CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT
MILITARY DRIVE

PROJECT NO. 23-03907

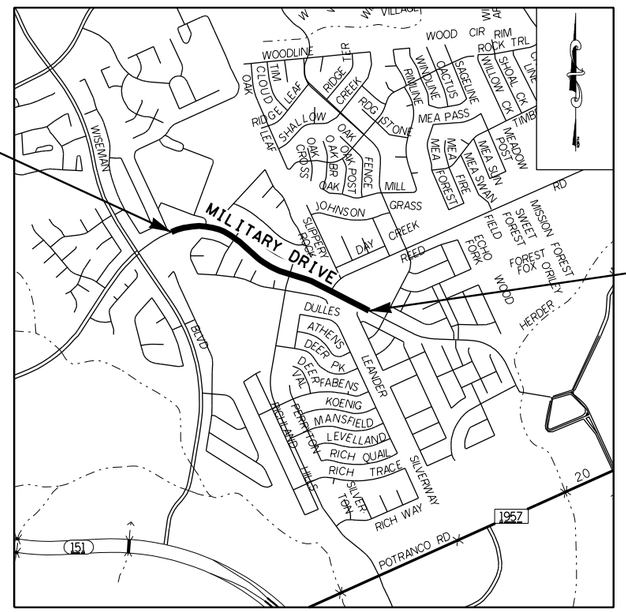
BASE BID

STREET WIDENING, MILL AND OVERLAY WITH CURBS, SUP, AND SIDEWALK,
MEDIAN, STORM SEWER, TRAFFIC SIGNAL UPGRADES/INSTALLATION, AND SIGNING AND PAVEMENT MARKINGS

ADD ALTERNATE BID 1

FLASHING SIGNAL INSTALLATION, SIDEWALK AND
PAVEMENT MARKINGS AT SEQUOIA HEIGHT INTERSECTION

BEGIN PROJECT
STA 219+18.42
X=2074137.87
Y=13717640.82



END PROJECT
STA 252+22.37
X=2077074.80
Y=13716308.16

SCALE: N. T. S.

NOTE

THE TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES IN THE PLANS INDICATE LOCATIONS WHERE UTILITY INFORMATION SHOWN IS KNOWN TO FALL OFF OR EXCEED THE STATED TYPICAL QUALITY LEVEL.

STORM DRAINAGE MAINS	QLC
SANITARY SEWER MAINS	QLC
WATER DISTRIBUTION MAINS	QLC
NATURAL GAS MAINS	QLC
OVERHEAD ELECTRIC LINES	QLC
UNDERGROUND ELECTRIC LINES	QLC
UNDERGROUND CATV (SBC) LINES	QLC
UNDERGROUND TELECOMMUNICATION LINES	QLC
ALL UNDERGROUND UTILITY SERVICE LINES	QLC

CLASSIFICATION:	SECONDARY ARTERIAL, TYPE A.
DESIGN SPEED:	35 MPH
ADT:	8995 (2019)
AREA OF DISTURBED SOIL:	2.394 ACRE

REGISTERED ACCESSIBILITY SPECIALIST (RAS)
INSPECTION REQUIRED. TDLR NO. TABS2025017879

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

PRIME: consor F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

LAMB-STAR
LAMB-STAR ENGINEERING, L.L.C.
3801 PARKWOOD BLVD. STE. 550
FRISCO, TX 75034
PH 214-440-3600
TBPLS # 10048300

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
4350 Lockhill Selma Road, Suite 100 • San Antonio, Texas 78249 • 210.494.5511

DOUCET
A Kleinfelder Company

META ENGINEERING
TBPE REG. # F-22397
13438 BANDERA ROAD, SUITE 201 - HELOTES, TX 78023 - (210) 874-6666

CITY OF SAN ANTONIO — TEXAS

PUBLIC WORKS

THROUGH INNOVATION AND DEDICATION, WE BUILD AND MAINTAIN SAN ANTONIO'S INFRASTRUCTURE

INDEX OF SHEETS

SHEET NO.			GENERAL
1			TITLE SHEET
2-3			INDEX OF SHEETS
4-5			PROJECT LAYOUT
6			SURVEY CONTROL INDEX SHEET
7			HORIZONTAL AND VERTICAL CONTROL DETAIL SHEET
8-9			TYPICAL SECTIONS (EXISTING)
10-13			TYPICAL SECTIONS (PROPOSED)
14			CITY OF SAN ANTONIO GENERAL NOTES
15			SUPPLEMENTAL GENERAL NOTES
16-22			SUMMARY OF QUANTITIES

SHEET NO.			TRAFFIC CONTROL PLAN
23			SCHEDULE OF TRAFFIC CONTROL AND ADVANCED WARNING DEVICES
24-25			TRAFFIC CONTROL SEQUENCE OF WORK NARRATIVE
26-47			TRAFFIC CONTROL TYPICAL SECTIONS
48-70			TCP LAYOUT PHASE 2
71-82			TCP LAYOUT PHASE 3
83-94			TCP LAYOUT PHASE 4
95-106			TCP LAYOUT PHASE 7
107-108			TEMPORARY SIGNAL LAYOUT @ RICHLAND HILLS DR
109			TEMPORARY SIGNAL SIGNING AND PHASING @ RICHLAND HILLS DR
110			TEMPORARY SIGN DETAILS @ RICHLAND HILLS DR
111			TEMPORARY CONDUIT AND CONDUCTOR SCHEDULE @ RICHLAND HILLS DR

SHEET NO.			TRAFFIC CONTROL STANDARDS
112-123	*	A	BC (1)-21 THRU BC (12)-21
124	*	A	WZ (TD)-17
125	*	A	WZ(STPM)-23
126	*	A	WZ(UL)-13
127	*	A	WZ(RCD)-13
128-129	*	A	WZ(BTS-1 & 2)-13
130	*	A	TCP(2-1)-18
131	*	A	TCP(2-4)-18
132	*	A	TCP(3-3)-14
133	*	A	TCP(3-4)-13
134-135	*	A	LPCB-13
136	*	A	TREATMENT FOR VARIOUS EDGE CONDITIONS

SHEET NO.			ROADWAY PLANS
137-138			HORIZONTAL CONTROL DATA
139			VERTICAL CONTROL DATA
140-142			PLAN AND PROFILE
143A			PLAN AND PROFILE (ADD ALT)
144-149			PLAN AND PROFILE
150-152			INTERSECTION PLAN AND PROFILE
153-154			INTERSECTION LAYOUT
155A			INTERSECTION LAYOUT (ADD ALT)
156-157			INTERSECTION LAYOUT
158-167			MISCELLANEOUS ROADWAY DETAILS
168A			MISCELLANEOUS ROADWAY DETAILS (ADD ALT)
169-171			MISCELLANEOUS ROADWAY DETAILS

SHEET NO.			ROADWAY STANDARDS
172-173		A	MISCELLANEOUS CONSTRUCTION STANDARDS 1 AND 2
174		A	WHEELCHAIR RAMP STANDARDS
175-178	*	A	PED-18
179-181	*	A	PRD-13
182	#	A	BENCH PAD STANDARD DESIGN

SHEET NO.			DRAINAGE PLANS
183			EXTERNAL DRAINAGE AREA MAP
184-186			INTERNAL DRAINAGE AREA MAP
187-188			DRAINAGE SYSTEM LAYOUT
189			HYDROLOGIC DATA SHEET
190-193			HYDRAULIC DATA SHEETS
194-200			STORM DRAIN PLAN AND PROFILE
201-203			GRADING SHEETS
204-205			SPECIAL DRAINAGE DETAILS
206			GRADING XS
207-210			STORM DRAIN PROFILES (LATERALS)
211-212			SPECIAL JUNCTION BOX DETAIL

SHEET NO.			DRAINAGE STANDARDS
213		B	4-WAY INLET STANDARDS
214		B	4'X4'X4' JUNCTION BOX STANDARDS
215		B	5'X5'X5' JUNCTION BOX STANDARDS
216		B	6'X6'X6' JUNCTION BOX STANDARDS
217		B	7'X7'X7' JUNCTION BOX STANDARDS
218		B	1854Z 1854A4 ASSEMBLY - MANHOLE ENCASEMENT
219		B	PIPE BEDDING & MISCELLANEOUS DRAINAGE DETAILS
220		B	TYPE "B" INLET STANDARDS
221-223		B	TYPE "C" INLET (TYPE I & II) & INLET EXTENSION STANDARDS (1-3)
224	*	B	PB
225	*	B	PBGC
226	*	B	PDD
227-228	*	B	PSL (1-2)
229	*	B	MC-MD
230-232	*	B	PRD-13 (1-3)
233-235	*	B	SIDEWALK BRIDGE STANDARD
236	*	B	PW
237	*	B	BCS
238	*	B	ARMOR CURB SLOT
239	*	B	MSD
240	*	B	TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS

SHEET NO.	SWPP & ENVIRONMENTAL PLAN
241	STORM WATER POLLUTION GENERAL NOTES
242-243	STORM WATER POLLUTION PLAN (SWP3)
244	ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC)
245-249	SW3P PLANS
250-251	TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 1 & 2
252-256	TREE PRESERVATION PLAN
257-260	TREE PRESERVATION TABLE
261	TREE PRESERVATION DETAILS

SHEET NO.	LANDSCAPING PLAN
262	OVERALL LANDSCAPE PLAN
263-266	LANDSCAPE PLAN
267	LANDSCAPE DETAILS
268	PLANT PALETTE
269	GENERAL LANDSCAPE NOTES
270	IRIRIGATION NOTES
271-274	IRRIGATION PLAN
275	IRRIGATION DETAILS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

[A] THE STANDARD SHEETS SPECIICALLY IDENTIFIED ON THIS SHEET HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED
PROFESSIONAL ENGINEER

5-17-25

[B] THE STANDARD SHEETS SPECIICALLY IDENTIFIED ON THIS SHEET HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

* TXDOT STANDARD
\# VIA STANDARD

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

INDEX OF SHEETS

SHEET 1 OF 2

95 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG / CHKD. BY: EV	SHEET NO. 2 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71684\C_MD_S_IND01.dgn
8:30:23 AM
5/19/2025

5/19/2025 8:30:29 AM
c:\bms\pwe-useast-006\knerr.chris\dms71684\C_MD_S_IND01.dgn

INDEX OF SHEETS

SHEET NO.		TRAFFIC SIGNAL PLANS
276		CONDITION DIAGRAM @ WARREN HS
277		PROPOSED SIGNAL LAYOUT @ WARREN HS
278		CONDUIT AND CONDUCTOR SCHEDULE @ WARREN HS
279		ESTIMATE OF QUANTITIES AND EQUIPMENT DESCRIPTIONS @ WARREN HS
280		ELEVATIONS @ WARREN HS
281A		CONDITION DIAGRAM @ SEQUOIA HEIGHT
282A		PROPOSED SIGNAL LAYOUT @ SEQUOIA HEIGHT
283A		CONDUIT AND CONDUCTOR SCHEDULE @ SEQUOIA HEIGHT
284A		ESTIMATE OF QUANTITIES AND EQUIPMENT DESCRIPTIONS @ SEQUOIA HEIGHT
285A		ELEVATIONS @ SEQUOIA HEIGHT
286A		PROPOSED SIGN DETAILS @ SEQUOIA HEIGHT
287		CONDITION DIAGRAM @ RICHLAND HILLS DR
288		PROPOSED SIGNAL LAYOUT @ RICHLAND HILLS DR
289		CONDUIT AND CONDUCTOR SCHEDULE @ RICHLAND HILLS DR
290		ESTIMATE OF QUANTITIES AND EQUIPMENT DESCRIPTIONS @ RICHLAND HILLS DR
291		ELEVATIONS @ RICHLAND HILLS DR
292		PROPOSED SIGN DETAILS @ RICHLAND HILLS DR
293		CONDITION DIAGRAM @ REED RD
294		PROPOSED SIGNAL LAYOUT @ REED RD
295		CONDUIT AND CONDUCTOR SCHEDULE @ REED RD
296		ESTIMATE OF QUANTITIES AND EQUIPMENT DESCRIPTIONS @ REED RD
297		ELEVATIONS @ REED RD
298		PROPOSED SIGN DETAILS @ REED RD
299		TYPE 332 CABINET FOUNDATION
300		BATTERY BACKUP DETAIL

SHEET NO.		TRAFFIC SIGNAL STANDARDS
301	* C	ED (1)-25
302-309	* C	ED (3)-25 THRU ED (10)-25
310-311	* C	SMA-80 (1)-12 THRU SMA-80 (2)-12
312	* C	MA-C-12
313	* C	MA-C(ILSN)-12
314	* C	MA-D-12
315	* C	TS-FD-12
316	* C	LUM-A-12
317	* C	CFA-12
318-320	C	ILSN-1 THRU ILSN-3

SHEET NO.		SIGNING AND PAVEMENT MARKING PLANS
321		SIGNING AND PAVEMENT MARKING LAYOUTS
322A		SIGNING AND PAVEMENT MARKING LAYOUTS (ADD ALT)
323		SIGNING AND PAVEMENT MARKING LAYOUTS
324A		SIGNING AND PAVEMENT MARKING LAYOUTS (ADD ALT)
325		SIGNING AND PAVEMENT MARKING LAYOUTS
326A		SIGNING AND PAVEMENT MARKING LAYOUTS (ADD ALT)
327-328		SIGNING AND PAVEMENT MARKING LAYOUTS
329-333		SCHOOL ZONE LAYOUT

SHEET NO.		SIGNING AND PAVEMENT MARKING STANDARDS
334-337	D	BICYCLE PAVEMENT MARKINGS 1-4
338	D	GENERAL NOTES AND SIGN MMOUNTING
339	D	D3 STREET NAME SIGN MOUNTING
340	D	BLANK SIGN DETAILS
341	D	PAVEMENT MARKINGS WITH RAISED PAVEMENT MARKERS
342	D	TYPE II A-A REFELECTIVE MARKERS ON RAISED MEDIAN
343	D	TURN LANE PAVEMENT MARKINGS
344-345	D	TURN LANE DETAILS 1 & 2
346-347	D	TWO-WAY LEFT-TURN LANE DETAILS 1 & 2
348	D	TYPICAL CROSSWALK DETAILS

SHEET NO.		CROSS SECTIONS
349-372		MILITARY DRIVE CROSS SECTIONS

SHEET NO.		UTILITY LAYOUTS
373-377		UTILITY BASE MAP

STATE OF TEXAS
XIDUO WANG
143018
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

C THE STANDARD SHEETS SPECIICALLY IDENTIFIED ON THIS SHEET HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

STATE OF TEXAS
MIGUEL A SANCHEZ
95878
REGISTERED
PROFESSIONAL ENGINEER

05/21/2025

D THE STANDARD SHEETS SPECIICALLY IDENTIFIED ON THIS SHEET HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

* TXDOT STANDARD

consor F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

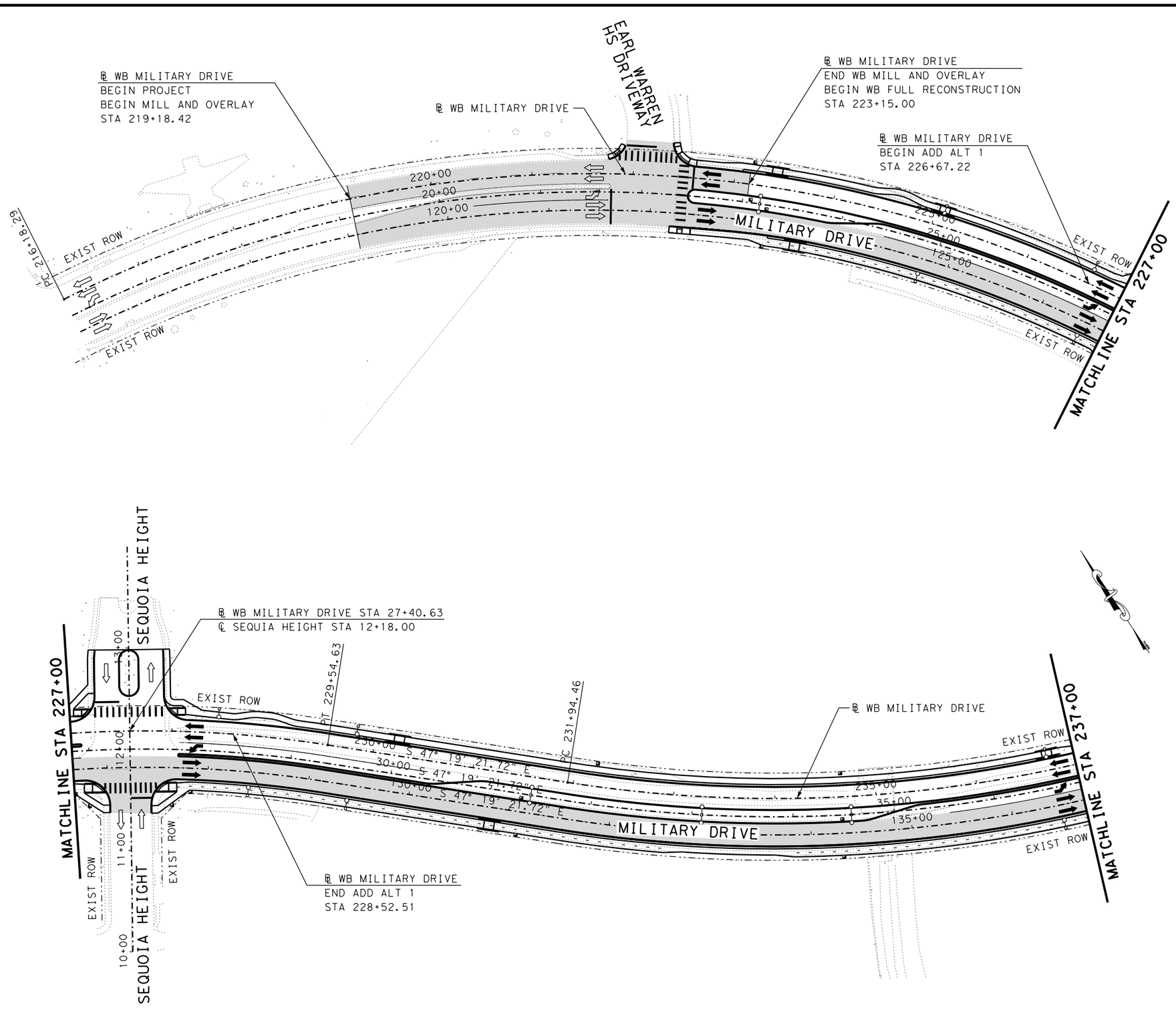
INDEX OF SHEETS

SHEET 2 OF 2

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 3 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71684\C_MD_S_IND02.dgn
8:31:32 AM
5/19/2025

5/19/2025 8:31:32 AM
c:\bms\pwe-useast-006\knerr.chris\dms71684\C_MD_S_IND02.dgn



LEGEND

- PROP TRAFFIC FLOW
- EXIST TRAFFIC FLOW
- EXIST RIGHT OF WAY
- MILL AND OVERLAY

0 50′ 100′

SCALE: 1" = 100′

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

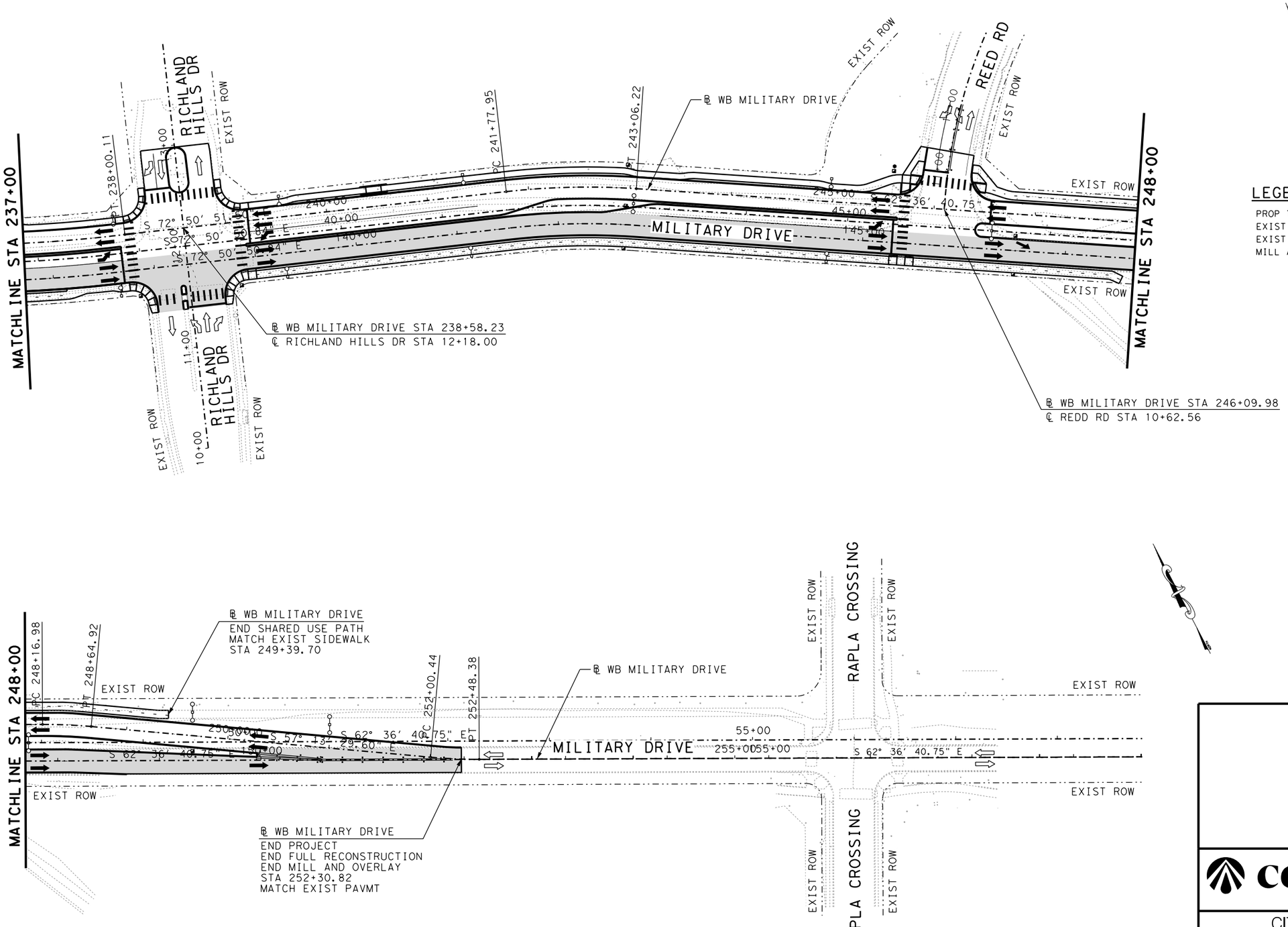
MILITARY DRIVE

PROJECT LAYOUTS

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 4 OF 377

c:\dms\pwe-useast-006\knerr.chris\dms71684\C_MD_S_GPL1.dgn
8:31:52 AM
5/19/2025

5/19/2025 8:31:52 AM
c:\dms\pwe-useast-006\knerr.chris\dms71684\C_MD_S_GPL1.dgn



STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

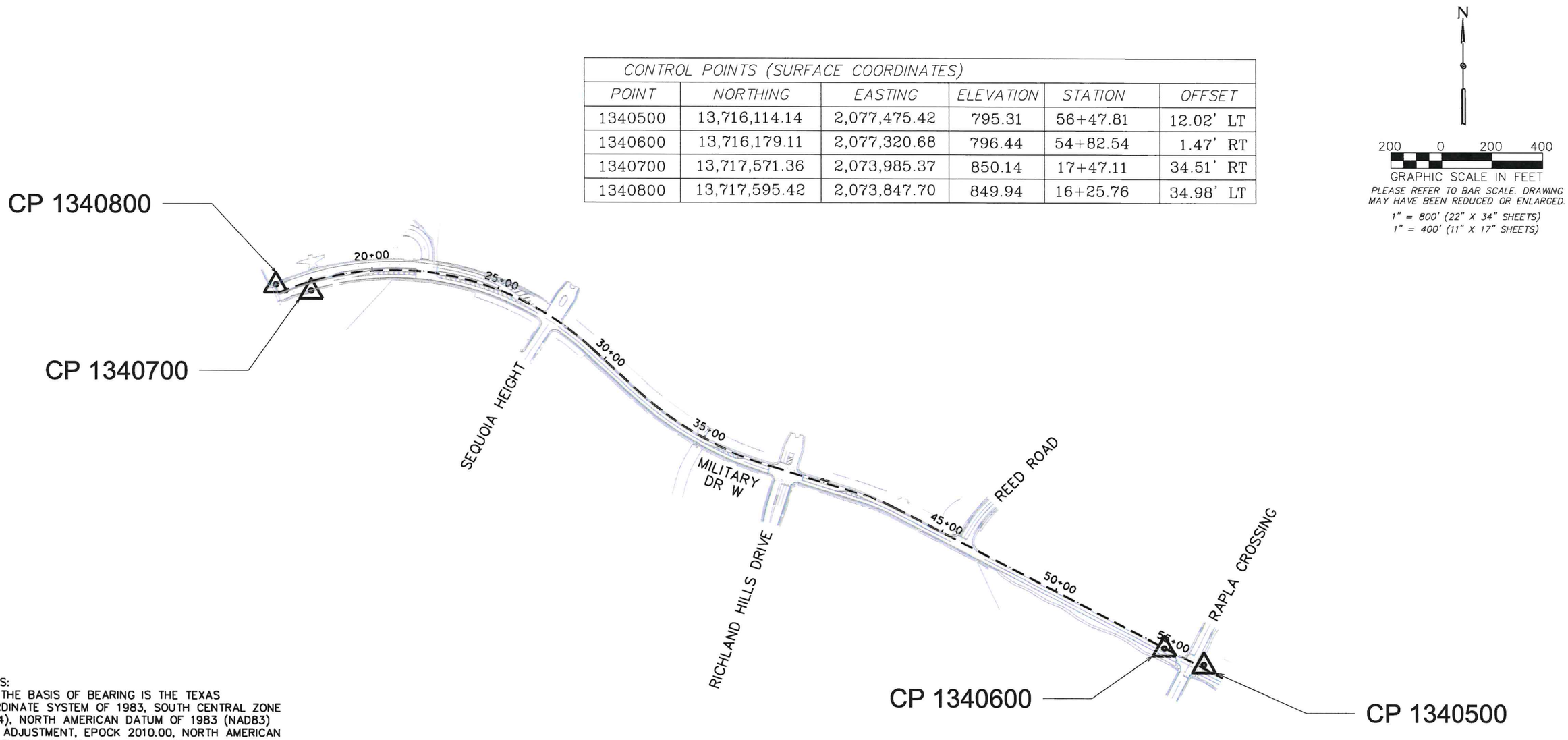
PROJECT LAYOUTS

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 5 OF 377

c:\dms\pwe-useast-006\knerr.chris\dms71684\C_MD_S_GPL2.dgn
8:32:03 AM
5/19/2025

5/19/2025 8:32:03 AM
c:\dms\pwe-useast-006\knerr.chris\dms71684\C_MD_S_GPL2.dgn

CONTROL POINTS (SURFACE COORDINATES)					
POINT	NORTHING	EASTING	ELEVATION	STATION	OFFSET
1340500	13,716,114.14	2,077,475.42	795.31	56+47.81	12.02' LT
1340600	13,716,179.11	2,077,320.68	796.44	54+82.54	1.47' RT
1340700	13,717,571.36	2,073,985.37	850.14	17+47.11	34.51' RT
1340800	13,717,595.42	2,073,847.70	849.94	16+25.76	34.98' LT



NOTES:
1. THE BASIS OF BEARING IS THE TEXAS COORDINATE SYSTEM OF 1983, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD83) 2011 ADJUSTMENT, EPOCK 2010.00, NORTH AMERICAN VERTICAL DATUM OF 1988, GEOID 18.

2. ALL COORDINATES AND DISTANCES ARE US SURVEY FEET, DISPLAYED IN SURFACE VALUES AND MAY BE CONVERTED TO GRID BY MULTIPLYING THE SURFACE VALUES BY A COMBINED SCALE FACTOR OF 0.999800028895, OR BY DIVIDING BY THE COMBINED ADJUSTMENT FACTOR OF 1.00017.

3. HORIZONTAL AND VERTICAL CONTROL VALUES WERE ESTABLISHED USING RTK GPS OBSERVATIONS ON THE LEICA SMARTNET

4. CONTROL POINT STATIONING AND OFFSET INFORMATION IS BASED OFF OF PROVIDED MILITARY DRIVE CENTERLINE

I HEREBY CERTIFY THAT THE HORIZONTAL AND VERTICAL DATA SHOWN HEREON WAS DETERMINED BY A FIELD SURVEY IN THE MONTH OF JULY, 2023 UTILIZING A STATIC NETWORK REFERENCED TO COR STATIONS AND IS CORRECTLY SHOWN HEREON.

STATE OF TEXAS
REGISTERED
AARON SCOTT BURRELL
5689
PROFESSIONAL
LAND SURVEYOR

8 May 2025

Aaron S. Burrell
Registered Professional Land Surveyor
No. 5689

CONTROL POINT LEGEND

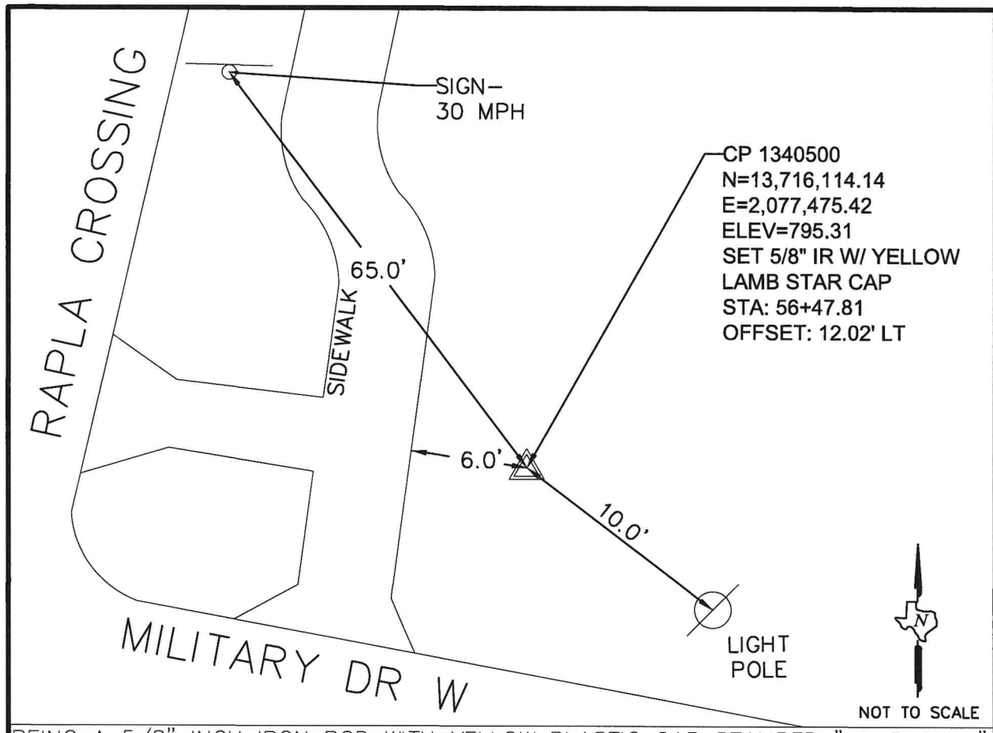
△ DENOTES PRIMARY CONTROL POINT (5/8" IRON ROD SET PLASTIC CAP STAMPED "LAMB-STAR"), UNLESS OTHERWISE NOTED

LAMB-STAR ENGINEERING, L.L.C.
18402 US HIGHWAY 281 N, SUITE 257
SAN ANTONIO, TEXAS 78259 (210) 469-0155
TEXAS REGISTERED ENGINEERING FIRM F-9073

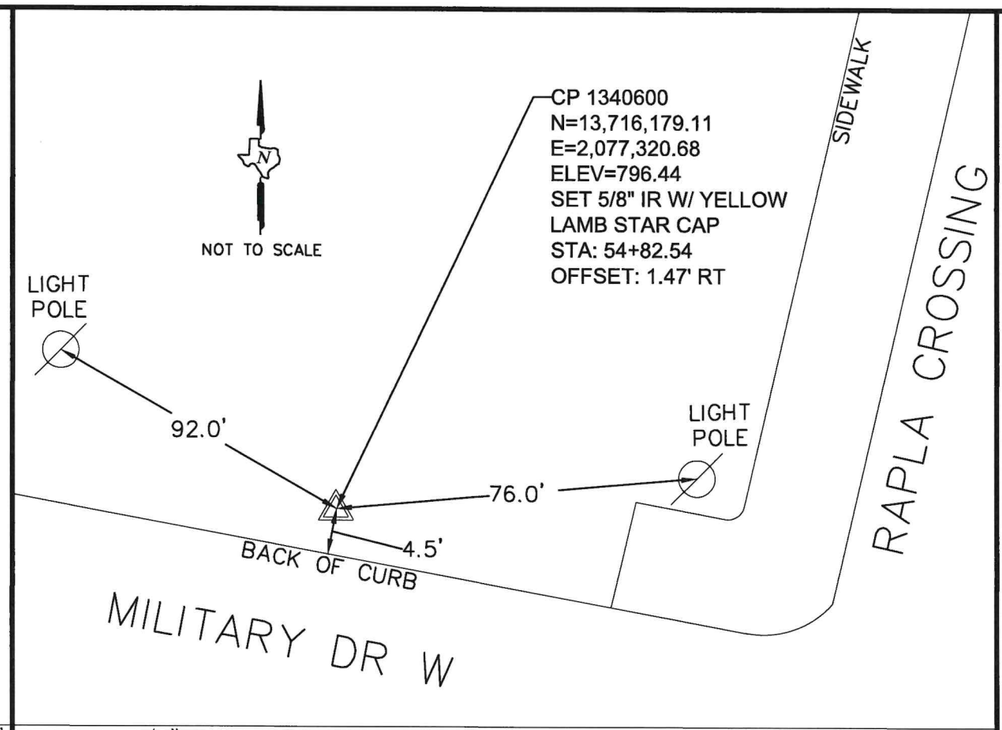
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DR W
SURVEY CONTROL INDEX SHEET

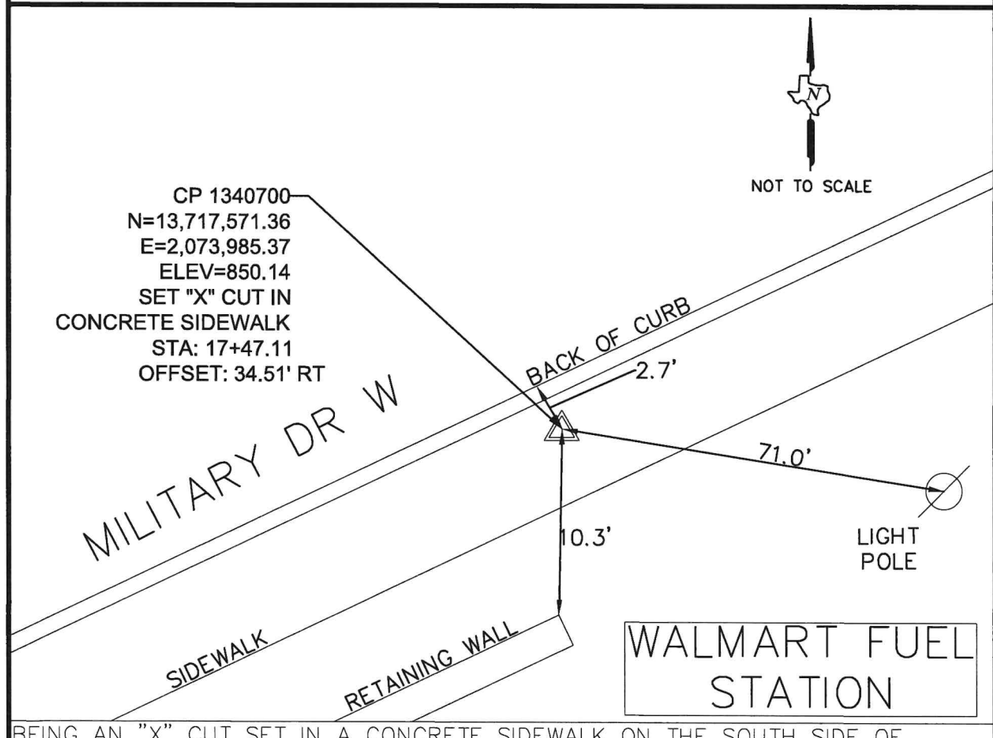
SHEET 1 OF 2	PROJECT NO.: XXXXXXXX	DATE: X/XX/2025
DRWN. BY:	DSGN. BY:	CHKD. BY: AB



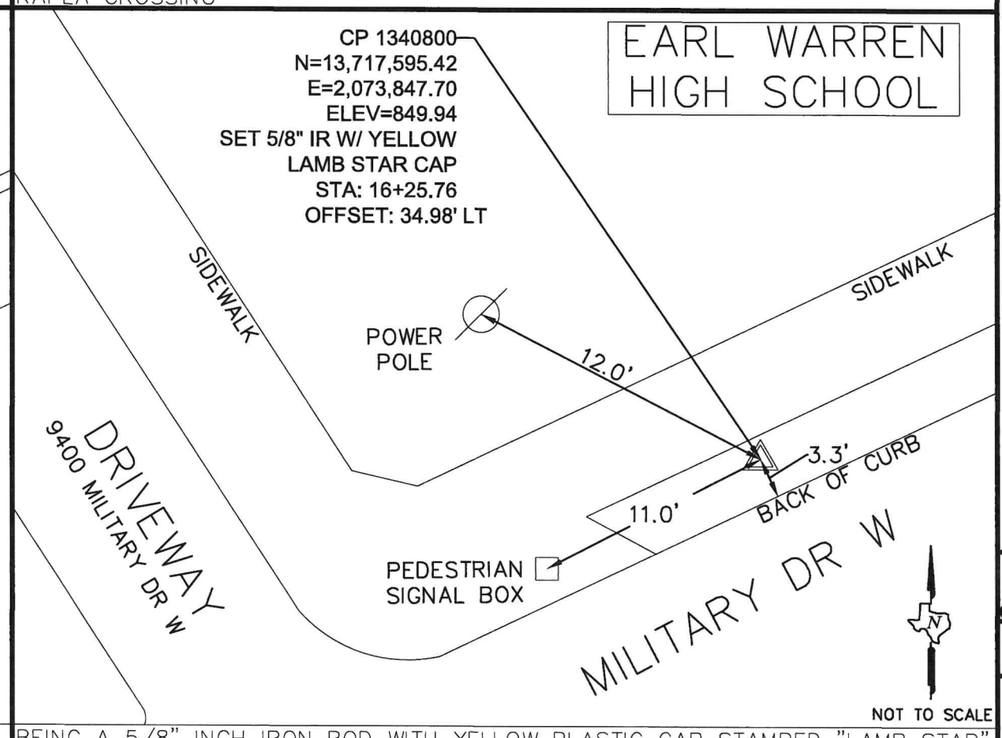
BEING A 5/8" INCH IRON ROD WITH YELLOW PLASTIC CAP STAMPED "LAMB STAR" SET ON THE NORTHEAST CORNER OF MILITARY DRIVE AND RAPLA CROSSING



BEING A 5/8" INCH IRON ROD WITH YELLOW PLASTIC CAP STAMPED "LAMB STAR" SET ON THE NORTH SIDE OF MILITARY DRIVE APPROXIMATELY 115 FEET WEST OF RAPLA CROSSING



BEING AN "X" CUT SET IN A CONCRETE SIDEWALK ON THE SOUTH SIDE OF MILITARY DRIVE APPROXIMATELY 750 FEET EAST OF HUNT LANE



BEING A 5/8" INCH IRON ROD WITH YELLOW PLASTIC CAP STAMPED "LAMB STAR" SET ON THE NORTH SIDE OF MILITARY DRIVE APPROXIMATELY 625 FEET EAST OF HUNT LANE

NOTES:

1. THE BASIS OF BEARING IS THE TEXAS COORDINATE SYSTEM OF 1983, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD83) 2011 ADJUSTMENT, EPOCK 2010.00, NORTH AMERICAN VERTICAL DATUM OF 1988, GEOID 18.

2. ALL COORDINATES AND DISTANCES ARE US SURVEY FEET, DISPLAYED IN SURFACE VALUES AND MAY BE CONVERTED TO GRID BY MULTIPLYING THE SURFACE VALUES BY A COMBINED SCALE FACTOR OF 0.999800028895, OR BY DIVIDING BY THE COMBINED ADJUSTMENT FACTOR OF 1.00017.

3. HORIZONTAL AND VERTICAL CONTROL VALUES WERE ESTABLISHED USING RTK GPS OBSERVATIONS ON THE LEICA SMARTNET

4. CONTROL POINT STATIONING AND OFFSET INFORMATION IS BASED OFF OF PROVIDED MILITARY DRIVE CENTERLINE

I HEREBY CERTIFY THAT THE HORIZONTAL AND VERTICAL DATA SHOWN HEREON WAS DETERMINED BY A FIELD SURVEY IN THE MONTH OF JULY, 2023 UTILIZING A STATIC NETWORK REFERENCED TO COR STATIONS AND IS CORRECTLY SHOWN HEREON.

STATE OF TEXAS
REGISTERED
AARON SCOTT BURRELL
5689
PROFESSIONAL
LAND SURVEYOR

8 May 2025

Aaron S. Burrell
Registered Professional Land Surveyor
No. 5689

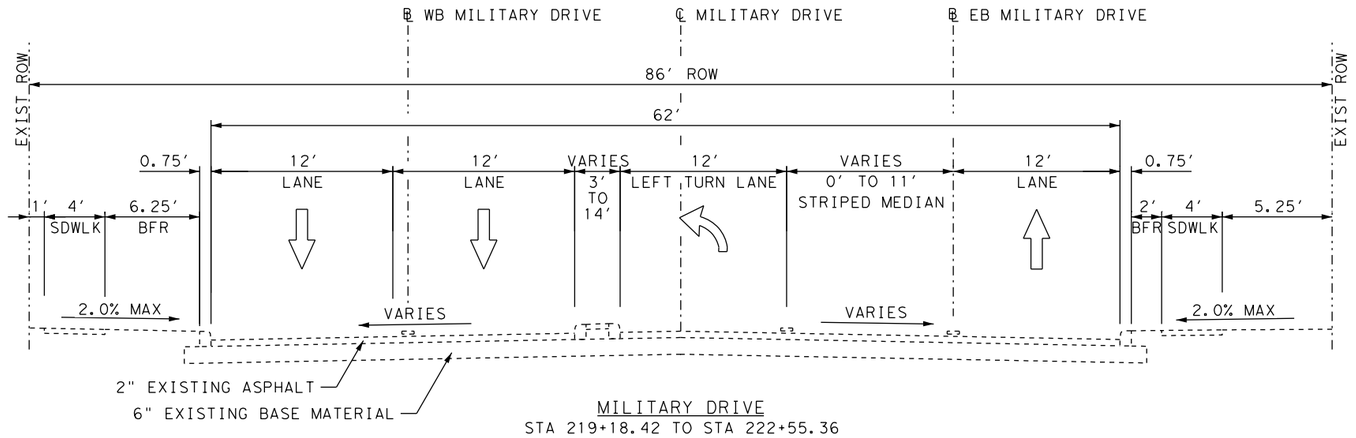
LAMB-STAR ENGINEERING, L.L.C.
18402 US HIGHWAY 281 N, SUITE 257
SAN ANTONIO, TEXAS 78259 (210) 469-0155
TEXAS REGISTERED ENGINEERING FIRM F-9073

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

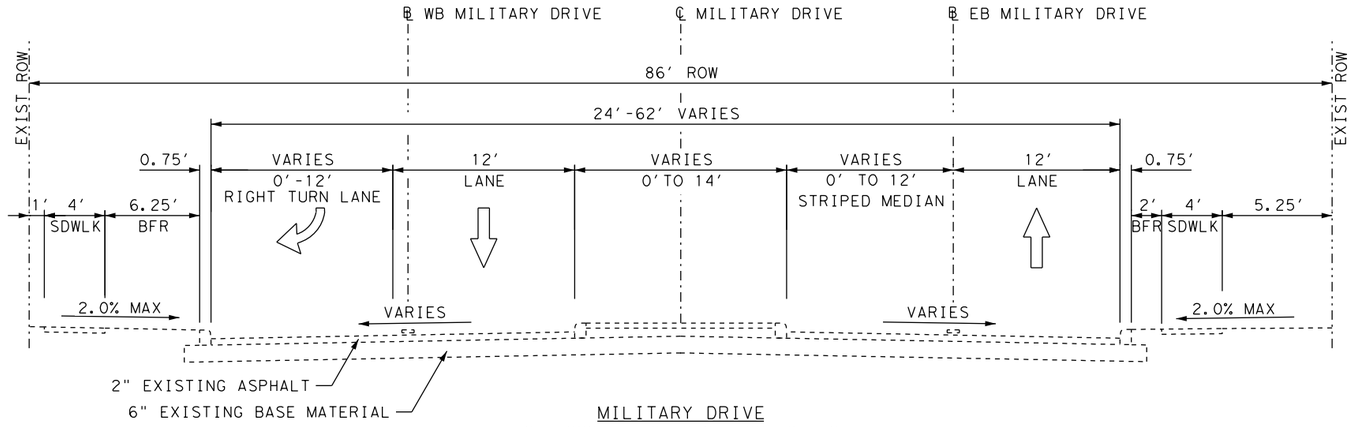
MILITARY DRIVE

HORIZONTAL AND VERTICAL CONTROL DETAIL SHEET

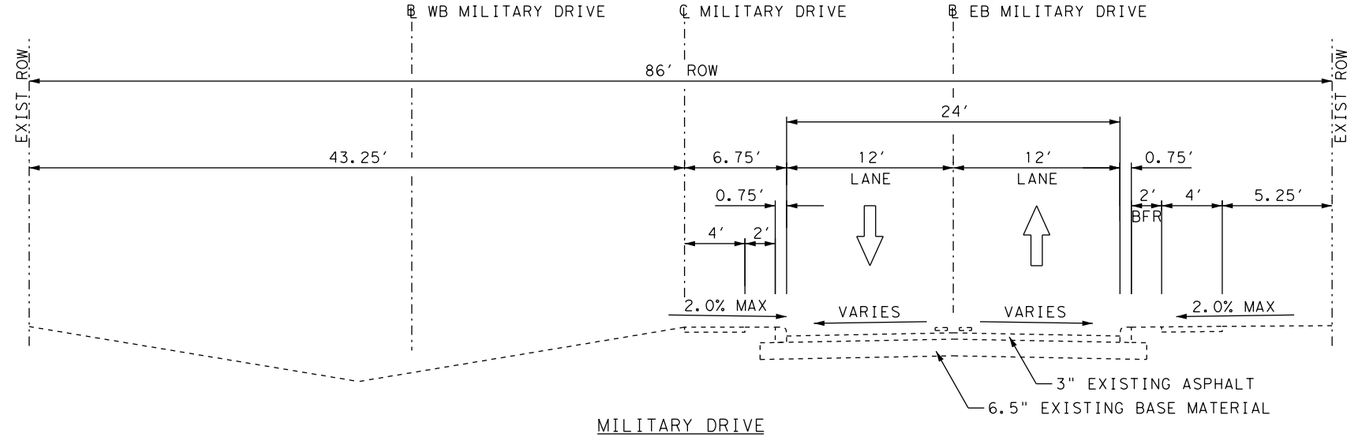
SHEET 2 OF 2	PROJECT NO.: XXXXXXXXX	DATE: X/XX/2025
DRWN. BY: KF	DSGN. BY:	CHKD. BY: AB



MILITARY DRIVE
STA 219+18.42 TO STA 222+55.36



MILITARY DRIVE
STA 222+55.36 TO STA 227+03.79



MILITARY DRIVE
STA 227+03.79 TO STA 235+18.19
STA 242+18.83 TO STA 252+22.45

NOTE

1. REFER TO GEOTECHNICAL REPORT FOR EXISTING PAVEMENT SECTIONS.
2. REFER TO CROSS SECTIONS FOR UTILITY INFORMATION.

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

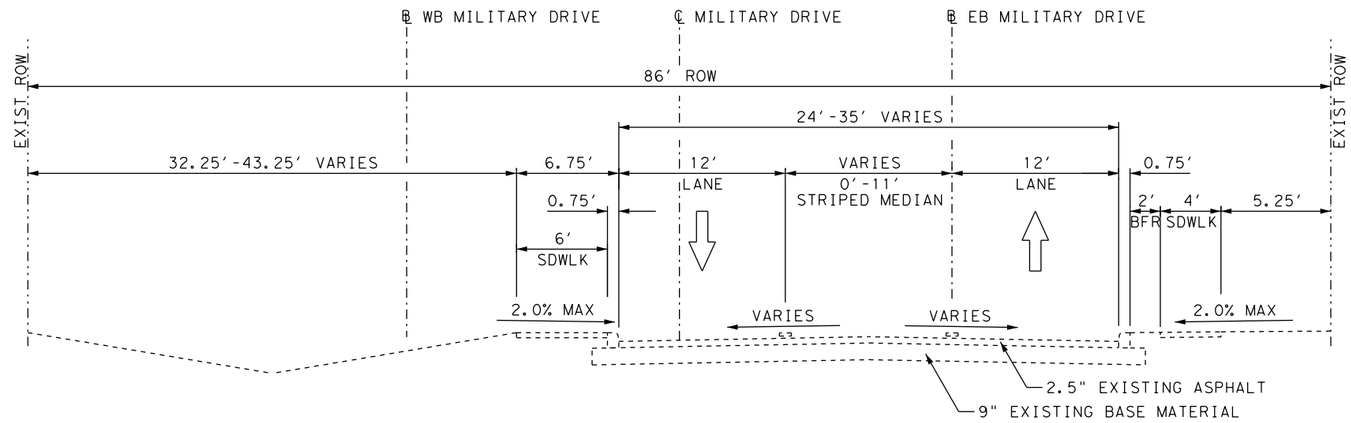
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

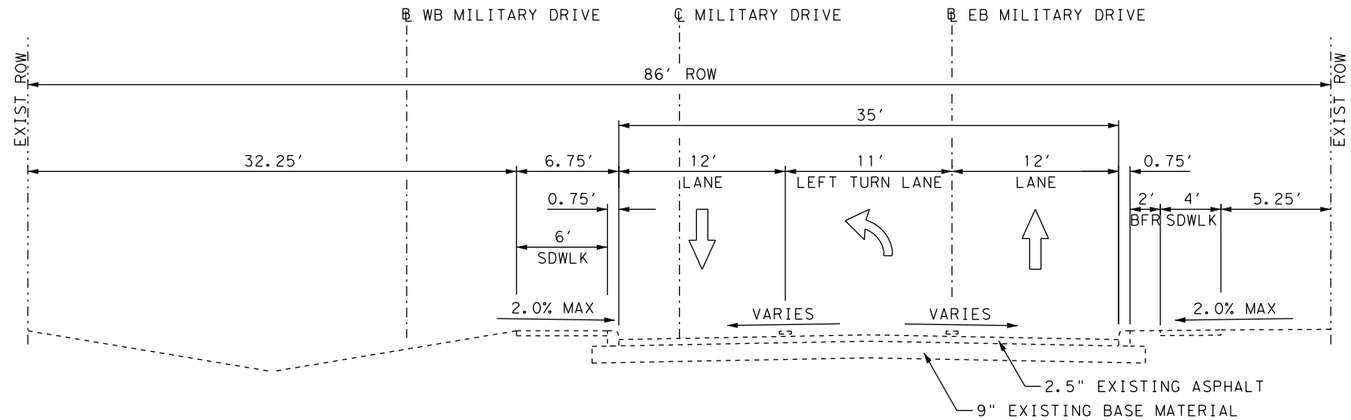
TYPICAL SECTIONS (EXISTING)

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 8 OF 377

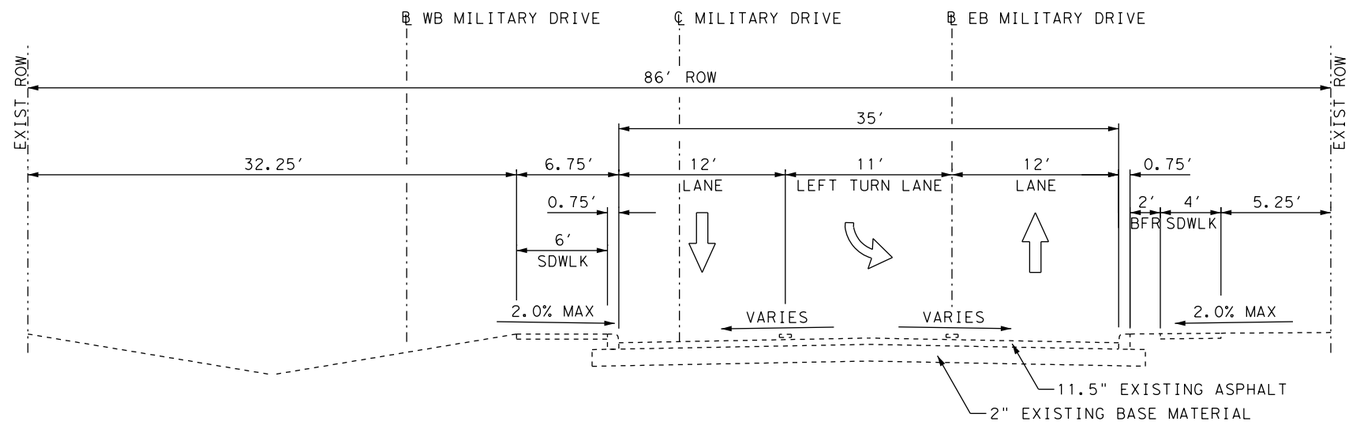
c:\dms\pwe-useast-006\knerr.chris\dms71684\C_MD_S_RTSE01.dgn
8:32:13 AM
5/19/2025



MILITARY DRIVE
STA 235+18.19 TO STA 236+91.07
STA 240+70.90 TO STA 242+18.83



MILITARY DRIVE
STA 236+91.07 TO STA 238+58.24



MILITARY DRIVE
STA 238+58.24 TO STA 240+70.90

NOTE

1. REFER TO GEOTECHNICAL REPORT FOR EXISTING PAVEMENT SECTIONS.
2. REFER TO CROSS SECTIONS FOR UTILITY INFORMATION.

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

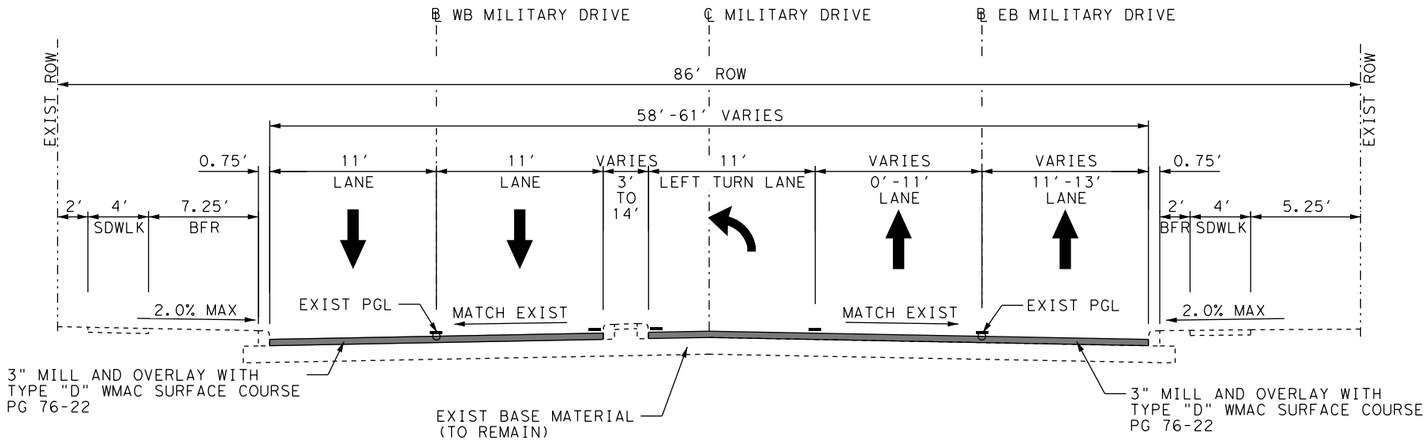
MILITARY DRIVE

TYPICAL SECTIONS (EXISTING)

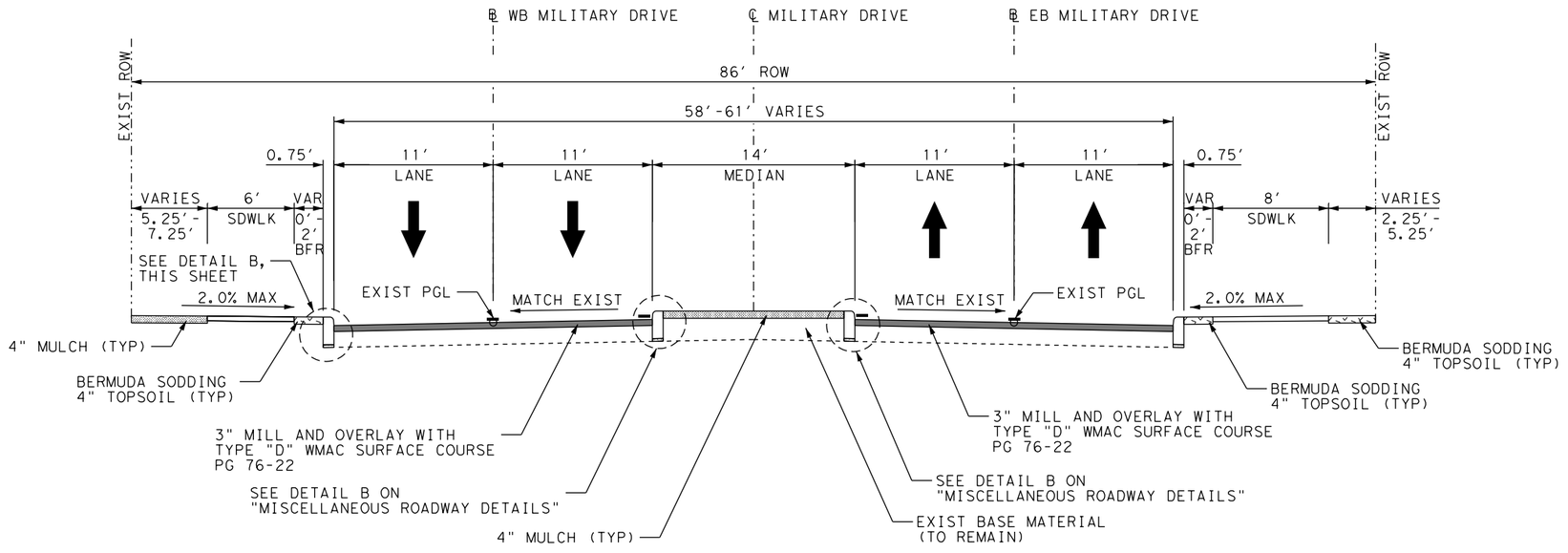
95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 9 OF 377

c:\dms\pwe-useast-006\knerr.chris\dms71684\C_MD_S_RTSE02.dgn
8:32:31 AM
5/19/2025

5/19/2025 8:32:31 AM
c:\dms\pwe-useast-006\knerr.chris\dms71684\C_MD_S_RTSE02.dgn



MILITARY DRIVE
STA 219+18.43 TO STA 221+79.53



MILITARY DRIVE
STA 222+55.36 TO STA 223+15.00

NOTES:

1. LEAVE A UNIFORM SURFACE OF PLANED PAVEMENT FREE OF ASPHALTIC MATERIAL.
2. REPAIR PAVEMENT FAILURES IN ACCORDANCE WITH "MISCELLANEOUS ROADWAY DETAILS" SHEET FOR FLEXIBLE PAVEMENT REPAIRS AND/OR AS DIRECTED BY THE ENGINEER.
3. FOR DETAILS NOT SHOWN HEREIN, SEE ROADWAYS PLANS, SIGNING AND PAVEMENT MARKING PLANS, AND APPLICABLE STANDARDS.
4. SEE "CROSS SECTIONS" SHEETS FOR FURTHER INFORMATION.
5. REFER TO "MISCELLANEOUS ROADWAY DETAILS" SHEET FOR MEDIAN DETAILS.
6. FOR RETAINING WALL LIMITS SEE ROADWAY PLANS

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER

5/19/2025

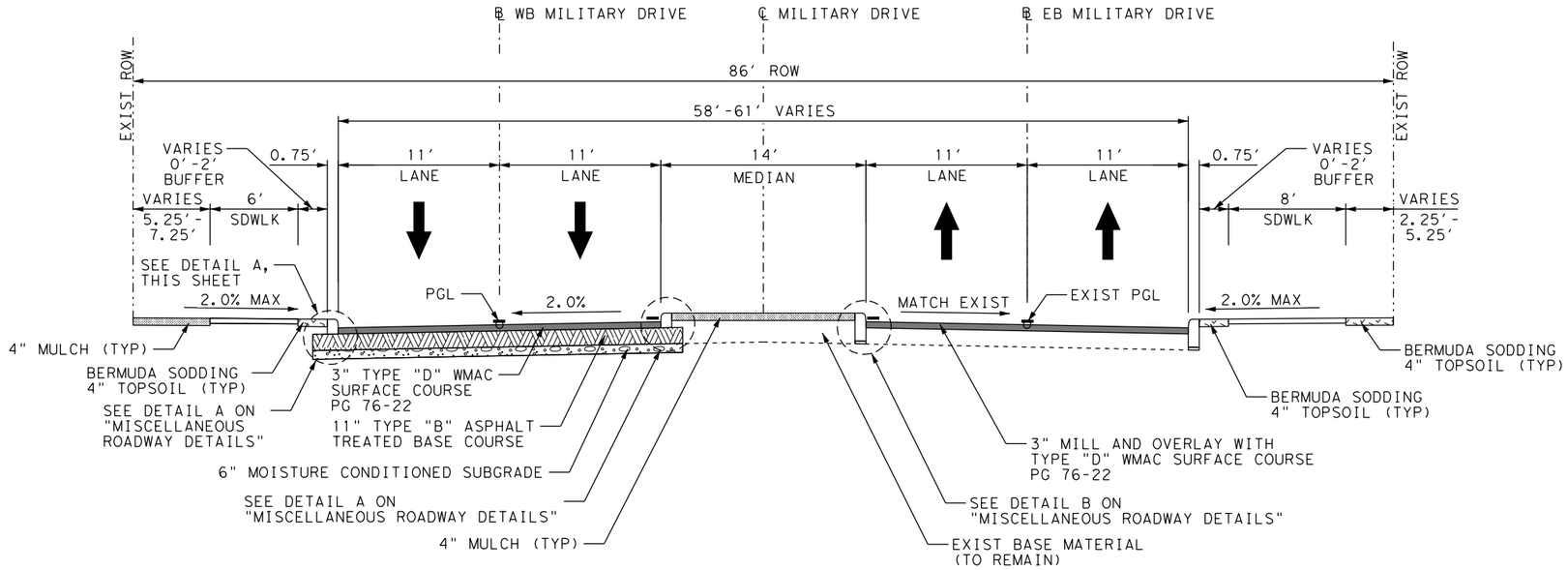
consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

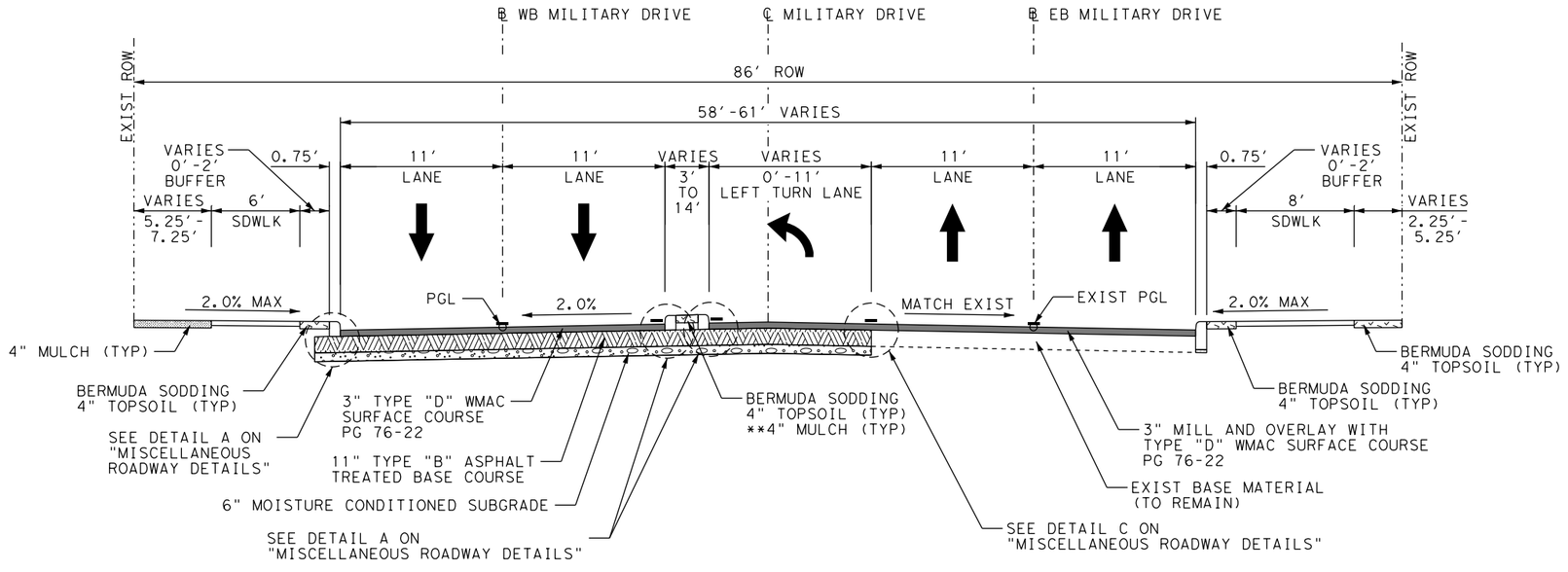
MILITARY DRIVE

TYPICAL SECTIONS (PROPOSED)

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 10 OF 377



MILITARY DRIVE
STA 221+16.91 TO STA 234+84.32
STA 223+15.00 TO STA 234+95.61
STA 242+29.02 TO STA 242+69.77



MILITARY DRIVE
**STA 223+95.61 TO STA 224+45.10
STA 224+45.10 TO STA 227+10.26
**STA 234+84.32 TO STA 235+35.38
STA 235+35.38 TO STA 237+95.32
**STA 242+69.77 TO STA 243+19.27
STA 243+19.27 TO STA 245+64.77

NOTES:

1. LEAVE A UNIFORM SURFACE OF PLANED PAVEMENT FREE OF ASPHALTIC MATERIAL.
2. REPAIR PAVEMENT FAILURES IN ACCORDANCE WITH "MISCELLANEOUS ROADWAY DETAILS" SHEET FOR FLEXIBLE PAVEMENT REPAIRS AND/OR AS DIRECTED BY THE ENGINEER.
3. FOR DETAILS NOT SHOWN HEREIN, SEE ROADWAYS PLANS, SIGNING AND PAVEMENT MARKING PLANS, AND APPLICABLE STANDARDS.
4. SEE "CROSS SECTIONS" SHEETS FOR FURTHER INFORMATION.
5. REFER TO "MISCELLANEOUS ROADWAY DETAILS" SHEET FOR MEDIAN DETAILS.
6. FOR RETAINING WALL LIMITS SEE ROADWAY PLANS

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

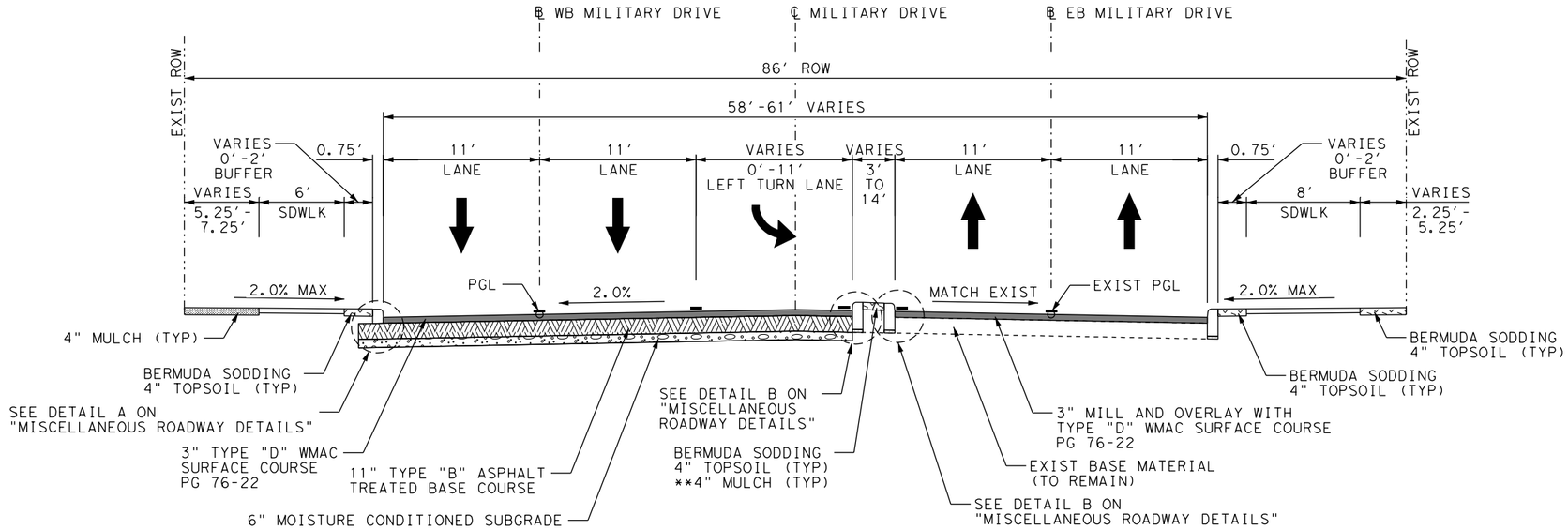
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

TYPICAL SECTIONS (PROPOSED)

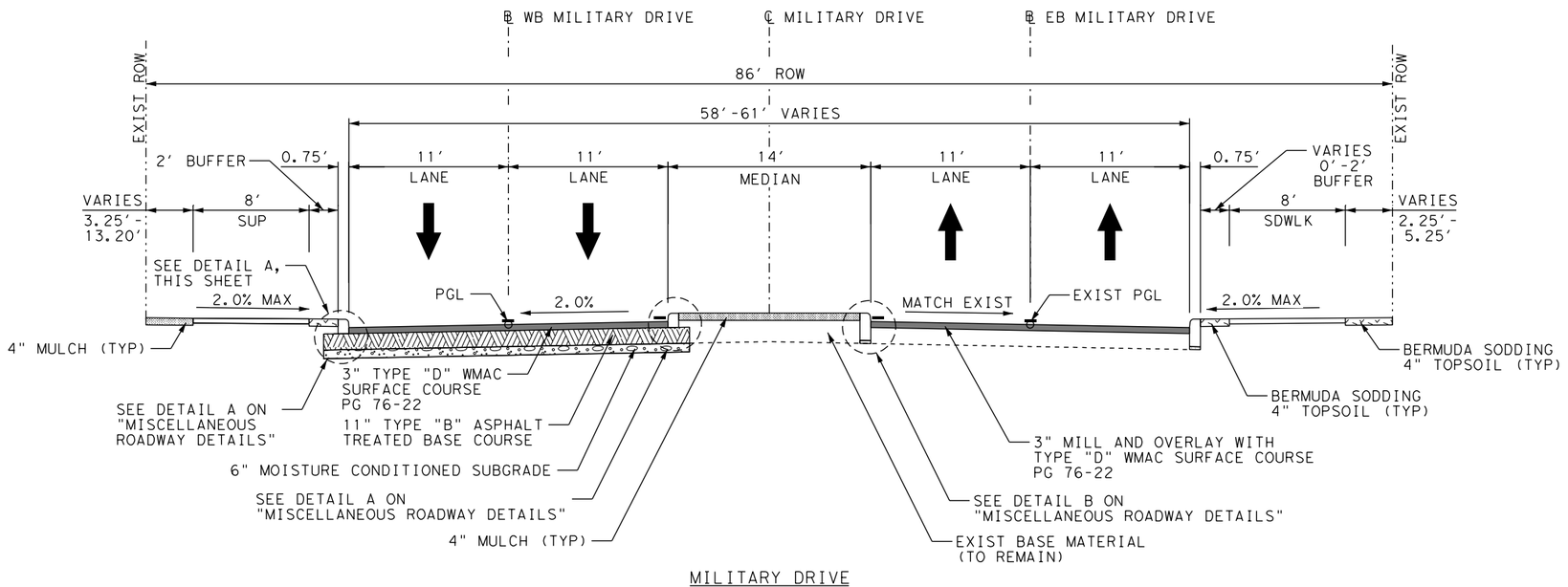
95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 11 OF 377

c:\dms\pwe-useast-006\knerr.chris\dms71684\C_MD_S_RTSP02.dgn
8:32:57 AM
5/19/2025



MILITARY DRIVE

STA 228+06.42 TO STA 230+67.00
**STA 230+67.00 TO STA 231+16.91
STA 239+17.21 TO STA 241+76.87
**STA 241+76.87 TO STA 242+29.02
STA 248+31.02 TO STA 249+04.14



MILITARY DRIVE

STA 246+41.37 TO STA 248+16.98

NOTES:

1. LEAVE A UNIFORM SURFACE OF PLANED PAVEMENT FREE OF ASPHALTIC MATERIAL.
2. REPAIR PAVEMENT FAILURES IN ACCORDANCE WITH "MISCELLANEOUS ROADWAY DETAILS" SHEET FOR FLEXIBLE PAVEMENT REPAIRS AND/OR AS DIRECTED BY THE ENGINEER.
3. FOR DETAILS NOT SHOWN HEREIN, SEE ROADWAYS PLANS, SIGNING AND PAVEMENT MARKING PLANS, AND APPLICABLE STANDARDS.
4. SEE "CROSS SECTIONS" SHEETS FOR FURTHER INFORMATION.
5. REFER TO "MISCELLANEOUS ROADWAY DETAILS" SHEET FOR MEDIAN DETAILS.
6. FOR RETAINING WALL LIMITS SEE ROADWAY PLANS

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

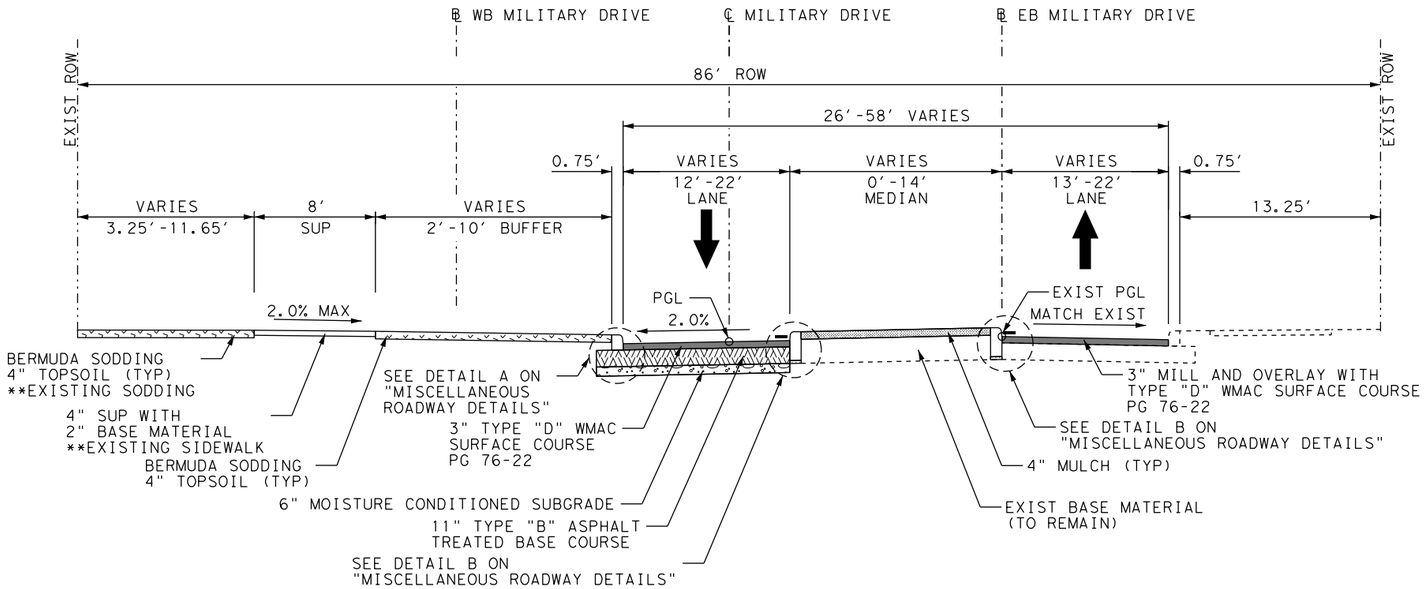
MILITARY DRIVE

TYPICAL SECTIONS (PROPOSED)

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 12 OF 377

c:\dms\pwe-useast-006\knerr.chris\dms71684\C_MD_S_RTSP03.dgn
8:33:09 AM
5/19/2025

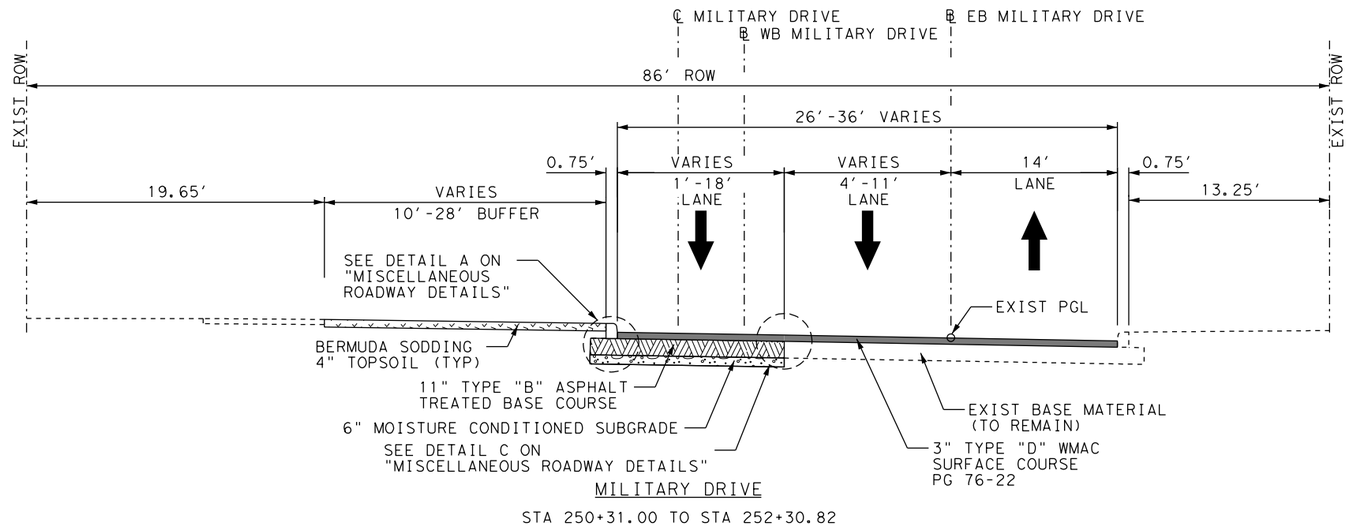
5/19/2025 8:33:09 AM
c:\dms\pwe-useast-006\knerr.chris\dms71684\C_MD_S_RTSP03.dgn



MILITARY DRIVE

STA 248+16.98 TO STA 249+39.32

**STA 249+39.32 TO STA 250+31.00



MILITARY DRIVE

STA 250+31.00 TO STA 252+30.82

NOTES:

1. LEAVE A UNIFORM SURFACE OF PLANED PAVEMENT FREE OF ASPHALTIC MATERIAL.
2. REPAIR PAVEMENT FAILURES IN ACCORDANCE WITH "MISCELLANEOUS ROADWAY DETAILS" SHEET FOR FLEXIBLE PAVEMENT REPAIRS AND/OR AS DIRECTED BY THE ENGINEER.
3. FOR DETAILS NOT SHOWN HEREIN, SEE ROADWAYS PLANS, SIGNING AND PAVEMENT MARKING PLANS, AND APPLICABLE STANDARDS.
4. SEE "CROSS SECTIONS" SHEETS FOR FURTHER INFORMATION.
5. REFER TO "MISCELLANEOUS ROADWAY DETAILS" SHEET FOR MEDIAN DETAILS.
6. FOR RETAINING WALL LIMITS SEE ROADWAY PLANS

SCALE: NTS

5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO

PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

TYPICAL SECTIONS (PROPOSED)

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 13 OF 377

c:\dms\pwe-useast-006\knerr.chris\dms71684\C_MD_S_RTSP04.dgn
8:33:18 AM
5/19/2025

5/19/2025 8:33:18 AM
c:\dms\pwe-useast-006\knerr.chris\dms71684\C_MD_S_RTSP04.dgn

GENERAL NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE CITY OF SAN ANTONIO STANDARD SPECIFICATIONS FOR CONSTRUCTION JUNE 2008, OR LATEST.
2. NO EXTRA PAYMENT SHALL BE ALLOWED FOR WORK CALLED FOR ON THE PLANS, BUT NOT INCLUDED IN THE BID PROPOSAL. THIS INCIDENTAL WORK WILL BE REQUIRED AND SHALL BE INCLUDED IN THE PAY ITEM TO WHICH IT RELATES.
3. THE CONTRACTOR SHALL PROVIDE ACCESS FOR THE DELIVERY OF MAIL BY THE U.S. POSTAL SERVICE.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL OR BETTER CONDITION ANY DAMAGE DONE TO EXISTING FENCES, CONCRETE ISLANDS, STREET PAVING, CURBS, SHRUBS, BUSHES OR DRIVEWAYS. (NO SEPARATE PAY ITEM).
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SEE THAT ALL SIGNS AND BARRICADES ARE PROPERLY INSTALLED AND MAINTAINED. ALL LOCATIONS AND DISTANCES WILL BE DECIDED UPON IN THE FIELD BY THE CONTRACTOR, USING THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES". THE CITY'S CONSTRUCTION INSPECTOR AND TRAFFIC ENGINEERING REPRESENTATIVE WILL ONLY BE RESPONSIBLE TO INSPECT BARRICADES AND SIGNS. IF, IN THE OPINION OF THE TRAFFIC ENGINEERING REPRESENTATIVE AND THE CONSTRUCTION INSPECTOR, THE BARRICADES AND SIGNS DO NOT CONFORM TO ESTABLISHED STANDARDS OR ARE INCORRECTLY PLACED OR ARE INSUFFICIENT IN QUANTITY TO PROTECT THE GENERAL PUBLIC, THE CONSTRUCTION INSPECTOR SHALL HAVE THE OPTION TO STOP OPERATIONS UNTIL SUCH TIME AS THE CONDITIONS ARE CORRECTED.
6. IF THE NEED ARISES, ADDITIONAL BARRICADES AND DIRECTIONAL DEVICES MAY BE ORDERED BY THE TRAFFIC ENGINEERING REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.
7. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.171 C.P.S. MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.
8. CONTRACTOR SHALL NOTIFY THE CITY INSPECTOR TWENTY FOUR (24) HOURS PRIOR TO BACKFILL OF ANY UTILITY TRENCHES TO SCHEDULE FOR DENSITY TEST AS REQUIRED.
9. CONTRACTOR SHALL PRESERVE ALL CONSTRUCTION STAKES, MARKS, ETC. IF ANY ARE DESTROYED OR REMOVED BY THE CONTRACTOR OR HIS EMPLOYEES, THEY SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
10. CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES PRIOR TO CONSTRUCTION TO DETERMINE THE LOCATION OF EXISTING UTILITIES. CONTRACTOR SHALL NOTIFY THE FOLLOWING AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO EXCAVATION OPERATION:
    - SAN ANTONIO WATER SYSTEM (SAWS) www.saws.org/service/locates-service/
    - TEXAS 811 ONE CALL SYSTEM 811 OR https://TEXAS811.ORG
    - CPS ENERGY
    - COSA DRAINAGE
    - COSA SIGNAL OPERATIONS
    - TELECOMMUNICATIONS [I.E., SPECTRUM (CHARTER), AT&T, GOOGLE FIBER, ETC.]
11. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES INDICATED ON THE PLANS ARE TAKEN FROM AVAILABLE RECORDS AND ARE NOT GUARANTEED, BUT SHALL BE INVESTIGATED AND VERIFIED BY THE CONTRACTOR BEFORE STARTING WORK. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY DAMAGE TO AND FOR THE MAINTENANCE AND PROTECTION OF THE EXISTING UTILITIES EVEN IF THEY ARE NOT SHOWN ON THE PLANS. LOCATION AND DEPTH OF EXISTING UTILITIES SHOWN HERE ARE APPROXIMATE ONLY. ACTUAL LOCATIONS AND DEPTHS MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION AND HE SHALL BE RESPONSIBLE FOR PROTECTION OF SAME DURING CONSTRUCTION.
12. ALL WASTE MATERIAL SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE HIS SOLE REPONSIBILITY TO DISPOSE OF THIS MATERIAL OFF THE LIMITS OF THE PROJECT. NO WASTE MATERIAL SHALL BE PLACED IN EXISTING LOWS THAT WILL BLOCK OR ALTER FLOW LIMITS OF EXISTING ARTIFICIAL OR NATURAL DRAINAGE.
13. THE CONTRACTOR SHALL NOT PLACE ANY WASTE MATERIAL IN THE 100-YEAR FLOOD PLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOOD PLAIN DEVELOPMENT PERMIT.
14. THE CONTRACTOR SHALL MAINTAIN ALL ADJOINING STREETS AND TRAVELED ROUTES FREE FROM SPILLED AND /OR TRACKED CONSTRUCTION MATERIALS AND /OR DEBRIS.
15. IF THE CONTRACTOR ENCOUNTERS ANY ARCHAEOLOGICAL DEPOSITS DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR MUST STOP EXCAVATION IMMEDIATELY, CONTACT THE CITY INSPECTOR, AND CALL THE CITY HISTORIC PRESERVATION OFFICE AT 207-5421 FOR AN ARCHAEOLOGICAL INVESTIGATION. THE CONTRACTOR CANNOT BEGIN EXCAVATION AGAIN WITHOUT WRITTEN PERMISSION FROM THE CITY.
    IF MORE THAN THREE (3) DAYS ARE REQUIRED FOR INVESTIGATION (NOT INCLUDING HOLIDAY AND WEEKENDS) AND IF THE CONTRACTOR IS UNABLE TO WORK IN OTHER AREAS, THEN THE CONTRACTOR WILL BE ALLOWED TO NEGOTIATE FOR ADDITIONAL CONSTRUCTION TIME UPON WRITTEN REQUEST WITHIN TEN (10) DAYS AFTER THE FIRST NOTICE TO THE CITY OF ARCHAEOLOGICAL INVESTIGATION FOR EACH EVENT.
    IF THE TIME REQUIRED FOR INVESTIGATION IS LESS THAN OR EQUAL TO THREE (3) DAYS FOR EACH EVENT, CONTRACT DURATION WILL NOT BE EXTENDED.
16. IF SUSPECTED CONTAMINATION IS ENCOUNTERED DURING CONSTRUCTION OPERATIONS, C.O.S.A. SHALL BE NOTIFIED IMMEDIATELY WHEN CONTAMINATED SOILS AND /OR GROUNDWATER ARE ENCOUNTERED AT LOCATIONS NOT IDENTIFIED IN THE PLANS. THE NOTIFICATION SHOULD INCLUDE THE STATION NUMBER, TYPE OF CONTAMINATED MEDIA, EVIDENCE OF CONTAMINATION AND MEASURES TAKEN TO CONTAIN THE CONTAMINATED MEDIA AND PREVENT PUBLIC ACCESS. THE CONTAMINATED SOIL AND /OR GROUNDWATER SHALL NOT BE REMOVED FROM THE LOCATION WITHOUT PRIOR C.O.S.A. APPROVAL.
    THE CONTRACTOR MUST STOP THE EXCAVATION IMMEDIATELY AND CONTACT THE C.O.S.A. INSPECTOR. THE CONTRACTOR CANNOT BEGIN EXCAVATION ACTIVITIES WITHOUT WRITTEN PERMISSION FROM THE CITY.
17. CONTRACTOR IS TO INCLUDE A MAILBOX POST BLOCKOUT FOR VACANT LOTS AND ALL RESIDENCES WHICH DO NOT HAVE MAILBOXES AT THE CURB. BLOCKOUTS ARE PROVIDED FOR FUTURE USE BY THE POST OFFICE.
18. THE CONTRACTOR SHALL NOT REMOVE OR ADJUST ANY VIA ASSETS. THE CONTRACTOR MUST CONTACT VIA ((210)-419-6905), (210)-362-5020, AND OR EMAIL VIACityRoadConstruction@viainfo.net) FOURTEEN DAYS PRIOR, FOR THE REMOVAL OF BENCHES, STOP POLES AND ANY OTHER VIA ASSETS WITHIN THE PROJECT LIMITS. PLEASE PROVIDE THIRTY DAYS PRIOR NOTICE FOR SHELTER REMOVAL AND DETOUR/TCP COORDINATION. THE CONTRACTOR WILL BE LIABLE FOR ANY DAMAGES TO VIA FACILITIES NOT REMOVED BY VIA. THE CONTRACTOR IS REQUIRED TO REPLACE ALL FLATWORK REMOVED OR DAMAGED IN THE COURSE OF EXECUTING THE CONTRACT UNLESS OTHERWISE NOTED BY VIA. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROTECTING VIA FACILITIES IF ADJACENT TO THE WORK AREA. THE CONTRACTOR SHALL SCHEDULE WITH VIA ((210)-419-6905), (210)-362-5020, AND OR EMAIL VIACityRoadConstruction@viainfo.net) A PRE-POUR INSPECTION FOR ANY SHELTER OR BENCH PAD, ADA CONNECTOR OR OTHER PLACEMENT THAT DIRECTLY AFFECTS VIA ASSETS PLACEMENT NOT TO INCLUDE SIDEWALKS.

TREE PROTECTION AND PRESERVATION GENERAL NOTES

1. NO UTILITY OR STREET EXCAVATION WORK SHALL BEGIN IN AREAS WHERE TREE PRESERVATION AND TREATMENT MEASURES HAVE NOT BEEN COMPLETED AND APPROVED.
2. TREE PROTECTION FENCING SHALL BE REQUIRED. TREE PROTECTION FENCING SHALL BE INSTALLED, MAINTAINED AND REPAIRED BY THE CONTRACTOR DURING SITE CONSTRUCTION. DURING CONSTRUCTION ACTIVITY, AT LEAST A SIX-INCH LAYER OF COARSE MULCH SHALL BE PLACED AND MAINTAINED OVER THE ROOT PROTECTION ZONE (NO SEPARATE PAY ITEM).
3. THE CONTRACTOR SHALL AVOID CUTTING ROOTS LARGER THAN ONE INCH IN DIAMETER WHEN EXCAVATING NEAR EXISTING TREES. EXCAVATION IN THE VICINITY OF TREES SHALL PROCEED WITH CAUTION. THE CONTRACTOR SHALL CONTACT THE CITY INSPECTOR FOR GUIDANCE.
4. ROOTS WILL BE CUT WITH A ROCK SAW OR BY HAND, NOT BY AN EXCAVATOR OR OTHER ROAD CONSTRUCTION EQUIPMENT.
5. ALL CURB AND SIDEWALK WORK SHALL USE ALTERNATIVE CONSTRUCTION METHODS TO MINIMIZE EXTENSIVE ROOT DAMAGE TO TREES.
6. EXPOSED ROOTS SHALL BE COVERED AT THE END OF THE DAY USING TECHNIQUES SUCH AS COVERING WITH SOIL, MULCH, OR WET BURLAP.
7. NO EQUIPMENT, VEHICLES OR MATERIALS SHALL OPERATE OR BE STORED WITHIN THE ROOT PROTECTION ZONE OF ANY TREE NEAR THE PROJECT. ROOT PROTECTION ZONE IS 1 FOOT OF RADIUS PER INCH OF TREE'S DIAMETER. A 10-INCH DIAMETER TREE WOULD HAVE A 10 FOOT RADIUS ROOT PROTECTION ZONE AROUND THE TREE. ROOTS OR BRANCHES IN CONFLICT WITH THE CONSTRUCTION SHALL BE CUT CLEANLY ACCORDING TO PROPER PRUNING METHODS. OAK WOUNDS SHALL BE PAINTED OVER WITHIN 30 MINUTES TO PREVENT OAK WILT.
8. SAPLINGS, SHRUBS OR BUSHES TO BE CLEARED FROM THE PROTECTED ROOT ZONE AREA OF A LARGE TREE SHALL BE REMOVED BY HAND AS DESIGNATED BY THE INSPECTOR.
9. NO WIRES, NAILS OR OTHER MATERIAL MAY BE ATTACHED TO PROTECTED TREES.
10. TREES, TREE LIMBS, BUSHES AND SHRUBS LOCATED IN THE CITY STREET OR ALLEY RIGHT-OF-WAY OR PERMANENT EASEMENTS WHICH INTERFERE WITH PROPOSED CONSTRUCTION ACTIVITIES SHALL BE PROPERLY PRUNED FOLLOWING THE ANSI A-300 STANDARDS FOR PRUNING. ALL TREE PRUNING SHALL BE COMPLETED BY A CITY OF SAN ANTONIO TREE MAINTENANCE LICENSED CONTRACTOR (ARTICLE 21-171, CITY CODE) ONLY AFTER APPROVAL FROM THE CAPITAL PROJECTS MANAGEMENT THROUGH THE INSPECTOR.
11. NO EXCESSIVE TREE TRIMMING WILL BE PERMITTED.
12. ALL DEBRIS GENERATED BY THE PRUNING AND TRIMMING OF THE TREES AND /OR BUSHES SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF PROPERLY (NO SEPARATE PAY ITEM).
13. TREES MUST BE MAINTAINED IN GOOD HEALTH THROUGHOUT THE CONSTRUCTION PROCESS. MAINTENANCE MAY INCLUDE, BUT NOT LIMITED TO: WATERING THE ROOT PROTECTION ZONE, WASHING FOLIAGE, FERTILIZATION, PRUNING, ADDITIONAL MULCH APPLICATIONS AND OTHER MAINTENANCE AS NEEDED ON THE PROJECT.
14. ANY TREE REMOVAL SHALL BE APPROVED BY THE CITY ARBORIST. (207-0278)
15. TREES WHICH ARE DAMAGED OR LOST DUE TO THE CONTRACTOR'S NEGLIGENCE DURING CONSTRUCTION SHALL BE MITIGATED TO THE CITY'S SATISFACTION.
16. TREE PLANTING FOR MITIGATION OR ENHANCEMENT: ALL PLANTED TREES SHALL BE MAINTAINED IN A HEALTHY CONDITION AT ALL TIMES. THIS INCLUDES IRRIGATION, FERTILIZING, PRUNING AND OTHER MAINTENANCE AS NEEDED ON THE PROJECT. TREES THAT DIE WITHIN TWELVE (12) MONTHS SHALL BE REPLACED WITH A TREE OF EQUAL SIZE AND SPECIES.

ACCESSIBILITY REQUIREMENTS

1. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN VEHICULAR AND PEDESTRIAN ACCESS AT ALL TIMES TO LOCAL RESIDENCES AND BUSINESSES.
2. WHEN THE WORK REQUIRES THE EXCAVATION OF THE STREET AND THE REMOVAL OF THE EXISTING DRIVEWAY APPROACHES AND SIDEWALKS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY ALL-WEATHER ACCESS TO THE BUSINESSES AND RESIDENCES. THE TEMPORARY DRIVEWAY APPROACHES SHALL BE CONSTRUCTED WITH FLEXIBLE BASE OR GRAVEL MATERIAL AT NO SEPARATE COST TO THE CITY.
3. PRIOR TO INITIATING THE CONSTRUCTION OF NEW DRIVEWAY APPROACHES, THE CONTRACTOR SHALL GIVE ADVANCE WARNING IN PERSON, OR IN WRITING, OF AT LEAST 48 HOURS TO EACH RESIDENCE THAT WILL BE IMMEDIATELY AFFECTED, SO THAT ALTERNATE PLANS MAY BE MADE BY THE RESIDENTS.
4. FOR BUSINESSES WITH MORE THAN ONE DRIVEWAY, AT LEAST ONE DRIVEWAY SHALL REMAIN OPEN WHILE THE OTHER NEW DRIVEWAY APPROACHES ARE CONSTRUCTED. FOR BUSINESSES WITH ONLY ONE DRIVEWAY, THE NEW DRIVEWAY APPROACH SHALL BE CONSTRUCTED IN HALF WIDTHS, UNLESS A TEMPORARY ASPHALT DRIVEWAY IS FIRST INSTALLED AT NO SEPARATE COST TO THE CITY.

DECEMBER 2009

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

CITY OF SAN ANTONIO GENERAL NOTES

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 14 OF 377

c:\dms\pwe-useast-006\knerr.chris\dms71684\GenNotesStd.dgn
8:33:28 AM
5/19/2025

5/19/2025 8:33:28 AM
c:\dms\pwe-useast-006\knerr.chris\dms71684\GenNotesStd.dgn

THE FOLLOWING CHANGES ARE MADE TO THE CITY OF SAN ANTONIO'S GENERAL NOTES:

ADDITIONAL NOTES:

1. DURNING THE PRE-CONSTRUCTION MEETING, THE CONTRACTOR MUST PROVIDE THE CITY CONSTRUCTION INSPECTOR AND THE PROJECT MANAGER THE LOCATION OF THE DISPOSAL SITE FOR EXCESS MATERIAL. THE CONTRACTOR MUST ALSO PROVIDE THE CITY WITH A COPY OF ALL REQUIRED PERMITS AND AGREEMENTS WITH PROPERTY OWNERS PRIOR TO ANY HAULING OF EXCESS MATERIAL FROM THE PROJECT SITE. IF THE DISPOSAL SITE CHANGES, THE CONTRACTOR MUST NOTIFY THE CITY INSPECTOR OF THE NEW SITE PRIOR TO ANY HAULING OF EXCESS MATERIAL.

2. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL OBTAIN ALL REQUIRED STORM WATER PERMITS, FEES, AND APPROVALS. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PERMITS REQUIRED FOR CONSTRUCTION IN DRAINAGE EASEMENTS, RIGHT-OF-WAYS, AND FLOODPLAINS.

3. THE CONTRACTOR SHALL NOTIFY STORM WATER ENGINEERING AT LEAST 24 HOURS PRIOR TO THE INSTALLATION OF ANY DRAINAGE FACILITY WITHIN A DRAINAGE EASEMENT OR STREET RIGHT-OF-WAY NOT INDICATED ON THE CONSTRUCTION PLANS.

4. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING EXISTING DRAINAGE FACILITIES FROM DAMAGE. ANY DAMAGE TO EXISTING DRAINAGE SYSTEMS, WHETHER OR NOT SHOWN ON THE PLANS, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR AT HIS EXPENSE. THE CONTRACTOR SHALL NOTIFY STORM WATER ENGINEERING AT 210-206-8433 AS SOON AS CONFLICTS WITH UTILITIES ARE ENCOUNTERED OR ANY DRAINAGE SYSTEM IS DAMAGED DURING CONSTRUCTION.

5. CONSTRUCTION SPOILS WILL NOT BE ALLOWED TO BE DEPOSITED ANYWHERE WITHIN A DRAINAGE EASEMENT, RIGHT-OF-WAY OR FLOODPLAIN WITHIN THE LIMITS OF THE PROJECT AND SHALL BE DISPOSED OFFSITE IN COMPLIANCE WITH CURRENT APPLICABLE REGULATIONS.

6. NO STRUCTURE, FENCES, WALLS, LANDSCAPING, OR OTHER OBSTRUCTIONS THAT IMPEDE DRAINAGE SHALL BE PLACED WITHIN THE LIMITS OF THE DRAINAGE EASEMENTS SHOWN ON THE CONSTRUCTION DOCUMENTS.

7. UPON COMPLETION OF TRENCHING, THE AREA WILL BE BACKFILLED AND COMPACTED TO ITS ORIGINAL CONDITION. TRENCHES/BORE PITS TO BE OPEN AND UNATTENDED LONGER THAN 24 HOURS SHALL BE PROTECTED TO WITHSTAND ALL HYDRODYNAMIC AND HYDROSTATIC FORCES AND PREVENT DOWNSTREAM IMPACTS. TRENCHES/BORE PITS TO BE OPEN LONGER THAN 30 DAYS AFTER STARTING EXCAVATION SHALL BE BACKFILLED WITH A SEMI-PERMANENT REPAIR BACKFILL.

8. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHOULD LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR HAS TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

9. THE CONTRACTOR SHALL NOT REMOVE OR ADJUST ANY VIA ASSETS. THE CONTRACTOR MUST CONTACT VIA ((210)-419-6905), (210)-362-5020, AND OR EMAIL VIACityRoadConstruction@viainfo.net) FOURTEEN DAYS PRIOR, FOR THE REMOVAL OF BENCHES, STOP POLES AND ANY OTHER VIA ASSETS WITHIN THE PROJECT LIMITS. PLEASE PROVIDE THIRTY DAYS PRIOR NOTICE FOR SHELTER REMOVAL AND DETOUR/TCP COORDINATION. THE CONTRACTOR WILL BE LIABLE FOR ANY DAMAGES TO VIA FACILITIES NOT REMOVED BY VIA. THE CONTRACTOR IS REQUIRED TO REPLACE ALL FLATWORK REMOVED OR DAMAGED IN THE COURSE OF EXECUTING THE CONTRACT UNLESS OTHERWISE NOTED BY VIA. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROTECTING VIA FACILITIES IF ADJACENT TO THE WORK AREA. THE CONTRACTOR SHALL SCHEDULE WITH VIA ((210)-419-6905), (210)-362-5020, AND OR EMAIL VIACityRoadConstruction@viainfo.net) A PRE-POUR INSPECTION FOR ANY SHELTER OR BENCH PAD, ADA CONNECTOR OR OTHER PLACEMENT THAT DIRECTLY AFFECTS VIA ASSETS PLACEMENT NOT TO INCLUDE SIDEWALKS.

EXCESS SOIL UTILIZATION/DISPOSAL GENERAL NOTES:

10. IT IS THE OWNER*S PREFERENCE THAT EXCAVATED SOILS FROM THE PROJECT BE REUSED WITHIN THE PROJECT TO THE FULLEST EXTENT POSSIBLE, AS LONG AS THEY MEET THE APPROPRIATE SPECIFICATION REQUIREMENTS.

11. CONTRACTOR SHALL PROVIDE A SUBMITTAL REGARDING DISPOSAL SITES TO THE CITY 14 DAYS PRIOR TO COMMENCEMENT OF HAULING OFF ANY EXCAVATED AND/OR EXCESS FILL MATERIAL. SUBMITTAL INCLUDES A SITE MAP LOCATION, PHYSICAL ADDRESS, BEXAR COUNTY APPRAISAL INFORMATION, FLOODPLAIN MAP SHOWING SITE LOCATION, ETC. THE CONDITIONS SET FORTH HEREIN ARE SOLELY DUE TO A DESIRE BY THE CITY TO MANAGE AND DOCUMENT THE DISPOSAL OF SOILS IN ACCORDANCE WITH TRANSPORTATION CAPITAL IMPROVEMENTS* SOIL RELOCATION POLICY AND COMMUNICATION PLAN. CONTRACTOR SHALL ADHERE TO THE FOLLOWING REQUIREMENTS:
    a. CONTRACTOR MUST ASSURE THAT THE NUMBER OF SOIL DISPOSAL SITE DOES NOT EXCEED THREE (3) SITES.
    b. CONTRACTOR SHALL VERIFY AND CONFIRM THAT NO DISPOSAL AREAS ARE WITHIN OR ADJACENT TO THE FLOODPLAIN AND KNOWN SUPERFUND OR ENVIRONMENTAL ISSUE AREA.
    c. CONTRACTOR AGREES TO ABIDE BY THE LANDOWNERS WRITTEN CONDITIONS IN LANDOWNER AGREEMENTS INCLUDING THOSE RELATED TO PLACEMENT, COMPACTION, RESTORATION AND EROSION CONTROL MEASURES OF THE SITE(S). IT IS THE CONTRACTORS RESPONSIBILITY TO OBTAIN WRITTEN APPROVAL FROM THE LANDOWNER(S) PRIOR TO PLACEMENT, AND THAT ANY COSTS THE CITY INCURS TO ADDRESS LEGITIMATE LANDOWNER CONCERNS WILL BE CONSIDERED AND MAY BE DEDUCTED FROM THE CONTRACTOR'S FINAL PAYMENT AS DETERMINED BY THE CITY. THE CITY RESERVES THE RIGHT TO REQUEST A COPY OF THE AGREEMENT BETWEEN THE LANDOWNER AND CONTRACTOR.
    d. CONTRACTOR AGREES TO COMPLY WITH OTHER REGULATORY AGENCIES REQUIREMENTS FOR PROPER AND LEGAL IMPLEMENTATION OF THE REUSE PLAN PRIOR TO SOIL TRANSPORT, AS APPLICABLE. CONTRACTOR SHALL ENSURE AN APPROPRIATE STORM WATER POLLUTION PREVENTION PLAN IS DEVELOPED AND IMPLEMENTED IN ACCORDANCE WITH TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM (TPDES) REQUIREMENTS, AS APPLICABLE.
    e. CONTRACTOR SHALL BE RESPONSIBLE FOR TRACKING EXCESS SOIL DISPOSAL TO APPROVED DESIGNATED AREAS. CONTRACTOR SHALL BE RESPONSIBLE FOR TRACKING EXCESS SOIL LOADS THROUGH DOCUMENTATION SUCH AS TRIP TICKETS, BILL OF LADING RECEIPTS, ETC FOR ALL TRANSPORTED SOIL TO EACH APPROVED SITE. THE CITY RESERVES THE RIGHT TO REQUEST THIS DOCUMENTATION.
    f. CONTRACTOR SHALL NOT BEGIN HAULING ACTIVITIES OF EXCAVATED OR EXCESS SOILS TO THE DESIGNATED DISPOSAL SITES UNTIL CITY ENGINEER OR HIS/HER DESIGNEE PROVIDES WRITTEN AUTHORIZATION.
    g. IN THE EVENT CONTRACTOR ONLY PROVIDES ONE DISPOSAL LOCATION TO CITY AND AN ADDITIONAL DISPOSAL LOCATION IS NEEDED, CONTRACTOR IS REQUIRED TO NOTIFY CITY IN WRITING OF ITS NEW DISPOSAL LOCATION AND PROVIDE WRITTEN DOCUMENTATION TO CITY*S ENGINEER A MINIMUM OF 14 DAYS IN ADVANCE OF UTILIZING THE ADDITIONAL LOCATION AND PRIOR TO HAULING ACTIVITIES. CONTRACTOR SHALL NOT BEGIN HAULING TO THIS NEW SITE UNTIL WRITTEN APPROVAL IS PROVIDED BY THE CITY ENGINEER OR HIS/HER DESIGNEE.

DELETED NOTES:

1. DELETE NOTE NO 18. – CONTRACTOR SHALL NOT REMOVE OR ADJUST ANY VIA FACILITIES. THE CONTRACTOR MUST CONTACT VIA FOURTEEN DAYS PRIOR, FOR THE REMOVAL OF BENCHES, STOP POLES OR ANY OTHER VIA FACILITIES THAT MAY BE PRESENT. PLEASE PROVIDE THIRTY DAYS PRIOR NOTICE FOR SHELTER REMOVAL (TELEPHONE NOS: (210) 362-2155 OR (210) 362-2357). THE CONTRACTOR WILL BE LIABLE FOR ANY DAMAGES TO VIA FACILITIES NOT REMOVED BY VIA. THE CONTRACTOR IS REQUIRED TO REPLACE ALL FLATWORK REMOVED OR DAMAGED IN THE COURSE OF EXECUTING THE CONTRACT UNLESS OTHERWISE NOTED BY VIA. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROTECTING VIA FACILITIES IF ADJACENT TO WORK AREA.

NOTE MODIFICATION:

1. MODIFY NOTE NO. 8 – CONTRACTOR SHALL NOTIFY THE CITY INSPECTOR TWENTY-FOUR (24) HOURS PRIOR TO BACKFILL OF ANY UTILITY TRENCHES IN ORDER TO SCHEDULE FOR DENSITY TEST AS REQUIRED (TELEPHONE NO. 207-7762).

2. MODIFY NOTE NO. 10 – CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES PRIOR TO CONSTRUCTION TO DETERMINE THE LOCATION OF EXISTING UTILITIES. CONTRACTORS SHALL NOTIFY THE FOLLOWING AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO EXCAVATION OPERATION:

SAN ANTONIO WATER SYSTEM (SAWS)	210-233-2009
COSA DRAINAGE	210-206-8433
COSA TRAFFIC SIGNAL OPERATIONS	210-207-8022
TEXAS STATE WIDE ONE CALL LOCATOR	1-800-545-6005 OR 811
– CPS ENERGY	
– SPECTRUM	
– AT&T	

3. MODIFY NOTE NO. 13 – THE CONTRACTOR SHALL NOT PLACE ANY WASTE MATERIAL IN THE 100-YEAR FLOOD PLAIN WITHOUT FIRST OBTAINING A FLOOD PLAIN DEVELOPMENT PERMIT THROUGH THE COSA PUBLIC WORKS DEPARTMENT OR, IF OUTSIDE COSA CITY LIMITS, THE APPLICABLE JURISDICTIONAL ENTITY OR ENTITIES.

STATE OF TEXAS
XIDUO WANG
143018
LICENSED PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

SUPPLEMENTAL GENERAL NOTES

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CAC	DSGN. BY: CG	CHKD. BY: XW	SHEET NO. 15 OF 377

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D220116TX.00\1_Design\500_CADD\dgn\02 Plan Files\01 general\Consor\C_MD_S_GGN02.dgn
c:\bms\pwe-usegst-006\knerr.chris\dms71684\C_MD_S_GGN02.dgn
5/19/2025 8:33:40 AM
5/19/2025

SUMMARY OF TCP ITEMS

	530.1	400	503	505	505	508	512	512	512	512	512	512	662	662	662
		7006	7002	7001	7003	7001	7009	7010	7033	7034	7057	7058	7001	7002	7004
	BARRICADES, SIGNS AND TRAFFIC HANDLING	CUT & RESTORING PAV	PORTABLE CHANGEABLE MESSAGE SIGN	TMA (STATIONARY)	TMA (MOBILE OPERATION)	CONSTRUCTING DETOURS	PORT CTB (FUR & INST) (LOW PROF) (TY 1)	PORT CTB (FUR & INST) (LOW PROF) (TY 2)	PORT CTB (MOVE) (LOW PROF) (TY 1)	PORT CTB (MOVE) (LOW PROF) (TY 2)	PORT CTB (REMOVE) (LOW PROF) (TY 1)	PORT CTB (REMOVE) (LOW PROF) (TY 2)	WK ZN PAV MRK NON-REMOV (W) 4" (BRK)	WK ZN PAV MRK NON-REMOV (W) 4" (DOT)	WK ZN PAV MRK NON-REMOV (W) 4" (SLD)
	LS	SY	EA	DAY	DAY	SY	LF	LF	LF	LF	LF	LF	LF	LF	LF
PHASE 2															
STEP 1		45													
STEP 2							880	80							355
STEP 3									880	80					90
STEP 4							180		880	40		40			
STEP 5						170			460	40	600				
STEP 6											460	40	699		637
PHASE 3															
STEP 1													889	235	26
STEP 2															251
PHASE 4															
STEP 1															
STEP 2															
STEP 3															
PHASE 7															
STEP 1 & 6													2136		1192
STEP 2 & 5													1114		1071
STEP 3 & 4													750		618
PROJECT TOTAL	**1**	**45**	**4**	**455**	**9**	**170**	**1,060**	**80**	**2,220**	**160**	**1,060**	**80**	**5,588**	**235**	**4,240**

SUMMARY OF TCP ITEMS

	662	662	662	662	662	662	662	677	677	677
	7017	7033	7035	7062	7064	7077	7097	7001	7008	7009
	WK ZN PAV MRK NON-REMOV (W) 24" (SLD)	WK ZN PAV MRK NON-REMOV (Y) 4" (BRK)	WK ZN PAV MRK NON-REMOV (Y) 4" (SLD)	WK ZN PAV MRK REMOV (W) 4" (DOT)	WK ZN PAV MRK REMOV (W) 4" (SLD)	WK ZN PAV MRK REMOV (W) 24" (SLD)	WK ZN PAV MRK REMOV (Y) 4" (SLD)	ELIM EXT PAV MRK & MRKS (4")	ELIM EXT PAV MRK & MRKS (24")	ELIM EXT PAV MRK & MRKS (ARROW)
	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA
PHASE 2										
STEP 1										
STEP 2	30	110	490		870		1750	1405		4
STEP 3	11		180	110	1195		1510	1585	50	
STEP 4				162	1385	31	2350	2180	70	2
STEP 5				58	484	13	480			3
STEP 6	36		146							
PHASE 3										
STEP 1	63		52							
STEP 2	18									
PHASE 4										
STEP 1			534							
STEP 2										
STEP 3										
PHASE 7										
STEP 1 & 6	24		584							
STEP 2 & 5										
STEP 3 & 4										
PROJECT TOTAL	**182**	**110**	**1,986**	**330**	**3,934**	**44**	**6,090**	**5,170**	**120**	**9**

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

SUMMARY OF QUANTITIES

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/20/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 16 OF 377

SUMMARY OF TEMPORARY SIGNAL QUANTITIES

ITEM	DESCRIPTION	UNITS	RICHLAND HILLS	TOTAL
618.1	CONDUIT (2 INCH/PVC SCHEDULE 40)	LF	240	240
620.1	ELECTRICAL CONDUCTORS (NO.6)(BARE)	LF	40	40
620.2	ELECTRICAL CONDUCTORS (NO.8)(BARE)	LF	240	240
620.3	ELECTRICAL CONDUCTORS (NO.6)(INSULATED)	LF	40	40
624.8	GROUND BOX TY D (162922)W/ APRON	EA	3	3
681.1	TEMP TRAF SIGNALS	EA	1	1
+	TEMPORARY SERVICE	EA	1	1
+	TEMP POLE MOUNTED SIGNAL CONTROLLER W/CABINET (NEMA COMPLIANT)	EA	1	1
+	POLE, 40' TREATED SOUTHERN YELLOW PINE TIMBER	EA	4	4
+	SIGN, PEDESTRIAN PUSHBUTTON (SYMBOL TYPE) (9"X15") (R10-3e) (L)	EA	3	3
+	SIGN, PEDESTRIAN PUSHBUTTON (SYMBOL TYPE) (9"X15") (R10-3e) (R)	EA	5	5
+	REGULATORY SIGN PANEL, LEFT TURN ONLY, (R3-5L), (30"X36")	EA	4	4
+	REGULATORY SIGN PANEL, RIGHT TURN ONLY, (R3-5R), (30"X36")	EA	1	1
+	REGULATORY SIGN PANEL, RIGHT/THRU ARROW, (R3-6R), (30"X36")	EA	2	2
+	REGULATORY SIGN PANEL, (LEFT TURN YIELD ON GREEN) (30"X36") (R10-12)	EA	3	3
+	REGULATORY SIGN PANEL, LEFT TURN YIELD ON FLASING YELLOW ARROW) (36"X42") (R10-17T)	EA	4	4
+	STREET NAME SIGN (AS SHOWN ON TEMPORARY SIGNAL SIGNING AND PHASING)	EA	4	4
+	5/8" X 8' DOUBLE EYE ANCHOR ROD	EA	8	8
+	STEEL GUY WIRE	EA	8	8
+	GUARD, GUY WIRE	EA	8	8
+	STEEL SPAN WIRE CABLE	LF	1850	1850
+	STEEL SWAY CABLE (3/8" DIAMETER)	LF	975	975
+	POWER SUPPLY	EA	1	1
682.1	INSTALL VEHICLE SIGNAL SECTION WITH BACK PLATE (3 SECTION)	EA	8	8
682.2	INSTALL VEHICLE SIGNAL SECTION WITH BACK PLATE (4 SECTION)	EA	6	6
682.4	INSTALL PEDESTRIAN SIGNAL SECTION (12 INCH) LED (2 IND)	EA	8	8
682.5	LOUVER (12 IN ADJUSTABLE)	EA	8	8
683.1	LED COUNTDOWN PEDESTRIAN SIGNAL MODULE	EA	8	8
684.1	TRAFFIC SIGNAL CABLES (TYPE A)(14 AWG)(CONDUCTOR NO. 9)	LF	2140	2140
684.1	TRAFFIC SIGNAL CABLES (TYPE A)(16 AWG)(CONDUCTOR NO. 3)	LF	1100	1100
687.1	PEDESTAL POLE ASSEMBLY	EA	5	5
++	DRILL SHAFT (24 IN)	LF	30	30
688.2	PEDESTRIAN DETECTORS (2 INCH PUSH BUTTON)	EA	8	8
699.X	FEDS FISH EYE CAMERA ASSEMBLY (INSTALL ONLY)	EA	1 **	1 **

** FEDS EQUIPMENT TO BE INSTALLED FOR USE IN TEMPORARY PHASE. EQUIPMENT PAID UNDER PERMANENT SIGNALS.

+ SUBSIDIARY TO ITEM 681.1, TEMP TRAF SIGNALS. (FOR CONTRACTOR INFORMATION ONLY)

++ SUBSIDIARY TO 687.1 PEDESTAL POLE ASSEMBLY

NOTE: SIGNAL HEADS, SIGNS, PUSH BUTTONS AND FEDS DETECTION (WHERE APPLICABLE) TO BE ADJUSTED PER TCP PHASE

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

SUMMARY OF QUANTITIES

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CAC	DSGN. BY: CG	CHKD. BY: XW	SHEET NO. 17 OF 377

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D2201161TX.00\1_Design\500_CADD\dgn\02 Plan Files\01 general\Consor\C_MD_S_GS001b.dgn
ci:\bms\pwe-useast-006\knerr.chris\dms71684\C_MD_S_GS001b.dgn
8:37:38 AM
5/19/2025

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D2201161TX.00\1_Design\500_CADD\dgn\02 Plan Files\01 general\Consor\C_MD_S_GS001b.dgn

SUMMARY OF ROADWAY

		100.1	100.2	101.1	103.1	103.3	104.1	107.1	202.1	203.1	208.1	240.2	240.4	307.1
		MOBILIZATION	INSURANCE AND BOND	PREPARING RIGHT-OF-WAY	REMOVE CONCRETE CURB	REMOVE SIDEWALKS AND DRIVEWAYS	STREET EXCAVATION	EMBANKMENT (FINAL) (ORD COMP) (TY B)	PRIME COAT	TACK COAT	SALVAGING, HAULING, AND STOCKPILING RECLAIMABLE ASPHALTIC PAVMENT (3" DEPTH)	WARM MIX ASPHALTIC CONCRETE TYPE B (11" COMP DEPTH)	WARM MIX ASPHALTIC CONCRETE TYPE D (3" COMP DEPTH)	CONCRETE STRUCTURE (ELEVATED SIDEWALKS)
SHEET NO.	LIMITS	LS	LS	LS	LF	SF	CY	CY	GAL	GAL	SY	SY	SY	CY
		BASE BID												
140 OF 377	BEGIN TO STA 221+00									111	1101		1101	
141 OF 377	STA 221+00 TO STA 225+00				1034	2254	279	44	127	357	1818	632	2304	5
143 OF 377	STA 225+00 TO STA 229+00				983	3607	1256	99	430	738	1212	2148	3079	2
144 OF 377	STA 229+00 TO STA 233+00				802	3156	1043	28	273	492	1073	1364	2185	5
145 OF 377	STA 233+00 TO STA 237+00				822	3678	1338	169	281	502	1108	1401	2213	2
146 OF 377	STA 237+00 TO STA 241+00				802	4071	768	117	426	747	1328	2128	3209	3
147 OF 377	STA 241+00 TO STA 245+00				788	3450	730	84	307	538	1052	1535	2303	
148 OF 377	STA 245+00 TO STA 249+00				857	4318	1278	130	374	640	1063	1869	2659	
149 OF 377	STA 249+00 TO END				335	318	437	6	117	249	893	581	1321	
BASE BID TOTALS:		**1**	**1**	**1**	**6423**	**24852**	**7129**	**677**	**2335**	**4374**	**10648**	**11658**	**20374**	**17**
		ADD ALTERNATE BID 1												
142A OF 377	STA 225+00 TO STA 229+00				983	3607	1256	99	430	738	1212	2148	3079	2
ADD ALTERNATE BID 1 TOTALS:		**0**	**0**	**0**	**983**	**3607**	**1256**	**99**	**430**	**738**	**1212**	**2148**	**3079**	**2**

SUMMARY OF ROADWAY

		500.1	502.1	502.XX	506.1	SS 2006	SAWS 100	SAWS 101	SAWS 826	351 7013	450 7050
		CONCRETE CURB	CONCRETE SIDEWALKS	VIA BENCH PAD	CONCRETE RETAINING WALLS (COMB. TYPE)	MOISTURE CONDITIONED SUBGRADE (6" COMP. DEPTH)	MOBILIZATION	PREPARING RIGHT-OF-WAY	VALVE BOX ADJUSTMENT	FLEXIBLE PAVEMENT STRUCTURE REPAIR(14")	(HANDRAIL) (TY D)
SHEET NO.	LIMITS	LF	SY	SY	CY	CY	LS	LS	EA	SY	LF
		BASE BID									
140 OF 377	BEGIN TO STA 221+00										
141 OF 377	STA 221+00 TO STA 225+00	1041	383	13		105			1		88
143 OF 377	STA 225+00 TO STA 229+00	1696	652		11	358			3		44
144 OF 377	STA 229+00 TO STA 233+00	1603	608		2	227					88
145 OF 377	STA 233+00 TO STA 237+00	1621	598		23	233				198	44
146 OF 377	STA 237+00 TO STA 241+00	1581	545	13		355				584	54
147 OF 377	STA 241+00 TO STA 245+00	1667	616			256				118	
148 OF 377	STA 245+00 TO STA 249+00	1542	618			312				425	
149 OF 377	STA 249+00 TO END	598	35			97					
BASE BID TOTALS:		**11349**	**4055**	**26**	**36**	**1943**	**1**	**1**	**4**	**1325**	**318**
		ADD ALTERNATE BID 1									
142A OF 377	STA 225+00 TO STA 229+00	1571	628		11	358			3		44
ADD ALTERNATE BID 1 TOTALS:		**1571**	**628**	**0**	**11**	**358**	**0**	**0**	**3**	**0**	**44**

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

SUMMARY OF QUANTITIES

95 % SUBMITTAL | PROJECT NO.: 23-03907 | DATE: 5/19/2025
DRWN. BY: CK | DSGN. BY: EG | CHKD. BY: EV | SHEET NO. 18 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71684\C_MD_S_GSQ01.dgn
8:34:08 AM
5/19/2025

5/19/2025 8:34:08 AM
c:\bms\pwe-useast-006\knerr.chris\dms71684\C_MD_S_GSQ01.dgn

SUMMARY OF DRAINAGE ITEMS

		105.1	106.1	309.1	309.1	309.1	309.1	401.1	401.1	401.1	403.1	403.2	403.6	403.7	403.8
		CHANNEL EXCAVATION (150 CY < X < 5,000 CY)	BOX CULVERT EXCAVATION (600 CY < X < 10,000 CY)	PRECAST REINFORCED CONCRETE BOX CULVERTS (3' x 3')	PRECAST REINFORCED CONCRETE BOX CULVERTS (4' x 2')	PRECAST REINFORCED CONCRETE BOX CULVERTS (4' x 3')	PRECAST REINFORCED CONCRETE BOX CULVERTS (5' x 3')	REINFORCED CONCRETE PIPE (CLASS III) (24" DIA)	REINFORCED CONCRETE PIPE (CLASS III) (30" DIA)	REINFORCED CONCRETE PIPE (CLASS III) (36" DIA)	JUNCTION BOX (COMPLETE) 4'X4'X4'	JUNCTION BOX (COMPLETE) 5'X5'X5'	SPECIAL JUNCTION BOX (29.5' X 5.0') (COMPLETE)	INLET (COMPLETE) (TYPE I) 10'	INLET (COMPLETE) (TYPE II) 10'
SHEET NO	LIMITS	CY	CY	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA
194 OF 377	223+00 TO 226+00							209	66		3			3	
195 OF 377	226+00 TO 230+00							53	170	239		5		3	1
196 OF 377	230+00 TO 234+00							15		385		2		3	
197 OF 377	234+00 TO 238+00	67	154	50			19	52	12	41	1			3	
198 OF 377	238+00 TO 242+00		724	273			64	48	85			2		2	1
199 OF 377	242+00 TO 246+50		1145			12	540	29					1	1	
200 OF 377	246+00 TO 250+00	175	385		57	116	46	31							
207 OF 377	STORM DRAIN PROFILES (1 OF 4)														
208 OF 377	STORM DRAIN PROFILES (2 OF 4)														
209 OF 377	STORM DRAIN PROFILES (3 OF 4)														
210 OF 377	STORM DRAIN PROFILES (4 OF 4)														
PROJECT TOTALS		242	2408	323	57	128	669	437	333	665	4	9	1	15	2

SUMMARY OF DRAINAGE ITEMS (CONT'D)

		403.8	403.12	403.12	403.14	407.4	410.2	505.1	550.1	450	465	465	465	465
										7063	7071	7074	7076	7077
		4'x4' 4-WAY INLET	SPECIAL INLET (TYPE B)	SPECIAL INLET (18.0' X 16.5') (COMPLETE)	INLET EXTENSIONS (10')	CONCRETE ENCASEMENT, CRADLES, SADDLES, AND COLLARS	GRAVEL SUBGRADE FILLER (X < 100 CY)	CONCRETE RIP RAP (5" THICK)	TRENCH EXCAVATION SAFETY PROTECTION	RAIL (HANDRAIL) (TY F)	INLET (COMPL) (PSL) (RC) (4FTX4FT)	INLET (COMPL) (PSL) (RC) (5FTX5FT)	INLET (COMPL) (PSL) (RC) (6FTX6FT)	INLET (COMPL) (PSL) (RC) (8FTX8FT)
SHEET NO	LIMITS	EA	EA	EA	EA	CY	CY	SY	LF	LF	EA	EA	EA	EA
194 OF 377	223+00 TO 226+00				3	3			275					
195 OF 377	226+00 TO 230+00		1		4	6			462					
196 OF 377	230+00 TO 234+00				3	4			400			1		
197 OF 377	234+00 TO 238+00				3	5	5		174	19	1	1		1
198 OF 377	238+00 TO 242+00		1		3	8	23		470					1
199 OF 377	242+00 TO 246+50	1		1	1	12	43	26	581	39				1
200 OF 377	246+00 TO 250+00						16		332	55			2	
207 OF 377	STORM DRAIN PROFILES (1 OF 4)					7								
208 OF 377	STORM DRAIN PROFILES (2 OF 4)					6								
209 OF 377	STORM DRAIN PROFILES (3 OF 4)					5								
210 OF 377	STORM DRAIN PROFILES (4 OF 4)					10								
PROJECT TOTALS		1	2	1	17	38	87	26	2694	113	1	2	2	3

SUMMARY OF DRAINAGE ITEMS (CONT'D)

		465	465	466	496	496	496	529
		7335	7336	7176	7005	7006	7007	7013
		INLET (COMPL) (ARMOR CURB SLOT)	INLET (COMPL) (TY SIDEWALK BRIDGE)	WINGWALL (PW-1) (HW=6FT)	REMOV STR (WINGWALL)	REMOV STR (HEADWALL)	REMOV STR (PIPE)	CONC CURB (SLOTTED)
SHEET NO	LIMITS	EA	EA	EA	EA	EA	LF	LF
194 OF 377	223+00 TO 226+00	2						
195 OF 377	226+00 TO 230+00	2						
196 OF 377	230+00 TO 234+00							
197 OF 377	234+00 TO 238+00					1		10
198 OF 377	238+00 TO 242+00							
199 OF 377	242+00 TO 246+50		1					
200 OF 377	246+00 TO 250+00			1	1	2	46	10
207 OF 377	STORM DRAIN PROFILES (1 OF 4)							
208 OF 377	STORM DRAIN PROFILES (2 OF 4)							
209 OF 377	STORM DRAIN PROFILES (3 OF 4)							
210 OF 377	STORM DRAIN PROFILES (4 OF 4)							
PROJECT TOTALS		4	1	1	1	3	46	20

consor F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

SUMMARY OF QUANTITIES

95 % SUBMITTAL | PROJECT NO.: 23-03907 | DATE: 5/19/2025
DRWN. BY: CK | DSGN. BY: EG | CHKD. BY: EV | SHEET NO. 19 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71684\C_MD_S_GSQ02.dgn
8:34:17 AM
5/19/2025

5/19/2025 8:34:17 AM
c:\bms\pwe-useast-006\knerr.chris\dms71684\C_MD_S_GSQ02.dgn

SUMMARY OF SWPPP

		515.1	516.1	540.1	540.6	540.9	540.10
		TOPSOIL (< 500 CY)	BERMUDA SODDING	ROCK FILTER DAMS (INSTALL) (TYPE 1)	CONSTRUCTION EXITS (INSTALL)	TEMPORARY SEDIMENT CONTROL FENCE	CURB INLET GRAVEL FILTERS
SHEET NO.	LIMITS	CY	SY	LF	SY	LF	LF
245 OF 377	BEGIN TO STA 224+00	11	99	40	112	361	90
246 OF 377	STA 224+00 TO STA 232+00	83	746	0	0	1454	258
247 OF 377	STA 232+00 TO STA 240+00	68	614	50	0	1485	222
248 OF 377	STA 240+00 TO STA 248+00	83	746	60	0	1405	276
249 OF 377	STA 248+00 TO END	119	1072	0	0	864	0
PROJECT TOTAL:		**364**	**3277**	**150**	**112**	**5569**	**846**

SUMMARY OF TREE PROTECTION

		SS 801.3
		LEVEL IIB PROTECTIVE FENCING
SHEET NO.	LIMITS	LF
252 OF 377	BEGIN TO STA 224+00	18
253 OF 377	STA 224+00 TO STA 232+00	102
254 OF 377	STA 232+00 TO STA 240+00	69
255 OF 377	STA 240+00 TO STA 248+00	25
256 OF 377	STA 248+00 TO END	17
PROJECT TOTAL:		**231**

SUMMARY OF TREE LANDSCAPING AND IRRIGATION

	SS 9000.8	SS 9001.3	SS 9001.4	SS 9001.5	SS 9001.1	SS 9004.1	SS 9004.2	SS 9004.3
	MULCH - 4" DEPTH	LARGE SHADE TREES 3" CALIPER	LARGE SHADE TREES 4" CALIPER	LARGE SHADE TREES 6" CALIPER	SMALL ORNIMENTAL TREES 2" CALIPER	TREE BUBBLERS	IRRIGATION CONTROLLER - W/ ELECTRIC METER	IRRIGATION WATER METER
SHEET NO.	CY	EA	EA	EA	EA	EA	EA	EA
263 OF 377	73	9	24	2	10			
264 OF 377	146	35	45	2	18			
265 OF 377	50	2	20	3	17			
266 OF 377	180	44	13		40			
271 OF 377						80	1	1
272 OF 377						184		
273 OF 377						68	1	1
274 OF 377						155		
PROJECT TOTAL:	**449**	**90**	**102**	**7**	**85**	**487**	**2**	**2**

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

SUMMARY OF QUANTITIES

95 % SUBMITTAL | PROJECT NO.: 23-03907 | DATE: 5/20/2025
DRWN. BY: CK | DSGN. BY: EG | CHKD. BY: EV | SHEET NO. 20 OF 377

c:\dms\pwe-useast-006\knerr.chris\dms71684\C_MD_S_GS002a.dgn
10:32:10 AM
5/20/2025

SUMMARY OF PERMANENT SIGNAL QUANTITIES

ITEM	DESCRIPTION	BASE BID					ADD ALT 1	
		UNITS	EARL WARREN HIGH SCHOOL	RICHLAND HILLS	REED RD	TOTAL	SEQUOIA HEIGHT	ADD ALT BID 1 TOTAL
308.1	DRILLED SHAFTS (30")	LF	0	11	22	33	11	11
308.1	DRILLED SHAFTS (36")	LF	13	39	13	65	39	39
615.1	TRAFFIC SIGNAL CONTROLLER ASSEMBLY (TYPE 332 CABINET)	EA	0	1	1	2	1	1
618.1	CONDUIT (2 INCH/PVC SCH 40)	LF	23	161	392	576	104	104
618.2	CONDUIT (3 INCH/PVC SCH 40)	LF	0	101	30	131	89	89
618.3	CONDUIT (4 INCH/PVC SCH 40)	LF	0	0	10	10	0	0
618.XX	CONDUIT (2 INCH/PVC SCH 80) (BORE)	LF	0	285	215	500	347	347
618.XX	CONDUIT (3 INCH/PVC SCH 80) (BORE)	LF	0	370	235	605	427	427
620.1	ELECTRICAL CONDUCTORS (NO. 6) (BARE)	LF	0	391	342	733	431	431
620.2	ELECTRICAL CONDUCTORS (NO. 8) (BARE)	LF	23	706	680	1409	766	766
620.3	ELECTRICAL CONDUCTORS (NO. 6) (INSULATED)	LF	0	65	10	75	10	10
624.8	GROUND BOXES TYPE D (162922) WITH APRON	EA	3	6	6	15	6	6
624.XX	REMOVING GROUND BOX	EA	3	4	0	7	0	0
628.1	ELECTRICAL SERVICES (INSTALLATION)	EA	0	1	1	2	1	1
628.2	REMOVE ELECTRICAL SERVICES	EA	0	1	0	1	0	0
633.1	BATTERY BACKUP SYSTEM	EA	1	1	1	3	1	1
655.1	TYPE 332 CONTROLLER FOUNDATION	EA	0	1	1	2	1	1
680.1	INSTALLATION OF HIGHWAY TRAFFIC SIGNALS (ISOLATED)	EA	1	1	1	3	1	1
*	ROD, 5/8" X 10' COPPER GROUND (CONTROLLER ONLY)	EA	0	1	1	2	1	1
*	SIGN, PEDESTRIAN PUSHBUTTON (SYMBOL TYPE) (9"X15") (R10-3e) (R)	EA	2	4	1	7	0	0
*	SIGN, PEDESTRIAN PUSHBUTTON (SYMBOL TYPE) (9"X15") (R10-3e) (L)	EA	2	4	3	9	0	0
*	REGULATORY SIGN PANEL (R3-5L, LEFT TURN ONLY) (30"X36")	EA	0	0	1	1	0	0
*	REGULATORY SIGN PANEL (R3-5R, RIGHT TURN ONLY) (30"X36")	EA	0	0	1	1	0	0
*	REGULATORY SIGN PANEL (R9-3, NO PEDESTRIANS) (18"X18")	EA	0	0	1	1	4	4
*	REGULATORY SIGN PANEL (R10-15 (MOD), TURNING VEHICLES STOP FOR PEDESTRIANS) (30"X30")	EA	0	0	1	1	0	0
*	REGULATORY SIGN PANEL (R10-17T, LEFT TURN YIELD ON FLASHING YELLOW ARROW) (36"X42")	EA	0	4	1	5	0	0
*	250W EQ LED LUMINAIRE	EA	0	4	2	6	4	4
*	DETECTOR UNIT	EA	0	1	1	2	1	1
*	POWER SUPPLY	EA	0	1	1	2	1	1
*	CONTROL, PHOTOELECTRIC	EA	0	1	1	2	1	1
680.XX	REMOVE TRAFFIC SIGNALS	EA	1	1	0	2	0	0
682.1	INSTALL VEHICLE SIGNAL SECTION WITH BACK PLATE (12 INCH) (3 SECTION)	EA	1	8	4	13	0	0
682.2	INSTALL VEHICLE SIGNAL SECTION WITH BACK PLATE (12 INCH) (4 SECTION)	EA	0	4	5	9	0	0
682.XX	INSTALL VEHICLE SIGNAL SECTION WITH BACK PLATE (12 INCH) (1 SECTION)	EA	0	0	0	0	10	10
683.1	LED COUNTDOWN PEDESTRIAN MODULE	EA	4	8	4	16	0	0
684.1	TRAFFIC SIGNAL CABLES (TYPE A) (12 AWG) (CONDUCTOR NO. 3)	LF	0	1754	750	2504	1336	1336
684.1	TRAFFIC SIGNAL CABLES (TYPE A) (14 AWG) (CONDUCTOR NO. 4)	LF	0	921	657	1578	708	708
684.1	TRAFFIC SIGNAL CABLES (TYPE A) (14 AWG) (CONDUCTOR NO. 9)	LF	579	3150	1891	5620	802	802
684.1	TRAFFIC SIGNAL CABLES (TYPE A) (16 AWG) (CONDUCTOR NO. 3)	LF	561	1517	485	2563	0	0
686.1	INSTALL TRAFFIC SIGNAL POLE ASSEMBLIES (STEEL) (1 ARM 24') (LUM)	EA	0	0	1	1	0	0
686.1	INSTALL TRAFFIC SIGNAL POLE ASSEMBLIES (STEEL) (1 ARM 32') (LUM)	EA	0	1	1	2	1	1
686.1	INSTALL TRAFFIC SIGNAL POLE ASSEMBLIES (STEEL) (1 ARM 40') (LUM)	EA	0	1	0	1	0	0
686.1	INSTALL TRAFFIC SIGNAL POLE ASSEMBLIES (STEEL) (1 ARM 44') (LUM)	EA	0	1	1	2	3	3
686.1	INSTALL TRAFFIC SIGNAL POLE ASSEMBLIES (STEEL) (1 ARM 48') (LUM)	EA	0	1	0	1	0	0
686.1	INSTALL TRAFFIC SIGNAL POLE ASSEMBLY (STEEL) (30' STRAIN POLE)	EA	1	0	0	1	0	0
687.1	PEDESTAL POLE ASSEMBLY	EA	3	5	3	11	0	0
**	DRILLED SHAFTS (24")	LF	18	30	18	66	0	0
688.3	AUDIBLE PEDESTRIAN SIGNAL UNITS (TYPE)	EA	4	8	4	16	0	0
688.XX	PEDESTRIAN DETECTOR CONTROLLER UNIT	EA	1	1	1	3	0	0
693.1	INTERNALLY LIGHTED STREET NAME SIGNS (6'S)	EA	0	2	3	5	2	2
693.1	INTERNALLY LIGHTED STREET NAME SIGNS (8'S)	EA	0	2	0	2	2	2
695.2	EMERGENCY PREEMPTION PHASE SELECTOR	EA	0	1	1	2	0	0
695.3	EMERGENCY PREEMPTION DETECTOR	EA	0	3	3	6	0	0
695.4	EMERGENCY PREEMPTION DETECTOR CABLE	LF	0	639	716	1355	0	0
699.1	FEDS PROCESSOR UNIT	EA	1	1	1	3	0	0
699.2	FEDS FISH EYE CAMERA ASSEMBLY	EA	2	2	2	6	0	0
699.4	LIFETIME FEDS DATA COLLECTION AND REPORTING	EA	1	1	1	3	0	0
699.6	FEDS COMMUNICATION CABLE (ETHERNET-CAT5E)	LF	340	418	397	1155	0	0
687 7005	REMOVE PED POLE ASSEMBLY	EA	0	2	0	2	0	0

* SUBSIDIARY TO ITEM 680.1 INSTALLATION OF HIGHWAY TRAFFIC SIGNALS (ISOLATED)

** SUBSIDIARY TO ITEM 687.1 PEDESTAL POLE ASSEMBLY

consor F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

SUMMARY OF QUANTITIES

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: CAG	DSGN. BY: CG / CHKD. BY: XW	SHEET NO. 21 OF 377

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D220116TX.00\1_Design\500_CADD\dgn\02 Plan Files\01 general\Consor\C_MD_S_GS003.dgn
c:\dms\pwe-useast-006\knerr.chris\dms71684\C_MD_S_GS003.dgn
5:34:35 PM
5/19/2025

SUMMARY OF SIGNS

ITEM		531.3	531.6	531.13	531.17	531.34	531.43	531.46	531.49B	531.57	531.66	531.67	531.68	531.70B	531.75	531.83	531.92	531.93	531.94	531.95	531.96	531.97	531.98	531.99
DESCRIPTION		R1-1 STOP (36")	R2-1 SPEED LIMIT (30"X36") (HIGH DENSITY)	R3-7 LEFT LANE MUST TURN LEFT (30"X30")	R4-7 KEEP RIGHT (24"X30")	S1-1 SCHOOL CROSSING (SYMBOL) (36"x36")	W1-7 (48"x24")	W3-3 TRAFFIC SIGNAL (SYMBOL) (36"x36")	W9-2TR LANE ENDS MERGE RIGHT ROAD (SYMBOL) (30"x30")	9 INCH STREET NAME, BLOCK NUMBER (VARIES X 9")	S5-2aTP END SCHOOL ZONE (24"x10")	R9-6 YIELD TO PEDS (12"X18")	R3-17 BIKE LANE (24"X18")	R3-17bP ENDS (24"X8")	D11-1 BIKE ROUTE (24"x18")	M7-5 ARROW (ROUTE SUPPLEMENTAL PLAQUES) (12"x9")	SW16-9P AHEAD (24"x12")	SW16-7PL (24"x12")	M6-3G AHEAD ARROW (SYMBOL) (12"x9")	M6-1 ARROW (ROUTE) (12"x9")	M6-1L ARROW (ROUTE) (12"x9")	R5-2 NO TRUCK (SYMBOL) (24"x24")	W5-4a PATH NARROWS (18"x18")	W6-1 DIVIDED ROAD (SYMBOL) (36"x36")
UNIT		EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
321 OF 377	BEGIN - 224+00					2								1	2			2	1					
323 OF 377	224+00 - 232+00	2	1			1				2	1	3			2		1					1		
325 OF 377	232+00 - 240+00		1	1	1	1		1				2			2		1						2	
327 OF 377	240+00 - 248+00		3			1	1	2	2			1	5	1	2	1	1		1	2	1			
328 OF 377	248+00 - END							1																1
BASE BID TOTALS:		2	5	1	1	5	1	4	2	2	1	6	5	2	8	1	3	2	2	2	1	1	2	1
ADD ALTERNATE BID 1																								
322A OF 377	BEGIN - 224+00							**1**																
324A OF 377	224+00 - 232+00																							
325A OF 377	232+00 - 240+00							**2**																
327 OF 377	240+00 - 248+00							2																
328 OF 377	248+00 - END							1																
ADD ALTERNATE BID 1 TOTALS:		2	5	1	1	5	1	**6**	2	2	1	6	5	2	8	1	3	2	2	2	1	1	2	1

SUMMARY OF PAVEMENT MARKINGS

ITEM		535.1	535.2	535.4	535.7	535.8	535.9	535.12	535.16	535.19	535.22	536.5	536.31	537.8	537.9
DESCRIPTION		4 INCH WIDE YELLOW LINE	4 INCH WIDE WHITE LINE	8 INCH WIDE WHITE LINE	24 INCH WIDE WHITE LINE	RIGHT WHITE ARROW	LEFT WHITE ARROW	WORD "ONLY"	STRAIGHT WHITE ARROW BICYCLE FACILITY	WORD STOP	LANE REDUCTION ARROW	12 INCH WIDE WHITE LINE	12 INCH WIDE BLACK LINE (CONTRAST)	TRAFFIC BUTTON (TYPE II-A-A)	TRAFFIC BUTTON (TYPE II-C-R)
UNIT		LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	LF	LF	EA	EA
321 OF 377	BEGIN - 224+00	830	202	133	289		2	1	2				404	144	28
323 OF 377	224+00 - 232+00	1507	379	484	265		6	2	4	2		8	442	177	62
325 OF 377	232+00 - 240+00	1446	336	340	511		4	2	4	2		8	768	171	53
327 OF 377	240+00 - 248+00	1630	439	297	363	1	6	2	2	1	1	4	514	179	68
328 OF 377	248+00 - END	1008	76											70	9
BASE BID TOTALS:		6421	1432	1254	1428	1	18	7	12	5	1	20	2128	741	220
ADD ALTERNATE BID 1															
322A OF 377	BEGIN - 224+00			133	289								404		
324A OF 377	224+00 - 232+00			**484**	**229**								**370**		
326A OF 377	232+00 - 240+00			340	511								768		
327 OF 377	240+00 - 248+00			297	363								514		
328 OF 377	248+00 - END														
ADD ALTERNATE BID 1 TOTALS:		6421	1432	**1254**	**1392**	1	18	7	12	5	1	20	**2056**	741	220

SUMMARY OF EXISTING SMALL SIGN REMOVAL

SHEET LIMITS	EXIST SIGN	DESCRIPTION
BEGIN - 24+00	1	PEDESTRIAN CROSSING AHEAD
	2	PEDESTRIAN CROSSING AHEAD
24+00 - 32+00	3	RIGHT LANE MUST TURN RIGHT
	4	PEDESTRIAN CROSSING AHEAD
	5	STOP
	6	TWO WAY TRAFFIC
	7	END SCHOOL ZONE/SPEED LIMIT /35 MPH
	8	NO THRU TRUCKS
	9	STOP/MILITARY DR W/ SEQUOIA HEIGHT
	10	BEGIN DIVIDED ROAD
32+00 - 40+00	11	TRAFFIC SIGNAL AHEAD
	12	PEDESTRIAN CROSSING AHEAD
	13	SPEED LIMIT/35 MPH
	14	STOP HERE ON RED
	15	DIVIDED HIGHWAY/ LT LANE MUST TURN LT
	16	STOP HERE ON RED
40+00 - 48+00	17	PEDESTRIAN CROSSING AHEAD
	18	LT TURN ONLY/ STRAIGHT/ RT TURN LANE
	19	SPEED LIMIT/ 35 MPH
	20	STOP SIGN AHEAD
	21	TRAFFIC SIGNAL AHEAD
	22	SPEED LIMIT/ 35 MPH
	23	BIKE LANE/ DIRECTIONAL
	24	MILITARY DR/ REED ROAD
	25	STOP/ ALL WAY
	26	STOP/ ALL WAY
	27	BIKE LANE/ ENDS
	28	TWO DIRECTION LARGE ARROW
	29	STOP/ ALL WAY
	30	SPEED LIMIT/ 35 MPH
	31	BIKE LANE/ DIRECTIONAL
48+00 - END	32	STOP SIGN AHEAD

META ENGINEERING
TBPE REG. # F-22397
13438 BANDERA ROAD, SUITE 104 - HELOTES, TX 78023 - (210) 874-6666

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

SUMMARY OF QUANTITIES

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05212025
DRWN. BY: RPG	DSGN. BY: MAS	CHKD. BY: JMS	SHEET NO.: 22 OF 377

Pen Table File
11:36:19 AM
01/28/2025

01/28/2025 11:36:19 AM
Pen Table File

GENERAL NOTES FOR THE CONSTRUCTION SEQUENCE & TRAFFIC CONTROL PLAN:

This is a suggested Traffic Control Plan (TCP). The Contractor may submit an alternate Traffic Control Plan, signed and sealed by a Licensed Professional Engineer in Texas, for approval by the Engineer. When mutually beneficial changes are proposed to the existing. Traffic Control Plan and are agreed upon by the Contractor and the City of San Antonio, the plan sheets may be developed and signed and sealed by the Engineer.

Furnish and install all Traffic Control Plans devices, including but not limited to barricades, signs, and work zone markings, in compliance with the latest version of the Texas Manual on Uniform Traffic Control Devices (TMUTCD), the State Standard Traffic Control Plans (TCP) sheets, and the Barricades and Construction (BC) sheets. Refer to the project general notes for additional information regarding the Traffic Control Plan.

Verify the location and spacing of signs, barricades, and channelizing devices prior to their placement along vertical curves, horizontal curves, and other geometric constraints to assure visibility to all motorists.

Place the traffic control devices only while work is actually in progress or a definite need exists. Always have enough barricades, channelizing devices, and signs at all times to replace those damaged.

Cover all existing signs that conflict with the Traffic Control Plan and uncover during non-working hours or as directed by the Engineer. Partial coverage of the sign or coverage by material that will not cover the entire sign all the time is not permitted.

Vary the spacing of signs to meet traffic conditions or as directed by the Engineer and assure that all traffic control devices and work zone pavement markings are kept in a highly visible condition (clean, upright and at proper location).

Maintain the roadway surface and work zone striping within the project while the traffic control plan is in effect.

Conduct construction operations so as to provide the least possible interference to traffic and to permit the continuous movement of traffic in all allowable directions at all times or as permitted by the sequence of construction. Provide for safe and convenient access to abutting property, highways, public roads, and street crossings except as otherwise shown on the sequence of construction. The contractor will maintain at all times two-way traffic or a minimum of one lane using a pilot vehicle and flaggers.

Place all stockpiled material, waste material, signs, barricades, channelizing devices and work vehicles not in use, at a minimum of 30 feet from the outer edge of the nearest travel lane. Location of stockpile and disposal site to be provided to City Construction Inspector and Project Manager at pre-construction meeting.

Maintain all existing drainage conditions during all construction phases until the permanent drainage facilities are constructed and ready to use. Handle excavated and stockpiled material in such a way that it will not block drainage.

Regulate all construction traffic so as to cause a minimal inconvenience to the traveling public. At the times when it is necessary for trucks to stop, unload or cross roadways under traffic, provide warning signs and flaggers as needed to adequately protect the traveling public.

During non working hours all drop-offs are to be filled to a 3:1 maximum slope except as otherwise noted in the plans or as directed by the engineer.

Notify the Engineer in writing two weeks prior to shifting of traffic within each phase of the Traffic Control Plan.

Remove from the work area all loose materials and debris resulting from construction operations at the end of each work day.

Maintain a minimum of one through lane open in each direction during working hours except as directed by the engineer.

Implement all required erosion control measures as shown in the plans during the various stages of construction.

GENERAL NOTES CONTINUED:

Moving an existing sign to a temporary location is subsidiary to this item. Installations with permanent supports at permanent locations will be paid for under the applicable bid item(s).

Use of portable changeable message sign as advance notice of lane closures will be required, as directed by the Engineer. For locations that are adjacent to each other, a single sign in advance of the entire work area is acceptable.

Additional signs, barricades and channelizing devices may be required to maintain traffic during construction, as shown on TCP standards. Additional signs, barricades, etc. (if any), will be subsidiary to item 530 "Barricades, Signs and Traffic Handling".

Refer to BC(6) Portable Changeable Message Sign (PCMS) Standards for a listing of abbreviated words and two-word phrases that are acceptable for use on PCMS. Submit the suggested message for the board to the Engineer for approval.

Place PCMS at locations requiring lane closures 2 weeks before the closures or as directed by the Engineer.

Provide off-duty uniformed peace officers in officially marked vehicles as part of traffic control operations. The peace officers must supply proof of certification by the Texas Commission on Law Enforcement standards. This work will be paid for under the provisions of COSA, unless otherwise provided for as a separate bid item or allowance.

Use opposing lane dividers and vertical panels to channelize traffic when existing pavement markings have been obliterated.

Refer to temporary traffic signal plans for adjustments, modifications or changes to the traffic signal heads, ground boxes, cable and other appurtenances associated with all existing traffic signal installations, as shown in plans for the safe handling of traffic in the work zone during construction of the permanent traffic signals.

Place temporary asphalt around the manholes and/or valves to provide a minimum of 50:1 taper when manholes and/or valves are exposed to traffic. Asphalt tapers will not be paid for directly, but will be subsidiary to the price bid for manhole and/or valve work.

NOTES:

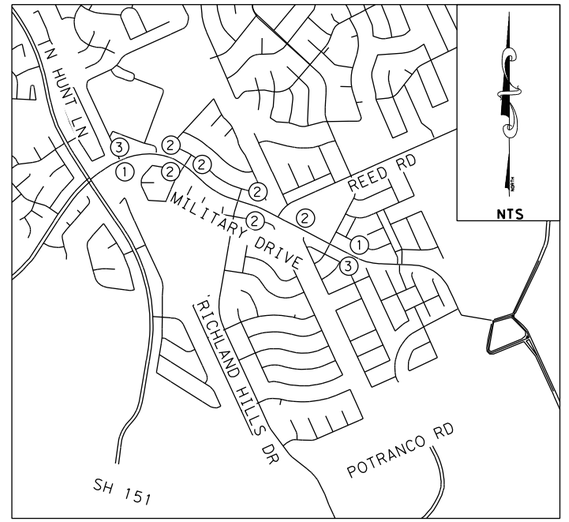
1. Certain signs must be used in conjunction with other signs. Example: "FLAGGER AHEAD" must have a "BE PREPARED TO STOP."

2. Barricades and warning signs on this sheet are minimal construction zone signing. Additional barricades, warning signs, arrow panels, cones, etc. in accordance with BC(1) thru (12) and the TMUTCD may be required in areas of actual construction.

3. See TCP Standard sheets for additional signing requirements.

4. Install UNEVEN LANES SIGNS (CW8-11) in advance of condition in accordance with WZ (UL). For edge condition distance "D" greater than 2", edge shall be shouldered up 3:1 using temporary fill at the end of each working day. Temporary fill may be removed when working on roadway in immediate area. Temporary fill, shoulder up and removal of temporary fill shall not be paid for directly but shall be considered subsidiary to various bid items.

TRAFFIC CONTROL DEVICE LOCATION MAP



LOCATION	USAGE	OBSERVE WARNING SIGNS STATE LAW	STAY ALERT TALK OR TEXT LATER	TRAFFIC FINES DOUBLE	SPEED LIMIT 35	ROAD WORK AHEAD	DO NOT PASS	FINE DOUBLE IN WORK ZONE WHEN WORKERS ARE PRESENT TEXAS LAW CONTRACTOR	COSA PROJECT SIGN	END ROAD WORK	SIGNAL WORK AHEAD	RIGHT LANE CLOSED ½ MILE		SIDEWALK CLOSED	SIDEWALK CLOSED CROSS HERE	AHEAD		SIDEWALK CLOSED AHEAD CROSS HERE	SIDEWALK CLOSED USE OTHER SIDE
	TYPE	R20-3T	G20-10T	G20-9TP R20-5T R20-5aTP	R2-1	CW20-1D	R4-1	G20-5T G20-6T	COSA PROJECT SIGN	G20-2bT	CW20SG-1	CW20-5TR/L CW16-3aP	R4-7	R9-9	R9-11aR/L	CW11-2 CW16-9P	CW11-2 CW16-7PL	R9-11R/L	R9-10DBL
(1)	PROJECT APPROACHES	X	X	X	X	X	X	X	X										
(2)	INTERSECTING STREETS					X				X									
(*)	AS DIRECTED											X							
(3)	PROJECT TERMINI									X									
(4)	SIGNAL WORK										X	X	X						
(5)	SIDEWALK/CROSSWALK CLOSURES													X	X	X	X	X	X

LOCATION	USAGE					CONES/ TUBULAR MARKERS	35 MPH		UNEVEN LANES	ROAD CLOSED AHEAD	DETOUR AHEAD	ROAD CLOSED REROUTE	REED RD DETOUR	WORK CONVOY	RIGHT LANE CLOSED LEFT LANE CLOSED	FLASHING ARROW PANEL	PORTABLE CHANGEABLE MESSAGE SIGN	500 FEET	BE PREPARED TO STOP
	TYPE	PLASTIC DRUM	VP	CHEVRON	OTLD	CONES/ TUBULAR MARKERS	CW1-4R/L CW13-1P	CW1-6aT	CW8-11	CW20-3D	CW20-2D	R11-2 M4-10R/L	M4-12T M4-9S/R/L	CW21-10aT	CW20-5bTR/L	FLASHING ARROW PANEL	PORTABLE CHANGEABLE MESSAGE SIGN	CW20-7 CW16-2P	CW3-4
(1)	PROJECT APPROACHES																		
(2)	INTERSECTING STREETS																		
(*)	AS DIRECTED	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
(3)	PROJECT TERMINI																		
(4)	SIGNAL WORK																		
(5)	SIDEWALK/CROSSWALK CLOSURES																		

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

SCHEDULE OF TRAFFIC CONTROL AND ADVANCED WARNING DEVICES

70 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV

SHEET NO. 23 OF 377

DETOURS, BARRICADES, WARNING SIGNS AND SEQUENCE OF WORK, ETC.

I. GENERAL

COOPERATE IN THE USE OF THE RIGHT OF WAY WITH THE CITY OF SAN ANTONIO AND VARIOUS PUBLIC UTILITIES AND THEIR CONTRACTORS AS MAY BE REQUIRED TO ALLOW ADJUSTMENTS TO BE MADE BY OTHERS.

TRAFFIC MUST BE HANDLED OVER THE ENTIRE PROJECT DURING CONSTRUCTION.

PROVIDE A MINIMUM OF 2 WEEKS NOTICE PRIOR OF STREET CLOSURES SO APPROPRIATE AUTHORITES CAN BE NOTIFIED.

MAINTAIN TWO WAY TRAFFIC DURING ALL PHASES OF CONSTURCTION, UNLESS OTHERWISE DIRECTED.

PROVIDE ACCESS TO ALL ADJACENT PROPERTIES THROUGHOUT ALL PHASES OF CONSTRUCTION. ADEQUACY OF ACCESS WILL BE AT THE DISCRETION OF THE ENGINEER.

RESTORE TO ORIGINAL OR BETTER CONDITION ALL DAMAGE TO EXISTING FENCES.

MAINTAIN PEDESTRIAN ACCESSIBILITY, AS SHOWN IN THIS TRAFFIC CONTROL PLAN OR AS DIRECTED BY THE ENGINEER, AT ALL TIMES DURING CONSTRUCTION.

REGULATE ALL CONSTRUCTION TRAFFIC TO MINIMIZE INCONVENIENCE TO THE TRAVELING PUBLIC. AT POINTS WHERE IT IS NECESSARY FOR TRUCKS TO STOP AND UNLOAD, PROVIDE WARNING SIGNS AND FLAGGERS.

A STORM WATER POLLUTION PREVENTION PLAN (SW3P) IS INCLUDED IN THESE CONSTRUCTION DOCUMENTS. INCORPOARATE THIS PLAN INTO THE SEQUENCE OF WORK AS NEEDED WITH THE SCHEDULE OF IMPLEMENTATION OF THESE SW3P MEASURES BEING BASED ON THE SEQUENCE OF SOIL DISTURBING ACTIVITES. WHEREVER POSSIBLE, PRESERVE THE EXISTING VEGETATION. MINIMIZE THE AMOUNT OF DISTURBED GROUND ON THE ENTIRE PROJECT.

MAINTAIN GRAVEL FILTER BAGS PLACED AT INLETS FROM PRIOR PHASES UNTIL THE FINAL SURFACE COURSE IS PLACED.

BACKFILL OR PLACE STEEL PLATES OVER OPEN TRENCHES AT THE END OF EACH WORKDAY. NO DIRECT PAYMENT.

II. SEQUENCE OF WORK

BEFORE THE COMMENCEMENT OF EACH PHASE, INSTALL ADVANCE WARNING SIGNS, TEMPORARY SIGNS AND BARRICADES AS SHOWN ON THE PLANS AND/OR AS DIRECTED/APPROVED BY THE ENGINEER. INSTALL IN LOCATIONS THAT ARE VISIBLE AND DO NOT OBSTRUCT LINES OF SIGHT FOR MOTORISTS AT DRIVEWAYS AND INTERSECTIONS.

INSTALL SW3P MEASURES PRIOR TO BEGINNING WORK DURING ANY PHASE OF CONSTRUCTION. MAINTAIN SW3P AT ALL TIMES DURING CONSTRUCTION AND ADJUST SW3P MEASURES AS REQUIRED BY THE ENGINEER.

DROP OFF CONDITIONS OF GREATER THAN 2" MUST HAVE A 3:1 SLOPE AT THE END OF EACH DAY, AS WELL AS THROUGHOUT THE PROJECT WHERE ACCESS TO ADJACENT PROPERTIES IS ALLOWED TO DRIVEWAYS AND SIDE STREETS.

PREPARING ROW / REMOVAL OF EXISTING ITEMS TO BE DONE ONLY IN AREAS WHERE WORK IS OCCURRING, AS PER THE PHASES NOTED BELOW.

PLANNING, SURFACE TREATMENTS AND OVERLAYS SHALL BE PERFORMED IN THE DIRECTION OF TRAFFIC. BEGIN SURFACE CONSTRUCTION ON THE HIGH SIDE OF THE ROAD TO AVOID WATER PONDING ISSUES.

WHEN ANY PROCESS OF THE WORK IS NOT COMPLETED IN ONE DAY, PROVIDE A TEMPORARY RAMP BETWEEN THE NEW SURFACE AND THE EXISITNG ROADWAY SURFACE AT A SLOPE NOT TO EXCEED 8:1 TO ALLOW SAFE PASSAGE OF TRAFFIC DURING NON-WORK PERIODS. THE MATERIAL USED SHAL CONFORM TO ITEM 205 HOT MIX ASPHALTIC CONCRETE PAVEMENT OR MATERIAL APPROVED BY THE ENGINEER. NO DIRECT PAYMENT FOR THIS WORK.

VERIFY AND LOCATE OVERHEAD AND BURIED UTILITIES PRIOR TO BEGINNING WORK TO PREVENT ANY DAMAGE OR INTERFERENCE TO EXISITNG UTILITIES.

III. CONSTRUCTION SEQUENCE

IN GENERAL, THIS PROJECT SHALL BE CONSTRUCTED IN 7 PHASES AS OUTLINED BELOW. FOR TRAFFIC HANDLING AT SIGNALIZED INTERSECTIONS, REFER TO THE DETAILED CONSTRUCTION PHASING LAYOUTS. EXISTING SIGNALIZED INTERSECTIONS INCLUDE WARREN HIGH SCHOOL ENTRANCE AND RICHLAND HILLS DR.

PHASE 1 - INSTALL PROPOSED UTILITIES

1. SET TRAFFIC CONTROL DEVICES AND PLACE SW3P MEASURES PRIOR TO STARTING WORK IN THIS PHASE.
2. UTILIZE TCP STANDARDS INCLUDED IN THE PLANS AS NECESSARY FOR UTILITY ADJUSTMENTS.
3. CONSTRUCT PROPOSED SAWS WATER WORK WHICH MAY INCLUDE VALVE BOX ADJUSTMENTS.
4. CONSTRUCT PROPOSED CPS GAS LINE WORK WHICH MAY INCLUDE VALVE BOX ADJUSTMENTS.

PHASE 2 - WESTBOUND LANES CONSTRUCTION

STEP 1 - DRAINAGE STRUCTURE AT MILITARY DRIVE/REED RD STA 247+00.00

1. PLACE TWO PCMS ALONG MILITARY DRIVE, ONE EACH FOR EASTBOUND AND WESTBOUND TRAFFIC, TWO WEEKS PRIOR TO CLOSING MILITARY DRIVE. LOCATIONS OF PCMS WILL BE DETERMINED BY THE ENGINEER.
2. SET TRAFFIC CONTROL DEVICES AND SW3P MEASURES PRIOR TO STARTING THIS PHASE.
3. PLACE BARRICADES, WARNING SIGNS AND TRAFFIC CONTROL DEVICES FOR SIDEWALK CLOSURES.
4. CLOSE MILITARY DRIVE FROM REED ROAD TO RAPLA CROSSING, REFER TO "TRAFFIC CONTROL PLAN DETOUR LAYOUTS" FOR DETOUR SIGNING AND ROUTE.
5. CUT EXISTING PAVEMENT, REMOVE EXISTING CURB AND SIDEWALK AND EXCAVATE FOR CONSTRUCTION OF BT-15, CI B-11, AND BT-14. CONSTRUCTION SHALL PROCEED FROM DOWNSTREAM OUTFALL TOWARDS UPSTREAM. PLACE TRENCH EXCAVATION. CONSTRUCT APPROXIMATELY 70' OF BT-14. BACKFILL AND/OR PLACE STEEL PLATES OVER OPEN TRENCHES AT THE END OF EACH WORKDAY.
6. RECONSTRUCT CURB.
7. RESTORE PAVEMENT.
8. NO DIRECT PAYMENT SHALL BE MADE FOR TEMPORARY BACKFILLING OF TRENCHES AND PLACEMENT OF STEEL PLATES.

STEP 2 - REED ROAD TO RAPLA CROSSING

1. SET TRAFFIC CONTROL DEVICES AND PLACE SW3P MEASURES PRIOR TO STARTING WORK IN THIS PHASE.
2. PLACE BARRICADES, WARNING SIGNS AND TRAFFIC CONTROL DEVICES.
3. ELIMINATE EXISTING PAVEMENT MARKINGS AND MARKERS. PLACE WZPM.
4. PLACE LPCB.
5. BEGIN EXCAVATION AND EMBANKMENT OPERATIONS.
6. CONTINUE CONSTRUCTION OF STORM SEWER BT-14, BT-13, BT-12, A PORTION OF BT-11. BJ-09, BL-12. REMOVE AND REPLACE EXISTING CI B-10D AND ADD EXTENTION. PROCEED WITH BL-11 AND CI B-10B.
7. CONSTRUCT MOISTURE CONDITIONED SUBGRADE LAYER.
8. PLACE TY B BASE MATERIAL IN TWO 4" AND ONE 3" LIFTS.
9. CONSTRUCT CURB AND MEDIAN. RECONSTRUCT CURB AND SIDEWALK REMOVED FOR THE INSTALLATION OF STORM DRAIN ALONG EAST SIDE OF REED RD.
10. PLACE LIFT OF TY D.
11. REMOVE LPCB, SET TY III BARRICADES AT BOTH ENDS OF CONSTRUCTION LIMITS AND KEEP THIS PORTION OF ROADWAY CLOSED UNTIL FURTHER NOTICE.

STEP 3 - RICHLAND HILLS DR TO REED ROAD

1. SET TRAFFIC CONTROL DEVICES AND PLACE SW3P MEASURES PRIOR TO STARTING WORK IN THIS PHASE.
2. PLACE BARRICADES, WARNING SIGNS AND TRAFFIC CONTROL DEVICES.
3. ELIMINATE EXISTING PAVEMENT MARKINGS AND MARKERS. PLACE WZPM.
4. INSTALL AND OPERATE TEMPORARY TRAFFIC SIGNAL.
5. BEGIN EXCAVATION AND EMBANKMENT OPERATIONS.
6. CONTINUE CONSTRUCTION OF STORM SEWER WITHIN THE LIMITS SHOWN.
7. CONSTRUCT MOISTURE CONDITIONED SUBGRADE LAYER.
8. PLACE 11' TY B BASE MATERIAL IN TWO 4" AND ONE 3" LIFTS.
9. CONSTRUCT CURB AND MEDIAN.
10. PLACE 1.5" LIFT OF TY D.
11. INSTALL PERMANENT TRAFFIC SIGNAL AT REED ROAD (NORTHWEST CORNER).
12. REMOVE LPCB, SET TY III BARRICADES AT BOTH ENDS OF CONSTRUCTION LIMITS AND KEEP THIS PORTION OF ROADWAY CLOSED UNTIL FURTHER NOTICE.

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TRAFFIC CONTROL
SEQUENCE OF WORK NARRATIVE

70 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV
		SHEET NO. 24 OF 377

PHASE 2 - WESTBOUND LANES CONSTRUCTION, CONT'D

STEP 4 - SEQUOIA HEIGHT TO RICHLAND HILLS DR

1. SET TRAFFIC CONTROL DEVICES AND PLACE SW3P MEASURES PRIOR TO STARTING WORK IN THIS PHASE.
2. PLACE BARRICADES, WARNING SIGNS AND TRAFFIC CONTROL DEVICES.
3. ELIMINATE EXISTING PAVEMENT MARKINGS AND MARKERS. PLACE WZPM.
4. PLACE LPCB.
5. INSTALL AND OPERATE TEMPORARY TRAFFIC SIGNAL.
6. BEGIN EXCAVATION AND EMBANKMENT OPERATIONS.
7. CONTINUE CONSTRUCTION OF STORM SEWER WITHIN THE LIMITS SHOWN.
8. CONSTRUCT MOISTURE CONDITIONED SUBGRADE LAYER.
9. PLACE TY B BASE MATERIAL IN TWO 4" AND ONE 3" LIFTS.
10. CONSTRUCT CURB AND MEDIAN.
11. PLACE LIFT OF TY D.
12. INSTALL PERMANENT TRAFFIC SIGNAL AT RICHLAND HILLS DR (WESTBOUND).
13. REMOVE LPCB, SET TY III BARRICADES AT BOTH ENDS OF CONSTRUCTION LIMITS AND KEEP THIS PORTION OF ROADWAY CLOSED UNTIL FURTHER NOTICE.

STEP 5 A - EARL WARREN HS DRIVEWAY TO SEQUOIA HEIGHT

1. SET TRAFFIC CONTROL DEVICES AND PLACE SW3P MEASURES PRIOR TO STARTING WORK IN THIS PHASE.
2. PLACE BARRICADES, WARNING SIGNS AND TRAFFIC CONTROL DEVICES.
3. CONSTRUCT TEMPORARY PAVEMENT.
4. PLACE WZPM.

STEP 5 B - EARL WARREN HS DRIVEWAY TO SEQUOIA HEIGHT

1. SET TRAFFIC CONTROL DEVICES AND PLACE SW3P MEASURES PRIOR TO STARTING WORK IN THIS PHASE.
2. PLACE BARRICADES, WARNING SIGNS AND TRAFFIC CONTROL DEVICES.
3. ELIMINATE EXISTING PAVEMENT MARKINGS AND MARKERS. PLACE WZPM.
4. PLACE LPCB.
5. BEGIN EXCAVATION AND EMBANKMENT OPERATIONS.
6. CONTINUE CONSTRUCTION OF STORM SEWER WITHIN THE LIMITS SHOWN.
7. CONSTRUCT MOISTURE CONDITIONED SUBGRADE LAYER.
8. PLACE TY B BASE MATERIAL IN TWO 4" AND ONE 3" LIFTS.
9. CONSTRUCT CURB AND MEDIAN.
10. PLACE LIFT OF TY D.
11. INSTALL PERMANENT TRAFFIC SIGNAL AT EARL WARREN HIGH SCHOOL (NORTHEAST CORNER).
12. REMOVE LPCB, SET TY III BARRICADES AT BOTH ENDS OF CONSTRUCTION LIMITS AND KEEP THIS PORTION OF ROADWAY CLOSED UNTIL FURTHER NOTICE.

STEP 6 - BEGINNING TO END OF PROJECT (CONSTRUCT MEDIAN/PAVEMENT/STRIPING/SIGNING)

1. SET TRAFFIC CONTROL DEVICES AND PLACE SW3P MEASURES PRIOR TO STARTING WORK IN THIS PHASE.
2. PLACE BARRICADES, WARNING SIGNS AND TRAFFIC CONTROL DEVICES.
3. COMPLETE ROADWAY AND MEDIANS AT LOCATIONS SHOWN.
4. ELIMINATE EXISTING PAVEMENT MARKINGS AND MARKERS FROM THE BEGINNING OF THE PROJECT TO EARL WARREN HS DRIVEWAY. PLACE WZPM FOLLOWING STRIPING LAYOUTS (WB LANES).
5. FROM EARL WARREN HS DRIVWEWAY TO END OF PROJECT, PLACE WZPM FOLLOWING STRIPING LAYOUTS (WB LANES).
6. INSTALL PERMANENT SIGNING (WB LANES).
7. REMOVE TY III ALONG WB LANES AND OPEN WB LANES TO TRAFFIC.
8. REMOVE BARRICADES, WARNING SIGNS AND TRAFFIC CONTROL DEVICES.

PHASE 3 - BASE REPAIR (EASTBOUND)

STEP 1 THRU 2 - BASE REPAIR

1. SET TRAFFIC CONTROL DEVICES AND PLACE SW3P MEASURES PRIOR TO STARTING WORK IN THIS PHASE.
2. PLACE BARRICADES, WARNING SIGNS AND TRAFFIC CONTROL DEVICES.
3. COMPLETE BASE REPAIR AT LOCATIONS SHOWN.
4. CONSTRUCT CURB ALONG LIMITS OF BASE REPAIR.
5. AT INTERSECTIONS, USE OFF-DUTY POLICE OFFICERS TO ASSIST WITH TRAFFIC CONTROL.
6. PLACE STEEL PLATES OVER OPEN TRENCHES AT THE END OF EACH WORKDAY.
7. REMOVE TRAFFIC CONTROL DEVICES AT THE END OF EACH DAY AND REOPEN ROADWAY TO NORMAL CONDITIONS. RESET TRAFFIC CONTROL DEVICES, IF NEEDED, TO COMPLETE BASE REPAIR.
8. SEQUOIA HEIGHT TO RICHLAND HILLS DR EASTBOUND LANES AND RICHLAND HILLS DR TO REED ROAD EASTBOUND LANES SHALL BE CLOSED DURING THIS STAGE, REFER TO TCP LAYOUT FOR SIGNING AND ROUTE.

PHASE 4 - CURB (EASTBOUND)

STEP 1 THRU 3

1. SET TRAFFIC CONTROL DEVICES AND PLACE SW3P MEASURES PRIOIR TO STARTING WORK IN THIS PHASE.
2. PLACE BARRICADES, WARNING SIGNS AND TRAFFIC CONTROL DEVICES.
3. REMOVE EXISTING CURB.
4. ACTIVATE PERMANENT TRAFFIC SIGNALS AT RICHLAND HILLS DR AND REED ROAD (EASTBOUND).
5. ACTIVATE PERMANENT TRAFFIC SIGNALS AT SEQUOIA HEIGHT AND RICHLAND HILLS DR (EASTBOUND).
6. ACTIVATE PERMANENT TRAFFIC SIGNALS AT EARL WARREN HIGH SCHOOL AND SEQUOIA HEIGHT (EASTBOUND).
7. CONSTRUCT CURB AT LOCATIONS SHOWN.
8. REMOVE TRAFFIC CONTROL DEVICES.

PHASE 5 - MILL (EASTBOUND)

1. SET TRAFFIC CONTROL DEVICES AND PLACE SW3P MEASURES PRIOR TO STARTING WORK IN THIS PHASE.
2. PLACE BARRICADES, WARNING SIGNS AND TRAFFIC CONTROL DEVICES.
3. MILL EXISTING PAVEMENT (3" DEPTH).

PHASE 6 - ILLUMINATION

1. ILLUMINATION POLES TO BE INSTALLED (BY OTHERS).

PHASE 7 - SIDEWALK (EASTBOUND & WESTBOUND)

1. SET TRAFFIC CONTROL DEVICES AND PLACE SW3P MEASURES PRIOIR TO STARTING WORK IN THIS PHASE.
2. PLACE BARRICADES, WARNING SIGNS AND TRAFFIC CONTROL DEVICES.
3. REMOVE EXISTING SIDEWALK AND CONSTRUCT SIDEWALKS AT LOCATIONS SHOWN.
4. REMOVE TRAFFIC CONTROL DEVICES.

PHASE 8 - FINAL SURFACE

1. PLACE 3" TY D WARM MIX ASPHALTIC CONCRETE SURFACE COURSE OVER MILLED AREAS.
2. PLACE 1.5" TY D HMAC SURFACE COURSE ON WB LANES.
3. PLACE FINAL STRIPE AND REMAINING SIGNS.
4. PLACE TREES/ LANDSCAPING.
5. PLACE TOPSOIL AND SOD.

IV. FINAL CLEANUP

1. REMOVE ALL SURPLUS MATERIALS FROM THE PROJECT. SOD ALL AREAS REQUIRING REVEGETATION IN ACCORDANCE WITH THE PLANS. COMPLETE ALL LANDSCAPE MAINTENANCE, FINAL INSPECTION ITEMS, AND CLEANUP.

V. PAYMENT

1. UNLESS OTHERWISE INDICATED ON THE PLANS OR SPECIFICATIONS, ALL WORK AND MATERIALS REQUIRED BY THESE PROVISIONS ARE NOT PAID FOR DIRECTLY BUT CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS FOR THIS CONTRACT.

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

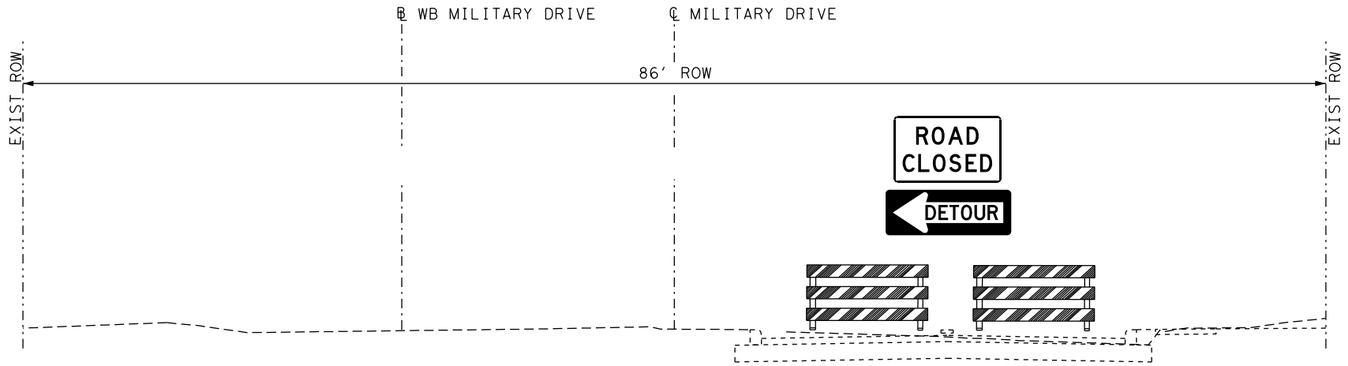
MILITARY DRIVE
TRAFFIC CONTROL SEQUENCE OF WORK NARRATIVE

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 25 OF 377

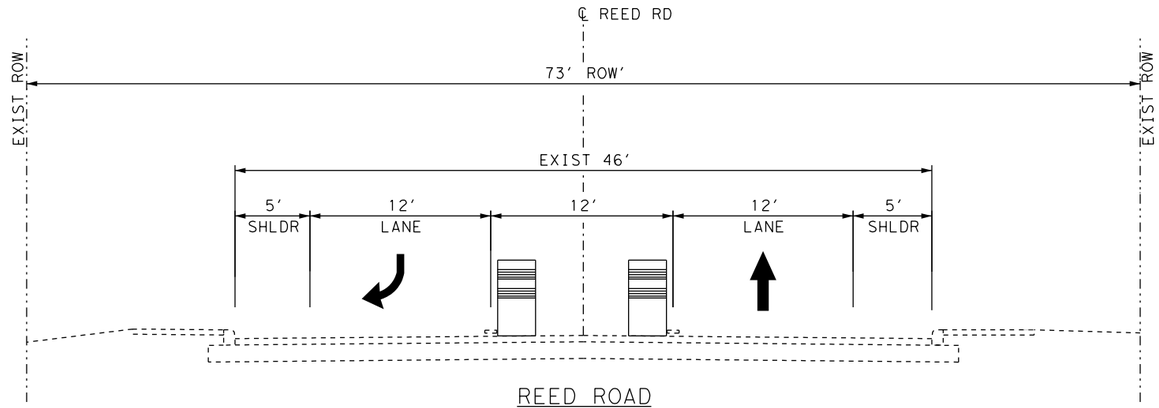
c:\dms\pwe-useast-006\knerr.chris\dms71690\VC_MD_S_TCN_02.dgn
8:36:41 AM
5/19/2025

LEGEND

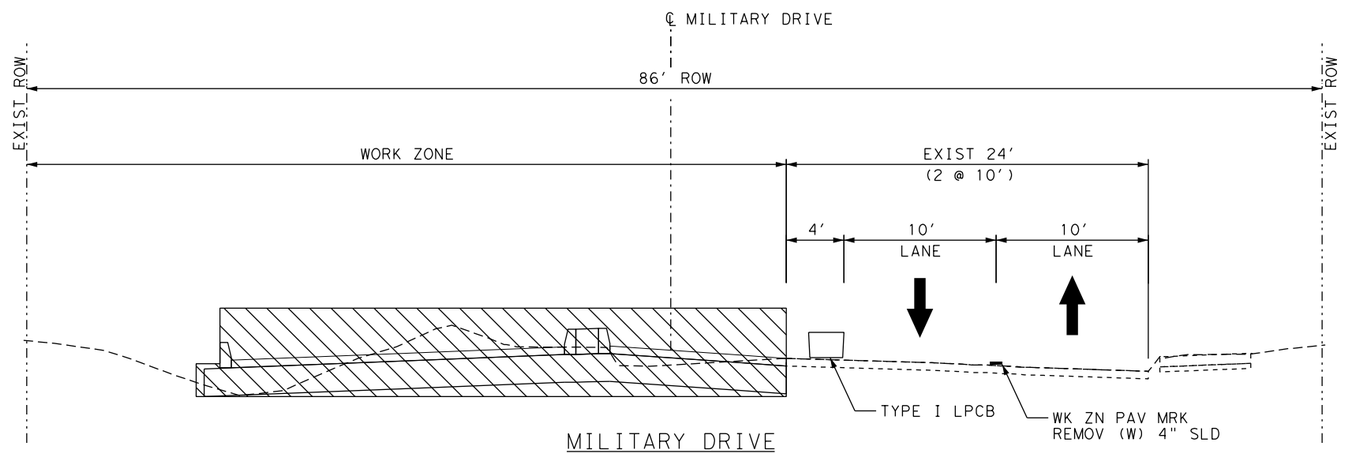
- WORK ZONE THIS PHASE
- WORK ZONE PREVIOUS PHASE
- DIRECTION OF TRAVEL
- LANE CLOSURE



MILITARY DRIVE
SECTION A+A
(PHASE 2 STEP 1)
STA 246+43.00



REED ROAD
SECTION B+B
(PHASE 2 STEP 1)
STA 10+60.00 TO STA 12+77.00



MILITARY DRIVE
SECTION C+C
(PHASE 2 STEP 2)
STA 246+21.00 TO STA 252+30.82

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

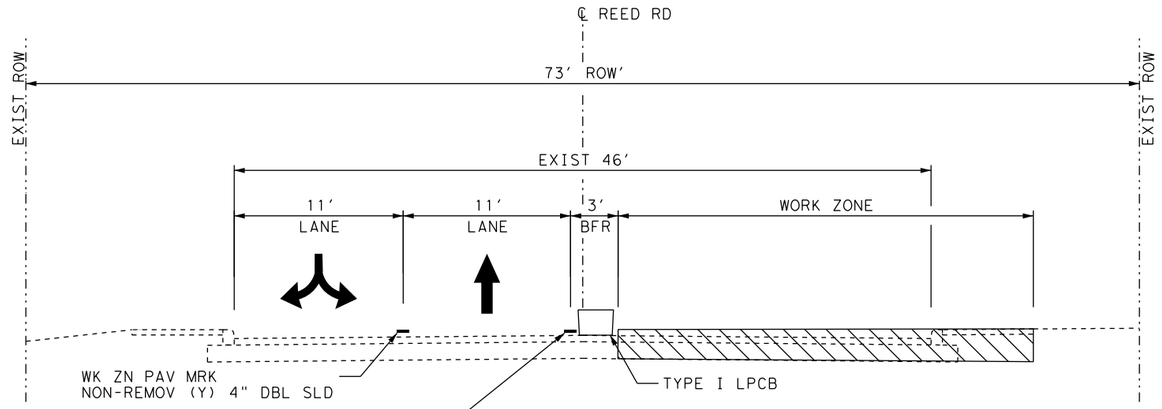
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TRAFFIC CONTROL TYPICAL SECTIONS
PHASE 2

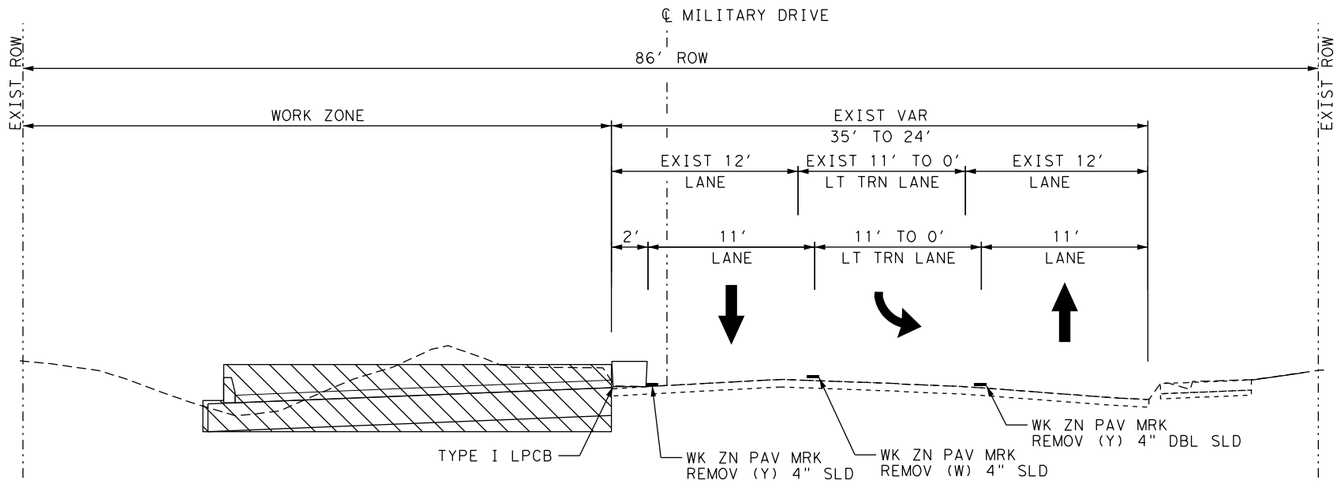
70 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 26 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TTS_S_PH3_1.dgn

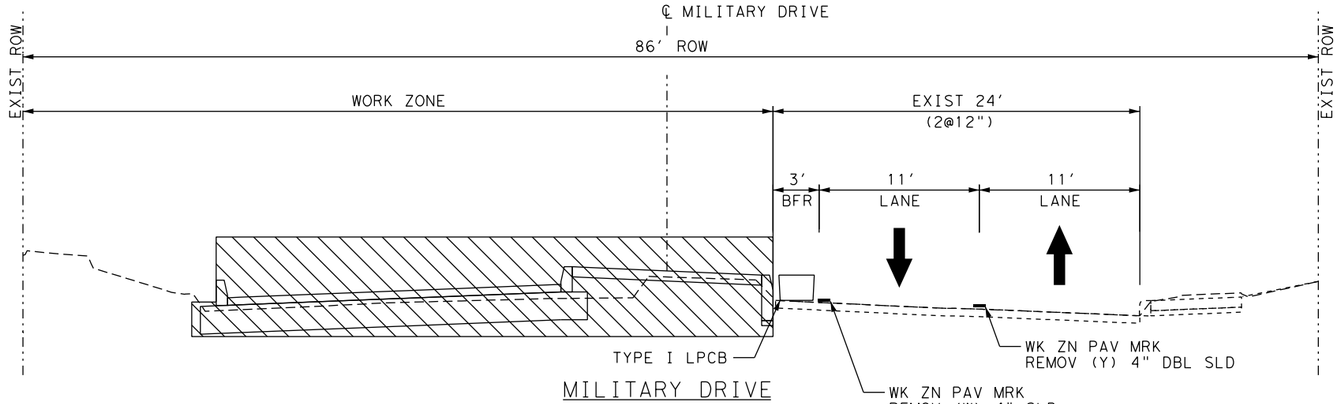
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TTS_S_PH3_1.dgn
8:37:07 AM
5/19/2025



REED ROAD
SECTION D+D
(PHASE 2 STEP 2)
STA 10+41.00 TO STA 12+00.00



MILITARY DRIVE
SECTION E+E
(PHASE 2 STEP 3)
STA 239+28.00 TO STA 241+86.00



MILITARY DRIVE
SECTION F+F
(PHASE 2 STEP 3)
STA 241+86.00 TO STA 243+27.00

LEGEND

- WORK ZONE THIS PHASE
- WORK ZONE PREVIOUS PHASE
- DIRECTION OF TRAVEL
- LANE CLOSURE

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

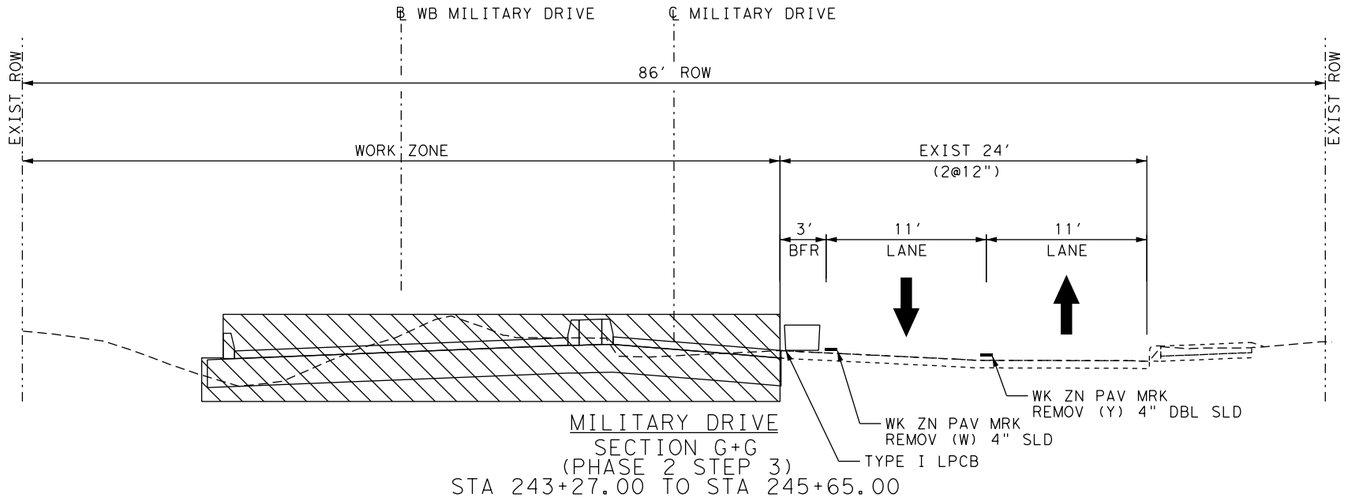
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

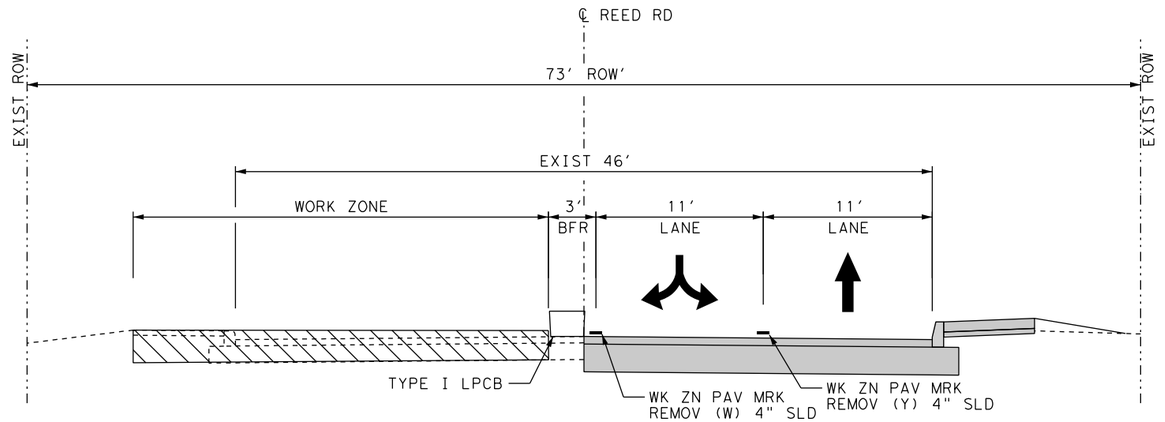
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TRAFFIC CONTROL TYPICAL SECTIONS
PHASE 2

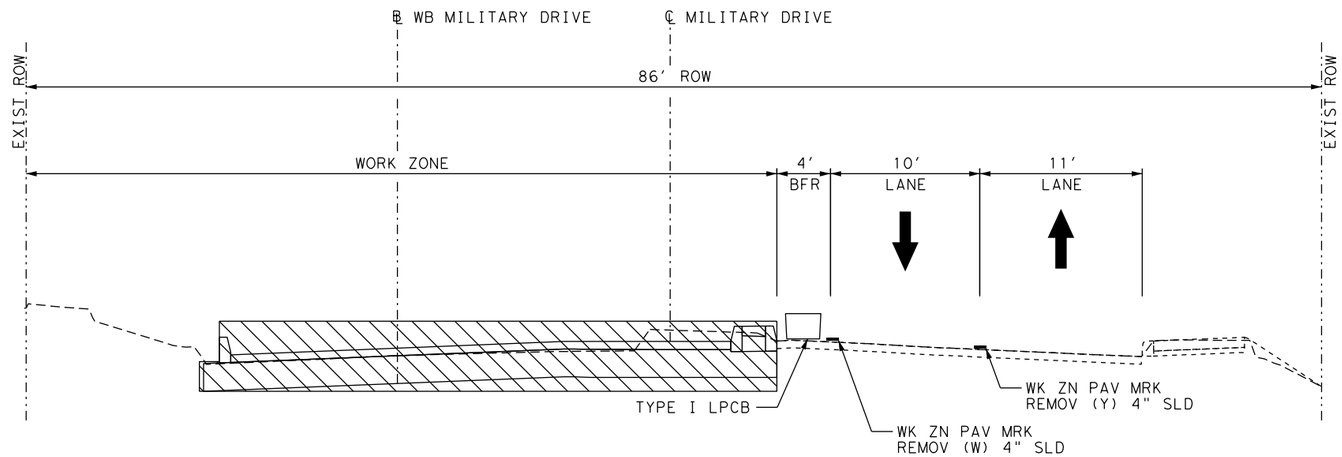
70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 27 OF 377



MILITARY DRIVE
SECTION G+G
(PHASE 2 STEP 3)
STA 243+27.00 TO STA 245+65.00



REED ROAD
SECTION H+H
(PHASE 2 STEP 3)
STA 10+38.00 TO STA 12+17.00



MILITARY DRIVE
SECTION I+I
(PHASE 2 STEP 4)
STA 227+96.00 TO STA 230+57.00

LEGEND

- WORK ZONE THIS PHASE
- WORK ZONE PREVIOUS PHASE
- DIRECTION OF TRAVEL
- LANE CLOSURE

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

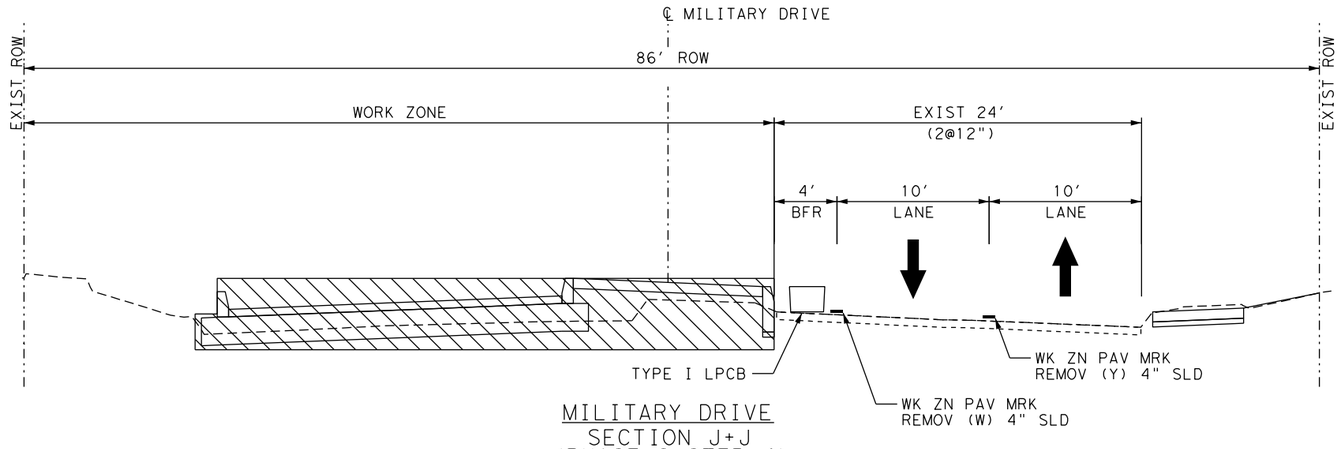
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

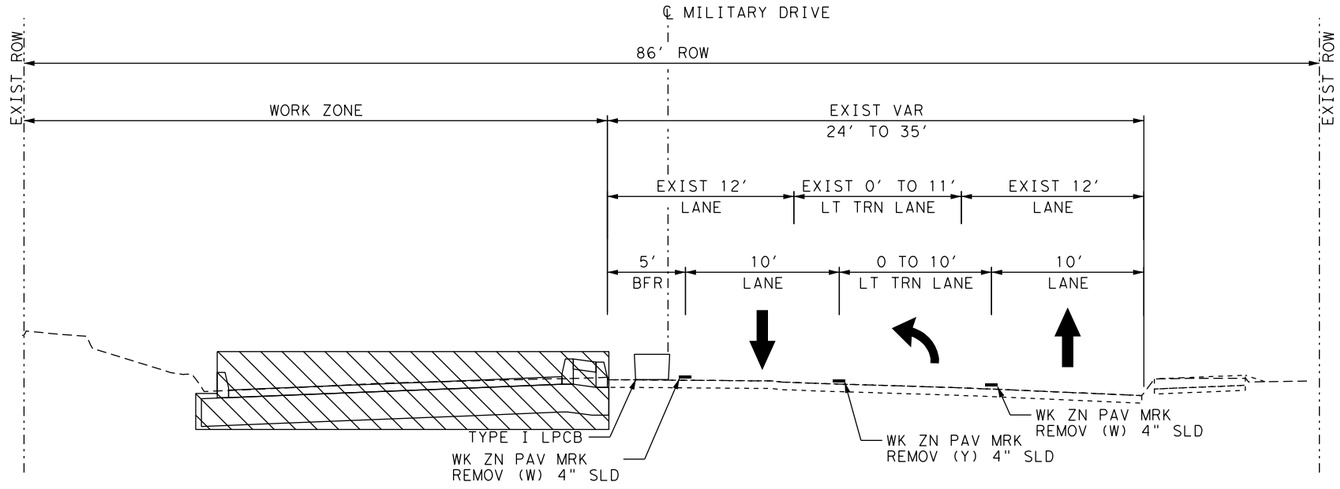
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TRAFFIC CONTROL TYPICAL SECTIONS
PHASE 2

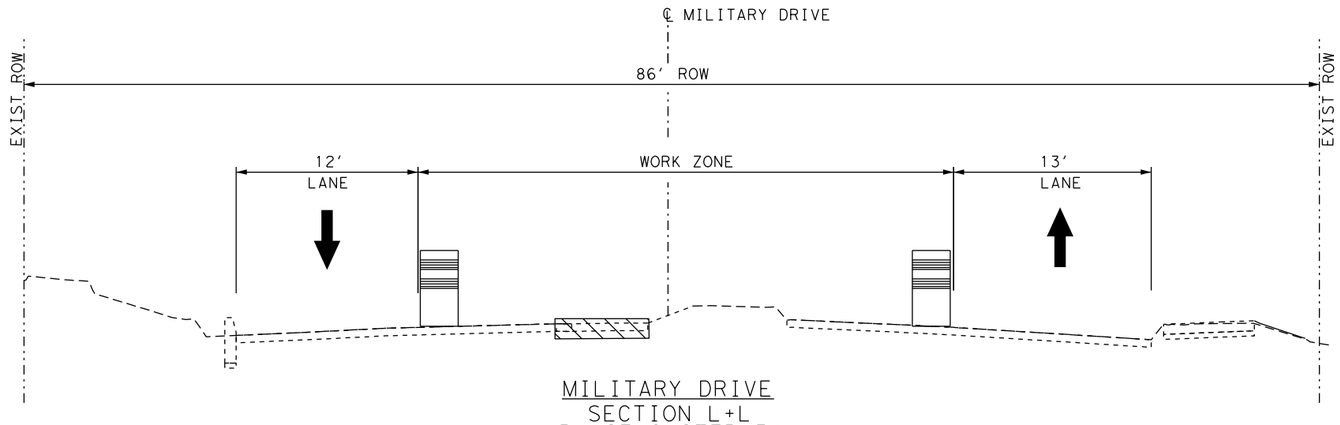
70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 28 OF 377



MILITARY DRIVE
SECTION J+J
(PHASE 2 STEP 4)
STA 230+57.00 TO STA 235+37.00



MILITARY DRIVE
SECTION K+K
(PHASE 2 STEP 4)
STA 235+37.00 TO STA 238+00.00



MILITARY DRIVE
SECTION L+L
(PHASE 2 STEP 5A)
STA 222+57.00 TO STA 225+14.00

LEGEND

- WORK ZONE THIS PHASE
- WORK ZONE PREVIOUS PHASE
- DIRECTION OF TRAVEL
- LANE CLOSURE

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

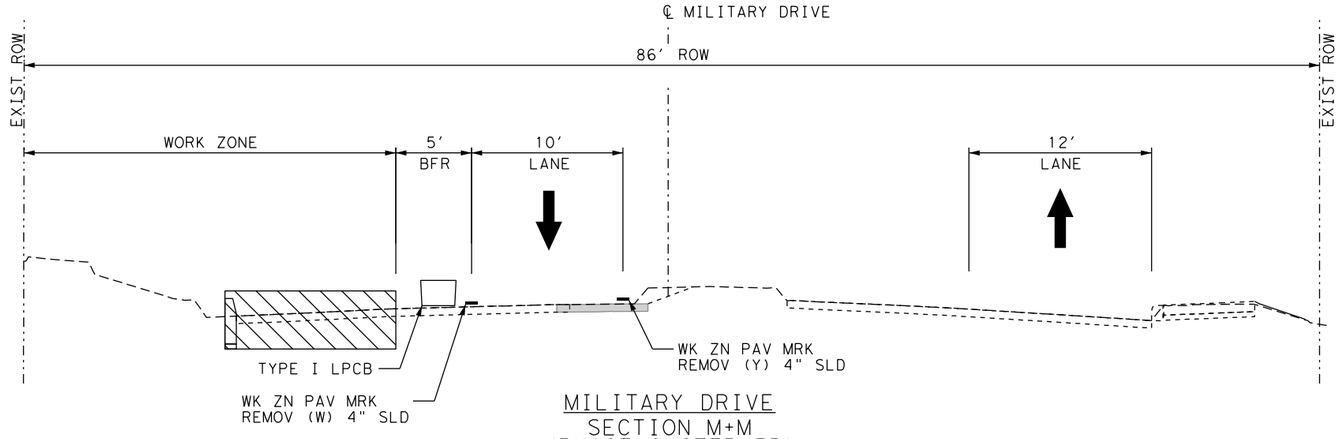
consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

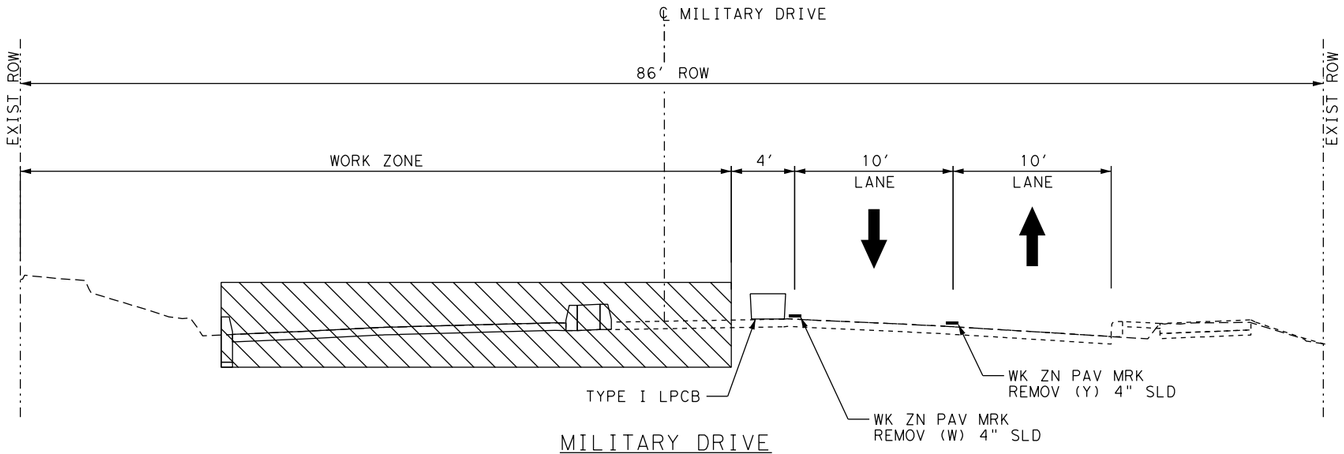
MILITARY DRIVE
TRAFFIC CONTROL TYPICAL SECTIONS
PHASE 3

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 29 OF 377

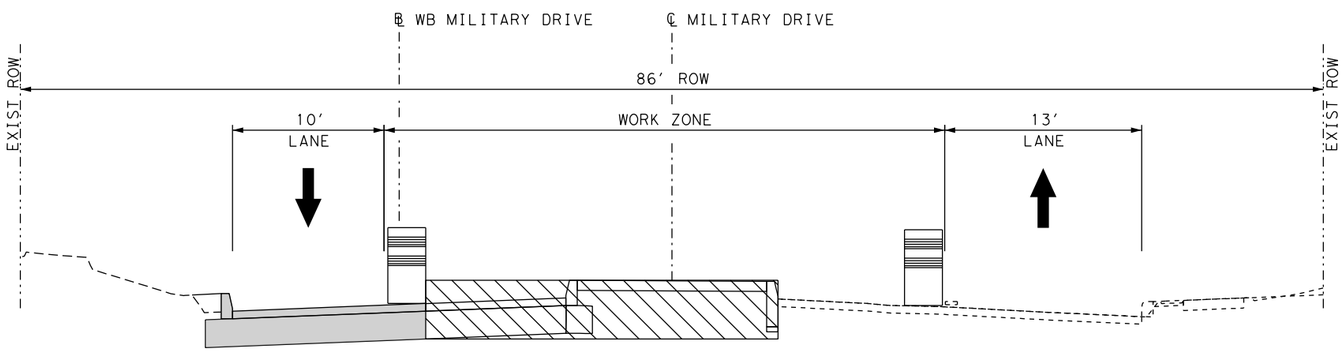
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TTS_S_PH3_4.dgn
5/19/2025 8:38:09 AM



MILITARY DRIVE
SECTION M+M
(PHASE 2 STEP 5B)
STA 222+58.00 TO STA 225+87.00



MILITARY DRIVE
SECTION N+N
(PHASE 2 STEP 5B)
STA 225+87.00 TO STA 227+24.00



MILITARY DRIVE
SECTION O+O
(PHASE 2 STEP 6)
STA 223+15.00 TO STA 227+10.00

LEGEND

- WORK ZONE THIS PHASE
- WORK ZONE PREVIOUS PHASE
- DIRECTION OF TRAVEL
- LANE CLOSURE

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

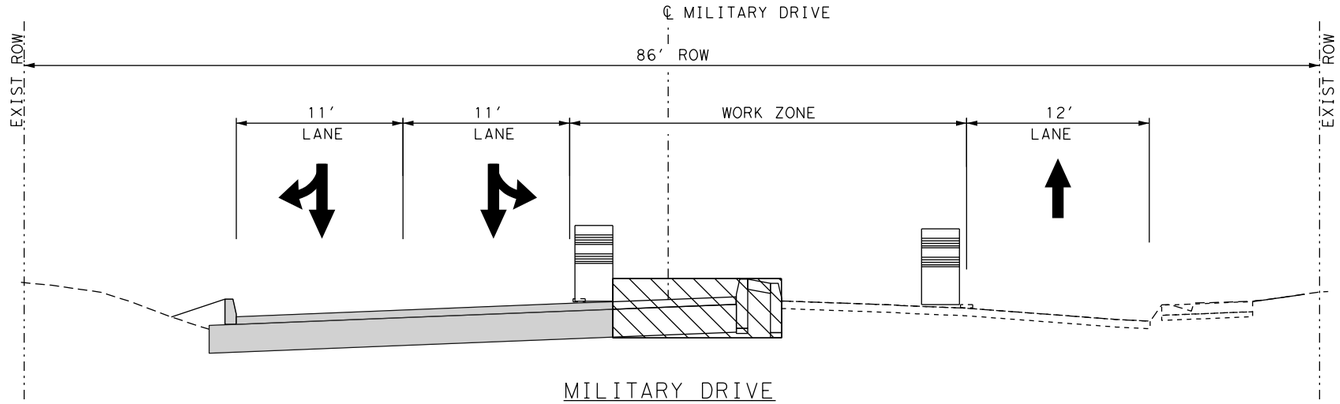
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

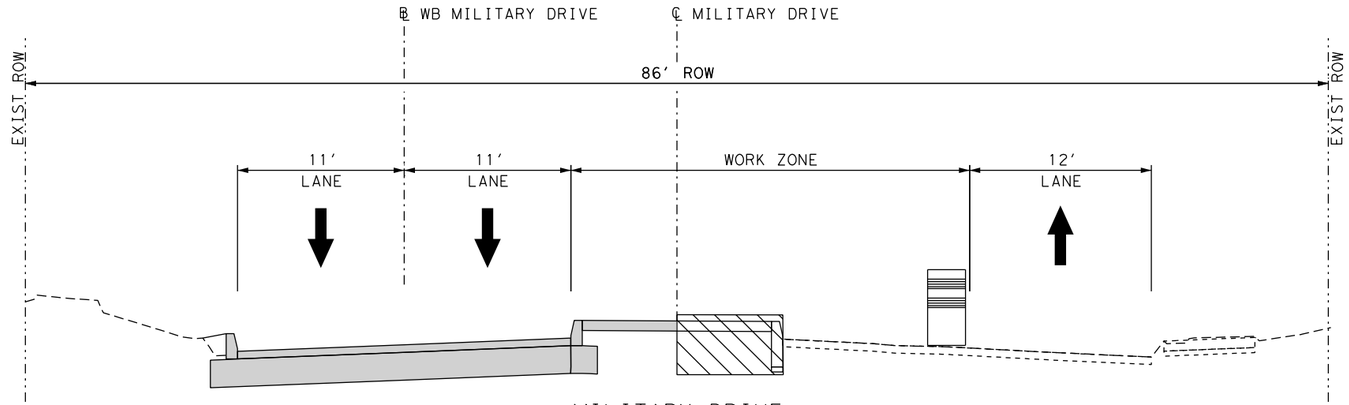
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TRAFFIC CONTROL TYPICAL SECTIONS
PHASE 2

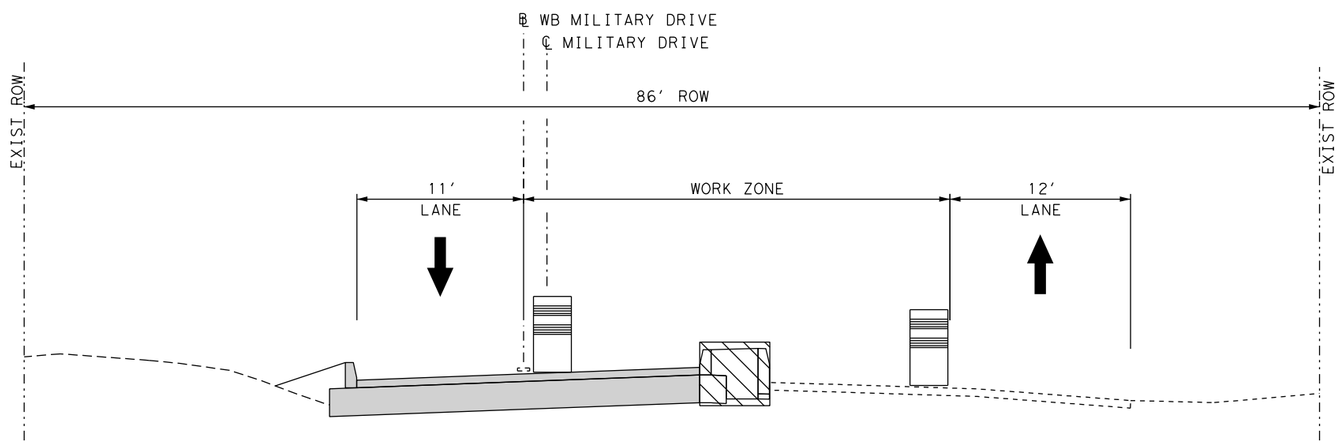
70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 30 OF 377



MILITARY DRIVE
SECTION P+P
(PHASE 2 STEP 6)
STA 239+17.00 TO STA 242+29.00



MILITARY DRIVE
SECTION Q+Q
(PHASE 2 STEP 6)
STA 242+29.00 TO STA 243+00.00



MILITARY DRIVE
SECTION R+R
(PHASE 2 STEP 6)
STA 248+31.00 TO STA 250+31.00

LEGEND

- WORK ZONE THIS PHASE
- WORK ZONE PREVIOUS PHASE
- DIRECTION OF TRAVEL
- LANE CLOSURE

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

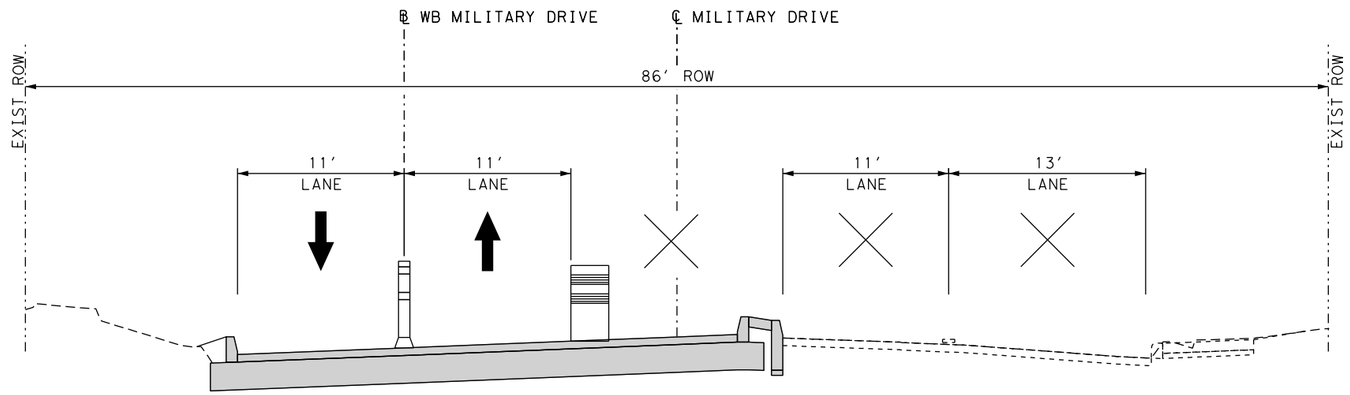
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TRAFFIC CONTROL TYPICAL SECTIONS
PHASE 2

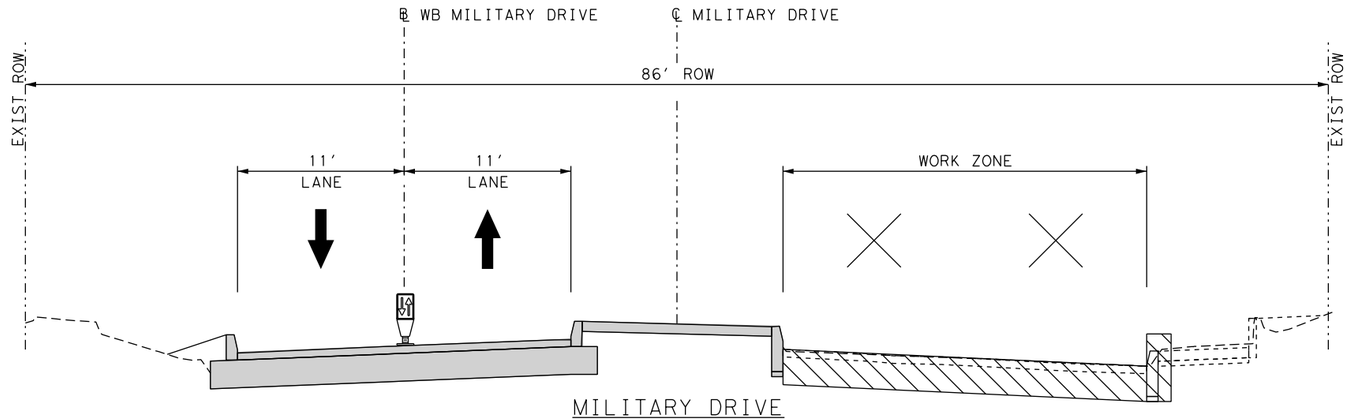
70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 31 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TTS_S_PH3_6.dgn

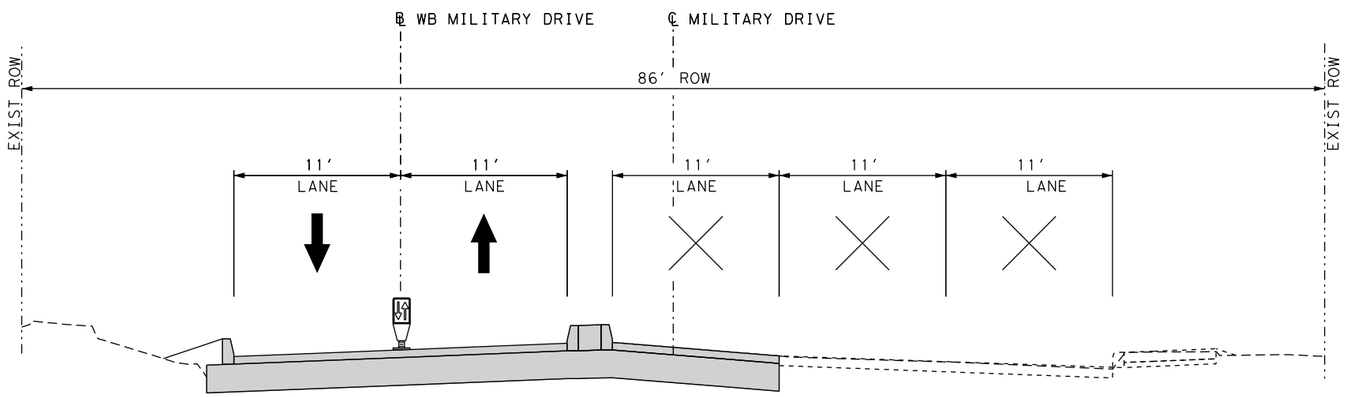
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TTS_S_PH3_6.dgn
5/19/2025 8:38:30 AM



MILITARY DRIVE
SECTION A+A
(PHASE 3 STEP 1)
STA 228+07.00 TO STA 231+11.00
STA 239+21.00 TO STA 241+50.00



MILITARY DRIVE
SECTION B+B
(PHASE 3 STEP 1)
STA 233+03.00 TO STA 233+34.00
STA 234+80.00 TO STA 235+31.00



MILITARY DRIVE
SECTION C+C
(PHASE 3 STEP 1)
STA 235+41.00 TO STA 237+96.00

LEGEND

- WORK ZONE THIS PHASE
- WORK ZONE PREVIOUS PHASE
- DIRECTION OF TRAVEL
- LANE CLOSURE

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

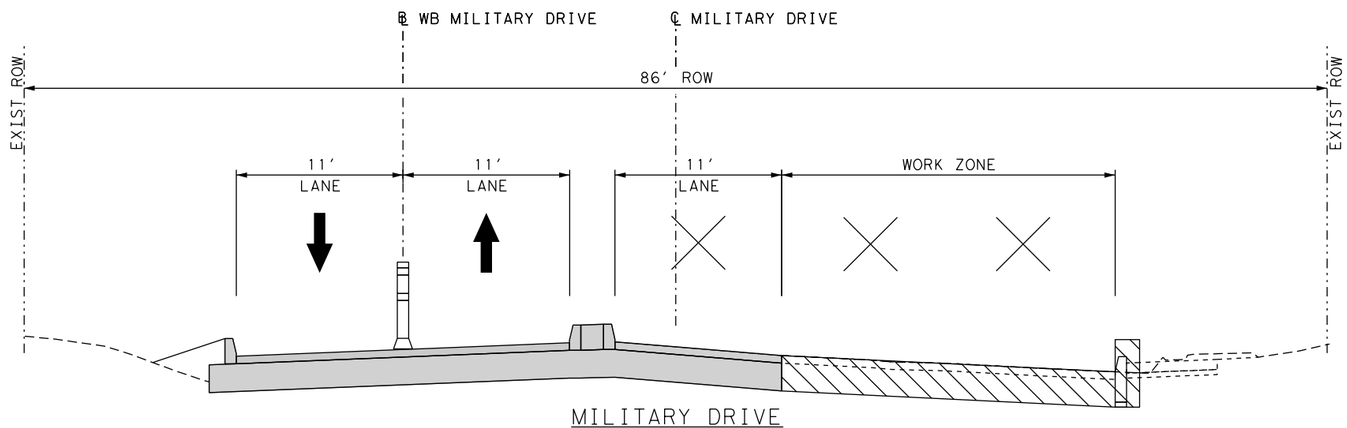
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

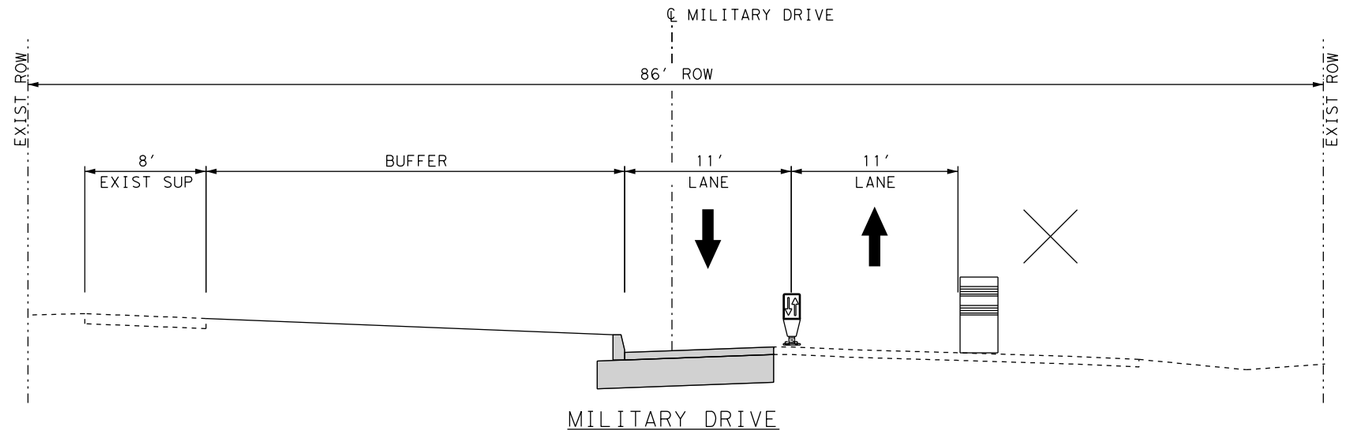
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TRAFFIC CONTROL TYPICAL SECTIONS
PHASE 3

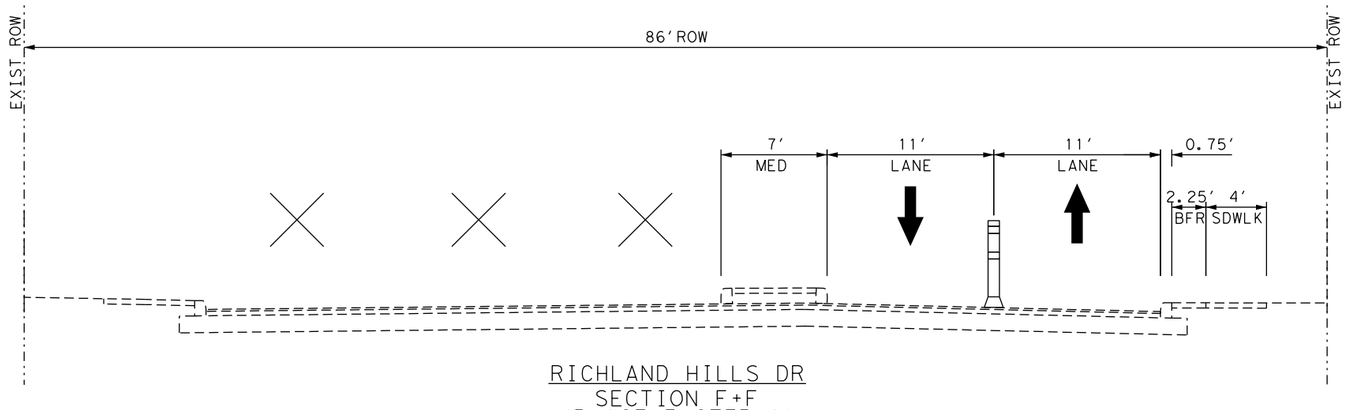
70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 32 OF 377



MILITARY DRIVE
SECTION D+D
(PHASE 3 STEP 1)
STA 243+03.00 TO STA 243+54.00



MILITARY DRIVE
SECTION E+E
(PHASE 3 STEP 1)
STA 250+31.00 TO STA 252+31.00



RICHLAND HILLS DR
SECTION F+F
(PHASE 3 STEP 1)
STA 10+00.00 TO STA 11+70.00

LEGEND

- WORK ZONE THIS PHASE
- WORK ZONE PREVIOUS PHASE
- DIRECTION OF TRAVEL
- LANE CLOSURE

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

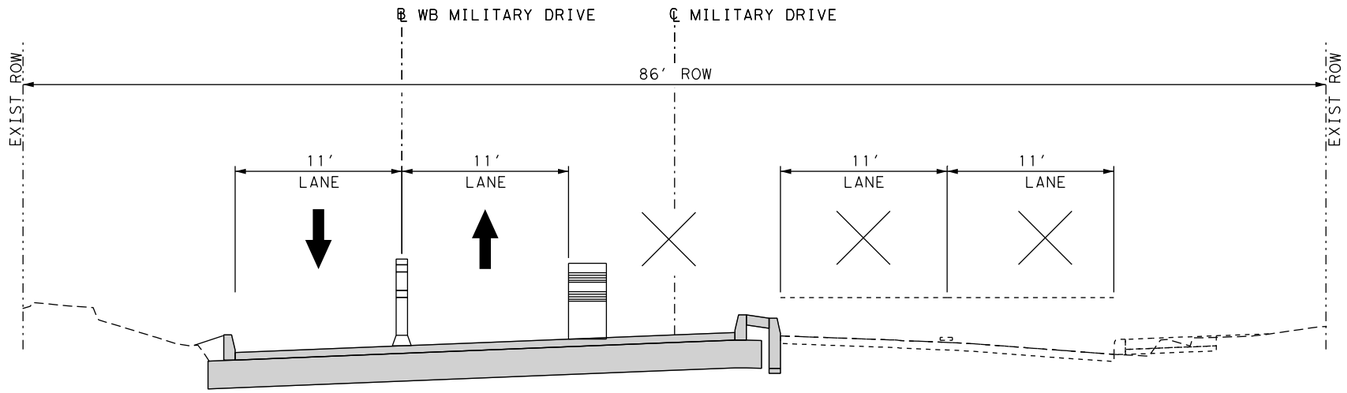
consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

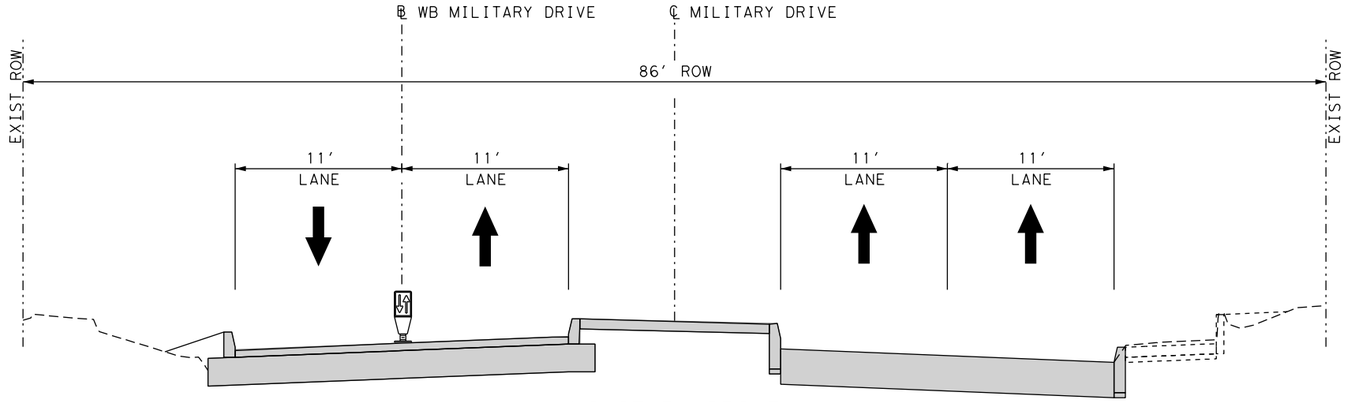
MILITARY DRIVE
TRAFFIC CONTROL TYPICAL SECTIONS
PHASE 3

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 33 OF 377

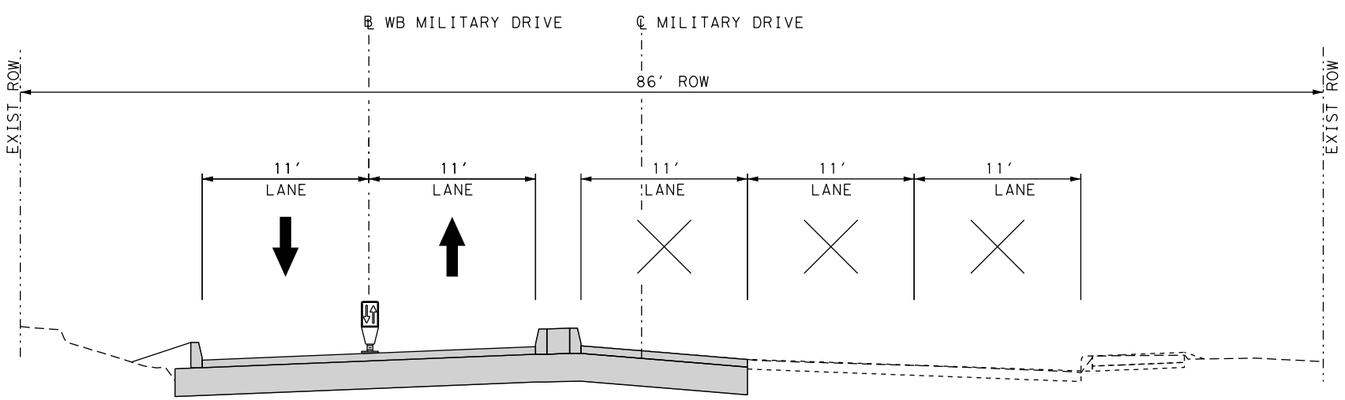
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TTS_S_PH4_2.dgn
5/19/2025 8:38:51 AM



MILITARY DRIVE
SECTION G+G
(PHASE 3 STEP 2)
STA 228+07.00 TO STA 231+11.00
STA 239+21.00 TO STA 241+50.00



MILITARY DRIVE
SECTION H+H
(PHASE 3 STEP 2)
STA 233+03.00 TO STA 233+34.00
STA 234+80.00 TO STA 235+31.00



MILITARY DRIVE
SECTION I+I
(PHASE 3 STEP 2)
STA 235+41.00 TO STA 237+96.00

LEGEND

- WORK ZONE THIS PHASE
- WORK ZONE PREVIOUS PHASE
- DIRECTION OF TRAVEL
- LANE CLOSURE

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

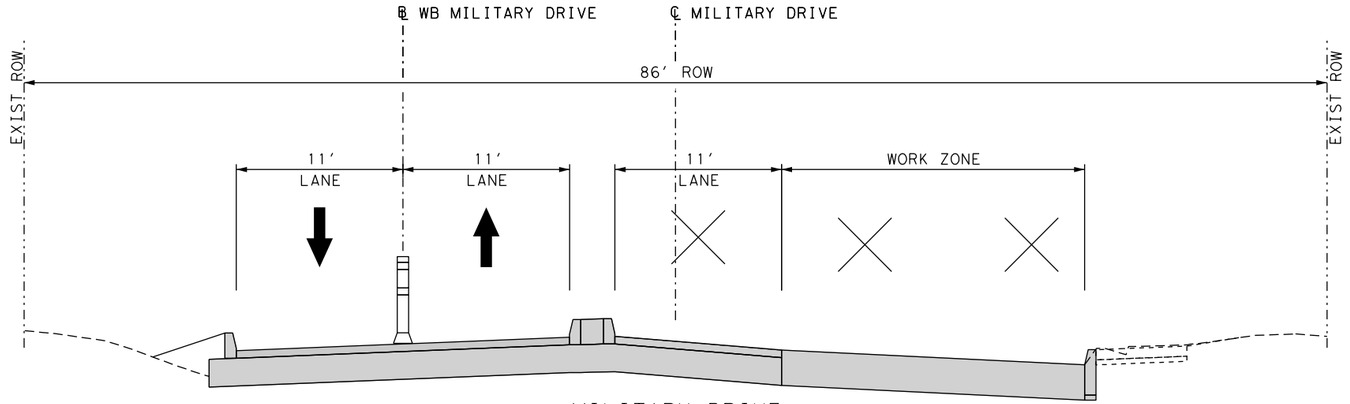
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TRAFFIC CONTROL TYPICAL SECTIONS
PHASE 3

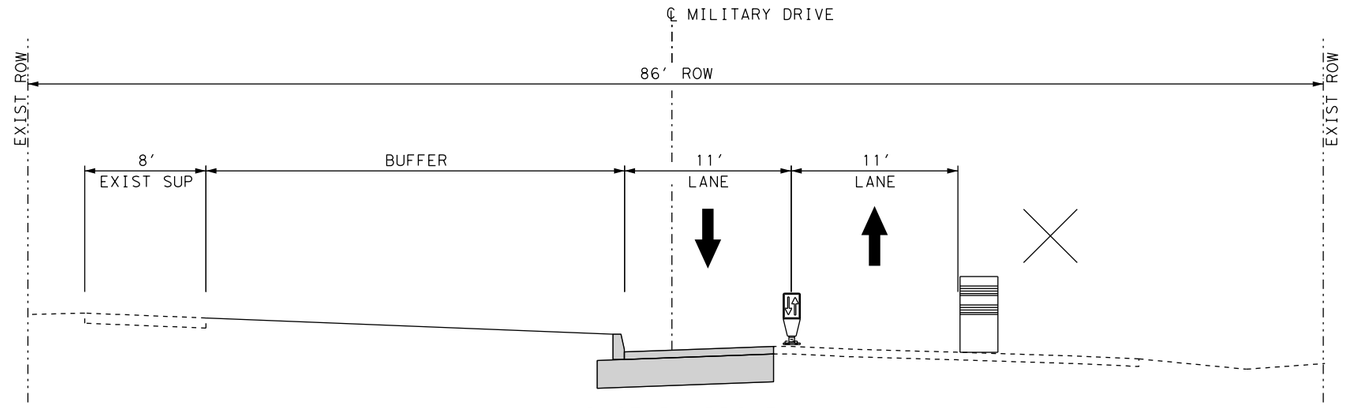
70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 34 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TTS_S_PH4_3.dgn

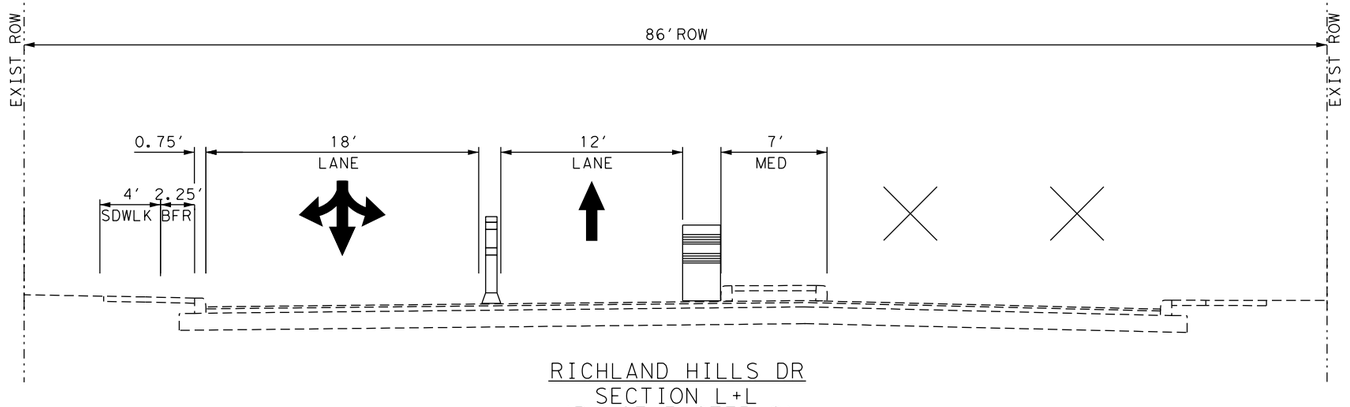
5/19/2025 8:39:01 AM
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TTS_S_PH4_3.dgn



MILITARY DRIVE
SECTION J+J
(PHASE 3 STEP 2)
STA 243+03.00 TO STA 243+54.00



MILITARY DRIVE
SECTION K+K
(PHASE 3 STEP 2)
STA 250+31.00 TO STA 252+31.00



RICHLAND HILLS DR
SECTION L+L
(PHASE 3 STEP 2)
STA 10+00.00 TO STA 11+80.00

LEGEND

- WORK ZONE THIS PHASE
- WORK ZONE PREVIOUS PHASE
- DIRECTION OF TRAVEL
- LANE CLOSURE

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

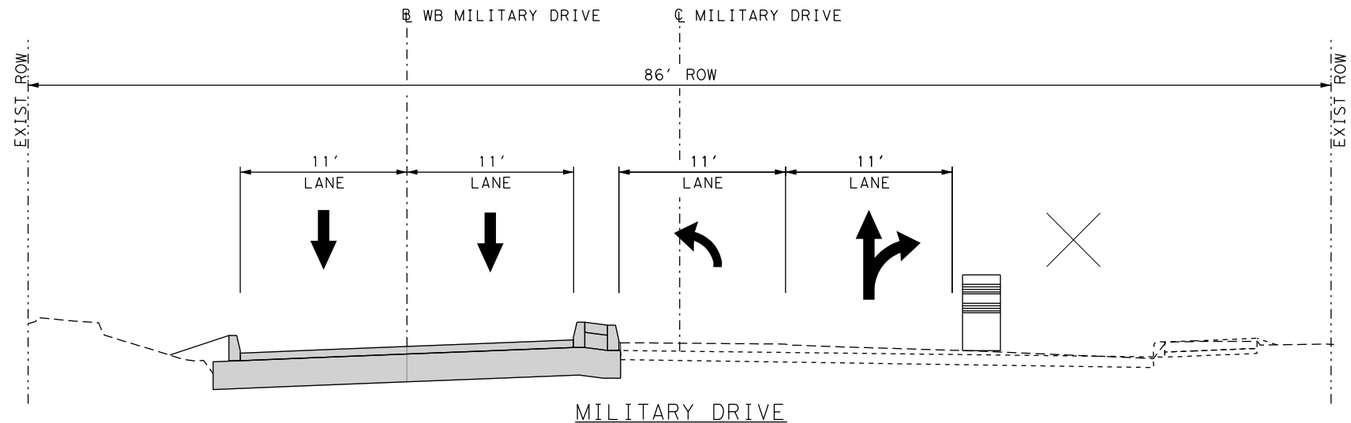
consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

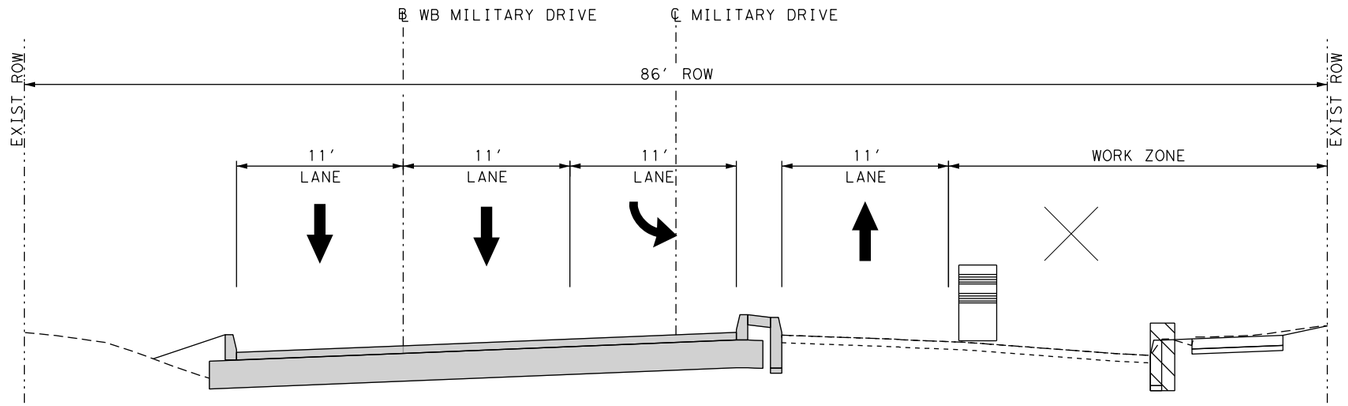
MILITARY DRIVE
TRAFFIC CONTROL TYPICAL SECTIONS
PHASE 3

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 35 OF 377

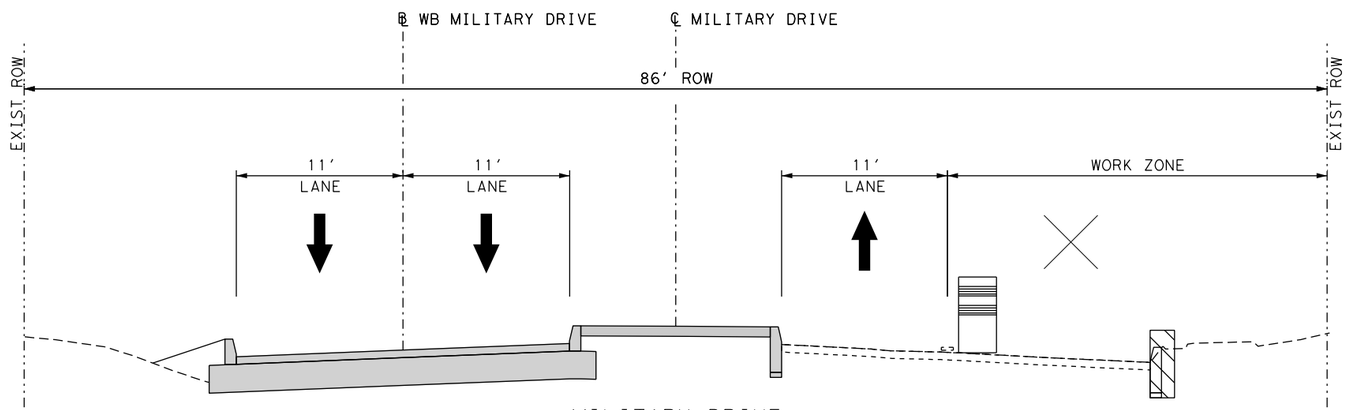
c:\dms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_ITS_S_PH4_4.dgn
5/19/2025 8:39:12 AM



MILITARY DRIVE
SECTION A+A
(PHASE 4 STEP 1)
STA 235+35.00 TO STA 237+95.00



MILITARY DRIVE
SECTION B+B
(PHASE 4 STEP 1)
STA 239+17.00 TO STA 242+29.00



MILITARY DRIVE
SECTION C+C
(PHASE 4 STEP 1)
STA 242+29.00 TO STA 242+70.00

LEGEND

- WORK ZONE THIS PHASE
- WORK ZONE PREVIOUS PHASE
- DIRECTION OF TRAVEL
- LANE CLOSURE

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

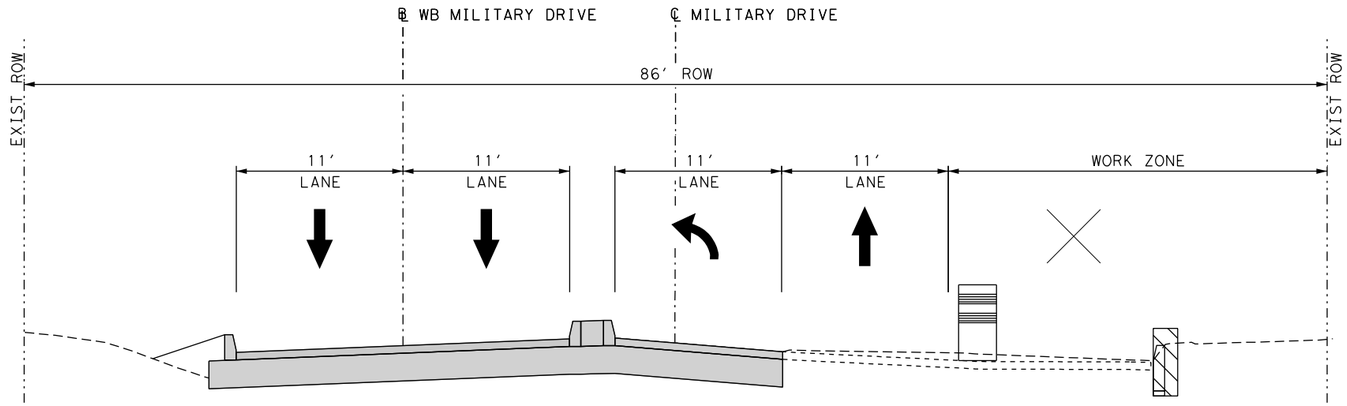
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TRAFFIC CONTROL TYPICAL SECTIONS
PHASE 4

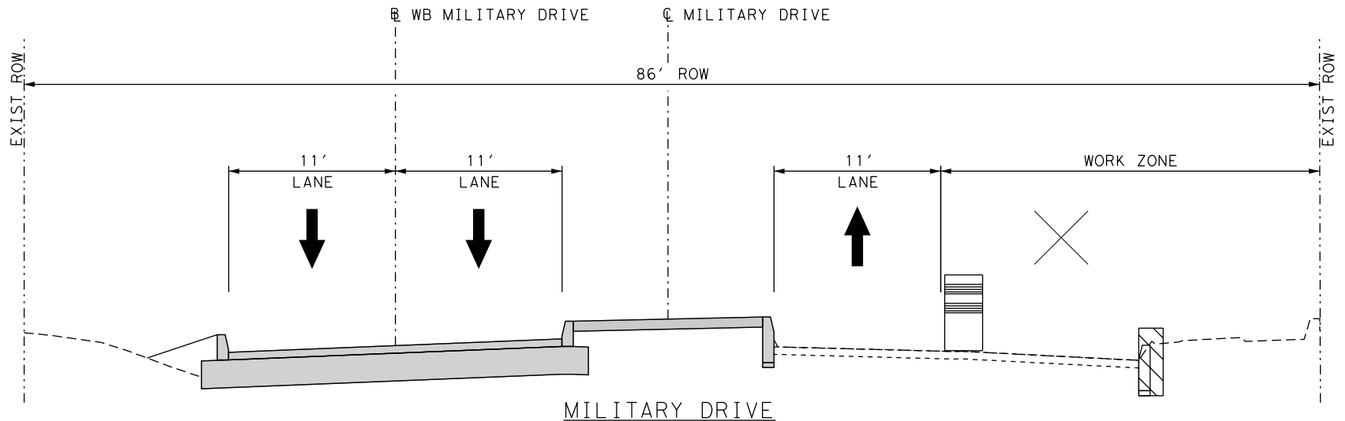
70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 36 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TTS_S_PH5_1.dgn

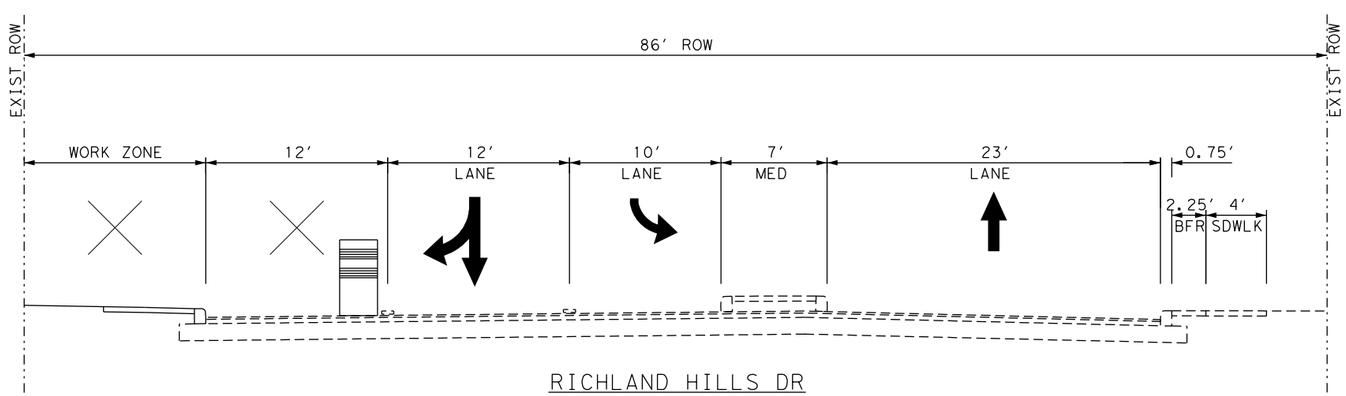
5/19/2025 8:39:22 AM
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TTS_S_PH5_1.dgn



MILITARY DRIVE
SECTION D+D
(PHASE 4 STEP 1)
STA 242+70.00 TO STA 245+65.00



MILITARY DRIVE
SECTION E+E
(PHASE 4 STEP 1)
STA 246+41.00 TO STA 247+92.00



RICHLAND HILLS DR
SECTION F+F
(PHASE 4 STEP 1)
STA 11+38.00 TO STA 11+72.00

LEGEND

- WORK ZONE THIS PHASE
- WORK ZONE PREVIOUS PHASE
- DIRECTION OF TRAVEL
- LANE CLOSURE

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-6464

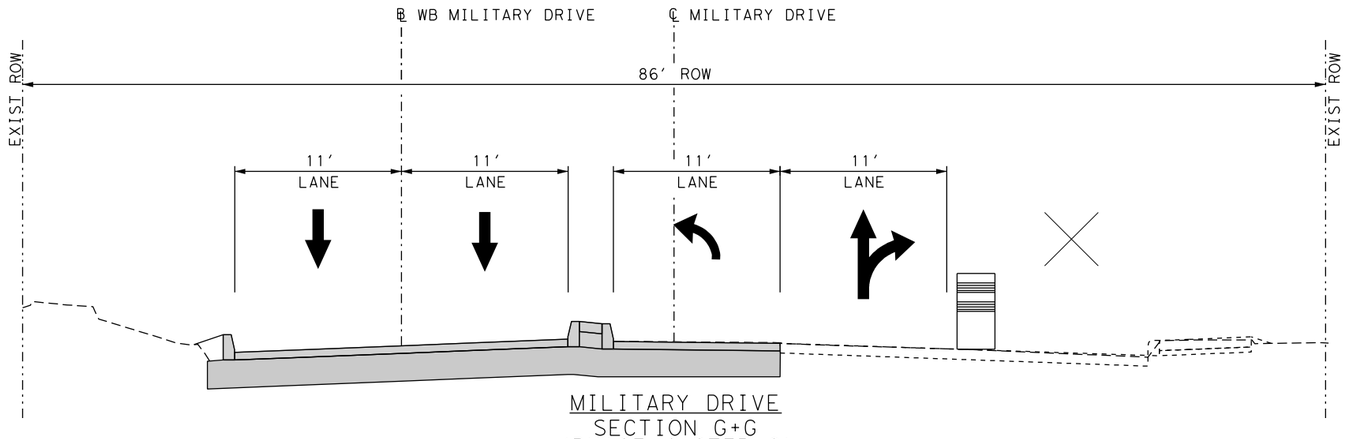
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TRAFFIC CONTROL TYPICAL SECTIONS
PHASE 4

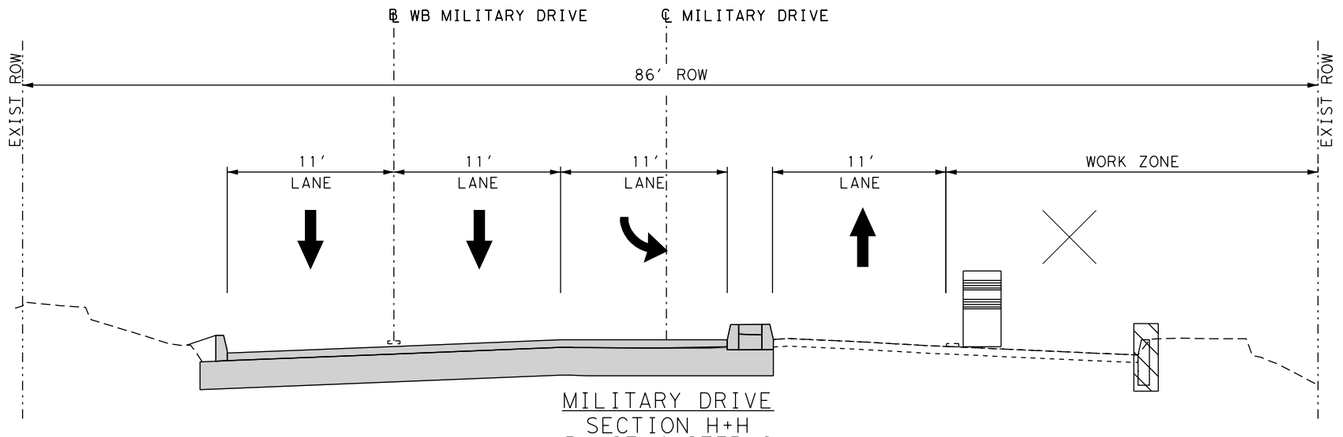
70 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 37 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TTS_S_PH5_2.dgn

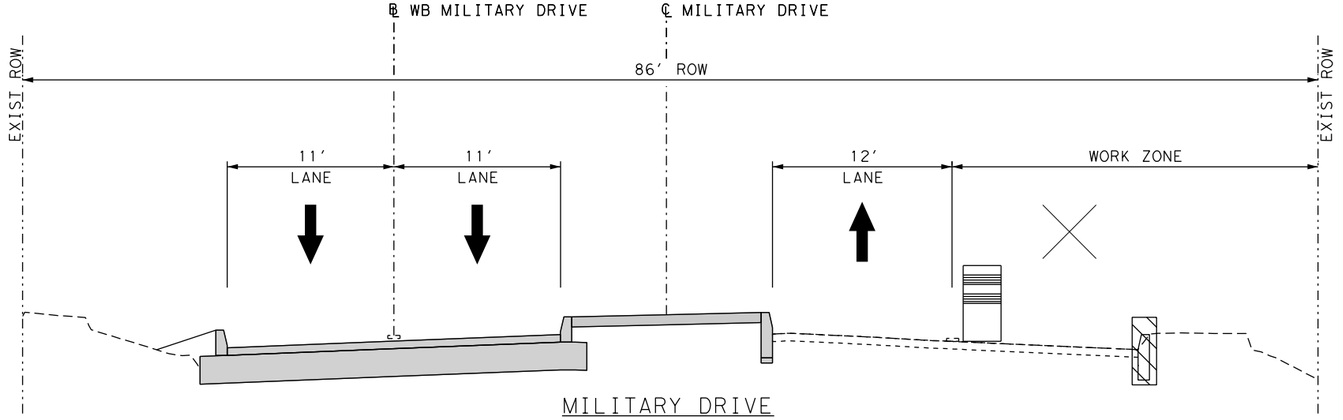
5/19/2025 8:39:33 AM
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TTS_S_PH5_2.dgn



MILITARY DRIVE
SECTION G+G
(PHASE 4 STEP 2)
STA 224+54.00 TO STA 227+10.00



MILITARY DRIVE
SECTION H+H
(PHASE 4 STEP 2)
STA 228+06.00 TO STA 231+17.00



MILITARY DRIVE
SECTION I+I
(PHASE 4 STEP 2)
STA 231+17.00 TO STA 234+84.00

LEGEND

- WORK ZONE THIS PHASE
- WORK ZONE PREVIOUS PHASE
- DIRECTION OF TRAVEL
- LANE CLOSURE

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

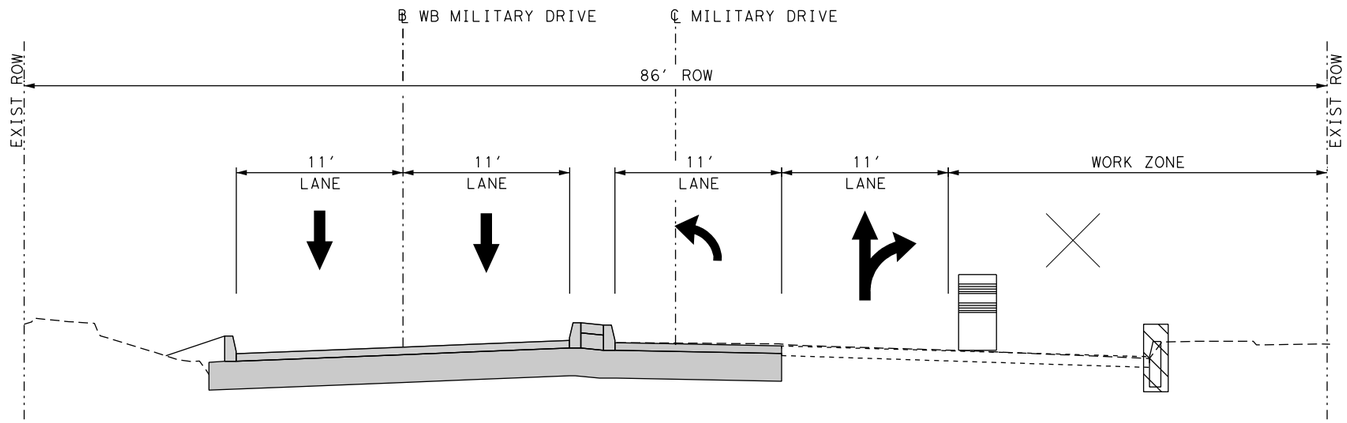
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

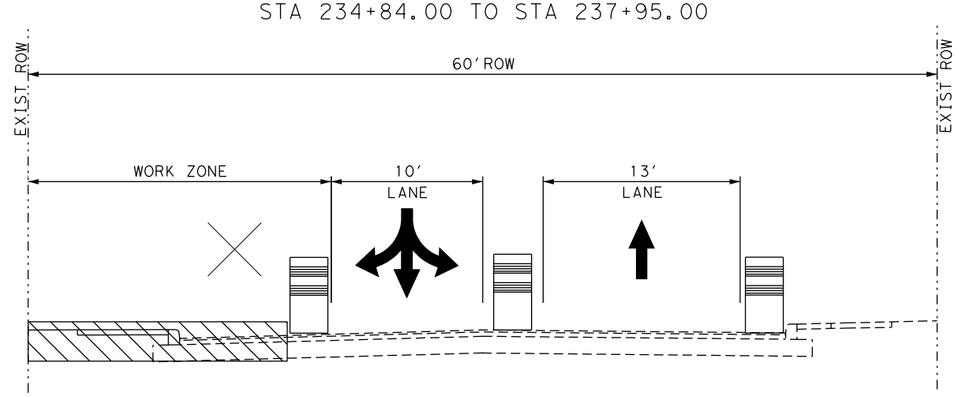
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TRAFFIC CONTROL TYPICAL SECTIONS
PHASE 4

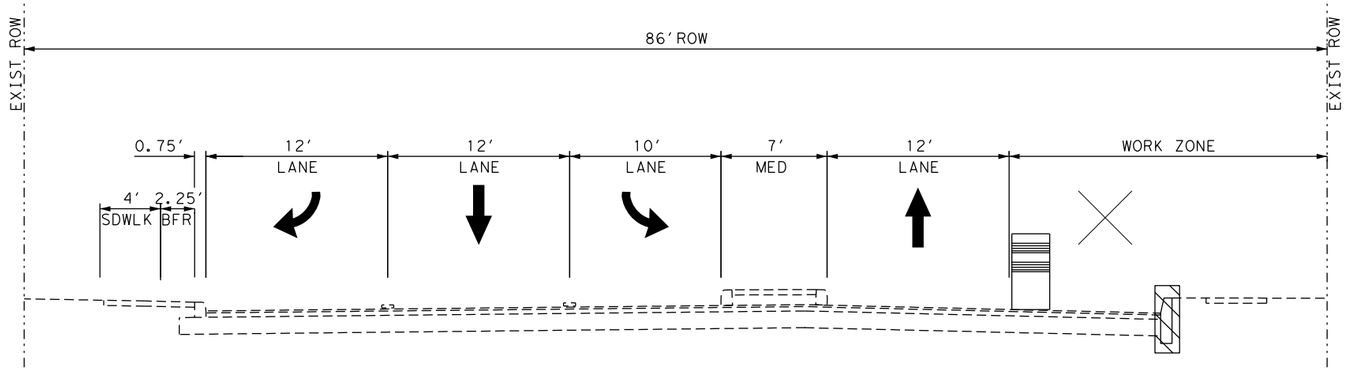
70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 38 OF 377



MILITARY DRIVE
SECTION J+J
(PHASE 4 STEP 2)
STA 234+84.00 TO STA 237+95.00



SEQUOIA HEIGHT
SECTION K+K
(PHASE 4 STEP 2)
STA 11+00.00 TO STA 11+80.00



RICHLAND HILLS DR
SECTION L+L
(PHASE 4 STEP 2)
STA 11+38.00 TO STA 11+70.00

LEGEND

- WORK ZONE THIS PHASE
- WORK ZONE PREVIOUS PHASE
- DIRECTION OF TRAVEL
- LANE CLOSURE

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER

5/19/2025

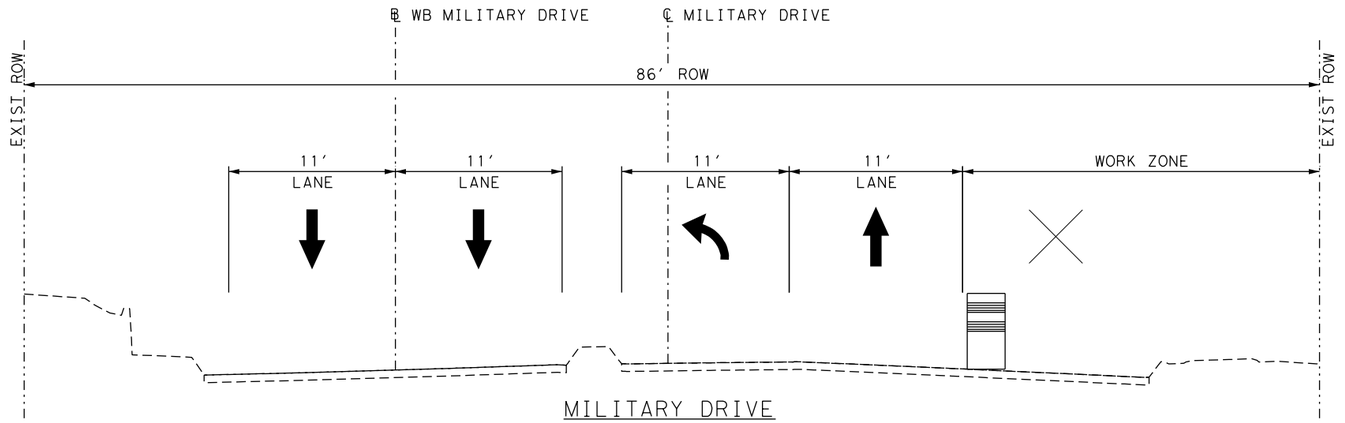
consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

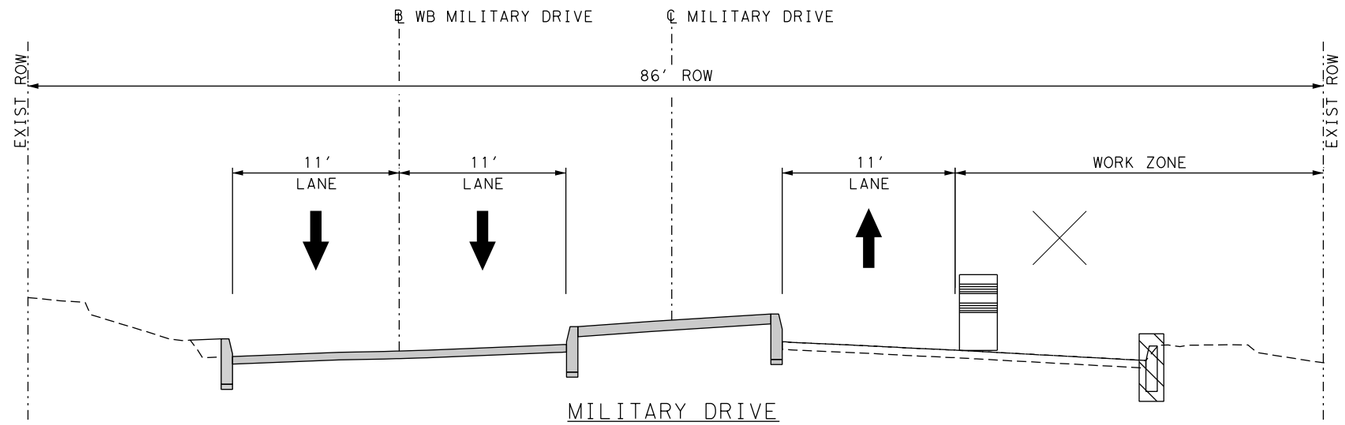
MILITARY DRIVE
TRAFFIC CONTROL TYPICAL SECTIONS
PHASE 4

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 39 OF 377

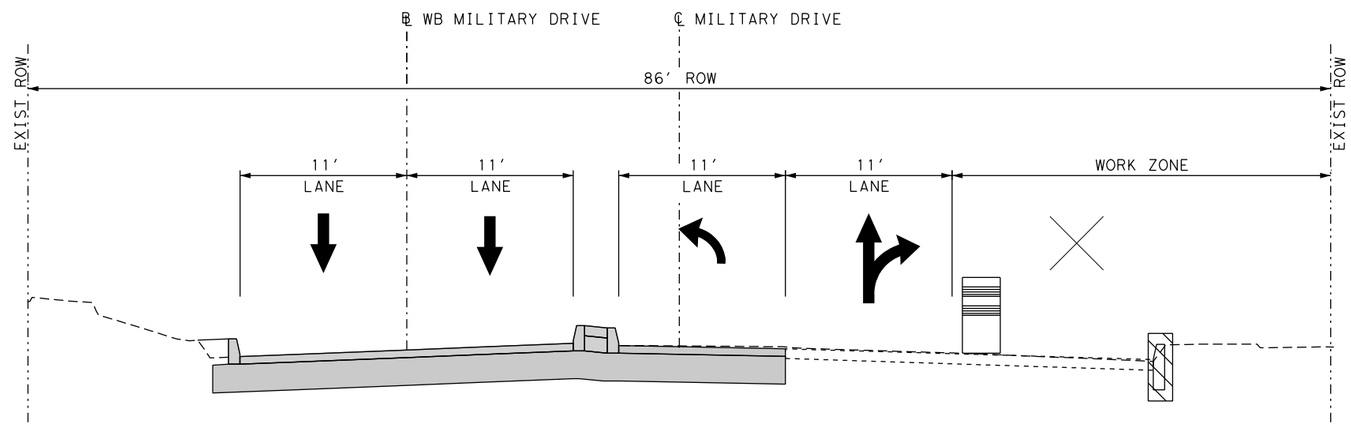
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TTS_S_PH5_4.dgn
5/19/2025 8:39:54 AM



MILITARY DRIVE
SECTION M+M
(PHASE 4 STEP 3)
STA 219+18.00 TO STA 221+80.00



MILITARY DRIVE
SECTION N+N
(PHASE 4 STEP 3)
STA 222+55.00 TO STA 223+96.00



MILITARY DRIVE
SECTION O+O
(PHASE 4 STEP 3)
STA 223+96.00 TO STA 227+10.00

LEGEND

- WORK ZONE THIS PHASE
- WORK ZONE PREVIOUS PHASE
- DIRECTION OF TRAVEL
- LANE CLOSURE

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TRAFFIC CONTROL TYPICAL SECTIONS
PHASE 4

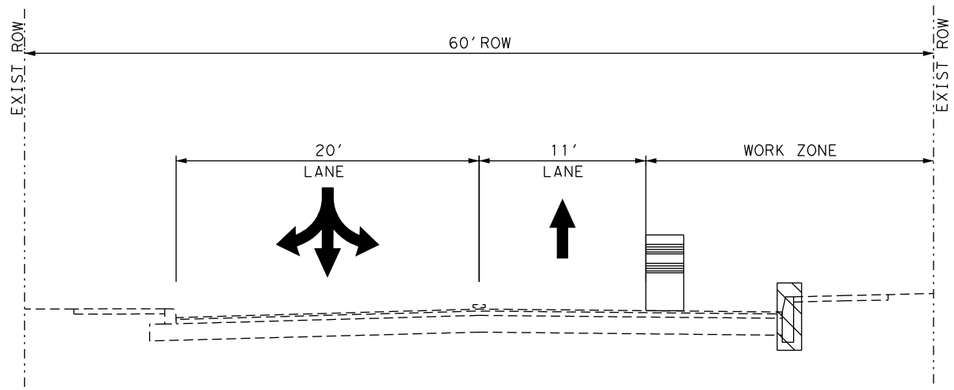
70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 40 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TTS_S_PH5_5.dgn

5/19/2025 8:40:05 AM
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TTS_S_PH5_5.dgn

LEGEND

- WORK ZONE THIS PHASE
- WORK ZONE PREVIOUS PHASE
- DIRECTION OF TRAVEL
- LANE CLOSURE



SEQUOIA HEIGHT
SECTION P+P
(PHASE 4 STEP 3)
STA 11+35.00 TO STA 11+70.00

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300.
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

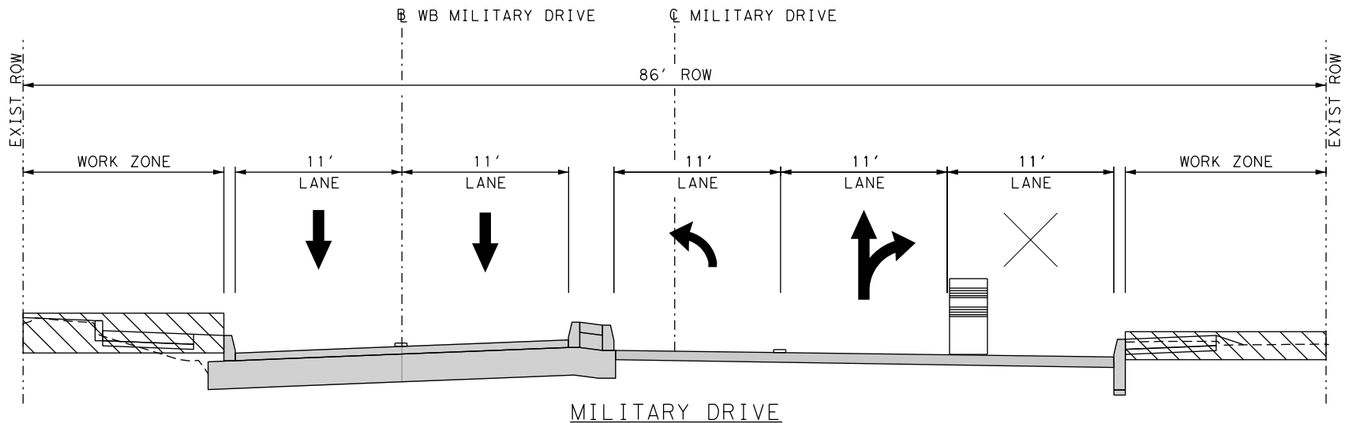
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TRAFFIC CONTROL TYPICAL SECTIONS
PHASE 4

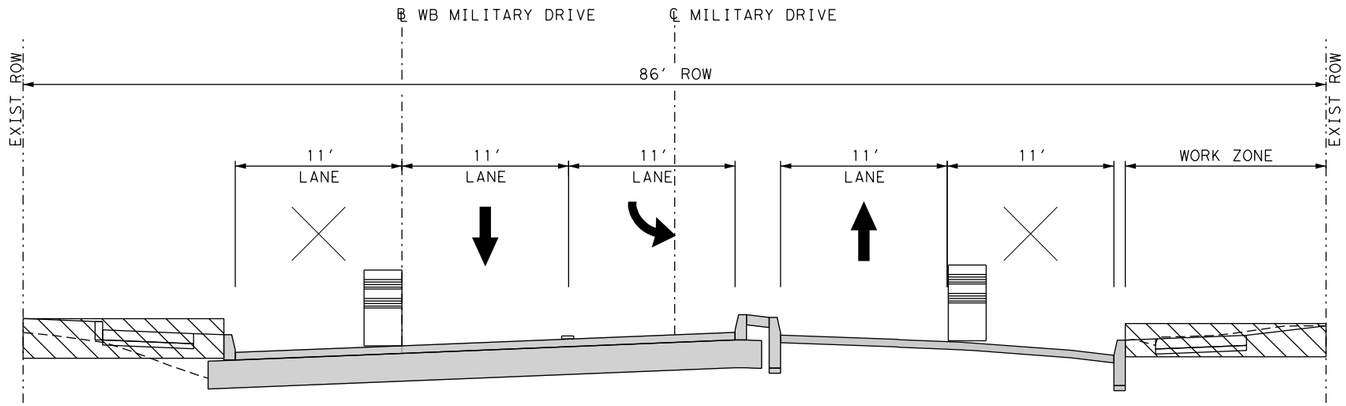
70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 41 OF 377

c:\dms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TTS_S_PH5_6.dgn
8:40:26 AM
5/19/2025

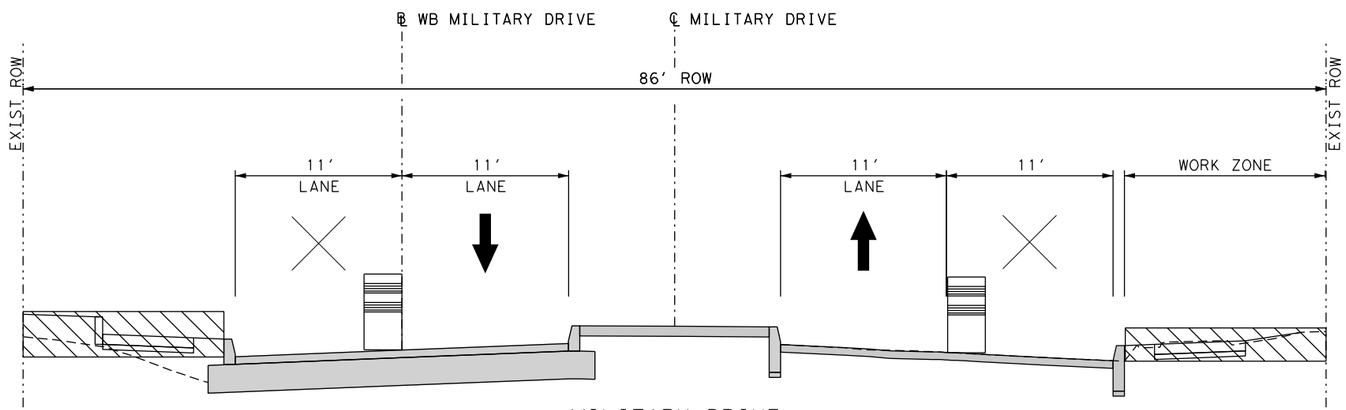
5/19/2025 8:40:26 AM
c:\dms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TTS_S_PH5_6.dgn



MILITARY DRIVE
SECTION A+A
(PHASE 7 STEP 1 & STEP 6)
STA 235+35.00 TO STA 237+95.00



MILITARY DRIVE
SECTION B+B
(PHASE 7 STEP 1 & STEP 6)
STA 239+17.00 TO STA 242+29.00



MILITARY DRIVE
SECTION C+C
(PHASE 7 STEP 1 & STEP 6)
STA 242+29.00 TO STA 242+70.00

LEGEND

- WORK ZONE THIS PHASE
- WORK ZONE PREVIOUS PHASE
- DIRECTION OF TRAVEL
- LANE CLOSURE

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-6464

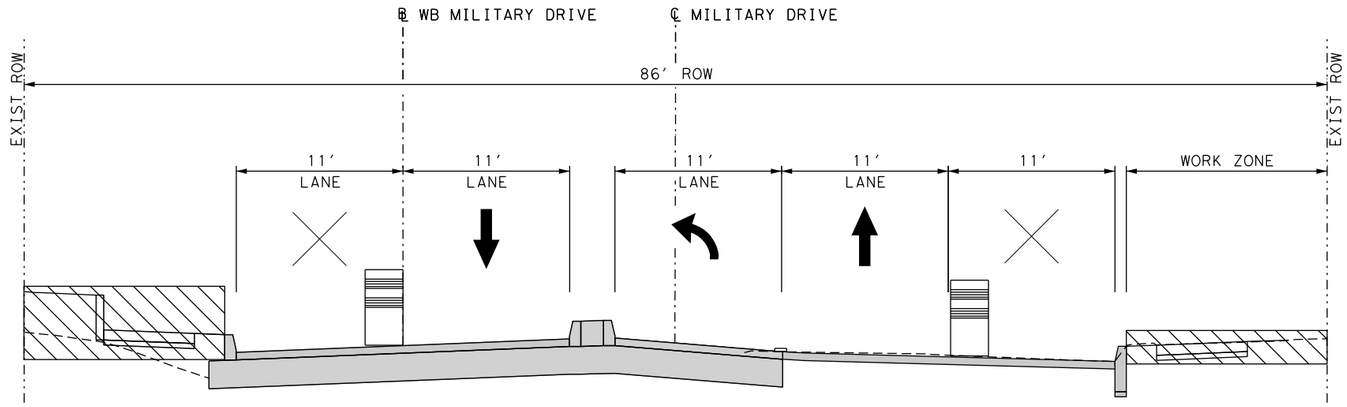
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TRAFFIC CONTROL TYPICAL SECTIONS
PHASE 7

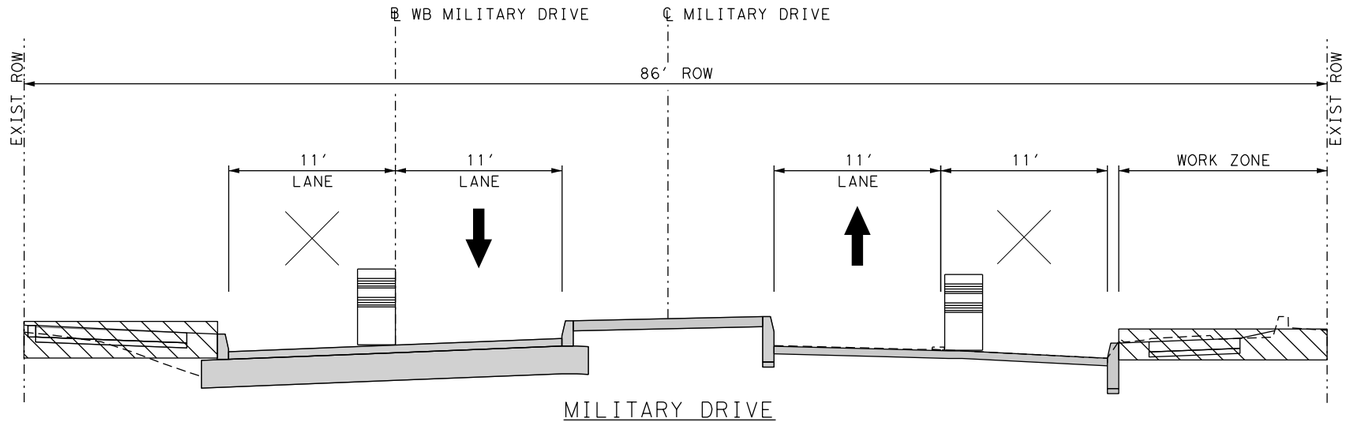
70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 42 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TTS_S_PH7_1.dgn

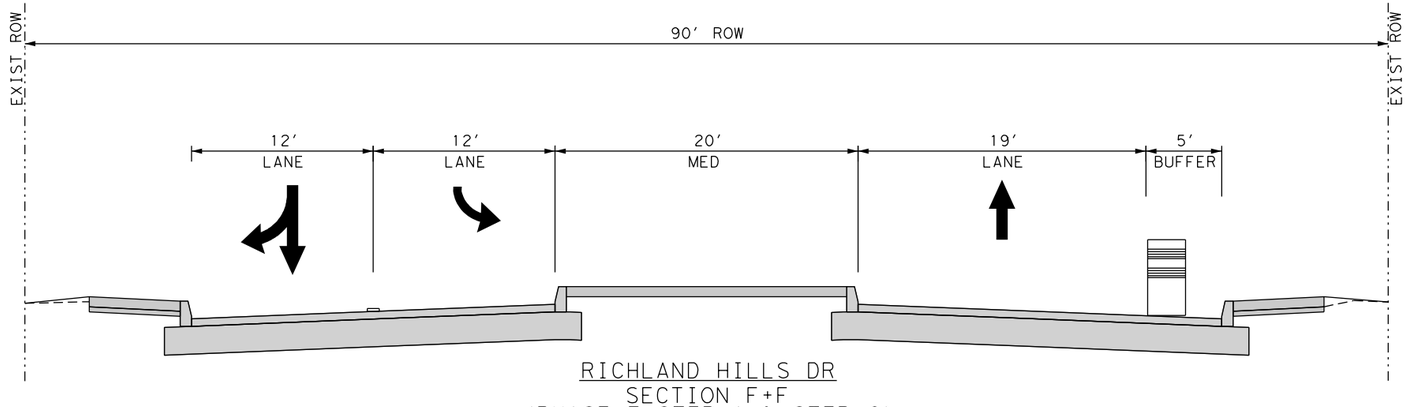
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TTS_S_PH7_1.dgn
8:40:45 AM
5/19/2025



MILITARY DRIVE
SECTION D+D
(PHASE 7 STEP 1 & STEP 6)
STA 242+70.00 TO STA 245+65.00



MILITARY DRIVE
SECTION E+E
(PHASE 7 STEP 1 & STEP 6)
STA 246+41.00 TO STA 247+92.00



RICHLAND HILLS DR
SECTION F+F
(PHASE 7 STEP 1 & STEP 6)
STA 11+38.00 TO STA 11+72.00

LEGEND

- WORK ZONE THIS PHASE
- WORK ZONE PREVIOUS PHASE
- DIRECTION OF TRAVEL
- LANE CLOSURE

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

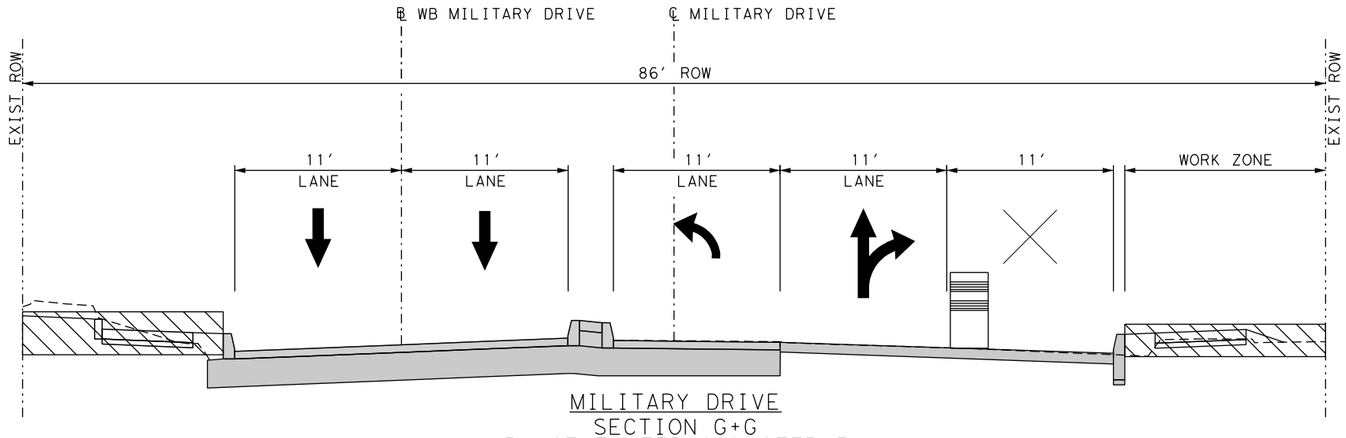
5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

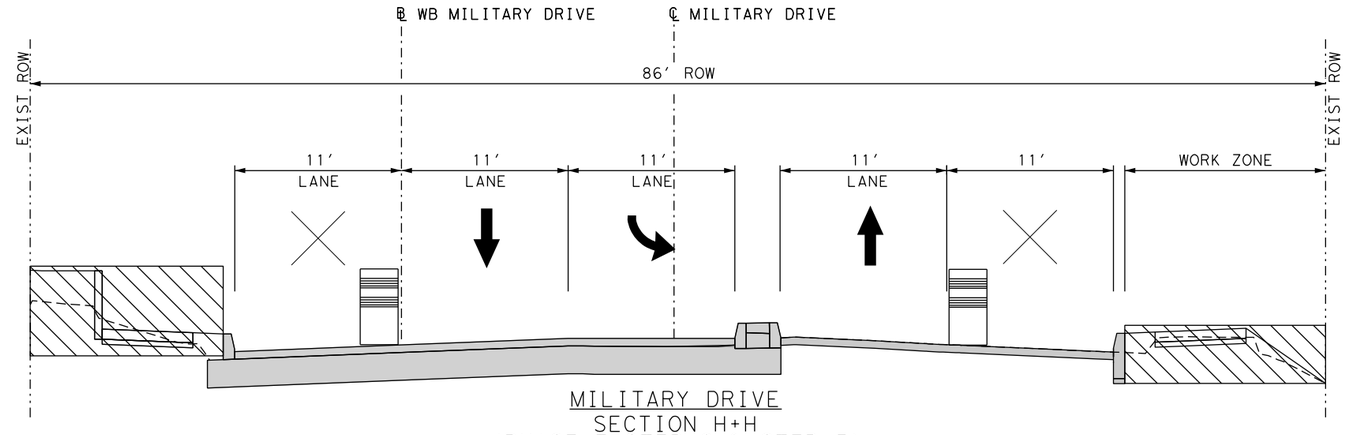
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TRAFFIC CONTROL TYPICAL SECTIONS
PHASE 7

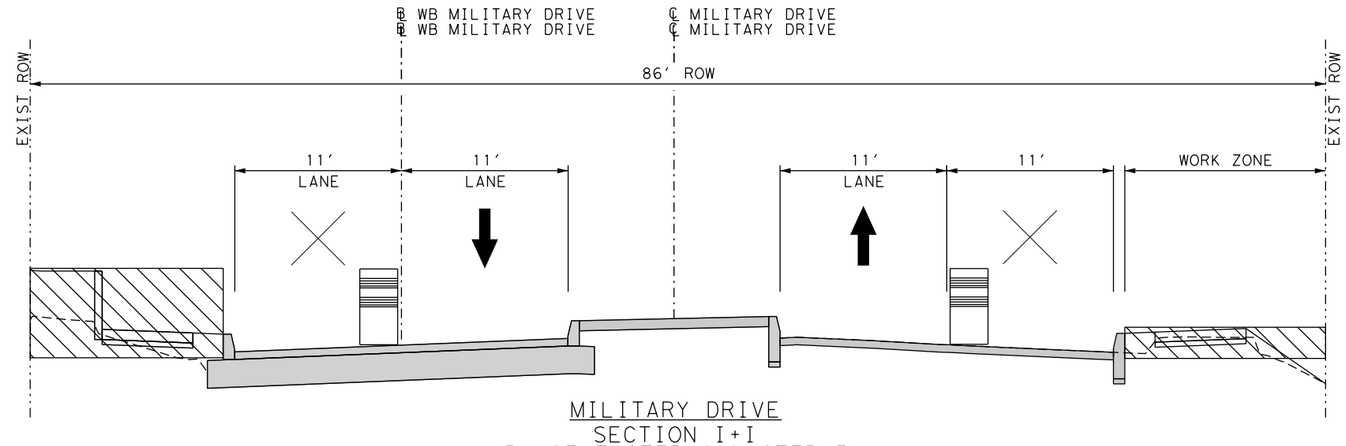
70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 43 OF 377



MILITARY DRIVE
SECTION G+G
(PHASE 7 STEP 2 & STEP 5)
STA 224+54.00 TO STA 227+10.00



MILITARY DRIVE
SECTION H+H
(PHASE 7 STEP 2 & STEP 5)
STA 228+06.00 TO STA 231+17.00



MILITARY DRIVE
SECTION I+I
(PHASE 7 STEP 2 & STEP 5)
STA 231+17.00 TO STA 234+84.00

LEGEND

- WORK ZONE THIS PHASE
- WORK ZONE PREVIOUS PHASE
- DIRECTION OF TRAVEL
- LANE CLOSURE

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

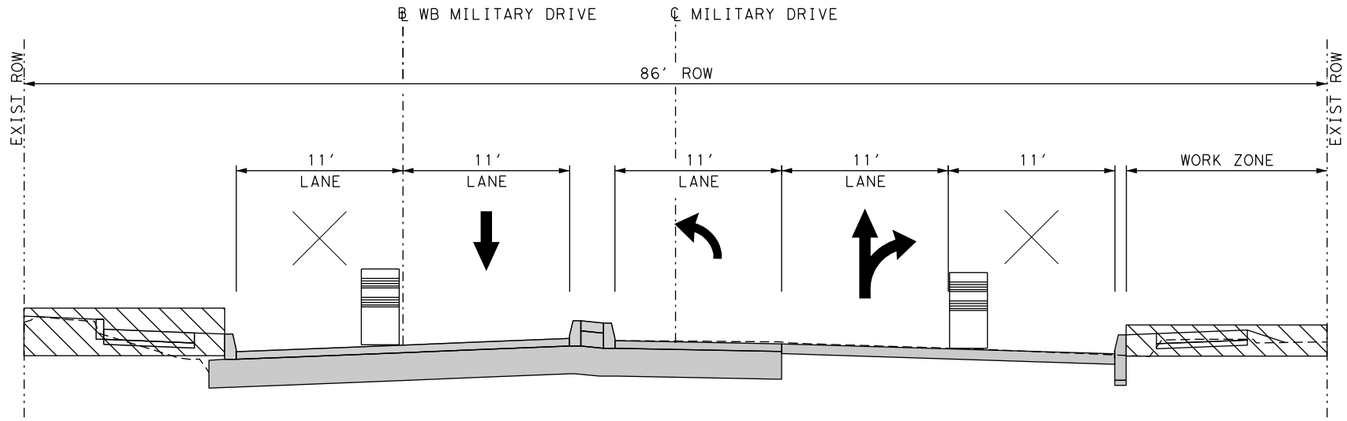
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

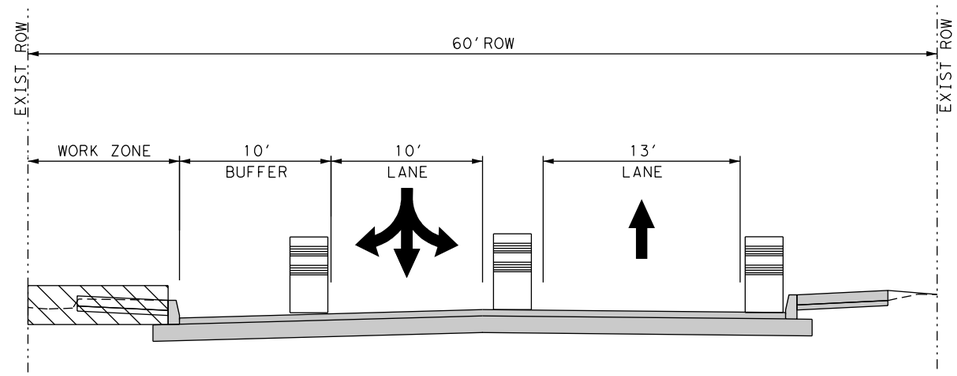
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TRAFFIC CONTROL TYPICAL SECTIONS
PHASE 7

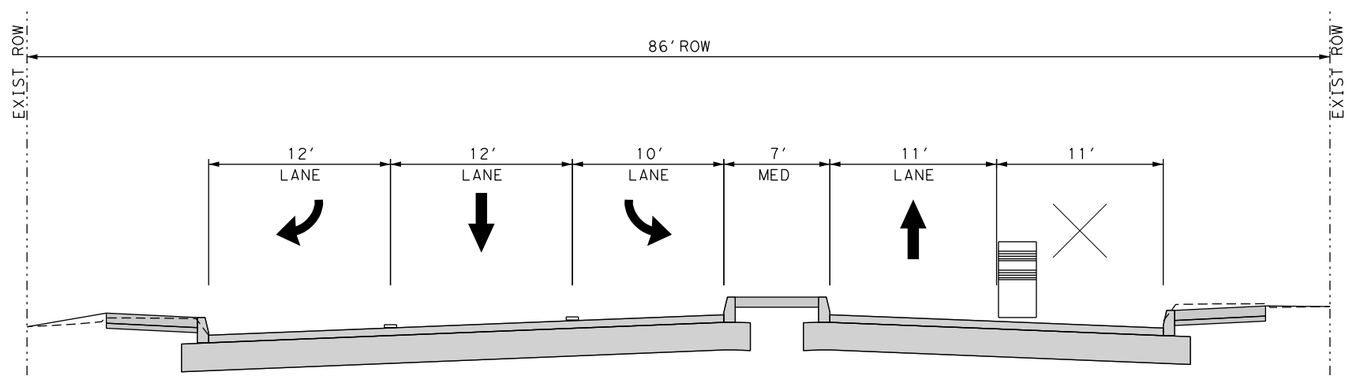
70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 44 OF 377



MILITARY DRIVE
SECTION J+J
(PHASE 7 STEP 2 & STEP 5)
STA 234+84.00 TO STA 237+95.00



SEQUOIA HEIGHT
SECTION K+K
(PHASE 7 STEP 2 & STEP 5)
STA 11+00.00 TO STA 11+80.00



RICHLAND HILLS DR
SECTION L+L
(PHASE 7 STEP 2 & STEP 5)
STA 11+38.00 TO STA 11+70.00

LEGEND

- WORK ZONE THIS PHASE
- WORK ZONE PREVIOUS PHASE
- DIRECTION OF TRAVEL
- LANE CLOSURE

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

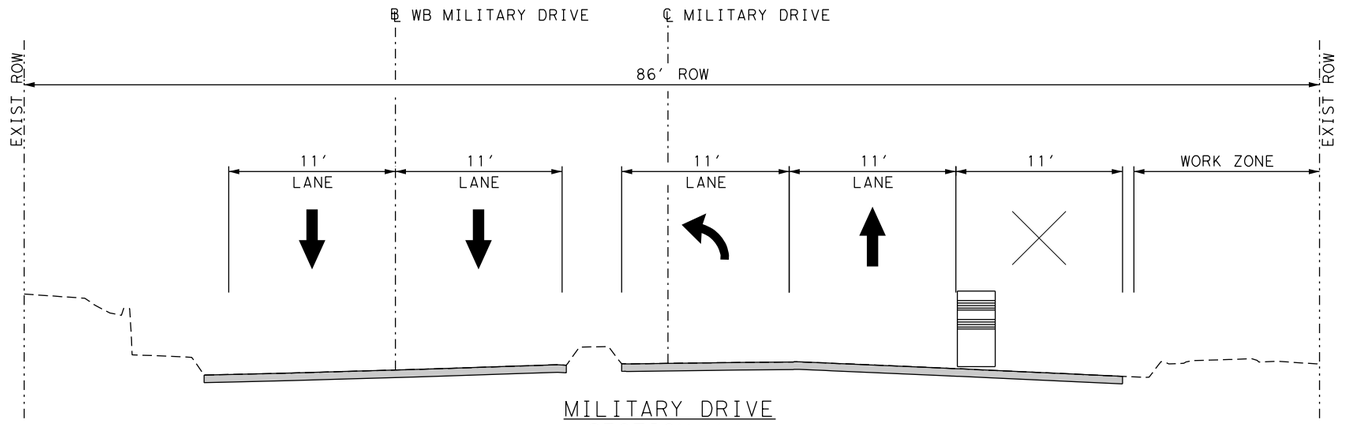
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

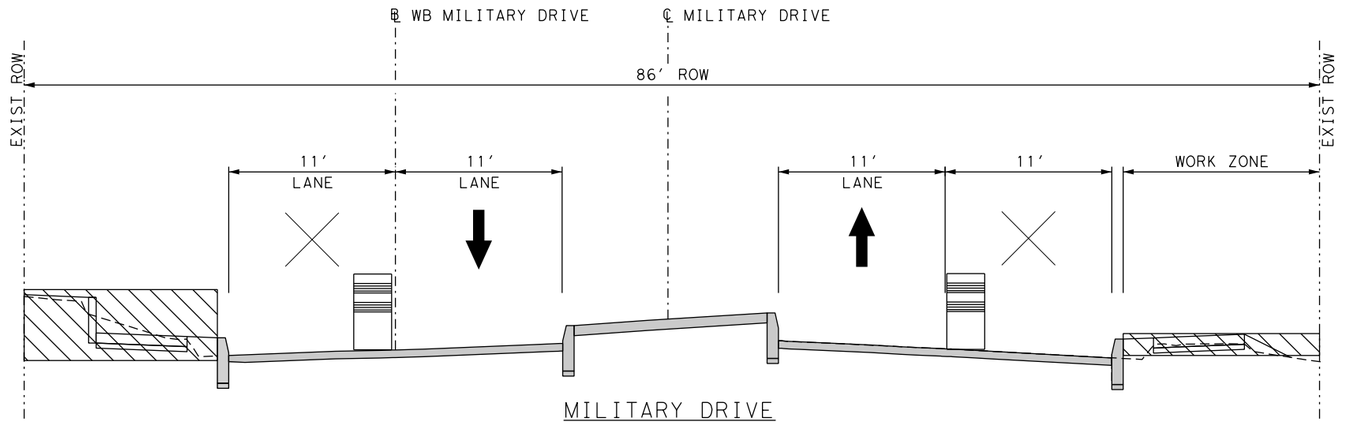
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TRAFFIC CONTROL TYPICAL SECTIONS
PHASE 7

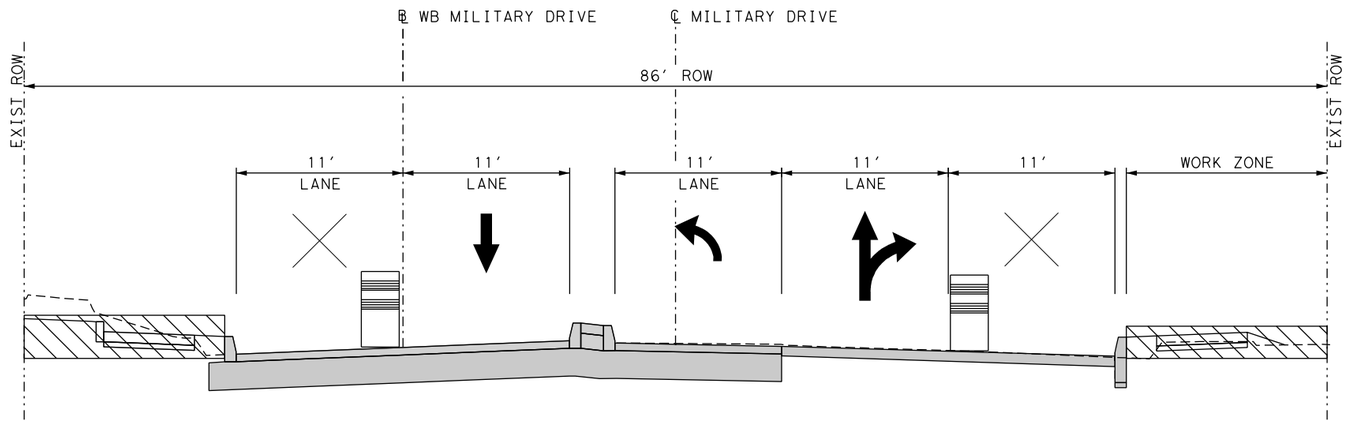
70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 45 OF 377



MILITARY DRIVE
SECTION M+M
(PHASE 7 STEP 3 & STEP 4)
STA 219+18.00 TO STA 221+80.00



MILITARY DRIVE
SECTION N+N
(PHASE 7 STEP 3 & STEP 4)
STA 222+55.00 TO STA 223+96.00



MILITARY DRIVE
SECTION O+O
(PHASE 7 STEP 3 & STEP 4)
STA 223+96.00 TO STA 227+10.00

LEGEND

- WORK ZONE THIS PHASE
- WORK ZONE PREVIOUS PHASE
- DIRECTION OF TRAVEL
- LANE CLOSURE

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TRAFFIC CONTROL TYPICAL SECTIONS
PHASE 7

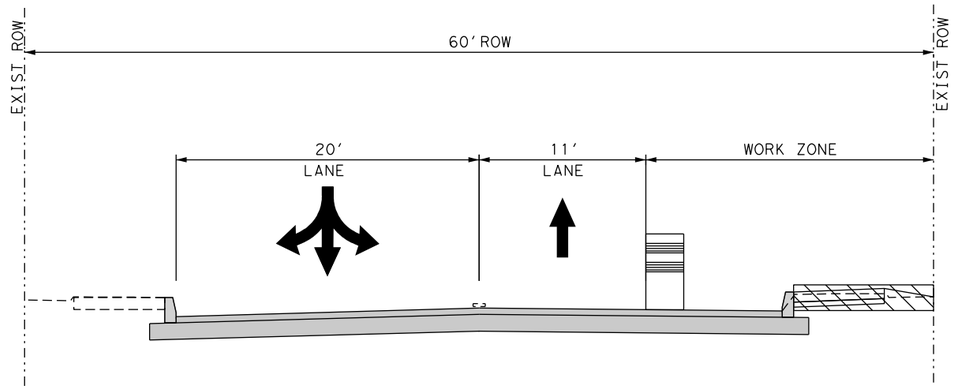
70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 46 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TTS_S_PH7_5.dgn

5/19/2025 8:41:49 AM
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TTS_S_PH7_5.dgn

LEGEND

- WORK ZONE THIS PHASE
- WORK ZONE PREVIOUS PHASE
- DIRECTION OF TRAVEL
- LANE CLOSURE



SEQUOIA HEIGHT
SECTION P+P
(PHASE 7 STEP 3 & STEP 4)
STA 11+35.00 TO STA 11+70.00

SCALE: NTS

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300.
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

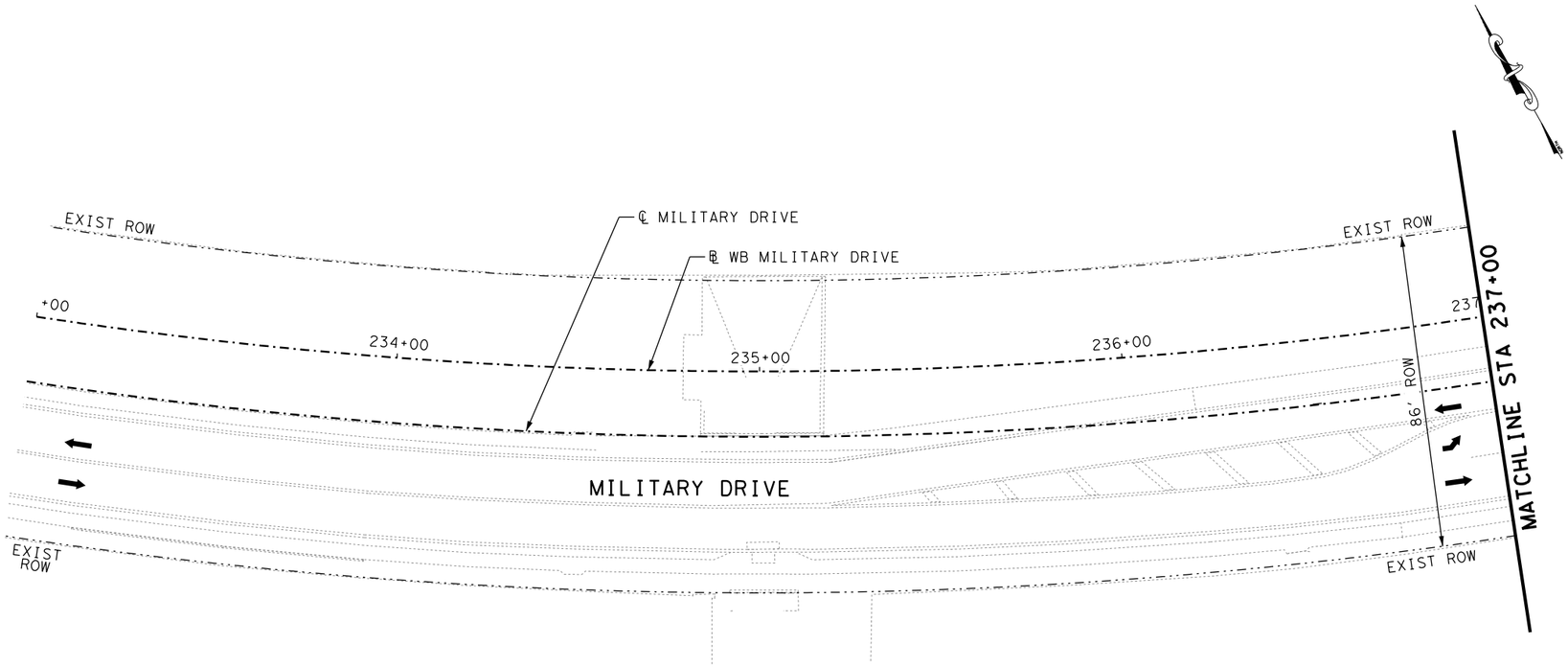
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

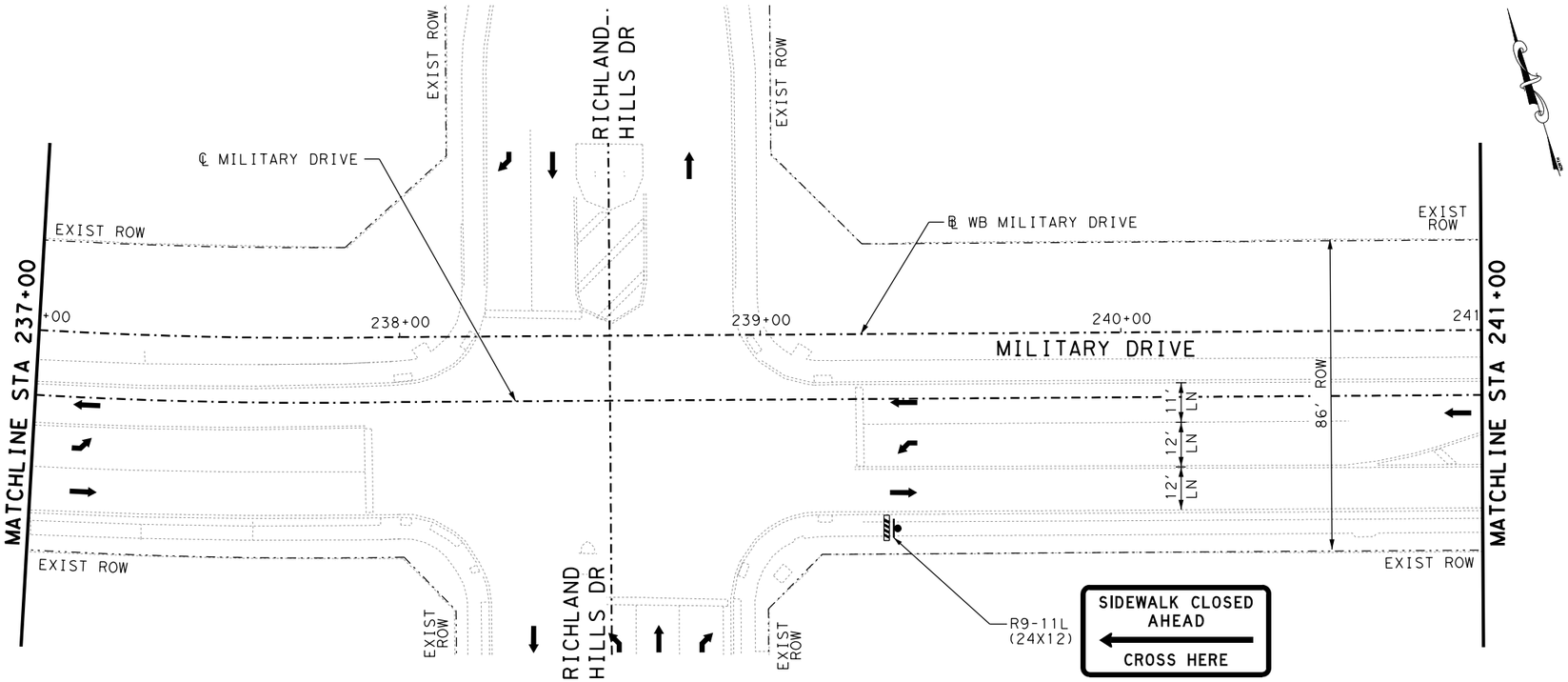
MILITARY DRIVE
TRAFFIC CONTROL TYPICAL SECTIONS
PHASE 7

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 47 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TTS_S_PH7_6.dgn
5/19/2025 8:42:01 AM

5/19/2025 8:42:01 AM
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TTS_S_PH7_6.dgn





LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TYPE I LPCB
- TYPE II LPCB
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

0 20′ 40′
SCALE: 1" = 40′

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

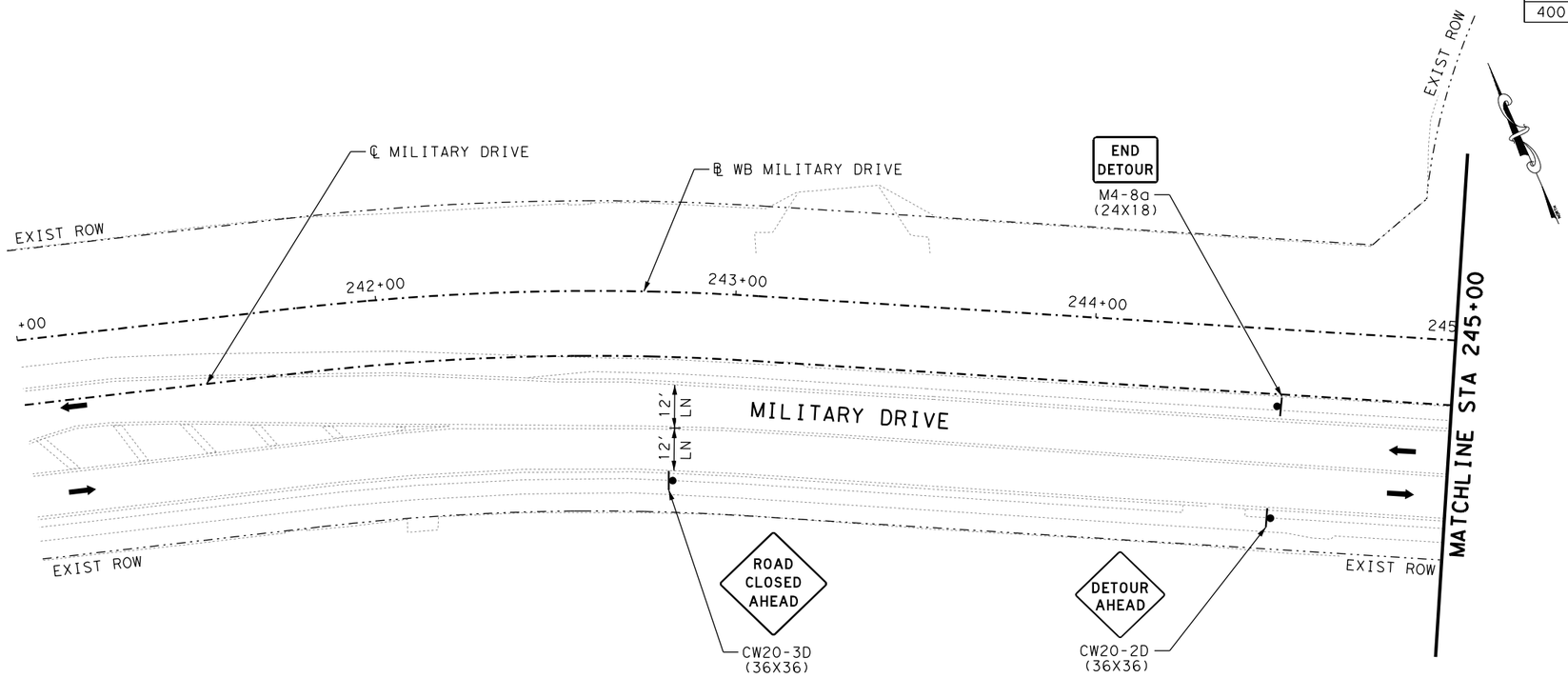
MILITARY DRIVE
TCP LAYOUT PHASE 2 STEP 1

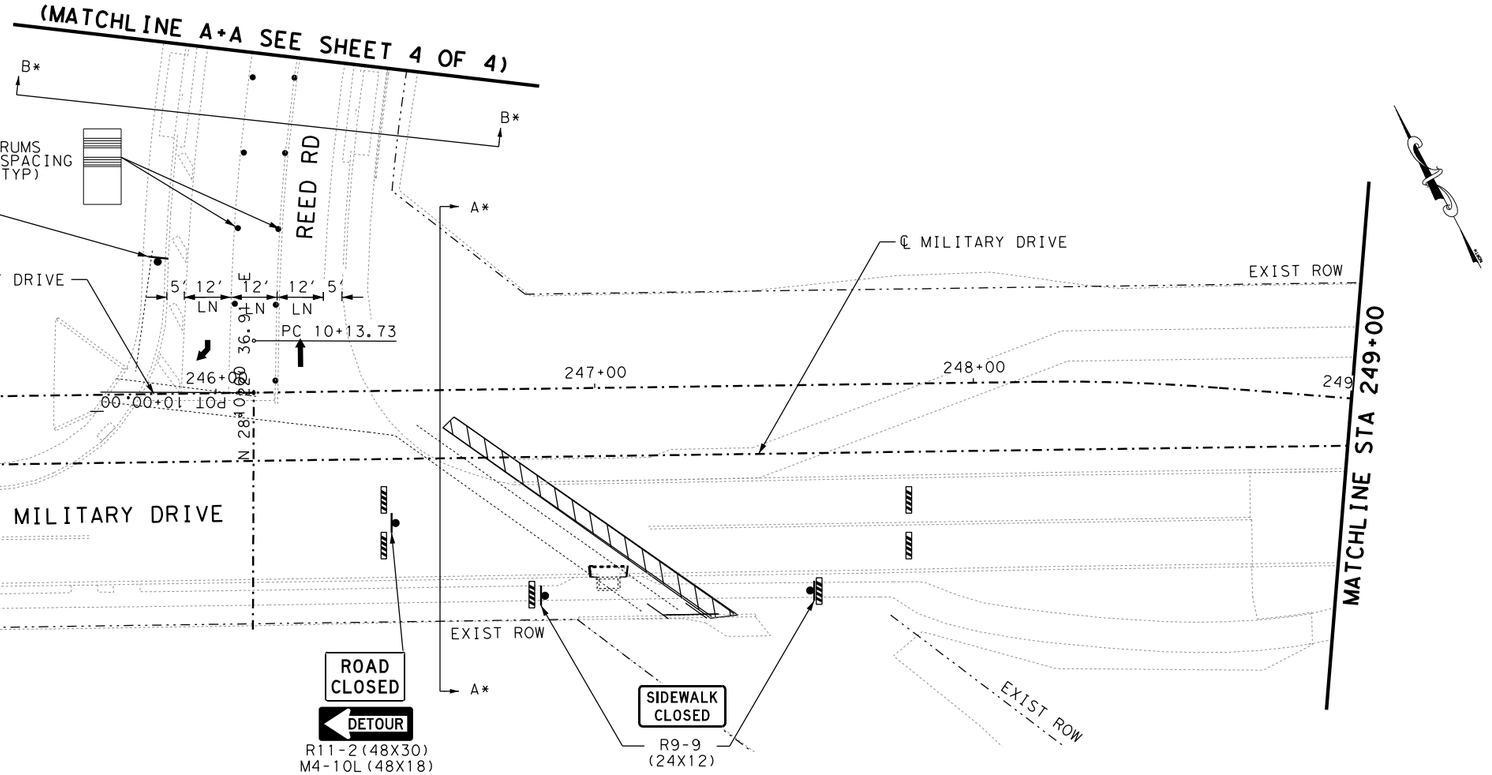
SHEET 1 OF 4

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 48 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S1_1.dgn
5/19/2025 8:42:23 AM

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
400	7006	CUT & RESTORING PAV	SY	45





LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.
2. REFER TO "TRAFFIC CONTROL PLAN DETOUR LAYOUTS" FOR DETOUR SIGNAGE.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

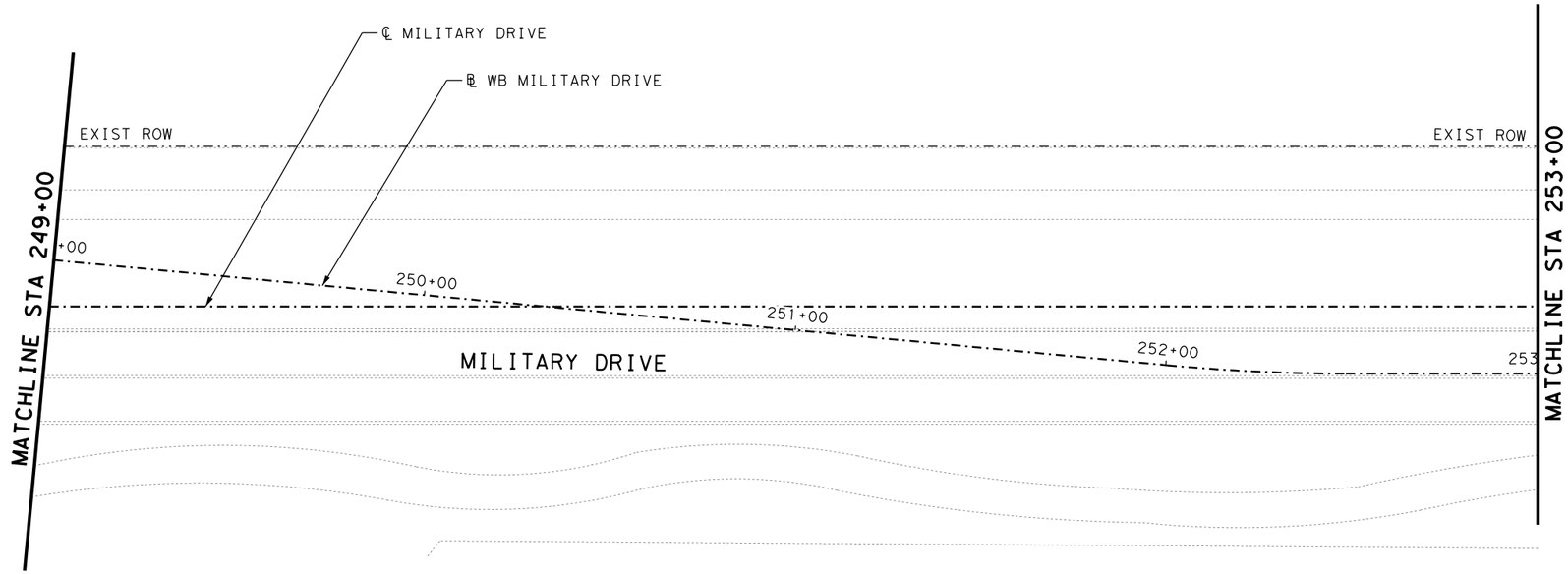
MILITARY DRIVE
TCP LAYOUT PHASE 2
STEP 1

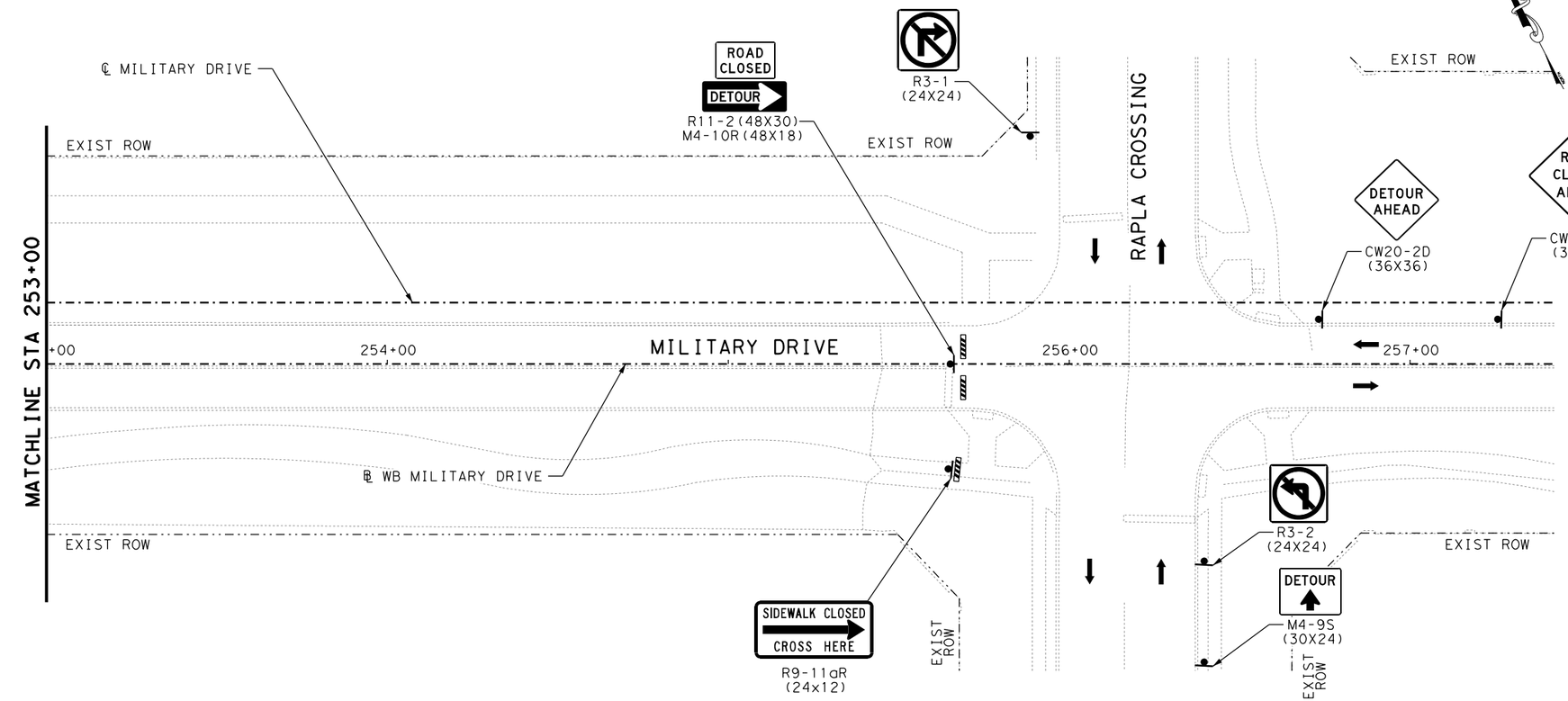
SHEET 2 OF 4

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 49 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S1_2.dgn
5/19/2025 8:42:35 AM

5/19/2025 8:42:35 AM
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S1_2.dgn





LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.
2. REFER TO TRAFFIC CONTROL PLAN DETOUR LAYOUTS' FOR DETOUR SIGNAGE.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

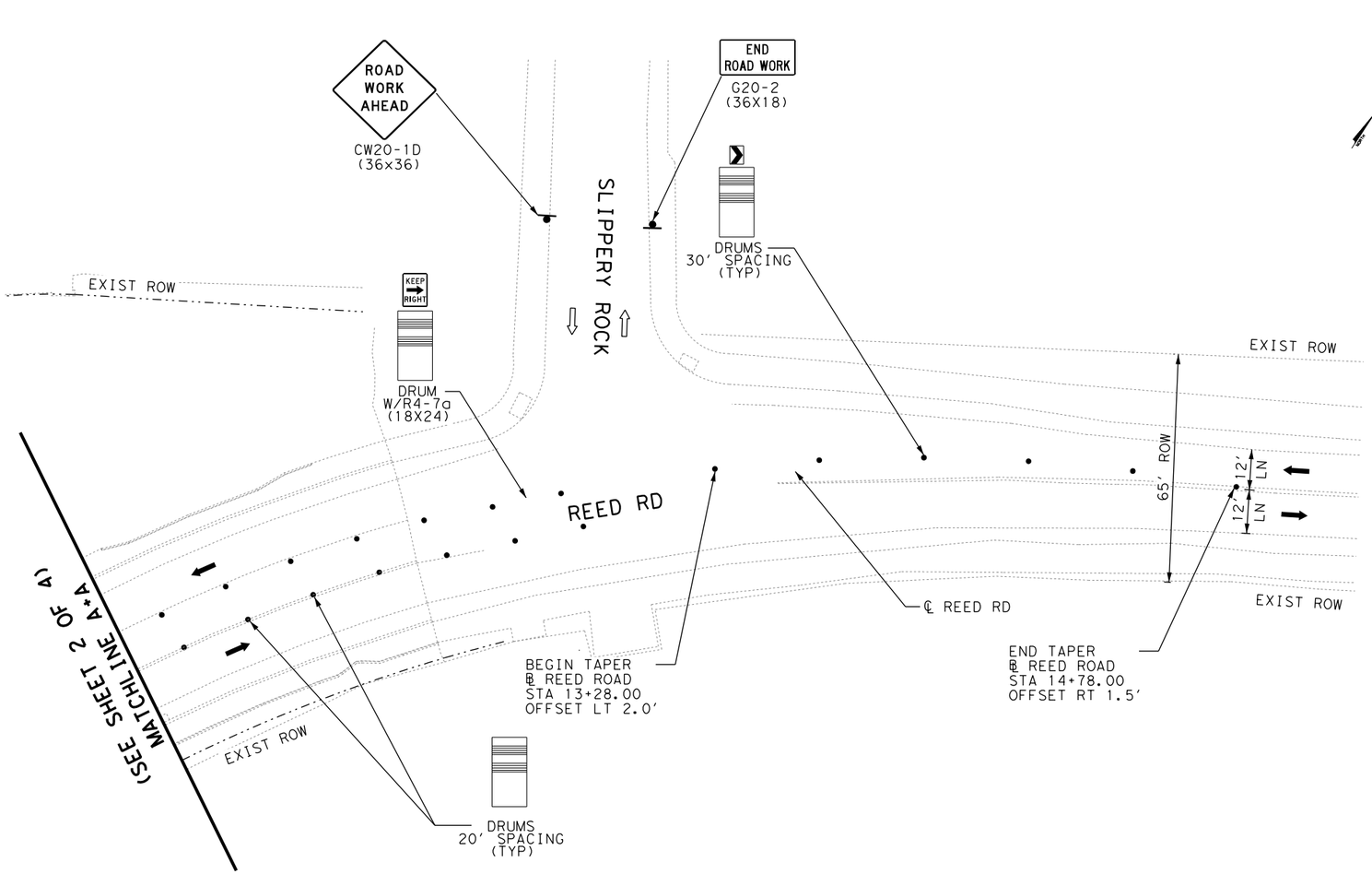
MILITARY DRIVE
TCP LAYOUT PHASE 2
STEP 1

SHEET 3 OF 4

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 50 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S1_3.dgn

5/19/2025 8:42:54 AM
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S1_3.dgn



LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TYPE I LPCB
- TYPE II LPCB
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.
2. REFER TO TRAFFIC CONTROL PLAN DETOUR LAYOUTS' FOR DETOUR SIGNAGE.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER

5/19/2025

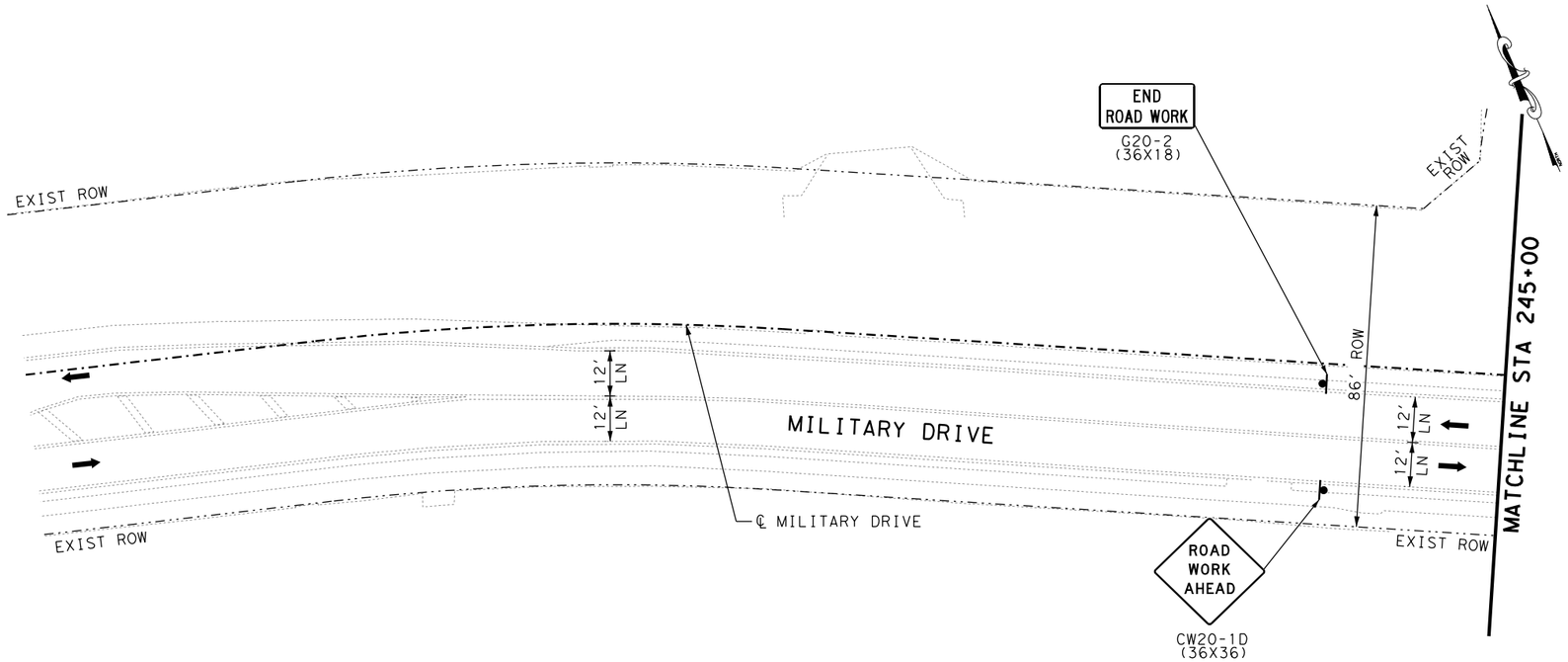
consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

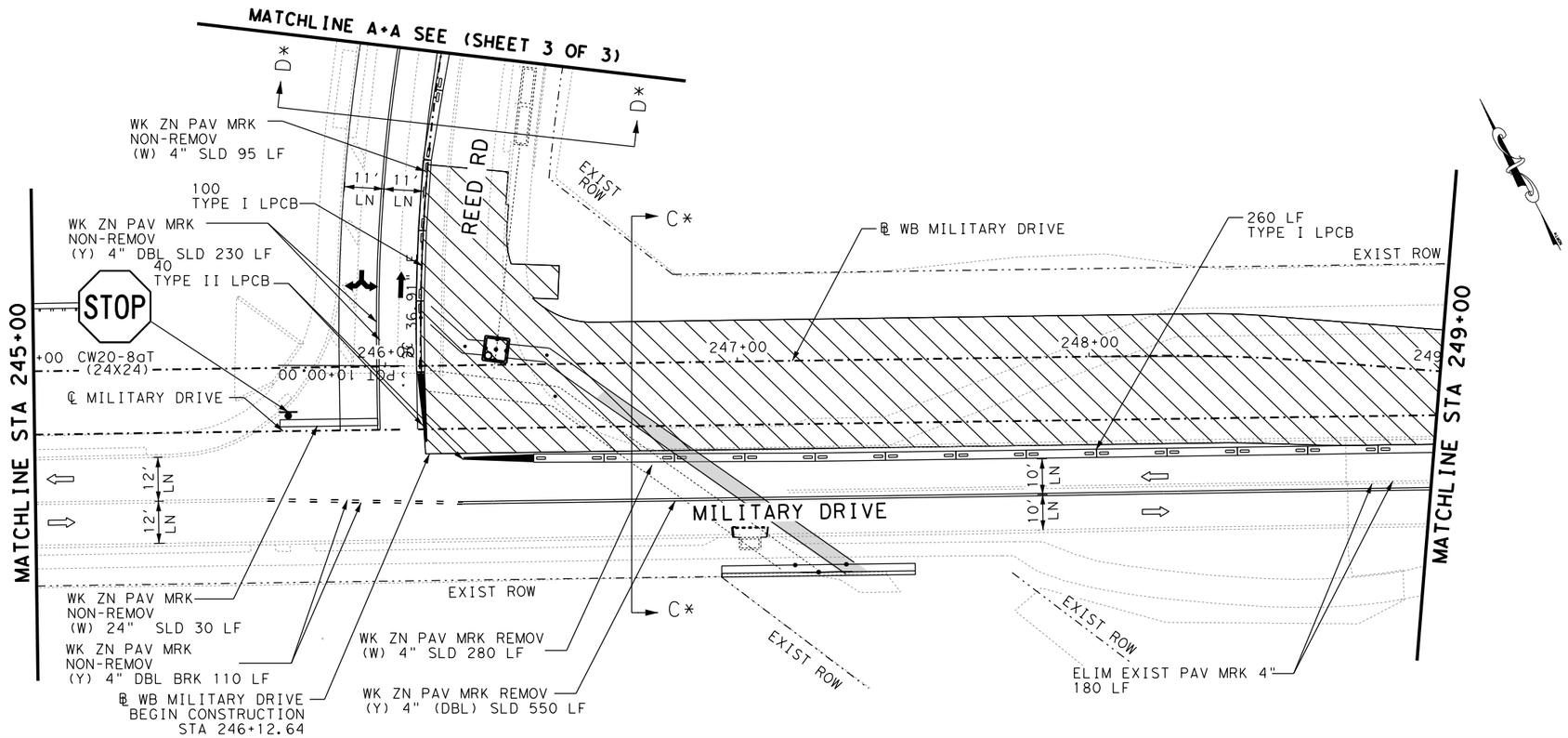
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 2
STEP 1

SHEET 4 OF 4

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 51 OF 377





ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
512	7009	PORT CTB (FUR & INST)(LOW PROF)(TY 1)	LF	360
512	7010	PORT CTB (FUR & INST)(LOW PROF)(TY 2)	LF	40
662	7004	WK ZN PAV MRK NON-REMOV (W)4"(SLD)	LF	95
662	7017	WK ZN PAV MRK NON-REMOV (W)24"(SLD)	LF	30
662	7033	WK ZN PAV MRK NON-REMOV (Y)4"(BRK)	LF	110
662	7034	WK ZN PAV MRK NON-REMOV (Y)4"(SLD)	LF	230
662	7064	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	280
662	7097	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	550
677	7001	ELIM EXT PAV MRK & MRKS (4")	LF	180
677	7009	ELIM EXT PAV MRK & MRKS (ARROW)	EA	2

LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TYPE I LPCB
- TYPE II LPCB
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

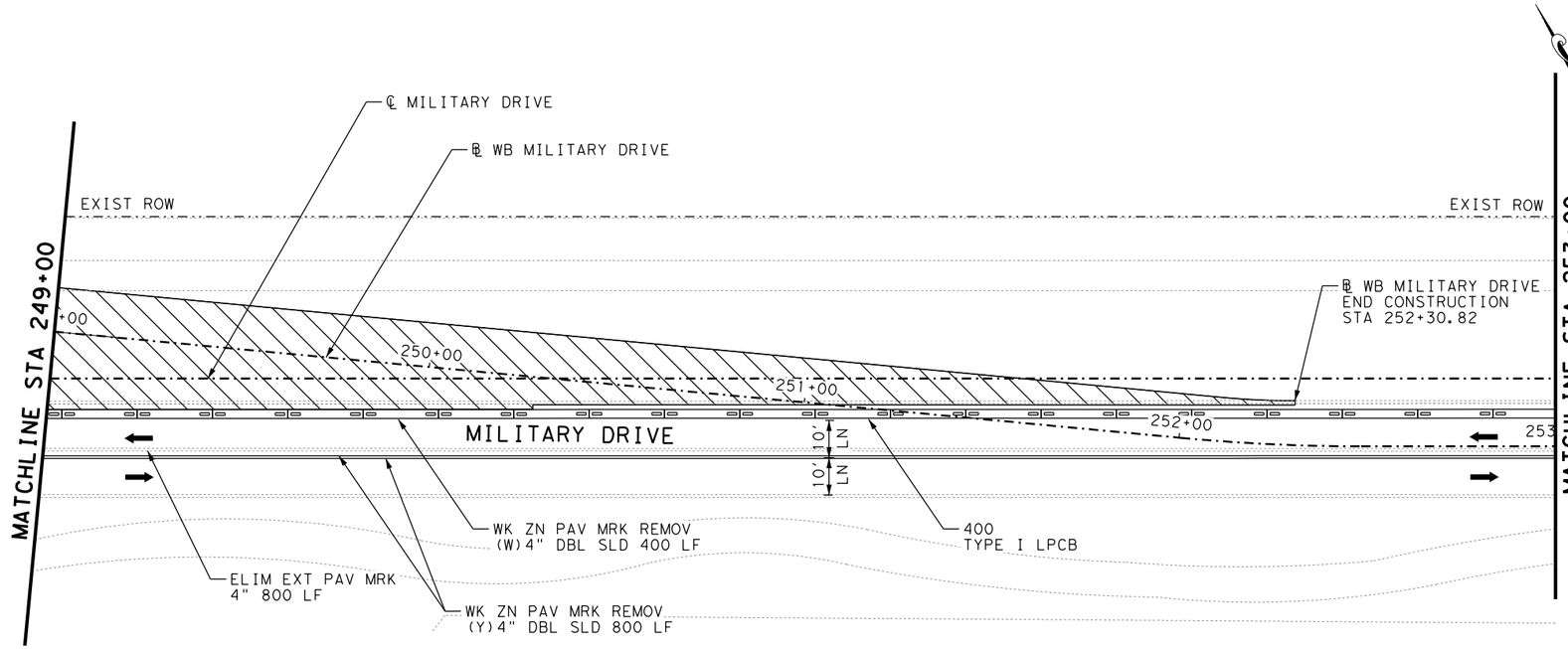
MILITARY DRIVE
TCP LAYOUT PHASE 2 STEP 2

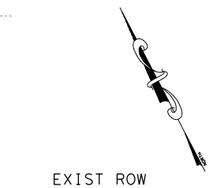
SHEET 1 OF 3

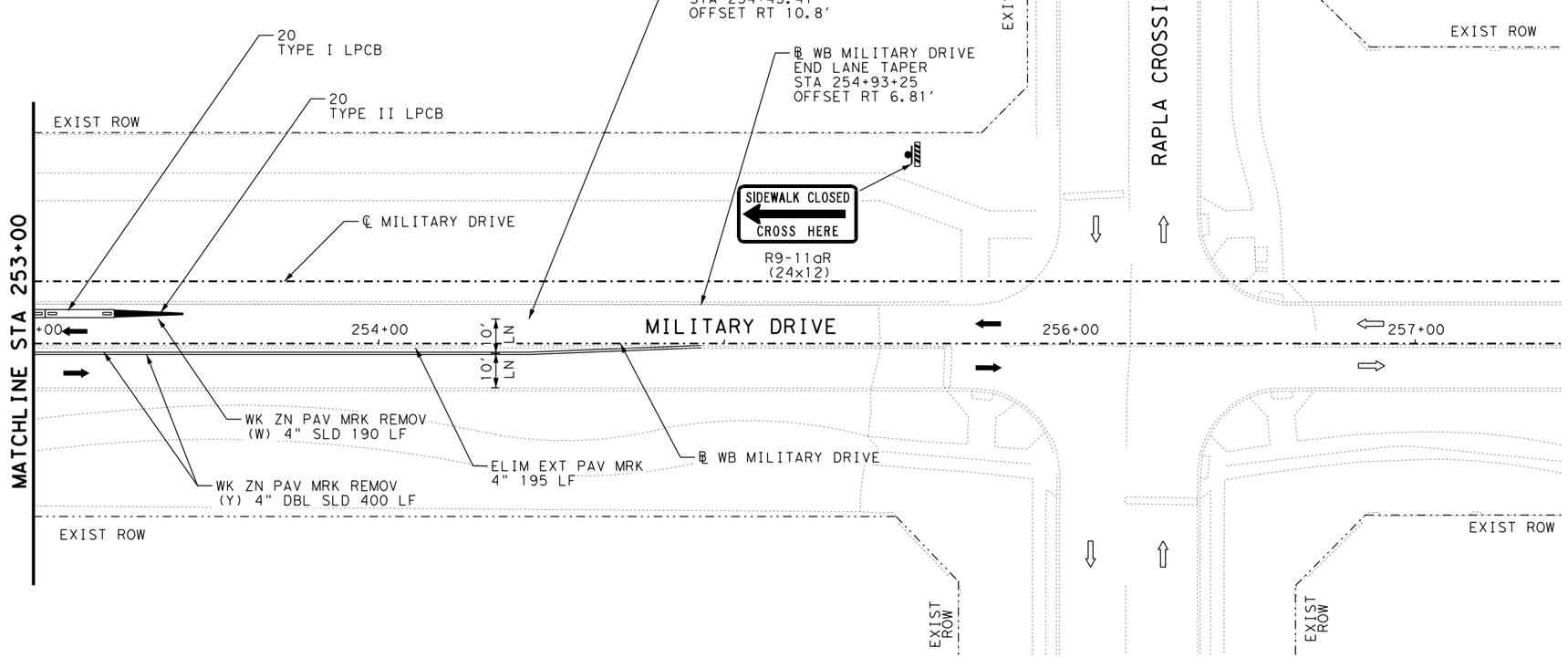
70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 52 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S2_1.dgn
5/19/2025 8:43:28 AM

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
512	7009	PORT CTB (FUR & INST)(LOW PROF)(TY 1)	LF	420
512	7010	PORT CTB (FUR & INST)(LOW PROF)(TY 2)	LF	20
662	7064	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	590
662	7097	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	1200
677	7001	ELIM EXT PAV MRK & MRKS (4")	LF	995







LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TYPE I LPCB
- TYPE II LPCB
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

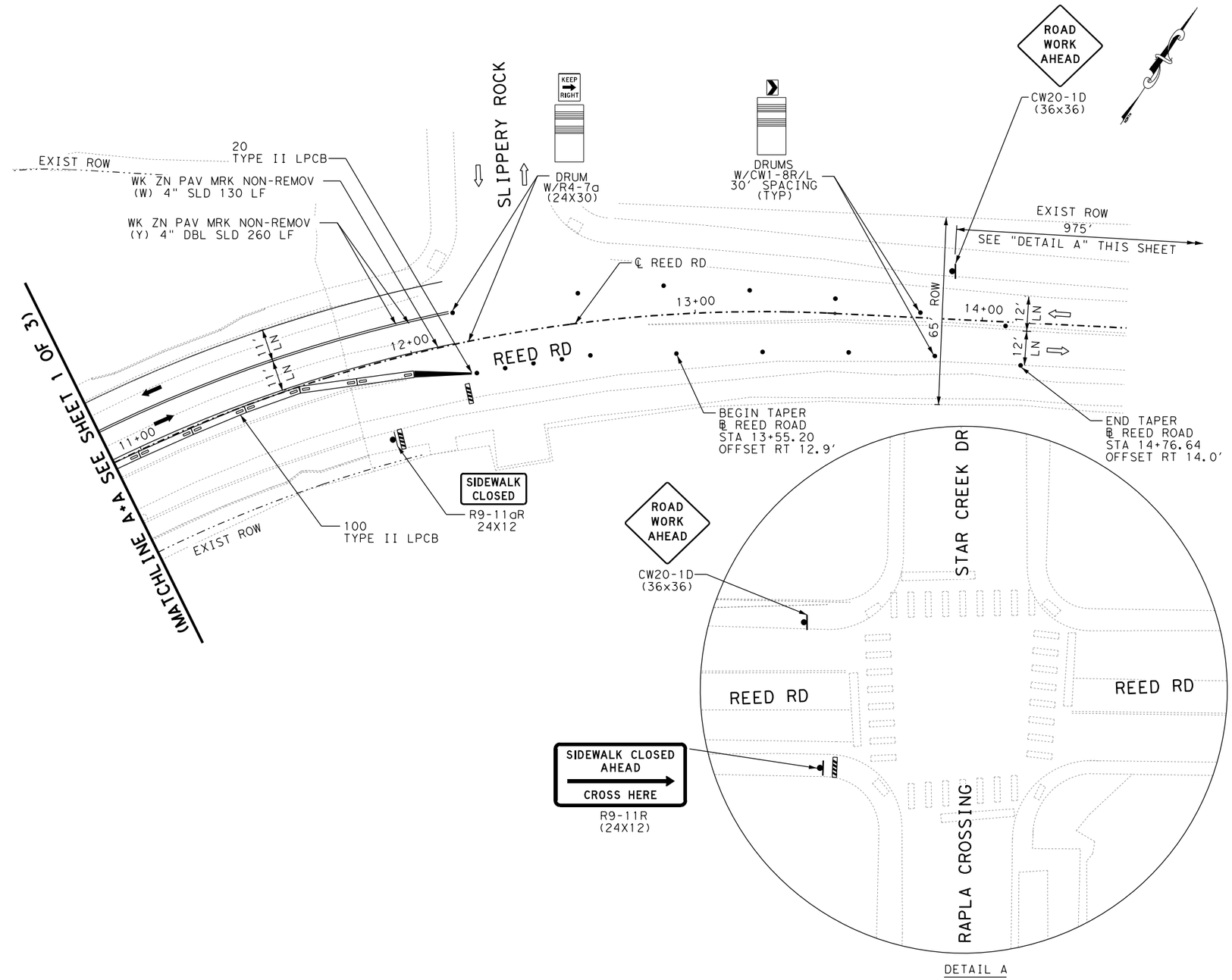
MILITARY DRIVE
TCP LAYOUT PHASE 2 STEP 2

SHEET 2 OF 3

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 53 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S2_2.dgn
5/19/2025 8:43:40 AM

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
512	7009	PORT CTB (FUR & INST)(LOW PROF)(TY 1)	LF	100
512	7010	PORT CTB (FUR & INST)(LOW PROF)(TY 2)	LF	20
662	7004	WK ZN PAV MRK NON-REMOV (W)4"(SLD)	LF	260
662	7034	WK ZN PAV MRK NON-REMOV (Y)4"(SLD)	LF	260
677	7001	ELIM EXT PAV MRK & MRKS (4")	LF	230
677	7009	ELIM EXT PAV MRK & MRKS (ARROW)	EA	2



DETAIL A

LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TYPE I LPCB
- TYPE II LPCB
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 2
STEP 2

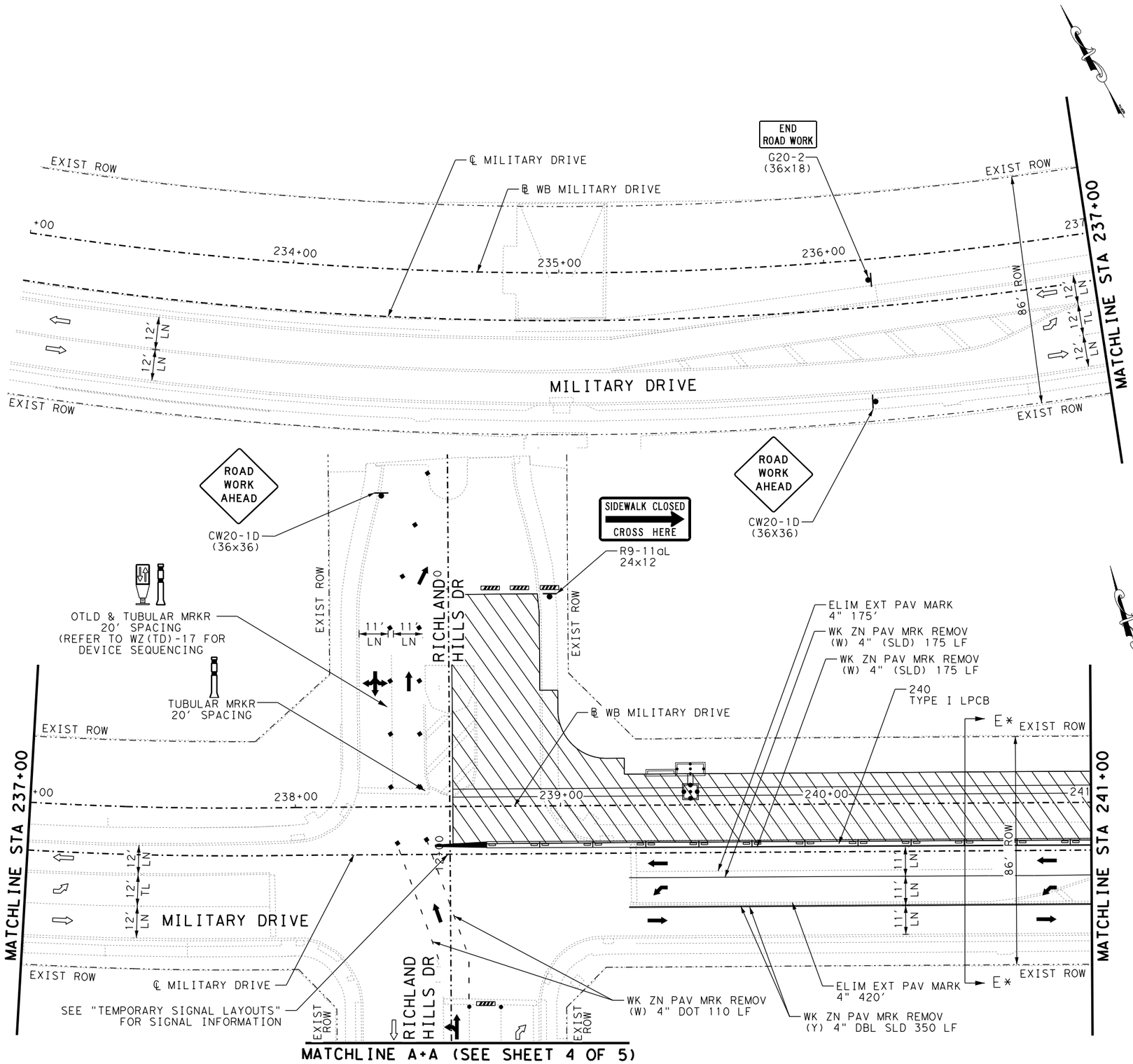
SHEET 3 OF 3

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 54 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S2_3.dgn
5/19/2025 8:43:57 AM

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S2_3.dgn
5/19/2025 8:43:57 AM

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
512	7033	PORT CTB (MOVE)(LOW PROF)(TY 1)	LF	240
512	7034	PORT CTB (MOVE)(LOW PROF)(TY 2)	LF	20
662	7062	WK ZN PAV MRK REMOV (W)4"(DOT)	LF	110
662	7064	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	595
662	7097	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	350
677	7001	ELIM EXT PAV MRK & MRKS (4")	LF	175



LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

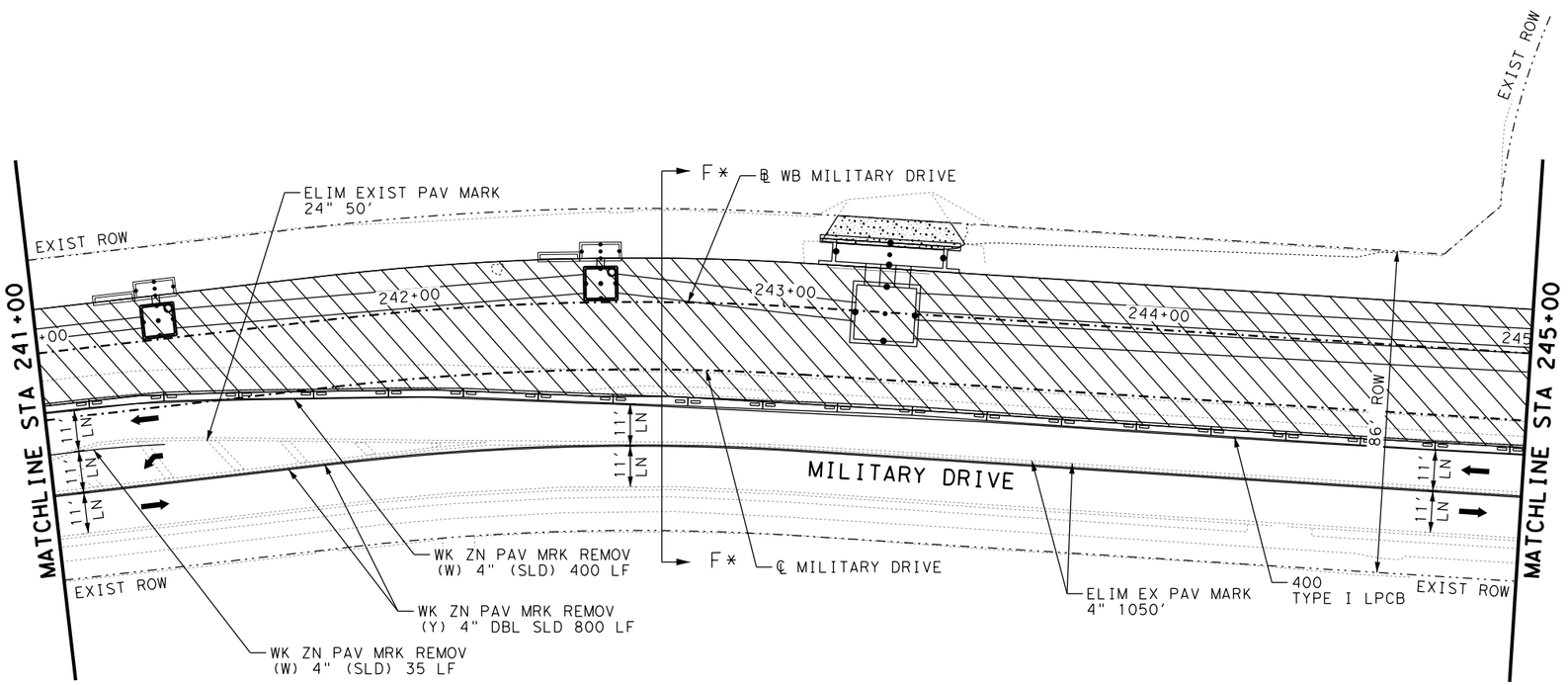
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

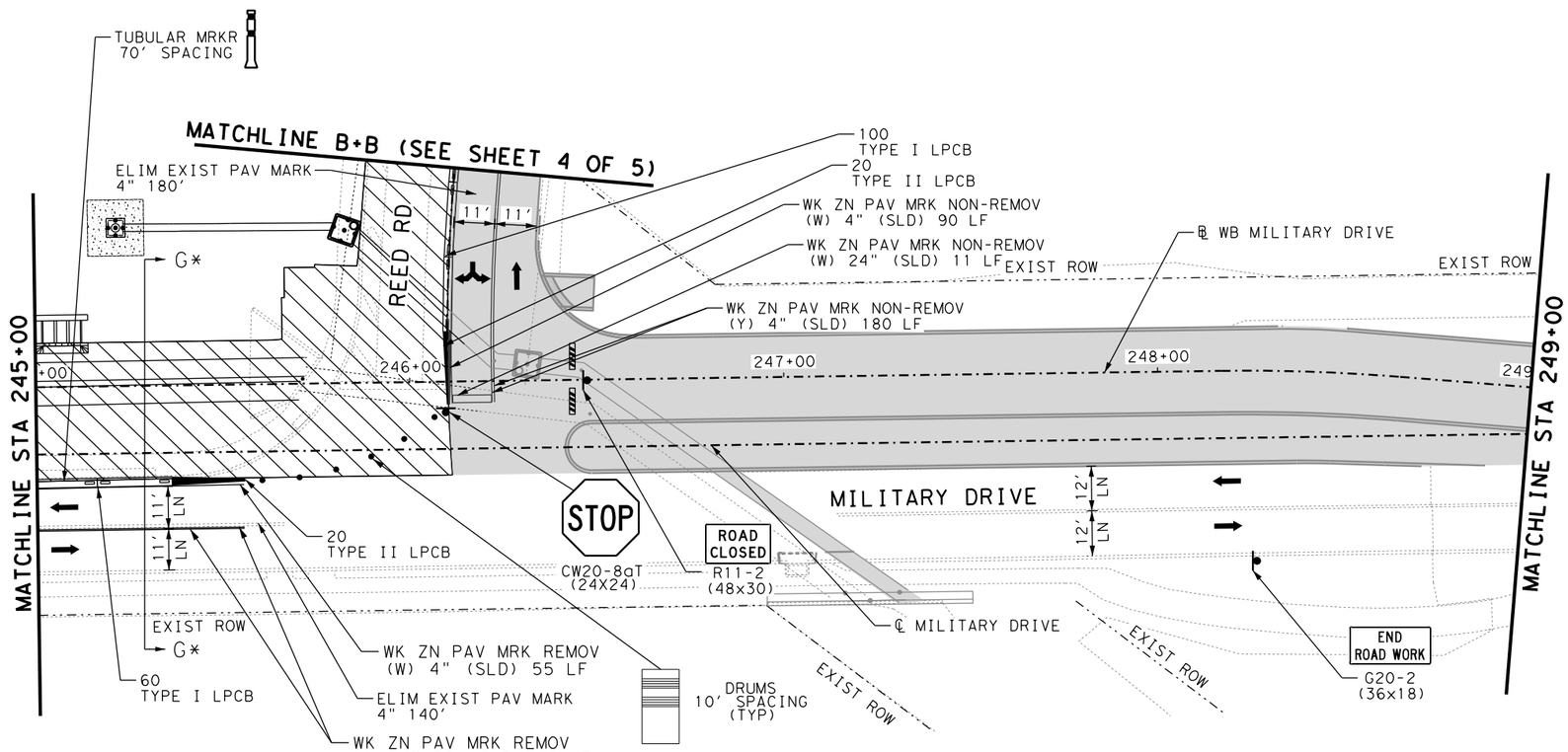
MILITARY DRIVE
TCP LAYOUT PHASE 2
STEP 3

SHEET 1 OF 5

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 55 OF 377

c:\dms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S3_1.dgn
5/19/2025 8:44:08 AM





ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
512	7033	PORT CTB (MOVE)(LOW PROF)(TY 1)	LF	560
512	7034	PORT CTB (MOVE)(LOW PROF)(TY 2)	LF	40
662	7004	WK ZN PAV MRK NON-REMOV (W)4"(SLD)	LF	90
662	7017	WK ZN PAV MRK NON-REMOV (W)24"(SLD)	LF	11
662	7034	WK ZN PAV MRK NON-REMOV (Y)4"(SLD)	LF	180
662	7064	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	490
662	7097	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	940
677	7001	ELIM EXT PAV MRK & MRKS (4")	LF	1190
677	7008	ELIM EXT PAV MRK & MRKS (24")	LF	50

LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- DIRECTION OF TRAVEL
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

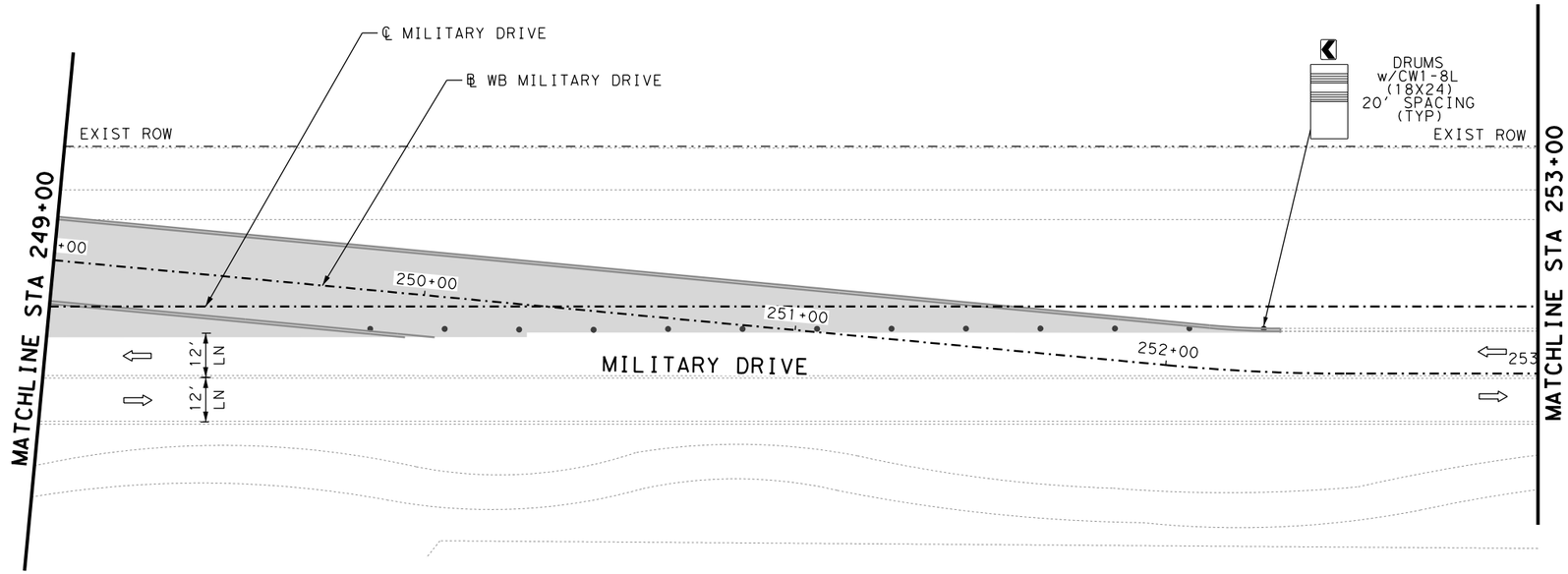
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

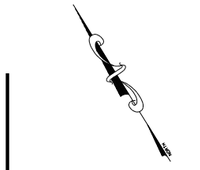
MILITARY DRIVE
TCP LAYOUT PHASE 2
STEP 3

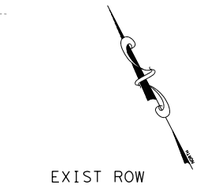
SHEET 2 OF 5

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 56 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S3_2.dgn
5/19/2025 8:44:20 AM





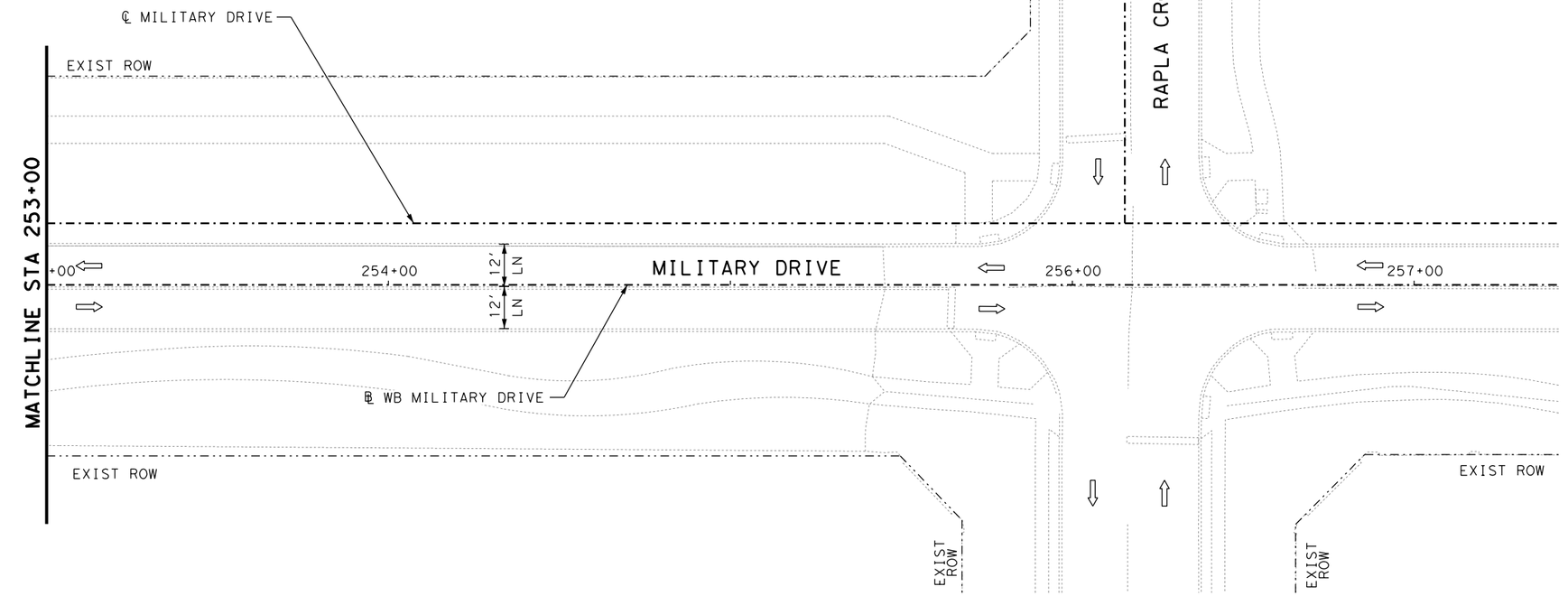


LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.



* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

0 20' 40'

SCALE: 1" = 40'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 2 STEP 3

SHEET 3 OF 5

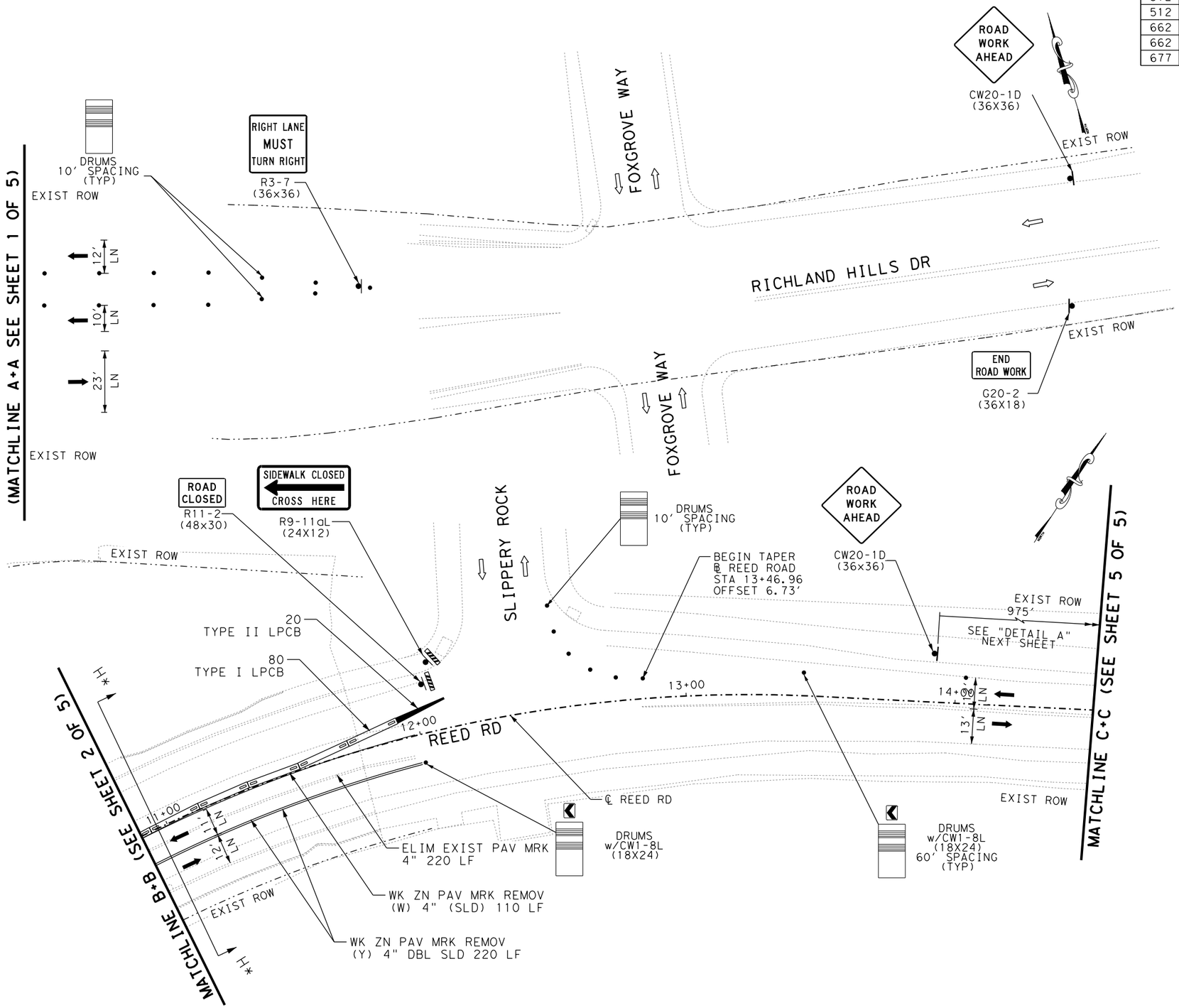
70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 57 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S3_3.dgn

5/19/2025 8:44:32 AM

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S3_3.dgn
8:44:32 AM
5/19/2025

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
512	7033	PORT CTB (MOVE)(LOW PROF)(TY 1)	LF	80
512	7034	PORT CTB (MOVE)(LOW PROF)(TY 2)	LF	20
662	7064	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	110
662	7097	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	220
677	7001	ELIM EXT PAV MRK & MRKS (4")	LF	220



LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

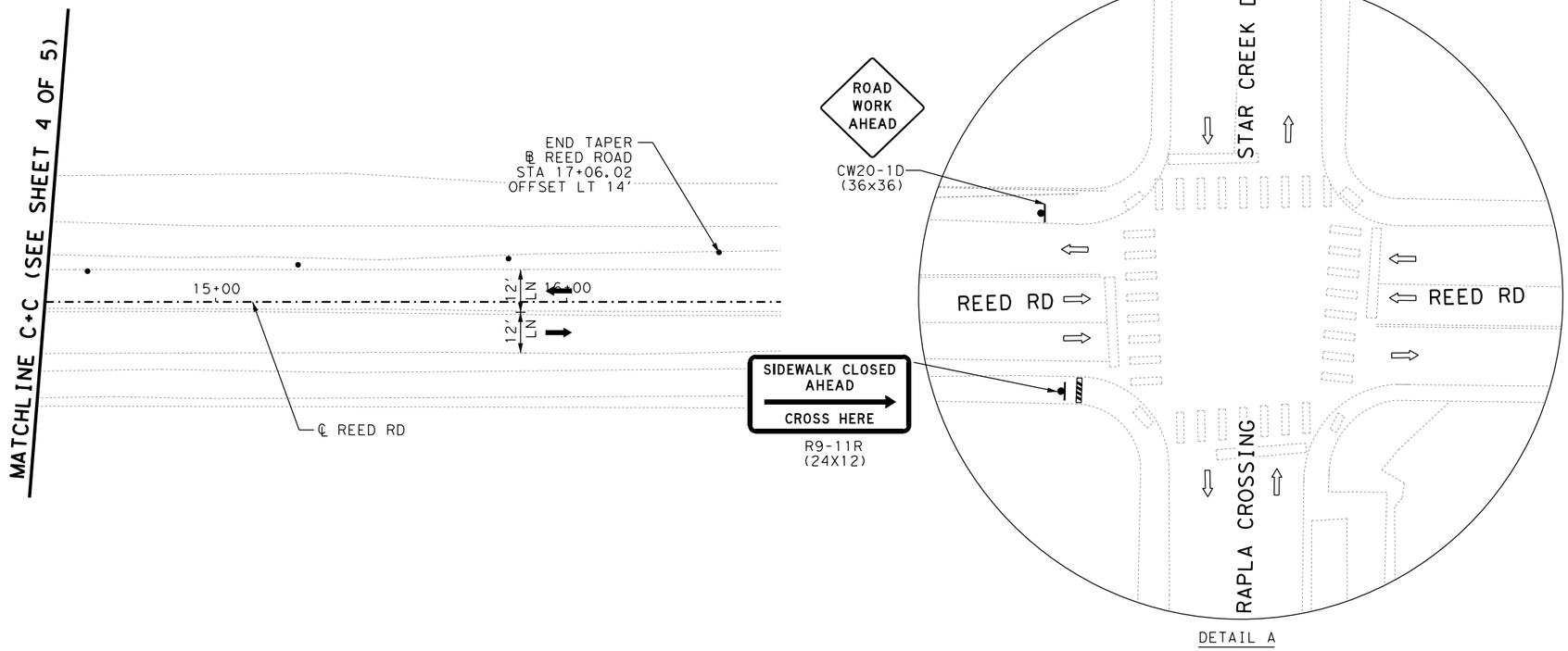
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 2
STEP 3

SHEET 4 OF 5

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 58 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S3_4.dgn
5/19/2025 8:44:46 AM



DETAIL A

LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 2
STEP 3

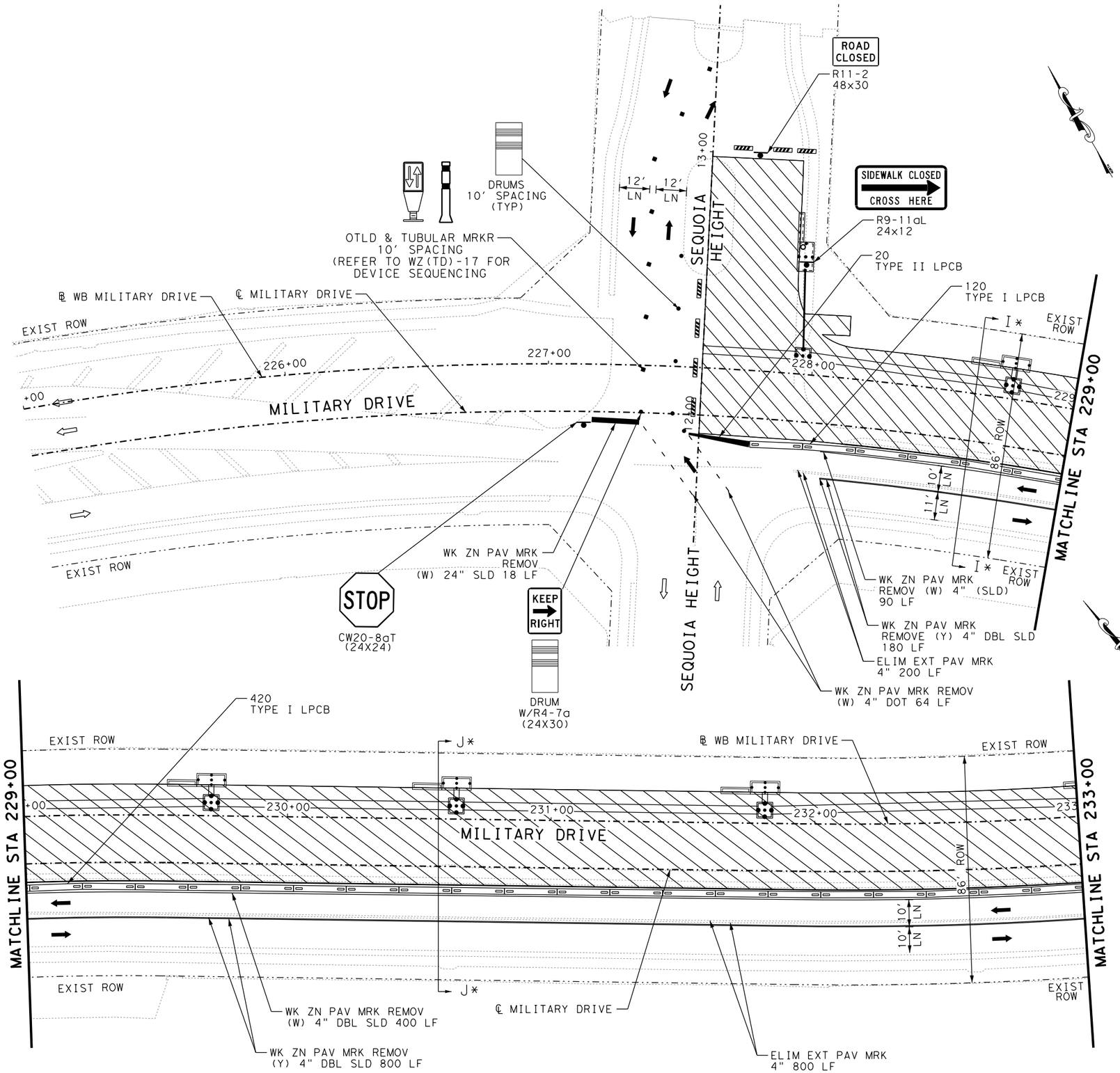
SHEET 5 OF 5

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 59 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S3_5.dgn

5/19/2025 8:45:01 AM
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S3_5.dgn

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
512	7009	PORT CTB (FUR & INST)(LOW PROF)(TY 1)	LF	180
512	7033	PORT CTB (MOVE)(LOW PROF)(TY 1)	LF	360
512	7034	PORT CTB (MOVE)(LOW PROF)(TY 2)	LF	20
512	7058	PORT CTB (REMOVE)(LOW PROF)(TY 2)	LF	40
662	7062	WK ZN PAV MRK REMOV (W)4"(DOT)	LF	64
662	7077	WK ZN PAV MRK REMOV (W)24"(SLD)	LF	18
662	7064	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	490
662	7097	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	980
677	7001	ELIM EXT PAV MRK & MRKS (4")	LF	1000



LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TYPE I LPCB
- TYPE II LPCB
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

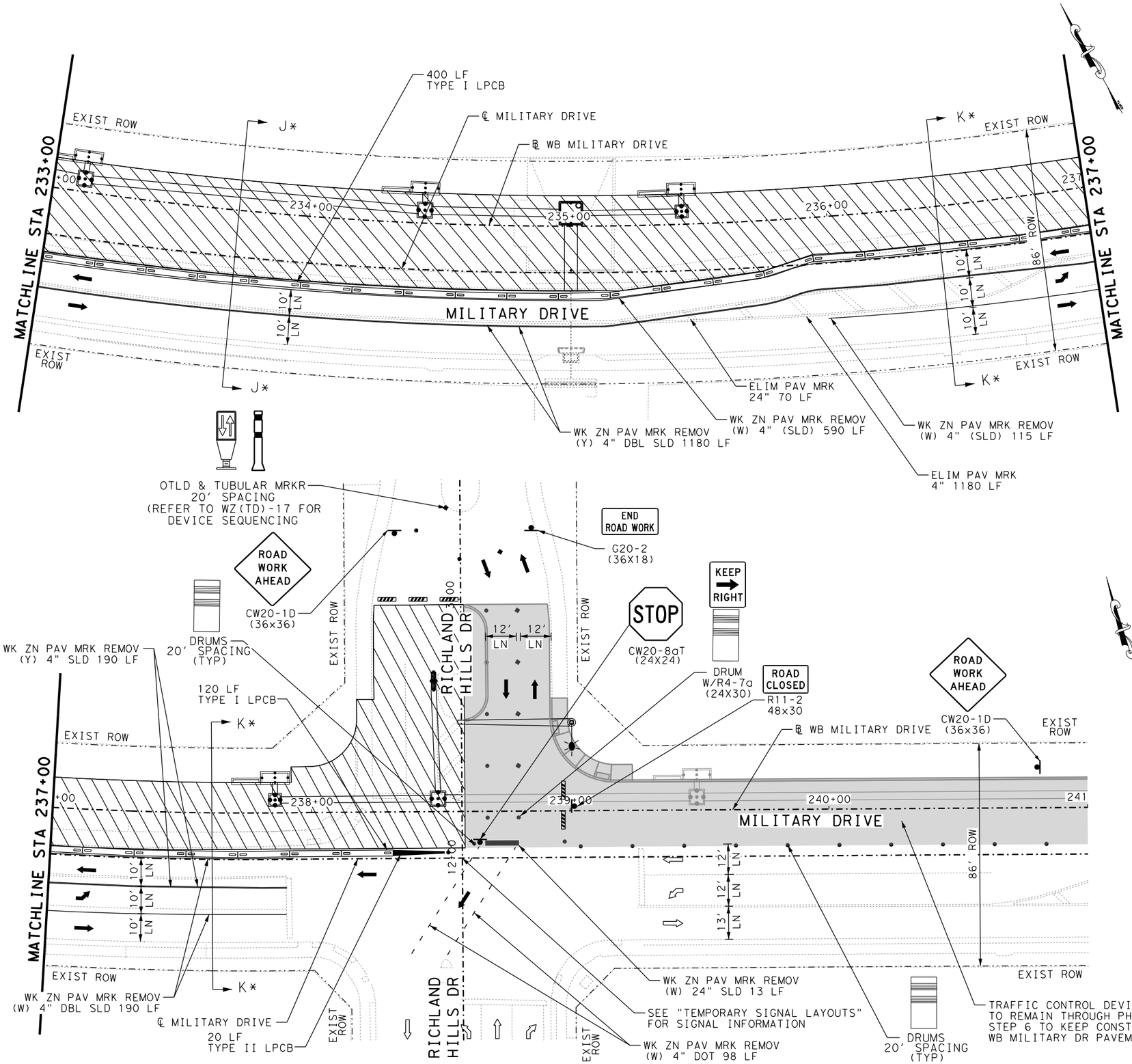
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 2
STEP 4

SHEET 1 OF 2

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 60 OF 377

c:\dms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S4_1.dgn
5/19/2025 8:45:14 AM



ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
512	7033	PORT CTB (MOVE)(LOW PROF)(TY 1)	LF	520
512	7034	PORT CTB (MOVE)(LOW PROF)(TY 2)	LF	20
662	7062	WK ZN PAV MRK REMOV (W)4"(DOT)	LF	98
662	7064	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	895
662	7077	WK ZN PAV MRK REMOV (W)24"(SLD)	LF	13
662	7097	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	1370
677	7001	ELIM EXT PAV MRK & MRKS (4")	LF	1180
677	7008	ELIM EXT PAV MRK & MRKS (24")	LF	70
677	7009	ELIM EXT PAV MRK & MRKS (ARROW)	EA	2

LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TYPE I LPCB
- TYPE II LPCB
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

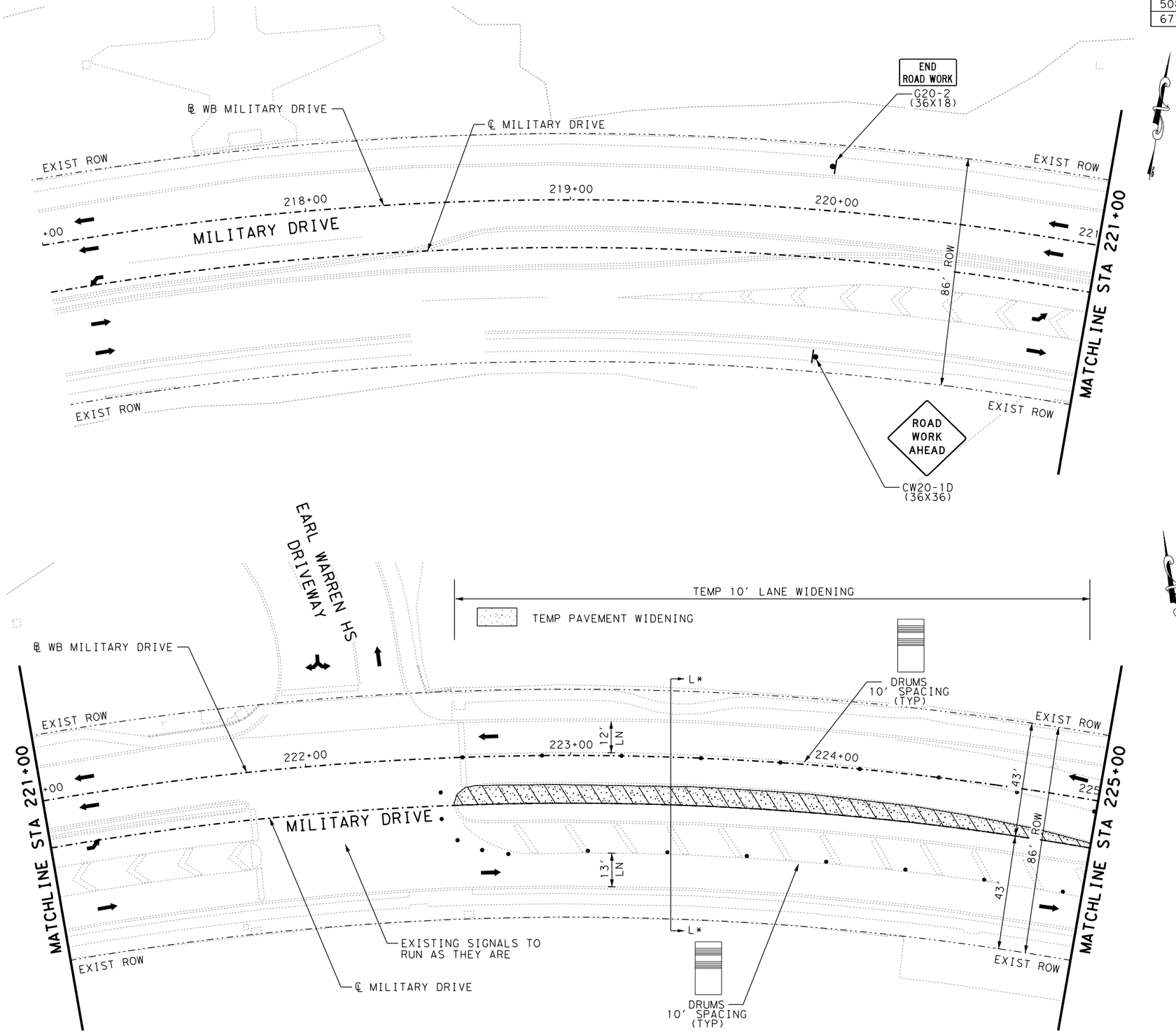
MILITARY DRIVE
TCP LAYOUT PHASE 2
STEP 4

SHEET 2 OF 2

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 61 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S4_2.dgn
5/19/2025 8:45:29 AM

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
508	7001	CONSTRUCTING DETOURS	SY	165
677	7009	ELIM EXT PAV MRK & MRKS (ARROW)	EA	2



LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TYPE I LPCB
- TYPE II LPCB
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

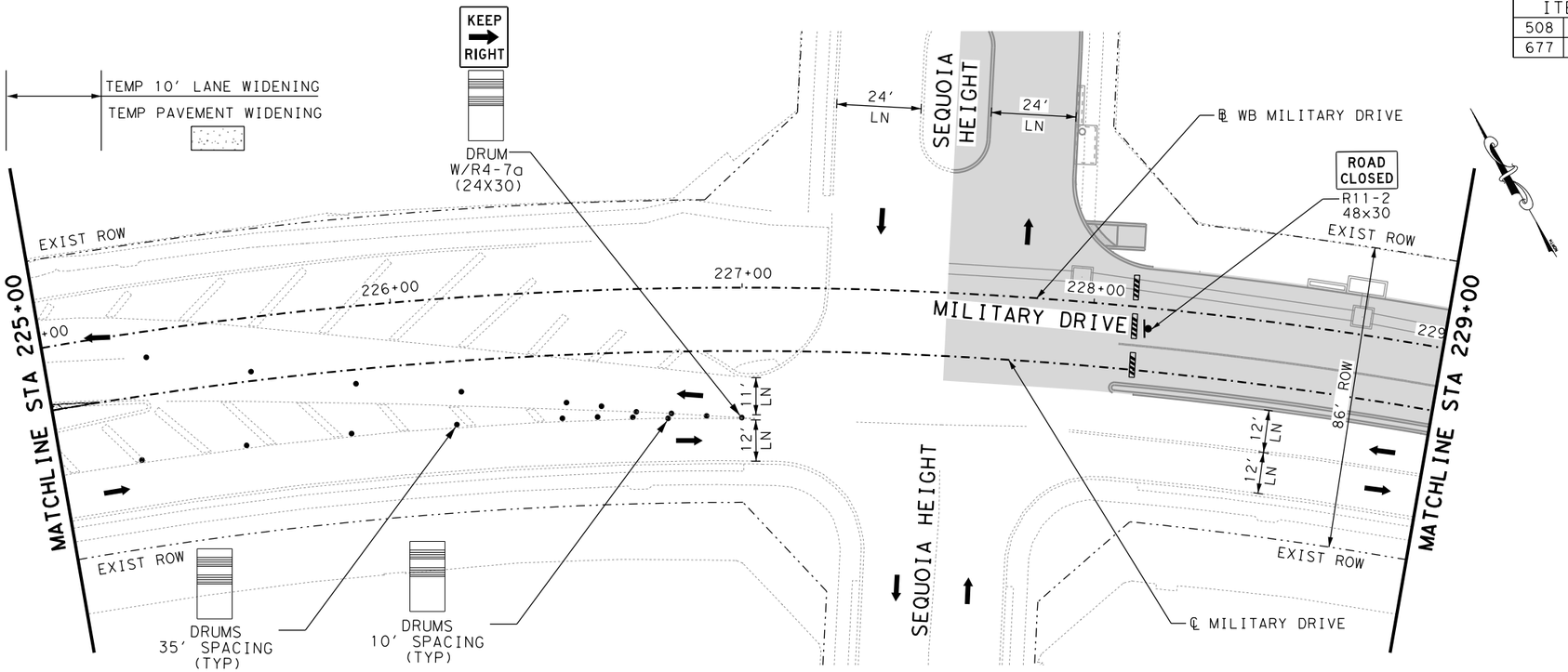
MILITARY DRIVE
TCP LAYOUT PHASE 2 STEP 5 A

SHEET 1 OF 2

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 62 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S5A_1.dgn
5/19/2025 8:45:43 AM

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
508	7001	CONSTRUCTING DETOURS	SY	5
677	7009	ELIM EXT PAV MRK & MRKS (ARROW)	EA	1

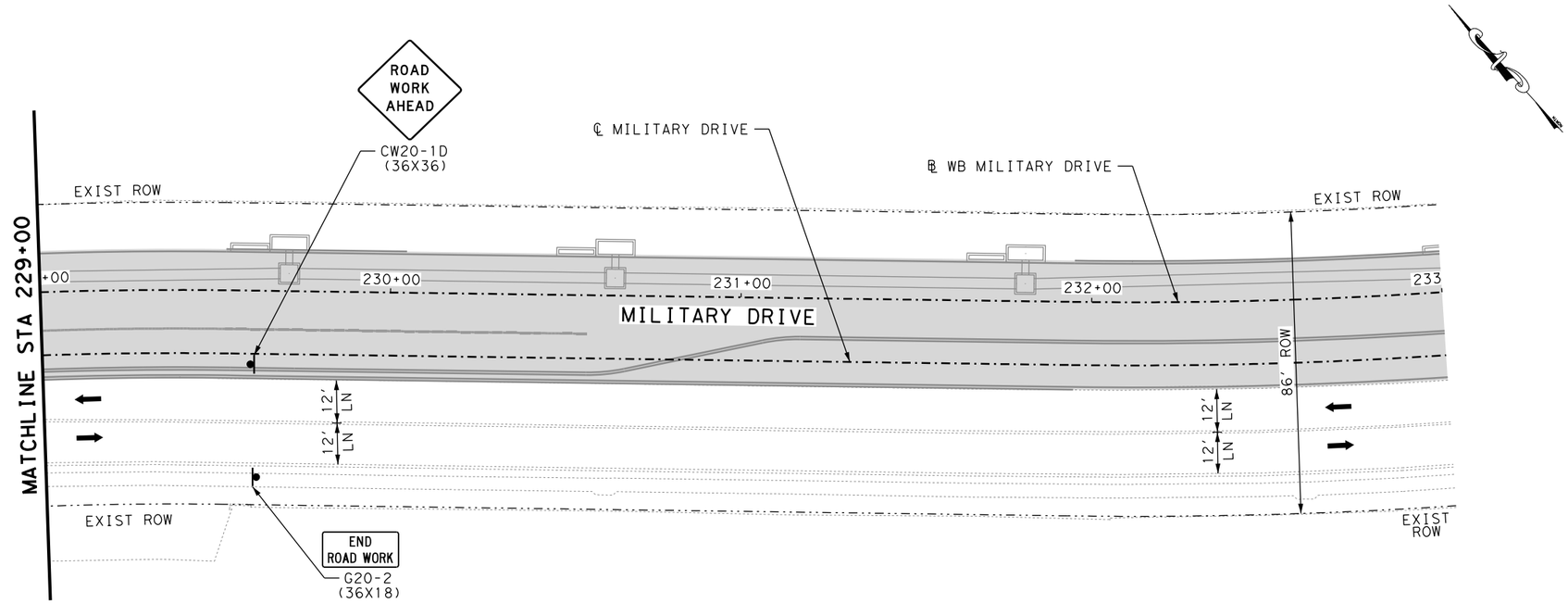


LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TYPE I LPCB
- TYPE II LPCB
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.



* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

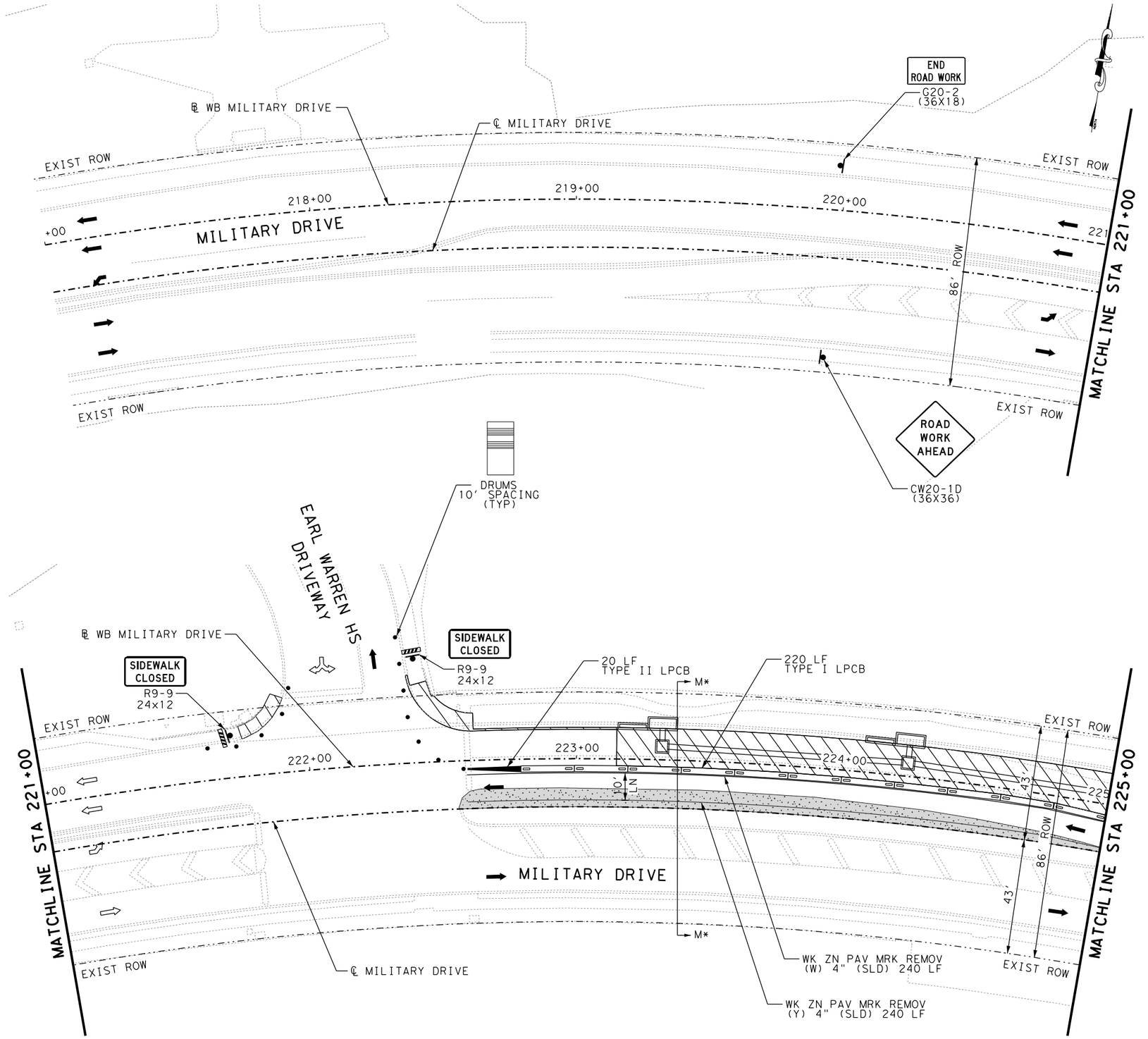
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 2
STEP 5 A

SHEET 2 OF 2

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 63 OF 377

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
512	7033	PORT CTB (MOVE)(LOW PROF)(TY 1)	LF	220
512	7034	PORT CTB (MOVE)(LOW PROF)(TY 2)	LF	20
512	7057	PORT CTB (REMOVE)(LOW PROF)(TY 1)	LF	600
662	7064	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	240
662	7097	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	240



LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TYPE I LPCB
- TYPE II LPCB
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

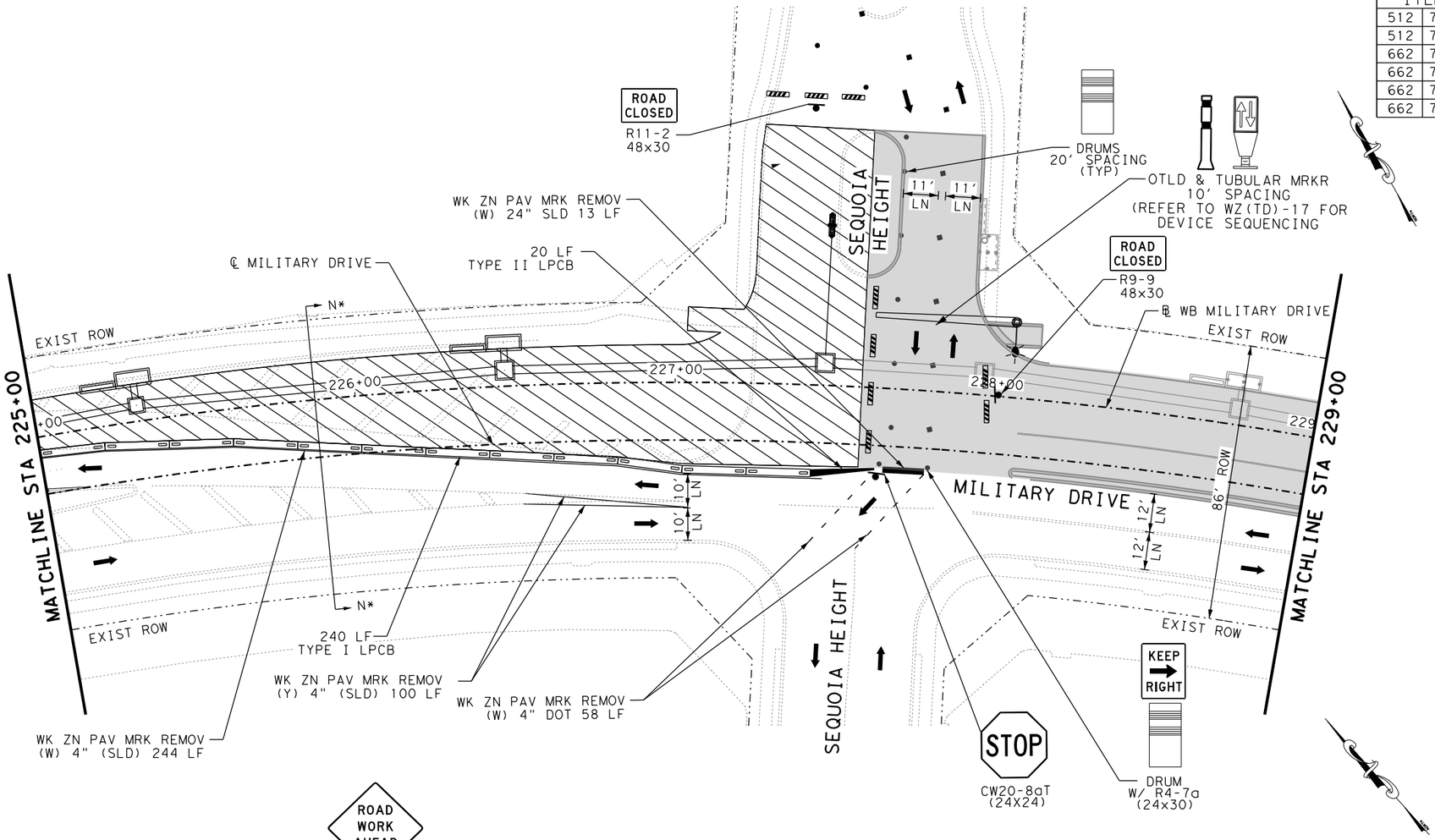
MILITARY DRIVE
TCP LAYOUT PHASE 2 STEP 5 B

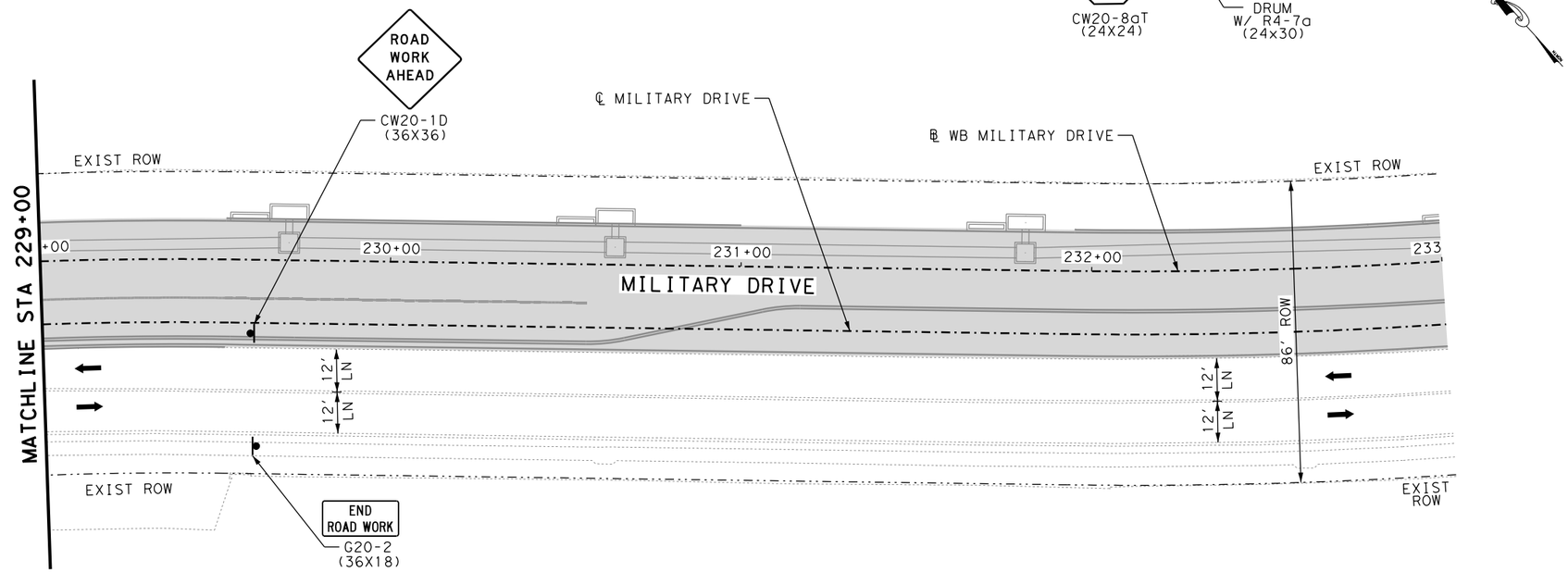
SHEET 1 OF 2

70 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 64 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S5B_1.dgn
5/19/2025 8:46:17 AM

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
512	7033	PORT CTB (MOVE)(LOW PROF)(TY 1)	LF	240
512	7034	PORT CTB (MOVE)(LOW PROF)(TY 2)	LF	20
662	7062	WK ZN PAV MRK REMOV (W)4"(DOT)	LF	58
662	7064	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	244
662	7077	WK ZN PAV MRK REMOV (W)24"(SLD)	LF	13
662	7097	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	240





LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TYPE I LPCB
- TYPE II LPCB
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

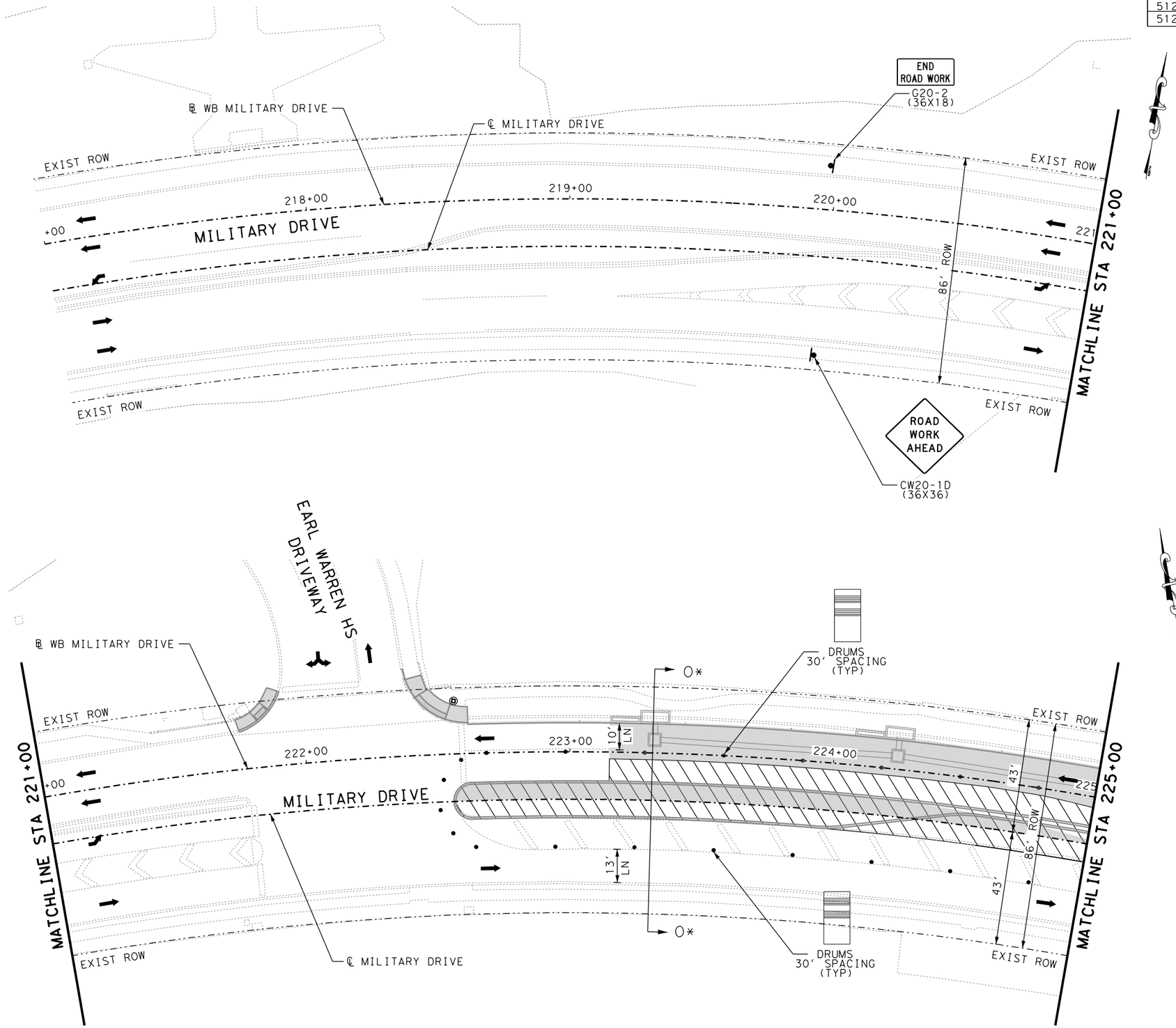
MILITARY DRIVE
TCP LAYOUT PHASE 2
STEP 5 B

SHEET 2 OF 2

70 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 65 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_55B_2.dgn
5/19/2025 8:46:28 AM

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
512	7057	PORT CTB (REMOVE)(LOW PROF)(TY 1)	LF	460
512	7058	PORT CTB (REMOVE)(LOW PROF)(TY 2)	LF	40



LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TYPE I LPCB
- TYPE II LPCB
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 2
STEP 6

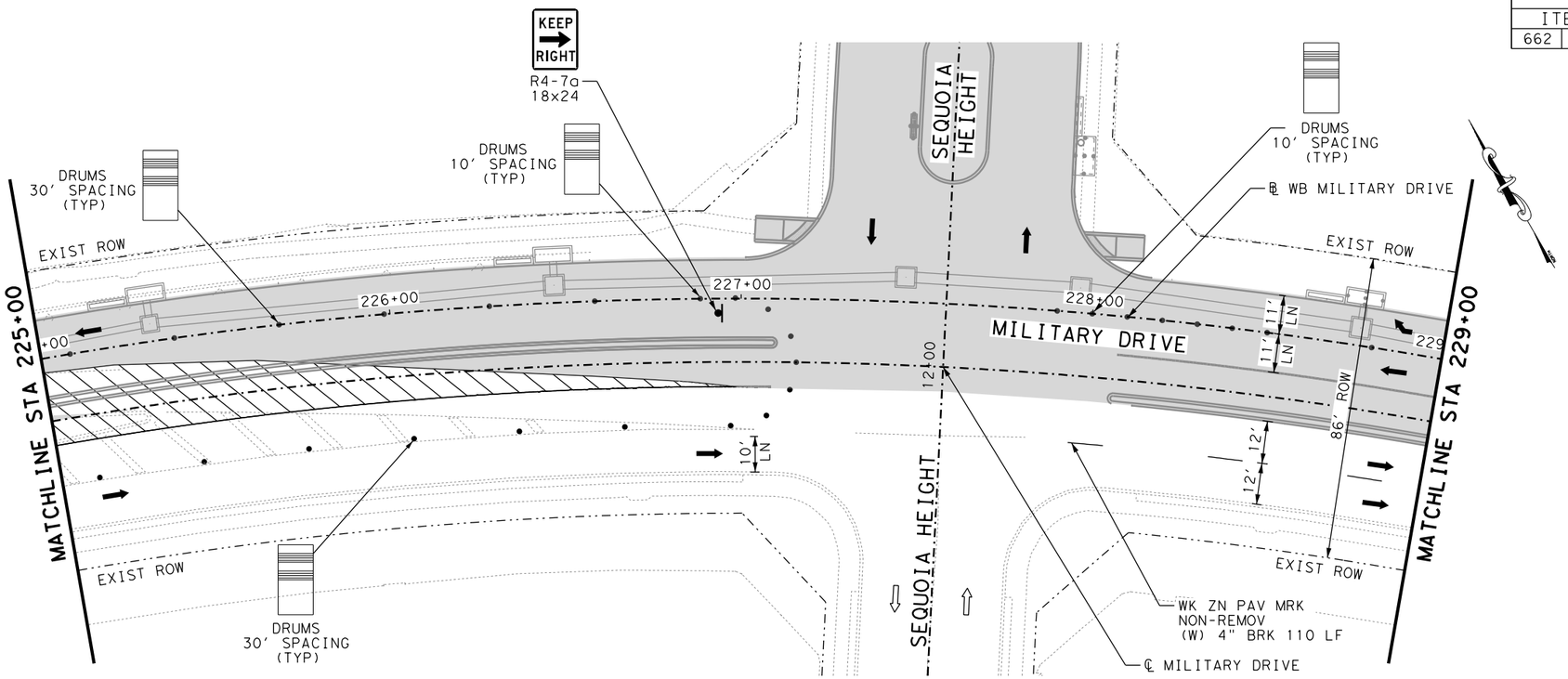
SHEET 1 OF 5

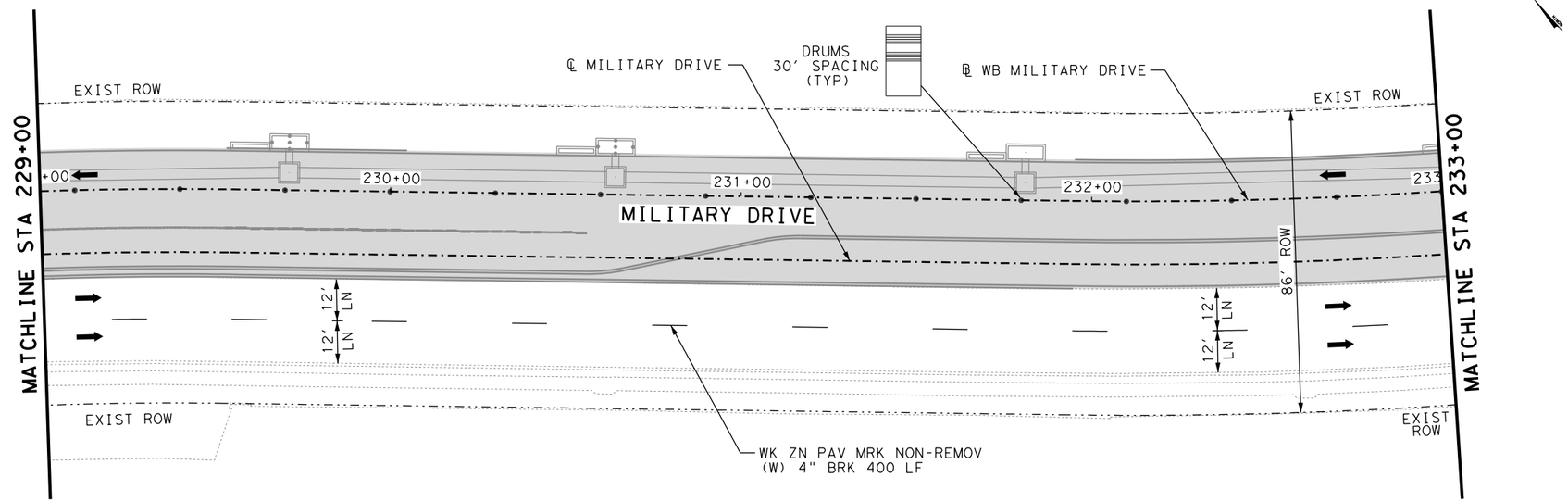
70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 66 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S6_1.dgn
5/19/2025 8:46:47 AM

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S6_1.dgn
5:46:47 AM
5/19/2025
5/19/2025 8:46:47 AM
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S6_1.dgn

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
662	7001	WK ZN PAV MRK NON-REMOV (W)4"(BRK)	LF	510





LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TYPE I LPCB
- TYPE II LPCB
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 2
STEP 6

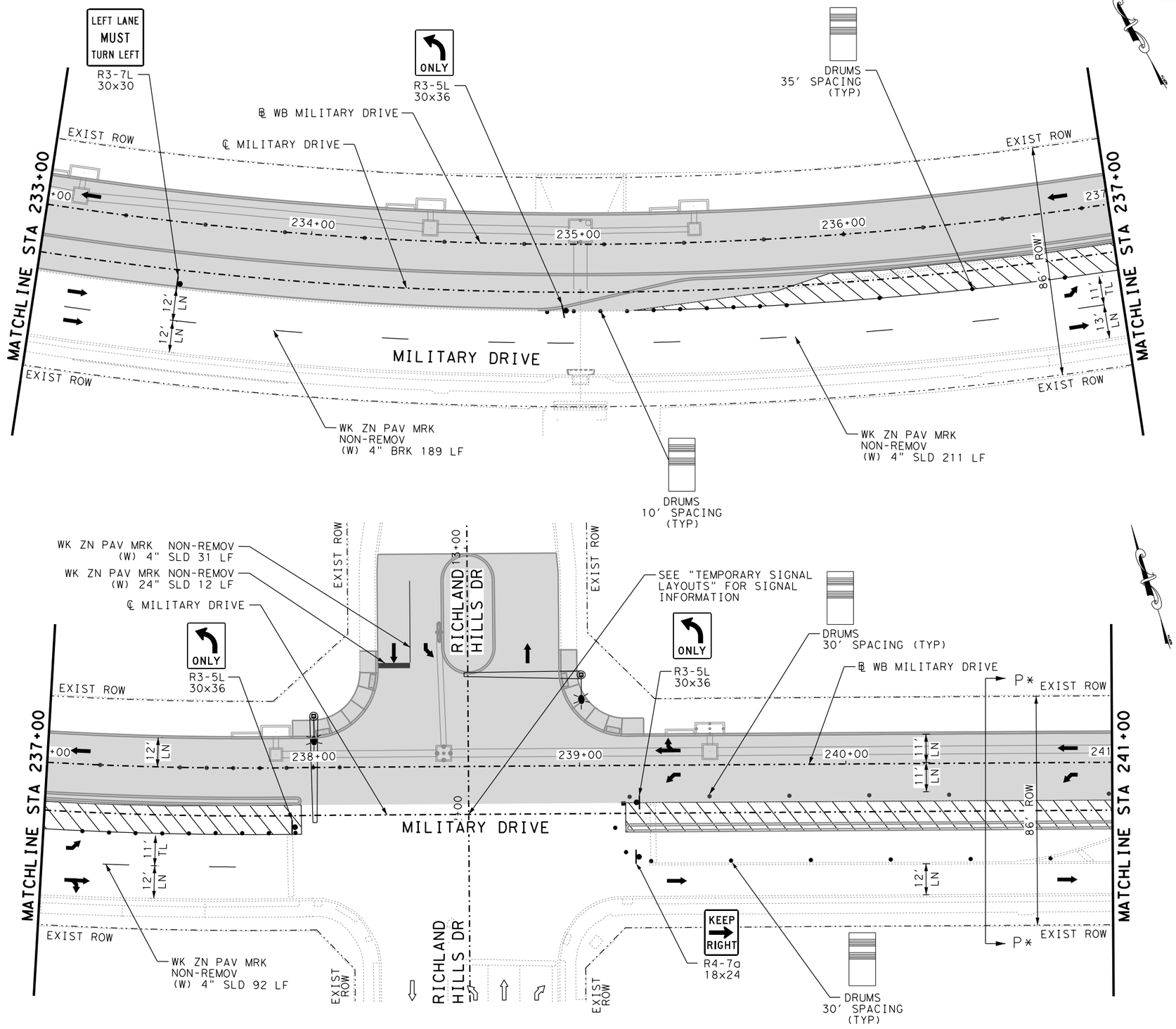
SHEET 2 OF 5

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 67 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S6_2.dgn
5/19/2025 8:46:57 AM

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S6_2.dgn
5/19/2025 8:46:57 AM

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
662	7001	WK ZN PAV MRK NON-REMOV (W)4"(BRK)	LF	189
662	7004	WK ZN PAV MRK NON-REMOV (W)4"(SLD)	LF	334
662	7017	WK ZN PAV MRK NON-REMOV (W)24"(SLD)	LF	12



LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

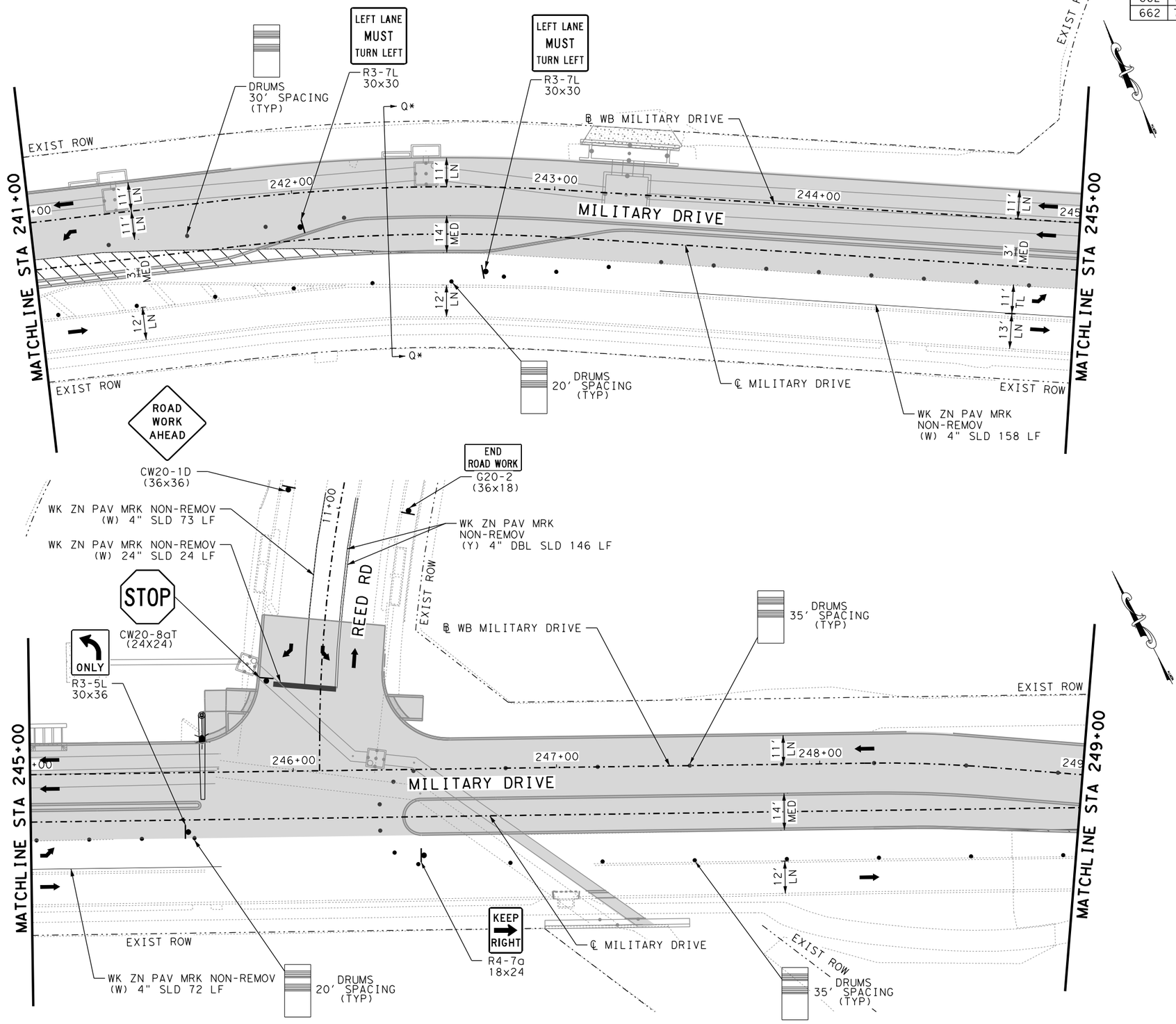
MILITARY DRIVE
TCP LAYOUT PHASE 2
STEP 6

SHEET 3 OF 5

70 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 68 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S6_3.dgn
5/19/2025 8:47:09 AM

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
662	7004	WK ZN PAV MRK NON-REMOV (W)4"(SLD)	LF	303
662	7017	WK ZN PAV MRK NON-REMOV (W)24"(SLD)	LF	24
662	7034	WK ZN PAV MRK NON-REMOV (Y)4"(SLD)	LF	146



LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

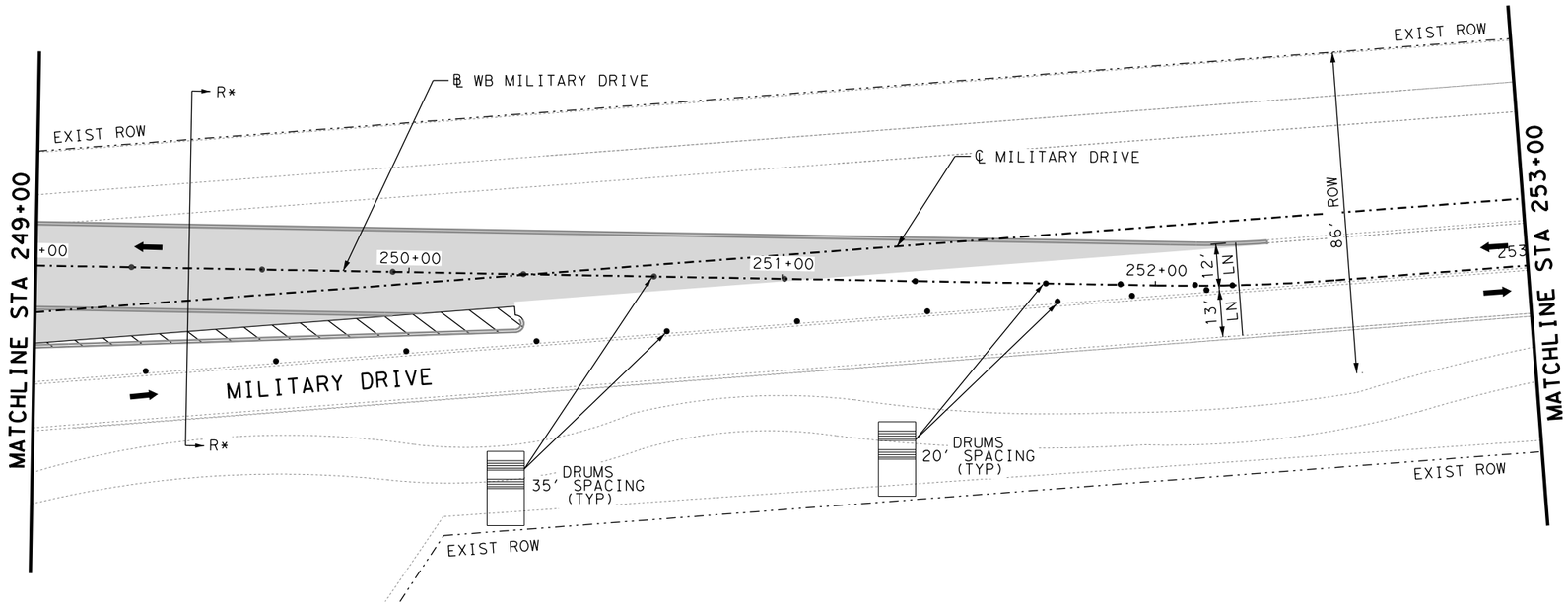
MILITARY DRIVE
TCP LAYOUT PHASE 2
STEP 6

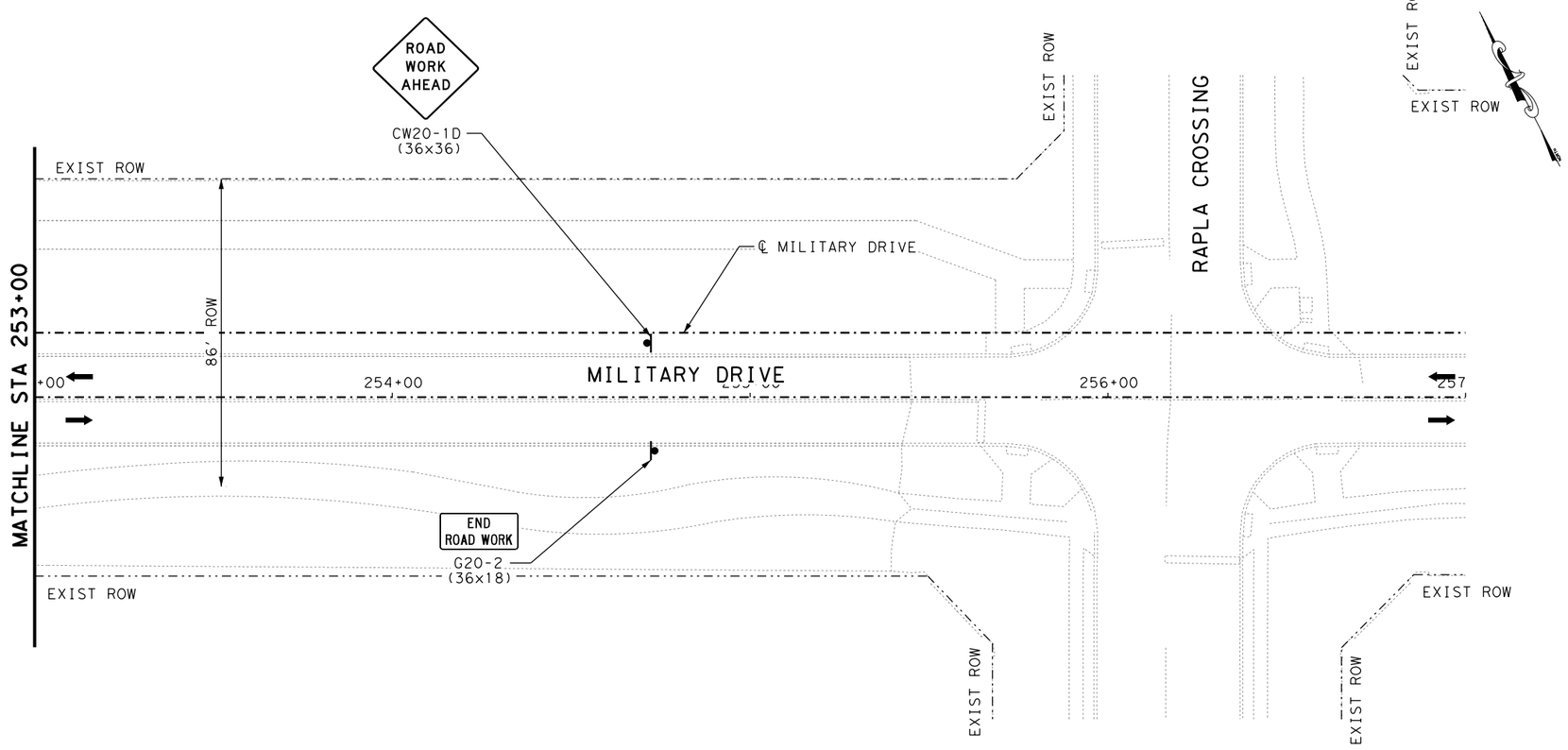
SHEET 4 OF 5

70 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 69 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S6_4.dgn
8:47:29 AM
5/19/2025

5/19/2025 8:47:29 AM
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S6_4.dgn





LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 2
STEP 6

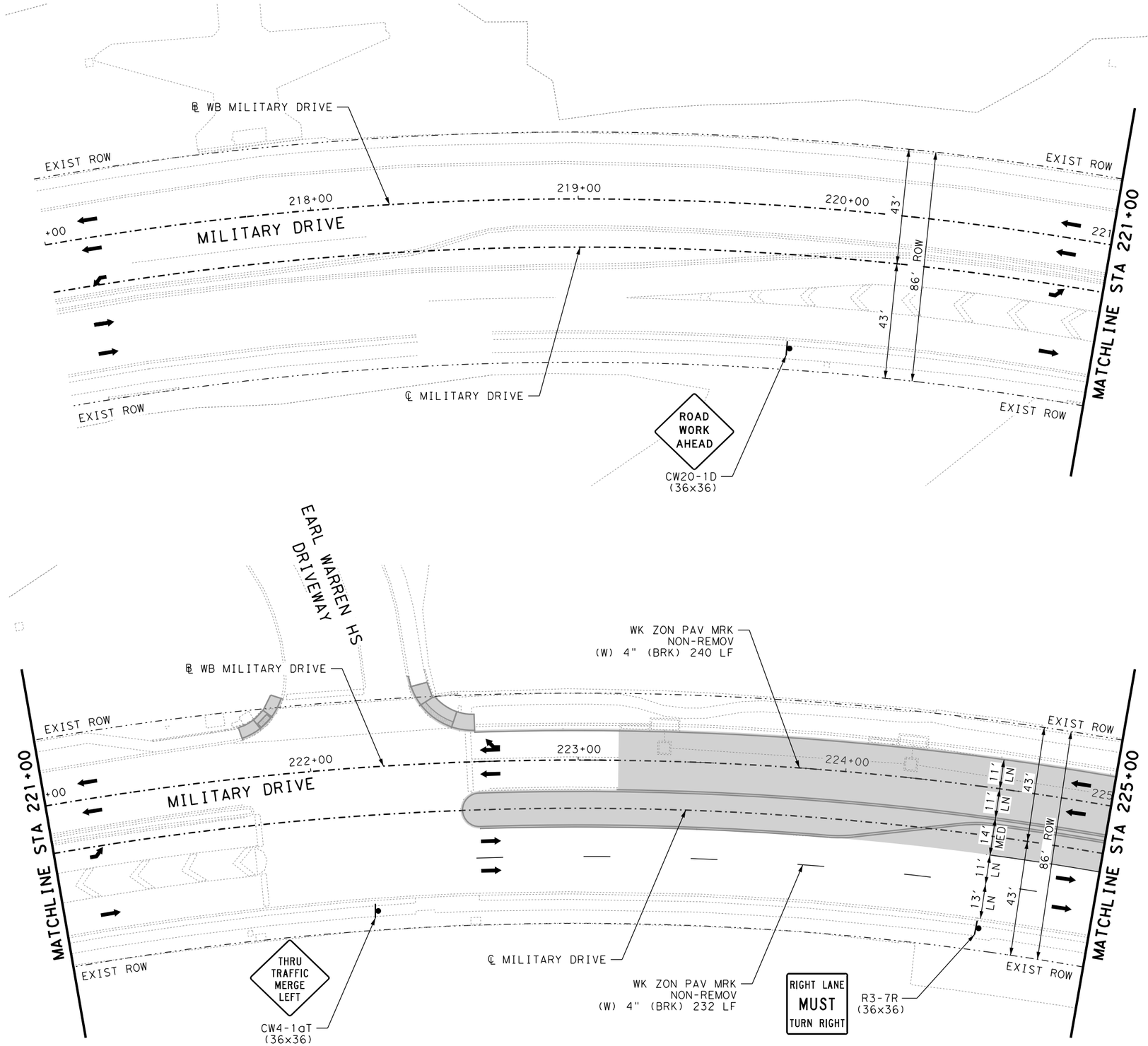
SHEET 5 OF 5

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 70 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S6_5.dgn
5/19/2025 8:47:46 AM

5/19/2025 8:47:46 AM
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH02_S6_5.dgn

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
662	7001	WK ZN PAV MRK NON-REMOV (W)4"(BRK)	LF	472



LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 3 STEP 1

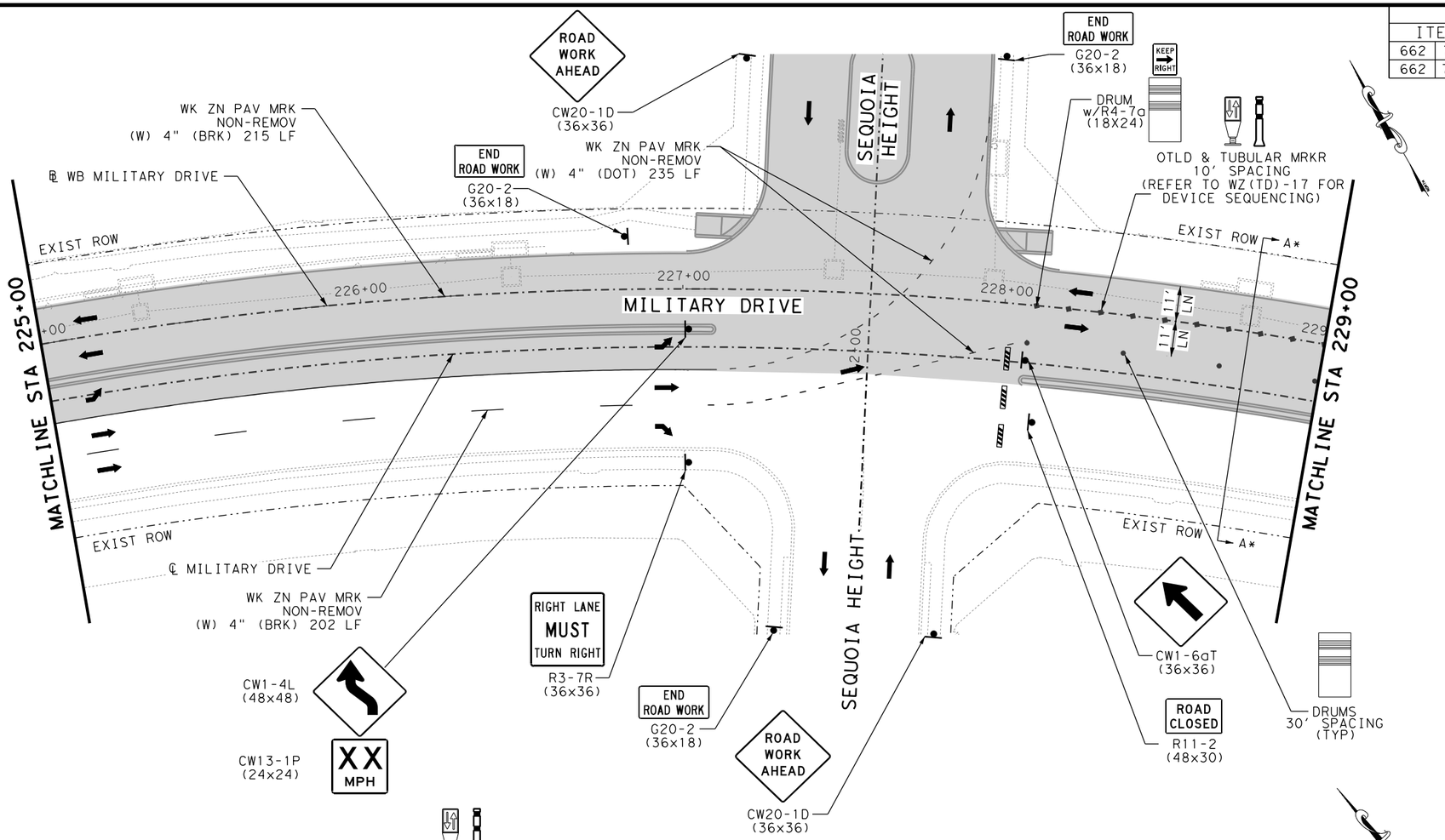
SHEET 1 OF 6

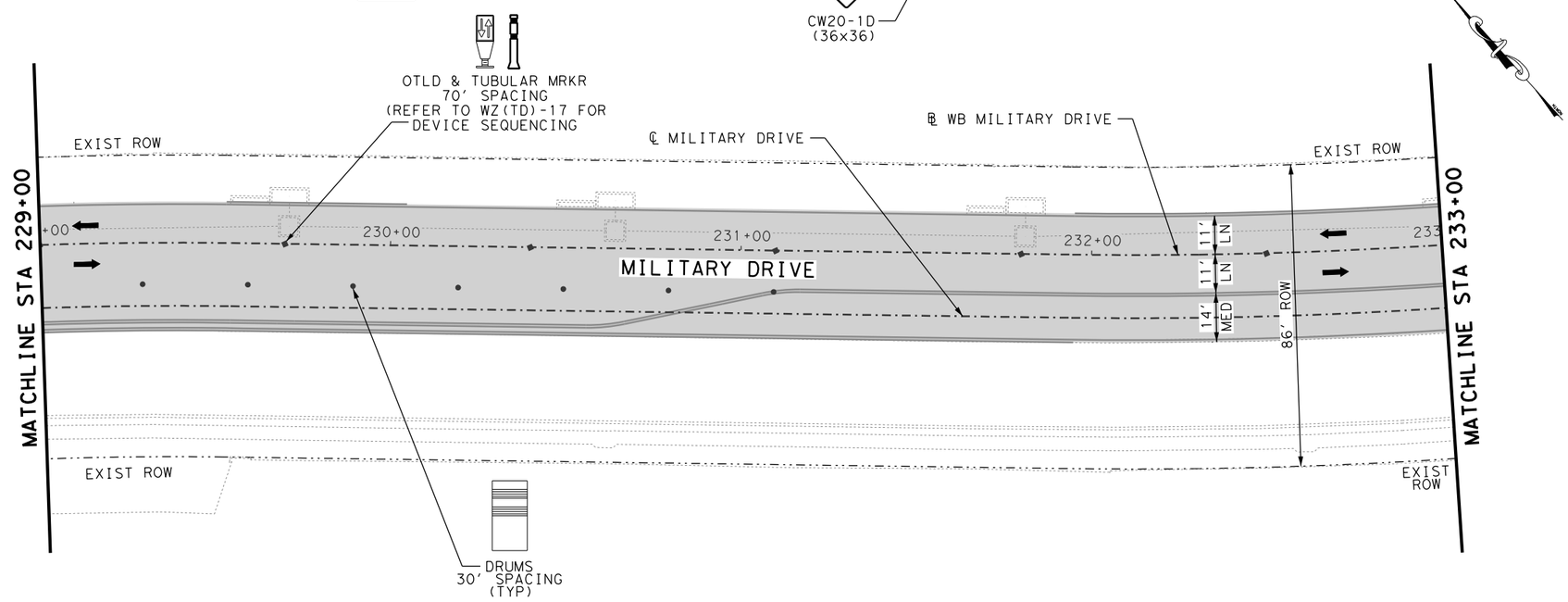
70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 71 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH03_S1_1.dgn

5/19/2025 8:47:57 AM
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH03_S1_1.dgn

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
662	7001	WK ZN PAV MRK NON-REMOV (W)4"(BRK)	LF	417
662	7002	WK ZN PAV MRK NON-REMOV (W)4"(DOT)	LF	235





LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

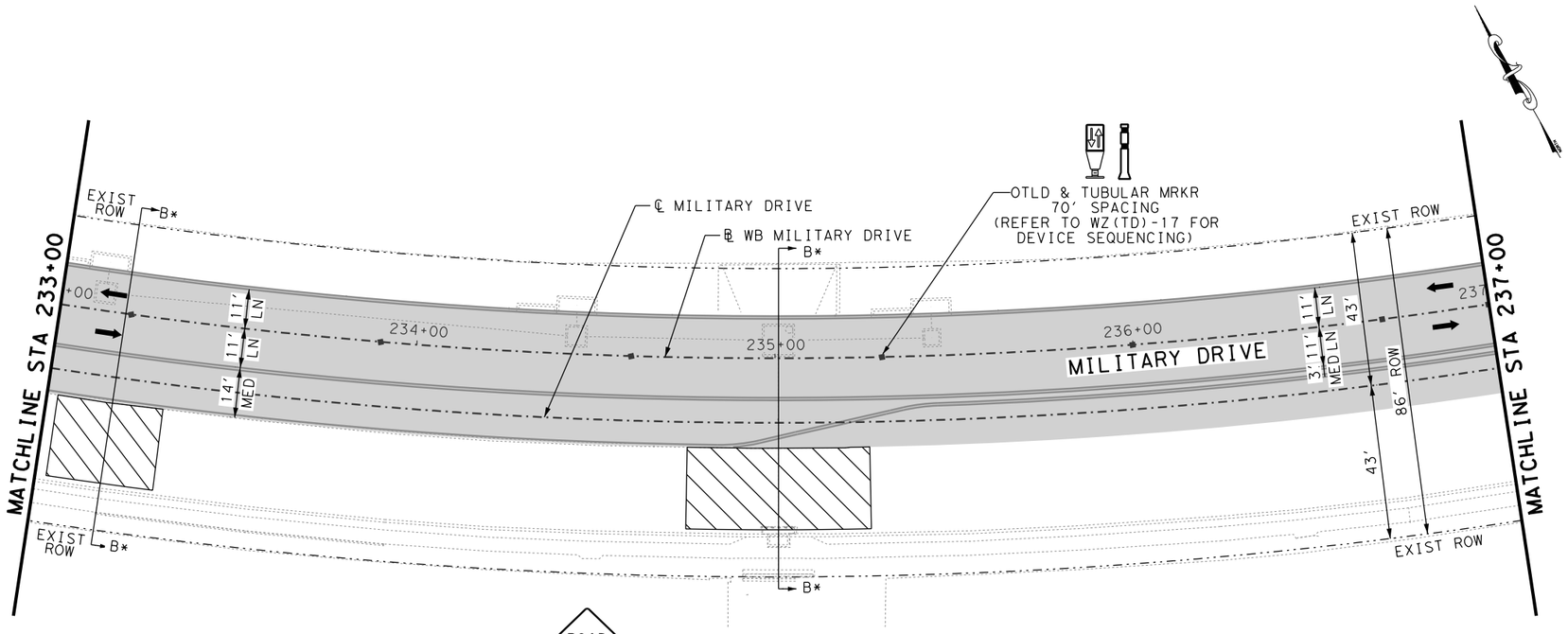
MILITARY DRIVE
TCP LAYOUT PHASE 3
STEP 1

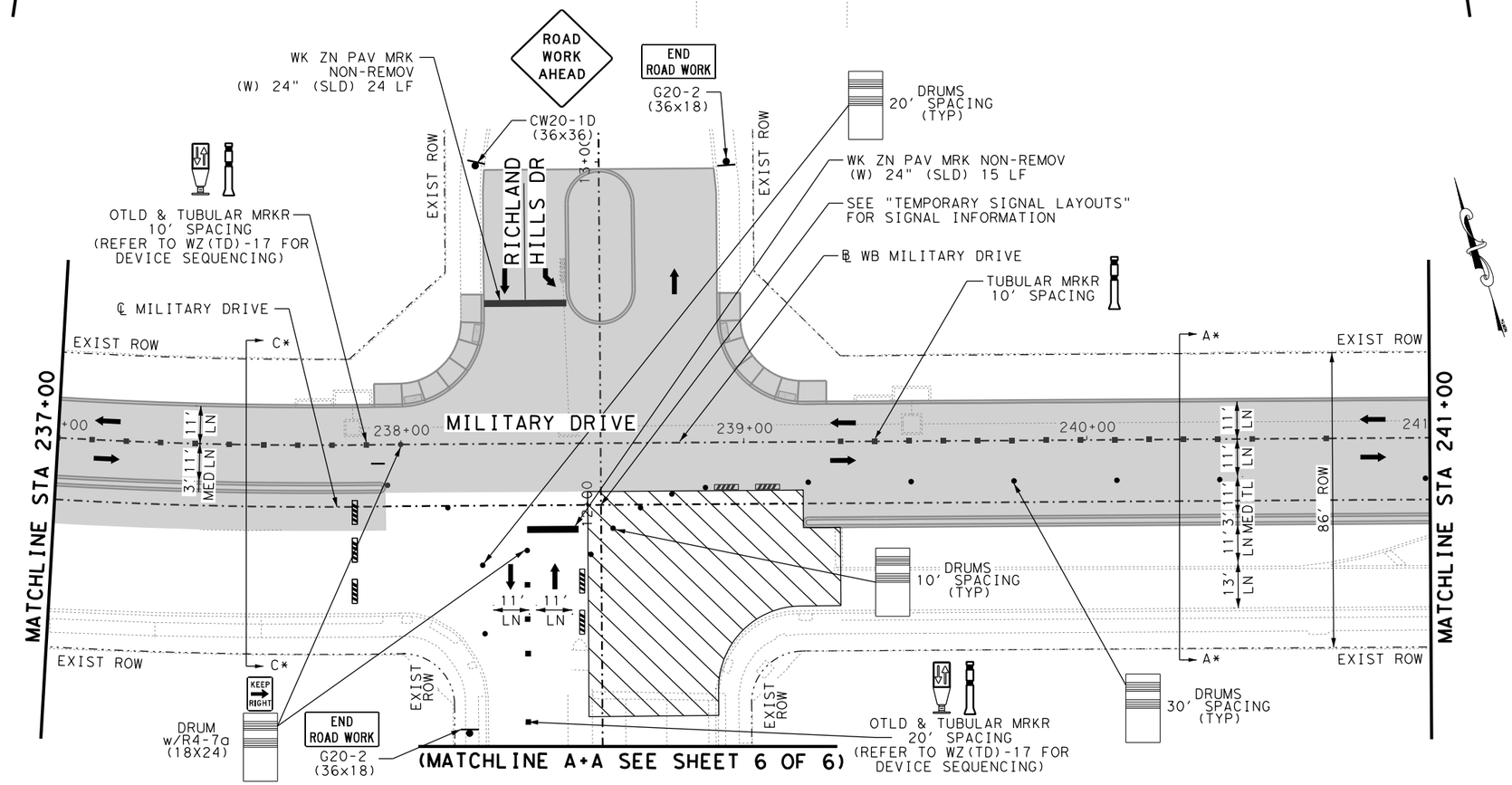
SHEET 2 OF 6

70 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 72 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH03_S1_2.dgn
5/19/2025 8:48:24 AM

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
662	7017	WK ZN PAV MRK NON-REMOV (W)24"(SLD)	LF	39





LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

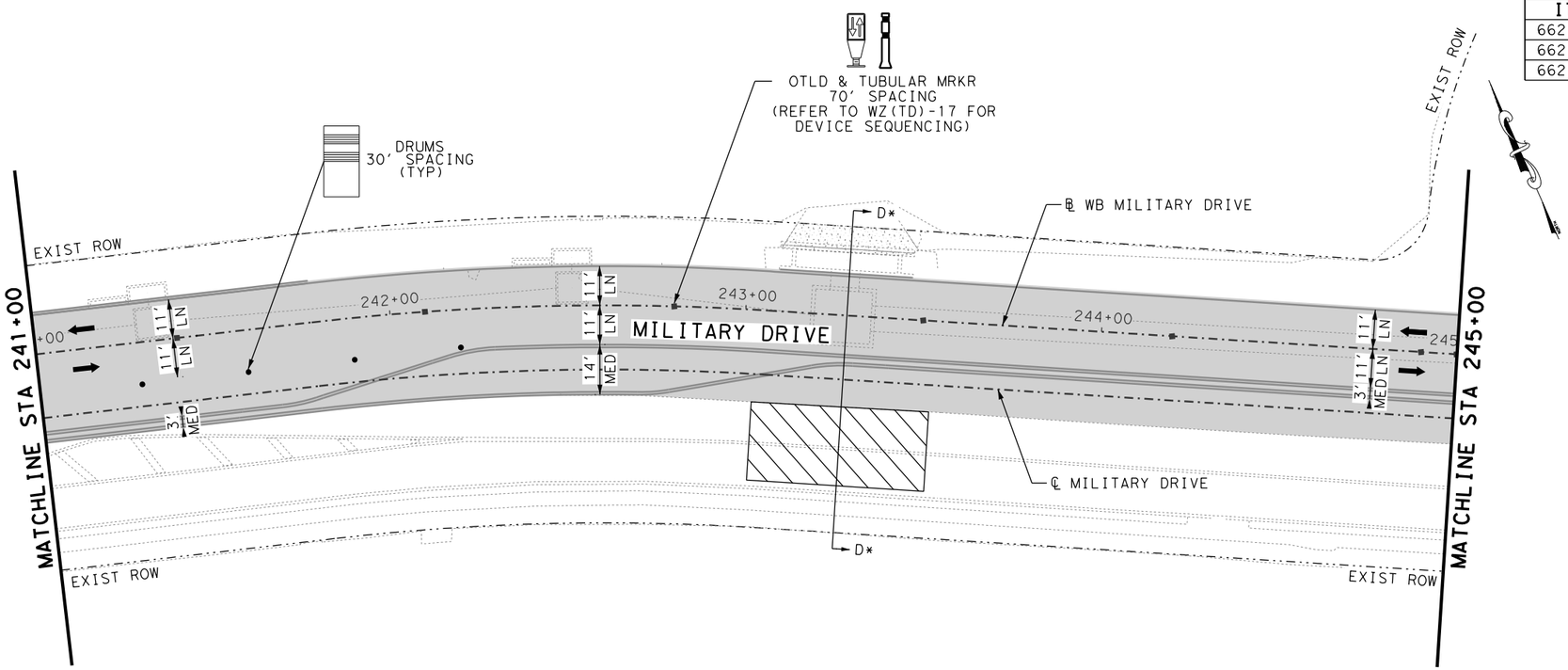
MILITARY DRIVE
TCP LAYOUT PHASE 3
STEP 1

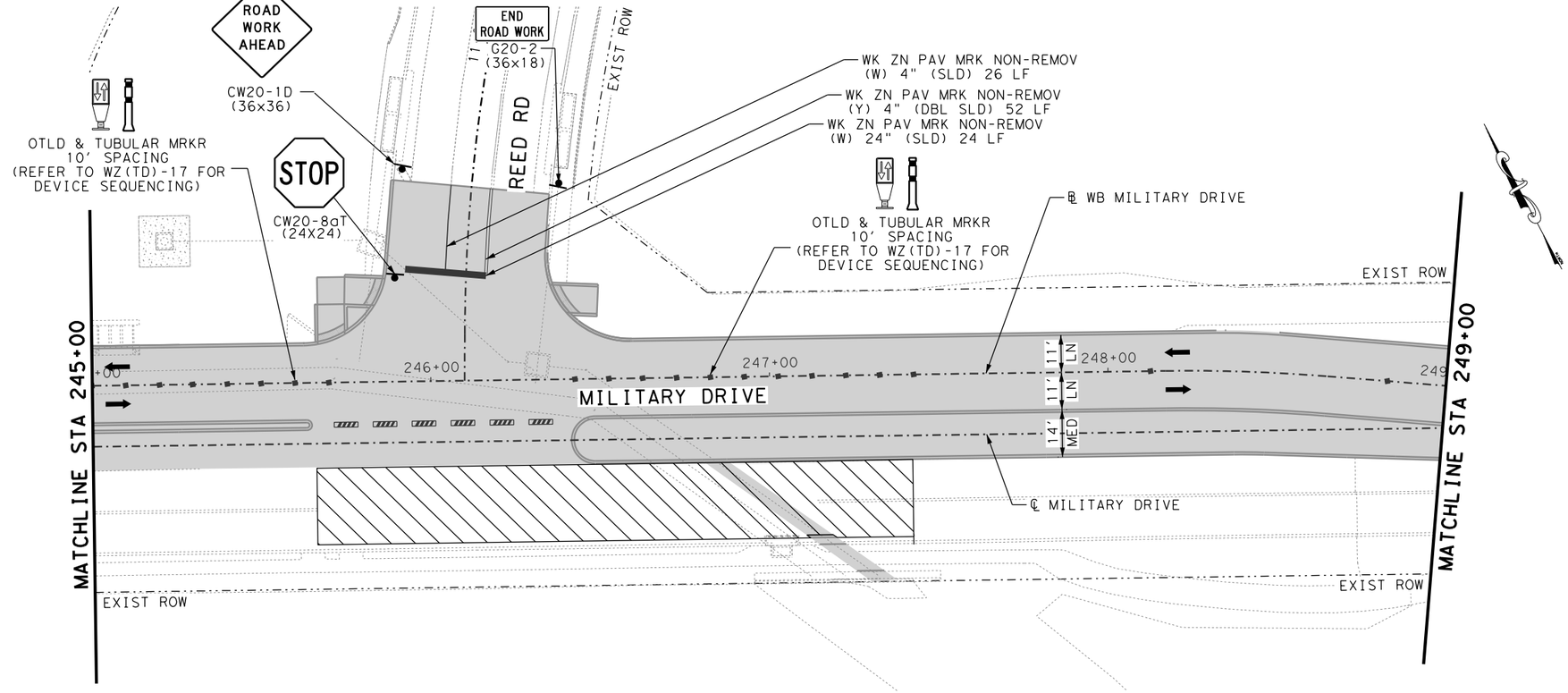
SHEET 3 OF 6

70 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV
		SHEET NO. 73 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH03_ST_3.dgn
5/19/2025 8:48:34 AM

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
662	7004	WK ZN PAV MRK NON-REMOV (W)4"(SLD)	LF	26
662	7017	WK ZN PAV MRK NON-REMOV (W)24"(SLD)	LF	24
662	7034	WK ZN PAV MRK NON-REMOV (Y)4"(SLD)	LF	52





LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

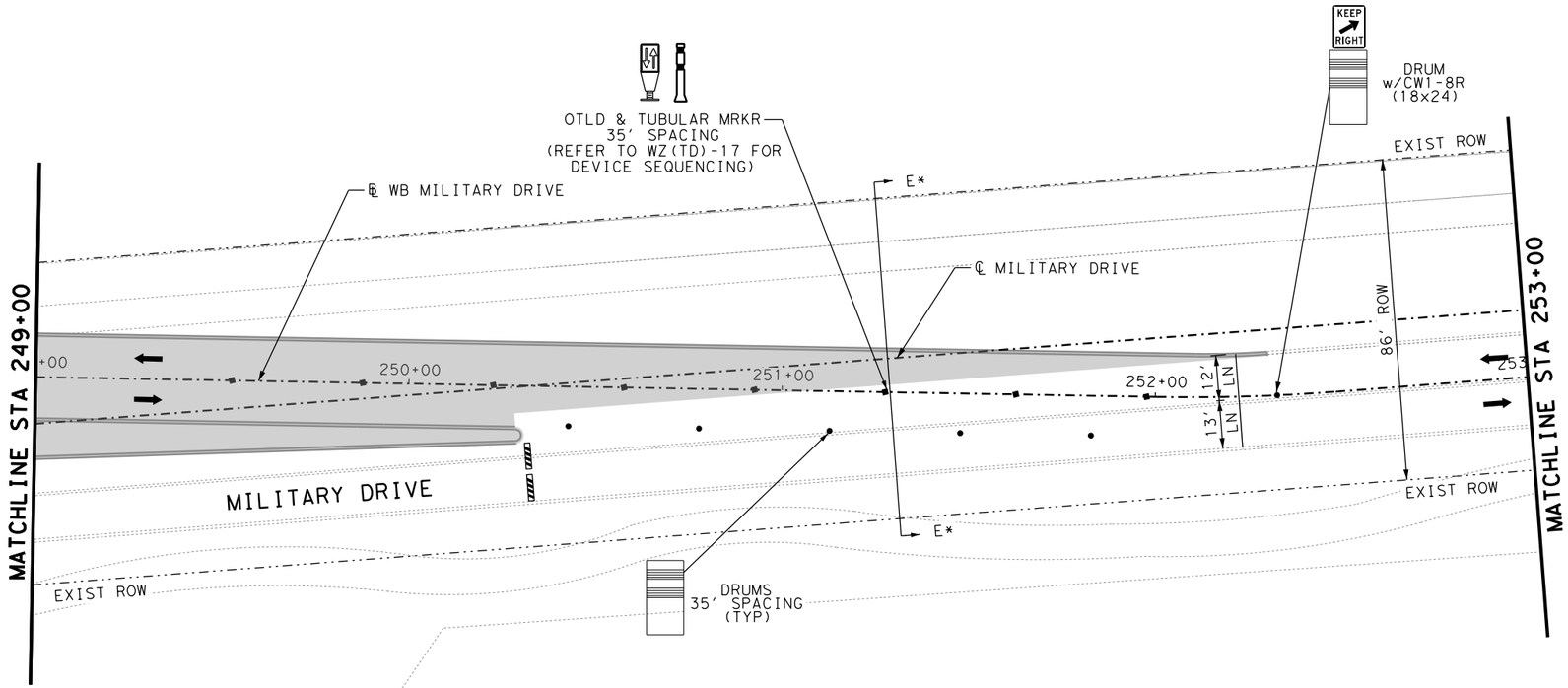
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

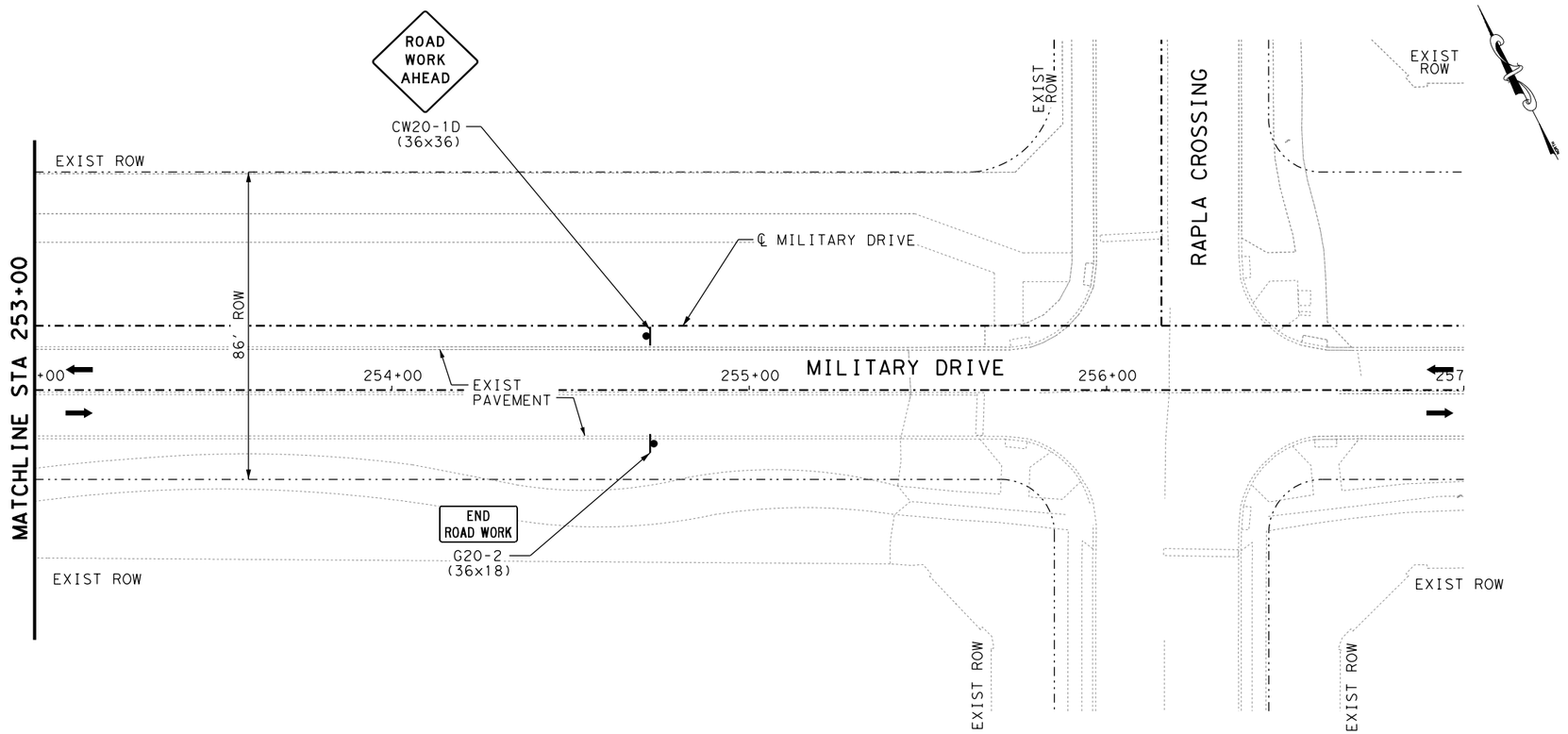
MILITARY DRIVE
TCP LAYOUT PHASE 3
STEP 1

SHEET 4 OF 6

70 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 74 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH03_S1_4.dgn
5/19/2025 8:48:44 AM





LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

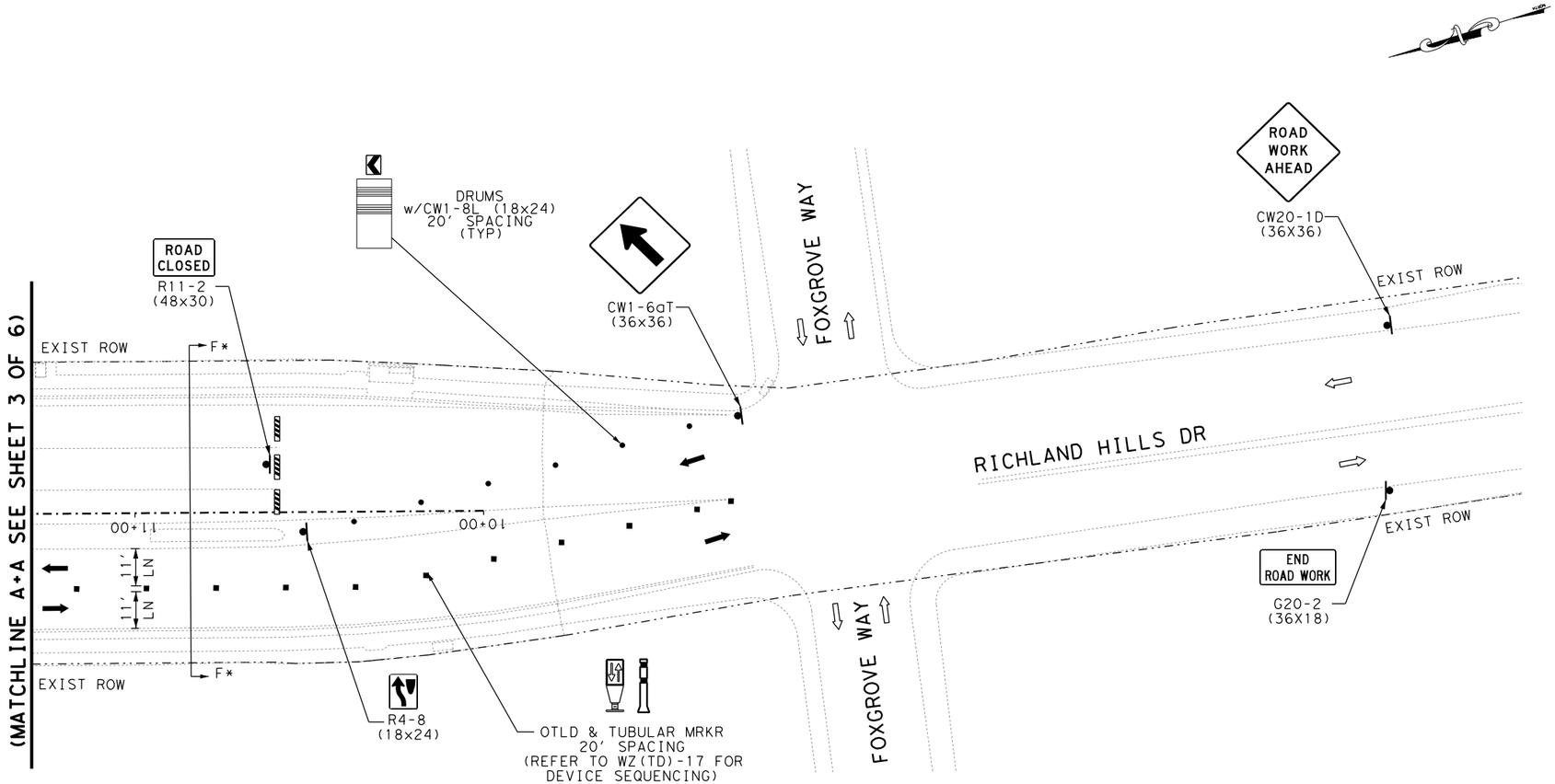
MILITARY DRIVE
TCP LAYOUT PHASE 3
STEP 1

SHEET 5 OF 6

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 75 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH03_S1_5.dgn

5/19/2025 8:48:54 AM
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH03_S1_5.dgn



LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

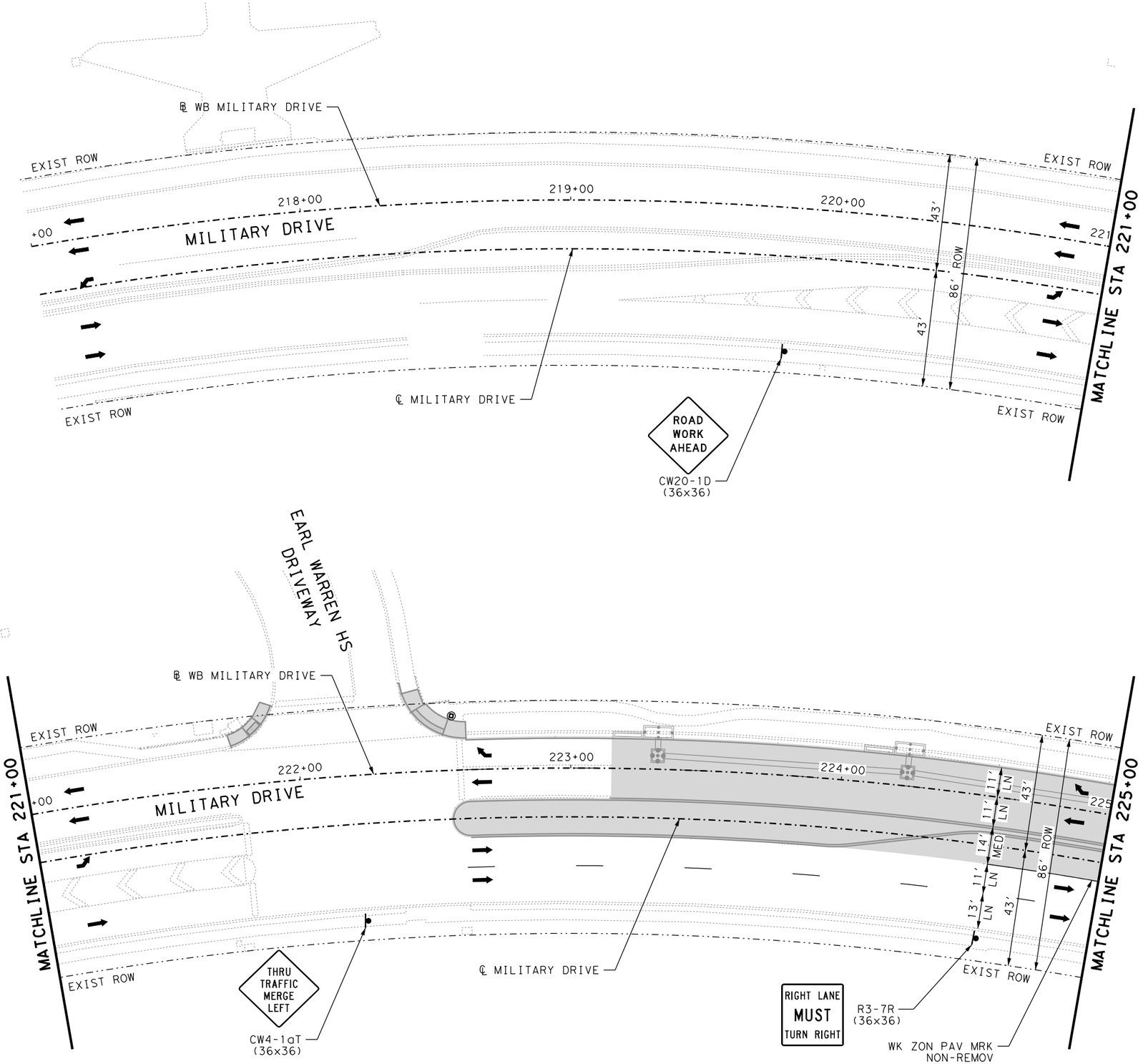
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 3 STEP 1

SHEET 6 OF 6

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 76 OF 377

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
662	7004	WK ZN PAV MRK NON-REMOV (W)4"(SLD)	LF	42



LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 3 STEP 2

SHEET 1 OF 6

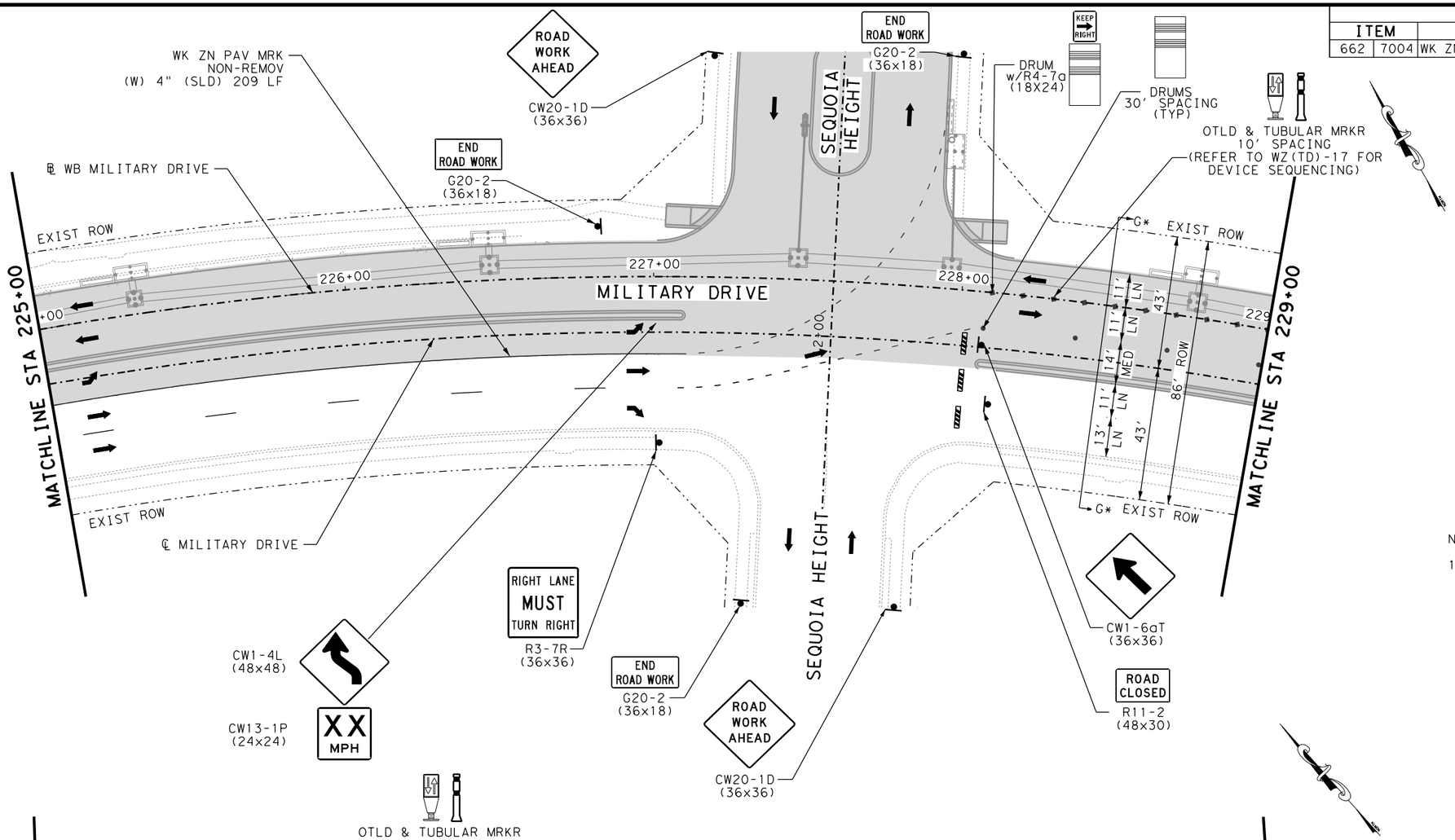
70 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV

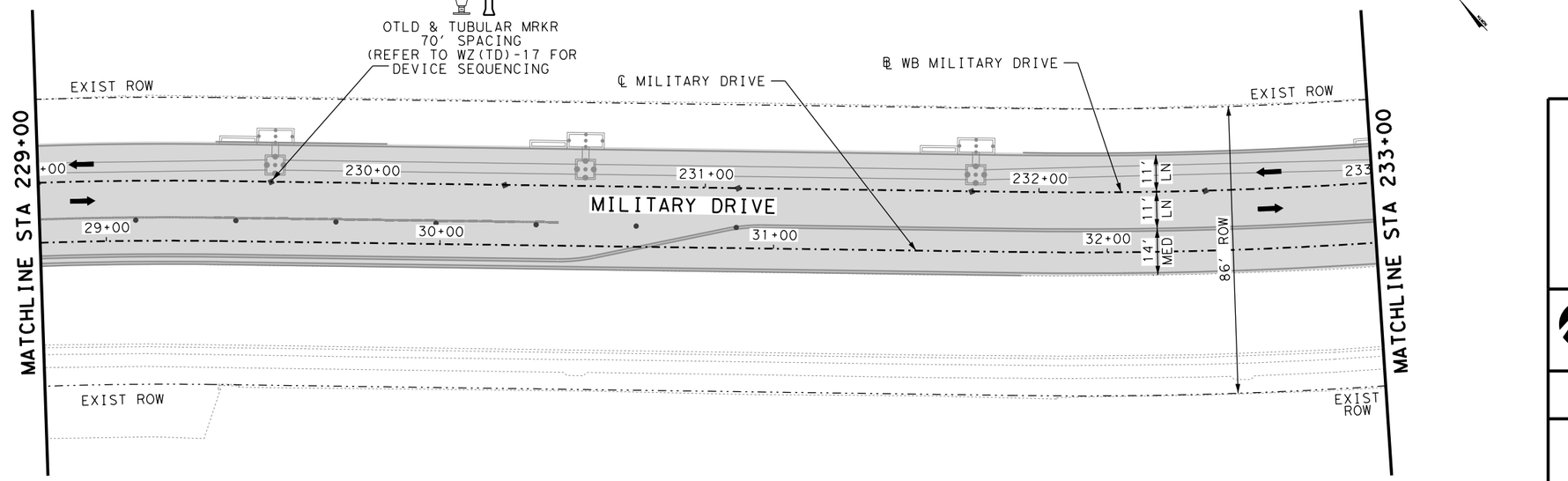
SHEET NO. 77 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH03_S2_1.dgn

5/19/2025 8:49:15 AM

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
662	7004	WK ZN PAV MRK NON-REMOV (W)4"(SLD)	LF	209





LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

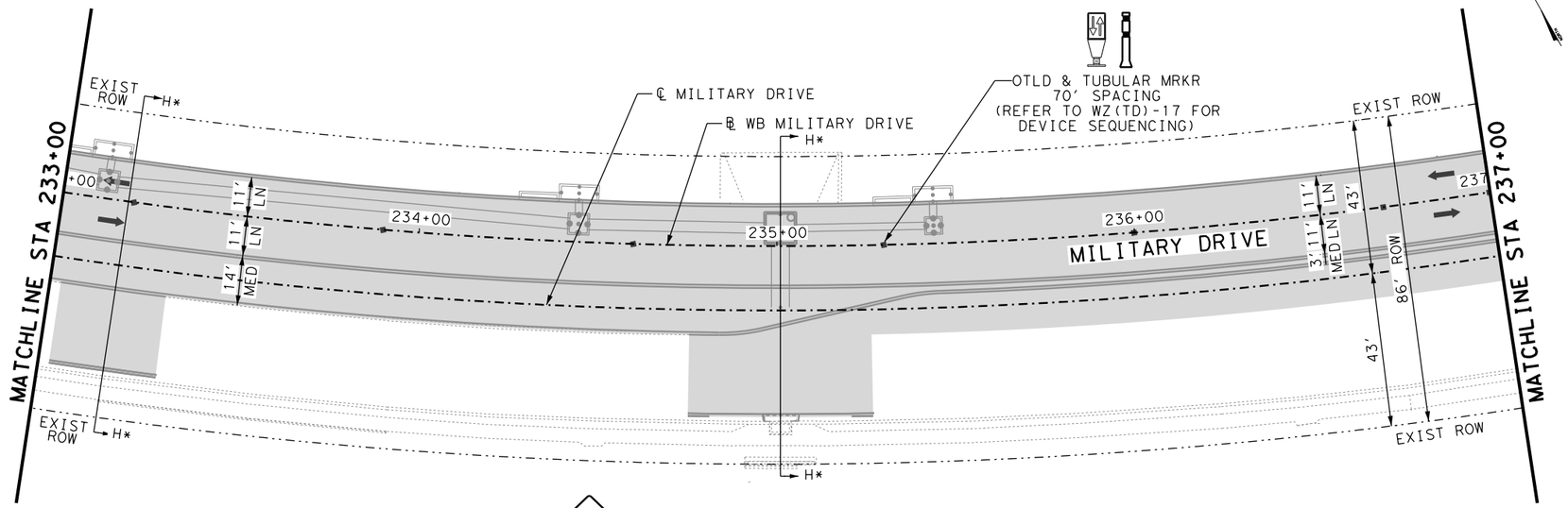
MILITARY DRIVE
TCP LAYOUT PHASE 3
STEP 2

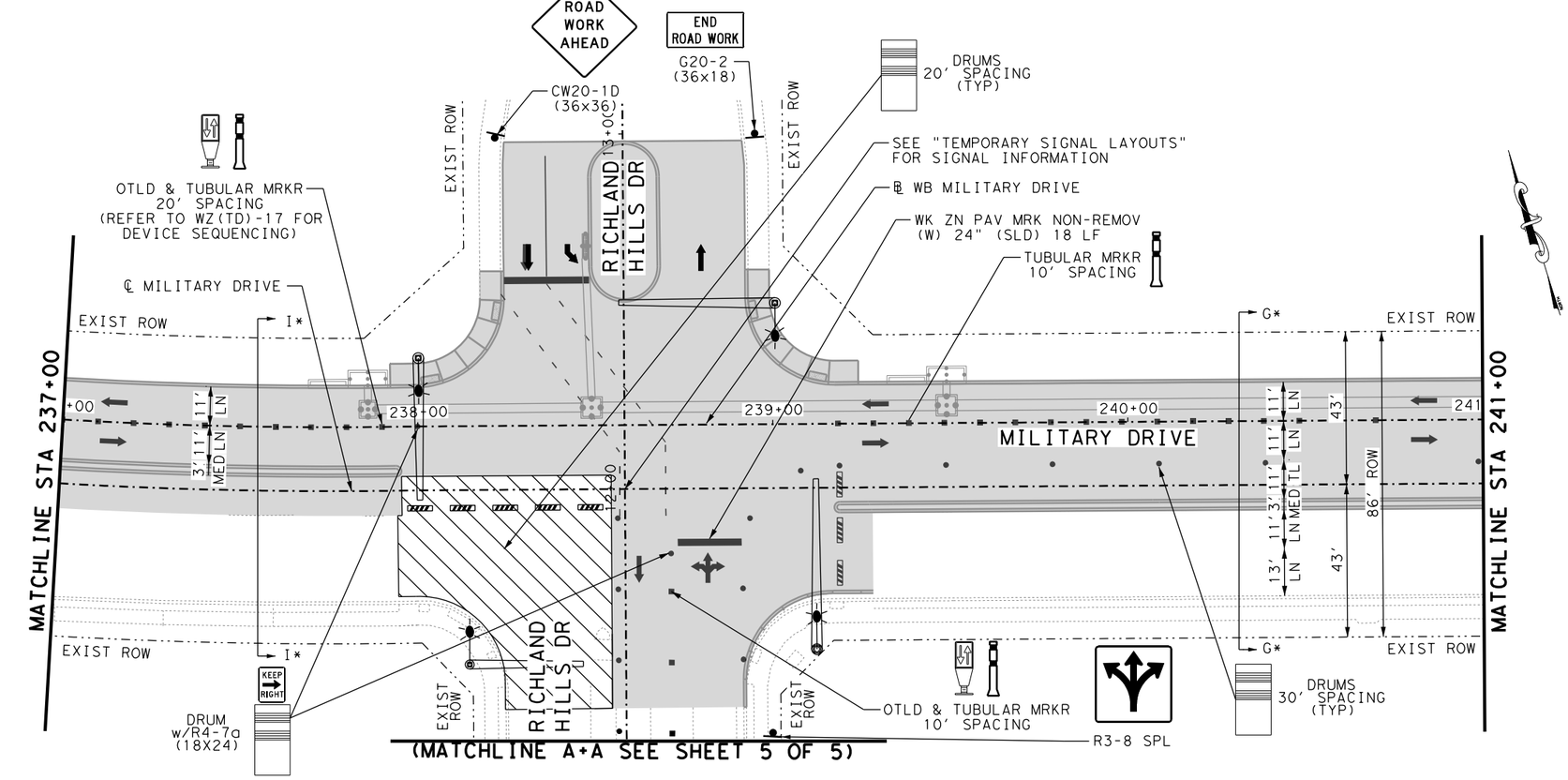
SHEET 2 OF 5

70 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 78 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH03_S2_2.dgn
5/19/2025 8:49:25 AM

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
662	7017	WK ZN PAV MRK NON-REMOV (W)24"(SLD)	LF	18





LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

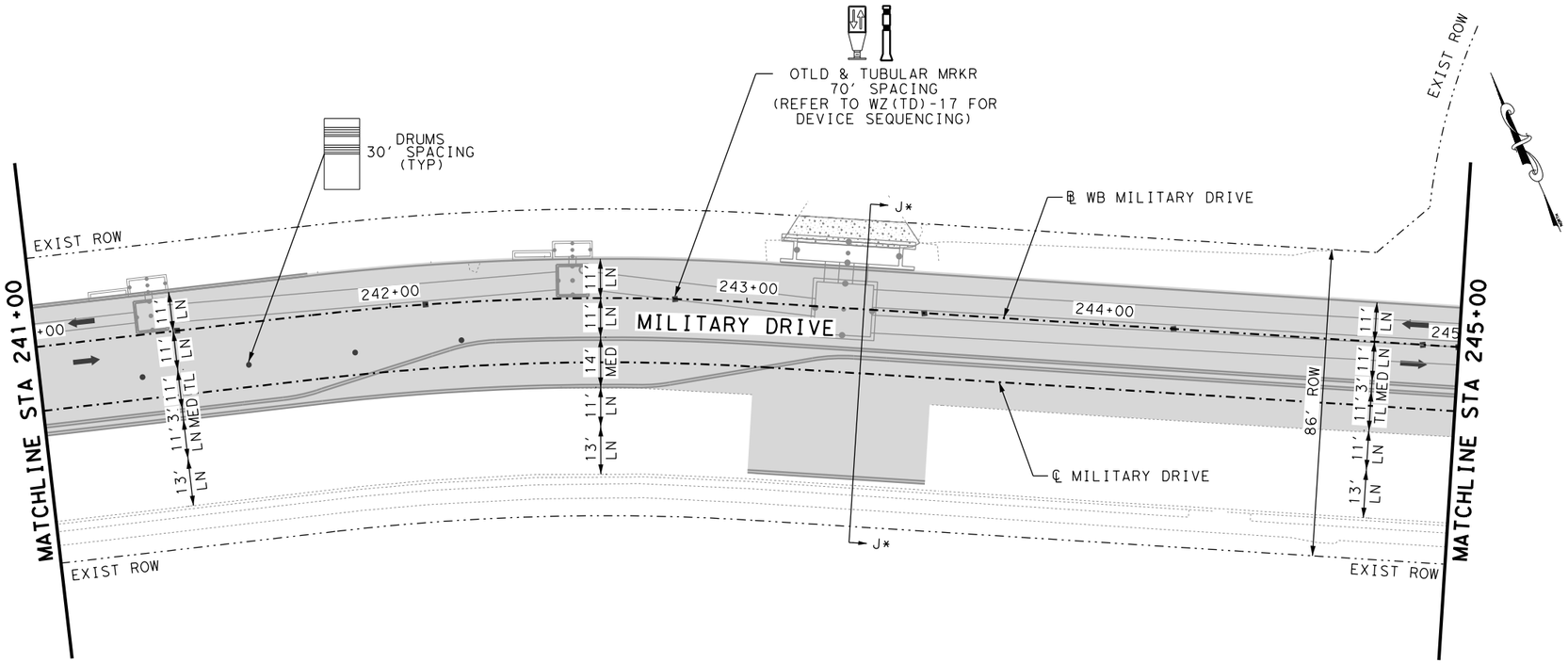
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

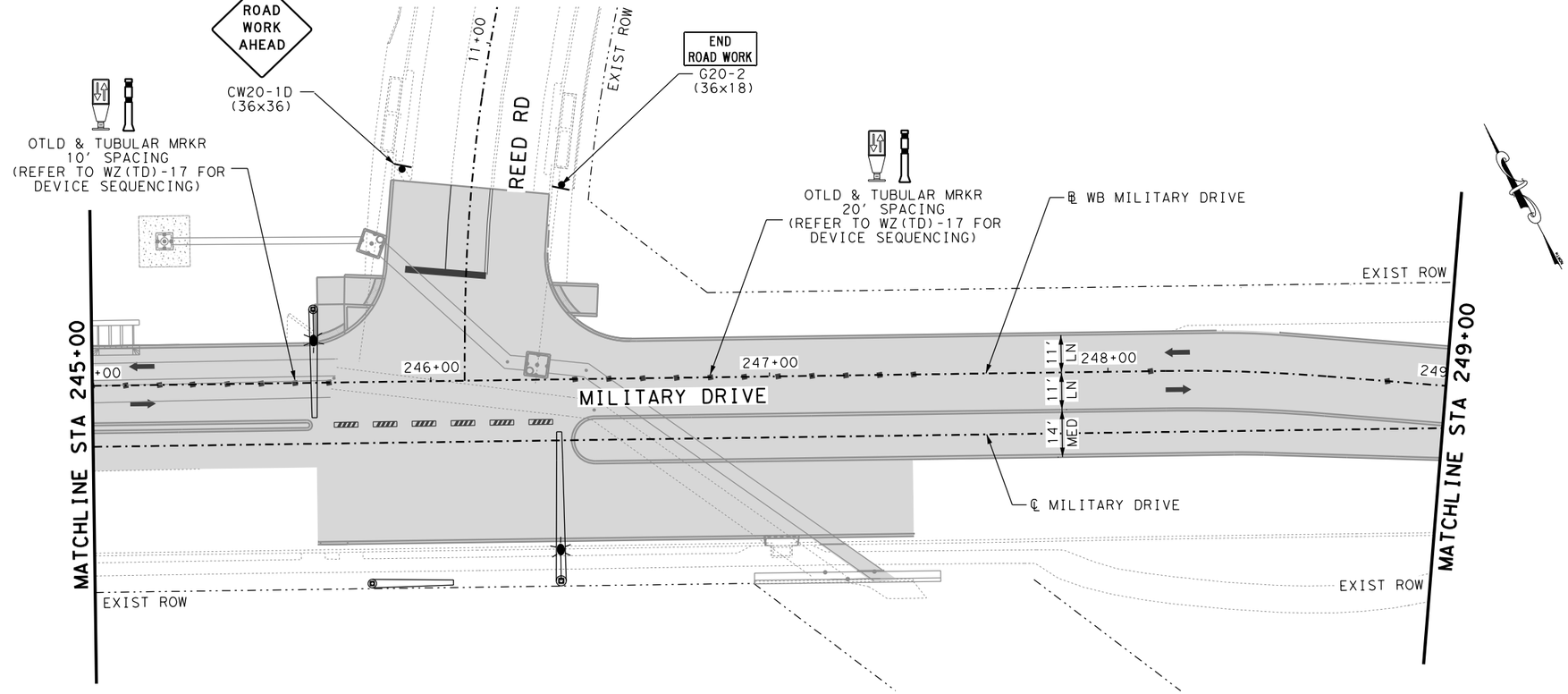
MILITARY DRIVE
TCP LAYOUT PHASE 3
STEP 2

SHEET 3 OF 6

70 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 79 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH03_S2_3.dgn
5/19/2025 8:49:35 AM





LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

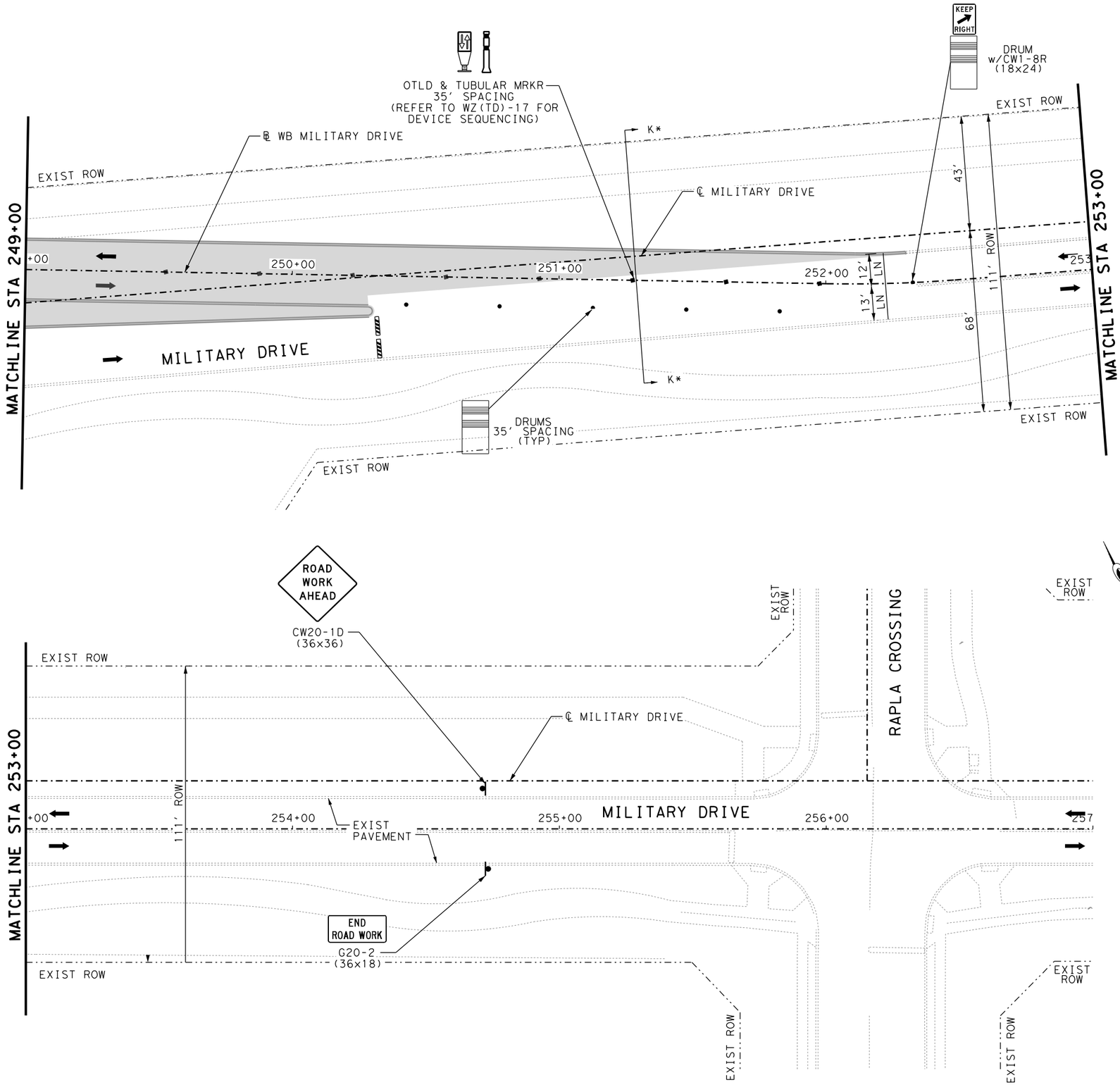
MILITARY DRIVE
TCP LAYOUT PHASE 3
STEP 2

SHEET 4 OF 6

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 80 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH03_S2_4.dgn

5/19/2025 8:49:45 AM
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH03_S2_4.dgn



LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

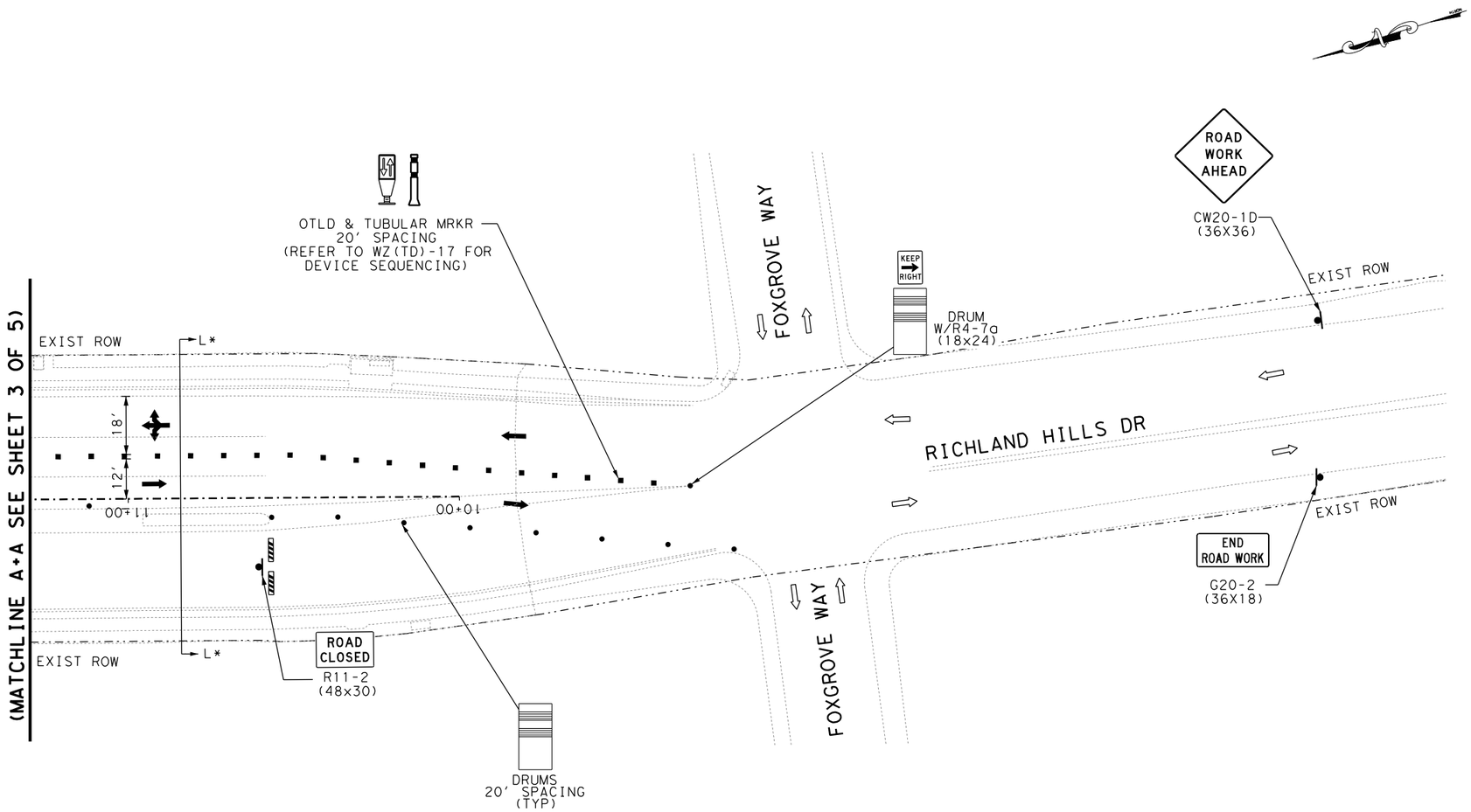
MILITARY DRIVE
TCP LAYOUT PHASE 3
STEP 2

SHEET 5 OF 6

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 81 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH03_S2_5.dgn

5/19/2025 8:49:56 AM
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH03_S2_5.dgn



LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

0 20' 40'

SCALE: 1" = 40'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

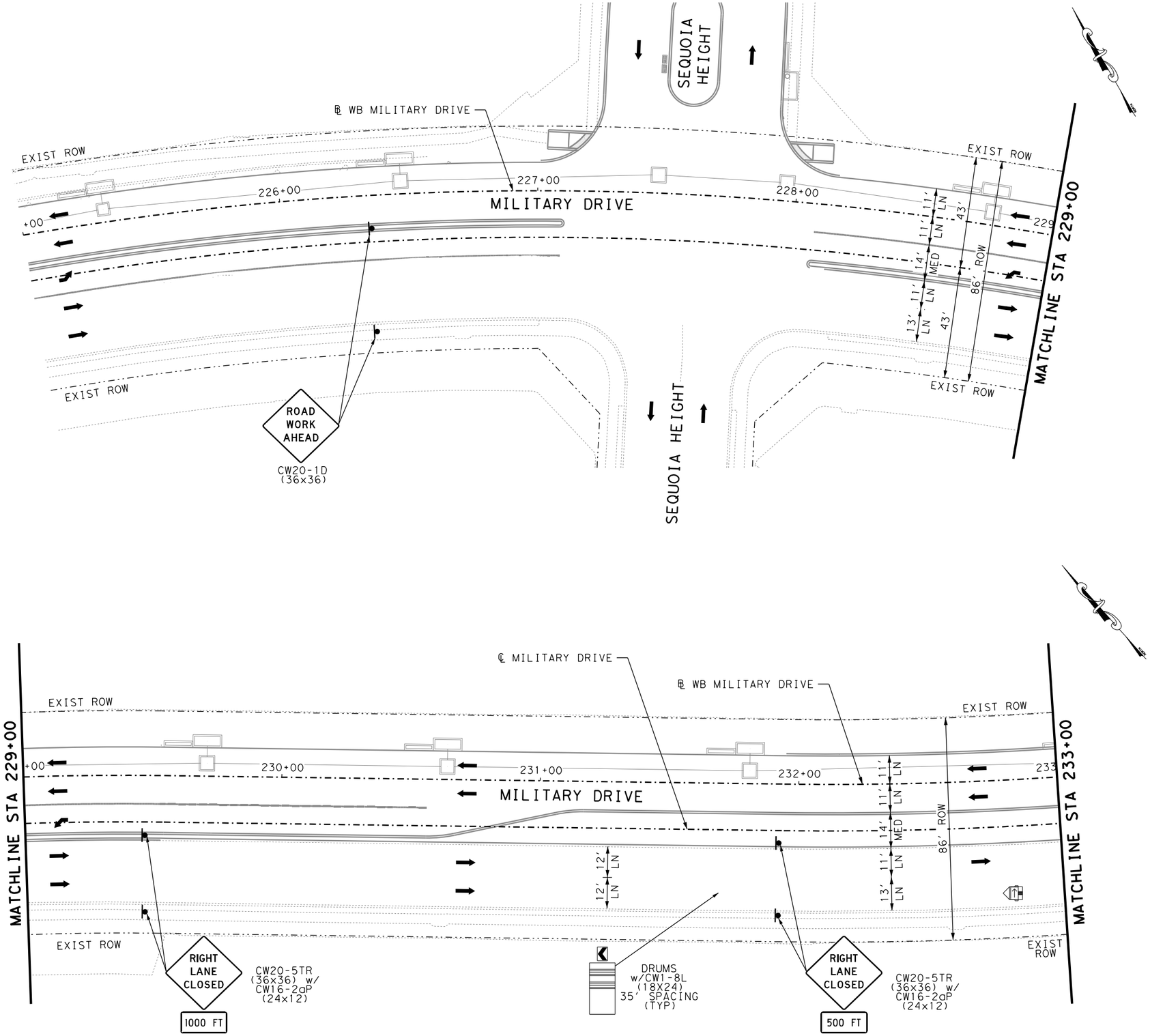
MILITARY DRIVE
TCP LAYOUT PHASE 3
STEP 2

SHEET 6 OF 6

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 82 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH03_S2_6.dgn
5/19/2025 8:50:06 AM

5/19/2025 8:50:06 AM
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH03_S2_6.dgn



LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

0 20′ 40′
SCALE: 1" = 40′

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

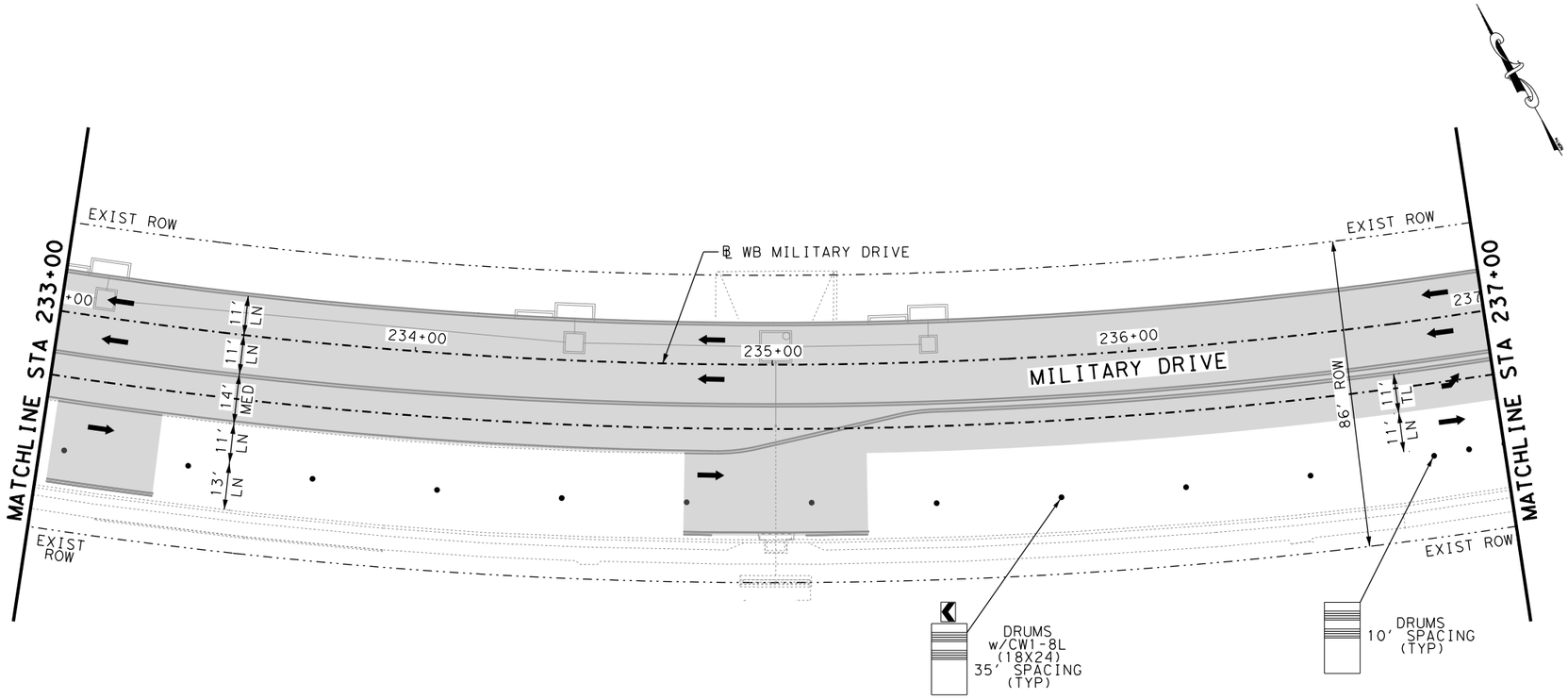
MILITARY DRIVE
TCP LAYOUT PHASE 4 STEP 1

SHEET 1 OF 5

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 83 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH04_S1_1.dgn
8:50:16 AM
5/19/2025

5/19/2025 8:50:16 AM
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH04_S1_1.dgn

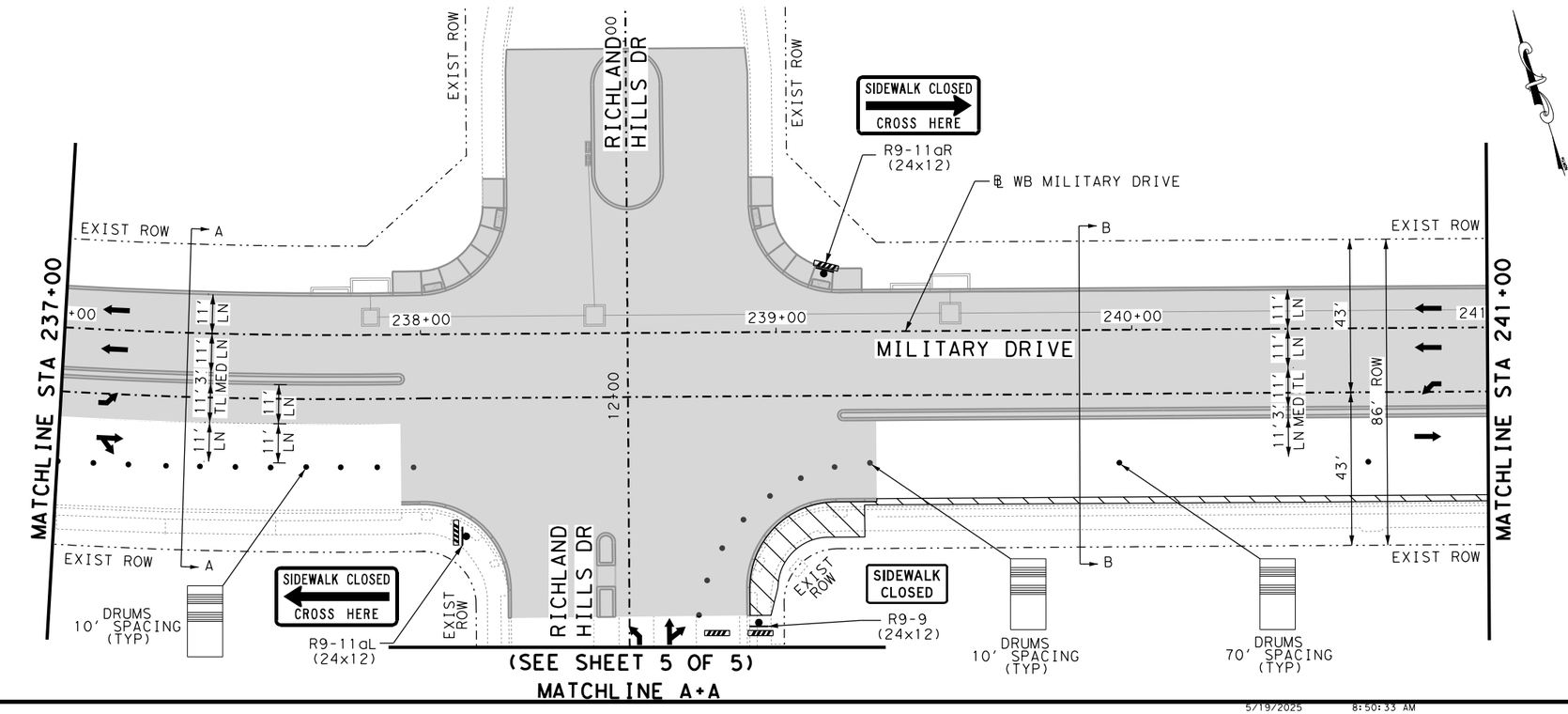


LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.



* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

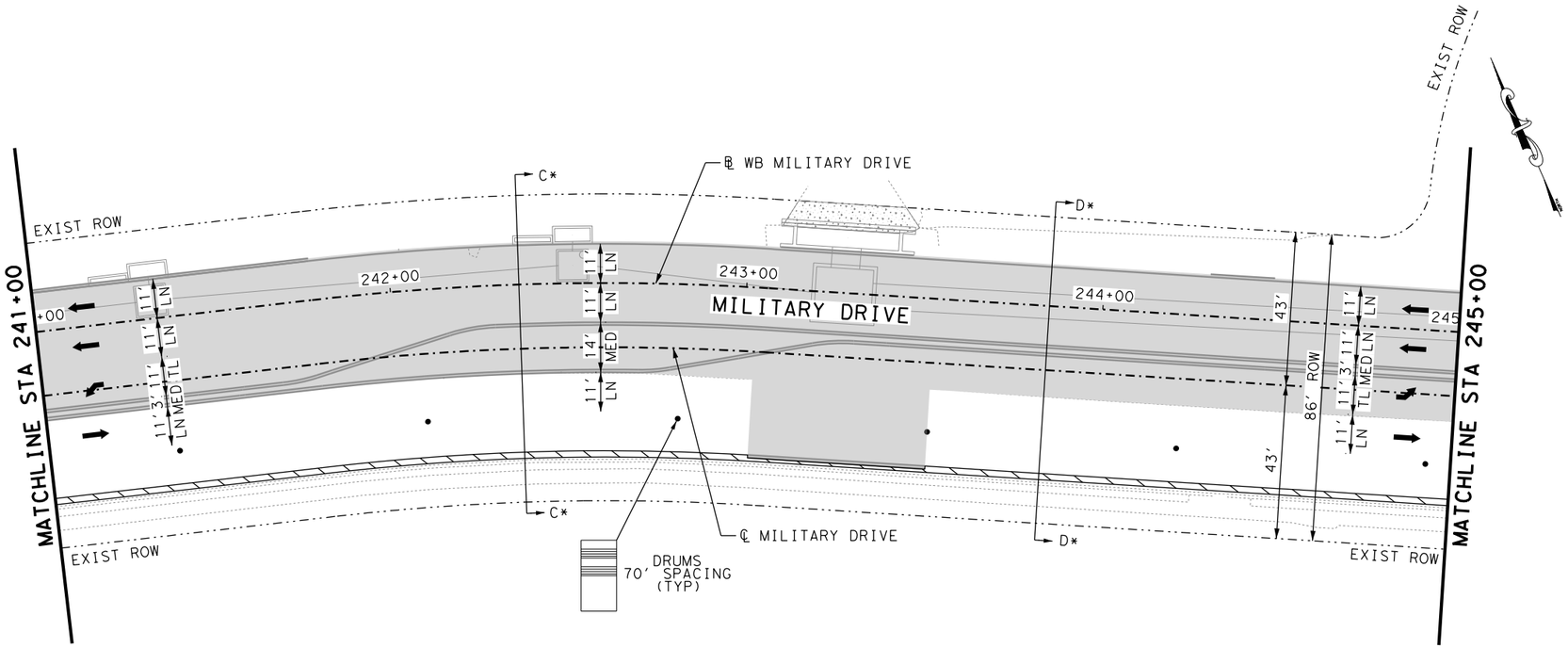
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

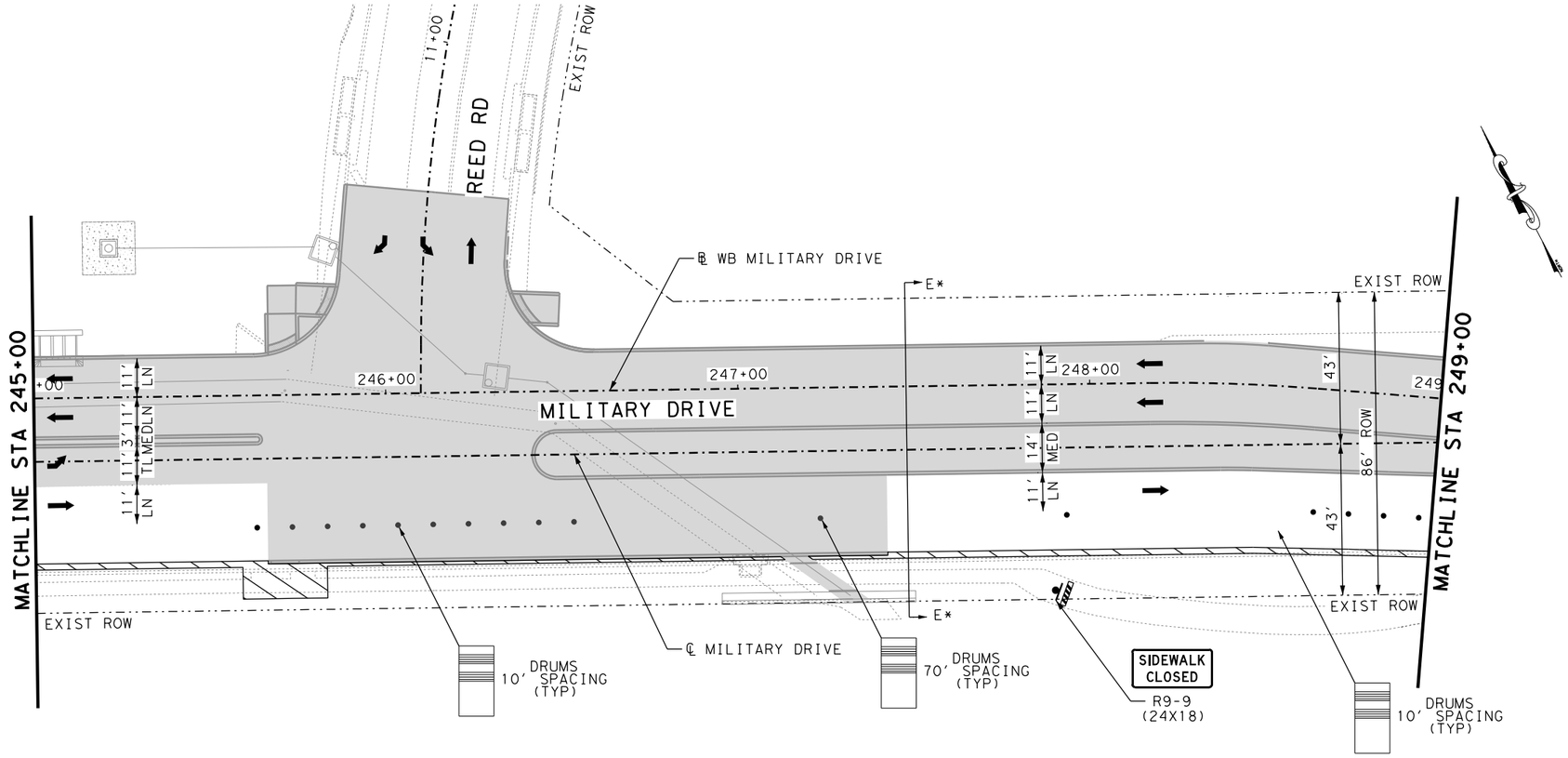
MILITARY DRIVE
TCP LAYOUT PHASE 4
STEP 1

SHEET 2 OF 5

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 84 OF 377

c:\dms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH04_S1_2.dgn
5/19/2025 8:50:33 AM





LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 4
STEP 1

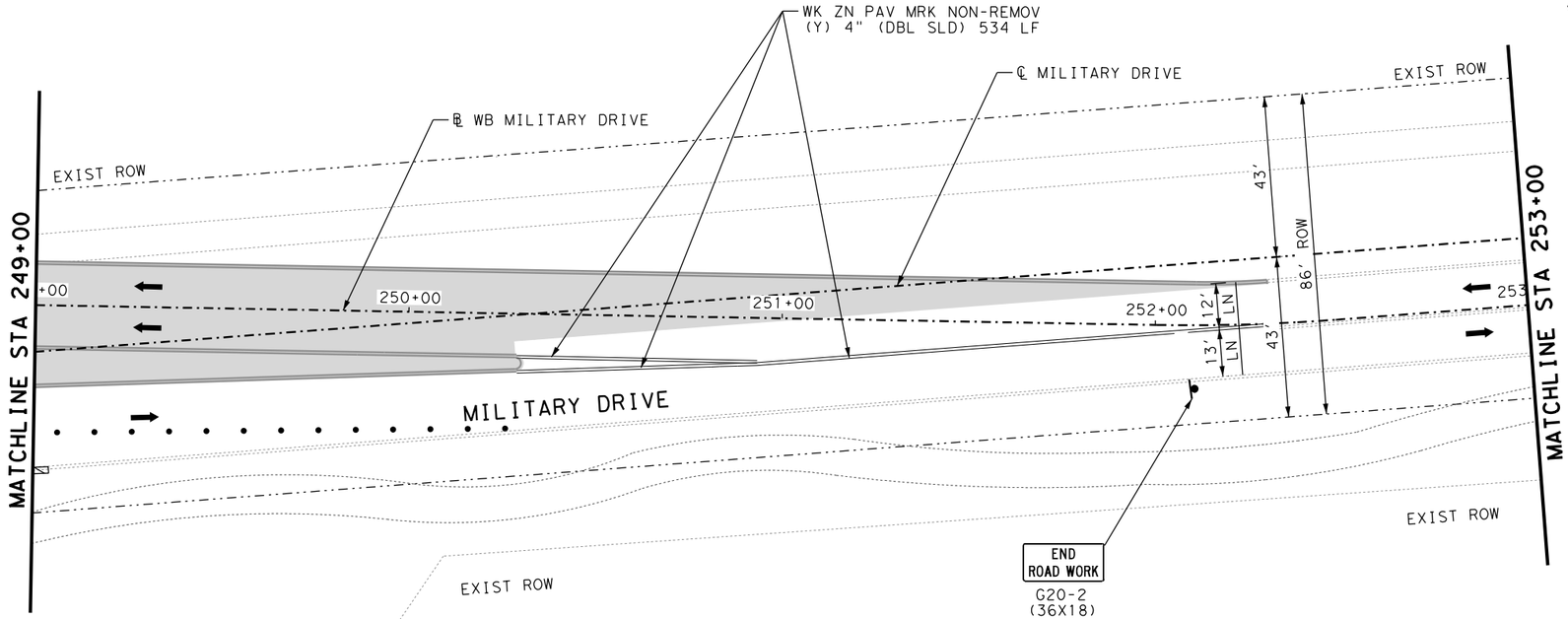
SHEET 3 OF 5

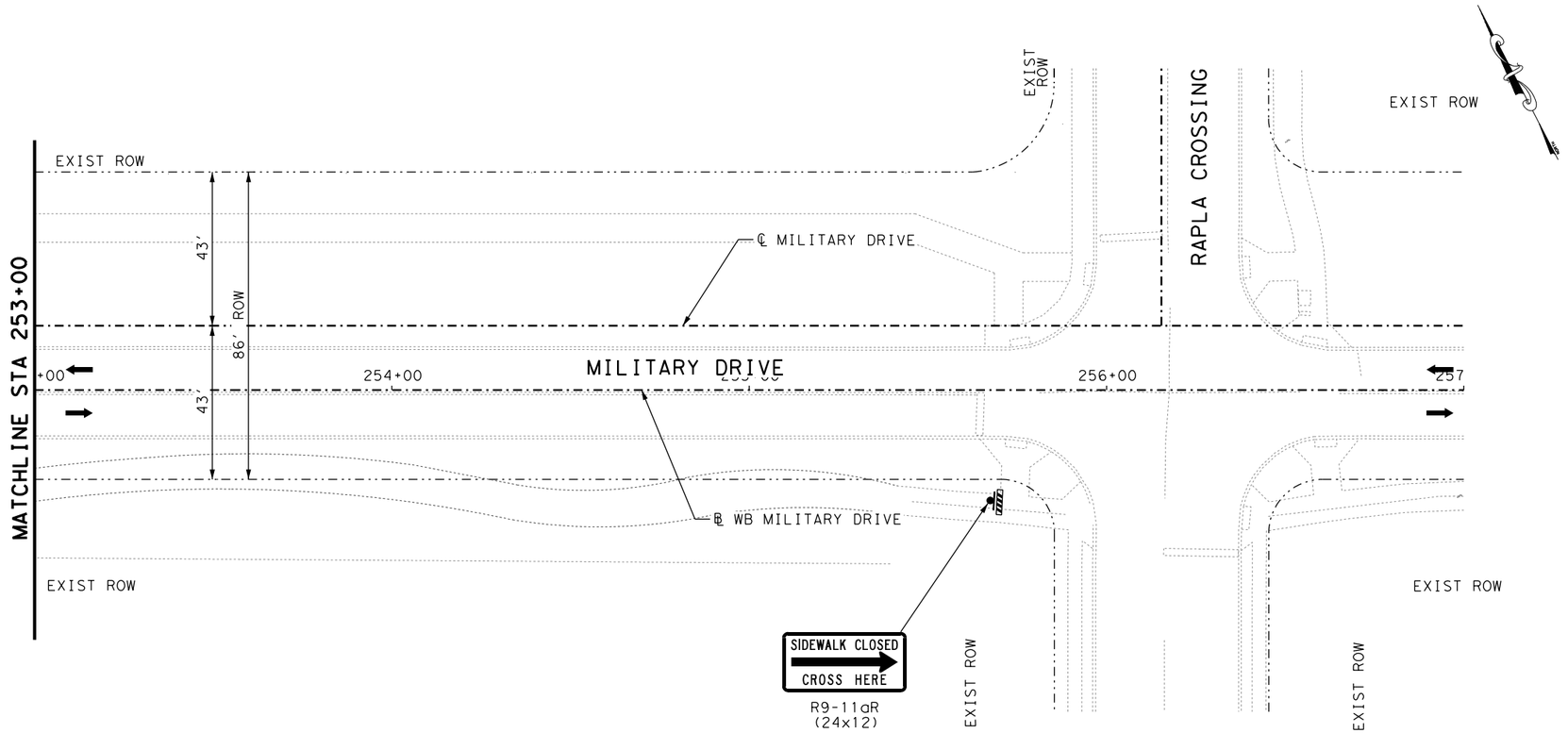
70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 85 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH04_S1_3.dgn

5/19/2025 8:50:43 AM
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH04_S1_3.dgn

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
662	7034	WK ZN PAV MRK NON-REMOV (Y)4"(SLD)	LF	534





LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

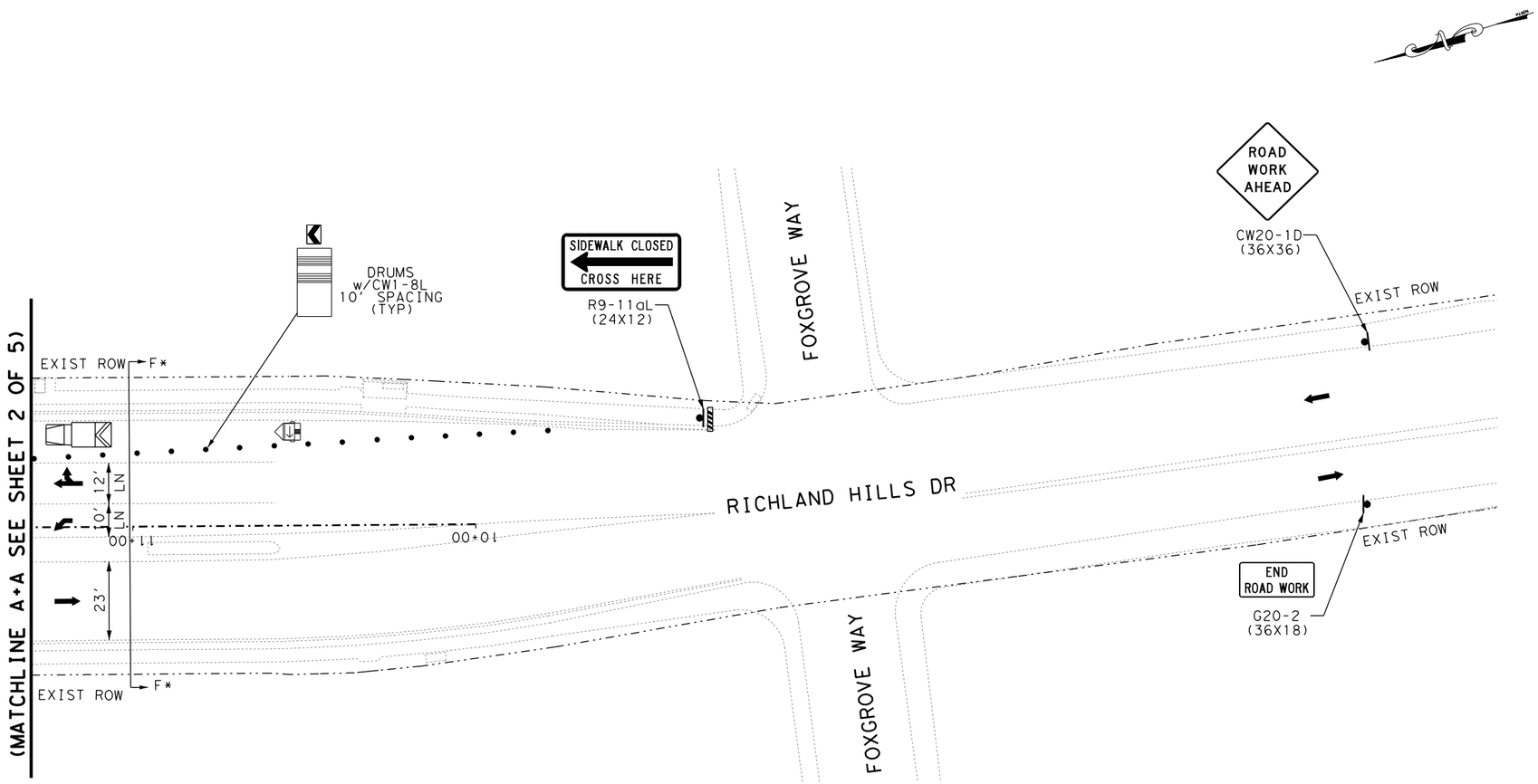
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 4 STEP 1

SHEET 4 OF 5

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 86 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH04_S1_4.dgn
5/19/2025 8:50:52 AM



LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

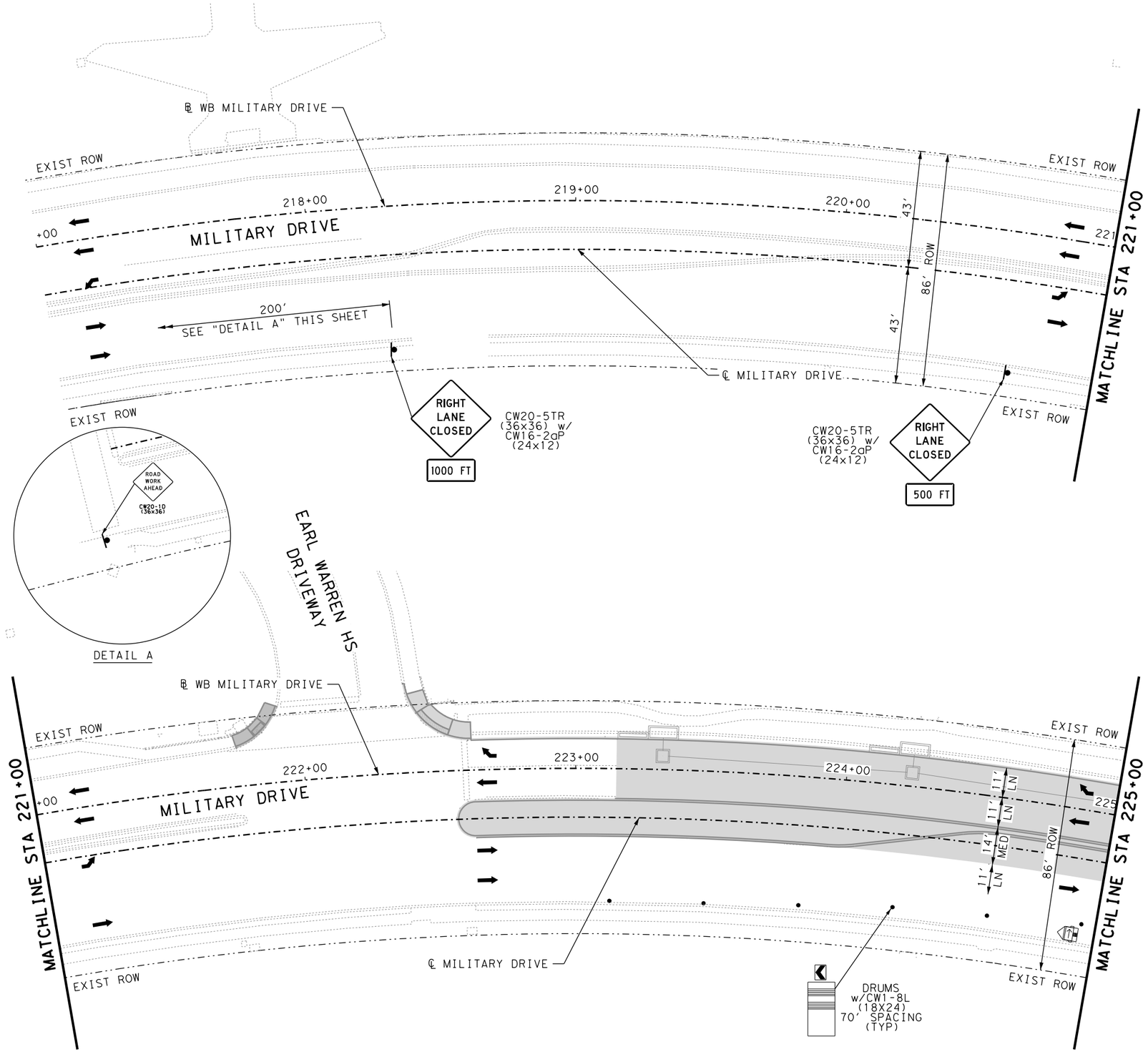
consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 4 STEP 1

SHEET 5 OF 5

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 87 OF 377



LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.
2. SIGN(S) TO BE PLACED IN REFERENCE TO BEGINNING CW20-5TR PLACED AT L=220

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

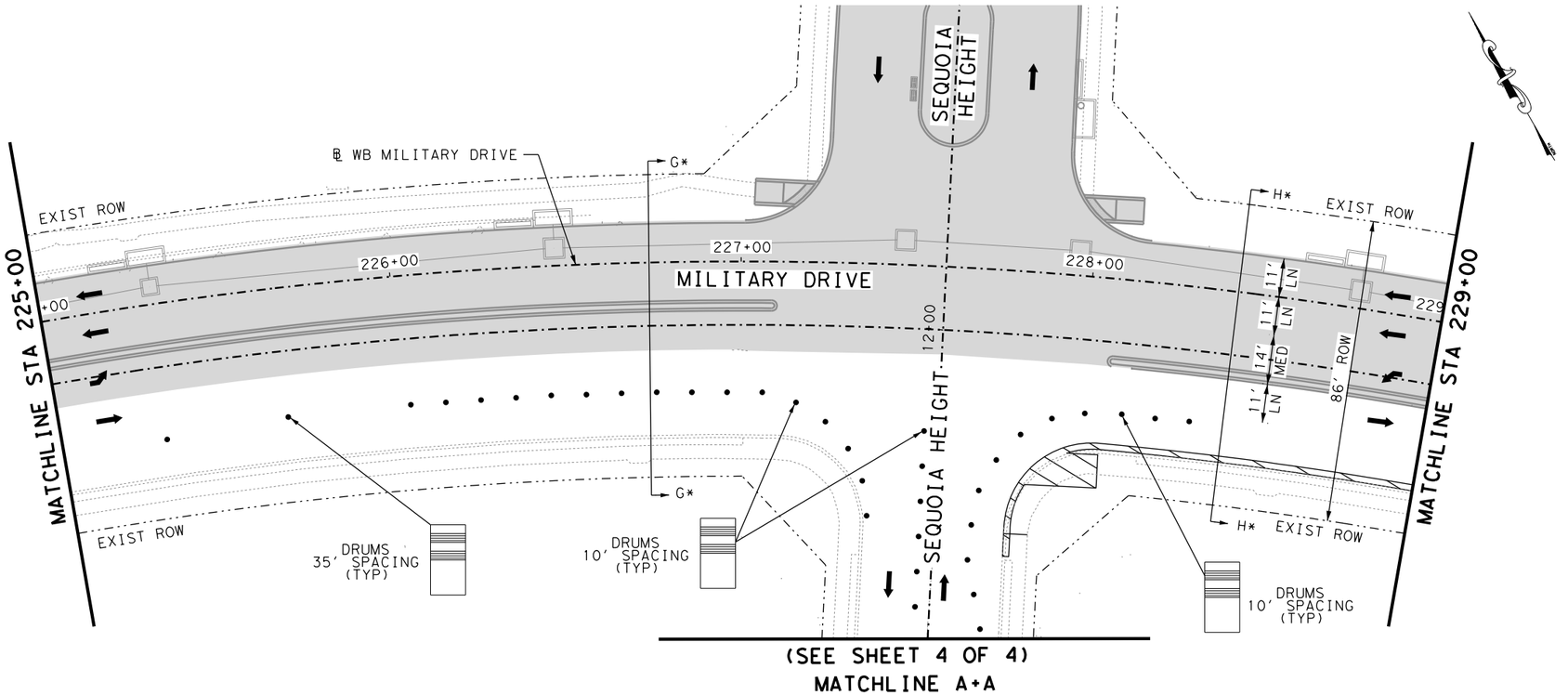
MILITARY DRIVE
TCP LAYOUT PHASE 4
STEP 2

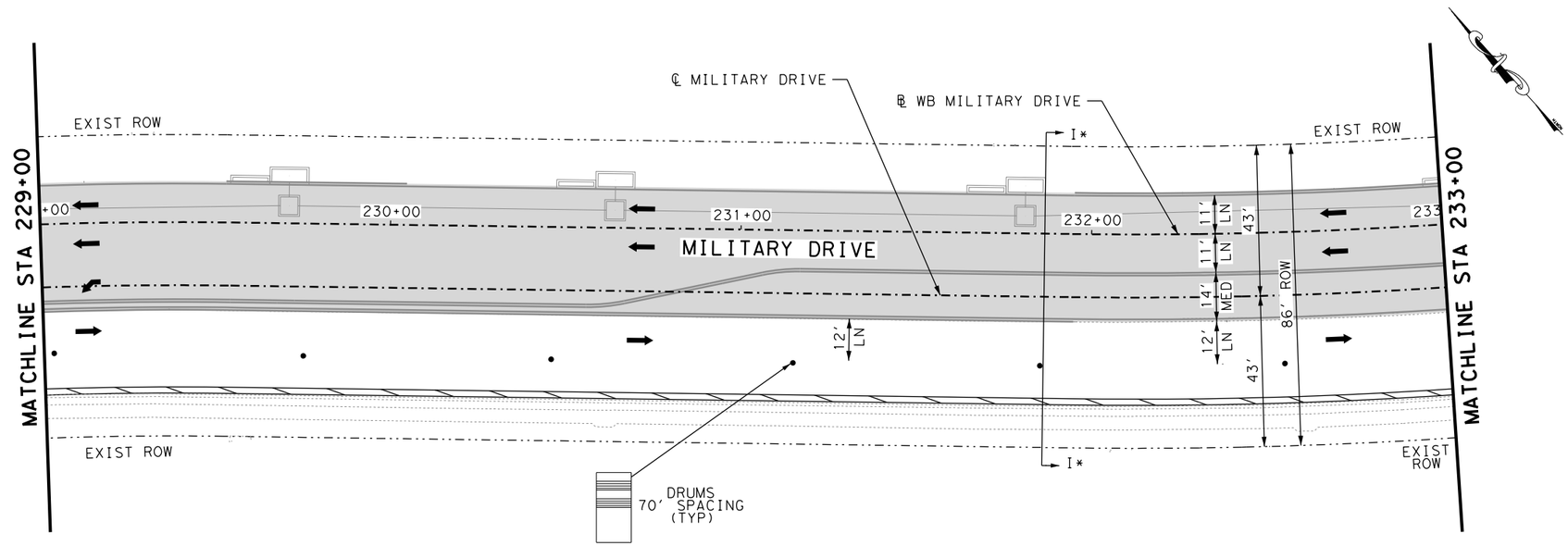
SHEET 1 OF 4

90 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: DR	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 88 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH04_S2_1.dgn

5/19/2025 8:51:12 AM
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH04_S2_1.dgn





LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

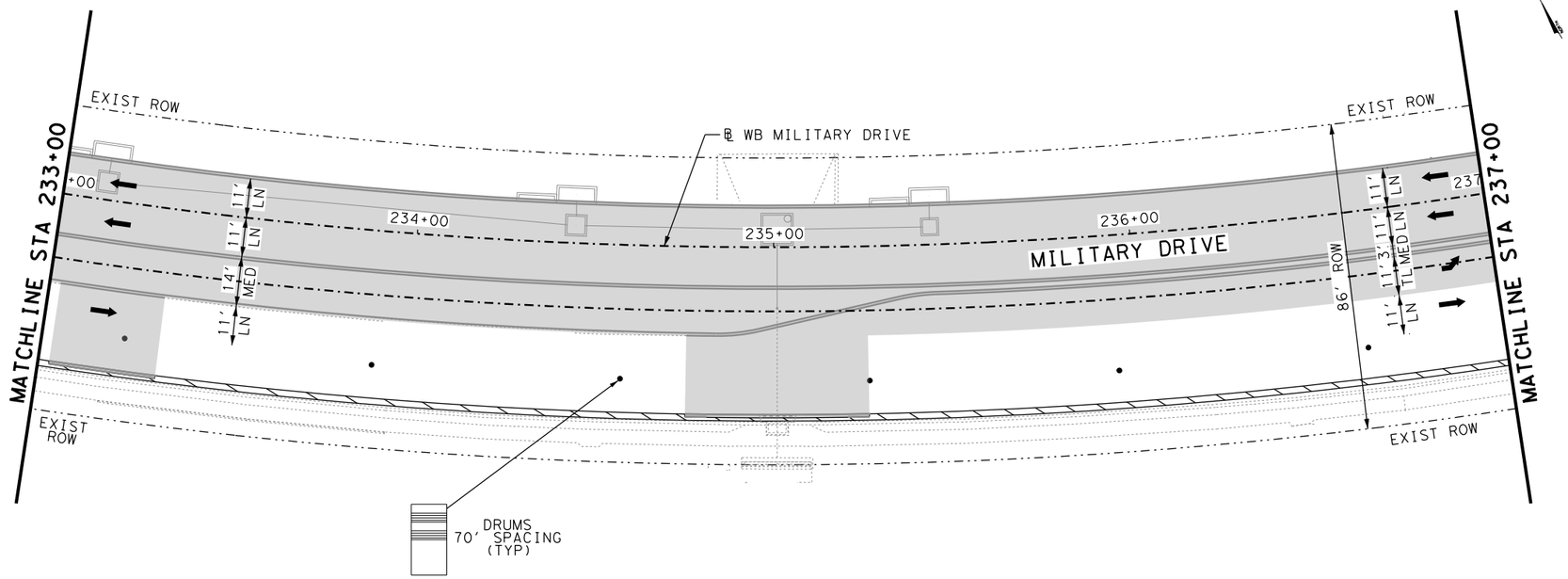
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

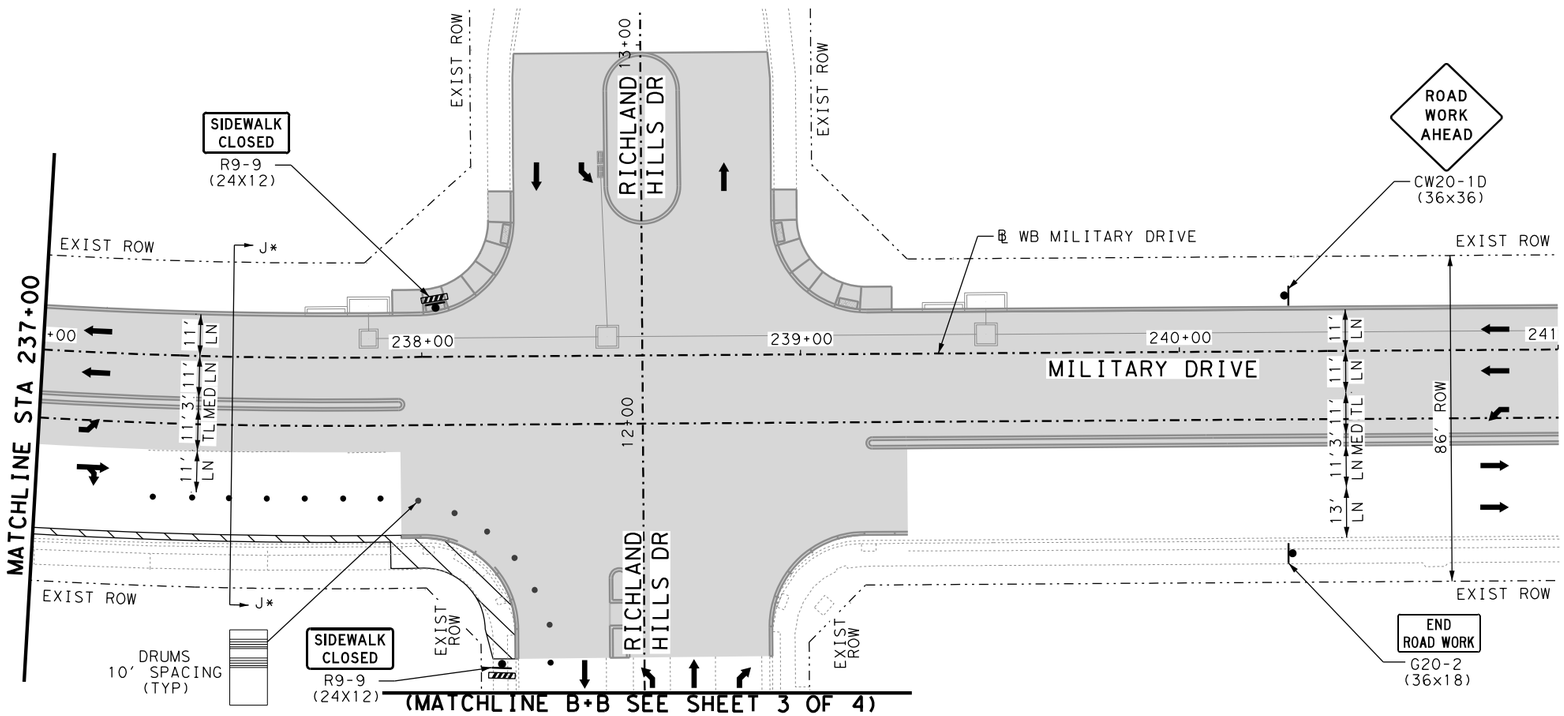
MILITARY DRIVE
TCP LAYOUT PHASE 4
STEP 2

SHEET 2 OF 4

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 89 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH04_S2_2.dgn
5/19/2025 8:51:29 AM





LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

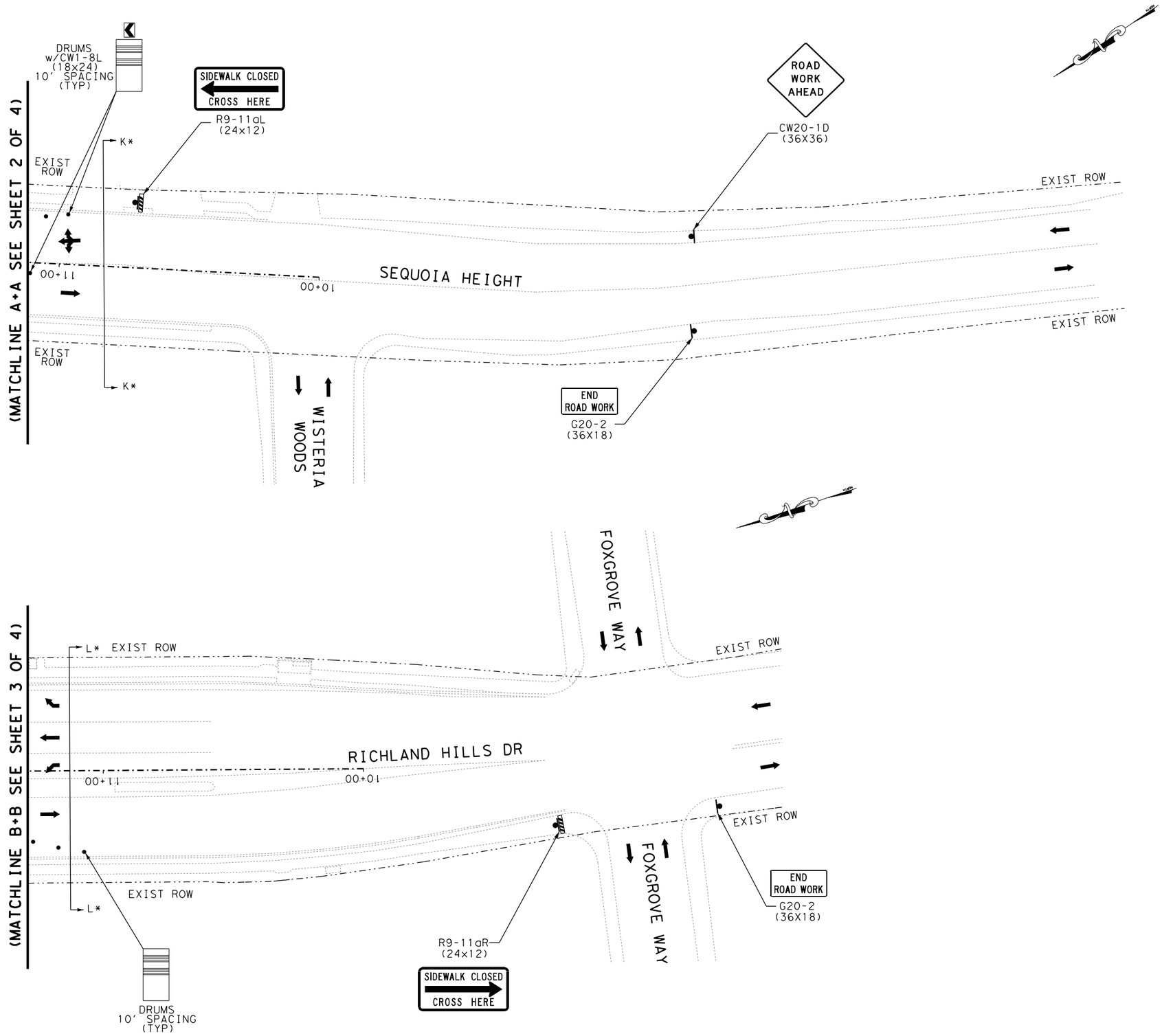
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 4 STEP 2

SHEET 3 OF 4

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 90 OF 377

c:\dms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH04_S2_3.dgn
5/19/2025 8:51:39 AM



LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

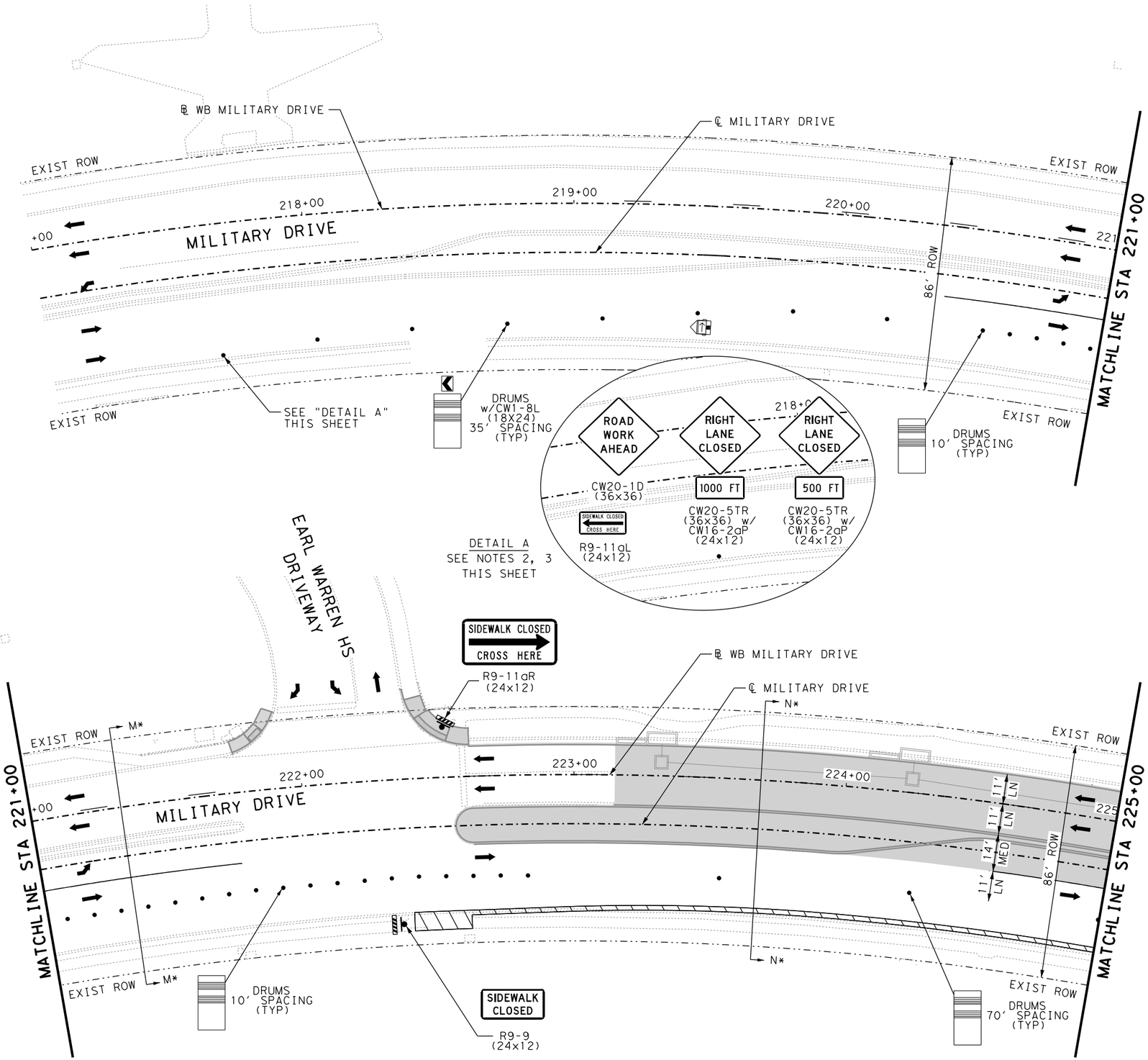
consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 4 STEP 2

SHEET 4 OF 4

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 91 OF 377



LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.
2. SIGNS TO BE PLACED IN REFERENCE TO BEGINNING DRUM.CW20-1D PLACED AT L=220 PRIOR TO CW20-5TR w/ CW16-2aP
3. R9-11aR TO BE PLACED AT 9400 MILITARY DR INTERSECTION

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

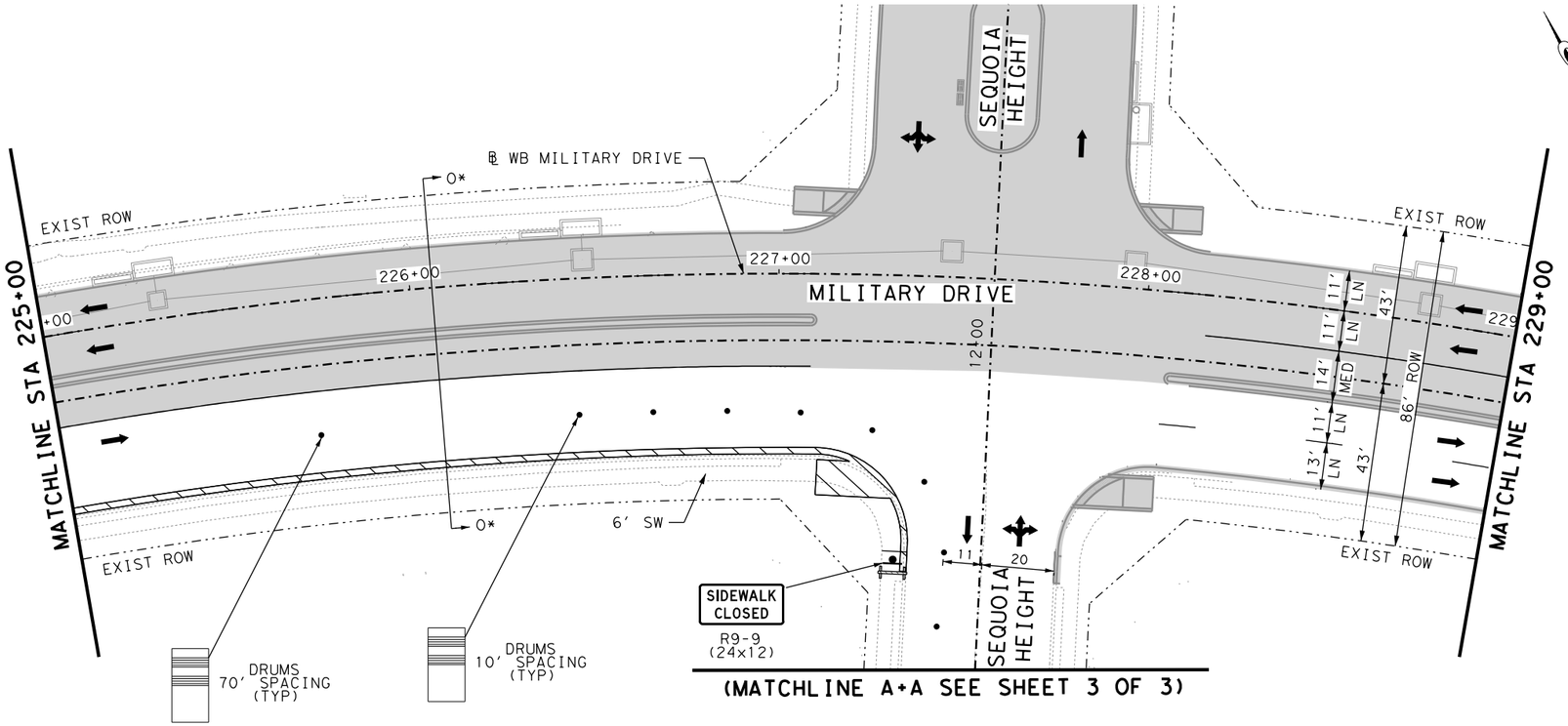
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 4
STEP 3

SHEET 1 OF 3

90 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: NR	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 92 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH04_S3_1.dgn
5/19/2025 8:52:07 AM

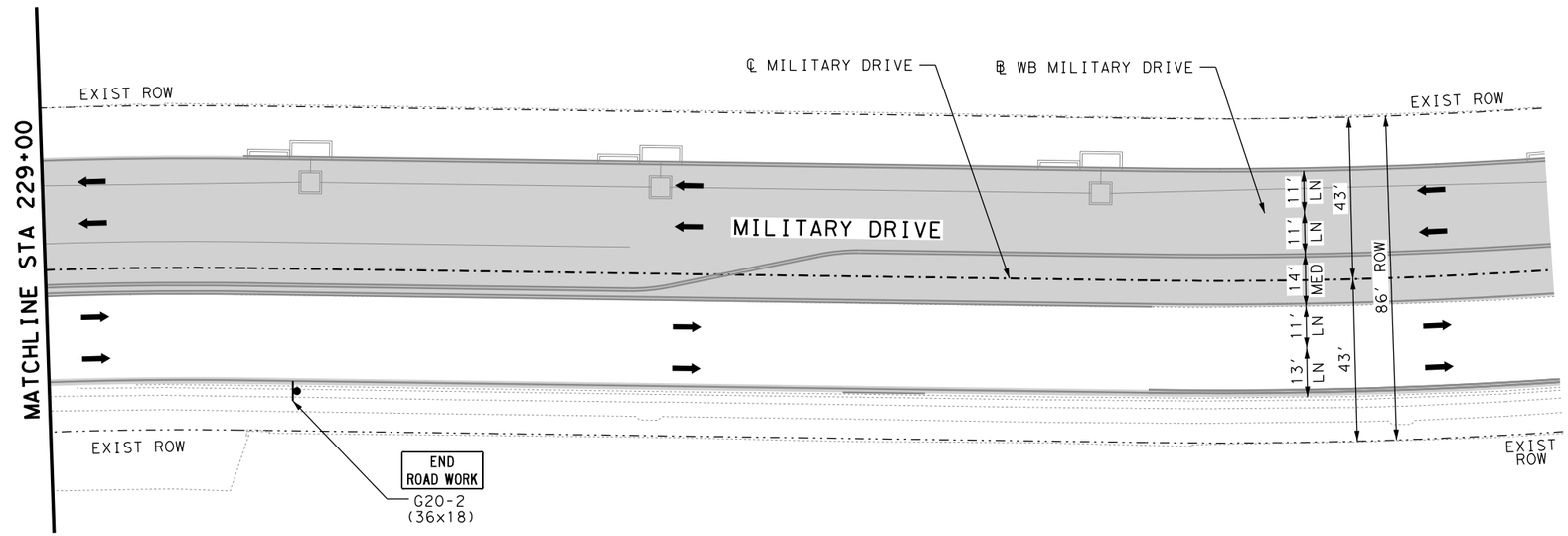


LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.



* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

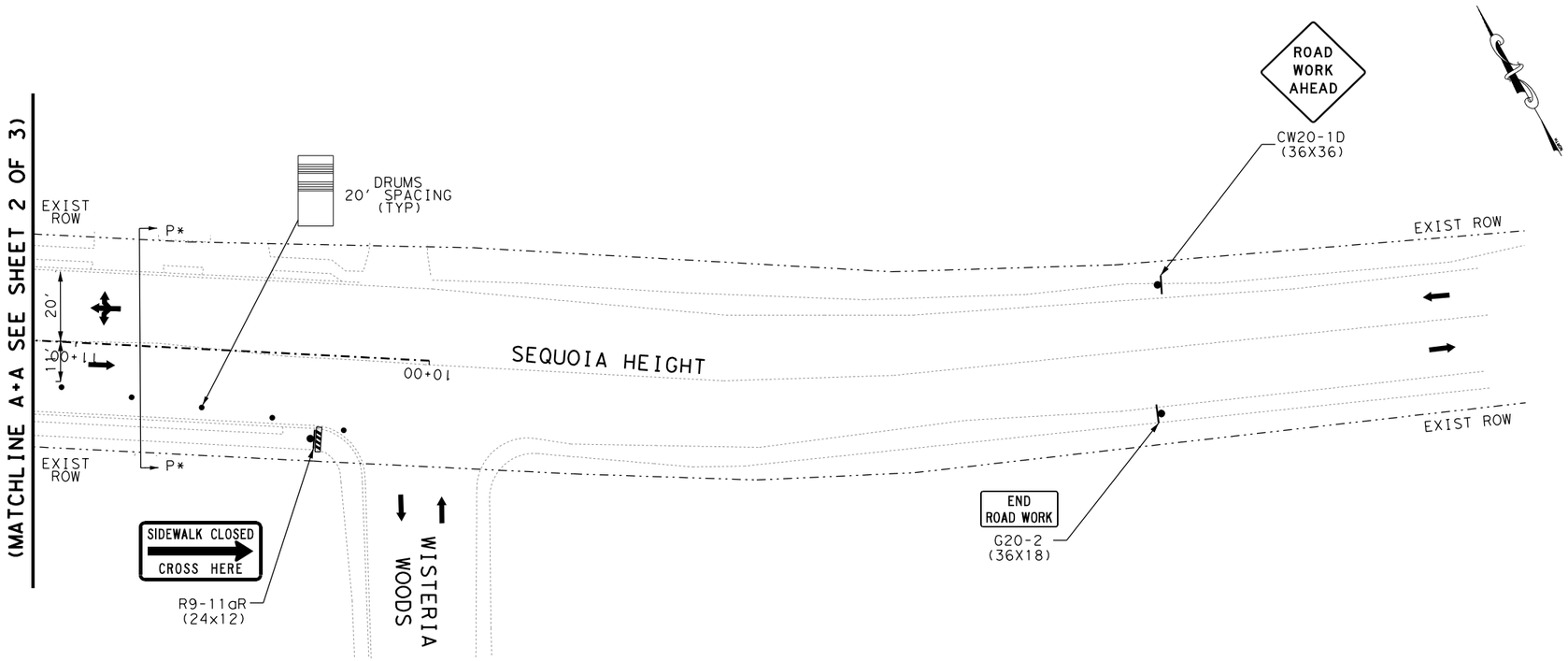
MILITARY DRIVE
TCP LAYOUT PHASE 4
STEP 3

SHEET 2 OF 3

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 93 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH04_S3_2.dgn

5/19/2025 8:52:17 AM
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH04_S3_2.dgn



LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

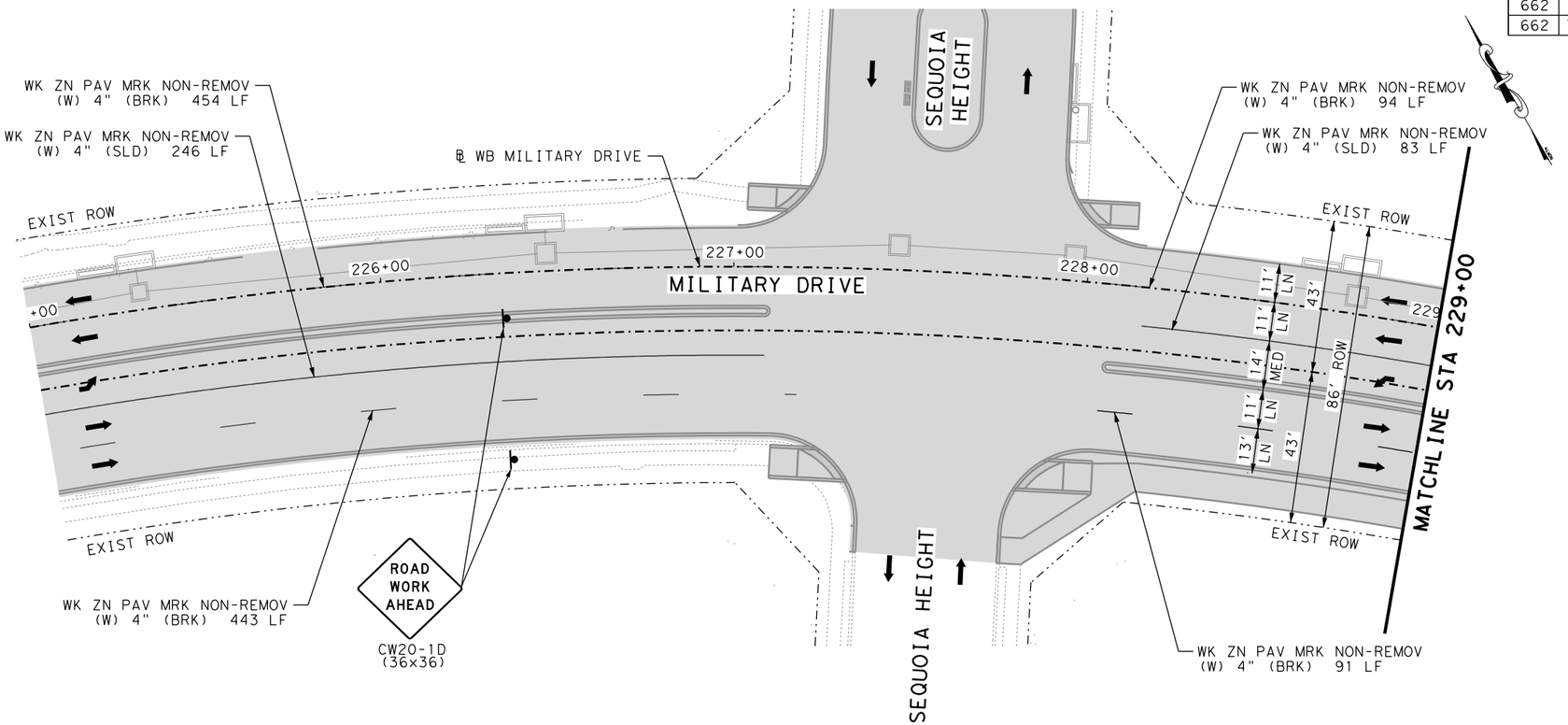
MILITARY DRIVE
TCP LAYOUT PHASE 4 STEP 3

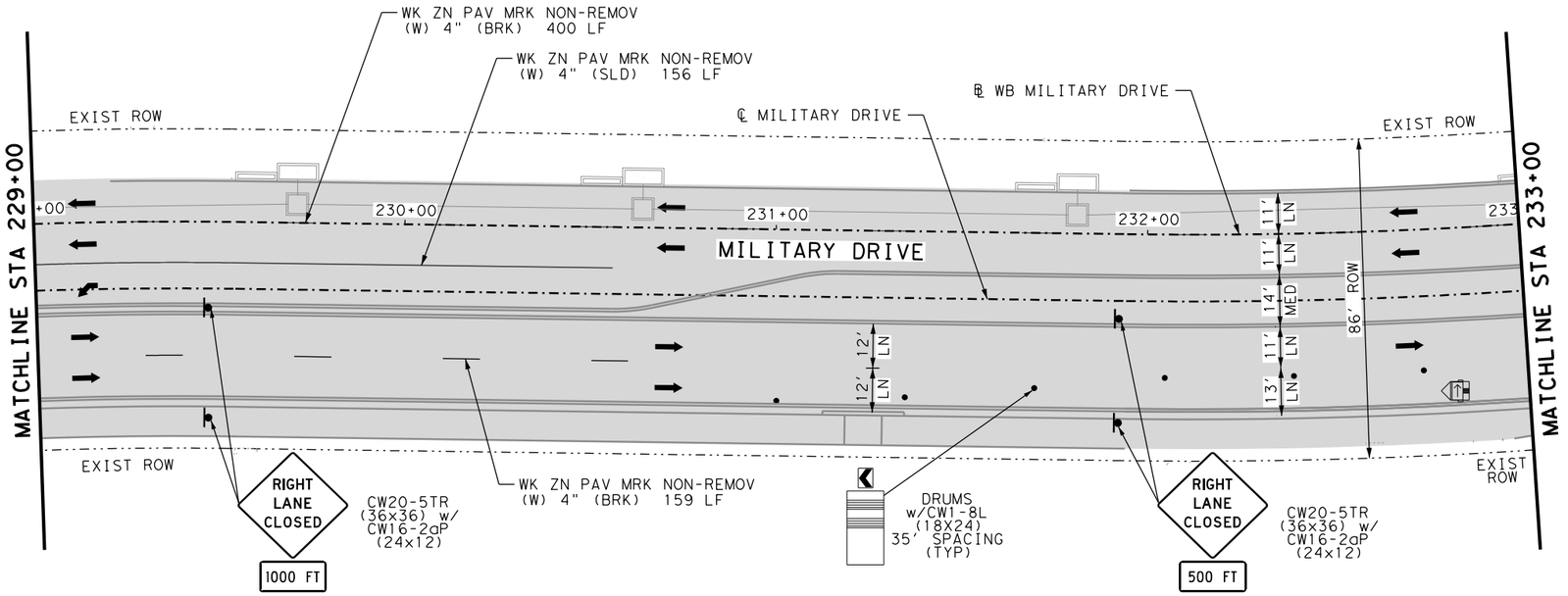
SHEET 3 OF 3

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 94 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH04_S3_3.dgn
5/19/2025 8:52:27 AM

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
662	7001	WK ZN PAV MRK NON-REMOV (W)4"(BRK)	LF	1641
662	7004	WK ZN PAV MRK NON-REMOV (W)4"(SLD)	LF	485





LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

0 20′ 40′
SCALE: 1" = 40′

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 7
STEP 1 & STEP 6

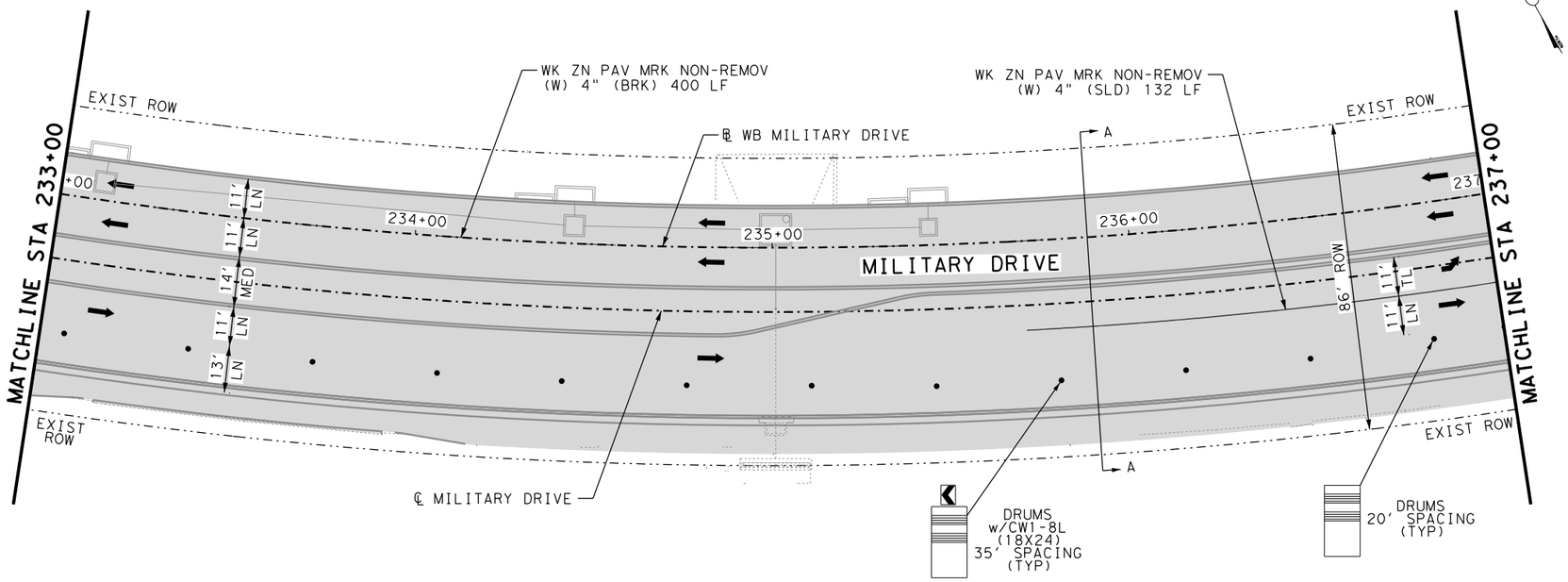
SHEET 1 OF 5

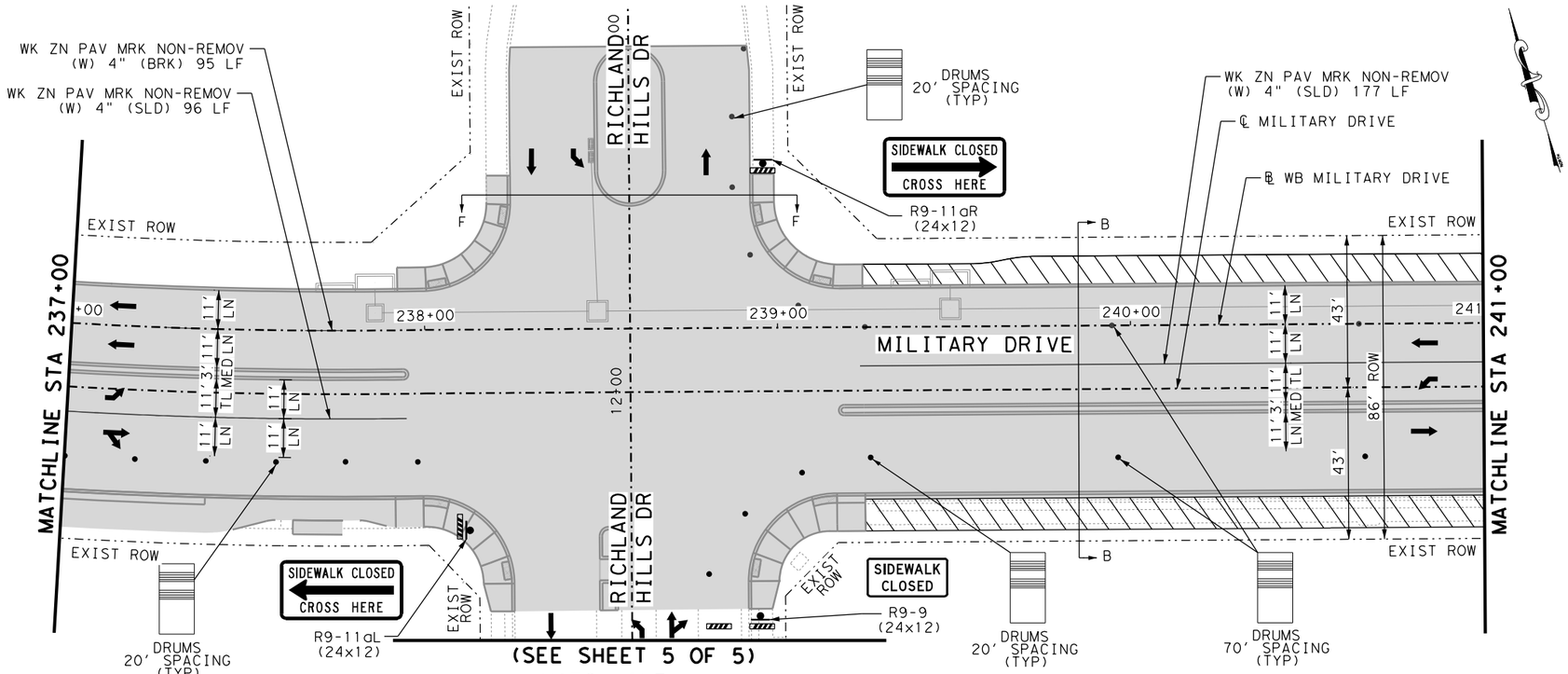
70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 95 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH07_S1_1.dgn
8:52:37 AM
5/19/2025

5/19/2025 8:52:37 AM
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH07_S1_1.dgn

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
662	7001	WK ZN PAV MRK NON-REMOV (W)4"(BRK)	LF	495
662	7004	WK ZN PAV MRK NON-REMOV (W)4"(SLD)	LF	405





LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 7
STEP 1 & STEP 6

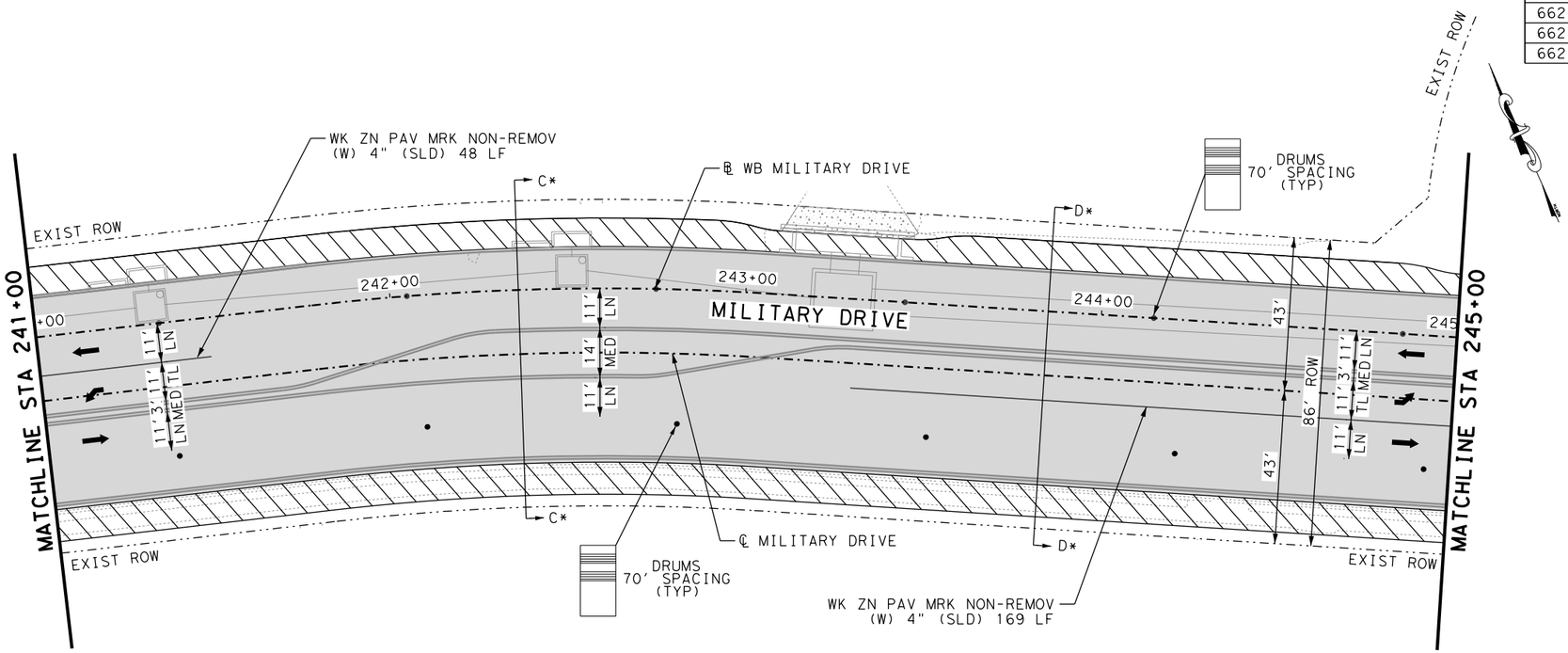
SHEET 2 OF 5

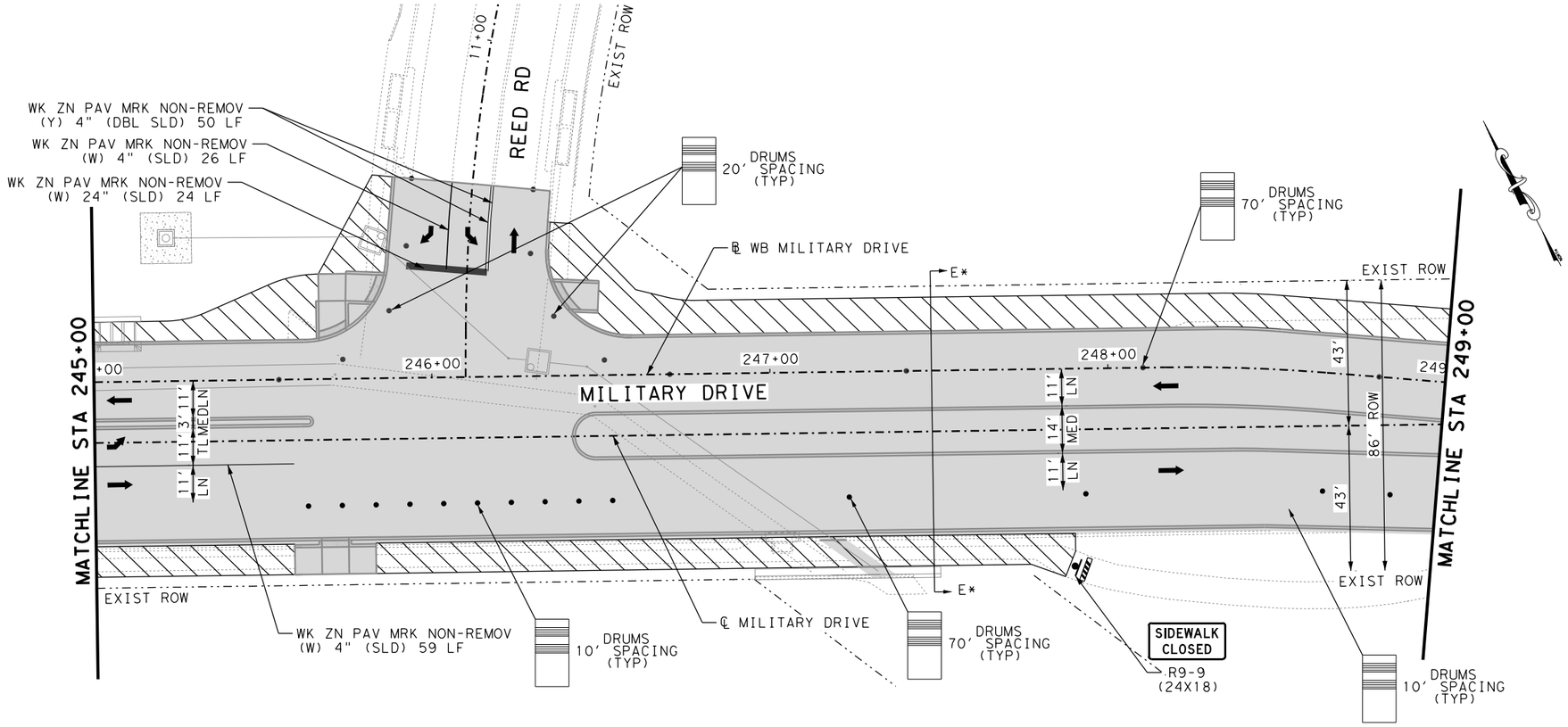
70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 96 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH07_S1_2.dgn

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH07_S1_2.dgn
8:52:46 AM
5/19/2025

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
662	7004	WK ZN PAV MRK NON-REMOV (W)4"(SLD)	LF	302
662	7017	WK ZN PAV MRK NON-REMOV (W)24"(SLD)	LF	24
662	7034	WK ZN PAV MRK NON-REMOV (Y)4"(SLD)	LF	50





LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 7
STEP 1 & STEP 6

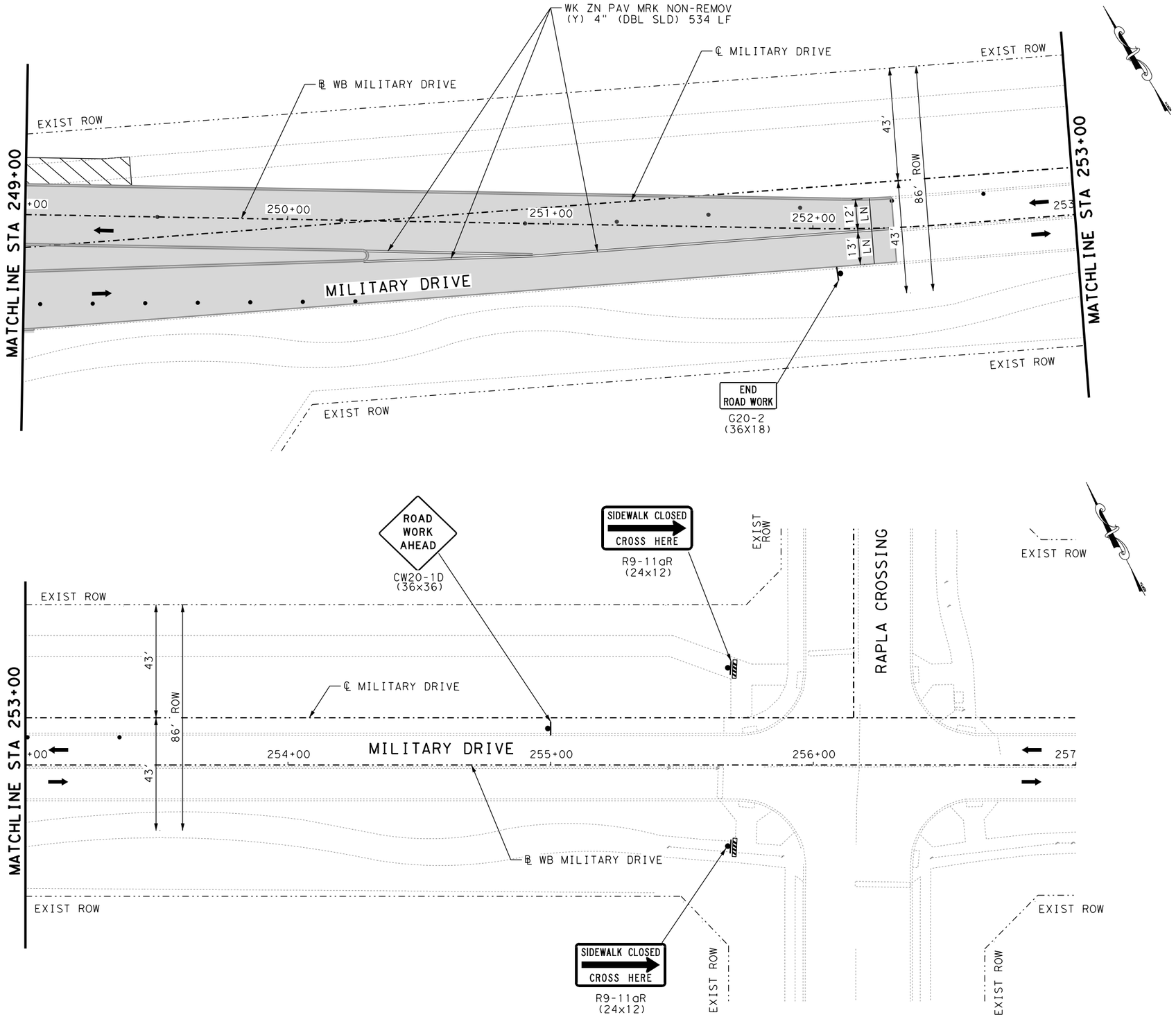
SHEET 3 OF 5

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 97 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH07_S1_3.dgn

5/19/2025 8:52:56 AM
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH07_S1_3.dgn

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
662	7034	WK ZN PAV MRK NON-REMOV (Y)4"(SLD)	LF	534



LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

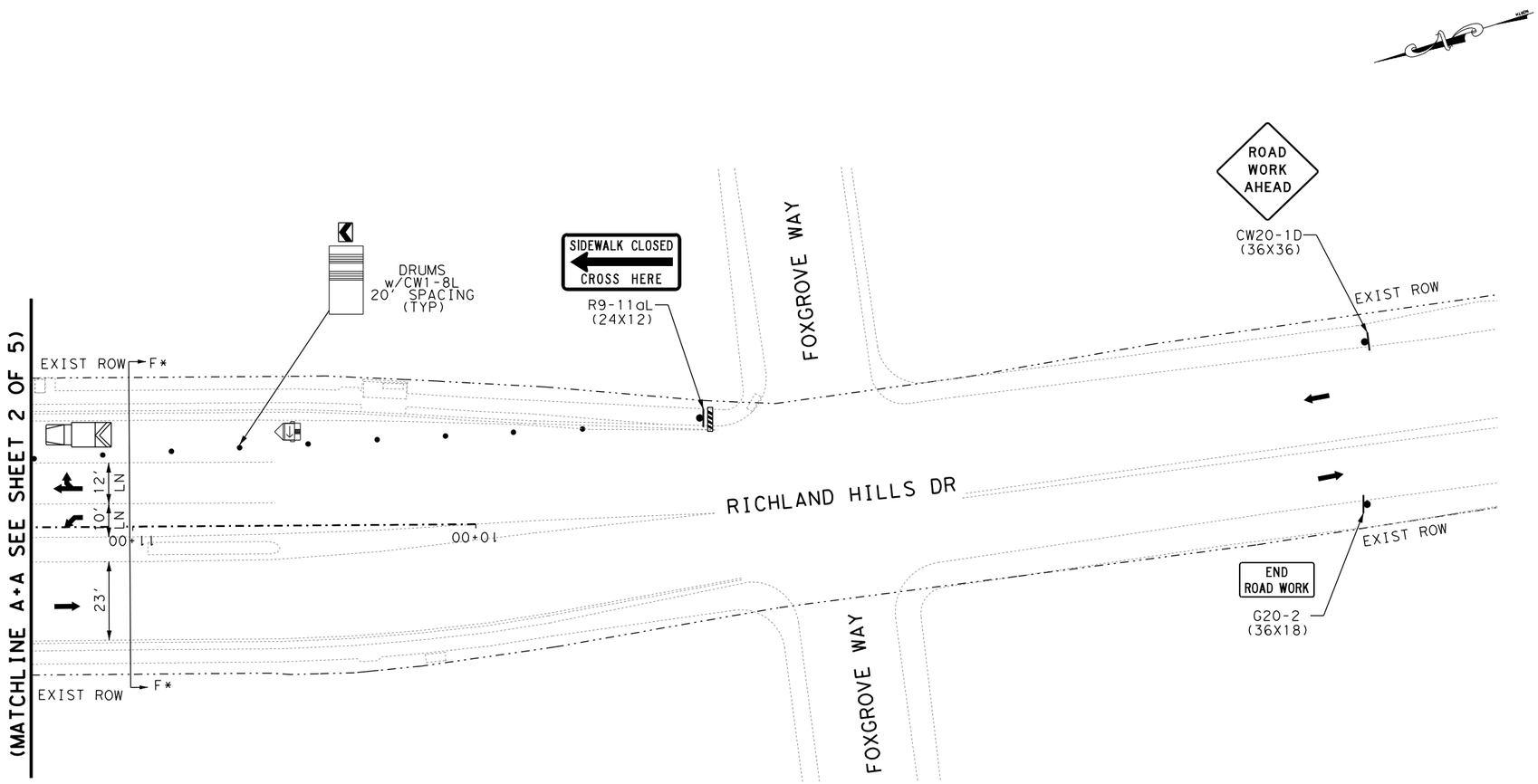
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 7
STEP 1 & STEP 6

SHEET 4 OF 5

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 98 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH07_S1_4.dgn
5/19/2025 8:53:06 AM



LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 7
STEP 1 & STEP 6

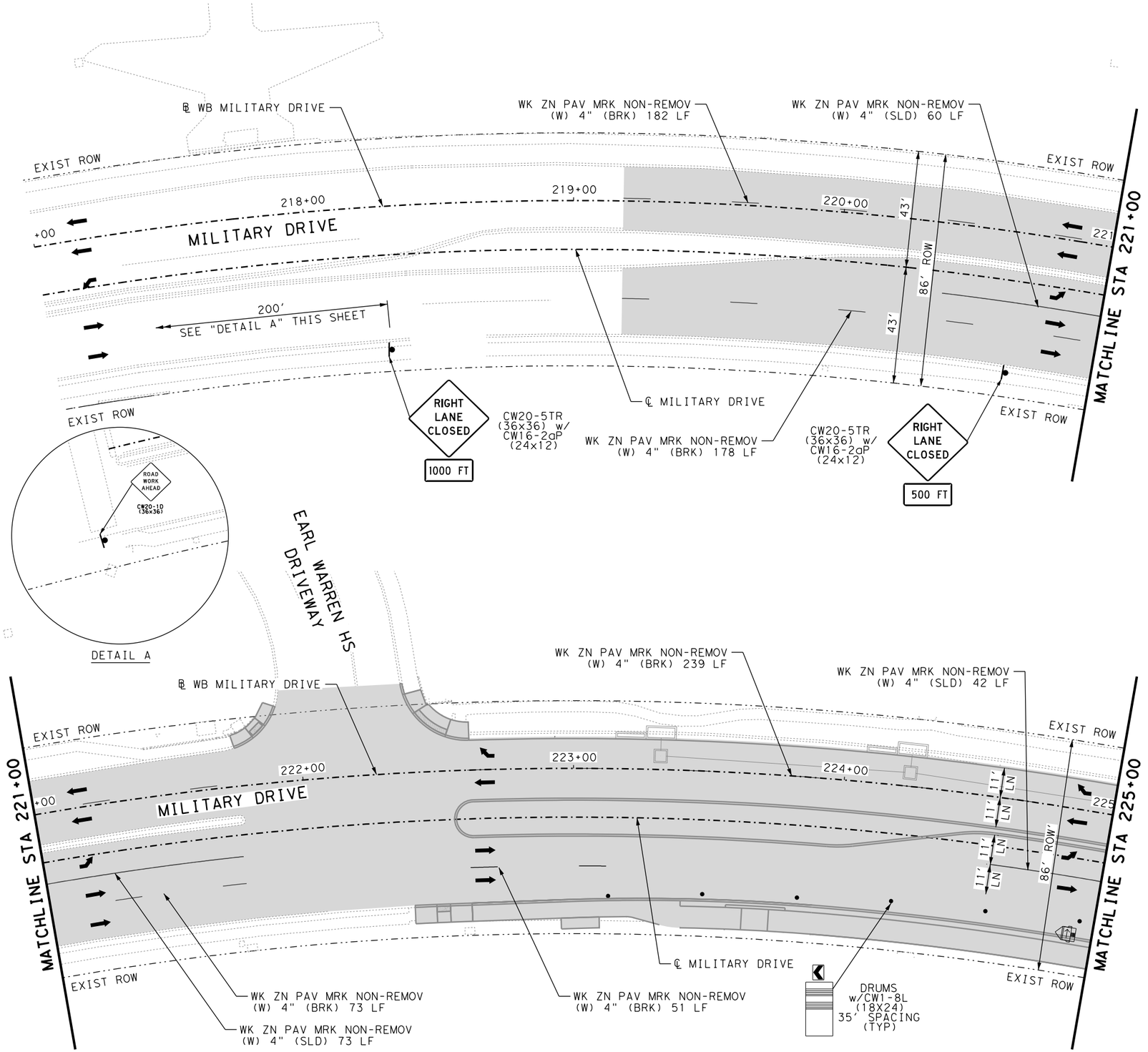
SHEET 5 OF 5

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 99 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH07_S1_5.dgn
8:53:16 AM
5/19/2025

5/19/2025 8:53:16 AM
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH07_S1_5.dgn

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
662	7001	WK ZN PAV MRK NON-REMOV (W)4"(BRK)	LF	723
662	7004	WK ZN PAV MRK NON-REMOV (W)4"(SLD)	LF	175



LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.
2. SIGN(S) TO BE PLACED IN REFERENCE TO BEGINNING CW20-5TR PLACED AT L=220

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

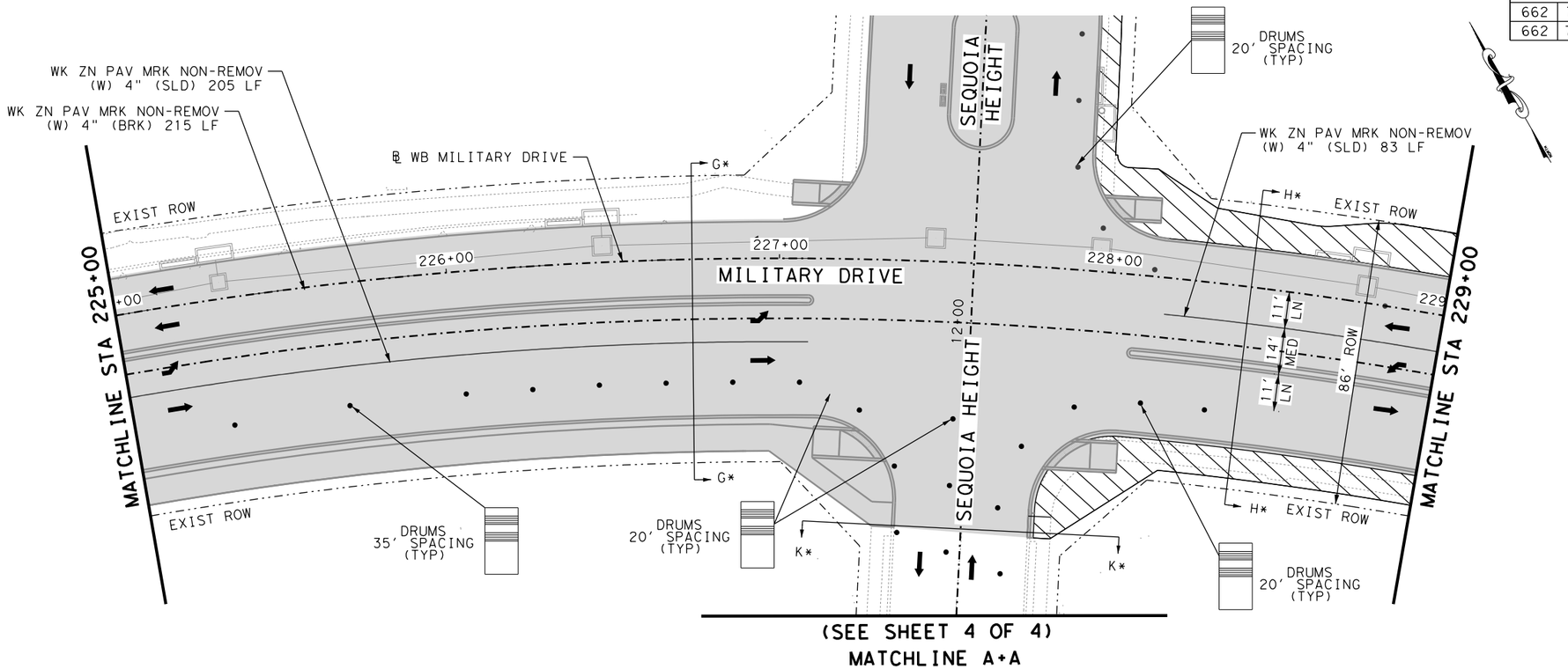
MILITARY DRIVE
TCP LAYOUT PHASE 7
STEP 2 & STEP 5

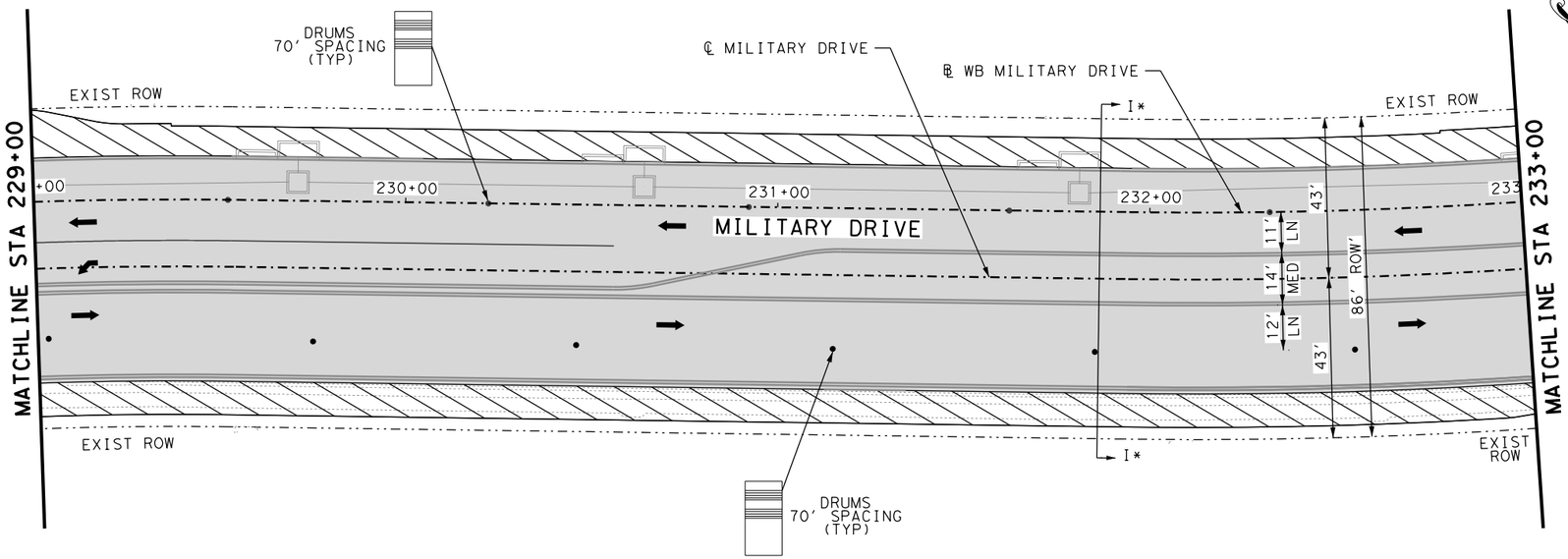
SHEET 1 OF 4

90 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: DR	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 100 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH07_S2_1.dgn
5/19/2025 8:53:25 AM

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
662	7001	WK ZN PAV MRK NON-REMOV (W)4"(BRK)	LF	215
662	7004	WK ZN PAV MRK NON-REMOV (W)4"(SLD)	LF	444





LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

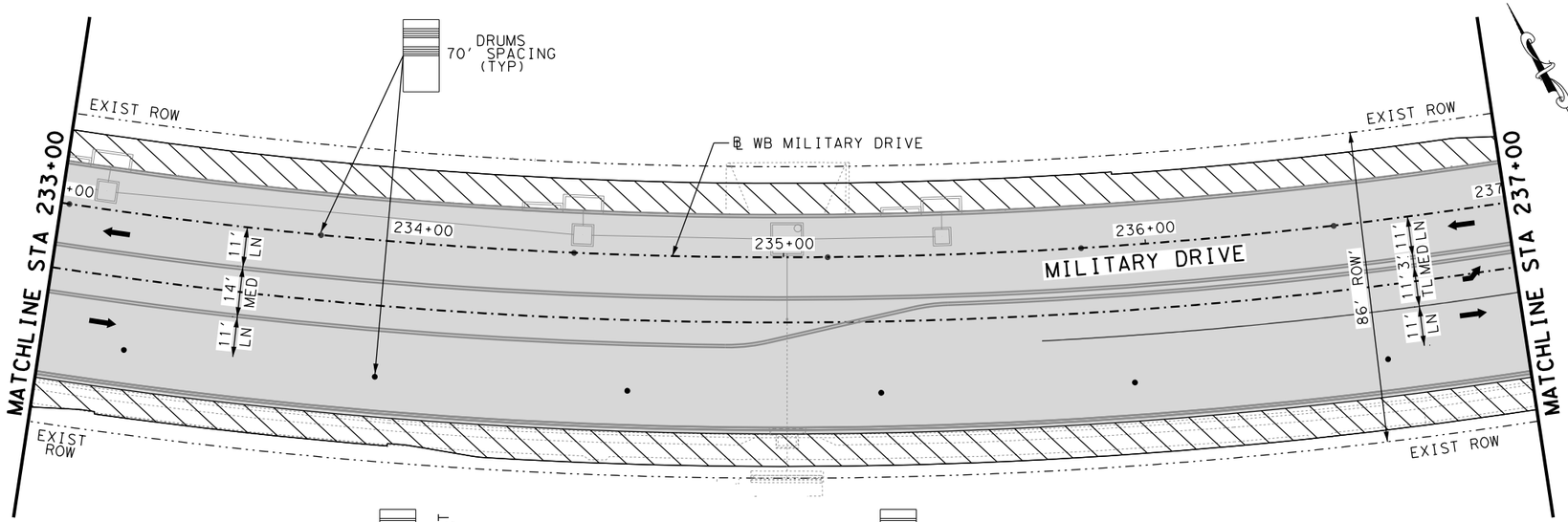
MILITARY DRIVE
TCP LAYOUT PHASE 7
STEP 2 & STEP 5

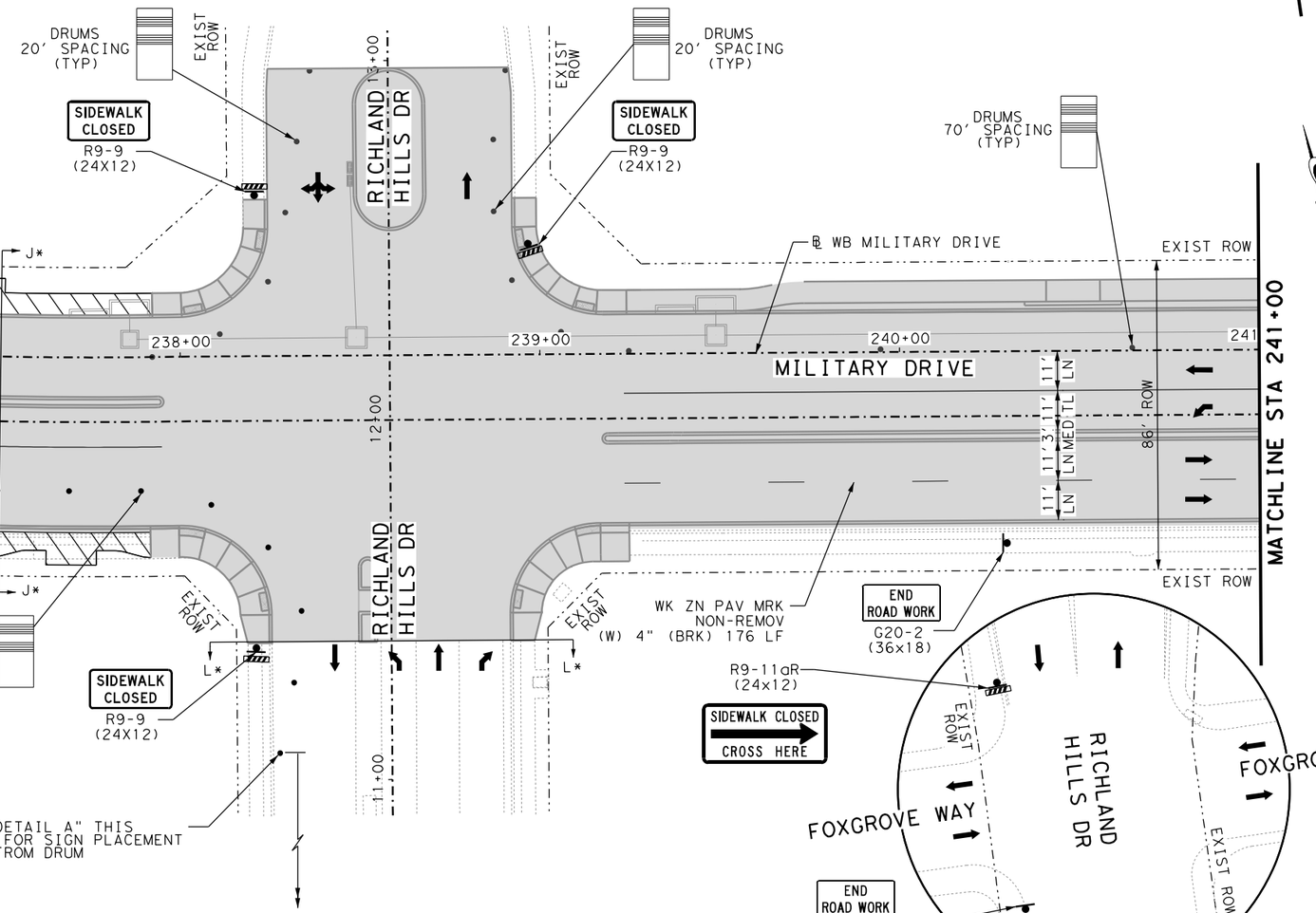
SHEET 2 OF 4

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 101 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH07_S2_2.dgn
5/19/2025 8:53:35 AM

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
662	7001	WK ZN PAV MRK NON-REMOV (W)4" (BRK)	LF	176
662	7004	WK ZN PAV MRK NON-REMOV (W)4" (SLD)	LF	404





LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 7
STEP 2 & STEP 5

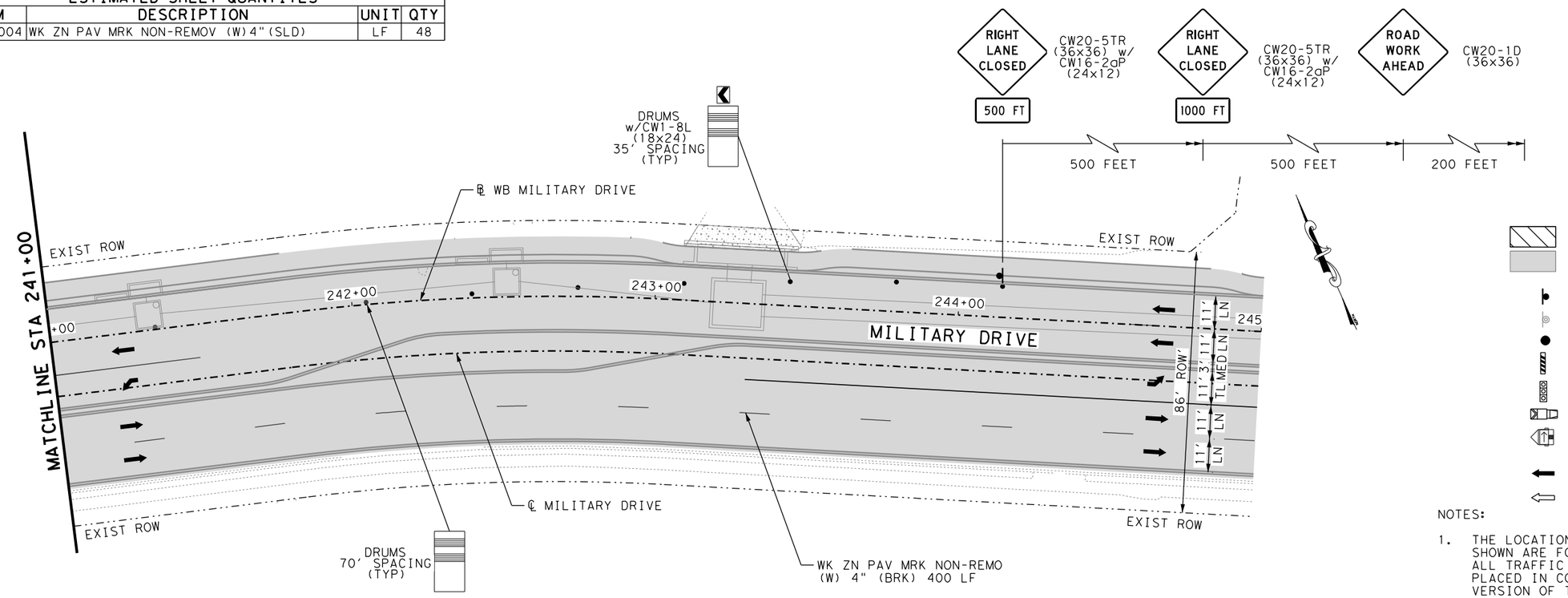
SHEET 3 OF 4

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 102 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH07_S2_3.dgn
5/19/2025 8:53:46 AM

ESTIMATED SHEET QUANTITES

ITEM		DESCRIPTION	UNIT	QTY
662	7004	WK ZN PAV MRK NON-REMOV (W)4"(SLD)	LF	48



LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

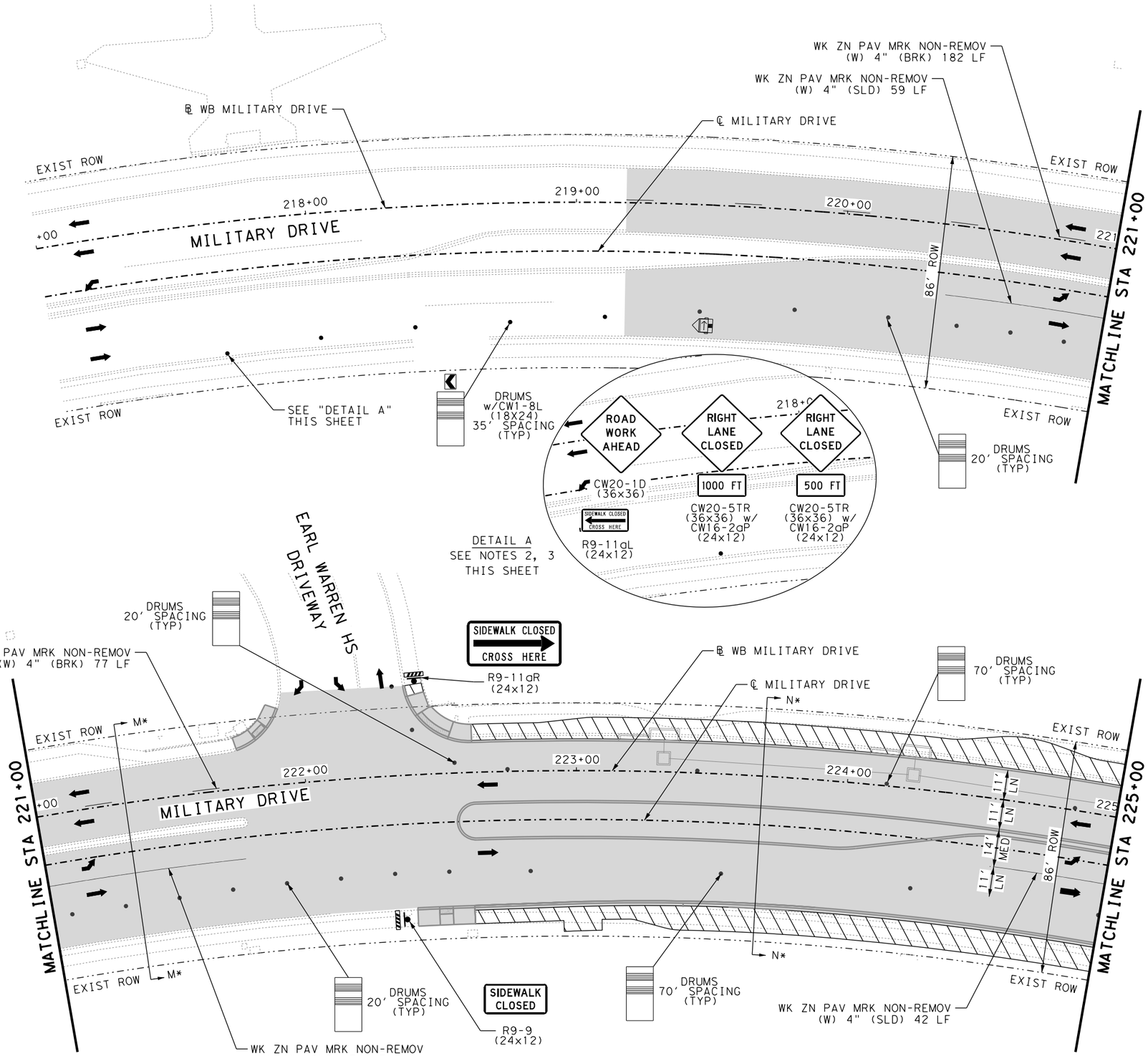
MILITARY DRIVE
TCP LAYOUT PHASE 7 STEP 2 & STEP 5

SHEET 4 OF 4

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 103 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH07_S2_4.dgn
5/19/2025 8:53:56 AM

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
662	7001	WK ZN PAV MRK NON-REMOV (W)4"(BRK)	LF	259
662	7004	WK ZN PAV MRK NON-REMOV (W)4"(SLD)	LF	175



LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.
2. SIGNS TO BE PLACED IN REFERENCE TO BEGINNING DRUM.CW20-1D PLACED AT L=220 PRIOR TO CW20-5TR w/ CW16-2aP
3. R9-11aR TO BE PLACED AT 9400 MILITARY DR INTERSECTION

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

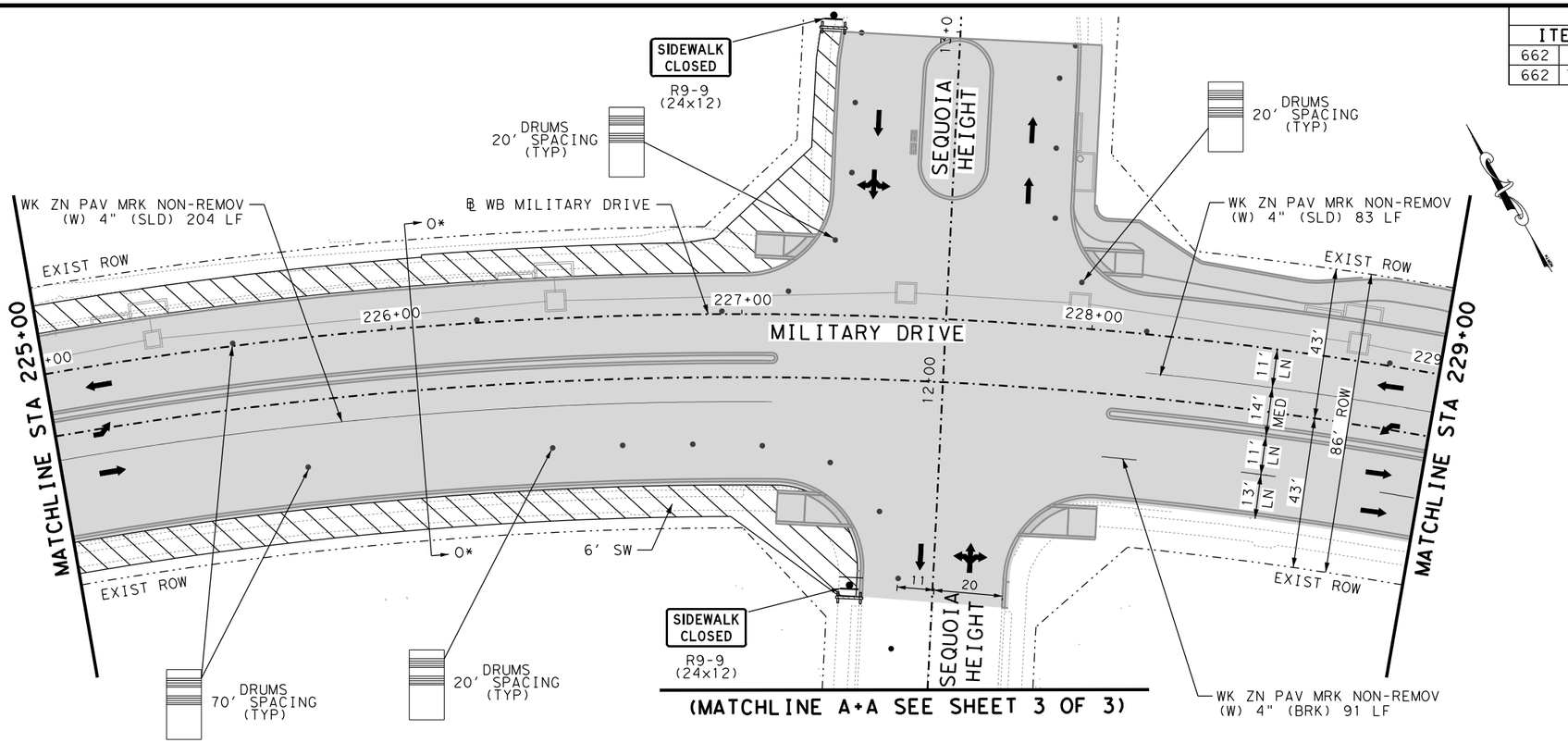
MILITARY DRIVE
TCP LAYOUT PHASE 7 STEP 3 & STEP 4

SHEET 1 OF 3

90 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NR	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 104 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH07_S3_1.dgn
5/19/2025 8:54:18 AM

ESTIMATED SHEET QUANTITES				
ITEM		DESCRIPTION	UNIT	QTY
662	7001	WK ZN PAV MRK NON-REMOV (W)4"(BRK)	LF	491
662	7004	WK ZN PAV MRK NON-REMOV (W)4"(SLD)	LF	443

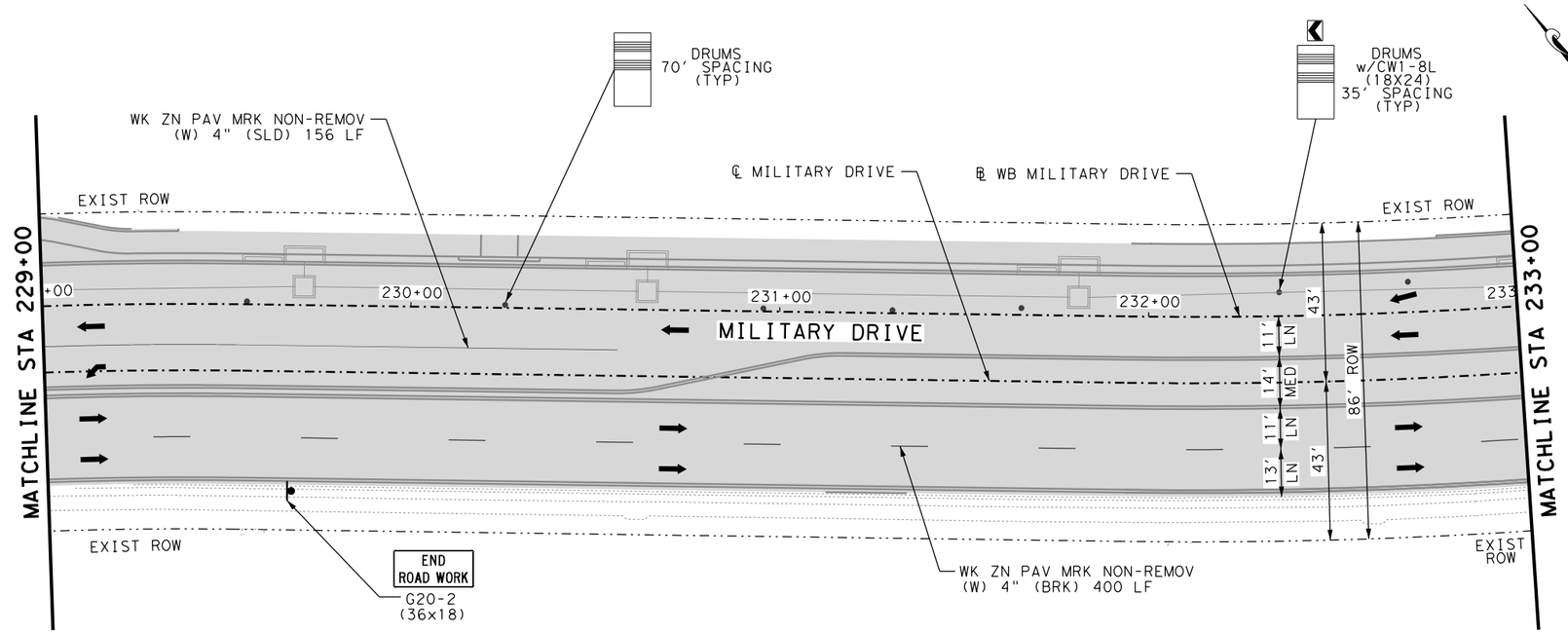


LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.



* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

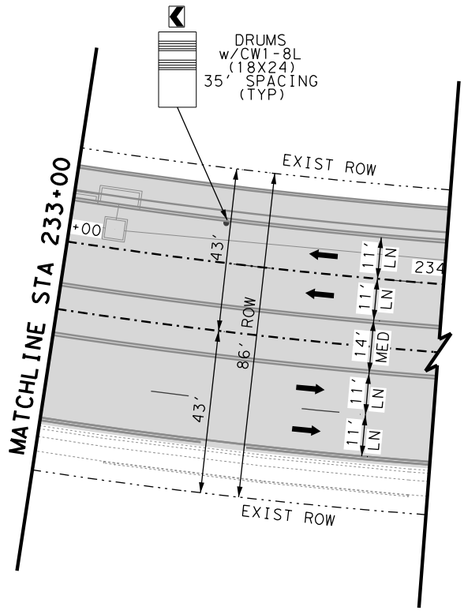
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

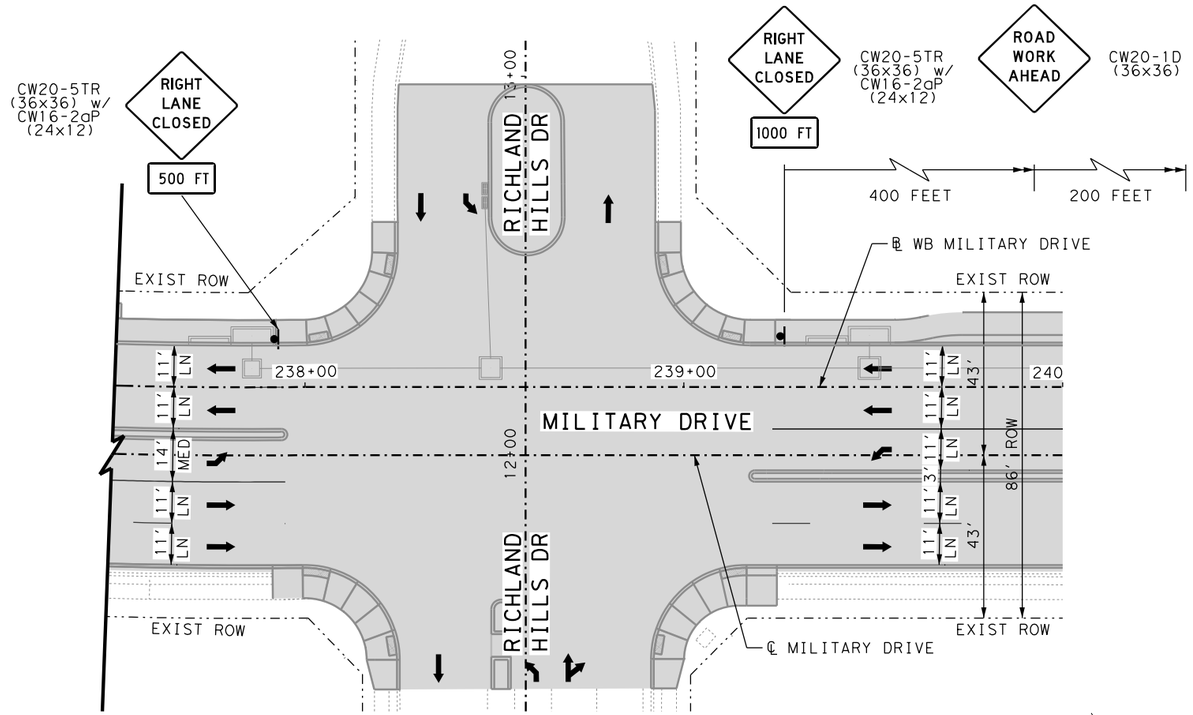
MILITARY DRIVE
TCP LAYOUT PHASE 7
STEP 3 & STEP 4

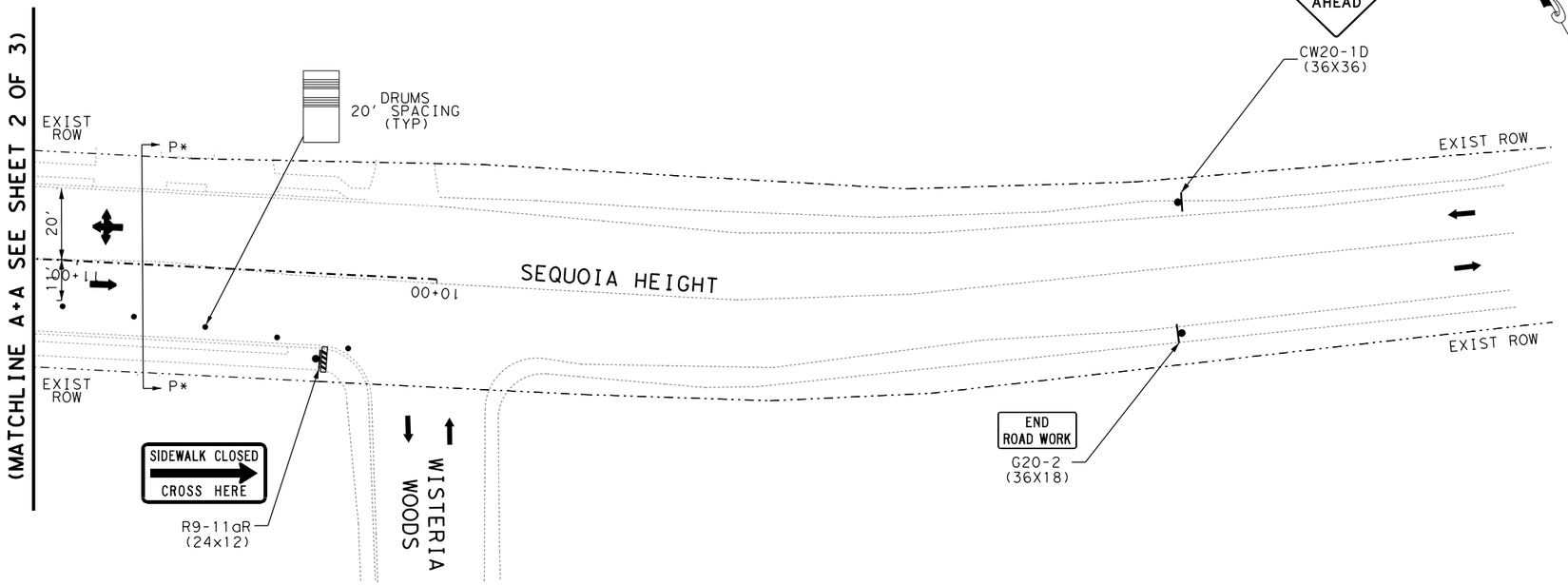
SHEET 2 OF 3

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 105 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH07_S3_2.dgn
5/19/2025 8:54:28 AM







LEGEND

- CONSTRUCTION THIS PHASE
- CONSTRUCTED IN PREVIOUS PHASES
- SIGN
- EXIST SIGN
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- SIGNALIZED INTERSECTION
- SHADOW VEHICLE W/ TMA
- TRAILER MOUNTED TRAFFIC ARROW BOARD
- PROPOSED DIRECTION OF TRAVEL
- EXIST DIRECTION OF TRAVEL

NOTES:

1. THE LOCATIONS OF TRAFFIC CONTROL DEVICES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN CONFORMANCE TO THE LATEST VERSION OF THE TMUTCD, TRAFFIC CONTROL STANDARDS, OR AS DIRECTED BY THE ENGINEER.

* REFER TO TCP TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

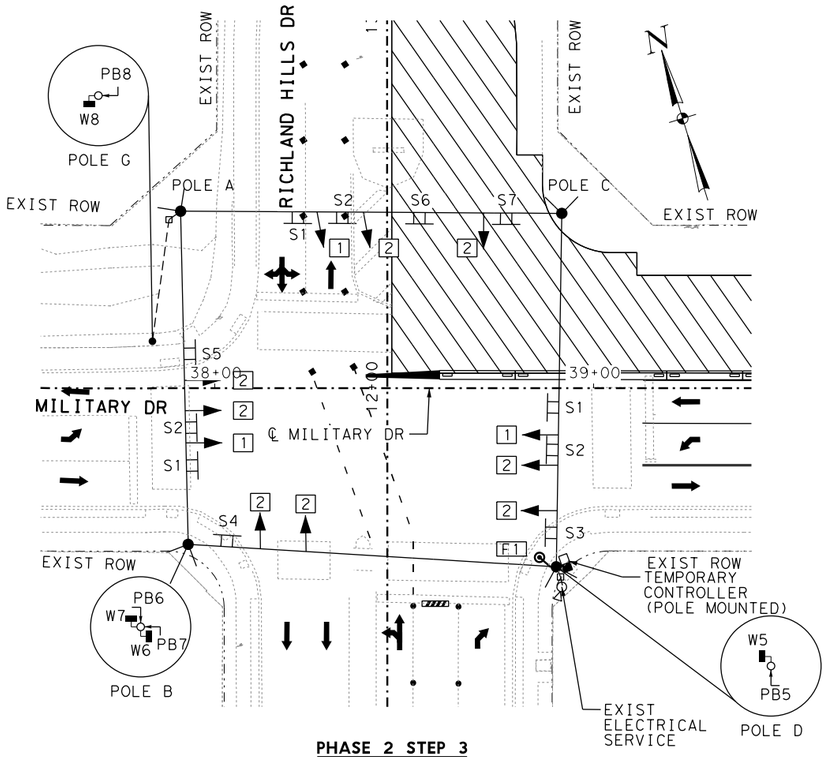
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TCP LAYOUT PHASE 7
STEP 3 & STEP 4

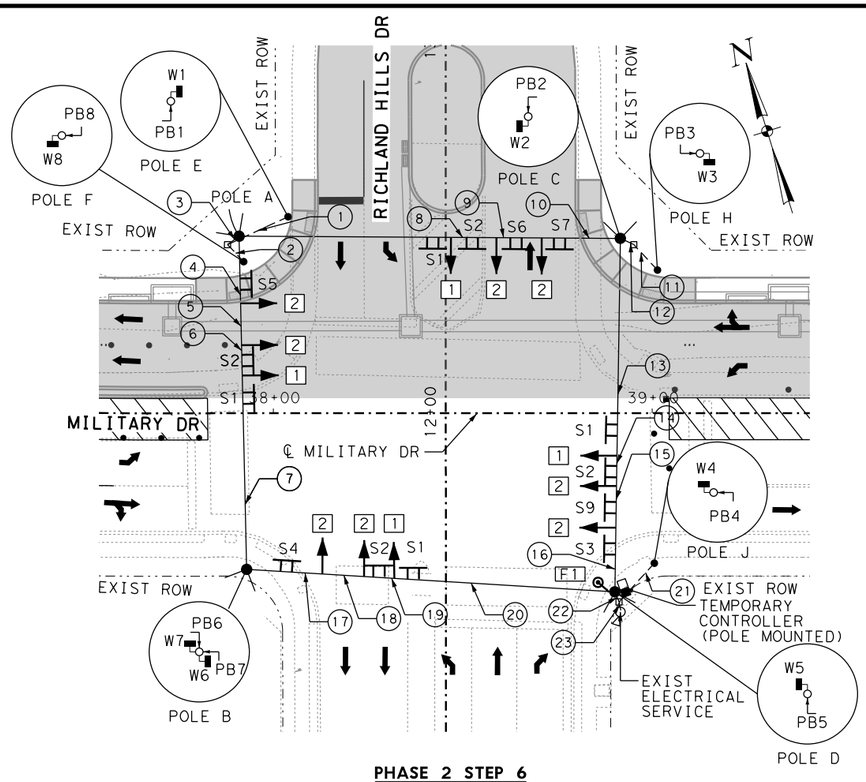
SHEET 3 OF 3

70 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: NC	DSGN. BY: NC	CHKD. BY: EV	SHEET NO. 106 OF 377

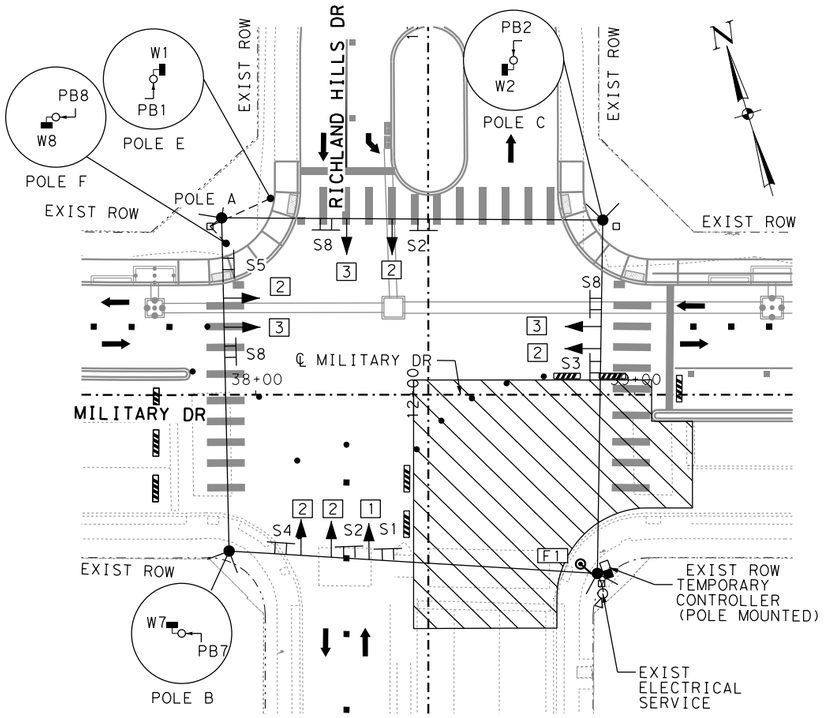
c:\bms\pwe-useast-006\knerr.chris\dms71690\C_MD_S_TCP_S_PH07_S3_3.dgn
5/19/2025 8:54:39 AM



PHASE 2 STEP 3



PHASE 2 STEP 6



PHASE 3 STEP 1

LEGEND

- EXIST SIGNAL POLE
- EXIST CONTROLLER
- EXIST ELECTRICAL SERVICE
- TEMP TIMBER POLE W/DOWN GUY
- 1 — TEMP SIGNAL HEAD AND DESIGNATION
- TEMP SPAN WIRE
- TEMP CONDUIT
- S1 — TEMP SIGN AND DESIGNATION
- TEMP GROUND BOX
- TEMP POLE MOUNTED CONTROLLER
- TEMP SERVICE METER
- FX — TEMP FEDS DETECTION AND DESIGNATION
- TCP DEVICE (SEE NOTE 2, THIS SHEET)
- EXIST RIGHT OF WAY
- CURRENT PHASE WORK ZONE
- CONSTRUCTED PREVIOUS PHASE
- TEMPORARY PAVEMENT
- TRAFFIC FLOW

NOTES:

1. RUN NUMBERS SIMILAR FOR ALL PHASES AND STEPS AS SHOWN.
2. SEE TRAFFIC CONTROL PLAN FOR ADDITIONAL TCP DEVICES.

0 20′ 40′

SCALE: 1" = 40′

STATE OF TEXAS
XIDUO WANG
143018
LICENSED
PROFESSIONAL ENGINEER

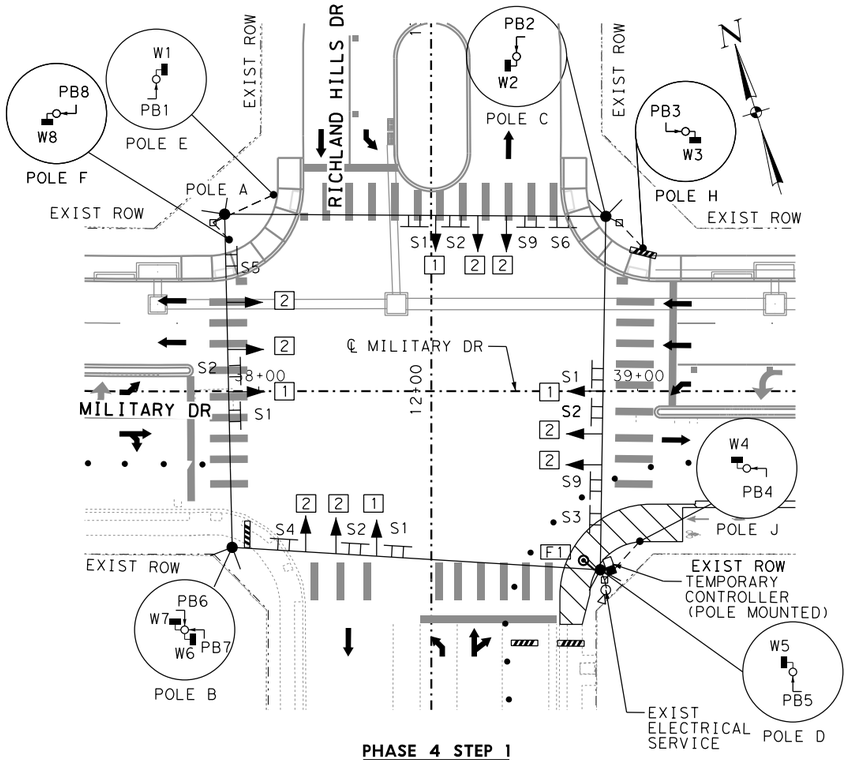
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TEMPORARY SIGNAL LAYOUT
RICHLAND HILLS DR

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CAG	DSGN. BY: CG	CHKD. BY: XW	SHEET NO. 107 OF 377



PHASE 4 STEP 1

LEGEND

- EXIST SIGNAL POLE
- EXIST CONTROLLER
- EXIST ELECTRICAL SERVICE
- TEMP TIMBER POLE W/DOWN GUY
- [1] TEMP SIGNAL HEAD AND DESIGNATION
- TEMP SPAN WIRE
- TEMP CONDUIT
- S1 TEMP SIGN AND DESIGNATION
- TEMP GROUND BOX
- TEMP POLE MOUNTED CONTROLLER
- TEMP SERVICE METER
- FX TEMP FEDS DETECTION AND DESIGNATION
- TCP DEVICE (SEE NOTE 2, THIS SHEET)
- EXIST RIGHT OF WAY
- CURRENT PHASE WORK ZONE
- CONSTRUCTED PREVIOUS PHASE
- TEMPORARY PAVEMENT
- TRAFFIC FLOW

NOTES:

1. RUN NUMBERS SIMILAR FOR ALL PHASES AND STEPS AS SHOWN.
2. SEE TRAFFIC CONTROL PLAN FOR ADDITIONAL TCP DEVICES.

0 20′ 40′

SCALE: 1" = 40′

STATE OF TEXAS
XIDUO WANG
143018
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

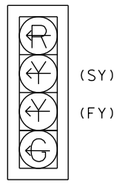
MILITARY DRIVE
TEMPORARY
SIGNAL LAYOUT
RICHLAND HILLS DR

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CAG	DSGN. BY: CG	CHKD. BY: XW	SHEET NO. 108 OF 377

c:\dms\pwe-useast-006\knerr.chris\dms71726\C_MD_S_LTL02F.dgn
8:55:00 AM
5/19/2025

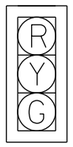
TEMP TRAFFIC SIGNAL HEADS

1 WAY, 4 SECTION
12" VERTICAL



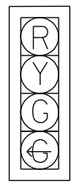
1

1 WAY, 3 SECTION
12" VERTICAL



2

1 WAY, 4 SECTION
12" VERTICAL



3

NOTE:

1. ALL SIGNALS HAVE YELLOW HOUSING AND BLACK BACKPLATES.

TEMP SIGNS ON SPAN WIRE

R10-17T
36X42

S1

R10-12
30X36

S8

R3-5L
30X36

S2

R3-5R
30X36

S7

R3-6R
30X36

S9

PHASE 2 STEP 3

1. TEMPORARY SIGNAL TO BE IN OPERATION AS SHOWN.
2. TEMP PED EQUIPMENT TO BE IN OPERATION AS SHOWN.

PHASE 2 STEP 4

1. SHIFT SIGNAL HEADS 1 AND 2 AND SIGN S1, S2, S6, S7 IN FRONT OF NB APPROACH.
2. COVER PEDESTRIAN SIGNAL HEADS W7 AND W8 AND PUSH BUTTONS PB7 AND PB8.
3. INSTALL PEDESTRIAN POLE H, SIGNAL HEAD W3 AND PUSH BUTTON PB3.
4. INSTALL PEDESTRIAN POLE J, SIGNAL HEAD W4 AND PUSH BUTTON PB4.

PHASE 2 STEP 5

1. MAINTAIN SIGNAL CONFIGURATION FROM PREVIOUS PHASE. NO CHANGES TO TEMPORARY SIGNALS, PEDESTRIAN SIGNALS OR SIGNS.

PHASE 2 STEP 6

1. SHIFT SIGNAL HEADS 1 AND 2 AND SIGNS S1, S2, S5 IN FRONT OF WB APPROACH AS SHOWN.
2. SHIFT SIGNAL HEADS 1 AND 2 AND SIGNS S1, S2, S3 IN FRONT OF EB APPROACH AS SHOWN.
3. SHIFT SIGNAL HEADS 1 AND 2 AND SIGNS S1, S2, S6, AND S7 IN FRONT OF NB APPROACH AS SHOWN.
4. SHIFT SIGNAL HEADS 2 AND SIGN S4 IN FRONT OF SB APPROACH AS SHOWN.
5. INSTALL SIGNAL HEAD 1 AND SIGN S1 AND S2 IN FRONT OF SB APPROACH AS SHOWN.
6. UNCOVER PEDESTRIAN SIGNAL HEADS W7 AND W8 AND PUSH BUTTONS PB7 AND PB8.

PHASE 3 STEP 1

1. REMOVE SIGNAL HEADS 1 AND 2 AND SIGNS S1, AND S2 IN FRONT OF WB APPROACH AS SHOWN.
2. SHIFT SIGNAL HEAD 2 AND S5 IN FRONT OF WB APPROACH AS SHOWN.
3. INSTALL SIGNAL HEAD 3 AND SIGN S8 IN FRONT OF WB APPROACH AS SHOWN.
4. REMOVE SIGNAL HEADS 1 AND 2 AND SIGNS S1, S2 AND S9 IN FRONT OF EB APPROACH AS SHOWN.
5. SHIFT SIGNAL HEAD 2 AND SIGN S3 IN FRONT OF EB APPROACH AS SHOWN.
6. INSTALL SIGNAL HEAD 3 AND SIGN S8 IN FRONT OF EB APPROACH AS SHOWN.
7. COVER PEDESTRIAN SIGNAL HEADS W3, W4, W5, AND W6 AND PUSH BUTTONS PB3, PB4, PB5 AND PB6.

PHASE 3 STEP 2

1. SHIFT SIGNAL HEADS 3 AND 2 AND SIGNS S2 AND S8 IN FRONT OF NB APPROACH.
2. SHIFT SIGNAL HEADS 1 AND 2 AND SIGNS S1, S2, AND S4 IN FRONT OF SB APPROACH.
3. COVER PEDESTRIAN SIGNAL HEADS W7, W8, AND PUSH BUTTONS PB7, AND PB8.
4. UNCOVER PEDESTRIAN SIGNAL HEADS W3, W4, AND PUSH BUTTONS PB3, AND PB4.

PHASE 4 STEP 1

1. REMOVE SIGNAL HEAD 3 AND SIGN S8 IN FRONT OF WB APPROACH AS SHOWN.
2. SHIFT SIGNAL HEAD 2 AND SIGN S5, IN FRONT OF WB APPROACH AS SHOWN.
3. INSTALL SIGNAL HEADS 1 AND 2, AND SIGNS S1 AND S2 IN FRONT OF WB APPROACH AS SHOWN.
4. REMOVE SIGNAL HEAD 3 AND SIGN S8 IN FRONT OF EB APPROACH AS SHOWN.
5. SHIFT SIGNAL HEAD 2 AND SIGN S3, IN FRONT OF EB APPROACH AS SHOWN.
6. INSTALL SIGNAL HEADS 1 AND 2 AND SIGNS S1, S2, AND S9 IN FRONT OF EB APPROACH AS SHOWN.
7. SHIFT SIGNAL HEADS 1 AND 2 AND SIGNS S1, S2, AND S4 IN FRONT OF SB APPROACH AS SHOWN.
8. REMOVE SIGNAL HEAD 3 AND SIGN S8 IN FRONT OF NB APPROACH AS SHOWN.
9. SHIFT SIGNAL HEAD 2 AND SIGN S2, IN FRONT OF NB APPROACH AS SHOWN.
10. INSTALL SIGNAL HEADS 1 AND 2, AND SIGNS S1, S2, S6, AND S9 IN FRONT OF NB APPROACH AS SHOWN.
11. COVER PEDESTRIAN SIGNAL HEADS W3, W4, W5, W6 AND PUSH BUTTONS PB3, PB4, PB5 AND PB6.
12. UNCOVER PEDESTRIAN SIGNAL HEADS W7, W8, AND PUSH BOTTONS PB7, AND PB8.

PHASE 4 STEP 2

1. SHIFT SIGNAL HEADS 1 AND 2 AND SIGNS S1, S2, S6, AND S9 IN FRONT OF NB APPROACH.
2. SHIFT SIGNAL HEADS 1 AND 2 AND SIGNS S1, S2, AND S4 IN FRONT OF SB APPROACH.
3. COVER PEDESTRIAN SIGNAL HEADS W5, W6, AND W7, AND PUSH BUTTONS PB5, PB6 AND PB7.
4. UNCOVER PEDESTRIAN SIGNAL HEADS W3 AND W4 AND PUSH BUTTONS PB3 AND PB4.
5. REMOVE PEDESTRIAN POLE F AND PEDESTRIAN SIGNAL EQUIPMENT.

NOTES:

1. EXISTING TRAFFIC SIGNAL TO BE IN OPERATION IN PHASE 1 THRU PHASE 2 STEP 2.
2. PERMANENT SIGNAL TO BE IN OPERATION AFTER PHASE 4 STEP 2.
3. SEE PHASE NOTES FOR INFORMATION ON PEDESTRIAN EQUIPMENT OPERATION.
4. THE LOCATION SHOWN FOR THE TRAFFIC SIGNAL CONTROLLER, SIGNAL POLES, CONDUIT RUNS, AND GROUND BOXES IS SUBJECT TO ADJUSTMENTS DUE TO FIELD CONDITIONS, WITH THE APPROVAL OF THE ENGINEER IN THE FIELD.
5. TEMPORARY SIGNAL HEADS TO BE ADJUSTED PER PHASE BY THE CONTRACTOR AND APPROVED BY THE ENGINEER IN THE FIELD.
6. CONTRACTOR SHOULD CONNECT SIGNAL WIRING AT CONTROLLER DURING OFF-PEAK HOURS. PROVIDE POLICE OFFICER AS NEEDED FOR TRAFFIC CONTROL.
7. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR SHOULD CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR SHOULD BE FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

TEMP PEDESTRIAN SIGNALS, SIGNS AND PUSH BUTTONS

R10-3eR
9 x 15
PB1, PB2, PB3,
PB4, PB7,

R10-3eL
9 x 15
PB5, PB6, PB8

LED COUNTDOWN
PEDESTRIAN
SIGNAL
W1-W8

STATE OF TEXAS
XIDUO WANG
143018
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

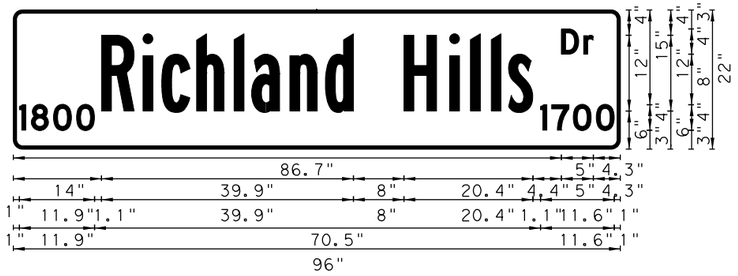
consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TEMPORARY SIGNAL SIGNING AND PHASING
RICHLAND HILLS DR

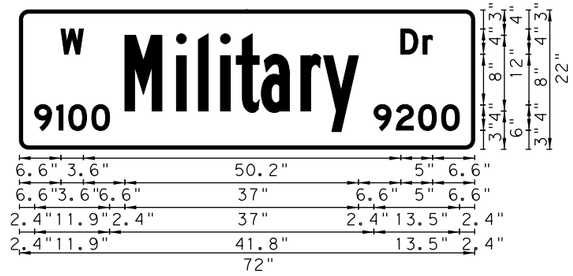
100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: CAG	DSGN. BY: CG / CHKD. BY: XW	SHEET NO. 109 OF 377

TEMPORARY SIGNS
MOUNTED TO MAST ARMS



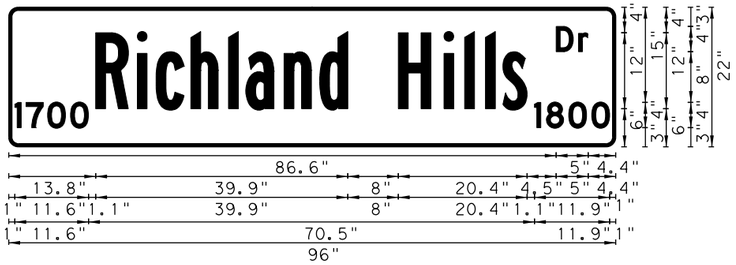
BORDER: R=1.5, TH=0.5
(RICHLAND HILLS) FONT: SERIES B
(DR), (1700), (1800) FONT: SERIES D

S3



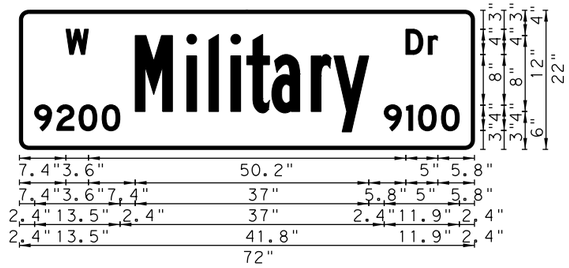
BORDER: R=1.5, TH=0.5
(MILITARY) FONT: SERIES B
((W), DR), (9100), (9200) FONT: SERIES D

S4



BORDER: R=1.5, TH=0.5
(RICHLAND HILLS) FONT: SERIES B
(DR), (1800), (1700) FONT: SERIES D

S5



BORDER: R=1.5, TH=0.5
(MILITARY) FONT: SERIES B
((W), DR), (9200), (9100) FONT: SERIES D

S6

STATE OF TEXAS
XIDUO WANG
143018
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TEMPORARY SIGN
DETAILS
RICHLAND HILLS DR

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: CAC	DSGN. BY: CG / CHKD. BY: XW	SHEET NO. 110 OF 377

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D220116TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL020_2.dgn
ct:\bms\pwe-useast-006\knerr.chris\dms71726\C_MD_S_LSL02D_2.dgn
8:15:13 AM
5/19/2025

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D220116TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL02D_2.dgn

ELECTRICAL SERVICE DATA

ELEC SERVICE POLE NO	SHEET NO	ELECTRICAL POLE DESCRIPTION (SEE ED(5)-14)	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO/SIZE	SAFETY SWITCH AMPS	MAIN CKT BKR POLE/AMPS	TWO-POLE CONTACTOR AMPS	PANELBOARD/ LOAD CENTER AMP RATING	CIRCUIT NO	BRANCH CKT BKR POLE/AMPS	CKT AMP LOAD	SERVICE KVA LOAD
TS-1		ELC SRV TY D 120/240 060 (NS) SS (E) TP (O)	1 1/4"	3/#6	N/A	2P/60	N/A	100	SIGNALS	1P/50	40	4.8

TEMP CONDUIT AND CONDUCTOR SCHEDULE

	CONDUIT / SPAN NUMBER	1	2	3*	4	5	6	7	8	9	10	11	12*	13	14	15	16	17	18	19	20	21	22*	23
A = AERIAL T = TRENCHED B = BORED*	NUMBER OF CONDUITS	1	1	1								1	1									1	1	1
	CONDUIT SIZE IN INCHES	2	2	2								2	2									2	2	2
	CONDUIT / SPAN LENGTH (FT)	30	30	25	20	20	10	55	15	15	20	20	25	60	10	15	20	20	15	10	60	20	25	20
	RUN TYPE	T	T	T	A	A	A	A	A	A	A	T	T	A	A	A	A	A	A	A	A	T	T	T
AWG	CIRCUIT	NUMBER OF CONDUCTORS																						
#6 THHN/THWN	120 POWER HOT & COMMON																							1
BARE AND BOND	#6 BARE																							1
	#8 BARE	1	1	1								1	1									1	1	
9-CONDUCTOR #14 CABLE (SIGNAL HEADS)	MILITARY DR EB														1	2	2							
	MILITARY DR WB					1	2	2										2	2	2	2			
	RICHLAND HILLS DR SB																	1	1	2	2			
	RICHLAND HILLS DR NB								1	2	2			2	2	2	2							
9-CONDUCTOR #14 CABLE	POLE B - W6																	1	1	1	1			
	POLE B - W7																	1	1	1	1			
	POLE C - W2													1	1	1	1							
	POLE D - W5																						1	
	POLE E - W1	1		1	1	1	1	1										1	1	1	1			
	POLE F- W8		1	1	1	1	1	1										1	1	1	1			
	POLE H -W3											1	1	1	1	1	1							
	POLE J - W4																					1	1	
3-CONDUCTOR #16 CABLE	POLE B - PB6																	1	1	1	1			
	POLE B - PB7																	1	1	1	1			
	POLE C - PB2													1	1	1	1							
	POLE D - PB5																						1	
	POLE E - PB1	1		1	1	1	1	1										1	1	1	1			
	POLE F- PB8		1	1	1	1	1	1										1	1	1	1			
	POLE H -PB3											1	1	1	1	1	1							
	POLE J - PB4																					1	1	
FED COMMUNICATION CABLE (ETHERNET - CAT5E)	POLE D																							1

ELECTRICAL CHART SIMILAR FOR ALL PHASES AND STEPS AS LISTED IN NOTES.
COIL 25' EXTRA CABLE ON POLES FOR VARIOUS PHASES/STEPS OF CONSTRUCTION.
* INCLUDES VERTICAL RUN ON POLE

ESTIMATE OF QUANTITIES

ITEM	DESCRIPTION	UNITS	RICHLAND HILLS
618.1	CONDUIT (2 INCH/PVC SCHEDULE 40)	LF	240
620.1	ELECTRICAL CONDUCTORS (NO.6)(BARE)	LF	40
620.2	ELECTRICAL CONDUCTORS (NO.8)(BARE)	LF	240
620.3	ELECTRICAL CONDUCTORS (NO.6)(INSULATED)	LF	40
624.8	GROUND BOX TY D (162922)W/ APRON	EA	3
681.1	TEMP TRAF SIGNALS	EA	1
682.1	INSTALL VEHICLE SIGNAL SECTION WITH BACK PLATE (3 SECTION)	EA	8
682.2	INSTALL VEHICLE SIGNAL SECTION WITH BACK PLATE (4 SECTION)	EA	6
682.4	INSTALL PEDESTRIAN SIGNAL SECTION (12 INCH) LED (2 IND)	EA	8
682.5	LOUVER (12 IN ADJUSTABLE)	EA	8
683.1	LED COUNTDOWN PEDESTRIAN SIGNAL MODULE	EA	8
684.1	TRAFFIC SIGNAL CABLES (TYPE A)(14 AWG)(CONDUCTOR NO. 9)	LF	2140
684.1	TRAFFIC SIGNAL CABLES (TYPE A)(16 AWG)(CONDUCTOR NO. 3)	LF	1100
687.1	PEDESTAL POLE ASSEMBLY	EA	5
688.2	PEDESTRIAN DETECTORS (2 INCH PUSH BUTTON)	EA	8
699.X	FEDS FISH EYE CAMERA ASSEMBLY (INSTALL ONLY)	EA	1**

** FEDS EQUIPMENT TO BE INSTALLED FOR USE IN TEMPORARY PHASE. EQUIPMENT PAID UNDER PERMANENT SIGNALS.

POLE DESCRIPTIONS

POLE	DESCRIPTION
POLE A	TIMBER POLE W/ 1 DOWN GUY (30' TALL)
POLE B	TIMBER POLE W/ 1 DOWN GUY (30' TALL) W/ PUSH BUTTON AND PED SIGNAL HEAD
POLE C	TIMBER POLE W/ 1 DOWN GUY (30' TALL) W/ PUSH BUTTON AND PED SIGNAL HEAD
POLE D	TIMBER POLE W/ 1 DOWN GUY (30' TALL) W/ FISH EYE DETECTION DEVICE, PUSH BUTTON AND PED SIGNAL HEAD
POLE E	TEMP PEDESTAL POLE (10' TALL) W/ PUSH BUTTON AND PED SIGNAL HEAD
POLE F	TEMP PEDESTAL POLE (10' TALL) W/ PUSH BUTTON AND PED SIGNAL HEAD
POLE G	TEMP PEDESTAL POLE (10' TALL) W/ PUSH BUTTON AND PED SIGNAL HEAD
POLE H	TEMP PEDESTAL POLE (10' TALL) W/ PUSH BUTTON AND PED SIGNAL HEAD
POLE J	TEMP PEDESTAL POLE (10' TALL) W/ PUSH BUTTON AND PED SIGNAL HEAD

TEMP VEHICLE DETECTION CHART

CAMERA	SETTING
F1	FEDS FISH EYE DETECTION SYSTEM

NOTE: FEDS EQUIPMENT TO BE INSTALLED FOR USE IN TEMPORARY PHASE

STATE OF TEXAS
XIDUO WANG
143018
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
TEMPORARY SIGNAL CONDUIT AND CONDUCTOR SCHEDULE
RICHLAND HILLS DR

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: CAC	DSGN. BY: CG	CHKD. BY: XW	SHEET NO. 111 OF 377

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).

2. The development and design of the Traffic Control Plan (TCP)is the responsibility of the Engineer.

3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.

4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.

5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets," the TxDOT "Roadway Design Manual" or engineering judgment.

6. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.

7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.

8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.

9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.

10. Where highway construction or maintenance work is being undertaken, other than mobile operations as defined by the Texas Manual on Uniform Traffic Control Devices, CSJ limit signs are required. CSJ limit signs are shown on BC(2). The OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits. For mobile operations, CSJ limit signs are not required.

11. Traffic control devices should be in place only while work is actually in progress or a definite need exists.

12. The Engineer has the final decision on the location of all traffic control devices.

13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

WORKER SAFETY NOTES:

1. Workers on foot who are exposed to traffic or to construction equipment within the right-of-way shall wear high-visibility safety apparel meeting the requirements of ISEA "American National Standard for High-Visibility Apparel," or equivalent revisions, and labeled as ANSI 107-2004 standard performance for Class 2 or 3 risk exposure. Class 3 garments should be considered for high traffic volume work areas or night time work.

2. Except in emergency situations, flagger stations shall be illuminated when flagging is used at night.

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

1. Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources.

2. Work zone traffic control devices shall be compliant with the Manual for Assessing safety Hardware (MASH).

THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT http://www.txdot.gov
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)"
STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD)
TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD)
TRAFFIC ENGINEERING STANDARD SHEETS

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

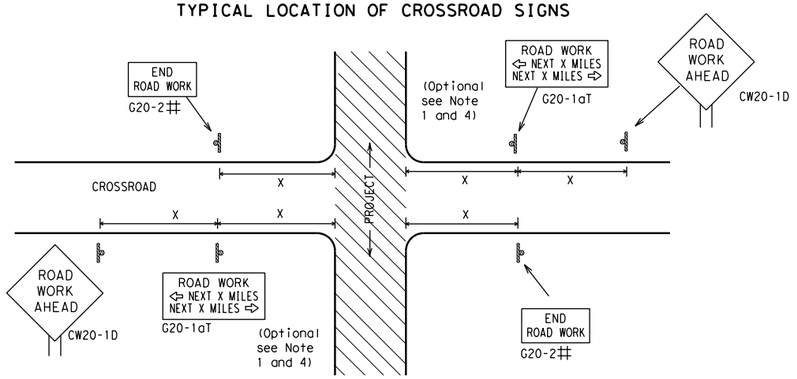
BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-03 7-13				MILITARY DR
9-07 8-14	DIST	COUNTY		SHEET NO.
5-10 5-21	SAT	BEXAR		112 OF 377

DATE: 5/19/2025 8:55:41 AM
FILE: c:\bms\pwe-useast-006\knerr.chris\dms71607\bc-21-01.dgn

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

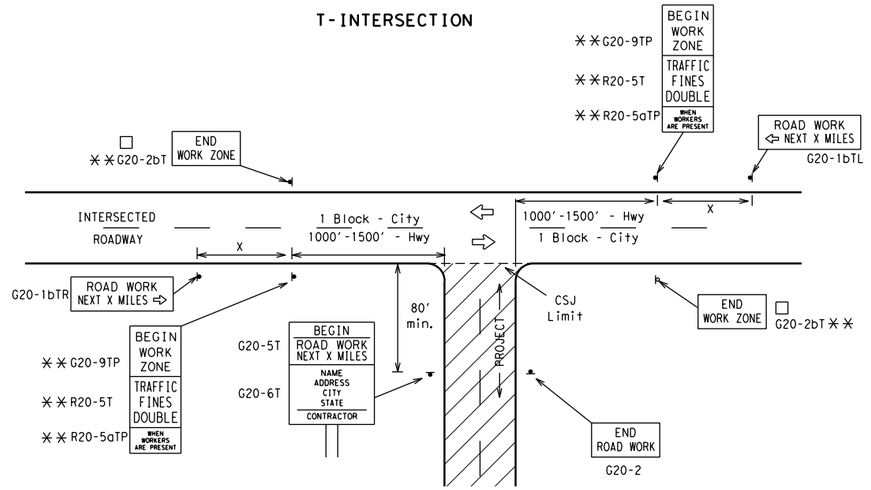
TYPICAL LOCATION OF CROSSROAD SIGNS



May be mounted on back of "ROAD WORK AHEAD"(CW20-1D) sign with approval of Engineer. (See note 2 below)

1. The typical minimum signing on a crossroad approach should be a "ROAD WORK AHEAD" (CW20-1D)sign and a (G20-2) "END ROAD WORK" sign, unless noted otherwise in plans.
2. The Engineer may use the reduced size 36" x 36" ROAD WORK AHEAD (CW20-1D) sign mounted back to back with the reduced size 36" x 18" "END ROAD WORK"(G20-2) sign on low volume crossroads (see Note 4 under "Typical Construction Warning Sign Size and Spacing"). See the "Standard Highway Sign Designs for Texas" manual for sign details. The Engineer may omit the advance warning signs on low volume crossroads. The Engineer will determine whether a road is low volume as per TMUTCD Part 5. This information shall be shown in the plans.
3. Based on existing field conditions, the Engineer/Inspector may require additional signs such as FLAGGER AHEAD, LOOSE GRAVEL, or other appropriate signs. When additional signs are required, these signs will be considered part of the minimum requirements. The Engineer/Inspector will determine the proper location and spacing of any sign not shown on the BC sheets, Traffic Control Plan sheets or the Work Zone Standard Sheets.
4. The "ROAD WORK NEXT X MILES"(G20-1aT)sign shall be required at high volume crossroads to advise motorists of the length of construction in either direction from the intersection. The Engineer will determine whether a roadway is considered high volume.
5. Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
6. When work occurs in the intersection area, appropriate traffic control devices, as shown elsewhere in the plans or as determined by the Engineer/Inspector, shall be in place.

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

1. The Engineer will determine the types and location of any additional traffic control devices, such as a flagger and accompanying signs, or other signs, that should be used when work is being performed at or near an intersection.
2. If construction closes the road at a T-intersection, the Contractor shall place the "CONTRACTOR NAME"(G20-6T) sign behind the Type 3 Barricades for the road closure (see BC(10) also). The "ROAD WORK NEXT X MILES" left arrow(G20-1bTL) and "ROAD WORK NEXT X MILES" right arrow (G20-1bTR)" signs shall be replaced by the detour signing called for in the plans.

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING[1,5,6]

SIZE

Sign Number or Series	Conventional Road	Expressway/ Freeway
CW20[4] CW21 CW22 CW23 CW25	48" x 48"	48" x 48"
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" x 48"	48" x 48"

SPACING

Posted Speed	Sign △ Spacing "X"
MPH	Feet (Apprx.)
30	120
35	160
40	240
45	320
50	400
55	500[2]
60	600[2]
65	700[2]
70	800[2]
75	900[2]
80	1000[2]
*	*[3]

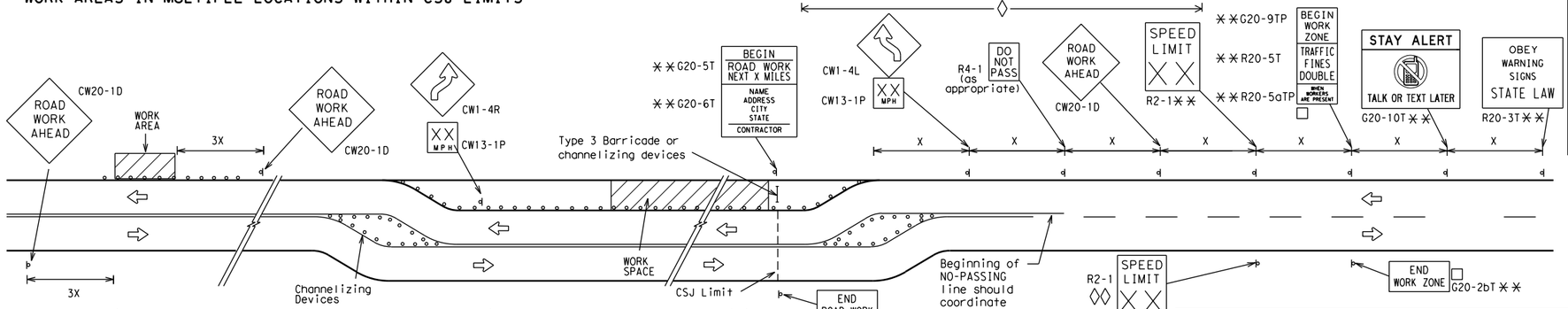
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

△ Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

GENERAL NOTES

1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may be used on low volume crossroads at the discretion of the Engineer as per TMUTCD Part 5. See Note 2 under "Typical Location of Crossroad Signs".
5. Only diamond shaped warning sign sizes are indicated.
6. See sign size listing in "TMUTCD", Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD"(CW20-1D)signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing of signs and channelizing devices.

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS

NOTES

The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES"(G20-5T)sign for each specific project. This distance shall replace the "X" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.

□ The "BEGIN WORK ZONE"(G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ Limits where traffic fines may double if workers are present.

** CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.

◊ Area for placement of "ROAD WORK AHEAD" (CW20-1D)sign and other signs or devices as called for on the Traffic Control Plan.

◊◊ Contractor will install a regulatory speed limit sign at the end of the work zone.

LEGEND	
⊢⊣	Type 3 Barricade
○ ○ ○	Channelizing Devices
▬	Sign
X	See Typical Construction Warning Sign Size and Spacing chart or the TMUTCD for sign spacing requirements.

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BEXAR		113 OF 377

DATE: 5/19/2025 8:55:50 AM
FILE: c:\dms\pwe-useast-006\knerr.chris\dms71607\bc-21-02.dgn

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

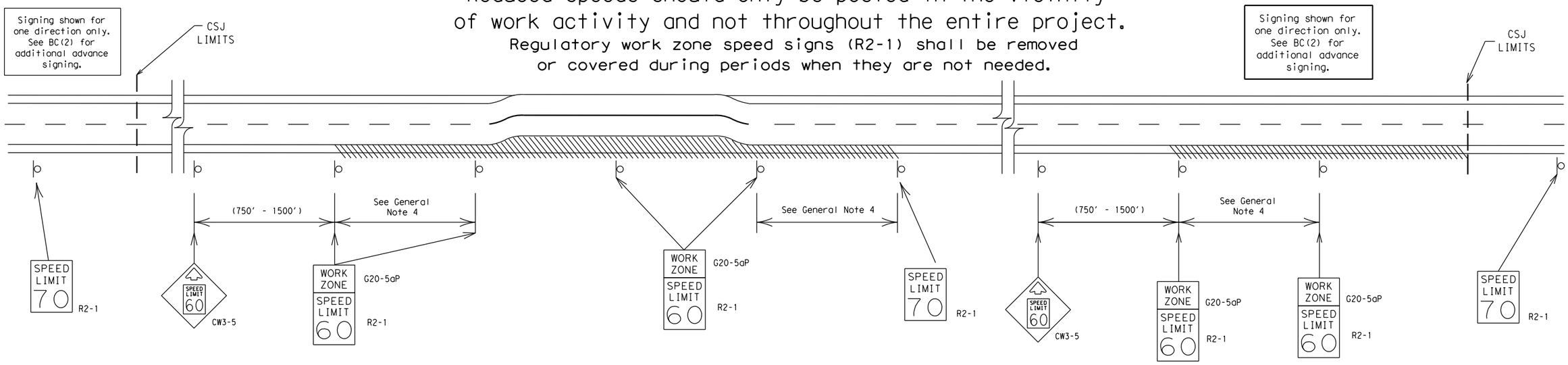
DATE: 5/19/2025 8:56:00 AM
FILE: c:\dms\pwe-useast-006\knerr.chris\dms71607\bc-21-03.dgn

TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

Work zone speed limits shall be regulatory, established in accordance with the "Procedures for Establishing Speed Zones," and approved by the Texas Transportation Commission, or by City Ordinance when within Incorporated City Limits.

Reduced speeds should only be posted in the vicinity of work activity and not throughout the entire project.

Regulatory work zone speed signs (R2-1) shall be removed or covered during periods when they are not needed.



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit should be included on the design of the traffic control plans when restricted geometrics with a lower design speed are present in the work zone and modification of the geometrics to a higher design speed is not feasible.

Long/Intermediate Term Work Zone Speed Limit signs, when approved as described above, should be posted and visible to the motorist when work activity is present. Work activity may also be defined as a change in the roadway that requires a reduced speed for motorists to safely negotiate the work area, including:

a) rough road or damaged pavement surface
b) substantial alteration of roadway geometrics (diversions)
c) construction detours
d) grade
e) width
f) other conditions readily apparent to the driver

As long as any of these conditions exist, the work zone speed limit signs should remain in place.

SHORT TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit may be included on the design of the traffic control plans when workers or equipment are not behind concrete barrier, when work activity is within 10 feet of the traveled way or actually in the traveled way.

Short Term Work Zone Speed Limit signs should be posted and visible to the motorists only when work activity is present. When work activity is not present, signs shall be removed or covered.
(See Removing or Covering on BC(4)).

GENERAL NOTES

1. Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
2. Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
3. Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
4. Frequency of work zone speed limit signs should be:
   40 mph and greater 0.2 to 2 miles
   35 mph and less 0.2 to 1 mile
5. Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
6. Fabrication, erection and maintenance of the"ADVANCE SPEED LIMIT"(CW3-5)sign, "WORK ZONE"(G20-5aP) plaque and the "SPEED LIMIT"(R2-1)signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
7. Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
8. Techniques that may help reduce traffic speeds include but are not limited to:
   A. Law enforcement.
   B. Flagger stationed next to sign.
   C. Portable changeable message sign (PCMS).
   D. Low-power (drone) radar transmitter.
   E. Speed monitor trailers or signs.
9. Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
10. For more specific guidance concerning the type of work, work zone conditions and factors impacting allowable regulatory construction speed zone reduction see TxDOT form #1204 in the TxDOT e-form system.

Texas Department of Transportation

Traffic Safety Division Standard

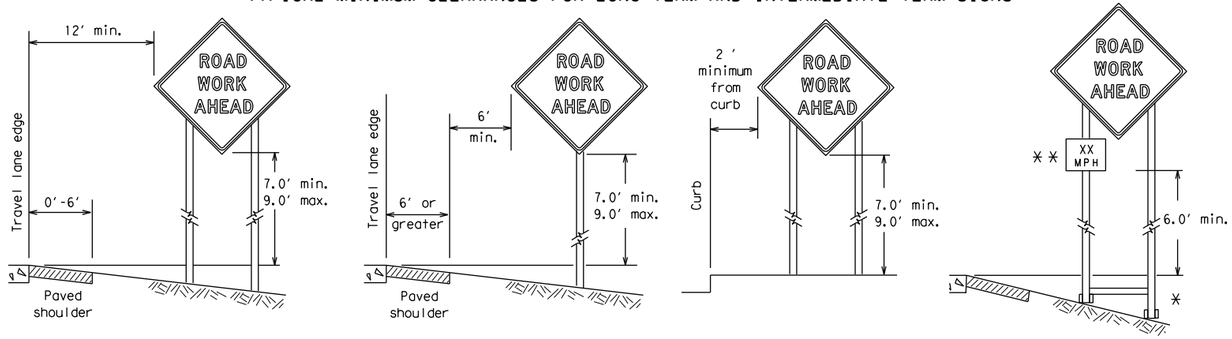
BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 9-07 8-14 7-13 5-21				MILITARY DR
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		114 OF 377

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

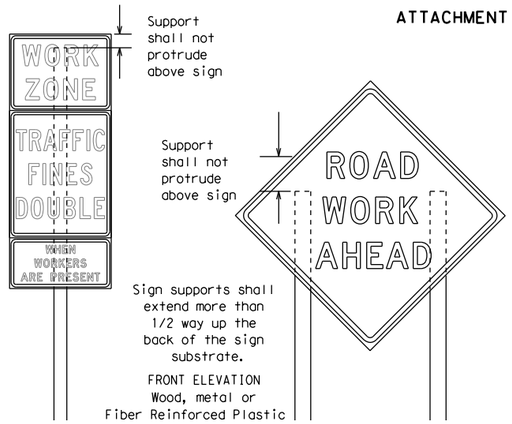
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



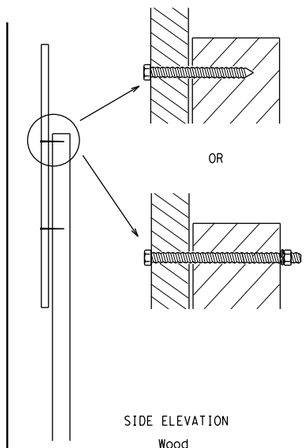
⁎ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

⁎⁎ When plaques are placed on dual-leg supports, they should be attached to the upright nearest the travel lane. Supplemental plaques (advisory or distance) should not cover the surface of the parent sign.

ATTACHMENT FOR SIGN SUPPORTS



FRONT ELEVATION
Wood, metal or
Fiber Reinforced Plastic



SIDE ELEVATION
Wood

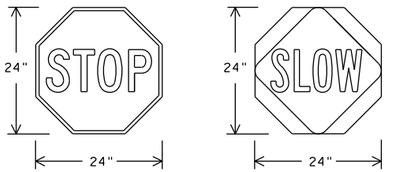
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

Nails shall NOT be allowed. Each sign shall be attached directly to the sign support. Multiple signs shall not be joined or spliced by any means. Wood supports shall not be extended or repaired by splicing or other means.

Splicing embedded perforated square metal tubing in order to extend post height will only be allowed when the splice is made using four bolts, two above and two below the spice point. Splice must be located entirely behind the sign substrate, not near the base of the support. Splice insert lengths should be at least 5 times nominal post size, centered on the splice and of at least the same gauge material.

STOP/SLOW PADDLES

1. STOP/SLOW paddles are the primary method to control traffic by flaggers. The STOP/SLOW paddle size should be 24" x 24".
2. STOP/SLOW paddles shall be retroreflectorized when used at night.
3. STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
4. Any lights incorporated into the STOP or SLOW paddle faces shall only be as specifically described in Section 6E.03 Hand Signaling Devices in the TMUTCD.



Background - Red
Legend & Border - White

Background - Orange
Legend & Border - Black

SHEETING REQUIREMENTS (WHEN USED AT NIGHT)		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	ORANGE	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND & BORDER	WHITE	TYPE B OR C SHEETING
LEGEND & BORDER	BLACK	ACRYLIC NON-REFLECTIVE FILM

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

1. Permanent signs are used to give notice of traffic laws or regulations, call attention to conditions that are potentially hazardous to traffic operations, show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, specific service (LOGO), or cultural information. Drivers proceeding through a work zone need the same, if not better route guidance as normally installed on a roadway without construction.
2. When permanent regulatory or warning signs conflict with work zone conditions, remove or cover the permanent signs until the permanent sign message matches the roadway condition. For details for covering large guide signs see the TS-CD standard.
3. When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
4. If existing signs are to be relocated on their original supports, they shall be installed on crashworthy bases as shown on the SMD Standard sheets. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards. This work should be paid for under the appropriate pay item for relocating existing signs.
5. If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC standard sheets, TLRS standard sheets or the CWZTCD list. The signs shall meet the required mounting heights shown on the BC, or the SMD standard sheets during construction. This work should be paid for under the appropriate pay item for relocating existing signs.
6. Any sign or traffic control device that is struck or damaged by the Contractor or his/her construction equipment shall be replaced as soon as possible by the Contractor to ensure proper guidance for the motorists. This will be subsidiary to Item 502.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. All signs shall be installed in accordance with the plans or as directed by the Engineer. Signs shall be used to regulate, warn, and guide the traveling public safely through the work zone.
5. The Contractor may furnish either the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon changes.
6. The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD) for small roadside signs. Supports for temporary large roadside signs shall meet the requirements detailed on the Temporary Large Roadside Signs (TLRS) standard sheets.The Contractor shall install the sign support in accordance with the manufacturer's recommendations. If there is a question regarding installation procedures, the Contractor shall furnish the Engineer a copy of the manufacturer's installation recommendations so the Engineer can verify the correct procedures are being followed.
7. The Contractor is responsible for installing signs on approved supports and replacing signs with damaged or cracked substrates and/or damaged or marred reflective sheeting as directed by the Engineer/Inspector.
8. Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1 inch.
9. The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.

DURATION OF WORK (as defined by the "Texas Manual on Uniform Traffic Control Devices" Part 6)

1. The types of sign supports, sign mounting height,the size of signs, and the type of sign substrates can vary based on the type of work being performed. The Engineer is responsible for selecting the appropriate size sign for the type of work being performed. The Contractor is responsible for ensuring the sign support, sign mounting height and substrate meets manufacturer's recommendations in regard to crashworthiness and duration of work requirements.
   a. Long-term stationary - work that occupies a location more than 3 days.
   b. Intermediate-term stationary - work that occupies a location more than one daylight period up to 3 days, or nighttime work lasting more than one hour.
   c. Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
   d. Short, duration - work that occupies a location up to 1 hour.
   e. Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

SIGN MOUNTING HEIGHT

1. The bottom of Long-term/Intermediate-term signs shall be at least 7 feet, but not more than 9 feet, above the paved surface, except as shown for supplemental plaques mounted below other signs.
2. The bottom of Short-term/Short Duration signs shall be a minimum of 1 foot above the pavement surface but no more than 2 feet above the ground.
3. Long-term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
4. Short-term/Short Duration signs shall be used only during daylight and shall be removed at the end of the workday or raised to appropriate Long-term/Intermediate sign height.
5. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

SIZE OF SIGNS

1. The Contractor shall furnish the sign sizes shown on BC (2) unless otherwise shown in the plans or as directed by the Engineer.

SIGN SUBSTRATES

1. The Contractor shall ensure the sign substrate is installed in accordance with the manufacturer's recommendations for the type of sign support that is being used. The CWZTCD lists each substrate that can be used on the different types and models of sign supports.
2. "Mesh" type materials are NOT an approved sign substrate, regardless of the tightness of the weave.
3. All wooden individual sign panels fabricated from 2 or more pieces shall have one or more plywood cleat, 1/2" thick by 6" wide, fastened to the back of the sign and extending fully across the sign. The cleat shall be attached to the back of the sign using wood screws that do not penetrate the face of the sign panel. The screws shall be placed on both sides of the splice and spaced at 6" centers. The Engineer may approve other methods of splicing the sign face.

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300 for rigid signs or DMS-8310 for roll-up signs. The web address for DMS specifications is shown on BC(1).
2. White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
3. Orange sheeting, meeting the requirements of DMS-8300 Type B_{FL} or Type C_{FL}, shall be used for rigid signs with orange backgrounds.

SIGN LETTERS

1. All sign letters and numbers shall be clear, and open rounded type uppercase alphabet letters as approved by the Federal Highway Administration (FHWA) and as published in the "Standard Highway Sign Design for Texas" manual. Signs, letters and numbers shall be of first class workmanship in accordance with Department Standards and Specifications.

REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
2. Long-term stationary or intermediate stationary signs installed on square metal tubing may be turned away from traffic 90 degrees when the sign message is not applicable. This technique may not be used for signs installed in the median of divided highways or near any intersections where the sign may be seen from approaching traffic.
3. Signs installed on wooden skids shall not be turned at 90 degree angles to the roadway. These signs should be removed or completely covered when not required.
4. When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night, without damaging the sign sheeting.
5. Burlap shall NOT be used to cover signs.
6. Duct tape or other adhesive material shall NOT be affixed to a sign face.
7. Signs and anchor stubs shall be removed and holes backfilled upon completion of work.

SIGN SUPPORT WEIGHTS

1. Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects shall not be permitted for use as sign support weights.
4. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs.
5. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall NOT be used.
6. Rubber ballasts designed for channelizing devices should not be used for ballast on portable sign supports. Sign supports designed and manufactured with rubber bases may be used when shown on the CWZTCD list.
7. Sandbags shall only be placed along or laid over the base supports of the traffic control device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners. Sandbags shall be placed along the length of the skids to weigh down the sign support.
8. Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.

FLAGS ON SIGNS

1. Flags may be used to draw attention to warning signs. When used, the flag shall be 16 inches square or larger and shall be orange or fluorescent red-orange in color. Flags shall not be allowed to cover any portion of the sign face.

Texas Department of Transportation

Traffic Safety Division Standard

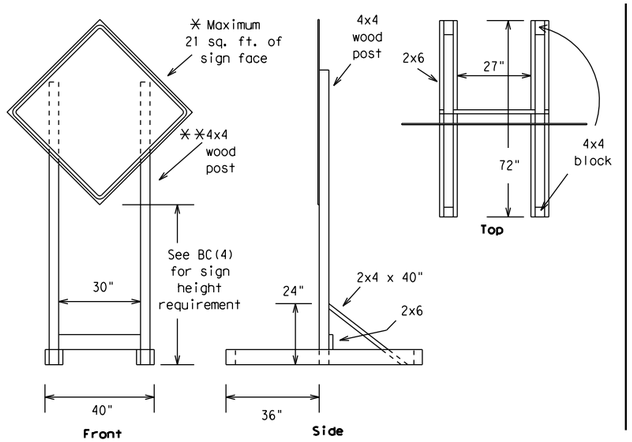
BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

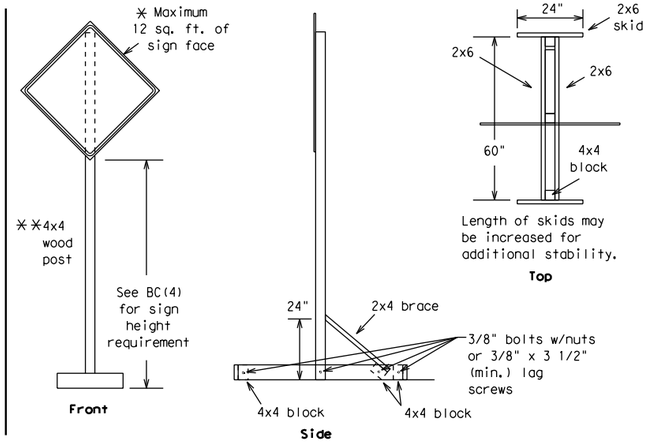
BC(4)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BEXAR		115 OF 377

DATE: 5/19/2025 8:56:09 AM
FILE: c:\bms\pwe-useast-006\knerr.chris\dms71607\bc-21-04.dgn

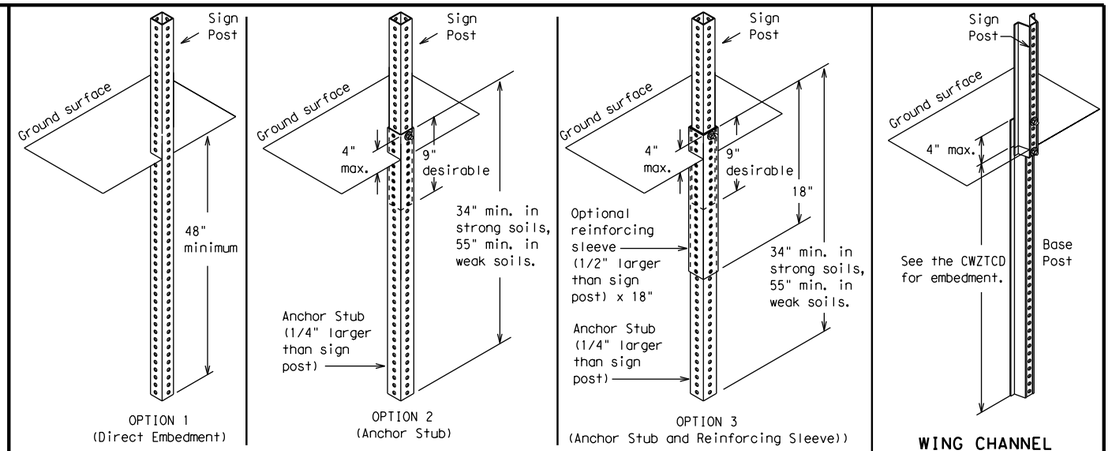
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.





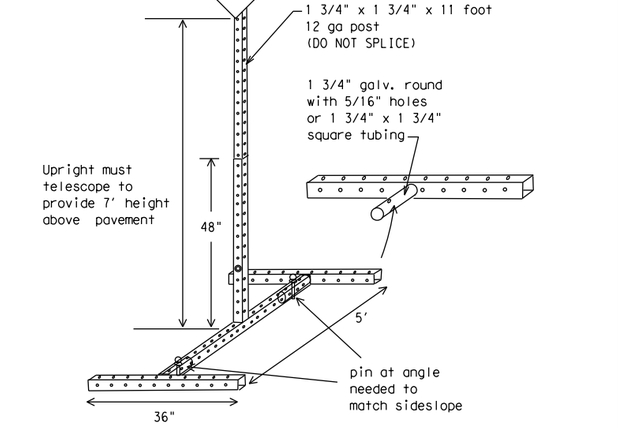
SKID MOUNTED WOOD SIGN SUPPORTS

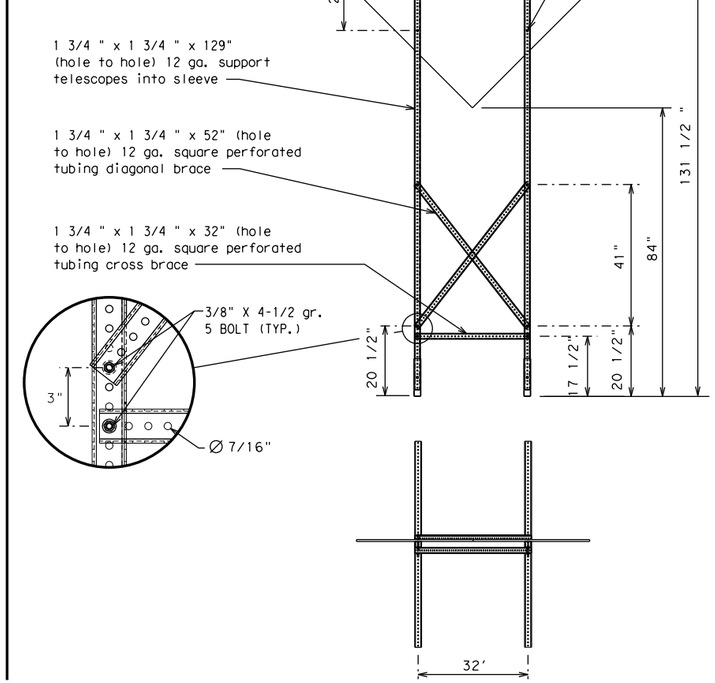
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

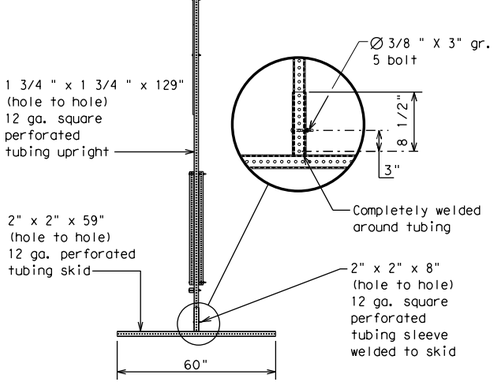


GROUND MOUNTED SIGN SUPPORTS

Refer to the CWZTCD and the manufacturer's installation procedure for each type sign support.
The maximum sign square footage shall adhere to the manufacturer's recommendation.
Two post installations can be used for larger signs.







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

WEDGE ANCHORS

Both steel and plastic Wedge Anchor Systems as shown on the SMD Standard Sheets may be used as temporary sign supports for signs up to 10 square feet of sign face. They may be set in concrete or in sturdy soils if approved by the Engineer. (See web address for "Traffic Engineering Standard Sheets" on BC(1)).

OTHER DESIGNS

MORE DETAILS OF APPROVED LONG/INTERMEDIATE AND SHORT TERM SUPPORTS CAN BE FOUND ON THE CWZTCD LIST. SEE BC(1) FOR WEBSITE LOCATION.

GENERAL NOTES

1. Nails may be used in the assembly of wooden sign supports, but 3/8" bolts with nuts or 3/8" x 3 1/2" lag screws must be used on every joint for final connection.
2. No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
3. When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.

* See BC(4) for definition of "Work Duration."

** Wood sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be painted white.

□ See the CWZTCD for the type of sign substrate that can be used for each approved sign support.

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BEXAR		116 OF 377

DATE: 5/19/2025 8:56:18 AM
FILE: c:\bms\pwe-useast-006\knerr.chris\dms71607\bc-21-05.dgn

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

WHEN NOT IN USE, REMOVE THE PCMS FROM THE RIGHT-OF-WAY OR PLACE THE PCMS BEHIND BARRIER OR GUARDRAIL WITH SIGN PANEL TURNED PARALLEL TO TRAFFIC

PORTABLE CHANGEABLE MESSAGE SIGNS

1. The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
2. Messages on PCMS should contain no more than 8 words (about four to eight characters per word), not including simple words such as "TO," "FOR," "AT," etc.
3. Messages should consist of a single phase, or two phases that alternate. Three-phase messages are not allowed. Each phase of the message should convey a single thought, and must be understood by itself.
4. Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED." Do not use the term "RAMP."
5. Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
6. When in use, the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
7. The message term "WEEKEND" should be used only if the work is to start on Saturday morning and end by Sunday evening at midnight. Actual days and hours of work should be displayed on the PCMS if work is to begin on Friday evening and/or continue into Monday morning.
8. The Engineer/Inspector may select one of two options which are available for displaying a two-phase message on a PCMS. Each phase may be displayed for either four seconds each or for three seconds each.
9. Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
10. Do not present redundant information on a two-phase message; i.e., keeping two lines of the message the same and changing the third line.
11. Do not use the word "Danger" in message.
12. Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
13. Do not display messages that scroll horizontally or vertically across the face of the sign.
14. The following table lists abbreviated words and two-word phrases that are acceptable for use on a PCMS. Both words in a phrase must be displayed together. Words or phrases not on this list should not be abbreviated, unless shown in the TMUTCD.
15. PCMS character height should be at least 18 inches for trailer mounted units. They should be visible from at least 1/2 (.5) mile and the text should be legible from at least 600 feet at night and 800 feet in daylight. Truck mounted units must have a character height of 10 inches and must be legible from at least 400 feet.
16. Each line of text should be centered on the message board rather than left or right justified.
17. If disabled, the PCMS should default to an illegible display that will not alarm motorists and will only be used to alert workers that the PCMS has malfunctioned. A pattern such as a series of horizontal solid bars is appropriate.

WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD
Alternate	ALT
Avenue	AVE
Best Route	BEST RTE
Boulevard	BLVD
Bridge	BRDG
Cannot	CANT
Center	CTR
Construction Ahead	CONST AHD
CROSSING	XING
Detour Route	DETOUR RTE
Do Not	DONT
East	E
Eastbound	(route) E
Emergency	EMER
Emergency Vehicle	EMER VEH
Entrance, Enter	ENT
Express Lane	EXP LN
Expressway	EXPWY
XXXX Feet	XXXX FT
Fog Ahead	FOG AHD
Freeway	FRWY, FWY
Freeway Blocked	FWY BLKD
Friday	FRI
Hazardous Driving	HAZ DRIVING
Hazardous Material	HAZMAT
High-Occupancy	HOV
Vehicle Highway	HWY
Hour(s)	HR, HRS
Information	INFO
It Is	ITS
Junction	JCT
Left	LFT
Left Lane	LFT LN
Lane Closed	LN CLOSED
Lower Level	LWR LEVEL
Maintenance	MAINT

WORD OR PHRASE	ABBREVIATION
Major	MAJ
Miles	MI
Miles Per Hour	MPH
Minor	MNR
Monday	MON
Normal	NORM
North	N
Northbound	(route) N
Parking	PKING
Road	RD
Right Lane	RT LN
Saturday	SAT
Service Road	SERV RD
Shoulder	SHLDR
Slippery	SLIP
South	S
Southbound	(route) S
Speed	SPD
Street	ST
Sunday	SUN
Telephone	PHONE
Temporary	TEMP
Thursday	THURS
To Downtown	TO DWNTN
Traffic	TRAF
Travelers	TRVLRS
Tuesday	TUES
Time Minutes	TIME MIN
Upper Level	UPR LEVEL
Vehicles (s)	VEH, VEHS
Warning	WARN
Wednesday	WED
Weight Limit	WT LIMIT
West	W
Westbound	(route) W
Wet Pavement	WET PVMT
Will Not	WONT

Roadway designation # IH-number, US-number, SH-number, FM-number

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

(The Engineer may approve other messages not specifically covered here.)

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

- FREEWAY CLOSED X MILE
- FRONTAGE ROAD CLOSED
- ROAD CLOSED AT SH XXX
- SHOULDER CLOSED XXX FT
- ROAD CLSD AT FM XXXX
- RIGHT LN CLOSED XXX FT
- RIGHT X LANES CLOSED
- RIGHT X LANES OPEN
- CENTER LANE CLOSED
- DAYTIME LANE CLOSURES
- NIGHT LANE CLOSURES
- I-XX SOUTH EXIT CLOSED
- VARIOUS LANES CLOSED
- EXIT XXX CLOSED X MILE
- EXIT CLOSED
- RIGHT LN TO BE CLOSED
- MALL DRIVEWAY CLOSED
- X LANES CLOSED TUE - FRI
- XXXXXXXX BLVD CLOSED

Other Condition List

- ROADWORK XXX FT
- ROAD REPAIRS XXXX FT
- FLAGGER XXXX FT
- LANE NARROWS XXXX FT
- RIGHT LN NARROWS XXXX FT
- TWO-WAY TRAFFIC XX MILE
- MERGING TRAFFIC XXXX FT
- CONST TRAFFIC XXX FT
- LOOSE GRAVEL XXXX FT
- UNEVEN LANES XXXX FT
- DETOUR X MILE
- ROUGH ROAD XXXX FT
- ROADWORK PAST SH XXXX
- ROADWORK NEXT FRI-SUN
- BUMP XXXX FT
- US XXX EXIT X MILES
- TRAFFIC SIGNAL XXXX FT
- LANES SHIFT *

* LANES SHIFT in Phase 1 must be used with STAY IN LANE in Phase 2.

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

- MERGE RIGHT
- FORM X LINES RIGHT
- DETOUR NEXT X EXITS
- USE XXXXX RD EXIT
- USE EXIT XXX
- USE EXIT I-XX NORTH
- STAY ON US XXX SOUTH
- USE I-XX E TO I-XX N
- TRUCKS USE US XXX N
- WATCH FOR TRUCKS
- WATCH FOR TRUCKS
- EXPECT DELAYS
- EXPECT DELAYS
- PREPARE TO STOP
- REDUCE SPEED XXX FT
- END SHOULDER USE
- USE OTHER ROUTES
- WATCH FOR WORKERS
- STAY IN LANE *

Location List

- AT FM XXXX
- BEFORE RAILROAD CROSSING
- NEXT X MILES
- PAST US XXX EXIT
- XXXXXXX TO XXXXXXX
- US XXX TO FM XXXX

Warning List

- SPEED LIMIT XX MPH
- MAXIMUM SPEED XX MPH
- MINIMUM SPEED XX MPH
- ADVISORY SPEED XX MPH
- RIGHT LANE EXIT
- USE CAUTION
- DRIVE SAFELY
- DRIVE WITH CARE

** Advance Notice List

- TUE-FRI XX AM- X PM
- APR XX-XX X PM-X AM
- BEGINS MONDAY
- BEGINS MAY XX
- MAY X-X XX PM - XX AM
- NEXT FRI-SUN
- XX AM TO XX PM
- NEXT TUE AUG XX
- TONIGHT XX PM- XX AM

* LANES SHIFT in Phase 1 must be used with STAY IN LANE in Phase 2.

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

1. Only 1 or 2 phases are to be used on a PCMS.
2. The 1st phase (or both) should be selected from the "Road/Lane/Ramp Closure List" and the "Other Condition List".
3. A 2nd phase can be selected from the "Action to Take/Effect on Travel, Location, General Warning, or Advance Notice Phase Lists".
4. A Location Phase is necessary only if a distance or location is not included in the first phase selected.
5. If two PCMS are used in sequence, they must be separated by a minimum of 1000 ft. Each PCMS shall be limited to two phases, and should be understandable by themselves.
6. For advance notice, when the current date is within seven days of the actual work date, calendar days should be replaced with days of the week. Advance notification should typically be for no more than one week prior to the work.

WORDING ALTERNATIVES

1. The words RIGHT, LEFT and ALL can be interchanged as appropriate.
2. Roadway designations IH, US, SH, FM and LP can be interchanged as appropriate.
3. EAST, WEST, NORTH and SOUTH (or abbreviations E, W, N and S) can be interchanged as appropriate.
4. Highway names and numbers replaced as appropriate.
5. ROAD, HIGHWAY and FREEWAY can be interchanged as needed.
6. AHEAD may be used instead of distances if necessary.
7. FT and MI, MILE and MILES interchanged as appropriate.
8. AT, BEFORE and PAST interchanged as needed.
9. Distances or AHEAD can be eliminated from the message if a location phase is used.

PCMS SIGNS WITHIN THE R.O.W. SHALL BE BEHIND GUARDRAIL OR CONCRETE BARRIER OR SHALL HAVE A MINIMUM OF FOUR (4) PLASTIC DRUMS PLACED PERPENDICULAR TO TRAFFIC ON THE UPSTREAM SIDE OF THE PCMS, WHEN EXPOSED TO ONE DIRECTION OF TRAFFIC. WHEN EXPOSED TO TWO WAY TRAFFIC, THE FOUR DRUMS SHOULD BE PLACED WITH ONE DRUM AT EACH OF THE FOUR CORNERS OF THE UNIT.

FULL MATRIX PCMS SIGNS

1. When Full Matrix PCMS signs are used, the character height and legibility/visibility requirements shall be maintained as listed in Note 15 under "PORTABLE CHANGEABLE MESSAGE SIGNS" above.
2. When symbol signs, such as the "Flagger Symbol"(CW20-7) are represented graphically on the Full Matrix PCMS sign and, with the approval of the Engineer, it shall maintain the legibility/visibility requirement listed above.
3. When symbol signs are represented graphically on the Full Matrix PCMS, they shall only supplement the use of the static sign represented, and shall not substitute for, or replace that sign.
4. A full matrix PCMS may be used to simulate a flashing arrow board provided it meets the visibility, flash rate and dimming requirements on BC(7), for the same size arrow.

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

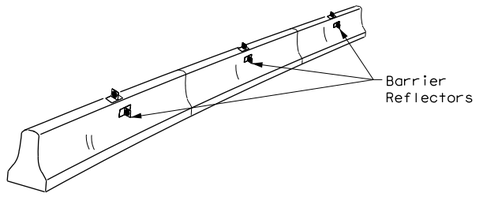
BC(6)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BEXAR		117 OF 377

DATE: 5/19/2025 8:56:28 AM
FILE: c:\bms\pwe-useast-006\knerr.chris\dms71607\bc-21-06.dgn

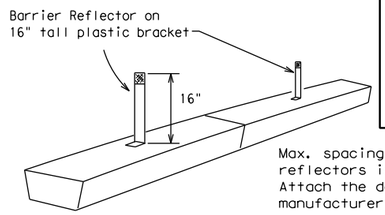
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.



CONCRETE TRAFFIC BARRIER (CTB)

3. Where traffic is on one side of the CTB, two (2) Barrier Reflectors shall be mounted in approximately the midsection of each section of CTB. An alternate mounting location is uniformly spaced at one end of each CTB. This will allow for attachment of a barrier grapple without damaging the reflector. The Barrier Reflector mounted on the side of the CTB shall be located directly below the reflector mounted on top of the barrier, as shown in the detail above.
4. Where CTB separates two-way traffic, three barrier reflectors shall be mounted on each section of CTB. The reflector unit on top shall have two yellow reflective faces (Bi-Directional)while the reflectors on each side of the barrier shall have one yellow reflective face, as shown in the detail above.
5. When CTB separates traffic traveling in the same direction, no barrier reflectors will be required on top of the CTB.
6. Barrier Reflector units shall be yellow or white in color to match the edgeline being supplemented.
7. Maximum spacing of Barrier Reflectors is forty (40) feet.
8. Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
9. Attachment of Barrier Reflectors to CTB shall be per manufacturer's recommendations.
10. Missing or damaged Barrier Reflectors shall be replaced as directed by the Engineer.
11. Single slope barriers shall be delineated as shown on the above detail.

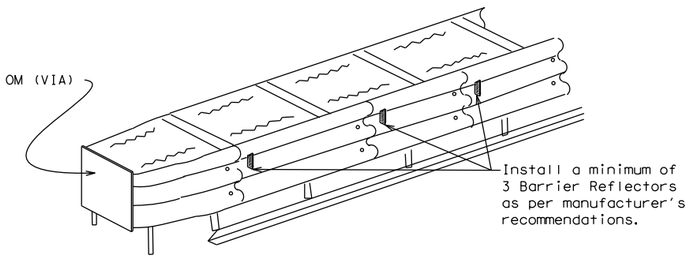


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB)

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

LPCB is approved for use in work zone locations, where the posted speed is 45mph, or less. See Roadway Standard Sheet LPCB.

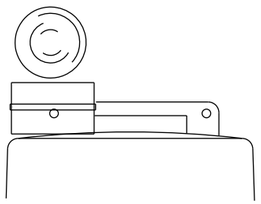


DELINEATION OF END TREATMENTS

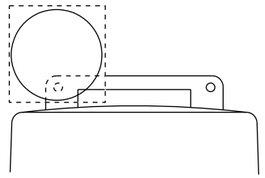
END TREATMENTS FOR CTB'S USED IN WORK ZONES

End treatments used on CTB's in work zones shall meet the apppropriate crashworthy standards as defined in the Manual for Assessing Safety Hardware (MASH). Refer to the CWZTCD List for approved end treatments and manufacturers.

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.



Warning reflector may be round or square.Must have a yellow reflective surface area of at least 30 square inches

WARNING LIGHTS

1. Warning lights shall meet the requirements of the TMUTCD.
2. Warning lights shall NOT be installed on barricades.
3. Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "FL". The Type A Warning Lights shall not be used with signs manufactured with Type B_{FL} or C_{FL} Sheeting meeting the requirements of Departmental Material Specification DMS-8300.
4. Type-C and Type D 360 degree Steady Burn Lights are intended to be used in a series for delineation to supplement other traffic control devices. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "SB".
5. The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
6. When required by the Engineer, the Contractor shall furnish a copy of the warning lights certification. The warning light manufacturer will certify the warning lights meet the requirements of the latest ITE Purchase Specifications for Flashing and Steady-Burn Warning Lights.
7. When used to delineate curves, Type-C and Type D Steady Burn Lights should only be placed on the outside of the curve, not the inside.
8. The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

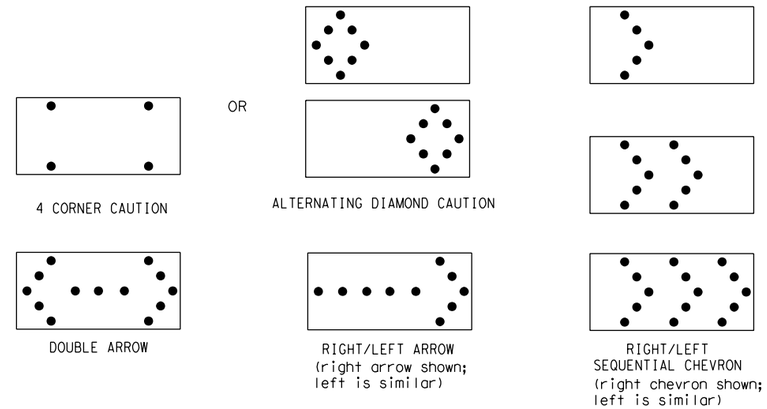
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing devices to form a merging taper may be used for delineation. If used, the successive flashing of the sequential warning lights should occur from the beginning of the taper to the end of the merging taper in order to identify the desired vehicle path. The rate of flashing for each light shall be 65 flashes per minute, plus or minus 10 flashes.
4. Type C and D steady-burn warning lights are intended to be used in a series to delineate the edge of the travel lane on detours, on lane changes, on lane closures, and on other similar conditions.
5. Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
6. Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
7. The maximum spacing for warning lights on drums should be identical to the channelizing device spacing.

WARNING REFLECTORS MOUNTED ON PLASTIC DRUMS AS A SUBSTITUTE FOR TYPE C (STEADY BURN) WARNING LIGHTS

1. A warning reflector or approved substitute may be mounted on a plastic drum as a substitute for a Type C, steady burn warning light at the discretion of the Contractor unless otherwise noted in the plans.
2. The warning reflector shall be yellow in color and shall be manufactured using a sign substrate approved for use with plastic drums listed on the CWZTCD.
3. The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
4. Round reflectors shall be fully reflectorized, including the area where attached to the drum.
5. Square substrates must have a minimum of 30 square inches of reflectorized sheeting. They do not have to be reflectorized where it attaches to the drum.
6. The side of the warning reflector facing approaching traffic shall have sheeting meeting the color and retroreflectivity requirements for DMS 8300-Type B or Type C.
7. When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
8. The warning reflector should be mounted on the side of the handle nearest approaching traffic.
9. The maximum spacing for warning reflectors should be identical to the channelizing device spacing requirements.

Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

1. The Flashing Arrow Board should be used for all lane closures on multi-lane roadways, or slow moving maintenance or construction activities on the travel lanes.
2. Flashing Arrow Boards should not be used on two-lane, two-way roadways, detours, diversions or work on shoulders unless the "CAUTION" display (see detail below) is used.
3. The Engineer/Inspector shall choose all appropriate signs, barricades and/or other traffic control devices that should be used in conjunction with the Flashing Arrow Board.
4. The Flashing Arrow Board should be able to display the following symbols:



4 CORNER CAUTION

ALTERNATING DIAMOND CAUTION

DOUBLE ARROW

RIGHT/LEFT ARROW (right arrow shown; left is similar)

RIGHT/LEFT SEQUENTIAL CHEVRON (right chevron shown; left is similar)

5. The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
6. The straight line caution display is NOT ALLOWED.
7. The Flashing Arrow Board shall be capable of minimum 50 percent dimming from rated lamp voltage. The flashing rate of the lamps shall not be less than 25 nor more than 40 flashes per minute.
8. Minimum lamp "on time" shall be approximately 50 percent for the flashing arrow and equal intervals of 25 percent for each sequential phase of the flashing chevron.
9. The sequential arrow display is NOT ALLOWED.
10. The flashing arrow display is the TxDOT standard; however, the sequential chevron display may be used during daylight operations.
11. The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
12. A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
13. A full matrix PCMS may be used to simulate a Flashing Arrow Board provided it meets visibility, flash rate and dimming requirements on this sheet for the same size arrow.
14. Minimum mounting height of trailer mounted Arrow Boards should be 7 feet from roadway to bottom of panel.

REQUIREMENTS			
TYPE	MINIMUM SIZE	MINIMUM NUMBER OF PANEL LAMPS	MINIMUM VISIBILITY DISTANCE
B	30 x 60	13	3/4 mile
C	48 x 96	15	1 mile

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

WHEN NOT IN USE, REMOVE THE ARROW BOARD FROM THE RIGHT-OF-WAY OR PLACE THE ARROW BOARD BEHIND CONCRETE TRAFFIC BARRIER OR GUARDRAIL.

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the Manual for Assessing Safety Hardware (MASH).
2. Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
3. Refer to the CWZTCD for a list of approved TMAs.
4. TMAs are required on freeways unless otherwise noted in the plans.
5. A TMA should be used anytime that it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
6. The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is an extended distance from the TMA.

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION ARROW PANEL, REFLECTORS, WARNING LIGHTS & ATTENUATOR

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BEXAR		118 OF 377

101

DATE: 5/19/2025 8:56:38 AM
FILE: c:\dms\pwe-useast-006\knerr.chris\dms71607\bc-21-07.dgn

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

GENERAL NOTES

1. For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
2. For intermediate term stationary work zones on freeways, drums should be used as the primary channelizing device but may be replaced in tangent sections by vertical panels, or 42" two-piece cones. In tangent sections, one-piece cones may be used with the approval of the Engineer but only if personnel are present on the project at all times to maintain the cones in proper position and location.
3. For short term stationary work zones on freeways, drums are the preferred channelizing device but may be replaced in tapers, transitions and tangent sections by vertical panels, two-piece cones or one-piece cones as approved by the Engineer.
4. Drums and all related items shall comply with the requirements of the current version of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
5. Drums, bases, and related materials shall exhibit good workmanship and shall be free from objectionable marks or defects that would adversely affect their appearance or serviceability.
6. The Contractor shall have a maximum of 24 hours to replace any plastic drums identified for replacement by the Engineer/Inspector. The replacement device must be an approved device.

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

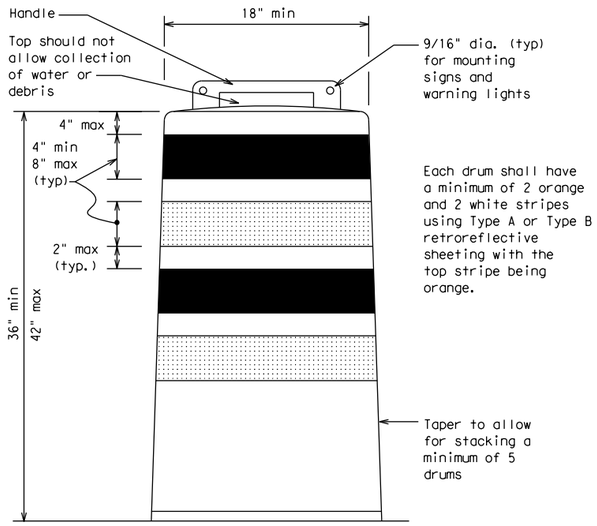
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
3. Plastic drums shall be constructed of lightweight flexible, and deformable materials. The Contractor shall NOT use metal drums or single piece plastic drums as channelization devices or sign supports.
4. Drums shall present a profile that is a minimum of 18 inches in width at the 36 inch height when viewed from any direction. The height of drum unit (body installed on base) shall be a minimum of 36 inches and a maximum of 42 inches.
5. The top of the drum shall have a built-in handle for easy pickup and shall be designed to drain water and not collect debris. The handle shall have a minimum of two widely spaced 9/16 inch diameter holes to allow attachment of a warning light, warning reflector unit or approved compliant sign.
6. The exterior of the drum body shall have a minimum of four alternating orange and white retroreflective circumferential stripes not less than 4 inches nor greater than 8 inches in width. Any non-reflectorized space between any two adjacent stripes shall not exceed 2 inches in width.
7. Bases shall have a maximum width of 36 inches, a maximum height of 4 inches, and a minimum of two footholds of sufficient size to allow base to be held down while separating the drum body from the base.
8. Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
9. Drum body shall have a maximum unballasted weight of 11 lbs.
10. Drum and base shall be marked with manufacturer's name and model number.

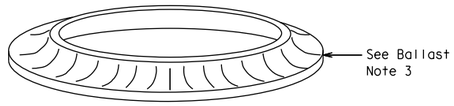
RETROREFLECTIVE SHEETING

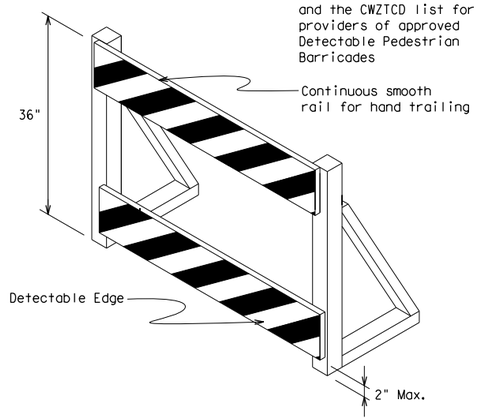
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials," Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall be suitable for use on and shall adhere to the drum surface such that, upon vehicular impact, the sheeting shall remain adhered in-place and exhibit no delaminating, cracking, or loss of retroreflectivity other than that loss due to abrasion of the sheeting surface.

BALLAST

1. Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other ballasting devices as approved by the Engineer. Stacking of sandbags will be allowed, however height of sandbags above pavement surface may not exceed 12 inches.
2. Bases with built-in ballast shall weigh between 40 lbs. and 50 lbs. Built-in ballast can be constructed of an integral crumb rubber base or a solid rubber base.
3. Recycled truck tire sidewalls may be used for ballast on drums approved for this type of ballast on the CWZTCD list.
4. The ballast shall not be heavy objects, water, or any material that would become hazardous to motorists, pedestrians, or workers when the drum is struck by a vehicle.
5. When used in regions susceptible to freezing, drums shall have drainage holes in the bottoms so that water will not collect and freeze becoming a hazard when struck by a vehicle.
6. Ballast shall not be placed on top of drums.
7. Adhesives may be used to secure base of drums to pavement.

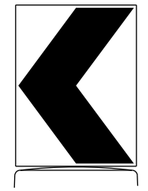




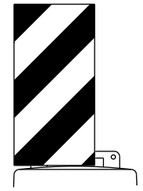


DETECTABLE PEDESTRIAN BARRICADES

1. When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility. Refer to WZ(BTS-2) for Pedestrian Control requirements for Sidewalk Diversions, Sidewalk Detours and Crosswalk Closures.
2. Where pedestrians with visual disabilities normally use the closed sidewalk, a Detectable Pedestrian Barricade shall be placed across the full width of the closed sidewalk instead of a Type 3 Barricade.
3. Detectable pedestrian barricades similar to the one pictured above, longitudinal channelizing devices, some concrete barriers, and wood or chain link fencing with a continuous detectable edging can satisfactorily delineate a pedestrian path.
4. Tape, rope, or plastic chain strung between devices are not detectable, do not comply with the design standards in the "Americans with Disabilities Act Accessibility Guidelines (ADAAG)" and should not be used as a control for pedestrian movements.
5. Warning lights shall not be attached to detectable pedestrian barricades.
6. Detectable pedestrian barricades should use 8" nominal barricade rails as shown on BC(10) provided that the top rail provides a smooth continuous rail suitable for hand trailing with no splinters, burrs, or sharp edges.



18" x 24" Sign
(Maximum Sign Dimension)
Chevron CW1-8, Opposing Traffic Lane Divider, Driveway sign D70a, Keep Right R4 series or other signs as approved by Engineer



12" x 24"
Vertical Panel
mount with diagonals sloping down towards travel way

Plywood, Aluminum or Metal sign substrates shall NOT be used on plastic drums

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

1. Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
2. Chevrons and other work zone signs with an orange background shall be manufactured with Type B_{FL} or Type C_{FL} Orange sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material," unless otherwise specified in the plans.
3. Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type A or Type B. Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
4. Other sign messages (text or symbolic) may be used as approved by the Engineer. Sign dimensions shall not exceed 18 inches in width or 24 inches in height, except for the R9 series signs discussed in note 8 below.
5. Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
6. Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
7. Chevrons may be placed on drums on the outside of curves, on merging tapers or on shifting tapers. When used in these locations, they may be placed on every drum or spaced not more than on every third drum. A minimum of three (3) should be used at each location called for in the plans.
8. R9-9, R9-10, R9-11 and R9-11a Sidewalk Closed signs which are 24 inches wide may be mounted on plastic drums, with approval of the Engineer.

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

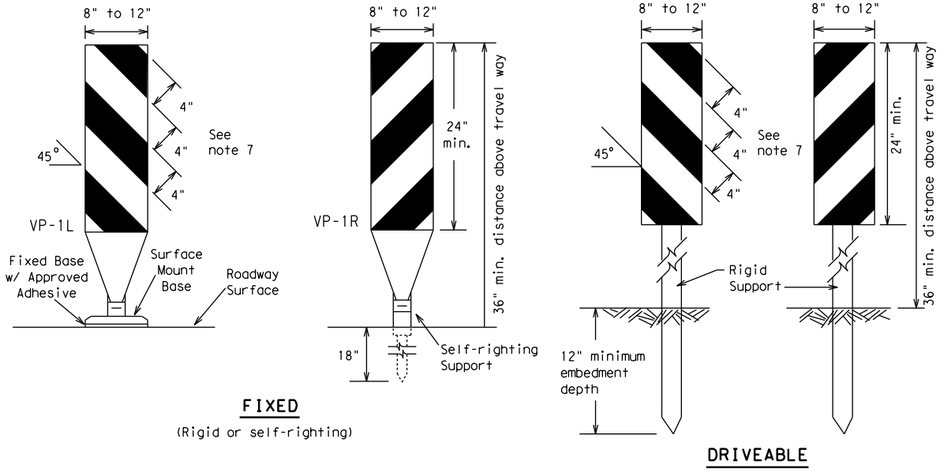
BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	SAT	BEXAR		119 OF 377
7-13				

102

DATE: 5/19/2025 8:56:47 AM
FILE: c:\dms\pwe-useast-006\knerr.chris\dms71607\bc-21-08.dgn

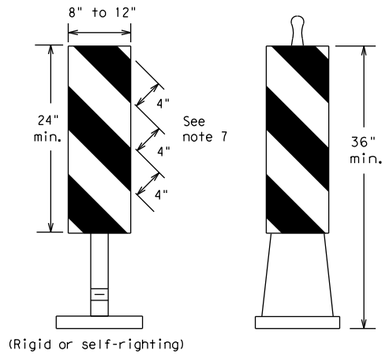
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



FIXED

(Rigid or self-righting)

DRIVEABLE

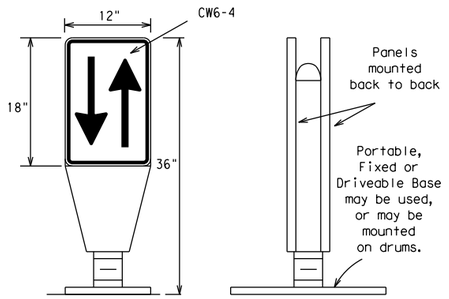


(Rigid or self-righting)

PORTABLE

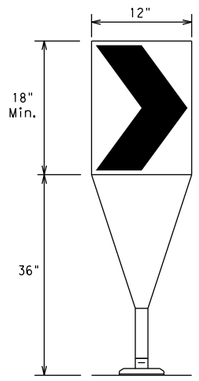
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual for additional requirements on the use VP's for drop-offs.
3. VP's should be mounted back to back if used at the edge of cuts adjacent to two-way two lane roadways. Stripes are to be reflective orange and reflective white and should always slope downward toward the travel lane.
4. VP's used on expressways and freeways or other high speed roadways, may have more than 270 square inches of retroreflective area facing traffic.
5. Self-righting supports are available with portable base. See "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
6. Sheeting for the VP's shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
7. Where the height of reflective material on the vertical panel is 36 inches or greater, a panel stripe of 6 inches shall be used.

VERTICAL PANELS (VPs)



1. Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base is secured to the pavement with an adhesive or rubber weight to minimize movement caused by a vehicle impact or wind gust.
2. The OTLD may be used in combination with 42" cones or VPs.
3. Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
4. The OTLD shall be orange with a black non-reflective legend. Sheeting for the OTLD shall be retroreflective Type B_{FL} or Type C_{FL} conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



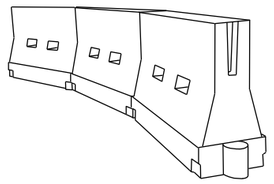
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

1. The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
2. Chevrons are intended to give notice of a sharp change of alignment with the direction of travel and provide additional emphasis and guidance for vehicle operators with regard to changes in horizontal alignment of the roadway.
3. Chevrons, when used, shall be erected on the outside of a sharp curve or turn, or on the far side of an intersection. They shall be in line with and at right angles to approaching traffic. Spacing should be such that the motorist always has three in view, until the change in alignment eliminates its need.
4. To be effective, the chevron should be visible for at least 500 feet.
5. Chevrons shall be orange with a black nonreflective legend. Sheeting for the chevron shall be retroreflective Type B_{FL} or Type C_{FL} conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.
6. For Long Term Stationary use on tapers or transitions on freeways and divided highways, self-righting chevrons may be used to supplement plastic drums but not to replace plastic drums.

CHEVRONS

GENERAL NOTES

1. Work Zone channelizing devices illustrated on this sheet may be installed in close proximity to traffic and are suitable for use on high or low speed roadways. The Engineer/Inspector shall ensure that spacing and placement is uniform and in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. Channelizing devices shown on this sheet may have a driveable, fixed or portable base. The requirement for self-righting channelizing devices must be specified in the General Notes or other plan sheets.
3. Channelizing devices on self-righting supports should be used in work zone areas where channelizing devices are frequently impacted by errant vehicles or vehicle related wind gusts making alignment of the channelizing devices difficult to maintain. Locations of these devices shall be detailed elsewhere in the plans. These devices shall conform to the TMUTCD and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
4. The Contractor shall maintain devices in a clean condition and replace damaged, nonreflective, faded, or broken devices and bases as required by the Engineer/Inspector. The Contractor shall be required to maintain proper device spacing and alignment.
5. Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
6. Pavement surfaces shall be prepared in a manner that ensures proper bonding between the adhesives, the fixed mount bases and the pavement surface. Adhesives shall be prepared and applied according to the manufacturer's recommendations.
7. The installation and removal of channelizing devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface integrity. Driveable bases shall not be permitted on final pavement surfaces. The Engineer/Inspector shall approve all application and removal procedures of fixed bases.



LONGITUDINAL CHANNELIZING DEVICES (LCD)

1. LCDs are crashworthy, lightweight, deformable devices that are highly visible, have good target value and can be connected together. They are not designed to contain or redirect a vehicle on impact.
2. LCDs may be used instead of a line of cones or drums.
3. LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
5. LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
6. LCDs used as barricades placed perpendicular to traffic should have at least one row of reflective sheeting meeting the requirements for barricade rails as shown on BC(10). Place reflective sheeting near the top of the LCD along the full length of the device.

WATER BALLASTED SYSTEMS USED AS BARRIERS

1. Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate Manual for Assessing Safety Hardware (MASH) crashworthiness requirements based on roadway speed and barrier application.
2. Water ballasted systems used to channelize vehicular traffic shall be supplemented with retroreflective delineation or channelizing devices to improve daytime/nighttime visibility. They may also be supplemented with pavement markings.
3. Water ballasted systems used as barriers shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. Water ballasted systems used as barriers should not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.
5. When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or flared to a point outside the clear zone.

If used to channelize pedestrians, longitudinal channelizing devices or water ballasted systems must have a continuous detectable bottom for users of long canes and the top of the unit shall not be less than 32 inches in height.

HOLLOW OR WATER BALLASTED SYSTEMS USED AS LONGITUDINAL CHANNELIZING DEVICES OR BARRIERS

Posted Speed	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'
35		205'	225'	245'	35'	70'
40		265'	295'	320'	40'	80'
45	L = WS	450'	495'	540'	45'	90'
50		500'	550'	600'	50'	100'
55		550'	605'	660'	55'	110'
60		600'	660'	720'	60'	120'
65		650'	715'	780'	65'	130'
70		700'	770'	840'	70'	140'
75		750'	825'	900'	75'	150'
80		800'	880'	960'	80'	160'

** Taper lengths have been rounded off.
L=Length of Taper (FT.) W=Width of Offset (FT.)
S=Posted Speed (MPH)

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BEXAR		120 OF 377

103

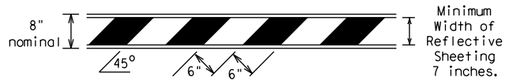
DATE: 5/19/2025 8:56:56 AM
FILE: c:\bms\pwe-useast-006\knerr.chris\dms71607\bc-21-09.dgn

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

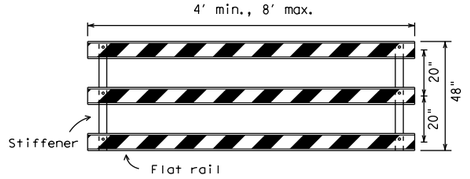
TYPE 3 BARRICADES

1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type 3 Barricades and a list of all materials used in the construction of Type 3 Barricades.
2. Type 3 Barricades shall be used at each end of construction projects closed to all traffic.
3. Barricades extending across a roadway should have stripes that slope downward in the direction toward which traffic must turn in detouring. When both right and left turns are provided, the chevron striping may slope downward in both directions from the center of the barricade. Where no turns are provided at a closed road, striping should slope downward in both directions toward the center of roadway.
4. Striping of rails, for the right side of the roadway, should slope downward to the left. For the left side of the roadway, striping should slope downward to the right.
5. Identification markings may be shown only on the back of the barricade rails. The maximum height of letters and/or company logos used for identification shall be 1".
6. Barricades shall not be placed parallel to traffic unless an adequate clear zone is provided.
7. Warning lights shall NOT be installed on barricades.
8. Where barricades require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight. Sand bags shall not be stacked in a manner that covers any portion of a barricade rails reflective sheeting. Rock, concrete, iron, steel or other solid objects will NOT be permitted. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners.
9. Sheeting for barricades shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.



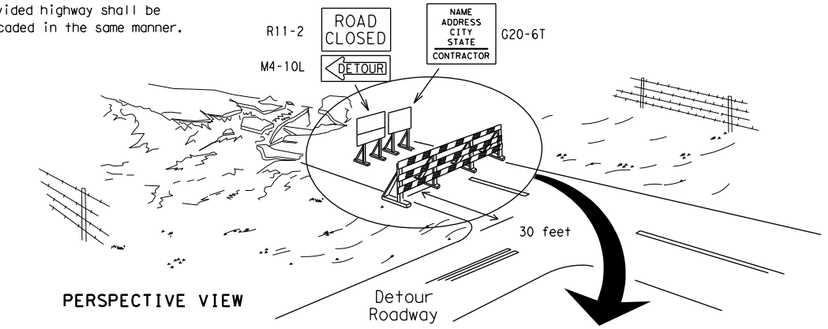
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



Stiffener may be inside or outside of support, but no more than 2 stiffeners shall be allowed on one barricade.

TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

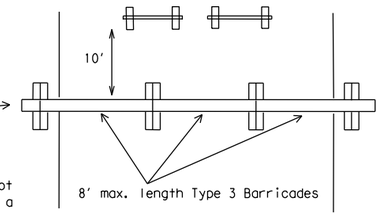
Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.

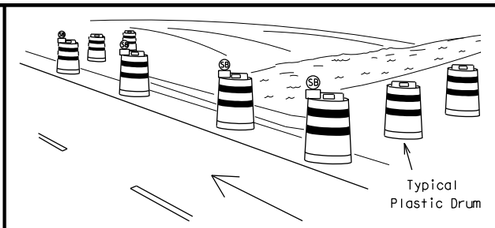
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

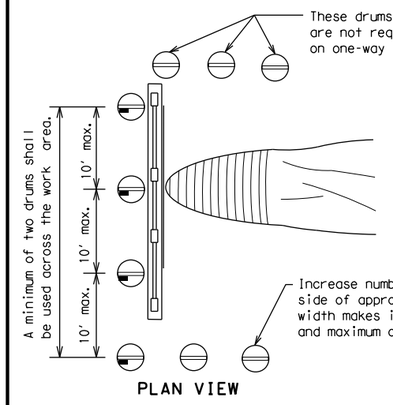
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

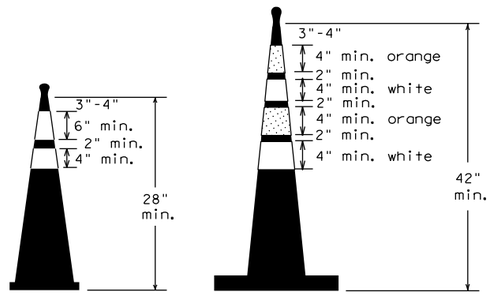
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder width is greater than 12 feet, steady-burn lights may be omitted if drums are used.
5. Drums must extend the length of the culvert widening.



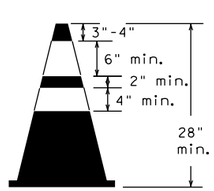
PLAN VIEW

LEGEND	
	Plastic drum
	Plastic drum with steady burn light or yellow warning reflector
SB	Steady burn warning light or yellow warning reflector

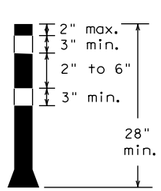
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

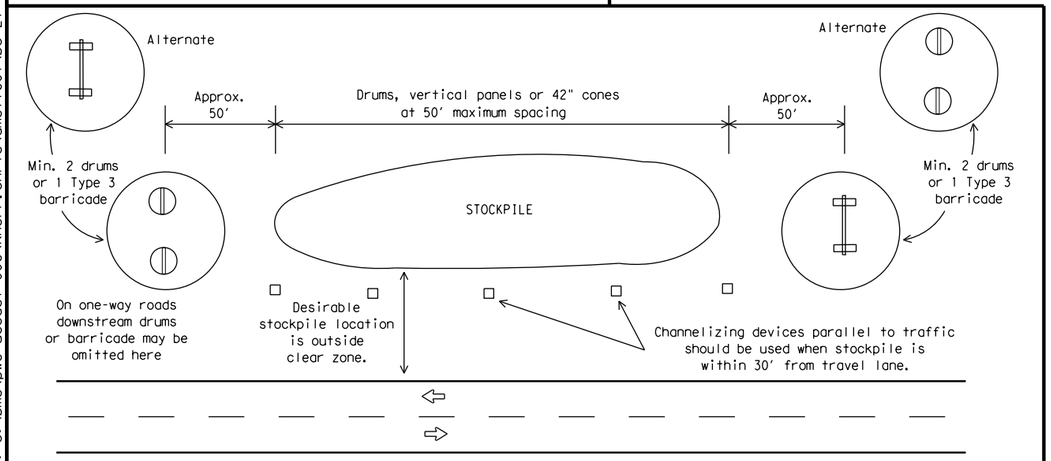


Tubular Marker

28" Cones shall have a minimum weight of 9 1/2 lbs.

42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

1. Traffic cones and tubular markers shall be predominantly orange, and meet the height and weight requirements shown above.
2. One-piece cones have the body and base of the cone molded in one consolidated unit. Two-piece cones have a cone shaped body and a separate rubber base, or ballast, that is added to keep the device upright and in place.
3. Two-piece cones may have a handle or loop extending up to 8" above the minimum height shown, in order to aid in retrieving the device.
4. Cones or tubular markers shall have white or white and orange reflective bands as shown above. The reflective bands shall have a smooth, sealed outer surface and meet the requirements of Departmental Material Specification DMS-8300 Type A or Type B.
5. 28" cones and tubular markers are generally suitable for short duration and short-term stationary work as defined on BC(4). These should not be used for intermediate-term or long-term stationary work unless personnel is on-site to maintain them in their proper upright position.
6. 42" two-piece cones, vertical panels or drums are suitable for all work zone durations.
7. Cones or tubular markers used on each project should be of the same size and shape.



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BEXAR		121 OF 377

DATE: 5/19/2025 8:57:06 AM
FILE: c:\bms\pwe-useast-006\knerr.chris\dms71607\bc-21-10.dgn

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

WORK ZONE PAVEMENT MARKINGS

GENERAL

1. The Contractor shall be responsible for maintaining work zone and existing pavement markings, in accordance with the standard specifications and special provisions, on all roadways open to traffic within the CSJ limits unless otherwise stated in the plans.
2. Color, patterns and dimensions shall be in conformance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
3. Additional supplemental pavement marking details may be found in the plans or specifications.
4. Pavement markings shall be installed in accordance with the TMUTCD and as shown on the plans.
5. When short term markings are required on the plans, short term markings shall conform with the TMUTCD, the plans and details as shown on the Standard Plan Sheet WZ(STPM).
6. When standard pavement markings are not in place and the roadway is opened to traffic, DO NOT PASS signs shall be erected to mark the beginning of the sections where passing is prohibited and PASS WITH CARE signs at the beginning of sections where passing is permitted.
7. All work zone pavement markings shall be installed in accordance with Item 662, "Work Zone Pavement Markings."

RAISED PAVEMENT MARKERS

1. Raised pavement markers are to be placed according to the patterns on BC(12).
2. All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and Departmental Material Specification DMS-4200 or DMS-4300.

PREFABRICATED PAVEMENT MARKINGS

1. Removable prefabricated pavement markings shall meet the requirements of DMS-8241.
2. Non-removable prefabricated pavement markings (foil back) shall meet the requirements of DMS-8240.

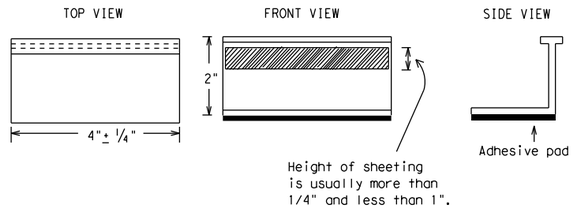
MAINTAINING WORK ZONE PAVEMENT MARKINGS

1. The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
2. Work zone pavement markings shall be inspected in accordance with the frequency and reporting requirements of work zone traffic control device inspections as required by Form 599.
3. The markings should provide a visible reference for a minimum distance of 300 feet during normal daylight hours and 160 feet when illuminated by automobile low-beam headlights at night, unless sight distance is restricted by roadway geometrics.
4. Markings failing to meet this criteria within the first 30 days after placement shall be replaced at the expense of the Contractor as per Specification Item 662.

REMOVAL OF PAVEMENT MARKINGS

1. Pavement markings that are no longer applicable, could create confusion or direct a motorist toward or into the closed portion of the roadway shall be removed or obliterated before the roadway is opened to traffic.
2. The above shall not apply to detours in place for less than three days, where flaggers and/or sufficient channelizing devices are used in lieu of markings to outline the detour route.
3. Pavement markings shall be removed to the fullest extent possible, so as not to leave a discernable marking. This shall be by any method approved by TxDOT Specification Item 677 for "Eliminating Existing Pavement Markings and Markers".
4. The removal of pavement markings may require resurfacing or seal coating portions of the roadway as described in Item 677.
5. Subject to the approval of the Engineer, any method that proves to be successful on a particular type pavement may be used.
6. Blast cleaning may be used but will not be required unless specifically shown in the plans.
7. Over-painting of the markings SHALL NOT BE permitted.
8. Removal of raised pavement markers shall be as directed by the Engineer.
9. Removal of existing pavement markings and markers will be paid for directly in accordance with Item 677, "ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS," unless otherwise stated in the plans.
10. Black-out marking tape may be used to cover conflicting existing markings for periods less than two weeks when approved by the Engineer.

Temporary Flexible-Reflective Roadway Marker Tabs



STAPLES OR NAILS SHALL NOT BE USED TO SECURE TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARKER TABS TO THE PAVEMENT SURFACE

1. Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
2. Tabs detailed on this sheet are to be inspected and accepted by the Engineer or designated representative. Sampling and testing is not normally required, however at the option of the Engineer, either "A" or "B" below may be imposed to assure quality before placement on the roadway.
   A. Select five (5) or more tabs at random from each lot or shipment and submit to the Construction Division, Materials and Pavement Section to determine specification compliance.
   B. Select five (5) tabs and perform the following test. Affix five (5) tabs at 24 inch intervals on an asphaltic pavement in a straight line. Using a medium size passenger vehicle or pickup, run over the markers with the front and rear tires at a speed of 35 to 40 miles per hour, four (4) times in each direction. No more than one (1) out of the five (5) reflective surfaces shall be lost or displaced as a result of this test.
3. Small design variances may be noted between tab manufacturers.
4. See Standard Sheet WZ(STPM) for tab placement on new pavements. See Standard Sheet TCP(7-1) for tab placement on seal coat work.

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

1. Raised pavement markers used as guidemarks shall be from the approved product list, and meet the requirements of DMS-4200.
2. All temporary construction raised pavement markers provided on a project shall be of the same manufacturer.
3. Adhesive for guidemarks shall be bituminous material hot applied or butyl rubber pad for all surfaces, or thermoplastic for concrete surfaces.

Guidemarks shall be designated as:
YELLOW - (two amber reflective surfaces with yellow body).
WHITE - (one silver reflective surface with white body).

DEPARTMENTAL MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
TRAFFIC BUTTONS	DMS-4300
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY REMOVABLE, PREFABRICATED PAVEMENT MARKINGS	DMS-8241
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS	DMS-8242

A list of prequalified reflective raised pavement markers, non-reflective traffic buttons, roadway marker tabs and other pavement markings can be found at the Material Producer List web address shown on BC(1).

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

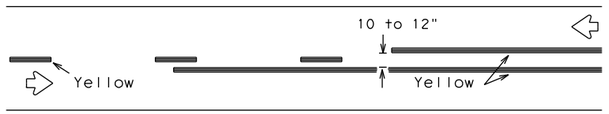
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-98 9-07 5-21 1-02 7-13 11-02 8-14				MILITARY DR
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		122 OF 377

105

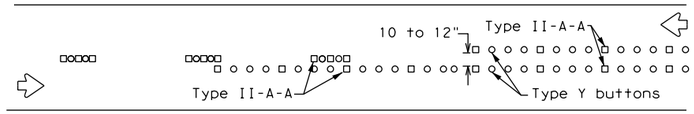
DATE: 5/19/2025 8:57:15 AM
FILE: c:\dms\pwe-useast-006\knerr.chris\dms71607\bc-21-11.dgn

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

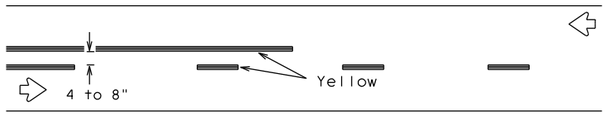
PAVEMENT MARKING PATTERNS



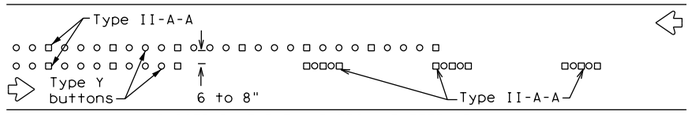
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



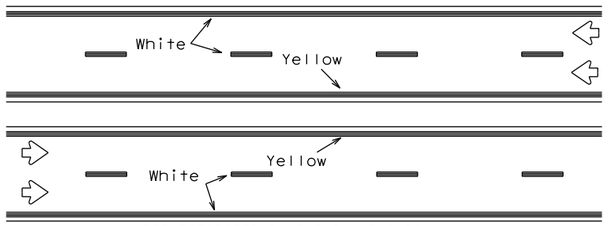
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



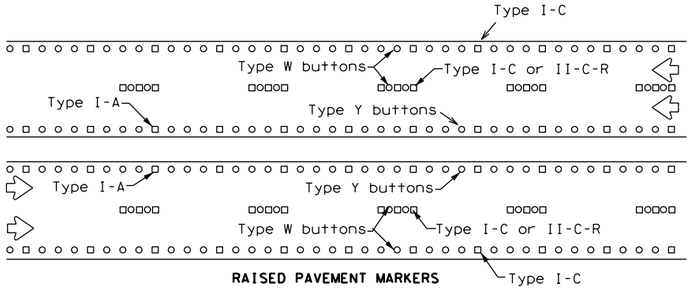
RAISED PAVEMENT MARKERS - PATTERN B

Pattern A is the TXDOT Standard, however Pattern B may be used if approved by the Engineer.
Prefabricated markings may be substituted for reflectorized pavement markings.

CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO-LANE, TWO-WAY HIGHWAYS



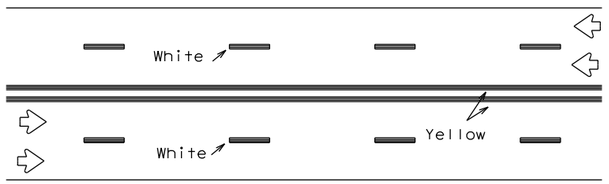
REFLECTORIZED PAVEMENT MARKINGS



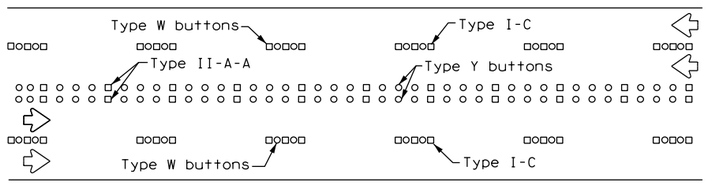
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



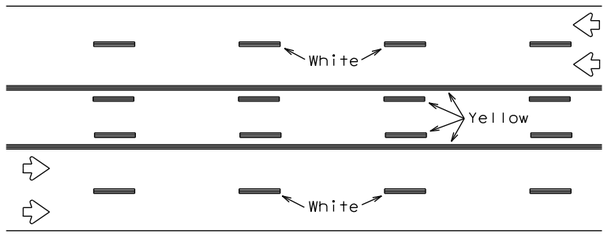
REFLECTORIZED PAVEMENT MARKINGS



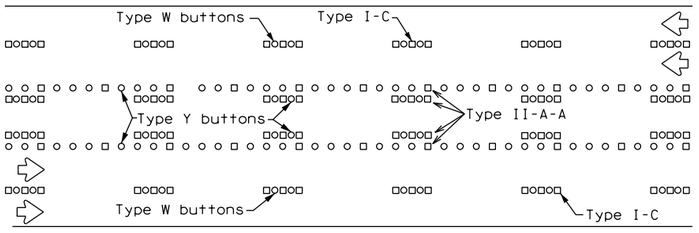
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

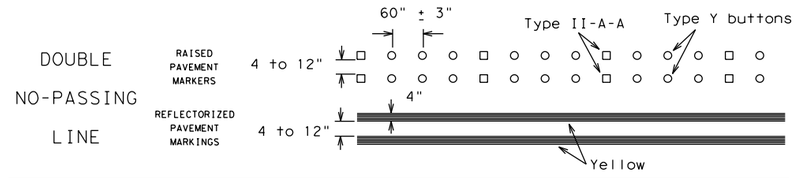
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

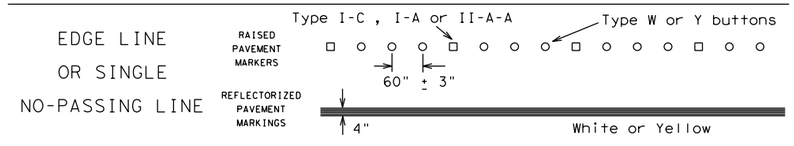
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

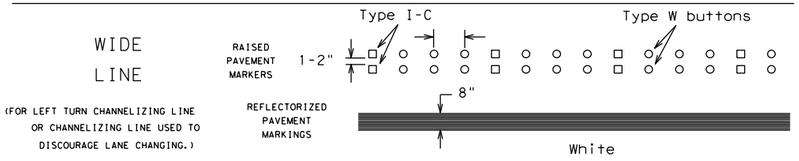


EDGE LINE OR SINGLE NO-PASSING LINE



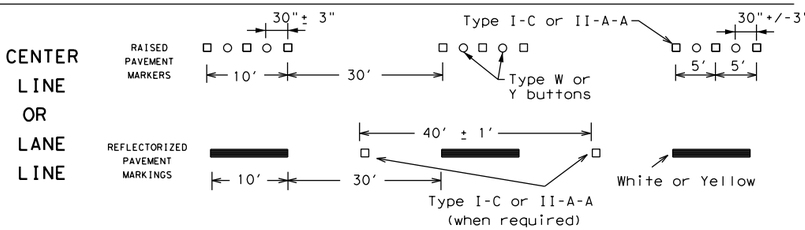
WIDE LINE

(FOR LEFT TURN CHANNELIZING LINE OR CHANNELIZING LINE USED TO DISCOURAGE LANE CHANGING.)

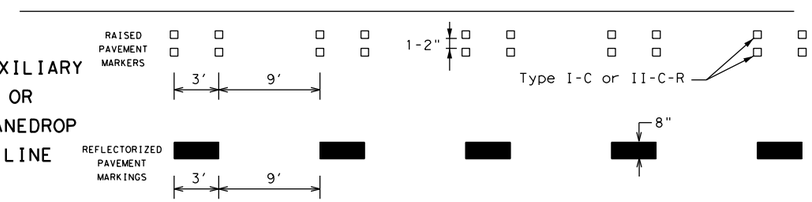


BROKEN LINES

CENTER LINE OR LANE LINE

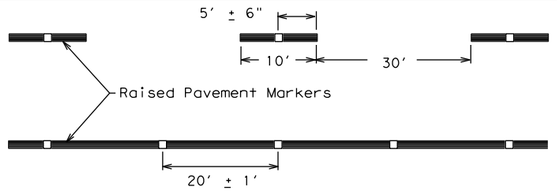


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

If raised pavement markers are used to supplement REMOVABLE markings, the markers shall be applied to the top of the tape at the approximate mid length of tape used for broken lines or at 20 foot spacing for solid lines. This allows an easier removal of raised pavement markers and tape.



Centerline only - not to be used on edge lines

Raised pavement markers used as standard pavement markings shall be from the approved products list and meet the requirements of Item 672 "RAISED PAVEMENT MARKERS."

SHEET 12 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

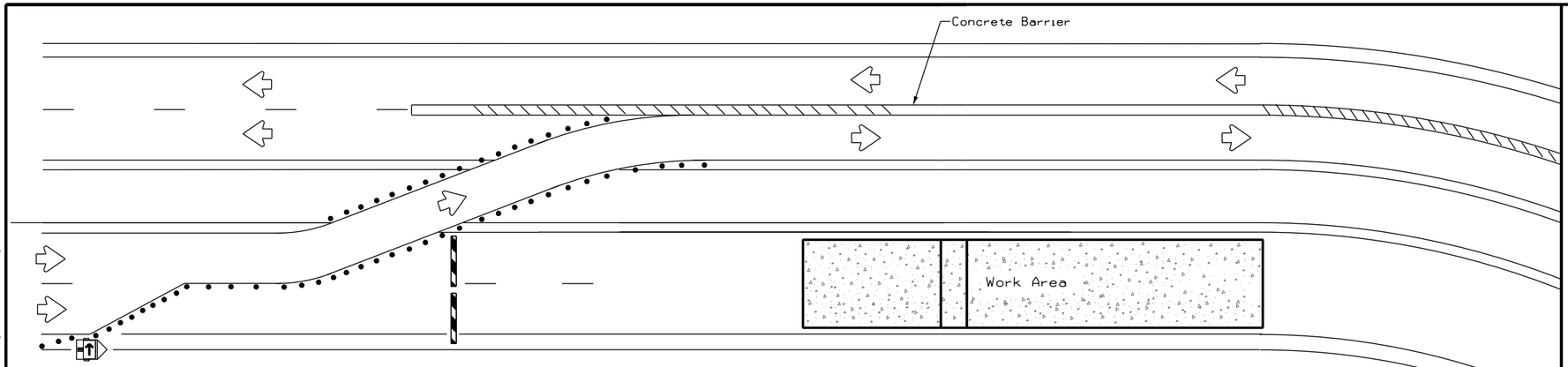
BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14				MILITARY DR
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		123 OF 377

106

DATE: 5/19/2025 8:57:25 AM
FILE: c:\bms\pwe-useast-006\knerr.chris\dms71607\bc-21-12.dgn

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



BARRIER DELINEATION WITH MODULAR GLARE SCREENS

NOTES:

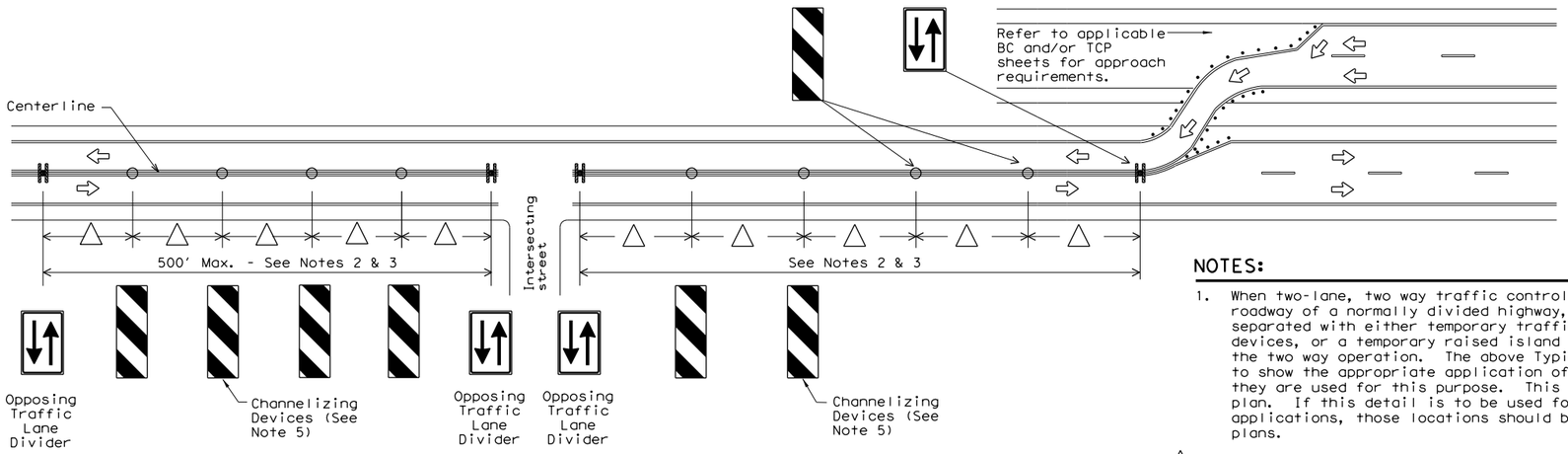
1. Length of Safety Glare screen will be specified elsewhere in the plans.
2. The cumulative nominal length of the modular safety glare screen units shall equal the length of the individual sections of temporary concrete traffic barrier on which they are installed so the joint between barrier sections will not be spanned by any one safety glare screen unit.
3. Screen Panel/blades will be designed such that reflective sheeting conforming with Departmental Material Specification DMS-8300, Sign Face Materials, Type B or C Yellow, minimum size of 2 inches by 12 inches can be attached to the edge of the panel/blade. The sheeting shall be attached to one glare screen panel/blade per section of concrete barrier not to exceed a spacing of 30 feet. Barrier reflectors are not necessary when panel/blades are installed with reflective sheeting as described.
4. Payment for these devices will be under statewide Special Specification "Modular Glare Screens for Headlight Barrier."
5. This detail is only intended to show types of locations where Glare Screens would be appropriate. Required signing and other devices shall be as shown elsewhere in the plans.

LEGEND	
	Type 3 Barricade
• • •	Channelizing Devices
	Trailer Mounted Flashing Arrow Board
	Sign
\\\\	Safety glare screen

DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
DELINEATORS AND OBJECT MARKERS	DMS-8600
MODULAR GLARE SCREENS FOR HEADLIGHT BARRIER	DMS-8610

Only pre-qualified products shall be used. A copy of the Compliant Work Zone Traffic Control Devices List" CWZTCD)describes pre-qualified products and their sources and may be found at the following web address:

http://www.txdot.gov/business/resources/producer-list.html



VERTICAL PANELS & OPPOSING TRAFFIC LANE DIVIDERS (OTLD) SEPARATING TWO-WAY TRAFFIC ON NORMALLY DIVIDED HIGHWAYS

NOTES:

1. When two-lane, two way traffic control must be maintained on one roadway of a normally divided highway, opposing traffic shall be separated with either temporary traffic barriers, channelizing devices, or a temporary raised island throughout the length of the two way operation. The above Typical Application is intended to show the appropriate application of channelizing devices when they are used for this purpose. This is not a traffic control plan. If this detail is to be used for other types of roads or applications, those locations should be stated elsewhere in the plans.

△2. Space devices according to the Tangent Spacing shown on the Device Spacing table on BC(9) but not exceeding 100'.

3. Every fifth device should be an OTLD except when spaced closer to accommodate an intersection. An OTLD should be the first device on each side of intersecting streets or roads.
4. Locations where surface mount bases with adhesives or self-righting devices will be required in order to maintain them in their proper position should be noted elsewhere in the plans.
5. Channelizing devices are to be vertical panels, 42" cones or tubular markers that are at least 36" tall. Tubular markers used to separate traffic should have a rubber base weighing at least 30 pounds. Tubular markers that are 42" tall or more shall have four bands of reflective material as detailed for 42" cones on BC(10). Tubular markers less than 42" but at least 36" tall shall have three bands of 3" wide white reflective material spaced 2" apart. Reflective material shall meet DMS-8300, Type A.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN TYPICAL DETAILS

WZ(TD)-17

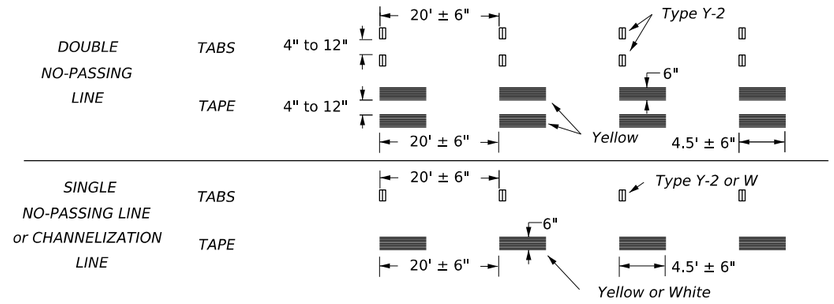
FILE: wztd-17.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-98 2-17 3-03 7-13				MILITARY DR
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		124 OF 377

110

DATE: 5/19/2025 8:57:34 AM
FILE: c:\dms\pwe-useast-006\knerr.chris\dms71607\wztd-17.dgn

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS



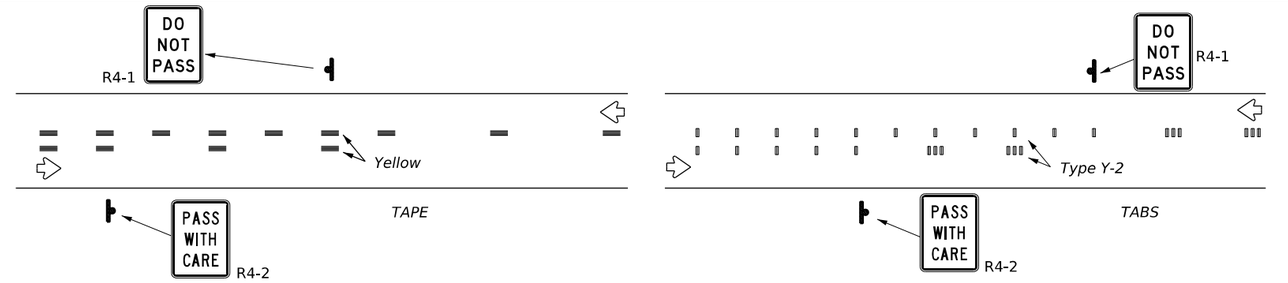
NOTES:

1. Short term pavement markings may be prefabricated markings (stick down tape) or temporary flexible reflective roadway marker tabs unless otherwise specified elsewhere in plans.
2. Short term pavement markings shall NOT be used to simulate edge lines.
3. Dimensions indicated on this sheet are typical and approximate. Variations in size and height may occur between markers or devices made by manufacturers, by as much as 1/4 inch, unless otherwise noted.
4. Temporary flexible-reflective roadway marker tabs will require normal maintenance replacement when used on roadways with an ADT per lane of up to 7500 vehicles with no more than 10% truck mix. When roadways exceed these values, additional maintenance replacement of devices should be planned.
5. No segment of roadway open to traffic shall remain without permanent pavement markings for a period greater than 14 calendar days. The Contractor will be responsible for maintaining short term pavement markings until permanent pavement markings are in place. When the Contractor is responsible for placement of permanent pavement markings, no segment of roadway shall remain without permanent pavement markings for a period greater than 14 calendar days unless weather conditions prohibit placement. Permanent pavement markings shall be placed as soon as weather permits.
6. For two lane, two-way roadways, DO NOT PASS signs shall be erected to mark the beginning of sections where passing is prohibited and PASS WITH CARE signs shall be erected to mark the beginning of sections where passing is permitted. Signs shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and may be used to indicate the limits of no-passing zones for up to 14 calendar days. Permanent pavement markings should then be placed.
7. For low volume two lane, two-way roadways of 4000 ADT or less, no-passing lines may be omitted when approved by the Engineer. DO NOT PASS and PASS WITH CARE signs shall be erected (see note 6).
8. For exit gores where a lane is being dropped place wide gore markings or retroreflective channelizing devices to guide motorist through the exit. If channelizing devices are to be used it should be noted elsewhere in the plans. One piece cones are not allowed for this purpose.

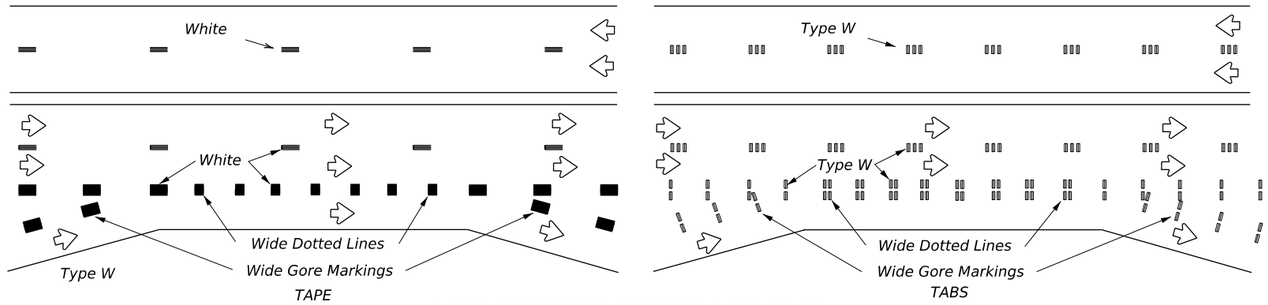
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

1. Temporary flexible-reflective roadway marker tabs detailed on this sheet will be designated Type Y-2 (two amber reflective surfaces with yellow body); Type Y (one amber reflective surface with yellow body); and Type W (one white or silver reflective surface with white body). Additional details may be found on BC(11).
2. Tabs shall meet requirements of Departmental Material Specification DMS-8242.
3. When dry, tabs shall be visible for a minimum distance of 200 feet during normal daylight hours and when illuminated by automobile low-beam head light at night, unless sight distance is restricted by roadway geometrics.
4. No two consecutive tabs nor four tabs per 1000 feet of line shall be missing or fail to meet the visual performance requirements of Note 3.

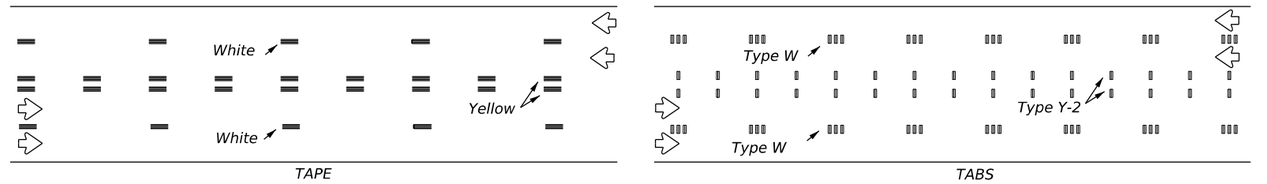
WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



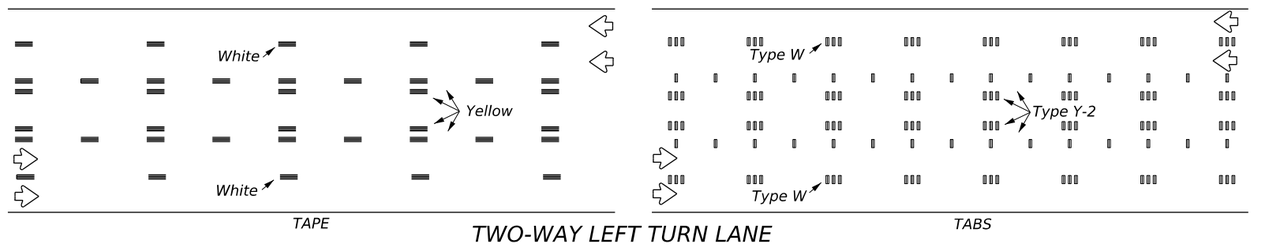
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



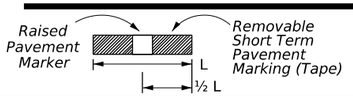
LANE LINES FOR DIVIDED HIGHWAY



LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



TWO-WAY LEFT TURN LANE



If raised pavement markers are used to supplement REMOVABLE short term markings, the markers shall be applied to the top of the tape at the approximate mid length of the tape. This allows an easier removal of raised markers and tape.

PREFABRICATED PAVEMENT MARKINGS

1. Temporary Removable Prefabricated Pavement Markings shall meet the requirements of DMS-8241.
2. Non-removable Prefabricated Pavement Markings shall meet the requirements of either DMS-8240 "Permanent Prefabricated Pavement Markings" or DMS-8243 "Temporary Costruction-Grade Prefabricated Pavement Markings."

RAISED PAVEMENT MARKERS

1. All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and DMS-4200.

DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS) & MATERIAL PRODUCER LISTS (MPL)

1. DMSs referenced above can be found along with embedded links to their respective MPLs at the following website:

http://www.txdot.gov/business/contractors_consultants/material_specifications/default.htm

Texas Department of Transportation

Traffic Safety Division Standard

WORK ZONE SHORT TERM PAVEMENT MARKINGS

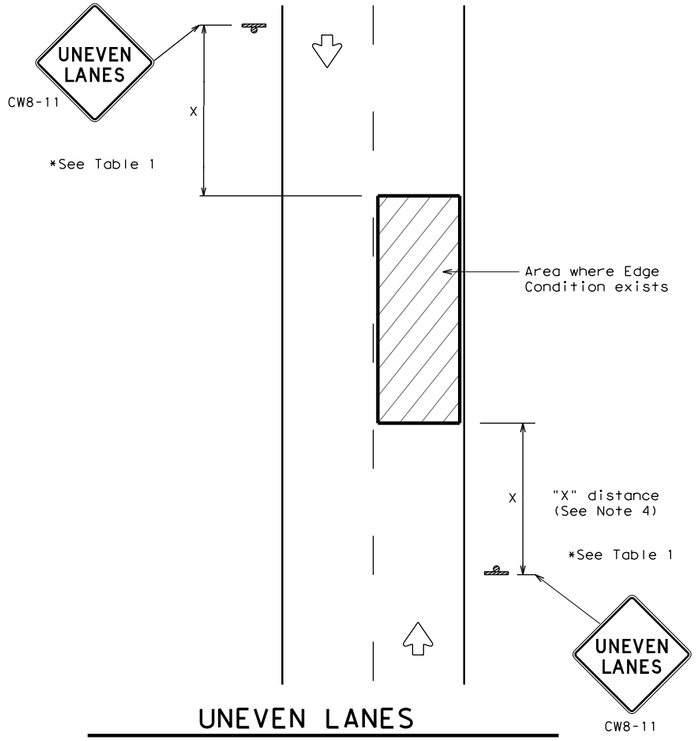
WZ(STPM)-23

FILE: wzstpm-23.dn	DN:	CK:	DW:	CK:
©TxDOT February 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
4-92 7-13	DIST	COUNTY		SHEET NO.
1-97 2-23	SAT	BEXAR		I25 OF 377
3-03				

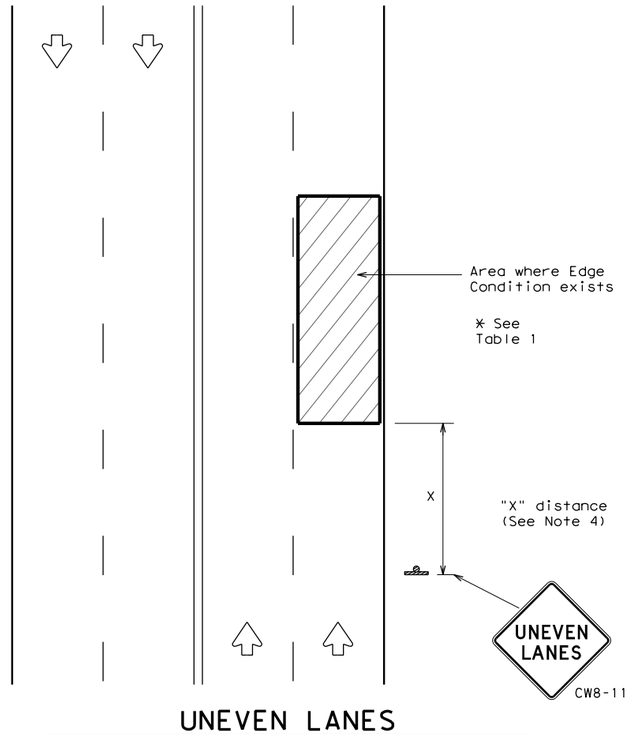
111

DATE: 5/19/2025 8:57:43 AM
FILE: c:\bms\pwe-useast-006\kner:chrisdms71607\wz(stpm)-23.dgn

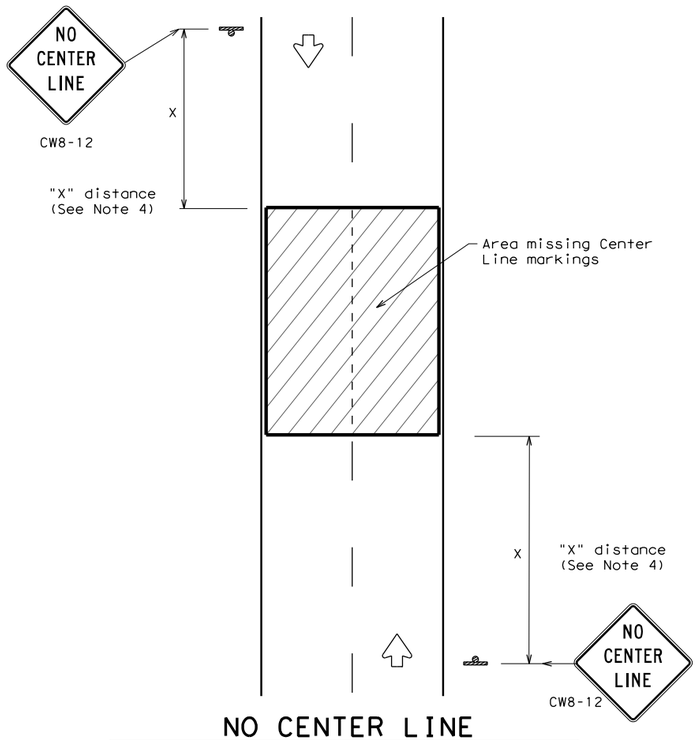
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



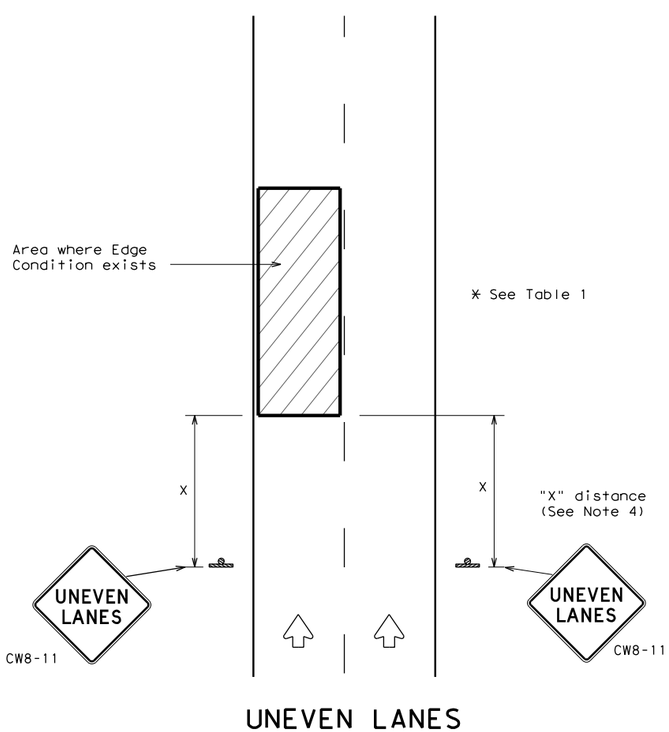
UNEVEN LANES
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
FOUR LANE CONVENTIONAL ROAD



NO CENTER LINE
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
DIVIDED ROADWAY

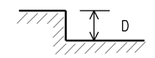
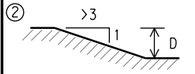
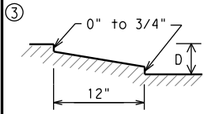
DEPARTMENTAL MATERIAL SPECIFICATIONS	
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY (REMOVABLE) PREFABRICATED PAVEMENT MARKINGS	DMS-8241
SIGN FACE MATERIALS	DMS-8300

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B_{FL} OR TYPE C_{FL} SHEETING
BLACK	LEGEND & BORDERS	ACRYLIC NON-REFLECTIVE SHEETING

GENERAL NOTES

1. If spalling or holes occur, ROUGH ROAD (CW8-8) signs should be placed in advance of the condition and be repeated every two miles where the condition persists.
2. UNEVEN LANES (CW8-11) signs shall be installed in advance of the condition and repeated every mile. Signs installed along the uneven lane condition may be supplemented with the NEXT XX MILES (CW7-3aP) plaque or Advisory Speed (CW13-1P) plaque.
3. NO CENTER LINE (CW8-12) signs and temporary pavement markings as per the WZ(STPM) standard shall be installed if yellow centerlines separating two way traffic are obscured or obliterated. Repeat NO CENTER LINE signs every two miles where the center line markings are not in place. The signs and markings shall remain in place until permanent pavement markings are installed.
4. Signs shall be spaced at the distances recommended as per BC standards.
5. Additional signs may be required as directed by the Engineer. Signs shall remain in place until final surface is applied. Signs shall be considered subsidiary to Item 502 "BARRICADES, SIGNS AND TRAFFIC HANDLING."
6. Signs shall be fabricated and mounted on supports as shown on the BC standards and/or listed on the "Compliant Work Zone Traffic Control Devices" list.
7. Short term markings shall not be used to simulate edge lines.
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition.

TABLE 1

Edge Condition	Edge Height (D)	* Warning Devices
① 	Less than or equal to: 1¼" (maximum-planing) 1½" (typical-overlay)	Sign: CW8-11
	Distance "D" may be a maximum of 1 1/4 " for planing operations and 2" for overlay operations if uneven lanes with edge condition 1 are open to traffic after work operations cease.	
② 	Less than or equal to 3"	Sign: CW8-11
③  Notched Wedge Joint	Distance "D" may be a maximum of 3" if uneven lanes with edge condition 2 or 3 are open to traffic after work operations cease. Uneven lanes should not be open to traffic when "D" is greater than 3".	

TRAFFIC CONTROL DURING PLANING, OVERLAY AND LEVELING OPERATIONS ARE SHOWN ELSEWHERE IN THE PLANS.

MINIMUM WARNING SIGN SIZE	
Conventional roads	36" x 36"
Freeways/expressways, divided roadways	48" x 48"

Texas Department of Transportation

Traffic Operations Division Standard

SIGNING FOR UNEVEN LANES

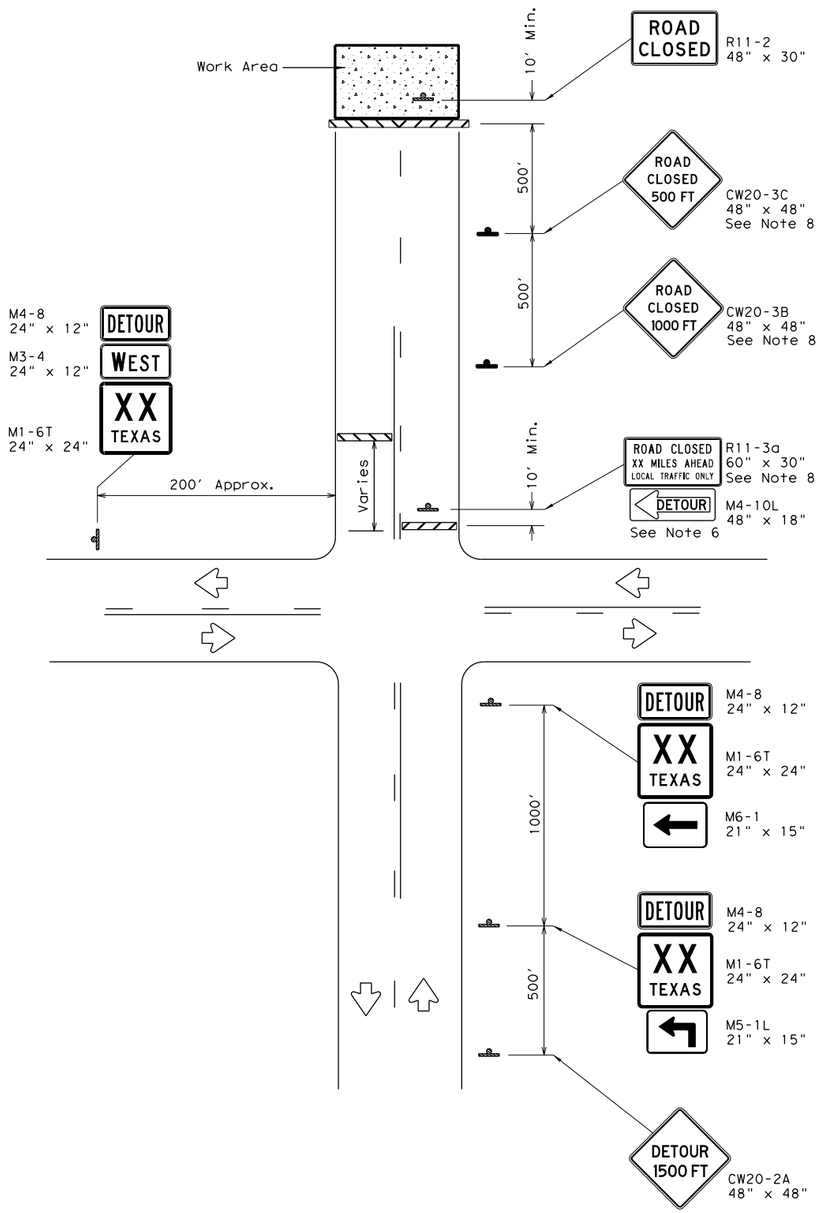
WZ(UL)-13

FILE: wzul-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
8-95 2-98 7-13	DIST	COUNTY		SHEET NO.
1-97 3-03	SAT	BEXAR		126 OF 377

DATE: 5/19/2025 8:57:55 AM
FILE: c:\bms\pwe-useast-006\knerr.chris\dms71607\wzul-13.dgn

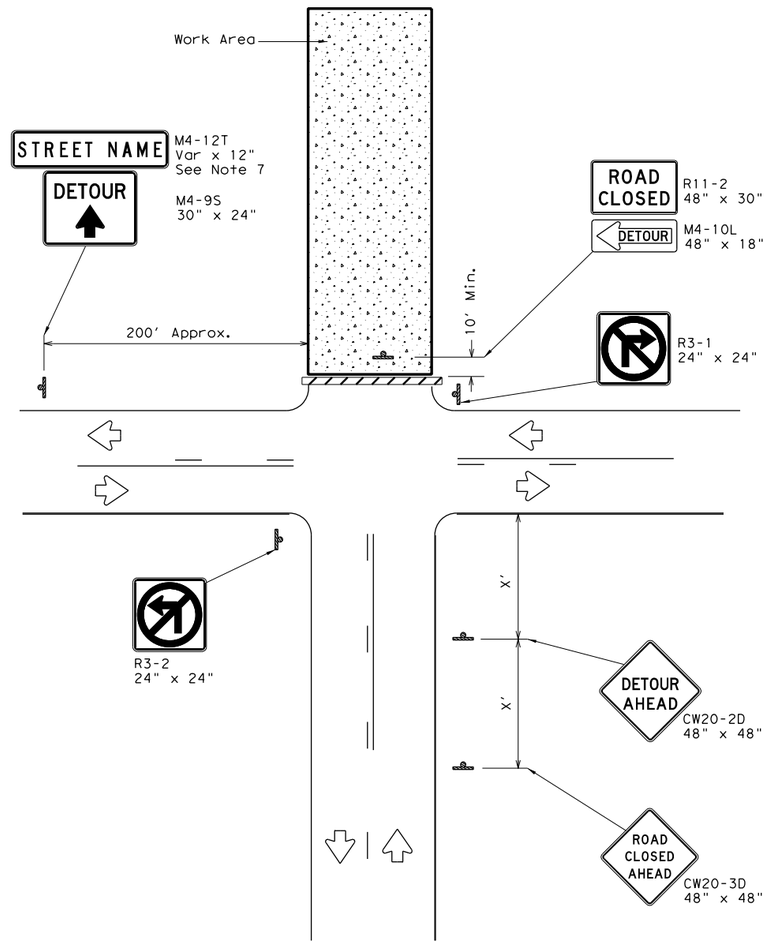
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 5/19/2025 8:58:05 AM
FILE: c:\bms\pwe-useast-006\knerr.chris\dms71607\wzrcd-13.dgn



ROAD CLOSURE BEYOND THE INTERSECTION

Signing for a Numbered Route with an Off-Site Detour



ROAD CLOSURE AT THE INTERSECTION

Signing for an Un-numbered Route with an Off-Site Detour

LEGEND	
	Type 3 Barricade
	Sign

Posted Speed *	Minimum Sign Spacing "X" Distance
30	120'
35	160'
40	240'
45	320'
50	400'
55	500'
60	600'
65	700'
70	800'
75	900'

* Conventional Roads Only

GENERAL NOTES

1. This sheet is intended to provide details for temporary work zone road closures. For permanent road closure details see the D&OM standards.
2. Barricades used shall meet the requirements shown on Barricade and Construction Standard BC(10) and listed on the Compliant Work Zone Traffic Control Devices list (CWZTCD).
3. Stockpiled materials shall not be placed on the traffic side of barricades.
4. Barricades at the road closure should extend from pavement edge to pavement edge.
5. Detour signing shown is intended to illustrate the type of signing that is appropriate for numbered routes or un-numbered routes as labeled. It does not indicate the full extent of detour signing required. Detour routes should be signed as shown elsewhere in the plans.
6. If the road is open for a significant distance beyond the intersection or there are significant origin/destination points beyond the intersection, the signs and barricades at this location should be located at the edge of the traveled way.
7. The Street Name (M4-12T) sign is to be placed above the DETOUR (M4-9S) sign.
8. For urban areas where there is a shorter distance between the intersection and the actual closure location, the ROAD CLOSED XX MILES AHEAD (R11-3a) sign may be replaced with a ROAD CLOSED TO THRU TRAFFIC (R11-4) sign. If adequate space does not exist between the intersection and the closure a single ROAD CLOSED AHEAD (CW20-3D) sign spaced as per the table above may replace the ROAD CLOSED 1000 FT (CW20-3B) and ROAD CLOSED 500 FT (CW20-3C) signs.
9. Signs and barricades shown shall be subsidiary to Item 502. Locations where these details will be required shall be as shown elsewhere in the plans.

Texas Department of Transportation

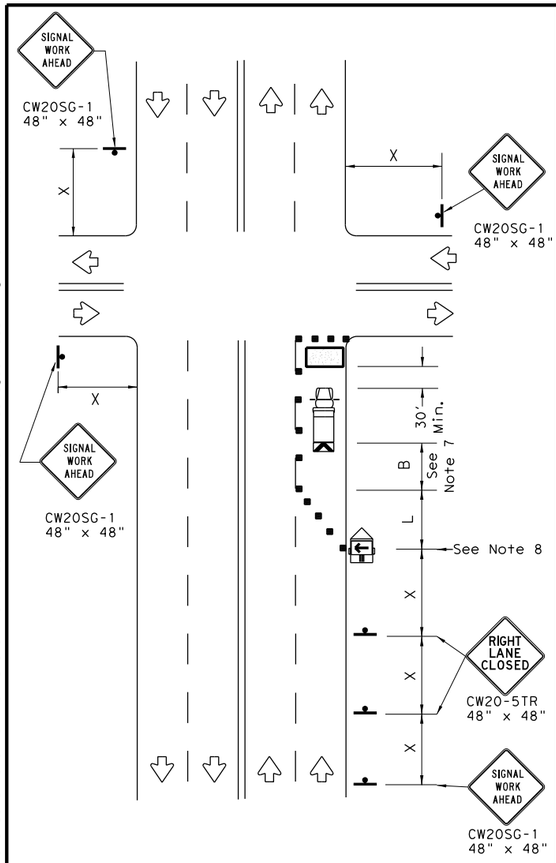
Traffic Operations Division Standard

WORK ZONE ROAD CLOSURE DETAILS

WZ(RCD)-13

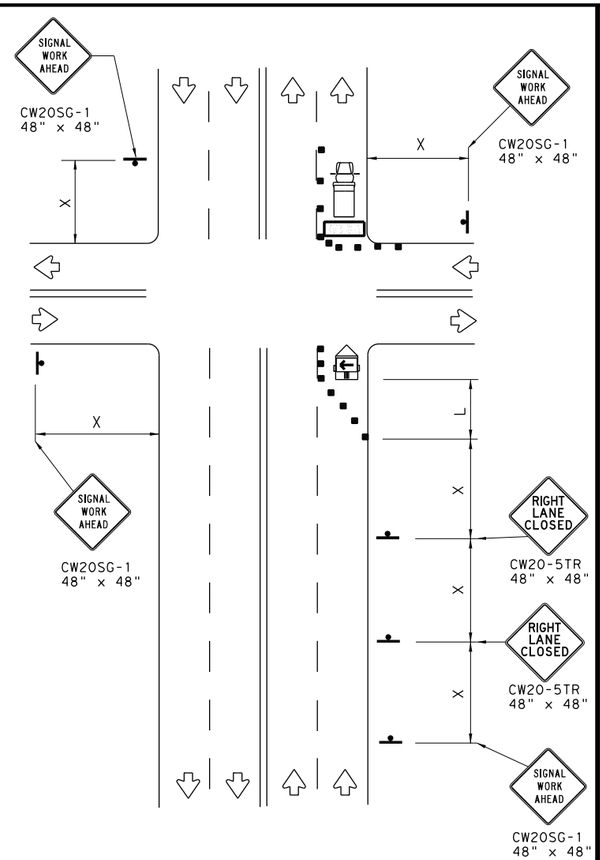
FILE: wzrcd-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 1995	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
1-97 4-98 7-13	DIST	COUNTY		SHEET NO.
2-98 3-03	SAT	BEXAR		127 OF 377

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



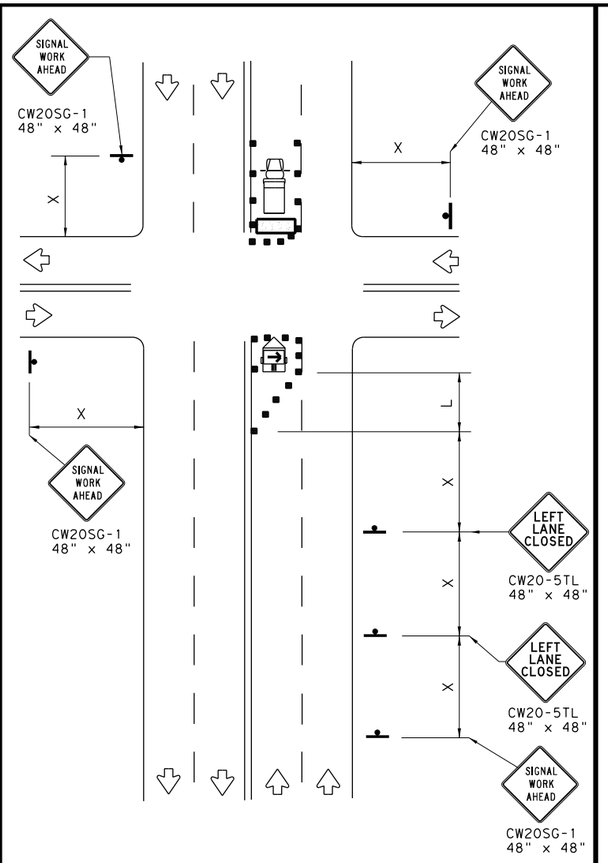
NEAR SIDE LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



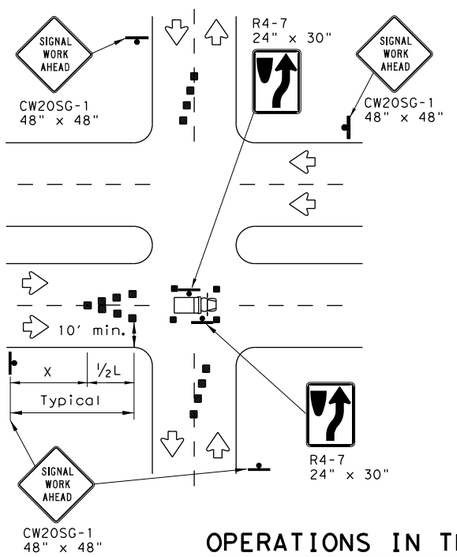
FAR SIDE RIGHT LANE CLOSURE

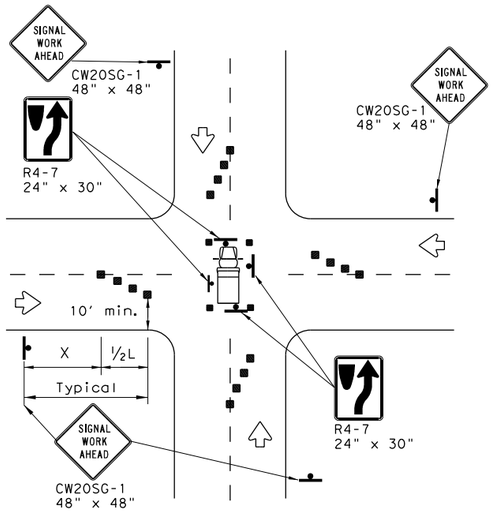
SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE LEFT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY





OPERATIONS IN THE INTERSECTION

SHORT DURATION

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L = WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only

** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

WORKERS IN BUCKET TRUCKS SHALL NOT WORK ABOVE OPEN LANES OF TRAFFIC.

GENERAL NOTES

1. The minimum size channelizing device is the 28" cone. 42" Two-piece cones, drums, vertical panels or barricades will be required when the device must be left unattended at night.
2. Obstructions or hazards at the work area shall be clearly marked and delineated at all times.
3. Flaggers and Flagger Symbol (CW20-7) signs may be required according to field conditions.
4. Vehicles parked in roadway shall be equipped with at least two high intensity rotating, flashing, oscillating or strobe type lights.
5. High level warning devices (flag trees) may be used at corners of the vehicle.
6. When work operations are performed on existing signals, the signals may be placed in flashing red mode when approved by the engineer. If existing signals do not have power, All-Way Stop (R1-1 and R1-3P) signs may be implemented when approved by the engineer.
7. For Short-Term Stationary work the buffer space "B" from the above table should be used if field conditions permit. For Short Duration (less than 1 hour) any buffer space provided will enhance the safety of the setup.
8. The arrow board at this location may be omitted for Short Duration work if the work vehicle has an arrow board in operation. As an option, the arrow board may be placed at the end of the taper in the closed lane if space is not available at the beginning of the taper.
9. Signs and devices for the NEAR SIDE LANE CLOSURE may be altered for a left lane closure by using a LEFT LANE CLOSED (CW20-5TL) and adding channelizing devices on the centerline to protect the work space from opposing traffic.

Texas Department of Transportation | Traffic Operations Division Standard

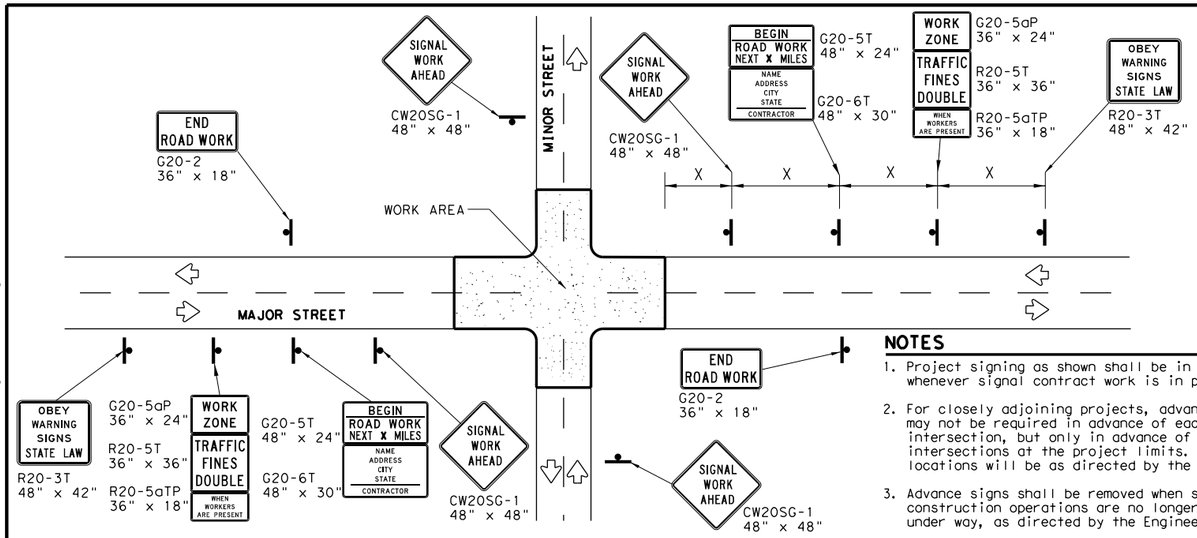
TRAFFIC SIGNAL WORK TYPICAL DETAILS

WZ(BTS-1)-13

FILE: wzbts-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
2-98 10-99 7-13	DIST	COUNTY		SHEET NO.
4-98 3-03	SAT	BEXAR		128 OF 377

DATE: 5/19/2025 8:58:15 AM
FILE: c:\bms\pwe-useast-006\knerr.chris\dms71607\wzbts-13-01.dgn

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



TYPICAL ADVANCE SIGNAL PROJECT SIGNING

FOR LONG TERM and INTERMEDIATE-TERM STATIONARY WORK OPERATIONS

NOTES

1. Project signing as shown shall be in place whenever signal contract work is in progress.
2. For closely adjoining projects, advance signing may not be required in advance of each intersection, but only in advance of the intersections at the project limits. Actual locations will be as directed by the Engineer.
3. Advance signs shall be removed when signal construction operations are no longer under way, as directed by the Engineer.
4. Warning sign spacing shown is typical for both directions.
5. See the Table on sheet 1 of 2 for Typical warning sign spacing.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Signs shall be installed and maintained in a straight and plumb condition.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. Nails shall NOT be used to attach signs to any support.
5. All signs shall be installed in accordance with the plans or as directed by the Engineer.
6. The Contractor shall furnish the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD).
7. The Contractor shall furnish sign supports and substrates listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD), installed as per the manufacturer's recommendations.
8. Temporary signs that have damaged or cracked substrates and/or damaged or marred reflective sheeting shall be replaced as directed by the Engineer.
9. Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1".
10. Damaged wood posts shall be replaced. Splicing wood posts will not be allowed.

DURATION OF WORK

1. Work zone durations are defined in Part 6, Section 6G.02 of the Texas Manual on Uniform Traffic Control Devices (TMUTCD).

SIGN MOUNTING HEIGHT

1. Sign height of Long-term/Intermediate-term warning signs shall be as shown on Figure 6F-1 of the TMUTCD.
2. Sign height of Short-term/Short Duration warning signs shall be as shown on Figure 6F-2 of the TMUTCD.
3. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered, unless otherwise approved by the Engineer.
2. When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night without damaging the sign sheeting. Burlap, or heavy materials such as plywood or aluminum shall not be used to cover signs.
3. Duct tape or other adhesive material shall NOT be affixed to a sign face.
4. Signs and anchor stubs shall be removed and holes back filled upon completion of the work.

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the requirements of the DMS and color usage table shown on this sheet.

SIGN SUPPORT WEIGHTS

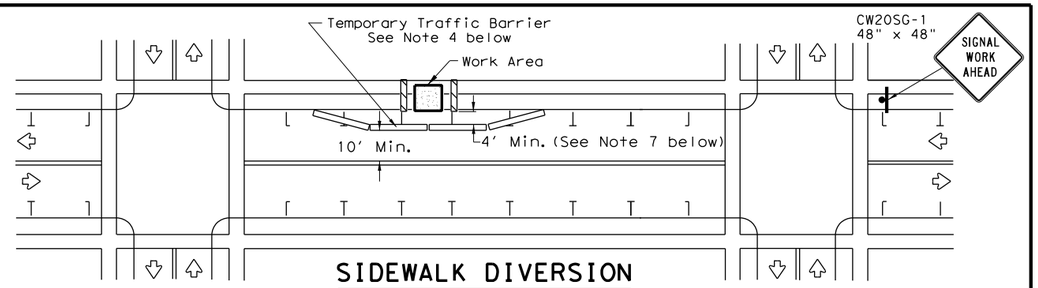
1. Weights used to keep signs from turning over should be sandbags filled with dry, cohesionless material.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects will not be permitted for use as sign support weights.
4. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs.
5. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber, such as tire inner tubes, shall not be used.
6. Rubber ballasts designed for channelizing devices should not be used for ballast on portable sign supports. Sign supports designed and manufactured with rubber bases may be used when shown on the CWZTCD list.
7. Sandbags shall only be placed along or laid over the base supports of the traffic control device and shall not be suspended above ground level or hung with rope, wire, chains or other fastners. Sandbags shall be placed along the length of the skids to weigh down the sign support.
8. Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.

LEGEND	
	Sign
	Channelizing Devices
	Type 3 Barricade

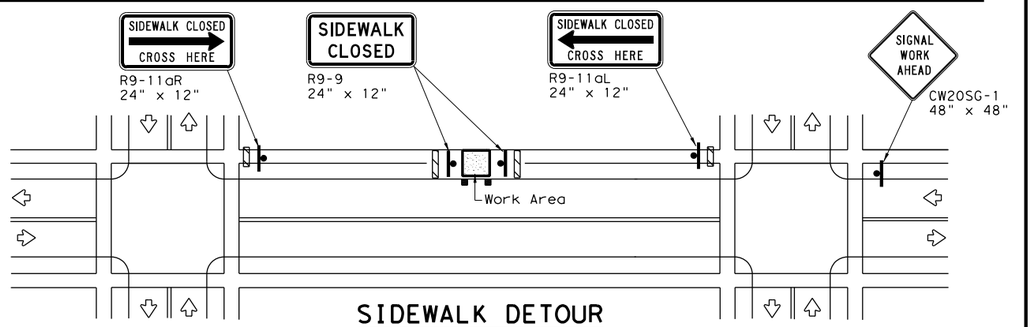
DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
FLEXIBLE ROLL-UP REFLECTIVE SIGNS	DMS-8310

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B_{FL} OR TYPE C_{FL} SHEETING
WHITE	BACKGROUND	TYPE A SHEETING
BLACK	LEGEND & BORDERS	ACRYLIC NON-REFLECTIVE SHEETING

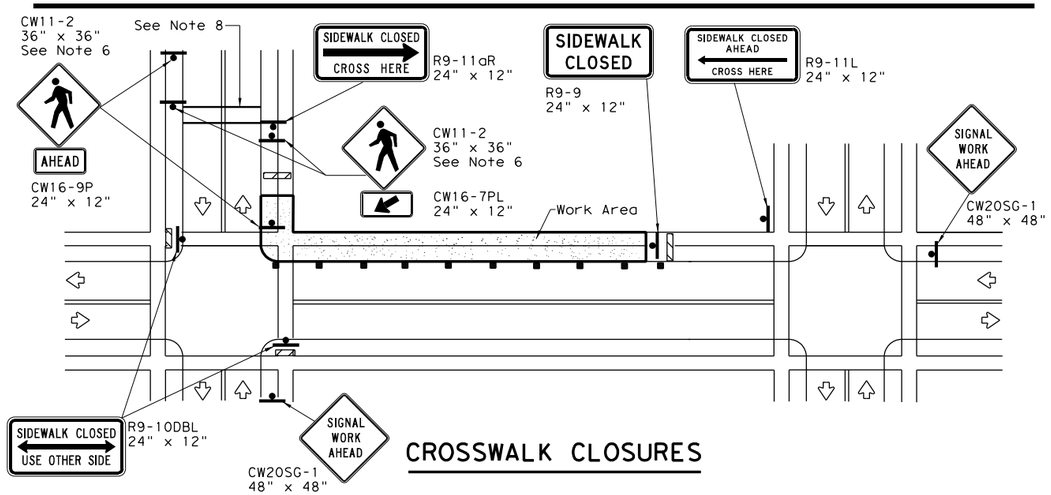
Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found at the following web address:
http://www.txdot.gov/txdot_library/publications/construction.htm



SIDEWALK DIVERSION



SIDEWALK DETOUR



CROSSWALK CLOSURES

PEDESTRIAN CONTROL

1. Holes, trenches or other hazards shall be adequately protected by covering, delineating or surrounding the hazard with orange plastic pedestrian fencing or longitudinal channelizing devices, or as directed by the Engineer.
2. "CROSSWALK CLOSURES" as detailed above will require the Engineer's approval prior to installation.
3. R9 series signs shown may be placed on supports detailed on the BC standards or CWZTCD list, or when fabricated from approved lightweight plastic substrates, they may be mounted on top of a plastic drum at or near the location shown.
4. For speeds less than 45 mph longitudinal channelizing devices may be used instead of traffic barriers when approved by the Engineer. Attenuation of blunt ends and installation of water filled devices shall be as per BC(9) and manufacturer's recommendations.
5. Location of devices are for general guidance. Actual device spacing and location must be field adjusted to meet actual conditions.
6. Where pedestrians with visual disabilities normally use the closed sidewalk Detectable Pedestrian Barricades should be used instead of the Type 3 Barricades shown.
7. The width of existing sidewalk should be maintained if practical.
8. Pavement markings for mid-block crosswalks shall be paid for under the appropriate bid items.
9. When crosswalks or other pedestrian facilities are closed or relocated, temporary facilities shall be detectable and shall include accessibility features consistent with the features present in the existing pedestrian facility.

Texas Department of Transportation

Traffic Operations Division Standard

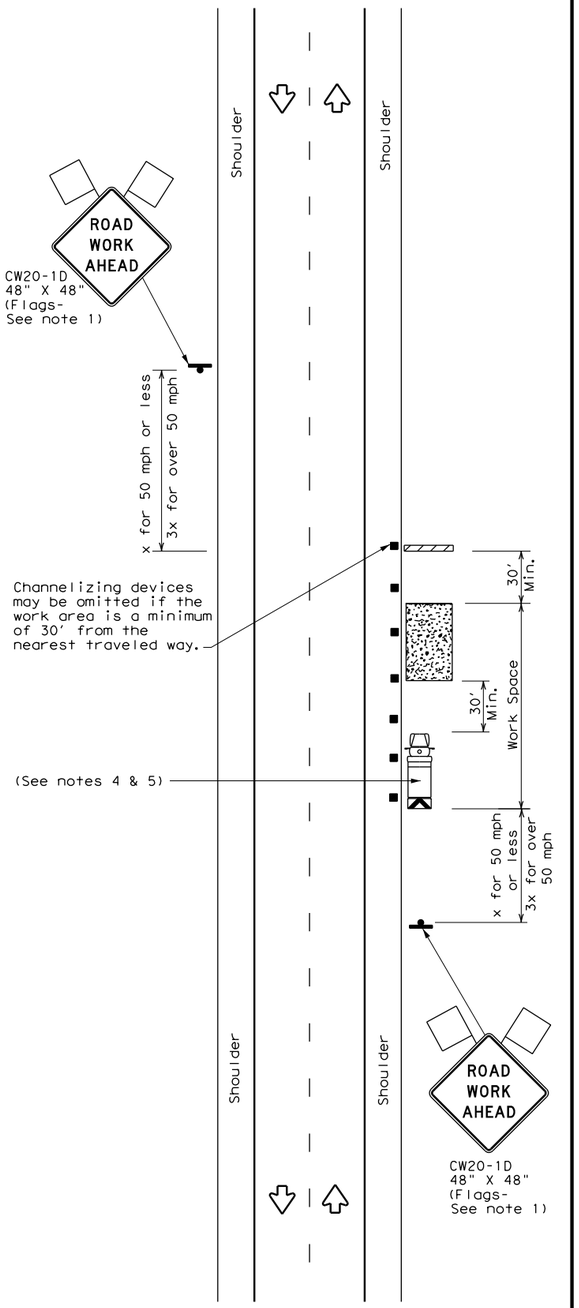
TRAFFIC SIGNAL WORK BARRICADES AND SIGNS

WZ(BTS-2)-13

FILE:	wzbts-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT	April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS					MILITARY DR
2-98 10-99 7-13		DIST	COUNTY		SHEET NO.
4-98 3-03		SAT	BEXAR		129 OF 377

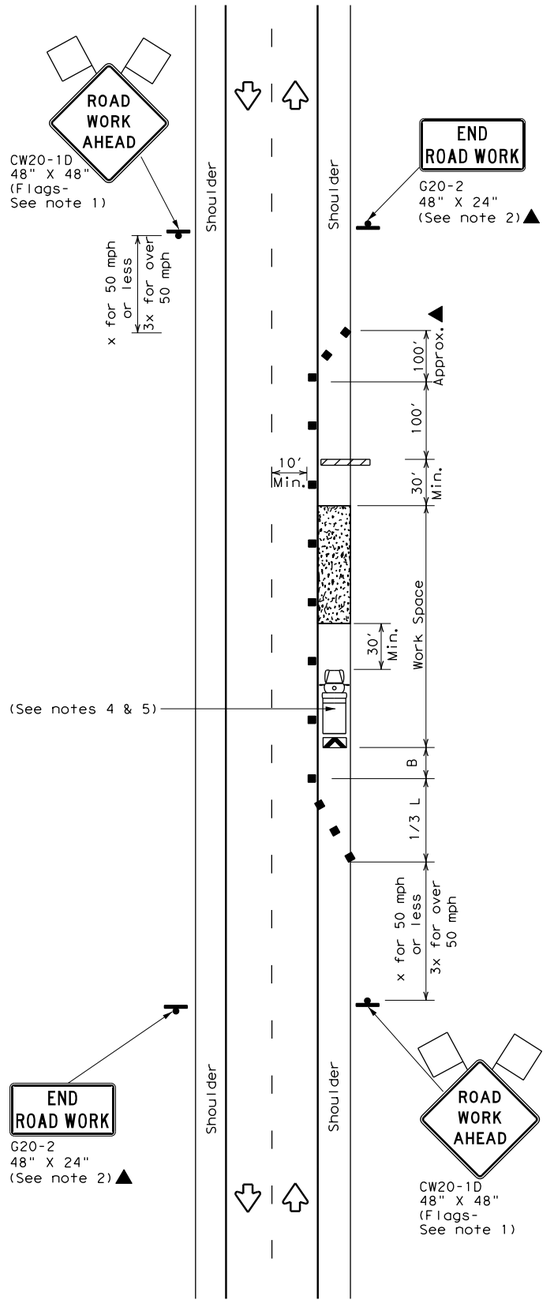
DATE: 5/19/2025 8:58:25 AM
FILE: c:\bms\pwe-useast-006\knerr.chris\dms71607\wzbts-13-02.dgn

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



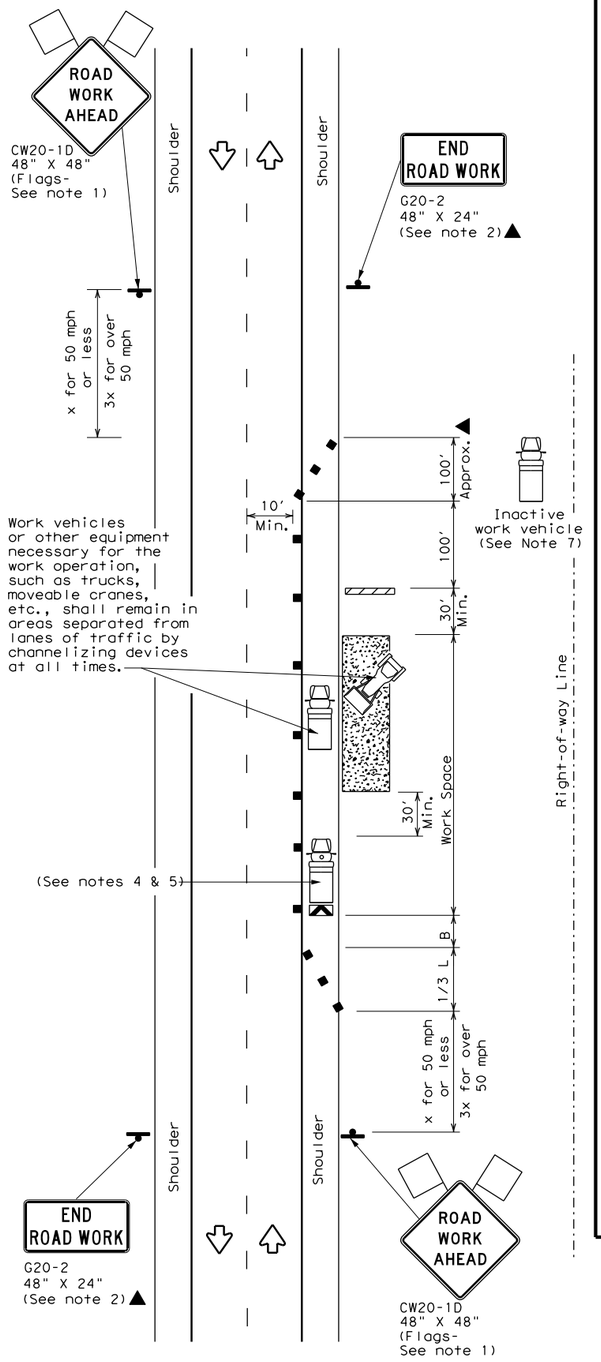
TCP (2-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L=WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only

** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓	✓	✓

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated in the plans, or for routine maintenance work, when approved by the Engineer.
3. Stockpiled material should be placed a minimum of 30 feet from nearest traveled way.
4. Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
5. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
6. See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
7. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
8. CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

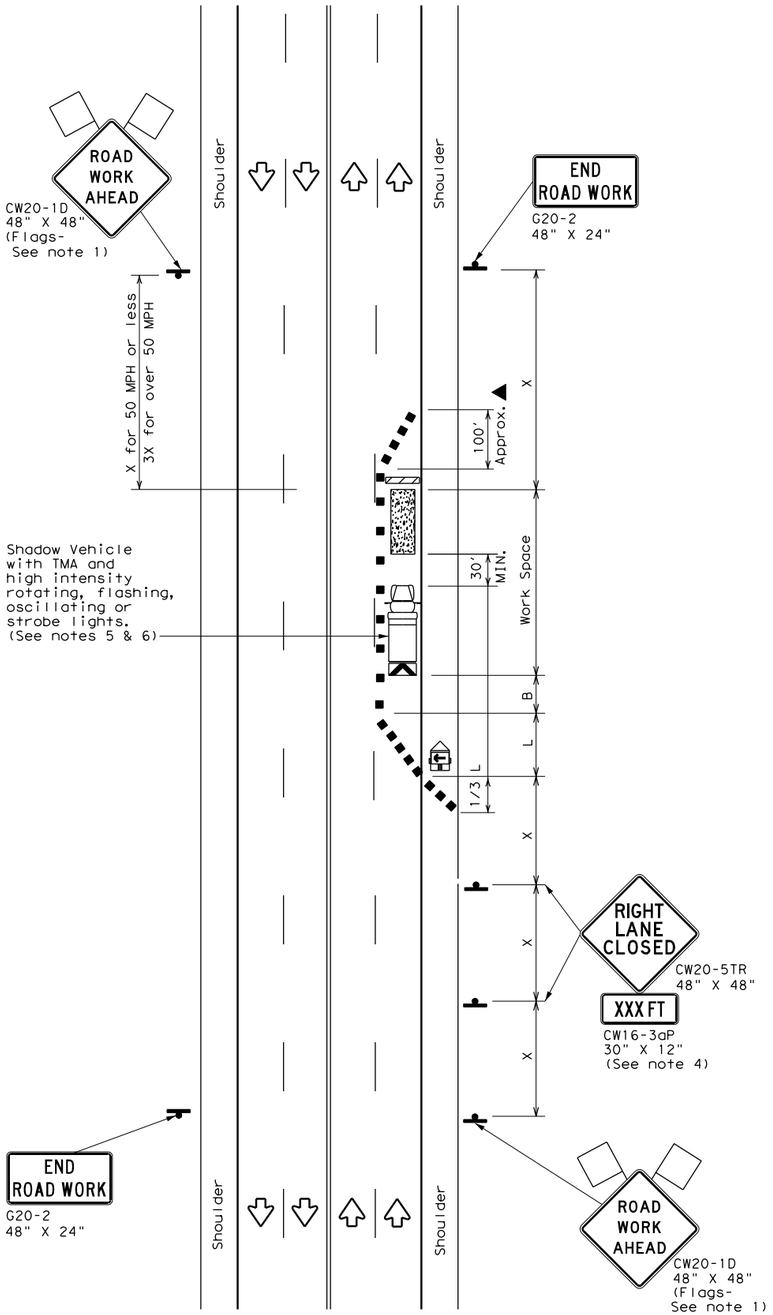
TCP(2-1)-18

FILE: tcp2-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	SAT	BEXAR		130 OF 377
1-97 2-18				

161

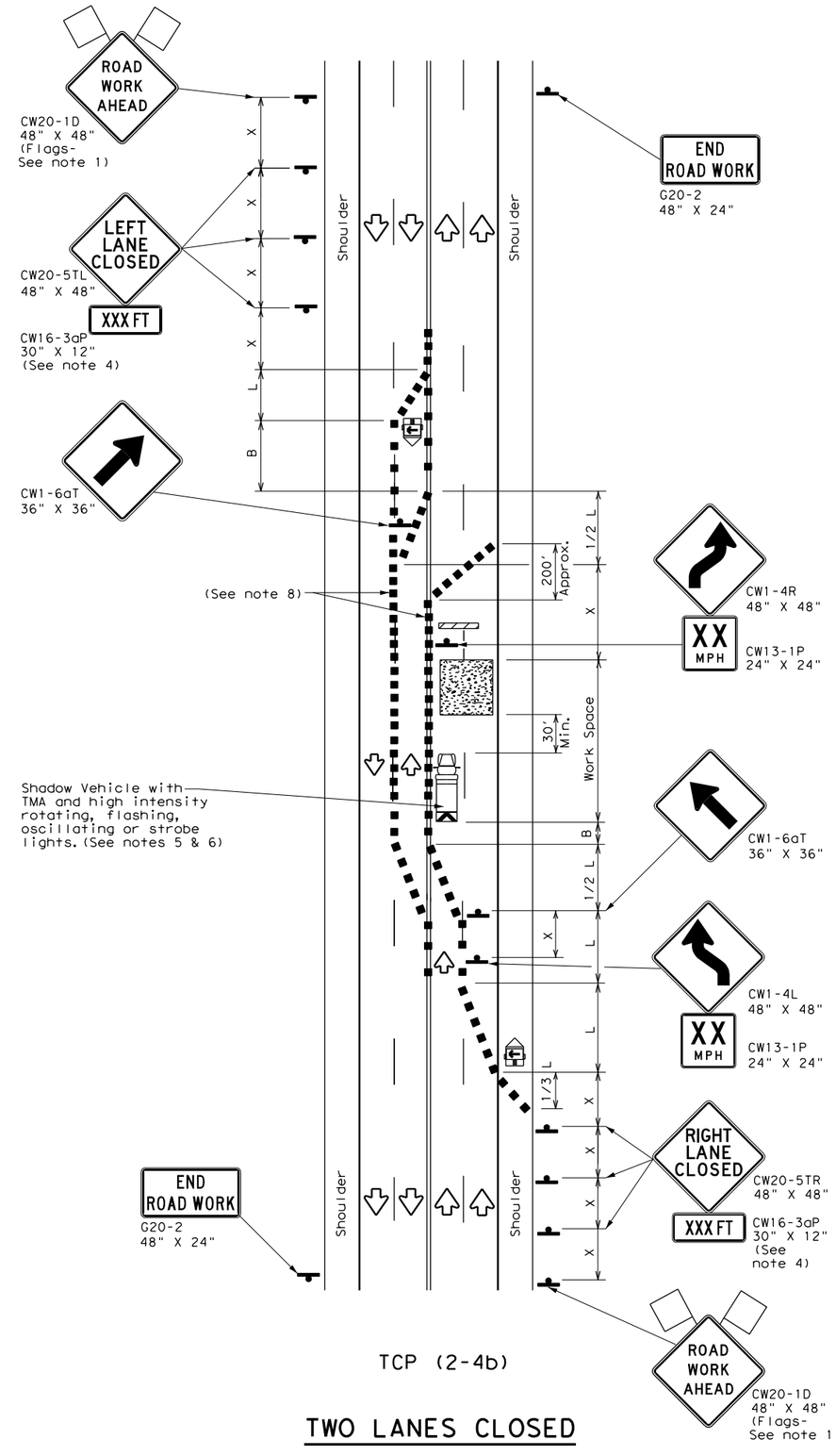
DATE: 5/19/2025 8:58:34 AM
FILE: c:\bms\pwe-useast-006\knerr.chris\dms71607\tcp2-1-18.dgn

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



TCP (2-4a)

ONE LANE CLOSED



TCP (2-4b)

TWO LANES CLOSED

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L=WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only

** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
		✓	✓	

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The downstream taper is optional. When used, it should be 100 feet minimum length per lane.
4. For short term applications, when post mounted signs are not used, the distance legend may be shown on the sign face rather than on a CW16-3aP supplemental plaque.
5. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
6. Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-4a)

7. If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED"signs shall be used and channelizing devices shall be placed on the centerline to protect the work space from opposing traffic with the arrow board placed in the closed lane near the end of the merging taper.

TCP (2-4b)

8. For shorter durations where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2(S) where S is the speed in mph. This tighter devices spacing is intended for the area of conflicting markings, not the entire work zone.

Texas Department of Transportation — Traffic Operations Division Standard

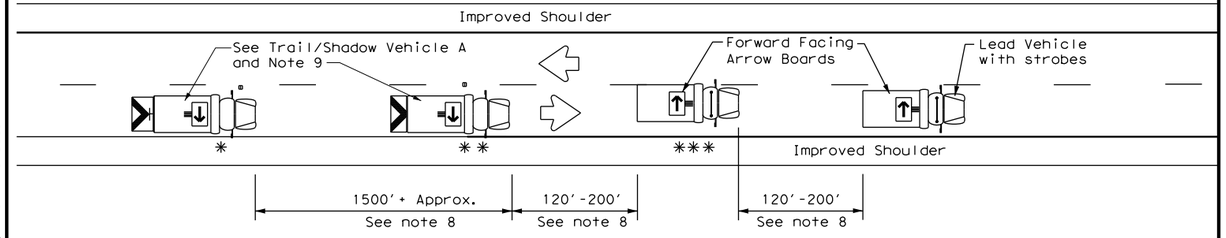
TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

TCP(2-4)-18

FILE: tcp2-4-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 3-03				MILITARY DR
1-97 2-12	DIST	COUNTY		SHEET NO.
4-98 2-18	SAT	BEXAR		131 OF 377

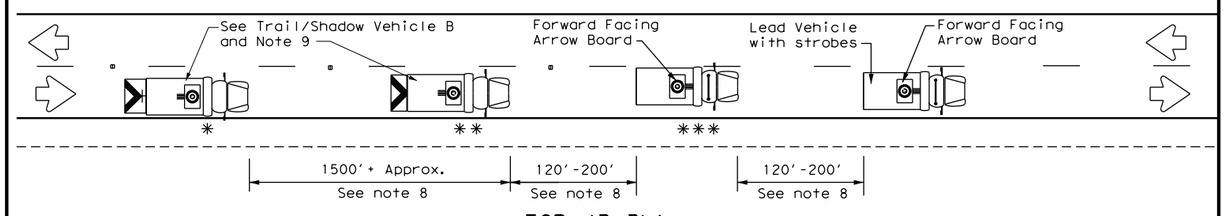
DATE: 5/19/2025 8:58:43 AM
FILE: c:\bms\pwe-useast-006\knerr.chris\dms71607\tcp2-4-18.dgn

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



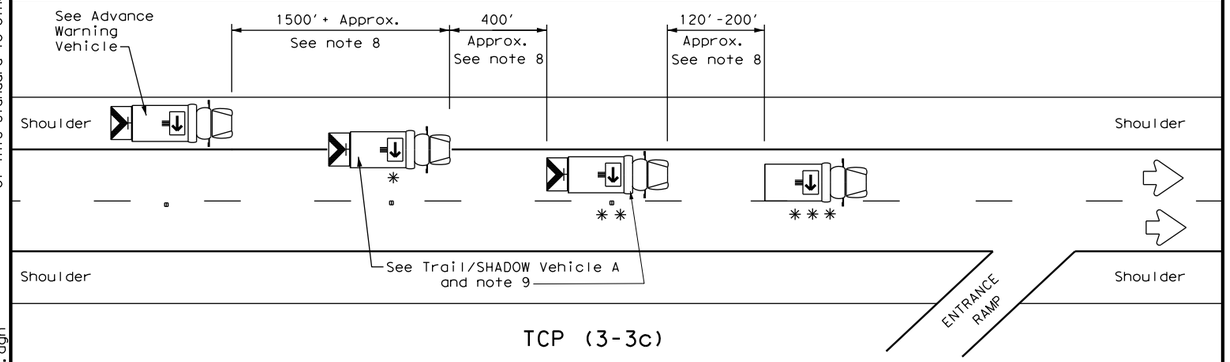
TCP (3-3a)

TWO LANE HIGHWAY WITH PAVED SHOULDERS (WORK ON TRAVEL LANE)



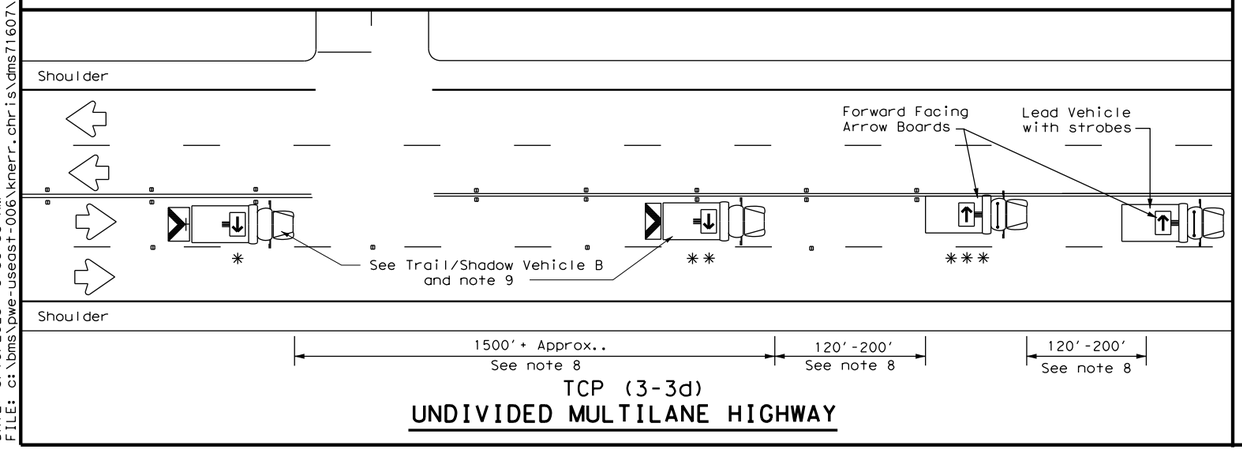
TCP (3-3b)

TWO LANE HIGHWAY WITHOUT PAVED SHOULDERS (WORK ON TRAVEL LANE)



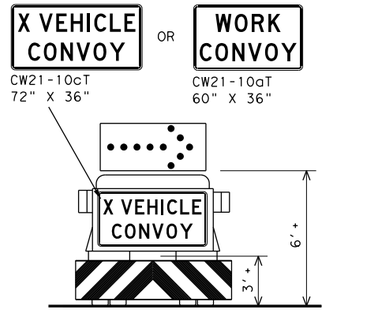
TCP (3-3c)

DIVIDED MULTILANE HIGHWAY



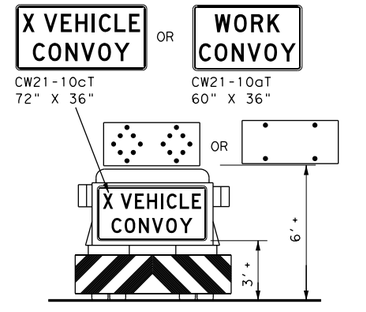
TCP (3-3d)

UNDIVIDED MULTILANE HIGHWAY



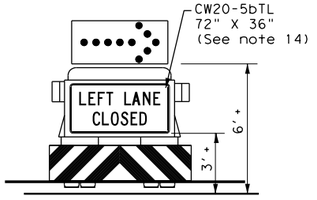
TRAIL/SHADOW VEHICLE A

with RIGHT Directional display
Flashing Arrow Board

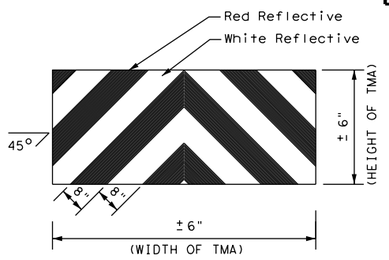


TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board
in Caution Mode



ADVANCE WARNING VEHICLE



STRIPING FOR TMA

LEGEND			
*	Trail Vehicle	ARROW BOARD DISPLAY	
**	Shadow Vehicle		
***	Work Vehicle		RIGHT Directional
	Heavy Work Vehicle		LEFT Directional
	Truck Mounted Attenuator (TMA)		Double Arrow
	Traffic Flow		CAUTION (Alternating Diamond or 4 Corner Flash)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
✓				

GENERAL NOTES

1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used on two way roads the WORK vehicle must have an arrow board. For divided roadways, the arrow board on the WORK vehicle is optional based on the type of work being performed. The Engineer will determine if the LEAD vehicle and/or TRAIL vehicle are required based on prevailing roadway conditions, traffic volume, and sight distance restrictions.
2. The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating, or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
3. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE, ADVANCE WARNING and TRAIL VEHICLE are required.
4. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS 8300, Type A.
5. Flashing arrow boards shall be Type B or Type C as per the Barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.
9. X VEHICLE CONVOY (CW21-10cT) or WORK CONVOY (CW21-10aT) signs shall be used on TRAIL VEHICLES and SHADOW VEHICLES as shown. As an option 48" x 48" diamond shaped WORK CONVOY (CW21-10T) or X VEHICLE CONVOY (CW21-10bT) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY sign shall have the number of the convoy vehicles displayed on the sign in the number designation "X" location. The X VEHICLE CONVOY sign shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.
10. For divided highways with two or three lanes in one direction, the appropriate LEFT LANE CLOSED (CW20-5bTL), RIGHT LANE CLOSED (CW20-5bTR), or CENTER LANE CLOSED (CW20-5dT) sign should be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (PCMS) or truck mounted changeable message sign (TMCMS) with a minimum character height of 12", and displaying the same legend may be substituted for these signs. An appropriate directional arrow display, simulating the size and legibility of the flashing arrow board may be used in the second phase of the PCMS/TMCMS message. When this is done, the arrow board will not be required on the Advance Warning Vehicle.
11. A double arrow shall not be displayed on the arrow board on the Advance Warning Vehicle.
12. For divided highways with three or four lanes in each direction, use TCP(3-2).
13. Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
14. The Advance Warning Vehicle may straddle the edgeline when Shoulder width makes it necessary.
15. On two-lane two-way roadways, the work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motorists are not allowed to pass the work convoy, a DO NOT PASS (R4-1) sign should be placed on the back of the rearmost protection vehicle.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS RAISED PAVEMENT MARKER INSTALLATION/ REMOVAL

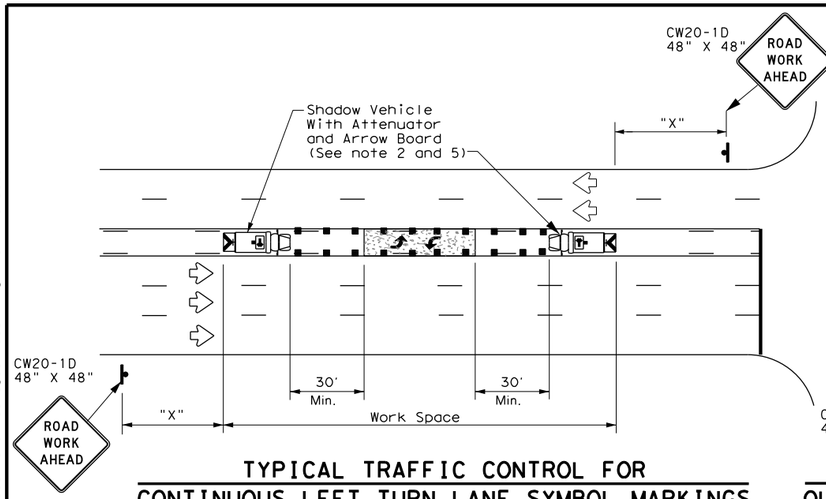
TCP(3-3)-14

FILE: tcp3-3.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT September 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 7-13	SAT	BEXAR		132 OF 377
1-97 7-14				

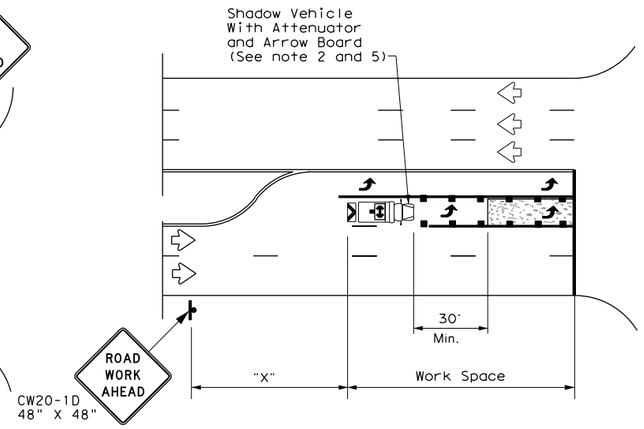
177

DATE: 5/19/2025 8:58:53 AM
FILE: c:\dms\pwe-useast-006\knerr.chris\dms71607\tcp3-3.dgn

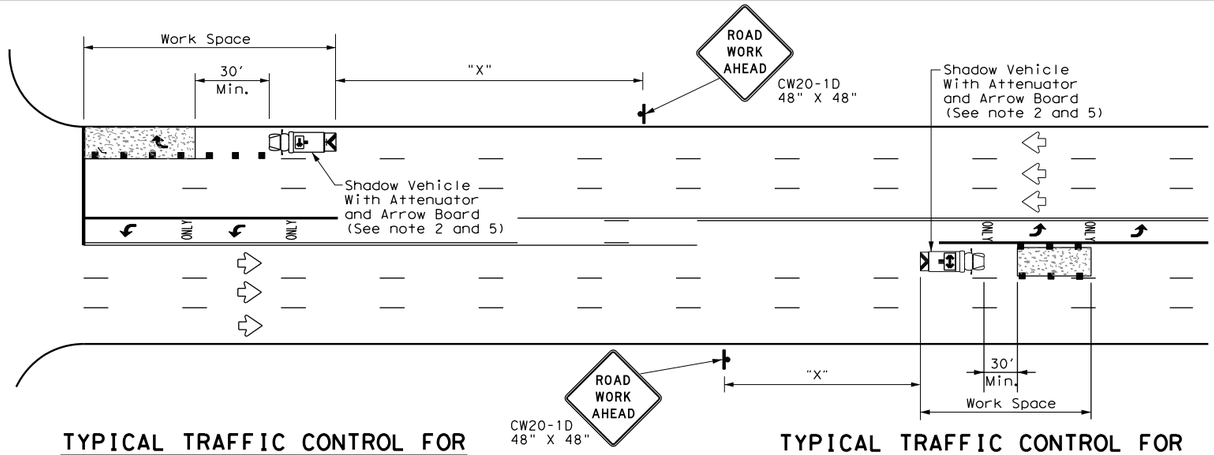
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



TYPICAL TRAFFIC CONTROL FOR
CONTINUOUS LEFT TURN LANE SYMBOL MARKINGS

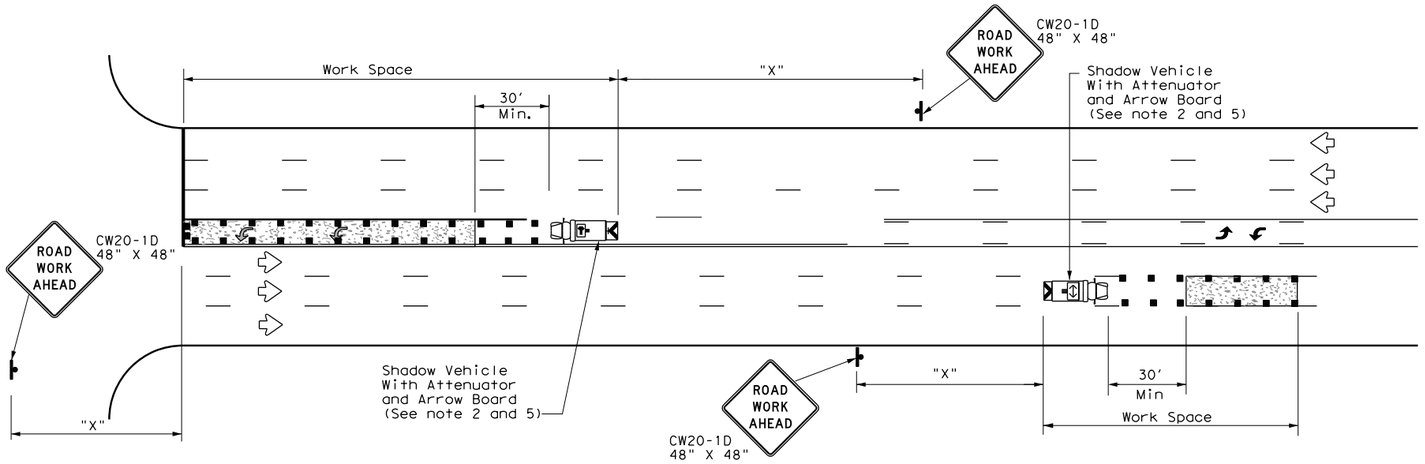


TYPICAL TRAFFIC CONTROL FOR
OUTSIDE DUAL LEFT TURN LANE SYMBOL MARKINGS



TYPICAL TRAFFIC CONTROL FOR
OUTSIDE LANE MARKINGS

TYPICAL TRAFFIC CONTROL FOR
INSIDE LANE MARKINGS



TYPICAL TRAFFIC CONTROL FOR
LEFT TURN LANE MARKINGS

TYPICAL TRAFFIC CONTROL FOR
CENTER LANE MARKINGS

LEGEND			
✳	Trail Vehicle	ARROW BOARD DISPLAY	
✳✳	Shadow Vehicle		
✳✳✳	Work Vehicle	→	RIGHT Directional
	Heavy Work Vehicle	←	LEFT Directional
	Truck Mounted Attenuator (TMA)	↔	Double Arrow
	Traffic Flow	■ ■ ■	Channelizing Devices

Posted Speed ✳	Formula	Minimum Desirable Taper Lengths ✳✳ 10′ Offset	11′ Offset	12′ Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150′	165′	180′	30′	60′	120′	90′
35		205′	225′	245′	35′	70′	160′	120′
40		265′	295′	320′	40′	80′	240′	155′
45	L=WS	450′	495′	540′	45′	90′	320′	195′
50		500′	550′	600′	50′	100′	400′	240′
55		550′	605′	660′	55′	110′	500′	295′
60		600′	660′	720′	60′	120′	600′	350′
65		650′	715′	780′	65′	130′	700′	410′
70		700′	770′	840′	70′	140′	800′	475′
75		750′	825′	900′	75′	150′	900′	540′

✳ Conventional Roads Only

✳✳ Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
✓				

GENERAL NOTES

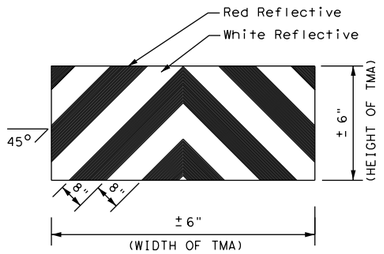
1. This traffic control plan is for use on conventional roads posted at 45 mph or less and is intended for mobile operations that move continuously or intermittently (stopping up to approximately 15 minutes) such as short-line striping and in-lane rumble strips. When activities are anticipated to take longer amounts of time or traffic conditions warrant, a short duration or short-term stationary traffic control plan should be used.

2. A Truck Mounted Attenuator shall be used on Shadow Vehicle. Striping on the back panel of all truck mounted attenuators shall be 8" red and white reflective sheeting placed in an inverted "V" design. Reflective sheeting shall meet or exceed the reflectivity and color requirements of departmental material specification DMS-8300, Type A.

3. All traffic control devices shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD), latest edition.

4. The use of yellow rotating beacons or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the drivers side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.

5. Flashing arrow board shall be used on Shadow Vehicle. Flashing arrow board shall be Type B or Type C as per BC Standards. The arrow board operation shall be controlled from inside the truck.



STRIPING FOR TMA

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS FOR ISOLATED WORK AREAS UNDIVIDED HIGHWAYS

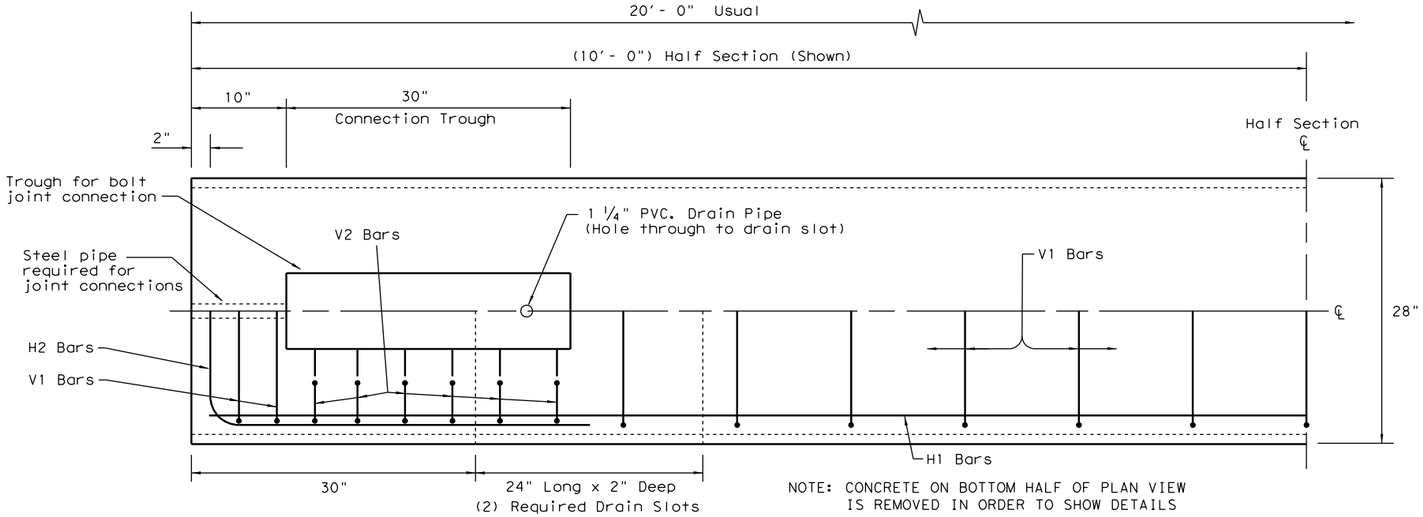
TCP(3-4)-13

FILE: tcp3-4.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT July, 2013	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		133 OF 377

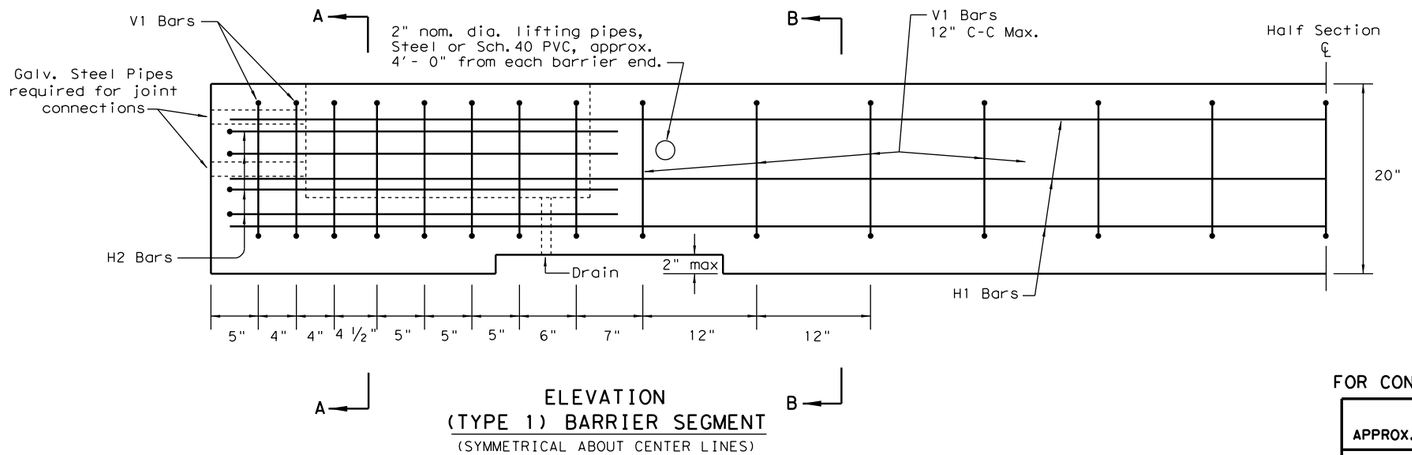
DATE: 5/19/2025 8:59:02 AM
FILE: c:\bms\pwe-useast-006\knerr.chris\dms71607\tcp3-4.dgn

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

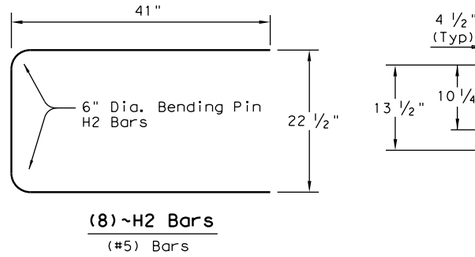
DATE: 5/19/2025
FILE: c:\bms\pwe-useast-006\knerr.chris\dms7160?\lpcb13-01.dgn



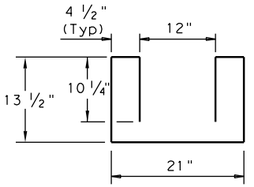
PLAN
(TYPE 1) BARRIER SEGMENT
(SYMMETRICAL ABOUT CENTER LINES)



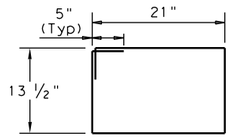
ELEVATION
(TYPE 1) BARRIER SEGMENT
(SYMMETRICAL ABOUT CENTER LINES)



(8)~H2 Bars
(#5) Bars



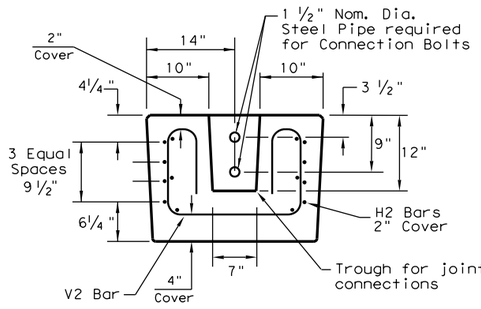
(12)~V2 Bars
(#4) Bars



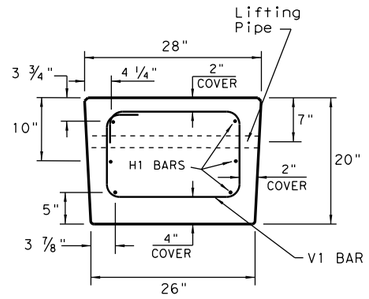
(17)~V1 Bars
(#4) Bars

REINFORCING STEEL DETAILS
TYPE 1 - BARRIER SEGMENT

Note: Use 2" Dia. Bending Pin, unless otherwise shown



SECTION A-A



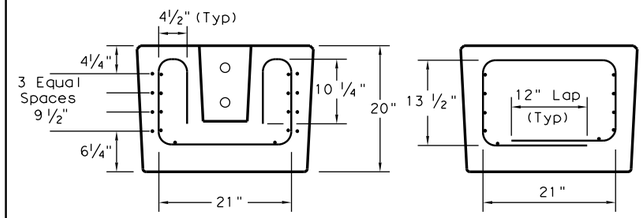
SECTION B-B

GENERAL NOTES

1. Low Profile Concrete Barrier (LPCB), is approved for use in temporary work zone locations, where the posted speed is 45 mph, or less.
2. Concrete shall be Class H for precast barrier with a minimum compressive strength of 3,600 psi.
3. Where used, rebar reinforcement shall be Grade 60 and conform to ASTM A615.
4. Precast LPCB barrier length shall be 20 ft.
5. All barrier edges shall have ¾" chamfer or a tooled radius.
6. Joint connection hardware shall be in accordance with Item 449, "Anchor Bolts." and is considered subsidiary.
7. Steel pipe required for joint connection bolts shall be galvanized in accordance with Item 445,"Galvanizing."
8. Welded wire reinforcement (WWR) may be used in lieu of conventional reinforcement for Type 1 barrier, and shall meet the requirements shown.

FOR CONTRACTORS INFORMATION ONLY

(TYPE 1) APPROX. QUANTITIES 20 FT. SECTION		
CONCRETE	CY	2.6
REINFORCING STEEL	LBS	330
TOTAL BARRIER WT.	LBS	11000



SECTION A-A SECTION B-B

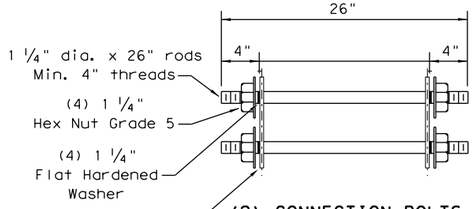
(WWR) GENERAL NOTES

1. Deformed Welded Wire Reinforcement shall conform to ASTM A497.
2. Welded wire cage may be cut or bent, if necessary, but must be approved by the Engineer.
3. Combinations of reinforcing steel and WWR are permitted, as directed by the Engineer. The dimensions from the end of the barrier section to the first wire shall not exceed 3".

REQUIRED (WWR) WIRE DESIGN

8 ~ (D31) Horizontal Wires (Equally spaced)
10 ~ (D20) Horizontal Wires (Equally spaced)
29 ~ (D20) Vertical Wires (Spaced as shown in Elevation View)

WELDED WIRE REINFORCEMENT (WWR)- OPTIONAL REINFORCING



(2) CONNECTION BOLTS
ASTM A36

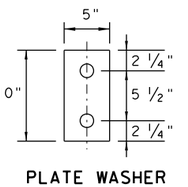


PLATE WASHER
5" x 10" x ⅜"

Note: Rods, Hex nuts and Washers shall be Galvanized.

SHEET 1 OF 2

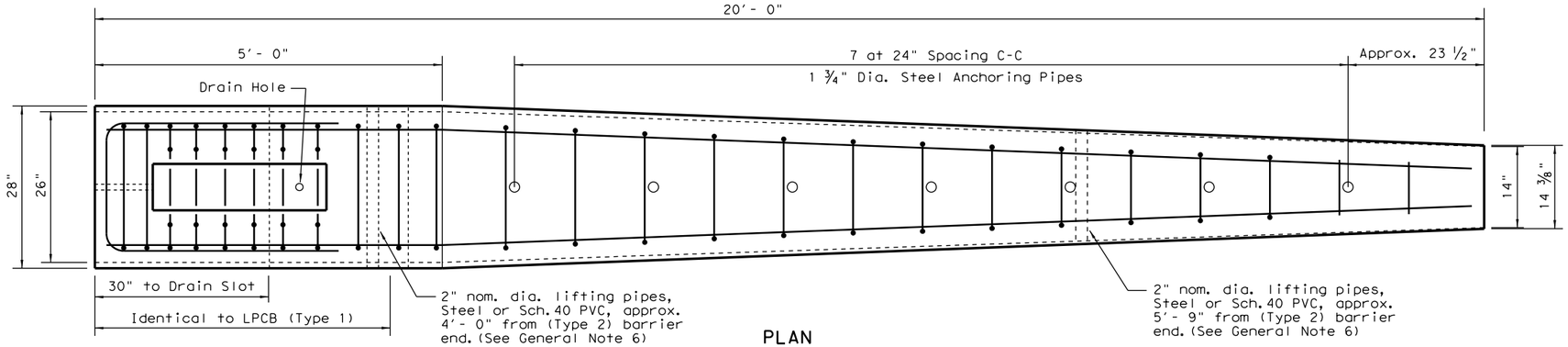
Texas Department of Transportation — Design Division Standard

LOW PROFILE CONCRETE BARRIER
PRECAST BARRIER (TYPE 1)
LPCB-13

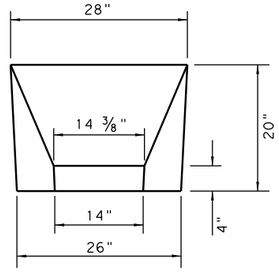
FILE: lpcb13.dgn	DN: TxDOT	CK: AM	DW: VP	CK:
©TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		134 OF 377

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

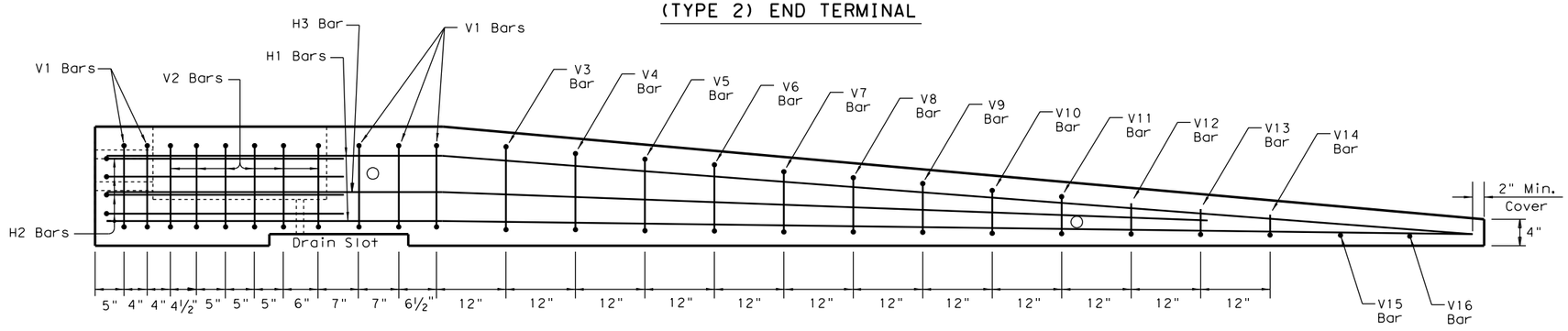
DATE: 5/19/2025
FILE: c:\bms\pwe-useast-006\knerr.chris\dms7160?\lpcb13-02.dgn



PLAN
(TYPE 2) END TERMINAL

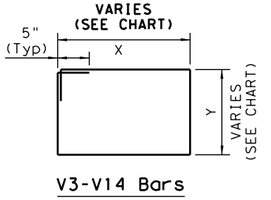


APPROACH VIEW

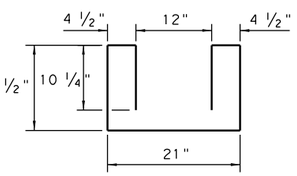


ELEVATION
(TYPE 2) END TERMINAL

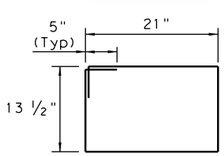
Note:
Anchoring pipes not shown in Elevation View



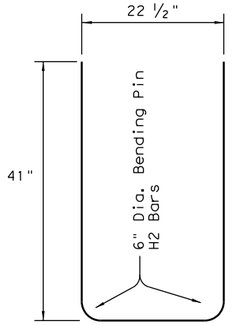
V3-V14 Bars



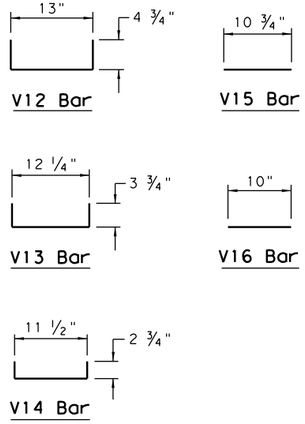
(6)~V2 Bars



(5)~V1 Bars



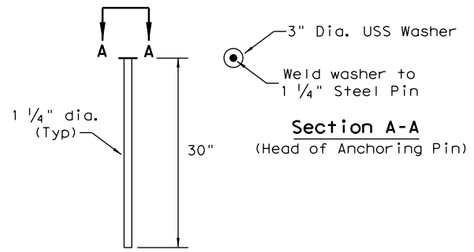
(4)~H2 Bars
(#5) Bars



Note: All V Bars are (#4)

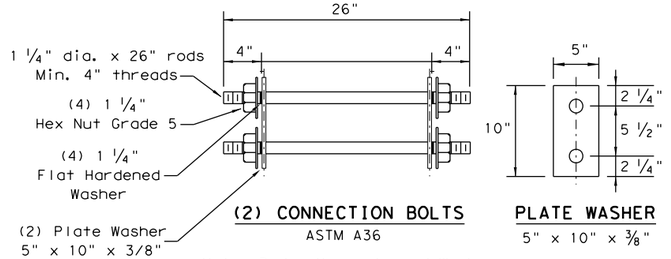
BAR(#4)	X (IN.)	Y (IN.)
V3 BAR	20 ¼	14 ½
V4 BAR	19 ½	13 ½
V5 BAR	18 ½	12 ¼
V6 BAR	17 ½	11 ¼
V7 BAR	17	10 ¼
V8 BAR	16 ¼	9
V9 BAR	15 ½	8
V10 BAR	14 ½	7
V11 BAR	13 ¾	6

REINFORCING STEEL DETAILS
TYPE 2 - END TERMINAL



(7) Anchor Pins
ASTM A36 Steel
(See Note 3)

Section A-A
(Head of Anchoring Pin)

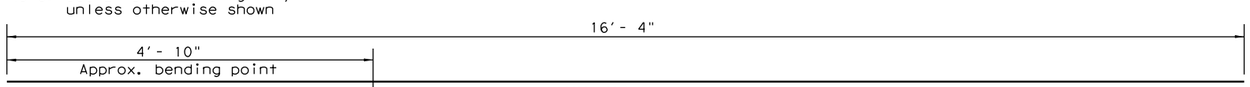


(2) CONNECTION BOLTS
ASTM A36

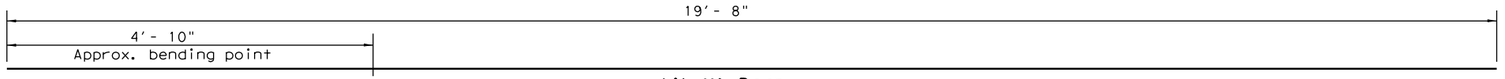
PLATE WASHER
5" x 10" x ⅜"

Note: Rods, Hex nuts and Washers shall be Galvanized.

Note: Use 2" Dia. Bending Pin, unless otherwise shown



(2)~H3 Bars
(#5) Bar



Note: Bends on H1 and H3 bars are slight and do not require formal bends.

(4)~H1 Bars
(#5) Bar

TYPE 2 - NOTES

1. Welded wire reinforcment (WWR) is "not" an option for Type 2 Barrier.
2. Type 2 Barrier shall be used as an end treatment for the Type 1 barrier segments, when applicable.
3. The end treatment can be used without the anchor pins in locations that can accommodate approximately 4 ft. of lateral displacement of the end treatment. The use of non-pinned end treatment does not affect the performance or the deflection of the Low-Profile barrier system.
4. The anchor pins are all the same length and are to be driven flush with the top of the (Type 2) barrier surface.
5. The bends in the H3 and H1 bars are slight, no formal bend is necessary.
6. The Type 2 barrier segment must be lifted from the rear first, to prevent cracking of sloped section.
7. See LPCB sheet 1 for additional information.

FOR CONTRACTORS INFORMATION ONLY

(TYPE 2) APPROX. QUANTITIES	20 FT. SECTION	
CONCRETE	CY	1.65
REINFORCING STEEL	LBS	240
TOTAL BARRIER WT.	LBS	7000

Texas Department of Transportation
Design Division Standard

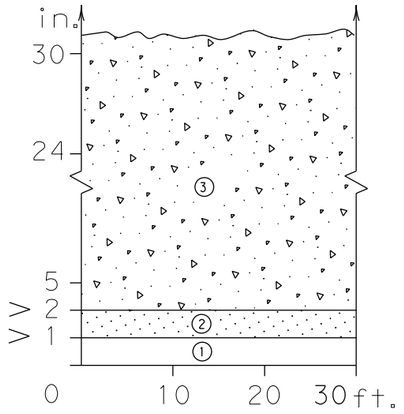
LOW PROFILE CONCRETE BARRIER
PRECAST BARRIER (TYPE 2)
LPCB-13

FILE: lpcb13.dgn	DN: TxDOT	CK: AM	DW: VP	CK:
© TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		135 OF 377

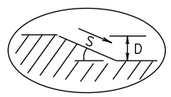
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

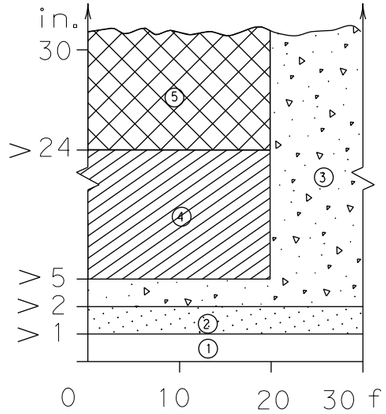
DEFINITION OF TREATMENT ZONES FOR VARIOUS EDGE CONDITIONS

Edge Height (D) in Inches versus Lateral Clearance (Y) in Feet

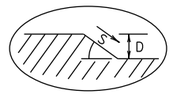


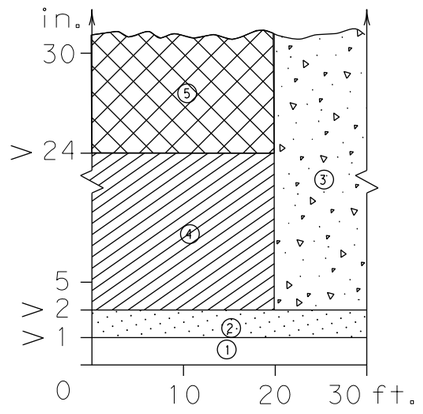
Edge Condition I
S = (3:1) (or flatter)



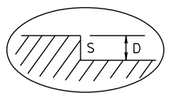


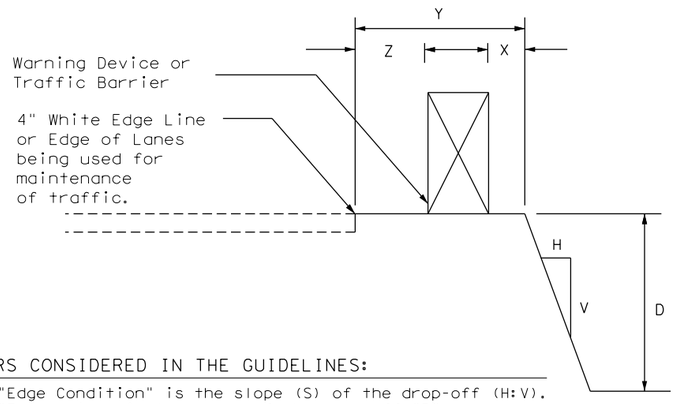
Edge Condition II
S = ((2.99):1) to (1:1)





Edge Condition III
S is steeper than (1:1)





FACTORS CONSIDERED IN THE GUIDELINES:

1. The "Edge Condition" is the slope (S) of the drop-off (H:V). The "Edge Height is the depth of the drop-off "D".

2. Distance "X" is to be the maximum practical under job conditions. Two feet minimum for high speed conditions. Distance "Y" is the lateral clearance from edge of travel lane to edge of dropoff. Distance "Z" does not have a minimum.

3. In addition to the factors considered in the guidelines, each construction zone drop-off situation should be analyzed individually, taking into account other variables, such as: traffic mix, posted speed in the construction zone, horizontal curvature, and the practicality of the treatment options.

4. The conditions for indicating the use of positive or protective barriers are given by Zone-5 and Figure-1. Traffic barriers are primarily applicable for high speed conditions. Urban areas with speeds of 30 mph or less may have a lesser need for signing, delineation, and barriers. Right-angled edges, however, with "D" greater than 2 inches and located within a lateral offset of 6 feet, may indicate a higher level of treatment.

5. If the distance "Y" must be less than 3 feet, the use of a positive barrier may not be feasible. In such a case, consider either: 1) narrowing the lanes to a desired 11 to 12 feet or 10 foot minimum (see CW20-8 sign), or 2) provide an edge slope such as Edge Condition I.

Zone	Treatment Types Guidelines:
①	No treatment
②	CW 8-11 "Uneven Lanes" signs.
③	CW 8-9a Shoulder Drop-Off" or CW 8-11 signs plus vertical panels.
④	CW8-9a or CW 8-11, signs plus drums. Where restricted space precludes the use of drums, use vertical panels. An edge slope to that of the profered Edge Condition I.
⑤	Check indications (Figure-1) for possitive barrier. Where positive barrier is not indicated, the treatment shown above for Zone-4 may be used after consideration of other applicable factors.

Edge Condition Notes:

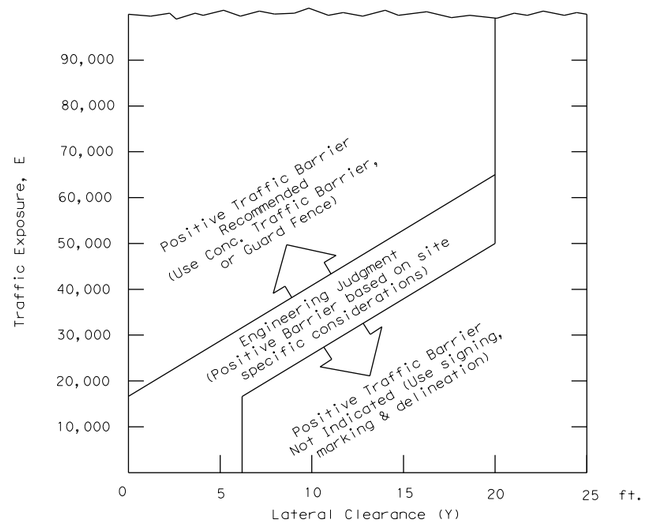
1. Edge Condition I: Most vehicles are able to traverse an edge condition with a slope rate of (3 to 1) or flatter. The slope must be constructed with a compacted material capable of supporting vehicles.

2. Edge Condition II: Most vehicles are able to traverse an edge condition with a slope between (2.99 to 1) and (1 to 1) so long as "D" does not exceed 5 inches. Under-carriage drag on most automobiles will occur when "D" exceeds 6 inches. As "D" exeeds 24 inches, the possibility for rollover is greater in most vehicles.

3. Edge Condition III: When slopes are greater than (1 to 1) and where "D" is greater than 2 inches, a more difficult control factor may exist for some vehicles, if not properly treated. For example, where "D" is greater than 2 inches and up to 24 inches different types of vehicles may experience different steering control at different edge heights. Automobiles might experience more steering control differential when "D" is greater than 2 inches and up to 5 inches. Trucks, particularly those with high loads, have more steering control differential when "D" is greater than 5 inches and up to 24 inches. When "D" exceeds 24 inches, the possibility of rollover is greater for most vehicles.

4. Milling or overlay operations that result in Edge Condition III should not be in place without appropriate warning treatments, and these conditions should not be left in place for extended periods of time.

FIGURE-1: CONDITIONS INDICATING USE OF POSITIVE BARRIER FOR ZONE 5 (▨)



1. E = ADT x T
   Where ADT is that portion of the average daily traffic volume traveling within 20 feet (generally two adjacent lanes) of the edge dropoff condition; and, T is the duration time in years of the dropoff condition.

2. Figure-1 provides a practical approach to the use of positive barriers for the protection of vehicles from pavement drop-offs. Other factors, such as the presence of heavy machinery, construction workers, or the mix and volume of traffic may make the use of positive barriers appropriate, even when the edge condition alone may not justify the use of a barrier.

3. An approved end treatment should be provided for any positive barrier end located within the clear zone.

These guidelines apply to temporary traffic control areas or work zones where continuous pavement edges or drop-offs exists parallel and adjacent to a lane used by traffic. The edge conditions may be present between shoulders and travel lanes, between adjacent or opposing travel lanes, or at intermediate points across the width of the paved surface. Due to the variability in construction operations, tolerances in the variables may be allowed by the engineer. These guidelines do not apply to short term operations. These guidelines do not constitute a rigid standard or policy; rather, they are guidance to be used in conjunction with engineering judgement. These guidelines may be updated on the Design Division's on-line manuals.

Engineer's Seal

Date 5/19/2025

Texas Department of Transportation

Traffic Safety Division Standard

TREATMENT FOR VARIOUS EDGE CONDITIONS

FILE: edgecon.dgn	DN:	CK:	DW:	CK:
©TxDOT August 2000	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
03-01 08-01 9-21	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		136 OF 377

DATE: 5/19/2025 8:59:30 AM
FILE: c:\txdms\pwe-useast-006\knerr.chris\dms71607\edgecon-21.dgn

MILITARY DRIVE

Chain MD_CL contains:
CUR MD_CL1 CUR MD_CL2 CUR MD_CL3 C2

Beginning chain MD_CL description

Curve Data

Curve MD_CL1
P.I. Station 23+59.84 X 2,074,535.6505 Y 13,717,853.2448
Delta = 65° 56′ 56.3669" (RT)
Degree = 5° 00′ 45.9148"
Tangent = 741.5497
Length = 1,315.6239
Radius = 1,143.0000
External = 219.4775
Long Chord = 1,244.1913
Mid. Ord. = 184.1225
P.C. Station 16+18.29 X 2,073,854.4320 Y 13,717,560.2647
P.T. Station 29+33.91 X 2,075,080.8255 Y 13,717,350.5717
C.C. X 2,074,306.0218 Y 13,716,510.2573
Back = N 66° 43′ 41.9097" E
Ahead = S 47° 19′ 21.7233" E
Chord Bear = S 80° 17′ 49.9068" E

Course from PT MD_CL1 to PC MD_CL2 S 47° 19′ 21.7229" E Dist 239.8323

Curve Data

Curve MD_CL2
P.I. Station 34+86.14 X 2,075,486.8143 Y 13,716,976.2337
Delta = 26° 11′ 22.0864" (LT)
Degree = 4° 15′ 58.5113"
Tangent = 312.3958
Length = 613.8752
Radius = 1,343.0000
External = 35.8546
Long Chord = 608.5450
Mid. Ord. = 34.9223
P.C. Station 31+73.75 X 2,075,257.1461 Y 13,717,187.9970
P.T. Station 37+87.62 X 2,075,786.3643 Y 13,716,887.5721
C.C. X 2,076,167.5234 Y 13,718,175.3480
Back = S 47° 19′ 21.7233" E
Ahead = S 73° 30′ 43.8097" E
Chord Bear = S 60° 25′ 02.7665" E

Course from PT MD_CL2 to PC MD_CL3 S 72° 50′ 50.8372" E Dist 377.6297

Curve Data

Curve MD_CL3
P.I. Station 42+27.95 X 2,076,207.1055 Y 13,716,757.7128
Delta = 10° 14′ 10.0840" (RT)
Degree = 8° 11′ 06.4009"
Tangent = 62.6958
Length = 125.0580
Radius = 700.0000
External = 2.8021
Long Chord = 124.8917
Mid. Ord. = 2.7909
P.C. Station 41+65.25 X 2,076,147.1982 Y 13,716,776.2028
P.T. Station 42+90.31 X 2,076,262.7735 Y 13,716,728.8711
C.C. X 2,075,940.7565 Y 13,716,107.3367
Back = S 72° 50′ 50.8368" E
Ahead = S 62° 36′ 40.7528" E
Chord Bear = S 67° 43′ 45.7948" E

Course from PT MD_CL3 to C2 S 62° 36′ 40.7527" E Dist 1,731.5256

Point C2 X 2,077,800.2060 Y 13,715,932.3272 Sta 60+21.83

Ending chain MD_CL description

WB MILITARY DRIVE

Chain MD_WB contains:
CUR MD_WB1 CUR MD_WB2 CUR MD_WB3 CUR MD_WB4 CUR MD_WB5

Beginning chain MD_WB description

Curve Data

Curve MD_WB1
P.I. Station 223+71.52 X 2,074,539.2667 Y 13,717,874.3942
Delta = 65° 56′ 56.3669" (RT)
Degree = 4° 56′ 06.1332"
Tangent = 753.2277
Length = 1,336.3424
Radius = 1,161.0000
External = 222.9339
Long Chord = 1,263.7849
Mid. Ord. = 187.0221
P.C. Station 216+18.29 X 2,073,847.3204 Y 13,717,576.8003
P.T. Station 229+54.63 X 2,075,093.0271 Y 13,717,363.8050
C.C. X 2,074,306.0218 Y 13,716,510.2573
Back = N 66° 43′ 41.9097" E
Ahead = S 47° 19′ 21.7233" E
Chord Bear = S 80° 17′ 49.9068" E

Course from PT MD_WB1 to PC MD_WB2 S 47° 19′ 21.7235" E Dist 239.8323

Curve Data

Curve MD_WB2
P.I. Station 235+02.67 X 2,075,495.9377 Y 13,716,992.3052
Delta = 26° 11′ 22.0864" (LT)
Degree = 4° 19′ 27.1552"
Tangent = 308.2088
Length = 605.6475
Radius = 1,325.0000
External = 35.3741
Long Chord = 600.3888
Mid. Ord. = 34.4542
P.C. Station 231+94.46 X 2,075,269.3478 Y 13,717,201.2303
P.T. Station 238+00.11 X 2,075,791.4730 Y 13,716,904.8320
C.C. X 2,076,167.5234 Y 13,718,175.3480
Back = S 47° 19′ 21.7233" E
Ahead = S 73° 30′ 43.8097" E
Chord Bear = S 60° 25′ 02.7665" E

Course from PT MD_WB2 to PC MD_WB3 S 72° 50′ 51.4981" E Dist 377.8362

Curve Data

Curve MD_WB3
P.I. Station 242+42.26 X 2,076,213.9535 Y 13,716,774.4372
Delta = 10° 14′ 10.7453" (RT)
Degree = 7° 58′ 47.6889"
Tangent = 64.3092
Length = 128.2761
Radius = 718.0000
External = 2.8742
Long Chord = 128.1055
Mid. Ord. = 2.8628
P.C. Station 241+77.95 X 2,076,152.5045 Y 13,716,793.4029
P.T. Station 243+06.22 X 2,076,271.0540 Y 13,716,744.8535
C.C. X 2,075,940.7565 Y 13,716,107.3367
Back = S 72° 50′ 51.4980" E
Ahead = S 62° 36′ 40.7528" E
Chord Bear = S 67° 43′ 46.1254" E

Course from PT MD_WB3 to PC MD_WB4 S 62° 36′ 40.7529" E Dist 510.7507

Curve Data

Curve MD_WB4
P.I. Station 248+40.97 X 2,076,745.8540 Y 13,716,498.8595
Delta = 5° 23′ 11.1575" (RT)
Degree = 11° 14′ 04.0797"
Tangent = 23.9905
Length = 47.9456
Radius = 510.0000
External = 0.5639
Long Chord = 47.9279
Mid. Ord. = 0.5633
P.C. Station 248+16.98 X 2,076,724.5527 Y 13,716,509.8957
P.T. Station 248+64.92 X 2,076,766.0253 Y 13,716,485.8724
C.C. X 2,076,489.9403 Y 13,716,057.0635
Back = S 62° 36′ 40.7528" E
Ahead = S 57° 13′ 29.5953" E
Chord Bear = S 59° 55′ 05.1740" E

Course from PT MD_WB4 to PC MD_WB5 S 57° 13′ 29.5951" E Dist 335.5177

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

HORIZONTAL ALIGNMENT DATA

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 137 OF 377

WB MILITARY DRIVE CON'T

Curve Data

Curve MD_WB5
P.I. Station 252+24.43 X 2,077,068.3004 Y 13,716,291.2552
Delta = 5° 23′ 11.1575" (LT)
Degree = 11° 14′ 04.0797"
Tangent = 23.9905
Length = 47.9456
Radius = 510.0000
External = 0.5639
Long Chord = 47.9279
Mid. Ord. = 0.5633
P.C. Station 252+00.44 X 2,077,048.1291 Y 13,716,304.2423
P.T. Station 252+48.38 X 2,077,089.6017 Y 13,716,280.2190
C.C. X 2,077,324.2141 Y 13,716,733.0512
Back = S 57° 13′ 29.5953" E
Ahead = S 62° 36′ 40.7528" E
Chord Bear = S 59° 55′ 05.1740" E

Ending chain MD_WB description

EB MILITARY DRIVE

Chain MD_EB contains:
CUR MD_EB1 CUR MD_EB2 CUR MD_EB3 101

Beginning chain MD_EB description

Curve Data

Curve MD_EB1
P.I. Station 123+48.16 X 2,074,532.0343 Y 13,717,832.0954
Delta = 65° 56′ 56.3669" (RT)
Degree = 5° 05′ 34.6494"
Tangent = 729.8718
Length = 1,294.9054
Radius = 1,125.0000
External = 216.0212
Long Chord = 1,224.5977
Mid. Ord. = 181.2230
P.C. Station 116+18.29 X 2,073,861.5437 Y 13,717,543.7292
P.T. Station 129+13.20 X 2,075,068.6238 Y 13,717,337.3384
C.C. X 2,074,306.0218 Y 13,716,510.2573
Back = N 66° 43′ 41.9097" E
Ahead = S 47° 19′ 21.7233" E
Chord Bear = S 80° 17′ 49.9068" E

Course from PT MD_EB1 to PC MD_EB2 S 47° 19′ 21.7234" E Dist 239.8323

Curve Data

Curve MD_EB2
P.I. Station 134+69.56 X 2,075,477.6502 Y 13,716,960.1996
Delta = 26° 11′ 06.2093" (LT)
Degree = 4° 12′ 35.3862"
Tangent = 316.5276
Length = 621.9981
Radius = 1,361.0000
External = 36.3227
Long Chord = 616.5992
Mid. Ord. = 35.3785
P.C. Station 131+53.03 X 2,075,244.9445 Y 13,717,174.7637
P.T. Station 137+75.03 X 2,075,781.1553 Y 13,716,870.3420
C.C. X 2,076,167.5234 Y 13,718,175.3480
Back = S 47° 19′ 21.7233" E
Ahead = S 73° 30′ 27.9327" E
Chord Bear = S 60° 24′ 54.8280" E

Course from PT MD_EB2 to PC MD_EB3 S 72° 50′ 50.8368" E Dist 377.5257

Curve Data

Curve MD_EB3
P.I. Station 142+13.64 X 2,076,200.2565 Y 13,716,740.9888
Delta = 10° 14′ 10.0840" (RT)
Degree = 8° 24′ 04.1065"
Tangent = 61.0837
Length = 121.8422
Radius = 682.0000
External = 2.7300
Long Chord = 121.6802
Mid. Ord. = 2.7191
P.C. Station 141+52.55 X 2,076,141.8897 Y 13,716,759.0034
P.T. Station 142+74.39 X 2,076,254.4931 Y 13,716,712.8888
C.C. X 2,075,940.7565 Y 13,716,107.3367
Back = S 72° 50′ 50.8368" E
Ahead = S 62° 36′ 40.7528" E
Chord Bear = S 67° 43′ 45.7948" E

Course from PT MD_EB3 to 101 S 62° 36′ 40.7528" E Dist 1,731.5256

Point 101 X 2,077,791.9256 Y 13,715,916.3449 Sta 160+05.92

Ending chain MD_EB description

SEQUOIA HEIGHT

Chain SEQ_CL contains:
S1 S2

Beginning chain SEQ_CL description

Point S1 X 2,074,819.4628 Y 13,717,301.2233 Sta 10+00.00

Course from S1 to S2 N 32° 59′ 15.6487" E Dist 400.0000

Point S2 X 2,075,037.2463 Y 13,717,636.7384 Sta 14+00.00

Ending chain SEQ_CL description

RICHLAND HILLS DR

Chain RICH_CL contains:
R1 R2

Beginning chain RICH_CL description

Point R1 X 2,075,782.7929 Y 13,716,679.3650 Sta 10+00.00

Course from R1 to R2 N 17° 07′ 49.7870" E Dist 400.0000

Point R2 X 2,075,900.6125 Y 13,717,061.6195 Sta 14+00.00

Ending chain RICH_CL description

REED RD

Chain REED_CL contains:
E1 CUR REED_CL1 E2 E3

Beginning chain REED_CL description

Point E1 X 2,076,511.0259 Y 13,716,550.0773 Sta 10+00.00

Course from E1 to PC REED_CL1 N 28° 22′ 36.9098" E Dist 76.2901

Curve Data

Curve REED_CL1
P.I. Station 12+50.03 X 2,076,629.8569 Y 13,716,770.0624
Delta = 37° 37′ 27.1477" (RT)
Degree = 11° 14′ 04.0797"
Tangent = 173.7384
Length = 334.8998
Radius = 510.0000
External = 28.7811
Long Chord = 328.9150
Mid. Ord. = 27.2436
P.C. Station 10+76.29 X 2,076,547.2843 Y 13,716,617.2004
P.T. Station 14+11.19 X 2,076,788.5762 Y 13,716,840.7250
C.C. X 2,076,996.0027 Y 13,716,374.8128
Back = N 28° 22′ 36.9098" E
Ahead = N 66° 00′ 04.0575" E
Chord Bear = N 47° 11′ 20.4837" E

Course from PT REED_CL1 to E2 N 66° 00′ 04.0575" E Dist 395.5895

Point E2 X 2,077,149.9684 Y 13,717,001.6187 Sta 18+06.78

Course from E2 to E3 N 66° 15′ 00.9407" E Dist 360.7868

Point E3 X 2,077,480.2014 Y 13,717,146.9229 Sta 21+67.57

Ending chain REED_CL description

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

HORIZONTAL ALIGNMENT DATA

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 138 OF 377

WB MILITARY DRIVE

Beginning profile WB_76P description:
Feature: Road_Centerline

		STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI	1	223+95.61	844.5466				
VPC		225+00.00	874.0433	-3.5065	K = 49.5		
VPI	2	225+50.00	845.2900		100.0000	50.0000	50.0000
VPT		226+00.00	544.5467	-1.4867			
VPC		227+15.00	842.8370	-1.4867	K = 218.1	SSD = 697.9	
VPI	3	230+00.00	838.6000		570.0000	285.0000	285.0000
VPT		232+85.00	826.9150	-4.1000			
VPC		233+35.00	824.8650	-4.1000	K = 49.6		
VPI	4	234+50.00	820.1500		230.0000	115.0000	115.0000
Low Point		235+38.22	820.6990				
VPT		235+65.00	820.7713	0.5403			
VPC		235+90.00	820.9064	0.5403	K = 40.1	SSD = 420.4	
High Point		236+11.65	820.9649				
VPI	5	236+50.00	821.2305		120.0000	60.0000	60.0000
VPT		237+10.00	819.7582	-2.4538			
VPI	6	239+00.00	815.0959	-2.4538			
VPC		241+50.00	810.3704	-1.8902	K = 78.2		
VPI	7	242+00.00	809.4253		100.0000	50.0000	50.0000
VPT		242+50.00	809.1196	-0.6113			
VPI	8	246+00.00	806.9800	-0.5000			
VPC		248+00.00	805.9800	-0.5000	K = 71.7		
VPI	9	248+90.00	805.5300		180.0000	90.0000	90.0000
VPT		249+80.00	802.8219	-3.0090			
VPI	10	250+31.00	801.2873				

Ending profile WB_76P description

EB MILITARY DRIVE

Beginning profile EB_PRF description:

		STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI	1	116+18.29	849.5883				
VPC		116+35.00	849.4780	-0.6597	K = 55.0		
Low Point		116+71.27	849.3584				
VPI	2	117+35.00	848.8184		199.9989	99.9994	99.9994
VPT		118+35.00	851.7965	2.9781			
VPC		118+88.00	853.3749	2.9781	K = 68.3	SSD = 383.9	
High Point		120+91.41	856.4038				
VPI	3	121+13.00	860.0756		450.0000	225.0000	225.0000
VPT		123+38.00	851.9526	-3.6102			
VPC		124+46.00	848.0536	-3.6102	K = 74.2		
VPI	4	125+36.00	844.8044		180.0000	90.0000	90.0000
VPT		126+26.00	843.7374	-1.1856			
VPC		126+40.18	843.5693	-1.1856	K = 117.8	SSD = 688.5	
VPI	5	127+50.00	842.2673		219.6417	109.8208	109.8208
VPT		128+59.82	838.9175	-3.0502			
VPC		130+55.00	832.9641	-3.0502	K = 80.0	SSD = 840.2	
VPI	6	131+10.00	831.2865		110.0000	55.0000	55.0000
VPT		131+65.00	828.8530	-4.4244			
VPC		132+38.00	825.6232	-4.4244	K = 50.8		
VPI	7	133+63.00	820.0927		250.0000	125.0000	125.0000
Low Point		134+62.74	820.6515				
VPT		134+88.00	820.7143	0.4973			
VPC		135+06.00	820.8038	0.4973	K = 75.8	SSD = 481.8	
High Point		135+43.69	820.8975				
VPI	8	136+16.00	821.3508		220.0000	110.0000	110.0000
VPT		137+26.00	818.7052	-2.4050			
VPC		138+80.50	814.9895	-2.4050	K = 47.9		
VPI	9	138+88.00	814.8091		15.0000	7.5000	7.5000
VPT		138+95.50	814.6522	-2.0922			
VPC		140+55.00	811.3151	-2.0922	K = 132.1		
VPI	10	141+55.00	809.2229		200.0000	100.0000	100.0000
VPT		142+55.00	808.6445	-0.5784			
VPI	11	146+22.00	806.5219	-0.5784			
VPC		147+12.00	806.3878	-0.1490	K = 70.3	SSD = 808.3	
VPI	12	147+62.00	806.3132		100.0000	50.0000	50.0000
VPT		148+12.00	805.5273	-1.5719			
VPC		148+50.00	804.9300	-1.5719	K = 75.3	SSD = 862.3	
VPI	13	149+00.00	804.1441		100.0000	50.0000	50.0000
VPT		149+50.00	802.6940	-2.9002			
VPC		150+60.00	799.5038	-2.9002	K = 81.9		
VPI	14	151+60.00	796.6037		200.0000	100.0000	100.0000
VPT		152+60.00	796.1468	-0.4568			
VPI	15	155+32.53	794.9019	-0.4568			

Ending profile EB_PRF description

NOTE:
EASTBOUND VERTICAL PROFILE WAS GENERATED TO VERIFY EXISTING VERTICAL GEOMETRY MEETS CURRENT DESIGN CRITERIA.

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

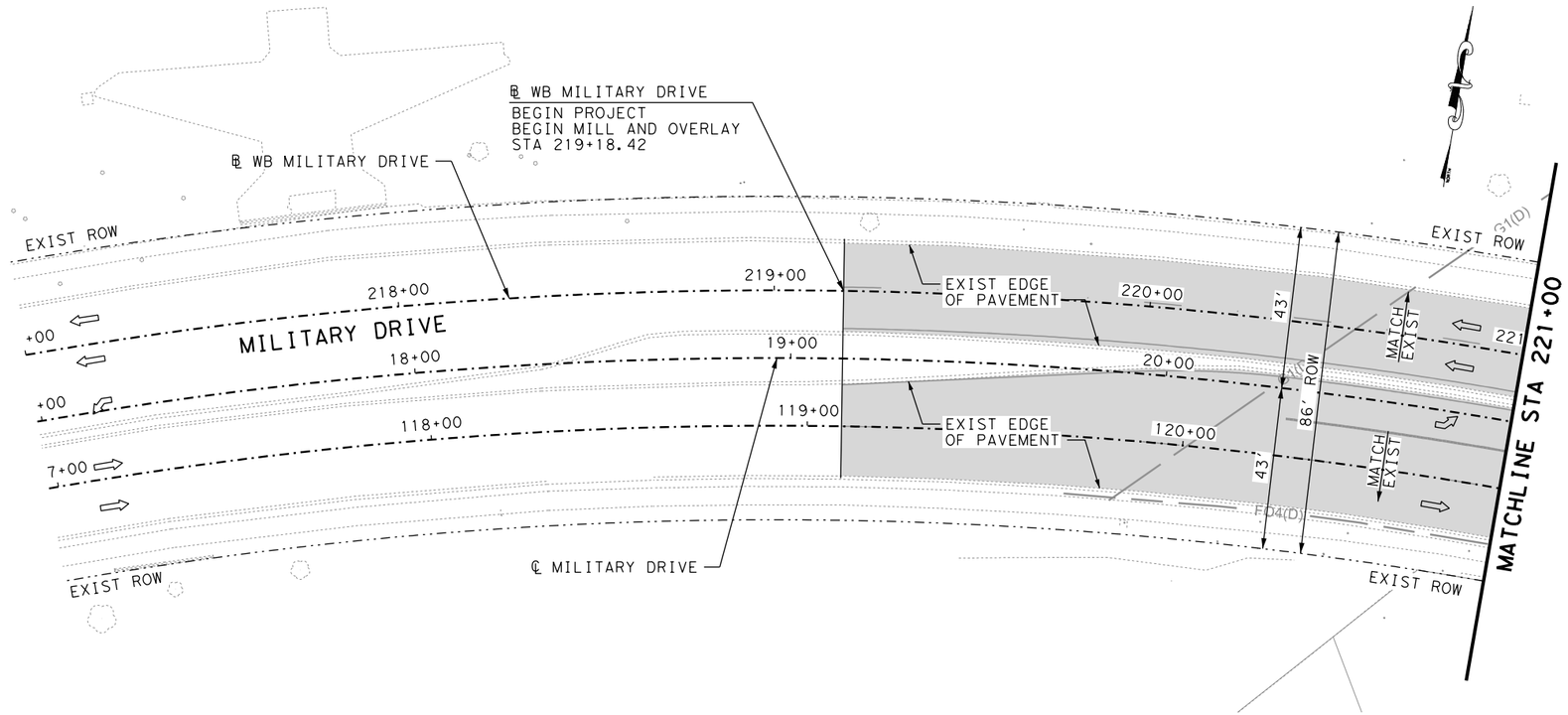
consor
F-12040
8023 VANTAGE DR. STE 300.
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

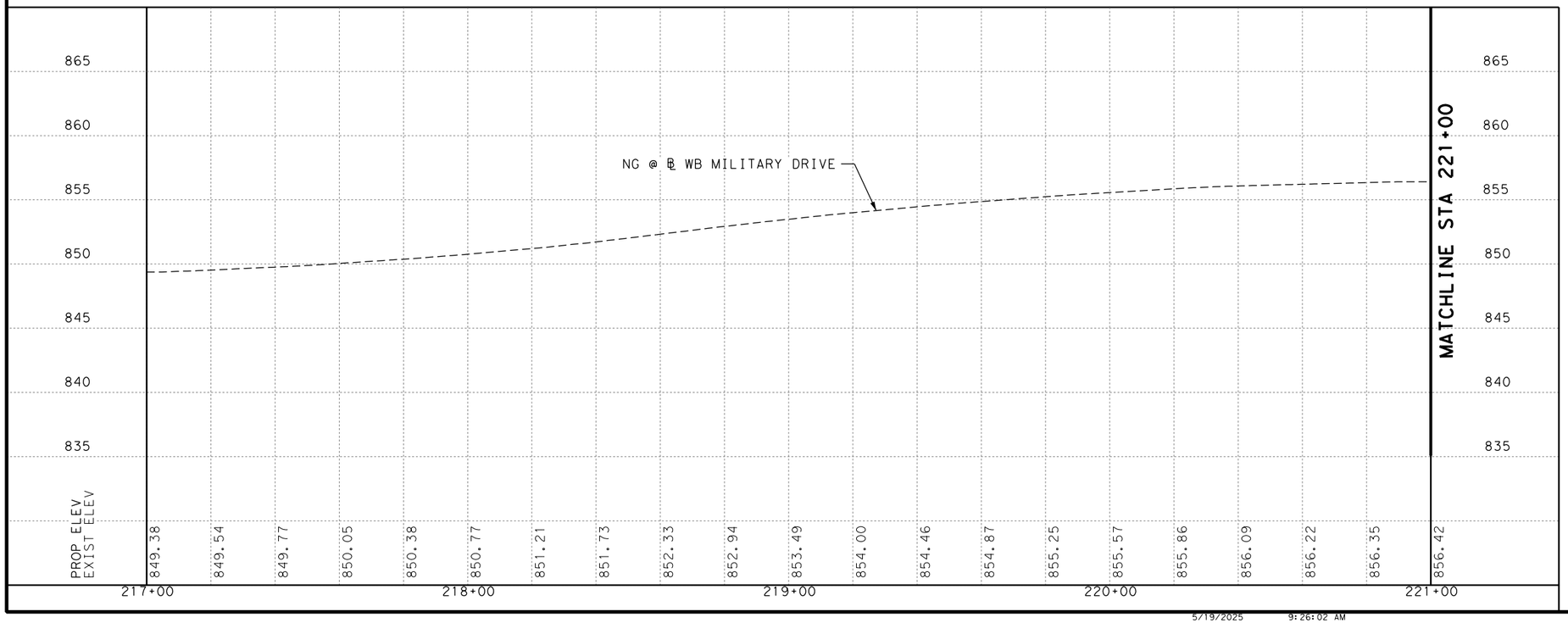
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

VERTICAL ALIGNMENT DATA

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 139 OF 377





ESTIMATED SHEET QUANTITES			
ITEM	DESCRIPTION	UNIT	QTY
103.1	REMOVE CONCRETE CURB	LF	0
103.3	REMOVE SIDEWALKS AND DRIVEWAYS	SF	0
104.1	STREET EXCAVATION	CY	0
107.1	EMBANKMENT (FINAL)(ORD COMP)(TY B)	CY	0
202.1	PRIME COAT	GAL	0
203.1	TACK COAT	GAL	111
208.1	SALVAGING, HAULING, AND STOCKPILING RECLAIMABLE ASPHALTIC PAVMENT (3" DEPTH)	SY	1101
240.2	WARM MIX ASPHALTIC CONCRETE TYPE B (11" COMP DEPTH)	SY	0
240.4	WARM MIX ASPHALTIC CONCRETE TYPE D (3" COMP DEPTH)	SY	1101
307.1	CONCRETE STRUCTURE (ELEVATED SIDEWALK)	CY	0
500.1	CONCRETE CURB	LF	0
502.1	CONCRETE SIDEWALKS	SY	0
502.XX	VIA BENCH PAD	SY	0
506.1	CONCRETE RETAINING WALLS (COMB. TYPE)	CY	0
SS 2006	MOISTURE CONDITIONED SUBGRADE (6" COMP DEPTH)	CY	0
SAWS 826	VALVE BOX ADJUSTMENTS	EA	0
351 7013	FLEXIBLE PAVEMENT STRUCTURE REPAIR	SY	0
450 7050	(HANDRAIL) (TY D)	LF	0

LEGEND

- PROP TRAFFIC FLOW
- EXIST TRAFFIC FLOW
- EXIST RIGHT OF WAY
- PROP CONC RET WALL COMB
- ADJUST PED/DRIVEWAY GATE AS NEEDED FOR CONSTR (1)
- TxDOT WHEELCHAIR RAMP, TYPE (II)
- CoSA WHEELCHAIR RAMP, TYPE (#)
- MILL AND OVERLAY
- PAVEMENT REPAIR
- SODDING
- MULCH

NOTES:

1. FOR INTERSECTION DETAILS, SEE INTERSECTION LAYOUTS.
2. SEE MISCELLANEOUS ROADWAY DETAILS FOR SIDEWALK AND MEDIAN DETAILS
3. 3" MILL AND 3" HMAC TY D OVERLAY
4. SEE MISCELLANEOUS CONSTRUCTION STANDARDS FOR ADDITIONAL INFORMATION.
5. FOR STORMWATER DETAILS, SEE STORM SEWER SYSTEM PLAN & PROFILES.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER
5/19/2025

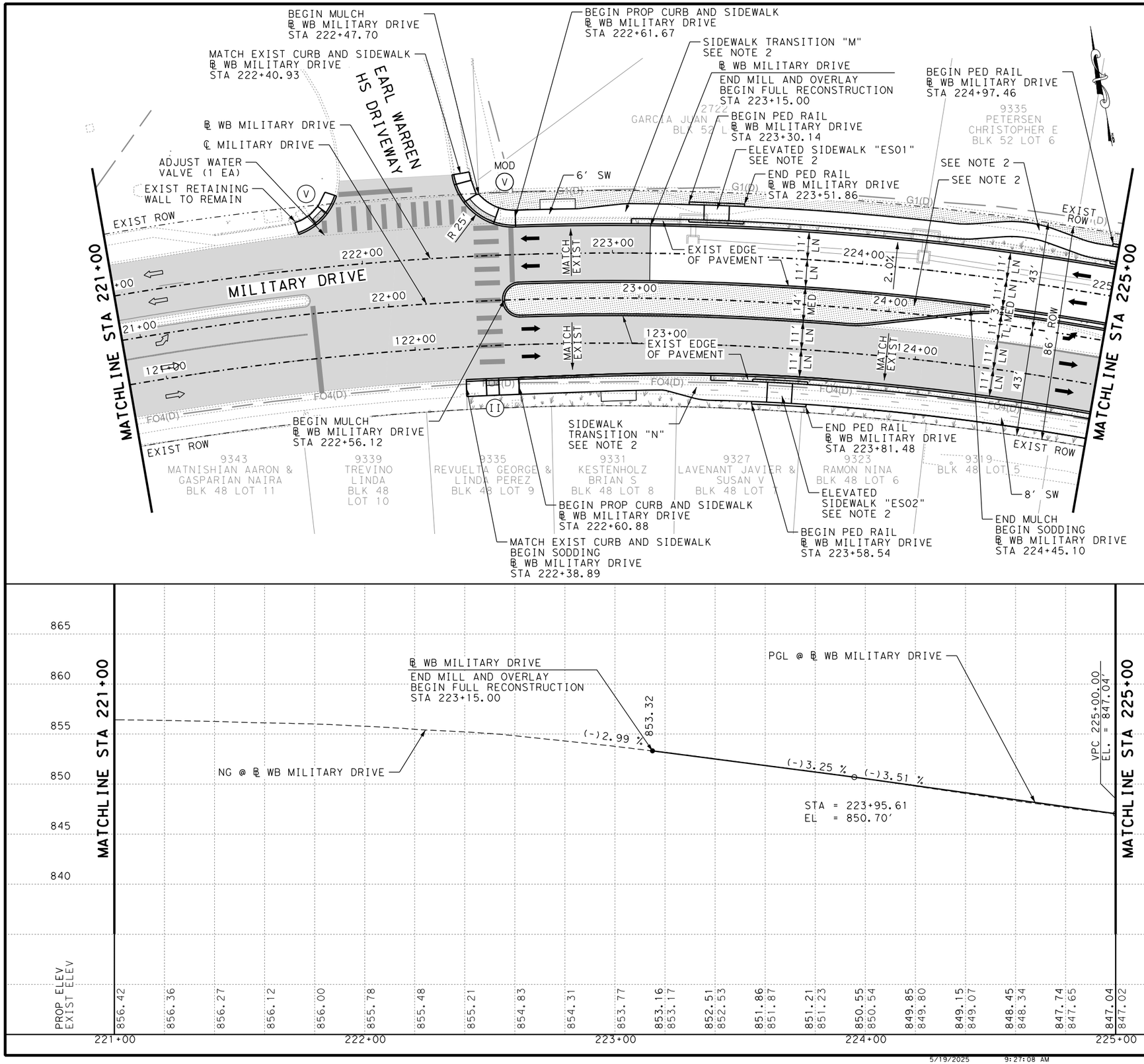
consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

PLAN AND PROFILE
BEGIN TO STA 221+00

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 140 OF 377



ESTIMATED SHEET QUANTITES			
ITEM	DESCRIPTION	UNIT	QTY
103.1	REMOVE CONCRETE CURB	LF	1034
103.3	REMOVE SIDEWALKS AND DRIVEWAYS	SF	2254
104.1	STREET EXCAVATION	CY	279
107.1	EMBANKMENT (FINAL)(ORD COMP)(TY B)	CY	44
202.1	PRIME COAT	GAL	127
203.1	TACK COAT	GAL	357
208.1	SALVAGING, HAULING, AND STOCKPILING RECLAIMABLE ASPHALTIC PAVMENT (3" DEPTH)	SY	1818
240.2	WARM MIX ASPHALTIC CONCRETE TYPE B (11" COMP DEPTH)	SY	632
240.4	WARM MIX ASPHALTIC CONCRETE TYPE D (3" COMP DEPTH)	SY	2304
307.1	CONCRETE STRUCTURE (ELEVATED SIDEWALK)	CY	5
500.1	CONCRETE CURB	LF	1041
502.1	CONCRETE SIDEWALKS	SY	383
502.XX	VIA BENCH PAD	SY	13
506.1	CONCRETE RETAINING WALLS (COMB. TYPE)	CY	0
SS 2006	MOISTURE CONDITIONED SUBGRADE (6" COMP DEPTH)	CY	105
SAWS 826	VALVE BOX ADJUSTMENTS	EA	1
351 7013	FLEXIBLE PAVEMENT STRUCTURE REPAIR	SY	0
450 7050	(HANDRAIL) (TY D)	LF	88

LEGEND

- PROP TRAFFIC FLOW
- EXIST TRAFFIC FLOW
- EXIST RIGHT OF WAY
- PROP CONC RET WALL COMB
- ADJUST PED/DRIVEWAY GATE AS NEEDED FOR CONSTR (1)
- TxDOT WHEELCHAIR RAMP, TYPE (II)
- CoSA WHEELCHAIR RAMP, TYPE (#)
- MILL AND OVERLAY
- PAVEMENT REPAIR
- SODDING
- MULCH

NOTES:

1. FOR INTERSECTION DETAILS, SEE INTERSECTION LAYOUTS.
2. SEE MISCELLANEOUS ROADWAY DETAILS FOR SIDEWALK AND MEDIAN DETAILS
3. 3" MILL AND 3" HMAC TY D OVERLAY
4. SEE MISCELLANEOUS CONSTRUCTION STANDARDS FOR ADDITIONAL INFORMATION.
5. FOR STORMWATER DETAILS, SEE STORM SEWER SYSTEM PLAN & PROFILES.

0 20' 40'

SCALE: 1" = 40'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300.
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

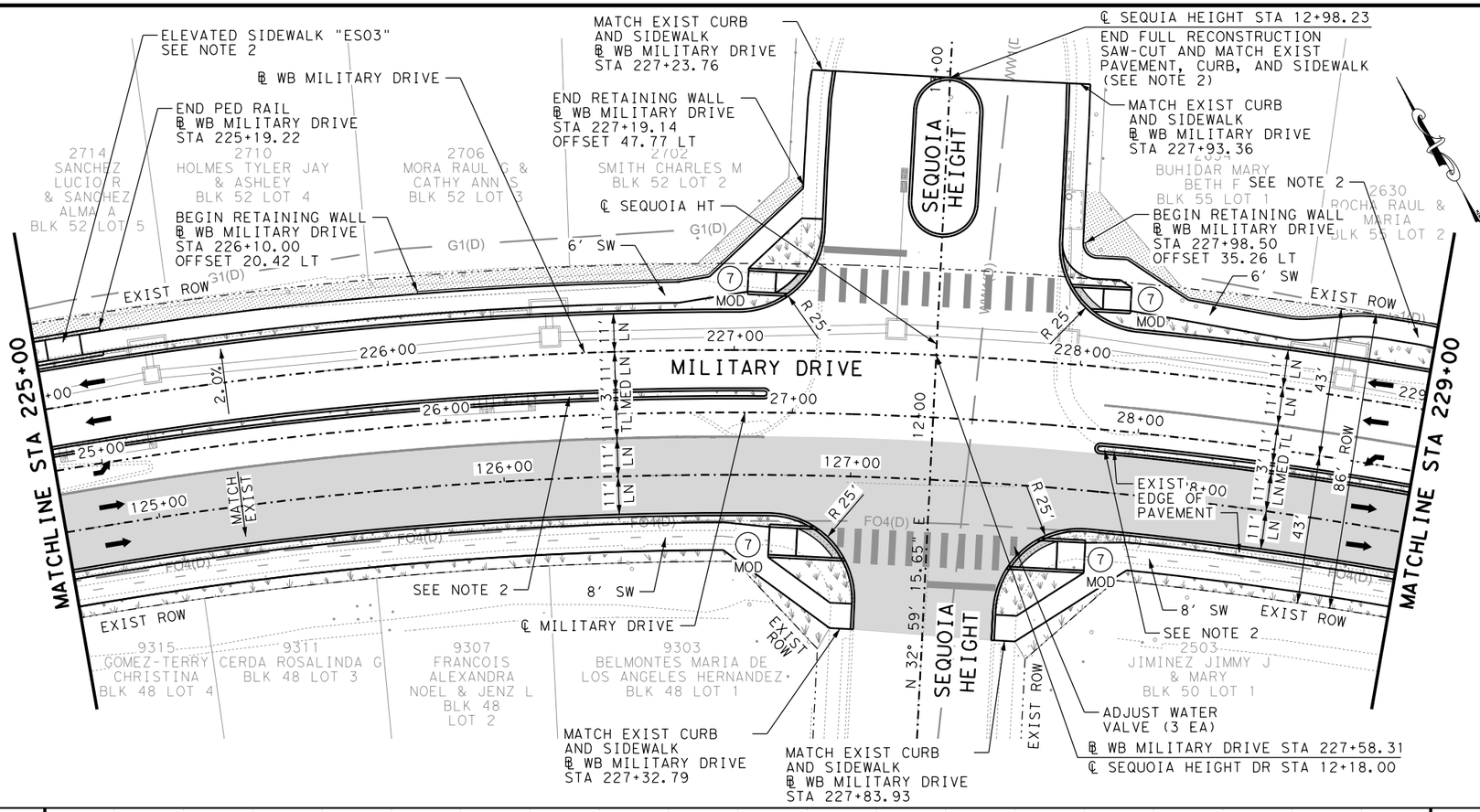
MILITARY DRIVE

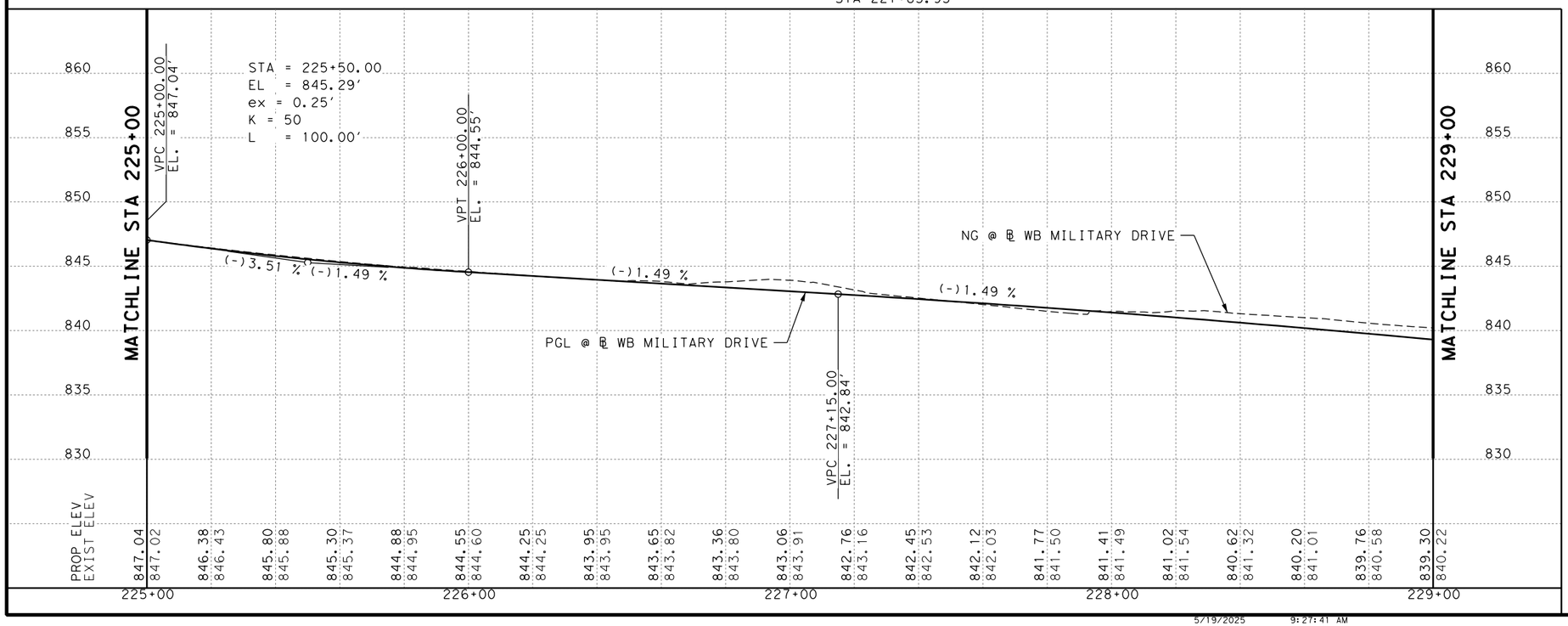
PLAN AND PROFILE

STA 221+00 TO STA 225+00

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 141 OF 377

c:\dms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_P&P02.dgn
9:27:08 AM
5/19/2025





ESTIMATED SHEET QUANTITES			
ITEM	DESCRIPTION	UNIT	QTY
103.1	REMOVE CONCRETE CURB	LF	983
103.3	REMOVE SIDEWALKS AND DRIVEWAYS	SF	3607
104.1	STREET EXCAVATION	CY	1256
107.1	EMBANKMENT (FINAL)(ORD COMP)(TY B)	CY	99
202.1	PRIME COAT	GAL	430
203.1	TACK COAT	GAL	738
208.1	SALVAGING, HAULING, AND STOCKPILING RECLAIMABLE ASPHALTIC PAVMENT (3" DEPTH)	SY	1212
240.2	WARM MIX ASPHALTIC CONCRETE TYPE B (11" COMP DEPTH)	SY	2148
240.4	WARM MIX ASPHALTIC CONCRETE TYPE D (3" COMP DEPTH)	SY	3079
307.1	CONCRETE STRUCTURE (ELEVATED SIDEWALK)	CY	2
500.1	CONCRETE CURB	LF	1696
502.1	CONCRETE SIDEWALKS	SY	652
502.XX	VIA BENCH PAD	SY	0
506.1	CONCRETE RETAINING WALLS (COMB. TYPE)	CY	11
SS 2006	MOISTURE CONDITIONED SUBGRADE (6" COMP DEPTH)	CY	358
SAWS 826	VALVE BOX ADJUSTMENTS	EA	3
351 7013	FLEXIBLE PAVEMENT STRUCTURE REPAIR	SY	0
450 7050	(HANDRAIL) (TY D)	LF	44

LEGEND

- PROP TRAFFIC FLOW
- EXIST TRAFFIC FLOW
- EXIST RIGHT OF WAY
- PROP CONC RET WALL COMB
- ADJUST PED/DRIVEWAY GATE AS NEEDED FOR CONSTR (1)
- TxDOT WHEELCHAIR RAMP, TYPE (II)
- CoSA WHEELCHAIR RAMP, TYPE (#)
- MILL AND OVERLAY
- PAVEMENT REPAIR
- SODDING
- MULCH

NOTES:

1. FOR INTERSECTION DETAILS, SEE INTERSECTION LAYOUTS.
2. SEE MISCELLANEOUS ROADWAY DETAILS FOR SIDEWALK AND MEDIAN DETAILS
3. 3" MILL AND 3" HMAC TY D OVERLAY
4. SEE MISCELLANEOUS CONSTRUCTION STANDARDS FOR ADDITIONAL INFORMATION.
5. FOR STORMWATER DETAILS, SEE STORM SEWER SYSTEM PLAN & PROFILES.

0 20' 40'

SCALE: 1" = 40'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

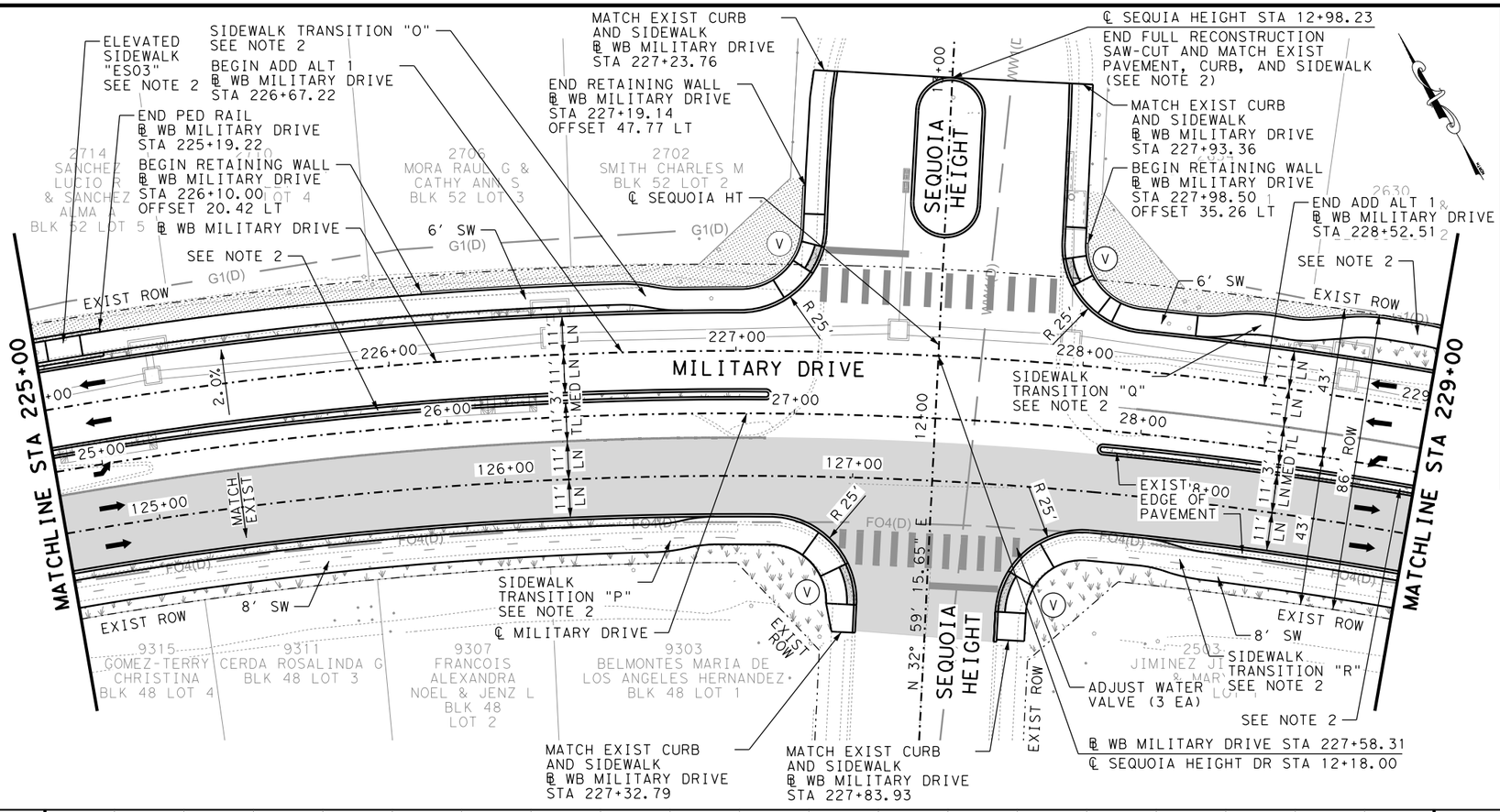
MILITARY DRIVE

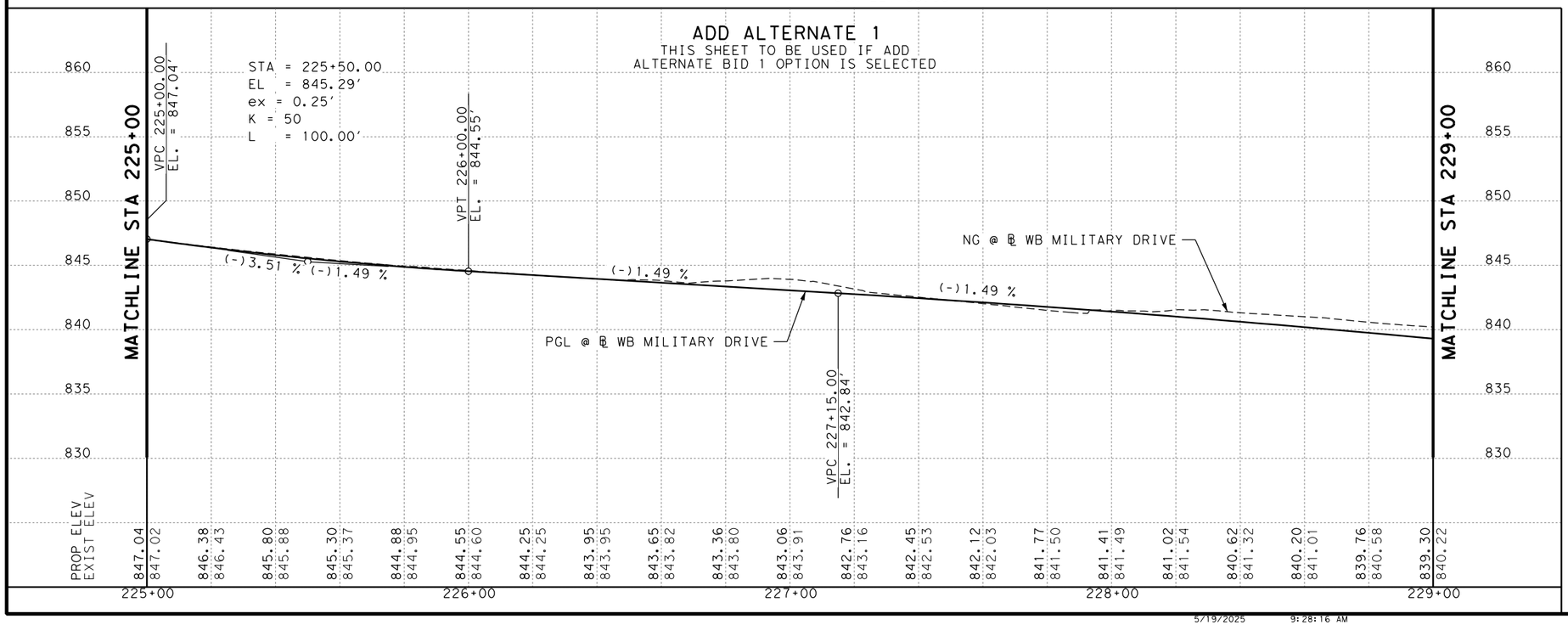
PLAN AND PROFILE

STA 225+00 TO STA 229+00

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 142 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_P&P03.dgn
5/19/2025 9:27:41 AM





ESTIMATED SHEET QUANTITES			
ITEM	DESCRIPTION	UNIT	QTY
103.1	REMOVE CONCRETE CURB	LF	983
103.3	REMOVE SIDEWALKS AND DRIVEWAYS	SF	3607
104.1	STREET EXCAVATION	CY	1256
107.1	EMBANKMENT (FINAL) (ORD COMP) (TY B)	CY	99
202.1	PRIME COAT	GAL	430
203.1	TACK COAT	GAL	738
208.1	SALVAGING, HAULING, AND STOCKPILING RECLAIMABLE ASPHALTIC PAVMENT (3" DEPTH)	SY	1212
240.2	WARM MIX ASPHALTIC CONCRETE TYPE B (11" COMP DEPTH)	SY	2148
240.4	WARM MIX ASPHALTIC CONCRETE TYPE D (3" COMP DEPTH)	SY	3079
307.1	CONCRETE STRUCTURE (ELEVATED SIDEWALK)	CY	2
500.1	CONCRETE CURB	LF	1571
502.1	CONCRETE SIDEWALKS	SY	628
502.XX	VIA BENCH PAD	SY	0
506.1	CONCRETE RETAINING WALLS (COMB. TYPE)	CY	11
SS 2006	MOISTURE CONDITIONED SUBGRADE (6" COMP DEPTH)	CY	358
SAWS 826	VALVE BOX ADJUSTMENTS	EA	3
351 6009	FLEXIBLE PAVEMENT STRUCTURE REPAIR	SY	0
450 7050	(HANDRAIL) (TY D)	LF	44

LEGEND

- PROP TRAFFIC FLOW
- EXIST TRAFFIC FLOW
- EXIST RIGHT OF WAY
- PROP CONC RET WALL COMB
- ADJUST PED/DRIVEWAY GATE AS NEEDED FOR CONSTR (1)
- TxDOT WHEELCHAIR RAMP, TYPE (II)
- CoSA WHEELCHAIR RAMP, TYPE (#)
- MILL AND OVERLAY
- PAVEMENT REPAIR
- SODDING
- MULCH

NOTES:

1. FOR INTERSECTION DETAILS, SEE INTERSECTION LAYOUTS.
2. SEE MISCELLANEOUS ROADWAY DETAILS FOR SIDEWALK AND MEDIAN DETAILS
3. 3" MILL AND 3" HMAC TY D OVERLAY
4. SEE MISCELLANEOUS CONSTRUCTION STANDARDS FOR ADDITIONAL INFORMATION.
5. FOR STORMWATER DETAILS, SEE STORM SEWER SYSTEM PLAN & PROFILES.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER
5/19/2025

consor F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

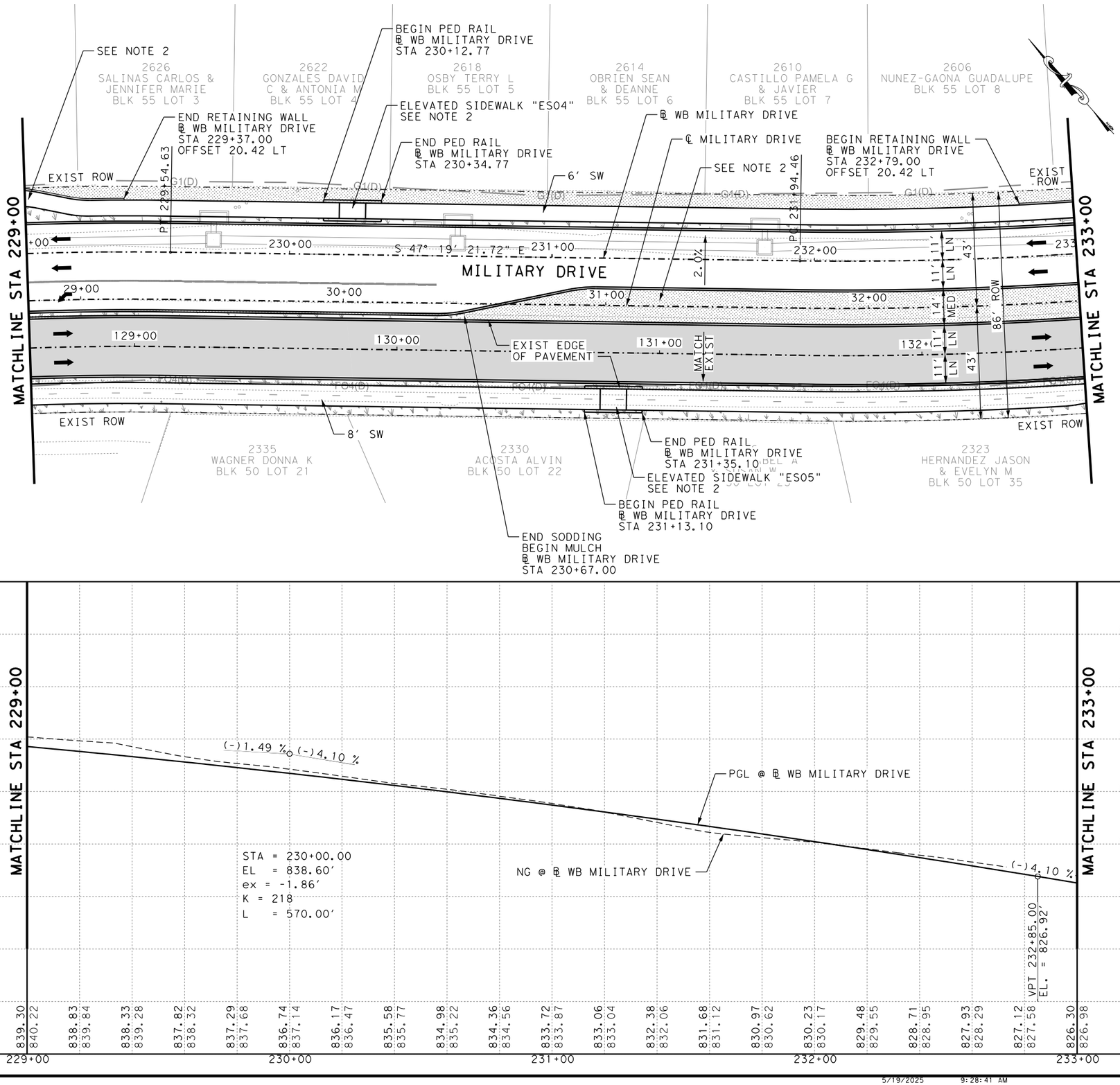
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

PLAN AND PROFILE
STA 225+00 TO STA 229+00

95 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. I43A OF 377

c:\dms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_P&P03A.dgn
5/19/2025 9:28:16 AM



ESTIMATED SHEET QUANTITES			
ITEM	DESCRIPTION	UNIT	QTY
103.1	REMOVE CONCRETE CURB	LF	802
103.3	REMOVE SIDEWALKS AND DRIVEWAYS	SF	3156
104.1	STREET EXCAVATION	CY	1043
107.1	EMBANKMENT (FINAL)(ORD COMP)(TY B)	CY	28
202.1	PRIME COAT	GAL	273
203.1	TACK COAT	GAL	492
208.1	SALVAGING, HAULING, AND STOCKPILING RECLAIMABLE ASPHALTIC PAVMENT (3" DEPTH)	SY	1073
240.2	WARM MIX ASPHALTIC CONCRETE TYPE B (11" COMP DEPTH)	SY	1364
240.4	WARM MIX ASPHALTIC CONCRETE TYPE D (3" COMP DEPTH)	SY	2185
307.1	CONCRETE STRUCTURE (ELEVATED SIDEWALK)	CY	5
500.1	CONCRETE CURB	LF	1603
502.1	CONCRETE SIDEWALKS	SY	608
502.XX	VIA BENCH PAD	SY	0
506.1	CONCRETE RETAINING WALLS (COMB. TYPE)	CY	2
SS 2006	MOISTURE CONDITIONED SUBGRADE (6" COMP DEPTH)	CY	227
SAWS 826	VALVE BOX ADJUSTMENTS	EA	0
351 7013	FLEXIBLE PAVEMENT STRUCTURE REPAIR	SY	0
450 7050	(HANDRAIL) (TY D)	LF	88

LEGEND

- PROP TRAFFIC FLOW
- EXIST TRAFFIC FLOW
- EXIST RIGHT OF WAY
- PROP CONC RET WALL COMB
- ADJUST PED/DRIVEWAY GATE AS NEEDED FOR CONSTR (1)
- TxDOT WHEELCHAIR RAMP, TYPE (II)
- CoSA WHEELCHAIR RAMP, TYPE (#)
- MILL AND OVERLAY
- PAVEMENT REPAIR
- SODDING
- MULCH

NOTES:

1. FOR INTERSECTION DETAILS, SEE INTERSECTION LAYOUTS.
2. SEE MISCELLANEOUS ROADWAY DETAILS FOR SIDEWALK AND MEDIAN DETAILS
3. 3" MILL AND 3" HMAC TY D OVERLAY
4. SEE MISCELLANEOUS CONSTRUCTION STANDARDS FOR ADDITIONAL INFORMATION.
5. FOR STORMWATER DETAILS, SEE STORM SEWER SYSTEM PLAN & PROFILES.

0 20' 40'

SCALE: 1" = 40'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

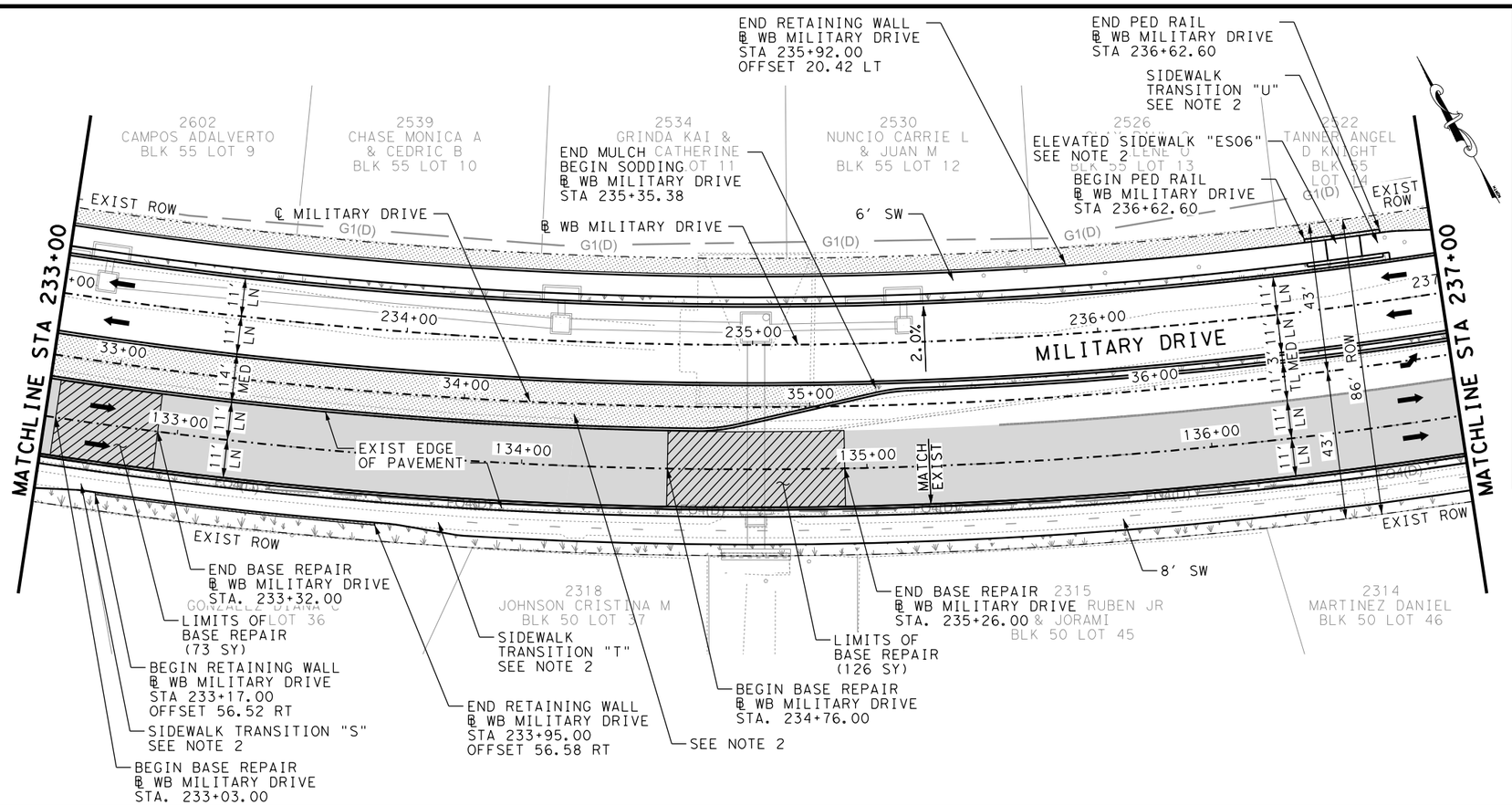
MILITARY DRIVE

PLAN AND PROFILE

STA 229+00 TO STA 233+00

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 144 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_P&P04.dgn
5/19/2025 9:28:41 AM



ESTIMATED SHEET QUANTITES			
ITEM	DESCRIPTION	UNIT	QTY
103.1	REMOVE CONCRETE CURB	LF	822
103.3	REMOVE SIDEWALKS AND DRIVEWAYS	SF	3678
104.1	STREET EXCAVATION	CY	1338
107.1	EMBANKMENT (FINAL)(ORD COMP)(TY B)	CY	169
202.1	PRIME COAT	GAL	281
203.1	TACK COAT	GAL	502
208.1	SALVAGING, HAULING, AND STOCKPILING RECLAIMABLE ASPHALTIC PAVMENT (3" DEPTH)	SY	1108
240.2	WARM MIX ASPHALTIC CONCRETE TYPE B (11" COMP DEPTH)	SY	1401
240.4	WARM MIX ASPHALTIC CONCRETE TYPE D (3" COMP DEPTH)	SY	2213
307.1	CONCRETE STRUCTURE (ELEVATED SIDEWALK)	CY	2
500.1	CONCRETE CURB	LF	1621
502.1	CONCRETE SIDEWALKS	SY	598
502.XX	VIA BENCH PAD	SY	0
506.1	CONCRETE RETAINING WALLS (COMB. TYPE)	CY	23
SS 2006	MOISTURE CONDITIONED SUBGRADE (6" COMP DEPTH)	CY	233
SAWS 826	VALVE BOX ADJUSTMENTS	EA	0
351 7013	FLEXIBLE PAVEMENT STRUCTURE REPAIR	SY	198
450 7050	(HANDRAIL) (TY D)	LF	44

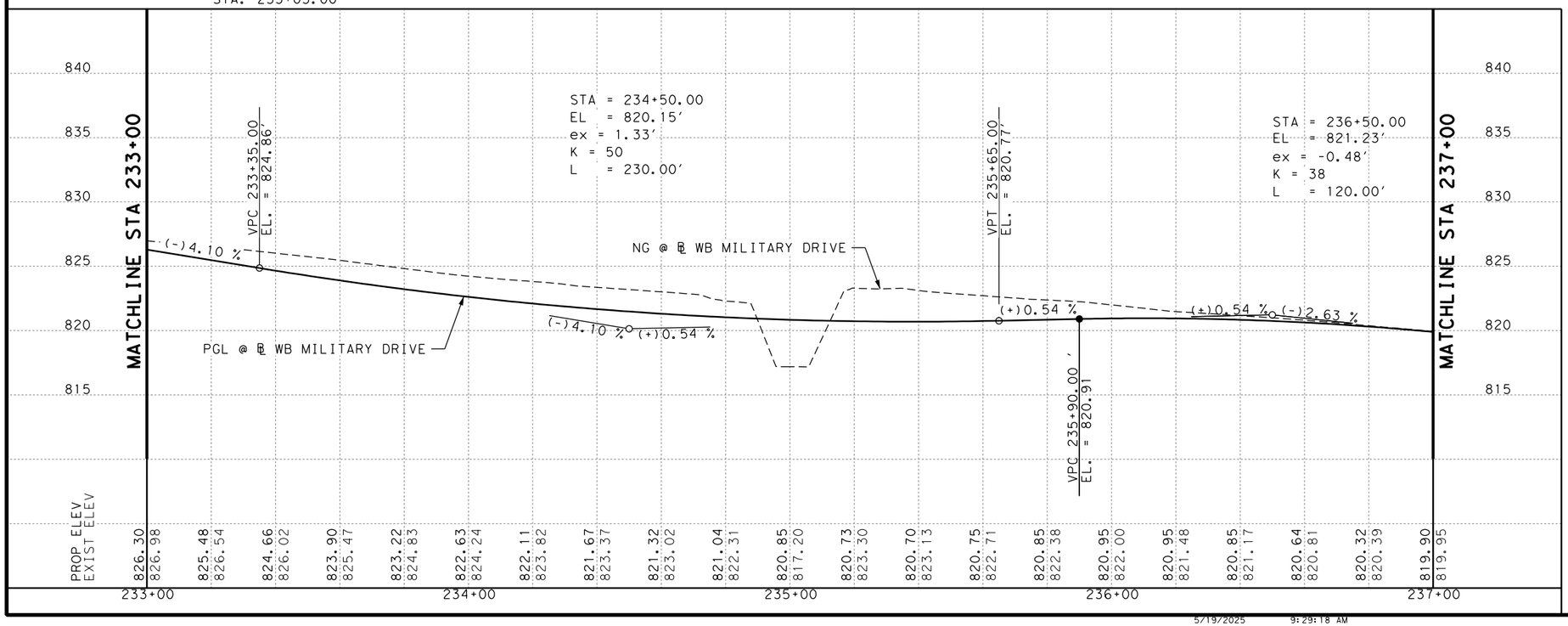
LEGEND

- PROP TRAFFIC FLOW
- EXIST TRAFFIC FLOW
- EXIST RIGHT OF WAY
- PROP CONC RET WALL COMB
- ADJUST PED/DRIVEWAY GATE AS NEEDED FOR CONSTR (1)
- TxDOT WHEELCHAIR RAMP, TYPE (II)
- CoSA WHEELCHAIR RAMP, TYPE (#)
- MILL AND OVERLAY
- PAVEMENT REPAIR
- SODDING
- MULCH

NOTES:

1. FOR INTERSECTION DETAILS, SEE INTERSECTION LAYOUTS.
2. SEE MISCELLANEOUS ROADWAY DETAILS FOR SIDEWALK AND MEDIAN DETAILS
3. 3" MILL AND 3" HMAC TY D OVERLAY
4. SEE MISCELLANEOUS CONSTRUCTION STANDARDS FOR ADDITIONAL INFORMATION.
5. FOR STORMWATER DETAILS, SEE STORM SEWER SYSTEM PLAN & PROFILES.

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



STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

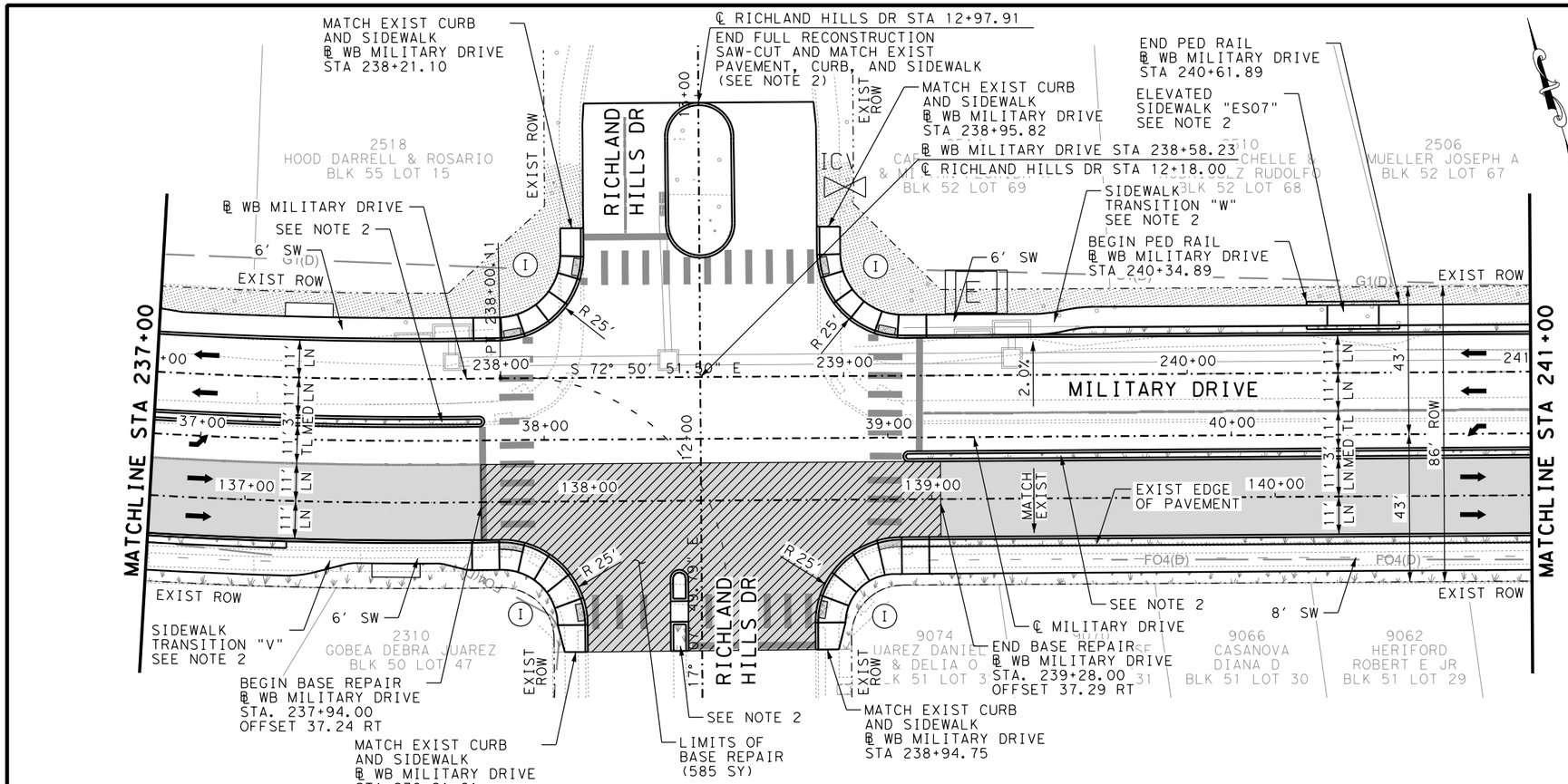
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

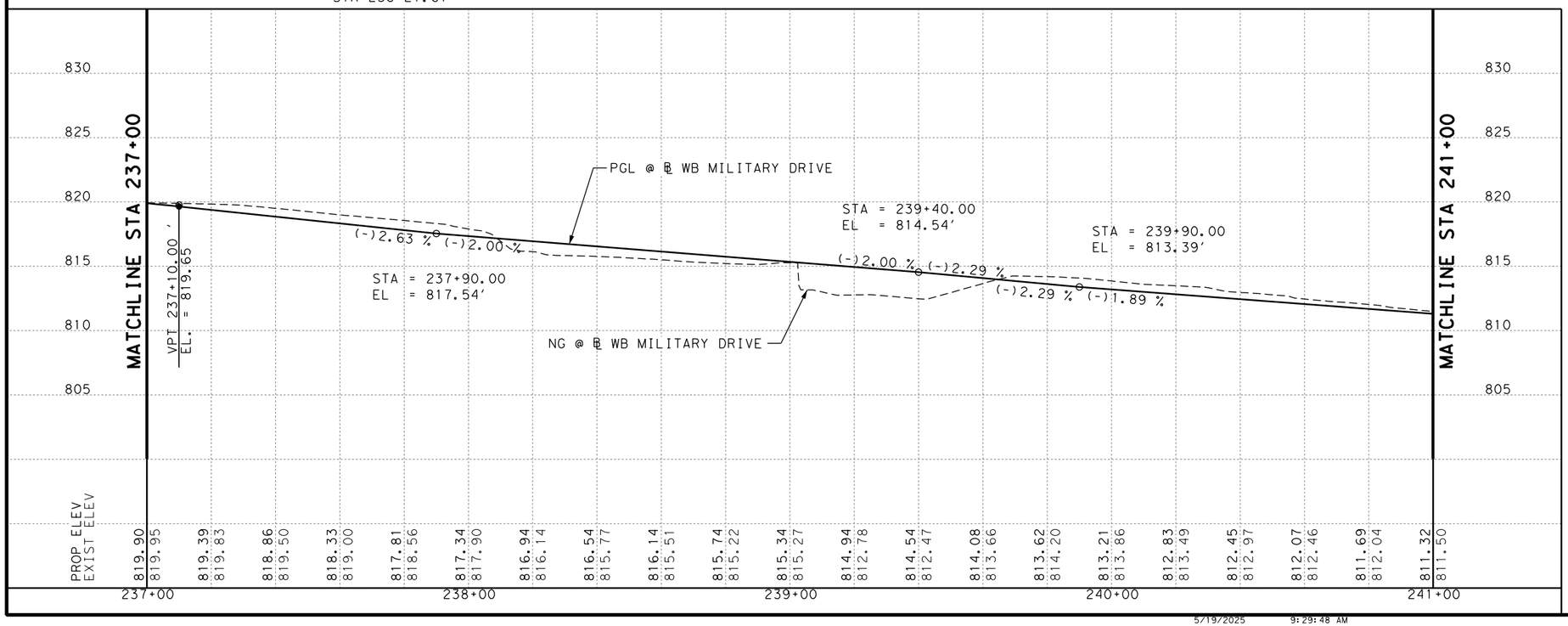
MILITARY DRIVE

PLAN AND PROFILE

STA 233+00 TO STA 237+00

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 145 OF 377





ESTIMATED SHEET QUANTITES			
ITEM	DESCRIPTION	UNIT	QTY
103.1	REMOVE CONCRETE CURB	LF	802
103.3	REMOVE SIDEWALKS AND DRIVEWAYS	SF	4071
104.1	STREET EXCAVATION	CY	768
107.1	EMBANKMENT (FINAL) (ORD COMP) (TY B)	CY	117
202.1	PRIME COAT	GAL	426
203.1	TACK COAT	GAL	747
208.1	SALVAGING, HAULING, AND STOCKPILING RECLAIMABLE ASPHALTIC PAVMENT (3" DEPTH)	SY	1328
240.2	WARM MIX ASPHALTIC CONCRETE TYPE B (11" COMP DEPTH)	SY	2128
240.4	WARM MIX ASPHALTIC CONCRETE TYPE D (3" COMP DEPTH)	SY	3209
307.1	CONCRETE STRUCTURE (ELEVATED SIDEWALK)	CY	3
500.1	CONCRETE CURB	LF	1581
502.1	CONCRETE SIDEWALKS	SY	545
502.XX	VIA BENCH PAD	SY	13
506.1	CONCRETE RETAINING WALLS (COMB. TYPE)	CY	0
SS 2006	MOISTURE CONDITIONED SUBGRADE (6" COMP DEPTH)	CY	355
SAWS 826	VALVE BOX ADJUSTMENTS	EA	0
351 7013	FLEXIBLE PAVEMENT STRUCTURE REPAIR	SY	584
450 7050	(HANDRAIL) (TY D)	LF	54

LEGEND

- PROP TRAFFIC FLOW
- EXIST TRAFFIC FLOW
- EXIST RIGHT OF WAY
- PROP CONC RET WALL COMB
- ADJUST PED/DRIVEWAY GATE AS NEEDED FOR CONSTR (1)
- TxDOT WHEELCHAIR RAMP, TYPE (II)
- CoSA WHEELCHAIR RAMP, TYPE (#)
- MILL AND OVERLAY
- PAVEMENT REPAIR
- SODDING
- MULCH

NOTES:

1. FOR INTERSECTION DETAILS, SEE INTERSECTION LAYOUTS.
2. SEE MISCELLANEOUS ROADWAY DETAILS FOR SIDEWALK AND MEDIAN DETAILS
3. 3" MILL AND 3" HMAC TY D OVERLAY
4. SEE MISCELLANEOUS CONSTRUCTION STANDARDS FOR ADDITIONAL INFORMATION.
5. FOR STORMWATER DETAILS, SEE STORM SEWER SYSTEM PLAN & PROFILES.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER
5/19/2025

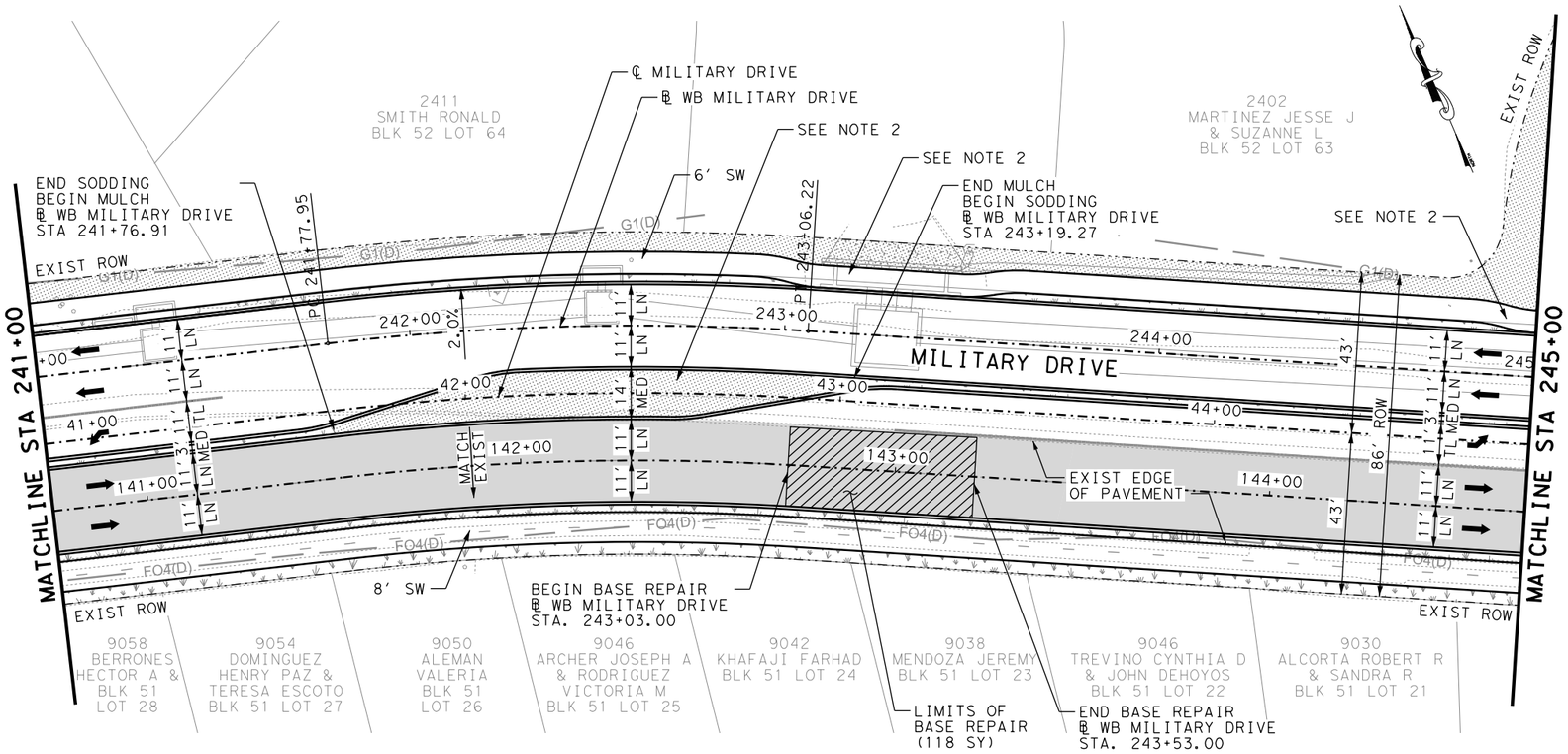
consor
F-12040
8023 VANTAGE DR. STE 300.
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

PLAN AND PROFILE
STA 237+00 TO STA 241+00

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 146 OF 377



ESTIMATED SHEET QUANTITES			
ITEM	DESCRIPTION	UNIT	QTY
103.1	REMOVE CONCRETE CURB	LF	788
103.3	REMOVE SIDEWALKS AND DRIVEWAYS	SF	3450
104.1	STREET EXCAVATION	CY	730
107.1	EMBANKMENT (FINAL)(ORD COMP)(TY B)	CY	84
202.1	PRIME COAT	GAL	307
203.1	TACK COAT	GAL	538
208.1	SALVAGING, HAULING, AND STOCKPILING RECLAIMABLE ASPHALTIC PAVMENT (3" DEPTH)	SY	1052
240.2	WARM MIX ASPHALTIC CONCRETE TYPE B (11" COMP DEPTH)	SY	1535
240.4	WARM MIX ASPHALTIC CONCRETE TYPE D (3" COMP DEPTH)	SY	2303
307.1	CONCRETE STRUCTURE (ELEVATED SIDEWALK)	CY	0
500.1	CONCRETE CURB	LF	1667
502.1	CONCRETE SIDEWALKS	SY	616
502.XX	VIA BENCH PAD	SY	0
506.1	CONCRETE RETAINING WALLS (COMB. TYPE)	CY	0
SS 2006	MOISTURE CONDITIONED SUBGRADE (6" COMP DEPTH)	CY	256
SAWS 826	VALVE BOX ADJUSTMENTS	EA	0
351 7013	FLEXIBLE PAVEMENT STRUCTURE REPAIR	SY	118
450 7050	(HANDRAIL) (TY D)	LF	0

LEGEND

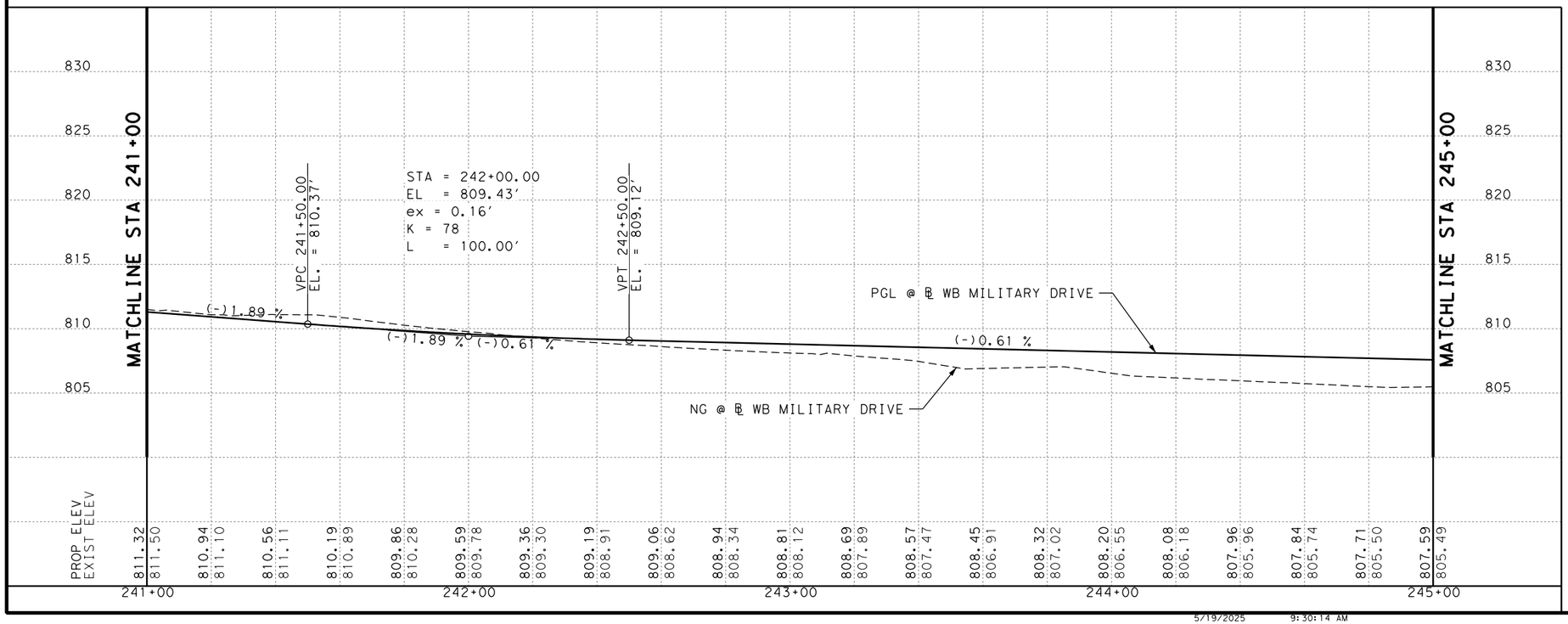
- PROP TRAFFIC FLOW
- EXIST TRAFFIC FLOW
- EXIST RIGHT OF WAY
- PROP CONC RET WALL COMB
- ADJUST PED/DRIVEWAY GATE AS NEEDED FOR CONSTR (1)
- TxDOT WHEELCHAIR RAMP, TYPE (II)
- CoSA WHEELCHAIR RAMP, TYPE (#)
- MILL AND OVERLAY
- PAVEMENT REPAIR
- SODDING
- MULCH

NOTES:

1. FOR INTERSECTION DETAILS, SEE INTERSECTION LAYOUTS.
2. SEE MISCELLANEOUS ROADWAY DETAILS FOR SIDEWALK AND MEDIAN DETAILS
3. 3" MILL AND 3" HMAC TY D OVERLAY
4. SEE MISCELLANEOUS CONSTRUCTION STANDARDS FOR ADDITIONAL INFORMATION.
5. FOR STORMWATER DETAILS, SEE STORM SEWER SYSTEM PLAN & PROFILES.

0 20' 40'

SCALE: 1" = 40'



STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

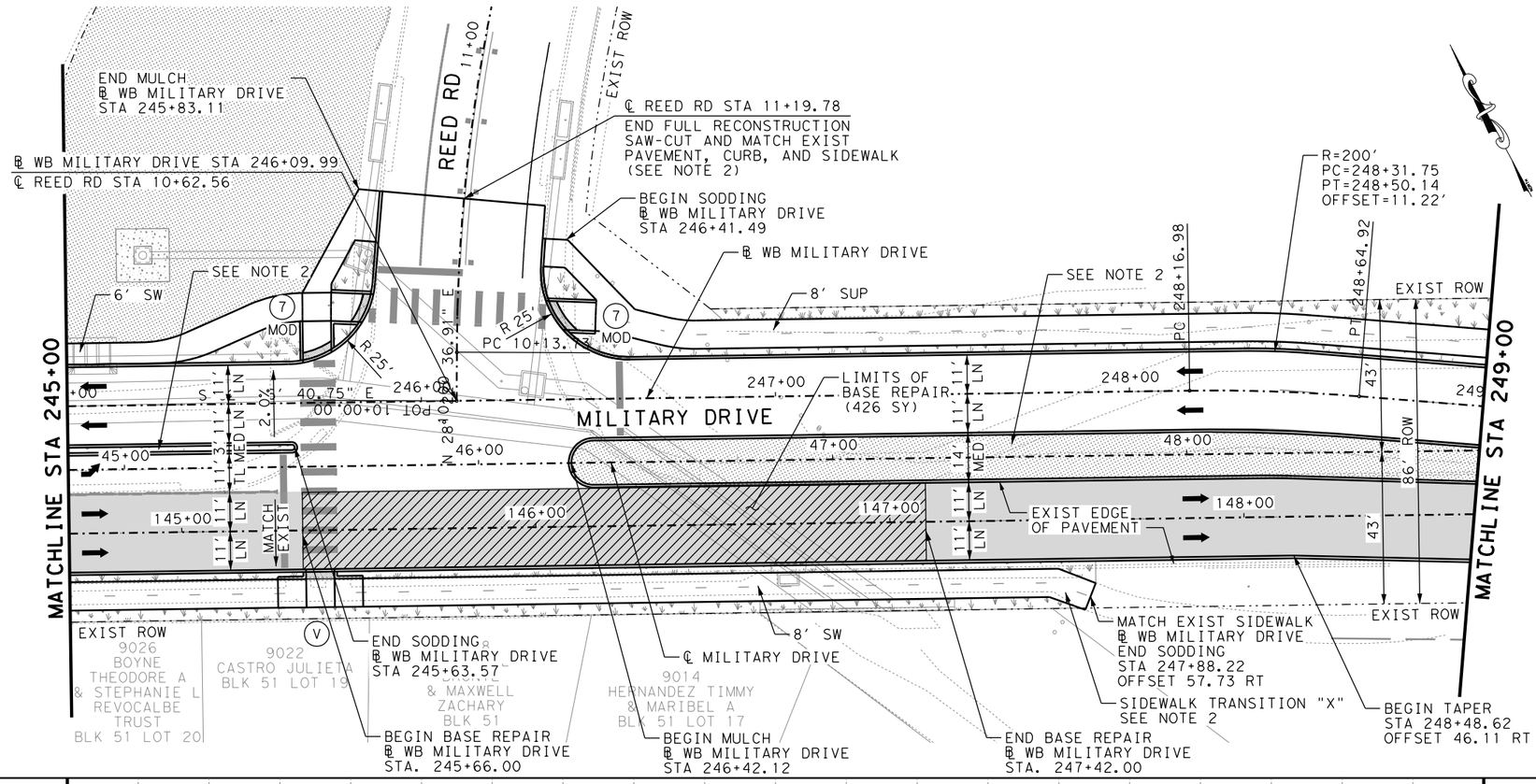
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

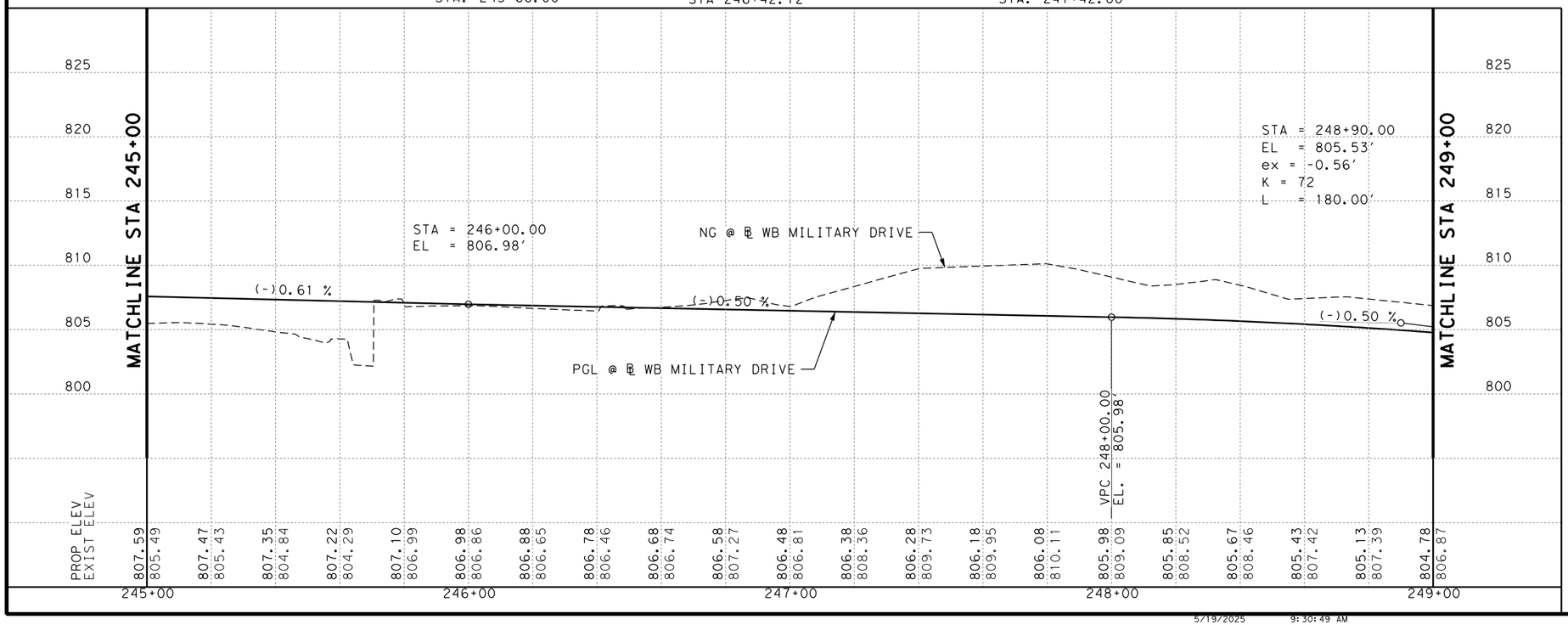
MILITARY DRIVE

PLAN AND PROFILE

STA 241+00 TO STA 245+00

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 147 OF 377





ESTIMATED SHEET QUANTITES

ITEM	DESCRIPTION	UNIT	QTY
103.1	REMOVE CONCRETE CURB	LF	857
103.3	REMOVE SIDEWALKS AND DRIVEWAYS	SF	4318
104.1	STREET EXCAVATION	CY	1278
107.1	EMBANKMENT (FINAL)(ORD COMP)(TY B)	CY	130
202.1	PRIME COAT	GAL	374
203.1	TACK COAT	GAL	640
208.1	SALVAGING, HAULING, AND STOCKPILING RECLAIMABLE ASPHALTIC PAVMENT (3" DEPTH)	SY	1063
240.2	WARM MIX ASPHALTIC CONCRETE TYPE B (11" COMP DEPTH)	SY	1869
240.4	WARM MIX ASPHALTIC CONCRETE TYPE D (3" COMP DEPTH)	SY	2659
307.1	CONCRETE STRUCTURE (ELEVATED SIDEWALK)	CY	0
500.1	CONCRETE CURB	LF	1542
502.1	CONCRETE SIDEWALKS	SY	618
502.XX	VIA BENCH PAD	SY	0
506.1	CONCRETE RETAINING WALLS (COMB. TYPE)	CY	0
SS 2006	MOISTURE CONDITIONED SUBGRADE (6" COMP DEPTH)	CY	312
SAWS 826	VALVE BOX ADJUSTMENTS	EA	0
351 7013	FLEXIBLE PAVEMENT STRUCTURE REPAIR	SY	425
450 7050	(HANDRAIL) (TY D)	LF	0

LEGEND

- PROP TRAFFIC FLOW
- EXIST TRAFFIC FLOW
- EXIST RIGHT OF WAY
- PROP CONC RET WALL COMB
- ADJUST PED/DRIVEWAY GATE AS NEEDED FOR CONSTR (1)
- TxDOT WHEELCHAIR RAMP, TYPE (II)
- CoSA WHEELCHAIR RAMP, TYPE (#)
- MILL AND OVERLAY
- PAVEMENT REPAIR
- SODDING
- MULCH

NOTES:

1. FOR INTERSECTION DETAILS, SEE INTERSECTION LAYOUTS.
2. SEE MISCELLANEOUS ROADWAY DETAILS FOR SIDEWALK AND MEDIAN DETAILS
3. 3" MILL AND 3" HMAC TY D OVERLAY
4. SEE MISCELLANEOUS CONSTRUCTION STANDARDS FOR ADDITIONAL INFORMATION.
5. FOR STORMWATER DETAILS, SEE STORM SEWER SYSTEM PLAN & PROFILES.

0 20' 40'

SCALE: 1" = 40'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

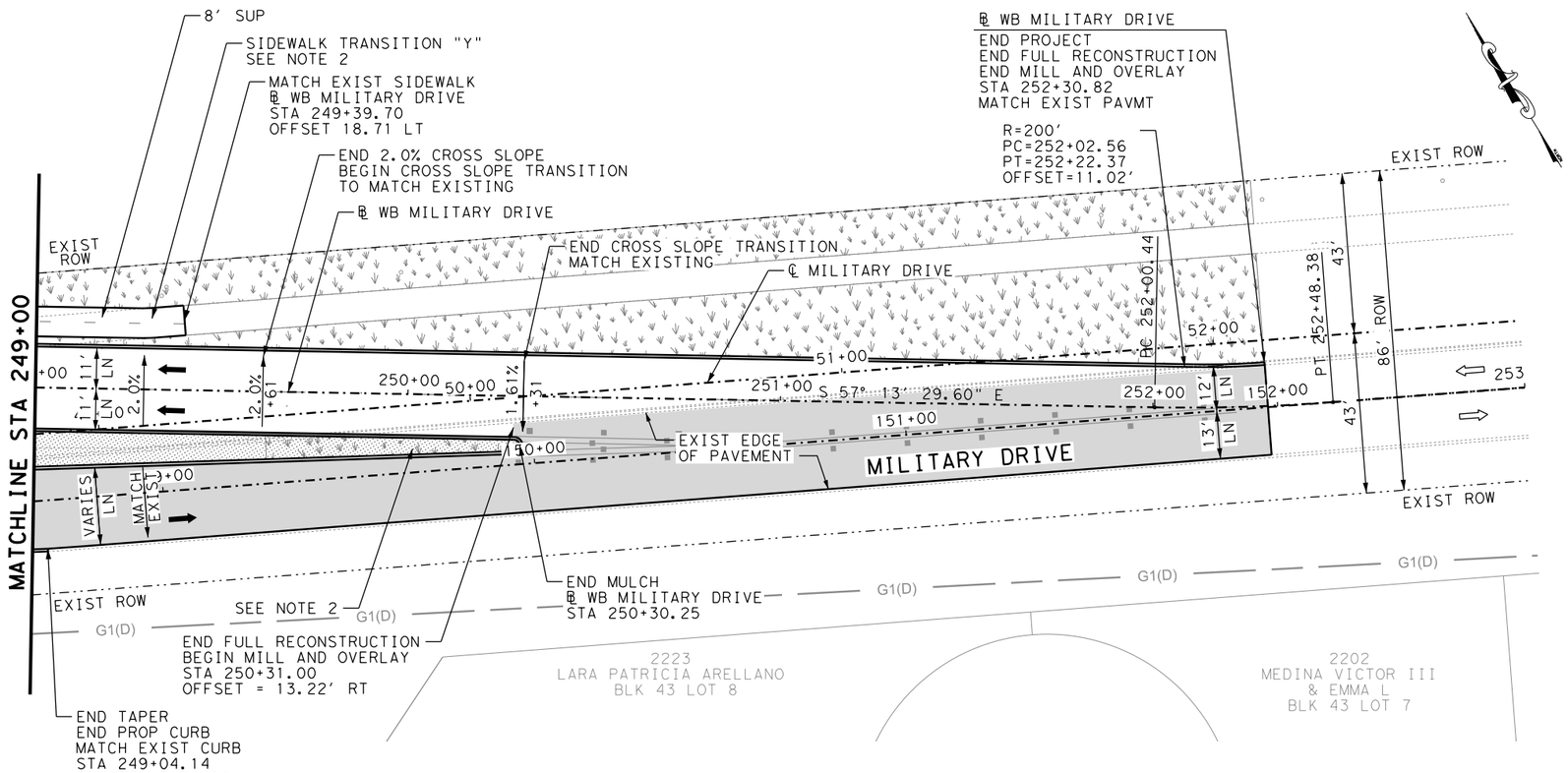
MILITARY DRIVE

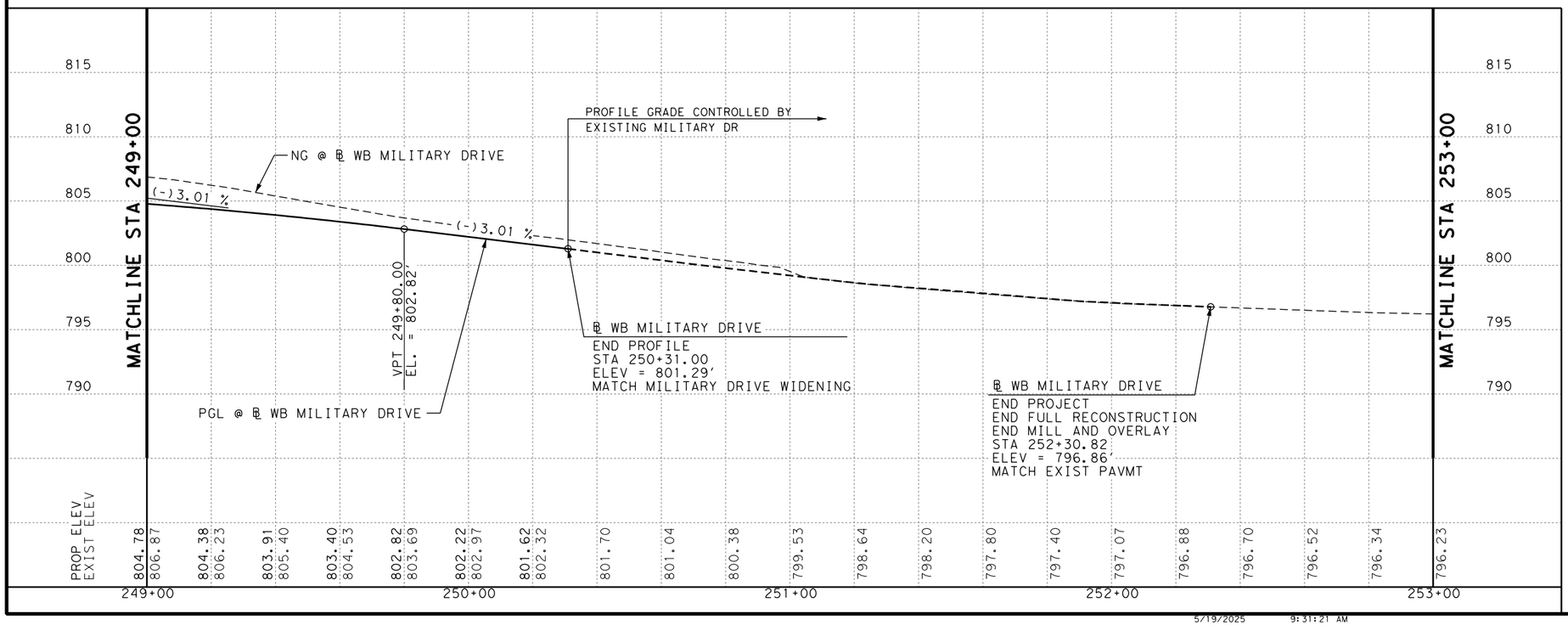
PLAN AND PROFILE

STA 245+00 TO STA 249+00

95 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV
		SHEET NO. 148 OF 377

c:\dms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_P&P08.dgn
5/19/2025 9:30:49 AM





ESTIMATED SHEET QUANTITES			
ITEM	DESCRIPTION	UNIT	QTY
103.1	REMOVE CONCRETE CURB	LF	335
103.3	REMOVE SIDEWALKS AND DRIVEWAYS	SF	318
104.1	STREET EXCAVATION	CY	437
107.1	EMBANKMENT (FINAL) (ORD COMP) (TY B)	CY	6
202.1	PRIME COAT	GAL	117
203.1	TACK COAT	GAL	249
208.1	SALVAGING, HAULING, AND STOCKPILING RECLAIMABLE ASPHALTIC PAVMENT (3" DEPTH)	SY	893
240.2	WARM MIX ASPHALTIC CONCRETE TYPE B (11" COMP DEPTH)	SY	581
240.4	WARM MIX ASPHALTIC CONCRETE TYPE D (3" COMP DEPTH)	SY	1321
307.1	CONCRETE STRUCTURE (ELEVATED SIDEWALK)	CY	0
500.1	CONCRETE CURB	LF	598
502.1	CONCRETE SIDEWALKS	SY	35
502.XX	VIA BENCH PAD	SY	0
506.1	CONCRETE RETAINING WALLS (COMB. TYPE)	CY	0
SS 2006	MOISTURE CONDITIONED SUBGRADE (6" COMP DEPTH)	CY	97
SAWS 826	VALVE BOX ADJUSTMENTS	EA	0
351 7013	FLEXIBLE PAVEMENT STRUCTURE REPAIR	SY	0
450 7050	(HANDRAIL) (TY D)	LF	0

LEGEND

- PROP TRAFFIC FLOW
- EXIST TRAFFIC FLOW
- EXIST RIGHT OF WAY
- PROP CONC RET WALL COMB
- ADJUST PED/DRIVEWAY GATE AS NEEDED FOR CONSTR (1)
- TxDOT WHEELCHAIR RAMP, TYPE (II)
- CoSA WHEELCHAIR RAMP, TYPE (#)
- MILL AND OVERLAY
- PAVEMENT REPAIR
- SODDING
- MULCH

NOTES:

1. FOR INTERSECTION DETAILS, SEE INTERSECTION LAYOUTS.
2. SEE MISCELLANEOUS ROADWAY DETAILS FOR SIDEWALK AND MEDIAN DETAILS
3. 3" MILL AND 3" HMAC TY D OVERLAY
4. SEE MISCELLANEOUS CONSTRUCTION STANDARDS FOR ADDITIONAL INFORMATION.
5. FOR STORMWATER DETAILS, SEE STORM SEWER SYSTEM PLAN & PROFILES.

0 20' 40'

SCALE: 1" = 40'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

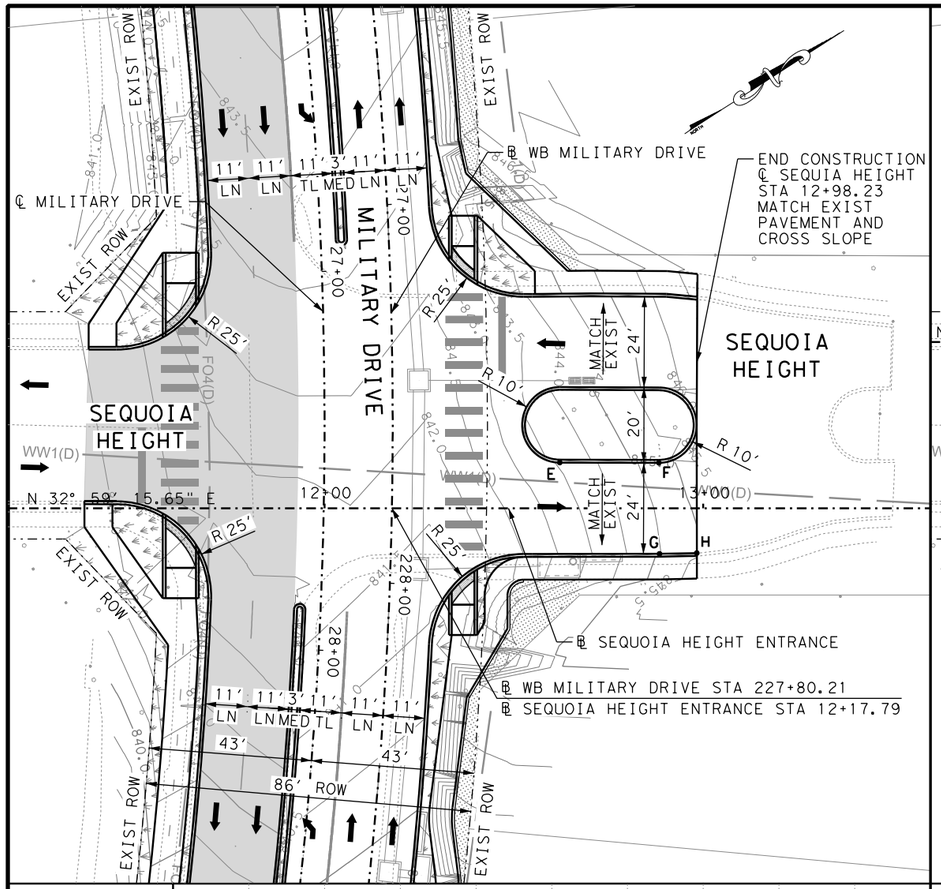
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

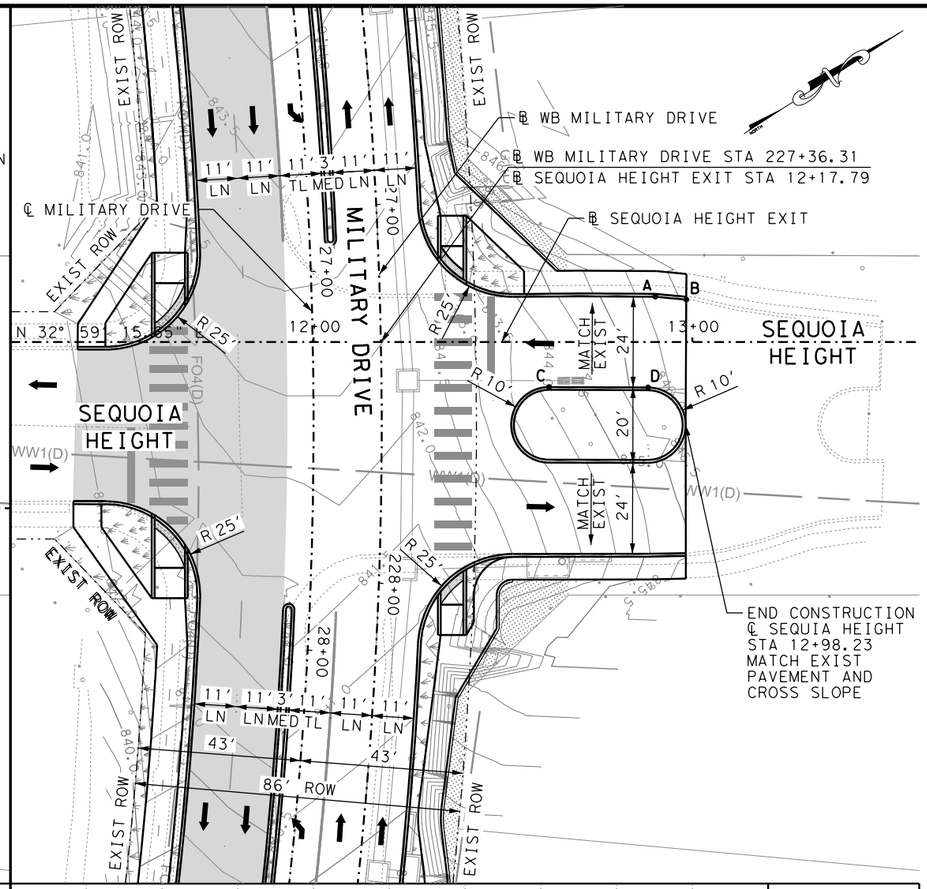
MILITARY DRIVE

PLAN AND PROFILE
STA 249+00 TO END

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 149 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_P&P09.dgn
5/19/2025 9:31:21 AM



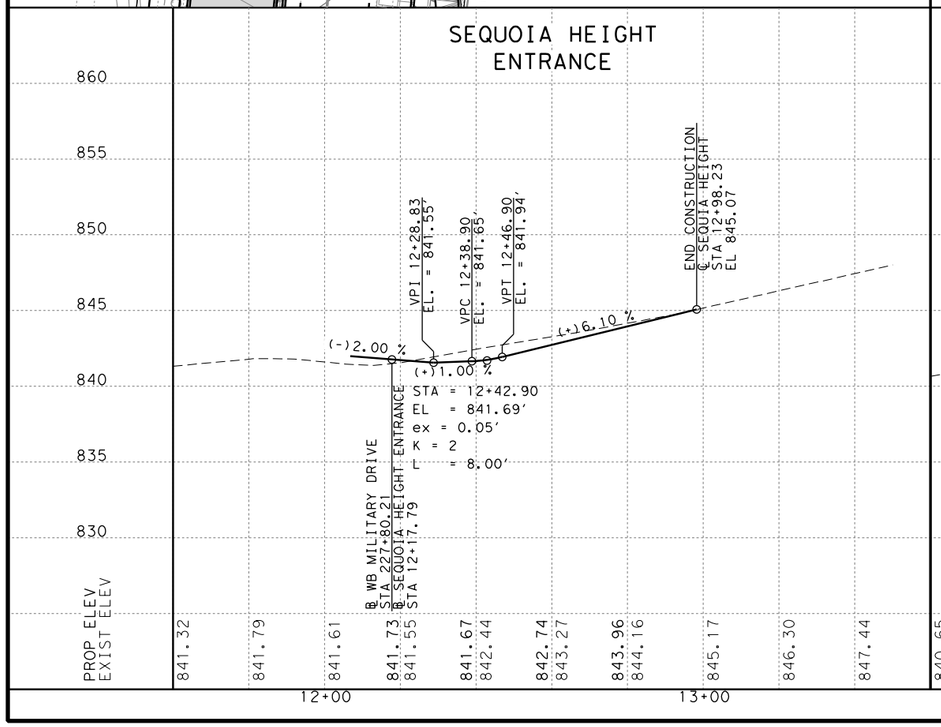


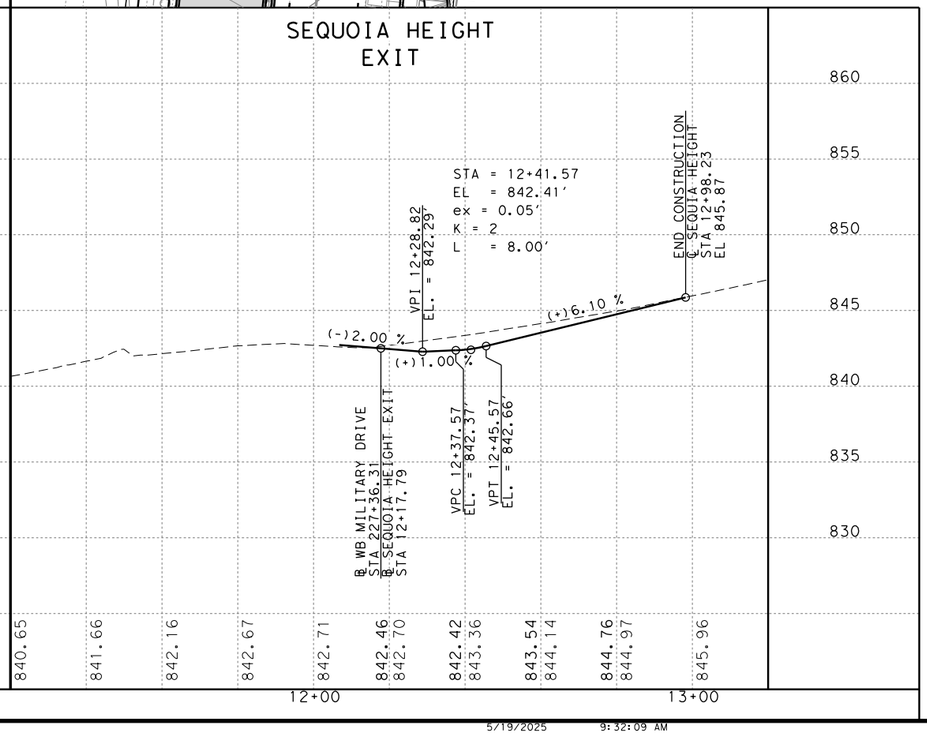
POINT	STATION	ELEV.	OFFSET
A	227+26.36	845.54′	72.69 LT
B	227+27.28	846.02′	80.87 LT
C	227+48.56	843.33′	44.22 LT
D	227+48.87	845.06′	70.35 LT
E	227+67.78	842.98′	44.16 LT
F	227+67.64	844.67′	70.29 LT
G	227+90.27	844.38′	70.93 LT
H	227+89.85	844.90′	80.76 LT

STATION AND OFFSETS ARE BASED ON WB MILITARY DRIVE ALIGNMENT

LEGEND

- PROP TRAFFIC FLOW
- EXIST TRAFFIC FLOW
- EXIST RIGHT OF WAY
- PROP CONC RET WALL COMB
- ADJUST PED/DRIVEWAY GATE AS NEEDED FOR CONSTR (1)
- TxDOT WHEELCHAIR RAMP, TYPE (II)
- CoSA WHEELCHAIR RAMP, TYPE (H)
- MILL AND OVERLAY
- PAVEMENT REPAIR
- SODDING
- MULCH





NOTES:

1. UNLESS OTHERWISE NOTED, DIMENSIONS ARE FROM EOP TO EOP
2. REFER TO PLAN AND PROFILE LAYOUTS FOR ADDITIONAL INFORMATION.
3. THE INFORMATION SHOWN CONCERNING TYPE AND LOCATION OF UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING DETERMINATIONS AS TO THE TYPE AND LOCATION OF ALL UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERE TO.

0 20′ 40′
SCALE: 1" = 40′

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

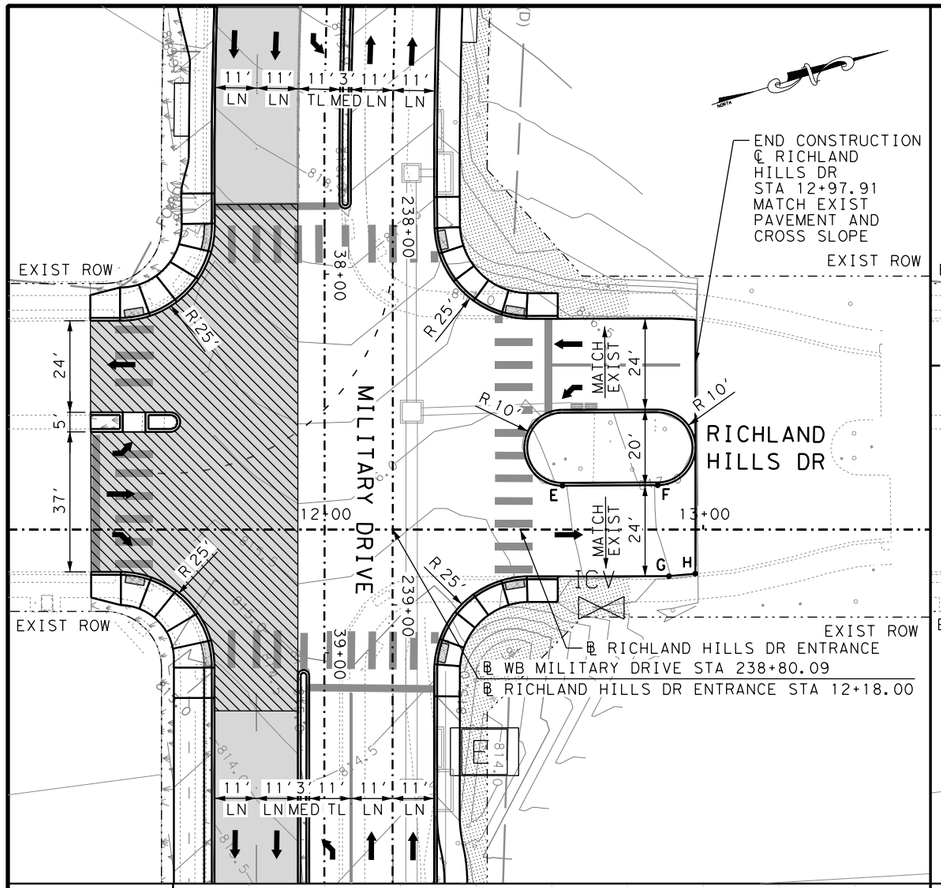
MILITARY DRIVE

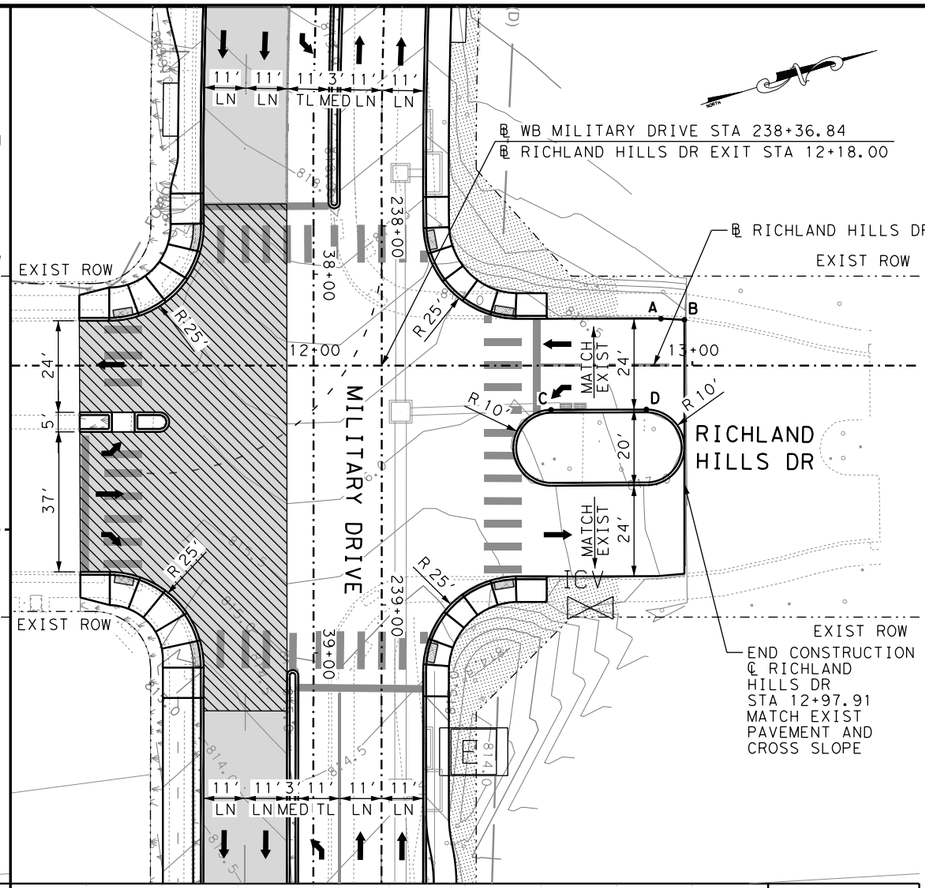
INTERSECTION PLAN AND PROFILE

SEQUOIA HEIGHT

95 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 150 OF 377

c:\dms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_P&P10.dgn
9:32:09 AM
5/19/2025





POINT	STATION	ELEV.	OFFSET
A	238+24.41	816.79'	73.71 LT
B	238+24.74	816.88'	79.90 LT
C	238+48.49	816.13'	44.73 LT
D	238+48.39	816.66'	69.87 LT
E	238+68.53	815.97'	44.83 LT
F	238+68.39	816.52'	69.97 LT
G	238+92.39	816.49'	72.98 LT
H	238+91.73	816.64'	79.92 LT

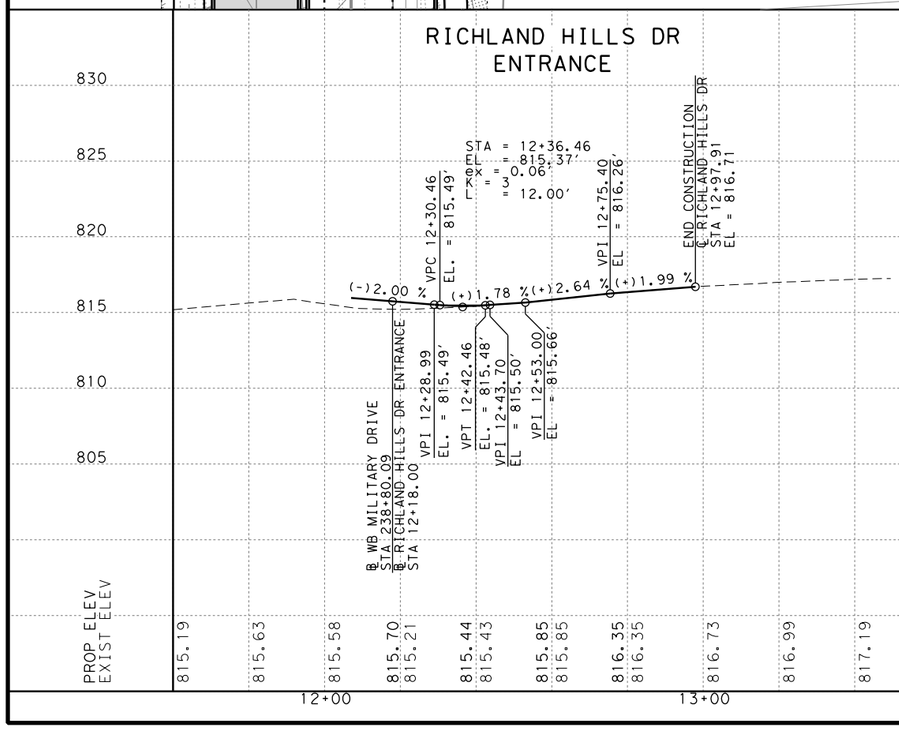
STATION AND OFFSETS ARE BASED ON WB MILITARY DRIVE ALIGNMENT

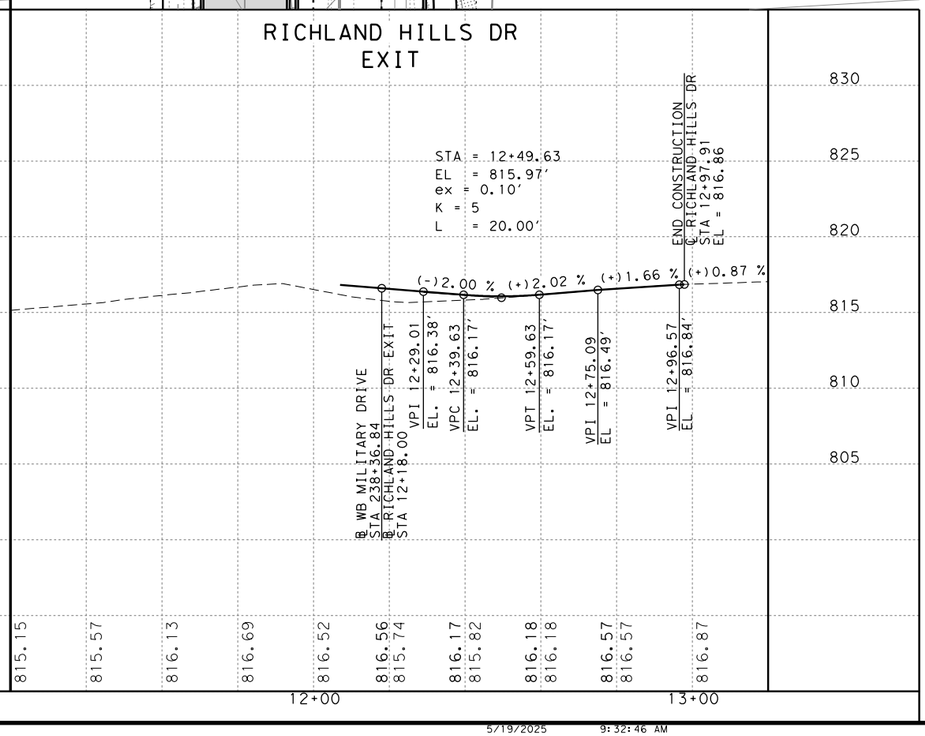
LEGEND

PROP TRAFFIC FLOW
EXIST TRAFFIC FLOW
EXIST RIGHT OF WAY
PROP CONC RET WALL COMB
ADJUST PED/DRIVEWAY GATE AS NEEDED FOR CONSTR (1)
TxDOT WHEELCHAIR RAMP, TYPE (II)
CoSA WHEELCHAIR RAMP, TYPE (#)
MILL AND OVERLAY
PAVEMENT REPAIR
SODDING
MULCH

NOTES:

1. UNLESS OTHERWISE NOTED, DIMENSIONS ARE FROM EOP TO EOP
2. REFER TO PLAN AND PROFILE LAYOUTS FOR ADDITIONAL INFORMATION.
3. THE INFORMATION SHOWN CONCERNING TYPE AND LOCATION OF UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING DETERMINATIONS AS TO THE TYPE AND LOCATION OF ALL UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERE TO.





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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

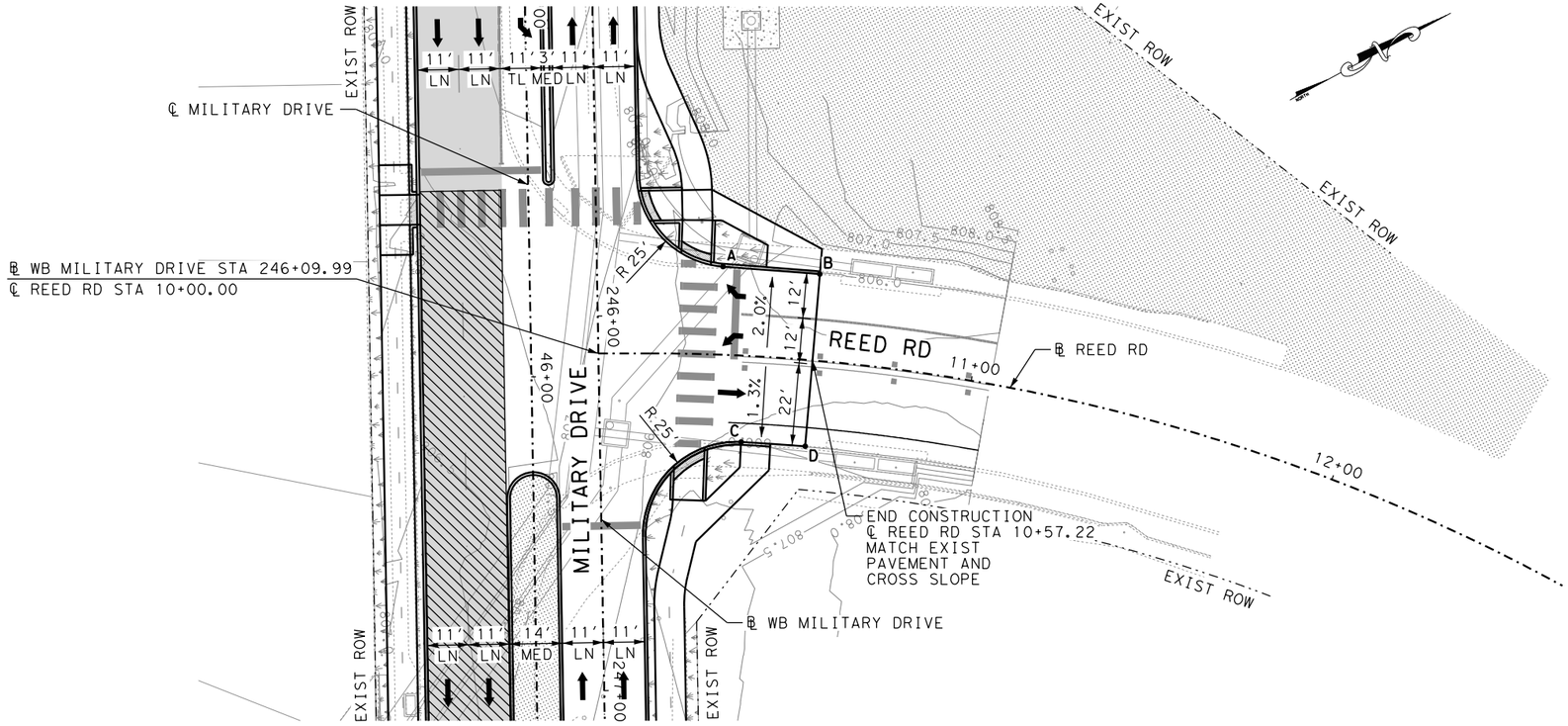
MILITARY DRIVE

INTERSECTION PLAN AND PROFILE

RICHLAND HILLS DR

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 151 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_P&P11.dgn
5/19/2025 9:32:46 AM



POINT	STATION	ELEV.	OFFSET
A	245+87.39	806.24′	33.66 LT
B	245+89.84	805.61′	59.49 LT
C	246+34.29	806.01′	37.69 LT
D	246+35.71	805.86′	54.77 LT

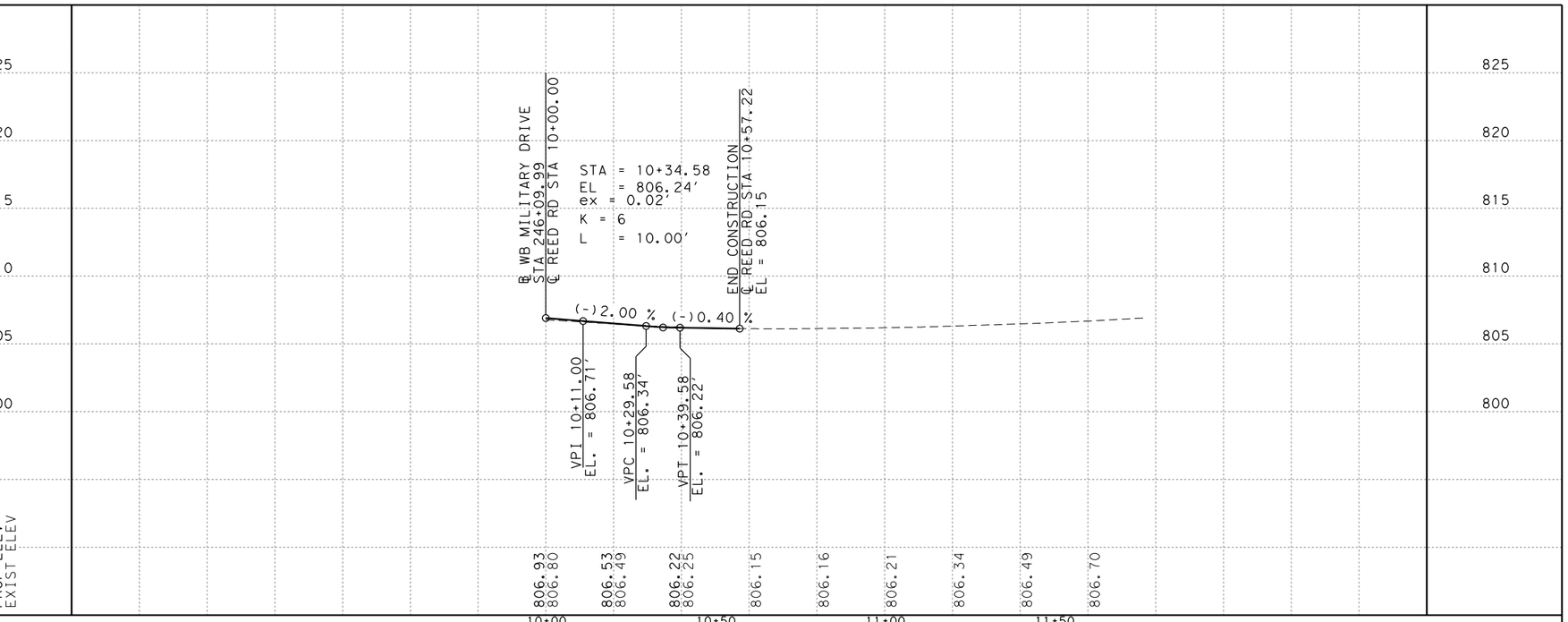
STATION AND OFFSETS ARE BASED ON WB MILITARY DRIVE ALIGNMENT

LEGEND

- PROP TRAFFIC FLOW
- EXIST TRAFFIC FLOW
- EXIST RIGHT OF WAY
- PROP CONC RET WALL COMB
- ADJUST PED/DRIVEWAY GATE AS NEEDED FOR CONSTR (1)
- TxDOT WHEELCHAIR RAMP, TYPE (II)
- CoSA WHEELCHAIR RAMP, TYPE (#)
- MILL AND OVERLAY
- PAVEMENT REPAIR
- SODDING
- MULCH

NOTES:

1. UNLESS OTHERWISE NOTED, DIMENSIONS ARE FROM EOP TO EOP
2. REFER TO PLAN AND PROFILE LAYOUTS FOR ADDITIONAL INFORMATION.
3. THE INFORMATION SHOWN CONCERNING TYPE AND LOCATION OF UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING DETERMINATIONS AS TO THE TYPE AND LOCATION OF ALL UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERE TO.



0 20′ 40′

SCALE: 1" = 40′

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

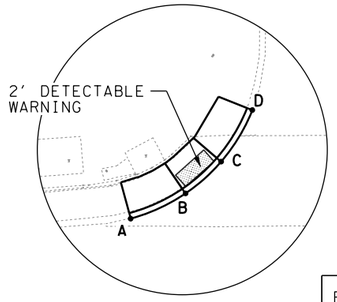
MILITARY DRIVE

INTERSECTION PLAN AND PROFILE

REED RD

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 152 OF 377

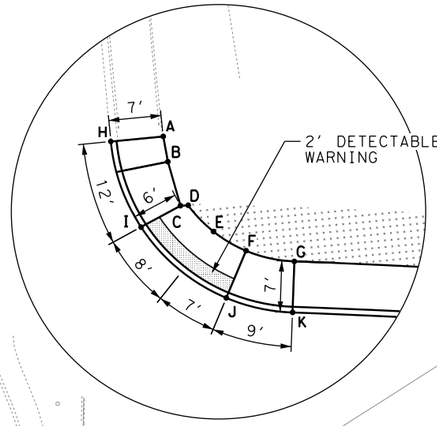
c:\bms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_P&P12.dgn
5/19/2025 9:33:18 AM



DETAIL A
SCALE: 1" = 20'

DETAIL A POINTS

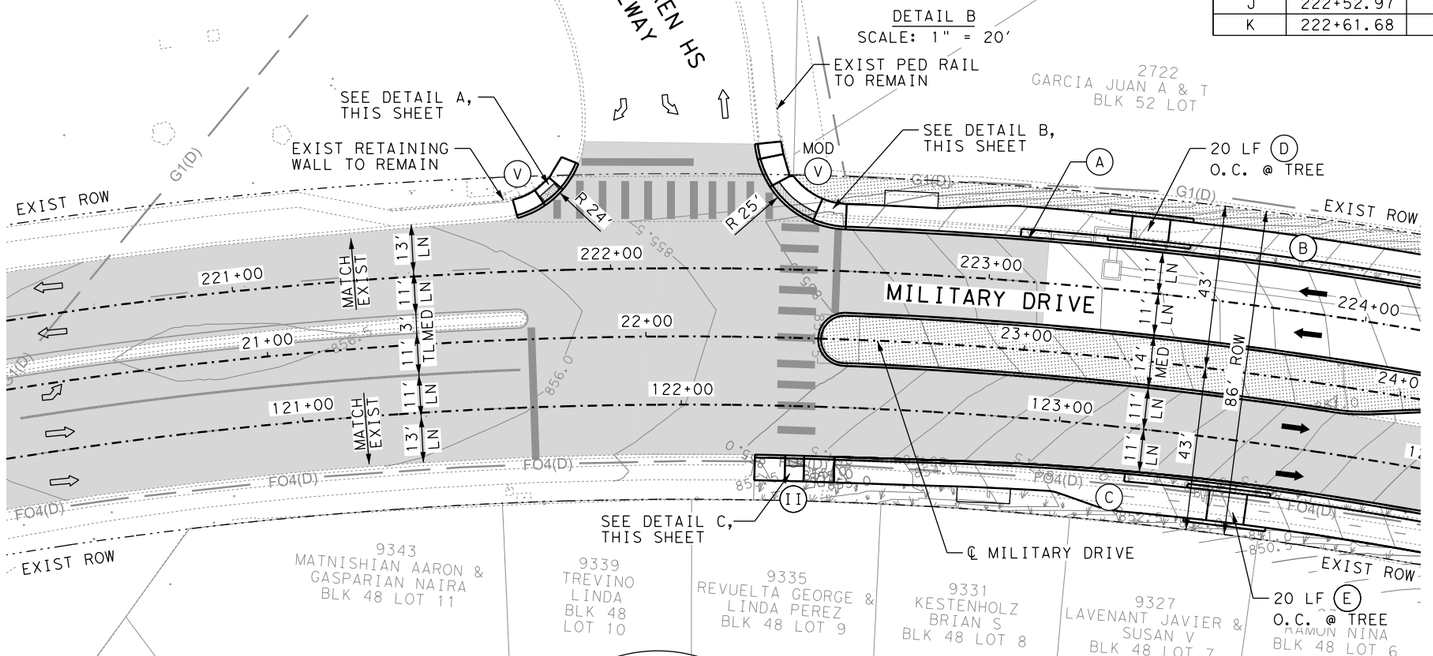
POINT	STATION	ELEV.	OFFSET
A	221+75.97	855.81'	14.08' LT
B	221+83.22	855.83'	17.18' LT
C	221+87.96	855.95'	21.21' LT
D	221+92.16	856.33'	27.92' LT

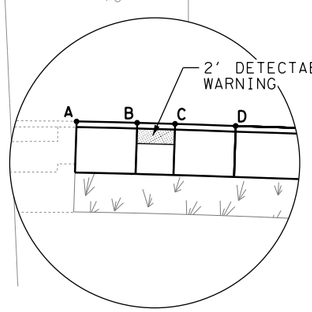


DETAIL B
SCALE: 1" = 20'

DETAIL B POINTS

POINT	STATION	ELEV.	OFFSET
A	222+44.28	856.30'	33.73' LT
B	222+44.95	856.45'	30.41' LT
C	222+46.71	855.40'	24.64' LT
D	222+47.70	855.75'	24.72' LT
E	222+51.06	855.11'	21.34' LT
F	222+55.35	854.89'	18.94' LT
G	222+61.68	855.25'	17.75' LT
H	222+37.58	856.03'	32.93' LT
I	222+41.66	855.28'	21.72' LT
J	222+52.97	854.76'	12.64' LT
K	222+61.68	854.54'	11.01' LT





DETAIL C
SCALE: 1" = 20'

DETAIL C POINTS

POINT	STATION	ELEV.	OFFSET
A	222+38.94	854.91'	49.07' RT
B	222+47.30	854.73'	49.09' RT
C	222+52.52	854.62'	49.1' RT
D	222+60.87	854.40'	49.12' RT

LEGEND

- (A) CONCRETE CURB (7")
- (B) 4" SIDEWALK (6' WIDE)
- (C) 4" SIDEWALK (8' WIDE)
- (D) 5" ELEVATED SIDEWALK (6' WIDE)
- (E) 5" ELEVATED SIDEWALK (8' WIDE)
- (F) SHARE USE PATH
- (G) SAW CUT & PVMT JUNCTION
- PROP TRAFFIC FLOW
- EXIST TRAFFIC FLOW
- (II) TxDOT WHEELCHAIR RAMP, TYPE
- (#) CoSA WHEELCHAIR RAMP, TYPE
- EXIST ROW
- MILL AND OVERLAY
- PAVEMENT REPAIR
- GRASS
- MULCH

NOTES:

1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE HORIZONTAL AND VERTICAL CONTROL DATA SHEETS.
2. SAW CUT AND MATCH EXISTING PAVEMENT ELEVATION, TAPER CURB ENDS PER CURB END DETAIL.
3. UTILITY POLES IN CONFLICT WILL BE RELOCATED BY OTHERS.

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

INTERSECTION LAYOUT
EARL WARREN HS DRIVEWAY

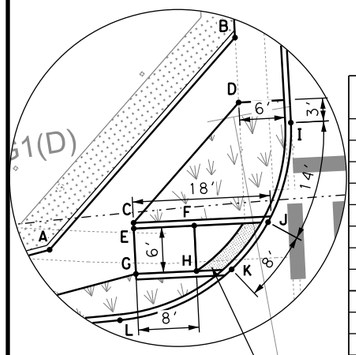
95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 153 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_RIL01.dgn
5/19/2025 9:33:53 AM

℄ SEQUOIA HEIGHT STA 12+98.23
END CONSTRUCTION
(SEE NOTE 2)

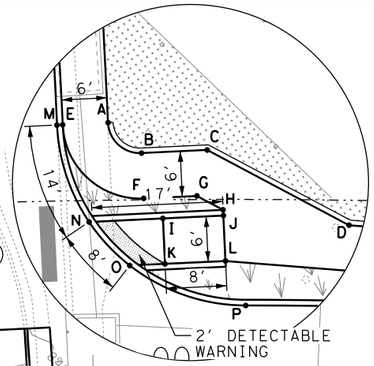
DETAIL A POINTS

POINT	STATION	ELEV.	OFFSET
A	226+92.92	843.71′	21.17′ LT
B	227+19.12	845.18′	46.81′ LT
C	227+04.08	843.85′	23.62′ LT
D	227+18.91	844.80′	38.23′ LT
E	227+04.05	843.85′	22.87′ LT
F	227+11.89	843.52′	22.53′ LT
G	227+03.77	843.73′	16.88′ LT
H	227+11.62	843.06′	16.53′ LT
I	227+00.00	843.46′	35.04′ LT
J	227+21.44	842.71′	22.18′ LT
K	227+16.24	842.74′	16.36′ LT
L	227+01.12	842.82′	11′ LT



DETAIL A
SCALE: 1" = 20′

2′ DETECTABLE WARNING



2′ DETECTABLE WARNING

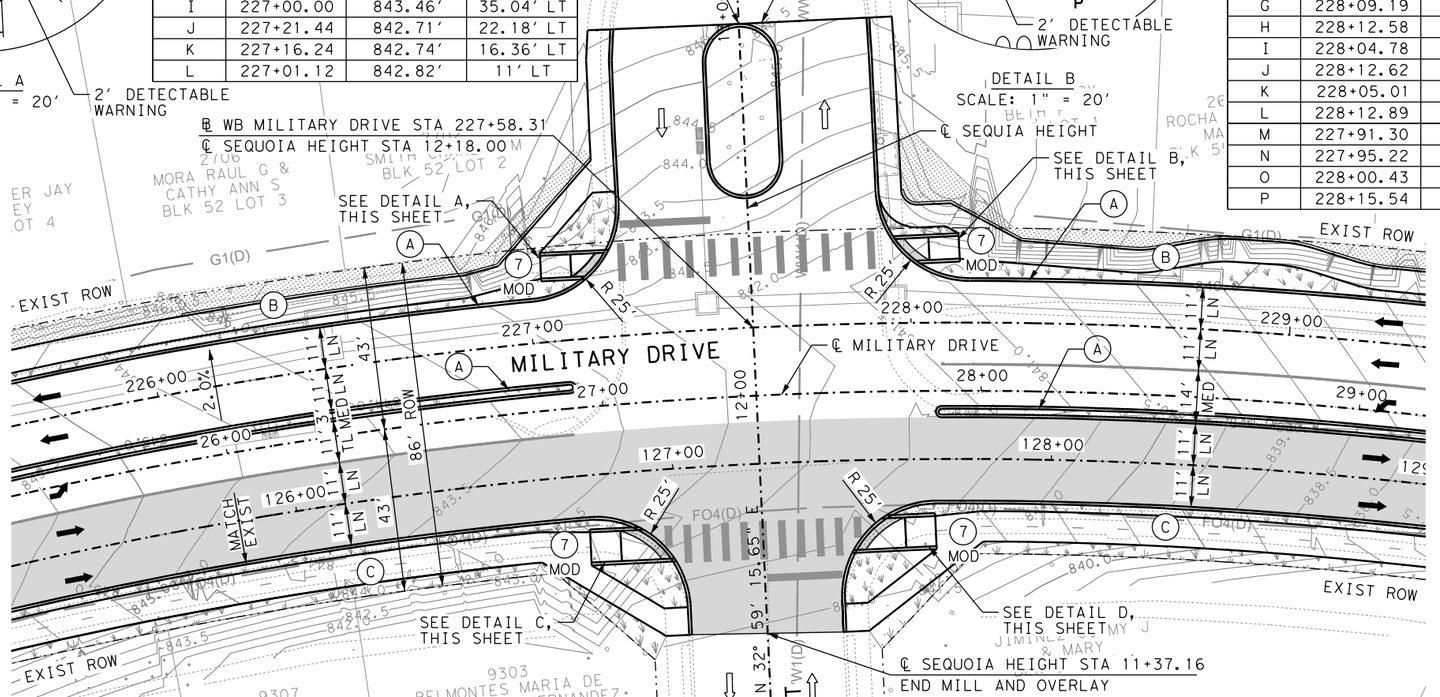
DETAIL B
SCALE: 1" = 20′

DETAIL B POINTS

POINT	STATION	ELEV.	OFFSET
A	227+97.85	843.20′	35.14′ LT
B	228+02.10	843.05′	31.18′ LT
C	228+10.54	842.61′	31.53′ LT
D	228+28.90	841.41′	21.70′ LT
E	227+92.03	843.08′	35.05′ LT
F	228+02.32	842.93′	25.18′ LT
G	228+09.19	842.49′	25.47′ LT
H	228+12.58	842.17′	23.62′ LT
I	228+04.78	841.79′	22.53′ LT
J	228+12.62	842.17′	22.87′ LT
K	228+05.01	841.39′	16.53′ LT
L	228+12.89	842.05′	16.88′ LT
M	227+91.30	842.04′	35.03′ LT
N	227+95.22	841.33′	22.18′ LT
O	228+00.43	841.19′	16.36′ LT
P	228+15.54	840.89′	11.01′ LT

LEGEND

- (A) CONCRETE CURB (7")
- (B) 4" SIDEWALK (6′ WIDE)
- (C) 4" SIDEWALK (8′ WIDE)
- (D) 5" ELEVATED SIDEWALK (6′ WIDE)
- (E) 5" ELEVATED SIDEWALK (8′ WIDE)
- (F) SHARE USE PATH
- (G) SAW CUT & PVMT JUNCTION
- PROP TRAFFIC FLOW
- EXIST TRAFFIC FLOW
- (II) TxDOT WHEELCHAIR RAMP, TYPE
- (#) CoSA WHEELCHAIR RAMP, TYPE
- EXIST ROW
- MILL AND OVERLAY
- PAVEMENT REPAIR
- GRASS
- MULCH

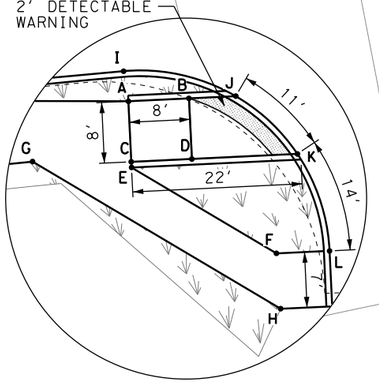


NOTES:

1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE HORIZONTAL AND VERTICAL CONTROL DATA SHEETS.
2. SAW CUT AND MATCH EXISTING PAVEMENT ELEVATION, TAPER CURB ENDS PER CURB END DETAIL.
3. UTILITY POLES IN CONFLICT WILL BE RELOCATED BY OTHERS.

0 20′ 40′
SCALE: 1" = 40′

2′ DETECTABLE WARNING

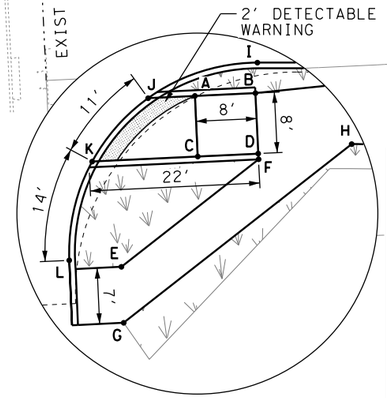


DETAIL C
SCALE: 1" = 20′

DETAIL C POINTS

POINT	STATION	ELEV.	OFFSET
A	227+10.64	843.21′	51.02′ RT
B	227+19.00	842.54′	51.32′ RT
C	227+10.29	843.05′	59.01′ RT
D	227+18.72	842.38′	59.31′ RT
E	227+10.26	843.05′	59.76′ RT
F	227+29.85	842.42′	72.60′ RT
G	226+96.63	843.83′	57.75′ RT
H	227+29.54	842.03′	79.93′ RT
I	227+10.35	842.86′	47′ RT
J	227+25.47	842.44′	51.51′ RT
K	227+33.42	842.12′	59.7′ RT
L	227+37.00	841.71′	72.76′ RT

2′ DETECTABLE WARNING



DETAIL D
SCALE: 1" = 20′

DETAIL D POINTS

POINT	STATION	ELEV.	OFFSET
A	227+97.72	841.36′	51.32′ RT
B	228+06.08	842.03′	51.02′ RT
C	227+98.00	841.51′	59.31′ RT
D	228+06.43	842.17′	59.01′ RT
E	227+87.03	841.76′	73.68′ RT
F	228+06.46	842.17′	59.76′ RT
G	227+87.17	841.41′	81.08′ RT
H	228+19.41	841.65′	57.75′ RT
I	228+06.37	841.13′	47′ RT
J	227+91.25	841.27′	51.51′ RT
K	227+83.30	841.24′	59.7′ RT
L	227+79.72	841.06′	72.66′ RT

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

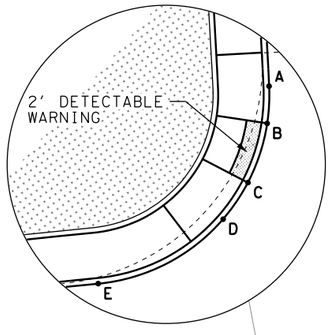
INTERSECTION LAYOUT SEQUOIA HEIGHT

95 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 154 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_RIL02.dgn
5/19/2025 9:34:18 AM

5/19/2025 9:34:18 AM
c:\bms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_RIL02.dgn

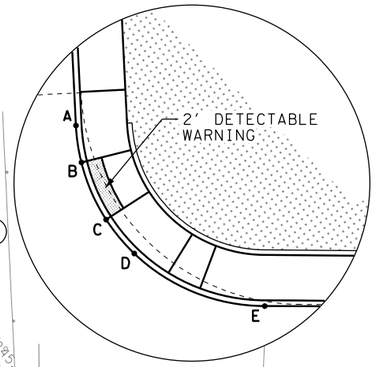
℄ SEQUOIA HEIGHT STA 12+98.23
END CONSTRUCTION
(SEE NOTE 2)



DETAIL A
SCALE: 1" = 20'

DETAIL A POINTS

POINT	STATION	ELEV.	OFFSET
A	227+25.36	843.28'	35.04' LT
B	227+24.76	842.98'	30.16' LT
C	227+21.68	842.71'	22.56' LT
D	227+18.10	842.73'	18.02' LT
E	227+01.12	842.82'	11.01' LT



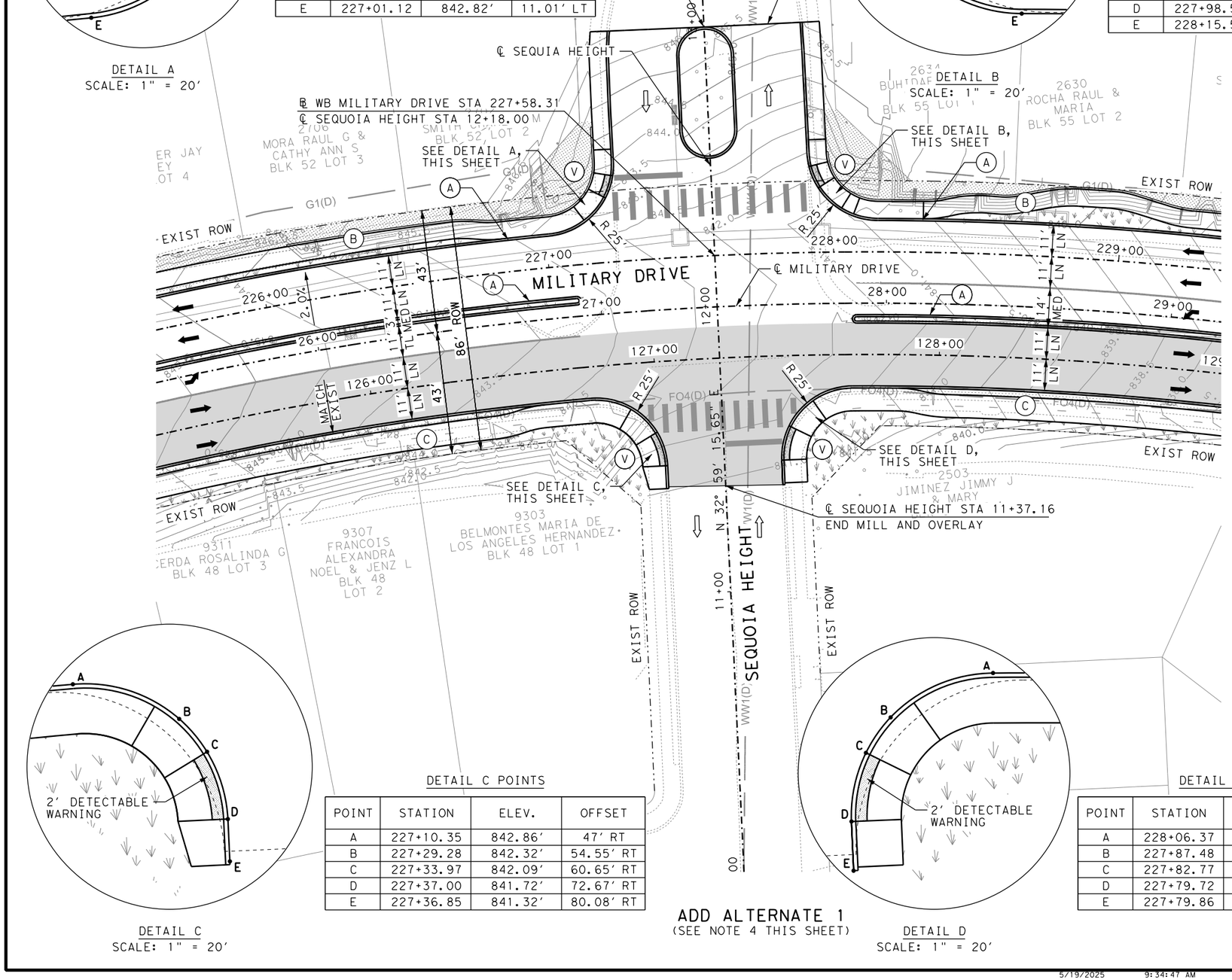
DETAIL B
SCALE: 1" = 20'

DETAIL B POINTS

POINT	STATION	ELEV.	OFFSET
A	227+91.30	842.04'	35.03' LT
B	227+91.91	841.72'	30.16' LT
C	227+94.98	841.33'	22.56' LT
D	227+98.57	841.23'	18.02' LT
E	228+15.54	840.89'	11.01' LT

LEGEND

- (A) CONCRETE CURB (7")
- (B) 4" SIDEWALK (6' WIDE)
- (C) 4" SIDEWALK (8' WIDE)
- (D) 5" ELEVATED SIDEWALK (6' WIDE)
- (E) 5" ELEVATED SIDEWALK (8' WIDE)
- (F) SHARE USE PATH
- (G) SAW CUT & PVMT JUNCTION
- PROP TRAFFIC FLOW
- EXIST TRAFFIC FLOW
- (II) TxDOT WHEELCHAIR RAMP, TYPE
- (#) CoSA WHEELCHAIR RAMP, TYPE
- EXIST ROW
- MILL AND OVERLAY
- PAVEMENT REPAIR
- GRASS
- MULCH



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

DETAIL C
SCALE: 1" = 20'

DETAIL C POINTS

POINT	STATION	ELEV.	OFFSET
A	227+10.35	842.86'	47' RT
B	227+29.28	842.32'	54.55' RT
C	227+33.97	842.09'	60.65' RT
D	227+37.00	841.72'	72.67' RT
E	227+36.85	841.32'	80.08' RT

ADD ALTERNATE 1
(SEE NOTE 4 THIS SHEET)

DETAIL D
SCALE: 1" = 20'

DETAIL D POINTS

POINT	STATION	ELEV.	OFFSET
A	228+06.37	841.13'	47' RT
B	227+87.48	841.29'	54.52' RT
C	227+82.77	841.23'	60.62' RT
D	227+79.72	841.09'	72.59' RT
E	227+79.86	840.70'	81.23' RT

NOTES:

1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE HORIZONTAL AND VERTICAL CONTROL DATA SHEETS.
2. SAW CUT AND MATCH EXISTING PAVEMENT ELEVATION, TAPER CURB ENDS PER CURB END DETAIL.
3. UTILITY POLES IN CONFLICT WILL BE RELOCATED BY OTHERS.
4. THIS SHEET TO BE USED ONLY IF ADD ALTERNATE BID 1 OPTION IS SELECTED.

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

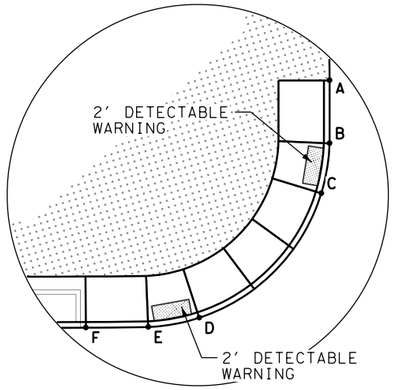
MILITARY DRIVE

INTERSECTION LAYOUT SEQUOIA HEIGHT

95 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 155A OF 377

c:\dms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_RIL02A.dgn
9:34:47 AM
5/19/2025

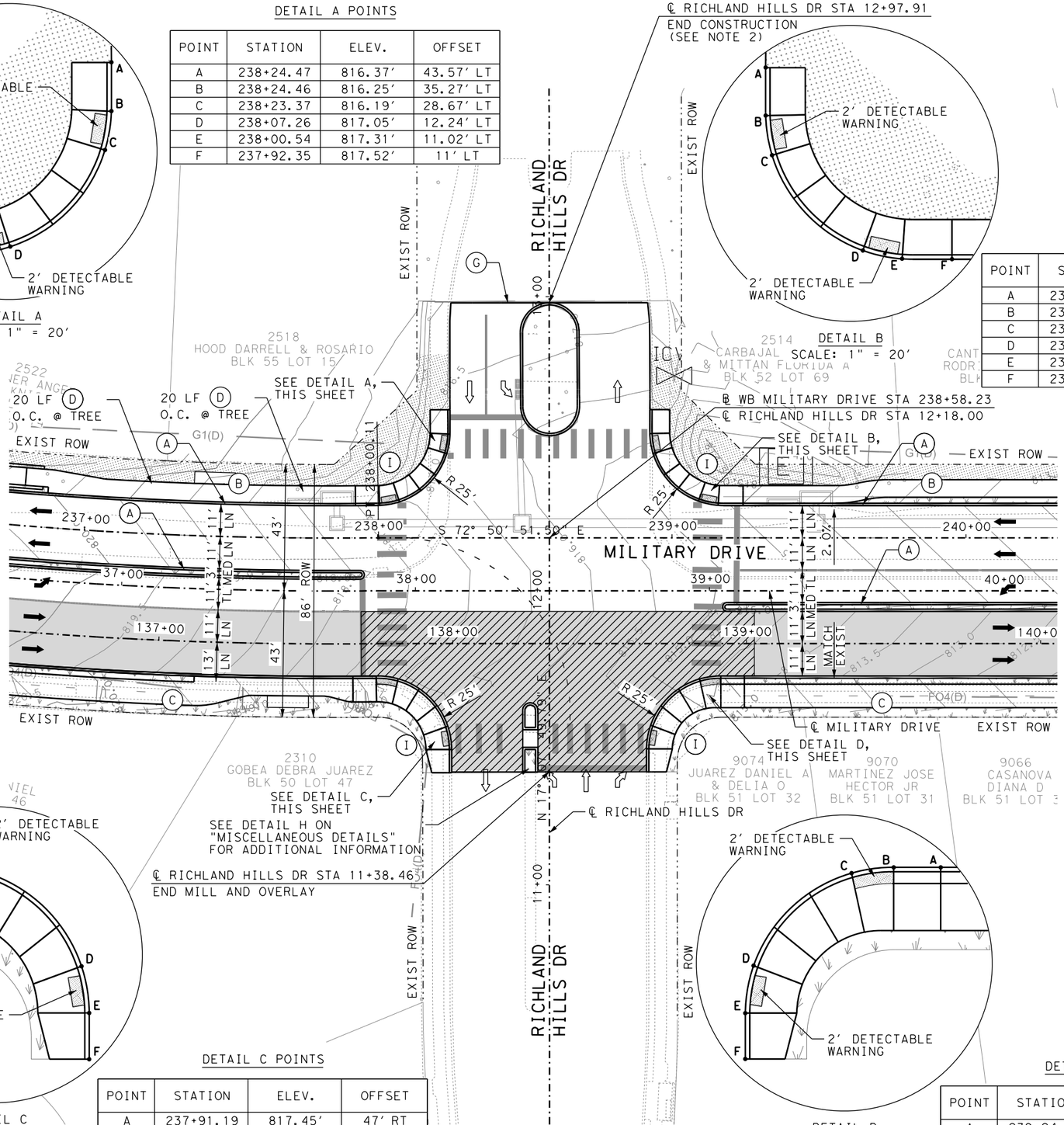
5/19/2025 9:34:47 AM
c:\dms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_RIL02A.dgn



DETAIL A
SCALE: 1" = 20'

DETAIL A POINTS

POINT	STATION	ELEV.	OFFSET
A	238+24.47	816.37'	43.57' LT
B	238+24.46	816.25'	35.27' LT
C	238+23.37	816.19'	28.67' LT
D	238+07.26	817.05'	12.24' LT
E	238+00.54	817.31'	11.02' LT
F	237+92.35	817.52'	11' LT



DETAIL B
SCALE: 1" = 20'

DETAIL B POINTS

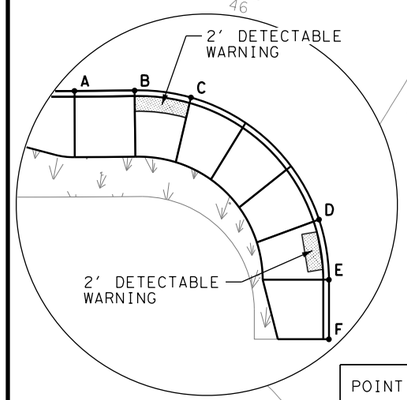
POINT	STATION	ELEV.	OFFSET
A	238+92.45	815.82'	43.58' LT
B	238+92.46	815.59'	35.42' LT
C	238+93.55	815.40'	28.68' LT
D	239+08.98	814.75'	12.49' LT
E	239+15.66	814.57'	11.07' LT
F	239+24.14	814.42'	11.01' LT

LEGEND

- (A) CONCRETE CURB (7")
- (B) 4" SIDEWALK (6' WIDE)
- (C) 4" SIDEWALK (8' WIDE)
- (D) 5" ELEVATED SIDEWALK (6' WIDE)
- (E) 5" ELEVATED SIDEWALK (8' WIDE)
- (F) SHARE USE PATH
- (G) SAW CUT & PVMT JUNCTION
- PROP TRAFFIC FLOW
- EXIST TRAFFIC FLOW
- (II) TxDOT WHEELCHAIR RAMP, TYPE
- (#) CoSA WHEELCHAIR RAMP, TYPE
- EXIST ROW
- MILL AND OVERLAY
- PAVEMENT REPAIR
- GRASS
- MULCH

NOTES:

1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE HORIZONTAL AND VERTICAL CONTROL DATA SHEETS.
2. SAW CUT AND MATCH EXISTING PAVEMENT ELEVATION, TAPER CURB ENDS PER CURB END DETAIL.
3. UTILITY POLES IN CONFLICT WILL BE RELOCATED BY OTHERS.



DETAIL C
SCALE: 1" = 20'

DETAIL C POINTS

POINT	STATION	ELEV.	OFFSET
A	237+91.19	817.45'	47' RT
B	237+98.85	817.24'	47' RT
C	238+06.79	817.01'	47.94' RT
D	238+23.71	816.05'	64.05' RT
E	238+25.00	815.88'	72' RT
F	238+25.01	815.65'	79.86' RT

DETAIL D
SCALE: 1" = 20'

DETAIL D POINTS

POINT	STATION	ELEV.	OFFSET
A	239+24.58	814.26'	47' RT
B	239+16.58	814.45'	47' RT
C	239+09.40	814.55'	47.98' RT
D	238+92.74	814.65'	63.72' RT
E	238+91.33	814.56'	71.78' RT
F	238+91.33	814.44'	79.58' RT

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

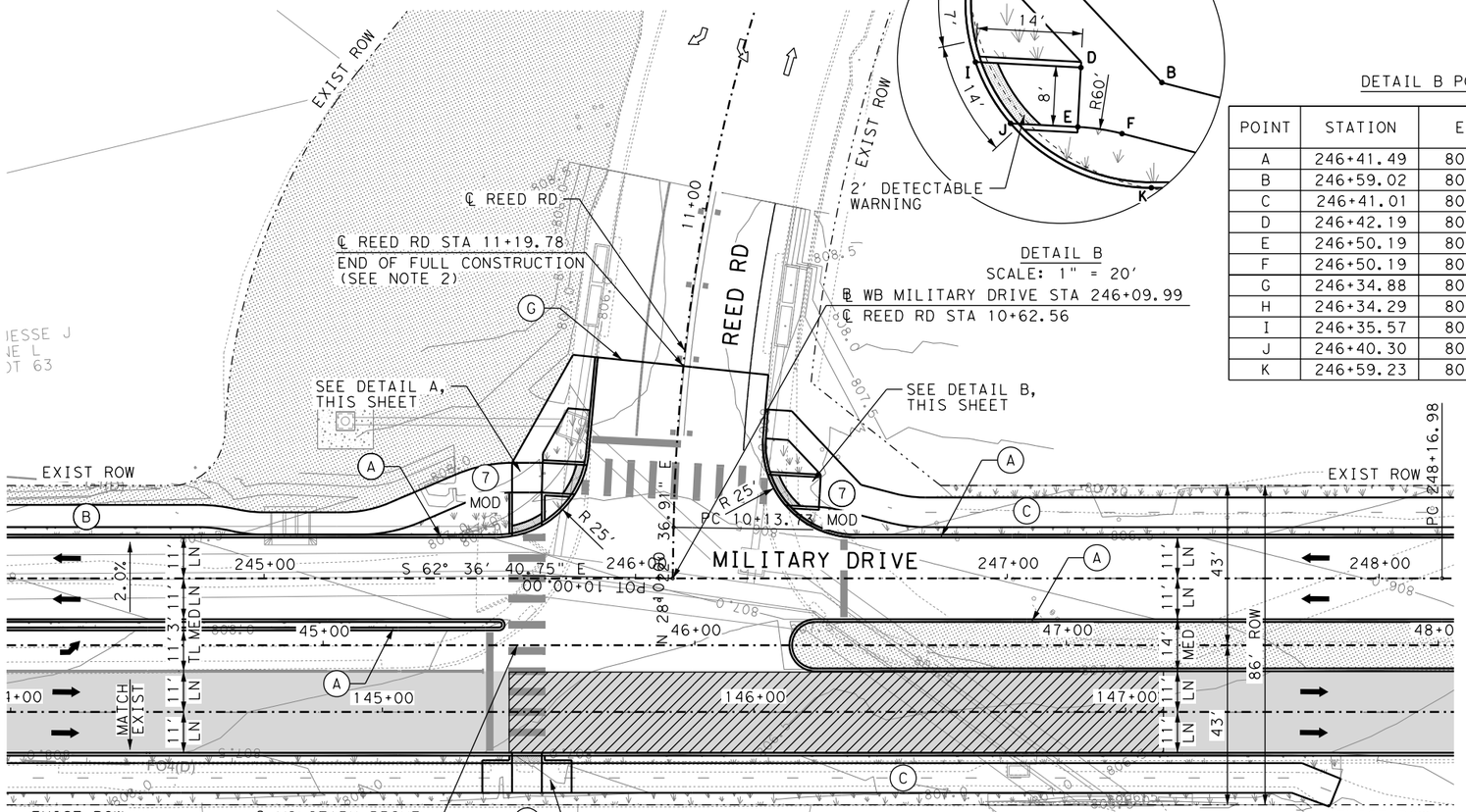
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

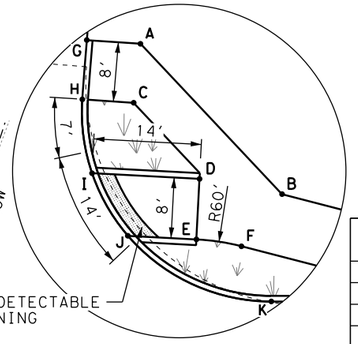
MILITARY DRIVE

INTERSECTION LAYOUT
RICHLAND HILLS DR

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 156 OF 377

c:\dms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_RIL03.dgn
9:35:13 AM
5/19/2025





DETAIL B
SCALE: 1" = 20'

DETAIL B POINTS

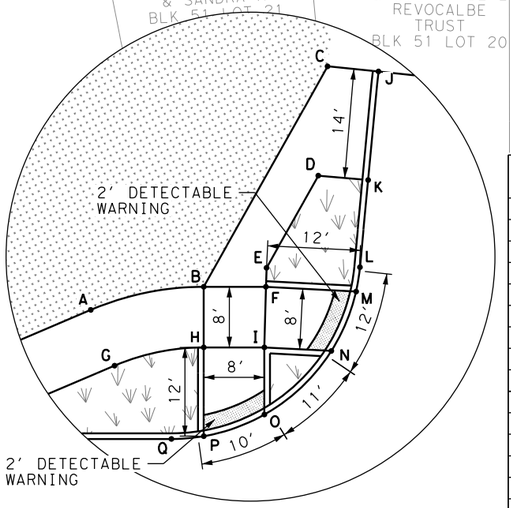
POINT	STATION	ELEV.	OFFSET
A	246+41.49	806.62'	45.02' LT
B	246+59.02	807.12'	25.16' LT
C	246+41.01	806.65'	37.23' LT
D	246+42.19	806.82'	27.19' LT
E	246+50.19	806.50'	19.2' LT
F	246+50.19	806.80'	18.29' LT
G	246+34.88	805.93'	45.51' LT
H	246+34.29	806.01'	37.69' LT
I	246+35.57	806.12'	27.93' LT
J	246+40.30	806.23'	19.67' LT
K	246+59.23	806.46'	11' LT

LEGEND

- (A) CONCRETE CURB (7")
- (B) 4" SIDEWALK (6' WIDE)
- (C) 4" SIDEWALK (8' WIDE)
- (D) 5" ELEVATED SIDEWALK (6' WIDE)
- (E) 5" ELEVATED SIDEWALK (8' WIDE)
- (F) SHARE USE PATH
- (G) SAW CUT & PVMT JUNCTION
- PROP TRAFFIC FLOW
- EXIST TRAFFIC FLOW
- (II) TxDOT WHEELCHAIR RAMP, TYPE
- (#) CoSA WHEELCHAIR RAMP, TYPE
- EXIST ROW
- MILL AND OVERLAY
- PAVEMENT REPAIR
- GRASS
- MULCH

NOTES:

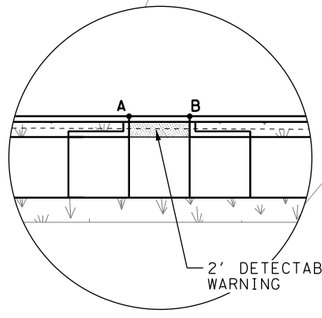
1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE HORIZONTAL AND VERTICAL CONTROL DATA SHEETS.
2. SAW CUT AND MATCH EXISTING PAVEMENT ELEVATION, TAPER CURB ENDS PER CURB END DETAIL.
3. UTILITY POLES IN CONFLICT WILL BE RELOCATED BY OTHERS.



DETAIL A
SCALE: 1" = 20'

DETAIL A POINTS

POINT	STATION	ELEV.	OFFSET
A	245+51.87	807.65'	28.04' LT
B	245+66.77	807.04'	31.08' LT
C	245+83.13	806.47'	60.18' LT
D	245+81.89	806.72'	45.75' LT
E	245+75.06	806.85'	33.59' LT
F	245+74.97	806.87'	31.08' LT
G	245+55.01	807.49'	20.68' LT
H	245+66.77	807.05'	23.08' LT
I	245+74.77	806.89'	23.08' LT
J	245+89.84	805.61'	59.5' LT
K	245+88.47	805.83'	45.18' LT
L	245+87.39	806.26'	33.66' LT
M	245+86.88	806.32'	30.46' LT
N	245+83.62	806.49'	22.62' LT
O	245+74.77	806.73'	14.22' LT
P	245+66.77	806.91'	11.37' LT
Q	245+65.50	806.99'	11' LT



DETAIL D
SCALE: 1" = 20'

DETAIL C POINTS

POINT	STATION	ELEV.	OFFSET
A	246+41.49	806.93'	47' RT
B	246+59.02	806.87'	47' RT

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

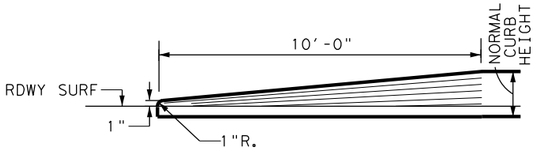
MILITARY DRIVE

INTERSECTION LAYOUT
REED RD

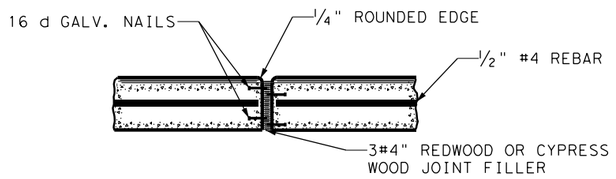
95 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 157 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_RIL04.dgn
9:35:29 AM
5/19/2025

5/19/2025 9:35:29 AM
c:\bms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_RIL04.dgn

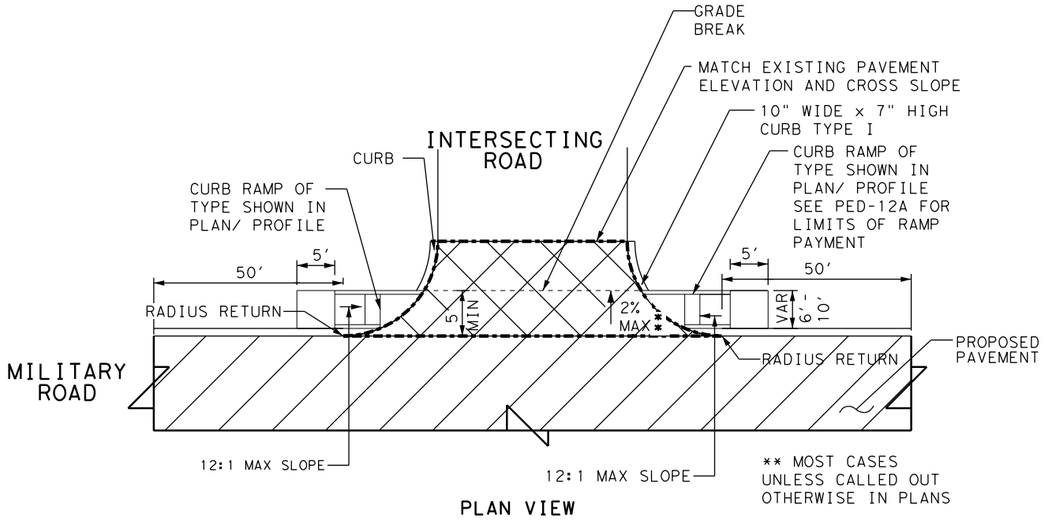


TRANSITION FOR CONCRETE CURB ENDS



EXPANSION JOINTS TO BE PLACED AT BEGINNING AND END OF CURVES, DRIVEWAYS WHEELCHAIR RAMPS, INLETS, ILLUMINATION/ SIGNAL FOUNDATIONS AND OTHER FIXED OBJECTS.

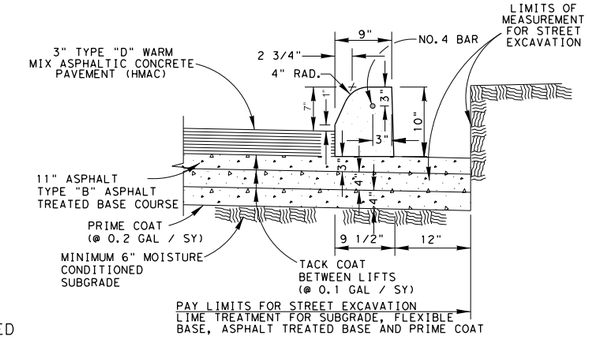
TYPICAL CURB EXPANSION JOINT DETAIL



PLAN VIEW

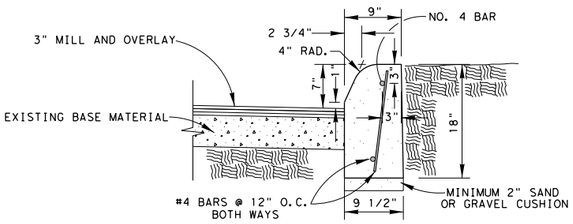
INTERSECTING ROADWAY DETAIL

N.T.S.



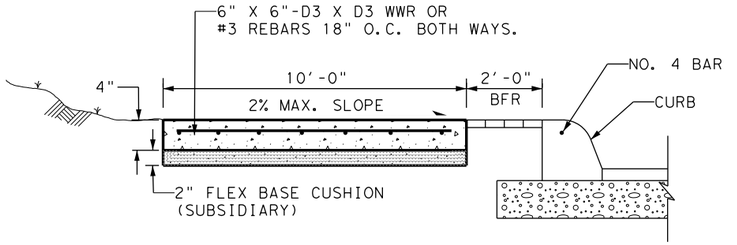
TYPICAL CONCRETE CURB DETAIL A

ITEM 500 ON ASPHALT TREATED BASE OR ASPHALTIC CONCRETE BASE
SCALE : NTS



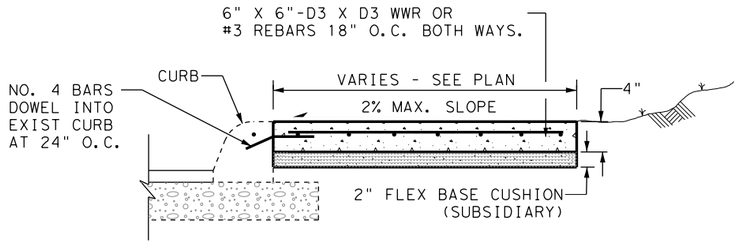
TYPICAL HEADER CURB DETAIL B

ITEM 500 ON SAND OR GRAVEL
SCALE : NTS

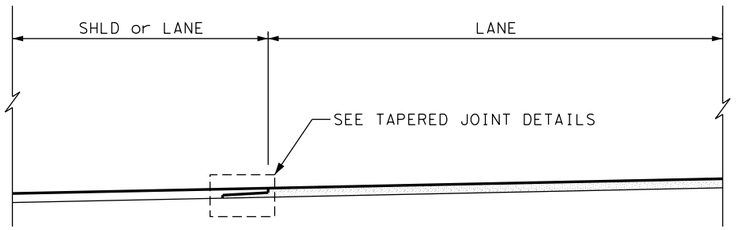


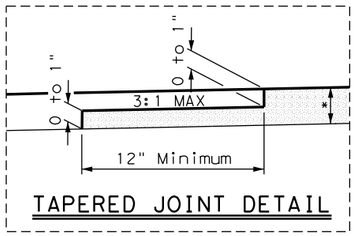
TYPICAL SHARE USE PATH SECTION

GROOVED JOINTS IN THE SIDE WALK SHALL BE AT A MAX. SPACING OF 10 FT. AND SHALL HAVE 3#4" EXPANSION JOINTS AT A MAX. SPACING OF 60' AND TO COINSIDE WITH THE CURB EXP. JOINTS. REFER TO ROADWAY SECTIONS FOR SIDEWALK CROSS SLOPE.

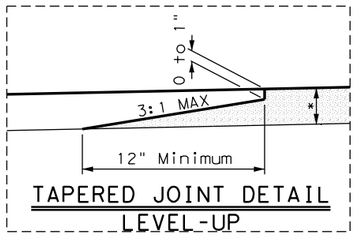


TYPICAL SIDEWALK DETAIL AT EXISTING CURB





TAPERED JOINT DETAIL



TAPERED JOINT DETAIL LEVEL-UP

* SEE TYPICAL SECTION FOR DEPTH AND TYPE OF HMA.

NOTES:

LONGITUDINAL JOINTS SHALL BE CONSTRUCTED BY TAPERING THE BITUMINOUS MAT. THE TAPERED PORTION SHALL EXTEND BEYOND THE NORMAL LANE WIDTH. THE TAPERED PORTION OF THE MAT SHALL BE CONSTRUCTED BY THE USE OF AN APPROVED STRIKE-OFF DEVICE THAT WILL PROVIDE A UNIFORM SLOPE AND WILL NOT RESTRICT THE MAIN SCREED. TACK COAT SHALL BE APPLIED TO THE IN-PLACE TAPER BEFORE THE ADJACENT MAT IS PLACED. FINAL DENSITY REQUIREMENTS FOR THE ENTIRE PAVEMENT, INCLUDING THE TAPER AREA, WILL REMAIN UNCHANGED. COMPACTION OF THE INITIAL TAPER SECTION WILL BE REQUIRED AS NEAR TO FINAL DENSITY AS POSSIBLE.

THE ENGINEER MAY ALLOW FOR VARIANCES TO THE DIMENSIONS SHOWN.

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

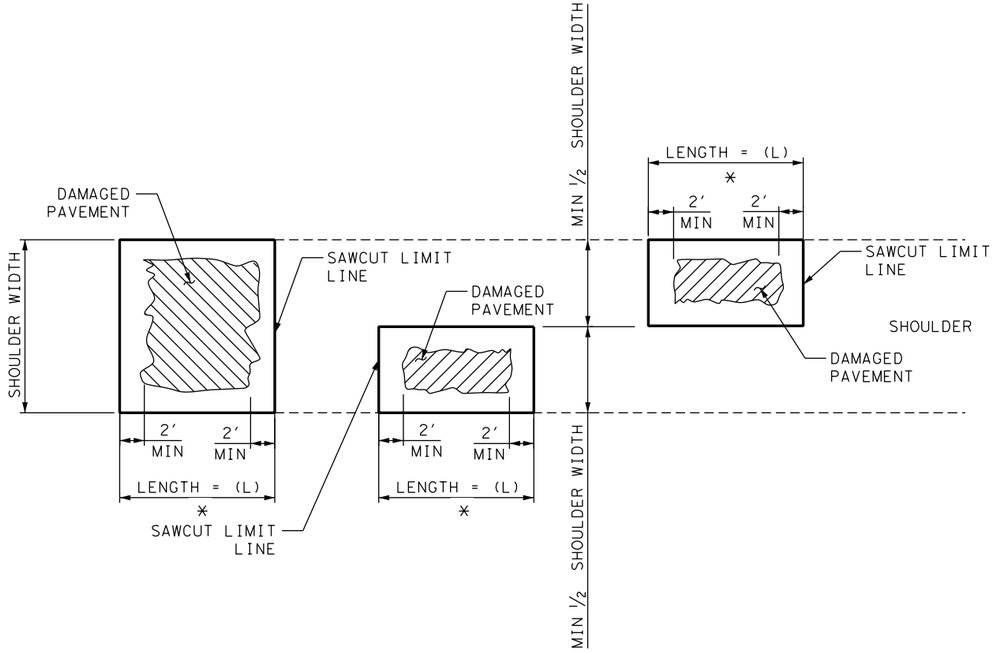
MILITARY DRIVE

MISCELLANEOUS ROADWAY DETAILS

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 158 OF 377

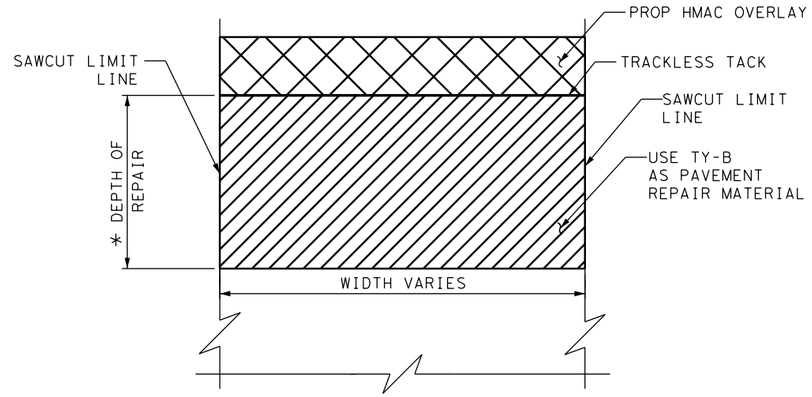
c:\bms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_RMD01.dgn
5:15:48 AM
5/19/2025

5/19/2025 9:35:44 AM
c:\bms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_RMD01.dgn



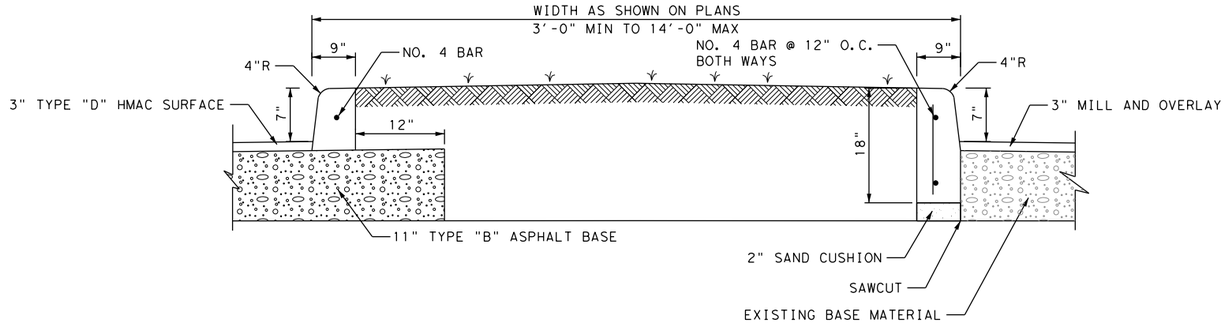
FLEXIBLE PAVEMENT REPAIR DETAIL

* ACTUAL DIMENSIONS AND LOCATIONS TO BE INITIALLY DETERMINED BY THE ENGINEER AND COORDINATED WITH THE CONTRACTOR IN THE FIELD.



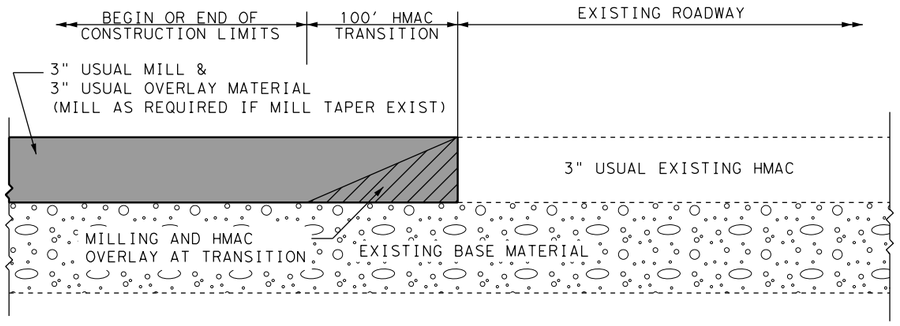
FLEXIBLE PAVEMENT REPAIR DETAIL PROFILE VIEW

* ACTUAL DIMENSIONS AND LOCATIONS TO BE INITIALLY DETERMINED BY THE ENGINEER AND COORDINATED WITH THE CONTRACTOR IN THE FIELD IN ACCORDANCE WITH THE GEOTECH REPORT.



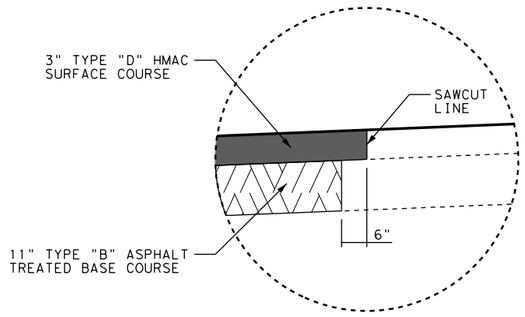
MEDIAN DETAIL

N.T.S.



HMA MILL & OVERLAY DETAIL AT BEGIN AND END OF CONSTRUCTION LIMITS

LONGITUDINAL SECTION



SAWCUT DETAIL C

N.T.S.

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040

8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

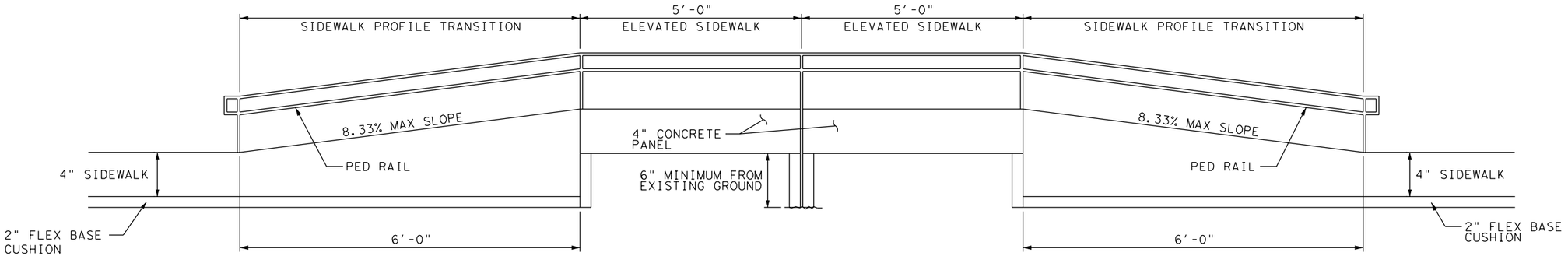
MILITARY DRIVE

MISCELLANEOUS ROADWAY DETAILS

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 159 OF 377

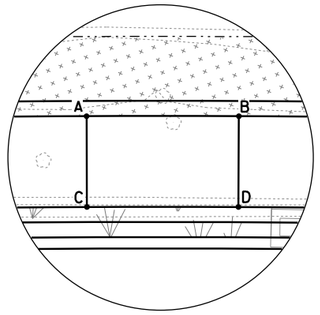
c:\bms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_RMD02.dgn
9:35:55 AM
5/19/2025

5/19/2025 9:35:55 AM
c:\bms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_RMD02.dgn

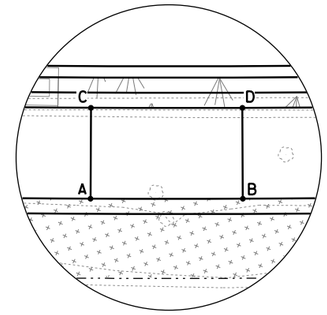


ELEVATED SIDEWALK ELEVATION TRANSITION DETAIL

SCALE : NTS



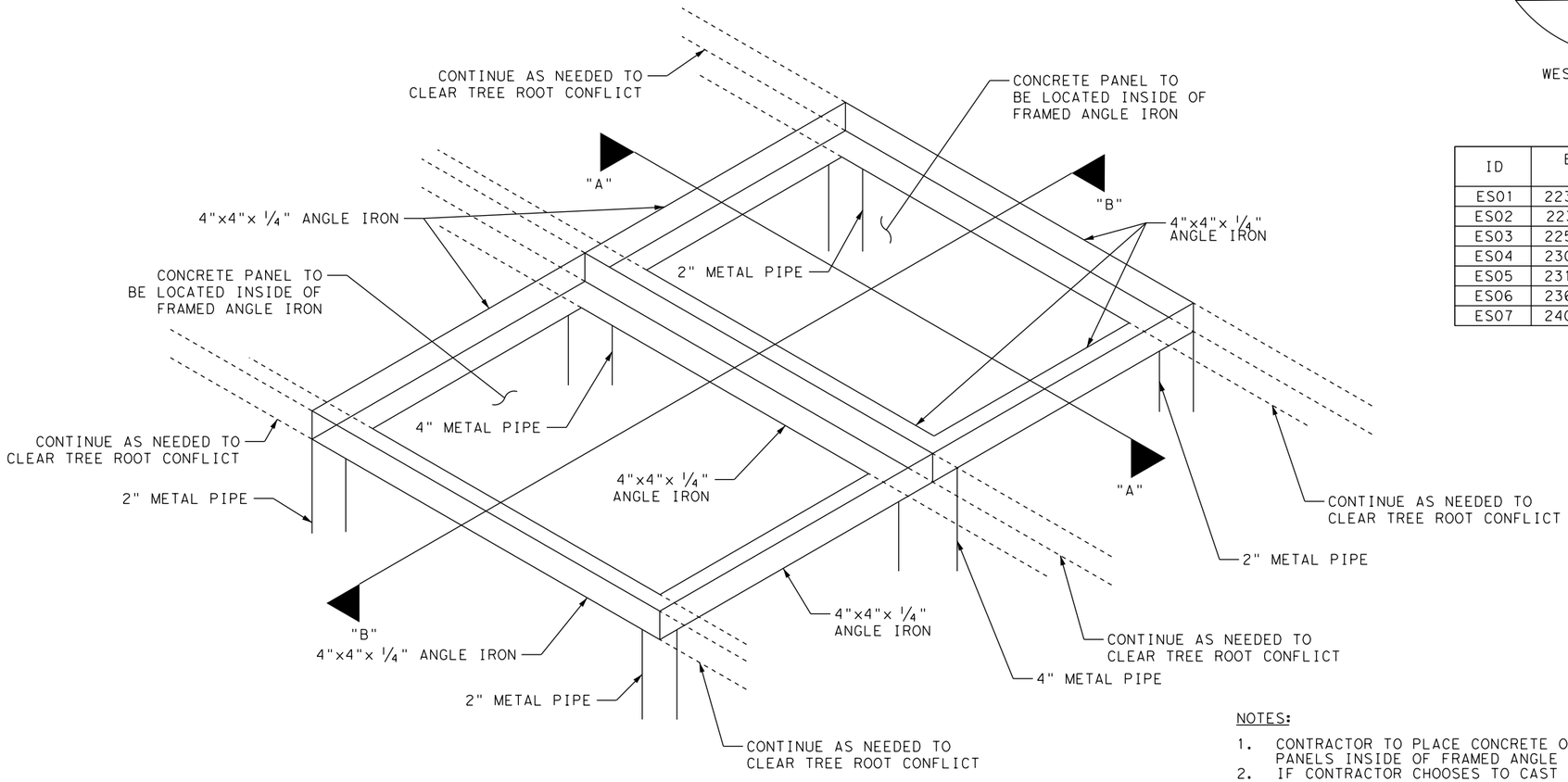
WESTBOUND SIDEWALK



EASTBOUND SIDEWALK

ELEVATED SIDEWALK

ID	BEGIN STA	END STA	ELEVATION			
			A	B	C	D
ES01	223+36.00	223+46.00	853.20	852.86	853.08	852.74
ES02	223+65.01	223+75.01	852.21	851.88	852.09	851.76
ES03	225+03.35	225+13.35	847.45	847.12	847.33	847.00
ES04	230+18.77	230+28.77	836.73	836.44	836.61	836.32
ES05	231+19.10	231+29.10	832.81	832.46	832.65	832.30
ES06	236+68.74	236+78.74	821.08	820.93	820.96	820.81
ES07	240+40.89	240+55.89	812.96	812.67	812.84	812.55



ELEVATED SIDEWALK DETAIL

SCALE : NTS

SEE NEXT SHEET FOR SECTION DETAILS

NOTES:

1. CONTRACTOR TO PLACE CONCRETE OR CONCRETE PANELS INSIDE OF FRAMED ANGLE IRON.
2. IF CONTRACTOR CHOOSES TO CAST IN PLACE CONCRETE PANELS, CONTRACTOR SHALL SUBMIT MATERIAL CHOICE FOR SUBFLOOR TO ENGINEER FOR APPROVAL
3. CONCRETE PANELS SHOULD BE MINIMUM 4" THICK. REINFORCEMENT SHALL BE #4 AND SPACED 12" OCEW

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

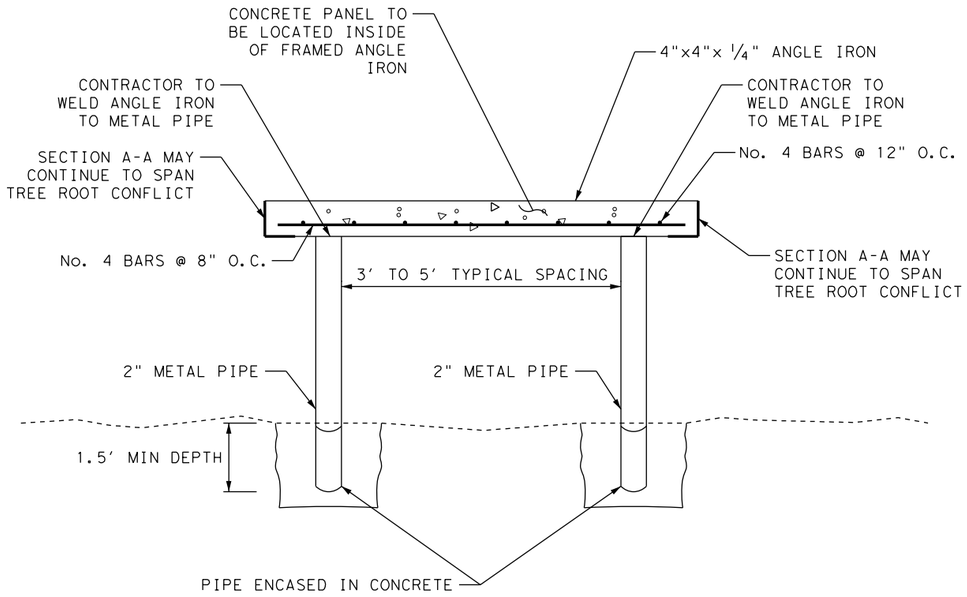
consor
F-12040

8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

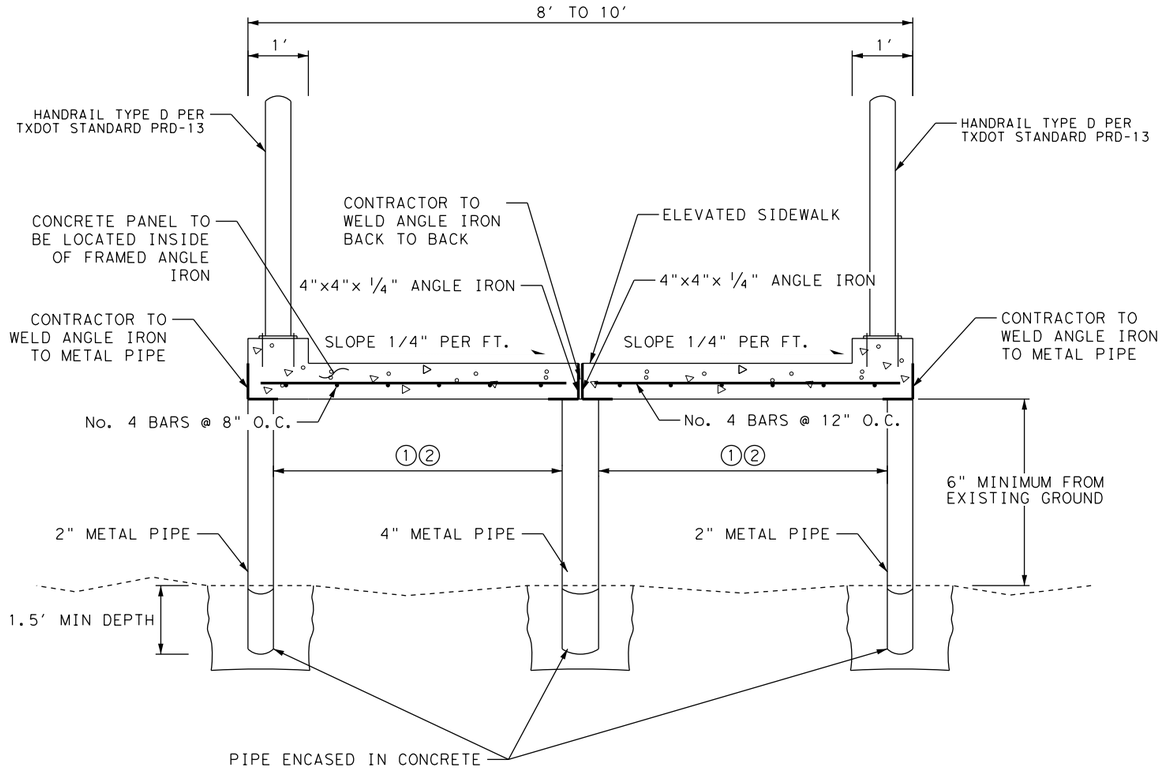
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
MISCELLANEOUS ROADWAY DETAILS

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 160 OF 377



ELEVATED SIDEWALK DETAIL
SECTION A-A
SCALE : NTS



ELEVATED SIDEWALK DETAIL
SECTION B-B
SCALE : NTS

① 3'-8" TYPICAL SPACING FOR 6' SIDEWALK
② 4'-8" TYPICAL SPACING FOR 8' SIDEWALK

NOTES:

1. CONTRACTOR TO PLACE CONCRETE OR CONCRETE PANELS INSIDE OF FRAMED ANGLE IRON.
2. IF CONTRACTOR CHOOSES TO CAST IN PLACE CONCRETE PANELS, CONTRACTOR SHALL SUBMIT MATERIAL CHOICE FOR SUBFLOOR TO ENGINEER FOR APPROVAL
3. CONCRETE PANELS SHOULD BE MINIMUM 4" THICK. REINFORCEMENT SHALL BE #4 AND SPACED 12" OCEW

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER
5/19/2025

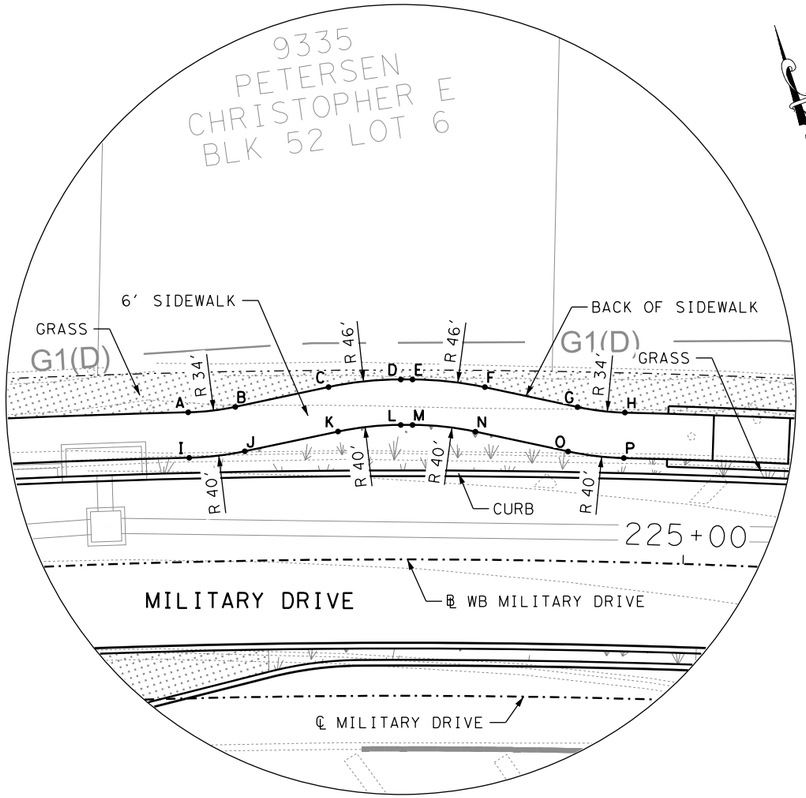
consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
MISCELLANEOUS ROADWAY DETAILS

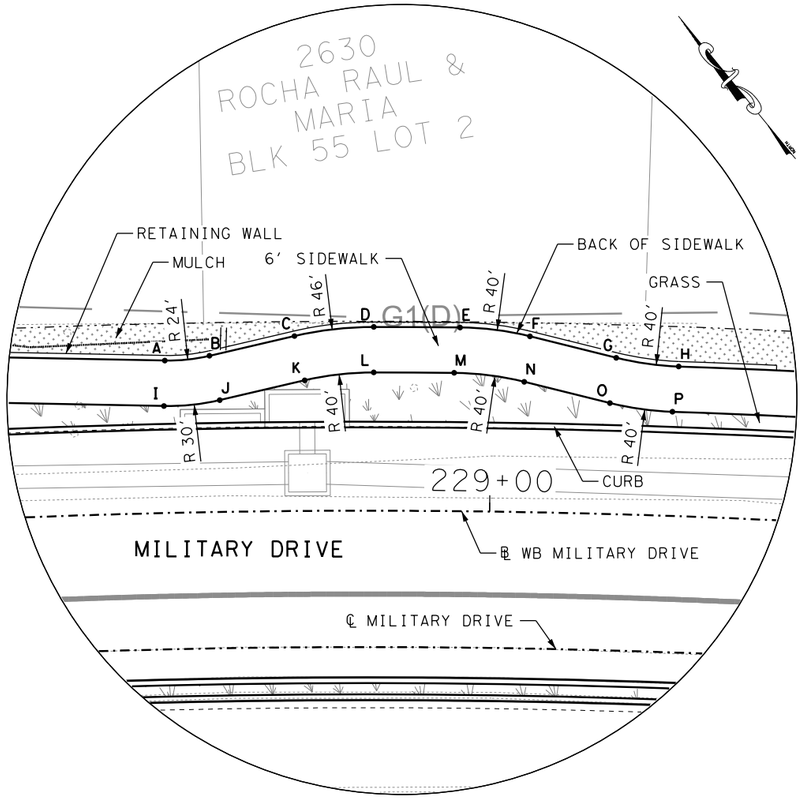
95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 161 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_RMD04.dgn
9:36:34 AM
5/19/2025



DETAIL D
SCALE: 1" = 20'

POINT	STATION	ELEV.	OFFSET
A	224+17.56	849.84'	19.74' LT
B	224+20.63	849.60'	20.34' LT
C	224+26.69	849.22'	22.78' LT
D	224+31.36	848.95'	23.74' LT
E	224+32.12	848.90'	23.74' LT
F	224+36.80	848.60'	22.78' LT
G	224+42.83	848.12'	20.34' LT
H	224+45.91	847.85'	19.74' LT
I	224+17.56	849.72'	13.74' LT
J	224+21.19	849.48'	14.44' LT
K	224+27.28	849.10'	16.9' LT
L	224+31.36	848.83'	17.74' LT
M	224+32.12	848.78'	17.74' LT
N	224+36.21	848.48'	16.9' LT
O	224+42.27	848.00'	14.44' LT
P	224+45.91	847.73'	13.74' LT



DETAIL E
SCALE: 1" = 20'

POINT	STATION	ELEV.	OFFSET
A	224+57.58	840.79'	20.12' LT
B	224+63.38	840.64'	20.62' LT
C	224+74.42	840.45'	23.08' LT
D	224+84.68	840.27'	24.24' LT
E	224+95.86	840.03'	24.24' LT
F	225+04.90	839.79'	23.2' LT
G	225+16.14	839.48'	20.64' LT
H	225+24.26	839.26'	19.74' LT
I	224+57.32	840.67'	14.12' LT
J	224+64.62	840.52'	14.74' LT
K	224+75.72	840.33'	17.22' LT
L	224+84.68	840.15'	18.24' LT
M	224+95.14	839.91'	18.24' LT
N	225+04.26	839.67'	17.2' LT
O	225+15.48	839.36'	14.64' LT
P	225+23.68	839.14'	13.74' LT

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

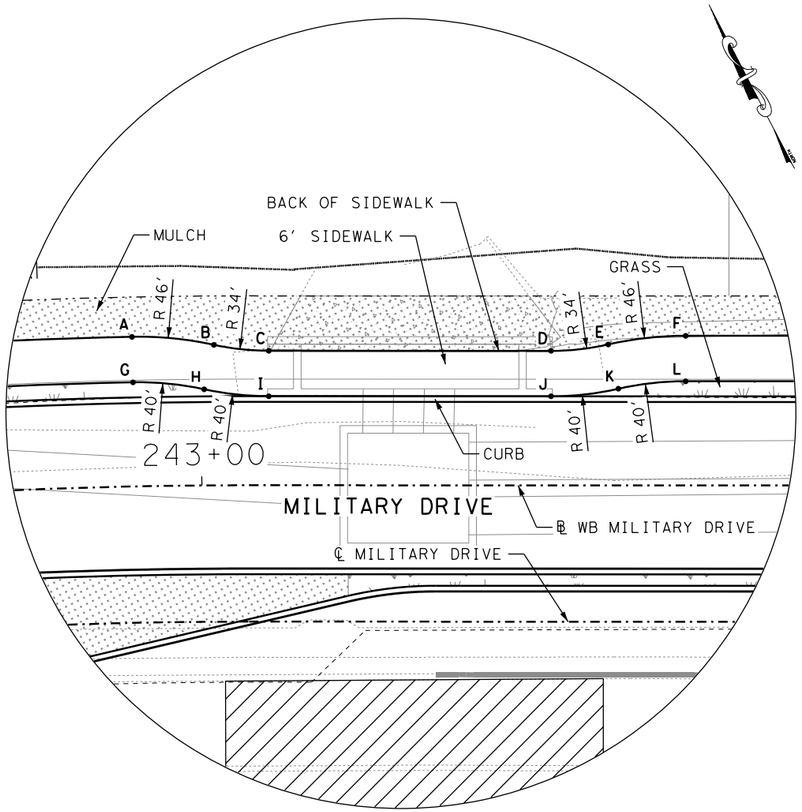
consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

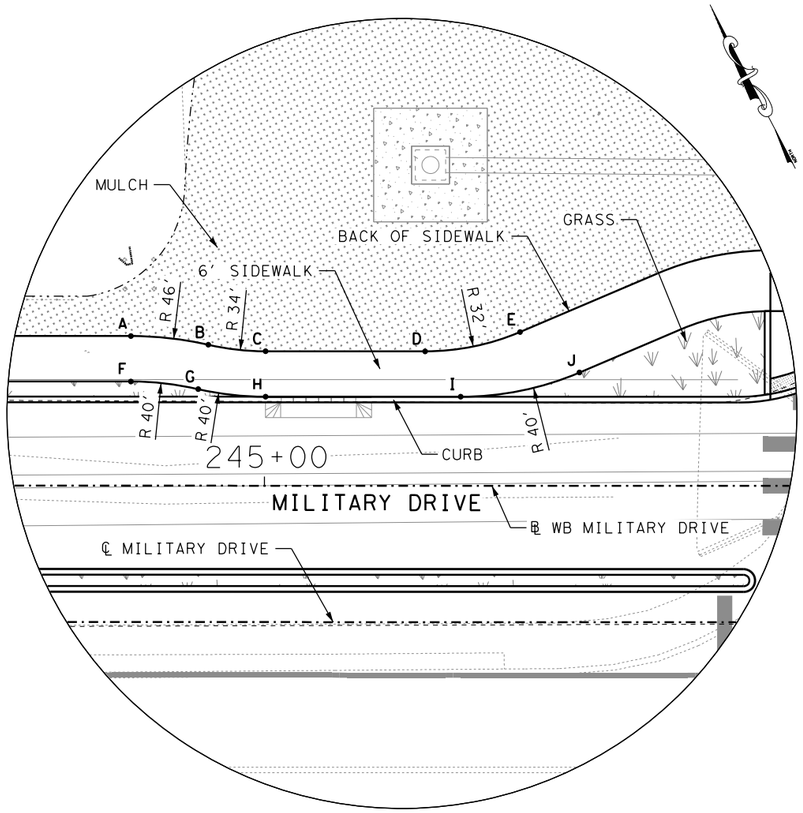
MISCELLANEOUS ROADWAY DETAILS

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 162 OF 377



DETAIL F
SCALE: 1" = 20'

POINT	STATION	ELEV.	OFFSET
A	242+91.18	809.39'	19.75' LT
B	243+01.68	809.31'	18.55' LT
C	243+08.83	809.24'	17.75' LT
D	243+46.08	809.02'	17.75' LT
E	243+53.64	808.98'	18.6' LT
F	243+63.86	808.95'	19.75' LT
G	242+91.18	809.27'	13.75' LT
H	243+00.39	809.19'	12.7' LT
I	243+08.83	809.12'	11.75' LT
J	243+46.08	808.90'	11.75' LT
K	243+54.97	808.86'	12.75' LT
L	243+63.86	808.83'	13.75' LT



DETAIL G
SCALE: 1" = 20'

POINT	STATION	ELEV.	OFFSET
A	244+82.35	808.18'	19.75' LT
B	244+92.57	808.13'	18.6' LT
C	245+00.13	808.07'	17.75' LT
D	244+15.27	807.98'	17.75' LT
E	244+29.39	807.95'	20.63' LT
F	244+82.35	808.06'	13.75' LT
G	244+91.24	808.01'	12.75' LT
H	245+00.13	807.95'	11.75' LT
I	245+25.88	807.80'	11.75' LT
J	245+41.57	807.76'	14.95' LT

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER

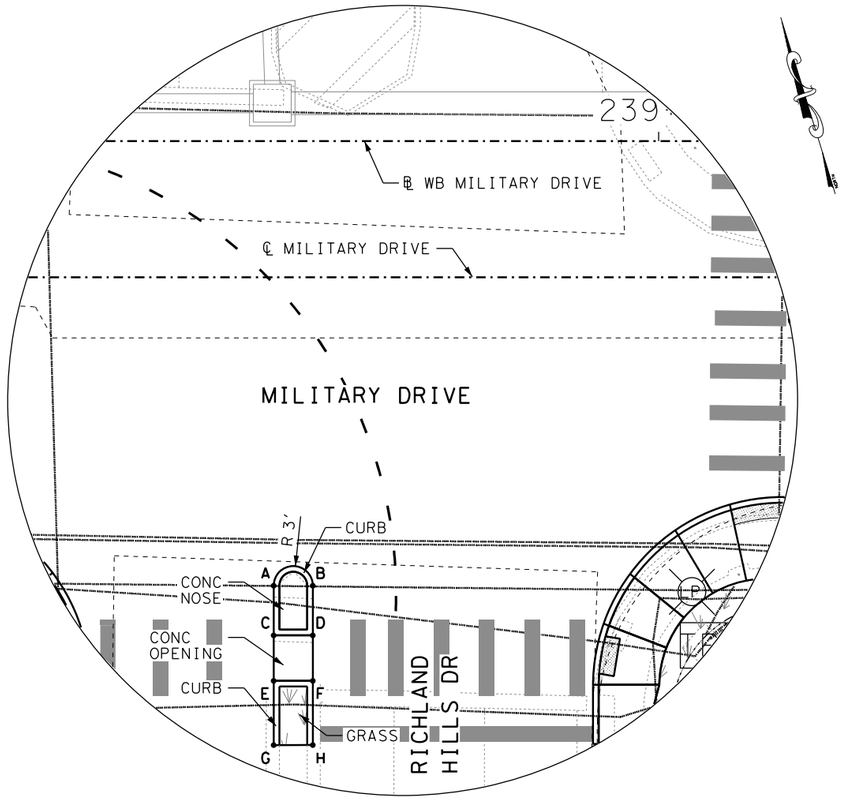
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
MISCELLANEOUS
ROADWAY DETAILS

95 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG / CHKD. BY: EV	SHEET NO. 163 OF 377



DETAIL H
SCALE: 1" = 20'

POINT	STATION	ELEV.	OFFSET
A	238+49.07	815.89'	58.69' RT
B	238+54.24	815.76'	58.69' RT
C	238+49.07	815.65'	65.25' RT
D	238+54.24	815.55'	65.25' RT
E	238+49.07	815.62'	71.25' RT
F	238+54.24	815.49'	71.25' RT
G	238+49.07	815.34'	79.75' RT
H	238+54.24	815.32'	79.75' RT

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300.
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

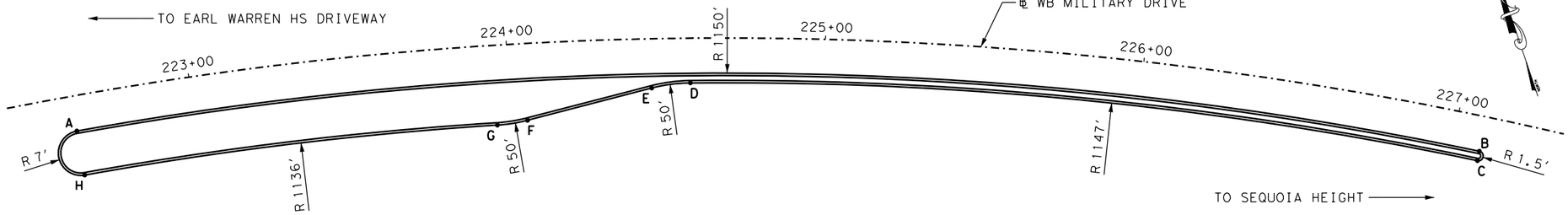
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
MISCELLANEOUS
ROADWAY DETAILS

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 164 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_RMD07.dgn
9:37:07 AM
5/19/2025

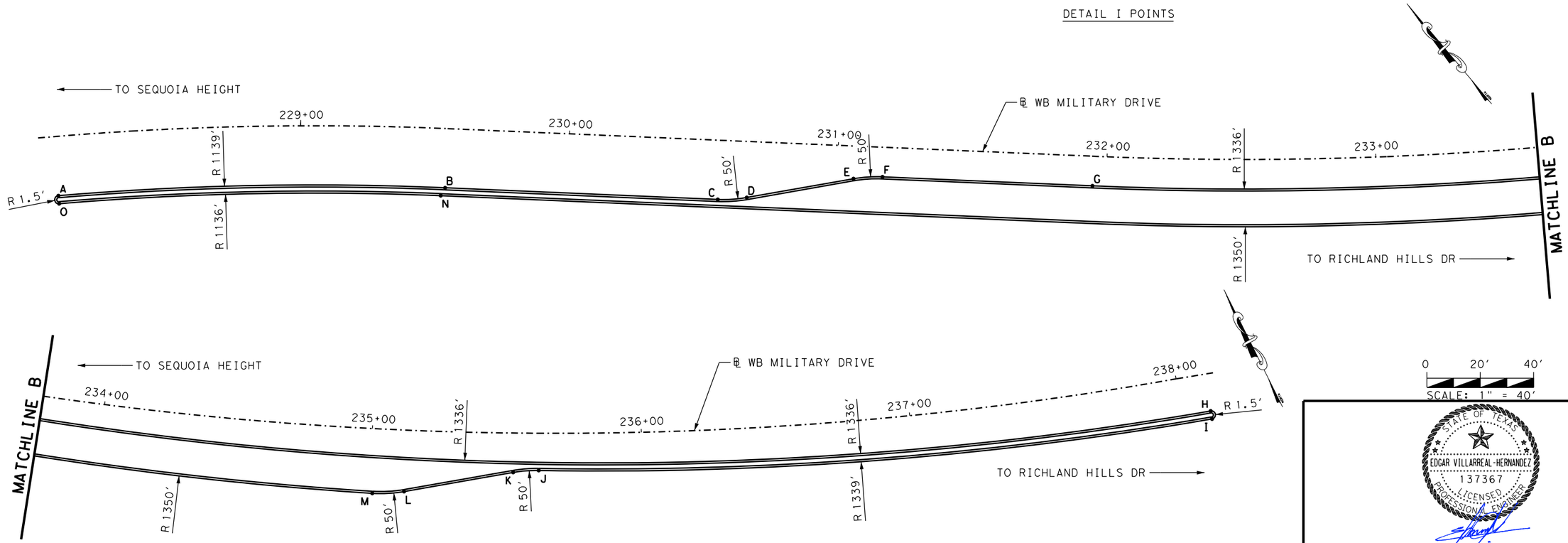
5/19/2025 9:37:07 AM
c:\bms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_RMD07.dgn



DETAIL I

POINT	STATION	ELEV.	OFFSET	POINT	STATION	ELEV.	OFFSET
A	222+62.47	854.91'	11' RT	E	224+45.27	849.30'	15.42' RT
B	227+08.74	843.18'	11' RT	F	224+05.30	850.81'	24.05' RT
C	227+08.74	843.27'	14' RT	G	223+95.62	851.02'	25' RT
D	224+57.52	848.86'	14' RT	H	222+62.47	855.03'	25' RT

DETAIL I POINTS



DETAIL J

POINT	STATION	ELEV.	OFFSET	POINT	STATION	ELEV.	OFFSET
A	228+07.95	841.70'	22' RT	I	228+10.67	817.99'	14' RT
B	229+54.63	838.40'	22' RT	J	228+61.92	820.99'	14' RT
C	228+56.08	835.62'	22' RT	K	228+52.52	820.96'	14.94' RT
D	228+66.83	835.19'	20.83' RT	L	228+12.72	820.88'	23.63' RT
E	229+06.16	833.84'	12.17' RT	M	229+01.17	820.81'	25' RT
F	229+16.91	833.38'	11' RT	N	229+53.10	837.59'	25' RT
G	229+94.46	830.64'	11' RT	O	228+07.95	841.39'	25' RT
H	228+10.65	818.01'	11' RT				

DETAIL J POINTS

0 20' 40'

SCALE: 1" = 40'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

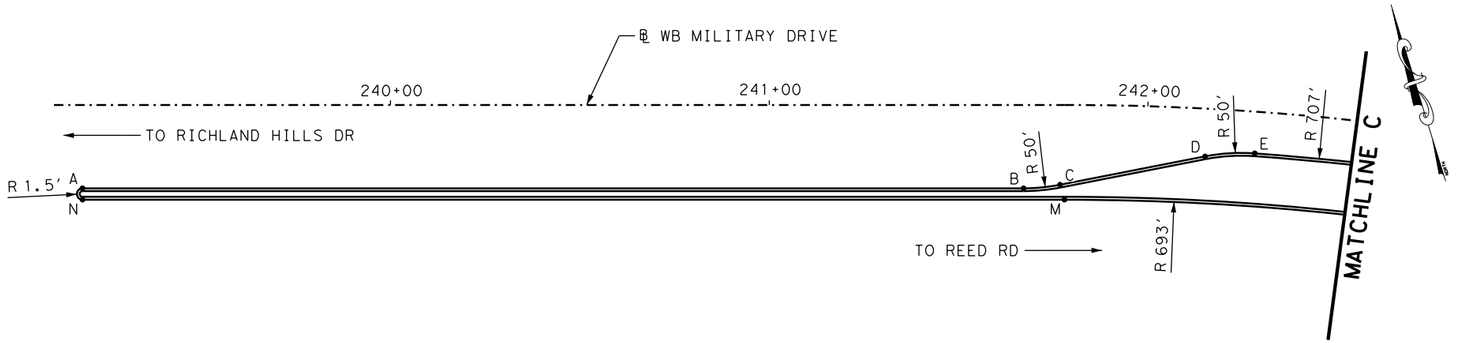
5/19/2025

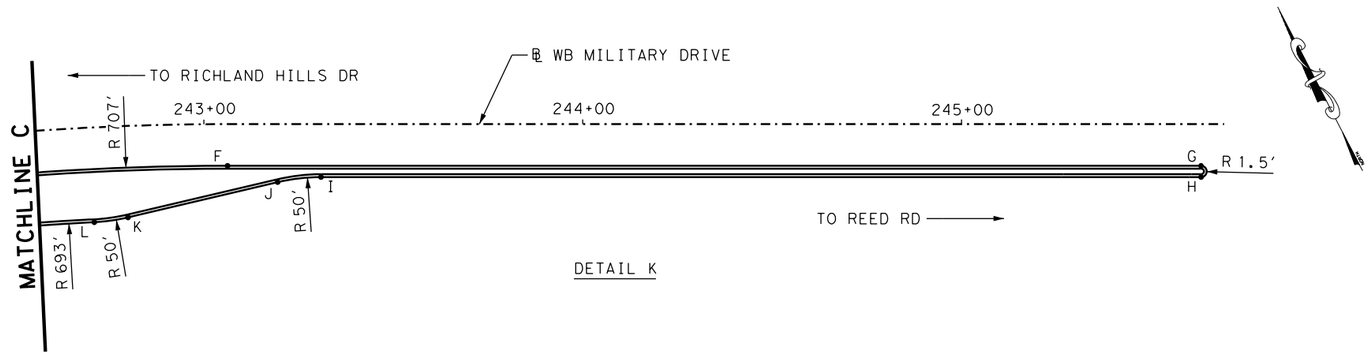
consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
MISCELLANEOUS ROADWAY DETAILS

95 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 165 OF 377

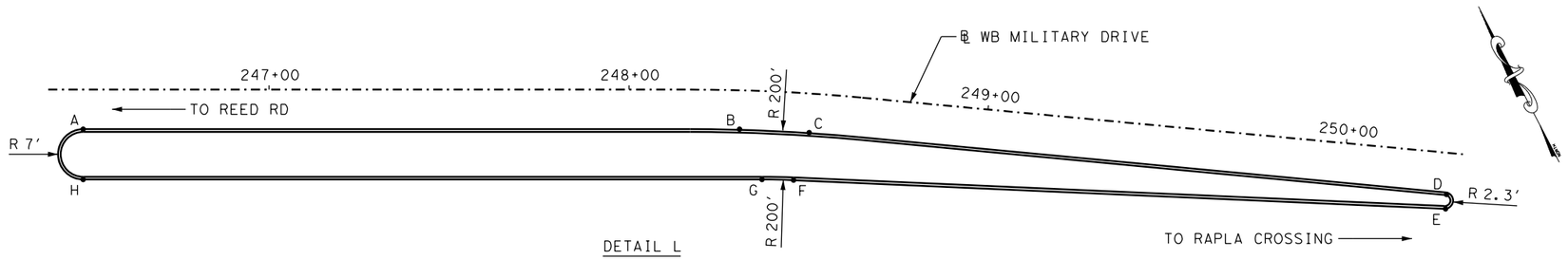




DETAIL K

POINT	STATION	ELEV.	OFFSET	POINT	STATION	ELEV.	OFFSET
A	239+18.71	814.89'	22' RT	H	245+63.26	807.47'	14' RT
B	241+67.17	810.59'	22' RT	I	243+30.90	808.86'	14' RT
C	241+76.76	810.33'	21.07' RT	J	243+19.44	808.91'	15.33' RT
D	242+15.73	809.74'	12.61' RT	K	242+79.05	808.99'	24.13' RT
E	242+29.02	809.58'	11' RT	L	242+69.77	809.05'	25' RT
F	243+06.22	809.00'	11' RT	M	241+77.95	809.81'	25' RT
G	245+63.27	807.42'	11' RT	N	239+18.71	814.89'	25' RT

DETAIL K POINTS



DETAIL L

POINT	STATION	ELEV.	OFFSET	POINT	STATION	ELEV.	OFFSET
A	246+48.37	807.01'	11' RT	E	250+29.13	801.13'	15.57' RT
B	248+16.98	806.10'	11' RT	F	248+47.20	805.66'	24.34' RT
C	248+64.92	805.58'	11' RT	G	248+37.97	805.81'	24.59' RT
D	250+28.74	801.21'	11' RT	H	246+48.37	806.56'	25' RT

DETAIL L POINTS

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

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

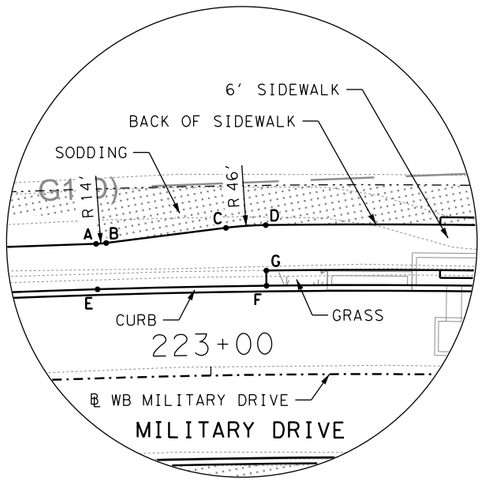
MILITARY DRIVE

MISCELLANEOUS ROADWAY DETAILS

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 166 OF 377

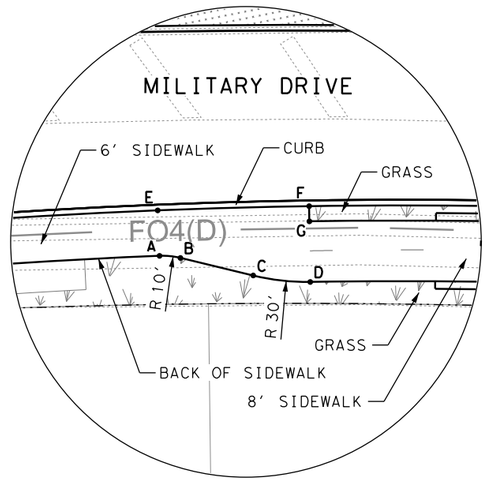
c:\bms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_RMD09.dgn
5/19/2025 9:37:27 AM

5/19/2025 9:37:27 AM
c:\bms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_RMD09.dgn



DETAIL M
SCALE: 1" = 20'

POINT	STATION	ELEV.	OFFSET
A	222+85.38	854.63'	17.75 LT
B	222+86.70	854.59'	17.82 LT
C	223+02.30	854.18'	19.46 LT
D	223+07.47	854.05'	19.75 LT
E	222+85.38	854.51'	11.75 LT
F	223+07.47	853.89'	11.75 LT
G	223+07.47	853.93'	13.75 LT



DETAIL N
SCALE: 1" = 20'

POINT	STATION	ELEV.	OFFSET
A	223+20.30	853.53'	54.58 RT
B	223+23.20	854.59'	54.90 RT
C	223+33.27	854.59'	57.31 RT
D	223+41.20	854.59'	58.17 RT
E	223+20.15	854.59'	48.58 RT
F	223+41.02	854.59'	48.17 RT
G	223+41.05	854.59'	50.17 RT

DETAIL O*
SCALE: 1" = 20'

POINT	STATION	ELEV.	OFFSET
A	226+67.26	844.08'	19.75 LT
B	226+75.77	843.94'	18.82 LT
C	226+77.98	843.91'	18.38 LT
D	226+84.86	843.77'	17.75 LT
E	226+67.17	843.96'	13.75 LT
F	226+74.60	843.82'	12.94 LT
G	226+76.83	843.79'	12.49 LT
H	226+84.91	843.65'	11.75 LT

* DETAIL TO BE USED IF ADD ALTERNATE BID 1 OPTION IS SELECTED

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER

5/19/2025

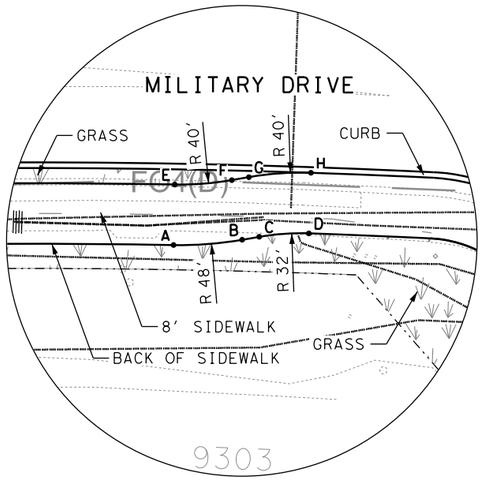
consor
F-12040
8023 VANTAGE DR. STE 300.
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
MISCELLANEOUS
ROADWAY DETAILS

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 167 OF 377

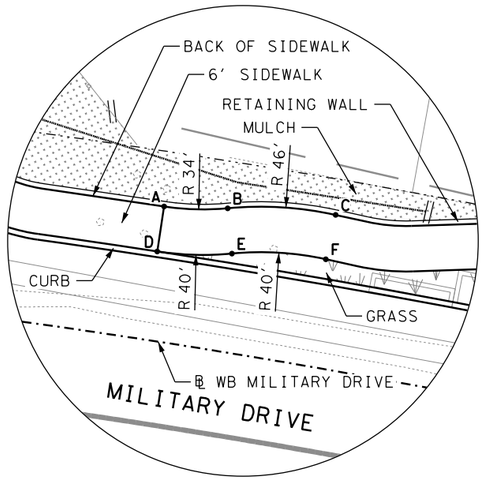
c:\dms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_RMD10.dgn
9:37:37 AM
5/19/2025



DETAIL P*
SCALE: 1" = 20'

POINT	STATION	ELEV.	OFFSET
A	226+74.77	844.10'	57.75 RT
B	226+84.27	843.99'	56.86 RT
C	226+86.63	843.93'	56.40 RT
D	226+93.49	843.83'	55.75 RT
E	226+74.77	843.94'	49.75 RT
F	226+82.63	843.83'	49.01 RT
G	226+84.97	843.79'	48.56 RT
H	226+93.49	843.67'	47.75 RT

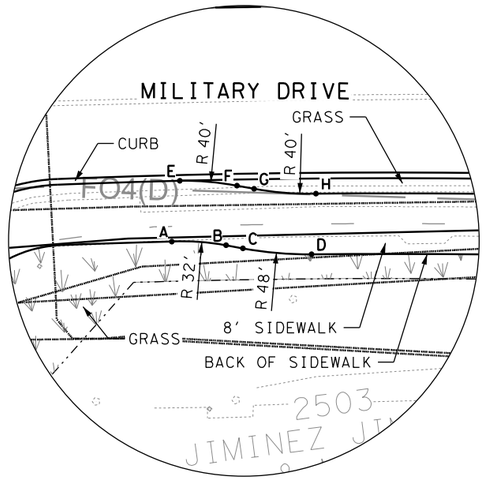
* DETAIL TO BE USED IF ADD ALTERNATE
BID 1 OPTION IS SELECTED



DETAIL Q*
SCALE: 1" = 20'

POINT	STATION	ELEV.	OFFSET
A	228+31.72	841.28'	17.75 LT
B	228+39.47	841.11'	18.82 LT
C	228+53.43	840.89'	20.31 LT
D	228+31.28	841.17'	11.75 LT
E	228+40.96	840.99'	13.01 LT
F	228+53.16	840.77'	14.31 LT

* DETAIL TO BE USED IF ADD ALTERNATE
BID 1 OPTION IS SELECTED



DETAIL R*
SCALE: 1" = 20'

POINT	STATION	ELEV.	OFFSET
A	228+21.82	841.56'	55.75 RT
B	228+29.33	841.36'	56.40 RT
C	228+31.66	841.31'	56.85 RT
D	228+41.19	841.12'	57.75 RT
E	228+23.15	841.37'	47.75 RT
F	228+30.99	841.20'	48.56 RT
G	228+33.30	841.15'	49.01 RT
H	228+41.19	840.96'	49.75 RT

* DETAIL TO BE USED IF ADD ALTERNATE
BID 1 OPTION IS SELECTED

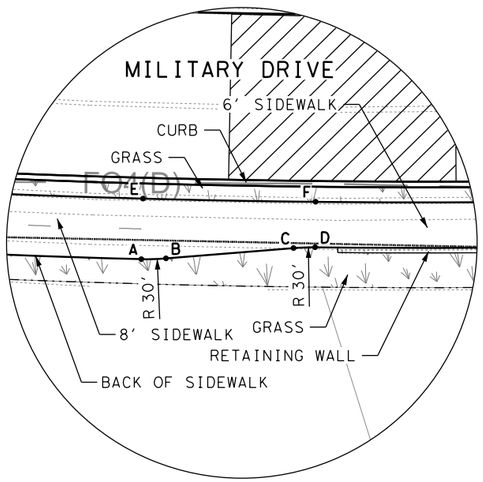
5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300.
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

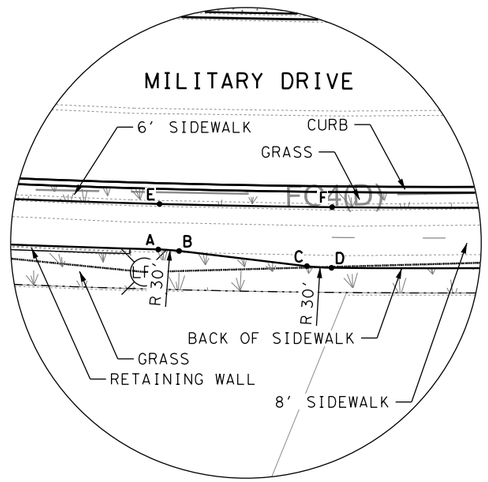
MILITARY DRIVE
MISCELLANEOUS
ROADWAY DETAILS

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 168A OF 377



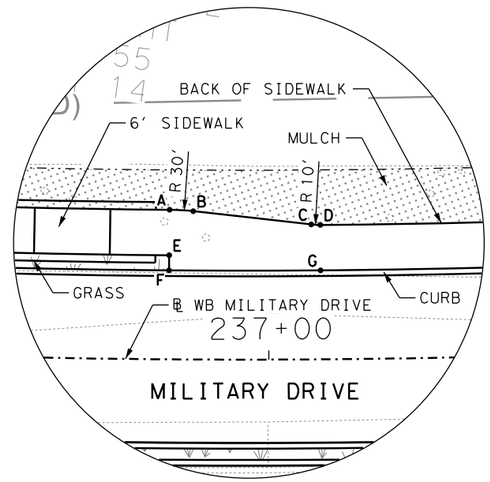
DETAIL S
SCALE: 1" = 20'

POINT	STATION	ELEV.	OFFSET
A	232+92.07	825.41'	57.75 RT
B	232+95.19	825.28'	57.58 RT
C	233+11.40	824.59'	55.88 RT
D	233+14.05	824.49'	55.75 RT
E	232+92.07	825.25'	49.75 RT
F	233+14.05	824.37'	49.75 RT



DETAIL T
SCALE: 1" = 20'

POINT	STATION	ELEV.	OFFSET
A	233+98.59	822.16'	55.75 RT
B	234+01.24	822.12'	55.88 RT
C	234+17.45	821.87'	57.58 RT
D	234+20.56	821.82'	57.75 RT
E	233+98.59	822.04'	49.75 RT
F	234+20.56	821.66'	49.75 RT



DETAIL U
SCALE: 1" = 20'

POINT	STATION	ELEV.	OFFSET
A	236+86.73	820.78'	19.75 LT
B	236+89.90	820.72'	19.58 LT
C	237+05.70	820.34'	17.82 LT
D	237+06.91	820.31'	17.75 LT
E	236+86.73	820.66'	13.75 LT
F	236+86.73	820.62'	11.75 LT
G	237+06.91	820.19'	11.75 LT

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040

8023 VANTAGE DR. STE 300.
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

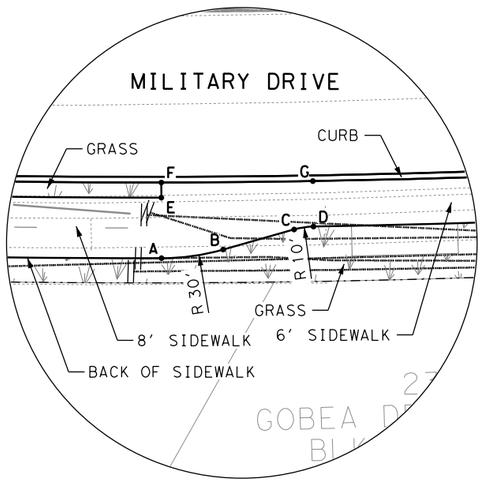
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
MISCELLANEOUS
ROADWAY DETAILS

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 169 OF 377

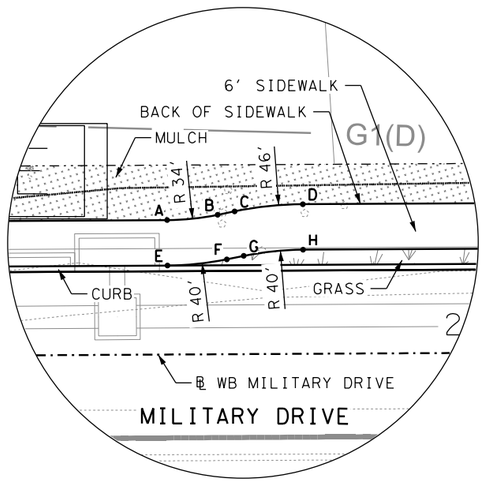
c:\bms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_RMD12.dgn
9:37:58 AM
5/19/2025

5/19/2025 9:37:58 AM
c:\bms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_RMD12.dgn



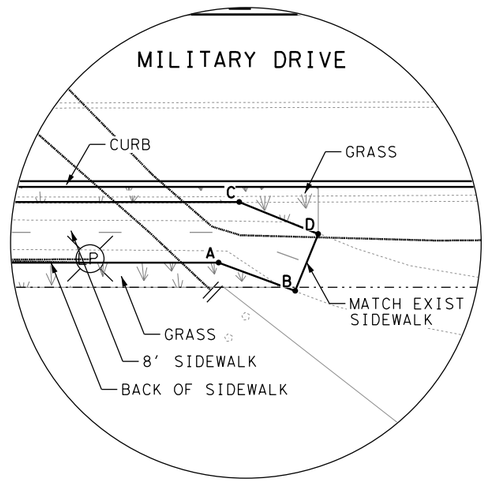
DETAIL V
SCALE: 1" = 20'

POINT	STATION	ELEV.	OFFSET
A	237+39.07	819.51'	57.75 RT
B	237+46.88	819.30'	56.65 RT
C	237+55.89	819.04'	54.09 RT
D	237+58.37	818.99'	53.75 RT
E	237+39.07	819.35'	49.75 RT
F	237+39.07	819.31'	47.75 RT
G	237+58.37	818.87'	47.75 RT



DETAIL W
SCALE: 1" = 20'

POINT	STATION	ELEV.	OFFSET
A	239+55.64	814.53'	17.75 LT
B	239+62.31	814.39'	18.41 LT
C	239+64.54	814.36'	18.86 LT
D	239+73.56	814.23'	19.75 LT
E	239+55.64	814.41'	11.75 LT
F	239+63.48	814.27'	12.53 LT
G	239+65.72	814.24'	12.97 LT
H	239+73.56	814.11'	13.75 LT



DETAIL X
SCALE: 1" = 20'

POINT	STATION	ELEV.	OFFSET
A	247+76.57	806.85'	57.75 RT
B	247+86.70	806.79'	61.48 RT
C	247+79.31	806.67'	49.75 RT
D	247+89.74	806.68'	53.97 RT

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

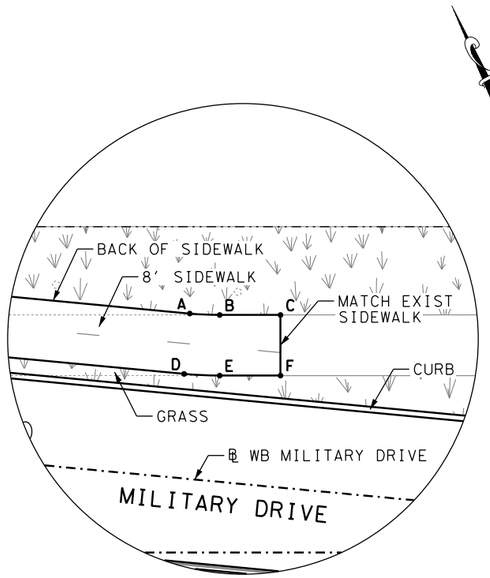
consor
F-12040
8023 VANTAGE DR. STE 300.
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
MISCELLANEOUS
ROADWAY DETAILS

95 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG	CHKD. BY: EV	SHEET NO. 170 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_RMD13.dgn
5:38:08 AM
5/19/2025



DETAIL Y
SCALE: 1" = 20'

POINT	STATION	ELEV.	OFFSET
A	249+27.39	804.77'	21.75 LT
B	249+31.33	804.67'	21.94 LT
C	249+39.32	804.78'	22.69 LT
D	249+27.39	804.61'	13.75 LT
E	249+32.08	804.51'	13.97 LT
F	249+40.07	805.39'	14.72 LT

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

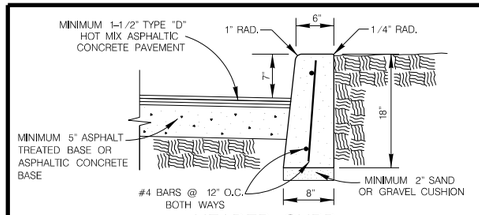
5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300.
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

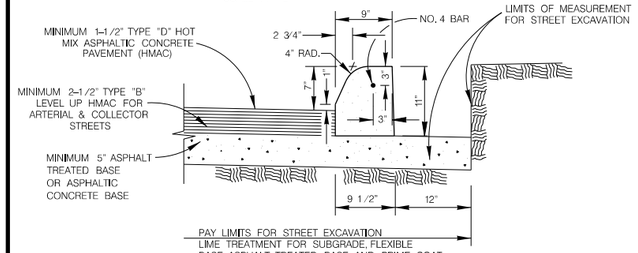
MILITARY DRIVE
MISCELLANEOUS
ROADWAY DETAILS

95 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: EG / CHKD. BY: EV	SHEET NO. 171 OF 377



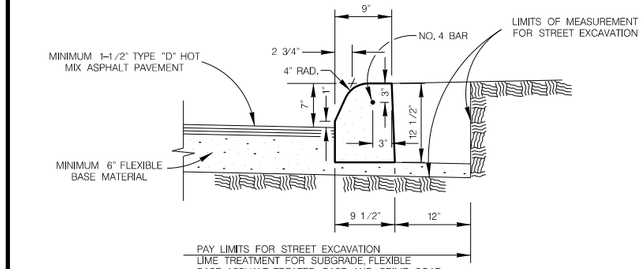
HEADER CURB

ITEM 500 ON SAND OR GRAVEL
SCALE : 1" = 2'



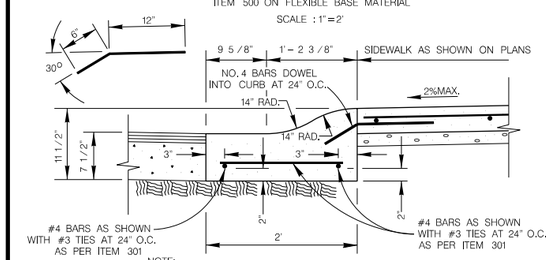
CONCRETE CURB

ITEM 500 ON ASPHALT TREATED BASE OR ASPHALTIC CONCRETE BASE
SCALE : 1" = 2'



CONCRETE CURB

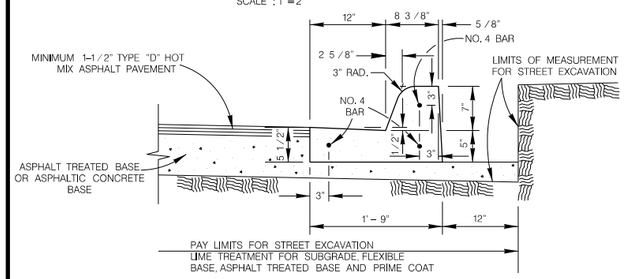
ITEM 500 ON FLEXIBLE BASE MATERIAL
SCALE : 1" = 2'



NOTE:
CURB TRANSITIONS SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN ITEM 500 CONCRETE CURBING

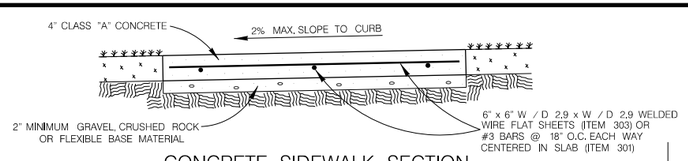
MOUNTABLE CURB

ITEM 500 ON COMPACTED SUBGRADE
SCALE : 1" = 2'



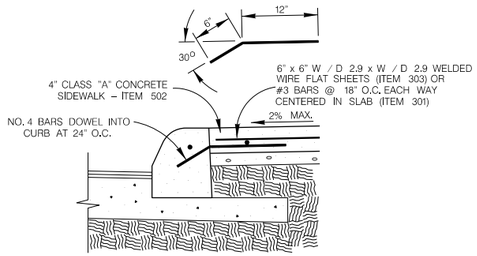
TYPICAL CURB & GUTTER DETAIL

ITEM 500 ASPHALT TREATED BASE OR ASPHALTIC CONCRETE BASE
SCALE : 1" = 2'



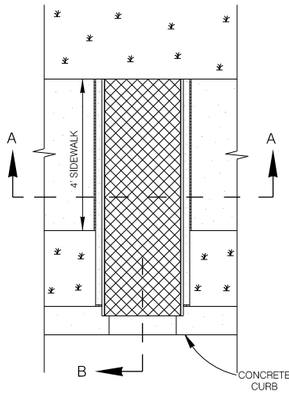
CONCRETE SIDEWALK SECTION

ITEM 502
SCALE : 1" = 2'



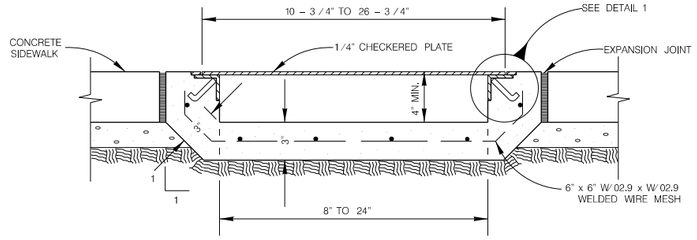
CONCRETE SIDEWALK ABUTTING CURB SECTION

ITEM 502
SCALE : 1" = 2'



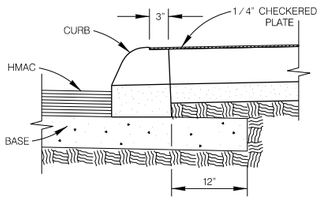
CONCRETE SIDEWALK DRAIN DETAIL

SCALE : 1" = 4'



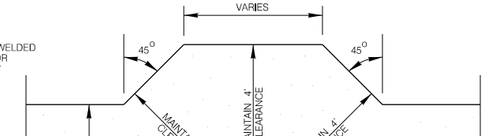
SECTION A–A

SCALE = 1 : 12



SECTION B

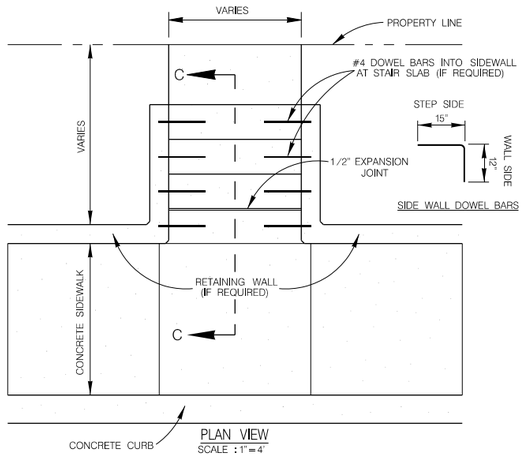
SCALE : 1" = 2'



NOTE :
THIS DETAIL TO BE USED WHENEVER A POWER POLE ENCROACHES ON SIDEWALK. A MINIMUM UNOBSTRUCTED CLEARANCE OF 4' IS TO BE MAINTAINED AROUND THE POLE AT THE LOCATIONS.

CONCRETE SIDEWALK @ UTILITY POWER POLE DETAIL

SCALE : 1" = 4'

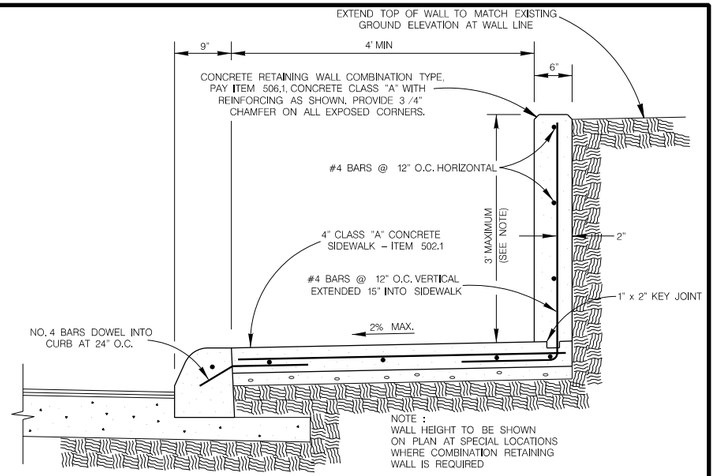


PLAN VIEW

SCALE : 1" = 4'

CONCRETE STEPS

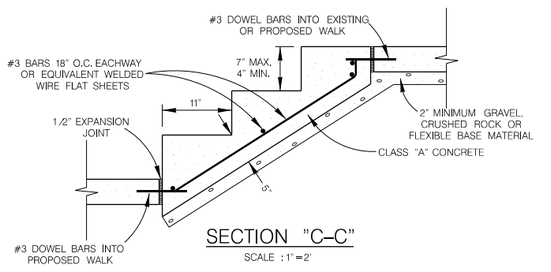
ITEM 524



NOTE :
WALL HEIGHT TO BE SHOWN ON PLAN AT SPECIAL LOCATIONS WHERE COMBINATION RETAINING WALL IS REQUIRED

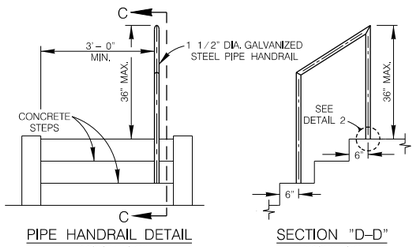
CONCRETE RETAINING WALL – COMBINATION TYPE

ITEM 506
SCALE : 1" = 2'



SECTION "C–C"

SCALE : 1" = 2'

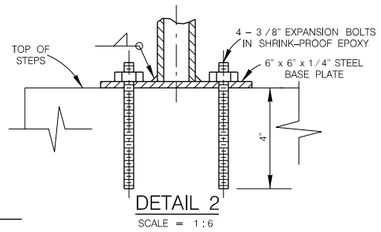


PIPE HANDRAIL DETAIL

PROFILE VIEW
SCALE : 1" = 4'

SECTION "D–D"

FRONT VIEW
SCALE : 1" = 4'



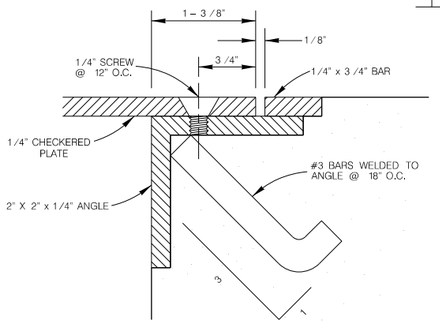
DETAIL 2

SCALE = 1 : 6

NOTES :
1. PLACE STEPS TO CONFORM WITH PROPOSED PARKWAY GRADING
2. 1–1/2" DIA. GALVANIZED STEEL PIPE HANDRAIL REQUIRED ON ONE SIDE OF THE STEPS WHEN 3 OR MORE RISERS ARE USED, OR AS DESIGNED BY ENGINEER. TO BE PAID UNDER ITEM 522

HANDRAIL FOR CONCRETE STEPS

ITEM 522



DETAIL 1

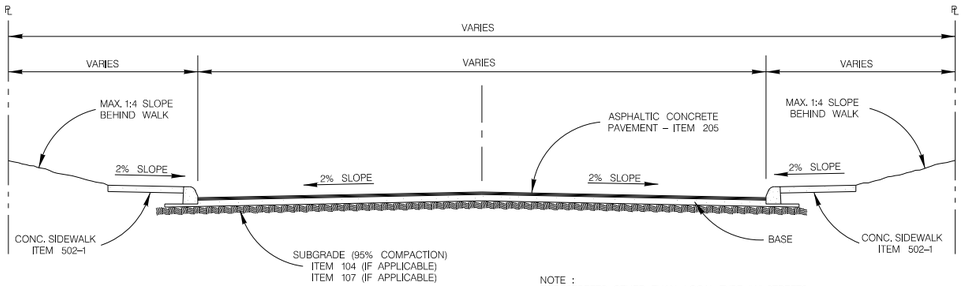
SCALE = 1 : 1

MAY 2009

CITY OF SAN ANTONIO
PUBLIC WORKS

MISCELLANEOUS CONSTRUCTION STANDARDS I

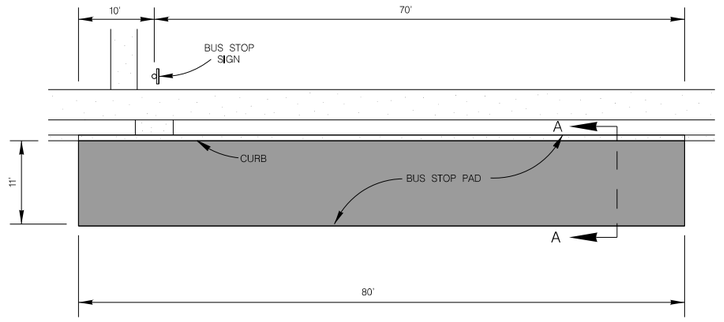
$Perc$% SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: V. VASQUEZ	DSGN. BY:	CHKD. BY: R.S. HOSSEINI, P.E.
		SHEET NO. 172 OF 377



NOTE :
FOR STREETS OTHER THAN LOCAL TYPE "A" STREETS, THE EDGE OF THE SIDEWALK MUST BE LOCATED A MINIMUM OF TWO FEET AWAY FROM THE BACK OF THE CURB.

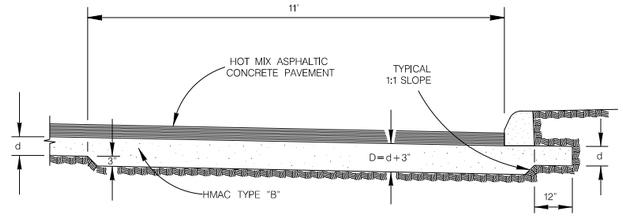
TYPICAL STREET SECTION

SCALE : 1" = 8'



PLAN VIEW

SCALE : 1" = 20'

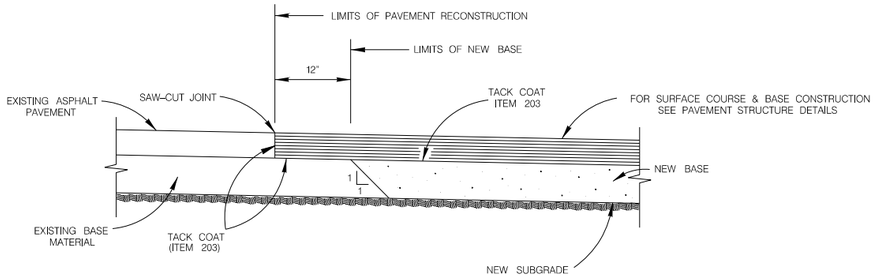


SECTION "A–A"

SCALE : 1" = 4'

NOTES :
1. EXCAVATION FOR THICKENED PAVEMENT SECTION WILL BE PAID UNDER ITEM NO. 104 "STREET EXCAVATION".

2. BASE MATERIALS :
   A.) IF THE MEASUREMENT FOR THE HMAC MATERIAL IS PER TON, THICKENED PAVEMENT SECTION WILL BE PAID FOR UNDER ITEM NO. 205, TYPE "B" – PER TON.
   B.) IF THE MEASUREMENT FOR THE HMAC MATERIAL IS PER SQUARE YARD, NO EXTRA PAYMENT WILL BE MADE FOR THE THICKENED PAVEMENT.

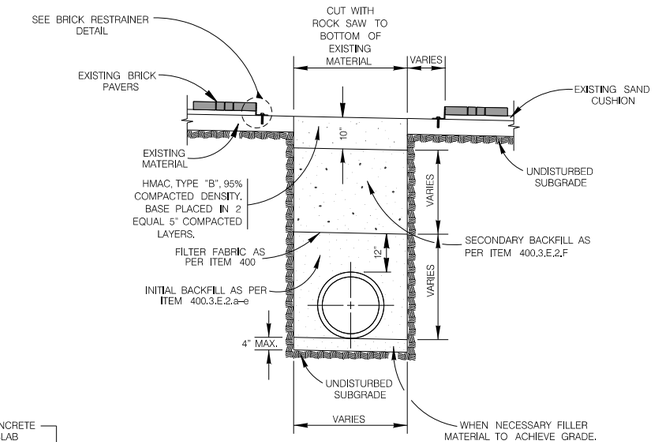


PAVEMENT JUNCTION DETAILS

SCALE : 1" = 2'

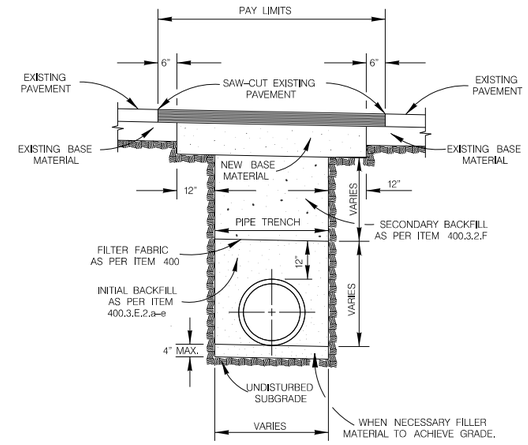
HMAC BUS STOP PAD

NEED CITY ENGINEER'S APPROVAL TO USE HMAC BUS PAD



TYPICAL BASE REPLACEMENT FOR BRICK SURFACED STREET SECTION

ITEM 511.3
SCALE : 1" = 4'

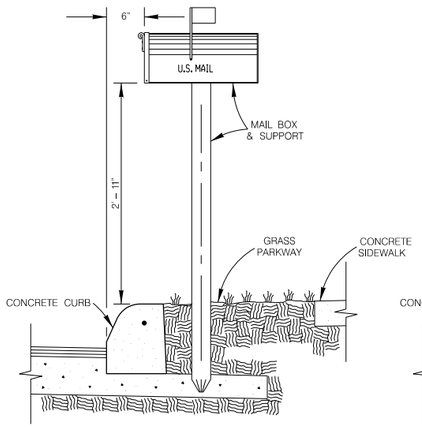


NOTES :
1. FOR LOCAL TYPE "A" & "B" STREETS (RESIDENTIAL) USE 6" ASPHALT CONCRETE BASE TYPE "B" WITH 1–1/2" TYPE "D" HOT MIX ASPHALTIC CONCRETE PAVEMENT.

2. FOR ARTERIAL & SECONDARY STREETS (COMMERCIAL) USE 12.5" TYPE "B" HOT MIX ASPHALTIC CONCRETE PAVEMENT LEVELING–UP COURSE & 1–1/2" TYPE "D" HOT MIX ASPHALTIC CONCRETE PAVEMENT SURFACE COURSE.

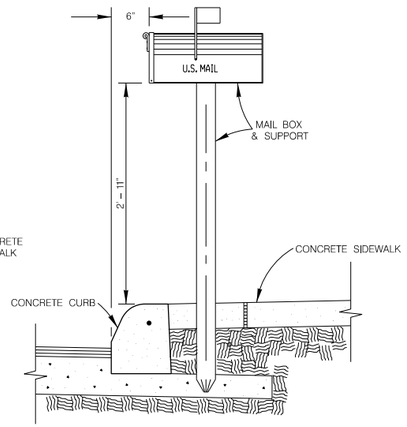
TYPICAL PAVEMENT REPLACEMENT

ITEM 511
SCALE : 1" = 4'



MAIL BOX PERPENDICULAR TO CURB

WHEN SIDEWALK IS DETACHED FROM CURB
SCALE : 1" = 2'

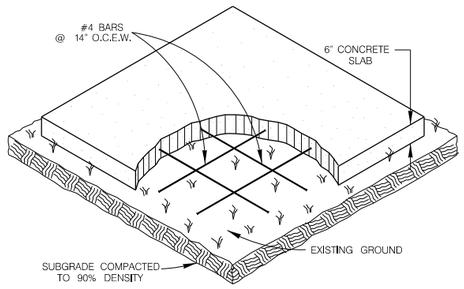


MAIL BOX PERPENDICULAR TO CURB

WHEN SIDEWALK IS ATTACHED TO CURB
SCALE : 1" = 2'

MAIL BOX LOCATION

ITEM 513.1



MAIL BOX PAD NOTES :
1. THE CONTRACTOR WILL CONSTRUCT SLABS FOR "TEMPORARY MAIL BOX COLLECTION PAD" FOR THE UNITED STATES POSTAL SERVICE WITH LOCATIONS AND SIZES SPECIFIED BY THE CITY ENGINEER DURING CONSTRUCTION.

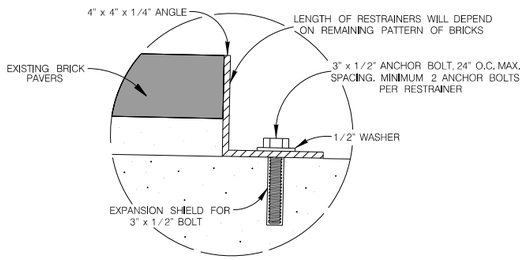
2. THE CONSTRUCTION OF SLABS SHALL CONFORM TO ITEM 513 "REMOVING AND RELOCATING MAILBOXES".

3. PAYMENT WILL BE MADE UNDER ITEM 513.2 "COMMUNITY MAILBOX SLAB – PER SQUARE YARD".

4. UNIT PRICE WILL INCLUDE REMOVAL OF "TEMPORARY MAIL BOX COLLECTION PAD" SLABS AT THE END OF THE PROJECT. NO SEPARATE PAY ITEM.

COMMUNITY MAIL BOX SLAB

ITEM 513.2
SCALE : 1" = 4'



BRICK RESTRAINER DETAIL

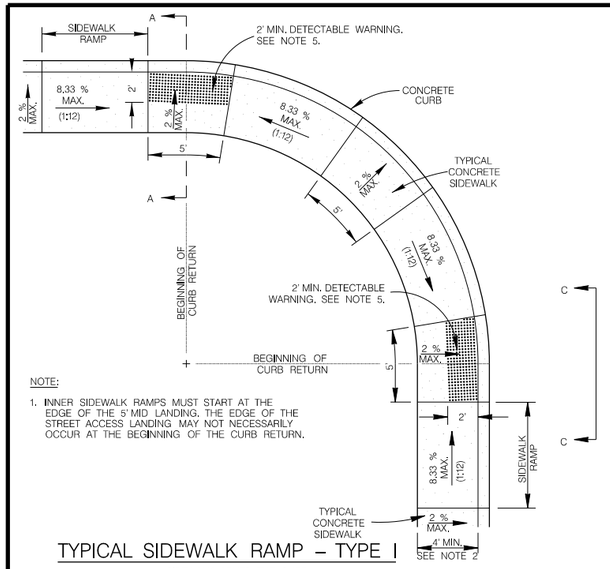
SCALE = 1 : 6

FEBRUARY 2010

CITY OF SAN ANTONIO
PUBLIC WORKS

MISCELLANEOUS CONSTRUCTION STANDARDS II

$Perc$ % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: V. VASQUEZ	DSGN. BY:	CHKD. BY: R.S. HOSSEINI, P.E.



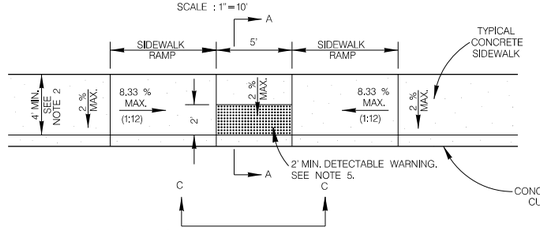
NOTE:

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'



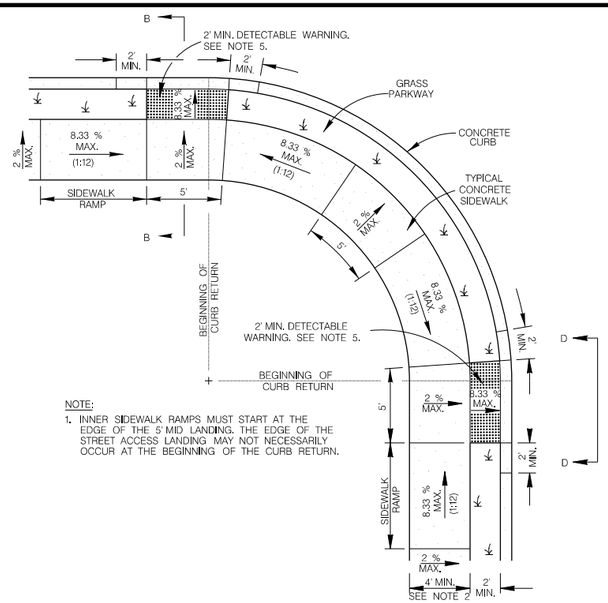
TYPICAL SIDEWALK RAMP – TYPE II

USED AT TEE INTERSECTIONS WHERE SIDEWALK ABUTS CURB

SCALE : 1" = 10'

GENERAL NOTES

1. WHEN POSSIBLE SIDEWALKS SHOULD BE PLACED NEXT TO THE PROPERTY LINE, ALLOWING A MININMUM OF 1 FOOT BUFFER. DEVIATION OF THE PATHWAY FROM A STRAIGHT LINE IS ENCOURAGED TO AVOID TREES OR OTHER OBSTRUCTIONS.
2. FOR LOCAL TYPE "A" STREETS, SIDEWALKS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF 4' AND IF SEPARATED FROM THE CURB, THE SIDEWALK SHALL BE LOCATED A MINIMUM OF 2' FROM THE BACK OF CURB.
3. FOR OTHER THAN LOCAL TYPE "A" STREETS, SIDEWALKS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF 4' AND SEPARATED A MINIMUM OF 2' 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.
4. SIDEWALK RAMP LENGTHS PRESENTED IN TABLE 1 ARE GUIDELINES ONLY. SIDEWALK RAMP LENGTHS SHALL BE OF SUFFICIENT LENGTH TO MAINTAIN 8.33% (1:12) MAXIMUM SLOPE.
5. ALL CURB–RAMPS OR LANDINGS ABUTTING THE CROSSWALK SHALL HAVE A DETECTABLE WARNING 24 INCHES DEEP (IN THE DIRECTION OF PEDESTRIAN TRAVEL) AND EXTENDING THE FULL WIDTH OF THE CURB RAMP OR LANDING. THE DETECTABLE WARNING SHALL CONSIST OF RAISED TRUNCATED DOMES, ALIGNED IN A GRID PATTERN WITH A DIAMETER OF A NOMINAL 0.9 INCHES (23 MM), A HEIGHT OF NOMINAL 0.2 INCHES (5 MM) AND A CENTER–TO–CENTER SPACING OF NOMINAL 2.35 INCHES (60 MM). THE DETECTABLE WARNING SURFACE SHALL BE A CAST–IN–PLACE TILE CONFORMING TO THE CITY OF SAN ANTONIO STANDARD SPECIFICATIONS OR PAVERS CONFORMING TO TXDOT STANDARD PED–05, PEDESTRIAN FACILITIES.
6. DETECTABLE WARNINGS SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT–ON–DARK, OR DARK–ON–LIGHT. THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE.
7. SIDEWALK RAMP TYPE V SHALL BE USED ONLY WHERE THERE IS SIGNIFICANT RESTRICTION WITHIN THE PARKWAY TO CONSTRUCT TYPE I OR TYPE III RAMPS.
8. CONSTRUCTION OF ALL WHEELCHAIR RAMPS TO BE INCLUDED UNDER ITEMS "500 – CONCRETE CURB, GUTTER, AND CONCRETE CURB AND GUTTER" AND /OR "502 – CONCRETE SIDEWALKS", RAMP SURFACE SHALL BE BRUSH FINISHED.
9. THESE DETAILS ARE FOR REFERENCE ONLY. ACTUAL LOCATIONS OF WHEELCHAIR RAMPS TO BE SHOWN ON CONSTRUCTION PLANS. CITY CONSTRUCTION INSPECTOR CAN ADJUST LOCATIONS FOR SAFETY OR UTILITY CLEARANCE.
10. SIDEWALKS LESS THAN 5 FEET IN WIDTH SHALL BE PROVIDED WITH A PASSING SPACE AT A MAXIMUM SPACING OF 200 FEET.
11. WHEELCHAIR RAMP SHALL BE CONSTRUCTED WITH 4" CLASS "A" CONCRETE AND 2" MINIMUM GRAVEL, CRUSHED ROCK OR FLEXIBLE BASE MATERIAL.
12. REINFORCING STEEL SHALL BE #3 BARS AT 18" O.C.E.W. OR 6" x 6" – W2.9 x W2.9 WIRE MESH.
13. SIDEWALK GRADES SHALL NOT EXCEED THE GRADE ESTABLISHED FOR THE ADJACENT ROADWAY, ANY SIDEWALK CONSTRUCTION THAT DEVIATES FROM THE NATURAL GRADE OF THE ROADWAY TO CREATE A GRADE STEEPER THAN THE EXISTING ROADWAY WILL REQUIRE RAMPS, HANDRAILS AND RESTING PLATFORMS TO BE CONSTRUCTED IN ACCORDANCE WITH ADA AND TAS STANDARDS.
14. SIDEWALK CROSS GRADE SHALL HAVE A MAXIMUM SLOPE OF 2%. LANDINGS SHALL HAVE A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
15. THE CHANGE OF GRADE BETWEEN ADJACENT SURFACES SHALL BE LESS THAN 11%. THE CHANGE OF GRADE SHALL BE DEFINED AS THE ALGEBRAIC DIFFERENCE OF THE ADJACENT SURFACE SLOPES. IN THE CASE OF A STREET ACCESS RAMP DESIGNED AT THE 8.33% MAXIMUM SLOPE, THE ADJACENT PAVEMENT CROSS SLOPE SHALL BE LESS THAN 2.67% (I.E. 8.33–(–2.67) = 11). IN ADDITION, THE ADJACENT PAVEMENT CROSS SLOPE SHALL BE LESS THAN OR EQUAL TO 5%.
16. IF THE CHANGE OF GRADE BETWEEN ADJACENT SURFACES IS GREATER THAN OR EQUAL TO 11%, A LEVELING STRIP, 2 FEET IN LENGTH, SHALL BE PROVIDED TO TRANSITION THE ADJACENT SURFACES.
17. ADA COMPLIANCE IN ALTERATIONS INCLUDE ONLY THAT WORK WITHIN THE LIMITS, BOUNDARIES OR SCOPE OF A PLANNED PROJECT.



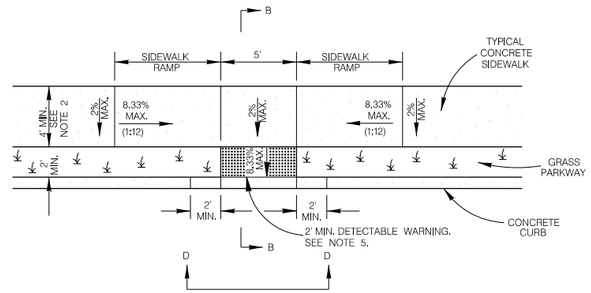
NOTE:

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

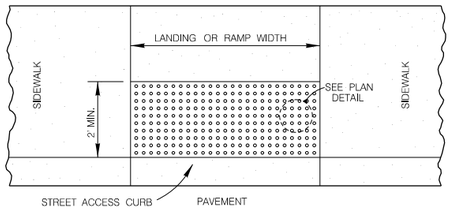
SCALE : 1" = 10'



TYPICAL SIDEWALK RAMP – TYPE IV

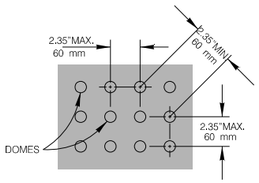
USED AT TEE INTERSECTIONS WHERE SIDEWALK IS SEPARATED FROM CURB

SCALE : 1" = 10'



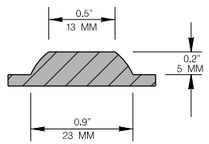
DETECTABLE WARNING SURFACE

SCALE : 1" = 4'



PLAN DETAIL

NO SCALE

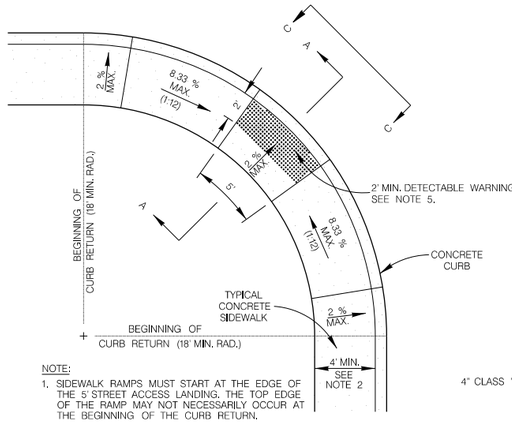


DOME SECTION

NO SCALE

NOTE:

STAMPED CONCRETE TRUNCATED DOMES WILL NOT BE ALLOWED TO BE USED FOR DETECTABLE WARNING ON WHEELCHAIR RAMPS. CONTRACTOR MUST SUBMIT TRUNCATED DOME INFORMATION THAT IS TO BE USED ON WHEELCHAIR RAMPS TO THE PROJECT MANAGER FOR APPROVAL AT LEAST 30 DAYS PRIOR TO INSTALLATION.



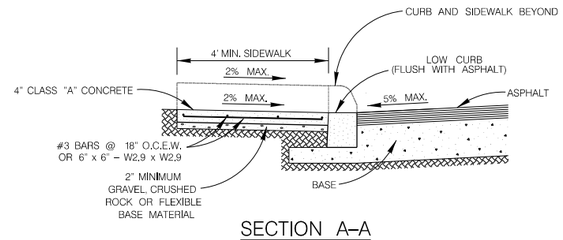
NOTE:

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

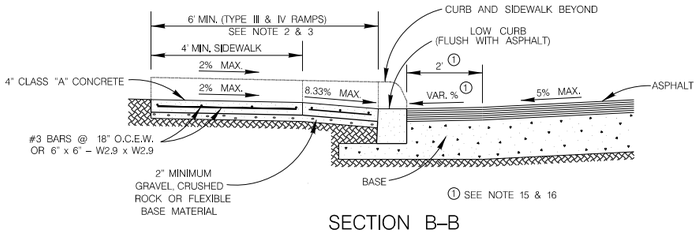
SIDEWALK ABUTS CURB

SCALE : 1" = 10'



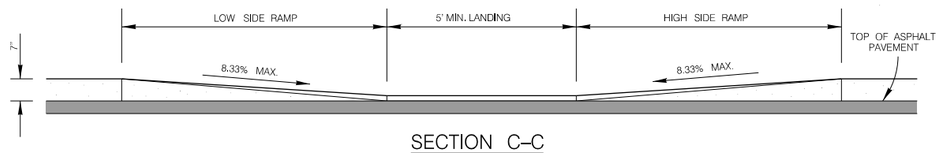
SECTION A–A

SCALE : 1" = 4'



SECTION B–B

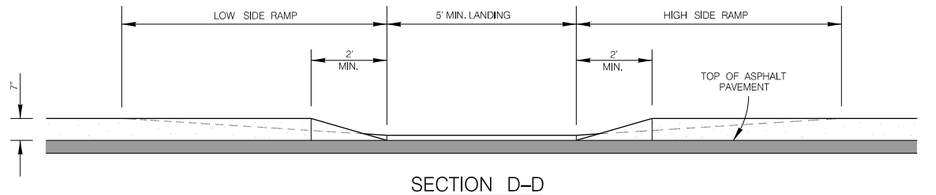
SCALE : 1" = 4'



SECTION C–C

CURB PROFILE WHERE SIDEWALK ABUTS CURB

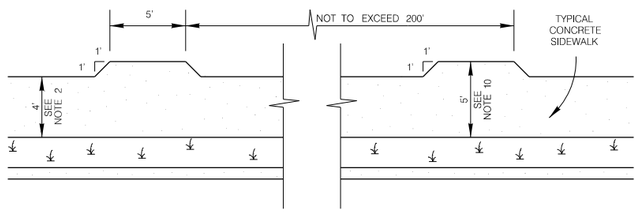
SCALE : 1" = 4'



SECTION D–D

CURB PROFILE WHERE SIDEWALK IS SEPARATED FROM CURB

SCALE : 1" = 4'



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'–6"	10'–0"
4%	4'–2"	12'–6"
5%	3'–10"	16'–8"

MAY 2009

CITY OF SAN ANTONIO

PUBLIC WORKS

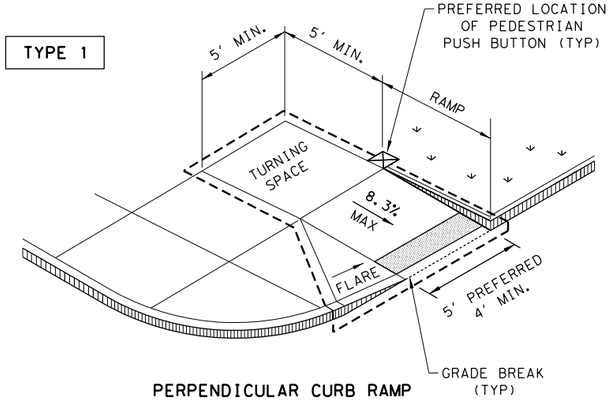
WHEELCHAIR RAMP STANDARDS

%Perc% SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: V. VASQUEZ	DSGN. BY:	CHKD. BY: R.S. HOSSEINI, P.E.	SHEET NO. 174 OF 377

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

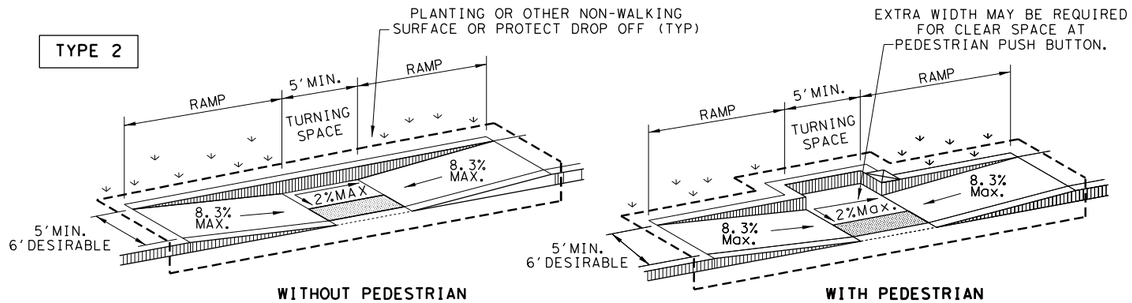
DATE: 5/19/2025
FILE: c:\bms\pwe-useast-006\knerr.chris\dms71609\ped18-1.dgn

TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

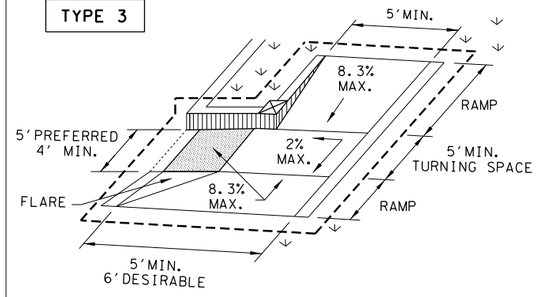


WITHOUT PEDESTRIAN PUSH BUTTON

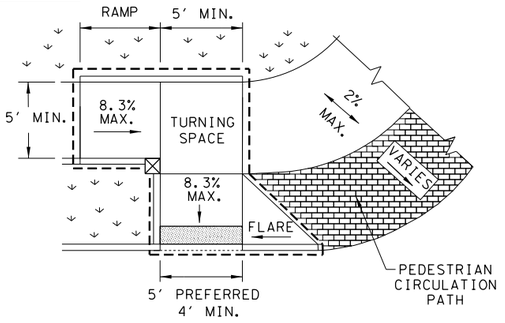
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

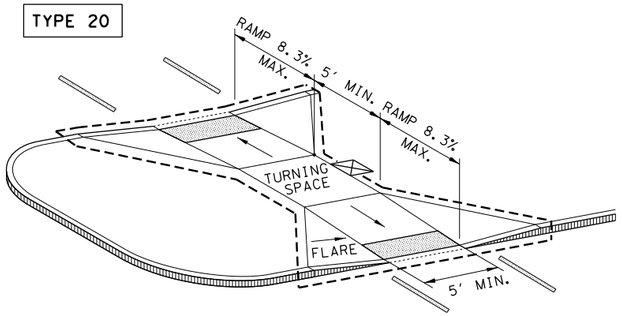


TYPE 6



COMBINATION CURB RAMPS

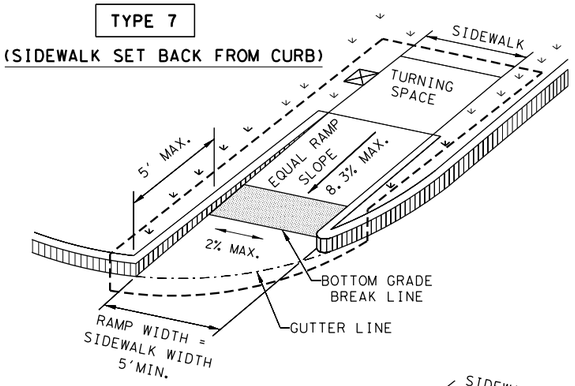
TYPE 20



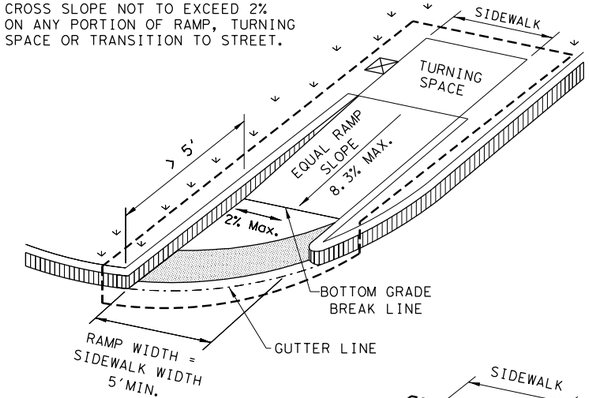
CURB RAMPS AT MEDIAN ISLANDS

TYPE 7

(SIDEWALK SET BACK FROM CURB)

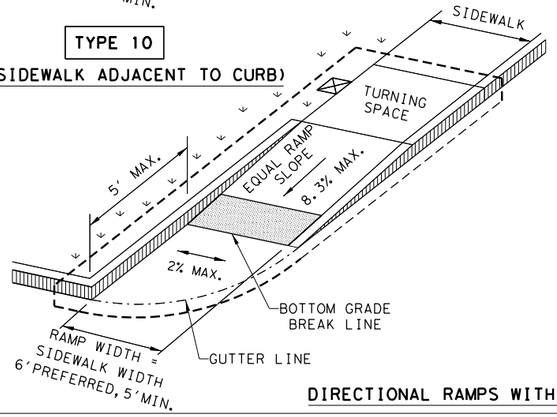


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.

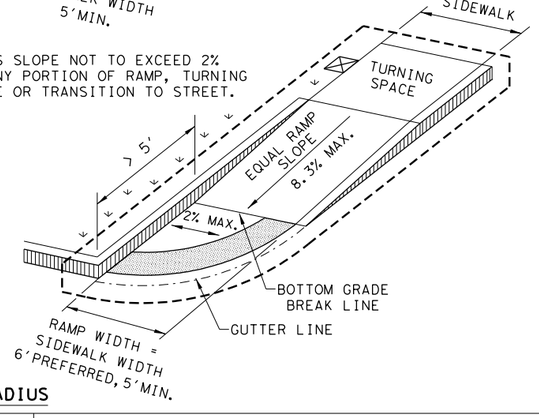


TYPE 10

(SIDEWALK ADJACENT TO CURB)

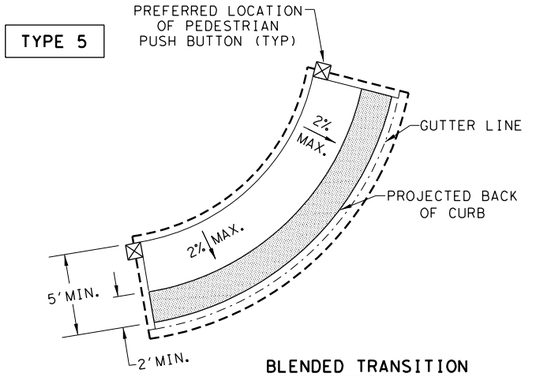


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



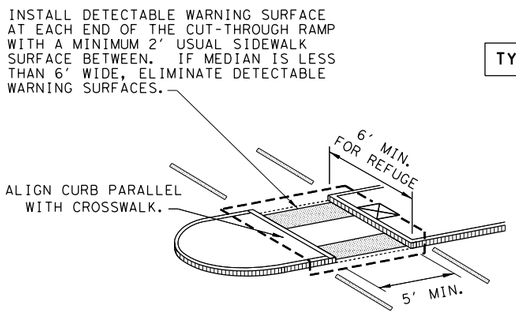
DIRECTIONAL RAMPS WITHIN RADIUS

TYPE 5



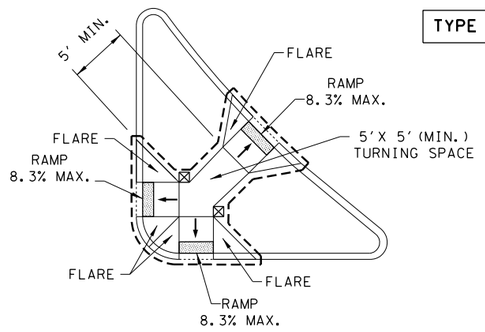
BLENDED TRANSITION
(FLUSH LANDING)

TYPE 21

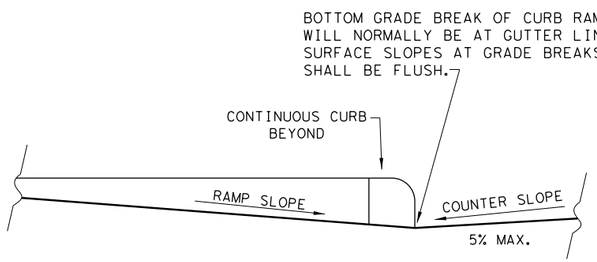


NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

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	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		175 OF 377

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 5/19/2025
FILE: c:\dms\pwe-useast-006\knerr.chris\dms71609\ped18-2.dgn

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 applicalble standards may remain in place unless otherwise shown on the plans.

DETECTABLE WARNING MATERIAL

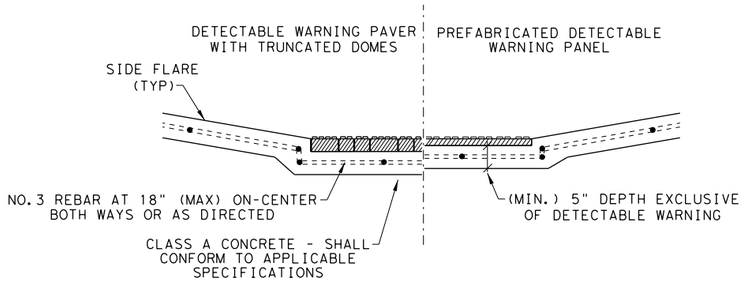
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material 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.

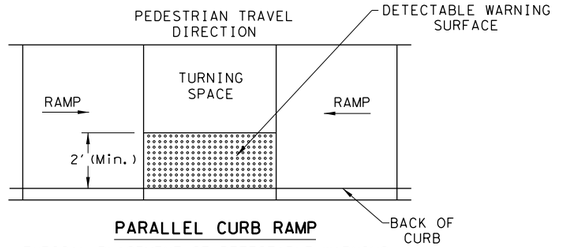
SIDEWALKS

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.

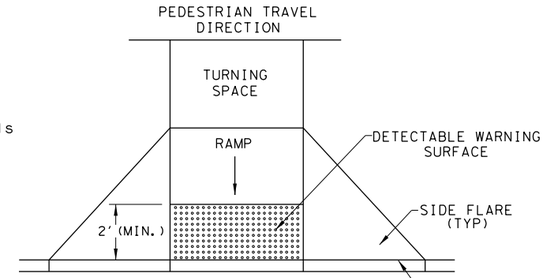


SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

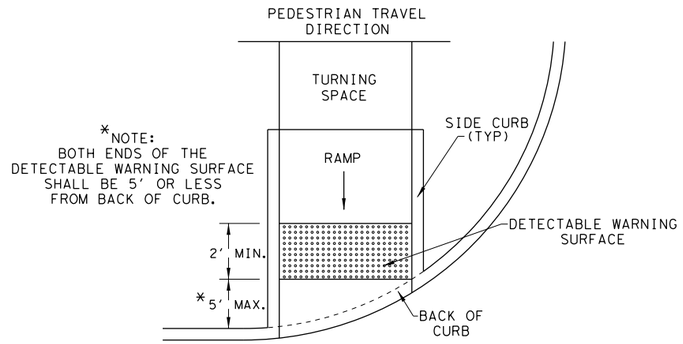
DETECTABLE WARNING SURFACE DETAILS



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.



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

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

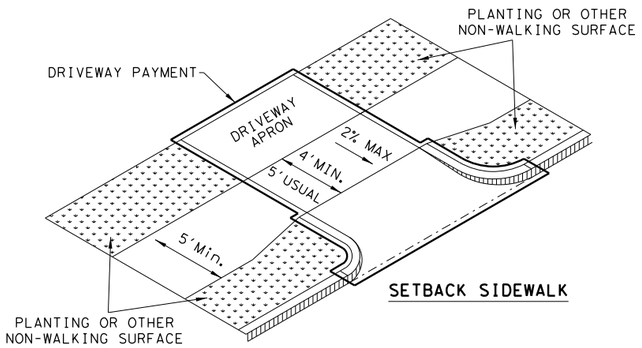
PED-18

FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS					MILITARY DR
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY			SHEET NO.
	SAT	BEXAR			176 OF 377

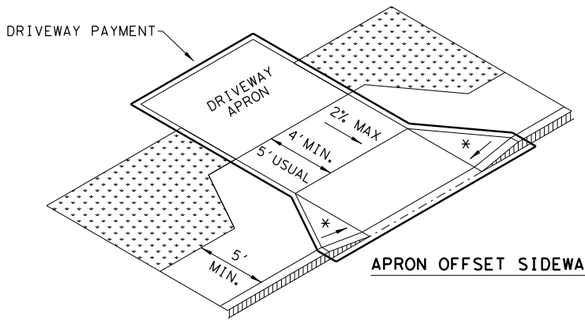
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 5/19/2025
FILE: c:\dms\pwe-useast-006\knerr.chris\dms71609\ped18-3.dgn

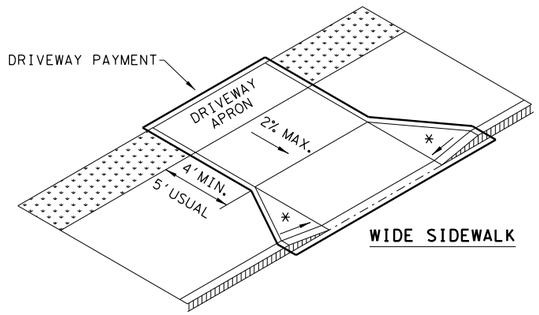
SIDEWALK TREATMENT AT DRIVEWAYS



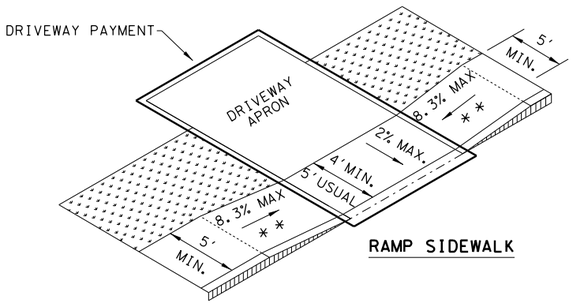
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

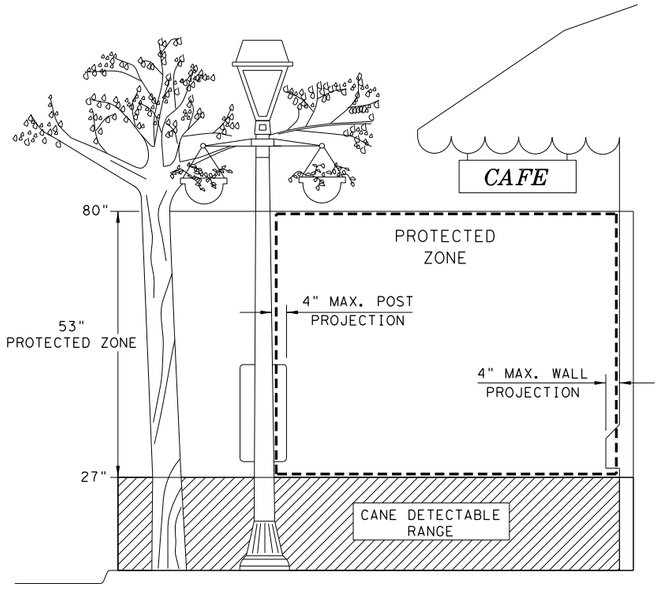


RAMP SIDEWALK

NOTES:

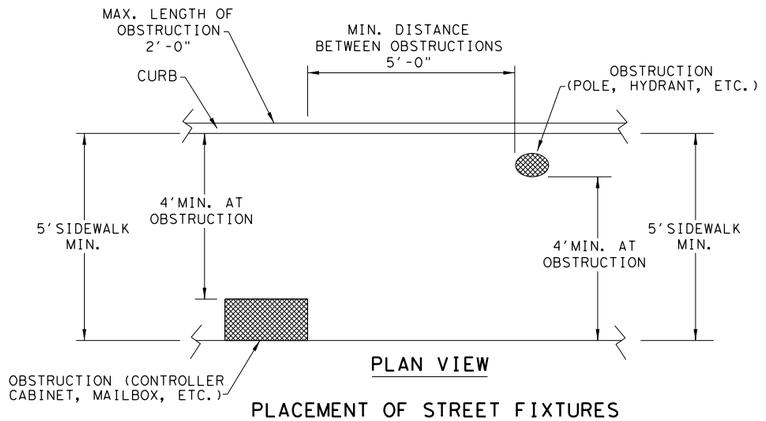
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

* * 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

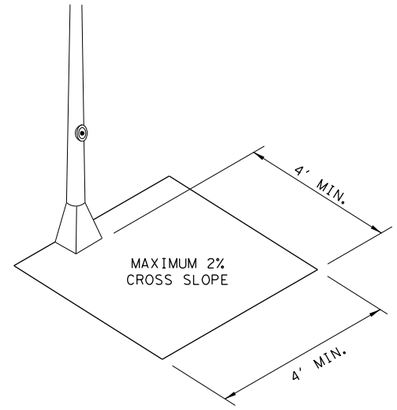
NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.



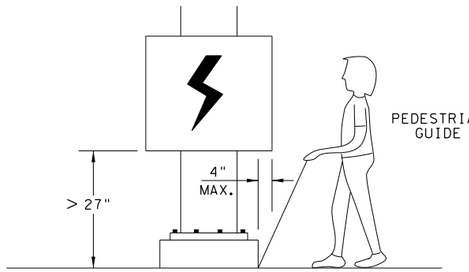
PLAN VIEW

PLACEMENT OF STREET FIXTURES

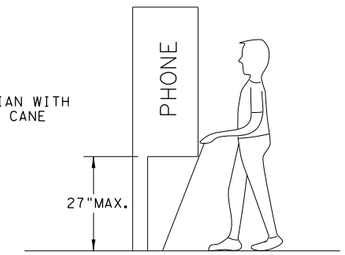
NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.



CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



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"

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

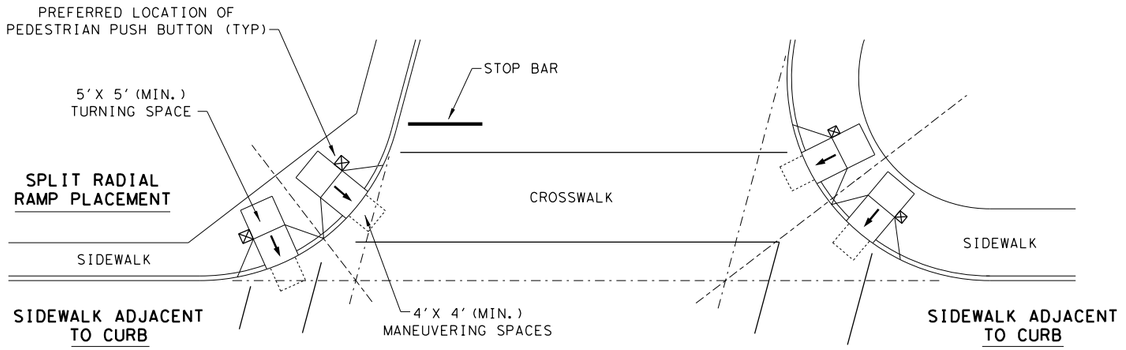
FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS					MILITARY DR
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY			SHEET NO.
	SAT	BEXAR			177 OF 377

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

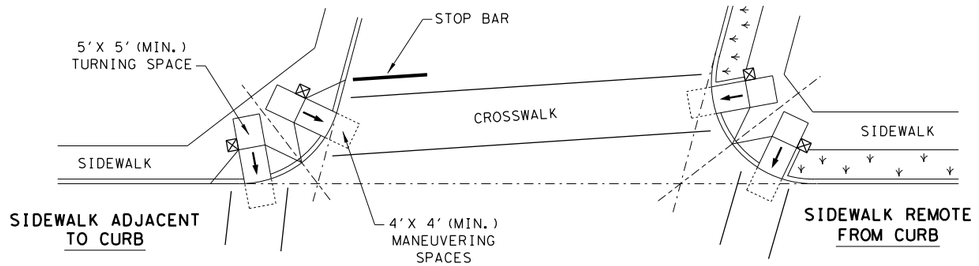
DATE: 5/19/2025
FILE: c:\dms\pwe-useast-006\knerr.chris\dms71609\ped18-4.dgn

TYPICAL CROSSING LAYOUTS

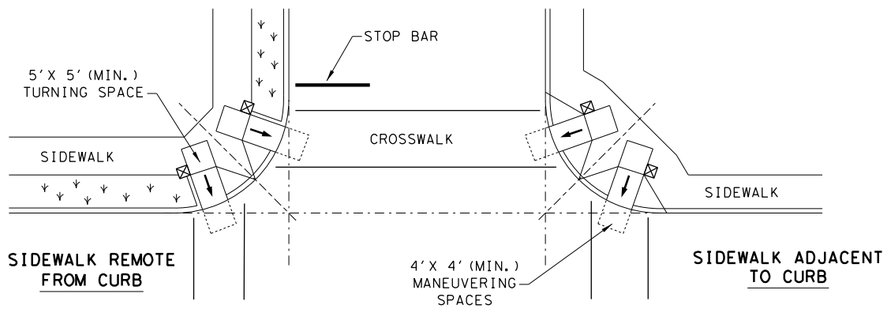
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



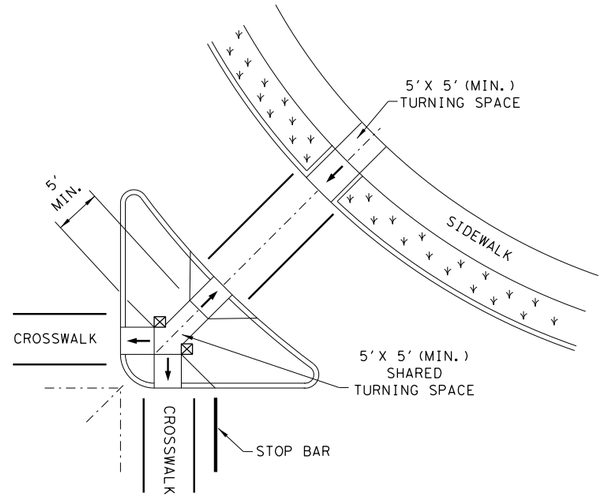
SKEWED INTERSECTION WITH "LARGE" RADIUS



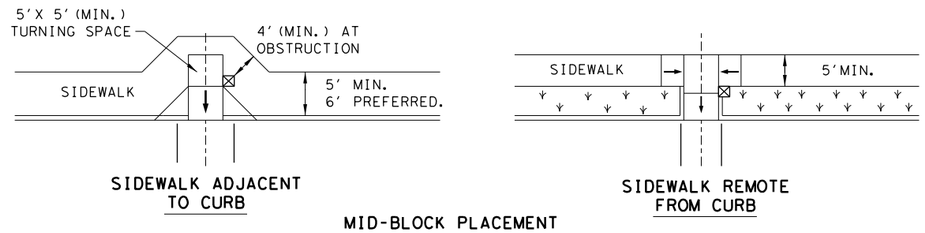
SKEWED INTERSECTION WITH "SMALL" RADIUS



NORMAL INTERSECTION WITH "SMALL" RADIUS



AT INTERSECTION
W/FREE RIGHT TURN & ISLAND



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.

Texas Department of Transportation — Design Division Standard

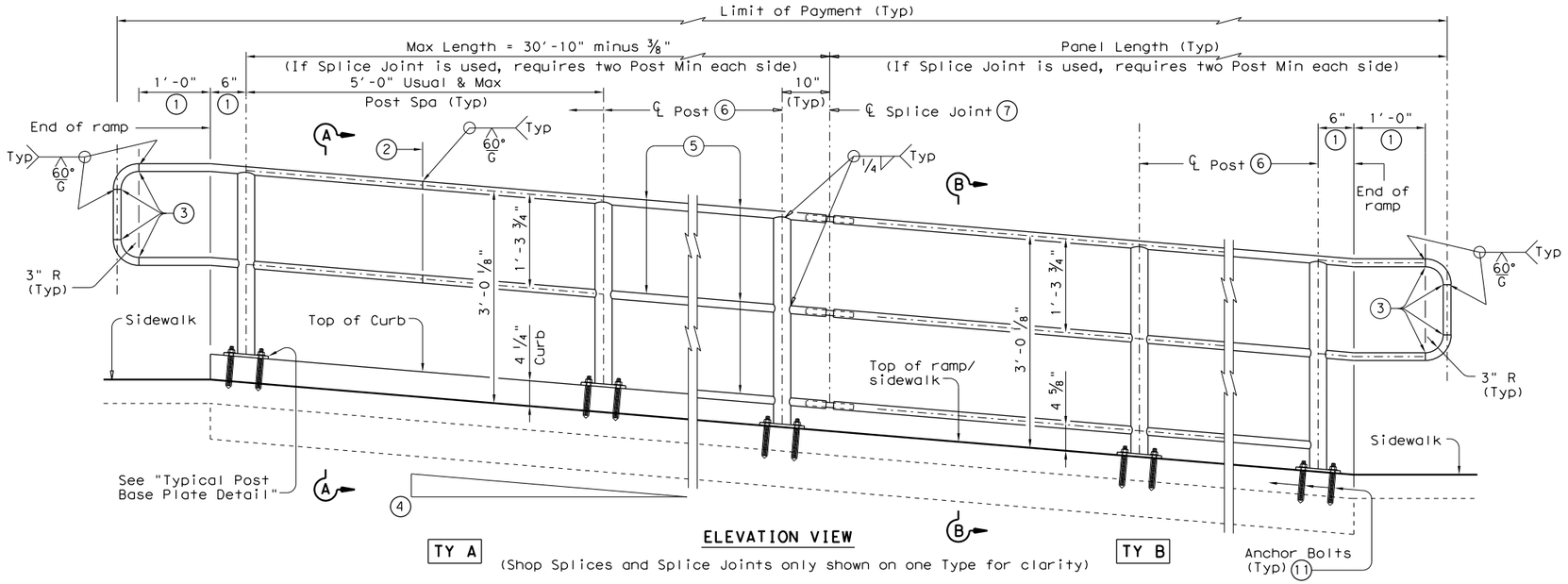
PEDESTRIAN FACILITIES CURB RAMPS

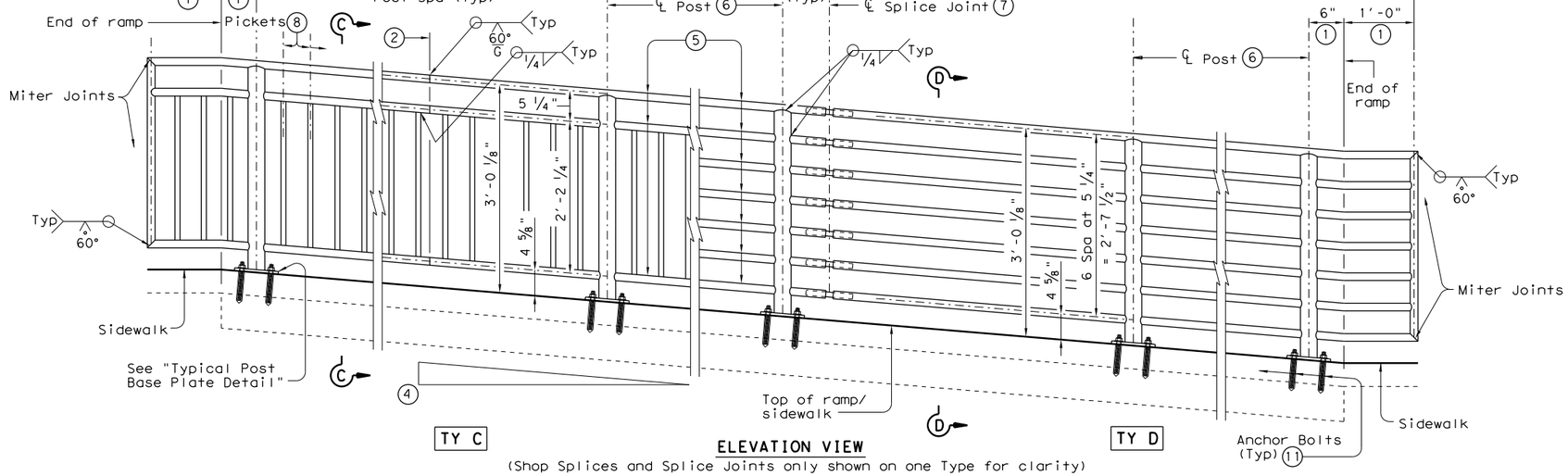
PED-18

FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS					MILITARY DR
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY			SHEET NO.
	SAT	BEXAR			178 OF 377

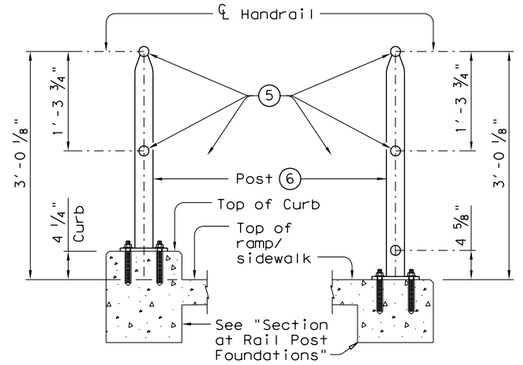
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 5/19/2025
FILE: c:\bms\pwe-useast-006\knerr.chris\dms71609\prd13-1.dgn



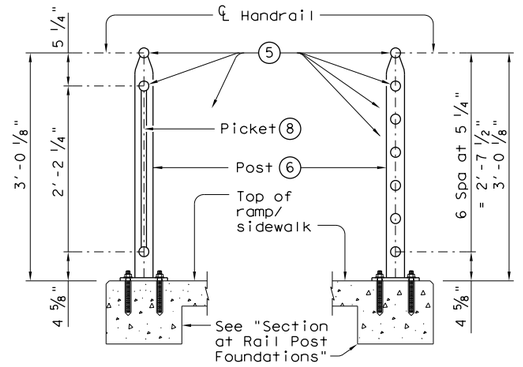


RECOMMENDED USAGE (9)(10)	
Dropoff Height/ Condition	Recommended Rail Options
< 30" dropoff	TY A, TY B, TY C, or TY D
≥ 30" dropoff, or along Bike Path	TY E or TY F



SECTION A-A
(Showing Handrail **TY A**)

SECTION B-B
(Showing Handrail **TY B**)



SECTION C-C
(Showing Handrail **TY C**)

SECTION D-D
(Showing Handrail **TY D**)

1. Parallel to ground.
2. One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
3. Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
4. See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.
5. 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.
6. 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.
7. See "Handrail Fabrication Details" for Splice Joints.
8. ℄ ⅝" Dia. Round Bar equal spacing at 4 ½" Max. Plumb all pickets.
9. When needed for accessibility (grade > 5 percent) or as needed for pedestrian safety.
10. Not to be used on bridges.
11. See "General Notes" for anchor bolt information.

SHEET 1 OF 3

Texas Department of Transportation

Design Division Standard

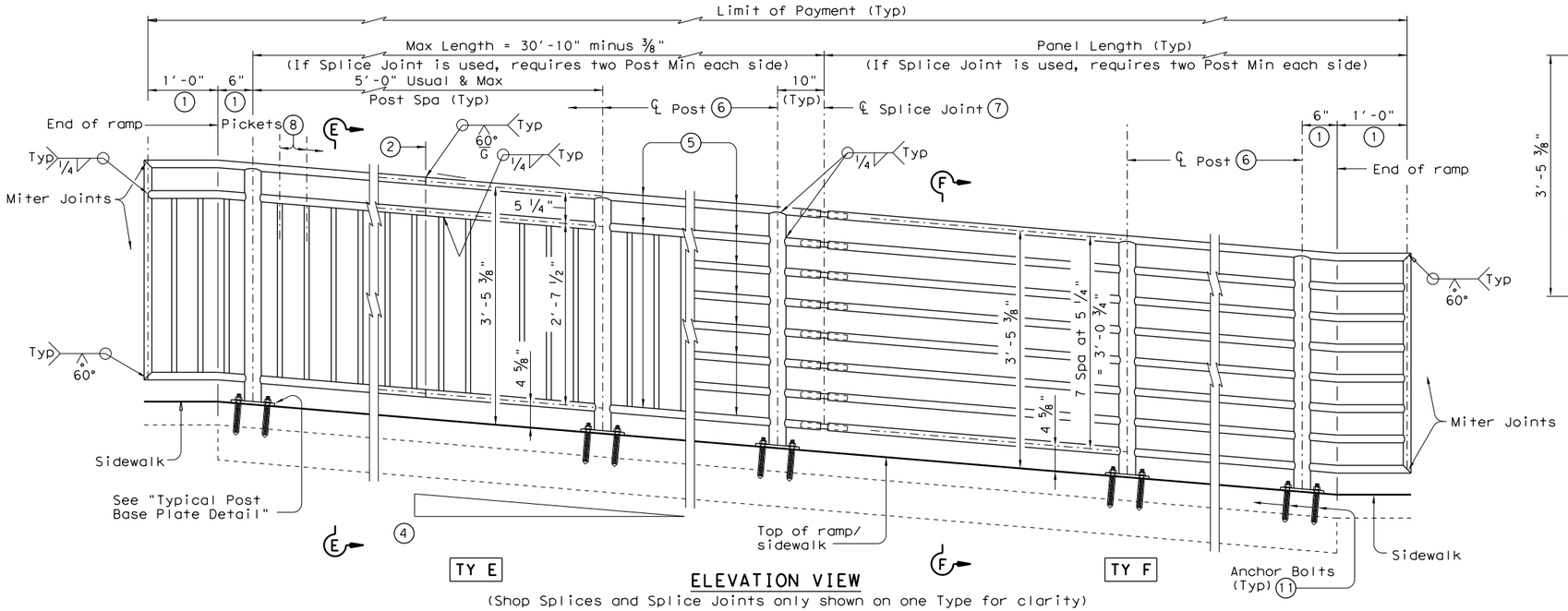
PEDESTRIAN HANDRAIL DETAILS

PRD-13

FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
©TxDOT Decmeber 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED MAY, 2013 (VP)				MILITARY DR
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		179 OF 377

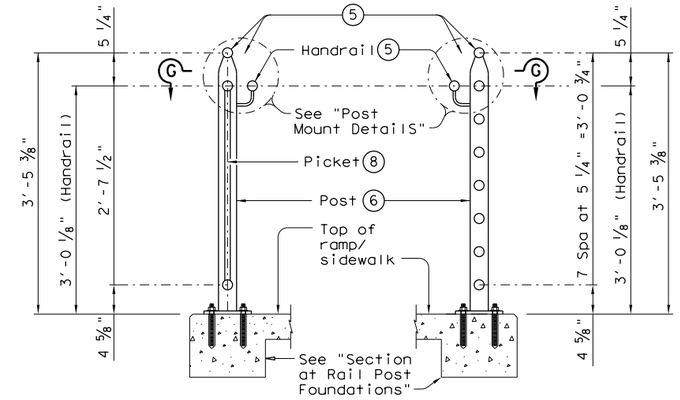
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 5/19/2025
FILE: c:\bms\pwe-useast-006\knerr.chris\dms71609\prd13-2.dgn



ELEVATION VIEW

(Shop Splices and Splice Joints only shown on one Type for clarity)

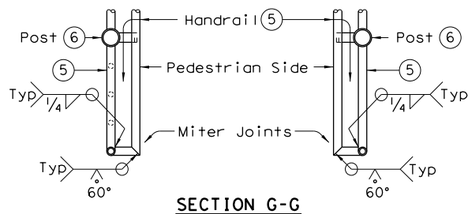


SECTION E-E

(Showing Handrail **TY E**)

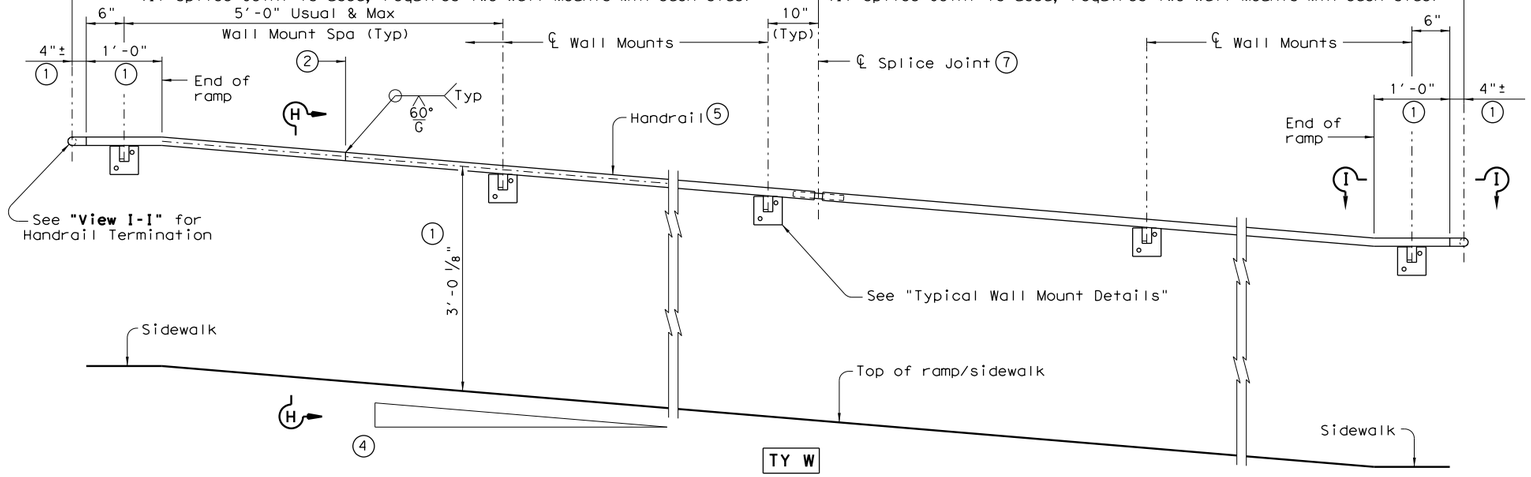
SECTION F-F

(Showing Handrail **TY F**)

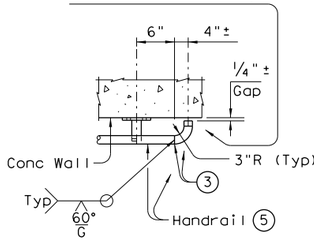


SECTION G-G

(Showing Handrail Termination)

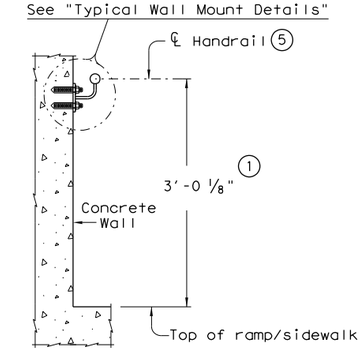


ELEVATION VIEW



VIEW I-I

(Showing Handrail Termination)



SECTION H-H

(Showing Handrail **TY W**)

1. Parallel to ground.
2. One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
3. Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
4. See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.
5. 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.
6. 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.
7. See "Handrail Fabrication Details" for Splice Joints.
8. ℄ ⅝" Dia. Round Bar equal spacing at 4 ½" Max. Plumb all pickets.
11. See "General Notes" for anchor bolt information.

Texas Department of Transportation

Design Division Standard

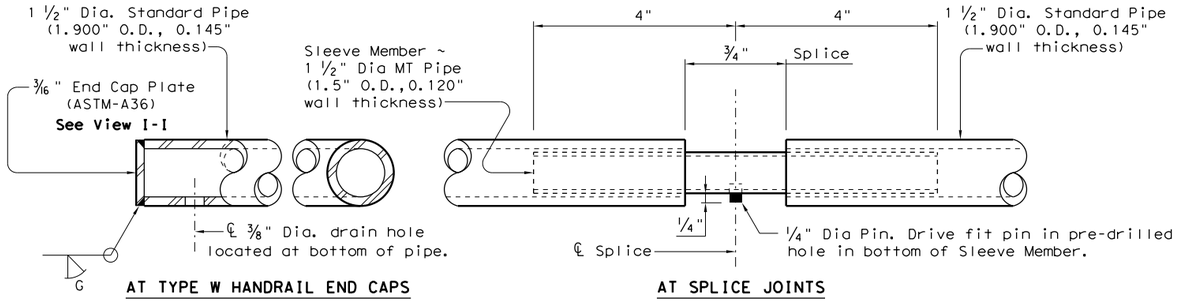
PEDESTRIAN HANDRAIL DETAILS

PRD-13

FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
©TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
REVISED MAY, 2013 (VP)	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		180 OF 377

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

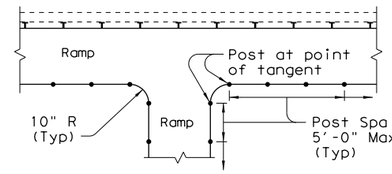
DATE: 5/19/2025
FILE: c:\bms\pwe-useast-006\knerr.chris\dms71609\prd13-3.dgn



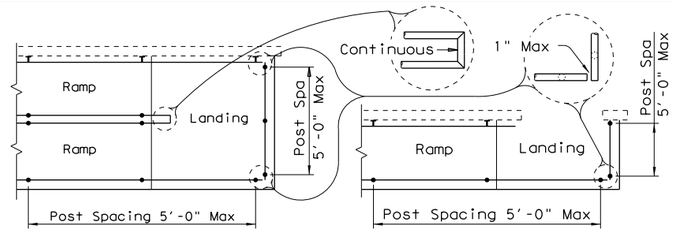
AT TYPE W HANDRAIL END CAPS

AT SPLICE JOINTS

HANDRAIL FABRICATION DETAILS



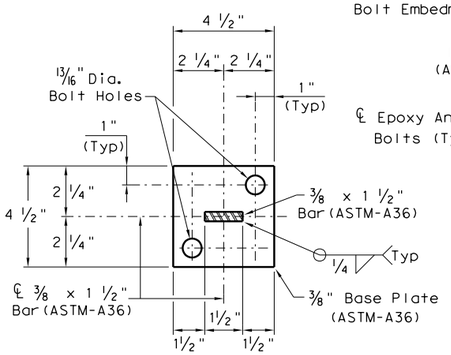
RAMP INTERSECTION



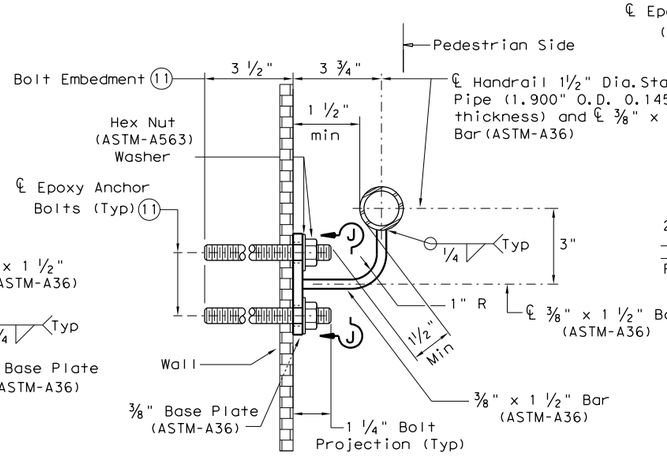
MULTI-LEVEL RAMP

SINGLE-LEVEL RAMP

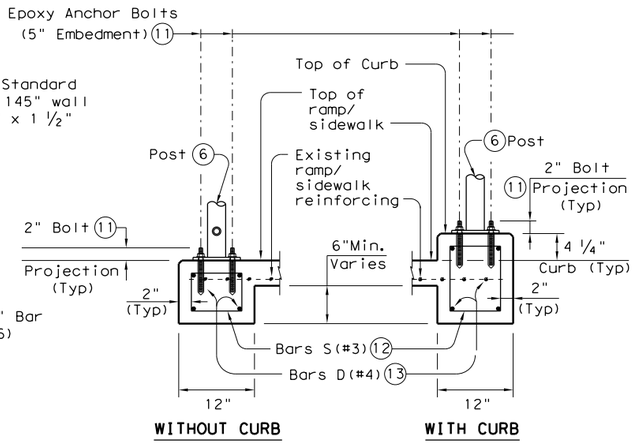
PLAN SHOWING RAIL AT RAMP CONDITIONS



SECTION J-J
(Anchor Bolts not shown for clarity)



SECTION AT WALL MOUNT



WITHOUT CURB

WITH CURB

SECTION AT RAIL POST FOUNDATIONS

GENERAL NOTES

Designed according to ADAAG, Texas Accessibility Standards, Uniform Building Code, and AASHTO LRFD Specifications.

Handrail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.

Pipe will conform to ASTM-A53 Grade B or A500 Grade B. Steel plates and steel bars will conform to ASTM-A36. Mechanical tubing (MT) will conform to ASTM A513 Grade 1015 or higher. Galvanize all steel components except reinforcing steel unless noted otherwise.

Concrete for foundations will be in accordance with Item 531 "Sidewalks". All reinforcing steel must be Grade 60. Bar laps, where required, will be as follows: Uncoated ~ #4 = 1'-5" Epoxy coated ~ #4 = 2'-1"

When the plans require painted steel, follow the requirements for painting galvanized steel in Item 446, "Cleaning and Painting Steel". Sleeve Members will receive galvanization and only get field painted after installation unless directed otherwise by Engineer.

Epoxy Anchor bolts for wall mount and post base plate will be ⅝" Dia. ASTM A36 threaded rods with one hex nut and one hardened steel washer at each bolt. ⅝" Dia. threaded rod embedment depth for wall mounts is 3 ½" and embedment depth for post base plate is 5".

Embed threaded rods into concrete with a Type III (Class C) epoxy meeting the requirements of DMS-6100, "Epoxies and Adhesives". Mix and dispense adhesive with the manufacturer's static mixing nozzle/dual cartridge system. Core drill holes (percussion drilling not permitted).

At the contractor's option the post base plate anchor bolts may be cast with the Ramp/Sidewalk (See Cast-in-Place Anchor Bolt Options).

Optional cast-in-place anchor bolts will be ⅝" Dia ASTM A307 Grade A bolts (or A36 threaded rods with one tack welded hex nut each) with one hex nut and one hardened steel washer at each bolt. Embedment depth of cast-in-place bolt will be 8" for post base plate.

Handrails and any wall or other surface adjacent to them will be free of any sharp or abrasive elements.

Submit shop drawings to the Engineer unless otherwise noted. For curved handrail applications, fabricate the handrail to the curve if radius is less than 600 ft. Shop drawings are required when rail is fabricated to the curve.

For all handrails, erection drawings will be submitted to the Engineer for approval to ensure proper installation.

Drawings will show handrail mount locations with bolts setting, spacing, ramp slope, and/or splice joint locations, and handrail lengths with identification showing where each handrail goes on the layout.

Payment for concrete sidewalks or curb ramps will be paid for in accordance with Item 531 "Sidewalks".

Payment for all items shown is to be included in unit price bid in accordance with Item 450 "Railing" of the type specified.

All exposed edges will be rounded or chamfered to approximately ⅛" by grinding.

TYPICAL WALL MOUNT DETAILS

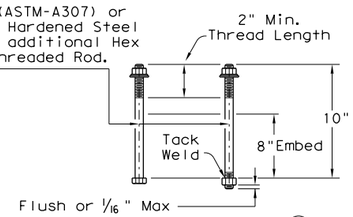
(5) 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp/sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.

(6) 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). Plumb all posts. See "Post Mount Detail" for crimping and trimming post to fit the diamenter of top rail. Provide holes as needed in post for galvanizing drainage and venting.

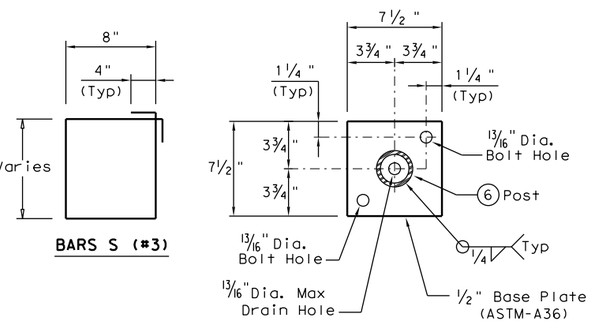
(11) See "General Notes" for anchor bolt information.

(12) Bars S(#3) spaced at 12" Max (Spaced 3" from outside edge of overall length of Ramp/Sidewalk).

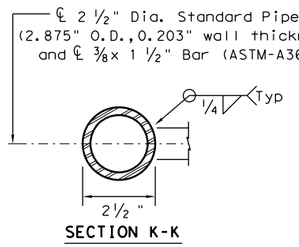
(13) Provide 1 ½" end cover to Bars D(#4) from outside edge of overall length of Ramp/Sidewalk.



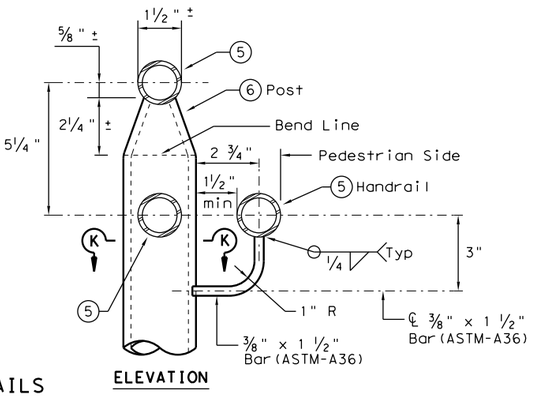
CAST-IN-PLACE ANCHOR BOLT OPTIONS (11)
(Used for Post Base Plate only)



TYPICAL POST BASE PLATE DETAIL



SECTION K-K



ELEVATION

POST MOUNT DETAILS

SHEET 3 OF 3

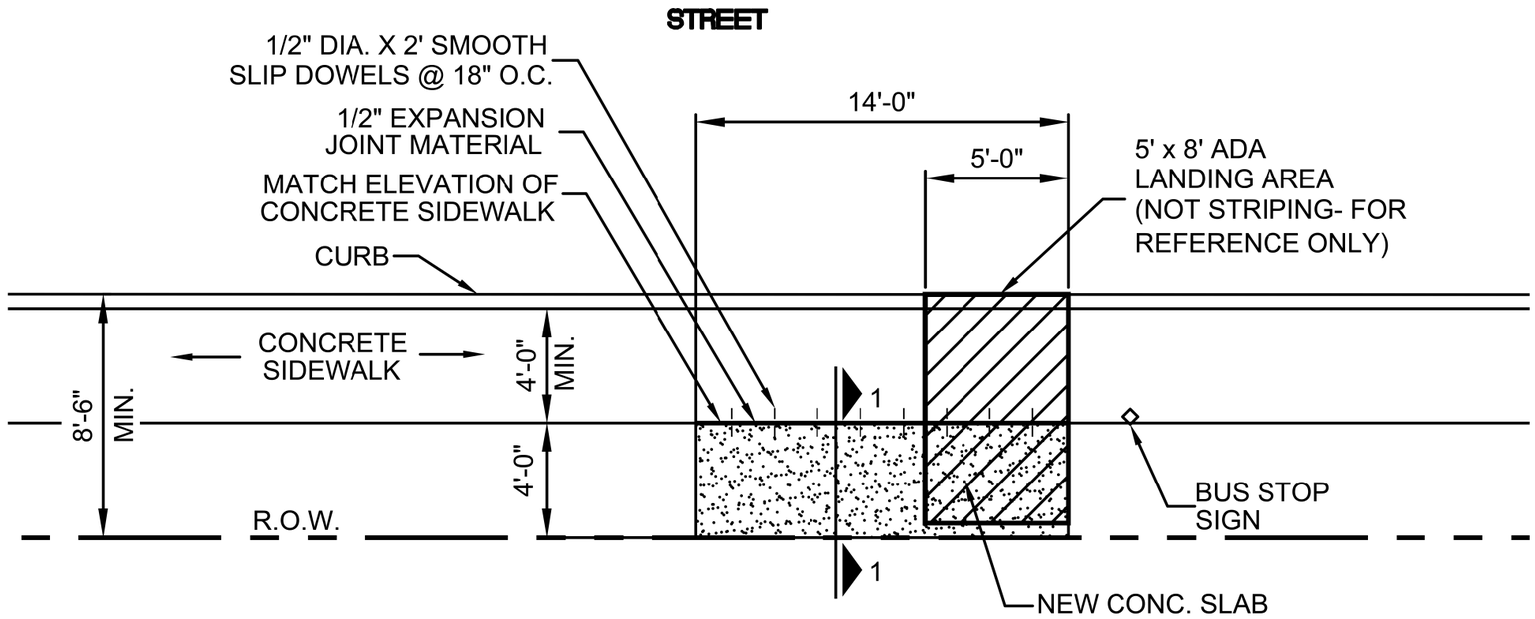
Texas Department of Transportation

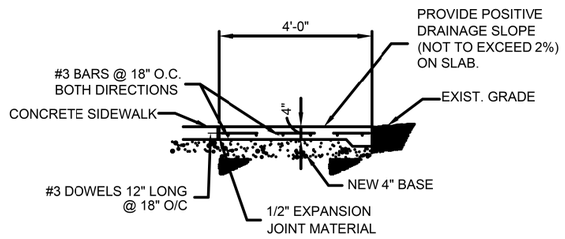
Design Division Standard

PEDESTRIAN HANDRAIL DETAILS

PRD-13

FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
©TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED MAY, 2013 (VP)				MILITARY DR
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		181 OF 377



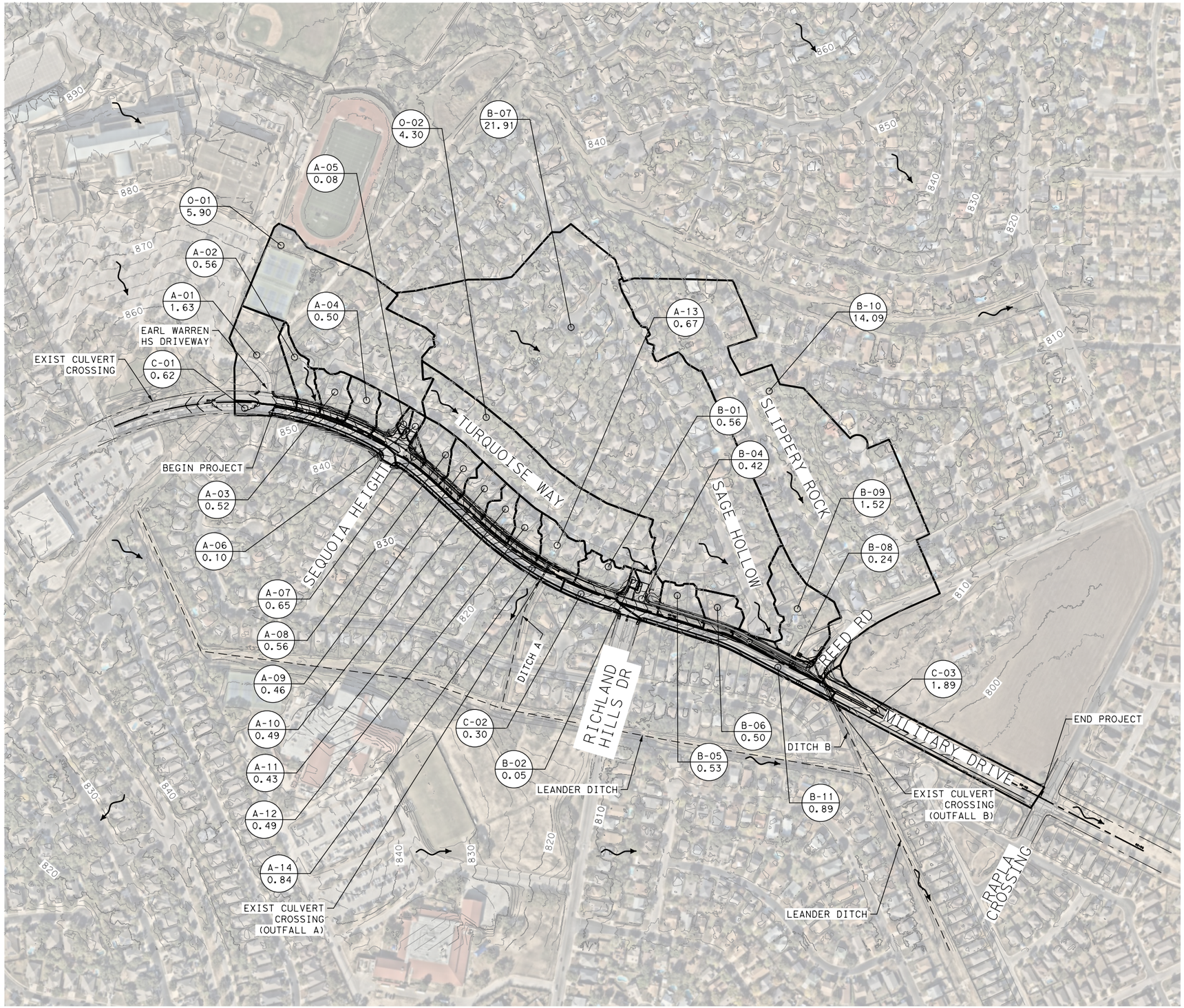


1 DETAIL

SCALE: 1/4" = 1'-0"

METROPOLITAN TRANSIT P.O. BOX 12490, 800 WEST MYRTLE SAN ANTONIO, TEXAS 78212	BENCH PAD STANDARD DESIGN	DATE:	DEC 12, 2018
		DRAWN BY:	NC
		SCALE:	3/16"=1'-0"
		SHEET:	1 OF 1

c:\bms\pwe-useast-006\knerr.chris\dms71696\C_MD_S_RMDVIA.dgn
9:39:59 AM
5/19/2025



LEGEND:

EXIST ROW

FLOW DIRECTION

DRAINAGE AREA NUMBER
AREA IN ACRES (X-XX / X.XX)

DRAINAGE AREA BOUNDARY

EXISTING 2' CONTOURS

EXISTING 10' CONTOURS

EXISTING DITCH

NOTES:

1. ATLAS 14 RAINFALL DATA AND BEXAR COUNTY PRECIPITATION AREA 3 DATA (PA-3) WERE USED TO CALCULATE PROJECT DISCHARGE.

2. TIME OF CONCENTRATION CALCULATED USING NRCS METHOD

3. CONTOUR DATA SOURCE IS SURVEY DATA (LAMB-STAR) AND TNRIS BEXAR & TRAVIS COUNTIES LIDAR 2021 1-FOOT HIGH RESOLUTION DATASET

4. REFER TO DRAINAGE TECHNICAL MEMO FOR ADDITIONAL HYDROLOGIC INFORMATION

0 200' 400'
SCALE: H: 1" = 400'

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED
PROFESSIONAL ENGINEER

5-17-25

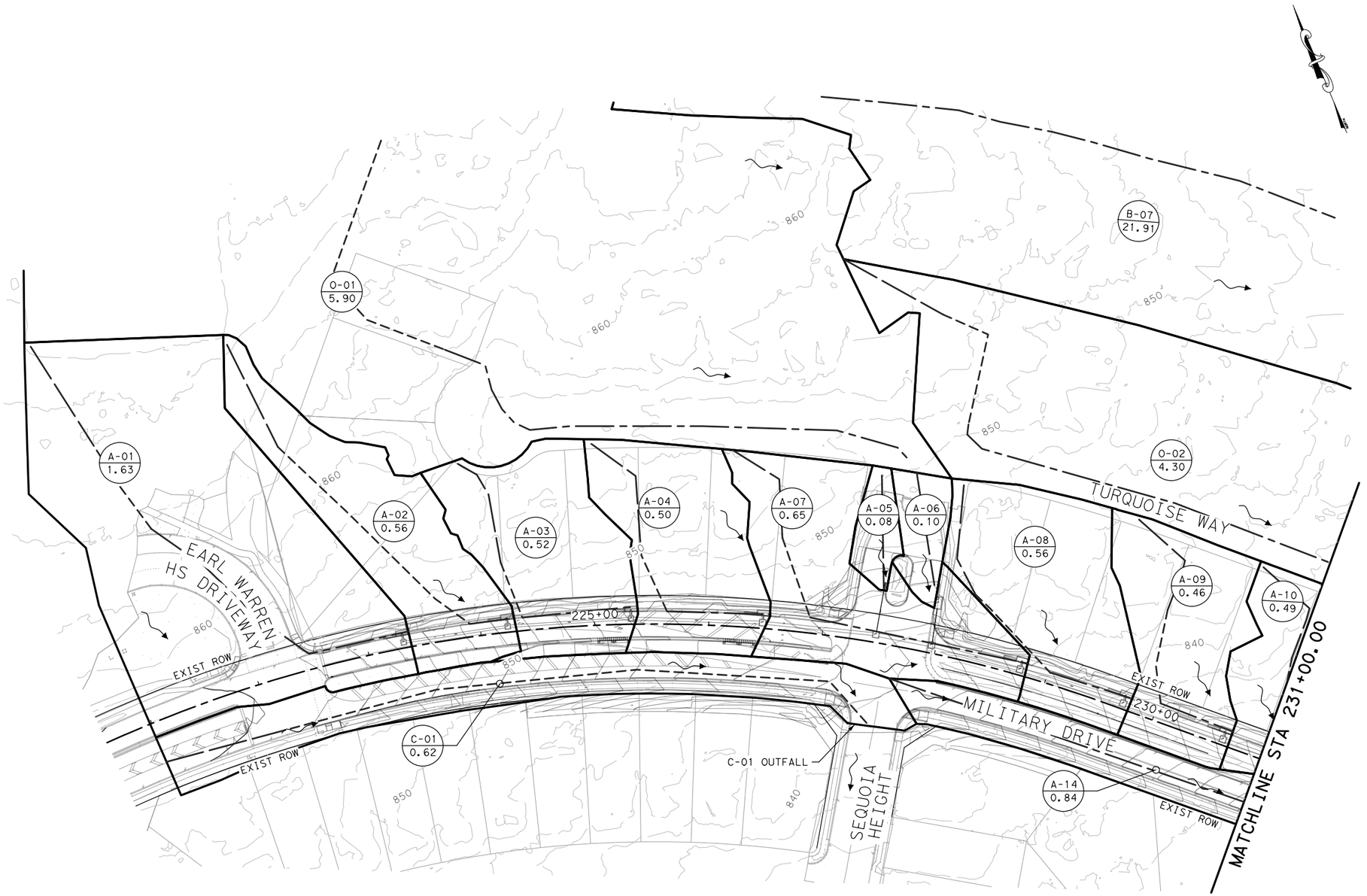
QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

EXTERNAL DRAINAGE AREA MAP

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT	CHKD. BY: JA
		SHEET NO. I83 OF 377



LEGEND:

- EXIST ROW
- FLOW DIRECTION
- DRAINAGE AREA NUMBER / AREA IN ACRES (X-XX / X.XX)
- DRAINAGE AREA BOUNDARY
- EXISTING 2' CONTOURS
- PROPOSED CONTOURS
- SHEET FLOW
- SHALLOW CONCENTRATED FLOW
- CHANNELIZED FLOW

NOTES:

1. CONTOUR DATA SOURCE IS SURVEY DATA (LAMB-STAR) AND TNRIS BEXAR & TRAVIS COUNTIES LIDAR 2021 1-FOOT HIGH RESOLUTION DATASET
2. REFER TO DRAINAGE TECHNICAL MEMO FOR ADDITIONAL HYDROLOGIC INFORMATION
3. DRAINAGE AREAS LABELED WITH "O" REFER TO OFFSITE BASINS THAT INCLUDE MULTIPLE OUTFALLS. SEE NOTE 4 AND 5 ON HYDROLOGIC DATA SHEET FOR THE DIVISION OF FLOW FROM "O" BASINS INTO EACH RECEIVING INLET BASIN.
4. O-01 & O-02 DIVERSION FLOWS DETERMINED BASED ON HEC-RAS(V5.0.7) SHEET FLOW ANALYSIS OF INTERSECTION.
5. O-01 DIVERTS 10% OF RUNOFF TO (O-02) AND THE OTHER 90% OF THE RUNOFF SPLITS 24% TO (A-05) AND 66% TO (A-06).
6. O-02 DIVERTS 34% OF RUNOFF TO (B-02) AND 66% TO (B-03).
7. ATLAS 14 - PRECIPITATION AREA 3 WAS USED. (PA-3)
8. HEC-HMS (V4.6) WAS USED FOR WATERSHED ANALYSIS. RATIONAL METHOD WAS USED FOR CALCULATIONS ON INTERNAL AND EXTERNAL DRAINAGE AREAS.

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

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED PROFESSIONAL ENGINEER
5-17-25

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

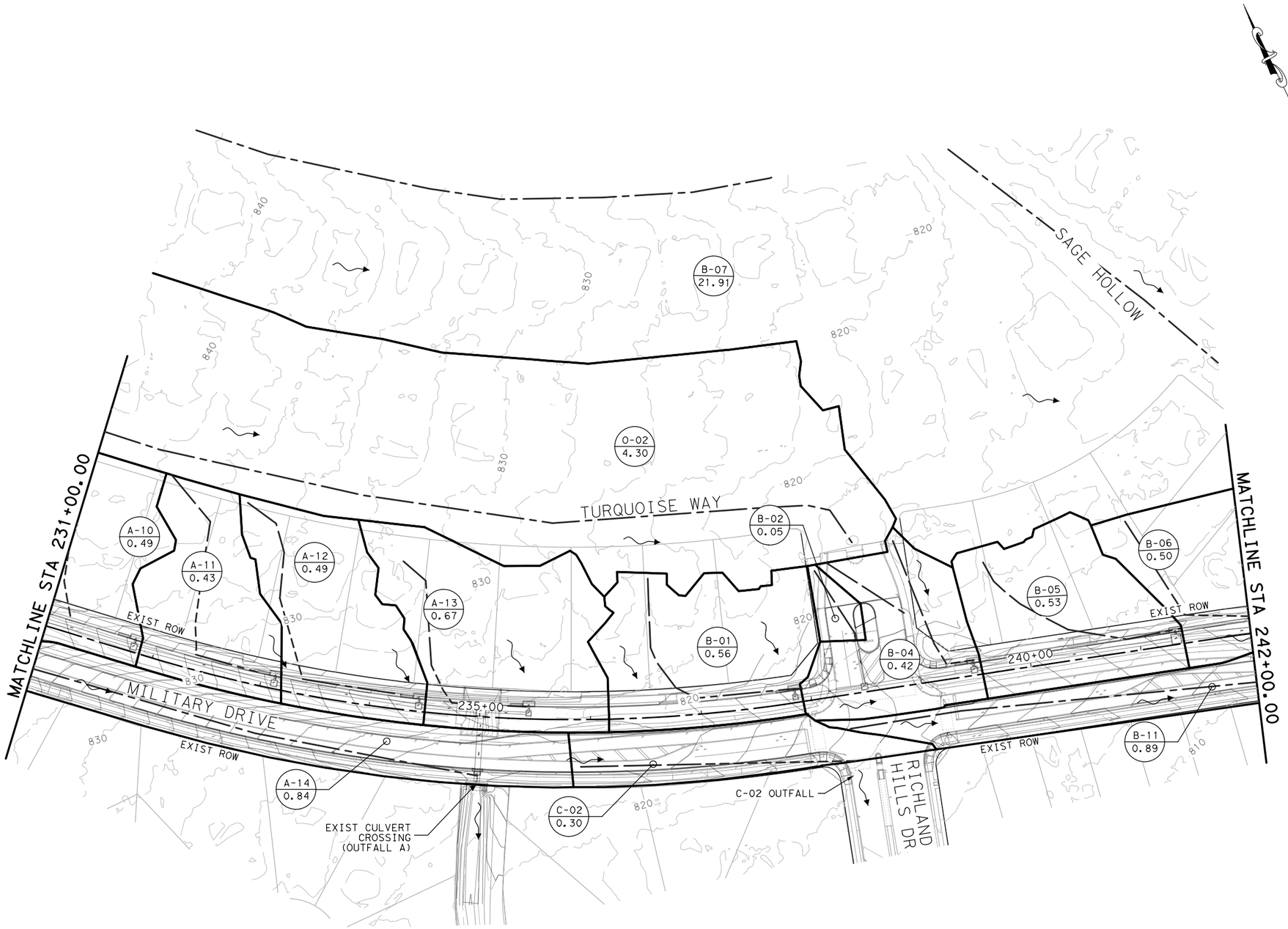
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
INTERNAL DRAINAGE AREA MAP (PROPOSED) (1 OF 3)

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT	CHKD. BY: JA	SHEET NO. 184 OF 377

Pen Table File
5/17/2025 8:03:22 PM

5/17/2025 8:03:22 PM
Pen Table File



LEGEND:

- EXIST ROW
- FLOW DIRECTION
- DRAINAGE AREA NUMBER / AREA IN ACRES (X-XX / X.XX)
- DRAINAGE AREA BOUNDARY
- EXISTING 2' CONTOURS
- PROPOSED CONTOURS
- SHEET FLOW
- SHALLOW CONCENTRATED FLOW
- CHANNELIZED FLOW

NOTES:

1. CONTOUR DATA SOURCE IS SURVEY DATA (LAMB-STAR) AND TNRIS BEXAR & TRAVIS COUNTIES LIDAR 2021 1-FOOT HIGH RESOLUTION DATASET
2. REFER TO DRAINAGE TECHNICAL MEMO FOR ADDITIONAL HYDROLOGIC INFORMATION
3. DRAINAGE AREAS LABELED WITH "O" REFER TO OFFSITE BASINS THAT INCLUDE MULTIPLE OUTFALLS. SEE NOTE 4 AND 5 ON HYDROLOGIC DATA SHEET FOR THE DIVISION OF FLOW FROM "O" BASINS INTO EACH RECEIVING INLET BASIN.
4. O-01 & O-02 DIVERSION FLOWS DETERMINED BASED ON HEC-RAS(V5.0.7) SHEET FLOW ANALYSIS OF INTERSECTION.
5. O-01 DIVERTS 10% OF RUNOFF TO (O-02) AND THE OTHER 90% OF THE RUNOFF SPLITS 24% TO (A-05) AND 66% TO (A-06).
6. O-02 DIVERTS 34% OF RUNOFF TO (B-02) AND 66% TO (B-04).
7. ATLAS 14 - PRECIPITATION AREA 3 WAS USED. (PA-3)
8. HEC-HMS (V4.6) WAS USED FOR WATERSHED ANALYSIS. RATIONAL METHOD WAS USED FOR CALCULATIONS ON INTERNAL AND EXTERNAL DRAINAGE AREAS.

0 50' 100'

SCALE: H: 1" = 100'

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED PROFESSIONAL ENGINEER

5-17-25

QUIDDITY

Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

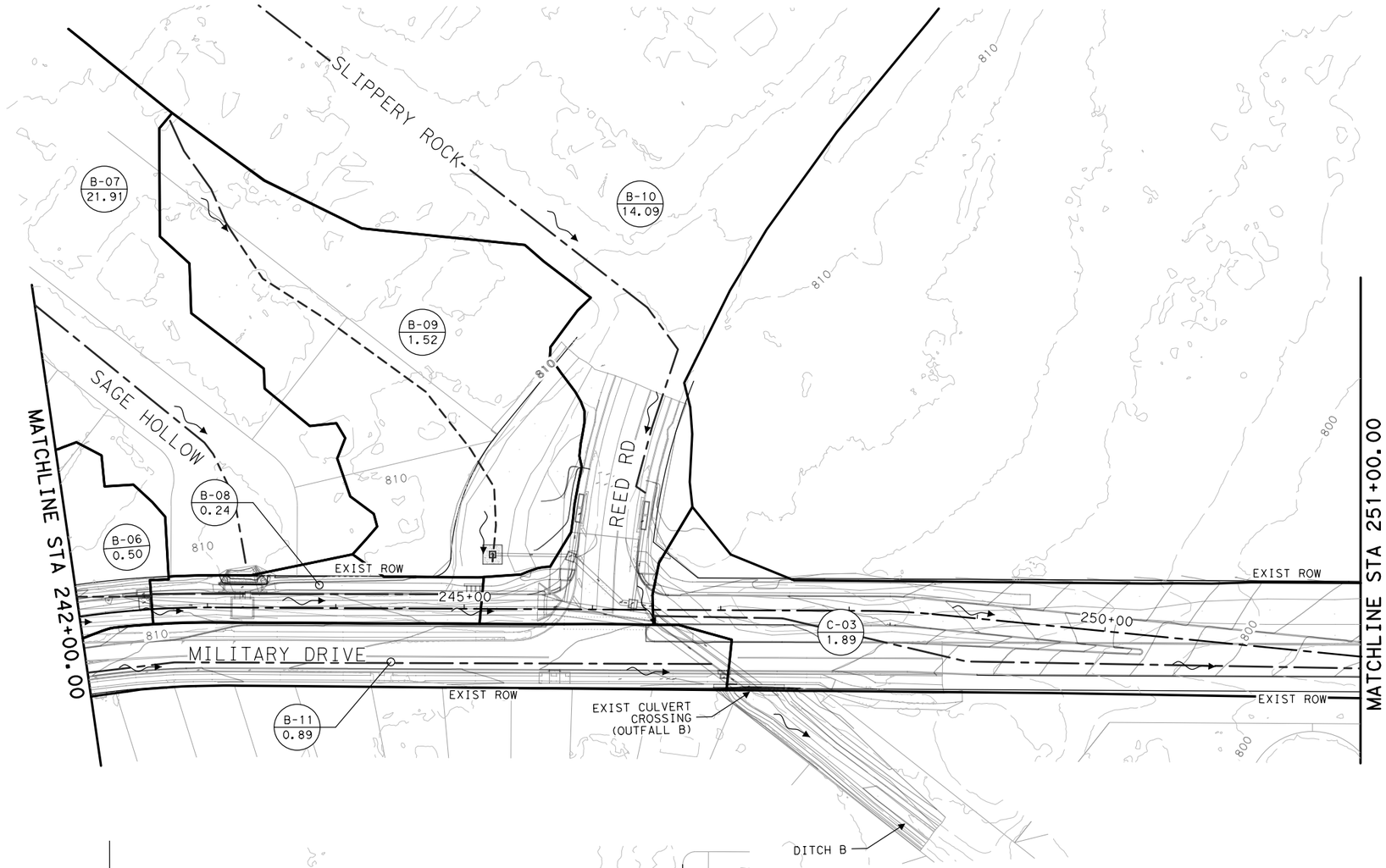
MILITARY DRIVE

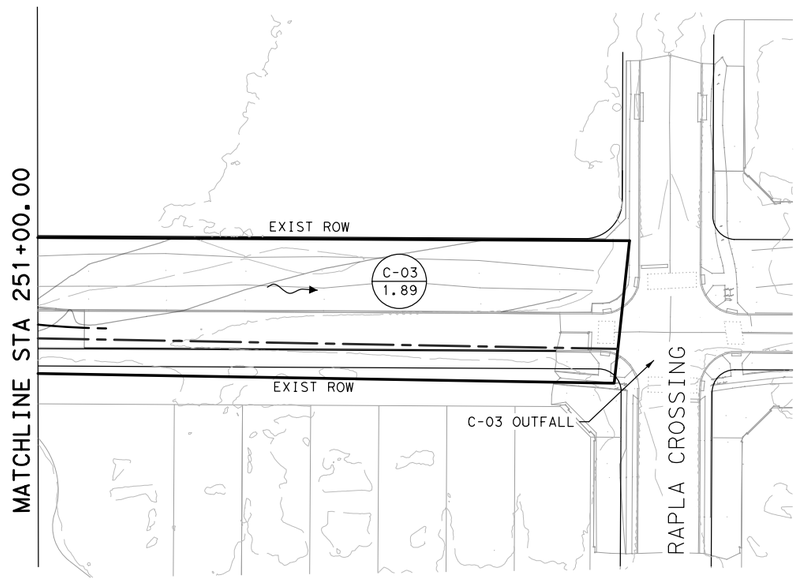
INTERNAL DRAINAGE AREA MAP (PROPOSED) (2 OF 3)

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT	CHKD. BY: JA	SHEET NO. 185 OF 377

Pen Table File
8:03:28 PM
5/17/2025

5/17/2025 8:03:28 PM
Pen Table File





LEGEND:

- EXIST ROW
- FLOW DIRECTION
- DRAINAGE AREA NUMBER / AREA IN ACRES (X-XX / X.XX)
- DRAINAGE AREA BOUNDARY
- EXISTING 2' CONTOURS
- PROPOSED CONTOURS
- SHEET FLOW
- SHALLOW CONCENTRATED FLOW
- CHANNELIZED FLOW

NOTES:

1. CONTOUR DATA SOURCE IS SURVEY DATA (LAMB-STAR) AND TNRIS BEXAR & TRAVIS COUNTIES LIDAR 2021 1-FOOT HIGH RESOLUTION DATASET
2. REFER TO DRAINAGE TECHNICAL MEMO FOR ADDITIONAL HYDROLOGIC INFORMATION
3. DRAINAGE AREAS LABELED WITH "O" REFER TO OFFSITE BASINS THAT INCLUDE MULTIPLE OUTFALLS. SEE NOTE 4 AND 5 ON HYDROLOGIC DATA SHEET FOR THE DIVISION OF FLOW FROM "O" BASINS INTO EACH RECEIVING INLET BASIN.
4. ATLAS 14 - PRECIPITATION AREA 3 WAS USED. (PA-3)
5. HEC-HMS (V4.6) WAS USED FOR WATERSHED ANALYSIS. RATIONAL METHOD WAS USED FOR CALCULATIONS ON INTERNAL AND EXTERNAL DRAINAGE AREAS.
6. THE DESIGN FREQUENCY FOR DRAINAGE AREA "B-10" OVERTOPS THE CREST OF REED ROAD AT INLETS B-10A AND B-10B. DESIGN FLOW SPLITS EVENLY AT INLETS B-10A AND B-10B.

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

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED PROFESSIONAL ENGINEER
5-17-25

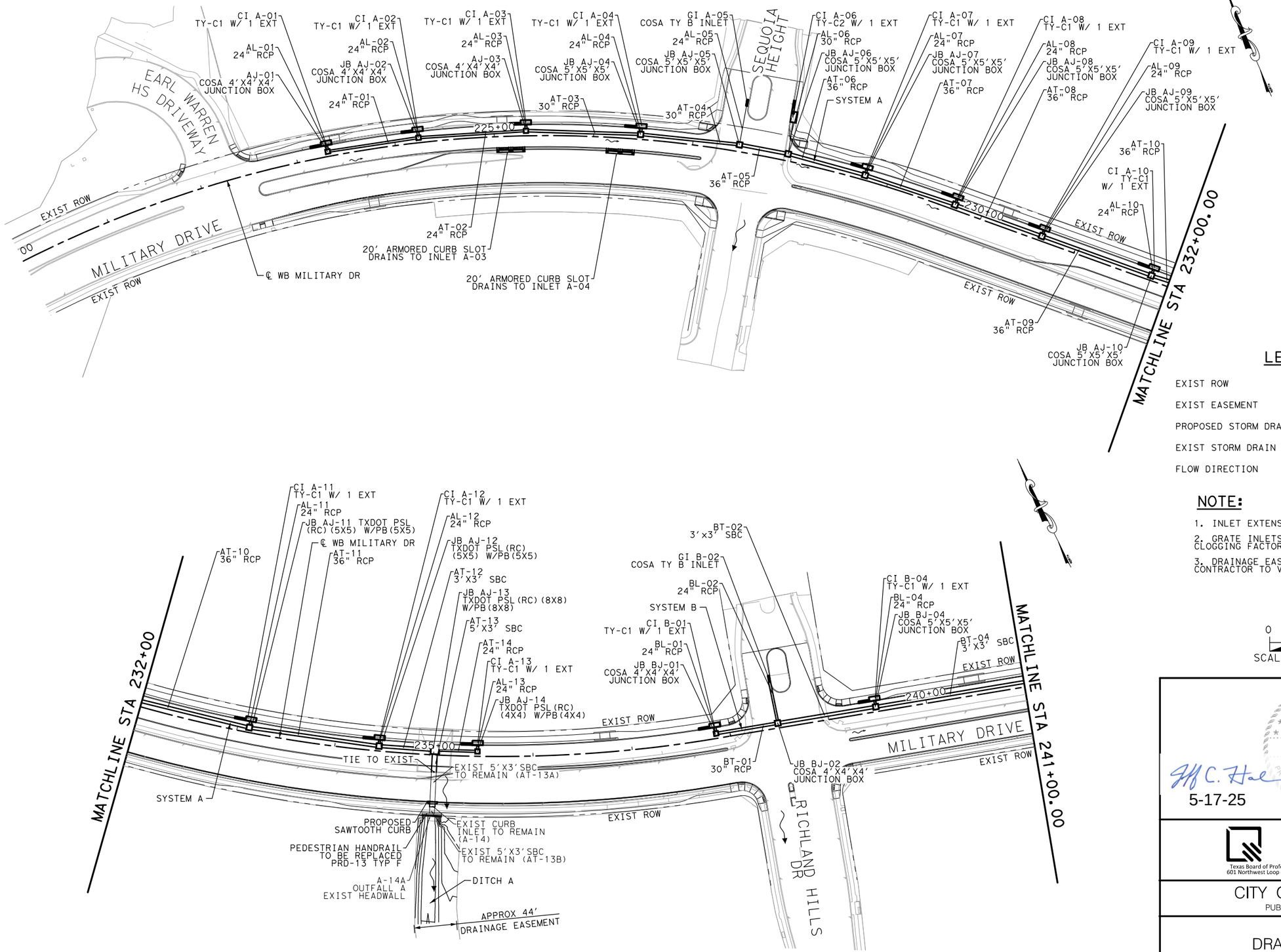
QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
INTERNAL DRAINAGE AREA MAP (PROPOSED) (3 OF 3)

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT CHKD. BY: JA	SHEET NO. 186 OF 377

Pen Table File
8:03:36 PM
5/17/2025



LEGEND:

- EXIST ROW
- EXIST EASEMENT
- PROPOSED STORM DRAIN
- EXIST STORM DRAIN
- FLOW DIRECTION

NOTE:

1. INLET EXTENSIONS ARE 10' LONG
2. GRATE INLETS WERE CALCULATED USING CLOGGING FACTORS
3. DRAINAGE EASEMENTS ARE APPROXIMATE, CONTRACTOR TO VERIFY

0 50' 100'

SCALE: H: 1" = 100'

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED PROFESSIONAL ENGINEER

5-17-25

QUIDDITY

Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

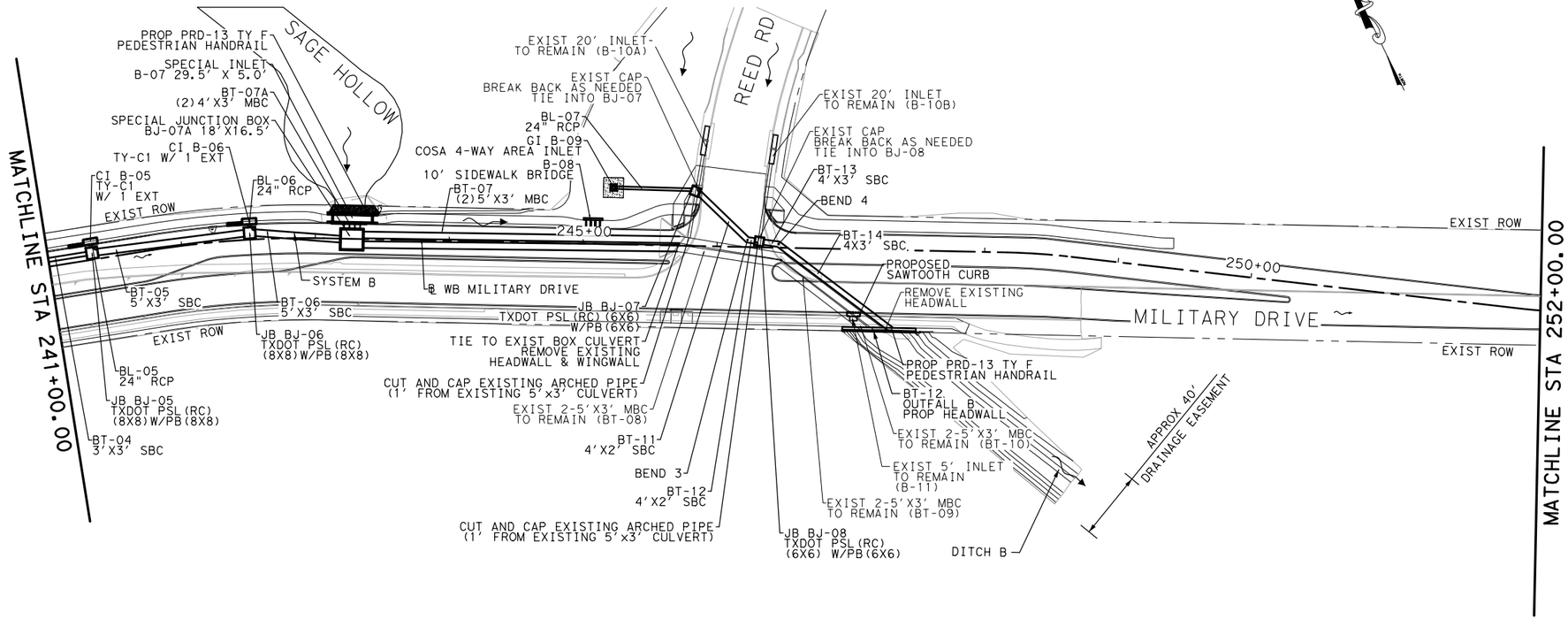
MILITARY DRIVE

DRAINAGE SYSTEM LAYOUT

(1 OF 2)

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT CHKD. BY: JA	SHEET NO. 187 OF 377

Pen Table File
8:03:44 PM
5/17/2025

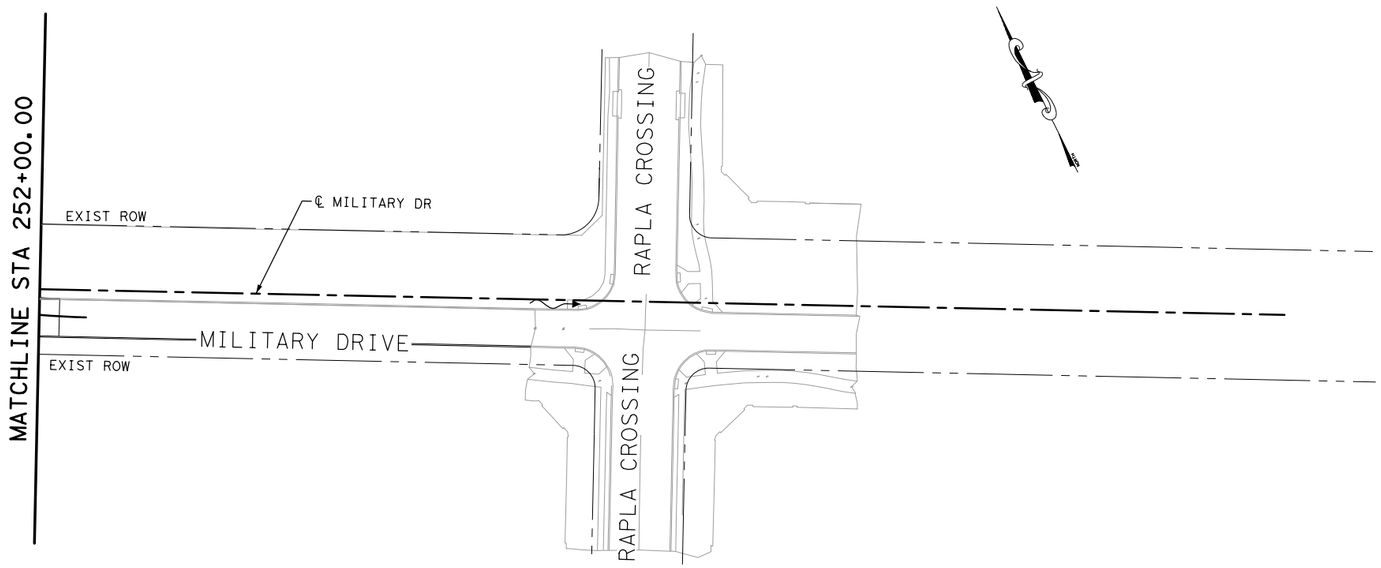


LEGEND:

- EXIST ROW
- EXIST EASEMENT
- PROPOSED STORM DRAIN
- EXIST STORM DRAIN
- FLOW DIRECTION
- PROPOSED CONTOUR

NOTE:

1. INLET EXTENSIONS ARE 10' LONG
2. GRATE INLETS WERE CALCULATED USING CLOGGING FACTORS
3. DRAINAGE EASEMENTS ARE APPROXIMATE, CONTRACTOR TO VERIFY



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

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED PROFESSIONAL ENGINEER
5-17-25

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

DRAINAGE SYSTEM LAYOUT (2 OF 2)

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT	CHKD. BY: JA	SHEET NO. I88 OF 377

Discharge Summary

RUNOFF COMPUTATION - RATIONAL METHOD

DRAINAGE AREA ID	PROP C	Tc (TIME OF CONCENTRATION) (MIN)	DRAINAGE AREA (AC)	PROP I 25YR (IN/HR)	PROP I 100YR (IN/HR)	PROP Q 25YR (CFS)	PROP Q 100YR (CFS)
A-01	0.61	8.82	1.63	9.24	11.58	9.15	11.47
A-02	0.63	7.60	0.56	9.70	12.18	3.41	4.29
A-03	0.71	7.31	0.49	9.82	12.33	3.43	4.31
A-04	0.71	7.72	0.47	9.65	12.12	3.23	4.05
A-05	0.95	5.00	0.08	11.00	13.79	0.79	0.99
A-06	0.94	5.00	0.10	11.00	13.79	1.07	1.35
A-07	0.82	7.47	0.70	9.76	12.25	5.58	7.00
A-08	0.73	8.28	0.56	9.44	11.84	3.84	4.82
A-09	0.73	7.87	0.46	9.59	12.04	3.23	4.05
A-10	0.72	7.14	0.49	9.89	12.41	3.48	4.37
A-11	0.72	7.78	0.43	9.63	12.09	2.94	3.70
A-12	0.71	7.10	0.49	9.91	12.44	3.48	4.36
A-13	0.71	6.37	0.67	10.25	12.86	4.91	6.16
A-14	0.82	5.00	0.84	11.00	13.79	7.58	9.50

Discharge Summary

RUNOFF COMPUTATION - RATIONAL METHOD

DRAINAGE AREA ID	PROP C	Tc (TIME OF CONCENTRATION) (MIN)	DRAINAGE AREA (AC)	PROP I 25YR (IN/HR)	PROP I 100YR (IN/HR)	PROP Q 25YR (CFS)	PROP Q 100YR (CFS)
B-01	0.72	7.87	0.56	9.59	12.04	3.90	4.89
B-02	0.91	5.00	0.05	11.00	13.79	0.52	0.65
B-04	0.85	7.56	0.42	9.72	12.20	3.48	4.36
B-05	0.74	7.11	0.53	9.91	12.43	3.85	4.84
B-06	0.68	8.68	0.50	9.29	11.64	3.19	4.00
B-07	0.71	11.84	21.91	8.24	10.30	128.20	160.32
B-08	0.88	5.00	0.24	11.00	13.79	2.27	2.84
B-09	0.60	10.16	1.52	8.77	10.99	7.97	9.98
B-10	0.73	11.24	14.09	8.43	10.55	86.12	107.77
B-11	0.91	5.00	0.89	11.00	13.79	8.88	11.13
C-01	0.92	5.00	0.62	11.00	13.79	6.21	7.79
C-02	0.91	5.00	0.30	11.00	13.79	3.01	3.77
C-03	0.71	5.00	1.89	11.00	13.79	14.74	18.48

TIME OF CONCENTRATION

NRCS-TR-55 METHOD

DRAINAGE AREA ID	DRAINAGE AREA (AC)	TOTAL FLOW LENGTH (FT)	SHEET FLOW LENGTH (FT)	SHEET FLOW SLOPE (FT/FT)	2-YR, 24-HR RAINFALL DEPTH (IN.)	OVERLAND ROUGHNESS COEFF. (N)	SHEET FLOW TRAVEL TIME (HR)	SHALLOW CONC. FLOW LENGTH (FT)	SHALLOW CONC. FLOW SLOPE (FT/FT)	PAVED (20.32) / UNPAVED (16.13)	SHALLOW CONC. FLOW TIME (HR)	CHANNEL FLOW LENGTH (FT)	CHANNEL FLOW SLOPE (FT/FT)	CHANNEL MANNING'S ROUGHNESS COEFF.	HYDRAULIC RADIUS (FT)	CHANNEL FLOW (HR)	TIME OF CONC. (HR)	TIME OF CON. (MIN)	NOTES
A-01	1.63	462.86	100.00	0.028	3.96	0.15	0.128	96.68	0.018	16.13	0.012	266.18	0.043	0.018	0.56	0.0064	0.15	**8.82**	
A-02	0.56	368.56	100.00	0.043	3.96	0.15	0.108	229.58	0.053	16.13	0.017	38.98	0.040	0.018	0.56	0.0010	0.13	**7.60**	
A-03	0.52	252.35	100.00	0.036	3.96	0.15	0.116	51.71	0.082	16.13	0.003	100.63	0.027	0.018	0.56	0.0030	0.12	**7.31**	
A-04	0.50	261.36	100.00	0.032	3.96	0.15	0.121	71.91	0.085	16.13	0.004	89.44	0.017	0.018	0.56	0.0034	0.13	**7.72**	
A-05	0.08	100.00	100.00	0.051	4.96	0.011	0.013	0.00	0.000	0.00	0.000	0.00	0.000	0	0.00	0.0000	0.01	**5.00**	**MIN TC USED**
A-06	0.10	100.00	100.00	0.057	5.96	0.011	0.012	0.00	0.000	0.00	0.000	0.00	0.000	0	0.00	0.0000	0.01	**5.00**	**MIN TC USED**
A-07	0.65	368.39	100.00	0.039	3.96	0.15	0.113	73.75	0.092	16.13	0.004	194.64	0.017	0.018	0.56	0.0075	0.12	**7.47**	
A-08	0.56	375.36	100.00	0.030	3.96	0.15	0.124	95.31	0.076	16.13	0.006	180.04	0.012	0.018	0.56	0.0080	0.14	**8.28**	
A-09	0.46	251.47	100.00	0.031	3.96	0.15	0.124	83.50	0.074	16.13	0.005	67.97	0.025	0.018	0.56	0.0021	0.13	**7.87**	
A-10	0.49	251.47	100.00	0.040	3.96	0.15	0.112	83.50	0.065	16.13	0.006	67.97	0.038	0.018	0.56	0.0017	0.12	**7.14**	
A-11	0.43	232.52	100.00	0.030	3.96	0.15	0.124	75.43	0.096	16.13	0.004	57.10	0.048	0.018	0.56	0.0013	0.13	**7.78**	
A-12	0.49	220.42	100.00	0.038	3.96	0.15	0.113	74.30	0.113	16.13	0.004	46.12	0.039	0.018	0.56	0.0012	0.12	**7.10**	
A-13	0.67	208.60	100.00	0.054	3.96	0.15	0.099	41.57	0.144	16.13	0.002	67.04	0.003	0.018	0.56	0.0057	0.11	**6.37**	
A-14	0.84	741.20	100.00	0.025	3.96	0.011	0.017	0.00	0.000	0.00	0.000	641.20	0.029	0.018	0.56	0.0185	0.04	**5.00**	**MIN TC USED**
B-01	0.56	221.58	100.00	0.028	3.96	0.15	0.128	0.00	0.000	0.00	0.000	121.58	0.035	0.018	0.56	0.0032	0.13	**7.87**	
B-02	0.05	67.00	67.00	0.036	3.96	0.011	0.010	0.00	0.000	0.00	0.000	0.00	0.000	0	0.00	0.0000	0.01	**5.00**	**MIN TC USED**
B-04	0.42	150.23	100.00	0.033	3.96	0.15	0.120	50.23	0.021	16.13	0.006	0.00	0.000	0	0.00	0.0000	0.13	**7.56**	**MIN TC USED**
B-05	0.53	202.42	100.00	0.036	3.96	0.15	0.116	0.00	0.000	0.00	0.000	102.42	0.029	0.018	0.57	0.0029	0.12	**7.11**	
B-06	0.50	215.40	100.00	0.026	3.96	0.15	0.131	100.11	0.019	16.13	0.013	15.29	0.006	0.018	0.56	0.0010	0.14	**8.68**	
B-07	21.91	2032.67	99.33	0.022	3.96	0.15	0.140	0.00	0.000	0.00	0.000	1933.34	0.028	0.018	0.56	0.0573	0.20	**11.84**	
B-08	0.24	257.17	100.00	0.005	3.96	0.011	0.032	0.00	0.000	0.00	0.000	157.17	0.003	0.018	0.56	0.0149	0.05	**5.00**	
B-09	1.52	447.53	100.00	0.029	3.96	0.15	0.126	347.53	0.019	16.13	0.043	0.00	0.000	0.018	0.00	0.0000	0.17	**10.16**	**MIN TC USED**
B-10	14.09	1763.76	100.00	0.038	3.96	0.15	0.114	139.76	0.032	16.13	0.013	1524.00	0.016	0.018	0.56	0.0600	0.19	**11.24**	
B-11	0.89	858.42	100.00	0.022	3.96	0.011	0.017	0.00	0.000	0.00	0.000	758.42	0.011	0.018	0.56	0.0359	0.05	**5.00**	
C-01	0.62	643.73	100.00	0.009	3.96	0.011	0.024	543.73	0.026	16.13	0.058	0.00	0.000	0	0.00	0.0000	0.08	**5.00**	**MIN TC USED**
C-02	0.30	249.59	100.00	0.009	3.96	0.011	0.025	149.59	0.024	16.13	0.016	0.00	0.000	0	0.00	0.0000	0.04	**5.00**	**MIN TC USED**
C-03	1.89	937.01	100.00	0.014	3.96	0.011	0.021	0.00	0.000	0.00	0.000	837.01	0.014	0.018	0.56	0.0347	0.06	**5.00**	**MIN TC USED**
O-01	5.90	1074.11	89.19	0.018	3.96	0.15	0.140	533.22	0.025	16.13	0.058	451.70	0.022	0.018	0.56	0.0151	0.21	**12.80**	**MIN TC USED**
O-02	4.30	1270.80	100.00	0.028	3.96	0.15	0.129	124.20	0.038	16.13	0.011	1046.60	0.030	0.018	0.56	0.0297	0.17	**10.17**	

NOTES:

1. FLOW VALUES ONLY SHOW RESPECTIVE DRAINAGE AREA. FOR TOTAL FLOW CONTRIBUTING TO SYSTEM A & B INLETS SEE HYDRAULIC DATA SHEET (1 OF 4), "Q INTERCEPTED" COLUMN ON TABLE.
2. DA O-01 DIVERTS 90% OF RUNOFF TO SEQUIOA HEIGHT GATED ENTRANCE.OF THAT PERCENTAGE, 24% GOES TO INLET A-05 AND 66% TO INLET A-06. REMAINING 10% CONTINUES ALONG TURQUOISE WAY TO DA O-02
3. DA O-02 IS ASSUMED TO TAKE THE 10% RUNOFF FROM O-01 AND THEN SPLIT THE TOTAL AMOUNT OF FLOW BETWEEN INLETS B-02 AND B-04. 34% TO B-02 AND 66% TO B-04.
4. ALL HYDROLOGY IS BASED ON ULTIMATE DEVELOPMENT OF CONTRIBUTING AREAS. THIS INCLUDES THE INCREASED IMPERVIOUS COVER DUE TO NEW ROADWAY PAVEMENT AND SHARED USE PATH.
5. ATLAS 14 PRECIPITATION WAS USED FOR HYDROLOGY CALCULATIONS (PA-3)
6. MAXIMUM ALLOWABLE SHEET FLOW LENGTH IS 100 FEET
7. TABLE DETAILING COMPOSITE C CALCULATIONS CAN BE FOUND ON TABLE 6 ON APPENDIX D IN THE DRAINAGE REPORT.

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED PROFESSIONAL ENGINEER
5-17-25

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

HYDROLOGIC DATA SHEET

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT	CHKD. BY: JA	SHEET NO. 189 OF 377

Pen Table File
8:03:55 PM
5/17/2025

SYSTEM-A INLET COMPUTATIONS - 25YR

INLET									CURB INLET DESIGN															
ID	REFERENCE CHAIN	STATION	OFFSET (FT)	TYPE	PROFILE TYPE	DISCHARGE Q (CFS)	ADDED CARRY OVER (CFS)	Q INTERCEPTED (CFS)	LENGTH REQUIRED (FT)	ACTUAL LENGTH (FT)	DEPRESSION DEPTH (FT)	DEPRESSION WIDTH (FT)	LONG. SLOPE (%)	CROSS SLOPE (FT/FT)	MANNING'S n-VALUE	ALLOW. POND WIDTH (FT)	ACTUAL POND WIDTH (FT)	MAX PONDED DEPTH (FT)	COMPUTED PONDED DEPTH (FT)	CAPACITY (CFS)	CARRY OVER INLET ID	CARRY OVER FLOW (CFS)	REMARKS
A-01	MD_WB	223+32.00	-11.75	TY 1 10' INLET W/ 1EXT	On Grade	11.48		11.48	38.11	20.00	0.21	2.00	3.03	0.02	0.018	22.00	15.31	0.44	0.31	8.47	A-02	3.01	
A-02	MD_WB	224+24.00	-11.75	TY 1 10' INLET W/ 1EXT	On Grade	4.28	3.01	7.29	31.04	20.00	0.21	2.00	3.62	0.02	0.018	22.00	12.49	0.44	0.25	6.16	A-03	1.14	
A-03	MD_WB	225+32.00	-11.75	TY 1 10' INLET W/ 1EXT	On Grade	4.31	1.14	5.44	24.78	20.00	0.21	2.00	2.75	0.02	0.018	22.00	11.79	0.44	0.24	5.16	A-04	0.28	
A-04	MD_WB	226+47.00	-11.75	TY 1 10' INLET W/ 1EXT	On Grade	4.05	0.28	4.34	18.93	20.00	0.21	2.00	1.49	0.02	0.018	22.00	12.14	0.44	0.24	4.34	A-07		
A-05	MD_WB	227+47.00	-50.00	TYPE B INLET	On Grade	0.99	8.27	9.06					4.50	0.02	0.018	22.00	15.57	0.44	0.23	2.16	A-07	6.90	LOCATED ON SEQUOIA HEIGHT GATED ENTRANCE
A-06	MD_WB	227+94.06	-44.50	TY 2 10' INLET W/ 1EXT	On Grade	1.34	22.73	23.81	71.83	20.00	0.21	2.00	4.80	0.02	0.018	22.00	22.09	0.44	0.33	10.58	A-07	13.23	LOCATED ON SEQUOIA HEIGHT GATED ENTRANCE
A-07	MD_WB	228+76.00	-11.75	TY 1 10' INLET W/ 1EXT	On Grade	7.00	20.14	27.14	56.22	20.00	0.21	2.00	2.23	0.02	0.018	29.00	22.38	0.58	0.45	14.84	A-08	12.30	THIS INLET TO CAPTURE BYPASS FLOW FROM SEQUOIA HEIGHT GATED ENTRANCE
A-08	MD_WB	229+71.00	-11.75	TY 1 10' INLET W/ 1EXT	On Grade	4.82	12.30	17.12	45.89	20.00	0.21	2.00	2.66	0.02	0.018	29.00	18.22	0.58	0.36	11.01	A-09	6.11	
A-09	MD_WB	230+64.00	-11.75	TY 1 10' INLET W/ 1EXT	On Grade	4.05	6.11	10.16	35.84	20.00	0.21	2.00	3.09	0.02	0.018	29.00	14.57	0.58	0.29	7.82	A-10	2.34	
A-10	MD_WB	231+81.00	-11.75	TY 1 10' INLET W/ 1EXT	On Grade	4.37	2.34	6.71	29.66	20.00	0.21	2.00	3.62	0.02	0.018	22.00	12.10	0.44	0.24	5.82	A-11	0.89	
A-11	MD_WB	233+12.13	-11.75	TY 1 10' INLET W/ 1EXT	On Grade	3.69	0.89	4.58	24.78	20.00	0.21	2.00	4.10	0.02	0.018	22.00	10.26	0.44	0.21	4.35	A-12	0.24	
A-12	MD_WB	234+44.21	-11.75	TY 1 10' INLET W/ 1EXT	On Grade	4.37	0.24	4.60	20.72	20.00	0.21	2.00	1.90	0.02	0.018	22.00	11.87	0.44	0.24	4.59	A-13	0.01	
A-13	MD_WB	235+44.04	-11.75	TY 1 10' INLET W/ 1EXT	On Grade	6.16	0.01	6.17	12.47	20.00	0.21	2.00	0.12	0.02	0.018	22.00	22.29	0.44	0.45	6.17	B-01		
A-14	MD_WB	235+01.00	52.0	Typ C Curb Inlet 5'	Sag	9.51		9.51	23.78	5.00	0.25	1.50		0.02	0.018	22.00	57.51	0.44	1.15	4.65			EXISTING INLET LOCATED ALONG EB LANE TO REMAIN. RICHLAND HILLS

NOTES:

1. A-14 IS AN EXISTING INLET IN SAG. ANY FLOW NOT CAPTURED IS CONTAINED WITHIN PONDING DEPTH. SEE REPORT FOR FURTHER DETAILS. NO OVERFLOW TOWARD INTERSECTION OF MILITARY DRIVE AND RICHLAND HILLS
2. STANDARD 10' EXTENSIONS WILL BE USED.
3. A 50% CLOGGING FACTOR HAS BEEN APPLIED TO GRATE INLET CALCULATIONS.
4. INLETS DESIGNED FOR Q25 TRUNK DESIGNED FOR Q25 STORM SEWER CALCULATION PERFORMED IN GEOPAK DRAINAGE V8i
5. MOST INLETS ARE LOCATED ON GRADE WITH TYPICAL ROADWAY SECTIONS OF TWO LANES. SEE REMARKS FOR VARIANCES.
6. O-01 DIVERTS 10% OF RUNOFF TO (O-02) AND THE OTHER 90% OF THE RUNOFF SPLITS 24% TO (A-05) AND 66% TO (A-06)

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED
PROFESSIONAL ENGINEER
5-17-25

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

HYDRAULIC DATA SHEETS (1 OF 4)

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT	CHKD. BY: JA	SHEET NO. 190 OF 377

SYSTEM-A CONVEYANCE COMPUTATIONS - 25YR

LINK ID	FROM	TO	INVERT UPSTREAM	INVERT DOWNSTREAM	DRAINAGE AREA	WEIGHTED RUNOFF	DESIGN T_c	INTENSITY	TOTAL DISCHARGE	CAPACITY	ACTUAL LENGTH	N VALUE	DIAMETER	BOX CULVERT HEIGHT	BOX CULVERT WIDTH	FRICTION SLOPE	PIPE SLOPE	UNIFORM VELOCITY	FULL VELOCITY	HGL UPSTREAM 25YR	HGL DOWNSTREAM 25YR	EGL UPSTREAM 25YR	EGL DOWNSTREAM 25YR	JUNCTION LOSS	NOTES
					(ACRES)	"C"	(MIN)	(IN/HR)	(CFS)	(CFS)	(FT)		(FT)	(FT)	(FT)	(FT/FT)	(%)	(FT/S)	(FT/S)	(FT)	(FT)	(FT)	(FT)	(FT)	
AL-01	A-01	AJ-01	844.65	844.42	1.63	0.61	8.8	9.24	7.35	54.4	4.75	0.013	2.00	N/A	N/A	0.0500	5.00	11.47	2.34	846.07	845.09	846.42	846.07	0.24	
AL-02	A-02	AJ-02	840.03	839.79	0.56	0.63	7.6	9.70	4.87	54.4	4.75	0.013	2.00	N/A	N/A	0.0500	5.00	10.18	1.55	841.41	841.39	841.53	841.92	0.08	
AL-03	A-03	AJ-03	837.32	837.08	0.49	0.71	7.3	9.82	3.79	54.4	4.75	0.013	2.00	N/A	N/A	0.0500	5.00	9.46	1.21	838.32	837.54	838.57	838.32	0.13	
AL-04	A-04	AJ-04	833.33	833.12	0.47	0.71	7.7	9.65	3.23	54.4	4.25	0.013	2.00	N/A	N/A	0.0500	5.00	9.02	1.03	835.01	835.00	835.04	835.60	0.02	
AL-05	A-05	AJ-05	829.91	828.06	0.09	0.95	5.0	11.00	2.16	54.4	37.06	0.013	2.00	N/A	N/A	0.0500	5.00	8.00	0.69	830.77	828.34	830.95	829.32	0.05	RECEIVING RUNOFF FROM EXTERNAL DA (O-01)
AL-06	A-06	AJ-06	828.78	827.28	0.11	0.97	7.5	11.00	10.58	98.7	29.97	0.013	2.50	N/A	N/A	0.0500	5.00	12.45	2.16	830.44	827.90	830.85	829.78	0.19	RECEIVING RUNOFF FROM EXTERNAL DA (O-01)
AL-07	A-07	AJ-07	826.21	826.00	0.70	0.82	7.5	9.76	14.40	54.4	4.25	0.013	2.00	N/A	N/A	0.0500	5.00	13.87	4.58	829.31	828.95	829.64	829.98	0.33	
AL-08	A-08	AJ-08	824.51	824.47	0.56	0.73	8.3	9.44	10.25	24.3	4.25	0.013	2.00	N/A	N/A	0.0100	1.00	7.01	3.26	827.64	827.46	827.81	828.72	0.17	
AL-09	A-09	AJ-09	823.54	823.33	0.46	0.73	7.9	9.59	6.78	54.4	4.25	0.013	2.00	N/A	N/A	0.0500	5.00	11.21	2.16	826.30	826.22	826.37	827.66	0.07	
AL-10	A-10	AJ-10	822.03	821.82	0.49	0.72	7.1	9.89	4.59	54.4	4.25	0.013	2.00	N/A	N/A	0.0500	5.00	10.01	1.46	824.82	824.79	824.86	826.35	0.03	
AL-11	A-11	AJ-11	819.82	819.61	0.43	0.72	7.8	9.63	3.19	54.4	4.25	0.013	2.00	N/A	N/A	0.0500	5.00	9.00	1.02	822.64	822.62	822.66	824.29	0.02	
AL-12	A-12	AJ-12	817.84	817.63	0.49	0.72	7.1	9.91	3.48	54.4	4.26	0.013	2.00	N/A	N/A	0.0500	5.00	9.23	1.11	819.50	819.48	819.53	820.59	0.03	
AL-13	A-13	AJ-14	816.51	816.47	0.68	0.71	6.4	10.25	4.91	24.3	4.75	0.013	2.00	N/A	N/A	0.0100	1.00	5.75	1.56	819.36	819.32	819.40	819.35	0.04	
AT-01	AJ-01	AJ-02	844.21	839.79	1.63	0.61	8.8	9.23	7.34	54.4	88.37	0.013	2.00	N/A	N/A	0.0500	5.00	11.48	2.34	845.67	840.31	846.04	842.31	0.29	
AT-02	AJ-02	AJ-03	839.69	837.08	2.19	0.61	9.0	9.18	11.98	38.5	104.43	0.013	2.00	N/A	N/A	0.0250	2.50	10.25	3.81	841.39	837.89	841.92	839.47	0.35	
AT-03	AJ-03	AJ-04	836.45	833.12	2.69	0.63	9.1	9.12	15.44	76.4	110.95	0.013	2.50	N/A	N/A	0.0300	3.00	11.56	3.15	838.06	833.92	838.59	835.92	0.15	
AT-04	AJ-04	AJ-05	833.12	828.55	3.16	0.64	9.3	9.06	18.37	96.7	95.06	0.013	2.50	N/A	N/A	0.0480	4.81	14.39	3.74	835.00	829.34	835.60	832.32	0.19	
AT-05	AJ-05	AJ-06	827.99	827.28	3.16	0.64	9.4	9.02	20.45	90.8	44.75	0.013	3.00	N/A	N/A	0.0160	1.60	9.83	2.89	829.57	828.35	830.14	829.61	0.05	
AT-06	AJ-06	AJ-07	827.21	826.00	3.16	0.64	9.5	8.99	30.97	90.8	75.43	0.013	3.00	N/A	N/A	0.0160	1.60	11.00	4.38	829.59	827.32	830.35	828.99	0.50	
AT-07	AJ-07	AJ-08	826.00	824.47	3.86	0.67	9.6	8.95	44.81	93.5	90.32	0.013	3.00	N/A	N/A	0.0170	1.70	12.37	6.34	828.95	826.07	829.98	828.18	0.68	
AT-08	AJ-08	AJ-09	824.40	823.30	4.42	0.68	9.8	8.90	54.73	80.2	88.00	0.013	3.00	N/A	N/A	0.0120	1.25	11.50	7.74	827.46	825.28	828.72	827.19	0.59	
AT-09	AJ-09	AJ-10	823.24	821.78	4.88	0.69	9.9	8.86	61.12	81.8	112.00	0.013	3.00	N/A	N/A	0.0130	1.30	11.97	8.65	826.22	823.87	827.66	825.98	0.39	
AT-10	AJ-10	AJ-11	821.78	819.61	5.37	0.69	10.1	8.80	65.15	94.4	125.48	0.013	3.00	N/A	N/A	0.0170	1.73	13.60	9.22	824.79	821.60	826.35	824.26	0.33	
AT-11	AJ-11	AJ-12	819.61	816.69	5.79	0.69	10.2	8.75	67.89	108.9	126.89	0.013	3.00	N/A	N/A	0.0230	2.30	15.35	9.61	822.62	818.57	824.29	821.85	0.27	
AT-12	AJ-12	AJ-13	816.59	815.84	6.28	0.69	10.4	8.71	70.77	124.5	49.88	0.013	N/A	3	3.00	0.0150	1.50	12.44	7.86	819.48	819.25	820.59	819.88	0.01	
AT-13	AJ-13	Tie-In 1	815.84	815.78	6.96	0.69	10.4	8.68	74.83	124.7	18.10	0.015	N/A	3	5.00	0.0040	0.36	7.33	3.00	818.18	818.18	819.88	818.79	1.05	
AT-13A	Tie-In 1	A-14	815.76	815.64	6.96	0.69	10.5	8.67	74.75	124.6	32.40	0.015	N/A	3	5.00	0.0040	0.36	7.32	4.98	2.42	818.12	818.79	818.81	0.03	EX PIPE TO REMAIN
AT-13B	A-14	A-14A	815.64	815.61	7.80	0.71	10.6	8.64	80.60	136.2	7.00	0.015	N/A	3	5.00	0.0040	0.36	8.08	5.37	2.48	818.05	818.81	818.73	0.06	EX PIPE TO REMAIN
AT-14	AJ-14	AJ-13	816.28	815.95	0.68	0.71	6.4	10.24	4.90	23.1	36.80	0.013	2.00	N/A	N/A	0.0090	0.90	5.55	1.56	2.00	819.25	819.35	819.88	0.05	

SYSTEM-A RUNOFF COMPUTATIONS - 25YR

DRAINAGE AREA		PROP C	T_c CALC	INTENSITY I25	DISCHARGE Q25
ID	(ACRES)		(MIN)	(IN / HR)	(CFS)
A-01	1.63	0.61	8.82	9.24	9.16
A-02	0.56	0.63	7.60	9.70	3.41
A-03	0.49	0.71	7.31	9.82	3.43
A-04	0.47	0.71	7.72	9.65	3.23
A-05	0.08	0.95	5.00	11.00	0.79
A-06	0.10	0.94	5.00	11.00	1.07
A-07	0.70	0.82	7.47	9.76	5.58
A-08	0.56	0.73	8.28	9.44	3.84
A-09	0.46	0.73	7.87	9.59	3.23
A-10	0.49	0.72	7.14	9.89	3.48
A-11	0.43	0.72	7.78	9.63	2.94
A-12	0.49	0.72	7.11	9.91	3.48
A-13	0.68	0.71	6.37	10.25	4.91
A-14	0.84	0.82	5.00	11.00	7.59

NOTES:

1. SYSTEM-A RUNOFF COMPUTATIONS ONLY SHOW FLOW VALUES FROM RESPECTIVE DRAINAGE AREA. FOR TOTAL FLOW CONTRIBUTING TO SYSTEM A INLETS SEE HYDRAULIC DATA SHEETS (1 OF 4),"Q INTERCEPTED" COLUMN ON TABLE
2. INLETS DESIGNED FOR Q25 TRUNK DESIGNED FOR Q25 STORM SEWER CALCULATION PERFORMED IN GEOPAK DRAINAGE V8i
3. STANDARD 10' INLET EXTENSIONS WILL BE USED
4. THE TAILWATER CONDITION USED FOR THE HGL CALCULATIONS FOR SYSTEM A WAS THE AVERAGE OF CRITICAL DEPTH AND THE RISE (HEIGHT) OF THE STORM CONDUIT.
5. PIPES WITH REPORTED DESIGN VELOCITIES NEAR OR BELOW 3 FPS HAVE BEEN CHECKED FOR THE MINIMUM CLEANING VELOCITY OF THREE (3) FPS FOR A FIVE YEAR EVENT

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED PROFESSIONAL ENGINEER
5-17-25

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

HYDRAULIC DATA SHEETS (2 OF 4)

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT	CHKD. BY: JA
		SHEET NO. 191 OF 377

Pen Table File
8:04:05 PM
5/17/2025

SYSTEM-B INLET COMPUTATIONS - 25YR

INLET					PROFILE TYPE	DISCHARGE Q	ADDED CARRY OVER	Q INTERCEPTED	CURB INLET DESIGN										CAPACITY	CARRY OVER INLET ID	CARRY OVER FLOW	REMARKS
ID	REFERENCE CHAIN	STATION	OFFSET (FT)	TYPE		(CFS)	(CFS)	(CFS)	LENGTH REQUIRED (FT)	ACTUAL LENGTH (FT)	DEPRESSION DEPTH (FT)	DEPRESSION WIDTH (FT)	LONG. SLOPE (%)	CROSS SLOPE (FT/FT)	MANNING'S n-VALUE	ALLOW. POND WIDTH (FT)	ACTUAL POND WIDTH (FT)	MAX PONDED DEPTH (FT)	COMPUTED PONDED DEPTH (FT)	(CFS)		(CFS)	
B-01	MD_WB	237+86.00	-11.75	TY 1 10' INLET W/ 1EXT	On Grade	4.89	N/A	4.89	22.76	20.00	0.21	2.00	2.45	0.02	0.018	22.00	11.57	0.44	0.23	4.78	B-04	0.11	
B-02	MD_WB	238+47.57	-50.50	TYPE B INLET	On Grade	0.65	10.65	11.17	N/A	N/A	N/A	N/A	1.50	0.01	0.018	22.00	41.13	0.44	0.21	1.69	B-04	9.48	LOCATED ON RICHLAND HILLS DR GATED ENTRANCE
B-04	MD_WB	239+49.00	-11.75	TY 2 10' INLET W/ 1EXT	On Grade	3.41	20.68	33.84	63.67	20.00	0.21	2.00	2.29	0.02	0.018	29.00	24.17	0.58	0.48	16.67	B-05	17.17	LOCATED ON RICHLAND HILLS DR GATED ENTRANCE
B-05	MD_WB	241+33.00	-11.75	TY 1 10' INLET W/ 1EXT	On Grade	4.83	17.17	22.00	48.31	20.00	0.21	2.00	1.89	0.02	0.018	29.00	21.33	0.58	0.43	13.59	B-06	8.41	
B-06	MD_WB	242+51.26	-11.75	TY 1 10' INLET W/ 1EXT	On Grade	4.01	8.41	12.42	27.06	20.00	0.21	2.00	0.61	0.02	0.018	22.00	21.27	0.44	0.43	11.31	B-09	1.11	
B-07	MD_WB	243+27.46	-15.36	SPECIAL JB 29.5' X 5.0' W/ INLET	Sag	N/A	N/A	128.20	129.27	29.25	N/A	N/A	N/A	0.02	0.015	12.00	76.85	2.76	1.54	308.47	N/A	N/A	INLET STRUCTURE FACING OFFSITE TO CAPTURE DISCHARGE FROM SAGE HOLLOW CUL DE SAC
B-08	MD_WB	245+07.13	-11.75	10' SIDEWALK BRIDGE	On Grade	2.27	N/A	2.27	10.81	10.00	0.21	2.00	0.61	0.02	0.018	22.00	11.26	0.44	0.23	2.27	N/A	N/A	SIDEWALK BRIDGE DRAINS TO B-09
B-09	MD_WB	245+21.89	-42.34	4-WAY AREA INLET	Sag	9.97	1.42	11.39	N/A	N/A	N/A	N/A	N/A	0.02	0.015	25.00	32.62	2.83	0.65	14.04	N/A	N/A	4-WAY INLET LOCATED OUTSIDE PAVEMENT
B-10A	MD_WB	245+89.86	-73.75	TY 2 10' INLET W/ 1EXT	Sag	N/A	2.27	42.06	55.70	20.00	0.21	2.00	N/A	0.02	0.015	24.00	46.02	0.70	0.61	36.05	B-10C	N/A	EXISTING INLET ON REED RD TO REMAIN
B-10B	MD_WB	246+38.73	-68.21	TY 2 10' INLET W/ 1EXT	Sag	N/A	N/A	42.06	39.44	20.00	0.21	2.00	N/A	0.01	0.015	24.00	43.75	0.70	0.61	36.05	N/A	N/A	EXISTING INLET ON REED RD TO REMAIN
B-11	MD_WB	247+02.98	52.98	5' EX INLET	On Grade	11.12	N/A	11.12	24.02	5.00	0.25	1.50	0.50	0.02	0.016	22.00	20.28	0.44	0.41	3.81	FLOWS EAST ON MILITARY DRIVE TO RAPLA CROSSING	7.30	EXISTING INLET LOCATED ALONG EB LANE TO REMAIN

NOTES:

1. THE EXISTING REED ROAD CURB INLETS ARE TO REMAIN.
2. STANDARD 10' EXTENSION WILL BE USED.
3. INLETS DESIGNED FOR Q25 TRUNK DESIGNED FOR Q25 STORM SEWER CALCULATION PERFORMED IN GEOPAK DRAINAGE V8i
4. FLOW FROM B-08 GOES THROUGH PEDESTRIAN BRIDGE TO B-09. CALCULATIONS REFLECT MANUAL INPUT OF FLOW FROM B-08 INTO B-09
5. A 50% CLOGGING FACTOR HAS BEEN APPLIED TO GRATE INLET CALCULATIONS.
6. MOST INLETS ARE LOCATED ON GRADE WITH TYPICAL ROADWAY SECTIONS OF TWO LANES. SEE REMARKS FOR VARIANCES.
7. THE DESIGN FREQUENCY FOR DRAINAGE AREA "B-10" OVERTOPS THE CREST OF REED ROAD AT INLETS B-10A AND B-10B. DESIGN FLOW SPLITS EVENLY AT INLETS B-10A AND B-10B.
8. O-02 DIVERTS 34% OF RUNOFF TO (B-02) AND 66% TO (B-04).

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED
PROFESSIONAL ENGINEER
5-17-25

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
HYDRAULIC DATA SHEETS (3 OF 4)

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT	CHKD. BY: JA
		SHEET NO. 192 OF 377

Pen Table File
8:04:10 PM
5/17/2025

SYSTEM-B CONVEYANCE COMPUTATIONS - 25YR

LINK ID	FROM	TO	INVERT UPSTREAM (FT)	INVERT DOWNSTREAM (FT)	DRAINAGE AREA (ACRES)	WEIGHTED RUNOFF "C"	DESIGN T_c (MIN)	INTENSITY (IN/HR)	DISCHARGE (CFS)	CAPACITY (CFS)	ACTUAL LENGTH (FT)	DIAMETER (FT)	BOX CULVERT WIDTH (FT)	BOX CULVERT HEIGHT (FT)	"N" VALUE	NUMBER OF BARRELS	PIPE SLOPE (%)	UNIFORM VELOCITY (FT/S)	FULL VELOCITY (FT/S)	HGL UPSTREAM 25YR (FT)	HGL DOWNSTREAM 25YR (FT)	EGL UPSTREAM 25YR (FT)	EGL DOWNSTREAM 25YR (FT)	NOTES
BL-01	B-01	BJ-01	809.48	809.46	0.57	0.72	7.9	9.59	3.90	17.2	4.75	2.00	N/A	N/A	0.013	1	0.50	4.18	1.24	810.43	810.13	810.68	810.41	
BL-02	B-02	BJ-02	808.81	808.42	0.04	0.97	5.0	11.00	1.69	24.3	39.58	2.00	N/A	N/A	0.013	1	1.00	4.22	0.54	809.43	808.79	809.59	809.06	RECEIVING RUNOFF FROM EXTERNAL DA (O-02)
BL-04	B-04	BJ-04	807.04	807.00	0.33	0.84	7.6	9.72	16.64	24.3	4.25	2.00	N/A	N/A	0.013	1	1.00	7.87	5.30	809.51	808.36	809.92	809.19	RECEIVING RUNOFF FROM EXTERNAL DA (O-02)
BL-05	B-05	BJ-05	804.03	804.00	0.53	0.74	7.1	9.91	13.21	24.3	2.75	2.00	N/A	N/A	0.013	1	1.00	7.46	4.20	806.69	806.39	806.96	806.51	
BL-06	B-06	BJ-06	803.78	803.75	0.50	0.68	8.7	9.29	10.28	27.2	2.75	2.00	N/A	N/A	0.013	1	1.25	7.64	3.27	806.50	806.31	806.66	806.47	
BL-07	B-09	BJ-07	801.83	801.66	1.52	0.60	10.2	8.77	8.74	13.3	56.35	2.00	N/A	N/A	0.013	1	0.30	4.30	2.78	806.83	806.61	806.95	807.24	CONVEYS RUNOFF FROM 4-WAY INLET. RECEIVES RUNOFF FROM B-08
BL-08	B-10A	BJ-07	802.15	802.03					42.06	24.2	25.58	1.00	N/A	N/A	0.013	1	0.48	9.29	9.29	808.44	806.61	809.79	807.24	
BL-09	B-10B	BJ-08	801.80	801.25					42.06	34.4	56.26	1.88	N/A	N/A	0.013	1	0.97	9.29	9.29	808.27	806.00	809.61	806.92	
BT-01	BJ-01	BJ-02	808.97	807.92	0.57	0.72	7.9	9.58	3.89	59.2	14.00	2.50	N/A	N/A	0.013	1	1.80	6.47	0.79	809.92	808.37	810.15	809.01	
BT-02	BJ-02	BJ-04	807.35	806.04	0.57	0.72	8.1	9.52	5.56	119.1	95.00	N/A	3.00	3.00	0.013	1	1.37	5.60	0.62	807.89	806.37	808.13	806.86	
BT-04	BJ-04	BJ-05	806.04	803.82	0.57	0.72	8.4	9.41	22.16	113.6	177.50	N/A	3.00	3.00	0.013	1	1.25	8.55	2.46	808.06	804.68	808.66	805.82	
BT-05	BJ-05	BJ-06	803.82	803.29	1.09	0.73	8.7	9.27	35.06	144.6	110.65	N/A	5.00	3.00	0.013	1	0.48	6.57	2.34	806.39	806.31	806.51	806.47	
BT-06	BJ-06	BJ-07A	803.29	802.96	1.60	0.71	9.0	9.16	45.21	148.0	64.47	N/A	5.00	3.00	0.013	1	0.51	7.22	3.01	806.31	806.19	806.47	806.98	
BT-07	BJ-07A	Bend-1	802.90	802.20	1.60	0.71	9.2	9.10	173.44	227.0	236.18	N/A	5.00	3.00	0.013	1	0.30	7.19	5.78	806.19	804.64	806.98	805.46	
BT-07A	B-07	BJ-07A	802.98	802.95					128.20	234.3	5.75	N/A	4.00	3.00	0.013	2	0.50	8.53	5.34	806.67	806.19	807.11	806.98	TIES TO SPECIAL JB
BT-08	Bend-1	Bend-2	802.20	801.55	1.60	0.71	9.8	8.90	173.22	381.1	77.43	N/A	5.00	3.00	0.013	2	0.84	10.44	5.77	804.64	804.70	805.46	805.22	
BT-09	Bend-2	B-11	801.57	800.94	1.60	0.71	9.9	8.86	173.17	395.8	68.68	N/A	5.00	3.00	0.013	2	0.90	10.74	5.77	804.70	804.40	805.22	804.93	
BT-10	B-11	B-12	800.94	800.81	2.48	0.78	10.0	8.82	174.77	396.5	14.77	N/A	5.00	3.00	0.013	2	0.91	10.76	5.83	804.40	804.30	804.93	804.83	
BT-11	BJ-07	Bend-3	801.55	801.43	1.52	0.60	10.4	8.70	50.73	61.3	50.42	N/A	4.00	2.00	0.013	1	0.46	7.32	6.34	806.61	806.22	807.24	806.85	
BT-12	Bend-3	BJ-08	801.43	801.40	1.52	0.60	10.5	8.66	50.70	68.6	5.82	N/A	4.00	2.00	0.013	1	0.58	8.03	6.34	806.22	806.00	806.85	806.92	
BT-13	BJ-08	Bend-4	801.38	801.28	1.52	0.60	10.5	8.66	92.75	145.8	11.56	N/A	4.00	3.00	0.013	1	0.91	11.10	7.73	806.00	805.11	806.92	806.04	
BT-14	Bend-4	B-12	801.28	800.81	1.52	0.60	10.6	8.65	92.75	102.6	103.82	N/A	4.00	3.00	0.013	1	0.45	8.47	7.73	805.11	804.30	806.04	805.23	

SYSTEM-B RUNOFF COMPUTATIONS - 25YR

DRAINAGE AREA		PROP C	T. CALC	INTENSITY I25	DISCHARGE Q25
ID	(ACRES)		(MIN)	(IN / HR)	(CFS)
B-01	0.57	0.72	7.87	9.59	3.90
B-02	0.05	0.91	5.00	11.00	0.52
B-04	0.33	0.84	7.56	9.72	2.72
B-05	0.53	0.74	7.11	9.91	3.85
B-06	0.50	0.68	8.68	9.29	3.20
B-09	1.52	0.60	10.16	8.77	7.96
B-11	0.89	0.91	5.00	11.00	8.87

NOTES:

1. SYSTEM-B RUNOFF COMPUTATIONS ONLY SHOW FLOW VALUES FROM RESPECTIVE DRAINAGE AREA. FOR TOTAL FLOW CONTRIBUTING TO SYSTEM B INLETS SEE HYDRAULIC DATA SHEET (3 OF 4), "Q-INTERCEPTED" COLUMN ON TABLE
2. INLETS DESIGNED FOR Q25 TRUNK DESIGNED FOR Q25 STORM SEWER CALCULATION PERFORMED IN GEOPAK DRAINAGE V8I
3. THE TAILWATER CONDITION USED FOR THE HGL CALCULATIONS FOR SYSTEM B WAS THE STATIC KNOWN WATER SURFACE ELEVATION OF DITCH B
4. BL-08 AND BL-09 ARE EXISTING PIPES (22.5"X36.25") THE EXISTING CONDUITS WILL REMAIN AND BE CUT BACK AS NEEDED TO CONNECT TO NEW TRUNK LINE IN MILITARY DRIVE.

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED PROFESSIONAL ENGINEER
5-17-25

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

HYDRAULIC DATA SHEETS (4 OF 4)

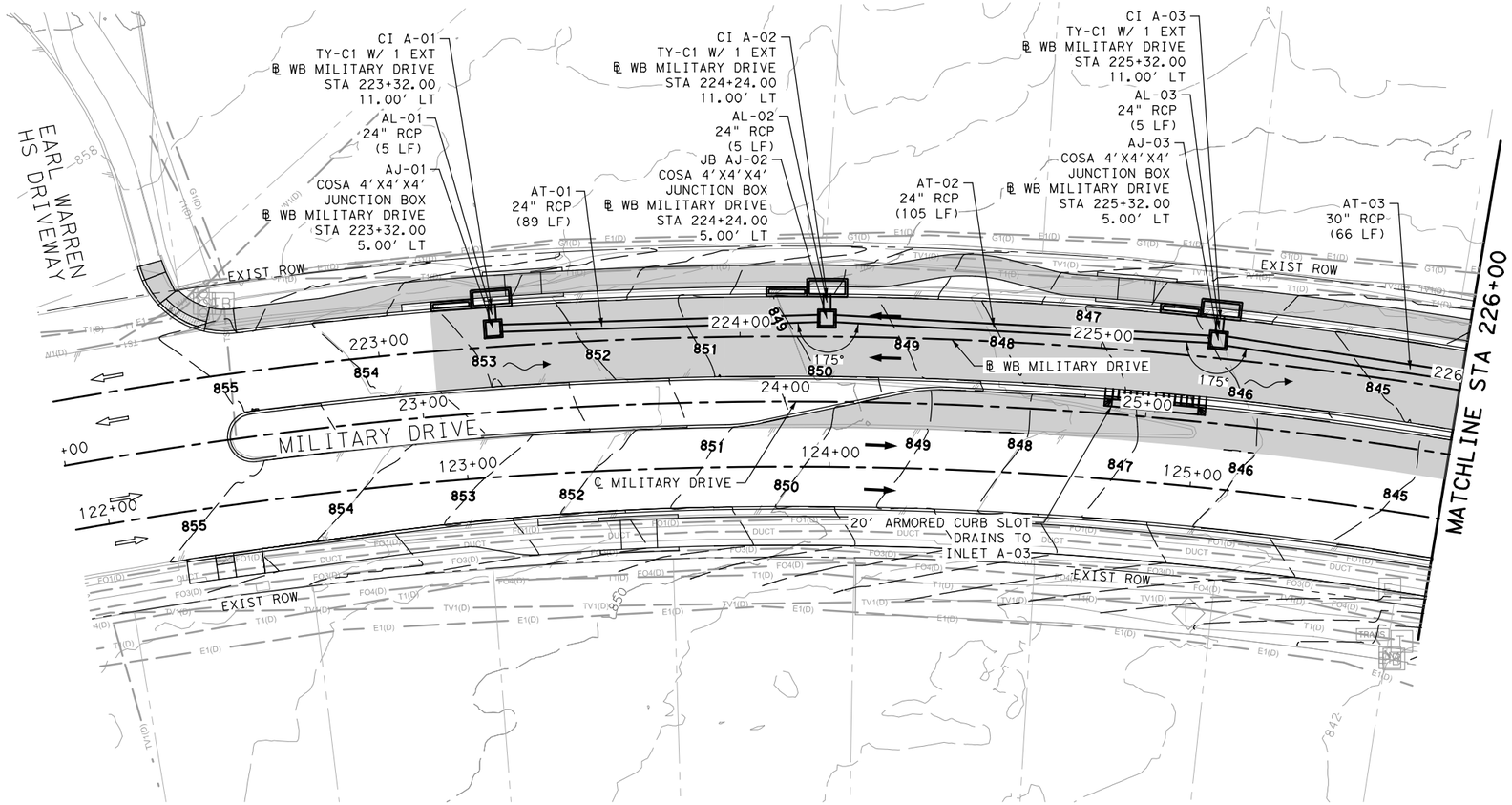
100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT	CHKD. BY: JA

SHEET NO. 193 OF 377

Pen Table File
8:04:14 PM
5/17/2025

5/17/2025 8:04:14 PM

Pen Table File



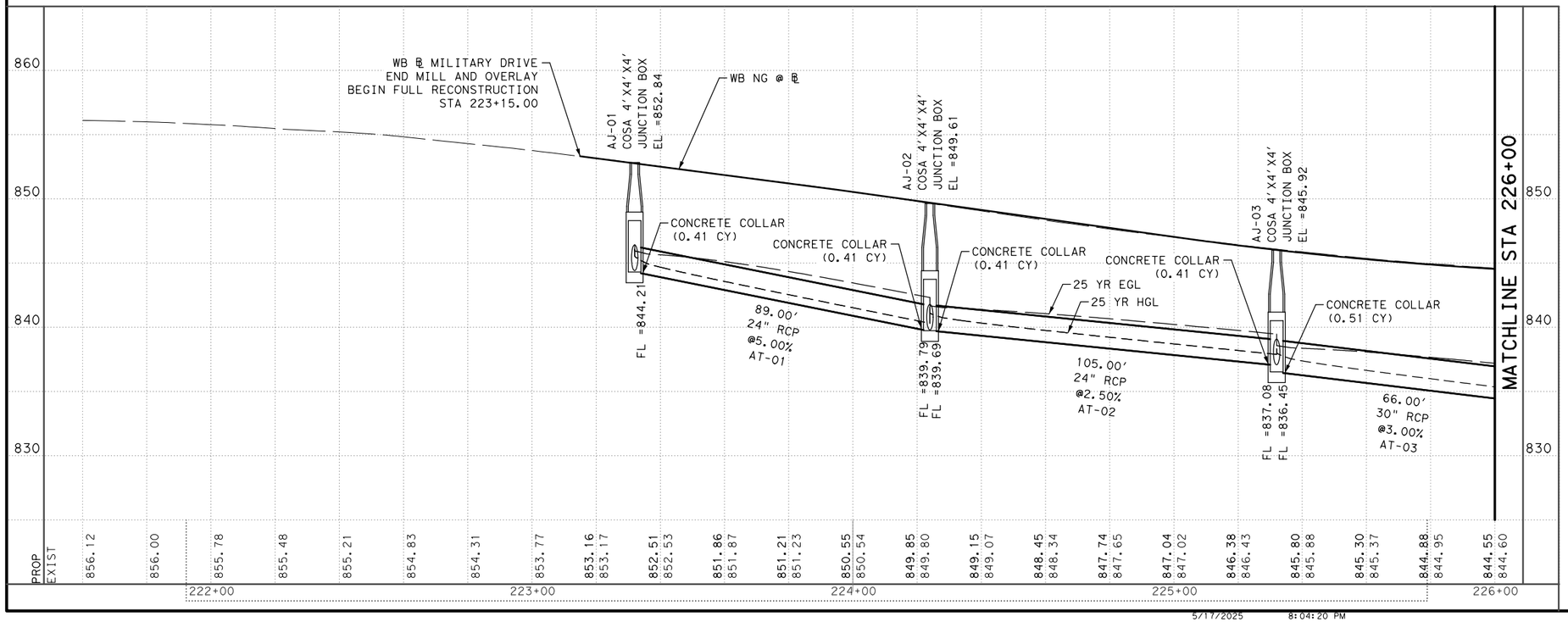
LEGEND:

- EXIST ROW
- EXIST EASEMENT
- 25YR ULT HGL
- 25YR ULT EGL
- PROPOSED LANE
- EXISTING LANE
- FULL RECONSTRUCTION
- FLOW DIRECTION
- EXISTING 2' CONTOURS
- PROPOSED CONTOURS

NOTES:

1. STATION AND OFFSET CALLOUTS FOR CURB INLETS ARE LOCATED AT FACE OF THE CURB.
2. STORM SEWER LENGTHS AND SLOPES SHOWN ARE FROM CENTER OF DRAINAGE STRUCTURE.
3. LOCKING MANHOLE LIDS MUST BE USED FOR ALL PROPOSED MANHOLES.
4. INLET EXTENSIONS ARE 10' LONG. TY C1 W/1 EXT INLET : 20LF

MILITARY DRIVE DRAINAGE SUMMARY			
ITEM	DESCRIPTION	UNIT	SHEET QTY
401.1	REINFORCED CONCRETE PIPE (CLASS III) (24" DIA)	LF	209
401.1	REINFORCED CONCRETE PIPE (CLASS III) (30" DIA)	LF	66
403.1	JUNCTION BOX (COMPLETE) 4'X4'X4'	EA	3
403.7	INLET (COMPLETE) (TYPE I) 10'	EA	3
403.14	INLET EXTENSIONS (10')	EA	3
407.4	CONCRETE ENCASEMENT, CRADLES, SADDLES, AND COLLARS	CY	3
550.1	TRENCH EXCAVATION SAFETY PROTECTION	LF	275
465-7335	INLET (COMPL) (ARMOR CURB SLOT)	EA	2



0 20' 40'

SCALE: H: 1" = 40'
V: 1" = 10'

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED PROFESSIONAL ENGINEER
5-17-25

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

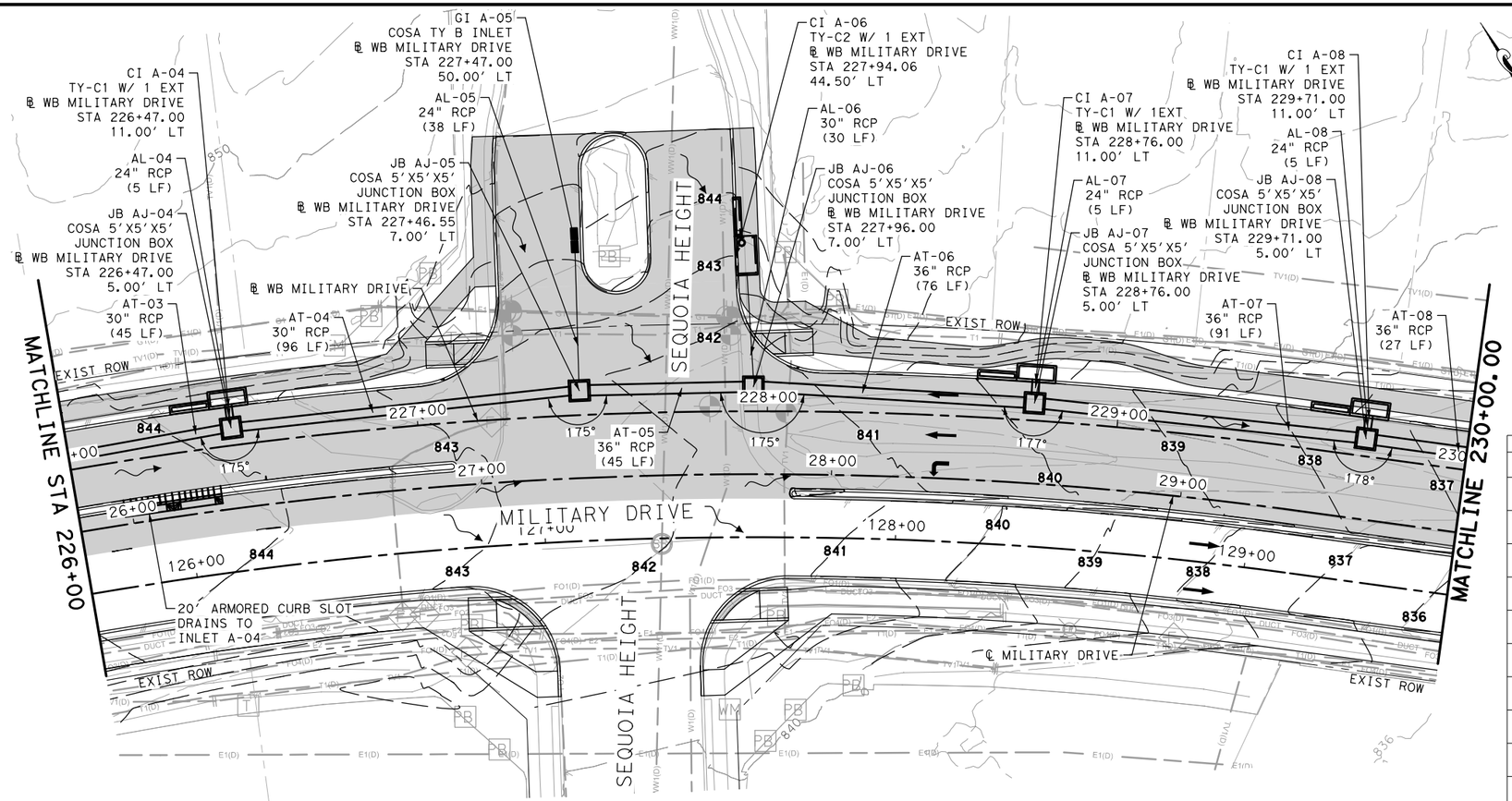
MILITARY DRIVE

STORM DRAIN PLAN AND PROFILE (1 OF 7)

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT CHKD. BY: JA	SHEET NO. 194 OF 377

Pen Table File
8:04:20 PM
5/17/2025

5/17/2025 8:04:20 PM
Pen Table File



LEGEND:

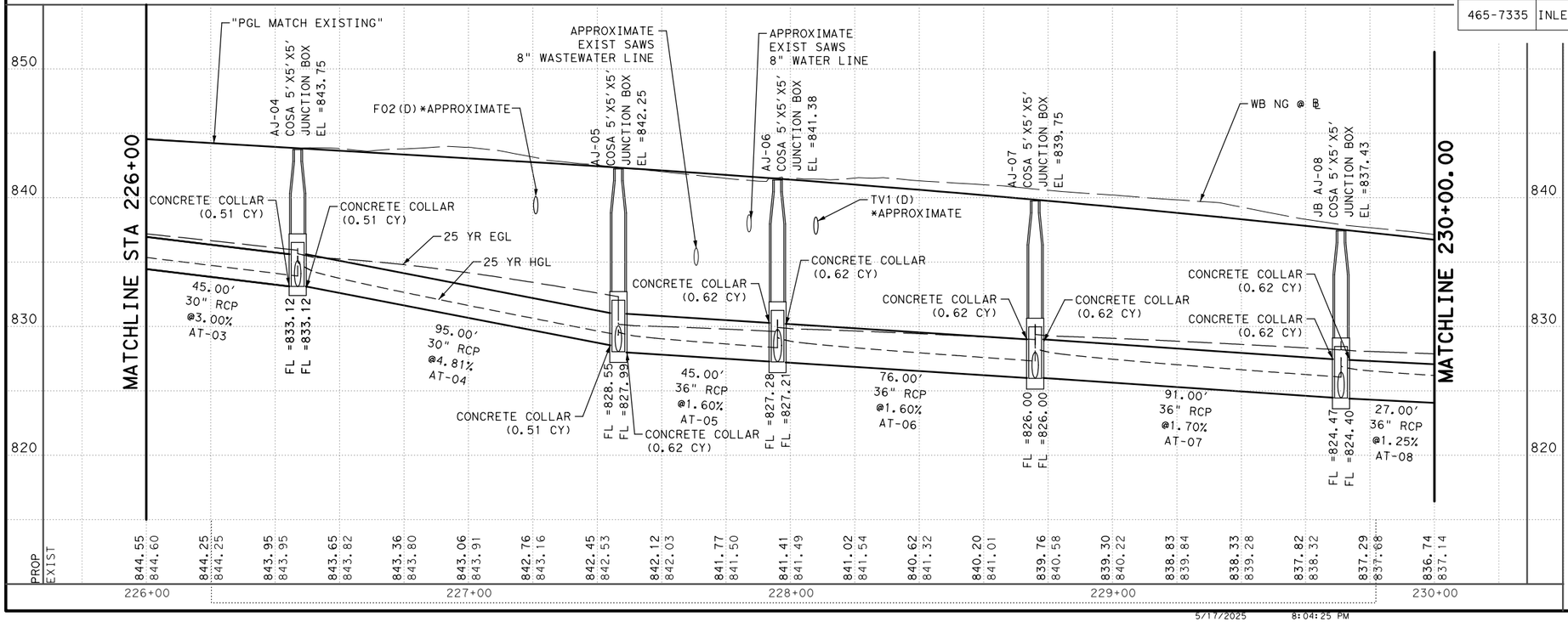
- EXIST ROW
- EXIST EASEMENT
- 25YR ULT HGL
- 25YR ULT EGL
- PROPOSED LANE
- EXISTING LANE
- FULL RECONSTRUCTION
- FLOW DIRECTION
- EXISTING 2' CONTOURS
- PROPOSED CONTOURS

NOTES:

1. STATION AND OFFSET CALLOUTS FOR CURB INLETS ARE LOCATED AT FACE OF THE CURB.
2. STORM SEWER LENGTHS AND SLOPES SHOWN ARE FROM CENTER OF DRAINAGE STRUCTURE.
3. LOCKING MANHOLE LIDS MUST BE USED FOR ALL PROPOSED MANHOLES.
4. INLET EXTENSIONS ARE 10' LONG. TY C1 W/1 EXT INLET : 20LF

MILITARY DRIVE DRAINAGE SUMMARY

ITEM	DESCRIPTION	UNIT	SHEET QTY
401.1	REINFORCED CONCRETE PIPE (CLASS III) (24" DIA)	LF	53
401.1	REINFORCED CONCRETE PIPE (CLASS III) (30" DIA)	LF	170
401.1	REINFORCED CONCRETE PIPE (CLASS III)(36" DIA)	LF	239
403.2	JUNCTION BOX (COMPLETE) 5'X5'X5'	EA	5
403.7	INLET (COMPLETE) (TYPE I) 10'	EA	3
403.8	INLET (COMPLETE) (TYPE II) 10'	EA	1
403.12	SPECIAL INLET (TYPE B)	EA	1
403.14	INLET EXTENSIONS (10')	EA	4
407.4	CONCRETE ENCASEMENT, CRADLES, SADDLES, AND COLLARS	CY	6
550.1	TRENCH EXCAVATION SAFETY PROTECTION	LF	462
465-7335	INLET (COMPL) (ARMOR CURB SLOT)	EA	2



SCALE: H: 1" = 40'
V: 1" = 10'

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED PROFESSIONAL ENGINEER
5-17-25

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

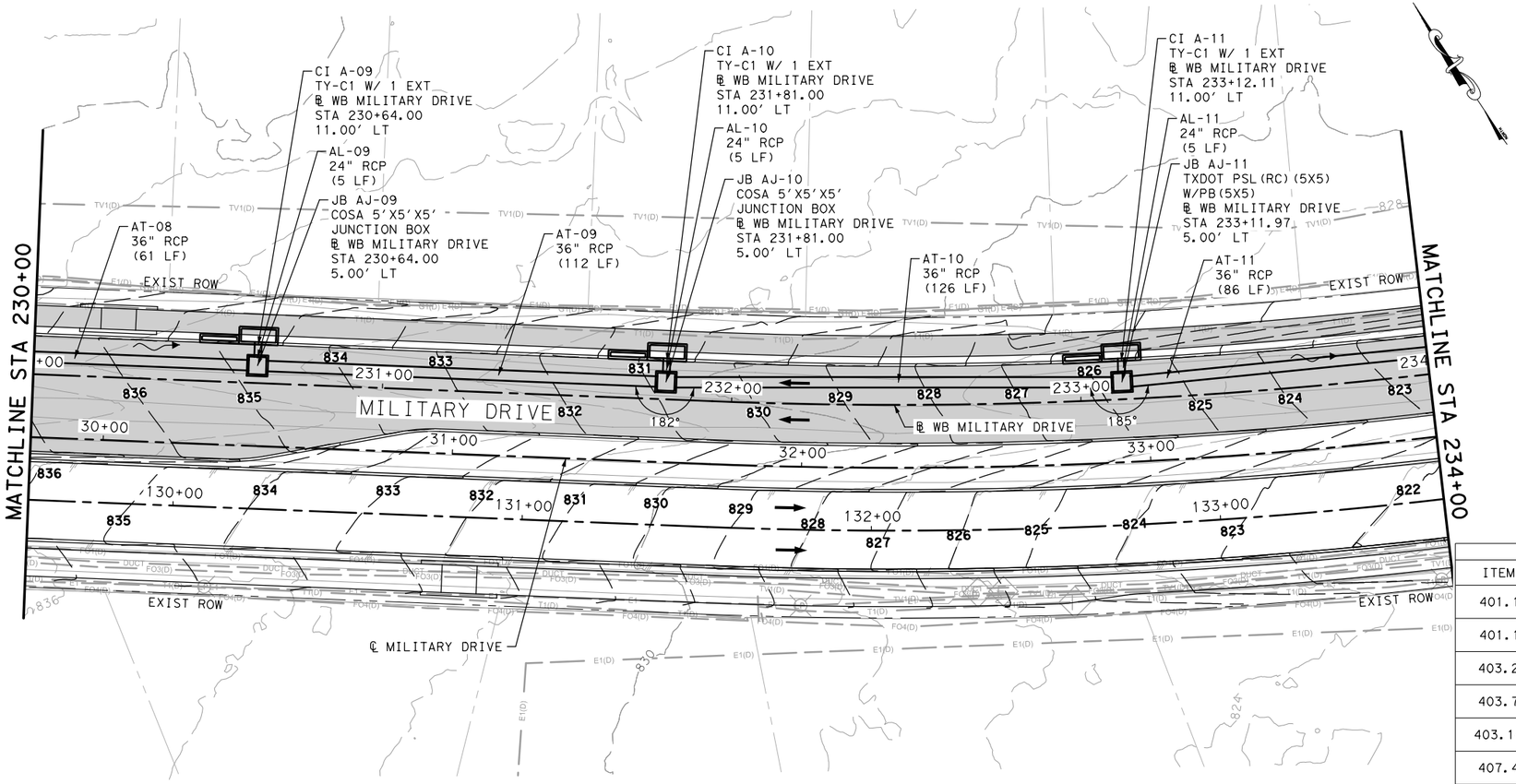
MILITARY DRIVE

STORM DRAIN PLAN AND PROFILE (2 OF 7)

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT CHKD. BY: JA	SHEET NO. 195 OF 377

Pen Table File
8:04:25 PM
5/17/2025

5/17/2025 8:04:25 PM
Pen Table File



LEGEND:

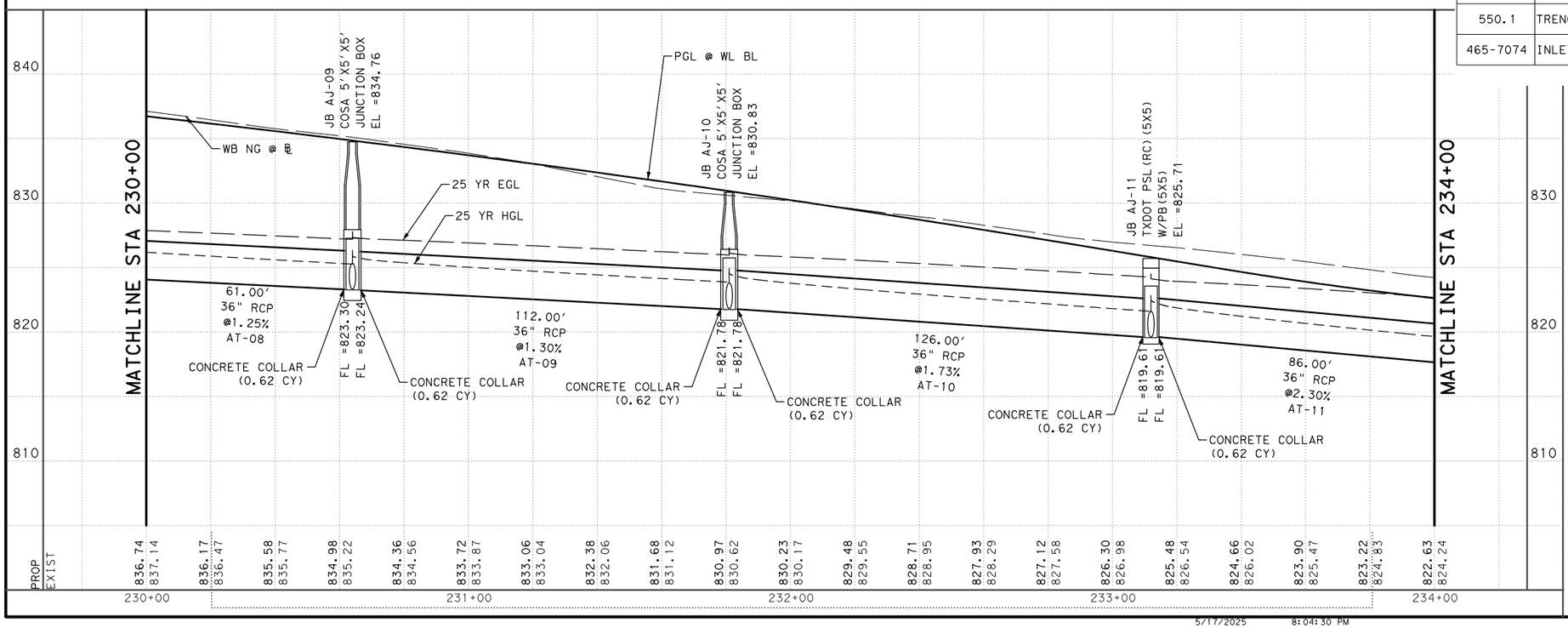
EXIST ROW
EXIST EASEMENT
25YR ULT HGL
25YR ULT EGL
PROPOSED LANE
EXISTING LANE
FULL RECONSTRUCTION
FLOW DIRECTION
EXISTING 2' CONTOURS
PROPOSED CONTOURS

NOTES:

1. STATION AND OFFSET CALLOUTS FOR CURB INLETS ARE LOCATED AT FACE OF THE CURB.
2. STORM SEWER LENGTHS AND SLOPES SHOWN ARE FROM CENTER OF DRAINAGE STRUCTURE.
3. LOCKING MANHOLE LIDS MUST BE USED FOR ALL PROPOSED MANHOLES.
4. INLET EXTENSIONS ARE 10' LONG. TY C1 W/1 EXT INLET : 20LF

MILITARY DRIVE DRAINAGE SUMMARY

ITEM	DESCRIPTION	UNIT	SHEET QTY
401.1	REINFORCED CONCRETE PIPE (CLASS III) (24" DIA)	LF	15
401.1	REINFORCED CONCRETE PIPE (CLASS III)(36" DIA)	LF	385
403.2	JUNCTION BOX (COMPLETE) 5'X5'X5'	EA	2
403.7	INLET (COMPLETE) (TYPE I) 10'	EA	3
403.14	INLET EXTENSIONS (10')	EA	3
407.4	CONCRETE ENCASEMENT, CRADLES, SADDLES, AND COLLARS	CY	4
550.1	TRENCH EXCAVATION SAFETY PROTECTION	LF	400
465-7074	INLET (COMPL)(PSL)(RC)(5FTX5FT)	EA	1



SCALE: H: 1" = 40'
V: 1" = 10'

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED PROFESSIONAL ENGINEER
5-17-25

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

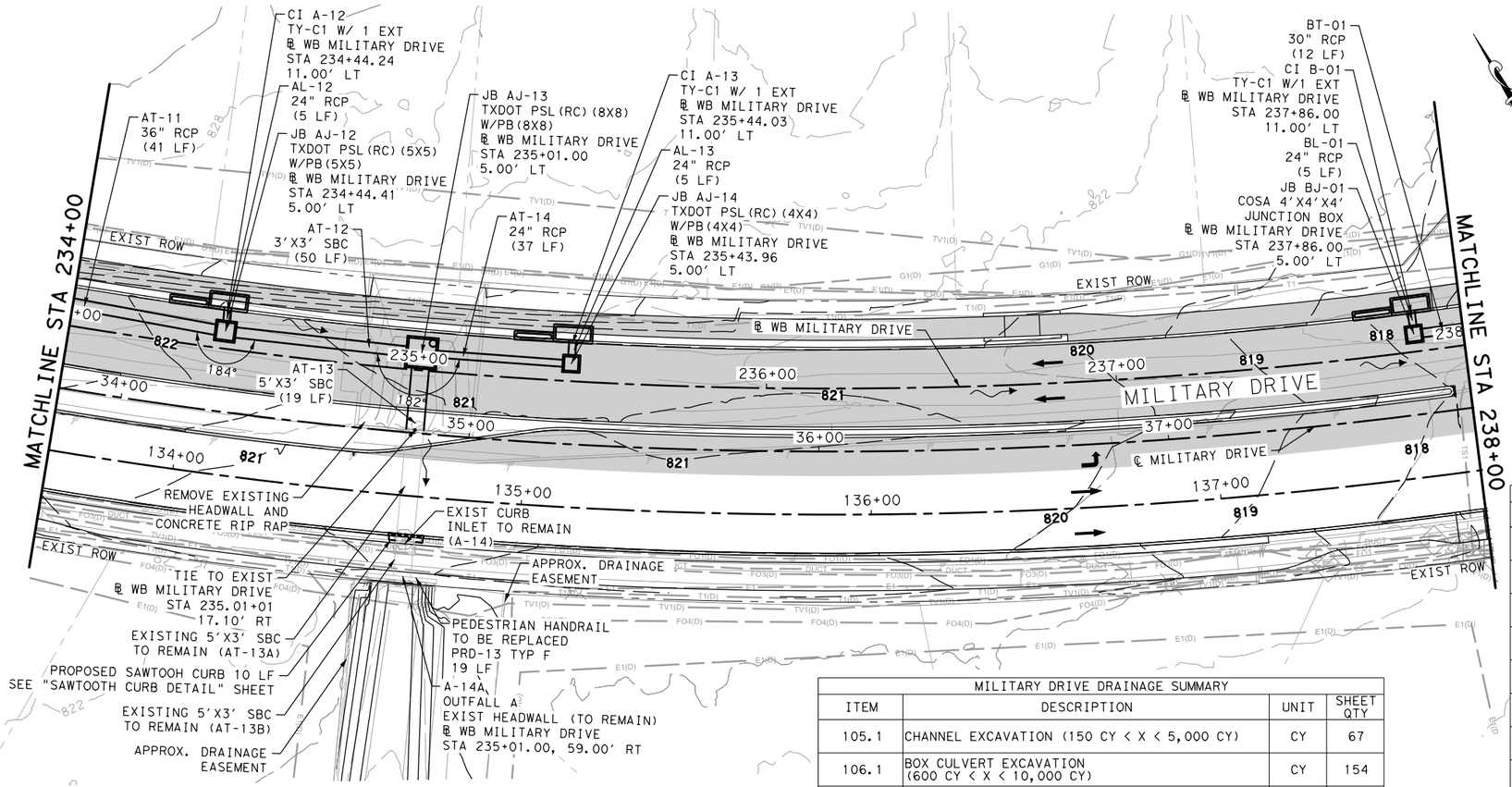
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
STORM DRAIN
PLAN AND PROFILE (3 OF 7)

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT	CHKD. BY: JA	SHEET NO. 196 OF 377

Pen Table File
8:04:30 PM
5/17/2025

5/17/2025 8:04:30 PM
Pen Table File



LEGEND:

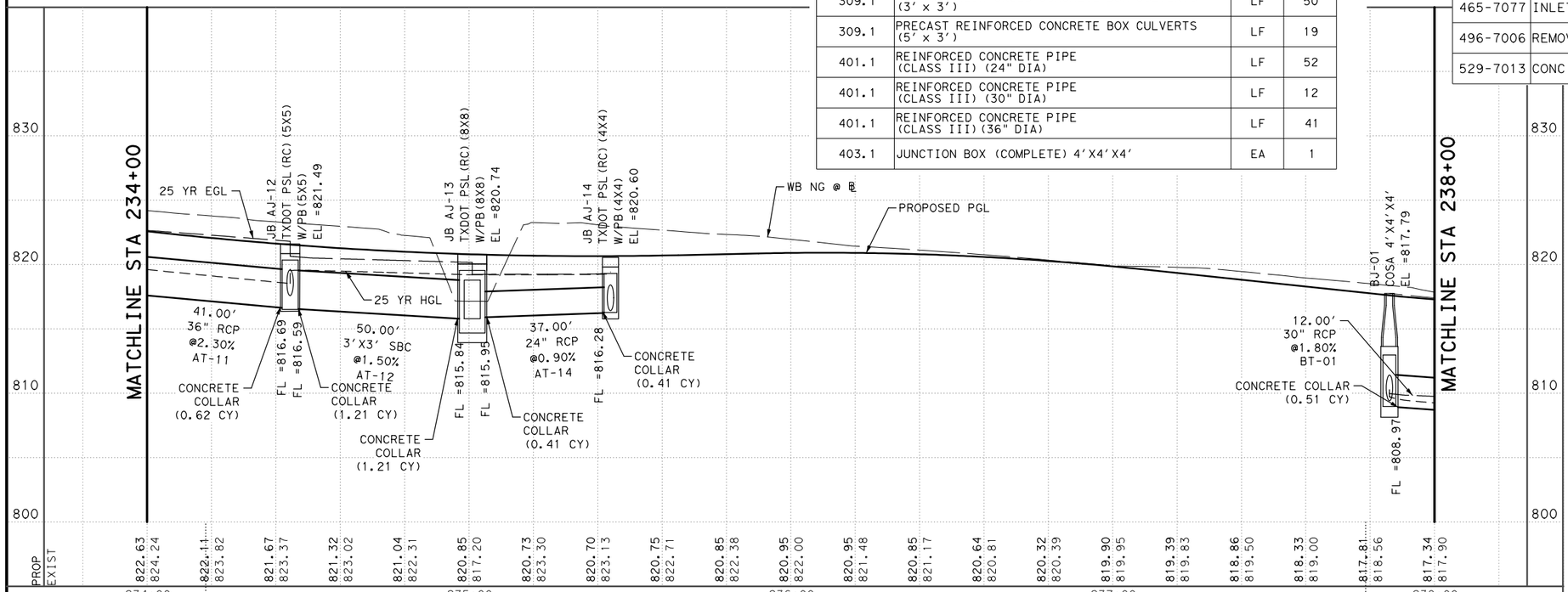
- EXIST ROW
- EXIST EASEMENT
- 25YR ULT HGL
- 25YR ULT EGL
- PROPOSED LANE
- EXISTING LANE
- FULL RECONSTRUCTION
- FLOW DIRECTION
- EXISTING 2' CONTOURS
- PROPOSED CONTOURS

NOTES:

1. STATION AND OFFSET CALLOUTS FOR CURB INLETS ARE LOCATED AT FACE OF THE CURB.
2. STORM SEWER LENGTHS AND SLOPES SHOWN ARE FROM CENTER OF DRAINAGE STRUCTURE.
3. LOCKING MANHOLE LIDS MUST BE USED FOR ALL PROPOSED MANHOLES.
4. INLET EXTENSIONS ARE 10' LONG. TY C1 W/1 EXT INLET : 20LF

MILITARY DRIVE DRAINAGE SUMMARY			
ITEM	DESCRIPTION	UNIT	SHEET QTY
105.1	CHANNEL EXCAVATION (150 CY < X < 5,000 CY)	CY	67
106.1	BOX CULVERT EXCAVATION (600 CY < X < 10,000 CY)	CY	154
309.1	PRECAST REINFORCED CONCRETE BOX CULVERTS (3' x 3')	LF	50
309.1	PRECAST REINFORCED CONCRETE BOX CULVERTS (5' x 3')	LF	19
401.1	REINFORCED CONCRETE PIPE (CLASS III) (24" DIA)	LF	52
401.1	REINFORCED CONCRETE PIPE (CLASS III) (30" DIA)	LF	12
401.1	REINFORCED CONCRETE PIPE (CLASS III)(36" DIA)	LF	41
403.1	JUNCTION BOX (COMPLETE) 4'X4'X4'	EA	1

MILITARY DRIVE DRAINAGE SUMMARY			
ITEM	DESCRIPTION	UNIT	SHEET QTY
403.7	INLET (COMPLETE) (TYPE I) 10'	EA	3
403.14	INLET EXTENSIONS (10')	EA	3
407.4	CONCRETE ENCASEMENT, CRADLES, ADDLES, AND COLLARS	CY	5
410.2	GRAVEL SUBGRADE FILLER (X < 100 CY)	CY	5
550.1	TRENCH EXCAVATION SAFETY PROTECTION	LF	174
450-7063	RAIL (HANDRAIL) (TY F)	LF	19
465-7071	INLET (COMPL)(PSL)(RC)(4FTX4FT)	EA	1
465-7074	INLET (COMPL)(PSL)(RC)(5FTX5FT)	EA	1
465-7077	INLET (COMPL)(PSL)(RC)(8FTX8FT)	EA	1
496-7006	REMOV STR (HEADWALL)	EA	1
529-7013	CONC CURB (SLOTTED)	LF	10



0 20' 40'

SCALE: H: 1" = 40'
V: 1" = 10'

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED
PROFESSIONAL ENGINEER
5-17-25

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

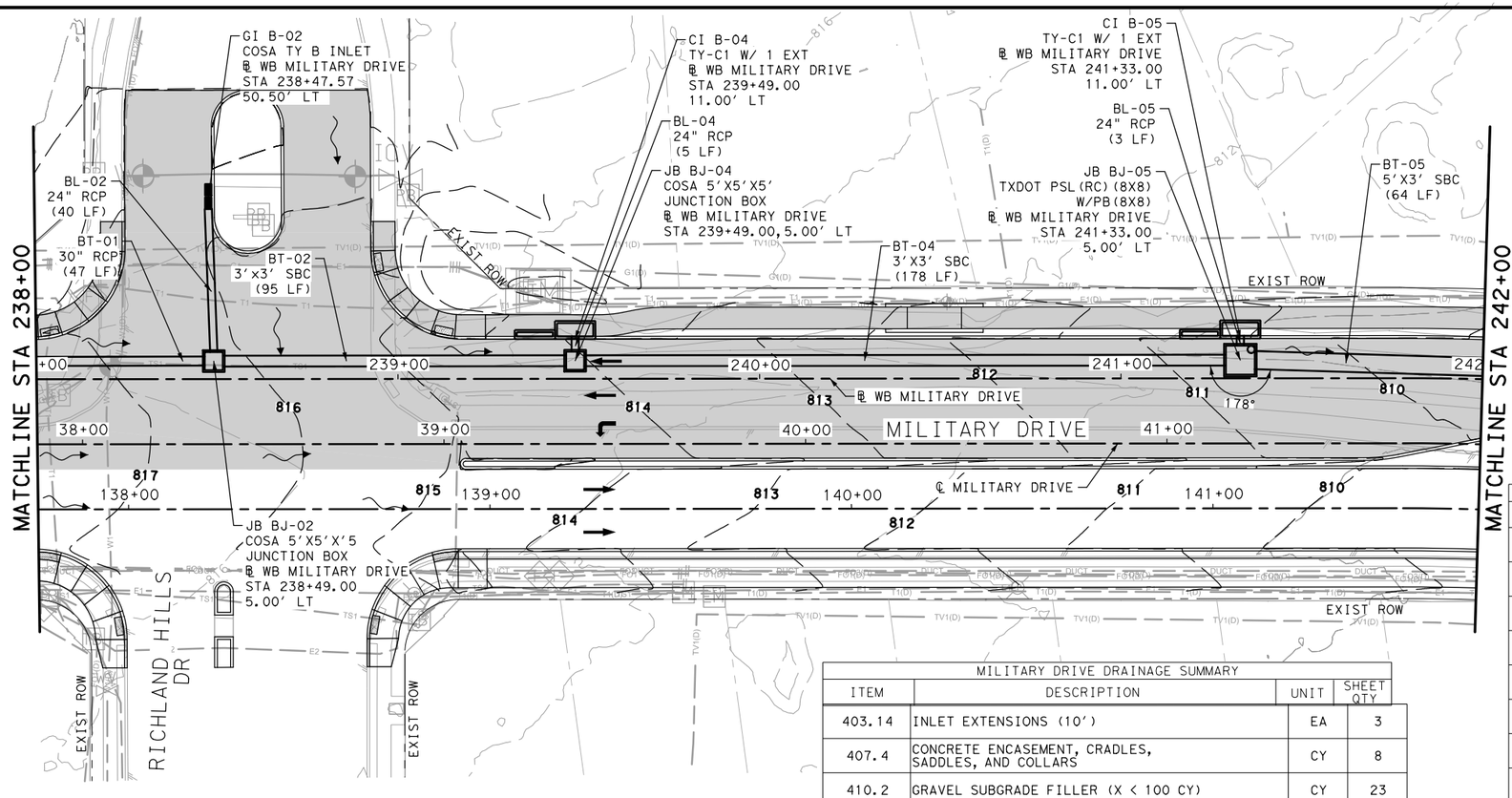
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

STORM DRAIN PLAN AND PROFILE (4 OF 7)

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT	CHKD. BY: JA
		SHEET NO. 197 OF 377

Pen Table File
8:04:35 PM
5/17/2025



LEGEND:

- EXIST ROW
- EXIST EASEMENT
- 25YR ULT HGL
- 25YR ULT EGL
- PROPOSED LANE
- EXISTING LANE
- FULL RECONSTRUCTION
- FLOW DIRECTION
- EXISTING 2' CONTOURS
- PROPOSED CONTOURS

NOTES:

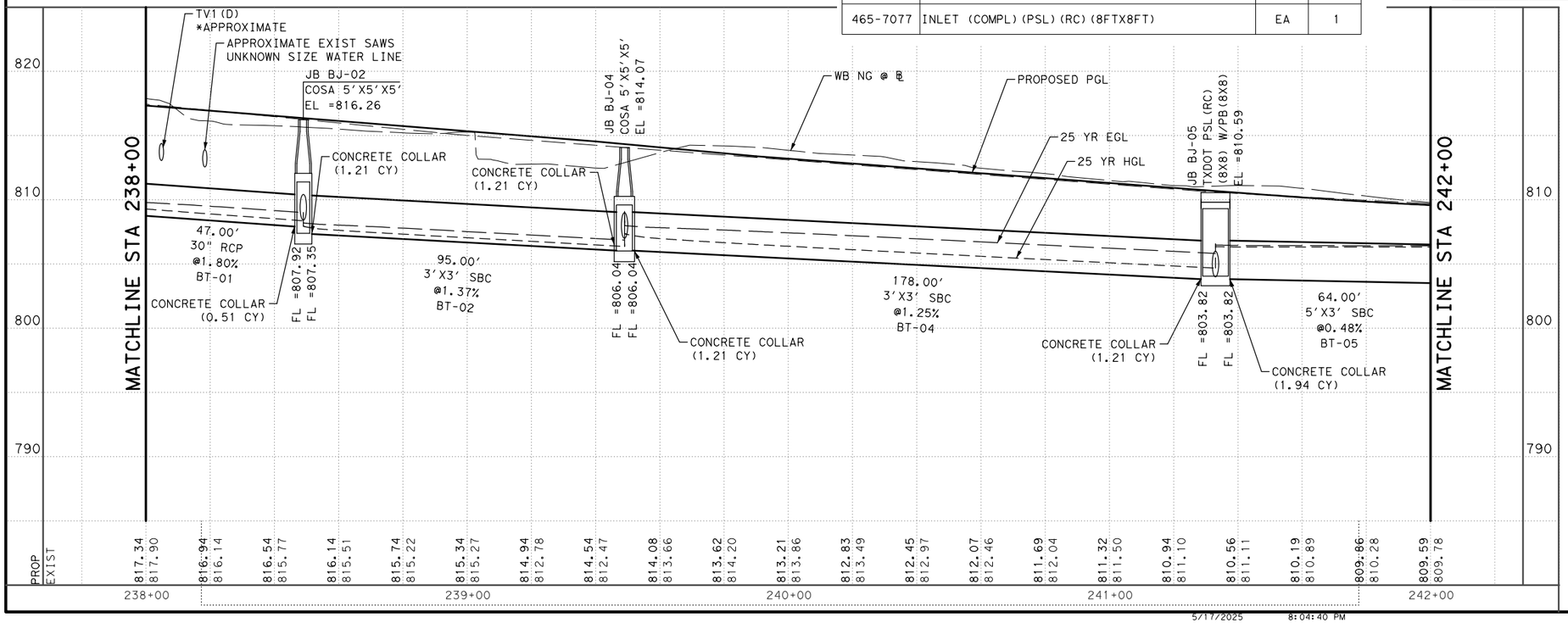
1. STATION AND OFFSET CALLOUTS FOR CURB INLETS ARE LOCATED AT FACE OF THE CURB.
2. STORM SEWER LENGTHS AND SLOPES SHOWN ARE FROM CENTER OF DRAINAGE STRUCTURE.
3. LOCKING MANHOLE LIDS MUST BE USED FOR ALL PROPOSED MANHOLES.
4. INLET EXTENSIONS ARE 10' LONG. TY C1 W/1 EXT INLET : 20LF

MILITARY DRIVE DRAINAGE SUMMARY

ITEM	DESCRIPTION	UNIT	SHEET QTY
403.14	INLET EXTENSIONS (10')	EA	3
407.4	CONCRETE ENCASEMENT, CRADLES, SADDLES, AND COLLARS	CY	8
410.2	GRAVEL SUBGRADE FILLER (X < 100 CY)	CY	23
550.1	TRENCH EXCAVATION SAFETY PROTECTION	LF	470
465-7077	INLET (COMPL)(PSL)(RC)(8FTX8FT)	EA	1

MILITARY DRIVE DRAINAGE SUMMARY

ITEM	DESCRIPTION	UNIT	SHEET QTY
106.1	BOX CULVERT EXCAVATION (600 CY < X < 10,000 CY)	CY	724
309.1	PRECAST REINFORCED CONCRETE BOX CULVERTS (3' x 3')	LF	273
309.1	PRECAST REINFORCED CONCRETE BOX CULVERTS (5' x 3')	LF	64
401.1	REINFORCED CONCRETE PIPE (CLASS III) (24" DIA)	LF	48
401.1	REINFORCED CONCRETE PIPE (CLASS III) (30" DIA)	LF	85
403.12	SPECIAL INLET (TYPE B)	EA	1
403.2	JUNCTION BOX (COMPLETE) 5'X5'X5'	EA	2
403.7	INLET (COMPLETE) (TYPE I) 10'	EA	2
403.8	INLET (COMPLETE) (TYPE II) 10'	EA	1



SCALE: H: 1" = 40'
V: 1" = 10'

JEFF C. HAEBER
103543
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
5-17-25

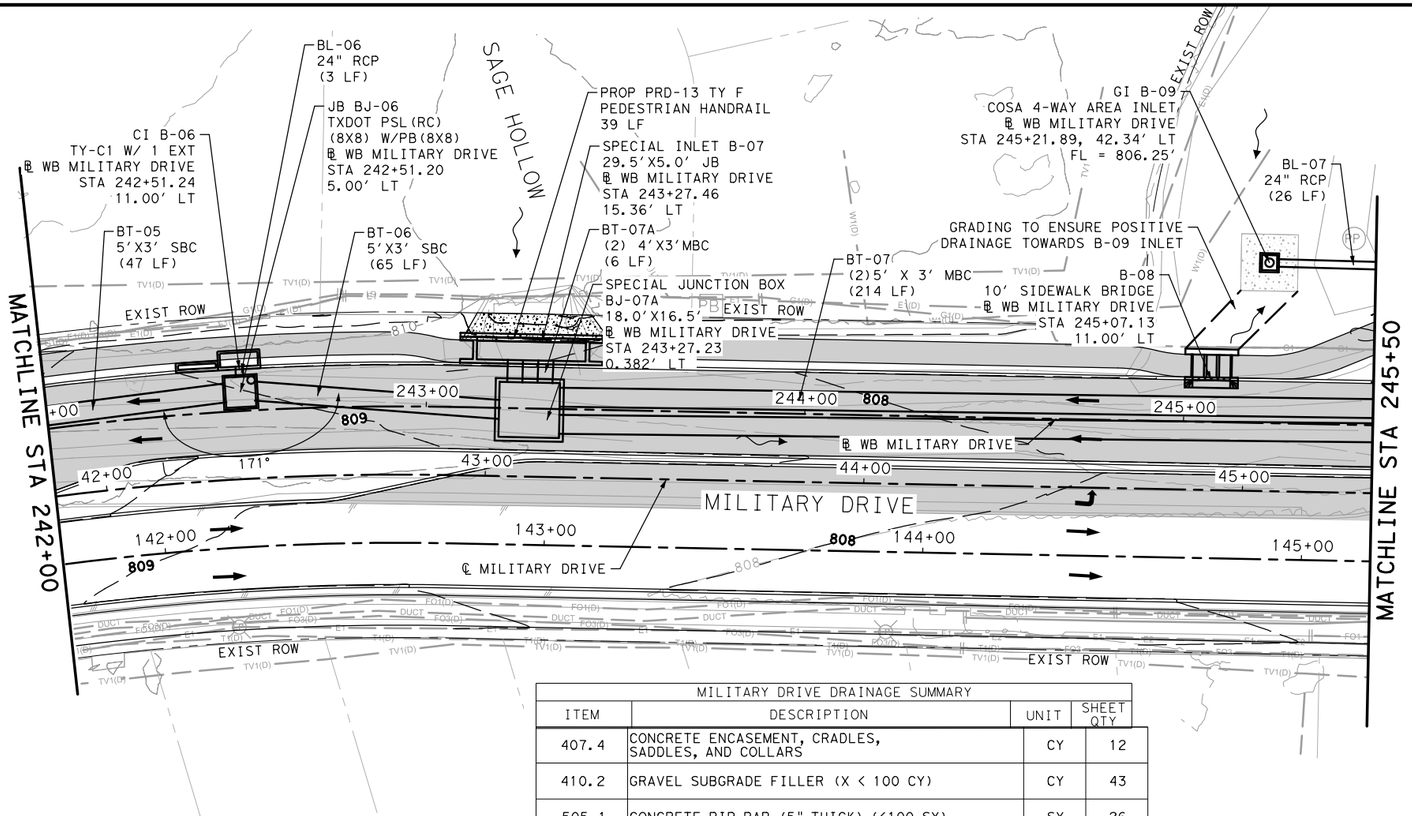
QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

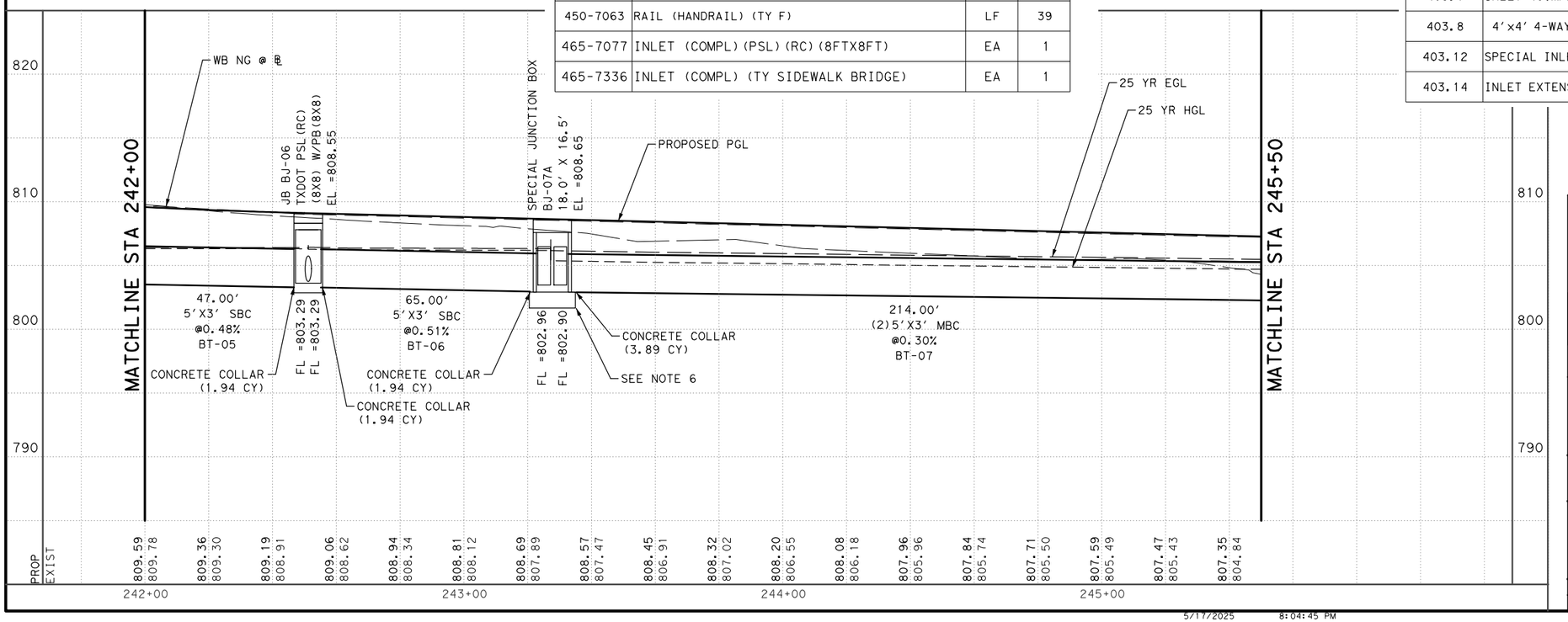
MILITARY DRIVE
STORM DRAIN
PLAN AND PROFILE (5 OF 7)

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT	CHKD. BY: JA	SHEET NO. 198 OF 377

Pen Table File
8:04:40 PM
5/17/2025



MILITARY DRIVE DRAINAGE SUMMARY			
ITEM	DESCRIPTION	UNIT	SHEET QTY
407.4	CONCRETE ENCASEMENT, CRADLES, SADDLES, AND COLLARS	CY	12
410.2	GRAVEL SUBGRADE FILLER (X < 100 CY)	CY	43
505.1	CONCRETE RIP RAP (5" THICK) (<100 SY)	SY	26
550.1	TRENCH EXCAVATION SAFETY PROTECTION	LF	581
450-7063	RAIL (HANDRAIL) (TY F)	LF	39
465-7077	INLET (COMPL)(PSL)(RC)(8FTX8FT)	EA	1
465-7336	INLET (COMPL) (TY SIDEWALK BRIDGE)	EA	1



LEGEND:

- EXIST ROW
- EXIST EASEMENT
- 25YR ULT HGL
- 25YR ULT EGL
- PROPOSED LANE
- EXISTING LANE
- FULL RECONSTRUCTION
- FLOW DIRECTION
- EXISTING 2' CONTOURS
- PROPOSED CONTOURS

NOTES:

1. STATION AND OFFSET CALLOUTS FOR CURB INLETS ARE LOCATED AT FACE OF THE CURB.
2. STORM SEWER LENGTHS AND SLOPES SHOWN ARE FROM CENTER OF DRAINAGE STRUCTURE.
3. LOCKING MANHOLE LIDS MUST BE USED FOR ALL PROPOSED MANHOLES.
4. INLET EXTENSIONS ARE 10' LONG. TY C1 W/1 EXT INLET : 20LF
5. REGRADE GROUND BEHIND SIDEWALK BRIDGE TO ALLOW POSITIVE DRAINAGE WITHIN ROW TO 4-WAY INLET
6. FOR STRUCTURAL INFORMATION REFER TO SPECIAL JUNCTION BOX BJ-07A DETAIL

MILITARY DRIVE DRAINAGE SUMMARY			
ITEM	DESCRIPTION	UNIT	SHEET QTY
106.1	BOX CULVERT EXCAVATION (600 CY < X < 10,000 CY)	CY	1145
309.1	PRECAST REINFORCED CONCRETE BOX CULVERTS (4' x 3')	LF	12
309.1	PRECAST REINFORCED CONCRETE BOX CULVERTS (5' x 3')	LF	540
401.1	REINFORCED CONCRETE PIPE (CLASS III) (24" DIA)	LF	29
403.6	SPECIAL JUNCTION BOX (29.5' X 5.0') (COMPLETE)	EA	1
403.7	INLET (COMPLETE) (TYPE I) 10'	EA	1
403.8	4'x4' 4-WAY INLET	EA	1
403.12	SPECIAL INLET (18.0' X 16.5') (COMPLETE)	EA	1
403.14	INLET EXTENSIONS (10')	EA	1

SCALE: H: 1" = 40'
V: 1" = 10'

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED PROFESSIONAL ENGINEER
5-17-25

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

STORM DRAIN PLAN AND PROFILE (6 OF 7)

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT	CHKD. BY: JA
		SHEET NO. 199 OF 377

MILITARY DRIVE DRAINAGE SUMMARY			
ITEM	DESCRIPTION	UNIT	SHEET QTY
105.1	CHANNEL EXCAVATION (150 CY < X < 5,000 CY)	CY	175
106.1	BOX CULVERT EXCAVATION (600 CY < X < 10,000 CY)	CY	385
309.1	PRECAST REINFORCED CONCRETE BOX CULVERTS (4' x 2')	LF	57
309.1	PRECAST REINFORCED CONCRETE BOX CULVERTS (4' x 3')	LF	116
309.1	PRECAST REINFORCED CONCRETE BOX CULVERTS (5' x 3')	LF	46
401.1	REINFORCED CONCRETE PIPE (CLASS III) (24" DIA)	LF	31

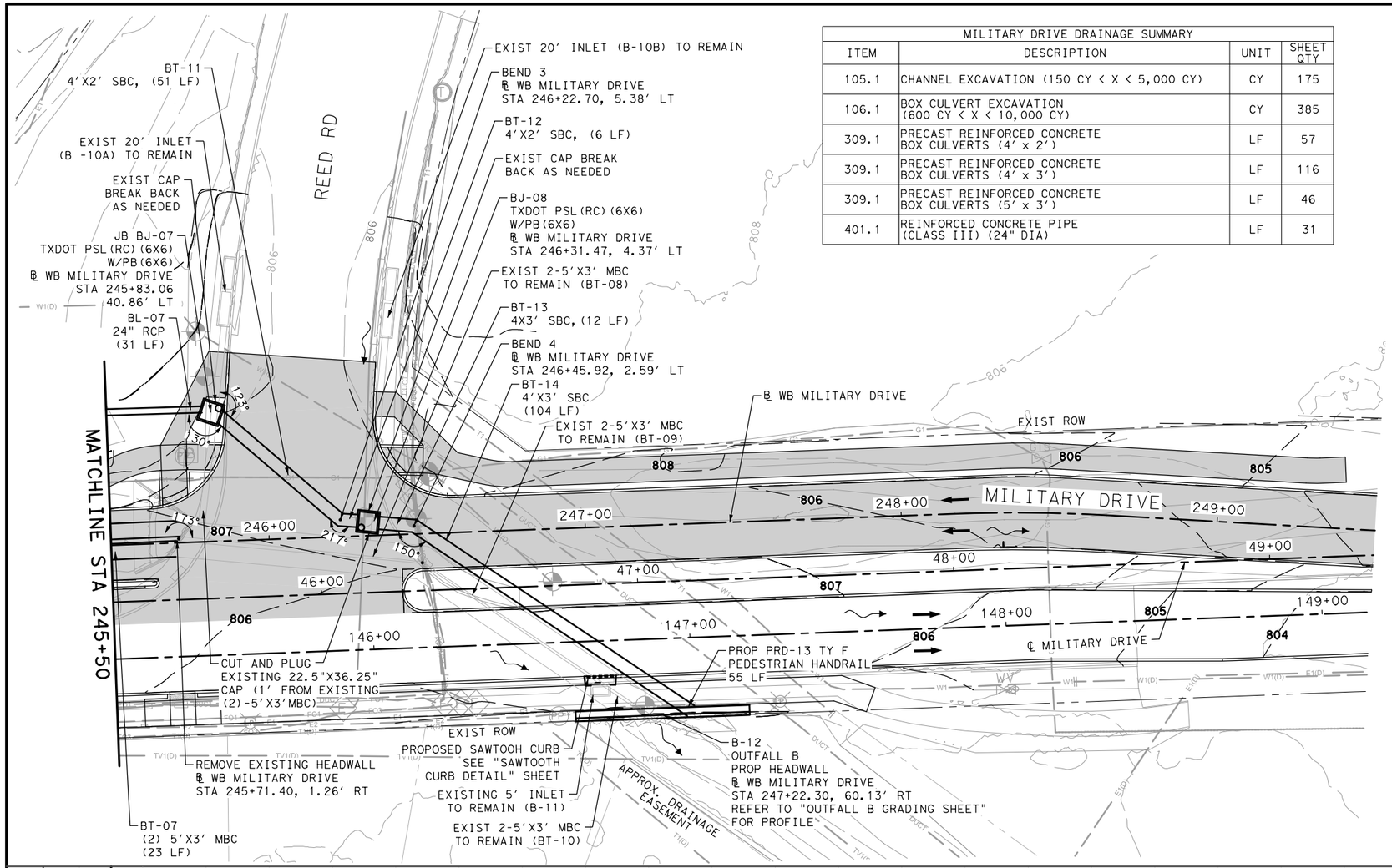
LEGEND:

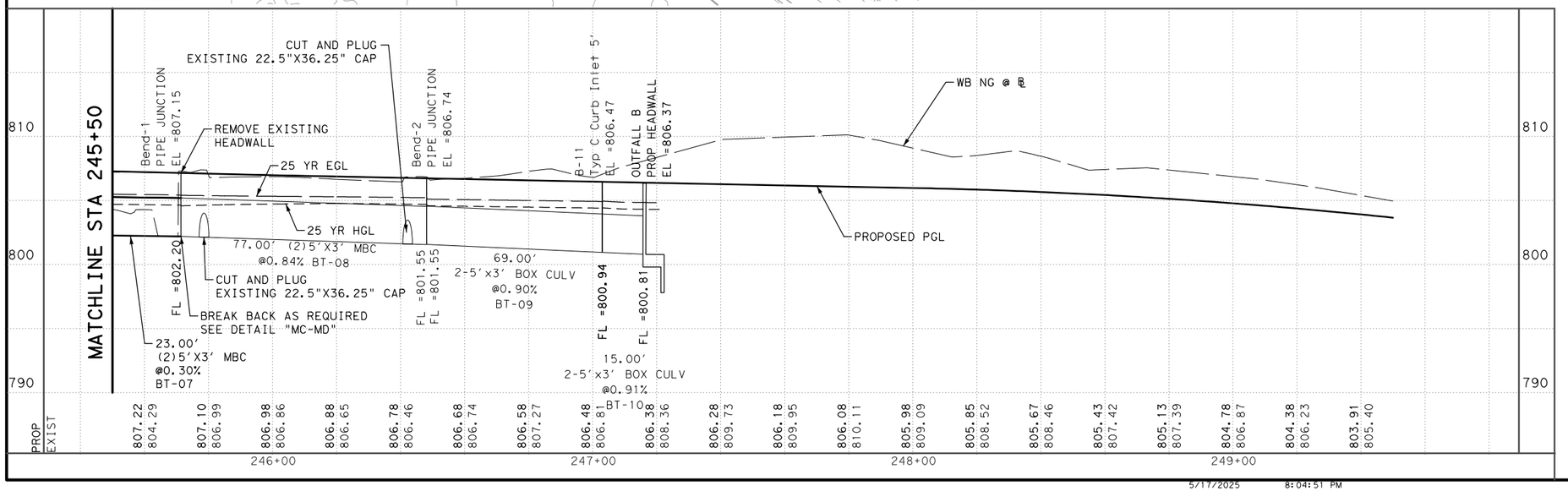
- EXIST ROW
- EXIST EASEMENT
- 25YR ULT HGL
- 25YR ULT EGL
- PROPOSED LANE
- EXISTING LANE
- FULL RECONSTRUCTION
- FLOW DIRECTION
- EXISTING 2' CONTOURS
- PROPOSED CONTOURS

NOTES:

1. STATION AND OFFSET CALLOUTS FOR CURB INLETS ARE LOCATED AT FACE OF THE CURB.
2. STORM SEWER LENGTHS AND SLOPES SHOWN ARE FROM CENTER OF DRAINAGE STRUCTURE.
3. LOCKING MANHOLE LIDS MUST BE USED FOR ALL PROPOSED MANHOLES.
4. INLET EXTENSIONS ARE 10' LONG. TY C1 W/1 EXT INLET : 20LF
5. REGRADE GROUND BEHIND SIDEWALK BRIDGE TO ALLOW POSITIVE DRAINAGE WITHIN ROW TO 4-WAY INLET

MILITARY DRIVE DRAINAGE SUMMARY			
ITEM	DESCRIPTION	UNIT	SHEET QTY
410.2	GRAVEL SUBGRADE FILLER (X < 100 CY)	CY	16
550.1	TRENCH EXCAVATION SAFETY PROTECTION	LF	332
450-7063	RAIL (HANDRAIL) (TY F)	LF	55
465-7076	INLET (COMPL)(PSL)(RC)(6FTX6FT)	EA	2
466-7176	WINGWALL (PW-1)(HW=6FT)	EA	1
496-7005	REMOV STR (WINGWALL)	EA	1
496-7006	REMOV STR (HEADWALL)	EA	2
496-7007	REMOV STR (PIPE)	LF	46
529-7013	CONC CURB (SLOTTED)	LF	10





SCALE: H: 1" = 40'
V: 1" = 10'

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED PROFESSIONAL ENGINEER
5-17-25

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

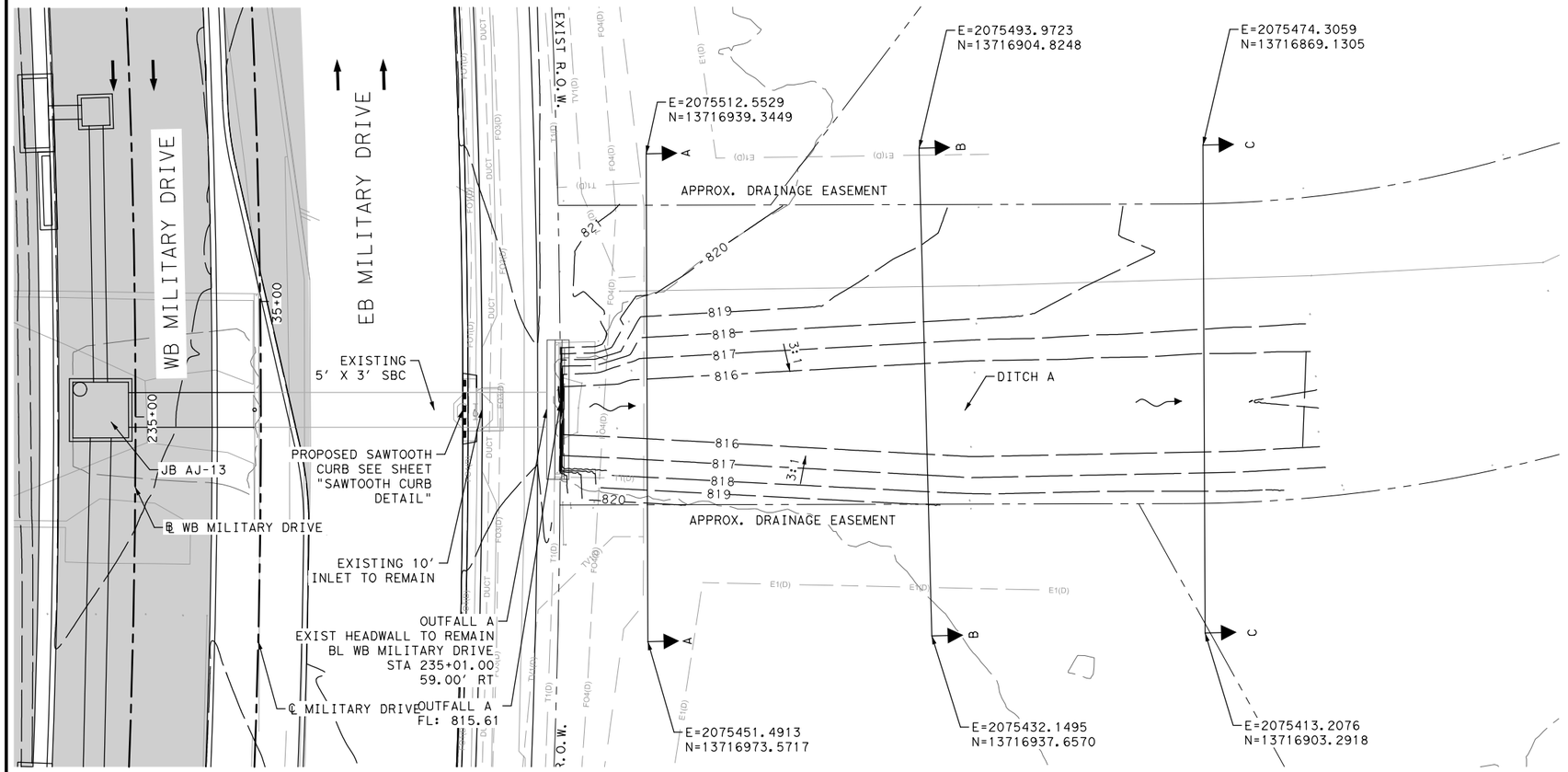
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

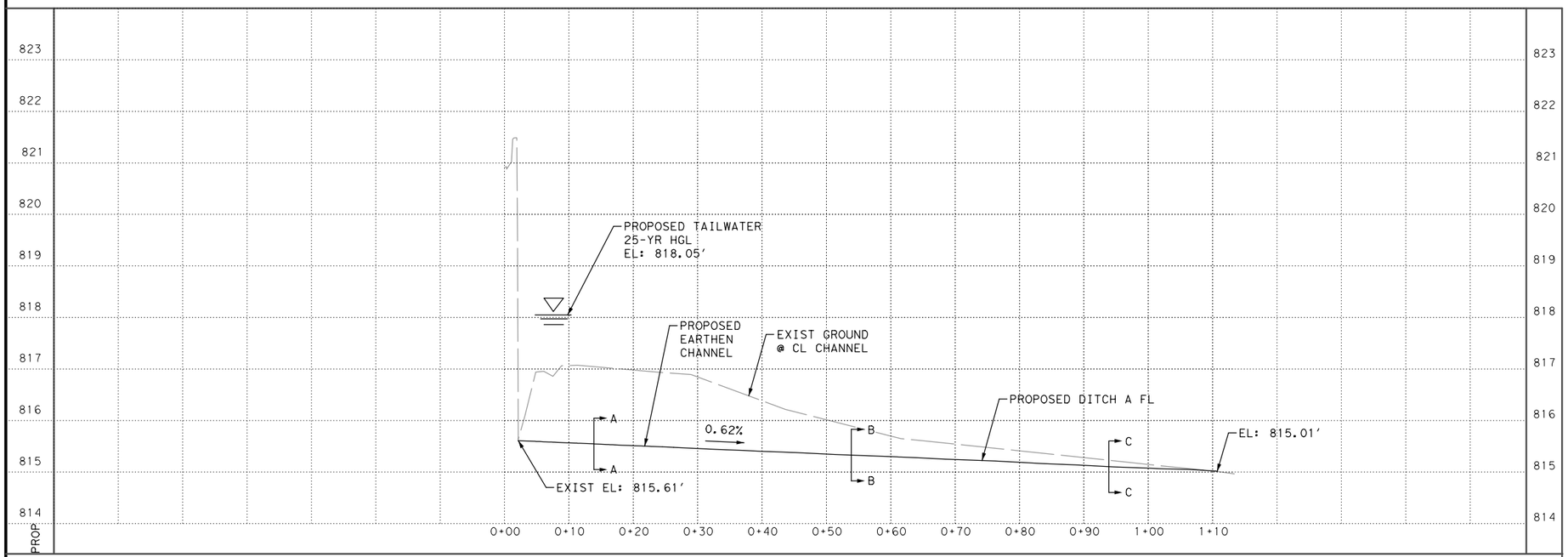
MILITARY DRIVE

STORM DRAIN PLAN AND PROFILE (7 OF 7)

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT / CHKD. BY: JA	SHEET NO.200 OF 377

Pen Table File
8:04:51 PM
5/17/2025





LEGEND:

- EXIST ROW
- EXIST EASEMENT
- PROPOSED LANE
- EXISTING LANE
- FULL RECONSTRUCTION
- FLOW DIRECTION
- EXISTING 1' CONTOURS
- PROPOSED 1' CONTOURS
- PROPOSED CONCRETE RIP-RAP

NOTES:

1. REFER TO GRADING CROSS SECTION SHEET

SCALE: H: 1" = 20'
V: 1" = 2.5'

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED
PROFESSIONAL ENGINEER
5-17-25

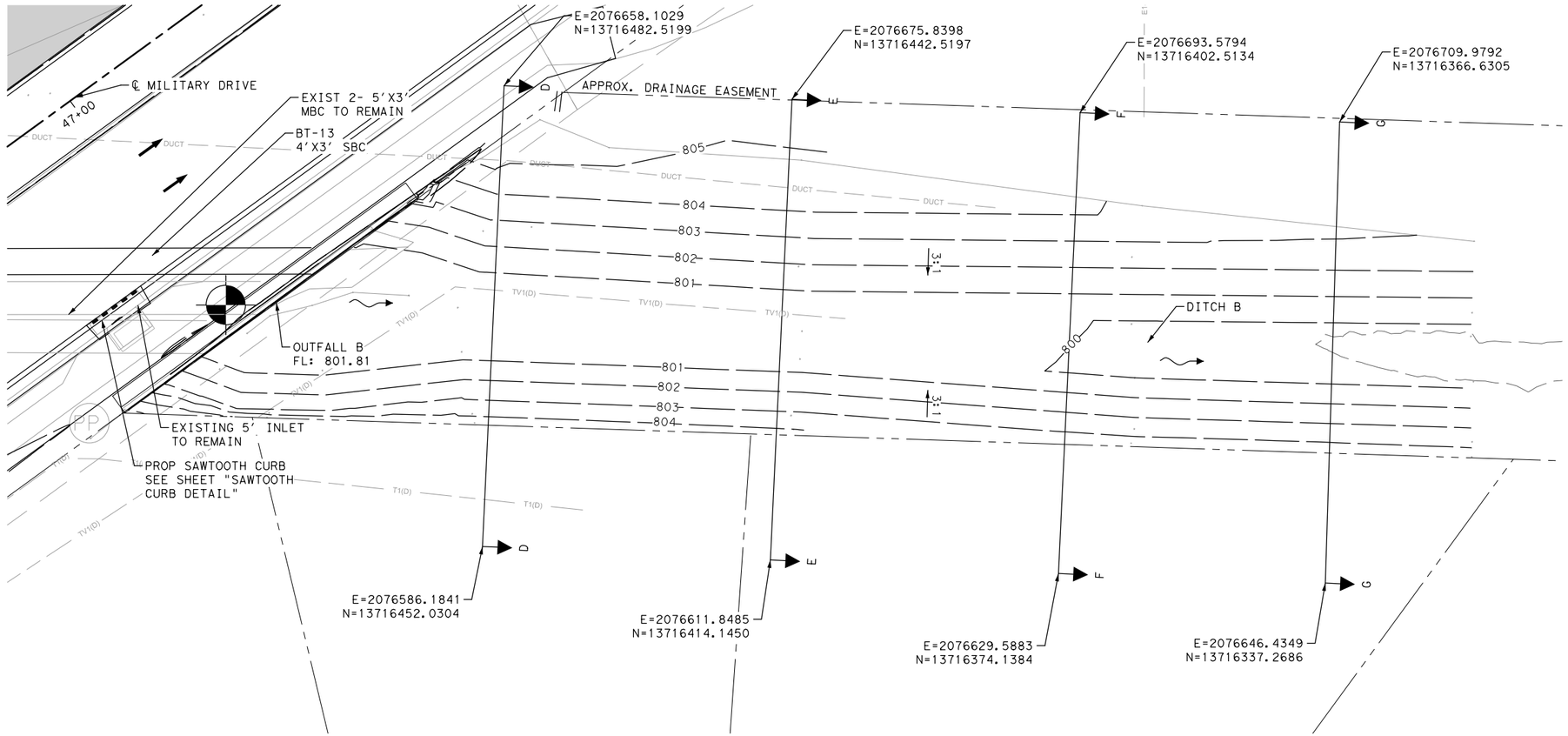
QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
OUTFALL A
GRADING SHEET

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT	CHKD. BY: JA	SHEET NO. 201 OF 377

Pen Table File
8:13:46 PM
5/17/2025

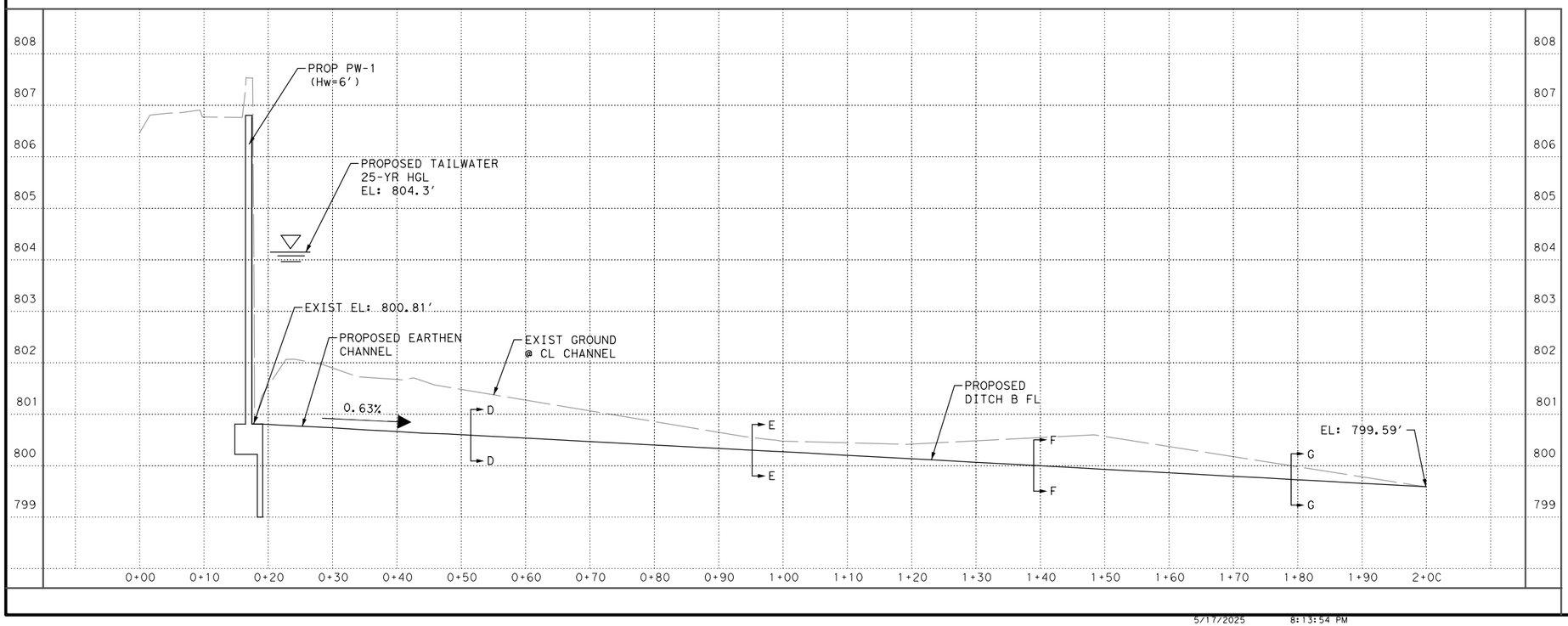


LEGEND:

- EXIST ROW
- EXIST EASEMENT
- PROPOSED LANE
- EXISTING LANE
- FULL RECONSTRUCTION
- FLOW DIRECTION
- EXISTING 1' CONTOURS
- PROPOSED 1' CONTOURS
- PROPOSED CONCRETE RIP-RAP

NOTES:

1. REFER TO GRADING CROSS SECTION SHEET



SCALE: H: 1" = 20'
V: 1" = 2.5'

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED PROFESSIONAL ENGINEER

5-17-25

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

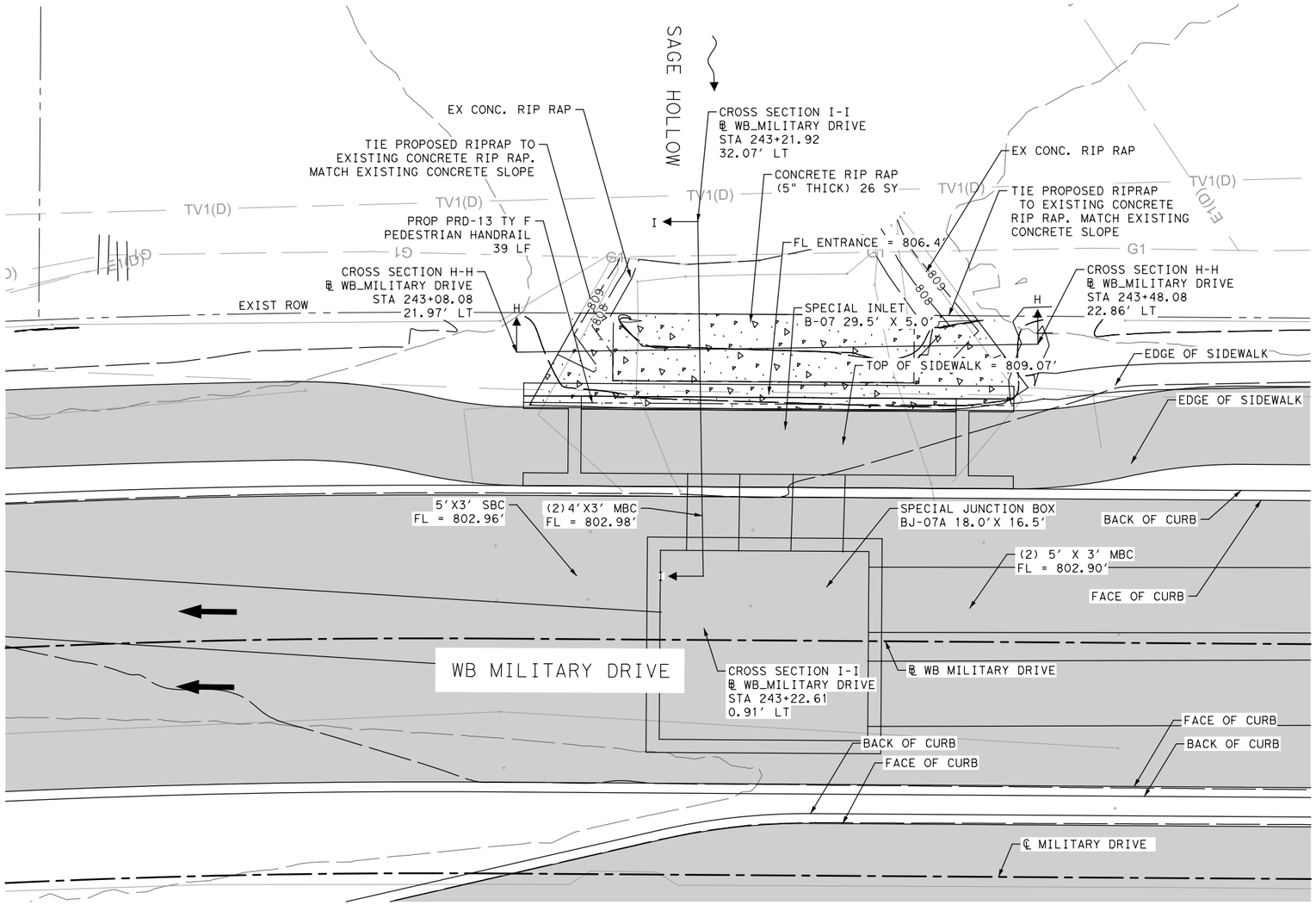
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
OUTFALL B
GRADING SHEET

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT	CHKD. BY: JA

SHEET NO. 202 OF 377

Pen Table File
5/17/2025 8:13:54 PM

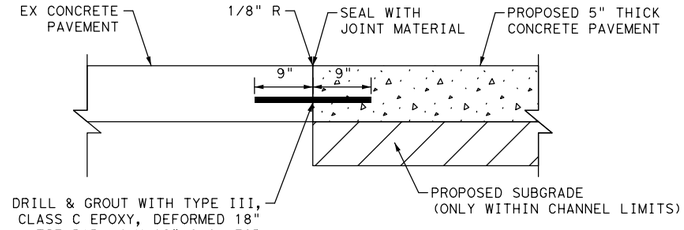


NOTES:

1. FOR STRUCTURAL INFORMATION REFER TO SPECIAL BOX BJ-07A DETAIL AND SPECIAL INLET B-07 DETAIL.

LEGEND:

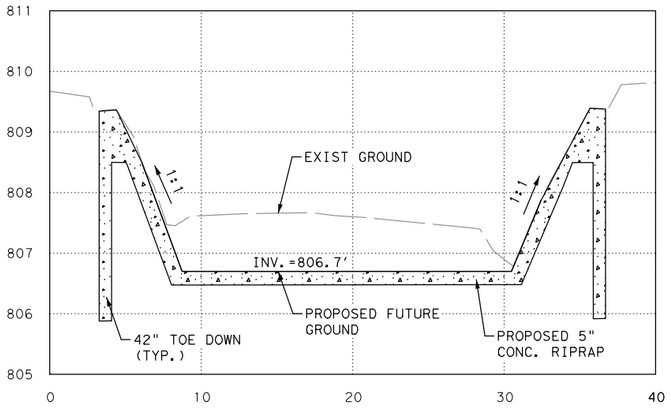
- EXIST ROW
- EXIST EASEMENT
- PROPOSED LANE
- EXISTING LANE
- FULL RECONSTRUCTION
- FLOW DIRECTION
- EXISTING 1' CONTOURS
- PROPOSED 1' CONTOURS
- PROPOSED CONCRETE RIP-RAP



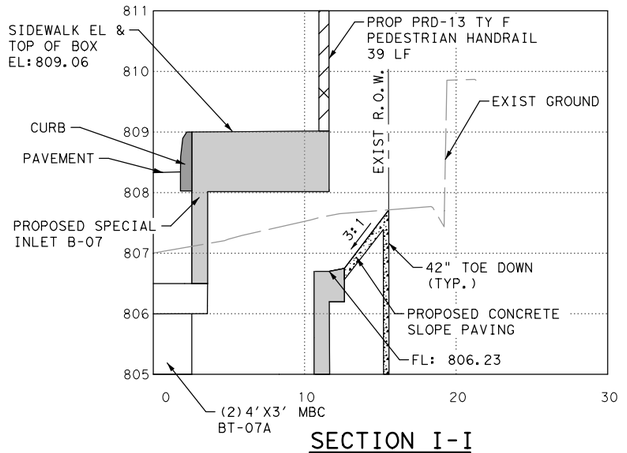
NEW-EXISTING CONCRETE DOWEL DETAIL

NTS

SCALE: H: 1" = 10'
V: 1" = 2.5'



SECTION H-H



SECTION I-I

JEFF C. HAEBER
103543
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
5-17-25

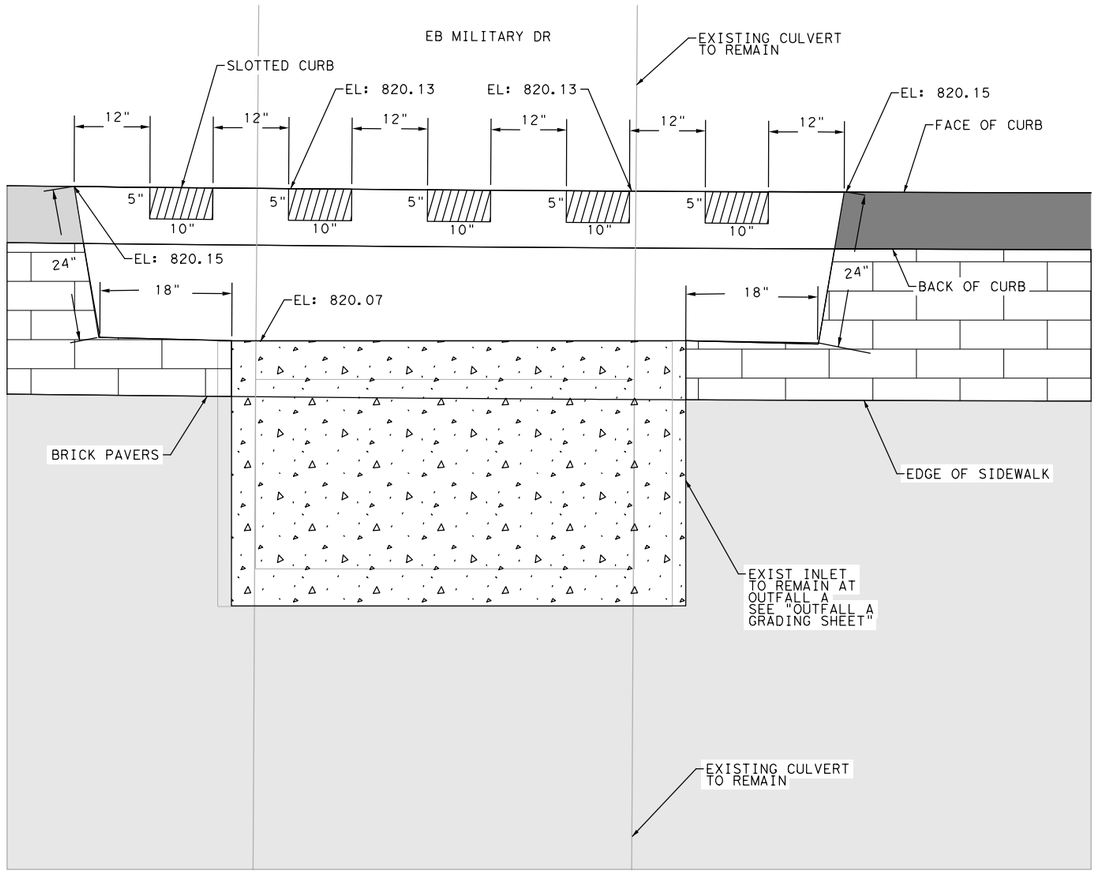
QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
SPECIAL INLET GRADING SHEET

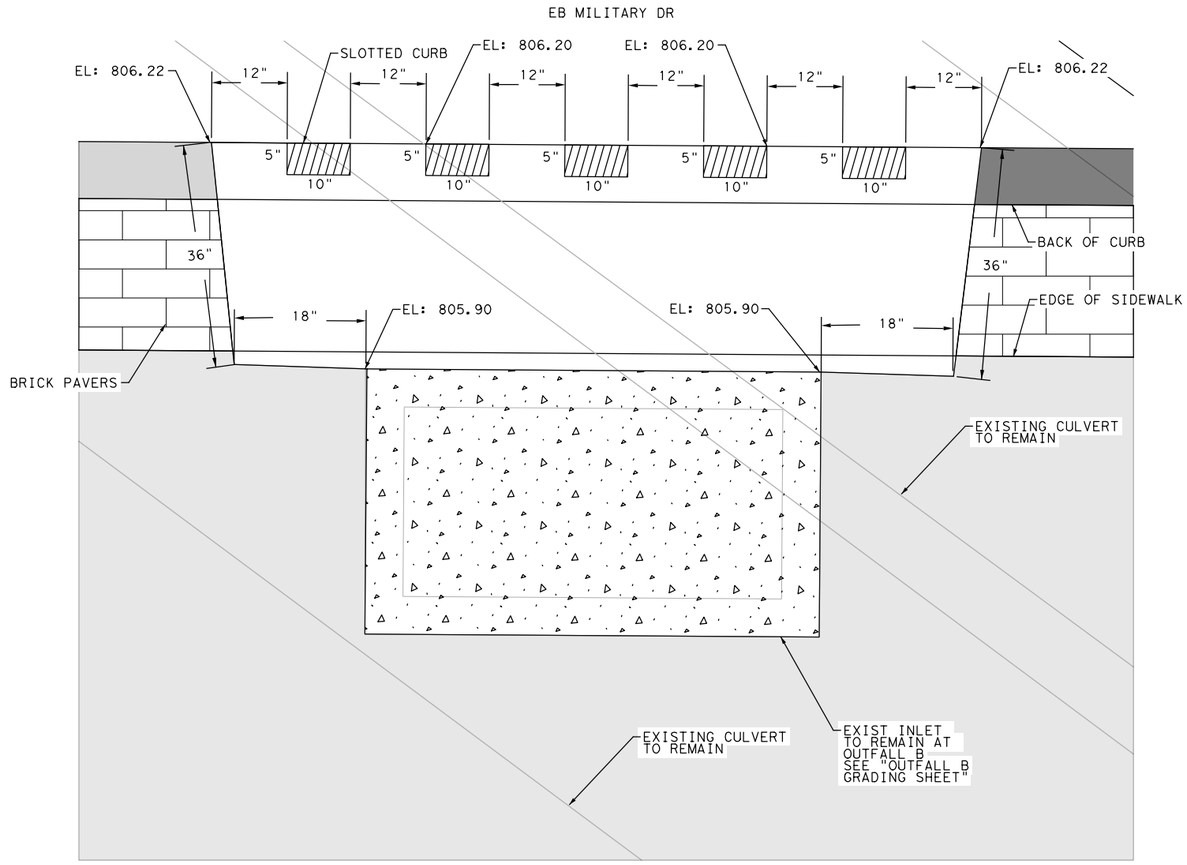
100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT	CHKD. BY: JA
		SHEET NO. 203 OF 377

Pen Table File
8:14:10 PM
5/17/2025



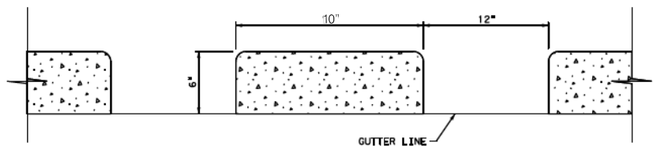
A-14: EXISTING 5' INLET SAWTOOTH CURB DETAIL

SCALE: 1" = 2'



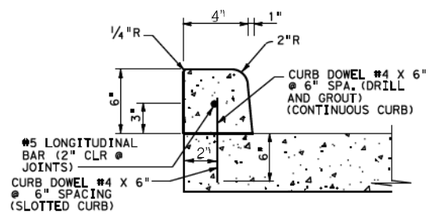
B-11: EXISTING 5' INLET SAWTOOTH CURB DETAIL

SCALE: 1" = 2'



SLOTTED CURB DETAIL
CONCRETE PAVEMENT

TXDOT PAY ITEM 529-6012 CONCRETE CURB (SLOTTED) - ON CONC.



DOWEL LOCATIONS IN SLOTTED CURB
CONCRETE PAVEMENT

TXDOT PAY ITEM 529-6012 CONCRETE CURB (SLOTTED) - ON CONC.

0 1' 2'

SCALE: H: 1" = 2'

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED PROFESSIONAL ENGINEER
5-17-25

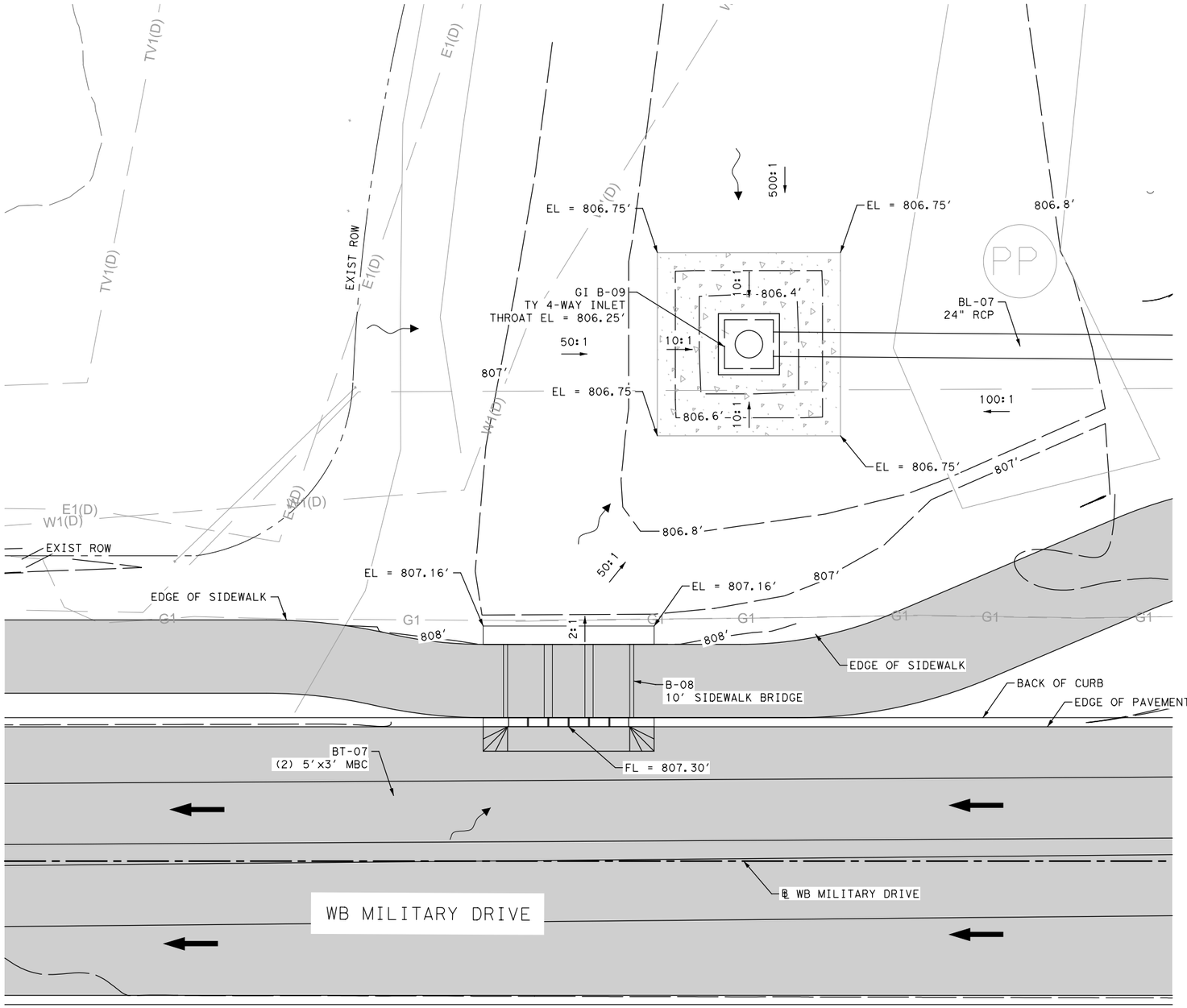
QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
SAWTOOTH CURB DETAIL

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT	CHKD. BY: JA	SHEET NO. 204 OF 377

Pen Table File
8:14:14 PM
5/17/2025



PROPOSED GRADING DETAILS

LEGEND:

- EXIST ROW
- EXIST EASEMENT
- PROPOSED LANE
- EXISTING LANE
- FULL RECONSTRUCTION
- FLOW DIRECTION
- EXISTING 1′ CONTOURS
- PROPOSED 1′ CONTOURS
- PROPOSED CONCRETE RIP RAP

NOTES:

1. REFER TO COSA 4-WAY INLET STANDARDS FOR DETAILS.
2. REFER TO TXDOT SIDEWALK BRIDGE STANDARDS FOR DETAILS.
3. CAUTION POWER POLES NEAR 4-WAY INLET

SCALE: H: 1" = 10′

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED PROFESSIONAL ENGINEER
5-17-25

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

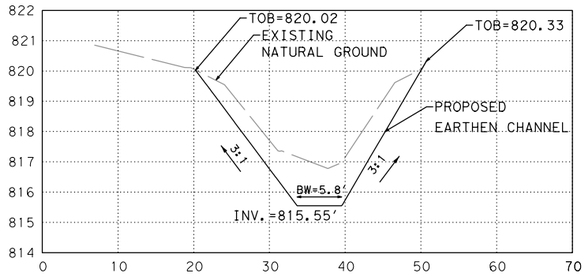
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
SIDEWALK BRIDGE
GRADING DETAILS

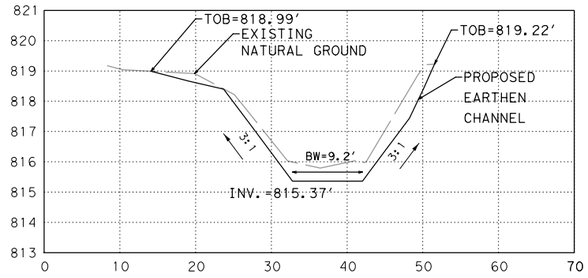
100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT / CHKD. BY: JA	SHEET NO. 205 OF 377

Pen Table File
8:14:19 PM
5/17/2025

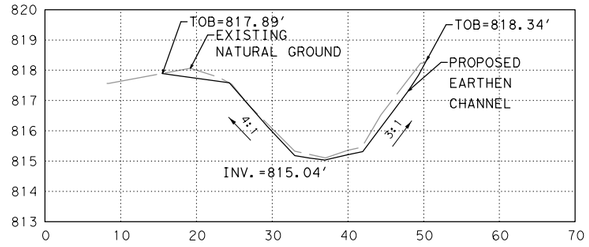
5/17/2025 8:14:19 PM
Pen Table File



XS A-A
OUTFALL A



XS B-B
OUTFALL A

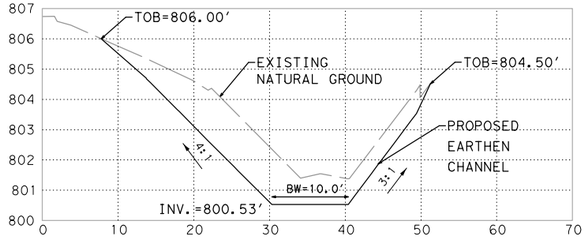


XS C-C
OUTFALL A

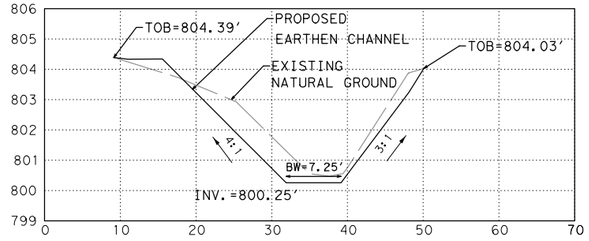
LEGEND:

PROPOSED SURFACE

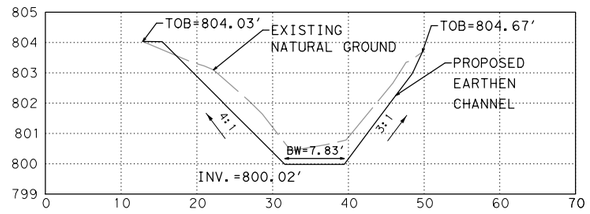
EXISTING SURFACE



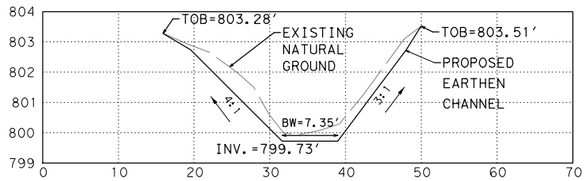
XS D-D
OUTFALL B



XS E-E
OUTFALL B



XS F-F
OUTFALL B



XS G-G
OUTFALL B

SCALE: H: 1" = 20'
V: 1" = 5'

JEFF C. HAEBER
103543
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS
5-17-25

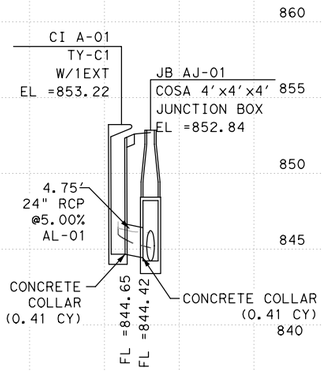
QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

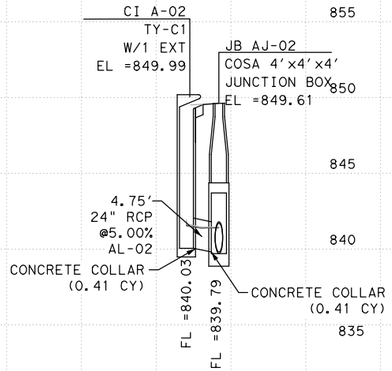
MILITARY DRIVE
GRADING
X-SECTIONS

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT CHKD. BY: JA	SHEET NO. 206 OF 377

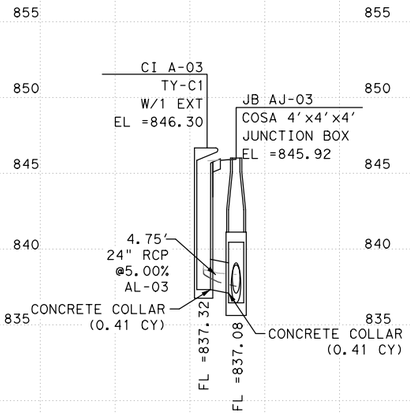
Pen Table File
8:14:24 PM
5/17/2025



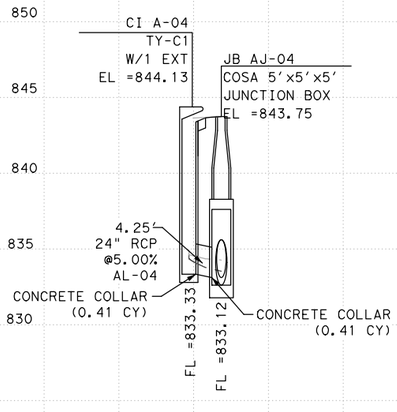
LATERAL AL-01
℄ WB MILITARY DR 223+32.00



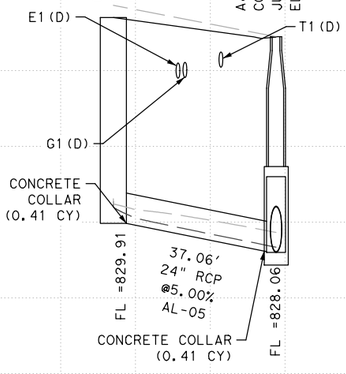
LATERAL AL-02
℄ WB MILITARY DR 224+24.00



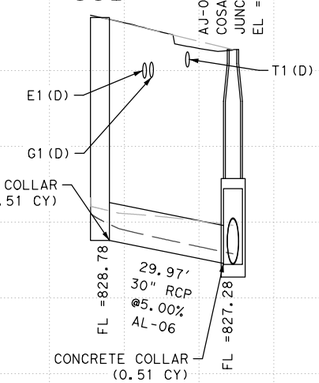
LATERAL AL-03
℄ WB MILITARY DR 225+32.00



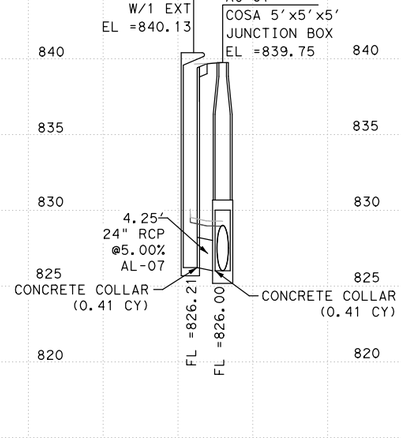
LATERAL AL-04
℄ WB MILITARY DR 226+47.00



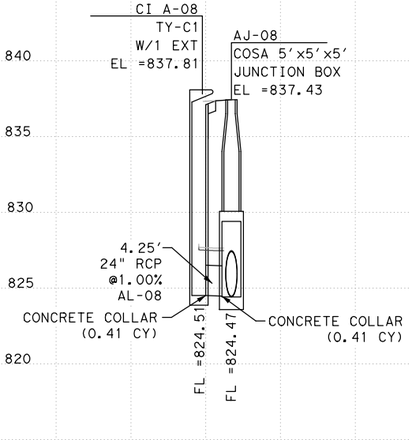
LATERAL AL-05
℄ WB MILITARY DR 227+46.55



LATERAL AL-06
℄ WB MILITARY DR 227+96.00



LATERAL AL-07
℄ WB MILITARY DR 228+76.00



LATERAL AL-08
℄ WB MILITARY DR 229+71.00

MILITARY DRIVE DRAINAGE SUMMARY			
ITEM	DESCRIPTION	UNIT	SHEET QTY
407.4	CONCRETE ENCASEMENT, CRADLES, SADDLES, AND COLLARS	CY	7

LEGEND:

- PROPOSED GROUND
- EXISTING GROUND
- 25YR ULT EGL
- 25YR ULT HGL

NOTES:

1. STORM SEWER LENGTHS AND SLOPES SHOWN ARE FROM CENTER TO CENTER OF DRINAGE STRUCTURE.
2. LENGTH FOR PAY, AS SHOWN IN QUANTITY SUMMARIES, IS FROM INSIDE WALL TO INSIDE WALL OF DRAINAGE STRUCTURE.
3. EXISTING UTILITY LOCATIONS SHOWN ARE APPROXIMATE. ACTUAL LOCATIONS MUST BE VERIFIED BY CONTRACTOR.
4. MINIMUM 4" DEPTH CLEAN GRAVEL SUBGRADE FILLER TO BE PLACED PER "PIPE BEDDING & MISCELLANEOUS DRAINAGE DETAILS" AND SPEC ITEM 140.
5. HGL AND EGL ARE BASED ON ULTIMATE DEVELOPMENT FLOWS

SCALE: H: 1" = 40'
V: 1" = 10'

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED
PROFESSIONAL ENGINEER
5-17-25

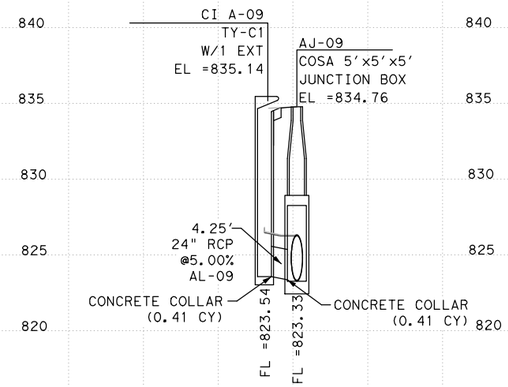
QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

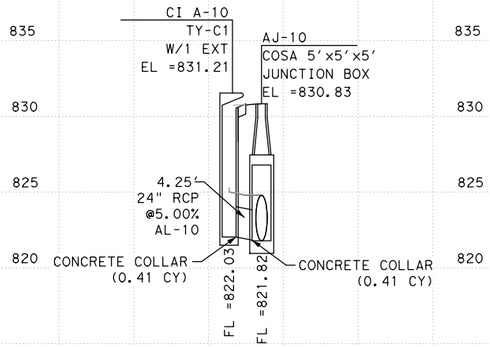
MILITARY DRIVE

STORM DRAIN PROFILES (1 OF 4)

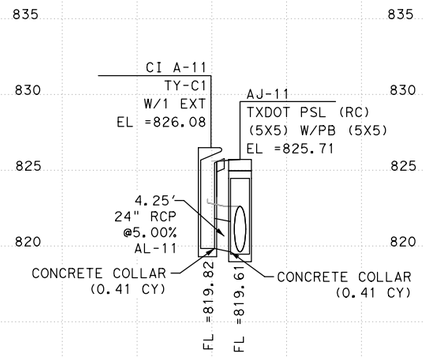
100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT	CHKD. BY: JA	SHEET NO. 207 OF 377



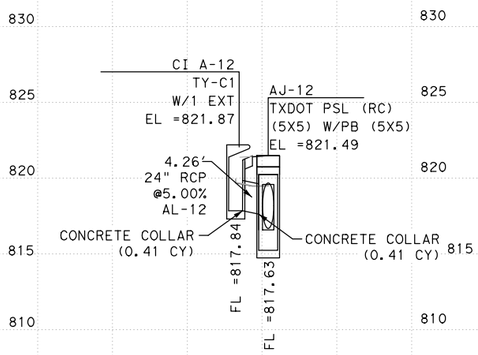
LATERAL AL-09
℄ WB MILITARY DR 230+64.00



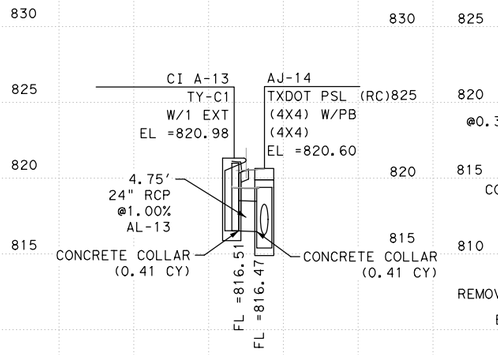
LATERAL AL-10
℄ WB MILITARY DR 231+81.00



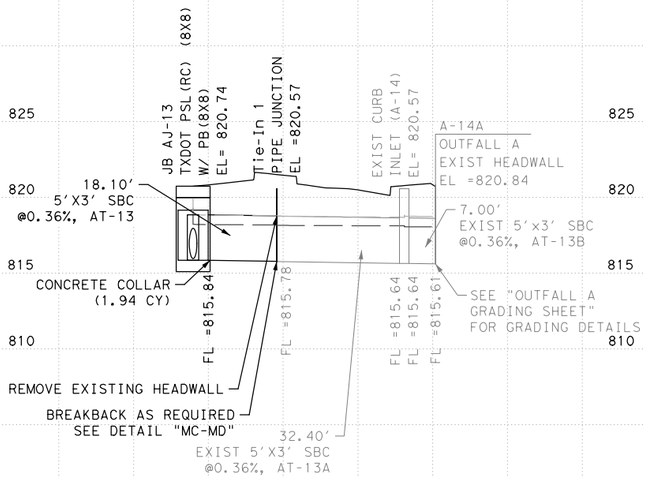
LATERAL AL-11
℄ WB MILITARY DR 233+11.97



LATERAL AL-12
℄ WB MILITARY DR 234+44.41



LATERAL AL-13
℄ WB MILITARY DR 235+43.96



OUTFALL A
℄ WB MILITARY DR 235+01.00

MILITARY DRIVE DRAINAGE SUMMARY			
ITEM	DESCRIPTION	UNIT	SHEET QTY
407.4	CONCRETE ENCASEMENT, CRADLES, SADDLES, AND COLLARS	CY	6

LEGEND:

PROPOSED GROUND

EXISTING GROUND

25YR ULT EGL

25YR ULT HGL

NOTES:

1. STORM SEWER LENGTHS AND SLOPES SHOWN ARE FROM CENTER TO CENTER OF DRINAGE STRUCTURE.
2. LENGTH FOR PAY, AS SHOWN IN QUANTITY SUMMARIES, IS FROM INSIDE WALL TO INSIDE WALL OF DRAINAGE STRUCTURE.
3. EXISTING UTILITY LOCATIONS SHOWN ARE APPROXIMATE. ACTUAL LOCATIONS MUST BE VERIFIED BY CONTRACTOR.
4. MINIMUM 4" DEPTH CLEAN GRAVEL SUBGRADE FILLER TO BE PLACED PER "PIPE BEDDING & MISCELLANEOUS DRAINAGE DETAILS" AND SPEC ITEM 140.
5. HGL AND EGL ARE BASED ON ULTIMATE DEVELOPMENT FLOWS

0 20' 40'

SCALE: H: 1" = 40'
V: 1" = 10'

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED PROFESSIONAL ENGINEER

5-17-25

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

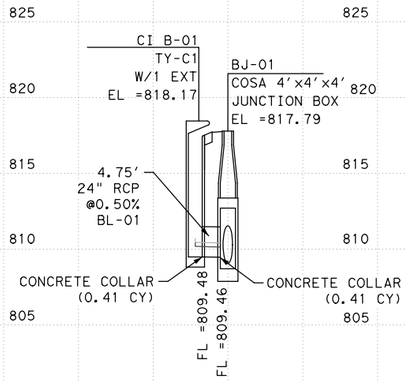
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
STORM DRAIN PROFILES (2 OF 4)

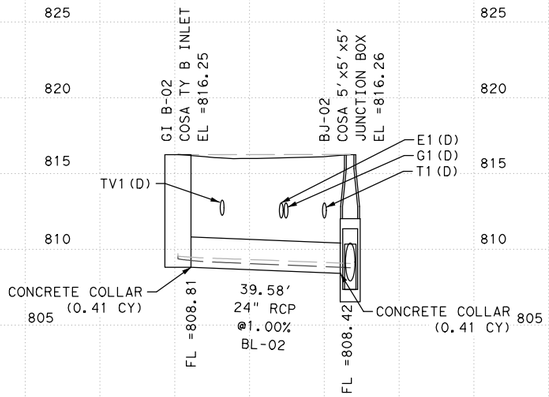
100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT	CHKD. BY: JA	SHEET NO. 208 OF 377

Pen Table File
8:14:33 PM
5/17/2025

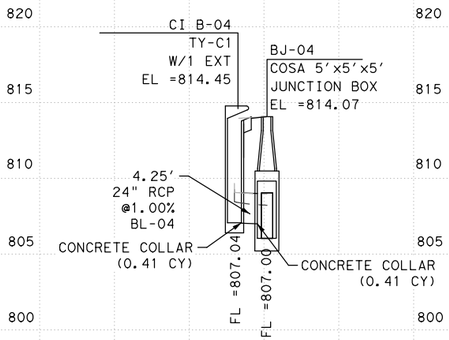
5/17/2025 8:14:33 PM
Pen Table File



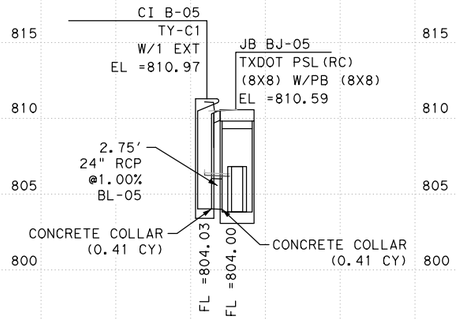
LATERAL BL-01
℄ WB MILITARY DR 236+86.00



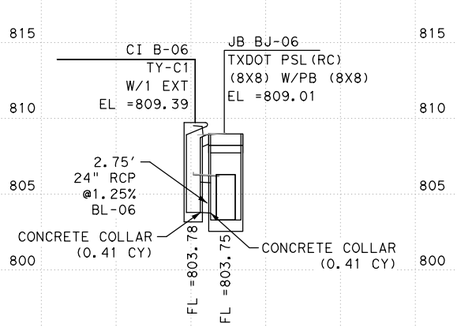
LATERAL BL-02
℄ WB MILITARY DR 238+49.00



LATERAL BL-04
℄ WB MILITARY DR 239+49.00



LATERAL BL-05
℄ WB MILITARY DR 241+33.00



LATERAL BL-06
℄ WB MILITARY DR 242+51.20

MILITARY DRIVE DRAINAGE SUMMARY			
ITEM	DESCRIPTION	UNIT	SHEET QTY
407.4	CONCRETE ENCASEMENT, CRADLES, SADDLES, AND COLLARS	CY	5

LEGEND:

PROPOSED GROUND

EXISTING GROUND

25YR ULT EGL

25YR ULT HGL

NOTES:

1. STORM SEWER LENGTHS AND SLOPES SHOWN ARE FROM CENTER TO CENTER OF DRINAGE STRUCTURE.
2. LENGTH FOR PAY, AS SHOWN IN QUANTITY SUMMARIES, IS FROM INSIDE WALL TO INSIDE WALL OF DRAINAGE STRUCTURE.
3. EXISTING UTILITY LOCATIONS SHOWN ARE APPROXIMATE. ACTUAL LOCATIONS MUST BE VERIFIED BY CONTRACTOR.
4. MINIMUM 4" DEPTH CLEAN GRAVEL SUBGRADE FILLER TO BE PLACED PER "PIPE BEDDING & MISCELLANEOUS DRAINAGE DETAILS" AND SPEC ITEM 140.
5. HGL AND EGL ARE BASED ON ULTIMATE DEVELOPMENT FLOWS

0 20' 40'
SCALE: H: 1" = 40'
V: 1" = 10'

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED PROFESSIONAL ENGINEER
5-17-25

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

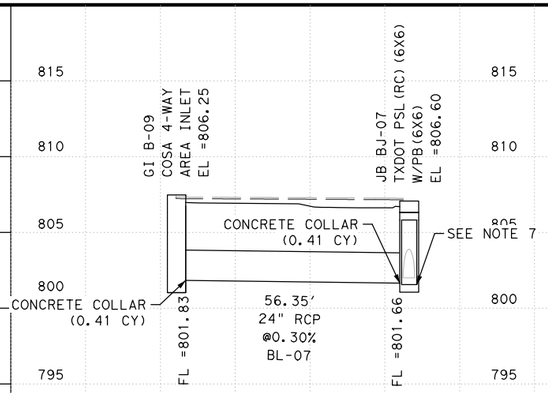
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
STORM DRAIN PROFILES (3 OF 4)

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT	CHKD. BY: JA	SHEET NO. 209 OF 377

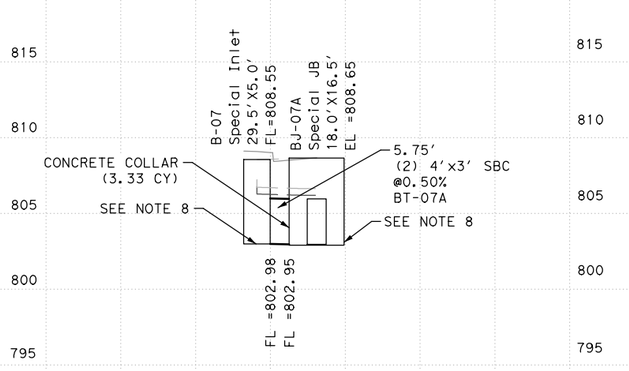
Pen Table File
8:14:38 PM
5/17/2025

5/17/2025 8:14:38 PM
Pen Table File



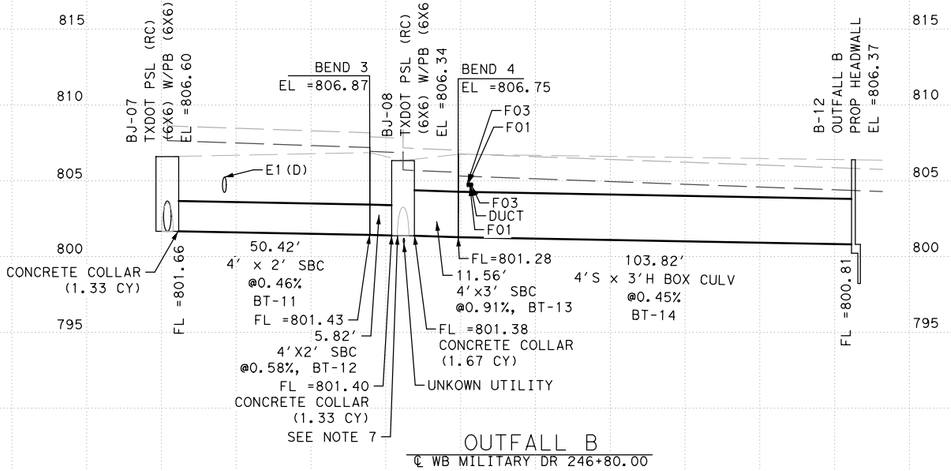
LATERAL BL-07

℄ WB MILITARY DR 245+52.00



LATERAL BT-07A

℄ WB MILITARY DR 243+27.46



OUTFALL B

℄ WB MILITARY DR 246+80.00

MILITARY DRIVE DRAINAGE SUMMARY			
ITEM	DESCRIPTION	UNIT	SHEET QTY
407.4	CONCRETE ENCASEMENT, CRADLES, SADDLES, AND COLLARS	CY	10

LEGEND:

PROPOSED GROUND

EXISTING GROUND

25YR ULT EGL

25YR ULT HGL

NOTES:

1. STORM SEWER LENGTHS AND SLOPES SHOWN ARE FROM CENTER TO CENTER OF DRINAGE STRUCTURE.
2. LENGTH FOR PAY, AS SHOWN IN QUANTITY SUMMARIES, IS FROM INSIDE WALL TO INSIDE WALL OF DRAINAGE STRUCTURE.
3. EXISTING UTILITY LOCATIONS SHOWN ARE APPROXIMATE. ACTUAL LOCATIONS MUST BE VERIFIED BY CONTRACTOR.
4. MINIMUM 4" DEPTH CLEAN GRAVEL SUBGRADE FILLER TO BE PLACED PER "PIPE BEDDING & MISCELLANEOUS DRAINAGE DETAILS" AND SPEC ITEM 140.
5. HGL AND EGL ARE BASED ON ULTIMATE DEVELOPMENT FLOWS
6. EXISTING GAS LINE IS OUT OF PROFILE VIEW RANGE. (G1)
7. CONTRACTOR TO VERIFY EXISTING 22.5"X6.25" CAP LOCATION AND ELEVATION. EXIST CAP BREAK BACK AS NEED TO CONNECT TO JUNCTION BOX.
8. FOR STRUCTURAL INFORMATION REFER TO SPECIAL JUNCTION BOX BJ-07A DETAIL AND SPECIAL INLET B-07 DETAIL. SEE GRADING SHEET FOR DETAILED CROSS SECTION

0 20' 40'

SCALE: H: 1" = 40'
V: 1" = 10'

STATE OF TEXAS
JEFF C. HAEBER
103543
LICENSED
PROFESSIONAL ENGINEER

5-17-25

QUIDDITY

Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
601 Northwest Loop 410, Suite 453•San Antonio, Texas 78216•210.494.5511

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

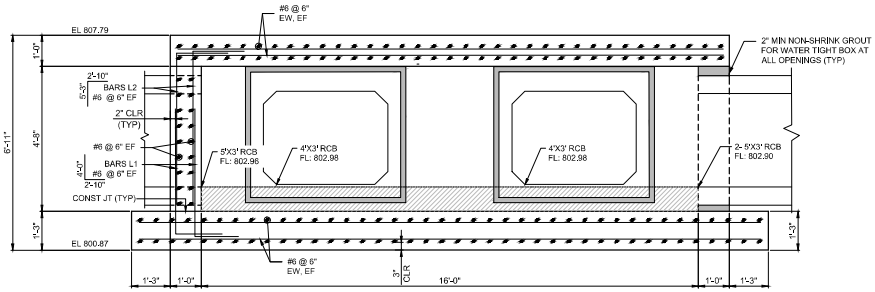
MILITARY DRIVE

STORM DRAIN PROFILES (4 OF 4)

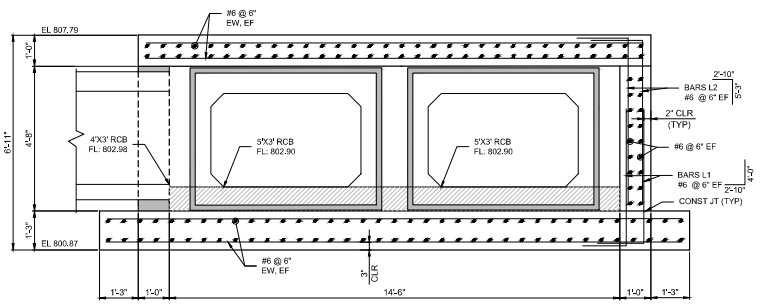
100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT CHKD. BY: JA	SHEET NO. 210 OF 377

Pen Table File
8:14:43 PM
5/17/2025

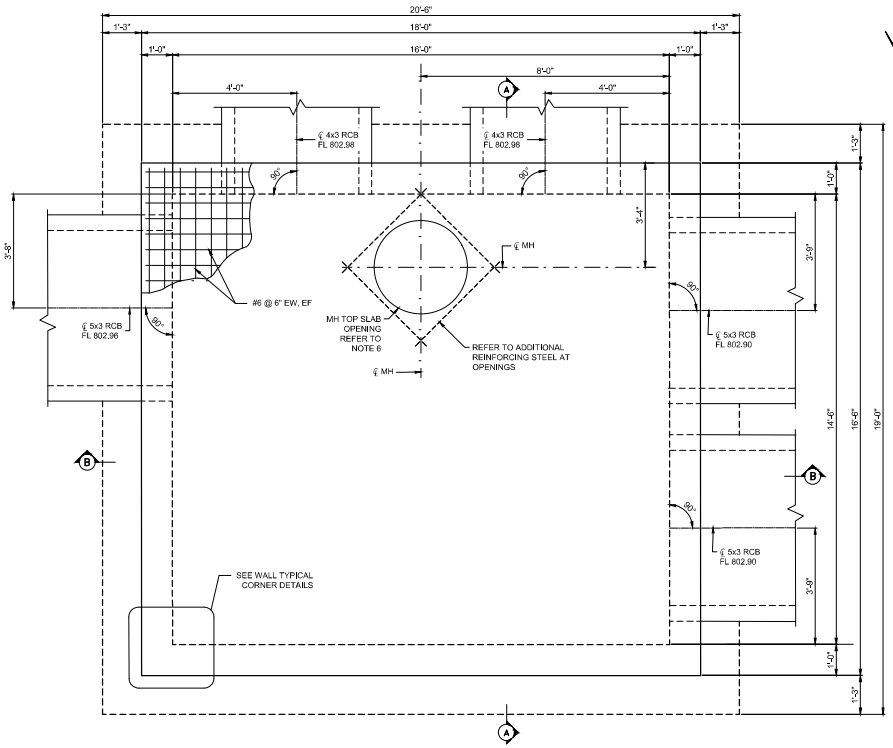
5/17/2025 8:14:43 PM
Pen Table File



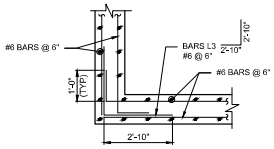
SECTION B–B
1/2" = 1'-0"



SECTION A–A
1/2" = 1'-0"



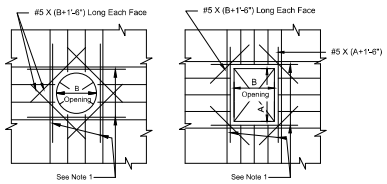
PLAN VIEW
1/2" = 1'-0"



TYPICAL WALL CORNER DETAIL
NTS

NOTES:

1. ALL CONCRETE SHALL BE TXDOT CLASS "S", f'c=4000 PSI.
2. ALL REINFORCING STEEL SHALL BE ASTM A615, WITH YIELD STRENGTH OF 60 KSI.
3. EXPOSED EDGES SHALL BE CHAMFERED ¾".
4. ALL CONSTRUCTION JOINTS SHALL BE THOROUGHLY CLEANED BEFORE FRESH CONCRETE IS PLACED. CONSTRUCTION JOINTS SHALL BE ROUGHENED TO A ¼" AMPLITUDE.
5. DETAILING OF REINFORCING SHALL BE IN ACCORDANCE WITH ACI 315, LATEST EDITION.
6. PLACING OF REINFORCING SHALL BE IN ACCORDANCE WITH C.R.S.I., "RECOMMENDED PRACTICE FOR PLACING OF REINFORCING BARS", LATEST EDITION.
7. REFER TO CITY OF SAN ANTONIO SHEET "1854Z 185A4 ASSEMBLY" FOR MANHOLE DETAIL.
8. REQUIRED BUOYANCY FACTOR = 1.10 < PROVIDED BUOYANCY FACTOR = 1.15



CIRCULAR RECTANGULAR

NOTES:

1. PROVIDE ADDITIONAL BARS EQUAL TO ONE-HALF OF BARS INTERRUPTED AT EACH SIDE OF OPENING AT 3" C/C. THESE BARS SHALL BE ORIGINAL SIZES AND LENGTHS AS THOSE OF THE INTERRUPTED BARS. (TYPICAL FOR OPENINGS IN SLABS AND WALLS.)
2. ADDITIONAL BARS ARE EXTENDED MINIMUM DEVELOPMENT LENGTH BEYOND OPENING EDGE.
3. FOR OPENINGS 1'-0" OR LESS, THE SLAB STEEL CAN BE RESPACED WITHOUT ADDITIONAL REINFORCING.

ADDITIONAL REINFORCING STEEL AT OPENINGS
NOT TO SCALE

STATE OF TEXAS
FRANK FIRDZAVIA
129128
LICENSED PROFESSIONAL ENGINEER
05/19/2025

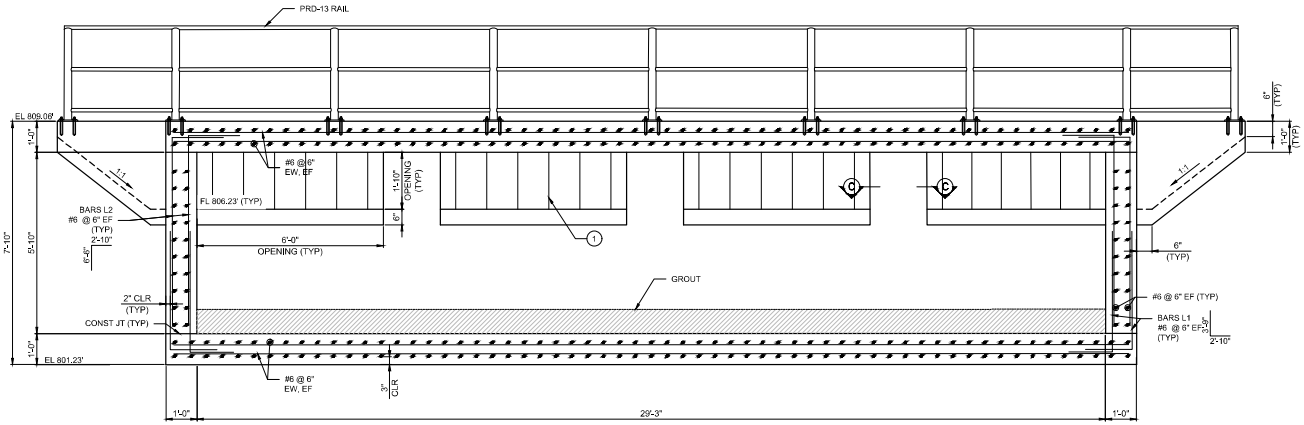
QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23280
2575 Sawdust Road, Suite 400 The Woodlands, Texas 77380 (281) 363-4039

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

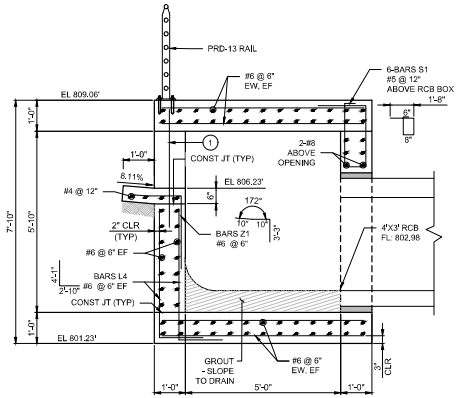
SPECIAL JUNCTION BOX BJ-07A DETAIL

95% SUBMITTAL	PROJECT NO.: 23-03907		DATE: 03/19/2025
DRWN. BY: SE	DSGN. BY: FF	CHKD. BY: MT	SHEET NO. 211 OF 377

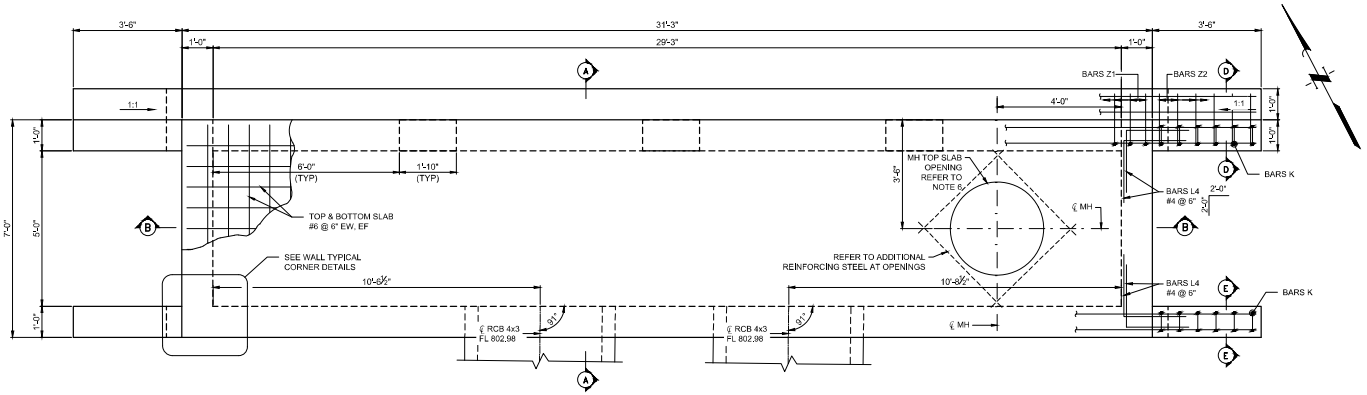
K:\T798K\T798K-0002-01 Military Drive\3 Design Phase\Autocad\Civil 3d Data\Surface\Surface Sheet\300 - Details - T798K-0002-01 SUBMITTAL.dwg May 19,2025 - 1:02pm mf



SECTION B–B
1/2" = 1'-0"



SECTION A–A
1/2" = 1'-0"

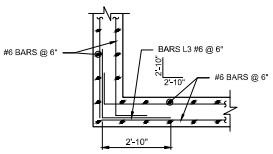


PLAN VIEW
1/2" = 1'-0"

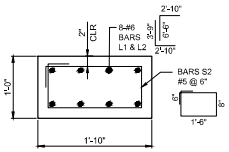
NOTES:

1. ALL CONCRETE SHALL BE TXDOT CLASS "C". f'_c=4000 PSI.
2. ALL REINFORCING STEEL SHALL BE AST M A615, WITH YIELD STRENGTH OF 60 KSI.
3. EXPOSED EDGES SHALL BE CHAMFERED ¾".
4. ALL CONSTRUCTION JOINTS SHALL BE THOROUGHLY CLEANED BEFORE FRESH CONCRETE IS PLACED. CONSTRUCTION JOINTS SHALL BE ROUGHENED TO A ¼" AMPLITUDE.
5. DETAILING OF REINFORCING SHALL BE IN ACCORDANCE WITH ACI 315, LATEST EDITION, PLACING OF REINFORCING SHALL BE IN ACCORDANCE WITH C.R.S.I., "RECOMMENDED PRACTICE FOR PLACING OF REINFORCING BARS", LATEST EDITION.
6. REFER TO CITY OF SAN ANTONIO SHEET "1854Z 185A4 ASSEMBLY" FOR MANHOLE DETAIL.
7. REQUIRED BUOYANCY FACTOR = 1.10 < PROVIDED BUOYANCY FACTOR = 1.11

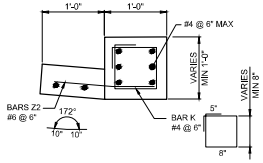
(1) 38" LONG-#4 BARS AT 12" WITH 8" EMBED (CENTERED THROUGH OPENING)



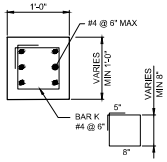
TYPICAL WALL CORNER DETAIL
1/2" = 1'-0"



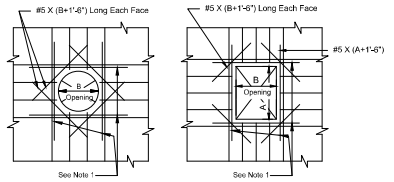
SECTION C–C
1/2" = 1'-0"



SECTION D–D
1/2" = 1'-0"



SECTION E–E
1/2" = 1'-0"



NOTES:

1. PROVIDE ADDITIONAL BARS EQUAL TO ONE-HALF OF BARS INTERRUPTED AT EACH SIDE OF OPENING AT 3" C/C. THESE BARS SHALL BE ORIGINAL SIZES AND LENGTHS AS THOSE OF THE INTERRUPTED BARS. (TYPICAL FOR OPENINGS IN SLABS AND WALLS.)
2. ADDITIONAL BARS ARE EXTENDED MINIMUM DEVELOPMENT LENGTH BEYOND OPENING EDGE.
3. FOR OPENINGS 1'-0" OR LESS, THE SLAB STEEL CAN BE RESPACED WITHOUT ADDITIONAL REINFORCING.

ADDITIONAL REINFORCING STEEL AT OPENINGS
NTS

STATE OF TEXAS
FRANK FORZUANNA
129128
LICENSED PROFESSIONAL ENGINEER
05/19/2025

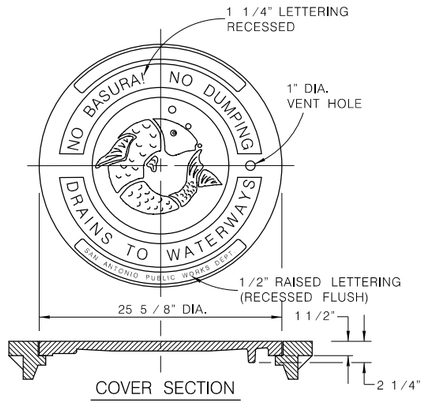
QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23280
2575 Sawdust Road, Suite 405 • The Woodlands, Texas 77380 • 281.362.4039

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

SPECIAL INLET B-07
DETAIL

95% SUBMITTAL	PROJECT NO.: 23-03907		DATE: 03/18/2025
DRWN. BY: SE	DSGN. BY: FF	CHKD. BY: MT	SHEET NO. 212 OF 377

K:\TPW\CYPW-0002-01 Military Drive\2 Design Phase\Analysis\Hdh Analysis\CAD\LJR Detail Sheet\300 - Details - 17906-0008.JR SUBMITTAL.dwg May 19,2025 - 1:02pm sfl

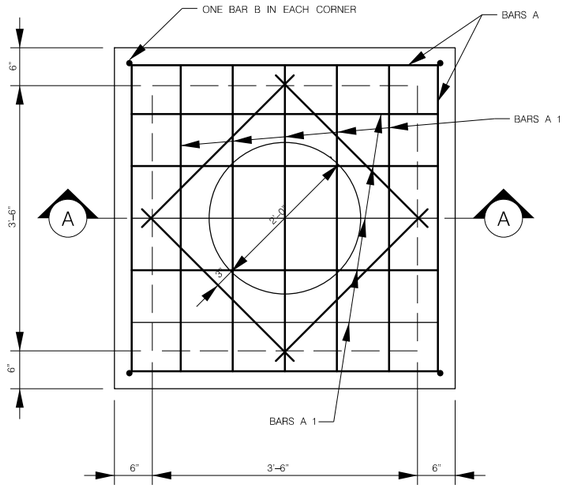


MANHOLE LID & RING DETAIL

SCALE: 1 : 16

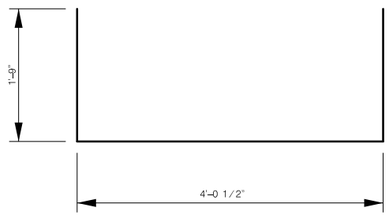
NOTES FOR MANHOLE LID AND RING

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.



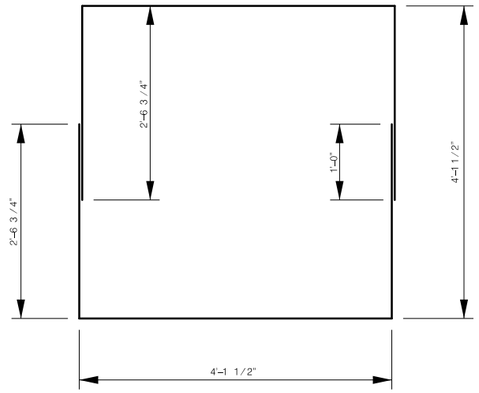
TOP SLAB PLAN VIEW

SCALE: 1" = 2'-0"



BARS A

SCALE: 1" = 2'-0"

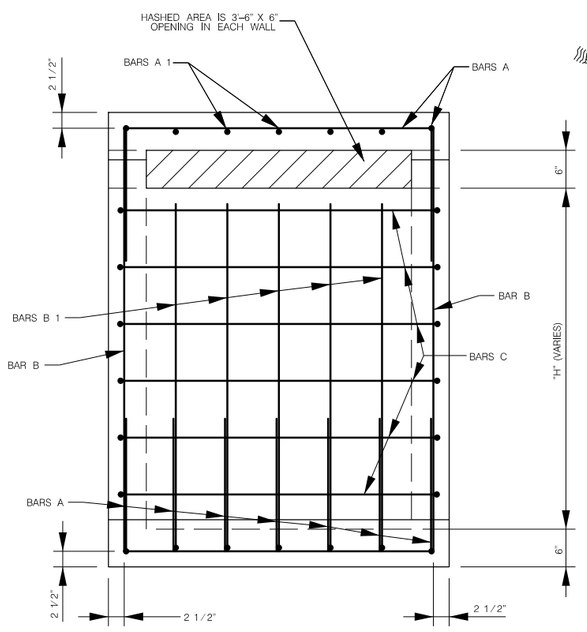


BARS C

SCALE: 1" = 2'-0"

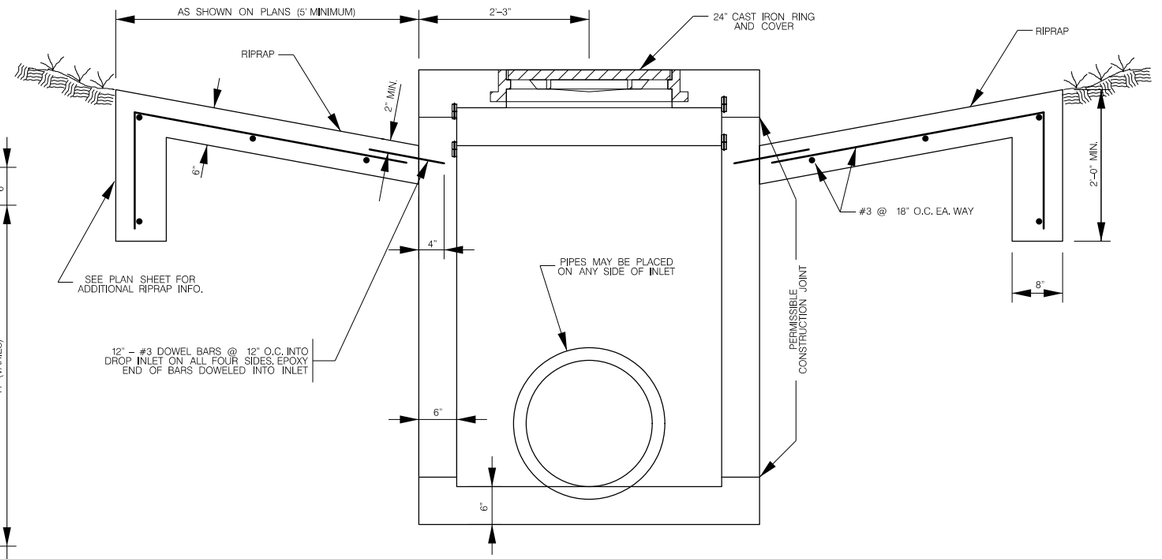
ESTIMATED QUANTITIES FOR "H" = 4'-6"					
REINFORCING STEEL					
BAR	NO.	SIZE	SPACE	LENGTH	WEIGHT
A	18	4	8" +/-	7'-6 1/2"	79
A 1	10	4	8" +/-	4'-0 1/2"	27
B	4	4	AS SHOWN	5'-7"	15
B 1	20	4	8" +/-	4'-7"	61
C	12	4	9" +/-	18'-6"	148
J	4	4	AS SHOWN	2'-8"	6
TOTAL REINFORCING STEEL					336 Lbs. *
CLASS A CONCRETE					2.10 CY *

* FOR CONTRACTOR'S INFORMATION ONLY.
QUANTITIES VARY WITH "H".
SEE INLET & MANHOLE SUMMARY SHEETS FOR "H".



SIDE VIEW WALL

SCALE: 1" = 2'-0"



SECTION A-A

SCALE: 1" = 2'-0"

GENERAL NOTES:

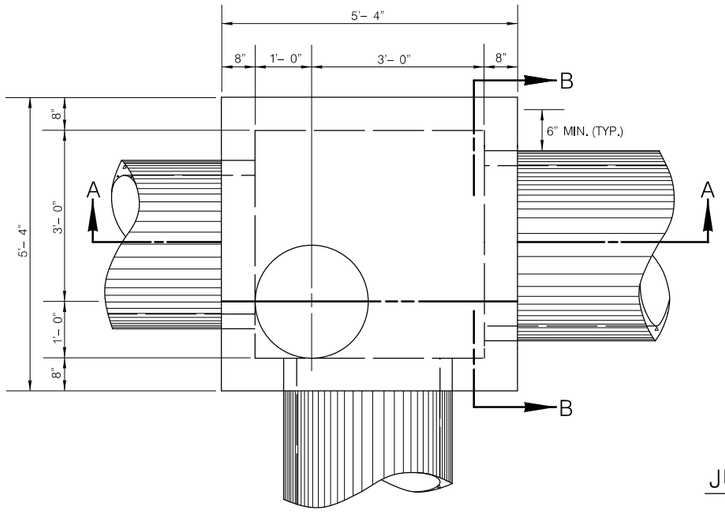
1. ALL BARS INTERCEPTING THE RING AND COVER OPENING AND PIPE OPENINGS. SHALL BE FIELD CUT
2. CONCRETE SHALL BE CLASS "A", 3000 PSI IN 28 DAYS.
3. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
4. ALL EXPOSED CORNERS SHALL HAVE 3/4" CHAMFER
5. PAYMENT FOR ALL EXCAVATION, BACKFILLING, CONCRETE, REINFORCING STEEL, RING, AND COVER SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 "STORM SEWER JUNCTION BOXES AND INLETS".

JANUARY 2005

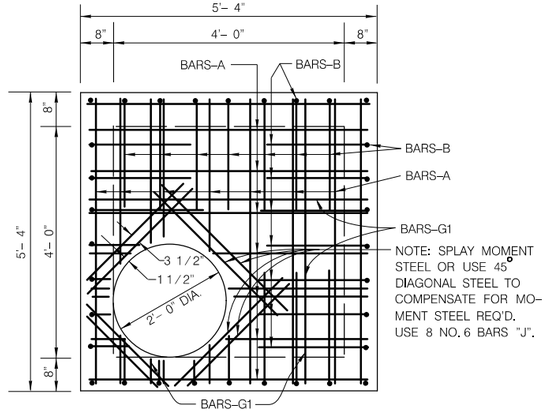
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

4-WAY INLET STANDARDS

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/7/2025
DRWN. BY: M. BARRERA, P.E.	DSGN. BY:	CHKD. BY:	SHEET NO. 213 OF 377

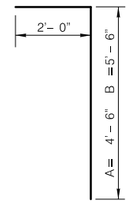


PLAN

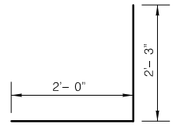


PLAN

JUNCTION BOX TOP SLAB SHOWING STEEL



BARS–B



BARS–C

A= 4' X 4' X 4' J.B. NO. 1 & 4

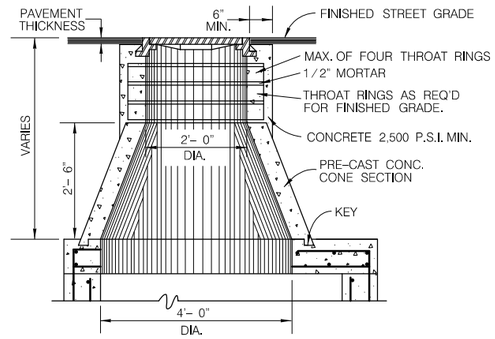
SCHEDULE FOR REINFORCING STEEL

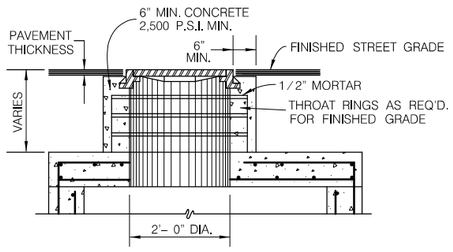
SHAPE	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
STRAIGHT	A	16	4	9" O.C.	5'– 1"	54
⌐	B	32	5	8" O.C.	6'– 10"	228
L	C	32	5	8" O.C.	4'– 3"	142
STRAIGHT	D	16	4	9" O.C.	5'– 1"	54
STRAIGHT	E	16	3	12" O.C.	3'–11"	24
STRAIGHT	G	16	4	12" O.C.	5'–1"	54
STRAIGHT	G_1	8	4	AS SHOWN	5'–1"	27
STRAIGHT	H	20	3	12" O.C.	4'–5"	33
STRAIGHT	J	8	6	3 1/2"	2'– 10"	34
				TOTAL		650 LBS.

CLASS "A" CONCRETE– 3.43 CU. YDS.
(DOES NOT EXCLUDE MANHOLE OPENINGS OR PIPE OPENING)

* NOTE: BAR SIZE AND SPACING BASED ON SPANS AS SHOWN – ANY REVISIONS TO THESE SPANS SHALL INCLUDE A RE–DESIGN ON STEEL REQD.

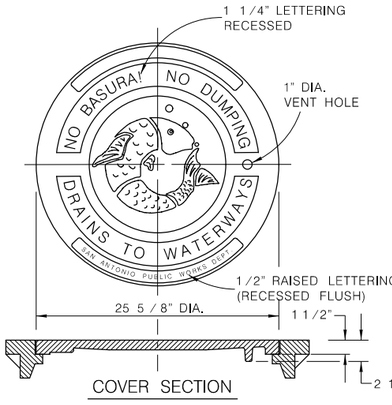
1. CONCRETE FOR STRUCTURE SHALL BE CLASS "A," 3,000 P.S.I. AT 28 DAYS.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED 3 /4".
3. REINFORCING STEEL SHALL BE NEW BILLET STEEL, INTERMEDIATE GRADE, ASTM. A–15. THE DEFORMATION SHALL CONFORM TO ASTM. A–305.
4. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER 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 (2,500 P.S.I. MIN.) TO EFFECT DRAINAGE TO OUTLET PIPE. COST SUBSIDIARY TO CLASS "A" CONCRETE (JUNCTION BOXES).
8. PAYMENT FOR ALL EXCAVATION, BACKFILLING, CONCRETE, REINFORCING STEEL, VERTICAL STACK, RING AND COVER SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 – "STORM SEWER JUNCTION BOXES AND INLETS".





VARIATION OF VERTICAL STACK

VERTICAL STACK DESIGN SHALL BE GOVERNED BY THE DEPTH OF THE TOP OF THE JUNCTION BOX BELOW THE FINISHED STREET GRADE.



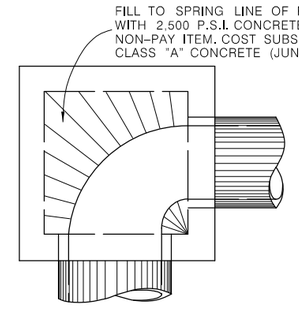
COVER SECTION

MANHOLE LID & RING DETAIL

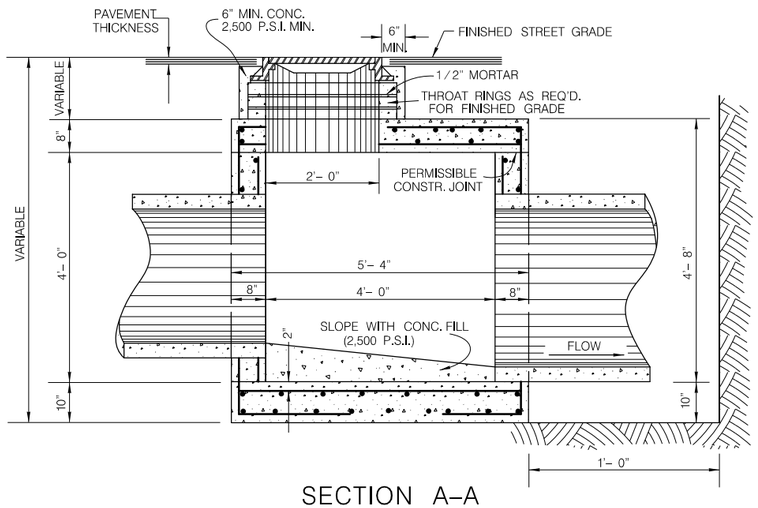
SCALE: 1 : 16

NOTES FOR MANHOLE LID AND RING

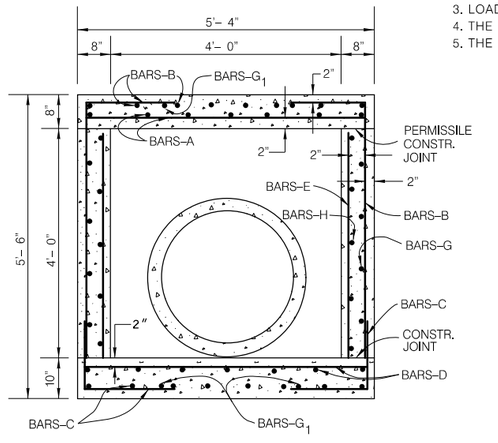
1. FOR LID DESIGN OUTSIDE OF CITY OF SAN ANTONIO, DELETE "SAN ANTONIO PUBLIC WORKS DEPT.".
2. CASTING NUMBER AND MANUFACTURER'S I.D. ON LID AND RING.
3. LOAD BEARING CAPABILITY OF HS–20 MINIMUM.
4. THE LOAD BEARING SURFACES SHALL BE MACHINE GROUND.
5. THE COMBINED WEIGHT OF THE MANHOLE RING AND COVER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



CURVED DEFLECTOR DETAIL



SECTION A–A



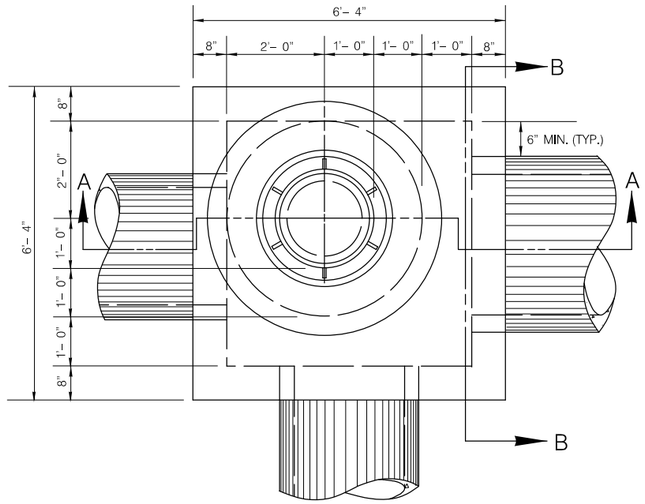
SECTION B–B

JANUARY 2005

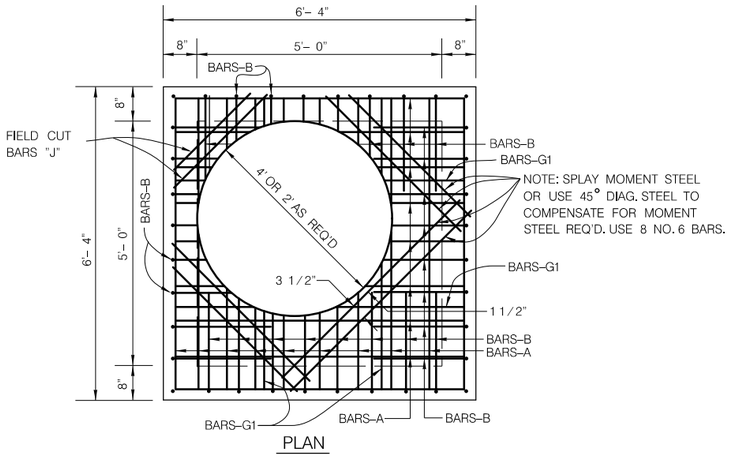
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

4'x4'x4' JUNCTION BOX STANDARDS

100 % SUBMITTAL	PROJECT NO.: 23–03907	DATE: 5/7/2025
DRWN. BY:	DSGN. BY: / CHKD. BY:	SHEET NO. 214 OF 377

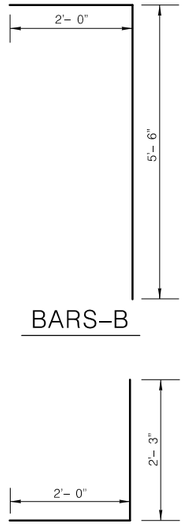


PLAN



PLAN

OF JUNCTION BOX TOP SLAB SHOWING STEEL



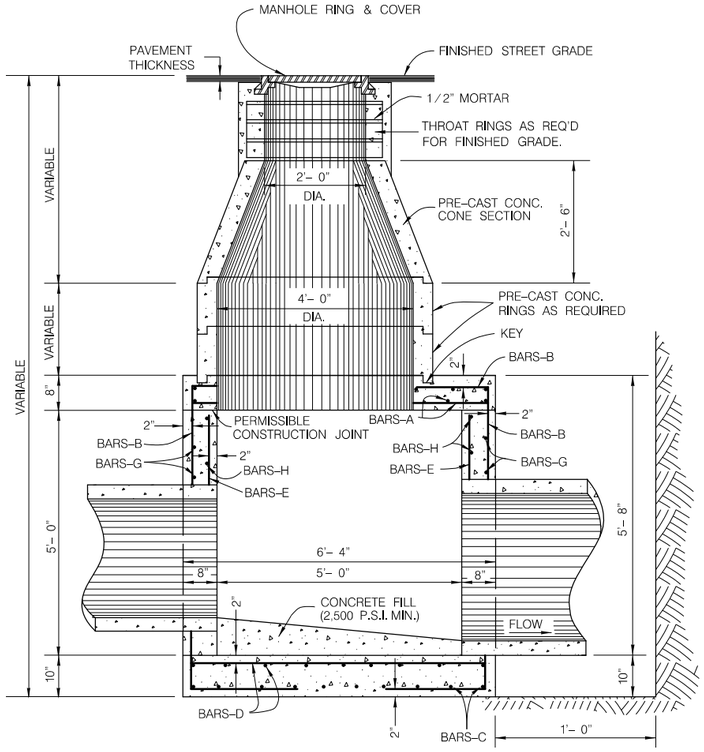
SCHEDULE FOR REINFORCING STEEL

SHAPE	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
STRAIGHT	A	18	4	9" O.C.	6'– 1"	73
⌜	B	36	5	8" O.C.	7'– 6"	282
⌞	C	36	5	8" O.C.	4'– 3"	160
STRAIGHT	D	18	4	9" O.C.	6'– 1"	73
STRAIGHT	E	20	3	12" O.C.	4'– 11"	37
STRAIGHT	G	20	4	12" O.C.	6'– 1"	81
STRAIGHT	G_1	8	4	AS SHOWN	6'– 1"	33
STRAIGHT	H	24	3	12" O.C.	5'– 5"	49
STRAIGHT	J	8	6	3 1/2" O.C.	4'– 11"	59
					TOTAL	847 lbs.

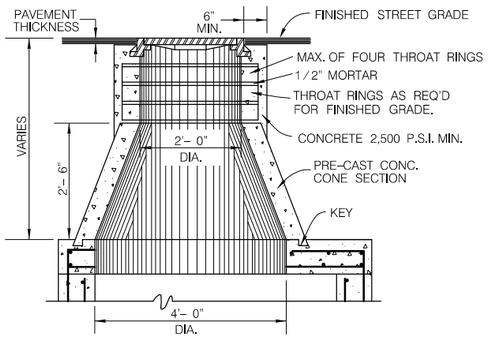
CLASS "A" CONCRETE – 5.03 CU. YDS.
(DOES NOT EXCLUDE MANHOLE OPENINGS OR PIPE OPENING)

★ NOTE: BAR SIZE AND SPACING BASED ON SPANS AS SHOWN – ANY REVISIONS TO THESE SPANS SHALL INCLUDE A RE–DESIGN ON STEEL REQD.

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 (2,500 P.S.I. MIN.) TO EFFECT DRAINAGE TO OUTLET PIPE. COST SUBSIDIARY TO CLASS "A" CONCRETE (JUNCTION BOXES).
8. PAYMENT FOR ALL EXCAVATION, BACKFILLING, CONCRETE, REINFORCING STEEL, VERTICAL STACK, RING AND COVER SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 – "STORM SEWER JUNCTION BOXES AND INLETS".

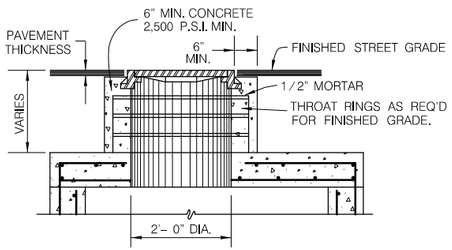


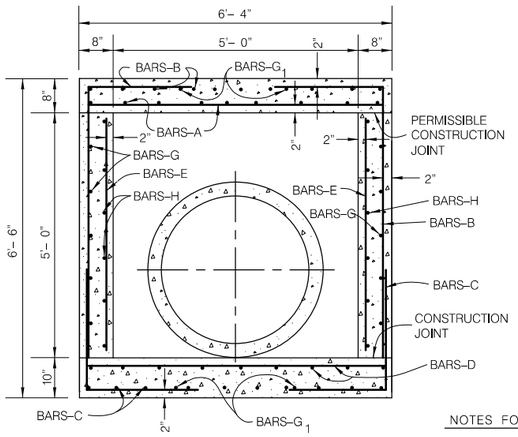
SECTION A–A



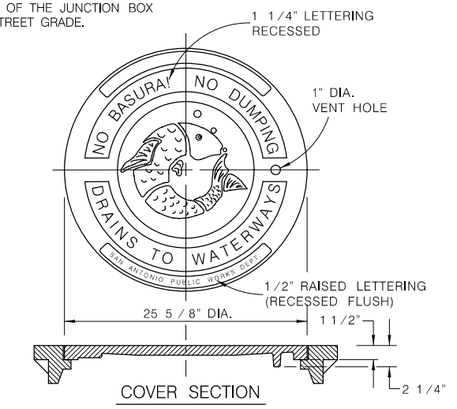
VARIATION OF VERTICAL STACK

VERTICAL STACK DESIGN SHALL BE GOVERNED BY THE DEPTH OF THE TOP OF THE JUNCTION BOX BELOW THE FINISHED STREET GRADE.





SECTION B–B



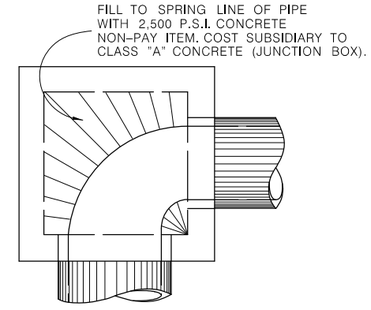
COVER SECTION

MANHOLE LID & RING DETAIL

SCALE: 1 : 16

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.



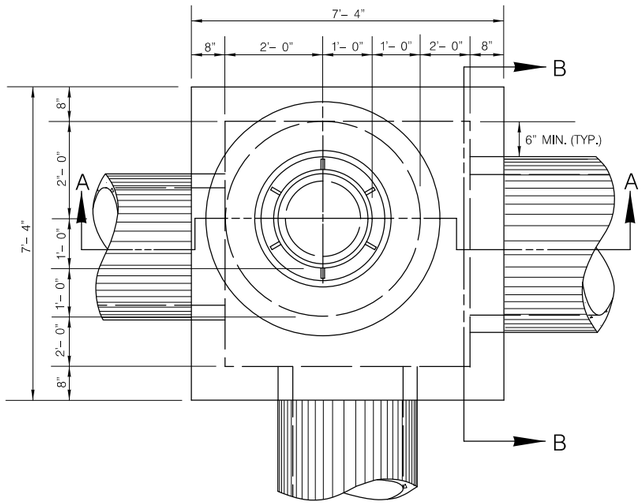
CURVED DEFLECTOR DETAIL

JANUARY 2005

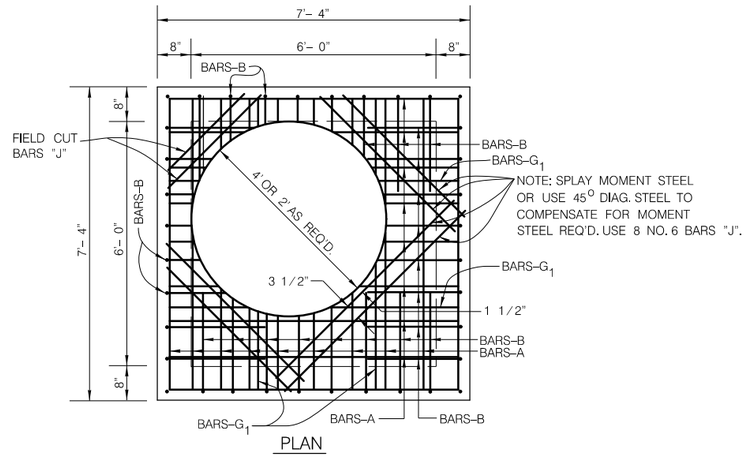
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

5'x5'x5' JUNCTION BOX STANDARDS

100 % SUBMITTAL	PROJECT NO.: 23–03907		DATE: 5/7/2025
DRWN. BY:	DSGN. BY:	CHKD. BY:	SHEET NO. 215 OF 377

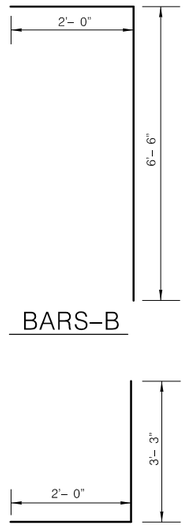


PLAN



PLAN

JUNCTION BOX TOP SLAB SHOWING STEEL



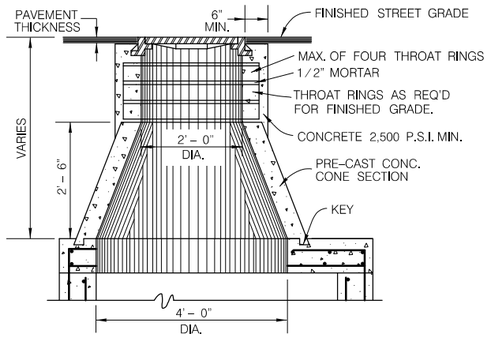
SCHEDULE FOR REINFORCING STEEL

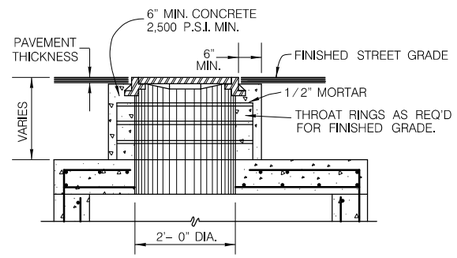
SHAPE	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
STRAIGHT	A	21	4	9" O.C.	7'– 1"	99
⌐	B	46	5	8" O.C.	8'– 6"	408
L	C	46	5	8" O.C.	5'– 3"	252
STRAIGHT	D	21	4	9" O.C.	7'– 1"	99
STRAIGHT	E	28	3	12" O.C.	5'– 11"	62
STRAIGHT	G	20	4	12" O.C.	7'– 1"	95
STRAIGHT	G_1	8	4	AS SHOWN	6'– 1"	33
STRAIGHT	H	27	3	12" O.C.	7'– 1"	72
STRAIGHT	J	8	6	3 1/2" O.C.	4'– 11"	59
					TOTAL	1,179 LBS.

CLASS "A" CONCRETE – 6.94 CU. YDS.
(DOES NOT EXCLUDE MANHOLE OPENINGS OR PIPE OPENING)

★ NOTE: BAR SIZE AND SPACING BASED ON SPANS AS SHOWN – ANY REVISIONS TO THESE SPANS SHALL INCLUDE A RE-DESIGN ON STEEL REQ'D.

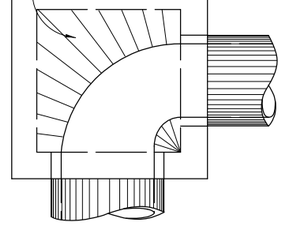
1. CONCRETE FOR STRUCTURE SHALL BE CLASS "A" 3,000 P.S.I. AT 28 DAYS.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED 3 /4".
3. REINFORCING STEEL SHALL BE NEW BILLET STEEL, INTERMEDIATE GRADE, ASTM A-15. THE DEFORMATION SHALL CONFORM TO ASTM A-305.
4. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER 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 (2,500 P.S.I. MIN.) TO EFFECT DRAINAGE TO OUTLET PIPE. COST SUBSIDIARY TO CLASS "A" CONCRETE (JUNCTION BOXES).
8. PAYMENT FOR ALL EXCAVATION, BACKFILLING, CONCRETE, REINFORCING STEEL, VERTICAL STACK, RING AND COVER SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 – "STORM SEWER JUNCTION BOXES AND INLETS".



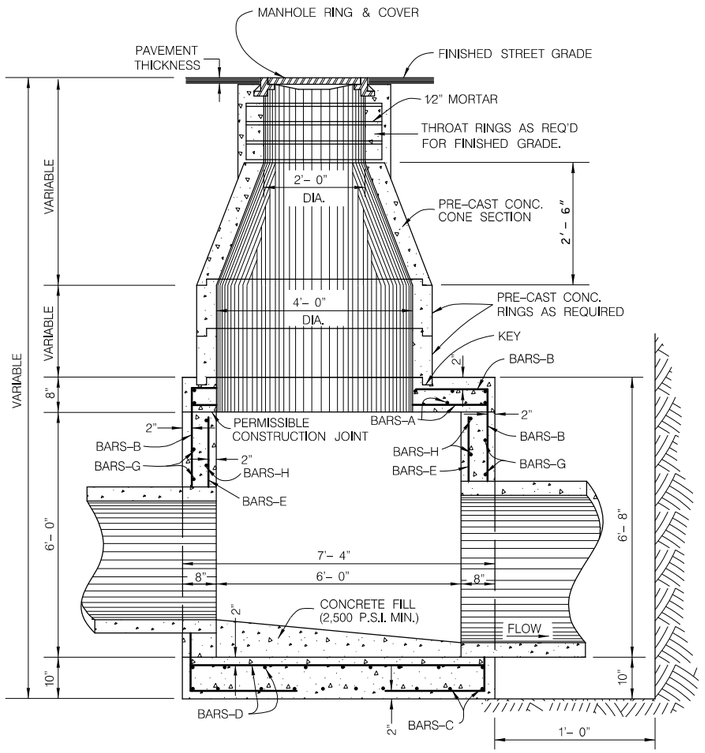


VARIATION OF VERTICAL STACK

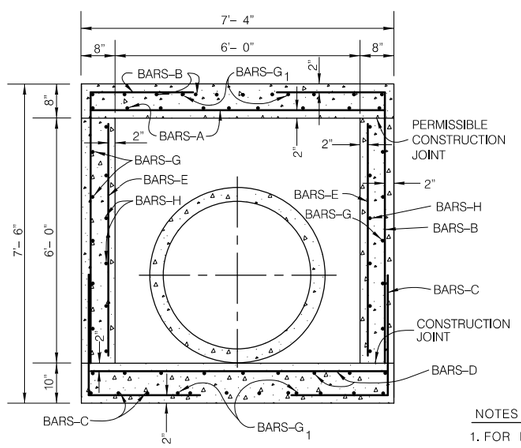
VERTICAL STACK DESIGN SHALL BE GOVERNED BY THE DEPTH OF THE TOP OF THE JUNCTION BOX BELOW THE FINISHED STREET GRADE.



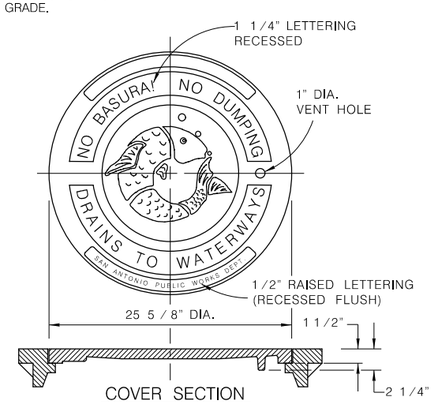
CURVED DEFLECTOR DETAIL



SECTION A–A



SECTION B–B



COVER SECTION

MANHOLE LID & RING DETAIL

SCALE: 1 : 16

NOTES FOR MANHOLE LID AND RING

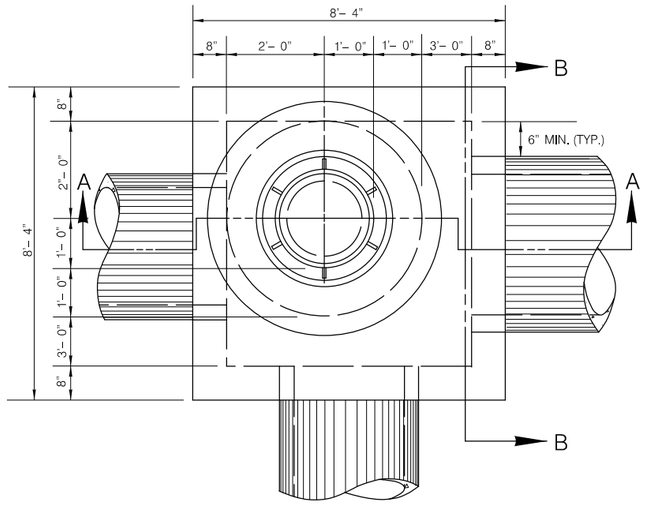
1. FOR LID DESIGN OUTSIDE OF CITY OF SAN ANTONIO, DELETE "SAN ANTONIO PUBLIC WORKS DEPT.".
2. CASTING NUMBER AND MANUFACTURER'S I.D. ON LID AND RING.
3. LOAD BEARING CAPABILITY OF HS-20 MINIMUM.
4. THE LOAD BEARING SURFACES SHALL BE MACHINE GROUND.
5. THE COMBINED WEIGHT OF THE MANHOLE RING AND COVER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

JANUARY 2005

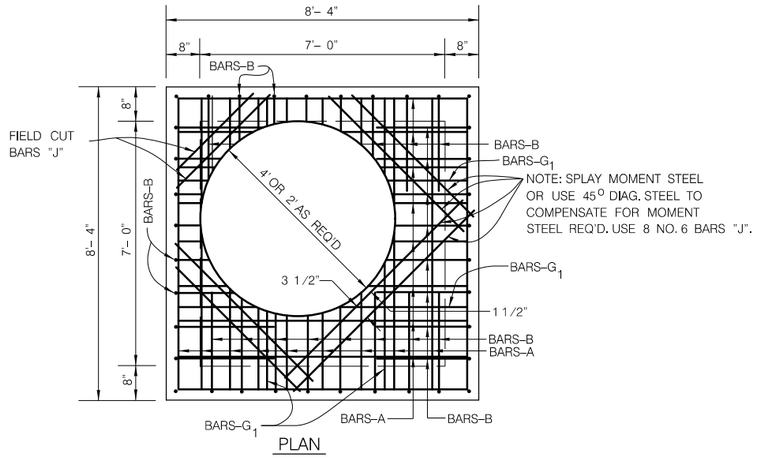
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

6'x6'x6' JUNCTION BOX STANDARDS

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/7/2025
DRWN. BY:	DSGN. BY: / CHKD. BY:	SHEET NO. 216 OF 377

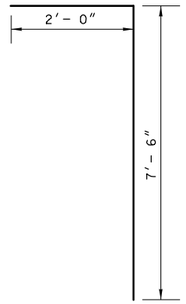


PLAN

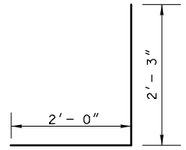


PLAN

JUNCTION BOX TOP SLAB SHOWING STEEL



BARS–B



BARS–C

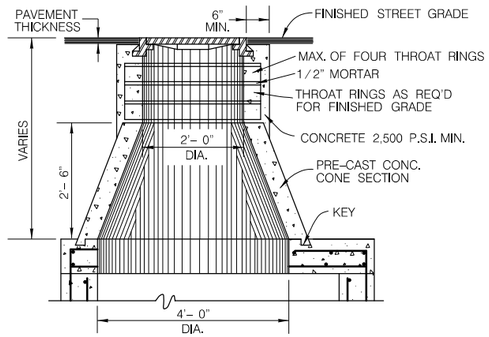
SCHEDULE FOR REINFORCING STEEL

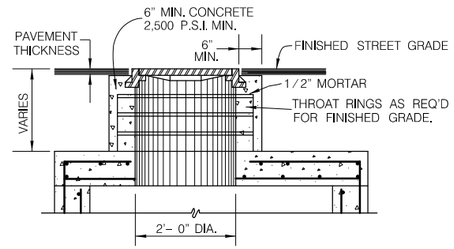
SHAPE	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
STRAIGHT	A	24	4	9" O.C.	8'– 1"	130
⌜	B	48	5	8" O.C.	9'– 6"	476
⌞	C	48	5	8" O.C.	4'– 3"	213
STRAIGHT	D	24	4	9" O.C.	8'– 1"	130
STRAIGHT	E	28	3	12" O.C.	6'– 11"	73
STRAIGHT	G	28	4	12" O.C.	8'– 6"	151
STRAIGHT	G_1	8	4	AS SHOWN	8'– 1"	43
STRAIGHT	H	32	3	12" O.C.	7'– 5"	89
STRAIGHT	J	8	6	3 1/2" O.C.	4'– 11"	59
					TOTAL	1,364 LBS.

CLASS "A" CONCRETE – 9.16 C.U. YDS.
(DOES NOT EXCLUDE MANHOLE OPENINGS OR PIPE OPENING)

★ NOTE: BAR SIZE AND SPACING BASED ON SPANS AS SHOWN – ANY REVISIONS TO THESE SPANS SHALL INCLUDE A RE-DESIGN ON STEEL REQD.

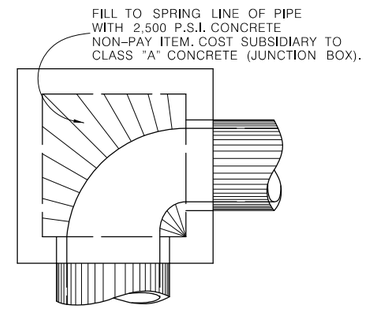
1. CONCRETE FOR STRUCTURE SHALL BE CLASS "A" 3,000 P.S.I. AT 28 DAYS.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4".
3. REINFORCING STEEL SHALL BE NEW BILLET STEEL, INTERMEDIATE GRADE, ASTM A-15. THE DEFORMATION SHALL CONFORM TO ASTM A-305.
4. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER 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 (2,500 P.S.I. MIN.) TO EFFECT DRAINAGE TO OUTLET PIPE. COST SUBSIDIARY TO CLASS "A" CONCRETE (JUNCTION BOXES).
8. PAYMENT FOR ALL EXCAVATION, BACKFILLING, CONCRETE, REINFORCING STEEL, VERTICAL STACK, RING AND COVER SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 – "STORM SEWER JUNCTION BOXES AND INLETS".



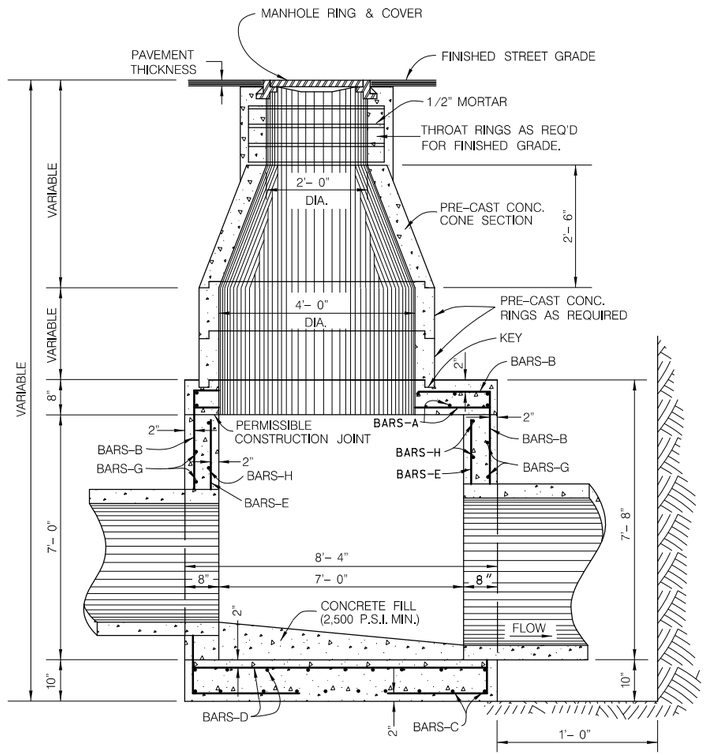


VARIATION OF VERTICAL STACK

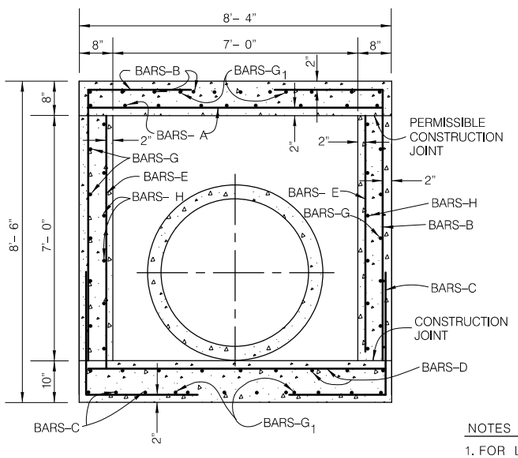
VERTICAL STACK DESIGN SHALL BE GOVERNED BY THE DEPTH OF THE TOP OF THE JUNCTION BOX BELOW THE FINISHED STREET GRADE.



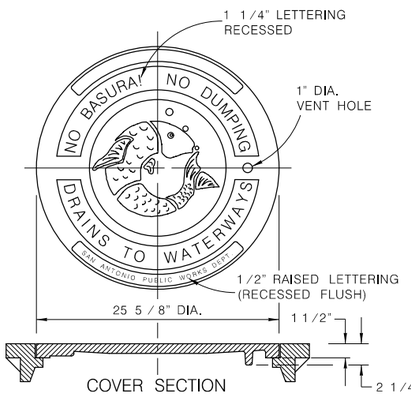
CURVED DEFLECTOR DETAIL



SECTION A–A



SECTION B– B



MANHOLE LID & RING DETAIL

SCALE: 1 : 16

NOTES FOR MANHOLE LID AND RING

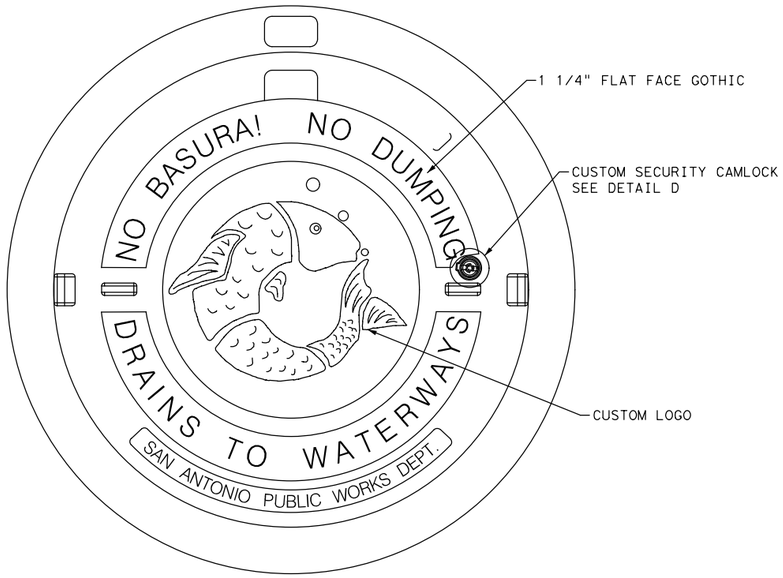
1. FOR LID DESIGN OUTSIDE OF CITY OF SAN ANTONIO, DELETE "SAN ANTONIO PUBLIC WORKS DEPT.".
2. CASTING NUMBER AND MANUFACTURER'S I.D. ON LID AND RING.
3. LOAD BEARING CAPABILITY OF HS-20 MINIMUM.
4. THE LOAD BEARING SURFACES SHALL BE MACHINE GROUND.
5. THE COMBINED WEIGHT OF THE MANHOLE RING AND COVER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

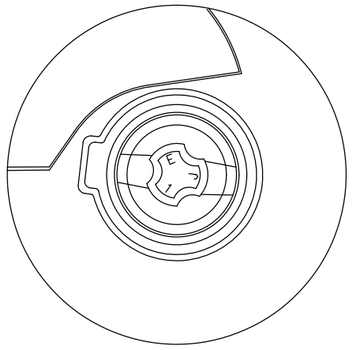
JANUARY 2005

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

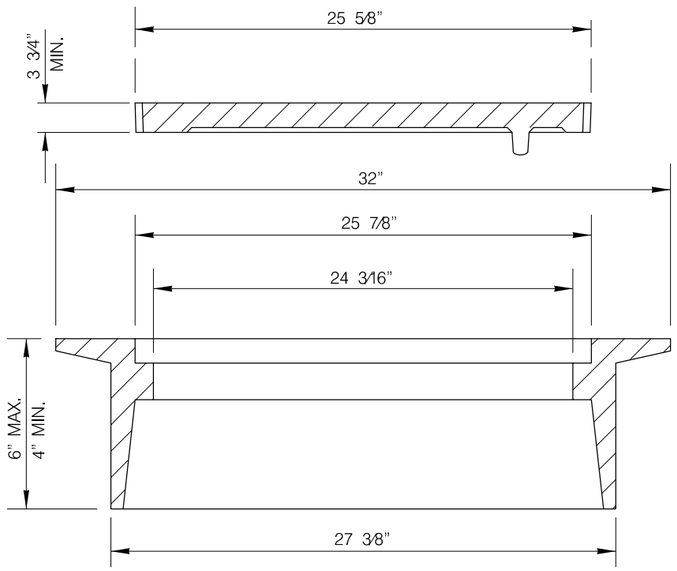
7'x7'x7' JUNCTION BOX STANDARDS

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/7/2025
DRWN. BY:	DSGN. BY: / CHKD. BY:	SHEET NO. 217 OF 377





DETAIL D



Product Number

00185480A02

-Materials
  Frame
    Gray Iron (CL35B)
  Cover
    Ductile Iron (70-50-05)

-Design Load
  Heavy Duty
-Open Area
  n/a
-Coating
  Undipped

Certification

-ASTM A48
-ASTM A536
-Country of Origin: USA

Major Components

00185411
00185480

Disclaimer

Weights (lbs/kg), dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.

CONFIDENTIAL: This drawing is the property of EJ Group, Inc. and embodies confidential information, registered marks, patents, trade secret information, and/or know-how that is the property of EJ Group, Inc. Copyright 2013 EJ Group, Inc. All rights reserved.

Contact

800 626 4653
ejco.com

PROP
EXIST

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

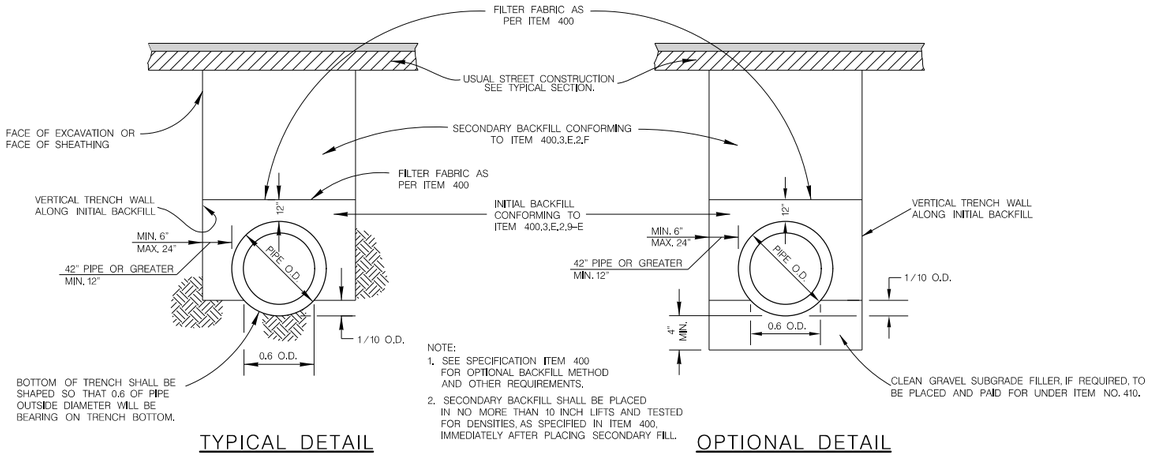
MILITARY DRIVE

1854Z 1854A4 ASSEMBLY

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/17/2025
DRWN. BY: DO	DSGN. BY: EDT	CHKD. BY: JA	SHEET NO. 218 OF 377

Pen Table File
8:15:12 PM
5/17/2025

5/17/2025 8:15:12 PM
Pen Table File

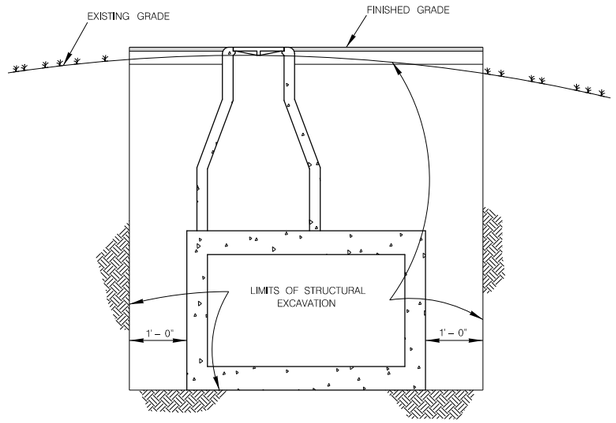


TYPICAL DETAIL

NOTE:
1. SEE SPECIFICATION ITEM 400 FOR OPTIONAL BACKFILL METHOD AND OTHER REQUIREMENTS.
2. SECONDARY BACKFILL SHALL BE PLACED IN NO MORE THAN 10 INCH LIFTS AND TESTED FOR DENSITIES, AS SPECIFIED IN ITEM 400, IMMEDIATELY AFTER PLACING SECONDARY FILL.

OPTIONAL DETAIL

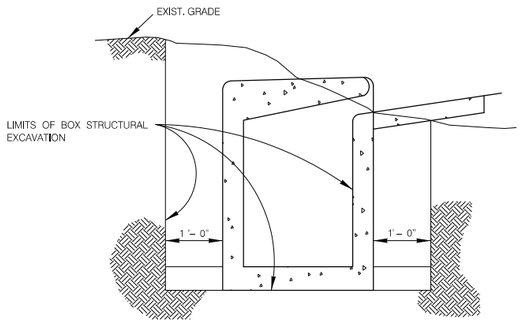
PIPE BEDDING & BACKFILL DETAILS



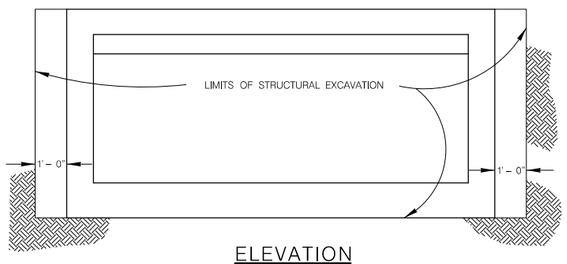
COST OF STRUCTURAL EXCAVATION TO BE INCLUDED WITH UNIT BID PRICE FOR JUNCTION BOX – ITEM 403.

STRUCTURAL EXCAVATION AT JUNCTION BOXES

NO SCALE



SIDE VIEW

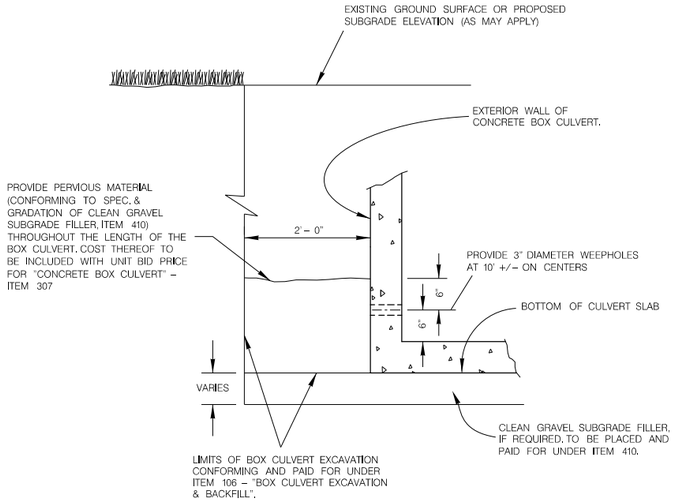


ELEVATION

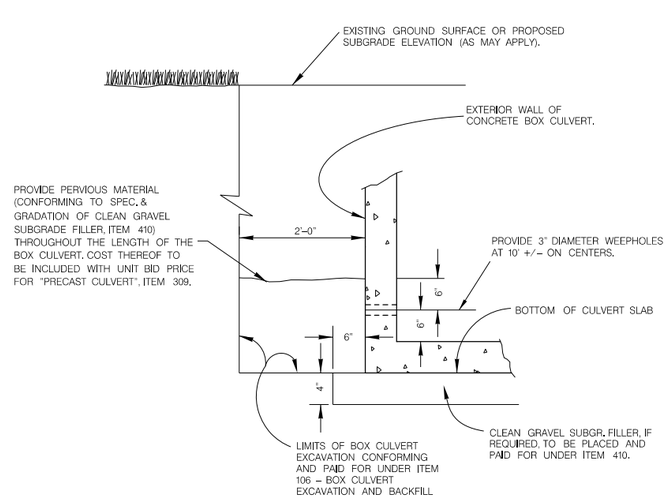
COST OF STRUCTURAL EXCAVATION TO BE INCLUDED WITH UNIT BID PRICE FOR INLETS – ITEM 403.

STRUCTURAL EXCAVATIONS AT DRAINAGE INLETS

NO SCALE



CAST–IN–PLACE BOX CULVERT



PRECAST BOX CULVERT

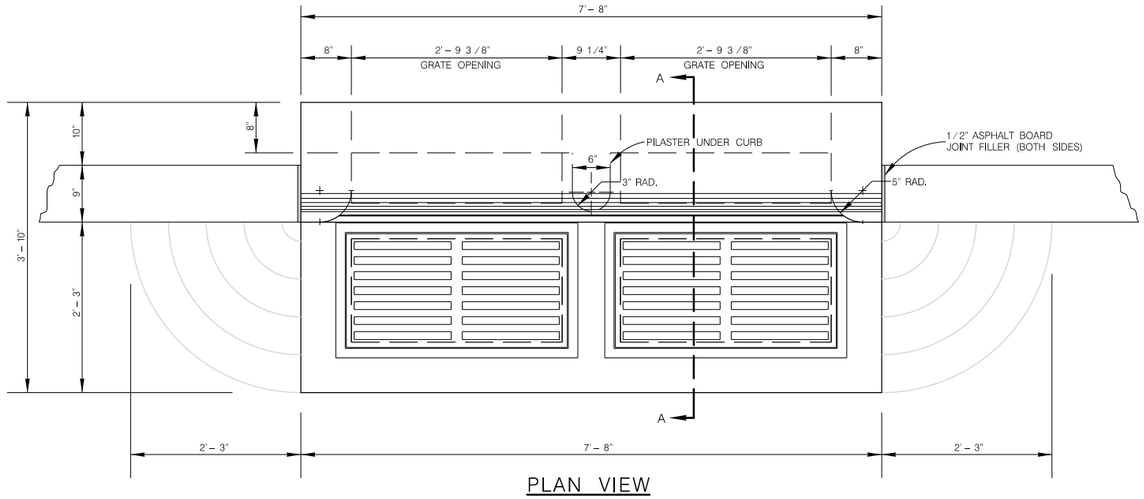
CONCRETE BOX CULVERT

MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

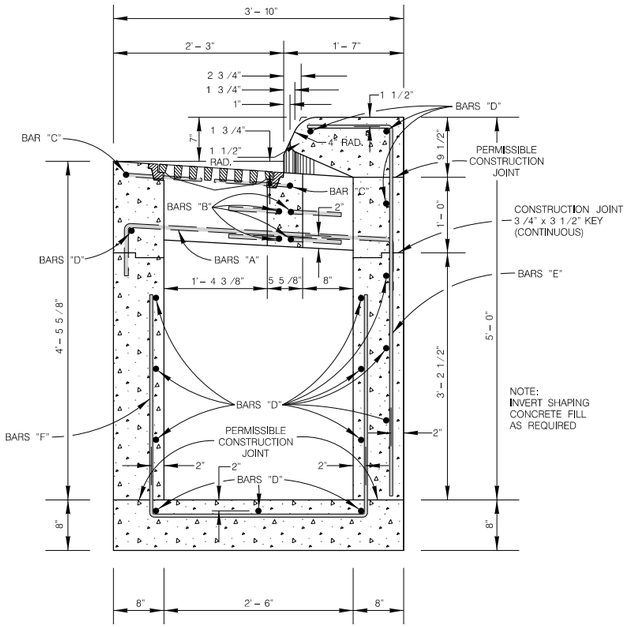
PIPE BEDDING & MISCELLANEOUS DRAINAGE DETAILS

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: $DATA$
DRWN. BY:	DSGN. BY:	CHKD. BY:	SHEET NO. 219 OF 377



PLAN VIEW

SCALE : 1" = 2'



SECTION A–A

SCALE : 1" = 2'

GENERAL NOTES

1. ALL BARS INTERCEPTING REINFORCED CONCRETE PIPE SHALL BE FIELD CUT.
2. CONCRETE FOR STRUCTURES SHALL BE CLASS "A", 3000 P.S.I. IN 28 DAYS.
3. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
4. ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4".
5. CONSTRUCTION JOINT SHOWN AT FLOWLINE MAY BE RAISED A MAXIMUM OF 6" AT THE OPTION OF THE CONTRACTOR. ADJUST LENGTH OF VERTICAL STEEL AS REQUIRED.
6. ALL REINFORCING STEEL SHALL BE MEET A.S.T.M. SPECIFICATION A15–58T, NEW BILLET–STEEL, INTERMEDIATE GRADE, AND A.S.T.M. A305–56, MINIMUM REQUIREMENTS FOR DEFORMED STEEL BARS.
7. PAYMENT FOR ALL EXCAVATION, BACKFILLING, CONCRETE AND REINFORCING STEEL SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 "STORM SEWER JUNCTION BOXES AND INLETS".

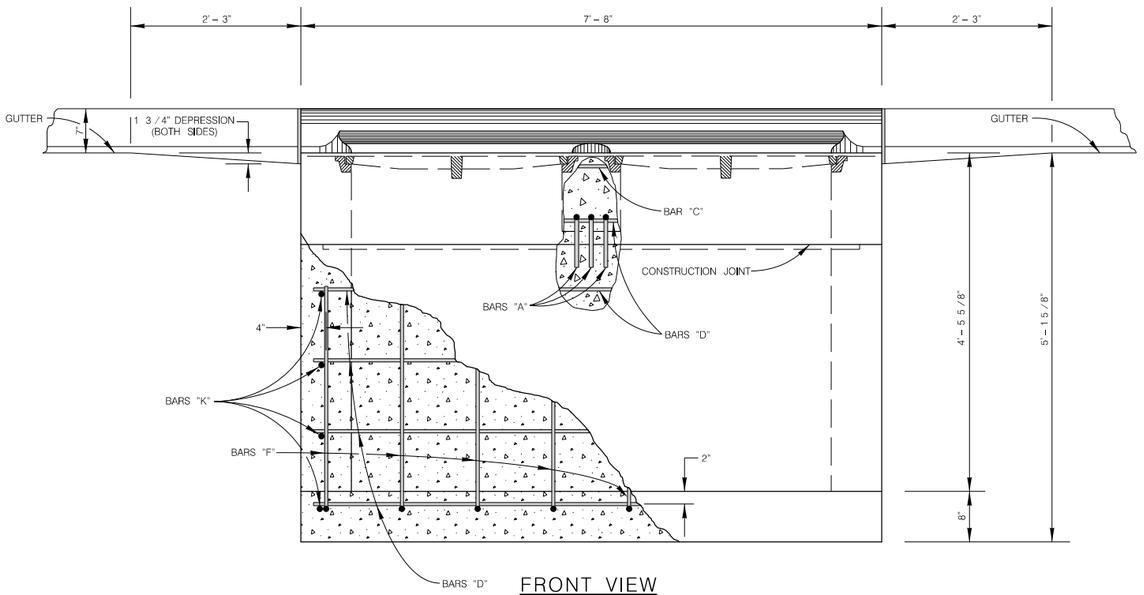
REINFORCING STEEL SCHEDULE

SHAPE	BAR	NO.	SIZE	SPACE	LENGTH	WEIGHT
	A	3	5	2 5/8" C–C	4'– 10"	15
	B	4	5	AS SHOWN	8'– 8"	36
	C	2	4	AS SHOWN	9'– 4"	12
STRAIGHT	D	16	4	AS SHOWN	7'– 4"	78
	E	11	4	9"	5'– 11 3/4"	44
	F	8	4	12"	8'– 8"	46
STRAIGHT	K	8	4	12"	2'– 10"	15
					TOTAL =	246 LBS.

ESTIMATED QUANTITIES

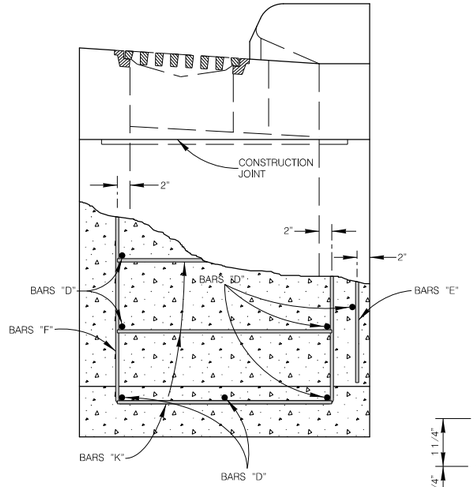
ITEM	UNIT	NEAT QUANTITY
CLASS "A" CONCRETE	C.Y.	*3.38
REINFORCING STEEL	LBS.	*246
STORM SEWER CASTINGS	LBS.	564

* THESE FIGURES DO NOT EXCLUDE CONCRETE & STEEL INTERCEPTED BY REINFORCED CONCRETE PIPE.



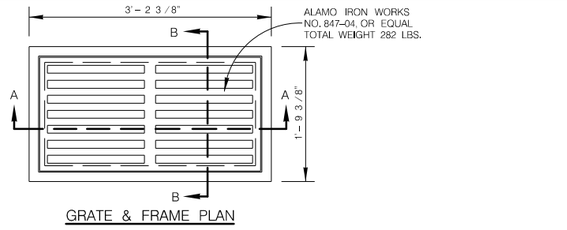
FRONT VIEW

SCALE : 1" = 2'



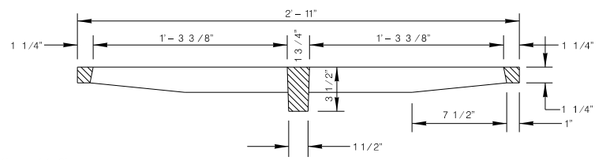
SIDE VIEW

SCALE : 1" = 2'



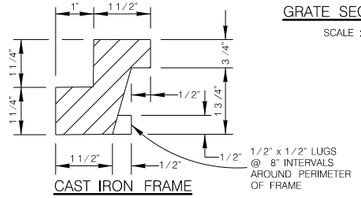
GRATE & FRAME PLAN

SCALE : 1" = 2'



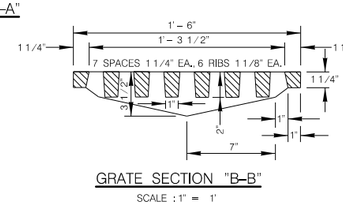
GRATE SECTION "A–A"

SCALE : 1" = 1'



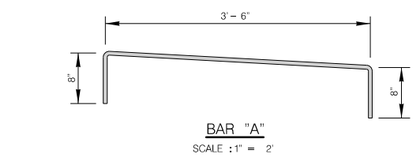
CAST IRON FRAME

SCALE : 1" = 4"



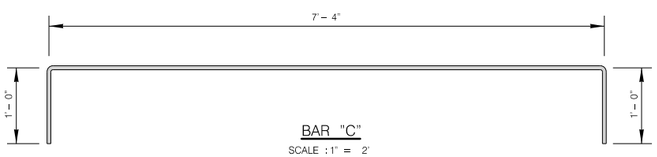
GRATE SECTION "B–B"

SCALE : 1" = 1'



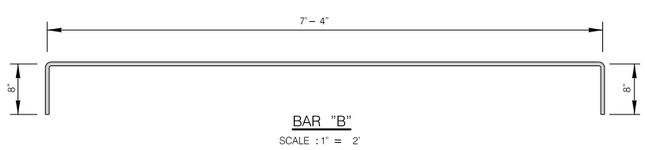
BAR "A"

SCALE : 1" = 2'



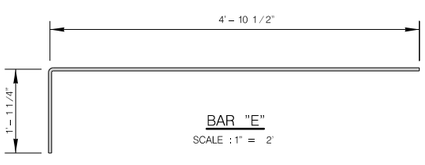
BAR "C"

SCALE : 1" = 2'



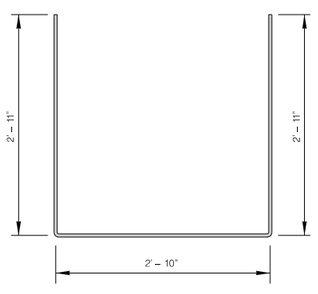
BAR "B"

SCALE : 1" = 2'



BAR "E"

SCALE : 1" = 2'



BAR "F"

SCALE : 1" = 2'

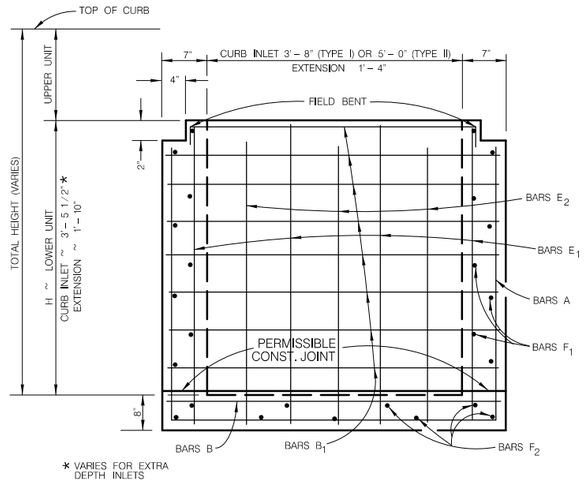
JANUARY 2005

CITY OF SAN ANTONIO

CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

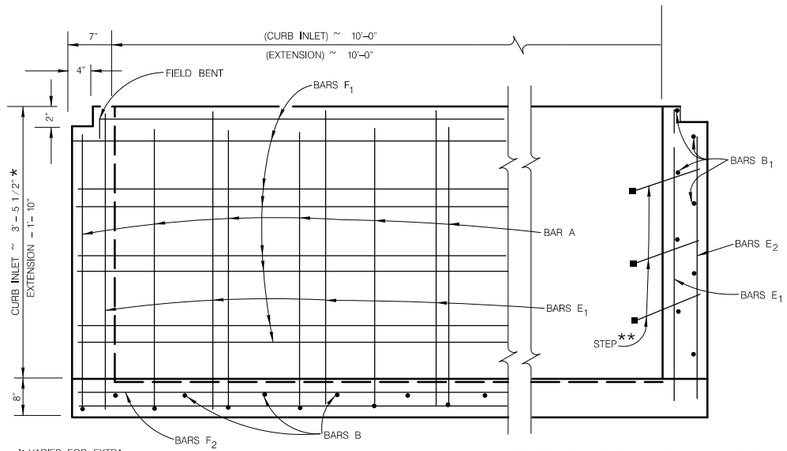
TYPE "B" INLET STANDARDS

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/7/2025
DRWN. BY:	DSGN. BY: / CHKD. BY:	SHEET NO. 220 OF 377



* VARIES FOR EXTRA DEPTH INLETS

SECTION A–A



* VARIES FOR EXTRA DEPTH INLETS

SECTION B–B

** LOCATION OF STEPS IN CURB INLET (LOWER UNIT) ONLY, WILL BE DETERMINED BY THE LOCATION OF RING COVER PLACEMENT. STEPS @ 15" O.C.

REINFORCING STEEL

LOWER UNIT 10'X 3'–8" (TYPE I)

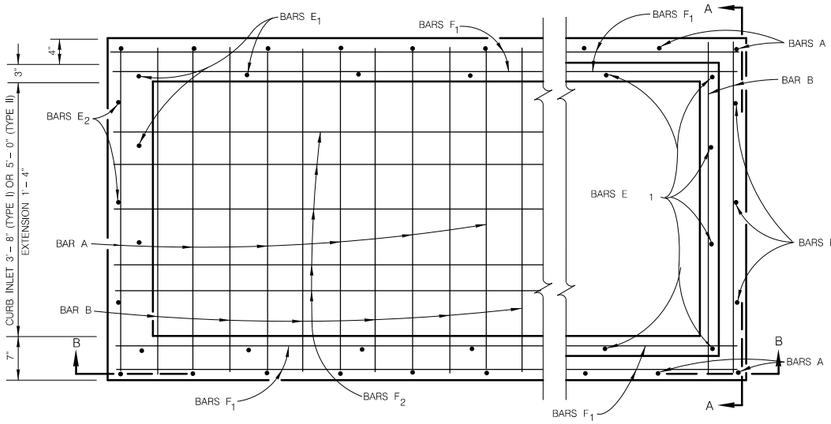
BAR	NO.	SIZE	SPAC.	LENGTH
A	12	#4	12"	VARIES
B	11	#4	12"	4'–6"
B_1	VARIES	#4	12"	4'–6"
E_1	20	#4	18"±	VARIES
E_2	6	#4	18"±	VARIES
F_1	VARIES	#4	12"±	10'–10"
F_2	9	#4	—	10'–10"

LOWER UNIT 10'X 5'–0" (TYPE II)

BAR	NO.	SIZE	SPAC.	LENGTH
A	12	#4	12"	VARIES
B	11	#4	12"	5'–10"
B_1	VARIES	#4	12"	5'–10"
E_1	22	#4	18"±	VARIES
E_2	8	#4	18"±	VARIES
F_1	VARIES	#4	12"±	10'–10"
F_2	11	#4	—	10'–10"

GENERAL NOTES

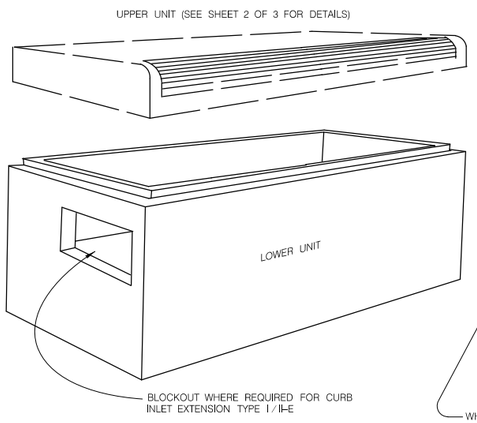
1. 5' INLETS AND 5' EXTENSIONS MUST BE IN ACCORDANCE WITH THE LATEST TXDOT CURB INLET TYPE "C" AND EXTENSION TYPE E (IL–C).
2. TYPE C–II INLET TO BE USED ONLY WHEN STORM DRAIN PIPE IS IN–LINE WITH CURB INLET AND APPROVED BY THE ENGINEER.
3. QUANTITIES SHOWN ARE FOR CONTRACTORS INFORMATION ONLY.
4. CONCRETE 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, CURB ARMOR AND STEPS 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. THE 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 BEND.
17. ALL LOWER UNITS SHALL RECEIVE INVERT MORTAR SHAPING.
18. PIPE BLOCKOUTS IN INLET WALLS SHOULD NOT EXCEED 3" BEYOND THE OUTER SHELL OF THE PIPE, TAKING INTO ACCOUNT THE SKEW OF THE PIPE AS NECESSARY. CONSTRUCTION JOINT MAY BE RAISED A MAXIMUM OF 6".

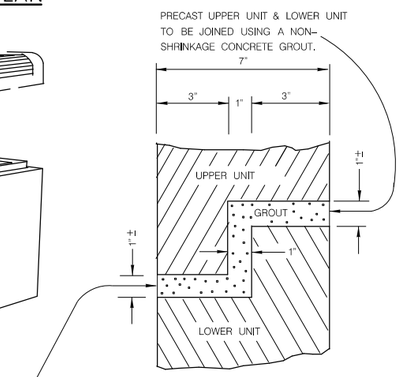


FLOOR STEEL

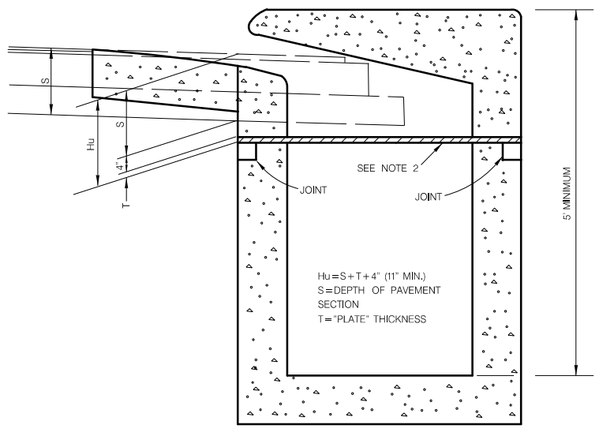
WALL STEEL

PLAN





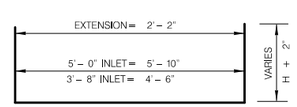
JOINT DETAIL



PHASE CONSTRUCTION

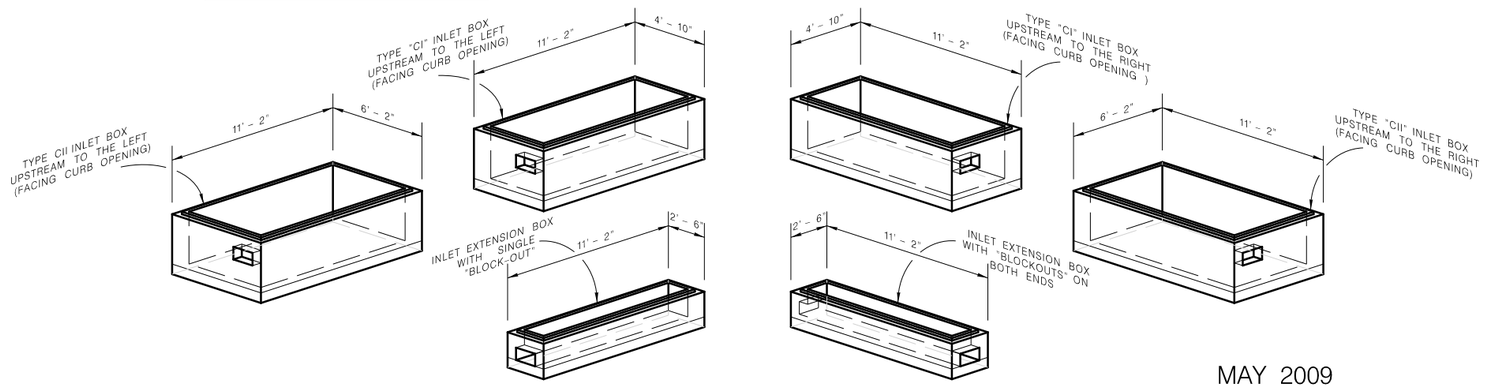
NOTES FOR PHASE CONSTRUCTION (WHEN DIRECTED BY THE ENGINEER):

1. THE CURB INLET AND EXTENSION SHALL BE CONSTRUCTED TO A DEPTH "Hu" 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 / OR EXTENSION.



BARS A

(LOWER UNIT)



CONCRETE INLET BOX CONFIGURATIONS (LOWER UNITS)

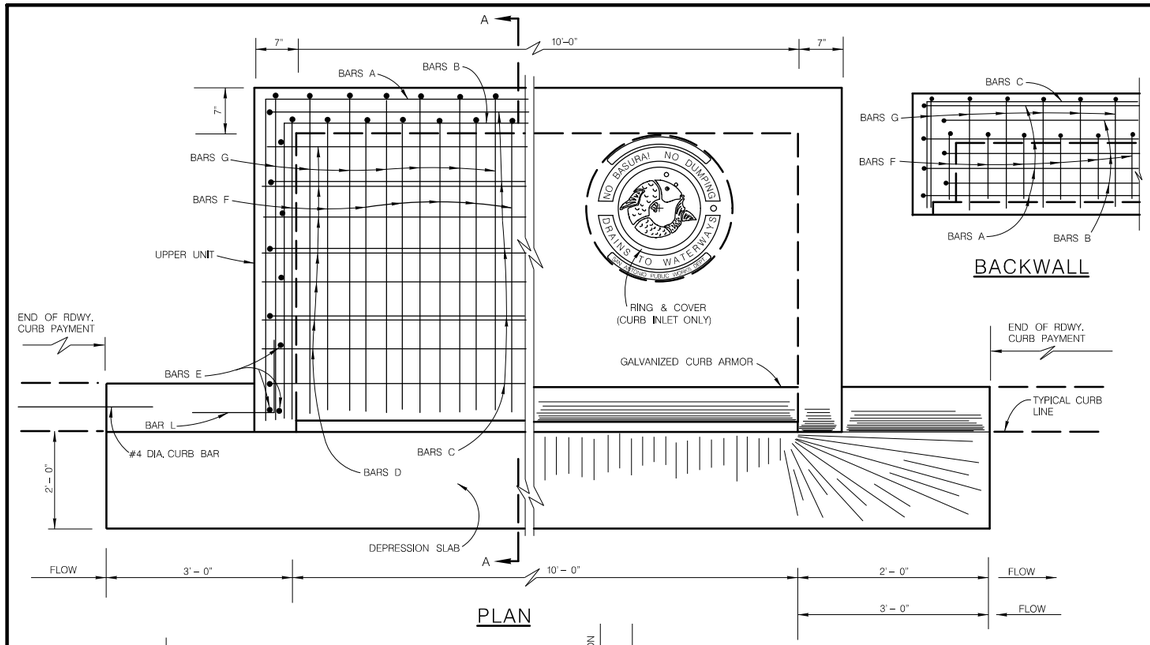
MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

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

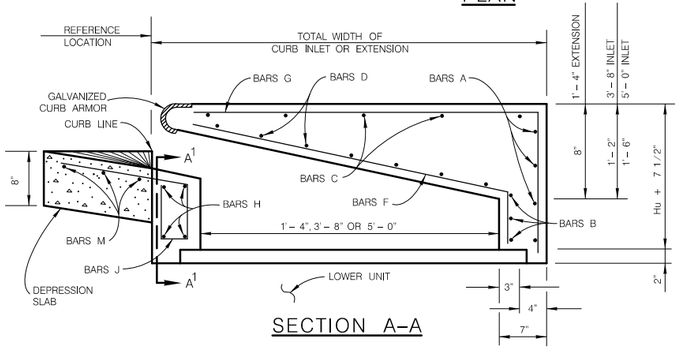
SHEET 1 OF 3

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/7/2025
DRWN. BY:	DSGN. BY:	CHKD. BY: SHEET NO. 221 OF 377

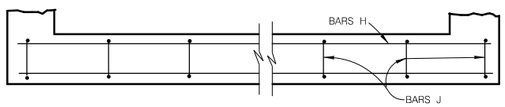


PLAN

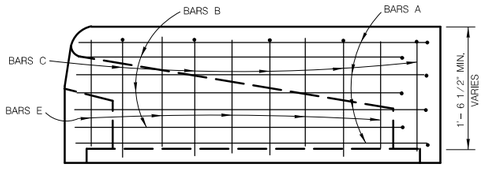
BACKWALL



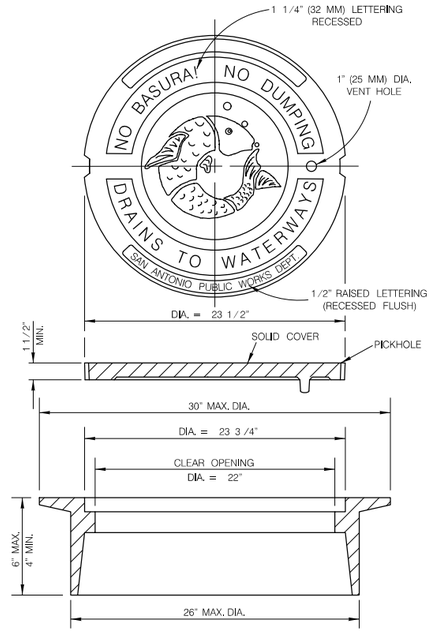
SECTION A-A



SECTION $A^1 - A^1$



END WALL



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")

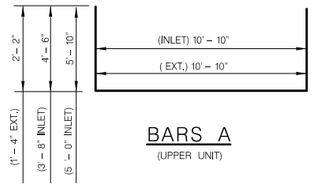
UPPER UNIT 10' X 3'-8" (TYPE I)					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	19'-10"	53
B	3	#4	—	18'-10"	38
C	5	#4	11"	13'-2"	44
D	7	#4	6"	10'-10"	51
E	12	#4	11"	1'-2"	9
F	21	#6	6"	4'-8"	147
G	22	#6	6"	5'-8"	187
H	4	#4	—	10'-10"	29
J	12	#4	12"	3'-6"	28
L	4	#4	—	2'-0"	5
M	3	#4	—	14'-8"	29
TOTAL WEIGHT					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"	62
D	11	#4	6"	10'-10"	80
E	16	#4	11"	1'-2"	13
F	21	#6	6"	5'-8"	179
G	22	#6	6"	7'-0"	231
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.

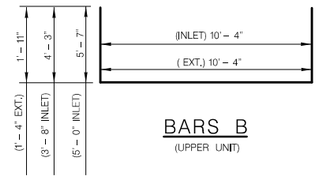
CLASS "A" CONCRETE QUANTITIES (FOR Hu = 11")

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

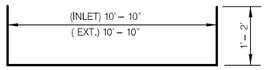
UPPER UNIT (ONLY)		C.Y.
10' X 3'-8"	CURB INLET	1.9
10' X 5'-0"	CURB INLET	2.7
10'	EXTENSION	1.0



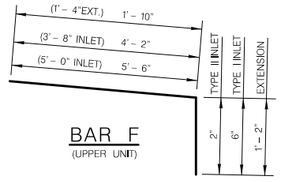
BARS A
(UPPER UNIT)



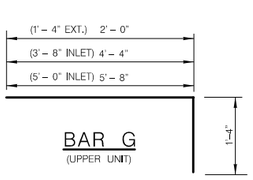
BARS B
(UPPER UNIT)



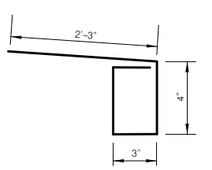
BAR C
(UPPER UNIT)



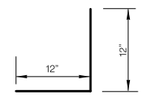
BAR F
(UPPER UNIT)



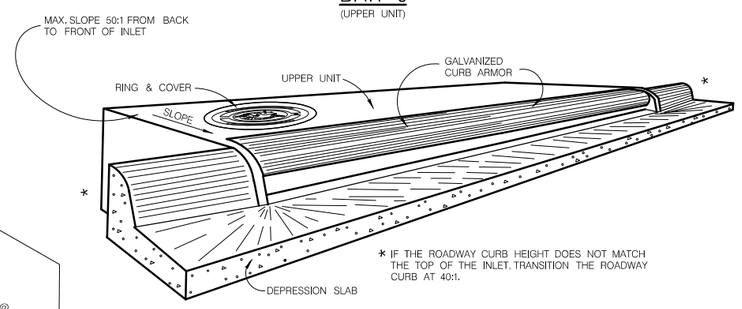
BAR G
(UPPER UNIT)



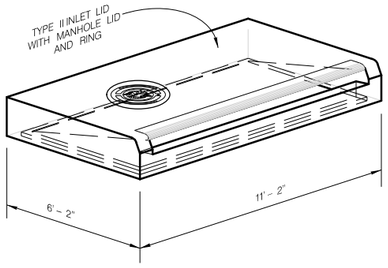
BAR J
(UPPER UNIT)

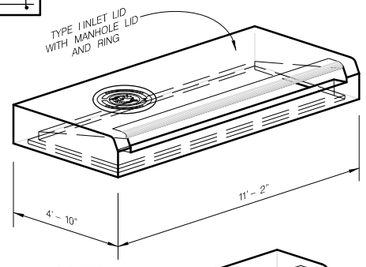


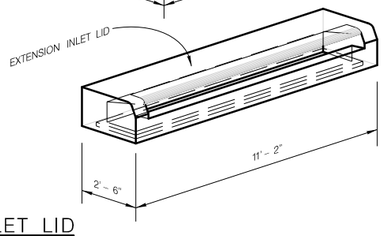
BAR L
(UPPER UNIT)



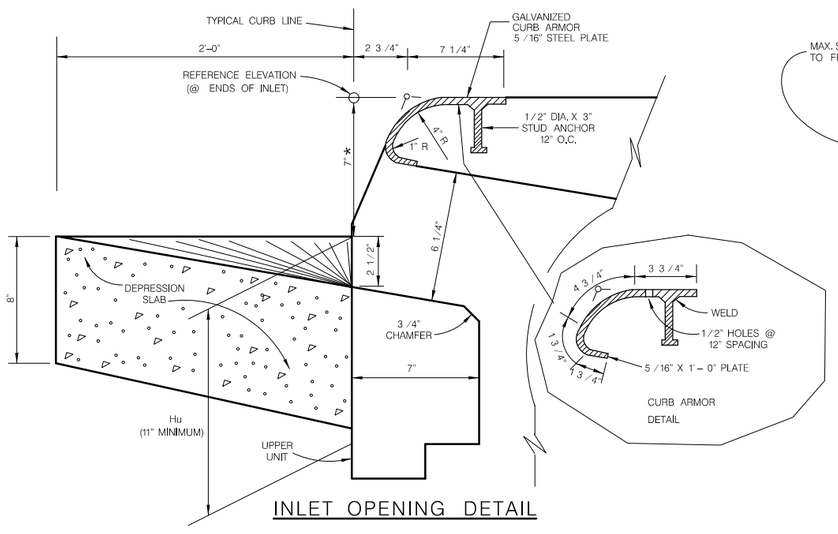
* IF THE ROADWAY CURB HEIGHT DOES NOT MATCH THE TOP OF THE INLET, TRANSITION THE ROADWAY CURB AT 40:1.







CONCRETE INLET LID CONFIGURATIONS (UPPER UNITS)



INLET OPENING DETAIL

MAY 2009

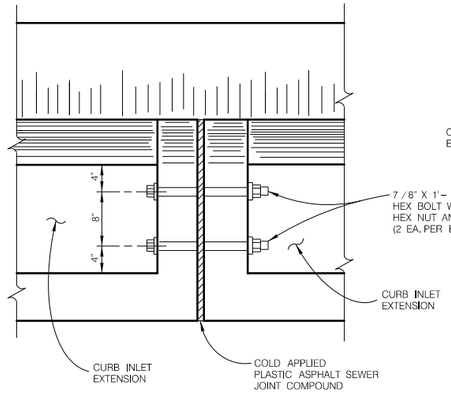
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

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

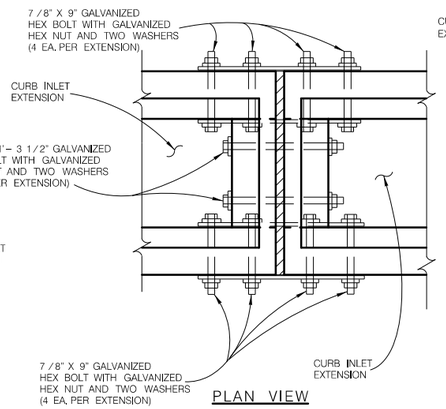
SHEET 2 OF 3

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/7/2025
DRWN. BY:	DSGN. BY:	CHKD. BY:

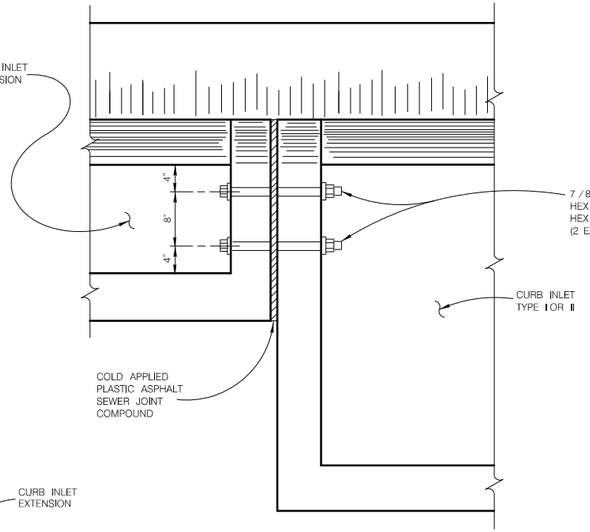
SHEET NO. 222 OF 377



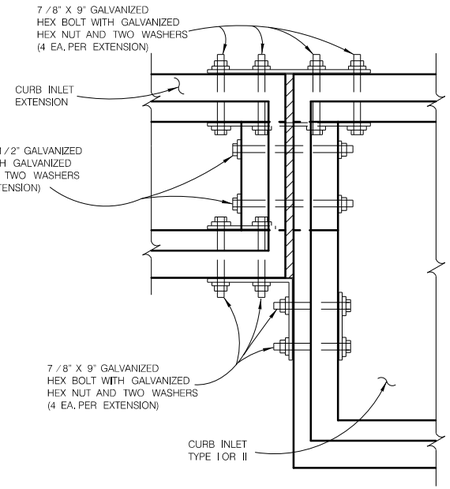
PLAN VIEW



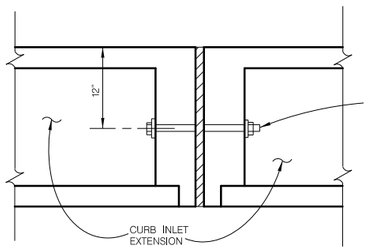
PLAN VIEW



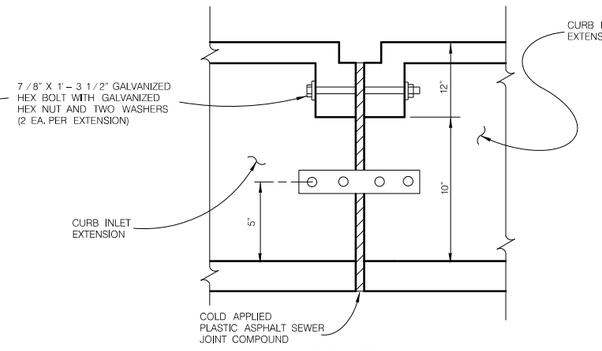
PLAN VIEW



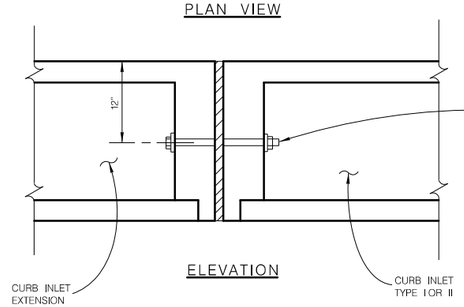
PLAN VIEW



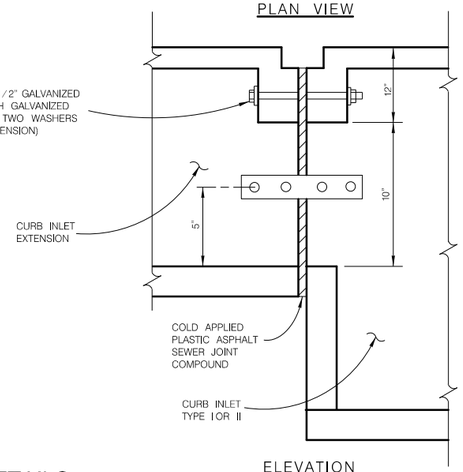
ELEVATION



ELEVATION



ELEVATION



ELEVATION

UPPER UNIT EXTENSION (FOR Hu = 11")					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	15'-2"	41
B	3	#4	—	14'-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	6"	2'-0"	63
G	22	#6	6"	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"	6'-2"	49
B	11	#4	12"	2'-2"	16
B_1	3	#4	12"	2'-2"	4
E_1	18	#4	18" ±	2'-3"	27
E_2	4	#4	18" ±	2'-1"	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

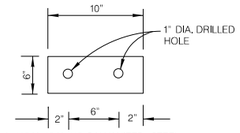
GENERAL NOTES

1. WHEN INLET EXTENSIONS ARE REQUIRED FOR ON GRADE INLETS THE 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.

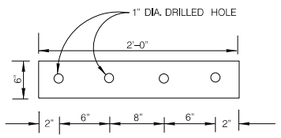
UPPER UNIT

INLET BOLTING DETAILS

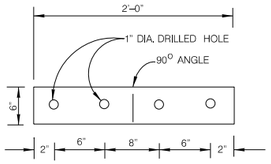
SHOWING EXTENSION TO EXTENSION



3/8" X 6" X 10" GALVANIZED STEEL BOLTING EXTENSION TO CURB INLET 2 EACH REQUIRED



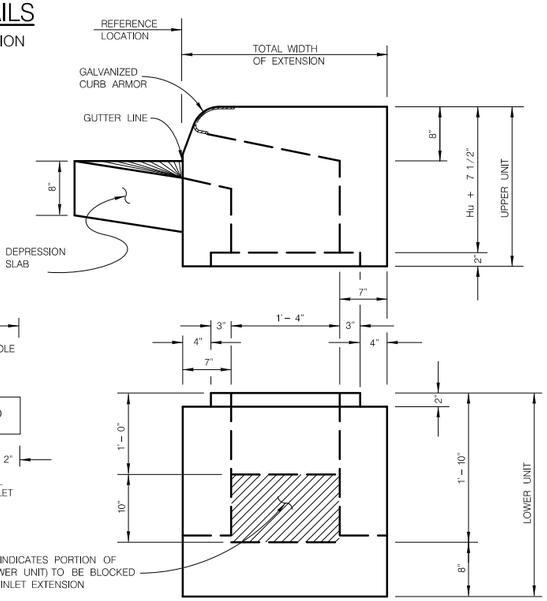
3/8" X 6" X 24" GALVANIZED STEEL BOLTING EXTENSION TO CURB INLET 2 EACH REQUIRED
BOLTING EXTENSION TO EXTENSION 4 EACH REQUIRED



3/8" X 6" X 24" GALVANIZED STEEL BOLTING EXTENSION TO CURB INLET 1 EACH REQUIRED

PLATES

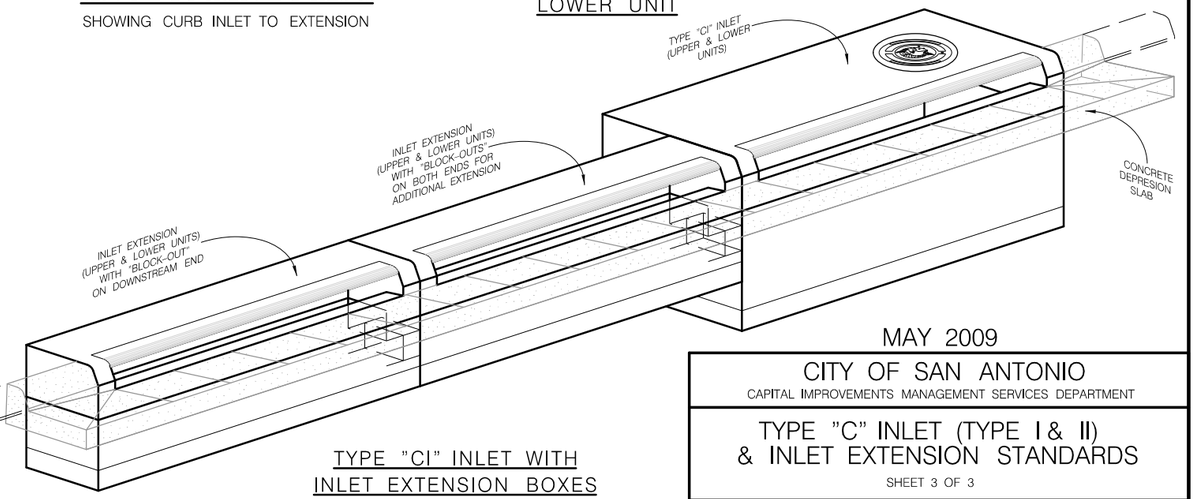
LOWER UNIT



SECTION A-A CURB INLET EXTENSION TYPE E

INLET BOLTING DETAILS

SHOWING CURB INLET TO EXTENSION



TYPE "CI" INLET WITH INLET EXTENSION BOXES

MAY 2009

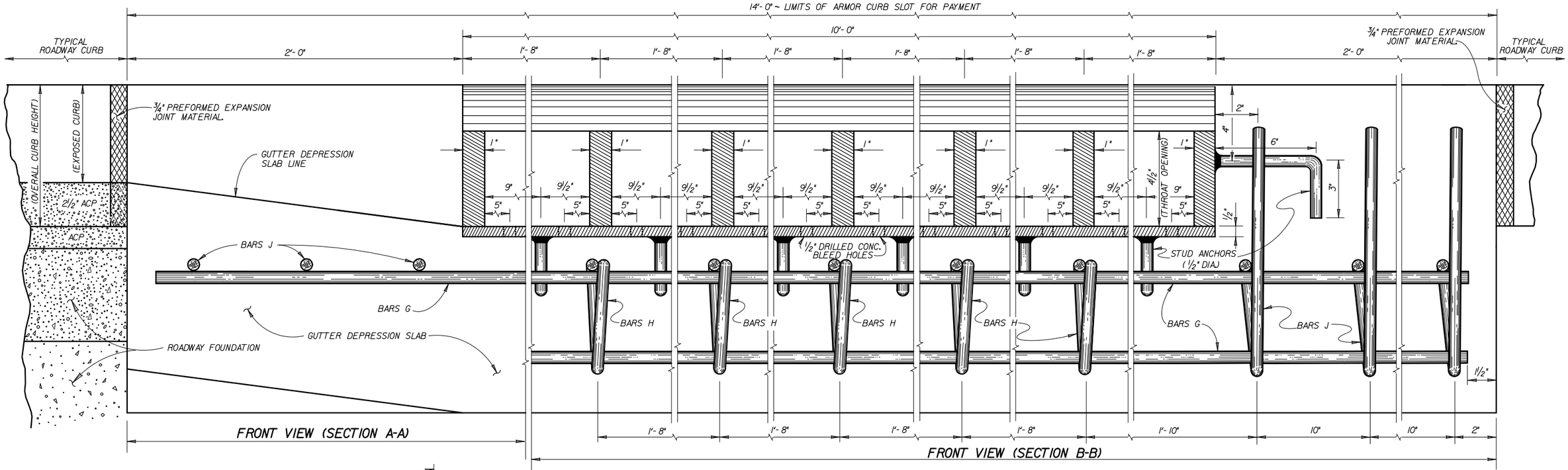
CITY OF SAN ANTONIO

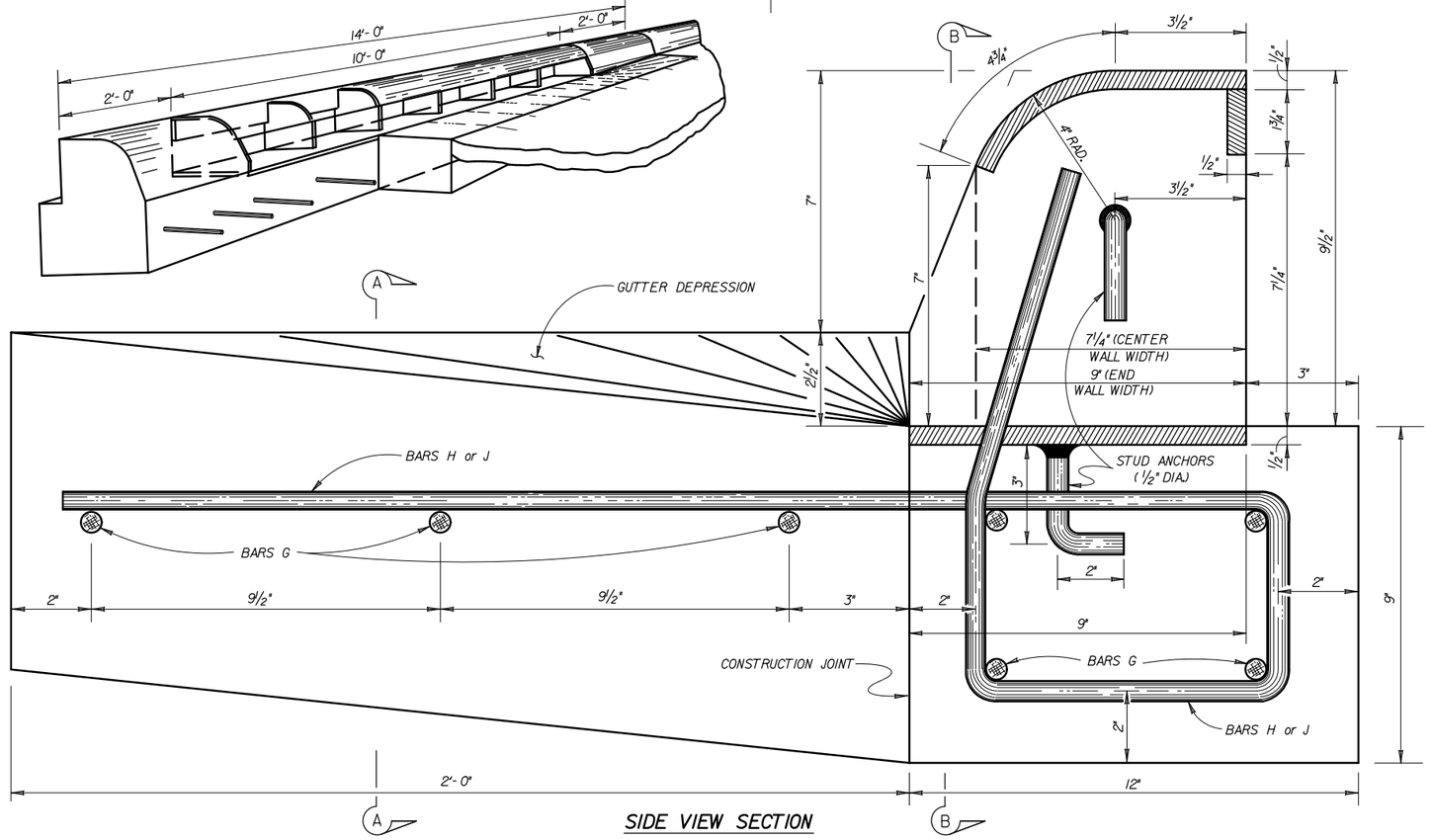
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

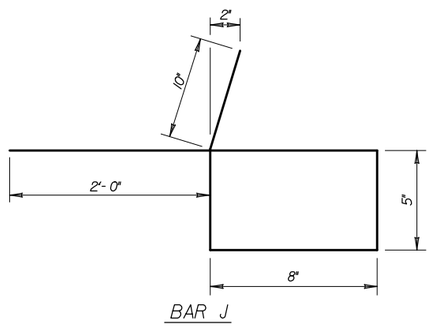
TYPE "C" INLET (TYPE I & II) & INLET EXTENSION STANDARDS

SHEET 3 OF 3

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/7/2025
DRWN. BY:	DSGN. BY:	CHKD. BY:	SHEET NO. 223 OF 377







ESTIMATED QUANTITIES
FOR REINFORCING STEEL & CONCRETE

BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
G	7	#4	SHOWN	13'- 9"	64
H	5	#4	1'- 8"	4'- 6"	15
J	6	#4	8"	5'- 0"	20
TOTAL WEIGHT *				LBS.	99
CONCRETE FOR FOUNDATION *				C.Y.	0.47
CONCRETE FOR GUTTER DEPRESSION *				C.Y.	0.78

STRUCTURAL STEEL FOR ARMOR CURB SLOT		
STUD ANCHORS (1/2" DIA)	LBS.	3.5
STEEL PLATE	LBS.	451
TOTAL WEIGHT *	LBS.	454.5

* FOR CONTRACTORS INFO ONLY.

GENERAL NOTES:

ALL CONCRETE SHALL BE CL "A".

ALL STEEL SHALL BE ASTM A36.

ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.

ALL SIDES OF ARMOR CURB SLOT AND STUD ANCHORS SHALL BE 1/4" FILLET WELDS.

ALL EXPOSED STRUCTURAL STEEL (ARMOR) SHALL BE GALVANIZED UNDER ITEM 445.

ALL EXPOSED EDGES ON ARMOR CURB SHALL RECEIVE A 1/8" BEVEL.

THE SHAPE OF THE TYPICAL ROADWAY CURB SHALL TRANSITION TO THE ARMOR CURB AS APPROVED BY THE ENGINEER.

ARMOR CURB SLOT
WITH CONCRETE FOUNDATION
SAN ANTONIO DISTRICT STANDARDS

© 1998 Texas Department of Transportation

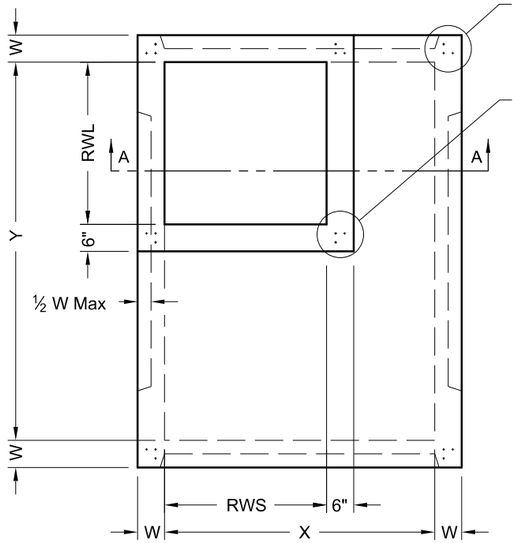
10/95
REV.07/01
REVJ2/04

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			224
STATE	STATE DISTRICT	COUNTY	
TEXAS	SAT		
CONT.	SECT.	JOB	HIGHWAY NO.

STRUCTURE DESIGN
/BRIDGE/STDS/ARMORCURB.DGN

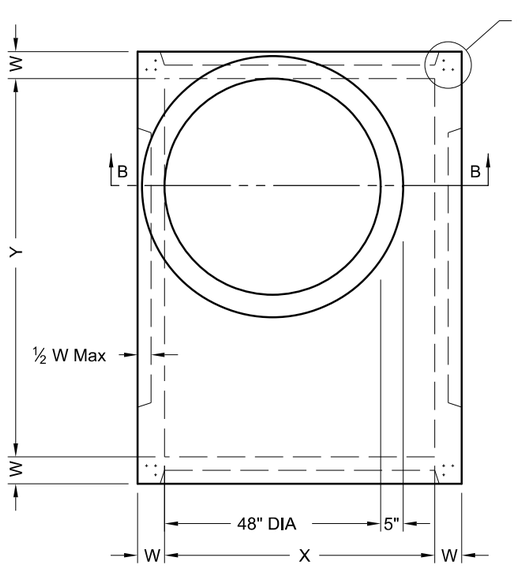
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act." No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:



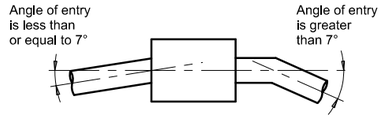
PLAN VIEW "A"

SQUARE REDUCED RISER OPTION



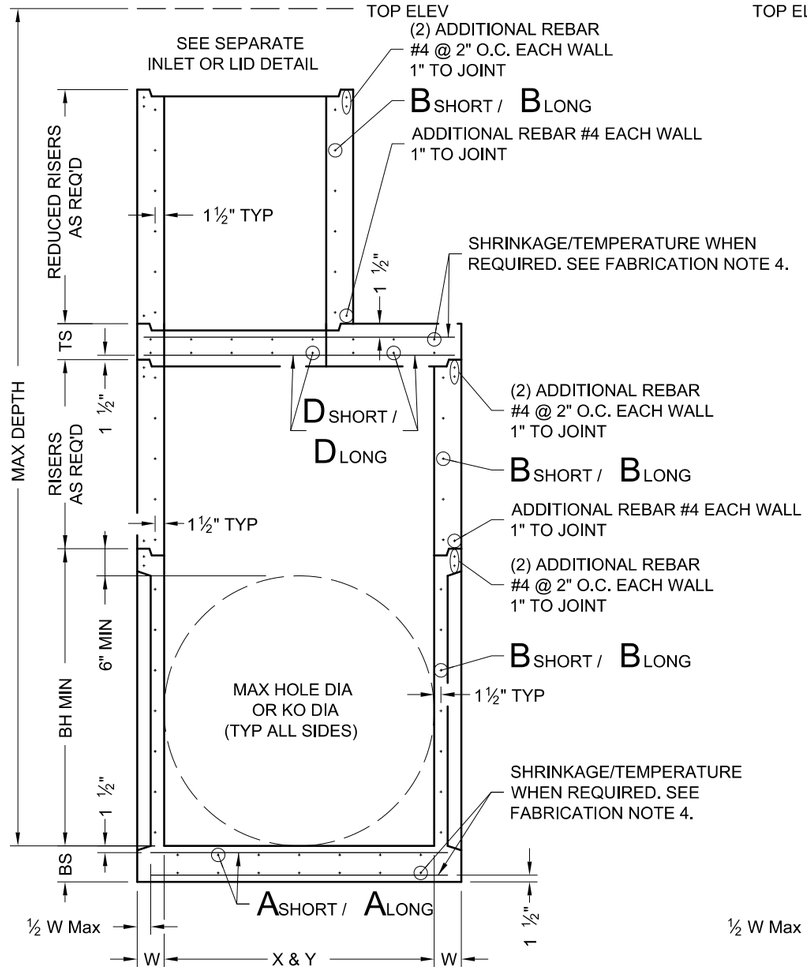
PLAN VIEW "B"

ROUND REDUCED RISER OPTION



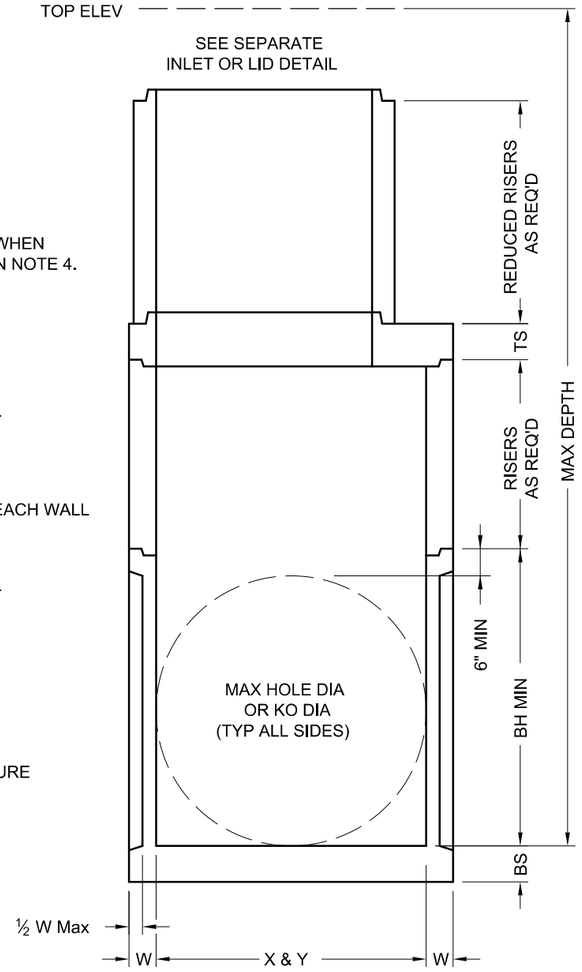
PIPE CONNECTION DETAIL

Connect pipes within 7° of normal to PB wall.
If necessary, use pipe elbow or curved
approach alignment to stay within this limit.



SECTION A-A

SQUARE REDUCED RISER OPTION



SECTION B-B

ROUND REDUCED RISER OPTION

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide typical clear cover of 1 ½" to reinforcing steel at interior or exterior walls.
4. Walls or slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 in²/ft each way.
5. No substitution is allowed for vertical and horizontal #4 bars in corners.
6. Manufacture base and risers to nearest 3" increment.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
8. Provide lifting devices in conformance with Manufacturer's recommendations.
9. See sheet PDD for sizes, dimensions, and reinforcing steel not shown.

INSTALLATION NOTES:

1. If required elsewhere. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to specified inlet or manhole.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. For rigid pipe, cut hole in thin wall panel (KO) 4" Max, 2" Min larger than pipe OD.
5. For flexible pipe, consult boot/seal Manufacturer's specification for placement tolerance and hole size. Center pipe in hole and install boot/seal per Manufacturer's specification.

GENERAL NOTES:

1. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PDD for sizes.
2. Designed according to ASTM C913.
3. Payment for precast base is subsidiary to the specified inlet, per Item 465, "Junction Boxes, Manholes, and Inlets."

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

Texas Department of Transportation

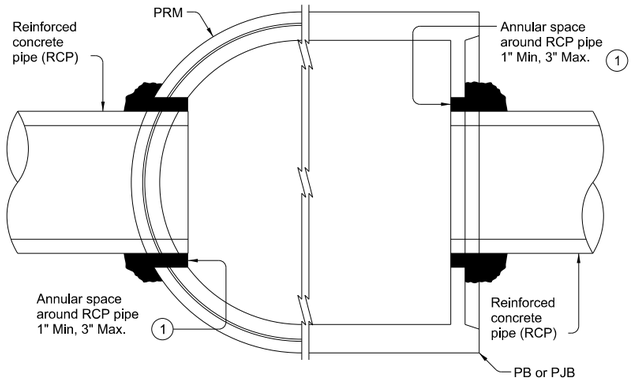
Bridge Division Standard

PRECAST BASE

PB

FILE: CD-PB-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS			23-03907	
	DIST	COUNTY		SHEET NO.
				225 OF 377

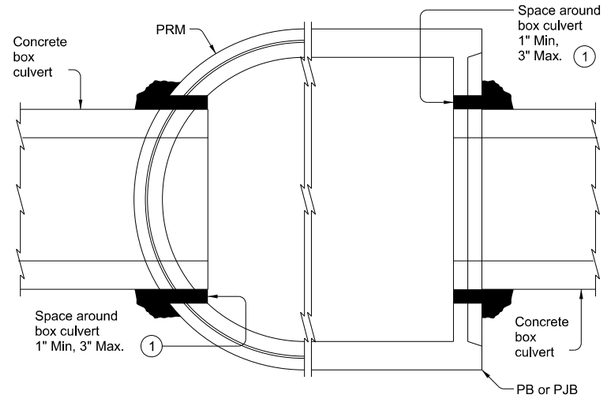
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act." No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

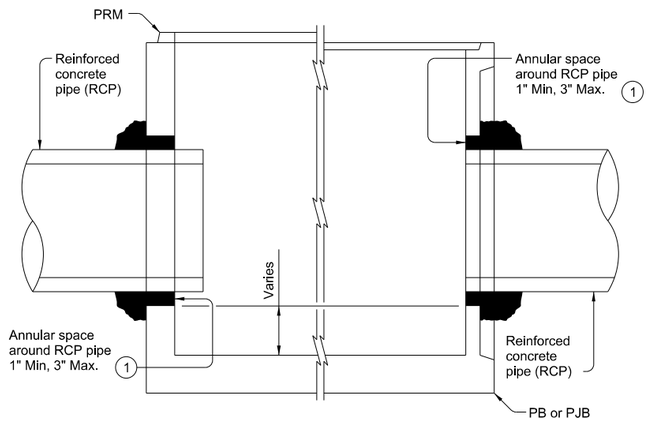
TYPICAL HALF PLAN



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

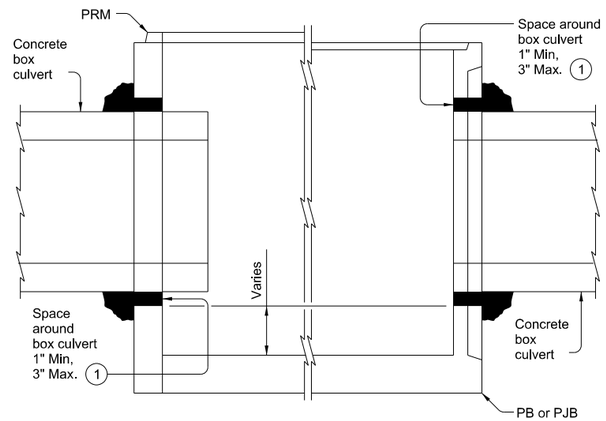
TYPICAL HALF PLAN



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

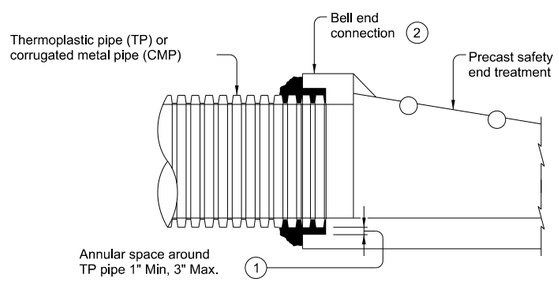
TYPICAL HALF ELEVATION



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

TYPICAL HALF ELEVATION



TYPICAL PARTIAL ELEVATION OF PRECAST SAFETY END TREATMENTS

Showing square PSET for parallel drainage, cross drainage shown similar.

1. Completely fill the void between the precast structure and the connecting pipe or box with cementitious grouts and mortars in accordance with DMS-4675 "Cementitious Grouts and Mortars for Miscellaneous Application."
2. For thermoplastic pipe, do not use bell or spigot for grouted connections. Remove the bell or spigot from the pipe by cutting between two exterior corrugations of the pipe before connecting and grouting the thermoplastic pipe to the structure.

CONSTRUCTION NOTES:

Do not grout rubber gasket joints without Manufacturer's recommendations.

Do not use bricks, masonry blocks, native stone, or similar materials in conjunction with grouted connections when filling void spaces around pipes or box culverts.

MATERIAL NOTES:

Provide grouted connections in accordance with DMS-4675, "Cementitious Grouts and Mortars for Miscellaneous Application."

GENERAL NOTES:

See applicable standards for notes and details not shown:
- Precast Base (PB)
- Precast Junction Box (PJB)
- Precast Round Manhole (PRM)
- Precast Safety End Treatments C/D Square (PSET-SC)
- Precast Safety End Treatments P/D Square (PSET-SP)

Provide Concrete Box Culverts in accordance with Item 462, "Concrete Box Culverts and Drains."

Provide Reinforced Concrete Pipe (RCP) in accordance with Item 464, "Reinforced Concrete Pipe."

Provide Thermoplastic Pipe (TP) in accordance with Item 468, "Thermoplastic Pipe Culverts and Drains".

Payment for grouted connections is considered subsidiary to other bid Items.

Texas Department of Transportation

Bridge Division Standard

PIPE AND BOX GROUTED CONNECTIONS FOR PRECAST STRUCTURES

PBGC____

FILE:	DN: TxDOT	CK: TAR	DW: JTR	CK: TAR
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
06-2024: Updated notes,	DIST	COUNTY		SHEET NO.
				226 OF 377

DATE: 06/17/2024 12:49 PM
FILE: DOCUMENT NAME

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act." No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

	Size	MAX DEPTH = 15 ft. to top of BASE SLAB										MAX DEPTH = 25 ft. to top of BASE SLAB										Min Height (See Gen Note 3)	Max HOLE DIA (See Fab Note 2)	Max KO DIA (See Fab Note 2)
		Base Slab			Base Unit or Riser Walls			Below Grade Slab (w/PJB) Reducing Slab (w/PB)				Base Slab			Base Unit or Riser Walls			Below Grade Slab (w/PJB) Reducing Slab (w/PB)						
		Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Reduced Riser Size	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Reduced Riser Size	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness			
	X x Y	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	BH MIN	HOLE DIA	KO DIA
	ft.	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	ft. **	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	ft. **	in^2/ft	in^2/ft	in.	ft.	in.	in.
Precast Junction Box (PJB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	0.37	0.37	9	0.29	0.29	6	0.24	0.24	6	N/A	0.37	0.37	9	3.5	36	36
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	0.41	0.41	9	0.47	0.47	6	0.38	0.38	6	N/A	0.41	0.41	9	4.5	48	48
	3x5	0.29	0.18	6	0.19	0.35	6	N/A	0.48	0.48	9	0.39	0.18	6	0.23	0.59	6	N/A	0.48	0.48	9	3.5	36/60	36/60
	4x5	0.36	0.18	6	0.22	0.34	6	N/A	0.42	0.42	9	0.53	0.26	6	0.39	0.59	6	N/A	0.42	0.42	9	4.5	48/60	48/60
	5x5	0.36	0.36	6	0.34	0.34	6	N/A	0.43	0.43	9	0.62	0.62	6	0.59	0.59	6	N/A	0.43	0.43	9	5.5	60	60
	5x6	0.27	0.27	9	0.34	0.45	6	N/A	0.48	0.48	9	0.47	0.45	9	0.38	0.54	8	N/A	0.48	0.48	9	5.5	60/72	60/72
	6x6	0.27	0.27	9	0.45	0.45	6	N/A	0.56	0.56	9	0.52	0.52	9	0.54	0.54	8	N/A	0.56	0.56	9	6.5	72	72
	8x8	0.46	0.46	9	0.51	0.51	8	N/A	0.45	0.45	12	0.87	0.87	9	0.59	0.59	10	N/A	0.45	0.45	12	8.5	96	72
Precast Base (PB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	N/A	N/A	N/A	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	3.5	36	36
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	0.47	0.47	6	0.38	0.38	6	N/A	N/A	N/A	N/A	4.5	48	48
	3x5	0.29	0.18	6	0.19	0.35	6	3x3	0.30	0.34	9	0.39	0.18	6	0.23	0.59	6	3x3	0.40	0.40	9	3.5	36/60	36/60
	4x5	0.36	0.18	6	0.22	0.34	6	3x3	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	3x3	0.46	0.37	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	4x4	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	4x4	0.39	0.39	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	48"	0.39	0.39	9	0.53	0.26	6	0.39	0.59	6	48"	0.47	0.47	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	3x5	0.33	0.40	9	0.53	0.26	6	0.39	0.59	6	3x5	0.48	0.48	9	4.5	48/60	48/60
	5x5	0.36	0.36	6	0.34	0.34	6	3x3	0.34	0.34	9	0.62	0.62	6	0.59	0.59	6	3x3	0.53	0.53	9	5.5	60	60
	5x5	0.36	0.36	6	0.34	0.34	6	4x4	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	4x4	0.64	0.64	9	5.5	60	60
	5x5	0.38	0.38	6	0.34	0.34	6	48"	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	48"	0.64	0.64	9	5.5	60	60
	5x5	0.36	0.36	6	0.34	0.34	6	3x5	0.34	0.40	9	0.62	0.62	6	0.59	0.59	6	3x5	0.53	0.53	9	5.5	60	60
	5x6	0.31	0.31	9	0.34	0.45	6	3x3	0.34	0.34	9	0.47	0.45	9	0.38	0.54	8	3x3	0.61	0.50	9	5.5	60/72	60/72
	5x6	0.27	0.27	9	0.34	0.45	6	4x4	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	4x4	0.74	0.57	9	5.5	60/72	60/72
	5x6	0.29	0.29	9	0.34	0.45	6	48"	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	48"	0.74	0.57	9	5.5	60/72	60/72
	5x6	0.29	0.29	9	0.34	0.45	6	3x5	0.45	0.45	9	0.47	0.45	9	0.38	0.54	8	3x5	0.61	0.61	9	5.5	60/72	60/72
	6x6	0.29	0.29	9	0.45	0.45	6	3x3	0.41	0.41	9	0.52	0.52	9	0.54	0.54	8	3x3	0.74	0.74	9	6.5	72	72
	6x6	0.27	0.27	9	0.45	0.45	6	4x4	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	4x4	0.87	0.87	9	6.5	72	72
	6x6	0.29	0.29	9	0.45	0.45	6	48"	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	48"	0.87	0.87	9	6.5	72	72
	6x6	0.29	0.29	9	0.45	0.45	6	3x5	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	3x5	0.87	0.87	9	6.5	72	72
	8x8	0.52	0.52	9	0.51	0.51	8	3x3	0.61	0.61	12	0.91	0.91	9	0.70	0.70	10	3x3	0.85	0.85	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	4x4	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	4x4	1.01	1.01	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	48"	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	48"	1.01	1.01	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	3x5	0.70	0.85	12	0.87	0.87	9	0.70	0.70	10	3x5	1.01	1.01	12	8.5	96	72

** Unless otherwise indicated.

FABRICATION NOTES:
1. Maximum spacing of reinforcement is 8".
2. At manufacturer's option, provide cast or cored holes or thin wall panels (KO) to the maximum diameter shown for each. When no penetration is required, it is acceptable to provide a wall with no sectional reduction.

GENERAL NOTES:
1. Precast Junction Box consists of base slab, base unit, risers (as required), and below grade slab. See sheet PJB for details.
2. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PB for details.
3. Min Height shown is for stock base units. Use stock base units whenever practical. Smaller height base units can be used in special installation circumstances, when noted elsewhere in the plans. Absolute minimum height of base units is 2'-6".

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

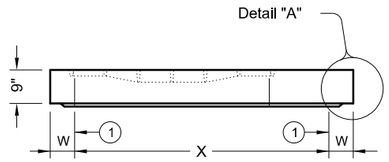
DESIGN DATA FOR PRECAST BASE AND JUNCTION BOX

PDD

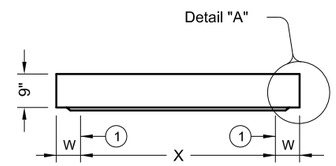
FILE: CD-PDD-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS			23-03907	
	DIST	COUNTY		SHEET NO.
				227 OF 377

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act." No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

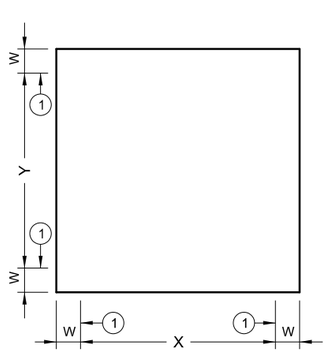
DATE:
FILE:



STYLE 'FG'



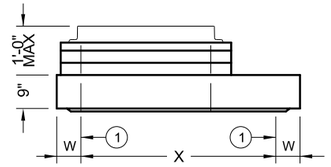
ELEVATION VIEW



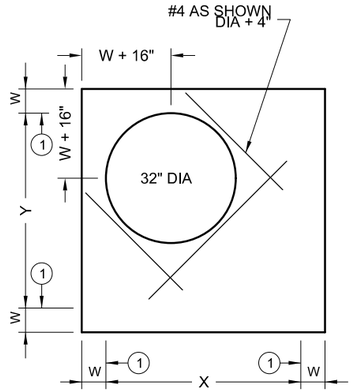
PLAN VIEW

NO OPENINGS

STYLE 'SL'



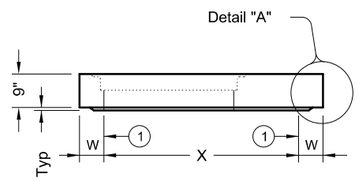
ELEVATION VIEW



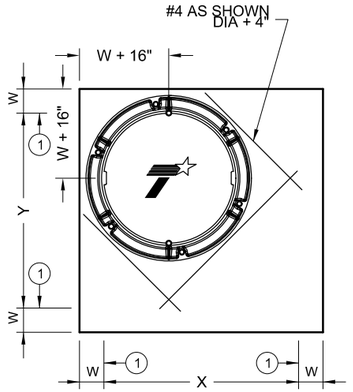
PLAN VIEW

SHIP LOOSE RING & COVER

STYLE 'RH'



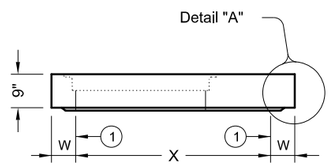
ELEVATION VIEW



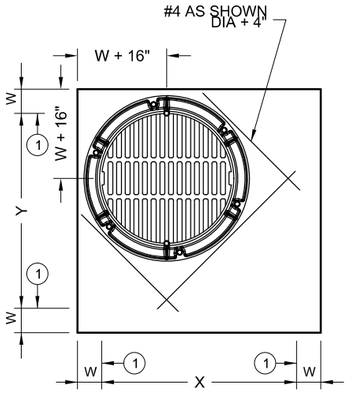
PLAN VIEW

32" DIA CAST-IN RING & COVER

STYLE 'RC'



ELEVATION VIEW

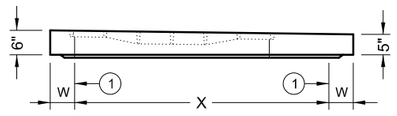


PLAN VIEW

32" DIA CAST-IN RING & GRATE

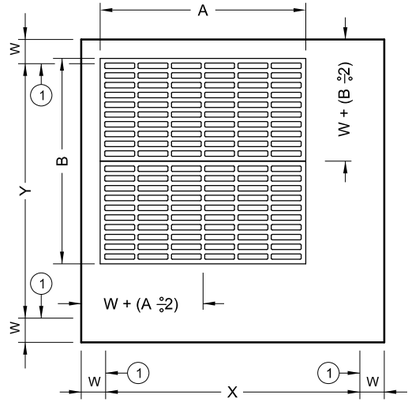
STYLE 'RG'

ORIENT TAPER TO CORRESPOND WITH ROADWAY CROSS-SLOPE.



STYLE 'SFG'

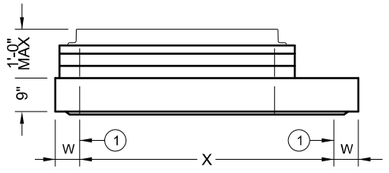
ELEVATION VIEW



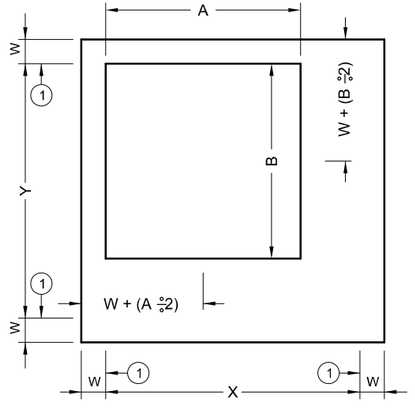
PLAN VIEW

CAST-IN FRAME & GRATE

STYLES 'FG' & 'SFG'



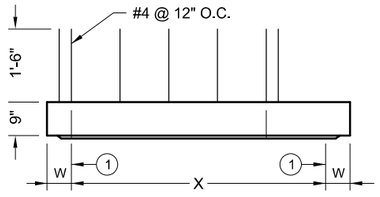
ELEVATION VIEW



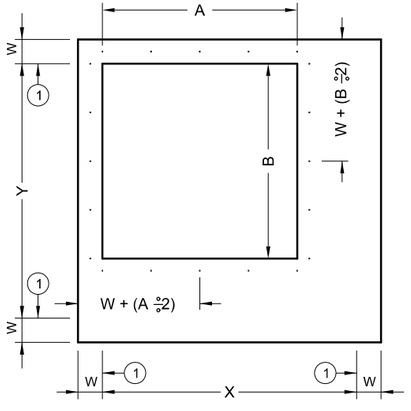
PLAN VIEW

SHIP LOOSE FRAME & GRATE

STYLE 'SH'



ELEVATION VIEW



PLAN VIEW

EXPOSED REBAR

STYLE 'S1'

(1) Matches inside face of wall of precast base or riser below inlet.

HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

PRECAST SLAB LID

PSL

FILE: CD-PSL-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS			23-03907	
	DIST	COUNTY		SHEET NO.
				228 OF 377

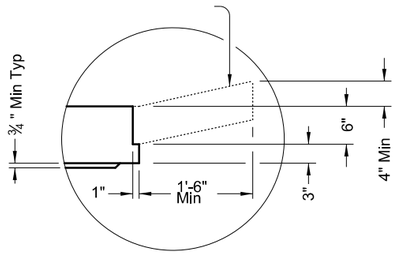
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act." No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

Style	Size (X x Y)	W (2)	A x B (nominal)	Short Span Reinf Steel Area	Long Span Reinf Steel Area
SL	3'x3'	6"	n/a	0.37 in□/ft	0.37 in□/ft
RH,RC,RG,SH,S1,FG	3'x3'	6"	3'x3' or 32" Dia	0.37 in□/ft	0.37 in□/ft
SFG	3'x3'	6"	3'x3'	0.32 in□/ft	0.32 in□/ft
SL	4'x4'	6"	n/a	0.34 in□/ft	0.34 in□/ft
RH,RC,RG,SH,S1,FG	4'x4'	6"	3'x3' or 32" Dia	0.41 in□/ft	0.41 in□/ft
SH,S1,FG	4'x4'	6"	4'x4'	0.41 in□/ft	0.41 in□/ft
SFG	4'x4'	6"	4'x4'	0.32 in□/ft	0.32 in□/ft
SL	3'x5'	6"	n/a	0.39 in□/ft	0.39 in□/ft
RH,RC,RG,SH,S1,FG	3'x5'	6"	3'x3' or 32" Dia	0.48 in□/ft	0.48 in□/ft
SH,S1,FG	3'x5'	6"	3'x5'	0.48 in□/ft	0.48 in□/ft
SFG	3'x5'	6"	3'x5'	0.32 in□/ft	0.32 in□/ft
SL	4'x5'	6"	n/a	0.42 in□/ft	0.42 in□/ft
RH,RC,RG,SH,S1,FG	4'x5'	6"	3'x3' or 32" Dia	0.42 in□/ft	0.42 in□/ft
SH,S1,FG	4'x5'	6"	4'x4'	0.63 in□/ft	0.63 in□/ft
SH,S1,FG	4'x5'	6"	3'x5'	0.66 in□/ft	0.66 in□/ft
SL	5'x5'	6"	n/a	0.36 in□/ft	0.36 in□/ft
RH,RC,RG,SH,S1,FG	5'x5'	6"	3'x3' or 32" Dia	0.43 in□/ft	0.43 in□/ft
SH,S1,FG	5'x5'	6"	4'x4'	0.63 in□/ft	0.63 in□/ft
SH,S1,FG	5'x5'	6"	3'x5'	0.63 in□/ft	0.63 in□/ft
SL	5'x6'	6"/8"	n/a	0.48 in□/ft	0.48 in□/ft
RH,RC,RG,SH,S1,FG	5'x6'	6"/8"	3'x3' or 32" Dia	0.48 in□/ft	0.48 in□/ft
SH,S1,FG	5'x6'	6"/8"	4'x4'	0.60 in□/ft	0.60 in□/ft
SH,S1,FG	5'x6'	6"/8"	3'x5'	0.60 in□/ft	0.60 in□/ft
SL	6'x6'	6"/8"	n/a	0.43 in□/ft	0.43 in□/ft
RH,RC,RG,SH,S1,FG	6'x6'	6"/8"	3'x3' or 32" Dia	0.56 in□/ft	0.56 in□/ft
SH,S1,FG	6'x6'	6"/8"	4'x4'	0.56 in□/ft	0.56 in□/ft
SH,S1,FG	6'x6'	6"/8"	3'x5'	0.59 in□/ft	0.59 in□/ft
SL	8'x8'	8"/10"	n/a	0.45 in□/ft	0.45 in□/ft
RH,RC,RG,SH,S1,FG	8'x8'	8"/10"	3'x3' or 32" Dia	0.45 in□/ft	0.45 in□/ft
SH,S1,FG	8'x8'	8"/10"	4'x4'	0.45 in□/ft	0.45 in□/ft
SH,S1,FG	8'x8'	8"/10"	3'x5'	0.45 in□/ft	0.45 in□/ft

(2) See sheet PDD for corresponding wall thickness (W) of base unit or riser.

Construct cast-in-place reinforced concrete apron, when shown elsewhere in plans. Use Class "A" concrete. Apron is subsidiary to PSL. Apron is 1'-6" Min width around precast zone drain.



DETAIL "A"

When an apron is to be constructed around PSL, use detail above to create an apron ledge on all 4 sides.

(Reinforcing not shown for clarity)

FABRICATION NOTES:

1. Locate penetration (Style 'RH'), ring and cover (Style 'RC'), ring and grate (Style 'RG'), and frame and grate (Style 'FG') in a corner. Only one penetration is allowed per slab lid.
2. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
3. Provide Grade 60 reinforcing steel or equivalent area of WWR.
4. Provide clear cover of ¾" to reinforcing from lower outside shoulder of slab for structural reinforcement, and 2" from top of slab for shrinkage and temperature reinforcement. Place short span reinforcing closest to surface.
5. Slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing. Provide steel area = 0.11 in²/ft each way.
6. No substitution is allowed for diagonal #4 bars around openings.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
8. Provide lifting devices in conformance with Manufacturer's recommendations.

INSTALLATION NOTES:

1. Precast slab lids are intended for direct traffic and may be placed in roadway.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. Initial installation of grade adjustment rings for Styles 'RH' and 'SH' is limited to 1'-0" Max as shown.
5. Grade adjustment rings for Styles 'RH' and 'SH' may be increased to 2'-0" Max when future construction affects final grade of structure. Make adjustments greater than 2'-0" with additional risers. Adjustments can be made up to Max depth shown on sheet PDD. Structure must be evaluated if Max depth will be exceeded.
6. Orient long dimension of grate slots perpendicular to traffic, unless noted otherwise on plans

GENERAL NOTES:

1. Designed according to ASTM C913.
2. Payment for lid is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, style, size, and opening size (when applicable).

Cover dimensions are clear dimensions, unless noted otherwise.

Texas Department of Transportation

Bridge Division Standard

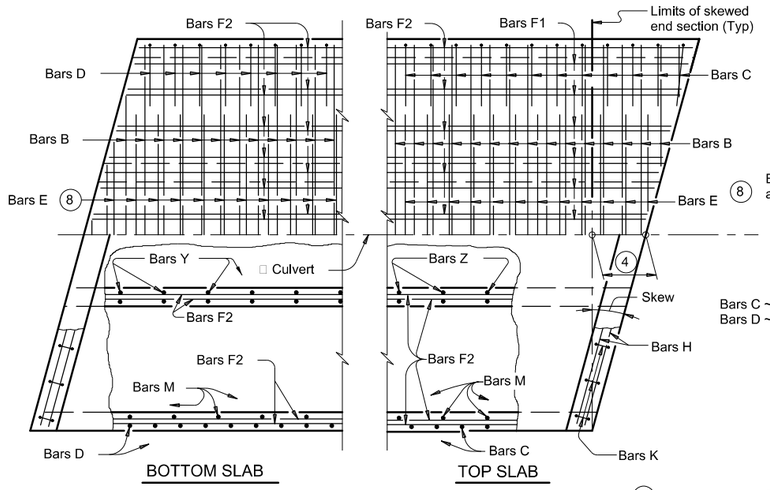
PRECAST SLAB LID

PSL

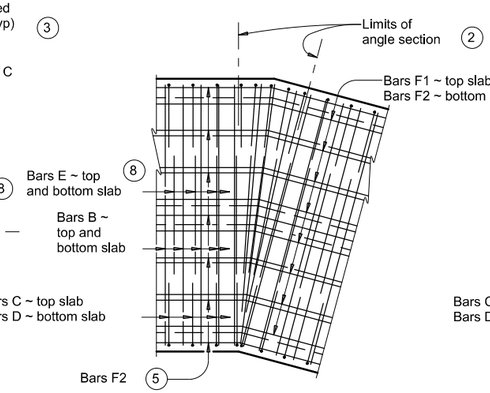
FILE: CD-PSL-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS			23-03907	
	DIST	COUNTY		SHEET NO.
				229 OF 377

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act." No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

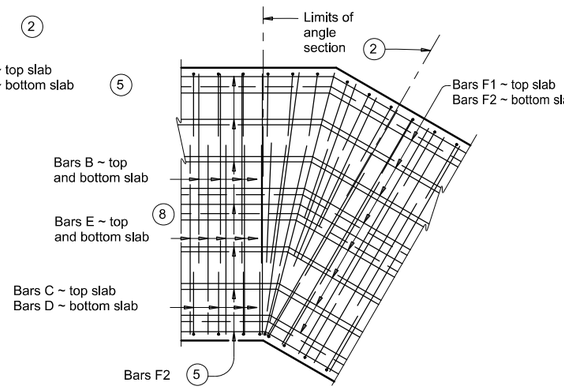
DATE:
FILE:



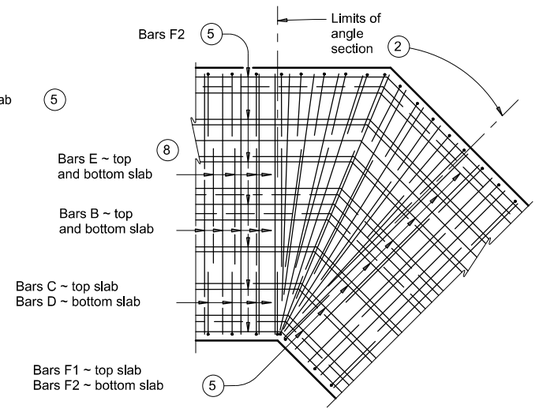
PLAN OF SKEWED ENDS ~ FROM 0° TO 15° (7)



PLAN OF ANGLE SECTION ~ FROM 0° TO 15°

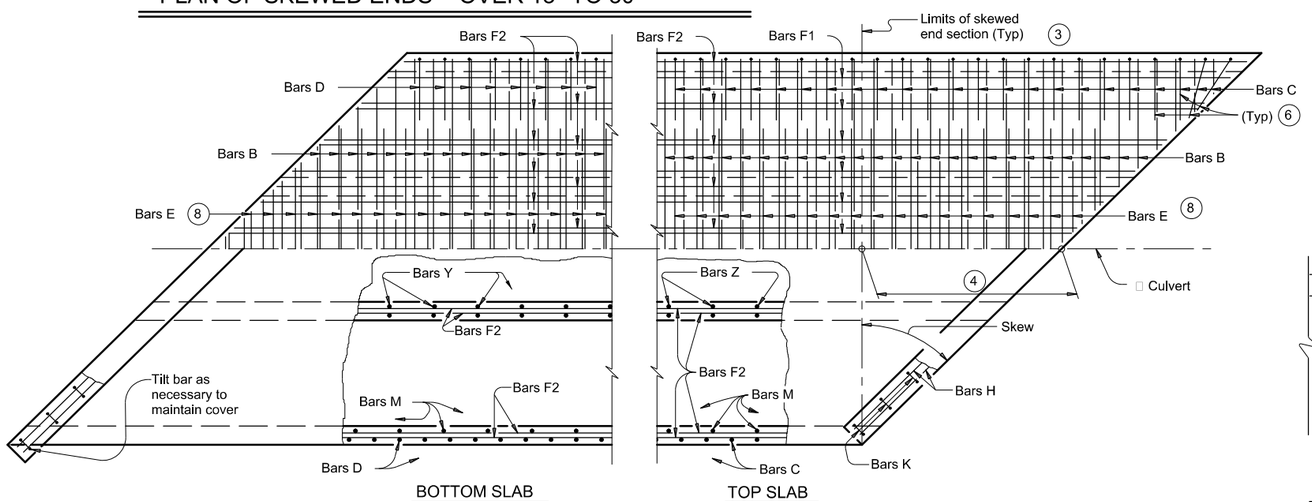


PLAN OF ANGLE SECTION ~ OVER 15° TO 30°



PLAN OF ANGLE SECTION ~ OVER 30° TO 45°

PLAN OF SKEWED ENDS ~ OVER 15° TO 30°



PLAN OF SKEWED ENDS ~ OVER 30° TO 45°

(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.

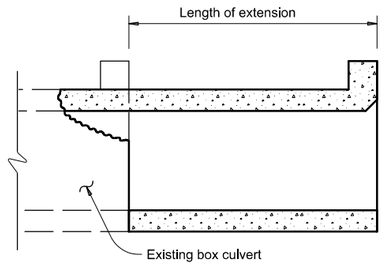
For non-skewed box culverts with less than 2'-0" of fill and for skewed or non-skewed culverts with a fill depth of 2'-0" or greater, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension. Alternatively, if the box is non-skewed, 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'-6" center-to-center spacing. Minimum embedment depth is 8". Anchor adhesive chosen must be able to achieve a basic bond strength in tension, Nba, 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 Item 450, "Railing." Test adhesive anchors 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]



LENGTHENING DETAIL (1)

(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 1'-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 sections 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

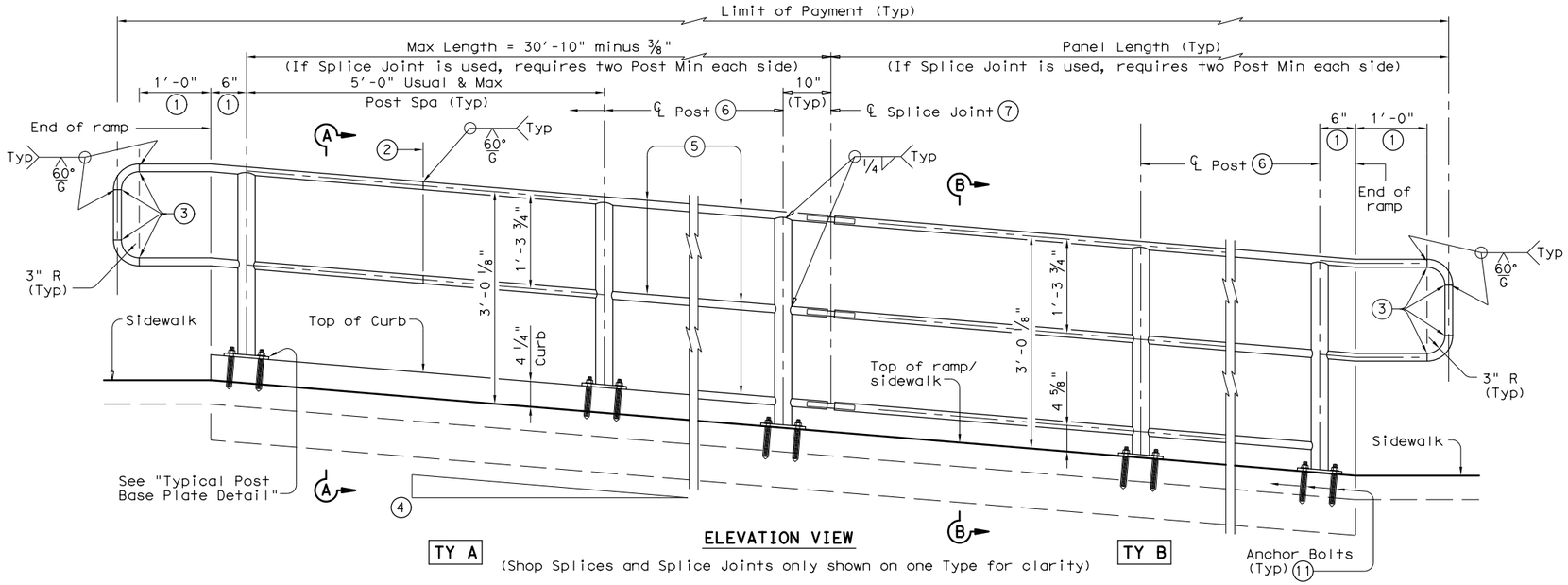
MULTIPLE BOX CULVERTS CAST-IN-PLACE MISCELLANEOUS DETAILS

MC-MD

FILE: CD-MC-MD-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS			23-03907	
	DIST	COUNTY		SHEET NO.
				230 OF 377

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

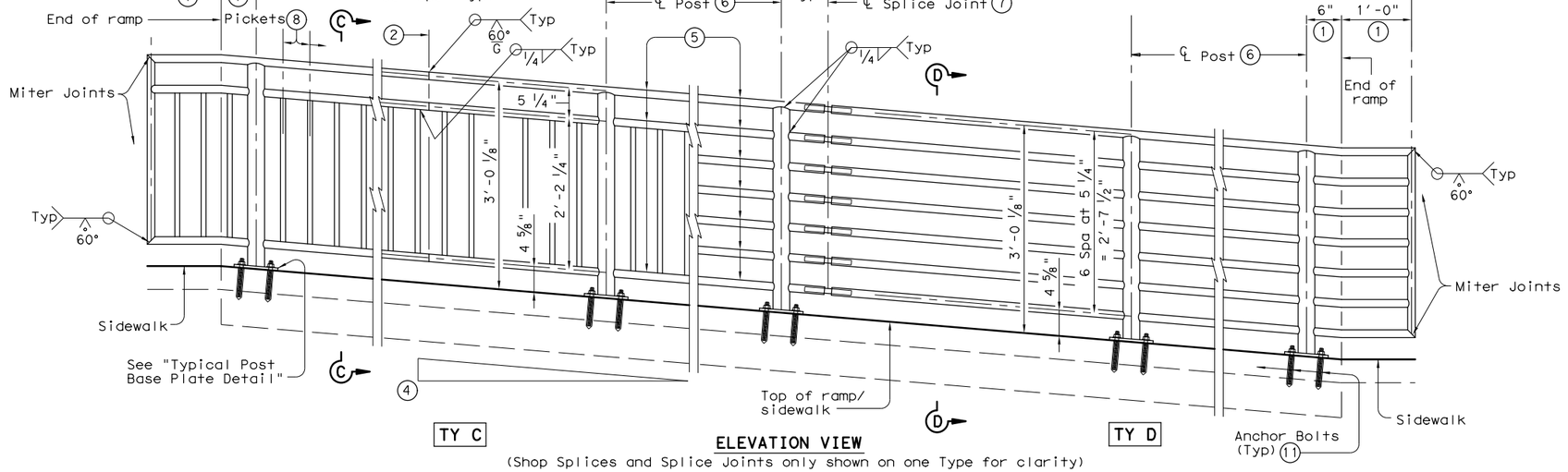


TY A

ELEVATION VIEW

(Shop Splices and Splice Joints only shown on one Type for clarity)

TY B



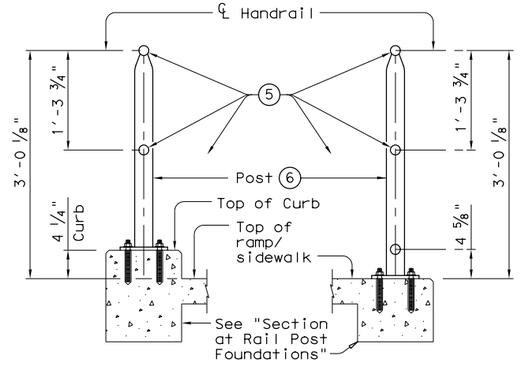
TY C

ELEVATION VIEW

(Shop Splices and Splice Joints only shown on one Type for clarity)

TY D

RECOMMENDED USAGE (9)(10)	
Dropoff Height/ Condition	Recommended Rail Options
< 30" dropoff	TY A, TY B, TY C, or TY D
≥ 30" dropoff, or along Bike Path	TY E or TY F

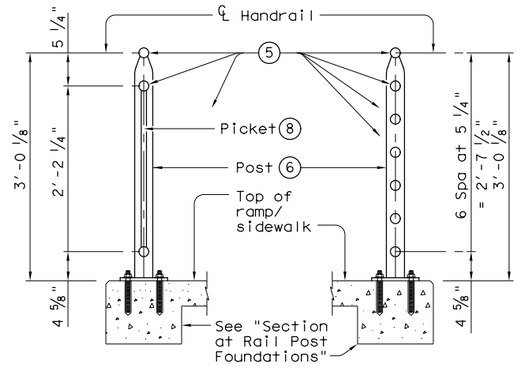


SECTION A-A

(Showing Handrail **TY A**)

SECTION B-B

(Showing Handrail **TY B**)



SECTION C-C

(Showing Handrail **TY C**)

SECTION D-D

(Showing Handrail **TY D**)

1. Parallel to ground.
2. One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
3. Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
4. See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.
5. 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.
6. 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.
7. See "Handrail Fabrication Details" for Splice Joints.
8. ℄ ⅝" Dia. Round Bar equal spacing at 4 ½" Max. Plumb all pickets.
9. When needed for accessibility (grade > 5 percent) or as needed for pedestrian safety.
10. Not to be used on bridges.
11. See "General Notes" for anchor bolt information.

SHEET 1 OF 3

Texas Department of Transportation

Design Division Standard

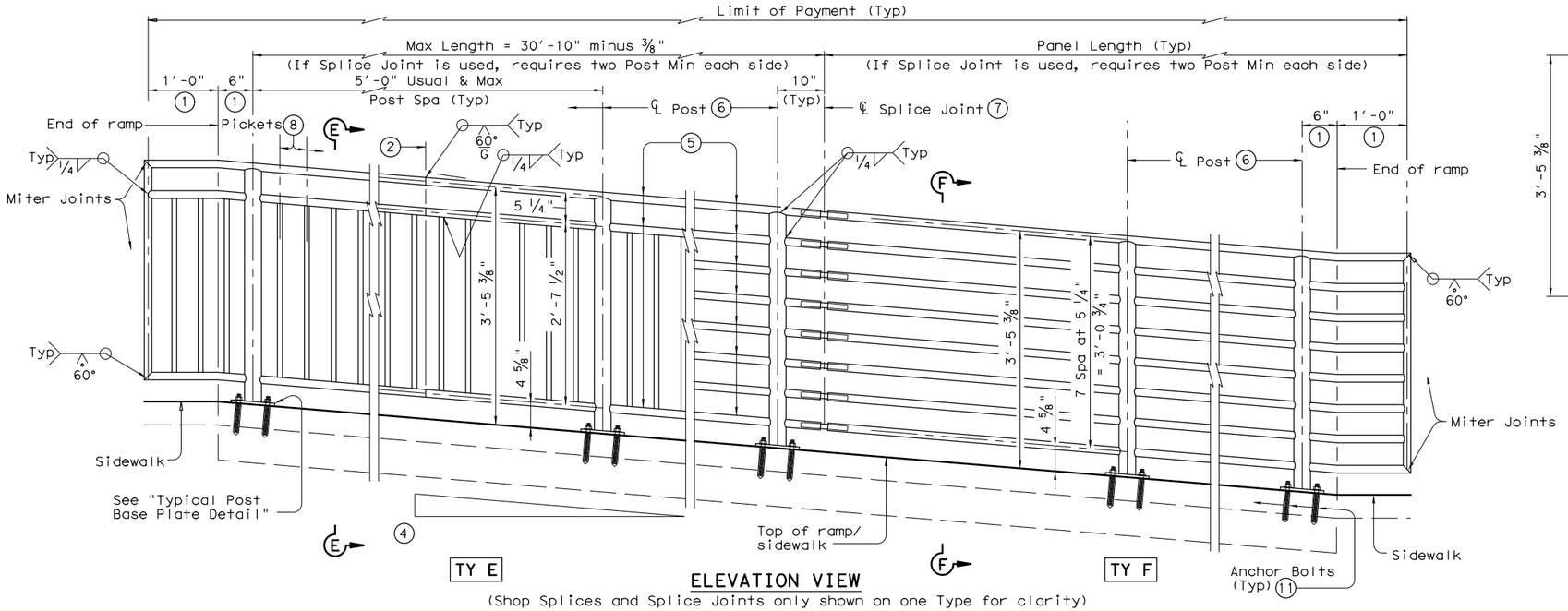
PEDESTRIAN HANDRAIL DETAILS

PRD-13

FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
©TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED MAY, 2013 (VP)				
	DIST	COUNTY		SHEET NO.
				231 OF 377

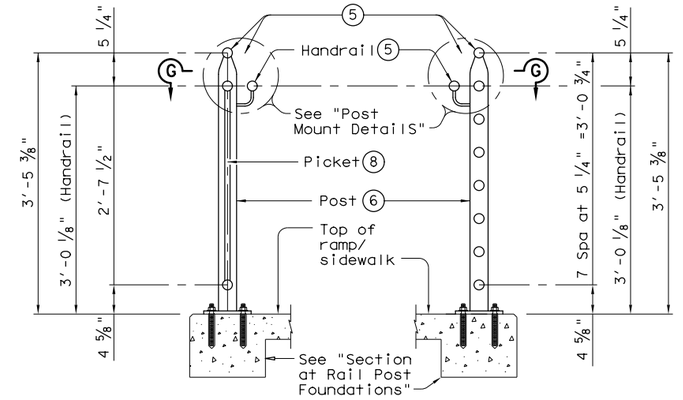
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:



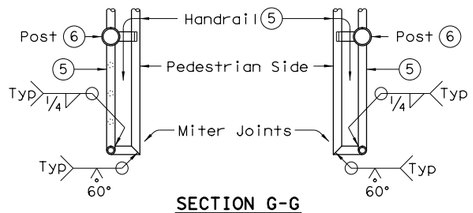
ELEVATION VIEW

(Shop Splices and Splice Joints only shown on one Type for clarity)

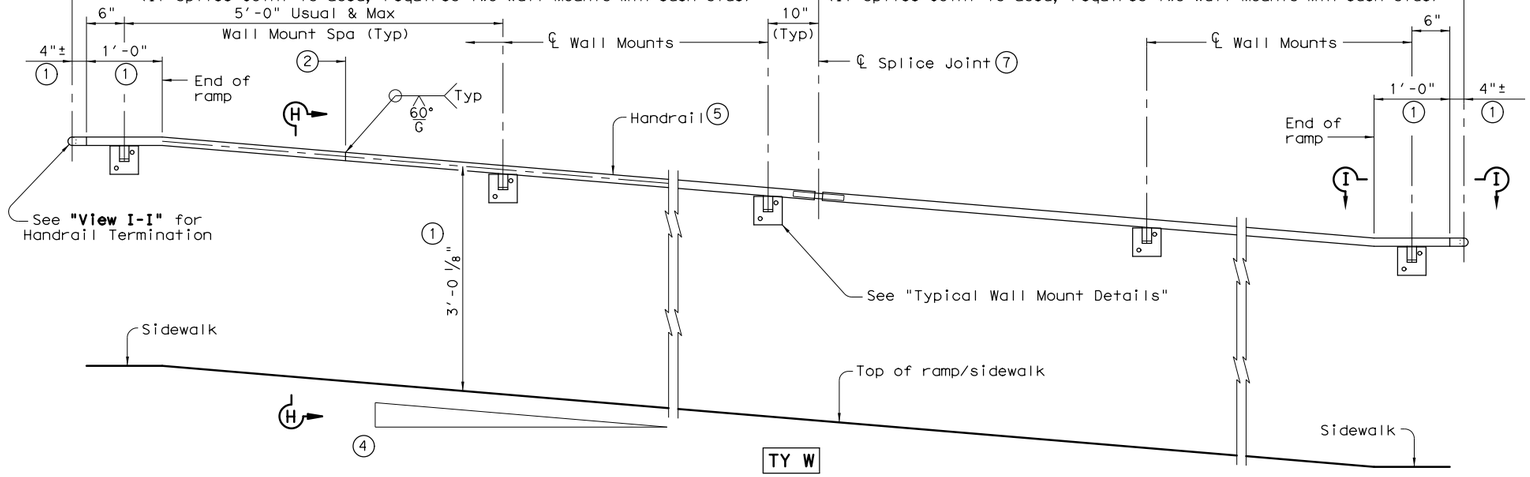


SECTION E-E
(Showing Handrail **TY E**)

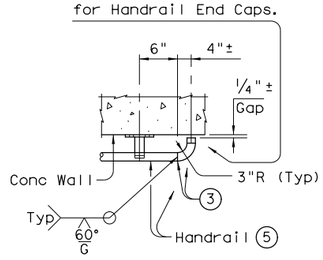
SECTION F-F
(Showing Handrail **TY F**)



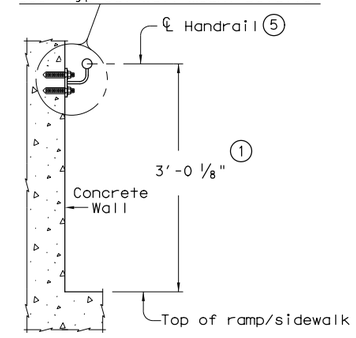
SECTION G-G
(Showing Handrail Termination)



ELEVATION VIEW



VIEW I-I
(Showing Handrail Termination)



SECTION H-H
(Showing Handrail **TY W**)

1. Parallel to ground.
2. One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
3. Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
4. See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.
5. 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.
6. 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.
7. See "Handrail Fabrication Details" for Splice Joints.
8. ℄ ⅝" Dia. Round Bar equal spacing at 4 ½" Max. Plumb all pickets.
11. See "General Notes" for anchor bolt information.

Texas Department of Transportation

Design Division Standard

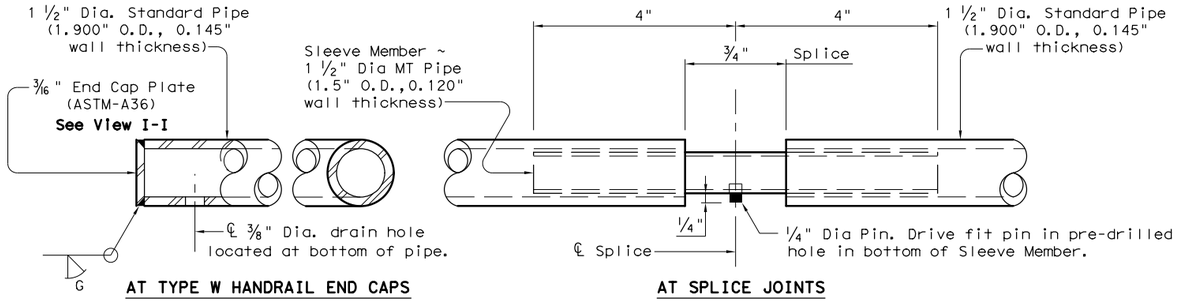
PEDESTRIAN HANDRAIL DETAILS

PRD-13

FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
©TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED MAY, 2013 (VP)	DIST	COUNTY		SHEET NO. 232 OF 377

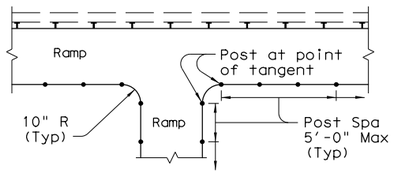
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

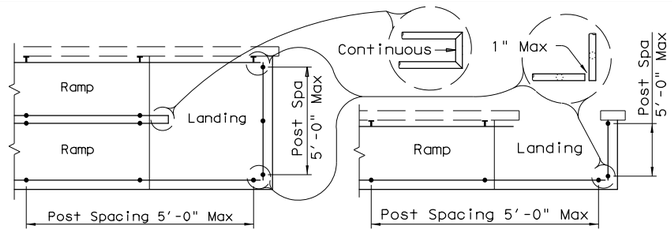


AT TYPE W HANDRAIL END CAPS **AT SPLICE JOINTS**

HANDRAIL FABRICATION DETAILS

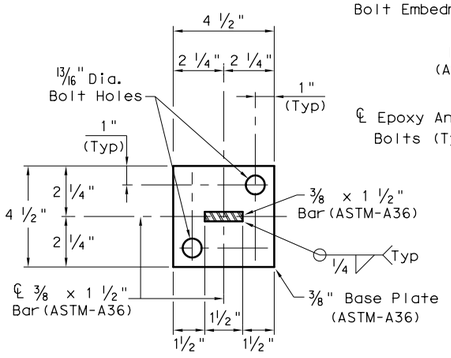


RAMP INTERSECTION

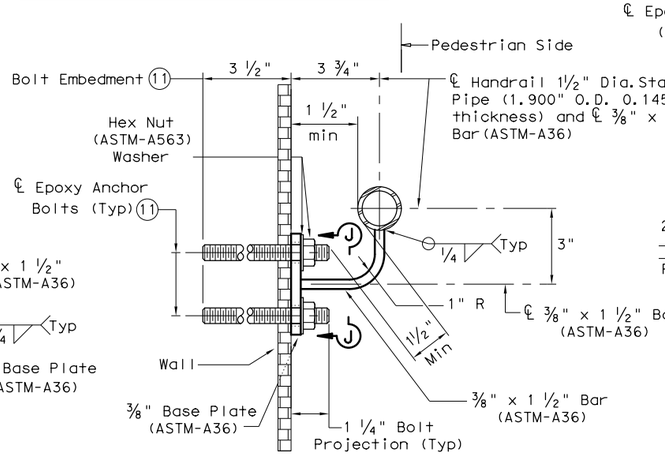


MULTI-LEVEL RAMP **SINGLE-LEVEL RAMP**

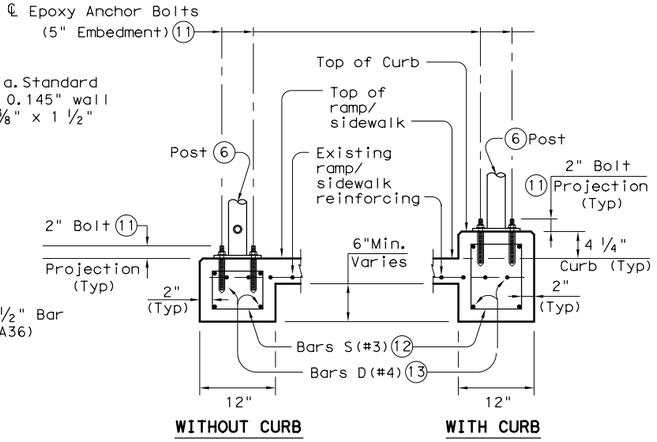
PLAN SHOWING RAIL AT RAMP CONDITIONS



SECTION J-J
(Anchor Bolts not shown for clarity)



SECTION AT WALL MOUNT



WITHOUT CURB **WITH CURB**

SECTION AT RAIL POST FOUNDATIONS

TYPICAL WALL MOUNT DETAILS

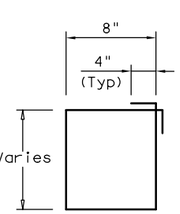
(5) 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp/sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.

(6) 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). Plumb all posts. See "Post Mount Detail" for crimping and trimming post to fit the diamenter of top rail. Provide holes as needed in post for galvanizing drainage and venting.

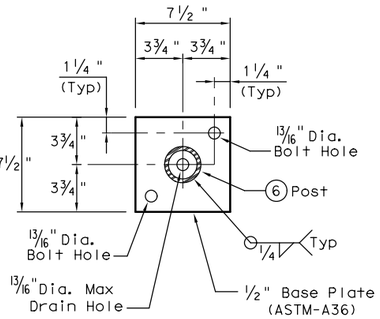
(11) See "General Notes" for anchor bolt information.

(12) Bars S(#3) spaced at 12" Max (Spaced 3" from outside edge of overall length of Ramp/Sidewalk).

(13) Provide 1 ½" end cover to Bars D(#4) from outside edge of overall length of Ramp/Sidewalk.

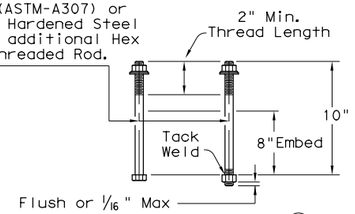


BARS S (#3)

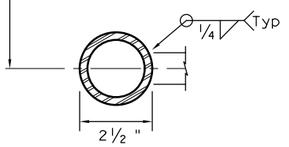


TYPICAL POST BASE PLATE DETAIL

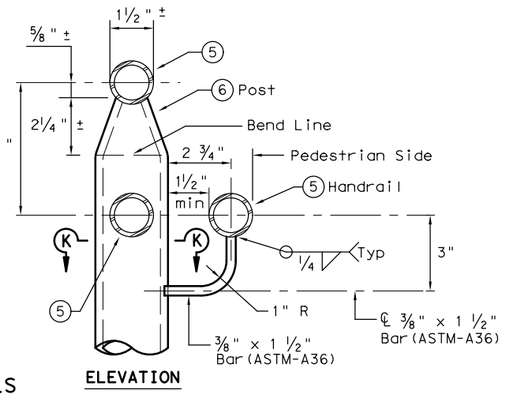
℄ 5/8" Dia. Hex Head Anchor Bolt (ASTM-A307) or Threaded Rod (ASTM-A36) with one Hardened Steel Washer placed under Hex Nut. One additional Hex Nut will be furnished for each Threaded Rod.



CAST-IN-PLACE ANCHOR BOLT OPTIONS
(Used for Post Base Plate only)



SECTION K-K



ELEVATION

POST MOUNT DETAILS

GENERAL NOTES

Designed according to ADAAG, Texas Accessibility Standards, Uniform Building Code, and AASHTO LRFD Specifications.

Handrail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.

Pipe will conform to ASTM-A53 Grade B or A500 Grade B. Steel plates and steel bars will conform to ASTM-A36. Mechanical tubing (MT) will conform to ASTM A513 Grade 1015 or higher. Galvanize all steel components except reinforcing steel unless noted otherwise.

Concrete for foundations will be in accordance with Item 531 "Sidewalks". All reinforcing steel must be Grade 60. Bar laps, where required, will be as follows: Uncoated ~ #4 = 1'-5" Epoxy coated ~ #4 = 2'-1"

When the plans require painted steel, follow the requirements for painting galvanized steel in Item 446, "Cleaning and Painting Steel". Sleeve Members will receive galvanization and only get field painted after installation unless directed otherwise by Engineer.

Epoxy Anchor bolts for wall mount and post base plate will be ⅝" Dia. ASTM A36 threaded rods with one hex nut and one hardened steel washer at each bolt. ⅝" Dia. threaded rod embedment depth for wall mounts is 3 ½" and embedment depth for post base plate is 5".

Embed threaded rods into concrete with a Type III (Class C) epoxy meeting the requirements of DMS-6100, "Epoxies and Adhesives". Mix and dispense adhesive with the manufacturer's static mixing nozzle/dual cartridge system. Core drill holes (percussion drilling not permitted).

At the contractor's option the post base plate anchor bolts may be cast with the Ramp/Sidewalk (See Cast-in-Place Anchor Bolt Options).

Optional cast-in-place anchor bolts will be ⅝" Dia ASTM A307 Grade A bolts (or A36 threaded rods with one tack welded hex nut each) with one hex nut and one hardened steel washer at each bolt. Embedment depth of cast-in-place bolt will be 8" for post base plate.

Handrails and any wall or other surface adjacent to them will be free of any sharp or abrasive elements.

Submit shop drawings to the Engineer unless otherwise noted. For curved handrail applications, fabricate the handrail to the curve if radius is less than 600 ft. Shop drawings are required when rail is fabricated to the curve.

For all handrails, erection drawings will be submitted to the Engineer for approval to ensure proper installation.

Drawings will show handrail mount locations with bolts setting, spacing, ramp slope, and/or splice joint locations, and handrail lengths with identification showing where each handrail goes on the layout.

Payment for concrete sidewalks or curb ramps will be paid for in accordance with Item 531 "Sidewalks".

Payment for all items shown is to be included in unit price bid in accordance with Item 450 "Railing" of the type specified.

All exposed edges will be rounded or chamfered to approximately ⅛" by grinding.

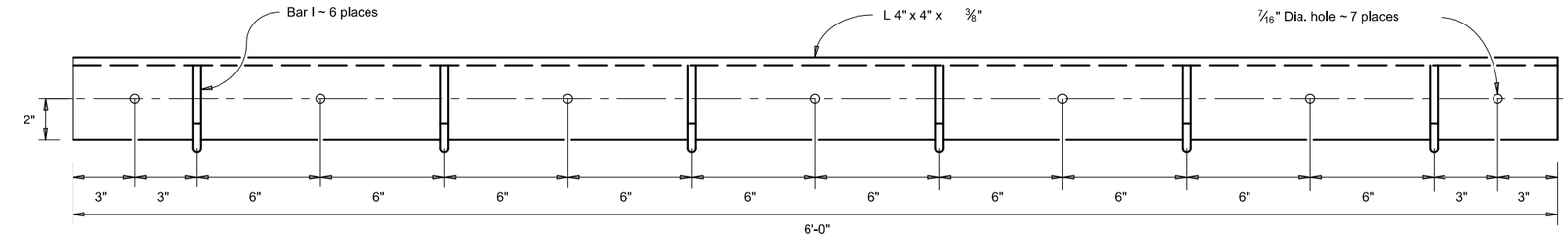
Texas Department of Transportation

Design Division Standard

PEDESTRIAN HANDRAIL DETAILS

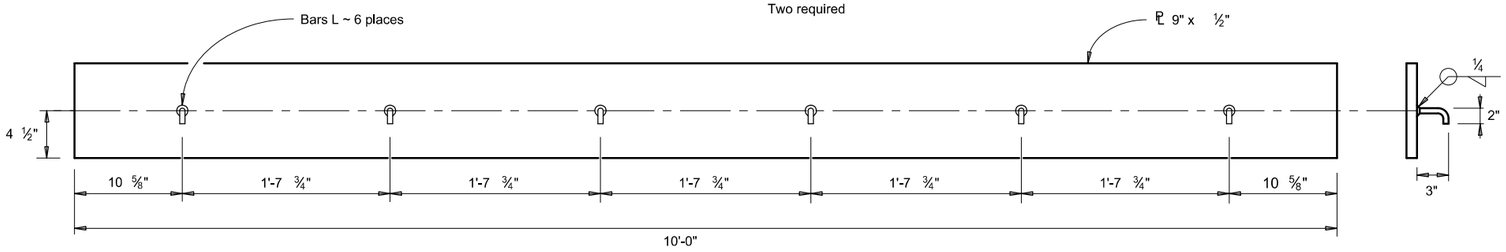
PRD-13

FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
©TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED MAY, 2013 (VP)	DIST	COUNTY		SHEET NO. 233 OF 377

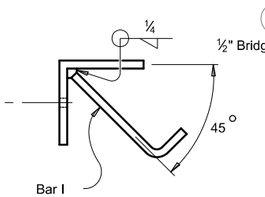


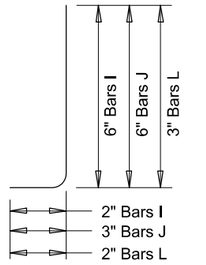
BRIDGE PLATE ATTACHMENT ANGLE

Two required

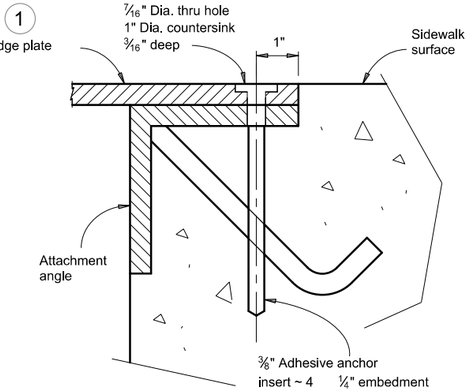


FLOOR PLATE





BARS I, J, AND L



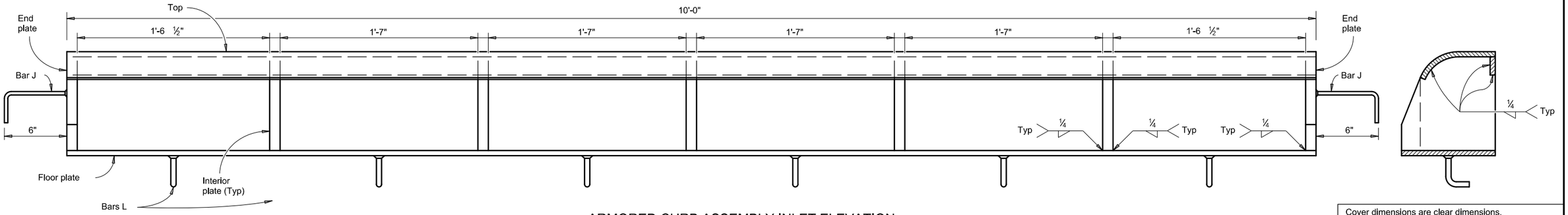
SECTION E

APPROVED SLIP RESISTANT PLATE	
Product	Manufacturer Website
Algrip ,'Steel	www.algrip.com
Mebac ®#3, Steel	www.harscoikg.com
SlipNOT ®Grade 2, Steel	www.slipnot.com

(1) Provide cover plates fabricated with a product from this list. No exceptions are permitted.

GENERAL NOTES:

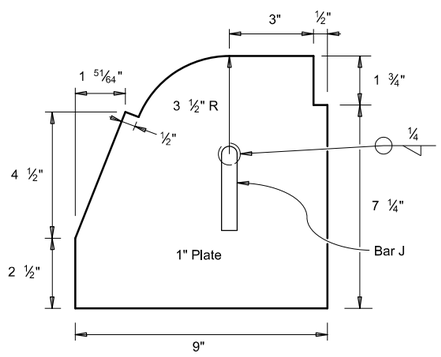
Provide Class A concrete (f'c = 3000 psi).
Provide Grade 60 reinforcing steel.
Structural steel components must be Grade A36.
All exposed edges of the armored curb must receive a ⅛" bevel.
All structural steel components must be galvanized after fabrication in accordance with Item 445, "Galvanizing".
Galvanizing damaged during transport or construction must be repaired in accordance with the Specification.
The bridge plate must be hot-dip galvanized slip resistant steel (see table). Checker or diamond plate is not allowed, nor are slip resistant tapes, films, or non-metallic coatings.
Adhesive anchor system must be HIT HY 150 H.I.S. internally threaded inserts as furnished by Hilti, Inc., Tulsa, OK, or approved equivalent.
Sidewalk bridge, including all labor, armored curb, bridge plate, and other material complete and in place must be paid for under Item 465, "Inlet (Comp) (Ty Sidewalk Bridge)" by location.
Shop drawings will not require the Engineer's approval if fabrication is in accordance with the details shown.



ARMORED CURB ASSEMBLY INLET ELEVATION

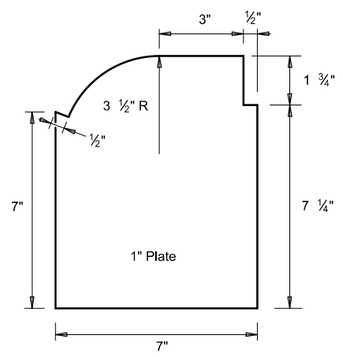
Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing bar dimensions are out-to-out of bar.

Contractor is responsible for verifying all dimensions and quantities in the field before beginning work.



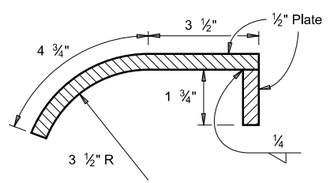
END PLATE

Two required



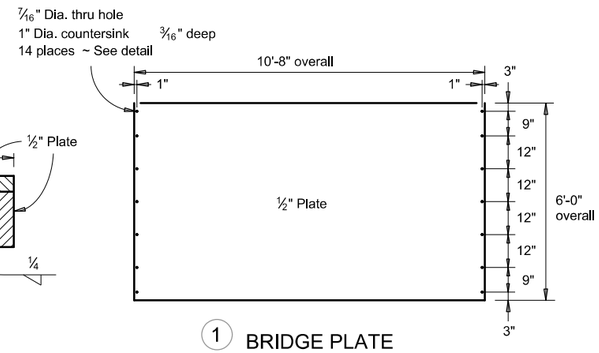
INTERIOR PLATE

Five required



TOP (SECTION)

10'-0" length



(1) BRIDGE PLATE

Hole location dimensions to center of hole

SHEET 3 OF 3

© 2020

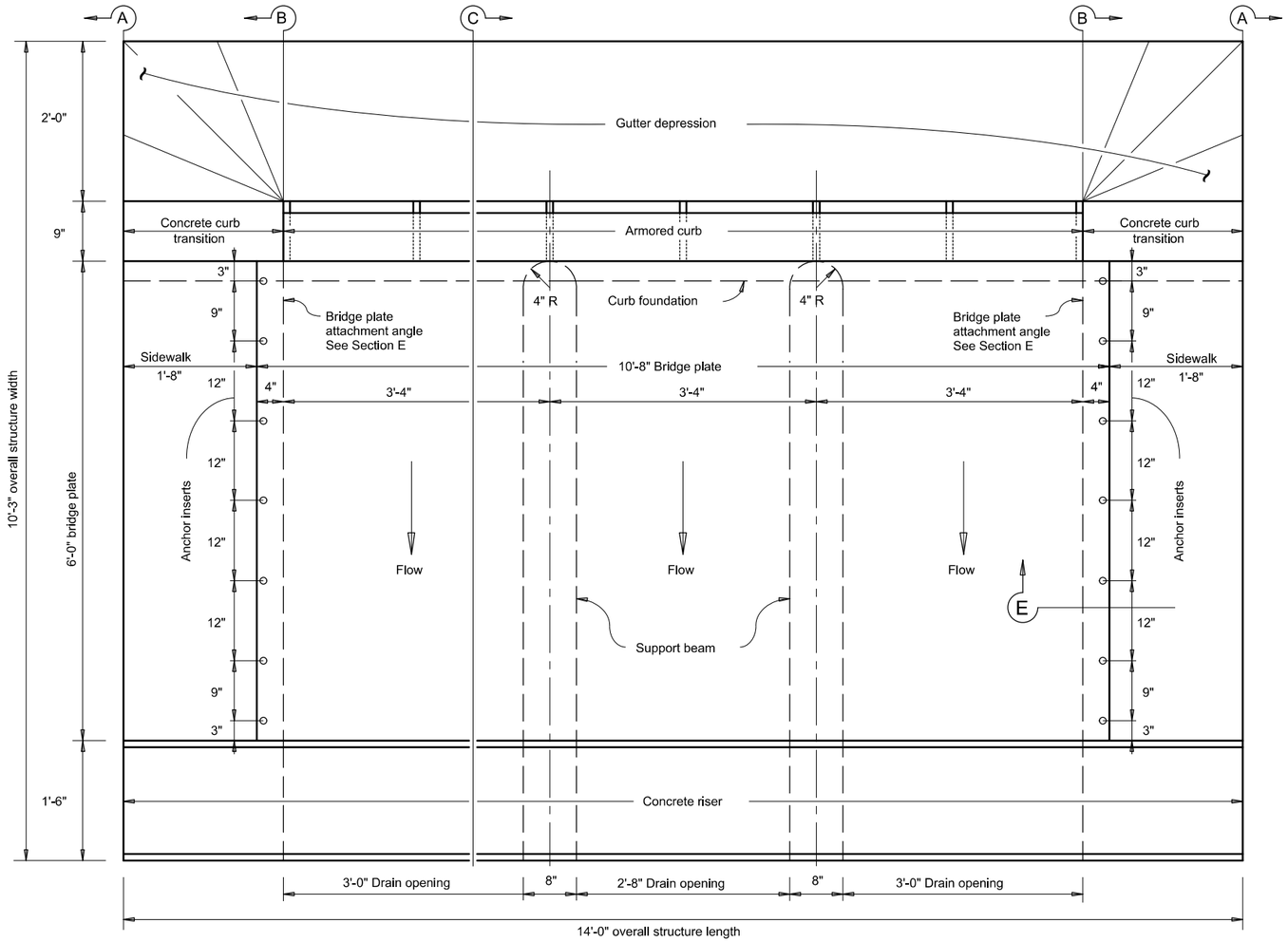
Texas Department of Transportation
San Antonio District (Structural Design)
Prepared by and for the use of TxDOT

SIDEWALK BRIDGE

SAN ANTONIO DISTRICT STANDARD

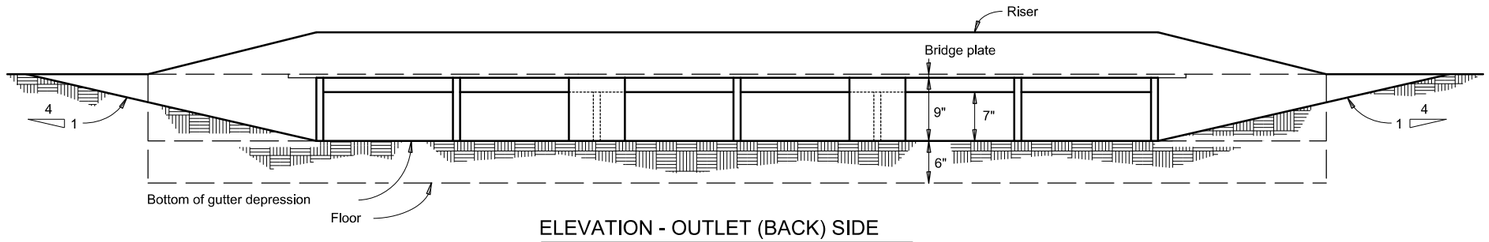
DN: BCL	CK:	FILENAME: SA District Sidewalk Bridge.dgn		
DW: SRF	CK:	ORIGINAL DRAWING DATE: January 2020		
DIST	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		COUNTY
SAT	6			COUNTY
CONTROL	SECTION	JOB	SHEET NO.	ROUTE
0000	00	000	234 OF 377	ROUTE

REVISIONS:

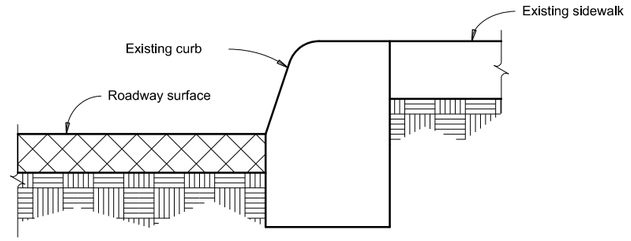


PLAN

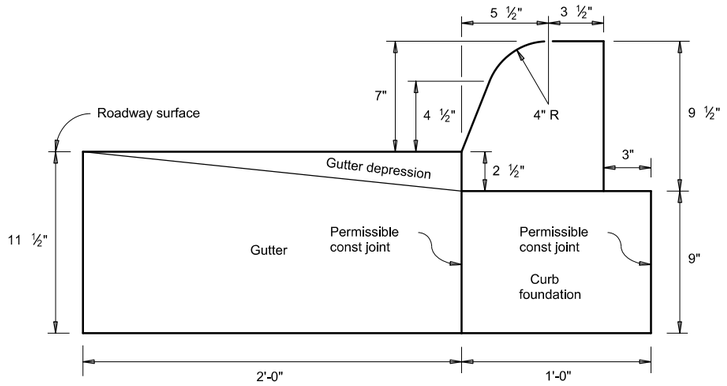
ELEVATION - INLET (STREET) SIDE



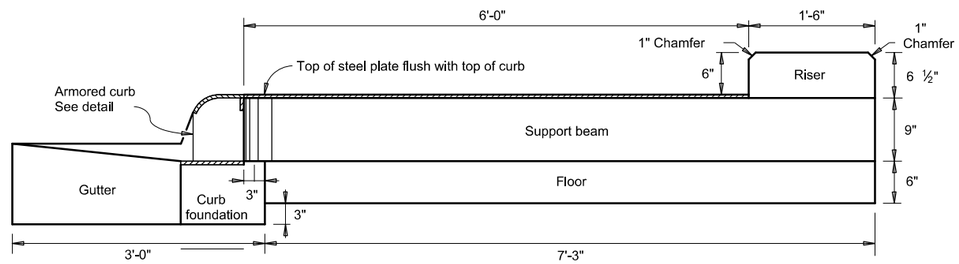
ELEVATION - OUTLET (BACK) SIDE



SECTION A



SECTION B DIMENSIONS



SECTION C DIMENSIONS

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

Contractor is responsible for verifying all dimensions and quantities in the field before beginning work.

© 2020

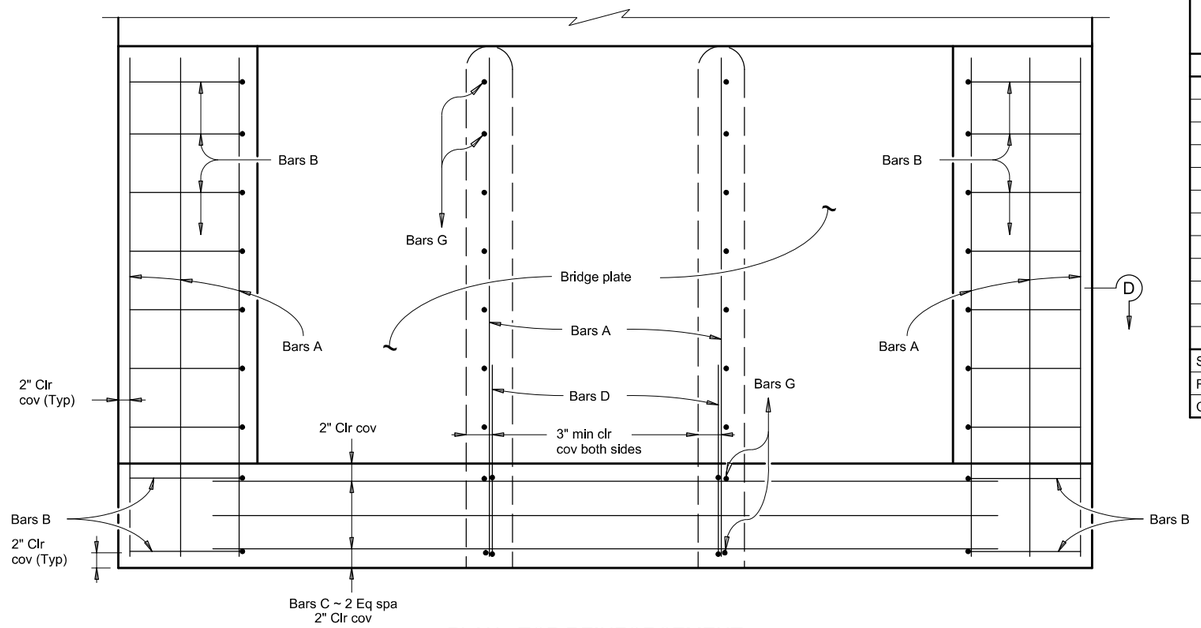
Texas Department of Transportation
San Antonio District (Structural Design)
Prepared by and for the use of TxDOT

SIDEWALK BRIDGE

SAN ANTONIO DISTRICT STANDARD

DN: BCL	CK:	FILENAME: SA District Sidewalk Bridge.dgn	
DW: SRF	CK:	ORIGINAL DRAWING DATE: January 2020	
DIST	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	COUNTY
SAT	6		COUNTY
CONTROL	SECTION	JOB / SHEET NO.	ROUTE
0000	00	000 / 235 OF 377	ROUTE

REVISIONS:

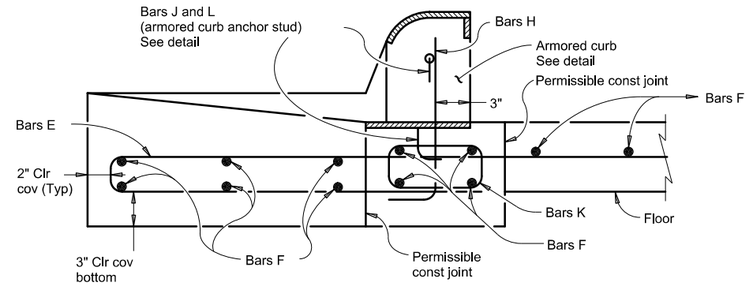


PLAN - TOP REINFORCEMENT

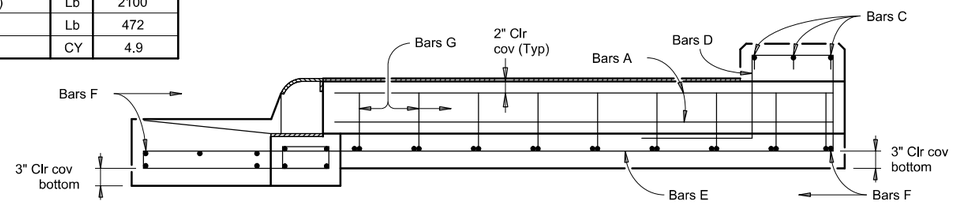
TABLE OF ESTIMATED QUANTITIES

For Contractor information only.

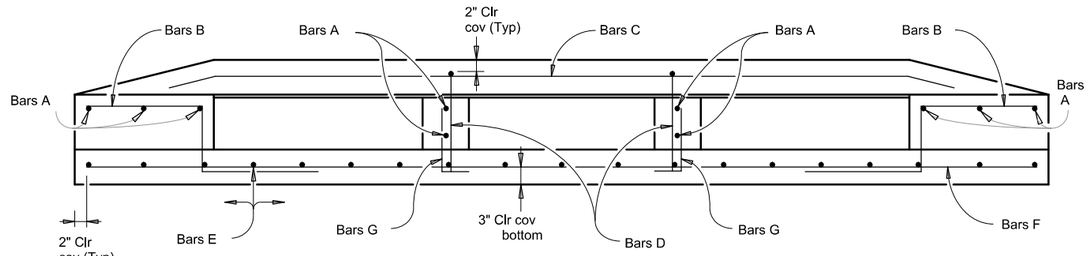
Bar	No.	Size	Length	Weight
A	10	#4	7'-2"	48
B	18	#4	4'-3"	52
C	3	#4	11'-4"	23
D	2	#4	5'-6"	8
E	19	#4	12'-10"	163
F	14	#4	13'-8"	128
G	18	#4	1'-6"	18
H	6	#4	1'-10"	8
I	6	#4	0'-8"	3
J	2	#4	0'-9"	1
K	19	#3	2'-6"	18
L	6	#4	0'-5"	2
Struct. steel (Misc. non bridge)			Lb	2100
Reinforcing Steel			Lb	472
Class "C" Concrete			CY	4.9



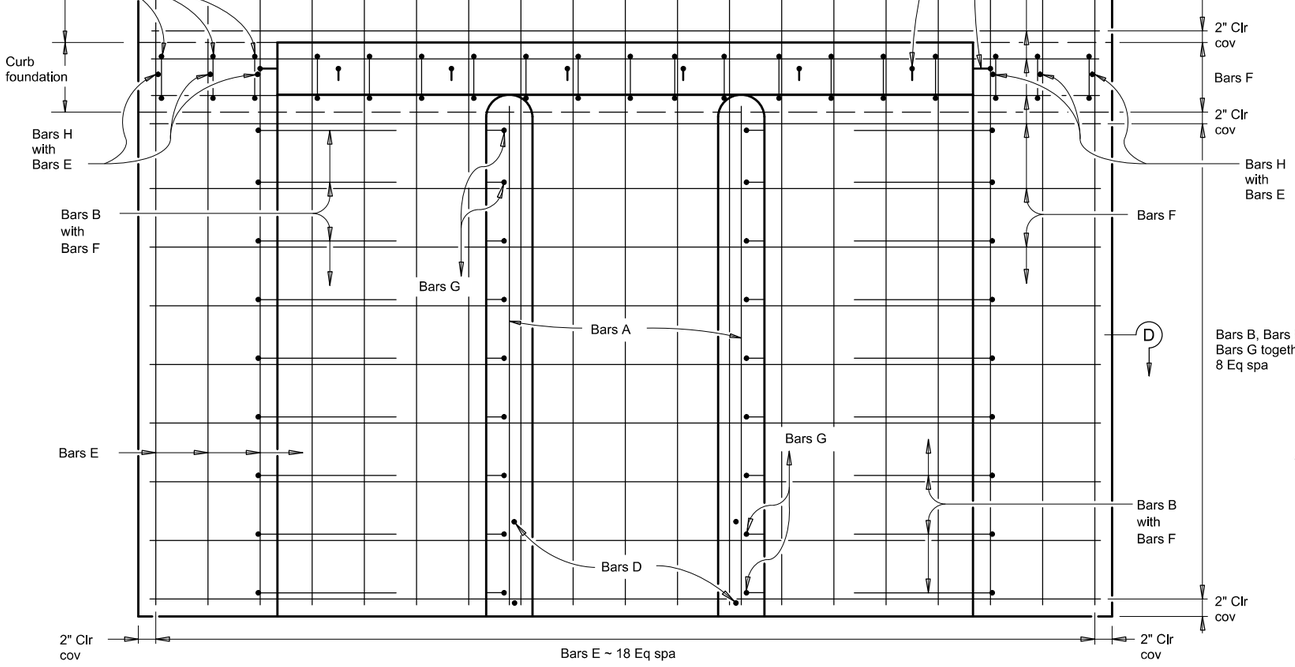
SECTION B REINFORCEMENT



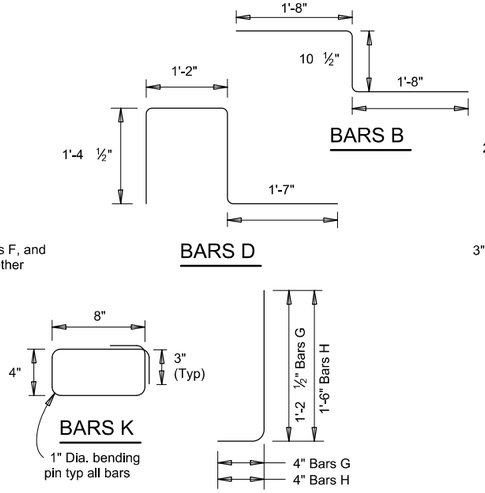
SECTION C REINFORCEMENT



SECTION D REINFORCEMENT



PLAN - BOTTOM REINFORCEMENT



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

Contractor is responsible for verifying all dimensions and quantities in the field before beginning work.

SHEET 2 OF 3

Texas Department of Transportation
San Antonio District (Structural Design)
© 2020
Prepared by and for the use of TxDOT

SIDEWALK BRIDGE

SAN ANTONIO DISTRICT STANDARD

DN: BCL	CK:	FILENAME: SA District Sidewalk Bridge.dgn		
DW: SRF	CK:	ORIGINAL DRAWING DATE: January 2020		
DIST	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		COUNTY
SAT	6			COUNTY
CONTROL	SECTION	JOB	SHEET NO.	ROUTE
0000	00	000	236 OF 377	ROUTE

REVISIONS:

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act." No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

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

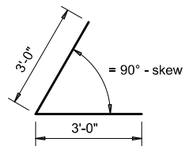
Dimensions					Variable Reinforcing				Estimated Quantities per ft of wing (2~wings) (4)		Estimated Quantities per ft of Toewall (1~toewall)	
					Bars J1		Bars J2					
Maximum Wingwall Height Hw	W	X	Y	Z	Size	Spa	Size	Spa	Reinf Lb/Ft	Conc (CY/Ft)	Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	48.64	0.406	6.85	0.071
2'-9"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.31	0.424	6.85	0.071
3'-0"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.98	0.444	6.85	0.071
3'-3"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.32	0.462	6.85	0.071
3'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.98	0.480	6.85	0.071
4'-0"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	55.77	0.532	6.85	0.071
4'-6"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	59.77	0.568	6.85	0.071
5'-0"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	63.45	0.632	6.96	0.075
5'-6"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	67.46	0.668	6.96	0.075
6'-0"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	80.67	0.730	7.07	0.078
6'-6"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	85.05	0.768	7.07	0.078
7'-0"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	92.15	0.864	8.07	0.093
7'-6"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	96.54	0.902	8.07	0.093
8'-0"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	139.04	0.962	8.13	0.095
8'-6"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	144.47	1.000	8.13	0.095
9'-6"	6'-0"	2'-10"	2'-2"	9"	#5	6"	#5	6"	156.93	1.136	8.41	0.110
10'-6"	6'-5"	3'-0"	2'-5"	9"	#6	6"	#5	6"	196.27	1.234	8.57	0.117
11'-6"	7'-2"	3'-6"	2'-8"	11"	#6	6"	#6	6"	230.13	1.438	9.52	0.140
12'-6"	7'-8"	3'-9"	2'-11"	1'-0"	#7	6"	#6	6"	283.41	1.592	9.74	0.157
13'-6"	8'-2"	4'-0"	3'-2"	1'-2"	#8	6"	#6	6"	348.72	1.804	10.02	0.186
14'-6"	8'-10"	4'-5"	3'-5"	1'-4"	#9	6"	#6	6"	432.94	2.046	10.30	0.218
15'-6"	9'-6"	4'-10"	3'-8"	1'-6"	#9	6"	#7	6"	489.52	2.302	11.24	0.253
16'-0"	9'-11"	5'-0"	3'-11"	1'-7"	#9	6"	#7	6"	505.72	2.448	11.47	0.279

TABLE OF WINGWALL REINFORCING
(2~wings)

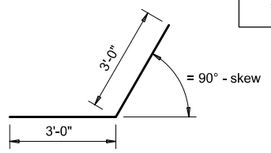
Bar	Size	No.	Spa
D1	#6	~	1'-0"
D2	#6	~	1'-0"
E1	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	~	8"
M1	#4	4	~
P	#4	~	1'-0"
V	#4	~	1'-0"

TABLE OF TOEWALL REINFORCING

Bar	Size	No.	Spa
J3	#4	~	1'-0"
M2	#4	2	~
E2	#4	~	1'-0"



BARS D1



BARS D2

WING DIMENSION FORMULAS:

(All values are in feet.)

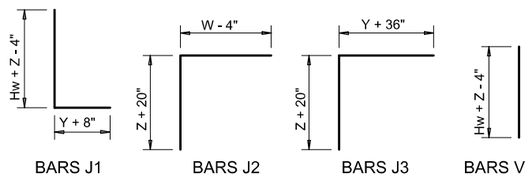
Hw = H + T + C
Lw = (Hw) (SL) ÷ cosine (θ) for Type PW-1
= (Hw - 1') (SL) ÷ cosine (θ) for Type PW-2 and Hw 4' ≥
= (Hw - 0.5') (SL) ÷ cosine (θ) for Type PW-2 and Hw 4' <

For cast-in-place culverts:
Ltw = [(N) (S) + (N + 1) (U)] ÷ cosine (θ)

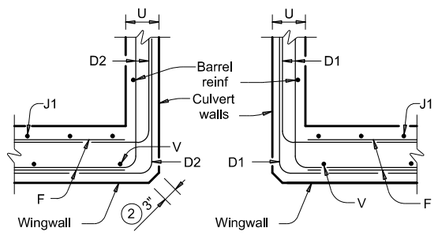
For precast culverts:
Ltw = [(N) (2 U + S) + (N - 1) (0.5')] ÷ cosine (θ)
Total Wingwall Area (two wings ~ SF)
= (2)(Hw)(Lw) for Type PW-1
= (2)(Hw)(Lw) - 6 SF for Type PW-2 and Hw 4' ≥
= (2)(Hw)(Lw) - 1.5 SF for Type PW-2 and Hw 4' <

Hw = Height of wingwall
Lw = Length of wingwall
Ltw = Culvert toewall length
N = Number of culvert spans
SL:1 = Channel slope ratio. (horizontal: 1 vertical, usual value is 2:1)
θ = Culvert skew

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



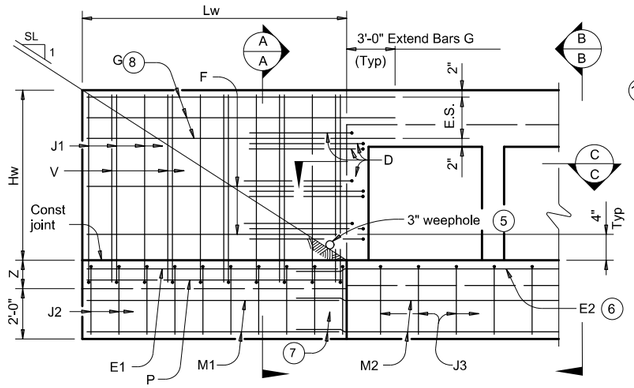
BARS J1 BARS J2 BARS J3 BARS V



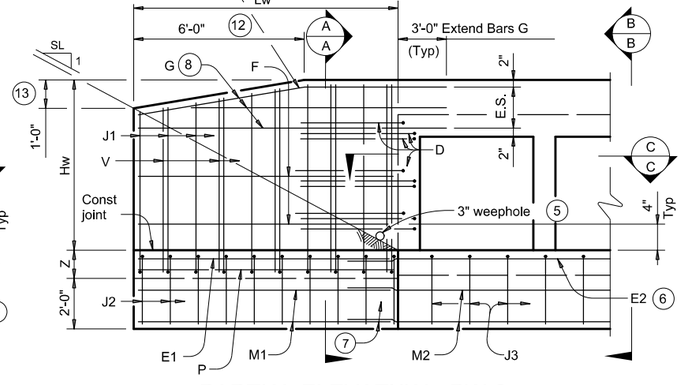
SECTION C-C - PW-1

1. Skew = 0°
2. At discharge end, chamfer may be ¾" minimum.
3. For 15° skew ~ 1"
   For 30° skew ~ 2"
   For 45° skew ~ 3"
4. Quantities shown are for two Type PW-1 wings. Adjust concrete volume for Type PW-2 wings. To determine estimated quantities for two wings, multiply the tabulated values by Lw. Quantities shown do not include weight of Bars D.
5. Provide weepholes for Hw = 5'-0" and greater. Fill around weepholes with coarse gravel.
6. Extend Bars E2 1'-6" minimum into the wingwall footing.
7. Lap Bars M1 1'-6" minimum with Bars M2.
8. Place Bars G as shown, equally spaced at 8" maximum. Provide at least two pairs of Bars G per wing.
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.

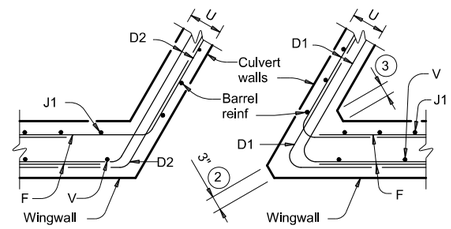
    Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
11. 1'-0" typical. 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.
12. 3'-0" for Hw < 4'.
13. 6" for Hw < 4'.



PARTIAL ELEVATION - PW-1



PARTIAL ELEVATION - PW-2



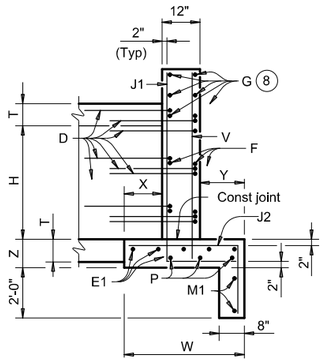
SECTION C-C - PW-2

DESIGNER NOTES:
Type PW-1 can be used for all applications and must be used if railing is to be mounted to the wingwall.
Type PW-2 can only be used for applications without a railing mounted to the wingwall.

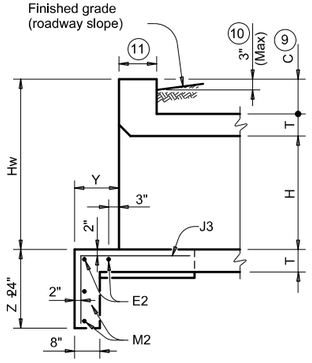
MATERIAL NOTES:
Provide Class C concrete (f'c=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.

GENERAL NOTES:
Designed in accordance with AASHTO LRFD Bridge Design Specifications.
Depth of toewalls for wingwalls and culverts may be reduced or eliminated when founded on solid rock, when directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for wingwall type and additional dimensions and information.
Quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for the Contractor's information only.

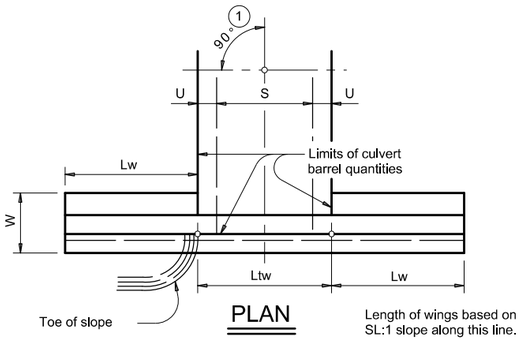
Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing dimensions are out-to-out of bars.



SECTION A-A
(Showing wing reinforcement.)



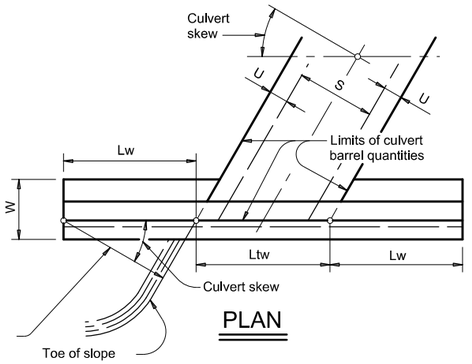
SECTION B-B
(Showing wing reinforcement.)



PLAN

Length of wings based on SL:1 slope along this line.

DETAILS FOR NON-SKEWED BOX CULVERTS



PLAN

DETAILS FOR SKEWED BOX CULVERTS
(Showing 30° skew.)

Texas Department of Transportation

Bridge Division Standard

CONCRETE WINGWALLS
WITH PARALLEL WINGS FOR BOX CULVERTS
TYPES PW-1 AND PW-2

PW

FILE: CD-PW-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				237 OF 377

Culvert Station and/or Creek Name followed by applicable end (Lt, Rt or Both)	Description of Box Culvert No. Spans ~ Span X Height	Max Fill Height (Ft)	Applicable Box Culvert Standard (4)	Applicable Wingwall or End Treatment Standard	Skew Angle (0°,15°, 30° or 45°)	Side Slope or Channel Slope Ratio (SL:1)	T Culvert Top Slab Thickness (In)	U Culvert Wall Thickness (In)	C Estimated Curb Height (Ft)	Hw Height of Wingwall (1) (Ft)	A Curb to End of Wingwall (Ft)	B Offset of End of Wingwall (Ft)	Lw Length of Longest Wingwall (Ft)	Ltw Culvert Toewall Length (Ft)	Atw Anchor Toewall Length (Ft)	Riprap Apron (CY)	Class "C" Conc (Curb) (2) (CY)	Class "C" Conc (Wingwall) (3) (CY)	Total Wingwall Area (SF)
247+22.30 (Rt)	2 ~ 5'x 3' , 1 ~ 4'x 3'	3'	MC-5-20	PW-1	45°	3:1	8"	7"	2.333'	6.000'	N/A	N/A	25.456'	23.924'	N/A	0.0	2.0	30.34	305

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act." No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

NOTES:
Skew = 0° on SW-0, FW-0, SETB-CD, SETB-SW-0, and SETB-FW-0 standard sheets;
30° maximum for safety end treatment

SL:1 = Horizontal : 1 Vertical
· Side slope at culvert for flared or straight wingwalls.
· Channel slope for parallel wingwalls.
· Slope must be 3:1 or flatter for safety end treatments.

T = Box culvert top slab thickness. Dimension can be found on the applicable box culvert standard sheet.

U = Box culvert wall thickness. Dimension can be found on the applicable box culvert standard sheet.

C = Curb height

See applicable wing or end treatment standard sheets for calculations of Hw, A, B, Lw, Ltw, Atw, and Total Wingwall Area.

Hw = Height of wingwall

A = Distance from face of curb to end of wingwall (not applicable to parallel or straight wingwalls)

B = Offset of end of wingwall (not applicable to parallel or straight wingwalls)

Lw = Length of longest wingwall.

Ltw = Length of culvert toewall (not applicable when using riprap apron)

Atw = Length of anchor toewall (applicable to safety end treatment only)
Total Wingwall Area = Wingwall area in sq. ft. for two wingwalls (one structure end) if Lt or Rt.
Area for four wingwalls (two structure ends) if Both.

(1) Round the wall heights shown to the nearest foot for bidding purposes.

(2) Concrete volume shown is for box culvert curb only. For curbs using the Box Culvert Rail Mounting Details (RAC) standard sheet quantities shown must be increased by a factor of 2.25. If Class S concrete is required for the top slab of the culvert, also provide Class S concrete for the curb. Curb concrete is considered part of the Box Culvert for payment.

(3) Concrete volume shown is total of wings, footings, culvert toewall (if any), anchor toewalls (if any) and wingwall toewalls. Riprap aprons, culverts, and curb quantities are not included.

(4) Regardless of the type of culvert shown on this sheet, the Contractor has the option of furnishing cast-in-place or precast culverts unless otherwise shown elsewhere on the plans. If the Contractor elects to provide culverts of a different type than those shown on this sheet, it is the Contractor's responsibility to make the necessary adjustments to the dimensions and quantities shown.

SPECIAL NOTE:

This sheet is a supplement to the box culvert standards. It is to be filled out by the culvert specifier and provides dimensions for the construction of the box culvert wingwalls and safety end treatments.

An Excel 2010 spreadsheet to assist in completing this table can be downloaded from the Bridge Standards (English) web page on the TxDOT web site. The completed sheet must be signed, sealed, and dated by a licensed Professional Engineer.

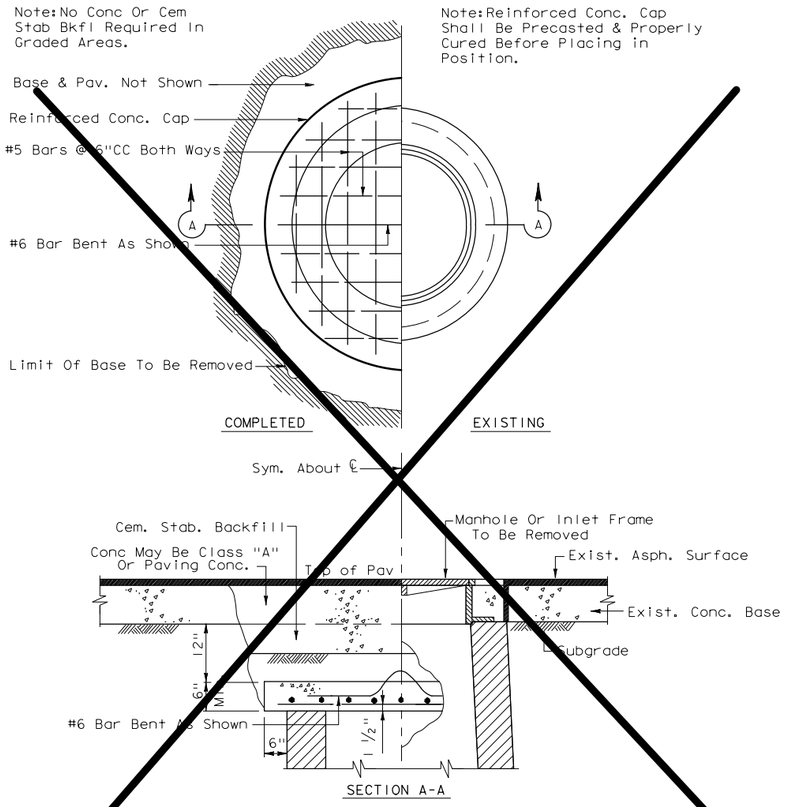
Texas Department of Transportation

Bridge Division Standard

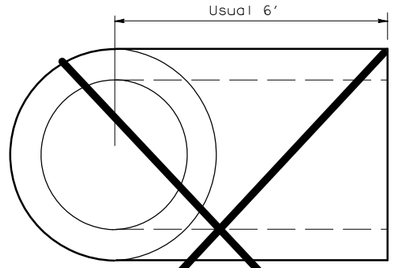
BOX CULVERT SUPPLEMENT
WINGS AND END TREATMENTS

BCS

FILE: CD-BCS-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				238 OF 377

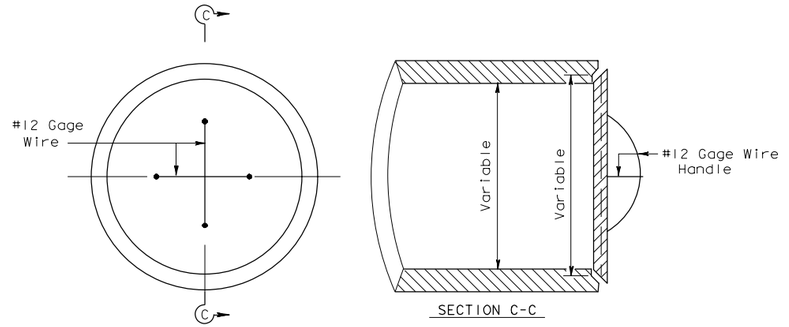


DETAIL SHOWING METHOD OF CAPPING ABANDONED MANHOLES OR INLETS (GRADED OR PAVED AREAS)



Note: Jointing Material Shall Conform To Requirements Of Item "Reinforced Concrete Pipe." Material For Tees Shall Conform To Requirements Of Item "Reinforced Concrete Pipe." Payment For Tee To Be In Accordance With Item "Reinforced Concrete Pipe."

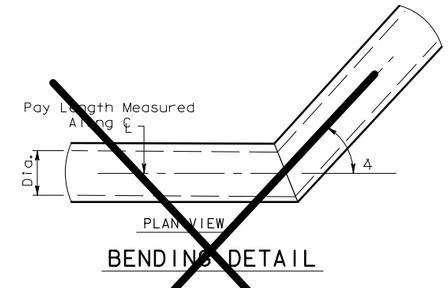
PRECAST STORM SEWER TEE



Note: The Price Of Plug Shall Be Subsidiary To The Unit Bid Price For Pipe Sewer Or RCP. Mortar Joints To Be Used As Directed By The Engineer. Removal Of The Existing Plugs For Storm Sewer Or RCP Conns. Shall Be Considered Incidental To Item "Excavation And Backfill For Structures."

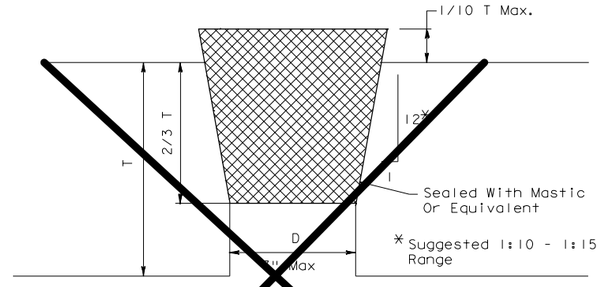
Concrete Plug For End Of Pipe Culvert Or Sewer

CONCRETE PLUG FOR PIPE



BENDING DETAIL

Note: Bending Of Proposed Pipe Sewer Or RCP In A Vertical & /Or Horizontal Plane Shall Be Accomplished By The Use Of A "Pipe Collar" Or A "Precast Elbow", As Approved By The Engineer.
Price Of "Pipe Collar" Or, "Precast Elbow" Shall Be Subsidiary To The Unit Prices Bid For Item Reinforced Concrete Pipe.
Pay Length Measurement To Be Along Horizontal ℄ & Horizontal Plane Of Pipes.

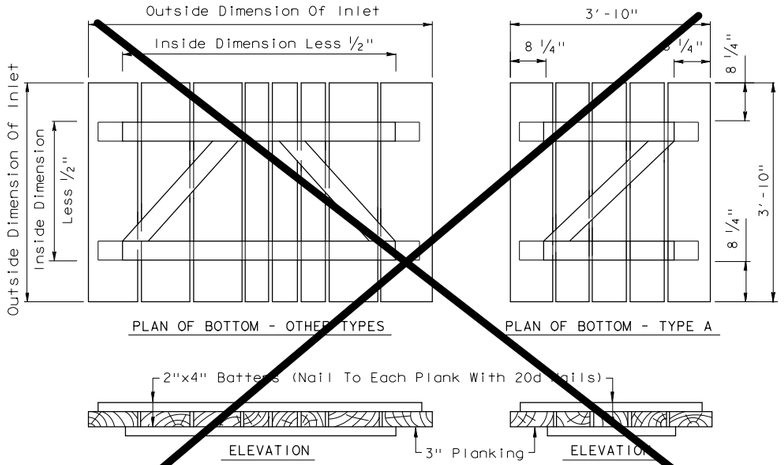


T = Wall Thickness On Top Of Box Or Pipe
D = Diameter Of Lifting Hole

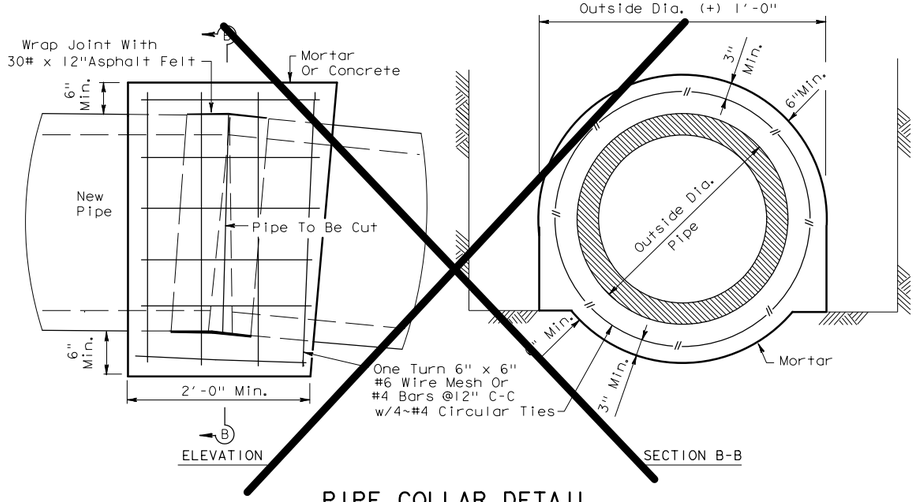
Minimum Length Of Plug Is 2/3 T +/-
Minimum Diameter At Bottom Of Plug = D - ⅛"
Maximum 1/10 T Of Plug Not Seated In Lifting Hole

Note: The Plug Shall Be Cast With The Same Taper As The Lifting Hole.

DETAIL OF PLUG FOR LIFTING HOLES IN RCB AND RCP



TEMPORARY COVERS FOR ALL TYPES OF INLETS



PIPE COLLAR DETAIL

For Horizontal Or Vertical Placement

d = Diameter
R = Radius

Texas Department of Transportation
Houston District (Bridge)

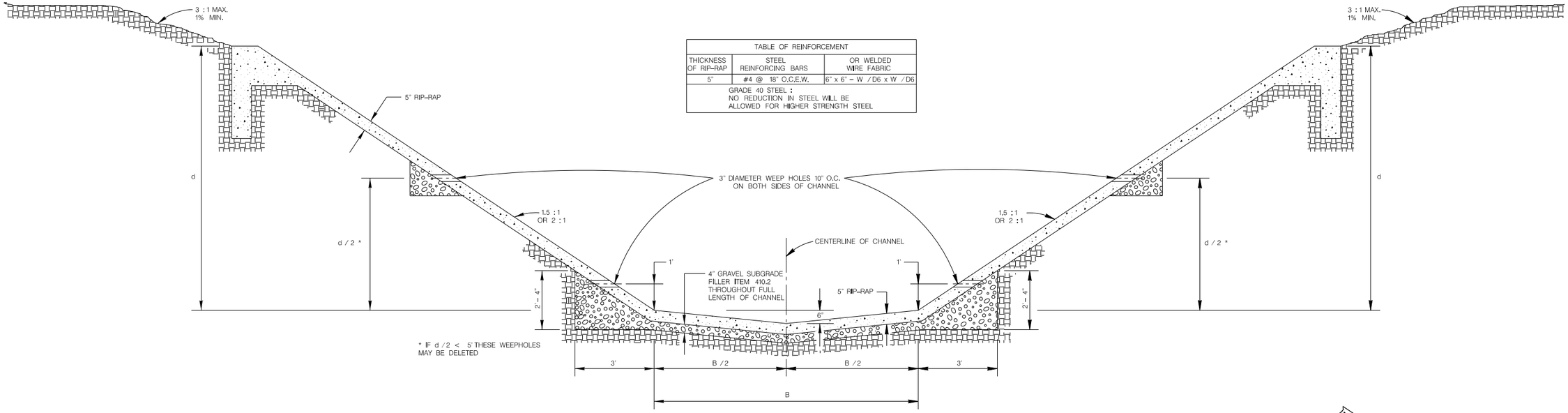
MISCELLANEOUS SEWER DETAILS

MSD

FILE: STDD11.DGN	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK:
© TxDOT Mar 2004	DISTRICT	FED REG	PROJECT NO.	
REVISIONS 3/2015 2014 Specs	HOU	6		
	COUNTY		SHEET	
			239 OF 377	

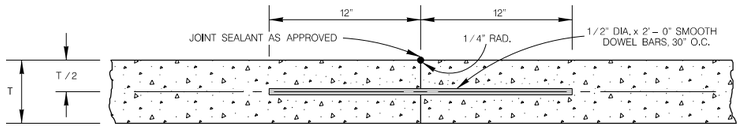
STDD11.DGN

TABLE OF REINFORCEMENT		
THICKNESS OF RIP-RAP	STEEL REINFORCING BARS	OR WELDED WIRE FABRIC
5"	#4 @ 18" O.C.E.W.	6" x 6" – W /D6 x W /D6
GRADE 40 STEEL : NO REDUCTION IN STEEL WILL BE ALLOWED FOR HIGHER STRENGTH STEEL		



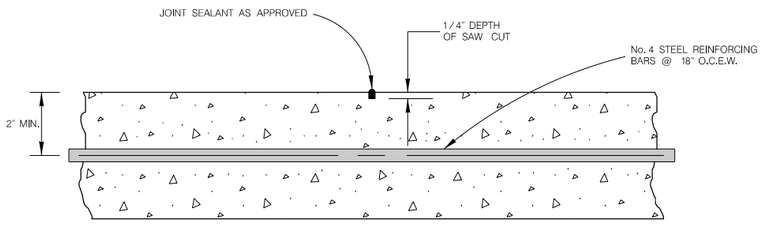
TYPICAL CHANNEL SECTION
LOOKING DOWNSTREAM

SCALE : 1" = 4'



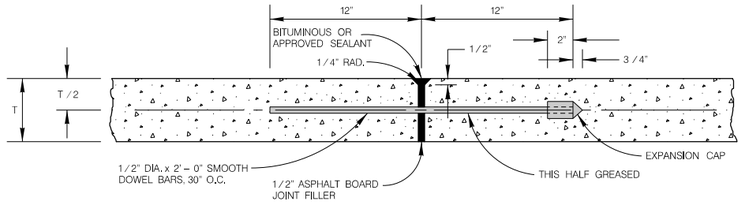
CONVERSE CONTRACTION
OR CONSTRUCTION JOINT

SCALE : 1" = 1'



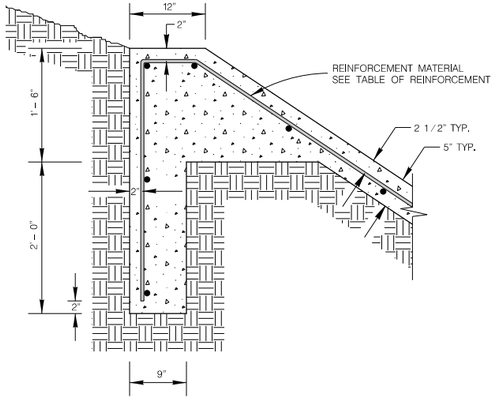
"SAW CUT" CONTRACTION JOINT

SCALE : 1" = 6"



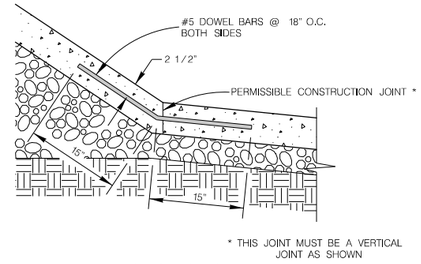
TRANSVERSE EXPANSION JOINT

SCALE : 1" = 1'



REINFORCEMENT DETAIL
TOE–DOWN

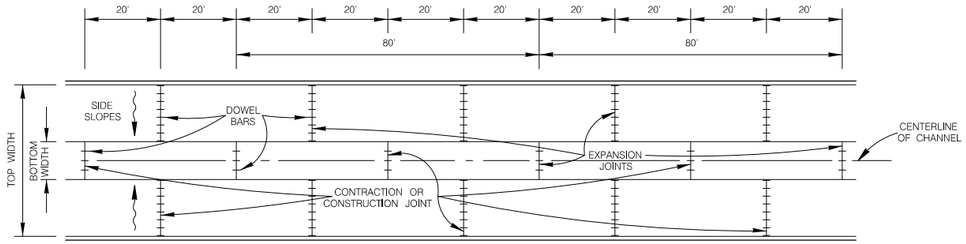
SCALE : 1" = 2'



* THIS JOINT MUST BE A VERTICAL JOINT AS SHOWN

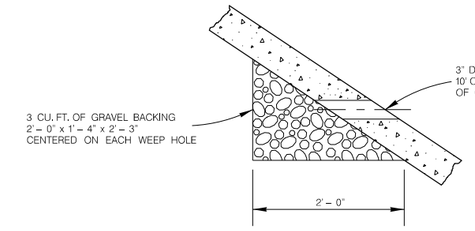
ALL SECTIONS

SCALE : 1" = 2'



EXPANSION AND CONTRACTION JOINTS
FOR CONCRETE CHANNEL LINING

SCALE : 1" = 40'



WEEP HOLES DETAILS
FOR SIDE SLOPES

SCALE : 1" = 2'

GENERAL NOTES

1. CONCRETE FOR CHANNEL RIP-RAP SHALL BE CLASS "A" 3000 P.S.I.
2. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS UNLESS OTHERWISE SHOWN.
3. ALL REINFORCEMENT STEEL SHALL MEET ASTM DESIGNATIONS AS CALLED FOR IN THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION".
4. NEW RIP-RAP SHOULD BE ATTACHED TO EXISTING RIP-RAP BY NO. 4 BARS DOWELED 6" INTO EXISTING RIP-RAP. THESE BARS ARE TO BE SPACED 18" O.C. AND HAVE A LENGTH OF 18".

MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TYPICAL CONCRETE CHANNEL RIP–RAP STANDARDS

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/17/2025
DRWN. BY:	DSGN. BY:	CHKD. BY:	SHEET NO. 240 OF 377

EPA & TCEQ Construction General Permit - Checklist of Record Keeping Responsibilities
City of San Antonio (COSA) - July-2015

ENGINEER

Pre Construction

- Design of structural controls
- Development of SWP3
- Development of SWP3 site diagram(s) including grading plans/contours anticipated at initial, interim and final grade
- Development of project phasing schedule
- Water Pollution Abatement Plan (WPAP) (Edwards Aquifer)
- AST Plan (Edwards Aquifer)
- Environmental Preconstruction Meeting

During Construction

- Evaluation of BMP effectiveness
- Review of SWP3 Modifications

Post Construction

- Close Out Inspection
  - o Ensure removal of temporary BMPs,
  - o Verify correct installation of permanent BMPs,
  - o Assess final stabilization achieved to allow Notice of Termination

COSA CONSTRUCTION PROJECT MANAGER

Pre Construction

- Review SWP3 Plans
- Environmental Preconstruction Meeting
- Conduct SWP3 Training (EPA only)

Construction

- Ensure inspections are performed and documented every 7 days
- Ensure maintenance of up to date copies of SWP3 and associated records
  - o Corrective Action Documentation- within 7 days of time of discovery (EPA)
  - o Maintenance- document if unable to fix/install item within 7 days. (EPA)
- Ensure records of rainfall events are being maintained
  - o Rainfall during normal business hours that measures 0.25 inches or greater (EPA)
  - o Rainfall- record of total rainfall measured and the approximate beginning and ending dates of winter or drought conditions resulting in monthly frequency of inspections (TCEQ)
- Follow Up on incidents and spill reports to ensure proper corrective actions
  - o Construction Manager would be responsible for notifying COSA Environmental of a Reportable Quantity Release (e.g., sheen on water, 25 gallons of "oil" to land, etc.)
  - o Provide a description of spills and incidents & information obtained regarding quality and quantity of stormwater discharges to COSA Environmental.
- Ensure completing of the Grading Log (dates when activities start and end) and Construction Activities Log (daily)
  - o Ensure Construction Activities Log includes dates when construction activities temporarily or permanently cease on site (TCEQ) and dates when stabilization measures are initiated
- Ensure upkeep of the on-site Material Inventory
- Coordinate between Contractor, COSA, and Engineer when the SWP3 requires modification and/or when BMPs are not effective, are missing, or need maintenance/repair
- Ensure contractor is noting SWP3 accordingly (Dates of installment of BMPs, removal of BMPs, maintenance of BMPS, concrete washout pits date of install and removal, etc.)

Post Construction

- Close Out Inspection
  - o Ensure removal of temporary BMPs,
  - o Verify correct installation of permanent BMPs,
  - o Assess final stabilization achieved to allow Notice of Termination

COSA ENVIRONMENTAL GROUP

Pre Construction

- Review SWP3 Plans
- File Notice of Intent
- Environmental Preconstruction Meeting
- Conduct SWP3 Training (EPA only)
- File Secondary Operator Construction Site Notice with SAWS
- Ensure the SW3P inspector is certified in accordance with COSA Ordinance Sec. 34-805 (q)
- Post Construction Site Notice

Construction

- Ensure inspections are performed and documented every 7 days
- Ensure a designated SWP3 inspector certifies all inspection reports
- Ensure maintenance of up to date copies of SWP3 and associated records
  - o Corrective Action Documentation- within 7 days of time of discovery (EPA)
  - o Maintenance- document if unable to fix/install item within 7 days. (EPA)
- Ensure records of rainfall events are being maintained
  - o Rainfall during normal business hours that measures 0.25 inches or greater (EPA)
  - o Rainfall- record of total rainfall measured and the approximate beginning and ending dates of winter or drought conditions resulting in monthly frequency of inspections (TCEQ)
- Follow Up on incidents and spill reports to ensure proper corrective actions
  - o Conduct TCEQ notification as required for spills above a reportable quantity (e.g., sheen on water, 25 gallons of "oil" to land, etc.)
- Ensure completion of the Grading Log (dates when activities start and end) and Construction Activities Log (daily)
  - o Ensure Construction Activities Log includes dates when construction activities temporarily or permanently cease on site (TCEQ) and dates when stabilization measures are initiated
- Ensure upkeep of the on-site Material Inventory
- Coordinate between Construction Project Manager, Contractor, and Engineer when the SWP3 requires modification and/or when BMPs are not effective, are missing, or need maintenance/repair
- Ensure contractor is noting SWP3 accordingly (Dates of installment of BMPs, removal of BMPs, maintenance of BMPS, concrete washout pits date of install and removal, etc.)

Post Construction

- Close Out Inspection
  - o Ensure removal of temporary BMPs,
  - o Ensure removal of posted SWP3 documents
  - o Verify correct installation of permanent BMPs,
  - o Assess final stabilization achieved to allow Notice of Termination
- Obtain and file all records associated with the TPDES/NPDES Permit activities at the project for 3 years
- File Notice of Termination, when appropriate
- File copy of Notice of Termination with SAWS

CONTRACTOR

Pre Construction

- **Review SWP3 Plans**
- **Provide SW3P sheet showing staging area(s) within 1 mile of project**
- **File Notice of Intent**
- **Environmental Preconstruction Meeting**
- **Provide name and certification of the stormwater inspector [COSA Sec. 34-805 (q)]**
- **File Primary Operator Construction Site Notice with SAWS**
- **Conduct SWP3 Training (EPA only)**
- **Post Construction Site Notice**

Construction

- **Conduct inspections every 7 days and maintain records of inspections and corrective actions**
- **Ensure a designated SWP3 inspector certifies all inspection reports**
- **Maintain up to date copies of SWP3 and associated records**
  - o **Corrective Action Documentation- within 7 days of time of discovery (EPA)**
  - o **Maintenance- document if unable to fix/install item within 7 days. (EPA)**
- **Record rainfall events and maintain documentation with the SWP3**
  - o **Rainfall during normal business hours that measures 0.25 inches or greater (EPA)**
  - o **Rainfall- record of total rainfall measured and the approximate beginning and ending dates of winter or drought conditions resulting in monthly frequency of inspections (TCEQ)**

CONTRACTOR (Cont'd)

- **Conduct and record environmental monitoring-**
  - o **Retain all related records including: TSS (Once per week), Turbidity (Twice per day upstream and downstream) (EPA)**
  - o **Sampling-(onsite batch plant) document if sampling is not completed within the first 30 minutes of discharge (TCEQ).**
- **Follow Up on incidents and spill reports to ensure proper corrective actions**
  - o **Notify Construction Site Project Manager immediately of spills above a reportable quantity (e.g., sheen on water, 25 gallons of "oil" to land, etc.)**
  - o **Provide a description of spills and incidents & information obtained regarding quality and quantity of stormwater discharges to the Project Manager, as necessary.**
- **Complete the Grading Log (dates when activities start and end) and Construction Activities Log (daily)**
  - o **Ensure Construction Activities Log includes dates when construction activities temporarily or permanently cease on site (TCEQ) and dates when stabilization measures are initiated**
- **Maintain an on-site Material Inventory**
- **Update SWP3 to depict actual locations and types of BMPs, potential pollutant sources, etc., as the project proceeds.**
- **Coordinate between Construction Project Manager, COSA Environmental, and Engineer when the SWP3 requires modification and/or when BMPs are not effective, are missing, or need maintenance/repair**
- **Ensure SWP3 is being noted accordingly (Dates of installment of BMPs, removal of BMPs, maintenance of BMPS, concrete washout pits date of install and removal, etc.)**

Post Construction

- **Close Out Inspection**
  - o **Ensure removal of temporary BMPs,**
  - o **Ensure removal of posted SWP3 documents**
  - o **Verify correct installation of permanent BMPs,**
  - o **Assess final stabilization achieved to allow Notice of Termination**
- **Provide COSA Environmental with copies of all records associated with the TPDES/NPDES permit**
- **Maintain a copy of these records for Contractor permit compliance for 3 years following submittal of the Notice of Termination**
- **File Notice of Termination, when appropriate**
- **File copy of Notice of Termination with SAWS**

NOTE:

SW3P NARRATIVE TO ACCOMPANY SITE MAP AND PROJECT DESIGN SHEETS THAT INCLUDE IDENTIFYING EARTH DISTURBING ACTIVITIES, EXISTING AND PROPOSED SLOPES OF GRADING ACTIVITIES, CONSTRUCTION AND SOIL STOCKPILE LOCATIONS,SURFACE WATER CROSSINGS, DESIGNATED EXIST POINTS, STRUCTURES AND IMPERVIOUS SURFACES TO BE CONSTRUCTED, CONSTRUCTION SUPPORT ACTIVITY AREAS, LOCATION OF ALL SURFACE WATERS IN VICINITY, BOUNDARIES OF NATURAL BUFFERS, AREAS OF FEDERALLY LISTED CRITICAL HABITAT, TOPOGRAPHY, VEGETATIVE COVER AND DRAINAGE PATTERNS OF FLOWS ONTO, OVER AND FROM THE PROJECT SITE, STORMWATER AND ALLOWABLE NON STORMWATER DISCHARGE LOCATIONS, ALL STORM INLETS ON AND IN VICINITY OF THE SITE, LOCATION OF ALL POTENTIAL POLLUTANT GENERATING ACTIVITIES, LOCATION OF STORMWATER CONTROL MEASURES, AND LOCATIONS WHERE POLYMERS,FLOCCULANTS, AND OTHER CHEMICALS WILL BE USED AND STORED.

JANUARY 2015

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

STORM WATER POLLUTION
GENERAL NOTES

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/20/25
DRWN. BY:	DSGN. BY:	CHKD. BY:	SHEET NO.: 241 OF 377

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with the TPDES Construction General Permit TXR150000 (CGP). The City of San Antonio(COSA) ensures that project specifications include adequate best management practices (BMPs) for this project.

For all projects with any soil disturbing activities, the Contractor will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office. If no field office is available, then this SWP3 shall be kept in the Contractor's local office.

This SWP3 is consistent with requirements specified in applicable stormwater plans and the projects environmental permits, issues, and commitments (EPICs). A copy of the CGP is included in the SWP3 binder.

1.0 SITE/PROJECT DESCRIPTION

1.1 COSA PROJECT NO.:
23-03907

1.2 PROJECT LIMITS:
From: *SEQUOIA HEIGHT*

To: *RAPLA CROSSING*

1.3 PROJECT COORDINATES:
BEGIN: (Lat) *29.461°* ,(Long) *-98.669°*

END: (Lat) *29.457°* ,(Long) *-98.659°*

1.4 TOTAL PROJECT AREA (Acres): *7.85*

1.5 TOTAL AREA TO BE DISTURBED (Acres): *2.40*

1.6 NATURE OF CONSTRUCTION ACTIVITY:
STREET WIDENING, MILL & OVERLAY W/ CURBS, SIDEWALKS SUP, MEDIAN, STORM SEWER AND TRAFFIC SIGNAL UPGRADES/INSTALLATION

1.7 MAJOR SOIL TYPES:

Soil Type	Description
LEWISVILLE SILTY CLAY	*1 TO 3 PERCENT SLOPES*
ECKRANT COBBLY CLAY	*1 TO 8 PERCENT SLOPES*

1.8 PROJECT SPECIFIC LOCATIONS (PSLs):
PSLs must be depicted on the Environmental Layout Sheets in this SWP3. PSLs may be identified during preconstruction meetings or during the construction process. Please choose from the options below:

☐ PSLs determined during preconstruction meeting
☒ PSLs determined during construction
☐ No PSLs planned for construction

Type	Sheet #s
STORAGE/STAGING AREA(S)	*TBD*
CONSTRUCTION ENTRANCE/EXIT(S)	*TBD*

All off-ROW PSLs required by the Contractor are the Contractor's responsibility. The Contractor shall secure all permits required by local, state, federal laws for off-ROW PSLs. The contractor shall provide diagrams, areas of disturbance, acreage, and BMPs for all off-ROW PSLs within one mile of the project.

1.9 CONSTRUCTION ACTIVITIES:
(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record

☒ Mobilization
☒ Install sediment and erosion controls
☒ Blade existing topsoil into windrows, prep ROW, clear and grub
☒ Remove existing pavement
☒ Grading operations, excavation, and embankment
☒ Excavate and prepare subgrade for proposed pavement widening
☒ Remove existing culverts, safety end treatments (SETs)
☐ Remove existing metal beam guard fence (MBGF), bridge rail
☒ Install proposed pavement per plans
☒ Install culverts, culvert extensions, SETs
☐ Install mow strip, MBGF, bridge rail
☐ Place flex base
☒ Rework slopes, grade ditches
☐ Blade windrowed material back across slopes
☒ Revegetation of unpaved areas
☒ Achieve site stabilization and remove sediment and erosion control measures
☐ Other: _____
☐ Other: _____
☐ Other: _____

1.10 POTENTIAL POLLUTANTS AND SOURCES:
☒ Sediment laden stormwater from stormwater conveyance over disturbed area
☒ Fuels, oils, and lubricants from construction vehicles, equipment, and storage
☒ Solvents, paints, adhesives, etc. from various construction activities
☒ Transported soils from offsite vehicle tracking
☒ Construction debris and waste from various construction activities
☐ Contaminated water from excavation or dewatering pump-out water
☒ Sanitary waste from onsite restroom facilities
☒ Trash from various construction activities/receptacles
☐ Long-term stockpiles of material and waste
☐ Other: _____
☐ Other: _____
☐ Other: _____

1.11 RECEIVING WATERS:
Receiving waters must be depicted on the Environmental Layout Sheets in this SWP3. Include Segment # for receiving waters.

Tributaries	Classified Waterbody
SLICK RANCH CREEK	*LOWER LEON CREEK* (PFAS AND PCBS IN EDIBLE TISSUE, BACTERIA IN WATER)*

* Add (*) for impaired waterbodies with pollutant in ().

1.12 ROLES AND RESPONSIBILITIES: COSA
☒ Development of plans and specifications
☐ Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
☐ Post Construction Site Notice
☒ Submit NOI/CSN to local MS4
☐ Perform SWP3 inspections
☐ Maintain SWP3 records and update to reflect daily operations
☐ Complete and submit Notice of Termination to TCEQ
☒ Maintain SWP3 records for 3 years
☐ Other: _____
☐ Other: _____
☐ Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR
☒ Day To Day Operational Control
☒ Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
☒ Post Construction Site Notices
☒ Submit NOI/CSN to local MS4
☒ Maintain schedule of major construction activities
☒ Install, maintain and modify BMPs
☒ Complete and submit Notice of Termination to TCEQ
☒ Maintain SWP3 records for 3 years
☒ Other: PERFORM SWP3 INSPECTIONS
☐ Other: _____
☐ Other: _____

1.14 LOCAL MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) OPERATOR COORDINATION:

MS4 Entity
SAN ANTONIO WATER SYSTEM (SAWS)

STATE OF TEXAS
MACK W. THOMAS III
85607
LICENSED
PROFESSIONAL ENGINEER
5.20.25

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

CITY OF SAN ANTONIO TEXAS **PUBLIC WORKS**

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			242
STATE	STATE DIST.	COUNTY	
TEXAS			
CONT.	SECT.	JOB	HIGHWAY NO.

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

2.0 BEST MANAGEMENT PRACTICES (BMPs) AND CONTROLS, INSPECTION, AND MAINTENANCE

The Contractor shall be the responsible party for implementing the BMPs described herein and for complying with the SWP3 for control of erosion and sedimentation during day-to-day operations. The Contractor shall implement changes to this SWP3 approved by COSA within the times specified in this SWP3 or the CGP.

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

- ☐ ☐ Protection of Existing Vegetation
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Soil Retention Blankets
- ☐ ☐ Geotextiles
- ☐ ☐ Mulching/ Hydromulching
- ☐ ☐ Soil Surface Treatments
- ☐ ☐ Temporary Seeding
- ☐ X Permanent Planting, Sodding or Seeding
- ☐ ☐ Biodegradable Erosion Control Logs
- X ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Vertical Tracking
- ☐ ☐ Interceptor Swale
- ☐ ☐ Riprap
- ☐ ☐ Diversion Dike
- ☐ ☐ Temporary Pipe Slope Drain
- ☐ ☐ Embankment for Erosion Control
- ☐ ☐ Paved Flumes
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

2.2 SEDIMENT CONTROL BMPs:

T / P

- ☐ ☐ Biodegradable Erosion Control Logs
- ☐ ☐ Dewatering Controls
- X ☐ Inlet Protection
- X ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Sandbag Berms
- X ☐ Sediment Control Fence
- X ☐ Stabilized Construction Exit
- ☐ ☐ Floating Turbidity Barrier
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Vegetated Filter Strips
- X ☐ Other: *Disturbed areas shall be stabilized within 14 days unless construction activities will resume within 21 days.*
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in this SWP3

Sediment control BMPs requiring design capacity calculations (See SWP3):

T / P

- ☐ ☐ Sediment Trap
  - ☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
  - ☐ 3,600 cubic feet of storage per acre drained
- X ☐ Sedimentation Basin
  - X Not required (<10 acres disturbed)
  - ☐ Required (>10 acres) and implemented.
    - ☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
    - ☐ 3,600 cubic feet of storage per acre drained
  - ☐ Required (>10 acres), but not feasible due to:
    - ☐ Available area/Site geometry
    - ☐ Site slope/Drainage patterns
    - ☐ Site soils/Geotechnical factors
    - ☐ Public safety
    - ☐ Other: _____

2.3 PERMANENT CONTROLS:

(Coordinate post-construction BMPs with appropriate COSA maintenance sections.)

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To
SODDING ON MILITARY DRIVE	222+39	252+31

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in this SWP3

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

- X Excess dirt/mud on road removed daily
- ☐ Haul roads dampened for dust control
- X Loaded haul trucks to be covered with tarpaulin
- X Stabilized construction exit
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.5 POLLUTION PREVENTION MEASURES:

- X Chemical Management
- X Concrete and Materials Waste Management
- X Debris and Trash Management
- X Dust Control
- X Sanitary Facilities
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.6 VEGETATED BUFFER ZONES:

Natural vegetated buffers shall be maintained as feasible to protect adjacent surface waters. If vegetated natural buffer zones are not feasible due to site geometry, the appropriate additional sediment control measures have been incorporated into this SWP3.

Type	Stationing	
	From	To
N/A		

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in this SWP3

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

- X Fire hydrant flushings
- X Irrigation drainage
- X Pavement washwater (where spills or leaks have not occurred, and detergents are not used)
- X Potable water sources
- X Springs
- X Uncontaminated groundwater
- X Water used to wash vehicles or control dust
- X Other allowable non-stormwater discharges as allowed by TPDES GP TXR150000.

2.8 DEWATERING:

Dewatering discharges of accumulated stormwater, groundwater, and surface water including discharges from dewatering of trenches, excavations, foundations, vaults, and other points of accumulation are prohibited unless managed by appropriate controls to prevent and minimize the offsite discharge of sediment and other pollutants.

2.9 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by the Contractor, documented on the field inspection report form, and retained in this SWP3.

2.10 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor, documented on the field inspection report form, and retained in this SWP3.

STATE OF TEXAS
MACK W. THOMAS III
85607
LICENSED
PROFESSIONAL ENGINEER
5.20.25

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

CITY OF SAN ANTONIO — TEXAS — **PUBLIC WORKS**

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			243
STATE	STATE DIST.	COUNTY	
TEXAS			
CONT.	SECT.	JOB	HIGHWAY NO.

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

TPDES TXR 150000: Stormwater Discharge Permit or Construction General Permit required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 540.

List MS4 Operator(s) that may receive discharges from this project. They may need to be notified prior to construction activities.

1. SAN ANTONIO WATER SYSTEM

2.

☐ No Action Required ☒ Required Action

Action No.

1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000

2. Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.

3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.

4. SW3P inspections shall be conducted by a P.E. or a certified stormwater Inspector [see COSA Ordinance No. 019-02-14-0123, Sec 34-805(q)].

5. When Contractor specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the COSA Inspector.

II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS CLEAN WATER ACT SECTIONS 401 AND 404

USACE Permit required for filling, dredging, excavating or other work in any water bodies, rivers, creeks, streams, wetlands or wet areas.

The Contractor must adhere to all of the terms and conditions associated with the following permit(s):

☒ No Permit Required

☐ Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)

☐ Nationwide Permit 14 - PCN Required (1/10 to <1/2 acre, 1/3 in tidal waters)

☐ Individual 404 Permit Required

☐ Other Nationwide Permit Required: NWP# _____

Required Actions: List waters of the US permit applies to, location in project and check Best Management Practices planned to control erosion, sedimentation and post-project TSS.

1.

2.

The elevation of the ordinary high water marks of any areas requiring work to be performed in the waters of the US requiring the use of a nationwide permit can be found on the Bridge Layouts.

Best Management Practices:

Erosion	Sedimentation	Post-Construction TSS
☐ Temporary Vegetation	☐ Silt Fence	☐ Vegetative Filter Strips
☐ Blankets/Matting	☐ Rock Berm	☐ Retention/Irrigation Systems
☐ Mulch	☐ Triangular Filter Dike	☐ Extended Detention Basin
☐ Sodding	☐ Sand Bag Berm	☐ Constructed Wetlands
☐ Interceptor Swale	☐ Straw Bale Dike	☐ Wet Basin
☐ Diversion Dike	☐ Brush Berms	☐ Erosion Control Compost
☐ Erosion Control Compost	☐ Erosion Control Compost	☐ Mulch Filter Berm and Socks
☐ Mulch Filter Berm and Socks	☐ Mulch Filter Berm and Socks	☐ Compost Filter Berm and Socks
☐ Compost Filter Berm and Socks	☐ Compost Filter Berm and Socks	☐ Vegetation Lined Ditches
	☐ Stone Outlet Sediment Traps	☐ Sand Filter Systems
	☐ Sediment Basins	☐ Grassy Swales

III. CULTURAL RESOURCES

Cultural resources fall under the Antiquities Code of Texas and/or the National Historic Preservation Act, as amended in 1966. If a previously unidentified archeological site is encountered during construction work, activities in the vicinity shall be stopped immediately and the City Archeologist (210)207-5421 and/or the SHPO notified.

☐ No Action Required ☒ Required Action

Action No.

1. If a historic resource (concrete stamp, carriage block, metal fixture, tile, masonry, etc.) is found that is not in the plans or has not been previously assessed, contact the Office of Historic Preservation immediately at (210)207-0035

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical.
Contractor must adhere to Construction Specification Requirements Specs 162, 164, 192, 193, 506, 730, 751, 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.

☐ No Action Required ☒ Required Action

Action No.

1. Ensure a tree permit is in place for this project, if required.

2. Follow the tree preservation/mitigation plan provided in the design plan set. If there are any questions or concerns, please contact the City Arborist at (210)207-0278, before any work begins.

V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS.

☐ No Action Required ☒ Required Action

Action No.

1. MIGRATORY BIRD NESTS: Schedule construction activities as needed to meet the following requirements:
   A. Do not remove or destroy any active migratory bird nests (nests containing eggs and/or flightless birds) at any time of year. If there are any active nests, they shall not be removed until the nests become inactive.
   B. On/in structures, if there are any active nests, they shall not be removed until all nests become inactive. After inactive nests are removed and/or before nest activity begins, deterrent materials may be applied to the structures to prevent future nest building.

2. Deterrent material should be placed (and maintained) after October 1 or before February 15.

3. The preferred nesting season for migratory birds is from February 15 through October 1. When practical, schedule construction operations outside of the preferred nesting season.

4. If any of the listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the COSA Inspector immediately. The work may not remove active nests from bridges and other structures during nesting season of the birds associated with the nests. If caves or sinkholes are discovered, cease work in the immediate area, and contact the COSA Inspector immediately.

5. If any sensitive feature (caves, subsurface voids, etc) is discovered during construction, all construction activities near the sensitive feature must be suspended immediately. The Construction Inspector shall be immediately notified of any sensitive features encountered during construction. The construction activities near the sensitive feature may not proceed until a US Fish and Wildlife Service (USFWS) permitted biologist has assessed the site for evidence of habitat or listed endangered species. If it is determined that endangered species or their habitat is present within the void space, consultations with the USFWS will commence and work within the immediate vicinity of the sensitive feature will not be allowed to proceed until USFWS approval has been received.

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):
Comply with the Hazard Communication Act (the Act) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropriate for any hazardous materials used.

Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act.

Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the COSA Inspector if any of the following are detected:
- Dead or distressed vegetation (not identified as normal)
- Trash piles, drums, canister, barrels, etc.
- Undesirable smells or odors
- Evidence of leaching or seepage of substances

Does the project involve any bridge class structure rehabilitation or replacements (bridge class structures not including box culverts)?

☐ Yes ☐ No

If "No", then no further action is required.
If "Yes", then COSA is responsible for completing asbestos assessment/inspection.

Are the results of the asbestos inspection positive (is asbestos present)?

☐ Yes ☐ No

If "Yes", then COSA must retain a DSHS licensed asbestos consultant to assist with the notification, develop abatement/mitigation procedures, and perform management activities as necessary. The notification form to DSHS must be postmarked at least 15 working days prior to scheduled demolition.

If "No", then COSA is still required to notify DSHS 15 working days prior to any scheduled demolition.

In either case, the Contractor is responsible for providing the date(s) for abatement activities and/or demolition with careful coordination between the Engineer and asbestos consultant in order to minimize construction delays and subsequent claims.

Any other evidence indicating possible hazardous materials or contamination discovered on site. Hazardous Materials or Contamination Issues Specific to this Project:

☒ No Action Required ☐ Required Action

Action No.

1.

VII. OTHER ENVIRONMENTAL ISSUES

(includes regional issues such as Edwards Aquifer District, etc.)

☐ No Action Required ☒ Required Action

Action No.

1. AC pipe has been identified to be removed due to the City's infrastructure conflicts. Contractor is responsible for following City Asbestos Removal Specifications when removal is required due to City's conflicts. Contractor is required to follow SAWS 3000 specifications, when removing SAWS infrastructure.

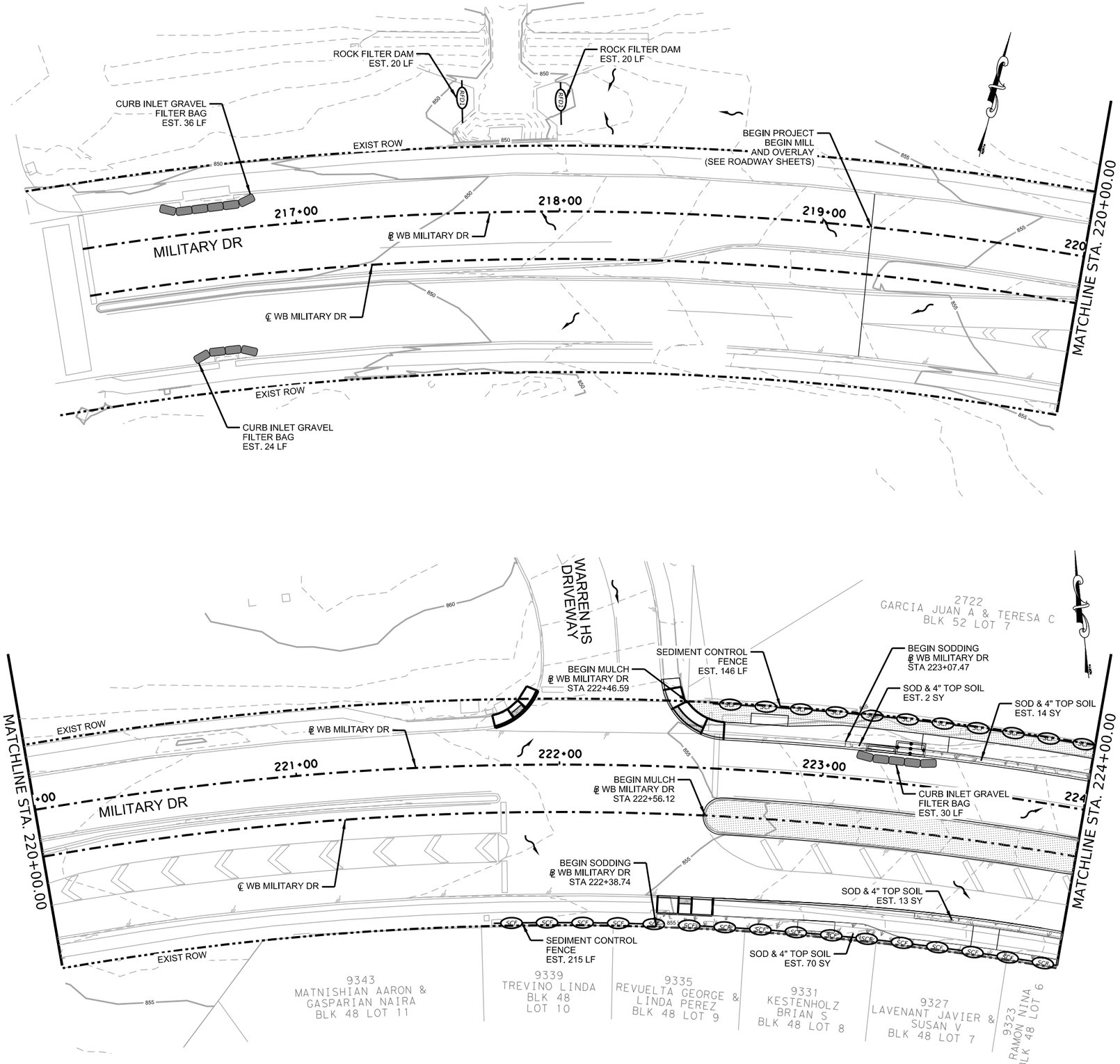
STATE OF TEXAS
MACK W. THOMAS III
85607
LICENSED
PROFESSIONAL ENGINEER
5.20.25

Military Drive
Sequoia Heights to E Reed Road

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP	CK: AR
©TxDOT: February 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS				
12-12-2011 (DS)	DIST	COUNTY		SHEET NO.
05-07-14 ADDED NOTE SECTION IV.				
01-23-2015 SECTION 1 (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.				244 OF 377



QUANTITY SUMMARY

ITEM	DESCRIPTION	UNIT	QTY
515.1	TOPSOIL	CY	11
516.1	BERMUDA SODDING	SY	99
540.1	ROCK FILTER DAMS	LF	40
540.6	CONSTRUCTION EXITS (INSTALL)	SY	112
540.9	TEMPORARY SEDIMENT CONTROL FENCE	LF	361
540.10	CURB INLET GRAVEL FILTERS	LF	90

LEGEND

- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- CURB INLET GRAVEL FILTER BAG
- SCF — SEDIMENT CONTROL FENCE
- RFD1 — ROCK FILTER DAM TYPE 1
- SOD
- MULCH
- FLOW ARROW

0 20' 40'

SCALE: 1" = 40'

STATE OF TEXAS
MACK W. THOMAS III
85607
LICENSED
PROFESSIONAL ENGINEER
5.20.25

consor
F-12040
8023 VANTAGE DR, STE 300
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

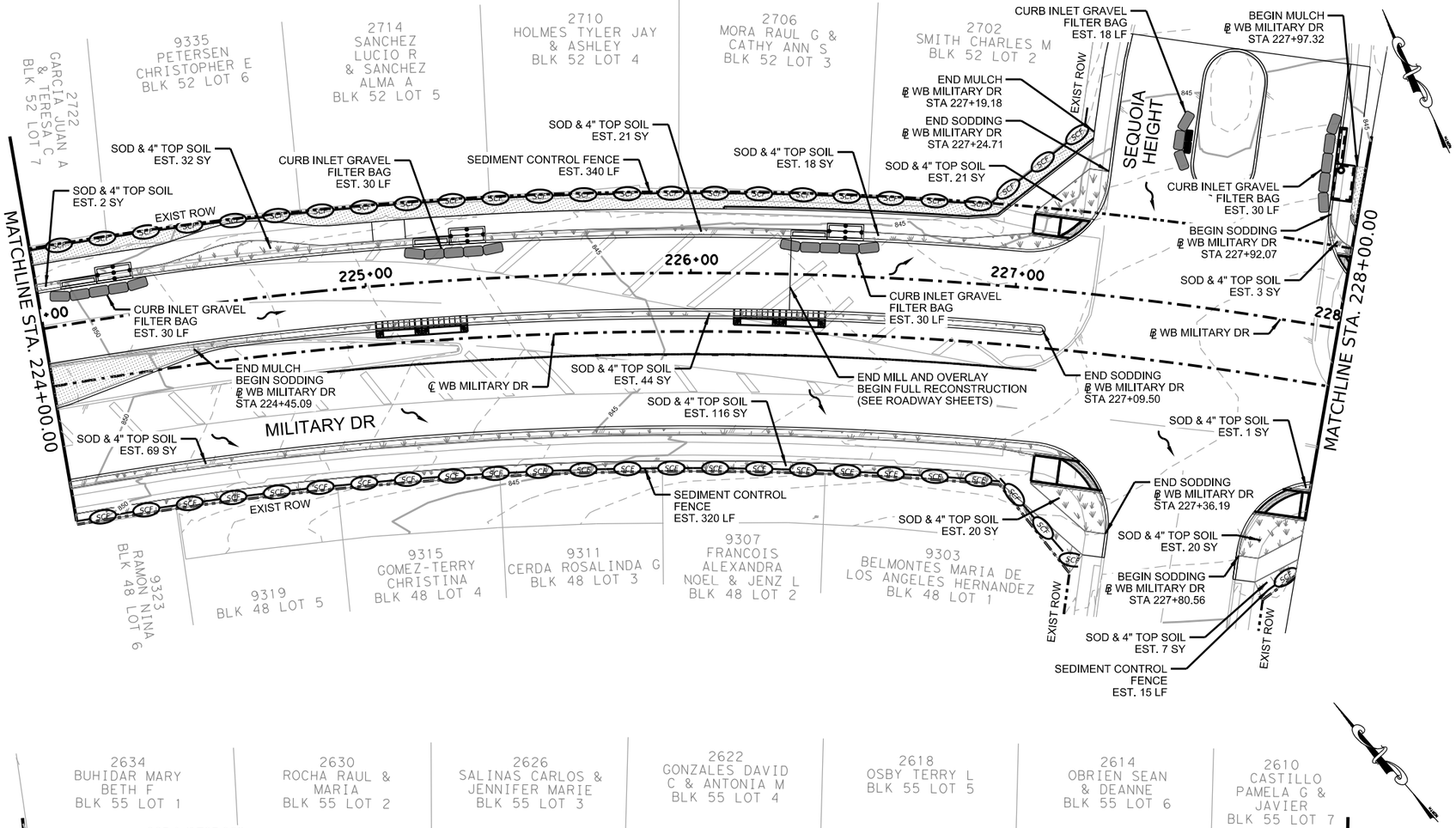
DOUCET
A Kleinfelder Company
CMI Engineering // Entitlements // Geospatial
927 E. Sonterra Boulevard, Ste 107
San Antonio, TX 78258, Tel: (210)-469-4564
www.doucetengineers.com
TBPE Firm Number: 3937
TBPELS Firm Number: 10194551

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

SW3P PLAN
BEGIN TO STA 224+00

100% SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/20/25
DRWN. BY: HH	DSGN. BY: HH	CHKD. BY: MWT	SHEET NO.245 OF 377



QUANTITY SUMMARY			
ITEM	DESCRIPTION	UNIT	QTY
515.1	TOPSOIL	CY	83
516.1	BERMUDA SODDING	SY	746
540.9	TEMPORARY SEDIMENT CONTROL FENCE	LF	1,454
540.10	CURB INLET GRAVEL FILTERS	LF	258

LEGEND

- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- CURB INLET GRAVEL FILTER BAG
- SCF — SEDIMENT CONTROL FENCE
- RFD1 — ROCK FILTER DAM TYPE 1
- SOD
- MULCH
- FLOW ARROW

0 20' 40'

SCALE: 1" = 40'

STATE OF TEXAS
MACK W. THOMAS III
85607
LICENSED
PROFESSIONAL ENGINEER
5.20.25

consor
F-12040
8023 VANTAGE DR, STE 300
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

DOUCET
A Kleinfelder Company
Civil Engineering // Entitlements // Geospatial
927 E. Sonterra Boulevard, Ste 107
San Antonio, TX 78258, Tel: (210)-469-4564
www.douceteengineers.com
TBPE Firm Number: 3937
TBPELS Firm Number: 10194551

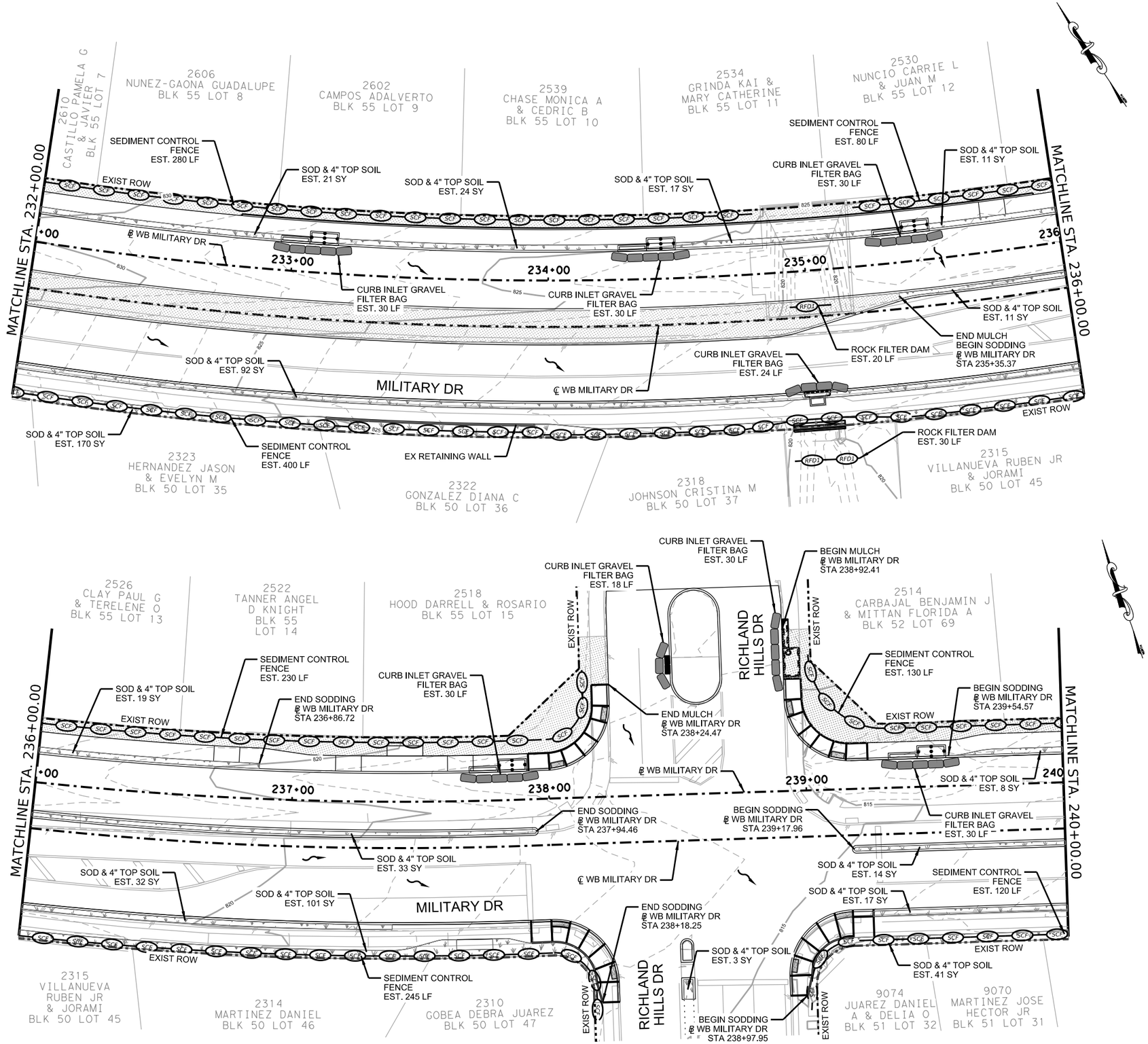
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

SW3P PLAN
STA 224+00 TO STA 232+00

100% SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/20/25
DRWN. BY: HH	DSGN. BY: HH	CHKD. BY: MWT	SHEET NO.246 OF 377

QUANTITY SUMMARY			
ITEM	DESCRIPTION	UNIT	QTY
515.1	TOPSOIL	CY	68
516.1	BERMUDA SODDING	SY	614
540.1	ROCK FILTER DAMS	LF	50
540.9	TEMPORARY SEDIMENT CONTROL FENCE	LF	1,485
540.10	CURB INLET GRAVEL FILTERS	LF	222



LEGEND

- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- CURB INLET GRAVEL FILTER BAG
- SCF — SEDIMENT CONTROL FENCE
- RFD1 — ROCK FILTER DAM TYPE 1
- SOD
- MULCH
- FLOW ARROW

0 20' 40'

SCALE: 1" = 40'

STATE OF TEXAS
MACK W. THOMAS III
85607
LICENSED
PROFESSIONAL ENGINEER
5.20.25

consor F-12040
8023 VANTAGE DR, STE 300
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

DOUCET
A Kleinfelder Company
Civil Engineering // Entitlements // Geospatial
927 E. Sonterra Boulevard, Ste 107
San Antonio, TX 78258, Tel: (210)-469-4564
www.doucetengineers.com
TBPE Firm Number: 3937
TBPELS Firm Number: 10194551

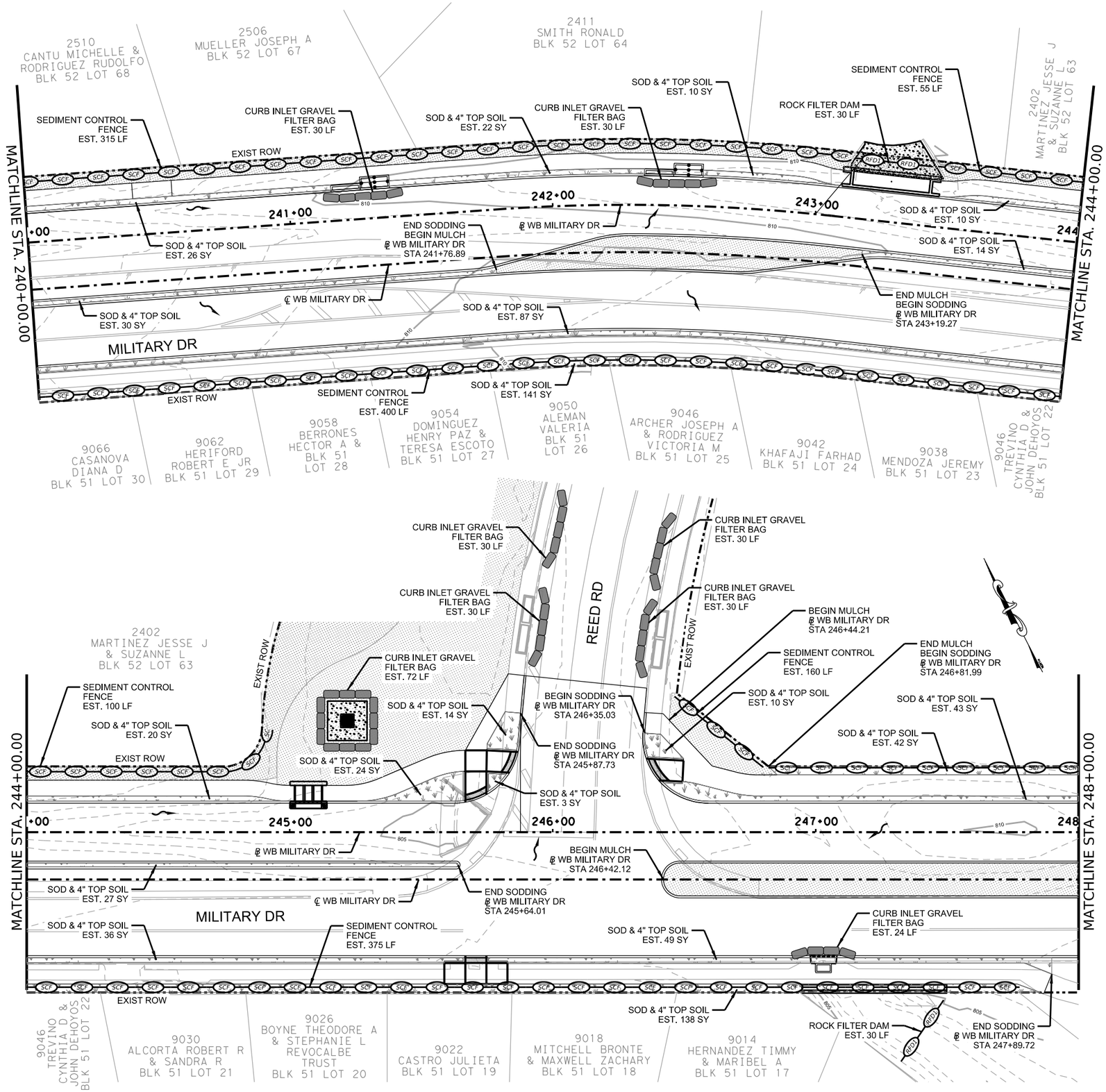
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

SW3P PLAN
STA 232+00 TO STA 240+00

100% SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/20/25
DRWN. BY: HH	DSGN. BY: HH	CHKD. BY: MWT	SHEET NO.247 OF 377

QUANTITY SUMMARY			
ITEM	DESCRIPTION	UNIT	QTY
515.1	TOPSOIL	CY	83
516.1	BERMUDA SODDING	SY	746
540.1	ROCK FILTER DAMS	LF	60
540.9	TEMPORARY SEDIMENT CONTROL FENCE	LF	1,405
540.10	CURB INLET GRAVEL FILTERS	LF	276



LEGEND

- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- CURB INLET GRAVEL FILTER BAG
- SCF — SEDIMENT CONTROL FENCE
- RFD1 — ROCK FILTER DAM TYPE 1
- SOD
- MULCH
- CONCRETE
- FLOW ARROW

0 20' 40'

SCALE: 1" = 40'

STATE OF TEXAS
MACK W. THOMAS III
85607
LICENSED PROFESSIONAL ENGINEER
5.20.25

consor
F-12040
8023 VANTAGE DR, STE 300
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

DOUCET
A Kleinfelder Company
CMI Engineering // Entitlements // Geospatial
927 E. Sonterra Boulevard, Ste 107
San Antonio, TX 78258, Tel: (210)469-4564
www.doucetengineers.com
TBPE Firm Number: 3937
TBPELS Firm Number: 10194551

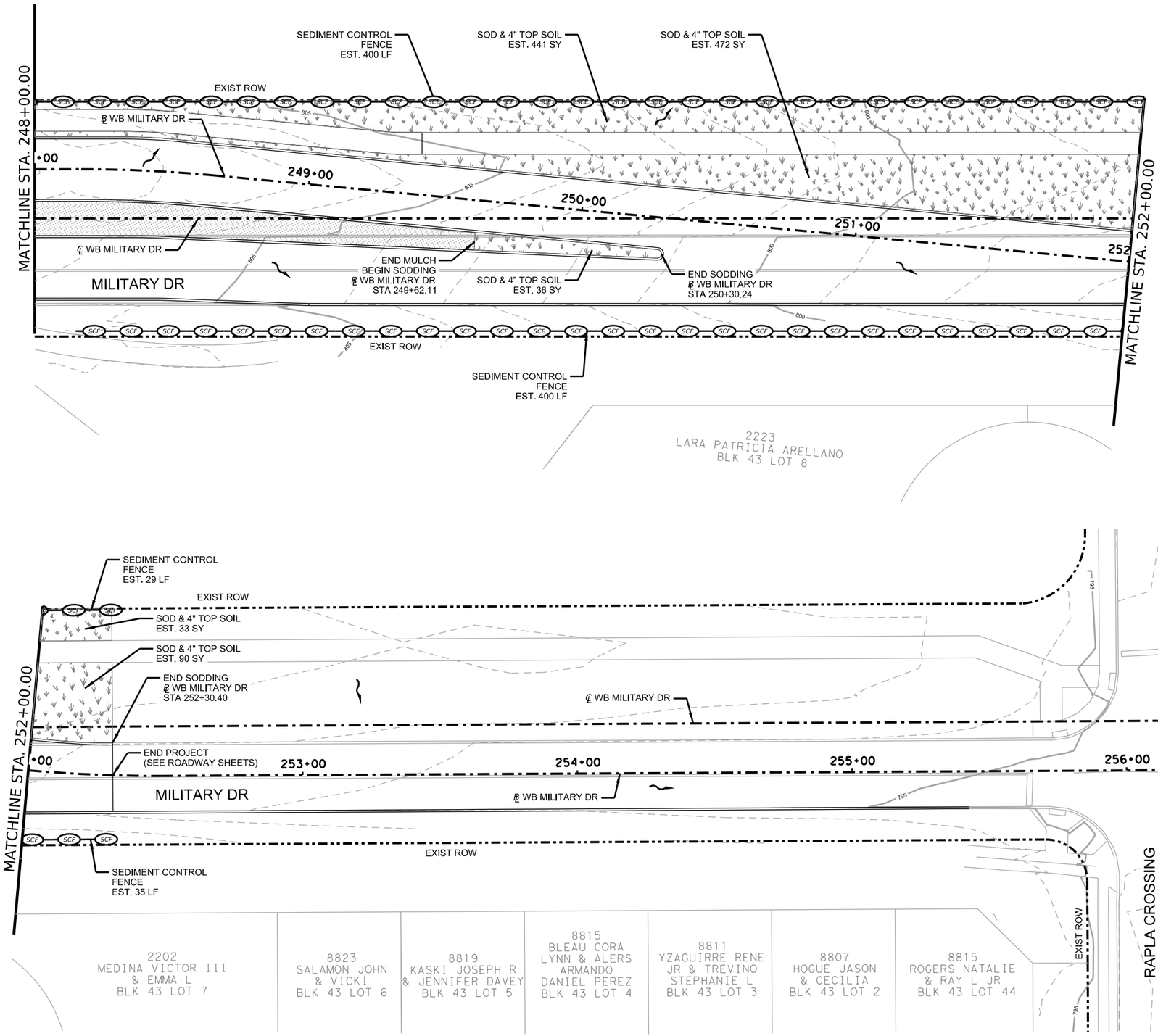
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

SW3P PLAN
STA 240+00 TO STA 248+00

100% SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/20/25
DRWN. BY: HH	DSGN. BY: HH	CHKD. BY: MWT	SHEET NO.248 OF 377

QUANTITY SUMMARY			
ITEM	DESCRIPTION	UNIT	QTY
515.1	TOPSOIL	CY	119
516.1	BERMUDA SODDING	SY	1,072
540.9	TEMPORARY SEDIMENT CONTROL FENCE	LF	864



LEGEND

- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- CURB INLET GRAVEL FILTER BAG
- SEDIMENT CONTROL FENCE
- ROCK FILTER DAM TYPE 1
- SOD
- MULCH
- FLOW ARROW

0 20' 40'

SCALE: 1" = 40'

STATE OF TEXAS
MACK W. THOMAS III
85607
LICENSED
PROFESSIONAL ENGINEER
5.20.25

consor
F-12040
8023 VANTAGE DR, STE 300
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

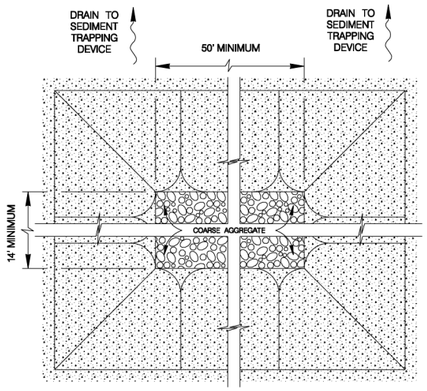
DOUCET
A Kleinfelder Company
Civil Engineering // Entitlements // Geospatial
927 E. Sonterra Boulevard, Ste 107
San Antonio, TX 78258, Tel: (210)-469-4564
www.doucetengineers.com
TBPE Firm Number: 3937
TBPELS Firm Number: 10194551

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

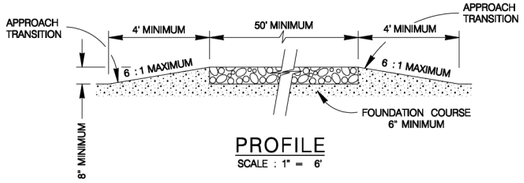
SW3P PLAN
STA 248+00 TO STA 255+89.95

100% SUBMITTAL	PROJECT NO.: 23-03907	DATE: 05/20/25
DRWN. BY: HH	DSGN. BY: HH	CHKD. BY: MWT



PLAN

SCALE : 1" = 6'



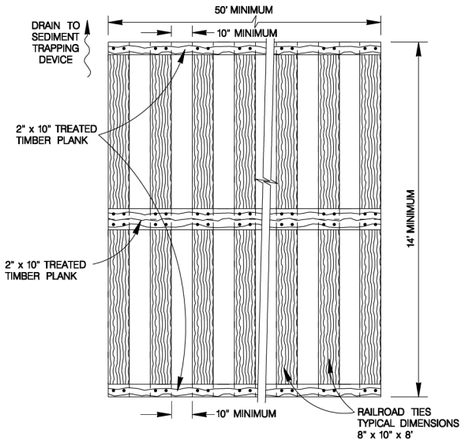
PROFILE

SCALE : 1" = 6'

GENERAL NOTES

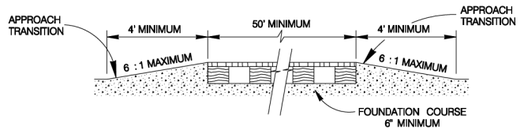
1. THE LENGTH OF THE TYPE 1 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS, BUT NOT LESS THAN 50'.
2. THE COARSE AGGREGATE SHOULD BE OPEN GRADED WITH A SIZE OF 4" TO 8".
3. THE APPROACH TRANSITIONS SHOULD BE NO STEEPER THAN 6 : 1 AND CONSTRUCTED AS DIRECTED BY THE ENGINEER.
4. THE CONSTRUCTION EXIT FOUNDATION COURSE SHALL BE FLEXIBLE BASE, BITUMINOUS CONCRETE, PORTLAND CEMENT CONCRETE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.
5. THE CONSTRUCTION EXIT SHALL BE GRADED TO ALLOW DRAINAGE TO A SEDIMENT TRAPPING DEVICE.
6. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

CONSTRUCTION EXIT – TYPE 1



PLAN

SCALE : 1" = 6'



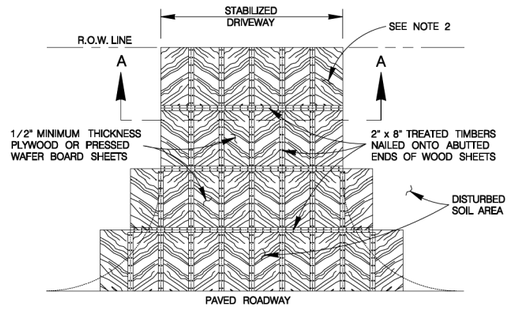
PROFILE

SCALE : 1" = 6'

GENERAL NOTES

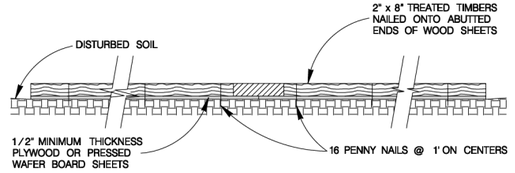
1. THE LENGTH OF THE TYPE 2 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS, BUT NOT LESS THAN 50'.
2. THE TREATED TIMBER PLANKS SHALL BE ATTACHED TO THE RAILROAD TIES WITH 1/2" x 6" MIN. LAG BOLTS. OTHER FASTENERS MAY BE USED AS APPROVED BY THE ENGINEER.
3. THE TREATED TIMBER PLANKS SHALL BE #2 GRADE MIN., AND SHOULD BE FREE FROM LARGE AND LOOSE KNOTS.
4. THE APPROACH TRANSITIONS SHOULD BE NO STEEPER THAN 6 : 1 AND CONSTRUCTED AS DIRECTED BY THE ENGINEER.
5. THE CONSTRUCTION EXIT FOUNDATION COURSE SHALL BE FLEXIBLE BASE, BITUMINOUS CONCRETE, PORTLAND CEMENT CONCRETE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.
6. THE CONSTRUCTION EXIT SHOULD BE GRADED TO ALLOW DRAINAGE TO A SEDIMENT TRAPPING DEVICE.
7. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

CONSTRUCTION EXIT – TYPE 2



PLAN

SCALE : 1" = 20'



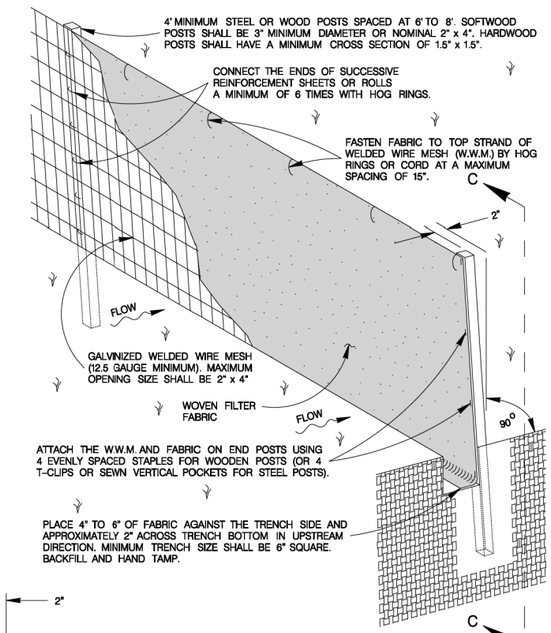
SECTION A–A

SCALE : 1" = 2'

GENERAL NOTES

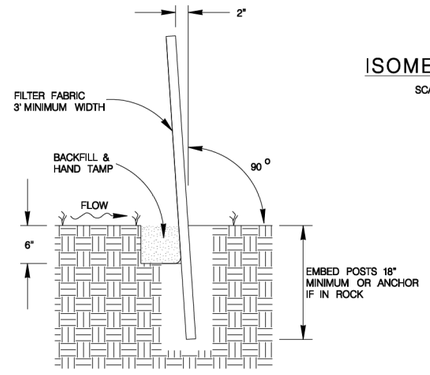
1. THE LENGTH OF THE TYPE 3 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.
2. THE TYPE 3 CONSTRUCTION EXIT MAY BE CONSTRUCTED FROM OPEN GRADED CRUSHED STONE WITH A SIZE OF 2 TO 4 INCHES SPREAD A MINIMUM OF 4 INCHES THICK TO THE LIMITS SHOWN ON THE PLANS.
3. THE TREATED TIMBER PLANKS SHALL BE #2 GRADE MIN., AND SHOULD BE FREE FROM LARGE AND LOOSE KNOTS.
4. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

CONSTRUCTION EXIT – TYPE 3



ISOMETRIC VIEW

SCALE : 1" = 2'



SECTION C–C

SCALE : 1" = 2'

SEDIMENT CONTROL FENCE USAGE GUIDELINES

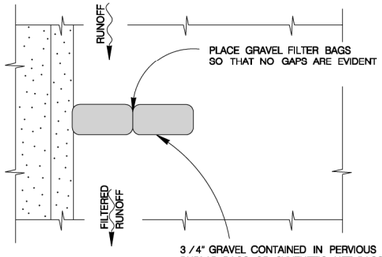
A SEDIMENT CONTROL FENCE MAY BE CONSTRUCTED NEAR THE DOWNSTREAM PERIMETER OF A DISTURBED AREA ALONG A CONTOUR TO INTERCEPT SEDIMENT FROM OVERLAND RUN-OFF. A 2 YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE TO BE FILTERED.

SEDIMENT CONTROL FENCE SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 100 GPM /FT SQUARED. SEDIMENT CONTROL FENCE IS NOT RECOMMENDED TO CONTROL EROSION FROM A DRAINAGE AREA LARGER THAN 2 ACRES.

GENERAL NOTES

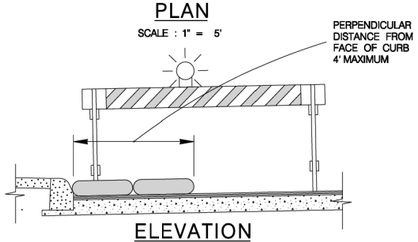
1. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

TEMPORARY SEDIMENT CONTROL FENCE



PLAN

SCALE : 1" = 5'

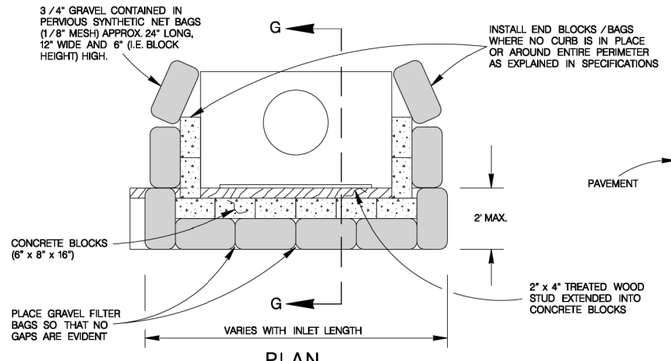


ELEVATION

SCALE : 1" = 5'

NOTE:
STRADDLE GRAVEL FILTER BAGS WITH TYPE 1 BARRICADES MOUNTED WITH TYPE "A" FLASHING WARNING LIGHT. SEE BARRICADE CONSTRUCTION SIGN DETAILS. PLACE FLASHING LIGHTS AWAY FROM GUTTER, FLUSH WITH OUTSIDE EDGE OF BAG CONFIGURATION.

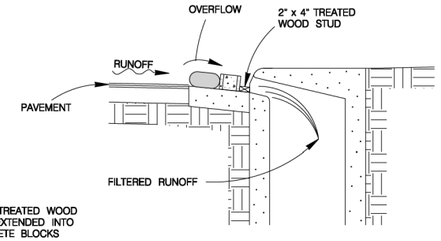
GRAVEL FILTER BAGS



PLAN

SCALE : 1" = 5'

NOTE:
GRAVEL FILTERS CAN BE USED ON PAVEMENT OR BARE GROUND.



SECTION G–G

SCALE : 1" = 5'

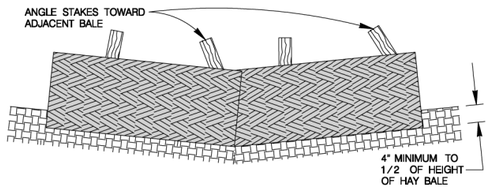
CURB INLET GRAVEL FILTER

JANUARY 2005

CITY OF SAN ANTONIO
PUBLIC WORKS

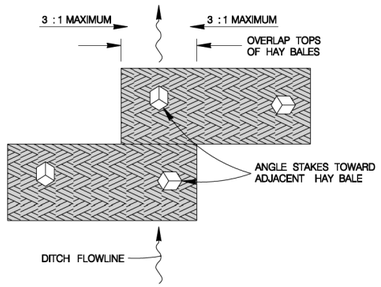
TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 1

% SUBMITTAL	PROJECT NO.:	DATE:
DRWN. BY: V. VASQUEZ	DSGN. BY:	CHKD. BY:



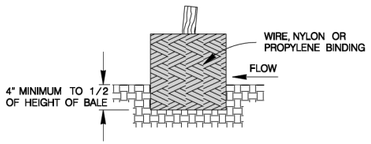
PROFILE VIEW

SCALE : 1" = 2'



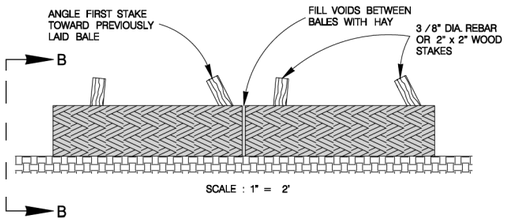
PLAN VIEW

SCALE : 1" = 2'



SECTION B–B

SCALE : 1" = 2'



SCALE : 1" = 2'

BALED HAY USAGE GUIDELINES

A BAILED HAY INSTALLATION MAY BE CONSTRUCTED NEAR THE DOWNSTREAM PERIMETER OF A DISTURBED AREA ALONG A CONTOUR TO INTERCEPT SEDIMENT FROM OVERLAND RUNOFF. A TWO YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE TO BE FILTERED. THE INSTALLATION SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 5 GPM /FT SQUARED OF CROSS SECTIONAL AREA. BALED HAY MAY BE USED AT THE FOLLOWING LOCATIONS:

1. WHERE THE RUNOFF APPROACHING THE BALED HAY FLOWS OVER DISTURBED SOIL FOR LESS THAN 100'. IF THE SLOPE OF THE DISTURBED SOIL EXCEEDS 10 %, THE LENGTH OF SLOPE UPSTREAM OF THE BAILED HAY SHOULD BE LESS THAN 50'.
2. WHERE THE INSTALLATION WILL BE REQUIRED FOR LESS THAN 3 MONTHS.
3. WHERE THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 1/2 ACRE.

FOR BALED HAY INSTALLATIONS IN SMALL DITCHES, THE FOLLOWING ADDITIONAL CONDITIONAL CONSIDERATIONS APPLY:

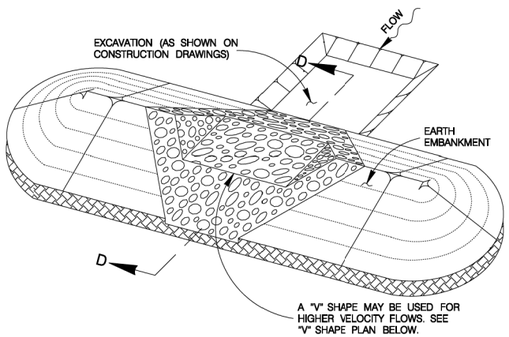
1. THE DITCH SIDESLOPES SHOULD BE GRADED AS FLAT AS POSSIBLE TO MAXIMIZE THE DRAINAGE FLOW RATE THRU THE HAY.
2. THE DITCH SHOULD BE GRADED LARGE ENOUGH TO CONTAIN THE OVERLAPPING DRAINAGE WHEN SEDIMENT HAS FILLED TO THE TOP OF THE BAILED HAY.

BALES SHOULD BE REPLACED USUALLY EVERY 2 MONTHS OR MORE OFTEN DURING WET WEATHER WHEN LOSS OF STRUCTURAL INTERGRITY IS ACCELERATED.

GENERAL NOTES

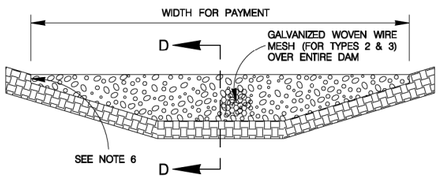
1. HAY BALES SHALL BE A MINIMUM OF 30" IN LENGTH AND WEIGH A MINIMUM OF 50 LBS.
2. HAY BALES SHALL BE BOUND BY EITHER WIRE OR NYLON OR POLYPROPYLENE STRING. THE BALES SHALL BE COMPOSED ENTIRELY OF VEGETABLE MATTER.
3. HAY BALES SHALL BE EMBEDDED IN THE SOIL A MININMUM OF 4" AND, WHERE POSSIBLE, ONE-HALF THE HEIGHT OF THE BALE.
4. HAY BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES. THE BALES SHALL BE PLACED WITH BINDINGS PARALLEL TO THE GROUND.
5. HAY BALES SHALL BE SECURELY ANCHORED IN PLACE WITH 3 /8" DIA. REBAR OR 2" x 2" WOOD STAKES DRIVEN THROUGH THE BALES. THE FIRST STAKE SHALL BE ANGLED TOWARDS THE PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER.
6. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

BALED HAY FOR EROSION CONTROL



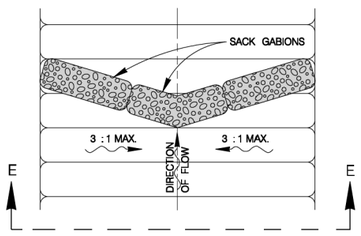
TYPE 1 & 2 FILTER DAM AT SEDIMENT TRAP

SCALE : 1" = 10'



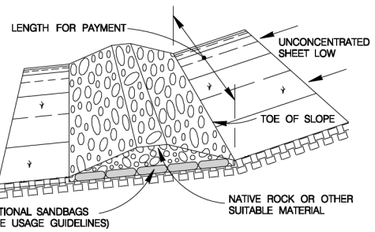
TYPE 1, 2 & 3 FILTER DAM AT CHANNEL SECTIONS

SCALE : 1" = 6'



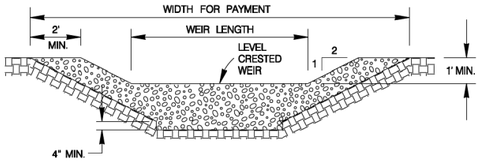
PLAN VIEW

SCALE : 1" = 10'



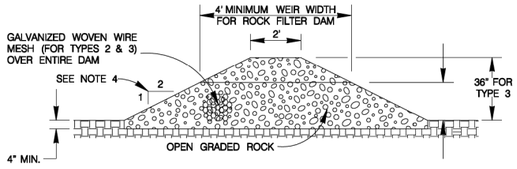
TYPE 1 FILTER DAM AT TOE OF SLOPE

SCALE : 1" = 10'



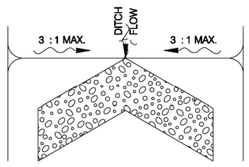
PROFILE OF TYPE 1 & 2 FILTER DAM AT SEDIMENT TRAP

SCALE : 1" = 6'



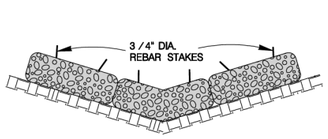
SECTION D–D

SCALE : 1" = 6'



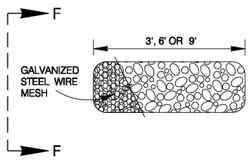
"V" SHAPE PLAN VIEW

NOT TO SCALE



SECTION E–E

SCALE : 1" = 10'



TYPE 4 SACK GABION DETAIL

SCALE : 1" = 6'

SECTION F–F

SCALE : 1" = 6'

TYPE 4 FILTER DAM AT DITCHES & SMALLER CHANNELS PLAN VIEW

ROCK FILTER DAM USAGE GUIDELINES

ROCK FILTER DAMS SHOULD BE CONSTRUCTED DOWNSTREAM FROM DISTURBED AREAS TO INTERCEPT SEDIMENT FROM OVERLOAD RUNOFF AND /OR CONCENTRATED FLOW. THE DAMS SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 60 GPM /FT SQUARED OF CROSS SECTIONAL AREA.. A 2 YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE.

TYPE 1 (18" HIGH WITH NO WIRE MESH) :

TYPE 1 MAY BE USED AT THE TOE OF SLOPES, AROUND INLETS IN SMALL DITCHES AND AT DIKE OR SWALE OUTLETS. THIS TYPE OF DAM IS RECOMMENDED TO CONTROL EROSION FROM A DRAINAGE AREA OF 5 ACRES OR LESS. TYPE 1 MAY NOT BE USED IN CONCENTRATED HIGH VELOCITY FLOWS (APPROXIMATELY 8 FT./SEC. OR MORE) IN WHICH AGGREGATE WASH OUT MAY OCCUR. SANDBAGS MAY BE USED AT THE EMBEDDED FOUNDATION (4" DEEP MIN.) FOR BETTER FILTERING EFFICIENCY OF LOW FLOWS IF CALLED FOR ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

TYPE 2 (18" HIGH WITH WIRE MESH) :

TYPE 2 MAY BE USED IN DITCHES AND AT DIKE OR SWALE OUTLETS.

TYPE 3 (36" HIGH WITH WIRE MESH) :

TYPE 3 MAY BE USED IN STREAM FLOW AND SHOULD BE SECURED TO THE STREAM BED.

TYPE 4 (SACK GABIONS) :

TYPE 4 MAY BE USED IN DITCHES AND SMALLER CHANNELS TO FORM AN EROSION CONTROL DAM.

GENERAL NOTES

1. IF SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER, FILTER DAMS SHOULD BE PLACED NEAR THE TOE OF SLOPES WHERE EROSION IS ANTICIPATED, UPSTREAM AND / OR DOWNSTREAM AT DRAINAGE STRUCTURES, AND IN ROADWAY DITCHES AND CHANNELS TO COLLECT SEDIMENT.
2. MATERIALS (AGGREGATE, WIRE MESH, SANDBAGS, ETC.) SHALL BE AS INDICATED BY THE SPECIFICATION FOR ROCK FILTER DAMS FOR EROSION AND SEDIMENTATION CONTROL.
3. THE ROCK FILTER DAM DIMENSIONS SHALL BE AS INDICATED ON THE STORM WATER POLLUTION PREVENTION PLANS.
4. SIDE SLOPES SHOULD BE 2 :1 OR FLATTER. DAMS WITHIN THE SAFETY ZONE SHALL HAVE SIDE SLOPES OF 6 :1 OR FLATTER.
5. MAINTAIN A MINIMUM OF 1' BETWEEN TOP OF ROCK FILTER DAM WEIR AND TOP OF EMBANKMENT FOR FILTER DAMS AT SEDIMENT TRAPS.
6. FILTER DAMS SHOULD BE EMBEDDED A MINIMUM OF 4" INTO THE EXISTING GROUND.
7. THE SEDIMENT TRAP FOR PONDING OF SEDIMENT LADEN RUNOFF SHALL BE OF THE DIMENSIONS SHOWN ON THE PLANS.
8. ROCK FILTER DAM TYPES 2 & 3 SHALL BE SECURED WITH 20 GAUGE GALVANIZED WOVEN WIRE MESH WITH 1" DIAMETER HEXAGONAL OPENINGS. THE AGGREGATE SHALL BE PLACED ON THE MESH TO THE HEIGHT AND SLOPES SPECIFIED. THE MESH SHALL BE FOLDED AT THE UPSTREAM SIDE OVER THE AGGREGATE AND TIGHTLY SECURED TO ITSELF ON THE DOWNSTREAM SIDE USING WIRE TIES OR HOG RINGS. IN STREAM USE, THE MESH SHOULD BE SECURED OR STAKED TO THE STREAM BED PRIOR TO AGGREGATE PLACEMENT.
9. SACK GABIONS SHOULD BE STAKED DOWN WITH 3 /4" DIA. REBAR STAKES.
10. FLOW OUTLET SHOULD BE ONTO A STABILIZED AREA (VEGETATION, ROCK, ETC.).
11. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

ROCK FILTER DAMS

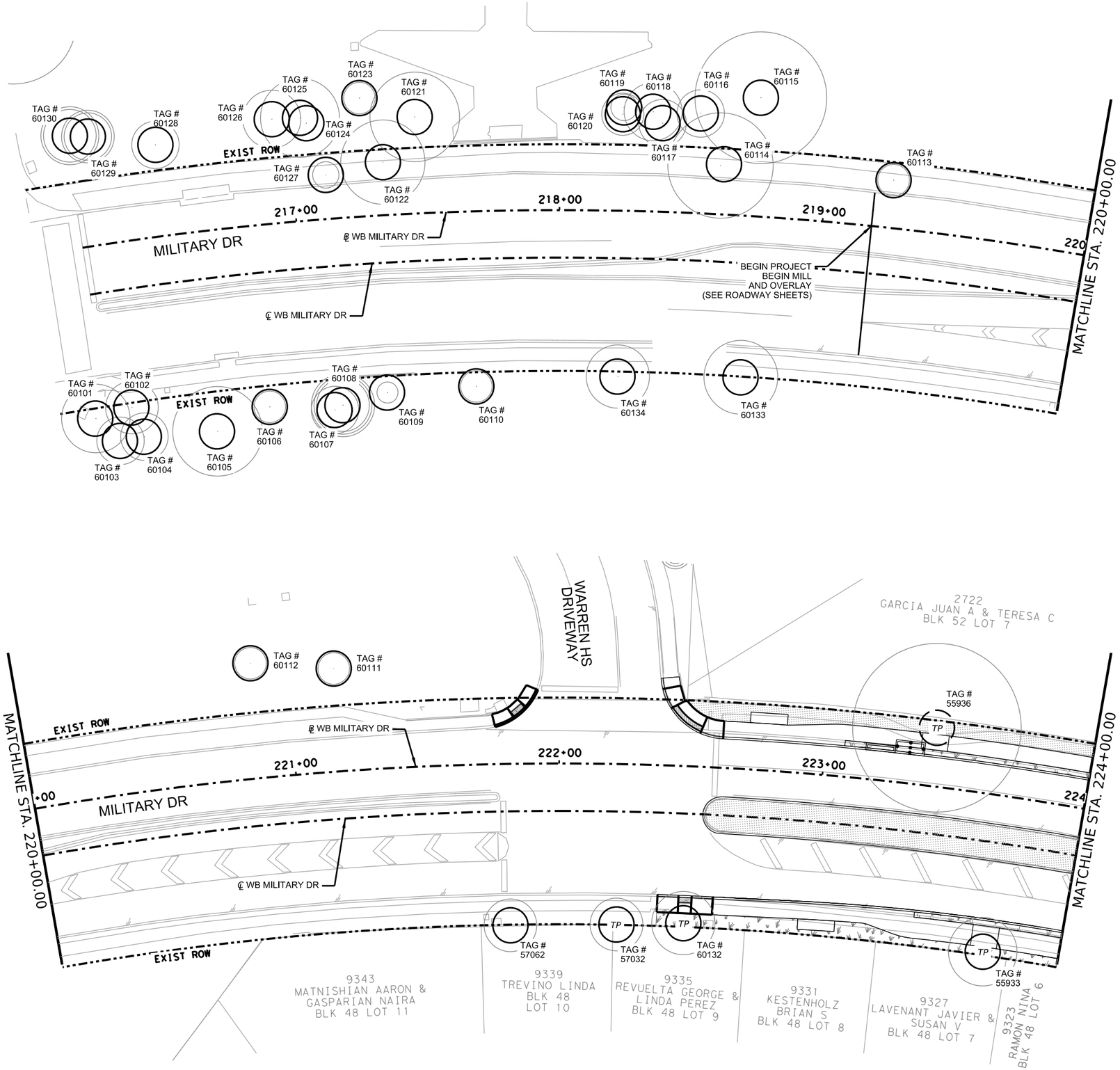
JANUARY 2005

CITY OF SAN ANTONIO
PUBLIC WORKS

TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 2

% SUBMITTAL	PROJECT NO.:		DATE:
DRWN. BY: V. VASQUEZ	DSGN. BY:	CHKD. BY:	SHEET NO. 251 OF 377

ITEM	DESCRIPTION	UNIT	QTY
801.3	LEVEL II B PROTECTIVE FENCING	LF	18



TREE PLANTING SOIL REQUIREMENT NOTE:

PER 35-523(M)(7):
ALL TREE PLANTING SUBJECT TO SECTION 35-523(M) SHALL BE REQUIRED TO BE PLANTED IN SOIL THAT IS SUITABLE FOR ESTABLISHING AND SUSTAINING THE PLANTINGS, IN ADDITION TO CONTAINING SUITABLE SOIL PARTICLE SIZE AND DEPTH OF SOIL ZONE, THE SOIL MUST CONTAIN SUFFICIENT ORGANIC MATTER AND NUTRIENTS. TESTING AND CONFIRMATION BY A LANDSCAPE ARCHITECT, OR A TEXAS LICENSED SOIL TESTING FIRM SHALL BE COMPLETED TO ENSURE THE SOILS ARE SUITABLE. IN LIEU OF CONFIRMATION BY A LANDSCAPE ARCHITECT, OR A TEXAS LICENSED SOIL TESTING FIRM, SOIL MAY BE AMENDED WITH COMPOST BY ADDING THREE (3) INCHES OF COMPOST BLENDED INTO EVERYONE (1) FOOT OF SOIL. FOR COMPLETE SOIL REPLACEMENT, SUCH AS TREE PLANTINGS, AN AMOUNT OF TWENTY-FIVE (25) PERCENT COMPOST MAY BE ADDED TO SEVENTY-FIVE (75) PERCENT NATIVE SOIL.

LEGEND

- EXISTING TREES TO BE REMOVED
- EXISTING TREES TO REMAIN
- EXISTING HERITAGE TREES TO BE REMOVED
- EXISTING HERITAGE TREES TO REMAIN
- NON-NATIVE INVASIVE TREES
- *TP* TREES TO BE PROTECTED

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

STATE OF TEXAS
MACK W. THOMAS III
85607
LICENSED
PROFESSIONAL ENGINEER
5.20.25

consor F-12040
8023 VANTAGE DR, STE 300
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

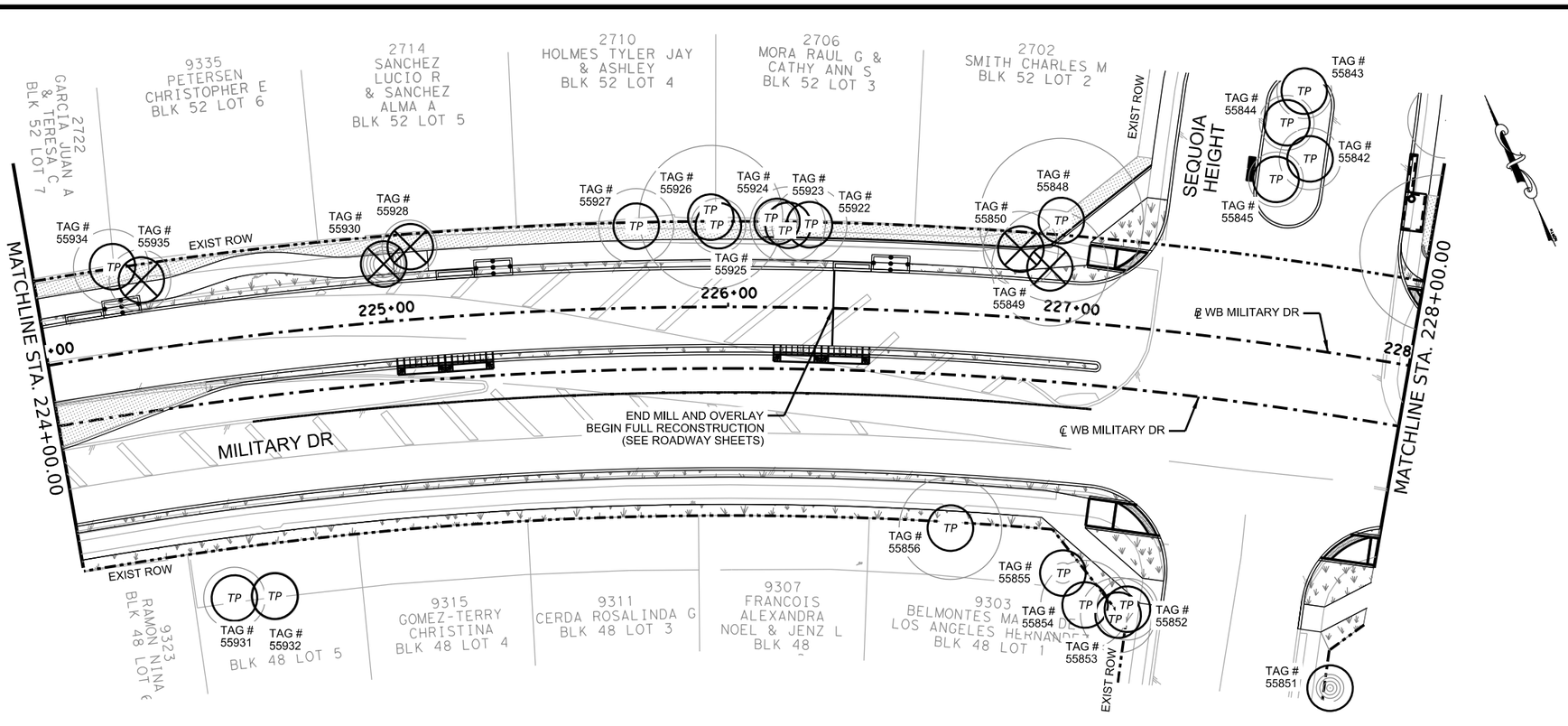
DOUCET
A Kleinfelder Company
Civil Engineering // Entitlements // Geospatial
927 E. Sonterra Boulevard, Ste 107
San Antonio, TX 78258, Tel: (210)-469-4564
www.doucetengineers.com
TBPE Firm Number: 3937
TBPELS Firm Number: 10194551

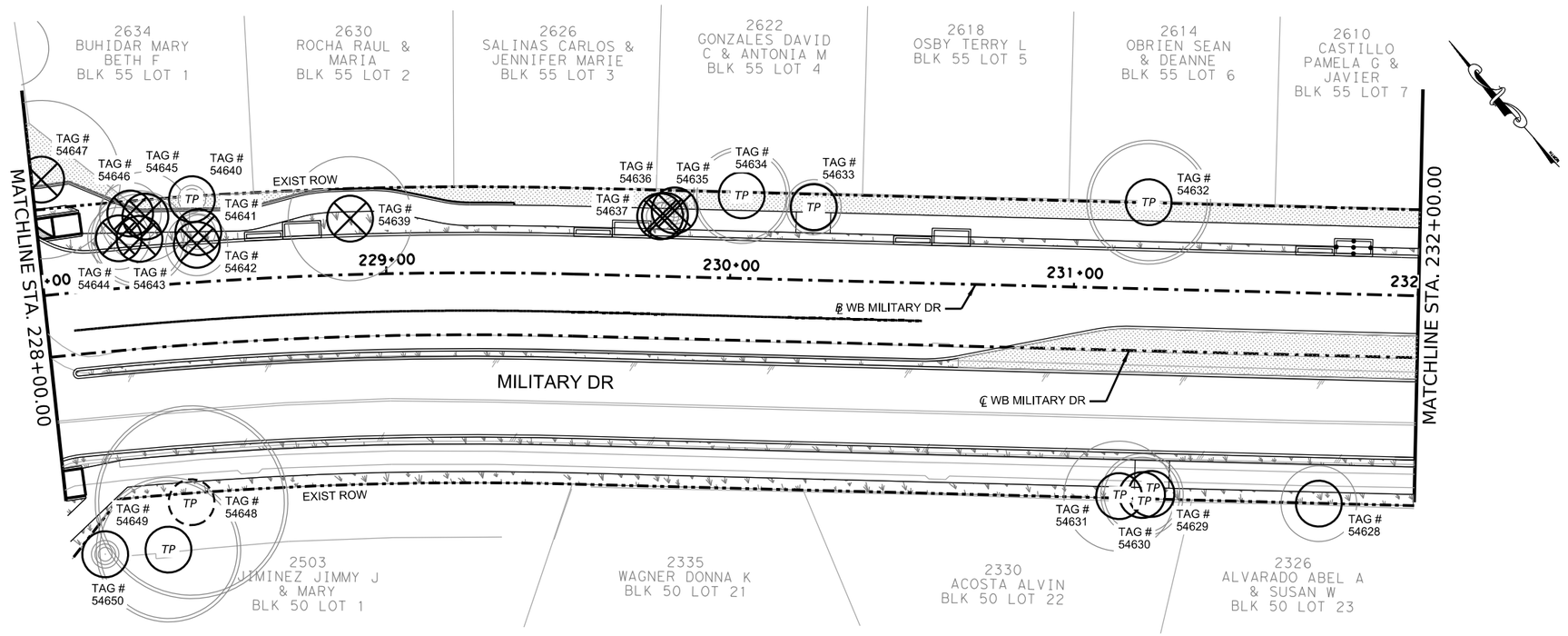
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

TREE PRESERVATION PLAN
BEGIN TO STA 224+00

100% SUBMITTAL	PROJECT NO.: 23-03907	DATE: 05/20/25
DRWN. BY: HH	DSGN. BY: HH	CHKD. BY: MWT





QUANTITY SUMMARY			
ITEM	DESCRIPTION	UNIT	QTY
801.3	LEVEL II B PROTECTIVE FENCING	LF	102

TREE PLANTING SOIL REQUIREMENT NOTE:

PER 35-523(M)(7):
ALL TREE PLANTING SUBJECT TO SECTION 35-523(M) SHALL BE REQUIRED TO BE PLANTED IN SOIL THAT IS SUITABLE FOR ESTABLISHING AND SUSTAINING THE PLANTINGS, IN ADDITION TO CONTAINING SUITABLE SOIL PARTICLE SIZE AND DEPTH OF SOIL ZONE, THE SOIL MUST CONTAIN SUFFICIENT ORGANIC MATTER AND NUTRIENTS. TESTING AND CONFIRMATION BY A LANDSCAPE ARCHITECT, OR A TEXAS LICENSED SOIL TESTING FIRM SHALL BE COMPLETED TO ENSURE THE SOILS ARE SUITABLE. IN LIEU OF CONFIRMATION BY A LANDSCAPE ARCHITECT, OR A TEXAS LICENSED SOIL TESTING FIRM, SOIL MAY BE AMENDED WITH COMPOST BY ADDING THREE (3) INCHES OF COMPOST BLENDED INTO EVERYONE (1) FOOT OF SOIL. FOR COMPLETE SOIL REPLACEMENT, SUCH AS TREE PLANTINGS, AN AMOUNT OF TWENTY-FIVE (25) PERCENT COMPOST MAY BE ADDED TO SEVENTY-FIVE (75) PERCENT NATIVE SOIL.

LEGEND

- EXISTING TREES TO BE REMOVED
- EXISTING TREES TO REMAIN
- EXISTING HERITAGE TREES TO BE REMOVED
- EXISTING HERITAGE TREES TO REMAIN
- NON-NATIVE INVASIVE TREES
- *TP* TREES TO BE PROTECTED

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

STATE OF TEXAS
MACK W. THOMAS III
85607
LICENSED
PROFESSIONAL ENGINEER
5.20.25

consor
F-12040
8023 VANTAGE DR, STE 300
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

DOUCET
A Kleinfelder Company
Civil Engineering // Entitlements // Geospatial
927 E. Sonterra Boulevard, Ste 107
San Antonio, TX 78258, Tel: (210)-469-4564
www.doucetengineers.com
TBPE Firm Number: 3937
TBPELS Firm Number: 10194551

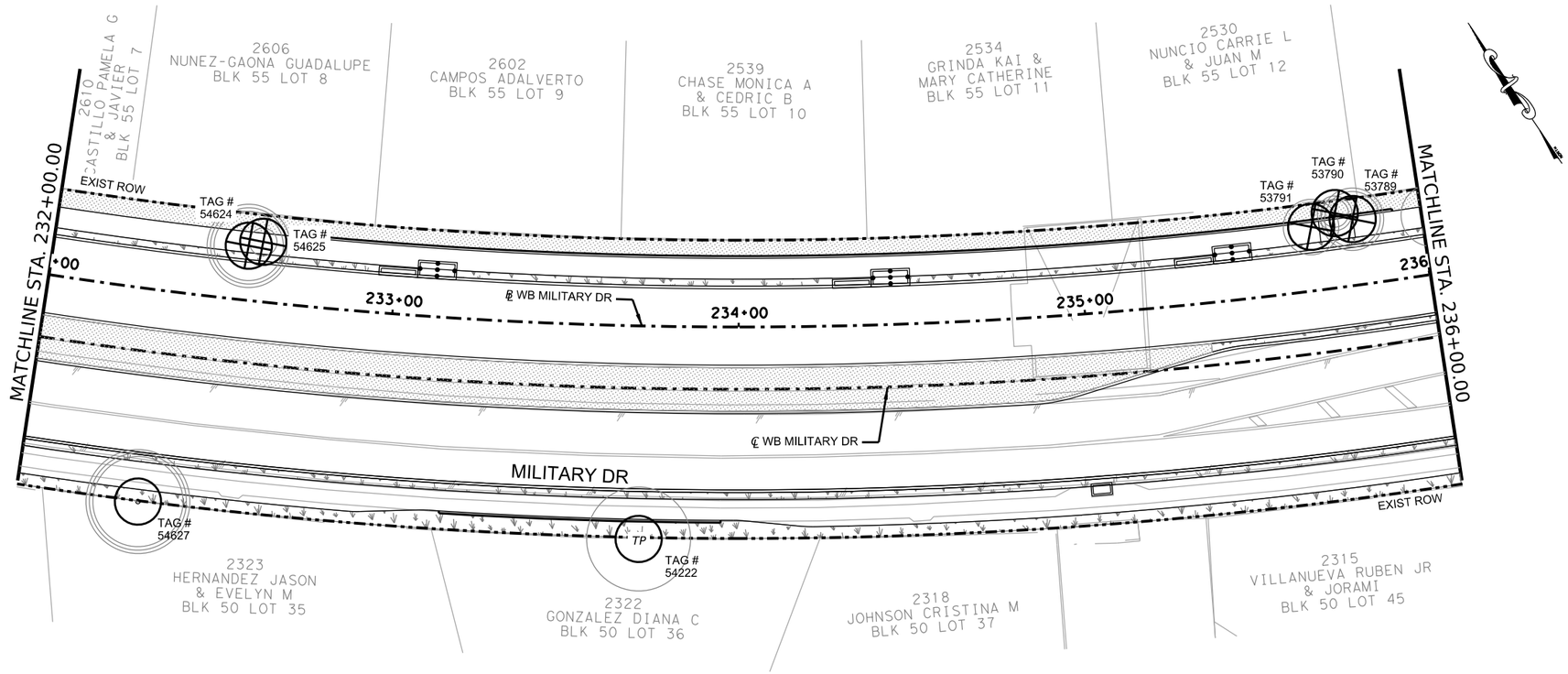
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

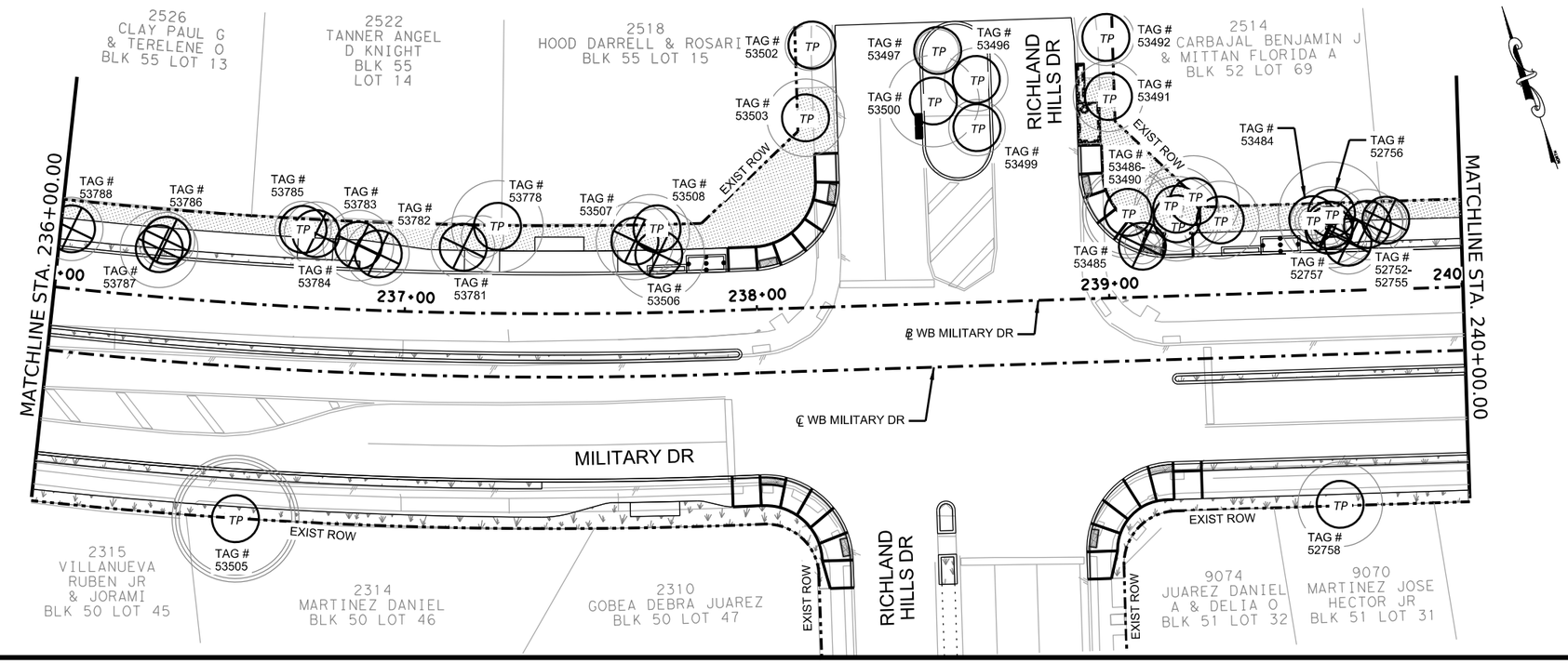
MILITARY DRIVE

TREE PRESERVATION PLAN
STA 224+00 TO STA 232+00

100% SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/20/25
DRWN. BY: HH	DSGN. BY: HH	CHKD. BY: MWT	SHEET NO.253 OF 377

QUANTITY SUMMARY			
ITEM	DESCRIPTION	UNIT	QTY
801.3	LEVEL II B PROTECTIVE FENCING	LF	69





TREE PLANTING SOIL REQUIREMENT NOTE:

PER 35-523(M)(7):
ALL TREE PLANTING SUBJECT TO SECTION 35-523(M) SHALL BE REQUIRED TO BE PLANTED IN SOIL THAT IS SUITABLE FOR ESTABLISHING AND SUSTAINING THE PLANTINGS, IN ADDITION TO CONTAINING SUITABLE SOIL PARTICLE SIZE AND DEPTH OF SOIL ZONE, THE SOIL MUST CONTAIN SUFFICIENT ORGANIC MATTER AND NUTRIENTS. TESTING AND CONFIRMATION BY A LANDSCAPE ARCHITECT, OR A TEXAS LICENSED SOIL TESTING FIRM SHALL BE COMPLETED TO ENSURE THE SOILS ARE SUITABLE. IN LIEU OF CONFIRMATION BY A LANDSCAPE ARCHITECT, OR A TEXAS LICENSED SOIL TESTING FIRM, SOIL MAY BE AMENDED WITH COMPOST BY ADDING THREE (3) INCHES OF COMPOST BLENDED INTO EVERYONE (1) FOOT OF SOIL. FOR COMPLETE SOIL REPLACEMENT, SUCH AS TREE PLANTINGS, AN AMOUNT OF TWENTY-FIVE (25) PERCENT COMPOST MAY BE ADDED TO SEVENTY-FIVE (75) PERCENT NATIVE SOIL.

LEGEND

- EXISTING TREES TO BE REMOVED
- EXISTING TREES TO REMAIN
- EXISTING HERITAGE TREES TO BE REMOVED
- EXISTING HERITAGE TREES TO REMAIN
- NON-NATIVE INVASIVE TREES
- *TP* TREES TO BE PROTECTED

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

STATE OF TEXAS
MACK W. THOMAS III
85607
LICENSED
PROFESSIONAL ENGINEER
5.20.25

consor
F-12040
8023 VANTAGE DR, STE 300
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

DOUCET
A Kleinfelder Company
CMI Engineering // Entitlements // Geospatial
927 E. Sonterra Boulevard, Ste 107
San Antonio, TX 78258, Tel: (210)-469-4564
www.doucetengineers.com
TBPE Firm Number: 3937
TBPELS Firm Number: 10194551

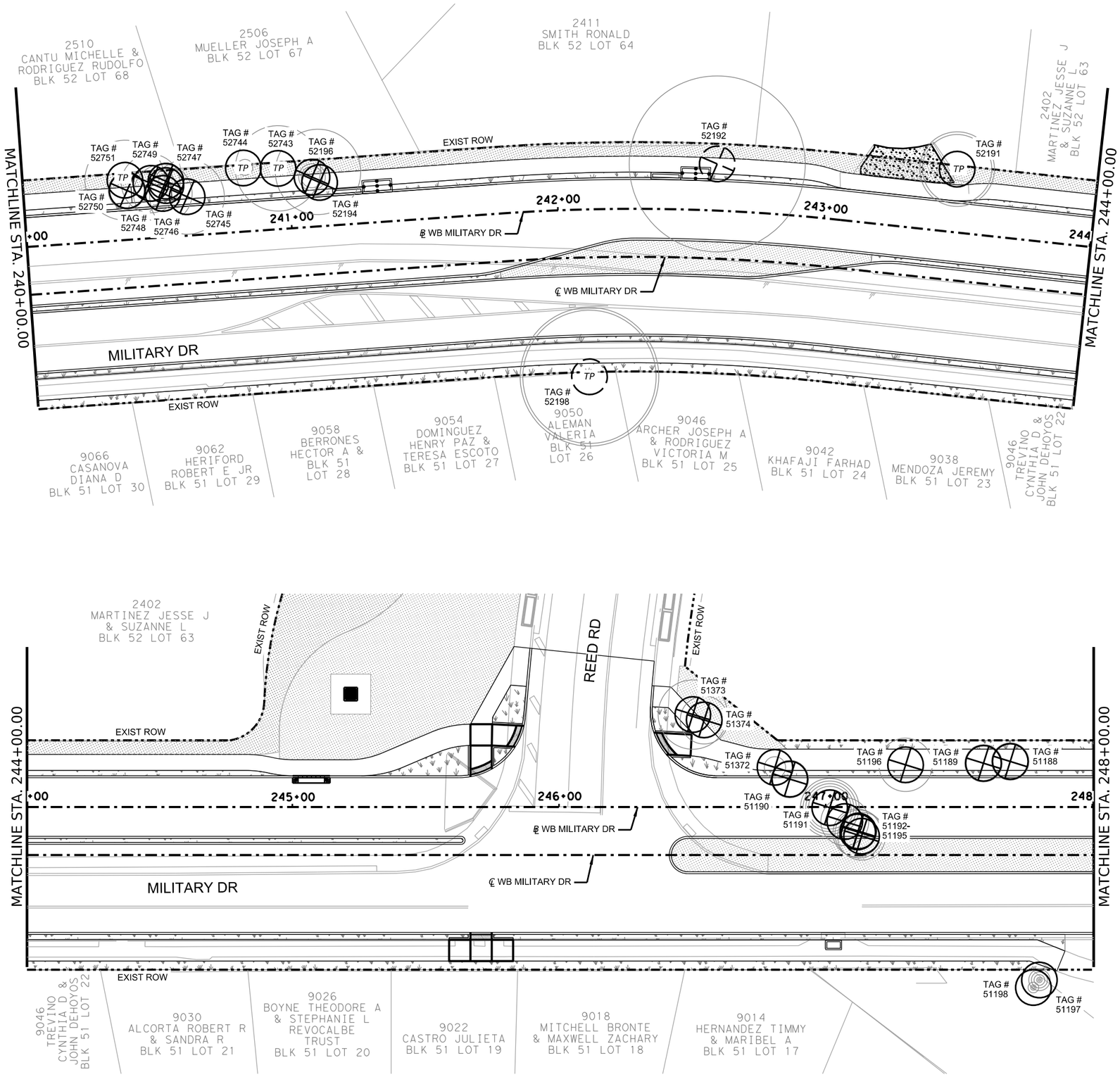
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

TREE PRESERVATION PLAN
STA 232+00 TO 240+00

100% SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/20/25
DRWN. BY: HH	DSGN. BY: HH	CHKD. BY: MWT	SHEET NO.254 OF 377

QUANTITY SUMMARY			
ITEM	DESCRIPTION	UNIT	QTY
801.3	LEVEL II B PROTECTIVE FENCING	LF	25



TREE PLANTING SOIL REQUIREMENT NOTE:

PER 35-523(M)(7):
ALL TREE PLANTING SUBJECT TO SECTION 35-523(M) SHALL BE REQUIRED TO BE PLANTED IN SOIL THAT IS SUITABLE FOR ESTABLISHING AND SUSTAINING THE PLANTINGS, IN ADDITION TO CONTAINING SUITABLE SOIL PARTICLE SIZE AND DEPTH OF SOIL ZONE, THE SOIL MUST CONTAIN SUFFICIENT ORGANIC MATTER AND NUTRIENTS. TESTING AND CONFIRMATION BY A LANDSCAPE ARCHITECT, OR A TEXAS LICENSED SOIL TESTING FIRM SHALL BE COMPLETED TO ENSURE THE SOILS ARE SUITABLE. IN LIEU OF CONFIRMATION BY A LANDSCAPE ARCHITECT, OR A TEXAS LICENSED SOIL TESTING FIRM, SOIL MAY BE AMENDED WITH COMPOST BY ADDING THREE (3) INCHES OF COMPOST BLENDED INTO EVERYONE (1) FOOT OF SOIL. FOR COMPLETE SOIL REPLACEMENT, SUCH AS TREE PLANTINGS, AN AMOUNT OF TWENTY-FIVE (25) PERCENT COMPOST MAY BE ADDED TO SEVENTY-FIVE (75) PERCENT NATIVE SOIL.

LEGEND

- EXISTING TREES TO BE REMOVED
- EXISTING TREES TO REMAIN
- EXISTING HERITAGE TREES TO BE REMOVED
- EXISTING HERITAGE TREES TO REMAIN
- NON-NATIVE INVASIVE TREES
- *TP* TREES TO BE PROTECTED

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

STATE OF TEXAS
MACK W. THOMAS III
85607
LICENSED
PROFESSIONAL ENGINEER
5.20.25

consor
F-12040
8023 VANTAGE DR, STE 300
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

DOUCET
A Kleinfelder Company
Civil Engineering // Entitlements // Geospatial
927 E. Sonterra Boulevard, Ste 107
San Antonio, TX 78258, Tel: (210)-469-4564
www.doucetengineers.com
TBPE Firm Number: 3937
TBPELS Firm Number: 10194551

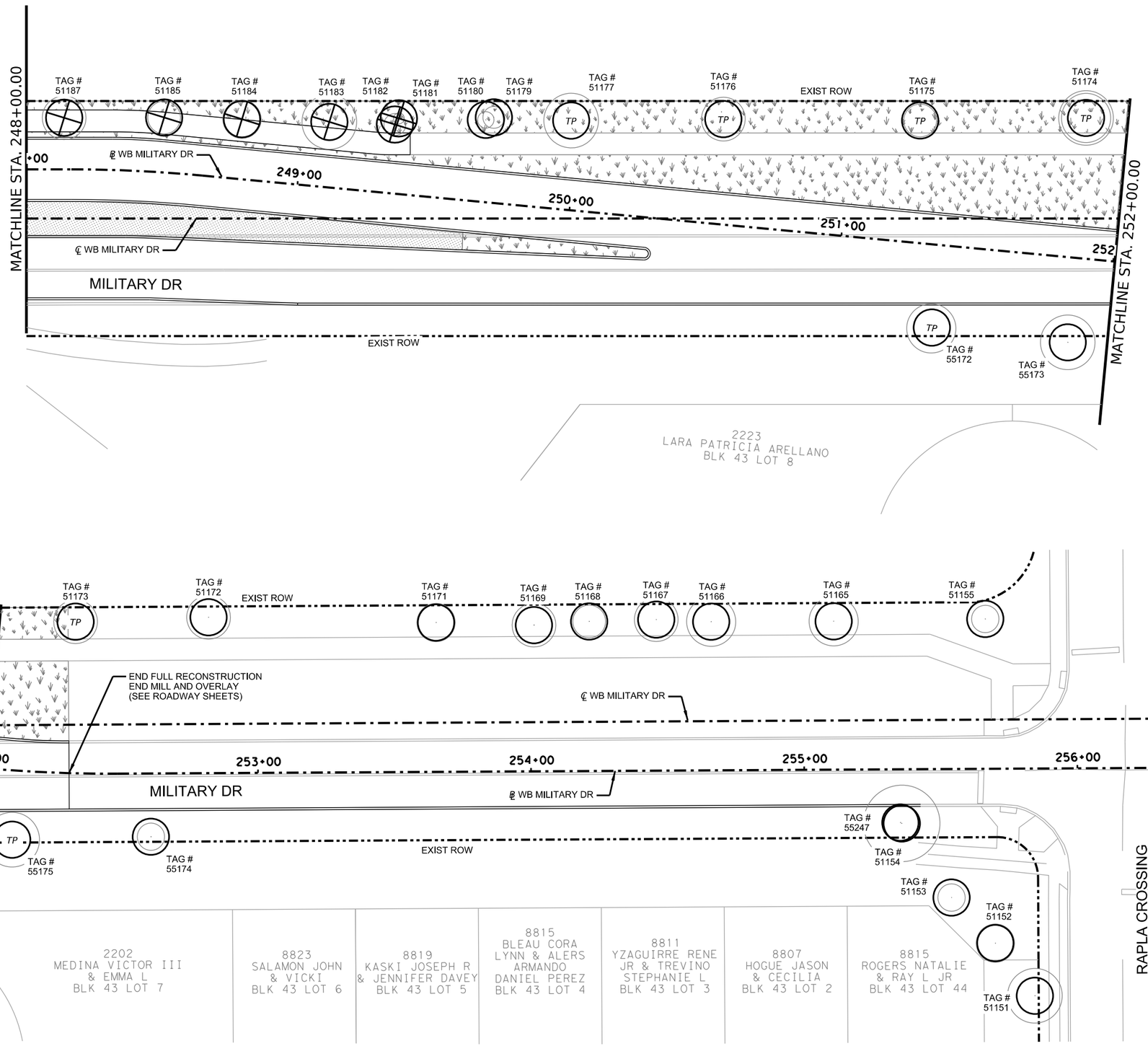
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

TREE PRESERVATION PLAN
STA 240+00 TO STA 248+00

100% SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/20/25
DRWN. BY: HH	DSGN. BY: HH	CHKD. BY: MWT	SHEET NO.255 OF 377

QUANTITY SUMMARY			
ITEM	DESCRIPTION	UNIT	QTY
801.3	LEVEL II B PROTECTIVE FENCING	LF	17



TREE PLANTING SOIL REQUIREMENT NOTE:

PER 35-523(M)(7):
ALL TREE PLANTING SUBJECT TO SECTION 35-523(M) SHALL BE REQUIRED TO BE PLANTED IN SOIL THAT IS SUITABLE FOR ESTABLISHING AND SUSTAINING THE PLANTINGS, IN ADDITION TO CONTAINING SUITABLE SOIL PARTICLE SIZE AND DEPTH OF SOIL ZONE, THE SOIL MUST CONTAIN SUFFICIENT ORGANIC MATTER AND NUTRIENTS. TESTING AND CONFIRMATION BY A LANDSCAPE ARCHITECT, OR A TEXAS LICENSED SOIL TESTING FIRM SHALL BE COMPLETED TO ENSURE THE SOILS ARE SUITABLE. IN LIEU OF CONFIRMATION BY A LANDSCAPE ARCHITECT, OR A TEXAS LICENSED SOIL TESTING FIRM, SOIL MAY BE AMENDED WITH COMPOST BY ADDING THREE (3) INCHES OF COMPOST BLENDED INTO EVERYONE (1) FOOT OF SOIL. FOR COMPLETE SOIL REPLACEMENT, SUCH AS TREE PLANTINGS, AN AMOUNT OF TWENTY-FIVE (25) PERCENT COMPOST MAY BE ADDED TO SEVENTY-FIVE (75) PERCENT NATIVE SOIL.

LEGEND

- EXISTING TREES TO BE REMOVED
- EXISTING TREES TO REMAIN
- EXISTING HERITAGE TREES TO BE REMOVED
- EXISTING HERITAGE TREES TO REMAIN
- NON-NATIVE INVASIVE TREES
- *TP* TREES TO BE PROTECTED

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

STATE OF TEXAS
MACK W. THOMAS III
85607
LICENSED
PROFESSIONAL ENGINEER
5.20.25

consor
F-12040
8023 VANTAGE DR, STE 300
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

DOUCET
A Kleinfelder Company
CMI Engineering // Entitlements // Geospatial
927 E. Sonterra Boulevard, Ste 107
San Antonio, TX 78258, Tel: (210)-469-4564
www.doucetengineers.com
TBPE Firm Number: 3937
TBPELS Firm Number: 10194551

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

TREE PRESERVATION PLAN
STA 248+00 TO STA 252+30.92

100% SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/20/25
DRWN. BY: HH	DSGN. BY: HH	CHKD. BY: MWT	SHEET NO.256 OF 377

TREE PRESERVATION AND MITIGATION PLAN

				UNDERSTORY SPECIES* 5.0" - 11.5"		SIGNIFICANT TREE 6.0" - 23.5"		SIGNIFICANT TREE** 10.0" - 23.5"		HERITAGE 3:1		HERITAGE 1:1		ADD'TL INCHES PRESERVED FOR MITIGATION
TAG #	SPECIES	DIAMETER (IN.)	PROTECTION	REMOVED	PRESERVED	REMOVED	PRESERVED	REMOVED	PRESERVED	REMOVED	PRESERVED	REMOVED	PRESERVED	PRESERVED
51141	CHINABERRY	7					INVASIVE							
51142	CHINABERRY	9					INVASIVE							
51143	ELM	11					11							
51144	TX MTN LAUREL	5			5									
51145	TX MTN LAUREL	4												4
51146	TX MTN LAUREL	5			5									
51147	RED OAK	9					9							
51148	LIVE OAK	9					9							
51149	ELM	8					8							
51150	ELM	7					7							
51151	ELM	10					10							
51152	TX MTN LAUREL	7					7							
51153	TX MTN LAUREL	3												3
51154	LIVE OAK	14					14							
51155	TX MTN LAUREL	5		5										
51156	RED OAK	13					13							
51157	RED OAK	14					14							
51158	TX MTN LAUREL	5			5									
51159	TX MTN LAUREL	(3) 6 5 5					6							
51162	TX MTN LAUREL	12					12							
51163	ELM	11					11							
51164	TX MTN LAUREL	3												3
51165	LIVE OAK	9				9								
51166	ELM	9				9								
51167	RED OAK	8				8								
51168	LIVE OAK	6				6								
51169	TX MTN LAUREL	3												3
51171	RED OAK	7				7								
51172	RED OAK	6				6								
51173	RED OAK	8	LEVEL II B			8								
51174	ELM	(2) 10	LEVEL II B			15								
51175	RED OAK	6	LEVEL II B			6								
51176	RED OAK	8	LEVEL II B			8								
51177	RED OAK	7	LEVEL II B			7								
51179	TX MTN LAUREL	2		2										
51180	TX MTN LAUREL	3		3										
51181	TX MTN LAUREL	2		2										
51182	TX MTN LAUREL	1		1										
51183	LIVE OAK	10				10								
51184	TX MTN LAUREL	2		2										
51185	TX MTN LAUREL	1		1										
51187	TX MTN LAUREL	2		2										
51188	TX MTN LAUREL	2		2										
51189	LIVE OAK	7				7								
51190	HACKBERRY	7		7										
51191	HACKBERRY	(4) 11						11						
51192	STUMP	9				9								
51193	STUMP	9				9								
51194	STUMP	4				4								
51195	STUMP	9				9								
51196	TX MTN LAUREL	1		1										
51197	CHINABERRY	(5) 4			INVASIVE									
51198	CHINABERRY	(3) 2			INVASIVE									
51372	HACKBERRY	4		4										
51373	HACKBERRY	13						13						
51374	HACKBERRY	9		9										
51924	LIVE OAK	14					14							
51925	LIVE OAK	9					9							
51926	LIVE OAK	(2) 11					16							
51927	LIVE OAK	(2) 4												4
51928	LIVE OAK	(2) 11					16							
52191	LIVE OAK	(2) 14	LEVEL II B				21							
52192	LIVE OAK	33								33				
52194	LIVE OAK	(4) 18 16 15 11				39								
52196	CHINABERRY	(2) 5		INVASIVE										
52198	LIVE OAK	(2) 26	LEVEL II B								39			
52743	LIVE OAK	16	LEVEL II B				16							
52744	HACKBERRY	(2) 3	LEVEL II B											3
52745	LIVE OAK	14				14								
52746	CHINABERRY	3		INVASIVE										

STATE OF TEXAS
MACK W. THOMAS III
85607
LICENSED
PROFESSIONAL ENGINEER
5.20.25

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

DOUCET
A Kleinfelder Company
Civil Engineering // Entitlements // Geospatial
927 E. Sonterra Boulevard, Ste 107
San Antonio, TX 78258, Tel: (210)469-4564
www.doucetengineers.com
TBPE Firm Number: 3937
TBPELS Firm Number: 10194551

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

TREE PRESERVATION TABLE
SHEET 1 OF 4

100% SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/20/25
DRWN. BY: HH	DSGN. BY: HH	CHKD. BY: MWT	SHEET NO.257 OF 377

TREE PRESERVATION AND MITIGATION PLAN

				UNDERSTORY SPECIES* 5.0" - 11.5"		SIGNIFICANT TREE 6.0" - 23.5"		SIGNIFICANT TREE** 10.0" - 23.5"		HERITAGE 3:1		HERITAGE 1:1		ADD'TL INCHES PRESERVED FOR MITIGATION
TAG #	SPECIES	DIAMETER (IN.)	PROTECTION	REMOVED	PRESERVED	REMOVED	PRESERVED	REMOVED	PRESERVED	REMOVED	PRESERVED	REMOVED	PRESERVED	PRESERVED
52747	LIVE OAK	11				11								
52748	CHINABERRY	(2) 5		INVASIVE										
52749	LIVE OAK	11				11								
52750	HACKBERRY	7		7										
52751	LIVE OAK	15	LEVEL II B				15							
52752	CHINABERRY	(2) 6				INVASIVE								
52753	LIVE OAK	10				10								
52754	LIVE OAK	9				9								
52755	LIVE OAK	11				11								
52756	HACKBERRY	15							15					
52757	PERSIMMON	(2) 5		5										
52758	LIVE OAK	12	LEVEL II B				12							
53484	CHINABERRY	(2) 5	LEVEL II B		INVASIVE									
53485	LIVE OAK	5		5										
53486	LIVE OAK	11	LEVEL II B				11							
53487	LIVE OAK	12	LEVEL II B				12							
53488	LIVE OAK	13	LEVEL II B				13							
53489	LIVE OAK	12	LEVEL II B				12							
53490	LIVE OAK	(2) 13	LEVEL II B				19							
53491	RED OAK	10	LEVEL II B				10							
53492	RED OAK	8	LEVEL II B				8							
53493	LIVE OAK	14					14							
53494	LIVE OAK	6					6							
53495	LIVE OAK	6					6							
53496	LIVE OAK	9	LEVEL II B				9							
53497	LIVE OAK	6	LEVEL II B				6							
53498	RED OAK	10					10							
53499	LIVE OAK	8	LEVEL II B				8							
53500	LIVE OAK	13	LEVEL II B				13							
53501	RED OAK	10					10							
53502	RED OAK	(2) 7	LEVEL II B				10							
53503	RED OAK	11	LEVEL II B				11							
53504	LIVE OAK	8					8							
53505	LIVE OAK	(3) 18	LEVEL II B				36							
53506	LIVE OAK	13				13								
53507	LIVE OAK	11				11								
53508	LIVE OAK	11	LEVEL II B				11							
53778	LIVE OAK	(2) 13 12	LEVEL II B				13							
53781	LIVE OAK	9				9								
53782	LIVE OAK	9				9								
53783	LIVE OAK	10				10								
53784	LIVE OAK	9				9								
53785	LIVE OAK	8	LEVEL II B				8							
53786	LIVE OAK	(2) 8				12								
53787	LIVE OAK	11				11								
53788	LIVE OAK	9				9								
53789	LIVE OAK	(2) 9				13								
53790	LIVE OAK	(2) 5		5										
53791	LIVE OAK	8				8								
54222	LIVE OAK	15	LEVEL II B				15							
54624	LIVE OAK	(3) 18 11 6				24								
54625	PERSIMMON	4		4										
54627	LIVE OAK	(3) 15					30							
54628	LIVE OAK	11					11							
54629	LIVE OAK	11	LEVEL II B				11							
54630	LIVE OAK	(2) 11	LEVEL II B				16							
54631	LIVE OAK	16	LEVEL II B				16							
54632	LIVE OAK	18	LEVEL II B				18							
54633	LIVE OAK	(2) 8	LEVEL II B				12							
54634	LIVE OAK	(2) 14	LEVEL II B				21							
54635	PERSIMMON	(5) 4		4										
54636	PERSIMMON	4		4										
54637	PERSIMMON	4		4										
54639	LIVE OAK	18				18								
54640	PERSIMMON	(3) 4	LEVEL II B											4
54641	LIVE OAK	5		5										
54642	LIVE OAK	9				9								
54643	LIVE OAK	(2) 14				21								
54644	LIVE OAK	9				9								
54645	LIVE OAK	13				13								

STATE OF TEXAS
MACK W. THOMAS III
85607
LICENSED
PROFESSIONAL ENGINEER
5.20.25

consor
F-12040
8023 VANTAGE DR, STE 300
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

DOUCET
A Kleinfelder Company
Civil Engineering // Entitlements // Geospatial
927 E. Sonterra Boulevard, Ste 107
San Antonio, TX 78258, Tel: (210)469-4564
www.doucetengineers.com
TBPE Firm Number: 3937
TBPELS Firm Number: 10194551

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

TREE PRESERVATION TABLE
SHEET 2 OF 4

100% SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/20/25
DRWN. BY: HH	DSGN. BY: HH	CHKD. BY: MWT	SHEET NO.258 OF 377

TREE PRESERVATION AND MITIGATION PLAN

				UNDERSTORY SPECIES* 5.0" - 11.5"		SIGNIFICANT TREE 6.0" - 23.5"		SIGNIFICANT TREE** 10.0" - 23.5"		HERITAGE 3:1		HERITAGE 1:1		ADD'TL INCHES PRESERVED FOR MITIGATION
TAG #	SPECIES	DIAMETER (IN.)	PROTECTION	REMOVED	PRESERVED	REMOVED	PRESERVED	REMOVED	PRESERVED	REMOVED	PRESERVED	REMOVED	PRESERVED	PRESERVED
54646	LIVE OAK	9				9								
54647	LIVE OAK	23				23								
54648	LIVE OAK	(2) 28	LEVEL II B								42			
54649	LIVE OAK	(2) 21	LEVEL II B						31					
54650	CRAPE MYRTLE	(3) 4												4
55172	ELM	9	LEVEL II B				9							
55173	ELM	10					10							
55174	ELM	5			5									
55175	LIVE OAK	10	LEVEL II B				10							
55247	LIVE OAK	14												
55841	LIVE OAK	11					11							
55842	LIVE OAK	9	LEVEL II B				9							
55843	LIVE OAK	8	LEVEL II B				8							
55844	LIVE OAK	8	LEVEL II B				8							
55845	LIVE OAK	8	LEVEL II B				8							
55846	LIVE OAK	12					12							
55847	LIVE OAK	13					13							
55848	LIVE OAK	24	LEVEL II B								24			
55849	LIVE OAK	17				17								
55850	LIVE OAK	11				11								
55851	CRAPE MYRTLE	(4) 4												4
55852	LIVE OAK	(2) 9	LEVEL II B				13							
55853	LIVE OAK	11	LEVEL II B				11							
55854	LIVE OAK	13	LEVEL II B				13							
55855	CRAPE MYRTLE	(3) 3	LEVEL II B											3
55856	LIVE OAK	(2) 15 9	LEVEL II B				15							
55922	LIVE OAK	11	LEVEL II B				11							
55923	LIVE OAK	11	LEVEL II B				11							
55924	LIVE OAK	6	LEVEL II B				6							
55925	PERSIMMON	8	LEVEL II B				8							
55926	LIVE OAK	21	LEVEL II B						21					
55927	LIVE OAK	11	LEVEL II B				11							
55928	LIVE OAK	(2) 8 5				10								
55930	LIVE OAK	(4) 6				15								
55931	LIVE OAK	9	LEVEL II B				9							
55932	LIVE OAK	7	LEVEL II B				7							
55933	LIVE OAK	13	LEVEL II B				13							
55934	LIVE OAK	11	LEVEL II B				11							
55935	LIVE OAK	9				9								
55936	LIVE OAK	32	LEVEL II B								32			
57032	LIVE OAK	10	LEVEL II B				10							
57033	PERSIMMON	(5) 6					6							
57034	LIVE OAK	11					11							
57035	LIVE OAK	17					17							
57036	PERSIMMON	(3) 6					6							
57037	PERSIMMON	(5) 4												4
57038	LIVE OAK	15					15							
57039	LIVE OAK	13					13							
57062	LIVE OAK	10					10							
60101	LIVE OAK	13					13							
60102	LIVE OAK	10					10							
60103	LIVE OAK	9					9							
60104	LIVE OAK	9					9							
60105	LIVE OAK	17					17							
60106	ELM	6					6							
60107	HACKBERRY	9												9
60108	HACKBERRY	(3) 12							12					
60109	ELM	4												4
60110	ELM	6					6							
60111	ELM	6					6							
60112	ELM	6					6							
60113	ELM	6					6							
60114	LIVE OAK	20					20							
60115	LIVE OAK	25					25							
60116	LIVE OAK	9					9							
60117	LIVE OAK	9					9							
60118	LIVE OAK	(2) 11					16							
60119	ELM	5			5									
60120	ELM	8					8							
60121	LIVE OAK	17					17							

STATE OF TEXAS
MACK W. THOMAS III
85607
LICENSED
PROFESSIONAL ENGINEER
5.20.25

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

DOUCET
A Kleinfelder Company
Civil Engineering // Entitlements // Geospatial
927 E. Sonterra Boulevard, Ste 107
San Antonio, TX 78258, Tel: (210)469-4564
www.doucetengineers.com
TBPE Firm Number: 3937
TBPELS Firm Number: 10194551

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

TREE PRESERVATION TABLE
SHEET 3 OF 4

100% SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/20/25
DRWN. BY: HH	DSGN. BY: HH	CHKD. BY: MWT	SHEET NO.259 OF 377

TREE PRESERVATION AND MITIGATION PLAN

				UNDERSTORY SPECIES* 5.0" - 11.5"		SIGNIFICANT TREE 6.0" - 23.5"		SIGNIFICANT TREE** 10.0" - 23.5"		HERITAGE 3:1		HERITAGE 1:1		ADD'TL INCHES PRESERVED FOR MITIGATION
TAG #	SPECIES	DIAMETER (IN.)	PROTECTION	REMOVED	PRESERVED	REMOVED	PRESERVED	REMOVED	PRESERVED	REMOVED	PRESERVED	REMOVED	PRESERVED	PRESERVED
60122	LIVE OAK	16					16							
60123	ELM	6					6							
60124	LIVE OAK	13					13							
60125	LIVE OAK	15					15							
60126	LIVE OAK	11					11							
60127	ELM	5			5									
60128	LIVE OAK	9					9							
60129	LIVE OAK	(2) 10					15							
60130	LIVE OAK	(2) 11					16							
60131	LIVE OAK	24									24			
60132	LIVE OAK	12	LEVEL II B				12							
60133	LIVE OAK	14					14							
60134	LIVE OAK	12					12							
SUB TOTAL INCHES				84	30	544	1320	24	79	33	161	0	0	33
TOTAL INCHES BY CATEGORY														
PRESERVATION PERCENTAGE					26%	SIGNIFICANT PRESERVATION		71%		HERITAGE PRESERVATION		83%		
MITIGATION REQUIRED (COMMERCIAL)					-	COMMERCIAL (INCHES)		-		HERITAGE MITIGATION (INCHES)			99	
MITIGATION REQUIRED (RESIDENTIAL)					-	RESIDENTIAL (INCHES)		-						

PRESERVED-TREE TO REMAIN THAT MEETS ROOT PROTECTION ZONE REQUIREMENTS DESCRIBED IN SECTION 35-523 OF THE UDC.
MITIGATION 1:1 FOR SIGNIFICANT TREES BELOW MINIMUM PRESERVATION REQUIREMENTS; 3:1 FOR HERITAGE TREES BELOW 100% PRESERVATION
* SMALL SPECIES: CONDALIA, REDBUD, TX. MOUNTAIN LAUREL, TX. PERSIMMON, HAWTHORN, POSSUMHAW - THESE ARE MITIGATED AT 1:1 FOR HERITAGE TREES
** ASHE JUNIPER, HUISACHE, MESQUITE, ARIZONA ASH, HACKBERRY PROTECTION AT 10" DBH AND MITIGATED AT 1:1 FOR HERITAGE TREES

STATE OF TEXAS
MACK W. THOMAS III
85607
LICENSED
PROFESSIONAL ENGINEER
5.20.25

consor
F-12040
8023 VANTAGE DR, STE 300
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

DOUCET
A Kleinfelder Company
CMI Engineering // Entitlements // Geospatial
927 E. Sonterra Boulevard, Ste 107
San Antonio, TX 78258, Tel: (210)-469-4564
www.doucetengineers.com
TBPE Firm Number: 3937
TBPELS Firm Number: 10194551

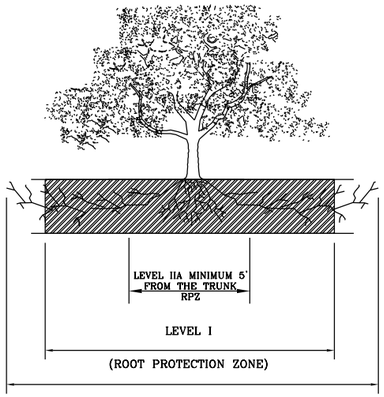
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

TREE PRESERVATION TABLE

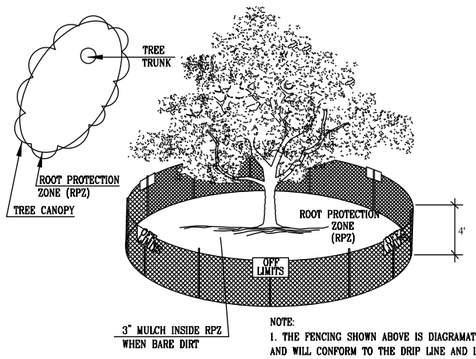
SHEET 4 OF 4

100% SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/20/25
DRWN. BY: HH	DSGN. BY: HH	CHKD. BY: MWT	SHEET NO.260 OF 377



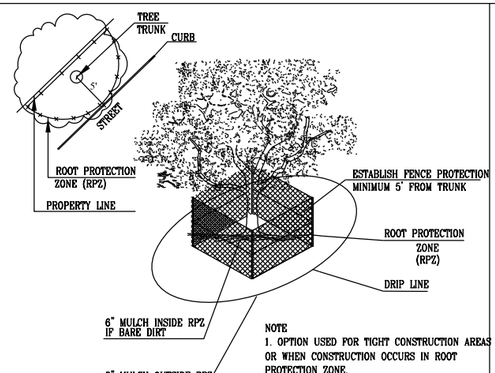
1.1.1 ELEVATION
N. T. S.

ROOT PROTECTION ZONE–THE ROOT PROTECTION ZONE IS A CIRCULAR AREA AROUND A TREE THAT IS BASED ON THE DIAMETER OF THE TREE. EACH 1 INCH DIAMETER OF THE TREE EQUALS 1 FOOT RADIUS FOR ROOT PROTECTION ZONE.



NOTE:
1. THE FENCING SHOWN ABOVE IS DIAGRAMATIC ONLY AND WILL CONFORM TO THE DRIP LINE AND LIMITED TO PROJECT BOUNDARY.
2. FOR ACCEPTABLE FENCING MATERIALS SEE SPECIFICATIONS.

1.1.2 LEVEL I & FENCE PROTECTION
N. T. S.



NOTE
1. OPTION USED FOR TIGHT CONSTRUCTION AREAS OR WHEN CONSTRUCTION OCCURS IN ROOT PROTECTION ZONE.
2. FOR ACCEPTABLE FENCING MATERIALS SEE SPECIFICATIONS.

1.1.3 LEVEL II A FENCE PROTECTION
N. T. S.

GENERAL NOTES

1. ALL THE TREES WITH A DIAMETER GREATER THAN 3 INCHES AFFECTED BY CONSTRUCTION SHALL HAVE THE LIMBS AND ROOTS TRIMMED AND PRUNED ACCORDING TO ITEM No. 802. TREE PRUNING. SOIL AMENDING AND FERTILIZATION, UNLESS SPECIFIED TREES SHALL RECEIVE LEVEL 2 PROTECTION AS PER ITEM No. 802. TREES TO RECEIVE LEVEL 1 PROTECTION AS PER ITEM No. 802 ARE SHOWN ON TREE PROTECTION TABLE ON THIS SHEET.

2. ALL TREES SHALL REMAIN UNLESS NOTED ON THE PLANS.

3. NO SITE PREPARATION WORK SHALL BEGIN IN AREAS WHERE TREE PRESERVATION AND TREATMENT MEASURES HAVE NOT BEEN COMPLETED AND APPROVED.

4. TREE PROTECTION FENCING SHALL BE REQUIRED. TREE PROTECTION FENCING SHALL BE INSTALLED, MAINTAINED AND REPAIRED BY THE CONTRACTOR DURING SITE CONSTRUCTION.

5. THE CONTRACTOR SHALL AVOID CUTTING ROOTS LARGER THAN THREE INCHES IN DIAMETER WHEN EXCAVATING NEAR EXISTING TREES. EXCAVATION IN THE VICINITY OF TREES SHALL PROCEED WITH CAUTION. THE CONTRACTOR SHALL CONTACT THE CITY INSPECTOR.

6. THE ROOT PROTECTION ZONE IS THAT AREA SURROUNDING A TREE, AS MEASURED BY A RADIUS FROM THE TREE TRUNK, IN WHICH NO EQUIPMENT, VEHICLES OR MATERIALS MAY OPERATE OR BE STORED. THE REQUIRED RADIUS LENGTH IS 1 FOOT PER DIAMETER INCH OF THE TREE. FOR EXAMPLE, A 10-INCH DIAMETER TREE WOULD HAVE A 5-FOOT RADIUS ROOT PROTECTION ZONE AROUND THE TREE. ROOTS OR BRANCHES THAT ARE IN CONFLICT WITH THE CONSTRUCTION SHALL BE CUT CLEANLY ACCORDING TO PROPER PRUNING METHODS. LIVE OAK WOUNDS SHALL BE PAINTED OVER, WITHIN 20 MINUTES TO PREVENT OAK WILT.

7. ACCESS TO FENCED AREAS WILL BE PERMITTED ONLY WITH THE APPROVAL OF THE ENGINEER OR CITY INSPECTOR.

8. GRADING, IF REQUIRED, SHALL BE LIMITED TO A 3 INCH CUT OR FILL WITHIN THE FENCED ROOT ZONE AREAS.

9. TREES, SHRUBS OR BUSHES TO BE CLEARED FROM PROTECTED ROOT ZONE AREAS SHALL BE REMOVED BY HAND AS DIRECTED BY THE PROJECT MANAGER OR CITY INSPECTOR.

10. TREES DAMAGED OR LOST DUE TO CONTRACTOR'S NEGLIGENCE DURING CONSTRUCTION SHALL BE MITIGATED TO THE ENGINEER'S SATISFACTION.

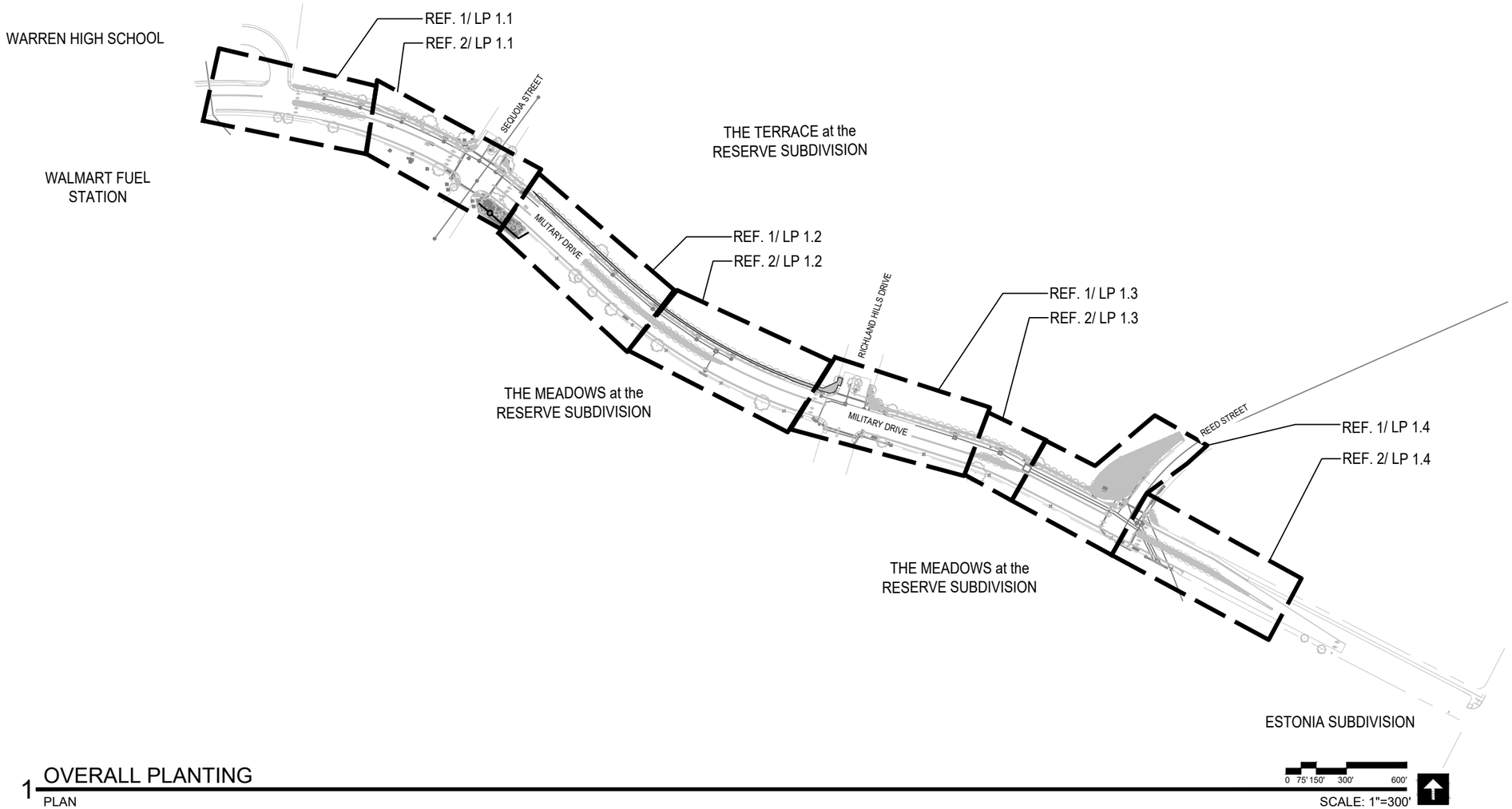
11. EXPOSED ROOTS SHALL BE COVERED AT THE END OF EACH DAY USING TECHNIQUES SUCH AS COVERING WITH SOIL, MULCH OR WET BURLAP.

12. ANY TREE REMOVAL SHALL BE APPROVED BY THE CITY ARBORIST PRIOR TO ITS REMOVAL.

1.3 GENERAL NOTES

TREE PROTECTION TABLE

PROTECTION MEASURE						
TREE SHEET #	TREE/CALIPER SHEET #	STATION OR NUMBER	LOCATION	ITEM 801	ITEM 802 MAINTENCE/ TREATMENTS/ PROTECTION	REMOVAL SEE GENERAL NOTE No. 2



1 OVERALL PLANTING
PLAN

SCALE: 1"=300'

MP STUDIO

REGISTERED LANDSCAPE ARCHITECT
MARK V. PADILLA
2533
STATE OF TEXAS

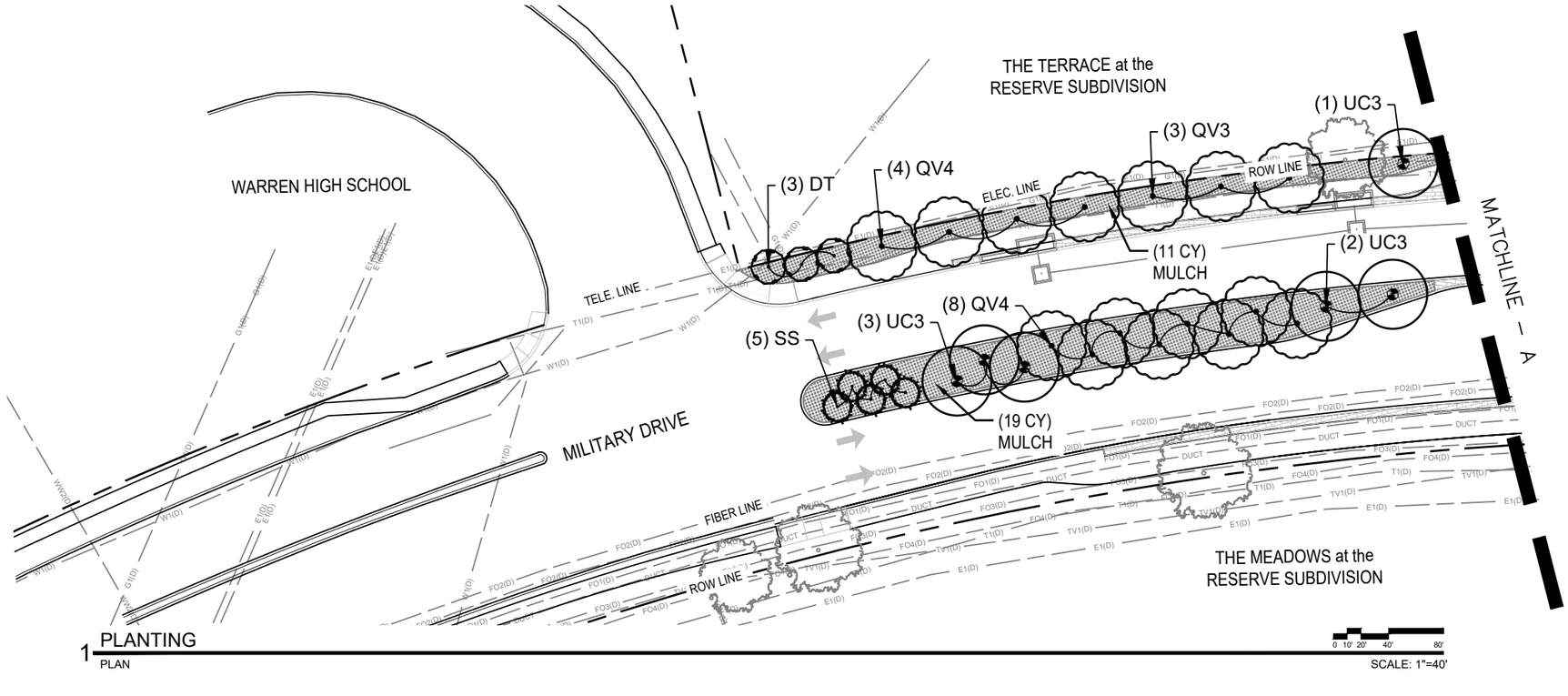
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

OVERALL LANDSCAPE PLAN

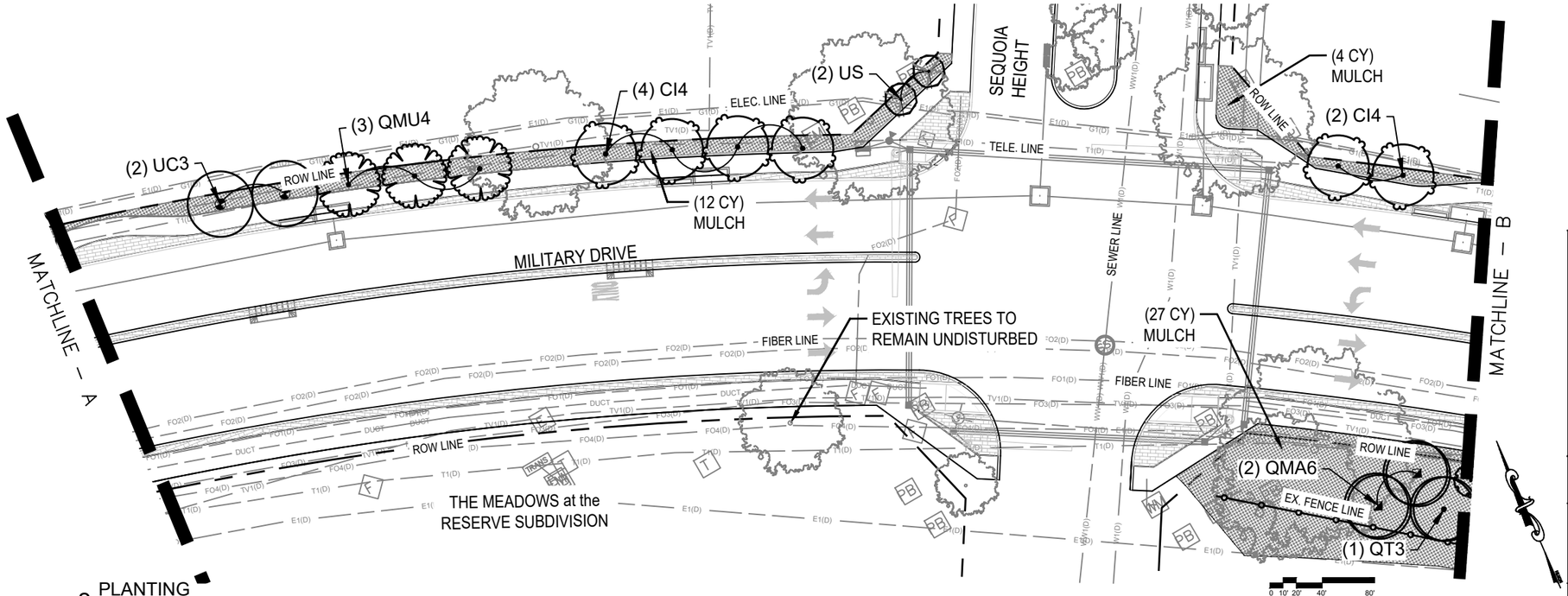
LP 1.0

100% SUBMITTAL	PROJECT NO.: 23-01579		DATE: 05/19/2025
DRWN. BY: ____	DSGN. BY: ____	CHKD. BY:	SHEET NO.262 OF 377



1 PLANTING PLAN

SCALE: 1"=40'

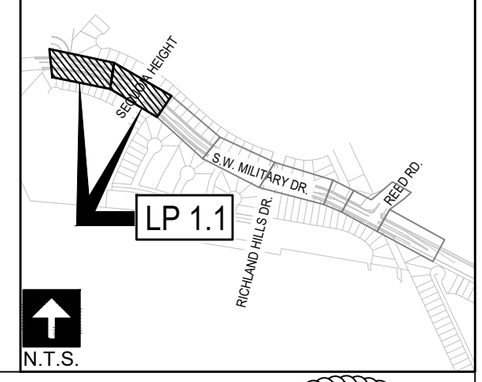


2 PLANTING PLAN

SCALE: 1"=40'

ESTIMATED SHEET QUANTITIES		
ITEM	UNIT	QTY
MULCH - 4" DEPTH	(CY)	73
LARGE SHADE TREES 3" CALIPER	(EA)	9
LARGE SHADE TREES 4" CALIPER	(EA)	24
LARGE SHADE TREES 6" CALIPER	(EA)	2
SMALL ORNAMENTAL TREES 2" CALIPER	(EA)	10
TREE BUBBLERS	(EA)	
IRRIGATION CONTROLLER - W/ ELECTRIC METER	(EA)	
IRRIGATION WATER METER	(EA)	

KEY MAP



MP STUDIO

REGISTERED LANDSCAPE ARCHITECT MARK V. PADILLA 2533 STATE OF TEXAS

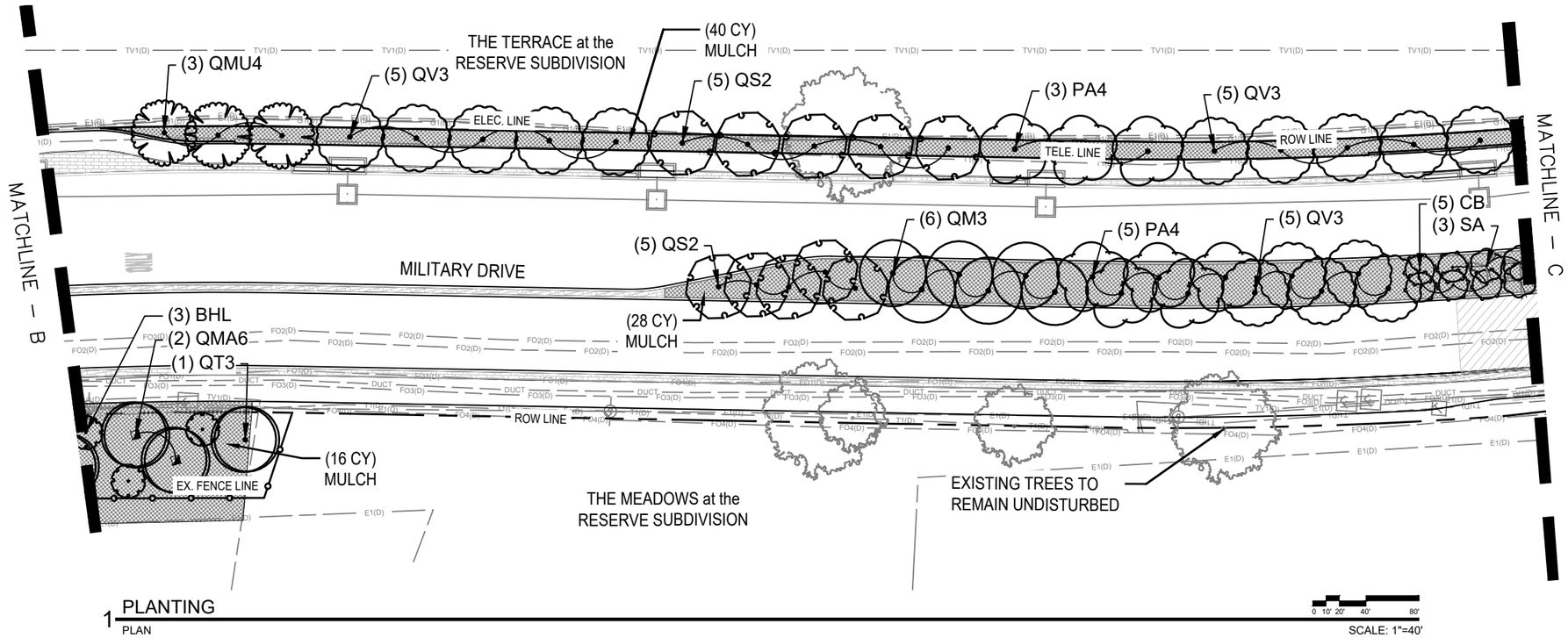
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

LANDSCAPE PLAN

LP 1.1

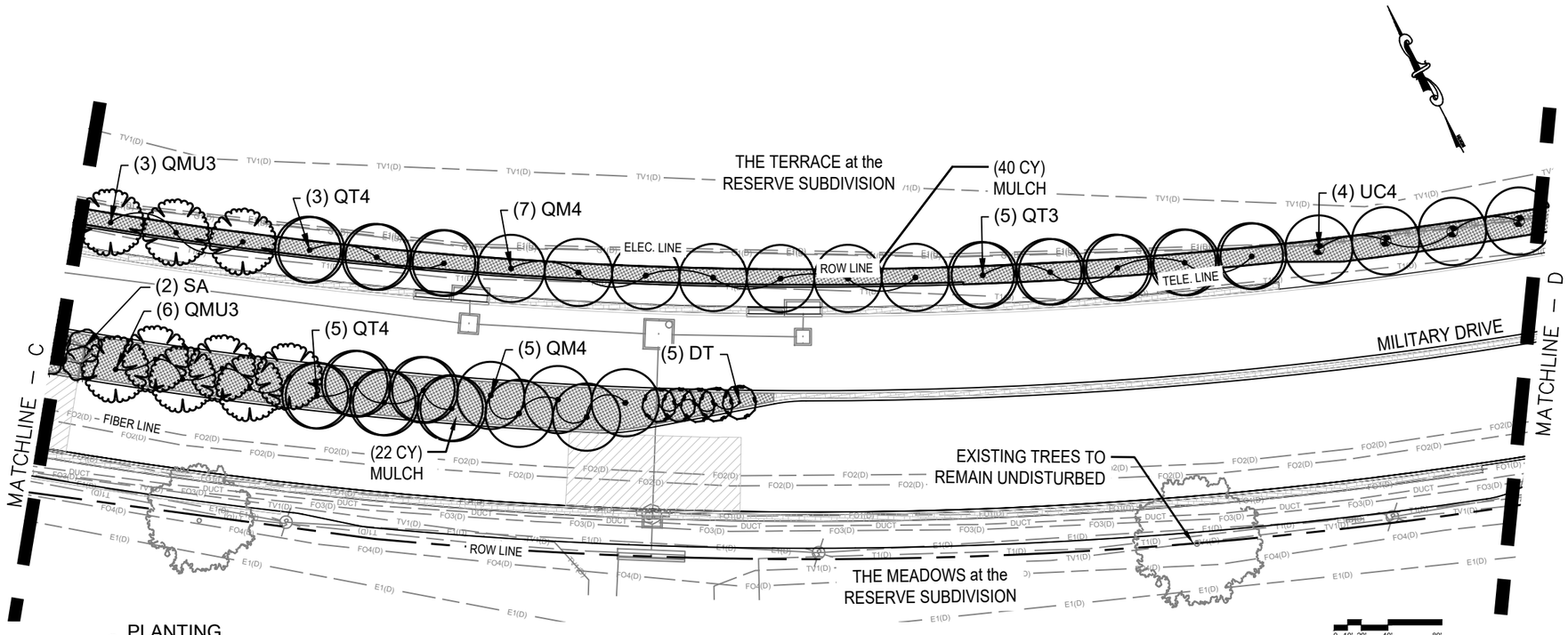
100% SUBMITTAL	PROJECT NO.: 23-01579		DATE: 05/19/2025
DRWN. BY:	DSGN. BY:	CHKD. BY:	SHEET NO.263 OF 377



1 PLANTING PLAN

0 10' 20' 40' 80'

SCALE: 1"=40'



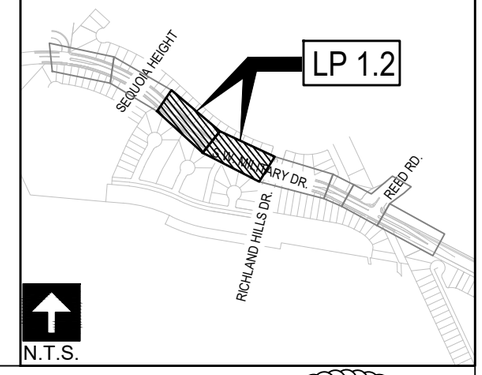
2 PLANTING PLAN

0 10' 20' 40' 80'

SCALE: 1"=40'

ESTIMATED SHEET QUANTITIES		
ITEM	UNIT	QTY
MULCH - 4" DEPTH	(CY)	146
LARGE SHADE TREES 3" CALIPER	(EA)	35
LARGE SHADE TREES 4" CALIPER	(EA)	45
LARGE SHADE TREES 6" CALIPER	(EA)	2
SMALL ORNAMENTAL TREES 2" CALIPER	(EA)	18
TREE BUBBLERS	(EA)	
IRRIGATION CONTROLLER - W/ ELECTRIC METER	(EA)	
IRRIGATION WATER METER	(EA)	

KEY MAP



MP STUDIO

REGISTERED LANDSCAPE ARCHITECT MARK V. PADILLA 2533 STATE OF TEXAS

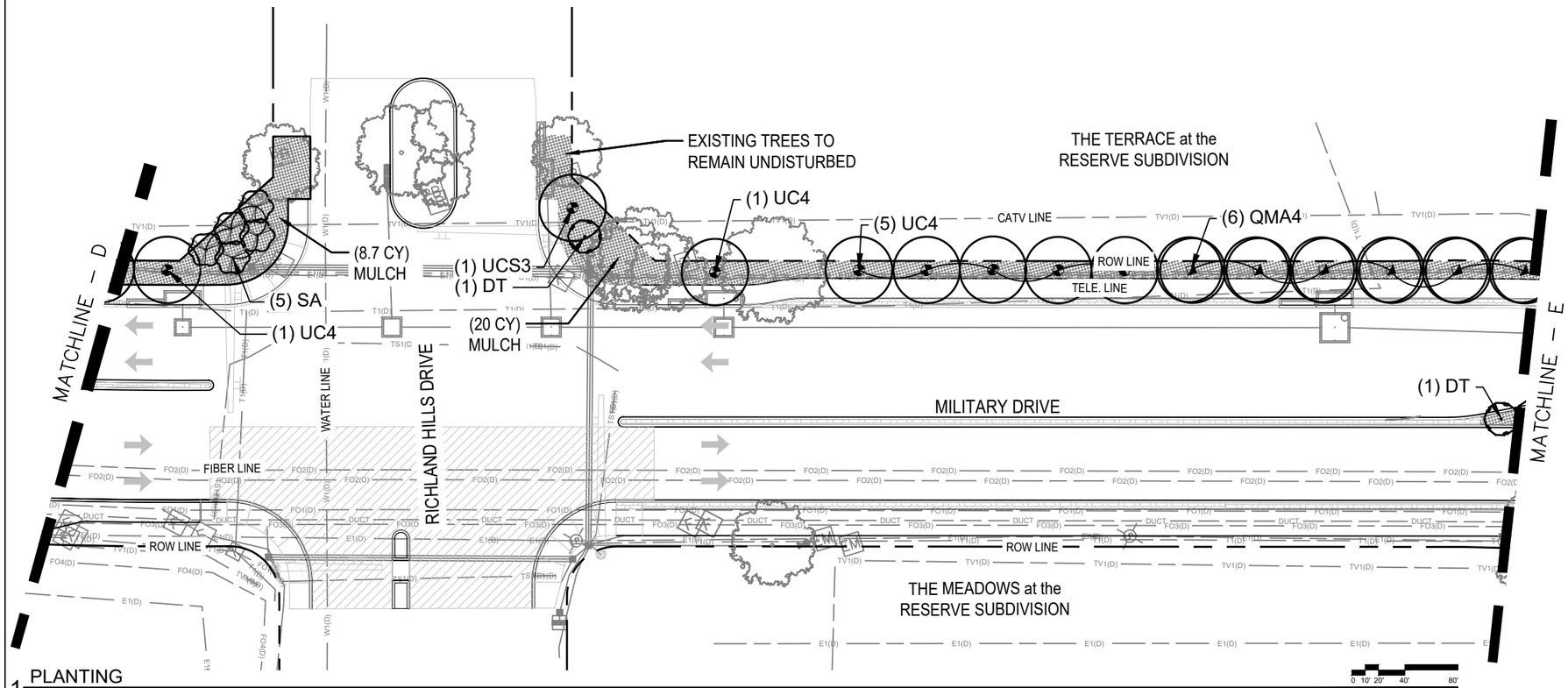
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

LANDSCAPE PLAN

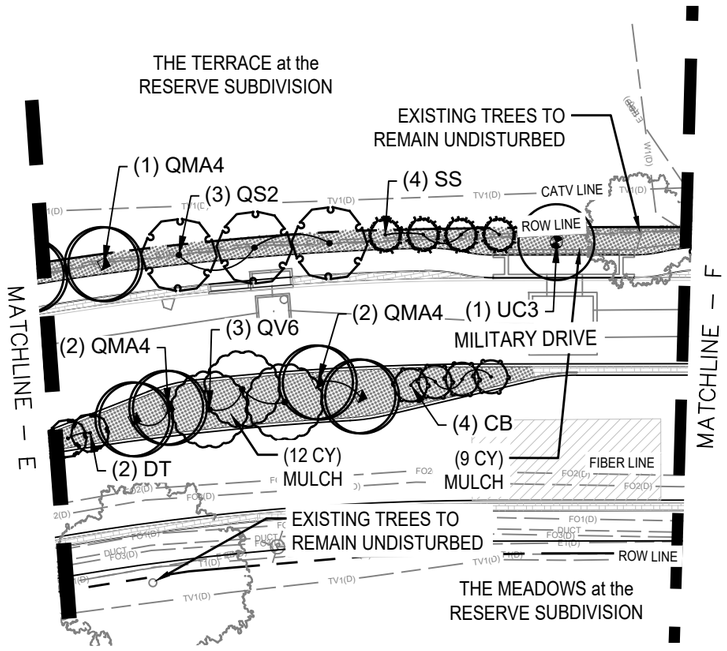
LP 1.2

100% SUBMITTAL	PROJECT NO.: 23-01579		DATE: 05/19/2025
DRWN. BY:	DSGN. BY:	CHKD. BY:	SHEET NO.264 OF 377



1 PLANTING PLAN

SCALE: 1"=40'

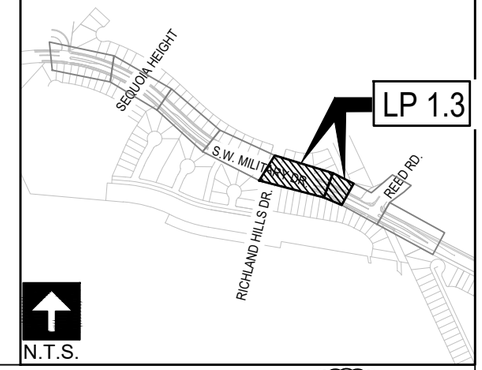


2 PLANTING PLAN

SCALE: 1"=40'

ESTIMATED SHEET QUANTITIES		
ITEM	UNIT	QTY
MULCH - 4" DEPTH	(CY)	50
LARGE SHADE TREES 3" CALIPER	(EA)	2
LARGE SHADE TREES 4" CALIPER	(EA)	20
LARGE SHADE TREES 6" CALIPER	(EA)	3
SMALL ORNAMENTAL TREES 2" CALIPER	(EA)	17
TREE BUBBLERS	(EA)	
IRRIGATION CONTROLLER - W/ ELECTRIC METER	(EA)	
IRRIGATION WATER METER	(EA)	

KEY MAP



MP STUDIO

REGISTERED LANDSCAPE ARCHITECT
MARK V. PADILLA
2533
STATE OF TEXAS

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

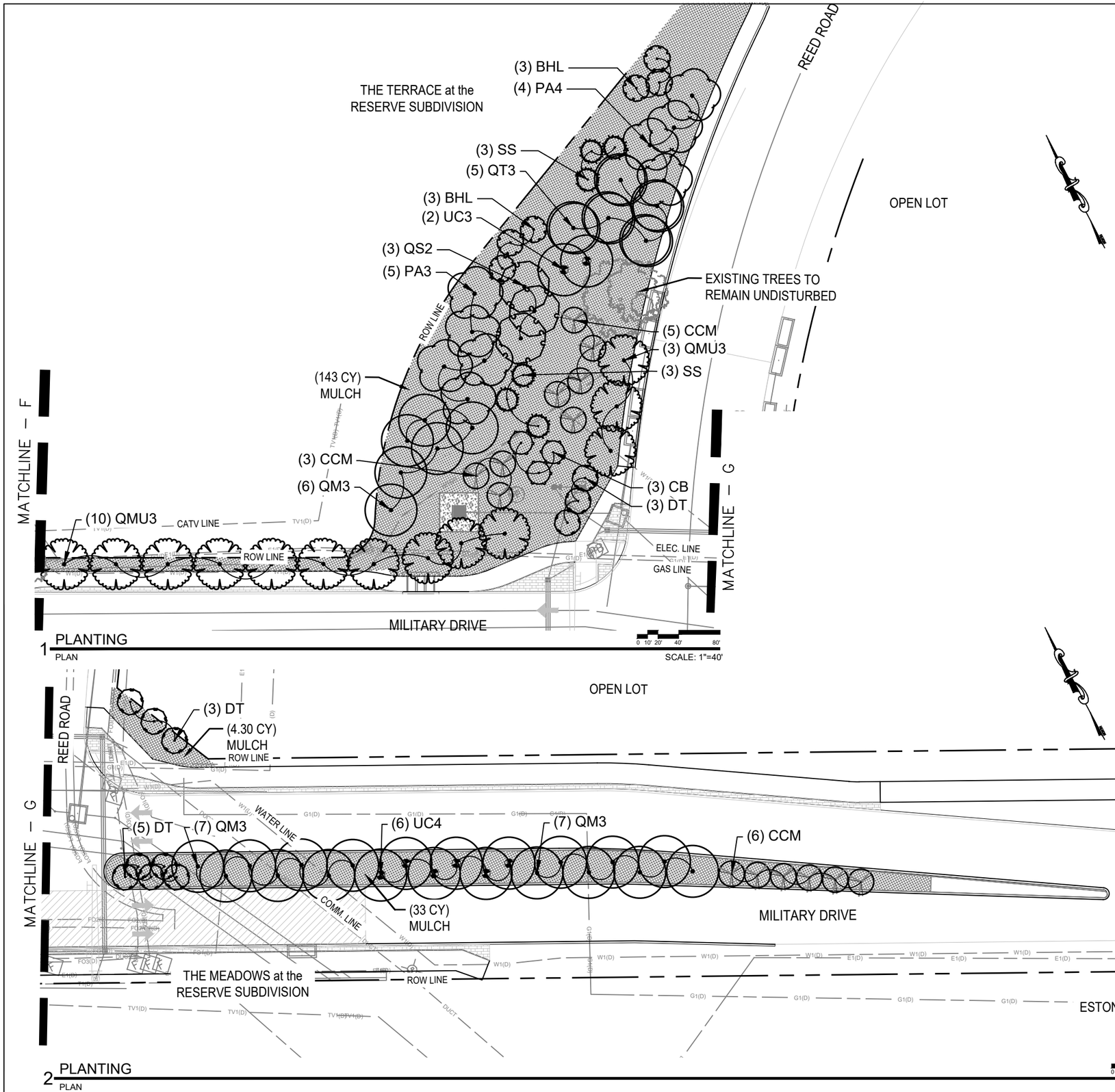
MILITARY DRIVE

LANDSCAPE PLAN

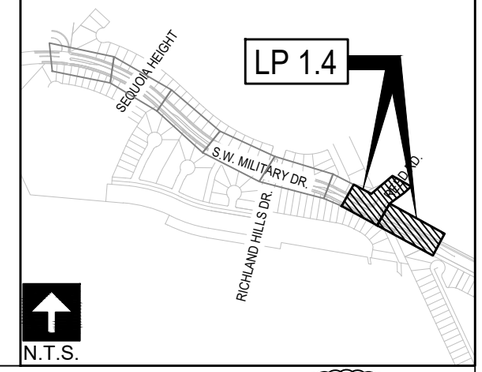
LP 1.3

100% SUBMITTAL	PROJECT NO.: 23-01579		DATE: 05/19/2025
DRWN. BY:	DSGN. BY:	CHKD. BY:	SHEET NO.265 OF 377

ESTIMATED SHEET QUANTITIES		
ITEM	UNIT	QTY
MULCH - 4" DEPTH	(CY)	180
LARGE SHADE TREES 3" CALIPER	(EA)	44
LARGE SHADE TREES 4" CALIPER	(EA)	13
LARGE SHADE TREES 6" CALIPER	(EA)	0
SMALL ORNAMENTAL TREES 2" CALIPER	(EA)	40
TREE BUBBLERS	(EA)	
IRRIGATION CONTROLLER - W/ ELECTRIC METER	(EA)	
IRRIGATION WATER METER	(EA)	



KEY MAP



MP STUDIO

REGISTERED LANDSCAPE ARCHITECT
RK V. PADILLA
2533
STATE OF TEXAS

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

LANDSCAPE PLAN

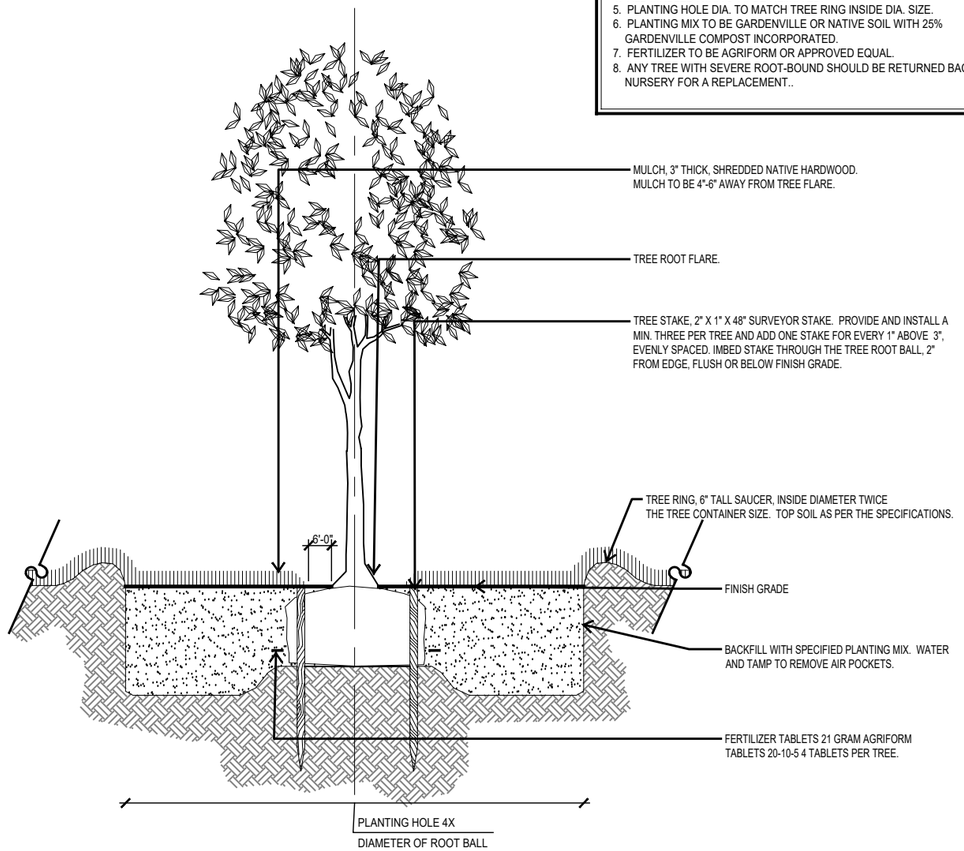
LP 1.4

100% SUBMITTAL	PROJECT NO.: 23-01579		DATE: 05/19/2025
DRWN. BY:	DSGN. BY:	CHKD. BY:	SHEET NO.266 OF 377

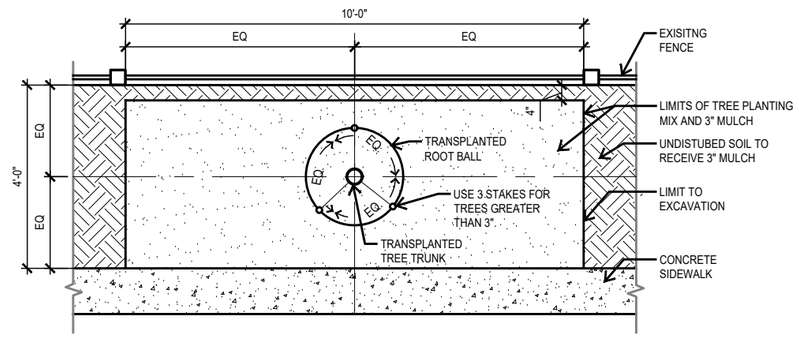
RIGHT-OF-WAY TREE PLANTING PIT SIZE:
WIDTH: FOUR (4) TIMES THE ROOT BALL
DEPTH: EQUAL TO THE ROOT BALL, LESS 2"

NOTES:
1. ROOT FLARE MUST BE EXPOSED, VISIBLE AND 2" ABOVE FINISH GRADE.
2. PAINT ALL CUTS OVER 1" DIA. PAINT ALL CUTS FOR QUERCUS SPECIES.
3. TREES THAT ARE TO BE PLANTED IN LANDSCAPE BEDS ARE TO MATCH THE MULCH TYPE FOR THE LANDSCAPE BED.
4. ALL GIRDLED ROOTS TO BE REMOVED.
5. PLANTING HOLE DIA. TO MATCH TREE RING INSIDE DIA. SIZE.
6. PLANTING MIX TO BE GARDENVILLE OR NATIVE SOIL WITH 25% GARDENVILLE COMPOST INCORPORATED.
7. FERTILIZER TO BE AGRIFORM OR APPROVED EQUAL.
8. ANY TREE WITH SEVERE ROOT-BOUND SHOULD BE RETURNED BACK TO NURSERY FOR A REPLACEMENT..

ALL TREES SHALL BE INSPECTED FOR ROOT-BOUND CONDITIONS PRIOR TO PLANTING. TREES EXHIBITING CIRCLING, GIRDLING, OR EXCESSIVELY COMPACTED ROOTS SHALL BE REJECTED OR CORRECTED BEFORE INSTALLATION. IF ROOTS ARE FOUND TO BE CIRCLING OR BOUND, THEY MUST BE MANUALLY LOOSENED OR CUT TO ENCOURAGE OUTWARD GROWTH. ROOT PRUNING SHALL BE PERFORMED PER ANSI A300 STANDARDS FOR TREE CARE OPERATIONS. THE CONTRACTOR SHALL ENSURE THAT TREES ARE PLANTED WITH ROOTS PROPERLY SPREAD IN A WELL-PREPARED PLANTING HOLE. ANY TREES FAILING TO ESTABLISH DUE TO IMPROPER ROOT CONDITIONS SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.



1 TYPICAL TREE PLANTING AT R.O.W
SECTION
SCALE: 1/2"=1'-0"



2 TYPICAL RIGHT-OF-WAY TREE STAKING AND PLANTING AREA
SECTION
SCALE: 1/2"=1'-0"

MP STUDIO

REGISTERED LANDSCAPE ARCHITECT
MARK V. PADILLA
2533
STATE OF TEXAS

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

LANDSCAPE DETAILS

LP 2.1

100% SUBMITTAL	PROJECT NO.: 23-01579		DATE: 05/19/2025
DRWN. BY:	DSGN. BY:	CHKD. BY:	SHEET NO.267 OF 377

PLANT SCHEDULE

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
TREES						
	CI4	6	CARYA ILLINOINENSIS	PECAN	4" CAL.	SINGLE TRUNK ; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY; PARK GRADE NOT ACCEPTABLE
	PA3	5	PLATANUS MEXICANA	MEXICAN SYCAMORE	3" CAL.	SINGLE TRUNK CONTAINER GROWN; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY; PARK GRADE NOT ACCEPTABLE
	PA4	12	PLATANUS MEXICANA	MEXICAN SYCAMORE	4" CAL.	SINGLE TRUNK CONTAINER GROWN; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY; PARK GRADE NOT ACCEPTABLE
	QS2	16	QUERCUS CANBYI	SIERRA RED OAK	4" CAL.	SINGLE TRUNK CONTAINER GROWN; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY; PARK GRADE NOT ACCEPTABLE
	QMA4	11	QUERCUS MACROCARPA	BURR OAK	4" CAL.	SINGLE TRUNK CONTAINER GROWN; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY; PARK GRADE NOT ACCEPTABLE
	QMA6	4	QUERCUS MACROCARPA	BURR OAK	6" CAL.	SINGLE TRUNK CONTAINER GROWN; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY; PARK GRADE NOT ACCEPTABLE
	QMU3	22	QUERCUS MUEHLENBERGII	CHINKAPIN OAK	3" CAL.	SINGLE TRUNK CONTAINER GROWN; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY; PARK GRADE NOT ACCEPTABLE
	QMU4	6	QUERCUS MUEHLENBERGII	CHINKAPIN OAK	4" CAL.	SINGLE TRUNK CONTAINER GROWN; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY; PARK GRADE NOT ACCEPTABLE
	QM3	26	QUERCUS POLYMORPHA 'MONTEREY'	MONTEREY OAK	3" CAL.	SINGLE TRUNK CONTAINER GROWN; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY; PARK GRADE NOT ACCEPTABLE
	QM4	12	QUERCUS POLYMORPHA 'MONTEREY'	MONTEREY OAK	4" CAL.	SINGLE TRUNK CONTAINER GROWN; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY; PARK GRADE NOT ACCEPTABLE
	QT3	12	QUERCUS TEXANA	TEXAS RED OAK	3" CAL.	SINGLE TRUNK CONTAINER GROWN; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY; PARK GRADE NOT ACCEPTABLE
	QT4	8	QUERCUS TEXANA	TEXAS RED OAK	4" CAL.	SINGLE TRUNK CONTAINER GROWN; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY; PARK GRADE NOT ACCEPTABLE
	QV3	18	QUERCUS VIRGINIANA	SOUTHERN LIVE OAK	3" CAL.	SINGLE TRUNK CONTAINER GROWN; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY; PARK GRADE NOT ACCEPTABLE
	QV4	12	QUERCUS VIRGINIANA	SOUTHERN LIVE OAK	4" CAL.	SINGLE TRUNK CONTAINER GROWN; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY; PARK GRADE NOT ACCEPTABLE
	QV6	3	QUERCUS VIRGINIANA	SOUTHERN LIVE OAK	6" CAL.	SINGLE TRUNK CONTAINER GROWN; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY; PARK GRADE NOT ACCEPTABLE
	UC3	12	ULMUS CRASSIFOLIA	CEDAR ELM	3" CAL.	SINGLE TRUNK B&B; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY; PARK GRADE NOT ACCEPTABLE
	UC4	17	ULMUS CRASSIFOLIA	CEDAR ELM	4" CAL.	SINGLE TRUNK B&B; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY; PARK GRADE NOT ACCEPTABLE
ORNAMENTAL TREES						
	BHL	9	BAUHINIA LUNARIOIDES	ANACACHO ORCHID TREE	8` HT.	MULTI-TRUNK ; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY; PARK GRADE NOT ACCEPTABLE
	CCM	14	CERCIS CANADENSIS	EASTERN REDBUD MULTI-TRUNK	8` HT.	MULTI-TRUNK ; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY; PARK GRADE NOT ACCEPTABLE
	CB	12	CHILOPSIS LINEARIS 'BUBBA'	BUBBA DESERT WILLOW	8` HT.	MULTI-TRUNK ; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY; PARK GRADE NOT ACCEPTABLE
	DT	23	DIOSPYROS TEXANA	TEXAS PERSIMMON	8` BTH	MULTI-TRUNK ; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY; PARK GRADE NOT ACCEPTABLE
	SS	15	SOPHORA SECUNDIFLORA	TEXAS MOUNTAIN LAUREL	8` HT.	MULTI-TRUNK ; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY; PARK GRADE NOT ACCEPTABLE
	SA	10	STYPHNOLOBIUM AFFINE	EVE'S NECKLACE	8` HT.	MULTI-TRUNK; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY; PARK GRADE NOT ACCEPTABLE
	US	2	UNGNADIA SPECIOSA	MEXICAN BUCKEYE	8` HT.	MULTI-TRUNK ; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY; PARK GRADE NOT ACCEPTABLE

ALL TREES SHALL BE INSPECTED FOR ROOT-BOUND CONDITIONS PRIOR TO PLANTING. TREES EXHIBITING CIRCLING, GIRDLING, OR EXCESSIVELY COMPACTED ROOTS SHALL BE REJECTED OR CORRECTED BEFORE INSTALLATION. IF ROOTS ARE FOUND TO BE CIRCLING OR BOUND, THEY MUST BE MANUALLY LOOSENED OR CUT TO ENCOURAGE OUTWARD GROWTH. ROOT PRUNING SHALL BE PERFORMED PER ANSI A300 STANDARDS FOR TREE CARE OPERATIONS. THE CONTRACTOR SHALL ENSURE THAT TREES ARE PLANTED WITH ROOTS PROPERLY SPREAD IN A WELL-PREPARED PLANTING HOLE. ANY TREES FAILING TO ESTABLISH DUE TO IMPROPER ROOT CONDITIONS SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

GROUND COVER MULCH

(45,223 SF)
(642 CY)

HARDWOOD MULCH
5" INSTALLED DOWN TO
4" THICK AFTER SETTLING

DOUBLE SHREDDED CEDAR
MULCH BULK

SITE ONE OR APPROVED EQUAL.
CONTRACTOR TO SUBMIT SAMPLE
FOR APPROVAL.

MP STUDIO

REGISTERED LANDSCAPE ARCHITECT
MARK V. PADILLA
2533
STATE OF TEXAS

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

PLANT PALETTE

LP 2.2

100% SUBMITTAL	PROJECT NO.: 23-01579	DATE: 05/19/2025
DRWN. BY:	DSGN. BY: CHKD. BY:	SHEET NO.268 OF 377

GENERAL LANDSCAPE NOTES

PART 1 :
LANDSCAPE CONTRACTOR SHALL ACCEPT THE SITE IN ITS EXISTING CONDITION AND SHALL TIE NEW WORK TO EXISTING CONDITIONS AND CONTROLS (SUCH AS EXISTING GRADES AND WALK ELEVATIONS) AS NECESSARY TO MEET THE INTENT OF THE PLANS.

BEFORE PROCEEDING WITH ANY WORK IN AN AREA, LANDSCAPE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LAYOUTS AND SIZES AND SHALL NOTIFY LANDSCAPE ARCHITECT OF ANY DISCREPANCIES BETWEEN PLANS AND ACTUAL SITE CONDITIONS. IF ANY UTILITIES OR OBSTRUCTIONS ARE DISCOVERED DURING CONTRACT WHICH MAY NOT HAVE BEEN KNOWN DURING DESIGN, CONTRACTOR SHALL STOP WORK AND IMMEDIATELY NOTIFY LANDSCAPE ARCHITECT BEFORE PRECEDING. LANDSCAPE CONTRACTOR SHALL BE LIABLE FOR ALL MODIFICATIONS AND DAMAGE IF WORK PROCEEDS IN EITHER OF THE ABOVE SITUATIONS WITHOUT NOTIFYING LANDSCAPE ARCHITECT.
PRIOR TO ANY EXCAVATION, LANDSCAPE CONTRACTOR SHALL CONTACT APPROPRIATE AUTHORITIES INCLUDING, BUT NOT LIMITED TO, TEXAS ONE CALL SYSTEM AT 1-800-245-4545 TO LOCATE EXISTING UNDERGROUND UTILITIES.

LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ANY DAMAGE TO ANY UTILITIES OR PROPERTY THAT MAY OCCUR IN THE EXECUTION OF HIS CONTRACT WORK. WHEN WORK REQUIRES CROSSING EXISTING WALKS OR CURBS WITH EQUIPMENT, LANDSCAPE CONTRACTOR SHALL PROVIDE APPROVED BRIDGE MATERIAL SUCH AS WOOD PLANKS AND EARTH TO PREVENT DAMAGE TO FINISHED WORK. LANDSCAPE CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER CONTRACTORS THAT MAY BE WORKING ON THE SITE SIMULTANEOUSLY AND SHALL COORDINATE STAGING OF HIS WORK WITH OWNER AND LANDSCAPE ARCHITECT. ALL TRASH AND DEBRIS GENERATED FROM CONTRACT OPERATIONS SHALL BE REMOVED ON A DAILY BASIS. ALL WORK SHALL BE IN COMPLIANCE WITH ALL APPLICABLE CODES AND ORDINANCES. LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR JOB SITE SAFETY IN CONJUNCTION WITH HIS CONTRACT WORK.

REFERENCES
A.) AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) Z60.1 - NURSERY STOCK.
B.) TEXAS STATE DEPARTMENT OF AGRICULTURE (TDA) - NURSERY FLORAL LICENSING PROGRAM.

1.1 SUBMITTALS FOR REVIEW
A.) PRODUCT DATE: LIST OF CHEMICALS TO BE USED ON SITE.
B.) SAMPLES:
1. 1 QUART SAMPLES OF EACH SOIL AMENDMENT WITH ANALYTICAL DATA FROM A RECOGNIZED TESTING LABORATORY SHOWING MANUFACTURER'S GUARANTEED ANALYSIS.
2. 1 CUBIC FOOT SAMPLES OF PREMIXED BACKFILL MIXES.
C.) TEST RESULTS:
1. PROVIDE SOIL SAMPLE TEST RESULTS INDICATING PH, FERTILITY LEVELS, AND PERCENTAGES OF SAND, SILT, AND CLAY.
2. PROVIDE RECOMMENDATIONS FOR SOIL AMENDMENTS AND FERTILIZERS BASED ON SOIL ANALYSIS; FOR CONTRACT PURPOSES, USE MIXTURE SPECIFIED IN THIS SECTION.
D.) NURSERY QUALIFICATIONS: COMPANY SPECIALIZING IN GROWING AND CULTIVATING PLANTS SPECIFIED IN THIS SECTION WITH MINIMUM THREE YEAR DOCUMENTED EXPERIENCE, AND CERTIFIED BY THE STATE OF TEXAS.
E.) INSTALLER QUALIFICATIONS:
1. COMPANY SPECIALIZING IN LANDSCAPE INSTALLATION WITH MINIMUM THREE YEARS DOCUMENTED EXPERIENCE.
2. PROVIDE FULL-TIME SUPERINTENDENT ON-SITE DURING INSTALLATION.
F.) PLANT MATERIALS:
1. PLANT MATERIALS ARE SUBJECT TO EXAMINATION BY LANDSCAPE ARCHITECT AT PLACE OF GROWTH OR UPON DELIVERY TO PROJECT.

1.2 DELIVERY, STORAGE AND HANDLING
A.) DELIVER FERTILIZER IN WATERPROOF BAGS SHOWING WEIGHT, GUARANTEED CHEMICAL ANALYSIS, MANUFACTURER AND BRAND NAME, AND APPROVALS OF AUTHORITIES HAVING JURISDICTION.
B.) DELIVER PLANT MATERIAL WITH IDENTIFICATION TAG SHOWING BOTANICAL NAME AND PLANT SIZE.
C.) DELIVER PLANT MATERIAL IMMEDIATELY PRIOR TO INSTALLATION; PLANT MATERIALS ON SAME DAY AS DELIVERED. IF PLANTING CANNOT BE ACCOMPLISHED ON SAME DAY AS DELIVERY, PROVIDE ADDITIONAL PROTECTION TO MAINTAIN PLANTS IN HEALTHY AND VIGOROUS CONDITION.
D.) KEEP PLANT MATERIAL MOIST AND PROTECT FROM DAMAGE AND DESICCATION OF LEAVES UNTIL PLANTING.
E.) DO NOT HANDLE PLANT MATERIALS BY STEM OR TRUNK.
F.) KEEP CONTAINERS INTACT UNTIL JUST PRIOR TO PLANTING.

1.3 SEQUENCING
A.) INSTALL TREES, SHRUBS, AND LINER STOCK PLANT MATERIALS PRIOR TO INSTALLATION OF LAWNS.

1.4 WARRANTY
A.) FURNISH WRITTEN WARRANTY THAT PLANT MATERIALS WILL BE IN HEALTHY, VIGOROUS, GROWING CONDITION ONE (1) YEAR AFTER FINAL ACCEPTANCE. DAMAGE DUE TO ACTS OF GOD, VANDALISM, OR NEGLIGENCE BY OWNER IS EXCLUDED.
B.) REPLACE DEAD, UNHEALTHY AND UNSIGHTLY PLANT MATERIALS WITHIN WARRANTY PERIOD, UPON NOTIFICATION BY OWNER OR LANDSCAPE ARCHITECT.
C.) NOTIFY OWNER AND LANDSCAPE ARCHITECT 30 DAYS PRIOR TO EXPIRATION OF WARRANTY PERIOD AND ARRANGE FINAL ACCEPTANCE INSPECTION BY ALL PARTIES.
1. REMOVE DEAD, UNHEALTHY, AND UNSIGHTLY PLANT MATERIALS.
2. REMOVE GUYING AND STAKING MATERIALS.
3. WARRANT REPLACEMENT PLANTS UNDER SAME PROVISIONS AND FOR SAME TIME PERIOD AS ORIGINAL PLANTS.

1.5 MAINTENANCE
1. MAINTAIN PLANT LIFE IMMEDIATELY AFTER PLACEMENT AND FOR NINETY (90 DAYS) AFTER FINAL ACCEPTANCE...
2. REPLACE DEAD OR DYING PLANTS WITH PLANTS OF SAME SIZE AND SPECIES SPECIFIED.
3. REMOVE TRASH, DEBRIS, AND LITTER, WATER, PRUNE, FERTILIZE, WEED, AND MOW. SPOT APPLY HERBICIDES, AND FUNGICIDE ONLY AS REQUIRED.
4. REMOVE CLIPPINGS AND DEBRIS FROM SITE PROMPTLY.
5. COORDINATE WITH OPERATION OF IRRIGATION SYSTEM TO ENSURE THAT PLANTS ARE ADEQUATELY WATERED. HAND WATER AREAS NOT RECEIVING ADEQUATE WATER FROM IRRIGATION SYSTEM.
6. RESET SETTLED PLANTS.
7. REAPPLY MULCH TO BARE AND THIN AREAS.

1.6 MATERIALS
A.) PLANT MATERIALS:
1. CERTIFIED IN ACCORDANCE WITH TDA REQUIREMENTS.
2. SPECIES AND SIZE AS INDICATED IN PLANT SCHEDULE. LARGER SIZE MAY BE SUBSTITUTE WITHOUT ADDITIONAL COST TO OWNER, PROVIDED ROOT BALL OR SPREAD INCREASES PROPORTIONATELY.
3. WHERE MATERIALS ARE PLANTED IN MASSES, PROVIDE PLANTS OF UNIFORM SIZE.
4. GROWN IN CLIMATIC CONDITIONS SIMILAR TO THOSE AT SITE. FREE FROM DISEASE, INSECT INFESTATIONS, DEFECTS INCLUDING WEAK OR BROKEN LIMBS, CROTCHES, AND DAMAGED TRUNKS, ROOTS OR LEAVES, SUN SCALD, FRESH BARK ABRASIONS, EXCESSIVE ABRASIONS, AND OBJECTIONABLE DISFIGUREMENTS.
5. EXHIBIT NORMAL GROWTH HABITS; VIGOROUS, HEALTHY, FULL, WELL-PROPORTIONED, AND SYMMETRICAL.
6. TREE TRUNKS TO BE STURDY AND EXHIBIT HARDENED SYSTEMS AND VIGOROUS AND FIBROUS ROOT SYSTEMS, NOT ROOT OR POT BOUND.
7. NOT PRUNED, TRIMMED, OR TOPPED.
8. CONTAINER-GROWN STOCK: GROWN IN CONTAINERS FROM SEEDING.

B.) TOPSOIL:
1. USE SITE GENERATED SOIL FROM PLANTING PREPARATIONS, REASONABLY FREE FROM CLAY LUMPS, COARSE SANDS, STONES, ROOTS, FOREIGN MATTER.
2. IF SUFFICIENT ON-SITE MATERIALS DO NOT EXIST, PROVIDE SIMILAR OFF-SITE TOPSOIL FROM APPROVED LOCAL SOURCE. SUBMIT SAMPLE AND SOURCE FOR APPROVAL PRIOR TO DELIVERY OF ANY SOIL TO SITE.
C.) MULCH:
1. DOUBLE SHREDDED, COMPOSTED HARDWOOD BARK OF VARYING LENGTH BY NEW EARTH LLC ph. 210-6615180 OR APPROVED SUBSTITUTE. PARTIALLY DECOMPOSED; FREE FROM STICKS, STONES, CLAY, AND GROWTH AND GERMINATION-INHIBITING INGREDIENTS.
D.) SOIL AMENDMENTS:
1. SOIL SULFUR: AGRICULTURAL GRADE SULFUR CONTAINING MINIMUM 99 PERCENT SULFUR EXPRESSED A ELEMENTAL.
2. IRON SULFATE: 20 PERCENT IRON EXPRESSED AS METALLIC IRON DERIVED FROM FERRIC AND FERROUS SULFATE AND 10 PERCENT SULFUR EXPRESSED AS ELEMENTAL. WHEN REQUIRED BY SOIL TESTS.
3. GYPSUM: AGRICULTURAL GRADE, CONTAINING MINIMUM 98 PERCENT CALCIUM SULFATE, WHEN REQUIRED BY SOIL TEST.
4. HERBICIDE: PRE-EMERGENT TYPE; SURFLAN OR APPROVED SUBSTITUTE.
5. FERTILIZER FOR TREES AT PLANTING: PLANT HEALTH CARE GROUP "PHC TREE SAVER" APPLIED AS PER P.H.C.G. DIRECTIONS AND APPLICATION RATES.
6. FERTILIZER FOR LAWN: PLANT HEALTH CARE GROUP "PHC FOR TURF 15-1-6" APPLIED AT A RATE OF SEVEN (7) POUNDS PER 1,000 SQUARE FEET.
7. SOIL INOCULATES FOLLOWING TREE PLANTING: PLANT HEALTH CARE GROUP "PHC INJECTABLE INOCULANT FOR TREES". APPLIED AS PER PHCG MIXING DIRECTIONS AND APPLICATION RATES.
8. FERTILIZER FOR PLANTER BED MIX: PLANT HEALTH CARE GROUP "HEALTHY START 3-4-3" APPLIED AT A RATE OF 25 POUNDS CUBIC YARD OF PLANT BED MIX.
H.) TURF:
1. ALL SEED USED SHALL BE HIGH QUALITY, EXTRA FANCY, TREATED LAWN TYPE SEED AT 98% PURITY AND 85% GERMINATION, AND SHALL BE FURNISHED IN SEALED STANDARD CONTAINERS WITH SIGNED COPIES OF A STATEMENT FROM THE VENDOR CERTIFYING THAT EACH CONTAINER OF SEED DELIVERED IS FULLY LABELED IN ACCORDANCE WITH THE TEXAS STATE AGRICULTURAL CODE AND IS EQUAL TO OR BETTER THAN THE REQUIREMENT OF THESE SPECIFICATIONS. LAWN SEED TO BE FREE OF WEEDS OR NOXIOUS GRASS SEEDS.
2. SEED WHICH HAS BECOME WET, MOLDY OR OTHERWISE DAMAGED IN TRANSIT OR STORAGE WILL NOT BE ACCEPTED.
3. GRASS SEED SCHEDULE:
A. SHADE FRIENDLY GRASS MIX.
B. DRAINFIELD MIX AT ALL FLOODPLAIN LOW WATER AREAS.
C. DAM SLOPE MIX AT ALL AREAS OF SLOPES HIGHER THAN 8%.
4. "HYDRO-MULCH" AS MANUFACTURED BY CONWED, OR APPROVAL EQUAL.
5. THE HYDO-MULCH SHALL BE COMPOSED OF WOOD CELLULOSE FIBER AND CONTAIN NO GERMINATION OR GROWTH-INHIBITING FACTORS.
6. HYRO-SEEDING ADDITIVE (BINDER): ECOLOGY 'CONTROL-M BINDER' ORGANIC SEEDING ADDITIVE.
7. SOD: PROVIDE FULL, DARK GREEN, UNIFORM, STRONGLY ROOTED SOD IN 16" X 24" STRIPS FREE FROM WEEDS, UNDESIRABLE GRASSES, DISEASES AND PESTS. SOD SHALL BE CUT FROM THE FIELD NO LONGER THAN 48 HOURS BEFORE PLANTING. ROOTS OF SOD SHALL BE KEPT MOIST.
8. BRACING: TREE ANCHORS SHALL BE AS PER DETAILS.
9. TREE PAINT: MORRISION TREE SEAL, CABORT TREE PAINT, OR OTHER PRODUCT APPROVED BY LANDSCAPE ARCHITECT.
10. PLANTER BED EDGING SHALL BE 3/16"X 4" STEEL EDGING WITH MANUFACTURERS STANDARD GREEN FINISH.
F.) MIXES:
1. PLANT BED MIX:
PLANT BED MIX (BACKFILL MIX) SHALL BE NEW EARTH'S 4 WAY MIX AS PRODUCED BY NEW EARTH LLC PH. 210-661-5180. DOCUMENTATION OF PURCHASE OF THIS SPECIFIC MIX SHALL BE SUBMITTED TO LANDSCAPE ARCHITECT. IF EQUAL IS PROPOSED, CONTRACTOR SHALL SUBMIT SAMPLE AND COMPLETE ANALYSIS WITH TEST RESULTS AND METHOD OF PRODUCTION FOR EVALUATION AS AN EQUAL SUBSTITUTE.

PART 2 EXECUTION:
2.1 PREPARATION
LANDSCAPE CONTRACTOR SHALL RECEIVE THE SITE AT APPROXIMATELY FINISH GRADE LESS ANY SETTLEMENT THAT MAY HAVE OCCURRED SINCE SITE CONSTRUCTION AND BACKFILLING. THIS GRADE SHALL BE RAKED TO REMOVE ALL DEBRIS INCLUDING STICKS, CLODS, AND STONES AND SHALL BE FINE GRADED TO ELIMINATE ALL HUMPS, RUTS, DEPRESSIONS AND ABRUPT CHANGES IN GRADE AND ANY AREA THAT COULD CAUSE WATER TO POND.
A.) IF VEGETATION IS GROWING IN PLANTING/LAWN AREA, APPLY HERBICIDE AT RATES RECOMMENDED BY MANUFACTURER. ALLOW TO DIE, AND THEN GRUB OUT ROOTS TO MINIMUM 1/2 INCH DEPTH.
B.) MARK LOCATION OF TREES AND OUTLINES OF PLANTS BEDS USING COLORED WOOD STAKES OR FLAGS PRIOR TO BEGINNING PLANTING; OBTAIN LANDSCAPE ARCHITECT'S APPROVAL PRIOR TO PROCEEDING.

2.2 PLANTING TREES AND SHRUBS
A.) REMOVE CONTAINERS WITHOUT DAMAGE TO ROOTS.
B.) REMOVE BOTTOM OF PLANT BOXES PRIOR TO PLACING PLANTS; REMOVE SIDES AFTER PLACEMENT AND PARTIAL BACKFILLING. PREVENT DAMAGE TO ROOTS.
C.) ENSURE TREES ARE NOT INSTALLED WITH ROOT-BOUND:
1. REMOVE UPPER THIRD OF BURLAP FROM BALLED AND BURLAP TREES AFTER PLACEMENT.
2. TEASE OUT THE ROOTS - LOOSEN THE ROOTS BY HAND OR A TOOL FOR PLANTING.
3. CUT CIRCLING ROOTS - ANY TREE WITH SEVERE ROOT-BOUND SHOULD BE RETURNED BACK TO NURSERY FOR A REPLACEMENT. MINOR ROOT-BOUND USE PRUNERS TO CUT THEM TO ENCOURAGE OUTWARD GROWTH.
4. SPREAD THE ROOTS - ENCOURAGE ROOTS TO GROW INTO THE SURROUNDING NEW SOIL MIX BY MAKING VERTICAL SLITS ALONG THE ROOT BALL.
D.) PLACE PLANT UPRIGHT AND PLUMB IN CENTER OF HOLE. PULL ANY WEEDS GROWING IN TREE BALL AND EXPOSE ROOT FLARE (THIS WILL BE THE TOP MOST IDENTIFIABLE ROOT). REMOVE ANY GIRDLING ROOTS AND SET PLANT SO THAT ROOT FLARE IS 1" ABOVE FINISH GRADE. ORIENT PLANTS FOR BEST APPEARANCE. BACKFILL THE BOTTOM 1/3 OF THE EXCAVATION WITH SOIL CUT FROM EXCAVATION OF PIT AND THOROUGHLY WATER THIS SOIL TO SETTLE IN. BACKFILL THE REMAINDER OF THE EXCAVATION WITH A 50/50 MIX OF NEW EARTH'S 4 WAY MIX AND NATIVE SOIL EXCAVATED FROM THE PIT. PLACE PLANT HEALTH CARE GROUP'S "TREE SAVER" IN BACKFILL AS PER P.H.C.G. DIRECTION AND APPLICATION RATES. LIGHTLY TAMP AND WATER SOIL TO REMOVE ALL AIR POCKETS. FOR PLANTS OUTSIDE OF PLANTING BEDS, CONSTRUCT 3 INCH HIGH WATER CONTAINMENT RING AROUND PLANT. SPREAD MULCH TO MINIMUM 4 INCH DEPTH OVER PLANT BASIN.
E.) ADJUST PLANT HEIGHT IF SETTLEMENT OCCURS AFTER BACKFILL AND STAKE AS DETAILED.
1. TWO TO THREE WEEKS FOLLOWING PLANTING, INJECT PLANT HEALTH CARE INJECTABLE INOCULANT AROUND ROOT BALL FOLLOWING MANUFACTURER'S DIRECTIONS AND APPLICATION RATES. CONTACT LANDSCAPE ARCHITECT TO OBSERVE THIS OPERATION.
F.) TRIM PLANTS TO REMOVE DEAD AND INJURED BRANCHES ONLY. TREAT CUTS OVER 3/4 INCH DIAMETER WITH TREE PAINT.
G.) BRACE PLANTS OVER 65 GALLONS SIZE IMMEDIATELY AFTER PAINTING:
1. FOR TREES 2" CAL. AND GREATER PROVIDE STAKING AS DETAILED. POSITION TO PREVENT HAZARDS TO PEDESTRIANS.
2. DO NOT RESTRICT PLANT MOVEMENT UNDER LIGHT WIND LOADS OR DAMAGE BARK.

2.3 PLANTING MASS SHRUBS, GROUNDCOVERS, AND ANNUALS (SEE DETAILS)
A.) EXCAVATE PLANT BED TO DEPTH AS DETAILED ON PLANS.
B.) BACKFILL WITH SPECIFIED 4-WAY MIX AND TILL IN SPECIFIED PLANT HEALTH CARE'S, "HEALTHY START 3-4-3" AT A RATE OF 25 LBS. PER CUBIC YARD OF PLANT BED MIX.
C.) INSTALL METAL EDGINGS TO SEPARATE ALL PLANTER BEDS FROM TURF AND AT LOCATIONS INDICATED ON PLANS.
D.) PLACE PLANTS IN STRAIGHT, EVENLY SPACED ROWS AT SPACING INDICATED ON DRAWINGS, TO UNIFORMLY FILL BEDS. USE TRIANGULAR SPACING METHOD UNLESS OTHERWISE INDICATED.
E.) WATER PLANTS THOROUGHLY IMMEDIATELY AFTER PLANTING. REPAIR SETTLED AREAS.
F.) ADJUST FINAL GRADES TO 1/2 INCH BELOW ADJACENT PAVING CURBS.
G.) SPREAD MULCH TO MINIMUM 4 INCH DEPTH OVER PLANTING BEDS AS DETAILED.

2.4 CLEANING AND ADJUSTING
A.) REMOVE PLANT CONTAINERS, TRASH, RUBBISH, AND EXCESS SOILS FROM SITE DAILY AND AT COMPLETION OF TREE, SHRUBS AND GROUNDCOVER PLANTING.
B.) REPAIR RUTS, HOLES AND SCARS IN GROWING SURFACE.

2.4 LAWN APPLICATION (AT COMPLETION OF TREE, SHRUB AND GROUNDCOVER PLANTINGS)
A.) COORDINATION:
1. HYDROMULCH AND SOD AFTER TREE, SHRUB AND GROUNDCOVER INSTALLATION IS COMPLETE.
1. CONTRACTOR TO COORDINATE WITH IRRIGATION CONTRACTOR TO INSURE FUNCTIONAL IRRIGATION SYSTEM PRIOR TO ANY LAWN INSTALLATION.

B.) PREPARATION:
1. PRE-PLANT WEED CONTROL:
IF WEEDS EXIST WITHIN PROPOSED LANDSCAPE AREAS AT THE BEGINNING OF WORK, SPRAY WITH A NON SELECTIVE SYSTEMIC CONTACT HERBICIDE, AS RECOMMENDED AND APPLIED BY AN APPROVED LICENSED APPLICATOR. CLEAR AND REMOVE THESE EXISTING WEEDS UPON HERBICIDE'S COMPLETED ACTION BY GRUBBING OFF ALL PLANTS AT LEAST 1/2"-1" BELOW THE SURFACE OF THE SOIL.
2. CONTRACTOR TO SCARIFY GROUND SURFACE TO A MINIMUM 2" DEPTH FOR ALL GRASSES AND REMOVE ALL STICKS, TRASH, ROCKS AND OTHER DEBRIS AND DISPOSE OFF SITE.
3. IF EXISTING SOIL IN AN AREA IS FOUND TO BE CONTAMINATED OR OTHERWISE UNSUITABLE, CONTRACTOR SHALL PROVIDE COST PER CUBIC YARD TO REPLACE WITH SOIL SUITABLE FOR TURF.
4. CONTRACTOR TO RAKE ENTIRE AREA, LEVELING ANY IMPERFECTIONS IN THE GRADE. LANDSCAPE CONTRACTOR TO ENSURE THAT THERE WILL BE POSITIVE DRAINAGE AND NO PONDING ON SITE. FINISHED GRADE OF LAWN AREAS TO BE 1/2" BELOW TOP OF CURBS, SIDEWALKS AND OTHER PAVEMENTS. REMOVE ANY LARGE (GREATER THAN 1") DIRT CLODS, ROCKS, AND TRASH AND PREPARE A SMOOTH, LEVEL, LOOSE AND COARSE SURFACE. LANDSCAPE ARCHITECT TO APPROVE FINE GRADING PRIOR TO ANY LAWN INSTALLATION. LAWN BED SHALL BE MOIST (BUT NOT MUDDY) TO RECEIVE SEED AND SOD.
C.) HYDROMULCH APPLICATION:
1. FOR ALL HYDROMULCH AREAS, INSTALL SOD STRIPS OF BERMUDA GRASS AT ALL BACKS OF CURBS WITHIN THE LIMITS OF CONSTRUCTION.
2. LAWN AREAS TO BE SEEDED IMMEDIATELY AFTER PREPARATION OF THE BED. APPLY A UNIFORM COAT OF HYDROMULCH AT THE RATES SPECIFIED BELOW:
A. SEED (REF. SCHEDULE, 1.6 H-3):
1). SHADE FRIENDLY GRASS MIX - 1 LB./1,250 S.F.
2). DRAINFIELD MIX - 1 LB./750 S.F.
3). DAM SLOPE MIX - 1 LB./1000 S.F.
B. WOOD CELLULOSE FIBER MULCH - 60 LBS../1,000 S.F.
C. FERTILIZER: "PHC FOR TURF" AT A RATE OF SEVEN (7) POUNDS PER 1,000 SQUARE FEET.
D. INCORPORATE A TACKIFIER WITH MULCH CAP. DELAY IRRIGATION 8 HOURS TO PERMIT TACKIFIER TO SET.
E. INSTALL EROSION CONTROL JUTE MESH WITH STAPLES FOR SLOPES AREAS.
3. SEED AREAS WITHIN SEEDING LIMITS INDICATED ON THE PLAN AND AREAS DISTURBED BY CONSTRUCTION OPERATIONS.
4. PROTECT EXISTING UTILITIES (INCLUDING IRRIGATION SYSTEM), PLANTING, PAVING, FENCING, AND OTHER SITE AMENITIES FROM DAMAGE CAUSED BY HYDROMULCHING OPERATION.
5. IMMEDIATELY FOLLOWING APPLICATION OF HYDROMULCH, THE CONTRACTOR SHALL WASH EXCESS HYDROMULCHING MATERIAL FROM PREVIOUSLY PLANTED MATERIAL, ARCHITECTURAL FEATURES, ETC.. CARE SHALL BE EXERCISED TO AVOID WASHING OR ERODING MULCH MATERIALS FROM LAWN AREA. CONTRACTOR IS RESPONSIBLE FOR REPLACING THE SEED IF IT WASHES OUT DURING A RAIN EVENT.
6. UPON ESTABLISHMENT OF LAWN, APPLY A POST EMERGENT HERBICIDE FOR CONTROL OF NUT GRASS AND WEEDS. FERTILIZE AT 45 DAY INTERVALS WITH SPECIFIED PLANT HEALTH GROUP'S FERTILIZER AT A RATE OF SEVEN (7) POUNDS PER 1,000 SQUARE FEET DURING AT 45 DAY INTERVALS DURING THE 90 DAY MAINTENANCE PERIOD.
7. SHOULD LAWN AREAS BE SEEDED WITH ANNUAL RYE GRASS (REF.. SCHEDULE SECTION 1.6 H-3) THE CONTRACTOR SHALL RETURN TO THE SITE BETWEEN APRIL 15 AND MAY 15 TO RE-PREPARE SEED BED AND HYDROMULCH WITH COMMON BERMUDA SEED IN ORDER TO ESTABLISH A PERMANENT TURF COVER IN ALL LAWN AREAS.
D.) SOD INSTALLATION:
1. INCORPORATE SPECIFIED LAWN FERTILIZER AT SEVEN (7) POUNDS PER 1000 SQUARE FEET OF LAWN AREA FOR SOD.
2. PRE- EMERGE HERBICIDE APPLICATION: APPLY RECOMMENDED HERBICIDE TO LABEL INSTRUCTIONS IN TWO APPLICATIONS. THE FIRST APPLICATION WILL BE UP TO 10 DAYS PRIOR TO PLANTING. THE SECOND APPLICATION WILL BE 5 DAYS PRIOR TO PLANTING. USE CARE TO AVOID WIND DRIFT OR RUNOFF TO ADJACENT ORNAMENTAL TREE OR SHRUB PLANTINGS.
3. LAY SOD WITHIN 24 HOURS FROM TIME OF STRIPPING.
2. LAY SOD TO FORM SOLID MASS WITH TIGHTLY FITTED JOINTS. BUTT ENDS AND SIDES OF SOD STRIPS. STAGGER STRIPS TO OFFSET JOINTS IN ADJACENT COURSES. WORK SIFTED SOIL INTO MINOR CRACKS BETWEEN PIECES OF SOD; REMOVE EXCESS SOD TO AVOID SMOTHERING ADJACENT GRASS.
5. SOD PADS SHALL BE OF FULLEST SIZE POSSIBLE-NO SOD SLIVERS WILL BE PERMITTED.
6. FINISHED GRADE OF NEW SOD SHALL BE FLUSH WITH ADJACENT LAWN AND PAVEMENT. ENSURE POSITIVE DRAINAGE.
7. ROLL ENTIRE SODDED AREA WITH SOD ROLLER. WATER SOD THOROUGHLY.
8. CONTRACTOR SHALL OVERSEED SOD AREAS WITH ANNUAL RYE GRASS IF LAWN INSTALLATION OCCURS SEPTEMBER 15 THROUGH APRIL 15 AT 8 LBS.. 1,000 S.F.
9. SHOULD LAWN AREAS BE SEEDED WITH ANNUAL RYE GRASS THE CONTRACTOR SHALL RETURN TO THE SITE BETWEEN APRIL 15 AND MAY 15 TO RE-PREPARE SEED BED AND SEED WITH BERMUDA.

2.5 ACCEPTANCE
A.) PRIOR TO SCHEDULING A SUBSTANTIAL COMPLETION INSPECTION LANDSCAPE CONTRACTOR SHALL THOROUGHLY CLEAN SITE OF ALL DEBRIS AND TRASH AND REPAIR ANY DAMAGE TO FINISH GRADE. WHEN LANDSCAPE WORK IS COMPLETE A SUBSTANTIAL COMPLETION INSPECTION WILL BE HELD. FOLLOWING COMPLETION OF ANY PUNCH LIST ITEMS GENERATED FROM THE SUBSTANTIAL COMPLETION INSPECTION A FINAL INSPECTION WILL BE HELD AND IF FOUND ACCEPTABLE A CERTIFICATE OF FINAL ACCEPTANCE WILL BE ISSUED.
B.) LANDSCAPE CONTRACTOR SHALL CONTINUE MAINTENANCE UNTIL FINAL ACCEPTANCE AT WHICH TIME THE SPECIFIED MAINTENANCE PERIOD WILL BEGIN.

END OF SPECIFICATIONS

MP STUDIO

REGISTERED LANDSCAPE ARCHITECT
MARK V. PADILLA
2533
STATE OF TEXAS

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

GENERAL LANDSCAPE NOTES

LP 2.3

100% SUBMITTAL	PROJECT NO.: 23-01579		DATE: 05/19/2025
DRWN. BY:	DSGN. BY:	CHKD. BY:	SHEET NO.269 OF 377

IRRIGATION CONSTRUCTION NOTES

1. IT IS THE IRRIGATION CONTRACTORS SOLE RESPONSIBILITY TO CONFIRM THE ACTUAL ONSITE WATER PRESSURE FROM THE SOURCE. IF WATER PRESSURE IS LESS THAN MANDATED THEN IMMEDIATELY NOTIFY THE OWNERS REPRESENTATIVE. IF ACTUAL SITE STATIC PRESSURE EXCEEDS DESIGN PRESSURE BY 15 P.S.I. IN ANY ZONE, A PRESSURE REDUCING VALVE SHALL BE INSTALLED.

2. DO NOT WILLFULLY PROCEED WITH CONSTRUCTION AS DESIGN WHEN IT IS OBVIOUS THAT UNKNOWN OBSTRUCTIONS AND/OR GRADE DIFFERENCES EXIST THAT MAY NOT HAVE BEEN KNOWN DURING DESIGN. SUCH CONDITIONS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNERS REPRESENTATIVE. THE IRRIGATION CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ALL NECESSARY REVISIONS DUE TO FAILURE TO GIVE SUCH NOTIFICATION.

3. THE IRRIGATION CONTRACTOR IS REQUIRED BY LAW TO NOTIFY TEXAS ONE CALL (800-245-4545) 72 HOURS PRIOR TO ANY EXCAVATION. IRRIGATION CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING THEMSELVES FAMILIAR WITH ALL UNDERGROUND UTILITIES AND PIPES. IRRIGATION CONTRACTORS SHALL TAKE SOLE RESPONSIBILITY FOR ANY COSTS INCURRED DUE TO DAMAGE OF SAID UTILITIES WHETHER OR NOT TEXAS ONE CALL IS NOTIFIED.

4. DUE TO SCALE OF DRAWINGS, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS, SLEEVES, ETC. WHICH MAY BE REQUIRED. IRRIGATION CONTRACTOR SHALL CAREFULLY INVESTIGATE THE STRUCTURAL AND FINISHED CONDITIONS AFFECTING ALL OF HIS WORK AND PLAN HIS WORK ACCORDINGLY. FURNISHINGS SUCH FITTINGS, ETC AS MAY BE REQUIRED TO MEET SUCH CONDITIONS. DRAWINGS ARE GENERALLY DIAGRAMMATIC AND INDICATIVE OF THE WORK TO BE INSTALLED. THE WORK SHALL BE INSTALLED IN SUCH A MANNER AS TO AVOID CONFLICTS BETWEEN IRRIGATION SYSTEM, PLANTING, AND ARCHITECTURAL FEATURES. THIS DESIGN IS DIAGRAMMATIC. ALL PIPING, VALVES, ETC., SHOWN WITHIN PAVED AREAS IS FOR DESIGN CLARIFICATION ONLY AND SHALL BE INSTALLED IN PLANTING AREAS AND WITHIN PROPERTY LINES.

5. LATERAL PIPE SHALL BE INSTALLED AT MIN. DEPTH OF 12" WITH MAINLINE PIPE / WIRE TO BE INSTALLED AT A MINIMUM OF 18". NO MACHINE TRENCHING IS TO BE DONE WITHIN DRIPLINE OF TREES. TRENCHING IS TO BE DONE BY HAND OR BY TUNNELING UNDER ROOT SYSTEM BY METHOD APPROVED BY OWNER'S REPRESENTATIVE. PIPING LAYOUT IS DIAGRAMMATIC AND PIPING SHALL BE ROUTED AROUND EXISTING PLANT MATERIAL TO AVOID DAMAGE TO EXISTING PLANTS. DO NOT CUT ANY ROOT OVER 3/4" DIAMETER. ANY CUTS MADE SHALL BE CLEAN AND WITHOUT FRAYED ENDS.

6. IRRIGATION CONTRACTOR SHALL BE RESPONSIBLE FOR SLEEVES WHEREVER PIPING OR CONDUIT PASSES, UNDER ALL PAVING, THROUGH WALLS, ETC. ALL SLEEVE LOCATIONS MAY NOT BE SHOWN ON PLAN, COORDINATE WITH ARCHITECTURAL AND CIVIL DRAWINGS, GENERAL CONTRACTOR, AND OTHER SUBCONTRACTORS AS REQUIRED. ALL SLEEVES SHALL BE SCH 40 PVC, SIZED TWICE THE DIAMETER OF PIPE OR COMBINATION OF PIPES ENCLOSED WITHIN THE SLEEVE.

7. ALL PIPE CONNECTIONS SHALL BE PRIMED WITH AN APPROVED COLOR PRIMER BEFORE BEING CHEMICAL WELDED.

8. IT IS THE IRRIGATION CONTRACTORS RESPONSIBILITY TO COORDINATE PIPING WITH THE LANDSCAPE SUBCONTRACTOR TO AVOID CONFLICT WITH PLANTING BEDS. IT WILL BE THE RESPONSIBILITY OF THE IRRIGATION SUBCONTRACTOR TO MOVE PIPING TO ALLOW PROPER ADJUSTMENTS TO ENSURE PROPER COVERAGE AT NO ADDITIONAL COST TO THE OWNER.

9. ALL ROTORS SHALL BE LOCATED 12" FROM PAVEMENT, CURBS OR EDGE OF STRUCTURE, ALL SPRAY HEADS SHALL BE LOCATED 6" FROM PAVEMENT, CURBS OR EDGE OF STRUCTURE.

10. USE RIGID SCH 80 PVC SWING JOINT ASSEMBLIES TO CONNECT ALL ROTARY HEADS AND QUICK COUPLERS.

11. ALL SPRAY HEADS SHALL BE CONNECTED WITH A 12" MINIMUM LENGTH OF 1/2" FLEX PVC.

12. ALL LANDSCAPE PLANTING AREAS IRRIGATED WITH DRIP SHOULD BE INSTALLED AT 18" SPACING.

13. ALL TURF AREAS IRRIGATED WITH DRIP SHOULD BE INSTALLED 12" SPACING.

14. ALL IRRIGATION WIRES SHALL BE UL LISTED FOR DIRECT BURIAL AND BE A MINIMUM #14 GAUGE. WIRE SPLICES SHALL INCLUDE DBY CONNECTORS AS RECOMMENDED BY 3M COMPANY.

15. ELECTRIC POWER SHALL BE PROVIDED TO CONTROLLER LOCATION BY GENERAL CONTRACTOR. IRRIGATION CONTRACTOR SHALL PROVIDE FINAL HARD-WIRE TO CONTROLLERS.

16. VALVE BOXES SHALL BE INSTALLED FLUSH WITH GRADE, SUPPORTED BY BRICKS IF NECESSARY. INSTALL 3" OF PEA GRAVEL BELOW THE VALVE. USE 12" X 17" RECTANGULAR VALVE BOXES WITH A PURPLE LID FOR QUICK COUPLING VALVES AND 10" ROUND BOXES FOR ELECTRIC VALVES UNLESS NOTED OTHERWISE.

17. VALVE AND CIRCUIT SHALL BE SEPARATED BASED ON WATER USE, SO THAT TURF AREAS ARE WATERED SEPARATELY FROM SHRUB AND GROUNDCOVER AREAS. IRRIGATION HEADS IN THE TURF AREAS WILL BE VALVED SEPARATELY FROM SHRUB AND/OR GROUNDCOVER AREAS. IT IS RECOMMENDED THAT SEASONAL COLOR AREAS BE WATERED SEPARATELY. UNDER NO CIRCUMSTANCES ARE ZONE TYPES TO BE COMBINED.

18. FINAL LOCATION OF CONTROLLER, WATER METER, BACKFLOW DEVICE, MASTER VALVE, FLOW SENSOR, AND WEATHER SENSOR SHALL BE APPROVED BY GENERAL CONTRACTOR, LANDSCAPE ARCHITECT, OR AN OWNERS REPRESENTATIVE.

19. AFTER AWARD OF CONTRACT AND BEFORE ANY IRRIGATION SYSTEM MATERIALS ARE ORDERED FROM SUPPLIERS OR DELIVERED TO THE JOB SITE, SUBMIT TO THE OWNER A COMPLETE LIST OF ALL IRRIGATION SYSTEM MATERIALS, OR PROCESSES PROPOSED TO BE FURNISHED AND INSTALLED AS PART OF THIS CONTRACT. THE LANDSCAPE ARCHITECT OR OWNERS'S AUTHORIZED REPRESENTATIVE WILL ALLOW NO SUBSTITUTIONS WITHOUT PRIOR WRITTEN ACCEPTANCE.

20. IRRIGATION CONTRACTOR WILL SUPPLY A COMPLETE AS BUILT DRAWING TO INCLUDE EXACT LOCATION OF ALL MAINLINE, VALVES, CONTROLLERS, QUICK COUPLERS, POINT OF CONNECTION, AND WIRE PATH. IRRIGATION CONTRACTOR WILL SUPPLY A COMPLETE SET OF OPERATION AND MAINTENANCE MANUALS.

21. PROVIDE A COLORED LAMINATED ZONE MAP AND INSTALL AT THE CONTROLLER.

22. THE IRRIGATION CONTRACTOR SHALL COMPLY WITH ALL LOCAL AND STATE MANDATED IRRIGATION ORDINANCES AND SHALL SECURE ALL NECESSARY PERMITS AND PAY ALL ASSOCIATED FEES UNLESS OTHERWISE NOTED. ANY DISCREPANCIES SHALL BE DISCUSSED PRIOR TO CONSTRUCTION.

IRRIGATION LEGEND

KEY	EXPLANATION
A W	1" DEDICATED IRRIGATION METER
B W	1" DEDICATED IRRIGATION METER
A DC	1" DOUBLE CHECK BACKFLOW DEVICE IN SEPARATE VALVE BOX PER LOCAL CODES.
B DC	1" DOUBLE CHECK BACKFLOW DEVICE IN SEPARATE VALVE BOX PER LOCAL CODES.
MV	1.5" MASTER VALVE, HUNTER ICV-151G NORMALLY CLOSED VALVE
	TREE BUBBLER ASSEMBLY - ON 6' POP UP
A C	IRRIGATION CONTROLLER HUNTER ACC-99D. FINAL LOCATION TO BE DETERMINED AFTER CONSULTING WITH LANDSCAPE ARCHITECT
B C	IRRIGATION CONTROLLER HUNTER ACC-99D. FINAL LOCATION TO BE DETERMINED AFTER CONSULTING WITH LANDSCAPE ARCHITECT
W	WEATHER SENSOR HUNTER SOLAR-SYNC. FINAL LOCATION TO BE DETERMINED AFTER CONSULTING WITH LANDSCAPE ARCHITECT
	HUNTER ICV-AS-ADJ SERIES - REMOTE CONTROL VALVE
	MANUAL ISOLATION VALVE - SIZE OF MAINLINE
	QUICK COUPLER VALVE
	MAIN LINE - USE SCH-40 PVC PIPE AS DESIGNATED ON PLANS
	LATERAL LINE - SIZE AS NOTED ON PLANS. USE CLASS 315 ON 1/2" PIPE AND CLASS 200 IPS PVC ON 3/4" AND LARGER PIPE.
	IRRIGATION SLEEVE - USE 2 SIZES LARGER THAN TOTAL DIAMETER OF PIPE/S DESIGNATED FOR CROSSING PAVING. VALVE WIRING MAY RUN IN THE SAME SLEEVES. USE SCH 40 PVC PIPE.

# #
f #

ZONE IDENTIFICATION
IRRIGATION ZONE SIZE IN GALLONS PER MINUTE
ZONE SIZE

PRESSURE CALCULATIONS - A @ Zone #6

DESIGN STATISTICS FOR CALCULATIONS

TOTAL ZONE FLOW:	26.0 g.p.m
ELECTRIC VALVE SIZE:	1.5"
STATIC PRESSURE LESS 10% (STATIC @ 65 psi):	58.5 p.s.i.

ACCUMULATIVE LOSSES FROM CITY MAIN TO FURTHEST HEAD:

SPRINKLER HEAD REQUIREMENT:	30.0 p.s.i.
ZONE PIPE/FITTING LOSS:	1.6 p.s.i.
1.5" ELECTRIC VALVE LOSS:	1.5 p.s.i.
ELEVATION NET LOSS: (+ - FT):	n/a
SYSTEM MAINLINE LOSS (2" SCH 40 LOOP):	4.2 p.s.i.
BACKFLOW PREVENTOR LOSS (1"):	4.0 p.s.i.
WATER METER LOSS (1"):	4.0 p.s.i.
MASTER ELECTRIC VALVE LOSS (1.5"):	1.5 p.s.i.
TYPE K COPPER SERVICE LOSS:	
TOTAL NET LOSS:	16.8 p.s.i.
DESIGN PRESSURE:	46.8 p.s.i.

NOTE: ACTUAL STATIC WATER PRESSURE WAS UNAVAILABLE AT THE TIME OF IRRIGATION DESIGN. 65 PSI IS USED AS A STANDARD PRESSURE FOR DESIGN. PRESSURE MUST BE CONFIRMED 65 OR GREATER BY IRRIGATION CONTRACTOR BEFORE ANY INSTALLATION. PIPE HAS BEEN SIZE TO INSURE THAT VELOCITY DOES NOT EXCEED 5 FPS. DO NOT CHANGE PIPE SIZE IN THE FIELD WITHOUT CONSULTING SYSTEM DESIGNER.

WATERING SCHEDULE - SYSTEM A

PRECIPITATION RATE (IN/HR)	WATER DESIRED (IN/WK)	TIME/CYCLE (MIN)	NUMBER OF ZONES	TOTAL TIME MIN.	TOTAL TIME HRS
TREE BUBBLERS (3.87)	.80	12.0	11	132	2.20

TOTAL SYSTEM HOURS OF OPERATION PER WEEK: 2.20

NOTE: A TYPICAL SCHEDULE WOULD ALLOW WATERING TO OCCUR TWO TIMES PER WEEK. TOTAL WATERING TIME WOULD BE DIVIDED BY THE NUMBER OF WATERING DAYS. THIS SCHEDULE IS DESIGNED FOR SUMMER WATER USAGE AND ESTABLISHMENT OF NEW PLANTING.

Statement of Conformance:
I, JOSEPH A. FERDIN, LICENSED IRRIGATOR #0022076, HEREBY CERTIFIES THAT THIS IRRIGATION DESIGN CONFORMS TO THE DESIGN AND INSTALLATION PARAMETERS OF THE IRRIGATION DESIGN AND EQUIPMENT STANDARDS SET OUT 35-510(J) AND 35-511(C) (6) OF THE CITY OF SAN ANTONIO UNIFIED DEVELOPMENT CODE.

Joseph A Ferdin TX LI # 22076

MP STUDIO

LICENSED IRRIGATOR JOSEPH A. FERDIN LI0022076 STATE OF TEXAS

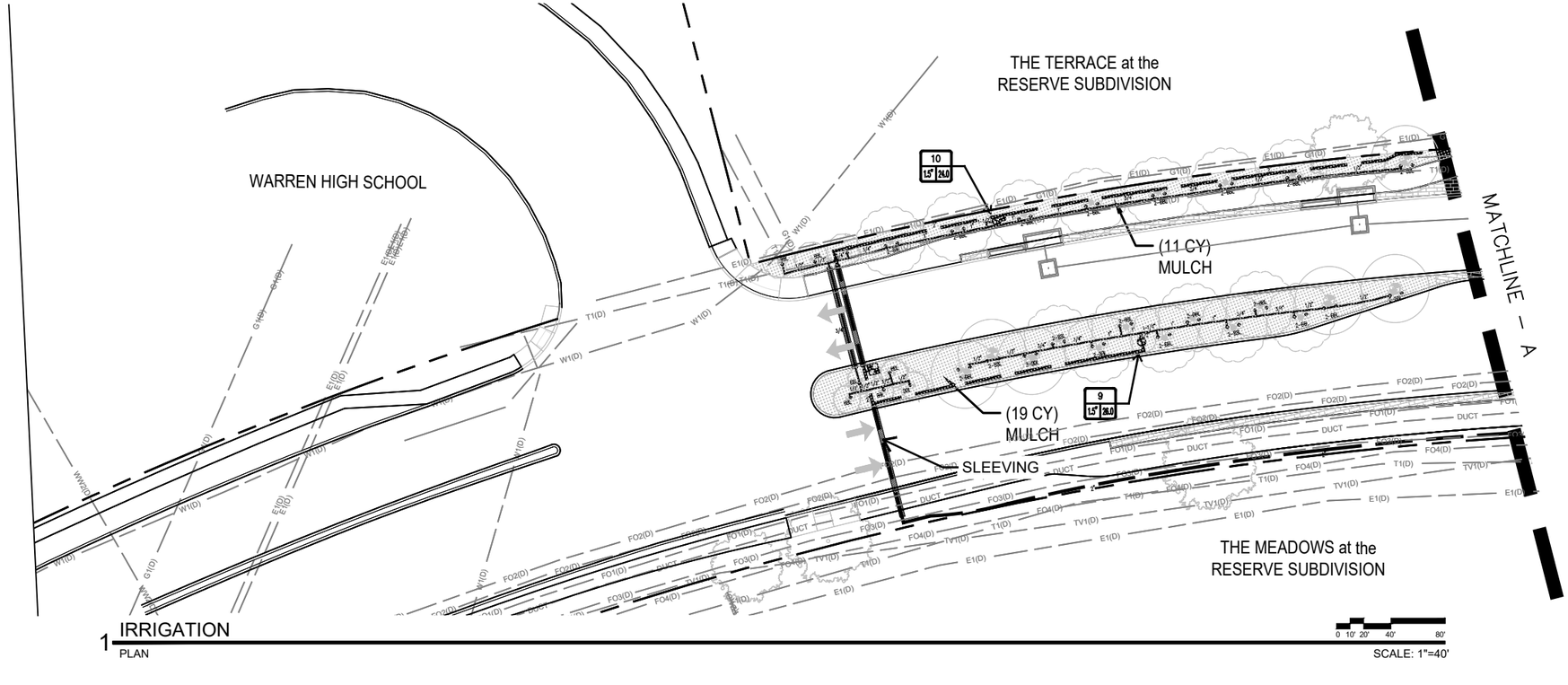
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

IRRIGATION NOTES

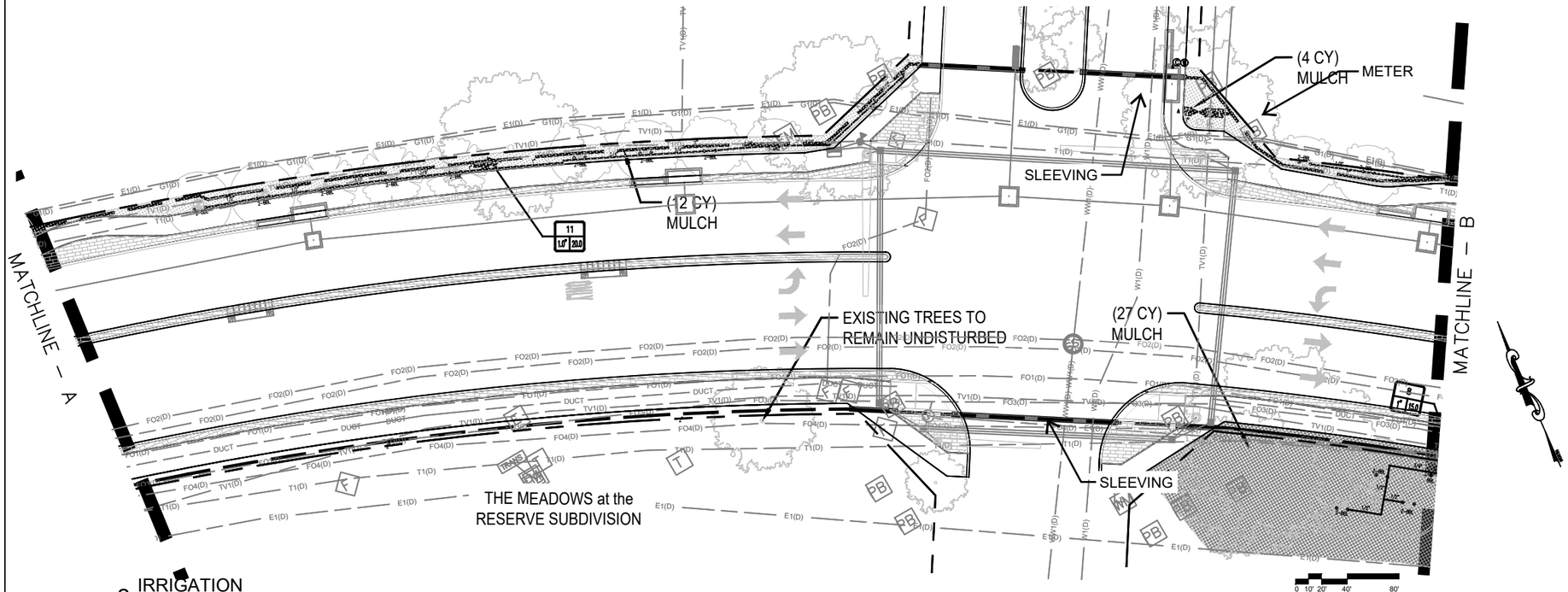
LI 1.0

100% SUBMITTAL	PROJECT NO.: 23-01579		DATE: 05/19/2025
DRWN. BY:	DSGN. BY:	CHKD. BY:	SHEET NO.270 OF 377



1 IRRIGATION PLAN

SCALE: 1"=40'

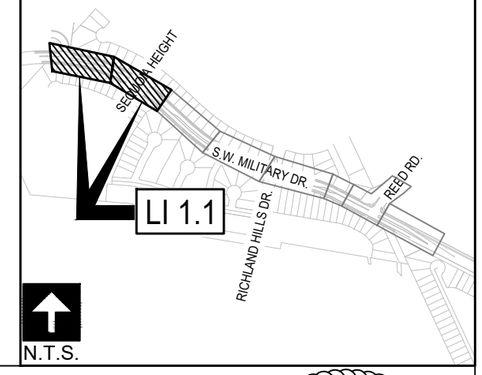


2 IRRIGATION PLAN

SCALE: 1"=40'

ESTIMATED SHEET QUANTITIES		
ITEM	UNIT	QTY
MULCH - 4" DEPTH	(CY)	
LARGE SHADE TREES 3" CALIPER	(EA)	
LARGE SHADE TREES 4" CALIPER	(EA)	
LARGE SHADE TREES 6" CALIPER	(EA)	
SMALL ORNAMENTAL TREES 2" CALIPER	(EA)	
TREE BUBBLERS	(EA)	80
IRRIGATION CONTROLLER - W/ ELECTRIC METER	(EA)	1
IRRIGATION WATER METER	(EA)	1

KEY MAP



MP STUDIO

LICENSED IRRIGATOR
JOSEPH A. FERRARA
LI0022076
STATE OF TEXAS

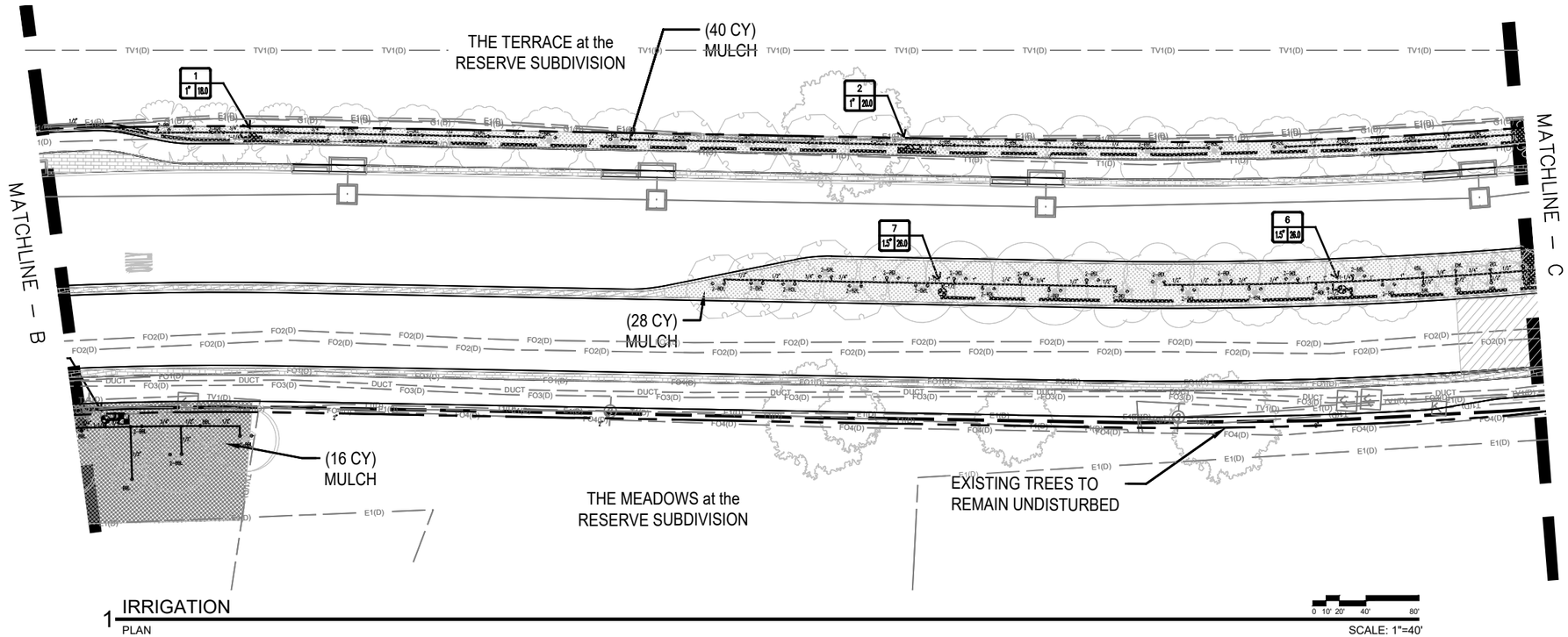
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

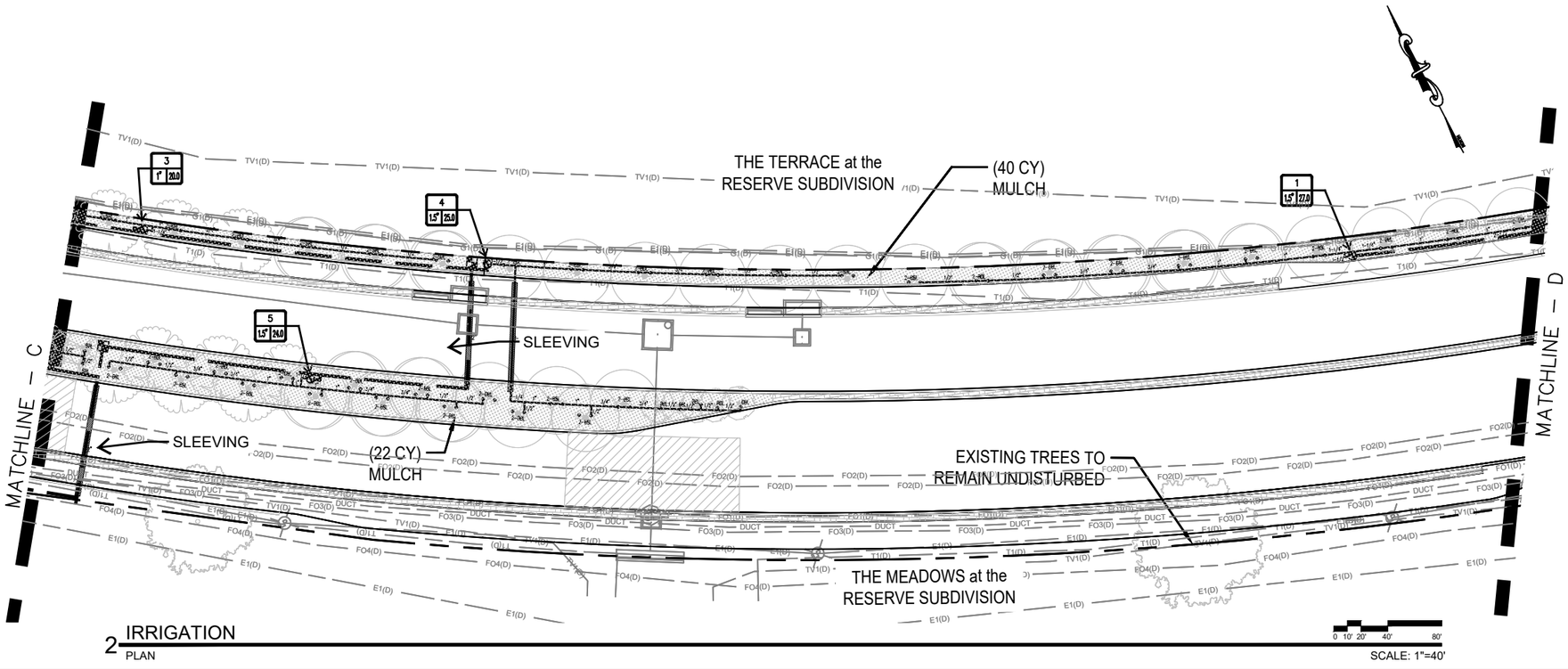
MILITARY DRIVE

IRRIGATION PLAN

LI 1.1

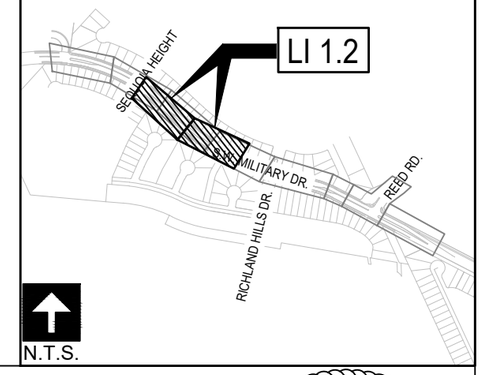
100% SUBMITTAL	PROJECT NO.: 23-01579		DATE: 05/19/2025
DRWN. BY:	DSGN. BY:	CHKD. BY:	SHEET NO. 271 OF 377





ESTIMATED SHEET QUANTITIES		
ITEM	UNIT	QTY
MULCH - 4" DEPTH	(CY)	
LARGE SHADE TREES 3" CALIPER	(EA)	
LARGE SHADE TREES 4" CALIPER	(EA)	
LARGE SHADE TREES 6" CALIPER	(EA)	
SMALL ORNAMENTAL TREES 2" CALIPER	(EA)	
TREE BUBBLERS	(EA)	184
IRRIGATION CONTROLLER - W/ ELECTRIC METER	(EA)	0
IRRIGATION WATER METER	(EA)	0

KEY MAP



MP STUDIO

LICENSED IRRIGATOR JOSEPH A. FERRO LI0022076 STATE OF TEXAS

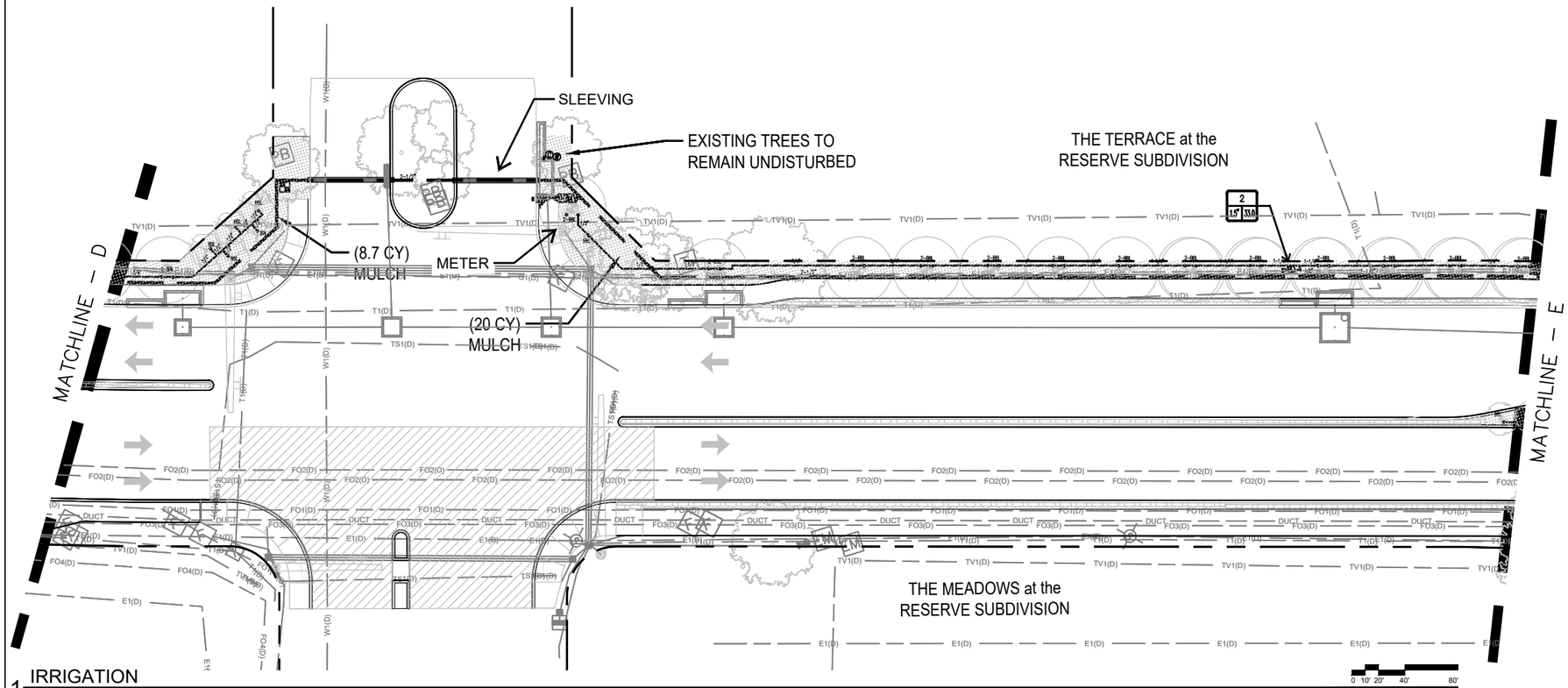
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

IRRIGATION PLAN

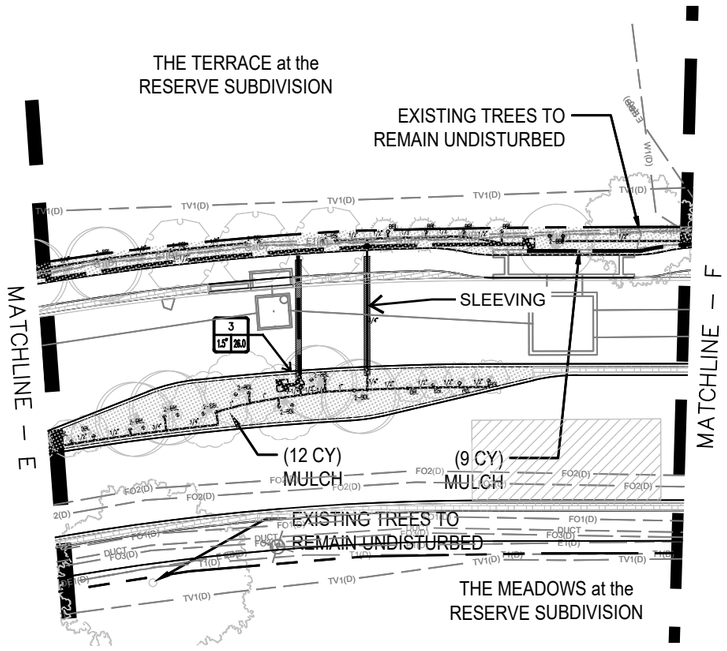
LI 1.2

100% SUBMITTAL	PROJECT NO.: 23-01579		DATE: 05/19/2025
DRWN. BY:	DSGN. BY:	CHKD. BY:	SHEET NO.272 OF 377



1 IRRIGATION PLAN

SCALE: 1"=40'

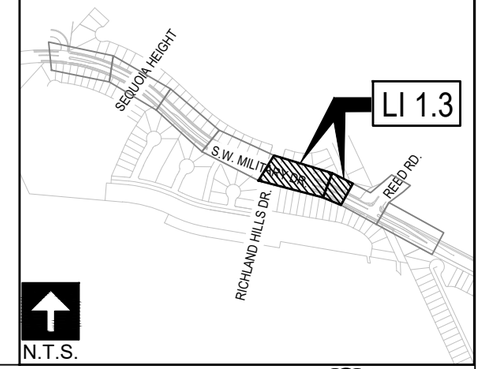


2 IRRIGATION PLAN

SCALE: 1"=40'

ESTIMATED SHEET QUANTITIES		
ITEM	UNIT	QTY
MULCH - 4" DEPTH	(CY)	
LARGE SHADE TREES 3" CALIPER	(EA)	
LARGE SHADE TREES 4" CALIPER	(EA)	
LARGE SHADE TREES 6" CALIPER	(EA)	
SMALL ORNAMENTAL TREES 2" CALIPER	(EA)	
TREE BUBBLERS	(EA)	68
IRRIGATION CONTROLLER - W/ ELECTRIC METER	(EA)	1
IRRIGATION WATER METER	(EA)	1

KEY MAP



MP STUDIO

LICENSED IRRIGATOR JOSEPH A. FERRA LI0022076 STATE OF TEXAS

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

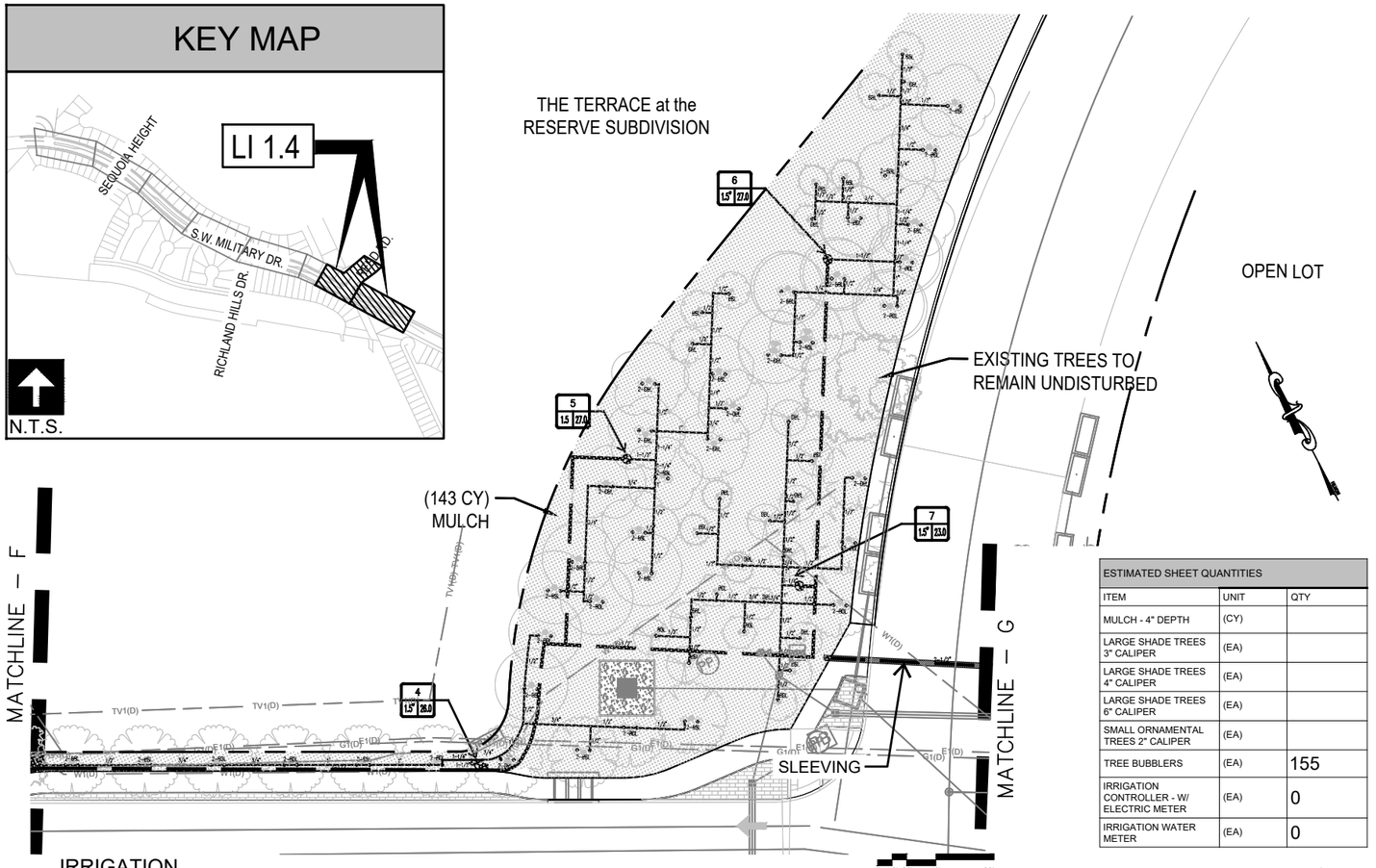
MILITARY DRIVE

IRRIGATION PLAN

LI 1.3

100% SUBMITTAL	PROJECT NO.: 23-01579		DATE: 05/19/2025
DRWN. BY:	DSGN. BY:	CHKD. BY:	SHEET NO.273 OF 377

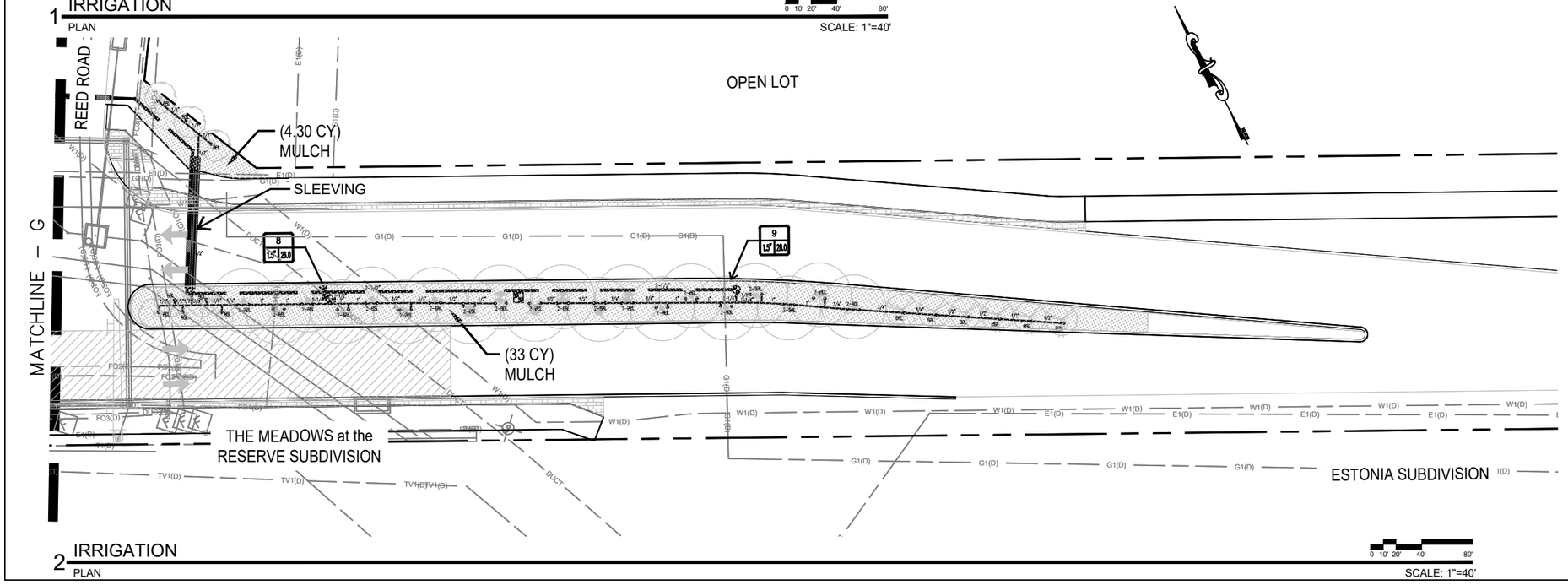
KEY MAP



1 IRRIGATION PLAN

SCALE: 1"=40'

ESTIMATED SHEET QUANTITIES		
ITEM	UNIT	QTY
MULCH - 4" DEPTH	(CY)	
LARGE SHADE TREES 3" CALIPER	(EA)	
LARGE SHADE TREES 4" CALIPER	(EA)	
LARGE SHADE TREES 6" CALIPER	(EA)	
SMALL ORNAMENTAL TREES 2" CALIPER	(EA)	
TREE BUBBLERS	(EA)	155
IRRIGATION CONTROLLER - W/ ELECTRIC METER	(EA)	0
IRRIGATION WATER METER	(EA)	0



2 IRRIGATION PLAN

SCALE: 1"=40'

PRESSURE CALCULATIONS - B @ Zone #9

DESIGN STATISTICS FOR CALCULATIONS	
TOTAL ZONE FLOW:	28.0 g.p.m
ELECTRIC VALVE SIZE:	1.5"
STATIC PRESSURE LESS 10% (STATIC @ 65 psi):	58.5 p.s.i.
ACCUMULATIVE LOSSES FROM CITY MAIN TO FURTHEST HEAD:	
SPRINKLER HEAD REQUIREMENT:	30.0 p.s.i.
ZONE PIPE/FITTING LOSS:	1.9 p.s.i.
1.5" ELECTRIC VALVE LOSS:	1.5 p.s.i.
ELEVATION NET LOSS: (+ - FT):	n/a
SYSTEM MAINLINE LOSS (2 1/2" SCH 40):	4.3 p.s.i.
BACKFLOW PREVENTOR LOSS (1"):	4.0 p.s.i.
WATER METER LOSS (1"):	4.6 p.s.i.
MASTER ELECTRIC VALVE LOSS (1.5"):	1.5 p.s.i.
TYPE K COPPER SERVICE LOSS:	
TOTAL NET LOSS:	17.8 p.s.i.
DESIGN PRESSURE:	47.8 p.s.i.

NOTE: ACTUAL STATIC WATER PRESSURE WAS UNAVAILABLE AT THE TIME OF IRRIGATION DESIGN. 65 PSI IS USED AS A STANDARD PRESSURE FOR DESIGN. PRESSURE MUST BE CONFIRMED 65 OR GREATER BY IRRIGATION CONTRACTOR BEFORE ANY INSTALLATION. PIPE HAS BEEN SIZE TO INSURE THAT VELOCITY DOES NOT EXCEED 5 FPS. DO NOT CHANGE PIPE SIZE IN THE FIELD WITHOUT CONSULTING SYSTEM DESIGNER.

WATERING SCHEDULE - SYSTEM B

PRECIPITATION RATE (IN/HR)	WATER DESIRED (IN/WK)	TIME/CYCLE (MIN)	NUMBER OF ZONES	TOTAL TIME MIN.	TOTAL TIME HRS
TREE BUBBLERS (3.87)	.80	12.0	9	108	1.80
		TOTAL SYSTEM HOURS OF OPERATION PER WEEK:			1.80

NOTE: A TYPICAL SCHEDULE WOULD ALLOW WATERING TO OCCUR TWO TIMES PER WEEK. TOTAL WATERING TIME WOULD BE DIVIDED BY THE NUMBER OF WATERING DAYS. THIS SCHEDULE IS DESIGNED FOR SUMMER WATER USAGE AND ESTABLISHMENT OF NEW PLANTING.

Statement of Conformance:
I, JOSEPH A. FERDIN, LICENSED IRRIGATOR #0022076, HEREBY CERTIFIES THAT THIS IRRIGATION DESIGN CONFORMS TO THE DESIGN AND INSTALLATION PARAMETERS OF THE IRRIGATION DESIGN AND EQUIPMENT STANDARDS SET OUT 35-510(J) AND 35-511(C) (6) OF THE CITY OF SAN ANTONIO UNIFIED DEVELOPMENT CODE.

Joseph A Ferdin TX LI # 22076

MP STUDIO

LICENSED IRRIGATOR JOSEPH A. FERDIN LI0022076 STATE OF TEXAS

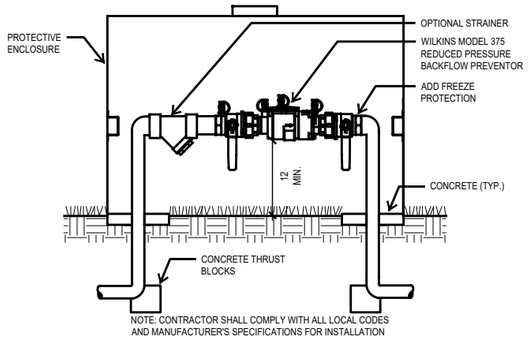
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

IRRIGATION PLAN

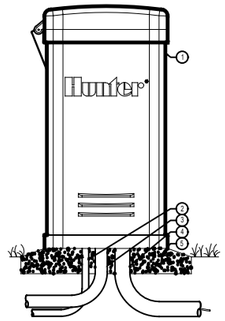
LI 1.4

100% SUBMITTAL	PROJECT NO.: 23-01579		DATE: 05/19/2025
DRWN. BY:	DSGN. BY:	CHKD. BY:	SHEET NO.274 OF 377



1 BACKFLOW DEVICE

SECTION NOT TO SCALE



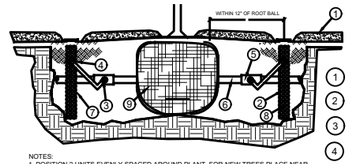
LEGEND:

1. IRRIGATION CONTROLLER (12C-800-PP) PER PLAN
2. ELECTRICAL SUPPLY CONDUIT
   CONNECT TO POWER SOURCE, J-BOX INSIDE CONTROLLER
3. GROUND WIRE CONDUIT
   GROUND PER ASIC GUIDELINES
4. IRRIGATION CONTROL WIRE IN CONDUIT
   SIZE AND TYPE PER LOCAL CODES
5. PEDESTAL BASE PER PLAN
   INSURE POSITIVE DRAINAGE AWAY FROM PEDESTAL

NOTE
CONTROLLER SHALL BE HARD-WIRED TO GROUNDED 110 VAC POWER SOURCE

4 HUNTER CONTROLLER

SECTION NOT TO SCALE

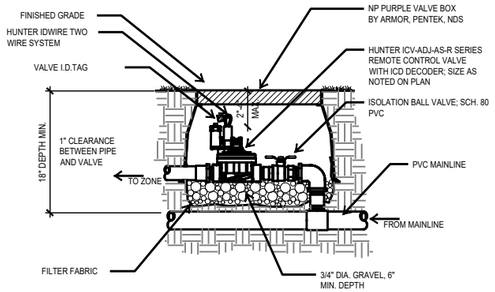


NOTES:
1. POSITION 2 UNITS EVENLY SPACED AROUND PLANT. FOR NEW TREES PLACE NEAR ROOT BALL. FOR EXISTING TREES PLACE HALF THE DISTANCE BETWEEN CANOPY EDGE AND TREE TRUNK.
2. INSTALL PRODUCT WITH TOP EVEN WITH GROUND SURFACE.
3. RZWS SERIES MODEL:
   RZWS-18-50-CV: 0.50 GPM, CHECK VALVE
4. WHEN INSTALLING IN EXTREMELY HARD OR CLAY SOILS, ADD 3/4" (1.9 CM) GRAVEL UNDER AND AROUND THE UNIT TO ALLOW FASTER WATER INFILTRATION AND ROOT PENETRATION.
5. ONCE RZWS HAS BEEN INSTALLED FILL THE BASKET WITH PEA GRAVEL BEFORE LOCKING LID.
6. OPTIONAL RWS-SOCK FOR USE IN SANDY SOILS.

1. FINISH GRADE/TOP OF MULCH
2. ROOT WATERING SYSTEM: HUNTER RZWS
3. SWING ASSEMBLY (INCLUDED)
4. 1/2" (1,3 CM) MALE NPT INLET (INCLUDED)
5. PVC SCH 40 TEE OR EL
6. PVC OR POLYETHYLENE LATERAL PIPE
7. OPTIONAL SOCK (RWS-SOCK) FOR SANDY SOILS
8. 4" (10,2 CM) WIDE X 36" (91,4 CM) LONG RIGID BASKET WEAVE CANISTER (INCLUDED)
9. PLANT ROOT BALL

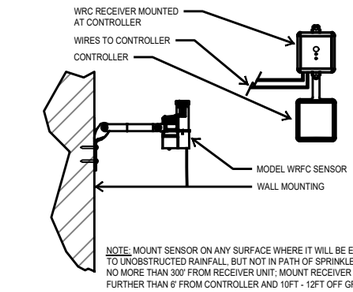
7 TREE BUBBLER

SECTION NOT TO SCALE



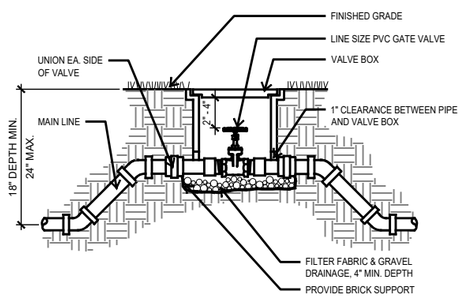
2 ZONE VALVE

SECTION NOT TO SCALE



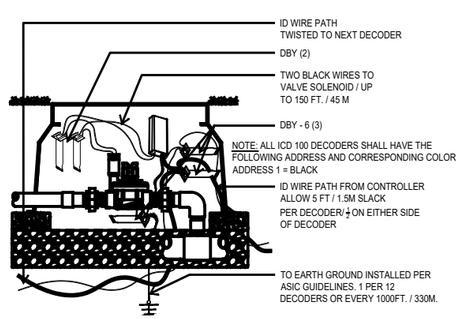
5 IRRIGATION WEATHER SENSOR

SECTION NOT TO SCALE



3 MANUAL ISOLATION VALVE

SECTION NOT TO SCALE



6 HUNTER ICD 100 DECODER

SECTION NOT TO SCALE

MP STUDIO

LICENSED IRRIGATOR JOSEPH A. FERRIS LI0022076 STATE OF TEXAS

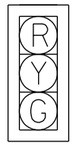
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

100% SUBMITTAL	PROJECT NO.: 23-01579		DATE: 05/19/2025
DRWN. BY: ____	DSGN. BY: ____	CHKD. BY:	SHEET NO.275 OF 377

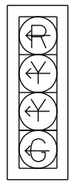
EXISTING TRAFFIC SIGNALS

1 WAY, 3 SECTION 12" VERTICAL



1, 2, 3, 4, 6, 7, 8, 9

1 WAY, 4 SECTION 12" VERTICAL



5

NOTE:

ALL SIGNALS HAVE YELLOW HOUSING AND BLACK BACK PLATES.

EXISTING PEDESTRIAN SIGNALS, SIGNS AND PUSH BUTTONS

W1, W2, W3, W4

PB1, PB2, PB3

PB4

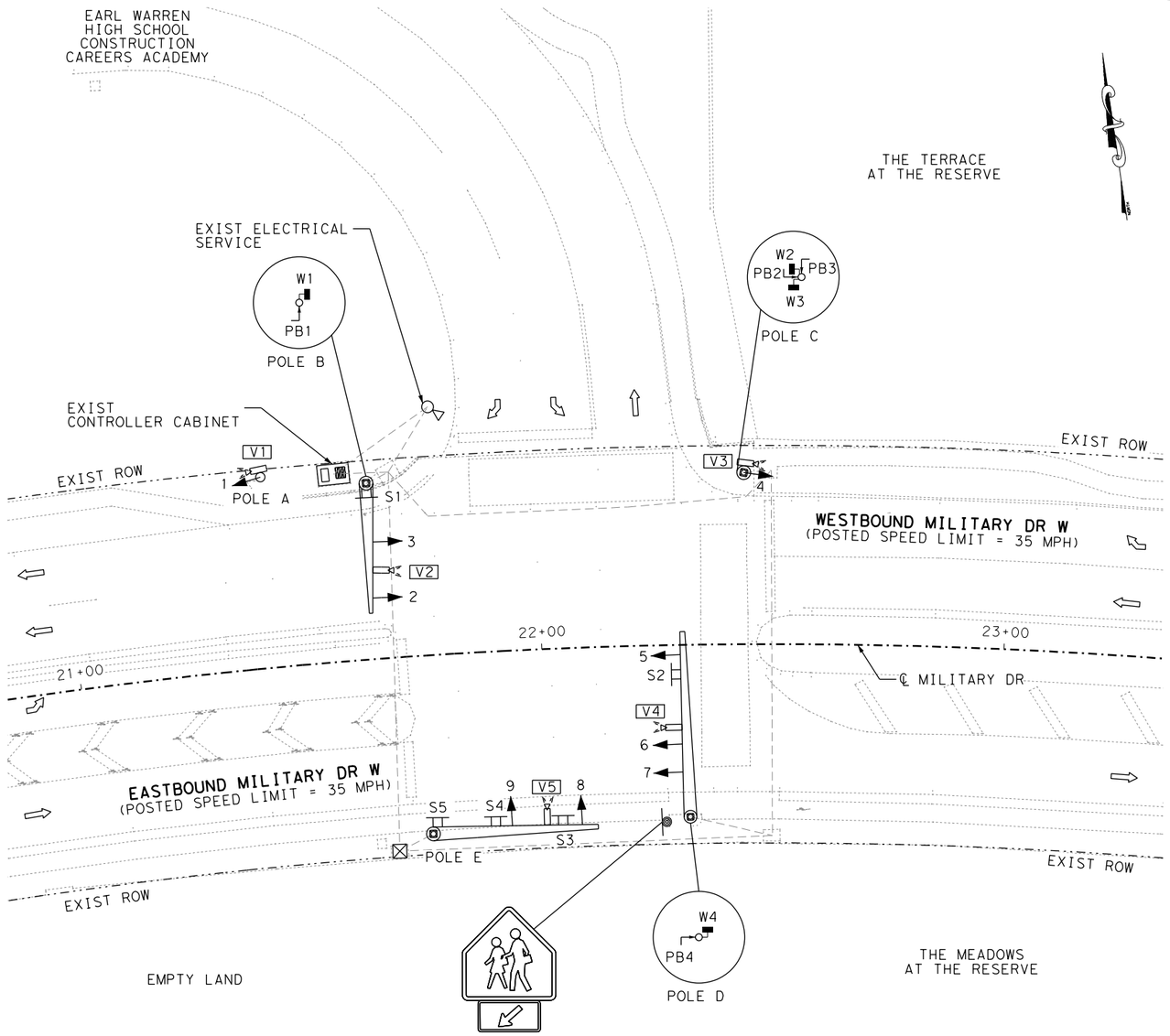
EXISTING SIGNS MOUNTED TO MAST ARMS

S1, S5

S2

S4

S3



LEGEND

- EXIST SIGNAL POLE/MAST ARM SET UP
- EXIST STEEL STRAIN POLE
- EXIST PEDESTRIAN POLE
- 1 — EXIST SIGNAL HEAD AND DESIGNATION
- S1 — EXIST OVERHEAD SIGN AND DESIGNATION
- EXIST CONTROLLER
- EXIST SIGNAL GROUND BOX
- EXIST ELECTRICAL SERVICE
- V1 — EXIST VIVDS CAMERA AND DESIGNATION
- R1 — EXIST RADAR PRESENCE DETECTION
- EXIST PREEMPTION DEVICE
- EXIST PED SIGNAL
- EXIST PUSH BUTTON
- EXIST GROUND MOUNTED SIGN
- EXIST ROW
- TRAFFIC FLOW

0 15′ 30′
SCALE: 1" = 30′

NOTE:

1. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHOULD LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR SHOULD BE FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

STATE OF TEXAS
XIDUO WANG
143018
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

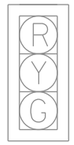
CONDITION DIAGRAM

WARREN HS

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CAG	DSGN. BY: CG	CHKD. BY: XW	SHEET NO. 276 OF 377

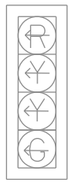
EXISTING TRAFFIC SIGNALS TO REMAIN

1 WAY, 3 SECTION 12" VERTICAL



1, 2, 3, 4, 6, 7, 8, 9

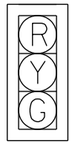
1 WAY, 4 SECTION 12" VERTICAL



5

PROPOSED TRAFFIC SIGNALS

1 WAY, 3 SECTION 12" VERTICAL



4

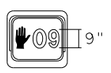
NOTE:

ALL SIGNALS HAVE YELLOW HOUSING AND RETROREFLECTIVE BACK PLATES.

PROPOSED ACCESSIBLE PEDESTRIAN SIGNALS, SIGNS, AND PUSH BUTTONS

R10-3eR
9 x 15
PB1, PB3

R10-3eL
9 x 15
PB2, PB4



LED COUNTDOWN PEDESTRIAN SIGNAL
W1, W2
W3, W4

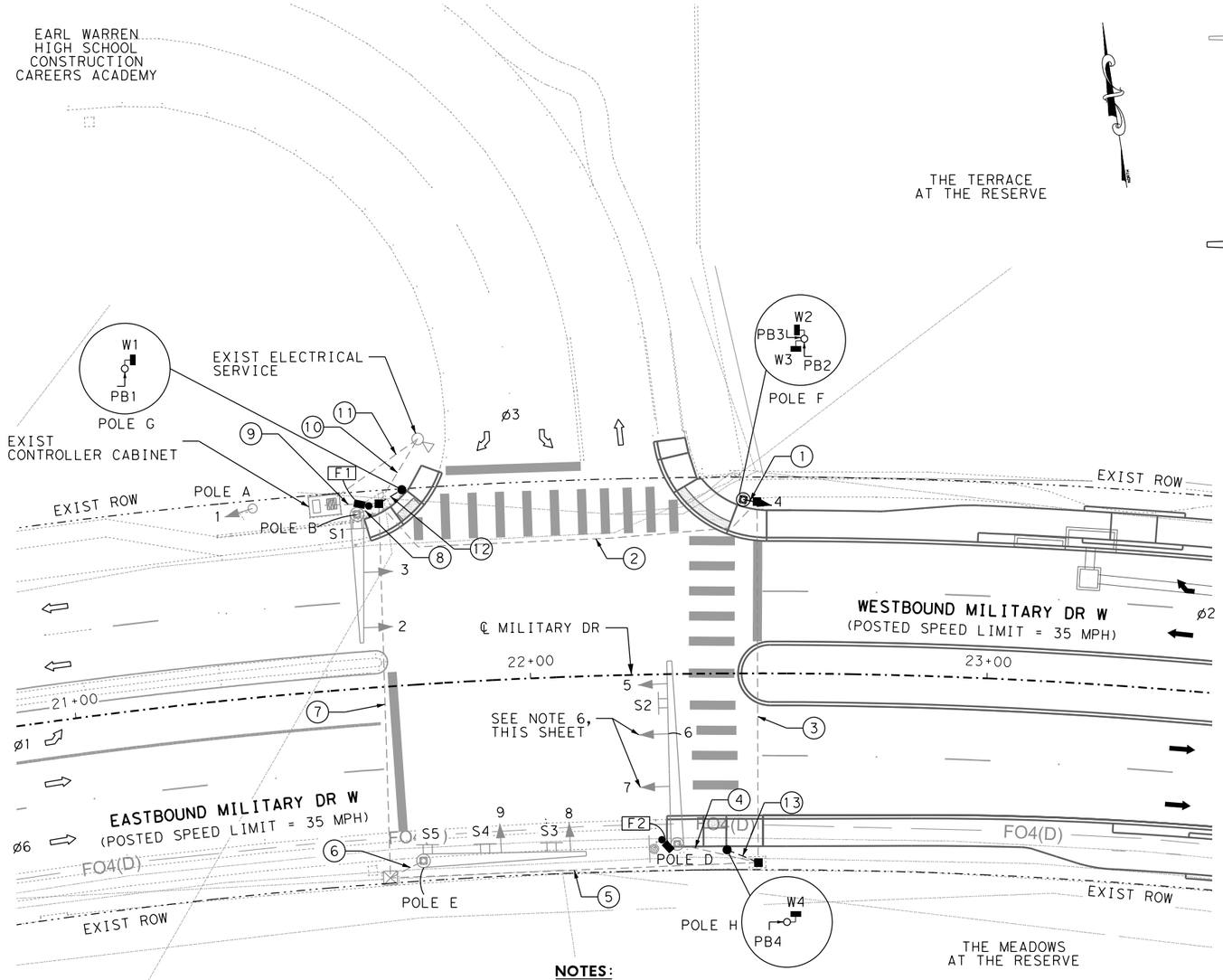
EXISTING SIGNS MOUNTED TO MAST ARMS TO REMAIN

S1, S5

S2

S4

S3



LEGEND

- EXIST SIGNAL POLE/MAST ARM SET UP
- EXIST SIGNAL POLE
- EXIST SIGNAL HEAD AND DESIGNATION
- EXIST SIGNAL CONDUIT
- EXIST MAST ARM MOUNTED SIGN AND DESIGNATION
- EXIST CONTROLLER, SLAB AND FOUNDATION
- EXIST SIGNAL GROUND BOX
- EXIST SERVICE METER
- EXIST ROW
- PROP SIGNAL POLE/MAST ARM SET UP
- PROP STRAIN POLE
- PROP SIGNAL HEAD AND DESIGNATION
- PROP PREEMPTION DEVICE
- PROP MAST ARM MOUNTED SIGN AND DESIGNATION
- PROP LUMINAIRE ARM
- PROP SIGNAL CONDUIT
- PROP CONDUIT BORE
- PROP PEDESTRIAN POLE
- PROP SIGNAL GROUND BOX TYPE D W/APRON (SEE NOTE 3, THIS SHEET)
- PROP PED SIGNAL
- PROP PUSH BUTTON
- PROP FISH EYE DETECTION SYSTEM
- EXIST TRAFFIC FLOW
- PROP TRAFFIC FLOW

0 15′ 30′
SCALE: 1" = 30′

NOTES:

1. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHOULD LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR SHOULD BE FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.
2. CONTRACTOR MUST LIMIT DOWNTIME AND INSTALL ALL CONDUIT AND CABLING BEFORE SWITCH OVER. ALL CABLE TERMINATIONS MUST BE DONE DURING OFF PEAK HOURS TO LIMIT DOWNTIME. CONTRACTOR TO PROVIDE OFF-DUTY POLICE OFFICER DURING SWITCH OVER.
3. ALL DIMENSIONS FOR SIGNS ARE IN INCHES.
4. ALL SALVAGABLE EQUIPMENT SHALL BE TAKEN TO COSA FACILITIES AT 6939 W LOOP 1604 N BLDG, SAN ANTONIO, TX 78254.
5. CONTACT COSA AT UTILITY.LOCATES@SANANTONIO.GOV TO LOCATE UNDERGROUND FACILITIES.
6. CONTRACTOR MUST RELOCATE EXISTING SIGNAL HEADS TO PROPOSED LOCATION AS SHOWN ON PLANS. EXISTING WIRING FOR SIGNAL HEADS RUNNING THROUGH THE SIGNAL POLE AND MAST ARM IS TO BE REMOVED AND REPLACED.
7. CONTRACTOR MUST REMOVE EXISTING VIVIDS FROM TRAFFIC SIGNAL POLES AND UPGRADE TO A FISH EYE DETECTION SYSTEM AS SHOWN ON PLANS.

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

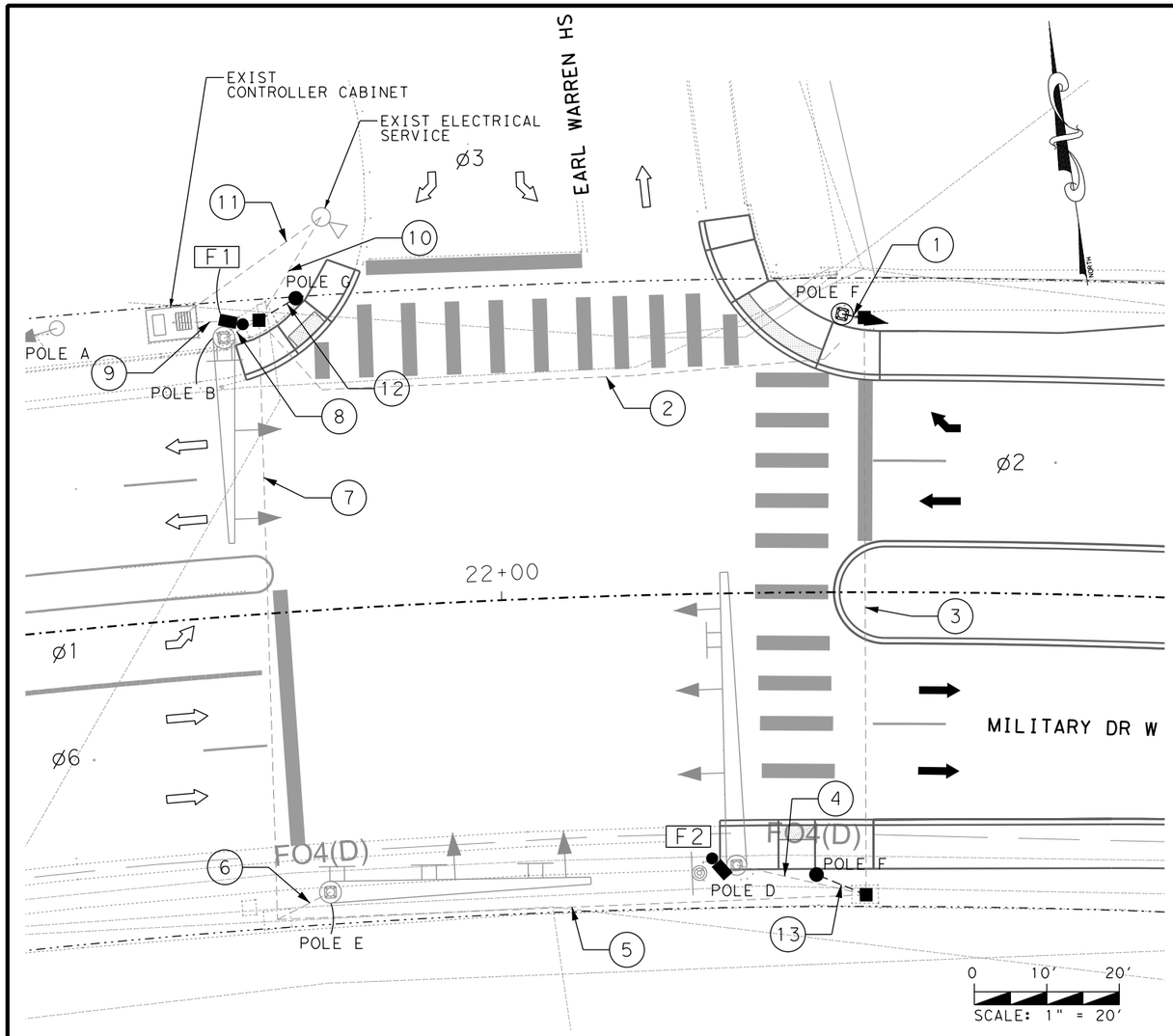
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
PROPOSED SIGNAL LAYOUT
WARREN HS

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CAC	DSGN. BY: CG	CHKD. BY: XW	SHEET NO. 277 OF 377

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D2201161TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL01.dgn
ci:\bms\pwe-useast-006\knerr.chris\dms71726\C_MD_S_LSL01.dgn
5:03:38 PM
5/19/2025

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D2201161TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL01.dgn



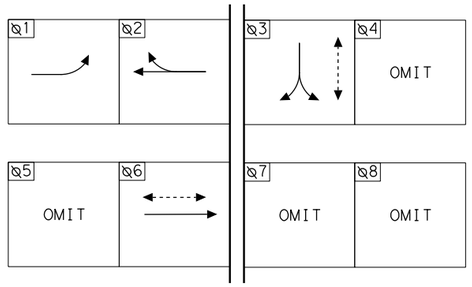
CONDUIT AND CONDUCTOR SCHEDULE

T = TRENCHED B = BORED E = EXISTING*	CONDUIT / SPAN NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13
	NUMBER OF CONDUITS	1	*	*	*	*	*	*	*	*	*	*	1	1
	CONDUIT SIZE IN INCHES	2	*	*	*	*	*	*	*	*	*	*	2	2
	CONDUIT / SPAN LENGTH (FT)	5	90	80	20	85	10	85	6	12	17	25	8	10
	RUN TYPE	T	E	E	E	E	E	E	E	E	E	E	T	T
AWG	CIRCUIT	NUMBER OF CONDUCTORS												
BARE BOND GROUND	#8 BARE	1											1	1
9-CONDUCTOR #14 CABLE (SIGNAL HEAD)	⌀1 PH - POLE F	**	**							**				
	⌀6 PH - POLE D				1	1		1		1				
9-CONDUCTOR #14 CABLE (PEDESTRIAN HEAD)	⌀1 PH - POLE F	**	**							**				
	⌀6 PH - POLE G									1			1	
	⌀1 PH - POLE H					1		1		1				1
3-CONDUCTOR #16 CABLE (PUSH BUTTON)	⌀1 PB - POLE F	2	2							2				
	⌀6 PB - POLE G									1			1	
	⌀1 PB - POLE H					1		1		1				1
ETHERNET CAT-5e CABLE	FISH EYE DETECTION SYSTEM - POLE B								1	1				
	FISH EYE DETECTION SYSTEM - POLE D				1	1		1		1				

* CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDUIT AND CONDUCTORS

** FOR POLE F, PULL BACK CONDUCTORS FROM EXIST POLE C TO NEAREST GROUND BOX AND RUN THROUGH NEW CONDUIT TO PROP POLE F

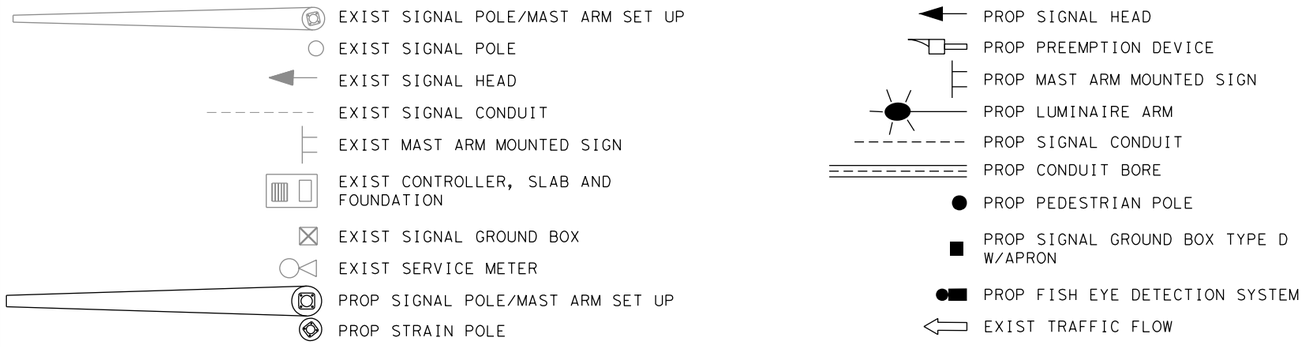
PHASING DIAGRAM



VEHICLE DETECTORS

DETECTOR ID	DESCRIPTION
F1	PROPOSED FISH EYE DETECTION SYSTEM
F2	PROPOSED FISH EYE DETECTION SYSTEM

LEGEND



STATE OF TEXAS
XIDUO WANG
143018
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
CONDUIT AND CONDUCTOR SCHEDULE
WARREN HS

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: CAG	DSGN. BY: CG	CHKD. BY: XW	SHEET NO. 278 OF 377

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D2201161TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL01A.dgn
c:\bms\pwe-useast-006\knerr.chris\dms71726\C_MD_S_LSL01A.dgn
2:04:03 PM
5/19/2025

ELECTRICAL SERVICE DATA

ELEC SERVICE POLE NO	ELECTRICAL POLE DESCRIPTION (SEE ED(5)-14)	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO/SIZE	SAFETY SWITCH AMPS	MAIN CKT BKR POLE/AMPS	TWO-POLE CONTRACTOR AMPS	PANELBOARD/ LOAD CENTER AMP RATING	CIRCUIT NO	BRANCH CKT BKR POLE/AMPS	CKT AMP LOAD	SERVICE KVA LOAD
EXISTING ELECTRICAL SERVICE TO REMAIN											

POLE AND EQUIPMENT DESCRIPTION WITH ATTATCHMENTS

POLE	DESCRIPTION
A	EXIST SIGNAL EQUIPMENT AND POLE TO REMAIN
B	EXIST SIGNAL EQUIPMENT AND POLE TO REMAIN, REMOVE (1) PED PUSH BUTTON, INSTALL (1) FISH EYE DETECTION SYSTEM
C	EXIST SIGNAL EQUIPMENT AND POLE TO BE REMOVED
D	EXIST SIGNAL EQUIPMENT AND POLE TO REMAIN, REMOVE (1) PED PUSH BUTTON, SHIFT AND ADJUST (2) SIGNAL HEADS 6 AND 7
E	EXIST SIGNAL EQUIPMENT AND POLE TO REMAIN
F	INSTALL 30' HIGH STRAIN POLE ON 13.2' DEEP 36-A FND WITH (2) LED COUNTDOWN PED SIGNAL HEADS AND (2) AUDIBLE PED PUSH BUTTON WITH R10-3eR AND R10-3eL SIGNS
G	INSTALL 10' HIGH PEDESTAL POLE ON A 5.7' DEEP 24-A FND WITH (1) LED COUNTDOWN PED SIGNAL HEADS, (1) AUDIBLE PED PUSH BUTTON WITH R10-3eR SIGN
H	INSTALL 10' HIGH PEDESTAL POLE ON A 5.7' DEEP 24-A FND WITH (1) LED COUNTDOWN PED SIGNAL HEADS, (1) AUDIBLE PED PUSH BUTTON WITH R10-3eL SIGN
	EXISTING ELECTRICAL SERVICE TO REMAIN.
	EXISTING CABINET W/ EXISTING SIGNAL CONTROLLER, INSTALL BATTERY BACK UP SYSTEM

ESTIMATE OF QUANTITIES

ITEM	DESCTIPTION	UNITS	ESTIMATED QUANTITY
308.1	DRILLED SHAFTS (36")	LF	13
618.1	CONDUIT (2 INCH/PVC SCHEDULE 40)	LF	23
620.2	ELECTRICAL CONDUCTORS (NO.8) (BARE)	LF	23
624.8	GROUND BOXES TYPE D (162922) WITH APRON	EA	3
624.XX	REMOVING GROUND BOXES	EA	3
633.1	BATTERY BACKUP SYSTEM	EA	1
680.1	INSTALLATION OF HIGHWAY TRAFFIC SIGNALS (ISOLATED)	EA	1
*	SIGN, PEDESTRIAN PUSHBUTTON (SYMBOL TYPE) (9"X15") (R10-3e) (R)	EA	2
*	SIGN, PEDESTRIAN PUSHBUTTON (SYMBOL TYPE) (9"X15") (R10-3e) (L)	EA	2
680.XX	REMOVING TRAFFIC SIGNALS	EA	1
682.1	INSTALL VEHICLE SIGNAL SECTION WITH BACK PLATE (12 INCH)(3 SECTION)	EA	1
683.1	LED COUNTDWON PEDESTRIAN MODULE	EA	4
684.1	TRAFFIC SIGNAL CABLES (TYPE A) (14 AWG) (CONDUCTOR NO. 9)	LF	579
684.1	TRAFFIC SIGNAL CABLES (TYPE A) (16 AWG) (CONDUCTOR NO. 3)	LF	561
686.1	INSTALL TRAFFIC SIGNAL POLE ASSEMBLY (STEEL) (30' STRAIN POLE)	EA	1
687.1	PEDESTAL POLE ASSEMBLY	EA	3
**	DRILLED SHAFTS (24")	LF	18
688.3	AUDIBLE PEDESTRIAN SIGNAL UNITYS (TYPE)	EA	4
688.XX	PEDESTRIAN DETECTOR CONTROLLER UNIT	EA	1
699.1	FEDS PROCESSOR UNIT	EA	1
699.2	FEDS FISH EYE CAMERA ASSEMBLY	EA	2
699.4	LIFETIME FEDS DATA COLLECTION AND REPORTING	EA	1
699.6	FEDS COMMUNICATION CABLE (ETHERNET-CAT5E)	LF	340

* SUBSIDIARY TO ITEM 680.1 INSTALLATION OF HIGHWAY TRAFFIC SIGNALS (ISOLATED)

NOTE: NOT A COMPLETE TRAFFIC SIGNAL INSTALL OR REMOVAL

STATE OF TEXAS
XIDUO WANG
143018
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

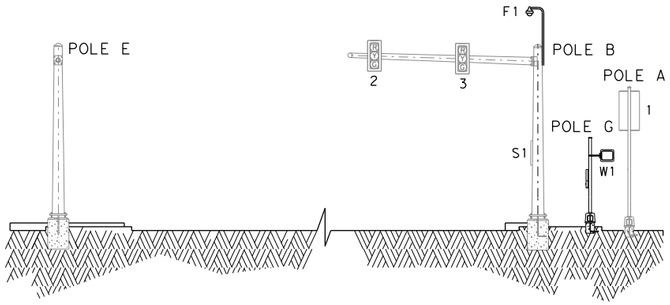
consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

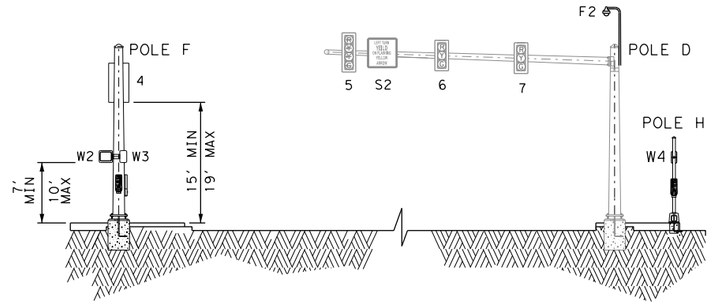
MILITARY DRIVE
ESTIMATE OF QUANTITIES AND EQUIPMENT DESCRIPTIONS
WARREN HS

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CAC	DSGN. BY: CG	CHKD. BY: XW	SHEET NO. 279 OF 377

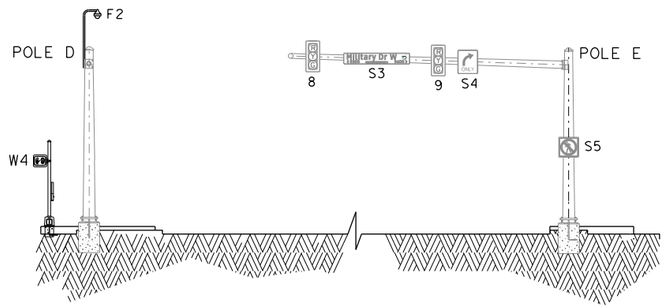
pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D220116TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL01B.dgn
ct:\bms\pwe-useast-006\knerr.chris\dms71726\C_MD_S_LSL01B.dgn
5:16:36 AM
5/19/2025



LOOKING WEST ON MILITARY DR
AT EARL WARREN HIGH SCHOOL



LOOKING EAST ON MILITARY DR
AT EARL WARREN HIGH SCHOOL



LOOKING SOUTH ON MILITARY DR
AT EARL WARREN HIGH SCHOOL

SCALE: NTS

STATE OF TEXAS
XIDUO WANG
143018
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

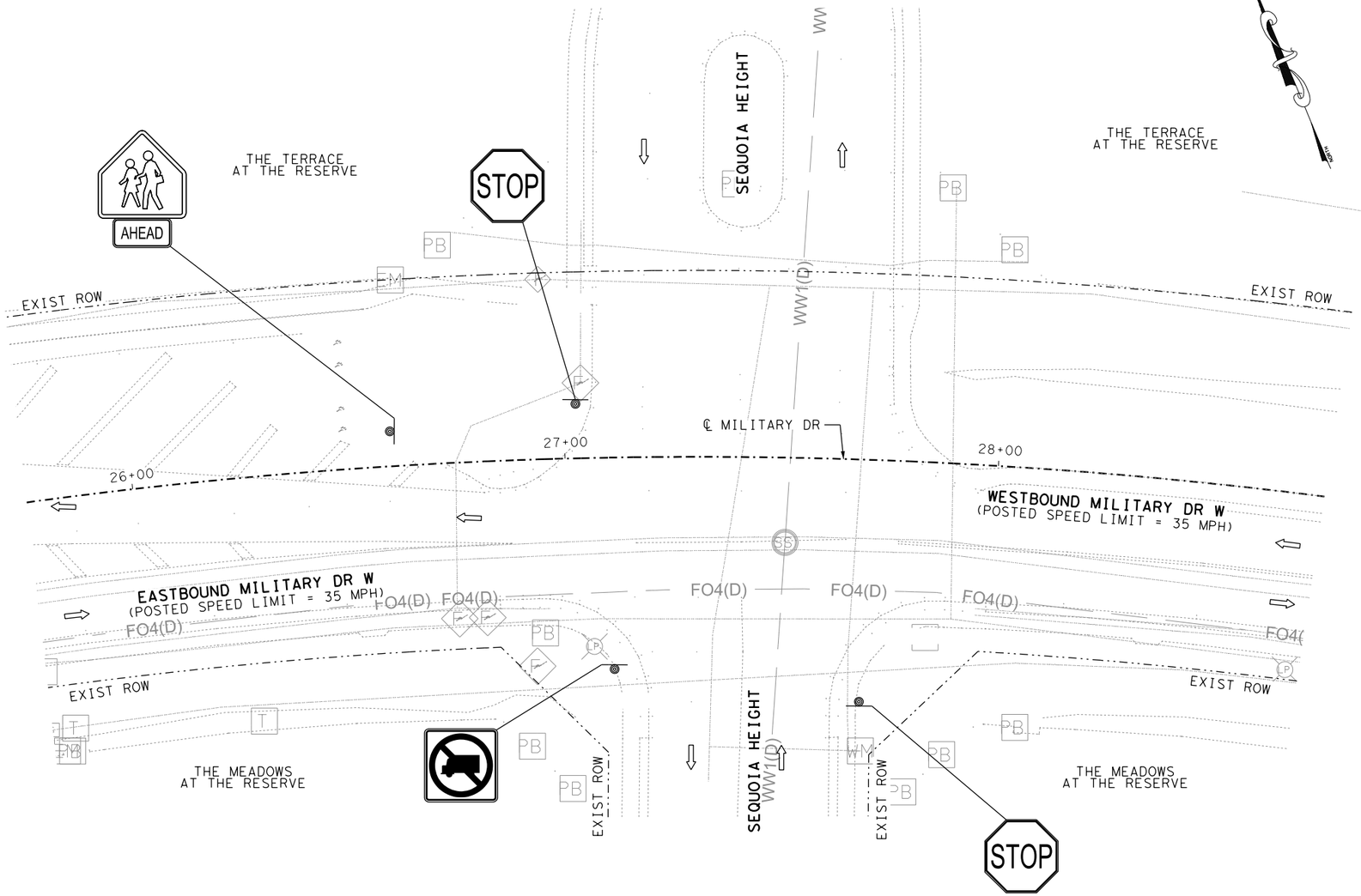
ELEVATIONS

WARREN HS

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: CAC	DSGN. BY: CG	CHKD. BY: XW
		SHEET NO. 280 OF 377

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D220116TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL01C.dgn
ct:\bms\pwe-useast-006\knerr.chris\dms71726\C_MD_S_LSL01C.dgn
5:15:13 PM
5/19/2025

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D220116TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL01C.dgn



LEGEND

- EXIST SIGNAL POLE/MAST ARM SET UP
- EXIST STEEL STRAIN POLE
- EXIST PEDESTRIAN POLE
- 1 — EXIST SIGNAL HEAD AND DESIGNATION
- S1 — EXIST OVERHEAD SIGN AND DESIGNATION
- EXIST CONTROLLER
- EXIST SIGNAL GROUND BOX
- EXIST ELECTRICAL SERVICE
- V1 — EXIST VIVDS CAMERA AND DESIGNATION
- R1 — EXIST RADAR PRESENCE DETECTION
- EXIST PREEMPTION DEVICE
- EXIST PED SIGNAL
- EXIST PUSH BUTTON
- EXIST GROUND MOUNTED SIGN
- EXIST ROW
- TRAFFIC FLOW

NOTE:

THIS SHEET TO BE USED ONLY IF ADD ALTERNATE BID 1 OPTION IS SELECTED.

0 15′ 30′
SCALE: 1" = 30′

NOTE:

1. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHOULD LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR SHOULD BE FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

STATE OF TEXAS
XIDUO WANG
143018
LICENSED PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

CONDITION DIAGRAM

SEQUOIA HEIGHT

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CAG	DSGN. BY: CG	CHKD. BY: XW	SHEET NO.28IA OF 377

c:\dms\pwe-useast-006\knerr.chris\dms71726\C_MD_S_LCL04.dgn
9:05:40 AM
5/19/2025

5/19/2025 9:05:40 AM
c:\dms\pwe-useast-006\knerr.chris\dms71726\C_MD_S_LCL04.dgn

PROPOSED TRAFFIC SIGNALS

1 WAY, 1 SECTION
12" VERTICAL

(Y) (FY)

1, 2, 3, 6, 7, 8

1 WAY, 1 SECTION
12" VERTICAL

(R) (FR)

4, 5, 9, 10

NOTE:

ALL SIGNALS HAVE YELLOW HOUSING AND RETROREFLECTIVE BACK PLATES.

PROPOSED SIGNS MOUNTED TO MAST ARMS

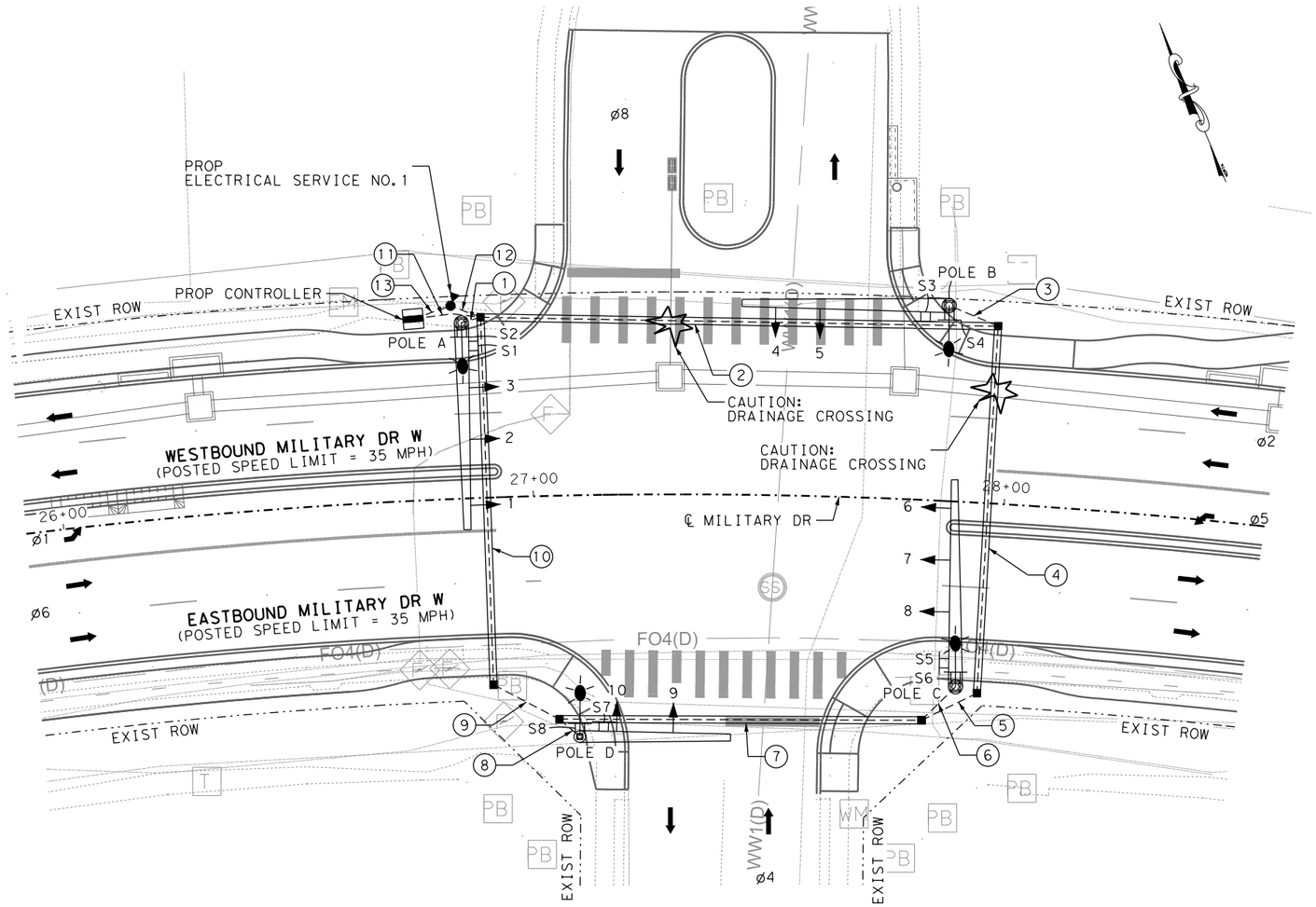
R9-3
18"X18"
S2, S4, S6, S8

ILSN
96"X22"
S1

ILSN
96"X22"
S5

ILSN
72"X22"
S3

ILSN
72"X22"
S7



LEGEND

- EXIST SIGNAL POLE/MAST ARM SET UP
- EXIST SIGNAL POLE
- EXIST SIGNAL HEAD AND DESIGNATION
- EXIST SIGNAL CONDUIT
- SX EXIST MAST ARM MOUNTED SIGN AND DESIGNATION
- EXIST CONTROLLER, SLAB AND FOUNDATION
- EXIST SIGNAL GROUND BOX
- EXIST SERVICE METER
- EXIST ROW
- PROP SIGNAL POLE/MAST ARM SET UP
- PROP STRAIN POLE
- PROP SIGNAL HEAD AND DESIGNATION
- PROP PREEMPTION DEVICE
- SX PROP MAST ARM MOUNTED SIGN AND DESIGNATION
- PROP LUMINAIRE ARM
- PROP SIGNAL CONDUIT
- PROP CONDUIT BORE
- PROP PEDESTRIAN POLE
- PROP SIGNAL GROUND BOX TYPE D W/APRON (SEE NOTE 3, THIS SHEET)
- PROP PED SIGNAL
- PROP PUSH BUTTON
- PROP FISH EYE DETECTION SYSTEM
- EXIST TRAFFIC FLOW
- PROP TRAFFIC FLOW

NOTES:

1. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHOULD LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR SHOULD BE FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.
2. ALL DIMENSIONS FOR SIGNS ARE IN INCHES.
3. ALL SALVAGABLE EQUIPMENT SHALL BE TAKEN TO COSA FACILITIES AT 6939 W LOOP 1604 N BLDG, SAN ANTONIO, TX 78254.
4. CONTACT COSA AT UTILITY.LOCATES@SANANTONIO.GOV TO LOCATE UNDERGROUND FACILITIES.

NOTE:

THIS SHEET TO BE USED ONLY IF ADD ALTERNATE BID 1 OPTION IS SELECTED.

0 15' 30'
SCALE: 1" = 30'

STATE OF TEXAS
XIDUO WANG
143018
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

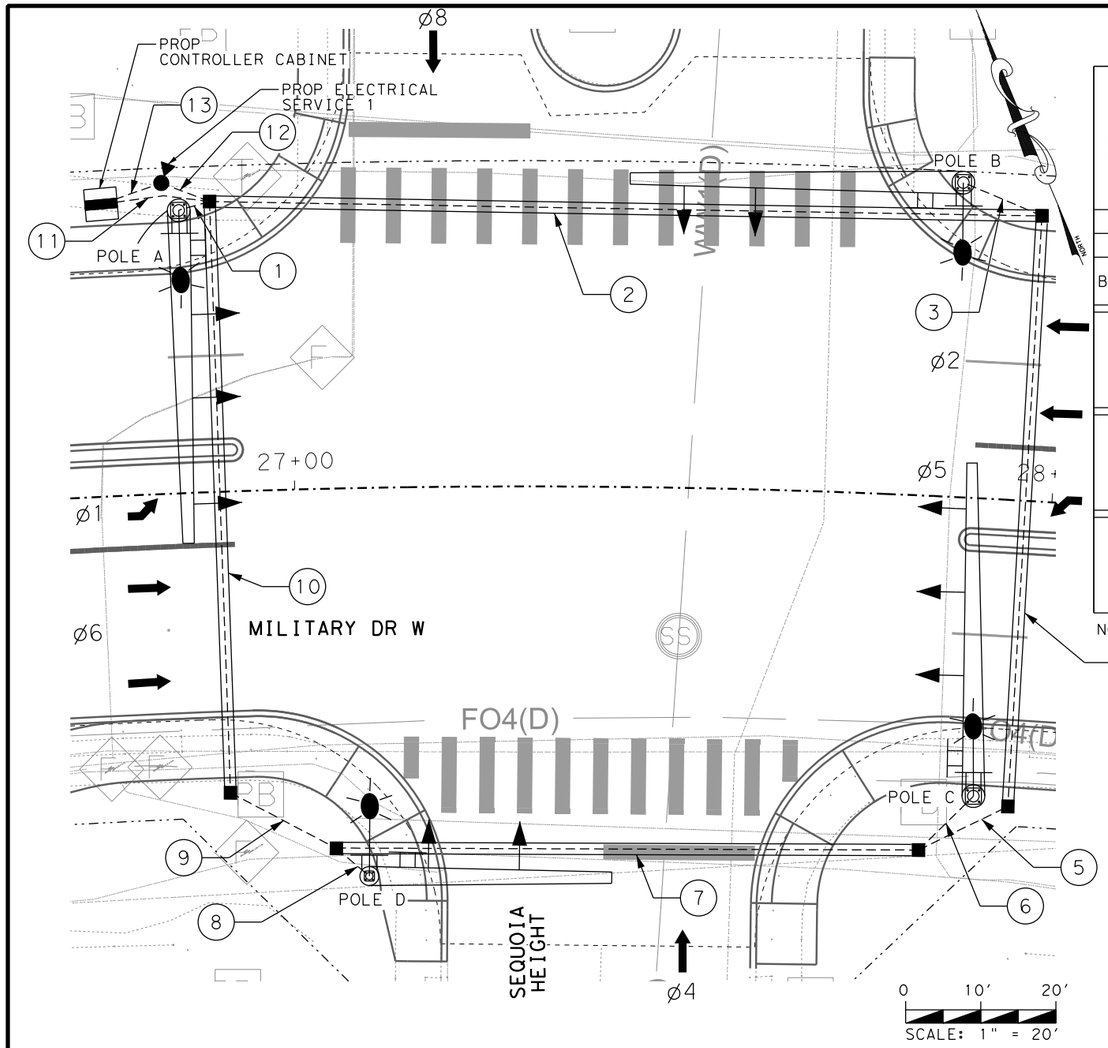
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
PROPOSED SIGNAL LAYOUT
SEQUOIA HEIGHT

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CAC	DSGN. BY: CG	CHKD. BY: XW	SHEET NO 282A OF 377

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D2201116TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL04.dgn
c:\dms\pwe-useast-006\knerr.chris\dms71726\C_MD_S_LSL04.dgn
5:06:28 PM
5/19/2025

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D2201116TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL04.dgn



CONDUIT AND CONDUCTOR SCHEDULE

T = TRENCHED B = BORED E = EXISTING	CONDUIT / SPAN RUN NUMBER	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	12	13
	NUMBER OF CONDUITS	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	2	1	2	1	1
	CONDUIT SIZE IN INCHES	3	2	3	2	3	2	3	2	2	2	3	2	3	2	3	2	3	2	3	2	3	3	2
	CONDUIT / SPAN LENGTH (FT)	5	5	##	##	12	12	80	80	15	15	10	10	77	77	6	6	16	16	80	80	15	10	10
	RUN TYPE	T	T	B	B	T	T	B	B	T	T	T	T	B	B	T	T	T	T	B	B	T	T	T
AWG	CIRCUIT	NUMBER OF CONDUCTORS																						
#6 THHN / THWN	120 POWER HOT & COMMON																							1
BARE BOND GROUND	#6 BARE		1		1		1		1		1		1		1		1		1		1		1	1
	#8 BARE	1		1		1		2		2		1		1		1		1		2		2		
9-CONDUCTOR #14 CABLE (SIGNAL HEADS)	ø6 & ø1 VH - POLE A	1																				1		
	ø8 & ø3 VH - POLE B			1		1																1		
	ø2 & ø5 VH - POLE C											1		1				1		1		1		
	ø4 & ø7 VH - POLE D															1		1		1		1		
4-CONDUCTOR #14 CABLE (ILSN)	ILSN - POLE A		1																				1	
	ILSN - POLE B				1		1																1	
	ILSN - POLE C											1		1					1		1		1	
	ILSN - POLE D																1		1		1		1	
3-CONDUCTOR #12 CABLE (LUMINAIRE)	LUMINAIRE - POLE A		2																				2	
	LUMINAIRE - POLE B				2		2																2	
	LUMINAIRE - POLE C											2		2					2		2		2	
	LUMINAIRE - POLE D																2		2		2		2	

NOTE: PROPOSED LUMINAIRE AND ILSN CABLES WILL BE RAN IN CONDUIT SEPARATE FROM SIGNAL AND DETECTION CABLE

LEGEND

- EXIST SIGNAL POLE/MAST ARM SET UP
- EXIST SIGNAL POLE
- EXIST SIGNAL HEAD
- EXIST SIGNAL CONDUIT
- EXIST MAST ARM MOUNTED SIGN
- EXIST CONTROLLER, SLAB AND FOUNDATION
- EXIST SIGNAL GROUND BOX
- EXIST SERVICE METER
- PROP SIGNAL POLE/MAST ARM SET UP
- PROP STRAIN POLE
- PROP SIGNAL HEAD
- PROP PREEMPTION DEVICE
- PROP MAST ARM MOUNTED SIGN
- PROP LUMINAIRE ARM
- PROP SIGNAL CONDUIT
- PROP CONDUIT BORE
- PROP PEDESTRIAN POLE
- PROP SIGNAL GROUND BOX TYPE D W/APRON
- PROP FISH EYE DETECTION SYSTEM
- EXIST TRAFFIC FLOW
- PROP TRAFFIC FLOW

NOTES

THIS SHEET TO BE USED ONLY IF ADD ALTERNATE BID 1 OPTION IS SELECTED.

STATE OF TEXAS
XIDUO WANG
143018
LICENSED PROFESSIONAL ENGINEER

5/19/2025

consor F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
CONDUIT AND CONDUCTOR SCHEDULE
SEQUOIA HEIGHT

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: CAC	DSGN. BY: CG	CHKD. BY: XW	SHEET NO.283A OF 377

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D220116TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL04A.dgn
c:\dms\pwe-useast-006\knerr_chris\dms71726\C_MD_S_LSL04A.dgn
5:07:18 PM
5/19/2025

ELECTRICAL SERVICE DATA

ELEC SERVICE POLE NO	ELECTRICAL POLE DESCRIPTION (SEE ED(5)-14)	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO/SIZE	SAFETY SWITCH AMPS	MAIN CKT BKR POLE/AMPS	TWO-POLE CONTACTOR AMPS	PANELBOARD/ LOAD CENTER AMP RATING	CIRCUIT NO	BRANCH CKT BKR POLE/AMPS	CKT AMP LOAD	SERVICE KVA LOAD
1	ELC SRV TY D 120/240 060 (NS)SS(E)PS(U)	1 1/4"	3/#6	N/A	2P/60	30	100	A - TRF SIG	1P/50	40.0	7.0
								B - ILSN	2P/20	3.0	
								C- LUM	2P/20	6.0	

ESTIMATE OF QUANTITIES

ITEM	DESCTIPTION	UNITS	ESTIMATED QUANTITY
308.1	DRILLED SHAFTS (30")	LF	11
308.1	DRILLED SHAFTS (36")	LF	39
615.1	TRAFFIC SIGNAL CONTROLLER ASSEMBLY (TYPE 332 CABINET)	EA	1
618.1	CONDUIT (2 INCH/PVC SCH 40)	LF	104
618.2	CONDUIT (3 INCH/PVC SCH 40)	LF	89
618.XX	CONDUIT (2 INCH/PVC SCH 80) (BORE)	LF	347
618.XX	CONDUIT (3 INCH/PVC SCH 80) (BORE)	LF	427
620.1	ELECTRICAL CONDUCTORS (NO. 6) (BARE)	LF	431
620.2	ELECTRICAL CONDUCTORS (NO. 8) (BARE)	LF	766
620.3	ELECTRICAL CONDUCTORS (NO. 6) (INSULATED)	LF	10
624.8	GROUND BOXES TYPE D (162922) WITH APRON	EA	6
628.1	ELECTRICAL SERVICE (PER INSTALLATION)	EA	1
633.1	BATTERY BACKUP SYSTEM	EA	1
655.1	TYPE 332 CONTROLLER FOUNDATION	EA	1
680.1	INSTALLATION OF HIGHWAY TRAFFIC SIGNALS (ISOLATED)	EA	1
*	ROD, 5/8" X 10' COPPER GROUND (CONTROLLER ONLY)	EA	1
*	REGULATORY SIGN PANEL (R9-3, NO PEDESTRIANS) (24"X24")	EA	4
*	250W EQ LED LUMINAIRE	EA	4
*	DETECTOR UNIT	EA	1
*	POWER SUPPLY	EA	1
*	CONTROL, PHOTOELECTRIC	EA	1
682.XX	INSTALL VEHICLE SIGNAL SECTION WITH BACK PLATE (RETRO REFLECTIVE)(12 INCH)(1 SECTION)	EA	10
684.1	TRAFFIC SIGNAL CABLES (TYPE A)(12 AWG)(CONDUCTOR NO. 3)	LF	1336
684.1	TRAFFIC SIGNAL CABLES (TYPE A)(14 AWG)(CONDUCTOR NO. 4)	LF	708
684.1	TRAFFIC SIGNAL CABLES (TYPE A)(14 AWG)(CONDUCTOR NO. 9)	LF	802
686.1	INSTALL TRAFFIC SIGNAL POLE ASSEMBLIES (STEEL) (1 ARM 32') (LUM)	EA	1
686.1	INSTALL TRAFFIC SIGNAL POLE ASSEMBLIES (STEEL) (1 ARM 44') (LUM)	EA	3
693.1	INTERNALLY LIGHTED STREET NAME SIGNS (6'S)	EA	2
693.1	INTERNALLY LIGHTED STREET NAME SIGNS (8'S)	EA	2

* SUBSIDIARY TO ITEM 680.1 INSTALLATION OF HIGHWAY TRAFFIC SIGNALS (ISOLATED)

POLE AND EQUIPMENT DESCRIPTION WITH ATTATCHMENTS

POLE	DESCRIPTION
A	INSTALL 30' HIGH SMA-80 STEEL POLE ON 13.2' DEEP 36-A FND W/ 44' MAST ARM, (1) 8' LUMINAIRE ARM, AND SIGNS S1 (ILSN) AND S2
B	INSTALL 30' HIGH SMA-80 STEEL POLE ON 13.2' DEEP 36-A FND W/ 44' MAST ARM, (1) 8' LUMINAIRE ARM, AND SIGNS S3 (ILSN) AND S4
C	INSTALL 30' HIGH SMA-80 STEEL POLE ON 13.2' DEEP 36-A FND W/ 44' MAST ARM, (1) 8' LUMINAIRE ARM, AND SIGNS S5 (ILSN) AND S6
D	INSTALL 30' HIGH SMA-80 STEEL POLE ON 11.3' DEEP 30-A FND W/ 32' MAST ARM, (1) 8' LUMINAIRE ARM, AND SIGNS S7 (ILSN) AND S8
PS1	PROPOSED SERVICE POLE TY D WITH SERVICE (120/240 VOLTS) METER, SERVICE ENCLOSURE AND SERVICE DISCONNECT
	PROPOSED FULLY-ACTUATED CONTROLLER W/ TYPE 332 CABINET AND BATTERY BACK-UP UNIT (BBU)

NOTE:

THIS SHEET TO BE USED ONLY IF ADD ALTERNATE BID 1 OPTION IS SELECTED.

STATE OF TEXAS
XIDUO WANG
143018
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

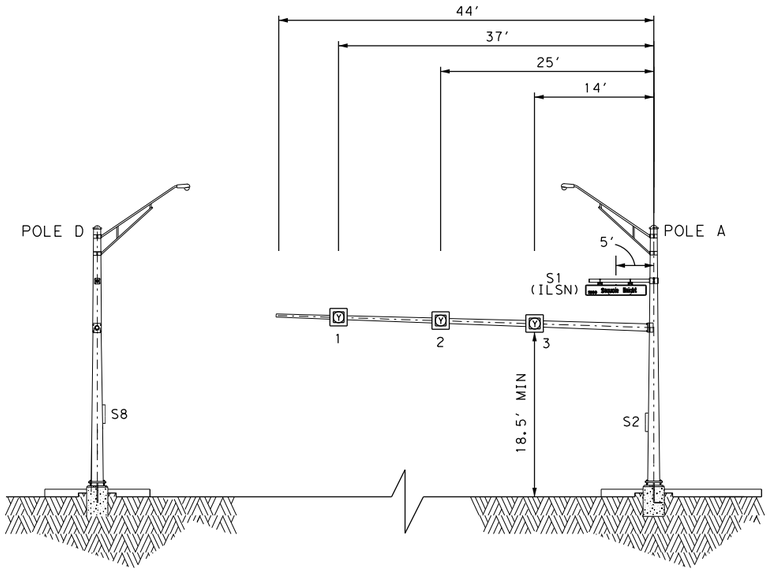
consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

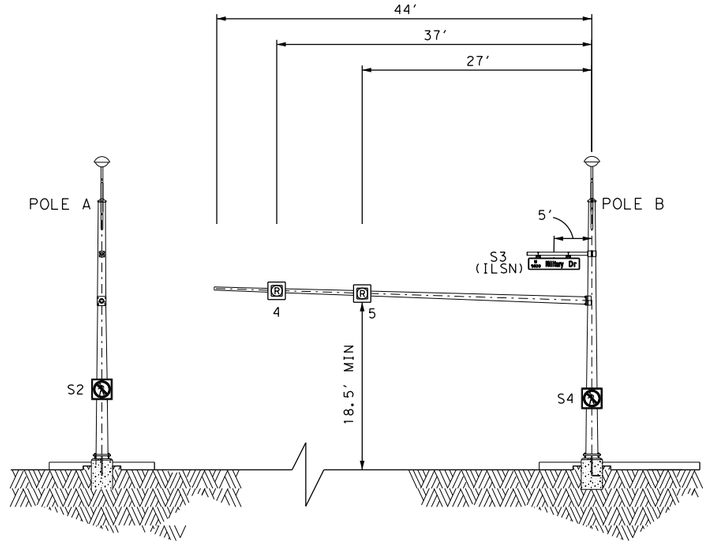
MILITARY DRIVE
ESTIMATE OF QUANTITIES AND EQUIPMENT DESCRIPTIONS
SEQUOIA HEIGHT

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CAG	DSGN. BY: CG	CHKD. BY: XW	SHEET NO 284A OF 377

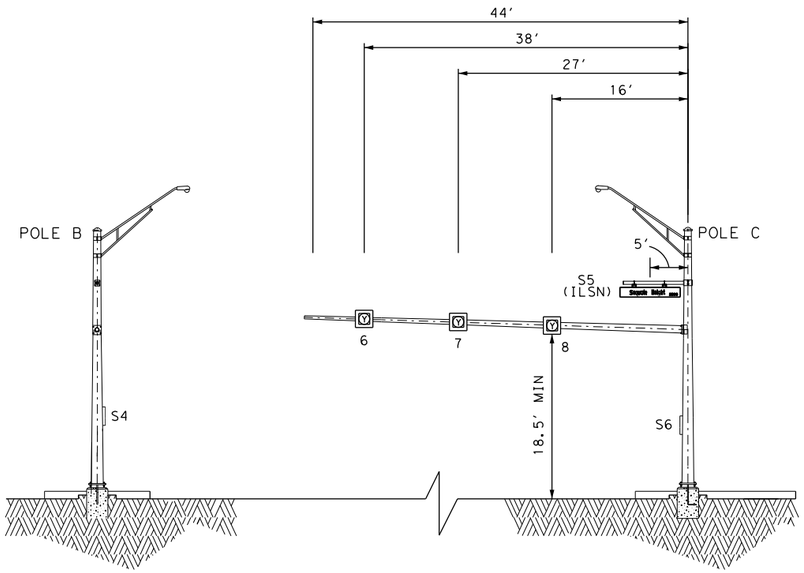
pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D220116TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL04B.dgn
c:\dms\pwe-useast-006\knerr.chris\dms71726\C_MD_S_LSL04B.dgn
9:07:40 AM
5/19/2025



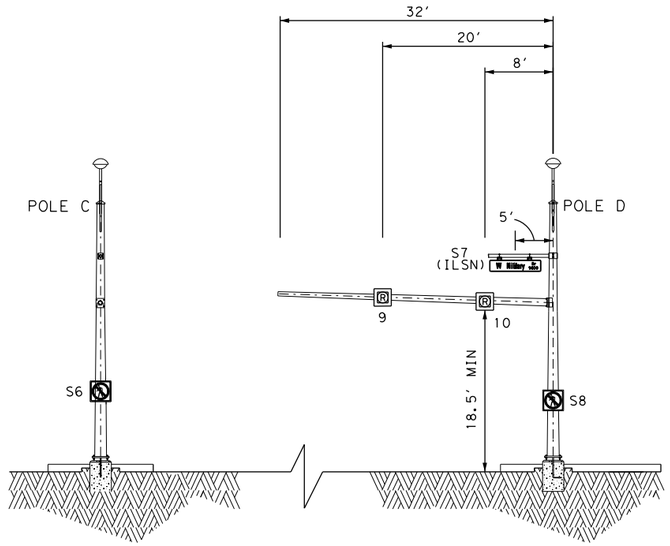
LOOKING WEST ON MILITARY DR
AT SEQUOIA HEIGHT DR



LOOKING NORTH ON MILITARY DR
AT SEQUOIA HEIGHT DR



LOOKING EAST ON MILITARY DR
AT SEQUOIA HEIGHT



LOOKING SOUTH ON MILITARY DR
AT SEQUOIA HEIGHT DR

NOTE:

THIS SHEET TO BE USED ONLY IF ADD ALTERNATE BID 1 OPTION IS SELECTED.

SCALE: NTS

STATE OF TEXAS
XIDUO WANG
143018
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

ELEVATIONS

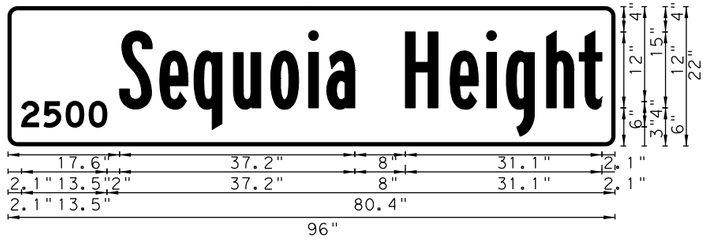
SEQUOIA HEIGHT

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: CAC	DSGN. BY: CG	CHKD. BY: XW

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D220116TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL04C.dgn
ct:\bms\pwe-useast-006\knerr.chris\dms71726\C_MD_S_LSL04C.dgn.dgn
5:08:14 AM
5/19/2025

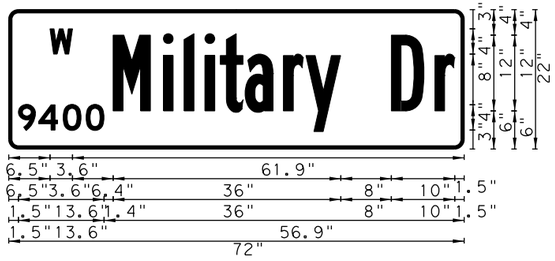
pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D220116TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL04C.dgn

PROPOSED SIGNS
MOUNTED TO MAST ARMS



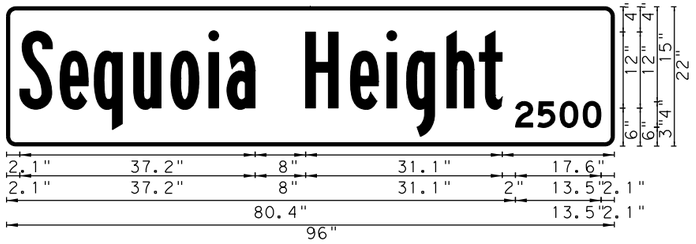
BORDER: R=1.5, TH=0.5
(SEQUOIA HEIGHT) FONT: SERIES B
(2500) FONT: SERIES D

S1 (ILSN)



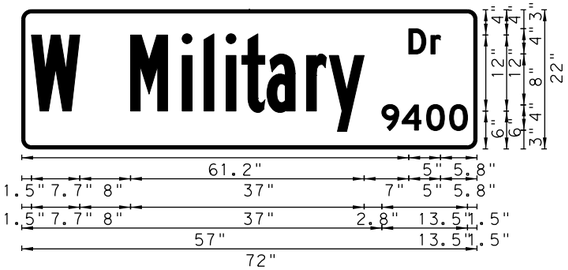
BORDER: R=1.5, TH=0.5
(MILITARY DR) FONT: SERIES B
(W), (9400) FONT: SERIES D

S3 (ILSN)



BORDER: R=1.5, TH=0.5
(SEQUOIA HEIGHT) FONT: SERIES B
(2500) FONT: SERIES D

S5 (ILSN)



BORDER: R=1.5, TH=0.5
(W MILITARY) FONT: SERIES B
(DR), (9100) FONT: SERIES D

S7 (ILSN)

NOTE:

THIS SHEET TO BE USED ONLY IF ADD ALTERNATE BID 1 OPTION IS SELECTED.

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

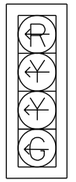
MILITARY DRIVE
PROPOSED SIGN DETAILS
SEQUOIA HEIGHT

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: CAC	DSGN. BY: CG	CHKD. BY: XW
		SHEET NO 286A OF 377

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D220116TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL04D.dgn
ct:\bms\pwe-useast-006\knerr.chris\dms71726\C_MD_S_LSL04D.dgn
5:08:53 AM
5/19/2025

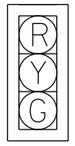
EXISTING TRAFFIC SIGNALS

1 WAY, 4 SECTION
12" VERTICAL



1, 4, 7, 10

1 WAY, 3 SECTION
12" VERTICAL



2, 3, 5, 6, 8,
9, 11, 12

NOTE:

ALL SIGNALS HAVE YELLOW HOUSING AND BLACK BACK PLATES.

EXISTING PEDESTRIAN SIGNALS, SIGNS AND PUSH BUTTONS

W1-W8

PB1, PB3,
PB5, PB7

PB2, PB4,
PB6, PB8

EXISTING SIGNS MOUNTED TO MAST ARMS

S1, S3, S5, S7

ILSN
S2

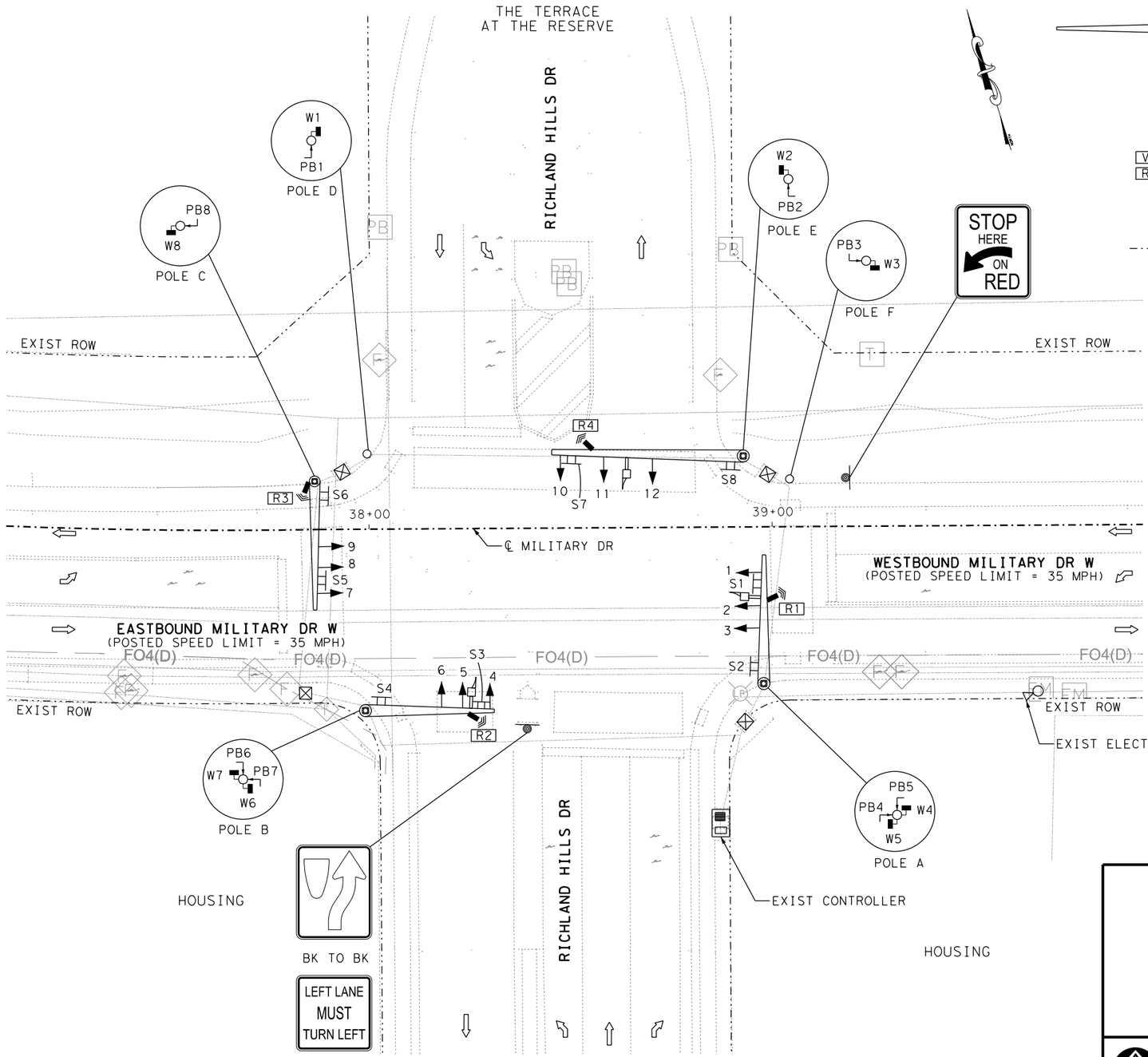
ILSN
S4

ILSN
S6

ILSN
S8

NOTE:

1. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHOULD LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR SHOULD BE FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.



LEGEND

- EXIST SIGNAL POLE/MAST ARM SET UP
- EXIST STEEL STRAIN POLE
- EXIST PEDESTRIAN POLE
- 1 — EXIST SIGNAL HEAD AND DESIGNATION
- S1 — EXIST OVERHEAD SIGN AND DESIGNATION
- EXIST CONTROLLER
- EXIST SIGNAL GROUND BOX
- EXIST ELECTRICAL SERVICE
- V1 — EXIST VIVDS CAMERA AND DESIGNATION
- R1 — EXIST RADAR PRESENCE DETECTION
- EXIST PREEMPTION DEVICE
- EXIST PED SIGNAL
- EXIST PUSH BUTTON
- EXIST GROUND MOUNTED SIGN
- EXIST ROW
- TRAFFIC FLOW

0 15' 30'
SCALE: 1" = 30'

STATE OF TEXAS
XIDUO WANG
143018
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

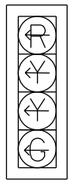
CONDITION DIAGRAM

RICHLAND HILLS DR

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CAG	DSGN. BY: CG	CHKD. BY: XW	SHEET NO. 287 OF 377

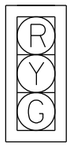
PROPOSED TRAFFIC SIGNALS

1 WAY, 4 SECTION 12" VERTICAL



1, 4, 7, 10

1 WAY, 3 SECTION 12" VERTICAL



2, 3, 5, 6, 8, 9, 11, 12

NOTE:

ALL SIGNALS HAVE YELLOW HOUSING AND RETROREFLECTIVE BACK PLATES.

PROPOSED SIGNS MOUNTED TO MAST ARMS

R10-17T
36"X42"
S1, S3, S5, S7

ILSN
96"X22"
S2

ILSN
96"X22"
S6

ILSN
72"X22"
S4

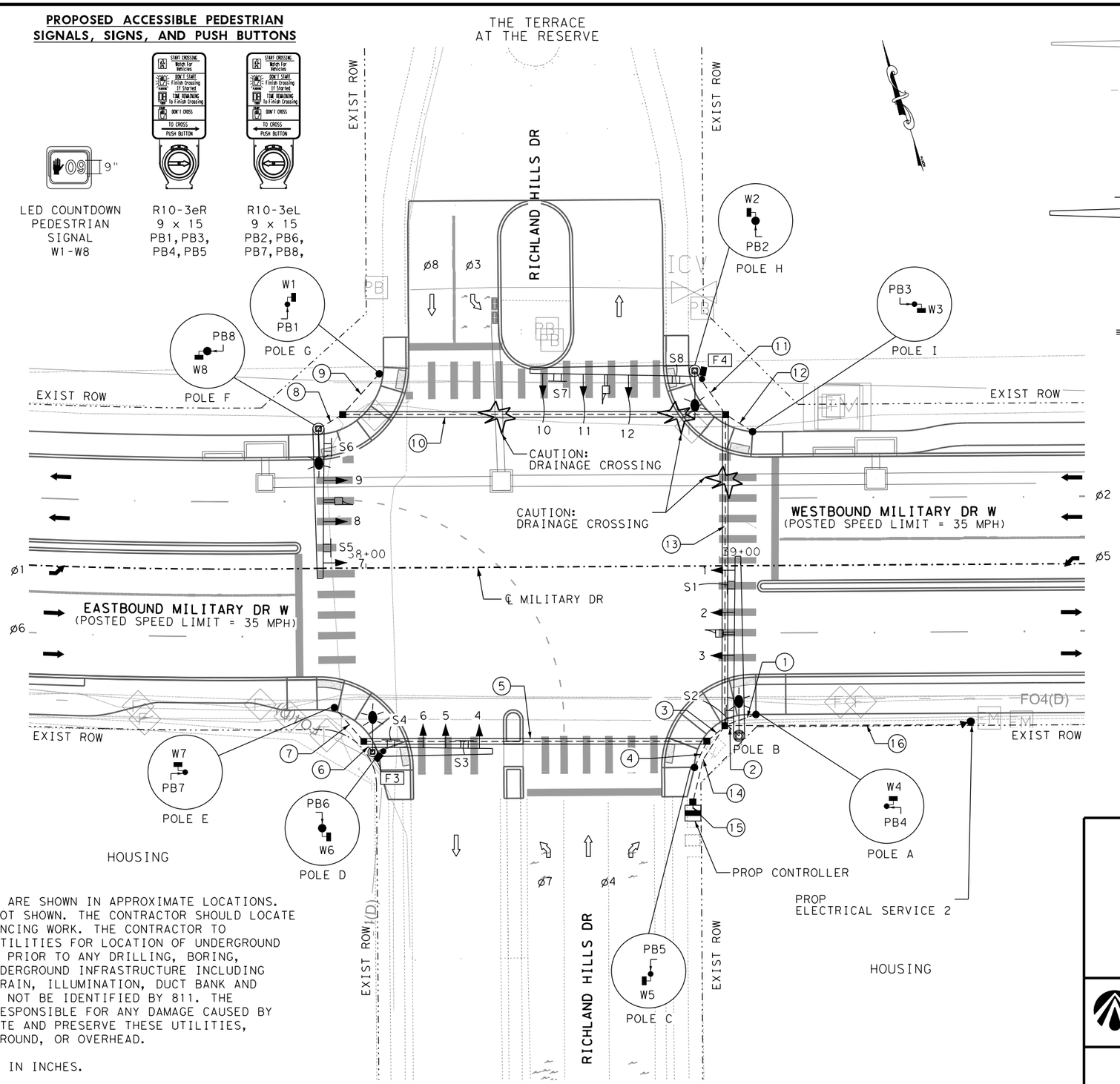
ILSN
72"X22"
S8

PROPOSED ACCESSIBLE PEDESTRIAN SIGNALS, SIGNS, AND PUSH BUTTONS

LED COUNTDOWN PEDESTRIAN SIGNAL W1-W8

R10-3eR 9 x 15 PB1, PB3, PB4, PB5

R10-3eL 9 x 15 PB2, PB6, PB7, PB8,



LEGEND

- EXIST SIGNAL POLE/MAST ARM SET UP
- EXIST SIGNAL POLE
- EXIST SIGNAL HEAD AND DESIGNATION
- EXIST SIGNAL CONDUIT
- EXIST MAST ARM MOUNTED SIGN AND DESIGNATION
- EXIST CONTROLLER, SLAB AND FOUNDATION
- EXIST SIGNAL GROUND BOX
- EXIST SERVICE METER
- EXIST ROW
- PROP SIGNAL POLE/MAST ARM SET UP
- PROP STRAIN POLE
- PROP SIGNAL HEAD AND DESIGNATION
- PROP PREEMPTION DEVICE
- PROP MAST ARM MOUNTED SIGN AND DESIGNATION
- PROP LUMINAIRE ARM
- PROP SIGNAL CONDUIT
- PROP CONDUIT BORE
- PROP PEDESTRIAN POLE
- PROP SIGNAL GROUND BOX TYPE D W/APRON (SEE NOTE 3, THIS SHEET)
- PROP PED SIGNAL
- PROP PUSH BUTTON
- PROP FISH EYE DETECTION SYSTEM
- EXIST TRAFFIC FLOW
- PROP TRAFFIC FLOW

0 15′ 30′
SCALE: 1" = 30′

NOTES:

1. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHOULD LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR SHOULD BE FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.
2. ALL DIMENSIONS FOR SIGNS ARE IN INCHES.
3. ALL SALVAGABLE EQUIPMENT SHALL BE TAKEN TO COSA FACILITIES AT 6939 W LOOP 1604 N BLDG, SAN ANTONIO, TX 78254.
4. CONTACT COSA AT UTILITY.LOCATES@SANANTONIO.GOV TO LOCATE UNDERGROUND FACILITIES.

STATE OF TEXAS
XIDUO WANG
143018
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

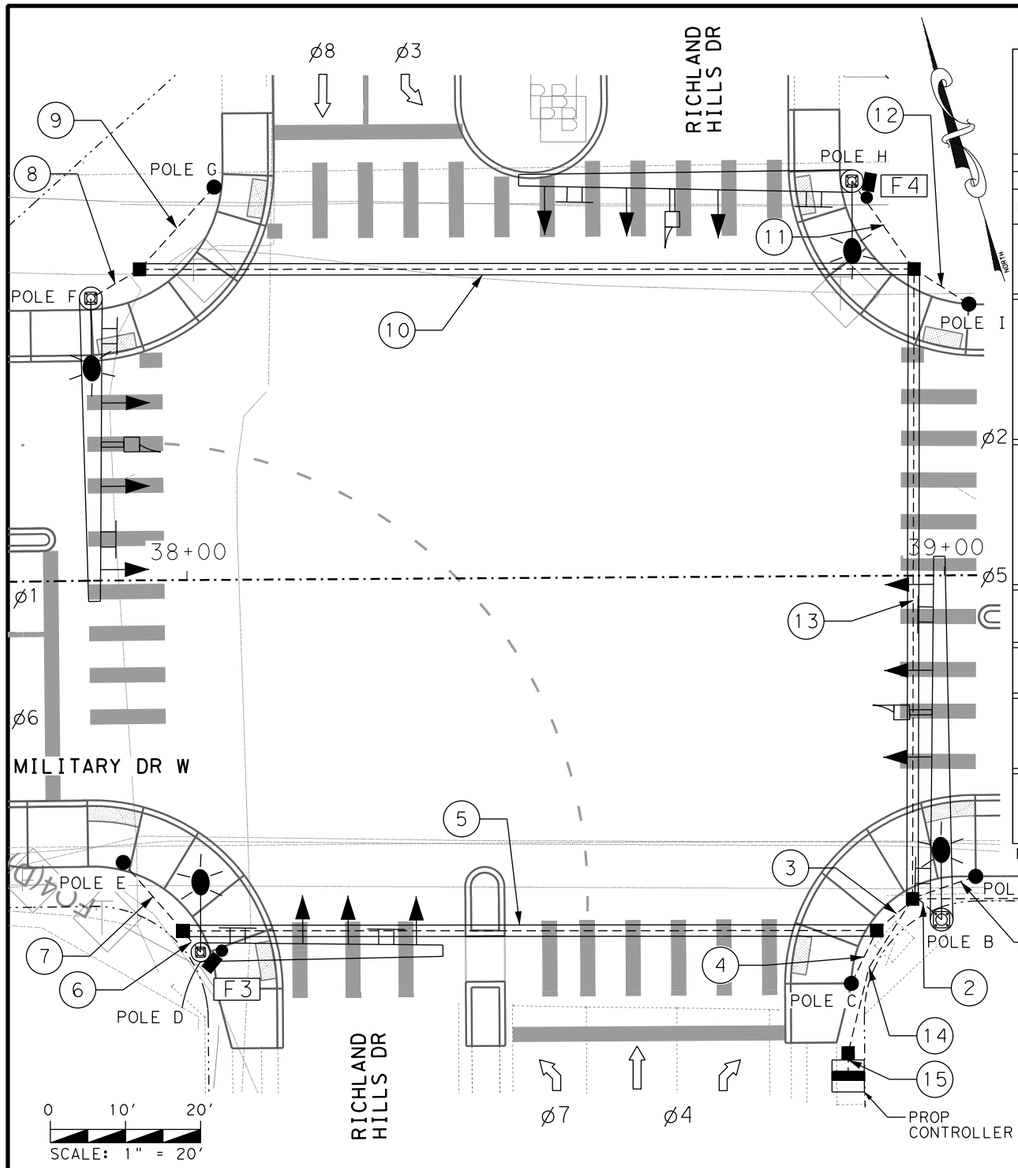
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
PROPOSED SIGNAL LAYOUT
RICHLAND HILLS DR

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CAG	DSGN. BY: CG	CHKD. BY: XW	SHEET NO. 288 OF 377

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D2201167X.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL02.dgn
ci:\bms\pwe-useast-006\knerr.chris\dms71726\C_MD_S_LSL02.dgn
5:09:37 AM
5/19/2025

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D2201167X.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL02.dgn
5:09:37 AM
5/19/2025



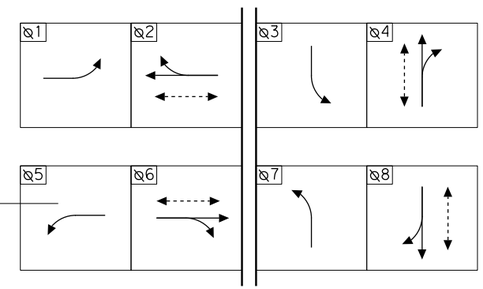
CONDUIT AND CONDUCTOR SCHEDULE

T = TRENCHED
B = BORED
E = EXISTING*

	CONDUIT / SPAN RUN NUMBER	1	2	2	3	3	4	5	5	6	6	7	8	8	9	10	10	11	11	12	13	13	14	15	16
	NUMBER OF CONDUITS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	2	1
	CONDUIT SIZE IN INCHES	2	3	2	3	2	2	3	2	3	2	2	3	2	2	3	2	3	2	2	3	2	3	3	2
	CONDUIT / SPAN LENGTH (FT)	10	5	5	8	8	8	95	95	5	5	12	8	8	15	105	105	15	15	10	85	85	25	5	65
	RUN TYPE	T	T	T	T	T	T	B	B	T	T	T	T	T	T	B	B	T	T	T	B	B	T	T	T
AWG	CIRCUIT	NUMBER OF CONDUCTORS																							
#6 THHN / THWN	120 POWER HOT & COMMON																								1
BARE BOND GROUND	#6 BARE			1		1			1		1			1			1		1			1			1
	#8 BARE	1	1		1		1	1		1		1	1		1	1		1		1	2		2	2	
9-CONDUCTOR #14 CABLE (SIGNAL HEADS)	ø6 & ø1 VH - POLE B		2																				2	2	
	ø3 & ø8 VH - POLE D				2			2		2													2	2	
	ø5 & ø2 VH - POLE F												2			2					2		2	2	
	ø4 & ø7 VH - POLE H																	2			2		2	2	
9-CONDUCTOR #14 CABLE (PEDESTRIAN HEAD)	ø7 PH - POLE A	1																					1	1	
	ø6 PH - POLE C				1		1																1	1	
	ø6 PH - POLE D				1			1		1													1	1	
	ø8 PH - POLE E				1			1				1											1	1	
	ø8 PH - POLE F												1			1					1		1	1	
	ø2 PH - POLE G														1	1					1		1	1	
	ø5 PH - POLE H																	1			1		1	1	
	ø7 PH - POLE I																			1	1		1	1	
3-CONDUCTOR #16 CABLE (PUSH BUTTON)	ø7 PPB - POLE A	1																					1	1	
	ø6 PPB - POLE C				1		1																1	1	
	ø6 PPB - POLE D				1			1		1													1	1	
	ø8 PPB - POLE E				1			1				1											1	1	
	ø8 PPB - POLE F												1			1					1		1	1	
	ø2 PPB - POLE G														1	1					1		1	1	
	ø5 PPB - POLE H																	1			1		1	1	
	ø7 PPB - POLE I																			1	1		1	1	
OPTICOM MODEL 138 DETECTOR CABLE	ø6 PREEMPT - POLE B		1																				1	1	
	ø2 PREEMPT - POLE F												1			1					1		1	1	
	ø4 PREEMPT - POLE H																	1			1		1	1	
ETHERNET CAT-5e CABLE	FISH EYE DETECTION SYSTEM - POLE D				1			1		1													1	1	
	FISH EYE DETECTION SYSTEM - POLE H																	1			1		1	1	
4-CONDUCTOR #14 CABLE (ILSN)	ILSN - POLE B			1																					1
	ILSN - POLE D					1			1		1														1
	ILSN - POLE F													1			1					1			1
	ILSN - POLE H																		1			1			1
3-CONDUCTOR #12 CABLE (LUMINAIRE)	LUMINAIRE - POLE B			2																					2
	LUMINAIRE - POLE D					2			2		2														2
	LUMINAIRE - POLE F													2			2					2			2
	LUMINAIRE - POLE H																		2			2			2

NOTE: PROPOSED LUMINAIRE AND ILSN CABLES WILL BE RAN IN CONDUIT SEPARATE FROM SIGNAL AND DETECTION CABLE

PHASING DIAGRAM



VEHICLE DETECTORS

DETECTOR ID	DESCRIPTION
F3	PROPOSED FISH EYE DETECTION SYSTEM
F4	PROPOSED FISH EYE DETECTION SYSTEM

LEGEND

- EXIST SIGNAL POLE/MAST ARM SET UP
- EXIST SIGNAL POLE
- EXIST SIGNAL HEAD
- EXIST SIGNAL CONDUIT
- EXIST MAST ARM MOUNTED SIGN
- EXIST CONTROLLER, SLAB AND FOUNDATION
- EXIST SIGNAL GROUND BOX
- EXIST SERVICE METER
- PROP SIGNAL POLE/MAST ARM SET UP
- PROP STRAIN POLE
- PROP SIGNAL HEAD
- PROP PREEMPTION DEVICE
- PROP MAST ARM MOUNTED SIGN
- PROP LUMINAIRE ARM
- PROP SIGNAL CONDUIT
- PROP CONDUIT BORE
- PROP PEDESTRIAN POLE
- PROP SIGNAL GROUND BOX TYPE D W/APRON
- PROP FISH EYE DETECTION SYSTEM
- EXIST TRAFFIC FLOW
- PROP TRAFFIC FLOW

STATE OF TEXAS
XIDUO WANG
143018
LICENSED PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
CONDUIT AND CONDUCTOR SCHEDULE
RICHLAND HILLS DR

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: CAC	DSGN. BY: CG	CHKD. BY: XW
		SHEET NO. 289 OF 377

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D220116TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL02A.dgn
c:\dms\pwe-useast-006\knerr_chris\dms71726\C_MD_S_LSL02A.dgn
5:19:38 PM
5/19/2025

ELECTRICAL SERVICE DATA

ELEC SERVICE POLE NO	ELECTRICAL POLE DESCRIPTION (SEE ED(5)-14)	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO/SIZE	SAFETY SWITCH AMPS	MAIN CKT BKR POLE/AMPS	TWO-POLE CONTACTOR AMPS	PANELBOARD/ LOAD CENTER AMP RATING	CIRCUIT NO	BRANCH CKT BKR POLE/AMPS	CKT AMP LOAD	SERVICE KVA LOAD
2	ELC SRV TY D 120/240 060 (NS)SS(E)PS(U)	1 1/4"	3/#6	N/A	2P/60	30	100	A - TRF SIG	1P/50	40.0	7.0
								B - ILSN	2P/20	3.0	
								C- LUM	2P/20	6.0	

ESTIMATE OF QUANTITIES

ITEM	DESCTIPTION	UNITS	ESTIMATED QUANTITY
308.1	DRILLED SHAFTS (30")	LF	11
308.1	DRILLED SHAFTS (36")	LF	39
615.1	TRAFFIC SIGNAL CONTROLLER ASSEMBLY (TYPE 332 CABINET)	EA	1
618.1	CONDUIT (2 INCH/PVC SCH 40)	LF	161
618.2	CONDUIT (3 INCH/PVC SCH 40)	LF	101
618.XX	CONDUIT (2 INCH/PVC SCH 80) (BORE)	LF	285
618.XX	CONDUIT (3 INCH/PVC SCH 80) (BORE)	LF	370
620.1	ELECTRICAL CONDUCTORS (NO. 6) (BARE)	LF	391
620.2	ELECTRICAL CONDUCTORS (NO. 8) (BARE)	LF	706
620.3	ELECTRICAL CONDUCTORS (NO. 6) (INSULATED)	LF	65
624.8	GROUND BOXES TYPE D (162922) WITH APRON	EA	6
624.XX	REMOVE GROUND BOX	EA	4
628.1	ELECTRICAL SERVICES (PER INSTALLATION)	EA	1
628.2	REMOVE ELECTRICAL SERVICES	EA	1
633.1	BATTERY BACKUP SYSTEM	EA	1
655.1	TYPE 332 CONTROLLER FOUNDATION	EA	1
680.1	INSTALLATION OF HIGHWAY TRAFFIC SIGNALS (ISOLATED)	EA	1
*	ROD, 5/8" X 10' COPPER GROUND (CONTROLLER ONLY)	EA	1
*	SIGN, PEDESTRIAN PUSHBUTTON (SYMBOL TYPE) (9"X15") (R10-3e) (R)	EA	4
*	SIGN, PEDESTRIAN PUSHBUTTON (SYMBOL TYPE) (9"X15") (R10-3e) (L)	EA	4
*	REGULATORY SIGN PANEL (R10-17T, LEFT TURN YIELD ON FLASHING YELLOW ARROW) (36"X42")	EA	4
*	250W EQ LED LUMINAIRE	EA	4
*	DETECTOR UNIT	EA	1
*	POWER SUPPLY	EA	1
*	CONTROL, PHOTOELECTRIC	EA	1
680.XX	REMOVE TRAFFIC SIGNALS	EA	1
682.1	INSTALL VEHICLE SIGNAL SECTION WITH BACK PLATE (RETROREFELCTIVE)(12 INCH)(3 SECTION)	EA	8
682.2	INSTALL VEHICLE SIGNAL SECTION WITH BACK PLATE (RETROREFELCTIVE)(12 INCH)(4 SECTION)	EA	4
683.1	LED COUNTDOWN PEDESTRIAN MODULE	EA	8
684.1	TRAFFIC SIGNAL CABLES (TYPE A)(12 AWG)(CONDUCTOR NO. 6)	LF	1754
684.1	TRAFFIC SIGNAL CABLES (TYPE A)(14 AWG)(CONDUCTOR NO. 4)	LF	921
684.1	TRAFFIC SIGNAL CABLES (TYPE A)(14 AWG)(CONDUCTOR NO. 9)	LF	3150
684.1	TRAFFIC SIGNAL CABLES (TYPE A)(16 AWG)(CONDUCTOR NO. 3)	LF	1517
686.1	INSTALL TRAFFIC SIGNAL POLE ASSEMBLIES (STEEL) (1 ARM 32') (LUM)	EA	1
686.1	INSTALL TRAFFIC SIGNAL POLE ASSEMBLIES (STEEL) (1 ARM 40') (LUM)	EA	1
686.1	INSTALL TRAFFIC SIGNAL POLE ASSEMBLIES (STEEL) (1 ARM 44') (LUM)	EA	1
686.1	INSTALL TRAFFIC SIGNAL POLE ASSEMBLIES (STEEL) (1 ARM 48') (LUM)	EA	1
687.1	PEDESTAL POLE ASSEMBLY	EA	5
**	DRILLED SHAFTS (24")	LF	30
688.3	AUDIBLE PEDESTRIAN SIGNAL UNITS	EA	8
688.XX	PED DETECTOR CONTROLLER UNIT	EA	1
693.1	INTERNALLY LIGHTED STREET NAME SIGNS (ILSN SIGN 6'S)	EA	2
693.1	INTERNALLY LIGHTED STREET NAME SIGNS (ILSN SIGN 8'S)	EA	2
695.2	EMERGENCY PREEMPTION PHASE SELECTOR	EA	1
695.3	EMERGENCY PREEMPTION DETECTOR	EA	3
695.4	EMERGENCY PREEMPTION DETECTOR CABLE	LF	639
699.1	FEDS PROCESSOR UNIT	EA	1
699.2	FEDS FISH EYE CAMERA ASSEMBLY	EA	2
699.4	LIFETIME FEDS DATA COLLECTION AND REPORTING	EA	1
699.6	FEDS COMMUNICATION CABLE (ETHERNET-CAT5E)	LF	418
687 7005	REMOVE PED POLE ASSEMBLY	EA	2

* SUBSIDIARY TO ITEM 680.1 INSTALLATION OF HIGHWAY TRAFFIC SIGNALS (ISOLATED)

** SUBSIDIARY TO ITEM 687.1 PEDESTAL POLE ASSEMBLY

POLE AND EQUIPMENT DESCRIPTION WITH ATTACHMENTS

POLE	DESCRIPTION
A	INSTALL 10' HIGH PEDESTAL POLE ON A 5.7' DEEP 24-A FND WITH (1) LED COUNTDOWN PED SIGNAL HEAD, AND (1) AUDIBLE PED PUSH BUTTON WITH R10-3eR SIGN
B	INSTALL 30' HIGH SMA-80 STEEL POLE ON 13.2' DEEP 36-A FND W/ 48' MAST ARM, (1) PREEMPTION DEVICE, (1) 8' LUMINAIRE ARM, AND SIGNS S1 AND S2 (ILSN)
C	INSTALL 10' HIGH PEDESTAL POLE ON A 5.7' DEEP 24-A FND WITH (1) LED COUNTDOWN PED SIGNAL HEAD, AND (1) AUDIBLE PED PUSH BUTTON WITH R10-3eR SIGN
D	INSTALL 30' HIGH SMA-80 STEEL POLE ON 11.3' DEEP 30-A FND W/ 32' MAST ARM, (1) LED COUNTDOWN SIGNAL HEAD, (1) AUDIBLE PED PUSH BUTTON W/ R10-3eL SIGN, (1) 8' LUMINAIRE ARM, (1) FISH EYE DETECTION SYSTEM, AND SIGNS S3 AND S4 (ILSN)
E	INSTALL 10' HIGH PEDESTAL POLE ON A 5.7' DEEP 24-A FND WITH (1) LED COUNTDOWN PED SIGNAL HEAD, AND (1) AUDIBLE PED PUSH BUTTON WITH R10-3eL SIGN
F	INSTALL 30' HIGH SMA-80 STEEL POLE ON A 13.2' DEEP 36-A FND W/ 40' MAST ARM, (1) LED COUNTDOWN SIGNAL HEAD, (1) AUDIBLE PEDESTRIAN BUTTON W/ R10-3eL SIGN, (1) PREEMPTION DEVICE, (1) 8' LUMINAIRE ARM, AND SIGNS S5 AND S6 (ILSN)
G	INSTALL 10' HIGH PEDESTAL POLE ON A 5.7' DEEP 24-A FND WITH (1) LED COUNTDOWN PED SIGNAL HEAD, AND (1) AUDIBLE PED PUSH BUTTON WITH R10-3eR SIGN
H	INSTALL 30' HIGH SMA-80 STEEL POLE ON 13.2' DEEP 36-A FND W/ 44' MAST ARM, (1) LED COUNTDOWN SIGNAL HEAD, (1) AUDIBLE PED PUSH BUTTON W/ R10-3eL SIGN, (1) PREEMPTION DEVICE, (1) 8' LUMINAIRE ARM, (1) FISH EYE DETECTION SYSTEM, AND SIGNS S7 AND S8 (ILSN)
I	INSTALL 10' HIGH PEDESTAL POLE ON A 5.7' DEEP 24-A FND WITH (1) LED COUNTDOWN PED SIGNAL HEAD, AND (1) AUDIBLE PED PUSH BUTTON WITH R10-3eR SIGN
PS2	PROPOSED SERVICE POLE TY D WITH SERVICE (120/240 VOLTS) METER, SERVICE ENCLOSURE AND SERVICE DISCONNECT
	PROPOSED FULLY-ACTUATED CONTROLLER W/ TYPE 332 CABINET AND BATTERY BACK-UP UNIT (BBU)

STATE OF TEXAS
XIDUO WANG
143018
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

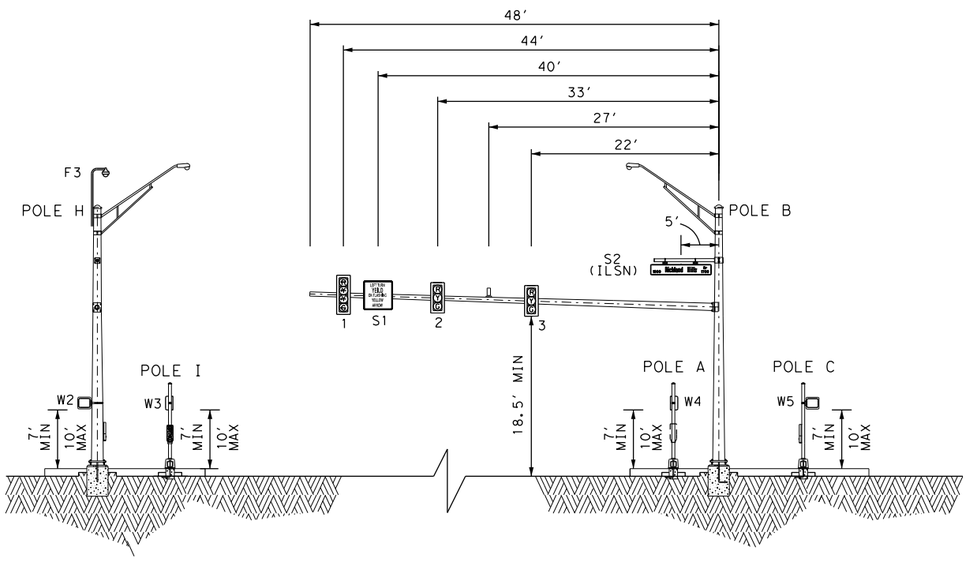
consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

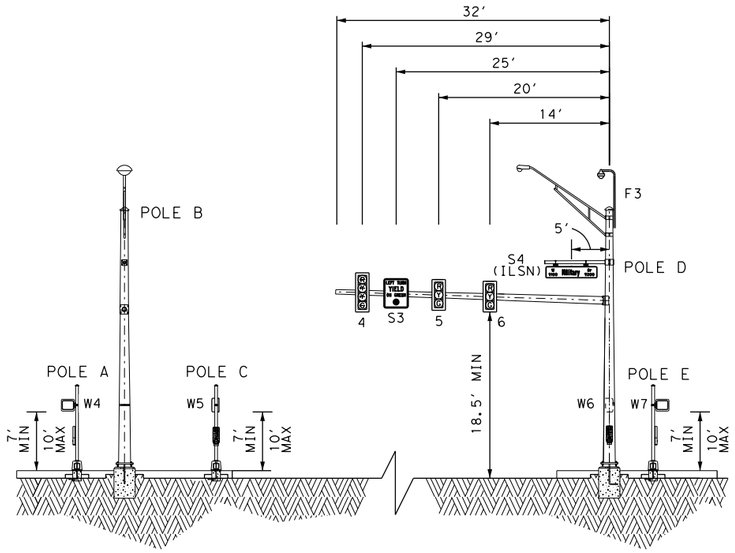
MILITARY DRIVE
ESTIMATE OF QUANTITIES AND EQUIPMENT DESCRIPTIONS
RICHLAND HILLS DR

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: CAC	DSGN. BY: CG	CHKD. BY: XW
		SHEET NO. 290 OF 377

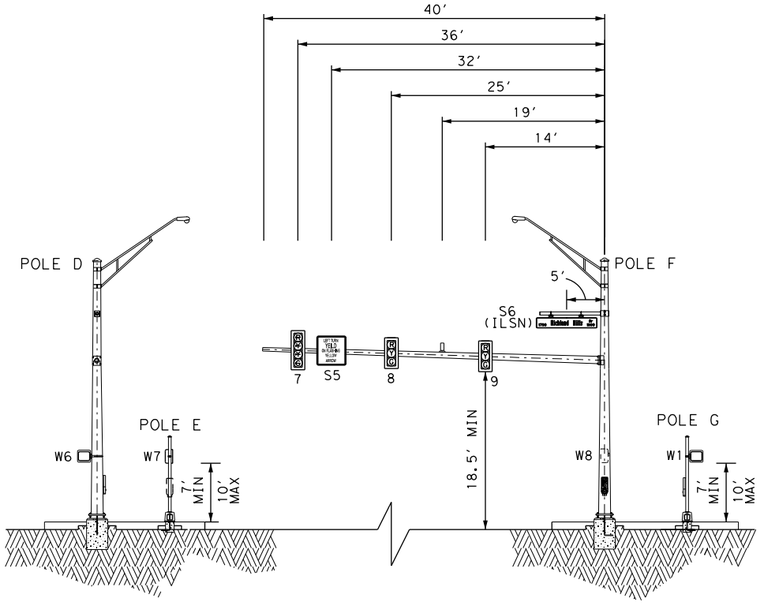
pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D220116TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL02B.dgn
c:\bms\pwe-useast-006\knerr.chris\dms71726\C_MD_S_LSL02B.dgn
5:17 PM
5/19/2025



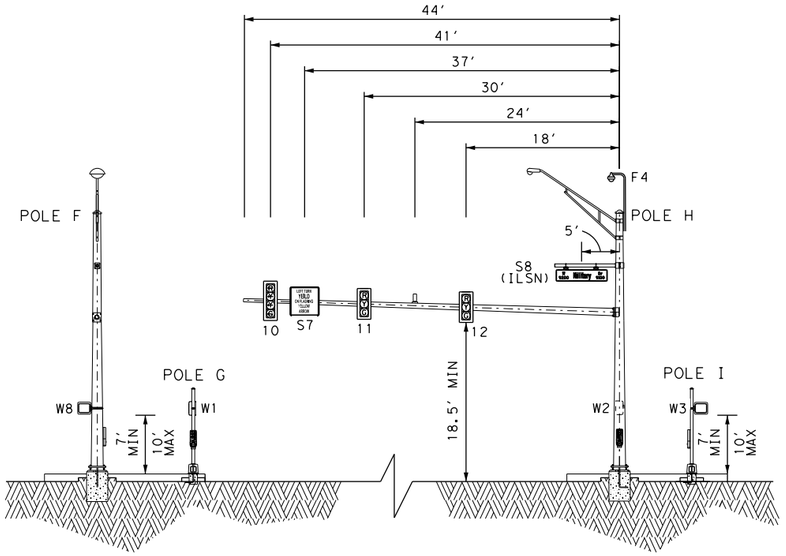
LOOKING EAST ON MILITARY DR
AT RICHAND HILLS DR



LOOKING SOUTH ON MILITARY DR
AT RICHAND HILLS DR



LOOKING WEST ON MILITARY DR
AT RICHAND HILLS DR



LOOKING NORTH ON MILITARY DR
AT RICHAND HILLS DR

SCALE: NTS

STATE OF TEXAS
XIDUO WANG
143018
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

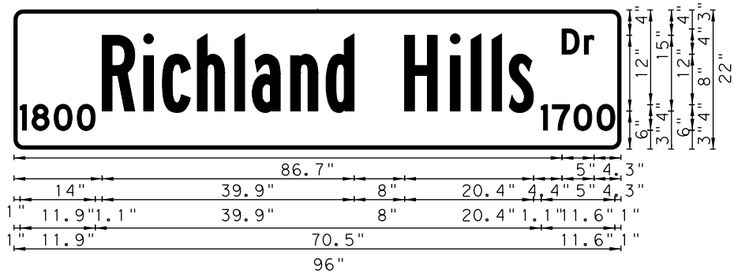
ELEVATIONS

RICHLAND HILLS DR

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CAC	DSGN. BY: CG	CHKD. BY: XW	SHEET NO. 291 OF 377

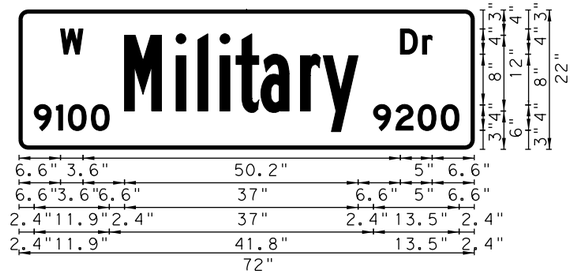
pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D220116TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL02C.dgn
ct:\bms\pwe-useast-006\knerr.chris\dms71726\C_MD_S_LSL02C.dgn
2:13:10 AM
5/19/2025

PROPOSED SIGNS
MOUNTED TO MAST ARMS



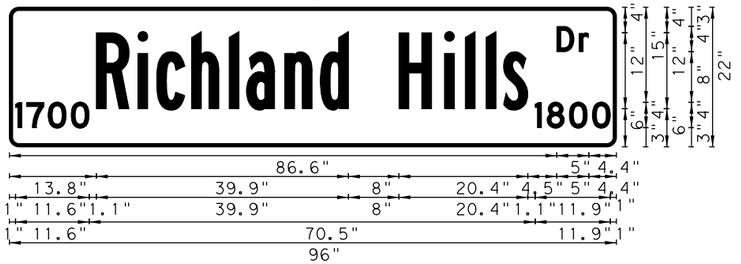
BORDER: R=1.5, TH=0.5
(RICHLAND HILLS) FONT: SERIES B
(DR), (1700), (1800) FONT: SERIES D

S2 (ILSN)



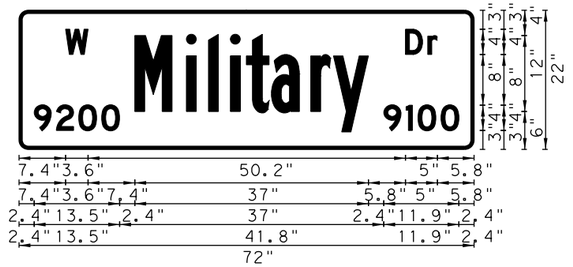
BORDER: R=1.5, TH=0.5
(MILITARY) FONT: SERIES B
((W), DR), (9100), (9200) FONT: SERIES D

S4 (ILSN)



BORDER: R=1.5, TH=0.5
(RICHLAND HILLS) FONT: SERIES B
(DR), (1800), (1700) FONT: SERIES D

S6 (ILSN)



BORDER: R=1.5, TH=0.5
(MILITARY) FONT: SERIES B
((W), DR), (9200), (9100) FONT: SERIES D

S8 (ILSN)

STATE OF TEXAS
XIDUO WANG
143018
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

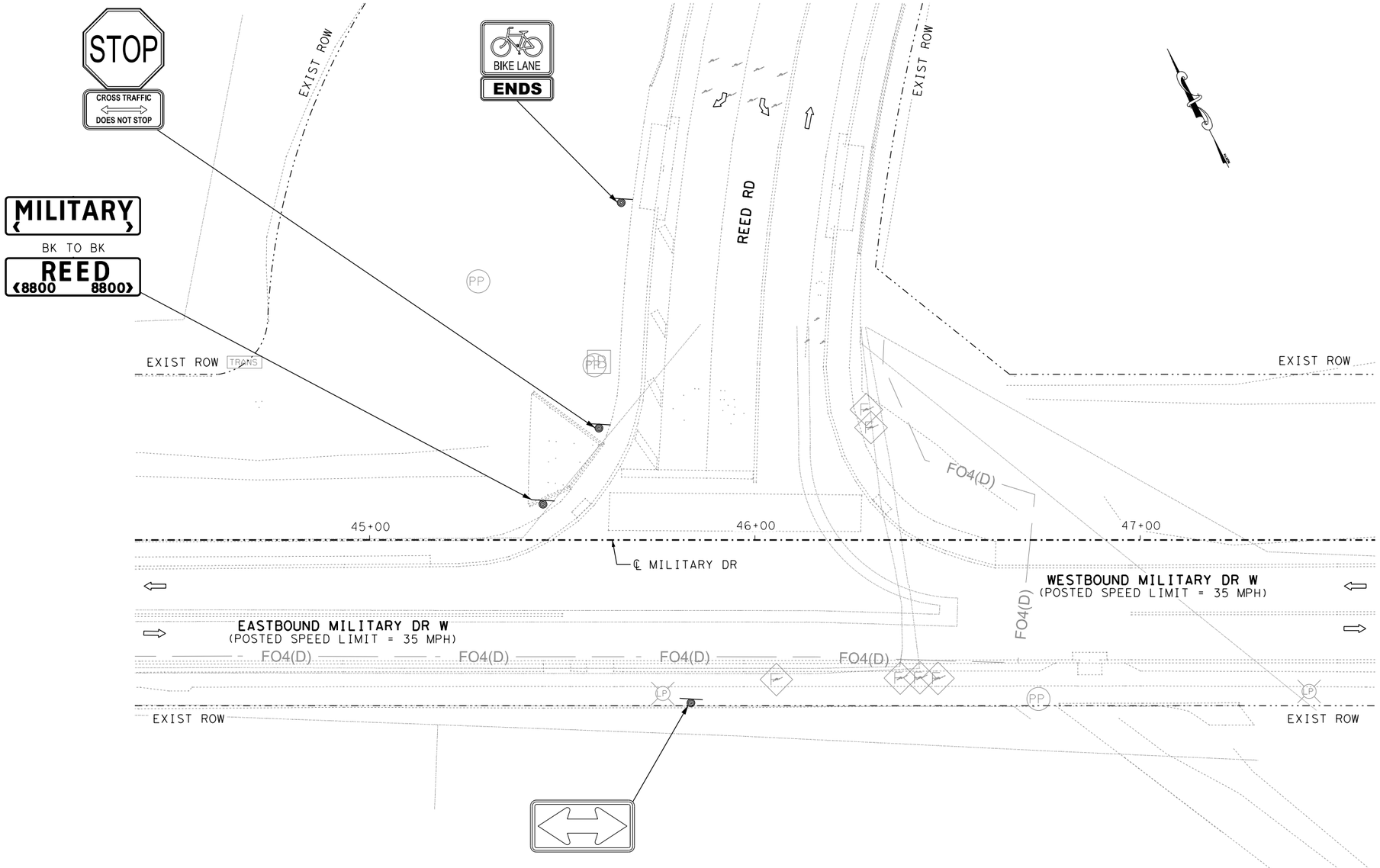
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
PROPOSED SIGN DETAILS
RICHLAND HILLS DR

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: CAC	DSGN. BY: CG	CHKD. BY: XW
		SHEET NO. 292 OF 377

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D220116TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL02D.dgn
ct:\dms\pwe-useast-006\knerr.chris\dms71726\C_MD_S_LSL02D.dgn
5/19/2025 8:13:23 AM
5/19/2025

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D220116TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL02D.dgn



LEGEND

- EXIST SIGNAL POLE/MAST ARM SET UP
- EXIST STEEL STRAIN POLE
- EXIST PEDESTRIAN POLE
- 1 — EXIST SIGNAL HEAD AND DESIGNATION
- S1 — EXIST OVERHEAD SIGN AND DESIGNATION
- EXIST CONTROLLER
- EXIST SIGNAL GROUND BOX
- EXIST ELECTRICAL SERVICE
- V1 — EXIST VIVDS CAMERA AND DESIGNATION
- R1 — EXIST RADAR PRESENCE DETECTION
- EXIST PREEMPTION DEVICE
- EXIST PED SIGNAL
- EXIST PUSH BUTTON
- EXIST GROUND MOUNTED SIGN
- EXIST ROW
- TRAFFIC FLOW

0 15′ 30′
SCALE: 1" = 30′

NOTE:

1. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHOULD LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR SHOULD BE FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

STATE OF TEXAS
XIDUO WANG
143018
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

CONDITION DIAGRAM

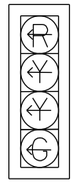
REED RD

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CAG	DSGN. BY: CG	CHKD. BY: XW	SHEET NO. 293 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71726\C_MD_S_LCL03.dgn
5/19/2025 9:12:51 AM

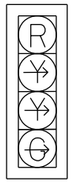
PROPOSED TRAFFIC SIGNALS

1 WAY, 4 SECTION
12" VERTICAL



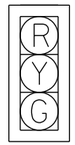
1, 4, 5

1 WAY, 4 SECTION
12" VERTICAL



6, 7

1 WAY, 3 SECTION
12" VERTICAL

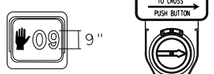


2, 3, 8, 9

NOTE:

ALL SIGNALS HAVE YELLOW HOUSING AND RETROREFLECTIVE BACK PLATES.

PROPOSED ACCESSIBLE PEDESTRIAN SIGNALS, SIGNS, AND PUSH BUTTONS



LED COUNTDOWN PEDESTRIAN SIGNAL

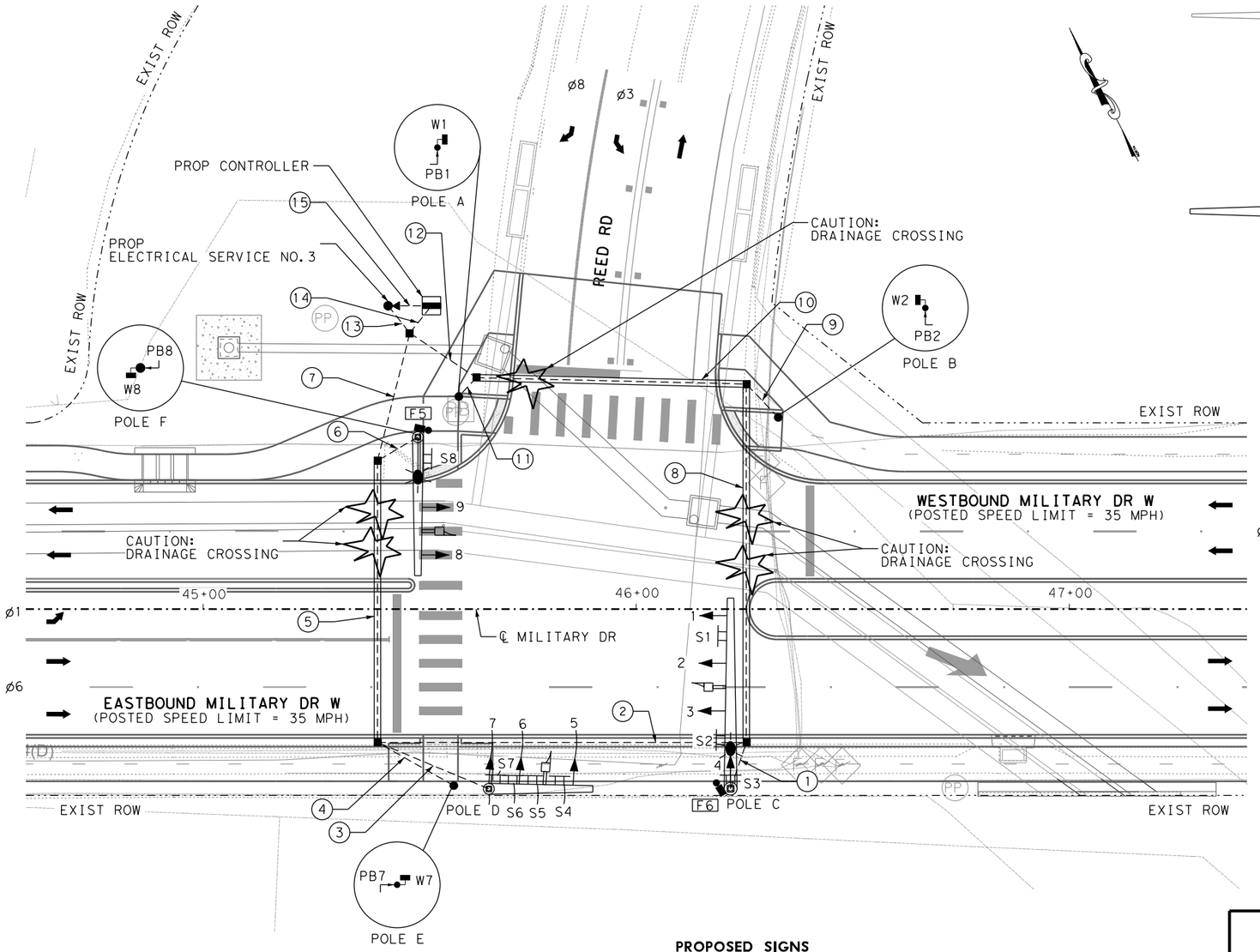
W1, W2, W7, W8

R10-3eR
9 x 15

PB1

R10-3eL
9 x 15

PB2, PB7, PB8



LEGEND

- EXIST SIGNAL POLE/MAST ARM SET UP
- EXIST SIGNAL POLE
- EXIST SIGNAL HEAD AND DESIGNATION
- EXIST SIGNAL CONDUIT
- EXIST MAST ARM MOUNTED SIGN AND DESIGNATION
- EXIST CONTROLLER, SLAB AND FOUNDATION
- EXIST SIGNAL GROUND BOX
- EXIST SERVICE METER
- EXIST ROW
- PROP SIGNAL POLE/MAST ARM SET UP
- PROP STRAIN POLE
- PROP SIGNAL HEAD AND DESIGNATION
- PROP PREEMPTION DEVICE
- PROP MAST ARM MOUNTED SIGN AND DESIGNATION
- PROP LUMINAIRE ARM
- PROP SIGNAL CONDUIT
- PROP CONDUIT BORE
- PROP PEDESTRIAN POLE
- PROP SIGNAL GROUND BOX TYPE D W/APRON (SEE NOTE 3, THIS SHEET)
- PROP PED SIGNAL
- PROP PUSH BUTTON
- PROP FISH EYE DETECTION SYSTEM
- EXIST TRAFFIC FLOW
- PROP TRAFFIC FLOW

0 15′ 30′
SCALE: 1" = 30′

NOTES:

1. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHOULD LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR SHOULD BE FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.
2. ALL DIMENSIONS FOR SIGNS ARE IN INCHES.
3. ALL SALVAGABLE EQUIPMENT SHALL BE TAKEN TO COSA FACILITIES AT 6939 W LOOP 1604 N BLDG, SAN ANTONIO, TX 78254.
4. CONTACT COSA AT UTILITY.LOCATES@SANANTONIO.GOV TO LOCATE UNDERGROUND FACILITIES.

PROPOSED SIGNS MOUNTED TO MAST ARMS

R10-17T
36"X42"

S1

R9-3
18"X18"

S3

R3-5L
30"X36"

S4

R3-5R
30"X36"

S5

R10-15 (MOD)
30"X30"

S6

ILSN
72"X22"

S2, S8

ILSN
72"X22"

S7

STATE OF TEXAS
XIDUO WANG
143018
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040

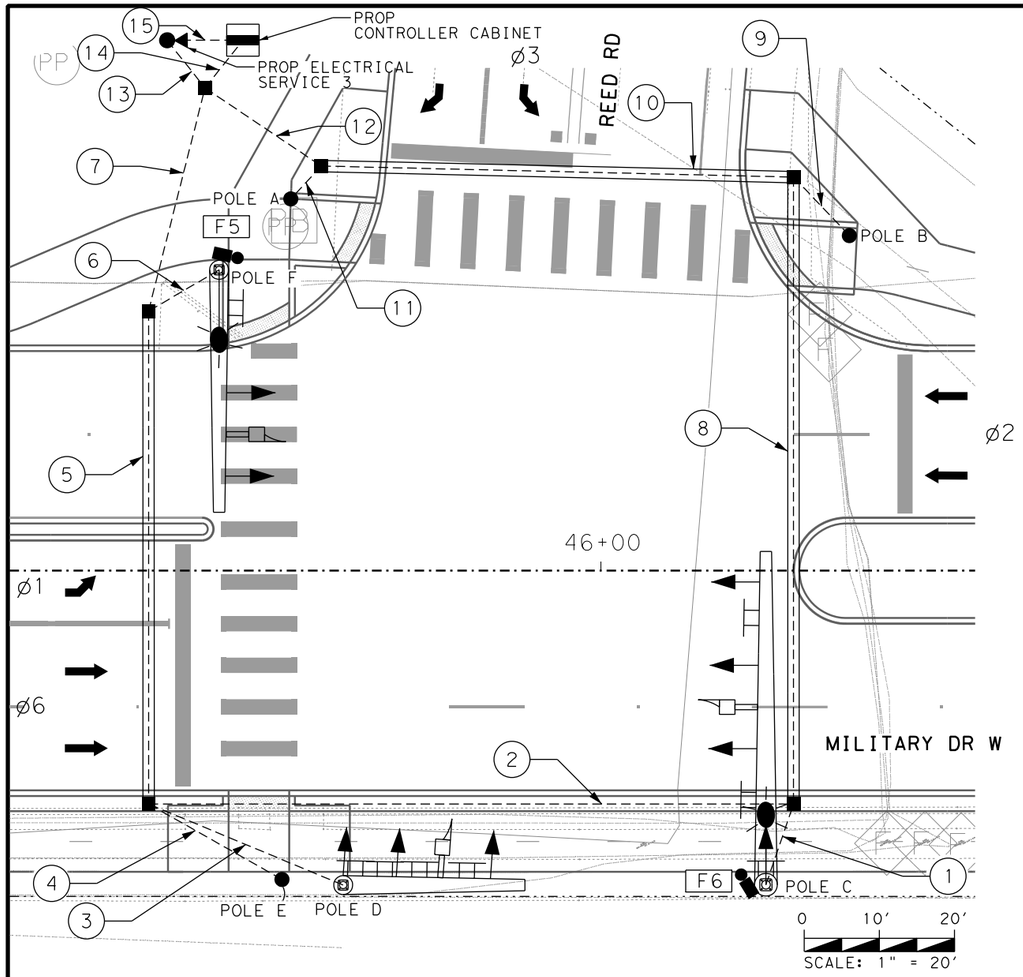
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
PROPOSED SIGNAL LAYOUT
REED RD

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CAC	DSGN. BY: CG	CHKD. BY: XW	SHEET NO. 294 OF 377

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D2201161TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL03.dgn
c:\dms\pwe-useast-006\knerr.chris\dms71726\C_MD_S_LSL03.dgn
25:13:29 PM
5/19/2025



LEGEND

- EXIST SIGNAL POLE/MAST ARM SET UP
- EXIST SIGNAL POLE
- EXIST SIGNAL HEAD
- EXIST SIGNAL CONDUIT
- EXIST MAST ARM MOUNTED SIGN
- EXIST CONTROLLER, SLAB AND FOUNDATION
- EXIST SIGNAL GROUND BOX
- EXIST SERVICE METER
- PROP SIGNAL POLE/MAST ARM SET UP
- PROP STRAIN POLE
- PROP SIGNAL HEAD
- PROP PREEMPTION DEVICE
- PROP MAST ARM MOUNTED SIGN
- PROP LUMINAIRE ARM
- PROP SIGNAL CONDUIT
- PROP CONDUIT BORE
- PROP PEDESTRIAN POLE
- PROP SIGNAL GROUND BOX TYPE D W/APRON
- PROP FISH EYE DETECTION SYSTEM
- EXIST TRAFFIC FLOW
- PROP TRAFFIC FLOW

CONDUIT AND CONDUCTOR SCHEDULE

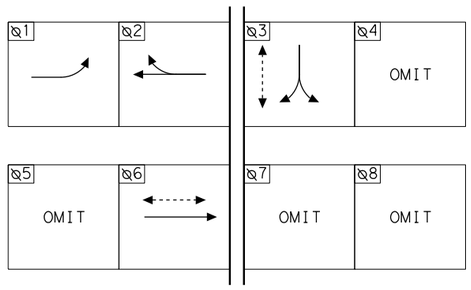
T = TRENCHED B = BORED E = EXISTING	CONDUIT / SPAN RUN NUMBER	1	1	2	2	3	3	4	5	5	6	6	7	7	8	8	9	10	11	12	13	14	15
	NUMBER OF CONDUITS	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1
	CONDUIT SIZE IN INCHES	2	2	2	2	2	2	2	3	2	2	2	3	2	3	2	2	2	2	2	2	4	2
	CONDUIT / SPAN LENGTH (FT)	15	15	85	85	30	30	20	65	65	12	12	30	30	85	85	12	65	6	20	10	10	10
	RUN TYPE	T	T	T	T	T	T	T	B	B	T	T	T	T	B	B	T	B	T	T	T	T	T
AWG	CIRCUIT	NUMBER OF CONDUCTORS																					
#6 THHN / THWN	120 POWER HOT & COMMON																						1
BARE BOND GROUND	#6 BARE		1		1		1			1		1		1		1					1		1
	#8 BARE	1		1		1		1	1		1		1		2		1	1	1	1		1	
9-CONDUCTOR #14 CABLE (SIGNAL HEADS)	ø6 & ø1 VH - POLE C	2		2					2				2									2	
	ø2 VH - POLE C	1		1					1				1									1	
	ø3 & ø8 VH - POLE D					2			2				2									2	
	ø2 VH - POLE F										1		1									1	
9-CONDUCTOR #14 CABLE (PEDESTRIAN HEAD)	ø2 PH - POLE A																		1	1		1	
	ø2 PH - POLE B																1	1		1		1	
	ø8 PH - POLE E							1	1				1									1	
	ø8 PH - POLE F										1		1									1	
3-CONDUCTOR #16 CABLE (PUSH BUTTON)	ø2 PPB - POLE A																		1	1		1	
	ø2 PPB - POLE B																1	1		1		1	
	ø8 PPB - POLE E							1	1				1									1	
	ø8 PPB - POLE F										1		1									1	
OPTICOM MODEL 138 DETECTOR CABLE	ø6 PREEMPT - POLE C	1		1					1				1									1	
	ø8 PREEMPT - POLE D					1			1				1									1	
	ø2 PREEMPT - POLE F										1		1									1	
ETHERNET CAT-5e CABLE	FISH EYE DETECTION SYSTEM - POLE C	1		1					1				1									1	
	FISH EYE DETECTION SYSTEM - POLE F										1		1									1	
4-CONDUCTOR #14 CABLE (ILSN)	ILSN - POLE C		1		1				1					1							1		
	ILSN - POLE D						1		1					1							1		
	ILSN - POLE F											1		1							1		
3-CONDUCTOR #12 CABLE (LUMINAIRE)	LUMINAIRE - POLE C		2		2				2				2								2		
	LUMINAIRE - POLE F											2		2							2		

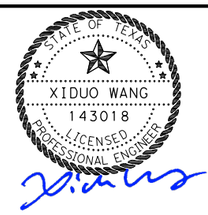
NOTE: PROPOSED LUMINAIRE AND ILSN CABLES WILL BE RAN IN CONDUIT SEPARATE FROM SIGNAL AND DETECTION CABLE

VEHICLE DETECTORS

DETECTOR ID	DESCRIPTION
F5	PROPOSED FISH EYE DETECTION SYSTEM
F6	PROPOSED FISH EYE DETECTION SYSTEM

PHASING DIAGRAM





5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
CONDUIT AND CONDUCTOR SCHEDULE
REED RD

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: CAG	DSGN. BY: CG	CHKD. BY: XW	SHEET NO. 295 OF 377

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D220116TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL03A.dgn
ci:\bms\pwe-useast-006\knerr.chris\dms71726\C_MD_S_LSL03A.dgn
5:13:27 PM
5/19/2025

ELECTRICAL SERVICE DATA

ELEC SERVICE POLE NO	ELECTRICAL POLE DESCRIPTION (SEE ED(5)-14)	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO/SIZE	SAFETY SWITCH AMPS	MAIN CKT BKR POLE/AMPS	TWO-POLE CONTACTOR AMPS	PANELBOARD/ LOAD CENTER AMP RATING	CIRCUIT NO	BRANCH CKT BKR POLE/AMPS	CKT AMP LOAD	SERVICE KVA LOAD
3	ELC SRV TY D 120/240 060 (NS)SS(E)PS(U)	1 1/4"	3/#6	N/A	2P/60	30	100	A - TRF SIG	1P/50	40.0	6.1
								B - ILSN	2P/20	2.3	
								C- LUM	2P/20	3.0	

ESTIMATE OF QUANTITIES

ITEM	DESCTIPTION	UNITS	ESTIMATED QUANTITY
308.1	DRILLED SHAFTS (30")	LF	22
308.1	DRILLED SHAFTS (36")	LF	13
615.1	TRAFFIC SIGNAL CONTROLLER ASSEMBLY (TYPE 332 CABINET)	EA	1
618.1	CONDUIT (2 INCH/PVC SCH 40)	LF	392
618.2	CONDUIT (3 INCH/PVC SCH 40)	LF	30
618.3	CONDUIT (4 INCH/PVC SCH 40)	LF	10
618.XX	CONDUIT (2 INCH/PVC SCH 80) (BORE)	LF	215
618.XX	CONDUIT (3 INCH/PVC SCH 80) (BORE)	LF	235
620.1	ELECTRICAL CONDUCTORS (NO. 6) (BARE)	LF	342
620.2	ELECTRICAL CONDUCTORS (NO. 8) (BARE)	LF	680
620.3	ELECTRICAL CONDUCTORS (NO. 6) (INSULATED)	LF	10
624.8	GROUND BOXES TYPE D (162922) WITH APRON	EA	6
628.1	ELECTRICAL SERVICE (PER INSTALLATION)	EA	1
633.1	BATTERY BACKUP SYSTEM	EA	1
655.1	TYPE 332 CONTROLLER FOUNDATION	EA	1
680.1	INSTALLATION OF HIGHWAY TRAFFIC SIGNALS (ISOLATED)	EA	1
*	ROD, 5/8" X 10' COPPER GROUND (CONTROLLER ONLY)	EA	1
*	SIGN, PEDESTRIAN PUSHBUTTON (SYMBOL TYPE) (9"X15") (R10-3e) (R)	EA	1
*	SIGN, PEDESTRIAN PUSHBUTTON (SYMBOL TYPE) (9"X15") (R10-3e) (L)	EA	3
*	REGULATORY SIGN PANEL (R3-5L, LEFT TURN ONLY) (30"X36")	EA	1
*	REGULATORY SIGN PANEL (R3-5R, RIGHT TURN ONLY) (30"X36")	EA	1
*	REGULATORY SIGN PANEL (R9-3, NO PEDESTRIANS) (18"X18")	EA	1
*	REGULATORY SIGN PANEL (R10-15 (MOD), TURNING VEHICLES STOP FOR PEDESTRIANS) (30"X30")	EA	1
*	REGULATORY SIGN PANEL (R10-17T, LEFT TURN YIELD ON FLASHING YELLOW ARROW) (36"X42")	EA	1
*	250W EQ LED LUMINAIRE	EA	2
*	DETECTOR UNIT	EA	1
*	POWER SUPPLY	EA	1
*	CONTROL, PHOTOELECTRIC	EA	1
682.1	INSTALL VEHICLE SIGNAL SECTION WITH BACK PLATE (RETROREFLECTIVE)(12 INCH) (3 SECTION)	EA	4
682.2	INSTALL VEHICLE SIGNAL SECTION WITH BACK PLATE (RETROREFLECTIVE)(12 INCH) (4 SECTION)	EA	5
683.1	LED COUNTDOWN PEDESTRIAN MODULE	EA	4
684.1	TRAFFIC SIGNAL CABLES (TYPE A)(12 AWG)(CONDUCTOR NO. 3)	LF	750
684.1	TRAFFIC SIGNAL CABLES (TYPE A)(14 AWG)(CONDUCTOR NO. 4)	LF	657
684.1	TRAFFIC SIGNAL CABLES (TYPE A)(14 AWG)(CONDUCTOR NO. 9)	LF	1891
684.1	TRAFFIC SIGNAL CABLES (TYPE A)(16 AWG)(CONDUCTOR NO. 3)	LF	485
686.1	INSTALL TRAFFIC SIGNAL POLE ASSEMBLIES (STEEL) (1 ARM 24') (LUM)	EA	1
686.1	INSTALL TRAFFIC SIGNAL POLE ASSEMBLIES (STEEL) (1 ARM 32') (LUM)	EA	1
686.1	INSTALL TRAFFIC SIGNAL POLE ASSEMBLIES (STEEL) (1 ARM 44') (LUM)	EA	1
687.1	PEDESTAL POLE ASSEMBLY	EA	3
**	DRILLED SHAFTS (24")	LF	18
688.3	AUDIBLE PEDESTRIAN SIGNAL UNITS	EA	4
688.XX	PED DETECTOR CONTROLLER UNIT	EA	1
693.1	INTERNALLY LIGHTED STREET NAME SIGNS (6'S)	EA	3
695.2	EMERGENCY PREEMPTION PHASE SELECTOR	EA	1
695.3	EMERGENCY PREEMPTION DETECTOR	EA	3
695.4	EMERGENCY PREEMPTION DETECTOR CABLE	LF	716
699.1	FEDS PROCESSOR UNIT	EA	1
699.2	FEDS FISH EYE CAMERA ASSEMBLY	EA	2
699.4	LIFETIME FEDS DATA COLLECTION AND REPORTING	EA	1
699.6	FEDS COMMUNICATION CABLE (ETHERNET-CAT5E)	LF	397

* SUBSIDIARY TO ITEM 680.1 INSTALLATION OF HIGHWAY TRAFFIC SIGNALS (ISOLATED)

** SUBSIDIARY TO ITEM 687.1 PEDESTAL POLE ASSEMBLY

POLE AND EQUIPMENT DESCRIPTION WITH ATTATCHMENTS

POLE	DESCRIPTION
A	INSTALL 10' HIGH PEDESTAL POLE ON A 5.7' DEEP 24-A FND WITH (1) LED COUNTDOWN PED SIGNAL HEADS, (1) AUDIBLE PED PUSH BUTTON WITH R10-3eR SIGN
B	INSTALL 10' HIGH PEDESTAL POLE ON A 5.7' DEEP 24-A FND WITH (1) LED COUNTDOWN PED SIGNAL HEADS, (1) AUDIBLE PED PUSH BUTTON WITH R10-3eL SIGN
C	INSTALL 30' HIGH SMA-80 STEEL POLE ON 13.2' DEEP 36-A FND W/ 44' MAST ARM, (1) PREEMPTION DEVICE, (1) 8' LUMINAIRE ARM, (1) FISH EYE DETECTION SYSTEM AND SIGNS S1, S2 (ILSN), AND S3
D	INSTALL 30' HIGH SMA-80 STEEL POLE ON 11.3' DEEP 30-A FND W/ 24' MAST ARM, (1) PREEMPTION DEVICE, AND SIGNS S4, S5, S6, AND S7 (ILSN)
E	INSTALL 10' HIGH PEDESTAL POLE ON A 5.7' DEEP 24-A FND WITH (1) LED COUNTDOWN PED SIGNAL HEADS, (1) AUDIBLE PED PUSH BUTTON WITH R10-3eL SIGN
F	INSTALL 30' HIGH SMA-80 STEEL POLE ON 11.3' DEEP 30-A FND W/ 32' MAST ARM, (1) PREEMPTION DEVICE, (1) 8' LUMINAIRE ARM, (1) FISH EYE DETECTION SYSTEM, (1) LED COUNTDOWN PED SIGNAL HEAD, (1) AUDIBLE PED PUSH BUTTON WITH R10-3eL SIGN, AND SIGN S8 (ILSN)
PS3	PROPOSED SERVICE POLE TY D WITH SERVICE (120/240 VOLTS) METER, SERVICE ENCLOSURE AND SERVICE DISCONNECT
	PROPOSED FULLY-ACTUATED CONTROLLER W/ TYPE 332 CABINET AND BATTERY BACK-UP UNIT (BBU)

STATE OF TEXAS
XIDUO WANG
143018
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040

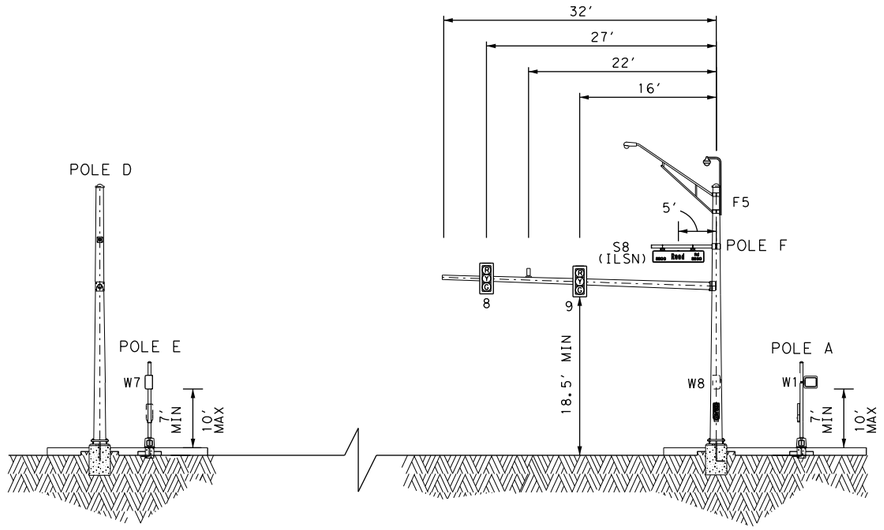
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

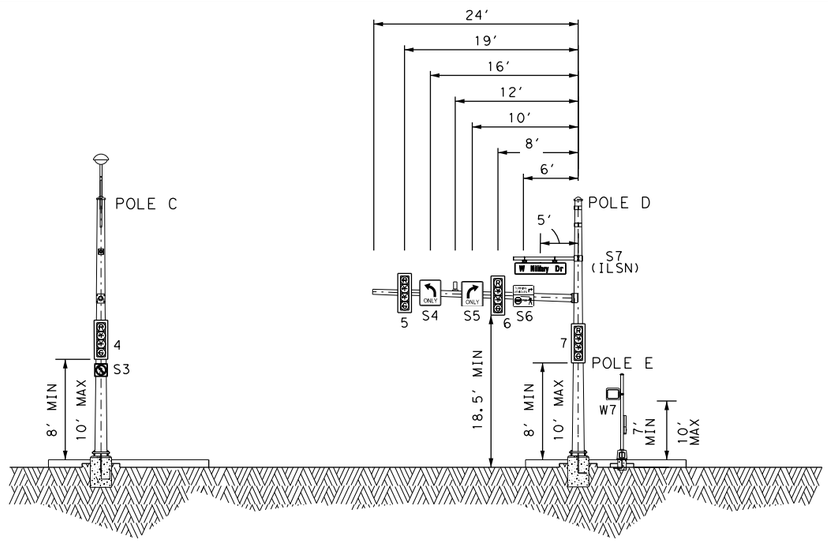
MILITARY DRIVE
ESTIMATE OF QUANTITIES AND EQUIPMENT DESCRIPTIONS
REED RD

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CAG	DSGN. BY: CG	CHKD. BY: XW	SHEET NO. 296 OF 377

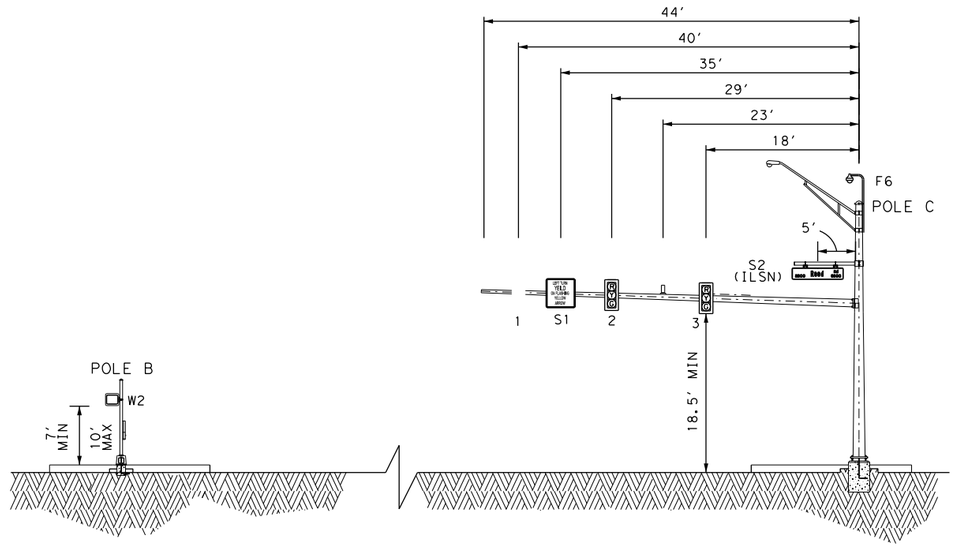
pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D2201161X.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL03B.dgn
5/19/2025 5:13:30 PM



LOOKING WEST ON MILITARY DR
AT REED RD



LOOKING SOUTH ON MILITARY DR
AT REED RD



LOOKING EAST ON MILITARY DR
AT REED RD

SCALE: NTS

STATE OF TEXAS
XIDUO WANG
143018
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040

8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

ELEVATIONS

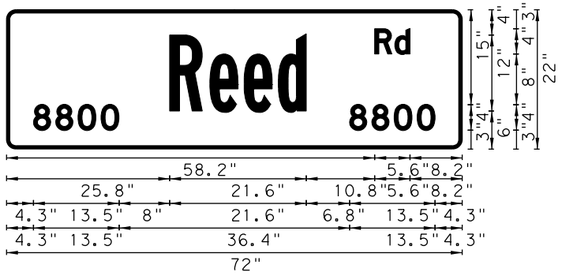
REED RD

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: CAG	DSGN. BY: CG / CHKD. BY: XW	SHEET NO. 297 OF 377

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D2201161TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL03C.dgn
ci:\bms\pwe-useast-006\knerr.chris\dms71726\C_MD_S_LSL03C.dgn
5/19/2025 9:13:30 AM
5/19/2025

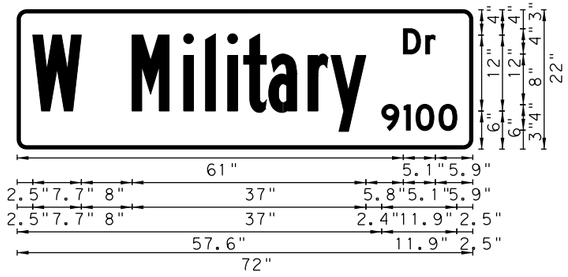
pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D2201161TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL03C.dgn

PROPOSED SIGNS
MOUNTED TO MAST ARMS



BORDER: R=1.5, TH=0.5
(REED) FONT: SERIES B
(DR), (8800), (8800) FONT: SERIES D

S2, S6 (ILSN)



BORDER: R=1.5, TH=0.5
(W MILITARY) FONT: SERIES B
(DR), (9100) FONT: SERIES D

S5 (ILSN)

5/19/2025

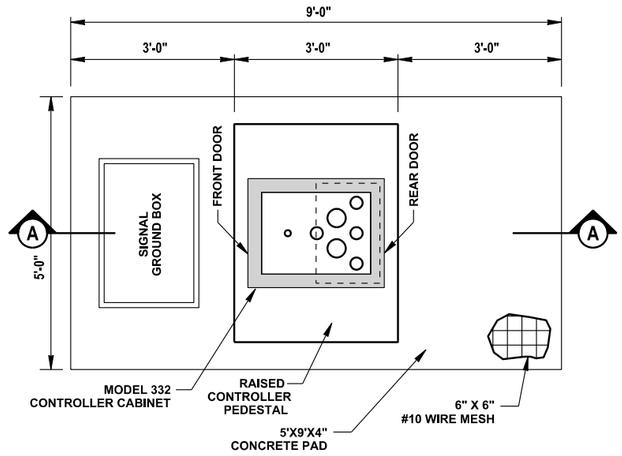
consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
PROPOSED SIGN
DETAILS
REED RD

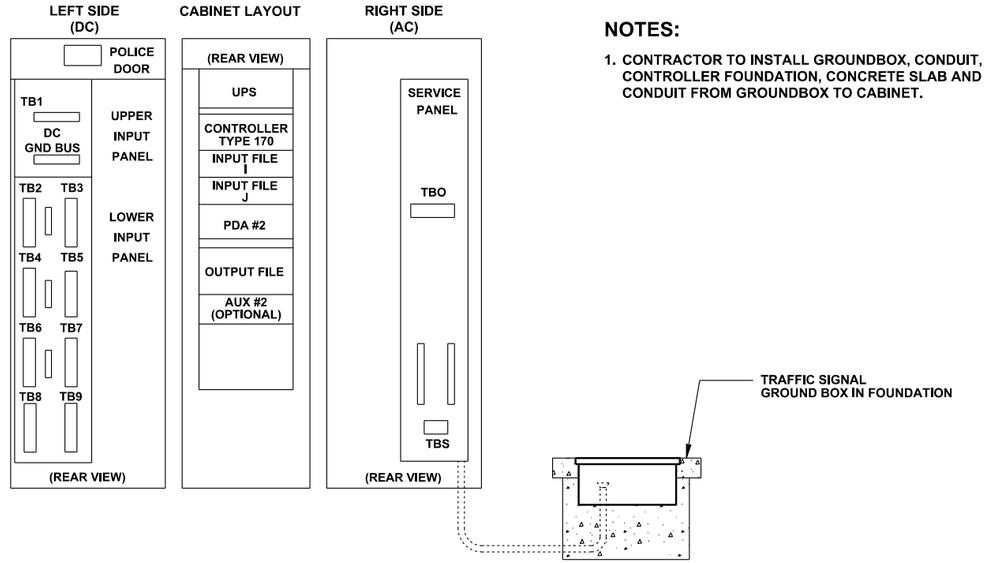
100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 5/19/2025
DRWN. BY: CAC	DSGN. BY: CG / CHKD. BY: XW	SHEET NO. 298 OF 377

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D220116TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\Consor\C_MD_S_LSL03D.dgn
ct:\bms\pwe-useast-006\knerr.chris\dms71726\C_MD_S_LSL03D.dgn
5/19/2025 11:53:58 AM
5/19/2025



TOP VIEW

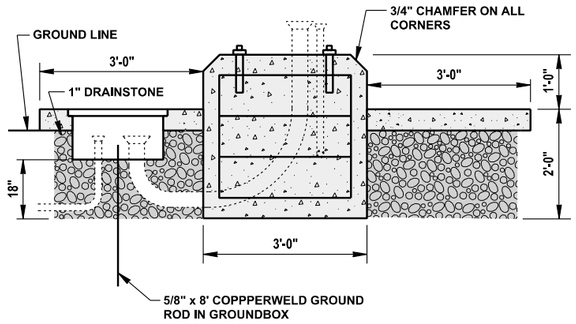
(NEW FOUNDATION)



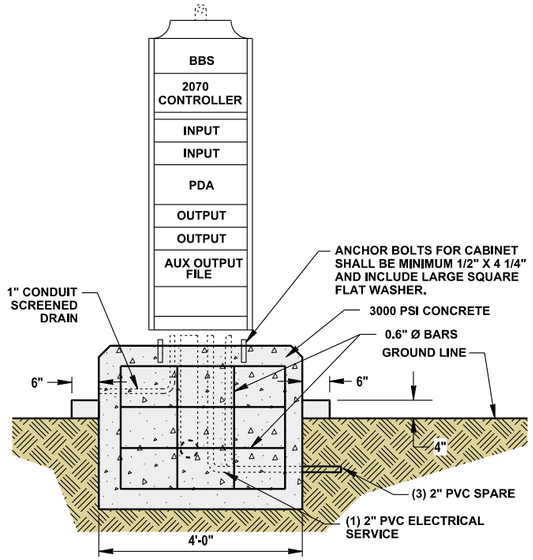
REAR VIEW SCHEMATIC

NOTES:

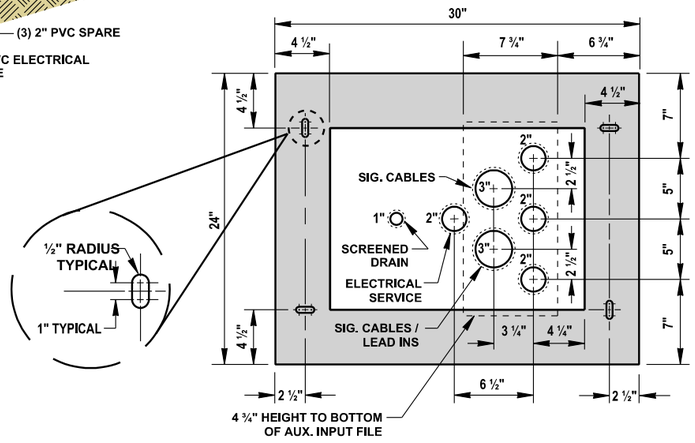
1. CONTRACTOR TO INSTALL GROUNDBOX, CONDUIT, CONTROLLER FOUNDATION, CONCRETE SLAB AND CONDUIT FROM GROUNDBOX TO CABINET.



SECTION A-A



REAR VIEW



BASE PLATE TEMPLATE

MAY 2024

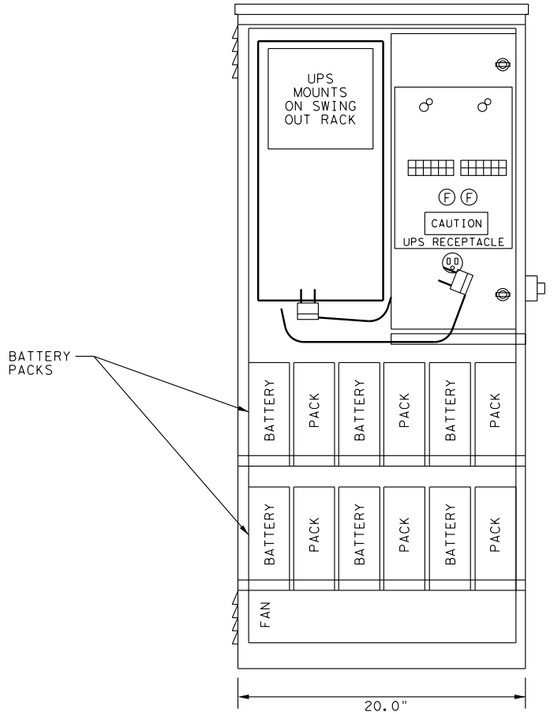
CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS

TRAFFIC SIGNAL STANDARDS

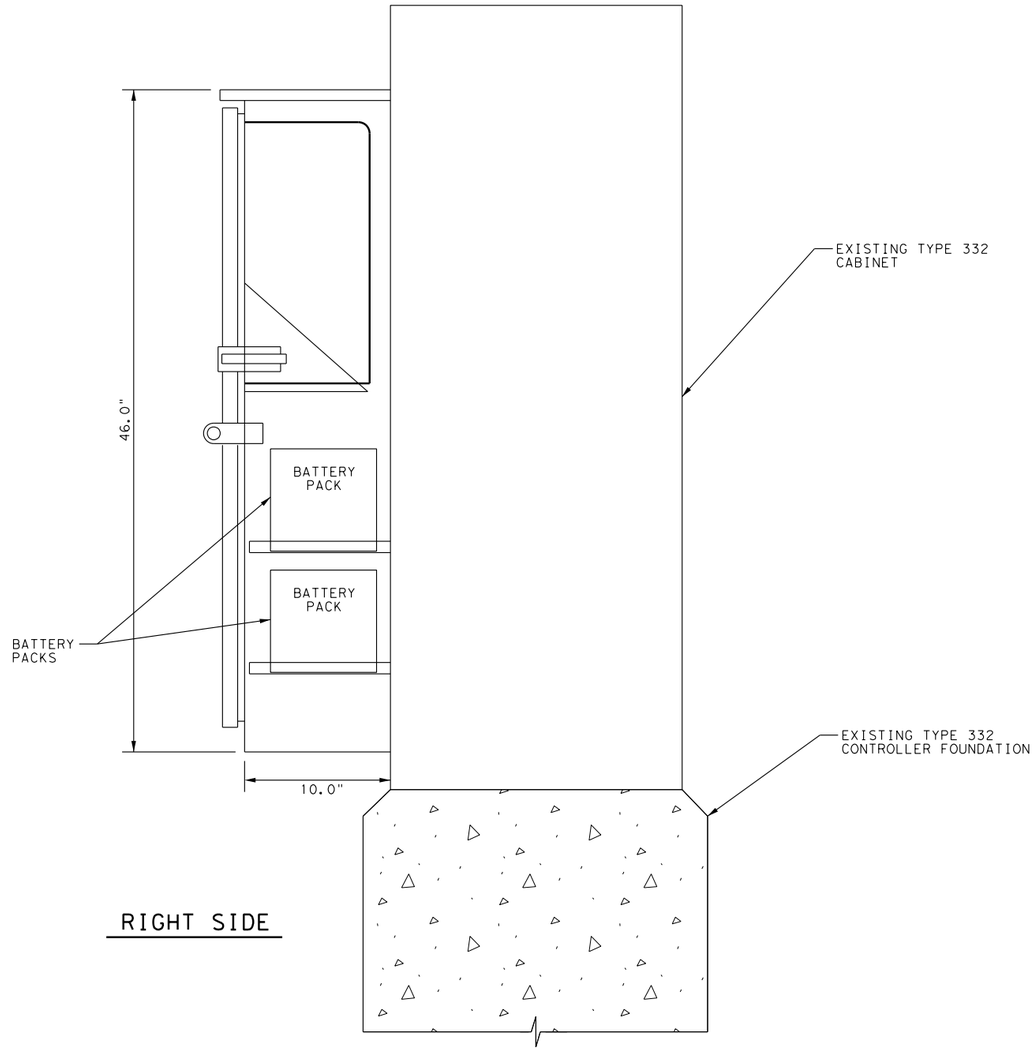
TYPE 332 CABINET FOUNDATION

TS-CAB-17

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 3/28/2025
DRWN. BY:	DSGN. BY:	CHKD. BY:	SHEET NO. 299 OF 377



FRONT VIEW



RIGHT SIDE

MAY 2024

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TRAFFIC SIGNAL STANDARDS

BATTERY BACKUP DETAIL

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 3/28/2025
DRWN. BY:	DSGN. BY:	CHKD. BY:	SHEET NO. 300 OF 377

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:5/20/2025 9:29:10 AM
FILE: c:\dms\pwe-useast-006\knerr.chris\dms81920\ed1-25.dgn

GENERAL NOTES FOR ALL ELECTRICAL WORK

1. The location of all conduits, junction boxes, ground boxes, and electrical services is diagrammatic and may be shifted to accommodate field conditions.

2. Provide new, unused, and undamaged materials. Ensure that all materials and installations comply with the National Electrical Code (NEC), TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA), and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as CSA Group, Intertek Testing Services, or FM Approvals can be considered equivalent to UL. Where reference is made to NEMA listed devices, International Electrotechnical Commission (IEC) listed devices will not be considered an acceptable equal to NEMA. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection. Replace or reinstall rejected material or equipment at no additional cost to the Department.

3. Miscellaneous nuts, bolts, and hardware, except for high strength bolts, may be stainless steel when plans specify galvanized, provided the bolt size is 1/2 in. or less in diameter.

4. Provide the following test equipment as required by the Engineer to confirm compliance with the contract and the NEC: voltmeter, ammeter, megohm meter (1000 volt DC), ground resistance tester, torque wrenches, and torque screwdrivers. Ensure all equipment has been properly calibrated within the last year. Provide calibration certification to the Engineer upon request. Operate test equipment during inspection as requested by the Engineer.

5. Install grounding as shown on the plans and in accordance with the NEC. Ensure all metallic conduits, metal poles, luminaires, and metal enclosures are bonded to an equipment grounding conductor. Provide stranded bare copper or green insulated grounding conductors. Ground rods, connectors, and bonding jumpers are subsidiary to the various bid items.

6. When required by the Engineer, notify the Department in writing of materials from the Material Producer List (MPL) intended for use on each project. Prequalified materials are listed on the MPL on TxDOT's website under "Roadway Illumination and Electrical Supplies." No substitutions will be allowed for materials on this list.

CONDUIT

A. MATERIALS

1. Provide conduit, junction boxes, fittings, and hardware per TxDOT Departmental Material Specification DMS-11030, "Conduit" and Item 618, "Conduit" of TxDOT's "Standard Specifications for Construction and Maintenance of Highways, Streets, And Bridges," latest edition. Provide conduits listed under Item 618 on the MPL under "Roadway Illumination and Electrical Supplies." Provide conduit types according to the descriptive code or as shown on the plans. Do not substitute other types of conduits for those shown. Provide Liquidtight Flexible Metal Conduit (LFMC) when flexible conduit is called for on galvanized steel Rigid Metal Conduit (RMC) systems. Provide Liquidtight Flexible Nonmetallic Conduit (LFNC) when flexible conduit is called for on Polyvinyl Chloride (PVC) systems.

2. Provide galvanized steel RMC for all exposed conduits, unless otherwise shown on the plans. Properly bond all metal conduits.

3. Unless otherwise shown on the plans, provide junction boxes with a minimum size as shown in the following table, which applies to the greatest number of conductors entering the box through one conduit with no more than four conduits per box. When a mixture of conductor sizes are present, count the conductors as if all are of the larger size. For situations not applicable to this table, size junction boxes per the NEC.

JUNCTION BOX SIZES

AWG	3 CONDUCTORS	5 CONDUCTORS	7 CONDUCTORS
#1	10" x 10" x 4"	12" x 12" x 4"	16" x 16" x 4"
#2	8" x 8" x 4"	10" x 10" x 4"	12" x 12" x 4"
#4	8" x 8" x 4"	10" x 10" x 4"	10" x 10" x 4"
#6	8" x 8" x 4"	8" x 8" x 4"	10" x 10" x 4"
#8	8" x 8" x 4"	8" x 8" x 4"	8" x 8" x 4"

4. Junction boxes with internal volumes up to 100 cu. in. and that are supported by entering raceways must have threaded entries or hubs identified for the intended purpose and be supported by connection of two or more rigid metal conduits. Secure conduit within 3 ft. of the box or within 18 in. of the box if all conduit entries are on the same side. Mechanically secure all junction boxes with an internal volume greater than 100 cu. in.

5. Provide hot dipped galvanized cast iron or sand cast aluminum outlet boxes for junction boxes containing only 10 AWG or 12 AWG conductors. Do not use die cast aluminum boxes. Size outlet boxes according to the NEC.

6. Do not use Intermediate Metal Conduit (IMC) or Electrical Metallic Tubing (EMT) unless specifically required by the plan sheets. When EMT is called for, provide junction boxes sized as directed above, listed and approved for outdoor use, unless otherwise noted on the plans. Provide junction boxes for IMC conduit systems that meet the same requirements for junction boxes used with RMC systems.

7. Provide PVC junction boxes intended for outdoor use on PVC conduit systems, unless otherwise noted on the plans.

8. Provide PVC elbows, unless otherwise shown in the plans. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system.

A. MATERIALS (CONTINUED)

9. When galvanized steel RMC elbows are specifically called for in the plans and any portion of the RMC elbow is buried less than 18 in. below grade or bottom of the ground box, ground the RMC elbow with a grounding bushing on a rigid metal extension. Grounding of the rigid metal elbow is not required if the entire RMC elbow is encased in a minimum of 2 in. of concrete. PVC extensions are allowed on these concrete encased rigid metal elbows. Elbows are subsidiary to various bid items.

10. When required, provide High-Density Polyethylene (HDPE) conduit with factory installed internal conductors according to DMS-11060, "Duct Cable." At the Contractor's request and with approval by the Engineer, substitute HDPE conduit with no conductors according to DMS-11030 for PVC conduit bid under Item 618. Provide conduit of the size and schedule as shown on the plans. Do not extend HDPE conduit into ground boxes or foundations. Provide PVC elbows at all ground boxes and foundations.

11. Use two-hole straps or strut straps when supporting 2 in. and larger conduits. On electrical service poles, properly sized stainless steel or hot dipped galvanized strut straps or stand-off straps are allowed on the service riser conduit.

B. CONSTRUCTION METHODS

1. Provide and install expansion joint conduit fittings on all structure-mounted conduits at the structure's expansion joints to allow for movement of the conduit. In addition, provide and install expansion joint fittings on all continuous runs of galvanized steel RMC conduit externally exposed on structures such as bridges at maximum intervals of 150 ft. When requested by the project Engineer, supply manufacturer's specification sheet for expansion joint conduit fittings. Repair or replace expansion joint fittings that do not allow for movement at no additional cost to the Department. Provide the method of determining the amount of expansion to the Engineer upon request. Do not use LFMC or LFNC as a substitute for the required expansion conduit fittings.

2. Space all conduit supports at maximum intervals of 5 ft. Install conduit spacers when attaching metal conduit to surfaces of concrete structures. See "Conduit Mounting Options" on ED(2). Install conduit supports within 3 ft. of all enclosures and conduit terminations.

3. Do not attach conduit supports directly to pre-stressed concrete beams, except as shown specifically in the plans or as approved by the Engineer.

4. Unless otherwise shown on the plans, jack or bore conduit placed beneath existing roadways, driveways, sidewalks, or after the base or surfacing operation has begun. Backfill and compact the bore pits below the conduit per Item 476 "Jacking, Boring, or Tunneling Pipe or Box" prior to installing conduit or duct cable to prevent bending of the connections.

5. When placing conduit in the subgrade of new roadways, backfill all trenches with excavated material unless otherwise noted on the plans. When placing conduit in the subbase of new roadways, backfill all trenches with cement-stabilized base as per requirements of Items: 110, "Excavation;" 400, "Excavation and Backfill for Structures;" 401, "Flowable Backfill;" 402, "Trench Excavation Protection;" and 403, "Temporary Special Shoring."

6. During construction, temporarily cap or plug open ends of all conduit and raceways immediately after installation to prevent entry of dirt, debris and animals. Temporary caps constructed of durable duct tape are allowed. Tightly affix the tape to the conduit opening. Clean out the conduit and prove it clear in accordance with Item 618 prior to installing any conductors.

7. Ensure conduit entry into the top of an enclosure is waterproof by installing conduit sealing hubs or using boxes with threaded bosses. This includes surface mounted safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes. Grounding bushings on water tight sealing hubs are not required.

8. Fit the ends of all PVC conduit terminations with bushings or bell end fittings. Provide and install a grounding bushing on all metal conduit terminations.

9. Install a bonding jumper from each grounding bushing to the nearest ground rod, grounding lug, or equipment grounding conductor. Ensure all bonding jumpers are the same size as the equipment grounding conductor. Bonding of conduit used as a casing under roadways for duct cable is not required, if the duct extends the full length through the casing.

10. Place conduits entering ground boxes so that the conduit openings are between 3 in. and 6 in. from the bottom of the box. See the ground box detail on sheet ED(4).

11. After completion of conductor installation, immediately seal ends of all conduits emerging from ground with duct seal, expandable foam, or other methods approved by the Engineer. Do not use silicone caulking. Do not use duct tape as a permanent seal.

12. File smooth the cut ends of all mounting strut and conduit. To avoid overspray, paint the field cut ends of all mounting strut and RMC (threaded or non-threaded) with zinc rich paint (94% min. zinc content as specified on DMS-8103 and listed on the MPL for Galvanizing Repair Paints) before installing. Use zinc rich paint to touch up galvanized material as allowed under Item 445 "Galvanizing." Do not paint non-galvanized material with zinc rich paint as an alternative for materials required to be galvanized.

13. For all conduits, ensure the burial depth is 18" min. For conduits placed under a roadway, ensure the burial depth is 24" min.

Texas Department of Transportation

Traffic Safety Division Standard

ELECTRICAL DETAILS CONDUITS & NOTES

ED(1)-25

FILE:	ed1-25.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT	April 2025	CONT	SECT	JOB	HIGHWAY
REVISIONS					MILITARY DR
1-92 3-03 4-25		DIST	COUNTY		SHEET NO.
4-98 5-03		SAT	BEXAR		301 OF 377
12-00 10-14					

71A

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 5/20/2025 9:29:30 AM
FILE: c:\dms\pwe-useast-006\knerr.chris\dms81920\ed3-25.dgn

ELECTRICAL CONDUCTORS

A. MATERIAL INFORMATION

1. Provide Type XHHW insulated copper conductors in accordance with Departmental Material Specification DMS-11040, "Conductors" and Item 620, "Electrical Conductors." Provide conductors as listed on the Material Producer List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 620.

2. Identify grounded (neutral) conductors with white insulation. Identify grounding conductors (ground wires) with green insulation or bare conductors. Identify ungrounded (hot) conductors with any color insulation except green, white, or gray. Keep color scheme consistent throughout the wiring system. Identify conductors 6 American Wire Gauge (AWG) and smaller by continuous color jacket. Identify electrical conductors 4 AWG and larger by continuous color jacket or by colored tape. When identifying conductors with colored tape, mark at least 6 in. of the conductor's insulation with half laps of tape at each accessible location.

3. Insulated grounding conductors may be substituted for bare conductors, unless otherwise shown in the plans. Insulated grounding conductors must be color coded green in accordance with Note 2.

4. Provide a 6 AWG bare solid copper grounding electrode conductor to bond the electrical service equipment to the concrete encased grounding electrode or the ground rod at the service location. Connect the grounding electrode conductor to the ground rod with a UL listed connector in accordance with DMS-11040. Connect the grounding electrode conductor to the concrete encased grounding electrode as shown in the plans.

5. Where two or more circuits are present in one conduit or enclosure, permanently label the conductors of each branch circuit by attaching a non-metallic, weather resistant tag around both circuit conductors at each accessible location. Provide one-piece tags with two $\frac{3}{16}$" straps, large enough to indicate circuit number, letter, or other identification as shown in the plans. Print circuit identification on the tag with a permanent marker.

6. Use listed compression connectors, mechanical lugs, terminal blocks, or split bolt connectors for splicing as specified in DMS-11040. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Provide UL listed gel-filled insulating splice covers. Splicing materials, insulating materials, breakaway disconnects, splice covers, and fuse holders are subsidiary to various bid items.

B. CONSTRUCTION METHODS

1. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the conduit system.

2. Leave 2 ft. to 3 ft. of length for each conductor up to the splice in ground boxes. Leave 3 ft. to 4 ft. of length for each conductor in ground boxes when pulled through with no splice. Leave 1 ft. to 1.5 ft. of length for each conductor at enclosures and pole bases. Leave 1.5 ft. to 3 ft. of length as required by electric utility for conductors exiting weatherheads.

3. Make splices only in junction boxes, ground boxes, pole bases, or electrical enclosures and use only listed compression connectors, mechanical lugs, terminal blocks, or split bolt connectors. Insulate splices with heavy wall heat shrink tubing or gel-filled insulating splice covers to provide a watertight splice. Overlap conductor insulation with heat shrink tubing a minimum of 2 in. past both sides of the splice. Where heat shrink tubing may not shrink sufficiently to provide a watertight seal around the individual conductors, prior to heating the tubing, increase the diameter of the conductor insulation using hot melt adhesive tape to provide a watertight seal between each conductor and the heat shrink tubing. Ensure the tape extends past the heat shrink tubing. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Heat shrink tubing that appears to have been burned or overheated is considered defective and must be replaced.

4. Size and install gel-filled insulating splice covers according to manufacturer's specifications when used in place of heat shrink tubing.

5. Wire nuts with factory applied waterproof sealant may be used for 8 AWG or smaller conductors in above ground junction boxes, but not in pole bases or ground boxes. Install wire nuts in an upright position to prevent the accumulation of water.

6. Support conductors in illumination poles with a J-hook at the top of the pole.

7. When terminating conductors, remove the insulation and jacketing material without nicking the individual strands of the conductor. Conductors with nicked individual conductor strands or removed strands will be considered damaged.

8. Replace conductors and cables that are damaged or that fail an insulation resistance test at no additional cost to the Department.

9. Do not repair damaged conductors with duct tape, electrical tape, or wire nuts. Use only approved splicing methods.

B. CONSTRUCTION METHODS (CONTINUED)

10. Do not terminate more than one conductor under a single lug unless it is rated for multiple conductors. Do not exceed the lug's listing for maximum number and size of conductors allowed.

11. Follow manufacturer's instructions when terminating conductors to breakaway connectors. Properly torque threaded connections. Proper terminations are critical to the safe operation of breakaway devices. Trim waterproofing boots on breakaway connectors to fit snugly around the conductor to ensure a waterproof connection. Only one conductor may enter a single opening in a boot. Provide waterproof boots with the correct number of openings. Leave unused openings factory sealed. Use prequalified breakaway connectors as shown on the MPL.

12. Provide and install a separate stranded equipment grounding conductor (EGC) in all conduits that contain circuit wiring of 50 volts or more. Unless shown elsewhere, size the EGC to be the same size as the largest current carrying conductor in the conduit. Bond all EGCs together at every accessible location. For ITS installations, bond and ground metal ground box covers and other metal equipment as shown on ITS standards.

C. TEMPORARY WIRING

1. Install temporary conductors and electrical equipment in accordance with the NEC article "Temporary Installations" and Department standard sheets.

2. Provide a ground fault circuit interrupter (GFCI) for powering portable electrical equipment, power tools, ice machines, ice storage bins and refrigerators located outdoors at grade. GFCI may be any one of the following: molded cord and plug set, receptacle, or circuit breaker type.

3. Use listed wire nuts with factory applied sealant for temporary wiring where approved.

4. Enclose conductor splices within a listed enclosure or ground box, or ensure the splices are more than 10 ft. above grade vertically and more than 5 ft. horizontally from any metal structure. When installing temporary conductors in areas subject to vehicle traffic or mobile construction equipment, ensure the vertical clearance to ground is at least 18 ft. when measured at the lowest point. Ground messenger wires that support power conductors in conformance with the NEC.

5. Protect and when necessary repair any existing electrical conduits uncovered during the construction process in a timely manner and in conformance with the NEC.

GROUND RODS & GROUNDING ELECTRODES

A. MATERIAL INFORMATION

1. Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS-11040 and the plans. Larger diameter or longer length rods may be called for in some locations. Concrete encased grounding electrodes may be called for in some locations including electrical services — see plan sheets.

B. CONSTRUCTION METHODS

1. Furnish and install ground rods in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil, ensure that the upper end is between 2 to 4 in. below finished grade.

2. Do not place ground rods in the same drilled hole as a timber or concrete pole.

3. Install ground rods so the imprinted part number is at the upper end of the rod.

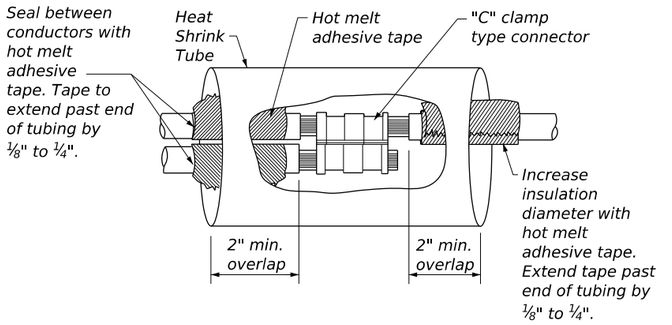
4. Remove all non-conductive material such as concrete splatter from the rod at the clamp location.

5. Route all conductors as short and straight as possible for connection to lightning protection ground rods. When a bend is required, ensure a minimum radius bend of 4 in.

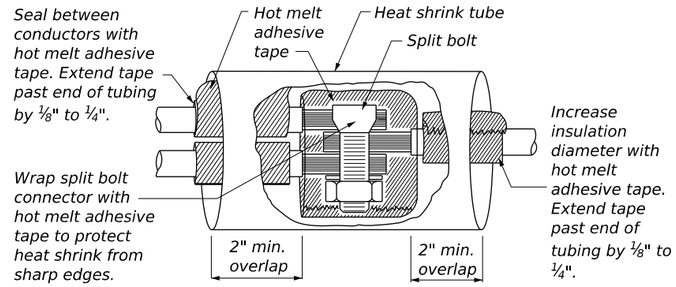
6. Unless otherwise called for in the plans, protect grounding electrode conductors with non-metallic conduit. When protecting grounding electrode conductors with metal conduit, provide and install a grounding bushing and properly sized bonding jumper on each end of the metal conduit.

7. Written authorization is required before installing a ground rod in a horizontal trench for rocky soil or a solid rock bottom.

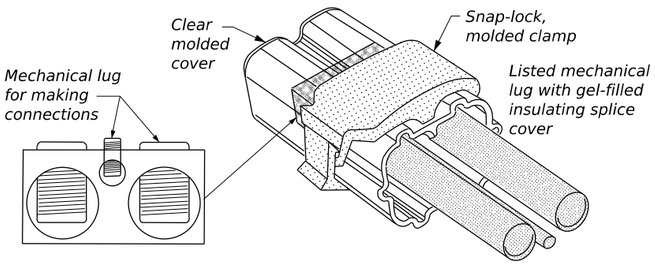
COMPRESSION SPLICE
OPTION 1



SPLIT BOLT SPLICE
OPTION 2



GEL-FILLED INSULATED SPLICE
OPTION 3



Texas Department of Transportation

Traffic Safety Division Standard

ELECTRICAL DETAILS CONDUCTORS

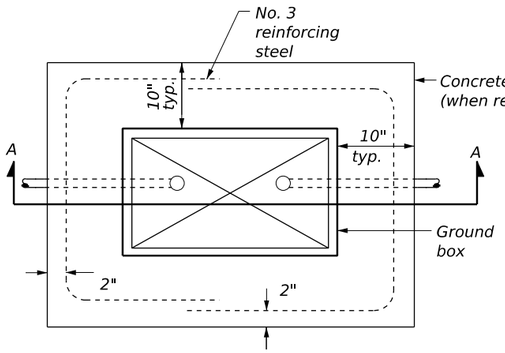
ED(3)-25

FILE: ed3-25.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2025	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
1-92 12-00 10-14 10-93 3-03 4-25 4-98 5-03	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		302 OF 377

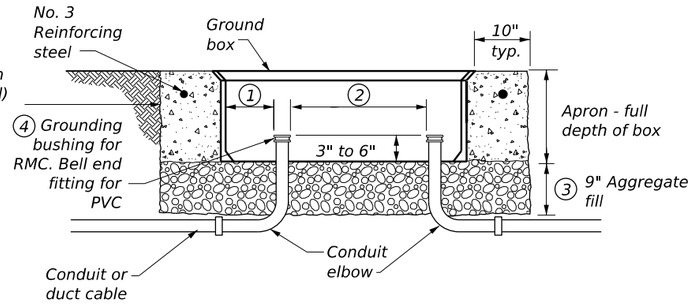
71C

APRON FOR GROUND BOX

PLAN VIEW



SECTION A - A



SECTION A - A NOTES:

(1) *Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.*

(2) *Maintain sufficient space between conduits to allow for proper installation of bushing.*

(3) *Place aggregate under the box, not in the box. Aggregate should not encroach on the interior volume of the box.*

(4) *Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.*

GROUND BOXES	
TYPE	OUTSIDE DIMENSIONS (Width x Length X Depth)
A	12" X 23" X 11"
B	12" X 23" X 22"
C	16" X 29" X 11"
D	16" X 29" X 22"
E	12" X 23" X 17"

NOTES:

A. MATERIALS

1. *Provide polymer concrete ground boxes measuring 16 in. x 30 in. x 24 in. (W x L x D) or smaller in accordance with Departmental Material Specification DMS-11070, "Ground Boxes" and Item 624, "Ground Boxes."*
2. *Provide Type A, B, C, D, and E ground boxes as shown in the plans and as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 624.*
3. *Ensure ground box cover is correctly labeled in accordance with DMS-11070.*
4. *Provide larger ground boxes in accordance with Item 624 and as shown in the plans.*

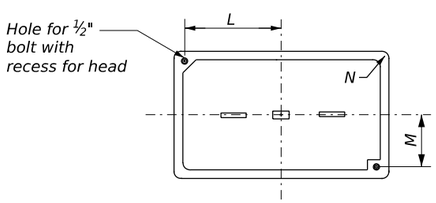
B. CONSTRUCTION METHODS

1. *Before setting ground box and after placing and capping conduits, lay an aggregate bed a minimum of 9 in. deep that extends 10 in. beyond the sides of the ground box. Provide coarse aggregate sized 3/4 in. to 2 in., with no more than 20% material passing through a no. 8 sieve, and as defined by the current ASTM C33/33M standard. Clean aggregate and dirt from conduits according to Item 618.*
2. *Cast ground box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Ground box aprons, including concrete and reinforcing steel, are subsidiary to ground boxes when called for by descriptive code.*
3. *Keep bolt holes in the box clear of dirt. Bolt covers down when not working in ground boxes.*
4. *Install all conduits and elbows in a professional and skillful manner. Uniformly space conduits so grounding bushings and bell end fittings can easily be installed.*
5. *Temporarily seal all conduits in the ground box until conductors are installed.*
6. *Permanently seal conduits immediately after the completion of conductor installation. Permanently seal the ends of all conduits with duct seal, expandable foam, or other method as approved. Do not use duct tape as a permanent conduit seal. Do not use silicone caulk as a sealant.*
7. *Bond all equipment grounding conductors in a ground box together with listed connectors.*
8. *When a Type B or D ground box is stacked to meet volume requirements, an appropriately sized hole may be cut for conduit entry in the side wall at least 18 in. below grade.*
9. *If an existing ground box in the contract has a metal cover, bond the cover to the equipment grounding conductor with a 3 ft. long stranded bonding jumper that is the same size as the grounding conductor. The bonding jumper is subsidiary to various bid items. Verify existing ground boxes with metal covers are shown on the plans, with notes fully describing the work required.*
10. *If other ground boxes with metal covers are within the project limits but are not part of the contract, the Engineer may direct the Contractor to bond the metal covers, identifying the specific boxes in writing. This work will be paid for separately.*
11. *Bond metal ground box covers to the grounding conductor with a tank ground type lug.*

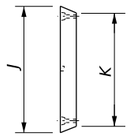
GROUND BOX COVERS								
TYPE	DIMENSIONS							
	H	I	J	K	L	M	N	P
A, B & E	23 ¼"	23"	13 ¾"	13 ½"	9 ⅞"	5 ⅛"	1 ⅜"	2"
C & D	30 ½"	30 ¼"	17 ½"	17 ¼"	13 ¼"	6 ¾"	1 ⅜"	2"

GROUND BOX COVER

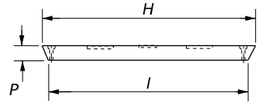
PLAN VIEW



END



SIDE



Texas Department of Transportation

Traffic Safety Division Standard

ELECTRICAL DETAILS
GROUND BOXES

ED(4)-25

FILE: ed4-25.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2025	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
1-92 3-03 4-25	DIST	COUNTY		SHEET NO.
4-98 5-03	SAT	BEXAR		303 OF 377
12-00 10-14				

71D

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 5/20/2025 9:29:45 AM
FILE: c:\dms\pwe-useast-006\knerr.chris\dms81920\ed4-25.dgn

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:5/20/2025 9:29:56 AM
FILE: c:\dms\pwe-useast-006\knerr.chris\dms81920\ed5-25.dgn

ELECTRICAL SERVICES NOTES

1. Provide electrical services in accordance with Electrical Details standard sheets, Departmental Material Specification (DMS)-11080, "Electrical Services" and Item 628, "Electrical Services." Provide electrical service types A, C, and D, as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 628. Provide other service types as detailed on the plans.

2. Coordinate with the Engineer and the utility provider for metering and compliance with utility requirements. Primary line extensions, connection charges, meter charges, and other charges by the utility company to provide power to the location are paid for in accordance with Item 628. Get approval for the costs associated with these charges prior to engaging the utility company to do the work. Consult with the utility provider to determine costs and requirements, and coordinate the work as approved.

3. Provide a Master Lock, Model No. 2, M1, or 6121, keyed to code 2195. Master Lock 2195 keys and locks become property of the Department. Unless otherwise approved, do not energize electrical service equipment until locks are installed.

4. Enclosures with external disconnects that de-energize all equipment inside the enclosure do not need a dead front trim. Protect incoming line terminations from incidental contact as required by the NEC.

5. When galvanized is specified for nuts, screws, bolts or miscellaneous hardware, stainless steel may be used.

6. Provide wiring and electrical components rated for 75°C. Provide red, black, and white colored XHHW service entrance conductors of minimum size 6 American Wire Gauge (AWG). Identify conductors per ED(3). Ensure each service entrance conductor exits through a separately bushed non-metallic opening in the weatherhead. The lengths of the conductors outside the weatherhead are to be 1.5 ft. to 3 ft. as required by electric utility.

7. Provide rigid metal conduit (RMC) for all conduits on service, except for the ½ in. PVC conduit containing the electrical service grounding electrode conductor. Size the service entrance conduit as shown in the plans. Ensure conduit for branch circuit entry to enclosure is the same size as shown on the layout sheets for branch circuit conduit. Extend all rigid metal conduits a minimum of 6 in. underground and then couple to the type and schedule of the conduit shown on the plans. Install a grounding bushing on the RMC where it terminates in the service enclosure.

8. Use of liquidtight flexible metal conduit (LFMC) is allowed between the meter and service enclosure when they are mounted 90 to 180 degrees from each other. Size this LFMC the same size as the service entrance conduit. LFMC must not exceed 3 ft. in length. Strap LFMC within 1 ft. of each end. Terminate each end of the LFMC with a grounding bushing or fitting. The LFMC must contain a grounded (neutral) conductor. Ensure bends in LFMC do not exceed 180 degrees. A pull test is required on all installed conductors, with at least 6 in. of free conductor movement demonstrated to the satisfaction of the Engineer.

9. Ensure all mounting hardware and installation details of services conform to utility company specifications.

10. Provide the following documents in the electrical service document pocket: schematic drawing unique to the service from the UL 508 shop; plan sheet showing Electrical Service Data Chart for the service; plan sheets for the circuits powered by the service; and red lined plan sheets if installation differs from the original design. Reduce larger sheets to 8 ½ in. x 11 in. and laminate all documents.

11. When providing an "Off The Shelf" Type D or Type T service, provide laminated plan sheets detailing equipment and branch circuits supplied by that service. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in. before laminating. When the enclosure has no door pocket, deliver these drawings to the Engineer before completion of the work.

12. Do not install conduit in the back wall of a service enclosure where it would penetrate the equipment mounting panel inside the enclosure. Provide grounding bushings on all metal conduits, and terminate bonding jumpers to grounding bus. Grounding bushings are not required when the end of the metal conduit is fitted with a watertight conduit hub or meter hub.

MAIN DISCONNECT & BRANCH CIRCUIT BREAKERS

1. Field drill flange-mounted remote operator handle, if needed, to ensure handle is lockable in both the "On" and "Off" positions.

2. When the utility company provides a transformer larger than 50 KVA, verify that the available fault current is less than the circuit breaker's ampere interrupting capacity (AIC) rating and provide documentation from the electric utility provider to the Engineer.

PHOTOELECTRIC CONTROL

1. Provide photocell as listed on the MPL. Move, adjust, or shield the photocell from stray or ambient night time light to ensure proper operation. Mount photocell facing north when practical. Mount top of pole photocells as shown on Top Mounted Photocell Detail.

ELECTRICAL SERVICE DATA (EXAMPLE) ∗

ELEC. SERVICE ID	PLAN SHEET NUMBER	ELECTRICAL SERVICE DESCRIPTION	SERVICE CONDUIT SIZE ∗∗	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CKT. BKR. POLE/AMPS	LIGHTING CONTACTOR AMPS	PANELBOARD/ LOADCENTER AMP RATING	BRANCH CIRCUIT ID	BRANCH CKT. BKR. POLE/AMPS	BRANCH CIRCUIT AMPS	KVA LOAD
SB 183	289	ELC SRV TY A 240/480 100(SS)AL(E)SF(U)	2"	3/#2	100	2P/100	2P/100	N/A	Lighting NB	2P/40	26	28.1
									Lighting SB	2P/40	25	
									Underpass	1P/20	15	
NB Access	30	ELC SRV TY D 120/240 060(NS)SS(E)TS(O)	1 ¼"	3/#6	N/A	2P/60	2P/30	100	Sig. Controller	1P/30	23	5.3
									Luminaires	2P/20	9	
									CCTV	1P/20	3	
2nd & Main	58	ELC SRV TY T 120/240 000(NS)GS(N)SP(O)	1 ¼"	3/#6	N/A	N/A	N/A	70	Flashing Beacon 1	1P/20	4	1.0
									Flashing Beacon 2	1P/20	4	

∗ Example only, not for construction. All new electrical services must have electrical service data chart specific to that service as shown in the plans.

∗∗ Verify service conduit size with utility. Size may change due to utility meter requirements. Ensure conduit size meets the National Electrical Code.

ELECTRICAL SERVICE BID ITEM DESCRIPTIONS

ELEC SERV TY X XXX/XXX XXX(XX)XX(X)XX(X)

SCHEMATIC TYPE

SERVICE VOLTAGE

DISCONNECT AMP RATING
NOTE: 000 indicates main lug only, typically Type T

SAFETY SWITCH
(SS) = Safety Switch Ahead of Meter - Check with Utility
(NS) = No Safety Switch Ahead of Meter - Check with Utility

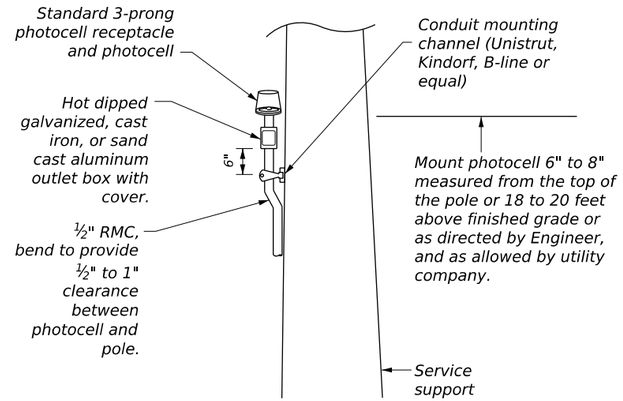
ENCLOSURE TYPE
GS = Galvanized steel ("off the shelf")
SS = Stainless steel (Custom Enclosure) - See MPL
AL = Aluminum (Custom Enclosure) - See MPL

PHOTOCELL MOUNTING LOCATION
(E) = Inside Service/Enclosure Mounted
(T) = Top of pole
(L) = Luminaire mounted
(N) = None - No Photocell or Lighting Contactor Required

SERVICE SUPPORT TYPE
GC = Granite concrete
OC = Other concrete
TP = Timber pole
SP = Steel pole
SF = Steel frame
OT = Pole by others or paid for separately
EX = Existing pole
TS = Service on traffic signal pole
PS = Pedestal Service

SERIVCE FEED
O = Overhead Service Feed from Utility
U = Underground Service Feed from Utility

TOP MOUNTED PHOTOCELL



Install conduit strap maximum 3 ft. from box. Spacing between straps supporting conduit is 5 ft. maximum.

Texas Department of Transportation

Traffic Safety Division Standard

ELECTRICAL DETAILS SERVICE NOTES & DATA

ED(5)-25

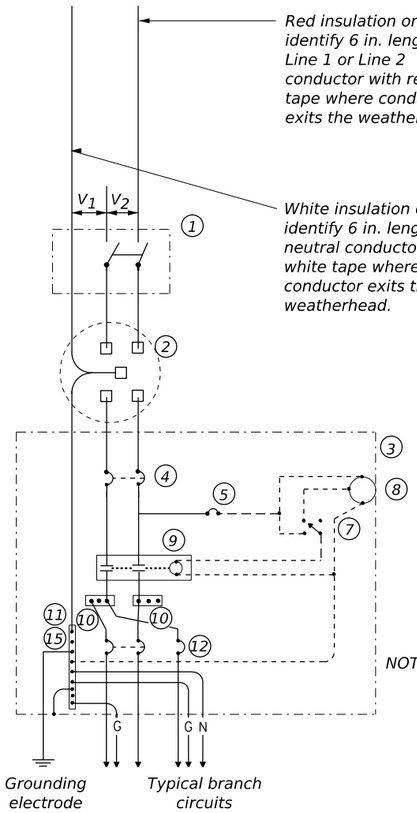
FILE: ed5-25.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2025	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
4-98 10-14 12-00 4-25 3-03	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		304 OF 377

71E

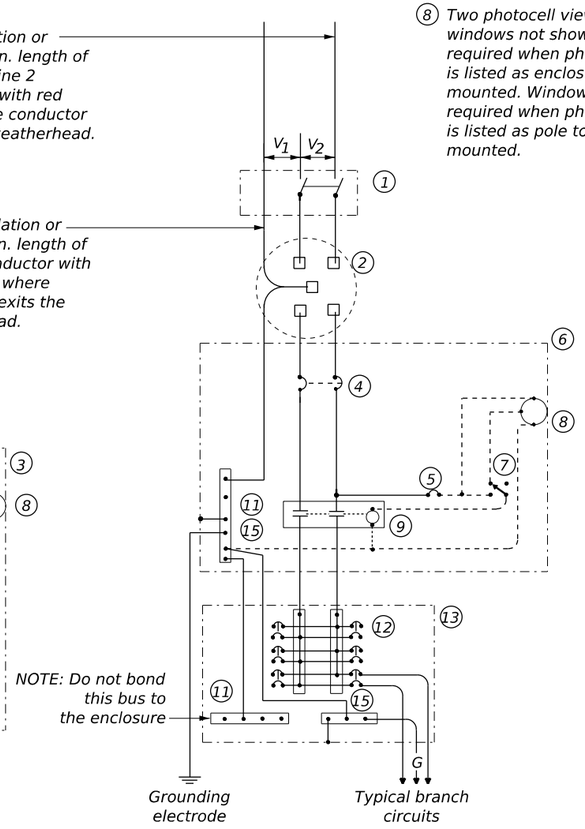
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 5/20/2025 9:30:07 AM
FILE: c:\dms\pwe-useast-006\knerr.chris\dms81920\ed6-25.dgn

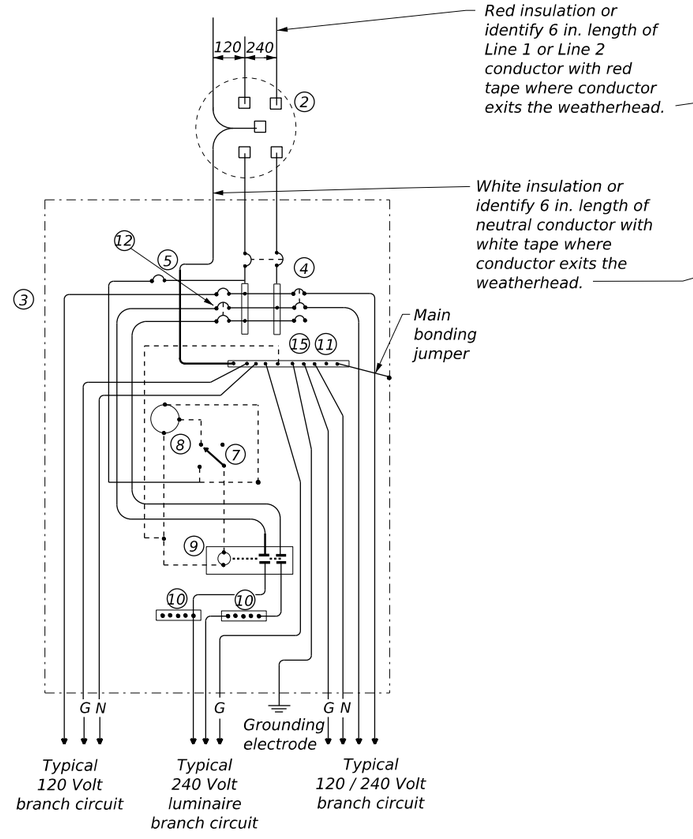
TYPE A
THREE WIRE



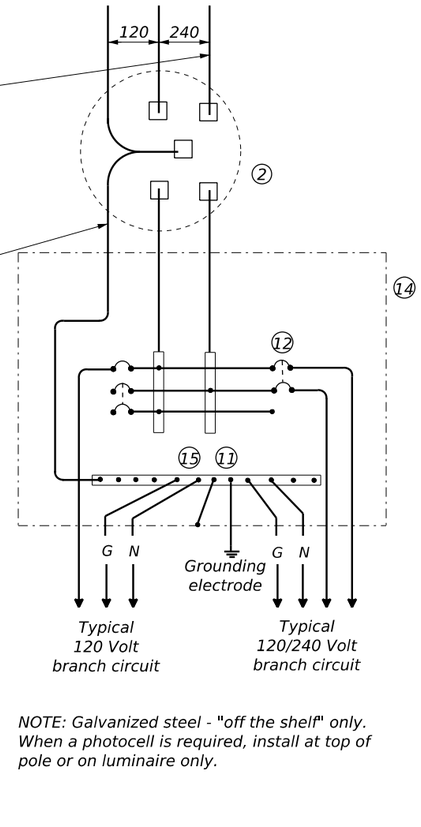
TYPE C
THREE WIRE



TYPE D - CUSTOM
120/240 VOLTS - THREE WIRE



TYPE T
120/240 VOLTS - THREE WIRE



NOTE: Galvanized steel - "off the shelf" only. When a photocell is required, install at top of pole or on luminaire only.

WIRING LEGEND	
———	Power Wiring
- - - - - - -	Control Wiring
—N—	Neutral Conductor
—G—	Equipment grounding conductor (always required)

SCHEMATIC NOTES:

1. Safety Switch (when required)
2. Meter (when required - verify with electric utility provider)
3. Service Assembly Enclosure
4. Main Disconnect Breaker (See Electrical Service Data)
5. Circuit Breaker, 15 Amp (Control Circuit)
6. Auxiliary Enclosure
7. Control Station ("H-O-A" Switch)
8. Photo Electric Control (enclosure-mounted shown)
9. Lighting Contactor
10. Power Distribution Terminal Blocks
11. Neutral Bus
12. Branch Circuit Breaker (See Electrical Service Data)
13. Separate Circuit Breaker Panelboard
14. Load Center
15. Ground Bus

Texas Department of Transportation

Traffic Safety Division Standard

ELECTRICAL DETAILS SERVICE SCHEMATICS AND NOTES

ED(6)-25

FILE: ed6-25.dgn		DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT		
©TxDOT April 2025		CONT	SECT	JOB	HIGHWAY		
REVISIONS					MILITARY DR		
4-98 10-14 12-00 4-25 3-03		DIST	COUNTY		SHEET NO.		
		SAT	BEXAR		305 OF 377		

71F

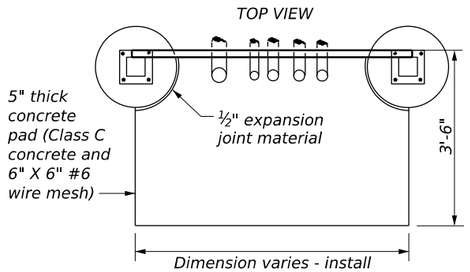
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

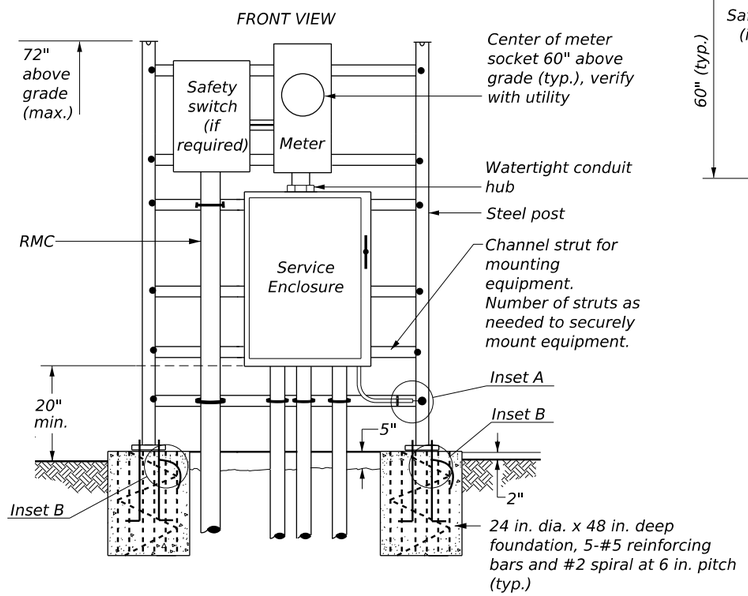
DATE: 5/20/2025 9:30:18 AM
FILE: c:\dms\pwe-useast-006\knerr.chris\dms81920\ed7-25.dgn

SUPPORT TYPE STEEL POLE (SP) AND STEEL FRAME (SF) NOTES:

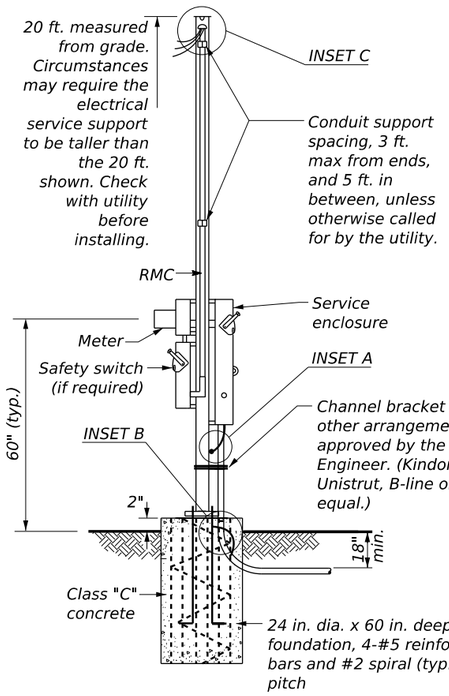
1. Provide steel pole and steel frame supports as per TxDOT Departmental Material Specification DMS-11080, "Electrical Services." Mount all equipment and conduit on 12 gauge galvanized steel or stainless steel channel strut, 1 ½ in. or 1 ⅝ in. wide by 1 in. to 3 ¾ in. deep Unistrut, Kindorf, B-line or equal. Drill, tap, and bolt or weld all channel and hardware to vertical members as approved. Do not stack channel. File smooth and paint field-cut ends of all channel with zinc-rich paint before installing.
2. Install a one point rack or eye bolt bracket 6 in. to 12 in. below the weatherhead as an overhead service drop anchoring point for the electric utility. Attaching bolt must pass through the pole and use a nut, washer, and locking washer on the other size. Self-tapping screws or lag bolts are not allowed.
3. Provide and install galvanized ¾ in. x 18 in. x 4 in. (dia. x length x hook length) anchor bolts for underground service supports. Provide and install galvanized ¾ in. x 56 in. x 4 in. anchor bolts for overhead service supports. Ensure anchor bolts have 3 in. of thread, with 3 ¼ in. to 3 ½ in. of the exposed anchor bolt projecting above finished foundation. Provide and install leveling nuts for all anchor bolts.
4. Use Class C concrete for foundations. Ensure reinforcing steel is Grade 60 with 3 in. of unobstructed concrete cover.
5. Shop drawings are not required for service support structure unless specifically stated elsewhere or directed by the Engineer.
6. Avoid contact of the service drop and service entrance conductors with the metal pole to prevent abrasion of the insulated conductors.
7. Placement of the meter and service enclosure may vary based on the installation of a safety switch.
8. Drill and tap steel poles and frames for ½ in. x 13 UNC tank ground fitting. For steel pole service supports, provide and install tank ground fitting 4 in. to 6 in. directly below the electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting.
9. For steel frame service supports, provide and install tank ground fitting on steel frame post. Install service grounding electrode conductor in a non-metallic conduit or tubing from the enclosure to the steel frame post. Connect electrical service grounding electrode conductor to the tank ground fitting. See SF, SP details and Inset A for more information.
10. Provide and install grounding bushings where RMC terminates in the enclosure. Grounding bushings are not required when RMC is fitted into a watertight conduit hub or meter hub.
11. If steel pole or frame is painted, bond each separate painted piece with a bonding jumper and lugs screwed into tapped holes.
12. Provide ¼ in. x 20 UNC machine screws for bonding. Do not use sheet metal screws. Remove all non-conductive material at contact points. Terminate bonding jumpers with listed devices. Install 6 AWG or larger stranded copper bonding jumpers. Make up all threaded bonding connections wrench-tight.
13. Bond one of the anchor bolts to the rebar cage with 6 AWG bare stranded copper conductor. Use listed mechanical connectors rated for embedment in concrete. See Inset B.

TYPE SF(U)
UNDERGROUND SERVICE

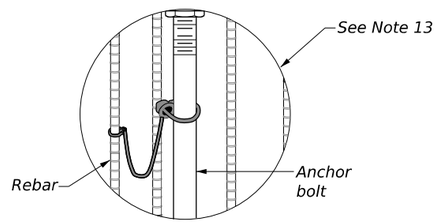




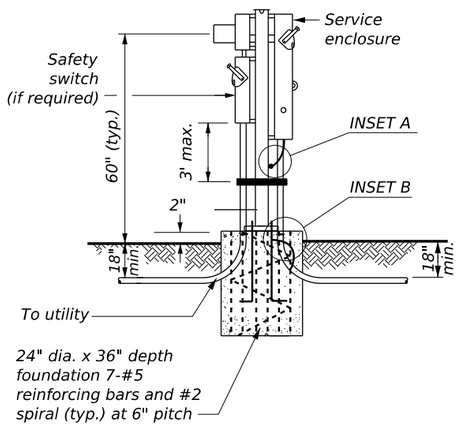
TYPE SP(O)
OVERHEAD SERVICE



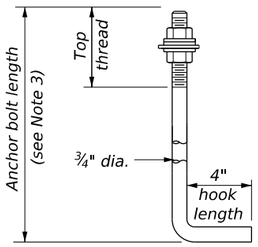
INSET B



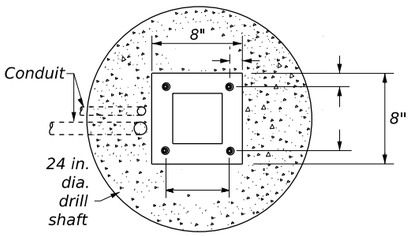
TYPE SP(U)



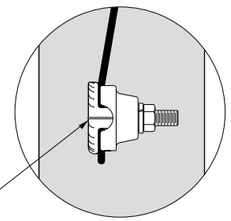
HOOKED ANCHOR DETAIL



BASE PLATE DETAIL

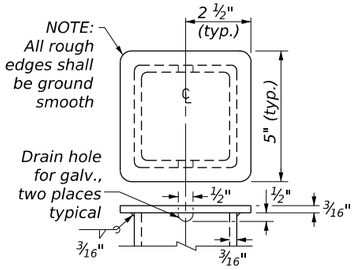


INSET A
FRONT VIEW

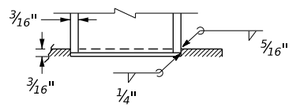


Drill, tap, and thread ½" x 13 UNC. Install tank ground fitting, connect electrical service grounding electrode conductor. See Note 8.

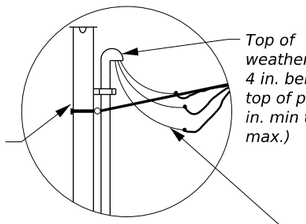
POLE TOP PLATE DETAIL



BOTTOM OF POLE DETAIL
TYPES SF & SP



INSET C
SIDE VIEW



Identify conductors red, black, and white as specified in ED(3), Electrical Conductors, Note A.2. Provide 1.5 ft. to 3 ft. of conductor length as required by electric utility.

Texas Department of Transportation

Traffic Safety Division Standard

ELECTRICAL DETAILS SERVICE SUPPORT TYPES SF & SP

ED(7)-25

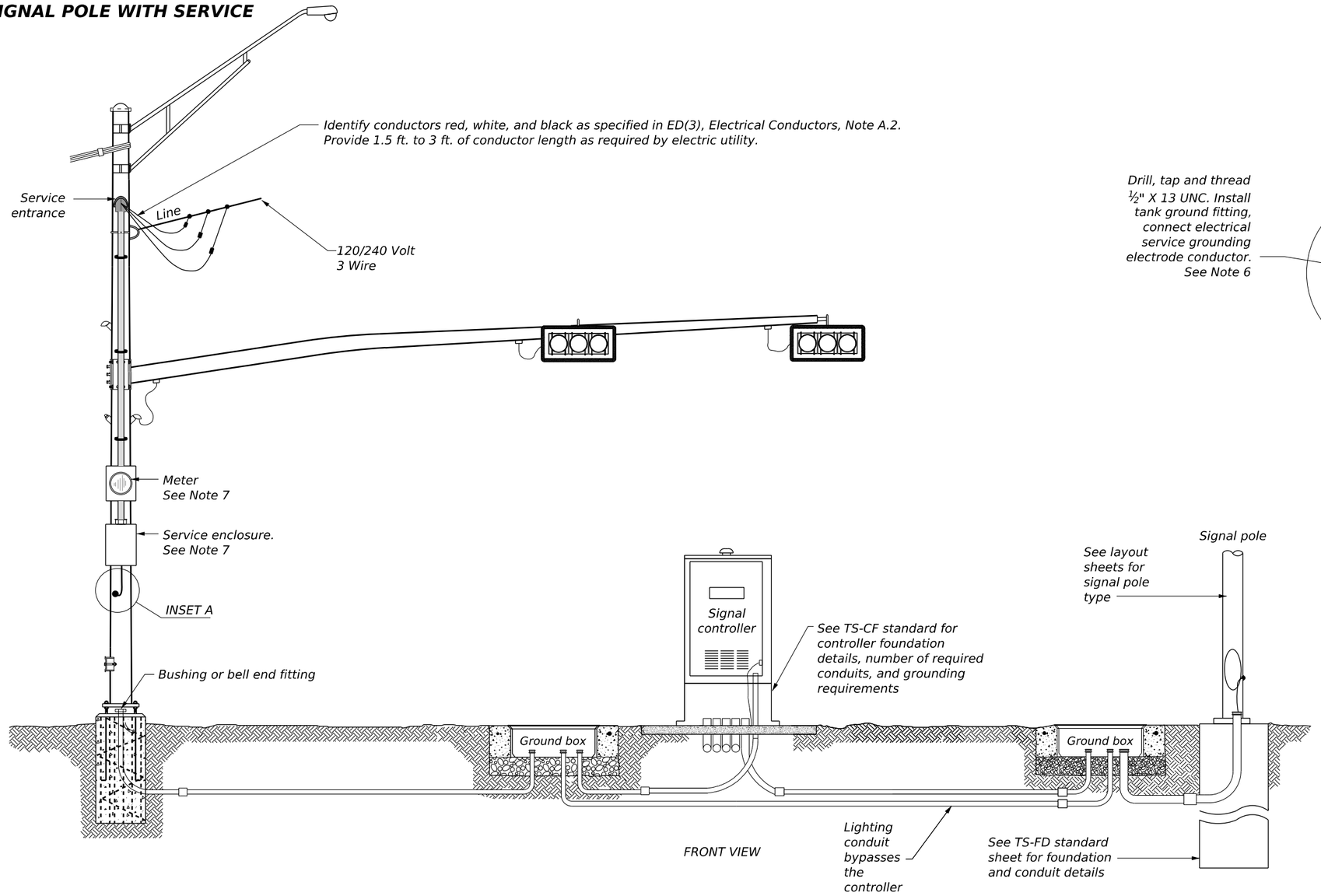
FILE: ed7-25.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2025	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
1-92 3-03 4-25 4-98 5-03 12-00 10-14	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		306 OF 377

71G

NOTES:

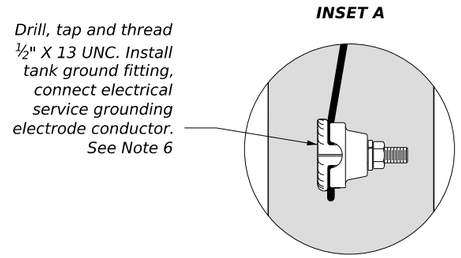
1. *Do not pass luminaire conductors through the signal controller cabinet.*
2. *Include an equipment grounding conductor in all conduits throughout the electrical system. Bond all exposed metal parts to the grounding conductor.*
3. *Provide roadway luminaires, when required, in accordance with Item 610, "Roadway Illumination Assemblies," except for performance testing of luminaires. Test installed roadway luminaires for proper operation as a part of the associated traffic signal system test.*
4. *Ground internally lighted street name (ILSN) signs to the pole with a 12 AWG green XHHW conductor.*
5. *Bond anchor bolts to rebar cage in two locations using #3 bars or 6 AWG stranded copper conductors. Use listed mechanical connectors rated for embedment in concrete. See TXDOT standard TS-FD for further details.*
6. *Drill and tap signal poles for ½ in. x 13 UNC tank ground fitting. Provide and install tank ground fitting 4 in. to 6 in. directly below electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Connect the electrical service grounding electrode conductor to the tank ground fitting. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting. See Inset A detail for further information. Size service entrance conduit and branch circuit conduit as shown in the plans.*
7. *Mount electrical service enclosure and meter to signal pole with stainless steel bands. Ensure bands are at least ¾ in. wide. Secure enclosures to bands using two-bolt brackets. Install brackets near top and bottom of each enclosure. Install properly sized stainless steel washers on each bolt in the enclosure. Band or drill and tap properly sized stand-off straps to signal pole for attaching conduit.*
8. *Lock all enclosures and bolt down all ground box covers before applying power to the signal installation.*
9. *Terminate conduits entering the top of enclosures with a watertight conduit hub or meter hub. Install a grounding bushing on all metal conduits not connected to conduit-sealing hub or threaded boss. Bond the grounding bushing to the ground bus with a bonding jumper. Seal all conduits entering enclosures with duct seal or expanding foam. Do not use silicone to seal conduit ends.*

SIGNAL POLE WITH SERVICE



FRONT VIEW

INSET A



DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 5/20/2025 9:30:32 AM
FILE: c:\dms\pwe-useast-006\knerr.chris\dms81920\ed8-25.dgn

Texas Department of Transportation

Traffic Safety Division Standard

ELECTRICAL DETAILS TYPICAL TRAFFIC SIGNAL SYSTEM DETAILS

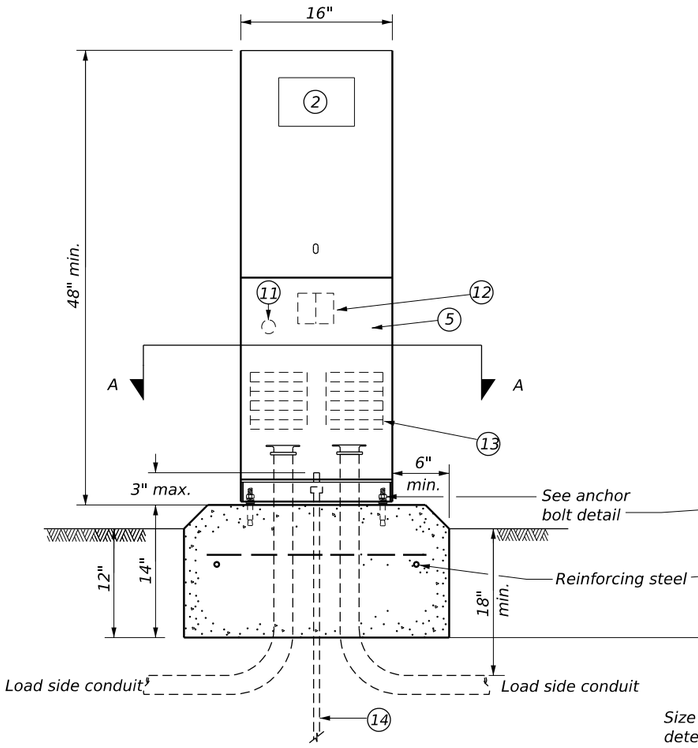
ED(8)-25

FILE: ed8-25.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2025	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
1-92 3-03 4-25 4-98 5-03 12-00 10-14	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		307 OF 377

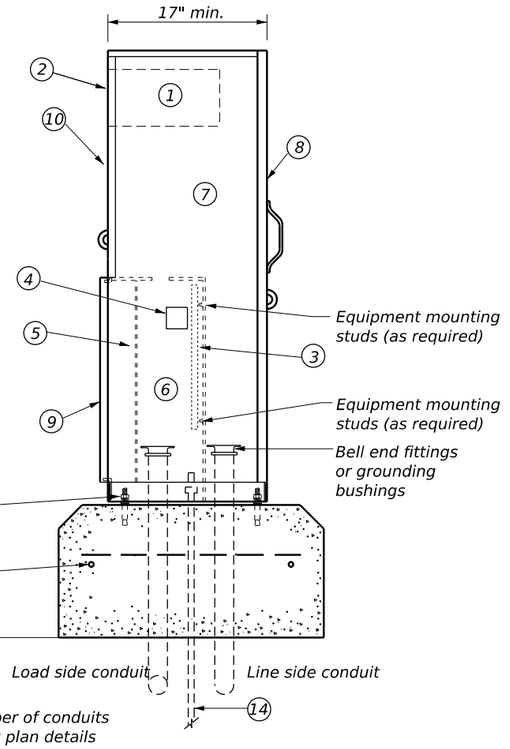
71H

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

FRONT VIEW

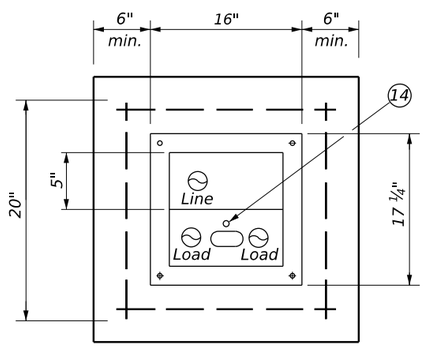


SIDE VIEW

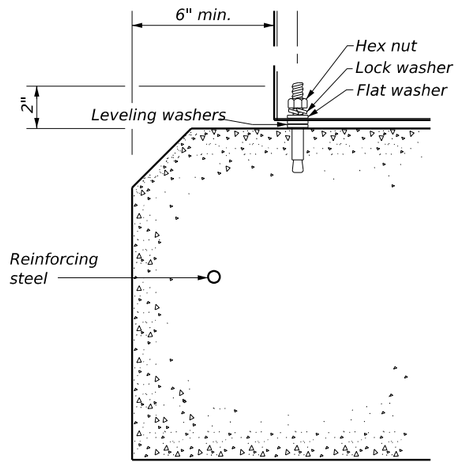


NOTE: Type D shown, Type A similar except that Type A shall have circuit breakers (CB) mounted on an equipment mounting panel. CB handles shall protrude through hinged deadfront trim.

SECTION A-A



ANCHOR BOLT DETAIL



DETAIL CALLOUTS:

1. Meter socket (when required)
2. Meter socket window (when required)
3. Equipment mounting panel
4. Photoelectric control window (when required)
5. Hinged deadfront trim
6. Load side conduit area
7. Line side conduit area
8. Utility access door, with handle
9. Pedestal door
10. Hinged meter access
11. Control station (H-O-A switch)
12. Main disconnect
13. Branch circuit breakers
14. Copper clad ground rod (in load side of cabinet) - 5/8" x 10'

NOTES:

1. *Manufacture pedestal electrical services in accordance with Departmental Material Specifications DMS-11080, "Electrical Services," DMS-11085, "Electrical Services-Pedestal (PS)" and Item 628, "Electrical Services." Provide pedestal electrical services listed on the Material Producer list (MPL) under "Roadway Illumination and Electrical Supplies," Item 628. Ensure all mounting hardware and installation details of services meet utility company specifications. Contact the local utility company for approval of pedestal details prior to installing the electrical pedestal service. Submit any changes required by the utility company prior to manufacturing the pedestal enclosure.*
2. *When a meter socket is required, provide a socket with a 100 amp (minimum) rating that complies with local utility requirements.*
3. *Provide concrete for pedestal service foundations in accordance with Item 656, "Foundations for Traffic Control Devices" except that concrete will not be paid for directly but is considered subsidiary to Item 628.*
4. *Provide #4 reinforcing steel for foundations in accordance with Item 440, "Reinforcement for Concrete."*
5. *Install ½ in. X 2 1/16 in. minimum length concrete single expansion type anchors for mounting pedestal enclosure to foundation. Match anchor location to mounting holes in each corner of enclosure. Secure each of the four corners of the pedestal enclosure to the anchors in the foundation with a ½ in. galvanized or stainless steel machine thread bolt, a properly sized locknut and a flat washer.*
6. *Finish top of concrete foundation in a professional and skillful manner. If leveling washers are used, ensure no more than ⅛ in. of gap exists at any corner. Do not exceed a maximum dip or rise in the foundation of ⅛ in. per foot. Ensure the top of the service enclosure is level front to back and side to side within ¼ in. Repair rocking or movement of the service enclosure at no additional cost to the Department.*
7. *Do not use liquidtight flexible metal conduit (LFMC) on pedestal services.*
8. *Ensure all elbows in the foundation are sized to meet utility provider's conduit requirements for underground conduit and feeders. PVC conduit extensions may be installed provided the ends of the rigid metal conduits are more than 2 in. below the top of the concrete foundation. Where extension conduits are metal, grounding bushings must be installed with a properly terminated bonding jumper.*

Texas Department of Transportation

Traffic Safety Division Standard

ELECTRICAL DETAILS PEDESTAL SERVICE TYPE PS

ED(9)-25

FILE: ed9-25.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2025	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
4-98 5-03 12-00 10-14 3-03 4-25	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		308 OF 377

71J

DATE: 5/20/2025 9:30:50 AM
FILE: c:\dms\pwe-use9s1-006\knerr.chris\dms81920\ed9-25.dgn

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

GENERAL NOTES:

1. For overhead services, install a one point rack or eye bolt bracket 6 in. to 12 in. below the weatherhead as a service drop anchoring point for the electric utility. Attaching bolt must pass through the pole and use a nut, washer, and locking washer on the other side. Self-tapping screws or lag bolts are not permitted.
2. Identify service entrance conductors red, white, and black as specified in ED(3), Electrical Conductors, Note A.2. Provide 1.5 ft. to 3 ft. of conductor length as required by electric utility.
3. Install Type A and Type C services so that the center of the grip of the service's external disconnect handle in the on position is no more than 6 ft. 7 in. above grade.

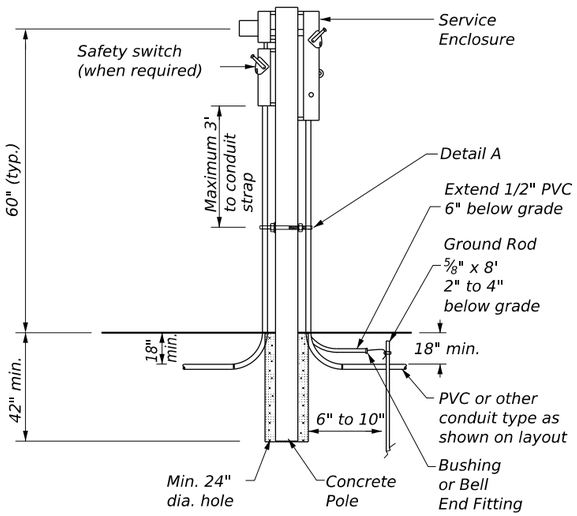
GRANITE CONCRETE (GC) & OTHER CONCRETE (OC) SERVICE NOTES

1. Ensure electrical service support structures bid as type Granite Concrete (GC) or Other Concrete (OC) meet the requirements of DMS-11080, "Electrical Services."
2. Provide prestressed concrete poles suitable for direct embedment into the ground without special foundations.
3. Verify poles are marked as required on DMS-11080. Location of marking should be approximately 4 ft. above final grade. Use the two-point pickup locations when handling pole in horizontal position, and one-point pickup location for use in raising the pole to a vertical position. These marks are small but conspicuous.
4. Embed poles 42 in. or 10% of the length plus 2 ft., whichever is greater.
5. Furnish and install galvanized or stainless steel channel strut 1 ½ in. or 1 ⅝ in. wide by 1 in. up to 3 ¾ in. deep (Unistrut, Kindorf, B-line or equal). Attach channel strut with stainless steel concrete anchors (max. 1 in. depth), square U-bolts or back to back channel strut with long bolts, or other secure mounting as approved by the Engineer. Ensure bolts are galvanized in accordance with ASTM A153. Do not stack channel struts.

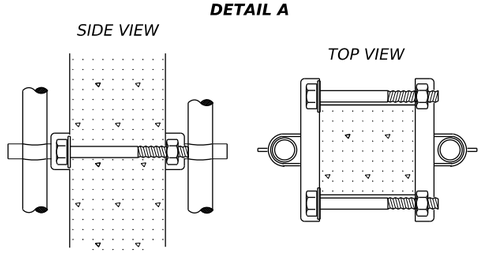
TIMBER POLE (TP) SERVICE NOTES

1. Ensure electrical service support is a class 5 treated timber pole as per Item 627, "Treated Timber Poles." Embed timber pole to depth required in Item 627.
2. Gain pole as required to provide flat surface for each channel. Gain timber pole to ⅝ in. max. depth and 1 ⅞ in. max. height. Gain pole in a professional and skillful manner.
3. Mount meter and service equipment on stainless steel or galvanized channel (Unistrut, Kindorf, or equal). Provide channel sized 1 in. to 3 ¾ in. maximum depth, and 1 ½ in. to 1 ⅝ in. maximum width. File smooth the cut ends of galvanized channel and paint with zinc rich paint before installing on pole. Secure each channel section to timber pole with two galvanized or stainless steel lag bolts, ¼ in. minimum diameter by 1 ½ in. minimum length. Use a galvanized or stainless steel flat washer on each lag bolt. Do not stack channel.
4. When excess length must be trimmed from poles, trim from the top end only.
5. Install point of attachment below weatherhead.

TYPES GC(U) & OC(U)
UNDERGROUND SERVICE

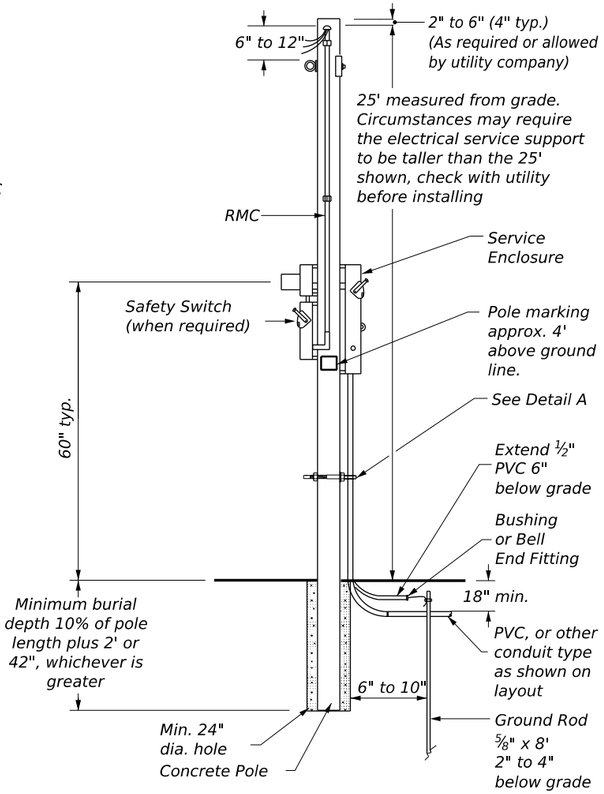


DETAIL A

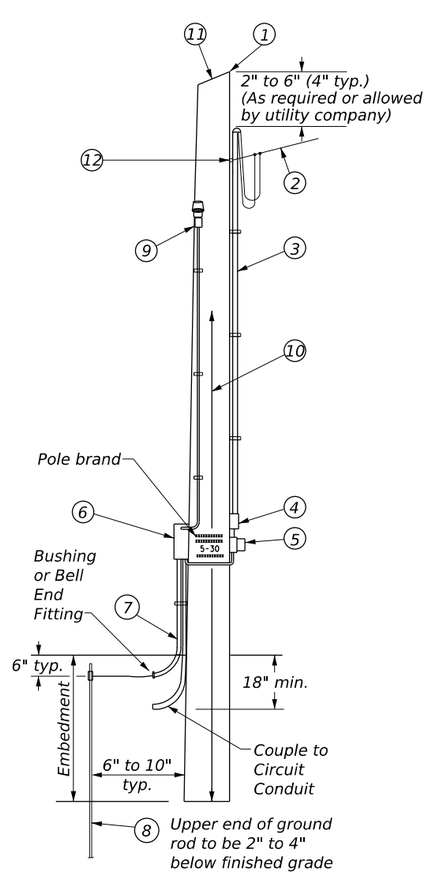


See GC & OC Note 5. Before installing channel that has been cut, file sharp edges and paint with zinc-rich paint. Ensure there is no paint splatter on the pole.

TYPES GC(O) & OC(O)
OVERHEAD SERVICE



TYPE TP(O)
OVERHEAD SERVICE



DETAIL CALLOUTS:

1. Class 5 pole, height as required
2. Service drop from utility company (attached below weatherhead)
3. Service conduit (RMC) and service entrance conductors - one red, one black, one white (see Electrical Service Data)
4. Safety switch (when required)
5. Meter (when required)
6. Service enclosure
7. 6 AWG solid bare copper grounding electrode conductor in ½ in. PVC to ground rod - extend conduit 6 in. underground.
8. ⅝ in. x 8 ft. copper clad ground rod - drive ground rod to a depth of 2 in. to 4 in. below grade.
9. See pole-top mounted photocell detail on ED(5).
10. When required by the serving utility provide bare 6 AWG copper conductor. Run wire from pole top to butt wrap or copper butt plate. Protect conductor with non-conductive material to a height of 8 ft. above finished grade.
11. When required by utility, cut top of pole at an angle to enhance rain run off.
12. Point of attachment (typ.)

Texas Department of Transportation

Traffic Safety Division Standard

ELECTRICAL DETAILS SERVICE SUPPORT TYPES GC, OC, & TP

ED(10)-25

FILE: ed10-25.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2025	CONT	SECT	JOB	HIGHWAY
REVISIONS				MILITARY DR
4-98 10-14 12-00 4-25 3-03	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		309 OF 377

71K

DATE: 5/20/2025 9:31:10 AM
FILE: c:\dms\pwe-useost-006\knerr.chris\dms81920\ed10-25.dgn

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

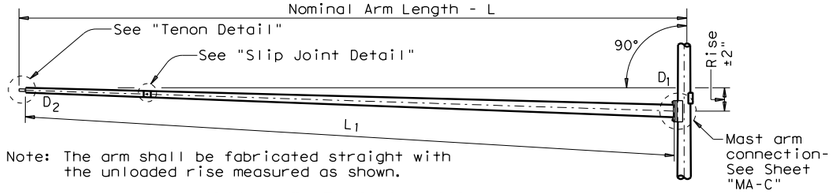
Arm Length	ROUND POLES					POLYGONAL POLES					Foundation Type
	D_B	D_{19}	D_{24}	D_{30}	① thk	D_B	D_{19}	D_{24}	D_{30}	① thk	
ft.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	
20	10.5	7.8	7.1	6.3	.179	11.5	8.5	7.7	6.8	.179	30-A
24	11.0	8.3	7.6	6.8	.179	12.0	9.0	8.2	7.3	.179	30-A
28	11.5	8.8	8.1	7.3	.179	12.5	9.5	8.7	7.8	.179	30-A
32	12.5	9.8	9.1	8.3	.179	12.0	9.0	8.2	7.3	.239	30-A
36	12.0	9.3	8.6	7.8	.239	12.5	9.5	8.7	7.8	.239	36-A
40	12.0	9.3	8.6	7.8	.239	13.5	10.5	9.7	8.8	.239	36-A
44	12.5	9.8	9.1	8.3	.239	14.0	11.0	10.2	9.3	.239	36-A
48	13.0	10.3	9.6	8.8	.239	15.0	12.0	11.2	10.3	.239	36-A

Arm Length	ROUND ARMS					POLYGONAL ARMS				
	L_1	D_1	D_2	① thk	Rise	L_1	D_1	② D_2	① thk	Rise
ft.	ft.	in.	in.	in.		ft.	in.	in.	in.	
20	19.1	6.5	3.8	.179	1'-9"	19.1	7.0	3.5	.179	1'-8"
24	23.1	7.5	4.3	.179	1'-10"	23.1	7.5	3.5	.179	1'-9"
28	27.1	8.0	4.2	.179	1'-11"	27.1	8.0	3.5	.179	1'-10"
32	31.0	9.0	4.7	.179	2'-1"	31.0	9.0	3.5	.179	2'-0"
36	35.0	9.5	4.6	.179	2'-4"	35.0	10.0	3.5	.179	2'-1"
40	39.0	9.5	4.1	.239	2'-8"	39.0	9.5	3.5	.239	2'-3"
44	43.0	10.0	4.1	.239	2'-11"	43.0	10.0	3.5	.239	2'-6"
48	47.0	10.5	4.1	.239	3'-4"	47.0	11.0	3.5	.239	2'-9"

D_B = Pole Base O.D.
D_{19} = Pole Top O.D. with no Luminaire and no ILSN
D_{24} = Pole Top O.D. with ILSN w/out Luminaire
D_{30} = Pole Top O.D. with Luminaire
D_1 = Arm Base O.D.
D_2 = Arm End O.D.
L_1 = Shaft Length
L = Nominal Arm Length

① Thickness shown are minimums, thicker materials may be used.

② D_2 may be increased by up to 1" for polygonal arms.



Note: The arm shall be fabricated straight with the unloaded rise measured as shown.

TRAFFIC SIGNAL ARM

(Fixed Mount)

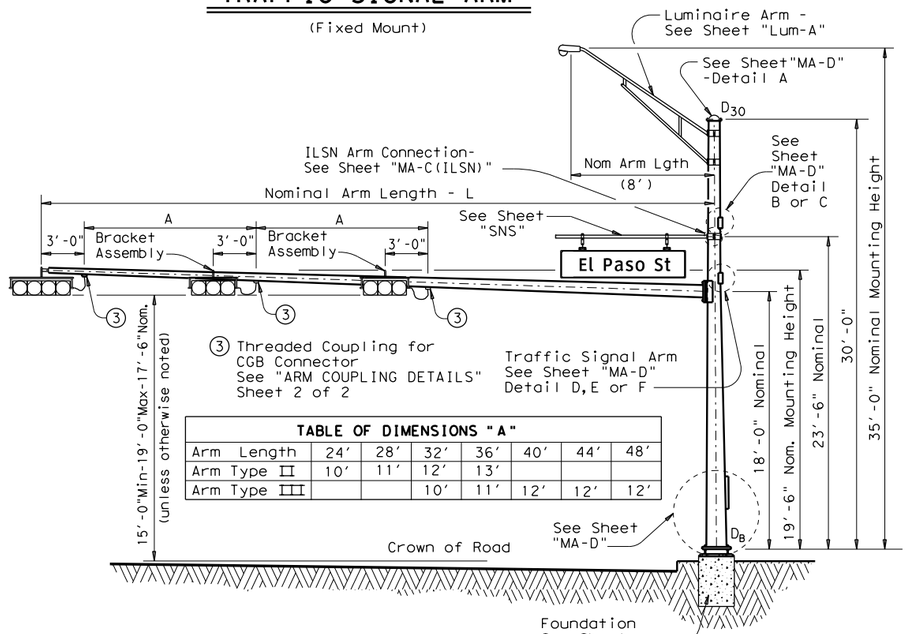


TABLE OF DIMENSIONS "A"

Arm Length	24'	28'	32'	36'	40'	44'	48'
Arm Type II	10'	11'	12'	13'			
Arm Type III			10'	11'	12'	12'	12'

STRUCTURE ASSEMBLY

SHIPPING PARTS LIST

Ship each pole with the following attached: enlarged hand hole, pole cap, fixed-arm connection bolts and washers and any additional hardware listed in the table.

Nominal Arm Length	30' Poles With Luminaire		24' Poles With ILSN		19' Poles With No Luminaire and No ILSN	
	Above hardware plus: One (or two if ILSN attached) small hand hole, clamp-on simplex		Above hardware plus one small hand hole		See note above	
ft	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20L-80		20S-80		20-80	
24	24L-80	1	24S-80		24-80	
28	28L-80		28S-80		28-80	
32	32L-80	3	32S-80		32-80	
36	36L-80		36S-80		36-80	
40	40L-80	1	40S-80		40-80	
44	44L-80	5	44S-80	1	44-80	
48	48L-80	1	48S-80		48-80	

Traffic Signal Arms (1 per Pole) Ship each arm with the listed equipment attached

Nominal Arm Length	Type I Arm (1 Signal)		Type II Arm (2 Signals)		Type III Arm (3 Signals)	
	1 CGB connector		1 Bracket Assembly and 2 CGB Connectors		2 Bracket Assemblies and 3 CGB Connectors	
ft	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20I-80					
24	24I-80		24II-80	1		
28	28I-80		28II-80			
32			32II-80	1	32III-80	2
36			36II-80		36III-80	
40					40III-80	1
44					44III-80	5
48					48III-80	1

Luminaire Arms (1 per 30' pole)

Nominal Arm Length	Quantity
8' Arm	10

ILSN Arm (Max. 2 per pole) Ship with clamps, bolts and washers

Nominal Arm Length	Quantity
7' Arm	7
9' Arm	4

Anchor Bolt Assemblies (1 per pole)

Anchor Bolt Diameter	Anchor Bolt Length	Quantity
1 ½"	3'-4"	4
1 ¾"	3'-10"	7

Each anchor bolt assembly consists of the following: Top and Bottom templates, 4 anchor bolts, 8 nuts, 8 flat washers, and 4 nut anchor devices (Type 2) per Standard Drawing "TS-FD".

Templates may be removed for shipment.

SHEET 1 OF 2

STATE OF TEXAS
XIDUO WANG
143018
LICENSED
PROFESSIONAL ENGINEER

5/20/2025

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES

SINGLE MAST ARM ASSEMBLY

(80 MPH WIND ZONE)

SMA-80(1)-12

© TxDOT August 1995

DN: MS	CK: JSY	DW: MMF	CK: JSY

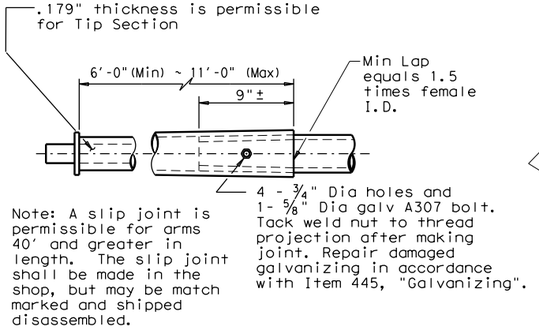
REVISIONS
5-96
11-99
1-12

CONT	SECT	JOB	HIGHWAY
			MILITARY DR
DIST	COUNTY		SHEET NO.
SAT	BEXAR		310 OF 377

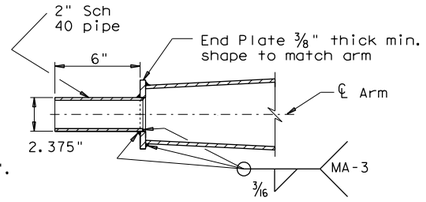
122A

DATE: 5/20/2025 9:54:18 AM
FILE: c:\bms\pwe-useast-006\knerr.chris\dms81920\sma-80-1.dgn

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



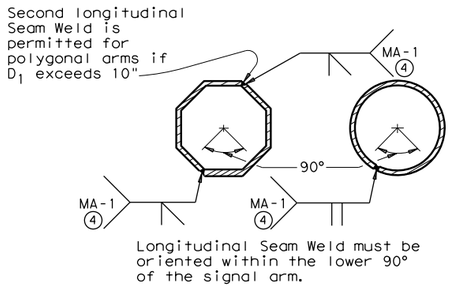
SLIP JOINT DETAIL



TENON DETAIL

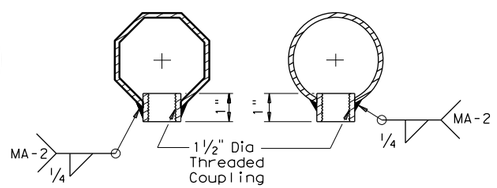
Stainless steel bands (or Cables) and cast bracket as in "Astro-Brac", "Sky Bracket" or "Easy Bracket" with 1 ½" Dia Threaded Coupling.

BRACKET ASSEMBLY



ARM WELD DETAIL

④ 60% Min. penetration 100% pemetration within 6" of circumferential base welds.



ARM COUPLING DETAILS

VIBRATION WARNING

Mast Arms of SMA and DMA structures and clamp-on Arms of LMA structures of approximately 40 ft or longer are subject to harmonic vertical vibrations in light wind conditions due to the aeroelastic characteristics of a few of the myriads of possible combinations of the following: signal numbers, weights and positions; existence/solidity of backplates; presence of additional attachments to the arm, such as signs and cameras; arm-wind orientation; and arm-pole stiffness.

Such vibrations may cause fatigue damage to the structure and may lead to galloping in moderate wind conditions which may further damage the structure and alarm the public. Tests have indicated that when wind is blowing toward the back side of signal heads having un-vented backplates attached the probability of unacceptable harmonic vibration and/or galloping is rather high.

If backplates are not required for improved visibility they should not be applied to the signal heads or, if they must be applied, they should be vented as a first and inexpensive measure to mitigate vibrations.

The traffic signal mast arms shall be visually inspected in 5 to 20 mph wind conditions after installation of signal heads and any attachments, including any required backpates. If vertical movements with a total excursion (maximum upward excursion to maximum downward excursion) of more than approximately 8" are observed at the arm tip, a damping plate shall be fitted to the arm. See "Damping Plate Mounting Details" on standard sheet, MA-DPD-10.

This visual inspection shall be repeated after each modification of the structure that could affect its aeroelastic response. Excessive vibrations shall not be allowed to continue for more than two days.

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications thereto. Design Wind Speed equals 80 mph plus a 1.3 gust factor.

Poles are designed to support one 8'-0" luminaire arm, one 9'-0" internally lighted street name sign and one traffic signal arm with a length as tabulated. The specified luminaire load applied at the end of the luminaire arm equals 60 lbs vertical dead load plus the horizontal wind load on an effective projected area of 1.6 sq ft. The specified internally lighted street name sign load applied 4.5 ft from the centerline of the pole equals 85 lbs vertical dead load plus horizontal wind load on an effective projected area of 11.5 sq ft. The specified signal load applied at the end of the traffic signal arm equals 180 lbs vertical dead load plus the horizontal wind load on an effective projected area of 32.4 sq ft (actual area times drag coefficient).

See Standard Sheet "MA-D" for pole details, "MA-C" for traffic signal arm connection details, "MA-C (ILSN)" for internally lighted street name sign arm connection details, "LUM-A" for luminaire arm and connection details, "SNS" for internally lighted street name sign details, and "TS-FD" for anchor bolt and foundation details. See "MA-C" for material specifications.

Fabrication shall be in accordance with Item 686, "Traffic Signal Pole Assemblies (Steel)" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. Materials, fabrication tolerances, and shipping practices shall meet the requirements of this sheet and Item 686, "Traffic Signal Pole Assemblies (Steel)".

Unless otherwise noted, all parts shall be galvanized in accordance with Item 445, "Galvanizing", after fabrication.

Deviation from the details and dimensions shown herein require submission of shop drawings in accordance with Item 441, "Steel Structures". Alternate designs are not acceptable.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES

SINGLE MAST ARM ASSEMBLY

(80 MPH WIND ZONE)

SMA-80(2)-12

© TxDOT August 1995

DN: MS	CK: JSY	DW: MMF	CK: JSY

REVISIONS
5-96
1-12

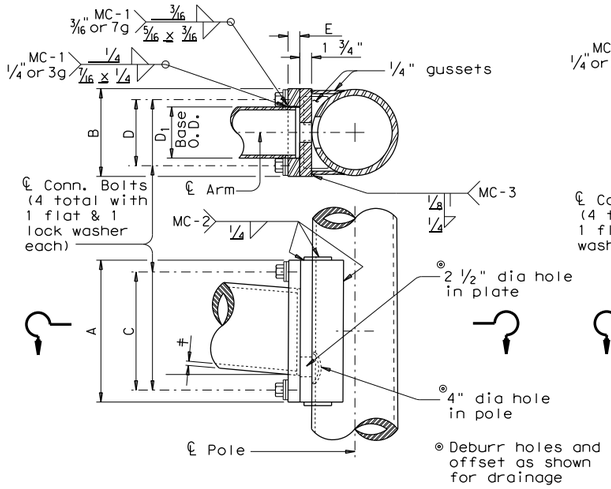
CONT	SECT	JOB	HIGHWAY
			MILITARY DR
DIST	COUNTY		SHEET NO.
SAT	BEXAR		311 OF 377

122B

DATE: 5/20/2025 9:31:42 AM
FILE: c:\bms\pwe-useast-006\knerr.chris\dms81920\sma-80-2.dgn

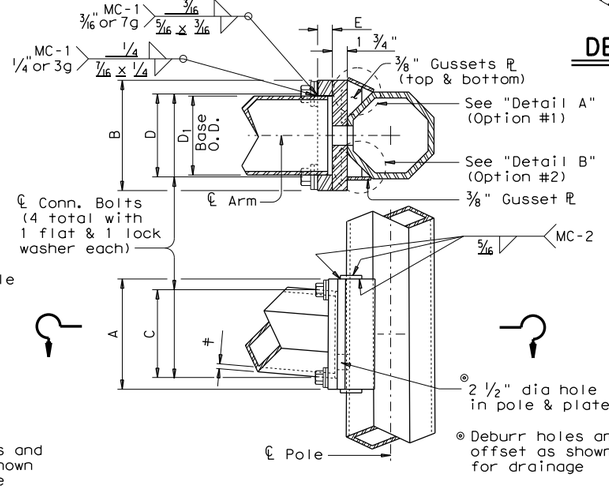
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

ARM SIZE D_1	ARM SIZE ǂ	A	B	C	D	E	CONN BOLT DIA
in.	in.	in.	in.	in.	in.	in.	in.
6.5	.179	12	9	9	6	1 3/4	1
7.5	.179	13	9	10	6	1 3/4	1
8.0	.179	14	10	11	7	2	1 1/4
9.0	.179	16	11	13	8	2	1 1/4
9.5	.179	17	12	14	9	2	1 1/4
9.5	.239	18	12	15	9	2	1 1/4
10.0	.239	18	12	15	9	2	1 1/4
10.5	.239	18	13	15	10	3	1 1/2
11.0	.239	18	13	15	10	3	1 1/2



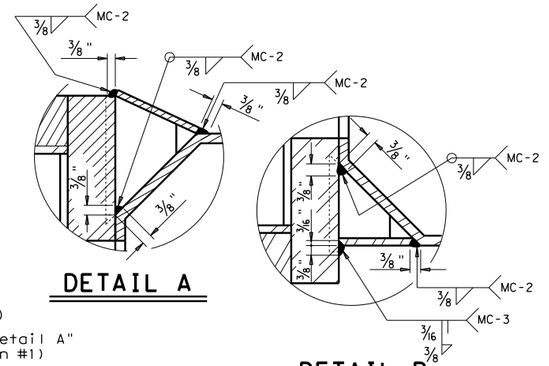
FIXED MOUNT DETAIL 1

ARM SIZE D_1	ARM SIZE ǂ	A	F	CONN. BOLTS No.	CONN. BOLTS Dia	PIN BOLTS No.	PIN BOLTS Dia
in.	in.	in.	in.	ea.	in.	ea.	in.
6.5	.179	12	6	4	1	2	5/8
7.5	.179	14	8	4	1	2	5/8
8.0	.179	14	8	4	1	2	5/8
9.0	.179	16	10	4	1	2	5/8
9.5	.179	18	12	4	1 1/4	3	5/8
9.5	.239	18	12	4	1 1/4	3	5/8
10.0	.239	18	12	4	1 1/4	3	5/8



FIXED MOUNT DETAIL 2

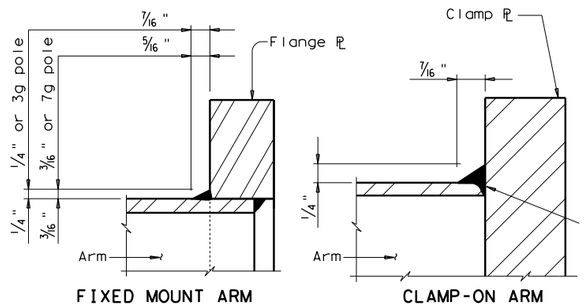
ARM SIZE D_1	ARM SIZE ǂ	A	F	T	CONN. BOLTS No.	CONN. BOLTS Dia	PIN BOLTS No.	PIN BOLTS Dia
in.	in.	in.	in.	in.	ea.	in.	ea.	in.
7.0	.179	12	6	3/4	4	3/4	2	5/8
7.5	.179	14	8	3/4	4	3/4	2	5/8
8.0	.179	14	8	3/4	4	3/4	2	5/8
9.0	.179	16	10	7/8	4	1	2	5/8
10.0	.179	18	10	7/8	4	1	2	5/8
9.5	.239	18	10	1	6	1	3	5/8
10.0	.239	18	10	1	6	1	3	5/8



MATERIALS	
Round Shafts or Polygonal Shafts ①	ASTM A595 Gr.A, A588, A1008 HSLAS Gr.50 Class 2, A1011 HSLAS Gr.50 Class 2, A572 Gr.50 or A1011 SS Gr.50 ②
Plates ①	ASTM A36, A588, or A572 Gr.50
Connection Bolts	ASTM A325 or A449, except where noted
Pin Bolts	ASTM A325
Pipe ①	ASTM A53 Gr.B, A501, A1008 HSLAS-F Gr.50, A1011 HSLAS-F Gr.50
Misc. Hardware	Galvanized steel or stainless steel or as noted

① ASTM A572, A1008 HSLAS, A1011 HSLAS, A1008 HSLAS-F, A1011 HSLAS-F or A1011 SS may have higher yield strengths but shall not have less elongation than the grade indicated.

② ASTM A1011 SS Gr.50 material shall also have a minimum elongation of 18 percent in 8 inches or 23 percent in 2 inches. Material thickness in excess of those stipulated under A1011 SS will be acceptable providing the material meets all other A1011 SS requirements and the requirements of this item.



ARM BASE WELD DETAILS

ARM SIZE D_1	ARM SIZE ǂ	A	F	CONN. BOLTS No.	CONN. BOLTS Dia	PIN BOLTS No.	PIN BOLTS Dia
in.	in.	in.	in.	ea.	in.	ea.	in.
6.5	.179	12	6	4	1	2	5/8
7.5	.179	14	8	4	1	2	5/8
8.0	.179	14	8	4	1	2	5/8
9.0	.179	16	10	4	1	2	5/8
9.5	.179	18	12	6	1	3	5/8
9.5	.239	18	12	6	1	3	5/8
10.0	.239	18	12	6	1	3	5/8

GENERAL NOTES:

Clamp-on details are used for the second arm on dual mast arm assemblies. A Maximum 1 1/2" wide vertical slotted hole shall be cut in the front clamp plate to facilitate drainage during galvanizing. The slot shall be centered behind the arm and shall be no longer than the arm diameter minus 1"

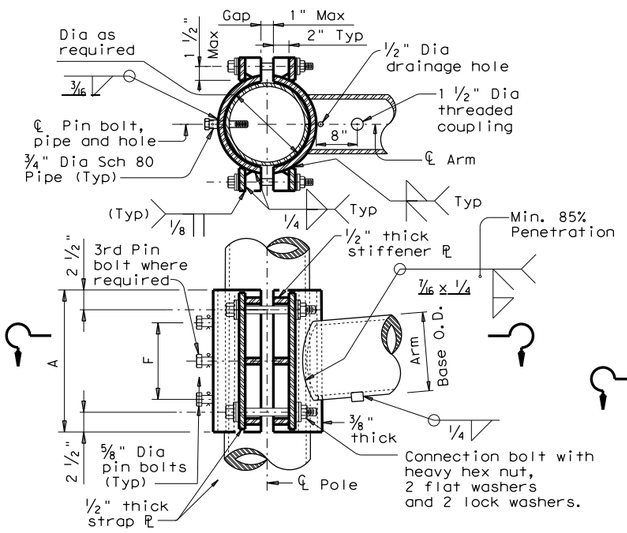
Fixed mount details are used for single mast arm assemblies and for the first arm on dual mast arm assemblies.

Where duplicate parts occur on a detail, welds shown for one part shall apply to all similar parts on the detail.

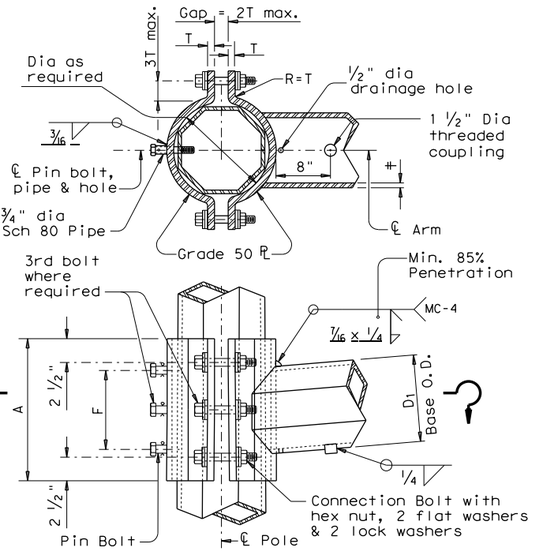
Pin bolts are required to prevent rotation of clamp-on arms under design wind forces.

NOTE:

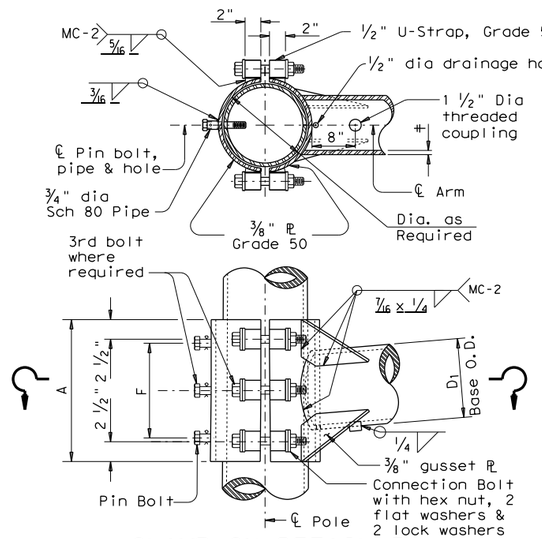
Pin bolts shall be A325 with threads excluded from the shear plane. Pin bolt and 3/4" dia pipe shall have 3/16" dia holes for a 1/8" dia galvanized cotter pin. Back clamp plate shall be furnished with a 3/4" dia hole for each pin bolt. An 11/16" dia hole for each pin bolt shall be field drilled through the pole after arm orientations have been approved by the Engineer.



CLAMP-ON DETAIL 1



CLAMP-ON DETAIL 2



CLAMP-ON DETAIL 3

Texas Department of Transportation
Traffic Operations Division

STANDARD ASSEMBLY FOR TRAFFIC SIGNAL SUPPORT STRUCTURES

MAST ARM CONNECTIONS

MA-C-12

© TxDOT August 1995

REVISIONS	DN: MS	CK: JSY	DW: MMF	CK: JSY
5-96	CONT	SECT	JOB	HIGHWAY
5-09				MILITARY DR
1-12	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		312 OF 377

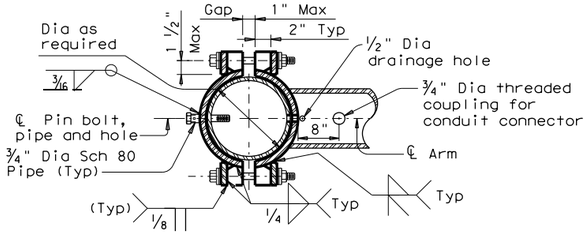
126A

DATE: 5/20/2025 9:31:53 AM
FILE: c:\bms\pwe-useast-006\knerr.chris\dms81920\mac.dgn

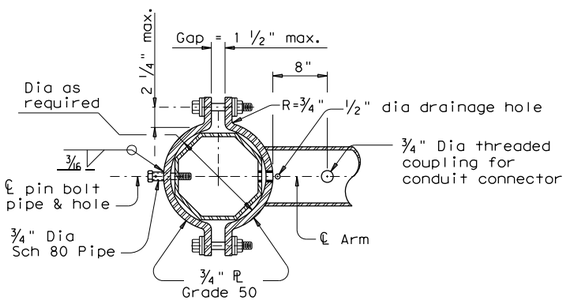
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 5/20/2025 9:32:04 AM
FILE: c:\bms\pwe-useast-006\knerr.chris\dms81920\macilsn.dgn

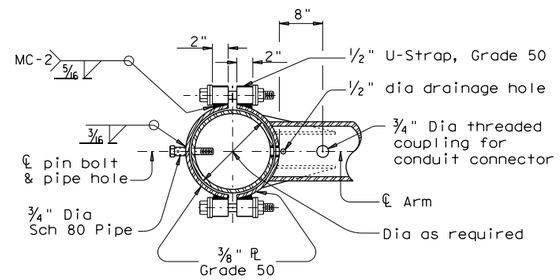
TABLE OF DIMENSIONS for ILSN Support Arm Clamp-on Details 1, 2 and 3						
ILSN ARM SIZE	A	F	CONN. BOLTS		PIN BOLTS	
			No.	Dia	No.	Dia
3 in. dia Schedule 40 Pipe	in.	in.	ea.	in.	ea.	in.
	10	4	4	¾	2	⅝



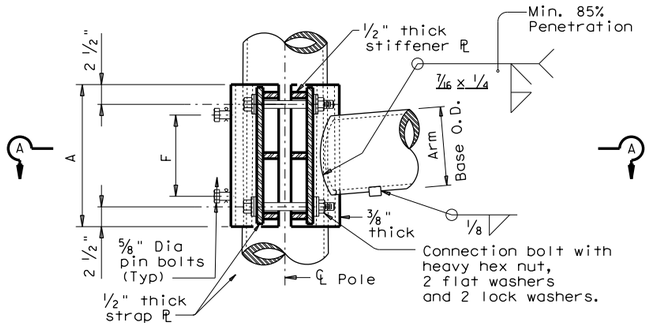
SECTION A-A



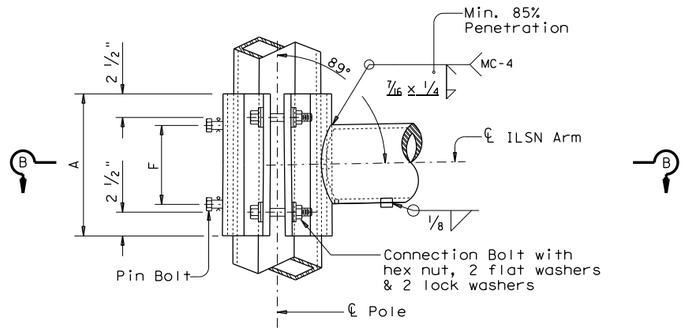
SECTION B-B



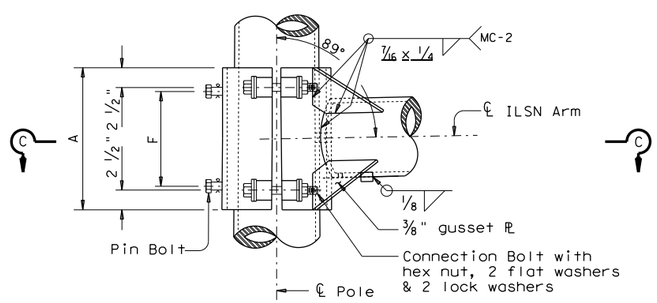
SECTION C-C



ILSN CLAMP-ON DETAIL 1



ILSN CLAMP-ON DETAIL 2



ILSN CLAMP-ON DETAIL 3

GENERAL NOTES:

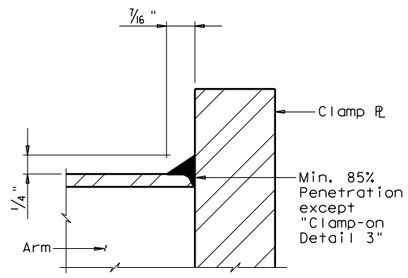
Clamp-on details shall be used for ILSN support arm assemblies. A 1 ½" inch diameter hole shall be cut in the front clamp plate for wiring access. A matched hole shall be field drilled through the pole to provide wire access after arm is oriented. Deburr both holes.

Where duplicate parts occur on a detail, welds shown for one part shall apply to all similar parts on the details.

Pin bolts are required to prevent rotation of clamp-on arms under design wind forces.

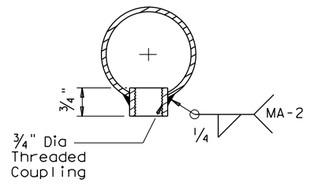
NOTE:

Pin bolts shall be A325 with threads excluded from the shear plane. Pin bolt and ¾" dia pipe shall have 3/16" dia holes for a 1/8" dia galvanized cotter pin. Back clamp plate shall be furnished with a ¾" dia hole for each pin bolt. An 11/16" dia hole for each pin bolt shall be field drilled through the pole after arm orientations have been approved by the Engineer.



CLAMP-ON ARM

ARM BASE WELD DETAILS



ILSN ARM COUPLING DETAIL

Texas Department of Transportation
Traffic Operations Division

STANDARD ASSEMBLY FOR TRAFFIC SIGNAL SUPPORT STRUCTURES

MAST-ARM CONNECTIONS

MA-C(ILSN)-12

© TxDOT August 1995

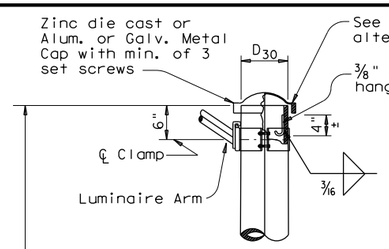
DN: MS	CK: JSY	DW: MMF	CK: JSY

REVISIONS
5-96
1-12

CONT	SECT	JOB	HIGHWAY
			MILITARY DR
DIST	COUNTY		SHEET NO.
SAT	BEXAR		313 OF 377

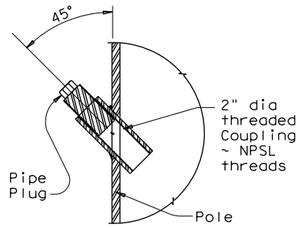
126B

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

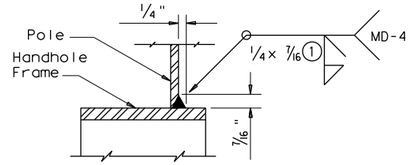


DETAIL A

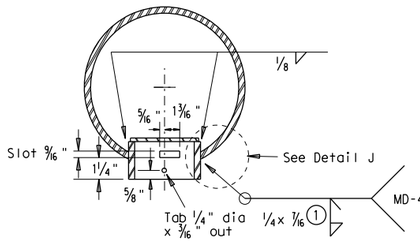
(for pole with luminaire)



POLE COUPLING DETAIL

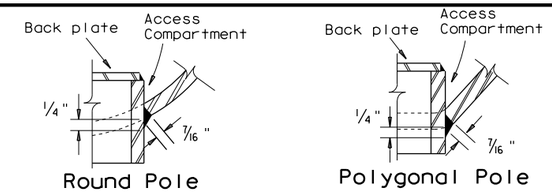


DETAIL G

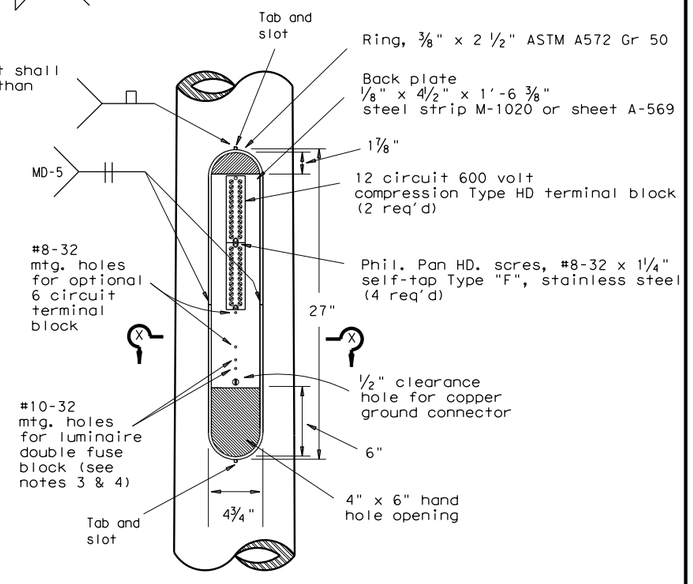


SECTION X-X

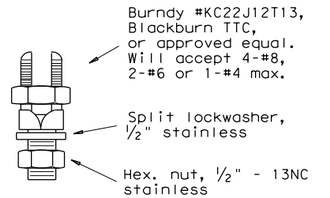
Opening for access compartment shall be no more than 1/16 inch wider than the access compartment itself.



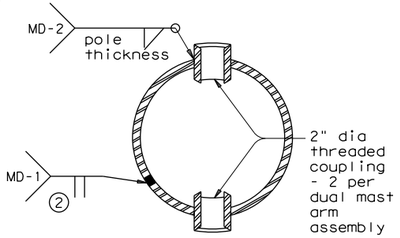
DETAIL J



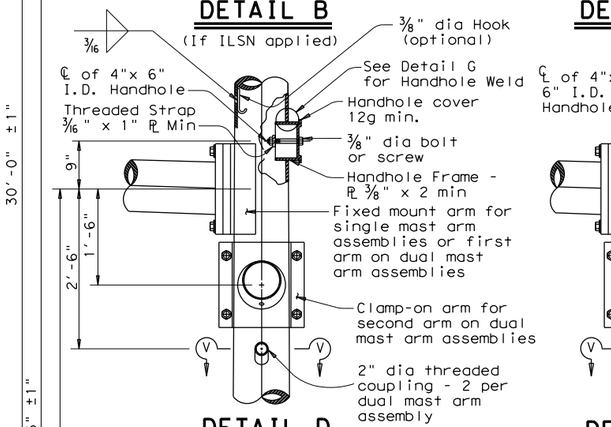
ACCESS COMPARTMENT



COPPER GROUND CONNECTOR

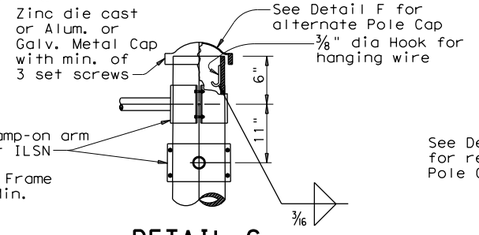


SECTION V-V

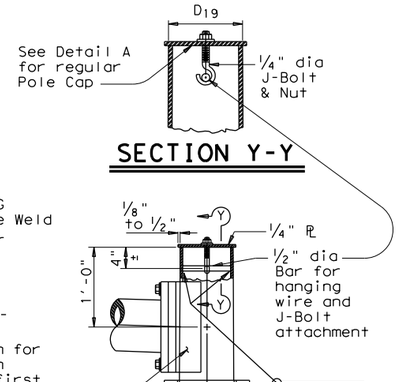


DETAIL B

(If ILSN applied)



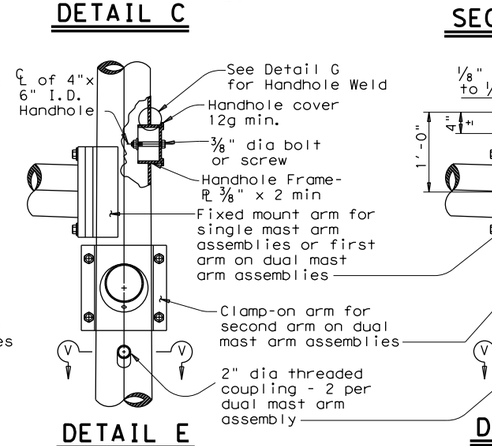
DETAIL C



SECTION Y-Y

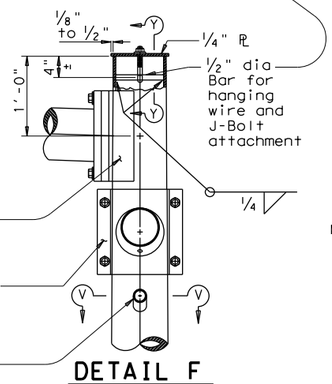
DETAIL D

(for 30' pole with luminaire and ILSN sign)



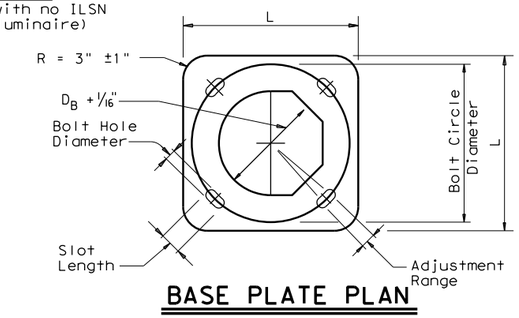
DETAIL E

(for 24' pole with ILSN sign and no luminaire)



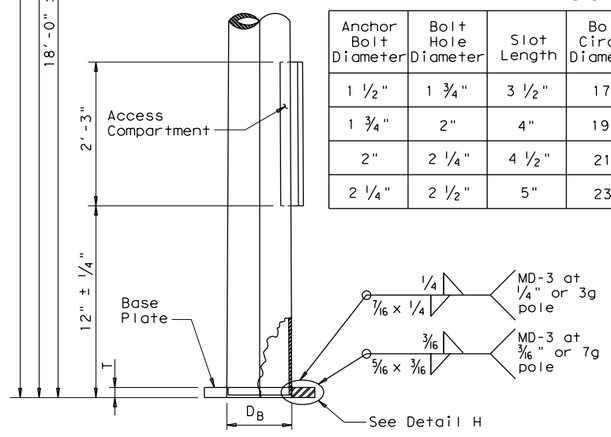
DETAIL F

(for 19' pole with no ILSN sign and no luminaire)

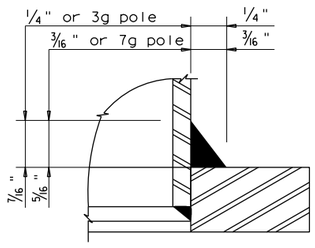


BASE PLATE PLAN

Anchor Bolt Diameter	Bolt Hole Diameter	Slot Length	Bolt Circle Diameter	Base ℞ Dim. L x T	Adjust. Range
1 1/2"	1 3/4"	3 1/2"	17"	18" x 1 1/2"	13.4°
1 3/4"	2"	4"	19"	20" x 1 3/4"	13.5°
2"	2 1/4"	4 1/2"	21"	22" x 2"	13.6°
2 1/4"	2 1/2"	5"	23"	24" x 2 1/4"	13.7°



POLE ELEVATION



DETAIL H

NOTES:

1. The cover shall be one piece formed from ABS plastic, shall be a pearl gray color, and shall be suitable for exposure to harsh sunlight and extreme weather. Cover shall latch with two screw latches and shall fit tightly to the enclosure ring to create a rainproof seal. Latch screws shall be 1/4-20 stainless flat socket head screws with tamper proof feature.
2. The pole manufacturer shall provide with each pole a separate kit consisting of: one cover with two latching assemblies, two terminal strips (Marathon #985GP12CU or approved equal), four #8-32 x 1 1/4" self tapping type "F" stainless steel pan head screws, and one ground connector (Blackburn TTC, Burndy KC22J12T13, or Ilsco SSS-5). The traffic signal contractor shall install the kit items in the field.
3. The screw hole spacing on the enclosure back plate shall be for two Marathon #985GP12 terminal strips, one Marathon #985GP06CU terminal strip, and one Bussmann #BM6032B fuse block.
4. Install one Bussmann #BM6032B, Littelfuse #L60030M-2C, or Ferraz-Shawmut #30352 fuse block for poles where luminaires are to be installed.

(1) 85% Min. penetration

(2) 60% Min. penetration 100% pemetration within 6" of circumferential base welds.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES MAST ARM POLE DETAILS

MA-D-12

© TxDOT August 1995

DN: MS	CK: JSY	DW: FDN	CK: CAL

REVISIONS
8-99
1-12

CONT	SECT	JOB	HIGHWAY
			MILITARY DR
DIST	COUNTY		SHEET NO.
SAT	BEXAR		314 OF 377

DATE: 5/20/2025 9:32:16 AM
FILE: c:\bms\pwe-useast-006\knerr.chris\dms81920\mad.dgn

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

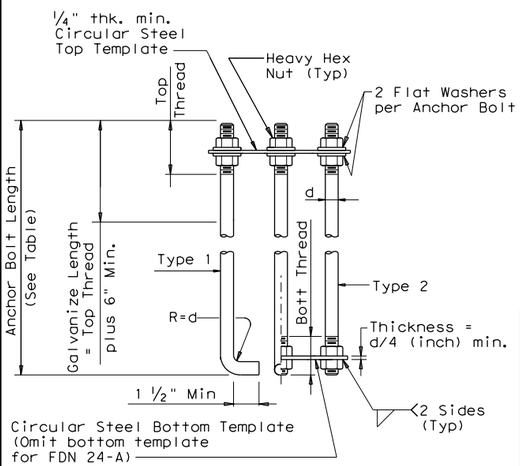
FOUNDATION DESIGN TABLE

FDN TYPE	DRILLED SHAFT DIA	REINFORCING STEEL		EMBEDDED DRILLED SHAFT LENGTH-ft (4), (5), (6)			ANCHOR BOLT DESIGN (1)				FOUNDATION DESIGN LOAD (2)		TYPICAL APPLICATION
		VERT BARS	SPIRAL & PITCH	TEXAS CONE PENETROMETER N blows/ft			ANCHOR BOLT DIA	Fy (ksi)	BOLT CIR DIA	ANCHOR TYPE	MOMENT K-ft	SHEAR Kips	
				10	15	40							
24-A	24"	4- #5	#2 at 12"	5.7	5.3	4.5	¾"	36	12 ¾"	1	10	1	Pedestal pole, pedestal mounted controller.
30-A	30"	8- #9	#3 at 6"	11.3	10.3	8.0	1 ½"	55	17"	2	87	3	Mast arm assembly. (see Selection Table)
36-A	36"	10- #9	#3 at 6"	13.2	12.0	9.4	1 ¾"	55	19"	2	131	5	Mast arm assembly. (see Selection Table) 30' strain pole with or without luminaire.
36-B	36"	12- #9	#3 at 6"	15.2	13.6	10.4	2"	55	21"	2	190	7	Mast arm assembly. (see Selection Table) Strain pole taller than 30' & strain pole with mast arm
42-A	42"	14- #9	#3 at 6"	17.4	15.6	11.9	2 ¼"	55	23"	2	271	9	Mast arm assembly. (see Selection Table)

FOUNDATION SELECTION TABLE FOR STANDARD MAST ARM PLUS ILSN SUPPORT ASSEMBLIES (ft)

		FDN 30-A	FDN 36-A	FDN 36-B	FDN 42-A
80 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH	32'	48'		
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS	24' X 24'			
		28' X 28'			
		32' X 28'	32' X 32'		
			36' X 36'		
			40' X 36'		
			44' X 28'	44' X 36'	
100 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH		36'	44'	
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS		24' X 24'		
			28' X 28'		
			32' X 24'	32' X 32'	
				36' X 36'	
				40' x24'	40' X 36'
					44' x 36'

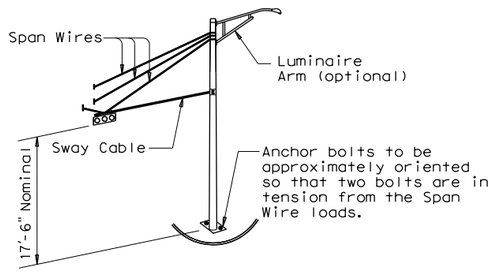
EXAMPLE:
1. For 80mph design wind speed, foundation 30-A can support up to a 32' arm with another arm up to 28'
2. For 100mph design wind speed, foundation 36-A can support a single 36' mast arm.



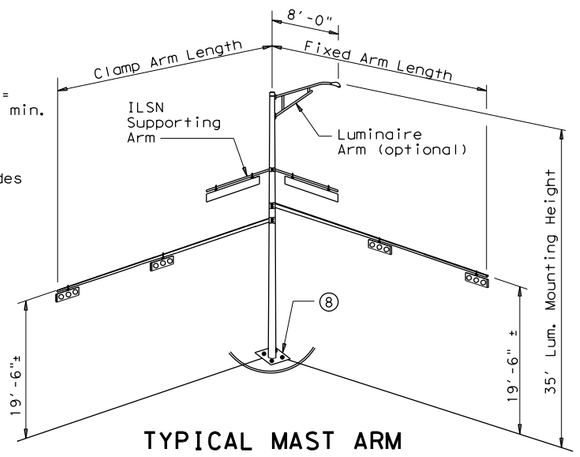
HOOKED ANCHOR (TYPE 1) NUT ANCHOR (TYPE 2)

ANCHOR BOLT ASSEMBLY

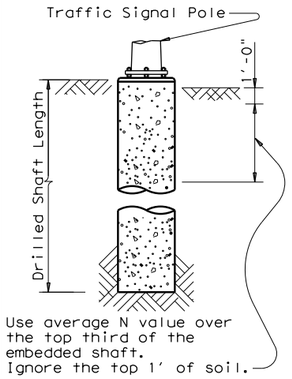
⑧ Orient anchor bolts orthogonal with the fixed arm direction to ensure that two bolts are in tension under dead load.

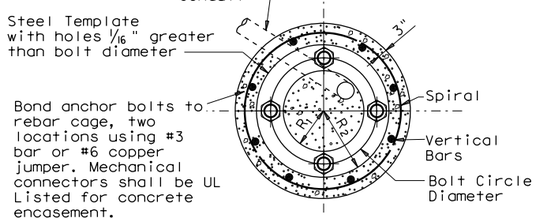


TYPICAL STRAIN POLE ASSEMBLY

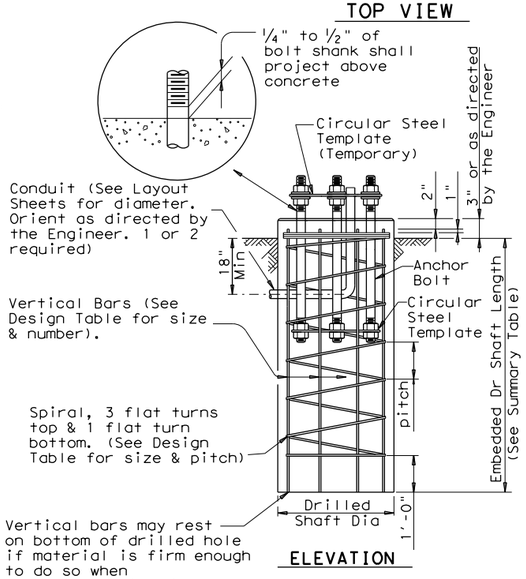


TYPICAL MAST ARM ASSEMBLY





TOP VIEW



ELEVATION

FOUNDATION DETAILS

NOTES:

① Anchor bolt design develops the foundation capacity given under Foundation Design Loads.

② Foundation Design Loads are the allowable moments and shears at the base of the structure.

③ Foundations may be listed separately or grouped according to similarity of location and type. Quantities are for the Contractor's information only.

④ Field Penetrometer readings at a depth of approximately 3 to 5 feet may be used to adjust shaft lengths.

⑤ If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.

⑥ Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

ANCHOR BOLT & TEMPLATE SIZES

BOLT DIA IN.	⑦ BOLT LENGTH	TOP THREAD	BOTTOM THREAD	BOLT CIRCLE	R2	R1
¾"	1'-6"	3"	—	12 ¾"	7 ⅛"	5 ⅝"
1 ½"	3'-4"	6"	4"	17"	10"	7"
1 ¾"	3'-10"	7"	4 ½"	19"	11 ¼"	7 ¾"
2"	4'-3"	8"	5"	21"	12 ½"	8 ½"
2 ¼"	4'-9"	9"	5 ½"	23"	13 ¾"	9 ¼"

⑦ Min dimensions given, longer bolts are acceptable.

FOUNDATION SUMMARY TABLE ③

LOCATION IDENTIFICATION	AVG. N BLOW /ft.	FDN TYPE	NO. EA	DRILLED SHAFT LENGTH ⑥ (FEET)				
				24-A	30-A	36-A	36-B	42-A
EARL WARREN HS								
POLE F	10	36-A	1			13		
POLE G	10	24-A	1	6				
POLE H	10	24-A	1	6				
SEQUOIA HEIGHT								
POLE A	10	36-A	1			13		
POLE B	10	36-A	1			13		
POLE C	10	36-A	1			13		
POLE D	10	30-A	1		11			
RICHLAND HILLS								
POLE A	10	24-A	1	6				
POLE B	10	36-A	1			13		
POLE C	10	24-A	1	6				
POLE D	10	30-A	1		11			
POLE E	10	24-A	1	6				
POLE F	10	36-A	1			13		
POLE G	10	24-A	1	6				
POLE H	10	36-A	1			13		
POLE I	10	24-A	1	6				
REED RD								
POLE A	10	24-A	1	6				
POLE B	10	24-A	1	6				
POLE C	10	36-A	1			13		
POLE D	10	30-A	1		11			
POLE E	10	24-A	1	6				
POLE F	10	30-A	1		11			
TOTAL DRILLED SHAFT LENGTHS				60	44	104		

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and interim revisions thereto.

Reinforcing steel shall conform to Item 440, "Reinforcing Steel".

Concrete shall be Class "C".

Threads for anchor bolts and nuts shall be rolled or cut threads of 8UN series up to 2" in diameter or UNC series for all sizes. Bolts and nuts shall have Class 2A and 2B fit tolerances. Galvanized nuts shall be tapped after galvanizing.

Anchor bolts that are larger than 1" in diameter shall conform to "alloy steel" or "medium-strength mild steel" per Item 449, "Anchor Bolts". Anchor bolts that are 1" in diameter or less shall conform to ASTM A36. Galvanize a minimum of the top end thread length plus 6" for all anchor bolts unless otherwise noted. Exposed washers and exposed nuts shall be galvanized. All galvanizing shall be in accordance with Item 445, "Galvanizing".

Templates and embedded nuts need not be galvanized. Lubricate and tighten anchor bolts when erecting the structure in accordance with Item 449, "Anchor Bolts".

STATE OF TEXAS
XIDUO WANG
143018
LICENSED
PROFESSIONAL ENGINEER

5/20/2025

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL POLE FOUNDATION

TS-FD-12

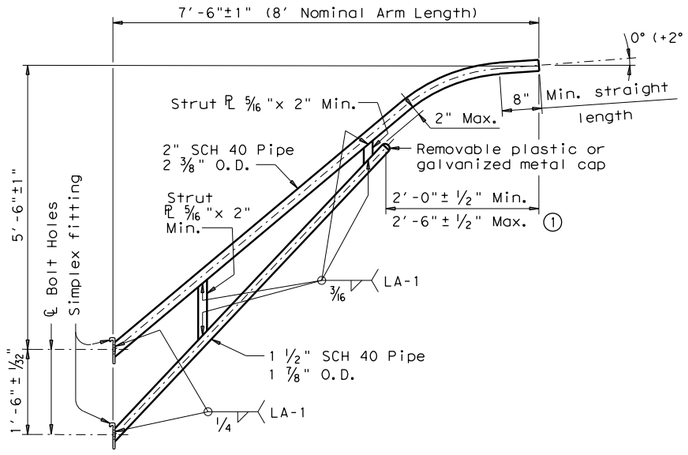
© TxDOT August 1995

DN: MS	CK: JSY	DW: MAO/MMF	CK: JSY/TEB
REVISIONS 5-96 11-99 1-12	CONT	SECT	JOB	HIGHWAY
				MILITARY DR
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		315 OF 377

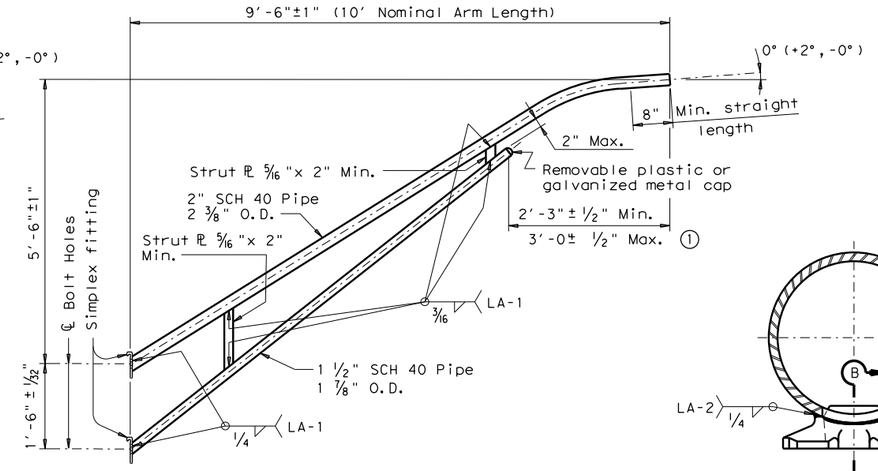
DATE: 5/20/2025 9:54:38 AM
FILE: c:\bms\pwe-useast-006\knerr.chris\dms81920\ts-fd.dgn

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

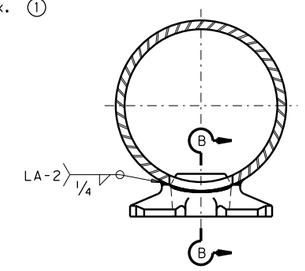
DATE: 5/20/2025 9:32:38 AM
FILE: c:\bms\pwe-useast-006\knerr.chris\dms81920\lum-a.dgn



8-FOOT LUMINAIRE ARM



10-FOOT LUMINAIRE ARM



DIRECT ATTACHMENT DETAIL

MATERIALS	
Pole or Arm Simplex	ASTM A27 Gr.65-35 or A148 Gr.80-50, A576 Gr.1021 (3), or A36 (Arm only)
Arm Pipes	ASTM A53 Gr.B, A501, A1008 HSLAS-F Gr.50 (4), or A1011 HSLAS-F Gr.50 (4)
Arm Strut Plates (2)	ASTM A36, A572 Gr.50 (4), or A588
Misc.	ASTM designations as noted

(1) Dimensional limits are given to show acceptable variation in design. All of a Fabricator's production of a particular arm length shall have the same dimensions within specified tolerances.

(2) Any of the materials listed for plates may be used where the drawings do not specify a particular ASTM designation.

(3) A576 must be suitable for forging and also meet minimum tensile strength of 65 ksi, minimum yield of 35 ksi, and elongation in 2 inches of 22 percent.

(4) ASTM A572, A1008 HSLAS-F, and A1011 HSLAS-F may have higher yield strengths but shall not have less elongation than the grade indicated.

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Revisions thereto. Design Wind Speed equals 90 mph plus a 1.3 gust factor. Arms are designed to support a 60 lb. luminaire having an effective projected area (actual area times drag coefficient) of 1.6 sq. ft.

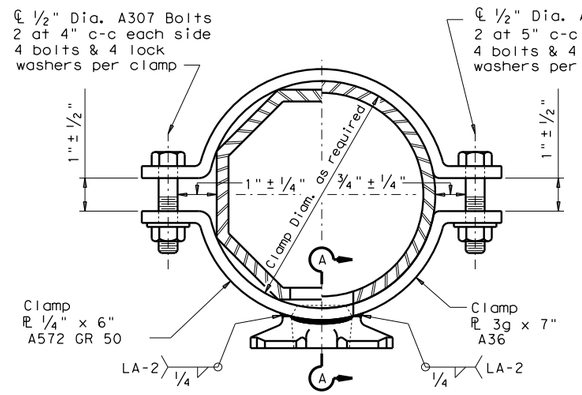
Materials and fabrication shall be in accordance with Item 686, "Traffic Signal Pole Assemblies (Steel)" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. In the absense of specified Fabricaton tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.

Unless otherwise noted, all parts shall be galvanized after fabrication in accordance with Item 445, "Galvanizing".

Deviation from the details and dimensions shown herein require submission of shop drawings in accordance with Item 441, "Steel Structures". Alternate designs are not acceptable.

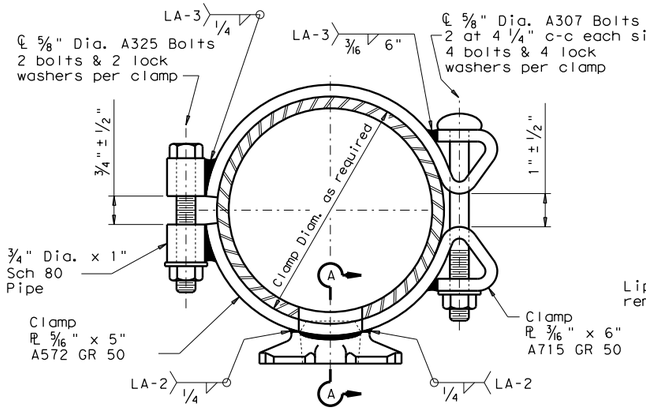
Each pole simplex fitting shall be supplied with 2 ASTM A325 bolts and 2 lock washers of the size specified. The bolts and lock washers shall be secured to the pole with the other hardware items called for in the plans. When clamp attachment is specified, the Fabricator shall ship the clamp assembly securely attached to the pole at the location shown on the plans.

If clamp assemblies are ordered without poles, the Fabricator shall ship one upper and one lower clamp assembly together in a single package, including all nuts and washers required for the clamps and simplex fittings.



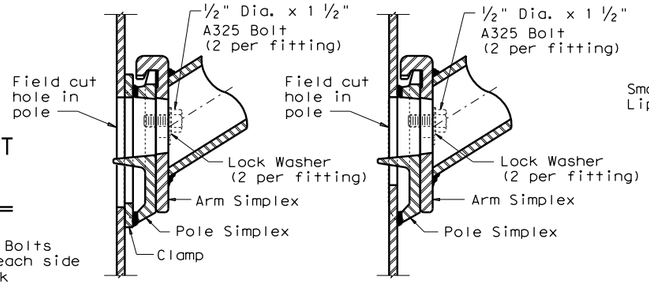
CLAMP ATTACHMENT DETAIL NO. 1 (HALF SECTION)

CLAMP ATTACHMENT DETAIL NO. 2 (HALF SECTION)



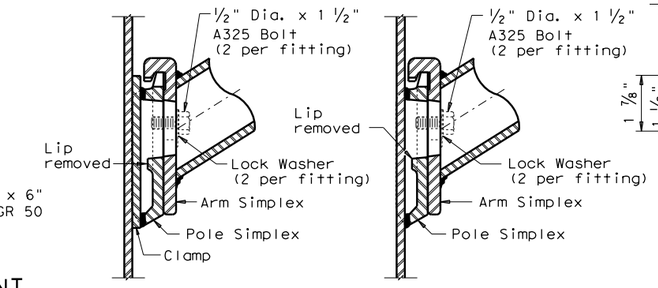
CLAMP ATTACHMENT DETAIL NO. 3 (HALF SECTION)

CLAMP ATTACHMENT DETAIL NO. 4 (HALF SECTION)



UPPER SIMPLEX FITTING

UPPER SIMPLEX FITTING

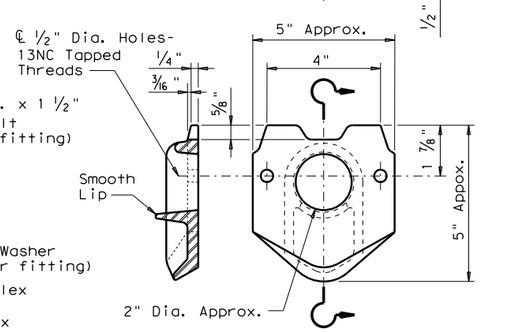


LOWER SIMPLEX FITTING

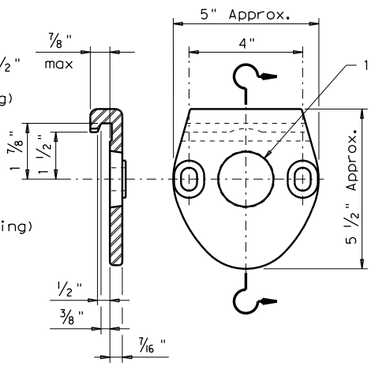
SECTON A-A

LOWER SIMPLEX FITTING

SECTON B-B



POLE SIMPLEX DETAIL



ARM SIMPLEX DETAIL

Texas Department of Transportation
Traffic Operations Division

STANDARD ASSEMBLY DRAWINGS FOR LUMINAIRE SUPPORT STRUCTURES

ARM DETAILS

LUM-A-12

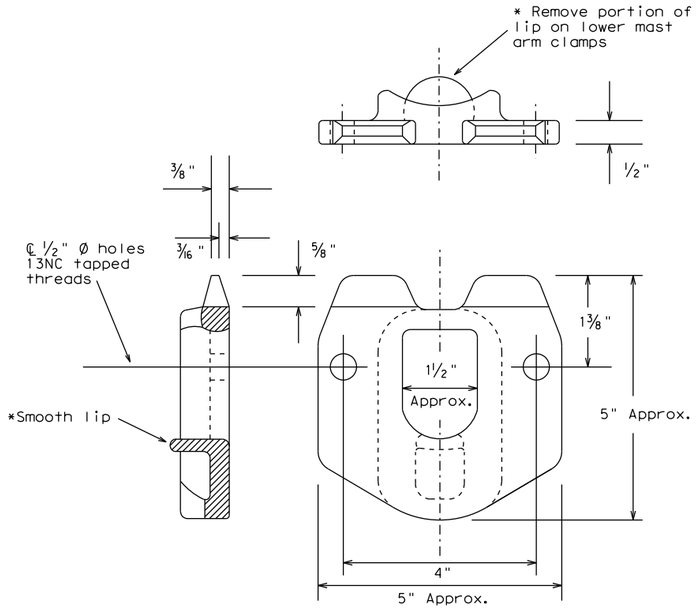
© TxDOT August 1995

DN: LEH.	CK: JSY.	DW: LII.	CK: TEH.

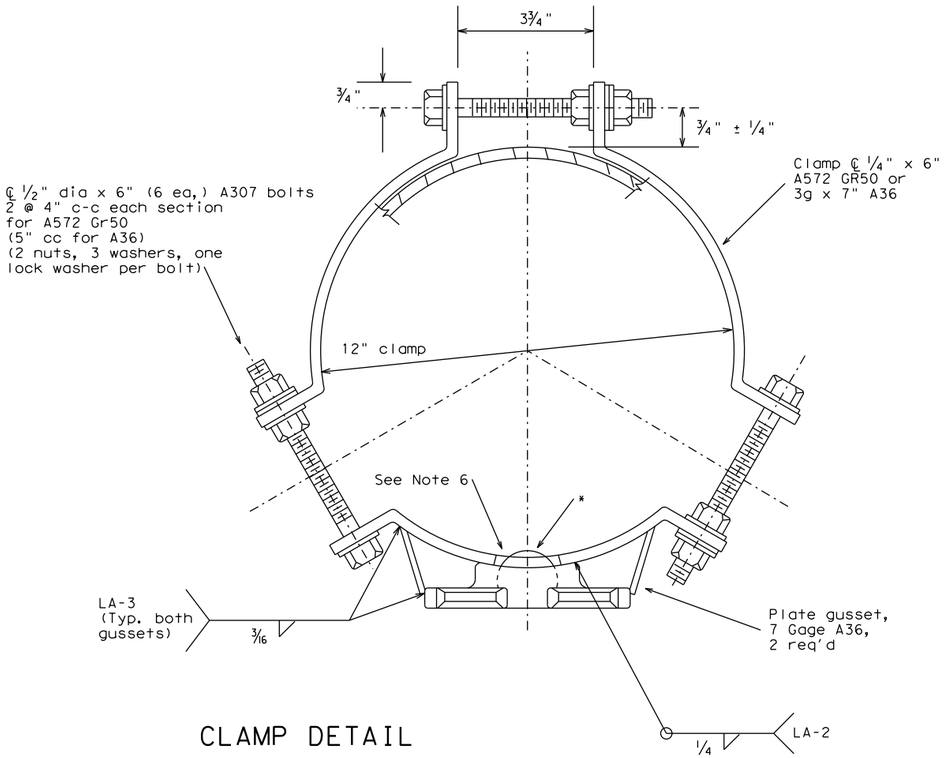
REVISIONS
5-96
1-99
1-12

CONT	SECT	JOB	HIGHWAY
			MILITARY DR
DIST	COUNTY		SHEET NO.
SAT	BEXAR		316 OF 377

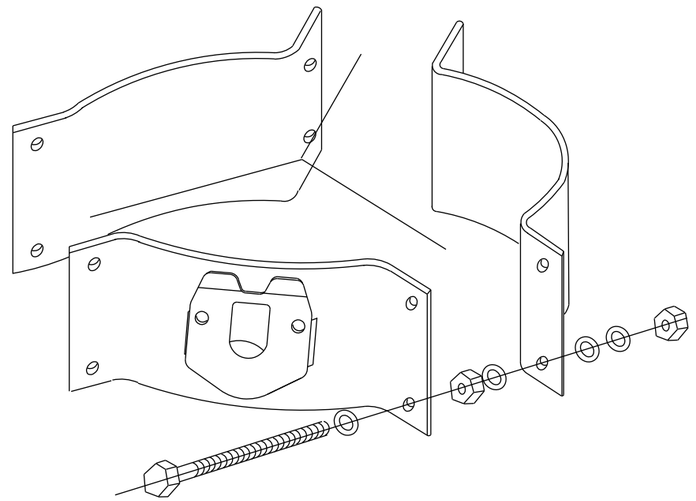
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



POLE SIMPLEX DETAILS



CLAMP DETAIL



PROJECTION

OTHER MATERIALS:

1. Pole simplex shall be ASTM A27 GR65-35 or A148 GR80-50 or A576 GR1021. ASTM A576 must be suitable for forging and also meet minimum tensile of 65ksi, minimum yield of 35ksi, and a minimum elongation of 22 percent in 2 inches.
2. Welded tabs and backplates shall be ASTM A-36 steel or better.
3. Nylon insert locknuts shall conform to ASTM A563.

GENERAL NOTES:

1. Materials and fabrication shall be in accordance with Standard Sheet "MA-C" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. In the absence of specified fabrication tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.
2. All parts shall be galvanized after fabrication in accordance with Item 445, "Galvanizing". The throat of the Simplex shall be made free of all rough or sharp edges resulting from the galvanizing process.
3. Each simplex fitting shall be supplied with 2 ASTM A325 bolts, ½in. X 1½in. and 2 lock washers. The bolts and lock washers shall be secured to the clamp with the other hardware items. The Fabricator shall ship clamp assembly together in a single package, including all bolts, nuts, and washers required for the clamp and simplex fitting.
4. Design conforms to 1994 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals" and interim revisions thereto. Design Wind Speed equals 80 mph plus a 1.3 gust factor. Clamps are designed to support a 60 lb. luminaire having an effective projected area (actual area times drag coefficient) of 1.6 sq.ft.,12 ft. maximum arm length.
5. Each assembly shall consist of one upper piece simplex fitting having a smooth lip and one lower piece simplex fitting with the lip removed.
6. Approximately 2 in. diameter hole in upper mast arm clamp.

For 8.9 - 12 inch diameter Signal Poles
(Two req'd for each mast arm)

Texas Department of Transportation
Traffic Operations Division

CLAMP ON FITTING ASSEMBLY FOR LUMINAIRE MAST ARM

CFA-12

©TxDOT	DN: KAB	CK: RES	DW: FDN	CK: CAL
REVISIONS	CONT	SECT	JOB	HIGHWAY
11-99				MILITARY DR
1-12	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		317 OF 377

130

DATE: 5/20/2025 9:32:49 AM
FILE: c:\bms\pwe-useast-006\knerr.chris\dms81920\cfa.dgn

INTERNALLY LIGHTED STREET NAME SIGN WITH LIGHT EMITTING DIODE LAMPS

'SINGLE - DOUBLE SIDED ILSN SIGN NOTES:

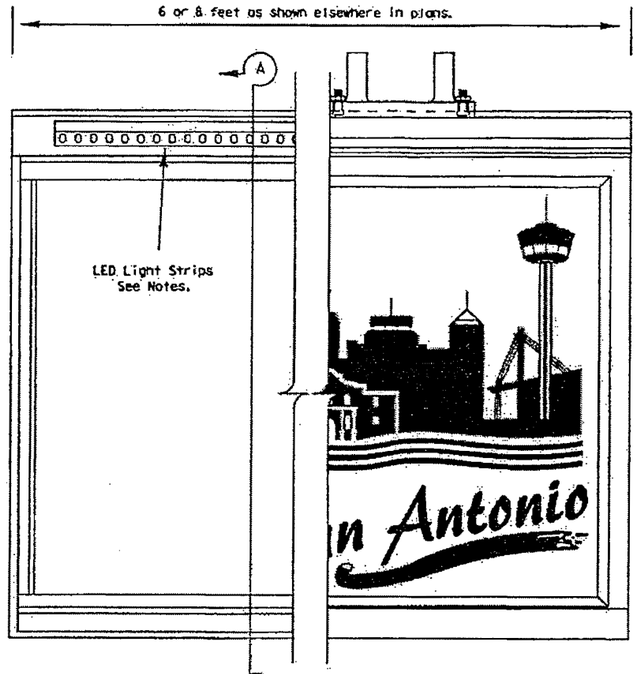
1. Eight foot ILSN sign shall not exceed 16 sq. ft. effective projected area (EPA) and shall not exceed a weight of 85 lbs.
   Six foot ILSN sign shall not exceed 12 sq. ft. EPA and shall not exceed a weight of 70 lbs.
2. Sign message shall be as shown elsewhere in the plans.
3. See Special Specification, "Internally Lighted Street Name Signs" for additional details.
4. Actual sign housing may change with vendor.
5. LED Light Source locations may vary by manufacturer. Power requirements and light output levels of specificaiton shall be satisfied.

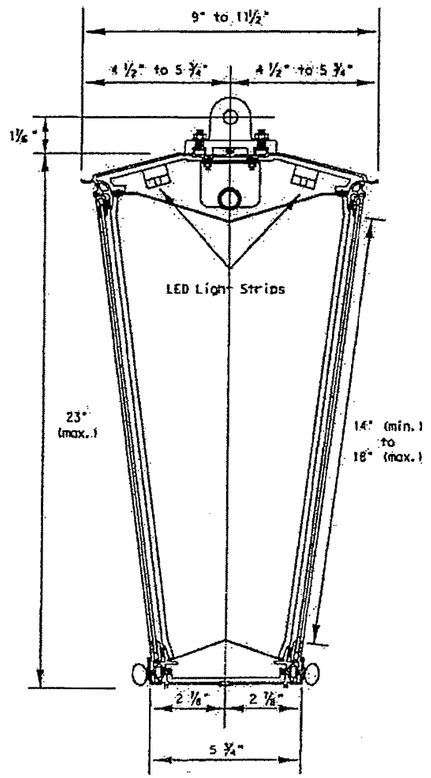
EXPLANATION OF DESCRIPTION

ILSN Sign - 8 - D

- Internally lighted street name sign
- Sign length; 6 or 8 ft.
- Single or double face

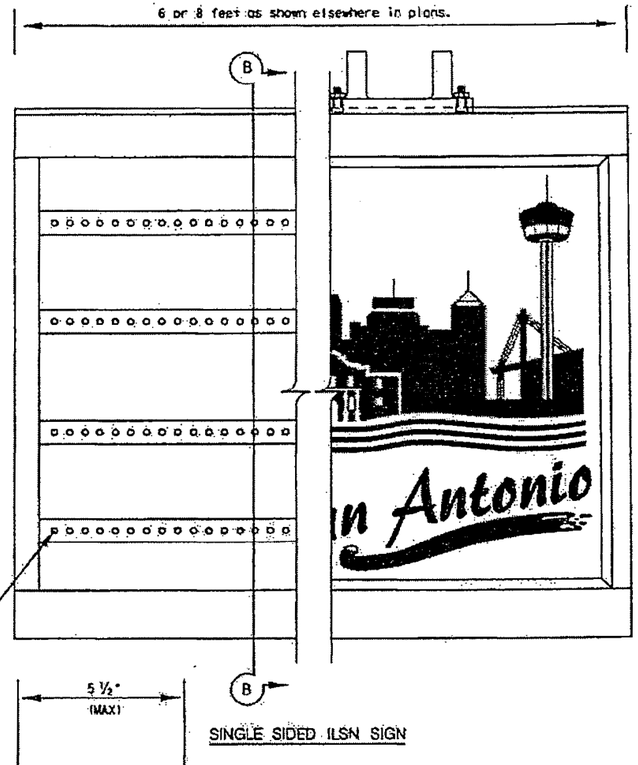
DOUBLE SIDED ILSN SIGN



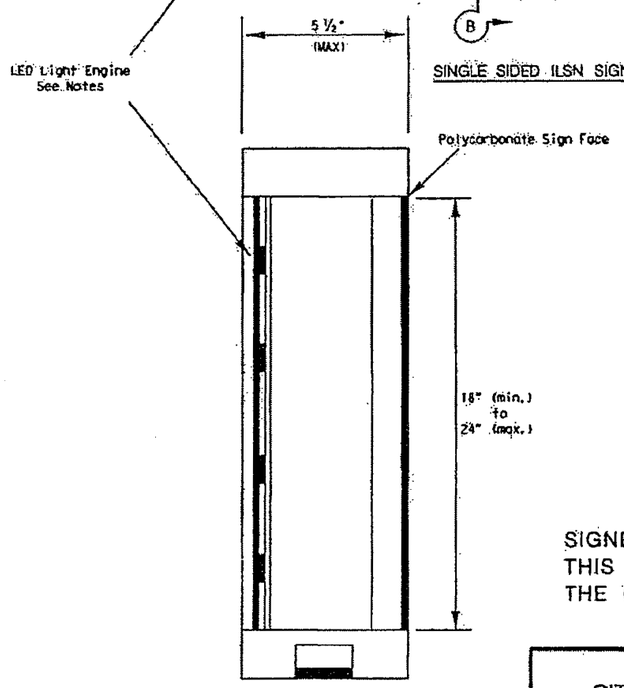


Section A-A

DOUBLE SIDED ILSN SIGN



SINGLE SIDED ILSN SIGN



Section B-B

SINGLE SIDED ILSN SIGN

SIGNED AND SEALED COPIES OF THIS STANDARD IS ON FILE WITH THE CITY OF SAN ANTONIO.

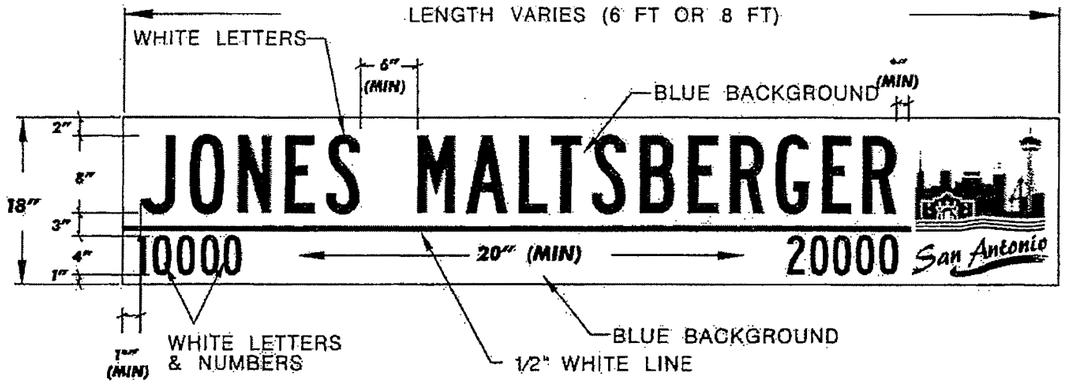
STANDARD PLANS
CITY OF SAN ANTONIO, TEXAS
DEPARTMENT OF PUBLIC WORKS

ILSN SIGN DETAILS
(ILSN-1)

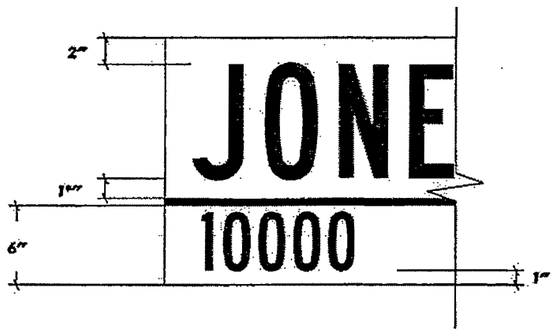
NO.	DATE	REVISION	DRWN.	CHKD	APPR.

DRAWN: (T) M. GLASEH	DATE	REVISIONS	SCALE: N.T.S.
CHECKED BY: GILMER GASTON, P.E., P.T.O.E.			DATE: 5/20/2025
			SHEET: 318 OF 377

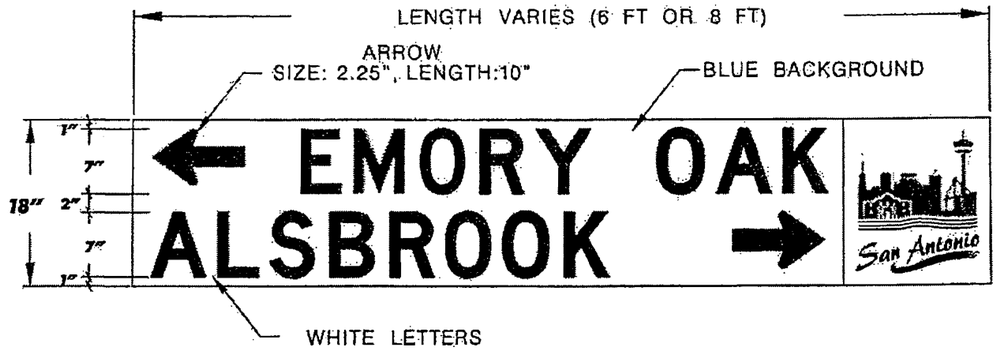
pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D2201161X.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\standards\CONSOR\ilsn-1.dgn
5/20/2025 8:35:10 AM
c:\dms\pwe-useast-006\knerr.chris\dms81920\ilsn-1.dgn
5/20/2025



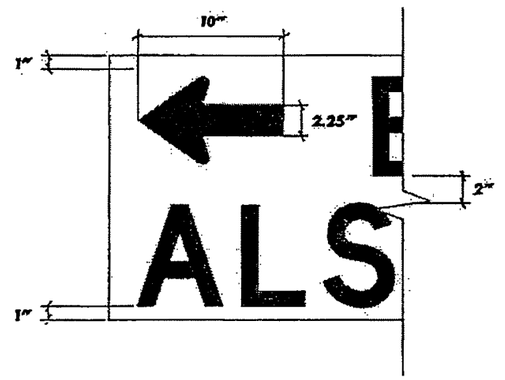
TYPICAL METRO ILSN SIGN



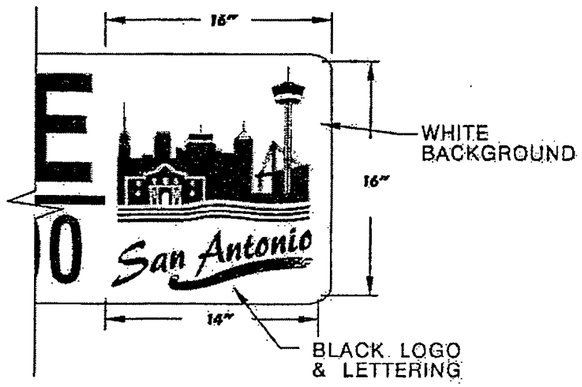
HEIGHT	18"
LENGTH	72" (6 FT) OR 96" (8 FT)
SUBSTRATE	POLYCARBONATE, TRANSLUCENT WHITE
THICKNESS	0.120"
SIGN FACE MATERIALS	BLUE FILM OVER WHITE POLYCARBONATE LOGO-A AS REQUIRED BY CITY
BLOCK NUMBERS	FONT: 4" SERIES D
LEGEND	SERIES D (USUAL) SERIES C OR B FOR MAXIMUM LENGTH 8 FT SIGN, AS NEEDED
COLOR	WHITE LEGEND ON BLUE BACKGROUND



TYPICAL DOUBLE STREET NAME ILSN SIGN



LOGO A



SIGN LOGO PLAQUE
OTHER LOGO PLAQUES
MAY BE SPECIFIED

SIGNED AND SEALED COPIES OF THIS STANDARD IS ON FILE WITH THE CITY OF SAN ANTONIO.

STANDARD PLANS
CITY OF SAN ANTONIO, TEXAS
DEPARTMENT OF PUBLIC WORKS

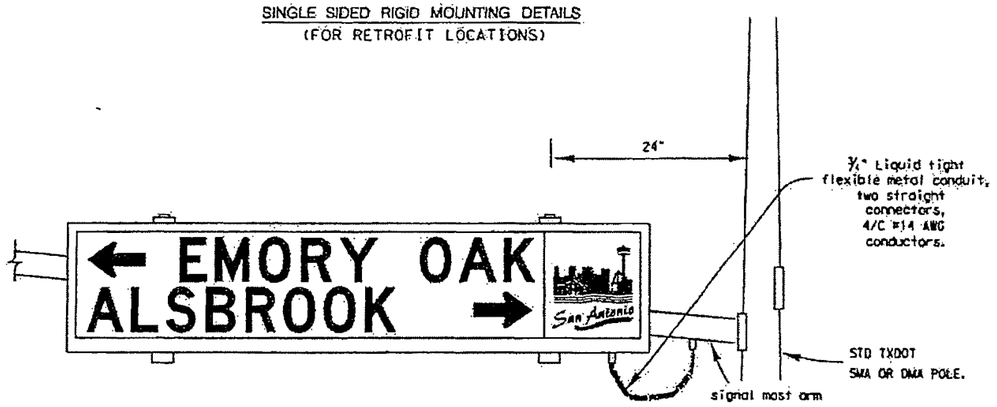
ILSN SIGN DETAILS
(ILSN-2)

NO.	DATE	REVISION	DRWN	CHKD	APPR

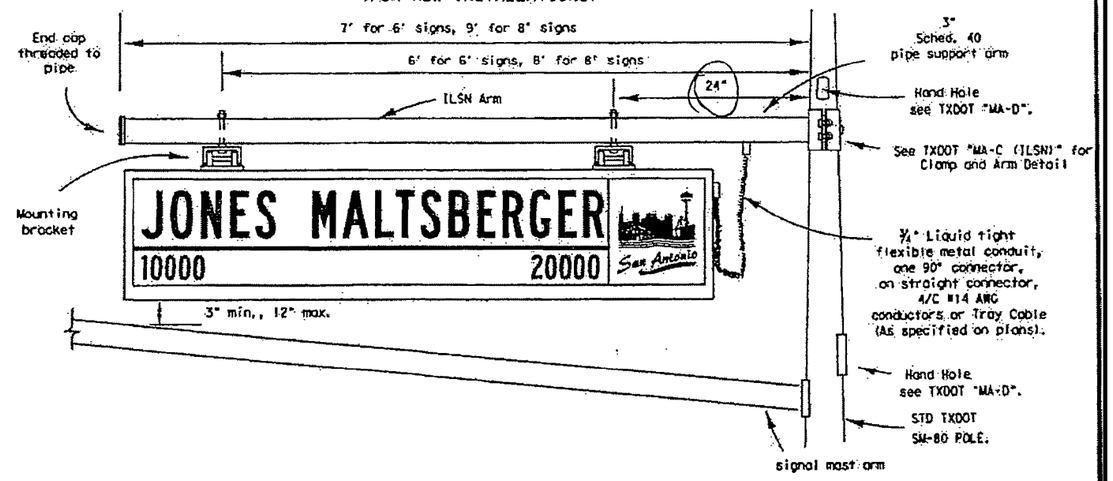
DRAWN BY: M. GLASER	DATE	REVISIONS	SCALE: N.T.S.
CHECKED BY: GILMER CASTON, P.E., P.T.O.E.			DATE 5/20/2025
			SHEET: 319 OF 377

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D2201116TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\standards\CONSOR\ilsn-2.dgn
c:\dms\pwe-useast-006\knerr.chris\dms81920\ilsn-2.dgn
5:38:38 AM
5/20/2025

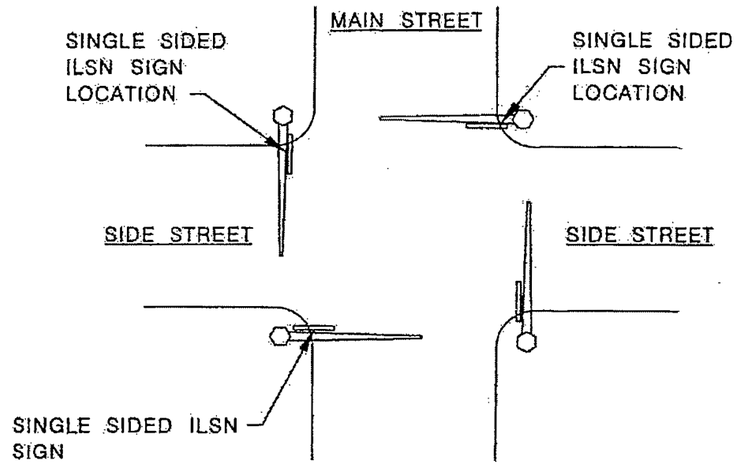
SINGLE SIDED RIGID MOUNTING DETAILS
(FOR RETROFIT LOCATIONS)



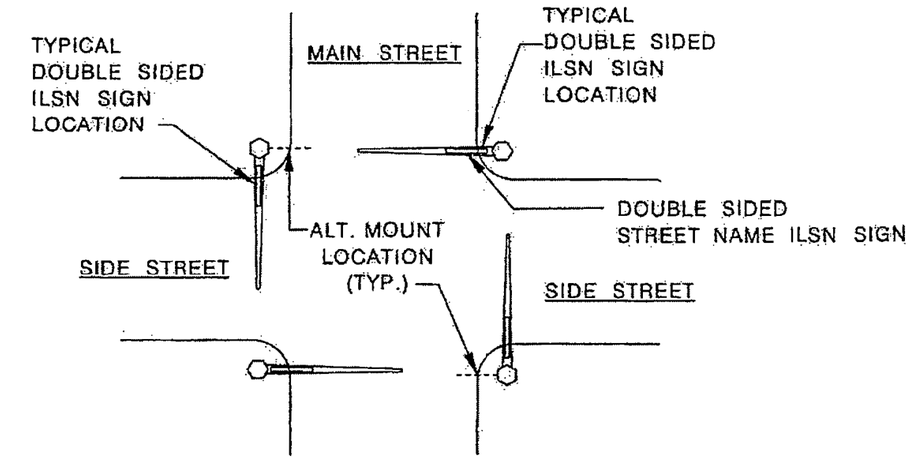
ILSN HANGING SIGN MOUNTING DETAILS
(FOR NEW INSTALLATIONS)



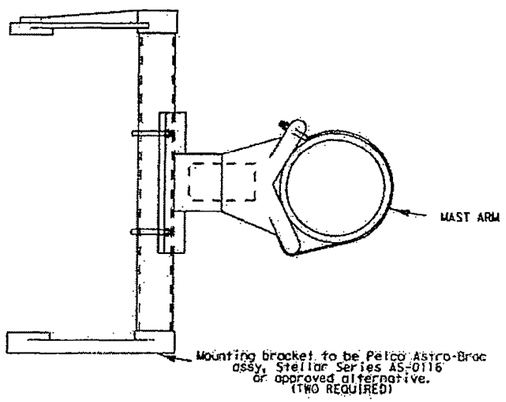
TYPICAL SINGLE SIDED ILSN SIGN PLACEMENT



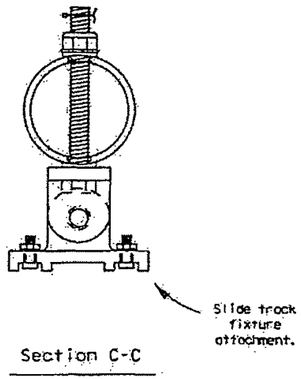
TYPICAL DOUBLE SIDED ILSN SIGN PLACEMENT



SINGLE SIDED SIGN MOUNTING BRACKET

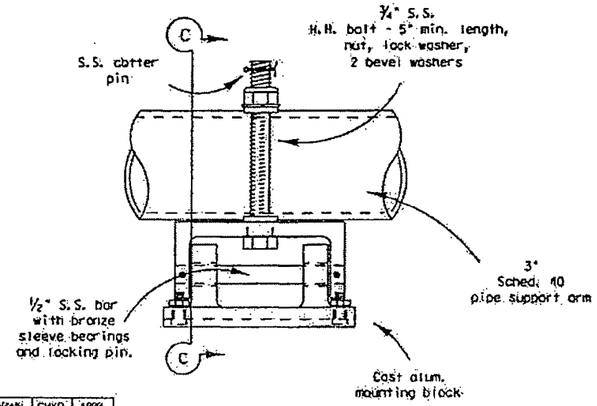


MOUNTING BRACKET



Section C-C

DOUBLE SIDED SIGN MOUNTING



SIGNED AND SEALED COPIES OF THIS STANDARD IS ON FILE WITH THE CITY OF SAN ANTONIO.

NO.	DATE	REVISION	DRWN.	CHKD.	APPR.

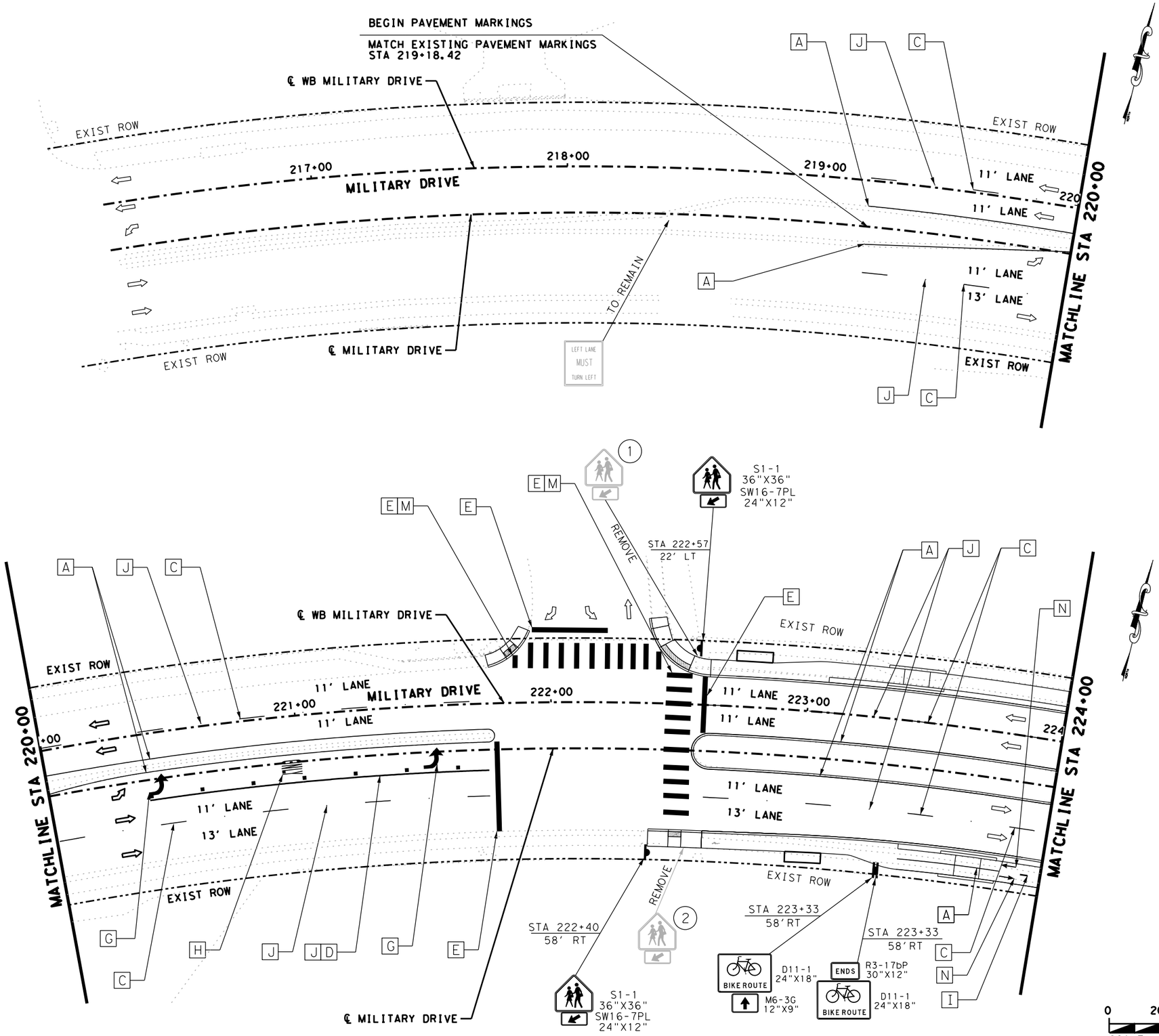
STANDARD PLANS
CITY OF SAN ANTONIO, TEXAS
DEPARTMENT OF PUBLIC WORKS

ILSN SIGN DETAILS
(ILSN-3)

DRAWN BY: M. GLASER	DATE	REVISIONS	SCALE: N.T.S.
CHECKED BY: GILMER GASTON, P.E., P.T.O.E.			DATE: 5/20/2025
			SHEET: 320 OF 377

pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D2201161TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\standards\CONSOR\ilsn-3.dgn
ct:\dms\pwe-useast-006\knerr_chris\dms81920\ilsn-3.dgn
5:36:10 AM
5/20/2025

5/20/2025 pw:\\consor-pw.bentley.com:consor-pw-02\Documents\TXPROJ\D2201161TX.00\1_Design\500_CADD\dgn\02 Plan Files\08 signal\standards\CONSOR\ilsn-3.dgn



SHEET TOTALS			
	EST	UNIT	DESCRIPTION
A	830	LF	REFL PAV MRK TY I (Y) 4"(SLD)
B	-	LF	REFL PAV MRK TY I (W) 4"(SLD)
C	202	LF	REFL PAV MRK TY I (W) 4"(BRK)
D	133	LF	REFL PAV MRK TY I (W) 8"(SLD)
E	289	LF	REFL PAV MRK TY I (W) 24"(SLD)
F	-	LF	REFL PAV MRK TY I (Y) 24"(SLD)
G	2	EA	REFL PAV MRK TY-I (W)(LEFT ARROW)
G1	-	EA	REFL PAV MRK TY-I (W)(RIGHT ARROW)
H	1	EA	REFL PAV MRK TY-I (W)(WORD)
I	18	LF	REFL PAV MRK TY I (Y) 4"(BRK)
J	28	EA	REFL PAV MRKR TY II - C-R
K	144	EA	REFL PAV MRKR TY II - A - A (TURN BAYS)
M	404	LF	BLACK PAV MARK (12")(CONTRAST)
N	2	EA	STRAIGHT WHITE ARROW BICYCLE FACILITY
O	-	EA	WORD STOP
P	-	LF	REFL PAV MRK TY I (W) 4"(DOT)
Q	-	EA	LANE REDUCTION ARROW
R	-	LF	REFL PAV MRK TY I (W) 12" (SLD)

⇦ DIRECTIONAL ARROWS
SIGN POST

NOTES:

1. ALL PROPOSED MARKINGS SHALL MEET AND BE INSTALLED PER CITY OF SAN ANTONIO STANDARDS.
2. ALL SIGNS MUST BE CONSTRUCTED IN ACCORDANCE WITH DETAILS FOUND IN "TEXAS MANUAL ON UNIFORM CONTROL DEVICES" (TMUTCD), LATEST EDITION.
3. ALL PROPOSED SIGNS AND RELOCATED SIGNS CALLED OUT WILL REQUIRE REMOVAL OF EXISTING SIGN ASSEMBLY. ALL OTHER EXISTING SIGNS WILL REMAIN IN PLACE.
4. ALL TY 1 PAVEMENT MARKING SHALL HAVE PAVEMENT SEALER.
5. REFER TO SUMMARY OF QUANTITIES FOR SHEET TOTALS FOR PROPOSED SIGNS AND SMALL SIGN REMOVALS.

STATE OF TEXAS
MIGUEL A. SANCHEZ
95878
REGISTERED PROFESSIONAL ENGINEER

Miguel Sanchez 05/21/2025

META ENGINEERING
TBPE REG. # F-22397

13438 BANDERA ROAD, SUITE 104 - HELOTES, TX 78023 - (210) 874-6666

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

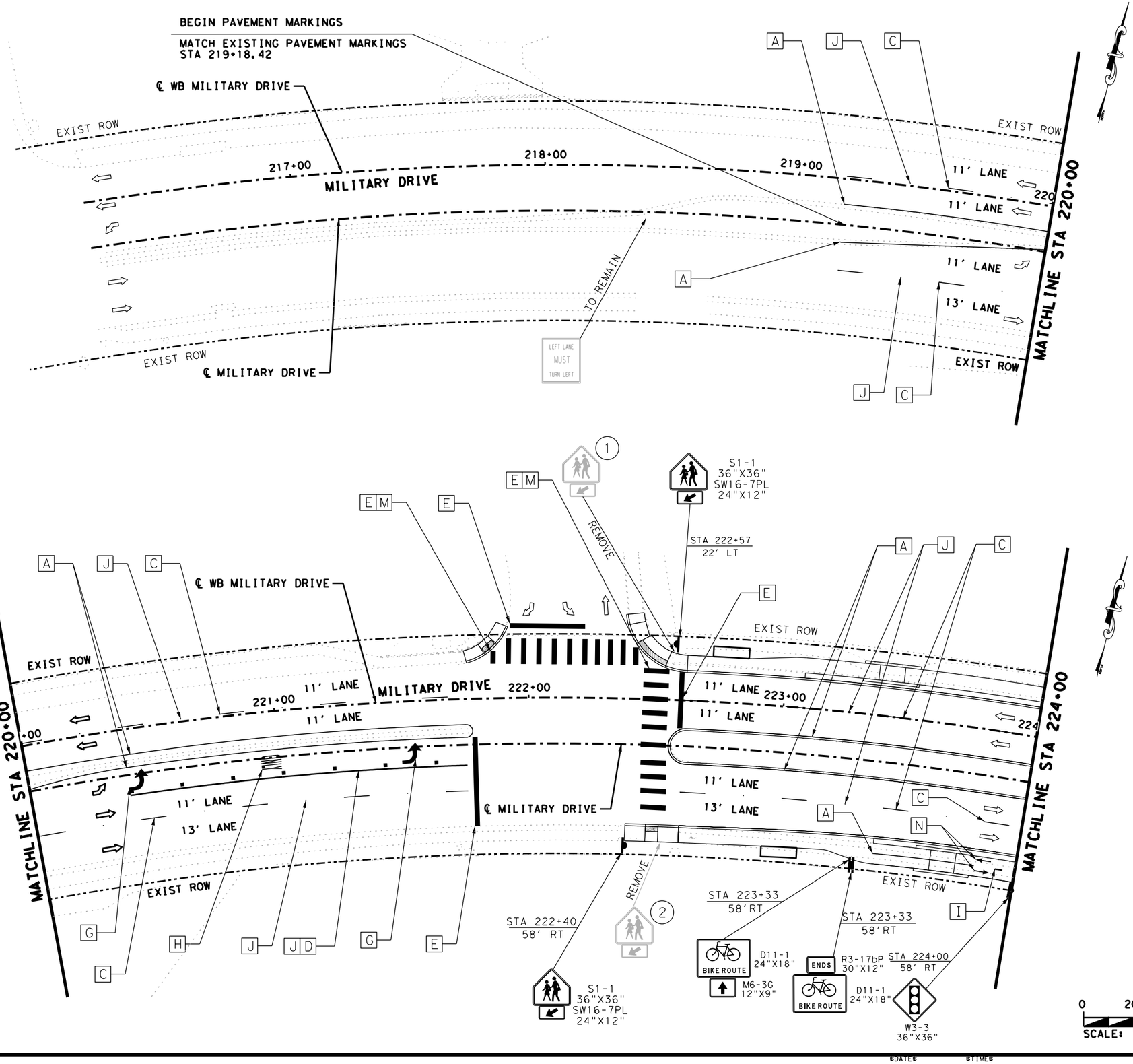
MILITARY DRIVE

SIGNING AND PAVEMENT MARKING LAYOUT

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/21/2025
DRWN. BY: RPG	DSGN. BY: MAS	CHKD. BY: JMS	SHEET NO. 321 OF 377

Pen Table File
01:26:51 AM
01/28/2025

01/28/2025 1:26:51 AM
Pen Table File



SHEET TOTALS			
	EST	UNIT	DESCRIPTION
A	830	LF	REFL PAV MRK TY I (Y) 4"(SLD)
B	-	LF	REFL PAV MRK TY I (W) 4"(SLD)
C	202	LF	REFL PAV MRK TY I (W) 4"(BRK)
D	133	LF	REFL PAV MRK TY I (W) 8"(SLD)
E	289	LF	REFL PAV MRK TY I (W) 24"(SLD)
F	-	LF	REFL PAV MRK TY I (Y) 24"(SLD)
G	2	EA	REFL PAV MRK TY-I (W)(LEFT ARROW)
G1	-	EA	REFL PAV MRK TY-I (W)(RIGHT ARROW)
H	1	EA	REFL PAV MRK TY-I (W)(WORD)
I	18	LF	REFL PAV MRK TY I (Y) 4"(BRK)
J	28	EA	REFL PAV MRKR TY II - C-R
K	144	EA	REFL PAV MRKR TY II - A - A (TURN BAYS)
M	404	LF	BLACK PAV MARK (12")(CONTRAST)
N	2	EA	STRAIGHT WHITE ARROW BICYCLE FACILITY
O	-	EA	WORD STOP
P	-	LF	REFL PAV MRK TY I (W) 4"(DOT)
Q	-	EA	LANE REDUCTION ARROW
R	-	LF	REFL PAV MRK TY I (W) 12" (SLD)

⇦ DIRECTIONAL ARROWS
SIGN POST

NOTES:

1. ALL PROPOSED MARKINGS SHALL MEET AND BE INSTALLED PER CITY OF SAN ANTONIO STANDARDS.
2. ALL SIGNS MUST BE CONSTRUCTED IN ACCORDANCE WITH DETAILS FOUND IN "TEXAS MANUAL ON UNIFORM CONTROL DEVICES" (TMUTCD), LATEST EDITION.
3. ALL PROPOSED SIGNS AND RELOCATED SIGNS CALLED OUT WILL REQUIRE REMOVAL OF EXISTING SIGN ASSEMBLY. ALL OTHER EXISTING SIGNS WILL REMAIN IN PLACE.
4. ALL TY 1 PAVEMENT MARKING SHALL HAVE PAVEMENT SEALER.
5. REFER TO SUMMARY OF QUANTITIES FOR SHEET TOTALS FOR PROPOSED SIGNS AND SMALL SIGN REMOVALS.

STATE OF TEXAS
MIGUEL A. SANCHEZ
95878
REGISTERED PROFESSIONAL ENGINEER
Miguel Sanchez
05/21/2025

META ENGINEERING
TBPE REG. # F-22397

13438 BANDERA ROAD, SUITE 104 - HELOTES, TX 78023 - (210) 874-6666

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

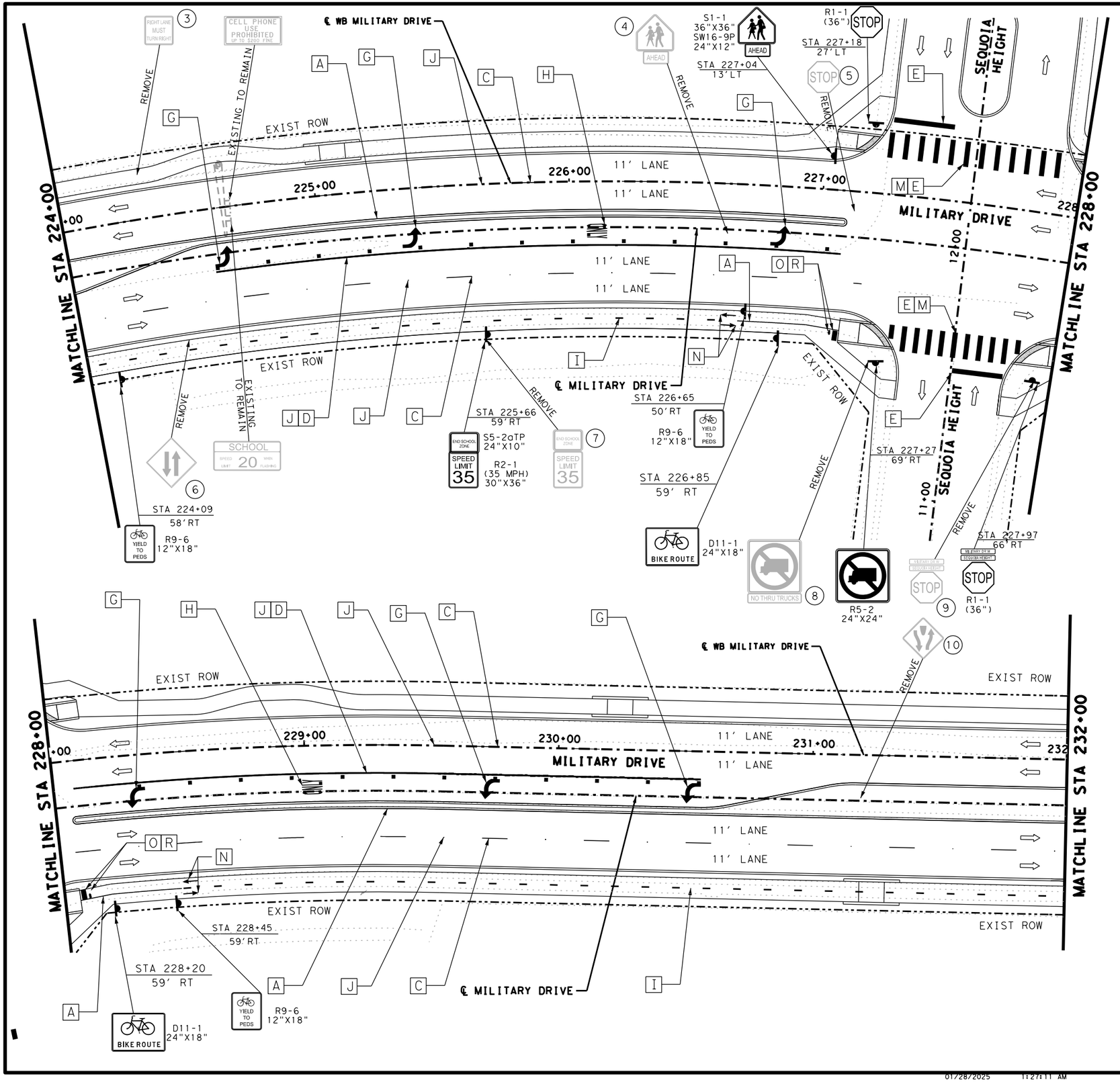
MILITARY DRIVE

SIGNING AND PAVEMENT MARKING LAYOUT 1A (ALT 1)

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/21/2025
DRWN. BY: RPG	DSGN. BY: MAS	CHKD. BY: JMS	SHEET NO 322A OF 377

Pen Table File
$TIME$
$DATE$

$DATE$ $TIME$ Pen Table File



SHEET TOTALS			
	EST	UNIT	DESCRIPTION
A	1507	LF	REFL PAV MRK TY I (Y) 4"(SLD)
B	-	LF	REFL PAV MRK TY I (W) 4"(SLD)
C	379	LF	REFL PAV MRK TY I (W) 4"(BRK)
D	484	LF	REFL PAV MRK TY I (W) 8"(SLD)
E	265	LF	REFL PAV MRK TY I (W) 24"(SLD)
F	-	LF	REFL PAV MRK TY I (Y) 24"(SLD)
G	6	EA	REFL PAV MRK TY-I (W)(LEFT ARROW)
G1	-	EA	REFL PAV MRK TY-I (W)(RIGHT ARROW)
H	2	EA	REFL PAV MRK TY-I (W)(WORD)
I	174	LF	REFL PAV MRK TY I (Y) 4"(BRK)
J	62	EA	REFL PAV MRKR TY II - C-R
K	177	EA	REFL PAV MRKR TY II - A - A (TURN BAYS)
M	442	LF	BLACK PAV MARK (12")(CONTRAST)
N	4	EA	STRAIGHT WHITE ARROW BICYCLE FACILITY
O	2	EA	WORD STOP
P	-	LF	REFL PAV MRK TY I (W) 4"(DOT)
Q	-	EA	LANE REDUCTION ARROW
R	-	LF	REFL PAV MRK TY I (W) 12" (SLD)

⇦ DIRECTIONAL ARROWS
SIGN POST

NOTES:

1. ALL PROPOSED MARKINGS SHALL MEET AND BE INSTALLED PER CITY OF SAN ANTONIO STANDARDS.
2. ALL SIGNS MUST BE CONSTRUCTED IN ACCORDANCE WITH DETAILS FOUND IN "TEXAS MANUAL ON UNIFORM CONTROL DEVICES" (TMUTCD), LATEST EDITION.
3. ALL PROPOSED SIGNS AND RELOCATED SIGNS CALLED OUT WILL REQUIRE REMOVAL OF EXISTING SIGN ASSEMBLY. ALL OTHER EXISTING SIGNS WILL REMAIN IN PLACE.
4. ALL TY 1 PAVEMENT MARKING SHALL HAVE PAVEMENT SEALER.
5. REFER TO SUMMARY OF QUANTITIES FOR SHEET TOTALS FOR PROPOSED SIGNS AND SMALL SIGN REMOVALS.

STATE OF TEXAS
MIGUEL A. SANCHEZ
95878
REGISTERED PROFESSIONAL ENGINEER

05/21/2025

META ENGINEERING
TBPE REG. # F-22397

13438 BANDERA ROAD, SUITE 104 - HELOTES, TX 78023 - (210) 874-6666

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

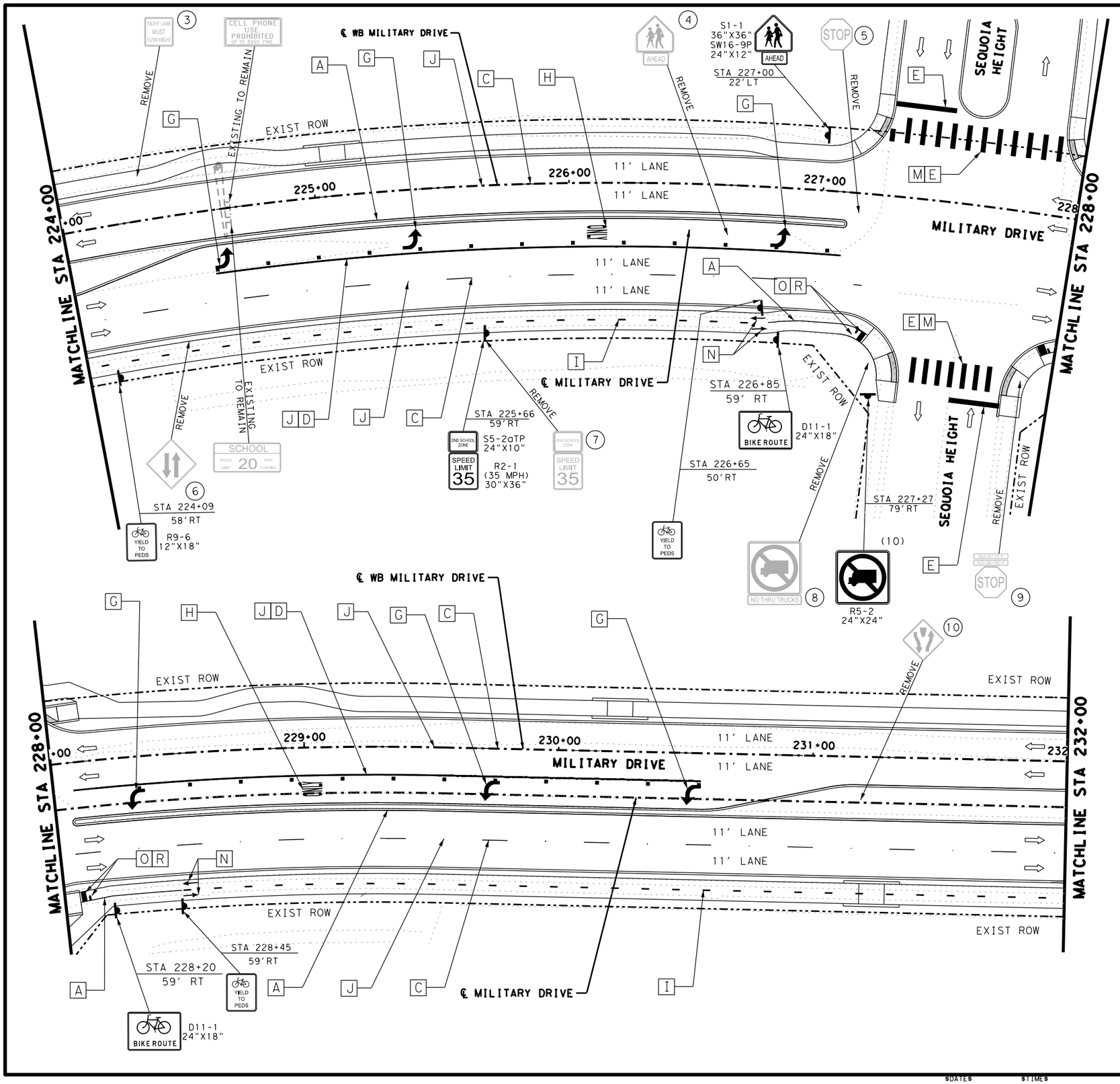
MILITARY DRIVE
SIGNING AND PAVEMENT MARKING LAYOUT

SCALE: 1" = 40'

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/21/2025
DRWN. BY: RPG	DSGN. BY: MAS	CHKD. BY: JMS	SHEET NO. 323 OF 377

Pen Table File
01/28/2025 1:27:11 AM

01/28/2025 1:27:11 AM
Pen Table File



SHEET TOTALS			
	EST	UNIT	DESCRIPTION
A	1507	LF	REFL PAV MRK TY I (Y) 4"(SLD)
B	-	LF	REFL PAV MRK TY I (W) 4"(SLD)
C	379	LF	REFL PAV MRK TY I (W) 4"(BRK)
D	429	LF	REFL PAV MRK TY I (W) 8"(SLD)
E	139	LF	REFL PAV MRK TY I (W) 24"(SLD)
F	-	LF	REFL PAV MRK TY I (Y) 24"(SLD)
G	6	EA	REFL PAV MRK TY-I (W)(LEFT ARROW)
G1	-	EA	REFL PAV MRK TY-I (W)(RIGHT ARROW)
H	2	EA	REFL PAV MRK TY-I (W)(WORD)
I	174	LF	REFL PAV MRK TY I (Y) 4"(BRK)
J	62	EA	REFL PAV MRKR TY II - C-R
K	177	EA	REFL PAV MRKR TY II - A - A (TURN BAYS)
M	432	LF	BLACK PAV MARK (12")(CONTRAST)
N	4	EA	STRAIGHT WHITE ARROW BICYCLE FACILITY
O	2	EA	WORD STOP
P	-	LF	REFL PAV MRK TY I (W) 4"(DOT)
Q	-	EA	LANE REDUCTION ARROW
R	-	LF	REFL PAV MRK TY I (W) 12" (SLD)

⇦ DIRECTIONAL ARROWS
SIGN POST

NOTES:

1. ALL PROPOSED MARKINGS SHALL MEET AND BE INSTALLED PER CITY OF SAN ANTONIO STANDARDS.
2. ALL SIGNS MUST BE CONSTRUCTED IN ACCORDANCE WITH DETAILS FOUND IN "TEXAS MANUAL ON UNIFORM CONTROL DEVICES" (TMUTCD), LATEST EDITION.
3. ALL PROPOSED SIGNS AND RELOCATED SIGNS CALLED OUT WILL REQUIRE REMOVAL OF EXISTING SIGN ASSEMBLY. ALL OTHER EXISTING SIGNS WILL REMAIN IN PLACE.
4. ALL TY 1 PAVEMENT MARKING SHALL HAVE PAVEMENT SEALER.
5. REFER TO SUMMARY OF QUANTITIES FOR SHEET TOTALS FOR PROPOSED SIGNS AND SMALL SIGN REMOVALS.

STATE OF TEXAS
MIGUEL A. SANCHEZ
95878
REGISTERED PROFESSIONAL ENGINEER

05/21/2025

META ENGINEERING
TBPE REG. # F-22397

13438 BANDERA ROAD, SUITE 104 - HELOTES, TX 78023 - (210) 874-6666

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

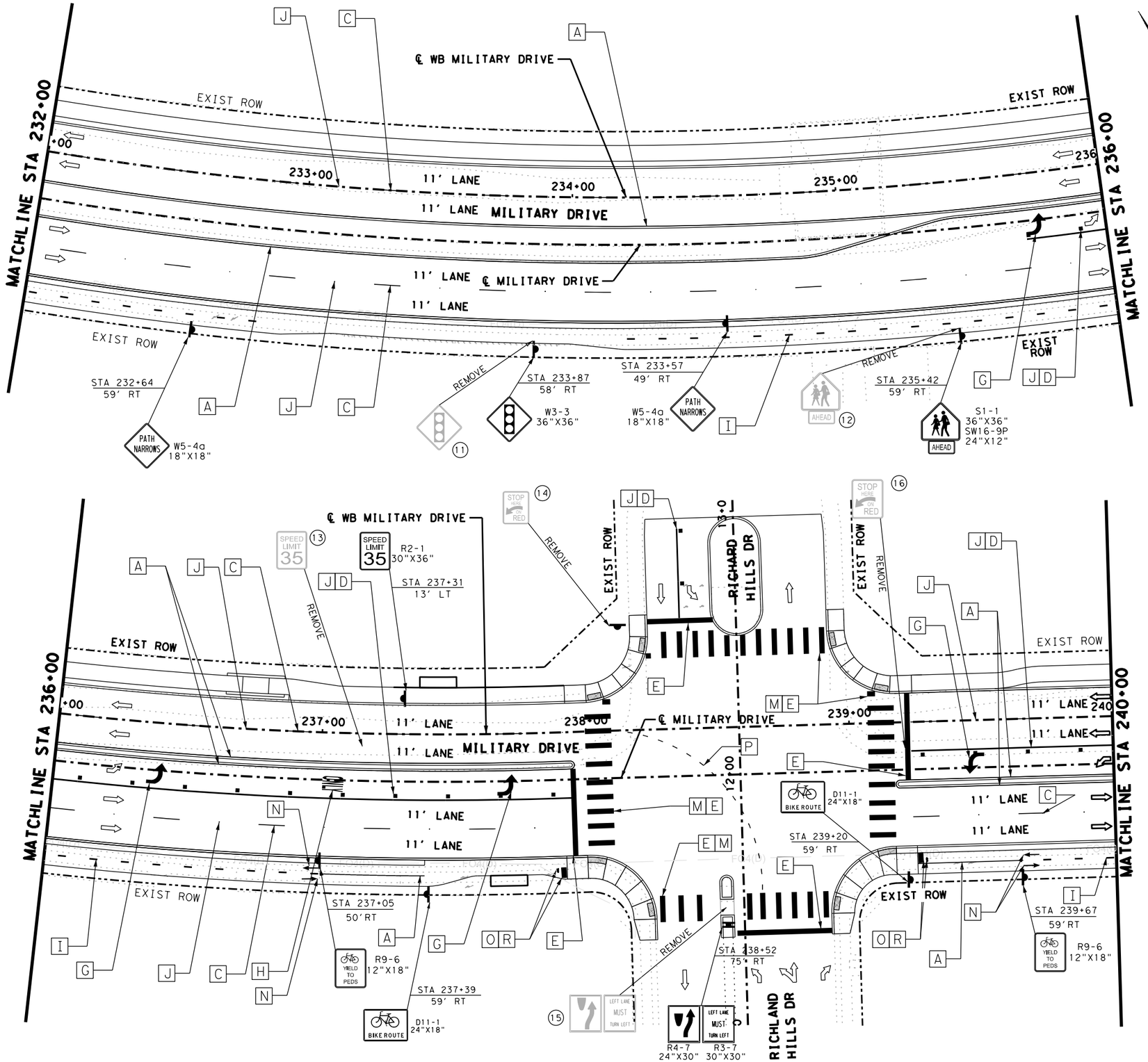
SIGNING AND PAVEMENT MARKING LAYOUT 2A (ALT 1)

0 20′ 40′
SCALE: 1" = 40′

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/21/2025
DRWN. BY: RPG	DSGN. BY: MAS	CHKD. BY: JMS	SHEET NO 324A OF 377

Pen Table File
$TIME$
$DATE$

$DATE$ $TIME$ Pen Table File



SHEET TOTALS			
	EST	UNIT	DESCRIPTION
A	1448	LF	REFL PAV MRK TY I (Y) 4"(SLD)
B	-	LF	REFL PAV MRK TY I (W) 4"(SLD)
C	336	LF	REFL PAV MRK TY I (W) 4"(BRK)
D	340	LF	REFL PAV MRK TY I (W) 8"(SLD)
E	511	LF	REFL PAV MRK TY I (W) 24"(SLD)
F	-	LF	REFL PAV MRK TY I (Y) 24"(SLD)
G	4	EA	REFL PAV MRK TY-I (W)(LEFT ARROW)
G1	-	EA	REFL PAV MRK TY-I (W)(RIGHT ARROW)
H	2	EA	REFL PAV MRK TY-I (W)(WORD)
I	132	LF	REFL PAV MRK TY I (Y) 4"(BRK)
J	53	EA	REFL PAV MRKR TY II - C-R
K	171	EA	REFL PAV MRKR TY II - A - A (TURN BAYS)
M	588	LF	BLACK PAV MARK (12")(CONTRAST)
N	4	EA	STRAIGHT WHITE ARROW BICYCLE FACILITY
O	2	EA	WORD STOP
P	31	LF	REFL PAV MRK TY I (W) 4"(DOT)
Q	-	EA	LANE REDUCTION ARROW
R	-	LF	REFL PAV MRK TY I (W) 12" (SLD)

⇦ DIRECTIONAL ARROWS
SIGN POST

NOTES:

1. ALL PROPOSED MARKINGS SHALL MEET AND BE INSTALLED PER CITY OF SAN ANTONIO STANDARDS.
2. ALL SIGNS MUST BE CONSTRUCTED IN ACCORDANCE WITH DETAILS FOUND IN "TEXAS MANUAL ON UNIFORM CONTROL DEVICES" (TMUTCD), LATEST EDITION.
3. ALL PROPOSED SIGNS AND RELOCATED SIGNS CALLED OUT WILL REQUIRE REMOVAL OF EXISTING SIGN ASSEMBLY. ALL OTHER EXISTING SIGNS WILL REMAIN IN PLACE.
4. ALL TY 1 PAVEMENT MARKING SHALL HAVE PAVEMENT SEALER.
5. REFER TO SUMMARY OF QUANTITIES FOR SHEET TOTALS FOR PROPOSED SIGNS AND SMALL SIGN REMOVALS.

STATE OF TEXAS
MIGUEL A. SANCHEZ
95878
REGISTERED PROFESSIONAL ENGINEER

05/21/2025

META ENGINEERING
TBPE REG. # F-22397

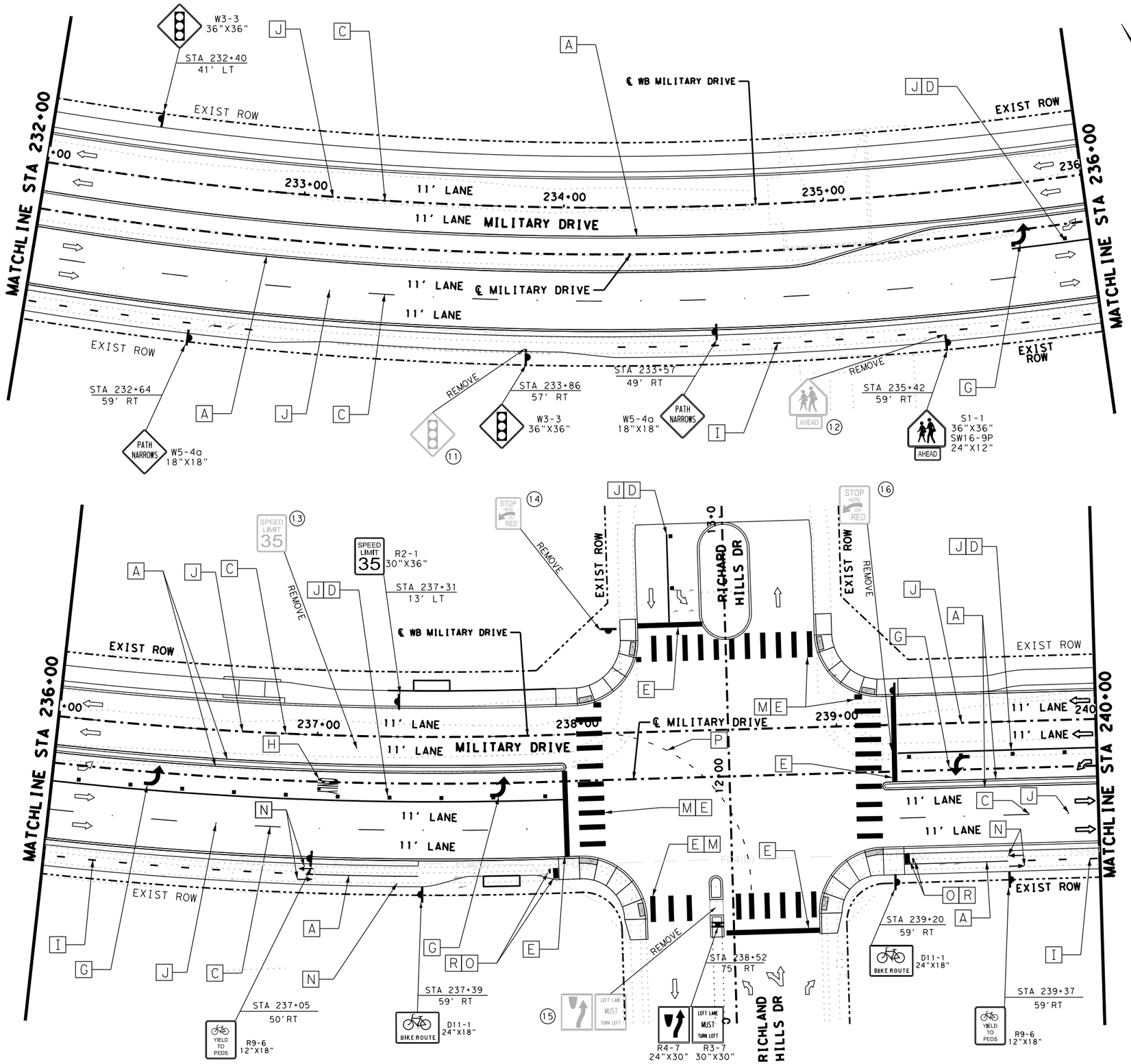
13438 BANDERA ROAD, SUITE 104 - HELOTES, TX 78023 - (210) 874-6666

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
SIGNING AND PAVEMENT MARKING LAYOUT

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/21/2025
DRWN. BY: RPG	DSGN. BY: MAS	CHKD. BY: JMS	SHEET NO. 325 OF 377

Pen Table File
11:27:33 AM
01/28/2025



SHEET TOTALS			
	EST	UNIT	DESCRIPTION
A	1448	LF	REFL PAV MRK TY I (Y) 4"(SLD)
B	-	LF	REFL PAV MRK TY I (W) 4"(SLD)
C	336	LF	REFL PAV MRK TY I (W) 4"(BRK)
D	340	LF	REFL PAV MRK TY I (W) 8"(SLD)
E	511	LF	REFL PAV MRK TY I (W) 24"(SLD)
F	-	LF	REFL PAV MRK TY I (Y) 24"(SLD)
G	4	EA	REFL PAV MRK TY-I (W)(LEFT ARROW)
G1	-	EA	REFL PAV MRK TY-I (W)(RIGHT ARROW)
H	2	EA	REFL PAV MRK TY-I (W)(WORD)
I	132	LF	REFL PAV MRK TY I (Y) 4"(BRK)
J	53	EA	REFL PAV MRKR TY II - C-R
K	171	EA	REFL PAV MRKR TY II - A - A (TURN BAYS)
M	588	LF	BLACK PAV MARK (12")(CONTRAST)
N	4	EA	STRAIGHT WHITE ARROW BICYCLE FACILITY
O	2	EA	WORD STOP
P	31	LF	REFL PAV MRK TY I (W) 4"(DOT)
Q	-	EA	LANE REDUCTION ARROW
R	-	LF	REFL PAV MRK TY I (W) 12" (SLD)

⇦ DIRECTIONAL ARROWS
SIGN POST

NOTES:

1. ALL PROPOSED MARKINGS SHALL MEET AND BE INSTALLED PER CITY OF SAN ANTONIO STANDARDS.
2. ALL SIGNS MUST BE CONSTRUCTED IN ACCORDANCE WITH DETAILS FOUND IN "TEXAS MANUAL ON UNIFORM CONTROL DEVICES" (TMUTCD), LATEST EDITION.
3. ALL PROPOSED SIGNS AND RELOCATED SIGNS CALLED OUT WILL REQUIRE REMOVAL OF EXISTING SIGN ASSEMBLY. ALL OTHER EXISTING SIGNS WILL REMAIN IN PLACE.
4. ALL TY 1 PAVEMENT MARKING SHALL HAVE PAVEMENT SEALER.
5. REFER TO SUMMARY OF QUANTITIES FOR SHEET TOTALS FOR PROPOSED SIGNS AND SMALL SIGN REMOVALS.

STATE OF TEXAS
MIGUEL A. SANCHEZ
95878
REGISTERED PROFESSIONAL ENGINEER

05/21/2025

META ENGINEERING
TBPE REG. # F-22397

13438 BANDERA ROAD, SUITE 104 - HELOTES, TX 78023 - (210) 874-6666

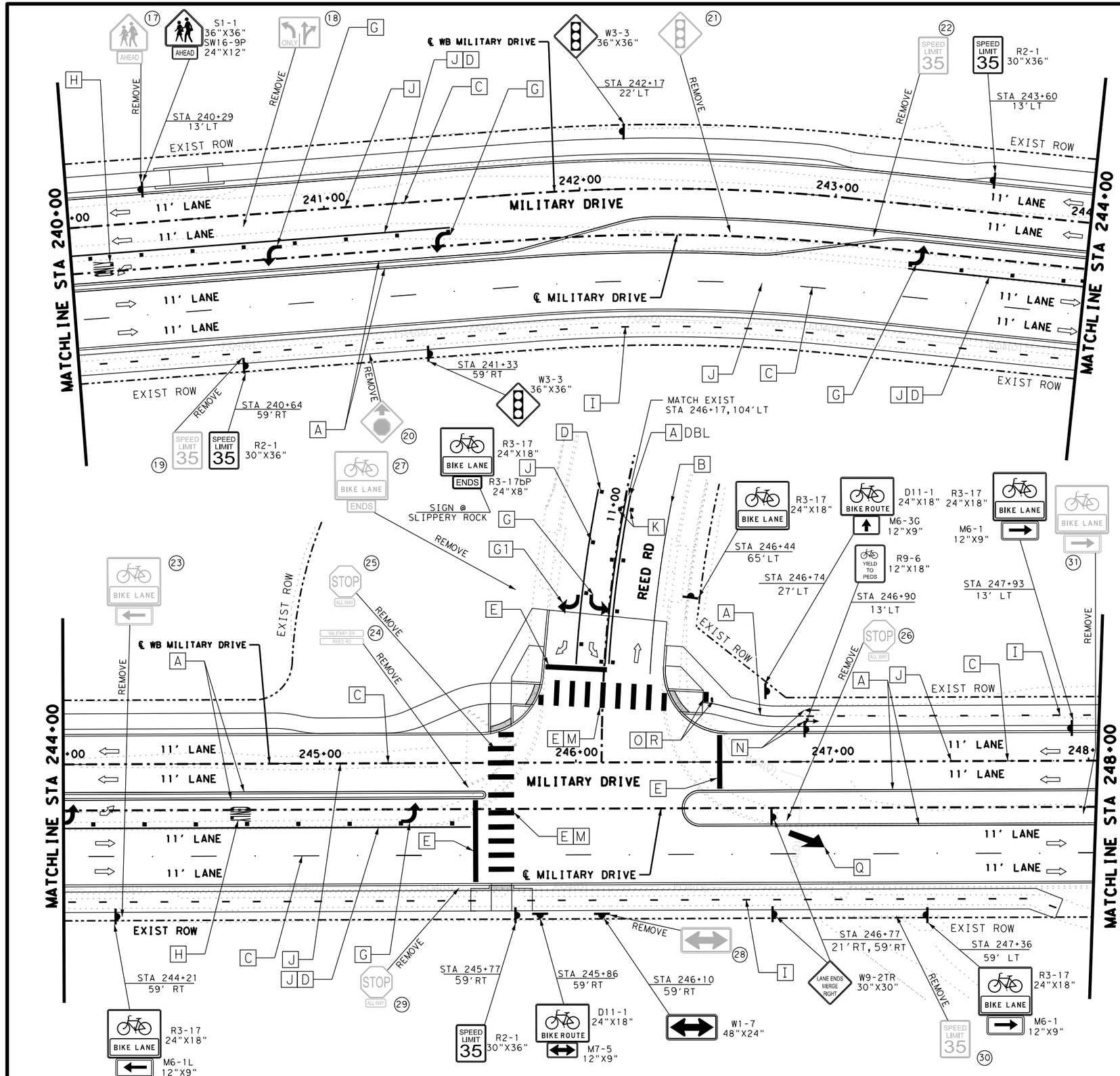
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE
SIGNING AND PAVEMENT MARKING LAYOUT 3A (ALT 1)

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/21/2025
DRWN. BY: RPG	DSGN. BY: MAS	CHKD. BY: JMS	SHEET NO 326A OF 377

Pen Table File
$TIME$
$DATE$

$DATE$ $TIME$
Pen Table File



SHEET TOTALS			
	EST	UNIT	DESCRIPTION
A	1630	LF	REFL PAV MRK TY I (Y) 4"(SLD)
B	67	LF	REFL PAV MRK TY I (W) 4"(SLD)
C	372	LF	REFL PAV MRK TY I (W) 4"(BRK)
D	578	LF	REFL PAV MRK TY I (W) 8"(SLD)
E	158	LF	REFL PAV MRK TY I (W) 24"(SLD)
F	-	LF	REFL PAV MRK TY I (Y) 24"(SLD)
G	6	EA	REFL PAV MRK TY-I (W)(LEFT ARROW)
G1	1	EA	REFL PAV MRK TY-I (W)(RIGHT ARROW)
H	2	EA	REFL PAV MRK TY-I (W)(WORD)
I	231	LF	REFL PAV MRK TY I (Y) 4"(BRK)
J	68	EA	REFL PAV MRKR TY II - C-R
K	179	EA	REFL PAV MRKR TY II - A - A (TURN BAYS)
M	-	LF	BLACK PAV MARK (12")(CONTRAST)
N	2	EA	STRAIGHT WHITE ARROW BICYCLE FACILITY
O	2	EA	WORD STOP
P	-	LF	REFL PAV MRK TY I (W) 4"(DOT)
Q	1	EA	LANE REDUCTION ARROW
R	-	LF	REFL PAV MRK TY I (W) 12" (SLD)

⇦ DIRECTIONAL ARROWS
SIGN POST

NOTES:

1. ALL PROPOSED MARKINGS SHALL MEET AND BE INSTALLED PER CITY OF SAN ANTONIO STANDARDS.
2. ALL SIGNS MUST BE CONSTRUCTED IN ACCORDANCE WITH DETAILS FOUND IN "TEXAS MANUAL ON UNIFORM CONTROL DEVICES" (TMUTCD), LATEST EDITION.
3. ALL PROPOSED SIGNS AND RELOCATED SIGNS CALLED OUT WILL REQUIRE REMOVAL OF EXISTING SIGN ASSEMBLY. ALL OTHER EXISTING SIGNS WILL REMAIN IN PLACE.
4. ALL TY 1 PAVEMENT MARKING SHALL HAVE PAVEMENT SEALER.
5. REFER TO SUMMARY OF QUANTITIES FOR SHEET TOTALS FOR PROPOSED SIGNS AND SMALL SIGN REMOVALS.

STATE OF TEXAS
MIGUEL A SANCHEZ
95878
REGISTERED PROFESSIONAL ENGINEER
05/21/2025

META ENGINEERING
TBPE REG. # F-22397

13438 BANDERA ROAD, SUITE 104 - HELOTES, TX 78023 - (210) 874-6666

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

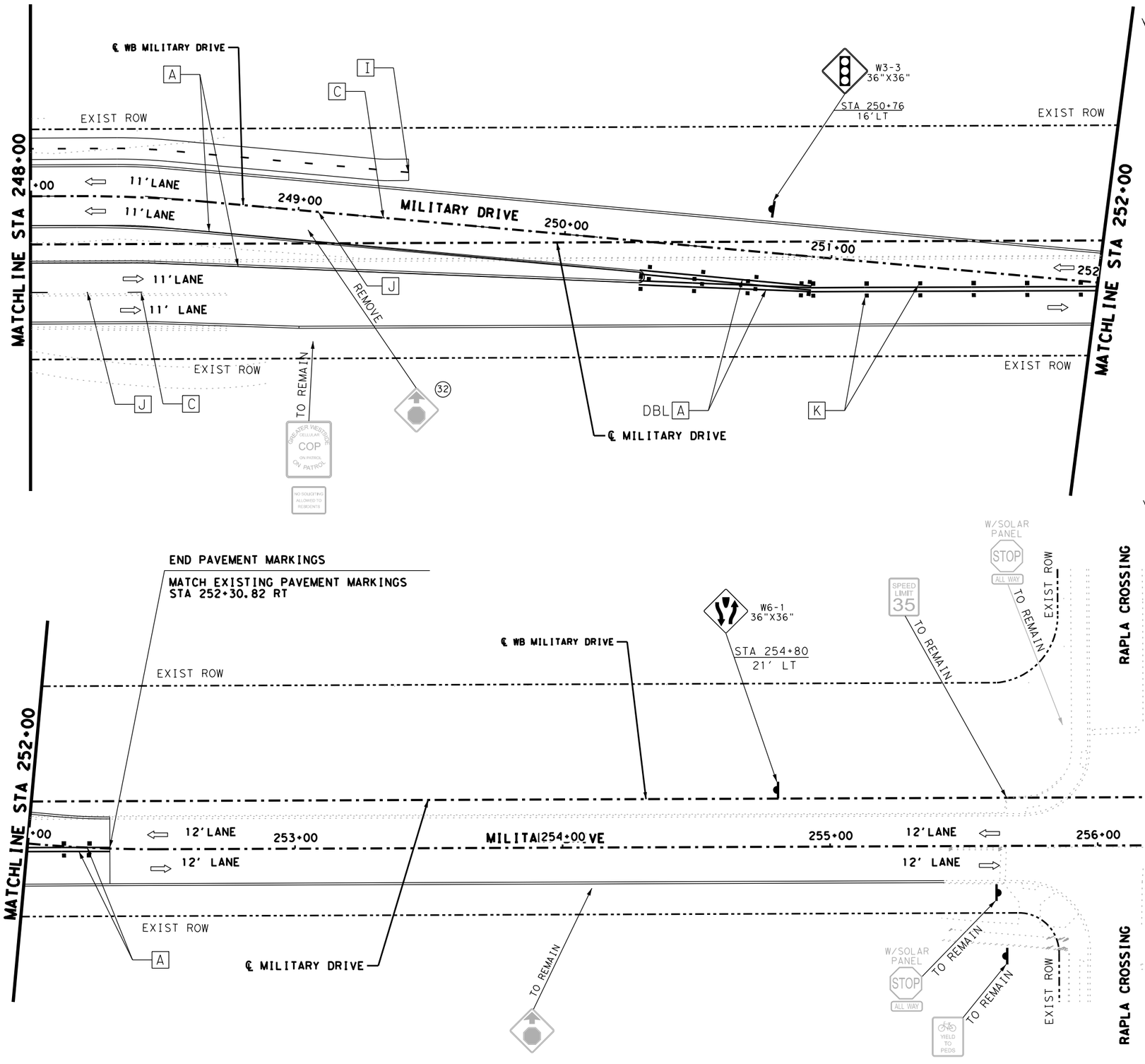
MILITARY DRIVE
SIGNING AND PAVEMENT MARKING LAYOUT

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

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/21/2025
DRWN. BY: RPG	DSGN. BY: MAS	CHKD. BY: JMS	SHEET NO.327 OF 377

Pen Table File
01/28/2025 1:27:55 AM

01/28/2025 1:27:55 AM Pen Table File



SHEET TOTALS			
	EST	UNIT	DESCRIPTION
A	1008	LF	REFL PAV MRK TY I (Y) 4"(SLD)
B	-	LF	REFL PAV MRK TY I (W) 4"(SLD)
C	76	LF	REFL PAV MRK TY I (W) 4"(BRK)
D	-	LF	REFL PAV MRK TY I (W) 8"(SLD)
E	-	LF	REFL PAV MRK TY I (W) 24"(SLD)
F	-	LF	REFL PAV MRK TY I (Y) 24"(SLD)
G	-	EA	REFL PAV MRK TY-I (W)(LEFT ARROW)
G1	-	EA	REFL PAV MRK TY-I (W)(RIGHT ARROW)
H	-	EA	REFL PAV MRK TY-I (W)(WORD)
I	33	LF	REFL PAV MRK TY I (Y) 4"(BRK)
J	9	EA	REFL PAV MRKR TY II - C-R
K	70	EA	REFL PAV MRKR TY II - A - A (TURN BAYS)
M	-	LF	BLACK PAV MARK (12")(CONTRAST)
N	-	EA	STRAIGHT WHITE ARROW BICYCLE FACILITY
O	-	EA	WORD STOP
P	-	LF	REFL PAV MRK TY I (W) 4"(DOT)
Q	-	EA	LANE REDUCTION ARROW
R	-	LF	REFL PAV MRK TY I (W) 12" (SLD)

⇦ DIRECTIONAL ARROWS
SIGN POST

NOTES:

1. ALL PROPOSED MARKINGS SHALL MEET AND BE INSTALLED PER CITY OF SAN ANTONIO STANDARDS.
2. ALL SIGNS MUST BE CONSTRUCTED IN ACCORDANCE WITH DETAILS FOUND IN "TEXAS MANUAL ON UNIFORM CONTROL DEVICES" (TMUTCD), LATEST EDITION.
3. ALL PROPOSED SIGNS AND RELOCATED SIGNS CALLED OUT WILL REQUIRE REMOVAL OF EXISTING SIGN ASSEMBLY. ALL OTHER EXISTING SIGNS WILL REMAIN IN PLACE.
4. ALL TY 1 PAVEMENT MARKING SHALL HAVE PAVEMENT SEALER.
5. REFER TO SUMMARY OF QUANTITIES FOR SHEET TOTALS FOR PROPOSED SIGNS AND SMALL SIGN REMOVALS.

STATE OF TEXAS
MIGUEL A. SANCHEZ
95878
REGISTERED PROFESSIONAL ENGINEER

05/21/2025

META ENGINEERING
TBPE REG. # F-22397

13438 BANDERA ROAD, SUITE 104 - HELOTES, TX 78023 - (210) 874-6666

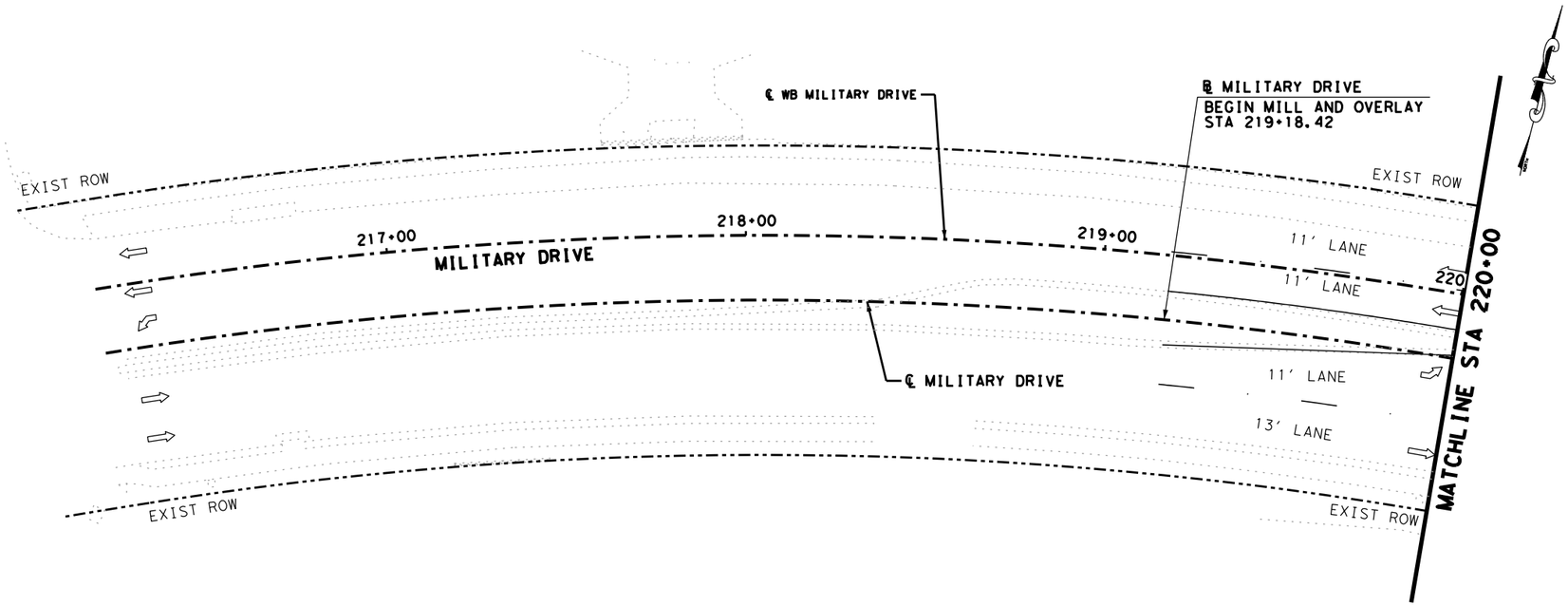
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

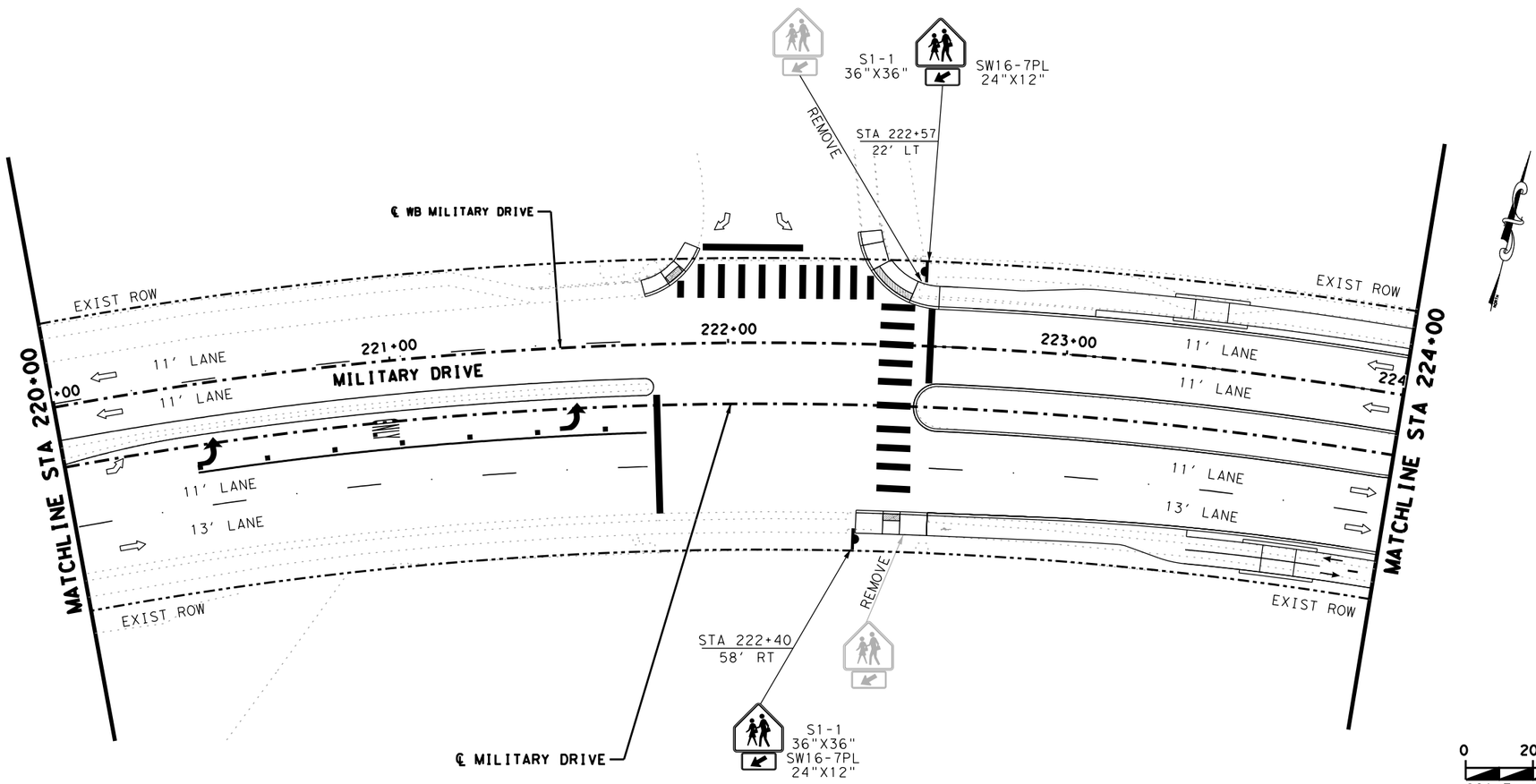
MILITARY DRIVE
SIGNING AND PAVEMENT MARKING LAYOUT

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/21/2025
DRWN. BY: RPG	DSGN. BY: MAS	CHKD. BY: JMS	SHEET NO. 328 OF 377

Pen Table File
01/28/2025 1:28:06 AM

01/28/2025 1:28:06 AM
Pen Table File





SHEET TOTALS			
	EST	UNIT	DESCRIPTION
A	-	LF	REFL PAV MRK TY I (Y) 4"(SLD)
B	-	LF	REFL PAV MRK TY I (W) 4"(SLD)
C	-	LF	REFL PAV MRK TY I (W) 4"(BRK)
D	-	LF	REFL PAV MRK TY I (W) 8"(SLD)
E	-	LF	REFL PAV MRK TY I (W) 24"(SLD)
F	-	LF	REFL PAV MRK TY I (Y) 24"(SLD)
G	-	EA	REFL PAV MRK TY-I (W)(LEFT ARROW)
G1	-	EA	REFL PAV MRK TY-I (W)(RIGHT ARROW)
H	-	EA	REFL PAV MRK TY-I (W)(WORD)
I	-	EA	REFL PAV MRK TY I (Y) 4"(BRK)
J	-	EA	REFL PAV MRKR TY II - CR
K	-	EA	REFL PAV MRKR TY II - A - A (TURN BAYS)
M	-	LF	BLACK PAV MARK (12")(CONTRAST)
N	-	EA	STRAIGHT WHITE ARROW BICYCLE FACILITY
O	-	EA	WORD STOP
P	-	LF	REFL PAV MRK TY I (W) 4" (DOT)
Q	-	EA	LANE REDUCTION ARROW
R	-	LF	REFL PAV MRK (W) 12" (SLD)

⇦ DIRECTIONAL ARROWS
SIGN POST

NOTES:

1. ALL PROPOSED MARKINGS SHALL MEET AND BE INSTALLED PER CITY OF SAN ANTONIO STANDARDS.
2. ALL SIGNS MUST BE CONSTRUCTED IN ACCORDANCE WITH DETAILS FOUND IN "TEXAS MANUAL ON UNIFORM CONTROL DEVICES" (TMUTCD), LATEST EDITION.
3. ALL PROPOSED SIGNS AND RELOCATED SIGNS CALLED OUT WILL REQUIRE REMOVAL OF EXISTING SIGN ASSEMBLY. ALL OTHER EXISTING SIGNS WILL REMAIN IN PLACE.
4. ALL TY 1 PAVEMENT MARKING SHALL HAVE PAVEMENT SEALER.
5. REFER TO SUMMARY OF QUANTITIES FOR SHEET TOTALS FOR PROPOSED SIGNS AND SMALL SIGN REMOVALS.

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

STATE OF TEXAS
MIGUEL A SANCHEZ
95878
REGISTERED PROFESSIONAL ENGINEER
05/21/2025

META ENGINEERING
TBPE REG. # F-22397

13438 BANDERA ROAD, SUITE 104 - HELOTES, TX 78023 - (210) 874-6666

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

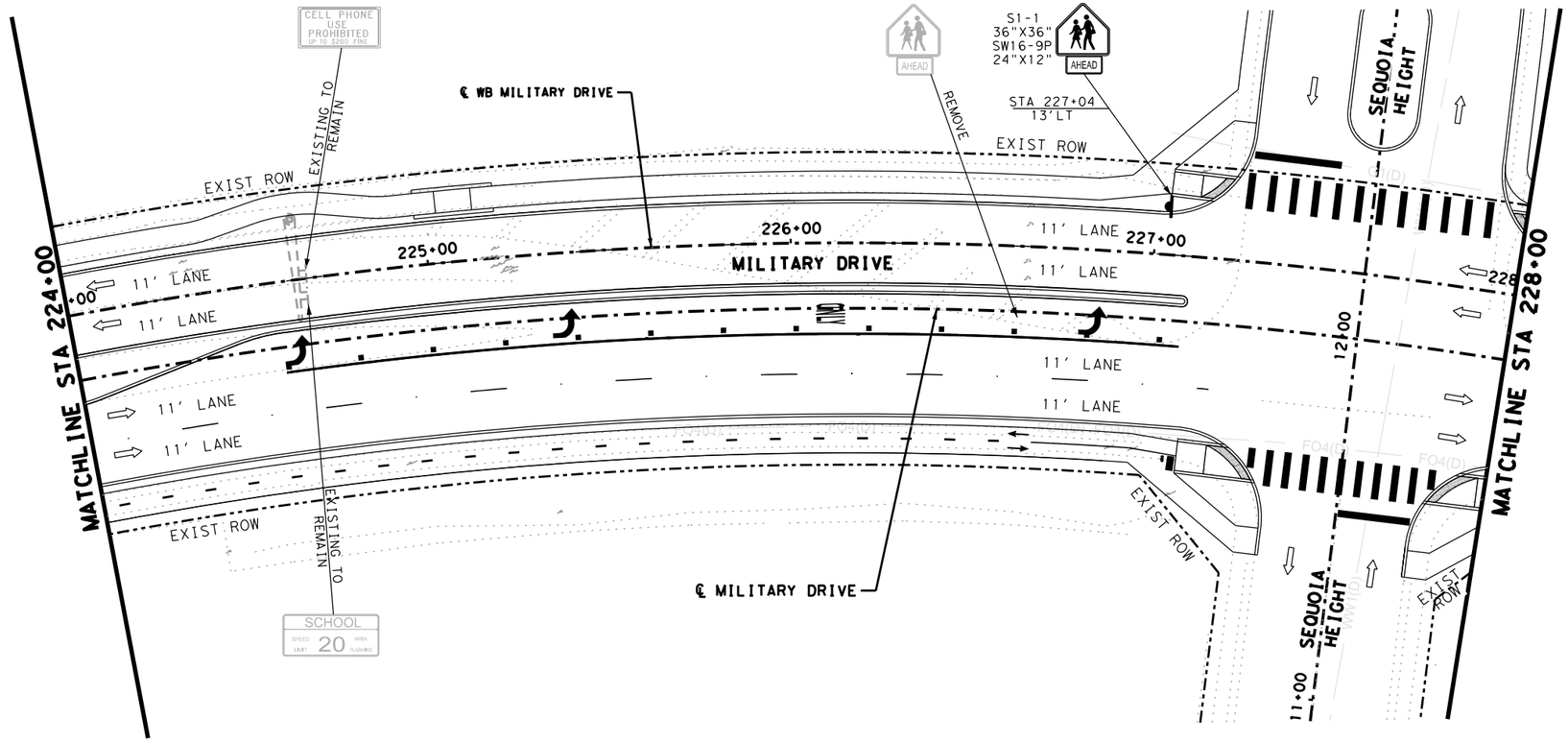
MILITARY DRIVE

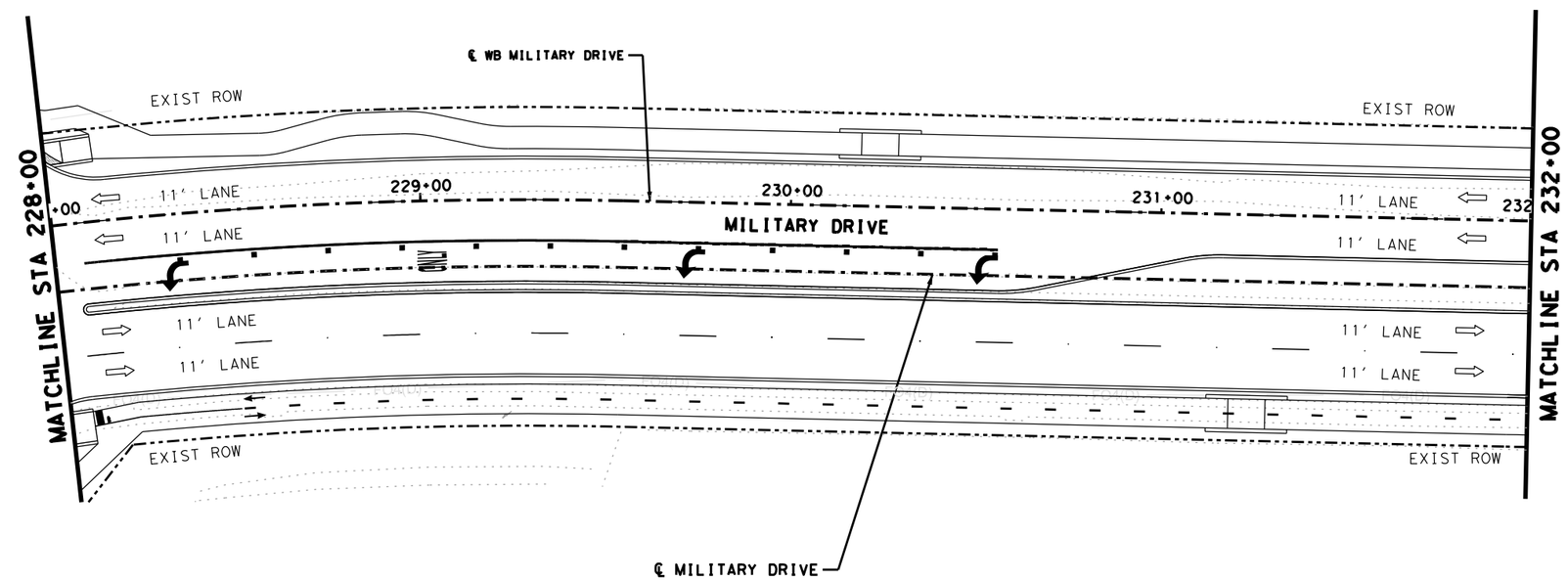
SCHOOL ZONE LAYOUT

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/21/2025
DRWN. BY: RPG	DSGN. BY: MAS	CHKD. BY: JMS	SHEET NO. 329 OF 377

Pen Table File
11:28:16 AM
01/28/2025

01/28/2025 11:28:16 AM
Pen Table File





SHEET TOTALS			
	EST	UNIT	DESCRIPTION
A	-	LF	REFL PAV MRK TY I (Y) 4"(SLD)
B	-	LF	REFL PAV MRK TY I (W) 4"(SLD)
C	-	LF	REFL PAV MRK TY I (W) 4"(BRK)
D	-	LF	REFL PAV MRK TY I (W) 8"(SLD)
E	-	LF	REFL PAV MRK TY I (W) 24"(SLD)
F	-	LF	REFL PAV MRK TY I (Y) 24"(SLD)
G	-	EA	REFL PAV MRK TY-I (W)(LEFT ARROW)
G1	-	EA	REFL PAV MRK TY-I (W)(RIGHT ARROW)
H	-	EA	REFL PAV MRK TY-I (W)(WORD)
I	-	EA	REFL PAV MRK TY I (Y) 4"(BRK)
J	-	EA	REFL PAV MRKR TY II - CR
K	-	EA	REFL PAV MRKR TY II - A - A (TURN BAYS)
M	-	LF	BLACK PAV MARK (12")(CONTRAST)
N	-	EA	STRAIGHT WHITE ARROW BICYCLE FACILITY
O	-	EA	WORD STOP
P	-	LF	REFL PAV MRK TY I (W) 4" (DOT)
Q	-	EA	LANE REDUCTION ARROW
R	-	LF	REFL PAV MRK (W) 12" (SLD)

⇦ DIRECTIONAL ARROWS
SIGN POST

NOTES:

1. ALL PROPOSED MARKINGS SHALL MEET AND BE INSTALLED PER CITY OF SAN ANTONIO STANDARDS.
2. ALL SIGNS MUST BE CONSTRUCTED IN ACCORDANCE WITH DETAILS FOUND IN "TEXAS MANUAL ON UNIFORM CONTROL DEVICES" (TMUTCD), LATEST EDITION.
3. ALL PROPOSED SIGNS AND RELOCATED SIGNS CALLED OUT WILL REQUIRE REMOVAL OF EXISTING SIGN ASSEMBLY. ALL OTHER EXISTING SIGNS WILL REMAIN IN PLACE.
4. ALL TY 1 PAVEMENT MARKING SHALL HAVE PAVEMENT SEALER.
5. REFER TO SUMMARY OF QUANTITIES FOR SHEET TOTALS FOR PROPOSED SIGNS AND SMALL SIGN REMOVALS.

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

STATE OF TEXAS
MIGUEL A. SANCHEZ
95878
REGISTERED PROFESSIONAL ENGINEER

Miguel Sanchez 05/21/2025

META ENGINEERING
TBPE REG. # F-22397

13438 BANDERA ROAD, SUITE 104 - HELOTES, TX 78023 - (210) 874-6666

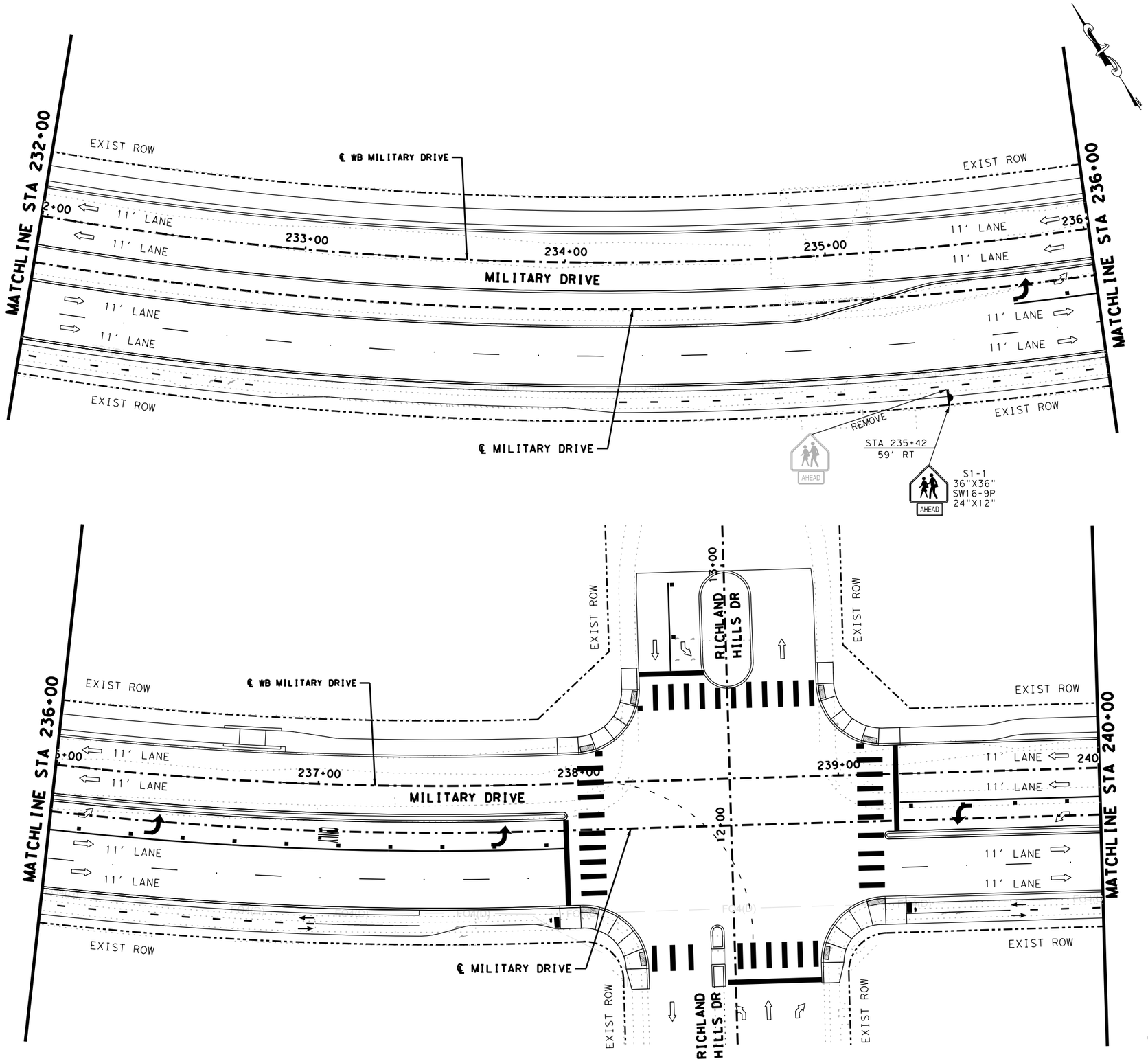
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

SCHOOL ZONE LAYOUT

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/21/2025
DRWN. BY: RPG	DSGN. BY: MAS	CHKD. BY: JMS	SHEET NO. 330 OF 377

Pen Table File
01/28/2025 11:28:27 AM
01/28/2025 11:28:27 AM
Pen Table File



SHEET TOTALS			
	EST	UNIT	DESCRIPTION
A	-	LF	REFL PAV MRK TY I (Y) 4"(SLD)
B	-	LF	REFL PAV MRK TY I (W) 4"(SLD)
C	-	LF	REFL PAV MRK TY I (W) 4"(BRK)
D	-	LF	REFL PAV MRK TY I (W) 8"(SLD)
E	-	LF	REFL PAV MRK TY I (W) 24"(SLD)
F	-	LF	REFL PAV MRK TY I (Y) 24"(SLD)
G	-	EA	REFL PAV MRK TY-I (W)(LEFT ARROW)
G1	-	EA	REFL PAV MRK TY-I (W)(RIGHT ARROW)
H	-	EA	REFL PAV MRK TY-I (W)(WORD)
I	-	EA	REFL PAV MRK TY I (Y) 4"(BRK)
J	-	EA	REFL PAV MRKR TY II - CR
K	-	EA	REFL PAV MRKR TY II - A - A (TURN BAYS)
M	-	LF	BLACK PAV MARK (12")(CONTRAST)
N	-	EA	STRAIGHT WHITE ARROW BICYCLE FACILITY
O	-	EA	WORD STOP
P	-	LF	REFL PAV MRK TY I (W) 4" (DOT)
Q	-	EA	LANE REDUCTION ARROW
R	-	LF	REFL PAV MRK (W) 12" (SLD)

⇦ DIRECTIONAL ARROWS
SIGN POST

NOTES:

1. ALL PROPOSED MARKINGS SHALL MEET AND BE INSTALLED PER CITY OF SAN ANTONIO STANDARDS.
2. ALL SIGNS MUST BE CONSTRUCTED IN ACCORDANCE WITH DETAILS FOUND IN "TEXAS MANUAL ON UNIFORM CONTROL DEVICES" (TMUTCD), LATEST EDITION.
3. ALL PROPOSED SIGNS AND RELOCATED SIGNS CALLED OUT WILL REQUIRE REMOVAL OF EXISTING SIGN ASSEMBLY. ALL OTHER EXISTING SIGNS WILL REMAIN IN PLACE.
4. ALL TY 1 PAVEMENT MARKING SHALL HAVE PAVEMENT SEALER.
5. REFER TO SUMMARY OF QUANTITIES FOR SHEET TOTALS FOR PROPOSED SIGNS AND SMALL SIGN REMOVALS.

STATE OF TEXAS
MIGUEL A SANCHEZ
95878
REGISTERED PROFESSIONAL ENGINEER

05/21/2025

META ENGINEERING
TBPE REG. # F-22397

13438 BANDERA ROAD, SUITE 104 - HELOTES, TX 78023 - (210) 874-6666

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

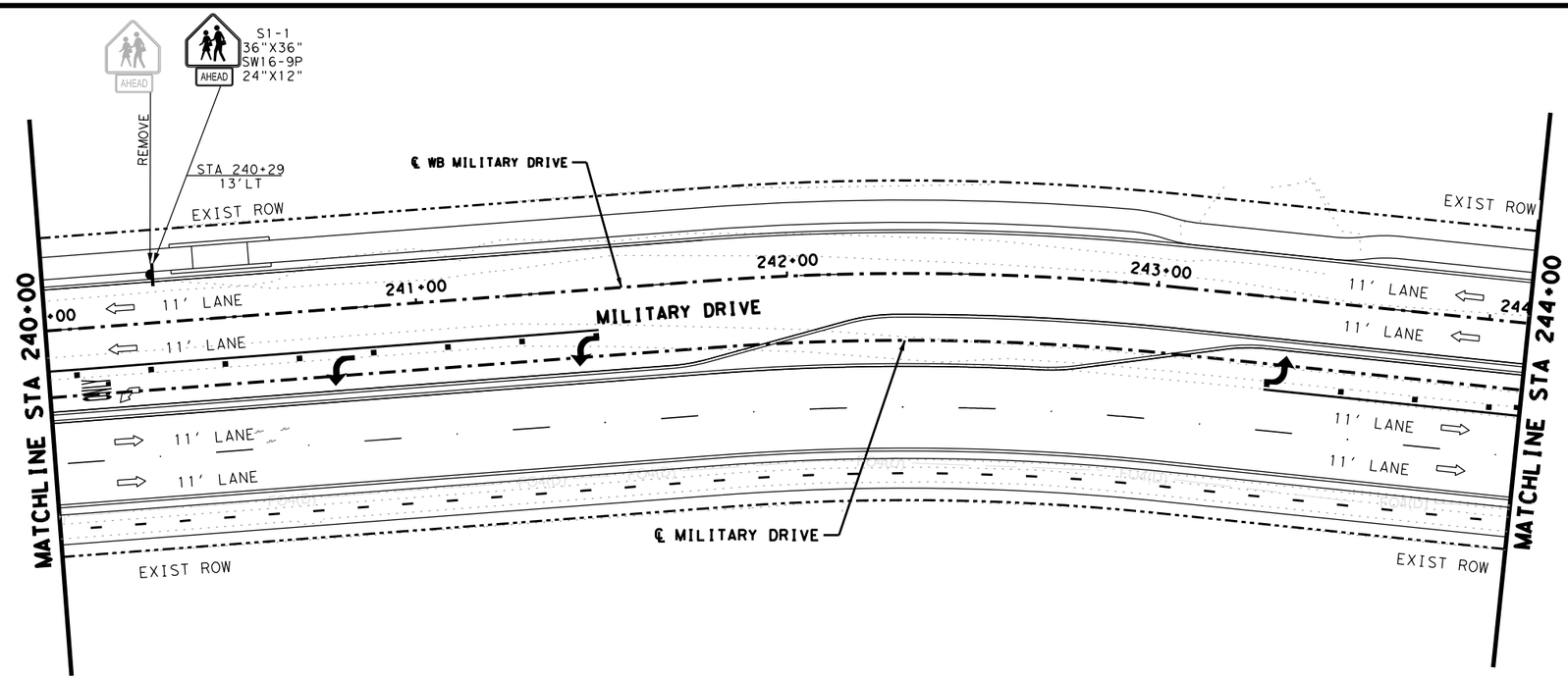
MILITARY DRIVE

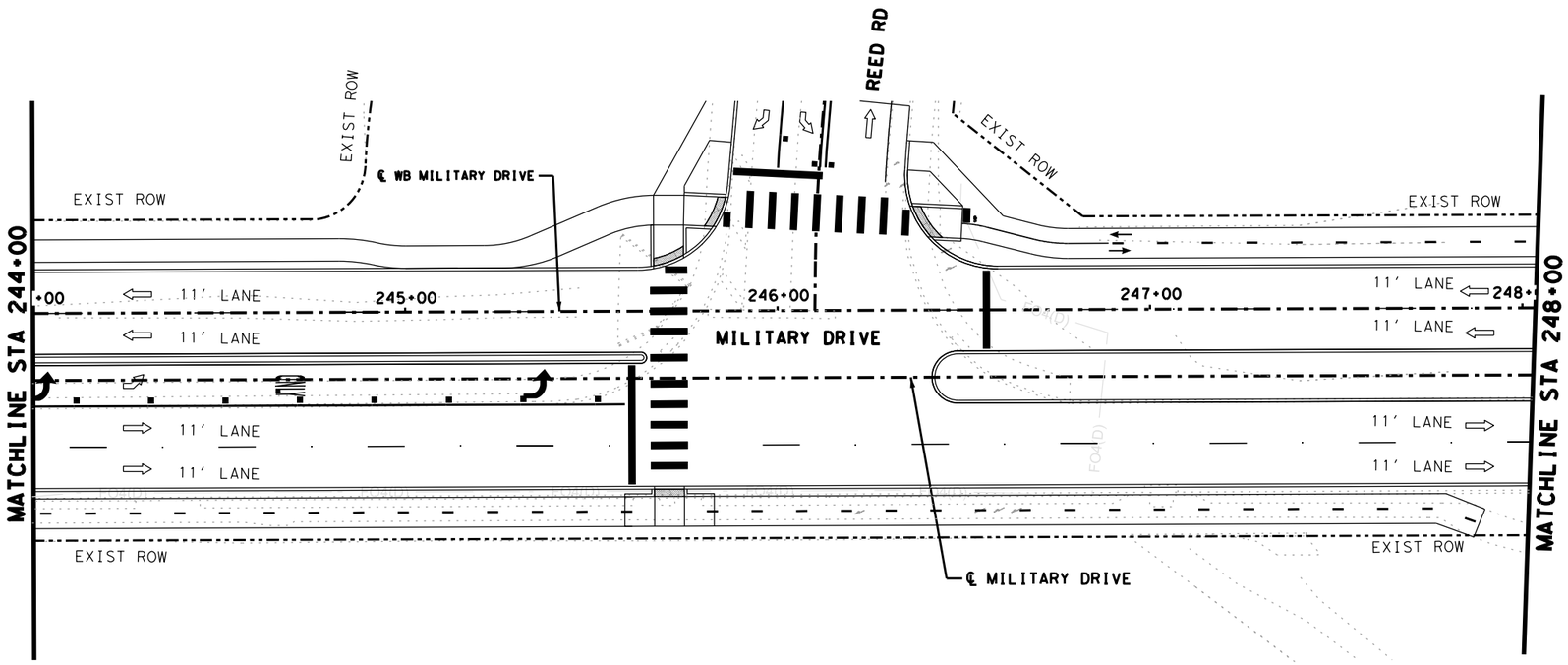
SCHOOL ZONE LAYOUT

100 % SUBMITTAL	PROJECT NO.: 23-03907			DATE: 05/21/2025
DRWN. BY: RPG	DSGN. BY: MAS	CHKD. BY: JMS		SHEET NO. 331 OF 377

Pen Table File
01/28/2025 1:28:38 AM

01/28/2025 1:28:38 AM
Pen Table File





SHEET TOTALS			
	EST	UNIT	DESCRIPTION
A	-	LF	REFL PAV MRK TY I (Y) 4"(SLD)
B	-	LF	REFL PAV MRK TY I (W) 4"(SLD)
C	-	LF	REFL PAV MRK TY I (W) 4"(BRK)
D	-	LF	REFL PAV MRK TY I (W) 8"(SLD)
E	-	LF	REFL PAV MRK TY I (W) 24"(SLD)
F	-	LF	REFL PAV MRK TY I (Y) 24"(SLD)
G	-	EA	REFL PAV MRK TY-I (W)(LEFT ARROW)
G1	-	EA	REFL PAV MRK TY-I (W)(RIGHT ARROW)
H	-	EA	REFL PAV MRK TY-I (W)(WORD)
I	-	EA	REFL PAV MRK TY I (Y) 4"(BRK)
J	-	EA	REFL PAV MRKR TY II - CR
K	-	EA	REFL PAV MRKR TY II - A - A (TURN BAYS)
M	-	LF	BLACK PAV MARK (12")(CONTRAST)
N	-	EA	STRAIGHT WHITE ARROW BICYCLE FACILITY
O	-	EA	WORD STOP
P	-	LF	REFL PAV MRK TY I (W) 4" (DOT)
Q	-	EA	LANE REDUCTION ARROW
R	-	LF	REFL PAV MRK (W) 12" (SLD)

⇦ DIRECTIONAL ARROWS
SIGN POST

NOTES:

1. ALL PROPOSED MARKINGS SHALL MEET AND BE INSTALLED PER CITY OF SAN ANTONIO STANDARDS.
2. ALL SIGNS MUST BE CONSTRUCTED IN ACCORDANCE WITH DETAILS FOUND IN "TEXAS MANUAL ON UNIFORM CONTROL DEVICES" (TMUTCD), LATEST EDITION.
3. ALL PROPOSED SIGNS AND RELOCATED SIGNS CALLED OUT WILL REQUIRE REMOVAL OF EXISTING SIGN ASSEMBLY. ALL OTHER EXISTING SIGNS WILL REMAIN IN PLACE.
4. ALL TY 1 PAVEMENT MARKING SHALL HAVE PAVEMENT SEALER.
5. REFER TO SUMMARY OF QUANTITIES FOR SHEET TOTALS FOR PROPOSED SIGNS AND SMALL SIGN REMOVALS.

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

STATE OF TEXAS
MIGUEL A SANCHEZ
95878
REGISTERED PROFESSIONAL ENGINEER

Miguel Sanchez 05/21/2025

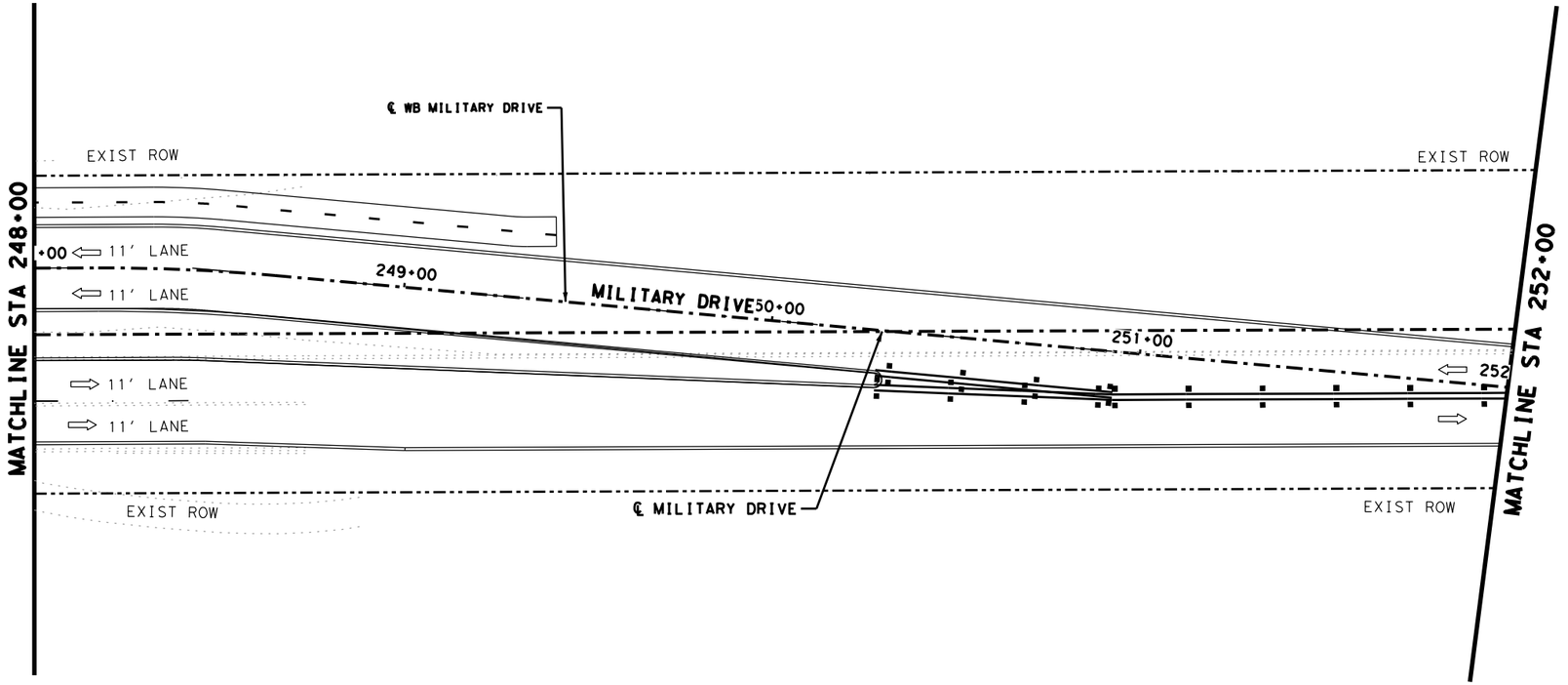
META ENGINEERING
TBPE REG. # F-22397
13438 BANDERA ROAD, SUITE 104 - HELOTES, TX 78023 - (210) 874-6666

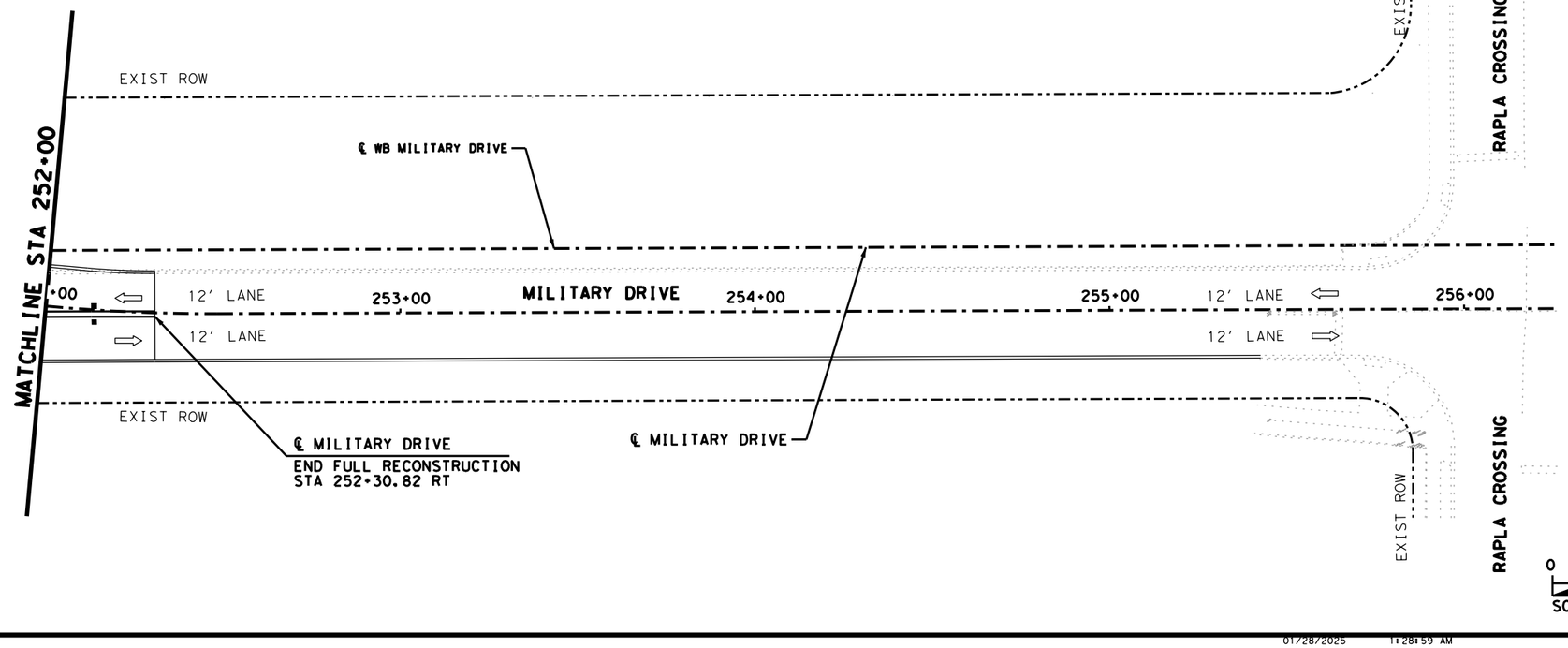
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

SCHOOL ZONE LAYOUT

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/21/2025
DRWN. BY: RPG	DSGN. BY: MAS	CHKD. BY: JMS	SHEET NO. 332 OF 377





0 20' 40'

SCALE: 1" = 40'

SHEET TOTALS			
	EST	UNIT	DESCRIPTION
A	-	LF	REFL PAV MRK TY I (Y) 4"(SLD)
B	-	LF	REFL PAV MRK TY I (W) 4"(SLD)
C	-	LF	REFL PAV MRK TY I (W) 4"(BRK)
D	-	LF	REFL PAV MRK TY I (W) 8"(SLD)
E	-	LF	REFL PAV MRK TY I (W) 24"(SLD)
F	-	LF	REFL PAV MRK TY I (Y) 24"(SLD)
G	-	EA	REFL PAV MRK TY-I (W)(LEFT ARROW)
G1	-	EA	REFL PAV MRK TY-I (W)(RIGHT ARROW)
H	-	EA	REFL PAV MRK TY-I (W)(WORD)
I	-	EA	REFL PAV MRK TY I (Y) 4"(BRK)
J	-	EA	REFL PAV MRKR TY II - CR
K	-	EA	REFL PAV MRKR TY II - A - A (TURN BAYS)
M	-	LF	BLACK PAV MARK (12")(CONTRAST)
N	-	EA	STRAIGHT WHITE ARROW BICYCLE FACILITY
O	-	EA	WORD STOP
P	-	LF	REFL PAV MRK TY I (W) 4" (DOT)
Q	-	EA	LANE REDUCTION ARROW
R	-	LF	REFL PAV MRK (W) 12" (SLD)

⇦ DIRECTIONAL ARROWS
SIGN POST

NOTES:

1. ALL PROPOSED MARKINGS SHALL MEET AND BE INSTALLED PER CITY OF SAN ANTONIO STANDARDS.
2. ALL SIGNS MUST BE CONSTRUCTED IN ACCORDANCE WITH DETAILS FOUND IN "TEXAS MANUAL ON UNIFORM CONTROL DEVICES" (TMUTCD), LATEST EDITION.
3. ALL PROPOSED SIGNS AND RELOCATED SIGNS CALLED OUT WILL REQUIRE REMOVAL OF EXISTING SIGN ASSEMBLY. ALL OTHER EXISTING SIGNS WILL REMAIN IN PLACE.
4. ALL TY 1 PAVEMENT MARKING SHALL HAVE PAVEMENT SEALER.
5. REFER TO SUMMARY OF QUANTITIES FOR SHEET TOTALS FOR PROPOSED SIGNS AND SMALL SIGN REMOVALS.

STATE OF TEXAS
MIGUEL A. SANCHEZ
95878
REGISTERED PROFESSIONAL ENGINEER

05/21/2025

META ENGINEERING
TBPE REG. # F-22397
13438 BANDERA ROAD, SUITE 104 - HELOTES, TX 78023 - (210) 874-6666

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

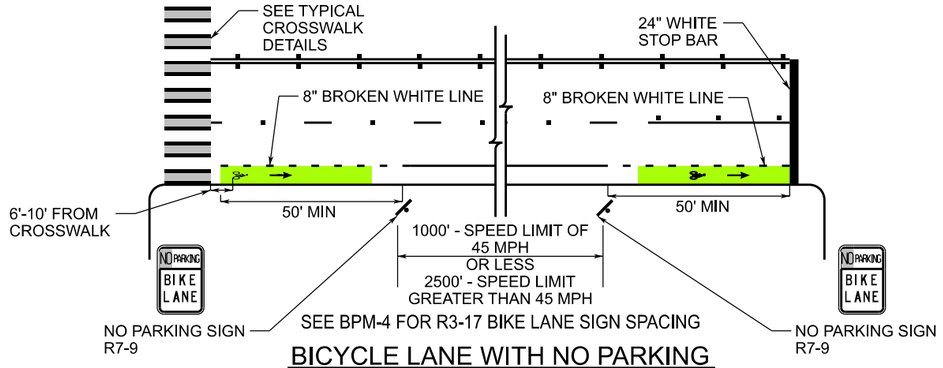
MILITARY DRIVE

SCHOOL ZONE LAYOUT

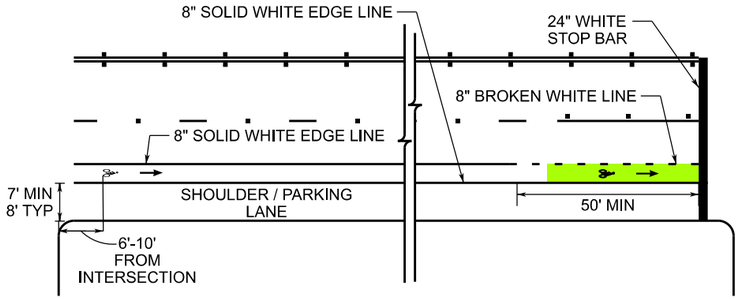
100 % SUBMITTAL	PROJECT NO.: 23-03907			DATE: 05/21/2025
DRWN. BY: RPG	DSGN. BY: MAS	CHKD. BY: JMS		SHEET NO. 333 OF 377

Pen Table File
11:28:59 AM
01/28/2025

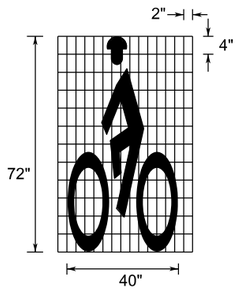
01/28/2025 11:28:59 AM
Pen Table File

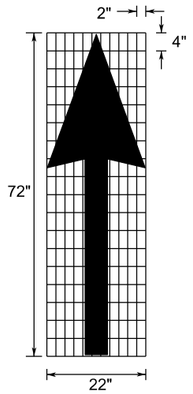


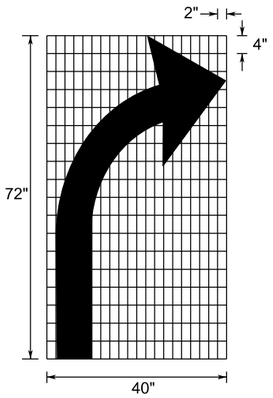
BICYCLE LANE WITH NO PARKING

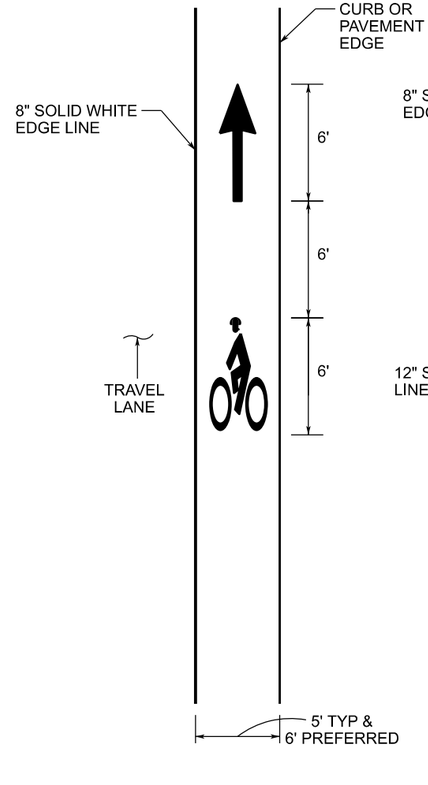


BICYCLE LANE WITH PARKING

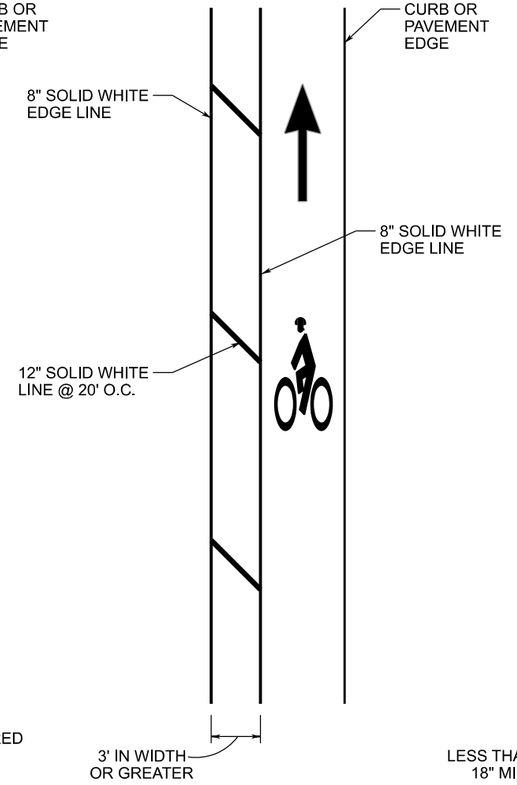




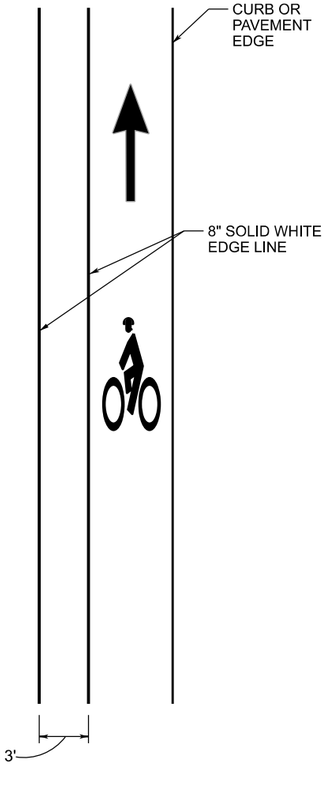




WITHOUT BUFFER ADJACENT TO TRAVEL LANE



≥ 3' BUFFER W/ DIAGONALS ADJACENT TO TRAVEL LANE



< 3' BUFFER W/ NO DIAGONALS ADJACENT TO TRAVEL LANE

GENERAL NOTES:

1. ALL PAVEMENT MARKINGS SHALL BE WHITE EXCEPT WHEN NOTED OTHERWISE.
2. ASIDE FROM LONG LANE MARKINGS, ALL OTHER PAVEMENT MARKINGS SHALL BE PREFORMED MATERIAL. HOT-APPLIED MARKINGS MAY BE USED ONLY IF APPROVED BY PWD - TRAFFIC ENGINEERING & OPERATIONS.
3. EXACT SIGN PLACEMENT AND DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.
4. BICYCLE SYMBOL MARKING SHALL FACE THRU LANE OF TRAFFIC.
5. WHEREVER POSSIBLE, MINIMIZE PARKING LANE WIDTH IN FAVOR OF INCREASED BIKE LANE WIDTH INCLUDING BUFFER.
6. ADDITONAL REFERENCES:

- TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR BICYCLE LANE SYMBOLS OR WORD MARKINGS.
- STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS FOR WORDS, ARROWS AND SYMBOLS.
- AASHTO GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES.

SEPTEMBER 2024

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

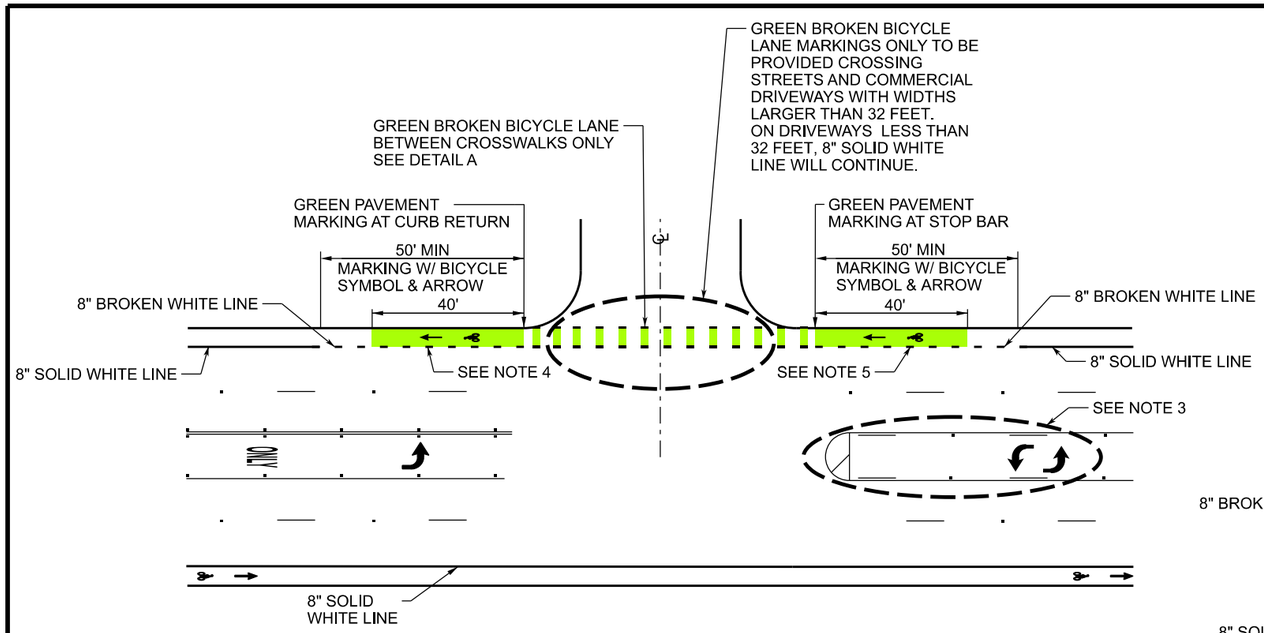
TRAFFIC ENGINEERING AND OPERATIONS STANDARDS

BICYCLE PAVEMENT MARKINGS 1

SHEET 01 OF 04

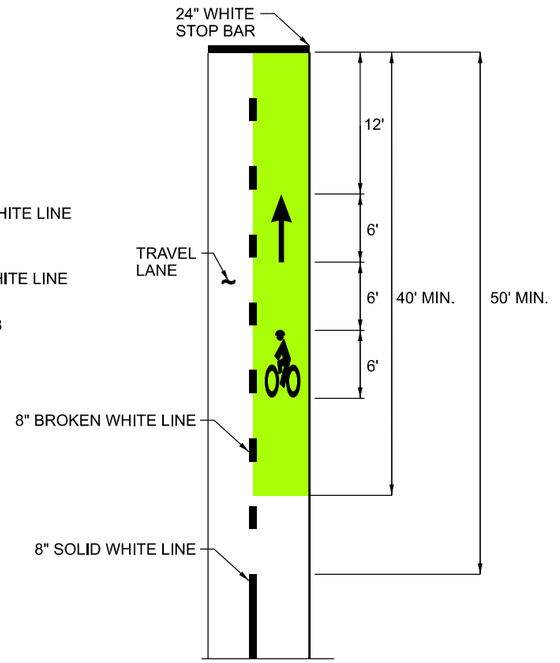
BPM(1)-24

100 % SUBMITTAL	PROJECT NO: 23-03907		DATE: 05/21/2025
DRWN. BY:	DSGN. BY:	CHKD. BY: L BANDA, P.E.	SHEET NO. 334 OF 377

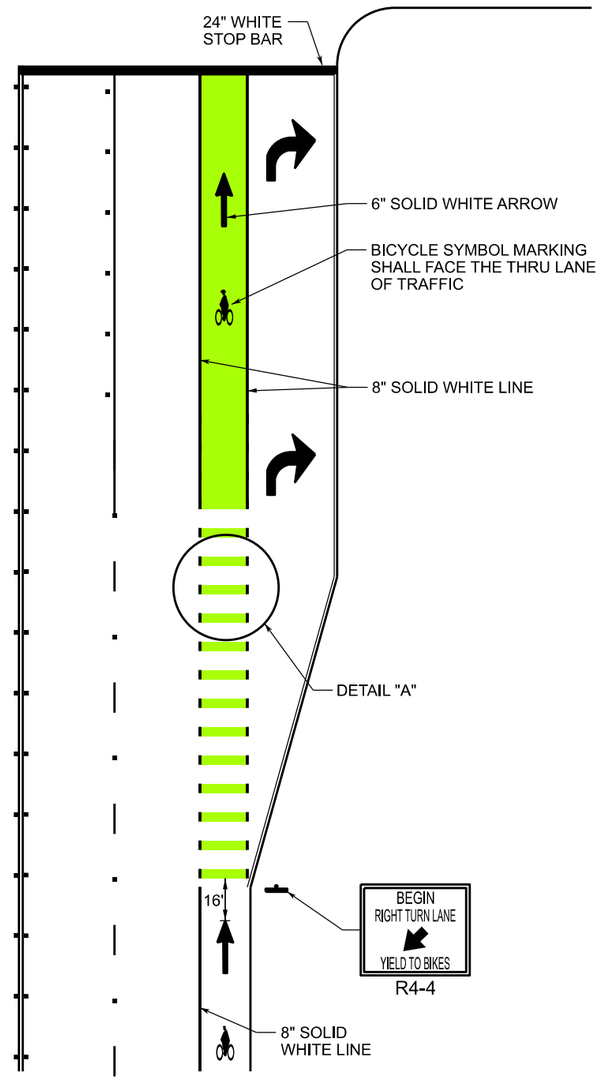


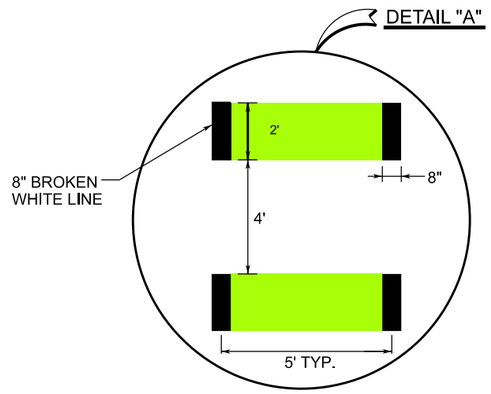
BICYCLE LANE AT T - INTERSECTION

FOR ALL CROSS STREETS ALONG CORRIDOR



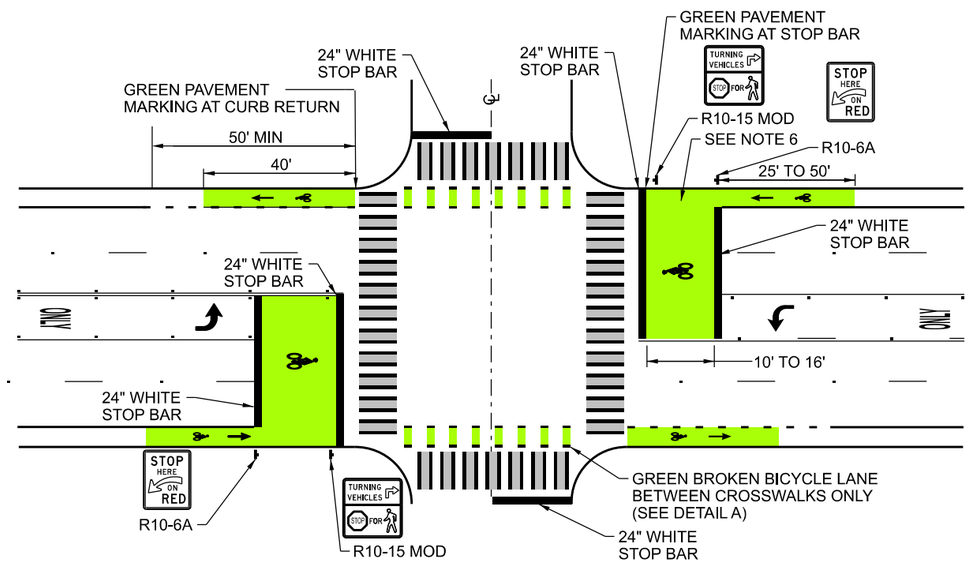
ADJACENT TO TRAVEL LANE





GREEN BROKEN BICYCLE LANE

RIGHT-TURN LANE AT INTERSECTION



BICYCLE LANE BIKE BOX AT SIGNALIZED INTERSECTION

FOR ALL CROSS STREETS ALONG CORRIDOR

GENERAL NOTES:

1. ASIDE FROM LONG LANE MARKINGS, ALL OTHER PAVEMENT MARKINGS SHALL BE PREFORMED MATERIAL. HOT-APPLIED MARKINGS MAY BE USED ONLY IF APPROVED BY PWD - TRAFFIC ENGINEERING & OPERATIONS.
2. BICYCLE SYMBOL MARKING SHALL FACE THRU LANE OF TRAFFIC.
3. BULL NOSE ONLY REQUIRED AT SIGNALIZED INTERSECTION WITH NO DRIVEWAY.
4. BROKEN LINE MAY INCREASE TO 200 FEET AT BUS STOP OR HEAVY RIGHT-TURN VOLUME.
5. BROKEN LINE AND GREEN PAVEMENT MARKING NOT NECESSARY AT MINOR UNCONTROLLED INTERSECTIONS, USE SOLID LINE INSTEAD.

SEPTEMBER 2024

CITY OF SAN ANTONIO

PUBLIC WORKS DEPARTMENT

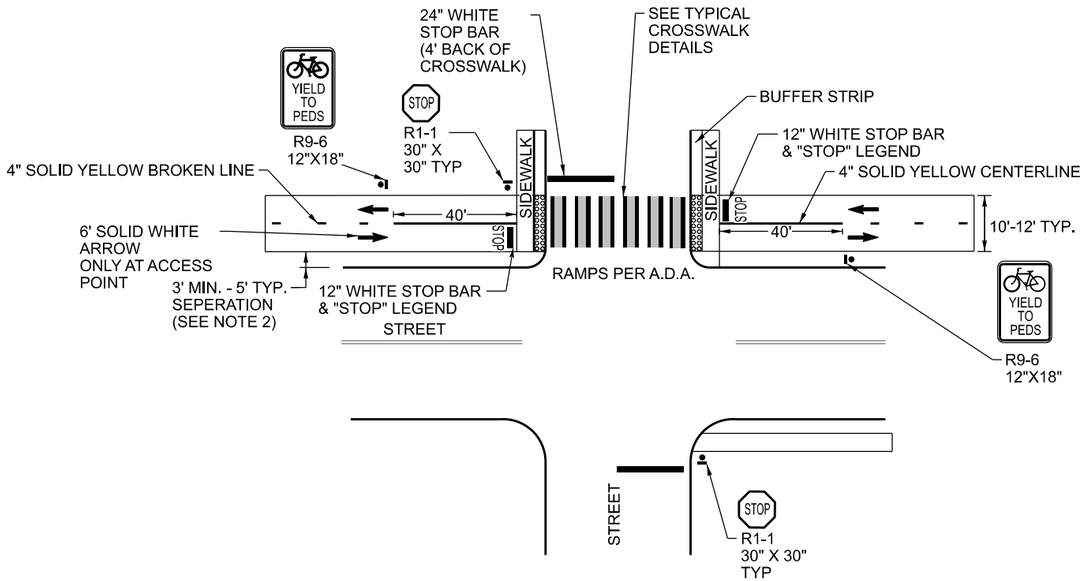
TRAFFIC ENGINEERING AND OPERATIONS STANDARDS

BICYCLE PAVEMENT MARKINGS 2

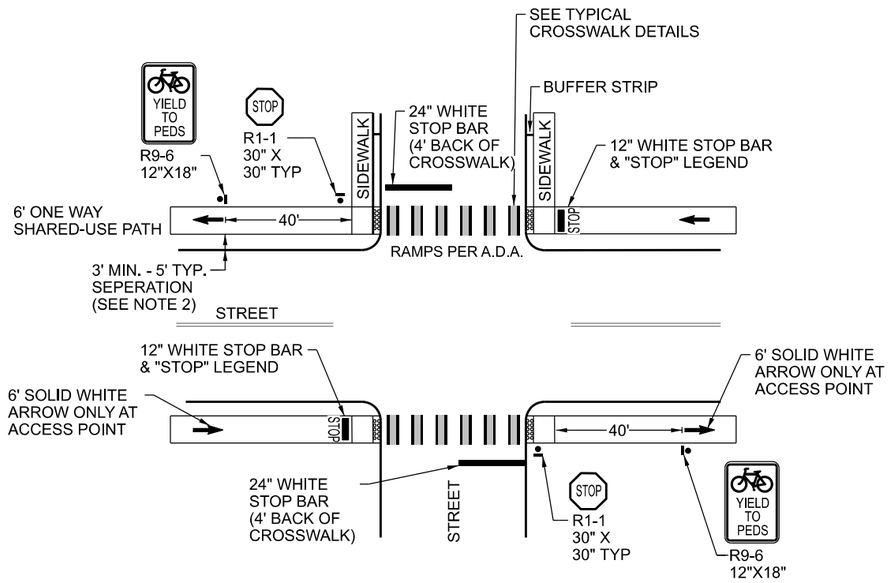
SHEET 02 OF 04

BPM(2)-24

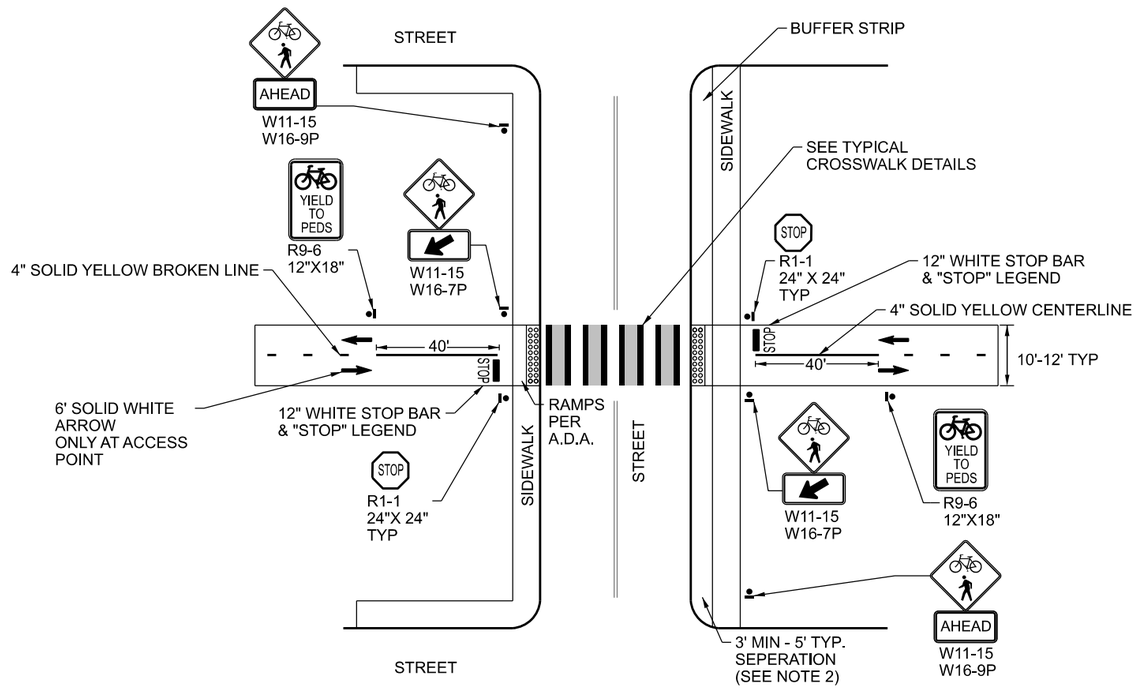
100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/21/2025
DRWN. BY:	DSGN. BY:	CHKD. BY: L BANDA, P.E.	SHEET NO. 335 OF 377



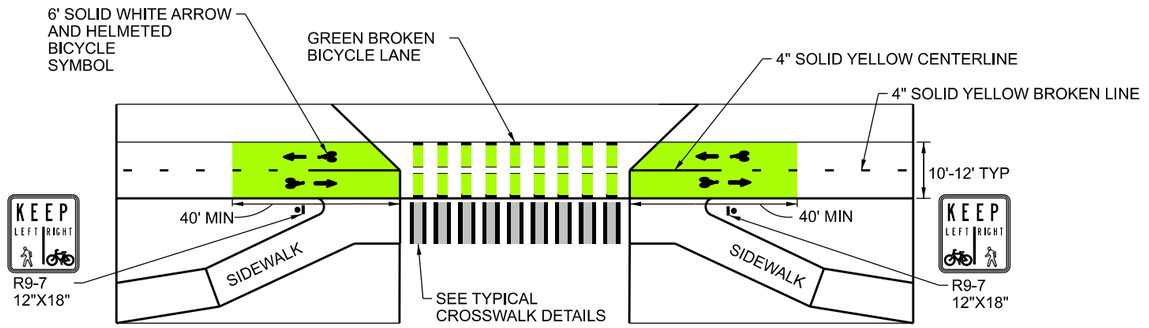
TWO-WAY SHARED-USE PATH
AT
TWO-WAY STOP CONTROLLED INTERSECTION CROSSING



ONE-WAY SHARED-USE PATH
AT
TWO-WAY STOP CONTROLLED INTERSECTION CROSSING



TWO-WAY SHARED-USE PATH
MID-BLOCK CROSSING



TWO-WAY CYCLE TRACK AND SHARED-USE PATH AT COMMERCIAL DRIVEWAY
WITH WIDTHS GREATER THAN 34 FT

GENERAL NOTES:

1. FOR CROSSWALK DETAILS REFER TO TYPICAL CROSSWALK DETAILS STANDARD.
2. MAINTAIN SEPARATION BETWEEN CURB AND EDGE OF SHARED-USE-PATH OR SIDEWALK AS NEEDED FOR CLEAR ZONE & ROADSIDE SIGNAGE.
3. CONCRETE SHARED-USE PATH PAVEMENT MARKINGS SHALL BE HIGH CONTRAST.
4. CYCLE TRACKS SHALL INCLUDE 6" SOLID WHITE ARROW AND HELMETED BICYCLE SYMBOL.

SEPTEMBER 2024

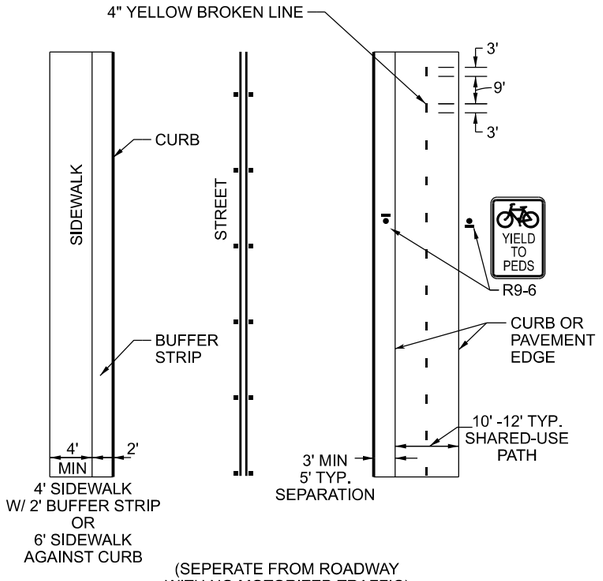
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TRAFFIC ENGINEERING AND OPERATIONS STANDARDS

BICYCLE PAVEMENT MARKINGS 3

SHEET 03 OF 04 BPM(3)-24

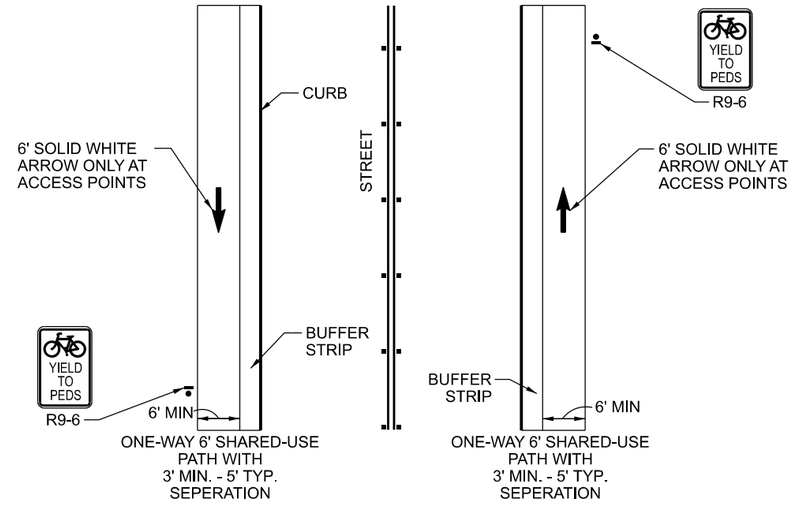
100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/21/2025
DRWN. BY:	DSGN. BY:	CHKD. BY: L BANDA, P.E.	SHEET NO. 336 OF 377



(SEPERATE FROM ROADWAY WITH NO MOTORIZED TRAFFIC)

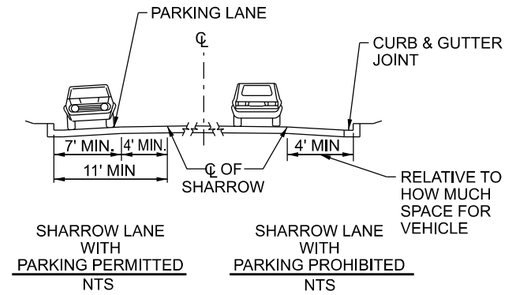
SIGN SPACING IS 300' TO 500' BASED ON AREA DENSITY, ROADWAY CONDITION AND ENGINEERING JUDGEMENT

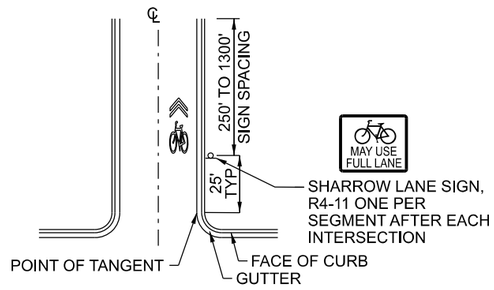
TWO-WAY SHARED-USE PATH



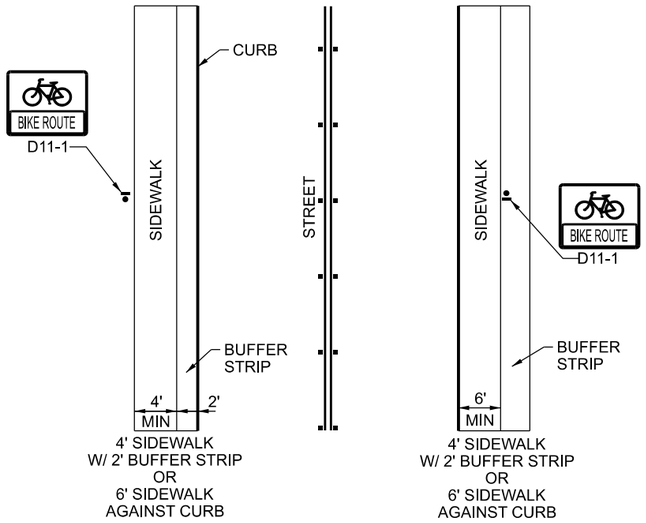
SIGN SPACING IS 300' TO 500' BASED ON AREA DENSITY, ROADWAY CONDITION AND ENGINEERING JUDGEMENT

ONE-WAY SHARED-USE PATH



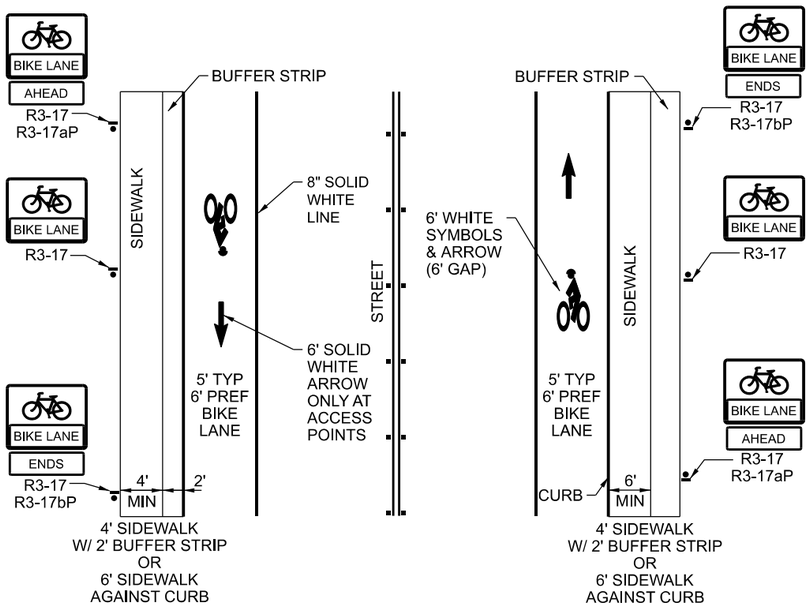


TYPICAL SHARROW LAYOUT



SIGN SPACING IS 300' TO 500' BASED ON AREA DENSITY, ROADWAY CONDITION AND ENGINEERING JUDGEMENT

BICYCLE ROUTE



SIGN SPACING IS 300' TO 500' BASED ON AREA DENSITY, ROADWAY CONDITION AND ENGINEERING JUDGEMENT

ONE-WAY BICYCLE LANE

GENERAL NOTES:

1. BICYCLE PAVEMENT MARKING SHALL FACE THE THRU LANE OF TRAFFIC.
2. NO PARKING BIKE LANE SIGNS (R7-9) MAY BE MOUNTED DIRECTLY BELOW THE BIKE ROUTE GUIDE SIGNS (D11-1) AND BIKE LANE SIGNS (R3-17) AS APPROPRIATE. SEE BPM(1)-23 FOR NO PARKING (R7-9) SPACING GUIDANCE.
3. THE BIKE LANE (R3-17) SIGN WITH THE "AHEAD" (R3-17aP) SIGN MOUNTED DIRECTLY BELOW SHOULD BE INSTALLED IN ADVANCE OF THE MARKED BICYCLE LANE.
4. THE BIKE LANE (R3-17) SIGN WITH THE "ENDS" (R3-17bP) SIGN MOUNTED DIRECTLY BELOW SHOULD BE INSTALLED AT THE END OF THE MARKED BICYCLE LANE.

SEPTEMBER 2024

CITY OF SAN ANTONIO

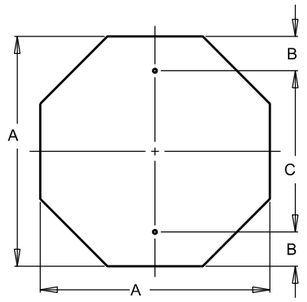
PUBLIC WORKS DEPARTMENT

TRAFFIC ENGINEERING AND OPERATIONS STANDARDS

BICYCLE PAVEMENT MARKINGS 4

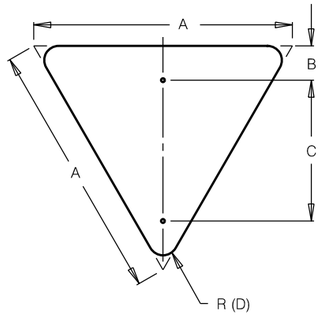
SHEET 04 OF 04 BPM(4)-24

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 05/21/2025	
DRWN. BY:	DSGN. BY:	CHKD. BY: L BANDA, P.E.	SHEET NO. 337 OF 377



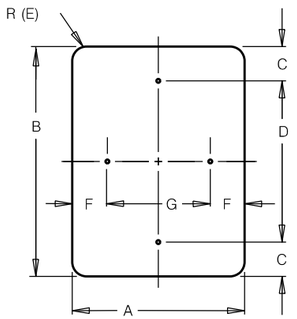
OCTAGONAL

A	B	C	T
18	3	18	0.080
30	3	24	0.080
36	3	30	0.100
48	3	36	0.100



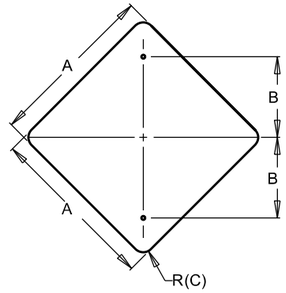
EQUILATERAL TRIANGLE

A	B	C	D	T
18	2	18	2	0.100
30	2	24	2	0.100
36	2	24	2	0.100
48	2	24	2	0.100
60	2	24	2	0.100



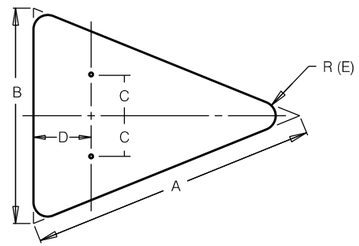
VERTICAL / HORIZONTAL RECTANGLE

A	B	C	D	E	F	G	T
12	18	1 1 / 2	15	1 1 / 2	1 1 / 2	9	0.080
12	36	3	30	1 1 / 2	1 1 / 2	9	0.080
18	24	1 1 / 2	21	1 1 / 2	1 1 / 2	15	0.080
24	30	3	24	1 1 / 2	3	18	0.080
24	36	3	30	1 1 / 2	3	18	0.080
24	48	6	36	1 7 / 8	3	18	0.080
30	36	3	30	1 7 / 8	3	24	0.080
36	48	3	30	1 7 / 8	3	24	0.080
48	60	3	30	1 7 / 8	3	24	0.080



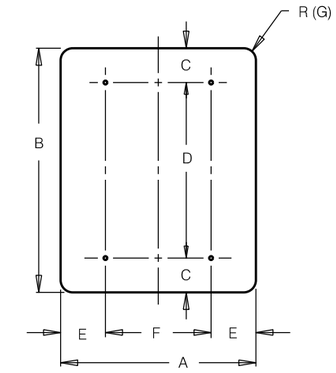
DIAMOND (A)

A	B	C	T
18	9	1 1 / 2	0.080
24	12	1 1 / 2	0.080
30	15	1 7 / 8	0.080
36	18	2 1 / 4	0.100



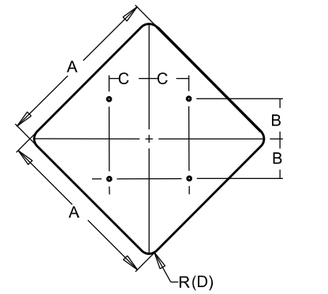
ISOSCELES TRIANGLE

A	B	C	D	E	T
40	30	7 1 /2	12	1 7 /8	0.100
48	36	9	15	2 1 /4	0.100
64	48	10 1 /2	18	2 3 /4	0.100



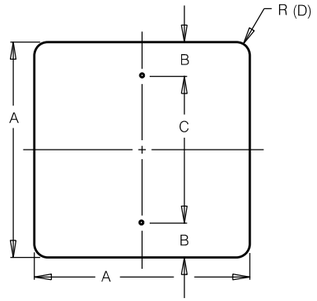
VERTICAL RECTANGLE

A	B	C	D	E	F	G	T
5	7 3 /4	1 /2	6 3 /4	1 /2	4	1 /4	0.100
48	60	6	48	9	30	3	0.100



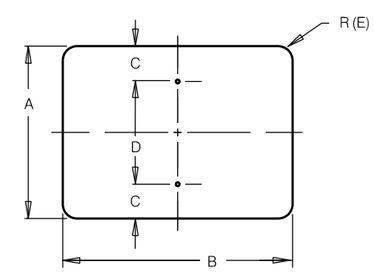
DIAMOND (B)

A	B	C	D	T
48	15	15	3	0.100



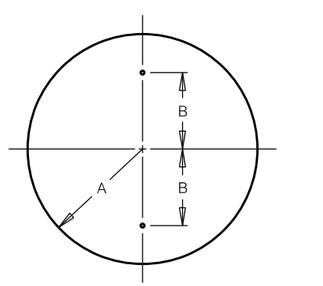
SQUARE (A)

A	B	C	D	T
18	1 1 /2	15	1 1 /2	0.080
24	3	18	1 1 /2	0.080
30	3	24	1 7 /8	0.080



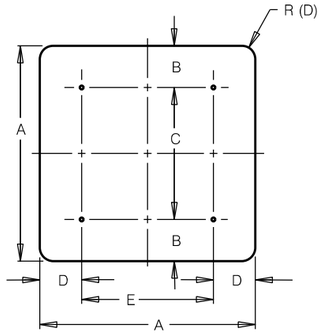
HORIZONTAL RECTANGLE

A	B	C	D	E	T
6	12	1	4	1 /4	0.080
6	18	1	4	1 /4	0.080
20	36	1 1 /2	17	1 1 /2	0.080
21	15	1 1 /2	12	1 1 /2	0.080
24	12	1 1 /2	9	1 1 /2	0.080
24	18	3	12	1 1 /2	0.080
30	15	1 1 /2	12	1 1 /2	0.080
30	24	3	18	1 1 /2	0.080
36	12	1 1 /2	9	1 1 /2	0.080



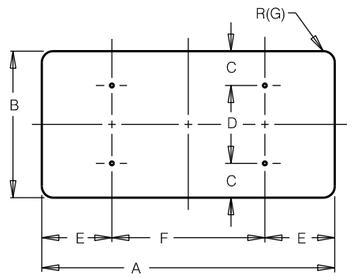
CIRCLE

A	B	T
18	15	0.100



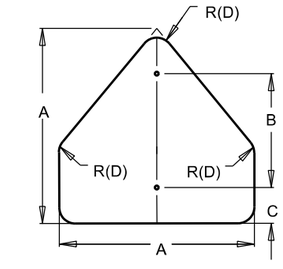
SQUARE (B)

A	B	C	D	E	F	T
36	*	*	*	*	*	0.100
48	6	36	9	30	3	0.100



HORIZONTAL RECTANGLE

A	B	C	D	E	F	G	T
36	24	3	18	6	24	1 1 /2	0.100
48	24	3	18	9	30	1 7 /8	0.100
48	36	6	24	9	30	2 1 /4	0.100
48	24	2	20	2	44	1 7 /8	0.100
48	36	3	30	3	42	2 1 /4	0.100
48	36	6	24	12	36	2 1 /4	0.100
60	30	3	24	3	42	1 7 /8	0.100
60	24	2	20	2	56	1 1 /2	0.100
60	36	3	30	3	54	2 1 /4	0.100
60	24	3	18	12	36	1 1 /2	0.100
60	30	3	24	3	54	1 1 /8	0.100



PENTAGON (SCHOOL)

A	B	C	D	T
30	*	3	*	0.100
36	24	3	2 1/4	0.100
48	*	*	3	0.100

GENERAL NOTES:

1. ALL BLANKS TO BE ALUMINUM ALLOY NO. 5052-H38.
2. “T” DENOTES THICKNESS OF SIGN BLANKS.
3. ALL HOLES SHALL BE 3/8” DIAMETER DRILLED OR PUNCHED AS SHOWN ON EACH BLANK DETAIL AND SHALL BE FREE OF BURRS AND OR ROUGH EDGES.
4. SIGN BLANK CORNERS TO BE ROUNDED AS SHOWN ON EACH DETAIL.
5. ALL SIGN BLANK TO BE ETCHED, DEGREASED, AND HAVE AN ALODINE FINISH PRIOR TO APPLICATION OF LEGENDS.
6. ALL DETAILS ARE NOT TO SCALE.
7. ALL DEMENSIONS ARE IN INCHES.
8. * HOLE PLACEMENT AS INDICATED ON THE PLANS.

SEPTEMBER 2024

CITY OF SAN ANTONIO

PUBLIC WORKS DEPARTMENT

TRAFFIC ENGINEERING AND OPERATIONS STANDARDS

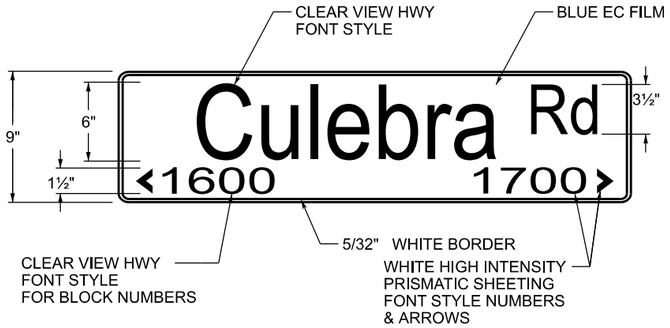
BLANK SIGN DETAILS

SHEET 03 OF 04

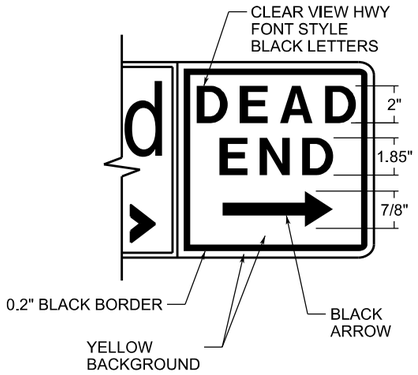
SM(3)-24

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 03/28/2025
DRWN. BY:	DSGN. BY:	CHKD. BY: L BANDA, P.E.

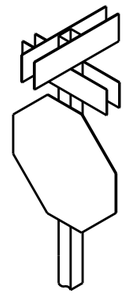
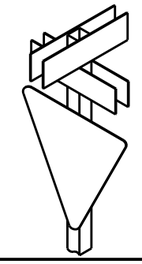
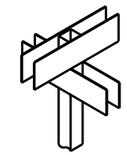
SHEET NO. 338 OF 377



9" D3 - STREET NAME SIGN



9" D3 WITH DEAD END
OR NO OUTLET SIGNAGE

STREET SIGN ASSEMBLY EXAMPLES	DESCRIPTION	UNIT	QUANTITY
STOP SIGN WITH 2 STREET NAMES 	R1-1 STOP	EA.	1
	9-IN STREET NAME PLATE	EA.	4
YIELD SIGN WITH 2 STREET NAMES 	R1-2 YIELD	EA.	1
	9-IN STREET NAME PLATE	EA.	4
2 STREET SIGNS 	9-IN STREET NAME SIGN	EA.	2
	9-IN STREET NAME PLATE	EA.	2

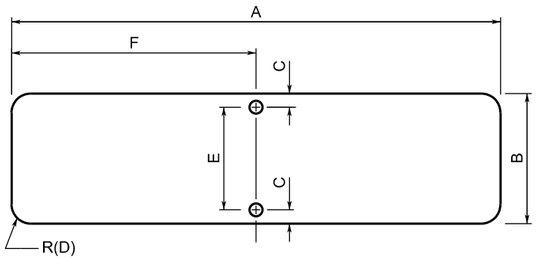
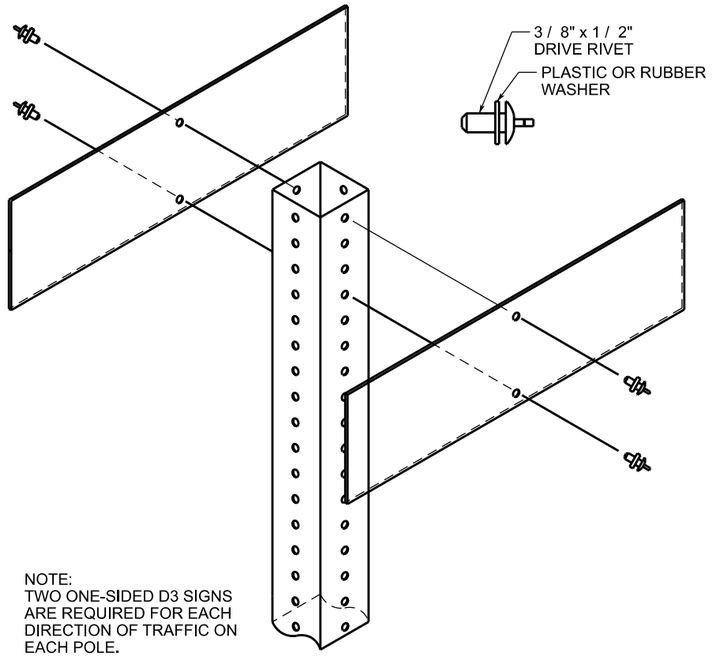


TABLE - D3 SIGNS

A	B	C	D	E	F	T
24"	9"	1 / 2"	1 / 2"	8"	12"	1 / 8"
30"	9"	1 / 2"	1 / 2"	8"	15"	1 / 8"
36"	9"	1 / 2"	1 / 2"	8"	18"	1 / 8"
42"	9"	1 / 2"	1 / 2"	8"	21"	1 / 8"
48"	9"	1 / 2"	1 / 2"	8"	24"	1 / 8"
54"	9"	1 / 2"	1 / 2"	8"	27"	1 / 8"

NOTE:
A 30" LONG OR GREATER PLATE SHALL BE USED WHEN A "DEAD END" OR "NO OUTLET" SUPPLEMENT IS REQUIRED.

HEIGHT	9" (228 mm)
LENGTH	24" (600 MM) MIN. 54" (1350 MM) MAX. 6" (150 MM) INCREMENTS OF LENGTH
THICKNESS	1 / 8" (3MM)
SUBSTRATE	ALUMINUM ALLOY, 5052-H38 (ASTM B-209) GOLD CHROMATE FINISH
SIGN FACE MATERIALS	BLUE FILM OVER HIGH INTENSITY FP-85, SECTION 718 AND L-S-300C
LEGENDS AND SYMBOLS	SERIES D (USUAL) SERIES C OR B FOR MAXIMUM LENGTH SIGN BLANK, IF NECESSARY
COLOR	WHITE LEGEND ON BLUE BACKGROUND
LETTER TRACKING	STREET NAME 0% BLOCK NUMBERS 25%



NOTE:
TWO ONE-SIDED D3 SIGNS ARE REQUIRED FOR EACH DIRECTION OF TRAFFIC ON EACH POLE.

D3 SIGN TO POLE INSTALLATION

GENERAL NOTES:

"9-INCH STREET NAME" SIGN (1-EA.) INCLUDES THE INSTALLATION OF (2) ONE-SIDED D3 SIGNS. THIS SHALL BE FULL COMPENSATION FOR MATERIALS AND LABOR AS DESCRIBED IN C.O.S.A. STANDARD SPECIFICATIONS AND GROUND SIGN MOUNTING STANDARD DETAIL.

"9-INCH STREET NAME PLATE" (1-EA.) INCLUDES THE INSTALLATION OF (2) ONE-SIDED D3 SIGNS ON TOP OF EXISTING SIGN (I.E., STOP - SIGN OR YIELD SIGN), EXTRA LENGTH POLE AND APPURTENANCES REQUIRED TO MEET SPECIFICATIONS.

SEPTEMBER 2024

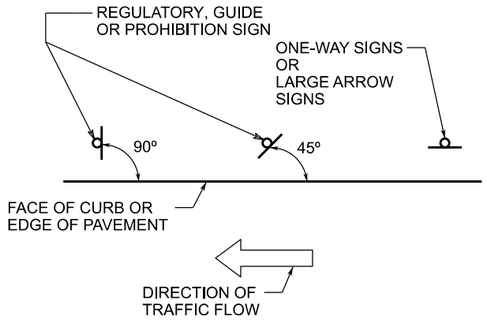
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TRAFFIC ENGINEERING AND OPERATIONS STARDARDS

D3 STREET NAME SIGN MOUNTING

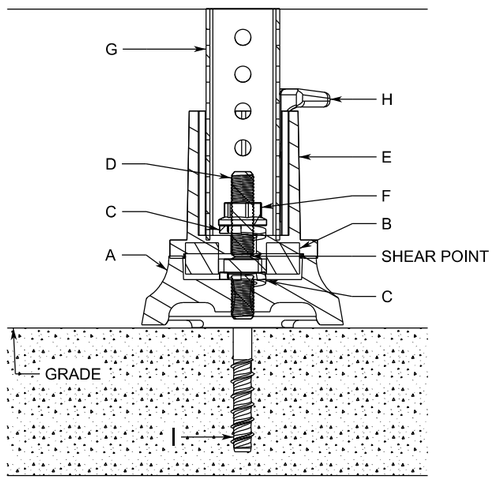
SHEET 02 OF 02 SM(2)-24

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/21/2025
DRWN. BY:	DSGN. BY:	CHKD. BY: L BANDA, P.E.	SHEET NO. 339 OF 377



TYPICAL GROUND MOUNTED SIGN ORIENTATION

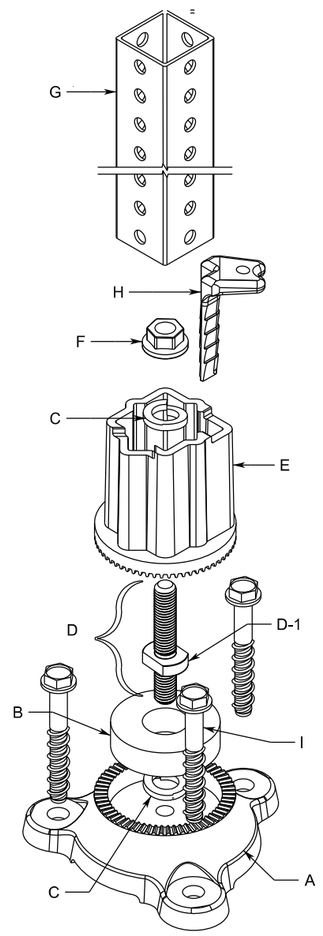
NOTE:
XCESSORIES SQUARED DEVELOPMENT KLEEN BREAK MODEL 425 OR APPROVED EQUIVALENT AS APPROVED BY THE ENGINEER.



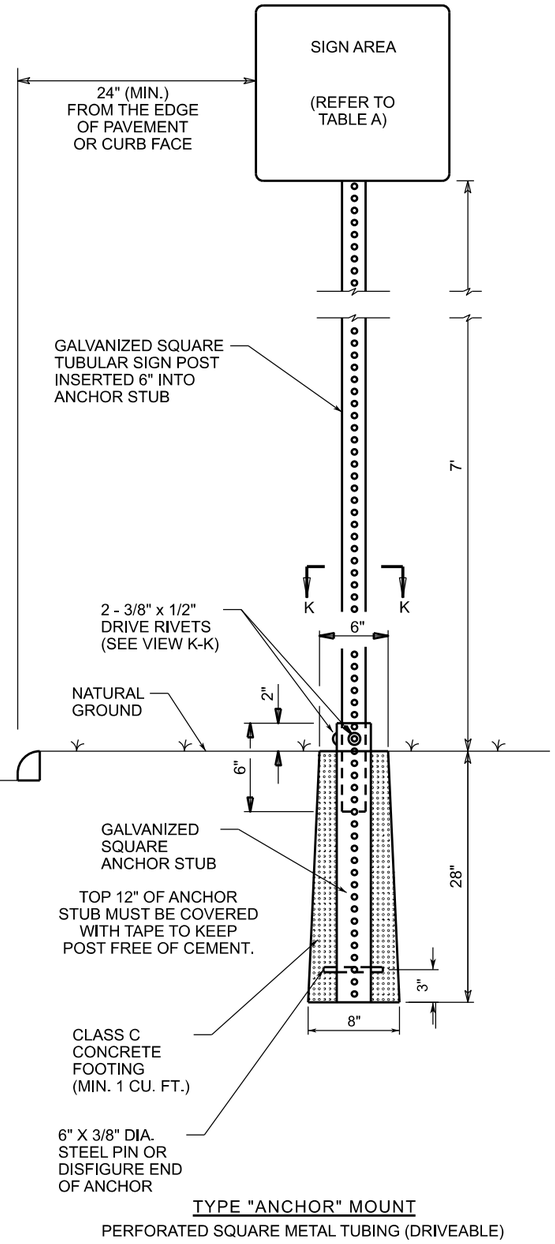
PARTS LIST

A	SURFACE MOUNT ANCHOR BASE
B	3" O.D. x 1.3" I.D. x 0.825" RUBBER BUSHING
C	LOCK WASHER
D	5/8"-11 x 4" SHEAR BOLT
D-1	SHOULDER
E	TOP HALF COUPLER
F	5/8"-11 SERRATED FLANGE NUT
G	SIGN SUPPORT 2" SQUARE POST
H	SIGN SUPPORT LOCKING WEDGE
I	CONCRETE MOUNTING FASTENER (NOT INCLUDED)

TYPE SURFACE / FLANGE MOUNT



TYPE SURFACE / FLANGE MOUNT EXPANDED VIEW



TYPE "ANCHOR" MOUNT

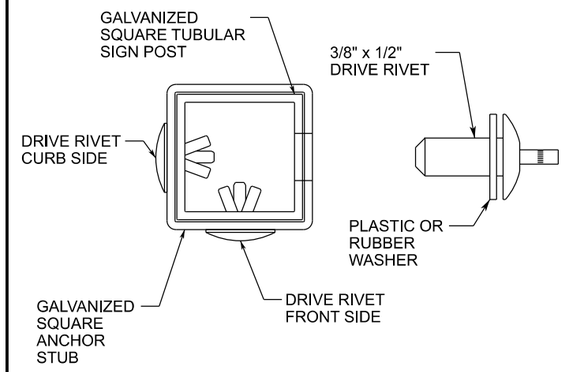
PERFORATED SQUARE METAL TUBING (DRIVEABLE)

TYPICAL GROUND SIGN INSTALLATION

TABLE A		
METAL TUBING	SIGN AREA	
	≤ 10 SQ. FT.	> 10 SQ. FT.
GALVANIZED SQUARE TUBULAR SIGN POST (PERFORATED)	1-3/4" x 1-3/4" (14 GAUGE)	2" x 2" (12 GAUGE)
GALVANIZED SQUARE ANCHOR STUB (PERFORATED)	2" x 2" (12 GAUGE)	2-1/4" x 2-1/4" (12 GAUGE)

NOTE:

1. A MINIMUM OF TWO (2) DRIVE RIVETS SHALL BE USED; ONE ON THE FRONT SIDE AND ONE ON THE CURB SIDE OF THE POLE.



VIEW K-K

GENERAL NOTES:

1. THE EXISTING SIGNS LOCATED ON THE JOBSITE ARE THE PROPERTY OF THE CITY OF SAN ANTONIO. THROUGHOUT THE PERIOD OF THE CONTRACT, THE CONTRACTOR SHALL PROTECT THESE SIGNS SUCH THAT THEY ARE NOT DAMAGED IN THE COURSE OF CONSTRUCTION ACTIVITY.
2. PRIOR TO THE START OF CONSTRUCTION, ALL EXISTING SIGNS WITHIN THE AREA OF CONSTRUCTION WILL BE INVENTORIED AND DOCUMENTED JOINTLY BY THE CONSTRUCTION INSPECTOR AND THE CONTRACTOR. THIS DOCUMENT WILL BE JOINTLY SIGNED BY BOTH PARTIES REFLECTING THE SIGN TYPE, SIZE, SIGN CONDITION, SIGN LOCATION, REFLECTIVITY ADEQUACY, ETC. THE CONTRACTOR IS HELD ACCOUNTABLE FOR THESE SIGNS THROUGHOUT THE PROJECT AND AT THE PROJECTS COMPLETION.
3. ALL GROUND MOUNTED SIGNS SHALL USE HIGH INTENSITY REFLECTIVE SHEETING.

SEPTEMBER 2024

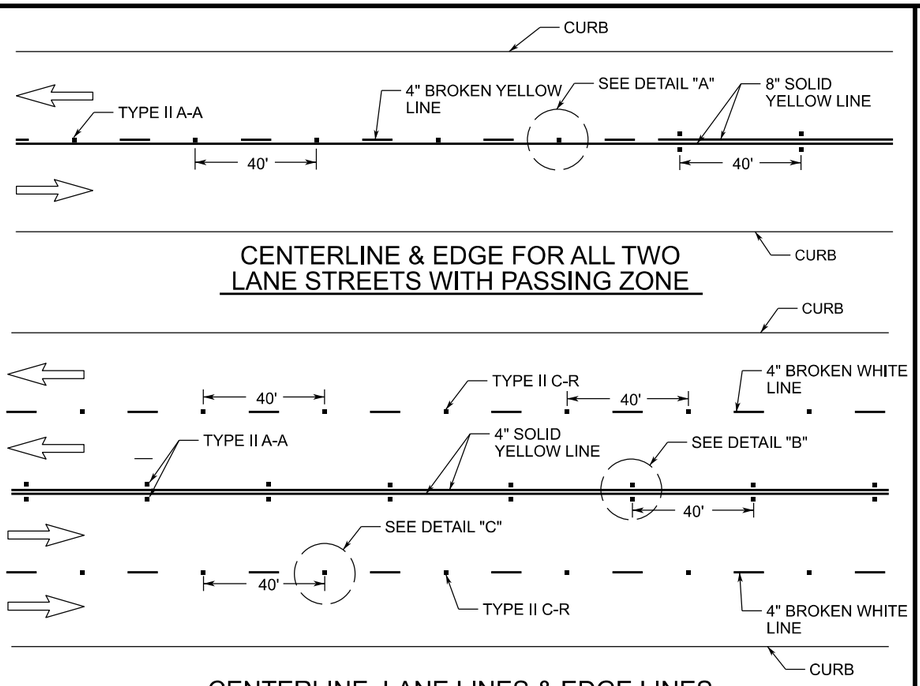
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TRAFFIC ENGINEERING AND OPERATIONS STANDARDS

GENERAL NOTES AND SIGN MOUNTING

SHEET 01 OF 04 SM(1)-24

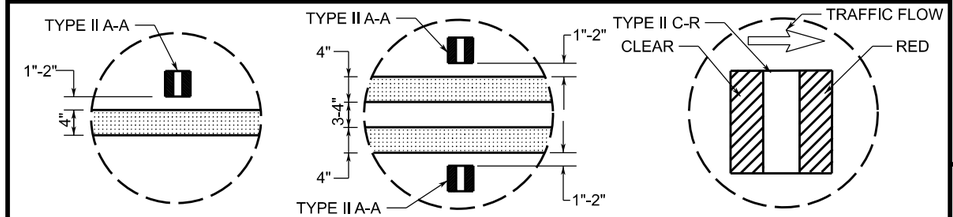
100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 03/28/2025
DRWN. BY:	DSGN. BY:	CHKD. BY: L BANDA, P.E.	SHEET NO. 340 OF 377



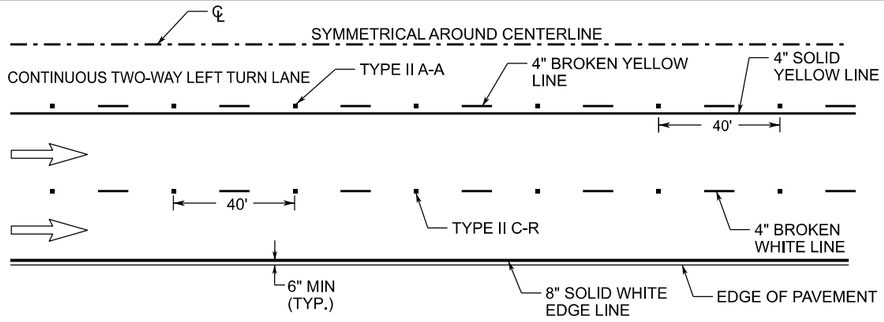
CENTERLINE & EDGE FOR ALL TWO LANE STREETS WITH PASSING ZONE

CENTERLINE, LANE LINES & EDGE LINES FOR FOUR LANE TWO-WAY STREETS

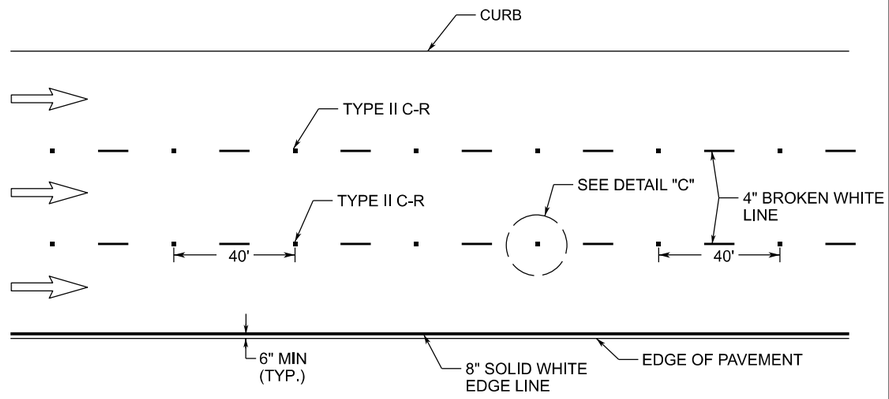
RAISED PAVEMENT MARKERS TYPE II C-R SHALL HAVE CLEAR FACE TOWARD NORMAL TRAFFIC AND RED FACE TOWARD WRONG-WAY TRAFFIC.



DETAIL "A" DETAIL "B" DETAIL "C"



CENTERLINE, LANE LINES, & EDGE LINES FOR TWO-WAY LEFT TURN LANE



LANE LINES & EDGE LINES FOR ONE-WAY MULTILANE STREET

RAISED PAVEMENT MARKERS TYPE II C-R SHALL HAVE CLEAR FACE TOWARD NORMAL TRAFFIC AND RED FACE TOWARD WRONG-WAY TRAFFIC.

*POSTED SPEED	FORMULA
<45	$L = \frac{WS^2}{60}$
≥45	L= WS

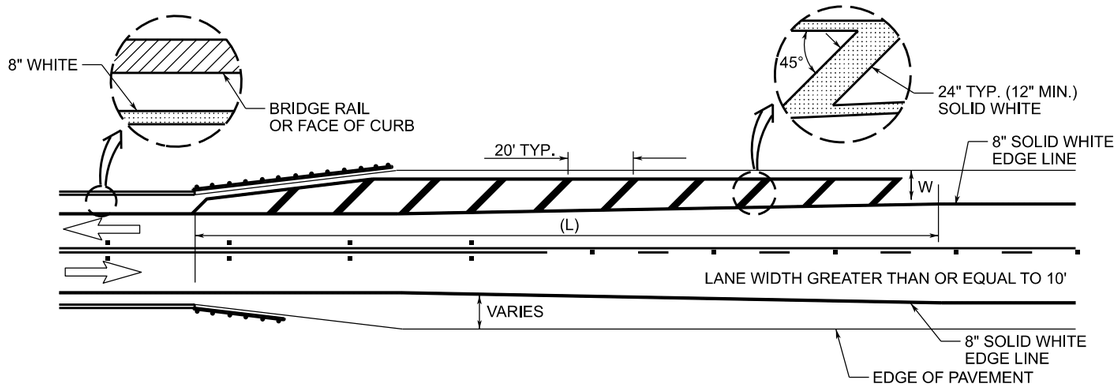
TABLE 1 - TYPICAL LENGTH (L)

*85TH PERCENTILE SPEED MAY BE USED ON ROADS WHERE TRAFFIC SPEEDS NORMALLY EXCEED THE POSTED SPEED LIMIT. CROSSHATCHING LENGTH SHOULD BE ROUNDED UP TO NEAREST 5 FOOT INCREMENT.

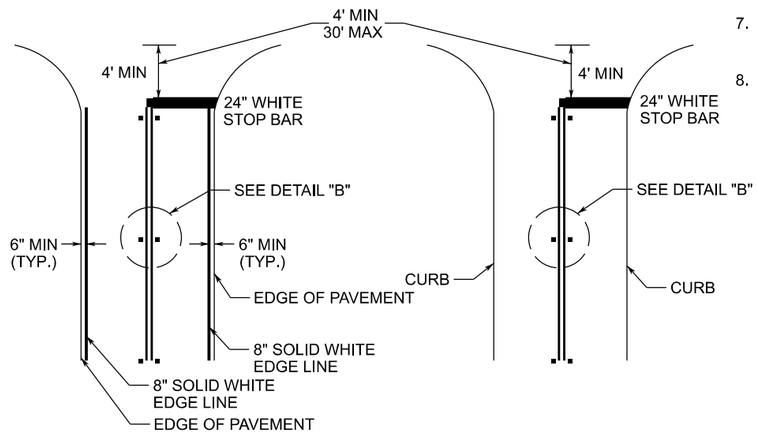
L= LENGTH OF CROSSHATCHING (FT)
W= WIDTH OF OFFSET (FT)
S= POSTED SPEED (MPH)

GENERAL NOTES:

1. EDGELINE ADJACENT TO CURB AND GUTTER IS NOT REQUIRED IN ALL CASES, HOWEVER SHALL BE PLACED AS DIRECTED BY THE ENGINEER.
2. THE TRAVELED WAY INCLUDES ONLY THAT PORTION OF THE ROADWAY USED FOR VEHICULAR TRAVEL AND NOT THE PARKING LANES, SIDEWALKS, BERMS AND SHOULDERS. THE TRAVELED WAYS SHALL BE MEASURED FROM THE INSIDE OF EDGELINE TO INSIDE OF EDGELINE OF A TWO LANE ROADWAY.
3. ALL RAISED PAVEMENT MARKERS PLACED IN BROKEN LINES SHALL BE PLACED IN LINE WITH AND MIDWAY BETWEEN THE STRIPES.
4. ON CONCRETE PAVEMENTS THE RAISED PAVEMENT MARKERS SHOULD BE PLACED TO ONE SIDE OF THE LONGITUDINAL JOINTS.
5. ALL PAVEMENT MARKING MATERIAL SHALL MEET THE REQUIRED MATERIAL SPECIFICATIONS AS SPECIFIED BY CITY OF SAN ANTONIO STANDARD SPECIFICATIONS.
6. ASIDE FROM LONG LANE LINE MARKINGS, ALL OTHER PAVEMENT MARKINGS SHALL BE PREFORMED MATERIAL. HOT-APPLIED MARKINGS MAY BE USED ONLY IF APPROVED BY PWD - TRAFFIC ENGINEERING AND OPERATIONS.
7. FOR GUARD FENCE DETAILS, REFER ELSEWHERE IN THE PLANS.
8. YELLOW EDGE LINES ADJACENT TO RAISED ISLAND ARE REQUIRED. REF TRMRM-24



ROADWAYS WITH REDUCED SHOULDER WIDTHS ACROSS BRIDGE OR CULVERT



GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

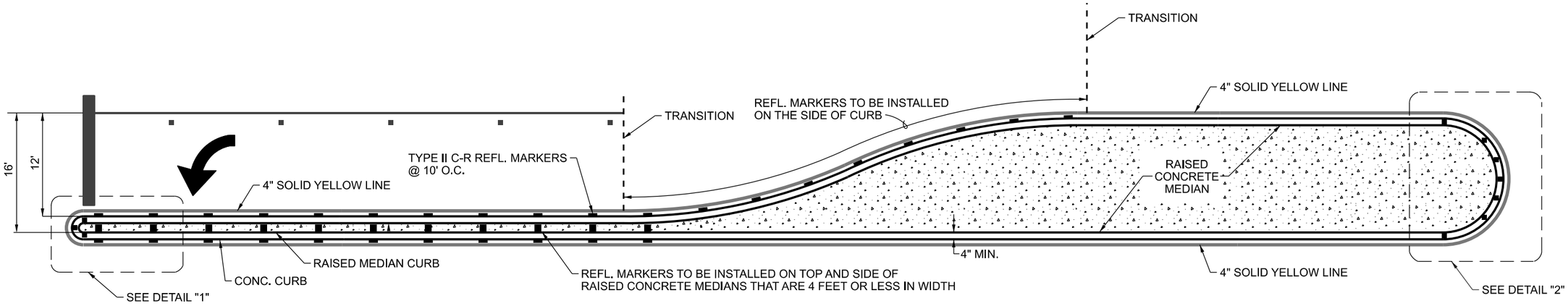
SEPTEMBER 2024

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TRAFFIC ENGINEERING AND OPERATIONS STANDARDS
PAVEMENT MARKINGS WITH RAISED PAVEMENT MARKERS

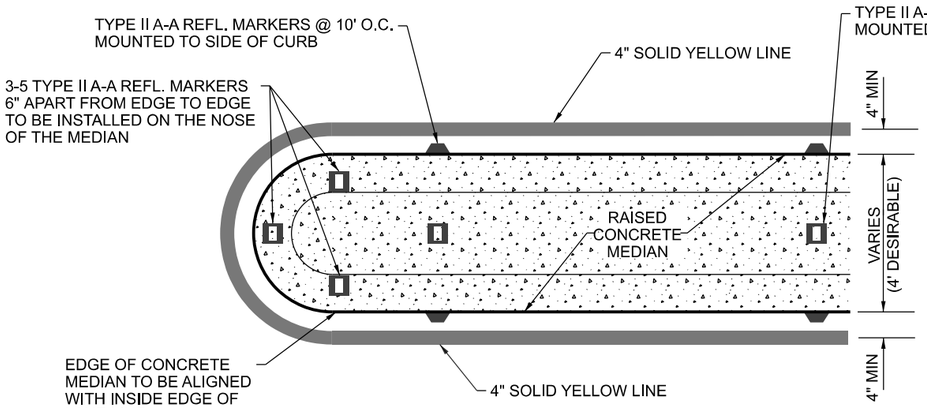
SHEET 01 OF 01 PM&RPM-24

100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 05/21/2025
DRWN. BY:	DSGN. BY:	CHKD. BY: L BANDA, P.E.
		SHEET NO. 341 OF 377



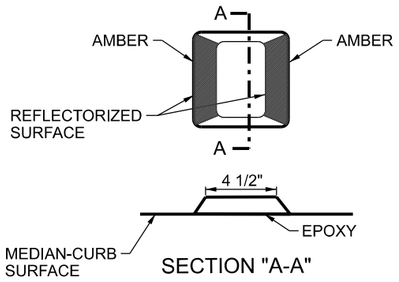
TYPICAL RAISED CONCRETE MEDIAN

NOT TO SCALE



DETAIL "1"

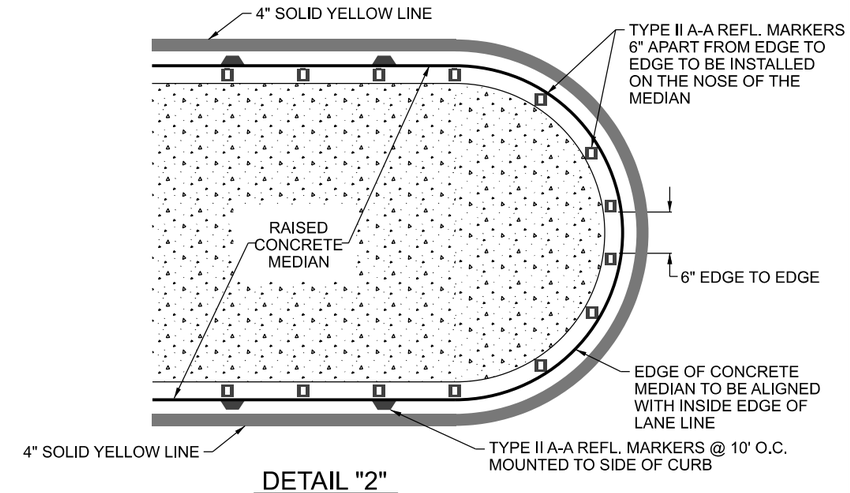
NOT TO SCALE



SECTION "A-A"

TYPE II A-A REFLECTIVE MARKERS

NOT TO SCALE

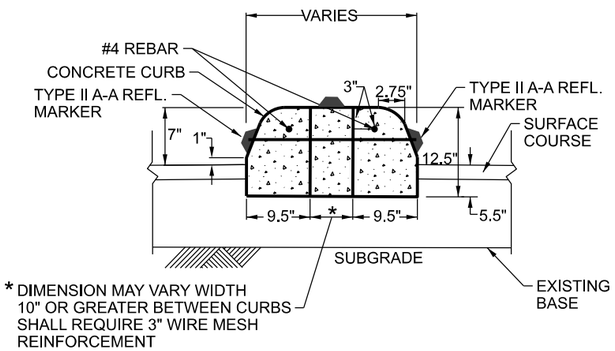


DETAIL "2"

NOT TO SCALE

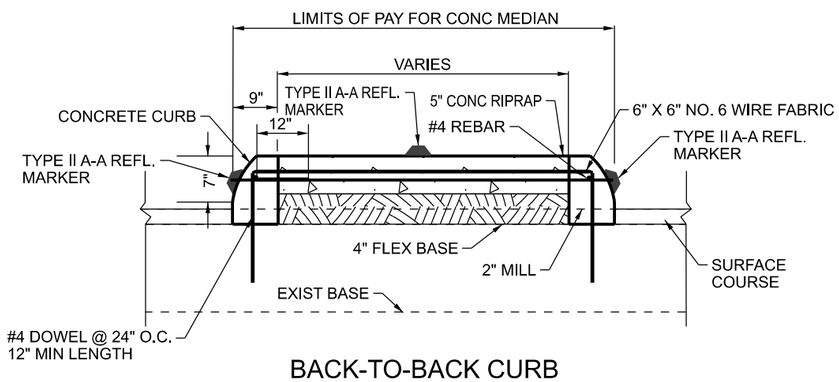
NOTES:

1. NEW CURBING SHALL EXTEND 5.5" INTO EXISTING PAVEMENT STRUCTURE.
2. IF FLEXIBLE BASE IS ENCOUNTERED, IT SHALL BE RECOMPACTED USING A HANDHELD VIBRATORY COMPACTOR.
3. REFLECTORS SHALL BE MOUNTED TO THE TOP OF BACK TO BACK CURB AT 10' SPACING. SEE MEDIAN DETAIL ON THIS SHEET.



BACK-TO-BACK CURB DETAIL FOR RETROFIT ON EXISTING ROADWAY

NOT TO SCALE



BACK-TO-BACK CURB ALTERNATE OPTION DOWELED MEDIAN

NOT TO SCALE

GENERAL NOTES:

1. ASIDE FROM LONG 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.
2. YELLOW EDGE LINES ADJACENT TO RAISED ISLAND ARE REQUIRED , REFER TO TRMRM-24.
3. SIDE MOUNT RPM SHALL BE APPLIED WITH EPOXY, TOP MOUNT RPM WITH EPOXY OR BITUMINOUS.

SEPTEMBER 2024

CITY OF SAN ANTONIO

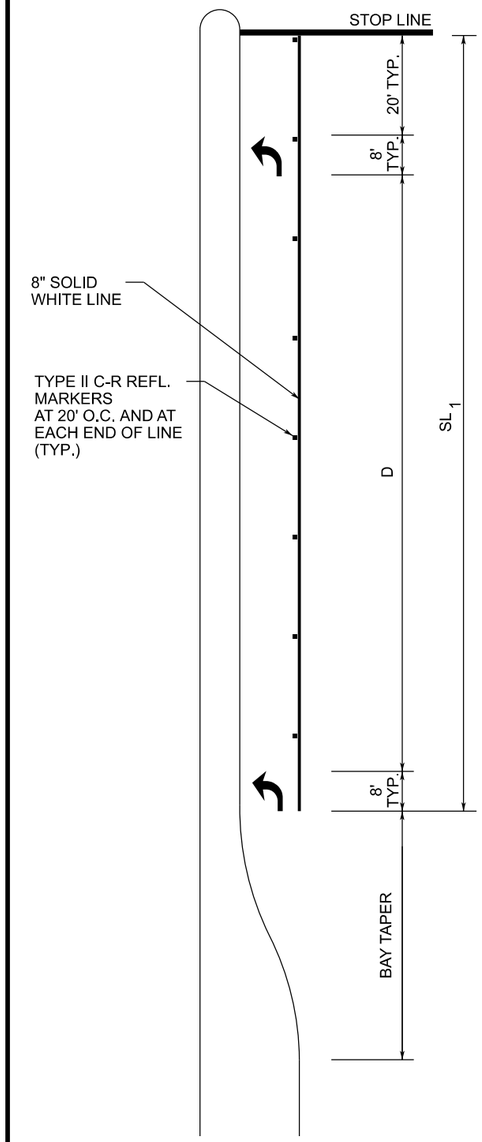
PUBLIC WORKS DEPARTMENT

TRAFFIC ENGINEERING AND OPERATIONS STANDARDS

TYPE II A-A REFELECTIVE MARKERS ON RAISED MEDIAN

SHEET 01 OF 01 TRMRM-24

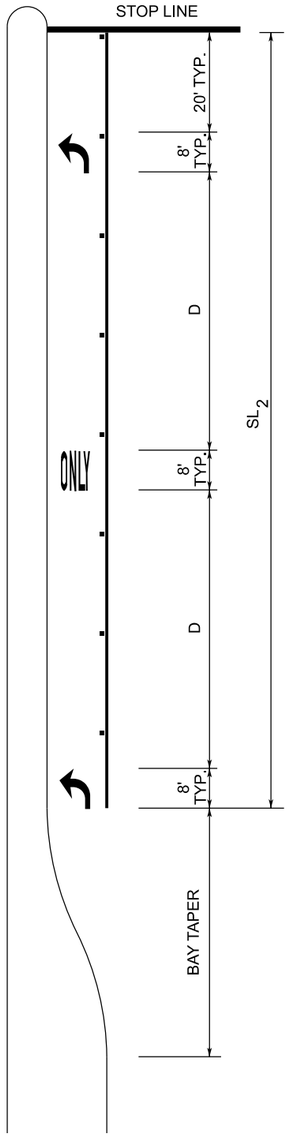
100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/21/2025
DRWN. BY:	DSGN. BY:	CHKD. BY: L BANDA, P.E.	SHEET NO. 342 OF 377



CASE 1

SL < 110'

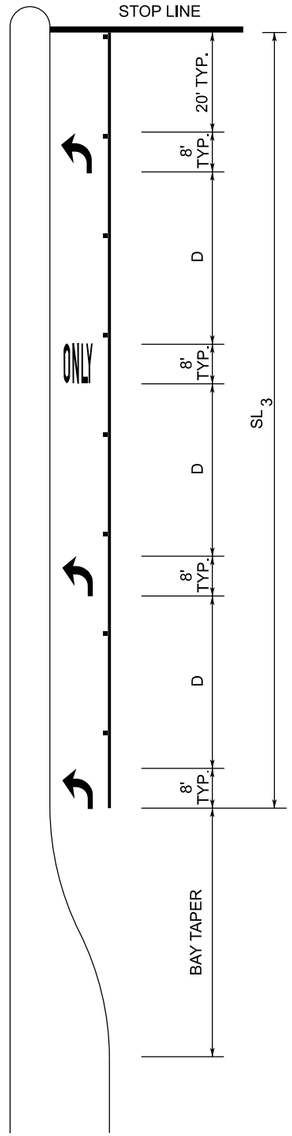
D = SL - 36



CASE 2

110' < SL < 200'

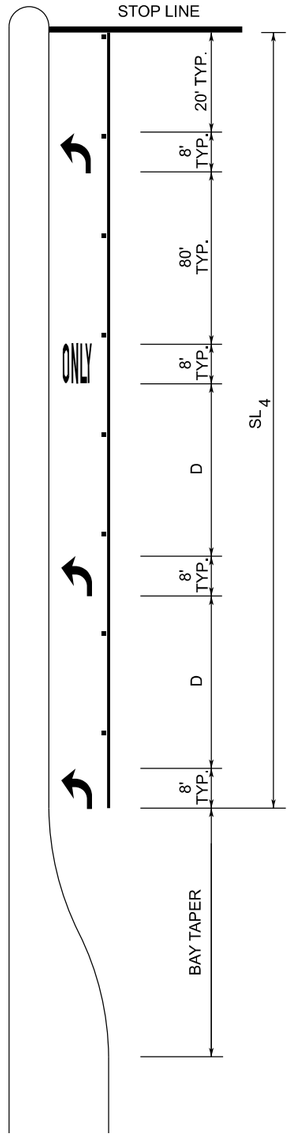
D = (SL - 44) / 2



CASE 3

201' < SL < 300'

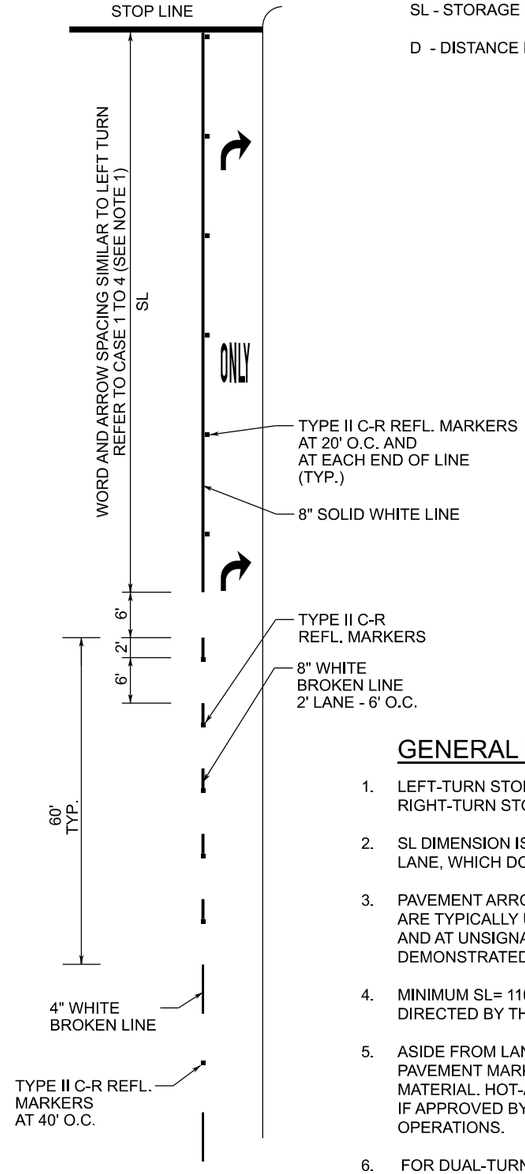
D = (SL - 52) / 3



CASE 4

SL > 300'

D = (SL - 132) / 2



RIGHT TURN LANE DROP

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

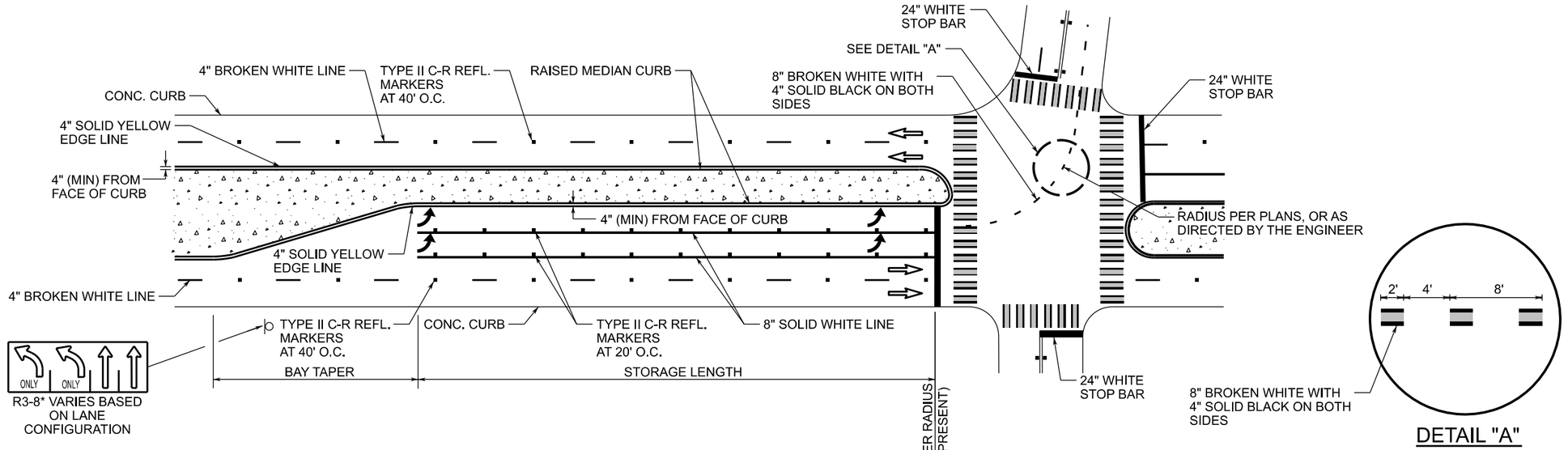
PUBLIC WORKS DEPARTMENT

TRAFFIC ENGINEERING AND OPERATIONS STANDARDS

TURN LANE PAVEMENT MARKINGS

SHEET 01 OF 01 TLPM-24

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/21/2025
DRWN. BY:	DSGN. BY:	CHKD. BY: L BANDA, P.E.	SHEET NO. 343 OF 377

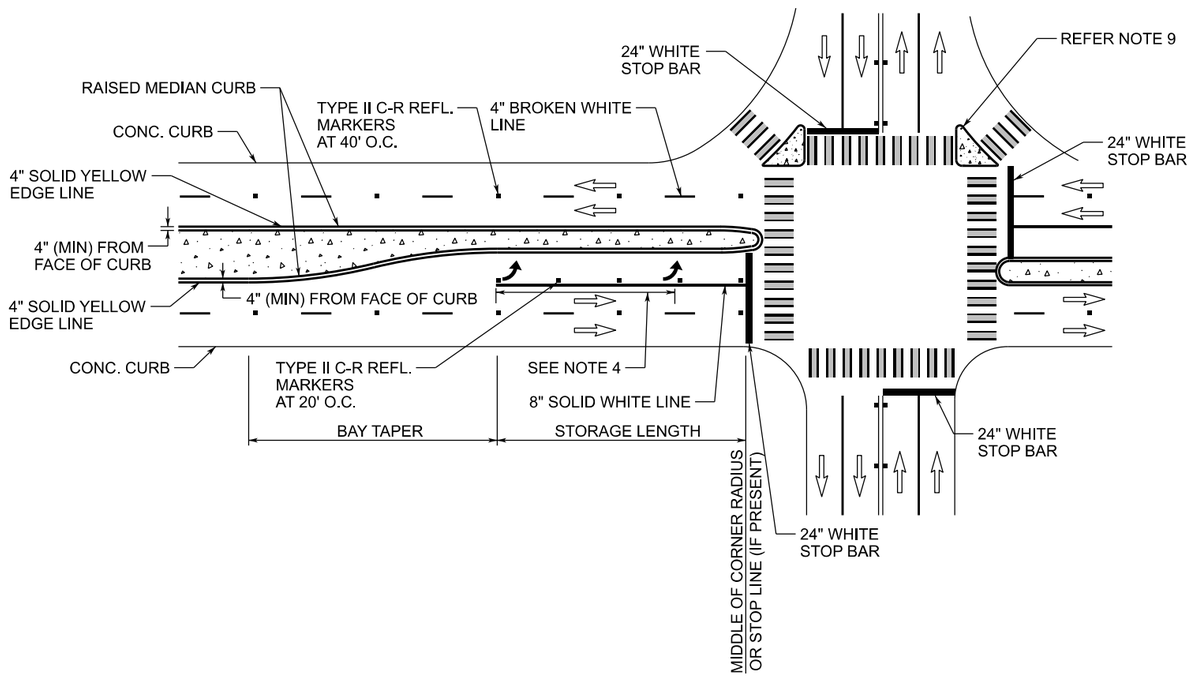


DETAIL "A"

MINIMUM TURN BAY REVERSE CURVE TAPER LENGTHS	
POSTED SPEED (MPH)	DUAL LT LANES (FT)
25-35	150'
40-45	150'
50-55	250'

MINIMUM STORAGE LENGTH	
POSTED SPEED (MPH)	MINIMUM LENGTH (FT)
40 OR LESS	110'
45 OR MORE	150'

DUAL LEFT (RAISED MEDIAN)



LEFT-TURN LANE (RAISED MEDIAN)

GENERAL NOTES:

1. THE POSTED SPEED LIMIT IS TYPICALLY EQUAL TO THE DESIGN SPEED MINUS 5 MPH.
2. THE DIMENSIONS GIVEN FOR DUAL LEFT (RAISED MEDIAN) IN THE MINIMUM LENGTH TABLES ON THIS SHEET ARE ALSO APPLICABLE FOR DUAL RIGHT-TURN LANES.
3. STORAGE LENGTHS LONGER THAN THE MINIMUMS LISTED ON THIS DRAWING MAY BE DETERMINED USING TRAFFIC ENGINEERING ANALYSIS.
4. FOR THE PLACEMENT OF PAVEMENT ARROWS AND WORDS SEE THE TURN LANE PAVEMENT MARKING STANDARD SHEET, REFER TO TLPM-24.
5. REFER TO STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKERS AND TURN LANE DETAILS STANDARD SHEETS.
6. REFER TO TYPICAL CROSSWALK DETAILS STANDARD FOR CROSSWALK DETAILS.
7. WHITE EDGE LINES AT EDGE OF PAVEMENT ARE REQUIRED WHERE CURBS ARE NOT PRESENT.
8. WHITE EDGE LINE ADJACENT TO CURB AND GUTTER IS NOT REQUIRED.
9. YELLOW EDGE LINES ADJACENT TO RAISED ISLAND ARE REQUIRED, REFER TO TRMRM-24.
10. ASIDE FROM LONG LANE LINE MARKINGS, ALL OTHER PAVEMENT MARKINGS SHALL BE PREFORMED MATERIAL. HOT-APPLIED MARKINGS MAY BE USED ONLY IF APPROVED BY PWD - TRAFFIC ENGINEERING AND OPERATIONS.

SEPTEMBER 2024

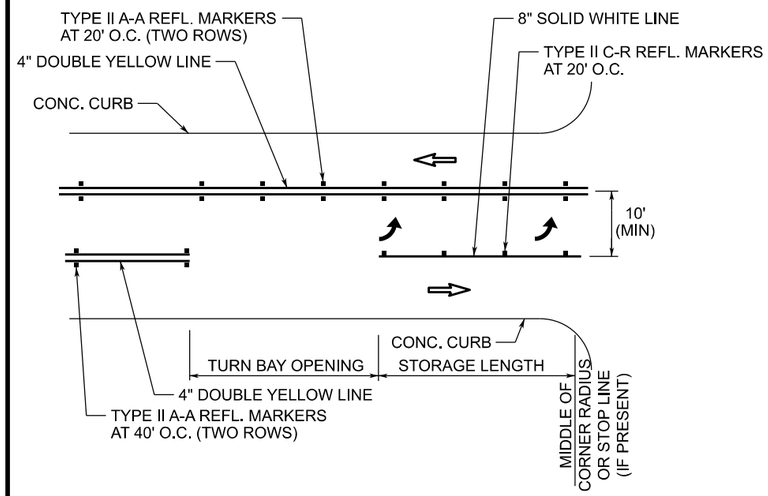
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TRAFFIC ENGINEERING AND OPERATIONS STANDARDS

TURN LANE DETAILS 1

SHEET 01 OF 02 TLD-(1)-24

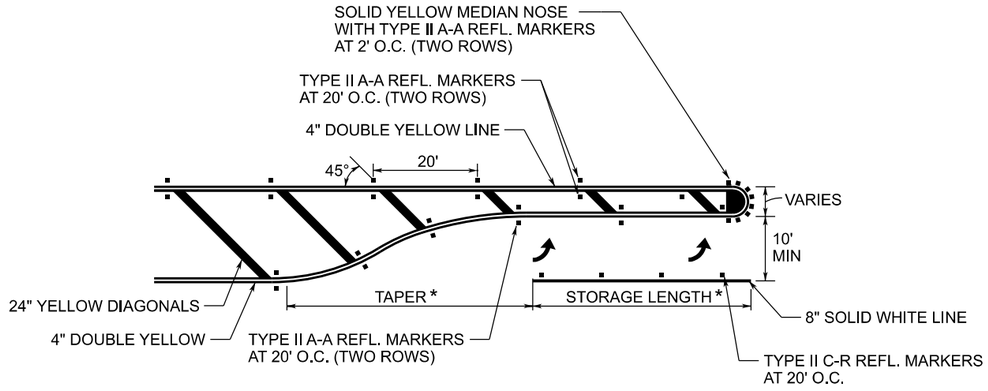
100 % SUBMITTAL	PROJECT NO.: 23-03907	DATE: 05/21/2025
DRWN. BY:	DSGN. BY:	CHKD. BY: L BANDA, P.E.

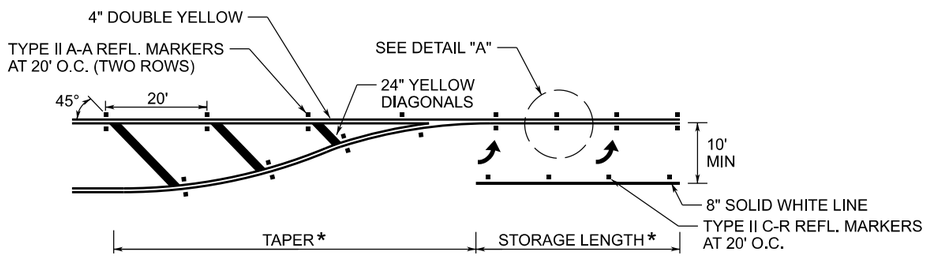


MINIMUM TURN BAY OPENINGS	
POSTED SPEED (MPH)	MINIMUM OPENING (FT)
25-35	60'
≥ 40	100'

MINIMUM STORAGE LENGTH	
POSTED SPEED (MPH)	MINIMUM OPENING (FT)
40 OR LESS	110'
45 OR MORE	150'

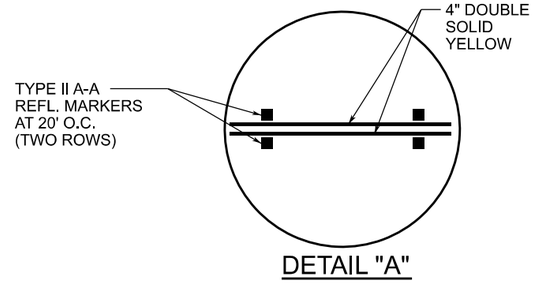
LEFT-TURN LANE





PAINTED MEDIAN LEFT TURN BAY DETAILS

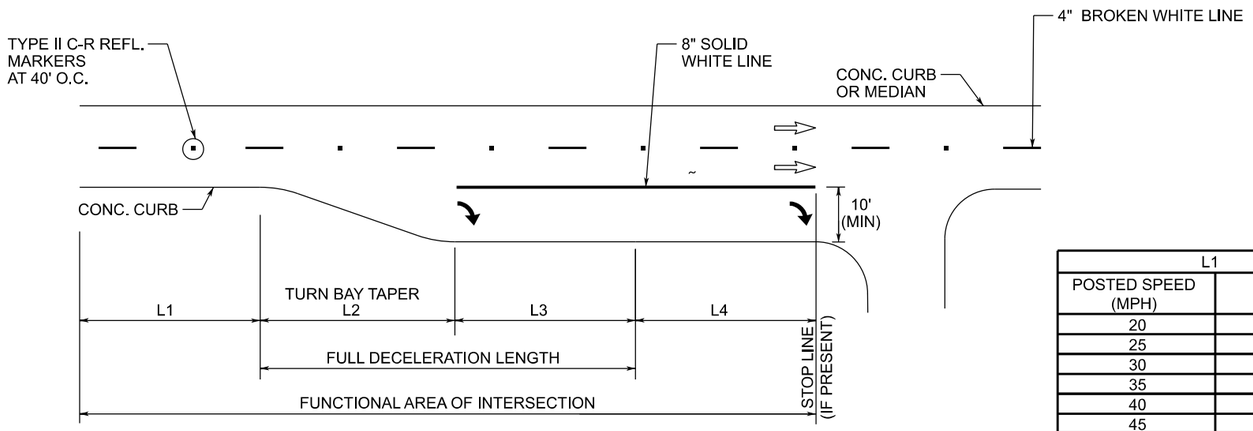
* USE MINIMUM TURN BAY REVERSE CURVE TAPER LENGTH AND MINIMUM STORAGE LENGTH TABLES FOR "LEFT-TURN LANE (RAISED MEDIAN)".



DETAIL "A"

GENERAL NOTES:

1. THE POSTED SPEED LIMIT IS TYPICALLY EQUAL TO THE DESIGN SPEED MINUS 5 MPH.
2. STORAGE LENGTHS LONGER THAN THE MINIMUMS LISTED ON THIS DRAWING MAY BE DETERMINED USING TRAFFIC ENGINEERING ANALYSIS OR APPROXIMATE CALCULATIONS.
3. FOR THE PLACEMENT OF PAVEMENT ARROWS AND WORDS SEE TURN LANE PAVEMENT MARKINGS STANDARD SHEET.
4. REFER TO APPLICABLE STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKERS AND TURN LANE DETAILS STANDARD SHEETS.
5. REFER TO BICYCLE PAVEMENT MARKINGS STANDARD SHEET FOR TYPE AND PLACEMENT.
6. WHITE EDGE LINES AT EDGE OF PAVEMENT ARE REQUIRED WHERE CURBS ARE NOT PRESENT.
7. WHITE EDGE LINE ADJACENT TO CURB AND GUTTER IS NOT REQUIRED.
8. BICYCLE SYMBOL MARKING SHALL FACE THRU LANE OF TRAFFIC.
9. ASIDE FROM LONG LANE LINE MARKINGS, ALL OTHER PAVEMENT MARKINGS SHALL BE PERFORMED. HOT-APPLIED PAVEMENT MARKINGS MAY BE USED ONLY IF APPROVED BY PWD TRAFFIC ENGINEERING & OPERATIONS.
10. ASSUMES A TURNING VEHICLE HAS "CLEARED THE THROUGH LANE" WHEN IT HAS MOVED LATERALLY APPROXIMATELY 9 FT SO THAT A FOLLOWING THROUGH VEHICLE CAN PASS WITHOUT ENCROACHING UPON THE ADJACENT TRAFFIC LANE.
11. THE SPEED DIFFERENTIAL BETWEEN THE TURNING VEHICLE AND FOLLOWING THROUGH VEHICLES IS 10 MPH WHEN THE TURNING VEHICLE "CLEARS THE THROUGH TRAFFIC LANE".
12. 5.8 FT/S^2 DECELERATION WHILE MOVING FROM THE THROUGH LANE INTO THE TURN LANE; 6.5 FT/S^2 AVERAGE DECELERATION AFTER COMPLETING LATERAL SHIFT INTO THE TURN LANE.
13. YELLOW EDGE LINES ADJACENT TO RAISED ISLAND ARE REQUIRED, REFER TO TRMRM-24.



UNSIGNALIZED RIGHT-TURN LANE

L1	
POSTED SPEED (MPH)	LENGTH (FT)
20	75'
25	95'
30	115'
35	130'
40	150'
45	170'
50	185'
55	205'
60	225'
65	240'
70	260'

DESIRABLE FULL DECELERATION LENGTHS	
(L2+L3)	
POSTED SPEED (MPH)	LENGTH (FT)
20	70'
25	115'
30	160'
35	220'
40	275'
45	350'
50	425'
55	515'
60	605'
65	720'
70	820'

SEPTEMBER 2024

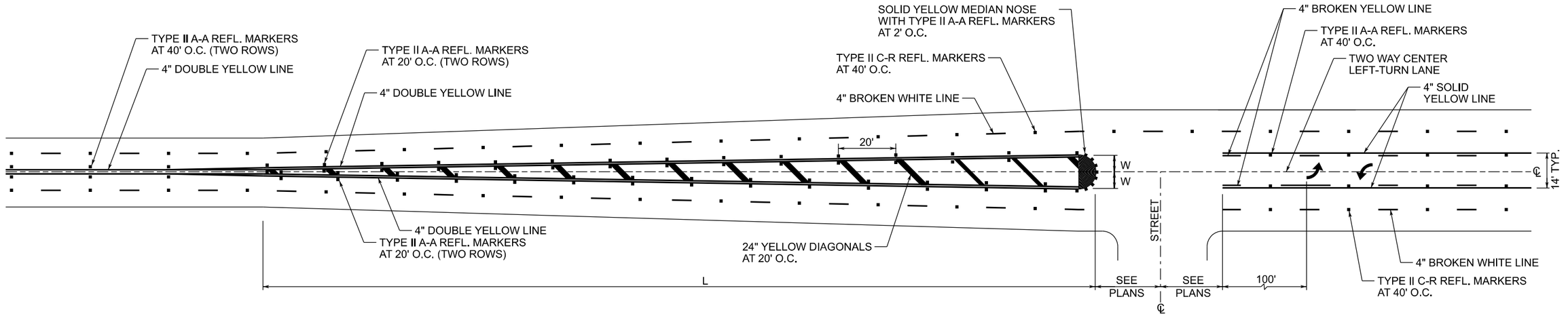
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TRAFFIC ENGINEERING AND OPERATIONS STANDARDS

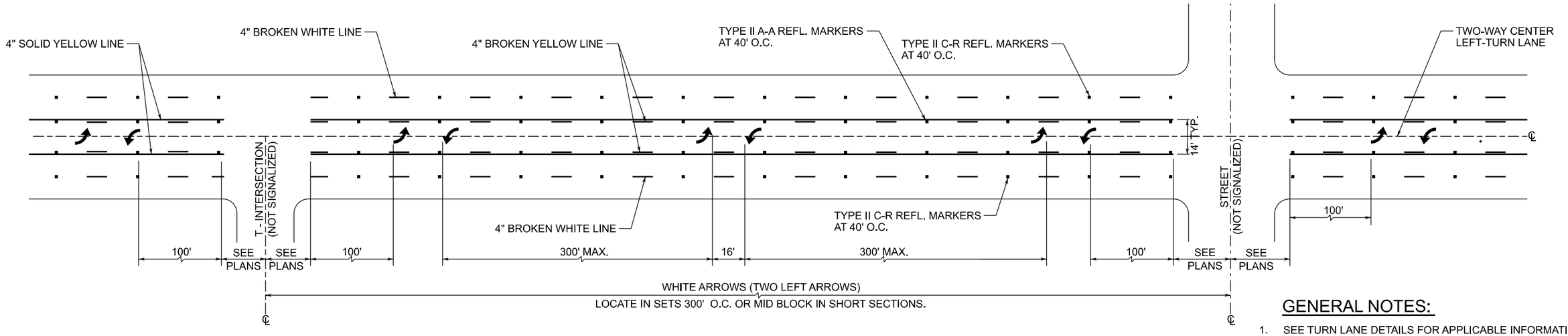
TURN LANE DETAILS 2

SHEET 02 OF 02 TLD-(2)-24

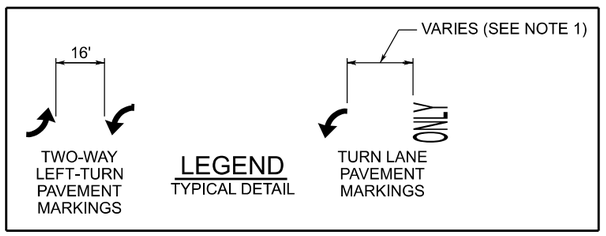
100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/21/2025
DRWN. BY:	DSGN. BY:	CHKD. BY: L BANDA, P.E.	SHEET NO. 345 OF 377



TYPICAL TRANSITION AT BEGINNING AND END OF TWO-WAY CENTER LEFT-TURN LANE



TWO-WAY LEFT-TURN LANE DETAILS NON-SIGNALIZED INTERSECTIONS



POSTED SPEED *	FORMULA
< 45	$L=\frac{WS^2}{60}$
≥ 40	L= WS

TABLE 1 - TYPICAL LENGTH (L)

* 85TH PERCENTILE SPEED MAY BE USED ON ROADS WHERE TRAFFIC SPEEDS NORMALLY EXCEED THE POSTED SPEED LIMIT. CROSSHATCHING LENGTH SHOULD BE ROUNDED UP TO NEAREST 5 FOOT INCREMENT.

L= LENGTH OF CROSSHATCHING (FT)
W= WIDTH OF OFFSET (FT)
S= POSTED SPEED (MPH)

GENERAL NOTES:

1. SEE TURN LANE DETAILS FOR APPLICABLE INFORMATION (TLPM-24).
2. SEE "PAINTED MEDIAN LEFT - TURN BAY DETAILS" ON LEFT TURN AND RIGHT TURN LANE DESIGN STANDARD SHEET 2 FOR APPLICABLE STANDARDS.
3. ASIDE FROM LONG 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.

SEPTEMBER 2024

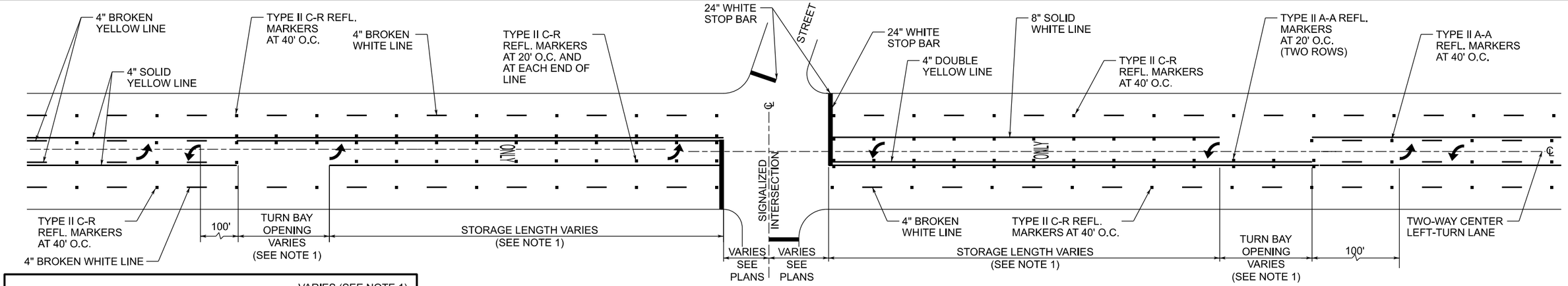
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TRAFFIC ENGINEERING AND OPERATIONS STANDARDS

TWO-WAY LEFT-TURN LANE DETAILS 1

SHEET 01 OF 02 TWLTLD-(1)-24

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/21/2025
DRWN. BY:	DSGN. BY:	CHKD. BY: L BANDA, P.E.	SHEET NO. 346 OF 377



16'

LEGEND
TYPICAL DETAIL

TWO-WAY LEFT-TURN PAVEMENT MARKINGS

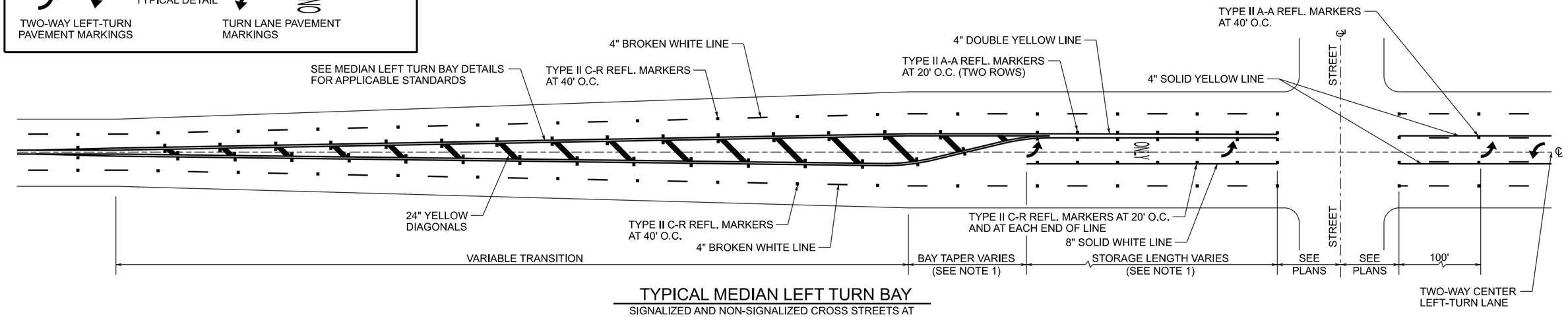
VARIES (SEE NOTE 1)

ONLY

TURN LANE PAVEMENT MARKINGS

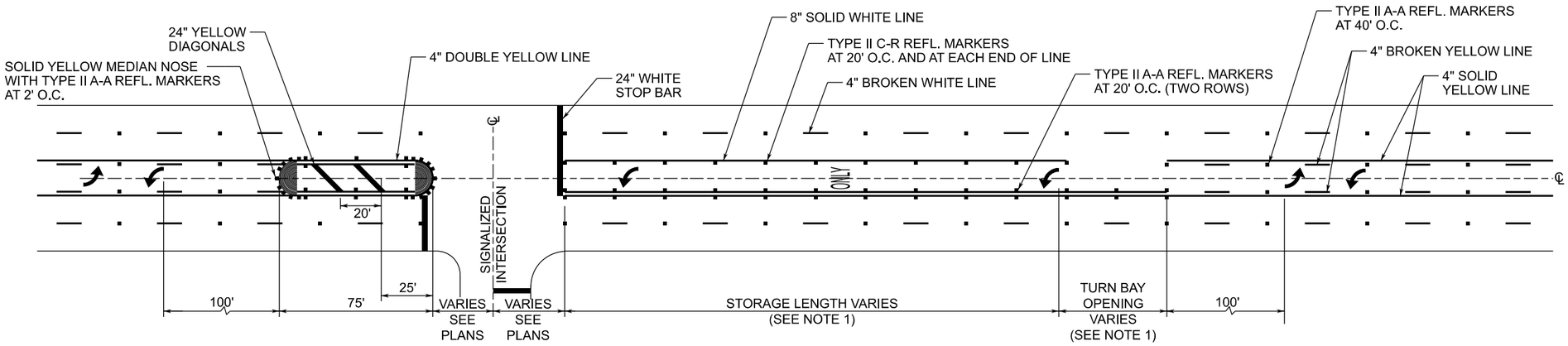
TYPICAL TWO-WAY LEFT-TURN LANE DETAILS

SIGNALIZED INTERSECTION



TYPICAL MEDIAN LEFT TURN BAY

SIGNALIZED AND NON-SIGNALIZED CROSS STREETS AT BEGINNING AND END OF TWO-WAY CENTER LEFT-TURN LANE



TYPICAL TWO-WAY LEFT-TURN LANE DETAILS

SIGNALIZED T INTERSECTION

GENERAL NOTES:

1. SEE TURN LANE DESIGN DETAILS FOR APPLICABLE INFORMATION, REFER TLPM-24
2. ASIDE FROM LONG 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.
3. YELLOW EDGE LINES ADJACENT TO RAISED ISLAND ARE REQUIRED, REFER TO TRMRM-24.

SEPTEMBER 2024

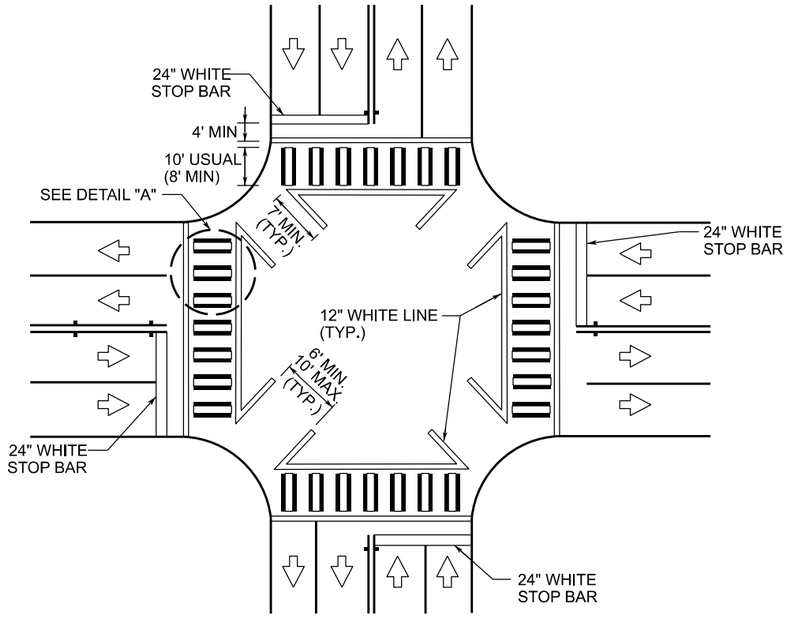
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TRAFFIC ENGINEERING AND OPERATIONS STANDARDS

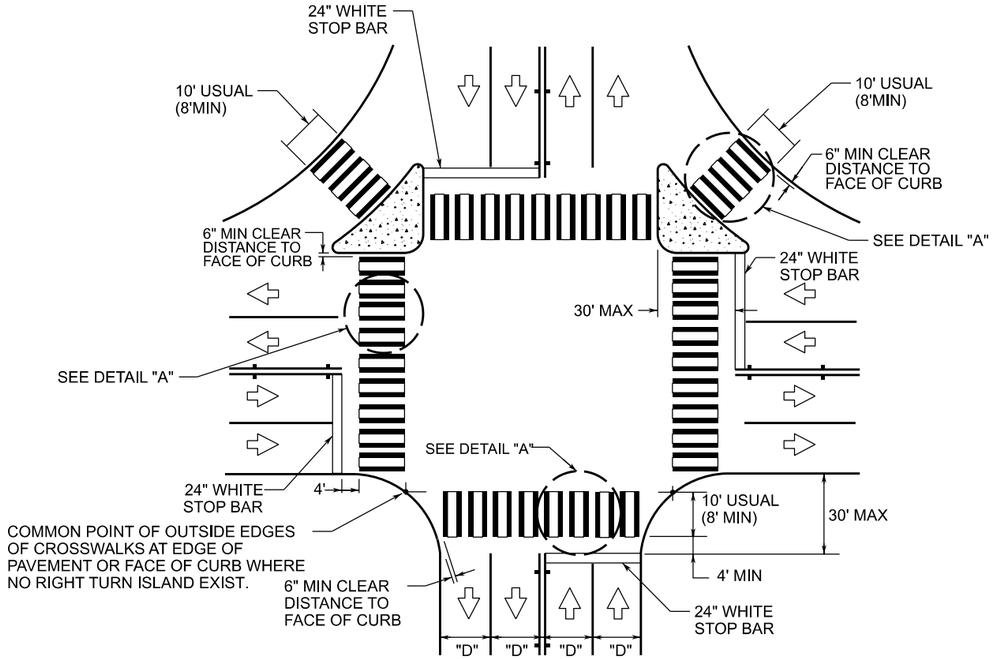
TWO-WAY LEFT-TURN LANE DETAILS 2

SHEET 02 OF 02 TWLTLD-(2)-24

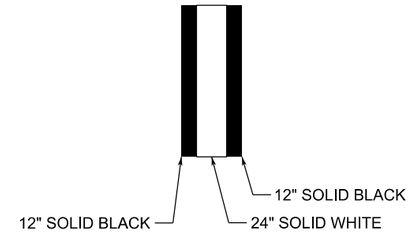
100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/21/2025
DRWN. BY:	DSGN. BY:	CHKD. BY: L BANDA, P.E.	SHEET NO. 347 OF 377



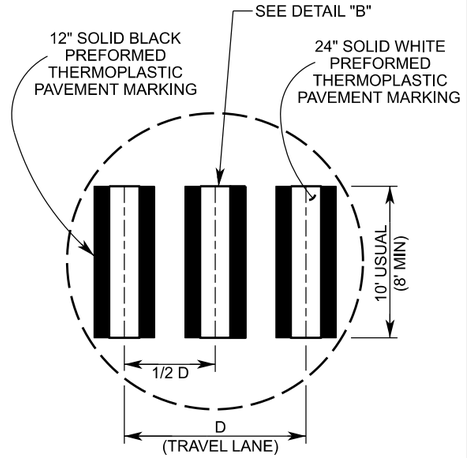
EXCLUSIVE PEDESTRIAN PHASE



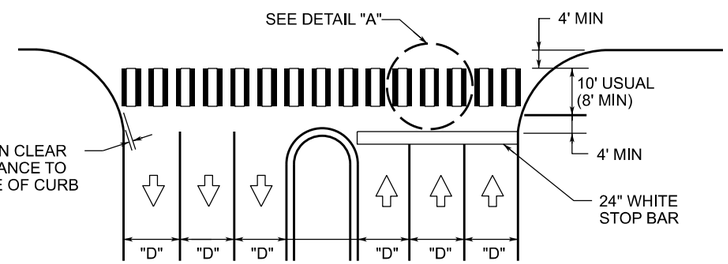
INTERSECTION WITH RIGHT TURN ISLANDS



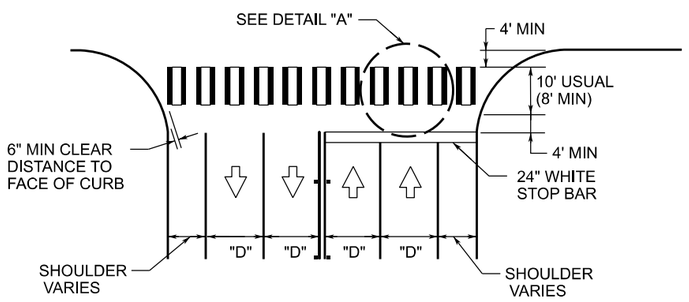
DETAIL B



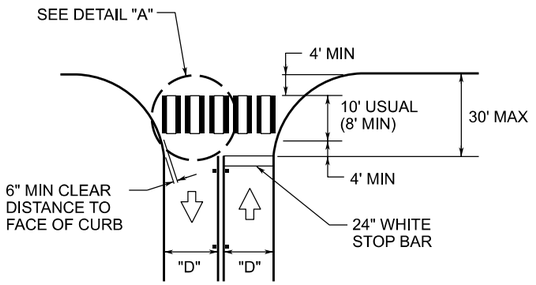
DETAIL A



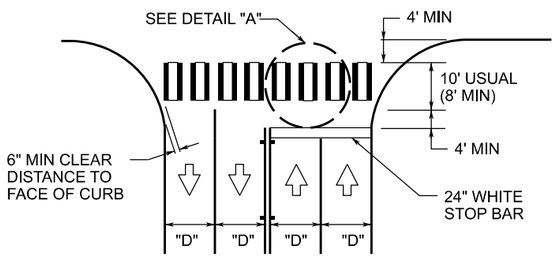
MULTI - LANES



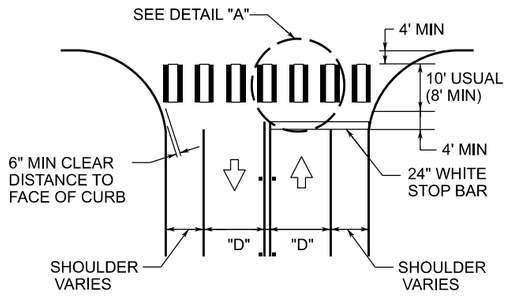
FOUR LANES WITH SHOULDERS



TWO LANES



FOUR LANES



TWO LANES WITH SHOULDERS

GENERAL NOTES

1. "D" IS EQUAL TO THE WIDTH OF TRAVEL LANE. SEE TEXAS MUTCD 3B.18
2. PREFORMED THERMOPLASTIC SHALL BE USED FOR ALL CROSSWALK PAVEMENT MARKINGS.
3. PREFORMED THERMOPLASTIC MATERIAL SHALL BE SUPPLIED BY A MANUFACTURER LISTED ON TxDOT'S MATERIAL PRODUCER LIST (MPL).

SEPTEMBER 2024

CITY OF SAN ANTONIO

PUBLIC WORKS DEPARTMENT

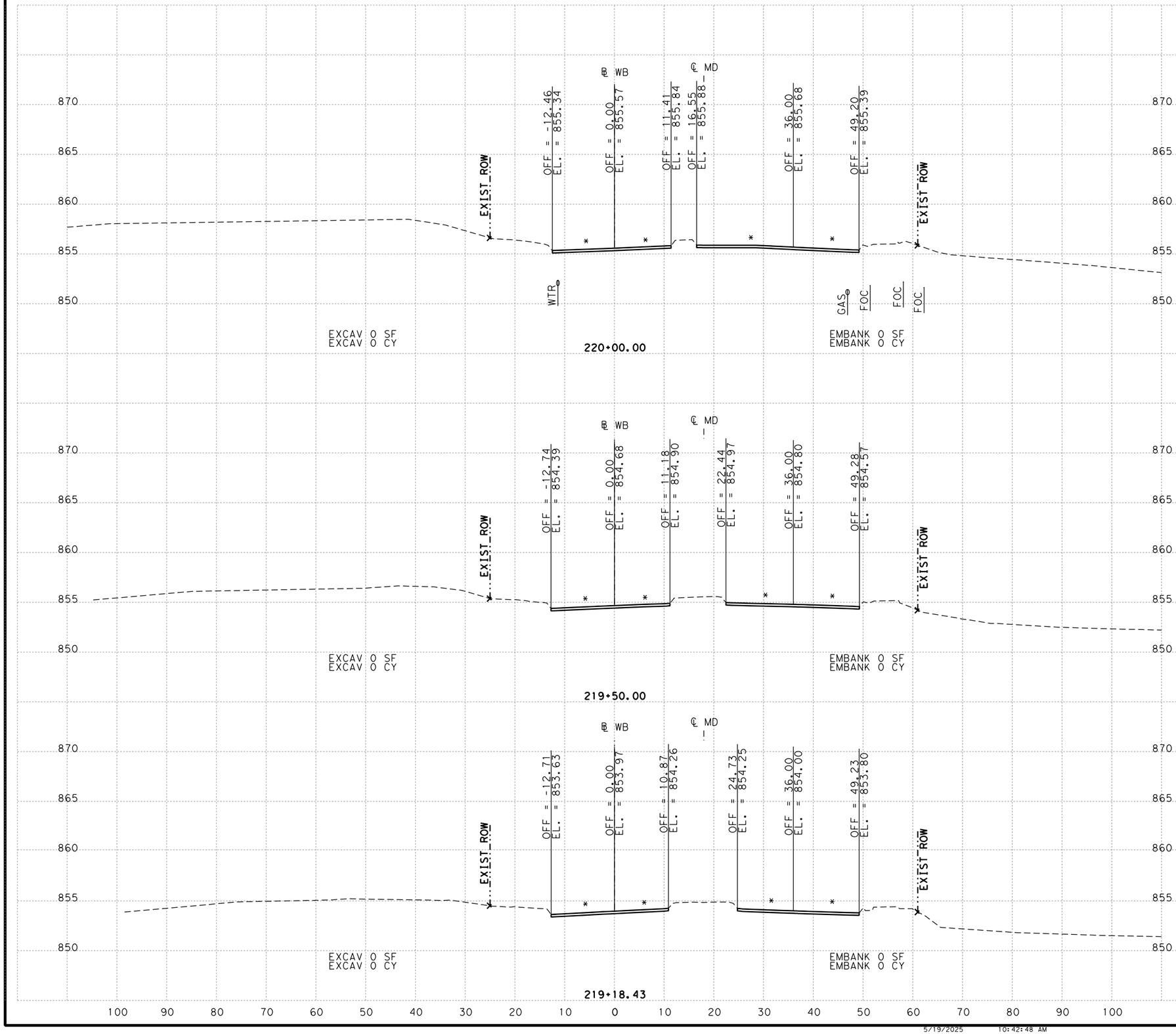
TRAFFIC ENGINEERING AND OPERATIONS STANDARDS

TYPICAL CROSSWALK DETAILS

SHEET 01 OF 01

TCD-24

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 05/21/2025
DRWN. BY:	DSGN. BY:	CHKD. BY: L BANDA, P.E.	SHEET NO. 348 OF 377



NOTES:

1. THE TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES IN THE PLANS INDICATE LOCATIONS WHERE UTILITY INFORMATION SHOWN IS KNOWN TO FALL OF OR EXCEED THE STATED TYPICAL QUALITY LEVEL.

STORM DRAINAGE MAINS	QLC
SANITARY SEWER MAINS	QLC
WATER DISTRIBUTION MAINS	QLC
NATURAL GAS MAINS	QLC
OVERHEAD ELECTRIC LINES	QLC
OVERHEAD CATV LINES	QLC
UNDERGROUND CATV LINES	QLC
OVERHEAD TELECOMMUNICATION LINES	QLC
UNDERGROUND TELECOMMUNICATION LINES	QLC
ALL UNDERGROUND UTILITY SERVICE LINES	QLC

2. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

* EXISTING CROSS SLOPE

GRAPHIC SCALE
0 10′ 20′
SCALE: H: 1" = 20′
V: 1" = 10′

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

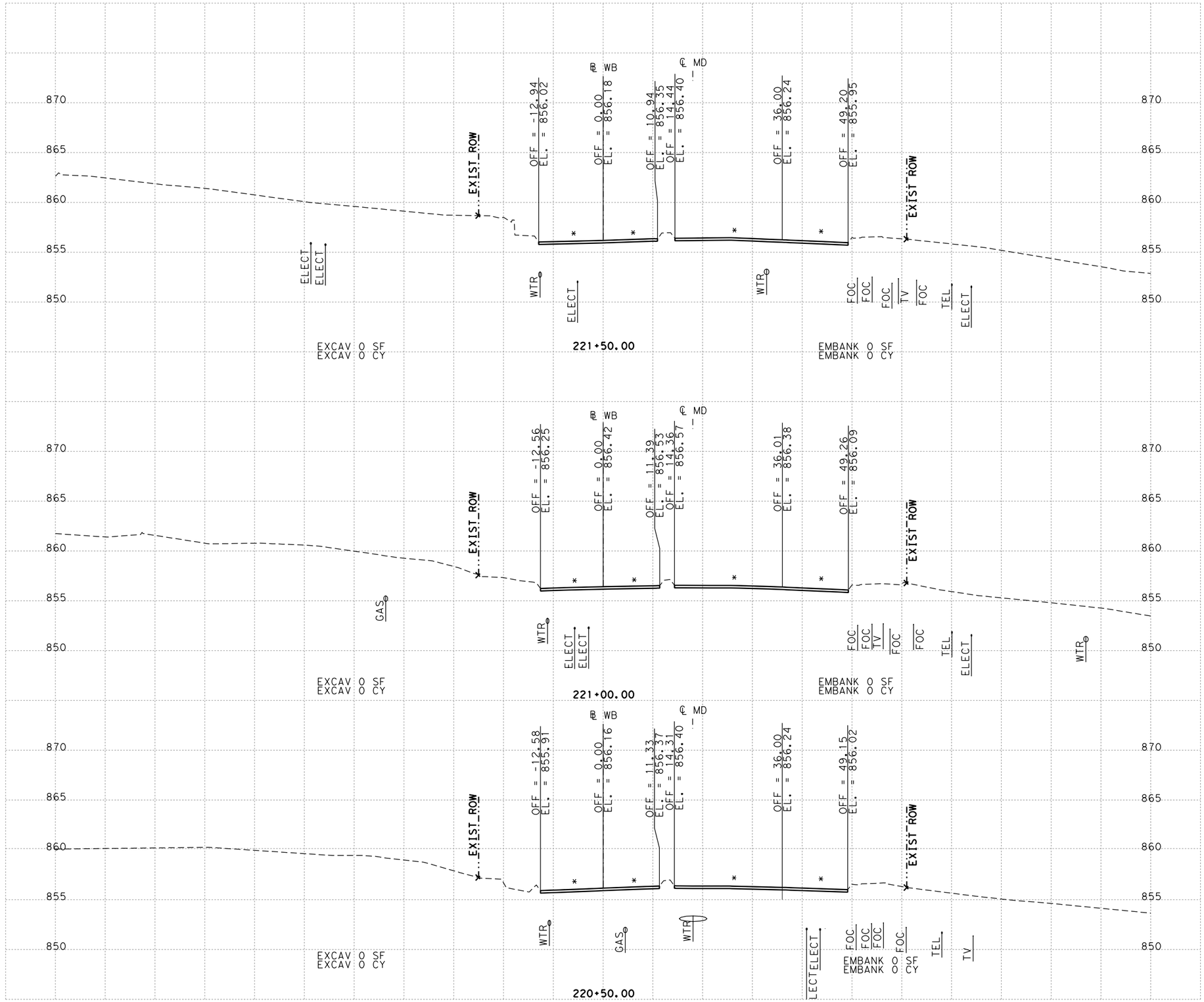
CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS

MILITARY DRIVE

CROSS SECTIONS
STA 219+18.43 TO STA 220+00.00

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: DR	CHKD. BY: EV	SHEET NO. 349 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms82939\C_MD_S_XS_95.dgn
5/19/2025 10:42:48 AM



NOTES:

1. THE TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES IN THE PLANS INDICATE LOCATIONS WHERE UTILITY INFORMATION SHOWN IS KNOWN TO FALL OF OR EXCEED THE STATED TYPICAL QUALITY LEVEL.

STORM DRAINAGE MAINS	QLC
SANITARY SEWER MAINS	QLC
WATER DISTRIBUTION MAINS	QLC
NATURAL GAS MAINS	QLC
OVERHEAD ELECTRIC LINES	QLC
OVERHEAD CATV LINES	QLC
UNDERGROUND CATV LINES	QLC
OVERHEAD TELECOMMUNICATION LINES	QLC
UNDERGROUND TELECOMMUNICATION LINES	QLC
ALL UNDERGROUND UTILITY SERVICE LINES	QLC

2. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

* EXISTING CROSS SLOPE

GRAPHIC SCALE
0 10' 20'
SCALE: H: 1" = 20'
V: 1" = 10'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS

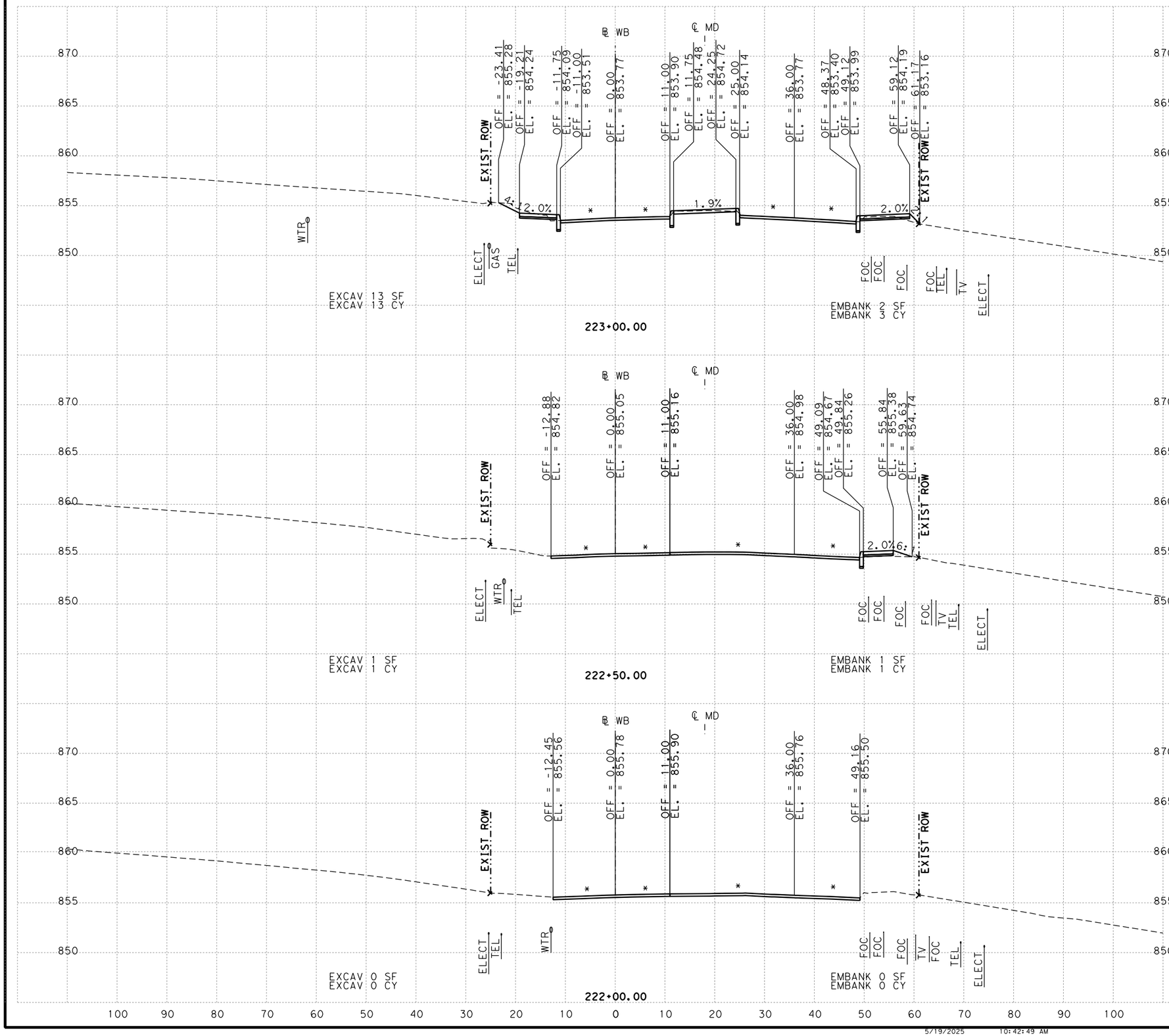
MILITARY DRIVE

CROSS SECTIONS
STA 220+50.00 TO STA 221+50.00

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: DR	CHKD. BY: EV	SHEET NO. 350 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms82939\C_MD_S_XS_95.dgn
5/19/2025 10:42:48 AM

5/19/2025 10:42:48 AM
c:\bms\pwe-useast-006\knerr.chris\dms82939\C_MD_S_XS_95.dgn



NOTES:

1. THE TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES IN THE PLANS INDICATE LOCATIONS WHERE UTILITY INFORMATION SHOWN IS KNOWN TO FALL OF OR EXCEED THE STATED TYPICAL QUALITY LEVEL.

STORM DRAINAGE MAINS	QLC
SANITARY SEWER MAINS	QLC
WATER DISTRIBUTION MAINS	QLC
NATURAL GAS MAINS	QLC
OVERHEAD ELECTRIC LINES	QLC
OVERHEAD CATV LINES	QLC
UNDERGROUND CATV LINES	QLC
OVERHEAD TELECOMMUNICATION LINES	QLC
UNDERGROUND TELECOMMUNICATION LINES	QLC
ALL UNDERGROUND UTILITY SERVICE LINES	QLC

2. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

* EXISTING CROSS SLOPE

GRAPHIC SCALE
0 10' 20'
SCALE: H: 1" = 20'
V: 1" = 10'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER

5/19/2025

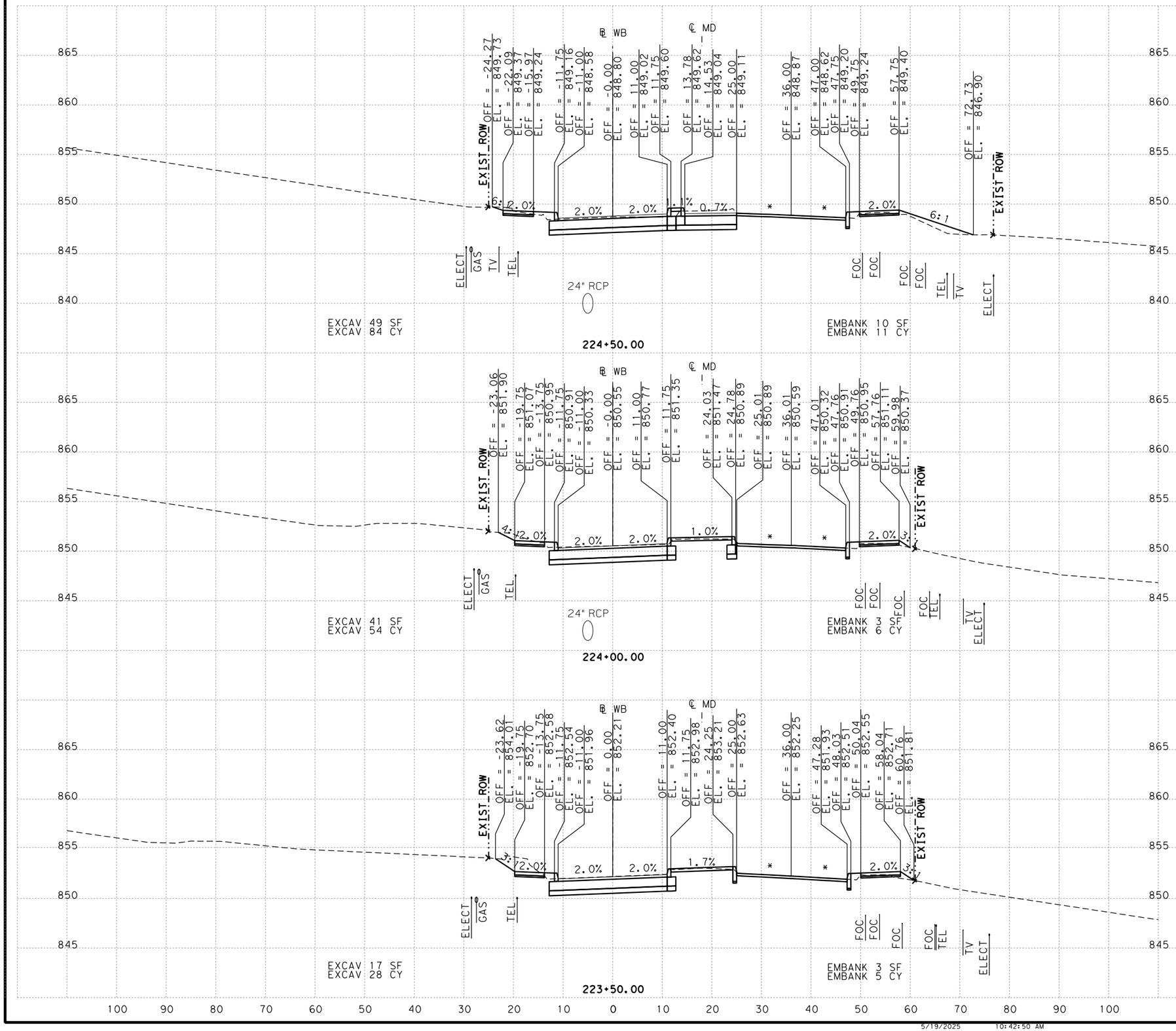
consor
F-12040
8023 VANTAGE DR. STE 300.
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS

MILITARY DRIVE

CROSS SECTIONS
STA 222+00.00 TO STA 223+00.00

100 % SUBMITTAL	PROJECT NO.: 23-03907			DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: DR	CHKD. BY: EV		SHEET NO. 351 OF 377



NOTES:

1. THE TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES IN THE PLANS INDICATE LOCATIONS WHERE UTILITY INFORMATION SHOWN IS KNOWN TO FALL OF OR EXCEED THE STATED TYPICAL QUALITY LEVEL.

STORM DRAINAGE MAINS	QLC
SANITARY SEWER MAINS	QLC
WATER DISTRIBUTION MAINS	QLC
NATURAL GAS MAINS	QLC
OVERHEAD ELECTRIC LINES	QLC
OVERHEAD CATV LINES	QLC
UNDERGROUND CATV LINES	QLC
OVERHEAD TELECOMMUNICATION LINES	QLC
UNDERGROUND TELECOMMUNICATION LINES	QLC
ALL UNDERGROUND UTILITY SERVICE LINES	QLC

2. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

* EXISTING CROSS SLOPE

GRAPHIC SCALE
0 10' 20'
SCALE: H: 1" = 20'
V: 1" = 10'

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

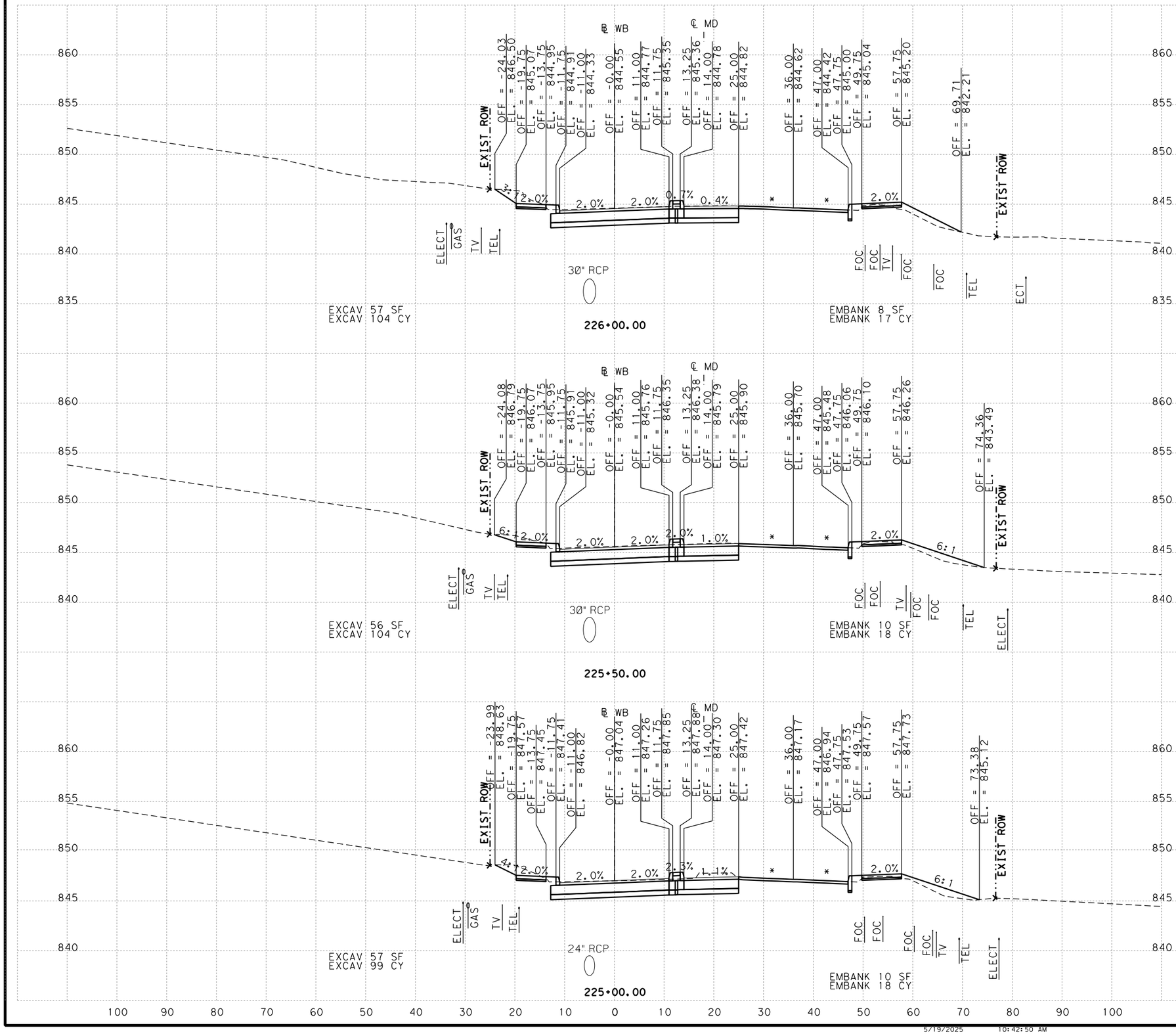
CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS

MILITARY DRIVE

CROSS SECTIONS
STA 223+50.00 TO STA 224+50.00

100 % SUBMITTAL	PROJECT NO.: 23-03907			DATE: 5/19/2025	
DRWN. BY: CK	DSGN. BY: DR	CHKD. BY: EV		SHEET NO. 352 OF 377	

c:\bms\pwe-useast-006\knerr.chris\dms82939\C_MD_S_XS_95.dgn
10:42:50 AM
5/19/2025



NOTES:

1. THE TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES IN THE PLANS INDICATE LOCATIONS WHERE UTILITY INFORMATION SHOWN IS KNOWN TO FALL OF OR EXCEED THE STATED TYPICAL QUALITY LEVEL.

STORM DRAINAGE MAINS	QLC
SANITARY SEWER MAINS	QLC
WATER DISTRIBUTION MAINS	QLC
NATURAL GAS MAINS	QLC
OVERHEAD ELECTRIC LINES	QLC
OVERHEAD CATV LINES	QLC
UNDERGROUND CATV LINES	QLC
OVERHEAD TELECOMMUNICATION LINES	QLC
UNDERGROUND TELECOMMUNICATION LINES	QLC
ALL UNDERGROUND UTILITY SERVICE LINES	QLC

2. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

* EXISTING CROSS SLOPE

GRAPHIC SCALE
0 10' 20'
SCALE: H: 1" = 20'
V: 1" = 10'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

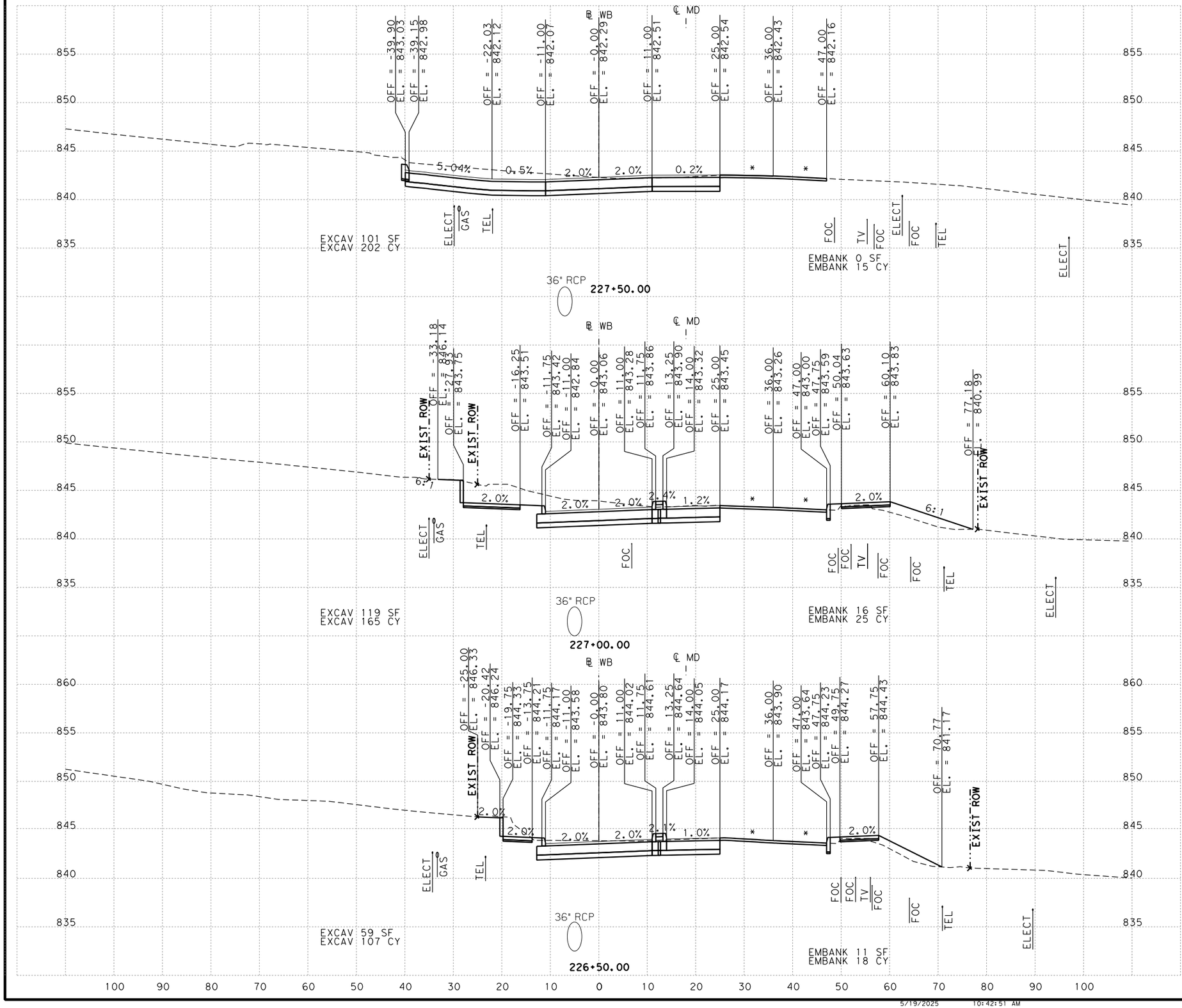
consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS

MILITARY DRIVE

CROSS SECTIONS
STA 225+00.00 TO STA 226+00.00

100 % SUBMITTAL	PROJECT NO.: 23-03907			DATE: 5/19/2025	
DRWN. BY: CK	DSGN. BY: DR	CHKD. BY: EV		SHEET NO. 353 OF 377	



NOTES:

1. THE TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES IN THE PLANS INDICATE LOCATIONS WHERE UTILITY INFORMATION SHOWN IS KNOWN TO FALL OF OR EXCEED THE STATED TYPICAL QUALITY LEVEL.

STORM DRAINAGE MAINS	QLC
SANITARY SEWER MAINS	QLC
WATER DISTRIBUTION MAINS	QLC
NATURAL GAS MAINS	QLC
OVERHEAD ELECTRIC LINES	QLC
OVERHEAD CATV LINES	QLC
UNDERGROUND CATV LINES	QLC
OVERHEAD TELECOMMUNICATION LINES	QLC
UNDERGROUND TELECOMMUNICATION LINES	QLC
ALL UNDERGROUND UTILITY SERVICE LINES	QLC

2. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

* EXISTING CROSS SLOPE

GRAPHIC SCALE
0 10' 20'
SCALE: H: 1" = 20'
V: 1" = 10'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

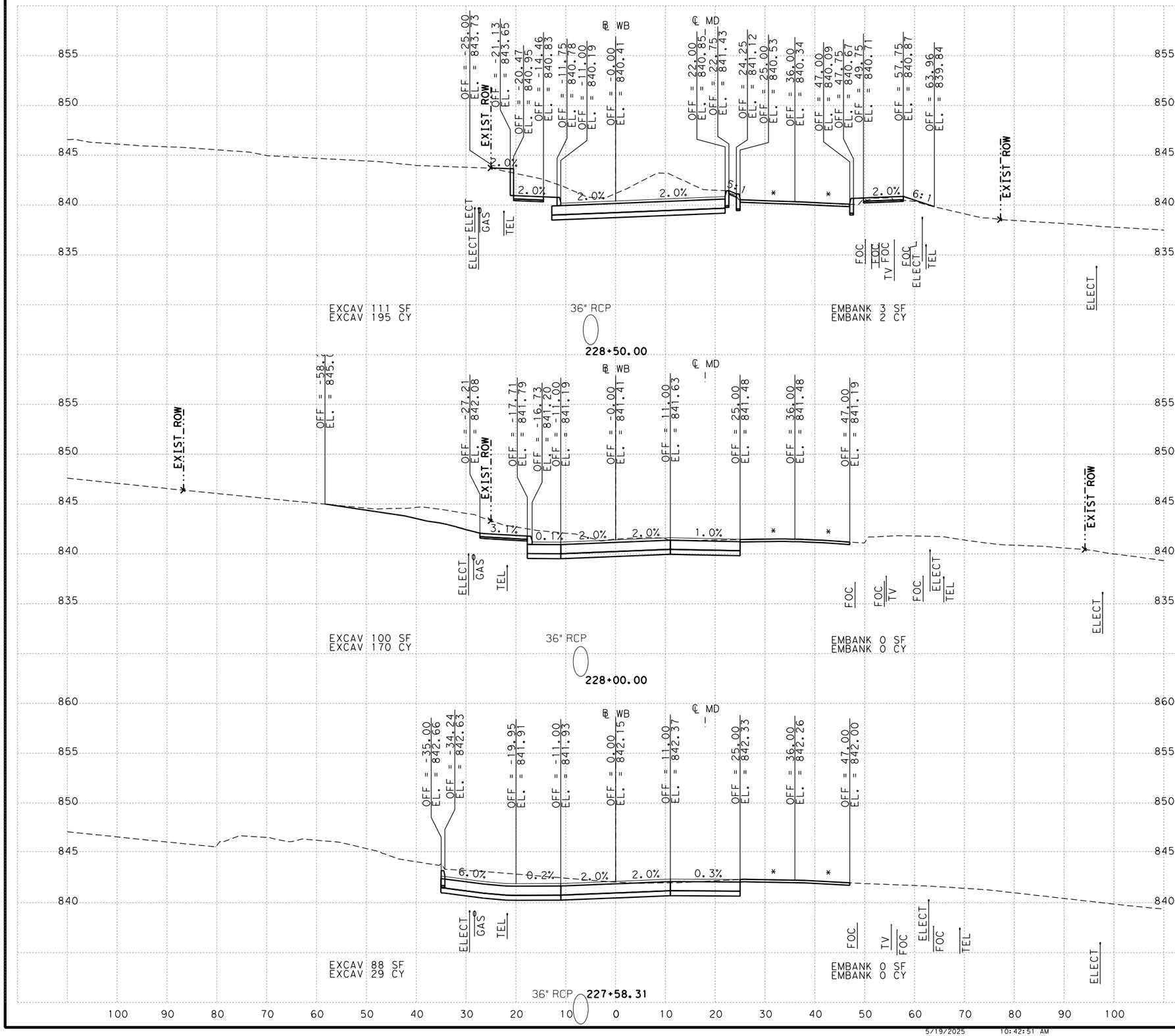
CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS

MILITARY DRIVE

CROSS SECTIONS
STA 226+50.00 TO STA 227+50.00

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: DR	CHKD. BY: EV	SHEET NO. 354 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms82939\C_MD_S_XS_95.dgn
5/19/2025 10:42:51 AM



NOTES:

1. THE TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES IN THE PLANS INDICATE LOCATIONS WHERE UTILITY INFORMATION SHOWN IS KNOWN TO FALL OF OR EXCEED THE STATED TYPICAL QUALITY LEVEL.

STORM DRAINAGE MAINS	QLC
SANITARY SEWER MAINS	QLC
WATER DISTRIBUTION MAINS	QLC
NATURAL GAS MAINS	QLC
OVERHEAD ELECTRIC LINES	QLC
OVERHEAD CATV LINES	QLC
UNDERGROUND CATV LINES	QLC
OVERHEAD TELECOMMUNICATION LINES	QLC
UNDERGROUND TELECOMMUNICATION LINES	QLC
ALL UNDERGROUND UTILITY SERVICE LINES	QLC

2. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

* EXISTING CROSS SLOPE

GRAPHIC SCALE
0 10' 20'
SCALE: H: 1" = 20'
V: 1" = 10'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

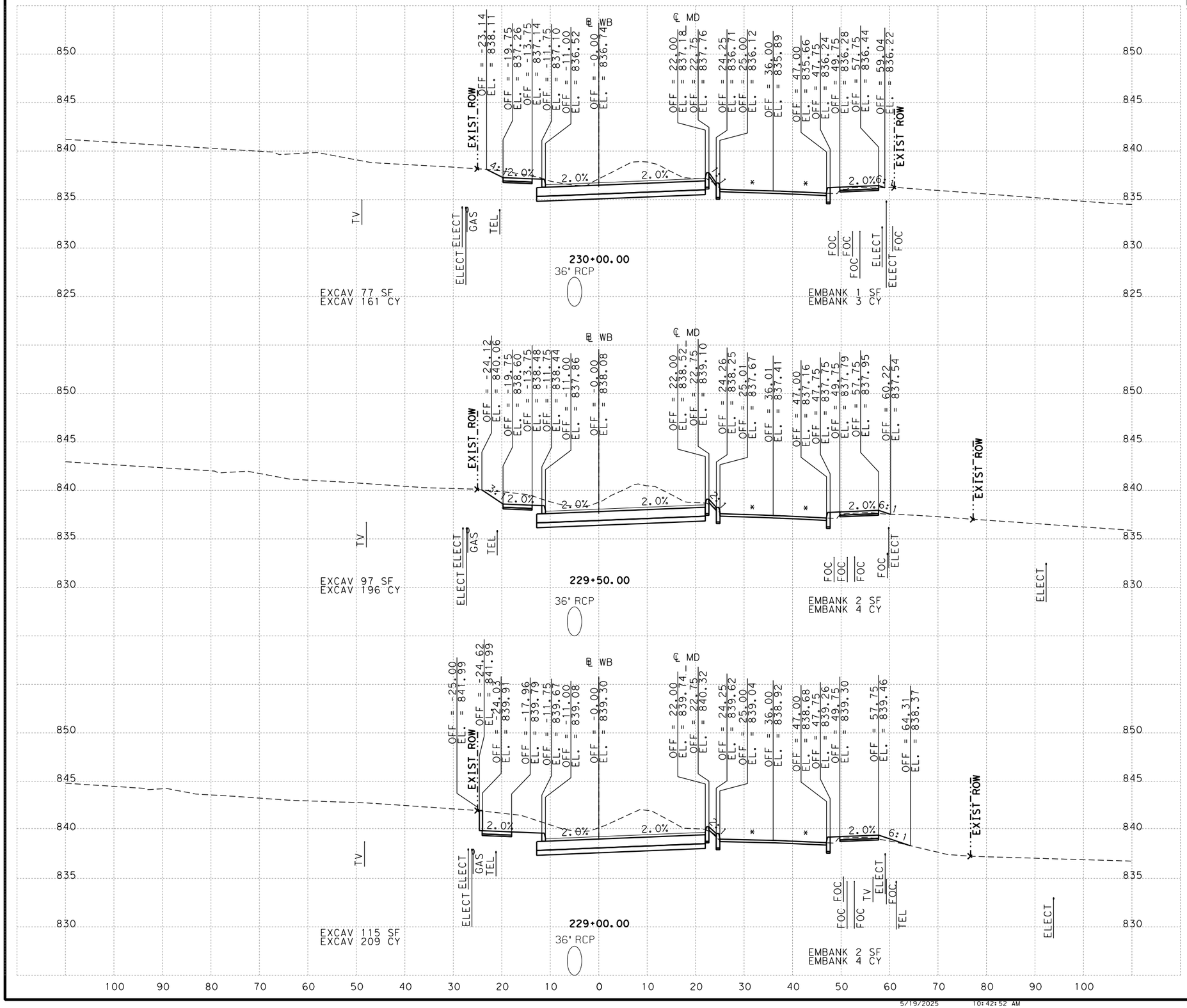
CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS

MILITARY DRIVE

CROSS SECTIONS
STA 227+58.31 TO STA 228+50.00

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: DR	CHKD. BY: EV	SHEET NO. 355 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms82939\C_MD_S_XS_95.dgn
5/19/2025 10:42:51 AM



NOTES:

1. THE TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES IN THE PLANS INDICATE LOCATIONS WHERE UTILITY INFORMATION SHOWN IS KNOWN TO FALL OF OR EXCEED THE STATED TYPICAL QUALITY LEVEL.

STORM DRAINAGE MAINS	QLC
SANITARY SEWER MAINS	QLC
WATER DISTRIBUTION MAINS	QLC
NATURAL GAS MAINS	QLC
OVERHEAD ELECTRIC LINES	QLC
OVERHEAD CATV LINES	QLC
UNDERGROUND CATV LINES	QLC
OVERHEAD TELECOMMUNICATION LINES	QLC
UNDERGROUND TELECOMMUNICATION LINES	QLC
ALL UNDERGROUND UTILITY SERVICE LINES	QLC

2. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

* EXISTING CROSS SLOPE

GRAPHIC SCALE
0 10' 20'
SCALE: H: 1" = 20'
V: 1" = 10'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

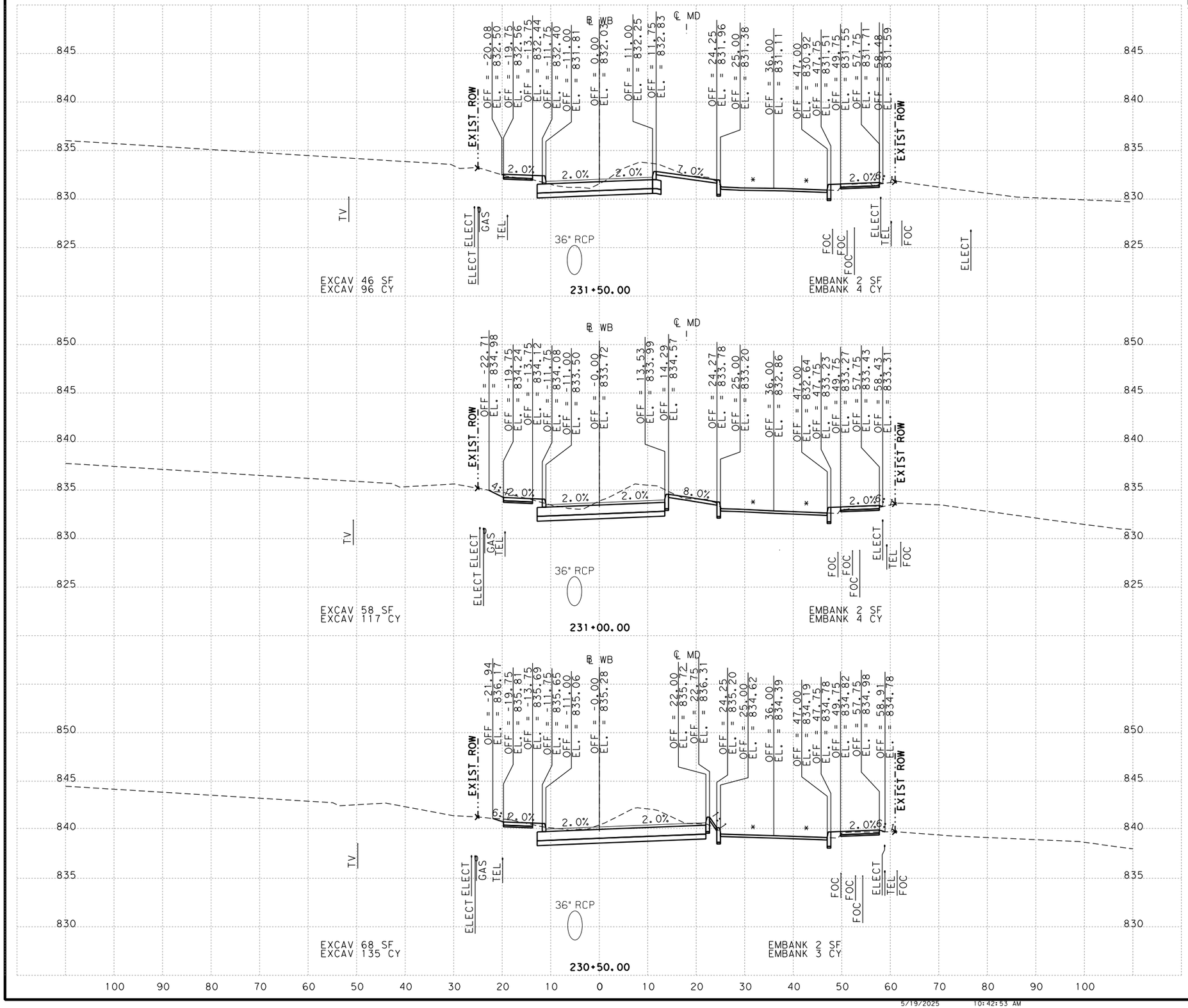
CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS

MILITARY DRIVE

CROSS SECTIONS
STA 229+00.00 TO STA 230+00.00

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: DR	CHKD. BY: EV	SHEET NO. 356 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms82939\C_MD_S_XS_95.dgn
5/19/2025 10:42:52 AM



NOTES:

1. THE TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES IN THE PLANS INDICATE LOCATIONS WHERE UTILITY INFORMATION SHOWN IS KNOWN TO FALL OF OR EXCEED THE STATED TYPICAL QUALITY LEVEL.

STORM DRAINAGE MAINS	QLC
SANITARY SEWER MAINS	QLC
WATER DISTRIBUTION MAINS	QLC
NATURAL GAS MAINS	QLC
OVERHEAD ELECTRIC LINES	QLC
OVERHEAD CATV LINES	QLC
UNDERGROUND CATV LINES	QLC
OVERHEAD TELECOMMUNICATION LINES	QLC
UNDERGROUND TELECOMMUNICATION LINES	QLC
ALL UNDERGROUND UTILITY SERVICE LINES	QLC

2. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

* EXISTING CROSS SLOPE

GRAPHIC SCALE
0 10' 20'
SCALE: H: 1" = 20'
V: 1" = 10'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300.
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

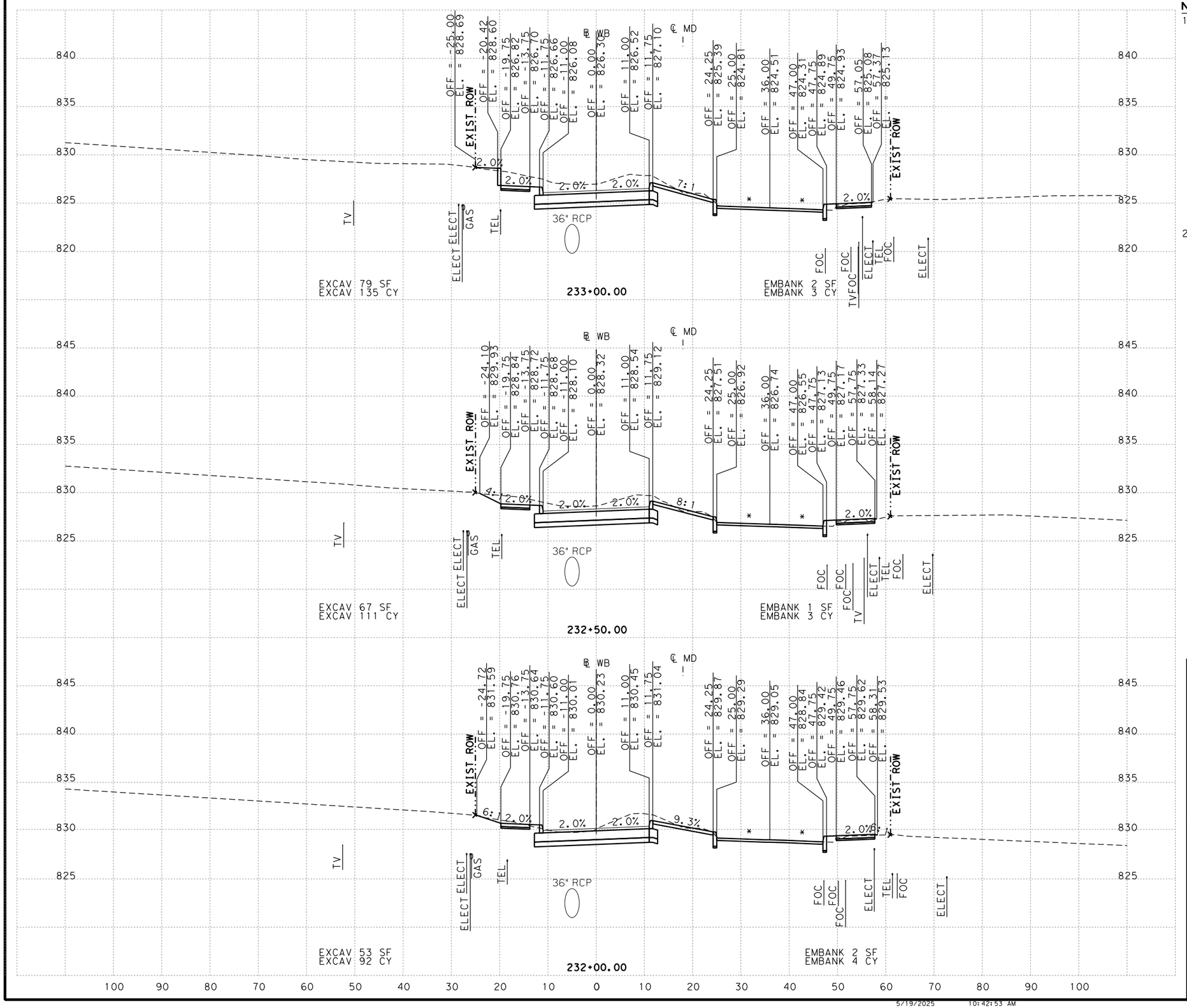
CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS

MILITARY DRIVE

CROSS SECTIONS
STA 230+50.00 TO STA 231+50.00

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: DR	CHKD. BY: EV	SHEET NO. 357 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms82939\C_MD_S_XS_95.dgn
5/19/2025 10:42:53 AM



NOTES:

1. THE TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES IN THE PLANS INDICATE LOCATIONS WHERE UTILITY INFORMATION SHOWN IS KNOWN TO FALL OF OR EXCEED THE STATED TYPICAL QUALITY LEVEL.

STORM DRAINAGE MAINS	QLC
SANITARY SEWER MAINS	QLC
WATER DISTRIBUTION MAINS	QLC
NATURAL GAS MAINS	QLC
OVERHEAD ELECTRIC LINES	QLC
OVERHEAD CATV LINES	QLC
UNDERGROUND CATV LINES	QLC
OVERHEAD TELECOMMUNICATION LINES	QLC
UNDERGROUND TELECOMMUNICATION LINES	QLC
ALL UNDERGROUND UTILITY SERVICE LINES	QLC

2. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

* EXISTING CROSS SLOPE

GRAPHIC SCALE
0 10' 20'
SCALE: H: 1" = 20'
V: 1" = 10'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

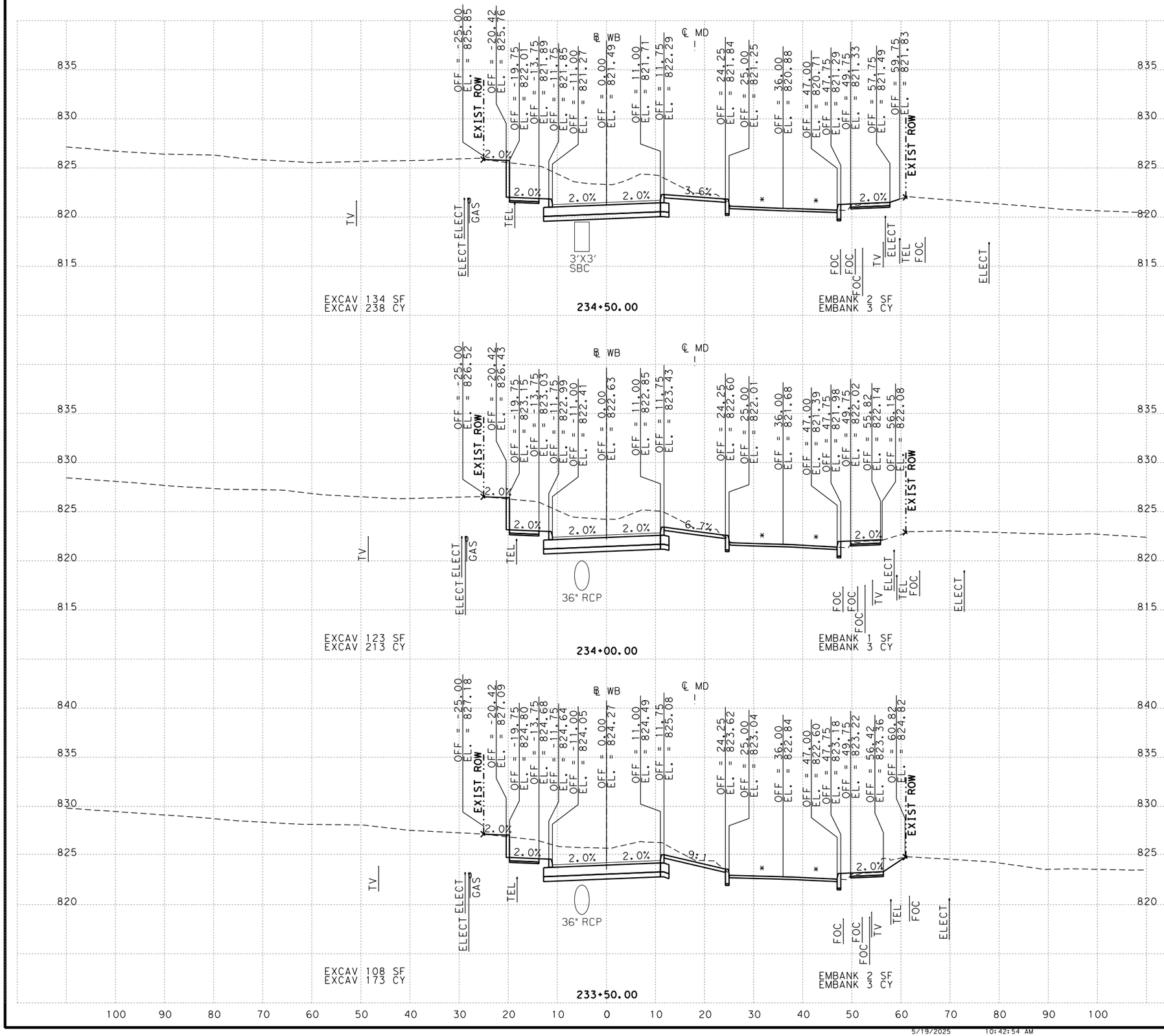
consor
F-12040
8023 VANTAGE DR. STE 300.
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS

MILITARY DRIVE

CROSS SECTIONS
STA 232+00.00 TO STA 233+00.00

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: DR	CHKD. BY: EV	SHEET NO. 358 OF 377



NOTES:

1. THE TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES IN THE PLANS INDICATE LOCATIONS WHERE UTILITY INFORMATION SHOWN IS KNOWN TO FALL OF OR EXCEED THE STATED TYPICAL QUALITY LEVEL.

STORM DRAINAGE MAINS	QLC
SANITARY SEWER MAINS	QLC
WATER DISTRIBUTION MAINS	QLC
NATURAL GAS MAINS	QLC
OVERHEAD ELECTRIC LINES	QLC
OVERHEAD CATV LINES	QLC
UNDERGROUND CATV LINES	QLC
OVERHEAD TELECOMMUNICATION LINES	QLC
UNDERGROUND TELECOMMUNICATION LINES	QLC
ALL UNDERGROUND UTILITY SERVICE LINES	QLC

2. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

* EXISTING CROSS SLOPE

GRAPHIC SCALE
0 10' 20'
SCALE: H: 1" = 20'
V: 1" = 10'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS

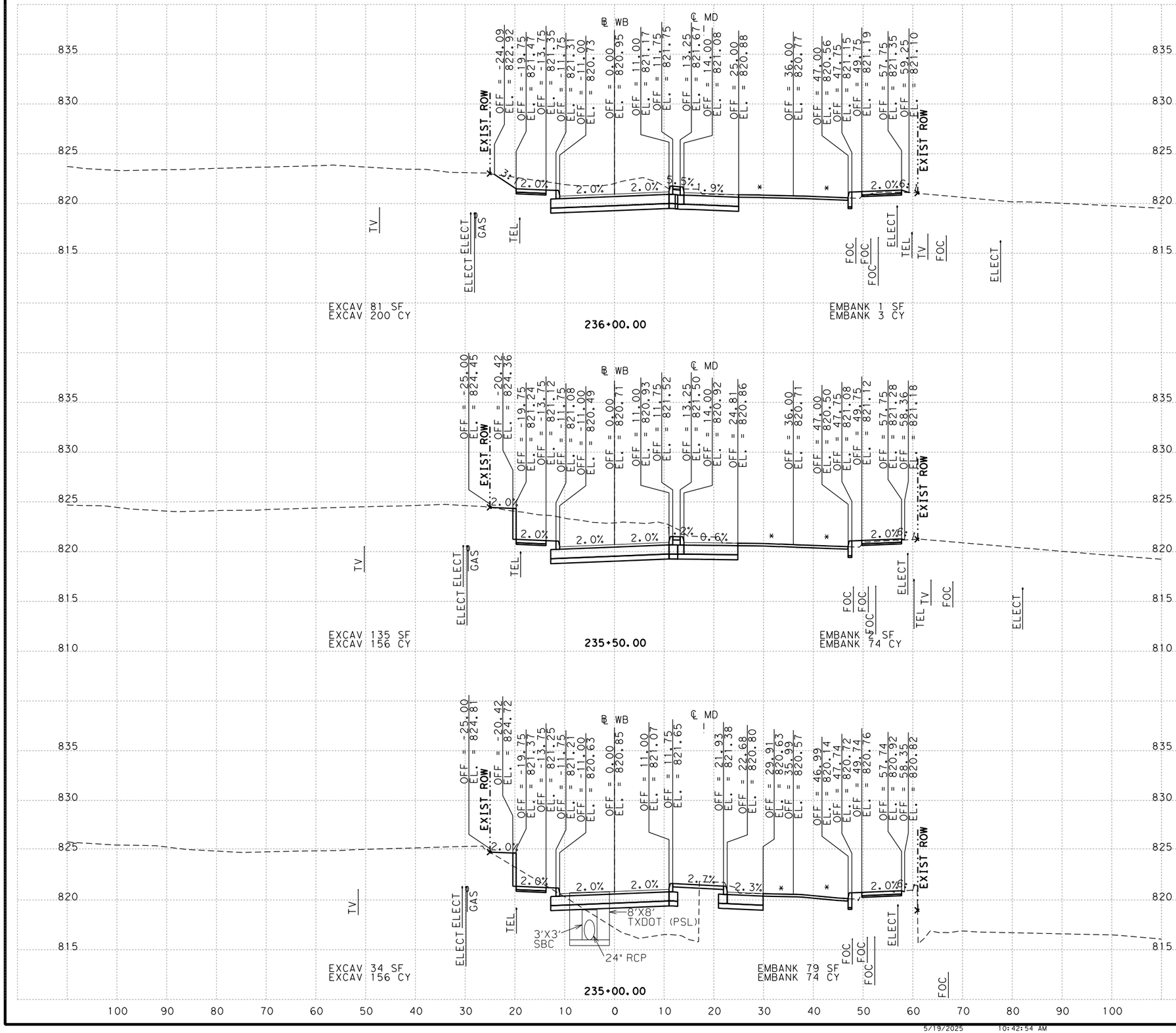
MILITARY DRIVE

CROSS SECTIONS
STA 233+50.00 TO STA 234+50.00

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: DR	CHKD. BY: EV	SHEET NO. 359 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms82939\C_MD_S_XS_95.dgn
10:42:54 AM
5/19/2025

5/19/2025 10:42:54 AM
c:\bms\pwe-useast-006\knerr.chris\dms82939\C_MD_S_XS_95.dgn



NOTES:

1. THE TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES IN THE PLANS INDICATE LOCATIONS WHERE UTILITY INFORMATION SHOWN IS KNOWN TO FALL OF OR EXCEED THE STATED TYPICAL QUALITY LEVEL.

STORM DRAINAGE MAINS	QLC
SANITARY SEWER MAINS	QLC
WATER DISTRIBUTION MAINS	QLC
NATURAL GAS MAINS	QLC
OVERHEAD ELECTRIC LINES	QLC
OVERHEAD CATV LINES	QLC
UNDERGROUND CATV LINES	QLC
OVERHEAD TELECOMMUNICATION LINES	QLC
UNDERGROUND TELECOMMUNICATION LINES	QLC
ALL UNDERGROUND UTILITY SERVICE LINES	QLC

2. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

* EXISTING CROSS SLOPE

GRAPHIC SCALE
0 10' 20'
SCALE: H: 1" = 20'
V: 1" = 10'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS

MILITARY DRIVE

CROSS SECTIONS
STA 235+00.00 TO STA 236+00.00

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: DR	CHKD. BY: EV	SHEET NO. 360 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms82939\C_MD_S_XS_95.dgn
5/19/2025 10:42:54 AM

NOTES:

1. THE TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES IN THE PLANS INDICATE LOCATIONS WHERE UTILITY INFORMATION SHOWN IS KNOWN TO FALL OF OR EXCEED THE STATED TYPICAL QUALITY LEVEL.

STORM DRAINAGE MAINS	QLC
SANITARY SEWER MAINS	QLC
WATER DISTRIBUTION MAINS	QLC
NATURAL GAS MAINS	QLC
OVERHEAD ELECTRIC LINES	QLC
OVERHEAD CATV LINES	QLC
UNDERGROUND CATV LINES	QLC
OVERHEAD TELECOMMUNICATION LINES	QLC
UNDERGROUND TELECOMMUNICATION LINES	QLC
ALL UNDERGROUND UTILITY SERVICE LINES	QLC

2. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

* EXISTING CROSS SLOPE

GRAPHIC SCALE
0 10' 20'
SCALE: H: 1" = 20'
V: 1" = 10'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

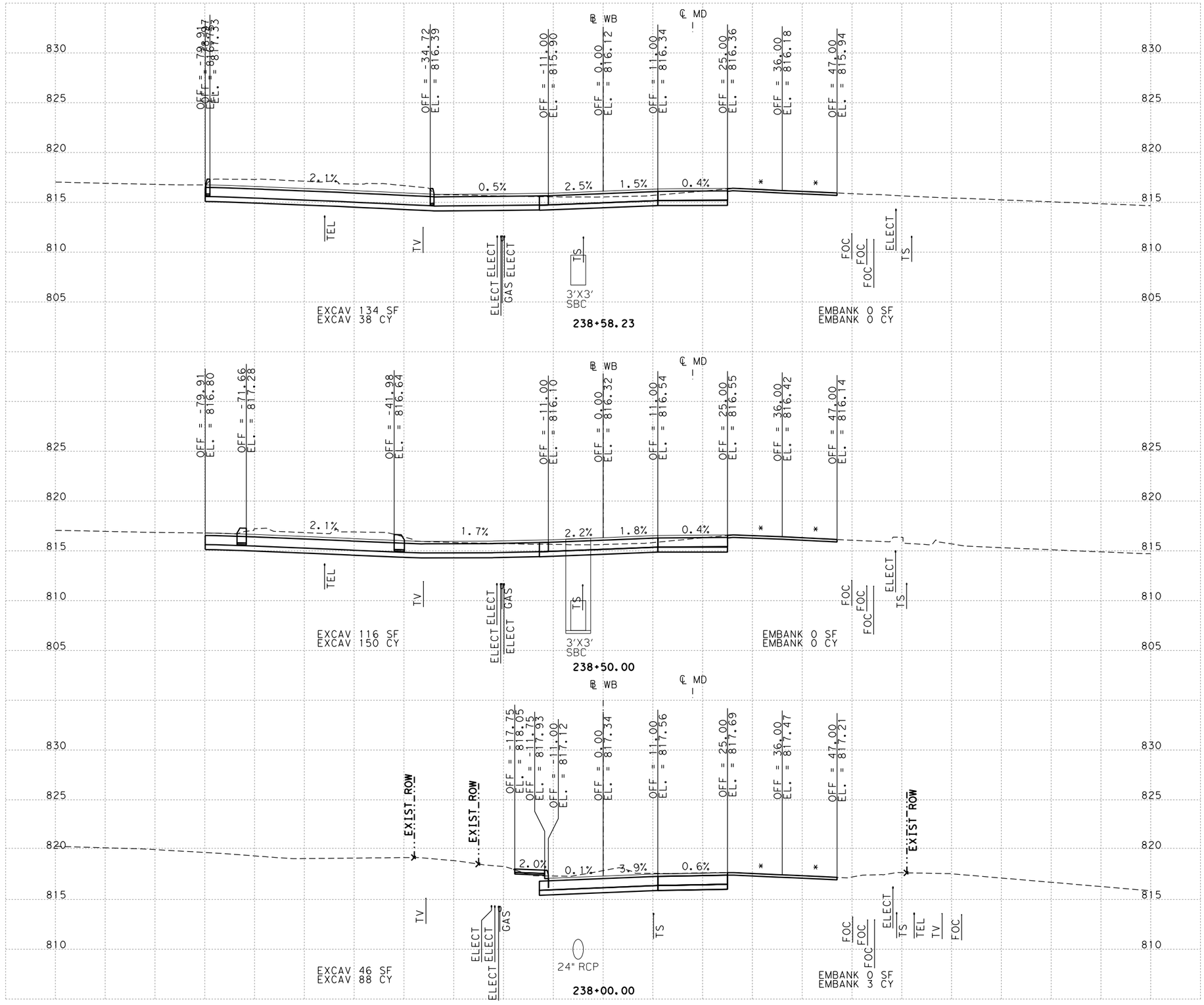
CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS

MILITARY DRIVE

CROSS SECTIONS
STA 236+50.00 TO STA 237+50.00

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: DR	CHKD. BY: EV	SHEET NO. 361 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms82939\C_MD_S_XS_95.dgn
5/19/2025 10:42:55 AM



NOTES:

1. THE TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES IN THE PLANS INDICATE LOCATIONS WHERE UTILITY INFORMATION SHOWN IS KNOWN TO FALL OF OR EXCEED THE STATED TYPICAL QUALITY LEVEL.

STORM DRAINAGE MAINS	QLC
SANITARY SEWER MAINS	QLC
WATER DISTRIBUTION MAINS	QLC
NATURAL GAS MAINS	QLC
OVERHEAD ELECTRIC LINES	QLC
OVERHEAD CATV LINES	QLC
UNDERGROUND CATV LINES	QLC
OVERHEAD TELECOMMUNICATION LINES	QLC
UNDERGROUND TELECOMMUNICATION LINES	QLC
ALL UNDERGROUND UTILITY SERVICE LINES	QLC

2. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

* EXISTING CROSS SLOPE

GRAPHIC SCALE
0 10' 20'
SCALE: H: 1" = 20'
V: 1" = 10'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS

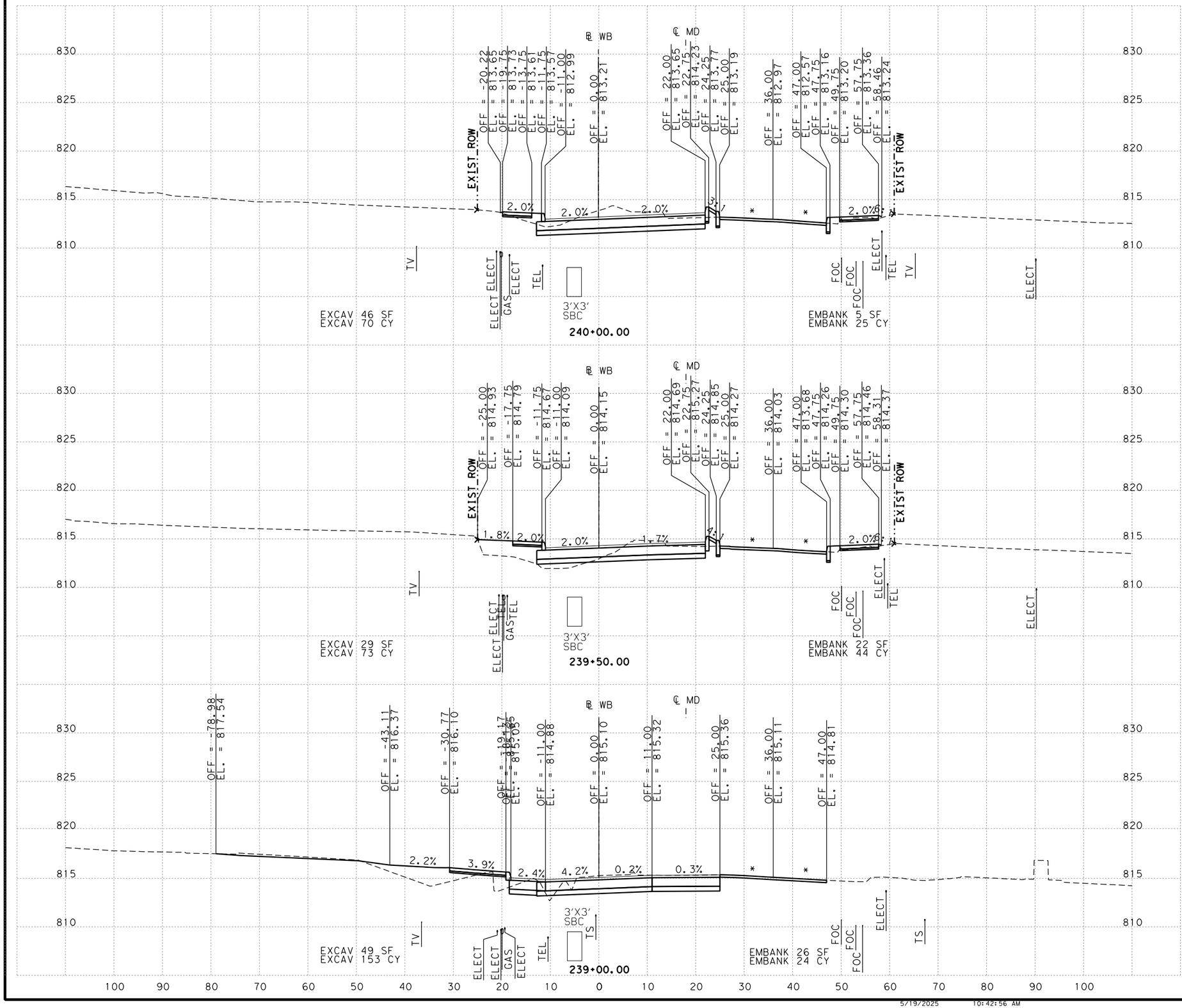
MILITARY DRIVE

CROSS SECTIONS
STA 238+00.00 TO STA 238+58.23

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: DR	CHKD. BY: EV	SHEET NO. 362 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms82939\C_MD_S_XS_95.dgn
5/19/2025 10:42:56 AM

c:\bms\pwe-useast-006\knerr.chris\dms82939\C_MD_S_XS_95.dgn
10:42:56 AM
5/19/2025



NOTES:

1. THE TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES IN THE PLANS INDICATE LOCATIONS WHERE UTILITY INFORMATION SHOWN IS KNOWN TO FALL OF OR EXCEED THE STATED TYPICAL QUALITY LEVEL.

STORM DRAINAGE MAINS	QLC
SANITARY SEWER MAINS	QLC
WATER DISTRIBUTION MAINS	QLC
NATURAL GAS MAINS	QLC
OVERHEAD ELECTRIC LINES	QLC
OVERHEAD CATV LINES	QLC
UNDERGROUND CATV LINES	QLC
OVERHEAD TELECOMMUNICATION LINES	QLC
UNDERGROUND TELECOMMUNICATION LINES	QLC
ALL UNDERGROUND UTILITY SERVICE LINES	QLC

2. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

* EXISTING CROSS SLOPE

GRAPHIC SCALE
0 10' 20'
SCALE: H: 1" = 20'
V: 1" = 10'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER

5/19/2025

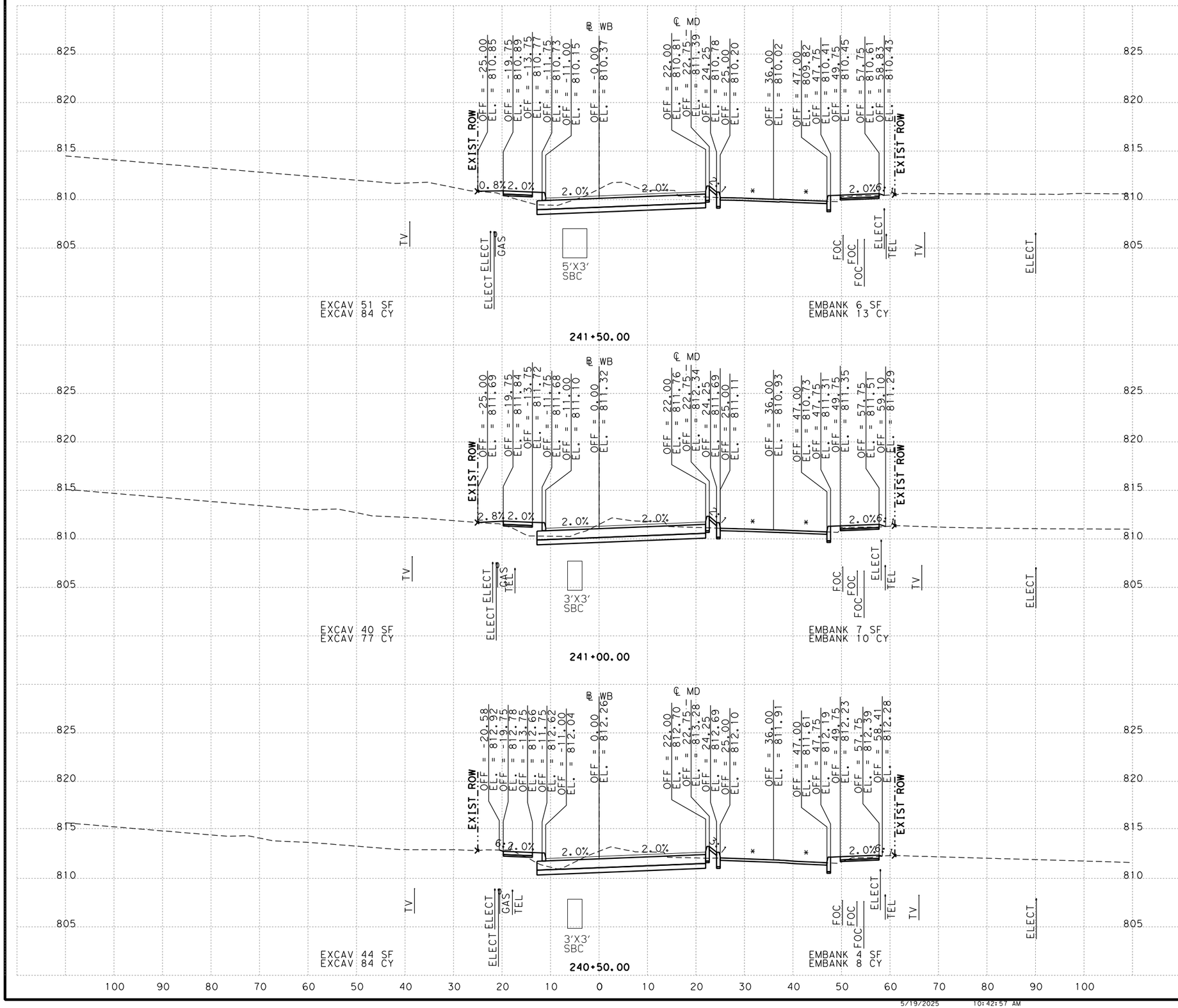
consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS

MILITARY DRIVE

CROSS SECTIONS
STA 239+00.00 TO STA 240+00.00

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: DR	CHKD. BY: EV	SHEET NO. 363 OF 377



NOTES:

1. THE TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES IN THE PLANS INDICATE LOCATIONS WHERE UTILITY INFORMATION SHOWN IS KNOWN TO FALL OF OR EXCEED THE STATED TYPICAL QUALITY LEVEL.

STORM DRAINAGE MAINS	QLC
SANITARY SEWER MAINS	QLC
WATER DISTRIBUTION MAINS	QLC
NATURAL GAS MAINS	QLC
OVERHEAD ELECTRIC LINES	QLC
OVERHEAD CATV LINES	QLC
UNDERGROUND CATV LINES	QLC
OVERHEAD TELECOMMUNICATION LINES	QLC
UNDERGROUND TELECOMMUNICATION LINES	QLC
ALL UNDERGROUND UTILITY SERVICE LINES	QLC

2. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

* EXISTING CROSS SLOPE

GRAPHIC SCALE
0 10' 20'
SCALE: H: 1" = 20'
V: 1" = 10'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

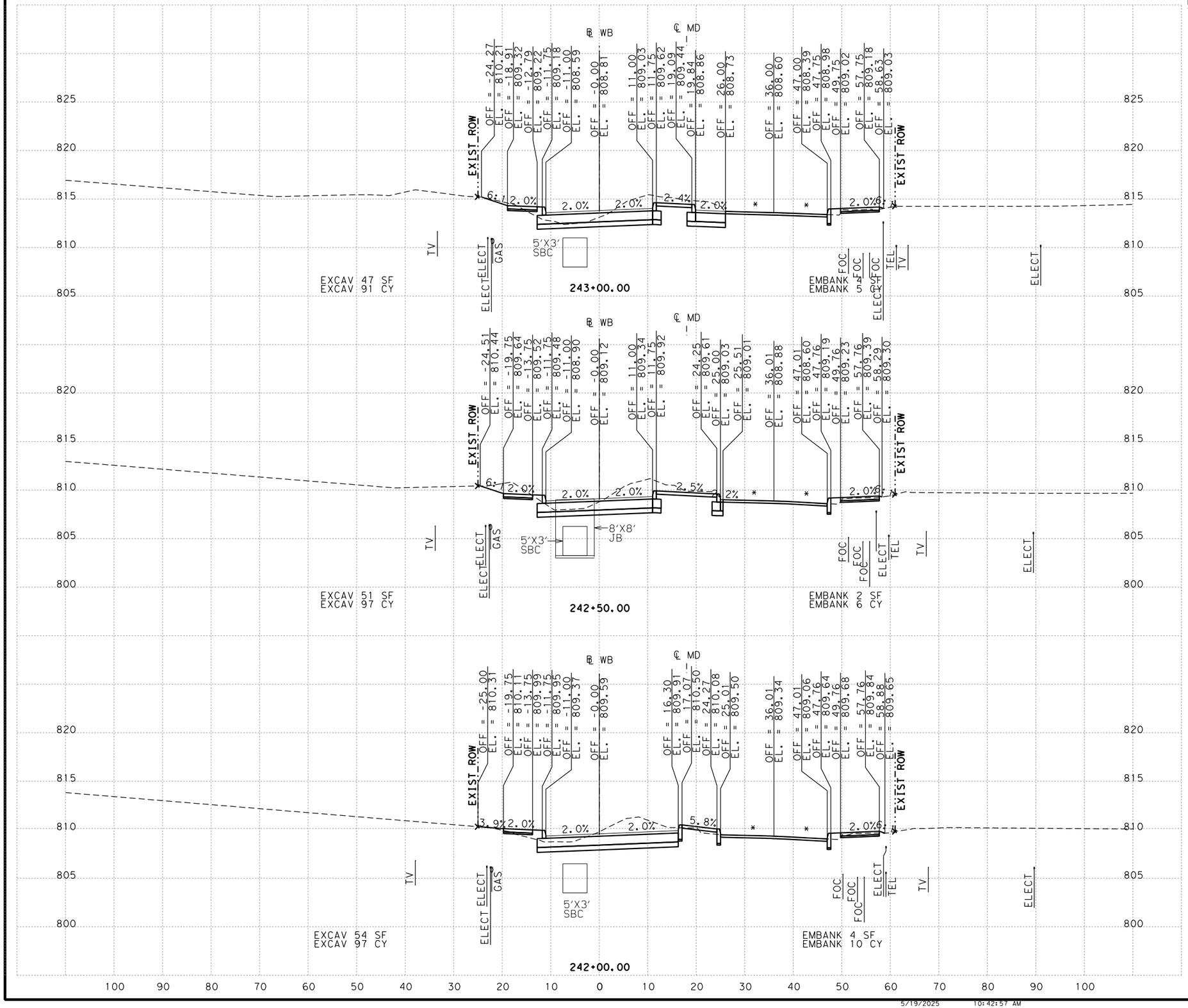
CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS

MILITARY DRIVE

CROSS SECTIONS
STA 240+50.00 TO STA 241+50.00

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: DR	CHKD. BY: EV	SHEET NO. 364 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms82939\C_MD_S_XS_95.dgn
5/19/2025 10:42:57 AM



NOTES:

1. THE TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES IN THE PLANS INDICATE LOCATIONS WHERE UTILITY INFORMATION SHOWN IS KNOWN TO FALL OF OR EXCEED THE STATED TYPICAL QUALITY LEVEL.

STORM DRAINAGE MAINS	QLC
SANITARY SEWER MAINS	QLC
WATER DISTRIBUTION MAINS	QLC
NATURAL GAS MAINS	QLC
OVERHEAD ELECTRIC LINES	QLC
OVERHEAD CATV LINES	QLC
UNDERGROUND CATV LINES	QLC
OVERHEAD TELECOMMUNICATION LINES	QLC
UNDERGROUND TELECOMMUNICATION LINES	QLC
ALL UNDERGROUND UTILITY SERVICE LINES	QLC

2. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

* EXISTING CROSS SLOPE

GRAPHIC SCALE
0 10' 20'
SCALE: H: 1" = 20'
V: 1" = 10'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

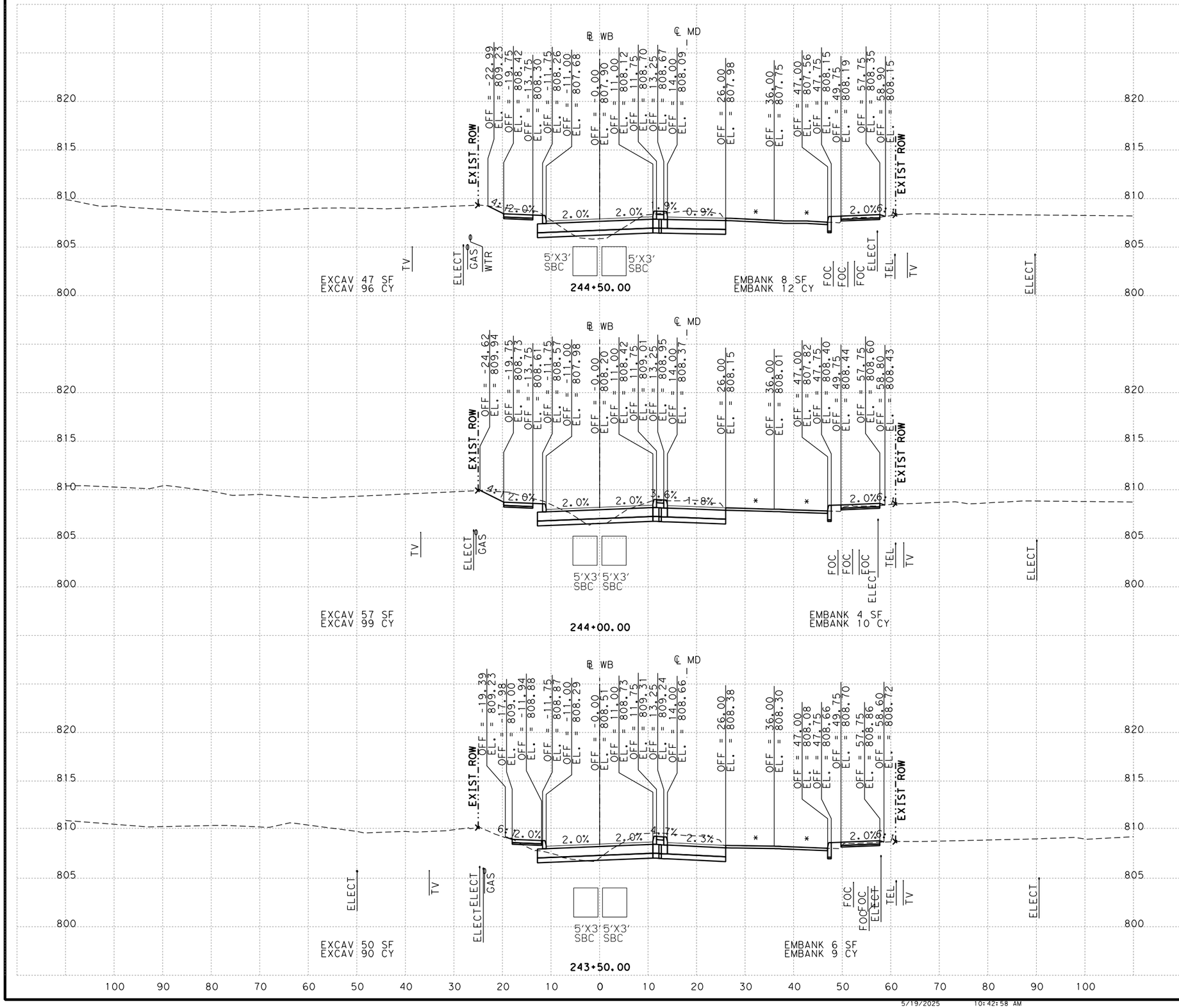
CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS

MILITARY DRIVE

CROSS SECTIONS
STA 242+00.00 TO STA 243+00.00

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: DR	CHKD. BY: EV	SHEET NO. 365 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms82939\C_MD_S_XS_95.dgn
5/19/2025 10:42:57 AM



NOTES:

1. THE TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES IN THE PLANS INDICATE LOCATIONS WHERE UTILITY INFORMATION SHOWN IS KNOWN TO FALL OF OR EXCEED THE STATED TYPICAL QUALITY LEVEL.

STORM DRAINAGE MAINS	QLC
SANITARY SEWER MAINS	QLC
WATER DISTRIBUTION MAINS	QLC
NATURAL GAS MAINS	QLC
OVERHEAD ELECTRIC LINES	QLC
OVERHEAD CATV LINES	QLC
UNDERGROUND CATV LINES	QLC
OVERHEAD TELECOMMUNICATION LINES	QLC
UNDERGROUND TELECOMMUNICATION LINES	QLC
ALL UNDERGROUND UTILITY SERVICE LINES	QLC

2. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

* EXISTING CROSS SLOPE

GRAPHIC SCALE
0 10' 20'
SCALE: H: 1" = 20'
V: 1" = 10'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

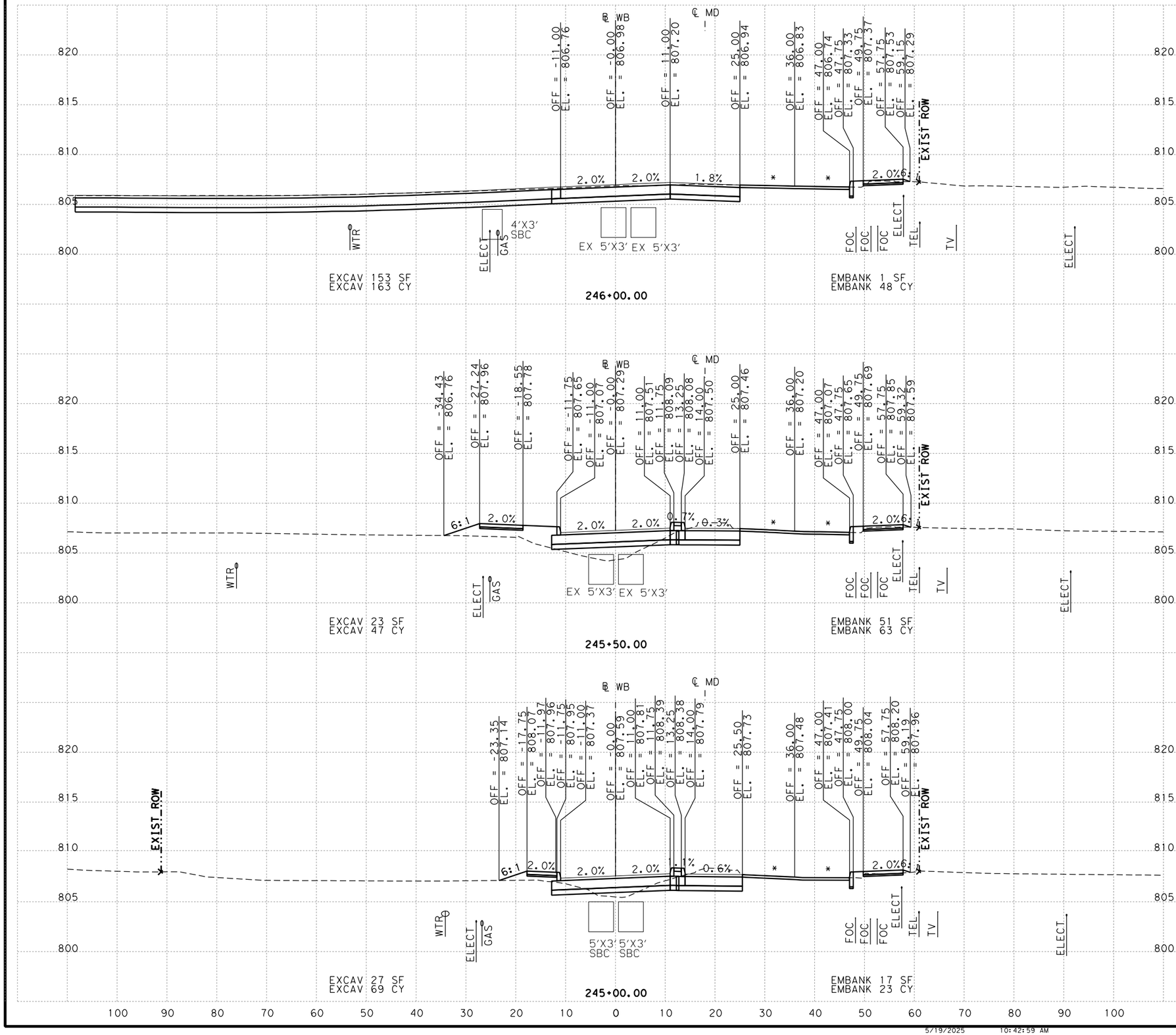
consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS

MILITARY DRIVE

CROSS SECTIONS
STA 243+50.00 TO STA 244+50.00

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: DR	CHKD. BY: EV	SHEET NO. 366 OF 377



NOTES:

1. THE TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES IN THE PLANS INDICATE LOCATIONS WHERE UTILITY INFORMATION SHOWN IS KNOWN TO FALL OF OR EXCEED THE STATED TYPICAL QUALITY LEVEL.

STORM DRAINAGE MAINS	QLC
SANITARY SEWER MAINS	QLC
WATER DISTRIBUTION MAINS	QLC
NATURAL GAS MAINS	QLC
OVERHEAD ELECTRIC LINES	QLC
OVERHEAD CATV LINES	QLC
UNDERGROUND CATV LINES	QLC
OVERHEAD TELECOMMUNICATION LINES	QLC
UNDERGROUND TELECOMMUNICATION LINES	QLC
ALL UNDERGROUND UTILITY SERVICE LINES	QLC

2. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

* EXISTING CROSS SLOPE

GRAPHIC SCALE
0 10' 20'
SCALE: H: 1" = 20'
V: 1" = 10'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS

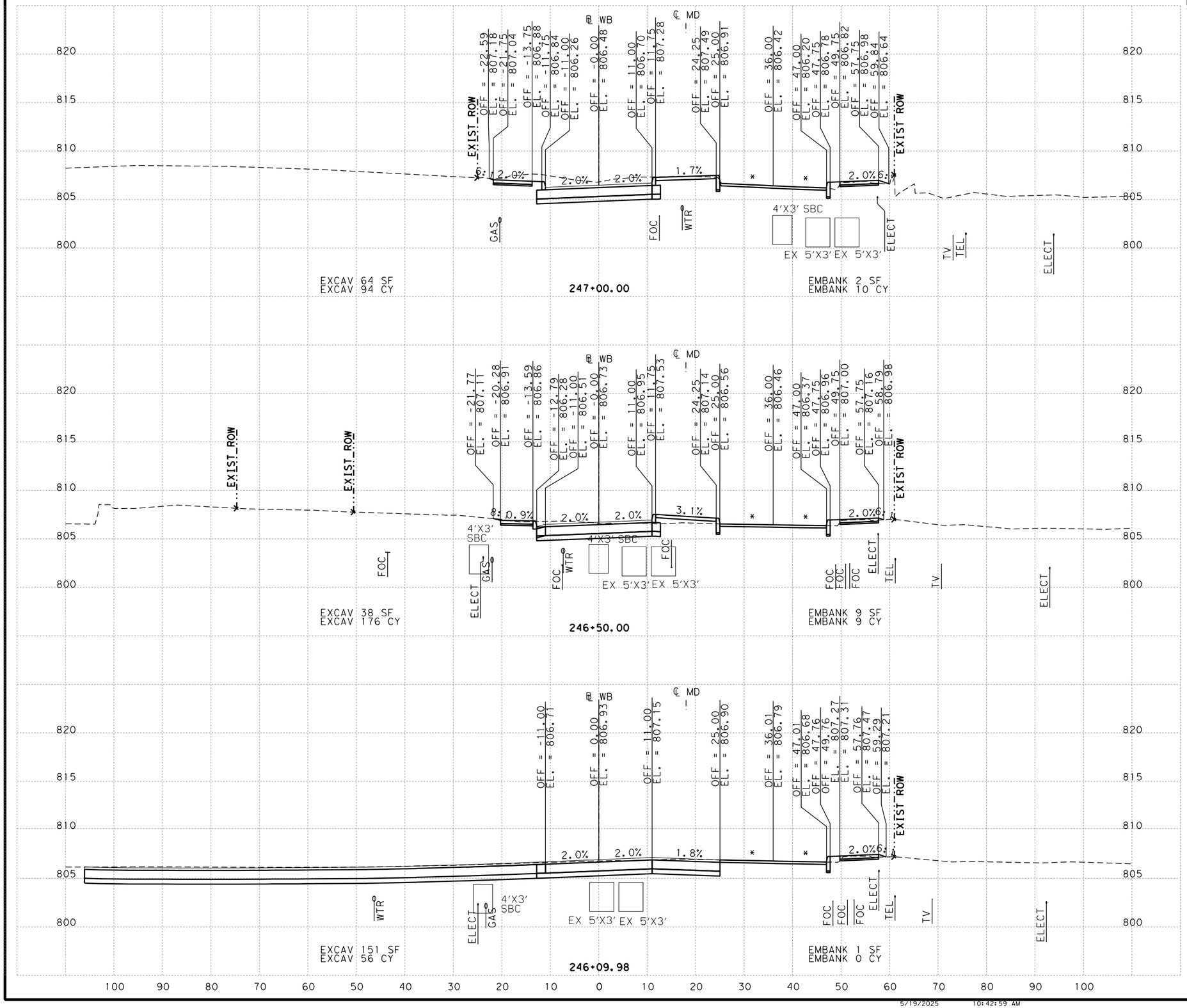
MILITARY DRIVE

CROSS SECTIONS
STA 245+00.00 TO STA 246+00.00

100 % SUBMITTAL	PROJECT NO.: 23-03907			DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: DR	CHKD. BY: EV		SHEET NO. 367 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms82939\C_MD_S_XS_95.dgn
5/19/2025 10:42:59 AM

5/19/2025 10:42:59 AM
c:\bms\pwe-useast-006\knerr.chris\dms82939\C_MD_S_XS_95.dgn



NOTES:

1. THE TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES IN THE PLANS INDICATE LOCATIONS WHERE UTILITY INFORMATION SHOWN IS KNOWN TO FALL OF OR EXCEED THE STATED TYPICAL QUALITY LEVEL.

STORM DRAINAGE MAINS	QLC
SANITARY SEWER MAINS	QLC
WATER DISTRIBUTION MAINS	QLC
NATURAL GAS MAINS	QLC
OVERHEAD ELECTRIC LINES	QLC
OVERHEAD CATV LINES	QLC
UNDERGROUND CATV LINES	QLC
OVERHEAD TELECOMMUNICATION LINES	QLC
UNDERGROUND TELECOMMUNICATION LINES	QLC
ALL UNDERGROUND UTILITY SERVICE LINES	QLC

2. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

* EXISTING CROSS SLOPE

GRAPHIC SCALE
0 10' 20'
SCALE: H: 1" = 20'
V: 1" = 10'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

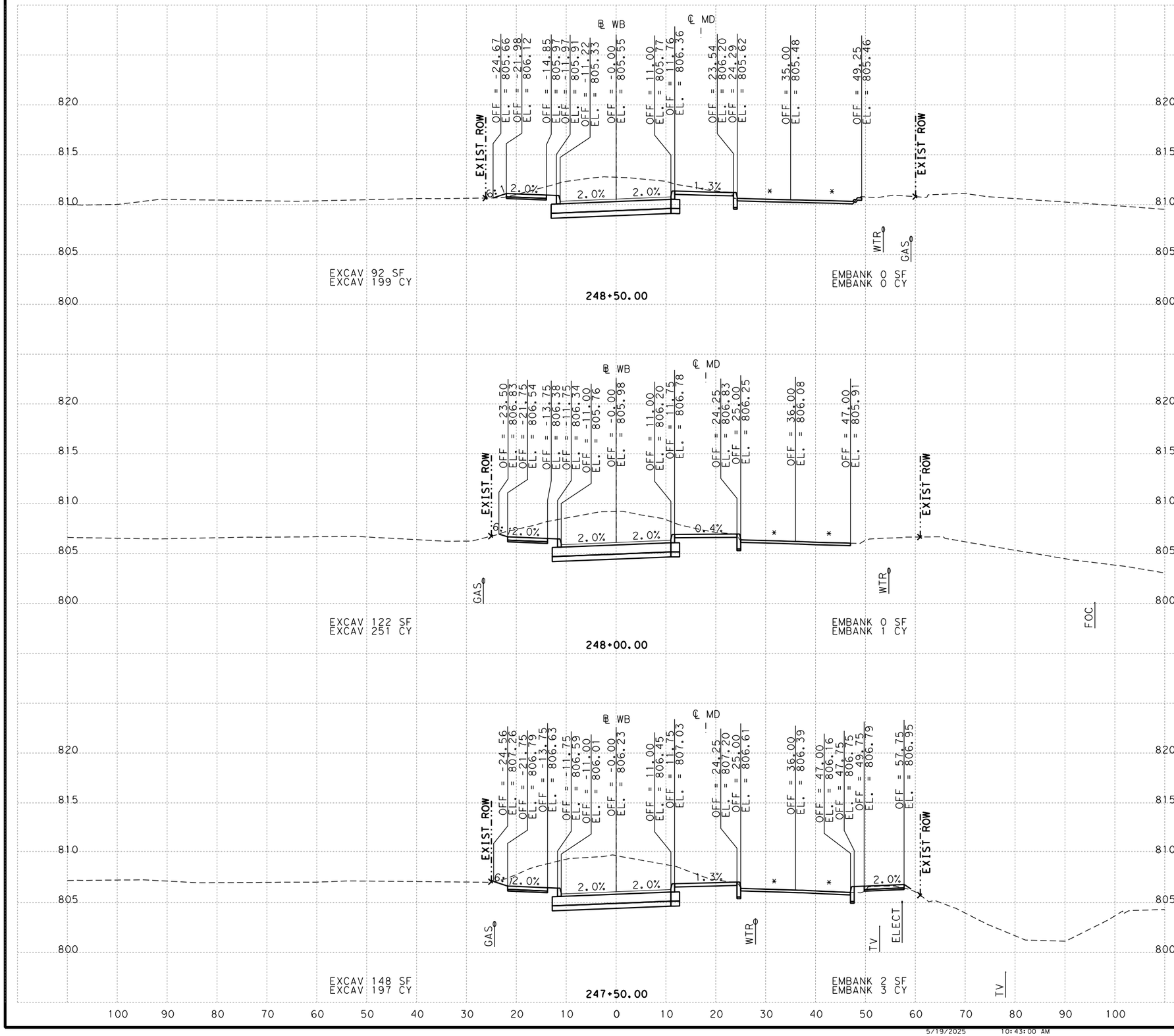
consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS

MILITARY DRIVE

CROSS SECTIONS
STA 246+09.98 TO STA 247+00.00

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: DR	CHKD. BY: EV	SHEET NO. 368 OF 377



NOTES:

1. THE TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES IN THE PLANS INDICATE LOCATIONS WHERE UTILITY INFORMATION SHOWN IS KNOWN TO FALL OF OR EXCEED THE STATED TYPICAL QUALITY LEVEL.

STORM DRAINAGE MAINS	QLC
SANITARY SEWER MAINS	QLC
WATER DISTRIBUTION MAINS	QLC
NATURAL GAS MAINS	QLC
OVERHEAD ELECTRIC LINES	QLC
OVERHEAD CATV LINES	QLC
UNDERGROUND CATV LINES	QLC
OVERHEAD TELECOMMUNICATION LINES	QLC
UNDERGROUND TELECOMMUNICATION LINES	QLC
ALL UNDERGROUND UTILITY SERVICE LINES	QLC

2. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

* EXISTING CROSS SLOPE

GRAPHIC SCALE
0 10' 20'
SCALE: H: 1" = 20'
V: 1" = 10'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS

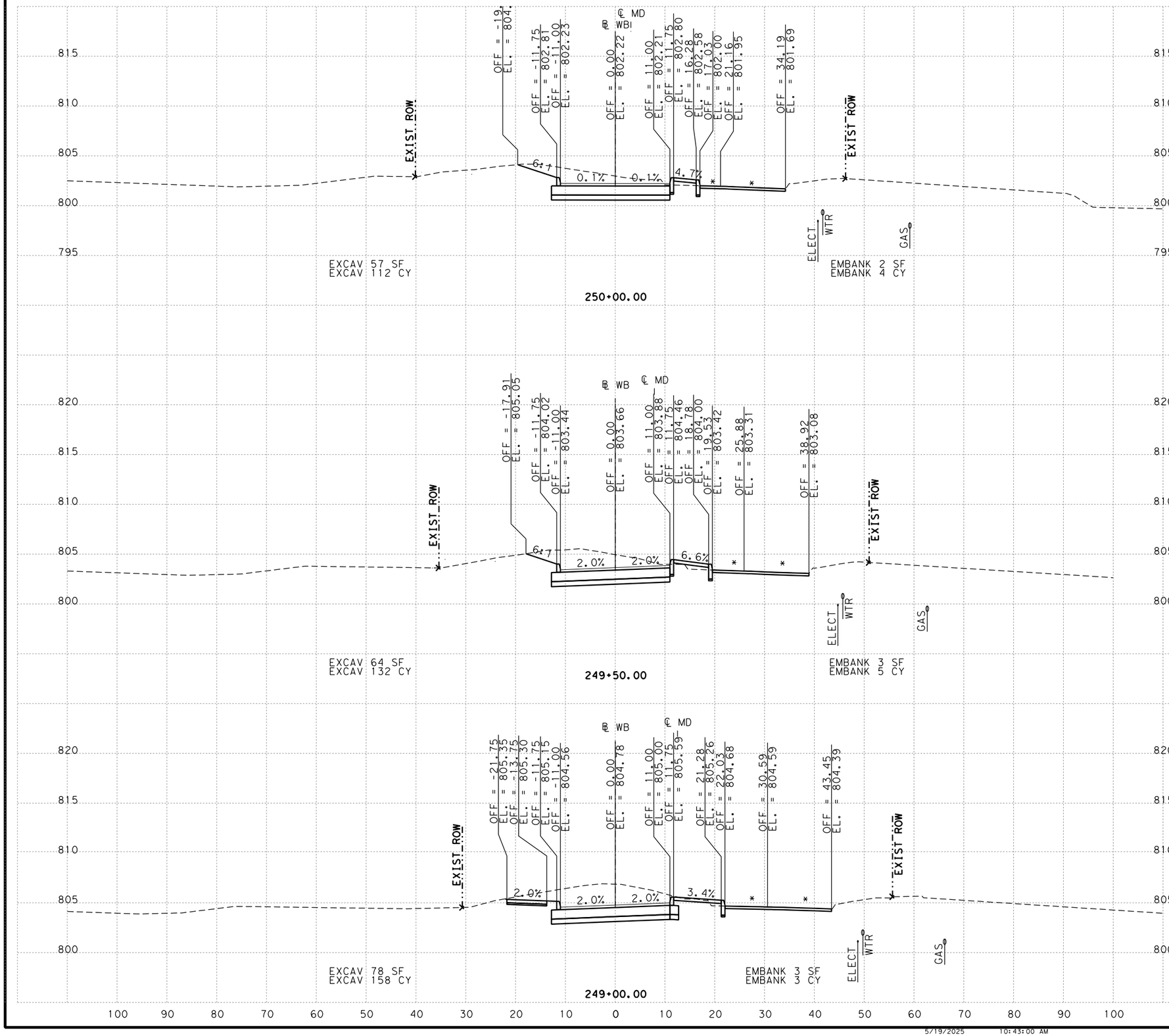
MILITARY DRIVE

CROSS SECTIONS
STA 247+50.00 TO STA 248+50.00

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: DR	CHKD. BY: EV	SHEET NO. 369 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms82939\C_MD_S_XS_95.dgn
5/19/2025 10:43:00 AM

c:\bms\pwe-useast-006\knerr.chris\dms82939\C_MD_S_XS_95.dgn
5/19/2025 10:43:00 AM



NOTES:

1. THE TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES IN THE PLANS INDICATE LOCATIONS WHERE UTILITY INFORMATION SHOWN IS KNOWN TO FALL OF OR EXCEED THE STATED TYPICAL QUALITY LEVEL.

STORM DRAINAGE MAINS	QLC
SANITARY SEWER MAINS	QLC
WATER DISTRIBUTION MAINS	QLC
NATURAL GAS MAINS	QLC
OVERHEAD ELECTRIC LINES	QLC
OVERHEAD CATV LINES	QLC
UNDERGROUND CATV LINES	QLC
OVERHEAD TELECOMMUNICATION LINES	QLC
UNDERGROUND TELECOMMUNICATION LINES	QLC
ALL UNDERGROUND UTILITY SERVICE LINES	QLC

2. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

* EXISTING CROSS SLOPE

GRAPHIC SCALE
0 10′ 20′
SCALE: H: 1" = 20′
V: 1" = 10′

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR. STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

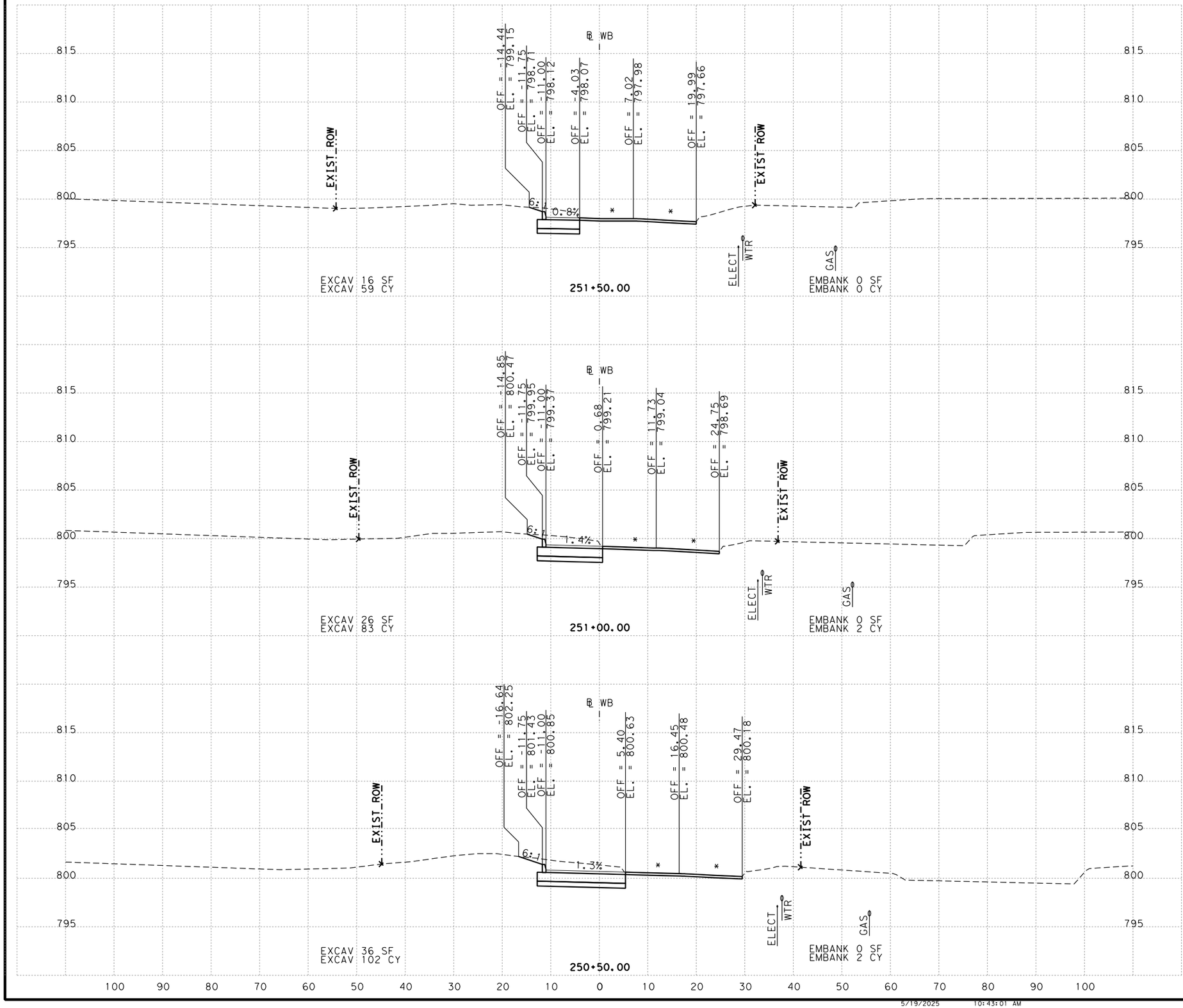
CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS

MILITARY DRIVE

CROSS SECTIONS
STA 249+00.00 TO STA 250+00.00

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: DR	CHKD. BY: EV	SHEET NO. 370 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms82939\C_MD_S_XS_95.dgn
5/19/2025 10:43:00 AM



NOTES:

1. THE TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES IN THE PLANS INDICATE LOCATIONS WHERE UTILITY INFORMATION SHOWN IS KNOWN TO FALL OF OR EXCEED THE STATED TYPICAL QUALITY LEVEL.

STORM DRAINAGE MAINS	QLC
SANITARY SEWER MAINS	QLC
WATER DISTRIBUTION MAINS	QLC
NATURAL GAS MAINS	QLC
OVERHEAD ELECTRIC LINES	QLC
OVERHEAD CATV LINES	QLC
UNDERGROUND CATV LINES	QLC
OVERHEAD TELECOMMUNICATION LINES	QLC
UNDERGROUND TELECOMMUNICATION LINES	QLC
ALL UNDERGROUND UTILITY SERVICE LINES	QLC

2. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

* EXISTING CROSS SLOPE

GRAPHIC SCALE
0 10' 20'
SCALE: H: 1" = 20'
V: 1" = 10'

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040
8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS

MILITARY DRIVE

CROSS SECTIONS
STA 250+50.00 TO STA 251+50.00

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: DR	CHKD. BY: EV	SHEET NO. 37 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms82939\C_MD_S_XS_95.dgn
5/19/2025 10:43:01 AM

c:\bms\pwe-useast-006\knerr.chris\dms82939\C_MD_S_XS_95.dgn
5/19/2025 10:43:01 AM

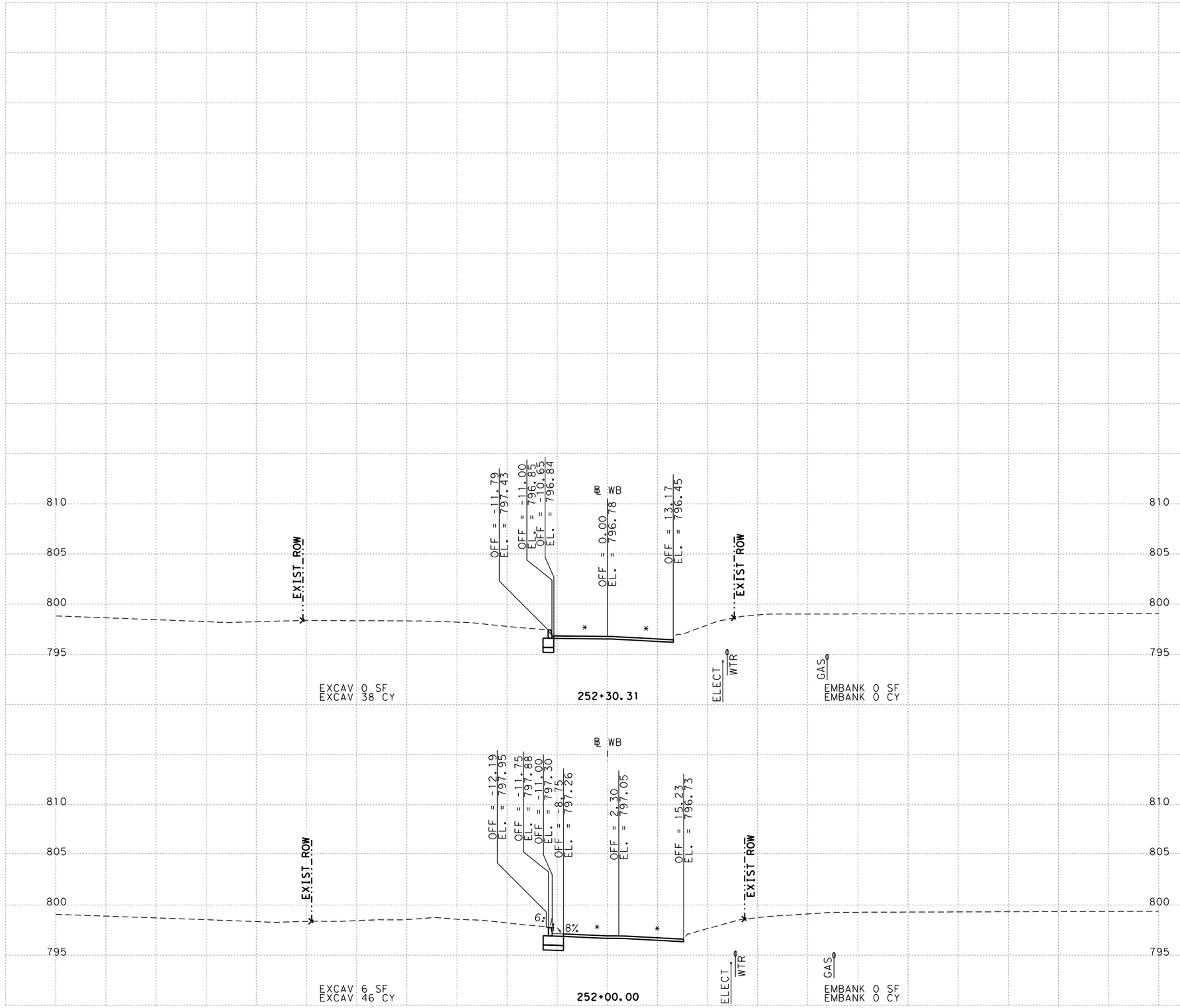
NOTES:

1. THE TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES IN THE PLANS INDICATE LOCATIONS WHERE UTILITY INFORMATION SHOWN IS KNOWN TO FALL OF OR EXCEED THE STATED TYPICAL QUALITY LEVEL.

STORM DRAINAGE MAINS	QLC
SANITARY SEWER MAINS	QLC
WATER DISTRIBUTION MAINS	QLC
NATURAL GAS MAINS	QLC
OVERHEAD ELECTRIC LINES	QLC
OVERHEAD CATV LINES	QLC
UNDERGROUND CATV LINES	QLC
OVERHEAD TELECOMMUNICATION LINES	QLC
UNDERGROUND TELECOMMUNICATION LINES	QLC
ALL UNDERGROUND UTILITY SERVICE LINES	QLC

2. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS. ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR TO CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

* EXISTING CROSS SLOPE



GRAPHIC SCALE
0 10′ 20′
SCALE: H: 1" = 20′
V: 1" = 10′

STATE OF TEXAS
EDGAR VILLARREAL-HERNANDEZ
137367
LICENSED
PROFESSIONAL ENGINEER

5/19/2025

consor
F-12040

8023 VANTAGE DR, STE 300,
SAN ANTONIO, TX 78230
PHONE: (210) 694-5464

CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS

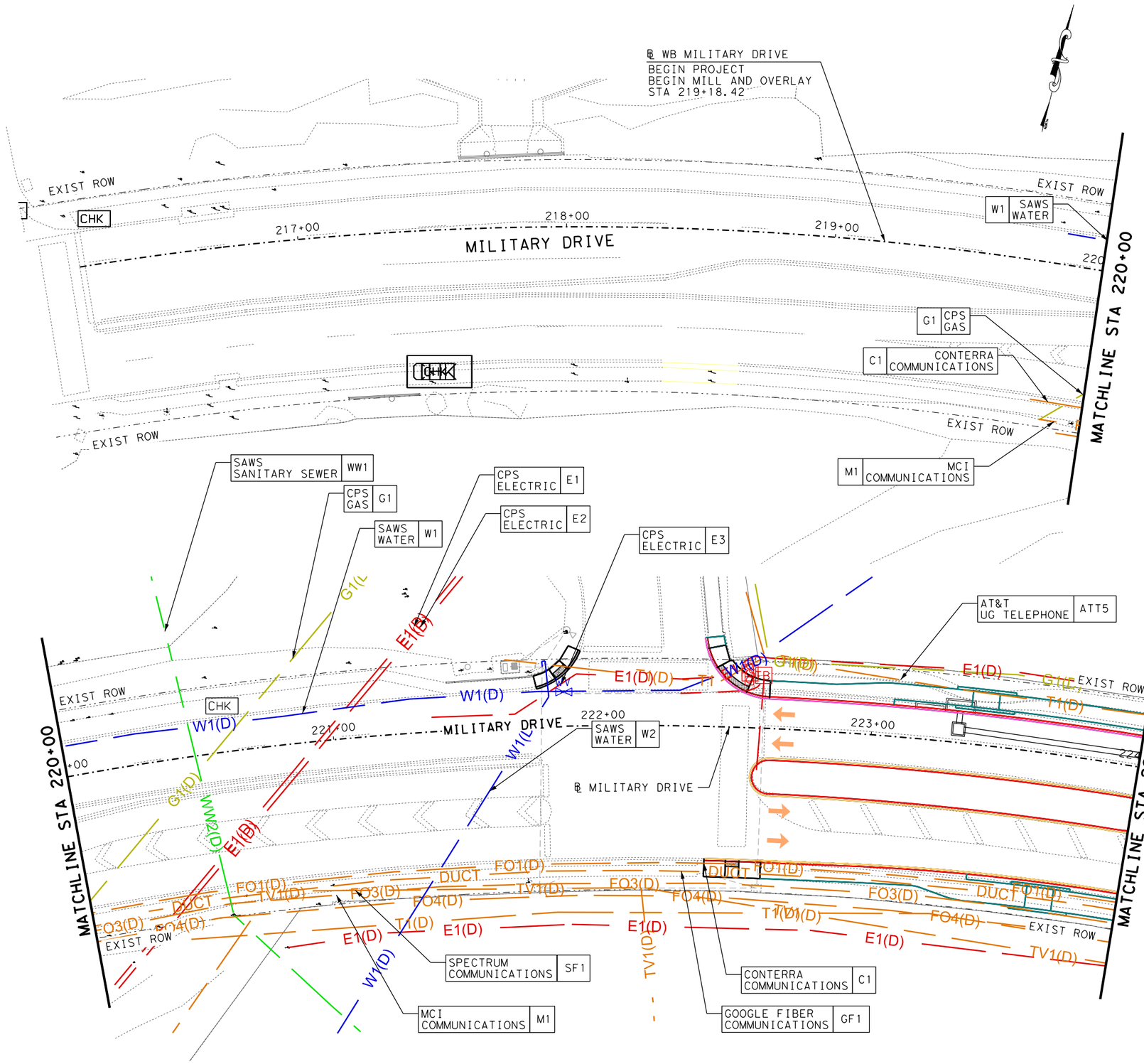
MILITARY DRIVE

CROSS SECTIONS
STA 252+00.00 TO STA 252+30.31

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: CK	DSGN. BY: DR	CHKD. BY: EV	SHEET NO. 372 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms82939\C_MD_S_XS_95.dgn
10:43:02 AM
5/19/2025

5/19/2025 10:43:02 AM
c:\bms\pwe-useast-006\knerr.chris\dms82939\C_MD_S_XS_95.dgn



LEGEND OF UTILITY TYPES

COMMUNICATIONS

- CATV - CHARTER (QL-D) — TV1(D)
- CATV - CHARTER (QL-B) — TV1
- FIBER DUCT BANK - ATT(QL-D) — DUCT
- FIBER DUCT BANK - GOOGLE (QL-D) — DUCT
- FIBER - CONTERRA (QL-D) — FO1(D)
- FIBER - CONTERRA (QL-B) — FO1
- FIBER - GOOGLE FIBER(QL-D) — FO2(D)
- FIBER - GOOGLE FIBER(QL-B) — FO2
- FIBER - MCI-VERIZON (QL-D) — FO3(D)
- FIBER - MCI-VERIZON (QL-B) — FO3
- FIBER - ZAYO (QL-D) — FO4(D)
- FIBER - ZAYO (QL-B) — FO4
- TELEPHONE - AT&T (QL-D) — T1(D)
- TELEPHONE - AT&T (QL-B) — T1
- UNKNOWN - UTILITY (QL-B) — UNK

ELECTRIC

- ELECTRIC - CPS ENERGY (QL-D) — E1(D)
- ELECTRIC - CPS ENERGY (QL-B) — E1

GAS

- GAS - CPS Energy (QL-D) — G1(D)
- GAS - CPS Energy (QL-B) — G1

TRAFFIC

- TRAFFIC - COSA (QL-D) — TS1(D)
- TRAFFIC - COSA (QL-B) — TS1
- STREET LIGHT - COSA (QL-B) — E2

WASTEWATER

- WASTEWATER - SAWS (QL-D) — WW1(D)
- WASTEWATER - UNK (QL-D) — WW2(D)

WATER

- WATER - SAWS (QL-D) — W1(D)

0 20′ 40′
SCALE: 1" = 40′

STATE OF TEXAS
AMPARO A. ORTEGA
103686
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

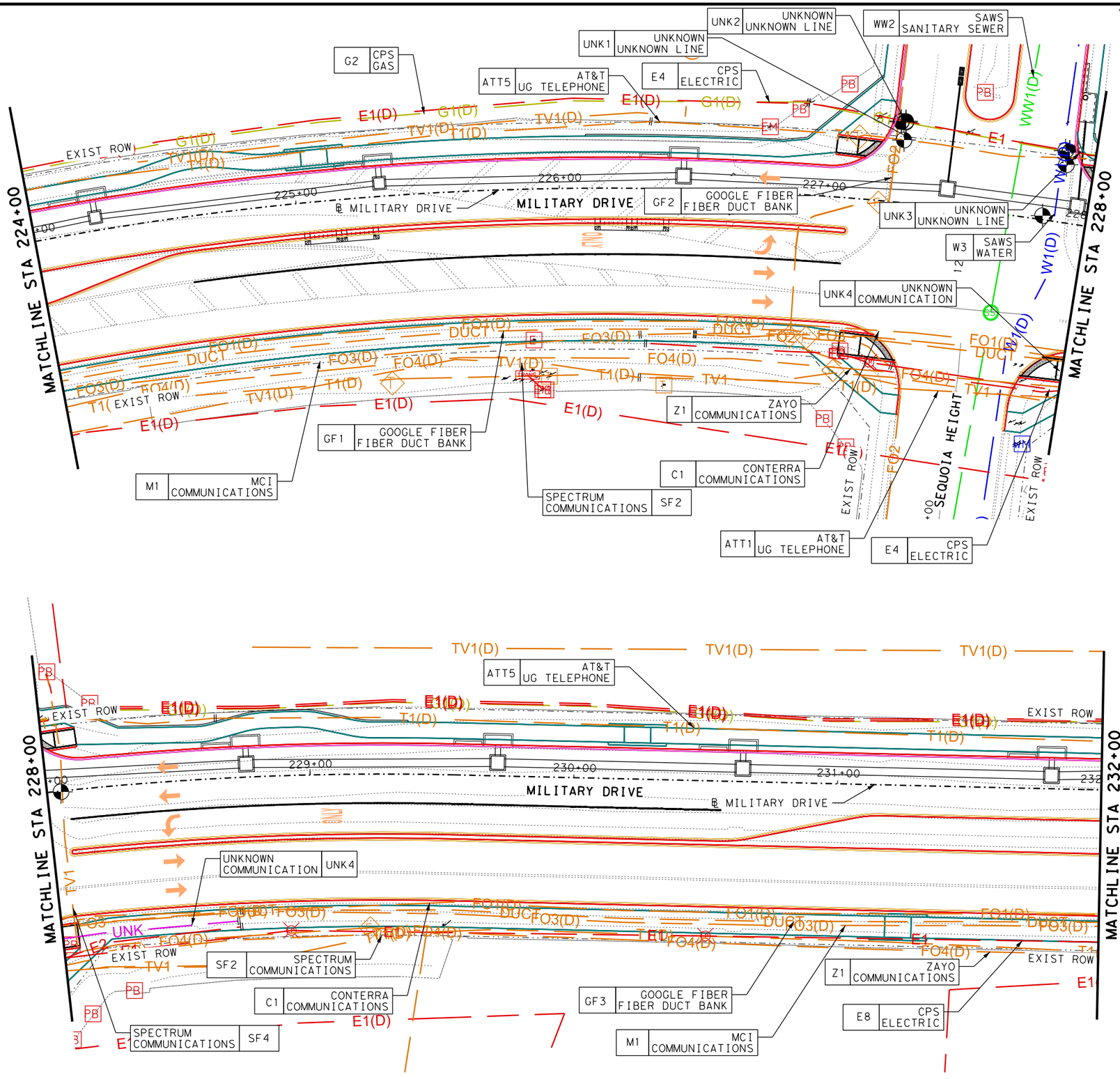
MILITARY DRIVE

UTILITY BASE MAP

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: JM	DSGN. BY: MH	CHKD. BY: AO	SHEET NO. 373 OF 377

c:\dms\pwe-useast-006\knerr.chris\dms71714\C_MD_S_UE01.dgn
5/19/2025 8:24:15 AM

5/19/2025 8:24:15 AM
c:\dms\pwe-useast-006\knerr.chris\dms71714\C_MD_S_UE01.dgn



LEGEND OF UTILITY TYPES

COMMUNICATIONS

CATV - CHARTER (QL-D)	TV1(D)
CATV - CHARTER (QL-B)	TV1
FIBER DUCT BANK - ATT(QL-D)	DUCT
FIBER DUCT BANK - GOOGLE (QL-D)	DUCT
FIBER - CONTERRA (QL-D)	FO1(D)
FIBER - CONTERRA (QL-B)	FO1
FIBER - GOOGLE FIBER(QL-D)	FO2(D)
FIBER - GOOGLE FIBER(QL-B)	FO2
FIBER - MCI-VERIZON (QL-D)	FO3(D)
FIBER - MCI-VERIZON (QL-B)	FO3
FIBER - ZAYO (QL-D)	FO4(D)
FIBER - ZAYO (QL-B)	FO4
TELEPHONE - AT&T (QL-D)	T1(D)
TELEPHONE - AT&T (QL-B)	T1
UNKNOWN - UTILITY (QL-B)	UNK

ELECTRIC

ELECTRIC - CPS ENERGY (QL-D)	E1(D)
ELECTRIC - CPS ENERGY (QL-B)	E1

GAS

GAS - CPS Energy (QL-D)	G1(D)
GAS - CPS Energy (QL-B)	G1

TRAFFIC

TRAFFIC - COSA (QL-D)	TS1(D)
TRAFFIC - COSA (QL-B)	TS1
STREET LIGHT - COSA (QL-B)	E2

WASTEWATER

WASTEWATER - SAWS (QL-D)	WW1(D)
WASTEWATER - UNK (QL-D)	WW2(D)

WATER

WATER - SAWS (QL-D)	W1(D)

0 20′ 40′
SCALE: 1" = 40′

STATE OF TEXAS
AMPARO A. ORTEGA
103686
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040

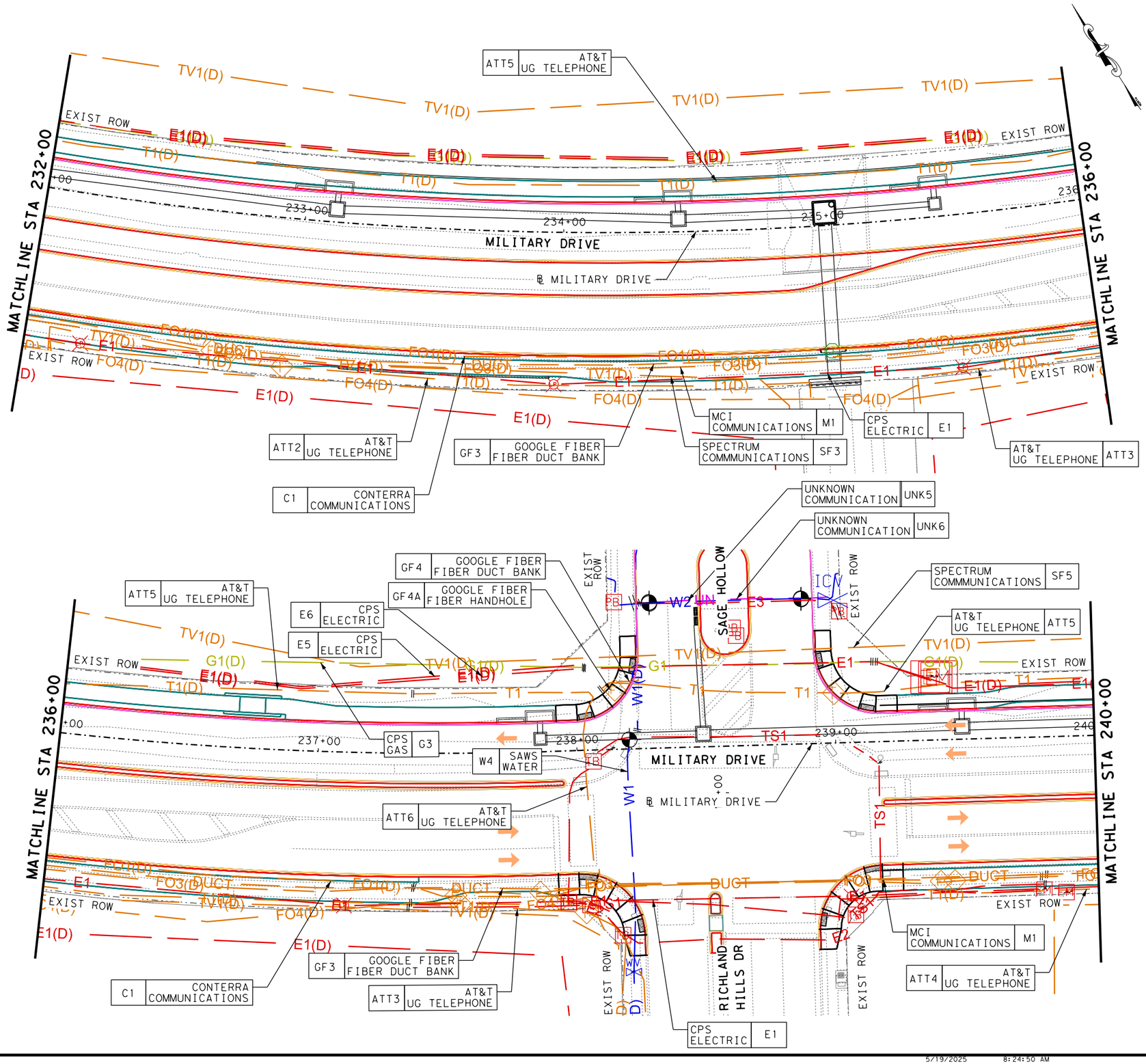
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

UTILITY BASE MAP

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: JM	DSGN. BY: MH	CHKD. BY: AO	SHEET NO. 374 OF 377

c:\dms\pwe-useast-006\khenr.chris\dms71714\C_MD_S_UE02.dgn
5/19/2025 8:24:32 AM



LEGEND OF UTILITY TYPES

COMMUNICATIONS
- CATV - CHARTER (QL-D) — TV1(D)
- CATV - CHARTER (QL-B) — TV1
- FIBER DUCT BANK - ATT(QL-D) — DUCT
- FIBER DUCT BANK - GOOGLE (QL-D) — DUCT
- FIBER - CONTERRA (QL-D) — FO1(D)
- FIBER - CONTERRA (QL-B) — FO1
- FIBER - GOOGLE FIBER(QL-D) — FO2(D)
- FIBER - GOOGLE FIBER(QL-B) — FO2
- FIBER - MCI-VERIZON (QL-D) — FO3(D)
- FIBER - MCI-VERIZON (QL-B) — FO3
- FIBER - ZAYO (QL-D) — FO4(D)
- FIBER - ZAYO (QL-B) — FO4
- TELEPHONE - AT&T (QL-D) — T1(D)
- TELEPHONE - AT&T (QL-B) — T1
- UNKNOWN - UTILITY (QL-B) — UNK

ELECTRIC
- ELECTRIC - CPS ENERGY (QL-D) — E1(D)
- ELECTRIC - CPS ENERGY (QL-B) — E1

GAS
- GAS - CPS Energy (QL-D) — G1(D)
- GAS - CPS Energy (QL-B) — G1

TRAFFIC
- TRAFFIC - COSA (QL-D) — TS1(D)
- TRAFFIC - COSA (QL-B) — TS1
- STREET LIGHT - COSA (QL-B) — E2

WASTEWATER
- WASTEWATER - SAWS (QL-D) — WW1(D)
- WASTEWATER - UNK (QL-D) — WW2(D)

WATER
- WATER - SAWS (QL-D) — W1(D)

0 20′ 40′
SCALE: 1" = 40′

STATE OF TEXAS
AMPARO A. ORTEGA
103686
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040

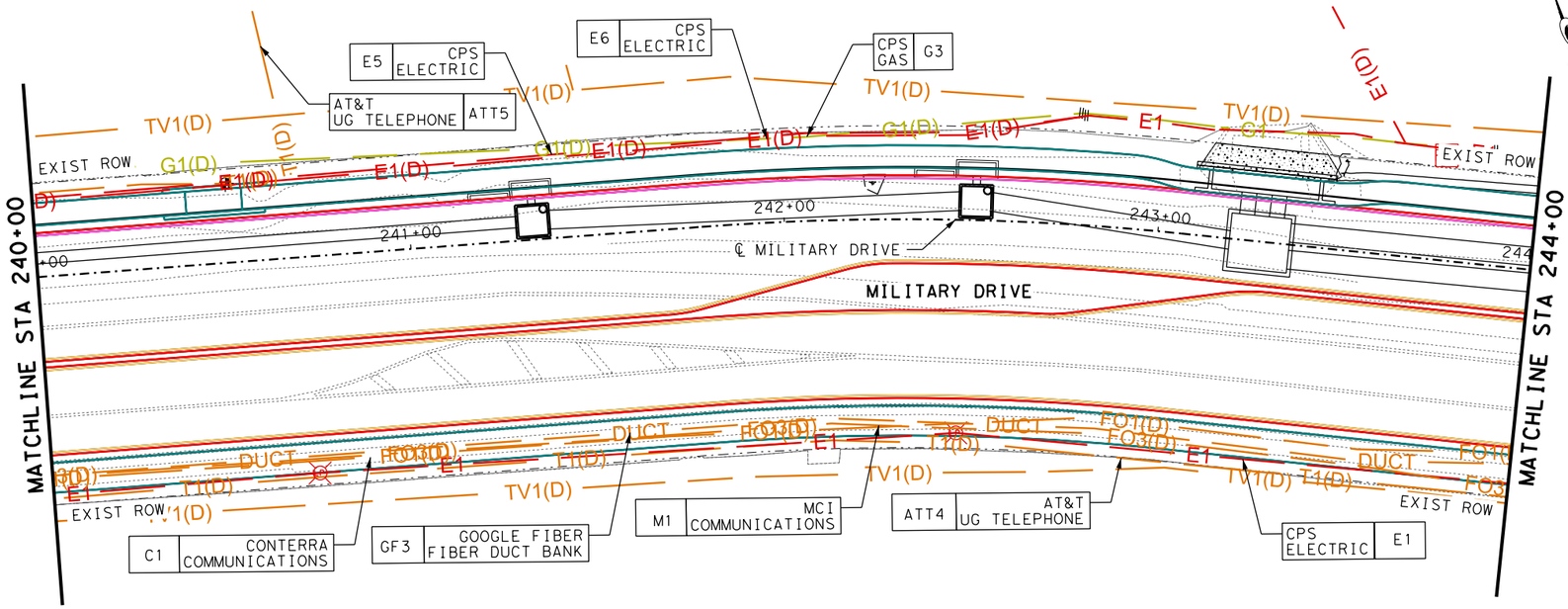
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

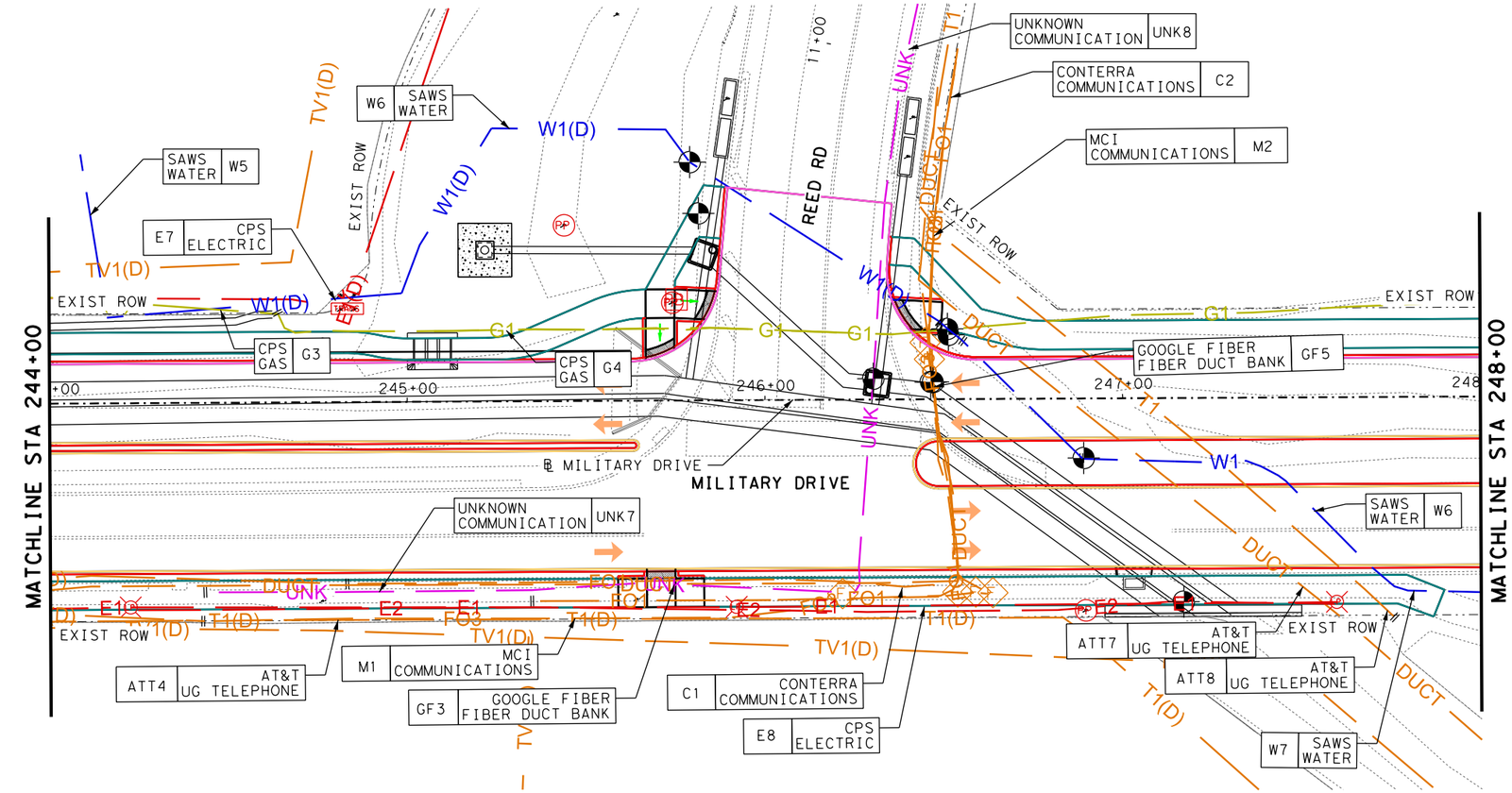
MILITARY DRIVE

UTILITY BASE MAP

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: JM	DSGN. BY: MH	CHKD. BY: AO	SHEET NO. 375 OF 377

c:\DMS\pwe-useast-006\knerr.chris\DMS71714\C_MD_S_UE03.dgn
5/19/2025 8:24:50 AM





LEGEND OF UTILITY TYPES

COMMUNICATIONS

CATV - CHARTER (QL-D)	TV1(D)
CATV - CHARTER (QL-B)	TV1
FIBER DUCT BANK - ATT(QL-D)	DUCT
FIBER DUCT BANK - GOOGLE (QL-D)	DUCT
FIBER - CONTERRA (QL-D)	FO1(D)
FIBER - CONTERRA (QL-B)	FO1
FIBER - GOOGLE FIBER(QL-D)	FO2(D)
FIBER - GOOGLE FIBER(QL-B)	FO2
FIBER - MCI-VERIZON (QL-D)	FO3(D)
FIBER - MCI-VERIZON (QL-B)	FO3
FIBER - ZAYO (QL-D)	FO4(D)
FIBER - ZAYO (QL-B)	FO4
TELEPHONE - AT&T (QL-D)	T1(D)
TELEPHONE - AT&T (QL-B)	T1
UNKNOWN - UTILITY (QL-B)	UNK

ELECTRIC

ELECTRIC - CPS ENERGY (QL-D)	E1(D)
ELECTRIC - CPS ENERGY (QL-B)	E1

GAS

GAS - CPS Energy (QL-D)	G1(D)
GAS - CPS Energy (QL-B)	G1

TRAFFIC

TRAFFIC - COSA (QL-D)	TS1(D)
TRAFFIC - COSA (QL-B)	TS1
STREET LIGHT - COSA (QL-B)	E2

WASTEWATER

WASTEWATER - SAWS (QL-D)	WW1(D)
WASTEWATER - UNK (QL-D)	WW2(D)

WATER

WATER - SAWS (QL-D)	W1(D)

0 20′ 40′
SCALE: 1" = 40′

STATE OF TEXAS
AMPARO A. ORTEGA
103686
LICENSED PROFESSIONAL ENGINEER
5/19/2025

consor F-12040

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

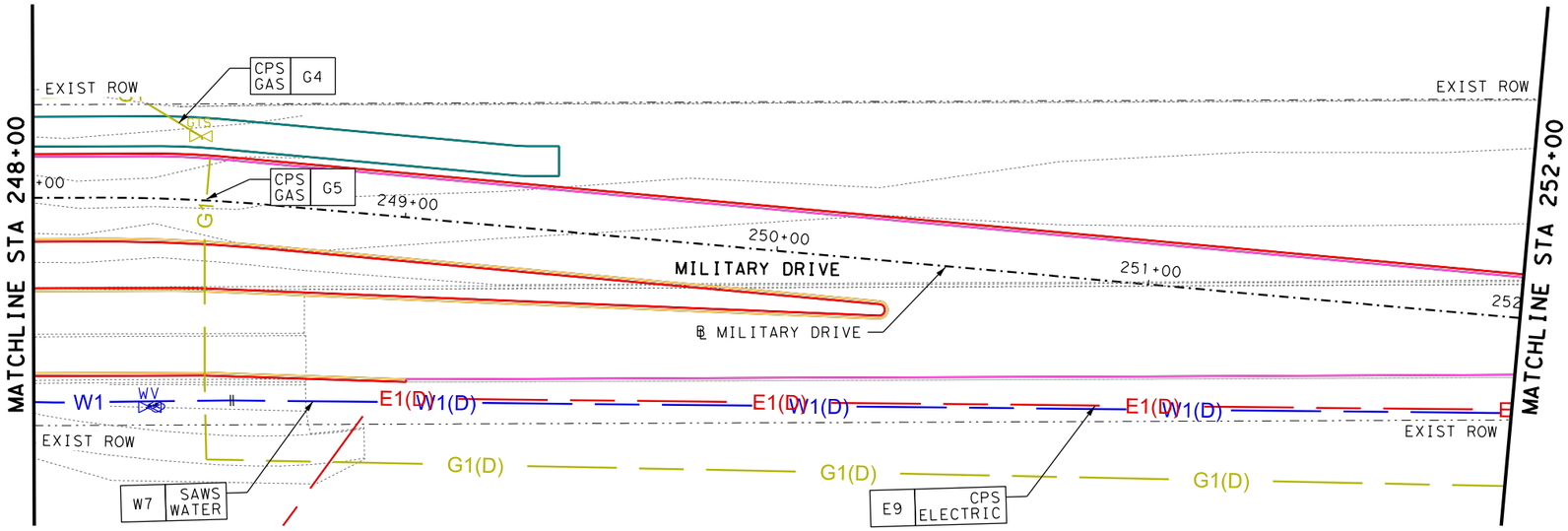
MILITARY DRIVE

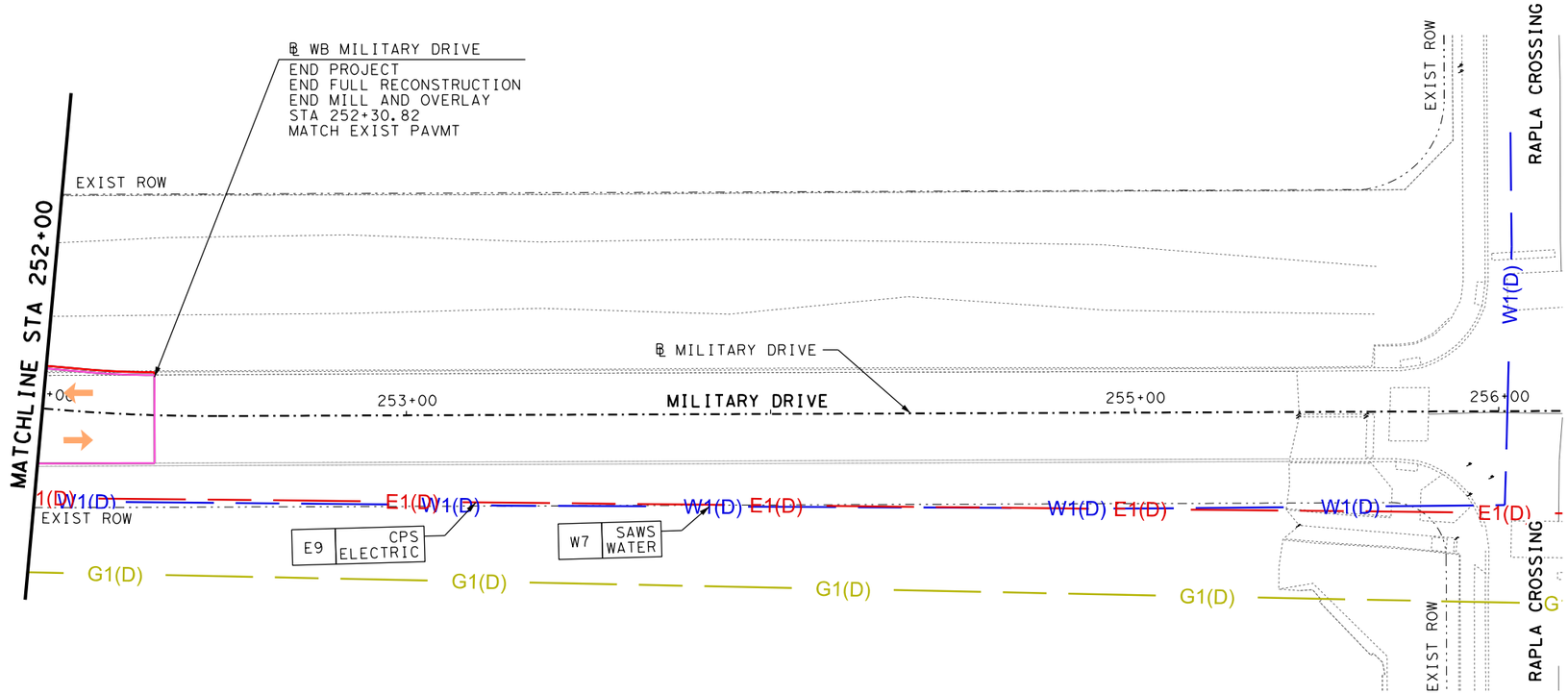
UTILITY BASE MAP

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: JM	DSGN. BY: MH	CHKD. BY: AO	SHEET NO. 376 OF 377

c:\bms\pwe-useast-006\knerr.chris\dms71714\C_MD_S_UE04.dgn
8:25:21 AM
5/19/2025

5/19/2025 8:25:21 AM
c:\bms\pwe-useast-006\knerr.chris\dms71714\C_MD_S_UE04.dgn





LEGEND OF UTILITY TYPES

COMMUNICATIONS

CATV - CHARTER (QL-D)	TV1(D)
CATV - CHARTER (QL-B)	TV1
FIBER DUCT BANK - ATT(QL-D)	DUCT
FIBER DUCT BANK - GOOGLE (QL-D)	DUCT
FIBER - CONTERRA (QL-D)	FO1(D)
FIBER - CONTERRA (QL-B)	FO1
FIBER - GOOGLE FIBER(QL-D)	FO2(D)
FIBER - GOOGLE FIBER(QL-B)	FO2
FIBER - MCI-VERIZON (QL-D)	FO3(D)
FIBER - MCI-VERIZON (QL-B)	FO3
FIBER - ZAYO (QL-D)	FO4(D)
FIBER - ZAYO (QL-B)	FO4
TELEPHONE - AT&T (QL-D)	T1(D)
TELEPHONE - AT&T (QL-B)	T1
UNKNOWN - UTILITY (QL-B)	UNK

ELECTRIC

ELECTRIC - CPS ENERGY (QL-D)	E1(D)
ELECTRIC - CPS ENERGY (QL-B)	E1

GAS

GAS - CPS Energy (QL-D)	G1(D)
GAS - CPS Energy (QL-B)	G1

TRAFFIC

TRAFFIC - COSA (QL-D)	TS1(D)
TRAFFIC - COSA (QL-B)	TS1
STREET LIGHT - COSA (QL-B)	E2

WASTEWATER

WASTEWATER - SAWS (QL-D)	WW1(D)
WASTEWATER - UNK (QL-D)	WW2(D)

WATER

WATER - SAWS (QL-D)	W1(D)

0 20′ 40′
SCALE: 1" = 40′

STATE OF TEXAS
AMPARO A. ORTEGA
103686
LICENSED
PROFESSIONAL ENGINEER
5/19/2025

consor
F-12040

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

MILITARY DRIVE

UTILITY BASE MAP

100 % SUBMITTAL	PROJECT NO.: 23-03907		DATE: 5/19/2025
DRWN. BY: JM	DSGN. BY: MH	CHKD. BY: AO	SHEET NO. 377 OF 377

c:\dms\pwe-useast-006\knerr.chris\dms71714\C_MD_S_UE05.dgn
5/19/2025 8:25:59 AM