74.07


STA = 1957+68.22
EL = 85.94'
STA = 21958+19.59
EL = 81.28'
STA = 1965+18.99
EL = 84.44'
STA = 1993+19.77
EL = 90.04'
(+)0.2000 %
(-)0.2000 %
(-)0.2000 %
(+)0.2000 %
(+)0.2000 %
(+)0.1500 %
(+)0.1930 %
(+)0.2312 %
US 281 PGL
EXIST NG
SB FR ROW
NB FR ROW
PROP
21955+00
21960+00
21965+00
21970+00
21975+00
21980+00
21985+00
21990+00
21995+00
11955+00
11960+00
11965+00
11970+00
11975+00
11980+00
11985+00
11990+00
11995+00
1955+00
1960+00
1965+00
1970+00
1975+00
1980+00
1985+00
1990+00
1995+00


TLE CO.
PROP 2-24" RCP
EXIST ROW
VALLE VALLEY COMM UG FO
SB FRTG RD
US 281 SB
US 281 NB
NB FRTG RD
1995+00
2000+00
EXIST ROW
AEP OH ELEC
VALLEY COMM UG FO
MATCH LINE STA 2004+00



| MAIN LANES | SB FR | ROW SB FR | NB FR | ROW NB FR |
|---|---|---|---|---|
| 90.76<br>85.76 | 90.12<br>87.04 | 85.32 | 90.48<br>85.35 | 82.46 |
| 90.91<br>86.13 | 90.34<br>87.40 | 85.79 | 90.71<br>85.70 | 83.37 |
| 2000+00<br>91.06<br>86.80 | 12000+00<br>90.56<br>87.80 | 86.25 | 22000+00<br>90.95<br>86.21 | 84.19 |
| 91.21<br>87.45 | 90.78<br>88.25 | 86.81 | 91.18<br>86.61 | 85.50 |
| 91.36<br>87.72 | 91.01<br>88.57 | 87.60 | 91.41<br>87.04 | 86.22 |
| 91.51<br>87.69 | 91.23<br>88.79 | 88.02 | 91.64<br>87.20 | 86.80 |
| 91.66<br>88.11 | 91.45<br>89.35 | 88.04 | 91.87<br>87.48 | 87.27 |

ROLL 5 OF 6

**US 281**

**CSJ: 0255-06-069, ETC.**

Date:

**100%**
SUBMITTAL

Scale: 0' 50' 100' 200'

## ALTERNATIVE 1 - PREFERRED