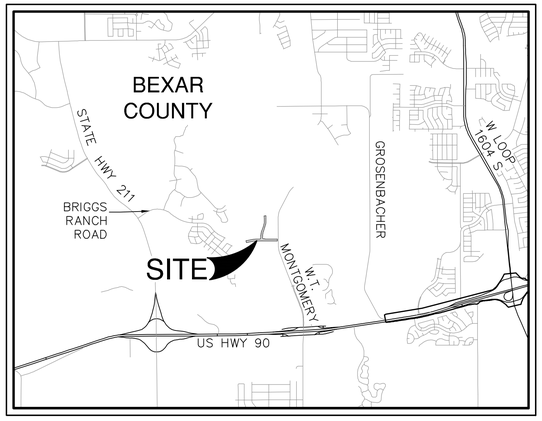
# BRE PHASE 2, COLLECTOR

## BEXAR COUNTY, TEXAS

## CIVIL CONSTRUCTION PLANS

SHEET INDEX

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|---|---|---|
| COVER SHEET | | C0.00 |
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| DRAIN B AND DRAIN B-1 | PLAN AND PROFILE | C1.11 |
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| CEDAR BLUFF RIDGE | PLAN AND PROFILE (10+00.00 TO 17+50.00) | C2.02 |
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LOCATION MAP
NOT-TO-SCALE

SHEET INDEX

| Sheet Title | Sheet Description | Sheet No. |
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| DETAILED SIGNAGE AND TURN LANE PLAN | | C3.01 |
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| SWPPP DETAILS | | C8.10 |

PREPARED FOR:

HDC HWY 211, LLC
100 NE LOOP 410, SUITE 1080
SAN ANTONIO, TEXAS 78216

JULY 2025

STATE OF TEXAS
MATTHEW GEISTWEIDT
116861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025

PAPE-DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

SEWER: UPPER MEDINA FAR WEST
SEWERSHED : MEDIO CREEK W.R.C.

Developer's Name: HDC HWY 211, LLC
Address: 100 NE LOOP 410, SUITE 1080
City: SAN ANTONIO State: TEXAS ZIP: 78216
Phone# (210) 838-6784 FAX#
SAWS Block Map# 080566, 080564 & 082564 Total EDU's 0 Total Acreage 14.00
Total Linear Footage of Pipe: 1,408 LF - 8" Plat No. 25-11800088
Number of Lots 0 SAWS JOB NO. 25-1519

WATER (SAWS PRESSURE ZONE 1080 HGL)

Developer's Name: HDC HWY 211, LTD
Address: 45 NE LOOP 410, SUITE 225
City: SAN ANTONIO State: TEXAS ZIP: 78216
Phone# (210) 838-6784 FAX#
SAWS Block Map# 080566, 080564 & 082564 Total EDU's 0 Total Acreage 14.00
Total Linear Footage of Pipe: 30 LF - 6" DI PIPE Plat No. 25-11800088
Number of Lots 0 SAWS JOB NO. 25-XXXX

SHEET C0.00

PLAT NO. 24-11800112 PD JOB NO. 11412-18 BRE PHASE 2, COLLECTOR

Date: Jul 22, 2025, 1:06pm User ID: dmorris
File: P:\114\12\18\Design\Civil\CV114218.dwg

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## Proposed Conditions Master Drainage Plan Calculations

**(Per City of San Antonio Requaltions)**

| Ref. Point | Structure / Description | Drainage Areas # | Area (Ac) | C | Total Flowpath (ft) | Overland/Sheet Flow (Seelye) $L_O$ (FT) | $S_O$ (ft/ft) | $T_O$* (MIN) | Shallow Concentrated Flow - 1** $L_{SC}$ (FT) | Condition*** | Slope (ft/ft) | $V_{SC}$ (FPS) | $T_{SC}$** (MIN) | Shallow Concentrated Flow - 2** $L_{SC}$ (FT) | Condition*** | Slope (ft/ft) | $V_{SC}$ (FPS) | $T_{SC}$** (MIN) | Channelized Flow** $L_{CH}$ (FT) | $V_{CH}$ (FPS) | $T_{CH}$** (MIN) | $T_{C-TOT}$ | Rational Method Q=CIA IDF Curve: CoSA_A14_PA4 Return Year | Intensity (in/hr) | Q (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | PROPOSED EARTH CHANNEL | A | 15.70 | 0.41 | 2,627 | 100 | 0.026 | 11 | 1,758 | U | 0.040 | 3.2 | 9.1 | | | | - | - | 769 | 6.0 | 2.1 | 22 | 5 | 4.30 | 27.7 |
| | | | | | | | | | | | | | | | | | | | | | | 22 | 25 | 5.91 | 38.0 |
| | | | | | | | | | | | | | | | | | | | | | | 22 | 100 | 7.34 | 47.2 |
| 2 | STREET/DRAIN CAPACITY | C | 2.00 | 0.78 | 893 | 100 | 0.020 | 12 | 43 | U | 0.026 | 2.6 | 0.3 | 750 | S | 0.015 | 3.5 | 3.6 | | - | - | 15 | 5 | 5.24 | 8.2 |
| | | | | | | | | | | | | | | | | | | | | | | 15 | 25 | 7.24 | 11.3 |
| | | | | | | | | | | | | | | | | | | | | | | 15 | 100 | 9.03 | 14.1 |
| 2a | DRAIN CAPACITY | A+C | 17.70 | 0.45 | 2,708 | 100 | 0.026 | 11 | 1,758 | U | 0.040 | 3.2 | 9.1 | | S | 0.015 | - | - | 850 | 6.0 | 2.4 | 22 | 5 | 4.30 | 34.2 |
| | | | | | | | | | | | | | | | | | | | | | | 22 | 25 | 5.91 | 47.1 |
| | | | | | | | | | | | | | | | | | | | | | | 22 | 100 | 7.34 | 58.5 |
| 3 | STREET/DRAIN CAPACITY | D+E | 4.40 | 0.55 | 1,327 | 100 | 0.021 | 12 | 606 | U | 0.017 | 2.1 | 4.8 | 621 | S | 0.016 | 3.6 | 2.9 | | - | - | 19 | 5 | 4.63 | 11.2 |
| | | | | | | | | | | | | | | | | | | | | | | 19 | 25 | 6.37 | 15.4 |
| | | | | | | | | | | | | | | | | | | | | | | 19 | 100 | 7.93 | 19.2 |
| 4 | STREET/DRAIN CAPACITY | F+G | 3.73 | 0.51 | 709 | 100 | 0.028 | 11 | 121 | U | 0.026 | 2.6 | 0.8 | 488 | S | 0.020 | 4.0 | 2.0 | | - | - | 13 | 5 | 5.61 | 10.7 |
| | | | | | | | | | | | | | | | | | | | | | | 13 | 25 | 7.82 | 14.9 |
| | | | | | | | | | | | | | | | | | | | | | | 13 | 100 | 9.76 | 18.6 |
| 5 | STREET/DRAIN CAPACITY | H | 1.11 | 0.74 | 583 | 25 | 0.020 | 5 | 558 | S | 0.013 | 3.2 | 2.9 | | | | - | - | | - | - | 7 | 5 | 7.05 | 5.8 |
| | | | | | | | | | | | | | | | | | | | | | | 7 | 25 | 9.89 | 8.1 |
| | | | | | | | | | | | | | | | | | | | | | | 7 | 100 | 12.37 | 10.2 |
| 5a | DRAIN CAPACITY | F+G+H | 4.84 | 0.56 | 769 | 100 | 0.028 | 11 | 121 | U | 0.026 | 2.6 | 0.8 | 488 | S | 0.020 | 4.0 | 2.0 | 60 | 6.0 | 0.2 | 13 | 5 | 5.61 | 15.2 |
| | | | | | | | | | | | | | | | | | | | | | | 13 | 25 | 7.82 | 21.2 |
| | | | | | | | | | | | | | | | | | | | | | | 13 | 100 | 9.76 | 26.5 |
| 6 | CULVERT | *SEE FLOOD STUDY FOR CALCULATION* | | | | | | | | | | | | | | | | | | | | 100 | - | 1,771.0 |
| 7 | STREET/DRAIN CAPACITY | J | 2.52 | 0.82 | 815 | 25 | 0.020 | 5 | 790 | S | 0.014 | 3.3 | 3.9 | | | | - | - | | - | - | 8 | 5 | 6.75 | 13.9 |
| | | | | | | | | | | | | | | | | | | | | | | 8 | 25 | 9.48 | 19.6 |
| | | | | | | | | | | | | | | | | | | | | | | 8 | 100 | 11.85 | 24.5 |
| 8 | PROPOSED EARTH CHANNEL | K | 19.75 | 0.41 | 3,151 | 100 | 0.032 | 11 | 2,212 | U | 0.020 | 2.3 | 16.2 | | | | - | - | 839 | 6.0 | 2.3 | 29 | 5 | 3.74 | 30.3 |
| | | | | | | | | | | | | | | | | | | | | | | 29 | 25 | 5.13 | 41.5 |
| | | | | | | | | | | | | | | | | | | | | | | 29 | 100 | 6.36 | 51.5 |

**Rational Method Time of Concentration**

*Seelye Chart or TR-55 Eqn. 3-3

**As Calculated using Mannings or TR-55 Figure 3-1 or 6 ft/s

$$T_o = \frac{(0.007(n*L)^{0.8})}{(P2^{0.5}*S^{0.4})} * 60$$

**From TR-55 Figure 3-1****

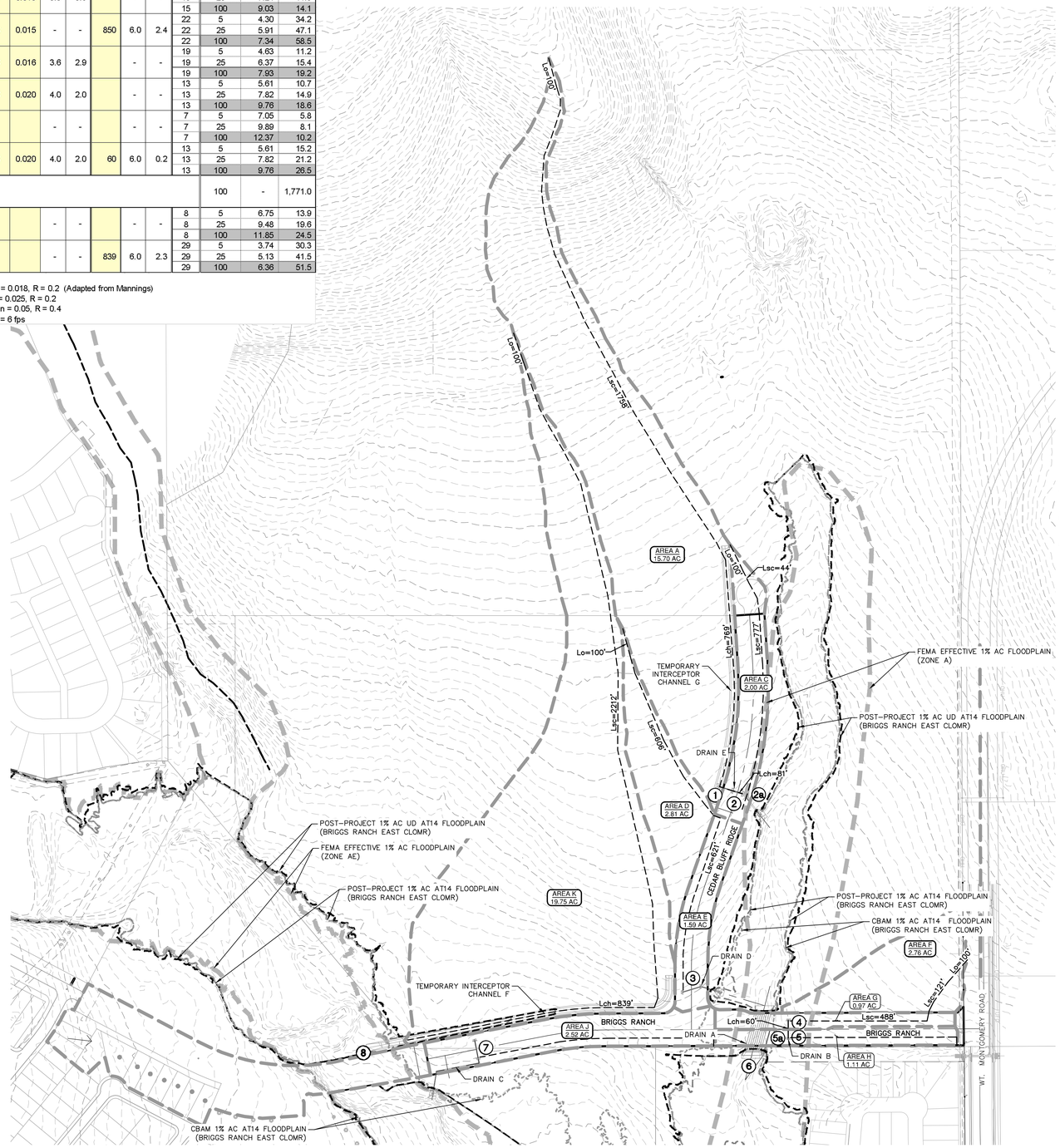
$$v = \frac{k}{n} R^{2/3} S_o^{1/2}$$

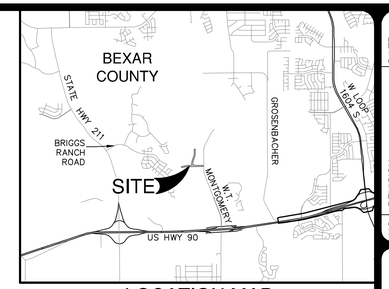
$$k = 1.486\ ft^{1/3}/s$$

**S:** For Streets: n = 0.018, R = 0.2 (Adapted from Mannings)
**P:** For Paved: n = 0.025, R = 0.2
**U:** For Unpaved: n = 0.05, R = 0.4
**D:** For Default: v = 6 fps

**Proposed Conditions Composite Runoff Coefficient Calculations**

| DA | C VALUE 0.39 | 0.41 | 0.67 | 0.96 | Total Area (ac) | Composite C Value |
|---|---|---|---|---|---|---|
| | Area (ac) | | | | | |
| A | | 15.70 | | | 15.70 | 0.41 |
| C | 0.64 | | | 1.36 | 2.00 | 0.78 |
| D | | 2.81 | | | 2.81 | 0.41 |
| E | 0.46 | | | 1.13 | 1.59 | 0.80 |
| D+E | 0.46 | 2.81 | | 1.13 | 4.40 | 0.55 |
| F | | 2.76 | | | 2.76 | 0.41 |
| G | 0.29 | | | 0.68 | 0.97 | 0.79 |
| H | 0.43 | | | 0.68 | 1.11 | 0.74 |
| J | 0.61 | | | 1.91 | 2.52 | 0.82 |
| K | | 19.75 | | | 19.75 | 0.41 |




LOCATION MAP

NOT-TO-SCALE

0' 200' 400' 600'

SCALE: 1"= 200'

LEGEND:

- PROJECT LIMTS
- 890 EXISTING 10' CONTOUR
- DRAINAGE AREAS
- TEMPORARY DRAINAGE AREAS
- DRAINAGE FLOW ARROW
- 300' LENGTH OF FLOW
- (1) DRAINAGE CALCULATION POINT
- FEMA EFFECTIVE 1% AC FLOODPLAIN
- CBAM 1% AC AT14 FLOODPLAIN (BRIGGS RANCH EAST CLOMR)
- POST-PROJECT 1% AC AT 14 FLOODPLAIN (BRIGGS RANCH EAST CLOMR)
- POST-PROJECT 1% AC UD AT14 FLOODPLAIN (BRIGGS RANCH EAST CLOMR)

DATE

NO. REVISION

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025


PAPE-DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800


# BRE PHASE 2, COLLECTOR

BEXAR COUNTY, TEXAS

MASTER DRAINAGE PLAN
PROPOSED CONDITIONS

PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C1.00

Date: July 22, 2025, 1:07 PM — User ID: dmorris
File: P:\114\12\18\Design\Civil\DRMP114218.dwg


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## Ultimate Conditions Master Drainage Plan Calculations

**(Per City of San Antonio Requirements)**

| Ref. Point | Structure / Description | Drainage Areas # | Area (Ac) | C | Total Flowpath (ft) | Overland/Sheet Flow* $L_O$ (FT) | $S_O$ (ft/ft) | $T_O$* (MIN) | Shallow Concentrated Flow - 1** $L_{SC}$ (FT) | Condition** | Slope (ft/ft) | $V_{SC}$ (FPS) | $T_{SC}$** (MIN) | Shallow Concentrated Flow - 2** $L_{SC}$ (FT) | Condition** | Slope (ft/ft) | $V_{SC}$ (FPS) | $T_{SC}$** (MIN) | Channelized Flow** $L_{CH}$ (FT) | $V_{CH}$ (FPS) | $T_{CH}$** (MIN) | $T_{C-TOT}$ | Rational Method Q=CIA IDF Curve: CoSA_A14_PA4 Return Year | Intensity (in/hr) | Q (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | DRAIN CAPACITY | B | 4.98 | 0.96 | 834 | 100 | 0.015 | 12 | 75 | U | 0.015 | 2.0 | 0.6 | 659 | P | 0.020 | 2.9 | 3.8 | | - | - | 16 | 5 | 5.06 | 24.2 |
| | | | | | | | | | | | | | | | | | | | | | | 16 | 25 | 6.99 | 33.4 |
| | | | | | | | | | | | | | | | | | | | | | | 16 | 100 | 8.71 | 41.6 |
| 2 | STREET/DRAIN CAPACITY | C | 5.63 | 0.75 | 1,565 | 100 | 0.020 | 12 | 20 | U | 0.020 | 2.3 | 0.1 | 1,445 | S | 0.020 | 4.0 | 6.0 | | - | - | 18 | 5 | 4.76 | 20.1 |
| | | | | | | | | | | | | | | | | | | | | | | 18 | 25 | 6.56 | 27.7 |
| | | | | | | | | | | | | | | | | | | | | | | 18 | 100 | 8.16 | 34.5 |
| 2a | DRAIN CAPACITY | B+C | 10.61 | 0.85 | 1,646 | 100 | 0.020 | 12 | 20 | U | 0.020 | 2.3 | 0.1 | 1,445 | S | 0.020 | 4.0 | 6.0 | 81 | 6.0 | 0.2 | 18 | 5 | 4.76 | 42.9 |
| | | | | | | | | | | | | | | | | | | | | | | 18 | 25 | 6.56 | 59.2 |
| | | | | | | | | | | | | | | | | | | | | | | 18 | 100 | 8.16 | 73.6 |
| 3 | STREET/DRAIN CAPACITY | D+E | 4.40 | 0.90 | 1,327 | 100 | 0.021 | 5 | 606 | P | 0.017 | 2.7 | 3.8 | 621 | S | 0.016 | 3.6 | 2.9 | | - | - | 11 | 5 | 6.02 | 23.8 |
| | | | | | | | | | | | | | | | | | | | | | | 11 | 25 | 8.43 | 33.4 |
| | | | | | | | | | | | | | | | | | | | | | | 11 | 100 | 10.54 | 41.7 |
| 4 | STREET/DRAIN CAPACITY | F+G | 2.13 | 0.88 | 709 | 100 | 0.028 | 5 | 121 | P | 0.026 | 3.3 | 0.6 | 488 | S | 0.020 | 4.0 | 2.0 | | - | - | 7 | 5 | 7.05 | 13.2 |
| | | | | | | | | | | | | | | | | | | | | | | 7 | 25 | 9.89 | 18.5 |
| | | | | | | | | | | | | | | | | | | | | | | 7 | 100 | 12.37 | 23.2 |
| 5 | STREET/DRAIN CAPACITY | H | 1.11 | 0.74 | 583 | 25 | 0.020 | 5 | 558 | S | 0.013 | 3.2 | 2.9 | | | | - | - | | - | - | 7 | 5 | 7.05 | 5.8 |
| | | | | | | | | | | | | | | | | | | | | | | 7 | 25 | 9.89 | 8.1 |
| | | | | | | | | | | | | | | | | | | | | | | 7 | 100 | 12.37 | 10.2 |
| 5a | DRAIN CAPACITY | F+G+H | 3.24 | 0.83 | 709 | 100 | 0.030 | 5 | 121 | P | 0.026 | 3.3 | 0.6 | 488 | S | 0.020 | 4.0 | 2.0 | | - | - | 7 | 5 | 7.05 | 19.0 |
| | | | | | | | | | | | | | | | | | | | | | | 7 | 25 | 9.89 | 26.6 |
| | | | | | | | | | | | | | | | | | | | | | | 7 | 100 | 12.37 | 33.3 |
| 6 | CULVERT | *SEE FLOOD STUDY FOR CALCULATION* | | | | | | | | | | | | | | | | | | | | | 100 | - | 1,771.0 |
| 7 | STREET/DRAIN CAPACITY | J | 2.71 | 0.82 | 815 | 25 | 0.020 | 5 | 790 | S | 0.014 | 3.3 | 3.9 | | | | - | - | | - | - | 8 | 5 | 6.75 | 15.0 |
| | | | | | | | | | | | | | | | | | | | | | | 8 | 25 | 9.48 | 21.1 |
| | | | | | | | | | | | | | | | | | | | | | | 8 | 100 | 11.85 | 26.3 |

**Rational Method Time of Concentration**

*Seelye Chart or TR-55 Eqn. 3-3

**As Calculated using Mannings or TR-55 Figure 3-1 or 6 ft/s

**From TR-55 Figure 3-1****

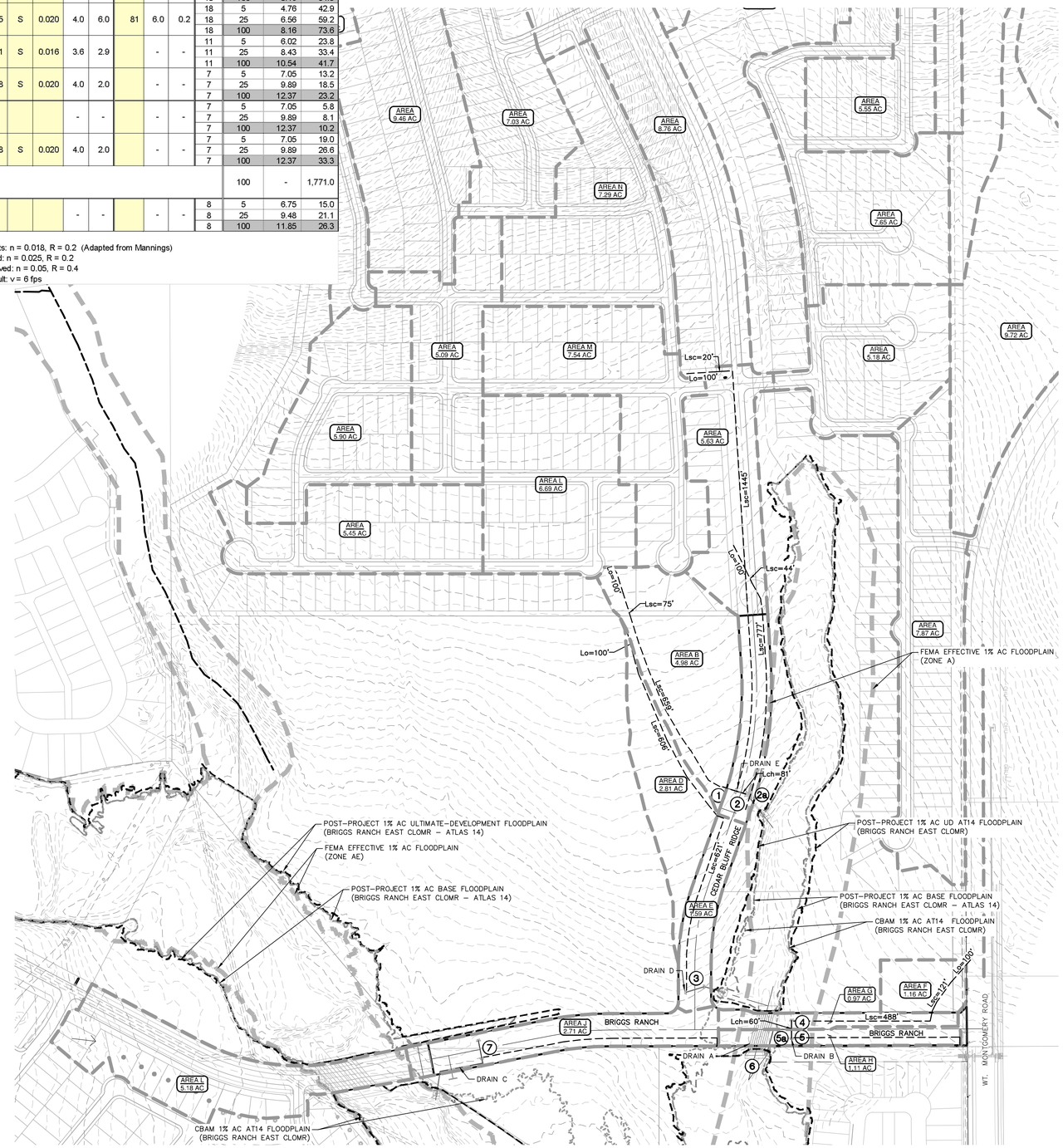
$$T_o = \frac{(0.007(n*L)^{0.8})}{(P2^{0.5}*S^{0.4})} * 60 \qquad v = \frac{k}{n} R^{2/3} S_o^{1/2}$$

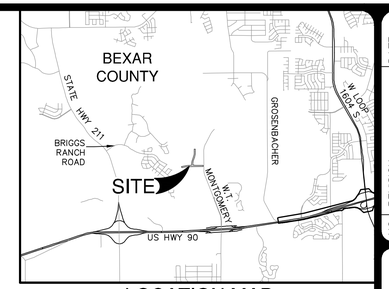
$$k = 1.486\ ft^{1/3}/s$$

**S:** For Streets: n = 0.018, R = 0.2 (Adapted from Mannings)
**P:** For Paved: n = 0.025, R = 0.2
**U:** For Unpaved: n = 0.05, R = 0.4
**D:** For Default: v = 6 fps

### Ultimate Conditions Composite Runoff Coefficient Calculations

| DA | C VALUE 0.39 | 0.41 | 0.67 | 0.96 | Total Area (ac) | Composite C Value |
|---|---|---|---|---|---|---|
| | Area (ac) | | | | | |
| B | | | | 4.98 | 4.98 | 0.96 |
| C | 1.16 | | 1.71 | 2.76 | 5.63 | 0.75 |
| D | | | | 2.81 | 2.81 | 0.96 |
| E | 0.46 | | | 1.13 | 1.59 | 0.80 |
| D+E | 0.46 | | | 3.94 | 4.40 | 0.90 |
| F | | | | 1.16 | 1.16 | 0.96 |
| G | 0.29 | | | 0.68 | 0.97 | 0.79 |
| H | 0.43 | | | 0.68 | 1.11 | 0.74 |
| J | 0.67 | | | 2.04 | 2.71 | 0.82 |
| K | | | | 19.75 | 19.75 | 0.96 |




LOCATION MAP

NOT-TO-SCALE

0' 200' 400' 600'

SCALE: 1"= 200'

## LEGEND:

- PROJECT LIMTS
- 890 EXISTING 10' CONTOUR
- DRAINAGE AREAS
- TEMPORARY DRAINAGE AREAS
- DRAINAGE FLOW ARROW
- 300' LENGTH OF FLOW
- (1) DRAINAGE CALCULATION POINT
- FEMA EFFECTIVE 1% AC FLOODPLAIN
- CBAM 1% AC AT14 FLOODPLAIN (BRIGGS RANCH EAST CLOMR)
- POST-PROJECT 1% AC AT 14 FLOODPLAIN (BRIGGS RANCH EAST CLOMR)
- POST-PROJECT 1% AC UD AT14 FLOODPLAIN (BRIGGS RANCH EAST CLOMR)

DATE

NO. REVISION

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025


PAPE-DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800


# BRE PHASE 2, COLLECTOR

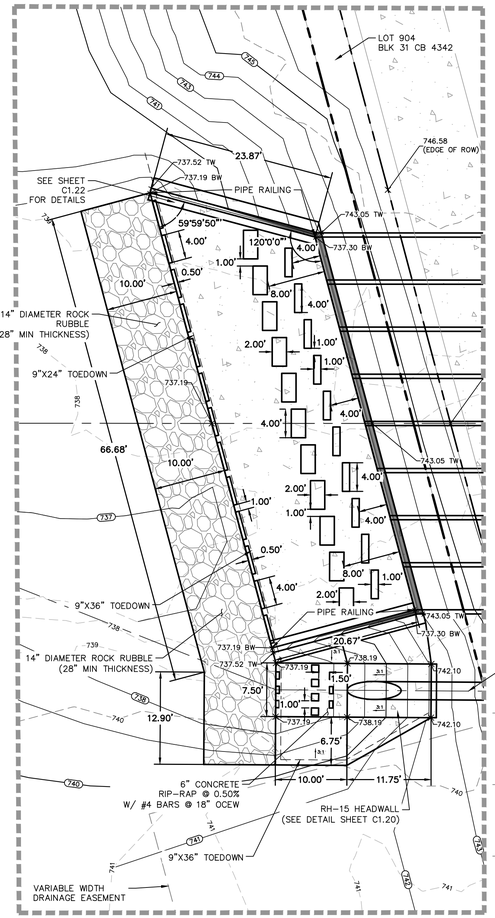
BEXAR COUNTY, TEXAS

MASTER DRAINAGE PLAN
ULTIMATE CONDITIONS

PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C1.01

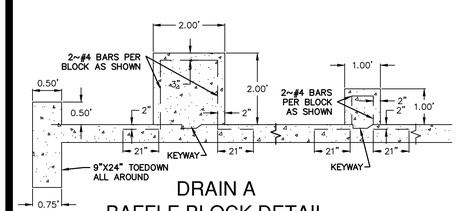
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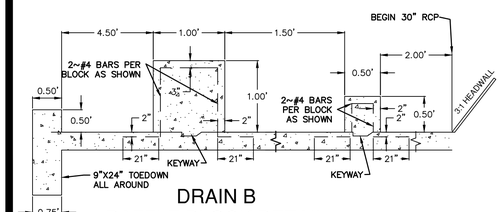

## DETAIL "A"

SCALE 1" = 10'



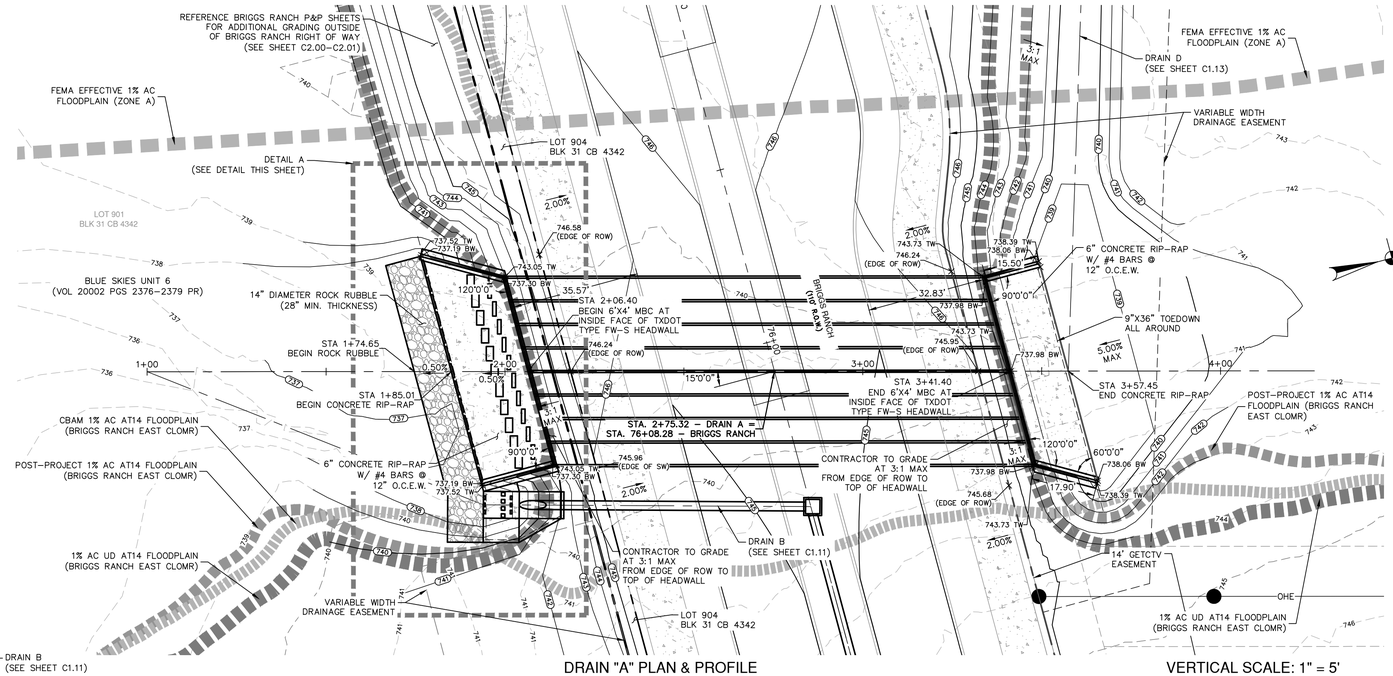

## DRAIN A
## BAFFLE BLOCK DETAIL

NOT-TO-SCALE




## DRAIN B
## BAFFLE BLOCK DETAIL

NOT-TO-SCALE

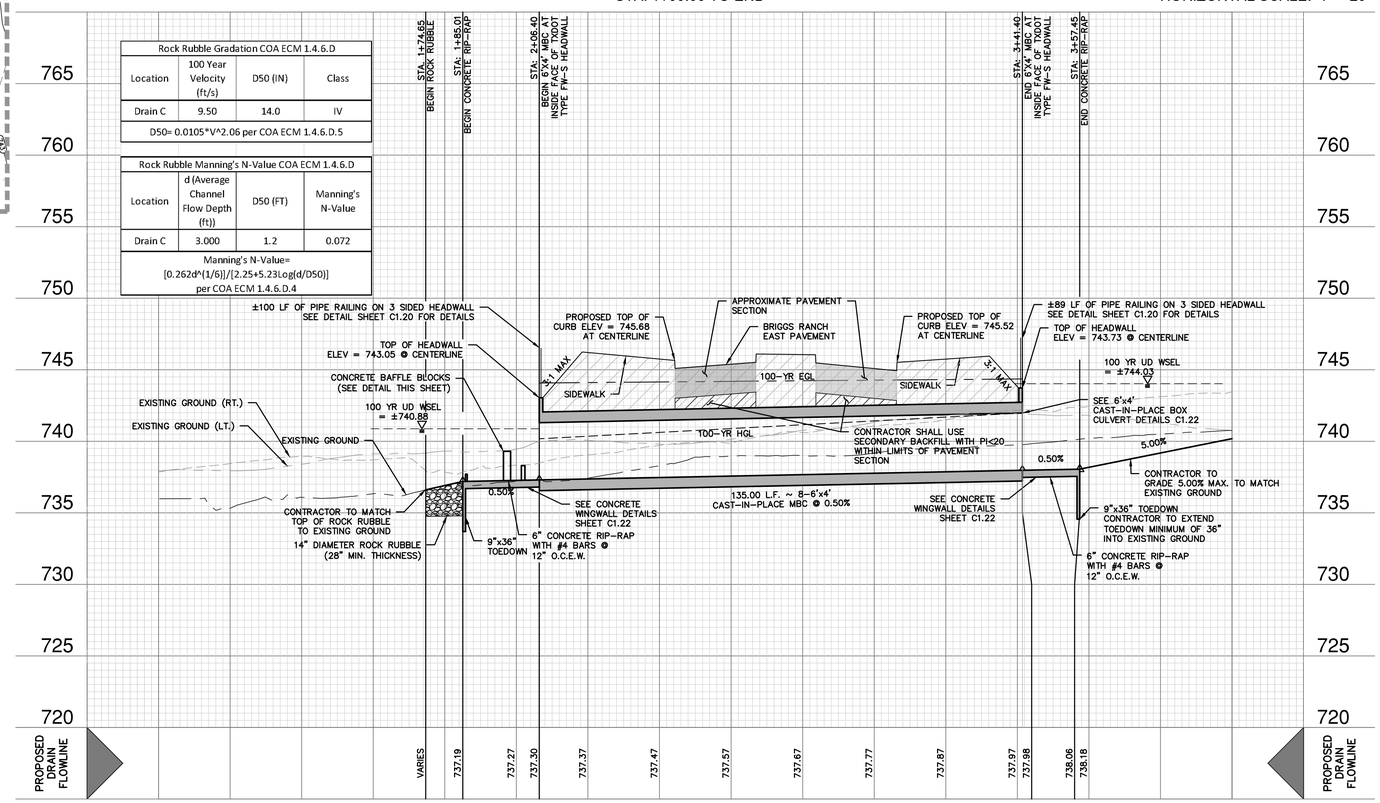


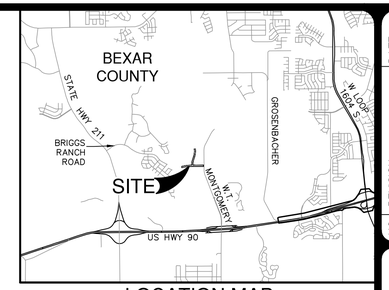

## DRAIN "A" PLAN & PROFILE
STA. 1+00.00 TO END

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'

| Rock Rubble Gradation COA ECM 1.4.6.D | | | |
|---|---|---|---|
| Location | 100 Year Velocity (ft/s) | D50 (IN) | Class |
| Drain C | 9.50 | 14.0 | IV |
| D50= 0.0105*V^2.06 per COA ECM 1.4.6.D.5 | | | |

| Rock Rubble Manning's N-Value COA ECM 1.4.6.D | | | |
|---|---|---|---|
| Location | d (Average Channel Flow Depth (ft)) | D50 (FT) | Manning's N-Value |
| Drain C | 3.000 | 1.2 | 0.072 |
| Manning's N-Value= [0.262d^(1/6)]/[2.25+5.23Log(d/D50)] per COA ECM 1.4.6.D.4 | | | |




## LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 20'

0' 20' 40' 60'

## DRAINAGE LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR — 690 —
- PROPOSED CONTOUR — 690 —
- PROPOSED WATER — W —
- PROPOSED SEWER — SS —
- EXISTING UTILITY POLE & OVERHEAD LINE — OHE —
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- FLOW ARROW

## 8 - 6'x4' CAST-IN-PLACE M.B.C. HYDRAULIC CALCULATION

$Q_{100UD}$ = 1,771.0 CFS
n = 0.013
S = 0.50%
dn (DOWNSTREAM) = 2.88'
dn (UPSTREAM) = 4.00'
Vn (DOWNSTREAM) = 12.81 FPS
Vn (UPSTREAM) = 9.22 FPS

## DRAINAGE & GRADING NOTES:

1. A BEXAR COUNTY ROW PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY ROW. CONTRACTOR SHALL COORDINATE A TRAFFIC CONTROL PLAN FOR ALL WORK WITHIN THE ROW. ADDITIONAL WARNING SIGNS MAY BE RECOMMENDED BY THE ENGINEER ONCE THE ROADWAYS ARE CONSTRUCTED.
2. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
3. ALL CONCRETE FOR TXDOT DRAINAGE STRUCTURES SHALL MEET TXDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
4. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
5. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
6. EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING. 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT.
7. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

## ROW PERMIT NOTE:

A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY RIGHTS-OF-WAY.

## TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

## CAUTION!!

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| NO. | REVISION | DATE |
|---|---|---|

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025

PAPE-DAWSON
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

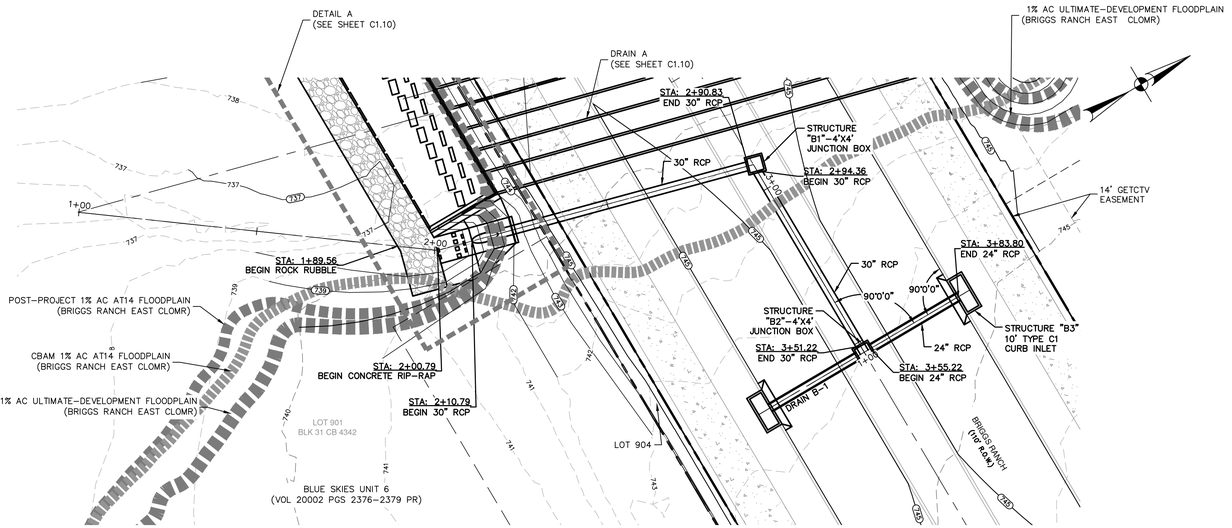
# BRE PHASE 2, COLLECTOR
BEXAR COUNTY, TEXAS

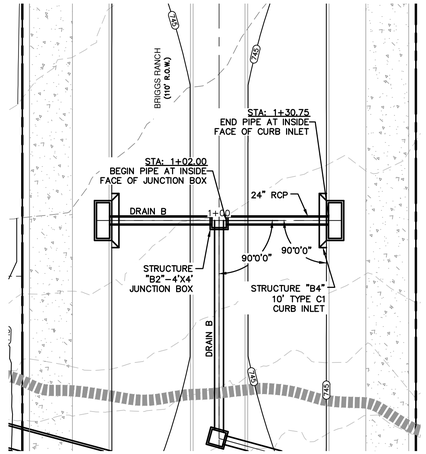
DRAIN A
PLAN AND PROFILE

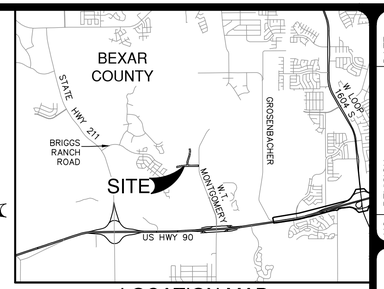
PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C1.10

Date: July 22, 2025, 2:29 PM – User ID: dmorris
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## LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 20'

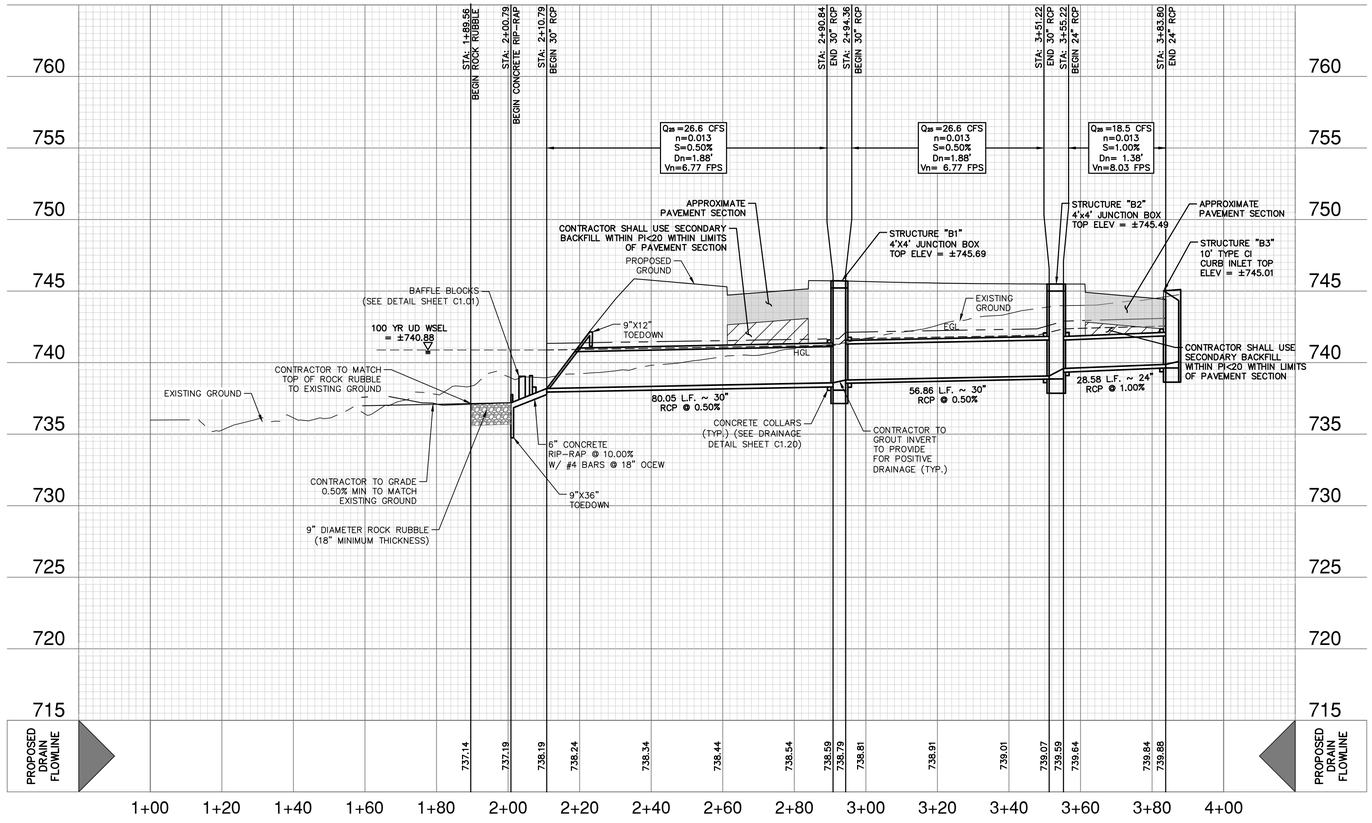
0' 20' 40' 60'

## DRAINAGE LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR — 690 —
- PROPOSED CONTOUR — 690 —
- PROPOSED WATER — W —
- PROPOSED SEWER — SS —
- EXISTING UTILITY POLE & OVERHEAD LINE
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- FLOW ARROW

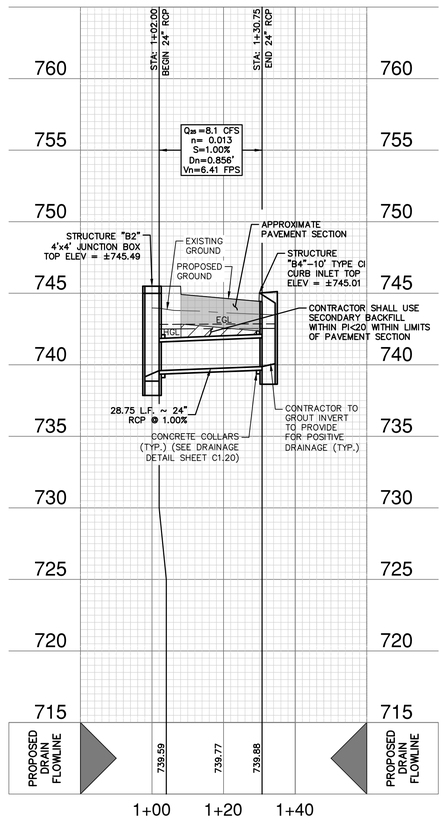
DRAIN "B" PLAN & PROFILE
STA. 1+00.00 TO END

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'




DRAIN "B-1" PLAN & PROFILE
STA. 1+00.00 TO END

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'




### HYDRAULIC CALCULATION
### IN-SUMP CURB INLET
STRUCTURE "B4"
(POINT 5)

$Q_{25}$ = 8.1 CFS
$Q_{25}$ = Cw x L x $H^{3/2}$
Cw = 3.087
H = 0.79'
Lcal = 3.7'
USE L = 1-10' INLET = 10' TOTAL
H = 0.41'

### HYDRAULIC CALCULATION
### IN-SUMP CURB INLET
STRUCTURE "B3"
(POINT 4)

$Q_{25}$ = 18.5 CFS
$Q_{25}$ = Cw x L x $H^{3/2}$
Cw = 3.087
H = 0.79'
Lcal = 8.53'
USE L = 1-10' INLET = 10' TOTAL
H = 0.72'

## DRAINAGE & GRADING NOTES:

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## ROW PERMIT NOTE:

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| NO. | REVISION | DATE |
|---|---|---|
| | | |

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025

**PAPE-DAWSON**
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

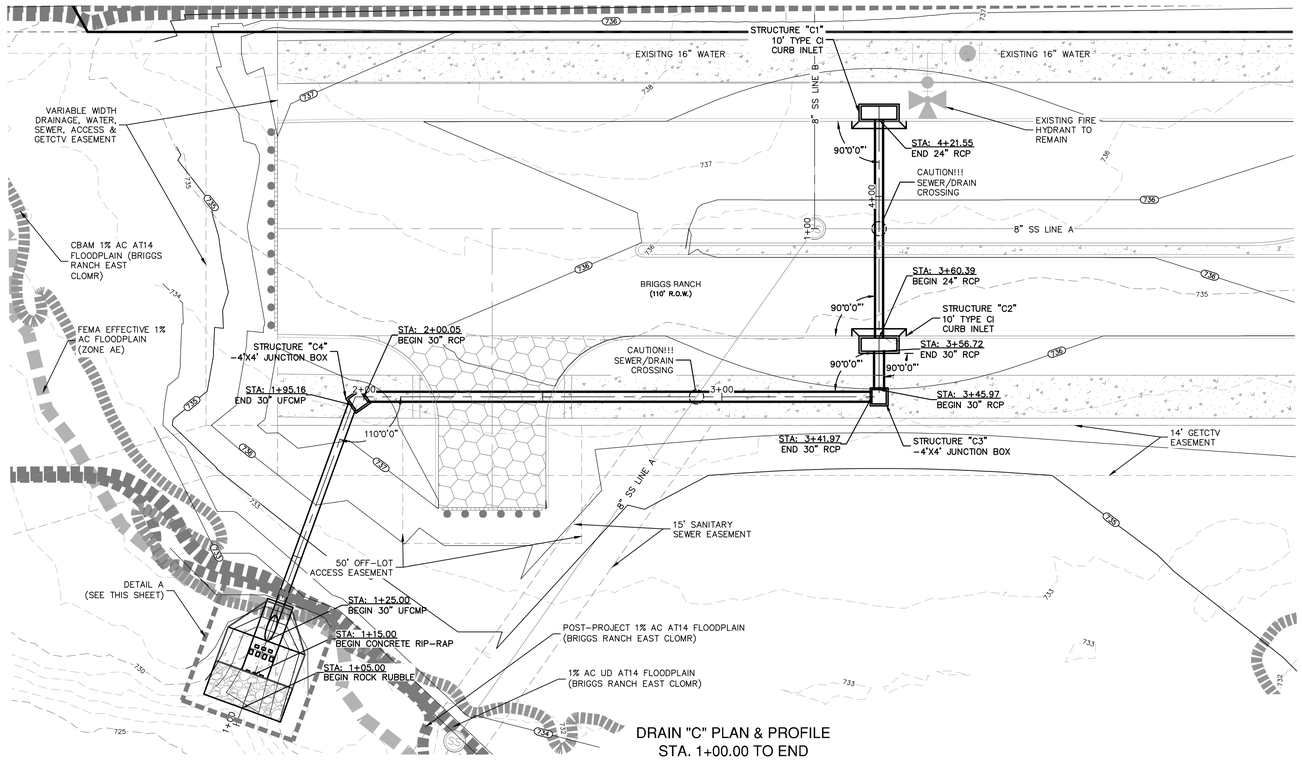
# BRE PHASE 2, COLLECTOR
BEXAR COUNTY, TEXAS

DRAIN B AND DRAIN B-1
PLAN AND PROFILE

PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C1.11

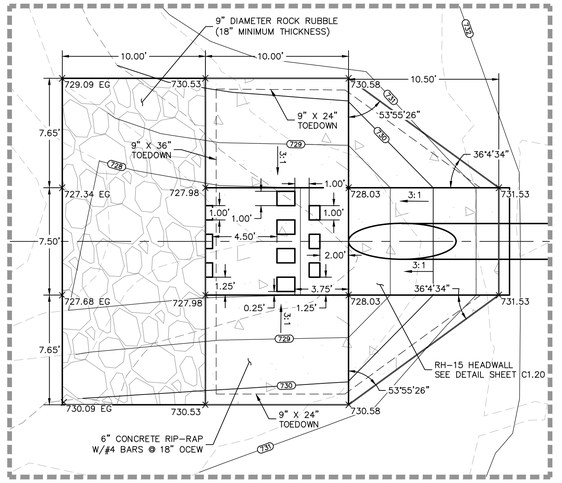
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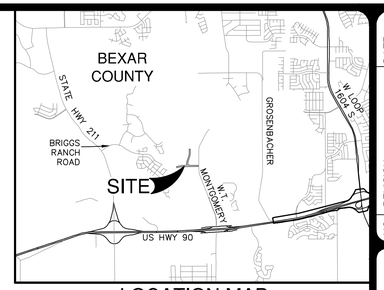



## DRAIN "C" PLAN & PROFILE
STA. 1+00.00 TO END

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'




## DETAIL "A"
SCALE 1" = 5'

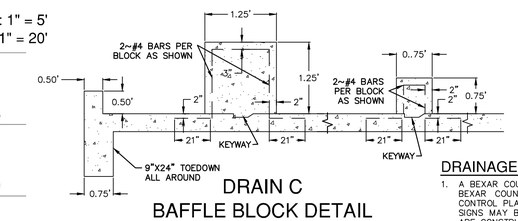



## LOCATION MAP
NOT-TO-SCALE

SCALE: 1"= 20'
0' 20' 40' 60'

## DRAINAGE LEGEND

| | |
|---|---|
| PROJECT LIMITS | |
| 100 YR FLOODPLAIN | |
| EXISTING CONTOUR | 690 |
| PROPOSED CONTOUR | 690 |
| PROPOSED WATER | W |
| PROPOSED SEWER | SS |
| EXISTING UTILITY POLE & OVERHEAD LINE | |
| PROPOSED STORM DRAIN | |
| EXISTING STORM DRAIN | |
| FLOW ARROW | |




## DRAIN C
## BAFFLE BLOCK DETAIL

### HYDRAULIC CALCULATION
### IN-SUMP CURB INLET
STRUCTURE "C1" & "C2"
(POINT 7)

$Q_{25}$ = 21.1 CFS
$Q_{25}$ = Cw x L x $H^{3/2}$
Cw = 3.087
H = 0.79'
Lcal = 9.73'
USE L = 2-10' INLETS = 20' TOTAL
H = 0.49'




## DRAINAGE & GRADING NOTES:

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## ROW PERMIT NOTE:

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STATE OF TEXAS
MATTHEW GEISTWEIDT
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7/22/2025

PAPE-DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

# BRE PHASE 2, COLLECTOR
BEXAR COUNTY, TEXAS

DRAIN C
PLAN AND PROFILE

PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C1.12

Date: July 22, 2025, 1:16 PM - User ID: dmorris
File: P:\114\12\18\Design\Civil\DRC114218.dwg

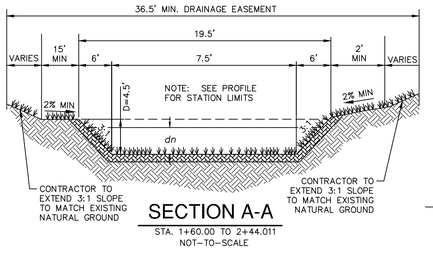
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## OPEN EARTHEN CHANNEL NOTE

CONTRACTOR SHALL REFERENCE TABLE 9.3.8.1 – "RETARDATION CLASS FOR LINING MATERIALS" PROVIDED ON SHEET C1.20 AND SUPPLIED RETARDANCE CLASS (RC) FOR CHOICE OF COVER WITHIN OPEN EARTHEN CHANNEL CROSS-SECTIONS.

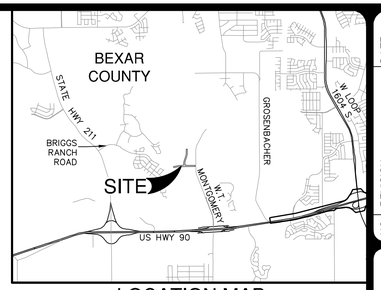
NOTE: CONTRACTOR TO HYDROMULCH AND WATER UNTIL VEGETATION IS ESTABLISHED. SEED MIXTURE TO BE DETERMINED BY OWNER.

CONTRACTOR SHALL OVER EXCAVATE CHANNEL AND PROVIDE 6" MINIMUM TOPSOIL (STRIPPINGS FROM INITIAL CLEANING OPERATIONS ARE ACCEPTABLE). NO SEPARATE PAY ITEM.




## SECTION A-A

STA. 1+60.00 TO 2+44.011
NOT-TO-SCALE

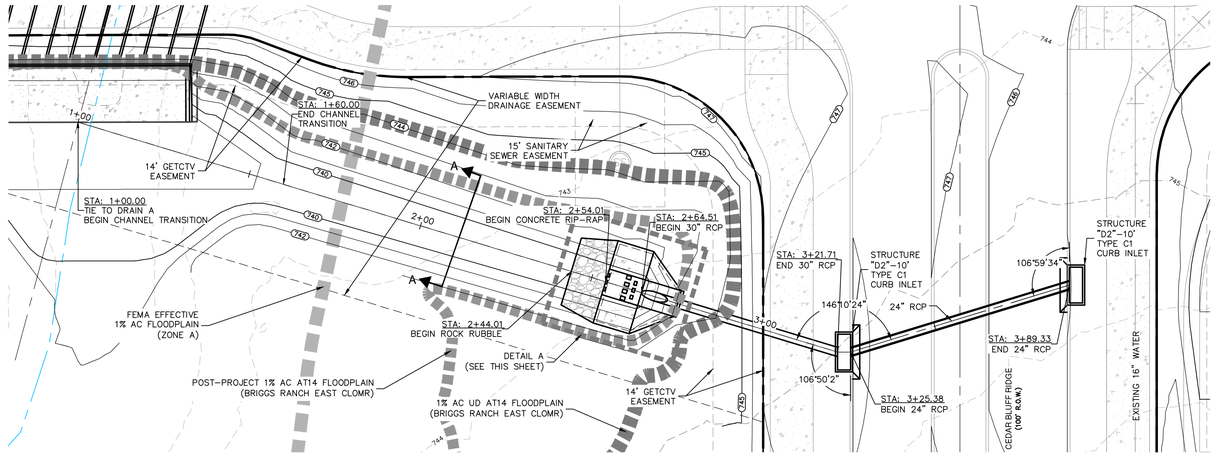



## LOCATION MAP

NOT-TO-SCALE

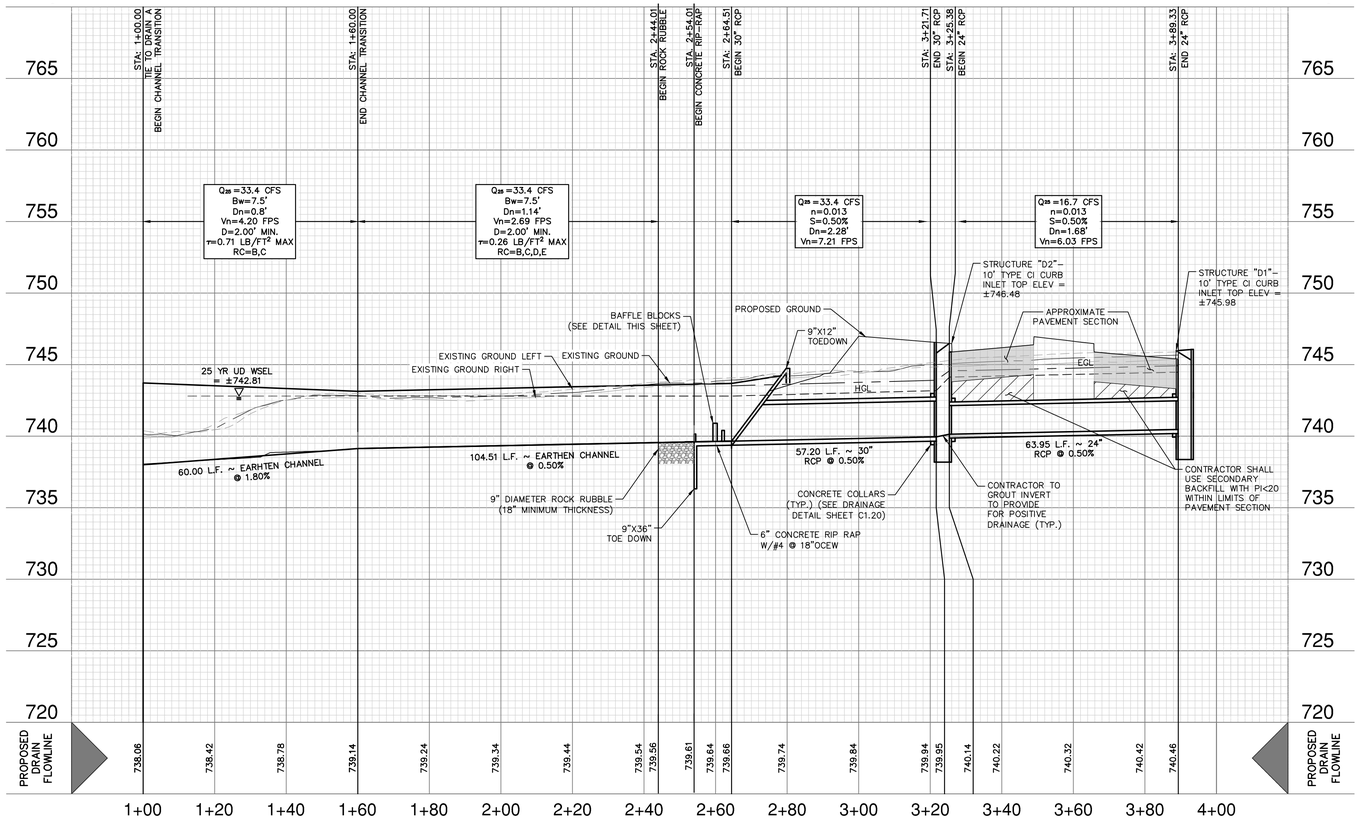
SCALE: 1"= 20'

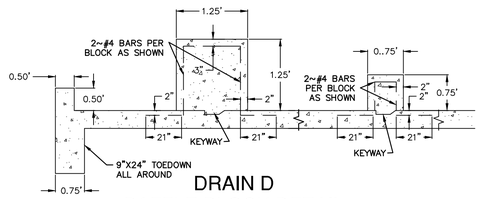
0' 20' 40' 60'




## DRAIN "D" PLAN & PROFILE
STA. 1+00.00 TO END

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'




## DRAIN D
## BAFFLE BLOCK DETAIL

## DRAINAGE LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR — 690
- PROPOSED CONTOUR — 690
- PROPOSED WATER — W
- PROPOSED SEWER — SS
- EXISTING UTILITY POLE & OVERHEAD LINE
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- FLOW ARROW

### HYDRAULIC CALCULATION
### IN-SUMP CURB INLET
STRUCTURE "D1" & "D2"
(POINT 3)

$Q_{25}$ = 33.4 CFS
$Q_{25}$ = Cw x L x $H^{3/2}$
Cw = 3.087
H = 0.79'
Lcal = 15.41'
USE L = 2-10' INLETS = 20' TOTAL
H = 0.66'

## DRAINAGE & GRADING NOTES:

1. A BEXAR COUNTY ROW PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY ROW. CONTRACTOR SHALL COORDINATE A TRAFFIC CONTROL PLAN FOR ALL WORK WITHIN THE ROW. ADDITIONAL WARNING SIGNS MAY BE RECOMMENDED BY THE ENGINEER ONCE THE ROADWAYS ARE CONSTRUCTED.
2. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
3. ALL CONCRETE FOR TXDOT DRAINAGE STRUCTURES SHALL MEET TXDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
4. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
5. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
6. EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING. 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT.
7. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

## ROW PERMIT NOTE:

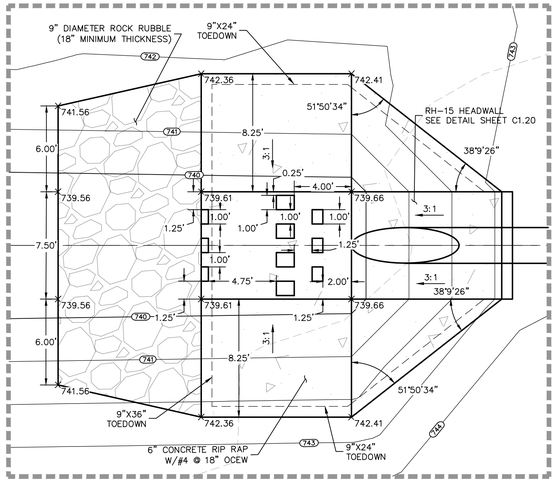
A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY RIGHTS-OF-WAY.

## TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

## CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.




## DETAIL "A"
SCALE 1" = 5'


STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025



PAPE-DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800


| NO. | REVISION | DATE |
|---|---|---|

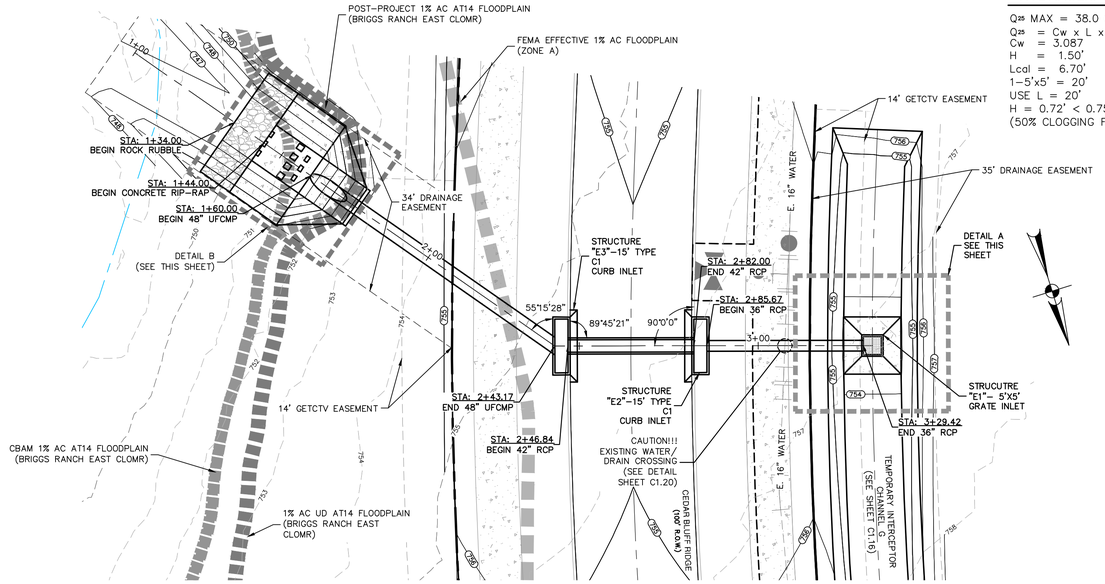
BRE PHASE 2, COLLECTOR
BEXAR COUNTY, TEXAS

DRAIN D
PLAN AND PROFILE

PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C1.13

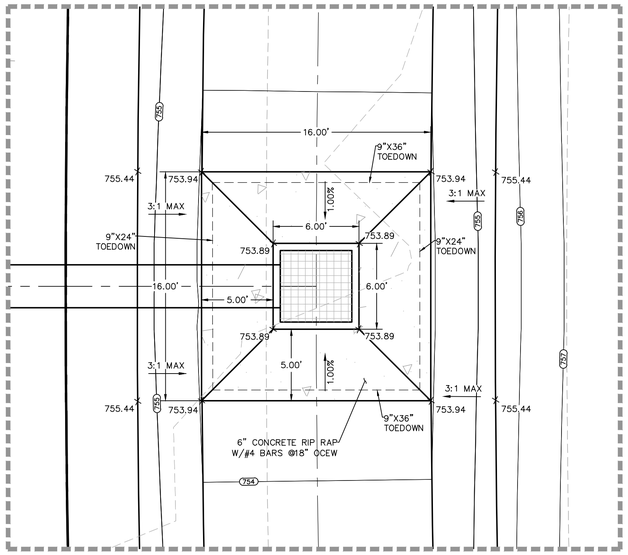
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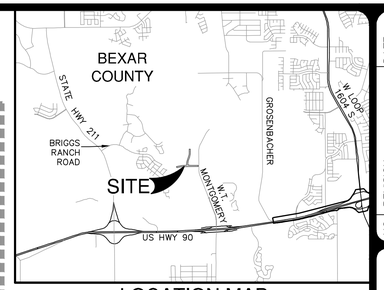

## 1 - 5' X 5' GRATE INLET HYDRAULIC CALCULATION

$Q_{25}$ MAX = 38.0 CFS (PROPOSED)
$Q_{25} = Cw \times L \times H^{3/2}$
Cw = 3.087
H = 1.50'
Lcal = 6.70'
1-5'x5' = 20'
USE L = 20'
H = 0.72' < 0.75
(50% CLOGGING FACTOR)




## DETAIL "A"

SCALE 1" = 5'




## LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 20'

0' 20' 40' 60'

## DRAINAGE LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR — 690
- PROPOSED CONTOUR — 690
- PROPOSED WATER — W
- PROPOSED SEWER — SS
- EXISTING UTILITY POLE & OVERHEAD LINE
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- FLOW ARROW

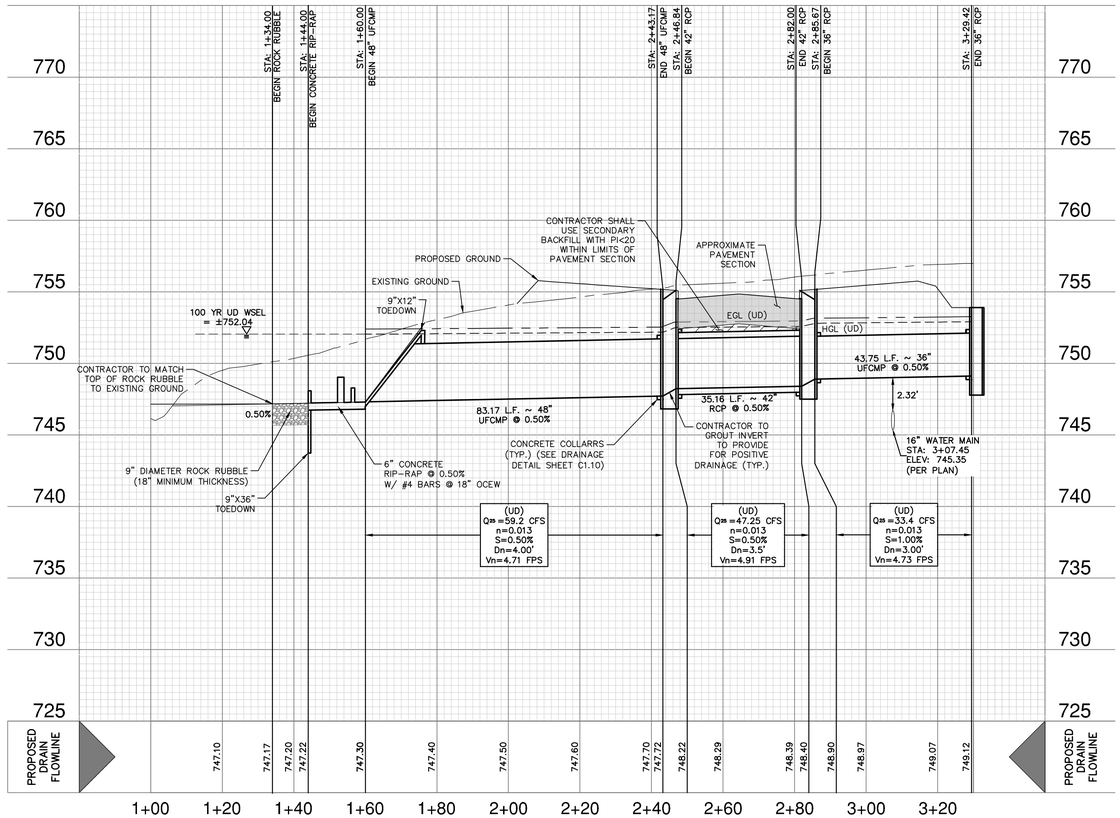
## HYDRAULIC CALCULATION IN-SUMP CURB INLET

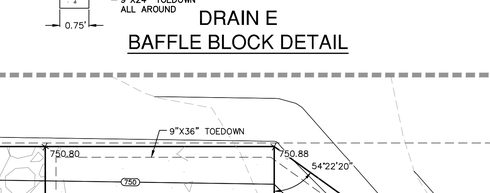
STRUCTURE "E2" & "E3"
(POINT 2)

$Q_{25}$ = 27.7 CFS (ULTIMATE)
$Q_{25} = Cw \times L \times H^{3/2}$
Cw = 3.087
H = 0.79'
Lcal = 12.8'
USE L = 2-15' INLETS = 30' TOTAL
H = 0.45'

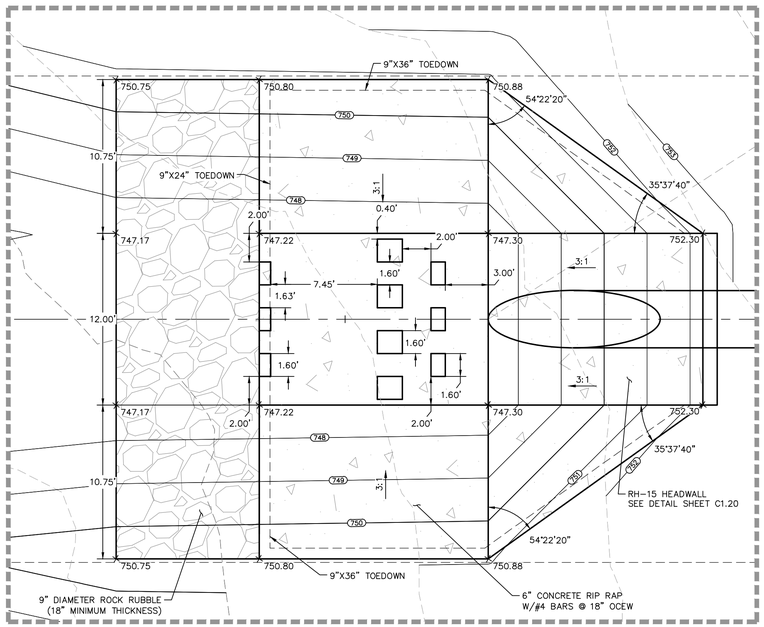
## DRAIN "E" PLAN & PROFILE
STA. 1+00.00 TO END

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'




## DRAIN E
## BAFFLE BLOCK DETAIL




## DETAIL "B"

SCALE 1" = 5'

## DRAINAGE & GRADING NOTES:

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## ROW PERMIT NOTE:

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## CAUTION!!

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| NO. | REVISION | DATE |
|---|---|---|
| | | |

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025

PAPE-DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

# BRE PHASE 2, COLLECTOR
BEXAR COUNTY, TEXAS

DRAIN E
PLAN AND PROFILE

PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C1.14

Date: July 22, 2025, 1:19 PM – User ID: dmorris
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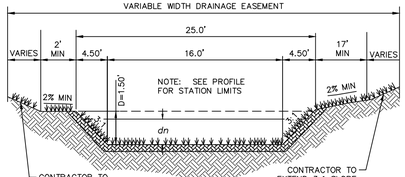
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## OPEN EARTHEN CHANNEL NOTE

CONTRACTOR SHALL REFERENCE TABLE 9.3.8.1 – "RETARDATION CLASS FOR LINING MATERIALS" PROVIDED ON SHEET C1.20 AND SUPPLIED RETARDANCE CLASS (RC) FOR CHOICE OF COVER WITHIN OPEN EARTHEN CHANNEL CROSS-SECTIONS.

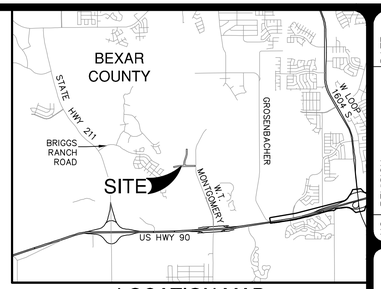
NOTE: CONTRACTOR TO HYDROMULCH AND WATER UNTIL VEGETATION IS ESTABLISHED. SEED MIXTURE TO BE DETERMINED BY OWNER.

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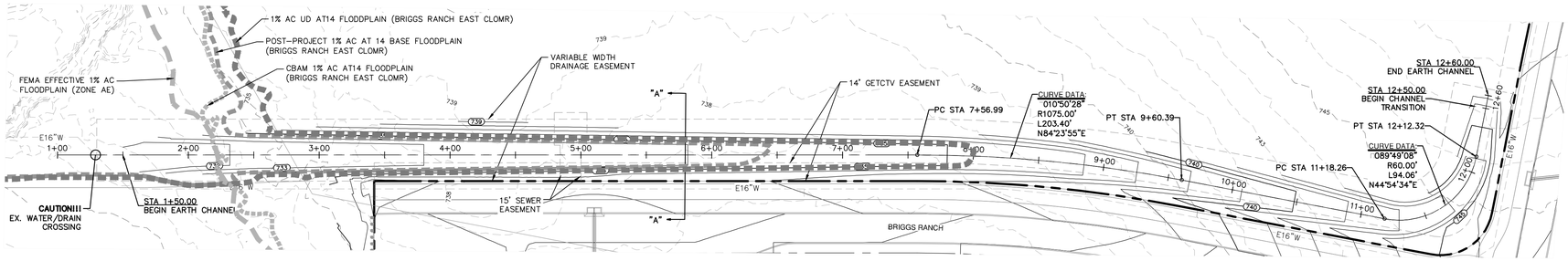

## SECTION A-A

STA. 1+50.00 TO 12+50.00
NOT-TO-SCALE



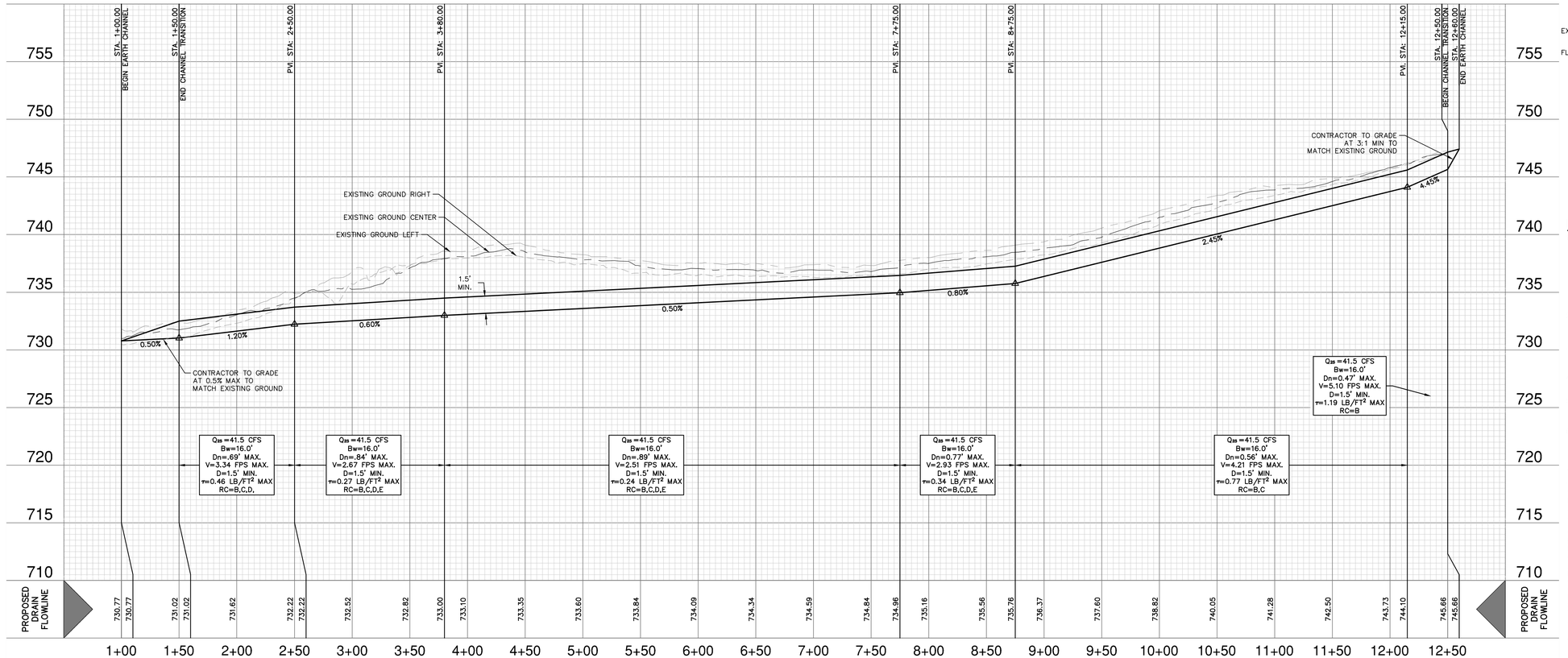

## LOCATION MAP

NOT-TO-SCALE




## TEMPORARY INTERCEPTOR CHANNEL F
(STA. 1+00.00 TO END)

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'




## DRAINAGE LEGEND

- PROJECT LIMITS
- EXISTING CONTOUR — 690
- PROPOSED CONTOUR — 690
- PROPOSED WATER — W
- PROPOSED SEWER — SS
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- FLOW ARROW

SCALE: 1"= 50'

0' 50' 100' 150'

## DRAINAGE & GRADING NOTES:

1. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
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4. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
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6. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

## TRENCH EXCAVATION SAFETY PROTECTION:

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| NO. | REVISION | DATE |
|---|---|---|
| | | |

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025


PAPE-DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800


# BRE PHASE 2, COLLECTOR
BEXAR COUNTY, TEXAS

TEMPORARY INTERCEPTOR CHANNEL F
PLAN AND PROFILE

PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C1.15

Date: July 22, 2025, 1:20 PM – User ID: dmorris
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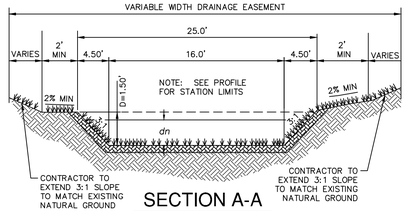

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## OPEN EARTHEN CHANNEL NOTE

CONTRACTOR SHALL REFERENCE TABLE 9.3.8.1 – "RETARDATION CLASS FOR LINING MATERIALS" PROVIDED ON SHEET C1.20 AND SUPPLIED RETARDANCE CLASS (RC) FOR CHOICE OF COVER WITHIN OPEN EARTHEN CHANNEL CROSS–SECTIONS.

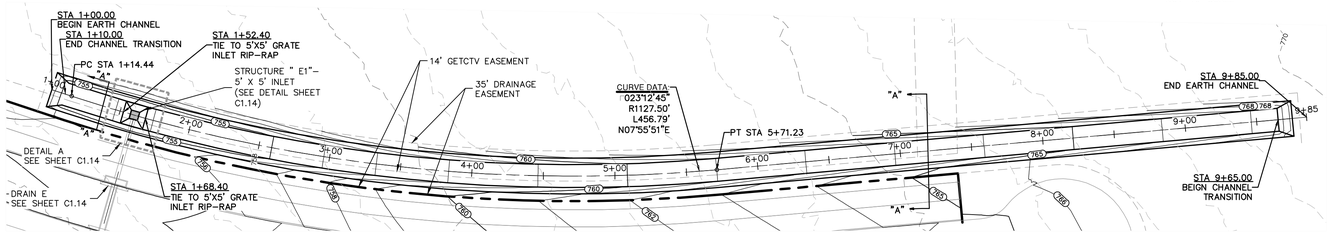
NOTE: CONTRACTOR TO HYDROMULCH AND WATER UNTIL VEGETATION IS ESTABLISHED. SEED MIXTURE TO BE DETERMINED BY OWNER.

CONTRACTOR SHALL OVER EXCAVATE CHANNEL AND PROVIDE 6" MINIMUM TOPSOIL (STRIPPINGS FROM INITIAL CLEANING OPERATIONS ARE ACCEPTABLE). NO SEPARATE PAY ITEM.



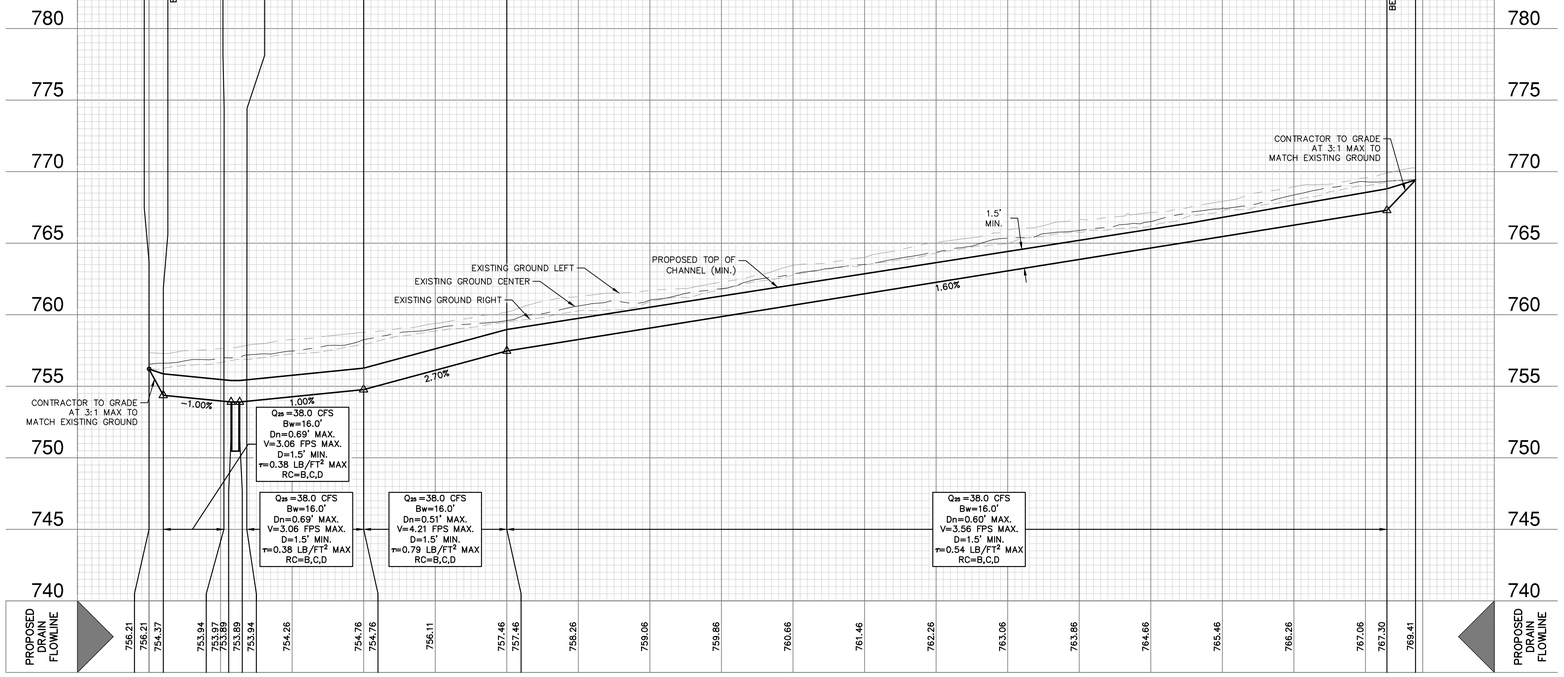

## SECTION A-A

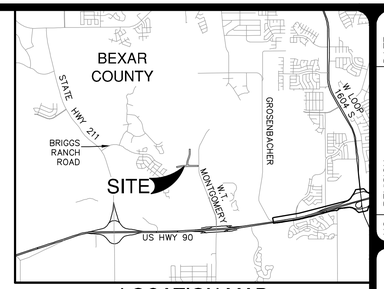
STA. 1+10.00 TO 1+52.40
STA. 1+68.40 TO 9+65.00
NOT–TO–SCALE




## TEMPORARY INTERCEPTOR CHANNEL G
(STA. 1+00.00 TO END)

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'




## LOCATION MAP
NOT–TO–SCALE

SCALE: 1"= 50'

0' 50' 100' 150'

## DRAINAGE LEGEND

- PROJECT LIMITS
- EXISTING CONTOUR 690
- PROPOSED CONTOUR 690
- PROPOSED WATER W
- PROPOSED SEWER SS
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- FLOW ARROW

## DRAINAGE & GRADING NOTES:

1. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
2. ALL CONCRETE FOR TXDOT DRAINAGE STRUCTURES SHALL MEET TXDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
3. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
4. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
5. EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING. 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT.
6. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

## TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WTHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

## CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1–800–DIG–TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

| NO. | REVISION | DATE |
|---|---|---|

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025


PAPE–DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800


# BRE PHASE 2, COLLECTOR
BEXAR COUNTY, TEXAS

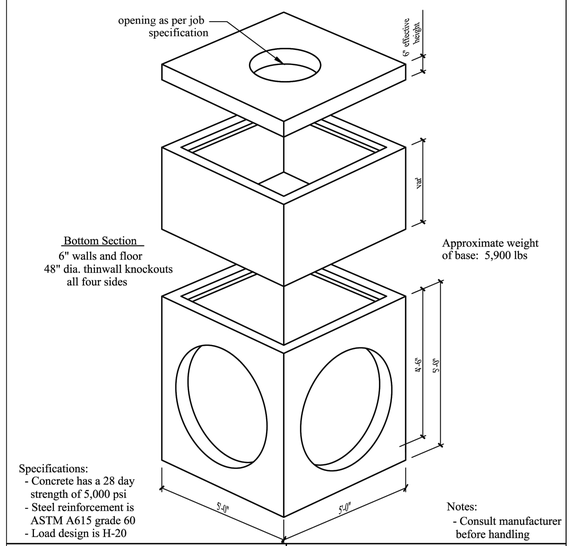
TEMPORARY INTERCEPTOR CHANNEL G
PLAN AND PROFILE

PLAT NO. 25-11800088
JOB NO. 11412–18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C1.16

Date: July 22, 2025, 1:21 PM – User ID: dmorris
File: P:\114\12\08\Design\Civil\141218_TEMP INT_G.dwg


THIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. RELY ONLY ON FINAL HARDCOPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL. AERIAL IMAGERY PROVIDED BY GOOGLE© UNLESS OTHERWISE NOTED. Imagery © 2016,CAPCOG,Digital Globe,Texas Orthoimagery Program, USDA Farm Service Agency.

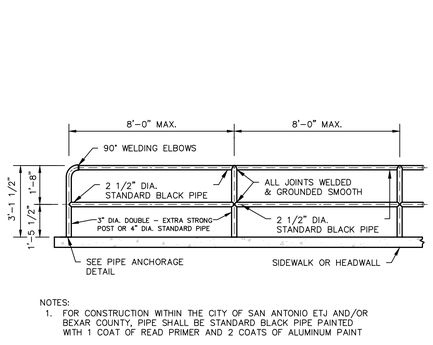
# 4' x 4' x var Junction Box




| | | | |
|---|---|---|---|
| Capital Precast | CAPITAL PRECAST, INC. 6905 SOUTH OLD BASTROP HWY SAN MARCOS, TEXAS 78666 PH. (830) 606-6200 | FOR 4' x 4' x var Junction Box | |
| | | JOB | |
| | | DRAWN RW | DATE 12/1/2015 Rev. No. |
| | | FILE catalog/junction boxes/4x4JB | SHEET 1 OF 1 |

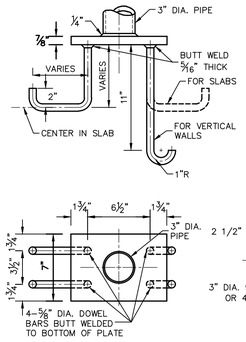
**Table 9.3.8.1 - Retardation Class for Lining Materials**
**(Source TXDOT - Hydraulic Design Manual, Chapter 7, Section 3 - Roadside Channel Design)**

| Retardance Class | Permissible Shear Stress (τ) (lb./sq.ft.) | Cover | Condition |
|---|---|---|---|
| B | 2.1 | Bermuda grass | Good stand, tall (average 12 in. or 305 mm) |
| | | Native Grass Mixture little bluestem, bluestem, blue gamma, other short and long stem midwest grasses | Good stand, unmowed |
| | | Lespedeza sericea | Good stand, not woody, tall (average 19 in. or 480 mm) |
| | | Alfalfa | Good stand, uncut (average 11 in. or 280 mm) |
| | | Blue gamma | Good stand, uncut (average 13 in. or 330 mm) |
| | | Crabgrass | Fair stand, uncut (10-to-48 in. or 55-to-1220 mm) |
| C | 1.1 | Bermuda grass | Good stand, mowed (average 6 in. or 150 mm) |
| | | Common lespedeza | Good stand, uncut (average 11 in. or 280 mm) |
| | | Grass-legume mixture: summer (orchard grass redtop, Italian ryegrass, and common lespedeza) | Good stand, uncut (6-8 in. or 150-200 mm) |
| | | Centipede grass | Very dense cover (average 6 in. or 150 mm) |
| | | Kentucky bluegrass | Good stand, headed (6-12 in. or 150 mm) |
| D | 0.6 | Bermuda grass | Good stand, cut to 2.5 in. or 65 mm |
| | | Common lespedeza | Excellent stand, uncut (average 4.5 in. or 115 mm) |
| | | Buffalo grass | Good stand, uncut (3-6 in. or 75-150 mm) |
| | | Grass-legume mixture: fall, spring (orchard grass, Italian ryegrass, and common lespedeza) | Good stand, uncut (4-5 in. or 100-125 mm) |
| | | Lespedeza sericea | After cutting to 2 in. or 50 mm (very good before cutting) |
| E | 0.35 | Bermuda grass | Good stand, cut to 1.5 in. or 40 mm |
| | | Bermuda grass | Burned stubble |

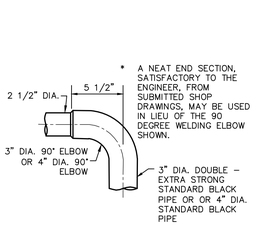



NOTES:
1. FOR CONSTRUCTION WITHIN THE CITY OF SAN ANTONIO ETJ AND/OR BEXAR COUNTY, PIPE SHALL BE STANDARD BLACK PIPE PAINTED WITH 1 COAT OF READ PRIMER AND 2 COATS OF ALUMINUM PAINT

## PIPE RAILING DETAIL
NOT–TO–SCALE

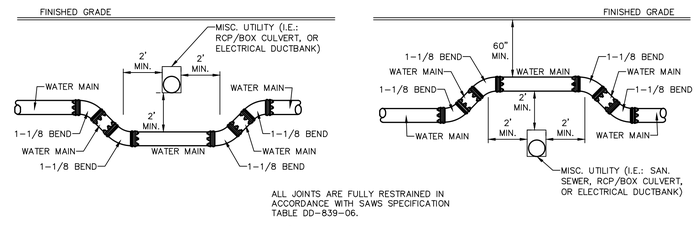



## PIPE ANCHORAGE DETAIL
NOT–TO–SCALE



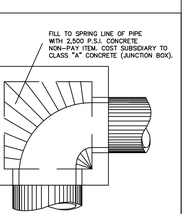

* A NEAT END SECTION, SATISFACTORY TO THE ENGINEER, FROM SUBMITTED SHOP DRAWINGS, MAY BE USED IN LIEU OF THE 90 DEGREE WELDING ELBOW SHOWN.

## 90° WELDING ELBOWS DETAIL
NOT–TO–SCALE




ALL JOINTS ARE FULLY RESTRAINED IN ACCORDANCE WITH SAWS SPECIFICATION TABLE DD–839–06.

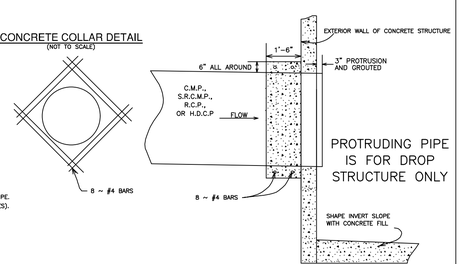
## TYPICAL UTILITY/WATER CROSSING DETAIL
NOT–TO–SCALE

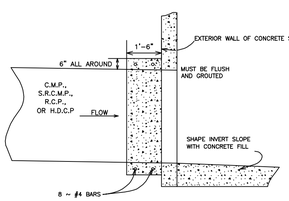



CURVED DEFLECTOR DETAIL
(NOT TO SCALE)

CONCRETE COLLAR DETAIL
(NOT TO SCALE)

1. CONCRETE FOR STRUCTURE SHALL BE CLASS "A," 3,000 P.S.I. AT 28 DAYS.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4".
3. REINFORCING STEEL SHALL BE NEW BILLET STEEL, INTERMEDIATE GRADE, ASTM. A–15. THE DEFORMATION SHALL CONFORM TO ASTM. A–305.
4. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
5. ALL BARS INTERCEPTING MANHOLE OPENING AND REINFORCED CONCRETE PIPE SHALL BE FIELD–CUT.
6. WHERE LAPPING OF BARS IS REQUIRED, A MINIMUM LAP OF 33 DIAMETERS SHALL BE USED.
7. INVERT OF JUNCTION BOX TO BE SHAPED WITH CONCRETE FILL (3,000 P.S.I. MIN.) TO EFFECT DRAINAGE TO OUTLET PIPE. COST SUBSIDIARY TO CLASS "A" CONCRETE (JUNCTION BOXES).



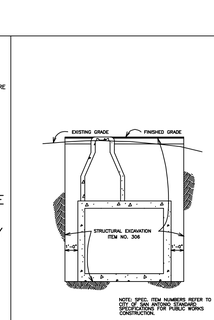

PIPE FLUSH WITH INVERT

JANUARY 2006

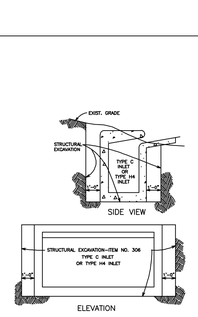
STANDARD PLANS
CITY OF SAN ANTONIO, TEXAS
DEVELOPMENT SERVICES

CONCRETE COLLAR DETAIL

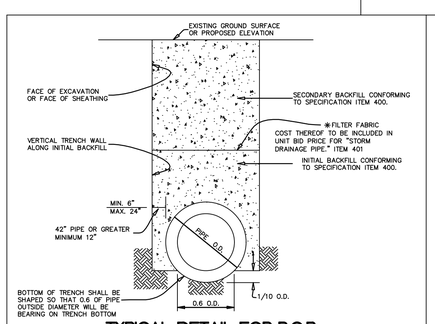
| DRAWN BY: ANDREW VONTER, P.E. | DATE | REVISIONS | SCALE: SEE ABOVE |
|---|---|---|---|
| CHECKED BY: SAM BENT, P.E. | | | DATE: 19 JANUARY 2006 |
| | | | SHEET: 1 OF 1 |



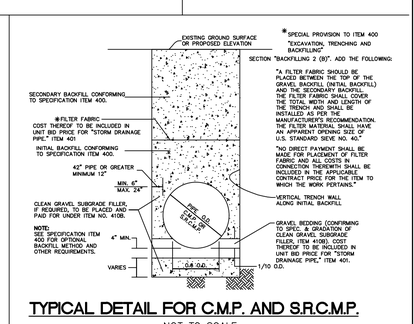

STRUCTURAL EXCAVATION AT JUNCTION BOXES
(NOT TO SCALE)



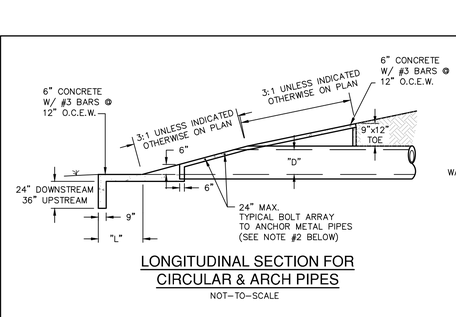

STRUCTURAL EXCAVATION AT DRAINAGE INLETS
(NOT TO SCALE)



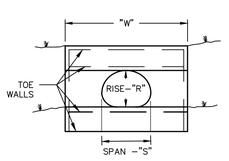

## TYPICAL DETAIL FOR R.C.P.
NOT–TO–SCALE



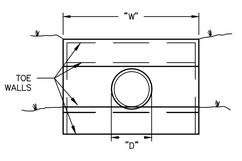

## TYPICAL DETAIL FOR C.M.P. AND S.R.C.M.P.
NOT TO SCALE




## LONGITUDINAL SECTION FOR CIRCULAR & ARCH PIPES
NOT–TO–SCALE




## SINGLE C.M.P. ARCH PIPE CULVERT
NOT–TO–SCALE

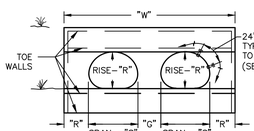



## SINGLE CIRCULAR PIPE CULVERT
(CMP OR RCP)
NOT–TO–SCALE

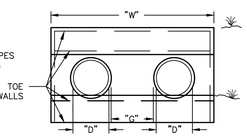
### DIMENSIONS FOR CIRCULAR (CMP AND RCP) PIPE CULVERT

| "D" INSIDE DIA. OF PIPE | "L" | "G" | | SINGLE | DOUBLE | TRIPLE | QUADRUPLE |
|---|---|---|---|---|---|---|---|
| | | CGM | RCP | "W" | | | |
| 18" | 2'–0" | 1'–2" | 0'–9" | 4'–6" | 7'–2" | 9'–10" | 12'–6" |
| 21" | 2'–6" | 1'–3" | 0'–10" | 5'–3" | 8'–4" | 11'–4" | 13'–4" |
| 24" | 3'–0" | 1'–5" | 0'–11" | 6'–0" | 9'–5" | 12'–10" | 16'–3" |
| 30" | 4'–0" | 1'–8" | 1'–1" | 7'–6" | 11'–8" | 15'–10" | 20'–0" |
| 36" | 5'–0" | 1'–11" | 1'–3" | 9'–0" | 13'–11" | 18'–10" | 23'–9" |
| 42" | 6'–0" | 2'–2" | 1'–5" | 10'–6" | 16'–2" | 21'–10" | 27'–6" |
| 48" | 7'–0" | 2'–5" | 1'–7" | 12'–0" | 18'–5" | 24'–10" | 31'–3" |
| 54" | 8'–0" | 2'–10" | 1'–11" | 13'–6" | 20'–10" | 28'–2" | 35'–6" |
| 60" | 9'–0" | 3'–2" | 2'–0" | 15'–0" | 23'–2" | 31'–4" | 39'–6" |

"G" IS MEASURED BETWEEN THE OTHER SURFACES OF THE PIPES.




## MULTIPLE C.M.P. ARCH PIPE CULVERT
NOT–TO–SCALE




## MULTIPLE CIRCULAR PIPE CULVERT
(CMP OR RCP)
NOT–TO–SCALE

### DIMENSIONS FOR C.M.P. ARCH PIPE CULVERTS

| DESIGN SIZE | APPROX. ARCH DIM. | | "L" | "G" | SINGLE | DOUBLE | TRIPLE | QUADRUPLE |
|---|---|---|---|---|---|---|---|---|
| | RISE "R" | SPAN "S" | | | "W" | | | |
| 2 | 21" | 15" | 2'–0" | 1'–2" | 4'–3" | 7'–2" | 10'–1" | 13'–0" |
| 3 | 28" | 20" | 3'–0" | 1'–5" | 5'–8" | 9'–5" | 13'–2" | 16'–11" |
| 4 | 35" | 24" | 4'–0" | 1'–8" | 6'–11" | 11'–6" | 16'–1" | 20'–8" |
| 5 | 42" | 29" | 5'–0" | 1'–11" | 8'–4" | 13'–9" | 19'–2" | 24'–7" |
| 6 | 49" | 33" | 6'–0" | 2'–2" | 9'–7" | 15'–10" | 22'–1" | 28'–4" |
| 7 | 57" | 38" | 7'–0" | 2'–5" | 11'–1" | 18'–3" | 25'–5" | 32'–7" |
| 8 | 64" | 43" | 8'–0" | 2'–10" | 12'–5" | 20'–8" | 28'–10" | 37'–0" |
| 9 | 71" | 47" | 9'–0" | 3'–2" | 13'–9" | 22'–10" | 31'–11" | 41'–0" |

BASED ON 2–2/3" X 1/2" CORRUGATION
"G" IS MEASURED BETWEEN THE OTHER SURFACES OF THE PIPES.

NOTES:
1. CONCRETE SHALL BE CLASS "A" 3000 PSI
2. ALL METAL PIPES (CIRCULAR AND/OR ARCH) SHALL HAVE 5/8" X 6" GALVANIZED BOLTS WITH 2 HEX NUTS AT 24" CENTERS TO ANCHOR THE PIPE TO THE CONCRETE. THIS WILL BE SUBSIDIARY TO THE RIPRAP HEADWALL.
3. FOR CONCRETE ARCH PIPES THE CMP ARCH PIPE CULVERT DIMENSIONS WILL HAVE TO BE ADJUSTED FOR THE PIPE WALL THICKNESS.
4. FOR PIPES LARGER THAN SHOWN, USE THE CLEAR DISTANCE BETWEEN PIPES SHOWN IN TXDOT ITEMS 460 AND/OR 464.
5. IF THE SIDES OF THE HEADWALL IS ADJACENT TO A RIPRAP SLOPE AND IF THE TOP OF THE HEADWALL IS ADJACENT TO THE ROADWAY FOUNDATION OR RIPRAP SLOPE, THE SIDE AND TOP TOE WALLS MAY BE ELIMINATED IF APPROVED BY THE ENGINEER.

RH-15 HEADWALL

| NO. | REVISION | DATE |
|---|---|---|
| | | |

STATE OF TEXAS
MATTHEW GEISTWEIDT
118661
LICENSED
PROFESSIONAL ENGINEER
7/22/2025

**PAPE–DAWSON**
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

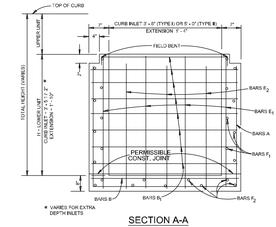
# BRE PHASE 2, COLLECTOR
BEXAR COUNTY, TEXAS

DRAINAGE DETAILS
(SHEET 1 OF 3)

PLAT NO. 25-11800088
JOB NO. 11412–18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RC
SHEET C1.20

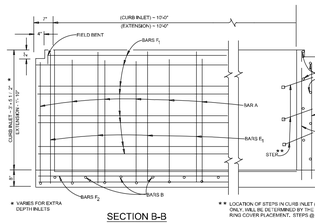
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★ VARIES FOR EXTRA DEPTH INLETS

SECTION A-A




★ VARIES FOR EXTRA DEPTH INLETS

★★ LOCATION OF STEPS IN CURB INLET (LOWER UNIT) ONLY. WILL BE DETERMINED BY THE LOCATION OF RING COVER PLACEMENT. STEPS @ 16" O.C.

SECTION B-B

## REINFORCING STEEL

LOWER UNIT 10' X 2' - 8" (TYPE I)

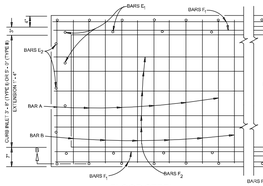
| BAR | NO. | SIZE | SPAC. | LENGTH |
|---|---|---|---|---|
| A | 12 | #4 | 12" | VARIES |
| B | 11 | #4 | 12" | 7'-6" |
| $B_1$ | VARIES | #4 | 12" | 4'-6" |
| $F_1$ | 20 | #4 | 18" ± | VARIES |
| $F_2$ | 6 | #4 | 18" ± | VARIES |
| $F_3$ | VARIES | #4 | 12" ± | 10'-10" |
| $F_2$ | 9 | #4 | — | 10'-10" |
| | | | | |
| | | | | |
| | | | | |

LOWER UNIT 10' X 5' - 0" (TYPE II)

| BAR | NO. | SIZE | SPAC. | LENGTH |
|---|---|---|---|---|
| A | 12' | #4 | 12" | VARIES |
| B | 11 | #4 | 12" | 8'-10" |
| $B_1$ | VARIES | #4 | 12" | 5'-10" |
| $F_1$ | 22 | #4 | 18" ± | VARIES |
| $F_2$ | 8 | #4 | 18" ± | VARIES |
| $F_3$ | VARIES | #4 | 12" ± | 10'-10" |
| $F_2$ | 11 | #4 | — | 10'-10" |
| | | | | |
| | | | | |
| | | | | |

## GENERAL NOTES

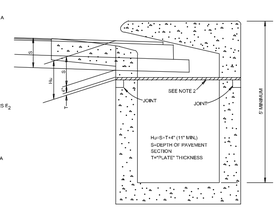
1. 5' INLETS AND 5' EXTENSIONS MUST BE IN ACCORDANCE WITH THE LATEST TXDOT CURB INLET TYPE "C" AND EXTENSION TYPE "B" (6-4-C).
2. TYPE "CAP INLET TO BE USED ONLY WHEN STORM DRAIN PIPE IS INLINE WITH CURB INLET AND APPROVED BY THE ENGINEER.
3. QUANTITIES SHOWN ARE FOR CONTRACTORS INFORMATION ONLY.
4. CONCRETE FOR STRUCTURES SHALL BE CLASS "A", 3000 PSI IN 28 DAYS.
5. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
6. ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 1 1/ 2".
7. ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M. A-615, GRADE 60 REQUIREMENTS.
8. ALL EXPOSED CORNERS SHALL BE CHAMFERED 3 / 4".
9. DEPRESSION SLAB SHALL RECEIVE A WOOD FLOAT FINISH.
10. FACE OF INLET TO CONFORM TO FACE OF CURB LINE.
11. ALL BARS INTERCEPTING MANHOLE RING & COVER SHALL BE CUT OR BENT.
12. PAYMENT FOR ALL EXCAVATION, BACK-FILLING, CONCRETE, REINFORCING STEEL, RING AND COVER SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 "STORM SEWER JUNCTION BOXES AND INLETS".
13. CAST IRON MANHOLE RING AND COVER TO BE PLACED NEXT TO OUTLET PIPE, EXCEPT FOR VERTICAL OUTLET PIPE IN WHICH CASE MANHOLE RING AND COVER WILL BE OFFSET.
14. GALVANIZED BOLTS, NUTS, WASHERS, PLATES AND GASKETS ARE SUBSIDIARY TO INLETS.
15. TYC CONTRACTOR SHALL PROVIDE AN ADEQUATE MEANS TO LIFT AND PLACE THE INLETS. WHEN USING PRECAST UNITS.
16. ALL BARS AT PIPE BLOCKOUT LOCATIONS SHALL BE CUT OR BENT.
17. ALL LOWER UNITS SHALL RECEIVE INVERT MORTAR SHAPING.
18. PIPE BLOCKOUTS IN INLET WALLS SHOULD NOT EXCEED 3" BEYOND THE OUTER SKILL OF THE PIPE, TAKING INTO ACCOUNT THE SWING OF THE PIPE, AS NECESSARY. CONSTRUCTION JOINT MAY BE RAISED A MAXIMUM OF 6".




FLOOR STEEL

WALL STEEL

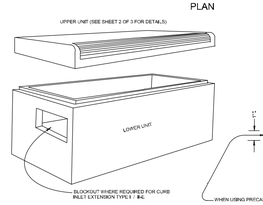
PLAN



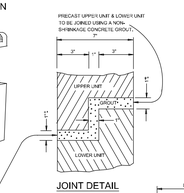

## PHASE CONSTRUCTION

NOTES FOR PHASE CONSTRUCTION (WHEN DIRECTED BY THE ENGINEER):

1. THE CURB INLET AND EXTENSION SHALL BE CONSTRUCTED TO A DEPTH 1"to" BELOW THE INLET AND EXTENSION GUTTER LINE ELEVATION.
2. CAP THE CURB INLET AND EXTENSION WITH A STEEL PLATE APPROVED BY THE ENGINEER AND CONSTRUCT THE ROADWAY OVER THE PLATE.
3. AFTER THE ROADWAY IS COMPLETED, BUT PRIOR TO THE FINAL HMAC OVERLAY, SAW CUT THE PAVEMENT, REMOVE THE PLATE, AND COMPLETE THE UPPER PORTION OF THE CURB INLET AND ON EXTENSION.

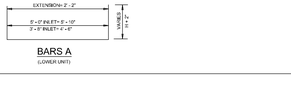



PLAN




JOINT DETAIL

- WHEN USING PRECAST UPPER UNIT, THIS SPACE IS FOR MAKING MINOR HORIZONTAL AND VERTICAL ADJUSTMENTS TO ACCOMODATE A FIT BETWEEN THE UPPER AND LOWER UNIT THAT ALLOWS FOR A MATCH LINE AND GRADE BETWEEN THE ROADWAY CURB AND THE UPPER UNIT OF THE INLET.




CONCRETE INLET BOX CONFIGURATIONS (LOWER UNITS)




BARS A (LOWER UNIT)

MAY 2009

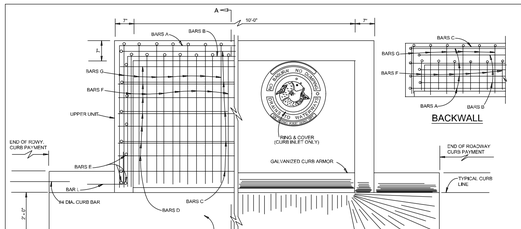
CITY OF SAN ANTONIO

CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TYPE "C" INLET (TYPE I & II) & INLET EXTENSION STANDARDS

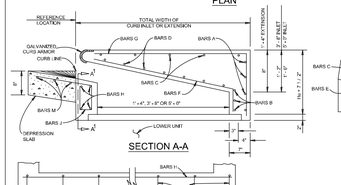
SHEET 3 OF 3

| % SUBMITTAL | PROJECT NO. | DATE |
|---|---|---|
| DRWN. BY: N. VASQUEZ | DSGN. BY: J.R. MATOS, P.E. | CHKD. BY: R.S. HOSSEIN, P.E. |




PLAN

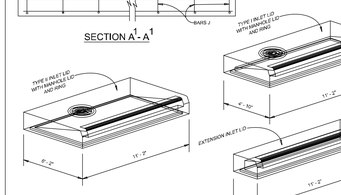
BACKWALL



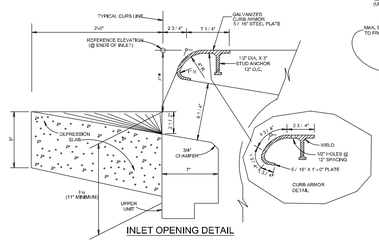

SECTION A-A

END WALL

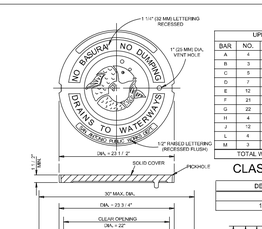
SECTION $A^1$-$A^1$




CONCRETE INLET LID CONFIGURATIONS (UPPER UNITS)




INLET OPENING DETAIL




MANHOLE LID & RING DETAIL (ITEM 409)

## NOTES FOR MANHOLE LID AND RING

1. FOR LID DESIGN OUTSIDE OF CITY OF SAN ANTONIO, DELETE "SAN ANTONIO PUBLIC WORKS DEPT.".
2. CASTING NUMBER AND MANUFACTURER'S I.D. ON LID AND RING.
3. LOAD BEARING CAPABILITY OF HS-20 MINIMUM.
4. THE LOAD BEARING SURFACES SHALL BE MACHINE GROUND.
5. THE COMBINED WEIGHT OF THE MANHOLE RING AND COVER MUST BE AT LEAST 260 LBS.

SEE SHEET 1 OF 3 FOR GENERAL NOTES.

## REINFORCING STEEL (FOR Hu=11")

UPPER UNIT 10' X 3'-6" (TYPE I)

| BAR | NO. | SIZE | SPAC. | LENGTH | WEIGHT |
|---|---|---|---|---|---|
| A | 4 | #4 | ---- | 10'-10" | 53 |
| B | 3 | #4 | ---- | 10'-10" | 39 |
| C | 5 | #4 | 11" | 13'-2" | 44 |
| D | 7 | #4 | 6" | 10'-10" | 51 |
| E | 12 | #4 | 11" | 1'-2" | 9 |
| F | 21 | #6 | 6" | 4'-8" | 147 |
| G | 22 | #6 | 6" | 5'-8" | 187 |
| H | 4 | #4 | ---- | 10'-10" | 29 |
| J | 12 | #4 | 12" | 3'-6" | 28 |
| L | 4 | #4 | ---- | 2'-0" | 5 |
| M | 3 | #4 | ---- | 14'-8" | 29 |
| TOTAL WEIGHT | | | | | 620 LBS. |

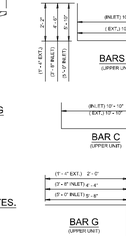
UPPER UNIT 10' X 5' (TYPE II)

| BAR | NO. | SIZE | SPAC. | LENGTH | WEIGHT |
|---|---|---|---|---|---|
| A | 4 | #4 | ---- | 22'-6" | 60 |
| B | 3 | #4 | ---- | 21'-6" | 43 |
| C | 7 | #4 | 11" | 13'-2" | 82 |
| D | 11 | #4 | 6" | 10'-10" | 80 |
| E | 16 | #4 | 11" | 1'-2" | 13 |
| F | 31 | #6 | 6" | 5'-8" | 179 |
| G | 32 | #6 | 6" | 7'-0" | 221 |
| H | 4 | #4 | ---- | 10'-10" | 29 |
| J | 12 | #4 | 12" | 3'-6" | 28 |
| L | 4 | #4 | ---- | 2'-0" | 5 |
| M | 3 | #4 | ---- | 14'-8" | 29 |
| TOTAL WEIGHT | | | | | 759 LBS. |

## CLASS "A" CONCRETE QUANTITIES (FOR Hu = 11")

| DEPRESSION SLAB | C.Y. |
|---|---|
| 10' INLET | 0.7 |
| 10' EXTENSION | 0.7 |

| UPPER UNIT (ONLY) | C.Y. |
|---|---|
| 10' X 3'-6" CURB INLET | 1.9 |
| 10' X 5'-0" CURB INLET | 2.7 |
| 10' EXTENSION | 1.0 |







MAY 2009

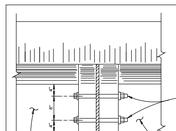
CITY OF SAN ANTONIO

CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

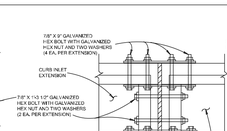
TYPE "C" INLET (TYPE I & II) & INLET EXTENSIONS STANDARDS

SHEET 2 OF 3

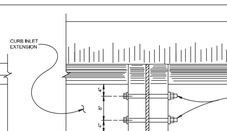
| % SUBMITTAL | PROJECT NO. | DATE |
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| DRWN. BY: N. VASQUEZ | DSGN. BY: J.R. MATOS, P.E. | CHKD. BY: R.S. HOSSEIN, P.E. |



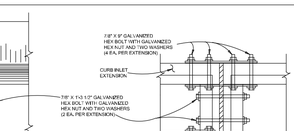

PLAN VIEW




PLAN VIEW



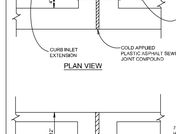

PLAN VIEW




PLAN VIEW

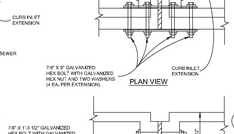
| UPPER UNIT EXTENSION (FOR Hu = 11") | | | | | |
|---|---|---|---|---|---|
| BAR | NO. | SIZE | SPAC. | LENGTH | WEIGHT |
| A | 4 | #4 | ---- | 10'-2" | 41 |
| B | 3 | #4 | ---- | 10'-2" | 28 |
| C | 3 | #4 | 11" | 13'-2" | 26 |
| D | 3 | #4 | 6" | 10'-10" | 22 |
| E | 8 | #4 | 11" | 1'-2" | 6 |
| F | 21 | #6 | 5" | 2'-9" | 63 |
| G | 22 | #6 | 5" | 3'-4" | 110 |
| H | 4 | #4 | ---- | 10'-10" | 29 |
| J | 12 | #4 | 12" | 3'-6" | 28 |
| L | 4 | #4 | ---- | 2'-0" | 5 |
| M | 3 | #4 | ---- | 14'-8" | 29 |
| REINFORCING STEEL | | | | LBS. | 387 |
| CLASS "A" CONCRETE | | | | C.Y. | 1.0 |

| LOWER UNIT EXTENSION | | | | | |
|---|---|---|---|---|---|
| BAR | NO. | SIZE | SPAC. | LENGTH | WEIGHT |
| A | 12 | #4 | 12" | 8'-2" | 49 |
| B | 11 | #4 | 12" | 2'-2" | 16 |
| $B_1$ | 3 | #4 | 12" | 2'-2" | 4 |
| $E_1$ | 18 | #4 | 18" ± | 3'-3" | 27 |
| $E_2$ | 4 | #4 | 18" ± | 2'-7" | 6 |
| $F_1$ | 16 | #4 | 12" ± | 10'-10" | 116 |
| $F_2$ | 5 | #4 | — | 10'-10" | 36 |
| | | | | | |
| | | | | | |
| | | | | | |
| REINFORCING STEEL | | | | LBS. | 254 |
| CLASS. "A" CONCRETE | | | | C.Y. | 1.4 |

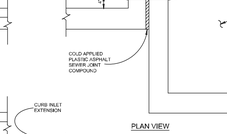



ELEVATION

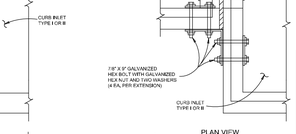
UPPER UNIT




LOWER UNIT




UPPER UNIT



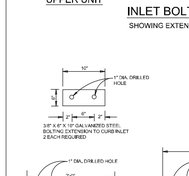

LOWER UNIT

## GENERAL NOTES

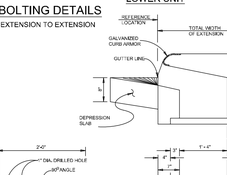
1. WHEN INLET EXTENSIONS ARE REQUIRED FOR ON GRADE INLETS WITH EXTENSION(S) SHALL BE PLACED ON THE UPSTREAM END OF THE INLET.
2. FOR CURB INLET EXTENSION REINFORCING STEEL NOTES & VARIOUS OTHER APPLICABLE DETAILS NOT FOUND ON THIS SHEET, REFER TO SHEETS 1 & 2.

## INLET BOLTING DETAILS

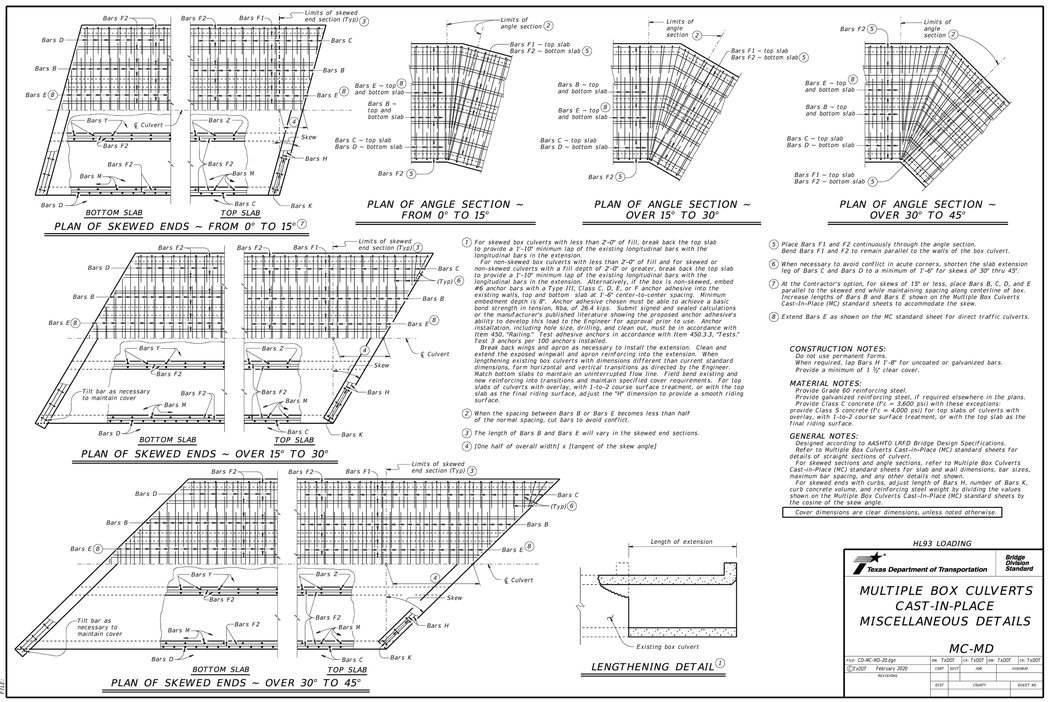
SHOWING EXTENSION TO EXTENSION




PLATES


REFERENCE LOCATION
TOTAL WIDTH OF EXTENSION
GALVANIZED CURB ARMOR
GUTTER LINE
DEPRESSION SLAB
UPPER UNIT
LOWER UNIT
2'-0"
DIA. DRILLED HOLE
ANGLE
1'-4"
3"
3"
3

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1. For skewed box culverts with less than 2'-0" of fill, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension.
   For non-skewed box culverts with less than 2'-0" of fill and for skewed or non-skewed culverts with a fill depth of 2'-0" or greater, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension. Alternatively, if the box is non-skewed, embed #6 anchor bars with a Type III, Class C, D, E, or F anchor adhesive into the existing walls, top and bottom slab at 1'-8" center-to-center spacing. Minimum embedment depth is 8". Anchor adhesive chosen must be able to achieve a basic bond strength in tension, $N_{ba}$, of 26.4 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with the ACI 318 Code, Section 17.8.2.4 and Section 17.8.3, in accordance with Item 450.3.3, "Tests." Test 3 anchors per 100 anchors installed.
   Break back wings and apron as necessary to install the extension. Clean and extend the exposed wingwall and apron reinforcing into the extension. When lengthening existing box culverts with dimensions different than current standard dimensions, form horizontal and vertical transitions as directed by the Engineer. Match bottom slabs to maintain an uninterrupted flow line. Field bend existing and new reinforcing into transitions and maintain specified cover requirements. For top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface, adjust the "H" dimension to provide a smooth riding surface.
2. When the spacing between Bars B or Bars E becomes less than half of the normal spacing, cut bars to avoid conflict.
3. The length of Bars B and Bars E will vary in the skewed end sections.
4. {One half of overall width} x {tangent of the skew angle}
5. Place Bars F1 and F2 continuously through the angle section. Bend Bars F1 and F2 to remain parallel to the walls of the box culvert.
6. When necessary to avoid conflict in acute corners, shorten the slab extension leg of Bars C and Bars D to a minimum of 1'-6" for skews of 30° thru 45°.
7. At the Contractor's option, for skews of 15° or less, place Bars B, C, D, and E parallel to the skewed end while maintaining spacing along centerline of box. Increase lengths of Bars B and Bars E shown on the Multiple Box Culverts Cast-In-Place (MC) standard sheets to accommodate the skew.
8. Extend Bars E as shown on the MC standard sheet for direct traffic culverts.

**CONSTRUCTION NOTES:**
Do not use permanent forms.
When required, lap Bars H T-8" for uncoated or galvanized bars.
Provide a minimum of 1 ½" clear cover.

**MATERIAL NOTES:**
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel, if required elsewhere in the plans.
Provide Class C concrete ($f'_c$ = 3,600 psi) with these exceptions: provide Class S concrete ($f'_c$ = 4,000 psi) for top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface.

**GENERAL NOTES:**
Designed according to AASHTO LRFD Bridge Design Specifications.
Refer to Multiple Box Culverts Cast-in-Place (MC) standard sheets for details of straight sections of culvert.
For skewed ends and angle sections, refer to Multiple Box Culverts Cast-in-Place (MC) standard sheets for slab and wall dimensions, bar sizes, maximum bar spacing, and any other details not shown.
For skewed ends with curbs, adjust length of Bars H, number of Bars K, curb concrete volume, and reinforcing steel weight by dividing the values shown on the Multiple Box Culverts Cast-In-Place (MC) standard sheets by the cosine of the skew angle.

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

Texas Department of Transportation — Bridge Division Standard

# MULTIPLE BOX CULVERTS CAST-IN-PLACE MISCELLANEOUS DETAILS

## MC-MD

| FILE: CD-MC-MD-20.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT February 2020 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | DIST | COUNTY | | SHEET NO. |

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**TABLE OF DIMENSIONS AND REINFORCING STEEL**
(Wings for one structure end)

| Maximum Wingwall Height Hw | Dimensions W | X | Y | Z | Variable Reinforcing Bars J1 Size | Bars J1 Spa | Bars J2 Size | Bars J2 Spa | Estimated Quantities per Ft of wing length (2-wings) Reinf (lb/Ft) | Conc (CY/Ft) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2'-6" | 2'-5" | 1'-0" | 9" | 7" | #4 | 1'-0" | #4 | 1'-0" | 33.73 | 0.248 |
| 3'-0" | 2'-5" | 1'-0" | 9" | 7" | #4 | 1'-0" | #4 | 1'-0" | 37.07 | 0.261 |
| 3'-6" | 2'-5" | 1'-0" | 9" | 7" | #4 | 1'-0" | #4 | 1'-0" | 37.74 | 0.273 |
| 4'-0" | 2'-5" | 1'-0" | 9" | 7" | #4 | 1'-0" | #4 | 1'-0" | 38.41 | 0.285 |
| 4'-6" | 3'-2" | 1'-6" | 1'-0" | 7" | #4 | 1'-0" | #4 | 1'-0" | 41.75 | 0.330 |
| 5'-0" | 3'-2" | 1'-6" | 1'-0" | 7" | #4 | 1'-0" | #4 | 1'-0" | 43.08 | 0.343 |
| 5'-6" | 3'-2" | 1'-6" | 1'-0" | 7" | #4 | 1'-0" | #4 | 1'-0" | 45.75 | 0.355 |
| 6'-0" | 3'-2" | 1'-6" | 1'-0" | 7" | #4 | 1'-0" | #4 | 1'-0" | 46.42 | 0.367 |
| 7'-0" | 3'-8" | 1'-9" | 1'-3" | 7" | #4 | 1'-0" | #4 | 1'-0" | 52.77 | 0.414 |
| 8'-0" | 4'-2" | 2'-0" | 1'-6" | 8" | #5 | 1'-0" | #4 | 1'-0" | 60.19 | 0.486 |
| 9'-0" | 4'-8" | 2'-3" | 1'-9" | 8" | #4 | 6" | #4 | 6" | 81.49 | 0.535 |
| 10'-0" | 5'-2" | 2'-6" | 2'-0" | 8" | #5 | 6" | #4 | 6" | 97.25 | 0.584 |
| 11'-0" | 5'-8" | 2'-9" | 2'-3" | 8" | #6 | 6" | #5 | 6" | 133.65 | 0.634 |
| 12'-0" | 6'-2" | 3'-0" | 2'-6" | 9" | #7 | 6" | #5 | 6" | 162.29 | 0.721 |
| 13'-0" | 6'-8" | 3'-3" | 2'-9" | 11" | #7 | 6" | #5 | 6" | 178.80 | 0.856 |
| 14'-0" | 7'-2" | 3'-6" | 3'-0" | 1'-0" | #8 | 6" | #5 | 6" | 216.78 | 0.959 |
| 15'-0" | 7'-8" | 4'-0" | 3'-0" | 1'-1" | #9 | 6" | #6 | 6" | 283.06 | 1.068 |
| 16'-0" | 8'-2" | 4'-6" | 3'-0" | 1'-3" | #9 | 6" | #6 | 6" | 297.02 | 1.234 |

**TABLE OF WINGWALL REINFORCING**

| Bar | Size | No. | Spa |
|---|---|---|---|
| DL | #5 | ~ | 1'-0" |
| DS | #5 | ~ | 1'-0" |
| E | #4 | ~ | 1'-0" |
| F | #4 | ~ | 1'-0" |
| G | #6 | 4 | ~ |
| H | #4 | 4 | ~ |
| P | #4 | ~ | 1'-0" |
| RS | #5 | 3 | ~ |
| RL | #5 | 3 | ~ |
| V | #4 | ~ | 1'-0" |

**TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES**

| Bar | Size | No. | Spa |
|---|---|---|---|
| L | #4 | ~ | 1'-0" |
| Q | #4 | 1 | ~ |
| Reinf (Lb/Ft) | | 2.45 | |
| Conc (CY/Ft) | | 0.037 | |

**WING DIMENSION FORMULAS:**
(All values are in Feet.)

Hw = H + T + C – 0.250
A = (Hw – 0.333)(Sc)
B = (A) [tangent (θ + 15°)]
Lw = (A) + (cosine (θ + 15°))

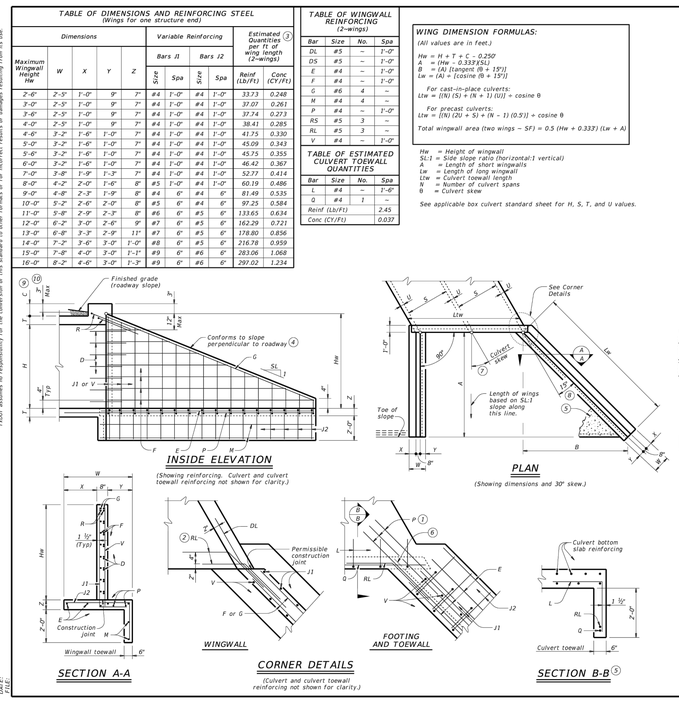
For cast-in-place culverts:
Ltw = (IN) (2S) + S) + (N – 1) (0.5)] + cosine θ

For precast culverts:
Ltw = (IN) (2S) + N) + (N – 1) (U)] + cosine θ

Total wingwall area (two wings – SF) = 0.5 (Hw + 0.333) (Lw + A)

Hw = Height of wingwall
Sl:1 = Side slope ratio (horizontal:1 vertical)
A = Length of short wingwalls
Lw = Length of long wingwall
Ltw = Culvert toewall length
N = Number of culvert spans
θ = Culvert skew

See applicable box culvert standard sheet for H, S, T, and U values.




1. Extend Bars P 3'-0" minimum into bottom slab of box culvert.
2. Adjust as necessary to maintain 1 1/2" clear cover and 4" minimum between bars.
3. Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings, multiply the tabulated values by 0.5 x (A + Lw).
4. Recommended values of side slope are: 2:1, 3:1, 4:1, and 6:1.
5. When shown elsewhere on the plans, construct reinforced concrete riprap at the end of the wingwalls for a length of 10'-0" (Typical). Unless otherwise shown on the plans or directed by the Engineer, provide a 6" wide by 1'-6" deep reinforced concrete toewall along all edges of the riprap adjacent to natural ground; reinforce the toewall by extending typical riprap reinforcing into the toewall; and extend construction joints or grooved joints oriented in the direction of flow across the full distance of the riprap at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.
6. At Contractor's option, culvert toewall may be ended flush with wingwall toewall. Adjust reinforcing as needed.
7. Applicable values of skew are: 15°, 30°, and 45°.
8. Typical wingwall angle for all skews.
9. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
10. For vehicle safety, the following requirements must be met:
    - For structures without bridge rail, construct curbs no more than 3" above finished grade.
    - For structures with bridge rail, construct curbs flush with finished grade.

    Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

**MATERIAL NOTES:**
Provide Class C concrete ($f'_c$=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
In riprap concrete, synthetic fibers listed on the "Fibers For Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

**GENERAL NOTES:**
Designed according to AASHTO LRFD Bridge Design Specifications.
When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.
Quantities for reinforcing steel and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

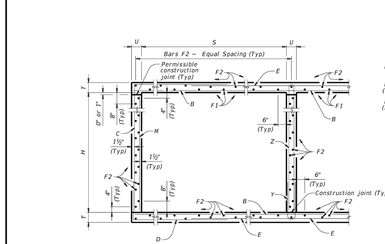
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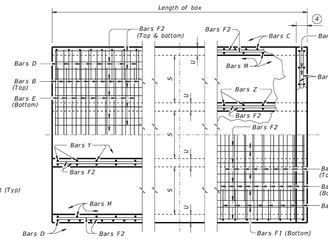
# CONCRETE WINGWALLS WITH FLARED WINGS FOR SKEWED BOX CULVERTS

## FW-S

| FILE: CD-FWS-20.dgn | DN: GAF | CK: CAT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT February 2020 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | DIST | COUNTY | | SHEET NO. |

DISCLAIMER:
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1. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
2. For vehicle safety, the following requirements must be met:
   - For structures without bridge rail, construct curbs no more than 3" above finished grade.
   - For structures with bridge rail, construct curbs flush with finished grade.

   Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
3. For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.
4. 1'-0" typical. 2'-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

The Contractor may replace Bars B, C, D, E, F1, F2, M, Y, and/or Z with deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes. The lap length required for WWR is never less than the lap length required for uncoated #4 bars.

*Example conversion. Replacing No. 6 Gr 60 at 6" Spacing with WWR*
*Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.*
*If D306 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86" Max spacing. Required lap length for the provided D306 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).*

**CONSTRUCTION NOTES:**
Do not use permanent forms.
Chamfer the bottom edge of the top slab 3" at the entrance.
Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed, and Bars Y and Z may be reversed.

**MATERIAL NOTES:**
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class C concrete ($f'_c$ = 3,600 psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete ($f'_c$ = 4,000 psi) for top slabs of:
- culverts with overlay,
- culverts with 1-to-2 course surface treatment, or
- culverts with the top slab as the final riding surface.

Provide bar laps, where required, as follows:
- Uncoated or galvanized – #4 = 1'-8" Min
- Uncoated or galvanized – #5 = 2'-1" Min
- Uncoated or galvanized – #6 = 2'-6" Min

**GENERAL NOTES:**
Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.
See the Multiple Box Culverts Cast-In-Place Miscellaneous Detail (MC-MD) standard sheet for details pertaining to skewed ends, angle sections, and lengthening.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing bar dimensions shown are out-to-out of bar.

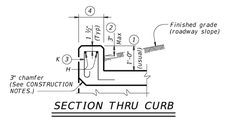
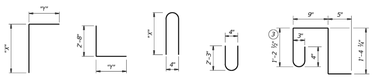



**TABLE OF BAR DIMENSIONS**

| H | "K" | "Y" |
|---|---|---|
| 2'-0" | 2'-7 ½" | 4'-1" |
| 3'-0" | 3'-7 ½" | 4'-1" |
| 4'-0" | 4'-7 ½" | 4'-1" |
| 5'-0" | 5'-7 ½" | 4'-1" |
| 6'-0" | 6'-7 ½" | 4'-1" |




HL93 LOADING — SHEET 1 OF 2

Texas Department of Transportation — Bridge Division Standard

# MULTIPLE BOX CULVERTS CAST-IN-PLACE

## 6'-0" SPAN
## 0' TO 16' FILL
## MC-6-16

| FILE: CD-MC616-20.dgn | DN: TBE | CK: BWP | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
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**BILLS OF REINFORCING STEEL (For Box Length = 40 feet)**

| NUMBER OF SPANS | SECTION DIMENSIONS S | H | T | U | Bars B No. | Size | Spa | Length | Wt | Bars C & D Bars C Length | Bars C Wt | Bars D Length | Bars D Wt | Bars E No. | Size | Spa | Length | Wt | Bars F1 – #4 No. | Spa | Length | Wt | Bars F2 – #4 No. | Spa | Length | Wt | Bars M – #4 No. | Spa | Length | Wt | Bars Y & Z – #4 No. | Spa | Bars Y Length | Wt | Bars Z Length | Wt | Bars H 4 – #4 Length | Wt | Bars K No. | Wt | QUANTITIES Per Foot of Barrel Conc (CY) | Reinf (Lb) | Curb Conc (CY) | Reinf (Lb) | Total Conc (CY) | Reinf (Lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 6'-0" | 2'-0" | 9" | 7" | 108 | #6 | 9" | 19'-2" | 2,190 | 108 | #5 | 9" | 6'-8" | 751 | 6'-9" | 760 | 108 | #6 | 9" | 10'-2" | 1,649 | 10 | 18" | 39'-9" | 266 | 44 | 18" | 39'-9" | 1,168 | 108 | 9" | 2'-0" | 144 | 54 | 9" | 4'-9" | 171 | 5'-5" | 195 | 13'-6" | 36 | 30 | 84 | 0.894 | 182.4 | 1.0 | 120 | 36.8 | 7,414 |
| 3 | 6'-0" | 2'-0" | 9" | 7" | 108 | #6 | 9" | 20'-1" | 3,258 | 108 | #5 | 9" | 6'-8" | 751 | 6'-9" | 760 | 108 | #6 | 9" | 16'-9" | 2,717 | 15 | 18" | 39'-9" | 398 | 63 | 18" | 39'-9" | 1,673 | 108 | 9" | 2'-0" | 144 | 108 | 9" | 4'-9" | 343 | 5'-5" | 391 | 20'-1" | 54 | 44 | 122 | 1.302 | 260.9 | 1.5 | 176 | 53.6 | 10,611 |
| 4 | 6'-0" | 2'-0" | 9" | 7" | 108 | #6 | 9" | 26'-8" | 4,326 | 108 | #5 | 9" | 6'-8" | 751 | 6'-9" | 760 | 108 | #6 | 9" | 23'-4" | 3,785 | 20 | 18" | 39'-9" | 531 | 82 | 18" | 39'-9" | 2,177 | 108 | 9" | 2'-0" | 144 | 162 | 9" | 4'-9" | 514 | 5'-5" | 586 | 26'-8" | 71 | 56 | 156 | 1.711 | 339.4 | 2.0 | 227 | 70.4 | 13,801 |
| 5 | 6'-0" | 2'-0" | 9" | 7" | 108 | #6 | 9" | 33'-3" | 5,394 | 108 | #5 | 9" | 6'-8" | 751 | 6'-9" | 760 | 108 | #6 | 9" | 29'-11" | 4,853 | 25 | 18" | 39'-9" | 664 | 101 | 18" | 39'-9" | 2,682 | 108 | 9" | 2'-0" | 144 | 216 | 9" | 4'-9" | 685 | 5'-5" | 782 | 33'-3" | 89 | 70 | 195 | 2.120 | 417.9 | 2.5 | 284 | 87.3 | 16,999 |
| 6 | 6'-0" | 2'-0" | 9" | 7" | 108 | #6 | 9" | 39'-10" | 6,462 | 108 | #5 | 9" | 6'-8" | 751 | 6'-9" | 760 | 108 | #6 | 9" | 36'-6" | 5,921 | 30 | 18" | 39'-9" | 797 | 120 | 18" | 39'-9" | 3,186 | 108 | 9" | 2'-0" | 144 | 270 | 9" | 4'-9" | 857 | 5'-5" | 977 | 39'-10" | 106 | 82 | 228 | 2.529 | 496.4 | 3.0 | 334 | 104.1 | 20,189 |
| 2 | 6'-0" | 3'-0" | 9" | 7" | 108 | #6 | 9" | 19'-2" | 2,190 | 108 | #5 | 9" | 7'-8" | 864 | 6'-9" | 760 | 108 | #6 | 9" | 10'-2" | 1,649 | 10 | 18" | 39'-9" | 266 | 50 | 18" | 39'-9" | 1,328 | 108 | 9" | 3'-0" | 216 | 54 | 9" | 4'-9" | 171 | 7'-5" | 268 | 13'-6" | 36 | 30 | 84 | 0.958 | 192.8 | 1.0 | 120 | 39.3 | 7,832 |
| 3 | 6'-0" | 3'-0" | 9" | 7" | 108 | #6 | 9" | 20'-1" | 3,258 | 108 | #5 | 9" | 7'-8" | 864 | 6'-9" | 760 | 108 | #6 | 9" | 16'-9" | 2,717 | 15 | 18" | 39'-9" | 398 | 71 | 18" | 39'-9" | 1,885 | 108 | 9" | 3'-0" | 216 | 108 | 9" | 4'-9" | 343 | 7'-5" | 535 | 20'-1" | 54 | 44 | 122 | 1.389 | 274.4 | 1.5 | 176 | 57.1 | 11,152 |
| 4 | 6'-0" | 3'-0" | 9" | 7" | 108 | #6 | 9" | 26'-8" | 4,326 | 108 | #5 | 9" | 7'-8" | 864 | 6'-9" | 760 | 108 | #6 | 9" | 23'-4" | 3,785 | 20 | 18" | 39'-9" | 531 | 92 | 18" | 39'-9" | 2,443 | 108 | 9" | 3'-0" | 216 | 162 | 9" | 4'-9" | 514 | 7'-5" | 803 | 26'-8" | 71 | 56 | 156 | 1.819 | 356.1 | 2.0 | 227 | 74.7 | 14,469 |
| 5 | 6'-0" | 3'-0" | 9" | 7" | 108 | #6 | 9" | 33'-3" | 5,394 | 108 | #5 | 9" | 7'-8" | 864 | 6'-9" | 760 | 108 | #6 | 9" | 29'-11" | 4,853 | 25 | 18" | 39'-9" | 664 | 113 | 18" | 39'-9" | 3,000 | 108 | 9" | 3'-0" | 216 | 216 | 9" | 4'-9" | 685 | 7'-5" | 1,070 | 33'-3" | 89 | 70 | 195 | 2.250 | 437.7 | 2.5 | 284 | 92.5 | 17,790 |
| 6 | 6'-0" | 3'-0" | 9" | 7" | 108 | #6 | 9" | 39'-10" | 6,462 | 108 | #5 | 9" | 7'-8" | 864 | 6'-9" | 760 | 108 | #6 | 9" | 36'-6" | 5,921 | 30 | 18" | 39'-9" | 797 | 134 | 18" | 39'-9" | 3,558 | 108 | 9" | 3'-0" | 216 | 270 | 9" | 4'-9" | 857 | 7'-5" | 1,338 | 39'-10" | 106 | 82 | 228 | 2.681 | 519.3 | 3.0 | 334 | 110.2 | 21,107 |
| 2 | 6'-0" | 4'-0" | 9" | 7" | 108 | #6 | 9" | 19'-2" | 2,190 | 108 | #5 | 9" | 8'-8" | 976 | 6'-9" | 760 | 108 | #6 | 9" | 10'-2" | 1,649 | 10 | 18" | 39'-9" | 266 | 50 | 18" | 39'-9" | 1,328 | 108 | 9" | 4'-0" | 289 | 54 | 9" | 4'-9" | 171 | 9'-5" | 340 | 13'-6" | 36 | 30 | 84 | 1.023 | 199.2 | 1.0 | 120 | 41.9 | 8,089 |
| 3 | 6'-0" | 4'-0" | 9" | 7" | 108 | #6 | 9" | 20'-1" | 3,258 | 108 | #5 | 9" | 8'-8" | 976 | 6'-9" | 760 | 108 | #6 | 9" | 16'-9" | 2,717 | 15 | 18" | 39'-9" | 398 | 71 | 18" | 39'-9" | 1,885 | 108 | 9" | 4'-0" | 289 | 108 | 9" | 4'-9" | 343 | 9'-5" | 679 | 20'-1" | 54 | 44 | 122 | 1.475 | 282.6 | 1.5 | 176 | 60.5 | 11,481 |
| 4 | 6'-0" | 4'-0" | 9" | 7" | 108 | #6 | 9" | 26'-8" | 4,326 | 108 | #5 | 9" | 8'-8" | 976 | 6'-9" | 760 | 108 | #6 | 9" | 23'-4" | 3,785 | 20 | 18" | 39'-9" | 531 | 92 | 18" | 39'-9" | 2,443 | 108 | 9" | 4'-0" | 289 | 162 | 9" | 4'-9" | 514 | 9'-5" | 1,019 | 26'-8" | 71 | 56 | 156 | 1.927 | 366.1 | 2.0 | 227 | 79.1 | 14,870 |
| 5 | 6'-0" | 4'-0" | 9" | 7" | 108 | #6 | 9" | 33'-3" | 5,394 | 108 | #5 | 9" | 8'-8" | 976 | 6'-9" | 760 | 108 | #6 | 9" | 29'-11" | 4,853 | 25 | 18" | 39'-9" | 664 | 113 | 18" | 39'-9" | 3,000 | 108 | 9" | 4'-0" | 289 | 216 | 9" | 4'-9" | 685 | 9'-5" | 1,359 | 33'-3" | 89 | 70 | 195 | 2.380 | 449.5 | 2.5 | 284 | 97.7 | 18,264 |
| 6 | 6'-0" | 4'-0" | 9" | 7" | 108 | #6 | 9" | 39'-10" | 6,462 | 108 | #5 | 9" | 8'-8" | 976 | 6'-9" | 760 | 108 | #6 | 9" | 36'-6" | 5,921 | 30 | 18" | 39'-9" | 797 | 134 | 18" | 39'-9" | 3,558 | 108 | 9" | 4'-0" | 289 | 270 | 9" | 4'-9" | 857 | 9'-5" | 1,698 | 39'-10" | 106 | 82 | 228 | 2.832 | 533.0 | 3.0 | 334 | 116.2 | 21,652 |
| 2 | 6'-0" | 5'-0" | 9" | 7" | 108 | #6 | 9" | 19'-2" | 2,190 | 108 | #5 | 9" | 9'-8" | 1,089 | 6'-9" | 760 | 108 | #6 | 9" | 10'-2" | 1,649 | 10 | 18" | 39'-9" | 266 | 56 | 18" | 39'-9" | 1,487 | 108 | 9" | 5'-0" | 361 | 54 | 9" | 4'-9" | 171 | 11'-5" | 412 | 13'-6" | 36 | 30 | 84 | 1.088 | 209.6 | 1.0 | 120 | 44.5 | 8,505 |
| 3 | 6'-0" | 5'-0" | 9" | 7" | 108 | #6 | 9" | 20'-1" | 3,258 | 108 | #5 | 9" | 9'-8" | 1,089 | 6'-9" | 760 | 108 | #6 | 9" | 16'-9" | 2,717 | 15 | 18" | 39'-9" | 398 | 79 | 18" | 39'-9" | 2,098 | 108 | 9" | 5'-0" | 361 | 108 | 9" | 4'-9" | 343 | 11'-5" | 824 | 20'-1" | 54 | 44 | 122 | 1.562 | 296.2 | 1.5 | 176 | 64.0 | 12,024 |
| 4 | 6'-0" | 5'-0" | 9" | 7" | 108 | #6 | 9" | 26'-8" | 4,326 | 108 | #5 | 9" | 9'-8" | 1,089 | 6'-9" | 760 | 108 | #6 | 9" | 23'-4" | 3,785 | 20 | 18" | 39'-9" | 531 | 102 | 18" | 39'-9" | 2,708 | 108 | 9" | 5'-0" | 361 | 162 | 9" | 4'-9" | 514 | 11'-5" | 1,235 | 26'-8" | 71 | 56 | 156 | 2.035 | 382.7 | 2.0 | 227 | 83.4 | 15,536 |
| 5 | 6'-0" | 5'-0" | 9" | 7" | 108 | #6 | 9" | 33'-3" | 5,394 | 108 | #5 | 9" | 9'-8" | 1,089 | 6'-9" | 760 | 108 | #6 | 9" | 29'-11" | 4,853 | 25 | 18" | 39'-9" | 664 | 125 | 18" | 39'-9" | 3,319 | 108 | 9" | 5'-0" | 361 | 216 | 9" | 4'-9" | 685 | 11'-5" | 1,647 | 33'-3" | 89 | 70 | 195 | 2.509 | 469.3 | 2.5 | 284 | 102.8 | 19,056 |
| 6 | 6'-0" | 5'-0" | 9" | 7" | 108 | #6 | 9" | 39'-10" | 6,462 | 108 | #5 | 9" | 9'-8" | 1,089 | 6'-9" | 760 | 108 | #6 | 9" | 36'-6" | 5,921 | 30 | 18" | 39'-9" | 797 | 148 | 18" | 39'-9" | 3,930 | 108 | 9" | 5'-0" | 361 | 270 | 9" | 4'-9" | 857 | 11'-5" | 2,059 | 39'-10" | 106 | 82 | 228 | 2.983 | 555.9 | 3.0 | 334 | 122.3 | 22,570 |
| 2 | 6'-0" | 6'-0" | 9" | 7" | 108 | #6 | 9" | 19'-2" | 2,190 | 108 | #5 | 9" | 10'-8" | 1,202 | 6'-9" | 760 | 108 | #6 | 9" | 10'-2" | 1,649 | 10 | 18" | 39'-9" | 266 | 62 | 18" | 39'-9" | 1,646 | 108 | 9" | 6'-0" | 433 | 54 | 9" | 4'-9" | 171 | 13'-5" | 484 | 13'-6" | 36 | 30 | 84 | 1.153 | 220.0 | 1.0 | 120 | 47.1 | 8,921 |
| 3 | 6'-0" | 6'-0" | 9" | 7" | 108 | #6 | 9" | 20'-1" | 3,258 | 108 | #5 | 9" | 10'-8" | 1,202 | 6'-9" | 760 | 108 | #6 | 9" | 16'-9" | 2,717 | 15 | 18" | 39'-9" | 398 | 87 | 18" | 39'-9" | 2,310 | 108 | 9" | 6'-0" | 433 | 108 | 9" | 4'-9" | 343 | 13'-5" | 968 | 20'-1" | 54 | 44 | 122 | 1.648 | 309.7 | 1.5 | 176 | 67.4 | 12,565 |
| 4 | 6'-0" | 6'-0" | 9" | 7" | 108 | #6 | 9" | 26'-8" | 4,326 | 108 | #5 | 9" | 10'-8" | 1,202 | 6'-9" | 760 | 108 | #6 | 9" | 23'-4" | 3,785 | 20 | 18" | 39'-9" | 531 | 112 | 18" | 39'-9" | 2,974 | 108 | 9" | 6'-0" | 433 | 162 | 9" | 4'-9" | 514 | 13'-5" | 1,452 | 26'-8" | 71 | 56 | 156 | 2.144 | 399.4 | 2.0 | 227 | 87.7 | 16,204 |
| 5 | 6'-0" | 6'-0" | 9" | 7" | 108 | #6 | 9" | 33'-3" | 5,394 | 108 | #5 | 9" | 10'-8" | 1,202 | 6'-9" | 760 | 108 | #6 | 9" | 29'-11" | 4,853 | 25 | 18" | 39'-9" | 664 | 137 | 18" | 39'-9" | 3,638 | 108 | 9" | 6'-0" | 433 | 216 | 9" | 4'-9" | 685 | 13'-5" | 1,936 | 33'-3" | 89 | 70 | 195 | 2.639 | 489.1 | 2.5 | 284 | 108.0 | 19,849 |
| 6 | 6'-0" | 6'-0" | 9" | 7" | 108 | #6 | 9" | 39'-10" | 6,462 | 108 | #5 | 9" | 10'-8" | 1,202 | 6'-9" | 760 | 108 | #6 | 9" | 36'-6" | 5,921 | 30 | 18" | 39'-9" | 797 | 162 | 18" | 39'-9" | 4,302 | 108 | 9" | 6'-0" | 433 | 270 | 9" | 4'-9" | 857 | 13'-5" | 2,420 | 39'-10" | 106 | 82 | 228 | 3.134 | 578.9 | 3.0 | 334 | 128.3 | 23,488 |

HL93 LOADING — SHEET 2 OF 2

Texas Department of Transportation — Bridge Division Standard

# MULTIPLE BOX CULVERTS CAST-IN-PLACE

## 6'-0" SPAN
## 0' TO 16' FILL
## MC-6-16

| FILE: CD-MC616-20.dgn | DN: TBE | CK: BWP | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT February 2020 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | DIST | COUNTY | | SHEET NO. |

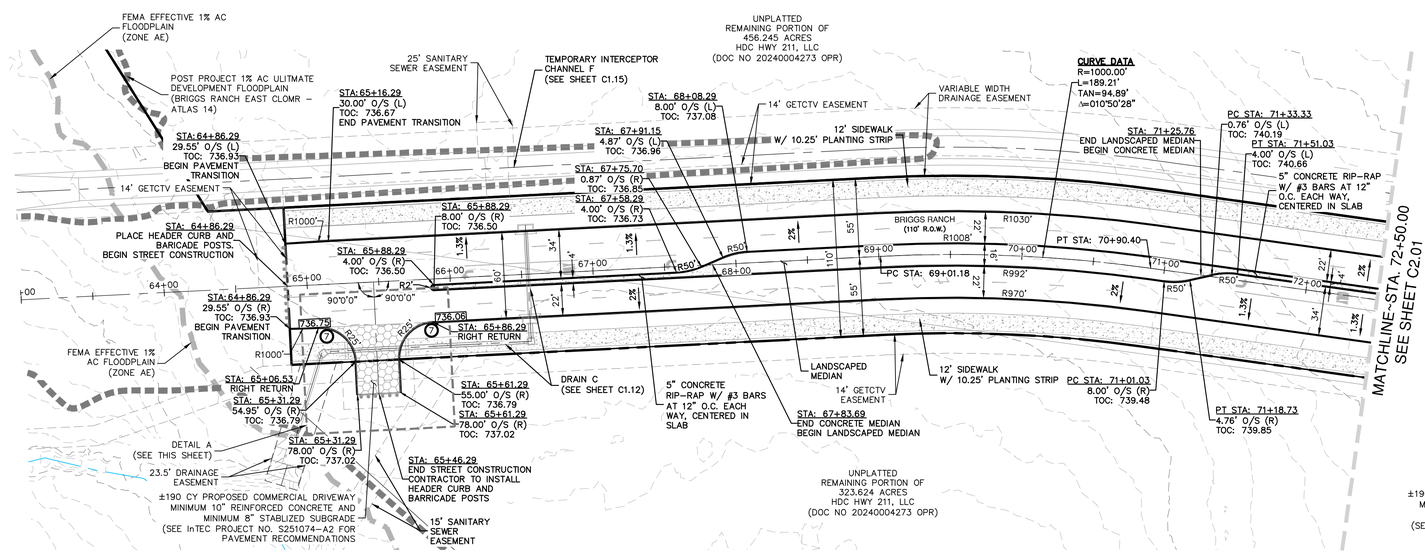
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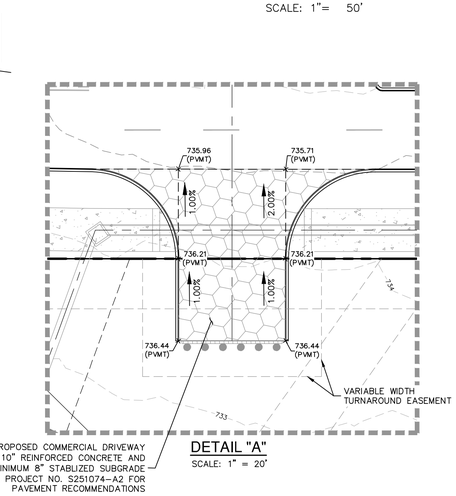
BEXAR COUNTY, TEXAS

DRAINAGE DETAILS (SHEET 3 OF 3)

| NO. | REVISION | DATE |
|---|---|---|
| | | |

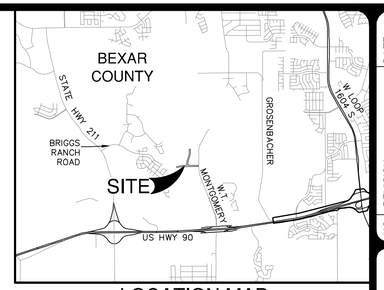
PAPE–DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
T




DETAIL "A"
SCALE: 1" = 20'

0' 50' 100' 150'
SCALE: 1"= 50'



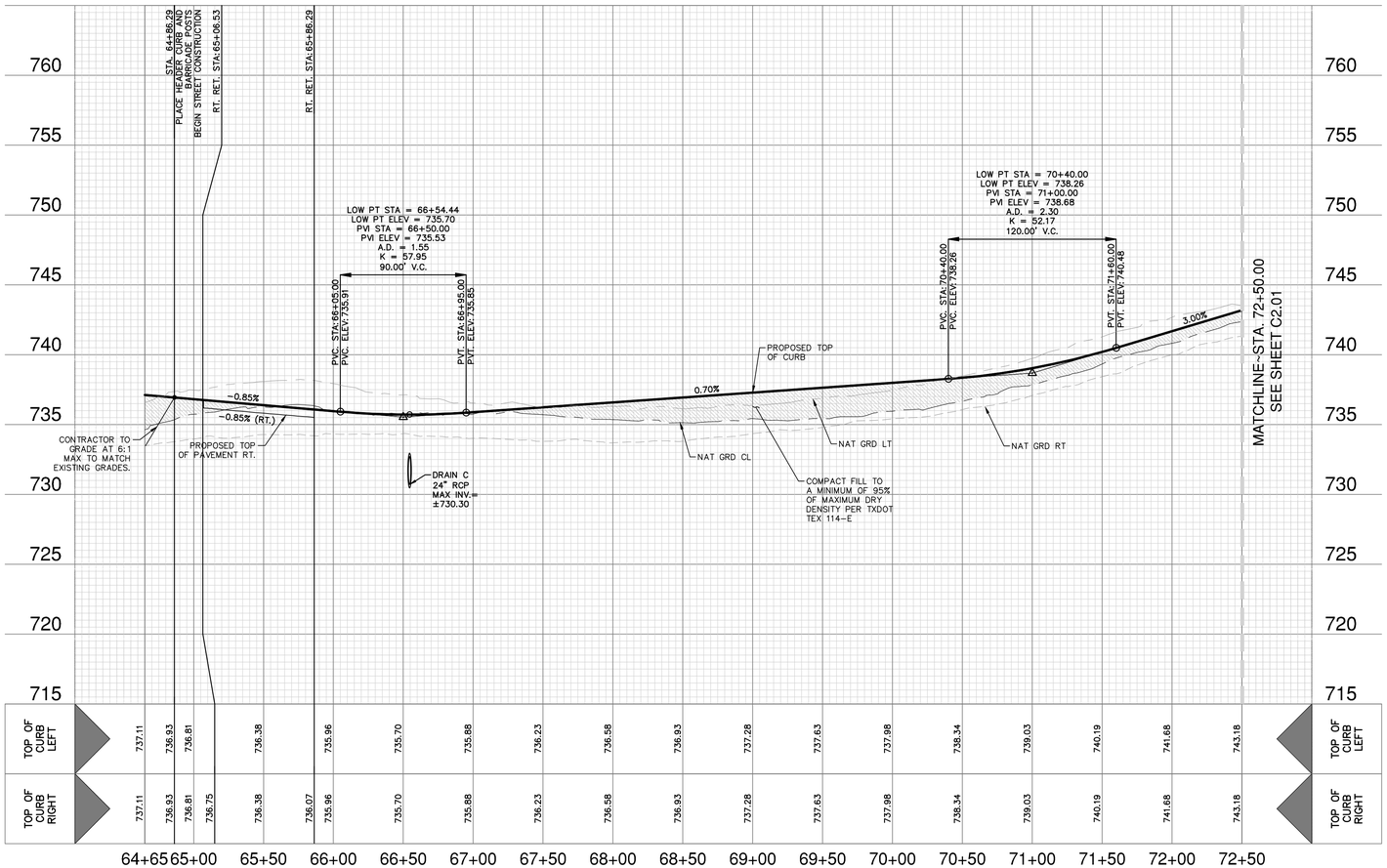

LOCATION MAP
NOT-TO-SCALE

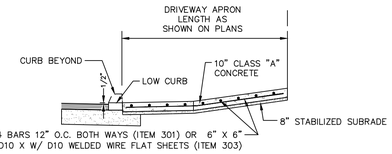
## STREET LEGEND

| | |
|---|---|
| PROJECT LIMITS | |
| MAINTAIN GUTTER | |
| EXISTING CONTOUR | 970 |
| WHEELCHAIR RAMP | |
| CENTERLINE | CL |
| RADIUS POINT | RP |
| POINT OF CURVATURE | PC |
| POINT OF TANGENCY | PT |
| RETURN | RET |
| DRAINAGE FLOW ARROW | |
| TOP OF CURB SPOT ELEVATION | 857.30 |
| PAVEMENT ELEVATION | 857.00(P) × |
| WASHOUT CROWN SECTION | |
| SIDEWALK (HOMEOWNER'S RESPONSIBILITY) | |
| SIDEWALK (DEVELOPER'S RESPONSIBILITY) | |
| DRIVEWAY | |

BRIGGS RANCH
STA. 64+86.29 TO 72+50.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'




## TYPICAL COMMERCIAL DRIVEWAY SECTION

NOT-TO-SCALE
ITEM 503.2

| PAVEMENT MATERIALS | ASPHALT (IN.) |
|---|---|
| REINFORCED CONCRETE | 10.0" |
| STABILIZED SUBGRADE | 8" |

## PAVEMENT SECTION

REFERENCE GEOTECHNICAL ENGINEERING REPORT PREPARED BY **INTEC L.P.,** FILE No. **S251074-A2,** DATED **JUNE 26, 2025,** FOR PAVEMENT MATERIALS AND CONSTRUCTION REQUIREMENTS. CONTRACTOR SHALL MEET OR EXCEED ALL PAVING RECOMMENDATIONS.

## STREET NOTES:

1. A BEXAR COUNTY ROW PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY ROW. CONTRACTOR SHALL COORDINATE A TRAFFIC CONTROL PLAN FOR ALL WORK WITHIN THE ROW. ADDITIONAL WARNING SIGNS MAY BE RECOMMENDED BY THE ENGINEER ONCE THE ROADWAYS ARE CONSTRUCTED.
2. CONTRACTOR SHALL MATCH EXISTING PAVEMENT AT TIE-IN. IF EXISTING PAVEMENT ELEVATION DIFFERS SIGNIFICANTLY, CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO CONTINUING WORK.
3. SIDEWALKS SHALL BE CONSTRUCTED WITH VARYING PLANTING STRIP AS SHOWN ON PLAN. FOR ALL LOCATIONS WHERE THE SIDEWALK IS SHOWN OFFSET. REFER TO STREET DETAIL SHEET FOR SIDEWALK AND RAMP DETAILS.
4. NO PERMANENT STRUCTURES HIGHER THAN 3 FEET, AND LOWER THAN 8 FEET ABOVE THE PAVEMENT, INCLUDING STRUCTURES, WALLS, FENCES, AND VEGETATION, SHALL BE CONSTRUCTED OR ALLOWED WITHIN THE CLEAR VISION EASEMENT. CONTRACTOR SHALL GRADE AREAS WITHIN CLEAR VISION EASEMENTS SUCH THAT THE ELEVATION WITHIN THE CLEAR VISION EASEMENT IS NOT HIGHER THAN 3 FEET ABOVE THE ADJACENT TOP OF PAVEMENT.
5. DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATING A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT. DRIVEWAY LOCATION IS SUBJECT TO CHANGE BASED ON HOME SELECTION AND FINAL LOT DESIGN.
6. CHANGES IN THE SIDEWALK LOCATION FOR A MAXIMUM LINEAR DISTANCE OF TWO HUNDRED (200) FEET ARE PERMITTED TO BE APPROVED BY THE FIELD INSPECTOR WITHOUT AMENDING THE STREET PLAN OR UTILITY LAYOUT PER UDC SECTION 35-506 (Q)(6).
7. THE CONSTRUCTION OF SIDEWALKS ADJACENT TO ALL 900 SERIES LOTS WILL BE THE RESPONSIBILITY OF THE DEVELOPER AS SHOWN ON THE OVERALL SIGNAGE PLAN.

DATE
NO. REVISION

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025

PAPE-DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

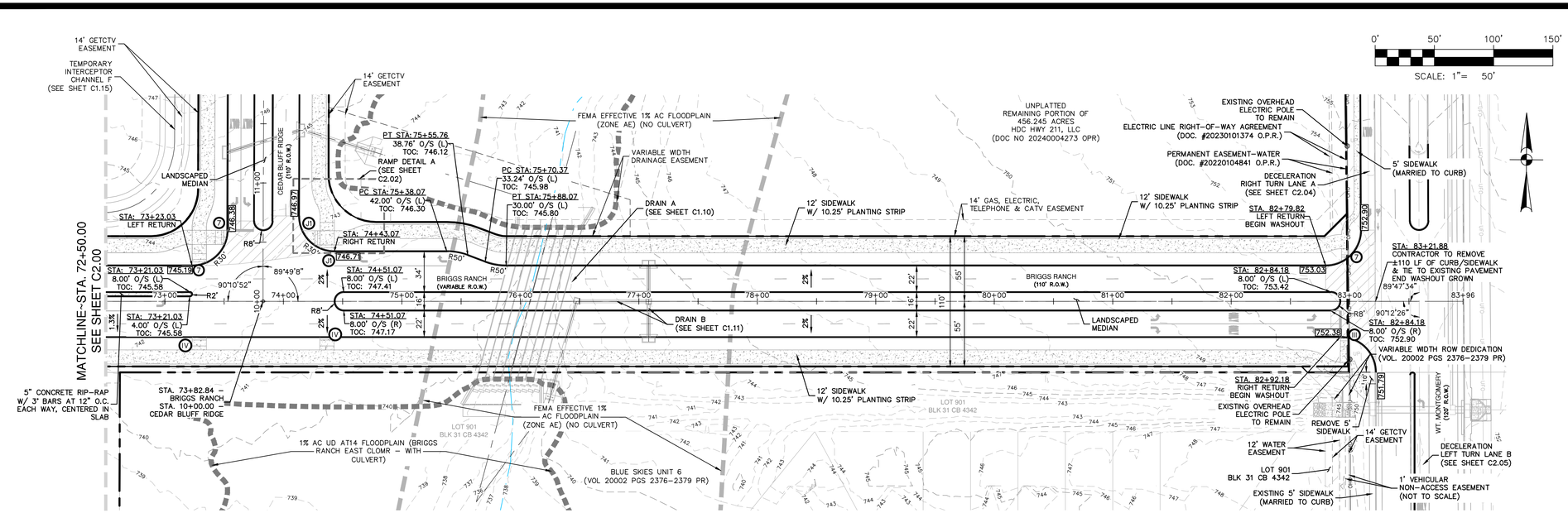
# BRE PHASE 2, COLLECTOR
BEXAR COUNTY, TEXAS

BRIGGS RANCH ROAD
PLAN AND PROFILE (BEGIN TO 72+50.00)

PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RC
SHEET C2.00

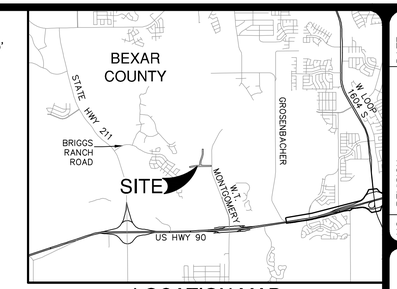
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BRIGGS RANCH
STA. 72+50.00 TO END

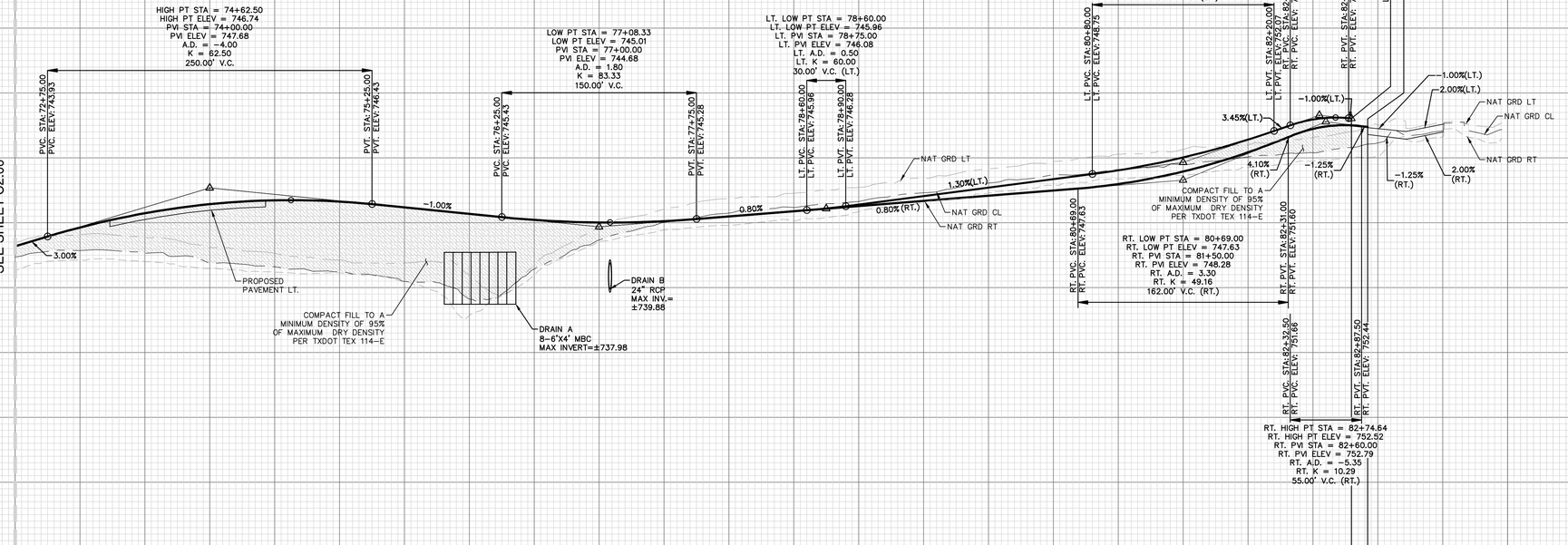
VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'




LOCATION MAP
NOT-TO-SCALE

## STREET LEGEND

| | |
|---|---|
| PROJECT LIMITS | |
| MAINTAIN GUTTER | |
| EXISTING CONTOUR | 970 |
| WHEELCHAIR RAMP | |
| CENTERLINE | CL |
| RADIUS POINT | RP |
| POINT OF CURVATURE | PC |
| POINT OF TANGENCY | PT |
| RETURN | RET |
| DRAINAGE FLOW ARROW | |
| TOP OF CURB SPOT ELEVATION | 857.30 |
| PAVEMENT ELEVATION | 857.00(P) × |
| WASHOUT CROWN SECTION | |
| SIDEWALK (HOMEOWNER'S RESPONSIBILITY) | |
| SIDEWALK (DEVELOPER'S RESPONSIBILITY) | |
| DRIVEWAY | |




| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TOP OF CURB LEFT | 743.18 | 744.63 | 746.73 | 746.63 | 746.18 | 745.68 | 745.22 | 745.02 | 745.12 | 745.48 | 745.88 | 746.41 | 747.06 | 747.71 | 748.36 | 749.04 | 750.03 | 751.41 | 752.95 | 752.38 | | | | | |
| TOP OF CURB RIGHT | 743.18 | 744.63 | 745.73 | 746.43 | 746.73 | 746.63 | 746.18 | 745.68 | 745.22 | 745.02 | 745.12 | 745.48 | 745.88 | 746.28 | 746.68 | 747.08 | 747.48 | 747.98 | 748.95 | 750.43 | 752.23 | 753.03 | | | |

## STREET NOTES:

1. A BEXAR COUNTY ROW PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY ROW. CONTRACTOR SHALL COORDINATE A TRAFFIC CONTROL PLAN FOR ALL WORK WITHIN THE ROW. ADDITIONAL WARNING SIGNS MAY BE RECOMMENDED BY THE ENGINEER ONCE THE ROADWAYS ARE CONSTRUCTED.
2. CONTRACTOR SHALL MATCH EXISTING PAVEMENT AT TIE-IN. IF EXISTING PAVEMENT ELEVATION DIFFERS SIGNIFICANTLY, CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO CONTINUING WORK.
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6. CHANGES IN THE SIDEWALK LOCATION FOR A MAXIMUM LINEAR DISTANCE OF TWO HUNDRED (200) FEET ARE PERMITTED TO BE APPROVED BY THE FIELD INSPECTOR WITHOUT AMENDING THE STREET PLAN OR UTILITY LAYOUT PER UDC SECTION 35-506 (Q)(6).
7. THE CONSTRUCTION OF SIDEWALKS ADJACENT TO ALL 900 SERIES LOTS WILL BE THE RESPONSIBILITY OF THE DEVELOPER AS SHOWN ON THE OVERALL SIGNAGE PLAN.

| NO. | REVISION | DATE |
|---|---|---|
| | | |

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025


PAPE-DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

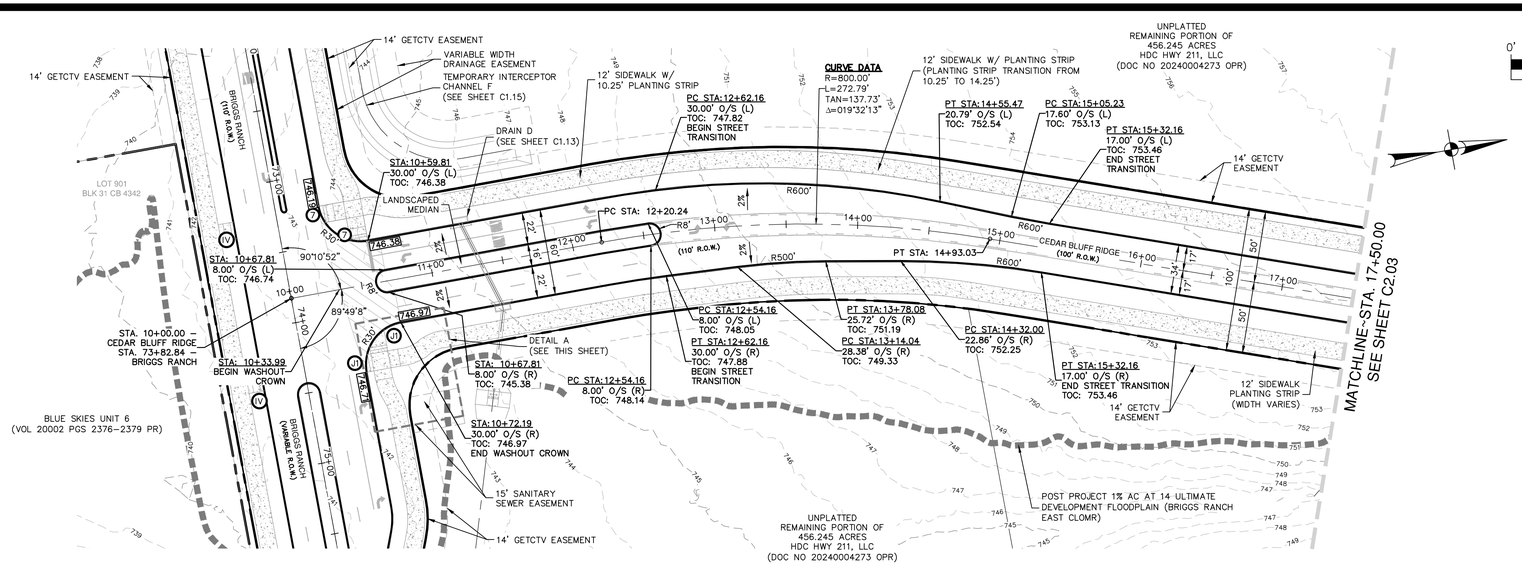

BRE PHASE 2, COLLECTOR
BEXAR COUNTY, TEXAS

BRIGGS RANCH ROAD
PLAN AND PROFILE (STA. 72+50.00 TO END)

PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C2.01

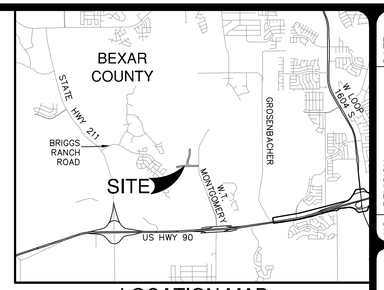
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0' 50' 100' 150'

SCALE: 1"= 50'




LOCATION MAP

NOT-TO-SCALE

## STREET LEGEND

| | |
|---|---|
| PROJECT LIMITS | |
| MAINTAIN GUTTER | |
| EXISTING CONTOUR | 970 |
| WHEELCHAIR RAMP | |
| CENTERLINE | CL |
| RADIUS POINT | RP |
| POINT OF CURVATURE | PC |
| POINT OF TANGENCY | PT |
| RETURN | RET |
| DRAINAGE FLOW ARROW | |
| TOP OF CURB SPOT ELEVATION | 857.30 |
| PAVEMENT ELEVATION | 857.00(P) × |
| WASHOUT CROWN SECTION | |
| SIDEWALK (HOMEOWNER'S RESPONSIBILITY) | |
| SIDEWALK (DEVELOPER'S RESPONSIBILITY) | |
| DRIVEWAY | |

CEDAR BLUFF RIDGE
STA. 10+00.00 TO 17+50.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'







DETAIL "A"

SCALE: 1" = 10'

## STREET NOTES:

1. A BEXAR COUNTY ROW PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY ROW. CONTRACTOR SHALL COORDINATE A TRAFFIC CONTROL PLAN FOR ALL WORK WITHIN THE ROW. ADDITIONAL WARNING SIGNS MAY BE RECOMMENDED BY THE ENGINEER ONCE THE ROADWAYS ARE CONSTRUCTED.
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5. DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATING A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT. DRIVEWAY LOCATION IS SUBJECT TO CHANGE BASED ON HOME SELECTION AND FINAL LOT DESIGN.
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7. THE CONSTRUCTION OF SIDEWALKS ADJACENT TO ALL 900 SERIES LOTS WILL BE THE RESPONSIBILITY OF THE DEVELOPER AS SHOWN ON THE OVERALL SIGNAGE PLAN.

DATE
NO. REVISION

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025

PAPE–DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

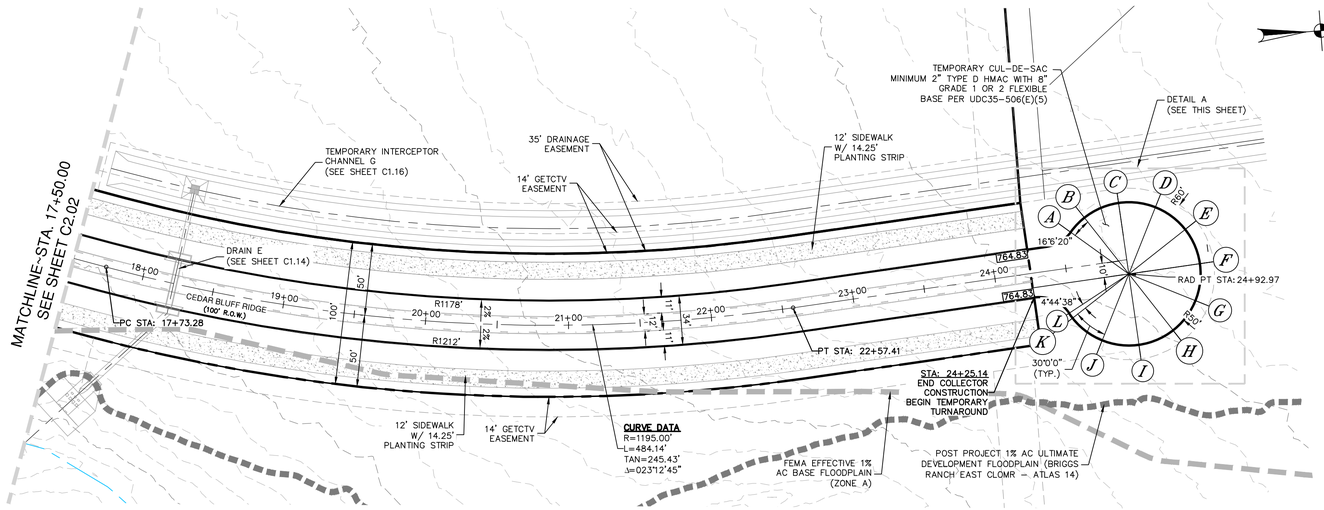
# BRE PHASE 2, COLLECTOR
BEXAR COUNTY, TEXAS

CEDAR BLUFF RIDGE
PLAN AND PROFILE (10+00.00 TO 17+50.00)

PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C2.02

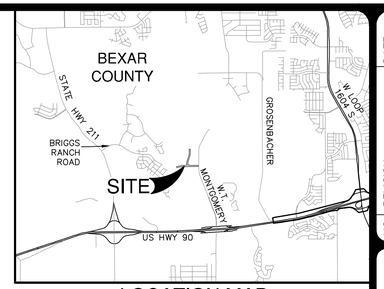
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0' 50' 100' 150'

SCALE: 1"= 50'




## LOCATION MAP

NOT-TO-SCALE

## STREET LEGEND

| | |
|---|---|
| PROJECT LIMITS | |
| MAINTAIN GUTTER | |
| EXISTING CONTOUR | 970 |
| WHEELCHAIR RAMP | |
| CENTERLINE | CL |
| RADIUS POINT | RP |
| POINT OF CURVATURE | PC |
| POINT OF TANGENCY | PT |
| RETURN | RET |
| DRAINAGE FLOW ARROW | |
| TOP OF CURB SPOT ELEVATION | 857.30 |
| PAVEMENT ELEVATION | 857.00(P) × |
| WASHOUT CROWN SECTION | |
| SIDEWALK (HOMEOWNER'S RESPONSIBILITY) | |
| SIDEWALK (DEVELOPER'S RESPONSIBILITY) | |
| DRIVEWAY | |

CEDAR BLUFF RIDGE
STA. 17+50.00 TO END

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'







## DETAIL "A"

SCALE: 1" = 20'

## STREET NOTES:

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4. NO PERMANENT STRUCTURES HIGHER THAN 3 FEET, AND LOWER THAN 8 FEET ABOVE THE PAVEMENT, INCLUDING STRUCTURES, WALLS, FENCES, AND VEGETATION, SHALL BE CONSTRUCTED OR ALLOWED WITHIN THE CLEAR VISION EASEMENT. CONTRACTOR SHALL GRADE AREAS WITHIN CLEAR VISION EASEMENTS SUCH THAT THE ELEVATION WITHIN THE CLEAR VISION EASEMENT IS NOT HIGHER THAN 3 FEET ABOVE THE ADJACENT TOP OF PAVEMENT.
5. DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATING A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT. DRIVEWAY LOCATION IS SUBJECT TO CHANGE BASED ON HOME SELECTION AND FINAL LOT DESIGN.
6. CHANGES IN THE SIDEWALK LOCATION FOR A MAXIMUM LINEAR DISTANCE OF TWO HUNDRED (200) FEET ARE PERMITTED TO BE APPROVED BY THE FIELD INSPECTOR WITHOUT AMENDING THE STREET PLAN OR UTILITY LAYOUT PER UDC SECTION 35-506 (Q)(6).
7. THE CONSTRUCTION OF SIDEWALKS ADJACENT TO ALL 900 SERIES LOTS WILL BE THE RESPONSIBILITY OF THE DEVELOPER AS SHOWN ON THE OVERALL SIGNAGE PLAN.

| NO. | REVISION | DATE |
|---|---|---|
| | | |

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025

PAPE-DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

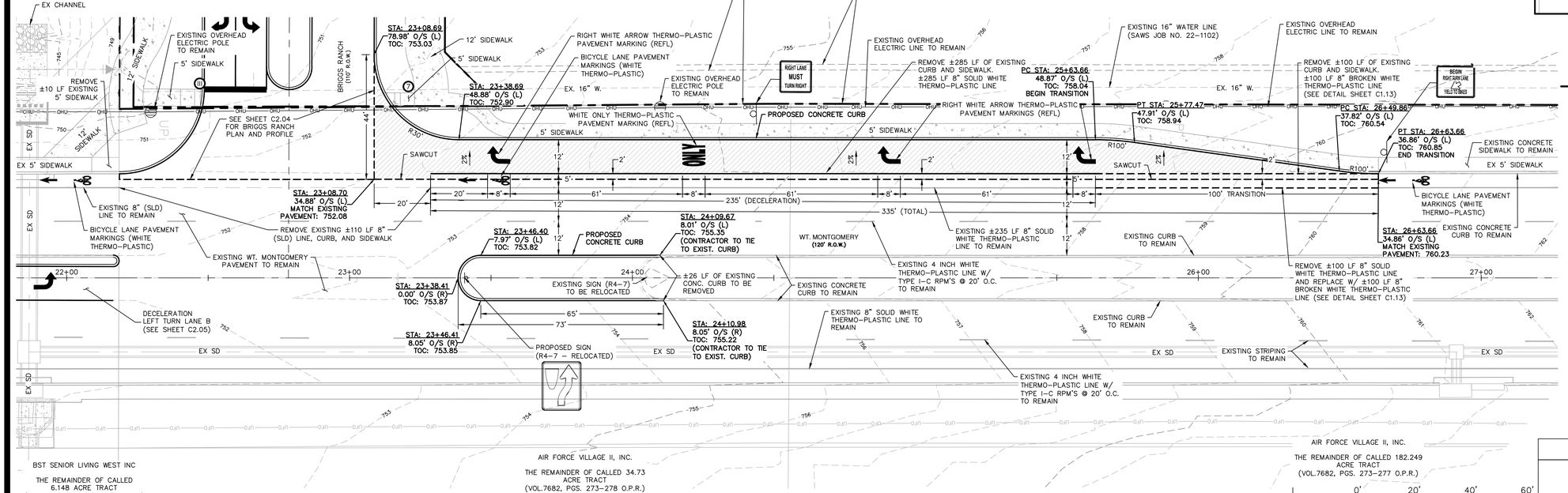
# BRE PHASE 2, COLLECTOR
BEXAR COUNTY, TEXAS

CEDAR BLUFF RIDGE
PLAN AND PROFILE (STA. 17+50 TO END)

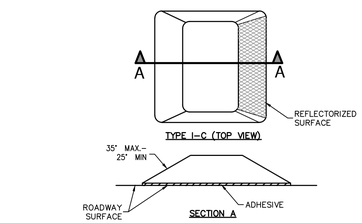
PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C2.03

Date: July 22, 2025, 1:26 PM – User ID: dmorris
File: P:\114\V2\18\Design\Civil\S1114218-CEDAR BLUFF RIDGE.dwg

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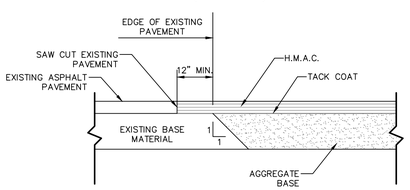



## DECELERATION LANE A - WT. MONTGOMERY & BRIGGS RANCH ROAD



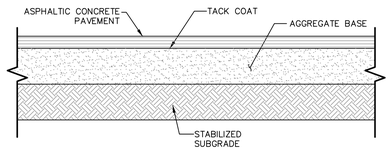

## RAISED PAVEMENT MARKERS DETAIL

(NOT TO SCALE)




## ASPHALT/ASPHALT JUNCTURE DETAIL

NOT-TO-SCALE




| PAVEMENT MATERIALS | ASPHALT (IN.) |
|---|---|
| TYPE "D" HMAC | 2.0" |
| TYPE "C" HMAC | 3.0" |
| AGGREGATE BASE | 22.5" |
| STABILIZED SUBGRADE | 8" |

## FLEXIBLE PAVEMENT SECTIONS

REFERENCE GEOTECHNICAL ENGINEERING REPORT PREPARED BY **INTEC L.P.,** FILE No. **S251074-A1,** DATED **JUNE 26, 2025,** FOR PAVEMENT MATERIALS AND CONSTRUCTION REQUIREMENTS. CONTRACTOR SHALL MEET OR EXCEED ALL PAVING RECOMMENDATIONS.

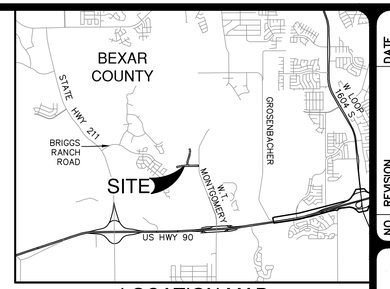
| SYMBOL | | ITEM NUMBER |
|---|---|---|
| | R4-7 24"x30" | 531.17 |
| BEGIN RIGHT TURN LANE YIELD TO BIKES | R4-4 | 531.71 |
| RIGHT LANE MUST TURN RIGHT | R3-7R | 531.13 |
| ONLY | R3-5R | 531.11 |

### NOTE

A BEXAR COUNTY ROW PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY RIGHT-OF-WAY

### BEXAR COUNTY ROW NOTES:

A BEXAR COUNTY ROW PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY ROW. CONTRACTOR SHALL COORDINATE A TRAFFIC CONTROL PLAN FOR ALL WORK WITHIN THE ROW. ADDITIONAL WARNING SIGNS MAY BE RECOMMENDED BY THE ENGINEER ONCE THE ROADWAYS ARE CONSTRUCTED.




## LOCATION MAP

NOT-TO-SCALE

## LEGEND

- PROPERTY LINE
- SANITARY SEWER MANHOLE
- STORM DRAIN MANHOLE
- TSB EXISTING TRAFFIC SIGNAL BOX
- EXISTING SIGN
- FH EXISTING FIRE HYDRANT
- LP EXISTING LIGHT POLE
- UP EXISTING UTILITY POLE
- RP EXISTING RISER POLE
- × 876.73 EXISTING SPOT ELEVATION
- 986 EXISTING CONTOUR
- 986 PROPOSED CONTOUR
- +986.00 PROPOSED SPOT ELEVATION
- PROPOSED DRAINAGE FLOW DIRECTION
- ASPHALT PAVEMENT (SEE THIS SHEET)
- SIDEWALK (DEVELOPERS RESPONSIBILITY)
- ACCESSIBLE RAMP (TRUNCATED DOMES)

| NO. | REVISION | DATE |
|---|---|---|
| | | |

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025


**PAPE-DAWSON**
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800


# BRE PHASE 2, COLLECTOR

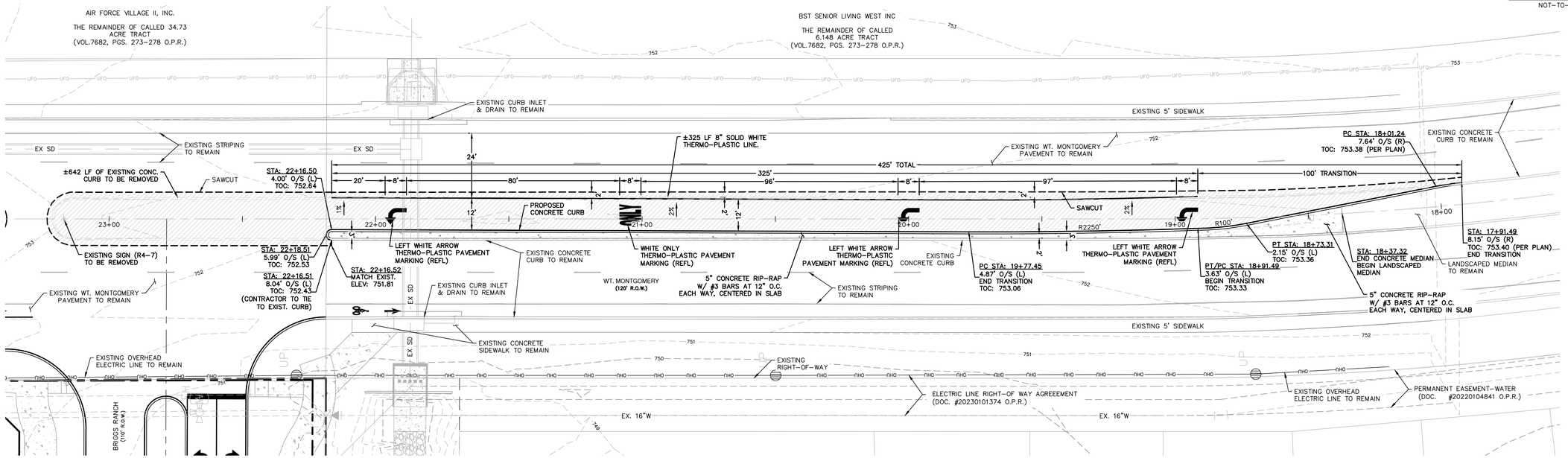
BEXAR COUNTY, TEXAS

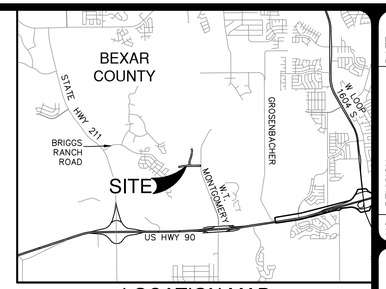
DECELERATION LANE A (FOR RIGHT-OF-WAY PERMIT ONLY)
PAVING, STRIPING AND GRADING PLAN

PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C2.04

Date: July 22, 2025, 3:29 PM - User ID: dmorris
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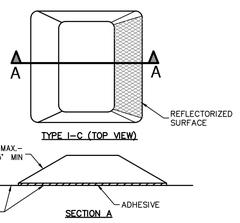


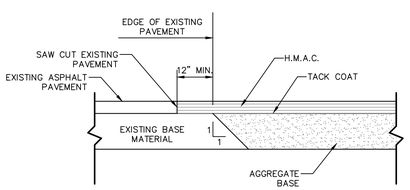

LOCATION MAP
NOT-TO-SCALE

## DECELERATION LANE B - WT. MONTOGERY & BRIGGS RANCH ROAD

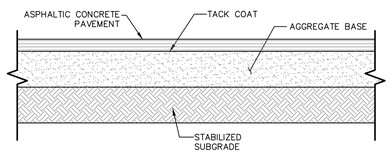
0' 20' 40' 60'
SCALE: 1"= 20'




## RAISED PAVEMENT MARKERS DETAIL
(NOT TO SCALE)




## ASPHALT/ASPHALT JUNCTURE DETAIL
NOT-TO-SCALE




| PAVEMENT MATERIALS | ASPHALT (IN.) |
|---|---|
| TYPE "D" HMAC | 2.0" |
| TYPE "C" HMAC | 3.0" |
| AGGREGATE BASE | 22.5" |
| STABILIZED SUBGRADE | 8" |

## FLEXIBLE PAVEMENT SECTIONS
REFERENCE GEOTECHNICAL ENGINEERING REPORT PREPARED BY **INTEC L.P.**, FILE No. **S251074-A1**, DATED **JUNE 26, 2025**, FOR PAVEMENT MATERIALS AND CONSTRUCTION REQUIREMENTS. CONTRACTOR SHALL MEET OR EXCEED ALL PAVING RECOMMENDATIONS.

## LEGEND

- PROPERTY LINE
- SANITARY SEWER MANHOLE
- STORM DRAIN MANHOLE
- TSB — EXISTING TRAFFIC SIGNAL BOX
- EXISTING SIGN
- FH — EXISTING FIRE HYDRANT
- LP — EXISTING LIGHT POLE
- UP — EXISTING UTILITY POLE
- RP — EXISTING RISER POLE
- × 876.73 — EXISTING SPOT ELEVATION
- 936 — EXISTING CONTOUR
- 986 — PROPOSED CONTOUR
- +986.00 — PROPOSED SPOT ELEVATION
- PROPOSED DRAINAGE FLOW DIRECTION
- ASPHALT PAVEMENT (SEE THIS SHEET)
- CONCRETE RIPRAP (BY OTHERS)
- ACCESSIBLE RAMP (TRUNCATED DOMES)

**NOTE**
A BEXAR COUNTY ROW PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY RIGHT-OF-WAY

## BEXAR COUNTY ROW NOTES:
A BEXAR COUNTY ROW PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY ROW. CONTRACTOR SHALL COORDINATE A TRAFFIC CONTROL PLAN FOR ALL WORK WITHIN THE ROW. ADDITIONAL WARNING SIGNS MAY BE RECOMMENDED BY THE ENGINEER ONCE THE ROADWAYS ARE CONSTRUCTED.

| NO. | REVISION | DATE |
|---|---|---|

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025


PAPE-DAWSON
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800


# BRE PHASE 2, COLLECTOR
BEXAR COUNTY, TEXAS

DECELERATION LANE B (FOR RIGHT-OF-WAY PERMIT ONLY)
PAVING, STRIPING AND GRADING PLAN

PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C2.05

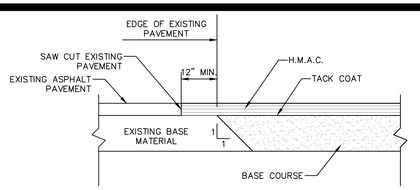
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## PAVEMENT SECTION DETAIL

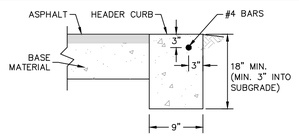
| STREET NAME | STATION | TYPE "D" HMAC SURFACE TXDOT ITEM 340, in. | TYPE "C" HMAC SURFACE TXDOT ITEM 340, in. | TYPE "B" HMAC SURFACE TXDOT ITEM 340, in. | AGGREGATE BASE, in. (TXDOT ITEM 247 TYPE A GRADE 1 OR 2) | STABILIZED SUBGRADE* | STRUCTURAL NUMBER |
|---|---|---|---|---|---|---|---|
| BRIGGS RANCH (COLLECTOR C) | 64+86.29 TO END | 1.5" | 2.5" | – | 21" | 8" | 5.34 |
| CEDAR RIDGE BLUFF (COLLECTOR C) | 10+00.00 TO 12+62.16 | 1.5" | 2.5" | – | 21" | 8" | 5.34 |
| CEDAR RIDGE BLUFF (COLLECTOR B) | 12+62.16 TO END | 1.5" | 2.5" | – | 21" | 8" | 5.34 |

*STRUCTURAL NUMBER FOR LIME STABILIZED SUBGRADE WAS NOT USED IN THE PAVEMENT SECTION CALCULATIONS



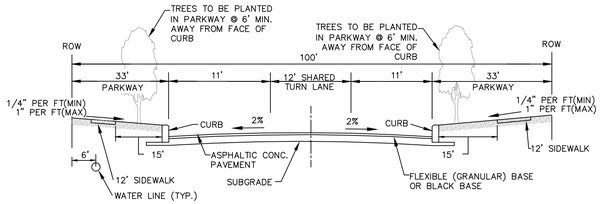

## ASPHALT/ASPHALT JUNCTURE DETAIL

NOT-TO-SCALE



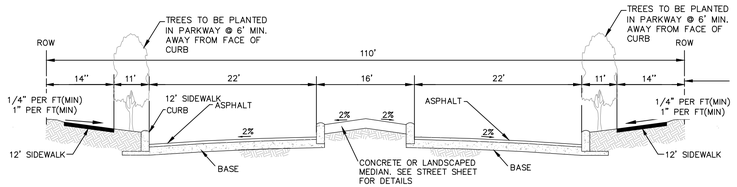

## HEADER CURB DETAIL

NOT-TO-SCALE



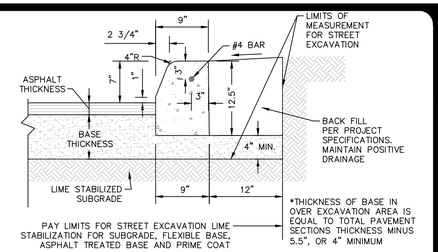

## 100' (COLLECTOR "B") ROW STREET SECTION

NOT-TO-SCALE



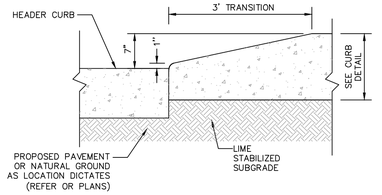

## 110' (COLLECTOR "C") STREET SECTION

NOT-TO-SCALE



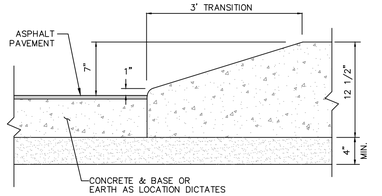

## CONCRETE CURB DETAIL

NOT-TO-SCALE



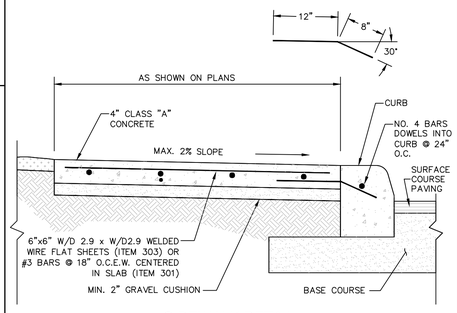

## CURB TRANSITION DETAIL (FROM HEADER CURB TO STANDARD CURB)

NOT-TO-SCALE



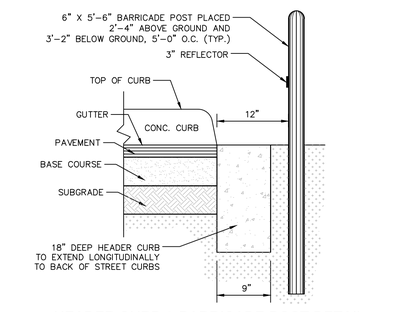

## CURB TRANSITION DETAIL (FROM PAVEMENT TO STANDARD CURB)

NOT-TO-SCALE




## SIDEWALK DETAIL

NOT-TO-SCALE




## HEADER CURB & BARRICADE POST DETAIL

NOT-TO-SCALE

## GENERAL NOTES:

1. CONTRACTOR SHALL REFERENCE THE PROJECT PAVEMENT DESIGN REPORT PREPARED BY **INTEC L.P., PROJECT NO. S251074** DATED **MARCH 28, 2025.**
2. CONTRACTOR SHALL RETAIN A GEOTECHNICAL ENGINEER TO VERIFY THE SUB GRADE CONDITION PRIOR TO PLACING ANY BASE MATERIAL. GEOTECHNICAL ENGINEER SHALL DETERMINE THE SUB GRADE CONDITION AND IF LIME TREATMENT IS REQUIRED.
3. GEOTECHNICAL ENGINEER SHOULD VERIFY THE STREET SUBGRADE AT THE TIME OF CONSTRUCTION PRIOR TO PLACEMENT OF AGGREGATE BASE.
4. EARTHWORK ACTIVITIES ON THE PROJECT SHOULD BE OBSERVED AND EVALUATED BY TTL PERSONNEL. THE EVALUATION SHOULD INCLUDE OBSERVATION AND TESTING OF ALL FILL AND BACKFILL SOILS PLACED AT THE SITE.
5. THE FLEXIBLE BASE COURSE SHOULD BE CRUSHED LIMESTONE CONFORMING TO 2014 TXDOT STANDARD SPECIFICATIONS, ITEM 247, TYPE A, GRADES 1 OR 2.
6. THE MOISTURE CONTENT OF THE FILL SHOULD BE MAINTAINED WITHIN THE RANGE OF OPTIMUM WATER CONTENT TO 2 PERCENTAGE POINTS BELOW THE OPTIMUM MOISTURE CONTENT AND 3 PERCENTAGE POINTS ABOVE THE OPTIMUM MOISTURE CONTENT AND COMPACTED TO 95 PERCENT OF THE MAXIMUM DRY DENSITY DETERMINED IN ACCORDANCE WITH THE STANDARD COMPACTION EFFORT (ASTM D 698).
7. IN THE EVENT THAT THE CLAY FILL USED IS DIFFERENT THAN THE EXISTING SUBGRADE, THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT COULD BE INVALIDATED AND THE DESIGN ENGINEER MUST BE CONSULTED TO DETERMINE IF ADDITIONAL CBR TESTING AND THICKER PAVEMENT SECTIONS ARE REQUIRED.
8. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL MATERIAL TESTING WITH THE PROJECT GEOTECHNICAL ENGINEER. TESTING SHALL BE PAID FOR BY THE OWNER.
8. FILL MATERIAL SHOULD BE NATIVE ON-SITE MATERIAL, FREE OF DELETERIOUS MATERIAL WITH A MINIMUM CBR VALUE OF 2.0 AND A PI MAXIMUM OF 70. THE GRAVEL SIZE SHOULD NOT EXCEED 3 INCHES IN DIAMETER. LIME APPLICATION RATE SHOULD BE RE-EVALUATED FOR THE FILL MATERIAL. THE MATERIAL SHOULD BE PLACED AS PER APPLICABLE CITY OR COUNTY GUIDELINES.
9. A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN THE BEXAR COUNTY ROW. CONTRACTOR SHALL COORDINATE A TRAFFIC CONTROL PLAN FOR ALL WORK WITHIN THE ROW. ADDITIONAL WARNING SIGNS MAY BE RECOMMENDED BY THE ENGINEER ONCE THE ROADWAYS ARE CONSTRUCTED.

## STREET SUBGRADE NOTES:

1. IF THE STREET SUBGRADE PLASTICITY INDEX VALUE IS GREATER THAN 20, SUBGRADE STABILIZATION IS NEEDED AS PER BEXAR COUNTY REQUIREMENTS.
2. IF THE SUBGRADE PLASTICITY INDEX VALUE IS 20 OR LESS. SUBGRADE TREATMENT IS NOT NEEDED. THE SUBGRADE SHOULD BE MOISTURE CONDITIONED (COMPACTED TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY AT A MINIMUM MOISTURE CONTENT OF OPTIMUM PLUS 2 PERCENT (TEX114E)).
3. LIME APPLICATION RATE OF 42.0 LBS PER SQ YARD FOR 8-INCH DEPTH OF STABILIZATION IS RECOMMENDED.
4. THE SUBGRADE SOILS SHOULD BE TESTED FOR SOIL SULFATE CONTENT PRIOR TO STABILIZATION. IF THE SOIL SULFATE CONTENT IS HIGHER THAN 3000 PPM, AN ALTERNATE PROCEDURE / RECOMMENDATION WILL BE NEEDED
5. LIME STABILIZATION SHOULD MEET BEXAR COUNTY STABILIZATION GUIDELINES (SUCH AS UNCONFINED COMPRESSIVE STRENGTH VALUE OF 160 PSI)
6. APPROVED FILL MATERIAL SHOULD BE USED TO RAISE THE GRADE. THE FILL SHOULD BE FREE OF DELETERIOUS MATERIAL WITH A MINIMUM CBR VALUE OF 2.0 AND A MAXIMUM PLASTICITY INDEX VALUE OF 50. LIME APPLICATION RATES SHOULD BE RE-EVALUATED AND TESTED FOR SULFATE CONTENT PRIOR TO USE OF THE FILL MATERIAL. THE MATERIAL SHOULD BE PLACED AS PER APPLICABLE CITY OR COUNTY GUIDELINES.
7. THE SUBGRADE SHOULD BE PROOF ROLLED TO IDENTIFY SOFT AREAS BEFORE TREATMENT.

## LIME NOTES:

FOR LIME STABILIZATION CONSTRUCTION VERIFICATION THE FOLLOWING SHALL BE CONDUCTED ON THE FIELD:

1. AFTER INITIAL MIXING THE SOIL-LIME MIXTURE SHALL MELLOW FOR A PERIOD OF TWO TO THREE (2-3) DAYS. MAINTAIN MOISTURE DURING MELLOWING.
2. AFTER MELLOWING AND FINAL MIXING, THE PULVERIZATION SHALL BE CHECKED USING THE FOLLOWING CRITERIA (REMOVE NON-SLAKING AGGREGATES RETAINED ON THE ¾ INCH SIEVE FROM THE SAMPLE):
   - MINIMUM PASSING 1¾" SIEVE 100
   - MINIMUM PASSING ¾" SIEVE 85
   - MINIMUM PASSING NO. 4 SIEVE 60
3. SAMPLE SOIL-LIME MIXTURE FOR DETERMINATION OF MAXIMUM DRY DENSITY (MDD). IN THE LABORATORY, MOLD SPECIMENS TO 95% OF MDD AT OPTIMUM MOISTURE CONTENT AND VERIFY UCS TO BE AT LEAST 160 PSI IN ACCORDANCE WITH PROCEDURE OUTLINED IN THE BEXAR COUNTY FLEXIBLE PAVEMENT DESIGN CRITERIA GUIDE FOR MIXTURE DESIGN.
4. COMPACT AND CHECK FIELD DENSITY (MINIMUM OF 95% OF MDD REQUIRED).
5. CURE FOR AN ADDITIONAL 2 TO 5 DAYS (TOTAL MELLOWING AND CURING TIME SHOULD TOTAL AT LEAST 5 DAYS).
6. VERIFY DEPTH OF LIME STABILIZED LAYER TO DEPTH AS NOTED ON PLAN TO WITHIN +/- 1.0 INCH.

| NO. | REVISION | DATE |
|---|---|---|
| | | |

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025


PAPE-DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800


# BRE PHASE 2, COLLECTOR
BEXAR COUNTY, TEXAS

STREET DETAILS (SHEET 1 OF 3)

PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C2.10

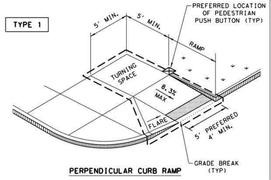
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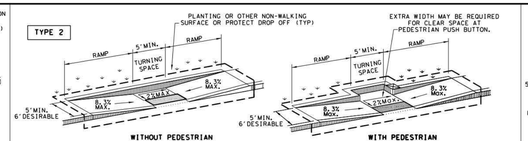
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FILE:

**TYPE 1**




PERPENDICULAR CURB RAMP

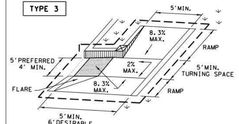
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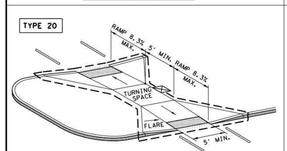

WITHOUT PEDESTRIAN PUSH BUTTON | WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

**TYPE 3**

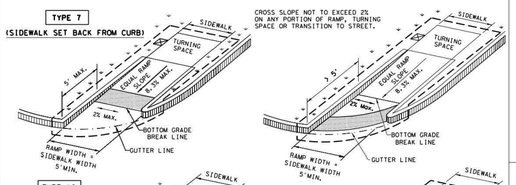



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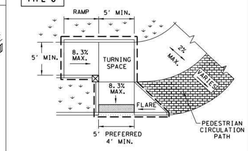



CURB RAMPS AT MEDIAN ISLANDS

**TYPE 7**
**(SIDEWALK SET BACK FROM CURB)**

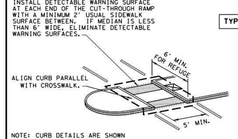



**TYPE 6**



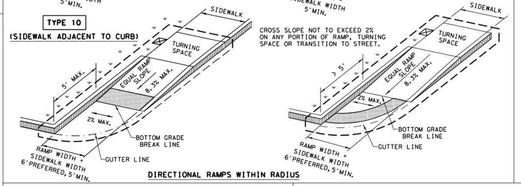

COMBINATION CURB RAMPS

**TYPE 21**



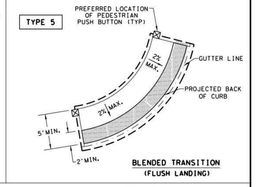

NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

**TYPE 10**
**(SIDEWALK ADJACENT TO CURB)**



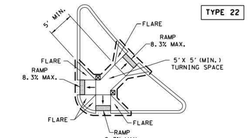

DIRECTIONAL RAMPS WITHIN RADIUS

**TYPE 5**

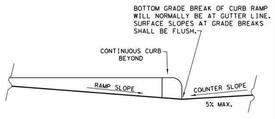



BLENDED TRANSITION (FLUSH LANDING)

**TYPE 22**




COMBINATION ISLAND RAMPS




TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

**NOTES / LEGEND:**

SEE GENERAL NOTES ON SHEET 2 OF 4 FOR MORE INFORMATION.

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

RAMP LIMITS OF PAYMENT

SHEET 1 OF 4

Texas Department of Transportation | Design Division Standard

PEDESTRIAN FACILITIES
CURB RAMPS
PED-18

| FILE: ped18 | DN:TxDOT | CK: VP | DW: VP | CK: KM | CK: PK & JG |
|---|---|---|---|---|---|
| ©TxDOT: MARCH, 2002 | CONT | SECT | JOB | | HIGHWAY |
| REVISIONS | DIST | COUNTY | | | SHEET NO. |
| REVISED 08.2010 | | | | | |
| REVISED 09.2012 | | | | | |
| REVISED 07.2014 | | | | | |

## GENERAL NOTES

**CURB RAMPS**

1. Install a curb ramp or blended transition at each pedestrian street crossing.
2. All slopes shown are maximum allowable. Cross slopes of 1.5% and lesser running should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
3. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
4. The minimum sidewalk width is 5'. Where the sidewalk is adjacent to the back of curb, a 6' sidewalk width is desirable. Where a 5' sidewalk cannot be provided due to site constraints, sidewalk width may be reduced to 4' for short distances. 5'x 5' passing areas at intervals not to exceed 200' are required.
5. Turning Spaces shall be 5'x 5' minimum. Cross slope shall be maximum 2%.
6. Clear space at the bottom of curb ramps shall be a minimum of 4'x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
7. Provide flared sides where the pedestrian circulation path crosses the curb ramp. Flared sides shall be sloped at 10% maximum, measured parallel to the curb. Returned curbs may be used only where pedestrians would not normally walk across the ramp, either because the adjacent surface is planted, substantially obstructed, or otherwise protected.
8. Additional information on curb ramp location, design, light reflective value and texture may be found in the latest draft of the Proposed Guidelines for Pedestrian Facilities in the Public Right of Way (PROWAG) as published by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board).
9. To serve as a pedestrian refuge area, the median should be a minimum of 6' wide, measured from back of curbs. Medians should be designed to provide accessible passage over or through them.
10. Small channelization islands, which do not provide a minimum 5'x 5' landing at the top of curb ramps, shall be cut through level with the surface of the street.
11. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall align with theoretical crosswalks unless otherwise directed.
12. Provide curb ramps to connect the pedestrian access route at each pedestrian street crossing. Handrails are not required on curb ramps.
13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".
14. Place concrete at a minimum depth of 5" for ramps, flares and landings, unless otherwise directed.
15. Furnish and install No. 3 reinforcing steel bars at 18" o.c. both ways, unless otherwise directed.
16. Provide a smooth transition where the curb ramps connect to the street.
17. Curbs shown on sheet 1 within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, gutter, or combined curb and gutter.
18. Existing features that comply with applicable standards may remain in place unless otherwise shown on the plans.

**DETECTABLE WARNING MATERIAL**

19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including sidewalks and flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.
20. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material Producer List. Install products in accordance with manufacturer's specifications.
21. Detectable warning surfaces must be firm, stable and slip resistant.
22. Detectable warning surfaces shall be a minimum of 24 inches in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.
23. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb and neither end of that edge is greater than 5 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.
24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.

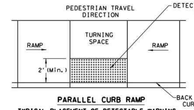
**DETECTABLE WARNING PAVERS (IF USED)**

25. Furnish detectable warning paver units meeting all requirements of ASTM C-936, C-33. Lay in a two by two unit basket weave pattern or as directed.
26. Lay full-size units first followed by closure units consisting of at least 25 percent (25%) of a full unit. Cut detectable warning paver units using a power saw.

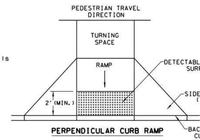
**SIDEWALKS**

27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section R406.
28. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the pedestrian access route or clear ground space.
29. Street grades and cross slopes shall be as shown elsewhere in the plans.
30. Changes in level greater than 1/4 inch are not permitted.
31. The least possible grade should be used to maximize accessibility. The running slope of sidewalks and crosswalks within the public right of way may follow the grade of the parallel roadway. Where a continuous grade greater than five percent (5%) must be provided, handrails may be desirable to improve accessibility. Handrails may also be needed to protect pedestrians from potentially hazardous conditions. If provided, handrails shall comply with PROWAG R409.
32. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.
33. Driveways and turnouts shall be constructed and paid for in accordance with Item "Intersections, Driveways and Turnouts". Sidewalks shall be constructed and paid for in accordance with Item, "Sidewalks".
34. Sidewalk details are shown elsewhere in the plans.

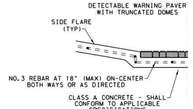
## DETECTABLE WARNING SURFACE DETAILS



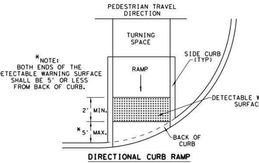

PARALLEL CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.




PERPENDICULAR CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.




SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS




*NOTE: BOTH ENDS OF THE DETECTABLE WARNING SURFACE SHALL BE 5' OR LESS FROM BACK OF CURB.

DIRECTIONAL CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

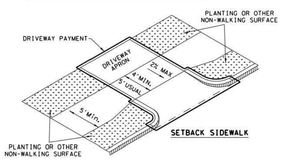
SHEET 2 OF 4

Texas Department of Transportation | Design Division Standard

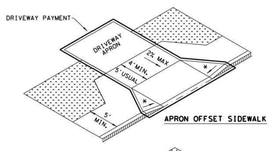
PEDESTRIAN FACILITIES
CURB RAMPS
PED-18

| FILE: ped18 | DN:TxDOT | CK: VP | DW: VP | CK: KM | CK: PK & JG |
|---|---|---|---|---|---|
| ©TxDOT: MARCH, 2002 | CONT | SECT | JOB | | HIGHWAY |
| REVISIONS | DIST | COUNTY | | | SHEET NO. |
| REVISED 08.2010 | | | | | |
| REVISED 09.2012 | | | | | |
| REVISED 07.2014 | | | | | |

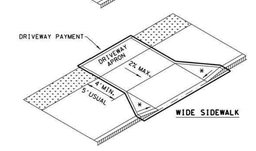
## SIDEWALK TREATMENT AT DRIVEWAYS



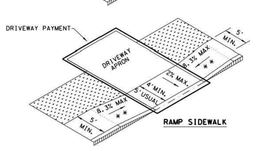

SETBACK SIDEWALK




APRON OFFSET SIDEWALK



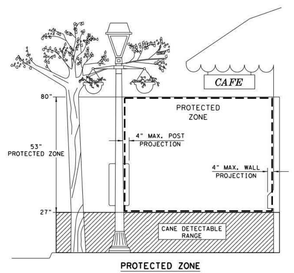

WIDE SIDEWALK




RAMP SIDEWALK

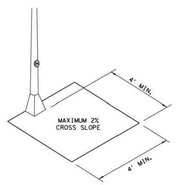
NOTES:
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

* * IF CURB HEIGHT IS GREATER THAN 6 INCHES, USE GRADE LESS THAN OR EQUAL TO 5%. HANDRAIL AND DETECTABLE WARNING ARE NOT REQUIRED.

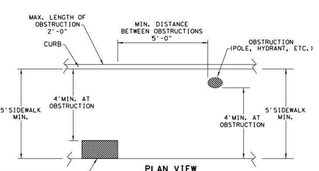



PROTECTED ZONE

NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.

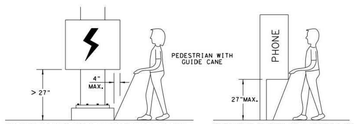



CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON




PLAN VIEW
PLACEMENT OF STREET FIXTURES

NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.




WHEN AN OBSTRUCTION OF A HEIGHT GREATER THAN 27" FROM THE SURFACE WOULD CREATE A PROTRUSION OF MORE THAN 4" INTO THE PEDESTRIAN CIRCULATION AREA, CONSTRUCT ADDITIONAL CURB OR FOUNDATION AT THE BOTTOM TO PROVIDE A MAXIMUM 4" OVERHANG.

PROTRUDING OBJECTS OF A HEIGHT ≤27" ARE DETECTABLE BY CANE AND DO NOT REQUIRE ADDITIONAL TREATMENT.

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

SHEET 3 OF 4

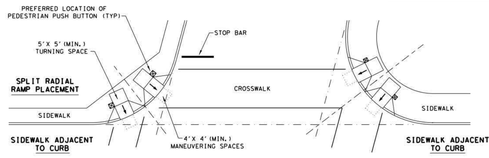
Texas Department of Transportation | Design Division Standard

PEDESTRIAN FACILITIES
CURB RAMPS
PED-18

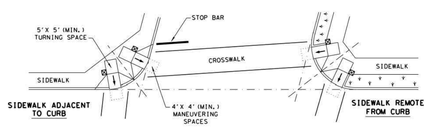
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| ©TxDOT: MARCH, 2002 | CONT | SECT | JOB | | HIGHWAY |
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| REVISED 09.2012 | | | | | |
| REVISED 07.2014 | | | | | |

## TYPICAL CROSSING LAYOUTS

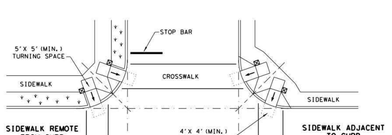
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



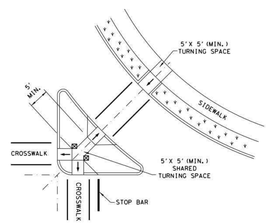

SKEWED INTERSECTION WITH "LARGE" RADIUS



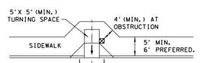

SKEWED INTERSECTION WITH "SMALL" RADIUS




NORMAL INTERSECTION WITH "SMALL" RADIUS




AT INTERSECTION W/FREE RIGHT TURN & ISLAND




SIDEWALK ADJACENT TO CURB




SIDEWALK REMOTE FROM CURB

MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

**LEGEND:**

SHOWS DOWNWARD SLOPE.

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON (IF APPLICABLE).

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

SHEET 4 OF 4

Texas Department of Transportation | Design Division Standard

PEDESTRIAN FACILITIES
CURB RAMPS
PED-18

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| REVISED 09.2012 | | | | | |
| REVISED 07.2014 | | | | | |

NO. | REVISION | DATE

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025

PAPE-DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

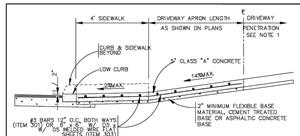
BRE PHASE 2, COLLECTOR
BEXAR COUNTY, TEXAS

STREET DETAILS
(SHEET 2 OF 3)

PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C2.11

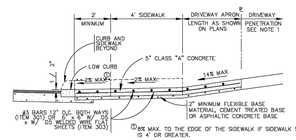
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## TYPICAL RESIDENTIAL DRIVEWAY SECTION

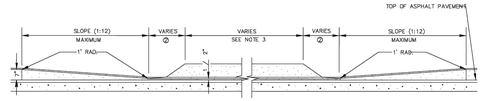
WITH SIDEWALK ABUTTING CURB
ITEM 503.1




① 8% MAX. TO THE EDGE OF THE SIDEWALK IF SIDEWALK SEPARATION IS 4' OR GREATER.

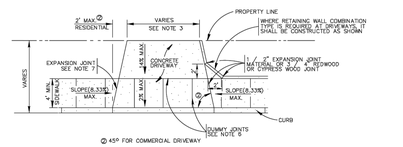
## TYPICAL RESIDENTIAL DRIVEWAY SECTION

WITH SIDEWALK SEPARATED FROM CURB
ITEM 503.1



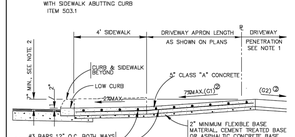

## CURB PROFILE AT DRIVEWAY

WITH SIDEWALK ABUTTING CURB



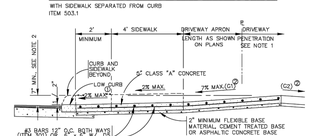

## TYPICAL DRIVEWAY PLAN VIEW

WITH SIDEWALK ABUTTING CURB




## TYPICAL RESIDENTIAL DRIVEWAY SECTION

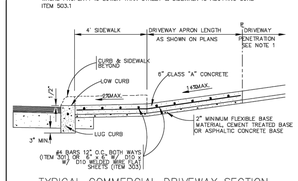
WITH SIDEWALK SEPARATED FROM CURB
ITEM 503.1




① 8% MAX. TO THE EDGE OF THE SIDEWALK IF SIDEWALK SEPARATION IS 4' OR GREATER.
② THE ALGEBRAIC DIFFERENCE OF G1 & G2 SHALL BE 14% OR LESS

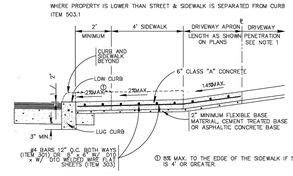
## TYPICAL RESIDENTIAL DRIVEWAY SECTION

WHERE PROPERTY IS LOWER THAN STREET & SIDEWALK IS ABUTTING CURB
ITEM 503.1




## TYPICAL COMMERCIAL DRIVEWAY SECTION

WITH SIDEWALK ABUTTING CURB
ITEM 503.2




① 8% MAX. TO THE EDGE OF THE SIDEWALK IF SIDEWALK SEPARATION IS 4' OR GREATER.

## TYPICAL COMMERCIAL DRIVEWAY SECTION

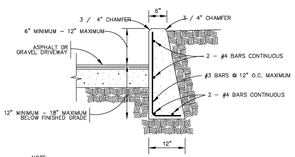
WITH SIDEWALK SEPARATED FROM CURB
ITEM 503.2

## CONCRETE DRIVEWAY NOTES

1. DRIVEWAY PENETRATION REFERS TO A PORTION OF THE DRIVEWAY THAT MAY BE NECESSARY TO RECONSTRUCT WITHIN PRIVATE PROPERTY TO COMPLY WITH A MAXIMUM DRIVEWAY SLOPE. THIS PORTION OF THE DRIVEWAY SHALL BE PAID FOR UNDER THE FOLLOWING ITEMS AS MAY APPLY:
   A.) CONCRETE DRIVEWAY PAD FOR UNDER ITEM NO. 503.1 OR 503.2.
   B.) ASPHALTIC CONCRETE DRIVEWAY FOR UNDER ITEM NO. 403.4 AND SHALL INCLUDE A MINIMUM OF 1" ASPHALT TYPE "D" & 6" FLEXIBLE BASE
   C.) GRAVEL DRIVEWAY PAD FOR UNDER ITEM NO. 503.3 AND SHALL INCLUDE A MINIMUM OF 6" FLEXIBLE BASE.
2. 7" MINIMUM HEIGHT WILL NOT NECESSARILY OCCUR AT THE PROPERTY LINE. IT MAY OCCUR WITHIN THE RIGHT OF WAY OR WITHIN THE DRIVEWAY PENETRATION ON PRIVATE PROPERTY.
3. THE PROPOSED DRIVEWAY SHOULD MATCH THE EXISTING WIDTH AT THE PROPERTY LINE BUT UNLESS AUTHORIZED BY THE COUNTY ENGINEER, THE WIDTH SHALL BE WITHIN THE FOLLOWING VALUES:

| TYPE | MINIMUM | MAXIMUM |
|---|---|---|
| RESIDENTIAL | 10' | 20' |
| COMMERCIAL - ONE WAY | 12' | 20' |
| COMMERCIAL - TWO WAY | 24' | 30' |

4. FOR LOCAL TYPE "A" STREETS, SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 4' AND IF SEPARATED FROM THE CURB, THE SIDEWALK SHALL BE LOCATED A MINIMUM OF 3' FROM THE BACK OF CURB.
5. FOR OTHER THAN LOCAL TYPE "A" STREETS, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 4' AND SEPARATED A MINIMUM OF 3' FROM THE BACK OF CURB OR, AS AN OPTION, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 6' WHEN LOCATED AT THE BACK OF CURB.
6. DUMMY JOINTS PARALLEL TO THE CURB SHALL BE PLACED WHERE THE SIDEWALK MEETS THE DRIVEWAY. DUMMY JOINTS PERPENDICULAR TO THE CURB, AND WITHIN THE BOUNDARIES OF THE PARALLEL DUMMY JOINTS, SHALL BE PLACED AT INTERVALS EQUAL TO THE WIDTH OF THE SIDEWALK.
7. A MINIMUM OF TWO ROUND AND SMOOTH DOWEL BARS 3 /8" IN DIAMETER AND 18" IN LENGTH SHALL BE SPACED 18" APART AT EACH EXPANSION JOINT.
8. SIDEWALK RAMP LENGTHS SHALL BE OF SUFFICIENT LENGTH TO MAINTAIN 8.33% MAXIMUM SLOPE. WHERE SIDEWALKS CROSS DRIVEWAYS, SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2%.
9. SIDEWALK RAMP SURFACE SHALL BE BRUSH FINISHED.




NOTE:
1. COST OF REINFORCEMENT TO BE INCLUDED IN UNIT COST OF ITEM 307.1.
2. CONCRETE RETAINING WALL COMBINATION TYPE SHALL BE USED FOR CONCRETE DRIVEWAYS.

## DRIVEWAY - CONCRETE RETAINING WALL

ON COMPACTED SUBGRADE
ITEM 307.1

BEXAR COUNTY

CONCRETE DRIVEWAY STANDARDS

DATE: FEBRUARY 2024

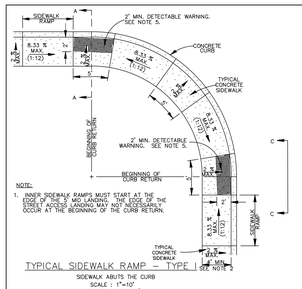
NO. REVISION | DATE

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025

PAPE-DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

BRE PHASE 2, COLLECTOR
BEXAR COUNTY, TEXAS

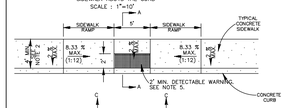
STREET DETAILS
(SHEET 3 OF 3)




NOTE:
1. INNER SIDEWALK RAMPS MUST START AT THE EDGE OF THE 5' MID LANDING. THE EDGE OF THE STREET ACCESS LANDING MAY NOT NECESSARILY OCCUR AT THE BEGINNING OF THE CURB RETURN.

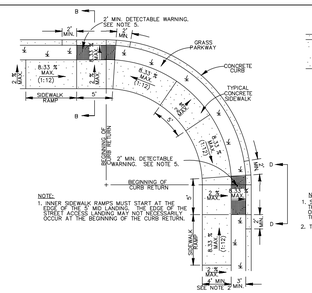
## TYPICAL SIDEWALK RAMP - TYPE I

SIDEWALK ABUTS THE CURB
SCALE : 1"=10'




## TYPICAL SIDEWALK RAMP - TYPE II

USED AT TEE INTERSECTIONS WHERE SIDEWALK ABUTS CURB
SCALE : 1"=10'




NOTE:
1. INNER SIDEWALK RAMPS MUST START AT THE EDGE OF THE 5' MID LANDING. THE EDGE OF THE STREET ACCESS LANDING MAY NOT NECESSARILY OCCUR AT THE BEGINNING OF THE CURB RETURN.

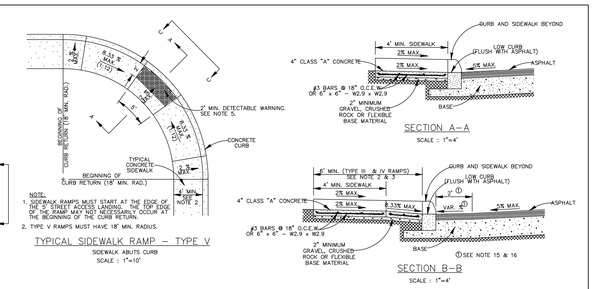
## TYPICAL SIDEWALK RAMP - TYPE III

SIDEWALK SEPARATED FROM CURB
SCALE : 1"=10'




## TYPICAL SIDEWALK RAMP - TYPE IV

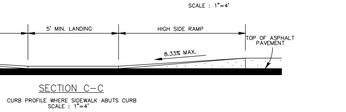
USED AT TEE INTERSECTIONS WHERE SIDEWALK IS SEPARATED FROM CURB
SCALE : 1"=10'




NOTE:
1. SIDEWALK RAMPS MUST START AT THE EDGE OF THE 5' STREET ACCESS LANDING. THE TOP EDGE OF THE RAMP MAY NOT NECESSARILY OCCUR AT THE BEGINNING OF THE CURB RETURN.
2. TYPE V RAMPS MUST HAVE 18' MIN. RADIUS.

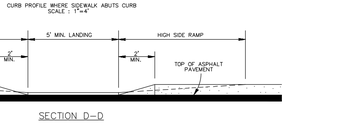
## TYPICAL SIDEWALK RAMP - TYPE V

SIDEWALK ABUTS CURB
SCALE : 1"=10'



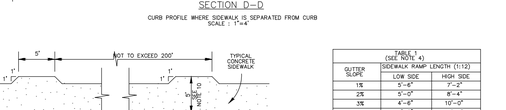

## SECTION A-A

SCALE : 1"=4'



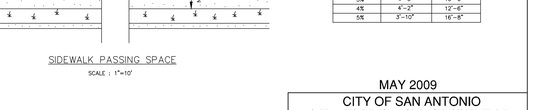

## SECTION B-B

SCALE : 1"=4'



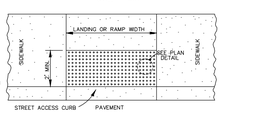

## SECTION C-C

CURB PROFILE WHERE SIDEWALK ABUTS CURB
SCALE : 1"=4'




## SECTION D-D

CURB PROFILE WHERE SIDEWALK IS SEPARATED FROM CURB
SCALE : 1"=4'




## DETECTABLE WARNING SURFACE

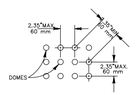
SCALE : 1"=4'



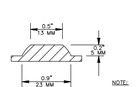

## SIDEWALK PASSING SPACE

SCALE : 1"=10'

| TABLE 1 (SEE NOTE 4) | | |
|---|---|---|
| GUTTER SLOPE | SIDEWALK RAMP LENGTH (1:12) | |
| | LOW SIDE | HIGH SIDE |
| 1% | 5'-6" | 7'-2" |
| 2% | 5'-0" | 8'-4" |
| 3% | 4'-8" | 10'-0" |
| 4% | 4'-2" | 12'-6" |
| 5% | 3'-10" | 16'-8" |




## PLAN DETAIL




## DOME SECTION

NOTE:
STAMPED CONCRETE TRUNCATED DOMES WILL NOT BE ALLOWED TO BE USED.
PRIOR TO INSTALLATION, THE CONTRACTOR SHALL SUBMIT A SHOP DRAWING FOR TRUNCATED DOME INFORMATION THAT IS TO BE INSTALLED ON WHEELCHAIR RAMPS TO THE PROJECT MANAGER FOR APPROVAL AT LEAST 30 DAYS PRIOR TO INSTALLATION.

MAY 2009
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

WHEELCHAIR RAMP STANDARDS

PROJECT NO.: | DATE:
DSGN BY: | CHKD. BY: RJS 11/03/2016 P.E. | SHEET NO.: 09

PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C2.12

Date: July 22, 2025, 1:28 PM - User ID: dmorris
File: P:\114\12\18\Design\Civil\STD114128.dwg

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UNITS MOUNTED ON 0.080" THICK SHEET ALUMINUM CONFORMING WITH ASTM B-209 ALLOY 6061-16.

TYPE 4 OM4-3
18" x 18"

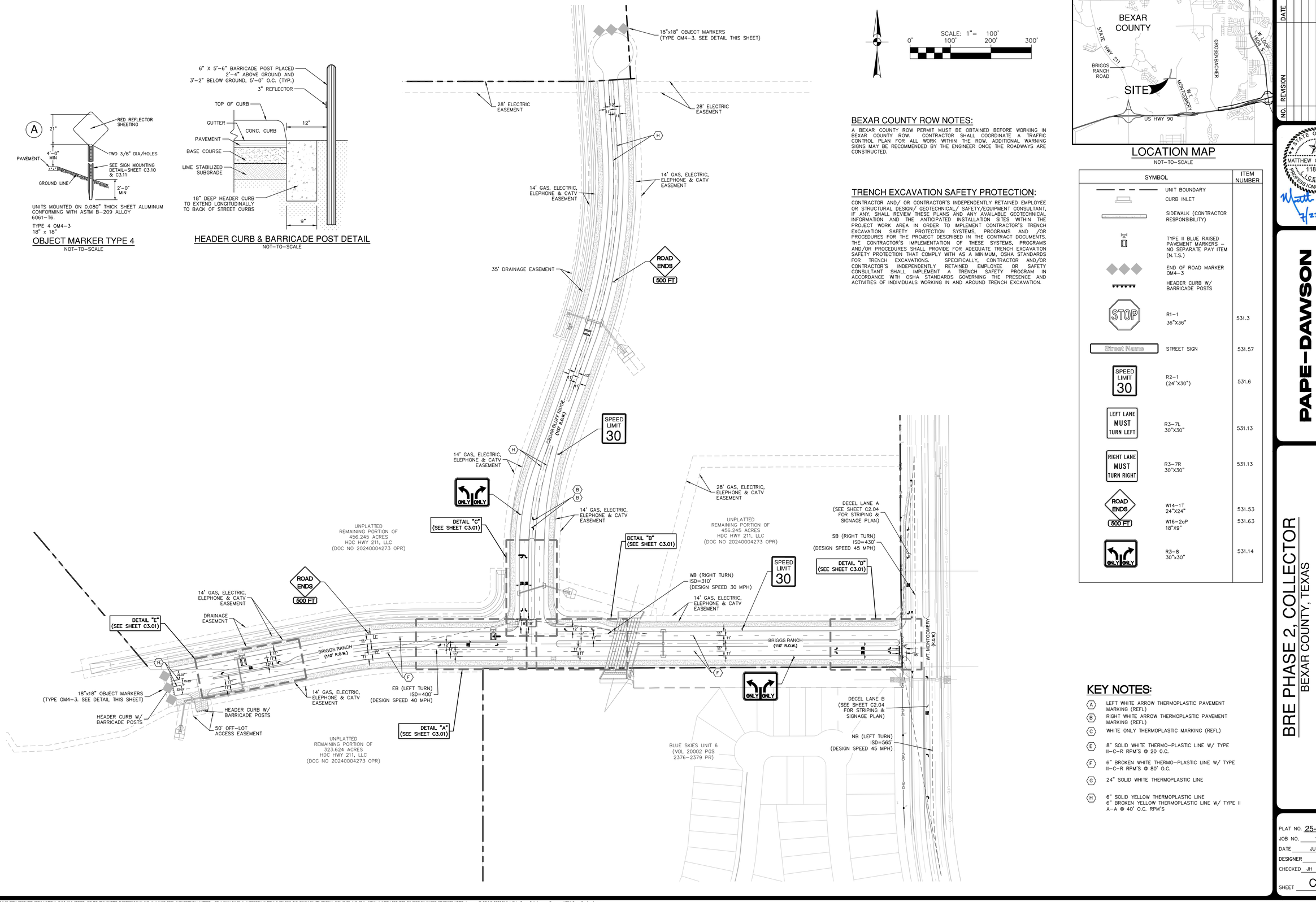
## OBJECT MARKER TYPE 4

NOT-TO-SCALE




## HEADER CURB & BARRICADE POST DETAIL

NOT-TO-SCALE




SCALE: 1"= 100'

0' 100' 200' 300'

## BEXAR COUNTY ROW NOTES:

A BEXAR COUNTY ROW PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY ROW. CONTRACTOR SHALL COORDINATE A TRAFFIC CONTROL PLAN FOR ALL WORK WITHIN THE ROW. ADDITIONAL WARNING SIGNS MAY BE RECOMMENDED BY THE ENGINEER ONCE THE ROADWAYS ARE CONSTRUCTED.

## TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.




## LOCATION MAP

NOT-TO-SCALE

| SYMBOL | | ITEM NUMBER |
|---|---|---|
| | UNIT BOUNDARY | |
| | CURB INLET | |
| | SIDEWALK (CONTRACTOR RESPONSIBILITY) | |
| | TYPE II BLUE RAISED PAVEMENT MARKERS – NO SEPARATE PAY ITEM (N.T.S.) | |
| | END OF ROAD MARKER OM4-3 | |
| | HEADER CURB W/ BARRICADE POSTS | |
| STOP | R1-1 36"X36" | 531.3 |
| Street Name | STREET SIGN | 531.57 |
| SPEED LIMIT 30 | R2-1 (24"X30") | 531.6 |
| LEFT LANE MUST TURN LEFT | R3-7L 30"X30" | 531.13 |
| RIGHT LANE MUST TURN RIGHT | R3-7R 30"X30" | 531.13 |
| ROAD ENDS 500 FT | W14-1T 24"X24" | 531.53 |
| | W16-2aP 18"X9" | 531.63 |
| ONLY ONLY | R3-8 30"x30" | 531.14 |

## KEY NOTES:

- (A) LEFT WHITE ARROW THERMOPLASTIC PAVEMENT MARKING (REFL)
- (B) RIGHT WHITE ARROW THERMOPLASTIC PAVEMENT MARKING (REFL)
- (C) WHITE ONLY THERMOPLASTIC MARKING (REFL)
- (E) 8" SOLID WHITE THERMO-PLASTIC LINE W/ TYPE II-C-R RPM'S @ 20 O.C.
- (F) 6" BROKEN WHITE THERMO-PLASTIC LINE W/ TYPE II-C-R RPM'S @ 80' O.C.
- (G) 24" SOLID WHITE THERMOPLASTIC LINE
- (H) 6" SOLID YELLOW THERMOPLASTIC LINE 6" BROKEN YELLOW THERMOPLASTIC LINE W/ TYPE II A-A @ 40' O.C. RPM'S

| NO. | REVISION | DATE |
|---|---|---|
| | | |

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025


PAPE-DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800


# BRE PHASE 2, COLLECTOR

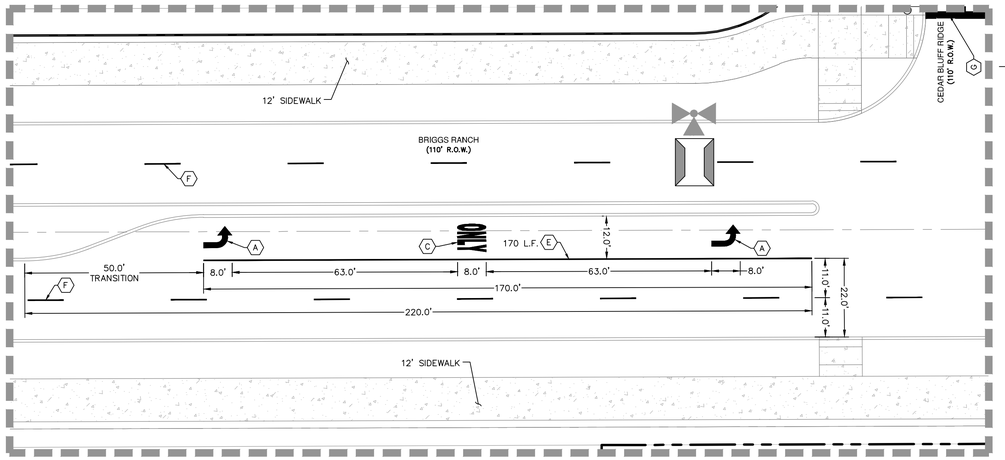
BEXAR COUNTY, TEXAS

OVERALL SIGNAGE PLAN

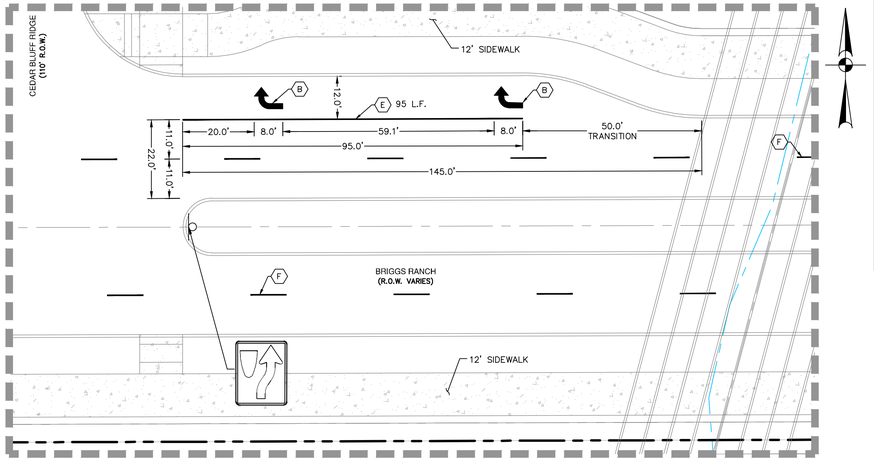
PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C3.00

Date: July 22, 2025, 1:29 PM – User ID: dmorris
File: P:\114\12\18\Design\Civil\SIGNAL141218.dwg

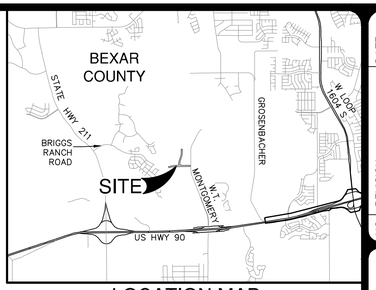

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## LEFT TURN LANE - DETAIL "A"




## RIGHT TURN LANE - DETAIL "B"

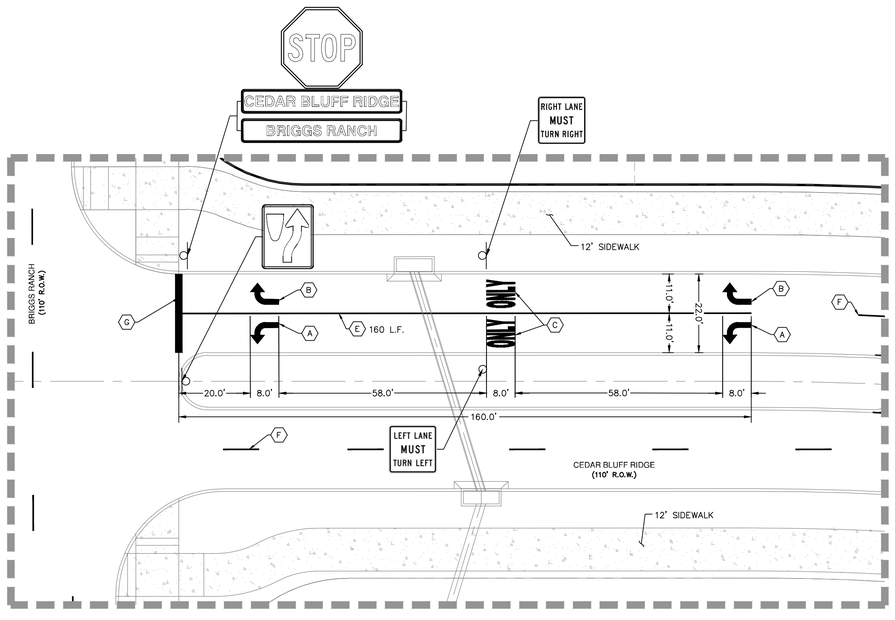



## LOCATION MAP

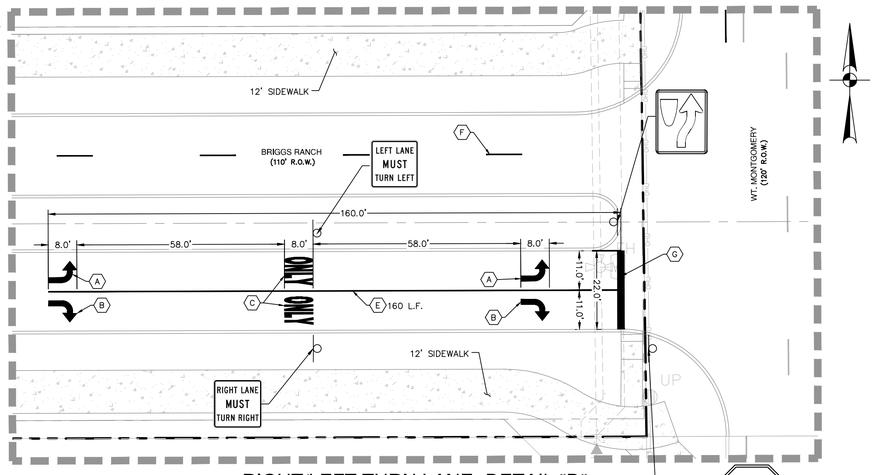
NOT-TO-SCALE

SCALE: 1"= 20'

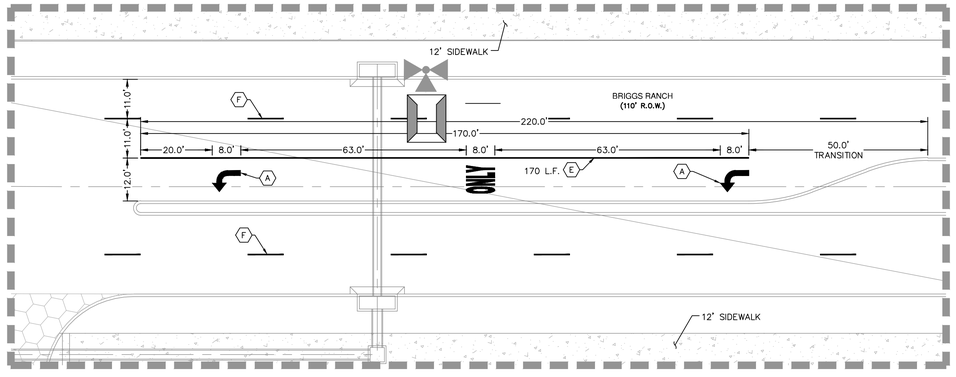
0' 20' 40' 60'




## RIGHT/LEFT TURN LANE- DETAIL "C"




## RIGHT/LEFT TURN LANE- DETAIL "D"




## LEFT TURN LANE - DETAIL "E"

| SYMBOL | | ITEM NUMBER |
|---|---|---|
| | UNIT BOUNDARY | |
| | CURB INLET | |
| | SIDEWALK (CONTRACTOR RESPONSIBILITY) | |
| | TYPE II BLUE RAISED PAVEMENT MARKERS – NO SEPARATE PAY ITEM (N.T.S.) | |
| | END OF ROAD MARKER OM4–3 | |
| | HEADER CURB W/ BARRICADE POSTS | |
| STOP | R1–1 36"X36" | 531.3 |
| Street Name | STREET SIGN | 531.57 |
| SPEED LIMIT 30 | R2–1 (24"X30") | 531.6 |
| LEFT LANE MUST TURN LEFT | R3–7L 30"X30" | 531.13 |
| RIGHT LANE MUST TURN RIGHT | R3–7R 30"X30" | 531.13 |
| ROAD ENDS 500 FT | W14–1 24"X24" W16–2aP 18"X9" | 531.63 |
| | R4–7 24"X30" | 531.17 |

## KEY NOTES:

- (A) LEFT WHITE ARROW THERMOPLASTIC PAVEMENT MARKING (REFL)
- (B) RIGHT WHITE ARROW THERMOPLASTIC PAVEMENT MARKING (REFL)
- (C) SOLID WHITE THERMOPLASTIC PAVEMENT MARKING THE WORD – "ONLY")
- (E) 8" SOLID WHITE THERMO–PLASTIC LINE W/ TYPE II–C–R RPM'S @ 20' O.C.
- (F) 6" BROKEN WHITE THERMO–PLASTIC LINE W/ TYPE II–C–R RPM'S @ 80' O.C.
- (G) 24" SOLID WHITE THERMOPLASTIC LINE
- (H) 6" SOLID YELLOW THERMOPLASTIC LINE 6" BROKEN YELLOW THERMOPLASTIC LINE W/ TYPE II A–A @ 40' O.C. RPM'S

## BEXAR COUNTY ROW NOTES:

A BEXAR COUNTY ROW PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY ROW. CONTRACTOR SHALL COORDINATE A TRAFFIC CONTROL PLAN FOR ALL WORK WITHIN THE ROW. ADDITIONAL WARNING SIGNS MAY BE RECOMMENDED BY THE ENGINEER ONCE THE ROADWAYS ARE CONSTRUCTED.

## DRIVEWAY NOTE:

DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATING A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT. DRIVEWAY LOCATION IS SUBJECT TO CHANGE BASED ON HOME SELECTION AND FINAL LOT DESIGN.

## TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

| NO. | REVISION | DATE |
|---|---|---|
| | | |

STATE OF TEXAS
MATTHEW GEISTWEIDT
116861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025


PAPE–DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800


# BRE PHASE 2, COLLECTOR

BEXAR COUNTY, TEXAS

DETAILED SIGNAGE AND TURN LANE PLAN

PLAT NO. 25-11800088
JOB NO. 11412–18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C3.01


Date: July 22, 2025, 1:31 PM – User ID: dmorris
File: P:\714\12\18\Design\Civil\SSTRN114218.dwg

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## SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

**Post Type**

FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
TWT = Thin-Walled Tubing (see SMD(TWT))
10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
SR0 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

**Number of Posts (1 or 2)**

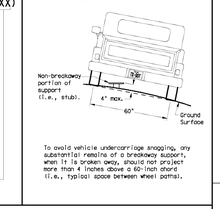
**Anchor Type**

UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
WS = Wedge Anchor Steel - (see SMD(TWT))
WP = Wedge Anchor Plastic (see SMD(TWT))
SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

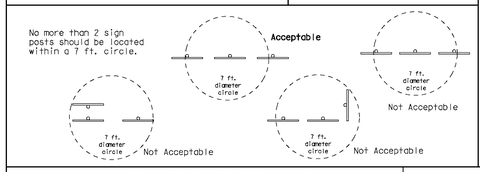
**Sign Mounting Designation**

P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED:
(EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
WC = 1-1/2 Ksi Wing Channel (see SMD(SLIP-1) to (SLIP-3))
EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-3))

## REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT

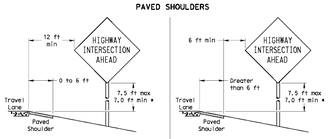



To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).




## SIGN LOCATION

**PAVED SHOULDERS**



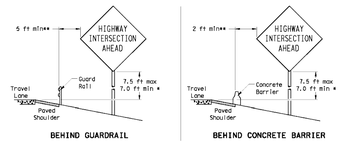

**LESS THAN 6 FT. WIDE**

When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.

**GREATER THAN 6 FT. WIDE**

When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

**BEHIND BARRIER**

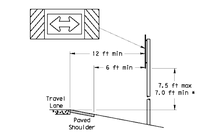



**BEHIND GUARDRAIL**

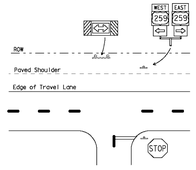
**BEHIND CONCRETE BARRIER**

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

**T-INTERSECTION**




When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.




* Signs shall be mounted using the following condition that results in the greatest sign elevation:

(1) a minimum of 7 ft to a maximum of 7.5 feet above the edge of the travel lane or

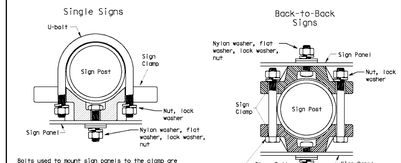
(2) a minimum of 7 ft to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

The website address is: http://www.txdot.gov/publications/traffic.htm

## TYPICAL SIGN ATTACHMENT DETAIL



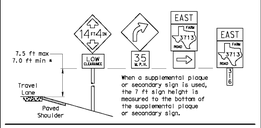

Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

Sign clamps may be either the specific size clamp or the universal clamp.

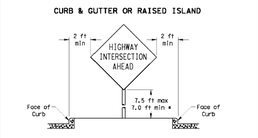
| Pipe Diameter | Approximate Bolt Length | |
|---|---|---|
| | Specific Clamp | Universal Clamp |
| 2" nominal | 3" | 3 or 3 1/2" |
| 2 1/2" nominal | 3 or 3 1/2" | 3 1/2 or 4" |
| 3" nominal | 3 1/2 or 4" | 4 1/2" |

**SIGNS WITH PLAQUES**

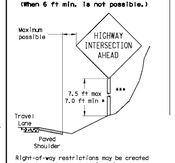



When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

**CURB & GUTTER OR RAISED ISLAND**




**RESTRICTED RIGHT-OF-WAY (When 6 ft min. is not possible.)**




Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

Texas Department of Transportation
Traffic Operations Division

## SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

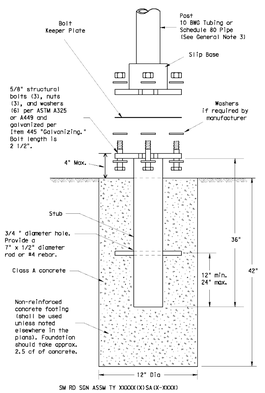
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DATE: FILE:

## TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS




SM RD SGN ASSM TY XXXXX(X)SA(X-XXXX)

**NOTE**

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

**GENERAL NOTES:**

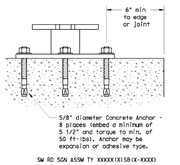
1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   0.134" nominal wall thickness
   Seamless or electric-resistance welded steel tubing or pipe
   Steel shall be HSLAS GF 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the followings
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   20% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
   Galvanization per ASTM A123 or ASTM A653 G210, for precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
   Schedule 80 Pipe (2.875" outside diameter)
   0.276" nominal wall thickness
   Steel tubing per ASTM A500 Gr C
   Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the followings
   46,000 PSI minimum yield strength
   62,000 PSI minimum tensile strength
   21% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

**ASSEMBLY PROCEDURE**

Foundation
1. Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. The Engineer may permit batches of concrete less than 1 cubic yards to be mixed with a portable, mortar-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by the Engineer. Concrete shall be Class A.
3. Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the traveiway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the traveiway. The cut shall be plumb and straight.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

## CONCRETE ANCHOR




SM RD SGN ASSM TY XXXXX(X)SB(X-XXXX)

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

Texas Department of Transportation
Traffic Operations Division

## SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

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PAPE-DAWSON
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

| NO. | REVISION | DATE |
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STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025

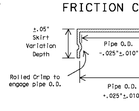
# BRE PHASE 2, COLLECTOR

BEXAR COUNTY, TEXAS

SIGNAGE DETAILS (SHEET 1 OF 4)

PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C3.10

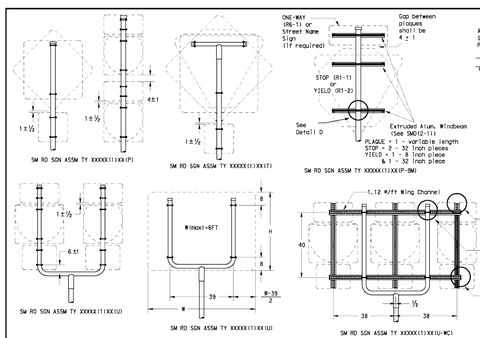
## FRICTION CAP DETAIL




Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes.

The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture.

Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.




All dimensions are in english unless detailed otherwise.

SM RD SGN ASSM TY XXXXX(1)XX(T) (* - See Note 12)

**GENERAL NOTES:**

| SIGN SUPPORT | # OF POSTS | MAX. SIGN AREA |
|---|---|---|
| 10 BWG | 1 | 16 SF |
| 10 BWG | 2 | 32 SF |
| Sch 80 | 1 | 32 SF |
| Sch 80 | 2 | 64 SF |

1. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
2. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
3. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
4. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
5. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
6. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
7. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
8. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
9. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
10. Additional sign(s) required on the "T-bracket" post shall be 7 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
11. Post open ends shall be fitted with friction Caps.
12. Sign blanks shall be the sizes and shapes shown on the plans.

| REQUIRED SUPPORT | | |
|---|---|---|
| | SIGN DESCRIPTION | SUPPORT |
| Regulatory | 48-inch STOP sign (R1-1) | TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM) |
| | 60-inch YIELD sign (R1-2) | TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM) |
| | 48x16-inch ONE-WAY sign (R6-1) | TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM) |
| | 36x48, 48x36, and 48x48-inch signs | TY 10BWG(1)XX(T) |
| | 48x60-inch signs | TY S80(1)XX(T) |
| | 48x48-inch signs (diamond or square) | TY 10BWG(1)XX(T) |
| | 60x60-inch signs | TY S80(1)XX(T) |
| Warning | 48-inch Advance School X-ing sign (S1-1) | TY 10BWG(1)XX(T) |
| | 48-inch School X-ing sign (S2-1) | TY 10BWG(1)XX(T) |
| | Large Arrow sign (W1-6 & W1-7) | TY 10BWG(1)XX(T) |

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Traffic Operations Division

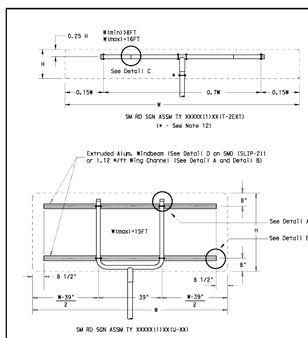
## SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

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**GENERAL NOTES:**

| SIGN SUPPORT | # OF POSTS | MAX. SIGN AREA |
|---|---|---|
| 10 BWG | 1 | 16 SF |
| 10 BWG | 2 | 32 SF |
| Sch 80 | 1 | 32 SF |
| Sch 80 | 2 | 64 SF |

1. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
2. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
3. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
4. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
5. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
6. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
7. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
8. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
9. Sign blanks shall be the sizes and shapes shown on the plans.
10. Additional sign clamp required on the "T-bracket" post for 7 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
11. Post open ends shall be fitted with friction Caps.

| REQUIRED SUPPORT | | |
|---|---|---|
| | SIGN DESCRIPTION | SUPPORT |
| Regulatory | 48-inch STOP sign (R1-1) | TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM) |
| | 60-inch YIELD sign (R1-2) | TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM) |
| | 48x16-inch ONE-WAY sign (R6-1) | TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM) |
| | 36x48, 48x36, and 48x48-inch signs | TY 10BWG(1)XX(T) |
| | 48x60-inch signs | TY S80(1)XX(T) |
| | 48x48-inch signs (diamond or square) | TY 10BWG(1)XX(T) |
| | 60x60-inch signs | TY S80(1)XX(T) |
| Warning | 48-inch Advance School X-ing sign (S1-1) | TY 10BWG(1)XX(T) |
| | 48-inch School X-ing sign (S2-1) | TY 10BWG(1)XX(T) |
| | Large Arrow sign (W1-6 & W1-7) | TY 10BWG(1)XX(T) |




Texas Department of Transportation
Traffic Operations Division

## SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

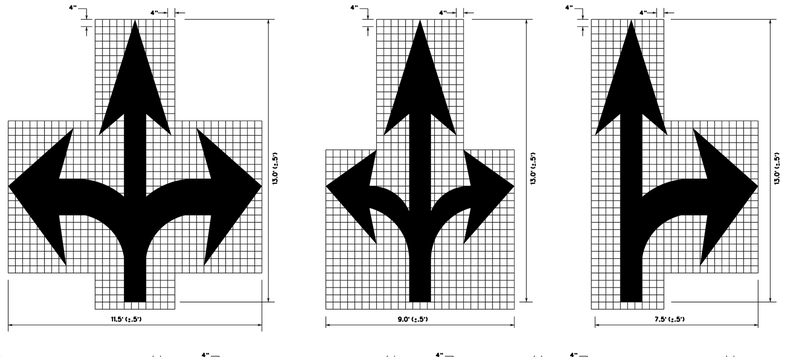
| © TxDOT July 2002 | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
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| 9-08 REVISIONS | CONT | SECT | JOB | HIGHWAY |
| | DIST | COUNTY | | SHEET No. |

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NOTES:

1. MINIMUM 8 FOOT WHITE MARKINGS SHALL BE USED, UNLESS OTHERWISE NOTED. IF MESSAGE CONSISTS OF MORE THAN ONE WORD, IT SHOULD BE PLACED WITH FIRST WORD NEAREST THE DRIVER.
2. THESE DETAILS ARE STANDARD SIZE FOR NORMAL INSTALLATION; SIZES MAY BE REDUCED APPROXIMATELY ONE-THIRD DEPENDING ON CONDITIONS.
3. THE LONGITUDINAL SPACE BETWEEN MARKINGS SHOULD BE 50 FEET.
4. MARKINGS CONSIDERED APPROPRIATE FOR USE WHEN WARRANTED INCLUDE THE FOLLOWING:
   - A. REGULATORY
     - STOP
     - RIGHT (LEFT) TURN ONLY
     - 25 MPH
     - SYMBOL ARROWS
   - B. WARNING
     - STOP AHEAD
     - SIGNAL AHEAD
     - SCHOOL
     - SCHOOL X-ING
     - PED X-ING
     - R X R (SEE RCPM DETAIL)
     - OTHER WORDS OR SYMBOLS MAY BE NECESSARY UNDER CERTAIN CONDITIONS
5. UNCONTROLLED USE OF PAVEMENT MARKINGS CAN RESULT IN DRIVER CONFUSION. WORD AND SYMBOL MARKINGS SHOULD BE NO MORE THAN THREE LINES.
6. THE WORD "STOP" SHALL NOT BE USED ON THE PAVEMENT UNLESS ACCOMPANIED BY A STOP LINE AND STOP SIGN. THE WORD "STOP" SHALL NOT BE PLACED ON THE PAVEMENT IN ADVANCE TO A STOP LINE, UNLESS EVERY VEHICLE IS REQUIRED TO STOP AT ALL TIMES.
7. PAVEMENT MARKINGS SHOULD GENERALLY BE NO MORE THAN ONE LANE IN WIDTH, WITH SCHOOL MESSAGES BEING THE EXCEPTION. FOR DETAILS OF SCHOOL AND SCHOOL CROSSING PAVEMENT MARKINGS, REFER TO PART VI OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
8. SPACING BETWEEN LETTERS SHOULD BE APPROXIMATELY 4 INCHES. THE WIDTH OF LETTERS MAY VARY DEPENDING ON THE WIDTH OF THE TRAVEL LANES.
9. LANE-USE ARROW MARKINGS MAY BE USED TO CONVEY EITHER GUIDANCE OR MANDATORY MESSAGES. ARROWS USED TO CONVEY A MANDATORY MOVEMENT MUST BE ACCOMPANIED BY STANDARD SIGNS AND THE PAVEMENT MARKING WORD "ONLY".
10. PAVEMENT MARKINGS ARE TO BE LOCATED AS SPECIFIED ELSEWHERE IN THE PLANS.

SEPTEMBER 2009

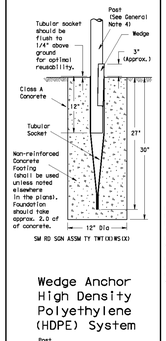
CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS
TRAFFIC ENGINEERING STANDARDS
STANDARD PAVEMENT MARKINGS (ARROWS)
SHEET 3 OF 16

| | | | |
|---|---|---|---|
| ☐ SUBMITTAL | PROJECT NO: | | DATE: |
| DRAWN BY: MM | DOCN. BY: CLV | CHKD BY: WF | SHEET NO.: 09 |

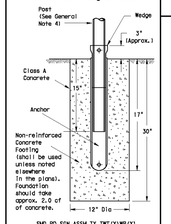
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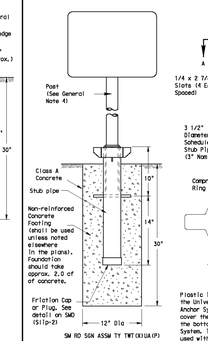
## Wedge Anchor Steel System




## Wedge Anchor High Density Polyethylene (HDPE) System




## Universal Anchor System with Thin-Walled Tubing Post




## Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post




NOTE

The devices shall be installed per manufacturer's recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
2. The tubular sockets, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
3. Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer_list.htm
4. Material used as post with this system shall conform to the following specifications:
   - 13 BWG Tubing (2.375" outside diameter) (TW1)
     - 0.095" nominal wall thickness
     - Seamless or electric-resistance welded steel tubing
     - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
     - Other steels may be used if they meet the followings
       - 55,000 PSI minimum yield strength
       - 70,000 PSI minimum tensile strength
       - 18% minimum elongation in 2"
     - Wall thickness (uncoated) shall be within the range of .083" to .099"
     - Outside diameter (uncoated) shall be within the range of 2.369" to 2.381"
     - Galvanization per ASTM 123 or ASTM A653 G210. For precoated steel tubing ASTM A653, recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
5. Sign plans shall list the sizes and shapes shown on the plans.
6. Additional sign clamp required on the "T-bracket" post for 24" high signs. Place clamp at least 3" above bottom of sign when possible.
7. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
8. See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is: https://www.txdot.gov/publications/traffic.html

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be free the bottom and the clearance requirements given on SMD(SGN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, mortar driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Place concrete into hole until it is approximately flush with the ground. Concrete shall be Class A.
3. Insert tubular support into concrete until top of socket is approximately 1/4 " above the concrete footing.
4. Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer..
5. Attach the wedge to the sign post.
6. Insert the sign post into socket and align sign face with roadway.
7. Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

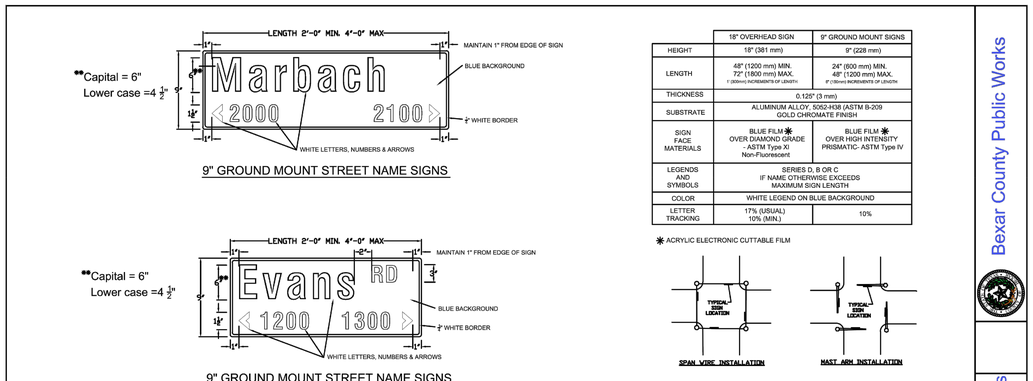
1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be free the bottom and the clearance requirements given on SMD(SGN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. Insert base post in foundation hole to depths shown and fill hole with concrete.
3. Level and plumb the base post using a torpedo level and allow concrete adequate time to set. The bottom of the slots provided in the stub pipe shall remain above the top of the concrete foundation.
4. Attach the sign to the sign post.
5. Install plastic insert around bottom of post.
6. Insert sign post into base post. Lower until the post comes to rest on steel rod.
7. Seat compression ring using a hammer. Typically, the top of compression ring will be approximately level with top of stub post when optimally installed.
8. Check sign post by hand to ensure it is unable to turn. If loose, increase the tightening of the compression ring.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
WEDGE & UNIVERSAL ANCHOR
WITH THIN WALL TUBING POST
SMD (TWT)-08

| © TxDOT July 2022 | | TxA TWT | DN: TxDOT | TPK TWT | DN: TxDOT |
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| 9-08 | REVISIONS | DIST | DIST | JVR | HOPKINS |
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| | | DIST | COUNTY | | SHEET No. |

26E




| | 18" OVERHEAD SIGN | 9" GROUND MOUNT SIGNS |
|---|---|---|
| HEIGHT | 18" (381 mm) | 9" (228 mm) |
| LENGTH | 48" (1200 mm) MIN. 72" (1800 mm) MAX. (* Letters) INCREMENTS OF 12 inch(s) | 24" (600 mm) MIN. 48" (1200 mm) MAX. (* Letters) INCREMENTS OF 12 inch(s) |
| THICKNESS | 0.125" (3 mm) | |
| SUBSTRATE | ALUMINUM ALLOY, 5052-H38 (ASTM B-209 GOLD CHROMATE FINISH | |
| SIGN FACE MATERIALS | BLUE FILM * OVER DIAMOND GRADE - ASTM Type XI Non-Fluorescent | BLUE FILM * OVER HIGH INTENSITY PRISMATIC- ASTM Type IV |
| LEGENDS AND SYMBOLS | SERIES D, B OR C IF NAME OTHERWISE EXCEEDS MAXIMUM SIGN LENGTH | |
| COLOR | WHITE LEGEND ON BLUE BACKGROUND | |
| LETTER TRACKING | 17% (USUAL) 10% (MIN.) | 10% |

* ACRYLIC ELECTRONIC CUTTABLE FILM




SIGN FACE MATERIALS SHALL CONFORM TO:

1. STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS & BRIDGES ON FEDERAL HIGHWAY PROJECTS - FP-03 U.S. CUSTOMARY UNITS SECTION 718
2. GENERAL SERVICES ADMINISTRATION FEDERAL SPECIFICATIONS L-S-300C
3. ASTM D 4956 - 05e1

Bexar County Public Works

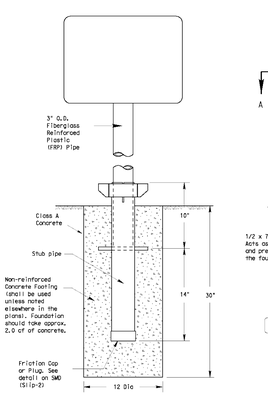
Street Name Sign Details

SHEET 1

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## Universal Anchor System with Fiberglass Reinforced Plastic (FRP) Post




GENERAL NOTES:

1. FRP sign supports for a single type sign support may be used for signs up to and including 32 square feet. Dual post installation may be used for signs up to and including 64 square feet.
2. All nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing."
3. See the Traffic Operations Division website for detailed drawings of sign clamps. The website address is: https://www.txdot.gov/publications/traffic.htm

FRP POST REQUIREMENTS

1. Materials shall conform to the requirements of Departmental Material Specification DMS-4612 and will be furnished in a yellow or gray color as specified elsewhere in the plans.
2. Thickness of FRP sign support is 0.125" + 0.031", - 0.0".
3. FRP sign supports are prequalified by the Traffic Operations Division. Prequalification procedures are obtained by writing:
   Texas Department of Transportation
   Traffic Operations Division
   125 East 11th Street
   Austin, Texas 78701-2483

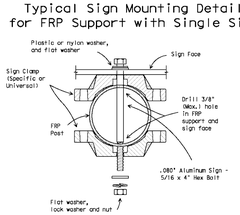
UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURES

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be free from the bottom and the clearance requirements given on SMD(SGN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, mortar driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Insert base post from bottom and ensure a minimum of 18" embedment if installed in solid rock.
4. Level and plumb the base post with coupler using a torpedo level and let concrete set a minimum of 4 days, unless otherwise directed by Engineer. Bottom of base post slots shall be above the concrete footing.
5. Attach sign to FRP post.
6. Insert sign post into base post. Lower until the post comes to rest on the steel rod.
7. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
8. Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

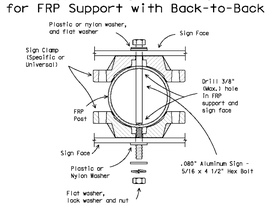
BOLT DOWN SIGN SUPPORT

1. Position base plate with coupler on existing concrete.
2. Drill holes into concrete and insert the 5/8" diameter bolts with wedge anchors, and tighten nuts.
3. Attach sign to FRP post.
4. Insert bottom of sign post into pipe stub.
5. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
6. Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

## Typical Sign Mounting Detail for FRP Support with Single Sign




## Typical Sign Mounting Detail for FRP Support with Back-to-Back Signs




Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
UNIVERSAL ANCHOR SYSTEM
WITH FRP POST
SMD (FRP)-08

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| 9-08 | REVISIONS | DIST | DIST | JVR | HOPKINS |
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| | | DIST | COUNTY | | SHEET No. |

26F

DATE

NO. REVISION

STATE OF TEXAS
MATTHEW GEISTWEIDT
116861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025

PAPE-DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

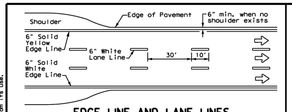
BRE PHASE 2, COLLECTOR
BEXAR COUNTY, TEXAS
SIGNAGE DETAILS (SHEET 2 OF 4)

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JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C3.11

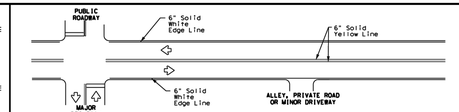
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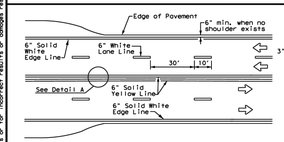
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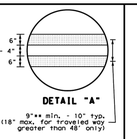

## EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS




## TYPICAL TWO-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS



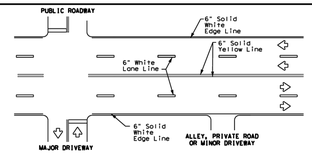

## CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



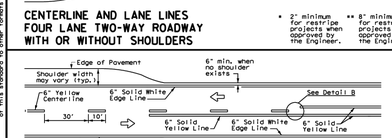

## DETAIL "A"

9"** min. - 10" typ.
(18" max. for traveled way greater than 48' only)

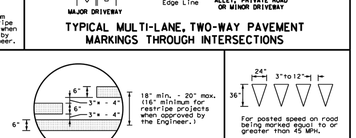
* 2" minimum for restripe projects when approved by the Engineer.
** 8" minimum for restripe projects when approved by the Engineer.




## TYPICAL MULTI-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS




## TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



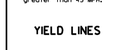

## DETAIL "B"

* 2" minimum for restripe projects when approved by the Engineer.

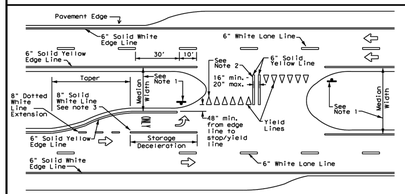



For posted speed on road being marked equal to or greater than 45 MPH.

## YIELD LINES




For posted speed on road being marked equal to or less than 40 MPH.




## FOUR LANE DIVIDED ROADWAY CROSSOVERS

## NOTES

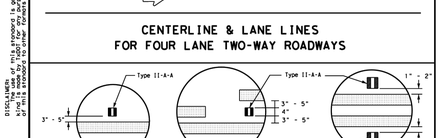
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs and stop bars are optional as determined by the Engineer.
2. Install median striping (double yellow centerlines and stop lines/yield lines) when a 50' or greater median centerline can be placed. Stop lines shall only be used with stop signs. Yield lines shall only be used with yield signs.
3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

## GENERAL NOTES

1. Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line of a two lane roadway.

| MATERIAL SPECIFICATIONS | |
|---|---|
| PAVEMENT MARKERS (REFLECTORIZED) | DMS-4200 |
| EPOXY AND ADHESIVES | DMS-6100 |
| BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS | DMS-6130 |
| TRAFFIC PAINT | DMS-8200 |
| HOT APPLIED THERMOPLASTIC | DMS-8220 |
| PERMANENT PREFABRICATED PAVEMENT MARKINGS | DMS-8240 |

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.




NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.

## GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Roadways

Texas Department of Transportation — Traffic Safety Division Standard

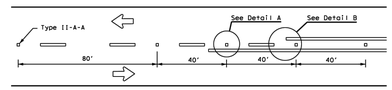
## TYPICAL STANDARD PAVEMENT MARKINGS

## PM(1)-22

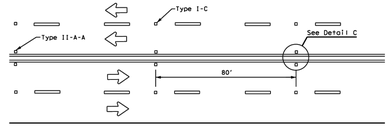
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| ©TxDOT | December 2022 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | | | | |
| 11-78 | 8-00 6-20 | | | | |
| 8-98 | 3-03 12-22 | DIST | COUNTY | | SHEET NO. |
| 6-00 | 2-12 | | | | |

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is intended or implied. Neither the engineer or the agency preparing the standard shall be liable for any damages resulting from its use.

## REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

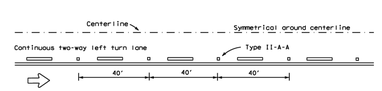



## CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS

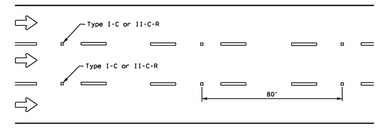



## CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY ROADWAYS



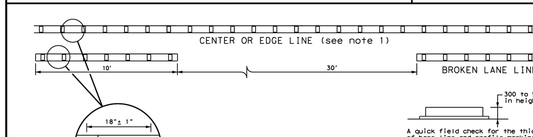

## CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE




## LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.

See Note 3.




## REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS




A quick field check for the thickness of base line and profile marking is approximately equal to a stack of 5 quarters to a maximum height of 7 quarters.

## NOTES

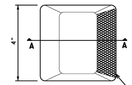
1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

## GENERAL NOTES

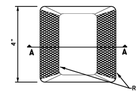
1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.

| MATERIAL SPECIFICATIONS | |
|---|---|
| PAVEMENT MARKERS (REFLECTORIZED) | DMS-4200 |
| EPOXY AND ADHESIVES | DMS-6100 |
| BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS | DMS-6130 |
| TRAFFIC PAINT | DMS-8200 |
| HOT APPLIED THERMOPLASTIC | DMS-8220 |
| PERMANENT PREFABRICATED PAVEMENT MARKINGS | DMS-8240 |

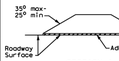
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.




Type I (Top View)




Type II (Top View)




SECTION A

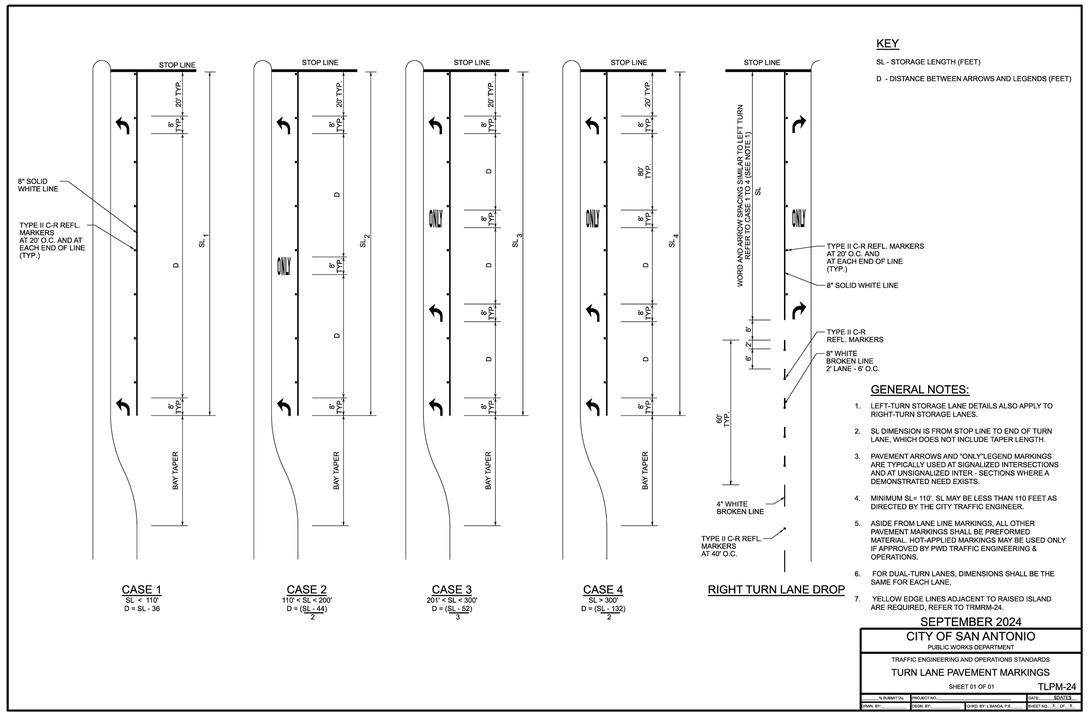
## RAISED PAVEMENT MARKERS

Texas Department of Transportation — Traffic Safety Division Standard

## POSITION GUIDANCE USING RAISED MARKERS RELECTORIZED PROFILE MARKINGS

## PM(2)-22

| FILE: | pm2-22.dgn | DN: | CK: | DW: | CK: |
|---|---|---|---|---|---|
| ©TxDOT | December 2022 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | | | | |
| 4-17 | 8-00 6-20 | | | | |
| 4-92 | 3-03 12-22 | DIST | COUNTY | | SHEET NO. |
| 6-00 | 2-12 | | | | |




KEY

SL - STORAGE LENGTH (FEET)

D - DISTANCE BETWEEN ARROWS AND LEGENDS (FEET)

## GENERAL NOTES:

1. LEFT-TURN STORAGE LANE DETAILS ALSO APPLY TO RIGHT-TURN STORAGE LANES.
2. SL DIMENSION IS FROM STOP LINE TO END OF TURN LANE, WHICH DOES NOT INCLUDE TAPER LENGTH.
3. PAVEMENT ARROWS AND "ONLY"LEGEND MARKINGS ARE TYPICALLY USED AT SIGNALIZED INTERSECTIONS AND AT UNSIGNALIZED INTER - SECTIONS WHERE A DEMONSTRATED NEED EXISTS.
4. MINIMUM SL= 110'. SL MAY BE LESS THAN 110 FEET AS DIRECTED BY THE CITY TRAFFIC ENGINEER.
5. ASIDE FROM LANE LINE MARKINGS, ALL OTHER PAVEMENT MARKINGS SHALL BE PREFORMED MATERIAL. HOT-APPLIED MARKINGS MAY BE USED ONLY IF APPROVED BY PWD TRAFFIC ENGINEERING & OPERATIONS.
6. FOR DUAL-TURN LANES, DIMENSIONS SHALL BE THE SAME FOR EACH LANE.
7. YELLOW EDGE LINES ADJACENT TO RAISED ISLAND ARE REQUIRED, REFER TO TRMRM-24.

SEPTEMBER 2024

CITY OF SAN ANTONIO

PUBLIC WORKS DEPARTMENT

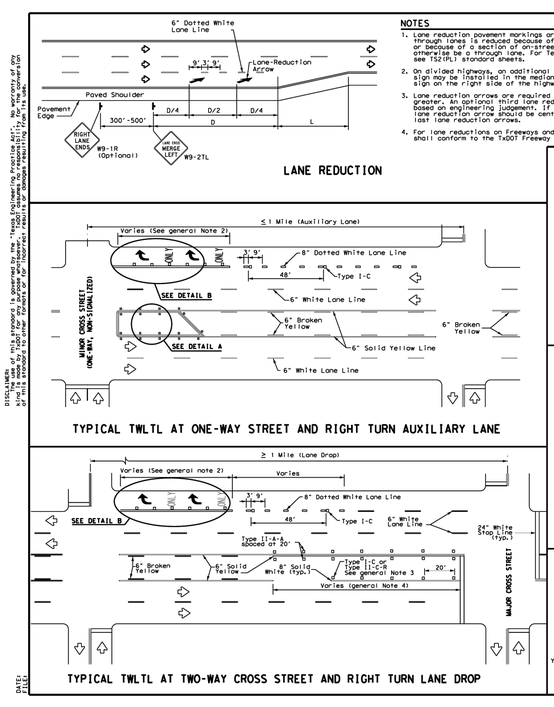
TRAFFIC ENGINEERING AND OPERATIONS STANDARDS

## TURN LANE PAVEMENT MARKINGS

SHEET 01 OF 01

TLPM-24

| % SUBMITTAL | PROJECT NO. | DATE | SCALE: |
|---|---|---|---|
| DRAWN BY: | DESIGN BY: | CHKD BY: L BANDA, P.E. | SHEET NO. X OF X |




## LANE REDUCTION

## NOTES

1. Lane reduction pavement markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. For Texas Super 2 Passing Lanes, see TS2(PL) standard sheets.
2. On divided highways, an additional RIGHT LANE ENDS (W9-1R) sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
3. Lane reduction arrows are required for speeds of 45 mph or greater. An optional third lane reduction arrow may be added based on engineering judgement. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
4. For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.

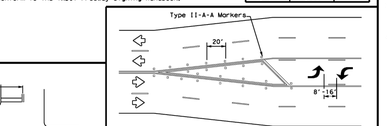
| ADVANCED WARNING SIGN DISTANCE (D) | | |
|---|---|---|
| Posted Speed | D (ft) | L (ft) |
| 30 MPH | 460 | L= WS²/60 |
| 35 MPH | 565 | |
| 40 MPH | 670 | |
| 45 MPH | 775 | |
| 50 MPH | 885 | L=WS |
| 55 MPH | 990 | |
| 60 MPH | 1,100 | |
| 65 MPH | 1,200 | |
| 70 MPH | 1,250 | |
| 75 MPH | 1,350 | |




## TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE




## TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP




A two-way left-turn (TWLT) lane-use arrow pavement marking should be used on or just downstream from the beginning of the taper or parallel portion of a left-turn lane, beginning the marking after each intersection or dedicated turn bay is not required unless stored elsewhere in the plans.

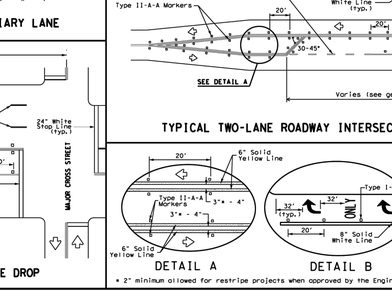
## TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

## GENERAL NOTES

1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows are as shown in the Standard Highway Sign Designs for Texas.
2. When lane-use words and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
3. Use raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.
4. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer. See Chapter 3 of the Roadway Design Manual for additional information on turning lanes or storage lengths.

| MATERIAL SPECIFICATIONS | |
|---|---|
| PAVEMENT MARKERS (REFLECTORIZED) | DMS-4200 |
| EPOXY AND ADHESIVES | DMS-6100 |
| BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS | DMS-6130 |
| TRAFFIC PAINT | DMS-8200 |
| HOT APPLIED THERMOPLASTIC | DMS-8220 |
| PERMANENT PREFABRICATED PAVEMENT MARKINGS | DMS-8240 |

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.




## TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS




* 2" minimum allowed for restripe projects when approved by the Engineer.

Texas Department of Transportation — Traffic Safety Division Standard

## TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS

## PM(3)-22

| FILE: | pm3-22.dgn | DN: | CK: | DW: | CK: |
|---|---|---|---|---|---|
| ©TxDOT | December 2022 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | | | | |
| 4-98 | 3-03 6-20 | | | | |
| 6-00 | 2-10 12-22 | DIST | COUNTY | | SHEET NO. |
| 8-00 | 2-12 | | | | |

PAPE-DAWSON

2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000

TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

| NO. | REVISION | DATE |
|---|---|---|
| | | |

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025

# BRE PHASE 2, COLLECTOR

BEXAR COUNTY, TEXAS

SIGNAGE DETAILS (SHEET 3 OF 4)

PLAT NO. 25-11800088

JOB NO. 11412-18

DATE JULY 2025

DESIGNER JP

CHECKED JH DRAWN RG

SHEET C3.12

Date: July 22, 2025, 1:31 PM — User ID: dmorris
File: P:\114\12\18\design\Civil\SIG11141218.dwg

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| NO. | REVISION | DATE |
|---|---|---|
| | | |




**PAPE-DAWSON**
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

# BRE PHASE 2, COLLECTOR
BEXAR COUNTY, TEXAS

SIGNAGE DETAILS
(SHEET 4 OF 4)




NOTES:

1. ALL PAVEMENT MARKINGS SHALL BE WHITE EXCEPT WHEN NOTED OTHERWISE.
2. PAVEMENT MARKINGS SHALL BE OF THE MATERIALS SPECIFIED AND SHALL BE IN CONFORMANCE WITH MATERIAL SPECIFICATIONS AS SPECIFIED BY CITY OF SAN ANTONIO STANDARD SPECIFICATIONS.
3. EXACT SIGN PLACEMENT AND DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.
4. ADDITIONAL REFERENCES: TMUTCD
   GUIDE FOR THE DEVELOPMENT OF BICYCLES FACILITIES, AASHTO, 1991.
5. FOR PLACEMENT OF PAVEMENT ARROWS AND WORDS SEE LEFT-TURN LANE & RIGHT-TURN LANE DESIGN WORKSHEET.

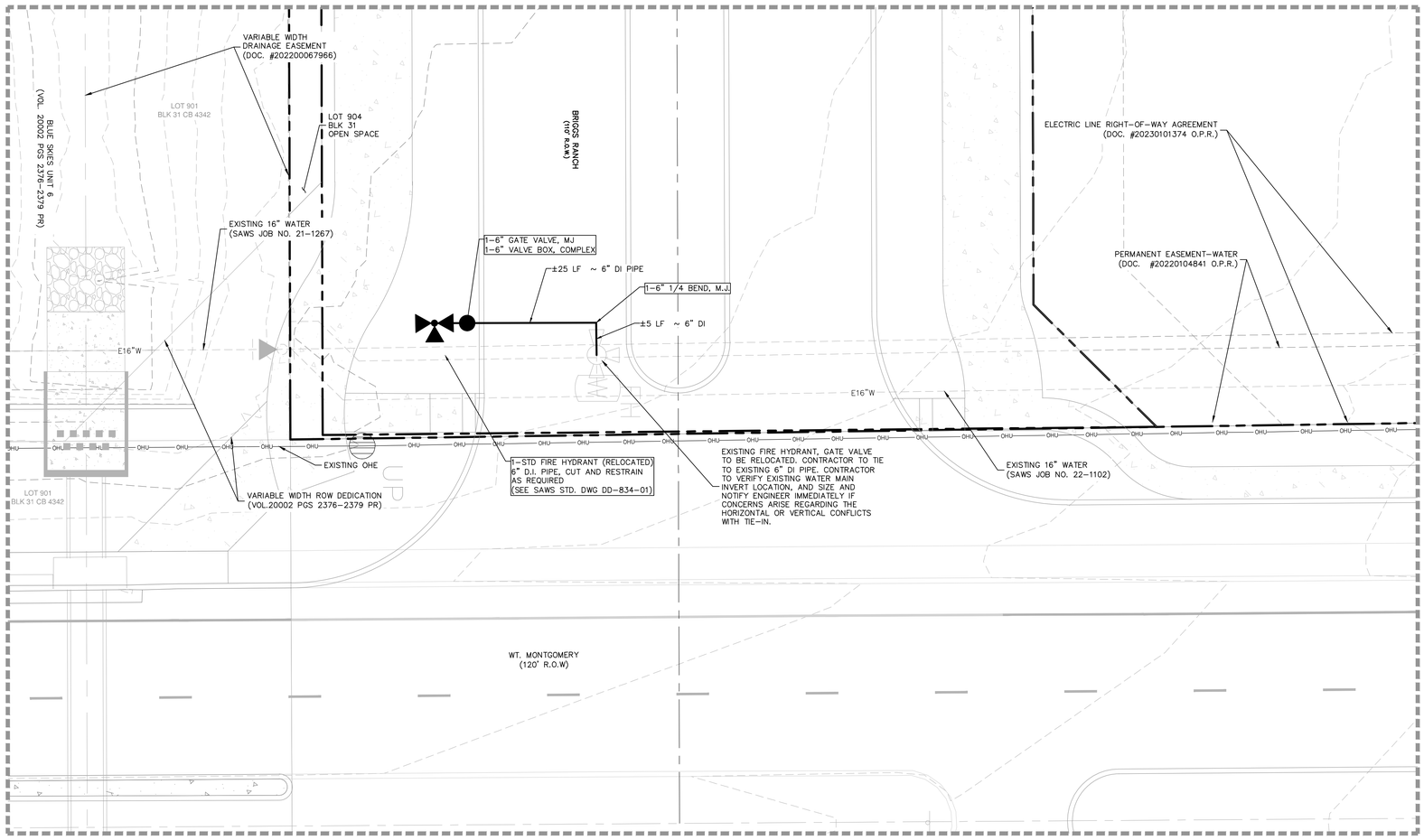
SEPTEMBER 2009
CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS
TRAFFIC ENGINEERING STANDARDS
BICYCLE LANE PAVEMENT MARKINGS
SHEET 8 OF 16

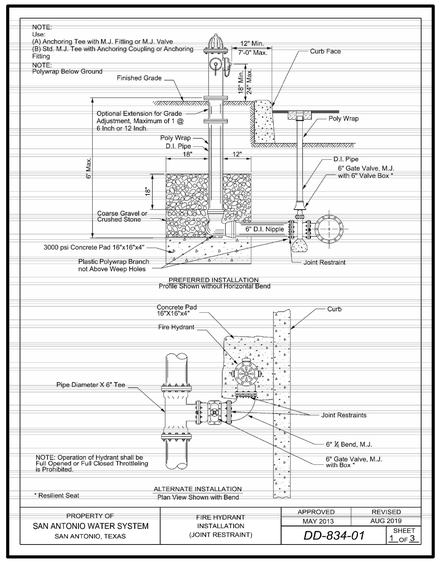
| % SUBMITTAL | PROJECT NO. | | DATE |
|---|---|---|---|
| DRWN. BY | DSGN. BY | CHKD. BY | SHEET NO. |

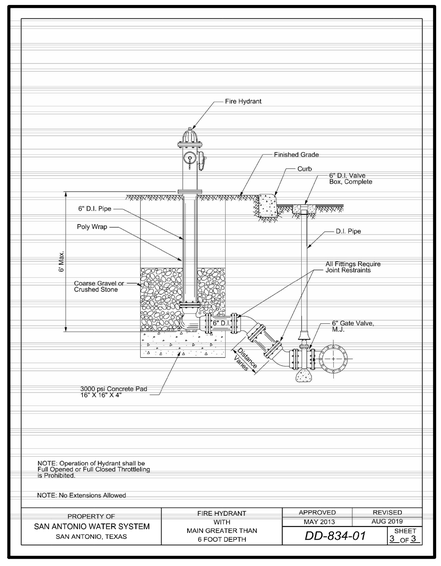
PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C3.13

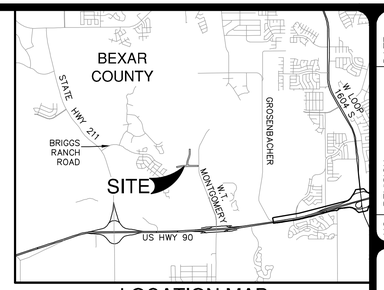
Date: July 22, 2025, 1:31 PM — User ID: dmorris
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LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 10'

0' 10' 20' 30'

## WATER PLAN LEGEND

| | |
|---|---|
| PROJECT LIMITS | |
| EXISTING OVERHEAD LINE | OHE |
| EXISTING WATER | W |
| EXISTING SEWER | SS |
| PROPOSED SEWER | SS (MANHOLE) |
| PROPOSED WATER | W (FIRE HYDRANT) |
| PROPOSED WYE & LATERAL | |
| SINGLE WATER SERVICE | |
| BUILDING SETBACK LINE | BSL |
| STREET LIGHTS | SL |
| EXISTING UTILITY POLE | UP |
| PROPOSED UTILITY POLE | PP |

## NOTE:

CONTRACTOR TO MAINTAIN A 4 FOOT MINIMUM SEPARATION BETWEEN STREET LIGHT BASE PERIMETER AND PROPOSED CURB PER PLAN.

## CONDUIT NOTES:

1. CONTRACTOR SHALL INSTALL PERMANENT MARKERS IN PROPOSED CURB WHERE CONDUITS CROSS THE ROADWAY (BOTH SIDES).
2. CONDUITS SHALL BE PVC WITH MINIMUM BURY OF 36 INCHES BELOW PROPOSED FINISHED GRADE. SCHEDULE 80 TO BE USED FOR CPS CONDUITS, ALL OTHER CONDUITS ARE SCHEDULE 40.
3. ALL CONDUITS SHALL BE EXTENDED BEHIND CURBS OR PROPOSED SIDEWALKS A MINIMUM OF 3 FEET AND CAPPED FOR FUTURE USE.
4. ALL CONDUIT SLEEVES TO BE USED FOR ELECTRIC, GAS, OR TELECOMMUNICATION UTILITY CROSSINGS SHALL BE INSTALLED TO MEET OR EXCEED DESIGN REQUIREMENTS FOR THE UTILITY AGENCY WHICH THEY ARE SERVING, INCLUDING BUT NOT LIMITED TO THE DEPTH, TRENCH PLACEMENT, AND PROXIMITY TO OTHER UTILITIES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR VERIFYING AND INSTALLING THE CONDUIT SLEEVES TO MEET THESE SPECIFICATIONS INCLUDING COORDINATING WITH THE UTILITY AGENCY FOR ANY REQUIRED INSPECTIONS

## TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

## CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

## WATER (SAWS PRESSURE ZONE 1080 HGL)

Developer's Name: HDC HWY 211, LTD

Address: 45 NE LOOP 410, SUITE 225

City: SAN ANTONIO State: TEXAS ZIP: 78216

Phone# (210) 838-6784 FAX#

SAWS Block Map# & 082564 Total EDU's 0 Total Acreage 14.00 080566, 080564

Total Linear Footage of Pipe: 30 LF - 6" DI PIPE Plat No. 25-11800088

Number of Lots 0 SAWS JOB NO. 25-XXXX

DATE | NO. | REVISION

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025

PAPE-DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

# BRE PHASE 2, COLLECTOR

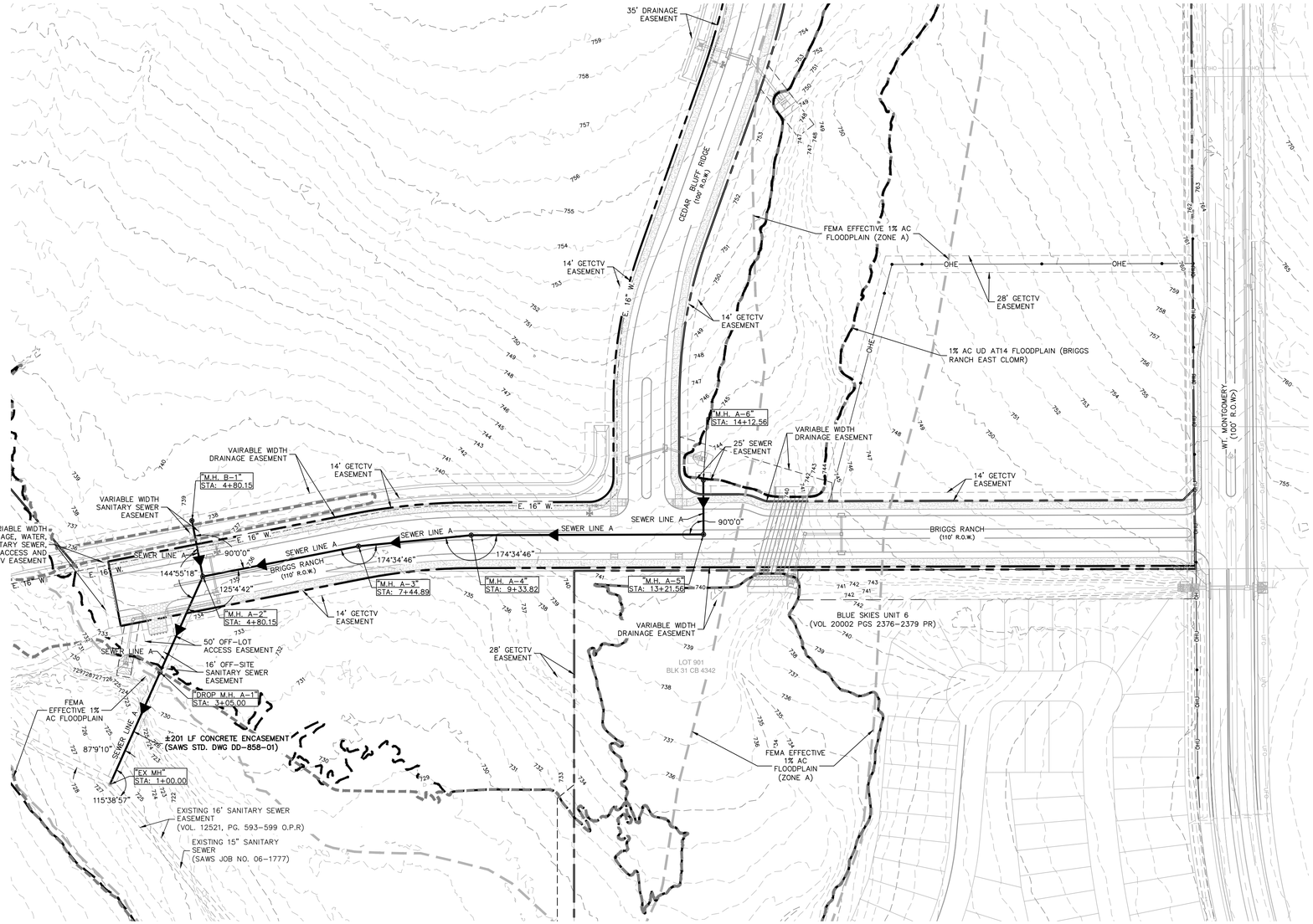
BEXAR COUNTY, TEXAS

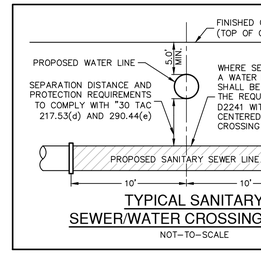
OVERALL WATER PLAN (FOR SAWS COUNTER-PERMIT ONLY)

PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C4.00

Date: July 22, 2025, 1:31 PM — User ID: dmorris
File: P:\114\12\18\Design\Civil\UTDA114218.dwg

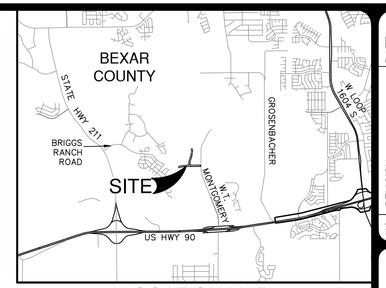
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## TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE




## LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 100'
0' 100' 200' 300'

## SEWER LEGEND

- PROJECT LIMITS
- EXISTING OVERHEAD LINE (OHE)
- EXISTING WATER (W)
- EXISTING SEWER (SS) — MANHOLE
- PROPOSED SEWER (SS)
- PROPOSED WATER — FIRE HYDRANT (W)
- PROPOSED WYE & 6" LATERAL
- SINGLE WATER SERVICE
- GAS, ELECTRIC, TELEPHONE, & CABLE TELEVISION EASEMENT — GETCTV

## CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

## ROW PERMIT NOTE:

A BEXAR COUNTY PERMIT MUST BE OBTAINED BUFORE WORKING IN BEXAR COUNTY RIGHTS-OF-WAY.

## TRENCH EXCAVATION SAFETY PROTECTION:

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Developer's Name: HDC HWY 211, LLC.
Address: 100 NE LOOP 410, SUITE 1080
City: SAN ANTONIO State: TEXAS ZIP: 78216
Phone# (210) 838-6784 FAX#
SAWS Block Map# & 082564 Total EDU's 0 Total Acreage 14.00
080566, 080564
Total Linear Footage of Pipe: 1,408 LF - 8" Plat No. 25-11800088
Number of Lots 0 SAWS JOB NO. 25-1519

| NO. | REVISION | DATE |
|---|---|---|
| | | |

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025

PAPE-DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

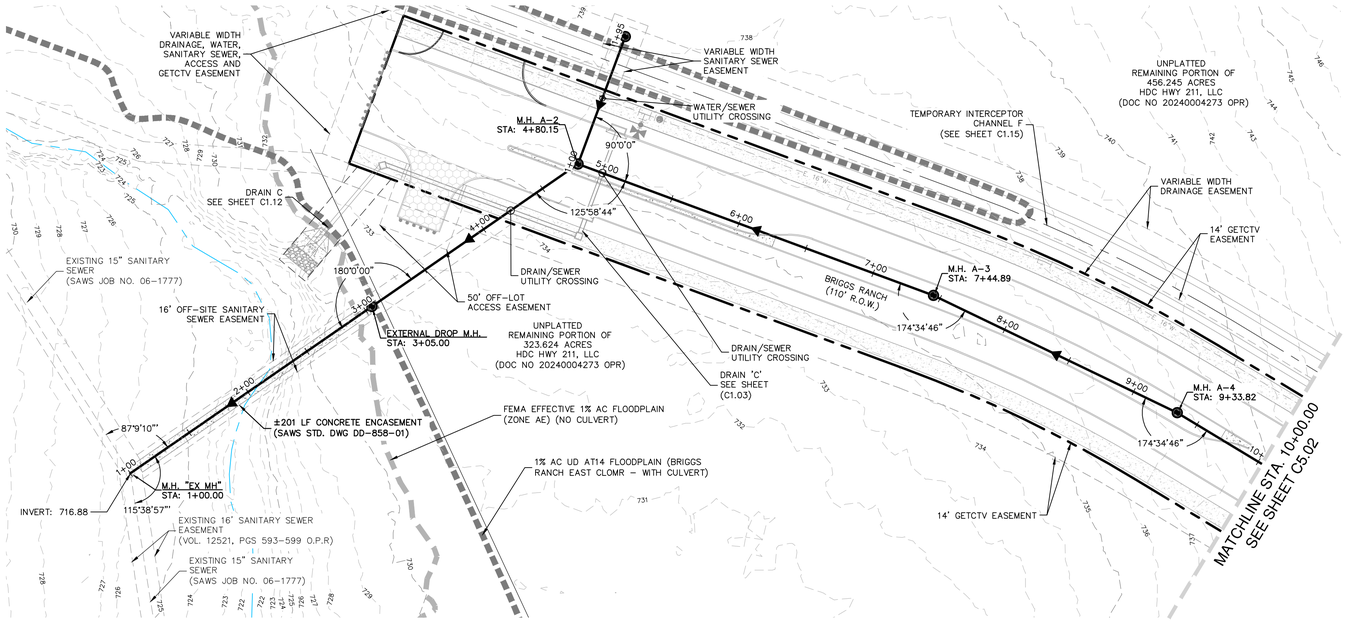
# BRE PHASE 2, COLLECTOR
BEXAR COUNTY, TEXAS

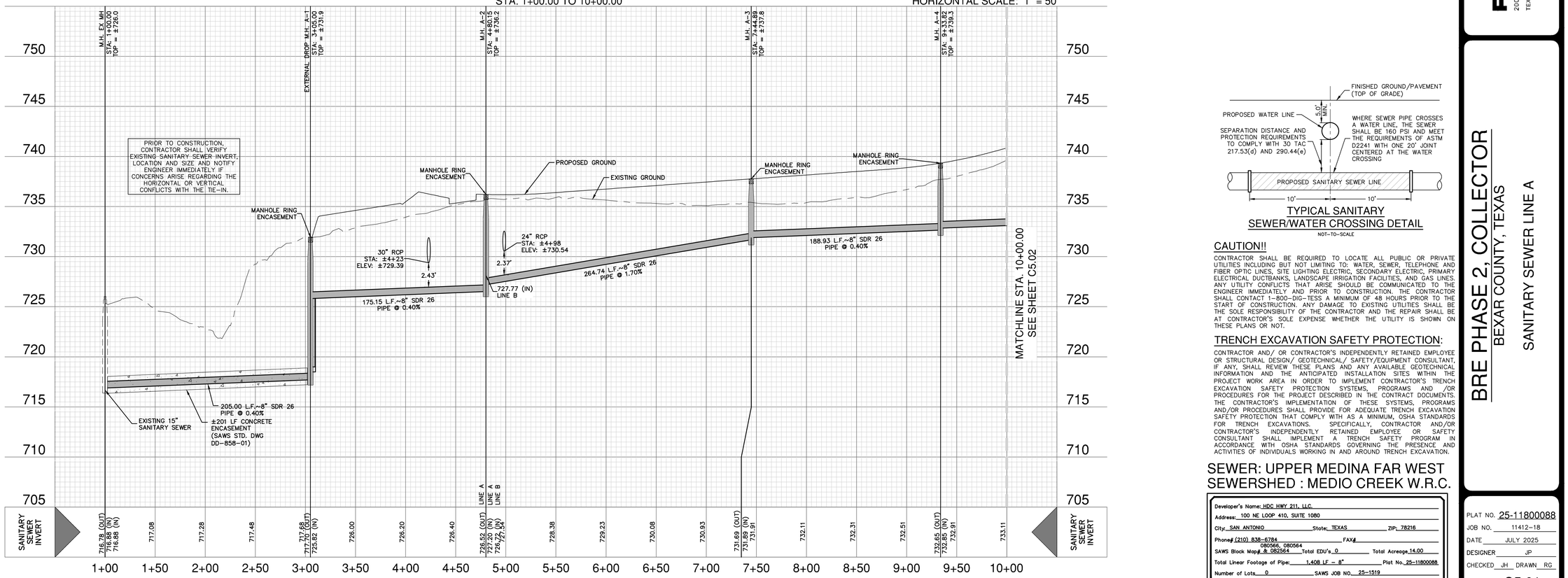
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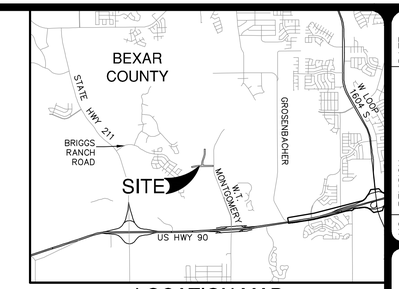
PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C5.00

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## LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 50'

0' 50' 100' 150'

## SEWER LEGEND

- PROJECT LIMITS
- EXISTING WATER (W)
- EXISTING SEWER (SS)
- PROPOSED SEWER (SS) MANHOLE (S)
- PROPOSED WATER (W) FIRE HYDRANT
- PROPOSED SEWER LATERAL (S)
- GAS, ELECTRIC, TELEPHONE, & CABLE TELEVISION EASEMENT (GETCTV)




## TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE

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PAPE-DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800


# BRE PHASE 2, COLLECTOR

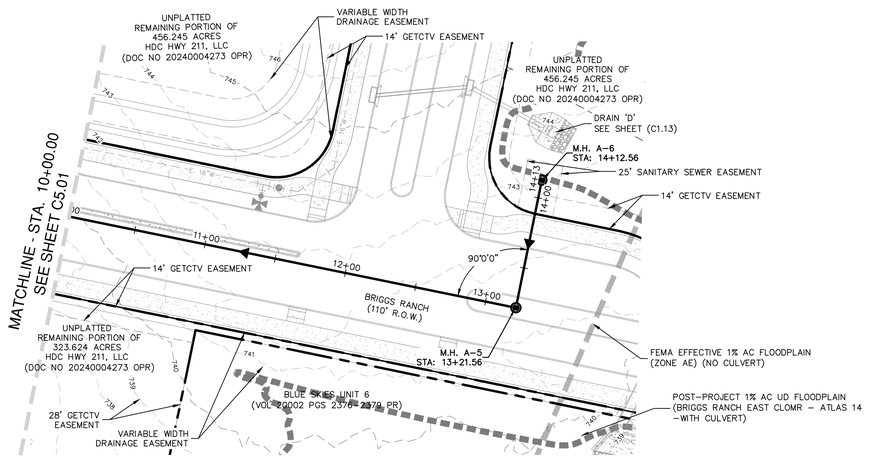
BEXAR COUNTY, TEXAS

SANITARY SEWER LINE A

PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C5.01

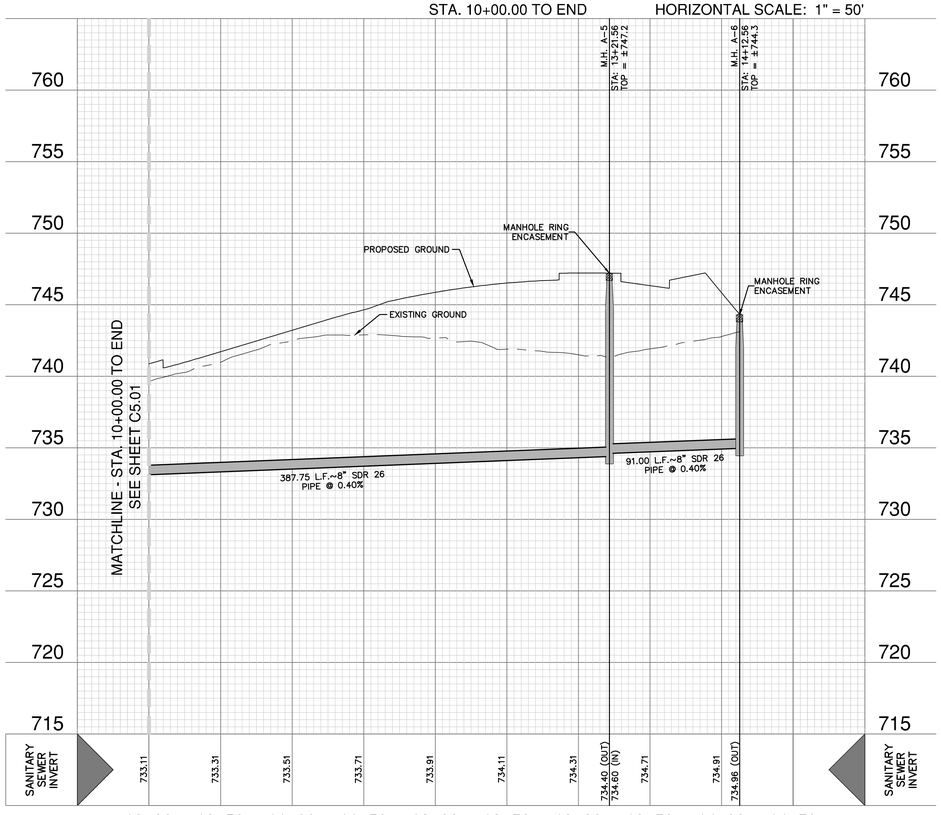

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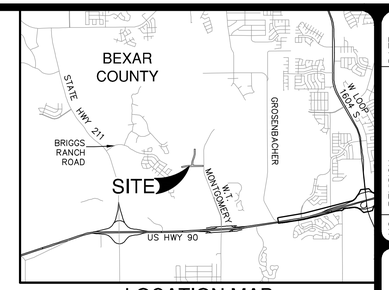
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SANITARY SEWER LINE "A"
STA. 10+00.00 TO END

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'




## LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 50'

0' 50' 100' 150'

## SEWER LEGEND

PROJECT LIMITS

EXISTING WATER — W —

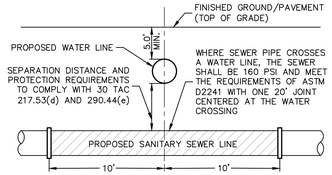
EXISTING SEWER — SS — MANHOLE

PROPOSED SEWER — SS — MANHOLE

PROPOSED WATER — W — FIRE HYDRANT

PROPOSED SEWER LATERAL — S

GAS, ELECTRIC, TELEPHONE, & CABLE TELEVISION EASEMENT — GETCTV




## TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

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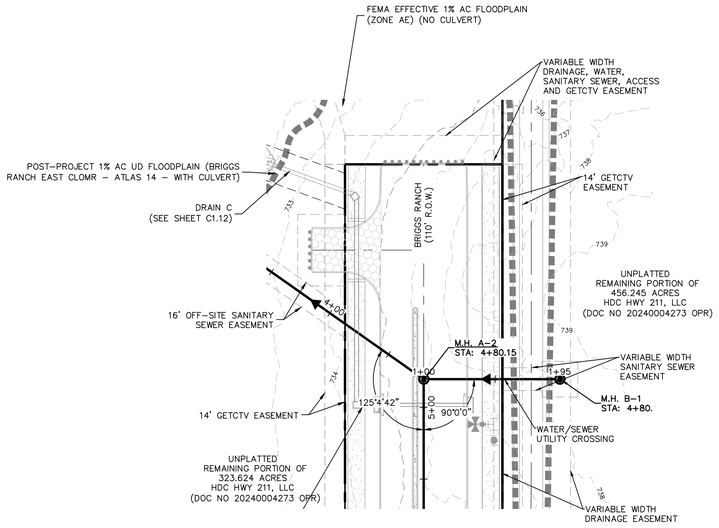
# BRE PHASE 2, COLLECTOR
BEXAR COUNTY, TEXAS

SANITARY SEWER LINE A

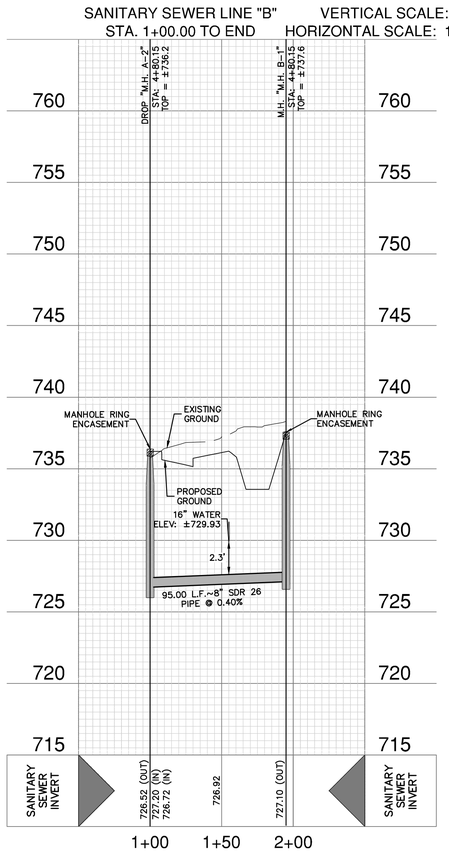
PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C5.02

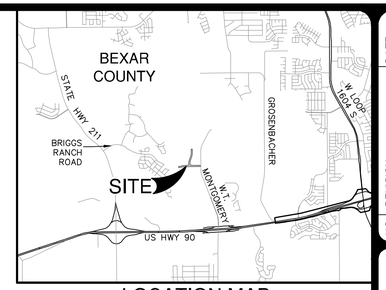
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SANITARY SEWER LINE "B" VERTICAL SCALE: 1" = 5'
STA. 1+00.00 TO END HORIZONTAL SCALE: 1" = 50'



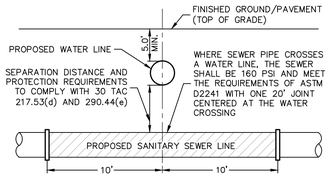




## LOCATION MAP
NOT-TO-SCALE

SCALE: 1"= 50'
0' 50' 100' 150'

## SEWER LEGEND

PROJECT LIMITS
EXISTING WATER
EXISTING SEWER
PROPOSED SEWER
PROPOSED WATER
PROPOSED SEWER LATERAL
GAS, ELECTRIC, & CABLE TELEVISION EASEMENT
MANHOLE
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GETCTV




## TYPICAL SANITARY SEWER/WATER CROSSING DETAIL
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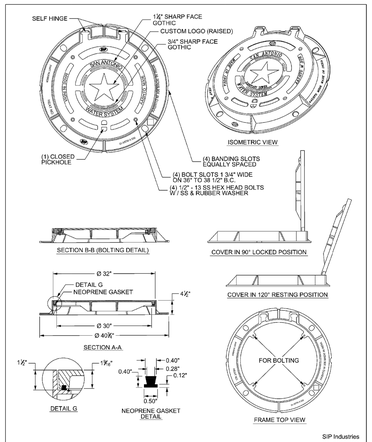
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BRE PHASE 2, COLLECTOR
BEXAR COUNTY, TEXAS
SANITARY SEWER LINE B

PLAT NO. 25-11800088
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DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C5.03

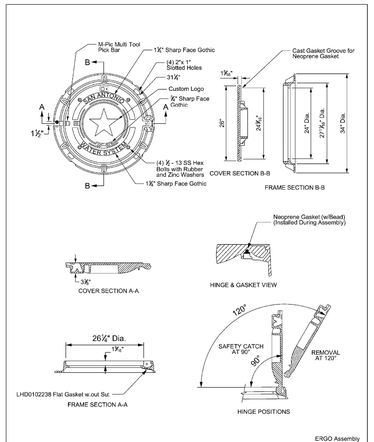
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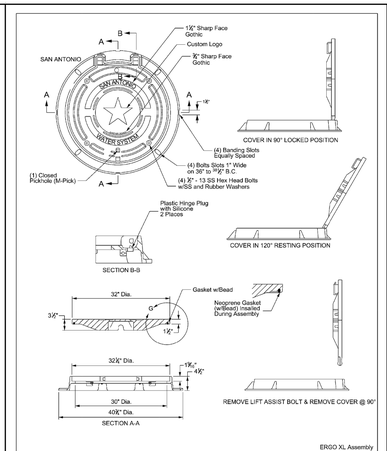

SJP Industries

| PROPERTY OF | | APPROVED | REVISED |
|---|---|---|---|
| SAN ANTONIO WATER SYSTEM<br>SAN ANTONIO, TEXAS | 30" MANHOLE RING AND COVER DETAIL | AUG 2019 | |
| | | DD 852-07 | SHEET 1 OF 6 |



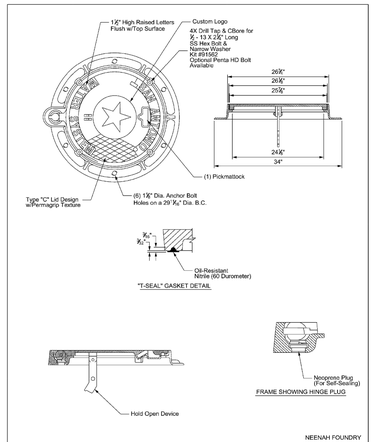

ERGO Assembly

| PROPERTY OF | | APPROVED | REVISED |
|---|---|---|---|
| SAN ANTONIO WATER SYSTEM<br>SAN ANTONIO, TEXAS | MANHOLE RING AND COVER DETAIL | MARCH 2008 | AUG 2019 |
| | | DD 852-07 | SHEET 2 OF 6 |



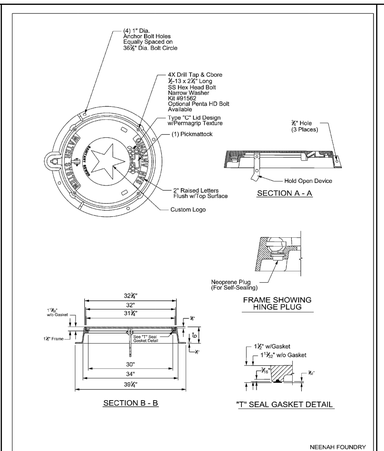

ERGO XL Assembly

| PROPERTY OF | | APPROVED | REVISED |
|---|---|---|---|
| SAN ANTONIO WATER SYSTEM<br>SAN ANTONIO, TEXAS | MANHOLE RING AND COVER DETAIL | MARCH 2008 | AUG 2019 |
| | | DD 852-07 | SHEET 3 OF 6 |



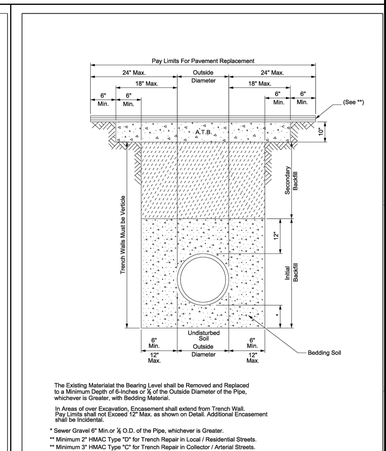

NEENAH FOUNDRY

| PROPERTY OF | | APPROVED | REVISED |
|---|---|---|---|
| SAN ANTONIO WATER SYSTEM<br>SAN ANTONIO, TEXAS | MANHOLE RING AND COVER DETAIL | MARCH 2008 | AUG 2019 |
| | | DD 852-07 | SHEET 4 OF 6 |




NEENAH FOUNDRY

| PROPERTY OF | | APPROVED | REVISED |
|---|---|---|---|
| SAN ANTONIO WATER SYSTEM<br>SAN ANTONIO, TEXAS | MANHOLE RING AND COVER DETAIL | MARCH 2008 | AUG 2019 |
| | | DD 852-07 | SHEET 5 OF 6 |




The Existing Materialat the Bearing Level shall be Removed and Replaced to a Minimum Depth of 6-Inches or ¼ of the Outside Diameter of the Pipe, whichever is Greater, with Bedding Material.

In Areas of over Excavation, Encasement shall extend from Trench Wall. Pay Limits shall not Exceed 12" Max. as shown on Detail. Additional Encasement shall be Incidental.

* Sewer Gravel 6" Min.or ¼ O.D. of the Pipe, whichever is Greater.
** Minimum 2" HMAC Type "D" for Trench Repair in Local / Residential Streets.
** Minimum 3" HMAC Type "C" for Trench Repair in Collector / Arterial Streets.

| PROPERTY OF | | APPROVED | REVISED |
|---|---|---|---|
| SAN ANTONIO WATER SYSTEM<br>SAN ANTONIO, TEXAS | SANITARY SEWER PIPE LAID IN TRENCH | MARCH 2008 | DEC 2018 |
| | | DD-804-01 | SHEET 1 OF 2 |




| PROPERTY OF | | APPROVED | REVISED |
|---|---|---|---|
| SAN ANTONIO WATER SYSTEM<br>SAN ANTONIO, TEXAS | TRENCH COMPACTION DETAIL | MARCH 2018 | DEC 2018 |
| | | DD 804-02 | SHEET 1 OF 1 |




Note:
All mandrels must be approved by SAWS Construction Inspections and stamped before use.

| PROPERTY OF | | APPROVED | REVISED |
|---|---|---|---|
| SAN ANTONIO WATER SYSTEM<br>SAN ANTONIO, TEXAS | GO, NO GO DEFLECTION TESTING MANDREL | March 2008 | |
| | | DD-848-01 | SHEET 1 OF 2 |



| SIZE | A | B* | MANDREL O.D. PVC (SDR-26) | RING O.D. PVC (SDR-26) |
|---|---|---|---|---|
| 6" | 4.0" | 4.5" | 5.50 | 4.79 |
| 8" | 5.5" | 6" | 7.37 | 6.66 |
| 10" | 7.0" | 7.5" | 9.21 | 8.50 |
| 12" | 8.0" | 9" | 10.96 | 10.25 |
| 15" | 10.0" | 11" | 13.42 | 12.71 |
| 18" | 12.0" | 13.5" | —— | —— |
| 21" | 14.0" | 16" | —— | —— |
| 24" | 16.0" | 18" | —— | —— |
| 27" | 18.0" | 20" | —— | —— |

* Minimum Length

CHART

Notes:
PVC pipes and fittings 6" to 15" in diameter shall conform to ASTM D-3034-08.
PVC pipes and fittings 18" to 27" in diameter shall conform to ASTM F-679-08.

This information is provided as a reference. All deflection testing shall be done in accordance with TCEQ Chapter 217.

| PROPERTY OF | | APPROVED | REVISED |
|---|---|---|---|
| SAN ANTONIO WATER SYSTEM<br>SAN ANTONIO, TEXAS | GO, NO GO DEFLECTION TESTING MANDREL CHART | MARCH 2008 | APRIL 2014 |
| | | DD-848-01 | SHEET 2 OF 2 |




| PROPERTY OF | | APPROVED | REVISED |
|---|---|---|---|
| SAN ANTONIO WATER SYSTEM<br>SAN ANTONIO, TEXAS | STANDARD PRECAST MANHOLE | MAY 2013 | AUG 2019 |
| | | DD-852-01 | SHEET 1 OF 2 |




General Notes:
1. Material for Sanitary Sewer Pipe Must be the Same from Manhole to Manhole. Changes in Type of Pipe may be Made only at Manholes, or Special Structures, Except as Approved by the Project Engineer.
2. Adaptors and Concrete Collars shall be used as approved by the SAWS Project Engineer.
3. Watertight Manhole Rings and Covers shall be Trans-Tex A77 "O" Ring or Approved Equal.

| PROPERTY OF | | APPROVED | REVISED |
|---|---|---|---|
| SAN ANTONIO WATER SYSTEM<br>SAN ANTONIO, TEXAS | STANDARD MONOLITHIC MANHOLE | March 2008 | AUG 2019 |
| | | DD 852-01 | SHEET 2 OF 2 |




NOTE:
1. The Concrete Shall be 4000 PSI Minimum and Reinforced with No. 4 Bars as Shown.
2. The Concrete Shall Extend to Edge of Saw Cut Pavement.
3. Manhole Ring Encasement is Required on all Manholes.
4. Manhole Lid shall Open in the Direction of Traffic or Downstream in Parkway

| PROPERTY OF | | APPROVED | REVISED |
|---|---|---|---|
| SAN ANTONIO WATER SYSTEM<br>SAN ANTONIO, TEXAS | MANHOLE RING ENCASEMENT DETAIL | AUGUST 2009 | AUG 2019 |
| | | DD 852-03 | SHEET 1 OF 2 |




Note:
A minimum of 3' of cover to subgrade is necessary, otherwise concrete encasement will be required.

| PROPERTY OF | | APPROVED | REVISED |
|---|---|---|---|
| SAN ANTONIO WATER SYSTEM<br>SAN ANTONIO, TEXAS | HOUSE LATERAL DETAIL (IN THE E.A.R.Z.) | March 2008 | December 2018 |
| | | DD-854-EARZ | SHEET 1 OF 1 |




Notes:
The saddle shall be permanently bonded to the existing main by the use of compounds or or clamps as recommended by the manufacturer.

| PROPERTY OF | | APPROVED | REVISED |
|---|---|---|---|
| SAN ANTONIO WATER SYSTEM<br>SAN ANTONIO, TEXAS | LATERAL CONNECTION | MARCH 2008 | APRIL 2014 |
| | | DD-854-03 | SHEET 1 OF 1 |




Notes:
1) All concrete encasement shall be poured at a plane 6" above the pipe between excavated trench walls.
2) All sewer pipe with less than 3' of cover to subgrade shall be concrete encased.
3) All Force mains shall be provided with thrust blocks, where changes in direction occur, at Tees, Bends, Crosses, changes in size, stops, or as directed by SAWS.

| PROPERTY OF | | APPROVED | REVISED |
|---|---|---|---|
| SAN ANTONIO WATER SYSTEM<br>SAN ANTONIO, TEXAS | TYPICAL CONCRETE ENCASEMENT DETAILS | March 2008 | AUG 2019 |
| | | DD-858-01 | SHEET 1 OF 1 |




| PROPERTY OF | | APPROVED | REVISED |
|---|---|---|---|
| SAN ANTONIO WATER SYSTEM<br>SAN ANTONIO, TEXAS | TYPICAL VERTICAL STACK DETAIL | MARCH 2008 | AUG 2019 |
| | | DD 860-01 | SHEET 1 OF 1 |




FOR NEW DEVELOPMENT CLEAN-OUTS MAY NOT BE PLACED IN PAVED AREAS I.E. SIDEWALKS, DRIVEWAYS, OR PARKING LOTS, AND MUST BE LOCATED A MINIMUM OF 6' FROM ALL PAVED AREAS.

| PROPERTY OF | | APPROVED | REVISED |
|---|---|---|---|
| SAN ANTONIO WATER SYSTEM<br>SAN ANTONIO, TEXAS | TYPICAL CLEANOUT DETAIL | March 2008 | AUG 2019 |
| | | DD-854-02 | SHEET 1 OF 3 |

## SEWER: UPPER MEDINA FAR WEST SEWERSHED : MEDIO CREEK W.R.C.

Developer's Name: HDC HWY 211, LLC
Address: 100 NE LOOP 410, SUITE 1080
City: SAN ANTONIO State: TEXAS ZIP: 78216
Phone# (210) 838-6784 FAX#
SAWS Block Map# 8 080564 080565, 080564 Total EDU's 0 Total Acreage 14.00
Total Linear Footage of Pipe: 1,408 LF – 8" Plat No. 25-11800088
Number of Lots 0 SAWS JOB NO. 25-1519

DATE
NO. REVISION


PAPE-DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800


STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025

BRE PHASE 2, COLLECTOR
BEXAR COUNTY, TEXAS
SANITARY SEWER DETAILS

PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C5.10

Date: July 22, 2025, 1:35 PM — User ID: dmorris
File: P:\11412\18\Design\Civil\DSD11412I8.dwg


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# SAWS CONSTRUCTION NOTES

(LAST REVISED JANUARY 2022)

## SAWS GENERAL SECTION

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL BE APPROVED BY THE SAN ANTONIO WATER SYSTEM (SAWS) AND COMPLY WITH THE PLANS, SPECIFICATIONS, GENERAL CONDITIONS AND WITH THE FOLLOWING AS APPLICABLE:

   A. CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) "DESIGN CRITERIA FOR DOMESTIC WASTEWATER SYSTEM"; TEXAS ADMINISTRATIVE CODE (TAC) TITLE 30 PART 1 CHAPTER 217 AND "PUBLIC DRINKING WATER"; TAC TITLE 30 PART 1 CHAPTER 290.
   B. CURRENT TXDOT "STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND DRAINAGE".
   C. CURRENT "SAN ANTONIO WATER SYSTEM STANDARD SPECIFICATIONS FOR WATER AND SANITARY SEWER CONSTRUCTION";
   D. CURRENT CITY OF SAN ANTONIO "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION";
   E. CURRENT CITY OF SAN ANTONIO "UTILITY EXCAVATION CRITERIA MANUAL" (UECM).

2. THE CONTRACTOR SHALL NOT PROCEED WITH ANY PIPE INSTALLATION WORK UNTIL THEY OBTAIN A COPY OF THE APPROVED COUNTER PERMIT OR GENERAL CONSTRUCTION PERMIT (GCP) FROM THE CONSULTANT AND HAS BEEN NOTIFIED BY SAWS CONSTRUCTION INSPECTION DIVISION TO PROCEED WITH THE WORK AND HAS ARRANGED A MEETING WITH THE INSPECTOR AND CONSULTANT FOR THE WORK REQUIREMENTS. WORK COMPLETED BY THE CONTRACTOR WITHOUT AN APPROVED COUNTER PERMIT AND/OR A GCP WILL BE SUBJECT TO REMOVAL AND REPLACEMENT AT THE EXPENSE OF THE CONTRACTORS AND/OR THE DEVELOPER.

3. THE CONTRACTOR SHALL OBTAIN THE SAWS STANDARD DETAILS FROM THE SAWS WEBSITE, HTTP://WWW.SAWS.ORG/BUSINESS_CENTER/SPECS. UNLESS OTHERWISE NOTED WITHIN THE DESIGN PLANS.

4. THE CONTRACTOR IS TO MAKE ARRANGEMENTS WITH THE SAWS CONSTRUCTION INSPECTION DIVISION AT (210) 233-2973, ON NOTIFICATION PROCEDURES THAT WILL BE USED TO NOTIFY AFFECTED HOME RESIDENTS AND/OR PROPERTY OWNERS 48 HOURS PRIOR TO BEGINNING ANY WORK.

5. LOCATION AND DEPTH OF EXISTING UTILITIES AND SERVICE LATERALS SHOWN ON THE PLANS ARE UNDERSTOOD TO BE APPROXIMATE. ACTUAL LOCATIONS AND DEPTHS MUST BE FIELD VERIFIED BY THE CONTRACTOR AT LEAST 1 WEEK PRIOR TO CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE UTILITY SERVICE LINES AS REQUIRED FOR CONSTRUCTION AND TO PROTECT THEM DURING CONSTRUCTION AT NO COST TO SAWS.

6. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UNDERGROUND UTILITIES AND DRAINAGE STRUCTURES AT LEAST 1-2 WEEKS PRIOR TO CONSTRUCTION WHETHER SHOWN ON PLANS OR NOT. PLEASE ALLOW UP TO 7 BUSINESS DAYS FOR LOCATES REQUESTING PIPE LOCATION MARKERS ON SAWS FACILITIES. THE FOLLOWING CONTACT INFORMATION ARE SUPPLIED FOR VERIFICATION PURPOSES:

   - SAWS UTILITY LOCATES: HTTP://WWW.SAWS.ORG/SERVICE/LOCATES
   - COSA DRAINAGE (210) 207-0724 OR (210) 207-6026
   - COSA TRAFFIC SIGNAL OPERATIONS (210) 206-8480
   - COSA TRAFFIC SIGNAL DAMAGES (210) 207-3951
   - TEXAS STATE WIDE ONE CALL LOCATOR 1-800-545-6005 OR 811

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING EXISTING FENCES, CURBS, STREETS, DRIVEWAYS, SIDEWALKS, LANDSCAPING AND STRUCTURES TO ITS ORIGINAL OR BETTER CONDITION IF DAMAGES ARE MADE AS A RESULT OF THE PROJECT'S CONSTRUCTION.

8. ALL WORK IN TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT) AND/OR BEXAR COUNTY RIGHT-OF-WAY SHALL BE DONE IN ACCORDANCE WITH RESPECTIVE CONSTRUCTION SPECIFICATIONS AND PERMIT REQUIREMENTS.

9. THE CONTRACTOR SHALL COMPLY WITH CITY OF SAN ANTONIO OR OTHER GOVERNING MUNICIPALITY'S TREE ORDINANCES WHEN EXCAVATING NEAR TREES.

10. THE CONTRACTOR SHALL NOT PLACE ANY WASTE MATERIALS IN THE 100-YEAR FLOOD PLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOOD PLAIN PERMIT.

11. HOLIDAY WORK: CONTRACTORS WILL NOT BE ALLOWED TO PERFORM SAWS WORK ON SAWS RECOGNIZED HOLIDAYS. REQUEST SHOULD BE SENT TO CONSTWORKREQ@SAWS.ORG.

    WEEKEND WORK: CONTRACTORS ARE REQUIRED TO NOTIFY THE SAWS INSPECTION CONSTRUCTION DEPARTMENT 48 HOURS IN ADVANCE TO REQUEST WEEKEND WORK. REQUEST SHOULD BE SENT TO CONSTWORKREQ@SAWS.ORG.

    ANY AND ALL SAWS UTILITY WORK INSTALLED WITHOUT HOLIDAY/WEEKEND APPROVAL WILL BE SUBJECT TO BE UNCOVERED FOR PROPER INSPECTION.

12. COMPACTION NOTE (ITEM 804): THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING THE COMPACTION REQUIREMENTS ON ALL TRENCH BACKFILL AND FOR PAYING FOR THE TESTS PERFORMED BY A THIRD PARTY. COMPACTION TESTS WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED, OR AS INDICATED BY THE SAWS INSPECTOR AND/OR THE TEST ADMINISTRATOR, PER EACH 12-INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. THIS PROJECT WILL NOT BE ACCEPTED AND FINALIZED BY SAWS WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.

13. A COPY OF ALL TESTING REPORTS SHALL BE FORWARDED TO SAWS CONSTRUCTION INSPECTION DIVISION.

## SAWS SEWER NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT NO SANITARY SEWER OVERFLOW (SSO) OCCURS AS A RESULT OF THEIR WORK. ALL CONTRACTOR PERSONNEL RESPONSIBLE FOR SSO PREVENTION AND CONTROL SHALL BE TRAINED ON PROPER RESPONSE. SHOULD AN SSO OCCUR, THE CONTRACTOR SHALL:

   A. IDENTIFY THE SOURCE OF THE SSO AND NOTIFY SAWS EMERGENCY OPERATIONS CENTER (EOC) IMMEDIATELY AT (210) 233-2014. PROVIDE THE ADDRESS OF THE SPILL AND AN ESTIMATED VOLUME OR FLOW.
   B. ATTEMPT TO ELIMINATE THE SOURCE OF THE SSO.
   C. CONTAIN SEWAGE FROM THE SSO TO THE EXTENT OF PREVENTING A POSSIBLE CONTAMINATION OF WATERWAYS.
   D. CLEAN UP SPILL SITE (RETURN CONTAINED SEWAGE TO THE COLLECTION SYSTEM IF POSSIBLE) AND PROPERLY DISPOSE OF CONTAMINATED SOIL/MATERIALS.
   E. CLEAN THE AFFECTED SEWER MAINS AND REMOVE ANY DEBRIS.
   F. MEET ALL POST-SSO REQUIREMENTS AS PER THE EPA CONSENT DECREE, INCLUDING LINE CLEANING AND TELEVISING THE AFFECTED SEWER MAINS (AT SAWS DIRECTION) WITHIN 24 HOURS.

   SHOULD THE CONTRACTOR FAIL TO ADDRESS AN SSO IMMEDIATELY AND TO SAWS SATISFACTION, THEY WILL BE RESPONSIBLE FOR ALL COSTS INCURRED BY SAWS, INCLUDING ANY FINES FROM EPA, TCEQ AND/OR ANY OTHER FEDERAL, STATE OR LOCAL AGENCIES.

   NO SEPARATE MEASUREMENT OR PAYMENT SHALL BE MADE FOR THIS WORK. ALL WORK SHALL BE DONE ACCORDING TO GUIDELINES SET BY THE TCEQ AND SAWS.

2. IF BYPASS PUMPING IS REQUIRED, THE CONTRACTOR SHALL PERFORM SUCH WORK IN ACCORDANCE WITH SAWS STANDARD SPECIFICATION FOR WATER AND SANITARY SEWER CONSTRUCTION, ITEM NO. 864, "BYPASS PUMPING".

3. PRIOR TO TIE-INS, ANY SHUTDOWNS OF EXISTING FORCE MAINS OF ANY SIZE MUST BE COORDINATED WITH THE SAWS CONSTRUCTION INSPECTION DIVISION AT (210) 233-2973 AT LEAST ONE WEEK IN ADVANCE OF THE SHUTDOWN. THE CONTRACTOR MUST ALSO PROVIDE A SEQUENCE OF WORK AS RELATED TO THE TIE-INS. THIS IS AT NO ADDITIONAL COST TO SAWS OR THE PROJECT AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SEQUENCE THE WORK ACCORDINGLY.

4. SEWER PIPE WHERE WATER LINE CROSSES SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241, TAC 217.53 AND TCEQ 290.44(E)(4)(B). CONTRACTOR SHALL CENTER A 20' JOINT OF 160 PSI PRESSURE RATED PVC AT THE PROPOSED WATER CROSSING.

5. ELEVATIONS POSTED FOR TOP OF MANHOLES ARE FOR REFERENCE ONLY: IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE ALLOWANCES AND ADJUSTMENTS FOR TOP OF MANHOLES TO MATCH THE FINISHED GRADE OF THE PROJECT'S IMPROVEMENTS. (NSPI)

6. SPILLS, OVERFLOWS, OR DISCHARGES OF WASTEWATER: ALL SPILLS, OVERFLOWS, OR DISCHARGES OF WASTEWATER, RECYCLED WATER, PETROLEUM PRODUCTS, OR CHEMICALS MUST BE REPORTED IMMEDIATELY TO THE SAWS INSPECTOR ASSIGNED TO THE COUNTER PERMIT OR GENERAL CONSTRUCTION PERMIT (GCP). THIS REQUIREMENT APPLIES TO EVERY SPILL, OVERFLOW, OR DISCHARGE REGARDLESS OF SIZE.

7. MANHOLE AND ALL PIPE TESTING (INCLUDING THE TV INSPECTION) MUST BE PERFORMED AND PASSED PRIOR TO FINAL FIELD ACCEPTANCE BY SAWS CONSTRUCTION INSPECTION DIVISION, AS PER THE SAWS SPECIFICATIONS FOR WATER AND SANITARY SEWER CONSTRUCTION.

8. ALL PVC PIPE OVER 14 FEET OF COVER SHALL BE EXTRA STRENGTH WITH MINIMUM PIPE STIFFNESS OF 115 PSI.

## PROJECT SEWER NOTES

1. ALL RESIDENTIAL SEWER SERVICE LATERALS ARE 6" DIA. AND SHALL BE EXTENDED TO 10' PAST THE PROPERTY LINE AND CAPPED AND SEALED. CONTRACTOR SHALL INSTALL A 2" X 4" STAKE, FOUR (4) FEET LONG, TWO (2) FEET DEEP INTO THE GROUND AT THE END OF EACH SERVICE. NO SEPARATE PAY ITEM.
2. CONTRACTOR TO INSTALL CLEANOUTS AT THE END OF ALL SEWER LATERALS, PER LATERAL DETAIL SHEET C5.10
3. NO VERTICAL STACKS ALLOWED FOR ANY LOTS UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
4. ALL 6" SEWER LATERALS WILL BE SET AT 2% GRADE FROM THE MAIN TO THE PROPERTY LINE.
5. WHEN HORIZONTAL DISTANCE BETWEEN SEWER PIPES AND WATER MAIN IS LESS THAN 9 FOOT OF SEPARATION, SEWER MAIN SHALL BE INSTALLED WITH 150 PSI (MIN) PRESSURE PIPE AND FITTINGS IN ACCORDANCE WITH SAWS CONSTRUCTION CRITERIA FOR CONSTRUCTION OF SEWER MAINS IN THE VICINITY OF WATER MAINS.
6. CONTRACTOR SHALL ENSURE THAT MANHOLES OUTSIDE OF PAVED AREAS ARE SET WITH TOP ELEVATIONS 6" ABOVE FINISHED GRADE WITH CONCRETE RING ENCASEMENT.
7. ALL SEWER PIPES SHALL BE 8" PVC (SDR 26), UNLESS OTHERWISE NOTED.
8. CONTRACTOR IS TO VERIFY EXISTING INVERT OF EXISTING SANITARY SEWER MAINS AND ALERT ENGINEER IMMEDIATELY OF ANY DIFFERENCE FROM INVERT SHOWN ON PLANS.
9. CONTRACTOR SHALL PROTECT ALL EXISTING FENCES. ANY FENCE DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR EXPENSE.
10. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
11. CONCRETE RING ENCASEMENT TO BE INSTALLED ON ALL MANHOLES AND, WITHIN LIMITS OF PAVEMENT, BE INSTALLED TO THE TOP OF THE BASE LAYER WITH A MINIMUM OF 2" OF ASPHALT ON TOP OF THE RING ENCASEMENT.
12. MANHOLE OPENING INCREASED TO 30" AS PER TAC CHAPTER 217.55.
13. ALL SEWER PIPE LATERALS SHALL BE SDR 26 (CLASS 160) PVC PIPE.
14. IF THE GIVEN TOP OF MANHOLE ELEVATION DOES NOT AGREE ON ACTUAL GROUND SURFACE OR FINISH PAVEMENT, THE CONTRACTOR SHALL ADJUST ELEVATIONS SUCH THAT THE TOP OF MANHOLE SHALL BE 0.5' ABOVE EXISTING GROUND, OR FLUSH TO FINISH ASPHALT PAVEMENT.
15. ALL MANHOLES CONSTRUCTED OVER THE EDWARDS AQUIFER RECHARGE ZONE SHOULD BE WATERTIGHT.

## SEWER: UPPER MEDINA FAR WEST SEWERSHED : MEDIO CREEK W.R.C.

Developer's Name: HDC HWY 211, LLC.
Address: 100 NE LOOP 410, SUITE 1080
City: SAN ANTONIO State: TEXAS ZIP: 78216
Phone# (210) 838-6784 FAX#
SAWS Block Map# & 080566, 080564 Total EDU's 0 Total Acreage 14.00
Total Linear Footage of Pipe: 1,408 LF - 8" Plat No. 25-11800088
Number of Lots: 0 SAWS JOB NO. 25-1519

| NO. | REVISION | DATE |
|---|---|---|

STATE OF TEXAS
MATTHEW GEISTWEIDT
116861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025

PAPE-DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

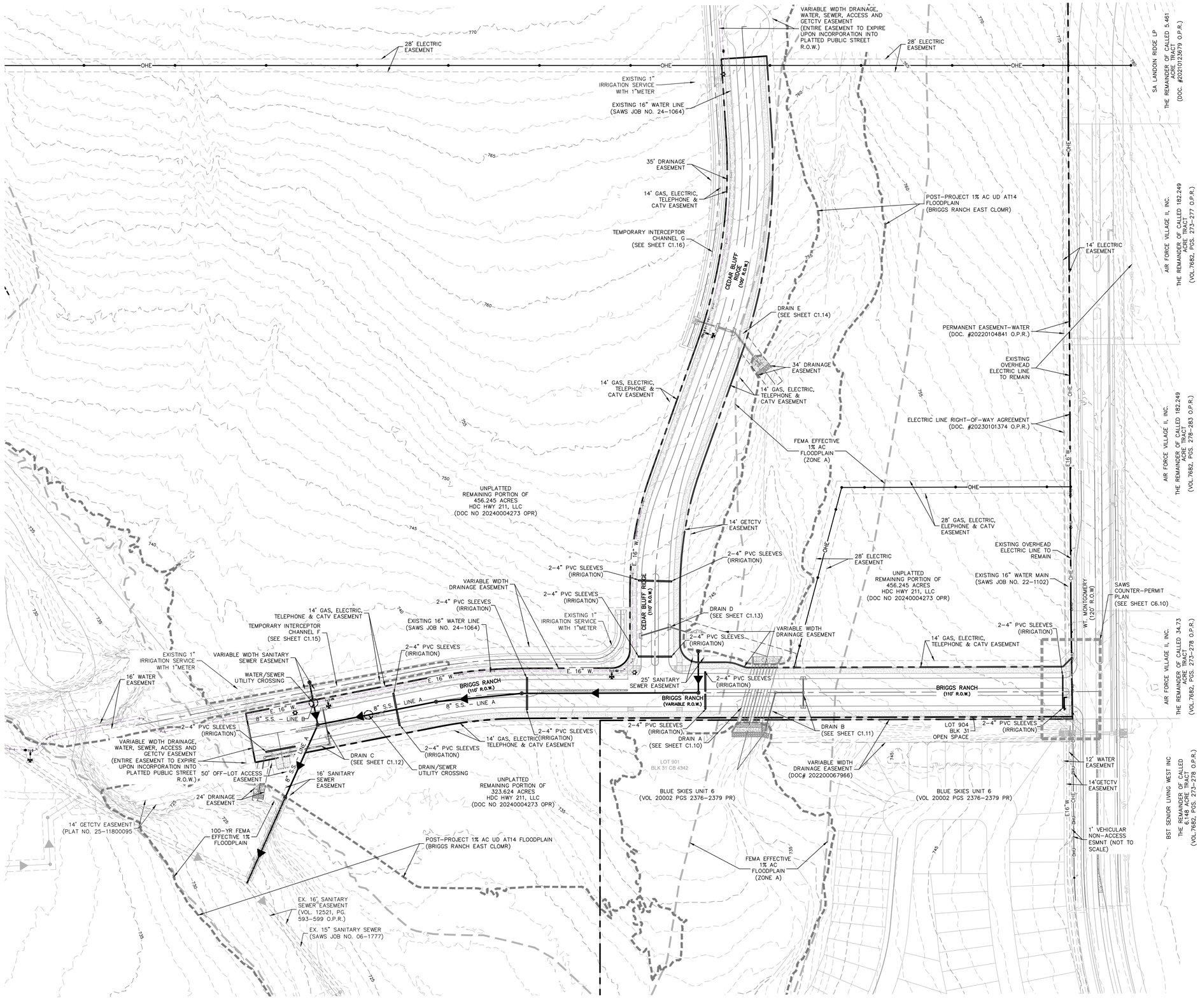
BRE PHASE 2, COLLECTOR
BEXAR COUNTY, TEXAS

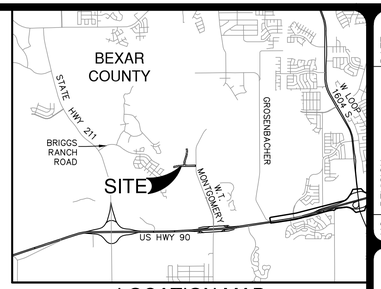
SANITARY SEWER NOTES

PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C5.11

Date: July 22, 2025, 1:35 PM - User ID: dmorris
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## LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 100'

0' 100' 200' 300'

## WATER PLAN LEGEND

| | |
|---|---|
| PROJECT LIMITS | |
| EXISTING OVERHEAD LINE | OHE |
| EXISTING WATER | W |
| EXISTING SEWER | SS |
| PROPOSED SEWER | SS, MANHOLE |
| PROPOSED WATER | W, FIRE HYDRANT |
| PROPOSED WYE & LATERAL | |
| SINGLE WATER SERVICE | |
| BUILDING SETBACK LINE | BSL |
| STREET LIGHTS | SL |
| EXISTING UTILITY POLE | UP |
| PROPOSED UTILITY POLE | PP |

## NOTE:

CONTRACTOR TO MAINTAIN A 4 FOOT MINIMUM SEPARATION BETWEEN STREET LIGHT BASE PERIMETER AND PROPOSED CURB PER PLAN.

## CONDUIT NOTES:

1. CONTRACTOR SHALL INSTALL PERMANENT MARKERS IN PROPOSED CURB WHERE CONDUITS CROSS THE ROADWAY (BOTH SIDES).
2. CONDUITS SHALL BE PVC WITH MINIMUM BURY OF 36 INCHES BELOW PROPOSED FINISHED GRADE. SCHEDULE 80 TO BE USED FOR CPS CONDUITS, ALL OTHER CONDUITS ARE SCHEDULE 40.
3. ALL CONDUITS SHALL BE EXTENDED BEHIND CURBS OR PROPOSED SIDEWALKS A MINIMUM OF 3 FEET AND CAPPED FOR FUTURE USE.
4. ALL CONDUIT SLEEVES TO BE USED FOR ELECTRIC, GAS, OR TELECOMMUNICATION UTILITY CROSSINGS SHALL BE INSTALLED TO MEET OR EXCEED DESIGN REQUIREMENTS FOR THE UTILITY AGENCY WHICH THEY ARE SERVING, INCLUDING BUT NOT LIMITED TO THE DEPTH, TRENCH PLACEMENT, AND PROXIMITY TO OTHER UTILITIES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR VERIFYING AND INSTALLING THE CONDUIT SLEEVES TO MEET THESE SPECIFICATIONS INCLUDING COORDINATING WITH THE UTILITY AGENCY FOR ANY REQUIRED INSPECTIONS

## TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

## CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

## SEWER: UPPER MEDINA FAR WEST SEWERSHED : MEDIO CREEK W.R.C.

Developer's Name: HDC HWY 211, LLC
Address: 100 NE LOOP 410, SUITE 1080
City: SAN ANTONIO State: TEXAS ZIP: 78216
Phone# (210) 838-6784 FAX#
SAWS Block Map# & 080566, 080564 Total EDU's 0 Total Acreage 14.00
Total Linear Footage of Pipe: 1,408 LF - 8" Plat No. 25-11800088
Number of Lots 0 SAWS JOB NO. 25-1519

## WATER (SAWS PRESSURE ZONE 1080 HGL)

Developer's Name: HDC HWY 211, LTD
Address: 45 NE LOOP 410, SUITE 225
City: SAN ANTONIO State: TEXAS ZIP: 78216
Phone# (210) 838-6784 FAX#
SAWS Block Map# & 080566, 080564 Total EDU's 0 Total Acreage 14.00
Total Linear Footage of Pipe: 30 LF - 6" DI PIPE Plat No. 25-11800088
Number of Lots 0 SAWS JOB NO. 25-XXXX

| NO. | REVISION | DATE |
|---|---|---|

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025

PAPE-DAWSON
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

# BRE PHASE 2, COLLECTOR

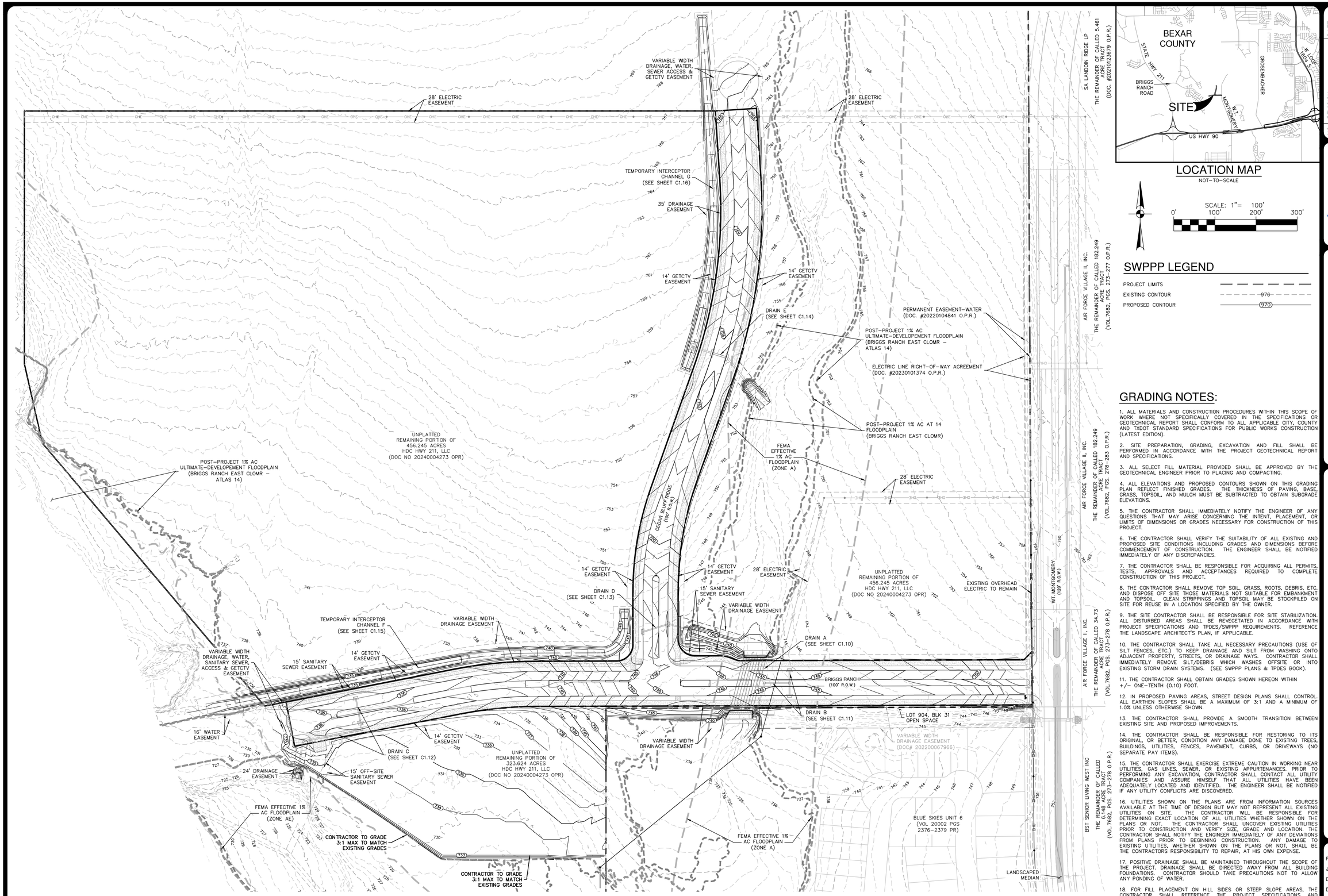
BEXAR COUNTY, TEXAS

OVERALL UTILITY PLAN

PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C6.00

Date: July 22, 2025, 3:41 PM — User ID: dmorris
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## LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 100'

0' 100' 200' 300'

## SWPPP LEGEND

PROJECT LIMITS

EXISTING CONTOUR 976

PROPOSED CONTOUR 970

## GRADING NOTES:

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THIS SCOPE OF WORK WHERE NOT SPECIFICALLY COVERED IN THE SPECIFICATIONS OR GEOTECHNICAL REPORT SHALL CONFORM TO ALL APPLICABLE CITY, COUNTY AND TXDOT STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (LATEST EDITION).

2. SITE PREPARATION, GRADING, EXCAVATION AND FILL SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT GEOTECHNICAL REPORT AND SPECIFICATIONS.

3. ALL SELECT FILL MATERIAL PROVIDED SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACING AND COMPACTING.

4. ALL ELEVATIONS AND PROPOSED CONTOURS SHOWN ON THIS GRADING PLAN REFLECT FINISHED GRADES. THE THICKNESS OF PAVING, BASE, GRASS, TOPSOIL, AND MULCH MUST BE SUBTRACTED TO OBTAIN SUBGRADE ELEVATIONS.

5. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY QUESTIONS THAT MAY ARISE CONCERNING THE INTENT, PLACEMENT, OR LIMITS OF DIMENSIONS OR GRADES NECESSARY FOR CONSTRUCTION OF THIS PROJECT.

6. THE CONTRACTOR SHALL VERIFY THE SUITABILITY OF ALL EXISTING AND PROPOSED SITE CONDITIONS INCLUDING GRADES AND DIMENSIONS BEFORE COMMENCEMENT OF CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES.

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL PERMITS, TESTS, APPROVALS AND ACCEPTANCES REQUIRED TO COMPLETE CONSTRUCTION OF THIS PROJECT.

8. THE CONTRACTOR SHALL REMOVE TOP SOIL, GRASS, ROOTS, DEBRIS, ETC. AND DISPOSE OFF SITE THOSE MATERIALS NOT SUITABLE FOR EMBANKMENT AND TOPSOIL. CLEAN STRIPPINGS AND TOPSOIL MAY BE STOCKPILED ON SITE FOR REUSE IN A LOCATION SPECIFIED BY THE OWNER.

9. THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR SITE STABILIZATION. ALL DISTURBED AREAS SHALL BE REVEGETATED IN ACCORDANCE WITH PROJECT SPECIFICATIONS AND TPDES/SWPPP REQUIREMENTS. REFERENCE THE LANDSCAPE ARCHITECT'S PLAN, IF APPLICABLE.

10. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS (USE OF SILT FENCES, ETC.) TO KEEP DRAINAGE AND SILT FROM WASHING ONTO ADJACENT PROPERTY, STREETS, OR DRAINAGE WAYS. CONTRACTOR SHALL IMMEDIATELY REMOVE SILT/DEBRIS WHICH WASHES OFFSITE OR INTO EXISTING STORM DRAIN SYSTEMS. (SEE SWPPP PLANS & TPDES BOOK).

11. THE CONTRACTOR SHALL OBTAIN GRADES SHOWN HEREON WITHIN +/- ONE-TENTH (0.10) FOOT.

12. IN PROPOSED PAVING AREAS, STREET DESIGN PLANS SHALL CONTROL. ALL EARTHEN SLOPES SHALL BE A MAXIMUM OF 3:1 AND A MINIMUM OF 1.0% UNLESS OTHERWISE SHOWN.

13. THE CONTRACTOR SHALL PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING SITE AND PROPOSED IMPROVEMENTS.

14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL, OR BETTER, CONDITION ANY DAMAGE DONE TO EXISTING TREES, BUILDINGS, UTILITIES, FENCES, PAVEMENT, CURBS, OR DRIVEWAYS (NO SEPARATE PAY ITEMS).

15. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION IN WORKING NEAR UTILITIES, GAS LINES, SEWER, OR EXISTING APPURTENANCES. PRIOR TO PERFORMING ANY EXCAVATION, CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES AND ASSURE HIMSELF THAT ALL UTILITIES HAVE BEEN ADEQUATELY LOCATED AND IDENTIFIED. THE ENGINEER SHALL BE NOTIFIED IF ANY UTILITY CONFLICTS ARE DISCOVERED.

16. UTILITIES SHOWN ON THE PLANS ARE FROM INFORMATION SOURCES AVAILABLE AT THE TIME OF DESIGN BUT MAY NOT REPRESENT ALL EXISTING UTILITIES ON SITE. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES WHETHER SHOWN ON THESE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION AND VERIFY SIZE, GRADE AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTORS RESPONSIBILITY TO REPAIR, AT HIS OWN EXPENSE.

17. POSITIVE DRAINAGE SHALL BE MAINTAINED THROUGHOUT THE SCOPE OF THE PROJECT. DRAINAGE SHALL BE DIRECTED AWAY FROM ALL BUILDING FOUNDATIONS. CONTRACTOR SHOULD TAKE PRECAUTIONS NOT TO ALLOW ANY PONDING OF WATER.

18. FOR FILL PLACEMENT ON HILL SIDES OR STEEP SLOPE AREAS, THE CONTRACTOR SHALL REFERENCE THE PROJECT SPECIFICATIONS AND GEOTECHNICAL REPORT FOR SPECIAL INSTRUCTIONS REGARDING BENCHING.

19. NO WORK SHALL BE PERFORMED IN A PUBLIC RIGHT-OF-WAY WITHOUT A PERMIT.

| NO. | REVISION | DATE |
|---|---|---|
| | | |

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025


PAPE-DAWSON
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800


# BRE PHASE 2, COLLECTOR

BEXAR COUNTY, TEXAS

OVERALL GRADING PLAN

PLAT NO. 25-11800088

JOB NO. 11412-18

DATE JULY 2025

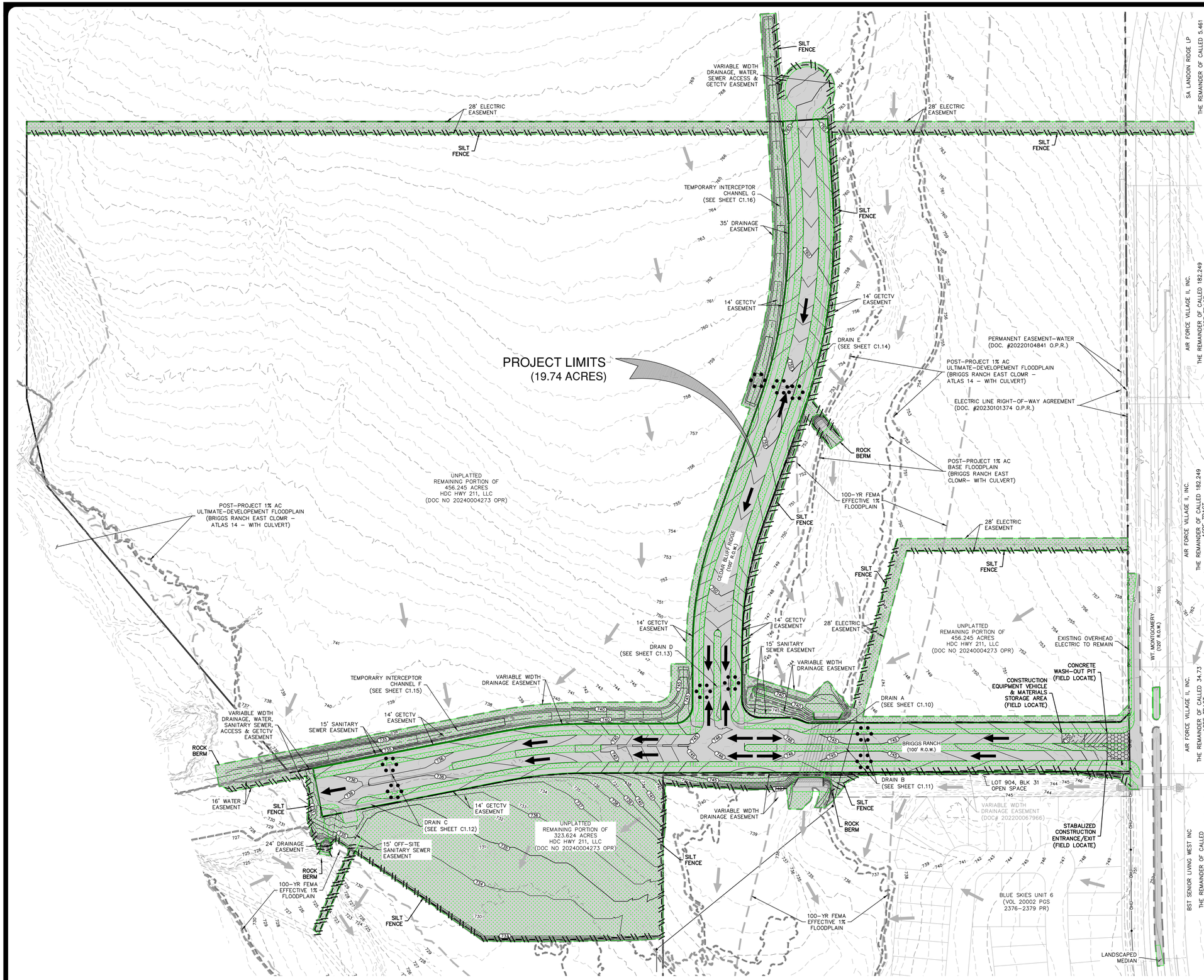
DESIGNER JP

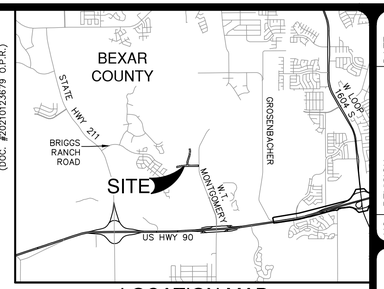
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LOCATION MAP
NOT-TO-SCALE

SCALE: 1"= 100'
0' 100' 200' 300'

## SWPPP LEGEND

- PROJECT LIMITS
- EXISTING CONTOUR (976)
- PROPOSED CONTOUR (970)
- EXISTING CREEK CENTERLINE
- FLOW ARROW (EXISTING)
- FLOW ARROW (PROPOSED)
- SILT FENCE
- ROCK BERM
- GRAVEL FILTER BAGS
- GRATE INLET PROTECTION
- LIMITS OF DISTURBED AREA
- STABILIZED CONSTRUCTION ENTRANCE/EXIT (FIELD LOCATE)
- CONSTRUCTION EQUIPMENT, VEHICLE & MATERIALS STORAGE AREA (FIELD LOCATE)
- CONCRETE TRUCK WASH-OUT PIT (FIELD LOCATE)
- AREA TO BE PERMANENTLY STABILIZED

## CONDUIT NOTES:

1. CONTRACTOR SHALL INSTALL PERMANENT MARKERS IN PROPOSED CURB WHERE CONDUITS CROSS THE ROADWAY (BOTH SIDES).
2. CONDUITS SHALL BE PVC WITH MINIMUM BURY OF 36 INCHES BELOW PROPOSED FINISHED GRADE. SCHEDULE 80 TO BE USED FOR CPS CONDUITS, ALL OTHER CONDUITS ARE SCHEDULE 40.
3. ALL CONDUITS SHALL BE EXTENDED BEHIND CURBS OR PROPOSED SIDEWALKS A MINIMUM OF 3 FEET AND CAPPED FOR FUTURE USE.
4. ALL CONDUIT SLEEVES TO BE USED FOR ELECTRIC, GAS, OR TELECOMMUNICATION UTILITY CROSSINGS SHALL BE INSTALLED TO MEET OR EXCEED DESIGN REQUIREMENTS FOR THE UTILITY AGENCY WHICH THEY ARE SERVING, INCLUDING BUT NOT LIMITED TO THE DEPTH, TRENCH PLACEMENT, AND PROXIMITY TO OTHER UTILITIES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR VERIFYING AND INSTALLING THE CONDUIT SLEEVES TO MEET THESE SPECIFICATIONS INCLUDING COORDINATING WITH THE UTILITY AGENCY FOR ANY REQUIRED INSPECTIONS

## TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

## CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

| NO. | REVISION | DATE |
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STATE OF TEXAS
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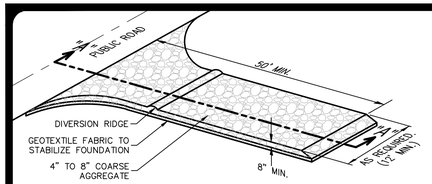

# BRE PHASE 2, COLLECTOR
BEXAR COUNTY, TEXAS

STORMWATER POLLUTION PREVENTION PLAN

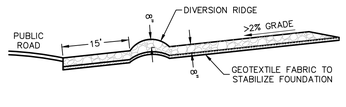
PLAT NO. 25-11800088
JOB NO. 11412-18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C8.00

Date: July 22, 2025, 2:35 PM — User ID: dmorris
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SCHEMATIC OF TEMPORARY CONSTRUCTION ENTRANCE/EXIT




SECTION "A-A" OF A CONSTRUCTION ENTRANCE/EXIT

## MATERIALS

1. THE AGGREGATE SHOULD CONSIST OF 4–INCH TO 8–INCH WASHED STONE OVER A STABLE FOUNDATION AS SPECIFIED IN THE PLAN.

2. THE AGGREGATE SHOULD BE PLACED WITH A MINIMUM THICKNESS OF 8–INCHES.

3. THE GEOTEXTILE FABRIC SHOULD BE DESIGNED SPECIFICALLY FOR USE AS A SOIL FILTRATION MEDIA WITH AN APPROXIMATE WEIGHT OF 6 OZ/YD$^2$, A MULLEN BURST RATING OF 140 LB/IN$^2$, AND AN EQUIVALENT OPENING SIZE GREATER THAN A NUMBER 50 SIEVE.

4. IF A WASHING FACILITY IS REQUIRED, A LEVEL AREA WITH A MINIMUM OF 4–INCH DIAMETER WASHED STONE OR COMMERCIAL ROCK SHOULD BE INCLUDED IN THE PLANS. DIVERT WASTEWATER TO A SEDIMENT TRAP OR BASIN.

## INSTALLATION

1. AVOID CURVES ON PUBLIC ROADS AND STEEP SLOPES. REMOVE VEGETATION AND OTHER OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA. GRADE CROWN FOUNDATION FOR POSITIVE DRAINAGE.

2. THE MINIMUM WIDTH OF THE ENTRANCE/EXIT SHOULD BE 12 FEET OR THE FULL WIDTH OF EXIT ROADWAY, WHICHEVER IS GREATER.

3. THE CONSTRUCTION ENTRANCE SHOULD BE AT LEAST 50 FEET LONG.

4. IF THE SLOPE TOWARD THE ROAD EXCEEDS 2%, CONSTRUCT A RIDGE, 6–INCHES TO 8–INCHES HIGH WITH 3:1 (H:V) SIDE SLOPES, ACROSS THE FOUNDATION APPROXIMATELY 15 FEET FROM THE ENTRANCE TO DIVERT RUNOFF AWAY FROM THE PUBLIC ROAD.

5. PLACE GEOTEXTILE FABRIC AND GRADE FOUNDATION TO IMPROVE STABILITY, ESPECIALLY WHERE WET CONDITIONS ARE ANTICIPATED.

6. PLACE STONE TO DIMENSIONS AND GRADE SHOWN ON PLANS. LEAVE SURFACE SMOOTH AND SLOPE FOR DRAINAGE.

7. DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE STONE PAD TO A SEDIMENT TRAP OR BASIN.

8. INSTALL PIPE UNDER PAD AS NEEDED TO MAINTAIN PROPER PUBLIC ROAD DRAINAGE.

## COMMON TROUBLE POINTS

1. INADEQUATE RUNOFF CONTROL–SEDIMENT WASHES ONTO PUBLIC ROAD.

2. STONE TOO SMALL OR GEOTEXTILE FABRIC ABSENT, RESULTS IN MUDDY CONDITION AS STONE IS PRESSED INTO SOIL.

3. PAD TOO SHORT FOR HEAVY CONSTRUCTION TRAFFIC–EXTEND PAD BEYOND THE MINIMUM 50–FOOT LENGTH AS NECESSARY.

4. PAD NOT FLARED SUFFICIENTLY AT ROAD SURFACE, RESULTS IN MUD BEING TRACKED ON TO ROAD AND POSSIBLE DAMAGE TO ROAD.

5. UNSTABLE FOUNDATION – USE GEOTEXTILE FABRIC UNDER PAD AND/OR IMPROVE FOUNDATION DRAINAGE.

## INSPECTION AND MAINTENANCE GUIDELINES

1. THE ENTRANCE SHOULD BE MAINTAINED IN A CONDITION, WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.

2. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS–OF–WAY SHOULD BE REMOVED IMMEDIATELY BY CONTRACTOR.

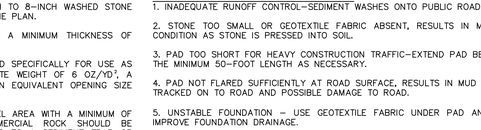
3. WHEN NECESSARY, WHEELS SHOULD BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT–OF–WAY.

4. WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

5. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE BY USING APPROVED METHODS.

# STABILIZED CONSTRUCTION ENTRANCE/EXIT DETAIL

NOT–TO–SCALE




ISOMETRIC PLAN VIEW

SECTION "A-A"

## ROCK BERMS

THE PURPOSE OF A ROCK BERM IS TO SERVE AS A CHECK DAM IN AREAS OF CONCENTRATED FLOW, TO INTERCEPT SEDIMENT–LADEN RUNOFF, DETAIN THE SEDIMENT AND RELEASE THE WATER IN SHEET FLOW. THE ROCK BERM SHOULD BE USED WHEN THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 5 ACRES. ROCK BERMS ARE USED IN AREAS WHERE THE VOLUME OF RUNOFF IS TOO GREAT FOR A SILT FENCE TO CONTAIN. THEY ARE LESS EFFECTIVE FOR SEDIMENT REMOVAL THAN SILT FENCES, PARTICULARLY FOR FINE PARTICLES, BUT ARE ABLE TO WITHSTAND HIGHER FLOWS THAN A SILT FENCE. AS SUCH, ROCK BERMS ARE OFTEN USED IN AREAS OF CHANNEL FLOWS (DITCHES, GULLIES, ETC.). ROCK BERMS ARE MOST EFFECTIVE AT REDUCING BED LOAD IN CHANNELS AND SHOULD NOT BE SUBSTITUTED FOR OTHER EROSION AND SEDIMENT CONTROL MEASURES FARTHER UP THE WATERSHED.

## INSPECTION AND MAINTENANCE GUIDELINES

1. INSPECTION SHOULD BE MADE WEEKLY BY THE RESPONSIBLE PARTY, FOR INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE.

2. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT IN AN APPROVED MANNER THAT WILL NOT CAUSE ANY ADDITIONAL SILTATION.

3. REPAIR ANY LOOSE WIRE SHEATHING.

4. THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION.

5. THE BERM SHOULD BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.

6. THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

## MATERIALS

1. THE BERM STRUCTURE SHOULD BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM OPENING OF 1 INCH AND A MINIMUM WIRE DIAMETER OF 20 GAUGE GALVANIZED AND SHOULD BE SECURED WITH SHOAT RINGS.

2. CLEAN, OPEN GRADED 3–INCH TO 5–INCH DIAMETER ROCK SHOULD BE USED, EXCEPT IN AREAS WHERE HIGH VELOCITIES OR LARGE VOLUMES OF FLOW ARE EXPECTED, WHERE 5–INCH TO 8–INCH DIAMETER ROCKS MAY BE USED.

## INSTALLATION

1. LAY OUT THE WOVEN WIRE SHEATHING PERPENDICULAR TO THE FLOW LINE. THE SHEATHING SHOULD BE 20 GAUGE WOVEN WIRE MESH WITH 1 INCH OPENINGS.

2. BERM SHOULD HAVE A TOP WIDTH OF 2 FEET MINIMUM WITH SIDE SLOPES BEING 2:1 (H:V) OR FLATTER.

3. PLACE THE ROCK ALONG THE SHEATHING AS SHOWN IN THE DIAGRAM TO A HEIGHT NOT LESS THAN 18".

4. WRAP THE WIRE SHEATHING AROUND THE ROCK AND SECURE WITH TIE WIRE SO THAT THE ENDS OF THE SHEATHING OVERLAP AT LEAST 2 INCHES, AND THE BERM RETAINS ITS SHAPE WHEN WALKED UPON.

5. BERM SHOULD BE BUILT ALONG THE CONTOUR AT ZERO PERCENT GRADE OR AS NEAR AS POSSIBLE.

6. THE ENDS OF THE BERM SHOULD BE TIED INTO EXISTING UPSLOPE GRADE AND THE BERM SHOULD BE BURIED IN A TRENCH APPROXIMATELY 3 TO 4 INCHES DEEP TO PREVENT FAILURE OF THE CONTROL.

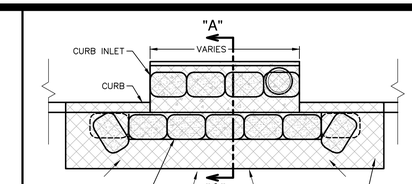
## COMMON TROUBLE POINTS

1. INSUFFICIENT BERM HEIGHT OR LENGTH (RUNOFF QUICKLY ESCAPES OVER THE TOP OR AROUND THE SIDES OF BERM).

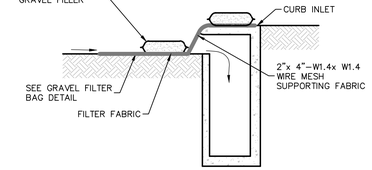
2. BERM NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND ONE SIDE).

# ROCK BERM DETAIL

NOT–TO–SCALE




PLAN VIEW




SECTION "A-A"

## GENERAL NOTES

1. CONTRACTOR TO INSTALL 2"x4"–W1.4xW1.4 WIRE MESH SUPPORTING FILTER FABRIC OVER THE INLET OPENING. FABRIC MUST BE SECURED TO WIRE BACKING WITH CLIPS OR WIRE TIES AT THIS LOCATION. SAND BAGS FILLED WITH WASHED PEA GRAVEL SHOULD BE PLACED ON TOP OF WIRE MESH ON TOP OF THE INLET AS SHOWN ON THIS DETAIL TO HOLD WIRE MESH IN PLACE. SANDBAGS FILLED WITH WASHED PEA GRAVEL SHOULD ALSO BE PLACED ALONG THE GUTTER AS SHOWN ON THIS DETAIL TO HOLD WIRE MESH IN PLACE. SAND BAGS TO BE STACKED TO FORM A CONTINUOUS BARRIER AROUND INLETS.

2. THE BAGS SHOULD BE TIGHTLY ABUTTED AGAINST EACH OTHER TO PREVENT RUNOFF FROM FLOWING BETWEEN THE BAGS.

## INSPECTION AND MAINTENANCE GUIDELINES

1. INSPECTION SHOULD BE MADE WEEKLY. REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.

2. REMOVE SEDIMENT WHEN BUILDUP REACHES A DEPTH OF 3 INCHES. REMOVED SEDIMENT SHOULD BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.

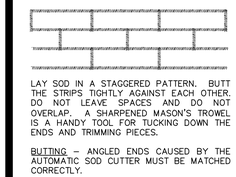
3. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.

4. INSPECT FILTER FABRIC AND PATCH OR REPLACE IF TORN OR MISSING.

5. STRUCTURES SHOULD BE REMOVED AND THE AREA STABILIZED ONLY AFTER THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

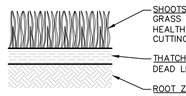
# BAGGED GRAVEL CURB INLET PROTECTION DETAIL

NOT–TO–SCALE



LAY SOD IN A STAGGERED PATTERN. BUTT THE STRIPS TIGHTLY AGAINST EACH OTHER. DO NOT LEAVE SPACES AND DO NOT OVERLAP. A SHARPENED MASON'S TROWEL IS A HANDY TOOL FOR TUCKING DOWN THE ENDS AND TRIMMING PIECES.

BUTTING – ANGLED ENDS CAUSED BY THE AUTOMATIC SOD CUTTER MUST BE MATCHED CORRECTLY.

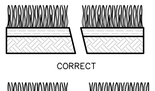



## APPEARANCE OF GOOD SOD

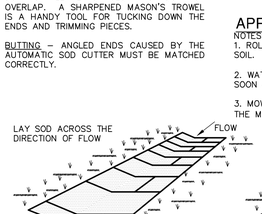
NOTES:
1. ROLL SOD IMMEDIATELY TO ACHIEVE FIRM CONTACT WITH THE SOIL.

2. WATER TO A DEPTH OF 4" AS NEEDED. WATER WELL AS SOON AS THE SOD IS LAID.

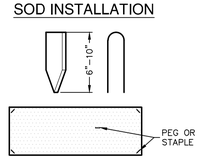
3. MOW WHEN THE SOD IS ESTABLISHED – IN 2–3 WEEKS. SET THE MOWER HIGH (2"–3").




SOD INSTALLATION




IN CRITICAL AREAS, SECURE SOD WITH NETTING. USE STAPLES.




USE PEGS OR STAPLES TO FASTEN SOD FIRMLY – AT THE ENDS OF STRIPS AND IN THE CENTER, OR EVERY 3–4 FEET IF THE STRIPS ARE LONG. WHEN READY TO MOW, DRIVE PEGS OR STAPLES FLUSH WITH THE GROUND.

## MATERIALS

1. SOD SHOULD BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3/4" INCH (± 1/4" INCH) AT THE TIME OF CUTTING. THIS THICKNESS SHOULD EXCLUDE SHOOT GROWTH AND THATCH.

2. PIECES OF SOD SHOULD BE CUT TO THE SUPPLIER'S STANDARD WIDTH AND LENGTH, WITH A MAXIMUM ALLOWABLE DEVIATION IN ANY DIMENSION OF 5% TORN OR UNEVEN PADS SHOULD NOT BE ACCEPTABLE.

3. STANDARD SIZE SECTIONS OF SOD SHOULD BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED FROM A FIRM GRASP ON ONE END OF THE SECTION.

4. SOD SHOULD BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS.

## SITE PREPARATION

1. PRIOR TO SOIL PREPARATION, AREAS TO BE SODDED SHOULD BE BROUGHT TO FINAL GRADE IN ACCORDANCE WITH THE APPROVED PLAN.

2. THE SURFACE SHOULD BE CLEARED OF ALL TRASH, DEBRIS AND OF ALL ROOTS, BRUSH, WIRE, GRADE STAKES AND OTHER OBJECTS THAT WOULD INTERFERE WITH PLANTING, FERTILIZING OR MAINTENANCE OPERATIONS.

3. FERTILIZE ACCORDING TO SOIL TESTS. FERTILIZER NEEDS CAN BE DETERMINED BY A SOIL TESTING LABORATORY OR REGIONAL RECOMMENDATIONS CAN BE MADE BY COUNTY AGRICULTURAL EXTENSION AGENTS. FERTILIZER SHOULD BE WORKED INTO THE SOIL TO A DEPTH OF 3 INCHES WITH A DISC, SPRINGTOOTH HARROW OR OTHER SUITABLE EQUIPMENT. ON SLOPING LAND, THE FINAL HARROWING OR DISCING OPERATION SHOULD BE ON THE CONTOUR.

## INSTALLATION IN CHANNELS

1. SOD STRIPS IN WATERWAYS SHOULD BE LAID PERPENDICULAR TO THE DIRECTION OF FLOW. CARE SHOULD BE TAKEN TO BUTT ENDS OF STRIPS TIGHTLY (SEE FIGURE ABOVE).

2. AFTER ROLLING OR TAMPING, SOD SHOULD BE PEGGED OR STAPLED TO RESIST WASHOUT DURING THE ESTABLISHMENT PERIOD. MESH OR OTHER NETTING MAY BE PEGGED OVER THE SOD FOR EXTRA PROTECTION IN CRITICAL AREAS.

## GENERAL INSTALLATION (VA. DEPT. OF CONSERVATION, 1992)

1. SOD SHOULD NOT BE CUT OR LAID IN EXCESSIVELY WET OR DRY WEATHER. SOD ALSO SHOULD NOT BE LAID ON SOIL SURFACES THAT ARE FROZEN.

2. DURING PERIODS OF HIGH TEMPERATURE, THE SOIL SHOULD BE LIGHTLY IRRIGATED IMMEDIATELY PRIOR TO LAYING THE SOD, TO COOL THE SOIL AND REDUCE ROOT BURNING AND DIEBACK.

3. THE FIRST ROW OF SOD SHOULD BE LAID IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO AND BUTTING TIGHTLY AGAINST EACH OTHER. LATERAL JOINTS SHOULD BE STAGGERED TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. CARE SHOULD BE EXERCISED TO ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE DRYING OF THE ROOTS (SEE FIGURE ABOVE).

4. ON SLOPES 3:1 OR GREATER, OR WHEREVER EROSION MAY BE A PROBLEM, SOD SHOULD BE LAID WITH STAGGERED JOINTS AND SECURED BY STAPLING OR OTHER APPROVED METHODS. SOD SHOULD BE INSTALLED WITH THE LENGTH PERPENDICULAR TO THE SLOPE (ON CONTOUR).

5. AS SODDING OF CLEARLY DEFINED AREAS IS COMPLETED, SOD SHOULD BE ROLLED OR TAMPED TO PROVIDE FIRM CONTACT BETWEEN ROOTS AND SOIL.

6. AFTER ROLLING, SOD SHOULD BE IRRIGATED TO A DEPTH SUFFICIENT THAT THE UNDERSIDE OF THE SOD PAD AND THE SOIL 4 INCHES BELOW THE SOD IS THOROUGHLY WET.

7. UNTIL SUCH TIME A GOOD ROOT SYSTEM BECOMES DEVELOPED, IN THE ABSENCE OF ADEQUATE RAINFALL, WATERING SHOULD BE PERFORMED AS OFTEN AS NECESSARY TO MAINTAIN MOIST SOIL TO A DEPTH OF AT LEAST 4 INCHES.

8. THE FIRST MOWING SHOULD NOT BE ATTEMPTED UNTIL THE SOD IS FIRMLY ROOTED, USUALLY 2–3 WEEKS. NOT MORE THAN ONE THIRD OF THE GRASS LEAF SHOULD BE REMOVED AT ANY ONE CUTTING.

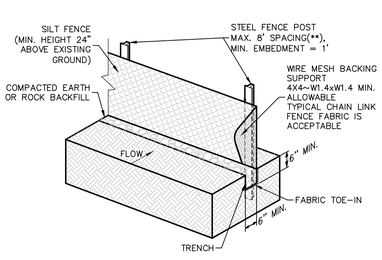
## INSPECTION AND MAINTENANCE GUIDELINES

1. SOD SHOULD BE INSPECTED WEEKLY AND AFTER EACH RAIN EVENT TO LOCATE AND REPAIR ANY DAMAGE.

2. DAMAGE FROM STORMS OR NORMAL CONSTRUCTION ACTIVITIES SUCH AS TIRE RUTS OR DISTURBANCE OF SWALE STABILIZATION SHOULD BE REPAIRED AS SOON AS PRACTICAL.

# SOD INSTALLATION DETAIL

NOT–TO–SCALE




**STEEL POSTS, WHICH SUPPORT THE SILT FENCE, SHOULD BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 1–FOOT DEEP AND SPACED NOT MORE THAN 8 FEET ON CENTER. WHERE WATER CONCENTRATES, THE MAXIMUM SPACING SHOULD BE 6 FEET. (RG–348, SECTION 1.4.3)

ISOMETRIC PLAN VIEW

## SILT FENCE

A SILT FENCE IS A BARRIER CONSISTING OF GEOTEXTILE FABRIC SUPPORTED BY METAL POSTS TO PREVENT SOIL AND SEDIMENT LOSS FROM A SITE. WHEN PROPERLY USED, SILT FENCES CAN BE HIGHLY EFFECTIVE AT CONTROLLING SEDIMENT FROM DISTURBED AREAS. THEY CAUSE RUNOFF TO POND, ALLOWING HEAVIER SOLIDS TO SETTLE OUT. IF NOT PROPERLY INSTALLED, SILT FENCES ARE NOT LIKELY TO BE EFFECTIVE.

THE PURPOSE OF A SILT FENCE IS TO INTERCEPT AND DETAIN WATER–BORN SEDIMENT FROM UNPROTECTED AREAS OF A LIMITED EXTENT. SILT FENCE IS USED DURING THE PERIOD OF CONSTRUCTION NEAR THE PERIMETER OF A DISTURBED AREA TO INTERCEPT SEDIMENT WHILE ALLOWING WATER TO PERCOLATE THROUGH. THIS FENCE SHOULD REMAIN IN PLACE UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. SILT FENCE SHOULD NOT BE USED WHERE THERE IS A CONCENTRATION OF WATER IN A CHANNEL OR DRAINAGE WAY. IF CONCENTRATED FLOW OCCURS AFTER INSTALLATION, CORRECTIVE ACTION MUST BE TAKEN SUCH AS PLACING A ROCK BERM IN THE AREAS OF CONCENTRATED FLOW.

SILT FENCING WITHIN THE SITE MAY BE TEMPORARILY MOVED DURING THE DAY TO ALLOW CONSTRUCTION ACTIVITY PROVIDED IT IS REPLACED AND PROPERLY ANCHORED TO THE GROUND AT THE END OF THE DAY. SILT EXCEEDS 70% OF THE PERIMETER OF THE SITE OR AROUND DRAINAGE WAYS SHOULD NOT BE MOVED AT ANY TIME.

## MATERIALS

1. SILT FENCE MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE, OR POLYAMIDE WOVEN OR NONWOVEN FABRIC. THE FABRIC SHOULD BE 36 INCHES, WITH A MINIMUM UNIT WEIGHT OF 4.5 OZ/YD, MULLEN BURST STRENGTH EXCEEDING 190 LB/IN2, ULTRAVIOLET STABILITY EXCEEDING 70%, AND MINIMUM APPARENT OPENING SIZE OF U.S. SIEVE NUMBER 30.

2. FENCE POSTS SHOULD BE MADE OF HOT ROLLED STEEL, AT LEAST 4 FEET LONG WITH TEE OR Y–BAR CROSS SECTION, SURFACE PAINTED OR GALVANIZED, MINIMUM WEIGHT 1.25 LB/FT, AND BRINDELL HARDNESS EXCEEDING 140.

3. WOVEN WIRE BACKING TO SUPPORT THE FABRIC SHOULD BE GALVANIZED 2" X 4" WELDED WIRE, 12 GAUGE MINIMUM.

## INSTALLATION

1. STEEL POSTS, WHICH SUPPORT THE SILT FENCE, SHOULD BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POSTS MUST BE EMBEDDED A MINIMUM OF 1–FOOT DEEP AND SPACED NOT MORE THAN 8 FEET ON CENTER. WHERE WATER CONCENTRATES, THE MAXIMUM SPACING SHOULD BE 6 FEET.

2. LAY OUT FENCING DOWN–SLOPE OF DISTURBED AREA, FOLLOWING THE CONTOUR AS CLOSELY AS POSSIBLE. THE FENCE SHOULD BE SITED SO THAT THE MAXIMUM DRAINAGE AREA IS ¼ ACRE/100 FEET OF FENCE.

3. THE TOE OF THE SILT FENCE SHOULD BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWN–SLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (E.G., PAVEMENT OR ROCK OUTCROP), WEIGHT FABRIC FLAP WITH 3 INCHES OF PEA GRAVEL ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.

4. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

5. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST. THERE SHOULD BE A 3–FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.

6. SILT FENCE SHOULD BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

## COMMON TROUBLE POINTS

1. FENCE NOT INSTALLED ALONG THE CONTOUR CAUSING WATER TO CONCENTRATE AND FLOW OVER THE FENCE.

2. FABRIC NOT SEATED SECURELY TO GROUND (RUNOFF PASSING UNDER FENCE).

3. FENCE NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND SIDES).

4. FENCE TREATING TOO LARGE AN AREA, OR EXCESSIVE CHANNEL FLOW (RUNOFF OVERTOPS OR COLLAPSES FENCE).

## INSPECTION AND MAINTENANCE GUIDELINES

1. INSPECT ALL FENCING WEEKLY.

2. REMOVE SEDIMENT WHEN BUILDUP APPROACHES 6 INCHES, BUT NOT TO EXCEED 50% OF HEIGHT.

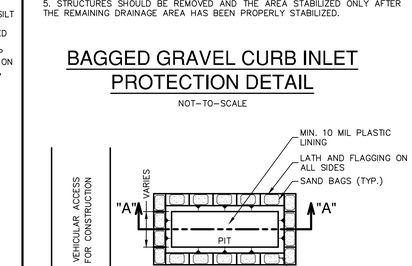
3. REPLACE TORN FABRIC OR INSTALL A SECOND LINE OF FENCING PARALLEL TO THE TORN SECTION.

4. REPLACE OR REPAIR SECTIONS CRUSHED OR COLLAPSED IN THE COURSE OF CONSTRUCTION ACTIVITY. IF A SECTION OF FENCE IS OBSTRUCTING VEHICULAR ACCESS, CONSIDER RELOCATING IT TO A SPOT WHERE IT WILL PROVIDE EQUAL PROTECTION, BUT WILL NOT OBSTRUCT VEHICLES. A TRIANGULAR FILTER DIKE MAY BE PREFERABLE TO A SILT FENCE AT COMMON VEHICLE ACCESS POINTS.

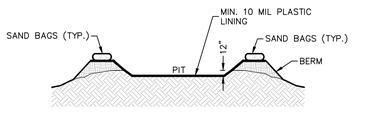
5. WHEN CONSTRUCTION IS COMPLETE, THE SEDIMENT SHOULD BE DISPOSED OF IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTATION AND THE PRIOR LOCATION OF THE SILT FENCE SHOULD BE REVEGETATED. THE FENCE ITSELF SHOULD BE DISPOSED OF IN AN APPROVED LANDFILL.

# SILT FENCE DETAIL

NOT–TO–SCALE




PLAN VIEW




SECTION "A-A"

## GENERAL NOTES

1. DETAIL ABOVE ILLUSTRATES MINIMUM DIMENSIONS. PIT CAN BE INCREASED IN SIZE DEPENDING ON EXPECTED FREQUENCY OF USE.

2. WASHOUT PIT SHALL BE LOCATED IN AN AREA EASILY ACCESSIBLE TO CONSTRUCTION TRAFFIC.

3. WASHOUT PIT SHALL NOT BE LOCATED IN AREAS SUBJECT TO INUNDATION FROM STORM WATER RUNOFF.

4. LOCATE WASHOUT AREA AT LEAST 50 FEET FROM SENSITIVE FEATURES, STORM DRAINS, OPEN DITCHES OR WATER BODIES.

5. TEMPORARY CONCRETE WASHOUT FACILITY SHOULD BE CONSTRUCTED WITH SUFFICIENT QUANTITY AND VOLUME TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS.

## MATERIALS

PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10 MIL IN POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL.

## MAINTENANCE

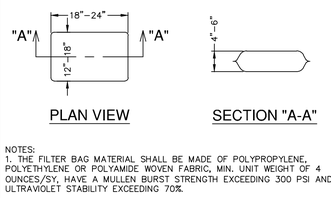
1. WHEN TEMPORARY CONCRETE WASHOUT FACILITIES ARE NO LONGER REQUIRED FOR THE WORK, THE HARDENED CONCRETE SHOULD BE REMOVED AND DISPOSED OF.

2. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF.

3. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCES CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE BACKFILLED AND REPAIRED.

# CONCRETE TRUCK WASHOUT PIT DETAIL

NOT–TO–SCALE




PLAN VIEW

SECTION "A-A"

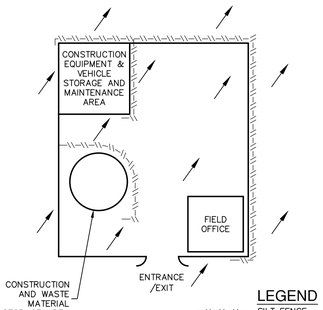
NOTES:
1. THE FILTER BAG MATERIAL SHALL BE MADE OF POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN FABRIC, MIN. UNIT WEIGHT OF 4 OUNCES/SY, HAVE A MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70%.

2. THE FILTER BAG SHALL BE FILLED WITH CLEAN, MEDIUM WASHED PEA GRAVEL TO COARSE GRAVEL (0.31 TO 0.75 INCH DIAMETER).

3. SAND SHALL NOT BE USED TO FILL THE FILTER BAGS.

# GRAVEL FILTER BAG DETAIL

NOT–TO–SCALE




# CONSTRUCTION STAGING AREA

NOT–TO–SCALE

THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE TPDES–STORM WATER POLLUTION PREVENTION PLAN (SWP3) REGULATIONS.

THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF THE SWP3 ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.

EXHIBIT 3

| NO. | REVISION | DATE |
|---|---|---|
| | | |

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7/22/2025

PAPE–DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

BRE PHASE 2, COLLECTOR
BEXAR COUNTY, TEXAS
SWPPP DETAILS

PLAT NO. 25-11800088
JOB NO. 11412–18
DATE JULY 2025
DESIGNER JP
CHECKED JH DRAWN RG
SHEET C8.10

Date: July 22, 2025, 1:37 PM – User ID: dmorris
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