CITY OF SAN ANTONIO

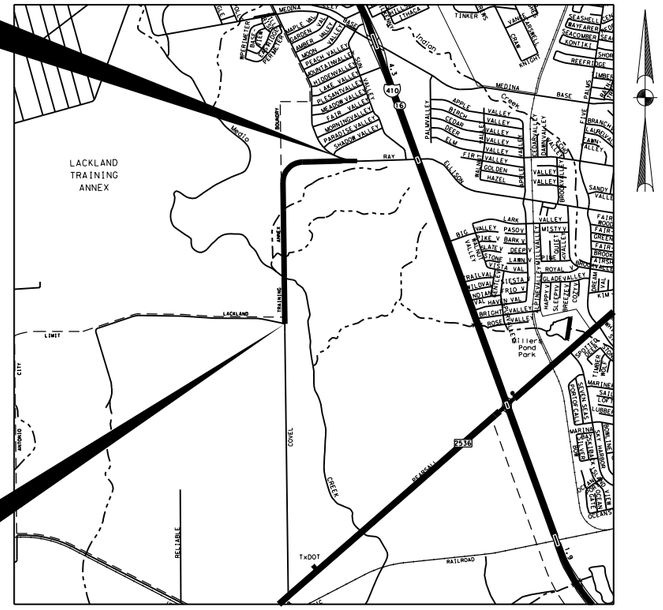
PUBLIC WORKS DEPARTMENT

100% SUBMITTAL

COVEL RD (RAY ELLISON BLVD. TO PATROL RD.)

LOCATION MAP
N.T.S.

BEGIN PROJECT
COSA PRJ. NUM.: 23-03872
BEG. STA. = 10+21.75



END PROJECT
COSA PRJ. NUM.: 23-03872
END STA. = 80+69.32

PROJECT LIMITS: IN SAN ANTONIO ON COVEL RD
FROM RAY ELLISON BLVD TO PATROL RD

TOTAL LENGTH OF PROJECT: 7,047.57 FT. = 1.33 MI.

ROADWAY CLASSIFICATION: PRIMARY ARTERIAL
DESIGN SPEED: 45 MPH
ADT: 2,044 (YEAR 2020)
AREA OF DISTURBED SOIL: 6.81 AC.

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

CITY OF SAN ANTONIO TEXAS
PUBLIC WORKS

PREPARED BY:
GANNETT FLEMING
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

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

	GENERAL	
1	TITLE SHEET	
2	INDEX OF SHEETS	
3	PROJECT LAYOUT	
4-5	COVEL RD CONTROL SHEET	
6	EXISTING TYPICAL SECTIONS	
7	PROPOSED TYPICAL SECTIONS	
8	CITY OF SAN ANTONIO GENERAL NOTES	
9-10	CITY OF SAN ANTONIO SUPPLEMENTAL GENERAL NOTES	
11	ESTIMATED QUANTITIES	
12-13	SUMMARY OF QUANTITIES (TCP)	
14	SUMMARY OF QUANTITIES (REMOVAL AND ROADWAY)	
15	SUMMARY OF QUANTITIES (DRAINAGE)	
16	SUMMARY OF QUANTITIES (SIGNING AND PAV. MARKINGS)	
17	SUMMARY OF QUANTITIES (SW3P)	
18	SUMMARY OF QUANTITIES (TREE PRESERVATION)	
	TRAFFIC CONTROL PLAN	
19	TRAFFIC CONTROL PLAN TRAFFIC NOTES	
20	TRAFFIC CONTROL PLAN SEQUENCE OF WORK	
21-23	TRAFFIC CONTROL PLAN TYPICAL SECTIONS	
24	PHASING & TRAFFIC CONTROL PLAN	
25-26	DETOUR LAYOUT	
27-54	TRAFFIC CONTROL PLAN	
55-58	COSA BC (1 THRU 4)	
59-60	*LPCB-13	
61-72	*BC (1)-21 THRU (12)-21	
73	*TCP (2-3)-23	
74	*EDGECON-21	
75	*WZBRK-13	
76	*WZRCD-13	
77	*WZ(STPM)-23	
	ROADWAY	
78-86	REMOVAL LAYOUTS	
87-88	HORIZONTAL ALIGNMENT DATA	
89	INTERSECTION LAYOUT AT BEGIN PROJECT	
90	INTERSECTION LAYOUT AT END PROJECT	
91	RAY ELLISON PLAN & PROFILE LAYOUT	
92-108	COVEL RD PLAN & PROFILE LAYOUTS	
109	DRIVEWAY DETAIL AND SUMMARY	
110	DRIVEWAY PROFILES	
111	COSA CONCRETE DRIVEWAY STANDARDS	
112	COSA MISCELLANEOUS CONSTRUCTION STANDARDS I	
113	COSA MISCELLANEOUS CONSTRUCTION STANDARDS II	
114	*CPTD (FTW)(MOD)	
115-116	*CRCP(1)-23	
117-120	*TYPE T131RC	
121	*MBGF(SR)-19	
122	*GF(31)-19	
123	*GF(31)DAT-19	
124	*GF(31)MS-19	
125	*SGT(10S)31-16	
126	*SGT(11S)31-18	
127	*SGT(12S)31-18	
128	*SGT(15)31-20	
129	*SGT(13S)31-18	
130	*SGT(14W)31-18	
131	*BED-14	
132	*CCCG-22	
133-136	*PED-18	
	DRAINAGE	
137-138	OFFSITE DRAINAGE AREA MAP	
139	INTERNAL DRAINAGE AREA MAP	
140-143	HYDRAULIC DATA SHEET	
144-148	CULVERT LAYOUTS	
149	*CH-PW-0	
150	*PW-20	
151	*SCP-6	
152	*SCP-MD	
153	TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS	
	SIGNAGE AND PAVEMENT MARKINGS	
154-162	SIGNAGE AND PAVEMENT MARKING LAYOUTS	
163-166	COSA TRAFSIGN STDS	
167	COSA MARKERS, TRAFFIC BUTTONS	
168	COSA ADVANCED WARNING BEACON	
169-174	*D & OM (1-6)-20	
175	*D & OM (VIA)-20	
	SW3P & ENVIRONMENTAL	
176	EPIC	
177	SW3P GENERAL NOTES	
178-179	SW3P NARRATIVE SHEETS	
180-188	SW3P LAYOUT	
189-190	SW3P STANDARDS	
	TREE PRESERVATION	
191	TREE PRESERVATION LAYOUT	
192	TREE PROTECTION NOTES AND DETAILS	
	UTILITIES	
193-201	EXISTING UTILITY LAYOUTS	
	CROSS SECTIONS	
202-337	PROPOSED COVEL RD CROSS SECTIONS	

	SAWS SANITARY SEWER (JOINT-BID)	
1	COVER SHEET	
2	INDEX OF SHEETS AND SUMMARY OF QUANTITIES	
3	SANITARY SEWER GENERAL NOTES	
4	PROJECT LAYOUT	
5-9	SANITARY SEWER ADJUSTMENTS	
	CPS GAS (JOINT-BID)	
1	CPS NOTES	
2	CPS GAS LOCATION DATA TABLE	
3-13	PROPOSED CPS GAS LAYOUTS	

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

* TXDOT STANDARD

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED PROFESSIONAL ENGINEER

6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

INDEX OF SHEETS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: FR	DSGN. BY: JAR	CHKD. BY: LC	SHT NO.: 2

1:58:09 PM
6/27/2025
jrobles
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RAY ELLISON BLVD NORTHBOUND SLOPE TRANSITIONS		
STATION	CROSS SLOPE	MODE
100+53.00	-4.30%	SUPER
101+04.00	-4.00%	SUPER
102+03.50	-4.20%	SUPER
102+30.00	-4.00%	SUPER

COVEL RD NORTHBOUND SLOPE TRANSITIONS		
STATION	CROSS SLOPE	MODE
10+26.50	2.00%	FULL SUPER
10+56.50	1.00%	FULL SUPER OUT
10+86.50	0.00%	LEVEL CROWN
11+16.50	-1.00%	NORMAL CROWN IN
11+46.50	-2.00%	NORMAL CROWN
11+90.00	-2.00%	NORMAL CROWN
12+10.50	-2.00%	NORMAL CROWN
12+37.75	-2.00%	NORMAL CROWN
13+01.00	-2.00%	NORMAL CROWN
13+38.10	-2.00%	NORMAL CROWN OUT
16+60.00	0.03%	FULL SUPER IN
19+90.00	2.00%	FULL SUPER OUT
21+50.00	0.00%	LEVEL CROWN
23+35.00	-6.00%	FULL SUPER IN
32+70.00	-6.00%	FULL SUPER OUT
34+40.00	-2.00%	NORMAL CROWN IN
36+10.00	-2.00%	NORMAL CROWN
43+00.00	-2.00%	NORMAL CROWN OUT
45+00.00	2.00%	FULL SUPER IN
62+25.75	2.00%	FULL SUPER OUT
63+45.75	-2.00%	NORMAL CROWN IN
64+43.75	-2.00%	NORMAL CROWN OUT
65+63.75	2.00%	FULL SUPER IN
78+00.00	2.00%	FULL SUPER OUT
80+69.31	-2.00%	NORMAL CROWN IN

COVEL RD SOUTHBOUND SLOPE TRANSITIONS		
STATION	CROSS SLOPE	MODE
10+26.50	-3.50%	BEGIN FULL SUPER
10+71.50	-5.00%	FULL SUPER
11+30.00	-4.00%	FULL SUPER OUT
12+10.50	-2.00%	NORMAL CROWN IN
12+20.00	-2.00%	NORMAL CROWN
12+37.75	-2.00%	NORMAL CROWN
12+85.50	-2.00%	NORMAL CROWN
13+01.00	-2.00%	NORMAL CROWN
13+38.10	-2.00%	NORMAL CROWN
13+72.25	-2.00%	NORMAL CROWN
19+90.00	-2.00%	NORMAL CROWN OUT
23+35.00	6.00%	FULL SUPER IN
32+70.00	6.00%	FULL SUPER OUT
36+10.00	-2.00%	NORMAL CROWN IN
43+00.00	-2.00%	NORMAL CROWN
63+45.75	-2.00%	NORMAL CROWN
64+43.75	-2.00%	NORMAL CROWN
65+63.75	-2.00%	NORMAL CROWN
76+69.00	-2.00%	BEGIN NORMAL CROWN OUT
77+50.00	-0.50%	NORMAL CROWN OUT
78+68.50	-0.50%	BEGIN NORMAL CROWN IN
79+68.50	-2.00%	NORMAL CROWN IN
80+69.32	-2.00%	NORMAL CROWN

MATCH LINE STA 32+00.00

FEMA FLOODPLAIN (100-YR)

EXIST CULVERT
3-30" CMP (REMOVE)
PROP CULVERT #1
5-30"X 47.50 LF
W/CH-PW-0 LT & RT

BEGIN RAY ELLISON
@ RAY ELLISON
STA 100+53.00

PC 100+00.00
PT 101+10.96
PC 101+75.62
PT 102+36.27
POT 103+11.43
HERCULES PT
PI 19+72.51
PC 22+94.51
30+00
25+00
15+00
20+00
100+00
POT 10+00.00
10+10.01
PC 10+26.50
PT 11+47.54
PC 12+87.36
PT 13+23.57

℄ COVEL RD
EXIST ROW
PROP EOP
COVEL RD
RAY ELLISON BLVD

BEGIN PROJECT
PRJ. NO.: 23-03872
STA 10+21.75

EXIST CULVERT
2-24" CMP (REMOVE)
PROP CULVERT #2
2-24"RCP X 50" LF
W/CH-PW-0 LT & RT

LEGEND
EXIST ROW
PROP EDGE OF PAVEMENT
FEMA FLOODPLAIN (100-YR)

MATCH LINE STA 32+00.00

FEMA FLOODPLAIN (100 YR)

HT 35+14.32

PROP EOP
EXIST ROW
35+00
40+00
45+00
50+00
55+00
PI 45+94.32
EXIST CONC DWY
TO BE REMOVED
AND RECONSTRUCTED
℄ COVEL RD
COVEL RD
EXIST CONC DWY
TO BE REMOVED
AND RECONSTRUCTED
FEMA FLOODPLAIN
(100-YR)
EXIST CONC DWY
TO BE REMOVED
AND RECONSTRUCTED

EXIST CULVERT
4-26"H X 42"W (REMOVE)
PROP CULVERT #3
4-6'X2'MBC X 61.68 LF &
4-DES 3 ARCH PIPE (24" EQUIV.) X 62 LF
W/PW-1 (HW=4FT) LT & RT

EXIST GRAVEL DWY
TO BE REMOVED
AND RECONSTRUCTED

EXIST CULVERT
6-26"H X 42"W (REMOVE)
PROP CULVERT #4
6-6'X2'MBC X 54.64 LF
W/PW-1 LT & RT

MATCH LINE STA 57+00.00

PROFILE GRADE LINE
& AXIS OF ROTATION

SUPERELEVATION DIAGRAM

MATCH LINE STA 57+00.00

FEMA FLOODPLAIN (100-YR)

EXIST CONC DWY
TO BE REMOVED
AND RECONSTRUCTED

PI 63+94.32
PROP EOP
℄ COVEL RD
EXIST ROW
COVEL RD
60+00
65+00
70+00
75+00
80+00
EXIST CONC DWY
TO BE REMOVED
AND RECONSTRUCTED
EXIST CONC DWY
TO BE REMOVED
AND RECONSTRUCTED
PROP EOP
EXIST ROW

END PROJECT
PRJ. NO.: 23-03872
STA 80+69.32

EXIST CULVERT
5-10' X 10' BOX (TO REMAIN)

PATROL RD
COVEL GARDENS
WASTE MANAGEMENT
EXIST GRAVEL DWY
TO BE REMOVED
AND REPLACED
FEMA FLOODPLAIN
(100-YR)

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
6/27/2025

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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

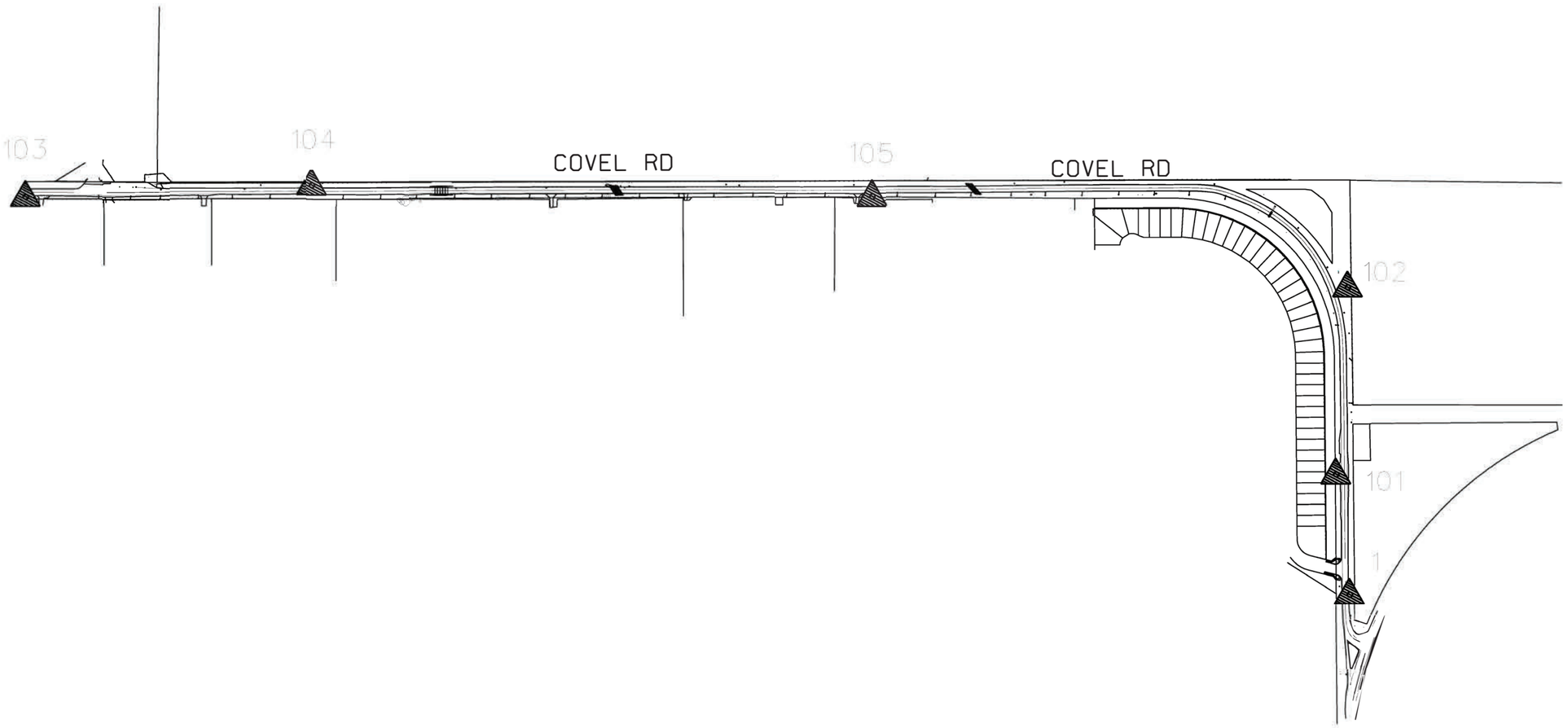
COVEL RD IMPROVEMENTS

PROJECT LAYOUT

SHEET 1 OF 1

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: FR	DSGN. BY: JAR	CHKD. BY: LC	SHT NO.: 3

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6/27/2025
jrobles
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NOTES:

1. ALL COORDINATES SHOWN ARE BASED ON THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), 2011 ADJUSTMENT. ALL COORDINATES SHOWN HERE ON ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE COMBINED ADJUSTMENT FACTOR OF 1.00017.

2. HORIZONTAL VALUES WERE ESTABLISHED FROM TXDOT REAL TIME NETWORK. VERTICAL VALUES WERE ESTABLISHED FROM HOLDING A GPS ELEVEATION BASED ON GEOID 12B, NAVD88 DATUM AND DIGITAL DIFFERENTIAL LEVELING FROM CONTROL POINT 52

3. THIS CONTROL WAS PREFORMED IN JUNE 2023.

04/17/2023

DAN H. CLARK, R.P.L.S. #6011

AG3 Group, LLC
4800 FREDERICKSBURG RD. SUITE 200SL
SAN ANTONIO, TX 78229
P:210-208-9400 F:210-208-9401
TBPE No. F-10015 · TBPLS No. 10193922

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL ROAD
CONTROL SHEET

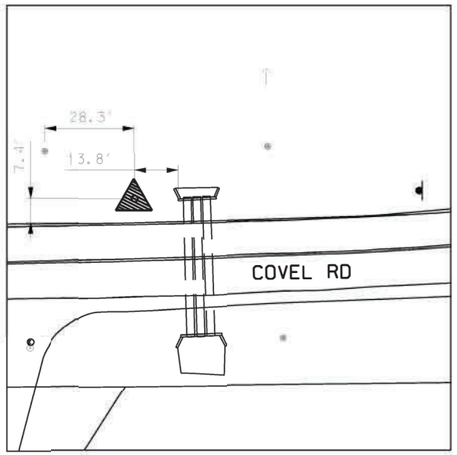
SHEET 1 OF 2

100% SUBMITTAL	PROJECT NO.: 23-0387		DATE: 7/21/2023
DRWN. BY: MV	DSGN. BY:	CHKD. BY:	SHT NO.: 4

7/6/23
MFV/AG3

CP #1-IRON ROD SET

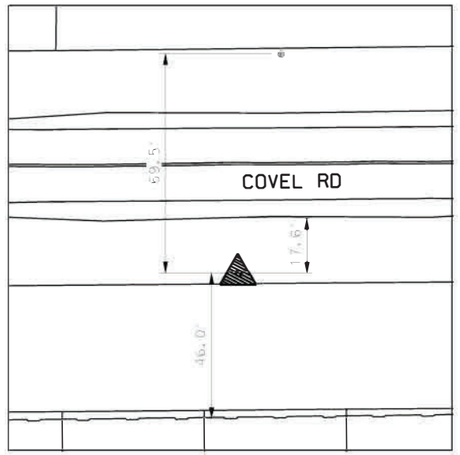
N: 13681215.29
E: 2082674.12
EL: 706.86



CONTROL POINT #1IS AN IRON ROD SET WITH ALUMINIUM CAP LOCATED IN THE EXISTING R.O.W. APPROXIMATELY 100' WEST FROM THE INTERSECTION COVEL RD. & HERCULES POINT. 28.3' FROM THE POWER POLE, 13.8' FROM THE CORNER OF THE HEADWALL, AND 7.4' FROM THE EDGE OF PAVEMENT.

CP #101-IRON ROD SET

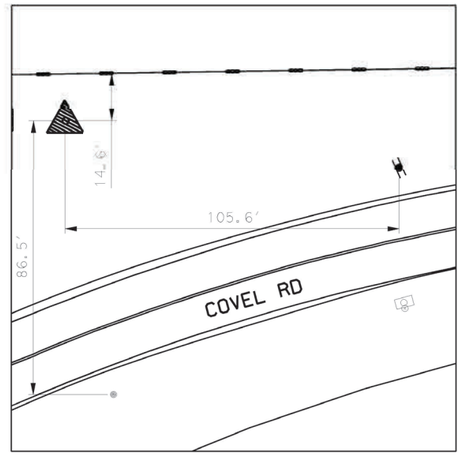
N: 13681156.00
E: 2082674.12
EL: 704.95



CONTROL POINT #101 IS AN IRON ROD SET WITH ALUMINIUM CAP LOCATED IN THE EXISTING R.O.W. APPROXIMATELY 400' EAST FROM THE INTERSECTION COVEL RD. & HERCULES POINT. 69.5' FROM THE POWER POLE, 46.0' FROM THE FENCE LINE, AND 17.6' FROM THE EDGE OF PAVEMENT.

CP #102-IRON ROD SET

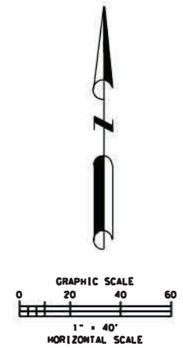
N: 13681204.26
E: 2081900.41
EL: 692.40



CONTROL POINT #102 IS AN IRON ROD SET WITH ALUMINIUM CAP LOCATED IN THE EXISTING R.O.W. APPROXIMATELY 1190' EAST FROM THE INTERSECTION COVEL RD. & HERCULES POINT. 14.6' FROM THE FENCE LINE, 105.6' FROM THE SIGN, AND 86.5' FROM THE POWER POLE.

LEGEND

CONTROL POINT

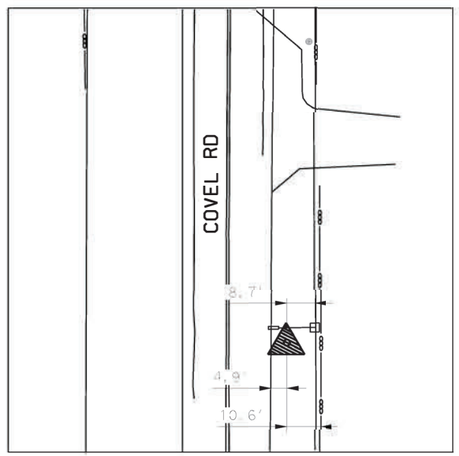


NOTES:

1. ALL COORDINATES SHOWN ARE BASED ON THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), 2011 ADJUSTMENT. ALL COORDINATES SHOWN HERE ON ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE COMBINED ADJUSTMENT FACTOR OF 1.00017.
2. HORIZONTAL VALUES WERE ESTABLISHED FROM TXDOT REAL TIME NETWORK. VERTICAL VALUES WERE ESTABLISHED FROM HOLDING A GPS ELEVEATION BASED ON GEOID 12B, NAVD88 DATUM AND DIGITAL DIFFERENTIAL LEVELING FROM CONTROL POINT 52
3. THIS CONTROL WAS PREFORMED IN JUNE 2023.

CP #103-IRON ROD SET

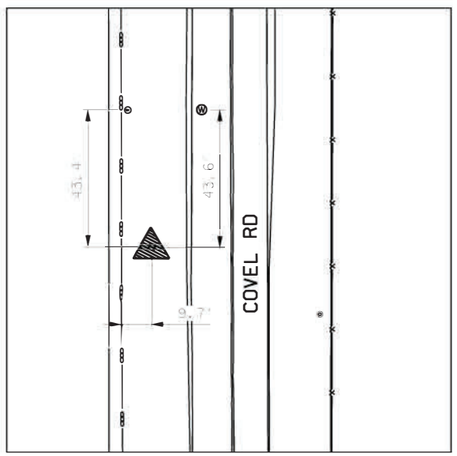
N: 13675722.95
E: 2081476.50
EL: 630.26



CONTROL POINT #103 IS AN IRON ROD SET WITH ALUMINIUM CAP LOCATED IN THE EXISTING R.O.W. APPROXIMATELY 557' SOUTH FROM THE INTERSECTION COVEL RD. & PATROL RD. 10.6' FROM THE FENCE LINE, 8.7' FROM THE LIGHT POLE, AND 4.9' FROM THE EDGE OF PAVEMENT.

CP #104-IRON ROD SET

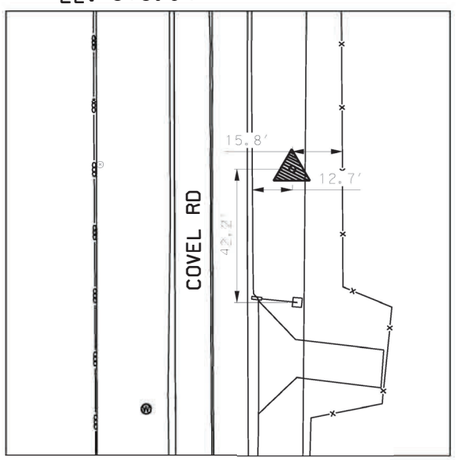
N: 13676908.99
E: 2081476.50
EL: 630.93



CONTROL POINT #104 IS AN IRON ROD SET WITH ALUMINIUM CAP LOCATED IN THE EXISTING R.O.W. APPROXIMATELY 636.3' NORTH FROM THE INTERSECTION COVEL RD. & PATROL RD. 9.7' FROM THE FENCE LINE, 43.4' FROM THE GAS VALVE, AND 43.6' FROM THE MAN HOLE WASTE.

CP #105-IRON ROD SET

N: 10074539.29
E: 3461884.87
EL: 313.04



CONTROL POINT #105 IS AN IRON ROD SET WITH ALUMINIUM CAP LOCATED IN THE EXISTING R.O.W. APPROXIMATELY 2961' NORTH FROM THE INTERSECTION COVEL RD. & PATROL RD. 15.8' FROM THE FENCE LINE, 42.2' FROM THE LIGHT POLE, AND 12.7' FROM THE EDGE OF PAVEMENT.

04/17/2023

DAN H. CLARK, R.P.L.S. #6011

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TBPE No. F-10015 · TBPLS No. 10193922

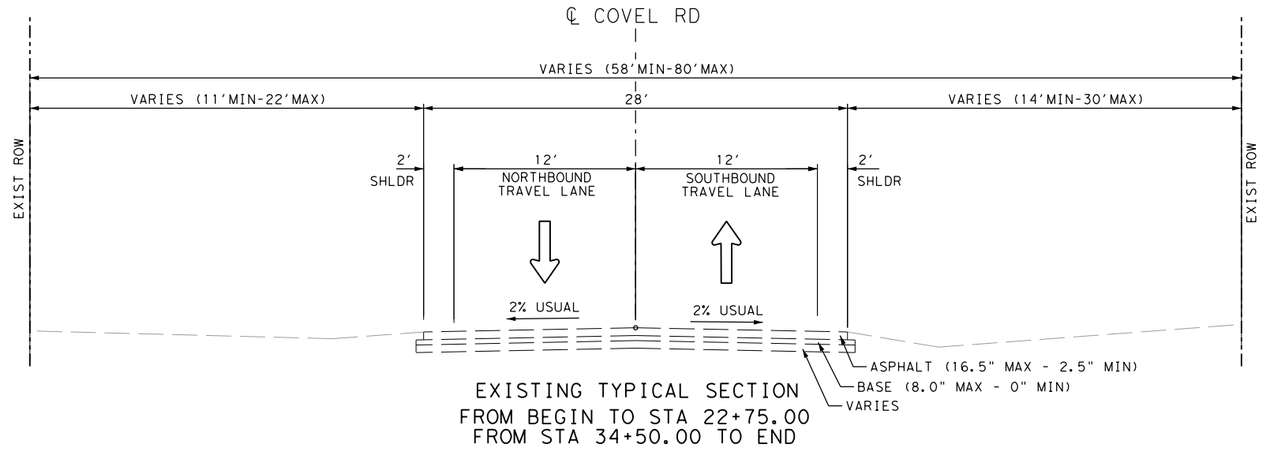
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL ROAD
CONTROL SHEET

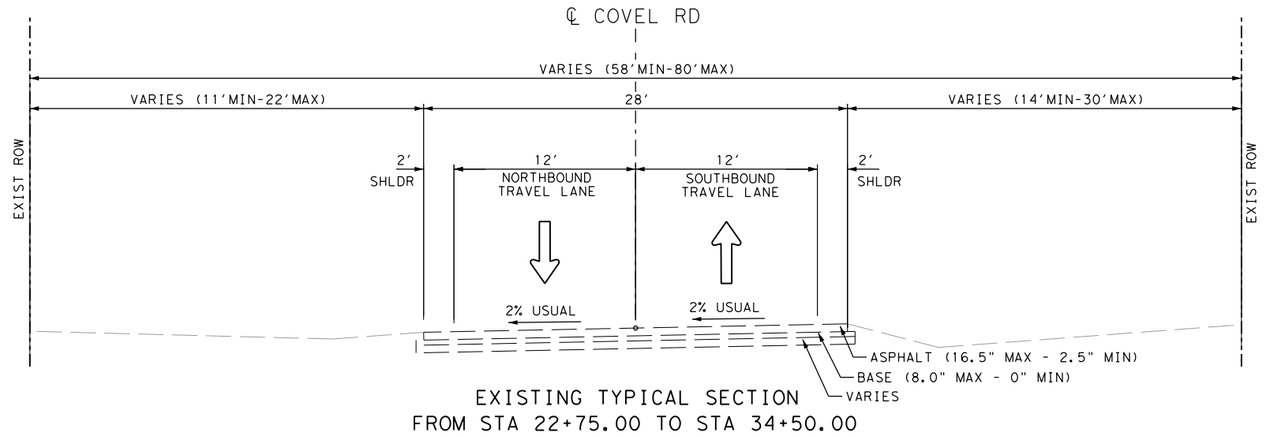
SHEET 2 OF 2

100% SUBMITTAL	PROJECT NO.: 23-0387		DATE: 7/21/2023
DRWN. BY: MV	DSGN. BY:	CHKD. BY:	SHT NO.: 5

7/6/23
MFV/AG3



EXISTING TYPICAL SECTION
FROM BEGIN TO STA 22+75.00
FROM STA 34+50.00 TO END



EXISTING TYPICAL SECTION
FROM STA 22+75.00 TO STA 34+50.00

NOTE: PAVEMENT DEPTH VARIES THROUGHOUT THE PROJECT.

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

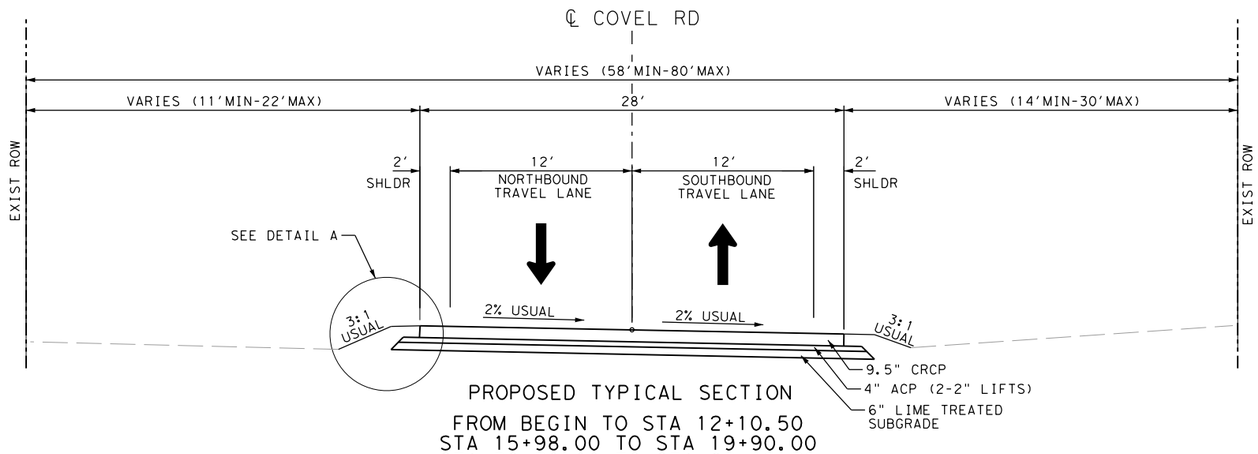
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS
EXISTING TYPICAL SECTIONS

NTS SHEET 1 OF 1

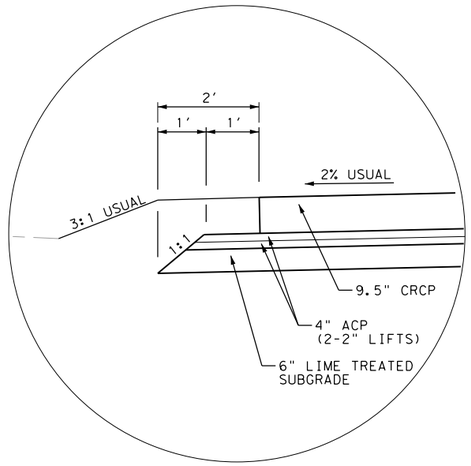
100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: FR	DSGN. BY: JAR	CHKD. BY: LC	SHT NO.: 6

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6/27/2025
jrobles
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PROPOSED TYPICAL SECTION

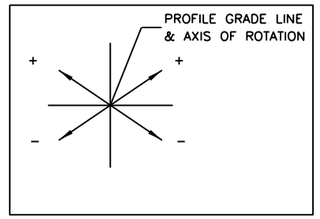
FROM BEGIN TO STA 12+10.50
STA 15+98.00 TO STA 19+90.00
STA 32+70.00 TO STA 63+45.75
STA 64+43.75 TO STA 78+00.00



DETAIL A

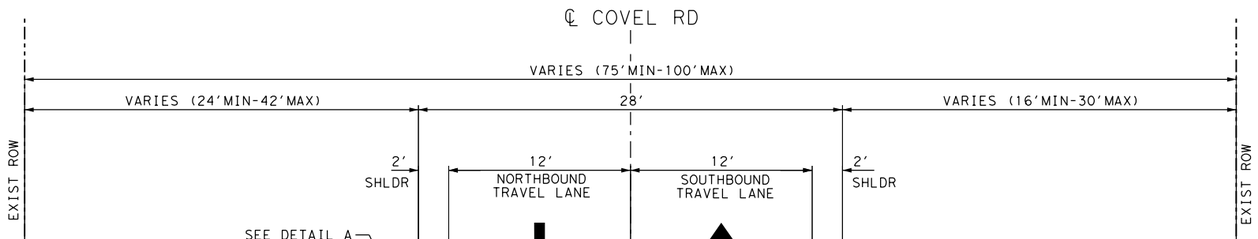
NOTES:

1. CONTRACTOR TO ALLOW SEVEN (7) DAYS FOR HIGH SULFATE TREATMENT MELLOWING TIME AS PER GEOTECH REPORT, FROM BEGINNING OF THE PROJECT TO STA. 19+72.



SUPERELEVATION DIAGRAM

PROPOSED TYPICAL SECTION
STA 12+10.50 TO STA 15+98.00
STA 63+45.75 TO STA 64+43.75
STA 78+00.00 TO STA 80+69.31



PROPOSED TYPICAL SECTION
STA 19+90.00 TO STA 32+70.00

PROPOSED TYPICAL SECTION
STA 100+53.00 TO STA 102+30.00

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER

6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED TYPICAL SECTIONS

NTS			SHEET 1 OF 1
100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: FR	DSGN. BY: JAR	CHKD. BY: LC	SHT NO.: 7

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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)	233-2010
BEXAR METROPOLITAN WATER DISTRICT (BEXAR MET)	354-6538 / 357-5741
COSA DRAINAGE	206-8433
COSA SIGNAL OPERATIONS	207-7720 / 207-7765
TEXAS STATE WIDE ONE CALL LOCATOR	1-800-344-8377

- CITY PUBLIC SERVICE ENERGY
- TIME WARNER
- AT&T
- MCI

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 207-7306 OR 207-3327 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. 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) 419-6905). 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.

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 (REFER TO DETAILS).
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

CITY OF SAN ANTONIO
GENERAL NOTES

100 % SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: DS	DSGN. BY: LC	CHKD. BY: FR	SHEET NO.: 8

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

ADDITIONAL NOTES

ITEMS:

1.THE PRICE OF REMOVAL PAY ITEMS IS FULL COMPENSATION FOR LOADING, HAULING, DISPOSAL, STOCKPILING, REMOVAL OF APPURTENANCES, EXCAVATION AND BACKFILL, EQUIPMENT, LABOR TOOL, AND INCIDENTALS.

2. ALL TREE REMOVALS SHALL BE CONSIDERED SUBSIDIARY TO ITEM 101.1 "PREPARING OF RIGHT-OF-WAY. (NO SEPARATE PAY ITEM)

3. CAPPING, PLUGGING, DEWATERING AND PUMPING EXISTING AND NEWLY INSTALLED CULVERTS SHALL BE CONSIDERED INCIDENTAL TO DRAINAGE ITEMS. (NO SEPARATE PAY ITEM)

4. ITEM 104.1 "STREET EXCAVATION" SHALL INCLUDE REMOVAL OF ALL MATERIALS ENCOUNTERED INCLUDING CONCRETE STABILIZED BASE OR FLOWABLE BACKFILL.

5. THE EXCAVATION OF CONCRETE STABILIZED OR FLOWABLE BACKFILL NECESSARY TO INSTALL PIPING OR CONDUIT SHALL BE CONSIDERED SUBSIDIARY TO THE PIPE OR CONDUIT BID ITEM.

6. THE CONTRACTOR SHALL COORDINATE ANY REMOVAL OF ASBESTOS CONCRETE PIPE WITH SAN ANTONIO WATER SYSTEM (SAWS).

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE INTEGRITY OF ANY STRUCTURE ADJACENT TO EXCAVATION OPERATIONS. THIS INCLUDES CONCRETE, ROCK OR MASON WALLS, FENCES, AND CONCRETE EMBANKMENT. ANY DAMAGE TO ADJACENT STRUCTURES SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL UTILITIES INCLUDING IRRIGATION SYSTEMS. ANY DAMAGE TO UTILITIES SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE.

9. ITEM 515.1 "TOPSOIL" ACCOUNTS FOR THE PLACEMENT OF 4 INCHES OF TOPSOIL AS RECOMMENDED PER PLANS.

10. SODDING AND TOPSOIL QUANTITY LIMITS INCLUDE AREAS WITHIN THE RIGHT-OF-WAY AS WELL AS AREAS SURROUNDING DRIVEWAY PENETRATIONS, RIPRAP AND DISTURBED AREAS DUE TO SIDE SLOPE GRADING. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO STABILIZE AND REVEGETATE ANY DISTURBED AREAS DUE TO CONSTRUCTION ACTIVITIES AT THE CONTRACTOR'S EXPENSE.

11. CHANNELIZATION DEVICES, TCP MEASURES FOR SURFACING OPERATIONS SHALL BE CONSIDERED SUBSIDIARY TO ITEM 530 "BARRICADES, SIGNS, AND TRAFFIC HANDLING". (NO SEPARATE PAY ITEM)

12. THE PRICE OF CULVERT PLUGS SHALL BE SUBSIDIARY TO THE UNIT BID PRICE FOR THE CULVERTS. MORTAR JOINTS TO BE USED AS DIRECTED BY THE ENGINEER. REMOVAL OF THE EXISTING PLUGS FOR CULVERT CONNECTIONS SHALL BE CONSIDERED INCIDENTAL TO ALL DRAINAGE ITEMS". (NO SEPARATE PAY ITEM)

13. VEGETATIVE WATERING IS SUBSIDIARY TO ITEM 516 "SODDING" AND ITEM "804 NEW TREE & SHRUB PLANTING AND MAINTENANCE". (NO SEPARATE PAY ITEM)

14. ALL REMOVAL OF FENCES, SEPTIC SYSTEMS, PIPES OR ANY OTHER OBSTRUCTIONS WITHIN THE ACQUIRED EASMENTS WILL BE SUBSIDIARY TO ITEM 101.1 "PREPARING OF RIGHT OF WAY". THE REMOVAL OF SEPTIC SYSTEMS INCLUDES ALL ABOVE AND UNDERGROUND INFRASTRUCTURE AND EQUIPMENT AS WELL AS THE REQUIRED PERMITS FOR THE REMOVALS. (NO SEPERATE PAY ITEM, SUBSIDIARY TO ITEM 101.1.)

15. THE DOWNSTREAM ANCHOR TERMINAL AND UPSTREAM SGT ARE SUBSIDIARY TO ITEM 509.1 "METAL BEAM GUARD RAIL", NO SEPERATE PAY ITEM.

16. ALL STEEL ROADWAY PLATES LOCATED WITHIN CONSTRUCTION AREA TO BE RETURNED TO COSA PUBLIC WORKS OPERATIONS TEAM. THIS WORK TO BE SUBSIDIARY TO ITEM 101.1 "PREPARING OF RIGHT OF WAY."

ADDITIONAL NOTES (CONT.)

EXCESS SOIL DISPOSAL GENERAL NOTES:

1. CONTRACTOR SHALL PROVIDE A SUBMITTAL REGARDING DISPOSAL SITES TO THE CITY 14 DAYS PRIOR TO COMMENCEMENT OF HAULING OFF ANY EXCAVED 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 SOLEY 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.

DECEMBER 2009

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

CITY OF SAN ANTONIO SUPPLEMENTAL GENERAL NOTES

100 % SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: DS	DSGN. BY: LC	CHKD. BY: FR	SHEET NO.: 9

ADDITIONAL NOTES (CONT.)

TREE PRESERVATION:

1.Any and all curb and sidewalk work shall use alternative construction methods to minimize extensive root damage to trees. Tree roots shall be cut with a saw prior to excavation with equipment. All construction access and staging areas will need to be surveyed and associated tree impacts will need to be accounted for in the preservation plan.

2.Prior to the start of work, call 207-1111 to schedule a pre-construction and fencing inspection. [Sec. 35-477 (5) (c)] Failure to schedule a fencing inspection prior to the start of work may result in a Stop Work Order, a penalty of $2000.00, or both. Referenced the AP# associated with the approved permit.

3.Contractor is responsible for providing a licensed Tree Maintenance Professional throughout the project per City of San Antonio Ordinance Article VIII Sec. 21-171.

35-523 (p) Public Projects. Municipal and utility entities shall obtain a tree permit before any vegetation is removed or new construction activity takes place. Special attention will be given to the preservation of trees in public rights-of-way that are to help satisfy the objectives of the streetscape planting standards of this article (section 35-512). The city arborist shall approve an application for the reasonable removal of a protected tree in connection with construction, maintenance or repair of public facilities in or above a public street, alley, rights-of-way, easement or other public land.

35-523 (p) (4) Design, Diversity and Desirability. The location of all improvements shall be orientated by the applicant, to the extent the applicant determines possible, in a manner which allows for the preserving of the greatest number of trees and in doing so is encouraged to acquire rights-of-way in such a manner. Applicants are also encouraged to preserve trees to meet the landscape and streetscape standards. Also, as the particular site conditions warrant, the applicant shall preserve a diversity of species.

35-523 (k) (5) All offsite staging, storage, project trailers, employee parking, etc. are required to comply with the terms and conditions of the approved tree permit.

35-477 (j) It shall be the responsibility of the permit holder to maintain a copy of the tree permit, the data and drawings required by this section, and the conditions of approval imposed by the City Arborist readily available at the site at all times during which the authorized work is in progress.

35-523 (k) (4) All broken branches & exposed roots 2" in diameter or greater of Significant, Heritage or mitigation trees shall be cut cleanly. For oak species, in order to prevent oak wilt infection, wounds must be painted within 30 min.

21-170 (b) All wounds to the trunk, limbs, and root system of oak trees in the city that expose sapwood shall be painted within 30 min. of the wound with asphaltic, exterior oil or latex based paint.

35-523 (k) (2) The barrier shall be in place before any site work is initiated and maintained throughout the construction process.

35-477 (5) (c) A pre-construction meeting is required to review procedures for protection and management of all significant, heritage or mitigation trees. This can be scheduled with the Fencing Inspection, 207.1111. Reference AP# provided at permitting.

Tree Planting and Maintenance: All preserved and planted trees shall be maintained in a healthy condition at all times. This includes irrigating, fertilizing, pruning, and other maintenance as needed. Trees that die within twelve months shall be replaced with a tree of comparable size and species. Regarding replacement of preserved trees, significant trees shall be replaced at a 1:1 ratio (or inch-for-inch) and heritage trees shall be replaced at a 3:1 ratio (or three-to-one inches).

ENVIRONMENTAL:

1. IF ANY SENSITIVE FEATURE (CAVES, SUBSURFACE VOIDS, ETC) IS DISCOVERED DURING CONSTRUCTION, ALL CONSTRUCTION ACTIVITIES NEAR THE SENSITIVE FEATURE MUST BE SUSPENDED IMMEDIATELY. THE ENGINEER SHOULD 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 ALL PARTIES ARE IN AGREEMENT REGARDING NECESSARY PERMITTING.

2. THE CONTRACTOR SHALL PROVIDE THE ENVIRONMENTAL PRODUCT DECLARATION DOCUMENTS FOR EACH MATERIAL USED ON THE PROJECT.

VIA:

1. THE CONTRACTOR SHALL NOT REMOVE OR ADJUST ANY VIA ASSETS.

2. THE CONTRACTOR MUST CONTACT VIA ((210)362-2155 OR (210)-362-2096) FOURTEEN DAYS PRIOR, FOR THE REMOVAL OF BENCHES, STOP POLES AND ANY OTHER VIA AMENITIES WITHIN THE PROJECT LIMITS.

3. PLEASE PROVIDE THIRTY DAYS PRIOR NOTICE FOR SHELTER REMOVAL.

4. THE CONTRACTOR WILL BE LIABLE FOR ANY DAMAGES TO VIA FACILITIES NOT REMOVED BY VIA.

5. THE CONTRACTOR IS REQUIRED TO REPLACE ALL FLATWORK REMOVED OR DAMAGED IN THE COURSE OF EXECUTING THE CONTRACT UNLESS OTHERWISE NOTED BY VIA.

6. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROTECTING VIA FACILITIES IF ADJACENT TO WORK AREA.

7. CONCERNING NEW VIA RELATED FLATWORK: THE CONTRACTOR SHALL SCHEDULE WITH VIA ((210)362-2155 OR (210)-362-2096) A PRE-POUR INSPECTION FOR ANY SHELTER SLAB, PAD, ADA CONNECTOR OR OTHER PLACEMENT THAT DIRECTLY AFFECTS VIA AMENITIES PLACEMENT NOT TO INCLUDE SIDEWALKS.

ADDITIONAL NOTES (CONT.)

STORM WATER:

1. 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.

2. 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.

3. 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 210-207-8052 AS SOON AS CONFLICTS WITH UTILITIES ARE ENCOUNTERED OR ANY DRAINAGE SYSTEM IS DAMAGED DURING CONSTRUCTION.

4. 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.

5. 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.

6. 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.

7. IMPROVED SECTIONS OF EARTHEN CHANNELS AND/OR WATERWAYS WILL BE VEGETATED BY SEEDING OR SODDING. EIGHTY-FIVE PERCENT OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT THE CHANNEL FOR MAINTENANCE.

DELETED NOTES

NONE

NOTE MODIFICATION

1. MODIFY NOTE NO. 10 - COSA DRAINAGE 207-8052
CITY PUBLIC SERVICE ENERGY 353-2012
TIME WARNER 352-4306
AT&T 283-1990

(REF. TCI OCTOBER 2017 DESIGN GUIDANCE MANUAL)

DECEMBER 2009

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

CITY OF SAN ANTONIO SUPPLEMENTAL GENERAL NOTES

100 % SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: DS	DSGN. BY: LC	CHKD. BY: FR	SHEET NO.: 10

ESTIMATED QUANTITIES			
ITEM NO.		UNIT	QUANTITY
COSA BID ITEMS			
100.1	MOBILIZATION	LS	1
101.1	PREPARING RIGHT-OF-WAY	LS	1
103.1	REMOVE CONCRETE CURB (< 700 L.F.)	LF	244
103.3	REMOVE CONCRETE SIDEWALKS & DRIVEWAYS (3,000 S.F. < X < 10,000 S.F.)	SF	3,730
104.1	STREET EXCAVATION (1,000 C.Y. < X < 10,000 C.Y.)	CY	11,010
106.1	BOX CULVERT EXCAVATION AND BACKFILL	CY	950
107.1	EMBANKMENT (FINAL)(ORD COMP)(TY A)	CY	1,395
108.1	LIME TREAT. SUBGRADE (6" COMPACTED DEPTH > 500 S.Y.)	SY	26,454
205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	2,745
205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (11.5" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	234
205.3	HOT MIX ASPHALTIC PAVEMENT TYPE C (3" COMP DEPTH)	SY	303
205.3	HOT MIX ASPHALTIC PAVEMENT TYPE C (4" COMP DEPTH) (>10,000)	SY	25,023
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	3,071
209.1	CONCRETE PAVEMENT (9.5")	SY	23,490
209.1	CONCRETE PAVEMENT, CLASS (P) TY (IL) (9.5IN)	SY	23,490
209.1	CONCRETE PAVEMENT (10")	SY	46
* 240.3	WARM MIX ASPHALTIC PAVEMENT, TYPE C (4" COMP. DEPTH)	SY	25,023
500.1	CONCRETE CURB	LF	76
* 503.2	PORTLAND CEMENT CONCRETE DRIVEWAY (COMMERCIAL)	SY	686
505.1	CONCRETE RIPRAP (4" THICK)	SY	79
505.1	CONCRETE RIPRAP (5" THICK)	SY	452
520.2	HYDROMULCHING (RESIDENTIAL OR COMMERCIAL)	SY	34,914
525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	1,120
530.1	BARRICADES, SIGNS & TRAFFIC HANDLING	LS	1
531.3	R1-1 STOP (30")(HIGH INTENSITY)	EA	2
531.45	W1-8 CHEVRON ALIGNMENT(18" X 24")(HIGH INTENSITY)	EA	8
531.55	OM-3 TYPE 3 OBJECT MARKER (12" X 36")(HIGH INTENSITY)	EA	2
531.57	9" STREET NAME SIGN	EA	2
531.59	SPECIAL SIGN(HIGH INTENSITY)	EA	3
531.6	R2-1 SPEED LIMIT (24" X 30")(HIGH INTENSITY)	EA	3
535.1	4 INCH WIDE YELLOW LINE	LF	6,255
535.4	8 INCH WIDE WHITE LINE	LF	14,518
535.7	24 INCH WIDE WHITE LINE	LF	489
537.8	TRAFFIC BUTTON (TYPE II-A-A)	EA	109
540.2	ROCK FILTER DAMS (INSTALL/REMOVE) (TY 2)	CY	360
540.6	CONSTRUCTION EXITS (INSTALL)	SY	414
540.6	CONSTRUCTION EXITS (REMOVE)	SY	414
540.8	SANDBAGS FOR EROSION CONTROL (6" HIGH)	LF	440
540.9	TEMPORARY SEDIMENT CONTROL FENCE	LF	11,061
685.1	INSTALL FLASHING BEACON ASSEMBLIES	EA	1
801.2	LEVEL II A PROTECTIVE FENCING	LF	140
SP3	UTILITY POLE BRACING	EA	4
TXDOT BID ITEMS			
105-6015	REMOVING STAB BASE & ASPH PAV (8" - 10")	SY	2,744
354-6021	PLANE ASPH CONC PAV(0" TO 2")	SY	92
354-6022	PLANE ASPH CONC PAV(0" TO 3")	SY	303
432-6045	RIP RAP (MOW STRIP)(4 IN)	CY	72
540-6004	RETROFIT RAIL (TY131RC)	LF	210
462-6099	CONC BOX CULV (6 FT x 2 FT)	LF	575
464-6007	RC PIPE (CL III)(30 IN)	LF	238
464-6018	RC PIPE (CL IV)(24 IN)	LF	100
464-6064	RC PIPE (ARCH)(CL IV)(DES 3)	LF	247
466-6099	HEADWALL (CH-FW-0) (DIA=30")	EA	2
466-6097	HEADWALL (CH-PW-0) (DIA=24")	EA	2
466-6179	WINGWALL (PW-1) (HW=4FT)	EA	4
529-6002	CONC CURB (TY II)	LF	235
531-6001	CONC SIDEWALKS (4")	SY	13
531-6010	CURB RAMPS (TY 7)	EA	2
540-6001	MTL W-BEAM GD FN (TIM POST)	LF	813
540-6014	SHORT RADIUS	LF	22
540-6016	DOWNSTREAM ANCHOR TERMINAL SECTION	EA	1
544-6001	GUARDRAIL END TREATMENT (INSTALL)	EA	6
658-6099	INSTL OM ASSM (OM-2Z)(WFLX)GND	EA	12
658-6116	INS DEL ASSM(D-SW)SZ 1(WFLX)GF2(BI)	EA	15
658-6120	INS DEL ASSM(D-SW)SZ 1(BRF)CTB(BI)	EA	2
662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	7757
662-6075	WK ZN PAV MRK REMOV (W)24"(SLD)	LF	24
662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	2425
662-6102	WK ZN PAV MRK REMOV (Y)24"(SLD)	LF	88
662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	434
677-7004	ELIM EXT PM & MRKS (8")	LF	1695
SAWS BID ITEMS (JOINT BID)			
100	MOBILIZATION	LS	1
101	PREPARATION OF RIGHT-OF-WAY	LS	1
851	ADJUST EXISTING MANHOLES	EA	9
855	RECONSTRUCTION OF EXISTING MANHOLE	EA	1
1103	POINT REPAIRS AND OBSTRUCTION REMOVALS	EA	2

* NOTE: SUSTAINABILITY PAVEMENT ALTERNATE

ESTIMATED QUANTITIES			
ITEM NO.		UNIT	QUANTITY
CPS GAS BID ITEMS (JOINT BID)			
1 - 2E	INSTALL GAS MAIN OR CASING BY TRENCHING (LF DISTANCE AS-MEASURED ALONG TOP OF TRENCH), 8" STEEL	LF	12
2 - 2I	INSTALL GAS MAIN OR CASING BY TRENCHING (LF DISTANCE AS-MEASURED ALONG TOP OF TRENCH), 16" STEEL	LF	4940
3 -	INSTALL 24" X 16" VALVE COMPLEX INCLUDING 24" PIPE, 16" PIPE, TWO 16" VALVES, 24" VALVE AND TEST RISERS, STEEL	EA	1
4 - 7J	INSTALL GAS MAIN OR CASING BY DIRECTIONAL DRILL BORE (INCLUDES ALL COSTS FOR INSTALLATION & RESTORATION, INCLUDING BORE PITS), 16" STEEL	LF	830
5 -	24" STOPPLE OPERATION (LABOR & FITTINGS)	EA	1
6 - 4A	ASPHALT - STREET RESTORATION ADJUSTMENT, WHEN REQUIRED. TO BE USED AS DIRECTED BY THE CPS ENERGY REPRESENTATIVE - 2" TYPE D WMA W/10" TYPE B WMA OR FLOWABLE FILL	SQFT	0
7 - 4B	FLOWABLE FILL - STREET RESTORATION ADJUSTMENT, WHEN REQUIRED. TO BE USED AS DIRECTED BY THE CPS ENERGY REPRESENTATIVE	CY	150
8 - 4C	CONCRETE - STREET RESTORATION ADJUSTMENT, WHEN REQUIRED. TO BE USED AS DIRECTED BY THE CPS ENERGY REPRESENTATIVE	CY	30
9 - 4D	CONCRETE/FLATWORK - STREET RESTORATION ADJUSTMENT, WHEN REQUIRED. TO BE USED AS DIRECTED BY THE CPS ENERGY REPRESENTATIVE	SQFT	0

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

ESTIMATED QUANTITIES

SHEET 1 OF 1

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
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TCP SUMMARY

SHEET	LOCATION	104.1 STREET EXCAVATION (<1,000 CY)	107.1 EMBANKMENT	108.1 LIME TREAT. SUBGRADE (6" COMP DEPTH)	205.2 HOT MIX ASPHALTIC PAVEMENT TYPE B (11.5" COMP DEPTH) (20% MAX RAP) (NO RAS) (PG 64-22)	205.2 HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP) (NO RAS) (PG 64-22)	205.4 HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	209.1 CONCRETE PAVEMENT (10")	525.1 CONCRETE TRAFFIC BARRIER (PORTABLE)	530.1 BARRICADES, SIGNS & TRAFFIC HANDLING
		CY	CY	SY	SY	SY	SY	SY	LF	LS
TRAFFIC CONTROL PLAN										1
PHASE I										
SUBPHASE A										
1 OF 3	STA 61+40.00 TO STA 70+20.00	9				36	36	0		
2 OF 3	STA 70+20.00 TO STA 79+00.00	279				1114	1114	0		
3 OF 3	STA 79+00.00 TO END	336				1344	1344	0		
SUBPHASE B										
1 OF 2	STA 61+40.00 TO STA 70+20.00	2		25	25		25	7	320	
2 OF2	STA 70+20.00 TO STA 79+00.00	2		25	25		25	7	320	
SUBPHASE C										
1 OF 2	STA 61+40.00 TO STA 70+20.00									
2 OF2	STA 70+20.00 TO STA 79+00.00									
SUBPHASE D										
1 OF 2	STA 61+40.00 TO STA 70+20.00									
2 OF2	STA 70+20.00 TO STA 79+00.00									
PHASE II										
1 OF 9	BEGIN TO STA 17+40.00	46		130	130	251	381	20	120	
2 OF 9	STA 17+40.00 TO STA 26+20.00									
3 OF 9	STA 26+20.00 TO STA 35+00.00								120	
4 OF 9	STA 35+00.00 TO STA 43+80.00								120	
5 OF 9	STA 43+80.00 TO STA 52+60.00									
6 OF 9	STA 52+60.00 TO STA 61+40.00								120	
7 OF 9	STA 61+40.00 TO STA 70+20.00									
8 OF 9	STA 70+20.00 TO STA 79+00.00									
9 OF 9	STA 79+00.00 TO END									
PHASE III										
1 OF 9	BEGIN TO STA 17+40.00	2		54	54		54	12		
2 OF 9	STA 17+40.00 TO STA 26+20.00									
3 OF 9	STA 26+20.00 TO STA 35+00.00									
4 OF 9	STA 35+00.00 TO STA 43+80.00									
5 OF 9	STA 43+80.00 TO STA 52+60.00									
6 OF 9	STA 52+60.00 TO STA 61+40.00									
7 OF 9	STA 61+40.00 TO STA 70+20.00		9							
8 OF 9	STA 70+20.00 TO STA 79+00.00		279							
9 OF 9	STA 79+00.00 TO END		336							
PHASE IV										
1 OF 1	BEGIN TO END		72				92			
PROJECT TOTALS		676	696	234	234	2745	3071	46	1120	1

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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

SUMMARY OF QUANTITIES (TCP)

SHEET 1 OF 2

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
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TCP SUMMARY

SHEET	LOCATION	TXDOT BID ITEMS 105-6015 REMOVING STAB BASE & ASPH PAV (8"-10")	354-6021 PLANE ASPH CONC PAV(0" TO 2")	662-6063 WK ZN PAV MRK REMOV (W)4"(SLD)	662-6095 WK ZN PAV MRK REMOV (Y)4"(SLD)	662-6102 WK ZN PAV MRK REMOV (Y)24"(SLD)	662-6111 WK ZN PV MK SHT TERM(TAB)TY Y-2	662-6075 WK ZN PAV MRK REMOV (W)24"(SLD)	677-7004 ELIM EXT PM & MRKS (8")
		SY	SY	LF	LF	LF	EA	LF	LF
	TRAFFIC CONTROL PLAN								
	PHASE I								
	SUBPHASE A								
1 OF 3	STA 61+40.00 TO STA 70+20.00			275			28		291
2 OF 3	STA 70+20.00 TO STA 79+00.00			654			63		668
3 OF 3	STA 79+00.00 TO END			734			72		736
	SUBPHASE B								
1 OF 2	STA 61+40.00 TO STA 70+20.00			1366			86		
2 OF2	STA 70+20.00 TO STA 79+00.00			1390			68		
	SUBPHASE C								
1 OF 2	STA 61+40.00 TO STA 70+20.00			766			50	12	
2 OF2	STA 70+20.00 TO STA 79+00.00			694			67		
	SUBPHASE D								
1 OF 2	STA 61+40.00 TO STA 70+20.00							12	
2 OF2	STA 70+20.00 TO STA 79+00.00								
	PHASE II								
1 OF 9	BEGIN TO STA 17+40.00								
2 OF 9	STA 17+40.00 TO STA 26+20.00								
3 OF 9	STA 26+20.00 TO STA 35+00.00								
4 OF 9	STA 35+00.00 TO STA 43+80.00								
5 OF 9	STA 43+80.00 TO STA 52+60.00								
6 OF 9	STA 52+60.00 TO STA 61+40.00								
7 OF 9	STA 61+40.00 TO STA 70+20.00			70	43				
8 OF 9	STA 70+20.00 TO STA 79+00.00			880	880				
9 OF 9	STA 79+00.00 TO END			283	304				
	PHASE III								
1 OF 9	BEGIN TO STA 17+40.00								
2 OF 9	STA 17+40.00 TO STA 26+20.00								
3 OF 9	STA 26+20.00 TO STA 35+00.00								
4 OF 9	STA 35+00.00 TO STA 43+80.00								
5 OF 9	STA 43+80.00 TO STA 52+60.00								
6 OF 9	STA 52+60.00 TO STA 61+40.00								
7 OF 9	STA 61+40.00 TO STA 70+20.00	36							
8 OF 9	STA 70+20.00 TO STA 79+00.00	1114		645	1118	88			
9 OF 9	STA 79+00.00 TO END	1344			80				
	PHASE IV								
1 OF 1	BEGIN TO END	250	92						
PROJECT TOTALS		2744	92	7757	2425	88	434	24	1695

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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

SUMMARY OF QUANTITIES (TCP)

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
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REMOVAL SUMMARY

SHEET	LOCATION	103.1 REMOVE CONCRETE CURB LF	103.3 REMOVE SIDEWALKS & DRIVEWAYS SF	104.1 STREET EXCAVATION CY
	REMOVAL LAYOUTS			
1 OF 9	BEGIN TO STA 17+40.00	244	242	1,125
2 OF 9	STA 17+40.00 TO STA 26+20.00	0	0	1,541
3 OF 9	STA 26+20.00 TO STA 35+00.00	0	0	1,369
4 OF 9	STA 35+00.00 TO STA 43+80.00	0	802	1,027
5 OF 9	STA 43+80.00 TO STA 52+60.00	0	847	1,027
6 OF 9	STA 52+60.00 TO STA 61+40.00	0	727	1,027
7 OF 9	STA 61+40.00 TO STA 70+20.00	0	0	1,027
8 OF 9	STA 70+20.00 TO STA 79+00.00	0	948	1,993
9 OF 9	STA 79+00.00 TO END	0	164	198
	PROJECT TOTALS	244	3,730	10,334

STATE OF TEXAS
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7/8/2025

ROADWAY SUMMARY

SHEET	LOCATION	100.1 MOBILIZATION LS	101.1 PREPARING RIGHT OF WAY LS	107.1 EMBANKMENT CY	108.1 LIME TREAT. SUBGRADE (6" COMP DEPTH) SY	205.3 HOT MIX ASPHALTIC PAVEMENT, TYPE C (3IN) SY	205.3 HOT MIX ASPHALTIC PAVEMENT, TYPE C (4IN) SY	209.1 CONCRETE PAVEMENT (9.5") SY	∗ 209.1 CONCRETE PAVEMENT CLASS P TY (IL) SY	∗ 240.3 WARM MIX ASPHALTIC PAVEMENT, TYPE C (4IN) SY	500.1 CONCRETE CURB LF	503.2 CONCRETE DRIVEWAY (COMM) SY	505.1 CONCRETE RIPRAP (4" THICK) SY	SP3 UTILITY POLE BRACING EA
	ROADWAY LAYOUTS													
1 OF 17	BEGIN TO STA 13+00.00	1	1	98	1,650	0	1,552	1,528	1,528	1,552	76	0	79	2
2 OF 17	STA 13+00.00 TO STA 17+40.00			72	1,714	0	1,617	1,519	1,519	1,617	0	150	0	0
3 OF 17	STA 17+40.00 TO STA 21+80.00			66	1,564	0	1,467	1,369	1,369	1,467	0	0	0	0
4 OF 17	STA 21+80.00 TO STA 26+20.00			60	1,564	0	1,467	1,369	1,369	1,467	0	0	0	0
5 OF 17	STA 26+20.00 TO STA 30+60.00			94	1,564	0	1,467	1,369	1,369	1,467	0	0	0	0
6 OF 17	STA 30+60.00 TO STA 35+00.00			41	1,564	0	1,467	1,369	1,369	1,467	0	0	0	1
7 OF 17	STA 35+00.00 TO STA 39+40.00			19	1,564	0	1,467	1,369	1,369	1,467	0	0	0	0
8 OF 17	STA 39+40.00 TO STA 43+80.00			68	1,564	0	1,467	1,369	1,369	1,467	0	143	0	1
9 OF 17	STA 43+80.00 TO STA 48+20.00			32	1,564	0	1,467	1,369	1,369	1,467	0	44	0	0
10 OF 17	STA 48+20.00 TO STA 52+60.00			13	1,564	0	1,467	1,369	1,369	1,467	0	74	0	0
11 OF 17	STA 52+60.00 TO STA 57+00.00			33	1,564	0	1,467	1,369	1,369	1,467	0	22	0	0
12 OF 17	STA 57+00.00 TO STA 61+40.00			31	1,564	0	1,467	1,369	1,369	1,467	0	57	0	0
13 OF 17	STA 61+40.00 TO STA 65+80.00			9	1,162	303	1,467	1,369	1,369	1,467	0	0	0	0
14 OF 17	STA 65+80.00 TO STA 70+20.00			20	1,564	0	1,467	1,369	1,369	1,467	0	0	0	0
15 OF 17	STA 70+20.00 TO STA 74+60.00			11	1,564	0	1,467	1,369	1,369	1,467	0	56	0	0
16 OF 17	STA 74+60.00 TO STA 79+00.00			27	2,317	0	2,218	2,119	2,119	2,218	0	139	0	0
17 OF 17	STA 79+00.00 TO END			5	602	0	565	527	527	565	0	0	0	0
	PROJECT TOTALS	1	1	699	26,220	303	25,023	23,490	23,490	25,023	76	686	79	4

ROADWAY SUMMARY

SHEET	LOCATION	354-6022(TXDOT) PLANE ASPH CONC PAV(0" TO 3") SY	432-6045(TXDOT) RIPRAP (MOW STRIP)(4 IN) CY	451-6004(TXDOT) RETROFIT RAIL (TY131RC) LF	529-6002(TXDOT) CONC CURB (TY II) LF	531-6001(TXDOT) CONC SIDEWALKS (4") SY	531-6010(TXDOT) CURB RAMPS (TY 7) EA	540-6001(TXDOT) MTL W-BEAM GD FEN (TIM POST) LF	540-6014(TXDOT) SHORT RADIUS LF	540-6016(TXDOT) DOWNSTREAM ANCHOR TERMINAL SECTION EA	544-6001(TXDOT) GUARDRAIL END TREATMENT (INSTALL) EA
	ROADWAY LAYOUTS										
1 OF 17	BEGIN TO STA 13+00.00	0	20	0	168	0	0	337	0	1	2
2 OF 17	STA 13+00.00 TO STA 17+40.00	0	10	0	67	13	2	63	0	0	1
3 OF 17	STA 17+40.00 TO STA 21+80.00	0	0	0	0	0	0	0	0	0	0
4 OF 17	STA 21+80.00 TO STA 26+20.00	0	0	0	0	0	0	0	0	0	0
5 OF 17	STA 26+20.00 TO STA 30+60.00	0	0	0	0	0	0	0	0	0	0
6 OF 17	STA 30+60.00 TO STA 35+00.00	0	0	0	0	0	0	0	0	0	0
7 OF 17	STA 35+00.00 TO STA 39+40.00	0	0	0	0	0	0	0	0	0	0
8 OF 17	STA 39+40.00 TO STA 43+80.00	0	0	0	0	0	0	0	0	0	0
9 OF 17	STA 43+80.00 TO STA 48+20.00	0	0	0	0	0	0	0	0	0	0
10 OF 17	STA 48+20.00 TO STA 52+60.00	0	0	0	0	0	0	0	0	0	0
11 OF 17	STA 52+60.00 TO STA 57+00.00	0	0	0	0	0	0	0	0	0	0
12 OF 17	STA 57+00.00 TO STA 61+40.00	0	7	0	0	0	0	0	0	0	1
13 OF 17	STA 61+40.00 TO STA 65+80.00	303	32	210	0	0	0	413	22	0	1
14 OF 17	STA 65+80.00 TO STA 70+20.00	0	3	0	0	0	0	0	0	0	1
15 OF 17	STA 70+20.00 TO STA 74+60.00	0	0	0	0	0	0	0	0	0	0
16 OF 17	STA 74+60.00 TO STA 79+00.00	0	0	0	0	0	0	0	0	0	0
17 OF 17	STA 79+00.00 TO END	0	0	0	0	0	0	0	0	0	0
	PROJECT TOTALS	303	72	210	235	13	2	813	22	1	6

∗ DENOTES SUSTAINABILITY PAVEMENT DESIGN ALTERNATIVE

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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

SUMMARY OF QUANTITIES (REMOVAL AND ROADWAY)

SHEET 1 OF 1

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: FR	DSGN. BY: JAR	CHKD. BY: LC	SHT NO.: 14

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DRAINAGE SUMMARY										
SHEET	LOCATION	106.1	505.1	462-6099	464-6007	464-6018	464-6064	466-6099	466-6097	466-6179
		BOX CULVERT EXCAVATION AND BACKFILL (< 600 CY)	CONCRETE RIPRAP (5" THICK) (< 100 SY)	CONC BOX CULV (6 FT x 2 FT)	RC PIPE (CL III)(30 IN)	RC PIPE (CL IV) (24 IN)	RC PIPE (ARCH)(CL IV)(DES 3)	HEADWALL (CH-PW-0) (DIA=30 IN)	HEADWALL (CH-PW-0) (DIA=24 IN)	WINGWALL (PW-1) (HW=4 FT)
		CY	SY	LF	LF	LF	LF	EA	EA	EA
1 OF 5	CULVERT 1	220	62		238			2		
2 OF 5	CULVERT 2	70	52			100			2	
3 OF 5	CULVERT 3	250	171	247			247			2
4 OF 5	CULVERT 4	410	167	328						2
5 OF 5	CULVERT 5									
TOTALS		950	452	575	238	100	247	2	2	4

STATE OF TEXAS
JEFFREY C. TYLER
106359
LICENSED
PROFESSIONAL ENGINEER
7/7/2025

NO.	REVISIONS	DRAWN	APPROVED	DATE

T-Core Engineers
84 NE Loop 410 Ste 380 ◆ San Antonio, Texas 78216 ◆ 210.900.2448 ◆ TBPE Registration No. F-18275 ◆ www.tcore.com

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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL ROAD IMPROVEMENTS

SUMMARY OF QUANTITIES (DRAINAGE)

SHEET 1 OF 1

100 % SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/7/2025
DRWN. BY: CT	DSGN. BY: JT	CHKD. BY: JT	SHEET NO.: 15 OF 336

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SIGNING & PAVEMENT MARKINGS SUMMARY								
SHEET	LOCATION	531.3	531.45	531.55	531.57	531.59	531.6	535.1
		R1-1 STOP (30") (HIGH INTENSITY)	W1-8 CHEVRON ALIGNMENT (18" X 24")	OM-3 TYPE 3 OBJECT MARKER (12" X 36")	9" STREET NAME SIGN	SPECIAL SIGN	R2-1 SPEED LIMIT (24" X 30")	4 INCH WIDE YELLOW LINE
		EA	EA	EA	EA	EA	EA	LF
SIGNING & PAVEMENT MARKINGS LAYOUTS								
1 OF 9	BEGIN TO STA 17+40.00	2	0	0	2	0	1	1250
2 OF 9	STA 17+40.00 TO STA 26+20.00	0	4	0	0	0	0	1760
3 OF 9	STA 26+20.00 TO STA 35+00.00	0	4	0	0	0	0	1760
4 OF 9	STA 35+00.00 TO STA 43+80.00	0	0	0	0	1	1	565
5 OF 9	STA 43+80.00 TO STA 52+60.00	0	0	0	0	0	0	220
6 OF 9	STA 52+60.00 TO STA 61+40.00	0	0	2	0	0	1	220
7 OF 9	STA 61+40.00 TO STA 70+20.00	0	0	0	0	0	0	220
8 OF 9	STA 70+20.00 TO STA 79+00.00	0	0	0	0	2	0	220
9 OF 9	STA 79+00.00 TO END	0	0	0	0	0	0	40
PROJECT TOTALS		2	8	2	2	3	3	6255

SIGNING & PAVEMENT MARKINGS SUMMARY								
SHEET	LOCATION	535.4	535.7	537.8	685.1	658-6099	658-6116	658-6120
		8 INCH WIDE WHITE LINE	24 INCH WIDE WHITE LINE	TRAFFIC BUTTON (TYPE II-A-A)	INSTALL FLASHING BEACON	INSTL OM ASSM (OM-2Z) (WFLX) GND	INS DEL ASSM (D-SW) SZ	INS DEL ASSM (D-SW) SZ
		LF	LF	EA	LF	EA	EA	EA
SIGNING & PAVEMENT MARKINGS LAYOUTS								
1 OF 9	BEGIN TO STA 17+40.00	1868	162	0	0	0	7	0
2 OF 9	STA 17+40.00 TO STA 26+20.00	1760	0	0	0	0	0	0
3 OF 9	STA 26+20.00 TO STA 35+00.00	1760	0	0	0	4	0	0
4 OF 9	STA 35+00.00 TO STA 43+80.00	1760	0	17	1	4	0	0
5 OF 9	STA 43+80.00 TO STA 52+60.00	1760	0	22	0	0	0	0
6 OF 9	STA 52+60.00 TO STA 61+40.00	1760	0	22	0	4	1	0
7 OF 9	STA 61+40.00 TO STA 70+20.00	1760	0	22	0	0	7	2
8 OF 9	STA 70+20.00 TO STA 79+00.00	1750	327	22	0	0	0	0
9 OF 9	STA 79+00.00 TO END	340	0	4	0	0	0	0
PROJECT TOTALS		14518	489	109	1	12	15	2

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER

7/8/2025

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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

SUMMARY OF QUANTITIES (SIGNING & PAVEMENT MARKINGS)

SHEET 1 OF 1

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
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SWP3 SUMMARY							
SHEET	LOCATION	520.2 HYDROMULCHING (RESIDENTIAL OR COMMERCIAL)	540.2 ROCK FILTER DAMS (INSTALL/REMOVE) (TYPE 2)	540.6 CONSTRUCTION EXITS (INSTALL)	540.6 CONSTRUCTION EXITS (REMOVE)	540.8 SANDBAGS FOR EROSION CONTROL (6" HIGH)	540.9 TEMPORARY SEDIMENT CONTROL FENCE
		SY	LF	SY	SY	LF	LF
	SWP3 LAYOUTS						
1 OF 9	BEGIN TO STA 17+40.00	4239	40	224	224	40	880
2 OF 9	STA 17+40.00 TO STA 26+20.00	5008				40	902
3 OF 9	STA 26+20.00 TO STA 35+00.00	5505	40			40	1113
4 OF 9	STA 35+00.00 TO STA 43+80.00	3862	80			120	1586
5 OF 9	STA 43+80.00 TO STA 52+60.00	3613				34	1718
6 OF 9	STA 52+60.00 TO STA 61+40.00	3410	80			60	1572
7 OF 9	STA 61+40.00 TO STA 70+20.00	3369	120			30	1497
8 OF 9	STA 70+20.00 TO STA 79+00.00	3148				56	1572
9 OF 9	STA 79+00.00 TO END	2760		190	190	20	221
PROJECT TOTALS		34914	360	414	414	440	11061

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STATE OF TEXAS
KRISTINA SAENZ
116984
LICENSED
PROFESSIONAL ENGINEER

Kristina Saenz P.E.

7/7/2025

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(210) 349-4395 (FAX)
4801 NORTHWEST LOOP 410, STE. 108
SAN ANTONIO, TEXAS, 78229
TBPE REG. NO. F-483
http//www.pozcam.com/

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

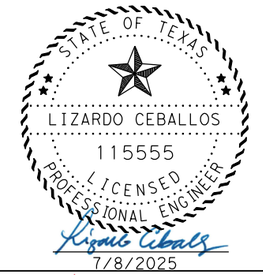
SUMMARY OF QUANTITIES (SW3P)

SHEET 1 OF 1

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/7/2025
DRWN. BY: RA	DSGN. BY: JM	CHKD. BY: II	SHT NO.: 17

				SIGNIFICANT TREES		HERITAGE TREES			* 801.2
TREE TAG NUMBER	SIZE AND SPECIES	APPROX STA	APPROX OFFSET	TREE SIZE TO REMAIN (IN)	TREE SIZE TO BE REMOVED (IN)	TREE SIZE TO REMAIN (IN)	TREE SIZE TO BE REMOVED (IN)		LEVEL II A PROTECTIVE FENCING
									LF
390	9" ELM	56+00.65	29.22' LT	9					20
391	19" ELM	57+02.13	26.19' LT	19					20
392	15" ELM	57+09.17	25.81' LT	15					20
382	20" MESQUITE	61+33.78	31.00' LT	20					20
381	15" MESQUITE	61+58.78	30.50' LT	15					20
383	12" ELM	64+82.41	42.46' LT	12					**
384	9" ELM	65+07.98	35.15' LT	9					20
385	18" ELM	65+16.62	31.55' LT	18					20
386	13" ELM	65+20.77	37.71' LT	13					**
387	18" HACKBERRY	65+44.85	40.04' LT	18					**
388	12" ELM	65+60.57	46.06' LT	12					**
389	10" ELM	65+70.38	36.14' LT	10					**
			TOTAL INCHES	170	0	0	0	PROJECT TOTALS	140
			TOTAL DIAMETER INCHES	170		0			
			TOTAL PERCENTAGE INCHES PRESERVED	100%		0%			

* DENOTES COSA SPECIFICATION
** TREE NOT WITHIN ROW



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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

SUMMARY OF QUANTITIES (TREE PRESERVATION)

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
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TRAFFIC NOTES

GENERAL AND SPECIAL CONDITIONS

1. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO SEE THAT ALL TRAFFIC CONTROL DEVICES ARE PROPERLY INSTALLED AND MAINTAINED ATTHE JOB SITE IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS AND RELATED INDUSTRY STANDARDS AND REGULATIONS. THE CONTRACTOR SHALL SUBMIT FOR REVIEW ASIGN AND BARRICADE PLAN CONFORMING TO THE REQUIREMENTS OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. THE CITY'S CONSTRUCTION INSPECTOR AND THE TRAFFIC ENGINEERING REPRESENTATIVE WILL ONLY BE RESPONSIBLE TO INSPECT THE TRAFFIC CONTROL DEVICES BEING DEPLOYED. IF, IN THE OPINION OF THE TRAFFIC ENGINEERING REPRESENTATIVE AND THE CONSTRUCTION INSPECTOR, THE TRAFFIC CONTROL DEVICES 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 CONSTRUCTION OPERATIONS AT NO EXPENSE TO THE CITY UNTIL SUCH TIME AS THE CONDITIONS ARE CORRECTED BY THE CONTRACTOR.

2. PRIOR TO MOVING ANY TRAFFIC SIGNS OR TRAFFIC SIGNALS, THE CONTRACTOR SHALL CONTACT THE CITY'S TRAFFIC OPERATIONS SECTION. PRIOR TO COMPLETION OF THE CONTRACT AND REMOVAL OF THE BARRICADES, THE CONTRACTOR SHALL AGAIN CONTACT THE TRAFFIC OPERATIONS SECTION. THE BARRICADES SHALL NOT BE REMOVED UNTIL ALL APPLICABLE PERMANENT TRAFFIC SIGNS AND SIGNALS ARE IN PLACE.

3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN AND MAINTAIN TEMPORARY STOP SIGNS AND ALL OTHER TRAFFIC CONTROL DEVICES REQUIRED TO PROTECT THE GENERAL PUBLIC. IF THE CITY HAS REMOVED PERMANENT STOP SIGNS, THE CONTRACTOR SHALL REQUEST THAT TEMPORARY SIGNS BE FURNISHED TO THE CONSTRUCTION SITE SO THAT THEY CAN BE REINSTALLED BY HIM. ALL PERMANENT SIGNS OR TRAFFIC CONTROL DEVICES MISSING OR DAMAGED UPON COMPLETION OF CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

4. THE CONTRACTOR MUST CONTACT THE CITY ENGINEER OR HIS DESIGNATED REPRESENTATIVE 72 HOURS IN ADVANCE (NOT INCLUDING WEEKENDS OR HOLIDAYS) OF ANY MINOR STREET CLOSURE. THIS MUCH TIME IS NECESSARY TO INSTALL ADVISORY SIGNS AND GIVE THE MOTORIST A MINIMUM OF 3 DAYS NOTICE OF THE STREET CLOSURE. THE TRAFFIC ENGINEERING OFFICE WILL MAKE THE NECESSARY ARRANGEMENTS AND NOTIFY ALL EMERGENCY SERVICES AND AGENCIES.

5. AS WORK PROGRESSES, LOCATION OF TEMPORARY TRAFFIC CONTROL DEVICES WILL BE ADJUSTED AND MODIFIED AS NECESSARY BY THE CONTRACTOR, WITH THE APPROVAL OF THE TRAFFIC ENGINEER OR HIS DESIGNATED REPRESENTATIVE.

6. IF THE NEED ARISES, ADDITIONAL TEMPORARY TRAFFIC CONTROL DEVICES, SPECIAL DIRECTIONAL DEVICES AND/OR BUSINESS NAME SIGNS MAY BE ORDERED BY THE TRAFFIC ENGINEERING REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.

7. TEMPORARY TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE TXDOT "BC-21" SHEETS AND TO THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

8. THE CONTRACTOR MUST MAINTAIN ALL STREETS OPEN TO THROUGH TRAFFIC BY REPAIRING TRENCHES, POTHOLES, LEVELING UP WITH ASPHALT, ETC., AT NO DIRECT PAYMENT. COST TO BE INCLUDED WITH OTHER ITEMS.

9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SUITABLE ACCESS ACCOMMODATIONS FOR SCHOOL CHILDREN AND PEDESTRIANS.

10. THE CONTRACTOR SHALL PROVIDE ACCESS FOR DELIVERY OF MAIL BY THE U.S. POSTAL SERVICE.

11. THE CONTRACTOR SHALL PROVIDE FOR ACCESS TO RESIDENCES AND ALL BUSINESSES AT ALL TIMES WITHIN ALL PHASES OF THE WORK.

12. WHEN CONSTRUCTION WORK NECESSITATES THE UTILIZATION OF VEHICLE PATHS OTHER THAN THE LANES NORMALLY USED, TRAFFIC CONTROL MARKINGS NO LONGER APPLICABLE SHALL BE REMOVED AND APPROVED TEMPORARY PAVEMENT MARKINGS AND SIGNS SHALL BE INSTALLED IN ACCORDANCE WITH PART VI OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

13. ALL TEMPORARY TRAFFIC CONTROL DEVICES, ETC., SHALL BE PROVIDED BY THE CONTRACTOR WITHOUT DIRECT PAYMENT. UNLESS OTHERWISE NOTED OR STATED.

14. THE CONSTRUCTION INSPECTOR SHALL MONITOR THE CONTRACTOR'S TRAFFIC CONTROL DEVICES AND WILL BE RESPONSIBLE TO FURNISH ALL RESIDENTS AND BUSINESSES WITH PROGRESS ADVISORIES ON ALL PHASES DURING THE COURSE OF CONSTRUCTION.

15. CONTRACTOR SHALL PROVIDE APPROPRIATE SAFE ACCESS AND BARRICADE WORK AT ALL TIMES TO PROTECT THE PUBLIC. THE SITE MUST BE LEFT IN A SECURE SAFE CONDITION AT NIGHT. THIS INCLUDES SUBSTANTIAL BARRICADES AROUND ALL TRENCHES, OPEN EXCAVATIONS, EQUIPMENT, ETC. IT IS THE CONTRACTOR'S RESPONSIBILITY TO TAKE NECESSARY PRECAUTIONS TO PROTECT THE PUBLIC THROUGHOUT THE DURATION OF THE PROJECT.

16. ANY QUESTIONS REGARDING PHASING OR STAGING WILL BE STRICTLY HANDLED BY THE DEPARTMENT OF PUBLIC WORKS WHICH HAS COMPLETE AUTHORITY TO MAKE FINAL DECISIONS ON ANY CHANGES OR MODIFICATIONS.

17. EXISTING CROSS DRAINS SHALL BE TEMPORARILY EXTENDED AS REQUIRED BY THE PLANS FOR TEMPORARY WIDENING OF ROADWAYS. NO DIRECT PAYMENT.

18. ANY ADDITIONAL CONSTRUCTION THAT IS NOT SHOWN AND IS REQUIRED TO COMPLETE THE TEMPORARY PAVEMENT SECTION FOR TEMPORARY WIDENING OF ROADWAYS WILL BE AT NO DIRECT PAYMENT TO THE CONTRACTOR, COST TO BE INCLUDED IN OTHER ITEMS.

19. WHEN DROP-OFF ADJACENT TO THE ROADWAY (TEMPORARY OR OTHERWISE) EXCEEDS TWO (2) INCHES AND IS LESS THAN TWO (2) FEET, THE CONTRACTOR SHALL PROVIDE DELINEATED DRUMS OR VERTICAL PANELS IN ACCORDANCE WITH THE MOST CURRENT STANDARDS BY BEXAR CITY PUBLIC WORKS & THE TEXAS DEPARTMENT OF TRANSPORTATION. HOWEVER, THIS WILL ONLY BE POSSIBLE IF A MINIMUM BUFFER ZONE OF FOUR (4) FEET IS AVAILABLE BETWEEN THE EDGE OF TRAVEL WAY AND THE WARNING OR CONTROL DEVICE. THE DRUMS OR PANELS SHALL BE PLACED AT TWENTY-FIVE (25) FOOT INTERVALS ALONG THE EDGE OF THE TEMPORARY ROADWAY. THIS WORK WILL BE INCLUDED UNDER TXDOT ITEM 502-6001 BARRICADES, SIGNS AND TRAFFIC HANDLING.

20. WHEN A DROP-OFF ON THE ROADWAY (TEMPORARY OR OTHERWISE) EXCEEDS TWO (2) FEET, THE CONTRACTOR SHALL PLACE A TEMPORARY PROTECTIVE BARRIER ON THE EDGE OF THE TEMPORARY ROADWAY CONFORMING TO THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. THE COST OF CONCRETE TRAFFIC BARRIERS (PORTABLE) FOR TEMPORARY WIDENING OF ROADWAYS SHALL BE PAID UNDER TXDOT ITEM 512.

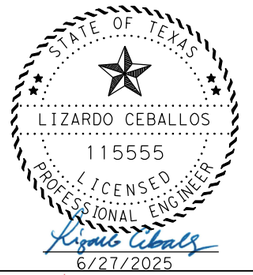
21. WHEN TWO-WAY TRAFFIC IS ROUTED ON ONE-SIDE OF THE EXISTING OR PROPOSED CENTER OF ROADWAY, AS PART OF STAGED CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY BEXAR CITY 48 HOURS PRIOR TO THE INSTALLATION OF TEMPORARY MARKINGS. CENTERLINE DIVIDING TWO-WAYTRAFFIC SHALL CONSIST OF SOLID DOUBLE YELLOW LINES, UNLESS BARRICADES OR BARRELS ARE APPROVED FOR SHORT-TERM USE.

22. ADDITIONAL TEMPORARY WIDENING MAY BE REQUIRED FOR SLOPES TO MAINTAIN THE MINIMUM TRAVEL SURFACE. EMBANKMENT SHALL BE AT NO DIRECT PAYMENT, COST TO BE INCLUDED IN OTHER ITEMS.

23. CONTRACTOR MUST ACCOMMODATE PEDESTRIAN ACCESS TO SCHOOL BUS PICK UP LOCATIONS THROUGHOUT ALL PHASES OF CONSTRUCTION.

24. CONTRACTOR TO REQUEST POLE BRACING FROM CPS & COSA 8 WEEKS PRIOR TO CONSTRUCTION START.

25. UTILITY VALVE ADJUSTMENTS SHALL BE SUBSIDIARY TO PREP ROW. CONTRACTOR TO NOTIFY COSA PM 30 DAYS PRIOR UTILITY VALVE ADJUSTMENTS.



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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN
TRAFFIC NOTES

SHEET 1 OF 1

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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1. GENERAL

A. HANDLE TRAFFIC APPROPRIATELY THROUGHOUT THE PROJECT DURING CONSTRUCTION. PROVIDE FOR THE SAFETY OF THE TRAVELING PUBLIC AT ALL TIMES. ROADWAY CLOSURES ARE NOT ALLOWED UNLESS OTHERWISE SPECIFIED IN THE PLANS AND/OR AS APPROVED BY THE ENGINEER. PROVIDE ACCESS TO PROPERTIES AND BUSINESSES ADJACENT TO THE RIGHT-OF-WAY AT ALL TIMES DURING THE DURATION OF THE PROJECT. THE ADEQUACY OF THE PROPERTY ACCESS WILL BE DETERMINED BY THE CITY AND ENGINEER. DO NOT LEAVE EQUIPMENT IN A POSITION THAT WILL ENDANGER THE TRAVELING PUBLIC. MAINTAIN ADEQUATE SAFETY PROVISIONS THROUGHOUT THE PROJECT BY INCLUSION OF SIGNING, MARKINGS, SIGNALS, BARRIERS, AND BARRICADES. CONFORM TO THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) WHEN USING THESE PROVISIONS.

B. THE USE OF THE RIGHT-OF-WAY IS NOT EXCLUSIVE. COOPERATE WITH THE CITY AND THE VARIOUS UTILITY COMPANIES AND CONTRACTORS, AS REQUIRED TO ALLOW ADJUSTMENTS TO BE MADE BY OTHERS. IF BY VIRTUE OF THE ADJUSTMENTS OF THESE UTILITIES THE CONTRACTOR IS DELAYED. AN EXTENSION OF THE WORKING TIME MAY BE GRANTED, IF IN THE OPINION OF THE ENGINEER IT IS WARRANTED.

C. ALL DETOURS, TRAFFIC MOVEMENTS, ETC., ARE DIRECTLY RELATED TO THE SEQUENCE OF WORK; THEREFORE, PROCEED WITH CONSTRUCTION OPERATIONS IN CONFORMITY WITH THE DETAILS SHOWN ON THE PLANS AND AS REQUIRED BY THIS NARRATIVE.

D. PROPOSE AND/OR RECOMMEND ANY MODIFICATIONS TO THE SEQUENCE OF WORK FOR CONSIDERATION TO THE ENGINEER IN WRITING. INCLUDE ANY CHANGES TO THE VARIOUS PAY ITEMS, IMPACT TO TRAFFIC, AND THE EFFECT OF THE OVERALL PROJECT IN TIME AND COST, ETC. WITH ANY MAJOR RECOMMENDED MODIFICATIONS. WRITTEN APPROVAL FROM THE ENGINEER IS REQUIRED PRIOR TO PROCEEDING WITH ANY CONSTRUCTION OPERATION BASED ON A REVISED PHASE/SEQUENCE OF WORK.

E. THE CITY ENGINEER MAY DIRECT THE CONTRACTOR TO VARY THE NUMBER AND LOCATIONS OF SIGNS THROUGHOUT THE PROJECT LIMITS.

F. CONSTRUCTION SHALL INCLUDE ALL JOINT BID UTILITY IMPROVEMENTS.

G. COOPERATE FULLY WITH THE VARIOUS UTILITY COMPANIES.

H. CONSTRUCTION IS APPROVED BETWEEN THE HOURS 7:00 AM AND 8:00 PM MONDAYS THROUGH FRIDAYS. ADDITIONAL HOURS ARE PERMITTED WITH APPROVAL FROM CITY.

I. WEEKEND HOURS ARE DEFINED AS THE HOURS BETWEEN 8:00 AM TO 8:00 PM SATURDAY AND 9:00 AM TO 5:00 PM SUNDAY.

J. OFF PEAK HOURS ARE DEFINED AS A TIME FRAME BETWEEN 8:00 PM TO 5:00 AM MONDAY THRU FRIDAY.

K. CONTRACTOR MUST MAINTAIN A MINIMUM VEHICULAR TRAVEL WAY OF 11' UNLESS SPECIFIED OTHERWISE.

L. CONTRACTOR TO MAINTAIN POSITIVE DRAINAGE DURING CONSTRUCTION, INCLUDING OFFSITE DRAINAGE FROM ADJACENT PROPERTIES AND AVOID IMPEDING FLOW FROM PRIVATE PROPERTY.

M. PLACE CONSTRUCTION EXITS AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.

N. DAILY LANE CLOSURES WILL BE USED IN ACCORDANCE WITH TXDOT TCP STANDARDS.

O. CONTRACTOR SHALL MAINTAIN ALL WORKZONES SHORT TERM PAVEMENT MARKINGS TO

BE VISIBLE AT ALL TIMES.

P. DROP OFF CONDITIONS OF GREATER THAN 2 IN. 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.

Q. CONTRACTOR SHALL USE UP TO 1000 LF OF LPCB FOR CONSTRUCTION OF CONCRETE LAYER. "TREATMENT FOR EDGE CONDITIONS" STANDARD WILL NOT BE APPLICABLE FOR THIS CASE.

R. PLANING, SURFACE TREATMENTS AND OVERLAYS SHALL BE PERFORMED IN THE DIRECTION OF TRAFFIC.

S. CONTRACTOR SHALL PROPERLY DISPOSE ALL RECYCLEABLE MATERIALS AS PRACTICAL TO PROPER RECYCLING CENTERS SUBSIDIARY TO COSA BID ITEM 101.1 PREP RIGHT OF WAY.

2. SEQUENCE OF WORK

THE SEQUENCE OF WORK WILL BE AS FOLLOWS UNLESS OTHERWISE DIRECTED/APPROVED BY THE ENGINEER. COVEL RD WILL BE CONSTRUCTED IN FOUR (4) PHASES. AT END OF WORKDAY CONTRACTOR SHALL PLACE A 3:1 SLOPE BETWEEN CONSTRUCTION EXCAVATED AREA AND TRAFFIC. THE CONTRACTOR SHALL PROVIDE ACCESS TO DRIVEWAYS AND SIDESTREETS AT ALL TIMES. (SEE DETAILS IN TCP LAYOUTS, DETOUR SHEETS). INSTALL TRAFFIC CONTROL DEVICES PER THE "BARRICADE AND CONSTRUCTION STANDARDS", AND SW3P MEASURES AS SHOWN ON THE PLANS AND/OR AS DIRECTED BY THE ENGINEER. APPROVAL BY THE ENGINEER MUST BE OBTAINED PRIOR TO THE BEGINNING OF CONSTRUCTION. PREPARING ROW, REMOVAL OF EXISTING ITEMS, AND ITEMS SUBSIDIARY TO COSA ITEM 101.1 TO BE DONE ONLY IN AREAS WHERE WORK IS OCCURING, AS PER THE PHASES NOTED BELOW. A BRIEF DESCRIPTION OF THESE PHASES ARE AS FOLLOWS:

PHASE I COVEL RD NORTHBOUND CONSTRUCTION STEPS

NOTE: DURING PHASE I-A SECTION OF COVEL ROAD WILL BE WIDENED WITH TEMPORARY PAVEMENT AT THE INTERSECTION OF COVEL GARDENS WASTE MANAGEMENT TO PROVIDE FULL ACCESS TO COVEL GARDEN DURING THE ENTIRE CONSTRUCTION. DURING PHASE II AND III COVEL ROAD WILL BE CONSTRUCTED IN HALF SECTIONS, THE EAST HALF SECTION WILL BE COMPLETED BEFORE STARTING CONSTRUCTION ON THE WEST HALF SECTION MAINTAINING ALL TRAFFIC HEADING TO THE SOUTHBOUND DIRECTION UNTIL THE COMPLETION OF THE PROJECT. DURING THESE PHASES, THE NB TRAFFIC BETWEEN COVEL GARDENS WASTE MANAGEMENT AND RAY ELLISON BLVD WILL BE DETOURED THRU PEARSALL RD AS PER THE PROVIDED DETOUR LAYOUTS. ALL PROPOSED JOINT BID UTILITY RELOCATIONS/ADJUSTMENTS WITHIN THIS TCP PHASE SHALL BE PERFORMED. CONTRACTOR TO COORDINATE WITH COSA 30 DAYS PRIOR TO UTLITY RELOCATIONS/ADJUSTMENTS THIS PHASE.

PHASE I A COVEL RD NORTHBOUND CONSTRUCTION STEPS

NOTE: REMOVE EXISTING PAVEMENT MARKINGS AND INSTALL SHORT TERM PAVEMENT MARKERS(TABS) AS PER TCP LAYOUTS. PERFORM ANY UTILITY VALVE ADJUSTMENTS. UTILITY VALVE ADJUSTMENTS SHALL BE SUBSIDIARY TO PREP ROW.

PHASE I A- CONSTRUCT TEMPORARY PAVEMENT AT COVEL RD AND COVEL GARDENS WASTE MANAGEMENT TO PROVIDE ACCESS DURING PHASE I B, I C, AND I D. REFER TO PHASE I TCP LAYOUTS. STATIONS 69+00 TO STATION 87+00

PHASE I B, C, D COVEL RD NORTHBOUND CONSTRUCTION STEPS

NOTE: RECONSTRUCTION OF COVEL RD AT THE INTERSECTION OF COVEL GARDENS WASTE MANAGEMENT AND RAY ELLISON BLVD IN 3 PHASES AS PER TCP LAYOUTS. REMOVE EXISTING PAVEMENT MARKINGS AND RESET SHORT TERM PAVEMENT MARKERS(TABS) AS PER TCP LAYOUTS.

PHASE I B -PLACE TRAFFIC ON DETOUR (SEE TRAFFIC CONTROL PLAN PHASE I B DETAILS. BUILD PERMANENT NB & SB PAVEMENT. STATIONS 77+49 TO STATION 80+69.

PHASE I C- PLACE ALL TRAFFIC ON NEW CONSTRUCTION CONCRETE PAVEMENT. BUILD CONCRETE PAVEMENT (SEE TRAFFIC CONTROL PLAN PHASE I C DETAILS) STATIONS 75+50 TO STATION 79+00

PHASE I D- COMPLETE COVEL RD/ COVEL GARDENS WASTE MANAGEMENT INTERSECTION. (SEE TRAFFIC CONTROL PLAN PHASE I D DETAILS) STATIONS 78+00 TO STATION 79+50

PHASE II COVEL RD NORTHBOUND CONSTRUCTION STEPS

STATIONS 10+00 TO STATION 77+50, STATIONS 100+00 TO STATION 103+12

NOTE: ROAD TO BE CLOSED TO NORTHBOUND TRAFFIC BETWEEN COVEL GARDENS WASTE MANGEMENT AND RAY ELLISON BLVD. DURING THIS PHASE THE EAST HALF SECTION OF THE ROAD WILL BE CONSTRUCTED. DRIVEWAYS SHALL ALWAYS MAINTAIN ACCESS AND CONSTRUCTED IN HALF SECTIONS. ALL PROPOSED JOINT BID UTILITY RELOCATIONS/ADJUSTMENTS WITHIN THIS TCP PHASE SHALL BE PERFORMED. CONTRACTOR TO COORDINATE WITH COSA 30 DAYS PRIOR TO UTLITY RELOCATIONS/ADJUSTMENTS THIS PHASE.

STEP 1. INSTALL TRAFFIC CONTROL DEVICES, SWPPP, AND PREP ROW.

STEP 2. OBLITERATE AND REMOVE THE EXISTING PAVEMENT.

STEP 3. COMPLETE ALL UTILITY, EXCAVATION, DRAINAGE, DRIVEWAY, SIGNAGE, & SIDEWALK WORK WITHIN THIS PHASE, INCLUDING OHE POLE BRACING (4 POLES) NOTED ON UTILITY LAYOUTS & UCM

STEP 4. CONSTRUCT TEMPORARY PAVEMENT AT COVEL/RAY ELLSION MEDIAN ISLAND. REFER TO PHASE III SHEET 1 FOR TEMPORARY PAVEMENT LIMITS.

STEP 5. PREPARE 6'' LIME TREATED SUBGRADE

STEP 6. PLACE THE HMAC BASE LAYER (4" HMAC TY-B).

STEP 7. PLACE 9.5'' OF CRCP

STEP 8. TRANSFER SOUTHBOUND TRAFFIC TO NEWLY CONSTRUCTED ROAD ONCE COMPRESSIVE DESIGN STRENGTH HAS BEEN ACHIEVED.

PHASE III: COVEL RD SOUTHBOUND CONSTRUCTION STEPS

STATIONS 10+00 TO STA 74+00

NOTE: ROAD IS TO BE CLOSED TO NORTHBOUND TRAFFIC BETWEEN RAY ELLISON BLVD AND COVEL GARDENS WASTE MANAGEMENT (SEE DETAILS IN TCP LAYOUTS). SWITCH SOUTHBOUND TRAFFIC TO THE NEW CONSTRUCTED SECTION AND THE WEST SIDE OF THE ROAD WILL BE CONSTRUCTED. DRIVEWAYS SHALL ALWAYS MAINTAIN ACCESS AND CONSTRUCTED IN HALF SECTIONS. ALL PROPOSED JOINT BID UTILITY RELOCATIONS/ADJUSTMENTS WITHIN THIS TCP PHASE SHALL BE PERFORMED. PROPOSED 16 IN. STEEL PIPE (CPS GAS) TO BE CONSTRUCTED THIS PHASE (REFER TO CPS PLANS FOR ADDITIONAL INFORMATION). CONTRACTOR TO COORDINATE WITH COSA 30 DAYS PRIOR TO UTLITY RELOCATIONS/ADJUSTMENTS THIS PHASE.

STEP 1. INSTALL TRAFFIC CONTROL DEVICES, SWPPP, AND PREP ROW.

STEP 2. OBLITERATE AND REMOVE THE EXISTING PAVEMENT.

STEP 3. COMPLETE ALL UTILITY, EXCAVATION, DRAINAGE, DRIVEWAY, SIGNAGE, DRIVEWAY WORK WITHIN THIS PHASE

STEP 4. PLACE 6'' LIME TREATED SUBGRADE

STEP 5. PLACE THE HMAC BASE LAYER (4" HMAC TY-B).

STEP 6. PLACE 9.5'' OF CRCP

STEP 7. ONCE COMPRESSIVE DESIGN STRENGTH HAS BEEN ACHIEVED, INSTALL PERMENANT PAVEMENT

MARKINGS AS PER SIGNING AND PAVEMENT MARKING LAYOUTS.

STEP 8. TRANSFER SOUTHBOUND TRAFFIC ON TO NEW ROADWAY

STEP 9. CONSTRUCT DRIVEWAY #8 IN HALF SECTIONS

STEP 10. REMOVE TEMPORARY PAVEMENT AT COVEL GARDENS WASTE MANAGEMENT INTERSECTION AND REPLACE WITH EMBANKMENT TO MATCH EXISTING GRADE

PHASE IV: COVEL RD @ RAY ELLISON ISLAND CONSTRUCTION STEPS

STATIONS 10+00 TO STATION 11+00

STEP 1. INSTALL TRAFFIC CONTROL DEVICES, SWPPP, AND PREP ROW.

STEP 2. OBLITERATE AND REMOVE TEMPORARY PAVEMENT AND EXISTING CURB.

STEP 3. CONSTRUCT NEW CURB AND GUTTER.

STEP 4. INSTALL TOPSOIL AND SOD WITHIN COVEL RD/RAY ELLISON MEDIAN ISLAND

STEP 5. RESTRIPE AND INSTALL ISLAND PAVEMENT MARKINGS AND SIGNAGE AS PER SIGNING AND PAVEMENT MARKING LAYOUT SHEET 1.

STEP 6. CONTRACTOR TO DEMOBILIZE.

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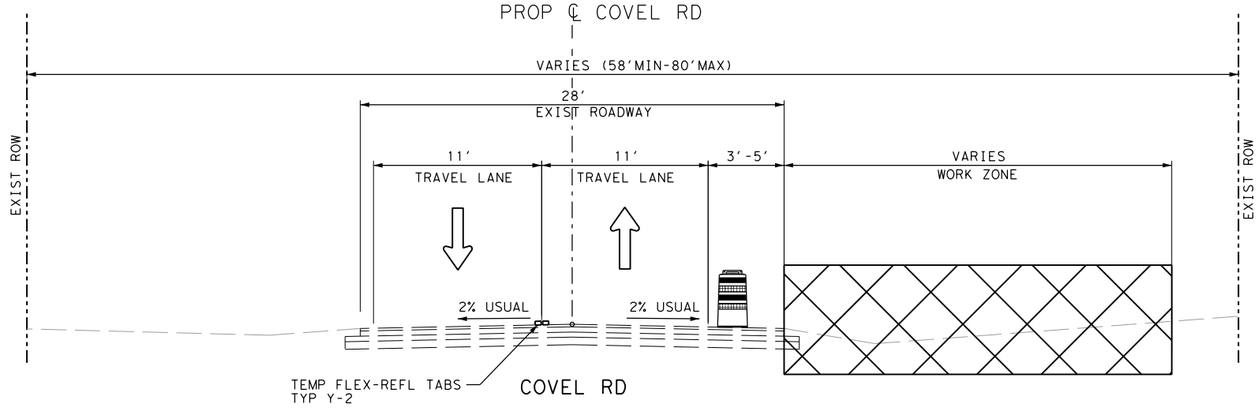
COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN SEQUENCE OF WORK

SHEET 1 OF 1

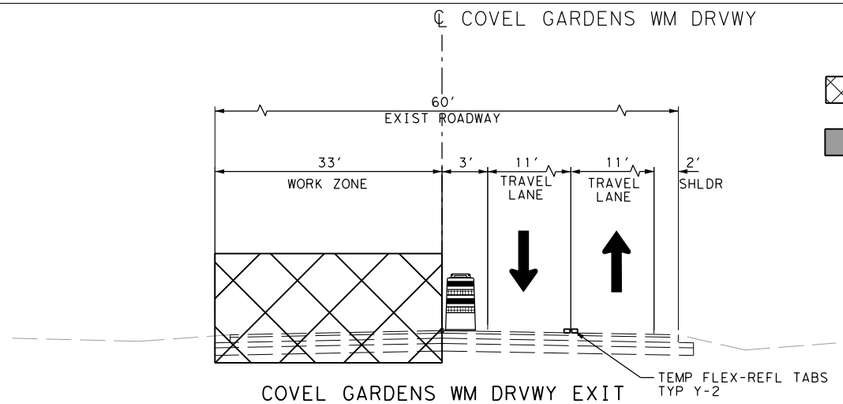
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COVEL RD

TCP TYPICAL SECTION
PHASE I A



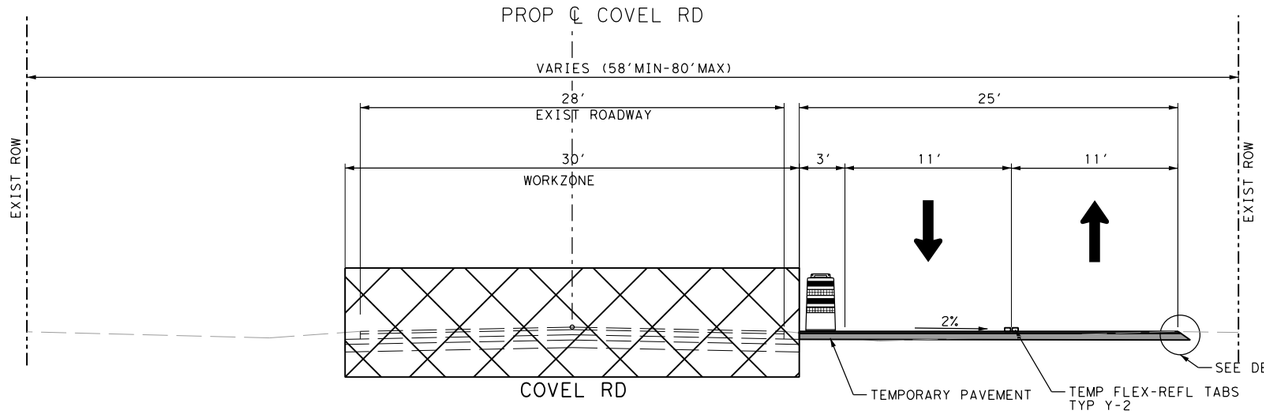
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TCP TYPICAL SECTION
PHASE I C

LEGEND

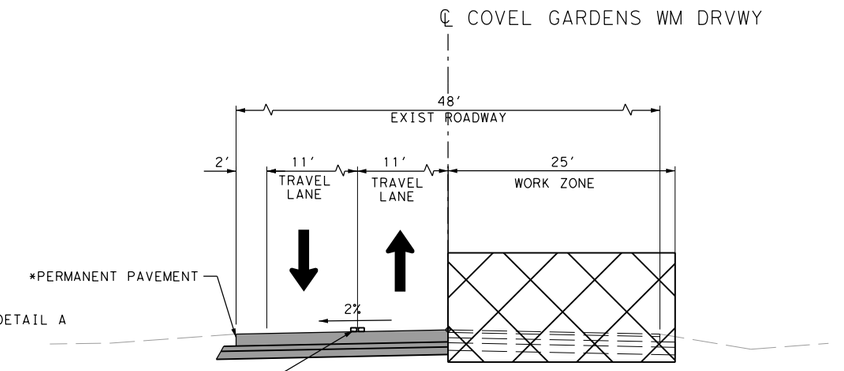
WORK ZONE

PAVEMENT COMPLETED PREVIOUS PHASE



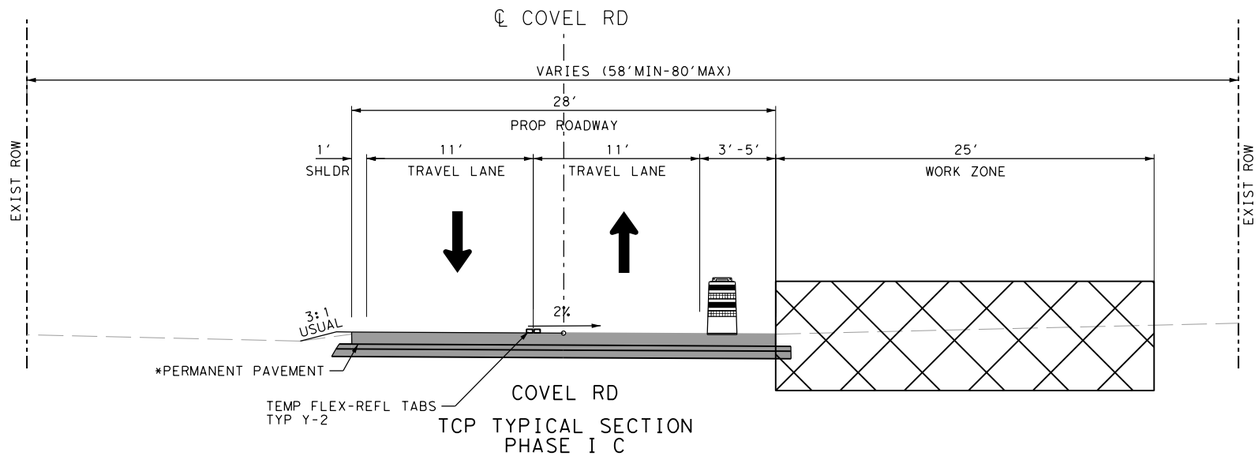
COVEL RD

TCP TYPICAL SECTION
PHASE I B



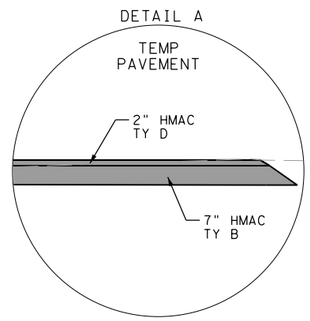
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TCP TYPICAL SECTION
PHASE I D



COVEL RD

TCP TYPICAL SECTION
PHASE I C



*NOTES:
REFER TO PROPOSED TYPICALS SHEET
FOR PERMANENT PAVEMENT DETAILS

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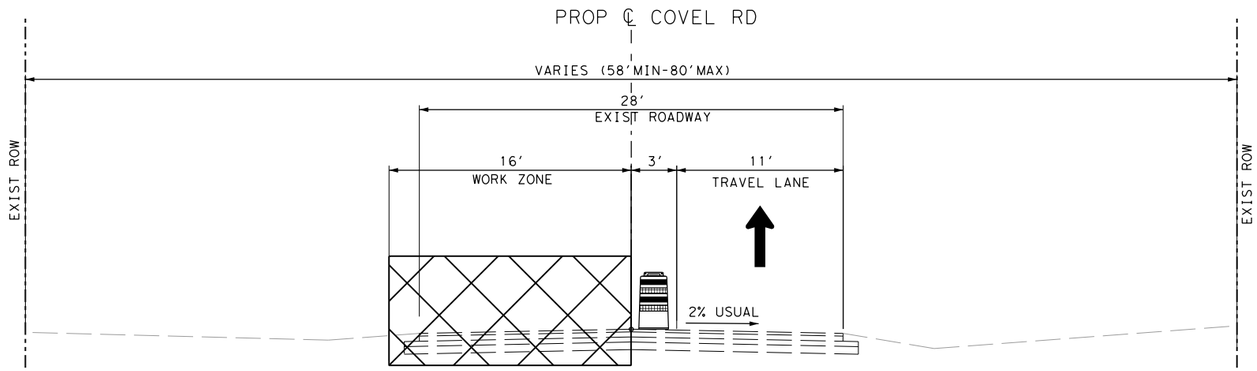
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COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN TYPICAL SECTIONS

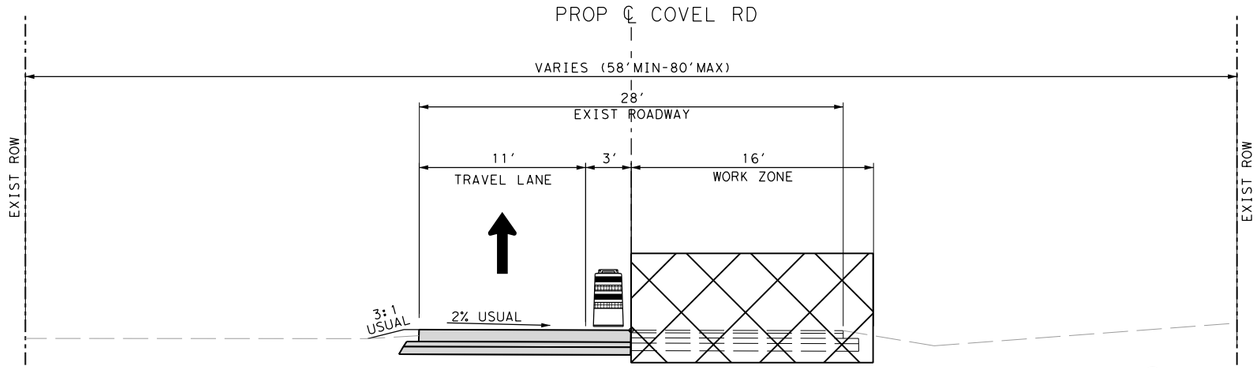
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COVEL RD

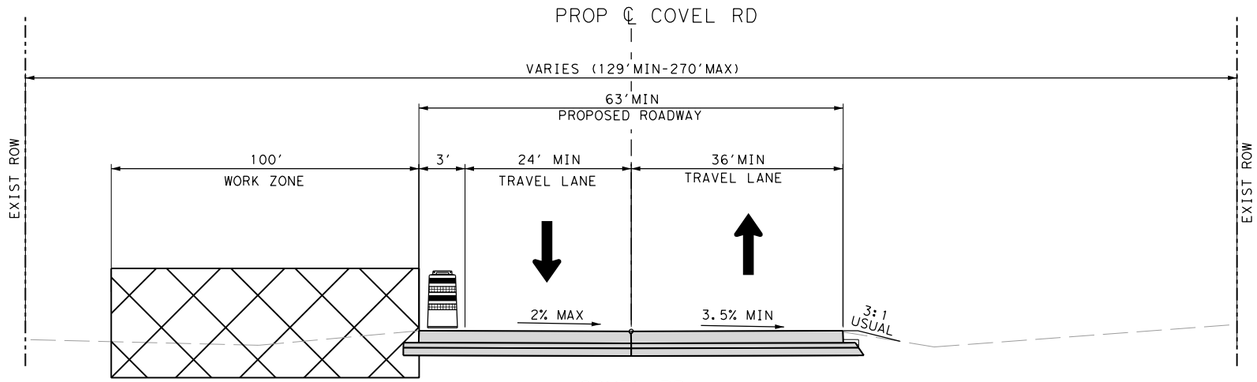
TCP TYPICAL SECTION
PHASE II



COVEL RD

TCP TYPICAL SECTION
PHASE III

PROPOSED 16" STEEL PIPE (CPS GAS)
REFER TO CPS GAS PLANS FOR UTILITY
RELOCATION LIMITS AND ADDITIONAL
INFORMATION



COVEL RD

TCP TYPICAL SECTION
PHASE IV

LEGEND

WORK ZONE

PAVEMENT COMPLETED
PREVIOUS PHASE

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COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN TYPICAL SECTIONS

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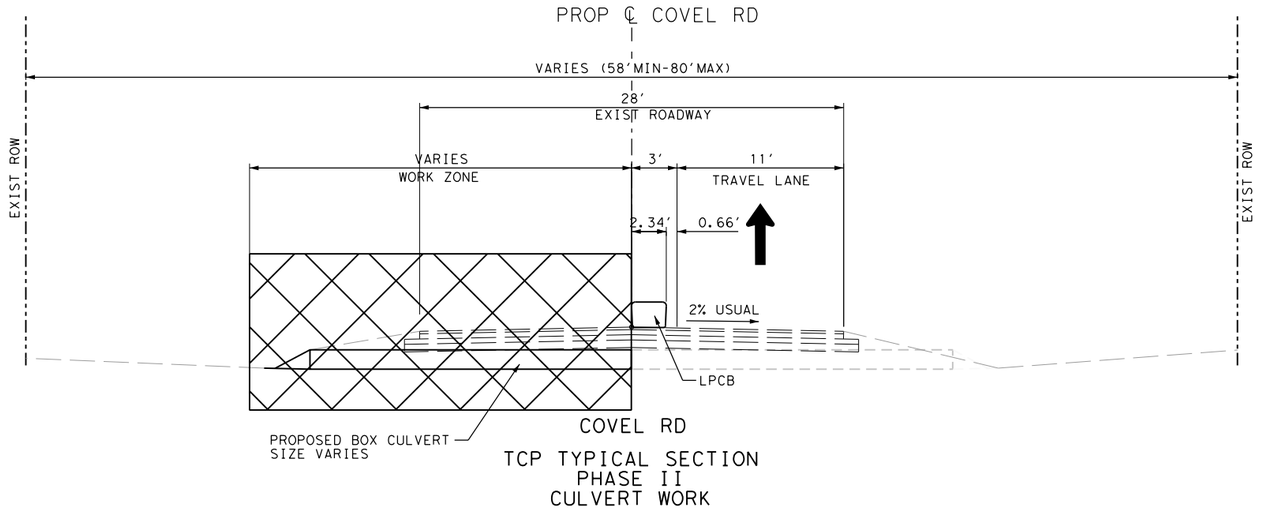
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LEGEND

WORK ZONE

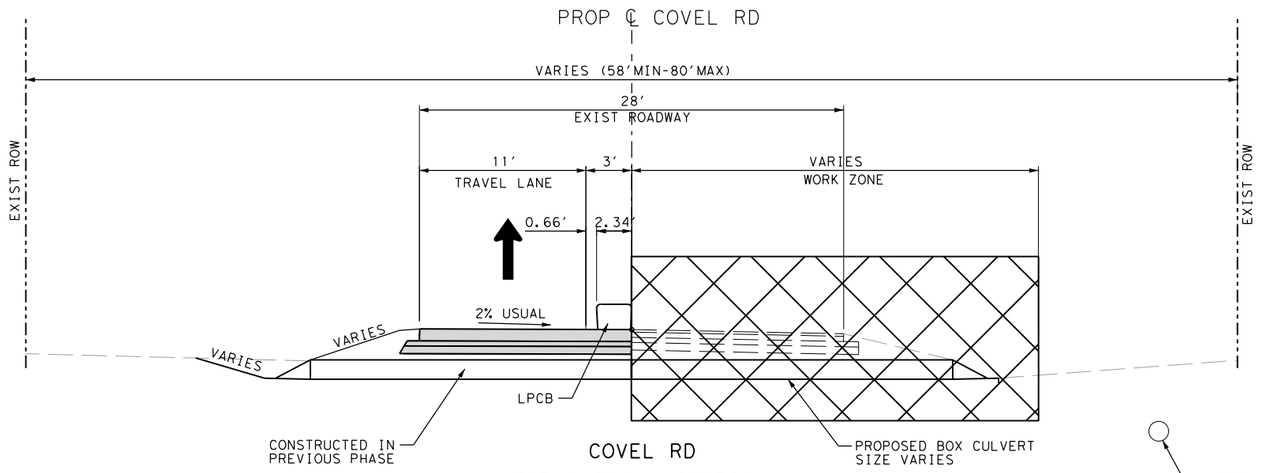
PAVEMENT COMPLETED PREVIOUS PHASE

LPCB = LOW PROFILE CONCRETE BARRIER



COVEL RD

TCP TYPICAL SECTION
PHASE II
CULVERT WORK



COVEL RD

TCP TYPICAL SECTION
PHASE III
CULVERT WORK

PROPOSED 16" STEEL PIPE (CPS GAS) REFER TO CPS GAS PLANS FOR UTILITY RELOCATION LIMITS AND ADDITIONAL INFORMATION

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COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN TYPICAL SECTIONS

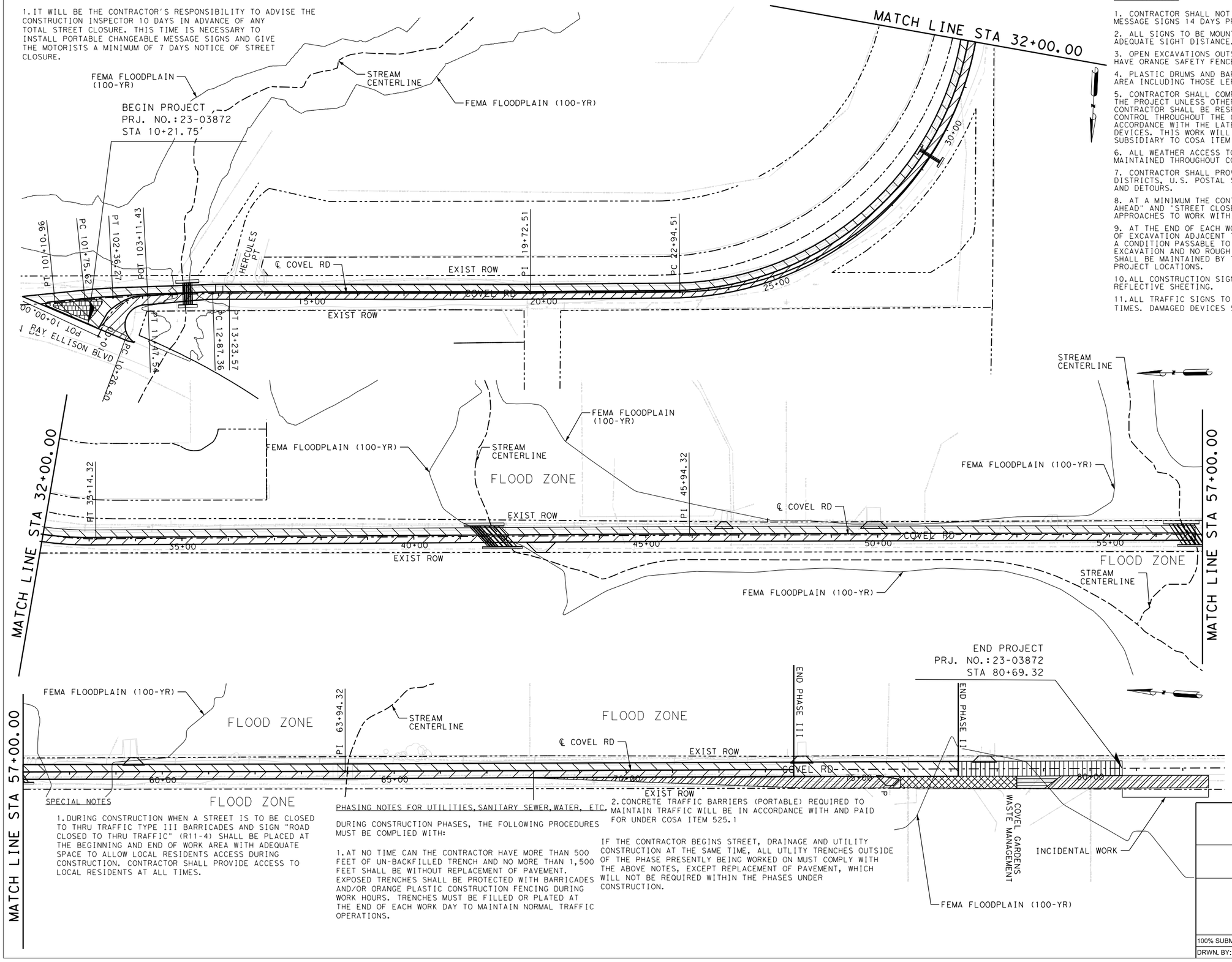
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PHASING AND STAGING NOTES

1. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO ADVISE THE CONSTRUCTION INSPECTOR 10 DAYS IN ADVANCE OF ANY TOTAL STREET CLOSURE. THIS TIME IS NECESSARY TO INSTALL PORTABLE CHANGEABLE MESSAGE SIGNS AND GIVE THE MOTORISTS A MINIMUM OF 7 DAYS NOTICE OF STREET CLOSURE.



TRAFFIC NOTES

1. CONTRACTOR SHALL NOTIFY ALL RESIDENTS WITH PORTABLE CHANGEABLE MESSAGE SIGNS 14 DAYS PRIOR TO START OF EACH MAJOR CONSTRUCTION PHASE.
2. ALL SIGNS TO BE MOUNTED ON SIGN SUPPORTS ONLY AND LOCATED TO PROVIDE ADEQUATE SIGHT DISTANCE.
3. OPEN EXCAVATIONS OUTSIDE OF THE PAVEMENT LIMITS, LEFT OVERNIGHT, SHALL HAVE ORANGE SAFETY FENCE SECURED AROUND THE PERIMETER PER OSHA STANDARDS.
4. PLASTIC DRUMS AND BARRICADES SHALL BE LOCATED TO DEFINE CONSTRUCTION AREA INCLUDING THOSE LEFT OVER NIGHT WITHIN THE PAVEMENT SECTION.
5. CONTRACTOR SHALL COMPLETE A PHASE BEFORE STARTING ANOTHER PHASE OF THE PROJECT UNLESS OTHERWISE NOTED OR APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING TRAFFIC CONTROL THROUGHOUT THE CONSTRUCTION PHASE. ALL TRAFFIC CONTROL TO BE IN ACCORDANCE WITH THE LATEST TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. THIS WORK WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED SUBSIDIARY TO COSA ITEM 530.1 BARRICADES, SIGNS AND TRAFFIC HANDLING.
6. ALL WEATHER ACCESS TO LOCAL RESIDENTS AND BUSINESSES SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
7. CONTRACTOR SHALL PROVIDE 14 DAY ADVANCED NOTICE TO LOCAL SCHOOL DISTRICTS, U.S. POSTAL SERVICE, AND EMERGENCY SERVICES FOR ALL ROAD CLOSURES AND DETOURS.
8. AT A MINIMUM THE CONTRACTOR SHALL ERECT TEMPORARY "STREET WORK AHEAD" AND "STREET CLOSED TO THRU TRAFFIC" SIGNS AND PROVIDE FLAG MEN AT ALL APPROACHES TO WORK WITHIN THE STREET RIGHT-OF-WAY.
9. AT THE END OF EACH WORKDAY PLACE A 3:1 MAX DROP-OFF SLOPE AT THE EDGE OF EXCAVATION ADJACENT TO THE TRAVELED ROADWAYS. ALL STREETS SHALL BE LEFT IN A CONDITION PASSABLE TO TRAFFIC WITH NO VERTICAL DROP-OFFS, NO OPEN EXCAVATION AND NO ROUGH BASE OR PAVEMENT AFTER WORK HOURS. ALL BASE SHALL BE MAINTAINED BY THE CONTRACTOR TO PROVIDE ACCESS THROUGH THE PROJECT LOCATIONS.
10. ALL CONSTRUCTION SIGNS AND BARRICADES SHALL HAVE HIGH INTENSITY REFLECTIVE SHEETING.
11. ALL TRAFFIC SIGNS TO BE KEPT IN PROPER POSITION, CLEAN AND LEGIBLE AT ALL TIMES. DAMAGED DEVICES SHALL BE REPLACED IMMEDIATELY.

LEGEND

- PHASE I A
- PHASE I B
- PHASE I C
- PHASE I D
- PHASE II
- PHASE III
- PHASE IV

0 100 200

SCALE: 1"=200'

SPECIAL NOTES

1. DURING CONSTRUCTION WHEN A STREET IS TO BE CLOSED TO THRU TRAFFIC TYPE III BARRICADES AND SIGN "ROAD CLOSED TO THRU TRAFFIC" (R11-4) SHALL BE PLACED AT THE BEGINNING AND END OF WORK AREA WITH ADEQUATE SPACE TO ALLOW LOCAL RESIDENTS ACCESS DURING CONSTRUCTION. CONTRACTOR SHALL PROVIDE ACCESS TO LOCAL RESIDENTS AT ALL TIMES.

PHASING NOTES FOR UTILITIES, SANITARY SEWER, WATER, ETC.

DURING CONSTRUCTION PHASES, THE FOLLOWING PROCEDURES MUST BE COMPLIED WITH:

1. AT NO TIME CAN THE CONTRACTOR HAVE MORE THAN 500 FEET OF UN-BACKFILLED TRENCH AND NO MORE THAN 1,500 FEET SHALL BE WITHOUT REPLACEMENT OF PAVEMENT. EXPOSED TRENCHES SHALL BE PROTECTED WITH BARRICADES AND/OR ORANGE PLASTIC CONSTRUCTION FENCING DURING WORK HOURS. TRENCHES MUST BE FILLED OR PLATED AT THE END OF EACH WORK DAY TO MAINTAIN NORMAL TRAFFIC OPERATIONS.
2. CONCRETE TRAFFIC BARRIERS (PORTABLE) REQUIRED TO MAINTAIN TRAFFIC WILL BE IN ACCORDANCE WITH AND PAID FOR UNDER COSA ITEM 525.1

IF THE CONTRACTOR BEGINS STREET, DRAINAGE AND UTILITY CONSTRUCTION AT THE SAME TIME, ALL UTLITY TRENCHES OUTSIDE OF THE PHASE PRESENTLY BEING WORKED ON MUST COMPLY WITH THE ABOVE NOTES, EXCEPT REPLACEMENT OF PAVEMENT, WHICH WILL NOT BE REQUIRED WITHIN THE PHASES UNDER CONSTRUCTION.

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COVEL RD IMPROVEMENTS

PHASING & TRAFFIC CONTROL PLAN

SHEET 1 OF 1

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LEGEND

TRAFFIC FLOW

DETOUR TRAFFIC FLOW

NOTES:
SEE TCP STANDARD BC(1-12) FOR STANDARD SIGN SPACING.

PCMS 10

1 WEEK PRIOR TO ACTIVATE DETOUR	DURING ACTIVATE DETOUR
BEGIN XXX XX	NORTHBOUND COVEL RD
NB COVEL RD CLOSED	CLOSED AHEAD

PCM

(10A) 1 WEEK PRIOR TO ACTIVATE DETOUR	(10B) DURING ACTIVATE DETOUR
BEGIN XXX XX	HERCULES POINT CLOSED
HERCULES POINT CLOSED	USE DETOUR

(23) COVEL RD M4-12T 36 X 12 / DETOUR M4-9L 30 X 24

(24) COVEL RD M4-12T 36 X 12 / DETOUR M4-9R 30 X 24

(25) COVEL RD M4-12T 36 X 12 / DETOUR M4-9S 30 X 24

(26) ROAD WORK ← NEXT 1 MILES G20-1bTL 72 X 24

(27) ROAD WORK NEXT 1 MILES → G20-1bTR 72 X 24

(1) NORTH RAY ELLISON M4-12T 36 X 12 / DETOUR M4-9R 30 X 24

(2) NORTH RAY ELLISON M4-12T 36 X 12 / DETOUR M4-9L 30 X 24

(3) NORTH RAY ELLISON M4-12T 36 X 12 / DETOUR M4-9S 30 X 24

(4) ROAD CLOSED TO THRU TRAFFIC

(5) END DETOUR M4-8a 24 X 18

(6) DETOUR AHEAD CW20-2D 36 X 36

(7) R3-1 48 X 48

(8) R3-2 48 X 48

(9) ROAD WORK AHEAD CW20-1D 48 X 48

(10A)(10B) PMS

(11) ROAD CLOSED W/TYPE III BARRICADE R11-2 48 x 30

(12) ROAD CLOSED 2 MILES AHEAD LOCAL TRAFFIC ONLY R11-3g MOD 60 x 30

(13) ROAD CLOSED 500 FT CW20-3C 36 X 36

(14) ROAD CLOSED 1000 FT CW20-3B 36 X 36

(15) ROAD CLOSED AHEAD CW20-3D 36 X 36

(16) ONLY R3-5R 30 x 36

(17) LOCAL TRAFFIC ONLY CW23-Spc

(18) BEGIN ROAD WORK NEXT X MILES G20-5T 48 X 24
NAME ADDRESS CITY STATE CONTRACTOR G20-6T 60 X 42

(19) ROAD WORK AHEAD CW20-1D 48 X 48
SPEED LIMIT XX R2-1 30 X 36
BEGIN WORK ZONE / TRAFFIC FINES DOUBLE / WHEN WORKERS ARE PRESENT G20-9TP 36 X 30; R20-5T 36 X 36; R20-5aT 36 X 18
STAY ALERT TALK OR TEXT LATER G20-10T 60 X 30
OBEY WARNING SIGNS STATE LAW R20-3T

(20) HERCULES PT M4-12T 36 X 12 / DETOUR M4-9L 30 X 24

(21) HERCULES PT M4-12T 36 X 12 / DETOUR M4-9R 30 X 24

(22) HERCULES PT M4-12T 36 X 12 / DETOUR M4-9S 30 X 24

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N. T. S.

6/27/2025

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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

DETOUR LAYOUT (PHASE II)

SHEET 1 OF 2

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: RT	DSGN. BY: RT	CHKD. BY: FR	SHT NO.: 25

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LEGEND

TRAFFIC FLOW

DETOUR TRAFFIC FLOW

NOTES:
SEE TCP STANDARD BC(1-12) FOR STANDARD SIGN SPACING.

PCMS 10

1 WEEK PRIOR TO ACTIVATE DETOUR	DURING ACTIVATE DETOUR
BEGIN XXX XX	NORTHBOUND COVEL RD
NB COVEL RD CLOSED	CLOSED AHEAD

PCM

(10A) 1 WEEK PRIOR TO ACTIVATE DETOUR	(10B) DURING ACTIVATE DETOUR
BEGIN XXX XX	SB DETOUR
SB DETOUR	USE CAUTION

(1) NORTH — COVEL RD DETOUR — M4-12T 36 X 12; M4-9R 30 X 24

(2) NORTH — COVEL RD DETOUR — M4-12T 36 X 12; M4-9L 30 X 24

(3) NORTH — COVEL RD DETOUR — M4-12T 36 X 12; M4-9S 30 X 24

(4) ROAD CLOSED TO THRU TRAFFIC

(5) END DETOUR — M4-8a 24 X 18

(6) DETOUR AHEAD — CW20-2D 36 X 36

(7) R3-1 48 X 48

(8) R3-2 48 X 48

(9) ROAD WORK AHEAD — CW20-1D 48 X 48

(10A)(10B) PMS

(11) ROAD CLOSED — R11-2 48 X 30
W/TYPE III BARRICADE

(12) ROAD CLOSED 2 MILES AHEAD LOCAL TRAFFIC ONLY — R11-3g MOD 60 X 30

(13) ROAD CLOSED 500 FT — CW20-3C 36 X 36

(14) ROAD CLOSED 1000 FT — CW20-3B 36 X 36

(15) ROAD CLOSED AHEAD — CW20-3D 36 X 36

(16) ONLY — R3-5R 30 X 36

(17) LOCAL TRAFFIC ONLY — CW23-Spc

(18) BEGIN ROAD WORK NEXT X MILES — G20-5T 48 X 24
NAME ADDRESS CITY STATE CONTRACTOR — G20-6T 60 X 42

(19)
- ROAD WORK AHEAD — CW20-1D 48 X 48
- SPEED LIMIT XX — R2-1 30 X 36
- BEGIN WORK ZONE / TRAFFIC FINES DOUBLE WHEN WORKERS ARE PRESENT — G20-9TP 36 X 30; R20-5T 36 X 36; R20-5aT 36 X 18
- STAY ALERT TALK OR TEXT LATER — G20-10T 60 X 30
- OBEY WARNING SIGNS STATE LAW — R20-3T

(20) RAY ELLISON DETOUR — M4-12T 36 X 12; M4-9L 30 X 24

(21) RAY ELLISON DETOUR — M4-12T 36 X 12; M4-9R 30 X 24

(22) RAY ELLISON DETOUR — M4-12T 36 X 12; M4-9S 30 X 24

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED PROFESSIONAL ENGINEER
6/27/2025

N. T. S.

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

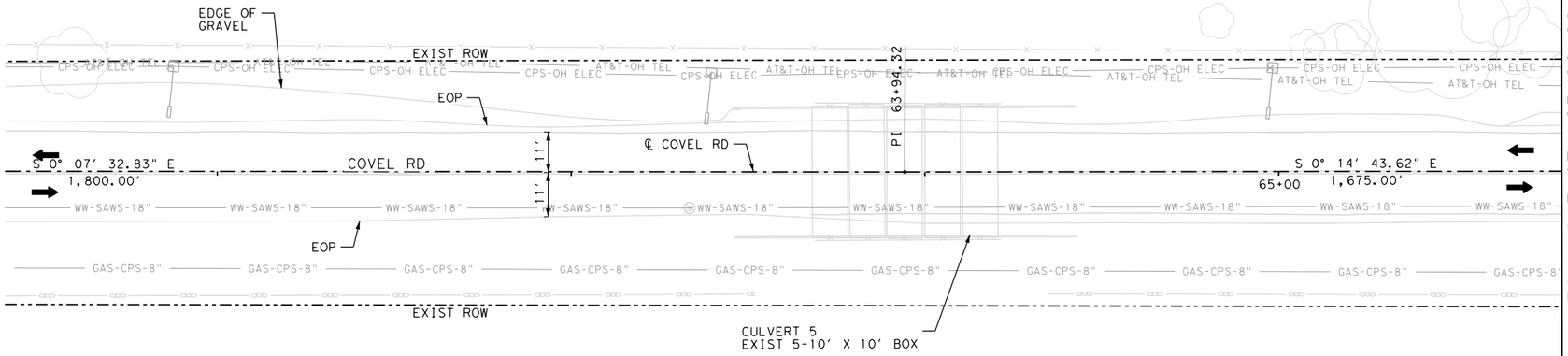
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS
DETOUR LAYOUT (PHASE III)

SHEET 2 OF 2

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- 0" TO 2" PLANE
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

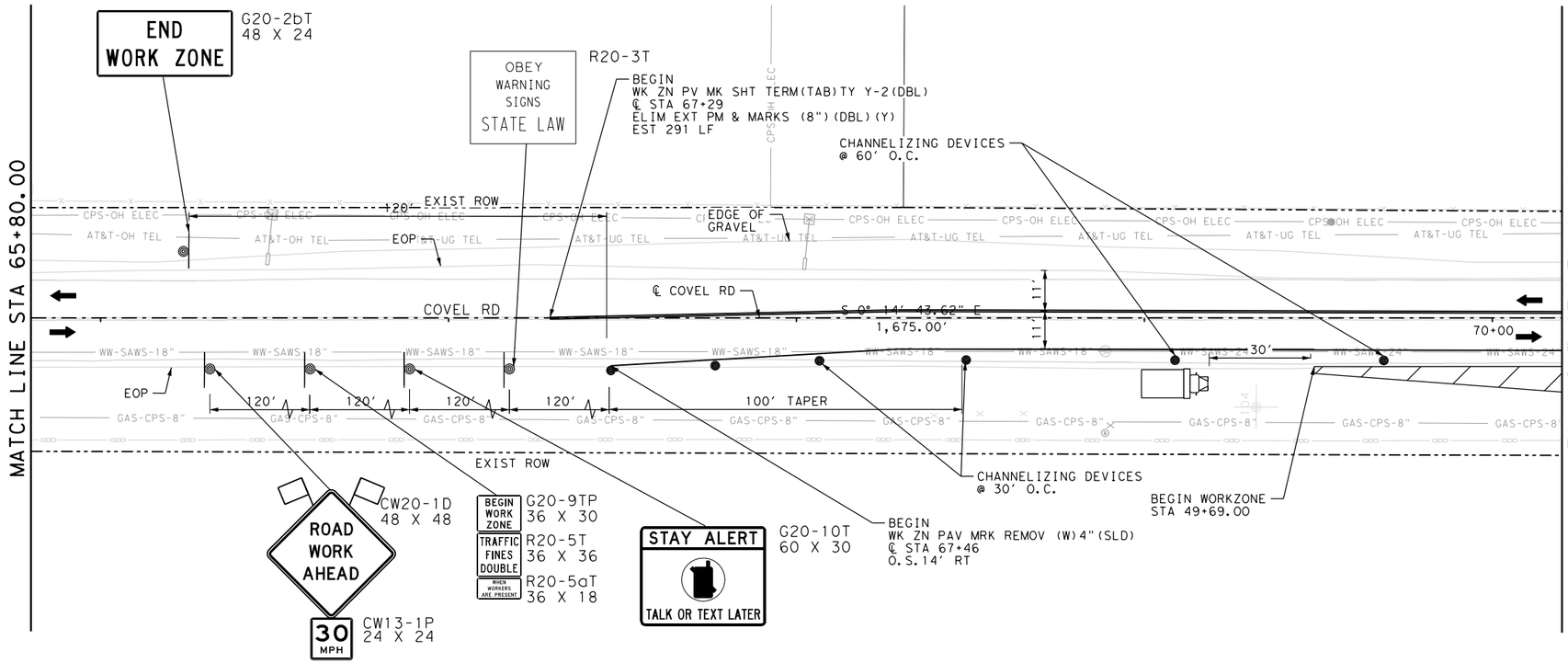
SEE DETOUR LAYOUTS FOR DETOUR SIGNING.

ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

BID ITEM	DESCRIPTION	UNIT	QTY
104.1	STREET EXCAVATION (< 1,000 CY)	CY	9
205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	36
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	36
525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	
662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	275
662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	
662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	28
677-7004	ELIM EXT PM & MRKS (8")	LF	291



20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED PROFESSIONAL ENGINEER

6/27/2025

GANNETT FLEMING
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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

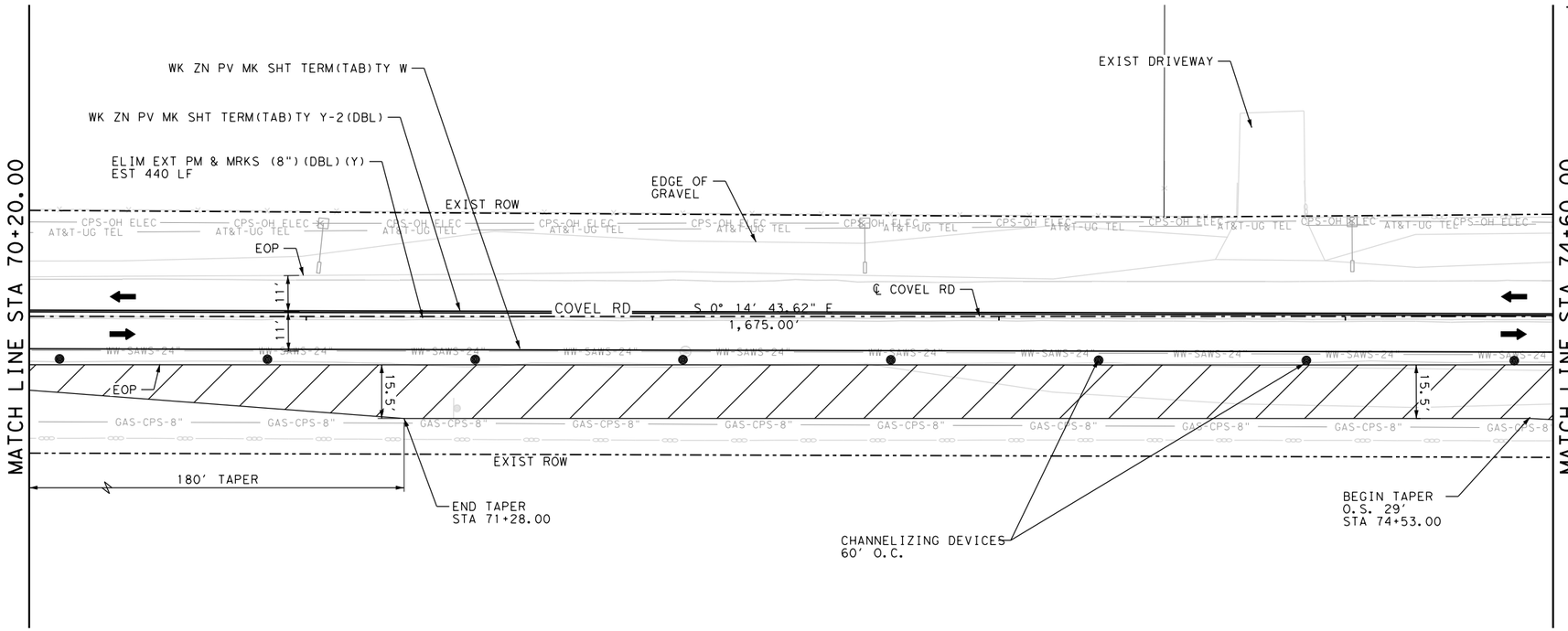
COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN PHASE I A

SHEET 1 OF 3

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: RT	DSGN. BY: RT	CHKD. BY: FR	SHT NO.: 27

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LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- 0" TO 2" PLANE
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

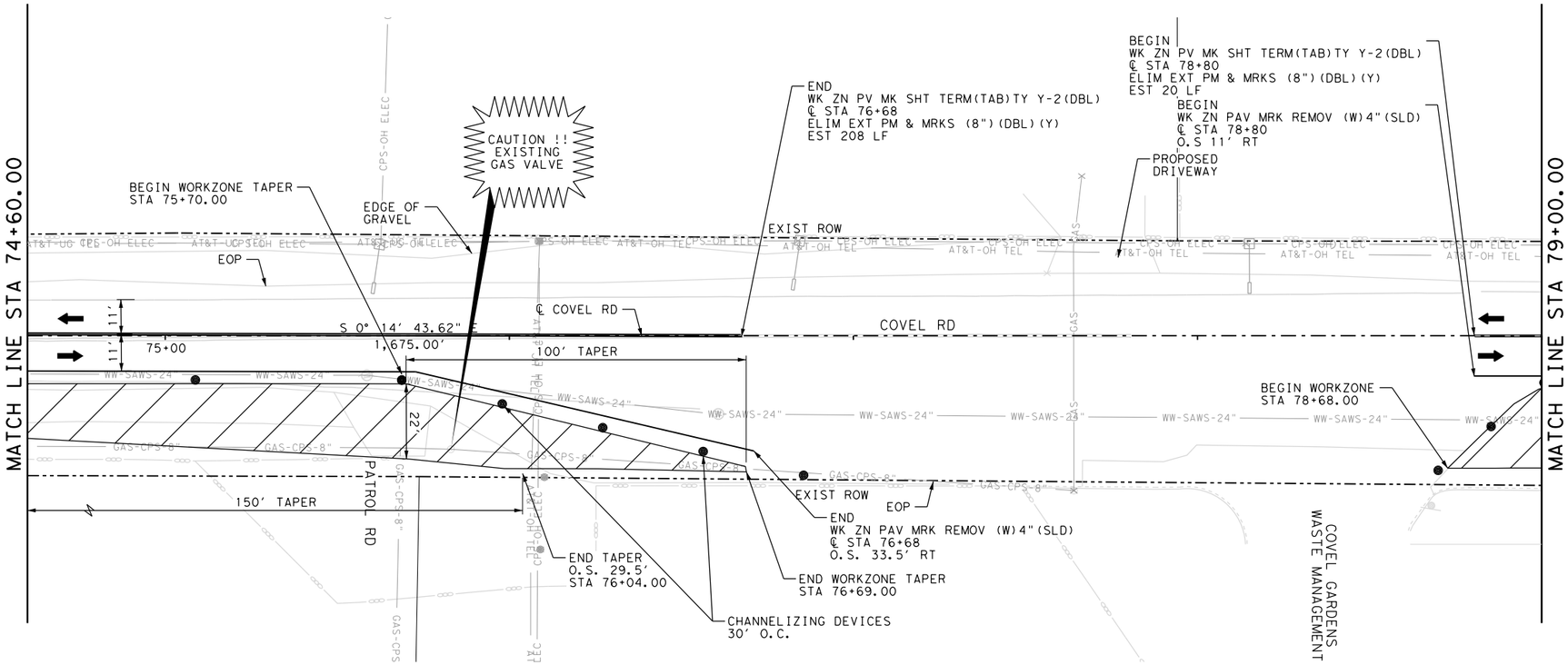
SEE DETOUR LAYOUTS FOR DETOUR SIGNING.

ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

BID ITEM	DESCRIPTION	UNIT	QTY
104.1	STREET EXCAVATION (< 1,000 CY)	CY	279
205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	1114
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	1114
525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	
662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	654
662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	
662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	63
677-7004	ELIM EXT PM & MRKS (8")	LF	668



20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED
PROFESSIONAL ENGINEER

6/27/2025

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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

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PUBLIC WORKS DEPARTMENT

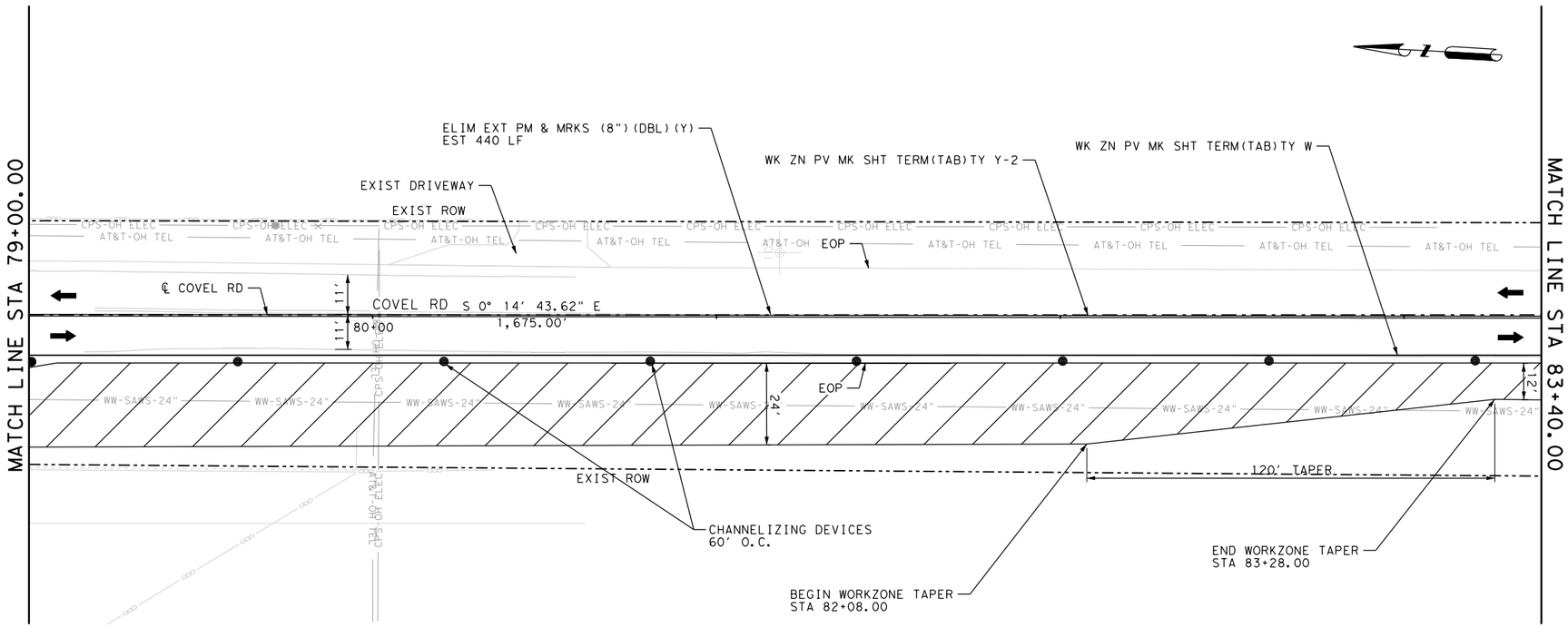
COVEL RD IMPROVEMENTS

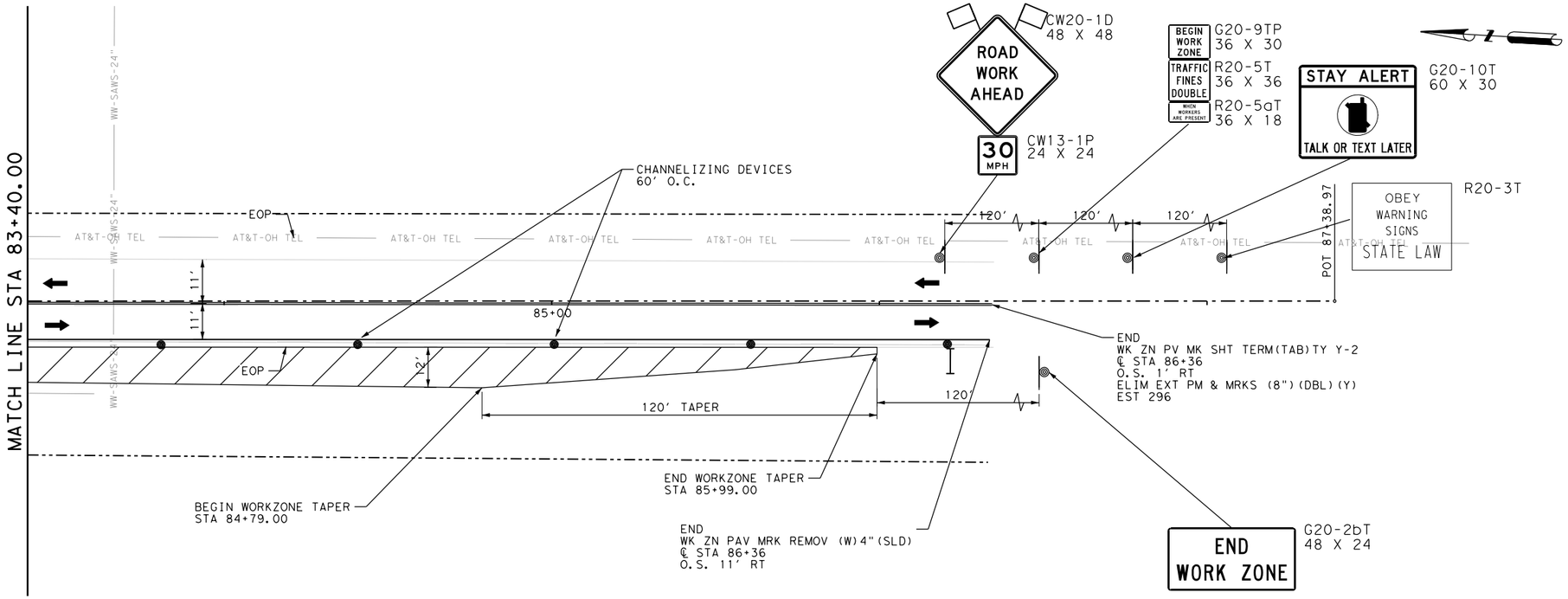
TRAFFIC CONTROL PLAN PHASE I A

SHEET 2 OF 3

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: RT	DSGN. BY: RT	CHKD. BY: FR	SHT NO.: 28

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LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- 0" TO 2" PLANE
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

SEE DETOUR LAYOUTS FOR DETOUR SIGNING.

ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

BID ITEM	DESCRIPTION	UNIT	QTY
104.1	STREET EXCAVATION (< 1,000 CY)	CY	336
205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	1344
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	1344
525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	
662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	734
662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	
662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	72
677-7004	ELIM EXT PM & MRKS (8")	LF	736

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED
PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

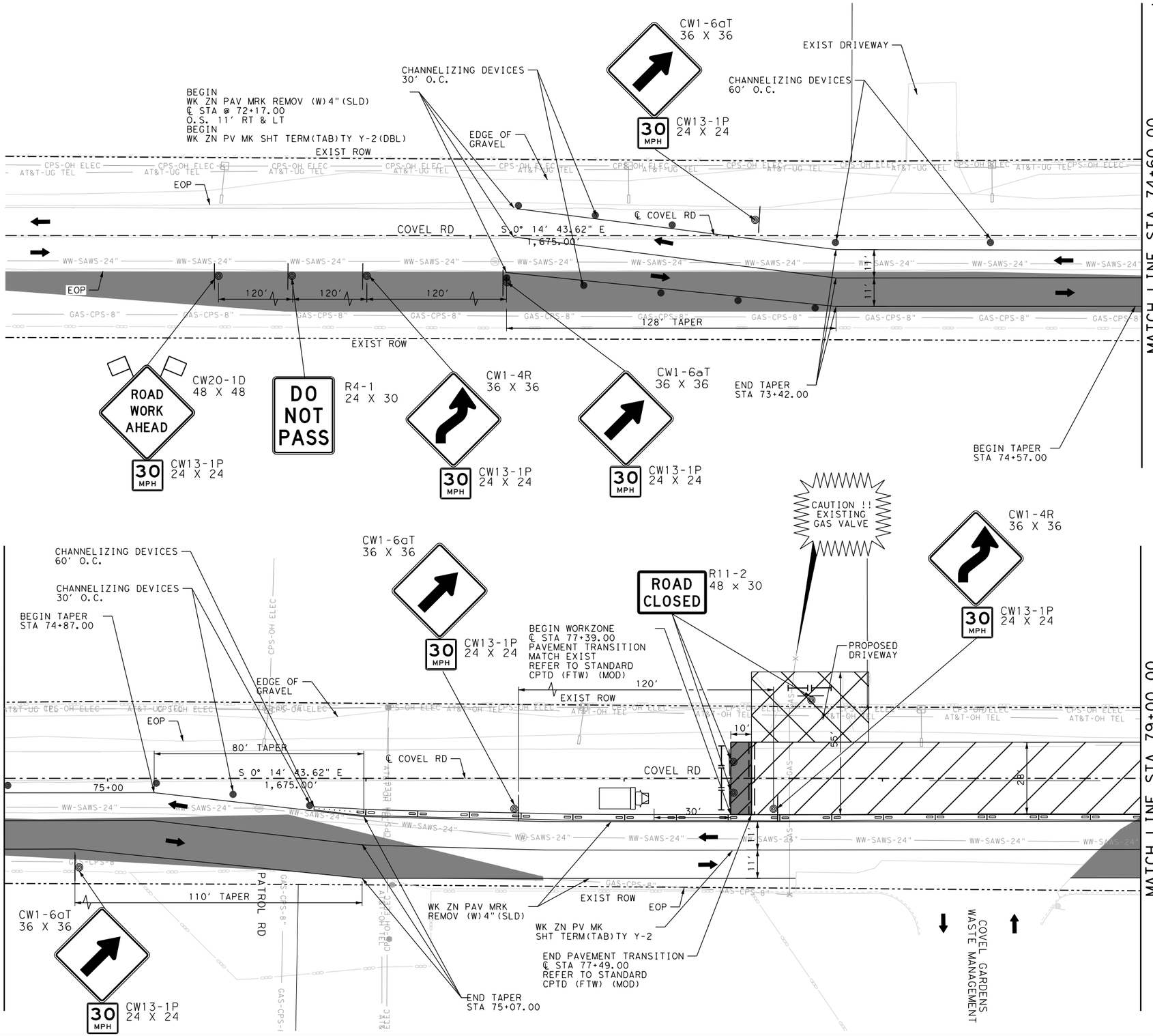
COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN PHASE I A

SHEET 3 OF 3

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- PAVEMENT TRANSITION
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

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ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

BID ITEM	DESCRIPTION	UNIT	QTY
104.1	STREET EXCAVATION (< 1,000 CY)	CY	2
108.1	LIME TREAT. SUBGRADE (6" COMP DEPTH)	SY	25
205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	
205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (11.5" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	25
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	25
209.1	CONCRETE PAVEMENT (10IN)	SY	7
525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	320
662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	1366
662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	
662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	86

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED
PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

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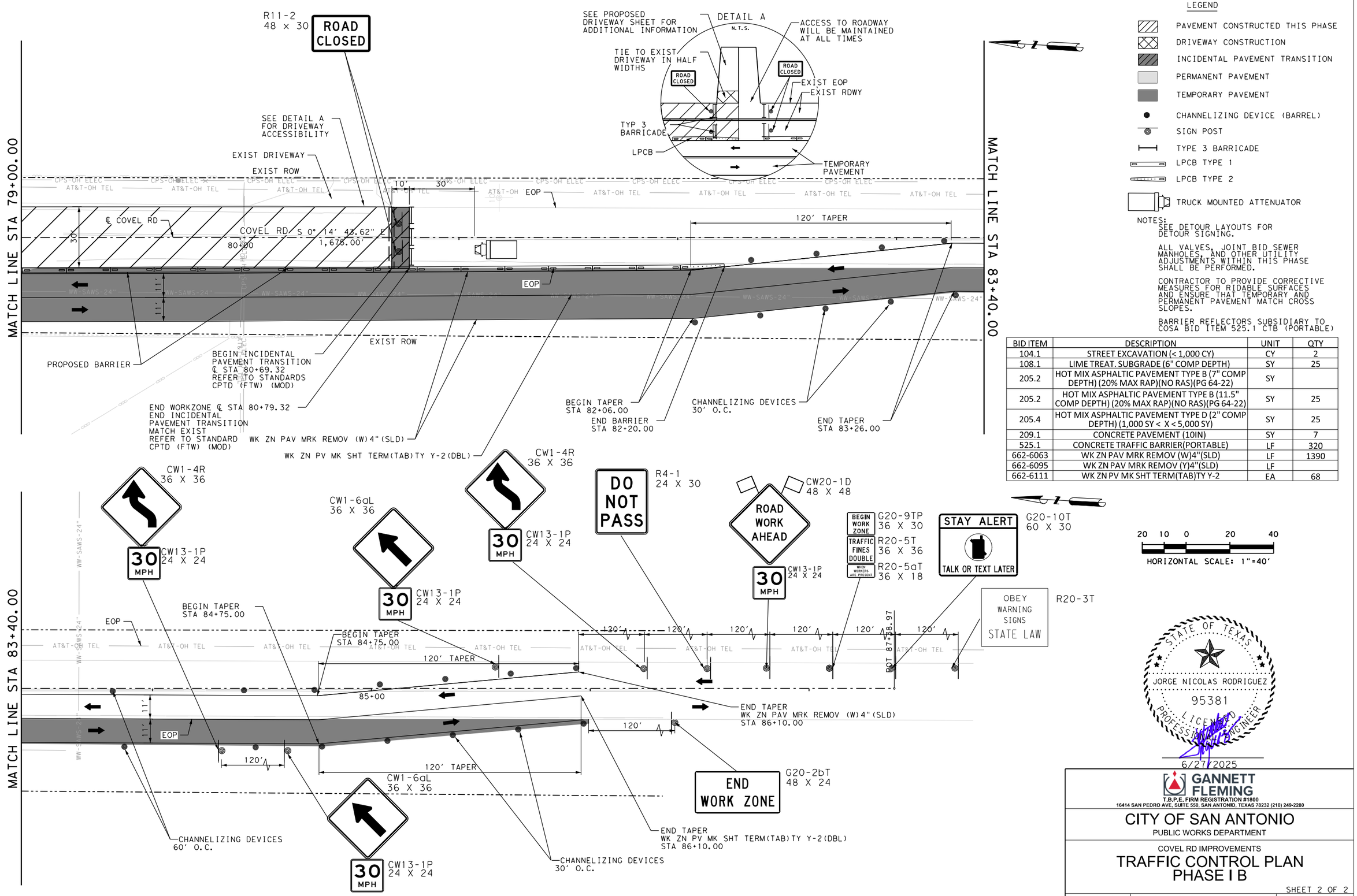
COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN PHASE I B

SHEET 1 OF 2

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- INCIDENTAL PAVEMENT TRANSITION
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

SEE DETOUR LAYOUTS FOR DETOUR SIGNING.

ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

BID ITEM	DESCRIPTION	UNIT	QTY
104.1	STREET EXCAVATION (< 1,000 CY)	CY	2
108.1	LIME TREAT. SUBGRADE (6" COMP DEPTH)	SY	25
205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	
205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (11.5" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	25
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	25
209.1	CONCRETE PAVEMENT (10IN)	SY	7
525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	320
662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	1390
662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	
662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	68

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

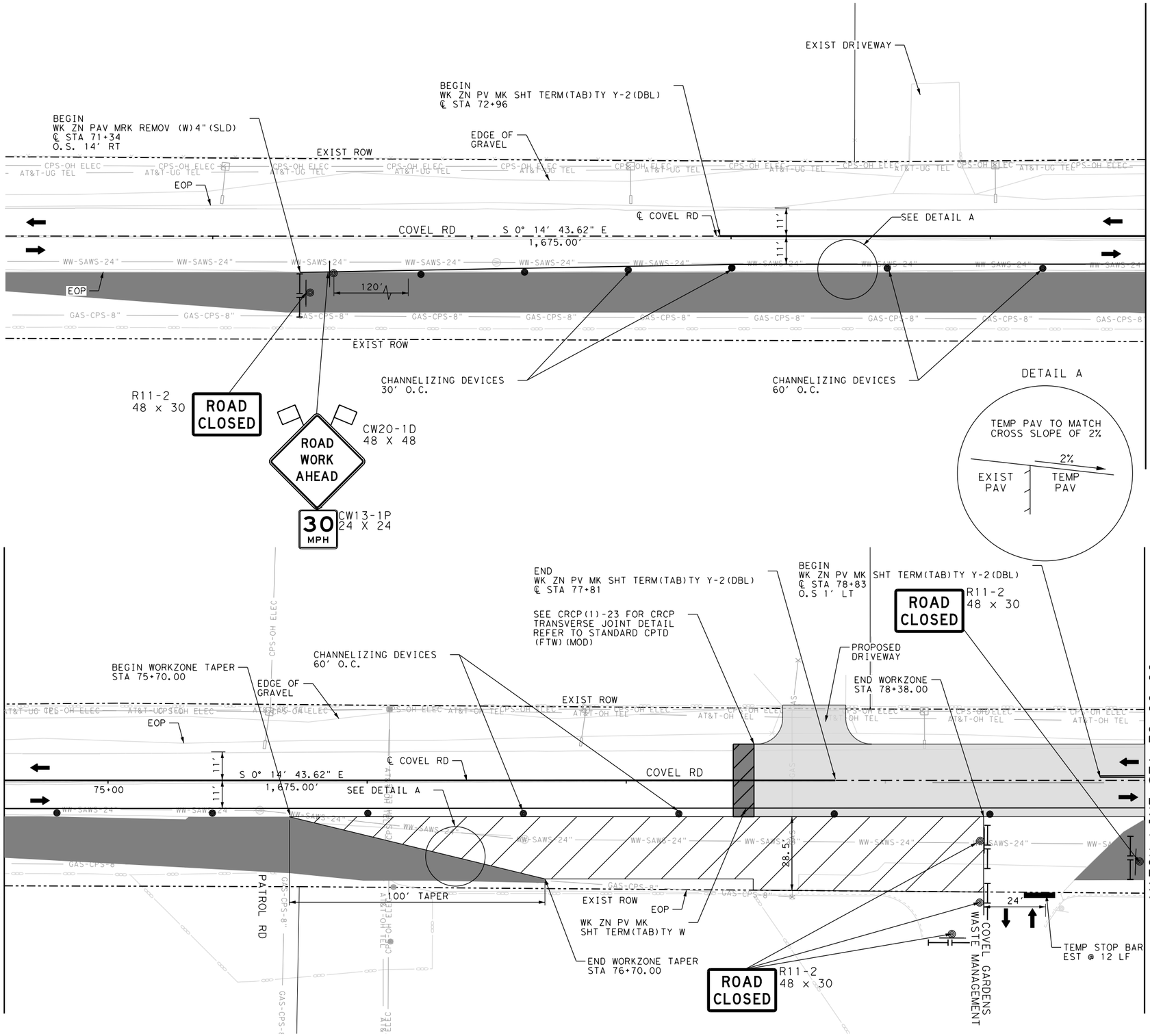
COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN PHASE I B

SHEET 2 OF 2

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: RT	DSGN. BY: RT	CHKD. BY: FR	SHT NO.: 31

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LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- PAVEMENT TRANSITION
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

SEE DETOUR LAYOUTS FOR DETOUR SIGNING.

ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

	BID ITEM	DESCRIPTION	UNIT	QTY
	205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	
	205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	
*	525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	
	662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	766
	662-6075	WK ZN PAV MRK REMOV (W)24"(SLD)	LF	12
	662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	
	662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	50

* BID ITEM PAID FOR IN PREVIOUS PHASE

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED
PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

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PUBLIC WORKS DEPARTMENT

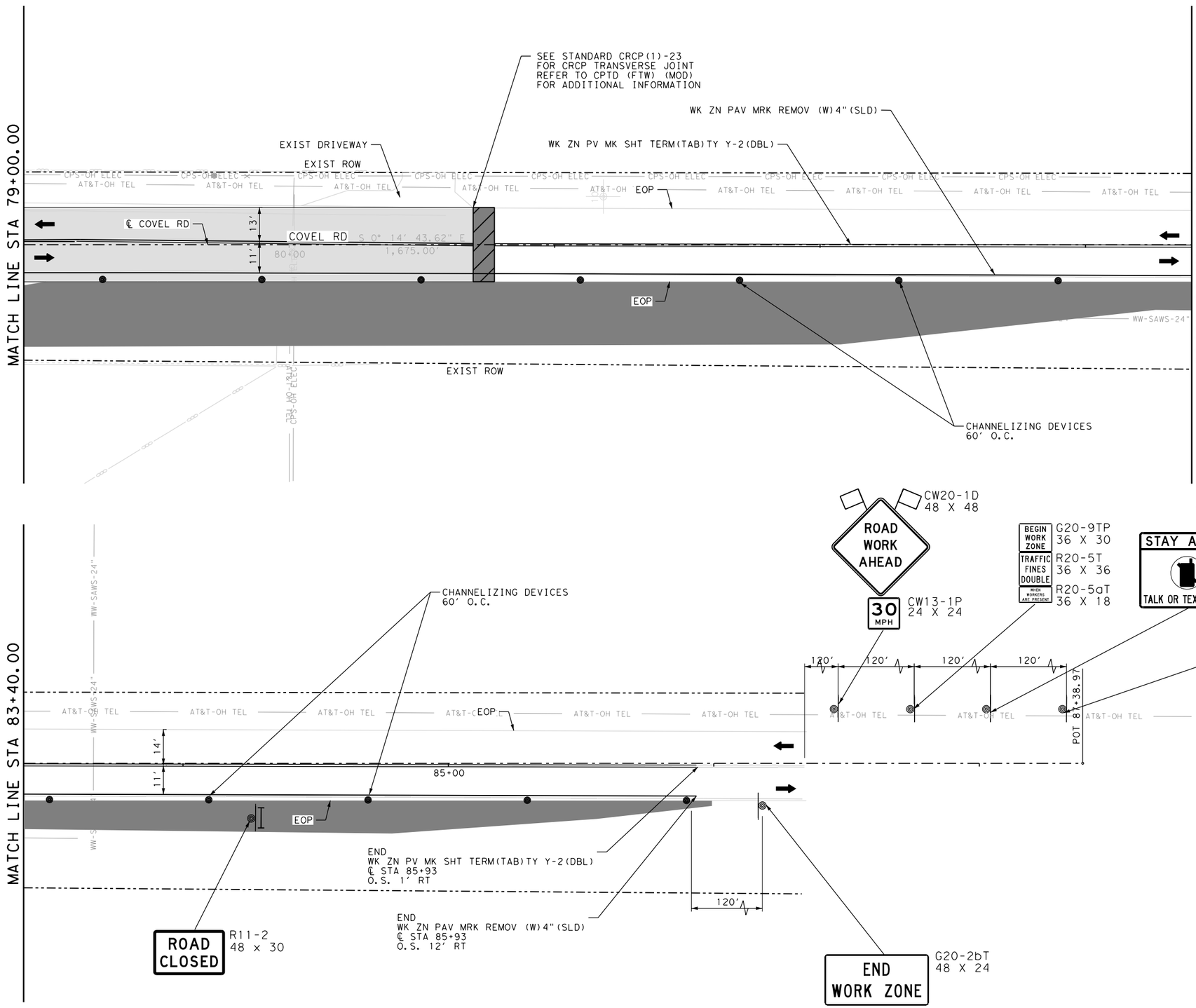
COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN PHASE I C

SHEET 1 OF 2

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: RT	DSGN. BY: RT	CHKD. BY: FR	SHT NO.: 32

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LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- INCIDENTAL PAVEMENT TRANSITION
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

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CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

BID ITEM	DESCRIPTION	UNIT	QTY
205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	
525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	
662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	694
662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	
662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	67

STATE OF TEXAS
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PUBLIC WORKS DEPARTMENT

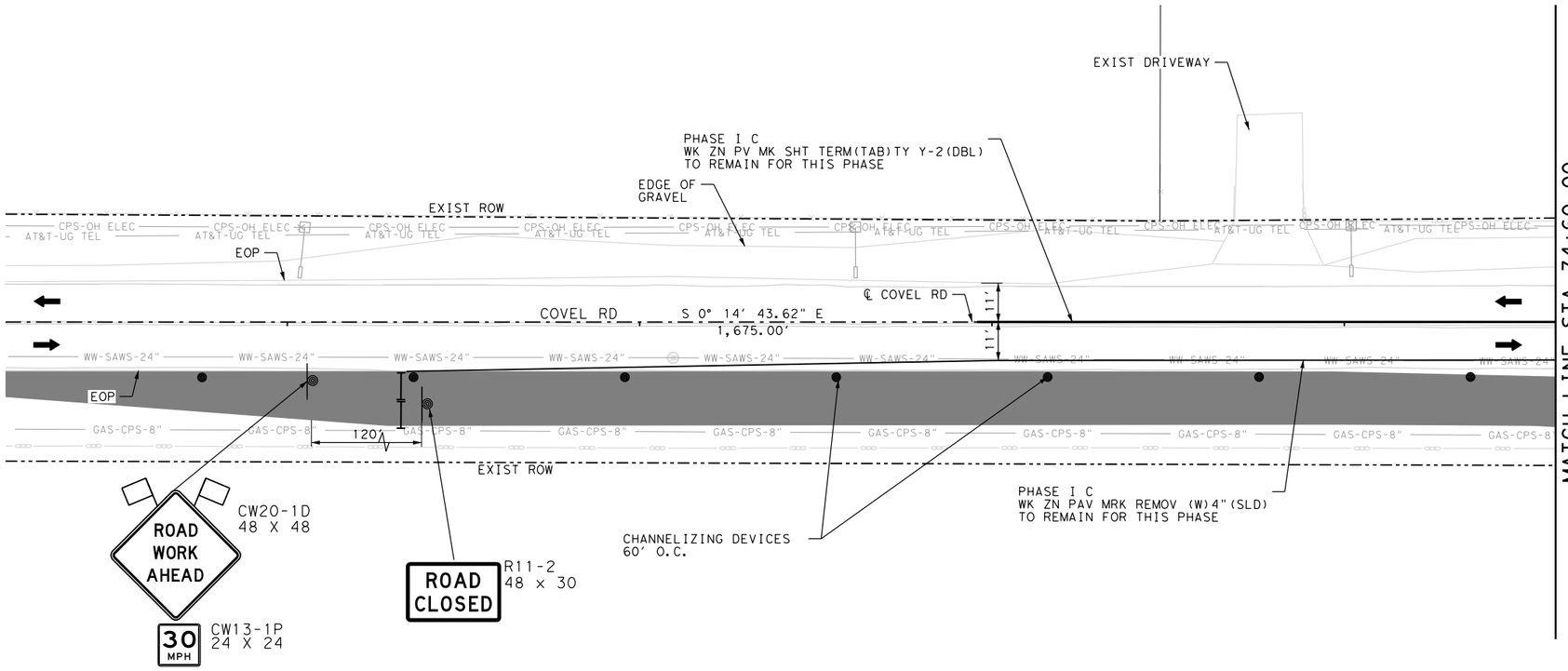
COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN PHASE I C

SHEET 2 OF 2

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: RT	DSGN. BY: RT	CHKD. BY: FR	SHT NO.: 33

2:03:08 PM
6/27/2025
jrobles
c:\projectwise\dannenbaum\workdir\jose.robles\d0172730\COVEL_RD_TCP_LAYOUT_PHI_SUBPH_C_02.dgn



LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- PAVEMENT TRANSITION
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

SEE DETOUR LAYOUTS FOR DETOUR SIGNING.

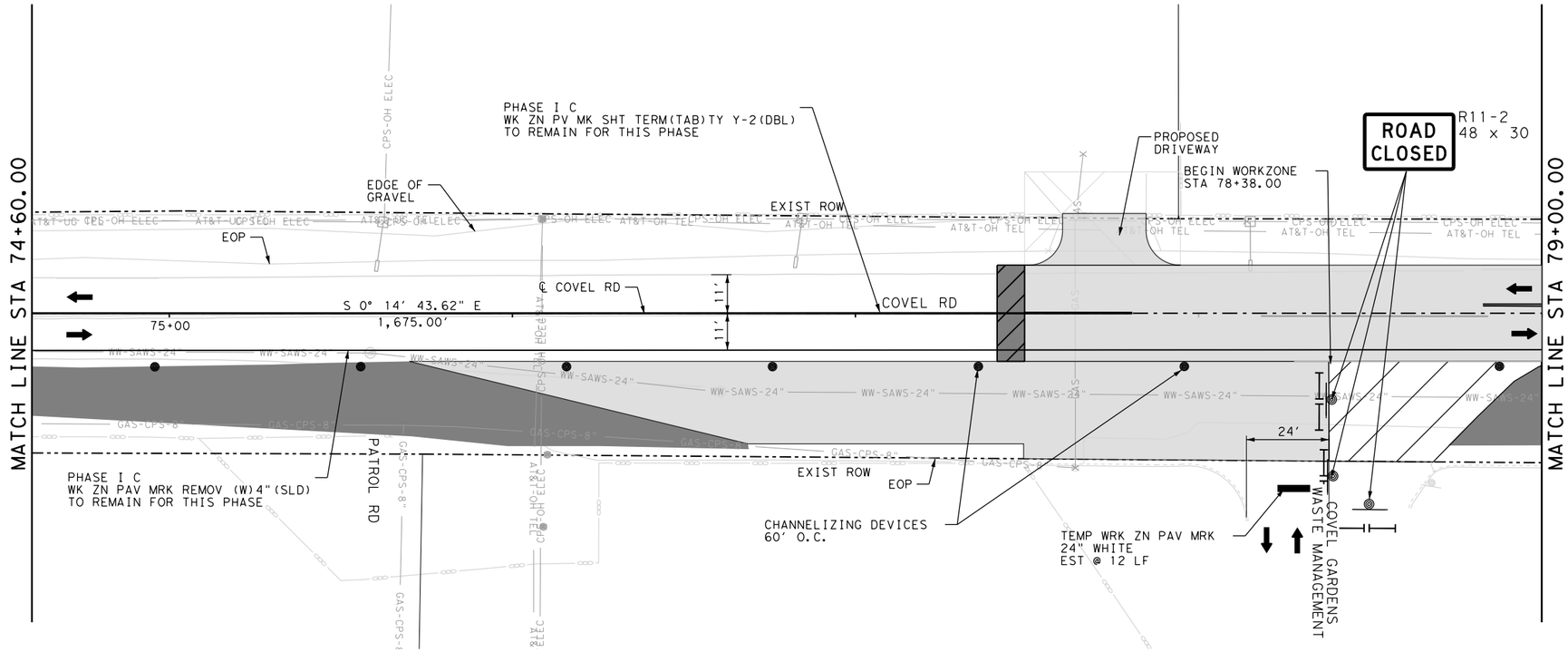
ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

	BID ITEM	DESCRIPTION	UNIT	QTY
	205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	
	205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	
*	525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	
	662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	
	662-6075	WK ZN PAV MRK REMOV (W)24"(SLD)	LF	12
	662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	
	662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	

* BID ITEM PAID FOR IN PREVIOUS PHASE



20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED
PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

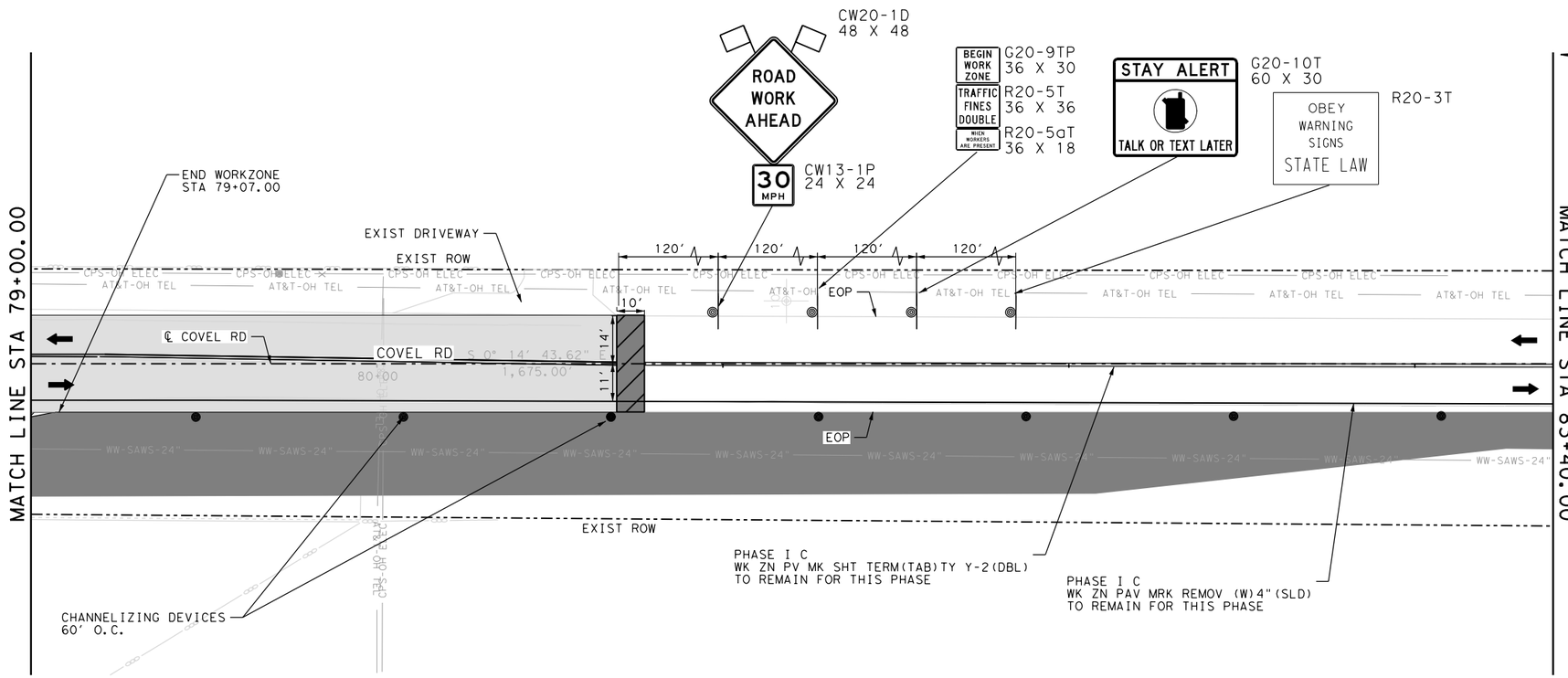
COVEL RD IMPROVEMENTS

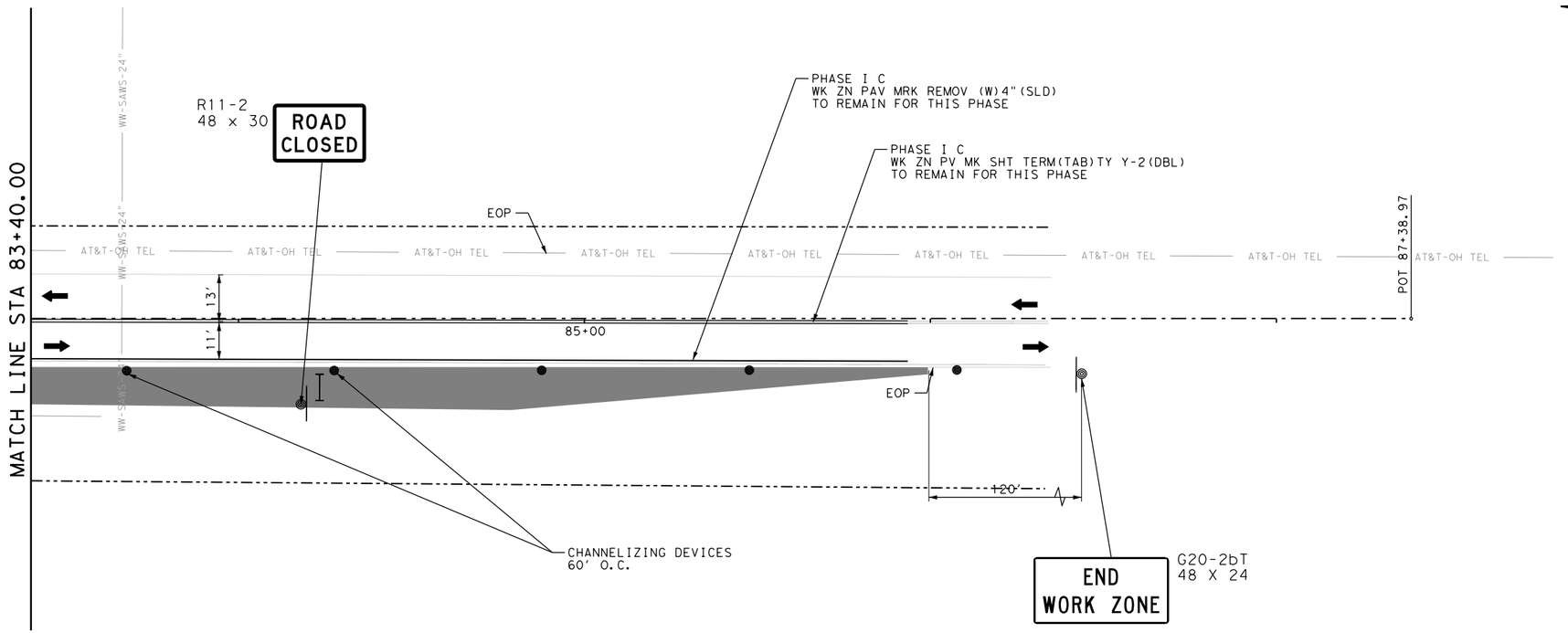
TRAFFIC CONTROL PLAN PHASE I D

SHEET 1 OF 2

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- INCIDENTAL PAVEMENT TRANSITION
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

SEE DETOUR LAYOUTS FOR DETOUR SIGNING.

ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

BID ITEM	DESCRIPTION	UNIT	QTY
205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	
525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	
662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	
662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	
662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED PROFESSIONAL ENGINEER

6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

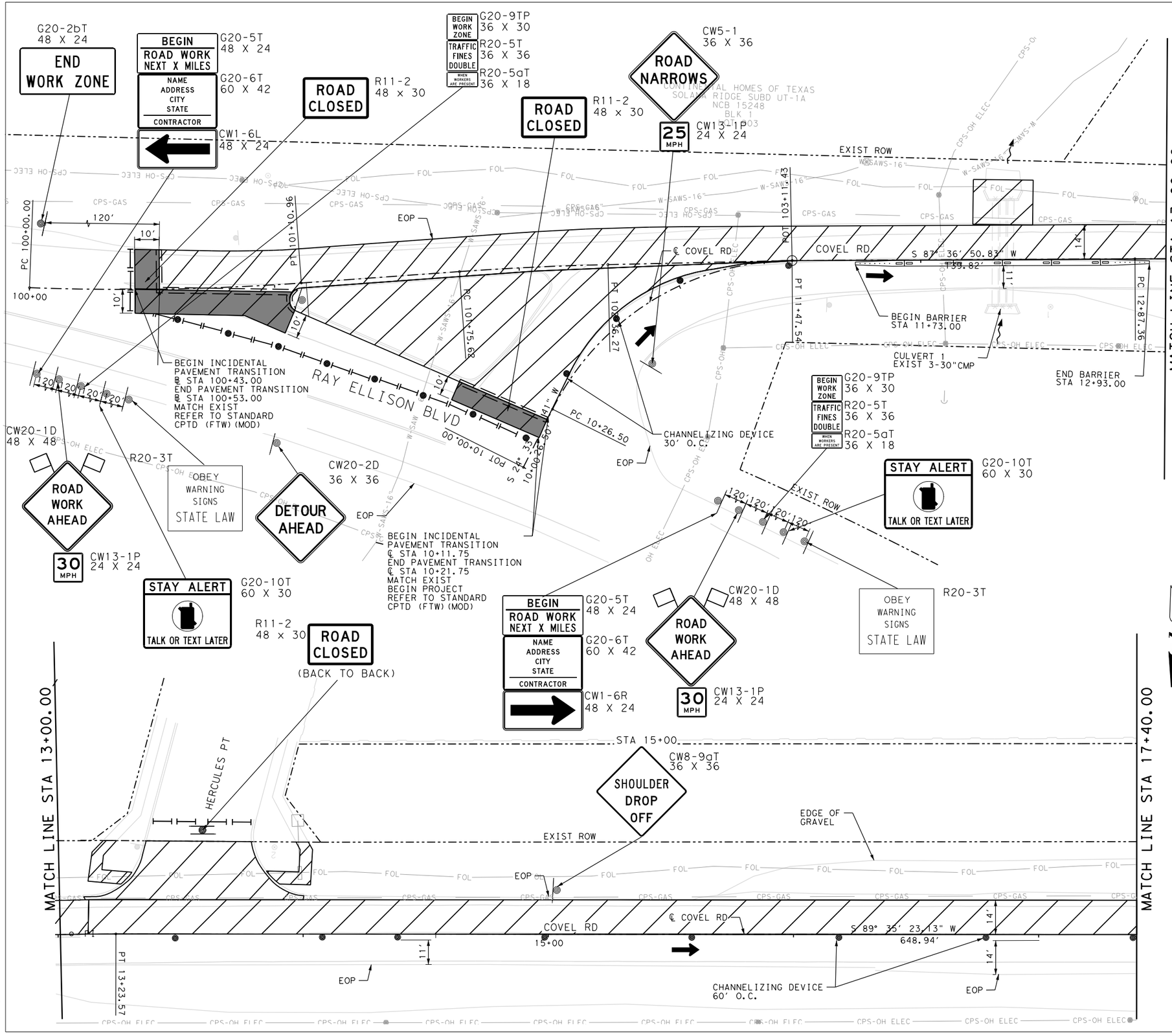
COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN PHASE I D

SHEET 2 OF 2

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: RT	DSGN. BY: RT	CHKD. BY: FR	SHT NO.: 35

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6/27/2025
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LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- INCIDENTAL PAVEMENT TRANSITION
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

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ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

	BID ITEM	DESCRIPTION	UNIT	QTY
	104.1	STREET EXCAVATION (< 1,000 CY)	CY	46
	108.1	LIME TREAT. SUBGRADE (6" COMP DEPTH)	SY	130
*	205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	251
	205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (11.5" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	130
*	205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	381
	209.1	CONCRETE PAVEMENT (10IN)	SY	20
	525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	120
	662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	
	662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	
	662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	

* TEMPORARY PAVEMENT. REFER TO TCP PH III SHEET 1 FOR TEMPORARY PAVEMENT LIMITS.

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

GANNETT FLEMING
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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

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PUBLIC WORKS DEPARTMENT

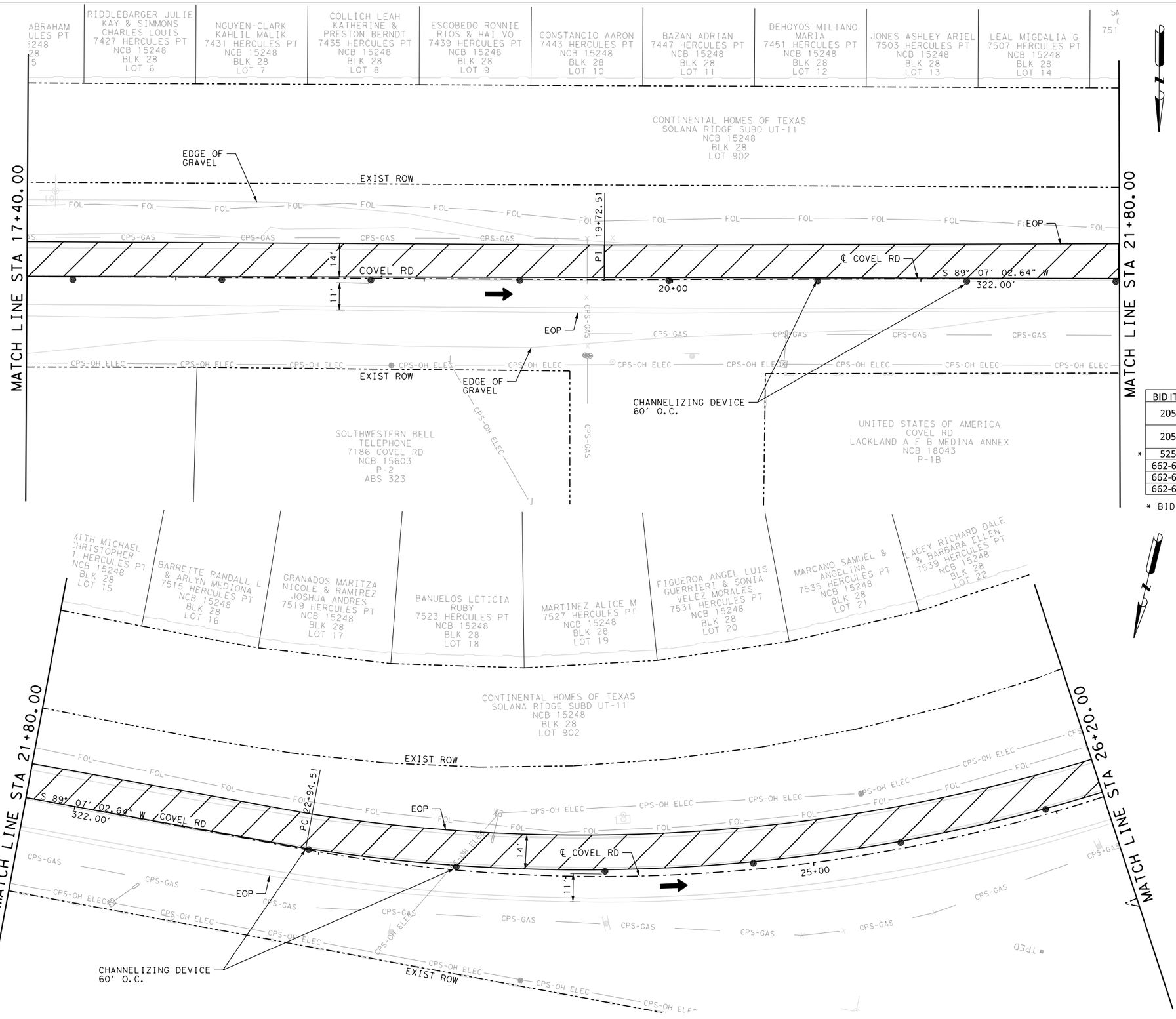
COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN PHASE II

SHEET 1 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: RT	DSGN. BY: RT	CHKD. BY: FR	SHT NO.: 36

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7/8/2025
jrobles
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LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- 0" TO 2" PLANE
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

SEE DETOUR LAYOUTS FOR DETOUR SIGNING.

ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

	BID ITEM	DESCRIPTION	UNIT	QTY
	205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	
	205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	
*	525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	
	662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	
	662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	
	662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	

* BID ITEM PAID FOR IN PREVIOUS PHASE

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED
PROFESSIONAL ENGINEER

7/8/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

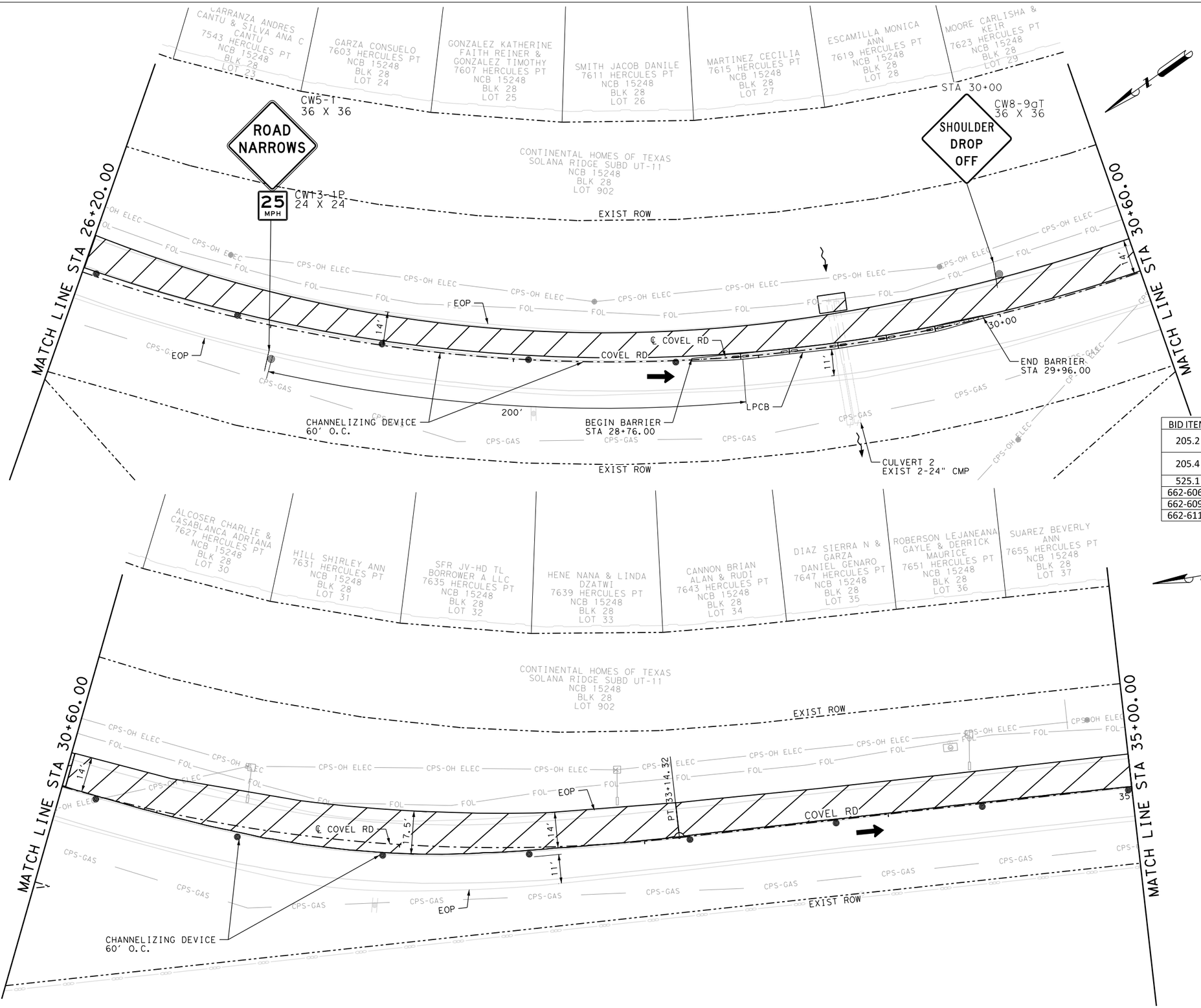
COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN PHASE II

SHEET 2 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: RT	DSGN. BY: RT	CHKD. BY: FR	SHT NO.: 37

9:18:01 AM
7/8/2025
jrobles
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LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- 0" TO 2" PLANE
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

SEE DETOUR LAYOUTS FOR DETOUR SIGNING.

ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

BID ITEM	DESCRIPTION	UNIT	QTY
205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	
525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	120
662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	
662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	
662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED PROFESSIONAL ENGINEER
7/8/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
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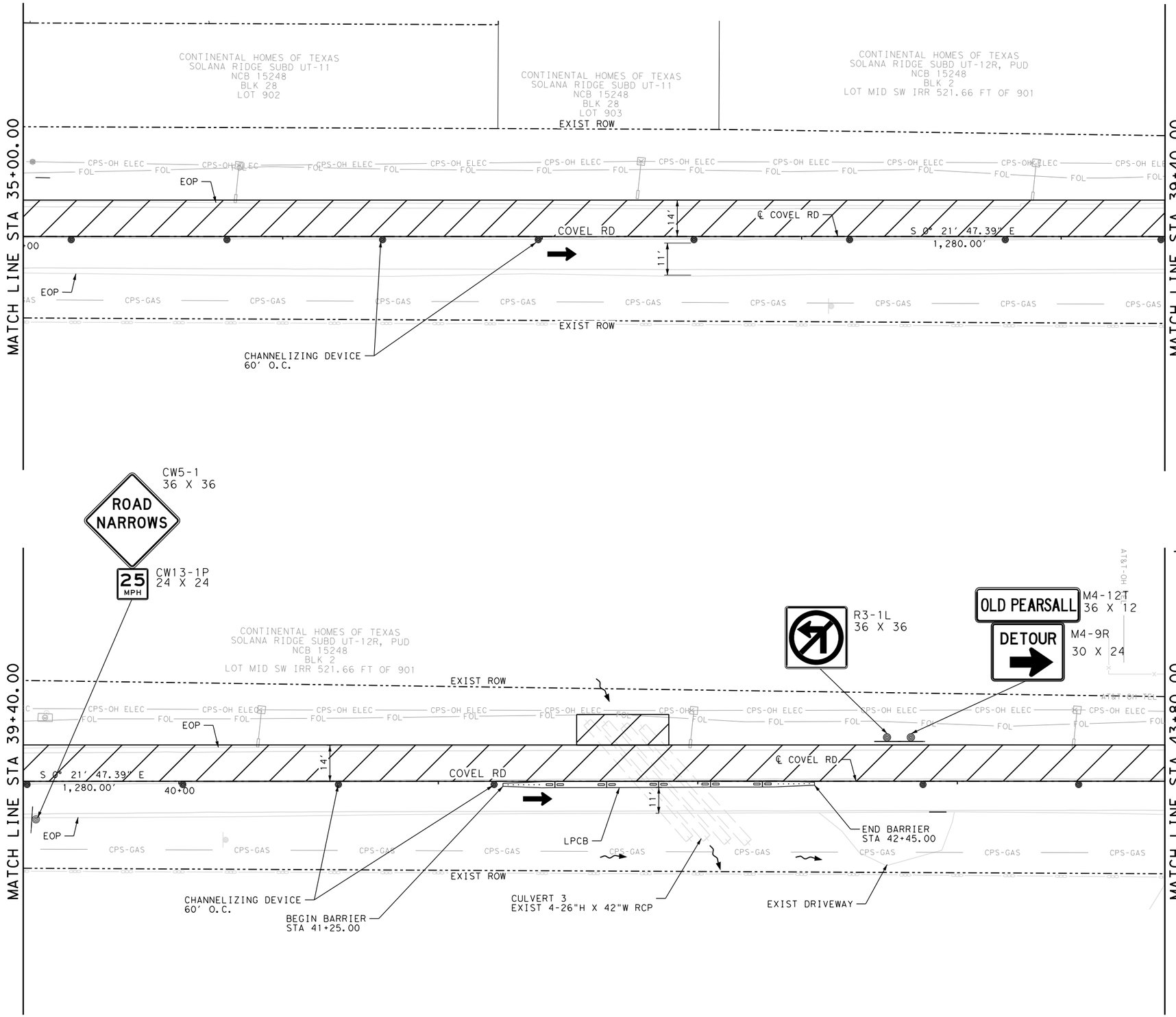
COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN PHASE II

SHEET 3 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: RT	DSGN. BY: RT	CHKD. BY: FR	SHT NO.: 38

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7/8/2025
jrobles
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LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- 0" TO 2" PLANE
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

SEE DETOUR LAYOUTS FOR DETOUR SIGNING.

ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

BID ITEM	DESCRIPTION	UNIT	QTY
205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	
525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	120
662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	
662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	
662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

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PUBLIC WORKS DEPARTMENT

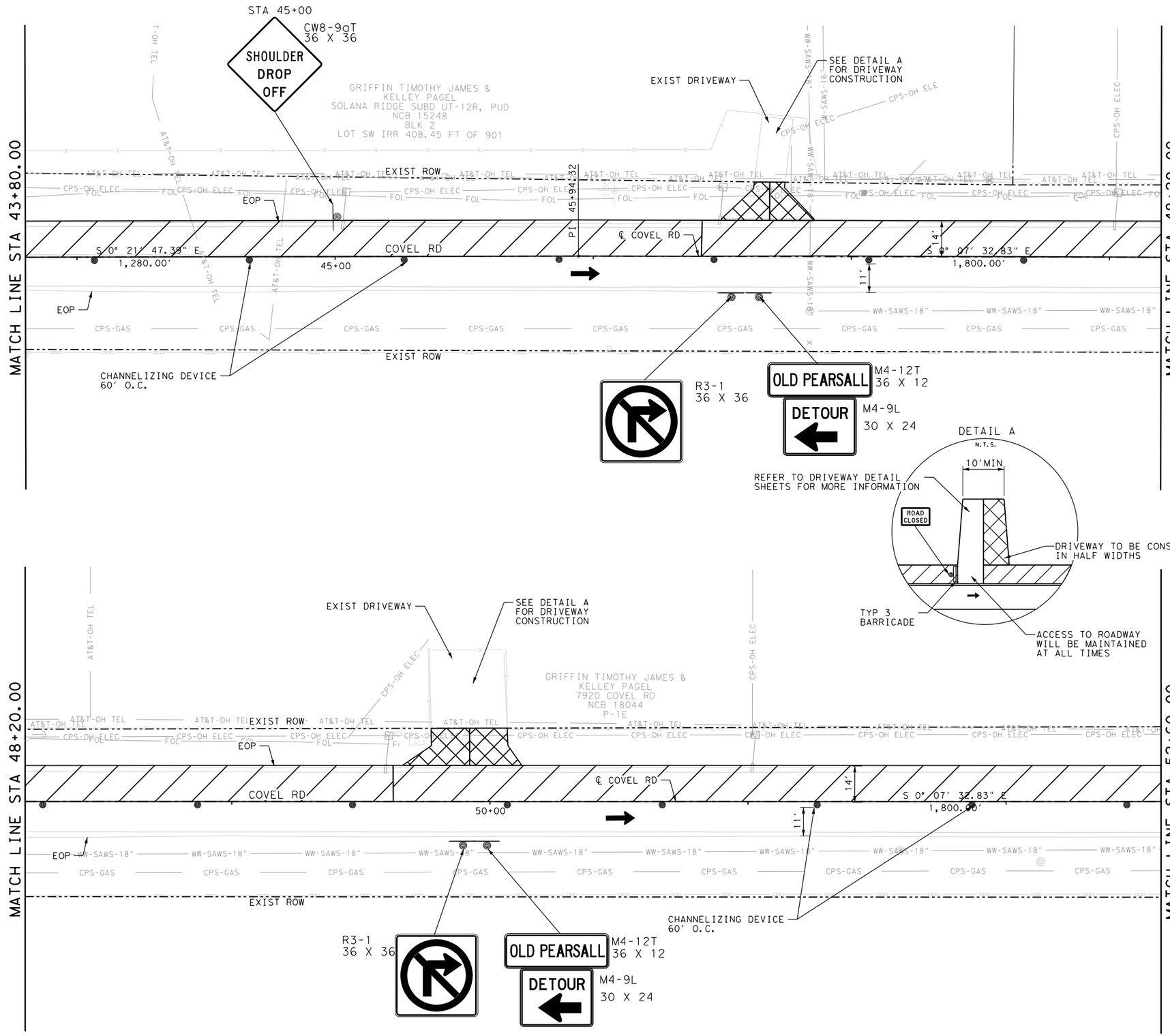
COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN PHASE II

SHEET 4 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: RT	DSGN. BY: RT	CHKD. BY: FR	SHT NO.: 39

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7/8/2025
jrobles
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LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- 0" TO 2" PLANE
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

SEE DETOUR LAYOUTS FOR DETOUR SIGNING.

ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

	BID ITEM	DESCRIPTION	UNIT	QTY
	205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	
	205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	
*	525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	
	662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	
	662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	
	662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	

* BID ITEM PAID FOR IN PREVIOUS PHASE

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED
PROFESSIONAL ENGINEER

7/8/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

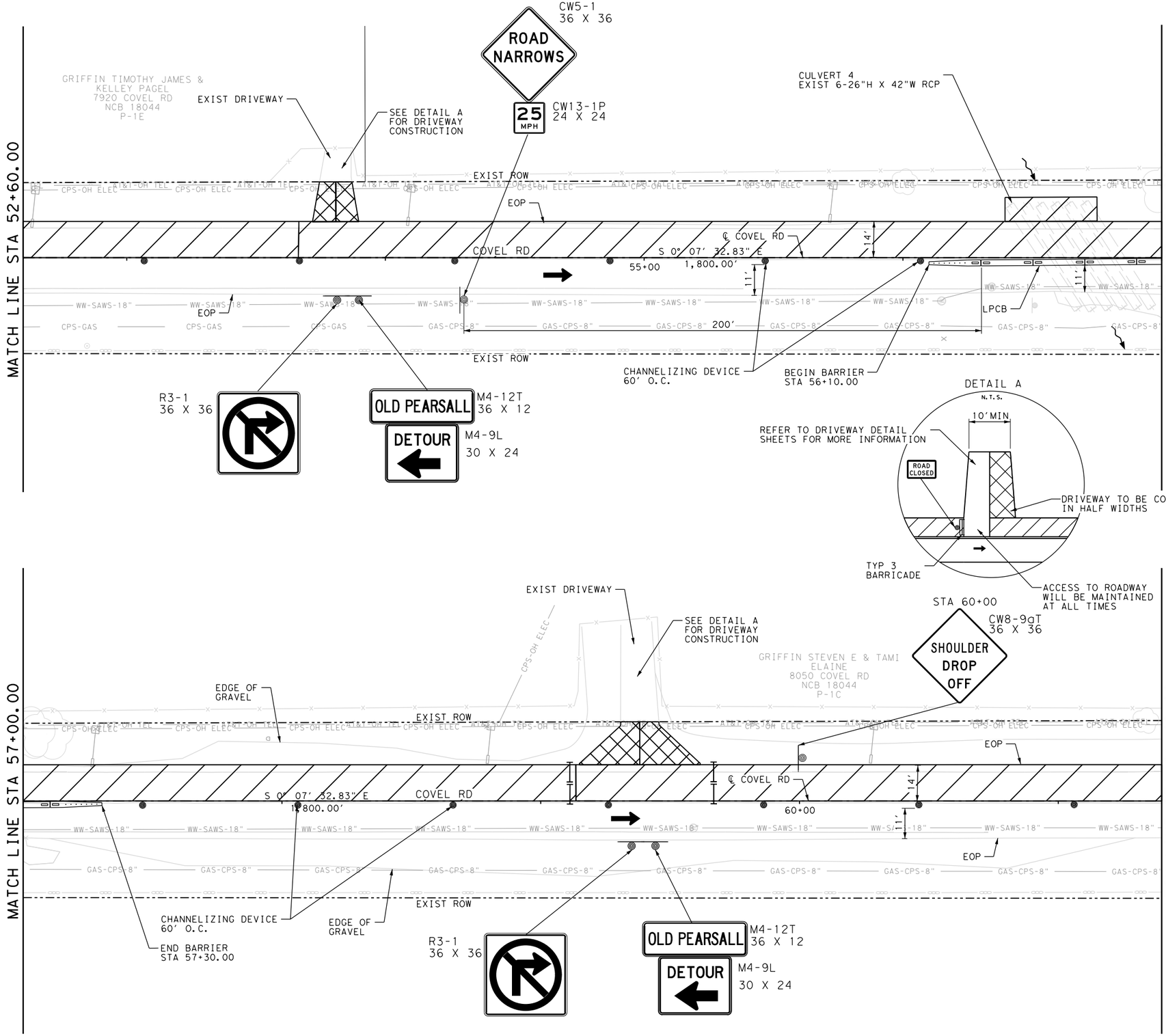
COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN PHASE II

SHEET 5 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: RT	DSGN. BY: RT	CHKD. BY: FR	SHT NO.: 40

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7/8/2025
jrobles
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LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- 0" TO 2" PLANE
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

SEE DETOUR LAYOUTS FOR DETOUR SIGNING.

ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

BID ITEM	DESCRIPTION	UNIT	QTY
205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	
525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	120
662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	
662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	
662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED PROFESSIONAL ENGINEER

7/8/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

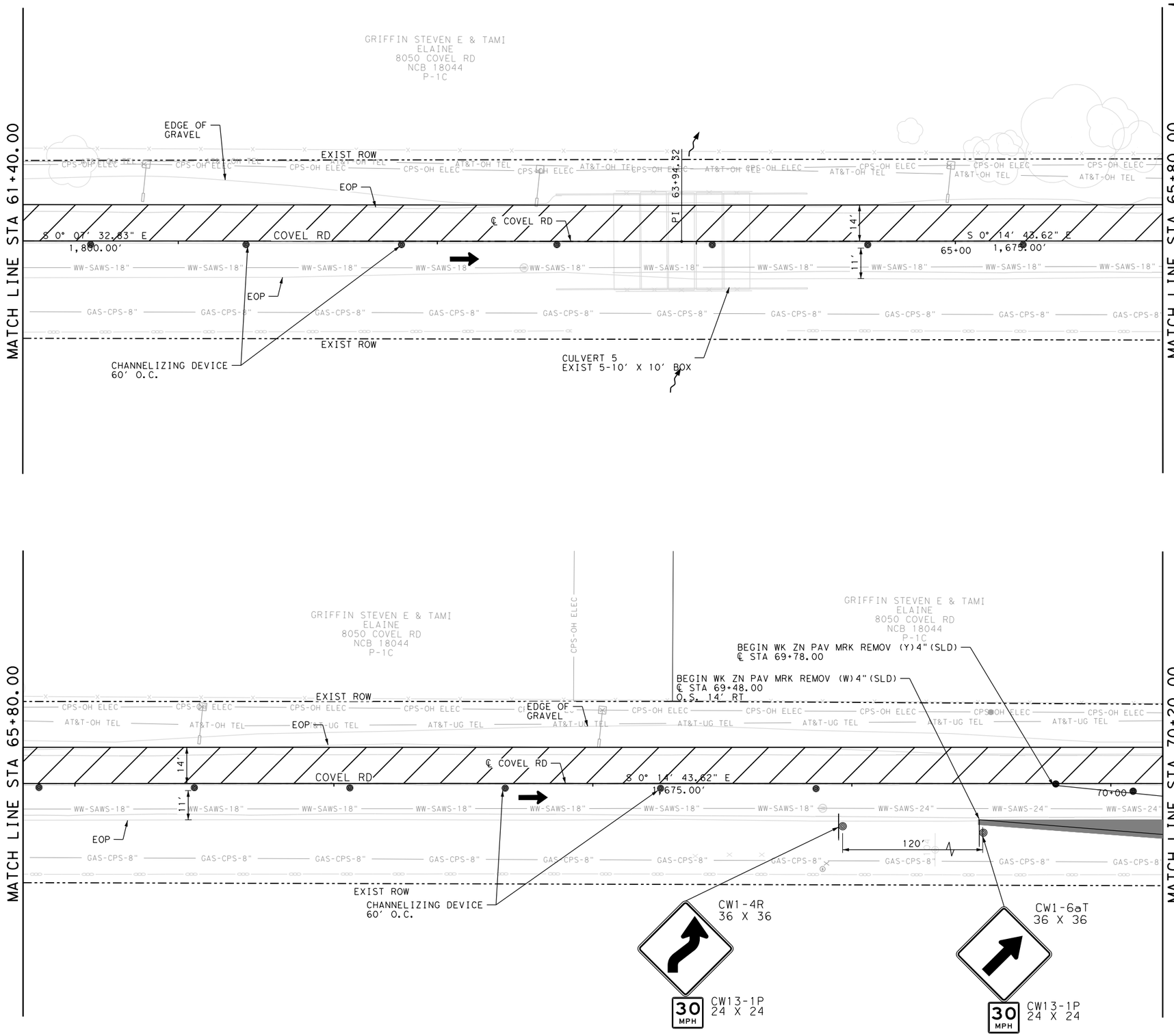
COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN PHASE II

SHEET 6 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: RT	DSGN. BY: RT	CHKD. BY: FR	SHT NO.: 41

9:18:53 AM
7/8/2025
jrobles
c:\projectwise\dannenbaum\workdir\jose.robles\d0172731\COVEL_RD_TCP_LAYOUT_PHII_06.dgn



LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- 0" TO 2" PLANE
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

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ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

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BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

	BID ITEM	DESCRIPTION	UNIT	QTY
	205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	
	205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	
*	525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	
	662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	70
	662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	43
	662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	

* BID ITEM PAID FOR IN PREVIOUS PHASE

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED PROFESSIONAL ENGINEER
7/8/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

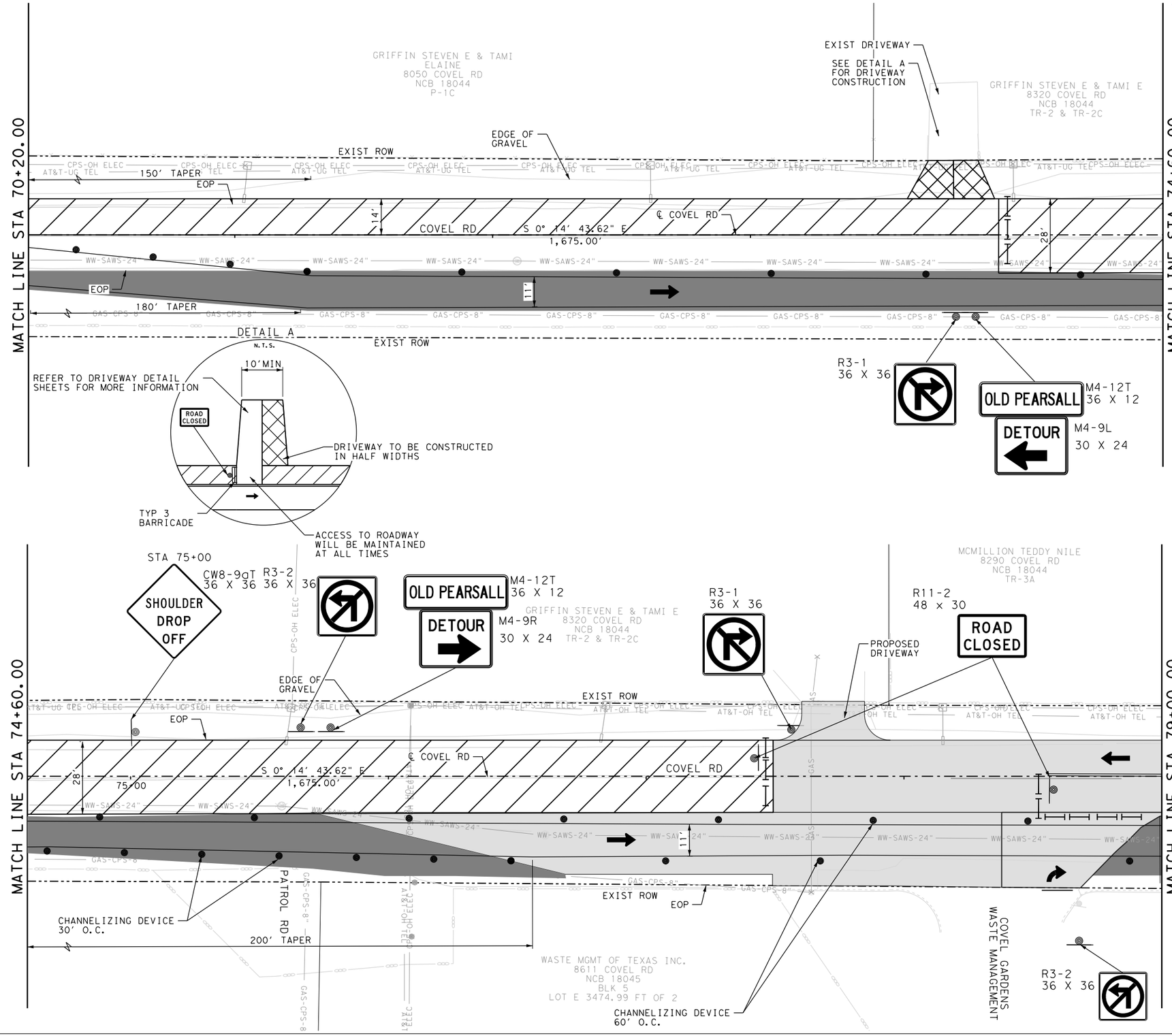
COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN PHASE II

SHEET 7 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: RT	DSGN. BY: RT	CHKD. BY: FR	SHT NO.: 42

9:19:08 AM
7/8/2025
jrobles
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LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- 0" TO 2" PLANE
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

SEE DETOUR LAYOUTS FOR DETOUR SIGNING.

ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

BID ITEM	DESCRIPTION	UNIT	QTY
205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	
* 525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	
662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	880
662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	880
662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	

* BID ITEM PAID FOR IN PREVIOUS PHASE

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED PROFESSIONAL ENGINEER

7/8/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE. SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

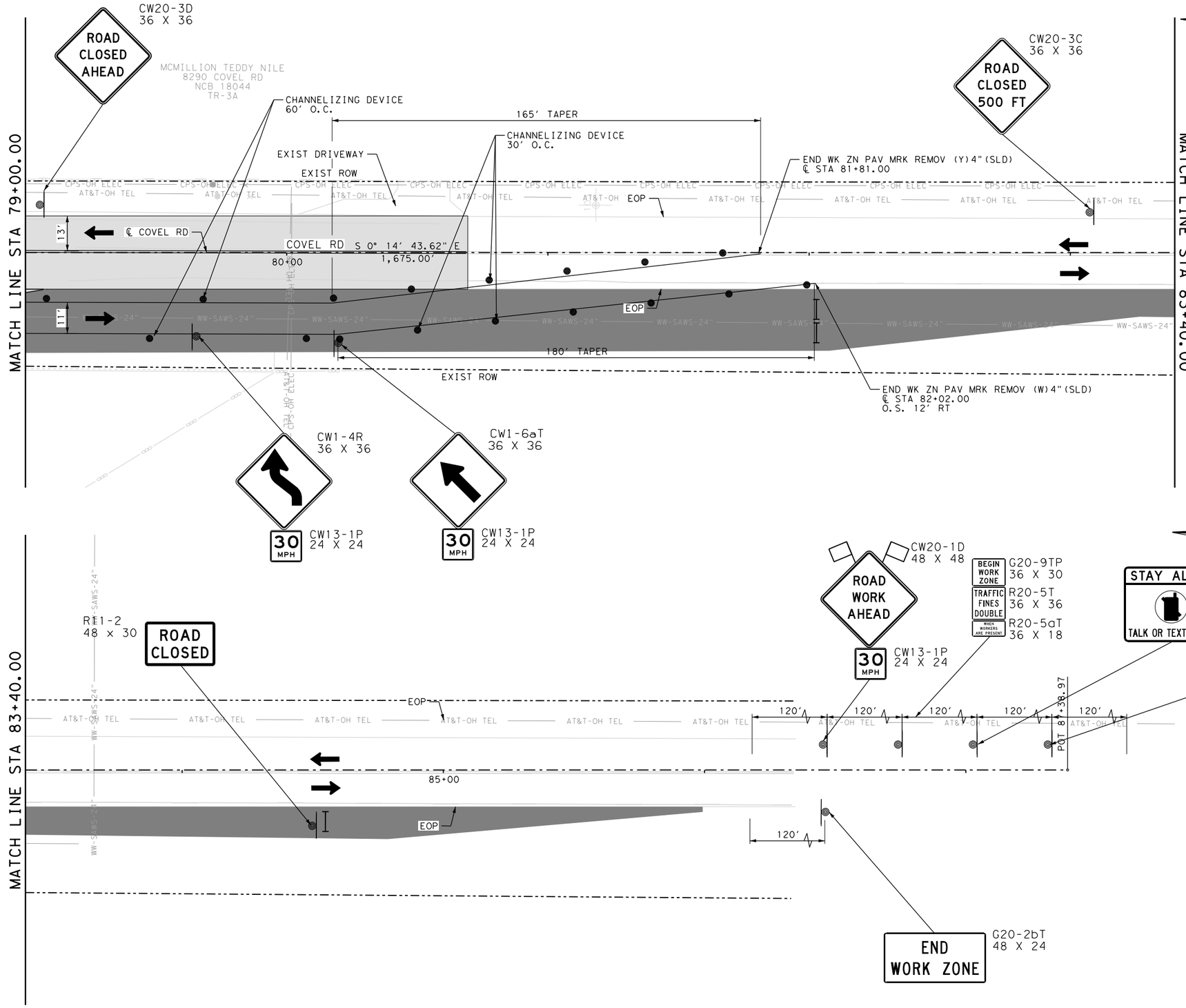
COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN PHASE II

SHEET 8 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: RT	DSGN. BY: RT	CHKD. BY: FR	SHT NO.: 43

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7/8/2025
jrobles
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LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- 0" TO 2" PLANE
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

SEE DETOUR LAYOUTS FOR DETOUR SIGNING.

ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

	BID ITEM	DESCRIPTION	UNIT	QTY
	205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	
	205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	
*	525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	
	662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	283
	662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	304
	662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	

* BID ITEM PAID FOR IN PREVIOUS PHASE

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED PROFESSIONAL ENGINEER
7/8/2025

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T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

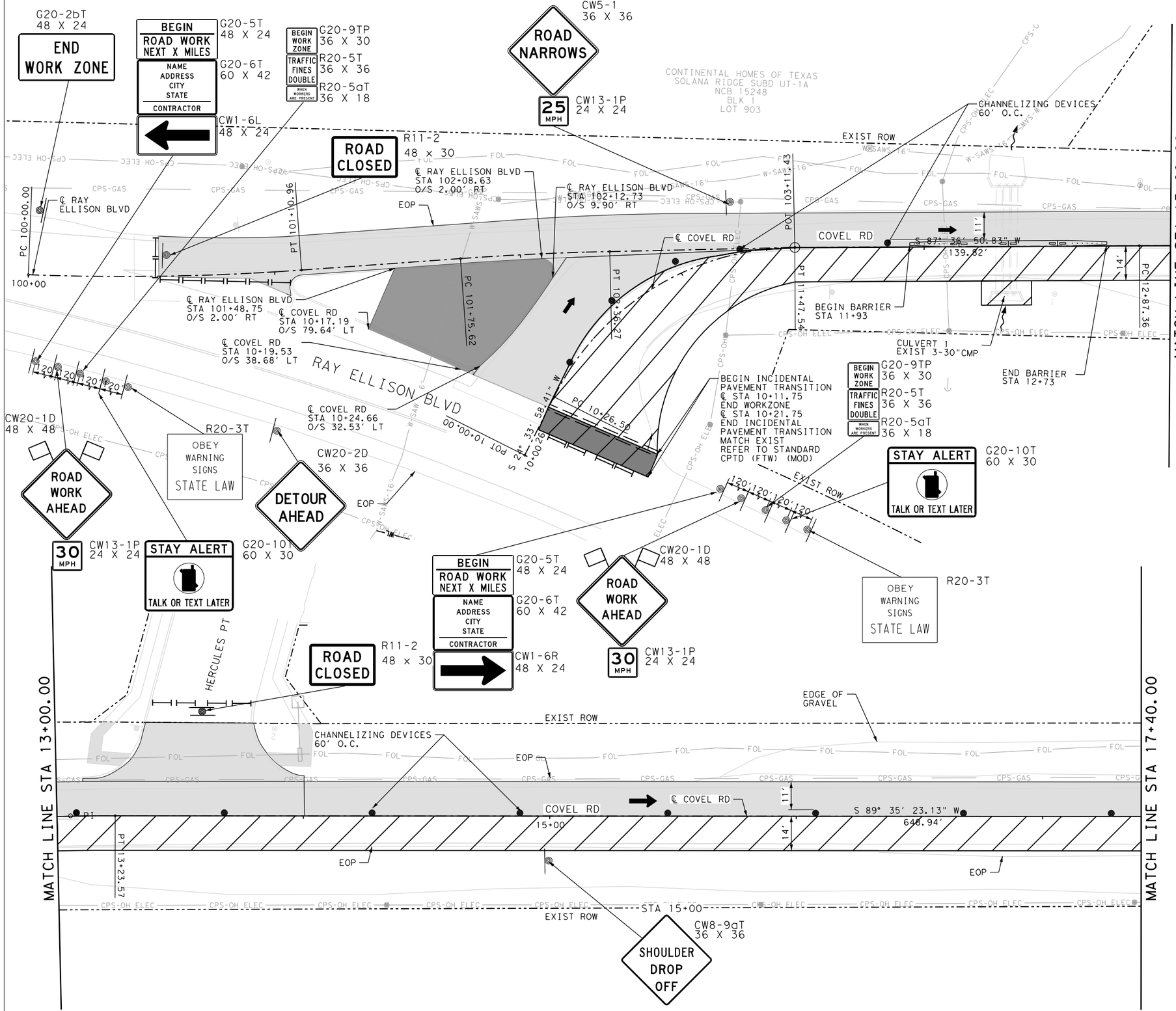
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN PHASE II

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
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7/8/2025
jrobles
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LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- INCIDENTAL PAVEMENT TRANSITION
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

SEE DETOUR LAYOUTS FOR DETOUR SIGNING.

ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

BID ITEM	DESCRIPTION	UNIT	QTY
104.1	STREET EXCAVATION (< 1,000 CY)	CY	2
108.1	LIME TREAT. SUBGRADE (6" COMP DEPTH)	SY	54
205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	
205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (11.5" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	54
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	54
209.1	CONCRETE PAVEMENT (10IN)	SY	12
* 525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	
662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	
662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	
662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	

* BID ITEM PAID FOR IN PHASE I & II

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED
PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

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PUBLIC WORKS DEPARTMENT

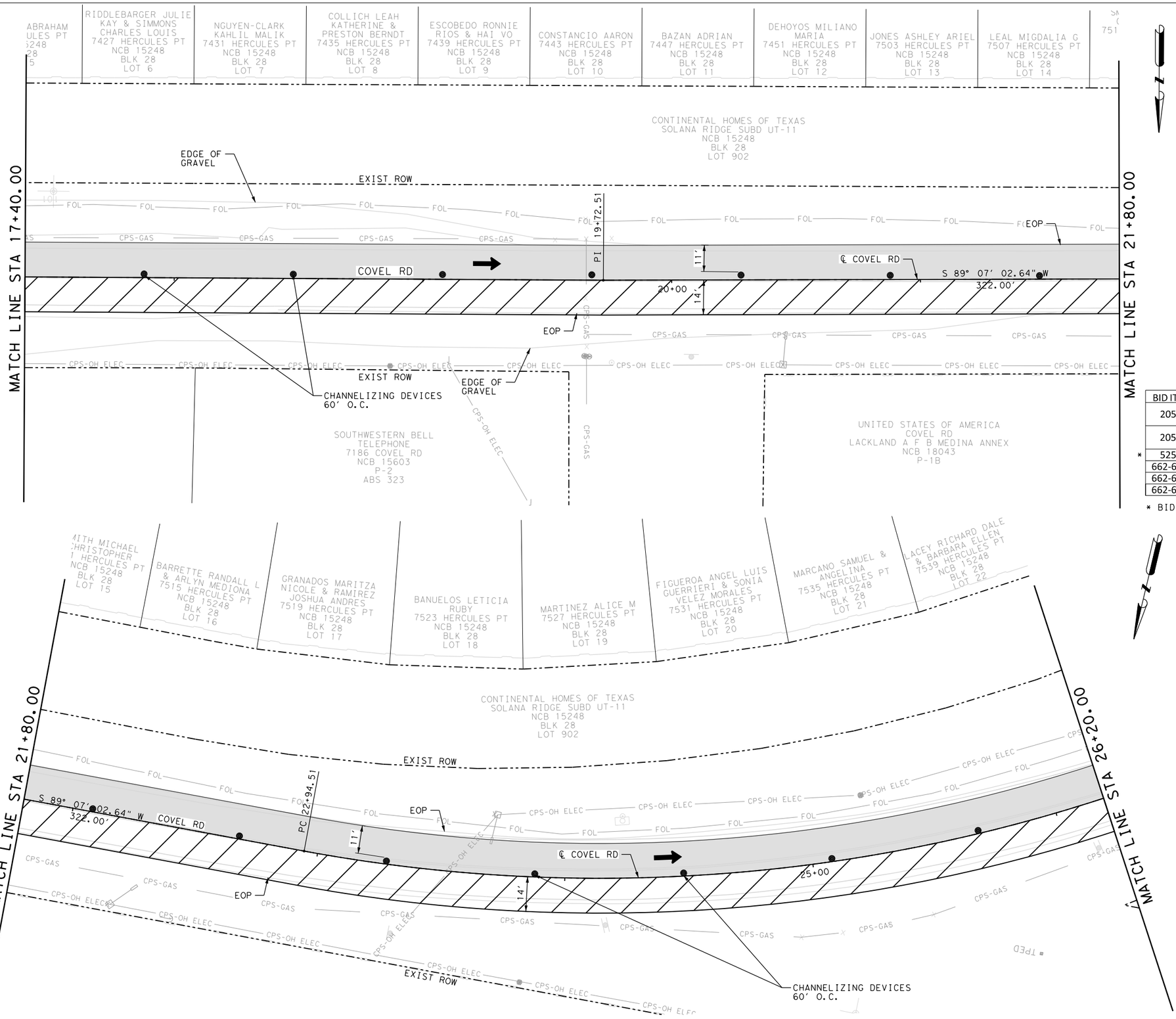
COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN PHASE III

SHEET 1 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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6/27/2025
jrobles
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LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- 0" TO 2" PLANE
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

SEE DETOUR LAYOUTS FOR DETOUR SIGNING.

ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

	BID ITEM	DESCRIPTION	UNIT	QTY
	205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	
	205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	
*	525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	
	662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	
	662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	
	662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	

* BID ITEM PAID FOR IN PHASE I & II

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED
PROFESSIONAL ENGINEER

6/27/2025

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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

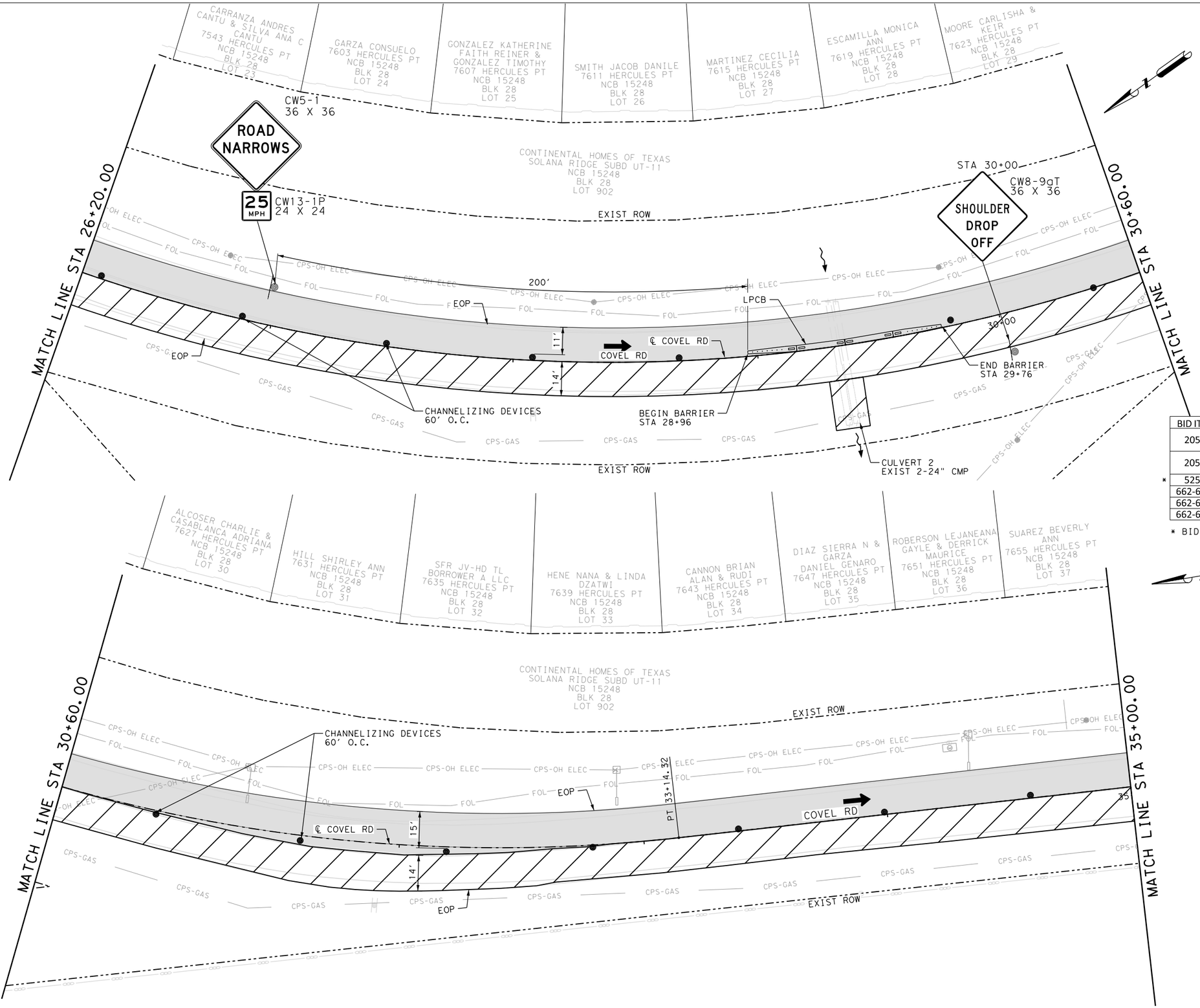
COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN PHASE III

SHEET 2 OF 9

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LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- 0" TO 2" PLANE
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

SEE DETOUR LAYOUTS FOR DETOUR SIGNING.

ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

BID ITEM	DESCRIPTION	UNIT	QTY
205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	
* 525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	
662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	
662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	
662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	

* BID ITEM PAID FOR IN PHASE I & II

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED PROFESSIONAL ENGINEER

6/27/2025

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T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

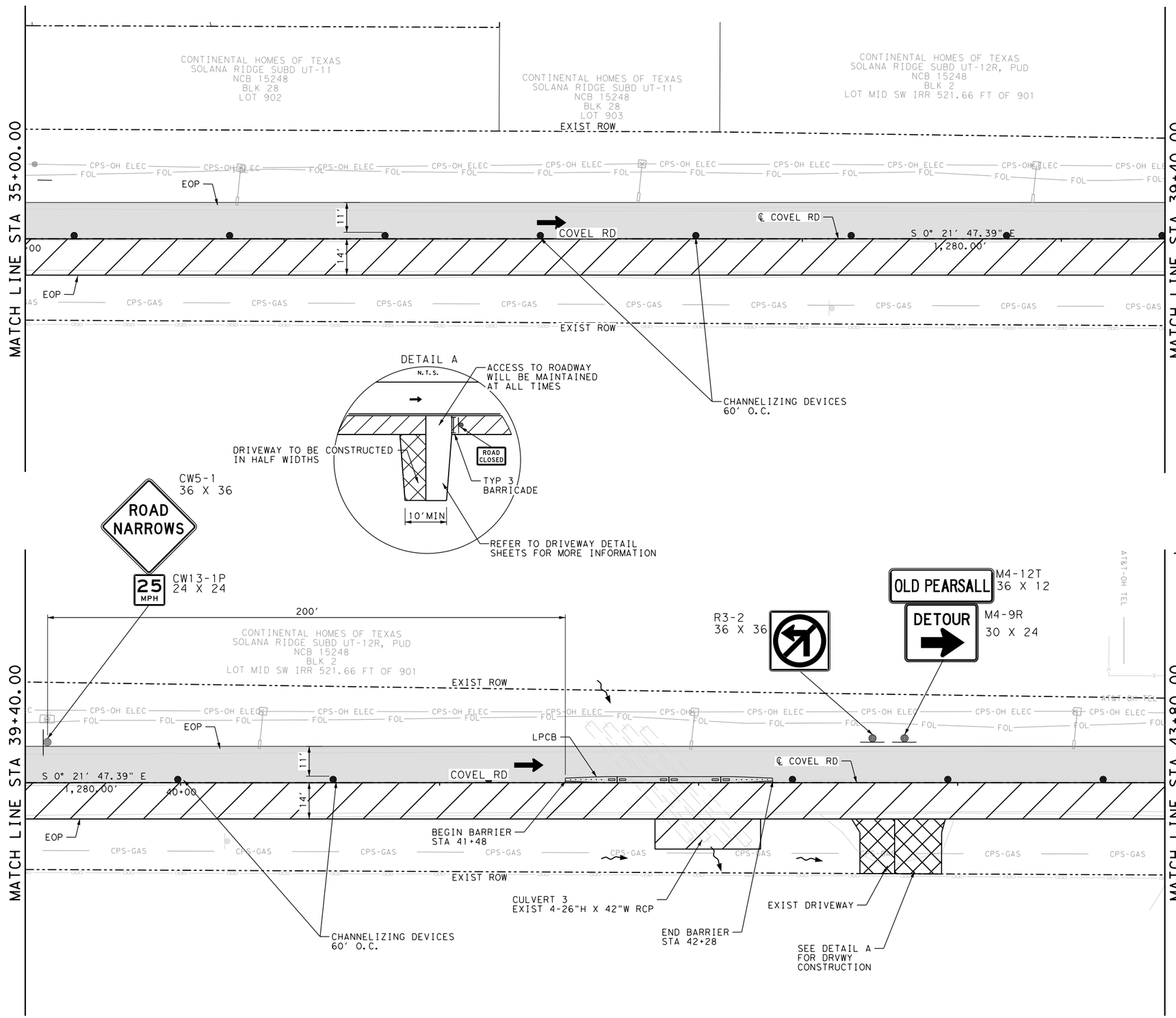
COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN PHASE III

SHEET 3 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- 0" TO 2" PLANE
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

SEE DETOUR LAYOUTS FOR DETOUR SIGNING.

ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

	BID ITEM	DESCRIPTION	UNIT	QTY
	205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	
	205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	
*	525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	
	662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	
	662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	
	662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	

* BID ITEM PAID FOR IN PHASE I & II

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED
PROFESSIONAL ENGINEER

6/27/2025

GANNETT FLEMING
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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

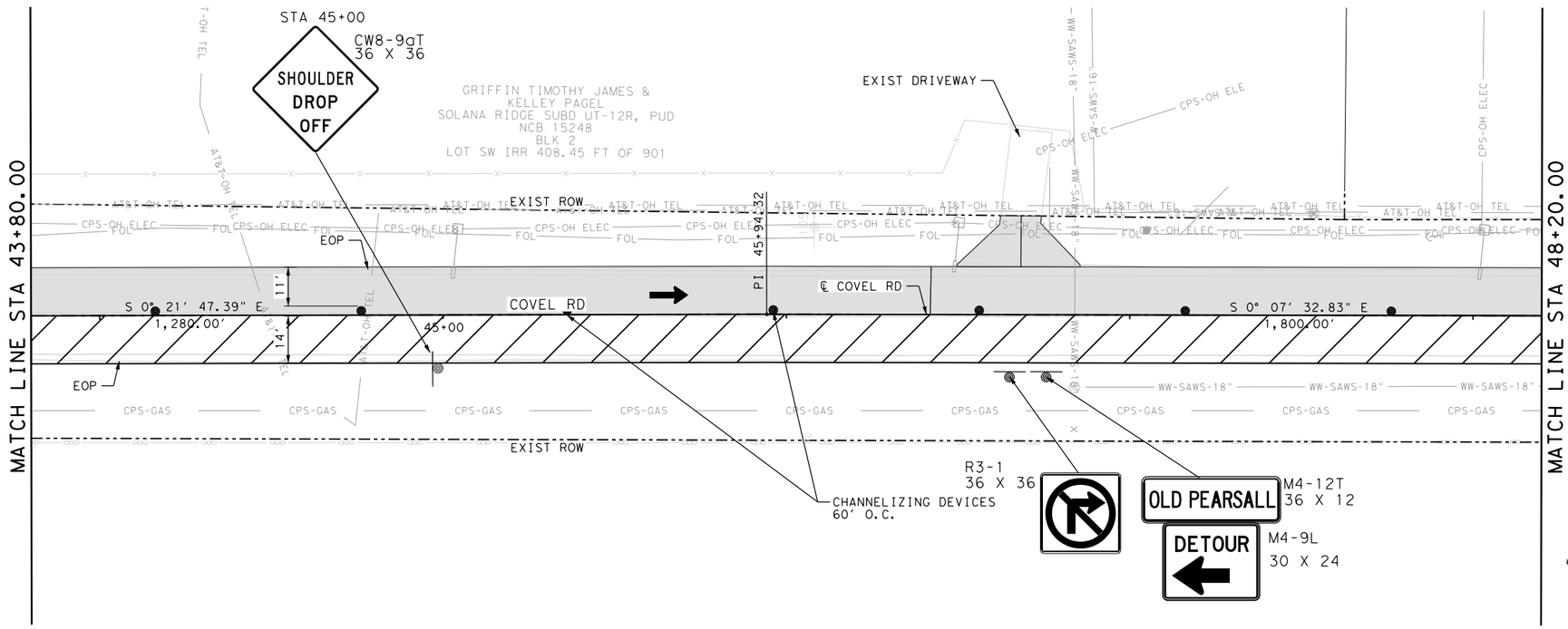
COVEL RD IMPROVEMENTS

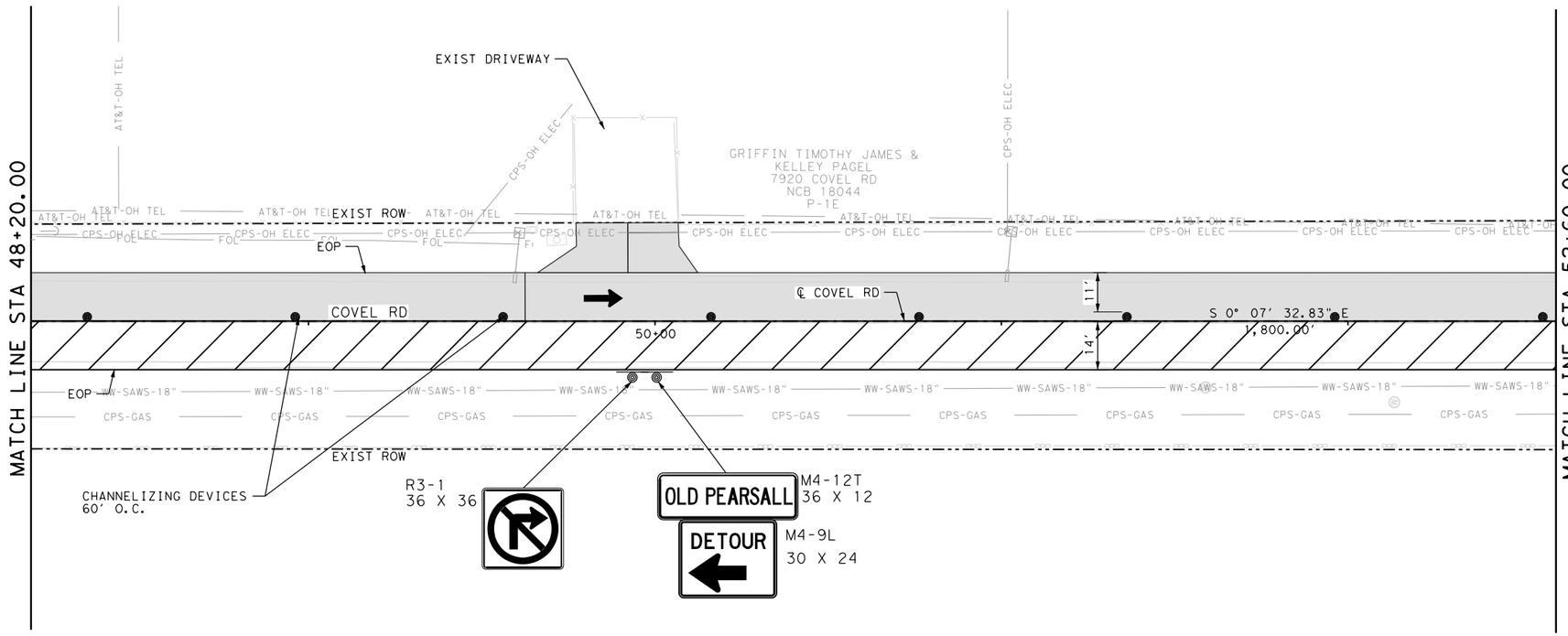
TRAFFIC CONTROL PLAN PHASE III

SHEET 4 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- 0" TO 2" PLANE
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

SEE DETOUR LAYOUTS FOR DETOUR SIGNING.

ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

	BID ITEM	DESCRIPTION	UNIT	QTY
	205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	
	205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	
*	525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	
	662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	
	662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	
	662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	

* BID ITEM PAID FOR IN PHASE I & II

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

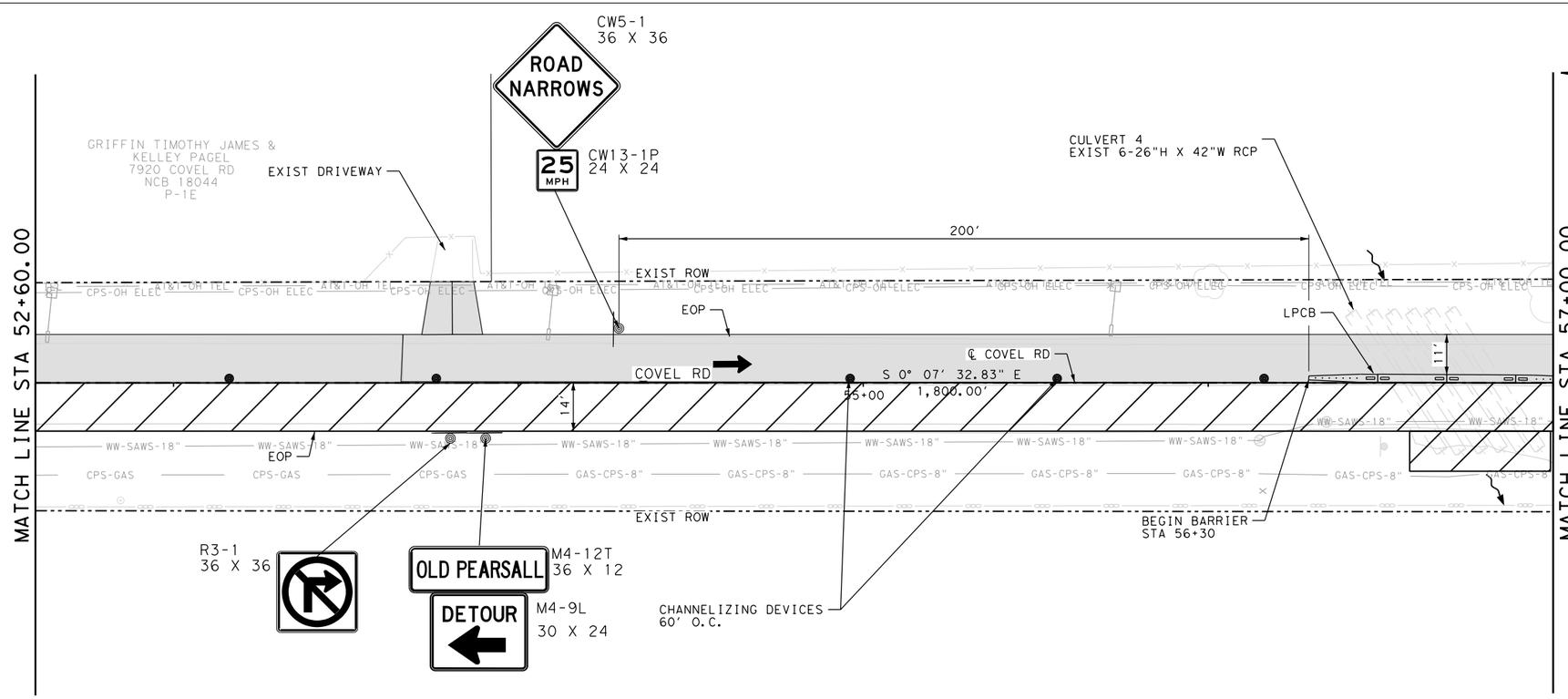
COVEL RD IMPROVEMENTS

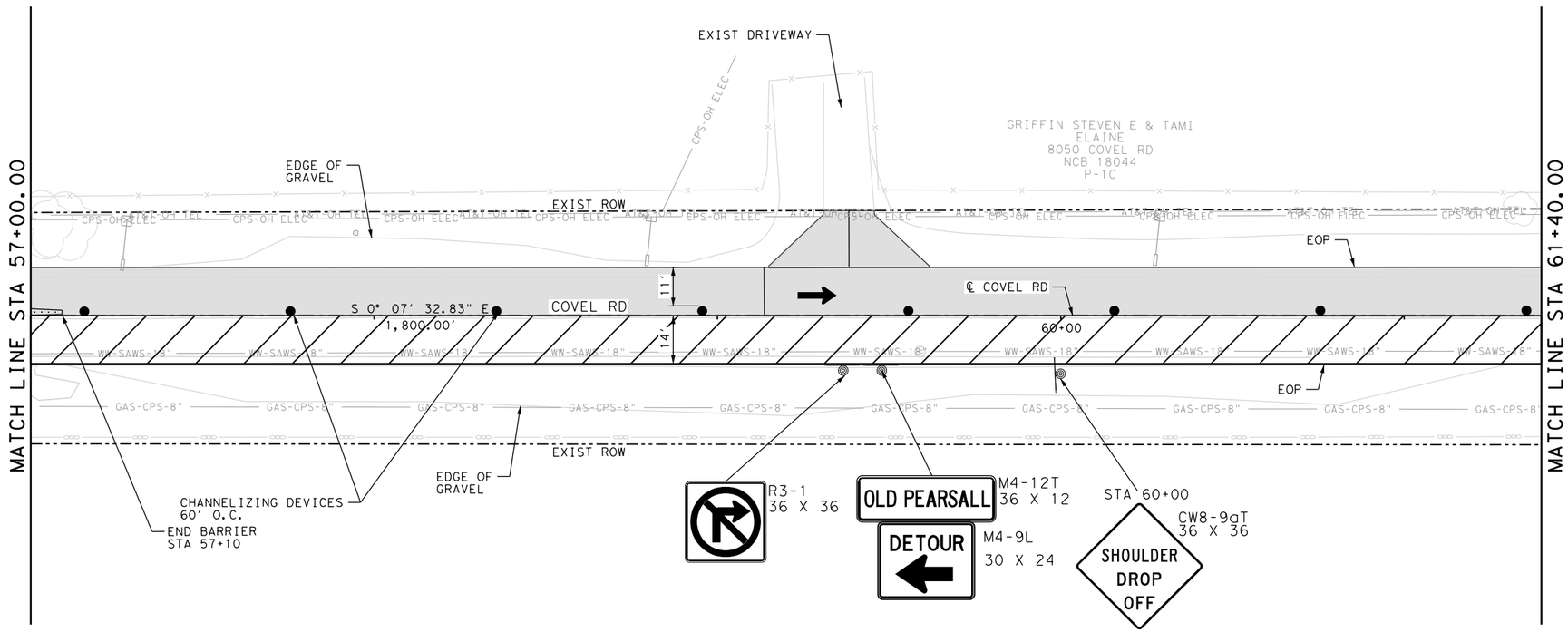
TRAFFIC CONTROL PLAN PHASE III

SHEET 5 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- 0" TO 2" PLANE
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

SEE DETOUR LAYOUTS FOR DETOUR SIGNING.

ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

	BID ITEM	DESCRIPTION	UNIT	QTY
	205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	
	205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	
*	525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	
	662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	
	662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	
	662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	

* BID ITEM PAID FOR IN PHASE I & II

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
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PUBLIC WORKS DEPARTMENT

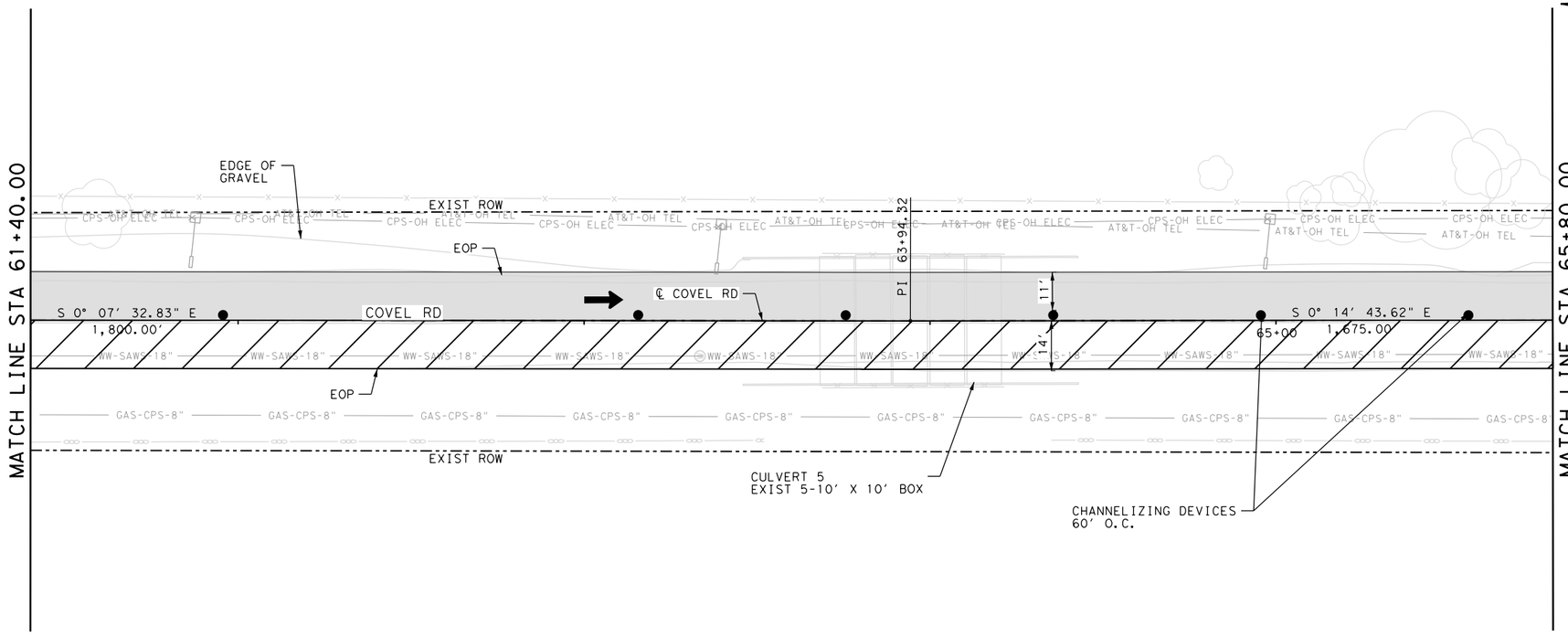
COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN PHASE III

SHEET 6 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- 0" TO 2" PLANE
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

SEE DETOUR LAYOUTS FOR DETOUR SIGNING.

ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

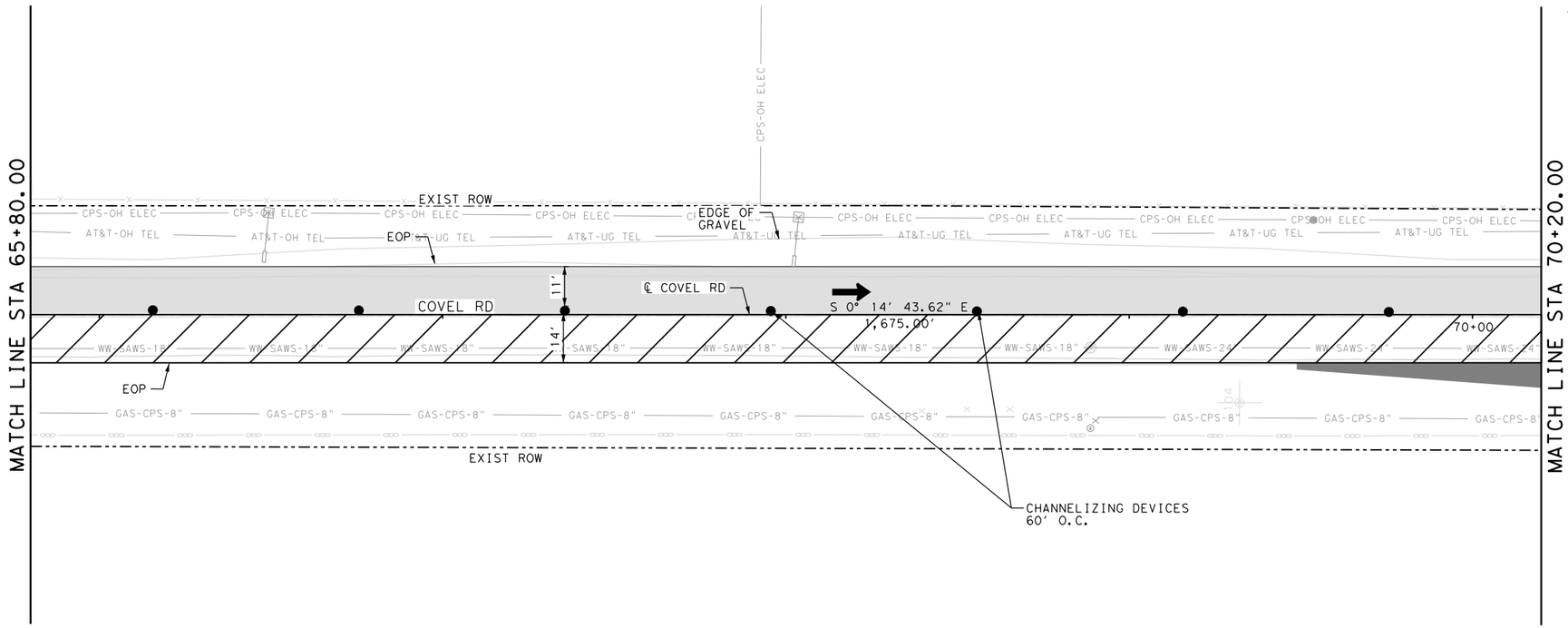
CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

	BID ITEM	DESCRIPTION	UNIT	QTY
	107.1	EMBANKMENT	CY	9
	205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	
	205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	
*	525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	
**	105-6015	REMOVING STAB BASE & ASPH PAV (8"-10")	SY	36
	662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	
	662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	
	662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	

* BID ITEM PAID FOR IN PHASE I & II

** BID ITEM PERTAINS TO REMOVAL OF TEMPORARY PAVEMENT PERFORMED UPON COMPLETION OF THIS TCP PHASE



20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

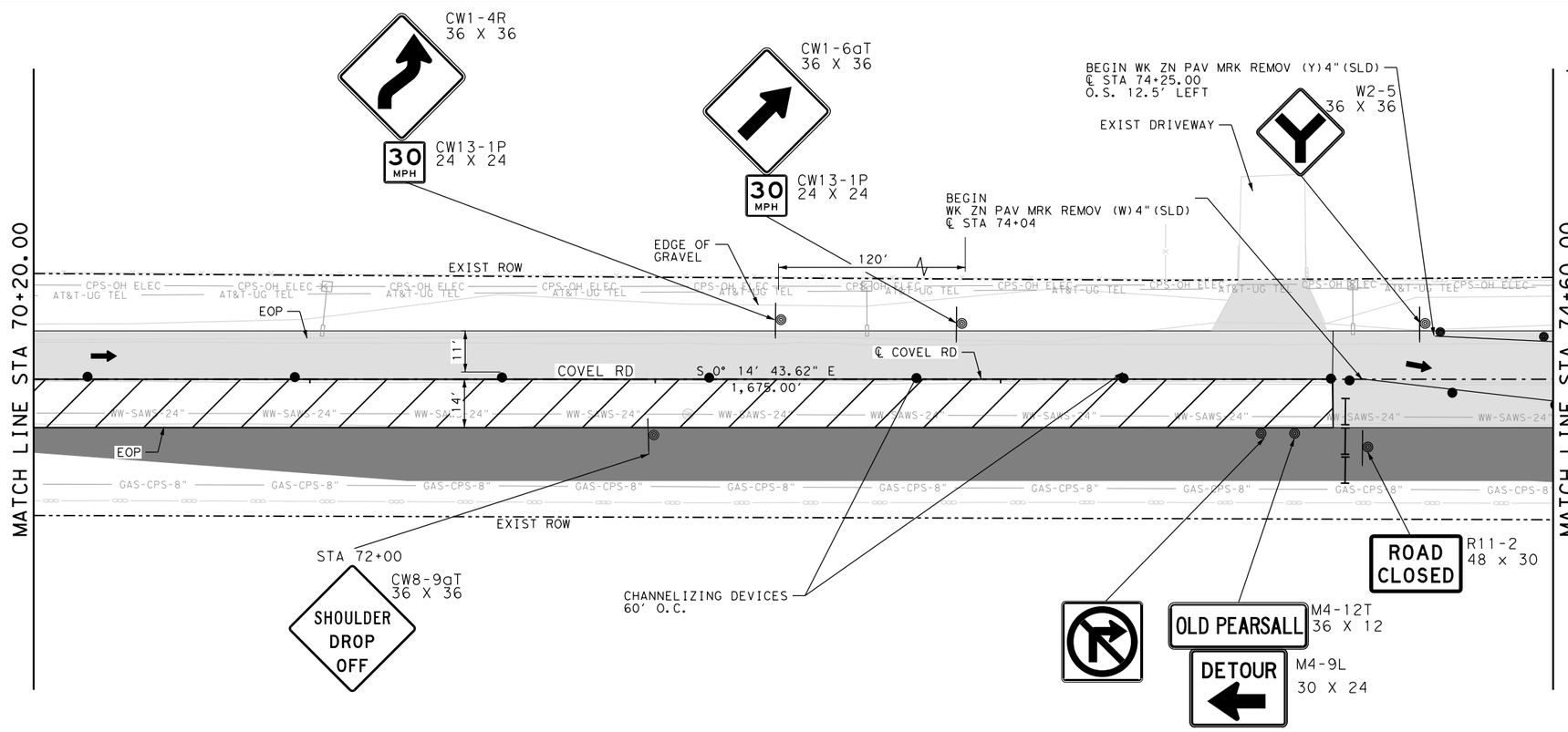
COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN PHASE III

SHEET 7 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- 0" TO 2" PLANE
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

SEE DETOUR LAYOUTS FOR DETOUR SIGNING.

ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

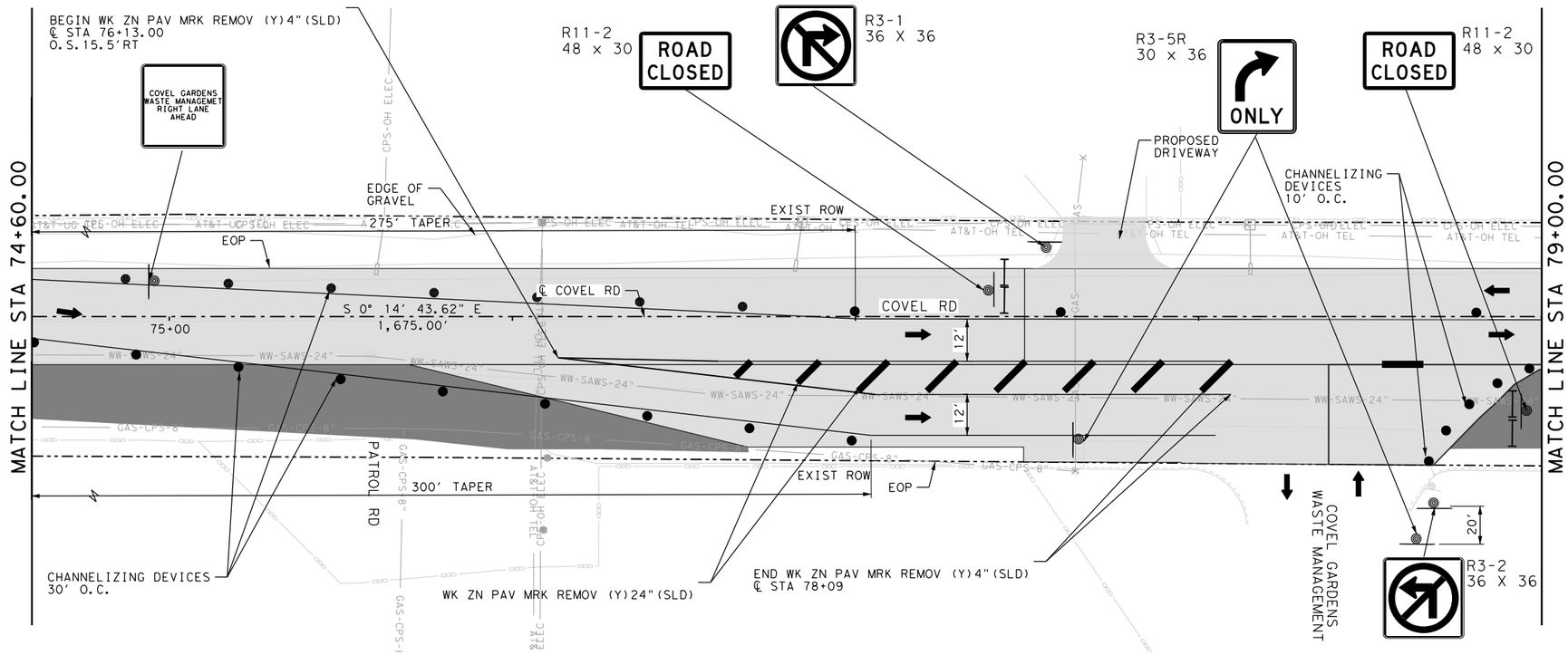
CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

	BID ITEM	DESCRIPTION	UNIT	QTY
	107.1	EMBANKMENT	CY	279
	205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	
	205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	
*	525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	
**	105-6015	REMOVING STAB BASE & ASPH PAV (8"-10")	SY	1114
	662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	645
	662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	1118
	662-6102	WK ZN PAV MRK REMOV (Y)24"(SLD)	LF	88
	662-6111	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	

* BID ITEM PAID FOR IN PHASE I & II

** BID ITEM PERTAINS TO REMOVAL OF TEMPORARY PAVEMENT PERFORMED UPON COMPLETION OF THIS TCP PHASE



20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED
PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

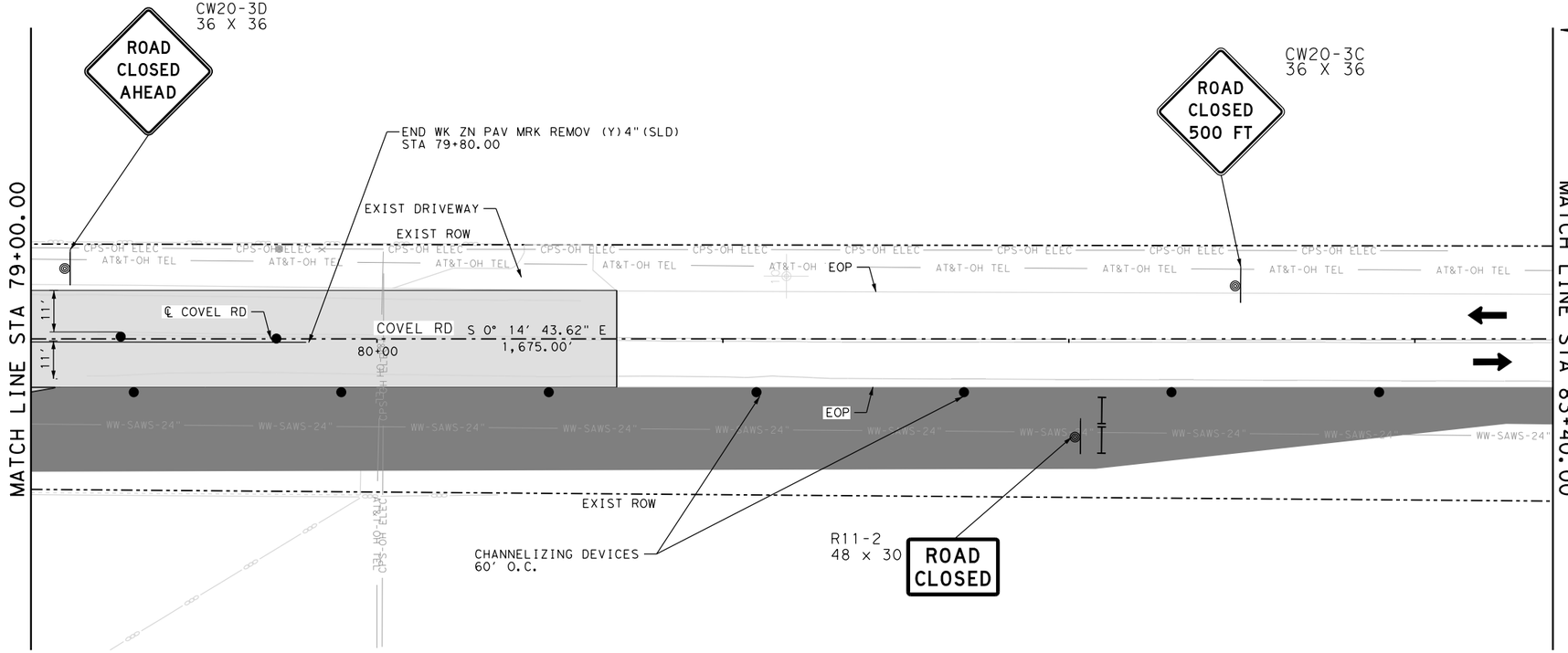
COVEL RD IMPROVEMENTS

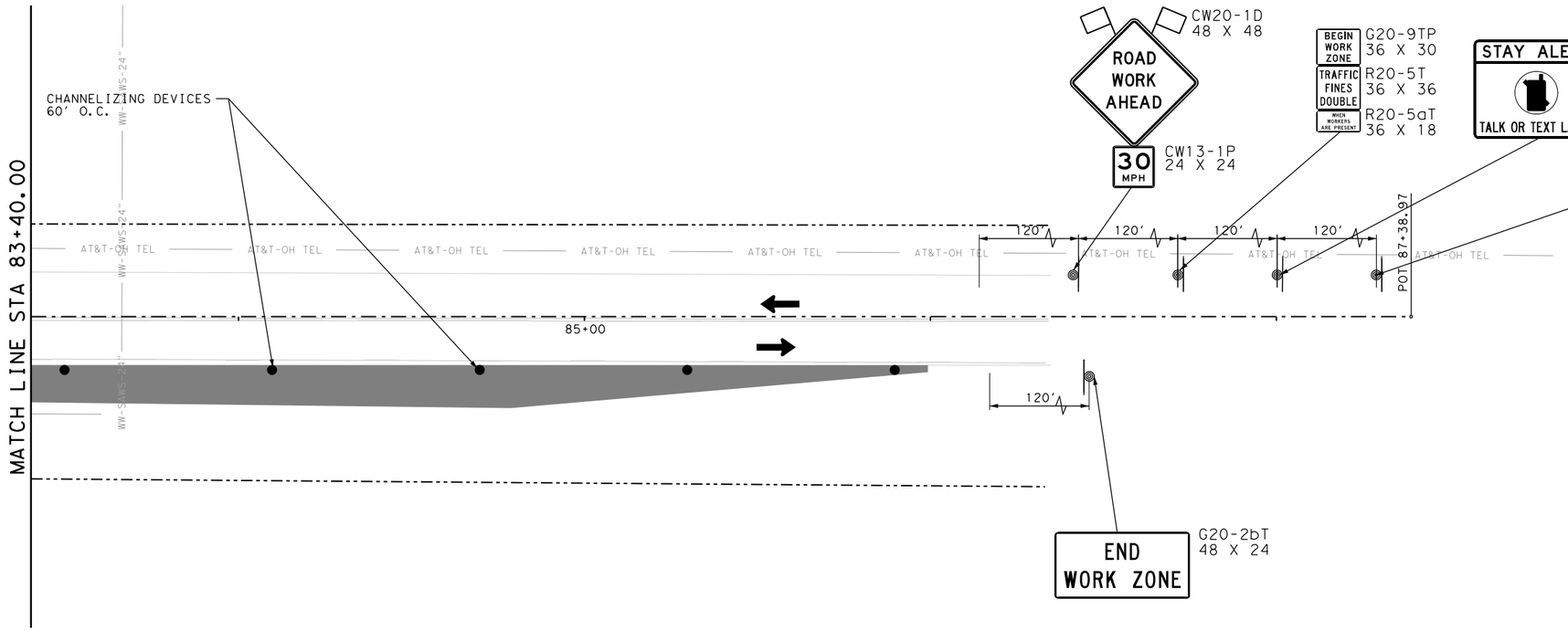
TRAFFIC CONTROL PLAN PHASE III

SHEET 8 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- DRIVEWAY CONSTRUCTION
- 0" TO 2" PLANE
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

SEE DETOUR LAYOUTS FOR DETOUR SIGNING.

ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

BID ITEM	DESCRIPTION	UNIT	QTY
107.1	EMBANKMENT	CY	336
205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	
* 525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	
105-6015	REMOVING STAB BASE & ASPH PAV (8"-10")	SY	1344
662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	
662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	80
6036-6001	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	

* BID ITEM PAID FOR IN PHASE I & II

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

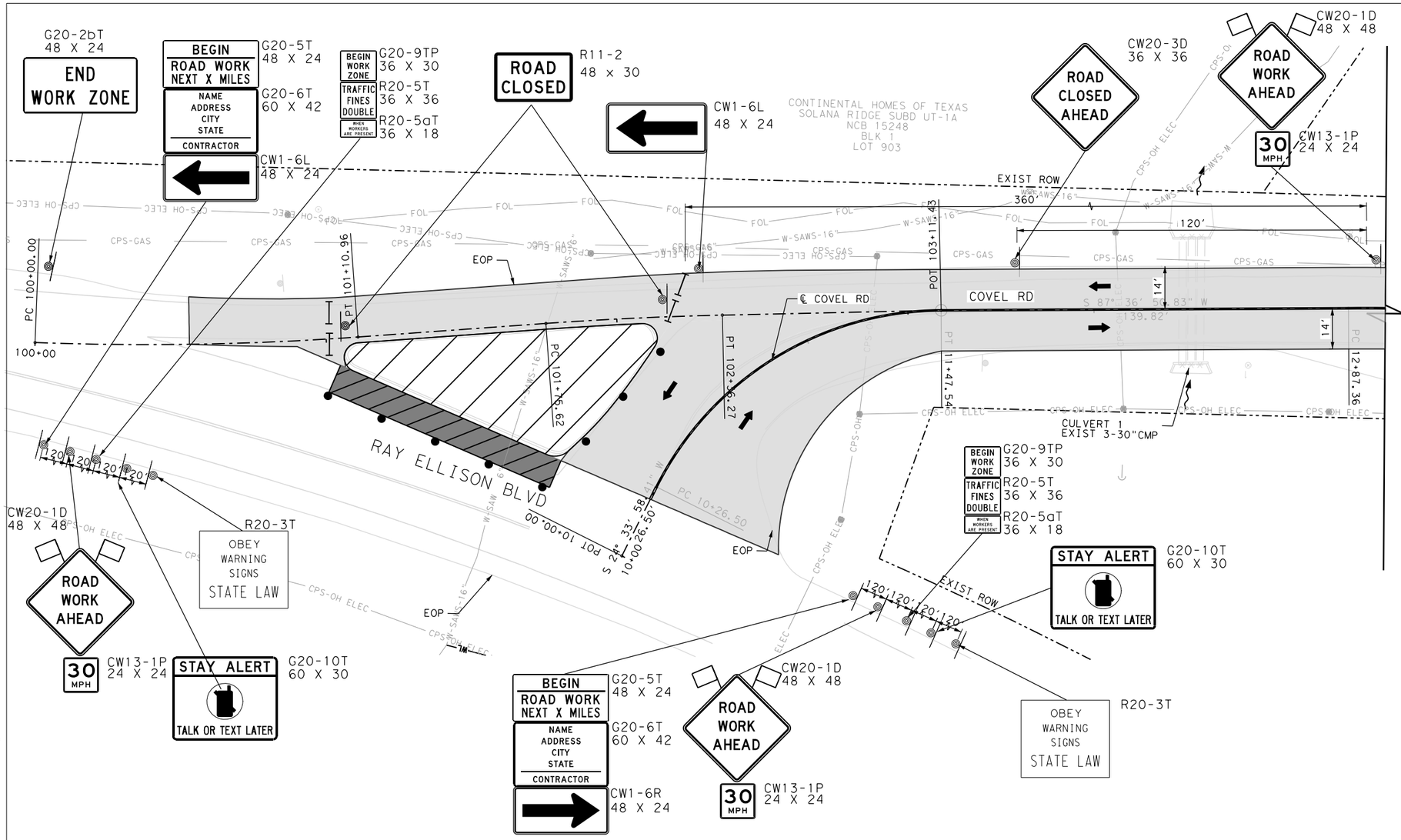
COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN PHASE III

SHEET 9 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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LEGEND

- CONSTRUCTION THIS PHASE
- DRIVEWAY CONSTRUCTION
- 0" TO 2" PLANE
- PERMANENT PAVEMENT
- TEMPORARY PAVEMENT
- CHANNELIZING DEVICE (BARREL)
- SIGN POST
- TYPE 3 BARRICADE
- LPCB TYPE 1
- LPCB TYPE 2
- TRUCK MOUNTED ATTENUATOR

NOTES:

SEE DETOUR LAYOUTS FOR DETOUR SIGNING.

ALL VALVES, JOINT BID SEWER MANHOLES, AND OTHER UTILITY ADJUSTMENTS WITHIN THIS PHASE SHALL BE PERFORMED.

CONTRACTOR TO PROVIDE CORRECTIVE MEASURES FOR RIDABLE SURFACES AND ENSURE THAT TEMPORARY AND PERMANENT PAVEMENT MATCH CROSS SLOPES.

BARRIER REFLECTORS SUBSIDIARY TO COSA BID ITEM 525.1 CTB (PORTABLE)

BID ITEM	DESCRIPTION	UNIT	QTY
107.1	EMBANKMENT	CY	72
205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH) (20% MAX RAP)(NO RAS)(PG 64-22)	SY	
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	92
525.1	CONCRETE TRAFFIC BARRIER(PORTABLE)	LF	
105-6015	REMOVING STAB BASE & ASPH PAV (8"-10")	SY	250
354-6021	PLANE ASPH CONC PAV(0" TO 2")	SY	92
662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	
662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	
6036-6001	WK ZN PV MK SHT TERM(TAB)TY Y-2	EA	

* THE REMOVAL OF STAB BASE AND ASPH PAVEMENT IS APPLICABLE FOR THE REMAINING PORTION OF THE TEMPORARY PAVEMENT FOUND INSIDE THE CHANNELIZED ISLAND.

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
JORGE NICOLAS RODRIGUEZ
95381
LICENSED
PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

TRAFFIC CONTROL PLAN PHASE IV

SHEET 1 OF 1

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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TRAFFIC NOTES

TRENCHING / EXCAVATING

The following notes shall apply to excavations of trenches or pits that are located in the pavement or are within six (6) feet of the edge of roadway:

1.) Trench walls shall not be closer than three (3) feet from the edge of the traveled way at any stage of construction.

2.) Traffic control devices shall be in place before starting any excavation.

3.) Trenches or pits will not be permitted to be bridged by steel plates and open to traffic unless they are temporarily backfilled to finished street grade.

4.) For pits or trenches along or in a roadway that are going to be left open over night that are zero to fifty (0 – 50) feet in length, the following applies. GUARD RAIL OR CONCRETE BARRIER SHALL BE USED.

5.) For pits or trenches along or in roadway that are going to be left open over night and are longer than 50 feet in length. CONCRETE BARRIERS MUST BE USED.

6.) Plastic construction fencing shall be required for any trench or pit left open over night.

7.) When using any guardrail or concrete barrier, protected end must be used as per the TEXAS–M.U.T.C.D.

8.) For vertical drop–offs greater than two (2) feet along roadway, low profile concrete with appropriate end protection must be installed.

9.) All concrete barriers placed on City R.O.W shall be low profile. No high profile barriers will be allowed.

REFLECTIVE SHEETING

The reflectorized white and reflectorized orange stripes for channelizing devices such as barricade drums and vertical panels shall be constructed of reflective sheeting meeting the color and retro–reflectivity requirements of high intensity, unless otherwise specified in the plans.

MAINTENANCE

1.) All traffic signs shall be kept in proper position, clean and legible at all times. Damaged barricades, signs, and other traffic control devices shall be replaced without undue delay.

2.) To ensure adequate maintenance, a suitable schedule for inspection, cleaning, and replacement of barricades, lights, and signs shall be established.

3.) Special attention and necessary action shall be taken to see that weeds, trees, shrubbery and construction materials do not obscure the face of any sign or barricades.

TRAINING

Each person whose actions affect maintenance and construction zone safety, from the upper–level management personnel through construction and maintenance field personnel, should receive training appropriate to the job decision each individual is required to make. Only those individuals who are qualified by means of adequate training in safe traffic control practices and have a basic understanding of the principles established by applicable standards and regulations, including those of the TEXAS M.U.T.C.D. should supervise the selection, placement, and maintenance of traffic control devices in maintenance and construction areas.

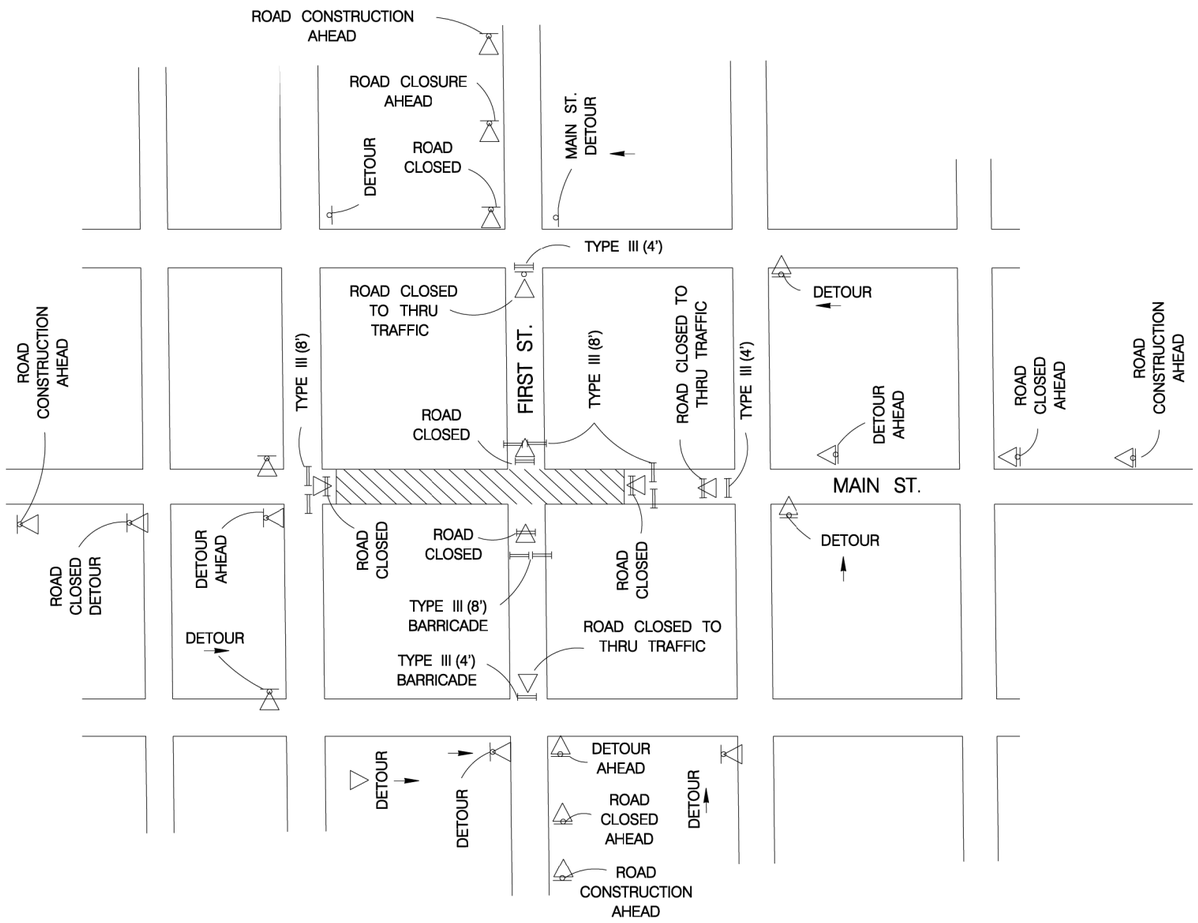
SPECIAL EVENTS BARRICADING

All Type I, (8') barricades used for special events (Dome, Runs, Walks, Parades etc.) shall be a minimum of 42" high and 96" wide. Any necessary signs will require proper sign stands.

USE OF CITY R.O.W.

The City of San Antonio reserves the right to allow contracting and barricading sub–contractors to use the City's R.O.W. The City also reserves the right to advise contractors and barricading sub–contractors to remove stored or unused traffic control devices from the City of San Antonio R.O.W. It is the barricading sub–contractor's responsibility to remove any traffic control device from City's R.O.W. when instructed to do so by a City representative.

CLOSURE DIAGRAMS



TYPICAL INTERSECTING STREET CLOSURE FOR TWO LANE STREETS

NOTE:
ALL SIGNS WILL BE MOUNTED ON SIGN SUPPORTS ONLY

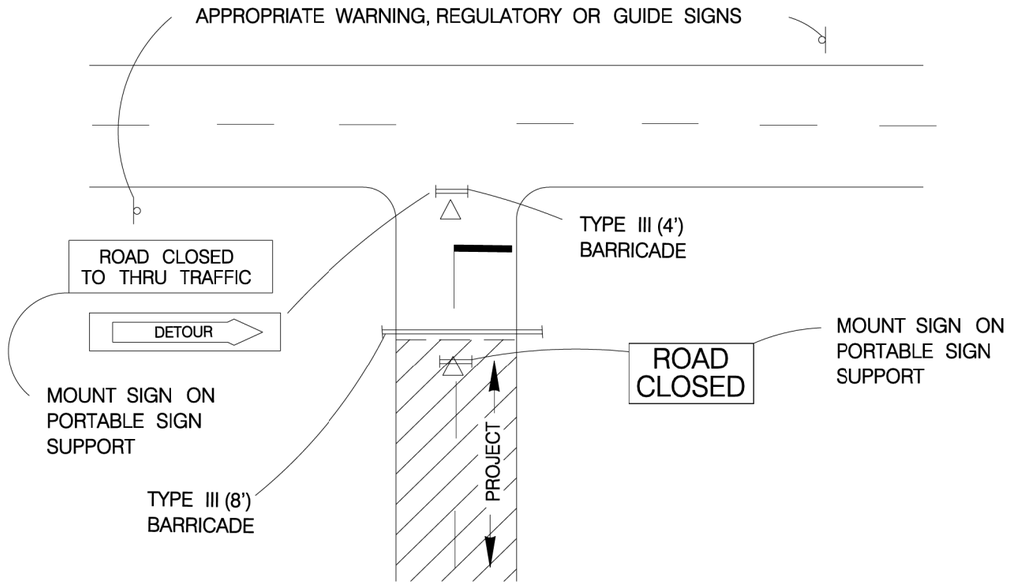
THE ORIGINAL OF THIS DRAWING WAS SIGNED AND SEALED BY JOHN D. FRIEBELE, #46394 ON 06-20-05 AND IS ON FILE WITH THE TRAFFIC ENGINEERING DIVISION OF THE PUBLIC WORKS DEPARTMENT, CITY OF SAN ANTONIO.

JUNE 2005

CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS

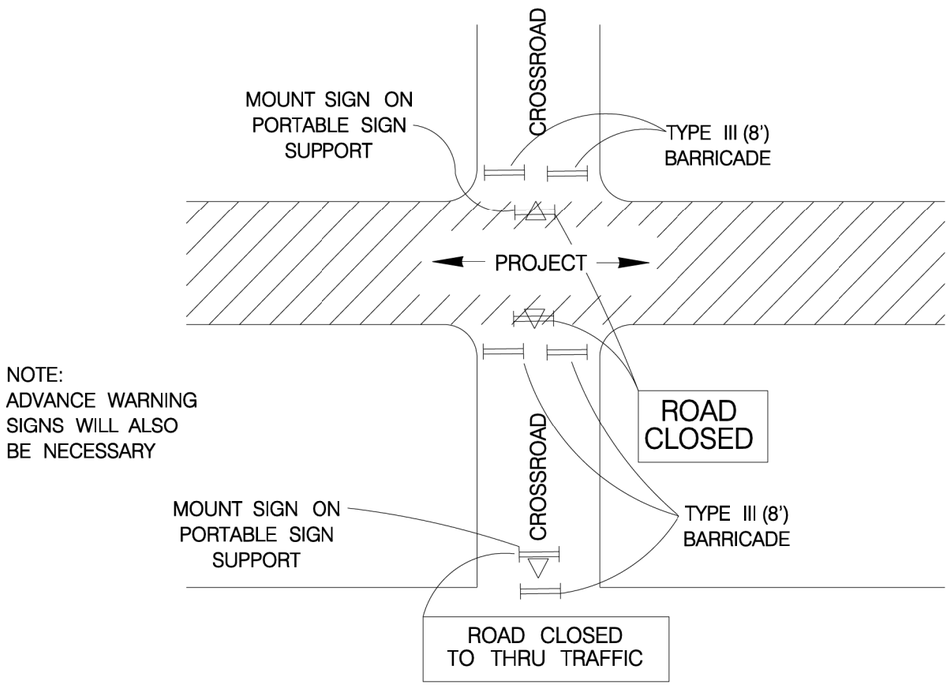
TRAFFIC STANDARDS
BARRICADE AND CONSTRUCTION STANDARDS
SHEET 1 OF 4

100 % SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: A.F.G.	DSGN. BY: E.N.M.	CHKD. BY: J.D.F./E.N.M.	SHEET NO.: 55 OF 330



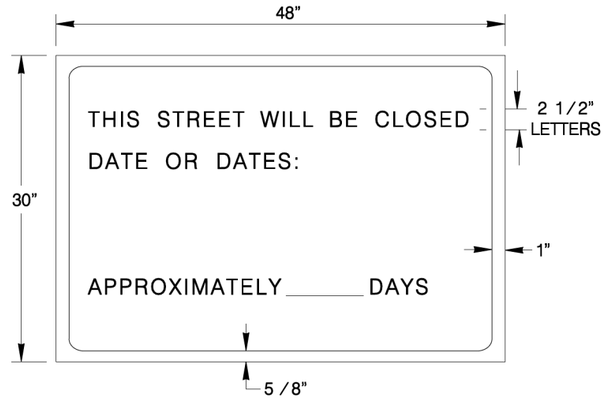
PROJECT LIMITS FOR CLOSED ROADWAY

BARRICADES SHALL BE ERECTED COMPLETELY ACROSS ROADWAY. CHANNELIZING DEVICES MAY BE DRUMS, VERTICAL PANELS OR CONES AS SPECIFIED IN THE PLANS

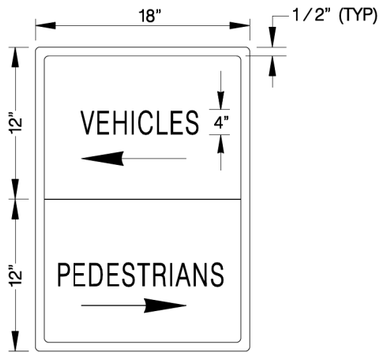


NOTE:
ADVANCE WARNING
SIGNS WILL ALSO
BE NECESSARY

CROSS STREET SIGNING AND BARRICADING TOTALLY CLOSED

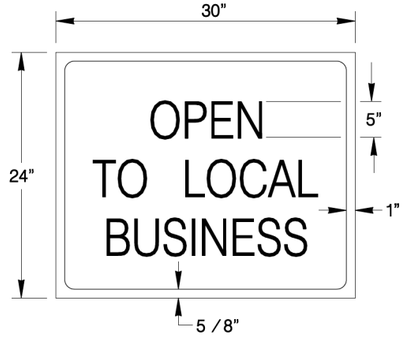


LETTERS– BLACK
BORDER– BLACK
BACKGROUND– ORANGE



LETTERS– BLACK
BORDER– BLACK
BACKGROUND– ORANGE
SPACING–3 SIGNS PER BLOCK

DIRECTION OF ARROWS
ARE REVERSIBLE



LETTERS– WHITE
BORDER– WHITE
BACKGROUND– BLUE REFLECTIVE

THE ORIGINAL OF THIS DRAWING WAS SIGNED AND SEALED BY JOHN D. FRIEBELE, #46394 ON 06-20-05 AND IS ON FILE WITH THE TRAFFIC ENGINEERING DIVISION OF THE PUBLIC WORKS DEPARTMENT, CITY OF SAN ANTONIO.

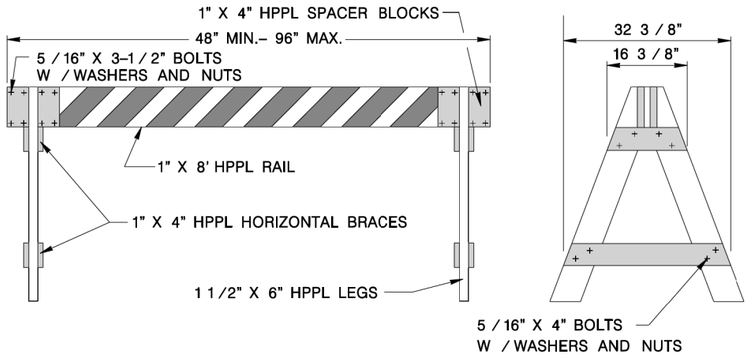
JUNE 2005

CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS

TRAFFIC STANDARDS
BARRICADE AND CONSTRUCTION STANDARDS
SHEET 2 OF 4

100 % SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: A.F.G.	DSGN. BY: E.N.M.	CHKD. BY: J.D.F./E.N.M.	SHEET NO.: 56 OF 330

TYPE I BARRICADE



1.) Only the following Type I barricade shall be used in the City of San Antonio Right–Of–Way:

A. 1" x 8" plastic rail with 2" x 6" wooden legs.

B. 1" x 8" wooden rail with plastic legs.

C. 1" x 8" wooden rail with 2" x 6" wood legs.

D. No screws allowed for assembly of A–legs or rail.

E. Warning lights will be used as directed by the Traffic Engineer.

F. All Type I (4') barricades will be a minimum of 36" high and 60" wide. (For Construction Use Only)

G. All Type I (8') barricades with wooden legs shall be 2" X 6" wood only.

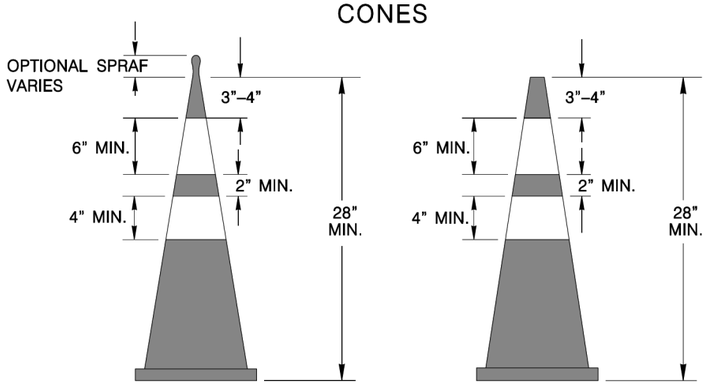
H. All Type I (4') barricades with wooden legs shall be 1" X 8" wood only.

2.) Type I Barricades shall not be used for partial and total street closures in construction work zones. Only Type III barricades shall be used for this purpose.

3.) Warning lights shall not be mounted on Type I barricades.

(See TxDOT BC–03 Sheets for specific construction information)

CONES

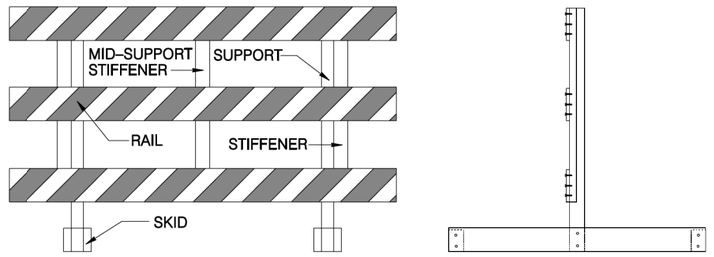


1.) Base for 28" high cones must weigh at least 9.5 lbs.

2.) Night time cones must have reflective collars.

(See TxDOT BC–03 Sheets for specific construction information)

Type III BARRICADE



1.) Only the following Type III barricade shall be used in the City of San Antonio Right–Of–Way.

A. Hollow polyvinyl or fiberglass tubing post with 1" X 8" wooden rails.

B. Hollow polyvinyl or fiberglass tubing post with plastic rails.

C. Skids must be wood or solid plastic only.

D. Warning lights shall not be mounted on Type III barricades.

(See TxDOT BC–03 Sheets for specific construction information)

TEMPORARY MARKINGS

1.) Solid double yellow painted lines shall be installed for temporary division of traffic or construction duration longer than five (5) days, with repainting to occur once monthly or at the discretion of the Traffic Engineer. (All cost of upkeep will be at the contractor's expense.)

2.) Solid double yellow tabs, or V/P panels shall be installed for temporary division of traffic for construction duration less than five (5) days, with re–tabbing to occur at the discretion of the Traffic Engineer.
NAILS SHALL NOT BE USED TO FIX TABS TO CEMENT OR BASE
(All cost of upkeep will be at the contractor's expense.)

(See TxDOT BC–03 Sheets for specific construction information.)

TEMPORARY CONCRETE BARRIER

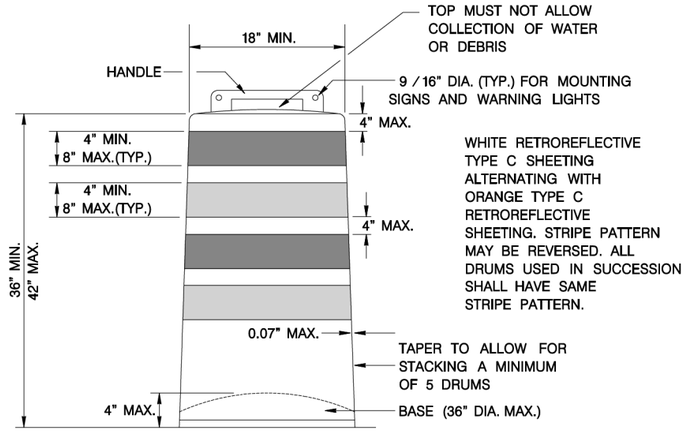
1.) All concrete barriers placed on City R.O.W. shall be low profile.

2.) No high profile barriers will be allowed.

3.) Reflectors will be required on each concrete barrier.

(See TxDOT BC–03 Sheets for specific construction information)

PLASTIC DRUMS



1.) 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).

2.) 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.

3.) The Engineer/Inspector shall provide written notice to the Contractor regarding the replacement of drums or other traffic control devices. The Contractor shall have a maximum of 24 hours to replace any plastic drums or other traffic control devices identified for replacement by the Engineer/Inspector. The replacement device must be an approved device.

4.) Each drum must have a 40 lb. rubber or plastic snap on.

5.) No signs larger than 18" X 24" will be allowed to be mounted on plastic drums.

6.) No warning lights will be allowed to be mounted on plastic barrels.

7.) In lieu of a warning light, a yellow reflector will be acceptable.

(See TxDOT BC–03 Sheets for specific construction information)

THE ORIGINAL OF THIS DRAWING WAS SIGNED AND SEALED BY JOHN D. FRIEBELE, #46894 ON 06-20-05 AND IS ON FILE WITH THE TRAFFIC ENGINEERING DIVISION OF THE PUBLIC WORKS DEPARTMENT, CITY OF SAN ANTONIO.

JUNE 2005

CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS

TRAFFIC STANDARDS

BARRICADE AND CONSTRUCTION STANDARDS

SHEET 3 OF 4

100 % SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: A.F.G.	DSGN. BY: E.N.M.	CHKD. BY: J.D.F./E.N.M.	SHEET NO.: 57 OF 330

SIGNS

1.) A maximum of two signs can be mounted on any one Long / Intermediate Term Stationary Portable Sign Support.

2.) 48" X 48" signs shall be mounted separately on the Long / Intermediate Term Stationary Portable Sign Support.

3.) For Short Term Stationary Portable Sign Support the distance from the bottom of the vinyl sign to the exiting ground must be one (1) foot.

4.) Long / Intermediate Term Stationary Portable Signs must be made of wood or plastic only.

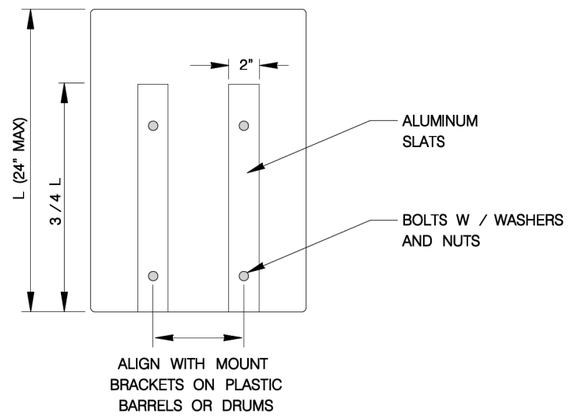
5.) No signs shall be mounted to any Type I, Type III, or folding barricades.

6.) Signs shall be mounted only on TxDOT approved sign supports.

7.) Detour signs will be mounted on single "D" legs w / 7' clearance from the bottom of the sign.

8.) WORK DURATION TERMINOLOGY
Long Term Stationary = occupies a location 3 or more days.
Intermediate–Term Stationary = occupies a location for overnight to 3 days.
Short Term Stationary = daylight work that occupies a location from 1 to 12 hours.
Short Duration = occupies a location up to 1 hour.

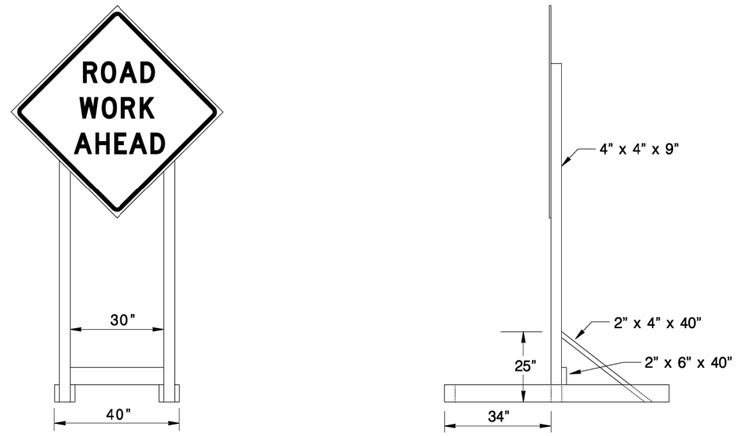
9.) Signs shall adhere to the following requirements:
- Signs placed on plastic barrels or drums shall be made of ABS plastic or plywood.
- Signs placed on skids shall be made of plywood or aluminum.
- Aluminum signs shall have a minimum thickness of 0.08".
- Plywood signs shall have a minimum thickness of 1 / 2".
- ABS Plastic signs shall have a minimum thickness of 0.13". Plastic signs cannot exceed 18" by 24" in size and shall be reinforced with 2" wide, 0.08" thick aluminum slats, as depicted below:



- No other material shall be accepted without the express written approval of the Traffic Engineer.

(See TxDOT BC–03 Sheets for specific construction information.)

LONG TERM / INTERMEDIATE TERM SIGN SUPPORT



1.) 48" X48" signs must be mounted independently.

2.) A maximum of two signs can be mounted on any one long term / intermediate sign support.

3.) Sand bag all sign supports.

4.) Distance from the bottom of the sign to the existing ground shall be 7'.

5.) Distance from the header barricade rail to the face of the sign panel shall be 2' min. and 10' max.

6.) Steel tripods shall not be allowed.

(See TxDOT BC–03 Sheets for specific construction information)

JUNE 2005

CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS

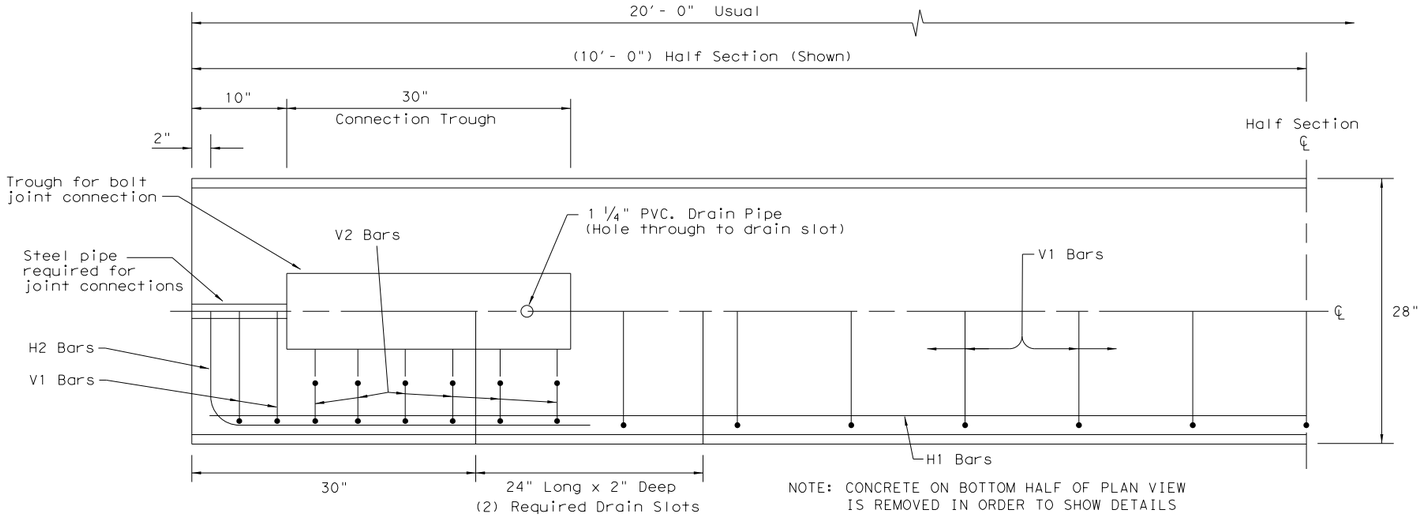
TRAFFIC STANDARDS
BARRICADE AND CONSTRUCTION STANDARDS
SHEET 4 OF 4

100 % SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: A.F.G.	DSGN. BY: E.N.M.	CHKD. BY: J.D.F./E.N.M.	SHEET NO.: 58 OF 330

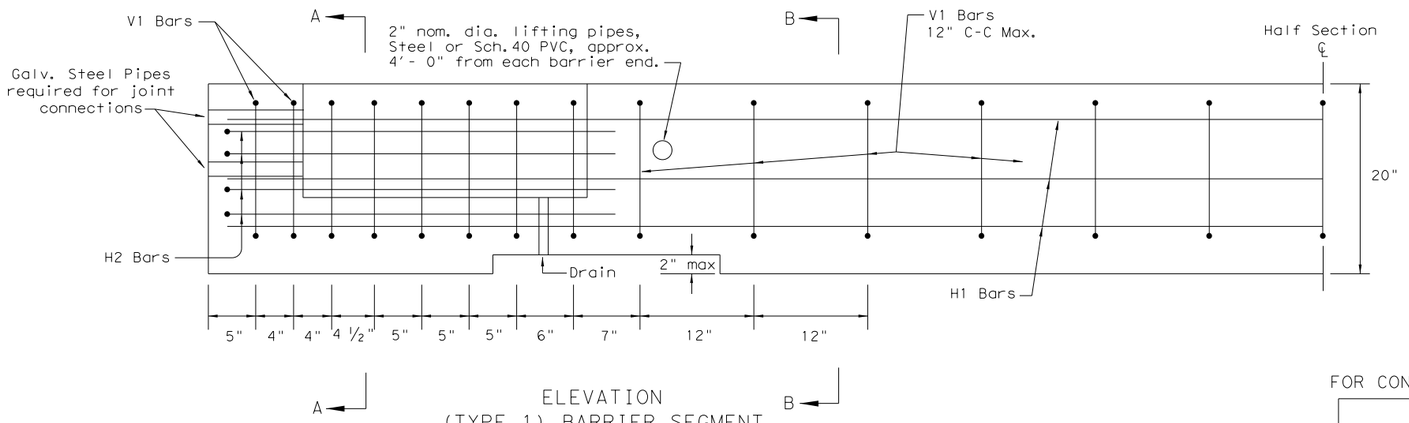
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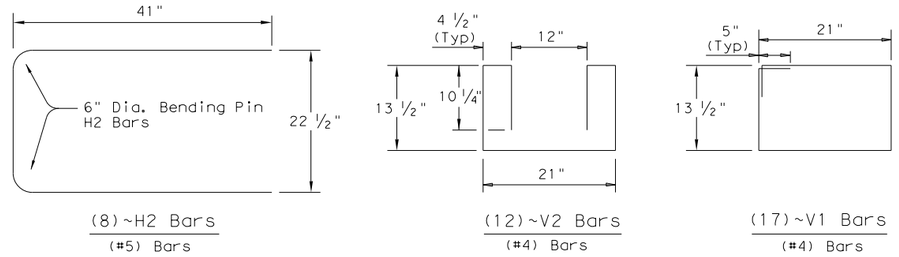
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PLAN
(TYPE 1) BARRIER SEGMENT
(SYMMETRICAL ABOUT CENTER LINES)

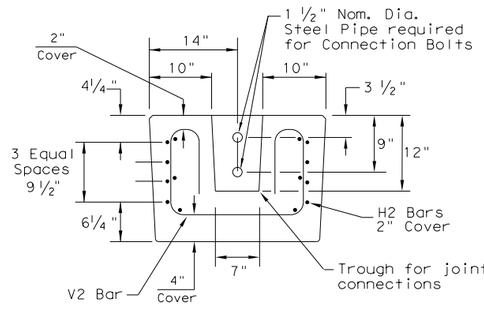


ELEVATION
(TYPE 1) BARRIER SEGMENT
(SYMMETRICAL ABOUT CENTER LINES)

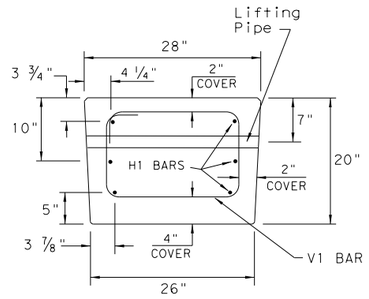


REINFORCING STEEL DETAILS
TYPE 1 - BARRIER SEGMENT

Note: Use 2" Dia. Bending Pin, unless otherwise shown



SECTION A-A



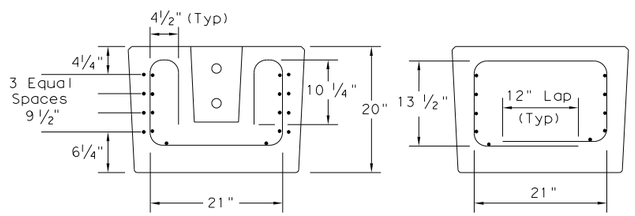
SECTION B-B

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

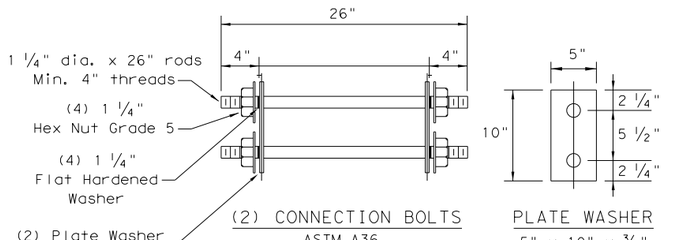
(WWR) GENERAL NOTES

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

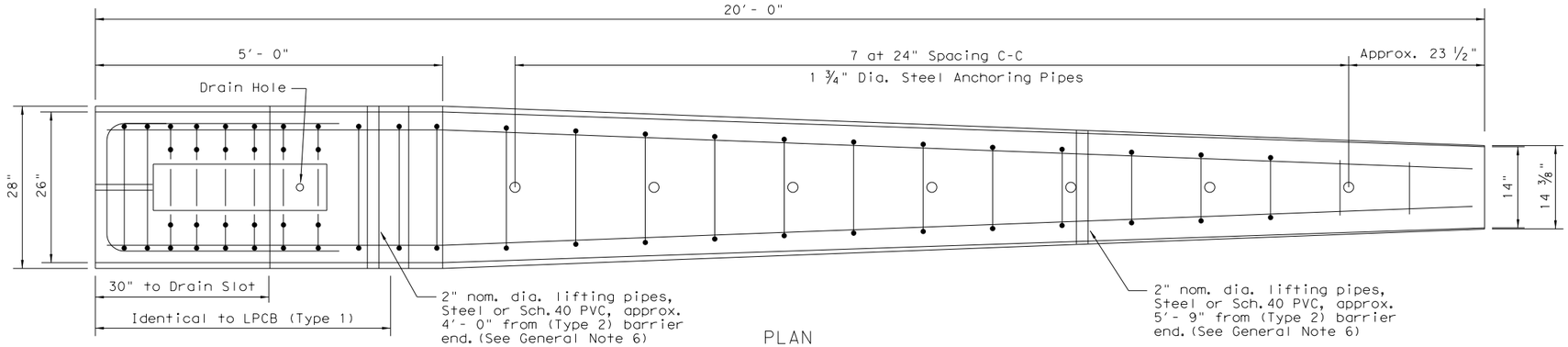
Texas Department of Transportation — Design Division Standard

LOW PROFILE CONCRETE BARRIER
PRECAST BARRIER (TYPE 1)
LPCB-13

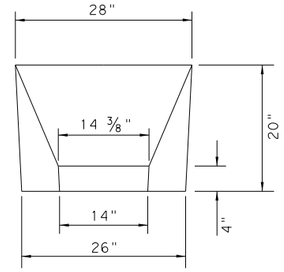
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©TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				COVEL RD
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		59

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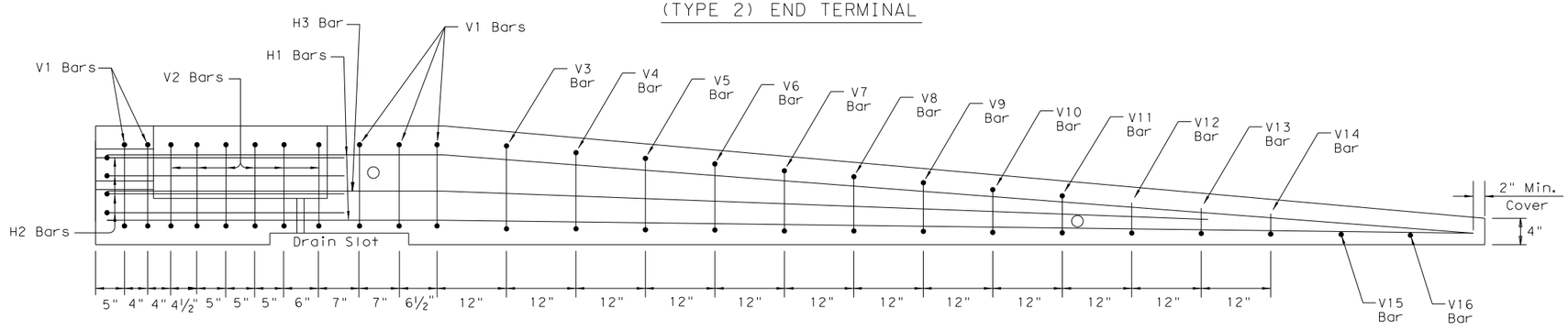
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PLAN
(TYPE 2) END TERMINAL

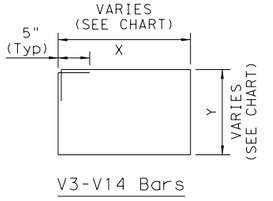


APPROACH VIEW

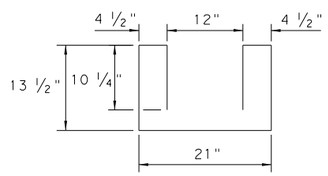


ELEVATION
(TYPE 2) END TERMINAL

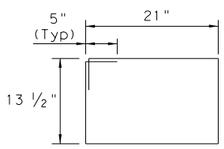
Note:
Anchoring pipes not shown in Elevation View



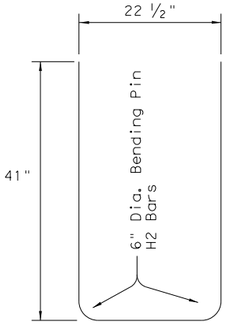
V3-V14 Bars



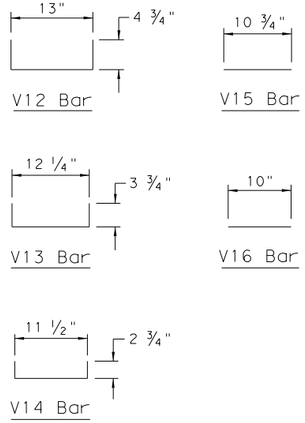
(6)~V2 Bars



(5)~V1 Bars



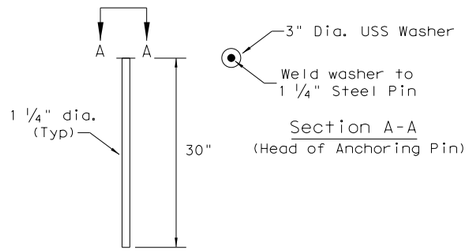
(4)~H2 Bars
(#5) Bars



Note: All V Bars are (#4)

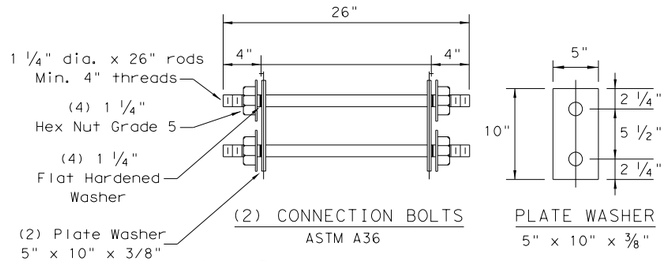
BAR(#4)	X (IN.)	Y (IN.)
V3 BAR	20 ¼	14 ½
V4 BAR	19 ½	13 ½
V5 BAR	18 ½	12 ¼
V6 BAR	17 ½	11 ¼
V7 BAR	17	10 ¼
V8 BAR	16 ¼	9
V9 BAR	15 ½	8
V10 BAR	14 ½	7
V11 BAR	13 ¾	6

REINFORCING STEEL DETAILS
TYPE 2 - END TERMINAL



Section A-A
(Head of Anchoring Pin)

(7) Anchor Pins
ASTM A36 Steel
(See Note 3)



(2) CONNECTION BOLTS
ASTM A36

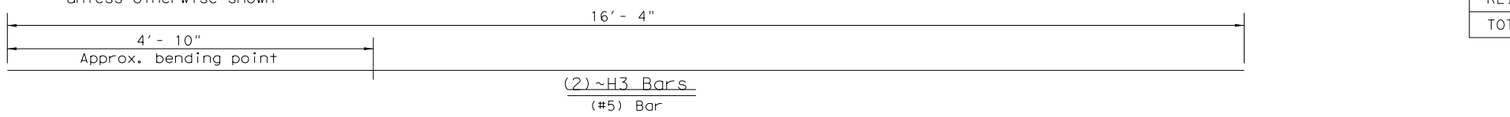
PLATE WASHER
5" x 10" x ⅜"

Note: Rods, Hex nuts and Washers shall be Galvanized.

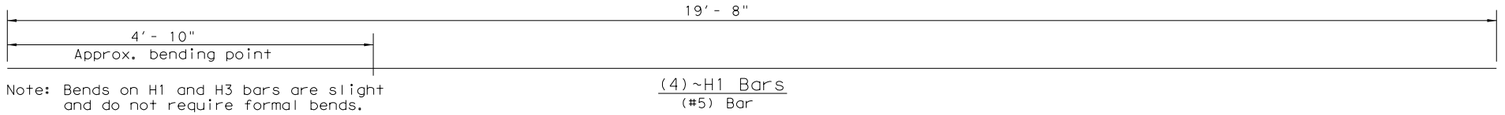
TYPE 2 - NOTES

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.

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

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

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REVISIONS				COVEL RD
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		60

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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

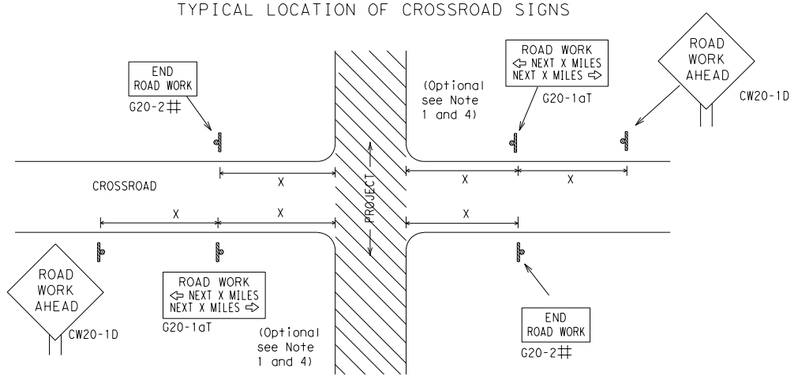
BC(1)-21

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9-07 8-14	DIST	COUNTY		SHEET NO.
5-10 5-21	SAT	BEXAR		61

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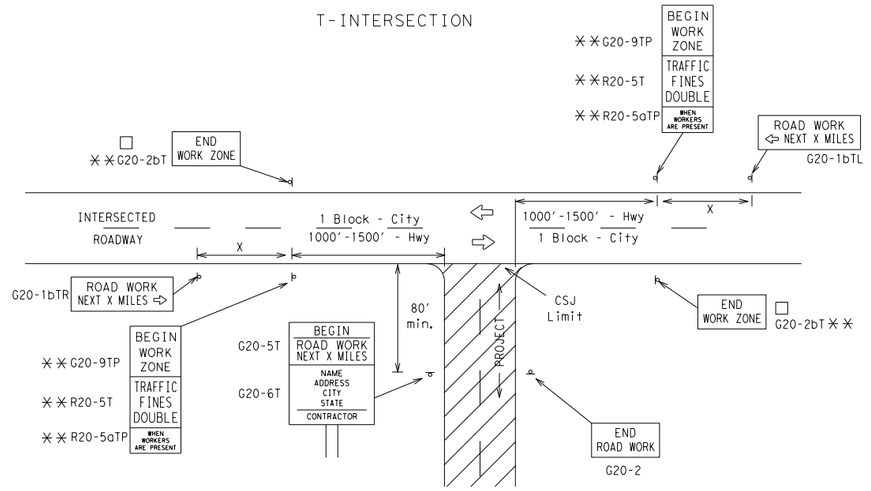
TYPICAL LOCATION OF CROSSROAD SIGNS



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]

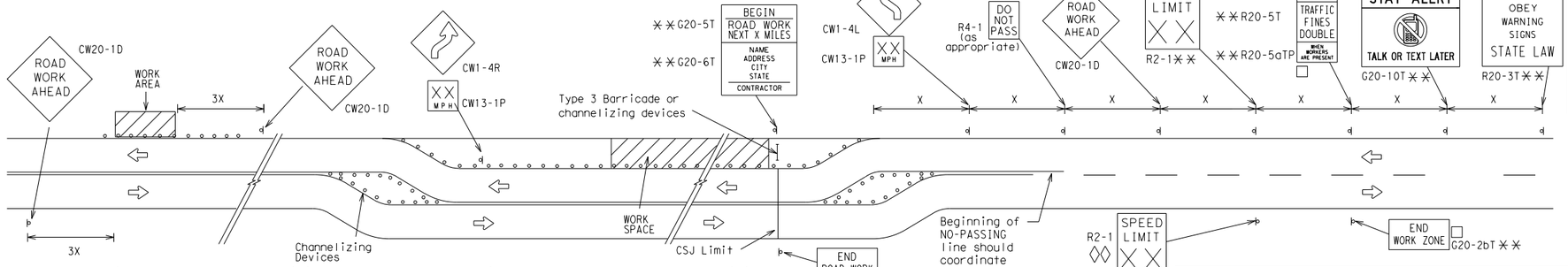
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

△ 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.

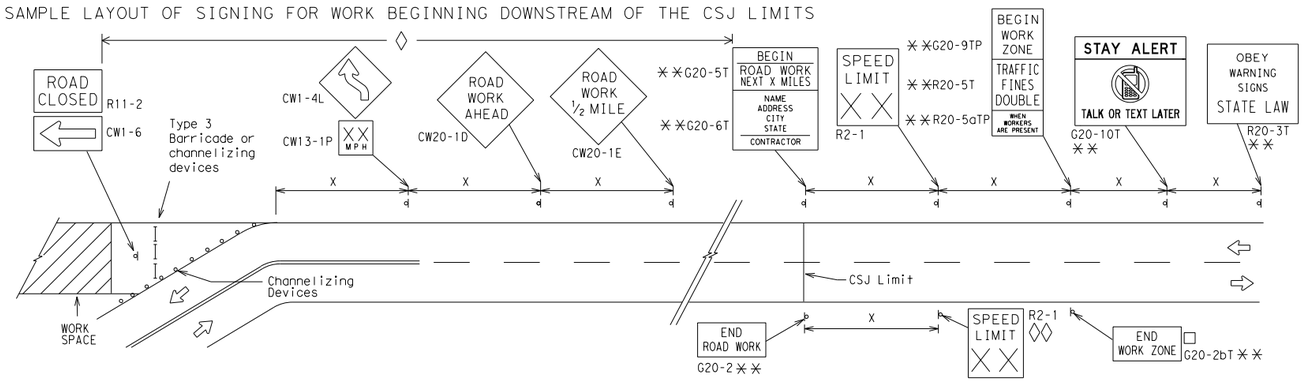
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING DOWNSTREAM OF 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

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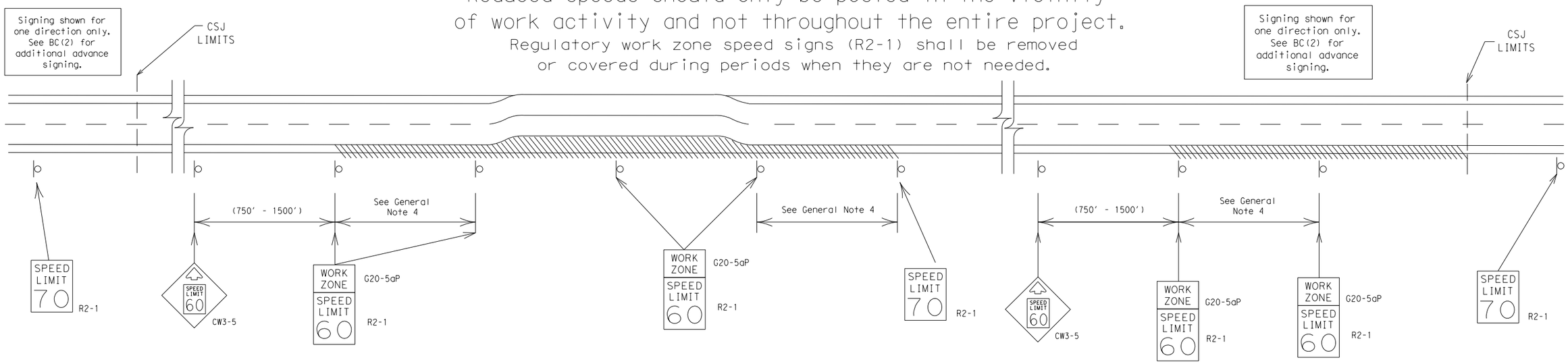
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TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

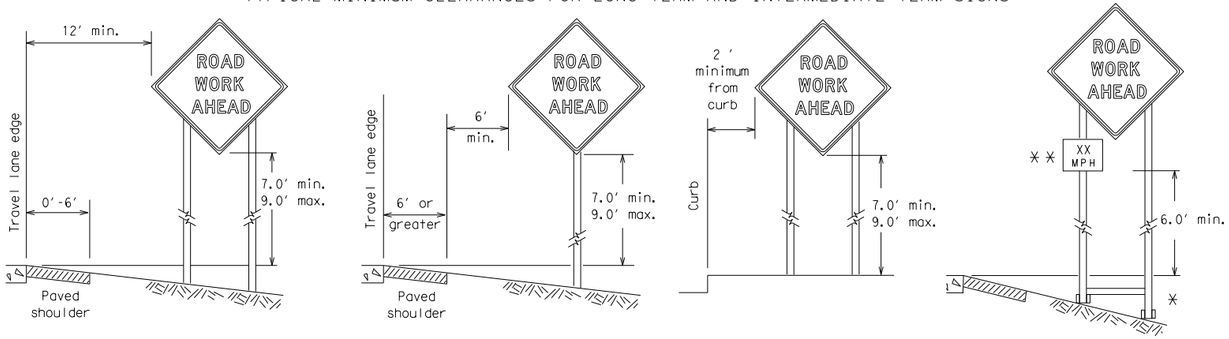
BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

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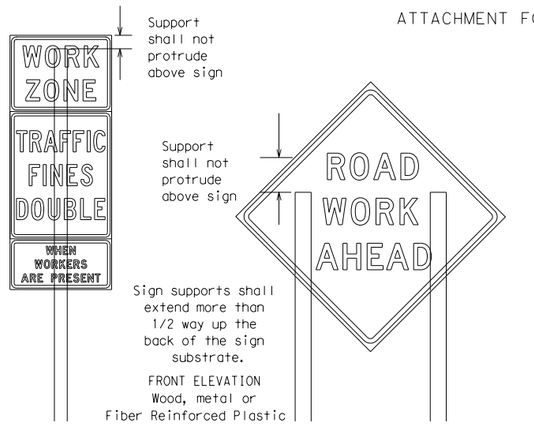
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

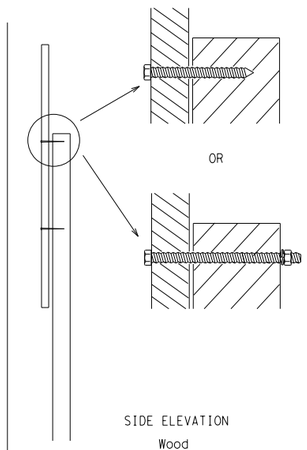


⁎ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

⁎⁎ 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





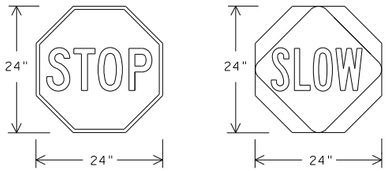
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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.



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

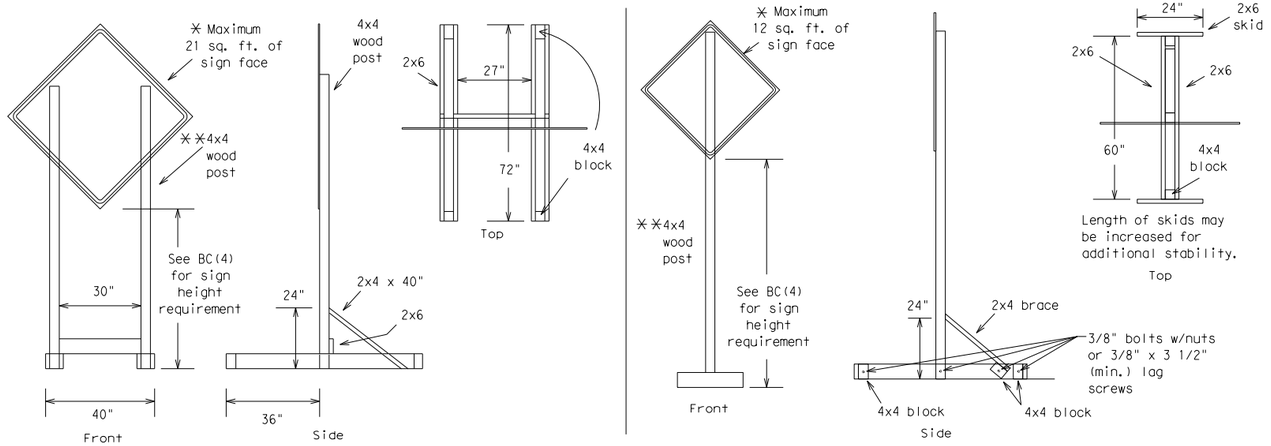
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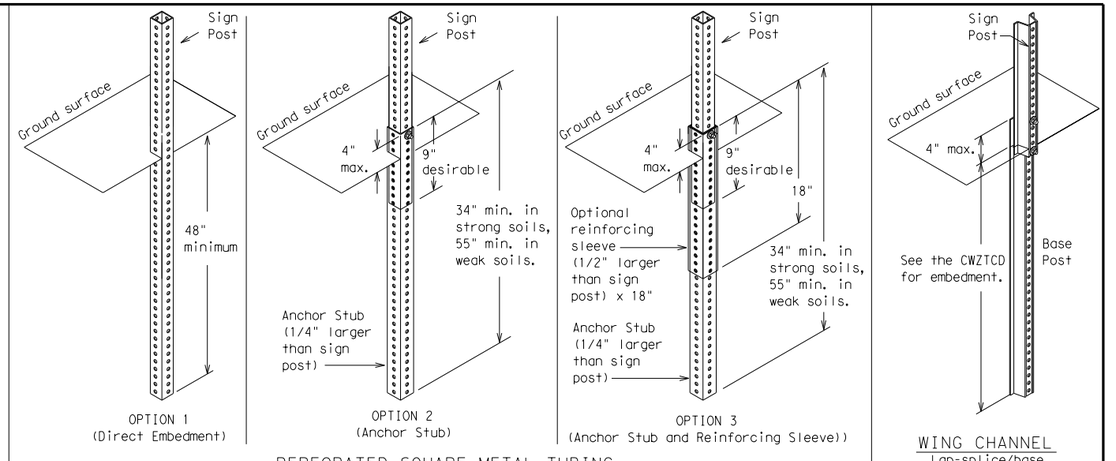
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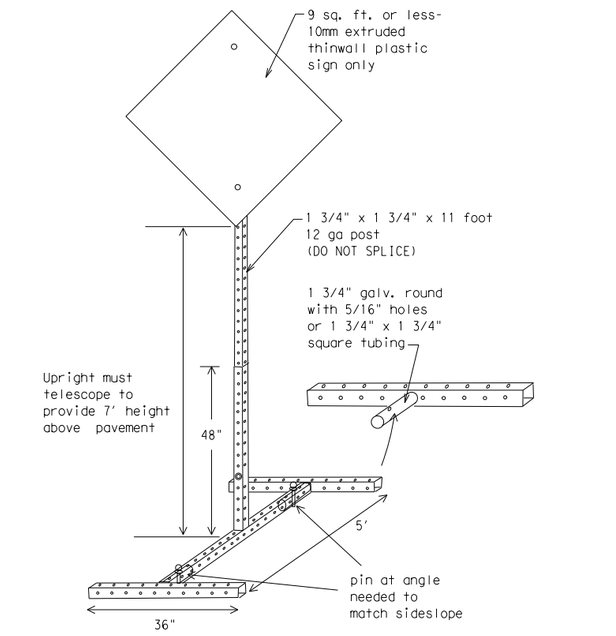
SKID MOUNTED WOOD SIGN SUPPORTS

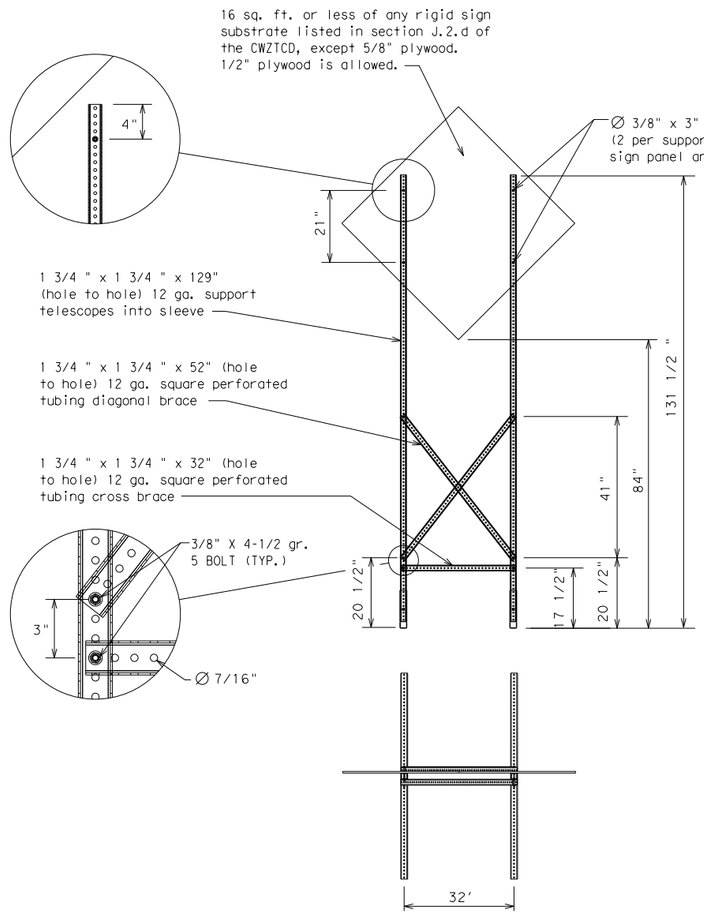
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

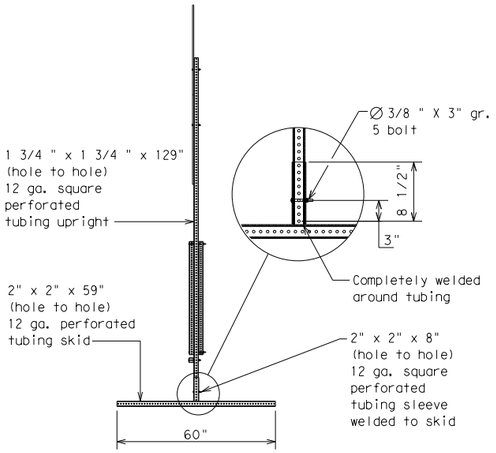


GROUND MOUNTED SIGN SUPPORTS

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

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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 *

* LANES SHIFT in Phase 1 must be used with STAY IN LANE in Phase 2.

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

** 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

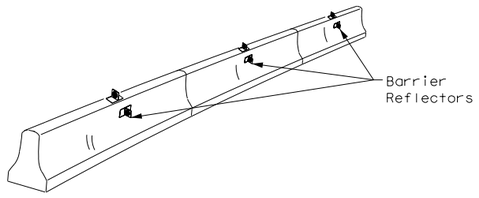
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©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				COVEL RD
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BEXAR		66

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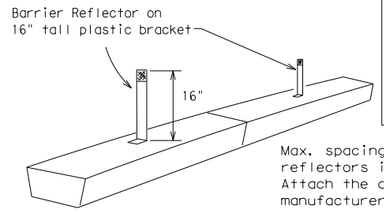
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1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors 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.

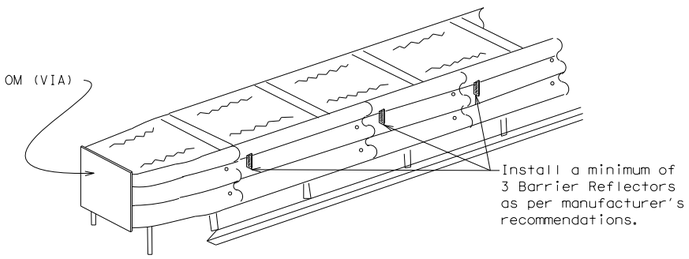


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

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.

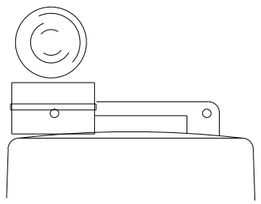


DELINEATION OF END TREATMENTS

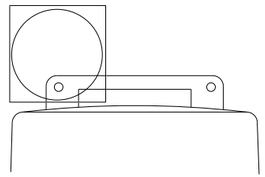
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

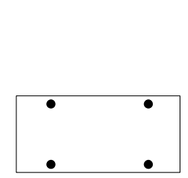
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing 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.

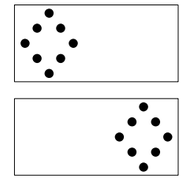
Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

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:

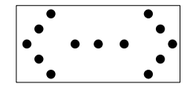


4 CORNER CAUTION

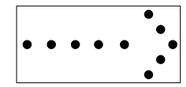
OR



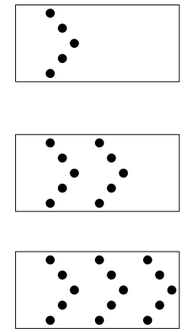
ALTERNATING DIAMOND CAUTION



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				COVEL RD
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BEXAR		67

101

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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:

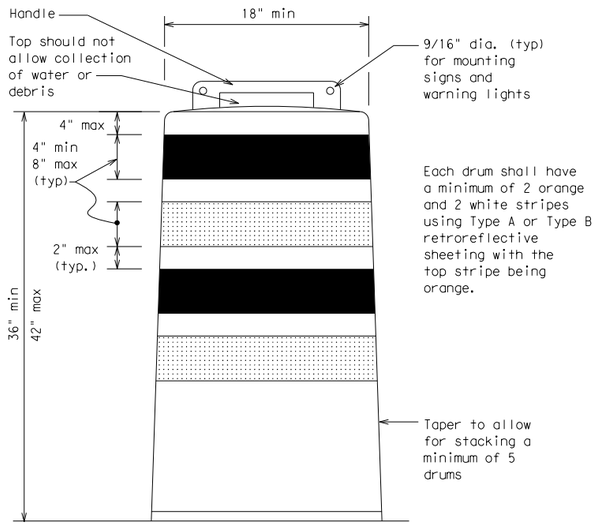
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents 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.

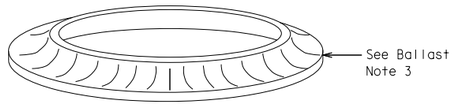
RETROREFLECTIVE SHEETING

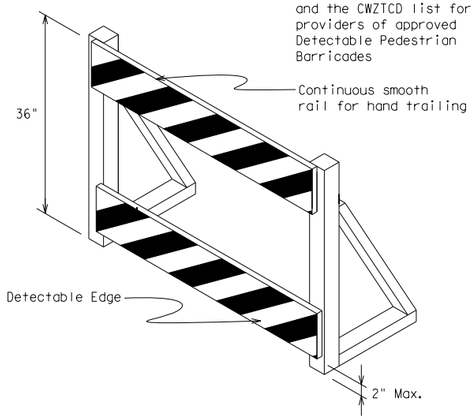
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall 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.

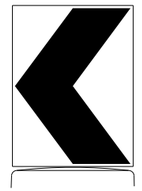




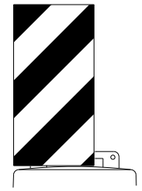


DETECTABLE PEDESTRIAN BARRICADES

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

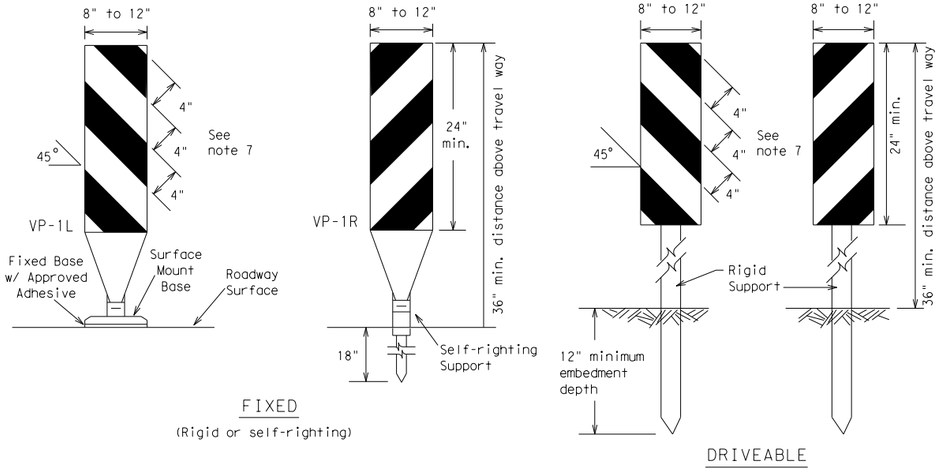
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7-13				

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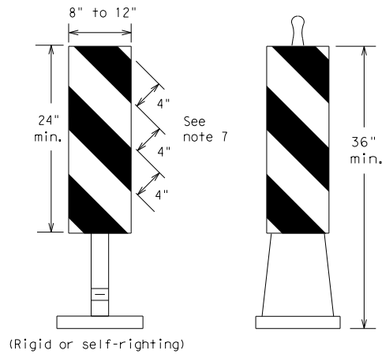
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FIXED
(Rigid or self-righting)

DRIVEABLE

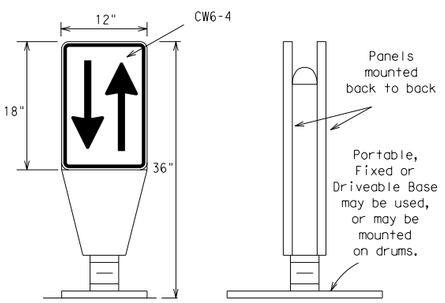


(Rigid or self-righting)

PORTABLE

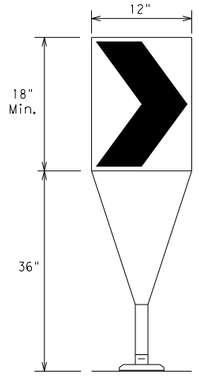
VERTICAL PANELS (VPs)

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.



OPPOSING TRAFFIC LANE DIVIDERS (OTLD)

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.



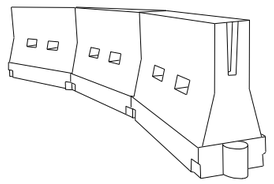
Fixed Base w/ Approved Adhesive
(Driveable Base, or Flexible Support can be used)

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 ✳✳			Suggested Maximum Spacing of Channelizing Devices	
		10′ Offset	11′ Offset	12′ Offset	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

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7-13 5-21	SAT	BEXAR		69

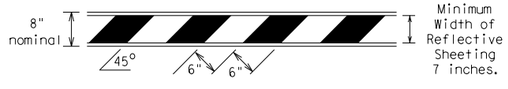
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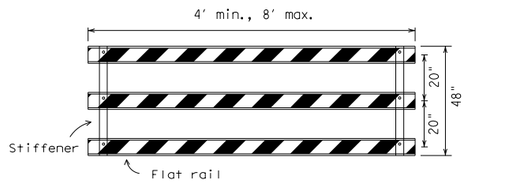
TYPE 3 BARRICADES

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.



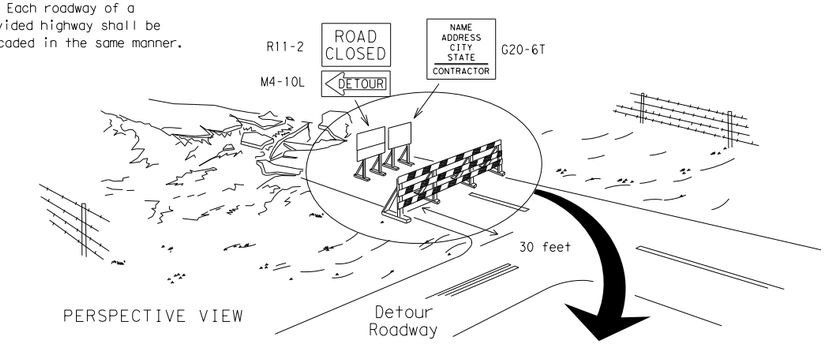
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

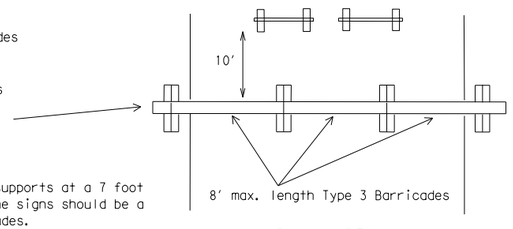
Each roadway of a divided highway shall be barricaded in the same manner.



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.

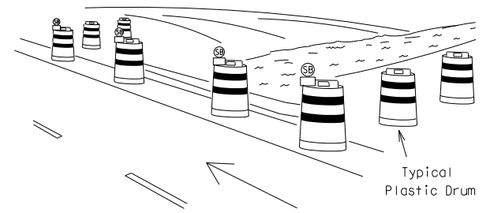
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

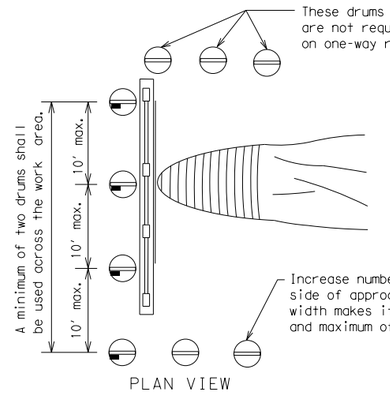
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

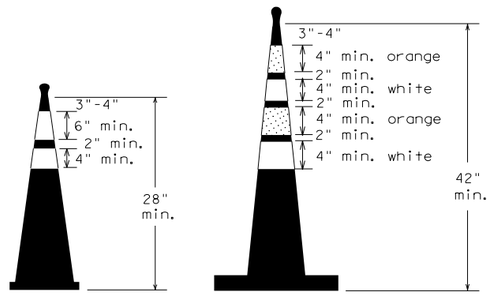
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder 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.



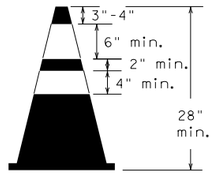
PLAN VIEW

LEGEND	
	Plastic drum
	Plastic drum with steady burn light or yellow warning reflector
SB	Steady burn warning light or yellow warning reflector

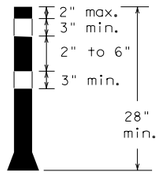
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

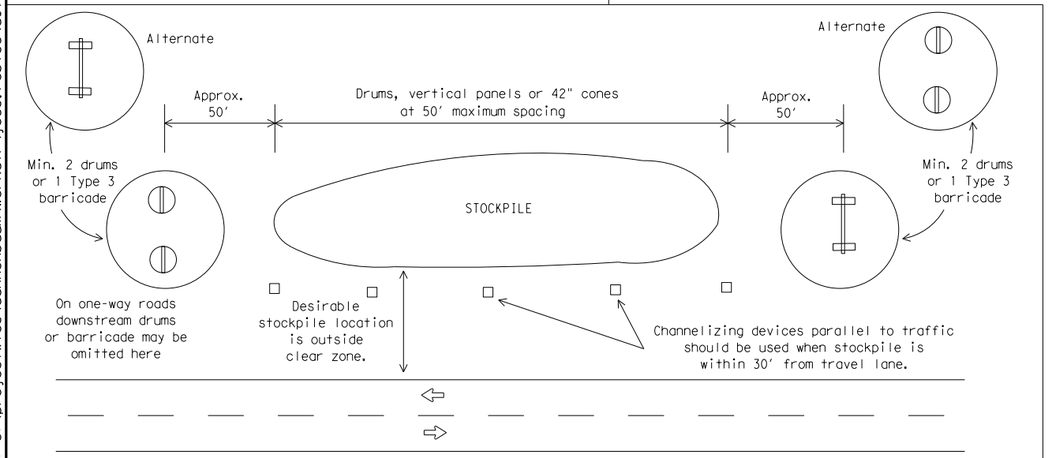


Tubular Marker

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

SHEET 10 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

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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.

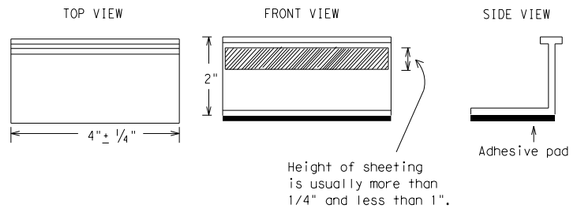
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

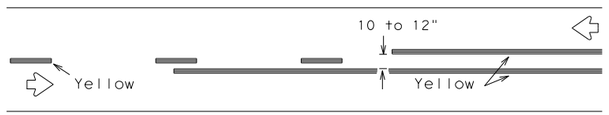
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-98 9-07 5-21				COVEL RD
1-02 7-13	DIST	COUNTY		SHEET NO.
11-02 8-14	SAT	BEXAR		71

105

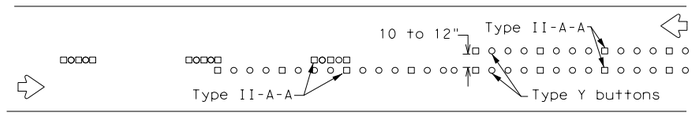
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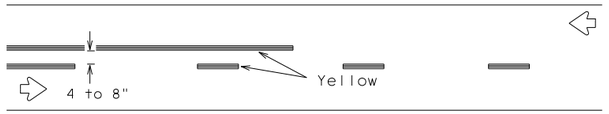
PAVEMENT MARKING PATTERNS



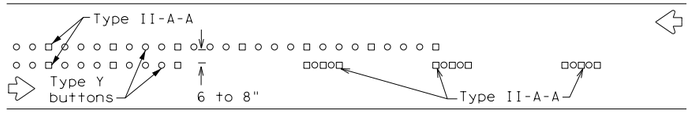
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



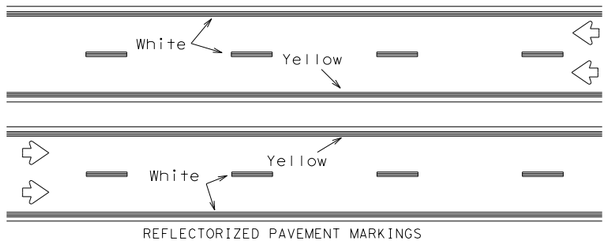
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



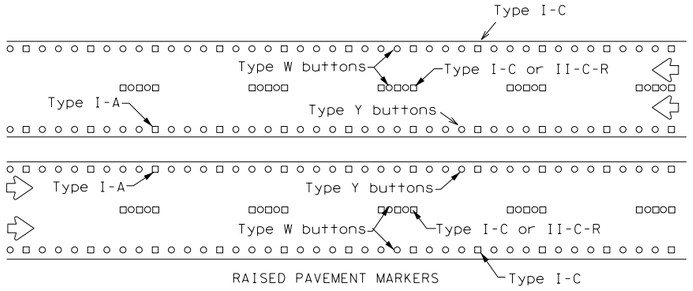
RAISED PAVEMENT MARKERS - PATTERN B

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



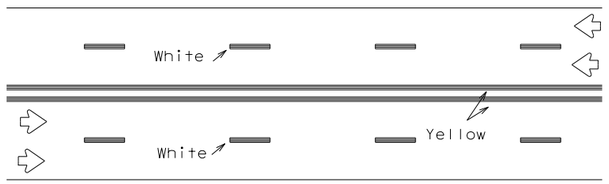
REFLECTORIZED PAVEMENT MARKINGS



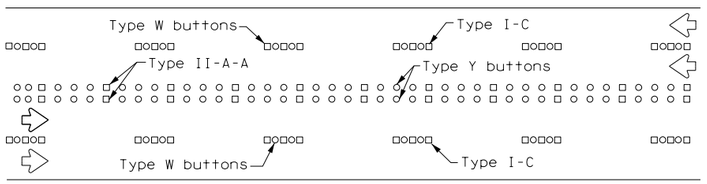
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



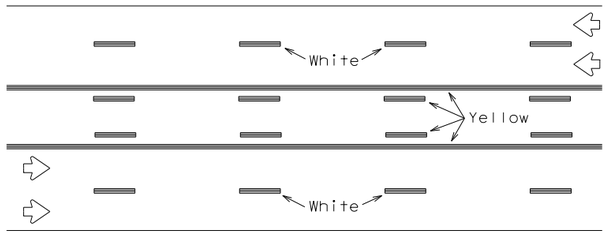
REFLECTORIZED PAVEMENT MARKINGS



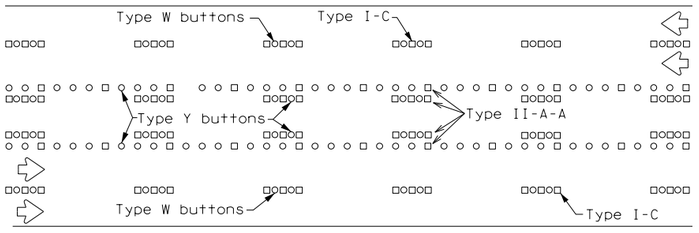
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

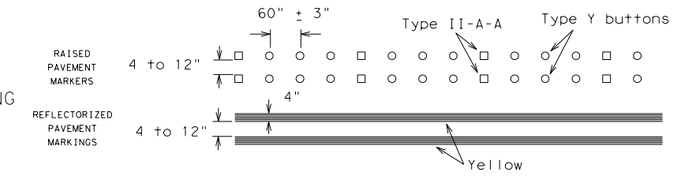
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

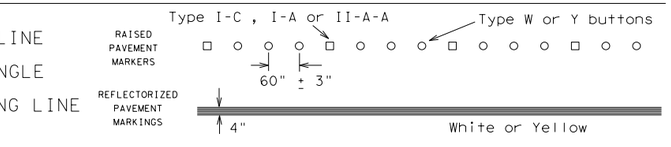
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

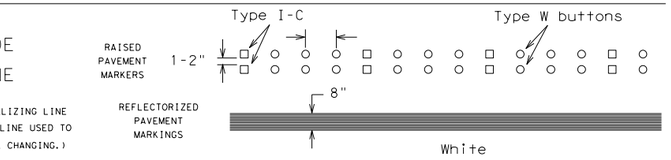


EDGE LINE OR SINGLE NO-PASSING LINE



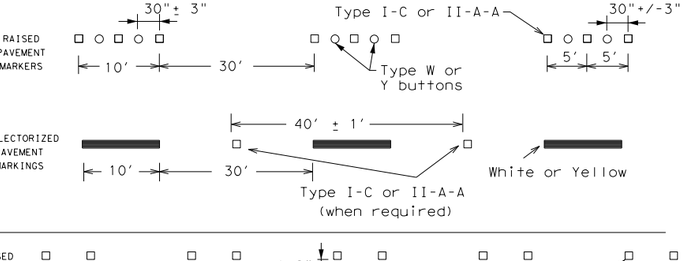
WIDE LINE

(FOR LEFT TURN CHANNELIZING LINE OR CHANNELIZING LINE USED TO DISCOURAGE LANE CHANGING.)

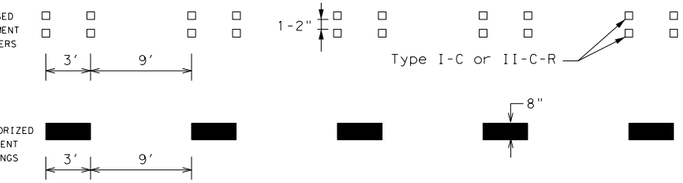


BROKEN LINES

CENTER LINE OR LANE LINE

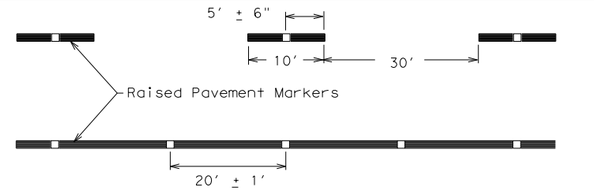


AUXILIARY OR LANEDROP LINE



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."

Texas Department of Transportation

Traffic Safety Division Standard

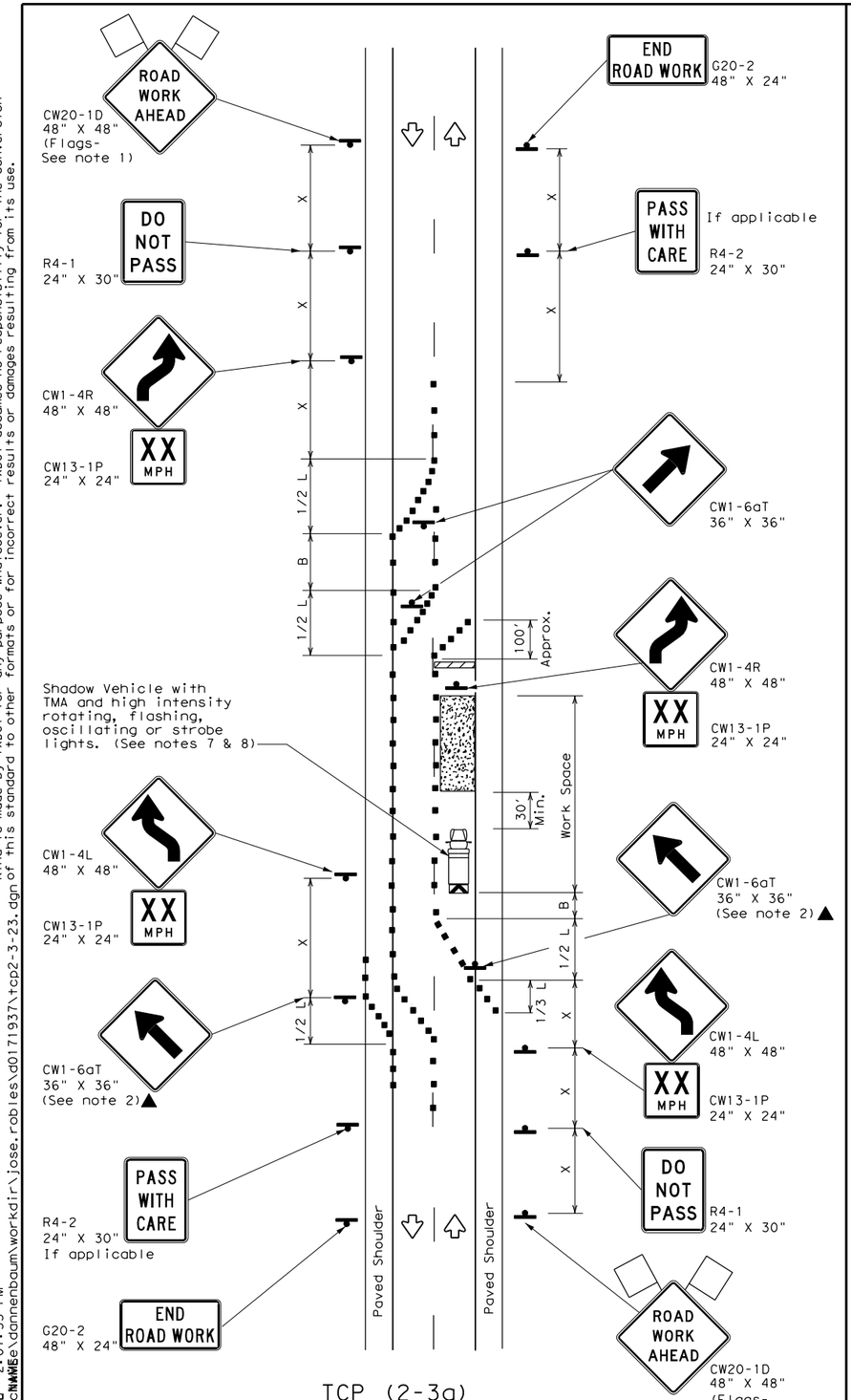
BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

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				COVEL RD
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		72

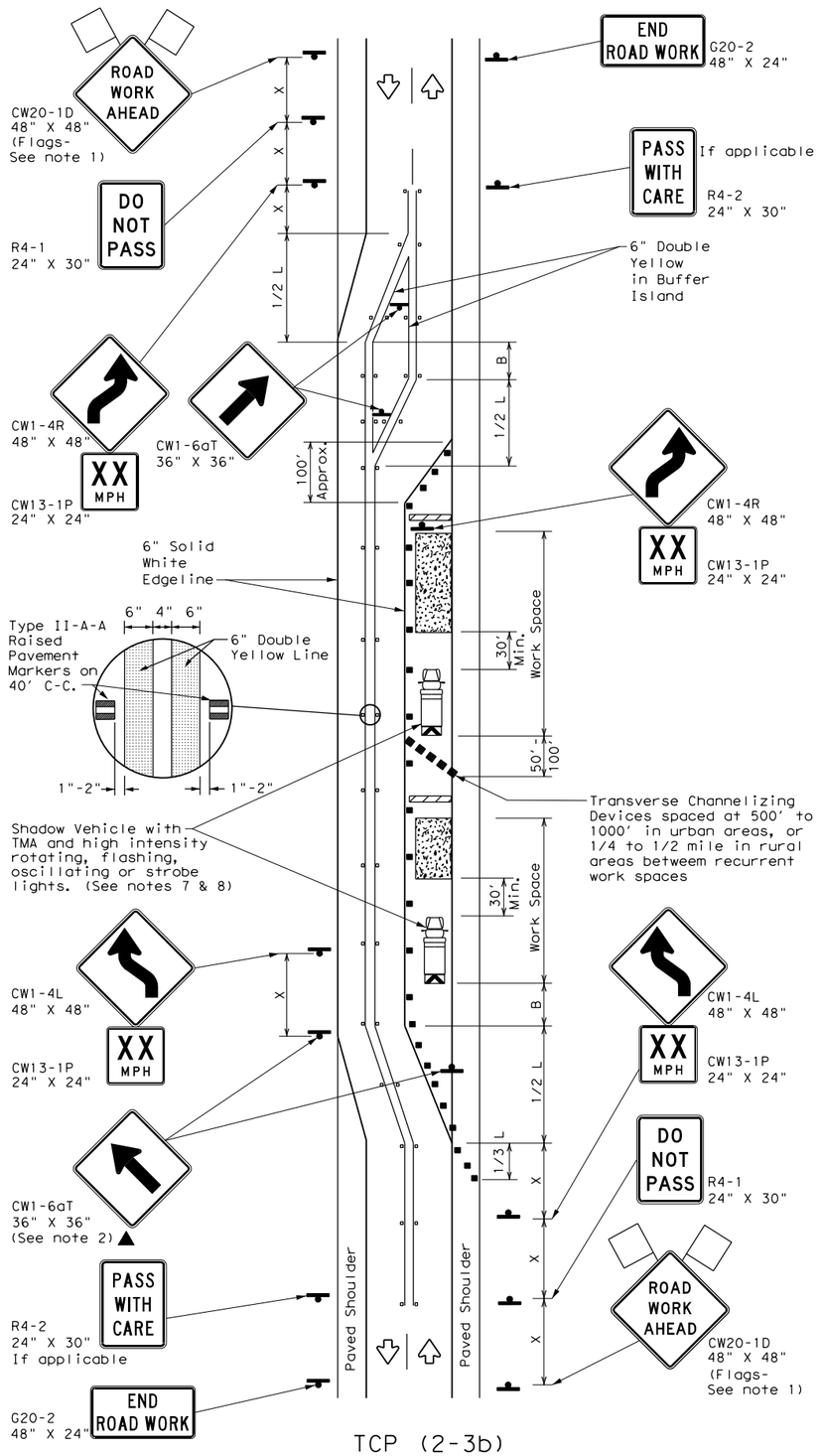
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DATE: DATE/TIME PLOTTED
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TCP (2-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
ADEQUATE FIELD OF VIEW



TCP (2-3b)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
INADEQUATE FIELD OF VIEW

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Raised Pavement Markers Ty II-AA
	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
				TCP(2-3b)ONLY
			✓	✓

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. When work space will be in place less than three days existing pavement markings may remain in place. Channelizing devices shall be used to separate traffic.
4. Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Flagger should be positioned at end of traffic queue.
5. The R4-1 "DO NOT PASS," R4-2 " PASS WITH CARE" and construction regulatory speed zone signs may be installed within CW20-1D "ROAD WORK AHEAD" signs. Proper spacing of signs shall be maintained.
6. Conflicting pavement marking shall be removed for long term projects.
7. 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.
8. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-3a)

9. Conflicting pavement markings shall be removed for long-term projects. 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 device spacing is intended for the area of the conflicting markings, not the entire work zone.

Texas Department of Transportation

Traffic Safety Division Standard

TRAFFIC CONTROL PLAN TRAFFIC SHIFTS ON TWO-LANE ROADS

TCP(2-3)-23

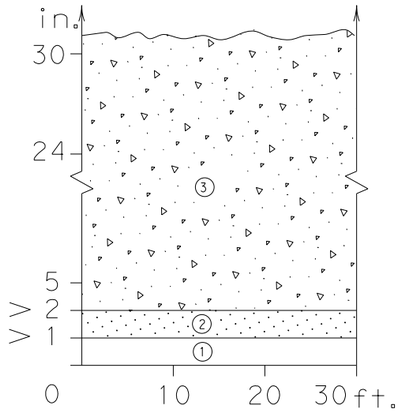
FILE: tcp(2-3)-23.dgn	DN:	CK:	DW:	CK:
©TxDOT April 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-85 4-98 2-18				COVEL RD
8-95 3-03 4-23	DIST	COUNTY		SHEET NO.
1-97 2-12		BEXAR		73

163

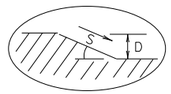
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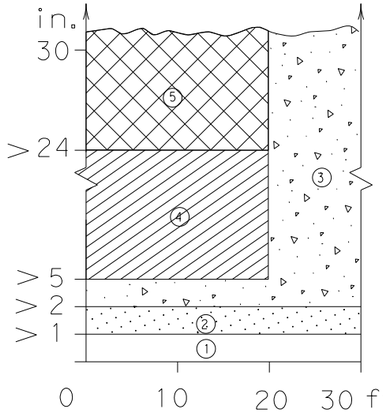
DEFINITION OF TREATMENT ZONES FOR VARIOUS EDGE CONDITIONS

Edge Height (D) in Inches versus Lateral Clearance (Y) in Feet

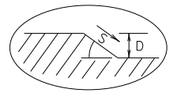


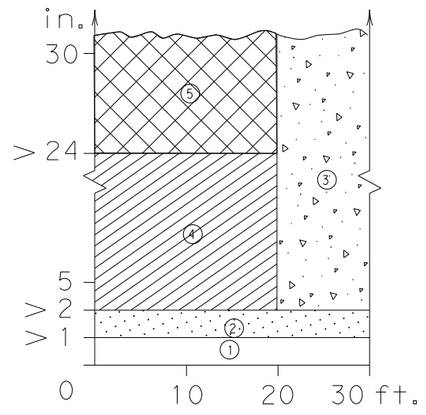
Edge Condition I
S = (3:1) (or flatter)



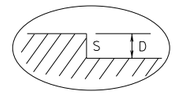


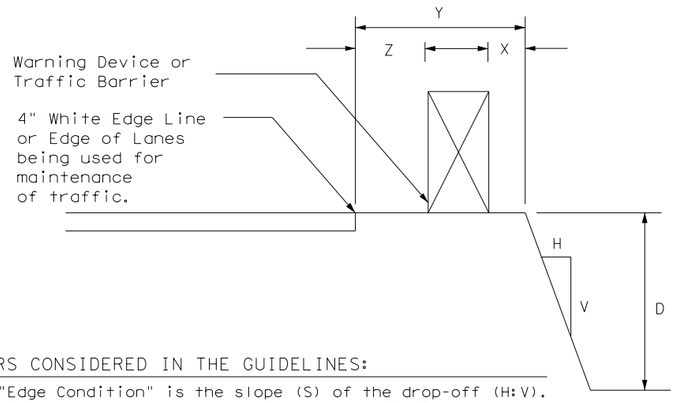
Edge Condition II
S = ((2.99):1) to (1:1)





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:

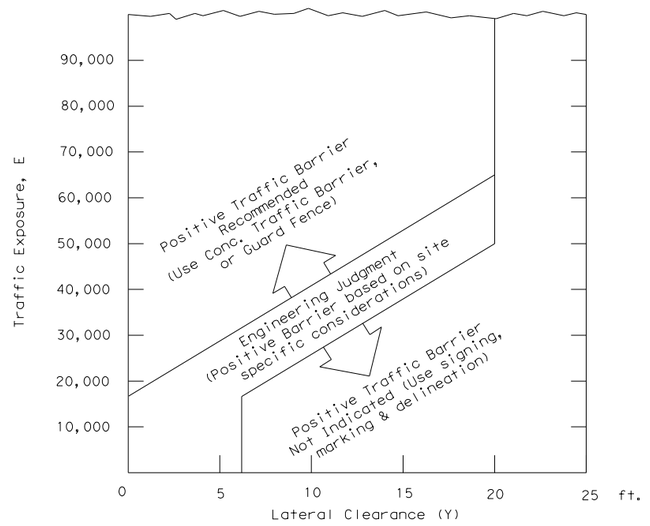
1. Edge Condition I: Most vehicles are able to traverse an edge condition with a slope rate of (3 to 1) or flatter. The slope must be constructed with a compacted material capable of supporting vehicles.

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.

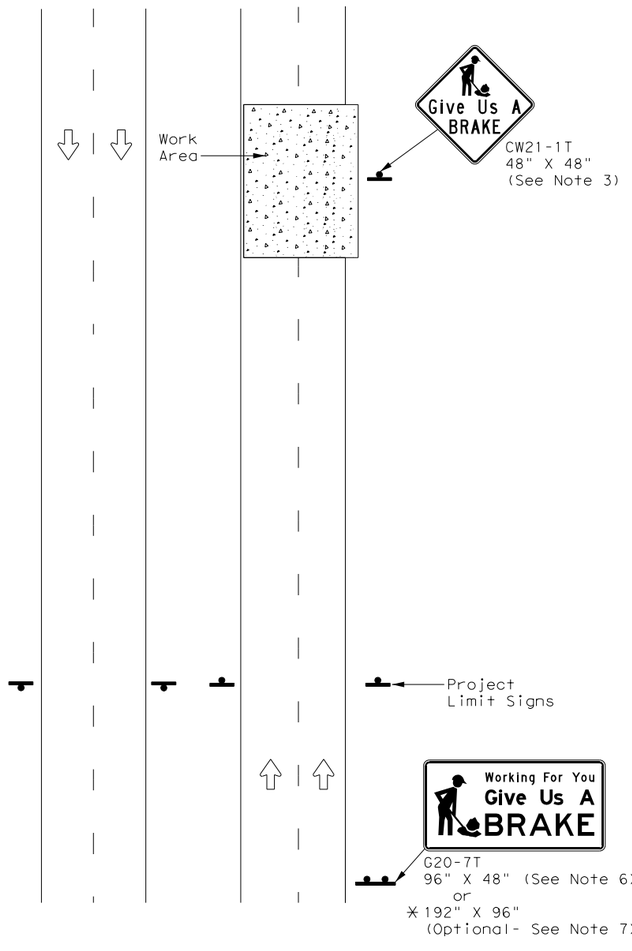
Texas Department of Transportation

Traffic Safety Division Standard

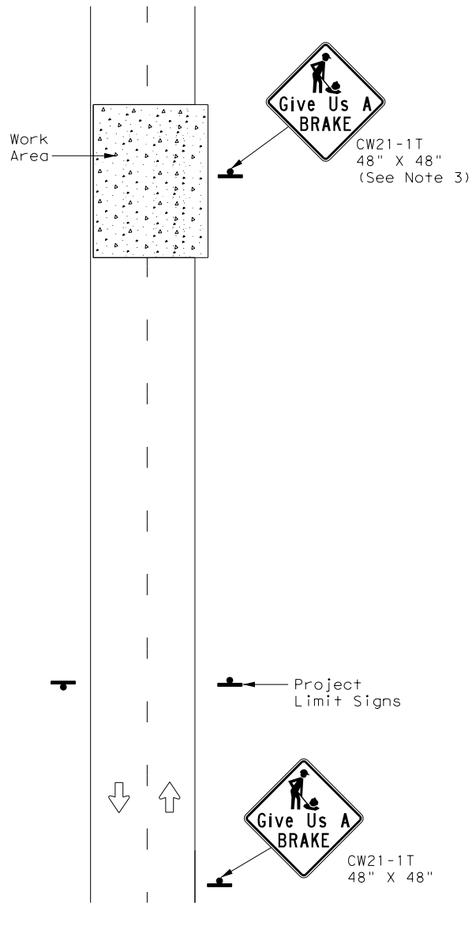
TREATMENT FOR VARIOUS EDGE CONDITIONS

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©TxDOT August 2000	CONT	SECT	JOB	HIGHWAY
REVISIONS				COVEL RD
03-01 08-01 9-21	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		74

DATE: 6/27/2025 2:08:04 PM
FILE: c:\projectwise\dannenbaum\workdir\jose.robles\d0171937\edgecon-21.dgn



DIVIDED HIGHWAY



UNDIVIDED HIGHWAY

SIGNS ARE SHOWN FOR ONE DIRECTION OF TRAVEL

✳ When the optional larger WORKING FOR YOU GIVE US A BRAKE (G20-7T) 192" x 96" sign is required, the locations shall be noted elsewhere in the plans.

SUMMARY OF LARGE SIGNS

BACKGROUND COLOR	SIGN DESIGNATION	SIGN	SIGN DIMENSIONS	REFLECTIVE SHEETING	SQ FT	GALVANIZED STRUCTURAL STEEL			DRILLED SHAFT 24" DIA. (LF)
						Size	(LF) ①	(LF) ②	
Orange	G20-7T	Working For You Give Us A BRAKE	96" X 48"	Type B_{FL} or C_{FL}	32	▲	▲	▲	▲
Orange	G20-7T	Working For You Give Us A BRAKE	192" X 96"	Type B_{FL} or C_{FL}	128	W8x18	16	17	12

▲ See Note 6 Below

LEGEND	
	Sign
	Large Sign
	Traffic Flow

DEPARTMENTAL MATERIAL SPECIFICATIONS	
PLYWOOD SIGN BLANKS	DMS-7100
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B_{FL} OR TYPE C_{FL}
BLACK	LEGEND & BORDERS	NON-REFLECTIVE ACRYLIC FILM

GENERAL NOTES

1. See BC and SMD sheets for additional sign support details.
2. Sign locations shall be approved by the Engineer.
3. For projects more than two miles in length, Give Us a BRAKE signs should be repeated halfway through the project. The Give Us a Brake (CW21-1T) may be used for this purpose.
4. Work zone speed limits are sometimes used in conjunction with GIVE US A BRAKE signing. See BC(3) for location and spacing of construction speed zone signing when required.
5. Give Us a Brake (CW21-1T) signs and supports shall be considered subsidiary to Item 502, "Barricades, Signs and Traffic Handling."
6. The 96" X 48" Working For You Give Us A BRAKE (G20-7T) may use a 1/2" or 5/8" plywood substrate or 0.125" aluminum sheeting substrate and may be supported by two 4" x 6" wood posts with drilled holes for breakaway as per BC(5) and will be subsidiary to Item 502.
7. The Working For You Give Us A BRAKE (G20-7T) 192" X 96" sign shall be paid for under the following specification items:
   Item 636 - Aluminum Signs
   Item 647 - Large Roadside Sign Supports and Assemblies.
   Item 416 - Drilled Shaft Foundations
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.

Texas Department of Transportation

Traffic Operations Division Standard

WORK ZONE "GIVE US A BRAKE" SIGNS

WZ(BRK)-13

FILE: wzbrk-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 1995	CONT	SECT	JOB	HIGHWAY
REVISIONS				COVEL RD
6-96 5-98 7-13	DIST	COUNTY		SHEET NO.
8-96 3-03	SAT	BEXAR		75

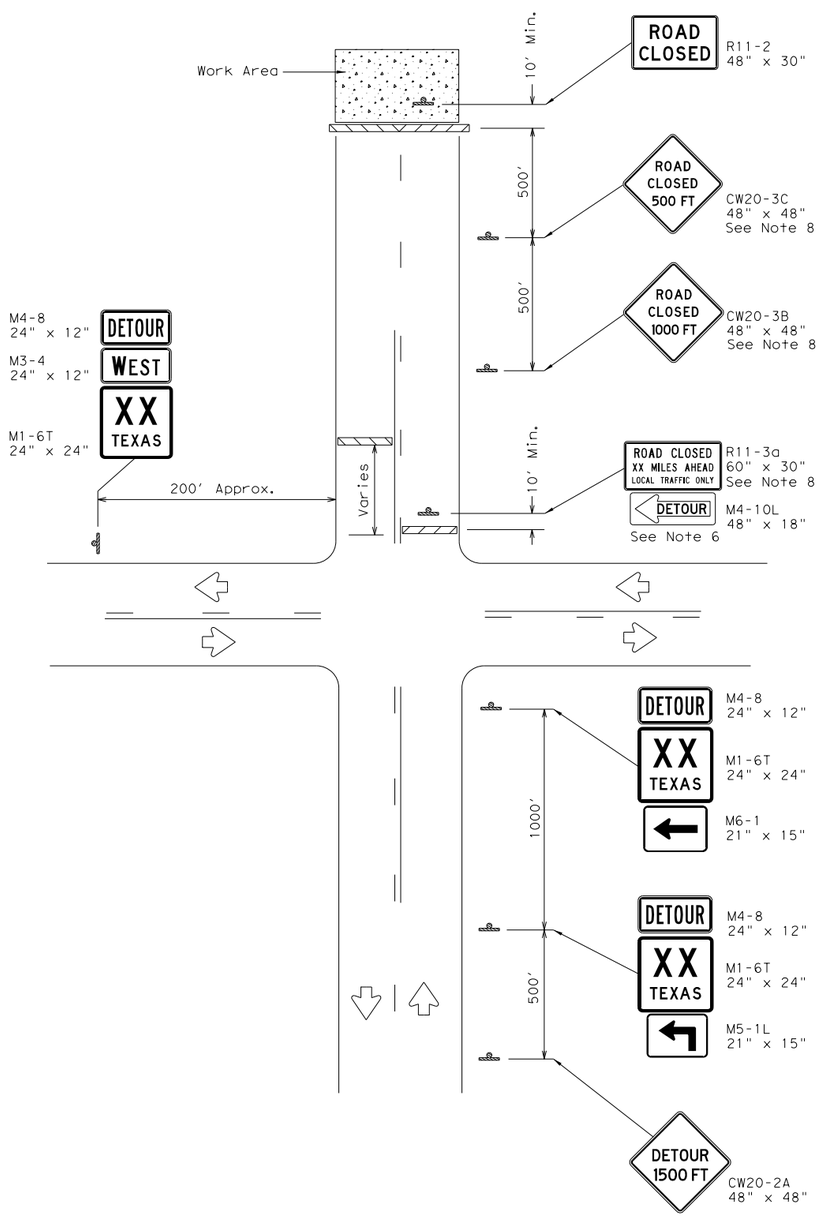
116

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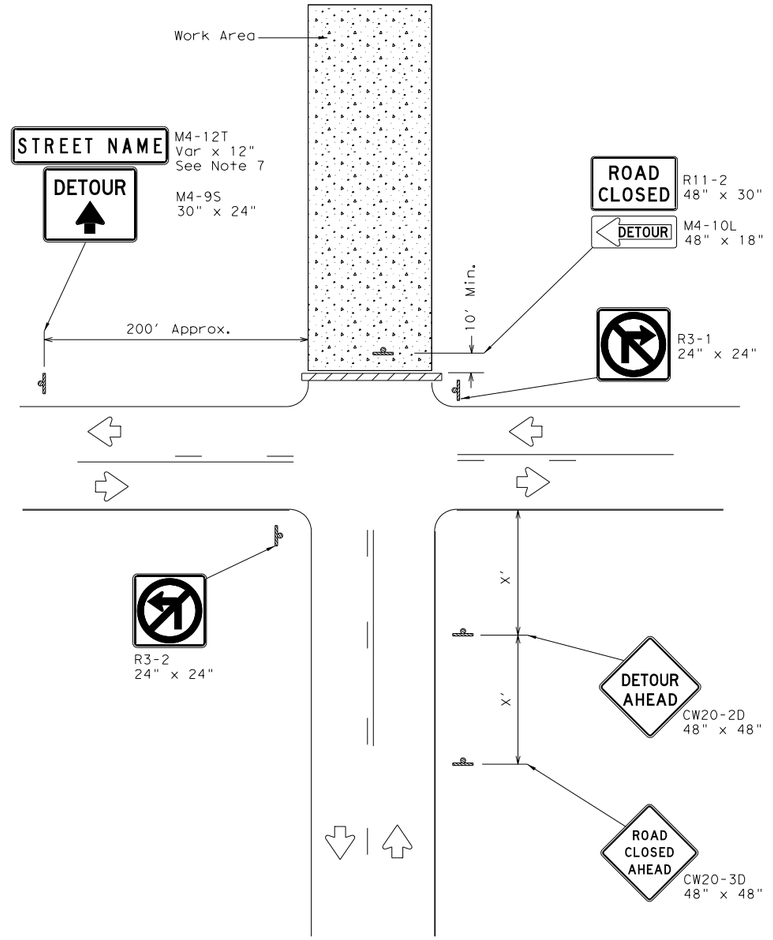
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ROAD CLOSURE BEYOND THE INTERSECTION

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

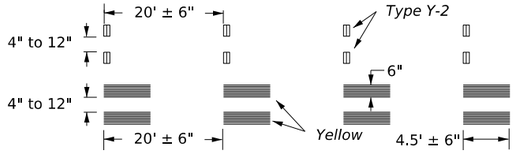
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©TxDOT August 1995	CONT	SECT	JOB	HIGHWAY
REVISIONS				COVEL RD
1-97 4-98 7-13	DIST	COUNTY		SHEET NO.
2-98 3-03	SAT	BEXAR		76

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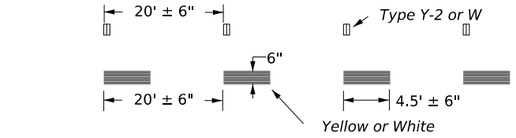
WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

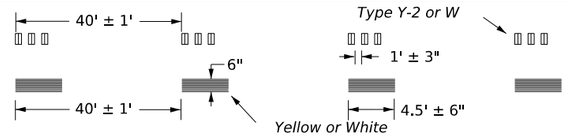


SINGLE NO-PASSING LINE or CHANNELIZATION LINE



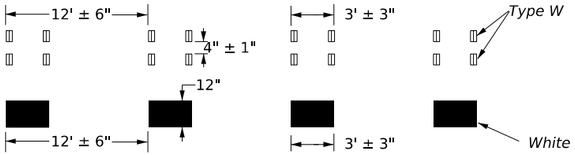
BROKEN LINES

(FOR CENTER LINE OR LANE LINE)

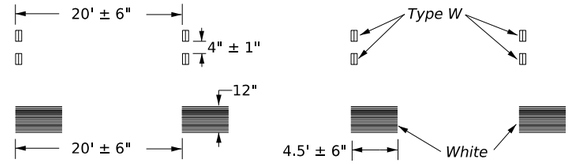


WIDE DOTTED LINES

(FOR LANE DROP LINES)



WIDE GORE MARKINGS



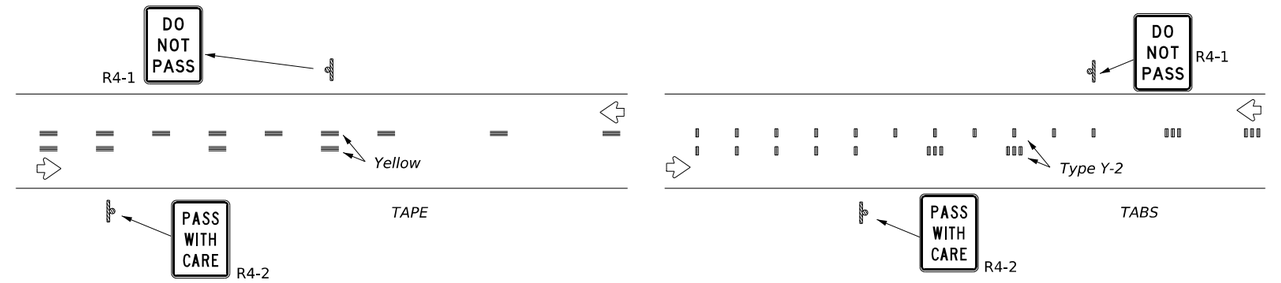
NOTES:

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.

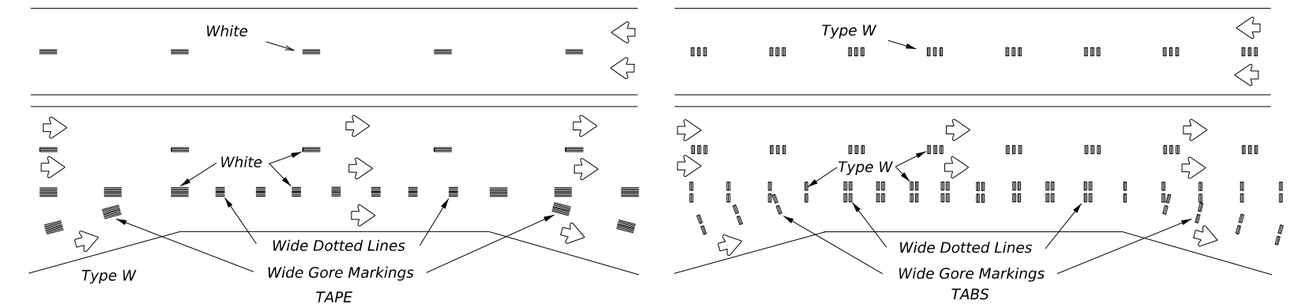
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

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.

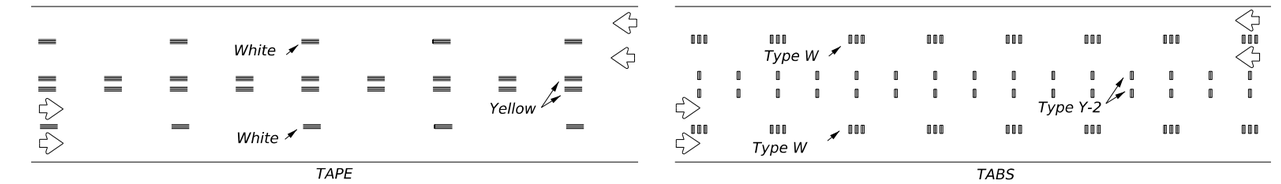
WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



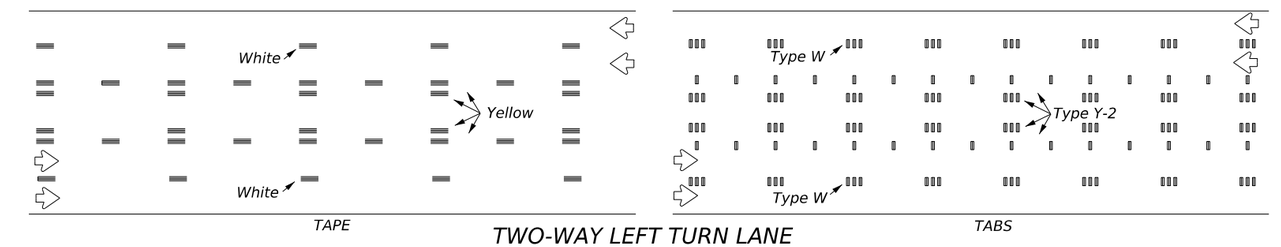
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



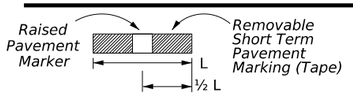
LANE LINES FOR DIVIDED HIGHWAY



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

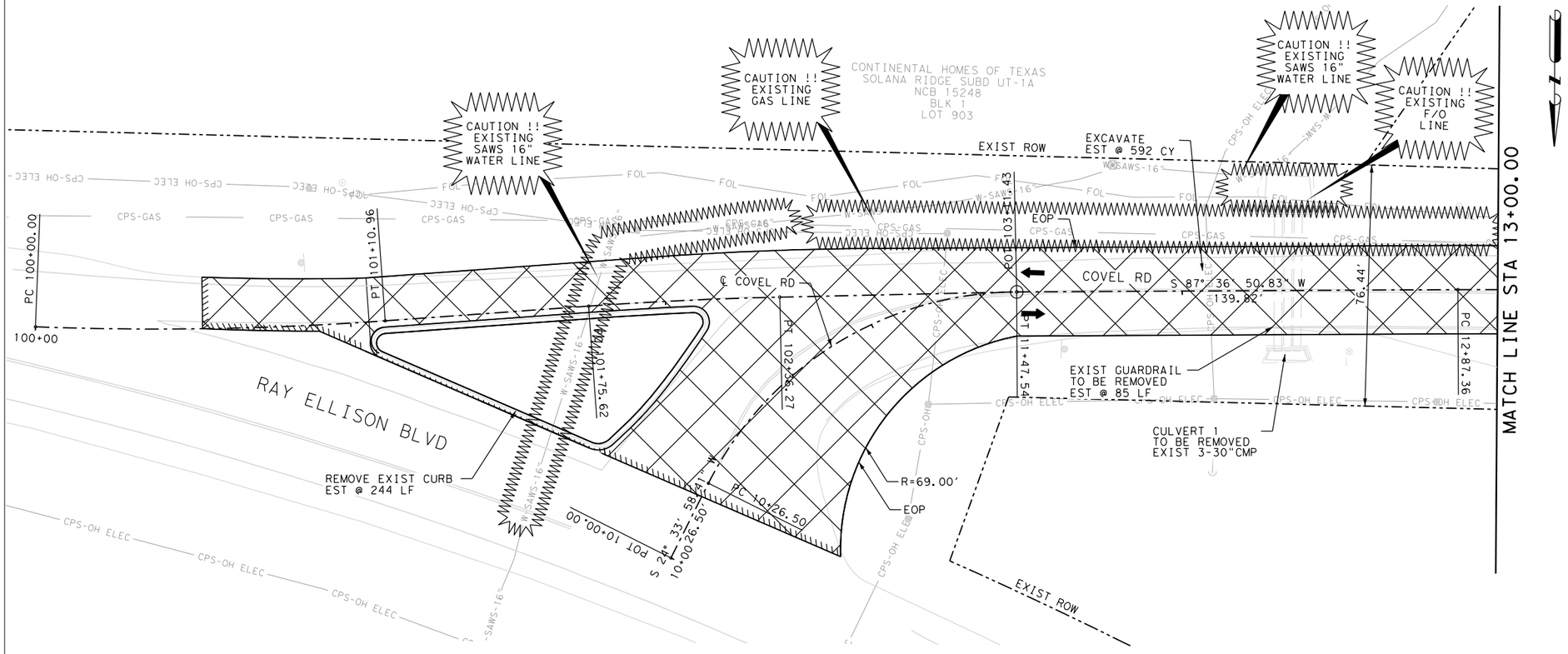
WORK ZONE SHORT TERM PAVEMENT MARKINGS

WZ(STPM)-23

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©TxDOT February 2023	CONT	SECT	JOB	HIGHWAY
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1-97 2-23	SAT	BEXAR		77
3-03				

111

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LEGEND

- EXIST ROW
- ROADWAY CENTERLINE
- PROPOSED LIMITS OF CONSTRUCTION
- EXISTING PAVEMENT TO BE REMOVED
- EXISTING DRIVEWAY/ SIDEWALK REMOVAL
- EXISTING TRAFFIC FLOW
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
- CPS-GAS — EXIST GAS LINE
- W-SAWS — EXIST WATER LINE
- WW-SAWS — EXIST WASTEWATER LINE
- AT&T-UG TEL — EXIST UNDERGROUND TELEPHONE LINE
- AT&T-OH TEL — EXIST OVERHEAD TELEPHONE LINE

NOTES:

1. THE UTILITY LOCATIONS SHOWN ARE APPROXIMATE ONLY. THE ACTUAL LOCATIONS AND DEPTHS OF UTILITIES SHOWN ON THE PLANS INCLUDING THOSE WHICH HAVE BEEN ADDED, ELIMINATED, ADJUSTED, AND/OR RELOCATED AFTER THE AFOREMENTIONED DATE OF PLAN PREPARATION MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO THE EXISTING UTILITIES DUE TO NEGLIGENCE OF THE CONTRACTOR OR DUE TO EXCAVATION OUTSIDE OF THE DEFINED CONSTRUCTION LIMITS OF THIS PROJECT. UNLESS SHOWN OTHERWISE ON THE PLANS, ALL EXISTING UTILITIES AND INFRASTRUCTURES DAMAGED BY THE CONTRACTOR SHALL BE REPLACED BY THE CONTRACTOR TO AN EQUAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE CITY.
2. REMOVAL OF EXISTING PAVEMENT TO BE PAID FOR UNDER COSA ITEM 104 "STREET EXCAVATION".
3. SEE "SIGNING & PAVEMENT MARKINGS" SHEETS FOR EXISTING SIGN REMOVAL.
4. ALL TREE/VEGETATION REMOVAL MUST BE FIELD VERIFIED BY THE INSPECTOR OR ENGINEER PRIOR TO REMOVAL.
5. TREE/SHRUB & CULVERT REMOVALS SHALL BE SUBSIDIARY TO PAY ITEM 101.1 "PREP ROW".
6. CONTRACTOR SHALL REMOVE THE EXISTING INFRASTRUCTURES INCLUDING PAVEMENTS ONLY FROM THE AREA (PHASE) THAT IS INTENDED FOR CONSTRUCTION AS SHOWN ON PLANS. THE STREETS INTENDED FOR CONSTRUCTION ON CURRENT PHASE SHALL FUNCTION NORMALLY AND SHALL NOT BE REMOVED.

ITEM	DESCRIPTION	UNIT	QTY
103.1	REMOVE CONCRETE CURB	LF	244
103.3	REMOVE SIDEWALKS AND DRIVEWAYS	SF	242
104.1	STREET EXCAVATION	CY	1125

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

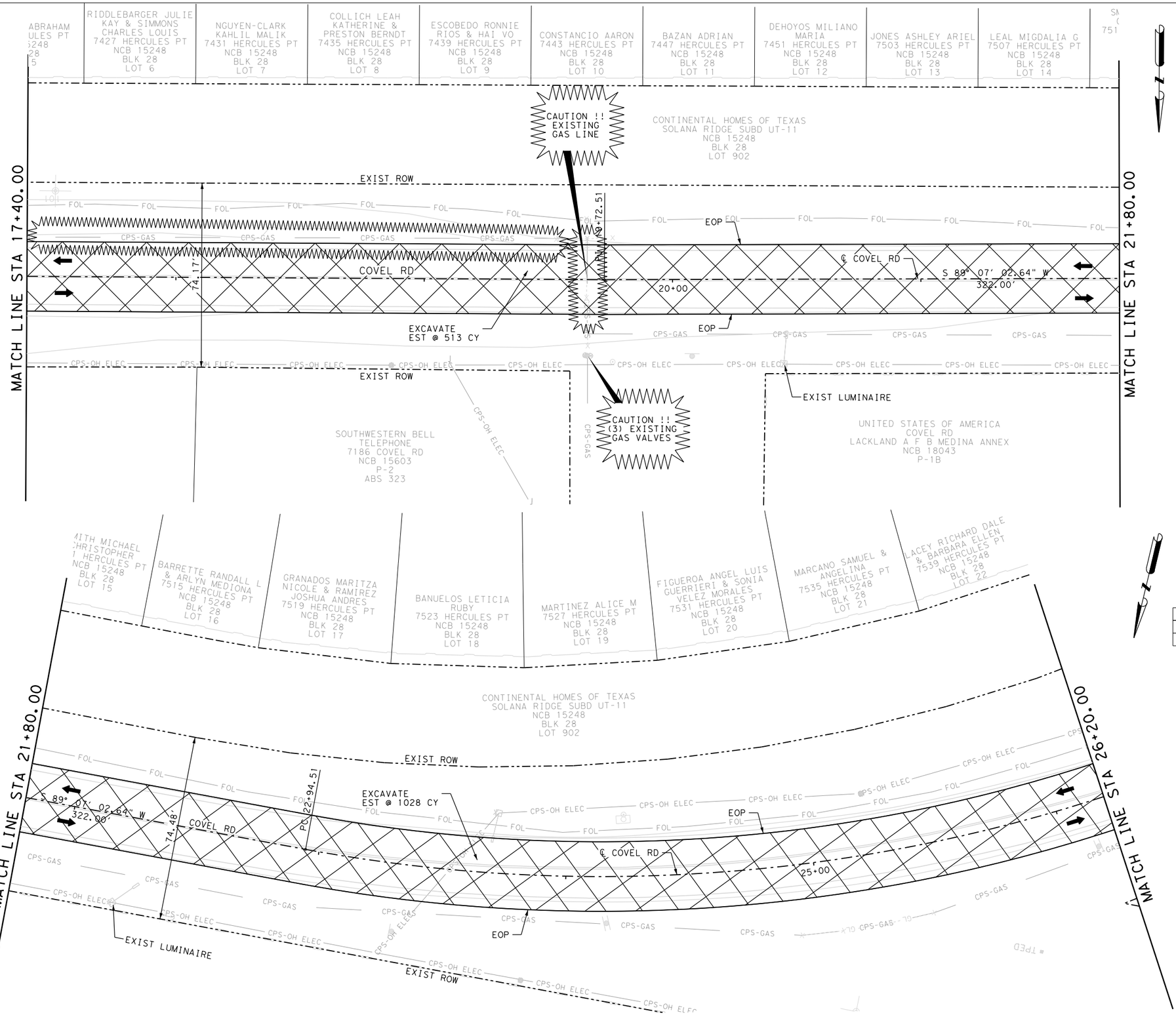
COVEL RD IMPROVEMENTS

REMOVAL LAYOUT

SHEET 1 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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6/27/2025
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LEGEND

- EXIST ROW
- ROADWAY CENTERLINE
- PROPOSED LIMITS OF CONSTRUCTION
- EXISTING PAVEMENT TO BE REMOVED
- EXISTING DRIVEWAY/ SIDEWALK REMOVAL
- EXISTING TRAFFIC FLOW
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
- CPS-GAS — EXIST GAS LINE
- W-SAWS — EXIST WATER LINE
- WW-SAWS — EXIST WASTEWATER LINE
- AT&T-UG TEL — EXIST UNDERGROUND TELEPHONE LINE
- AT&T-OH TEL — EXIST OVERHEAD TELEPHONE LINE

NOTES:

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2. REMOVAL OF EXISTING PAVEMENT TO BE PAID FOR UNDER COSA ITEM 104 "STREET EXCAVATION".
3. SEE "SIGNING & PAVEMENT MARKINGS" SHEETS FOR EXISTING SIGN REMOVAL.
4. ALL TREE/VEGETATION REMOVAL MUST BE FIELD VERIFIED BY THE INSPECTOR OR ENGINEER PRIOR TO REMOVAL.
5. TREE/SHRUB & CULVERT REMOVALS SHALL BE SUBSIDIARY TO PAY ITEM 101.1 "PREP ROW".
6. CONTRACTOR SHALL REMOVE THE EXISTING INFRASTRUCTURES INCLUDING PAVEMENTS ONLY FROM THE AREA (PHASE) THAT IS INTENDED FOR CONSTRUCTION AS SHOWN ON PLANS. THE STREETS INTENDED FOR CONSTRUCTION ON CURRENT PHASE SHALL FUNCTION NORMALLY AND SHALL NOT BE REMOVED.

ITEM	DESCRIPTION	UNIT	QTY
103.3	REMOVE SIDEWALKS AND DRIVEWAYS	SF	0
104.1	STREET EXCAVATION	CY	1541

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO

PUBLIC WORKS DEPARTMENT

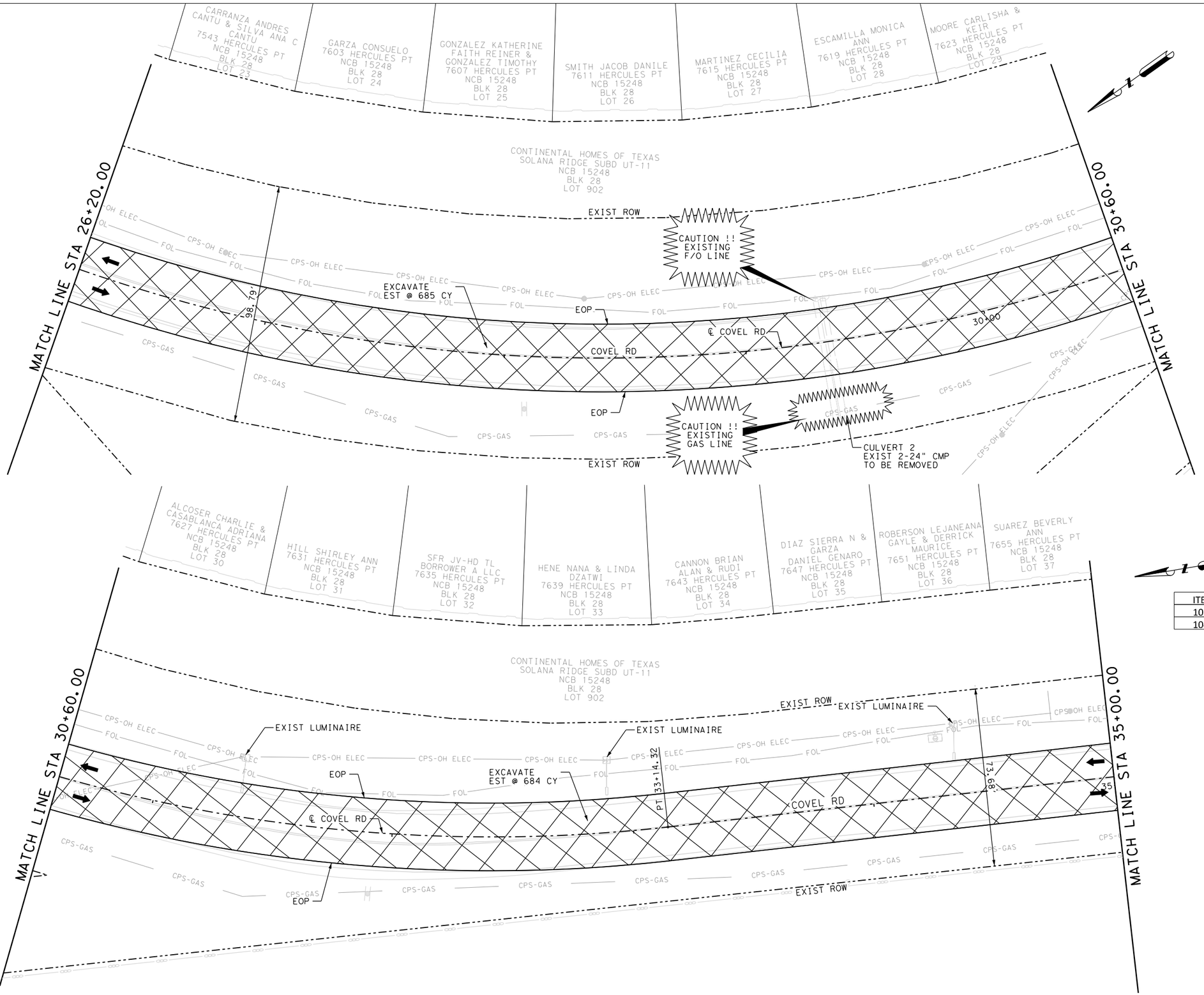
COVEL RD IMPROVEMENTS

REMOVAL LAYOUT

SHEET 2 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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jrobles
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LEGEND

- EXIST ROW
- ROADWAY CENTERLINE
- PROPOSED LIMITS OF CONSTRUCTION
- EXISTING PAVEMENT TO BE REMOVED
- EXISTING DRIVEWAY/ SIDEWALK REMOVAL
- EXISTING TRAFFIC FLOW
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
- CPS-GAS — EXIST GAS LINE
- W-SAWS — EXIST WATER LINE
- WW-SAWS — EXIST WASTEWATER LINE
- AT&T-UG TEL — EXIST UNDERGROUND TELEPHONE LINE
- AT&T-OH TEL — EXIST OVERHEAD TELEPHONE LINE

NOTES:

1. THE UTILITY LOCATIONS SHOWN ARE APPROXIMATE ONLY. THE ACTUAL LOCATIONS AND DEPTHS OF UTILITIES SHOWN ON THE PLANS INCLUDING THOSE WHICH HAVE BEEN ADDED, ELIMINATED, ADJUSTED, AND/OR RELOCATED AFTER THE AFOREMENTIONED DATE OF PLAN PREPARATION MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO THE EXISTING UTILITIES DUE TO NEGLIGENCE OF THE CONTRACTOR OR DUE TO EXCAVATION OUTSIDE OF THE DEFINED CONSTRUCTION LIMITS OF THIS PROJECT. UNLESS SHOWN OTHERWISE ON THE PLANS, ALL EXISTING UTILITIES AND INFRASTRUCTURES DAMAGED BY THE CONTRACTOR SHALL BE REPLACED BY THE CONTRACTOR TO AN EQUAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE CITY.
2. REMOVAL OF EXISTING PAVEMENT TO BE PAID FOR UNDER COSA ITEM 104 "STREET EXCAVATION".
3. SEE "SIGNING & PAVEMENT MARKINGS" SHEETS FOR EXISTING SIGN REMOVAL.
4. ALL TREE/VEGETATION REMOVAL MUST BE FIELD VERIFIED BY THE INSPECTOR OR ENGINEER PRIOR TO REMOVAL.
5. TREE/SHRUB & CULVERT REMOVALS SHALL BE SUBSIDIARY TO PAY ITEM 101.1 "PREP ROW".
6. CONTRACTOR SHALL REMOVE THE EXISTING INFRASTRUCTURES INCLUDING PAVEMENTS ONLY FROM THE AREA (PHASE) THAT IS INTENDED FOR CONSTRUCTION AS SHOWN ON PLANS. THE STREETS INTENDED FOR CONSTRUCTION ON CURRENT PHASE SHALL FUNCTION NORMALLY AND SHALL NOT BE REMOVED.

ITEM	DESCRIPTION	UNIT	QTY
103.3	REMOVE SIDEWALKS AND DRIVEWAYS	SF	0
104.1	STREET EXCAVATION	CY	1369

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER

6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

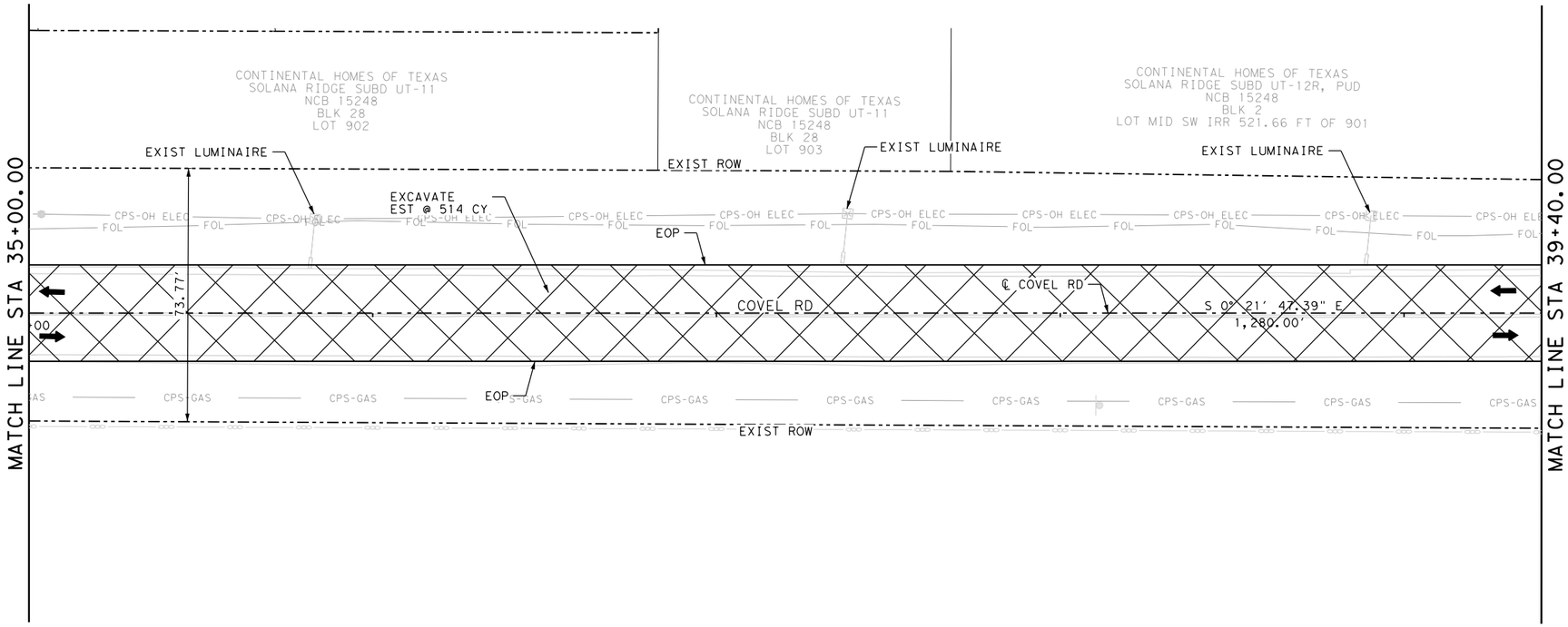
COVEL RD IMPROVEMENTS

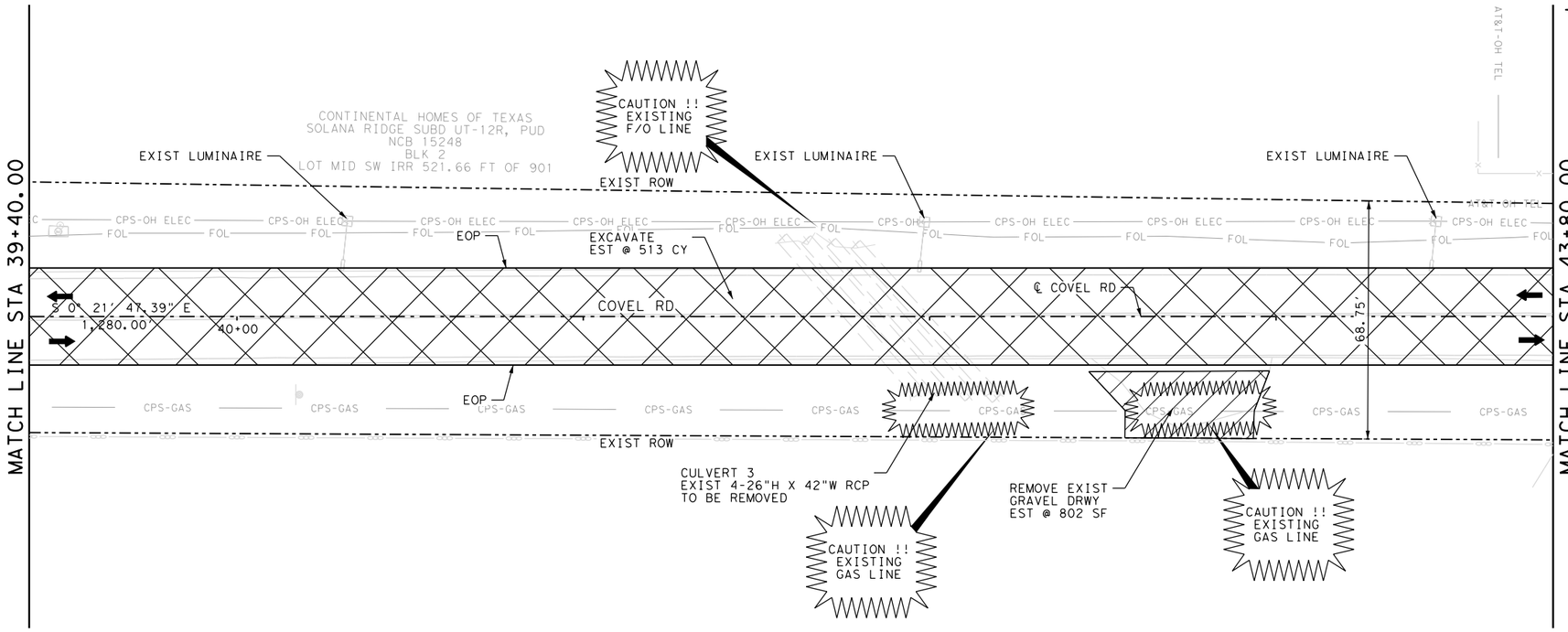
REMOVAL LAYOUT

SHEET 3 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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jrobles
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LEGEND

- EXIST ROW
- ROADWAY CENTERLINE
- PROPOSED LIMITS OF CONSTRUCTION
- EXISTING PAVEMENT TO BE REMOVED
- EXISTING DRIVEWAY/ SIDEWALK REMOVAL
- EXISTING TRAFFIC FLOW
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
- CPS-GAS — EXIST GAS LINE
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- WW-SAWS — EXIST WASTEWATER LINE
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ITEM	DESCRIPTION	UNIT	QTY
103.3	REMOVE SIDEWALKS AND DRIVEWAYS	SF	802
104.1	STREET EXCAVATION	CY	1027

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE. SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

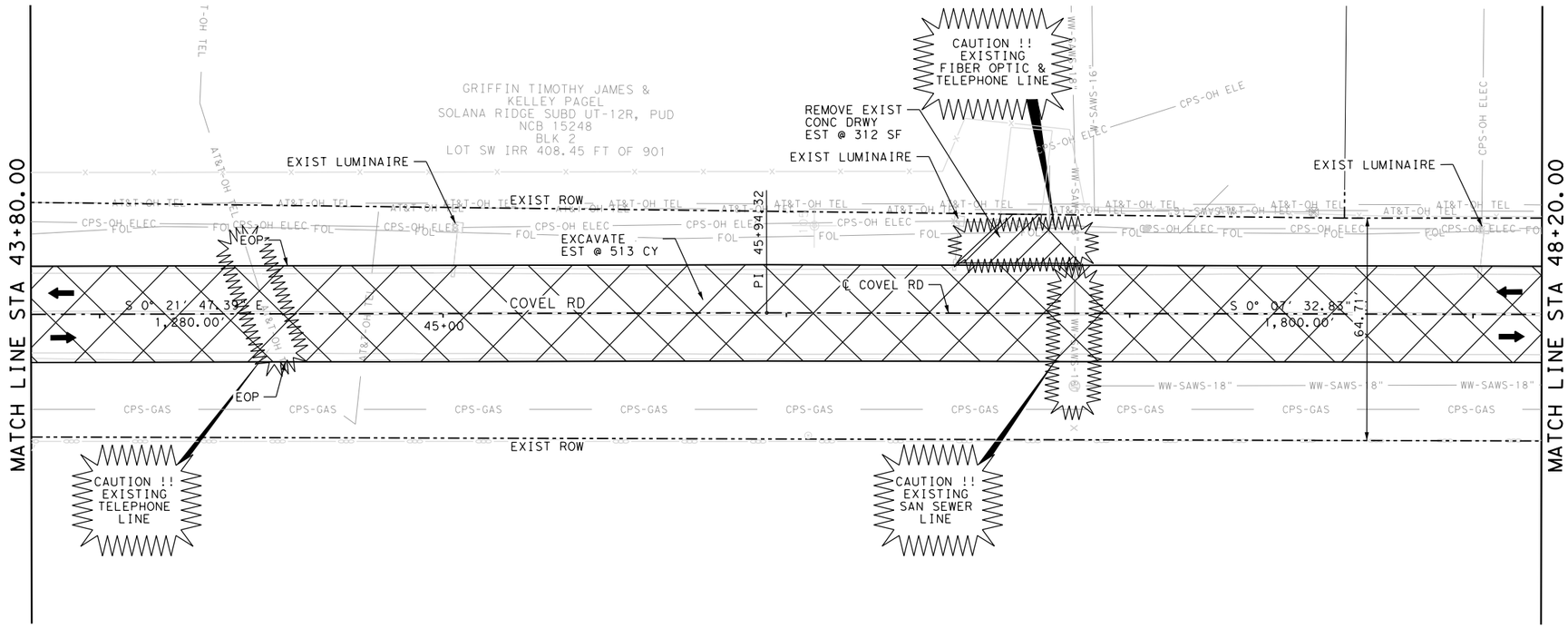
COVEL RD IMPROVEMENTS

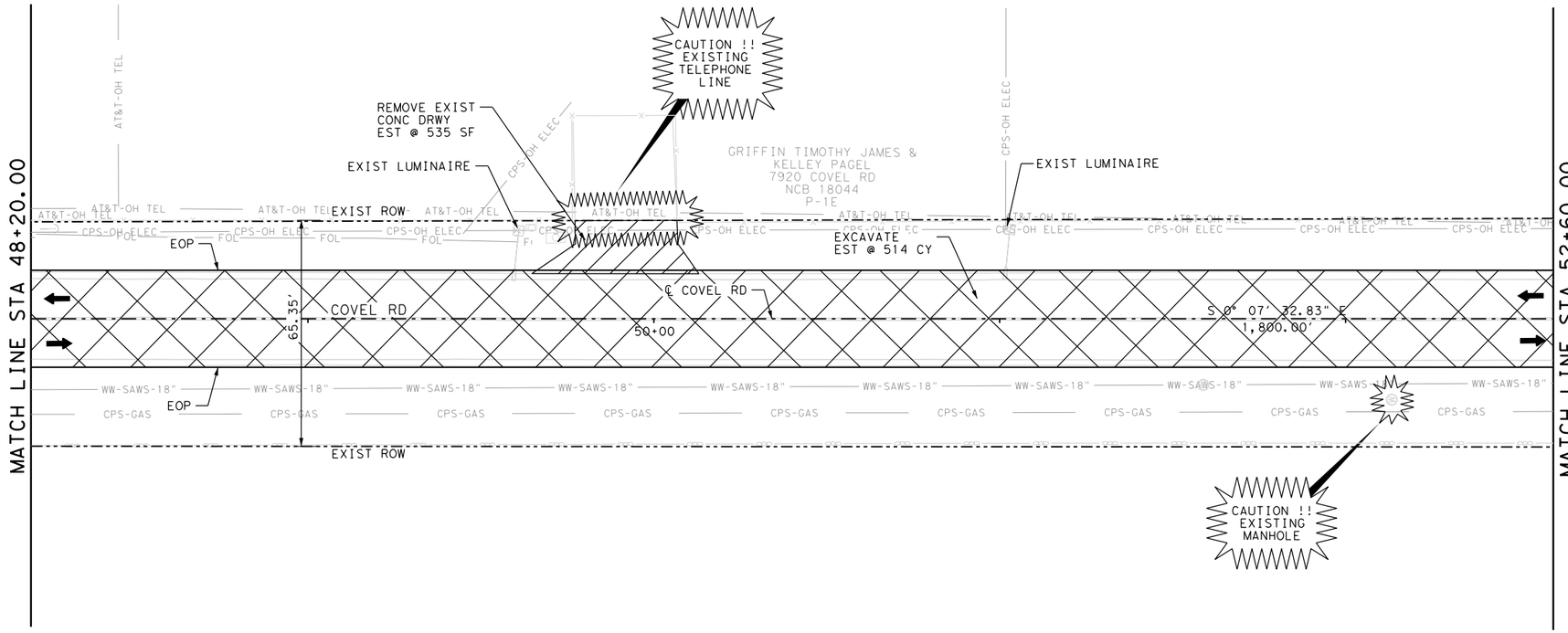
REMOVAL LAYOUT

SHEET 4 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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jrobles
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LEGEND

- EXIST ROW
- ROADWAY CENTERLINE
- PROPOSED LIMITS OF CONSTRUCTION
- EXISTING PAVEMENT TO BE REMOVED
- EXISTING DRIVEWAY/ SIDEWALK REMOVAL
- EXISTING TRAFFIC FLOW
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
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ITEM	DESCRIPTION	UNIT	QTY
103.3	REMOVE SIDEWALKS AND DRIVEWAYS	SF	847
104.1	STREET EXCAVATION	CY	1027

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE. SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

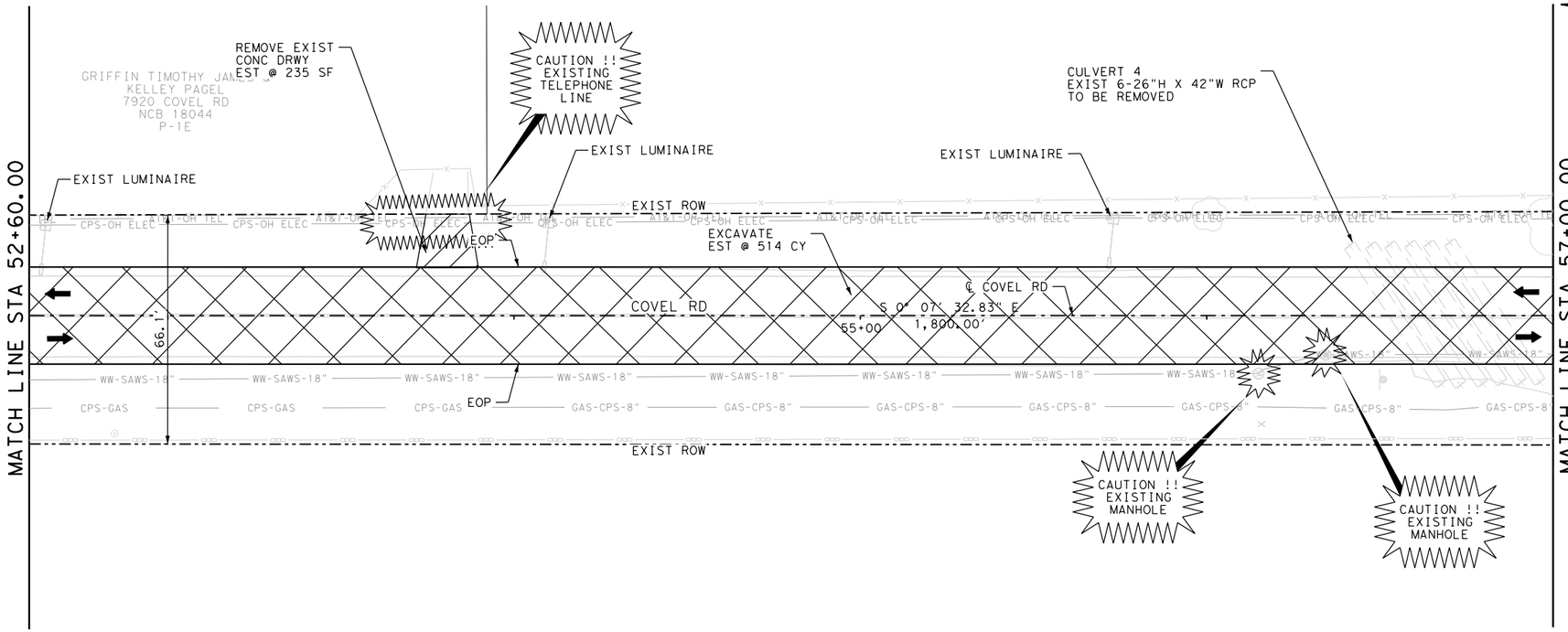
COVEL RD IMPROVEMENTS

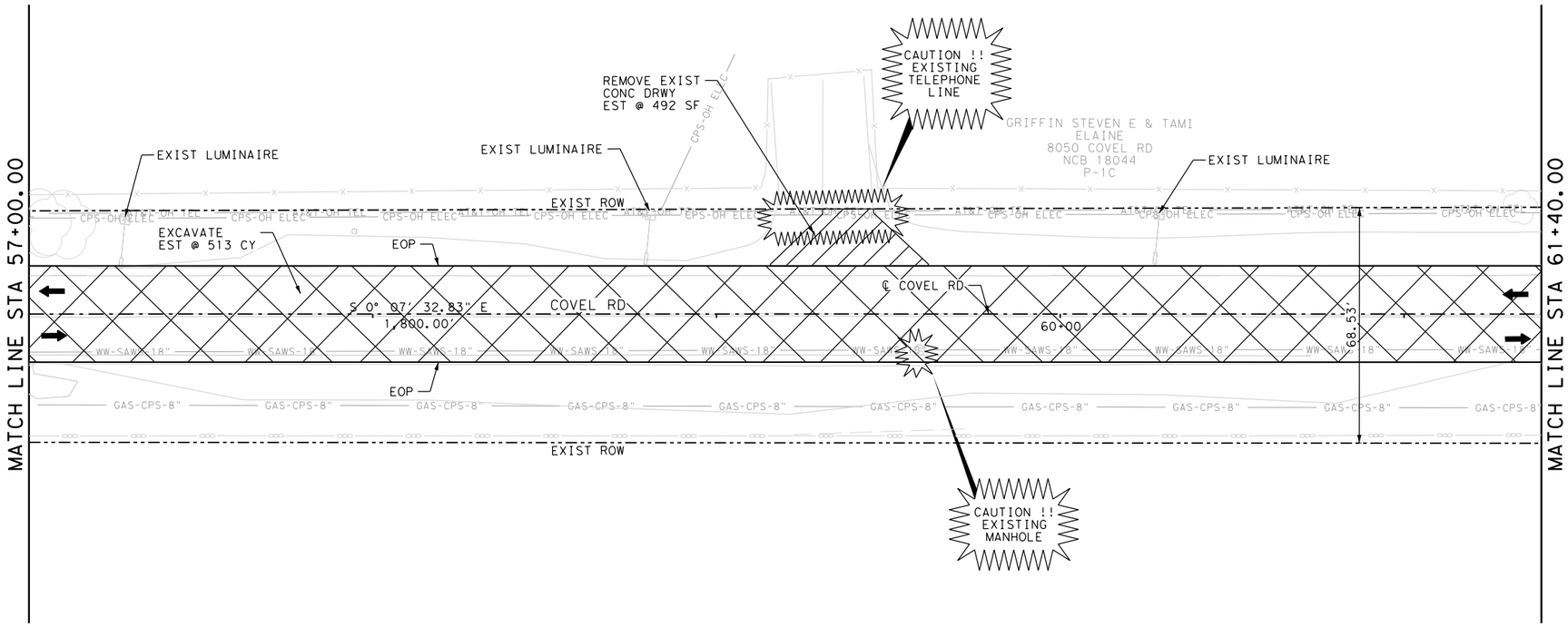
REMOVAL LAYOUT

SHEET 5 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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LEGEND

- EXIST ROW
- ROADWAY CENTERLINE
- PROPOSED LIMITS OF CONSTRUCTION
- EXISTING PAVEMENT TO BE REMOVED
- EXISTING DRIVEWAY/ SIDEWALK REMOVAL
- EXISTING TRAFFIC FLOW
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
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ITEM	DESCRIPTION	UNIT	QTY
103.3	REMOVE SIDEWALKS AND DRIVEWAYS	SF	727
104.1	STREET EXCAVATION	CY	1027

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE. SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

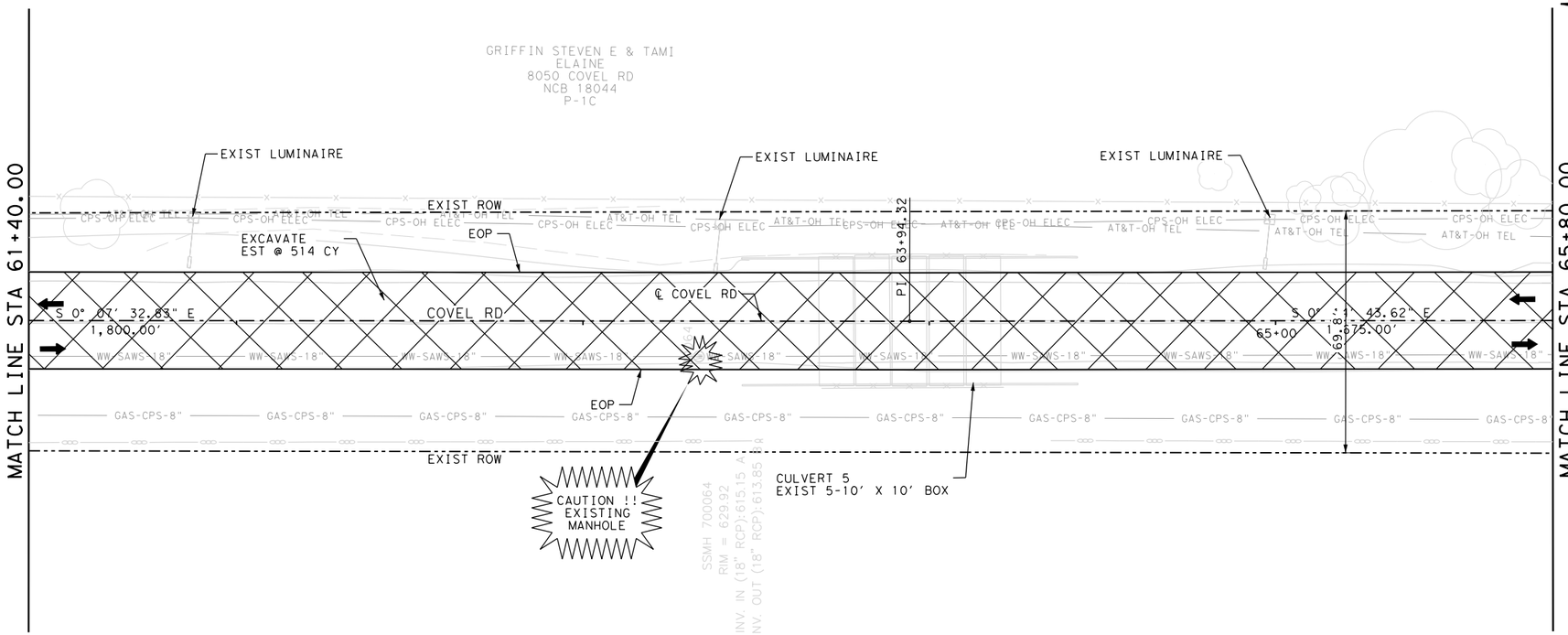
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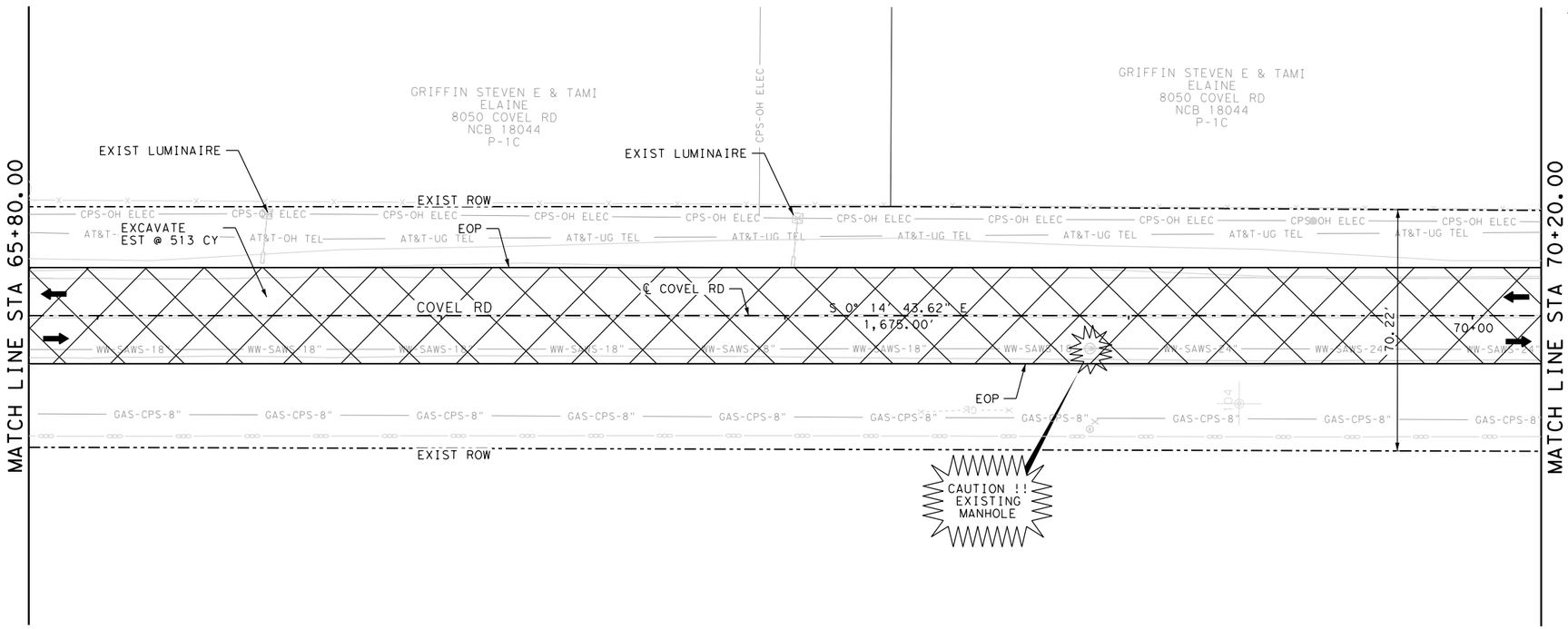
REMOVAL LAYOUT

SHEET 6 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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LEGEND

- EXIST ROW
- ROADWAY CENTERLINE
- PROPOSED LIMITS OF CONSTRUCTION
- EXISTING PAVEMENT TO BE REMOVED
- EXISTING DRIVEWAY/ SIDEWALK REMOVAL
- EXISTING TRAFFIC FLOW
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
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ITEM	DESCRIPTION	UNIT	QTY
103.3	REMOVE SIDEWALKS AND DRIVEWAYS	SF	0
104.1	STREET EXCAVATION	CY	1027

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE. SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

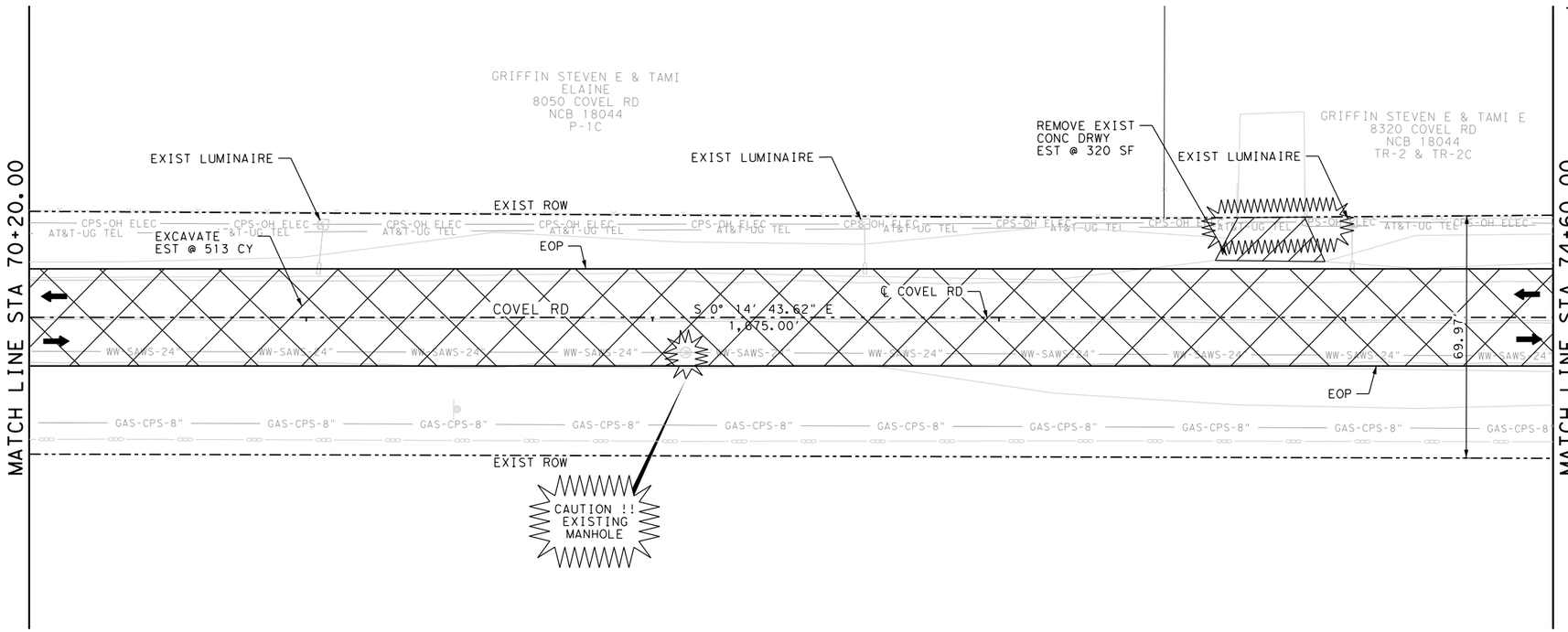
COVEL RD IMPROVEMENTS

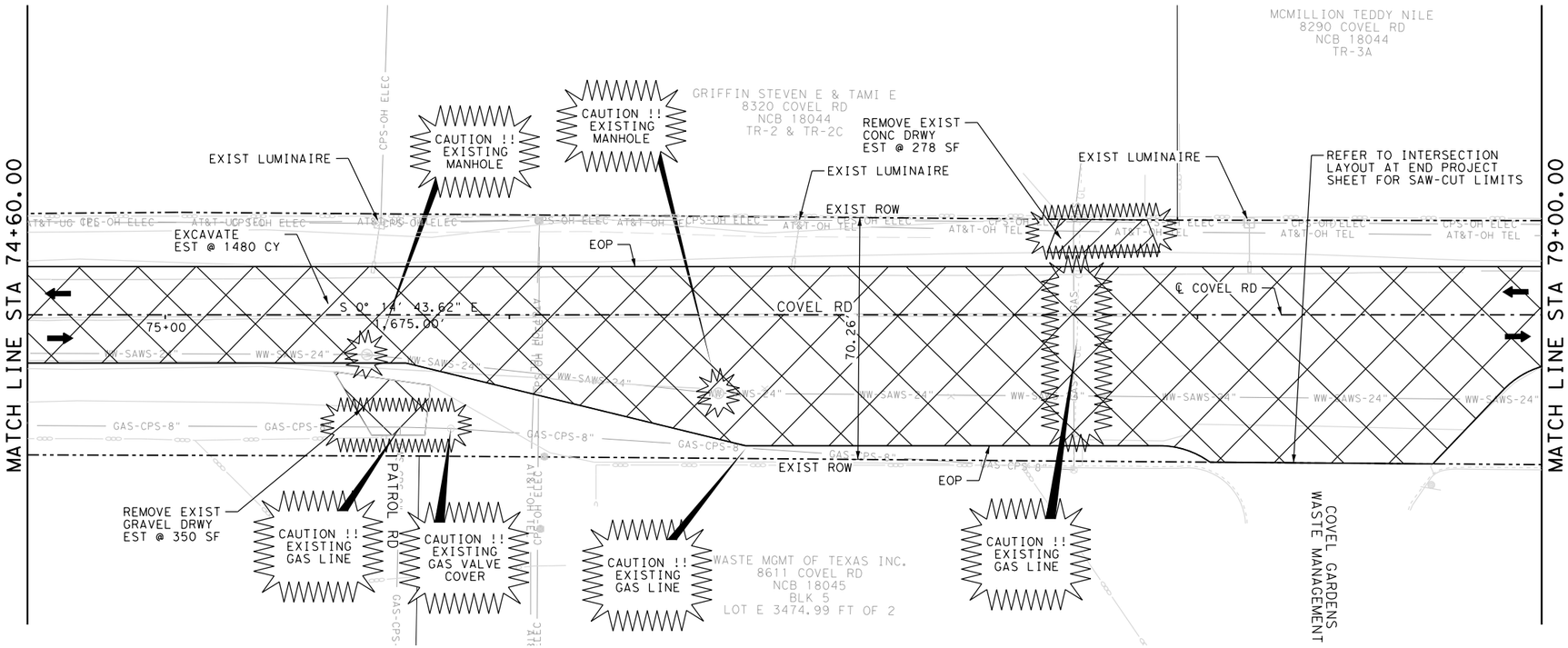
REMOVAL LAYOUT

SHEET 7 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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LEGEND

- EXIST ROW
- ROADWAY CENTERLINE
- PROPOSED LIMITS OF CONSTRUCTION
- EXISTING PAVEMENT TO BE REMOVED
- EXISTING DRIVEWAY/ SIDEWALK REMOVAL
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ITEM	DESCRIPTION	UNIT	QTY
103.3	REMOVE SIDEWALKS AND DRIVEWAYS	SF	948
104.1	STREET EXCAVATION	CY	1,993

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE. SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

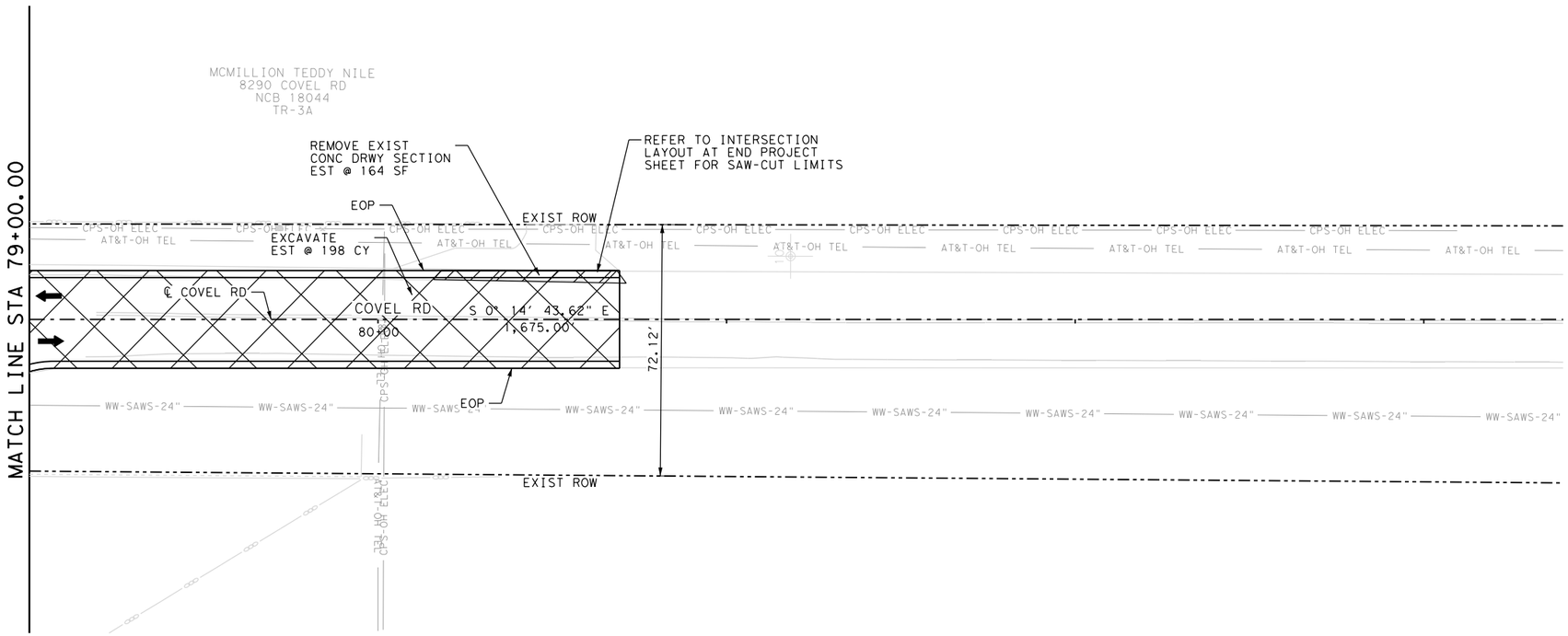
COVEL RD IMPROVEMENTS

REMOVAL LAYOUT

SHEET 8 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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LEGEND

- EXIST ROW
- ROADWAY CENTERLINE
- PROPOSED LIMITS OF CONSTRUCTION
- EXISTING PAVEMENT TO BE REMOVED
- EXISTING DRIVEWAY/ SIDEWALK REMOVAL
- EXISTING TRAFFIC FLOW
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4. ALL TREE/VEGETATION REMOVAL MUST BE FIELD VERIFIED BY THE INSPECTOR OR ENGINEER PRIOR TO REMOVAL.
5. TREE/SHRUB & CULVERT REMOVALS SHALL BE SUBSIDIARY TO PAY ITEM 101.1 "PREP ROW".
6. CONTRACTOR SHALL REMOVE THE EXISTING INFRASTRUCTURES INCLUDING PAVEMENTS ONLY FROM THE AREA (PHASE) THAT IS INTENDED FOR CONSTRUCTION AS SHOWN ON PLANS. THE STREETS INTENDED FOR CONSTRUCTION ON CURRENT PHASE SHALL FUNCTION NORMALLY AND SHALL NOT BE REMOVED.

ITEM	DESCRIPTION	UNIT	QTY
103.3	REMOVE SIDEWALKS AND DRIVEWAYS	SF	164
104.1	STREET EXCAVATION	CY	198

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE. SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

REMOVAL LAYOUT

SHEET 9 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: DS	DSGN. BY: DS	CHKD. BY: RT	SHT NO.: 86

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6/27/2025
jrobles
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Alignment name: HALN_COVEL_RD

* Alignment description:

* Alignment style:

*

	STATION	NORTHING	EASTING
Element: Linear			
POB( )	10+00.0000 R1	13681288.5376	2083383.9390
PC( )	10+26.5000 R1	13681264.4363	2083372.9217
Tangential Direction:	S 24.6 W		
Tangential Length:	26.5000		
Element: Circular			
PC( )	10+26.5000 R1	13681264.4363	2083372.9217
PI( )	10+93.9713 R1	13681203.0724	2083344.8709
CC( )		13681310.1682	2083272.8788
PT( )	11+47.5433 R1	13681200.2636	2083277.4580
Radius:	110.0000		
Delta:	63.0 Right		
Degree of Curvature(Arc):	52.1		
Length:	121.0433		
Tangent:	67.4713		
Chord:	115.0281		
Middle Ordinate:	16.2336		
External:	19.0441		
Tangent Direction:	S 24.6 W		
Radial Direction:	N 65.4 W		
Chord Direction:	S 56.1 W		
Radial Direction:	N 2.4 W		
Tangent Direction:	S 87.6 W		
Element: Linear			
PT( )	11+47.5433 R1	13681200.2636	2083277.4580
PC( )	12+87.3645 R1	13681194.4429	2083137.7580
Tangential Direction:	S 87.6 W		
Tangential Length:	139.8213		
Element: Circular			
PC( )	12+87.3645 R1	13681194.4429	2083137.7580
PI( )	13+05.4690 R1	13681193.6892	2083119.6691
CC( )		13682243.5327	2083094.0471
PT( )	13+23.5700 R1	13681193.5596	2083101.5651
Radius:	1050.0000		
Delta:	2.0 Right		
Degree of Curvature(Arc):	5.5		
Length:	36.2055		
Tangent:	18.1045		
Chord:	36.2037		
Middle Ordinate:	0.1560		
External:	0.1561		
Tangent Direction:	S 87.6 W		
Radial Direction:	N 2.4 W		
Chord Direction:	S 88.6 W		
Radial Direction:	N 0.4 W		
Tangent Direction:	S 89.6 W		
Element: Linear			
PT( )	13+23.5700 R1	13681193.5596	2083101.5651
PI( )	19+72.5076 R1	13681188.9132	2082452.6441
Tangential Direction:	S 89.6 W		
Tangential Length:	648.9377		
Element: Linear			
PI( )	19+72.5076 R1	13681188.9132	2082452.6441
PC( )	22+94.5076 R1	13681183.9532	2082130.6823
Tangential Direction:	S 89.1 W		
Tangential Length:	322.0000		
Element: Circular			
PC( )	22+94.5076 R1	13681183.9532	2082130.6823
PI( )	29+41.6143 R1	13681173.9854	2081483.6524
CC( )		13680531.0307	2082140.7408
PT( )	33+14.3176 R1	13680526.8917	2081487.7540
Radius:	653.0000		
Delta:	89.5 Left		
Degree of Curvature(Arc):	8.8		
Length:	1019.8100		
Tangent:	647.1067		
Chord:	919.2859		
Middle Ordinate:	189.1710		
External:	266.3237		
Tangent Direction:	S 89.1 W		
Radial Direction:	N 0.9 W		
Chord Direction:	S 44.4 W		
Radial Direction:	S 89.6 W		
Tangent Direction:	S 0.4 E		
Element: Linear			
PT( )	33+14.3176 R1	13680526.8917	2081487.7540
PI( )	45+94.3176 R1	13679246.9175	2081495.8671
Tangential Direction:	S 0.4 E		
Tangential Length:	1280.0000		
Element: Linear			
PI( )	45+94.3176 R1	13679246.9175	2081495.8671
PI( )	63+94.3176 R1	13677446.9218	2081499.8187
Tangential Direction:	S 0.1 E		
Tangential Length:	1800.0000		
Element: Linear			
PI( )	63+94.3176 R1	13677446.9218	2081499.8187
POE( )	80+69.3176 R1	13675771.9372	2081506.9942
Tangential Direction:	S 0.2 E		
Tangential Length:	1675.0000		

STATE OF TEXAS
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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

HORIZONTAL ALIGNMENT DATA

SHEET 1 OF 2

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: FR	DSGN. BY: JAR	CHKD. BY: LC	SHT NO.: 87

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6/27/2025
jrobles
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Alignment name: RAY ELLISON BASE LINE
* Alignment description:
* Alignment style: Road_Shoulder_Outside
*

	STATION	NORTHING	EASTING
Element: Circular			
PC( )	100+00.0000 R1	13681222.6745	2083587.9459
PI( )	100+55.5380 R1	13681222.7867	2083532.4080
CC( )		13680222.6765	2083585.9258
PT( )	101+10.9620 R1	13681216.7482	2083477.1992
Radius:	1000.0000		
Delta:	6.4 Left		
Degree of Curvature(Arc):	5.7		
Length:	110.9620		
Tangent:	55.5380		
Chord:	110.9051		
Middle Ordinate:	1.5387		
External:	1.5410		
Tangent Direction:	N 89.9 W		
Radial Direction:	N 0.1 E		
Chord Direction:	S 86.9 W		
Radial Direction:	N 6.2 W		
Tangent Direction:	S 83.8 W		
Element: Linear			
PT( )	101+10.9620 R1	13681216.7482	2083477.1992
PC( )	101+75.6160 R1	13681209.7186	2083412.9286
Tangential Direction:	S 83.8 W		
Tangential Length:	64.6539		
Element: Circular			
PC( )	101+75.6160 R1	13681209.7186	2083412.9286
PI( )	102+05.9512 R1	13681206.4204	2083382.7732
CC( )		13682402.6046	2083282.4566
PT( )	102+36.2735 R1	13681204.6500	2083352.4897
Radius:	1200.0000		
Delta:	2.9 Right		
Degree of Curvature(Arc):	4.8		
Length:	60.6575		
Tangent:	30.3352		
Chord:	60.6510		
Middle Ordinate:	0.3832		
External:	0.3834		
Tangent Direction:	S 83.8 W		
Radial Direction:	N 6.2 W		
Chord Direction:	S 85.2 W		
Radial Direction:	N 3.3 W		
Tangent Direction:	S 86.7 W		
Element: Linear			
PT( )	102+36.2735 R1	13681204.6500	2083352.4897
POE( )	103+11.4333 R1	13681200.2636	2083277.4580
Tangential Direction:	S 86.7 W		
Tangential Length:	75.1598		

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
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6/27/2025

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T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

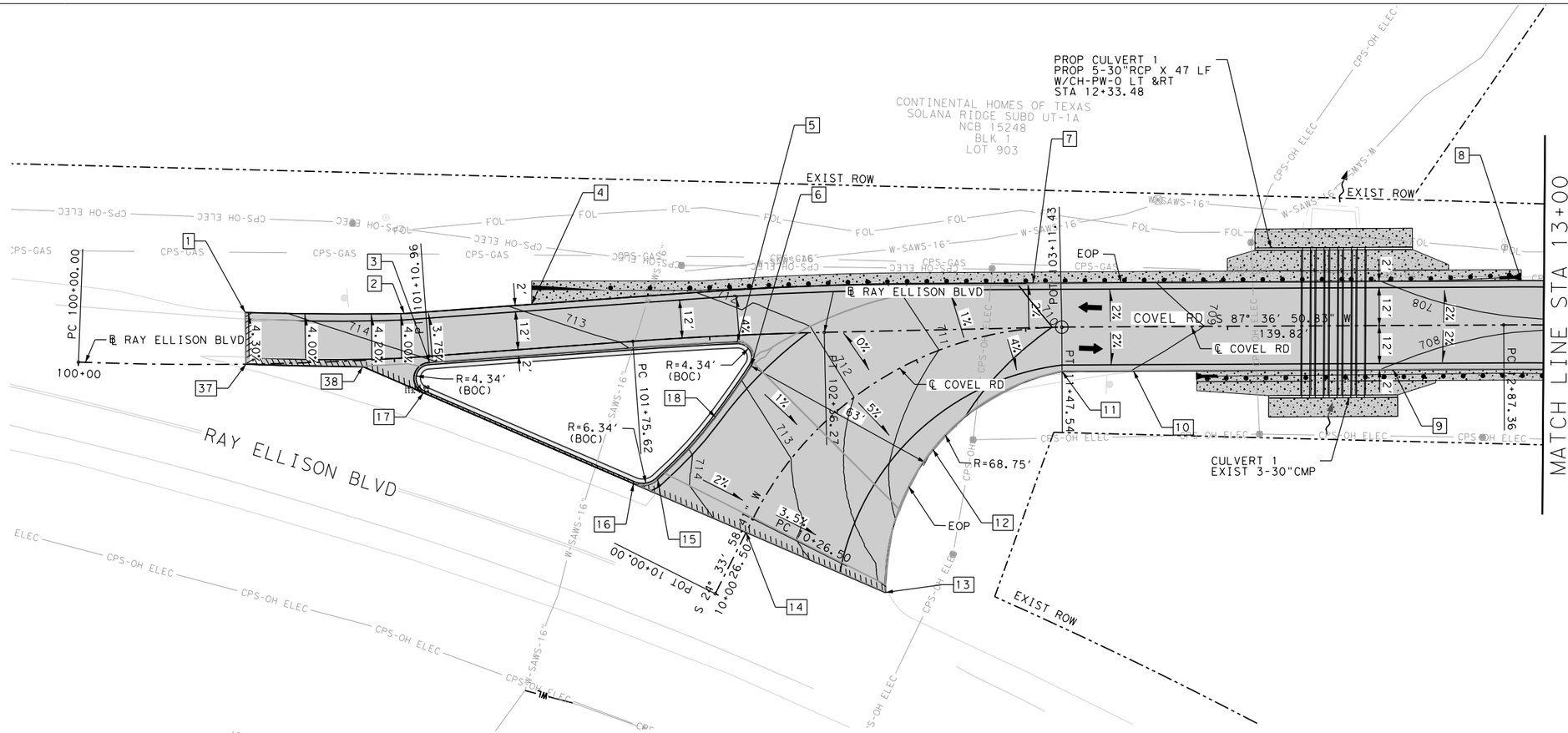
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

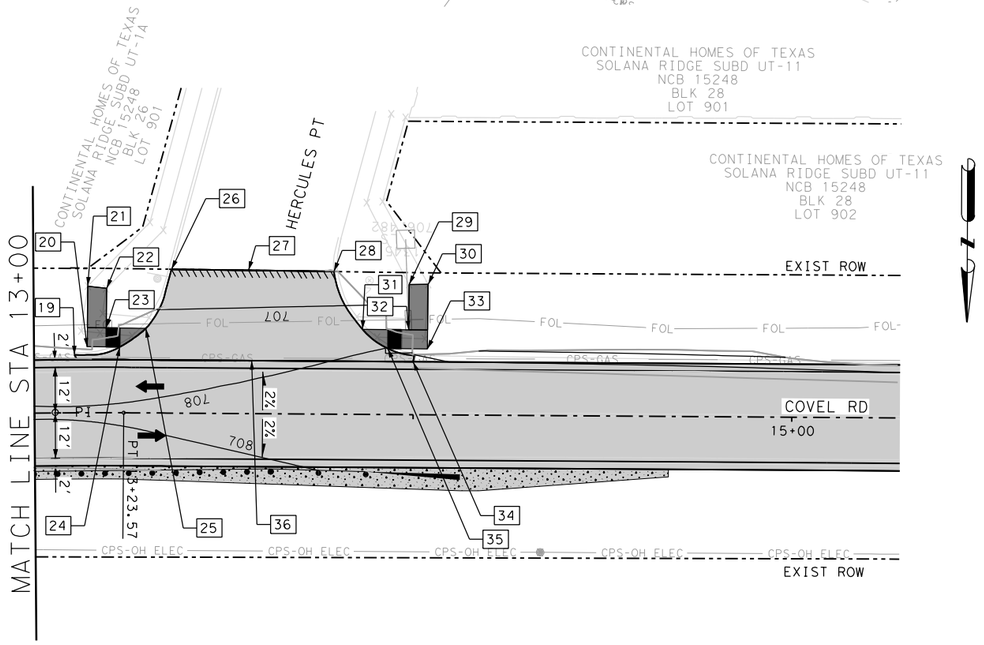
COVEL RD IMPROVEMENTS

HORIZONTAL ALIGNMENT DATA

SHEET 2 OF 2

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: FR	DSGN. BY: JAR	CHKD. BY: LC	SHT NO.: 88





POINT	STATION	ALIGNMENT	O/S(FT)	LT/RT	ELEV. (FT)
1	100+53.00	RAY ELLISON	16.35	LT	714.17
2	101+04.03	RAY ELLISON	14.00	LT	713.56
3	101+11.00	RAY ELLISON	2.00	RT	714.05
4	101+44.57	RAY ELLISON	14.00	LT	712.86
5	102+08.63	RAY ELLISON	2.00	RT	712.41
6	102+12.73	RAY ELLISON	9.89	RT	712.81
7	103+02.61	RAY ELLISON	14.14	LT	709.86
8	12+92.91	COVEL RD	14.00	LT	707.76
9	12+52.33	COVEL RD	14.00	RT	707.96
10	11+70.16	COVEL RD	14.00	RT	708.98
11	11+47.54	COVEL RD	14.00	RT	709.42
12	10+90.29	COVEL RD	27.52	RT	710.26
13	10+24.49	COVEL RD	47.91	RT	713.22
14	10+21.75	COVEL RD	0.00	-	713.55
15	10+24.11	COVEL RD	32.50	LT	714.17
16	10+19.52	COVEL RD	38.77	LT	714.44
17	101+08.43	RAY ELLISON	11.43	RT	714.61
18	10+45.43	COVEL RD	27.07	LT	713.5
19	13+10.62	COVEL RD	15.27	LT	707.73
20	13+13.96	COVEL RD	17.42	LT	707.53
21	13+14.14	COVEL RD	33.42	LT	707.44
22	13+18.98	COVEL RD	32.87	LT	707.39
23	13+18.91	COVEL RD	22.37	LT	707.75
24	13+22.41	COVEL RD	17.36	LT	707.7
25	13+29.26	COVEL RD	22.33	LT	707.55
26	13+35.92	COVEL RD	37.97	LT	706.49
27	13+56.28	COVEL RD	37.83	LT	706.32
28	13+78.84	COVEL RD	37.67	LT	706.26
29	13+98.72	COVEL RD	34.38	LT	707.15
30	14+03.72	COVEL RD	34.43	LT	707.29
31	13+86.48	COVEL RD	22.43	LT	707.82
32	13+98.68	COVEL RD	22.40	LT	707.6
33	14+03.67	COVEL RD	17.39	LT	708.03
34	13+99.91	COVEL RD	14.00	LT	708.13
35	13+93.20	COVEL RD	17.41	LT	708.03
36	13+57.28	COVEL RD	14.00	LT	707.92
37	100+53.00	RAY ELLISON	0.00	-	714.87
38	100+89.91	RAY ELLISON	2.00	RT	714.37

LEGEND

- EXIST ROW
- PROPOSED LIMITS OF CONSTRUCTION & SAWCUT LIMITS
- PROPOSED 9.5" CRCP, 4" ACP, & 6" LIME TREATED SUBGRADE
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED BRIDGE 3" MILL & OVERLAY
- PROPOSED RIPRAP
- (D#) DRIVEWAY NUMBER
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
- CPS-GAS — EXIST GAS LINE
- W-SAWS — EXIST WATER LINE
- WW-SAWS — EXIST WASTE WATER LINE
- AT&T-UG TEL — EXIST UNDERGROUND TELEPHONE LINE
- AT&T-OH TEL — EXIST OVERHEAD TELEPHONE LINE
- EXIST CHAINLINK FENCE LINE
- EXIST WIRE FRAME FENCE LINE

NOTES:

1. UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY DEPTH AND LOCATIONS PRIOR TO EXCAVATION. SEE UTILITY LAYOUTS FOR MORE INFORMATION.

2. REFER TO "PROJECT LAYOUT" SHEET FOR MORE INFORMATION.

3. SAWCUT SHALL BE SUBSIDIARY TO STREET EXCAVATION COSA BID ITEM 104.1.

4. DETECTABLE WARNING SURFACE SHALL BE SUBSIDIARY TO COSA BID ITEM 502.1.

5. CONTRACTOR SHALL NOTIFY THE COSA ENGINEER IN FORM OF RFI SHOULD ELEVATION DISCREPANCIES BE FOUND ON THE FIELD PRIOR TO CONSTRUCTION.

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
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PROFESSIONAL ENGINEER

6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

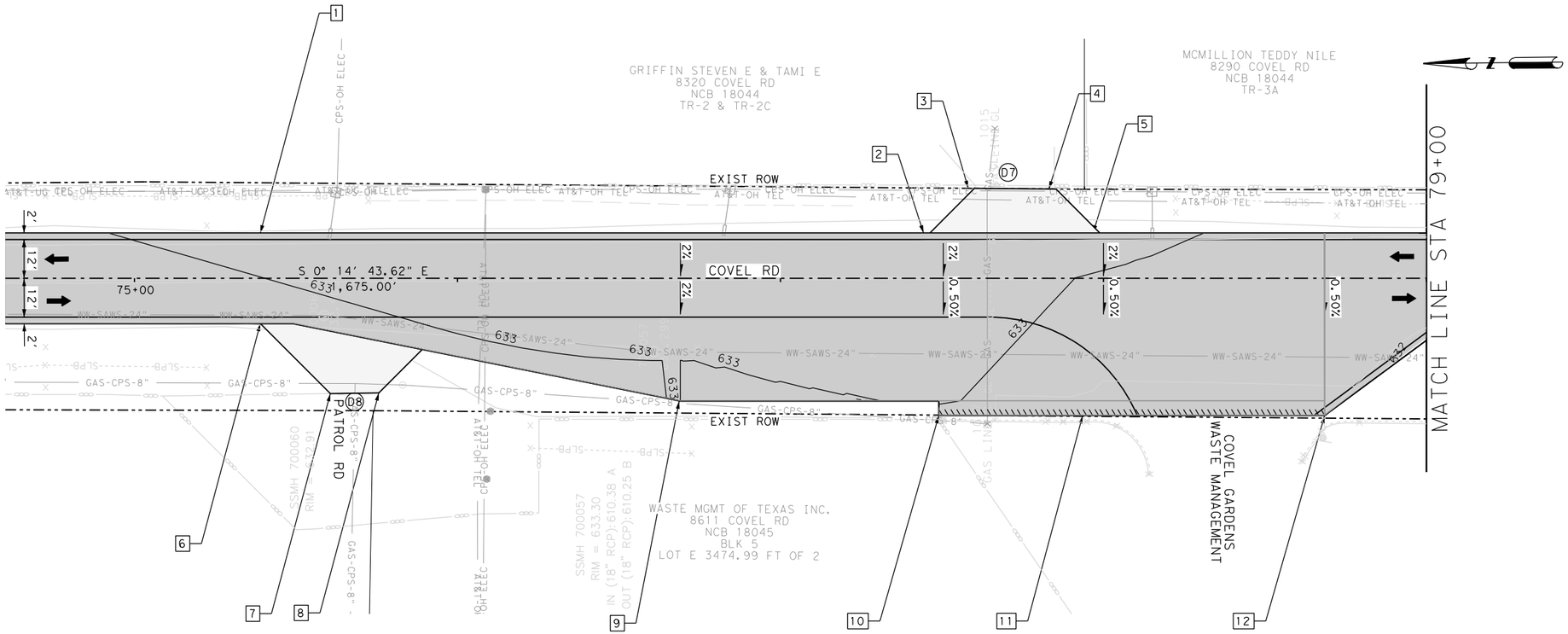
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

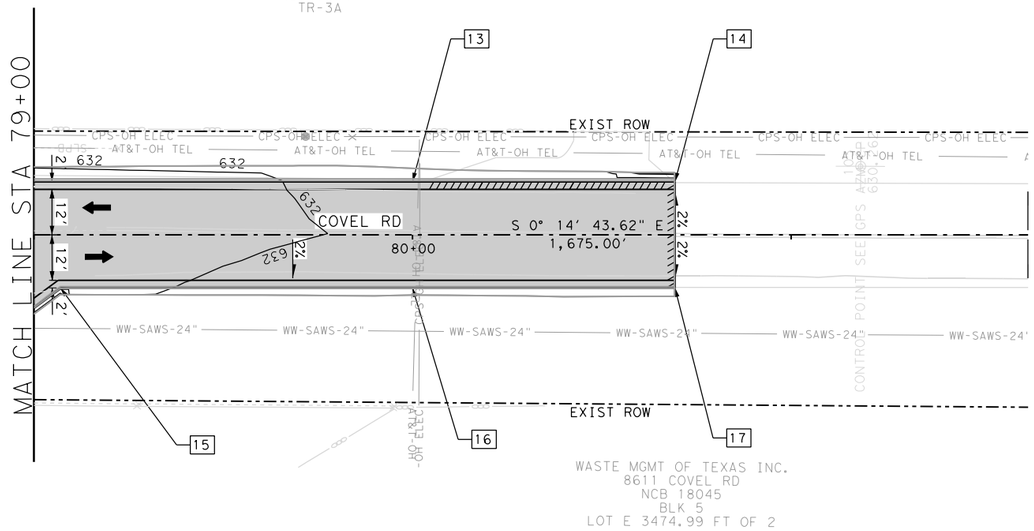
COVEL RD IMPROVEMENTS

INTERSECTION LAYOUT AT BEGIN PROJECT

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: RT	SHT NO.: 89

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6/27/2025
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LEGEND

- EXIST ROW
- PROPOSED LIMITS OF CONSTRUCTION & SAWCUT LIMITS
- PROPOSED 9.5" CRCP, 4" ACP, & 6" LIME TREATED SUBGRADE
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED BRIDGE 3" MILL & OVERLAY
- (D#) DRIVEWAY NUMBER
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
- CPS-GAS — EXIST GAS LINE
- W-SAWS — EXIST WATER LINE
- WW-SAWS — EXIST WASTE WATER LINE
- AT&T-UG TEL — EXIST UNDERGROUND TELEPHONE LINE
- AT&T-OH TEL — EXIST OVERHEAD TELEPHONE LINE
- EXIST CHAINLINK FENCE LINE
- EXIST WIRE FRAME FENCE LINE

NOTES:

1. UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY DEPTH AND LOCATIONS PRIOR TO EXCAVATION. SEE UTILITY LAYOUTS FOR MORE INFORMATION.

2. REFER TO "DRIVEWAY DETAILS AND SUMMARY", "DRIVEWAY PROFILES", AND "PROJECT LAYOUT" SHEETS FOR ADDITIONAL INFORMATION.

3. SAWCUT SHALL BE SUBSIDIARY TO STREET EXCAVATION COSA BID ITEM 104.1.

4. CONTRACTOR SHALL NOTIFY THE COSA ENGINEER IN FORM OF RFI SHOULD ELEVATION DISCREPANCIES BE FOUND ON THE FIELD PRIOR TO CONSTRUCTION.

POINT	STATION	ALIGNMENT	O/S(FT)	LT/RT	ELEV.
1	75+38.94	COVEL RD	14.0	LT	633.27
2	77+44.28	COVEL RD	14.0	LT	633.53
3	77+58.11	COVEL RD	27.8	LT	632.26
4	77+83.11	COVEL RD	27.6	LT	632.26
5	77+96.74	COVEL RD	14.0	LT	633.75
6	75+38.94	COVEL RD	14.0	RT	632.71
7	75+60.63	COVEL RD	14.3	RT	633.11
8	75+75.63	COVEL RD	57.4	RT	633.2
9	76+69.00	COVEL RD	38.0	RT	632.75
10	77+49.00	COVEL RD	42.5	RT	632.87
11	77+93.55	COVEL RD	42.5	RT	632.76
12	78+68.50	COVEL RD	42.5	RT	632.39
13	80+00.00	COVEL RD	14.0	LT	631.74
14	80+69.32	COVEL RD	14.0	LT	631.22
15	79+07.00	COVEL RD	14.0	RT	632.22
16	80+00.00	COVEL RD	14.0	RT	631.6
17	80+69.32	COVEL RD	14.0	RT	631.22

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

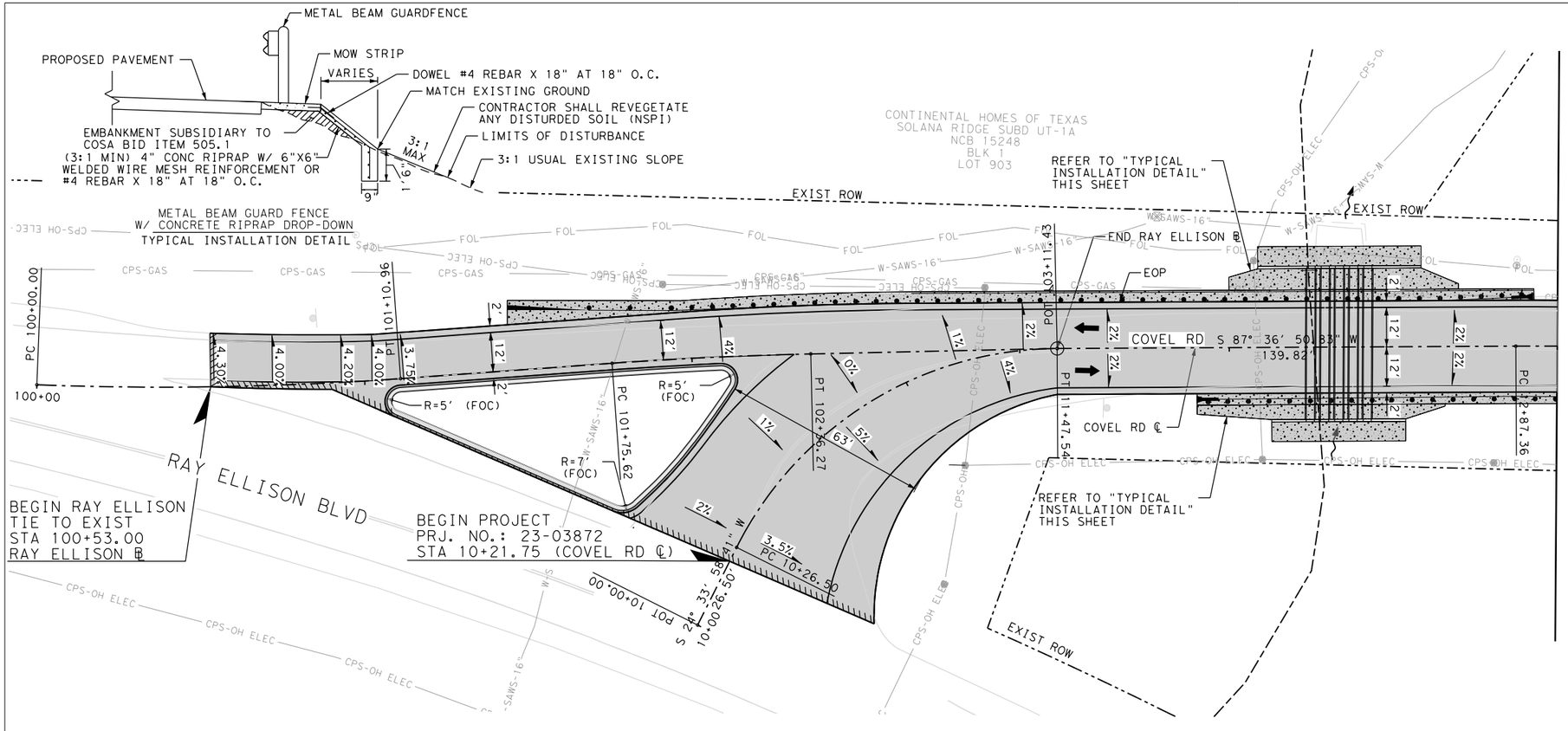
COVEL RD IMPROVEMENTS

INTERSECTION LAYOUT AT END PROJECT

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: RT	SHT NO.: 90

PROP
EXIST

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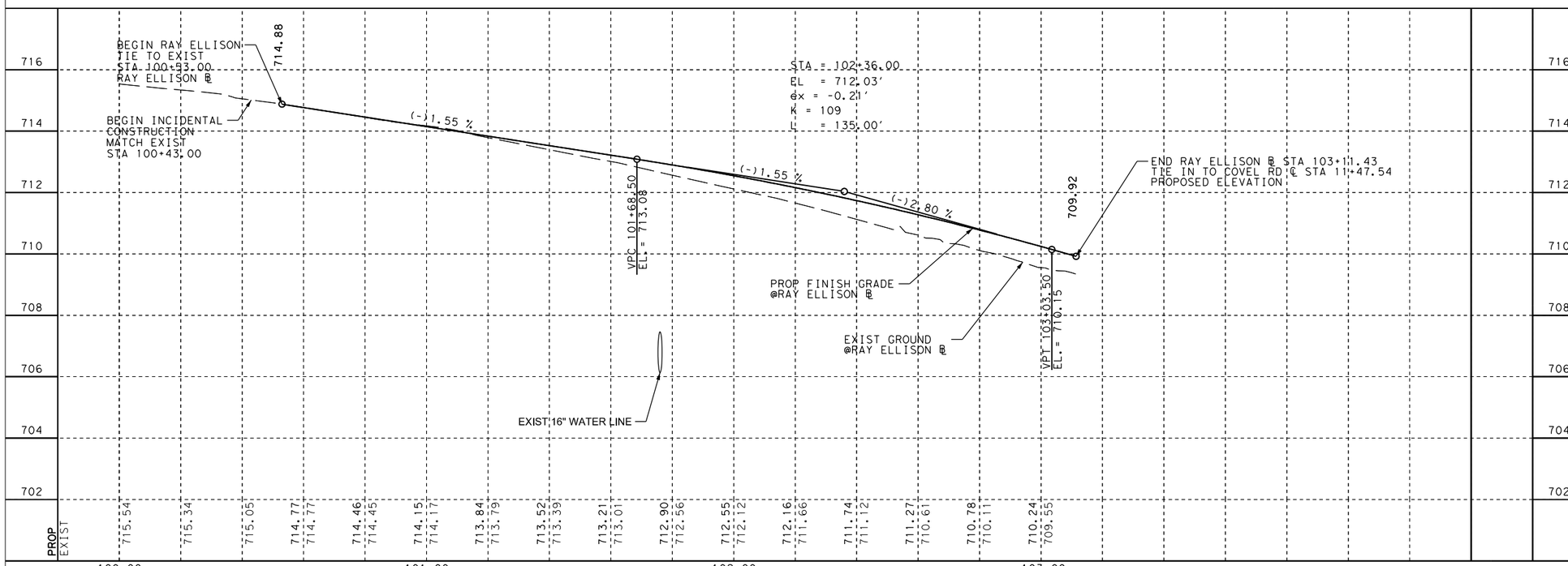


LEGEND

- EXIST ROW
- EXIST STREAM CENTERLINE
- PROPOSED LIMITS OF CONSTRUCTION
- PROPOSED 9.5" CRCP, 4" ACP, & 6" LIME TREATED SUBGRADE
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED BRIDGE 3" MILL & OVERLAY
- PROPOSED RIPRAP
- (D#) DRIVEWAY NUMBER
- FLOW ARROW
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
- CPS-GAS — EXIST GAS LINE
- W-SAWS — EXIST WATER LINE
- WW-SAWS — EXIST WASTE WATER LINE
- AT&T-UG TEL — EXIST UNDERGROUND TELEPHONE LINE
- AT&T-OH TEL — EXIST OVERHEAD TELEPHONE LINE
- EXIST CHAINLINK FENCE LINE
- EXIST WIRE FRAME FENCE LINE

NOTES:

1. UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY DEPTH AND LOCATIONS. SEE UTILITY LAYOUTS FOR MORE INFORMATION.
2. REFER TO COVEL RD PLAN & PROFILE SHEET 1 FOR ROADWAY QUANTITIES FOUND ON THIS SHEET
3. REFER TO "INTERSECTION LAYOUT AT BEGIN PROJECT" SHEET FOR ADDITIONAL INFORMATION
4. REFER TO "PROJECT LAYOUT" SHEET FOR CROSS SLOPE AND SUPER ELEVATION TRANSITIONS.
5. PROPOSED RAY ELLISON BLVD ALIGNMENT IS BASED ON INSIDE SHLDR
6. CONTRACTOR TO ALLOW SEVEN (7) DAYS FOR HIGH SULFATE TREATMENT MELLOWING TIME AS PER GEOTECH REPORT, FROM BEGIN PROJECT TO STA. 19+72.



20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

2 1 0 2 4

VERTICAL SCALE: 1"=4'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
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6/27/2025

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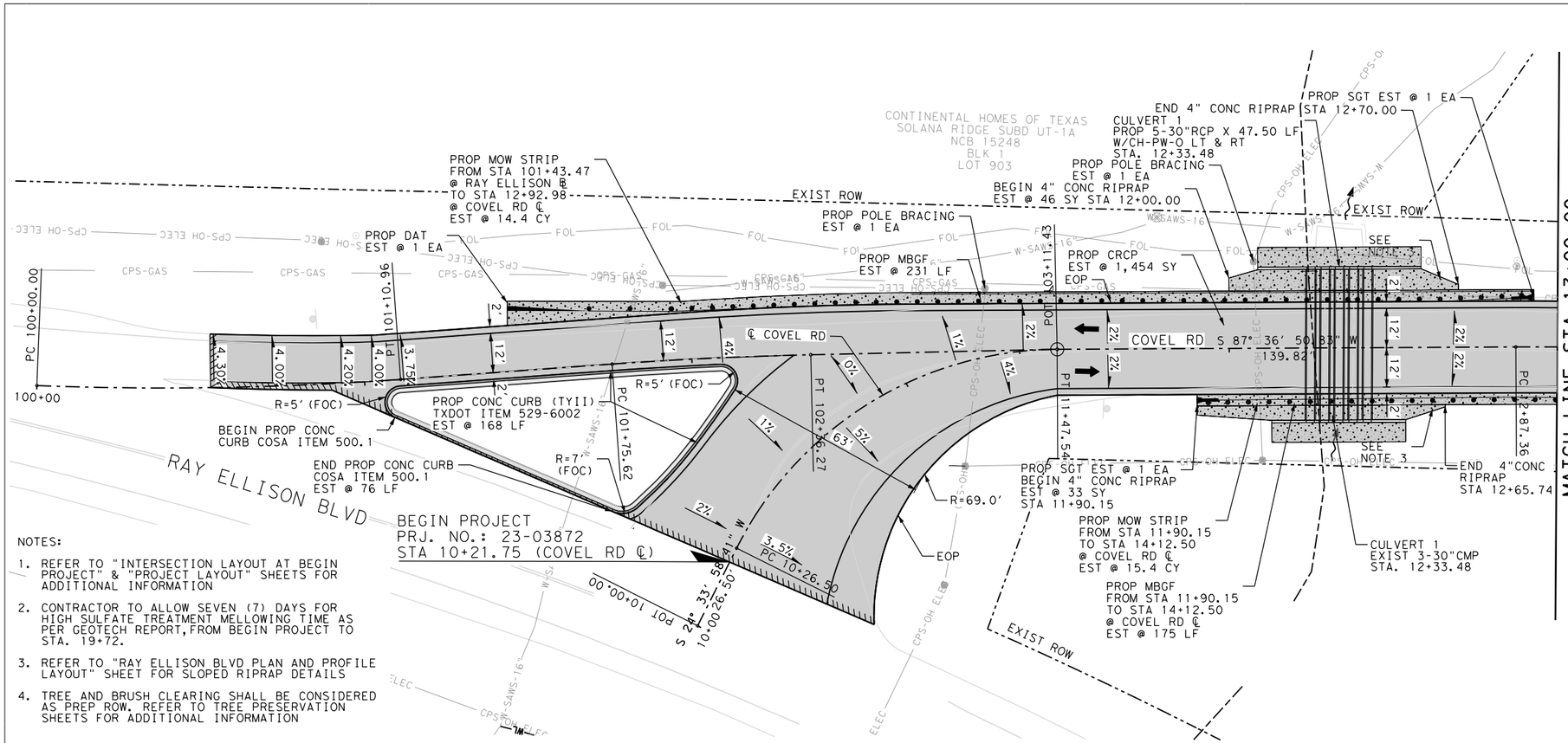
COVEL RD IMPROVEMENTS

RAY ELLISON BLVD PLAN AND PROFILE LAYOUT

SHEET 1 OF 1

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: RT	SHT NO.: 91

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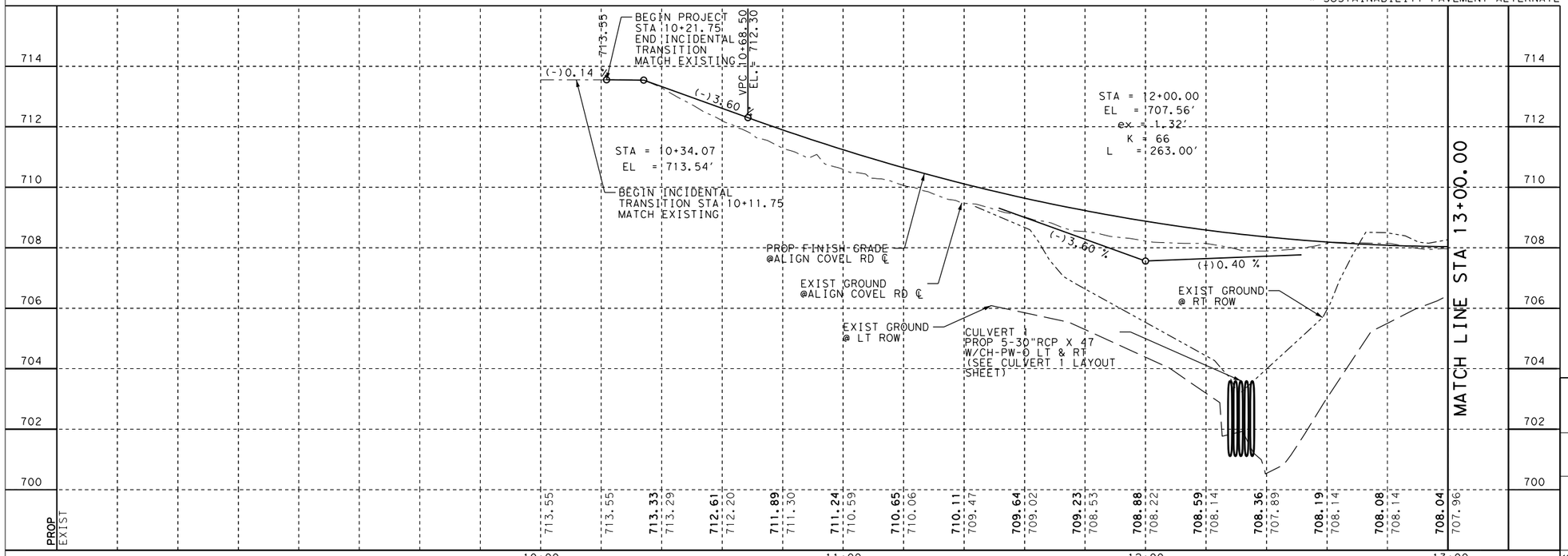
1. REFER TO "INTERSECTION LAYOUT AT BEGIN PROJECT" & "PROJECT LAYOUT" SHEETS FOR ADDITIONAL INFORMATION
2. CONTRACTOR TO ALLOW SEVEN (7) DAYS FOR HIGH SULFATE TREATMENT MELLOWING TIME AS PER GEOTECH REPORT, FROM BEGIN PROJECT TO STA. 19+72.
3. REFER TO "RAY ELLISON BLVD PLAN AND PROFILE LAYOUT" SHEET FOR SLOPED RIPRAP DETAILS
4. TREE AND BRUSH CLEARING SHALL BE CONSIDERED AS PREP ROW. REFER TO TREE PRESERVATION SHEETS FOR ADDITIONAL INFORMATION

LEGEND

- EXIST ROW
- EXIST STREAM CENTERLINE
- PROPOSED LIMITS OF CONSTRUCTION
- PROPOSED 9.5" CRCP, 4" ACP, & 6" LIME TREATED SUBGRADE
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED BRIDGE 3" MILL & OVERLAY
- PROPOSED RIPRAP
- (D#) DRIVEWAY NUMBER
- FLOW ARROW
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
- CPS-GAS — EXIST GAS LINE
- W-SAWS — EXIST WATER LINE
- WW-SAWS — EXIST WASTE WATER LINE
- AT&T-UG TEL — EXIST UNDERGROUND TELEPHONE LINE
- AT&T-OH TEL — EXIST OVERHEAD TELEPHONE LINE
- EXIST CHAINLINK FENCE LINE
- EXIST WIRE FRAME FENCE LINE

BID ITEM	DESCRIPTION	UNIT	QTY
107.1	EMBANKMENT	CY	98
108.1	LIME TREAT. SUBGRADE (6" COMP DEPTH)	SY	1,650
205.2	HOT MIX ASPHALTIC PAVEMENT, TYPE B (3IN)	SY	0
205.3	HOT MIX ASPHALTIC PAVEMENT, TYPE C (4IN)	SY	1,552
209.1	CONCRETE PAVEMENT (9.5IN)	SY	1,528
* 209.1	CONCRETE PAVEMENT, CLASS (P) TY (IL) (9.5IN)	SY	1,528
* 240.3	WARM MIX ASPHALTIC CONCRETE, TYPE C (4IN)	SY	1,552
500.1	CONCRETE CURB	LF	76
503.2	CONCRETE DRIVEWAY (COMM)	SY	0
505.1	CONCRETE RIPRAP (4"THICK)	SY	79
SP3	UTILITY POLE BRACING	EA	2
TXDOT BID ITEMS			
354-6022	PLANE ASPH CONC PAV(0" TO 3")	SY	0
432-6045	RIPRAP (MOW STRIP)(4 IN)	CY	20
529-6002	CONC CURB (TY II)	LF	168
540-6001	MTL W-BEAM GD FEN (TIM POST)	LF	337
540-6016	DOWNSTREAM ANCHOR TERMINAL SECTION	EA	1
544-6001	GUARDRAIL END TREATMENT (INSTALL)	EA	2

* SUSTAINABILITY PAVEMENT ALTERNATE



HORIZONTAL SCALE: 1"=40'

VERTICAL SCALE: 1"=4'

STATE OF TEXAS
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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

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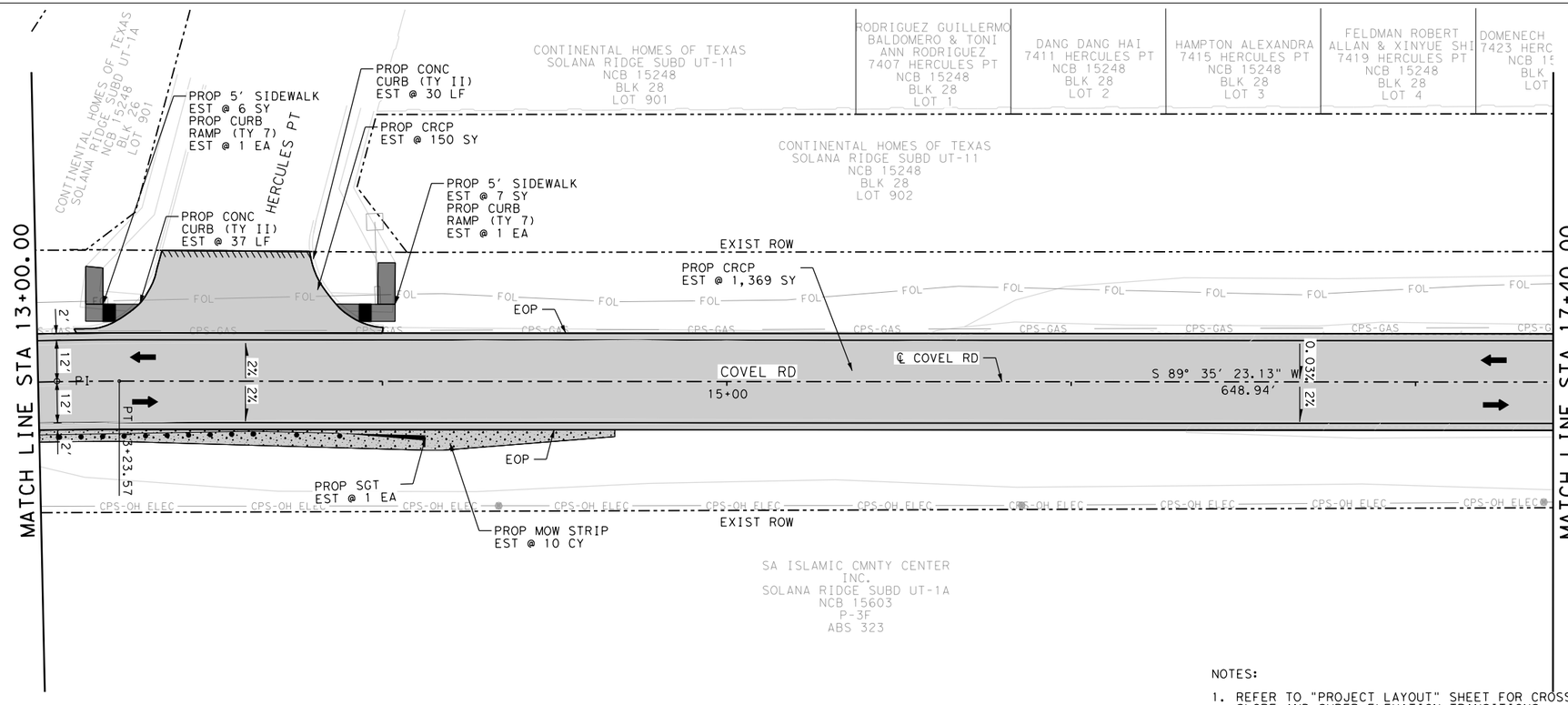
COVEL RD IMPROVEMENTS

COVEL RD PLAN AND PROFILE LAYOUTS

SHEET 1 OF 17

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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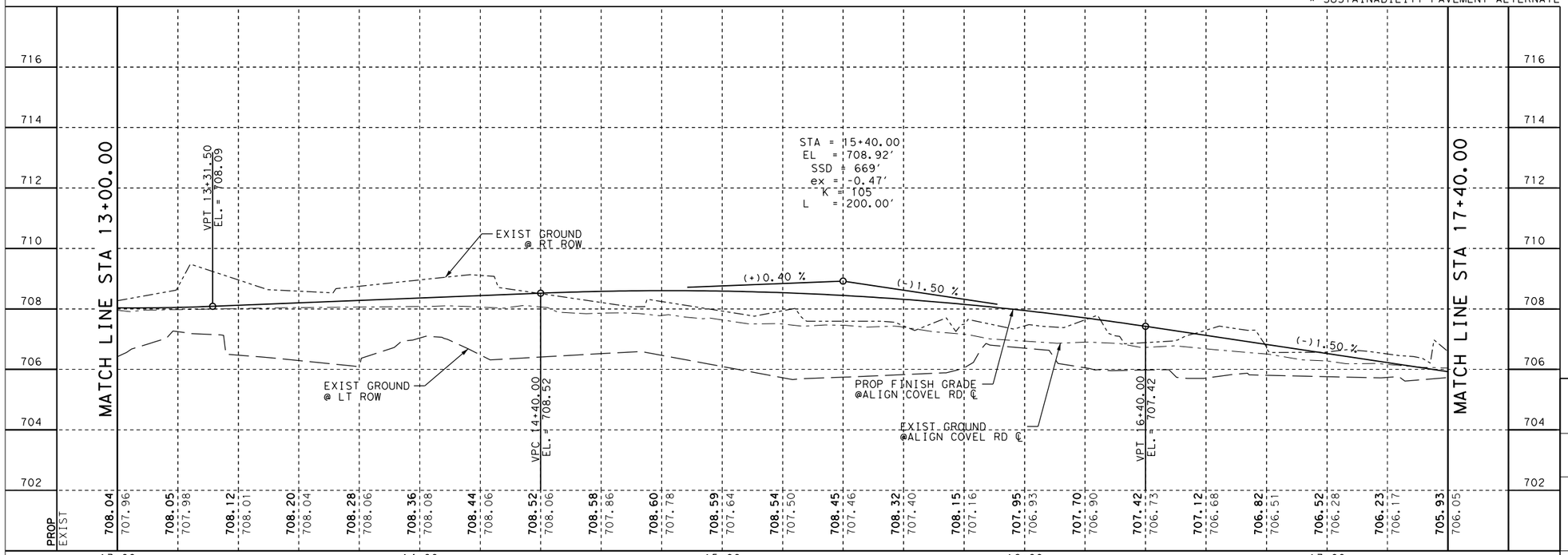
- EXIST ROW
- EXIST STREAM CENTERLINE
- PROPOSED LIMITS OF CONSTRUCTION
- PROPOSED 9.5" CRCP, 4" ACP, & 6" LIME TREATED SUBGRADE
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- AT&T-OH TEL — EXIST OVERHEAD TELEPHONE LINE
- EXIST CHAINLINK FENCE LINE
- EXIST WIRE FRAME FENCE LINE

BID ITEM	DESCRIPTION	UNIT	QTY
107.1	EMBANKMENT	CY	72
108.1	LIME TREAT. SUBGRADE (6" COMP DEPTH)	SY	1,714
205.2	HOT MIX ASPHALTIC PAVEMENT, TYPE B (3IN)	SY	0
205.3	HOT MIX ASPHALTIC PAVEMENT, TYPE C (4IN)	SY	1,617
209.1	CONCRETE PAVEMENT (9.5IN)	SY	1,519
* 209.1	CONCRETE PAVEMENT, CLASS (P) TY (IL) (9.5IN)	SY	1,519
* 240.3	WARM MIX ASPHALTIC CONCRETE, TYPE C (4IN)	SY	1,617
503.2	CONCRETE DRIVEWAY (COMM)	SY	150
TXDOT BID ITEMS			
354-6022	PLANE ASPH CONC PAV(0" TO 3")	SY	0
432-6045	RIPRAP (MOW STRIP)(4 IN)	CY	10
529-6002	CONC CURB (TY II)	LF	67
531-6001	CONC SIDEWALKS (4")	SY	13
531-6010	CURB RAMPS (TY 7)	EA	2
540-6001	MTL W-BEAM GD FEN (TIM POST)	LF	63
540-6016	DOWNSTREAM ANCHOR TERMINAL SECTION	EA	0
544-6001	GUARDRAIL END TREATMENT (INSTALL)	EA	1

NOTES:

1. REFER TO "PROJECT LAYOUT" SHEET FOR CROSS SLOPE AND SUPER ELEVATION TRANSITIONS.
2. REFER TO "DRIVEWAY DETAILS AND SUMMARY", "DRIVEWAY PROFILES" SHEETS FOR PROPOSED DRIVEWAY DETAILS.

* SUSTAINABILITY PAVEMENT ALTERNATE



20 10 0 20 40
HORIZONTAL SCALE: 1"=40'
2 1 0 2 4
VERTICAL SCALE: 1"=4'

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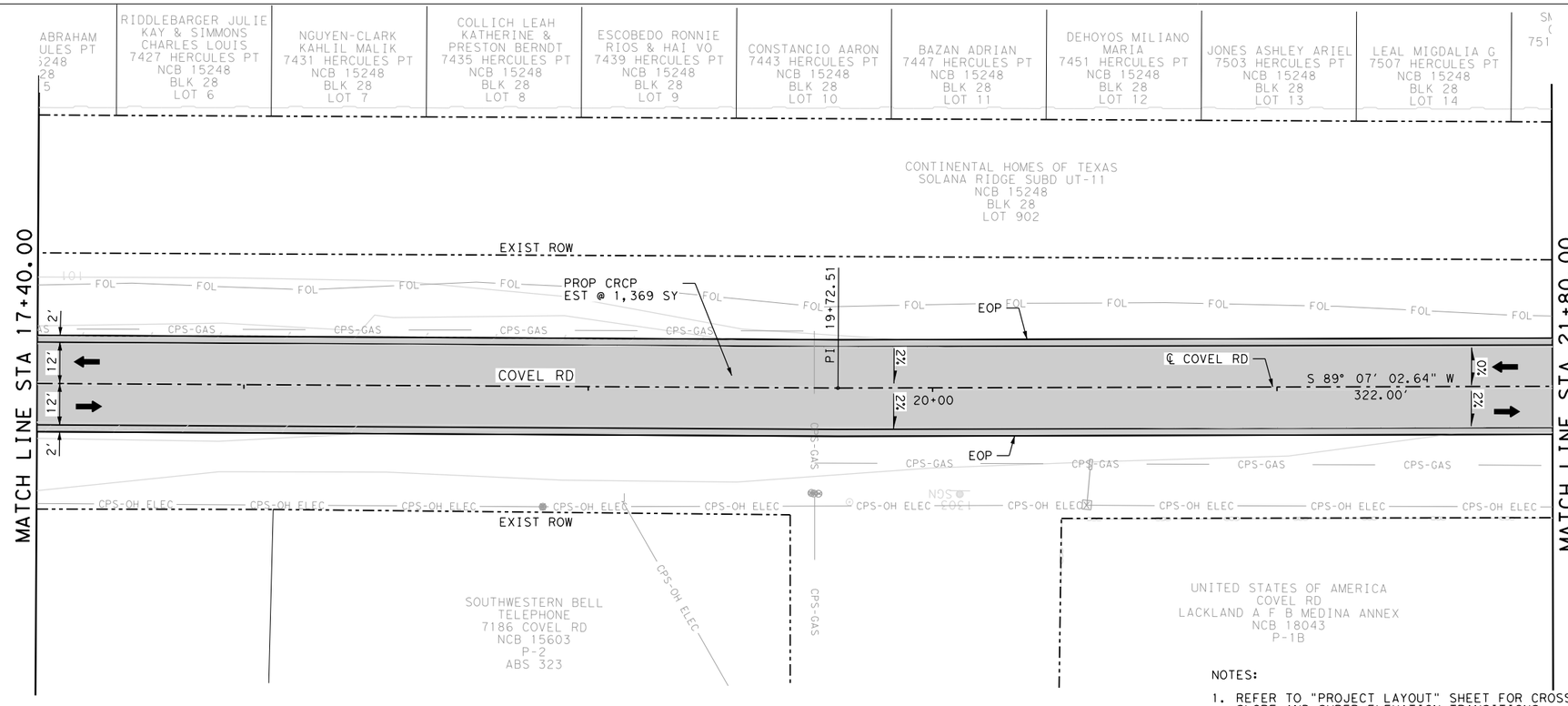
COVEL RD IMPROVEMENTS

COVEL RD PLAN AND PROFILE LAYOUTS

SHEET 2 OF 17

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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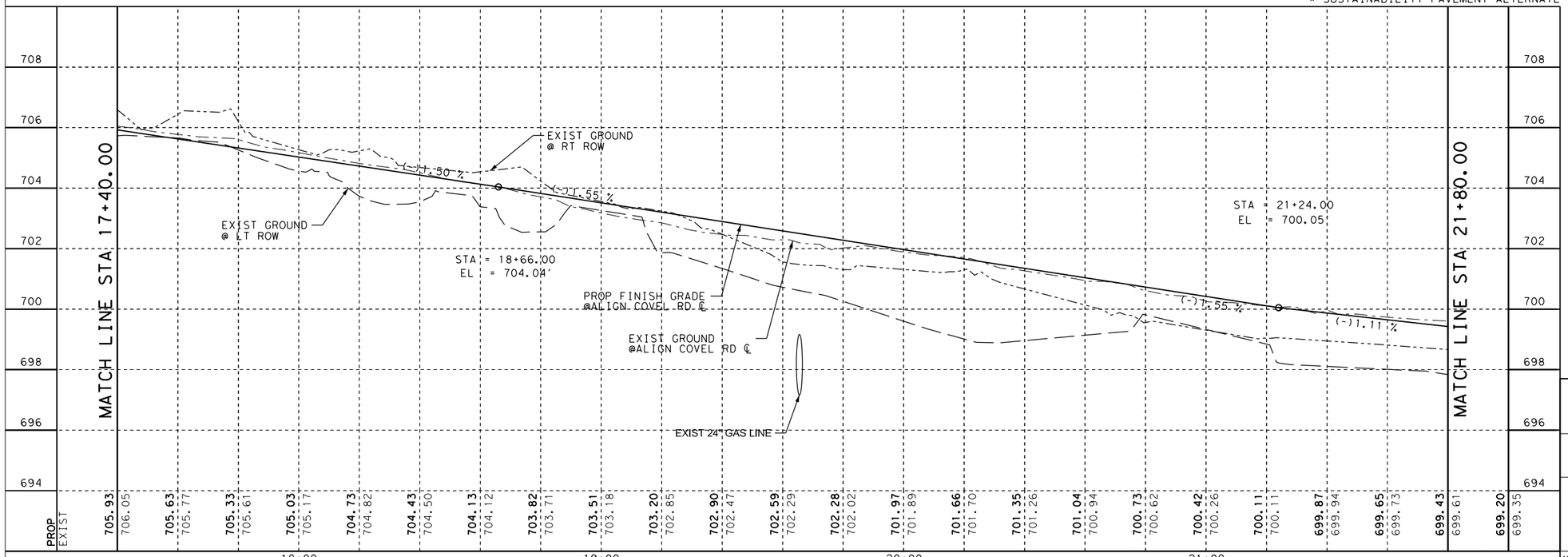
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- PROPOSED LIMITS OF CONSTRUCTION
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- EXIST WIRE FRAME FENCE LINE

BID ITEM	DESCRIPTION	UNIT	QTY
107.1	EMBANKMENT	CY	66
108.1	LIME TREAT. SUBGRADE (6" COMP DEPTH)	SY	1,564
205.2	HOT MIX ASPHALTIC PAVEMENT, TYPE B (3IN)	SY	0
205.3	HOT MIX ASPHALTIC PAVEMENT, TYPE C (4IN)	SY	1,467
209.1	CONCRETE PAVEMENT (9.5IN)	SY	1,369
* 209.1	CONCRETE PAVEMENT, CLASS (P) TY (IL) (9.5IN)	SY	1,369
* 240.3	WARM MIX ASPHALTIC CONCRETE, TYPE C (4IN)	SY	1,467
503.2	CONCRETE DRIVEWAY (COMM)	SY	0
TXDOT BID ITEMS			
354-6022	PLANE ASPH CONC PAV(0" TO 3")	SY	0

NOTES:

1. REFER TO "PROJECT LAYOUT" SHEET FOR CROSS SLOPE AND SUPER ELEVATION TRANSITIONS.
2. CONTRACTOR TO ALLOW SEVEN (7) DAYS FOR HIGH SULFATE TREATMENT MELLOWING TIME AS PER GEOTECH REPORT, FROM BEGIN PROJECT TO STA. 19+72.

* SUSTAINABILITY PAVEMENT ALTERNATE



20 10 0 20 40
HORIZONTAL SCALE: 1"=40'
2 1 0 2 4
VERTICAL SCALE: 1"=4'

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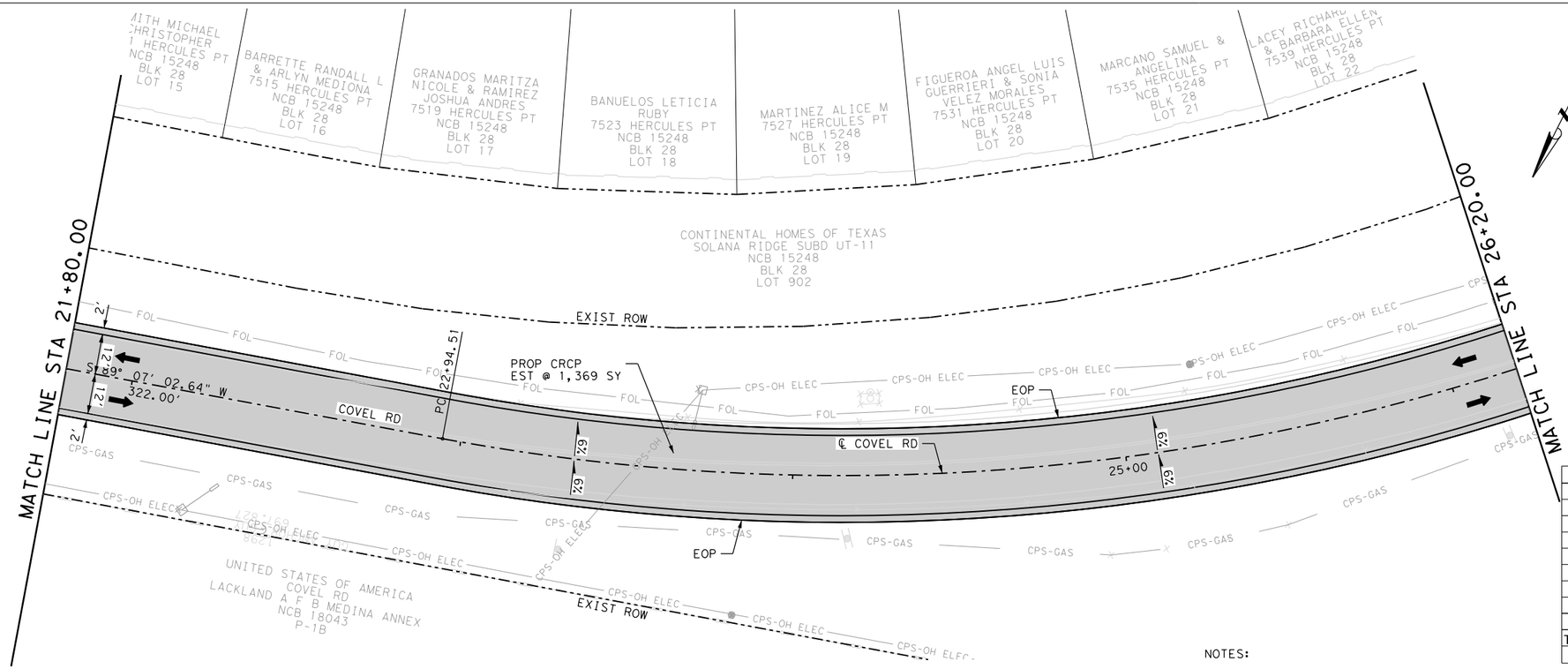
COVEL RD IMPROVEMENTS

COVEL RD PLAN AND PROFILE LAYOUTS

SHEET 3 OF 17

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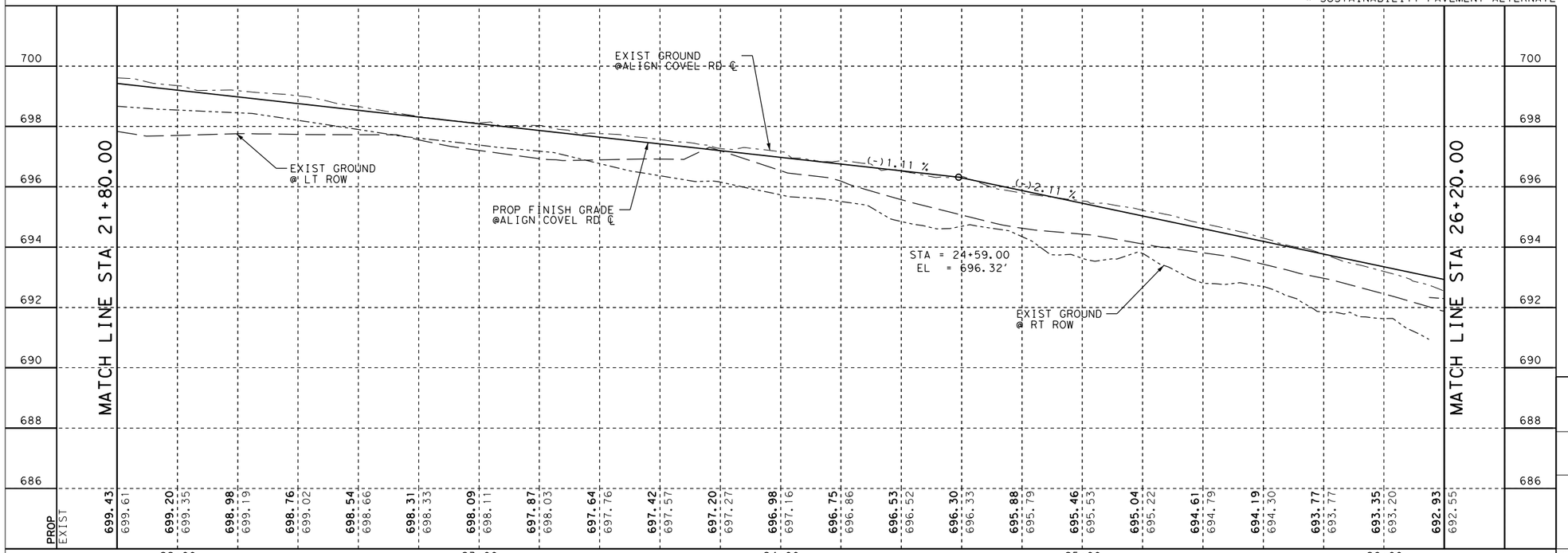
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- AT&T-OH TEL — EXIST OVERHEAD TELEPHONE LINE
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- EXIST WIRE FRAME FENCE LINE

BID ITEM	DESCRIPTION	UNIT	QTY
107.1	EMBANKMENT	CY	60
108.1	LIME TREAT. SUBGRADE (6" COMP DEPTH)	SY	1,564
205.2	HOT MIX ASPHALTIC PAVEMENT, TYPE B (3IN)	SY	0
205.3	HOT MIX ASPHALTIC PAVEMENT, TYPE C (4IN)	SY	1,467
209.1	CONCRETE PAVEMENT (9.5IN)	SY	1,369
* 209.1	CONCRETE PAVEMENT, CLASS (P) TY (IL) (9.5IN)	SY	1,369
* 240.3	WARM MIX ASPHALTIC CONCRETE, TYPE C (4IN)	SY	1,467
503.2	CONCRETE DRIVEWAY (COMM)	SY	0
TXDOT BID ITEMS			
354-6022	PLANE ASPH CONC PAV(0" TO 3")	SY	0

NOTES:

1. REFER TO "PROJECT LAYOUT" SHEET FOR CROSS SLOPE AND SUPER ELEVATION TRANSITIONS.

* SUSTAINABILITY PAVEMENT ALTERNATE



20 10 0 20 40
HORIZONTAL SCALE: 1"=40'
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PUBLIC WORKS DEPARTMENT

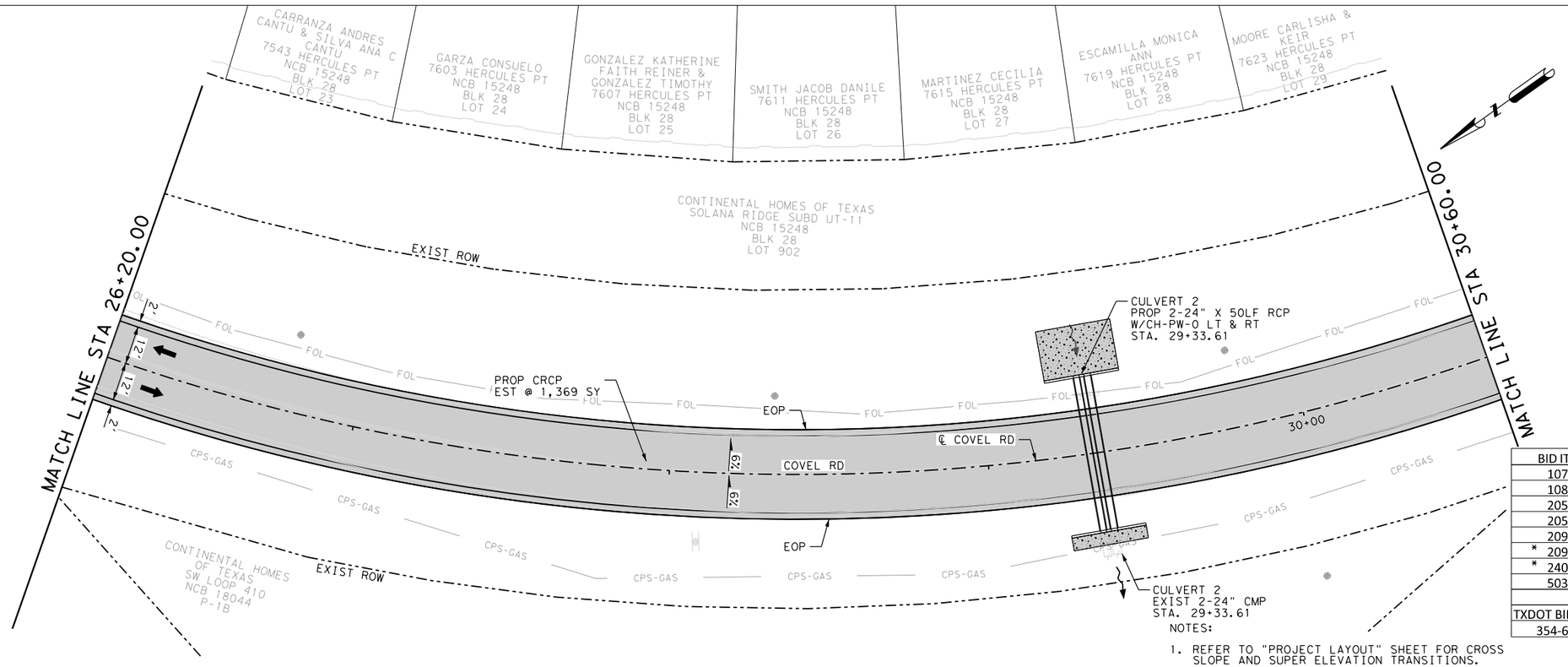
COVEL RD IMPROVEMENTS

COVEL RD PLAN AND PROFILE LAYOUTS

SHEET 4 OF 17

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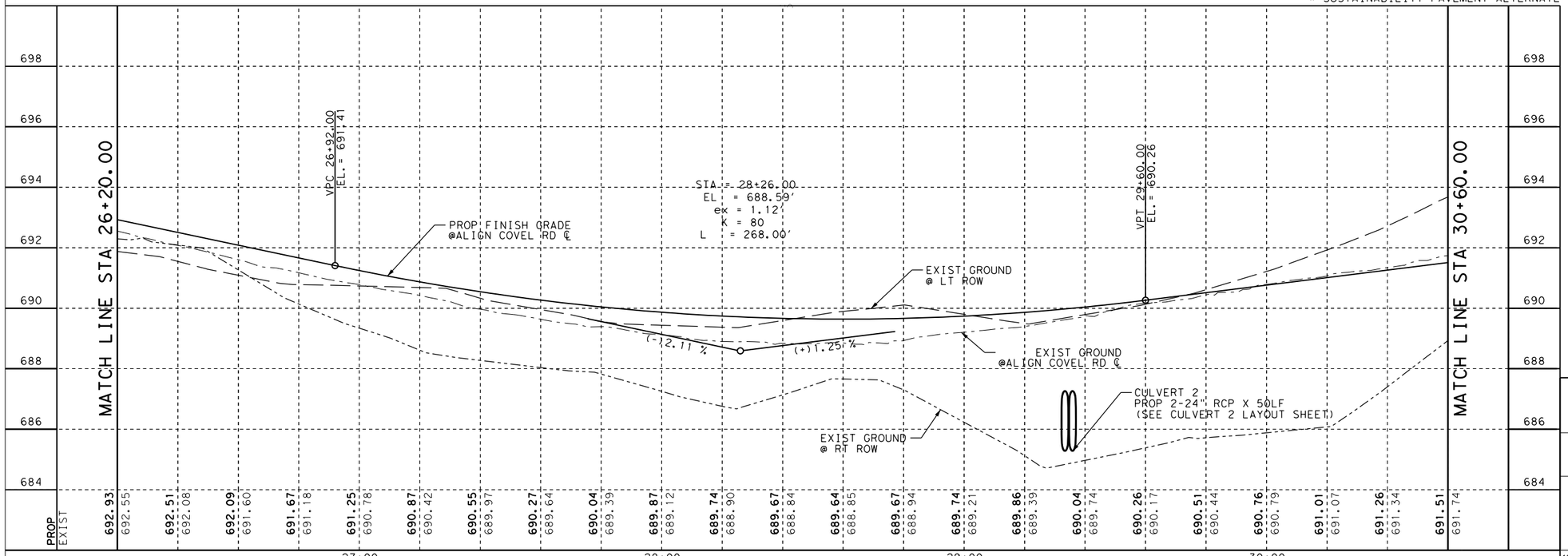
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BID ITEM	DESCRIPTION	UNIT	QTY
107.1	EMBANKMENT	CY	94
108.1	LIME TREAT. SUBGRADE (6" COMP DEPTH)	SY	1,564
205.2	HOT MIX ASPHALTIC PAVEMENT, TYPE B (3IN)	SY	0
205.3	HOT MIX ASPHALTIC PAVEMENT, TYPE C (4IN)	SY	1,467
209.1	CONCRETE PAVEMENT (9.5IN)	SY	1,369
* 209.1	CONCRETE PAVEMENT, CLASS (P) TY (IL) (9.5IN)	SY	1,369
* 240.3	WARM MIX ASPHALTIC CONCRETE, TYPE C (4IN)	SY	1,467
503.2	CONCRETE DRIVEWAY (COMM)	SY	0
TXDOT BID ITEMS			
354-6022	PLANE ASPH CONC PAV(0" TO 3")	SY	0

NOTES:

1. REFER TO "PROJECT LAYOUT" SHEET FOR CROSS SLOPE AND SUPER ELEVATION TRANSITIONS.
2. TREE AND BRUSH CLEARING SHALL BE CONSIDERED AS PREP ROW. REFER TO TREE PRESERVATION SHEETS FOR ADDITIONAL INFORMATION.

* SUSTAINABILITY PAVEMENT ALTERNATE



20 10 0 20 40
HORIZONTAL SCALE: 1"=40'
2 1 0 2 4
VERTICAL SCALE: 1"=4'

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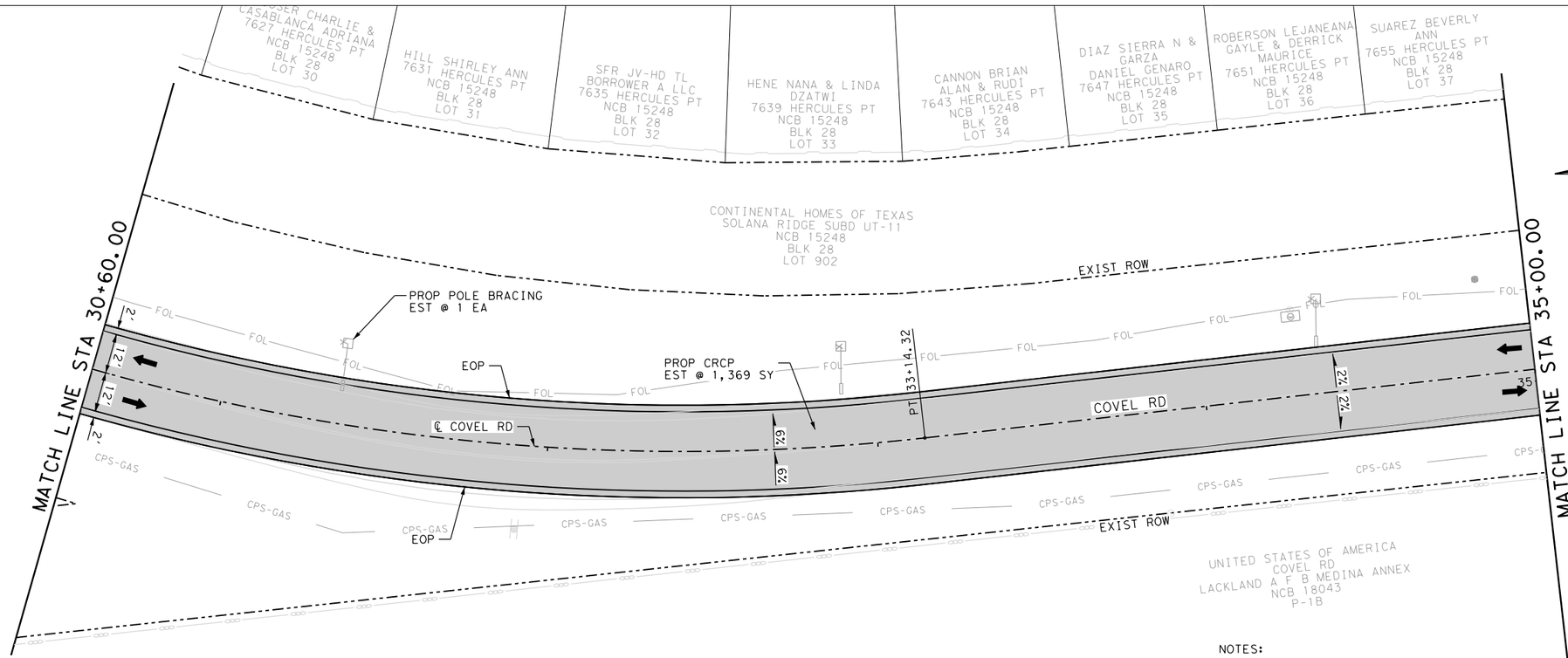
COVEL RD IMPROVEMENTS

COVEL RD PLAN AND PROFILE LAYOUTS

SHEET 5 OF 17

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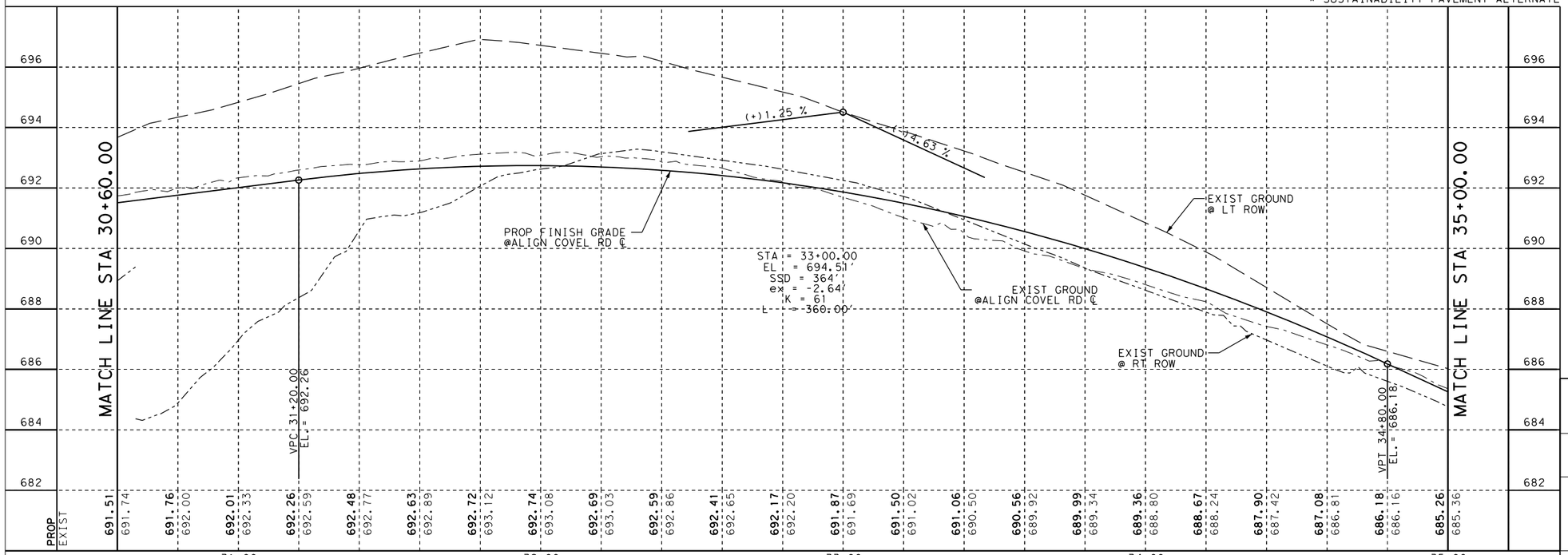
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BID ITEM	DESCRIPTION	UNIT	QTY
107.1	EMBANKMENT	CY	41
108.1	LIME TREAT. SUBGRADE (6" COMP DEPTH)	SY	1,564
205.2	HOT MIX ASPHALTIC PAVEMENT, TYPE B (3IN)	SY	0
205.3	HOT MIX ASPHALTIC PAVEMENT, TYPE C (4IN)	SY	1,467
209.1	CONCRETE PAVEMENT (9.5IN)	SY	1,369
* 209.1	CONCRETE PAVEMENT, CLASS (P) TY (IL) (9.5IN)	SY	1,369
* 240.3	WARM MIX ASPHALTIC CONCRETE, TYPE C (4IN)	SY	1,467
503.2	CONCRETE DRIVEWAY (COMM)	SY	0
SP3	UTILITY POST BRACING	EA	1
TXDOT BID ITEMS			
354-6022	PLANE ASPH CONC PAV(0" TO 3")	SY	0

NOTES:

1. REFER TO "PROJECT LAYOUT" SHEET FOR CROSS SLOPE AND SUPER ELEVATION TRANSITIONS.

* SUSTAINABILITY PAVEMENT ALTERNATE



20 10 0 20 40
HORIZONTAL SCALE: 1"=40'
2 1 0 2 4
VERTICAL SCALE: 1"=4'

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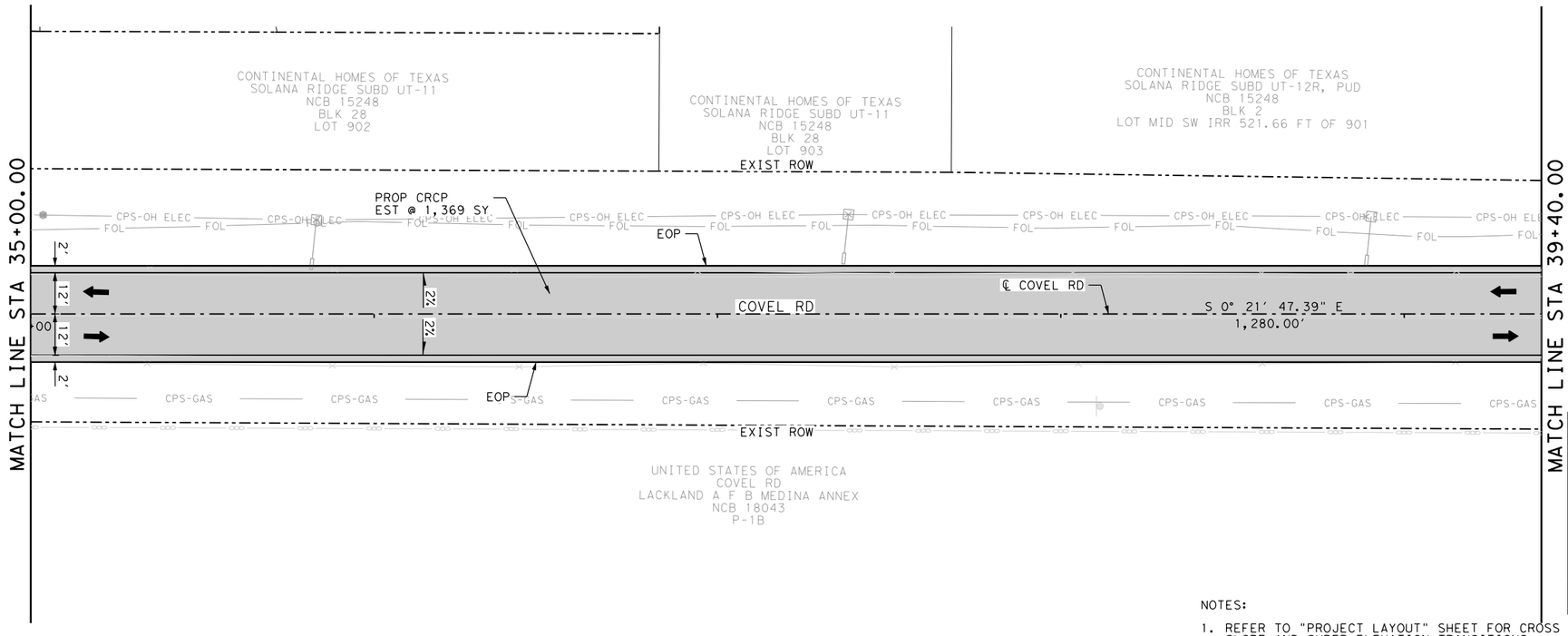
COVEL RD IMPROVEMENTS

COVEL RD PLAN AND PROFILE LAYOUTS

SHEET 6 OF 17

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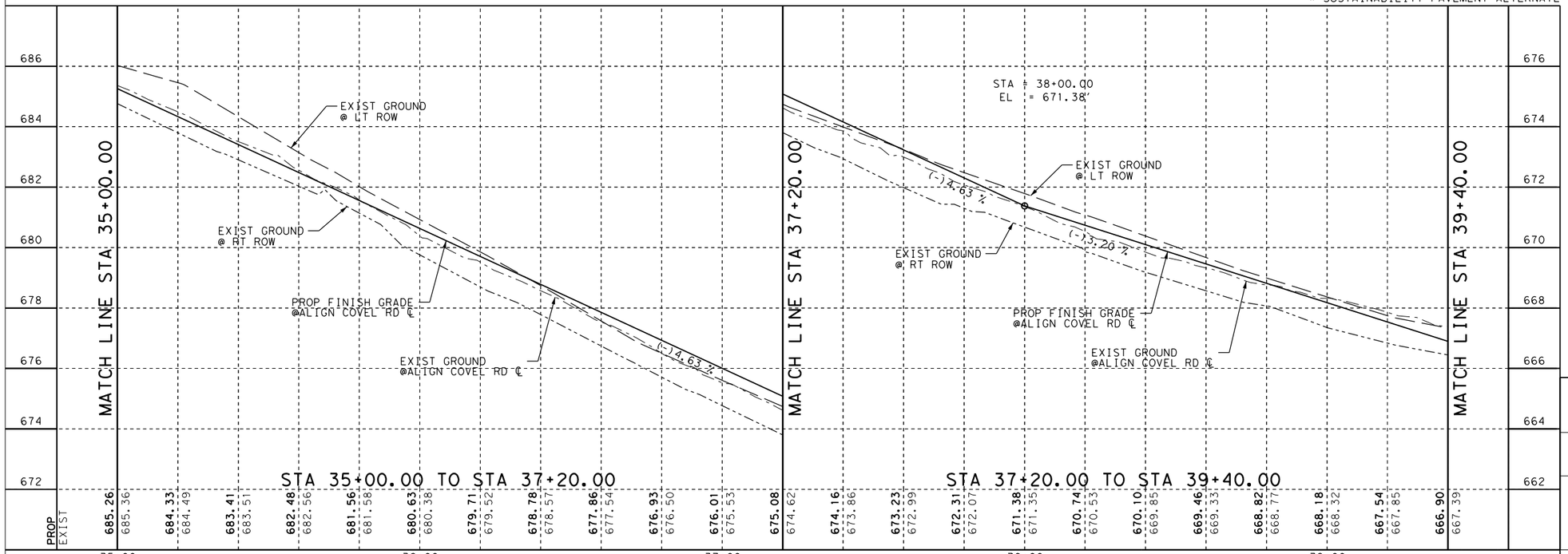
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- PROPOSED LIMITS OF CONSTRUCTION
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- PROPOSED CONCRETE DRIVEWAY
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- EXIST WIRE FRAME FENCE LINE

BID ITEM	DESCRIPTION	UNIT	QTY
107.1	EMBANKMENT	CY	19
108.1	LIME TREAT. SUBGRADE (6" COMP DEPTH)	SY	1,564
205.2	HOT MIX ASPHALTIC PAVEMENT, TYPE B (3IN)	SY	0
205.3	HOT MIX ASPHALTIC PAVEMENT, TYPE C (4IN)	SY	1,467
209.1	CONCRETE PAVEMENT (9.5IN)	SY	1,369
* 209.1	CONCRETE PAVEMENT, CLASS (P) TY (IL) (9.5IN)	SY	1,369
* 240.3	WARM MIX ASPHALTIC CONCRETE, TYPE C (4IN)	SY	1,467
503.2	CONCRETE DRIVEWAY (COMM)	SY	0
TXDOT BID ITEMS			
354-6022	PLANE ASPH CONC PAV(0" TO 3")	SY	0

NOTES:

1. REFER TO "PROJECT LAYOUT" SHEET FOR CROSS SLOPE AND SUPER ELEVATION TRANSITIONS.

* SUSTAINABILITY PAVEMENT ALTERNATE



20 10 0 20 40
HORIZONTAL SCALE: 1"=40'
2 1 0 2 4
VERTICAL SCALE: 1"=4'

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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

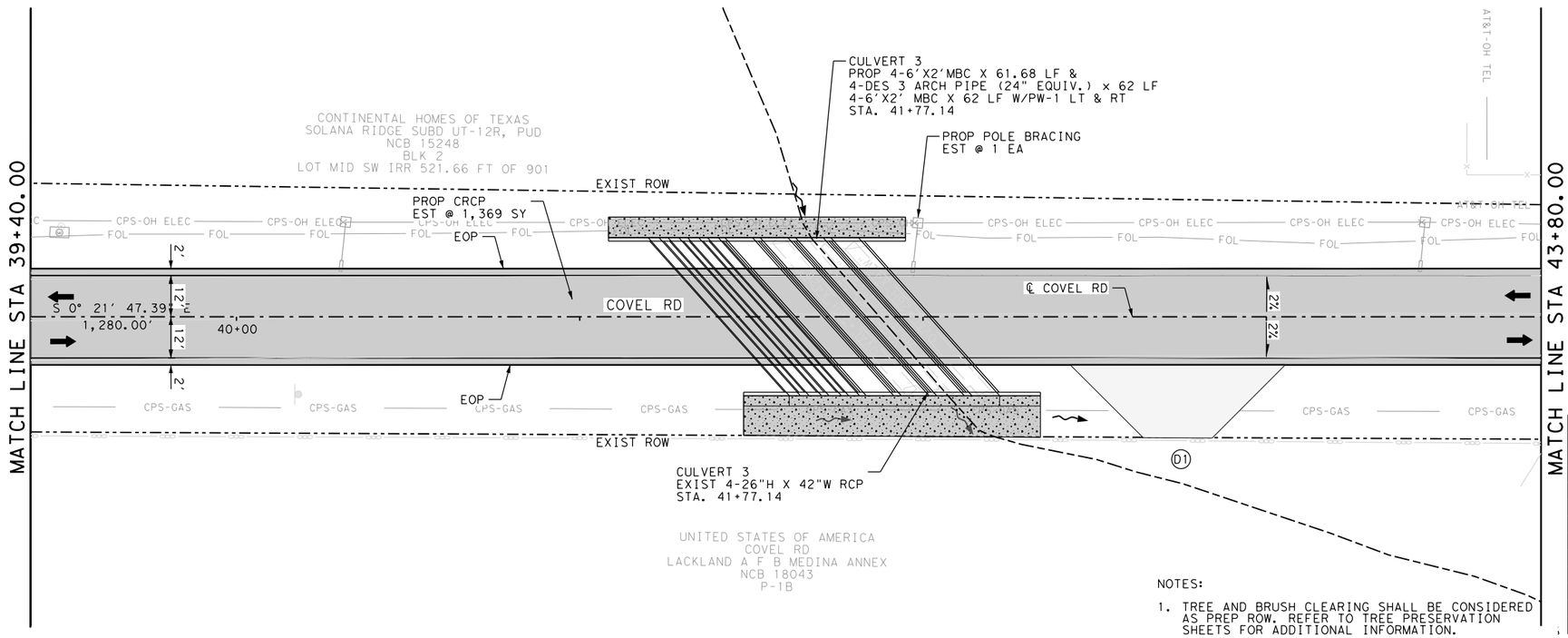
COVEL RD IMPROVEMENTS

COVEL RD PLAN AND PROFILE LAYOUTS

SHEET 7 OF 17

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: RT	SHT NO.: 98

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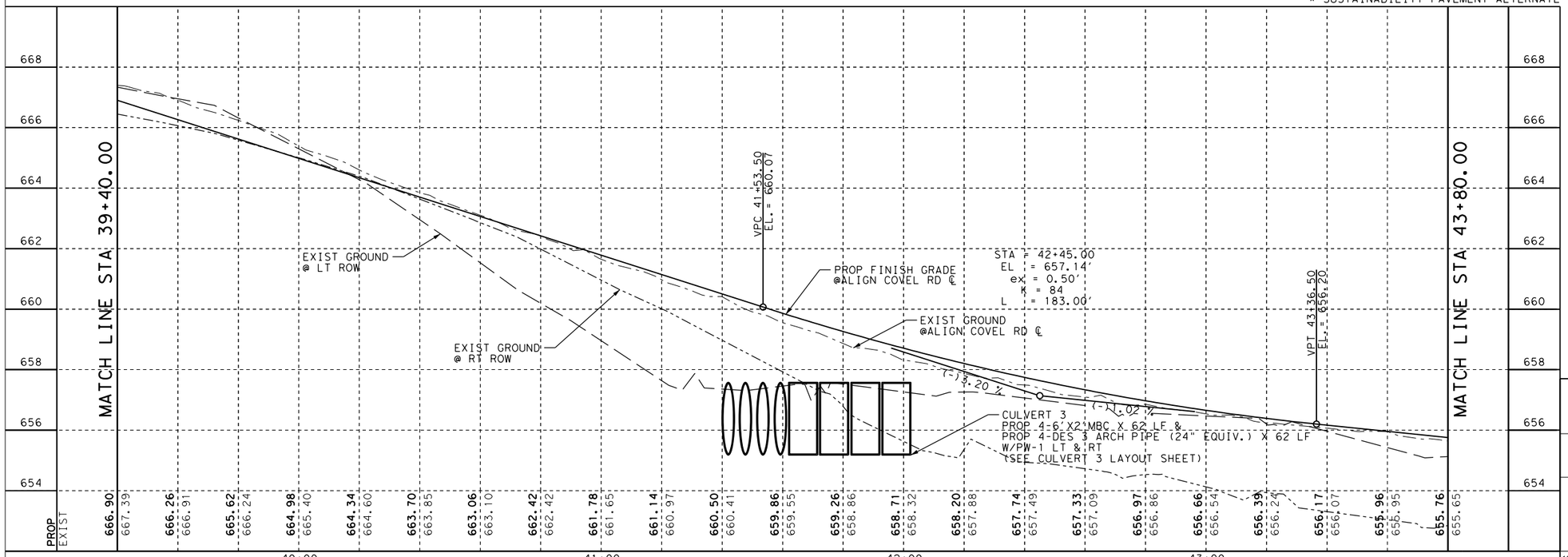
- EXIST ROW
- EXIST STREAM CENTERLINE
- PROPOSED LIMITS OF CONSTRUCTION
- PROPOSED 9.5" CRCP, 4" ACP, & 6" LIME TREATED SUBGRADE
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED BRIDGE 3" MILL & OVERLAY
- PROPOSED RIPRAP
- (D#) DRIVEWAY NUMBER
- FLOW ARROW
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
- CPS-GAS — EXIST GAS LINE
- W-SAWS — EXIST WATER LINE
- WW-SAWS — EXIST WASTE WATER LINE
- AT&T-UG TEL — EXIST UNDERGROUND TELEPHONE LINE
- AT&T-OH TEL — EXIST OVERHEAD TELEPHONE LINE
- EXIST CHAINLINK FENCE LINE
- EXIST WIRE FRAME FENCE LINE

BID ITEM	DESCRIPTION	UNIT	QTY
107.1	EMBANKMENT	CY	68
108.1	LIME TREAT. SUBGRADE (6" COMP DEPTH)	SY	1,564
205.2	HOT MIX ASPHALTIC PAVEMENT, TYPE B (3IN)	SY	0
205.3	HOT MIX ASPHALTIC PAVEMENT, TYPE C (4IN)	SY	1,467
209.1	CONCRETE PAVEMENT (9.5IN)	SY	1,369
* 209.1	CONCRETE PAVEMENT, CLASS (P) TY (IL) (9.5IN)	SY	1,369
* 240.3	WARM MIX ASPHALTIC CONCRETE, TYPE C (4IN)	SY	1,467
503.2	CONCRETE DRIVEWAY (COMM)	SY	143
SP3	UTILITY POST BRACING	EA	1
TXDOT BID ITEMS			
354-6022	PLANE ASPH CONC PAV(0" TO 3")	SY	0

NOTES:

1. TREE AND BRUSH CLEARING SHALL BE CONSIDERED AS PREP ROW. REFER TO TREE PRESERVATION SHEETS FOR ADDITIONAL INFORMATION.
2. REFER TO "PROJECT LAYOUT" SHEET FOR CROSS SLOPE AND SUPER ELEVATION TRANSITIONS.
3. REFER TO "DRIVEWAY DETAILS AND SUMMARY", "DRIVEWAY PROFILES" SHEETS FOR PROPOSED. DRIVEWAY DETAILS.

* SUSTAINABILITY PAVEMENT ALTERNATE



20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

2 1 0 2 4

VERTICAL SCALE: 1"=4'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

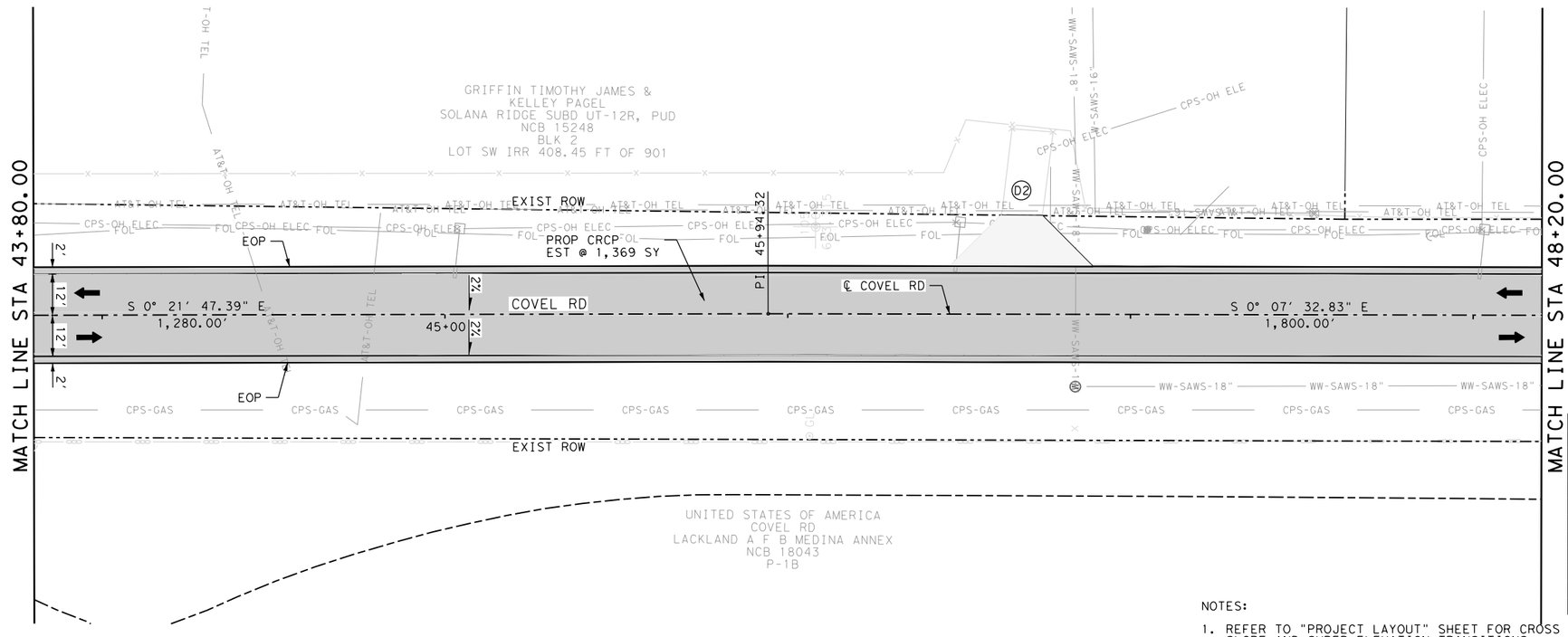
COVEL RD IMPROVEMENTS

COVEL RD PLAN AND PROFILE LAYOUTS

SHEET 8 OF 17

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
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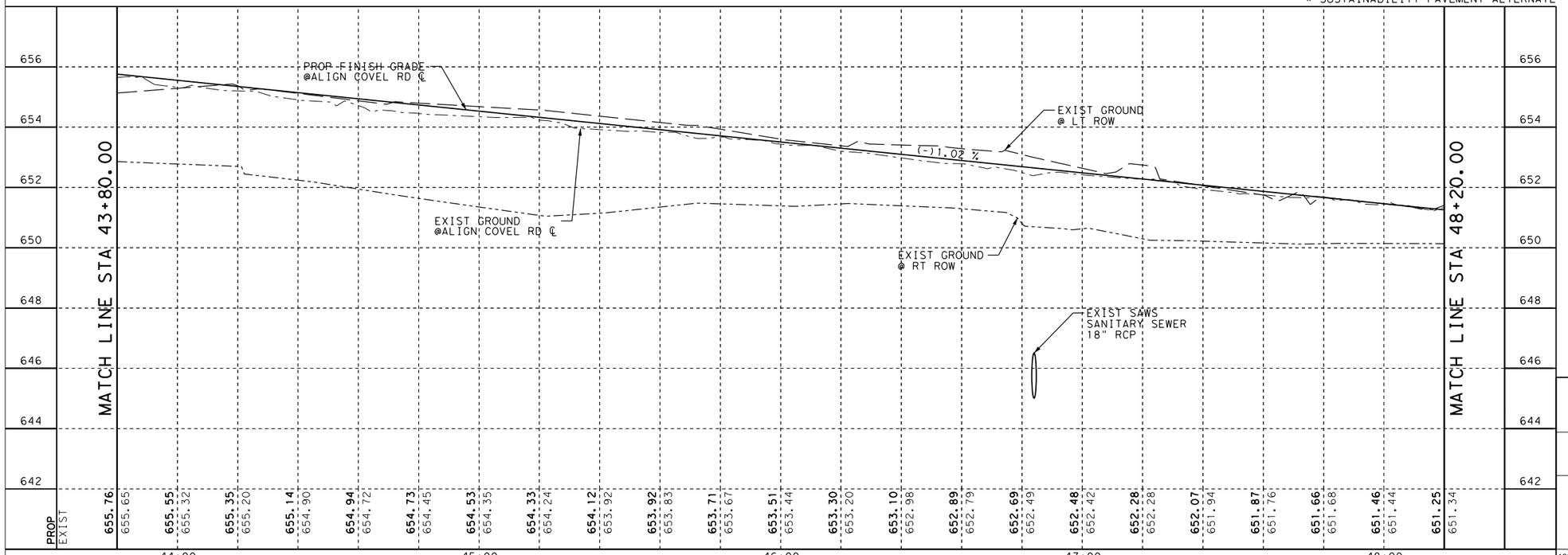
- EXIST ROW
- EXIST STREAM CENTERLINE
- PROPOSED LIMITS OF CONSTRUCTION
- PROPOSED 9.5" CRCP, 4" ACP, & 6" LIME TREATED SUBGRADE
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED BRIDGE 3" MILL & OVERLAY
- PROPOSED RIPRAP
- D# DRIVEWAY NUMBER
- FLOW ARROW
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
- CPS-GAS — EXIST GAS LINE
- W-SAWS — EXIST WATER LINE
- WW-SAWS — EXIST WASTE WATER LINE
- AT&T-UG TEL — EXIST UNDERGROUND TELEPHONE LINE
- AT&T-OH TEL — EXIST OVERHEAD TELEPHONE LINE
- EXIST CHAINLINK FENCE LINE
- EXIST WIRE FRAME FENCE LINE

BID ITEM	DESCRIPTION	UNIT	QTY
107.1	EMBANKMENT	CY	32
108.1	LIME TREAT. SUBGRADE (6" COMP DEPTH)	SY	1,564
205.2	HOT MIX ASPHALTIC PAVEMENT, TYPE B (3IN)	SY	0
205.3	HOT MIX ASPHALTIC PAVEMENT, TYPE C (4IN)	SY	1,467
209.1	CONCRETE PAVEMENT (9.5IN)	SY	1,369
* 209.1	CONCRETE PAVEMENT, CLASS (P) TY (IL) (9.5IN)	SY	1,369
* 240.3	WARM MIX ASPHALTIC CONCRETE, TYPE C (4IN)	SY	1,467
503.2	CONCRETE DRIVEWAY (COMM)	SY	44
TXDOT BID ITEMS			
354-6022	PLANE ASPH CONC PAV(0" TO 3")	SY	0

NOTES:

1. REFER TO "PROJECT LAYOUT" SHEET FOR CROSS SLOPE AND SUPER ELEVATION TRANSITIONS.
2. REFER TO "DRIVEWAY DETAILS AND SUMMARY", "DRIVEWAY PROFILES" SHEETS FOR PROPOSED DRIVEWAY DETAILS.

* SUSTAINABILITY PAVEMENT ALTERNATE



20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

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VERTICAL SCALE: 1"=4'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
6/27/2025

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PUBLIC WORKS DEPARTMENT

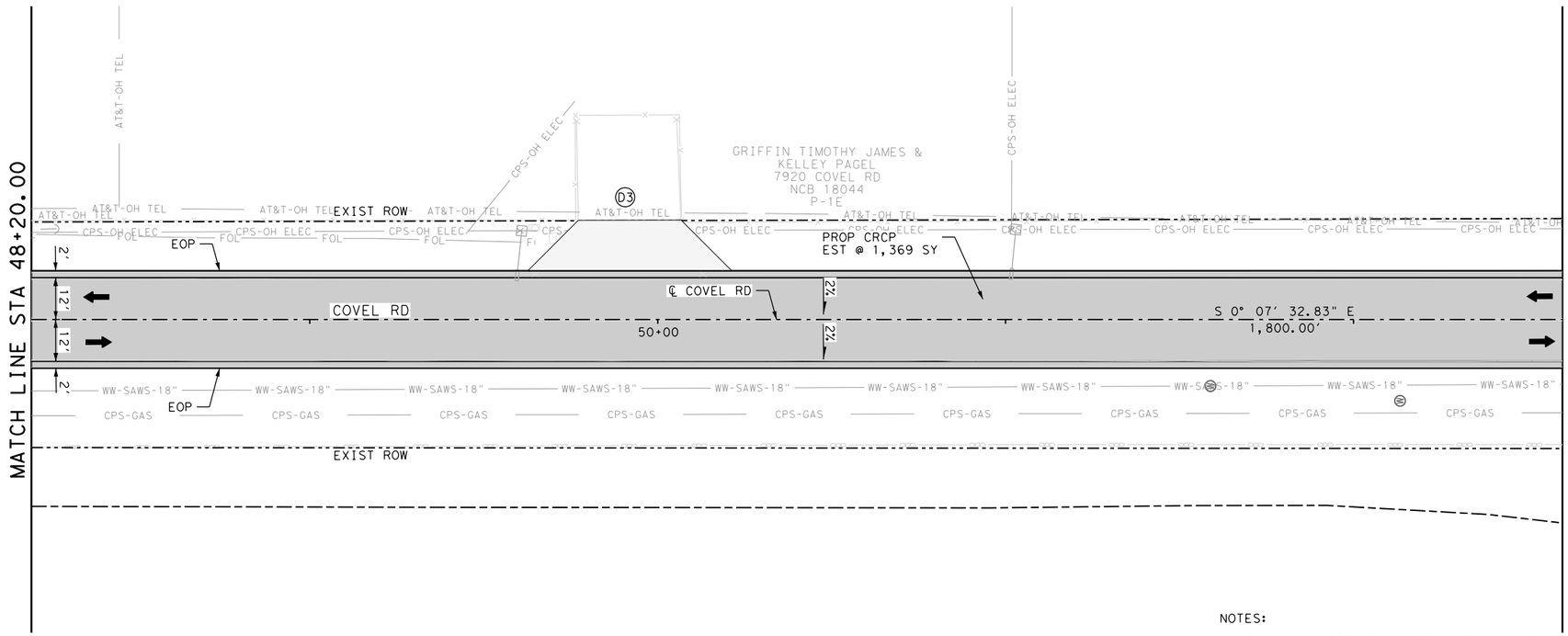
COVEL RD IMPROVEMENTS

COVEL RD PLAN AND PROFILE LAYOUTS

SHEET 9 OF 17

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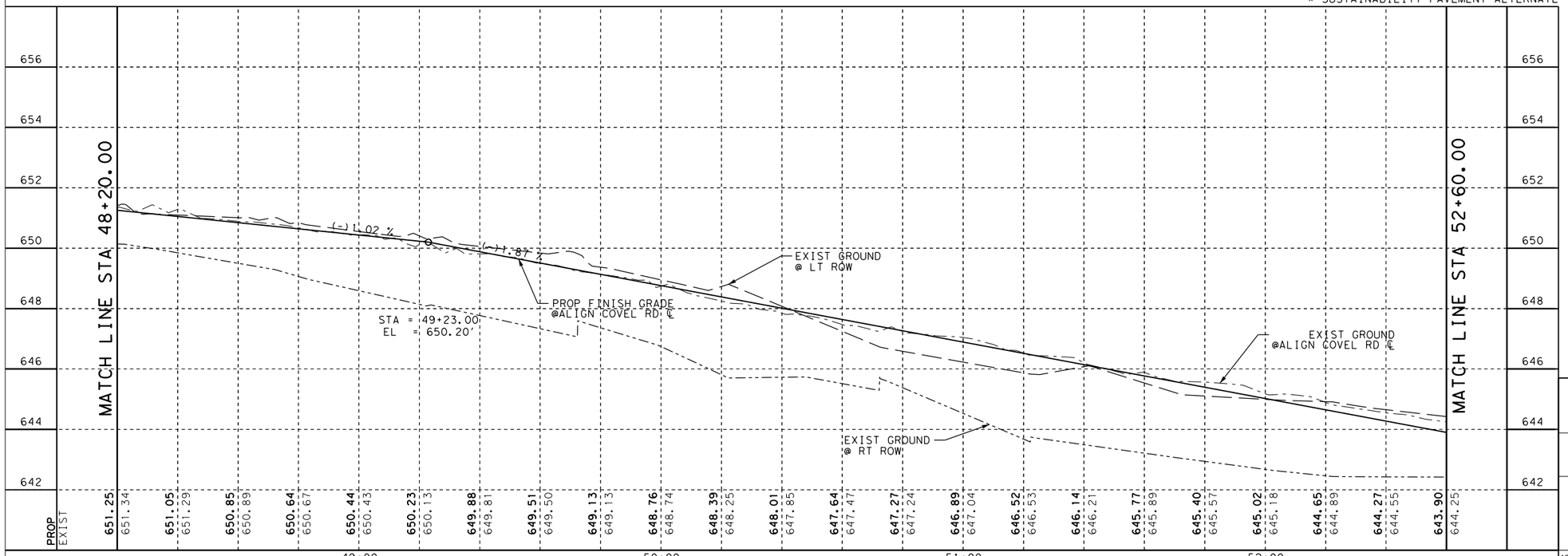
- EXIST ROW
- EXIST STREAM CENTERLINE
- PROPOSED LIMITS OF CONSTRUCTION
- PROPOSED 9.5" CRCP, 4" ACP, & 6" LIME TREATED SUBGRADE
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- AT&T-OH TEL — EXIST OVERHEAD TELEPHONE LINE
- EXIST CHAINLINK FENCE LINE
- EXIST WIRE FRAME FENCE LINE

BID ITEM	DESCRIPTION	UNIT	QTY
107.1	EMBANKMENT	CY	13
108.1	LIME TREAT. SUBGRADE (6" COMP DEPTH)	SY	1,564
205.2	HOT MIX ASPHALTIC PAVEMENT, TYPE B (3IN)	SY	0
205.3	HOT MIX ASPHALTIC PAVEMENT, TYPE C (4IN)	SY	1,467
209.1	CONCRETE PAVEMENT (9.5IN)	SY	1,369
* 209.1	CONCRETE PAVEMENT, CLASS (P) TY (IL) (9.5IN)	SY	1,369
* 240.3	WARM MIX ASPHALTIC CONCRETE, TYPE C (4IN)	SY	1,467
503.2	CONCRETE DRIVEWAY (COMM)	SY	74
TXDOT BID ITEMS			
354-6022	PLANE ASPH CONC PAV(0" TO 3")	SY	0

NOTES:

1. REFER TO "PROJECT LAYOUT" SHEET FOR CROSS SLOPE AND SUPER ELEVATION TRANSITIONS.
2. REFER TO "DRIVEWAY DETAILS AND SUMMARY", "DRIVEWAY PROFILES" SHEETS FOR PROPOSED DRIVEWAY DETAILS.

* SUSTAINABILITY PAVEMENT ALTERNATE



20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

2 1 0 2 4

VERTICAL SCALE: 1"=4'

STATE OF TEXAS
LIZARDO CEBALLOS
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LICENSED
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6/27/2025

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T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

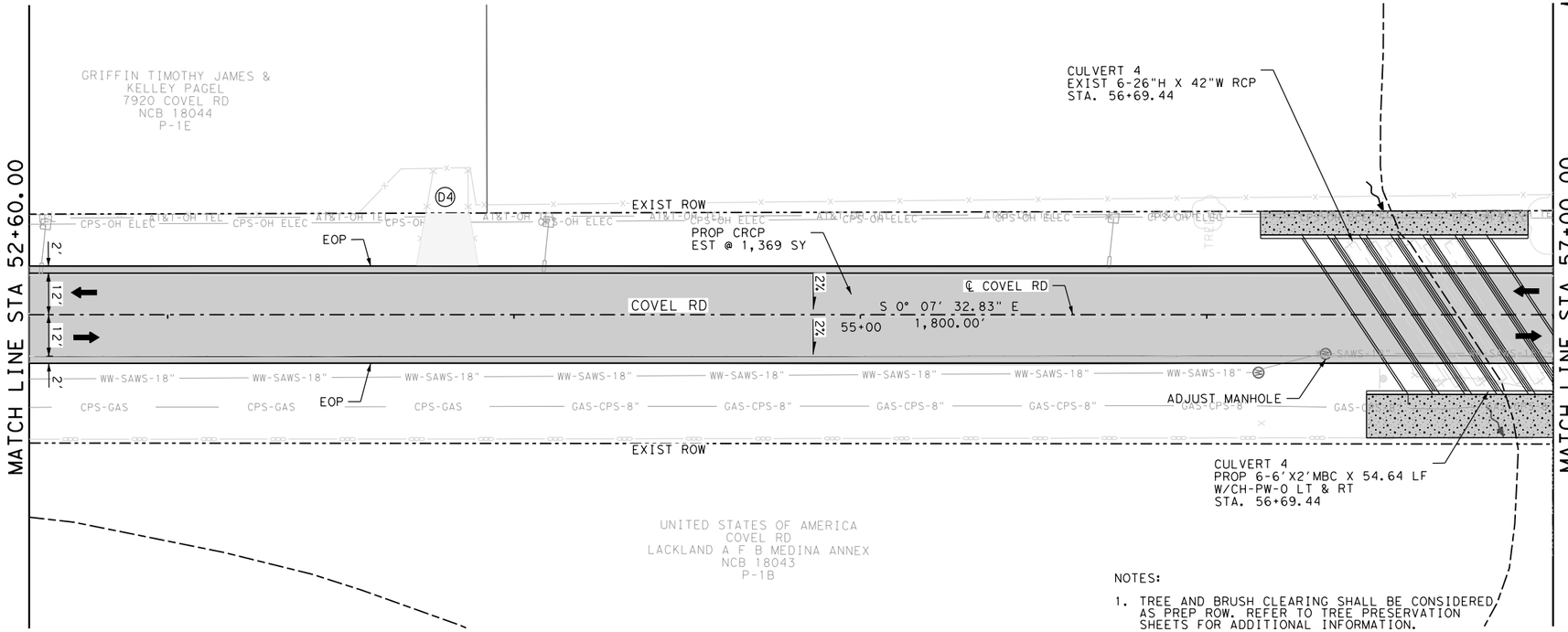
COVEL RD IMPROVEMENTS

COVEL RD PLAN AND PROFILE LAYOUTS

SHEET 10 OF 17

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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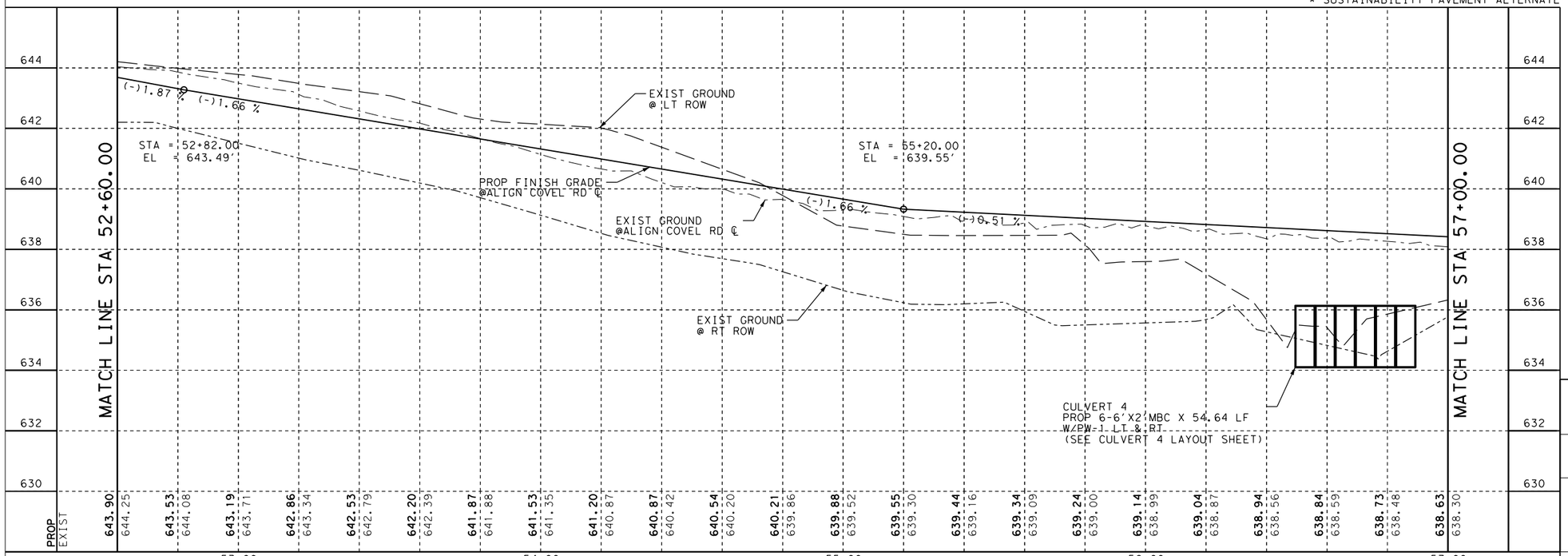
- EXIST ROW
- EXIST STREAM CENTERLINE
- PROPOSED LIMITS OF CONSTRUCTION
- PROPOSED 9.5" CRCP, 4" ACP, & 6" LIME TREATED SUBGRADE
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BID ITEM	DESCRIPTION	UNIT	QTY
107.1	EMBANKMENT	CY	33
108.1	LIME TREAT. SUBGRADE (6" COMP DEPTH)	SY	1,564
205.2	HOT MIX ASPHALTIC PAVEMENT, TYPE B (3IN)	SY	0
205.3	HOT MIX ASPHALTIC PAVEMENT, TYPE C (4IN)	SY	1,467
209.1	CONCRETE PAVEMENT (9.5IN)	SY	1,369
* 209.1	CONCRETE PAVEMENT, CLASS (P) TY (IL) (9.5IN)	SY	1,369
* 240.3	WARM MIX ASPHALTIC CONCRETE, TYPE C (4IN)	SY	1,467
503.2	CONCRETE DRIVEWAY (COMM)	SY	22
TXDOT BID ITEMS			
354-6022	PLANE ASPH CONC PAV(0" TO 3")	SY	0

NOTES:

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3. REFER TO "DRIVEWAY DETAILS AND SUMMARY", "DRIVEWAY PROFILES" SHEETS FOR PROPOSED DRIVEWAY DETAILS.

* SUSTAINABILITY PAVEMENT ALTERNATE



20 10 0 20 40
HORIZONTAL SCALE: 1"=40'
2 1 0 2 4
VERTICAL SCALE: 1"=4'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
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7/8/2025

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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

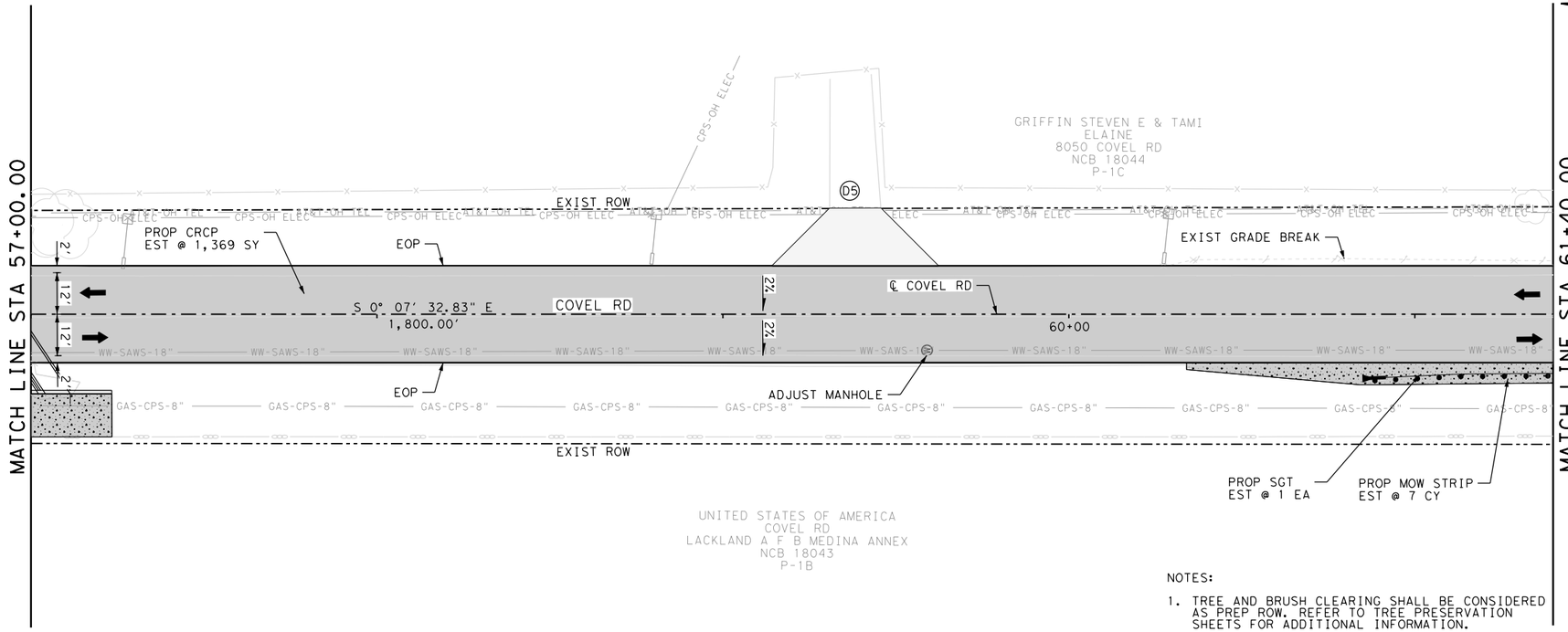
COVEL RD IMPROVEMENTS

COVEL RD PLAN AND PROFILE LAYOUTS

SHEET 11 OF 17

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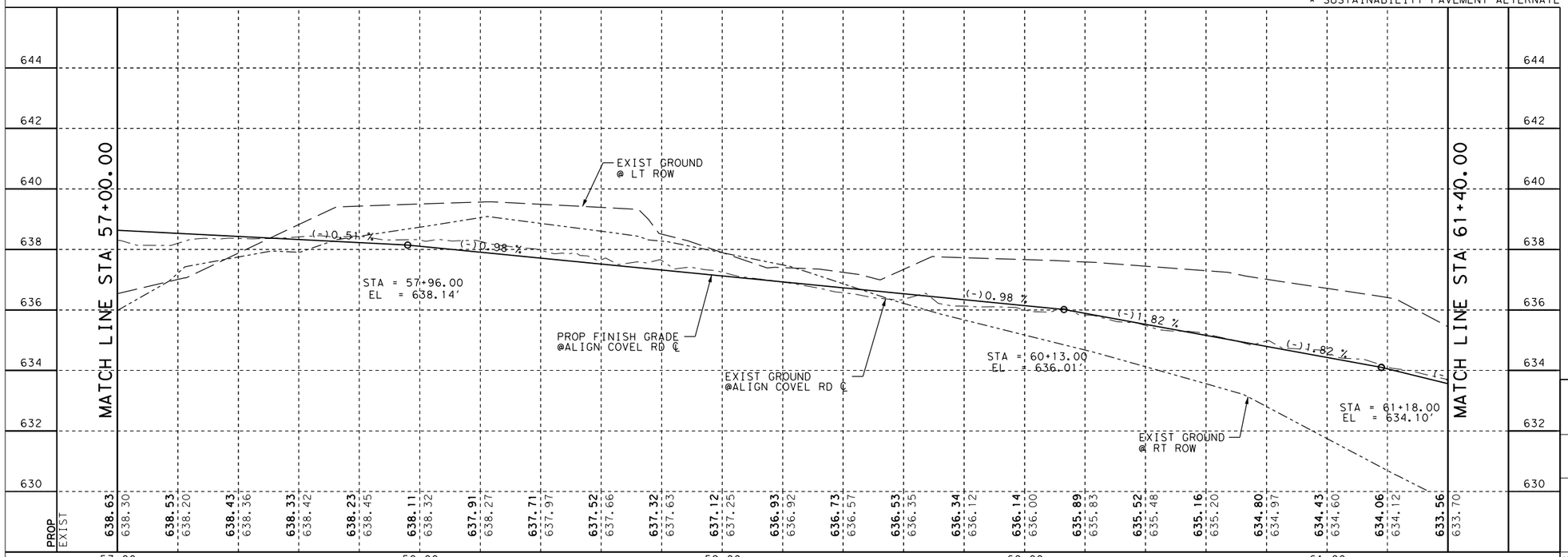
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- EXIST STREAM CENTERLINE
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- PROPOSED 9.5" CRCP, 4" ACP, & 6" LIME TREATED SUBGRADE
- PROPOSED CONCRETE DRIVEWAY
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- PROPOSED RIPRAP
- D# DRIVEWAY NUMBER
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- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
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- AT&T-OH TEL — EXIST OVERHEAD TELEPHONE LINE
- EXIST CHAINLINK FENCE LINE
- EXIST WIRE FRAME FENCE LINE

BID ITEM	DESCRIPTION	UNIT	QTY
107.1	EMBANKMENT	CY	31
108.1	LIME TREAT. SUBGRADE (6" COMP DEPTH)	SY	1,564
205.2	HOT MIX ASPHALTIC PAVEMENT, TYPE B (3IN)	SY	0
205.3	HOT MIX ASPHALTIC PAVEMENT, TYPE C (4IN)	SY	1,467
209.1	CONCRETE PAVEMENT (9.5IN)	SY	1,369
* 209.1	CONCRETE PAVEMENT, CLASS (P) TY (IL) (9.5IN)	SY	1,369
* 240.3	WARM MIX ASPHALTIC CONCRETE, TYPE C (4IN)	SY	1,467
503.2	CONCRETE DRIVEWAY (COMM)	SY	57
TXDOT BID ITEMS			
354-6022	PLANE ASPH CONC PAV(0" TO 3")	SY	0
432-6045	RIPRAP (MOW STRIP)(4 IN)	CY	7
540-6001	MTL W-BEAM GD FEN (TIM POST)	LF	0
540-6016	DOWNSTREAM ANCHOR TERMINAL SECTION	EA	0
544-6001	GUARDRAIL END TREATMENT (INSTALL)	EA	1

NOTES:

1. TREE AND BRUSH CLEARING SHALL BE CONSIDERED AS PREP ROW. REFER TO TREE PRESERVATION SHEETS FOR ADDITIONAL INFORMATION.
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3. REFER TO "DRIVEWAY DETAILS AND SUMMARY", "DRIVEWAY PROFILES" SHEETS FOR PROPOSED. DRIVEWAY DETAILS.

* SUSTAINABILITY PAVEMENT ALTERNATE



20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

2 1 0 2 4

VERTICAL SCALE: 1"=4'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
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7/8/2025

GANNETT FLEMING
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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

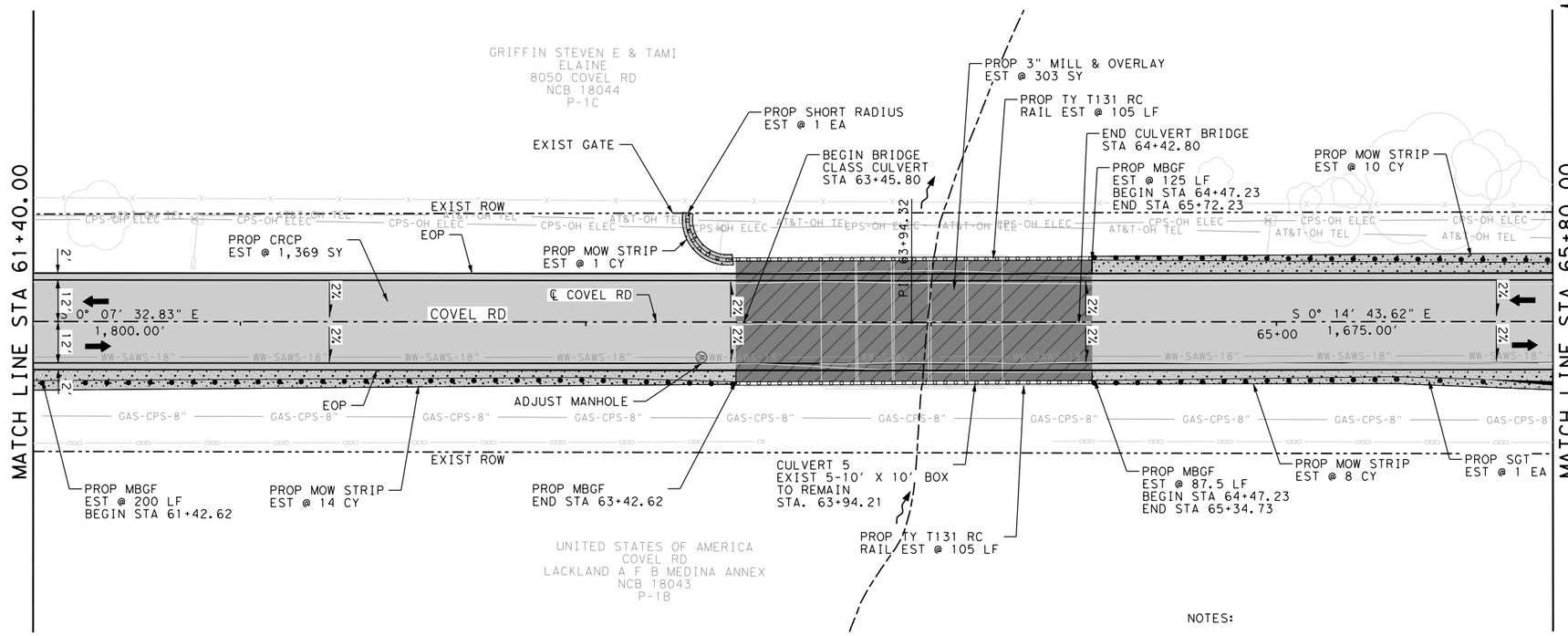
COVEL RD IMPROVEMENTS

COVEL RD PLAN AND PROFILE LAYOUTS

SHEET 12 OF 17

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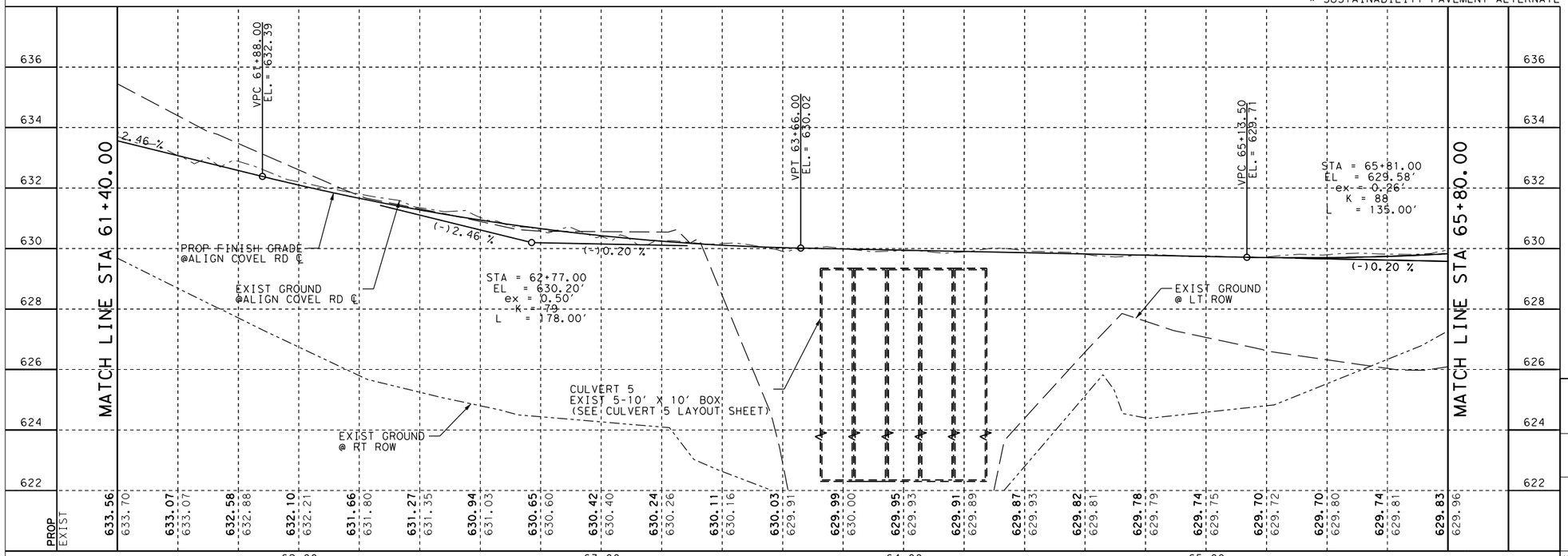
- EXIST ROW
- EXIST STREAM CENTERLINE
- PROPOSED LIMITS OF CONSTRUCTION
- PROPOSED 9.5" CRCP, 4" ACP, & 6" LIME TREATED SUBGRADE
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- PROPOSED RIPRAP
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- FLOW ARROW
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
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- AT&T-OH TEL — EXIST OVERHEAD TELEPHONE LINE
- EXIST CHAINLINK FENCE LINE
- EXIST WIRE FRAME FENCE LINE

BID ITEM	DESCRIPTION	UNIT	QTY
107.1	EMBANKMENT	CY	9
108.1	LIME TREAT. SUBGRADE (6" COMP DEPTH)	SY	1,162
205.3	HOT MIX ASPHALTIC PAVEMENT, TYPE C (3IN)	SY	303
205.3	HOT MIX ASPHALTIC PAVEMENT, TYPE C (4IN)	SY	1,467
209.1	CONCRETE PAVEMENT (9.5IN)	SY	1,369
* 209.1	CONCRETE PAVEMENT, CLASS (P) TY (IL) (9.5IN)	SY	1,369
* 240.3	WARM MIX ASPHALTIC CONCRETE, TYPE C (4IN)	SY	1,467
503.2	CONCRETE DRIVEWAY (COMM)	SY	0
TXDOT BID ITEMS			
354-6022	PLANE ASPH CONC PAV(0" TO 3")	SY	303
432-6045	RIPRAP (MOW STRIP)(4 IN)	CY	32
451-6004	RETROFIT RAIL (TY131RC)	LF	210
540-6001	MTL W-BEAM GD FEN (TIM POST)	LF	413
540-6014	SHORT RADIUS	LF	22
540-6016	DOWNSTREAM ANCHOR TERMINAL SECTION	EA	0
544-6001	GUARDRAIL END TREATMENT (INSTALL)	EA	1

NOTES:

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* SUSTAINABILITY PAVEMENT ALTERNATE



20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

2 1 0 2 4

VERTICAL SCALE: 1"=4'

STATE OF TEXAS
LIZARDO CEBALLOS
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PUBLIC WORKS DEPARTMENT

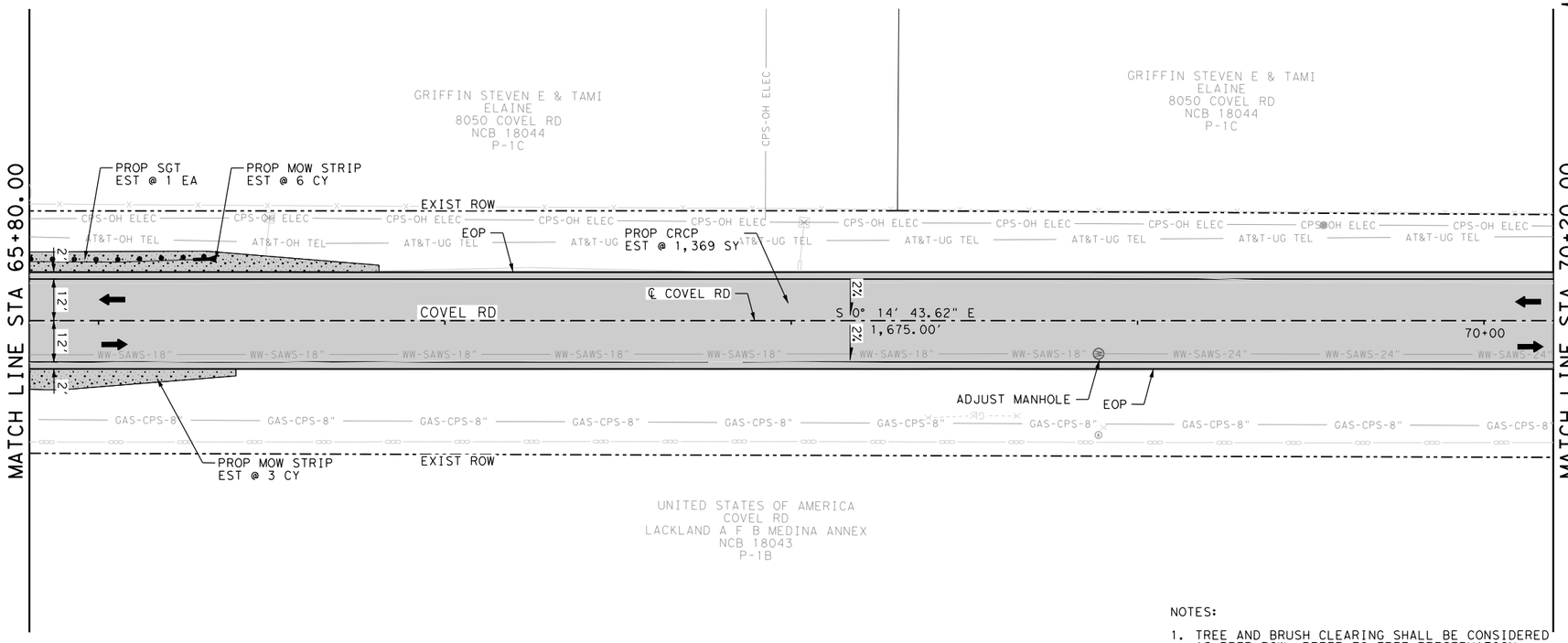
COVEL RD IMPROVEMENTS

COVEL RD PLAN AND PROFILE LAYOUTS

SHEET 13 OF 17

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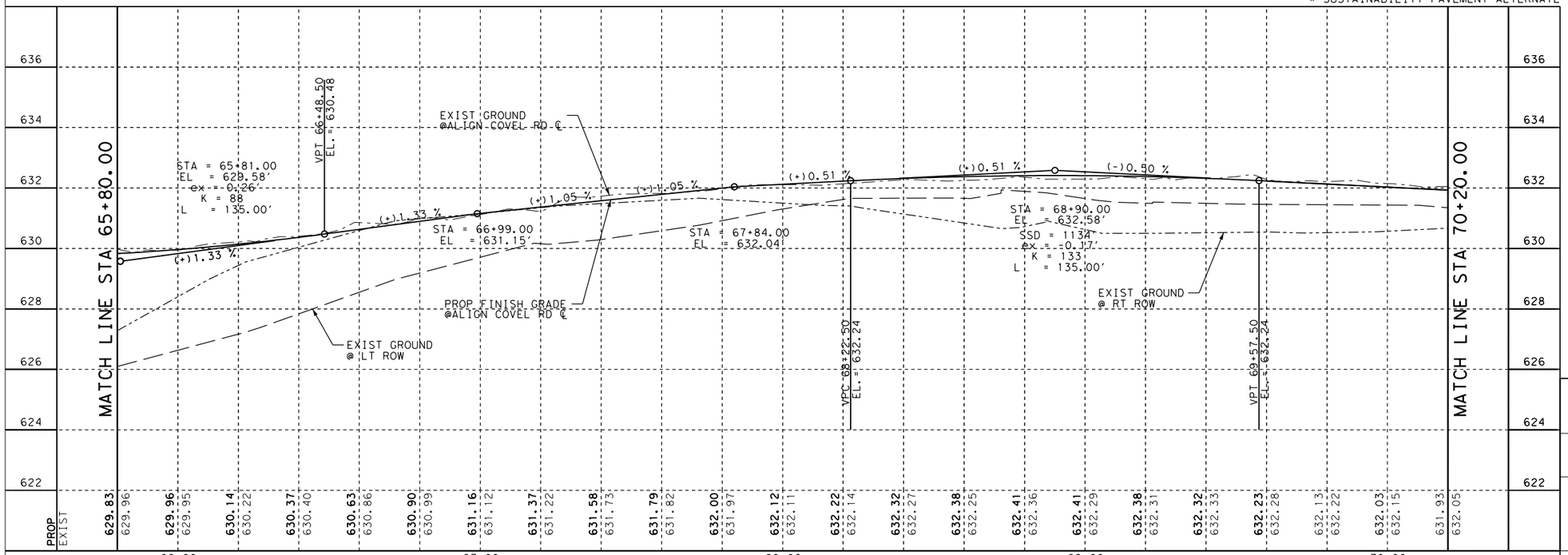
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- EXIST STREAM CENTERLINE
- PROPOSED LIMITS OF CONSTRUCTION
- PROPOSED 9.5" CRCP, 4" ACP, & 6" LIME TREATED SUBGRADE
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- PROPOSED RIPRAP
- (D#) DRIVEWAY NUMBER
- FLOW ARROW
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
- CPS-GAS — EXIST GAS LINE
- W-SAWS — EXIST WATER LINE
- WW-SAWS — EXIST WASTE WATER LINE
- AT&T-UG TEL — EXIST UNDERGROUND TELEPHONE LINE
- AT&T-OH TEL — EXIST OVERHEAD TELEPHONE LINE
- EXIST CHAINLINK FENCE LINE
- EXIST WIRE FRAME FENCE LINE

BID ITEM	DESCRIPTION	UNIT	QTY
107.1	EMBANKMENT	CY	20
108.1	LIME TREAT. SUBGRADE (6" COMP DEPTH)	SY	1,564
205.2	HOT MIX ASPHALTIC PAVEMENT, TYPE B (3IN)	SY	0
205.3	HOT MIX ASPHALTIC PAVEMENT, TYPE C (4IN)	SY	1,467
209.1	CONCRETE PAVEMENT (9.5IN)	SY	1,369
* 209.1	CONCRETE PAVEMENT, CLASS (P) TY (IL) (9.5IN)	SY	1,369
* 240.3	WARM MIX ASPHALTIC CONCRETE, TYPE C (4IN)	SY	1,467
503.2	CONCRETE DRIVEWAY (COMM)	SY	0
TXDOT BID ITEMS			
354-6022	PLANE ASPH CONC PAV(0" TO 3")	SY	0
432-6045	RIPRAP (MOW STRIP)(4 IN)	CY	3
540-6001	MTL W-BEAM GD FEN (TIM POST)	LF	0
540-6016	DOWNSTREAM ANCHOR TERMINAL SECTION	EA	0
544-6001	GUARDRAIL END TREATMENT (INSTALL)	EA	1

NOTES:

1. TREE AND BRUSH CLEARING SHALL BE CONSIDERED AS PREP ROW. REFER TO TREE PRESERVATION SHEETS FOR ADDITIONAL INFORMATION.
2. REFER TO "PROJECT LAYOUT" SHEET FOR CROSS SLOPE AND SUPER ELEVATION TRANSITIONS.

* SUSTAINABILITY PAVEMENT ALTERNATE



20 10 0 20 40
HORIZONTAL SCALE: 1"=40'
2 1 0 2 4
VERTICAL SCALE: 1"=4'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

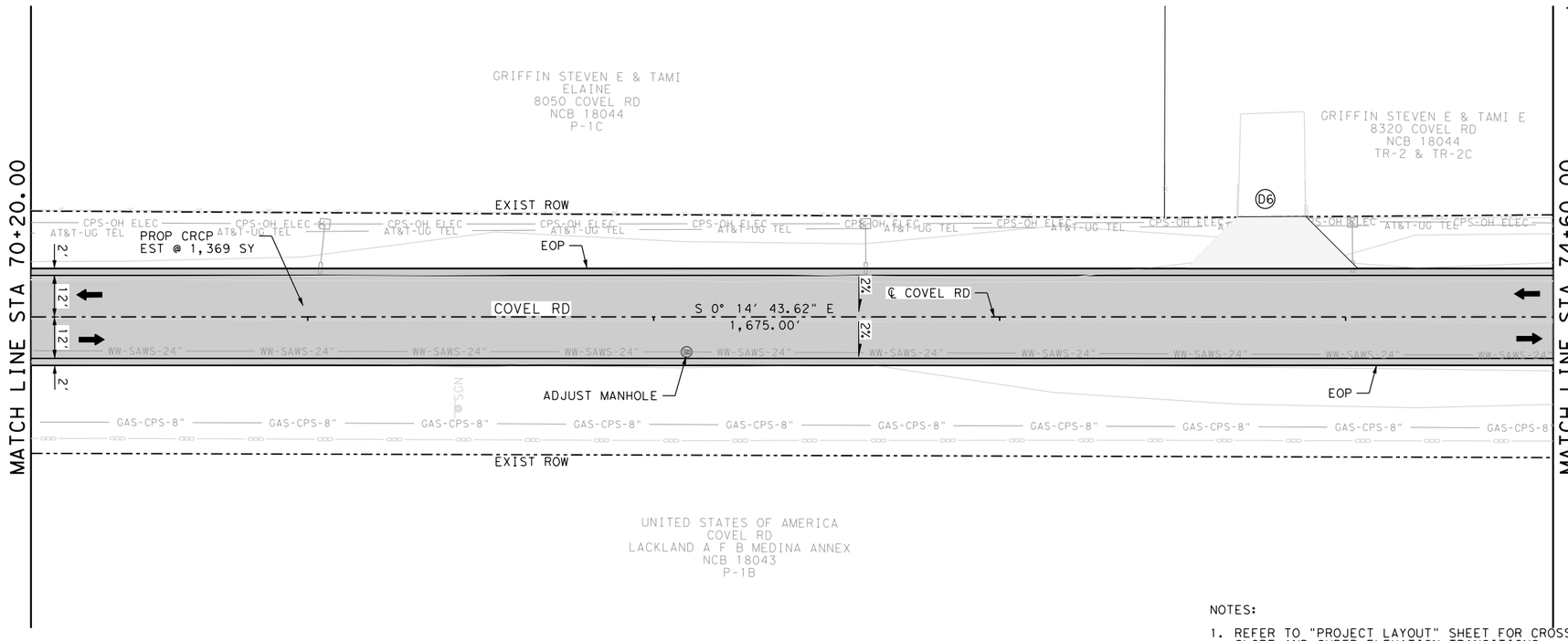
COVEL RD IMPROVEMENTS

COVEL RD PLAN AND PROFILE LAYOUTS

SHEET 14 OF 17

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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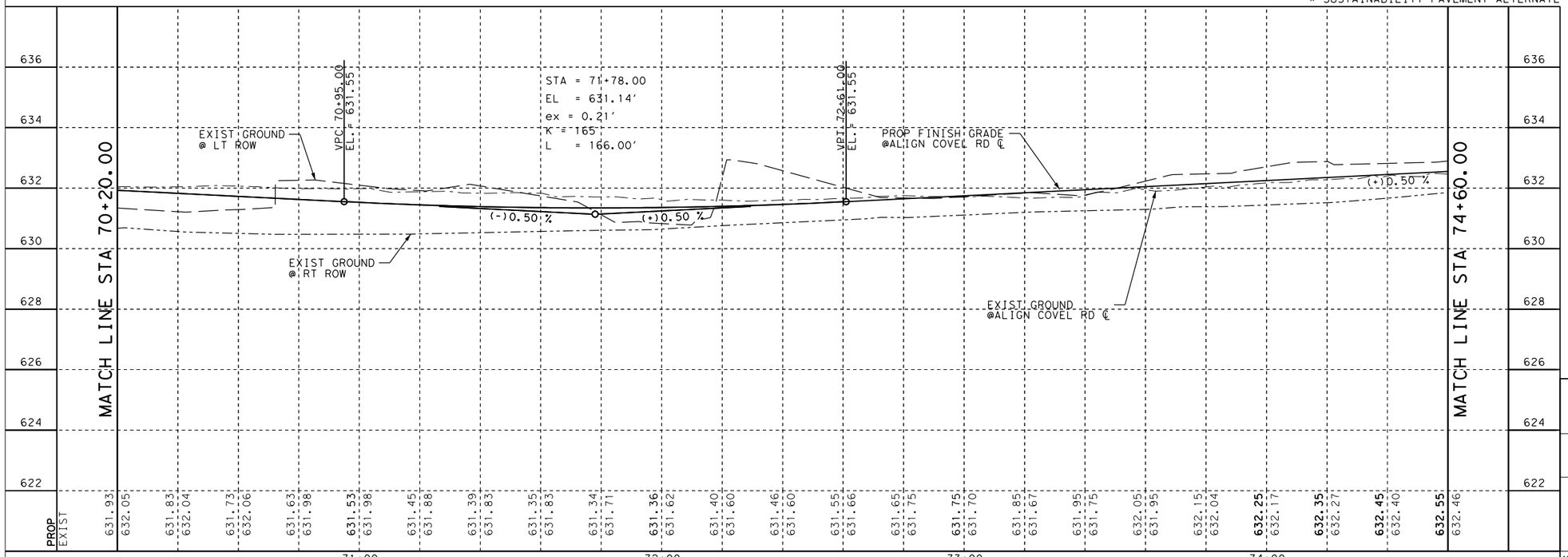
- EXIST ROW
- EXIST STREAM CENTERLINE
- PROPOSED LIMITS OF CONSTRUCTION
- PROPOSED 9.5" CRCP, 4" ACP, & 6" LIME TREATED SUBGRADE
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED BRIDGE 3" MILL & OVERLAY
- PROPOSED RIPRAP
- D# DRIVEWAY NUMBER
- FLOW ARROW
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
- CPS-GAS — EXIST GAS LINE
- W-SAWS — EXIST WATER LINE
- WW-SAWS — EXIST WASTE WATER LINE
- AT&T-UG TEL — EXIST UNDERGROUND TELEPHONE LINE
- AT&T-OH TEL — EXIST OVERHEAD TELEPHONE LINE
- EXIST CHAINLINK FENCE LINE
- EXIST WIRE FRAME FENCE LINE

BID ITEM	DESCRIPTION	UNIT	QTY
107.1	EMBANKMENT	CY	11
108.1	LIME TREAT. SUBGRADE (6" COMP DEPTH)	SY	1,564
205.2	HOT MIX ASPHALTIC PAVEMENT, TYPE B (3IN)	SY	0
205.3	HOT MIX ASPHALTIC PAVEMENT, TYPE C (4IN)	SY	1,467
209.1	CONCRETE PAVEMENT (9.5IN)	SY	1,369
* 209.1	CONCRETE PAVEMENT, CLASS (P) TY (IL) (9.5IN)	SY	1,369
* 240.3	WARM MIX ASPHALTIC CONCRETE, TYPE C (4IN)	SY	1,467
503.2	CONCRETE DRIVEWAY (COMM)	SY	56
TXDOT BID ITEMS			
354-6022	PLANE ASPH CONC PAV(0" TO 3")	SY	0

NOTES:

1. REFER TO "PROJECT LAYOUT" SHEET FOR CROSS SLOPE AND SUPER ELEVATION TRANSITIONS.
2. REFER TO "DRIVEWAY DETAILS AND SUMMARY", "DRIVEWAY PROFILES" SHEETS FOR PROPOSED DRIVEWAY DETAILS.

* SUSTAINABILITY PAVEMENT ALTERNATE



20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

2 1 0 2 4

VERTICAL SCALE: 1"=4'

STATE OF TEXAS
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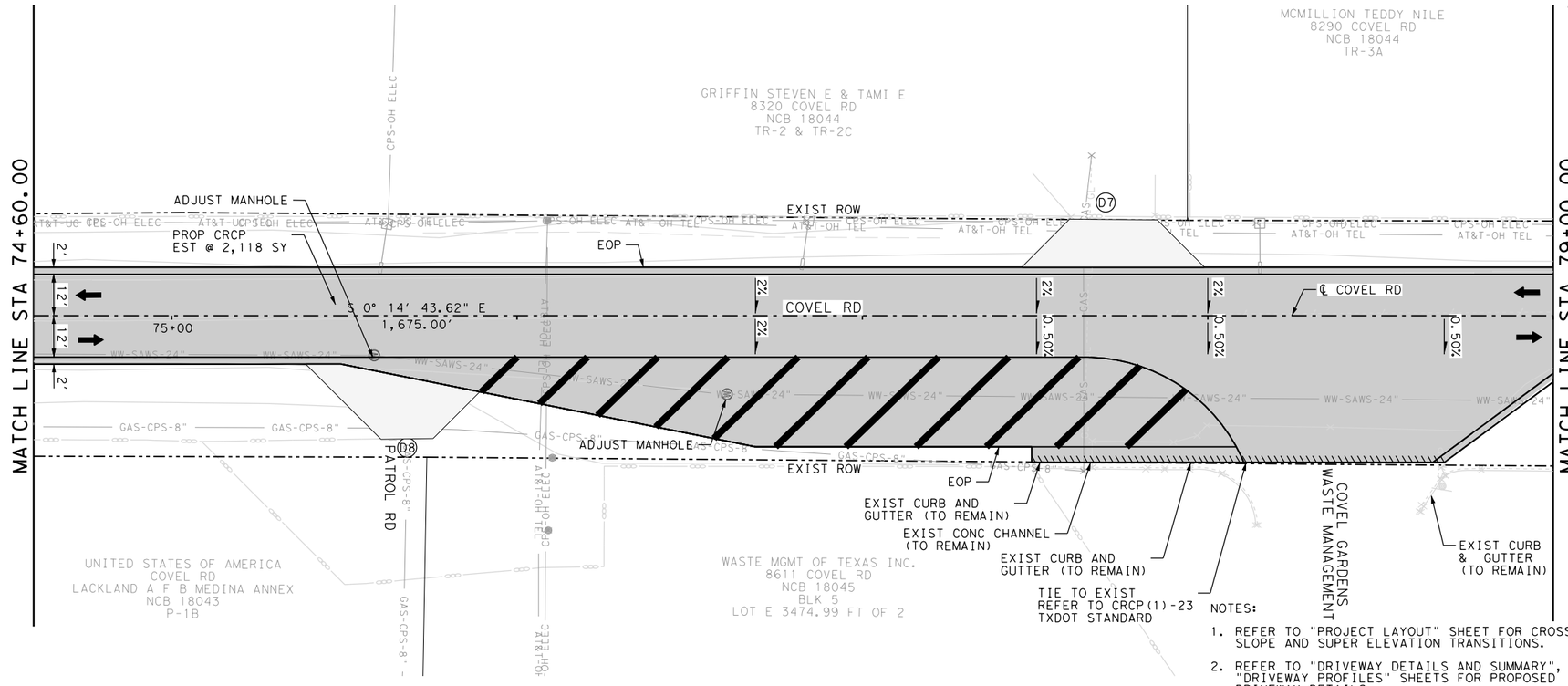
COVEL RD IMPROVEMENTS

COVEL RD PLAN AND PROFILE LAYOUTS

SHEET 15 OF 17

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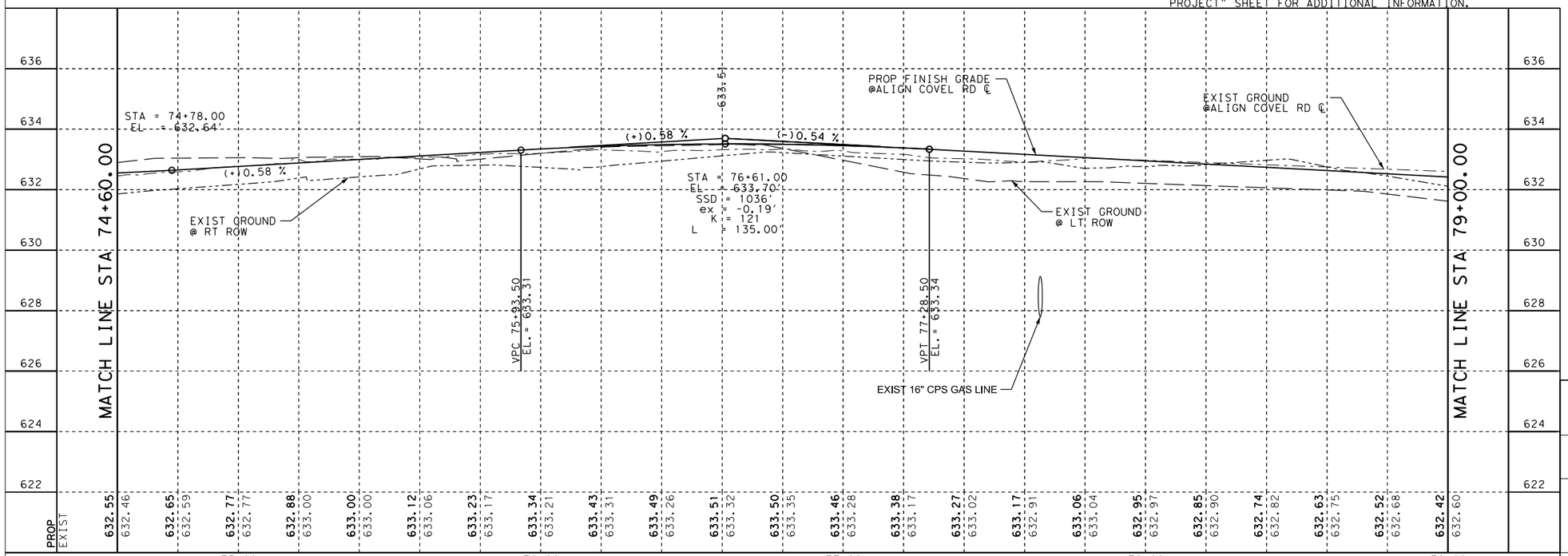
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- EXIST STREAM CENTERLINE
- PROPOSED LIMITS OF CONSTRUCTION
- PROPOSED 9.5" CRCP, 4" ACP, & 6" LIME TREATED SUBGRADE
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED BRIDGE 3" MILL & OVERLAY
- PROPOSED RIPRAP
- D# DRIVEWAY NUMBER
- FLOW ARROW
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
- CPS-GAS — EXIST GAS LINE
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- WW-SAWS — EXIST WASTE WATER LINE
- AT&T-UG TEL — EXIST UNDERGROUND TELEPHONE LINE
- AT&T-OH TEL — EXIST OVERHEAD TELEPHONE LINE
- EXIST CHAINLINK FENCE LINE
- EXIST WIRE FRAME FENCE LINE

BID ITEM	DESCRIPTION	UNIT	QTY
107.1	EMBANKMENT	CY	27
108.1	LIME TREAT. SUBGRADE (6" COMP DEPTH)	SY	2,317
205.2	HOT MIX ASPHALTIC PAVEMENT, TYPE B (3IN)	SY	0
205.3	HOT MIX ASPHALTIC PAVEMENT, TYPE C (4IN)	SY	2,218
209.1	CONCRETE PAVEMENT (9.5IN)	SY	2,119
* 209.1	CONCRETE PAVEMENT, CLASS (P) TY (IL) (9.5IN)	SY	2,119
* 240.3	WARM MIX ASPHALTIC CONCRETE, TYPE C (4IN)	SY	2,218
503.2	CONCRETE DRIVEWAY (COMM)	SY	139
TXDOT BID ITEMS			
354-6022	PLANE ASPH CONC PAV(0" TO 3")	SY	0

* SUSTAINABILITY PAVEMENT ALTERNATE

NOTES:

1. REFER TO "PROJECT LAYOUT" SHEET FOR CROSS SLOPE AND SUPER ELEVATION TRANSITIONS.
2. REFER TO "DRIVEWAY DETAILS AND SUMMARY", "DRIVEWAY PROFILES" SHEETS FOR PROPOSED DRIVEWAY DETAILS.
3. REFER TO "INTERSECTION LAYOUT AT END PROJECT" SHEET FOR ADDITIONAL INFORMATION.



20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

2 1 0 2 4

VERTICAL SCALE: 1"=4'

STATE OF TEXAS
LIZARDO CEBALLOS
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6/27/2025

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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

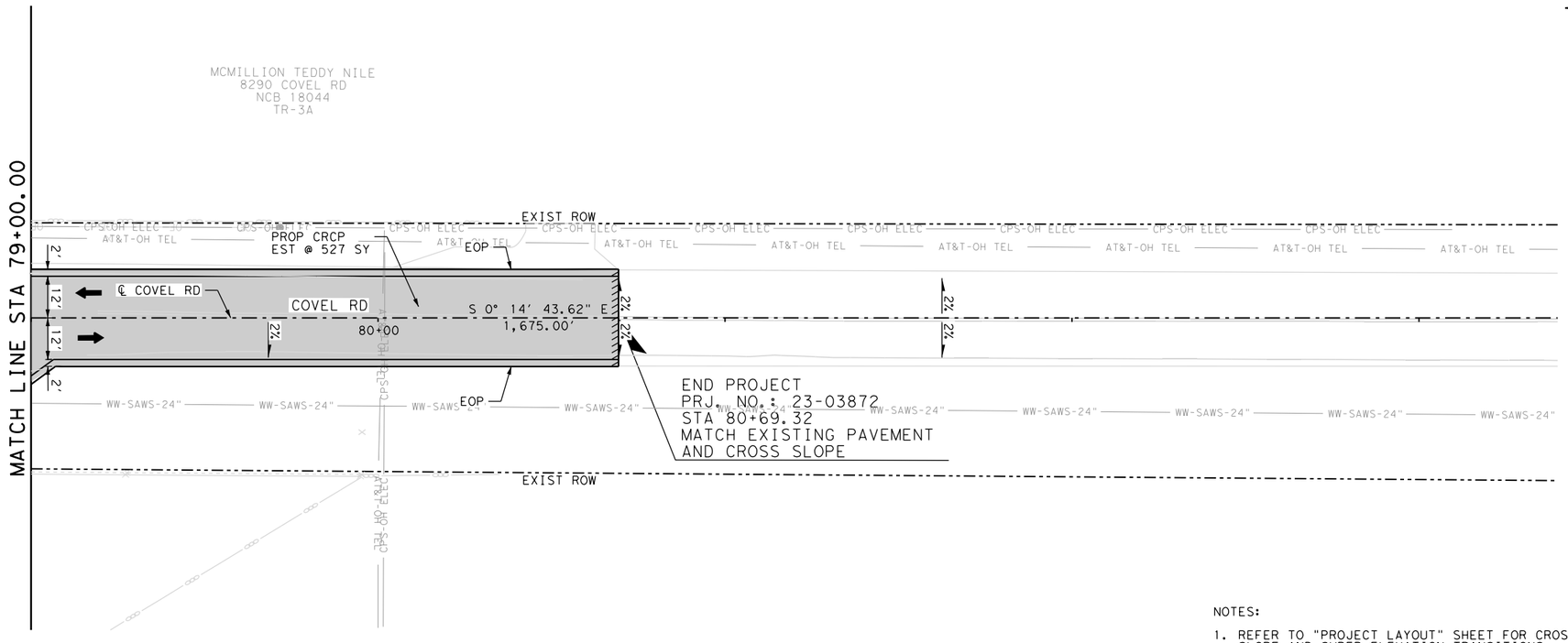
COVEL RD IMPROVEMENTS

COVEL RD PLAN AND PROFILE LAYOUTS

SHEET 16 OF 17

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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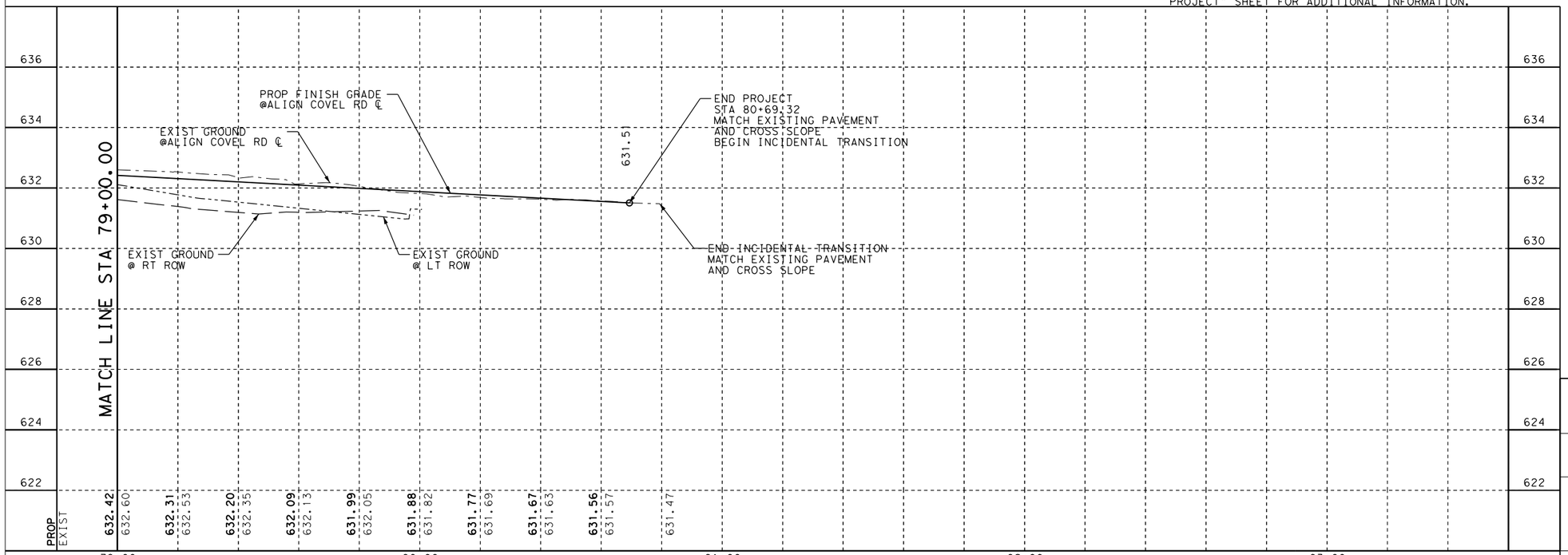
- EXIST ROW
- EXIST STREAM CENTERLINE
- PROPOSED LIMITS OF CONSTRUCTION
- PROPOSED 9.5" CRCP, 4" ACP, & 6" LIME TREATED SUBGRADE
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED BRIDGE 3" MILL & OVERLAY
- PROPOSED RIPRAP
- (D#) DRIVEWAY NUMBER
- FLOW ARROW
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
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- AT&T-UG TEL — EXIST UNDERGROUND TELEPHONE LINE
- AT&T-OH TEL — EXIST OVERHEAD TELEPHONE LINE
- EXIST CHAINLINK FENCE LINE
- EXIST WIRE FRAME FENCE LINE

BID ITEM	DESCRIPTION	UNIT	QTY
107.1	EMBANKMENT	CY	5
108.1	LIME TREAT. SUBGRADE (6" COMP DEPTH)	SY	602
205.2	HOT MIX ASPHALTIC PAVEMENT, TYPE B (3IN)	SY	0
205.3	HOT MIX ASPHALTIC PAVEMENT, TYPE C (4IN)	SY	565
209.1	CONCRETE PAVEMENT (9.5IN)	SY	527
* 209.1	CONCRETE PAVEMENT, CLASS (P) TY (IL) (9.5IN)	SY	527
* 240.3	WARM MIX ASPHALTIC CONCRETE, TYPE C (4IN)	SY	565
503.2	CONCRETE DRIVEWAY (COMM)	SY	0
TXDOT BID ITEMS			
354-6022	PLANE ASPH CONC PAV(0" TO 3")	SY	0

* SUSTAINABILITY PAVEMENT ALTERNATE

NOTES:

1. REFER TO "PROJECT LAYOUT" SHEET FOR CROSS SLOPE AND SUPER ELEVATION TRANSITIONS.
2. REFER TO "DRIVEWAY DETAILS AND SUMMARY", "DRIVEWAY PROFILES" SHEETS FOR PROPOSED DRIVEWAY DETAILS.
3. REFER TO "INTERSECTION LAYOUT AT END PROJECT" SHEET FOR ADDITIONAL INFORMATION.



20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

2 1 0 2 4

VERTICAL SCALE: 1"=4'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
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PROFESSIONAL ENGINEER

6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

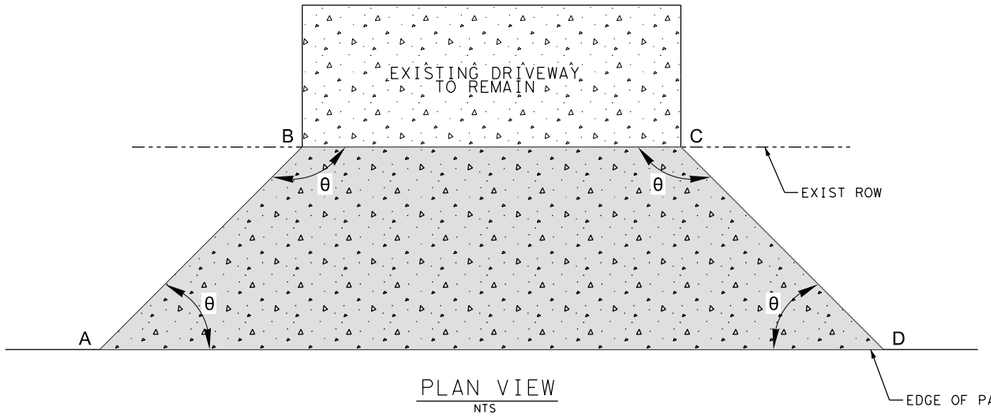
COVEL RD IMPROVEMENTS

COVEL RD PLAN AND PROFILE LAYOUTS

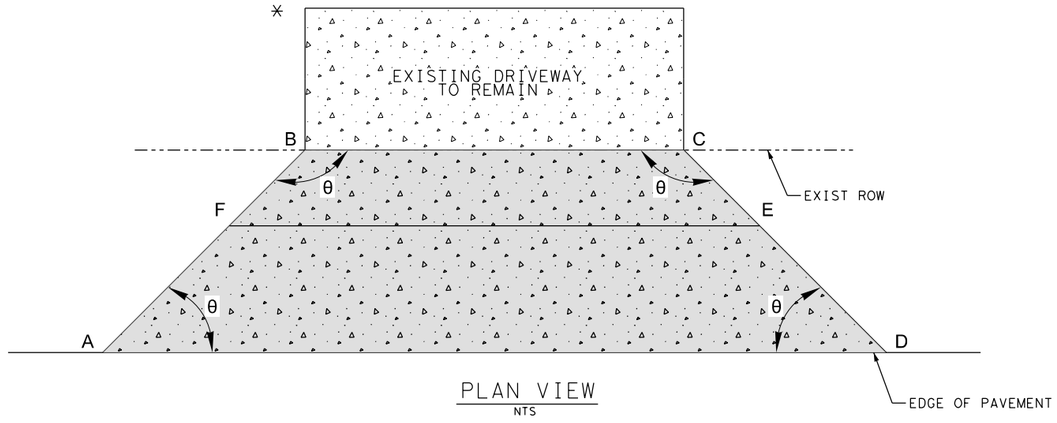
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DRIVEWAY NO.	POINT																								ITEM 503.2 DRWY (COMM)
	A				B				C				D				E				F				
	STA	OFFSET	ELEV	θ	STA	OFFSET	ELEV	θ	STA	OFFSET	ELEV	θ	STA	OFFSET	ELEV	θ	STA	OFFSET	ELEV	θ	STA	OFFSET	ELEV	θ	SY
D1	43+05.31	14.00' RT	656.30'	45	42+84.12	35.19' RT	654.53'	134.7	42+64.12	35.10' RT	654.67'	135.3	42+43.02	14.00' RT	657.40'	45	42+57.52	28.5	654.8	135	42+90.81	28.5	654.66	135	142.86
D2	46+47.45	14.00' LT	653.30'	45	46+62.36	28.91' LT	653.27'	134.4	46+74.27	28.79' LT	653.23'	135.6	46+89.06	14.00' LT	652.88'	45	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	44
D3	49+62.84	14.00' LT	649.74'	45	49+77.23	28.39' LT	649.40'	135.1	50+06.70	28.46' LT	648.80'	134.9	50+21.16	14.00' LT	648.65'	45	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	74.38
D4	53+71.84	14.00' LT	642.28'	80.1	53+74.52	29.27' LT	642.64'	100.1	53+87.08	29.30' LT	642.43'	99.3	53+87.65	14.00' LT	642.02'	80.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	22.08
D5	59+14.30	14.00' LT	637.26'	45	59+30.85	30.59' LT	637.35'	135.1	59+45.65	30.59' LT	637.17'	134.9	59+62.24	14.00' LT	636.79'	45	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	57.20
D6	73+54.13	14.00' LT	632.32'	45	73+68.94	28.81' LT	632.45'	135.4	73+88.46	28.96' LT	632.49'	134.6	74+03.42	14.00' LT	632.55'	45	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	55.96
D7	77+46.22	14.00' LT	633.52'	45	77+60.03	27.81' LT	632.27'	134.5	77+85.29	27.61,' LT	632.26'	135.5	77+98.91	14.00' LT	633.24'	45	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	59.08
D8	75+89.09	22.02' RT	632.84'	56.3	75+75.63	35.48' RT	632.80'	135.8	75+60.63	35.69' RT	632.70'	134.2	75+38.94	14.00' RT	632.71'	45	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	79.75



PLAN VIEW
NTS



PLAN VIEW
NTS

STATE OF TEXAS
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6/27/2025

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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

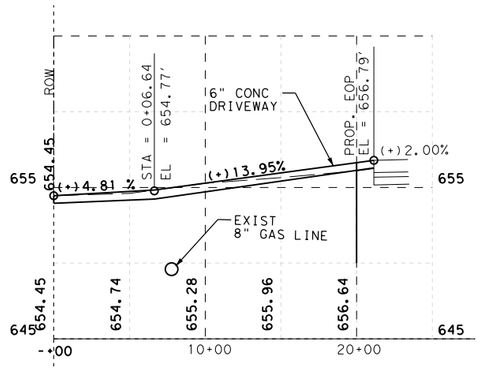
COVEL RD IMPROVEMENTS

DRIVEWAY DETAIL AND SUMMARY

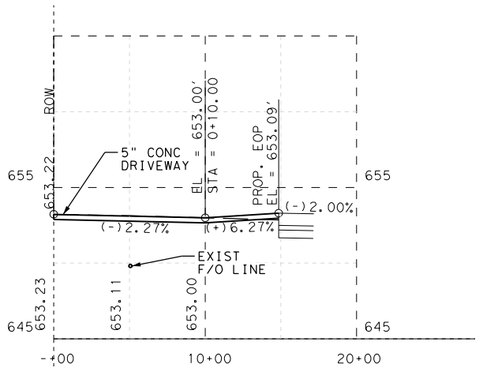
SHEET 1 OF 1

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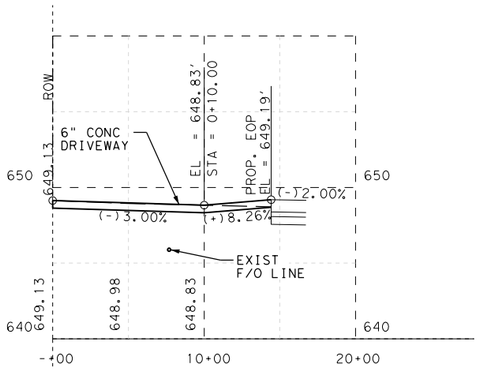
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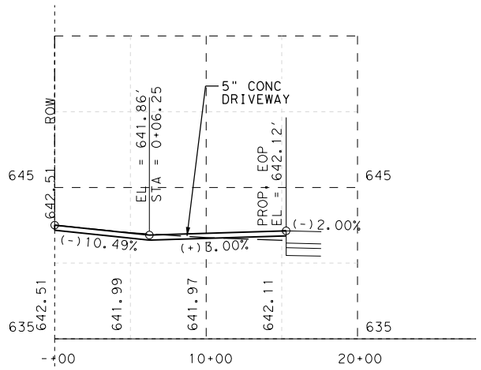
DRIVEWAY D1
42+74.16



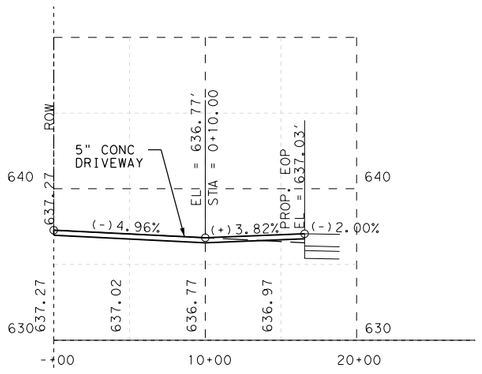
DRIVEWAY D2
46+68.31



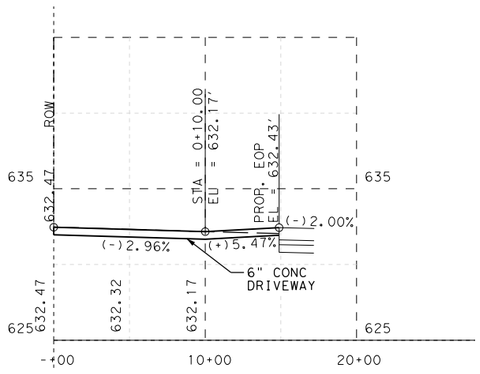
DRIVEWAY D3
49+91.96



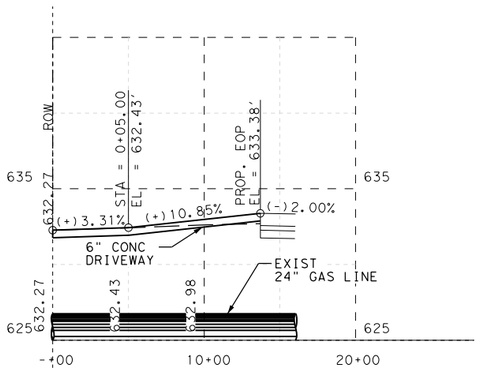
DRIVEWAY D4
53+80.80



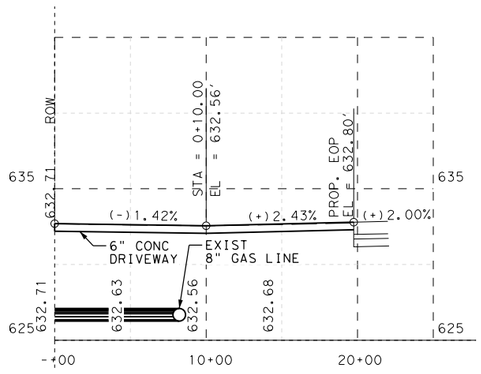
DRIVEWAY D5
59+38.25



DRIVEWAY D6
73+78.70



DRIVEWAY D7
77+72.66



DRIVEWAY D8
75+68.13

HORIZ / VERT 0 5 10

SCALE: 1"=10'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
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6/27/2025

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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

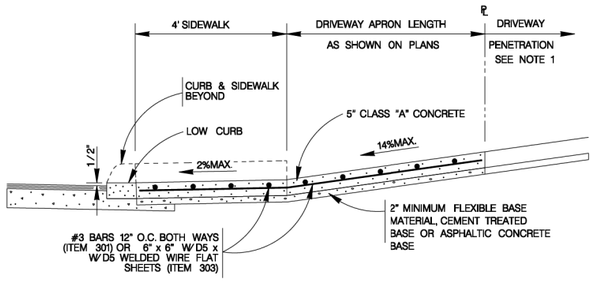
COVEL RD IMPROVEMENTS

DRIVEWAY PROFILES

SHEET 1 OF 1

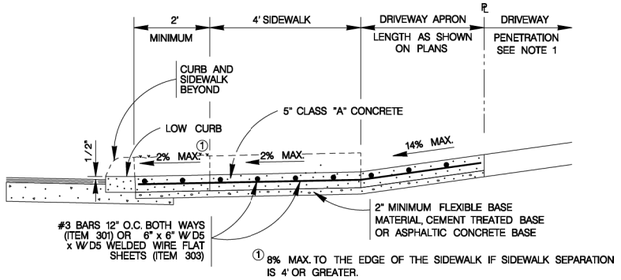
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6/27/2025
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TYPICAL RESIDENTIAL DRIVEWAY SECTION

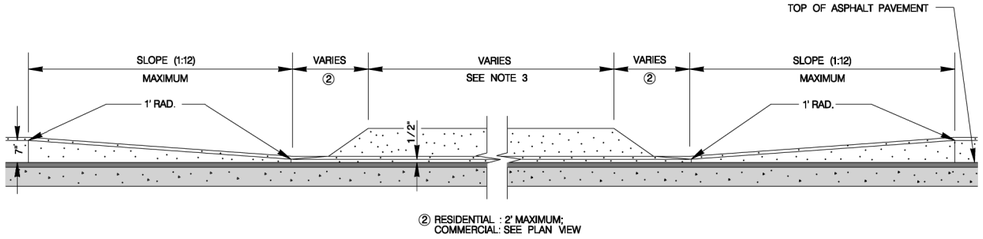
WITH SIDEWALK ABUTTING CURB
ITEM 503.1



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

TYPICAL RESIDENTIAL DRIVEWAY SECTION

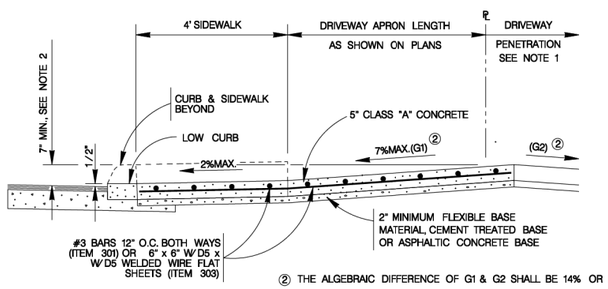
WITH SIDEWALK SEPARATED FROM CURB
ITEM 503.1



② RESIDENTIAL : 2' MAXIMUM;
COMMERCIAL: SEE PLAN VIEW

CURB PROFILE AT DRIVEWAY

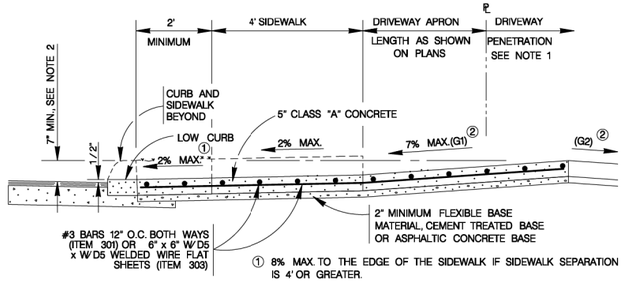
WITH SIDEWALK ABUTTING CURB



② THE ALGEBRAIC DIFFERENCE OF G1 & G2 SHALL BE 14% OR LESS

TYPICAL RESIDENTIAL DRIVEWAY SECTION

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

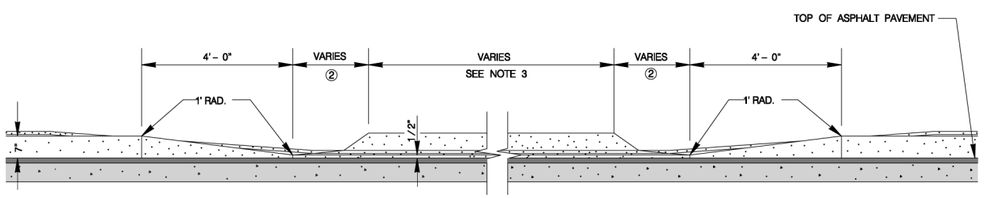


① 8% MAX. TO THE EDGE OF THE SIDEWALK IF SIDEWALK SEPARATION IS 4' OR GREATER.

② THE ALGEBRAIC DIFFERENCE OF G1 & G2 SHALL BE 14% OR LESS

TYPICAL RESIDENTIAL DRIVEWAY SECTION

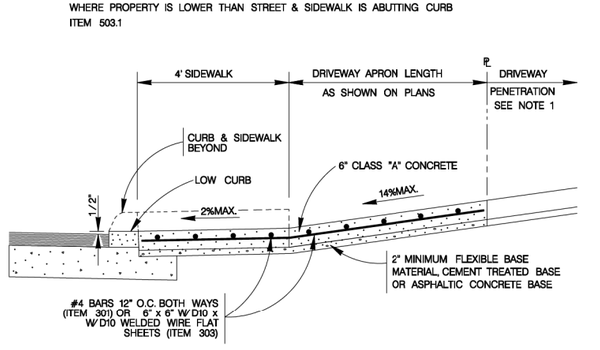
WHERE PROPERTY IS LOWER THAN STREET & SIDEWALK IS SEPARATED FROM CURB
ITEM 503.1



② RESIDENTIAL : 2' MAXIMUM;
COMMERCIAL: SEE PLAN VIEW

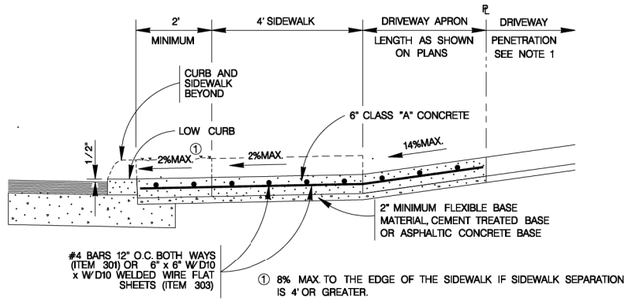
CURB PROFILE AT DRIVEWAY

WITH SIDEWALK SEPARATED FROM CURB



TYPICAL COMMERCIAL DRIVEWAY SECTION

WITH SIDEWALK ABUTTING CURB
ITEM 503.2



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

TYPICAL COMMERCIAL DRIVEWAY SECTION

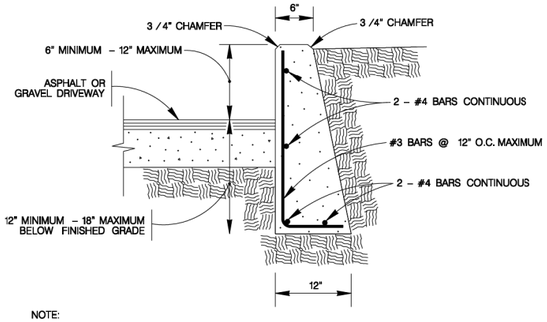
WITH SIDEWALK SEPARATED FROM CURB
ITEM 503.2

CONCRETE DRIVEWAY NOTES

1. DRIVEWAY PENETRATION REFERS TO A PORTION OF THE DRIVEWAY THAT MAY BE NECESSARY TO RECONSTRUCT WITHIN PRIVATE PROPERTY TO COMPLY WITH A MAXIMUM DRIVEWAY SLOPE. THIS PORTION OF THE DRIVEWAY SHALL BE PAID FOR UNDER THE FOLLOWING ITEMS AS MAY APPLY:
   A.) CONCRETE DRIVEWAY PAID FOR UNDER ITEM NO. 503.1 OR 503.2.
   B.) ASPHALTIC CONCRETE DRIVEWAY PAID FOR UNDER ITEM NO. 503.4 AND SHALL INCLUDE A MINIMUM OF 1" ASPHALT TYPE 'D' & 6" FLEXIBLE BASE
   C.) GRAVEL DRIVEWAY PAID FOR UNDER ITEM NO. 503.5 AND SHALL INCLUDE A MINIMUM OF 6" FLEXIBLE BASE
2. 7" MINIMUM HEIGHT WILL NOT NECESSARILY OCCUR AT THE PROPERTY LINE. IT MAY OCCUR WITHIN THE RIGHT OF WAY OR WITHIN THE DRIVEWAY PENETRATION ON PRIVATE PROPERTY.
3. THE PROPOSED DRIVEWAY SHOULD MATCH THE EXISTING WIDTH AT THE PROPERTY LINE BUT UNLESS AUTHORIZED BY THE CITY TRAFFIC ENGINEER, THE WIDTH SHALL BE WITHIN THE FOLLOWING VALUES:

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

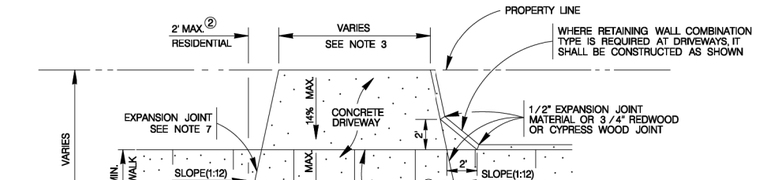
4. FOR LOCAL TYPE "A" STREETS, SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 4' AND IF SEPARATED FROM THE CURB, THE SIDEWALK SHALL BE LOCATED A MINIMUM OF 2' FROM THE BACK OF CURB.
5. FOR OTHER THAN LOCAL TYPE "A" STREETS, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 4' AND SEPARATED A MINIMUM OF 2' FROM THE BACK OF CURB OR, AS AN OPTION, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 6' WHEN LOCATED AT THE BACK OF CURB.
6. DUMMY JOINTS PARALLEL TO THE CURB SHALL BE PLACED WHERE THE SIDEWALK MEETS THE DRIVEWAY. DUMMY JOINTS PERPENDICULAR TO THE CURB, AND WITHIN THE BOUNDARIES OF THE PARALLEL DUMMY JOINTS, SHALL BE PLACED AT INTERVALS EQUAL TO THE WIDTH OF THE SIDEWALK.
7. A MINIMUM OF TWO ROUND AND SMOOTH DOWEL BARS 3 /8" IN DIAMETER AND 18" IN LENGTH SHALL BE SPACED 18" APART AT EACH EXPANSION JOINT.
8. SIDEWALK RAMP LENGTHS SHALL BE OF SUFFICIENT LENGTH TO MAINTAIN 8.33% (1:12) MAXIMUM SLOPE. WHERE SIDEWALKS CROSS DRIVEWAYS, SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2%.
9. SIDEWALK RAMP SURFACE SHALL BE BRUSH FINISHED.



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

DRIVEWAY – CONCRETE RETAINING WALL

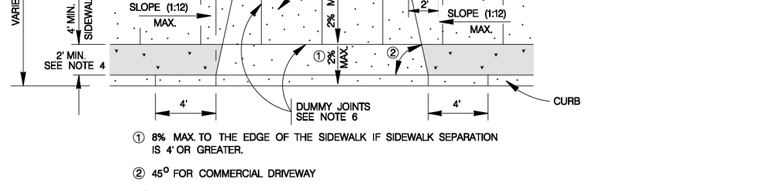
ON COMPACTED SUBGRADE
ITEM 307.1



② 45° FOR COMMERCIAL DRIVEWAY

TYPICAL DRIVEWAY PLAN VIEW

WITH SIDEWALK ABUTTING CURB



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

② 45° FOR COMMERCIAL DRIVEWAY

TYPICAL DRIVEWAY PLAN VIEW

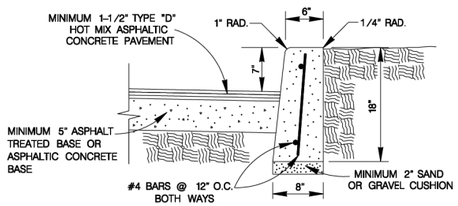
WITH SIDEWALK SEPARATED FROM CURB

MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

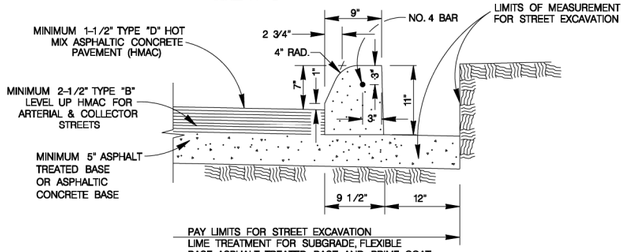
CONCRETE DRIVEWAY STANDARDS

100 % SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: V. VASQUEZ	DSGN. BY:	CHKD. BY: R.S. HOSSEINI, P.E.	SHEET NO.: 111



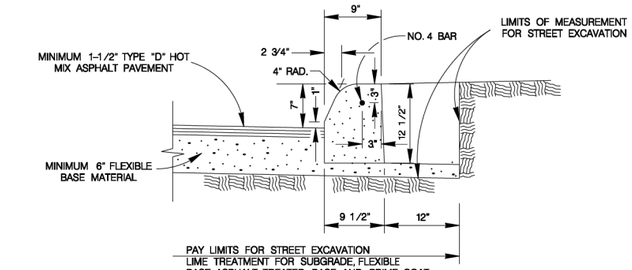
HEADER CURB

ITEM 500 ON SAND OR GRAVEL
SCALE : 1" = 2'



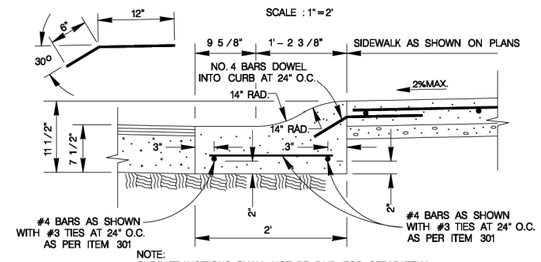
CONCRETE CURB

ITEM 500 ON ASPHALT TREATED BASE OR ASPHALTIC CONCRETE BASE
SCALE : 1" = 2'



CONCRETE CURB

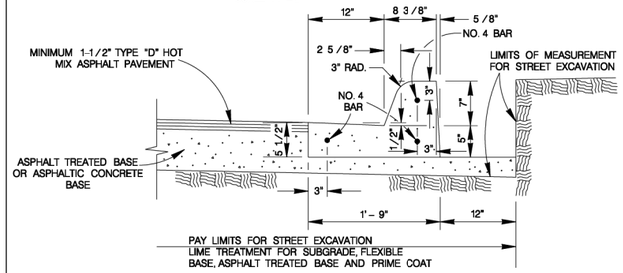
ITEM 500 ON FLEXIBLE BASE MATERIAL
SCALE : 1" = 2'



NOTE:
CURB TRANSITIONS SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN ITEM 500 CONCRETE CURBING

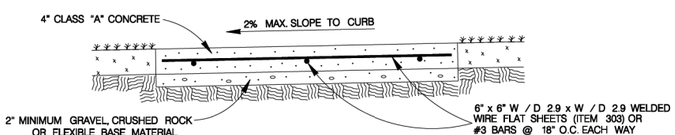
MOUNTABLE CURB

ITEM 500 ON COMPACTED SUBGRADE
SCALE : 1" = 2'



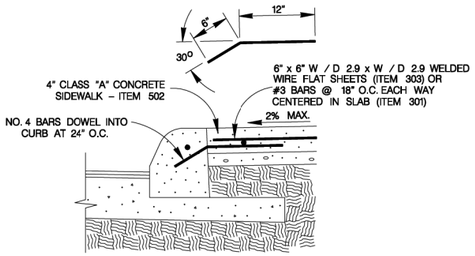
TYPICAL CURB & GUTTER DETAIL

ITEM 500 ON ASPHALT TREATED BASE OR ASPHALTIC CONCRETE BASE
SCALE : 1" = 2'



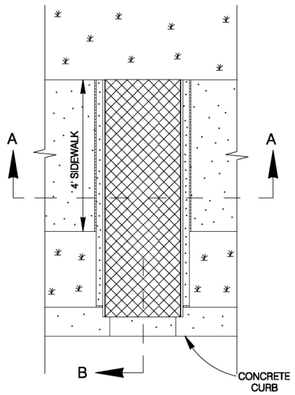
CONCRETE SIDEWALK SECTION

ITEM 502
SCALE : 1" = 2'



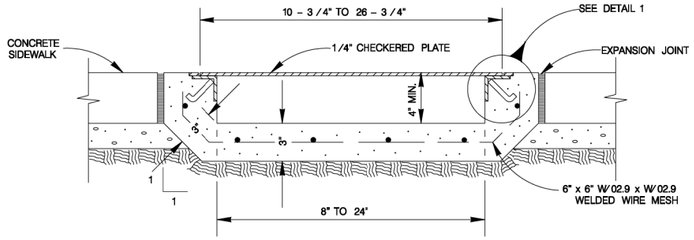
CONCRETE SIDEWALK ABUTTING CURB SECTION

ITEM 502
SCALE : 1" = 2'



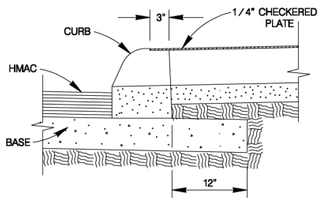
CONCRETE SIDEWALK DRAIN DETAIL

SCALE : 1" = 4'



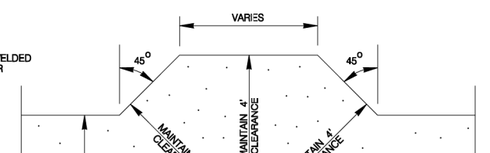
SECTION A–A

SCALE = 1 : 12



SECTION B

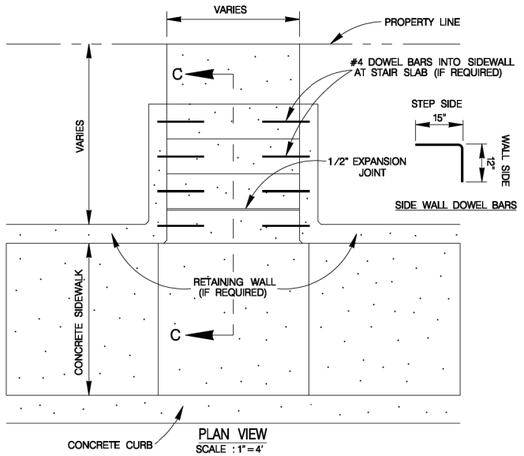
SCALE : 1" = 2'



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'

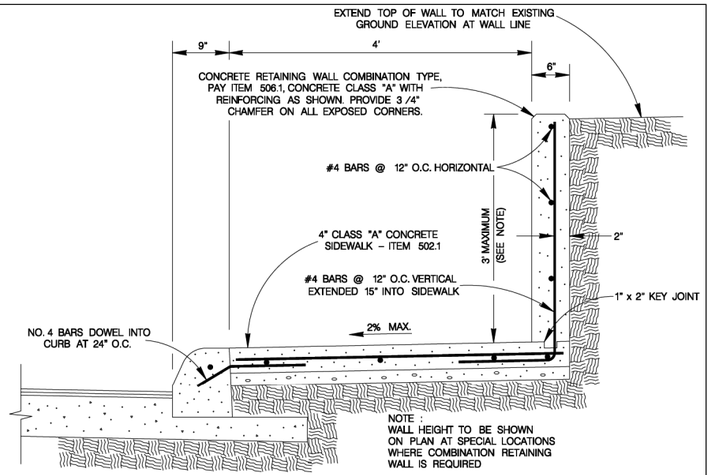


PLAN VIEW

SCALE : 1" = 4'

CONCRETE STEPS

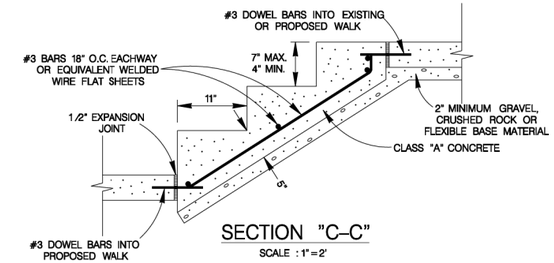
ITEM 524



NOTE :
WALL HEIGHT TO BE SHOWN ON PLAN AT SPECIAL LOCATIONS WHERE COMBINATION RETAINING WALL IS REQUIRED

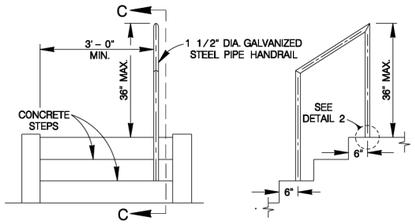
CONCRETE RETAINING WALL – COMBINATION TYPE

ITEM 506
SCALE : 1" = 2'



SECTION "C–C"

SCALE : 1" = 2'

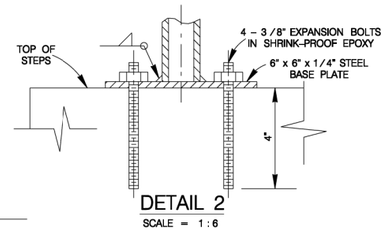


PIPE HANDRAIL DETAIL

PROFILE VIEW
SCALE : 1" = 4'

SECTION "D–D"

FRONT VIEW
SCALE : 1" = 4'



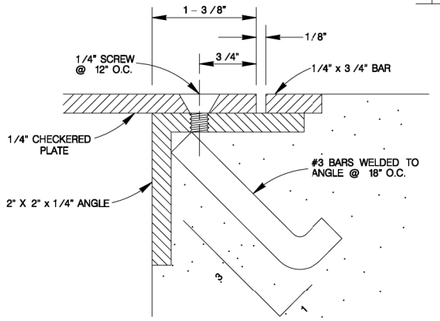
DETAIL 2

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

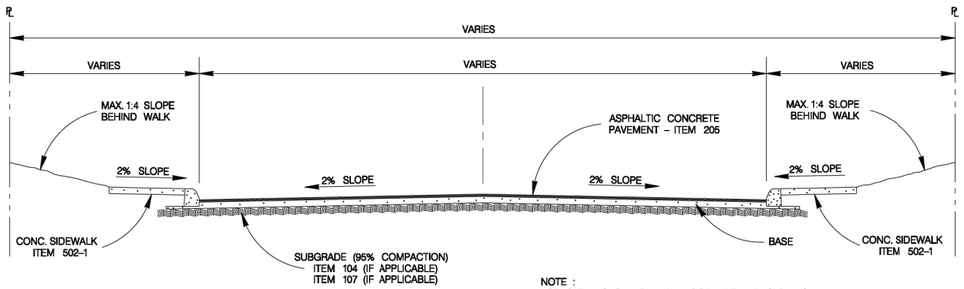
SCALE = 1 : 1

MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

MISCELLANEOUS CONSTRUCTION STANDARDS I

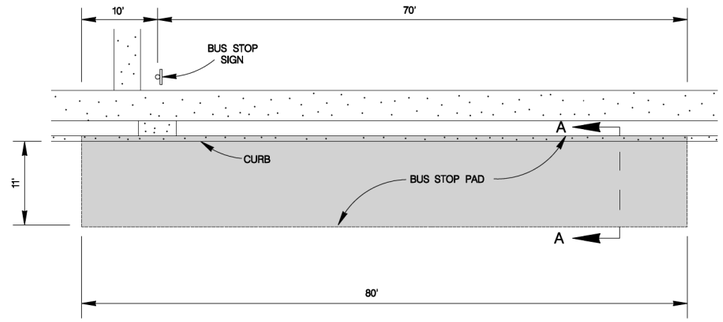
100 % SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: V. VASQUEZ	DSGN. BY:	CHKD. BY: R.S. HOSSEINI. P.E.	SHEET NO.: 112



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.

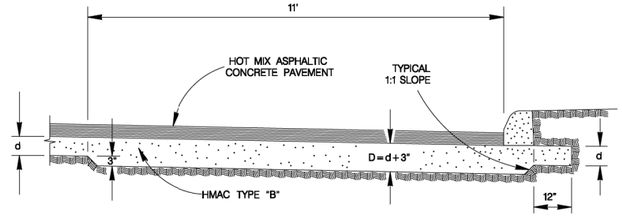
TYPICAL STREET SECTION

SCALE : 1" = 8'



PLAN VIEW

SCALE : 1" = 20'

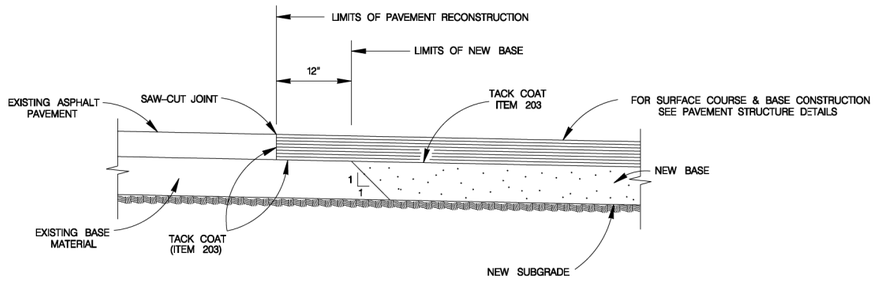


SECTION "A–A"

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.

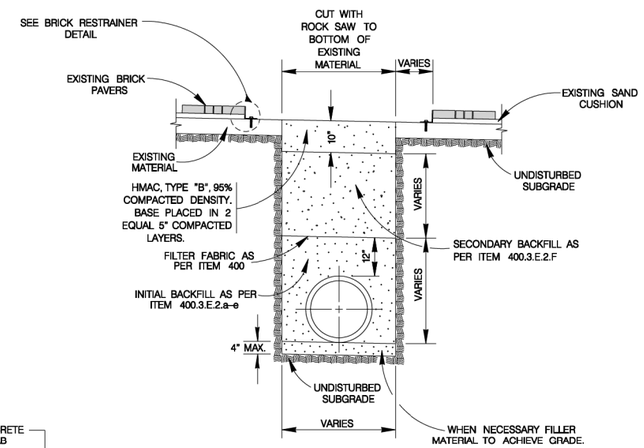


PAVEMENT JUNCTION DETAILS

SCALE : 1" = 2'

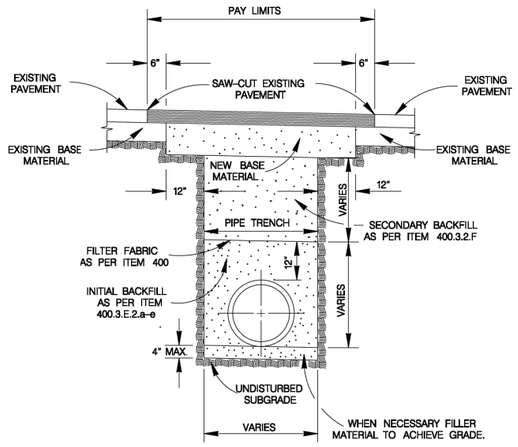
HMAC BUS STOP PAD

NEED CITY ENGINEER'S APPROVAL TO USE HMAC BUS PAD



TYPICAL BASE REPLACEMENT FOR BRICK SURFACED STREET SECTION

ITEM 511.3
SCALE : 1" = 4'

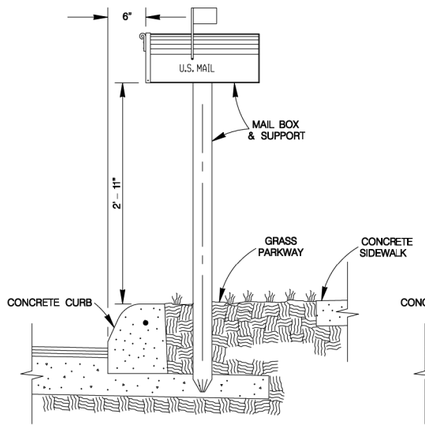


NOTES :
1. FOR LOCAL TYPE "A" & "B" STREETS (RESIDENTIAL) USE 6" ASPHALT CONCRETE BASE TYPE "B" WITH 1–1/2" TYPE "D" HOT MIX ASPHALTIC CONCRETE PAVEMENT.

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.

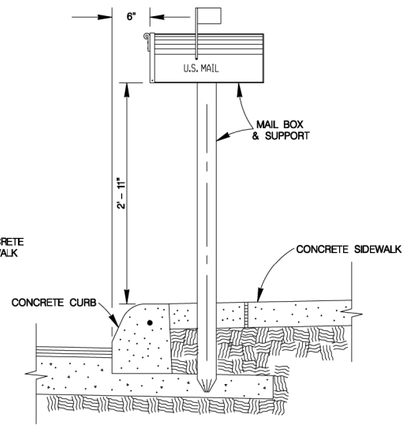
TYPICAL PAVEMENT REPLACEMENT

ITEM 511
SCALE : 1" = 4'



MAIL BOX PERPENDICULAR TO CURB

WHEN SIDEWALK IS DETACHED FROM CURB
SCALE : 1" = 2'

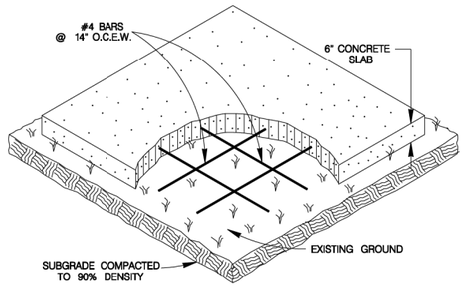


MAIL BOX PERPENDICULAR TO CURB

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.

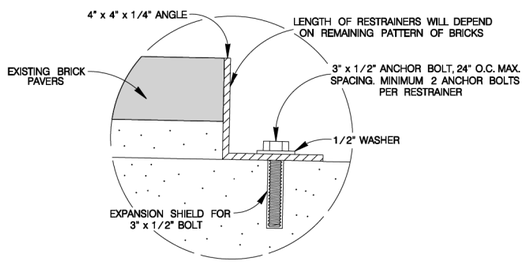
2. THE CONSTRUCTION OF SLABS SHALL CONFORM TO ITEM 513 "REMOVING AND RELOCATING MAILBOXES".

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

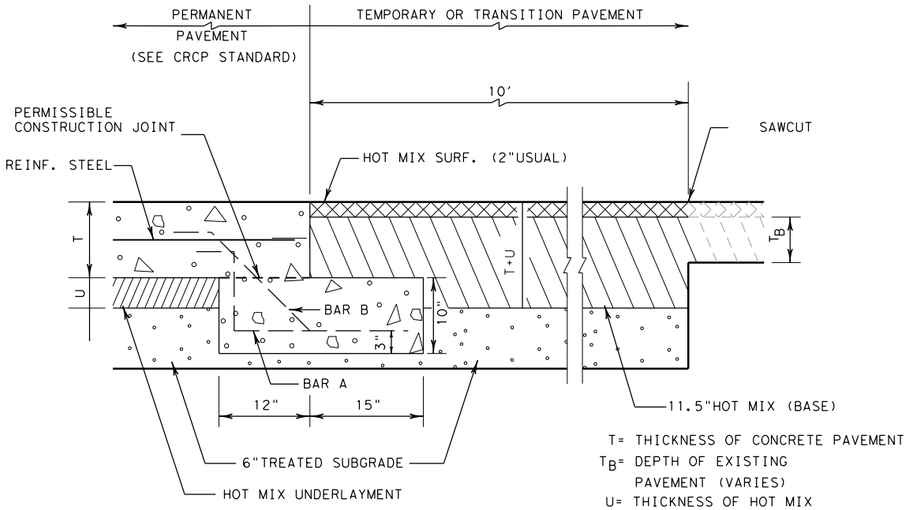
FEBRUARY 2010

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

MISCELLANEOUS CONSTRUCTION STANDARDS II

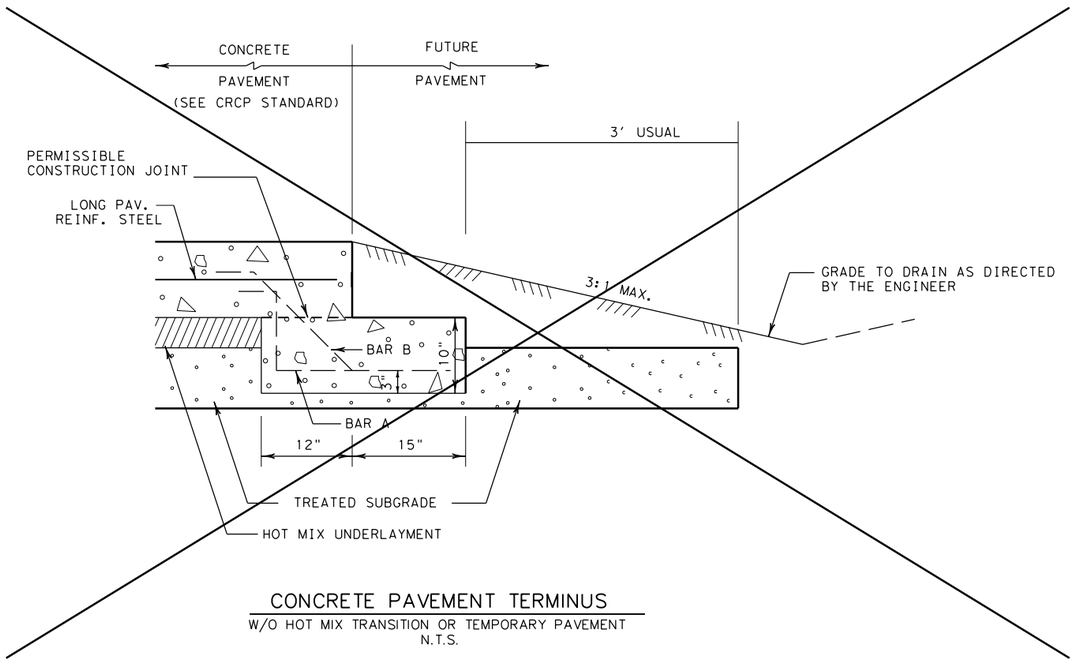
100 % SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: V. VASQUEZ	DSGN. BY:	CHKD. BY:R.S. HOSSEINI. P.E.	SHEET NO.: 113

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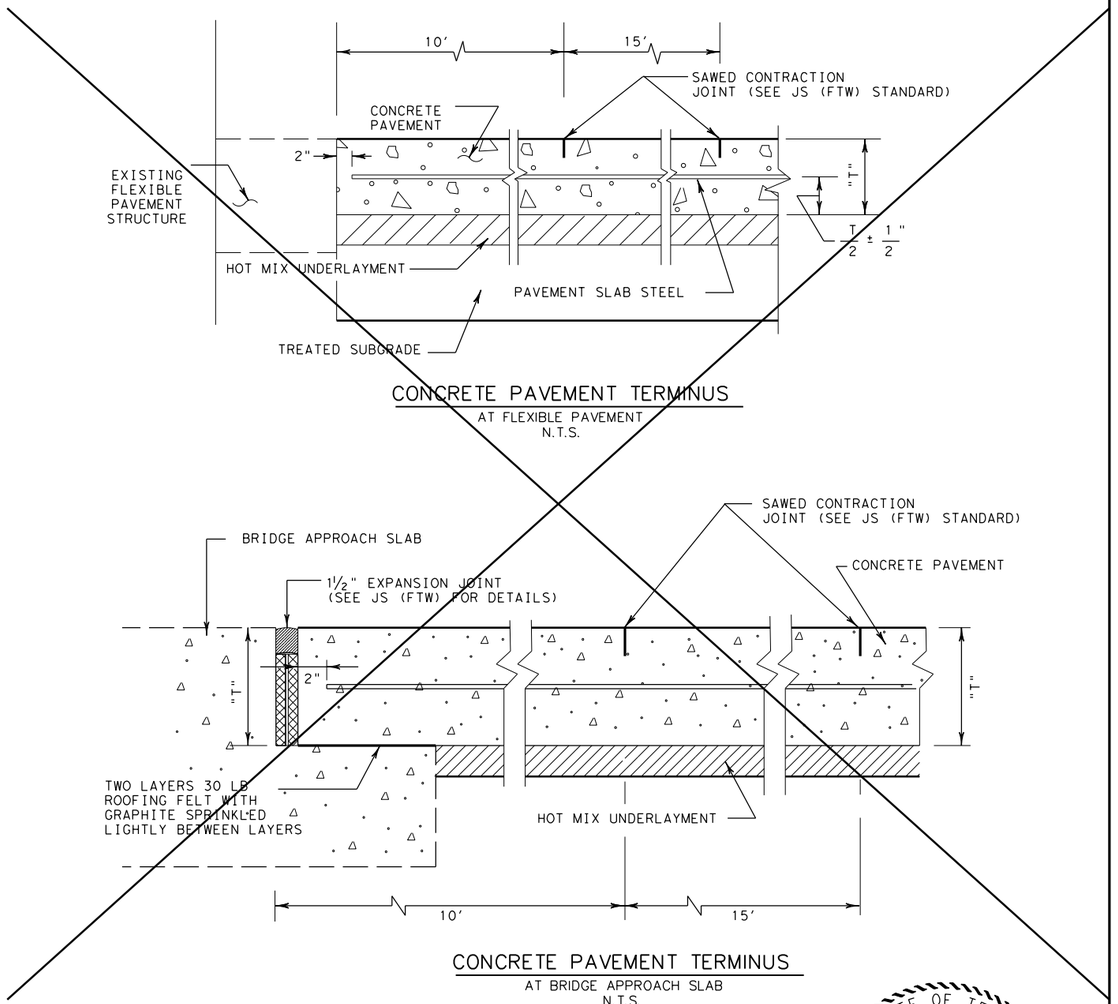


T= THICKNESS OF CONCRETE PAVEMENT
T_B= DEPTH OF EXISTING PAVEMENT (VARIES)
U= THICKNESS OF HOT MIX UNDERLAYMENT

CONCRETE PAVEMENT TERMINUS
AT HOT MIX TRANSITION OR TEMPORARY PAVEMENT
N.T.S.



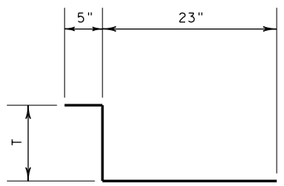
CONCRETE PAVEMENT TERMINUS
W/O HOT MIX TRANSITION OR TEMPORARY PAVEMENT
N.T.S.



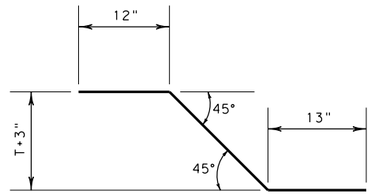
CONCRETE PAVEMENT TERMINUS
AT FLEXIBLE PAVEMENT
N.T.S.

CONCRETE PAVEMENT TERMINUS
AT BRIDGE APPROACH SLAB
N.T.S.

"T" = THICKNESS OF CONCRETE PAVEMENT AND BRIDGE APPROACH SLAB (8" MIN.). THICKNESS TO BE SHOWN ELSEWHERE IN THE PLANS. IF NORMAL PAVEMENT THICKNESS IS LESS THAN 8", 10' ADJACENT TO BRIDGE APPROACH SLAB TO BE 8" THICK, TAPERING TO NORMAL PAVEMENT THICKNESS OVER NEXT 10'. NO ADJUSTMENT IN PAY WILL BE MADE DUE TO INCREASED DEPTH OF CONCRETE PAVEMENT.



BAR "A" (#5)
@12" C-C



BAR "B" (#5)
@12" C-C

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
6/27/2025

Texas Department of Transportation
Fort Worth District Standard

CONCRETE PAVEMENT TERMINUS DETAILS
CPTD (FTW) (MOD)

ORIGINAL DRAWING: 05/2019	cptd-ftw.dgn	FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
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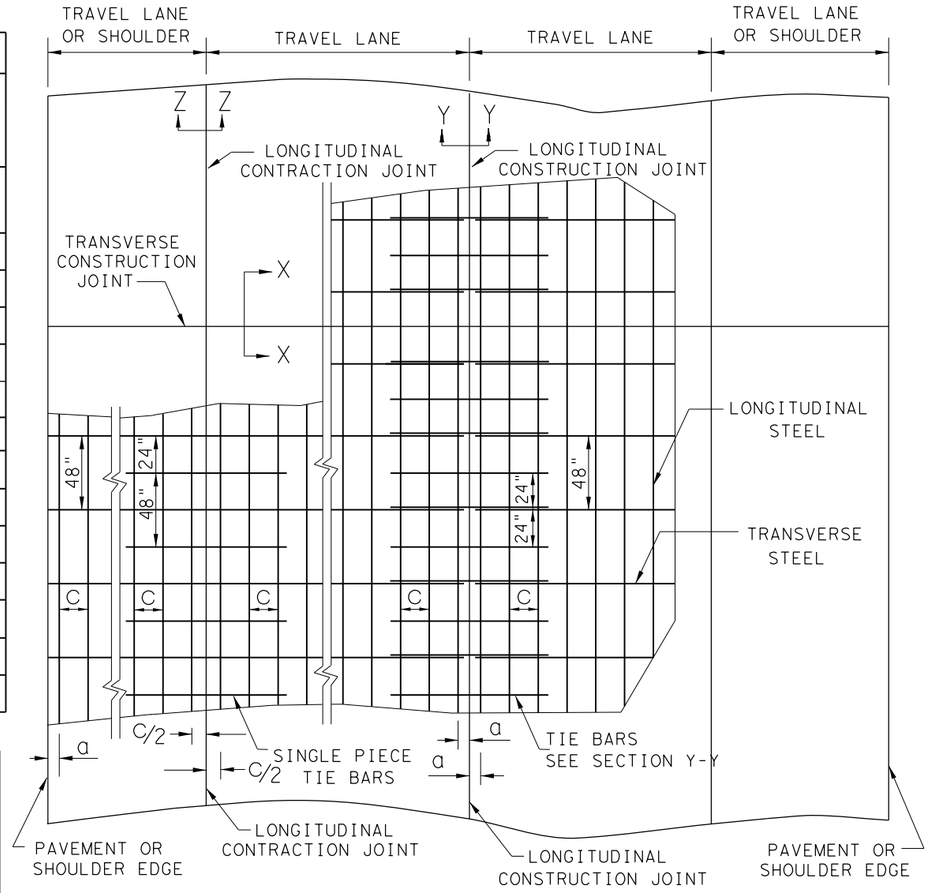
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TABLE NO. 1 LONGITUDINAL STEEL				
SLAB THICKNESS AND BAR SIZE		LONGITUDINAL STEEL BARS	FIRST SPACING AT EDGE OR JOINT	LONG. STEEL VERTICAL POSITION FROM BOTTOM OF PAVEMENT
T (IN.)	BAR SIZE	SPACING C (IN.)	SPACING a (IN.)	T1 (IN.)
7.0	#5	6.5	3 TO 4	3.5
7.5	#5	6.0	3 TO 4	3.75
8.0	#6	9.0	3 TO 4	4.0
8.5	#6	8.5	3 TO 4	4.25
9.0	#6	8.0	3 TO 4	4.5
9.5	#6	7.5	3 TO 4	4.75
10.0	#6	7.0	3 TO 4	5.0
10.5	#6	6.75	3 TO 4	5.5
11.0	#6	6.5	3 TO 4	6.0
11.5	#6	6.25	3 TO 4	6.5
12.0	#6	6.0	3 TO 4	7.0
12.5	#6	5.75	3 TO 4	7.5
13.0	#6	5.5	3 TO 4	8.0

TABLE NO. 2 TRANSVERSE STEEL AND TIE BARS						
SLAB THICKNESS (IN.)	TRANSVERSE STEEL		TIE BARS AT LONGITUDINAL CONTRACTION JOINT (SECTION Z-Z)		TIE BARS AT LONGITUDINAL CONSTRUCTION JOINT (SECTION Y-Y)	
	BAR SIZE	SPACING (IN.)	BAR SIZE	SPACING (IN.)	BAR SIZE	SPACING (IN.)
7.0 - 7.5	#5*	48	#5*	48	#5*	24
8.0 - 13.0	#5*	48	#6	48	#6	24

*CONTRACTOR MAY USE #6 REINFORCING STEEL INSTEAD OF #5 REINFORCING STEEL OR COMBINATION OF EACH SIZE

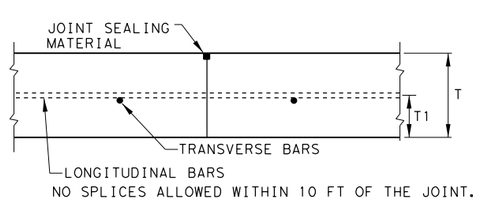


TYPICAL PAVEMENT LAYOUT

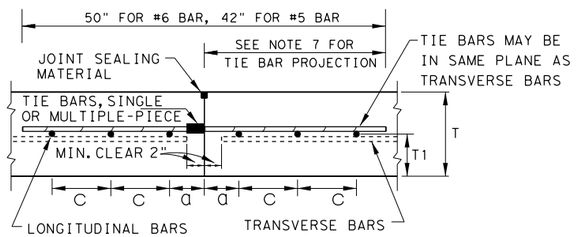
PLAN VIEW (NOT TO SCALE)

GENERAL NOTES

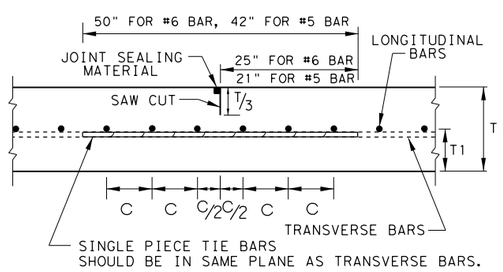
1. DETAILS FOR PAVEMENT WIDTH, PAVEMENT THICKNESS AND THE CROWN CROSS-SLOPE SHALL BE SHOWN ELSEWHERE IN THE PLANS. FOR PAVEMENTS WIDER THAN 100 FT. WITHOUT A FREE LONGITUDINAL JOINT, ADDITIONAL DETAIL MAY BE SHOWN ELSEWHERE IN THE PLANS.
2. USE COARSE AGGREGATES WITH A RATED COEFFICIENT OF THERMAL EXPANSION (CoTE) OF NOT MORE THAN 5.5 X 10^{-6} IN/IN/ °F AS LISTED IN THE CONCRETE RATED SOURCE QUALITY CATALOG (CRSQC).
3. ALL THE REINFORCING STEEL AND TIE BARS SHALL BE DEFORMED STEEL BARS CONFORMING TO ASTM A 615 (GRADE 60) OR ASTM A 996 (GRADE 60) OR ABOVE. STEEL BAR SIZES AND SPACINGS SHALL CONFORM TO TABLE NO.1 AND TABLE NO.2.
4. STEEL BAR PLACEMENT TOLERANCE SHALL BE +/- 1 IN. HORIZONTALLY AND +/- 0.5 IN. VERTICALLY. CALCULATED AVERAGE BAR SPACING (CONCRETE PLACEMENT WIDTH / NUMBER OF LONGITUDINAL BARS) SHALL CONFORM TO TABLE NO.1.
5. ADJUST REINFORCING STEEL VERTICALLY USING SHIMS OR OTHER METHODS, AS APPROVED, TO MEET VERTICAL TOLERANCES PRIOR TO CONCRETE PLACEMENT.
6. PAVEMENT WIDTHS OF MORE THAN 15 FT. SHALL HAVE A LONGITUDINAL JOINT (SECTION Z-Z OR SECTION Y-Y). THESE JOINTS SHALL BE LOCATED WITHIN 6 IN. OF THE LANE LINE UNLESS THE JOINT LOCATION IS SHOWN ELSEWHERE ON THE PLANS.
7. THE MINIMUM PROJECTION OF TIE BARS INTO THE ADJACENT PLACEMENT IS 22.5 IN. for #6 BARS AND 18.5 IN. FOR #5 BARS.
8. SEE STANDARD SHEET "CONCRETE CURB AND CURB AND GUTTER," FOR DETAILS WHEN TYING CONCRETE CURB OR CURB GUTTER AT A LONGITUDINAL JOINT.
9. REPLACE MISSING OR DAMAGED TIE BARS WITHOUT ADDITIONAL COMPENSATION BY DRILLING MIN.10 IN. DEEP AND GROUTING TIE BARS WITH TYPE III, CLASS C EPOXY. MEET THE PULL-OUT TEST REQUIREMENTS IN ITEM 361.
10. OMIT TIE BARS LOCATED WITHIN 18-IN. OF THE TRANSVERSE CONSTRUCTION JOINTS (SECTION X-X). USE HAND-OPERATED IMMERSION VIBRATORS TO CONSOLIDATE THE CONCRETE ADJACENT TO ALL FORMED JOINTS.
11. THE DETAIL FOR THE JOINT SEALANT AND RESERVOIR IS SHOWN ON STANDARD SHEET "CONCRETE PAVING DETAILS, JOINT SEALS."
12. LONGITUDINAL REINFORCING STEEL SPLICES SHALL BE A MINIMUM OF 25-IN.



TRANSVERSE CONSTRUCTION JOINT
SECTION X - X



LONGITUDINAL CONSTRUCTION JOINT
SECTION Y - Y



LONGITUDINAL CONTRACTION JOINT
SECTION Z - Z

SHEET 1 OF 2

Texas Department of Transportation

Design Division Standard

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

ONE LAYER STEEL BAR PLACEMENT
T - 7 to 13 INCHES

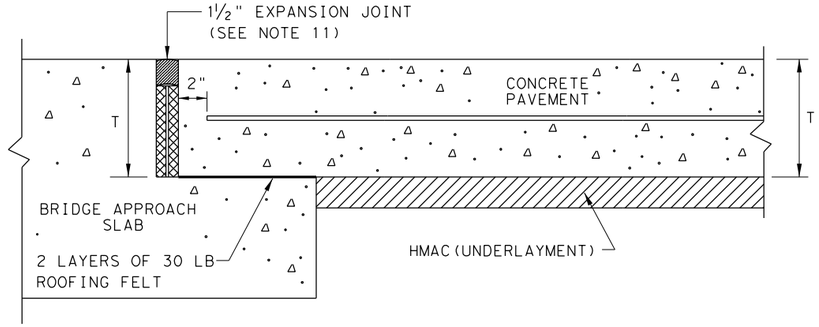
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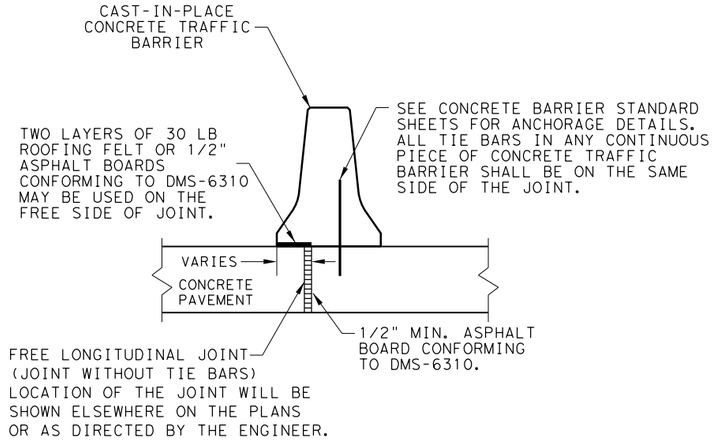
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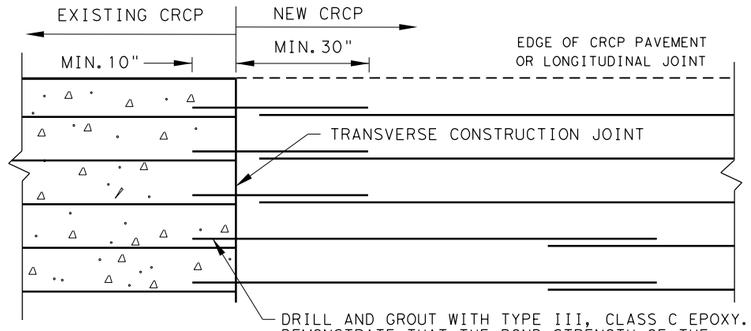
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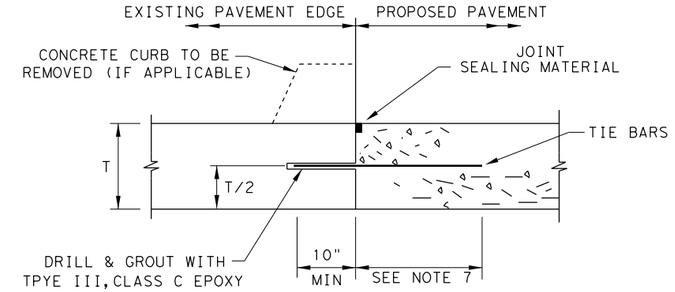
TRANSVERSE EXPANSION JOINT DETAIL
AT BRIDGE APPROACH



CENTERLINE FREE LONGITUDINAL JOINT DETAIL

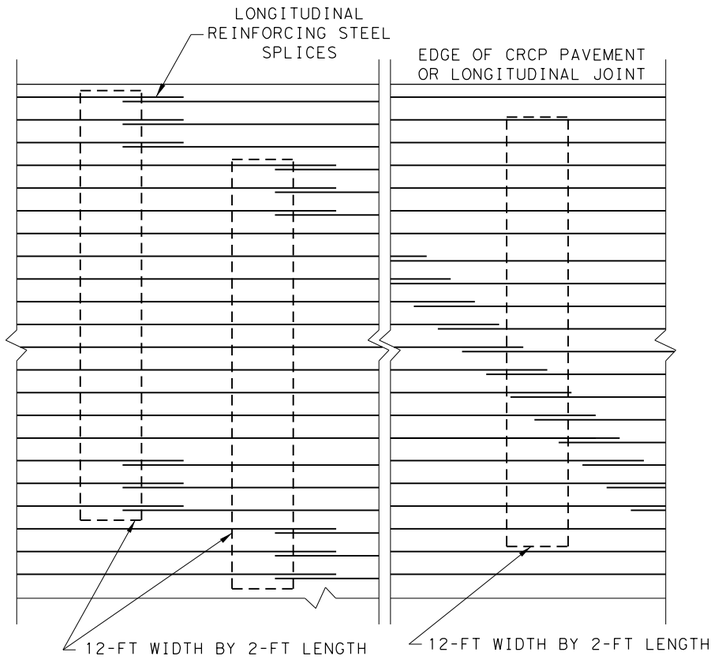


OPTION A: DRILL AND EPOXY
PLAN VIEW (NOT TO SCALE)



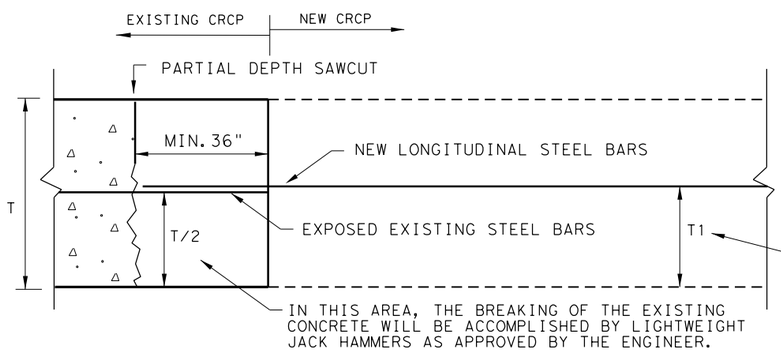
1. BEFORE CONCRETE PLACEMENT, PERFORM PULL-OUT TESTS ON EPOXY-GROUTED TIE BARS IN ACCORDANCE WITH ITEM 360.
2. SPACE TIE BARS AT 24" SPACING. USE #6 TIE BARS FOR 8" AND THICKER PAVEMENTS, USE #5 TIE BARS FOR LESS THAN 8" THICK PAVEMENTS.

LONGITUDINAL WIDENING JOINT DETAIL



STAGGER THE LAP LOCATIONS SO THAT NO MORE THAN 1/3 OF THE LONGITUDINAL STEEL IS SPLICED IN ANY GIVEN 12-FT. WIDTH AND 2-FT. LENGTH OF THE PAVEMENT. ANY OTHER LAP CONFIGURATION MEETING THIS REQUIREMENT WILL BE ALLOWED.

EXAMPLES OF LAP CONFIGURATION
PLAN VIEW (NOT TO SCALE)



OPTION B: BREAKBACK AND LAP

TRANSVERSE TIE JOINT DETAIL
NEW CRCP TO EXISTING CRCP

SHEET 2 OF 2

Texas Department of Transportation

Design Division Standard

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

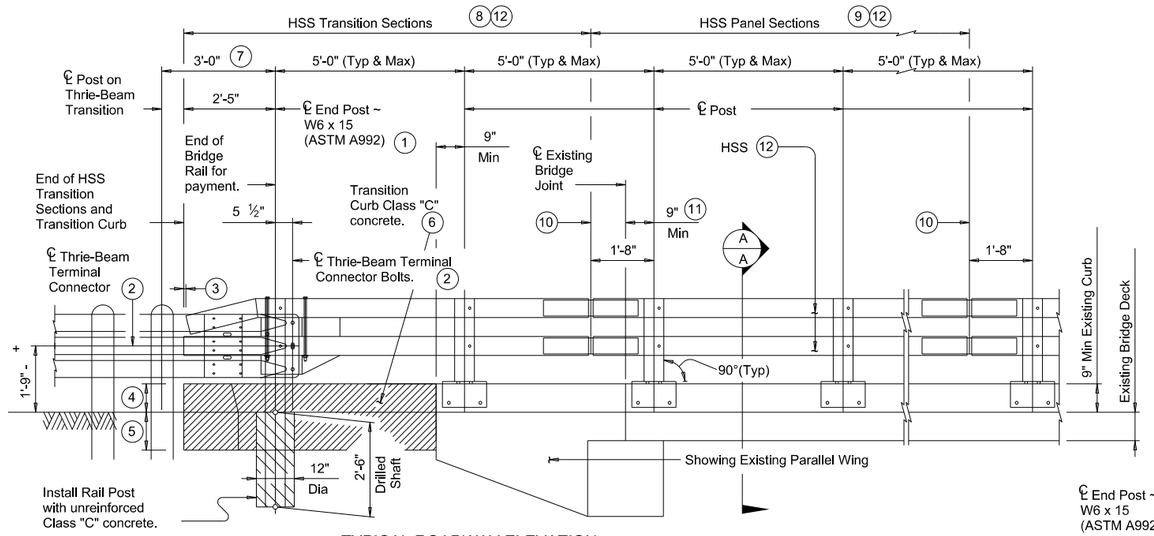
ONE LAYER STEEL BAR PLACEMENT
T - 7 to 13 INCHES

CRCP(1)-24

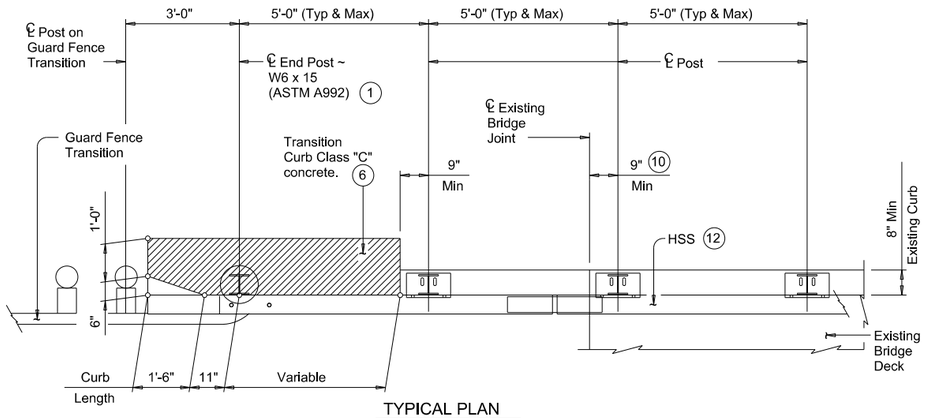
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	DIST	COUNTY		SHEET NO.
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TYPICAL ROADWAY ELEVATION

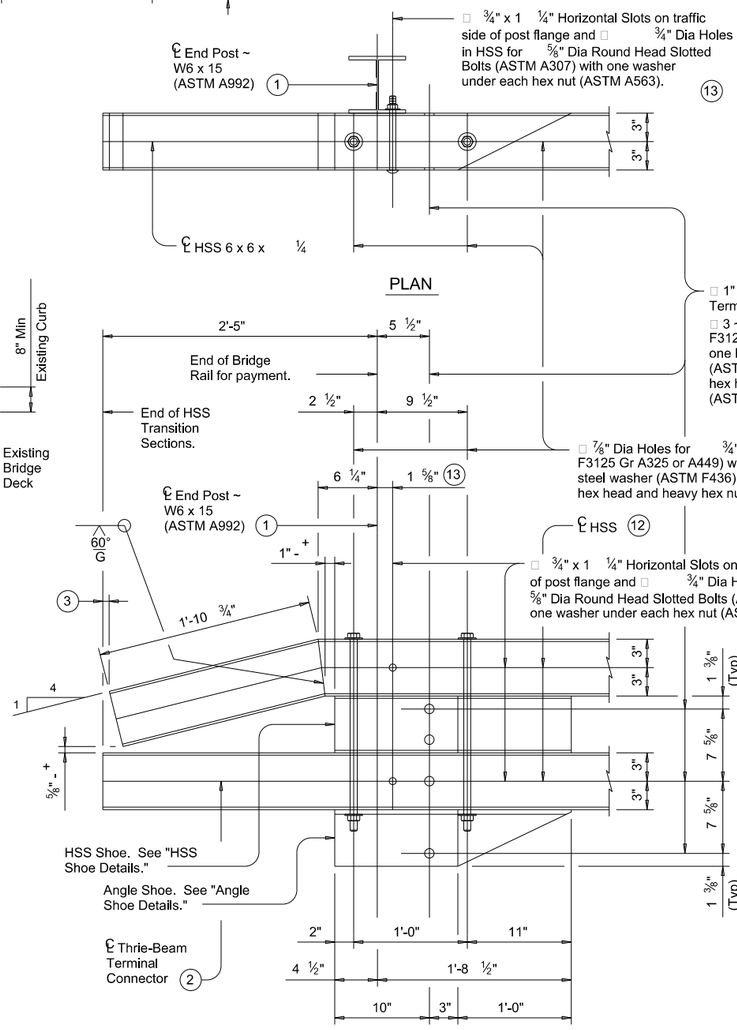


TYPICAL PLAN

EXAMPLE "A" RETROFIT WITH PARALLEL WING

(Showing 9" high and 8" wide curbs, higher and wider curbs similar)

1. Post length = Top of rail elevation minus bottom of drilled shaft elevation.
2. Terminal Connectors and associated hardware are to be paid for under the Item "Metal Beam Guard Fence." Attach the appropriate Metal Beam Guard Fence Transitions or Downstream Anchor Terminal to the bridge rail using 3 bolts as shown, and extend along the embankment.
3. Top HSS can be shorter than bottom HSS ⅝" plus or minus.
4. Match existing bridge curb height.
5. Cast transition curb 1'-0" into soil or top of concrete approach slab. Remove any asphaltic concrete or mow strip if present.
6. Match existing bridge curb face on traffic side of transition curb. Transition curb 6" x 1'-6" taper will remain vertical.
7. Showing first post for a TL-3 rated guard fence transition. First post for a TL-2 rated guard fence transition or a guard fence downstream anchor terminal is 4'-4 ¾".
8. HSS Transition Sections must have one soil mounted end post embedded in an unreinforced, Class "C" concrete drilled shaft as shown, and a minimum of one curb mounted post per transition section.
9. HSS Panel Sections must have a minimum of three posts and a maximum of eight posts per panel section.
10. ℄ HSS Expansion Joint or L HSS ℄ Splice Joint as required.
11. Use 9" minimum for both expansion joints and construction/controlled joints.
12. HSS 6 x 6 x ¼ (ASTM A1085 or A500 Gr C).
13. May be placed on either side of W6 x 15 web.



ROADWAY ELEVATION

HSS TRANSITION SECTION END DETAILS

Thrie-Beam Terminal Connector not shown for clarity.

CONSTRUCTION NOTES:

Field verify dimensions before commencing work and ordering materials.
Provide Type VIII epoxy mortar under post base plates if gaps larger than 1/16" exist.
One shop splice per rail member section is permitted with minimum 85 percent penetration.
The weld may be square groove or single V groove.
Round or chamfer exposed edges of HSS rail, rail post and plate to approximately 1/16" by grinding.
Test adhesive anchors in accordance with Item 450.3.3, "Tests". Test 3 anchors per 100 anchors installed. Perform corrective measures to provide adequate capacity if any of the tests do not meet the required test load. Repair damage from testing as directed.
Submit erection drawings showing panel lengths, splice locations, post placement, anchor bolt locations and adhesive anchor test data to demonstrate pullout strength to the Engineer for approval. Shop drawings are not required.

MATERIAL NOTES:

Galvanize all metal components of steel rail system.
Provide Grade 60 reinforcing steel.
Provide Class "C" concrete. As an alternate, provide Class "K" concrete, or a Type A-2 or Type C concrete repair material per DMS-4655 "Concrete Repair Materials." Do not use Type "B" (Ultra-Rapid) concrete repair materials.
Anchor bolts must be ¾" Dia ASTM A193 Gr B7 or ASTM A449 fully threaded rods with one heavy hex nut and one hardened steel washer (ASTM F436) each. Nuts must conform to ASTM A563 requirements. Embed fully threaded rods into concrete curb using a Type III, Class C, D, E, or F anchor adhesive. Minimum adhesive anchor embedment depth is 6 ¾". Anchor adhesive chosen must be able to achieve a basic bond strength in tension, Nba, of 30 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".

GENERAL NOTES:

This retrofit railing has been successfully evaluated by full-scale crash test to meet MASH TL-3 criteria. This retrofit railing can be used for speeds of 50 mph and greater when a TL-3 rated guard fence transition is used. When a TL-2 rated guard fence transition is used, this rail can only be used for speeds of 45 mph and less.
Rail anchorage details shown on this guide may require modification for select structure types.
See "Section A-A" for limits on existing overlay/seal coats thickness based on existing curb height.
This rail is to be paid for as "Retrofit Rail (Ty T131RC)" under Item 451 "Retrofit Railing."
Average weight with no overlay: 55 plf (9", 11" & 12" Curbs)
53 plf (18" Curbs)

Cover dimensions are clear dimensions, unless noted otherwise.

SHEET 1 OF 4

Texas Department of Transportation — Bridge Division Standard

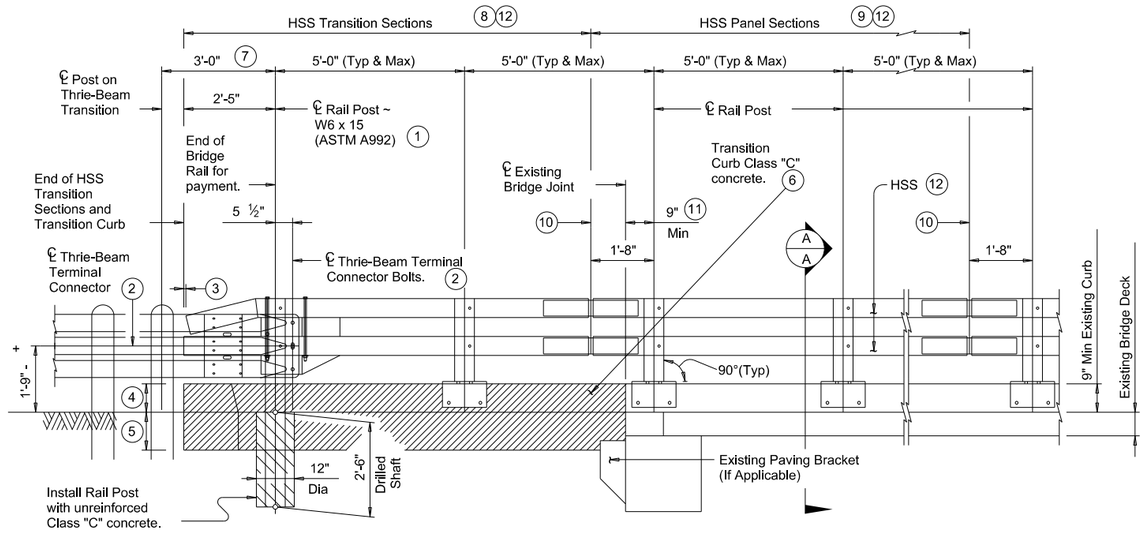
RETROFIT GUIDE FOR T131RC RAIL ON CURBS

TYPE T131RC

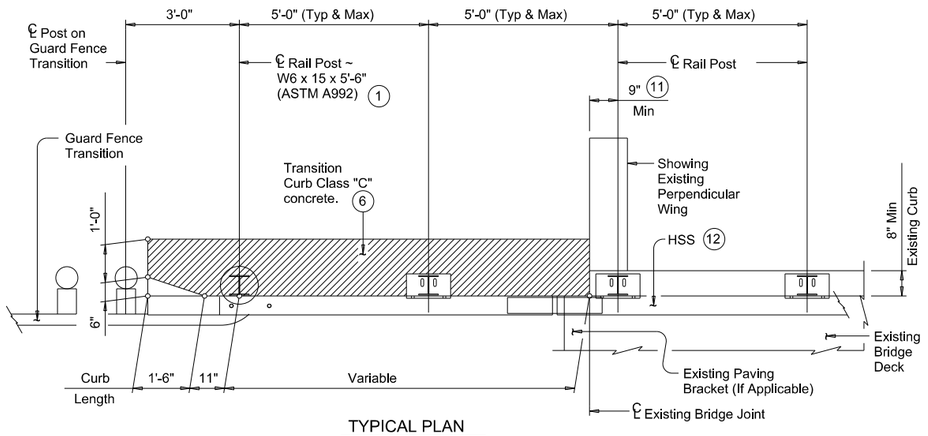
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TYPICAL ROADWAY ELEVATION

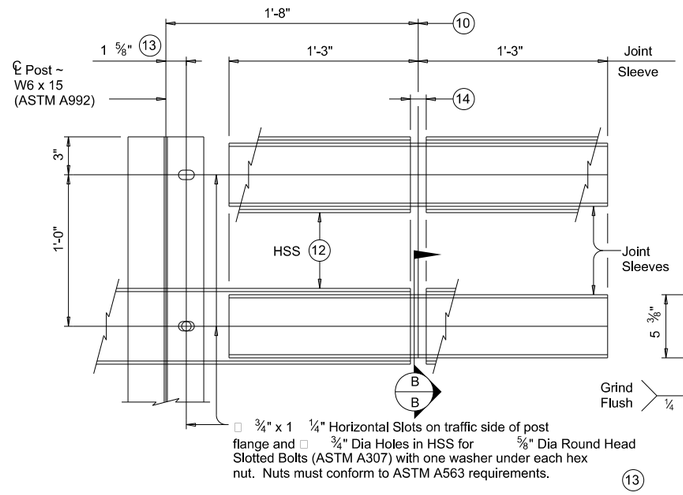


TYPICAL PLAN

EXAMPLE "B" RETROFIT WITH PERPENDICULAR WING

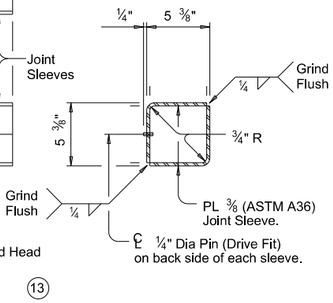
(Showing 9" high and 8" wide curbs, higher and wider curbs similar)

1. Post length = Top of rail elevation minus bottom of drilled shaft elevation.
2. Terminal Connectors and associated hardware are to be paid for under the Item "Metal Beam Guard Fence." Attach the appropriate Metal Beam Guard Fence Transitions or Downstream Anchor Terminal to the bridge rail using 3 bolts as shown, and extend along the embankment.
3. Top HSS can be shorter than bottom HSS ⅝" plus or minus.
4. Match existing bridge curb height.
5. Cast transition curb 1'-0" into soil or top of concrete approach slab. Remove any asphaltic concrete or mow strip if present.
6. Match existing bridge curb face on traffic side of transition curb. Transition curb 6" x 1'-6" taper will remain vertical.
7. Showing first post for a TL-3 rated guard fence transition. First post for a TL-2 rated guard fence transition or a guard fence downstream anchor terminal is 4'-4 ¾".
8. HSS Transition Sections must have one soil mounted end post embedded in an unreinforced, Class "C" concrete drilled shaft as shown, and a minimum of one curb mounted post per transition section.
9. HSS Panel Sections must have a minimum of three posts and a maximum of eight posts per panel section.
10. ℄ HSS Expansion Joint or L HSS Splice Joint as required.
11. Use 9" minimum for both expansion joints and construction/controlled joints.
12. HSS 6 x 6 x ¼ (ASTM A1085 or A500 Gr C).
13. May be placed on either side of W6 x 15 web.
14. Place HSS Expansion Joints in rail at every slab Expansion Joint. For Expansion and Splice Joints openings, use the greater of 1" or (slab opening plus ½").



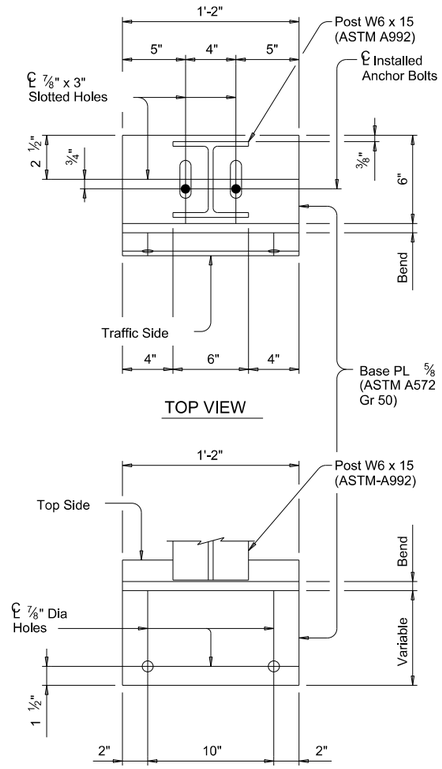
TYPICAL POST CONNECTION AND SPLICE DETAIL FOR HSS

Showing post with HSS and HSS splice.



SECTION B-B

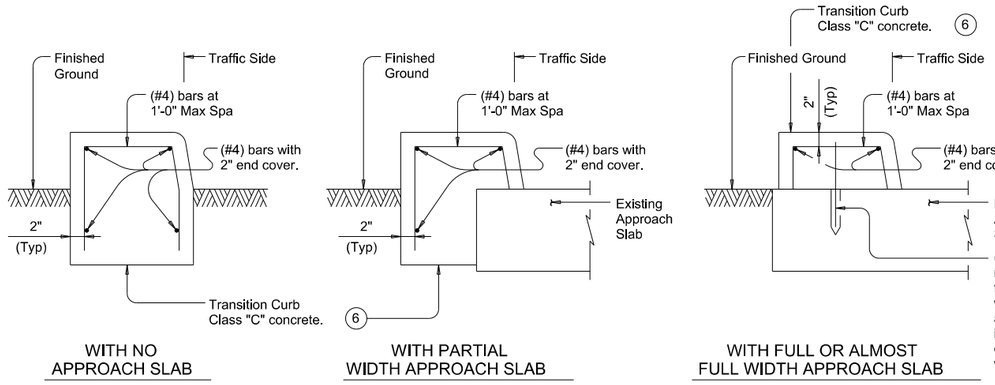
Showing typical joint sleeve.



TOP VIEW

FRONT VIEW

BASE PLATE DETAILS



WITH NO APPROACH SLAB

WITH PARTIAL WIDTH APPROACH SLAB

WITH FULL OR ALMOST FULL WIDTH APPROACH SLAB

EXAMPLES OF TRANSITION CURB SECTIONS

SHEET 2 OF 4

Texas Department of Transportation

Bridge Division Standard

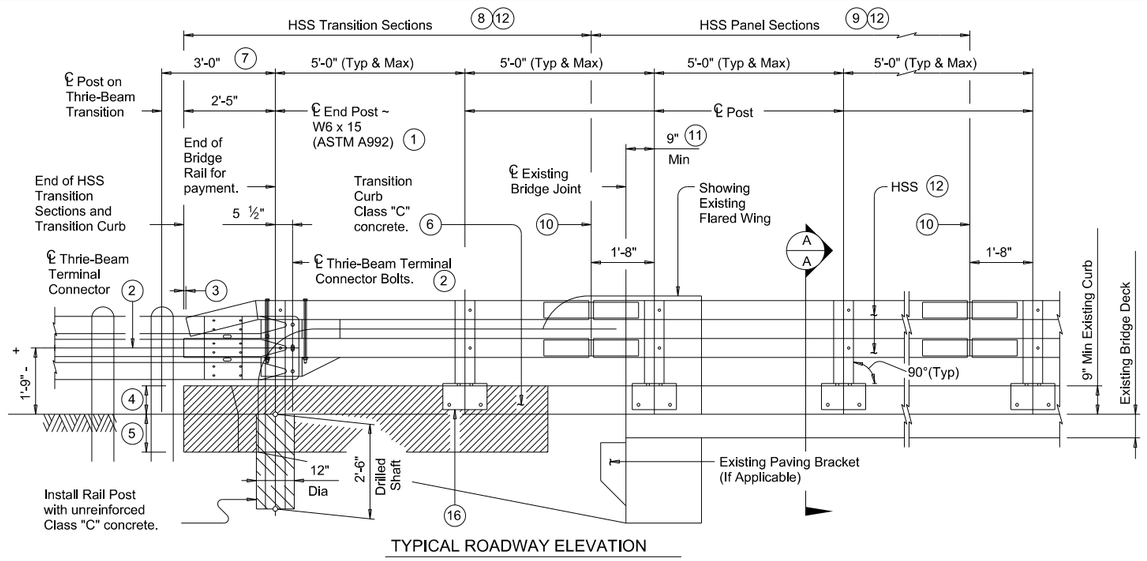
RETROFIT GUIDE FOR T131RC RAIL ON CURBS

TYPE T131RC

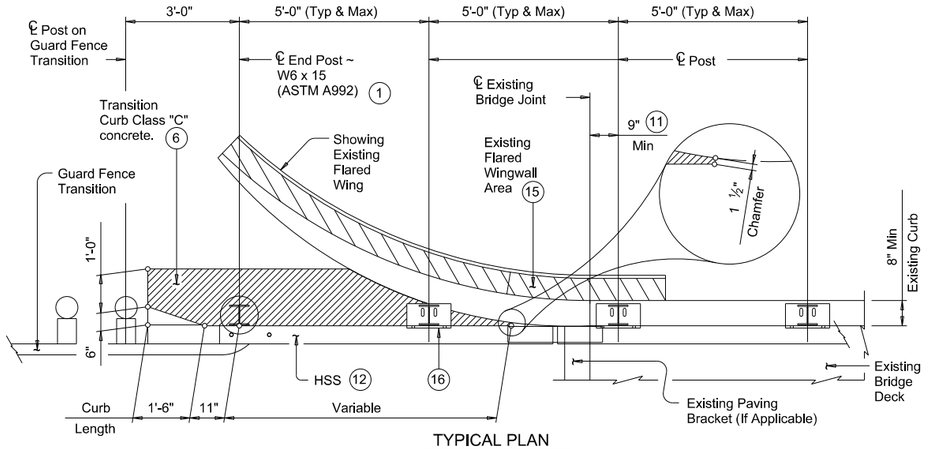
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©TxDOT September 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS				COVEL RD
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		118

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DATE: 6/27/2025 2:14:00 PM
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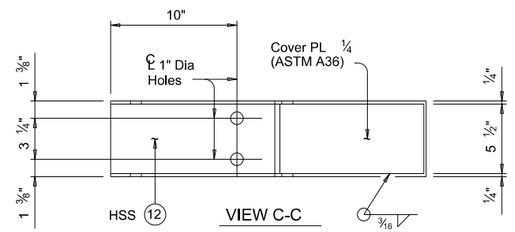
TYPICAL ROADWAY ELEVATION

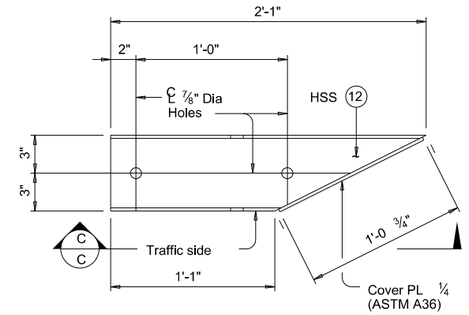


TYPICAL PLAN

EXAMPLE "C" RETROFIT WITH FLARED WING

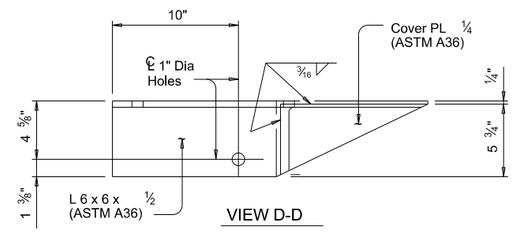
(Showing 9" high and 8" wide curbs, higher and wider curbs similar)

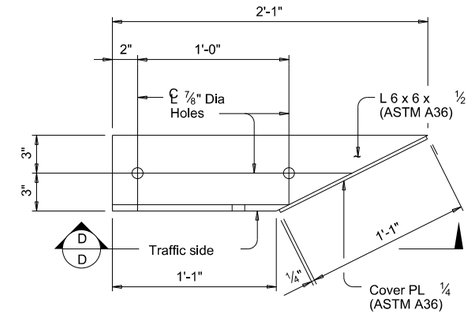




TOP VIEW

HSS SHOE DETAILS





TOP VIEW

ANGLE SHOE DETAILS

Angle Shoe shown is detailed for one side only, other side similar. For other side shoe must be built for opposite hand.

1. Post length = Top of rail elevation minus bottom of drilled shaft elevation.
2. Terminal Connectors and associated hardware are to be paid for under the Item "Metal Beam Guard Fence." The appropriate Metal Beam Guard Fence Transitions or Downstream Anchor Terminal must be attached to the bridge rail and extended along the embankment.
3. Top HSS can be shorter than bottom HSS ⅝" plus or minus.
4. Match existing bridge curb height.
5. Cast transition curb 1'-0" into soil or top of concrete approach slab. Remove any asphaltic concrete or mow strip if present.
6. Match existing bridge curb face on traffic side of transition curb. Transition curb 6" x 1'-6" taper will remain vertical.
7. Showing first post for a TL-3 rated guard fence transition. First post for a TL-2 rated guard fence transition or a guard fence downstream anchor terminal is 4'-4 ¾".
8. HSS Transition Sections must have one soil mounted end post embedded in an unreinforced, Class "C" concrete drilled shaft as shown, and a minimum of one curb mounted post per transition section.
9. HSS Panel Sections must have a minimum of three posts and a maximum of eight posts per panel section.
10. ℄ HSS Expansion Joint or L HSS℄Splice Joint as required.
11. Use 9" minimum for both expansion joints and construction/controlled joints.
12. HSS 6 x 6 x ¼ (ASTM A1085 or A500 Gr C).
15. Remove all existing structure area from top of existing curb. Cut and grind flush all existing reinforcing extending from top of existing curb and paint ends with two coats of zinc-rich paint conforming to the Item "Galvanizing."
16. When post is mounted to the transition curb on flared wings as shown, transition curb must be supported laterally by the existing wingwall/curb.

Texas Department of Transportation

Bridge Division Standard

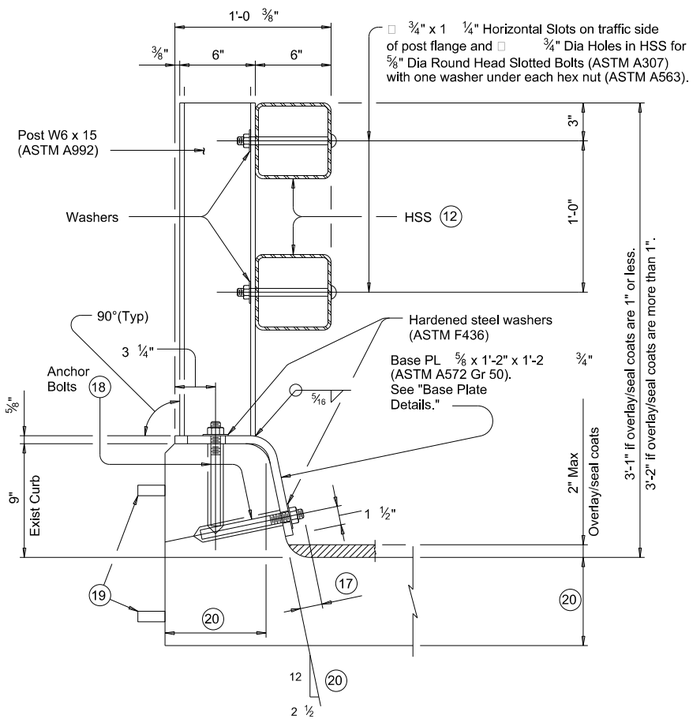
RETROFIT GUIDE FOR T131RC RAIL ON CURBS

TYPE T131RC

FILE:	DN: TxDOT	CK: JMH	DW: JTR	CK: MAS
©TxDOT September 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS				COVEL RD
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		119

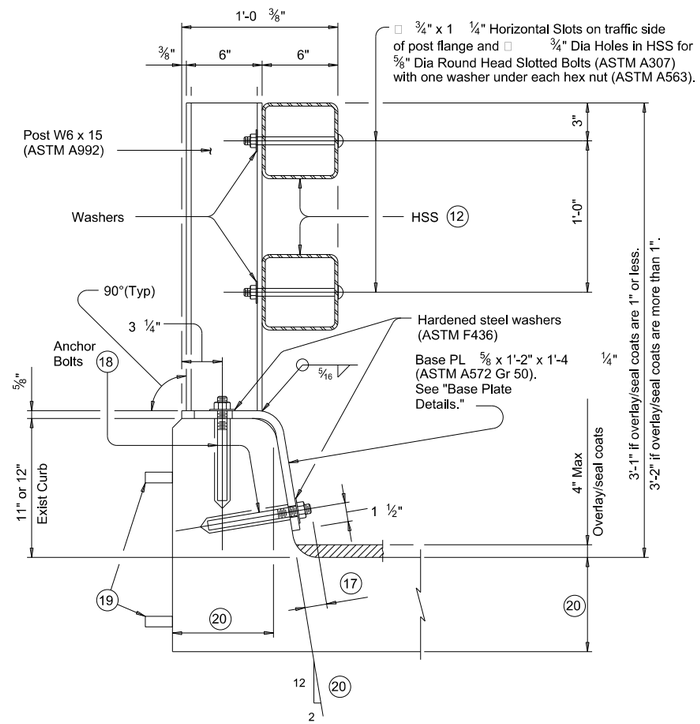
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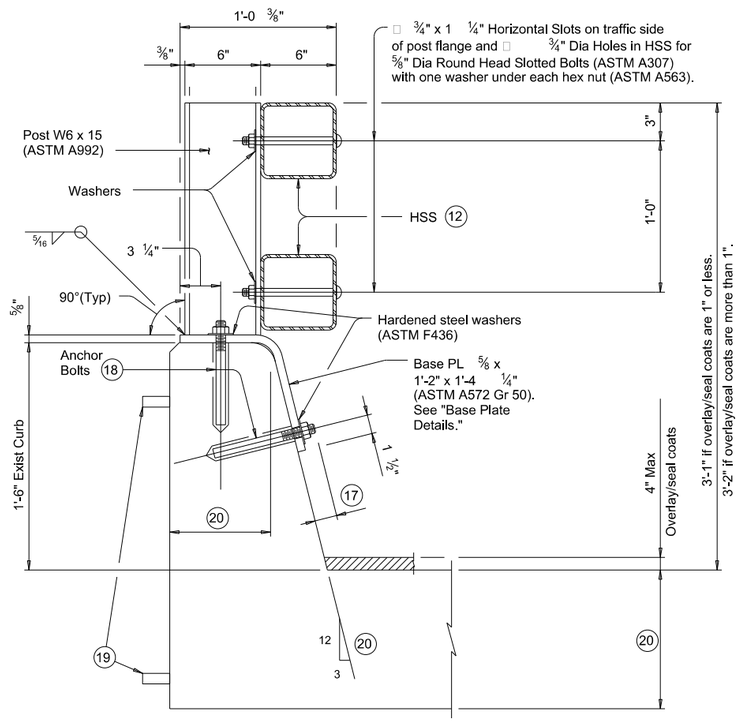
SECTION A-A OF 9" HIGH CURBS

(Showing example of 8" Min width curb, wider curbs similar)



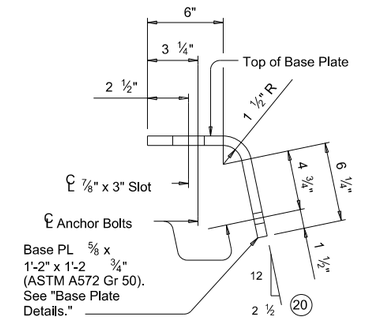
SECTION A-A OF 11" & 12" HIGH CURBS

(Showing example of 8" Min width curb, wider curbs similar)

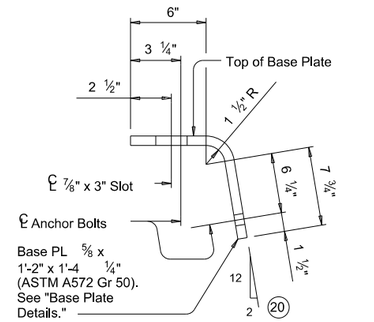


SECTION A-A OF 18" HIGH CURBS

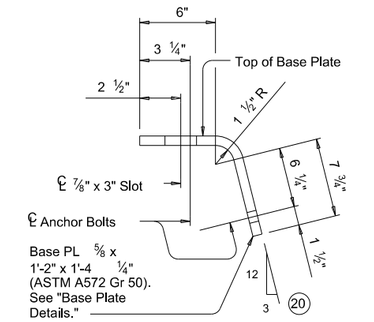
(Showing example of 8" Min width curb, wider curbs similar)



9" HIGH CURB BASE PLATE DETAIL



11" & 12" HIGH CURB BASE PLATE DETAIL



18" HIGH CURB BASE PLATE DETAIL

(12) HSS 6 x 6 x 1/4 (ASTM A1085 or A500 Gr C).

(17) 1 3/4" Bolt Projection (Typ).

(18) See "Material Notes" for anchor Bolt information.

(19) Remove existing railing (including posts), cut and grind anchor bolts flush and paint ends with two coats of zinc-rich paint conforming to the Item "Galvanizing."

(20) See elsewhere in plans for dimensions (curb width and height, slab and overlay thickness). Slope of curb may differ from what is shown. Adjust base plate as necessary to conform to curb face geometry.

SHEET 4 OF 4

Texas Department of Transportation

Bridge Division Standard

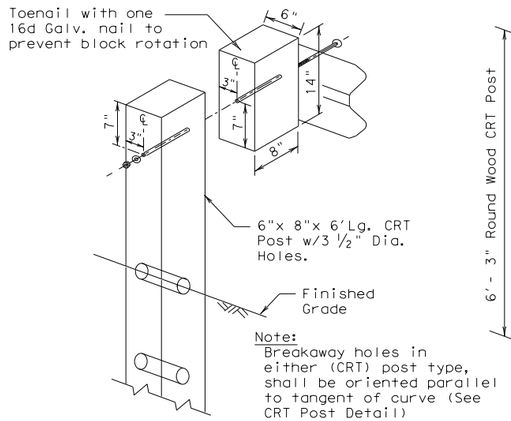
RETROFIT GUIDE FOR T131RC RAIL ON CURBS

TYPE T131RC

FILE:	DN: TxDOT	CK: JMH	DW: JTR	CK: MAS
©TxDOT September 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS				COVEL RD
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		120

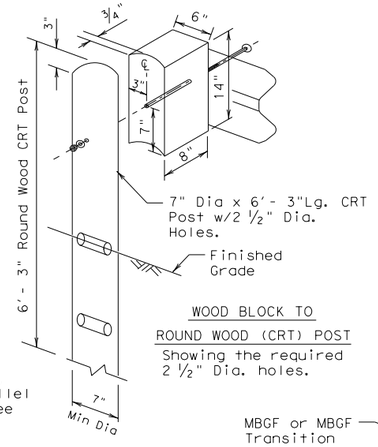
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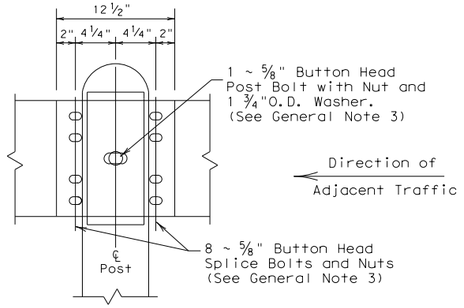
WOOD BLOCK TO RECTANGULAR WOOD (CRT) POST

Showing the required 3 ½" Dia. holes.

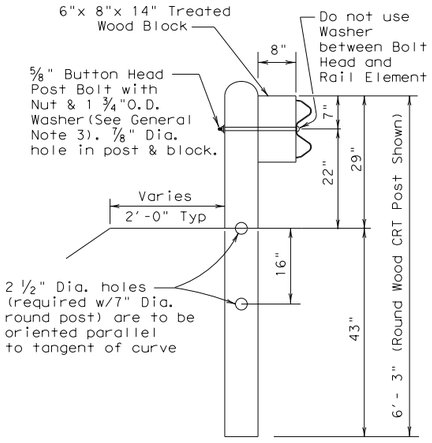


WOOD BLOCK TO ROUND WOOD (CRT) POST

Showing the required 2 ½" Dia. holes.

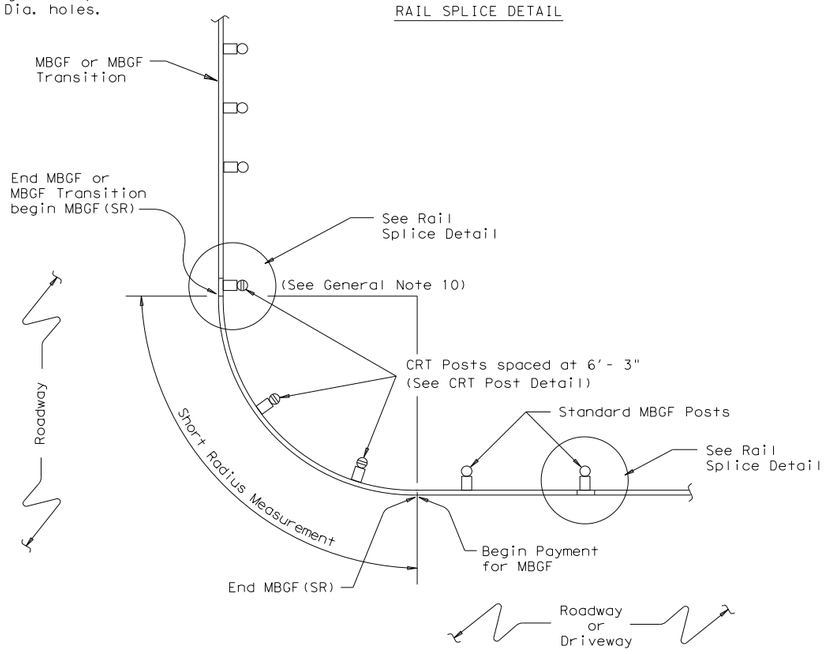


RAIL SPLICE DETAIL



(CRT) POST DETAIL
CONTROLLED RELEASE TERMINAL POST

Two or more wood CRT post(s) are required at any radius installation located at intersecting roadways or driveways.



PLAN VIEW
SHOWING TYPICAL RADIUS

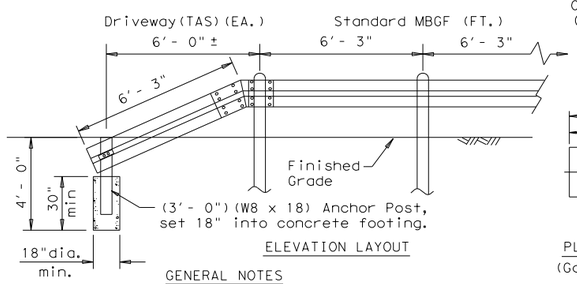
The required radius is shown elsewhere on the plans.

GENERAL NOTES

1. The type of (CRT) post (round wood post, or rectangular wood post) will be shown elsewhere in the plans. The exact position of MBGF shall be shown elsewhere in the plans or as directed by the Engineer.
2. Steel posts are not permitted at CRT post positions.
3. Rail element shall meet the requirements of Item 540,"Metal Beam Guard Fence" except as modified on the plans. The Contractor may furnish rail elements of 12 ½ or 25 foot nominal lengths.
4. Button head "post" bolts (ASTM A307) shall be of sufficient length to extend through the full thickness of the nut (ASTM A563) and Type A (1 ¾" O.D.)washer and not more than 1" beyond it. Button head "splice" bolts (ASTM A307) are ⅝" x 1 ¼" (or 2" long at triple rail splices) with a ⅝" double recessed nut (ASTM A563).
5. Fittings (bolts, nuts, and washers) shall be galvanized in accordance with Item 445, "Galvanizing." Fittings shall be subsidiary to the bid item.
6. Crown shall be widened to accommodate the Metal Beam Guard Fence.
7. The lateral approach to the guard fence, shall have a slope rate of not more than 1V:10H.
8. Unless otherwise shown in the plans, guard fence placed in the vicinity of curbs shall be positioned so that the face of curb is located directly below or behind the face of the block. Rail placed over curbs shall be installed so that the post bolt is located approximately 21 inches above the gutter pan or roadway surface.
9. If solid rock is encountered within 0 to 18" of the finished grade, drill a 22" dia. hole, 24" into the rock, or drill two 12" dia. front to back overlapping holes, 24" into the rock. If solid rock is encountered below 18",drill a 12" dia. hole, 12" into the rock or to the standard embedment depth, whichever is less. Any excess post length, after meeting these depths, may be field cut to ensure proper guardrail mounting height. Backfill with a cohesionless material.
10. Guardrail posts shall not be set in concrete, of any depth.
11. Special rail fabrication will be required at installations having a curvature of less than 150 ft. radius. The required radius shall be shown on the plans.
12. The terminal anchor section (TAS) post shall be set in Class A concrete (unless otherwise shown in the plans) in accordance with Item 421,"Hydraulic Cement Concrete." Concrete shall be subsidiary to the bid item requiring construction of the terminal anchor section (TAS). Terminal anchor post to be galvanized in accordance with Item 445, "Galvanizing."
13. Unless otherwise shown in the plans, a composite material post and/or block that meets the requirements of DMS-7210,"Composite Material Posts and Blocks for Metal Beam Guard Fence" may be substituted for posts and/or blocks of similar dimensions. The Construction Division, TxDOT maintains a Material Producer List (MPL) for producers of materials conforming to DMS-7210. Only producers on the MPL can furnish composite material posts and/or blocks.

"DRIVEWAY" TERMINAL ANCHOR SECTION

Only for use within driveway locations, where a standard (TAS) Terminal Anchor Section can not be installed.



ELEVATION LAYOUT

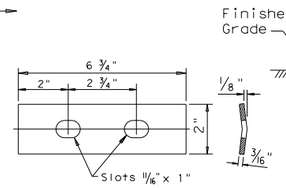
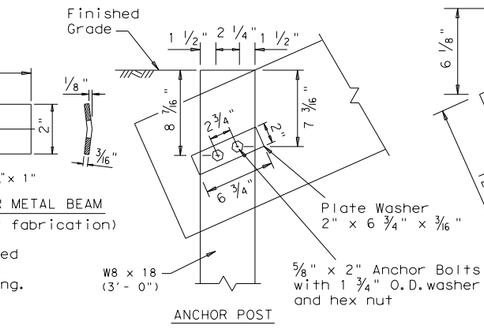
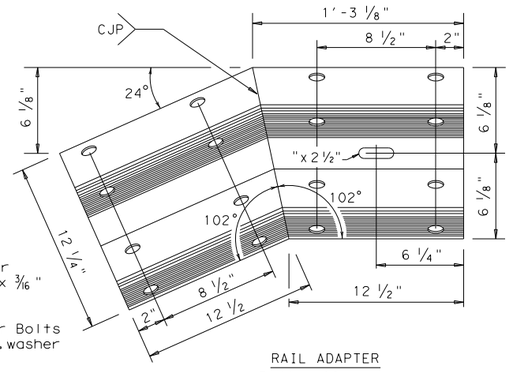


PLATE WASHER FOR METAL BEAM

(Galvanized after fabrication)



ANCHOR POST



RAIL ADAPTER

Rail - 10 gauge

(Galvanized after fabrication)

GENERAL NOTES

1. The "Driveway" Terminal Anchor Section is ONLY to be used within driveway locations, where the ROW is limited and a standard 25 ft.(TAS)Terminal Anchor Section,is too long.
2. Terminal anchor post shall be set in Class A concrete.
3. All steel shall be galvanized after fabrication in accordance with Item 445, "Galvanizing."

ONLY FOR USE IN MAINTENANCE REPAIRS OR HIGHLY CONSTRAINED SITE CONDITIONS.

Texas Department of Transportation

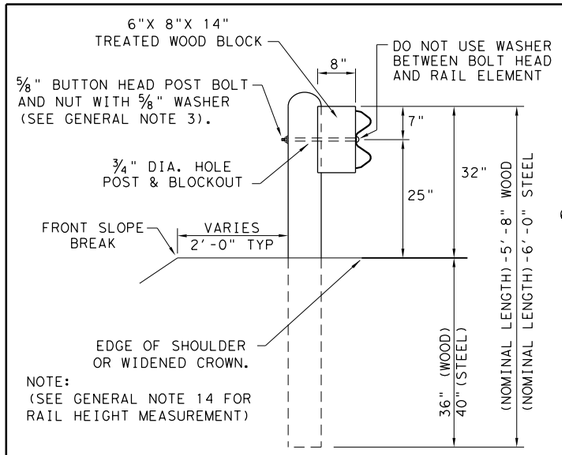
Design Division Standard

METAL BEAM GUARD FENCE
(SHORT RADIUS)
MBGF(SR)-19

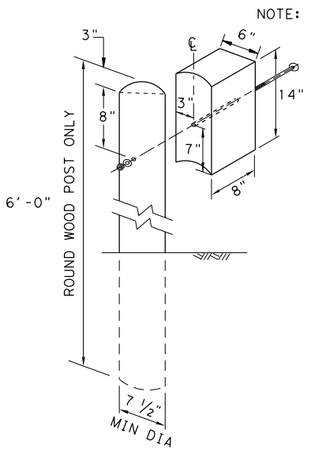
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©TxDOT NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS				COVEL RD
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		121

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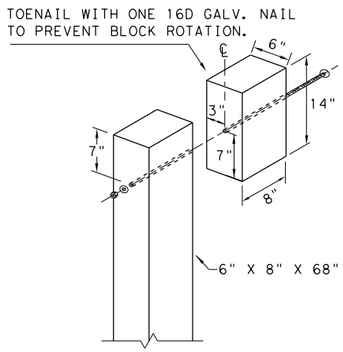
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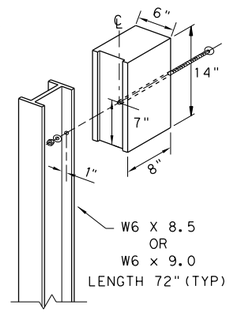
TYPICAL POST PLACEMENT



WOOD BLOCK TO
ROUND WOOD POST

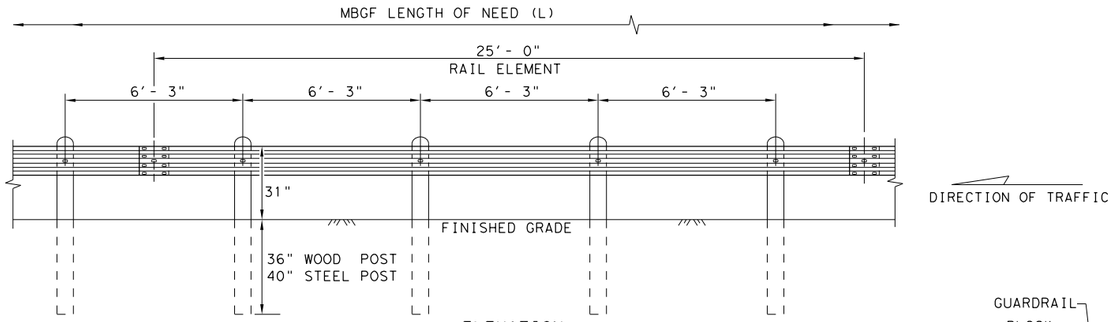


WOOD BLOCK TO
RECTANGULAR WOOD POST



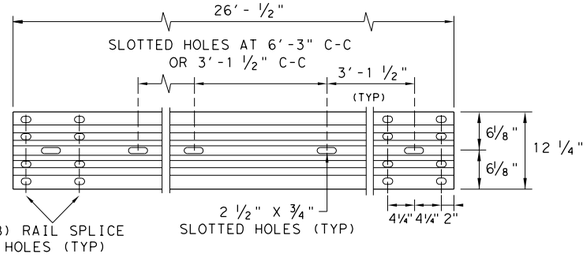
ROUTED WOOD BLOCK
TO I-BEAM STEEL POST

NOTE: ✻✻ "WOOD" INDICATES DIMENSIONS FOR BOTH ROUND AND RECTANGULAR WOOD POST SYSTEMS.



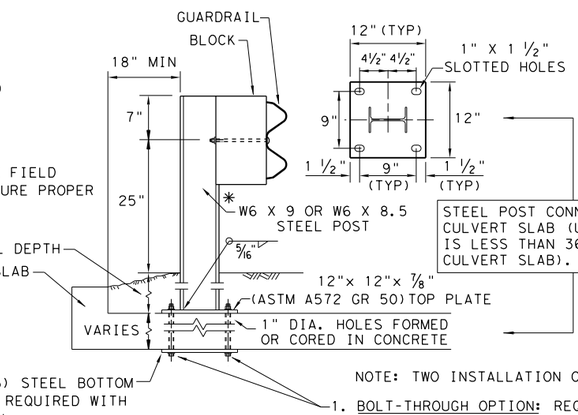
ELEVATION
MID-SPAN RAIL SPLICE

SHOWING A 25'- 0" SECTION OF W-BEAM RAIL. (SEE GENERAL NOTE 2)



ELEVATION 25'- 0"(NOM.) W-BEAM SECTION

NOTES: SEE GENERAL NOTE 2 FOR ALLOWABLE RAIL TYPES.
SEE RAIL SPLICE DETAIL FOR REQUIRED HARDWARE.



LOW FILL CULVERT POST

NOTE: TWO INSTALLATION OPTIONS.

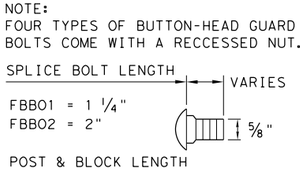
1. BOLT-THROUGH OPTION: REQUIRES A 6" MIN. SLAB THICKNESS. ⅞" DIA (ASTM A449) HEAVY HEX BOLTS WITH TWO HARDENED WASHER EACH AND HEAVY HEX NUTS.
   NOTE: BOLT LENGTH = SLAB PLUS 2 ¼" MIN.

2. EPOXY ANCHOR OPTION: THIS OPTION MAY ONLY BE USED IF THE CULVERT SLAB IS 9" MIN. THICK. THREADED ANCHOR RODS MUST BE ⅞" DIA. ASTM A449 OR A193 GRADE B7 WITH HEAVY HEX NUT, AND ONE HARDENED WASHER EACH. EMBED ANCHOR RODS 6" WITH HILTI HIT RE 500 EPOXY ADHESIVE. OTHER TYPE III CLASS C EPOXY ADHESIVES MEETING THE REQUIREMENTS OF DMS-6100, "EPOXIES AND ADHESIVES", MAY BE USED IF IT CAN BE DEMONSTRATED THAT THEY MEET OR EXCEED THE STRENGTH OF HILTI HIT RE 500 WITH THE SAME EMBEDMENT DEPTH AND THREADED ROD DIA. FOLLOW THE MANUFACTURER'S REQUIREMENTS FOR INSTALLING EPOXIED THREADED RODS. EXTEND RODS ¼" MIN. BEYOND NUT.

NOTE: CULVERTS OF 25 FT. OR LESS, SEE GF(31)LS STANDARD FOR "LONG SPAN" OPTION.

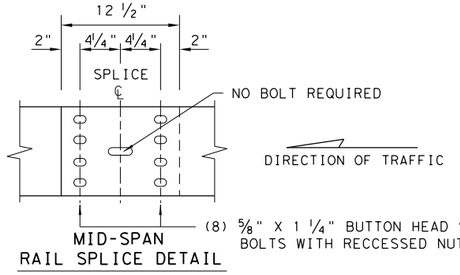
NOTE: TRANSISTIONS TO BRIDGE RAILS OR TRAFFIC BARRIERS.
SEE GF(31)TL3 TR STANDARD FOR HIGH-SPEED TL-3 TRANSITIONS.
SEE GF(31)TL2 TR STANDARD FOR LOW-SPEED TL-2 TRANSITIONS.

NOTE:
FOUR TYPES OF BUTTON-HEAD GUARD RAIL
BOLTS COME WITH A RECCESSED NUT.



BUTTON HEAD BOLT

NOTE: SEE GENERAL NOTE 3 FOR SPLICE & POST BOLT DETAILS.



MID-SPAN
RAIL SPLICE DETAIL

NOTE: GF(31), MID-SPAN RAIL SPLICES ARE REQUIRED WITH 6'-3" POST SPACINGS.

GENERAL NOTES

1. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST, OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. THE EXACT POSITION OF MBGF SHALL BE SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. STEEL POSTS TO BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING."
2. RAIL ELEMENTS SHALL MEET THE REQUIREMENTS OF ITEM 540,"METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED IN THE PLANS. THE CONTRACTOR MAY FURNISH RAIL ELEMENTS OF 25'- 0", OR 12'- 6" (NOM.) LENGTHS. RAIL ELEMENTS MAY HAVE SLOTTED HOLES AT 3'-1 ½" C-C OR 6'-3" C-C. A SPECIAL LENGTH OF RAIL MAY BE MANUFACTURED TO ACCOMMODATE THE DOWNSTREAM ANCHOR TERMINAL (DAT) AND THE TRANSITION SECTIONS OF GUARDRAIL.
3. BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND ⅝" WASHER (FWC16a) AND NOT MORE THAN 1" BEYOND IT. TRIM REMAINING BOLT LENGTH TO MEET REQUIRED LENGTH.
4. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445,"GALVANIZING." FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
5. CROWN SHALL BE WIDENED TO ACCOMMODATE THE METAL BEAM GUARD FENCE.
6. THE LATERAL APPROACH TO THE GUARD FENCE, SHALL HAVE A MAXIMUM SLOPE OF 1V:10H.
7. IF SHOWN ELSEWHERE IN THE PLANS OR AS DIRECTED BY THE ENGINEER, THE GUARD FENCE MAY BE FLARED AT A RATE OF 25:1 OR FLATTER.
8. UNLESS OTHERWISE SHOWN IN THE PLANS, GUARD FENCE PLACED IN THE VICINITY OF CURBS SHALL BE POSITIONED SO THAT THE FACE OF CURB IS LOCATED DIRECTLY BELOW OR BEHIND THE FACE OF THE RAIL. RAIL PLACED OVER CURBS SHALL BE INSTALLED SO THAT THE POST BOLT IS LOCATED APPROXIMATELY 25 INCHES ABOVE THE GUTTER PAN OR EDGE OF SHOULDER.
9. APPLICATIONS IN SOLID ROCK ARE ONLY ALLOWED WITH STEEL POSTS. IF SOLID ROCK IS ENCOUNTERED WITHIN 0 TO 18" OF THE FINISHED GRADE, DRILL A 24" DIA. HOLE, 24" INTO THE ROCK. IF SOLID ROCK IS ENCOUNTERED BELOW 18", DRILL A 12" DIA. HOLE, 12" INTO THE ROCK OR TO THE STANDARD EMBEDMENT DEPTH, WHICHEVER MAYBE LESS. ANY EXCESS POST LENGTH, AFTER MEETING THESE DEPTHS, MAY BE FIELD CUT TO ENSURE PROPER GUARDRAIL MOUNTING HEIGHT. BACKFILL WITH COARSE AGGREGATE MATERIAL.
10. POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
11. SPECIAL FABRICATION WILL BE REQUIRED AT INSTALLATION LOCATIONS HAVING A CURVATURE OF LESS THAN 150 FT. RADIUS.
12. UNLESS OTHERWISE SHOWN IN THE PLANS, A COMPOSITE MATERIAL BLOCK THAT MEETS THE REQUIREMENTS OF DMS-7210,"COMPOSITE MATERIAL POSTS AND BLOCKS FOR METAL BEAM GUARD FENCE" MAY BE SUBSTITUTED FOR BLOCKS OF SIMILAR DIMENSIONS. THE CONSTRUCTION DIVISION, TXDOT MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210 ONLY PRODUCERS ON THE MPL MAY FURNISH COMPOSITE MATERIAL BLOCKS.
13. FOR THE LOW FILL CULVERT OPTION, POSTS LOCATED PARTIALLY OR WHOLLY BETWEEN PRECAST BOX CULVERT UNITS, THE USE OF A CAST-IN-PLACE CONCRETE CLOSURE BETWEEN BOXES IS REQUIRED. THE LENGTH OF THE CAST-IN-PLACE CONCRETE CLOSURE SHALL ACCOMMODATE THE PLACEMENT OF THE LOW FILL CULVERT OPTION. SEE CONCRETE CLOSURE DETAILS ON BRIDGE STANDARD SCP-MD.
14. GUARDRAIL HEIGHT MEASUREMENT: WHEN THE GUARDRAIL IS LOCATED ABOVE PAVEMENT, MEASURE THE HEIGHT FROM THE PAVEMENT TO THE TOP OF THE W-BEAM RAIL. WHEN THE GUARDRAIL IS LOCATED UP TO 2 FT. OFF OF THE EDGE OF PAVEMENT OR FOR A PAVEMENT OVERLAY, USE A 10-FOOT STRAIGHTEDGE TO EXTEND THE PAVEMENT/SHOULDER SLOPE TO THE BACK OF RAIL, MEASURE FROM THE BOTTOM OF STRAIGHTEDGE TO THE TOP OF RAIL. FOR GUARDRAIL LOCATED DOWN A 10:1 SLOPE, MEASURE FROM THE NOMINAL TERRAIN.

Texas Department of Transportation

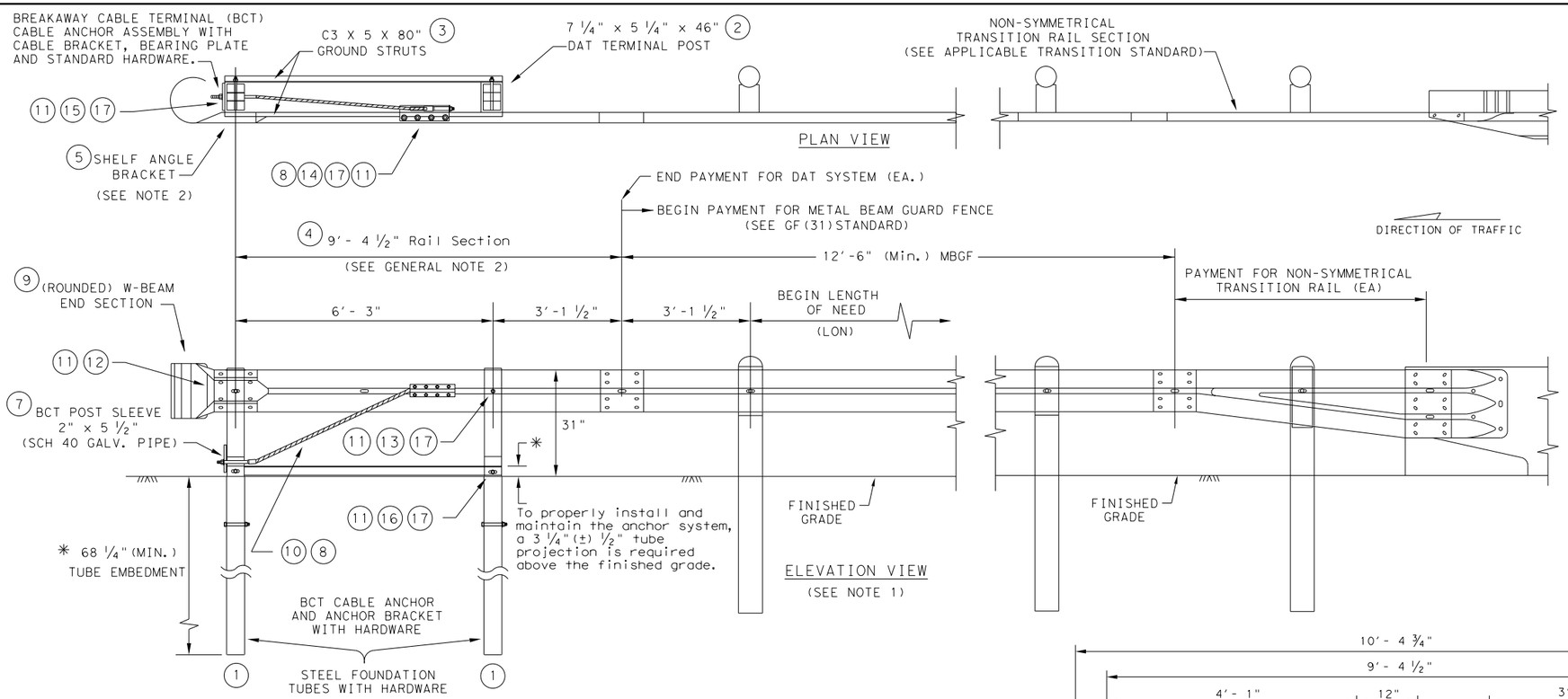
Design Division Standard

METAL BEAM GUARD FENCE
TL-3 MASH COMPLIANT
GF(31)-19

FILE: gf3119.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG
©TxDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				122

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DATE: 6/27/2025
FILE: c:\projectwise\dannenbaum\workdir\jose.robles\d0176930\gf31dat19.dgn



DOWNSTREAM ANCHOR TERMINAL (DAT)

NOTE: ONLY FOR DOWNSTREAM USE, WHEN LOCATED OUTSIDE THE HORIZONTAL CLEARANCE AREA OF OPPOSING TRAFFIC.

GENERAL NOTES

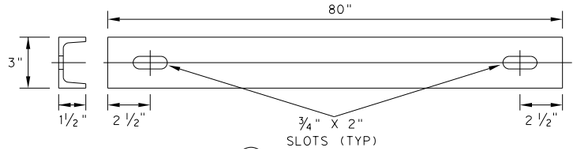
1. THE DETAIL SHOWN IS THE MINIMUM LENGTH OF NEED (LON) FOR A DOWNSTREAM ANCHOR TERMINAL (DAT) CONNECTED TO A CONCRETE RAIL.
2. THE RAIL SECTION AT THE END POST IS SUPPORTED BY THE SHELF ANGLE BRACKET. THE RAIL ELEMENT IS NOT ATTACHED TO THE END POST.
3. THE FOUNDATION TUBES SHALL NOT PROJECT MORE THAN 3 3/4" ABOVE THE FINISHED GRADE.
4. ALL HARDWARE FOR DAT SHALL BE ASTM A307 UNLESS OTHERWISE SHOWN.
5. REFER TO GF(31) SHEET FOR TERMINAL CONNECTION DETAILS.

MOW STRIP INSTALLATION

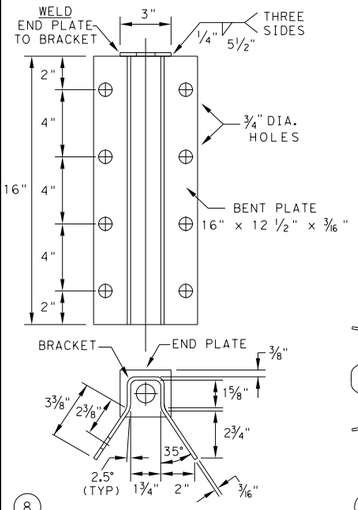
IF A MOW STRIP IS REQUIRED WITH THE DAT INSTALLATION THE LEAVE-OUT AREA AROUND THE STEEL FOUNDATION TUBES AND THE TWO CHANNEL STRUTS MAY BE OMITTED. THIS WILL REQUIRE A FULL POUR AT THE FOUNDATION TUBES.

#	(DAT) PARTS LIST	QTY
(1)	STEEL FOUNDATION TUBE	2
(2)	DAT TERMINAL POST	2
(3)	CHANNEL STRUT	2
(4)	TERMINAL RAIL ELEMENT	1
(5)	SHELF ANGLE BRACKET	1
(6)	BCT BEARING PLATE	1
(7)	BCT POST SLEEVE	1
(8)	GUARDRAIL ANCHOR BRACKET	1
(9)	(ROUNDED) W-BEAM END SECTION	1
(10)	BCT CABLE ANCHOR	1
(11)	RECESSED NUT, GUARDRAIL	20
(12)	1 1/4" BUTTON HEAD BOLT	4
(13)	10" BUTTON HEAD BOLT	2
(14)	5/8" X 2" HEX HEAD BOLT	8
(15)	5/8" X 8" HEX HEAD BOLT	4
(16)	5/8" X 10" HEX HEAD BOLT	2
(17)	5/8" FLAT WASHER	18

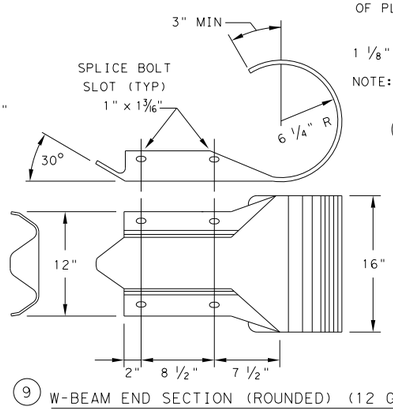
(4) TERMINAL RAIL ELEMENT FOR DAT



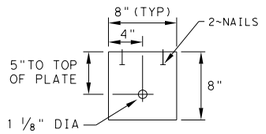
(3) CHANNEL STRUT
C3 X 5 X 80", GRADE A36



(8) GUARDRAIL ANCHOR BRACKET

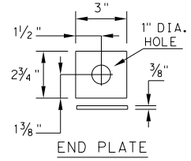


(9) W-BEAM END SECTION (ROUNDED) (12 GA.)

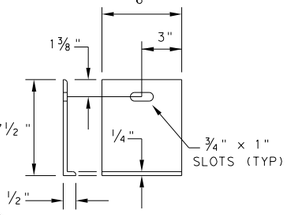


NOTE: DRIVE NAILS AND BEND OVER TO PREVENT PLATE ROTATION

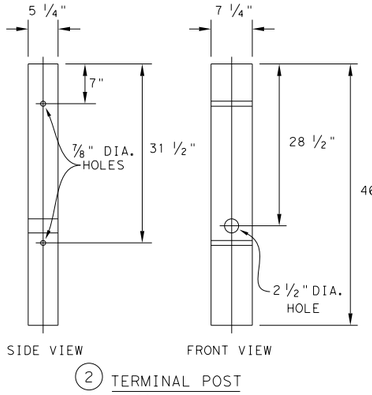
(6) BEARING PLATE
8"x 8"x 5/8" R



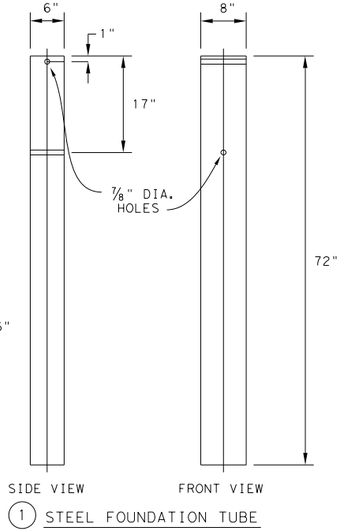
END PLATE



(5) SHELF ANGLE BRACKET



(2) TERMINAL POST
7 1/4"x 5 1/4"x 46" WOOD POST



(1) STEEL FOUNDATION TUBE
6"x 8"x 1/8" x 72" STEEL TUBE

Texas Department of Transportation

Design Division Standard

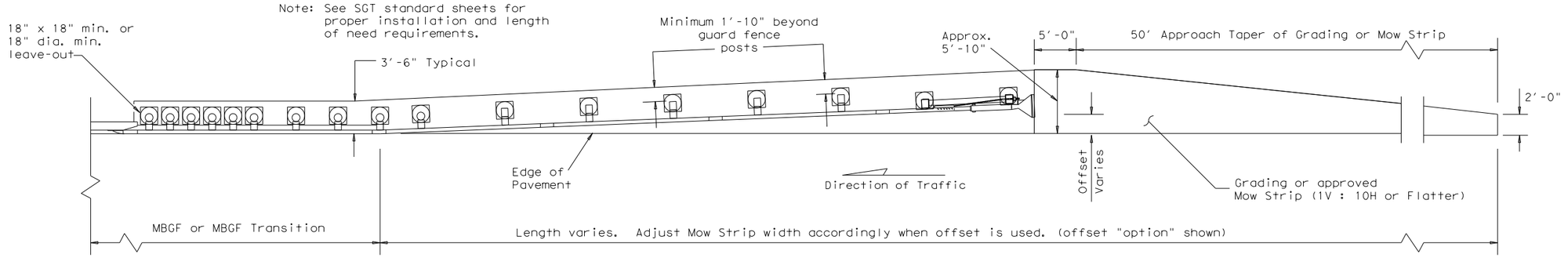
METAL BEAM GUARD FENCE
(DOWNSTREAM ANCHOR TERMINAL)
TL-3 MASH COMPLIANT

GF(31)DAT-19

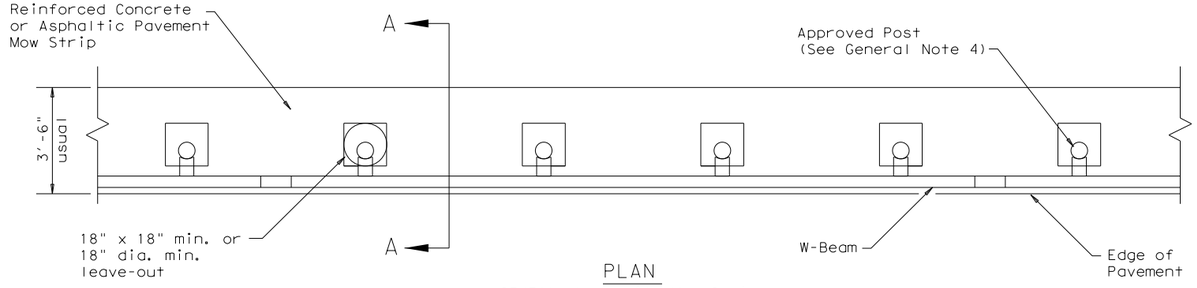
FILE: gf31dat19.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG
©TxDOT: NOVEMBER 2019 REVISIONS	CONT	SECT	JOB	HIGHWAY
				COVEL RD
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		123

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DATE: 6/27/2025
FILE: c:\projectwise\dannenbaum\workdir\jose.robles\d0176930\gf31ms19.dgn

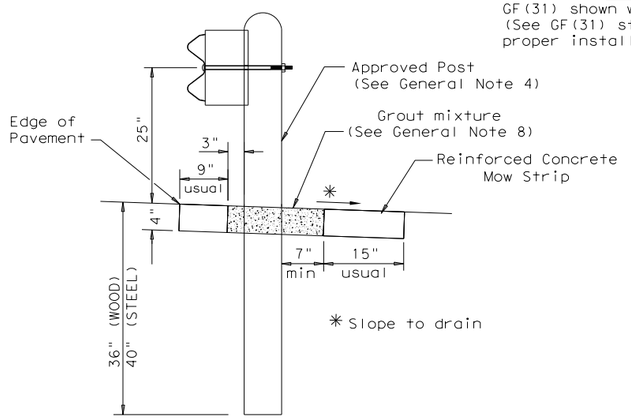


GRADING AND MOW STRIP AT GUARDRAIL END TREATMENTS



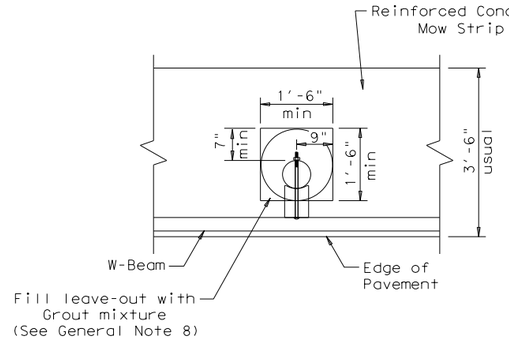
PLAN

GF(31) shown with Mow Strip
(See GF(31) standard sheet for proper installation)



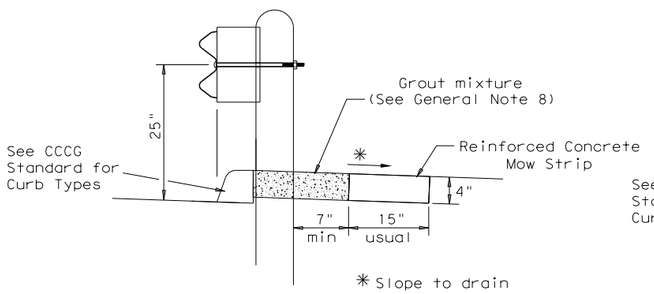
SECTION A-A

Typical



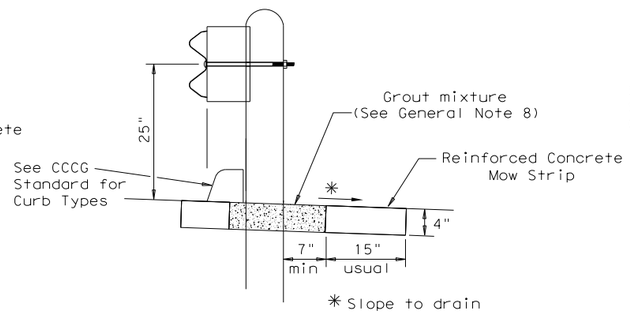
MOW STRIP DETAIL

Reinforced Concrete Mow Strip with 18" x 18" Square or 18" Dia. minimum leave-out.



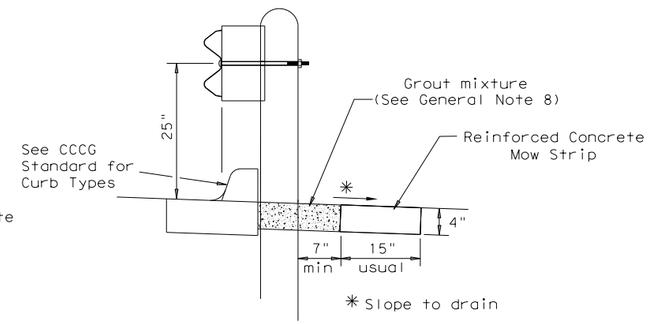
CURB OPTION (1)

This option will increase the post embedment throughout the system.



CURB OPTION (2)

Curb shown on top of mow strip



CURB OPTION (3)

Note: Site Condition(s)

Site conditions may exist where grading is required for the proper installation of metal guard fence and end treatments.

Approach grading or mow strip may be decreased or eliminated, as directed by the Engineer.

GENERAL NOTES

1. This mow strip design is for use with metal beam guard fence, guard fence transitions, and guard fence end treatments. See applicable GF(31) MBGF or GF(31) Transition Standard sheet for additional information.
2. Mow strips shall be reinforced concrete with (wire mesh or synthetic fiber), as shown on the plans and will be paid for under the pertinent bid item. Reinforced concrete shall be placed in accordance with Item 432, "Riprap." The use of the synthetic fiber in lieu of steel reinforcing is acceptable, provided the fiber producer is on the Department Material Producer List (MPL), maintained by TxDOT, Construction Division.
3. The leave-out behind the post shall be a minimum of 7".
4. Only steel (W6 x 8.5 or W6 x 9.0), or 7 ½" Dia. round wood posts are acceptable for use in the mow strip. See GF(31) Standard for additional details.
5. Other curb placement options may be used. Curbs are not considered part of the mow strip and will be paid for under other pertinent bid item.
6. Thickness of the mow strip will be 4".
7. The limits of payment for reinforced concrete will include leave-outs for the posts.
8. The leave-outs shall be filled with a Grout mixture consisting of: 2719 pounds sand, 188 pounds Type 1 or II cement, and 550 pounds of water per cubic yard, with a 28-day compressive strength of approximately 230 psi or less. Provide grout with a consistency that will flow into and completely fill all voids. Due to auger size, larger leave-out dimensions are acceptable from both an impact performance and maintenance repair standpoint (Suggested Maximum leave-out of 20"). Payment for furnishing and placing the grout mixture will be subsidiary to the pay item of riprap mow strip.

Texas Department of Transportation

Design Division Standard

METAL BEAM GUARD FENCE (MOW STRIP) TL-3 MASH COMPLIANT

GF(31)MS-19

FILE: gf31ms19.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG
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REVISIONS				COVEL RD
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DATE: 6/27/2025
FILE: c:\projectwise\dannenbaum\workdir\jose.robles\d0176930\sgt10s3116.dgn

NOTE: STEEL I-BEAM POST W6 X 8.5 (6'-0") PN: 533G
STANDARD WOOD BLOCKOUTS (6"X8"X14") PN: 4076B
AT (POSTS 2 THRU 8)

⅝" X 10" HGR BOLT PN: 3500G
⅝" HGR NUT PN: 3340G

LINE AT THE BACK OF POST #2 THRU #8

FROM THE CENTERLINE OF POST(1) & POST(0)

ANCHOR PADDLE PN: 15204A
ANGLE STRUT PN: 15202G
16"

POST(8) POST(7) POST(6) POST(5) POST(4) POST(3) POST(2) POST(1) POST(0)

PLAN VIEW

DO NOT BOLT ANCHOR RAIL TO - POST (2)
SEE DETAIL 1
BEGIN LENGTH OF NEED
TRAFFIC FLOW

MASH TEST LEVEL 3 (TL-3) LENGTH OF SoftStop TERMINAL (50'-9 ½")

50'-9 ½" STANDARD INSTALLATION LENGTH (MASH TL-3 SoftStop)

BEGIN STANDARD MBGF
END PAYMENT FOR SGT

6¼" 3'-1 ½" 6'-3" 6'-3"
ANCHOR RAIL WITH SLOTS - (THREADED THRU HEAD)
SEE SoftStop MANUAL FOR COMPLETE DETAILS

MIDDLE SLOT CUTOUT (1) 1 ¾" X 6'-10 ¼"
OUTSIDE SLOTS CUTOUT (2)½" X 6'-9 ⅝"

SoftStop FACE SEE GN(3) & NOTE: B

MBGF LAPPED IN DIRECTION OF TRAFFIC FLOW

25'-0" DOWNSTREAM W-BEAM GUARDRAIL PN: 61G
SoftStop ANCHOR RAIL (12GA) PN: 15215G

3'-1 ½"(+/-) 6'-3" 6'-3" 6'-3" 6'-3" 6'-3" 6'-3" 6'-3" 5'-8" 4'-7"

ANCHOR PADDLE PN: 15204A
END OF ANCHOR RAIL PN: 15215G
SEE NOTE: A

SEE NOTE: C

POST 32" HEIGHT
POST 40" DEPTH (TYP 1-8)
31" RAIL HEIGHT

RAIL 25'-0" PN: 61G
RAIL 25'-0" PN: 15215G

(8) ⅝"x 1-¼" GR BOLTS PN: 3360G
⅝" HEX NUTS PN: 3340G

(8) ⅝"x 1-¼" HGR BOLTS PN: 3360G
⅝" HEX NUTS PN: 3340G

DO NOT BOLT ANCHOR RAIL TO POST(2)
SEE DETAIL 2
SEE DETAIL 3

13/16" DIA. YIELDING HOLES
13/16" DIA. YIELDING HOLES

POST(8) POST(7) POST(6) POST(5) POST(4) POST(3) POST(2) 6'-0" (SYTP) PN: 15000G POST(1) 4'-9 ½" SYTP PN: 15203G POST(0) 6'-5 ⅜" PN: 15205A

6'-1⅜"

ELEVATION VIEW

HARDWARE FOR POST(2) THRU POST(8)
(1) ⅝"x 10" HGR BOLT PN: 3500G
(1) ⅝" HGR HEX NUT PN: 3340G

NOTE: DO NOT BOLT ANCHOR RAIL PANEL TO POST(2)

ALTERNATE BLOCKOUT SEE GENERAL NOTE: 6
4" X 7 ½" X 14" BLOCKOUT COMPOSITE PN: 6777B

6" X 8" X 14" BLOCKOUT WOOD PN: 4076B
NOTE: DO NOT BOLT ANCHOR RAIL TO POST(2)
8" 6" 14"
⅝" HGR NUT PN: 3340G
⅝" X 10" HGR POST BOLT PN: 3500G
13/16" DIAMETER YIELDING HOLES LOCATED IN FLANGES
FINISHED GRADE
(HOLES APROXIMATELY CENTERED AT FINISHED GRADE)

ISOMETRIC VIEW
POST(1 & 2)
W6 X 8.5 I-BEAM POST SHOWING STANDARD WOOD BLOCKOUT

NOTE: NO BLOCKOUT INSTALLED AT POST(1)

(1) ⅝" x 1 ¾" HEX HD BOLT PN 3391G
ANGLE STRUT PN: 15202G
(2) ⅝" WASHERS PN 4372G
(1) ⅝" HGR HEX NUT PN 3340G

DETAIL 1
SHOWN AT POST(1) NEAR GROUND

(1) ⅝" HEX NUT
(1) ⅝" x 1-½" HEX HD BOLT-GR-5 PN: 105286
(2) ⅝" ROUND WASHERS PN: 3240G

DETAIL 2
SHOWN AT POST(1)

ANCHOR KEEPER PLATE (24 GA) PN: 15207G
ANCHOR PLATE WASHER ½" THICK PN: 15206G
1" ROUND WASHER F463 PN: 4902G
(2) ⅝" x 2 ½" HEX HD BOLT GR-5 PN: 105285G
(2) ⅝" ROUND WASHER (WIDE) PN: 3240G

ALTERNATE BLOCKOUT SEE GENERAL NOTE: 6

ANCHOR PADDLE PN: 15204A
(2) ⅝" HEX NUT A563 GR.DH PN: 3245G
1" NUT PN: 3908G SHALL BE SECURELY TIGHTENED AFTER FINAL ASSEMBLY, BUT NOT DEFORMING THE KEEPER PLATE.

W-BEAM FLATTENED (4 PLIES)
ANGLE STRUT PN: 15202G
SEE NOTE: A
(2) ¾" x 2 ½" HEX BOLT (TYP) PN: 3717G
(4) ¾" FLAT WASHER (TYP) PN: 3701G
(2) ¾" HEX NUT (TYP) PN: 3704G
(2) ANCHOR POST ANGLE PN: 15201G
6'-1 ⅜" POST DEPTH

DETAIL 3
AT POST(0)
6'-5 ⅜" (W6 X 15)
I-BEAM POST PN: 15205A

TRAFFIC FLOW

W-BEAM RAIL 25'-0"
6" X 8" X 14" BLOCKOUT WOOD
⅝" X 10" HGR POST BOLT PN: 3500G
⅝" HGR NUT PN: 3340G
POST HEIGHT 32"
31" RAIL HEIGHT
40"
FINISHED GRADE
LINE POST (3, 4, 5, 6, 7 & 8)

SECTION VIEW B-B
6'-0" (W6 X 8.5)
I-BEAM POST PN: 533G

6" X 8" X 14" BLOCKOUT WOOD
W-BEAM RAIL 25'-0"
⅝" X 10" HGR POST BOLT PN: 3500G
⅝" HGR NUT PN: 3340G
POST HEIGHT 32"
31" RAIL HEIGHT
40"
FINISHED GRADE
POST(2)

SECTION VIEW A-A
6'-0" (W6 X 8.5)
(SYTP) I-BEAM POST PN: 15000G

NOTE: DO NOT BOLT ANCHOR RAIL PANEL TO POST(2)

POST 17"- ½" HEIGHT
4'-9 ½"
13/16" DIA. YIELDING HOLES
40"
POST(1)

FRONT VIEW POST(1)
4'-9 ½" (W6 X 8.5)
(SYTP) I-BEAM POST PN: 15203G

NOTE: NO BLOCKOUT INSTALLED AT POST(1)

APPROX 5'-10"
5'-0"
50' APPROACH GRADING
2'-0"
STANDARD MBGF
EDGE OF PAVEMENT
NOTE: ADJUST WIDTH ACCORDINGLY WHEN OFFSET IS USED. (OFFSET "OPTION" SHOWN)
2'-0" MAX. RAIL OFFSET
APPROACH GRADING (1V:10H OR FLATTER) SEE PRODUCT ASSEMBLY MANUAL FOR ADDITIONAL GUIDANCE.

APPROACH GRADING AT GUARDRAIL END TREATMENTS

NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE SoftStop END TERMINAL, IT IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: TRINITY HIGHWAY AT 1(888)323-6374. 2525 N. STEMMONS FREEWAY, DALLAS, TX 75207
2. FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE; SoftStop END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL. PN: 620237B
3. APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
4. FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
5. HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
6. A COMPOSITE MATERIAL BLOCKOUT THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS OF SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
7. IF SOLID ROCK IS ENCOUNTERED SEE THE MANUFACTURER'S INSTALLATION MANUAL AND REFER TO THE LATEST ROADWAY MBGF STANDARD FOR INSTALLATION GUIDANCE.
8. POSTS SHALL NOT BE SET IN CONCRETE.
9. IT IS ACCEPTABLE TO INSTALL THE SoftStop IMPACT HEAD PARALLEL TO THE GRADE LINE OR WITH AN UPWARD TILT.
10. DO NOT ATTACH THE SoftStop SYSTEM DIRECTLY TO A RIGID BARRIER.
11. UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE SoftStop SYSTEM BE CURVED.
12. A FLARE RATE OF UP TO 25:1 MAY BE USED TO PREVENT THE TERMINAL HEAD FROM ENCROACHING ON THE SHOULDER. THE FLARE MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS, IF DIRECTED BY THE ENGINEER.

NOTE: A	THE INSTALLATION HEIGHT OF FULLY ASSEMBLED ANCHOR POST WILL VARY FROM 3-¾" MIN. TO 4" MAX. ABOVE FINISHED GRADE.
NOTE: B	PART PN: 5852B RIGHT-SIDE (HIGH INTENSITY REFLECTIVE SHEETING) PART PN: 5851B LEFT-SIDE (HIGH INTENSITY REFLECTIVE SHEETING)
NOTE: C	W-BEAM SPLICE LOCATED BETWEEN LINE POST(4) AND LINE POST(5) GUARDRAIL PANEL 25'-0" PN: 61G ANCHOR RAIL 25'-0" PN: 15215G LAP GUARDRAIL IN DIRECTION OF TRAFFIC FLOW.

PART	QTY	MAIN SYSTEM COMPONENTS
620237B	1	PRODUCT DESCRIPTION ASSEMBLY MANUAL (LATEST REV.)
15208A	1	SoftStop HEAD (SEE MANUAL FOR RIGHT-LEFT APPROACH)
15215G	1	SoftStop ANCHOR RAIL (12GA) WITH CUTOUT SLOTS
61G	1	SoftStop DOWNSTREAM W-BEAM RAIL (12GA) (25'- 0")
15205A	1	POST #0 - ANCHOR POST (6'- 5 ⅜")
15203G	1	POST #1 - (SYTP) (4'- 9 ½")
15000G	1	POST #2 - (SYTP) (6'- 0")
533G	6	POST #3 THRU #8 - I-BEAM (W6 x 8.5) (6'- 0")
4076B	7	BLOCKOUT - WOOD (ROUTED) (6" x 8" x 14")
6777B	7	BLOCKOUT - COMPOSITE (4" x 7 ½" x 14")
15204A	1	ANCHOR PADDLE
15207G	1	ANCHOR KEEPER PLATE (24 GA)
15206G	1	ANCHOR PLATE WASHER (½" THICK)
15201G	2	ANCHOR POST ANGLE (10" LONG)
15202G	1	ANGLE STRUT
		HARDWARE
4902G	1	1" ROUND WASHER F436
3908G	1	1" HEAVY HEX NUT A563 GR.DH
3717G	2	¾" x 2 ½" HEX BOLT A325
3701G	4	¾" ROUND WASHER F436
3704G	2	¾" HEAVY HEX NUT A563 GR.DH
3360G	16	⅝" x 1 ¼" W-BEAM RAIL SPLICE BOLTS HGR
3340G	25	⅝" W-BEAM RAIL SPLICE NUTS HGR
3500G	7	⅝" x 10" HGR POST BOLT A307
3391G	1	⅝" x 1 ¾" HEX HD BOLT A325
4489G	1	⅝" x 9" HEX HD BOLT A325
4372G	4	⅝" WASHER F436
105285G	2	⅝" x 2 ½" HEX HD BOLT GR-5
105286G	1	⅝" x 1 ½" HEX HD BOLT GR-5
3240G	6	⅝" ROUND WASHER (WIDE)
3245G	3	⅝" HEX NUT A563 GR.DH
5852B	1	HIGH INTENSITY REFLECTIVE SHEETING - SEE NOTE: B

Texas Department of Transportation

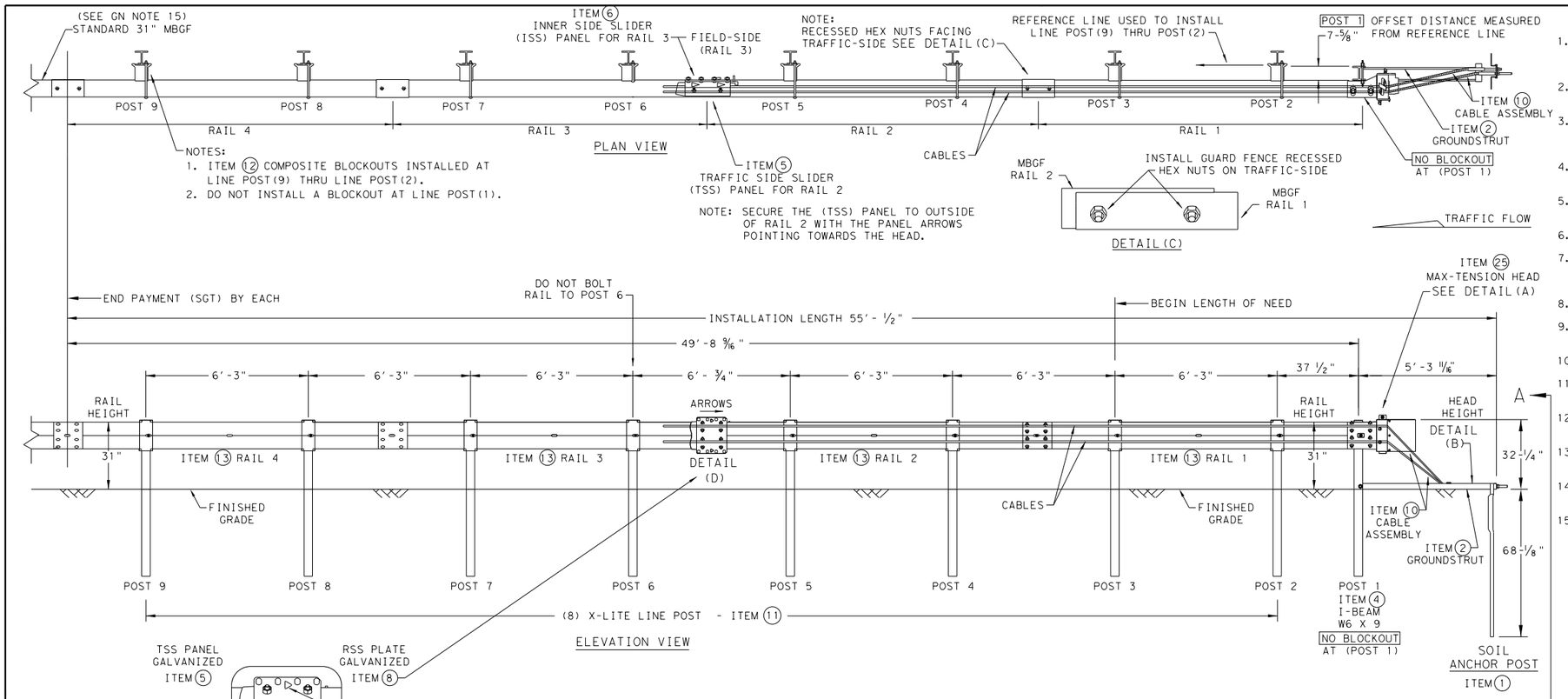
Design Division Standard

TRINITY HIGHWAY
SOFTSTOP END TERMINAL
MASH - TL-3
SGT(10S)31-16

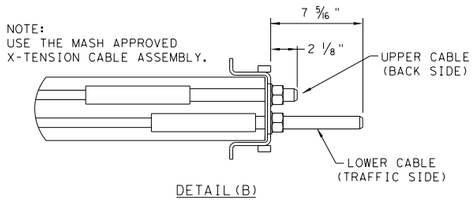
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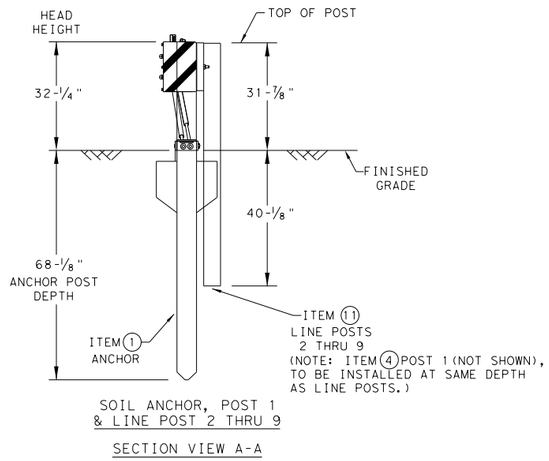
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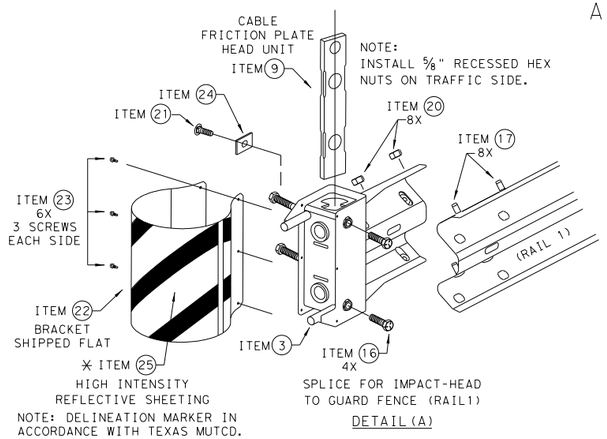
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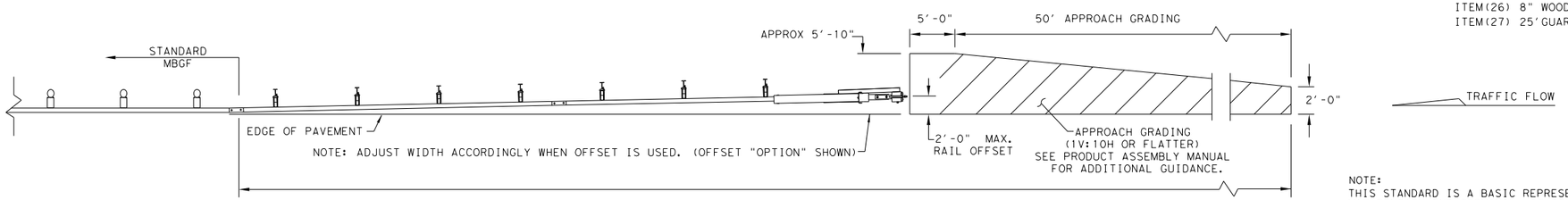












GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: LINDSAY TRANSPORTATION SOLUTIONS (LTS) - BARRIER SYSTEMS, INC. AT (707) 374-6800
2. FOR INSTALLATION, REPAIR, & MAINTENANCE REFER TO THE; MAX-TENSION INSTALLATION INSTRUCTION MANUAL. P/N MANMAX REV D (ECN 3516).
3. APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURE'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
4. FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
5. ALL STEEL COMPONENTS ARE GALVANIZED PER ASTM A123 OR EQUIVALENT UNLESS OTHERWISE STATED.
6. SYSTEM SHOWN USING STEEL WIDE FLANGE POST WITH COMPOSITE BLOCKOUTS.
7. COMPOSITE MATERIAL BLOCKOUT THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST(MPL)FOR CERTIFIED PRODUCERS.
8. REFER TO INSTALLATION MANUAL FOR SPECIFIC PANEL LAPPING GUIDANCE.
9. IF SOLID ROCK IS ENCOUNTERED SEE THE MANUFACTURER'S INSTALLATION MANUAL FOR INSTALLATION GUIDANCE.
10. POSTS SHALL NOT BE SET IN CONCRETE.
11. A DRIVING CAP WITH A TIMBER OR PLASTIC INSERT SHALL BE USED WHEN DRIVING POST TO PREVENT DAMAGE TO THE GALVANIZING ON TOP OF THE POST.
12. MAX-TENSION SYSTEM SHALL NEVER BE INSTALLED WITHIN A CURVED SECTION OF GUARDRAIL.
13. IF A DELINEATION MARKER IS REQUIRED, MARKER SHALL BE IN ACCORDANCE WITH TEXAS MUTCD.
14. THE SYSTEM IS SHOWN WITH 12'-6" MBGF PANELS, 25'-0" MBGF PANELS ARE ALSO ALLOWED.
15. A MINIMUM OF 12'-6" OF 12GA. MBGF IS REQUIRED IMMEDIATELY DOWNSTREAM OF THE MAX-TENSION SYSTEM.

ITEM #	PART NUMBER	DESCRIPTION	QTY
1	BSI-1610060-00	SOIL ANCHOR - GALVANIZED	1
2	BSI-1610061-00	GROUND STRUT - GALVANIZED	1
3	BSI-1610062-00	MAX-TENSION IMPACT HEAD	1
4	BSI-1610063-00	W6x9 I-BEAM POST 6FT.-GALVANIZED	1
5	BSI-1610064-00	TSS PANEL - TRAFFIC SIDE SLIDER	1
6	BSI-1610065-00	ISS PANEL - INNER SIDE SLIDER	1
7	BSI-1610066-00	TOOTH - GEOMET	1
8	BSI-1610067-00	RSS PLATE - REAR SIDE SLIDER	1
9	B061058	CABLE FRICTION PLATE - HEAD UNIT	1
10	BSI-1610069-00	CABLE ASSEMBLY - MASH X-TENSION	2
11	BSI-1012078-00	X-LITE LINE POST-GALVANIZED	8
12	B090534	8" W-BEAM COMPOSITE-BLOCKOUT XT110	8
13	BSI-4004386	12'-6" W-BEAM GUARD FENCE PANELS 12GA.	4
14	BSI-1102027-00	X-LITE SQUARE WASHER	1
15	BSI-2001886	5/8" X 7" THREAD BOLT HH (GR.5)GEOMET	1
16	BSI-2001885	3/4" X 3" ALL-THREAD BOLT HH (GR.5)GEOMET	4
17	4001115	5/8" X 1 1/4" GUARD FENCE BOLTS (GR.2)MGAL	48
18	2001840	5/8" X 10" GUARD FENCE BOLTS MGAL	8
19	2001636	5/8" WASHER F436 STRUCTURAL MGAL	2
20	4001116	5/8" RECESSED GUARD FENCE NUT (GR.2)MGAL	59
21	BSI-2001888	5/8" X 2" ALL THREAD BOLT (GR.5)GEOMET	1
22	BSI-1701063-00	DELINEATION MOUNTING (BRACKET)	1
23	BSI-2001887	1/4" X 3/4" SCREW SD HH 410SS	7
24	4002051	GUARDRAIL WASHER RECT AASHTO FWR03	1
* 25	SEE NOTE BELOW	HIGH INTENSITY REFLECTIVE SHEETING	1
** 26	4002337	8" W-BEAM TIMBER-BLOCKOUT, PDB01B	8
** 27	BSI-4004431	25' W-BEAM GUARDRAIL PANEL,8-SPACE,12GA.	2
28	MANMAX Rev-(D)	MAX-TENSION INSTALLATION INSTRUCTIONS	1

* TO BE PROVIDED BY DISTRIBUTOR OR CONTRACTOR.

** ALTERNATIVE ITEMS NOT SHOWN.
ITEM(26) 8" WOOD-BLOCKOUTS
ITEM(27) 25'GUARD FENCE PANELS

NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE MAX-TENSION END TERMINAL, IT IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

Texas Department of Transportation

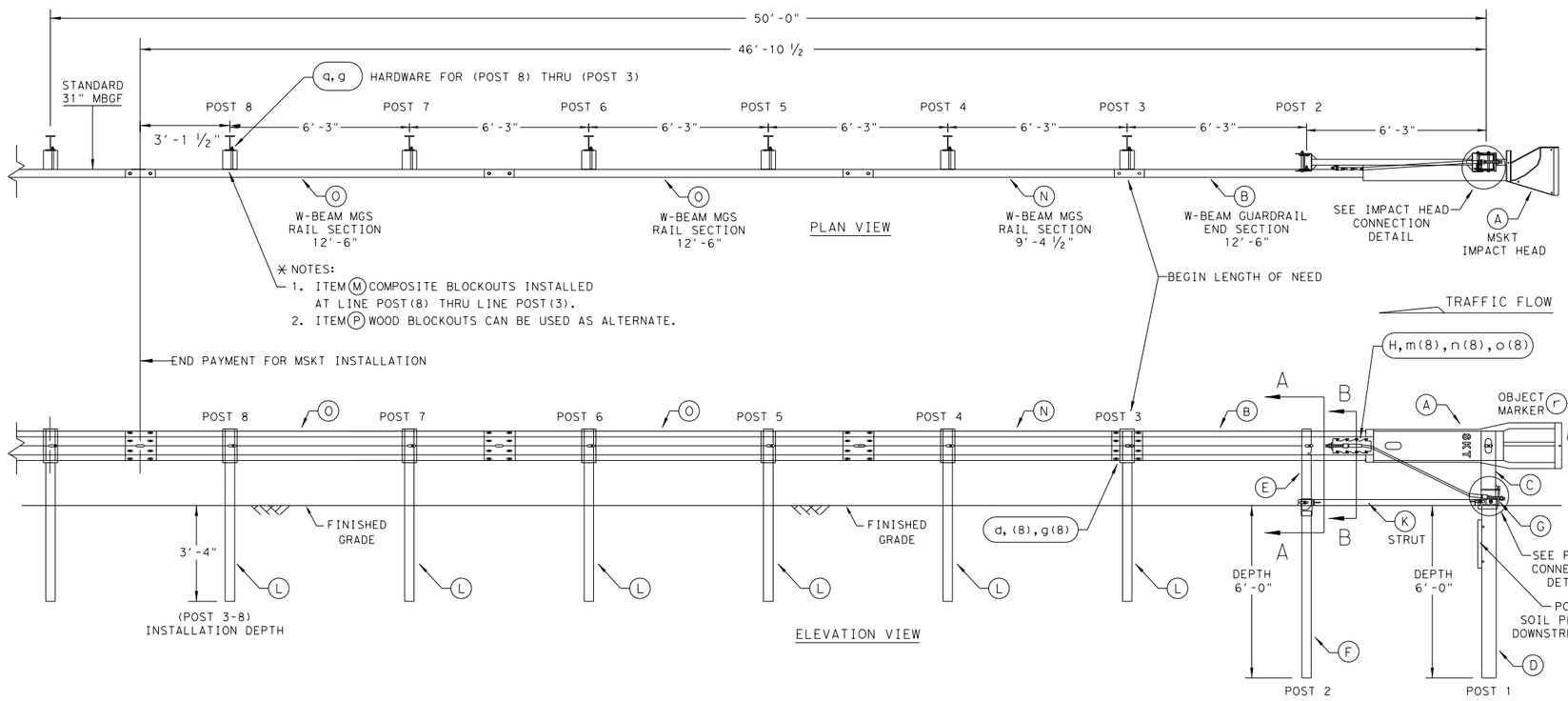
Design Division Standard

MAX-TENSION END TERMINAL
MASH - TL-3
SGT(11S)31-18

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REVISIONS				COVEL RD
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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 CONVERSIONOF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

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NOTE: SEE (GENERAL NOTE 14) FOR DRIVING CAP INFORMATION.

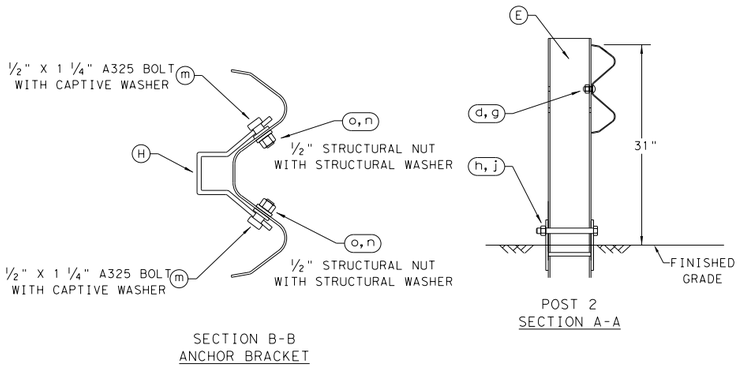
GENERAL NOTES

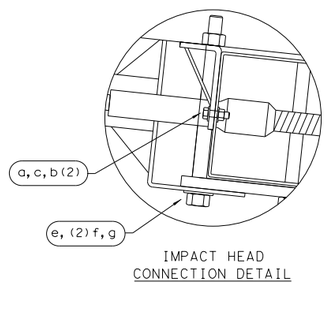
1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: ROAD SYSTEMS, INC. (432)263-2435. 3616 OLD HOWARD COUNTY AIRPORT, BIG SPRING, TX 79720
2. FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE; MSKT END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL (PUBLICATION~062717).
3. APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
4. FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
5. HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
6. SYSTEM SHOWN USING STEEL WIDE FLANGE POSTS WITH COMPOSITE BLOCKOUTS.
7. A COMPOSITE MATERIAL BLOCKOUTS THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS OF SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
8. IF SOLID ROCK IS ENCOUNTERED IN THE AREA OF (POST 1) AND / OR (POST 2) CONTACT THE MANUFACTURER, & REFER TO THE LATEST ROADWAY MBGF STANDARD FOR INSTALLATION GUIDANCE.
9. POSTS SHALL NOT BE SET IN CONCRETE.
10. SYSTEM MUST BE ATTACHED TO STANDARD 31" MBGF.
11. UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE MSKT SYSTEM BE CURVED.
12. A FLARE RATE OF UP TO 25:1 MAY BE USED TO PREVENT THE TERMINAL HEAD FROM ENCROACHING ON THE SHOULDER. THE FLARE MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS, IF DIRECTED BY THE ENGINEER.
13. THE SYSTEM IS SHOWN WITH TWO 12'-6" MBGF PANELS, ONE 25'-0" MBGF PANEL IS ALSO ALLOWED IN THEIR PLACE.
14. A DRIVING CAP WITH A TIMBER OR PLASTIC INSERT SHALL BE USED WHEN DRIVING POSTS 3-8 TO PREVENT DAMAGE TO THE GALVANIZING ON TOP OF THE POST. SPECIAL DRIVING CAP TO BE USED ON LOWER POSTS 1 & 2 TO PREVENT DAMAGE TO THE WELDED PLATES.

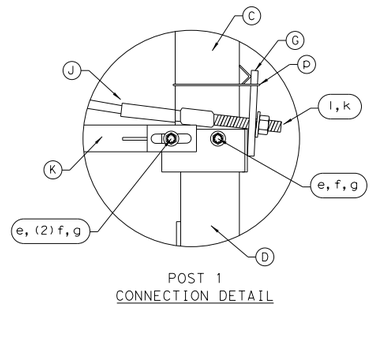
ITEM	QTY	MAIN SYSTEM COMPONENTS	ITEM NUMBERS
A	1	MSKT IMPACT HEAD	MS3000
B	1	W-BEAM GUARDRAIL END SECTION, 12 Ga.	SF1303
C	1	POST 1 - TOP (6" X 6" X 1/8" TUBE)	MTPHP1A
D	1	POST 1 - BOTTOM (6' W6X15)	MTPHP1B
E	1	POST 2 - ASSEMBLY TOP	UHP2A
F	1	POST 2 - ASSEMBLY BOTTOM (6' W6X9)	HP2B
G	1	BEARING PLATE	E750
H	1	CABLE ANCHOR BOX	S760
J	1	BCT CABLE ANCHOR ASSEMBLY	E770
K	1	GROUND STRUT	MS785
L	6	W6x9 OR W6x8.5 STEEL POST	P621
M	6	COMPOSITE BLOCKOUTS	CBSP-14
N	1	W-BEAM MGS RAIL SECTION (9'-4 1/2")	G12025
O	2	W-BEAM MGS RAIL SECTION (12'-6")	G1203A
P	6	WOOD BLOCKOUT 6" X 8" X 14"	P675
Q	1	W-BEAM MGS RAIL SECTION (25'-0")	G1209
		SMALL HARDWARE	
a	2	5/8" x 1" HEX BOLT (GRD 5)	B5160104A
b	4	5/8" WASHER	W0516
c	2	5/8" HEX NUT	N0516
d	25	5/8" Dia. x 1 1/4" SPLICE BOLT (POST 2)	B580122
e	2	5/8" Dia. x 9" HEX BOLT (GRD A449)	B580904A
f	3	5/8" WASHER	W050
g	33	5/8" Dia. H.G.R NUT	N050
h	1	3/4" Dia. x 8 1/2" HEX BOLT (GRD A449)	B340854A
j	1	3/4" Dia. HEX NUT	N030
k	2	1 ANCHOR CABLE HEX NUT	N100
l	2	1 ANCHOR CABLE WASHER	W100
m	8	1/2" x 1 1/4" A325 BOLT WITH CAPTIVE WASHER	SB12A
n	8	1/2" STRUCTURAL NUTS	N012A
o	8	1 1/16" O.D. x 3/16" I.D. STRUCTURAL WASHERS	W012A
p	1	BEARING PLATE RETAINER TIE	CT-100ST
q	6	5/8" x 10" H.G.R. BOLT	B581002
r	1	OBJECT MARKER 18" X 18"	E3151

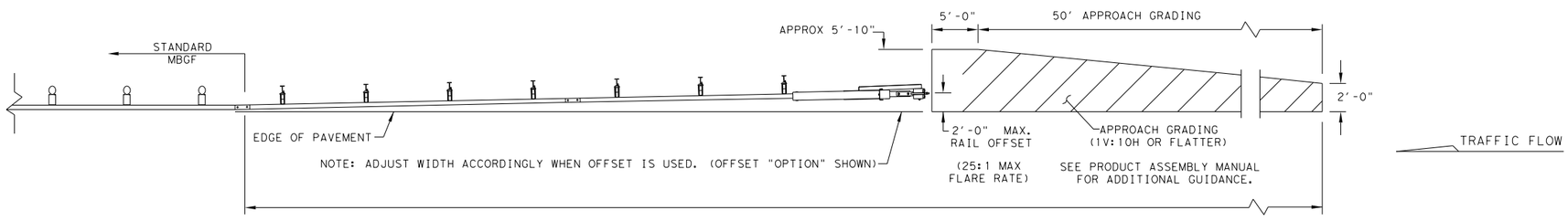
SEE NOTES: ✳

ALTERNATIVE ITEMS NOT SHOWN. ✳✳
✳ ITEM(P) 8" WOOD-BLOCKOUT
✳✳ ITEM(Q) 25'GUARD FENCE PANEL









APPROACH GRADING AT GUARDRAIL END TREATMENTS

NOTE: TXDOT GENERIC APPROACH GRADING LAYOUT USED FOR ALL TANGENT TYPE END TREATMENTS.

NOTE: THIS STANDARD IS A BASIC REPRESENTATION OF THE MSKT END TERMINAL, IT IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

Texas Department of Transportation

Design Division Standard

SINGLE GUARDRAIL TERMINAL

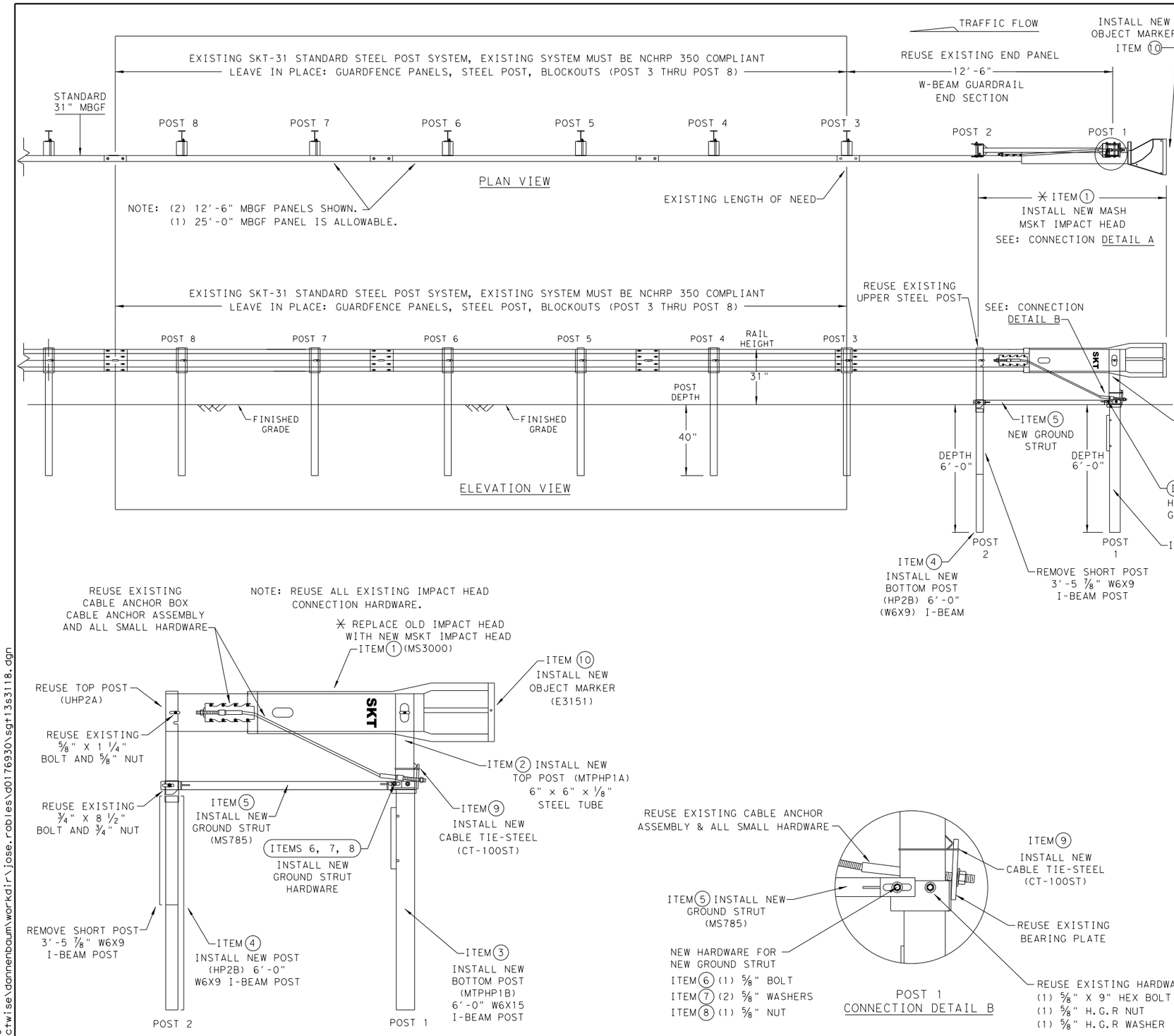
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REVISIONS					COVEL RD
	DIST	COUNTY			SHEET NO.
	SAT	BEXAR			127

DISCLAIMER:
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GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: ROAD SYSTEMS, INC. (432)263-2435. 3616 OLD HOWARD COUNTY AIRPORT, BIG SPRING, TX 79720
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4. FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
5. HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
6. IF SOLID ROCK IS ENCOUNTERED IN THE AREA OF (POST 1) AND / OR (POST 2) CONTACT THE MANUFACTURER, AND REFER TO THE LATEST ROADWAY MBGF STANDARD FOR INSTALLATION GUIDANCE.
7. POSTS SHALL NOT BE SET IN CONCRETE.
8. THE EXISTING SKT 31" STANDARD STEEL POST SYSTEM MUST BE THOROUGHLY INSPECTED, AND DETERMINED TO BE INTACT, AND FREE OF ANY DAMAGE OR DEFECTS BEFORE RETROFITTING. THIS INSPECTION INCLUDES COMPLETING THE MSKT RETROFIT INSPECTION CHECKLIST FOR THE EXISTING SKT 31" STEEL POST NCHRP 350 SYSTEM. ALL EXISTING, AND REUSABLE PARTS MUST BE FREE OF ANY DAMAGE FOR A MASH COMPLIANT RETROFIT.
9. UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE MSKT SYSTEM BE CURVED.
10. A FLARE RATE OF UP TO 25:1 MAY BE USED TO PREVENT THE TERMINAL HEAD FROM ENCROACHING ON THE SHOULDER. THE FLARE MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS, IF DIRECTED BY THE ENGINEER.
11. SPECIAL DRIVING CAP TO BE USED WHEN DRIVING (LOWER POSTS 1 & 2) TO PREVENT DAMAGE TO THE WELDED PLATES.

CONNECTION DETAIL A
IMPACT HEAD (POST 1 & POST 2)

ITEMS	QTY	MAIN SYSTEM COMPONENTS	PART NUMBERS
✳ 1	1	MSKT IMPACT HEAD	MS3000
2	1	POST 1 - TOP (6" X 6" X 1/8" TUBE)	MTPHP1A
3	1	POST 1 - BOTTOM (6' W6X15)	MTPHP1B
4	1	POST 2 - ASSEMBLY BOTTOM (6' W6X9)	HP2B
5	1	GROUND STRUT	MS785
6	1	5/8" X 9" HEX BOLT (GRD A449)	B580904A
7	2	5/8" WASHERS	W050
8	1	5/8" H.G.R NUT	N050
9	1	CABLE TIE-STEEL	CT-100ST
✳ 10	1	OBJECT MARKER 18" X 18"	E3151

COMPONENTS REQUIRED TO RETROFIT: EXISTING 31" STEEL POST (NCHRP 350 SKT) GUARDRAIL TERMINAL WITH THE NEW 31" (MASH COMPLIANT MSKT IMPACT HEAD).

✳ IF THE EXISTING NCHRP 350 (31" STEEL POST SKT) ALREADY HAS THE MSKT IMPACT HEAD THERE IS NO NEED TO REPLACE THE IMPACT HEAD OR OBJECT MARKER AS LONG AS IT IS NOT DAMAGED.

POST 1
CONNECTION DETAIL B

NOTE: THIS STANDARD IS A BASIC REPRESENTATION OF THE EXISTING; SKT END TERMINAL RETROFITED TO THE MSKT MASH COMPLIANT TERMINAL, IT IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

Texas Department of Transportation

Design Division Standard

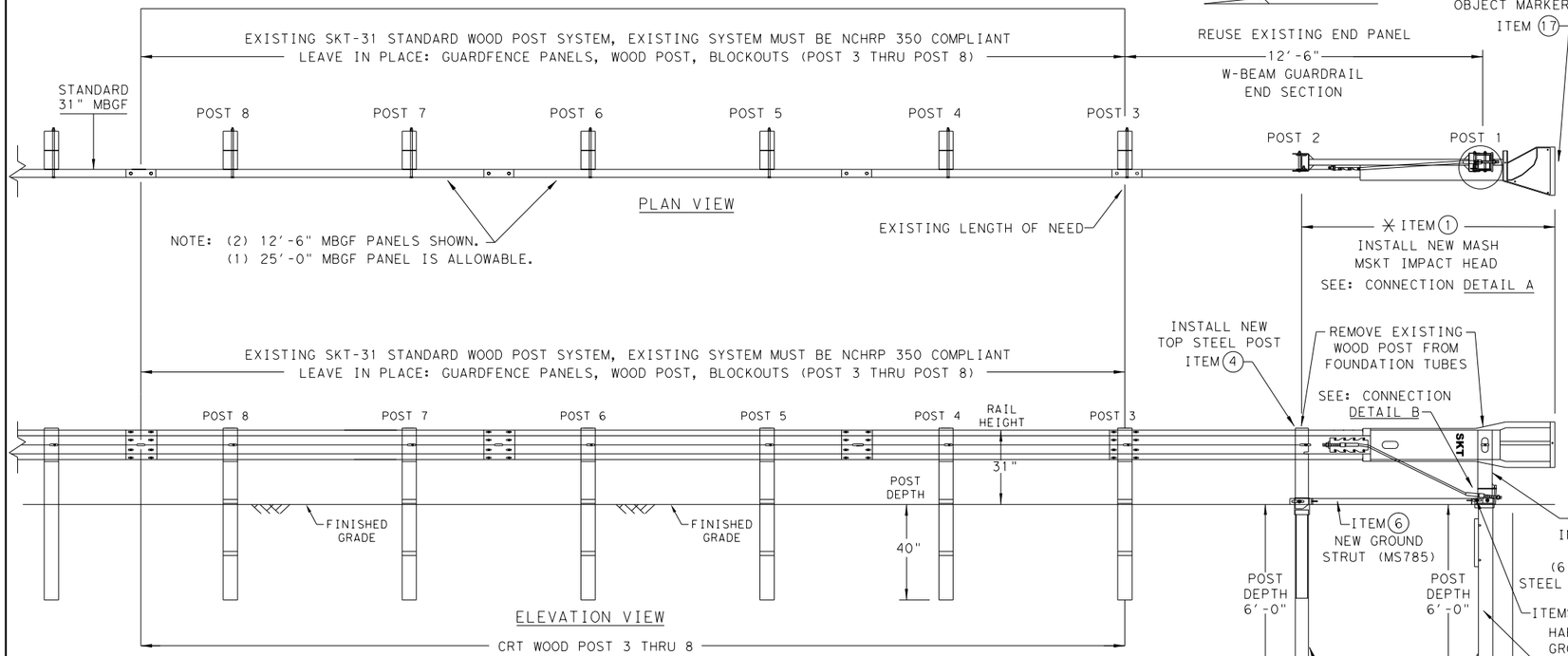
RETROFIT STANDARD SKT 31" STEEL POST SYSTEM TO MASH MSKT

SGT(13S)31-18

FILE: sgt13s3118.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CL
© TxDOT: APRIL 2018	CONT	SECT	JOB	HIGHWAY
REVISIONS				COVEL RD
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		128

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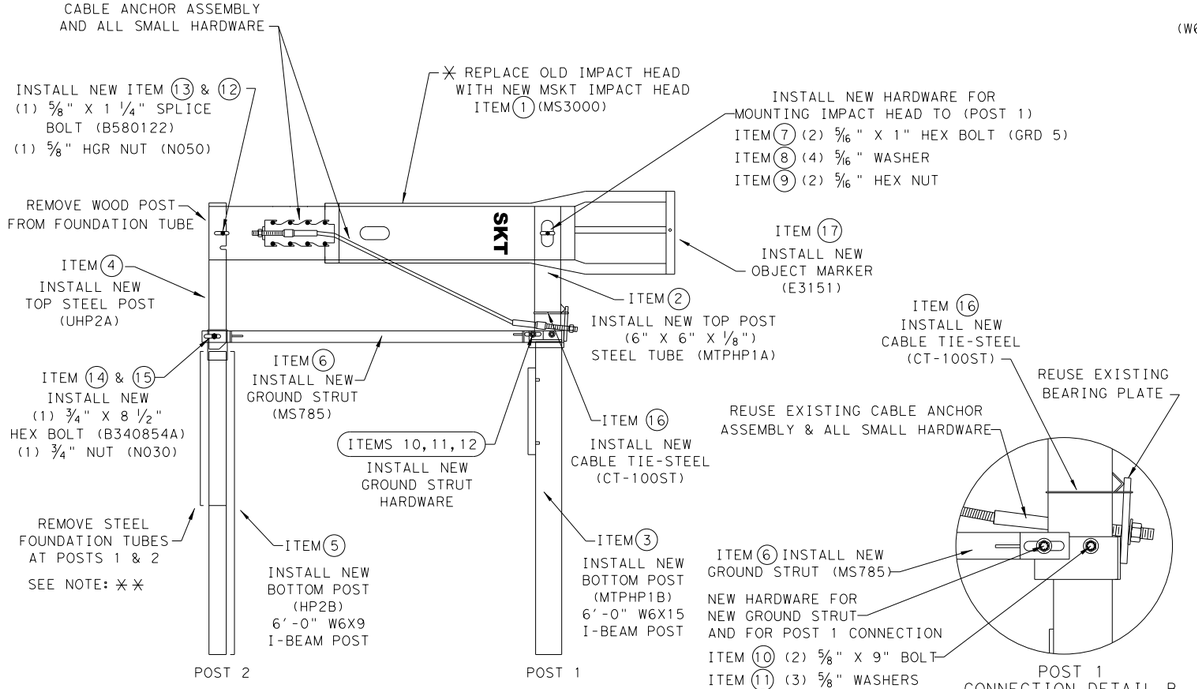
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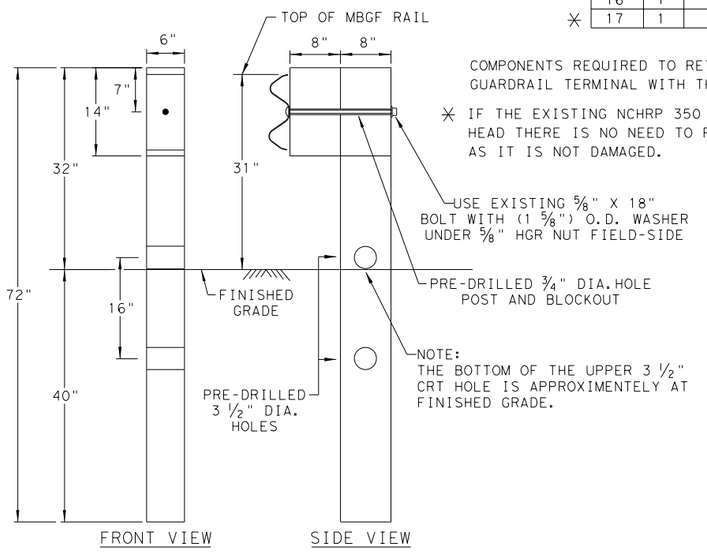


GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: ROAD SYSTEMS, INC. (432)263-2435. 3616 OLD HOWARD COUNTY AIRPORT, BIG SPRING, TX 79720
2. FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO; MSKT END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL (PUBLICATION~062717).
3. APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
4. FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
5. HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
6. IF SOLID ROCK IS ENCOUNTERED IN THE AREA OF (POST 1) AND / OR (POST 2) CONTACT THE MANUFACTURER, AND REFER TO THE LATEST ROADWAY MBGF STANDARD FOR INSTALLATION GUIDANCE.
7. POSTS SHALL NOT BE SET IN CONCRETE.
8. THE EXISTING SKT 31" STANDARD WOOD POST SYSTEM MUST BE THOROUGHLY INSPECTED, AND DETERMINED TO BE INTACT, AND FREE OF ANY DAMAGE OR DEFECTS BEFORE RETROFITTING. THIS INSPECTION INCLUDES COMPLETING THE MSKT RETROFIT INSPECTION CHECKLIST FOR THE EXISTING SKT 31" WOOD POST NCHRP 350 SYSTEM. ALL EXISTING, AND REUSABLE PARTS MUST BE FREE OF ANY DAMAGE FOR A MASH COMPLIANT RETROFIT.
9. UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE MSKT SYSTEM BE CURVED.
10. A FLARE RATE OF UP TO 25:1 MAY BE USED TO PREVENT THE TERMINAL HEAD FROM ENCROACHING ON THE SHOULDER. THE FLARE MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS, IF DIRECTED BY THE ENGINEER.
11. SPECIAL DRIVING CAP TO BE USED WHEN DRIVING (LOWER POSTS 1 & 2) TO PREVENT DAMAGE TO THE WELDED PLATES.

ITEMS	QTY	MAIN SYSTEM COMPONENTS	PART NUMBERS
1	1	MSKT IMPACT HEAD	MS3000
2	1	POST 1 - TOP (6" X 6" X 1/8" TUBE)	MTPHP1A
3	1	POST 1 - BOTTOM (6' W6X15)	MTPHP1B
4	1	POST 2 - ASSEMBLY TOP	UHP2A
5	1	POST 2 - ASSEMBLY BOTTOM (6' W6X9)	HP2B
6	1	GROUND STRUT	MS785
7	2	5/16" X 1" HEX BOLT (GRD 5)	B516014A
8	4	5/16" WASHERS	W0516
9	2	5/16" HEX NUT	N0516
10	2	5/8" X 9" HEX BOLT (GRD A449)	B580904A
11	3	5/8" WASHERS	W050
12	3	5/8" H.G.R NUT	N050
13	1	5/8" X 1 1/4" SPLICE BOLT	B580122
14	1	3/4" X 8 1/2" HEX BOLT (GRD 5)	B340854A
15	1	3/4" HEX NUT	N030
16	1	CABLE TIE-STEEL	CT-100ST
✳ 17	1	OBJECT MARKER 18" X 18"	E3151





COMPONENTS REQUIRED TO RETROFIT: EXISTING 31" WOOD POST (NCHRP 350 SKT) GUARDRAIL TERMINAL WITH THE NEW 31" (MASH COMPLIANT MSKT IMPACT HEAD).

✳ IF THE EXISTING NCHRP 350 (31" WOOD POST SKT) ALREADY HAS THE MSKT IMPACT HEAD THERE IS NO NEED TO REPLACE THE IMPACT HEAD OR OBJECT MARKER AS LONG AS IT IS NOT DAMAGED.

NOTE: THIS STANDARD IS A BASIC REPRESENTATION OF THE EXISTING; SKT END TERMINAL RETROFITED TO THE MSKT MASH COMPLIANT TERMINAL, IT IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

Texas Department of Transportation

Design Division Standard

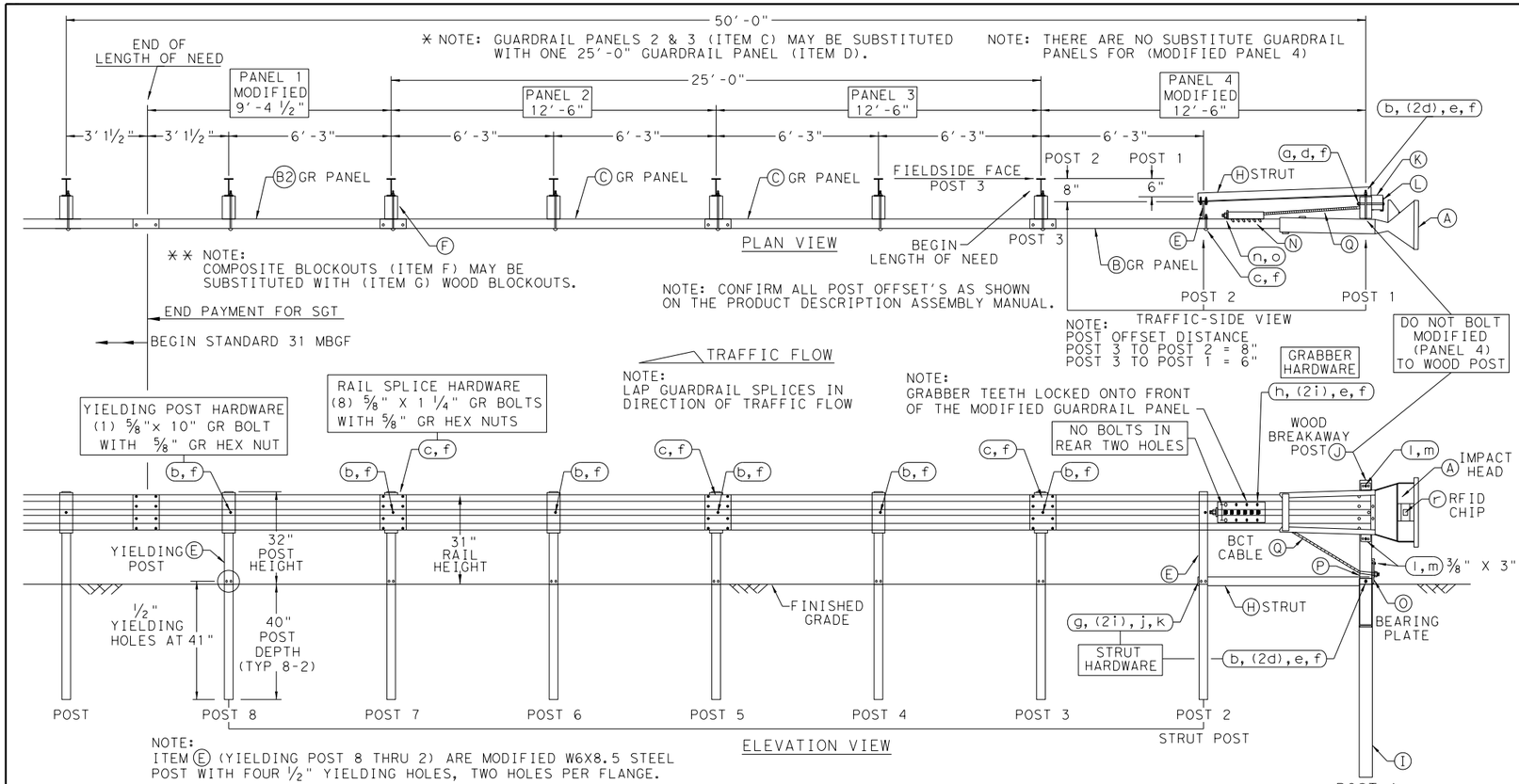
RETROFIT STANDARD SKT 31" WOOD POST SYSTEM TO MASH MSKT

SGT(14W)31-18

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©TxDOT: APRIL 2018	CONT	SECT	JOB	HIGHWAY	
REVISIONS				COVEL RD	
	DIST	COUNTY		SHEET NO.	
	SAT	BEXAR		129	

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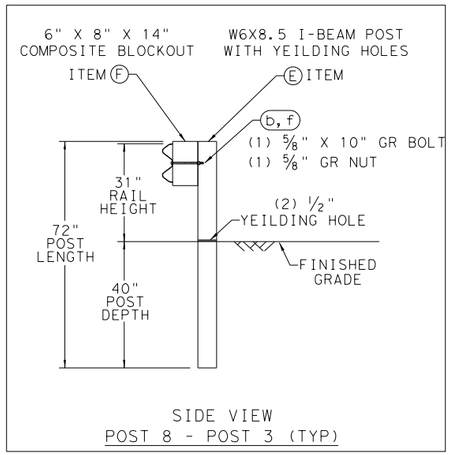


GENERAL NOTES

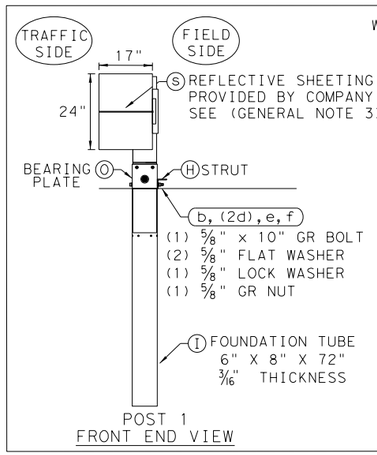
1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: SPIG INDUSTRY, INC. AT 1(267) 644-9510. 14675 INDUSTRIAL PARK RD; BRISTOL, VA 24202
2. FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE MANUFACTURER'S; SGET END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL.
3. MANUFACTURER WILL APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" TO THE FACE PLATE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. THE OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
4. THE NOMINAL HEIGHT OF THE GUARDRAIL BEAM IS 31 INCHES WITH A TOLERANCE OF +/- ONE INCH.
5. FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
6. (POST 2 THROUGH POST 8) ARE MODIFIED STEEL-YIELDING POSTS WITH YIELDING HOLES AT GROUND LEVEL. THERE ARE NO SUBSTITUTE POSTS.
7. POSTS SHALL NOT BE SET IN CONCRETE.
8. IF SOLID ROCK IS ENCOUNTERED FOR ANY OF THE POSTS IN THE SYSTEM, CONTACT THE MANUFACTURER FOR SPECIFIC INSTALLATION GUIDANCE.
9. HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445,"GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
10. A COMPOSITE MATERIAL BLOCKOUT THAT MEETS DMS-7210 REQUIREMENTS MAY BE SUBSTITUTED FOR AN APPROVED WOOD BLOCKOUT. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
11. THE ENTIRE SYSTEM MUST BE INSTALLED IN A STRAIGHT LINE WITHOUT ANY CURVE. HOWEVER, THE SYSTEM CAN BE OFFSET BY TWO FEET AS SHOWN ON THE APPROACH GRADING DETAIL TO HELP OFF-SET THE IMPACT HEAD FROM SHOULDER OF THE ROAD.

ITEM	QTY	MAIN SYSTEM COMPONENTS	ITEM #
A	1	SGET IMPACT HEAD	SIH1A
B	1	MODIFIED GUARDRAIL PANEL 12'-6" 12GA	126SPZGP
B2	1	MODIFIED GUARDRAIL PANEL 9'-4 1/2" 12GA	GP94
C	2	STANDARD GUARDRAIL PANEL 12'-6" 12GA	GP126
D	1	STANDARD GUARDRAIL PANEL 25'-0" 12GA	GP25
E	7	MODIFIED YIELDING I-BEAM POST W6x8.5	YP6MOD
F	6	COMPOSITE BLOCKOUT 6" X 8" X 14"	CBO8
G	6	WOOD BLOCKOUT 6" X 8" X 14"	WBO8
H	1	STRUT 3" X 3" X 80" x 1/4" A36 ANGLE	STR80
I	1	FOUNDATION TUBE 6" X 8" X 72" x 3/16"	FNDT6
J	1	WOOD BREAKAWAY POST 5 1/2" x 7 1/2" x 50"	WBRK50
K	1	WOOD STRIKE BLOCK	WSBLK14
L	1	STRIKE PLATE 1/4" A36 BENT PLATE	SPLT8
M	1	REINFORCEMENT PLATE 12 GA. GR55	REPLT17
N	1	GUARDRAIL GRABBER 2 1/2" X 2 1/2" X 16 1/2"	GGR17
O	1	BEARING PLATE 8" X 8 5/8" X 5/8" A36	BPLT8
P	1	PIPE SLEEVE 4 1/4" X 2 3/8" O.D. (2 1/8" I.D.)	PSLV4
Q	1	BCT CABLE 3/4" X 81" LENGTH	CBL81
		SMALL HARDWARE	
a	1	5/8" X 12" GUARDRAIL BOLT 307A HDG	12GRBLT
b	7	5/8" X 10" GUARDRAIL BOLT 307A HDG	10GRBLT
c	33	5/8" X 1 1/4" GR SPLICE BOLTS 307A HDG	1GRBLT
d	3	5/8" FLAT WASHER F436 A325 HDG	58FW436
e	1	5/8" LOCK WASHER HDG	58LW
f	39	5/8" GUARDRAIL HEX NUT HDG	58HN563
g	2	1/2" X 2" STRUT BOLT A325 HDG	2BLT
h	6	1/2" X 1 1/4" PLATE BOLT A325 HDG	125BLT
i	16	1/2" FLAT WASHER F436 A325 HDG	12FWF436
j	8	1/2" LOCK WASHER HDG	12LW
k	8	1/2" HEX NUT A563 HDG	12HN563
l	4	3/8" X 3" HEX LAG SCREW GR5 HDG	38LS
m	4	3/8" FLAT WASHER F436 A325 HDG	38FW844
n	2	1" FLAT WASHER F436 A325 HDG	1FWF436
o	2	1" HEX NUT A563DH HDG	1HN563
p	1	18" TO 24" LONG ZIP TIE RATED 175-200LB	ZPT18
q	1	1 1/2" X 4" SCH-40 PVC PIPE	PSPCR4
r	1	RFID CHIP RATED MIL-STD-810F	RFID810F
s	1	IMPACT HEAD REFLECTIVE SHEETING	RS30M

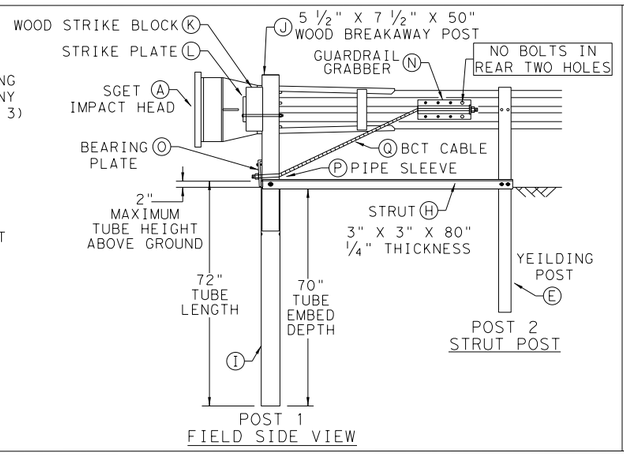
ALTERNATIVE ITEMS
* D
** G
NOTE: SEE PLAN VIEW



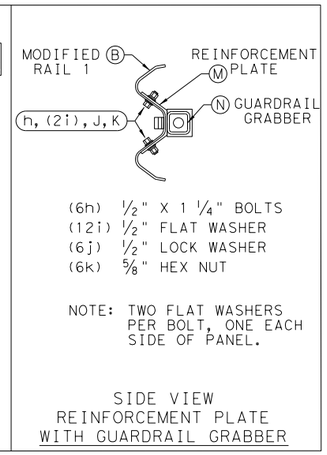
SIDE VIEW
POST 8 - POST 3 (TYP)



POST 1
FRONT END VIEW



POST 1
FIELD SIDE VIEW

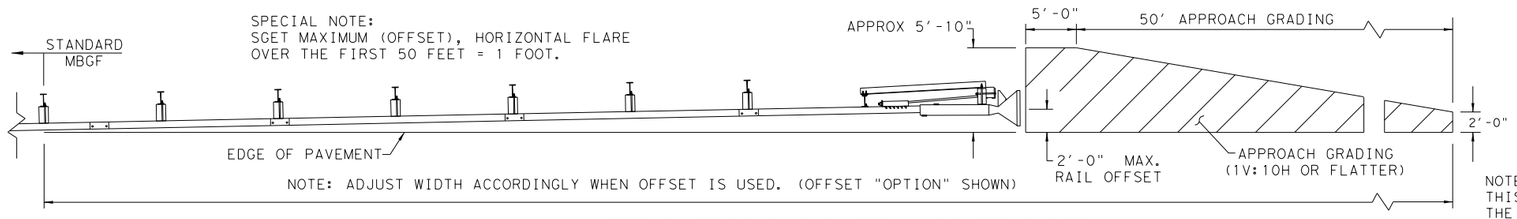


(6h) 1/2" X 1 1/4" BOLTS
(12i) 1/2" FLAT WASHER
(6j) 1/2" LOCK WASHER
(6k) 5/8" HEX NUT

NOTE: TWO FLAT WASHERS PER BOLT, ONE EACH SIDE OF PANEL.

SIDE VIEW
REINFORCEMENT PLATE
WITH GUARDRAIL GRABBER

POST 2
STRUT POST



APPROACH GRADING AT GUARDRAIL END TREATMENTS

NOTE:
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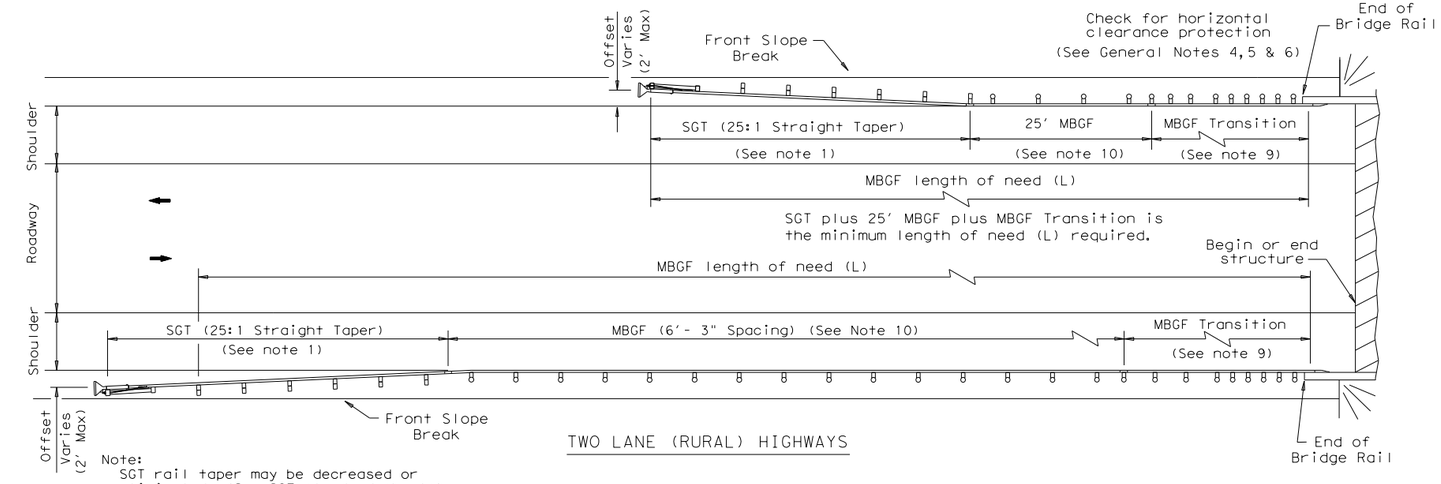
Texas Department of Transportation
Design Division Standard

SPIG INDUSTRY, LLC
SINGLE GUARDRAIL TERMINAL
SGET - TL-3 - MASH
SGT(15)31-20

FILE: sgt153120.dgn	DN: TxDOT	CK: KM	DW: VP	CK: VP	
©TxDOT: APRIL 2020	CONT	SECT	JOB	HIGHWAY	
REVISIONS				COVEL RD	
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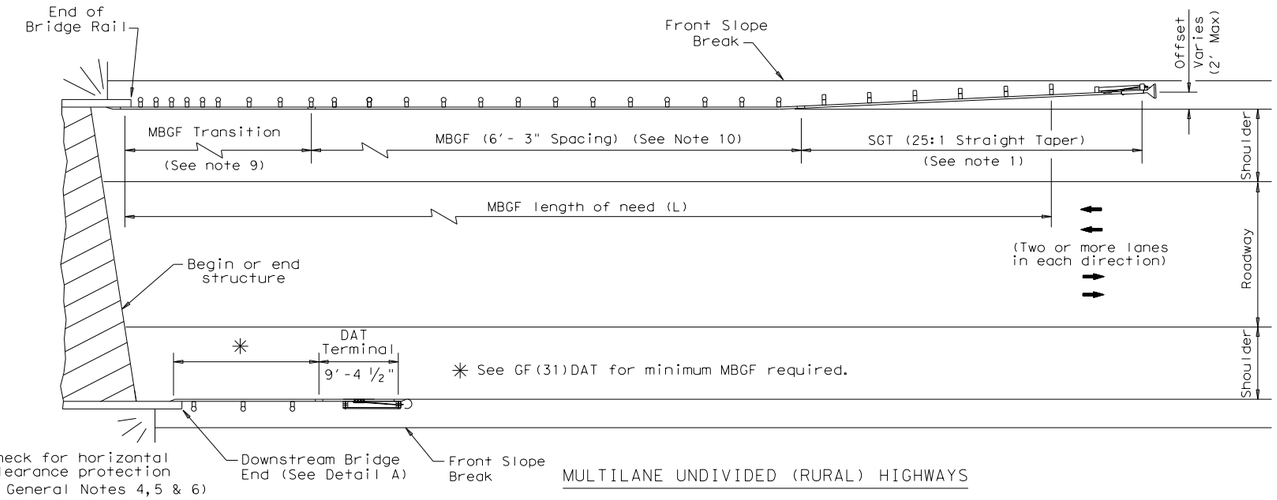
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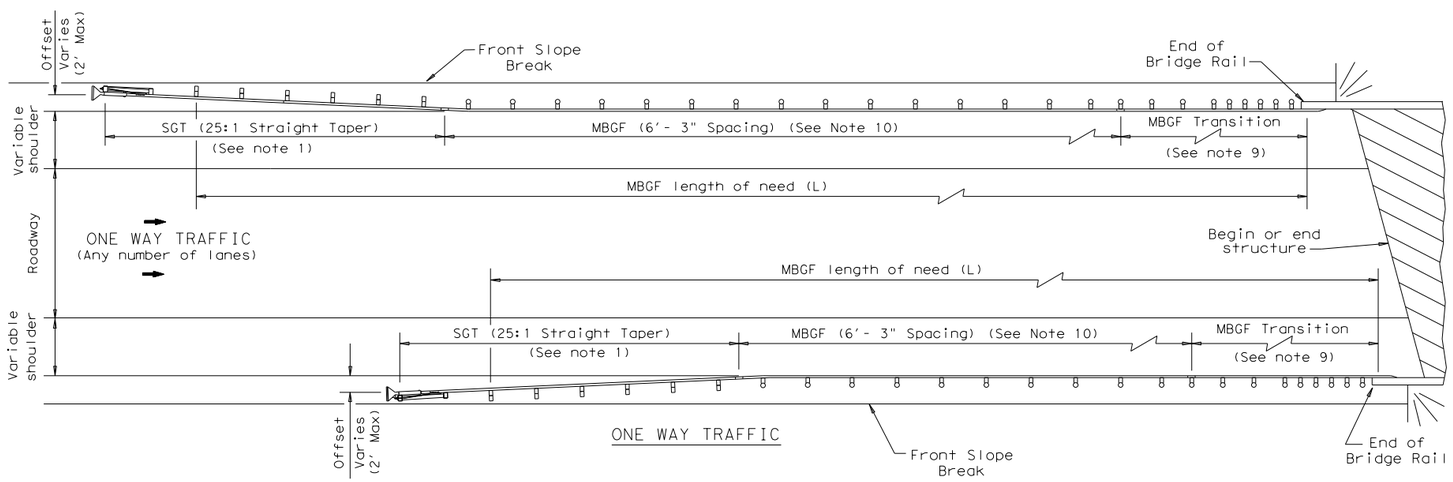


TWO LANE (RURAL) HIGHWAYS

Note:
SGT rail taper may be decreased or eliminated. (See SGT standard sheets)



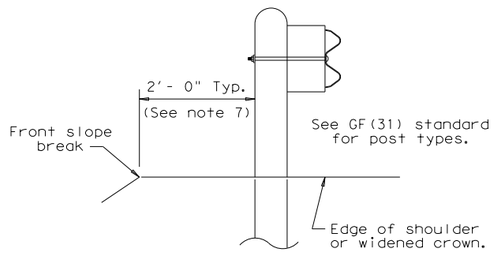
MULTILANE UNDIVIDED (RURAL) HIGHWAYS



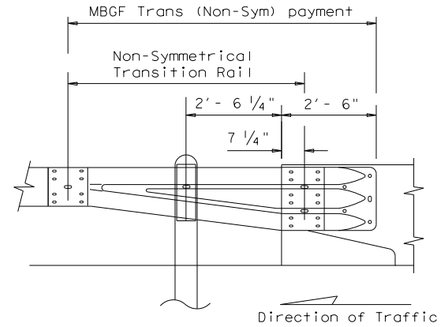
ONE WAY TRAFFIC

GENERAL NOTES

1. For more detail: See GF(31), SGT( )31, GF(31)TR, and GF(31)TL2 standard sheets.
2. Quantities of metal beam guard fence (MBGF) at individual bridge ends are as shown in the plans.
3. Use average daily traffic (ADT) for the current year to determine MBGF length of need in accordance with the Roadway Design Manual unless otherwise specified. Where significant traffic volume growth is anticipated on low volume (0-750 ADT) highways, use length determinations for the higher volume category.
4. MBGF may not be required to shield departure end of bridge unless other obstacles within the horizontal clearance limits or opposing traffic indicate a MBGF consideration.
5. Downstream anchor terminals (DAT) are only for downstream end anchorage use, outside the horizontal clearance area of opposing traffic.
6. Direct connection of MBGF to concrete rails are only for downstream rail connections outside the horizontal clearance area of opposing traffic. (This requires a minimum of three standard line posts plus the DAT terminal, See Detail A)
7. The crown shall be widened to accommodate MBGF. Typically the "front slope" break should be 2'- 0" from the back of the MBGF post. This applies to new construction on new alignment or where existing roadway cross section is to be widened to increase roadway width. This does not apply to rehab-ilitation work where existing roadway crown width is to be retained (See Typical Cross Section at MBGF).
8. For restrictive bridge widths: The MBGF should be properly transitioned from the existing bridge rail to the adjoining MBGF (See MBGF Transition Standards). Metal beam guard fence at these bridge location(s) shall be flared at the rate of 25:1 or flatter, and be of the length necessary to locate the terminal end at the 2 ft."maximum" offset from the shoulder edge in the approach direction.
9. Transition length and post spacing will vary depending on the transition type. Transition type will be shown elsewhere in the plans.
10. A minimum 25' length of MBGF will be required.



TYPICAL CROSS SECTION AT MBGF



Note:
All rail elements shall be lapped in the direction of adjacent traffic.

DETAIL A
Showing Downstream Rail Attachment

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Design Division Standard

BRIDGE END DETAILS

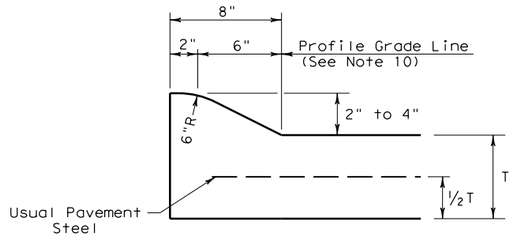
(METAL BEAM GUARD FENCE APPLICATIONS TO RIGID RAILS)

BED-14

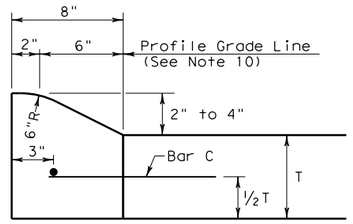
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REVISIONS REVISED APRIL 2014 SEE (MEMO 0414)				COVEL RD
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		131

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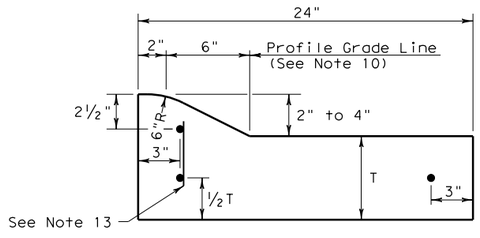
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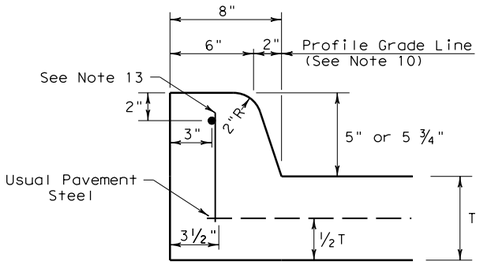
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2" - 4" HEIGHT



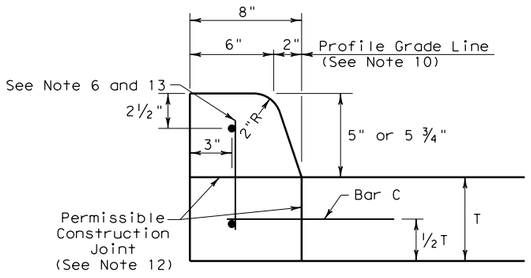
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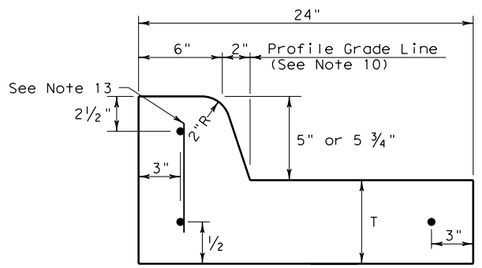
TYPE I CURB AND GUTTER
2" - 4" HEIGHT



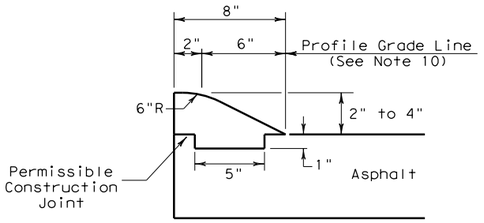
TYPE II CURB (MONOLITHIC)
5" - 5 ¾" HEIGHT



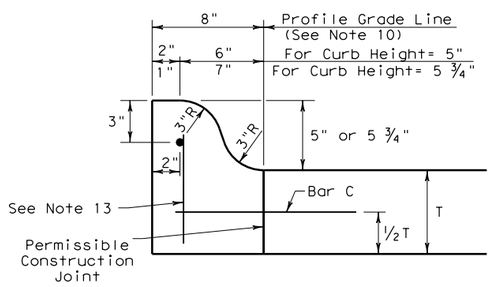
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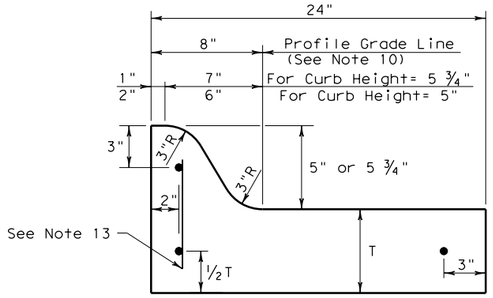
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5" - 5 ¾" HEIGHT



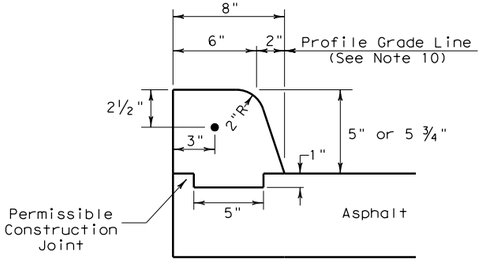
TYPE III CURB (KEYED)
2" - 4" HEIGHT



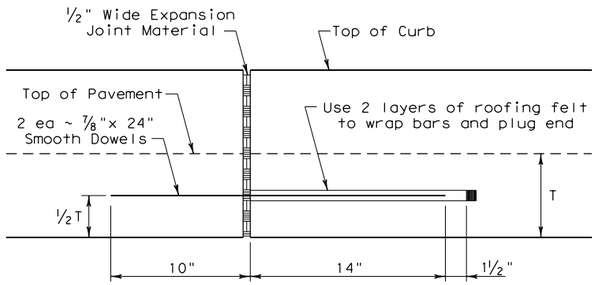
TYPE IIa CURB
5" - 5 ¾" HEIGHT



TYPE IIa CURB AND GUTTER
5" - 5 ¾" HEIGHT

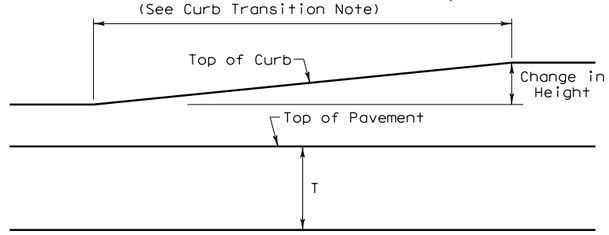


TYPE IV CURB (KEYED)
5" - 5 ¾" HEIGHT



EXPANSION JOINT DETAIL

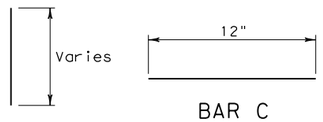
CURB TRANSITION NOTE:
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.



CURB TRANSITION
Note: To be paid for as Highest Curb

GENERAL NOTES

1. All materials and construction shall be in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
2. Concrete shall be Class A.
3. When reinforcing bars are used, they shall be No.4 unless otherwise shown. The use of fiber reinforced concrete in lieu of reinforcing steel is acceptable. Use fibers meeting the requirements of DMS 4550, "Fibers for Concrete," and dose fibers in accordance with Material Producers List (MPL) "Fibers for Class A and B Concrete Applications."
4. Round exposed sharp edges with a rounding tool, to a minimum radius of ¼ inch.
5. All existing curbs and driveways to be removed shall be sawed or removed at existing joints.
6. Where concrete curb is to be placed on existing concrete pavement, Bar B may be drilled and grouted in place, or may be inserted into fresh concrete.
7. Expansion and contraction joints shall be constructed to match pavement joints in all curbs and curb and gutter adjacent to jointed concrete pavement. Where placement of curb or curb and gutter is not adjacent to concrete pavement, expansion joints shall be provided at structures, curb returns at streets, and at locations directed by The Engineer.
8. Vertical and horizontal dowel bars and transverse reinforcing bars shall be placed at four feet C~C.
9. Dimension 'T' shown is the thickness of concrete pavement. When curb is installed adjacent to flexible pavement dimension 'T' is 8" maximum.
10. Usual profile grade line. Refer to typical sections and plan-profile sheets for exact locations.
11. One-half inch expansion joint material shall be provided where curb or curb and gutter is adjacent to sidewalk or riprap.
12. When horizontal permissible construction joints are used, the longitudinal pavement steel shall be placed in accordance with pavement details shown elsewhere in the plans. Reinforcing steel for curb section shall then conform to that required for concrete curb.
13. Bar B placement as needed (typically at four ft. C-C) to support curb reinforcing steel during concrete placement.



BAR B

BAR C

Texas Department of Transportation

Design Division Standard

CONCRETE CURB AND CURB AND GUTTER

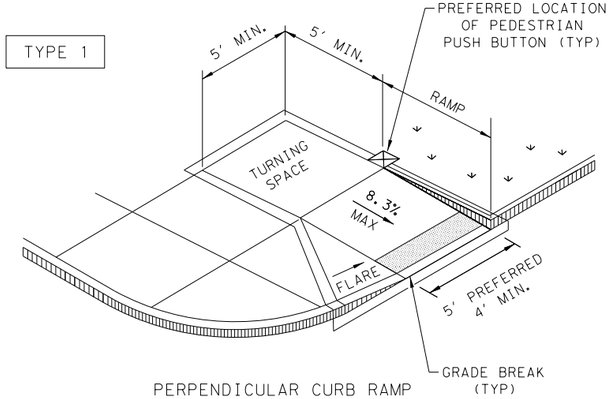
CCCG-22

FILE: cccg21.dgn	DN: TXDOT	CK: AN	DW: CS	CK: KM
© TxDOT: JUNE 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				132

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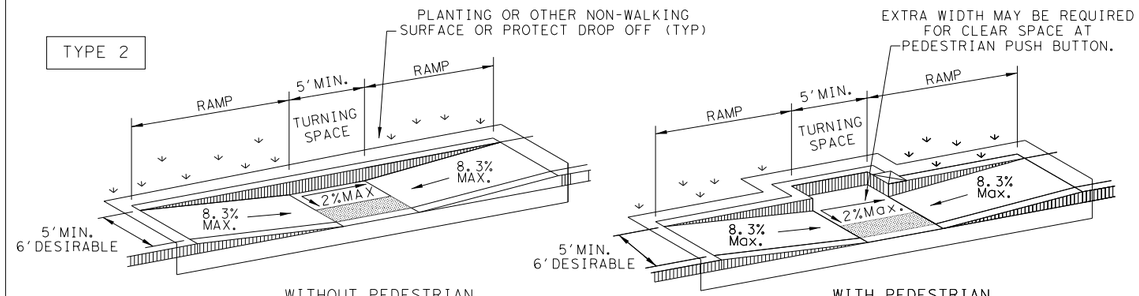
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TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

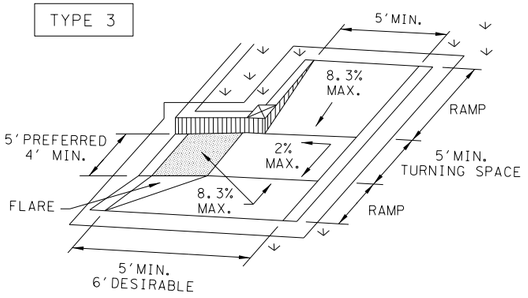


WITHOUT PEDESTRIAN PUSH BUTTON

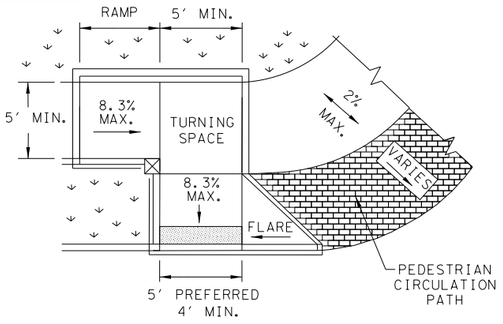
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

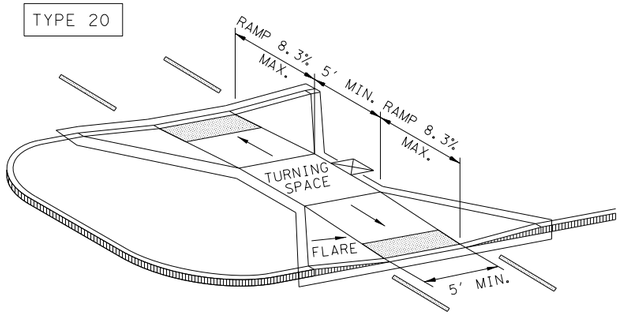


TYPE 6



COMBINATION CURB RAMPS

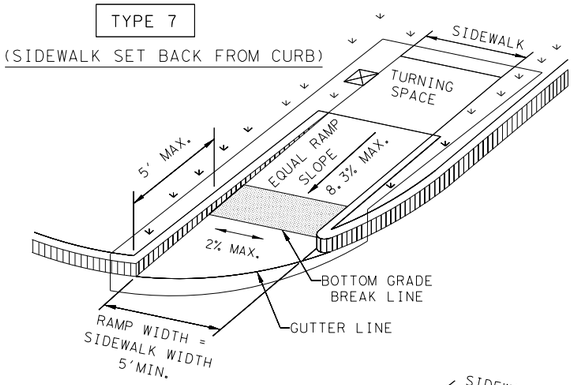
TYPE 20



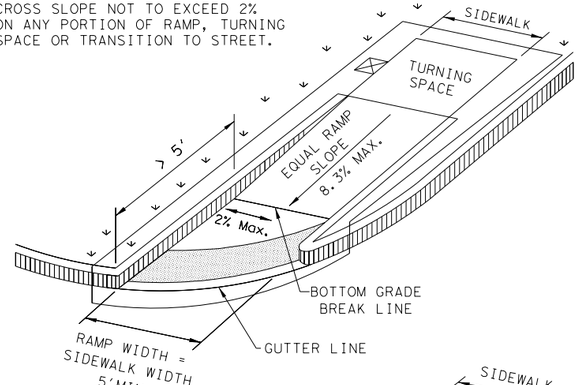
CURB RAMPS AT MEDIAN ISLANDS

TYPE 7

(SIDEWALK SET BACK FROM CURB)

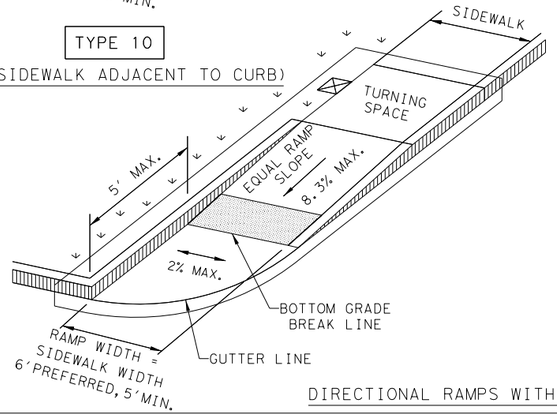


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.

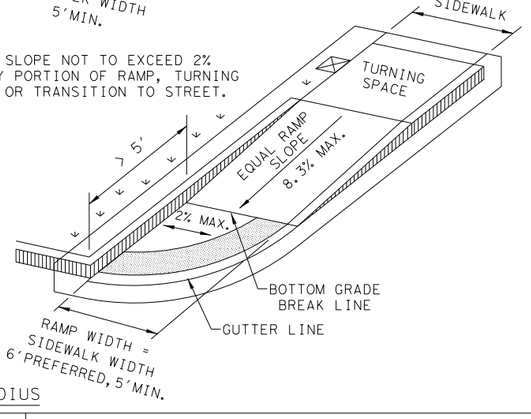


TYPE 10

(SIDEWALK ADJACENT TO CURB)

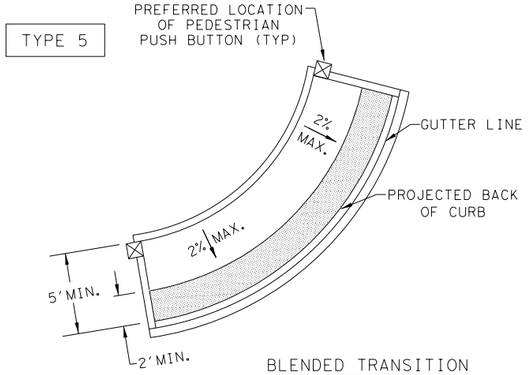


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

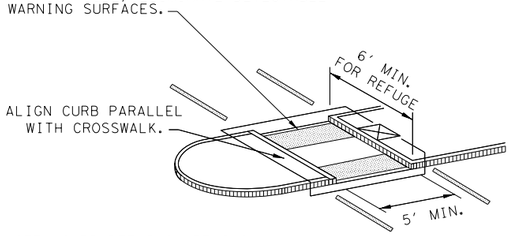
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

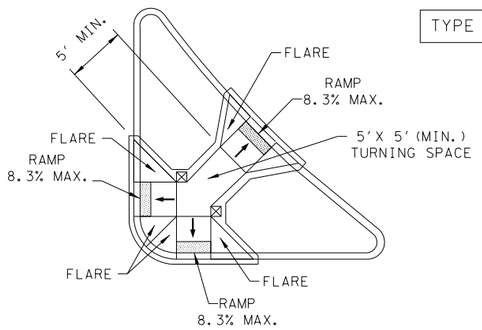
INSTALL DETECTABLE WARNING SURFACE AT EACH END OF THE CUT-THROUGH RAMP WITH A MINIMUM 2' USUAL SIDEWALK SURFACE BETWEEN. IF MEDIAN IS LESS THAN 6' WIDE, ELIMINATE DETECTABLE WARNING SURFACES.

TYPE 21



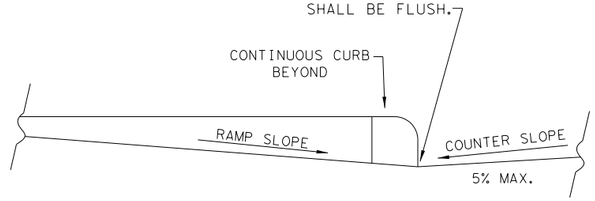
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS

BOTTOM GRADE BREAK OF CURB RAMP WILL NORMALLY BE AT GUTTER LINE. SURFACE SLOPES AT GRADE BREAKS SHALL BE FLUSH.



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				COVEL RD
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		133

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DATE: 6/27/2025
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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

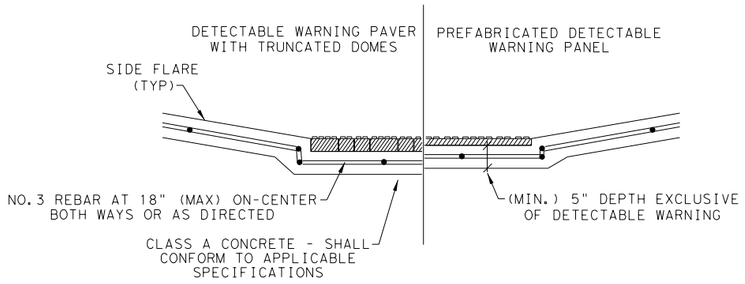
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material 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.

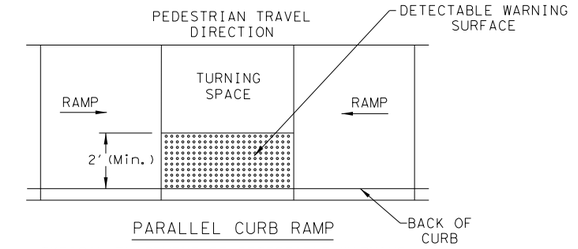
SIDEWALKS

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.



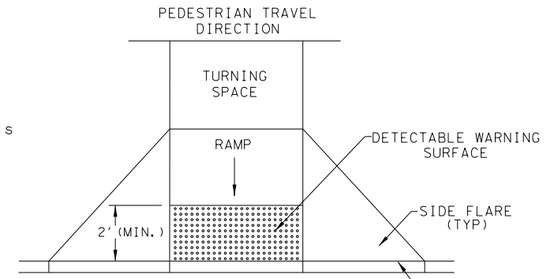
SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

DETECTABLE WARNING SURFACE DETAILS



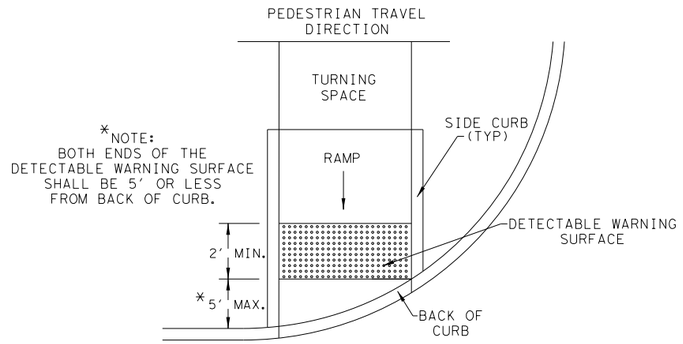
PARALLEL CURB RAMP

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

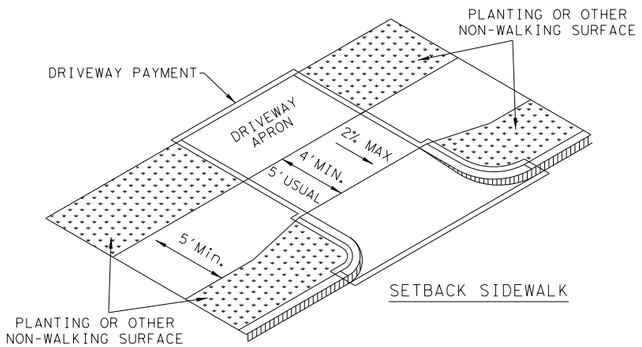
PED-18

FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
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REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY			SHEET NO.
	SAT	BEXAR			134

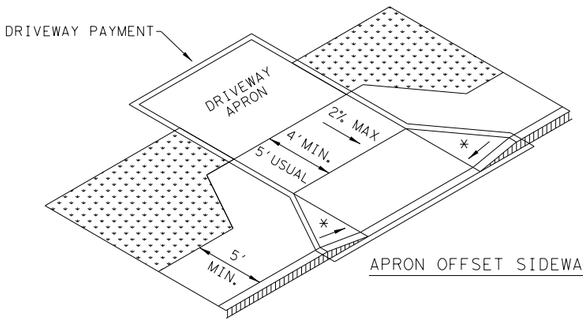
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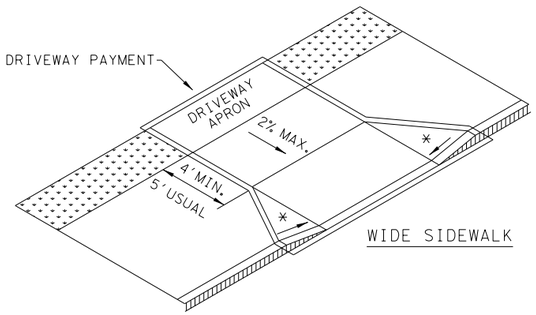
SIDEWALK TREATMENT AT DRIVEWAYS



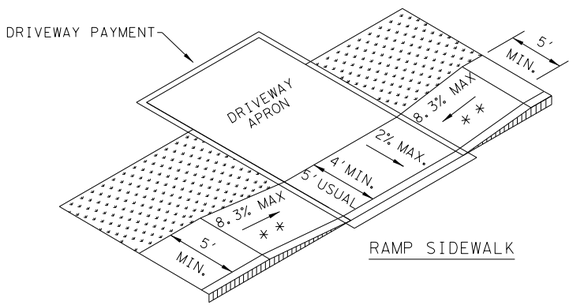
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

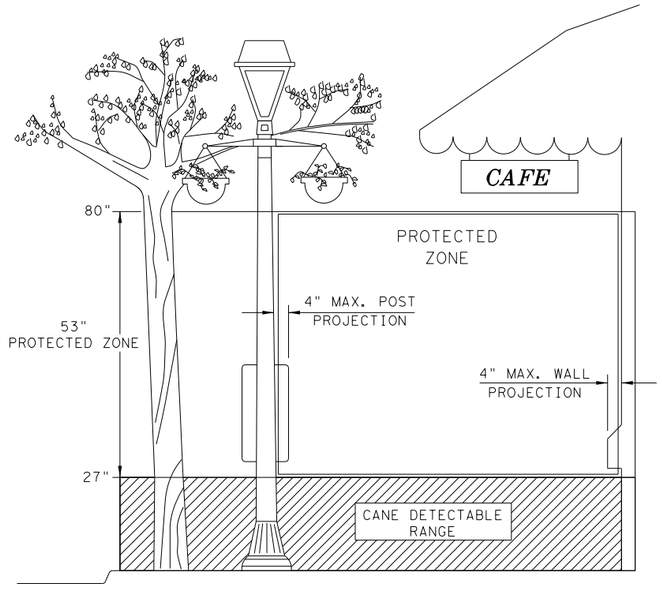


RAMP SIDEWALK

NOTES:

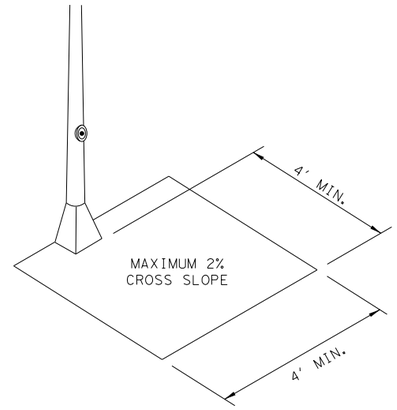
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

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

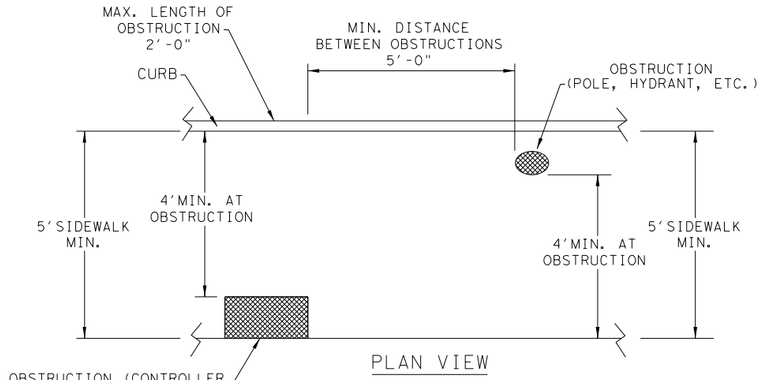


PROTECTED ZONE

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



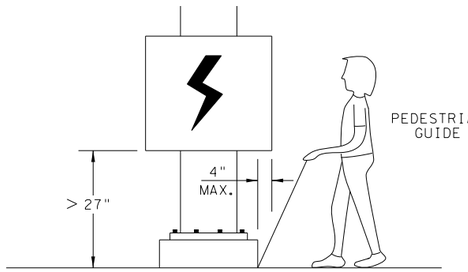
CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



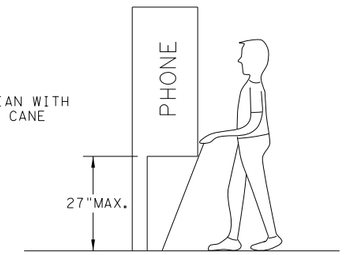
PLAN VIEW

PLACEMENT OF STREET FIXTURES

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



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



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

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

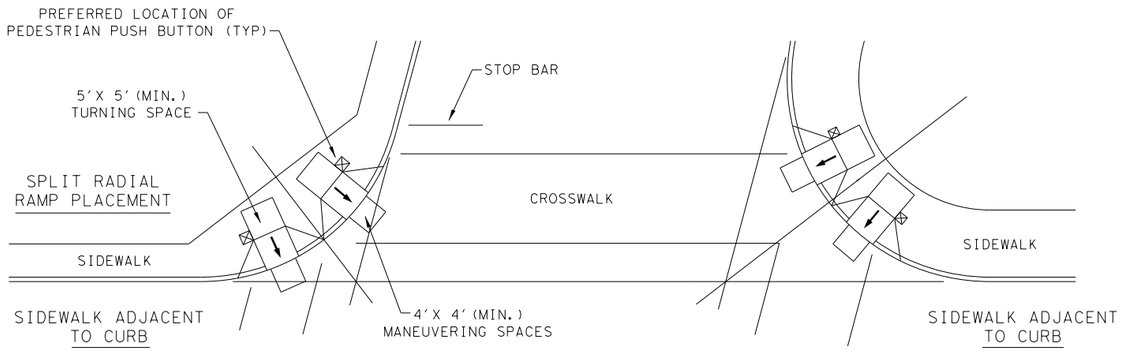
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© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS					COVEL RD
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY			SHEET NO.
	SAT	BEXAR			135

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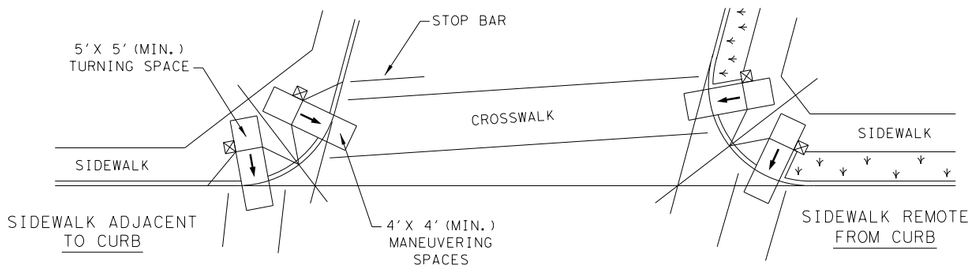
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TYPICAL CROSSING LAYOUTS

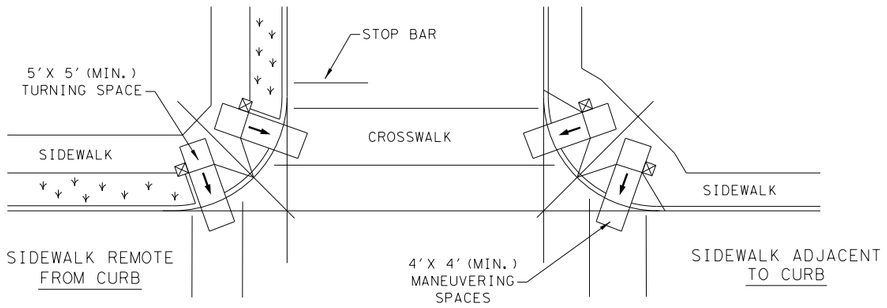
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



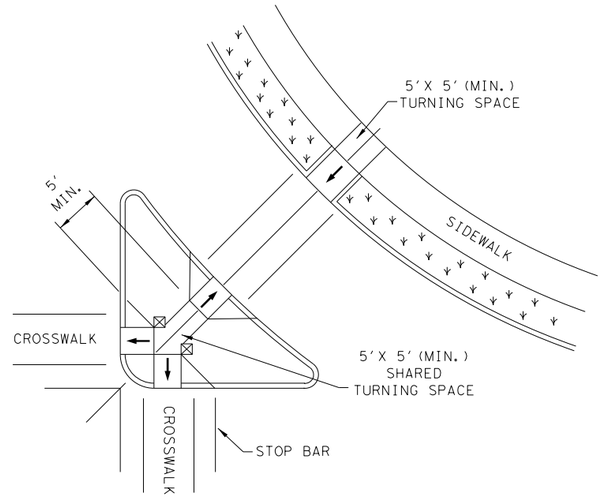
SKEWED INTERSECTION WITH "LARGE" RADIUS



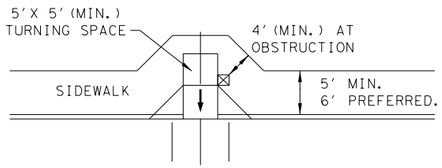
SKEWED INTERSECTION WITH "SMALL" RADIUS

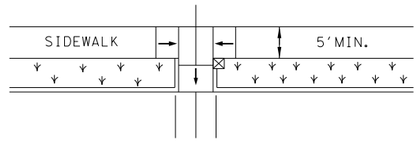


NORMAL INTERSECTION WITH "SMALL" RADIUS



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.

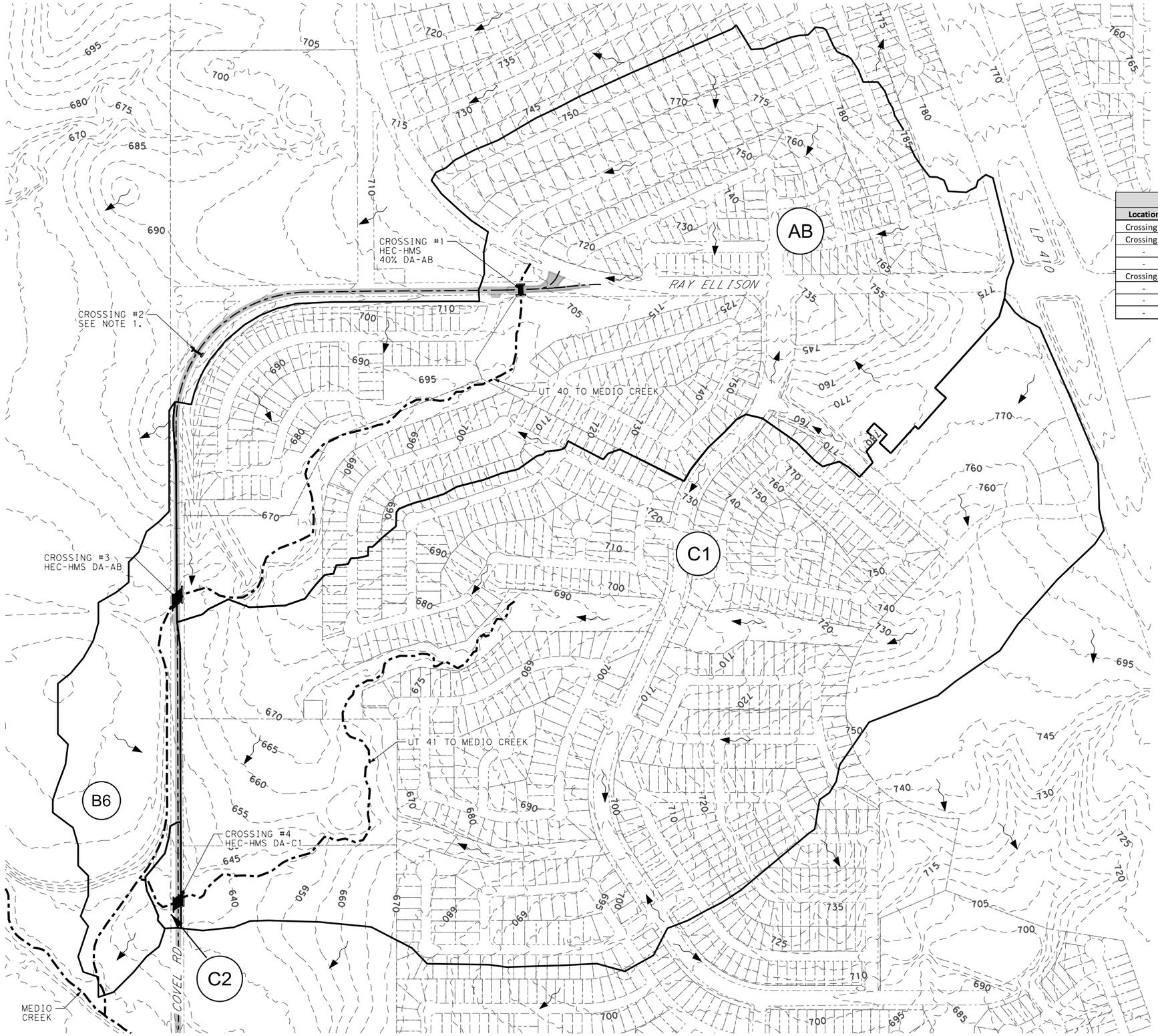
Texas Department of Transportation

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					COVEL RD
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY			SHEET NO.
	SAT	BEXAR			136



LEGEND

- EXISTING R.O.W.
- PROPOSED COVEL RD ℄
- PROPOSED DRAINAGE STRUCTURE
- DRAINAGE AREA BOUNDARY
- (AA) DRAINAGE AREA
- CREEK CENTERLINE
- FLOW DIRECTION
- Tc FLOW PATH
- 5' CONTOURS

Proposed								
Location	Area ID	Area (SQMI)	CT	CP	Lag Time (min)	Q10 (cfs)	Q25 (cfs)	Q100 (cfs)
Crossing 1	40% DA-AB	0.0900		-		246.6	294.9	367.5
Crossing 3	DA-AB	0.2250	0.59	0.55	0.21	616.6	737.2	918.7
-	DA-B6	0.0353	1.26	0.55	0.29	81.0	97.4	121.8
-	J-UT40			-		748.3	896.0	1116.6
Crossing 4	DA-C1	0.3061	0.59	0.55	0.27	744.0	890.8	1110.4
-	DA-C2	0.0021	0.75	0.55	0.03	8.2	9.8	12.2
-	J-UT41			-		692.1	828.1	1032.8
-	J-MDC-044			-		1403.5	1681.6	2099.4

NOTES:

1. REFER TO INTERNAL DRAINAGE AREA MAP FOR CROSSING #2 HYDROLOGIC PARAMETERS AND FLOW DATA.

N

0 250 500

SCALE: 1"=500'

STATE OF TEXAS
CARLOS LUNA III
125042
LICENSED
PROFESSIONAL ENGINEER

3/31/2025

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(210) 366-1988
TBPE No.: F-333
TBPLS No.: 10194506

GANNETT FLEMING
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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

OFFSITE DRAINAGE AREA MAP

SHEET 1 OF 2

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 3/31/2025
DRWN. BY: MAE	DSGN. BY: CL	CHKD. BY:	SHT NO.: 137

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3/31/2025
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LEGEND

- EXISTING R.O.W.
- PROPOSED COVEL RD ℄
- PROPOSED DRAINAGE STRUCTURE
- DRAINAGE AREA BOUNDARY
- (AA) DRAINAGE AREA
- CREEK CENTERLINE
- FLOW DIRECTION
- Tc FLOW PATH
- 5' CONTOURS

2040427

2040428

2040429

MEDIO CREEK

MEDIO CREEK

RAY ELLISON BLVD

SW LOOP 410

UT40 IN MEDIO CREEK

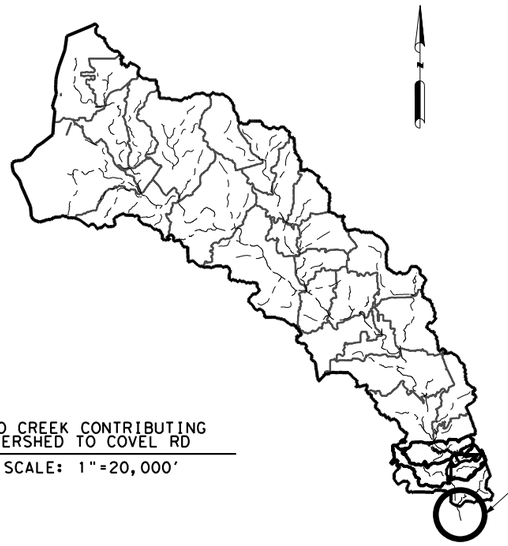
UT41 IN MEDIO CREEK

COVEL RD

CROSSING #5 AT
HEC-HMS COMPUTATION POINT
DFIRM JUNCTION ID "J2040428" AND
2021 MEDINA JUNCTION ID "J-MDC-043-044"

0 500 1,000

SCALE: 1"=1,000'



MEDIO CREEK CONTRIBUTING WATERSHED TO COVEL RD

SCALE: 1"=20,000'

CROSSING #5 AT
HEC-HMS COMPUTATION POINT
DFIRM JUNCTION ID
"J2040428" AND
2021 MEDINA JUNCTION ID
"J-MDC-043-044"

SUMMARY OF FLOW DATA

HMS Junction	AREA	Flows (cfs)			
	(Sq Mi)	Q10	Q50	Q100	Q100 UD
J-MDC-043-044	45.5359	16,155	27,862	32,987	36,669

NOTES:

1. MEDIO CREEK HYDROLOGY INFORMATION OBTAINED FROM "LOWER MEDINA RIVER WATERSHED TRIBUTARIES - FINAL HYDROLOGY REPORT" DATED NOVEMBER 2021. PREPARED BY AECOM AND HALFF ASSOCIATES FOR THE SAN ANTONIO RIVER AUTHORITY.

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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

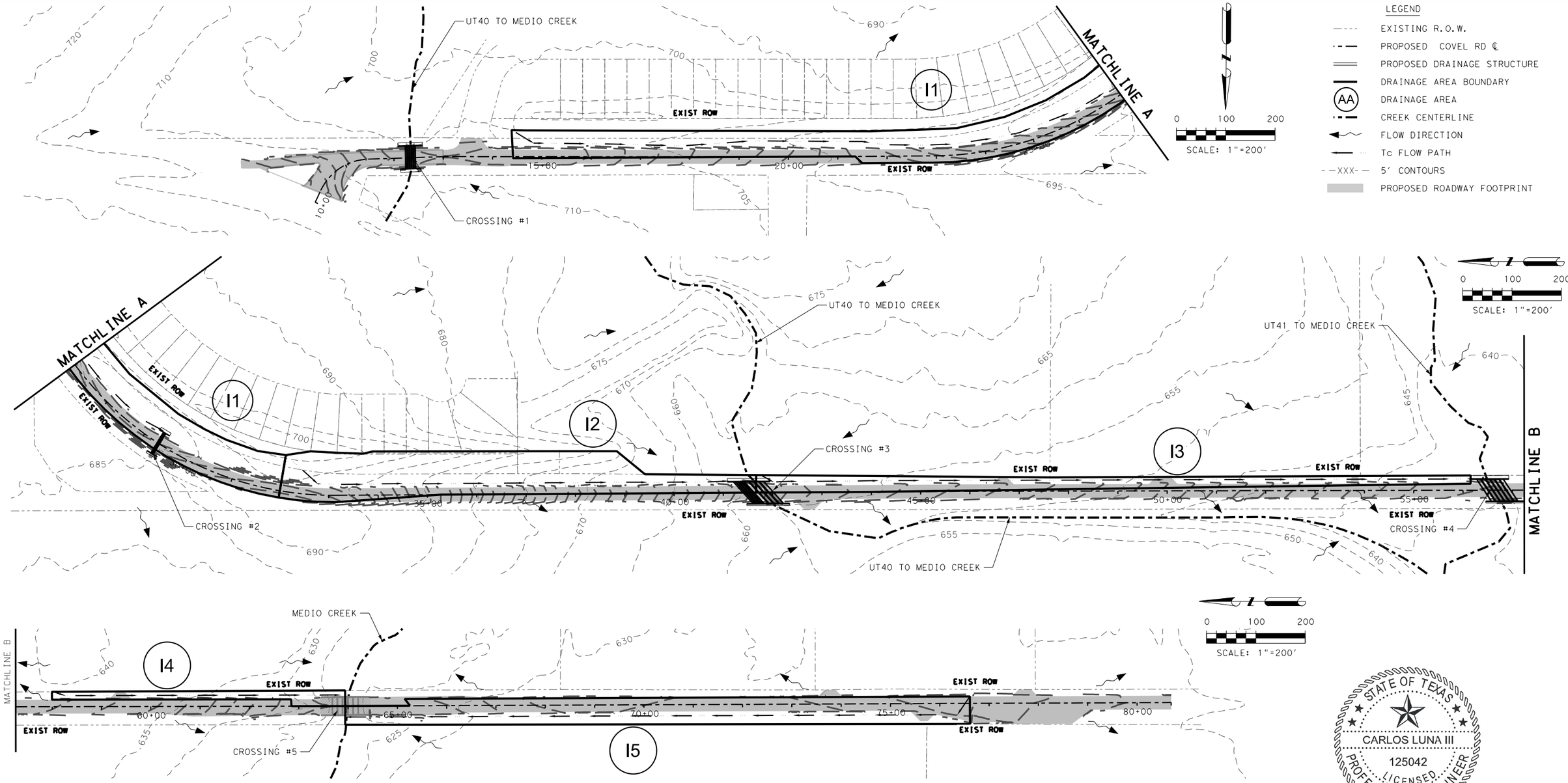
COVEL RD IMPROVEMENTS

OFFSITE DRAINAGE AREA MAP

SHEET 2 OF 2

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 3/31/2025
DRWN. BY: MAE	DSGN. BY: CL	CHKD. BY:	SHT NO.: 138

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Time of Concentration														
Basin	Precipitation Area	Sheet Flow					Shallow Concentrated				Channel			Total Tc
		L (ft)	n	S (ft/ft)	P (in)	Tc (min)	L (ft)	S (ft/ft)	Surface*	Tc (min)	L (ft)	V(min)	Tc (min)	(min)
Proposed														
I1	4	52	0.240	0.048	3.91	5.39					1425	3.90	6.09	11.48
I2	4	97	0.240	0.099	3.91	6.65					833	3.28	4.23	10.88
I3	4	26	0.240	0.015	3.91	4.95					1452	2.18	11.10	16.05
I4	4	25	0.240	0.051	3.91	2.93					558	2.10	4.43	7.36
I5	4	45	0.011	0.017	3.91	0.62					1241	2.77	7.47	8.09

Rational Q Values														
Basin	Precipitation Area	AREA (AC)	Tc (min)	C	Intensity (in/hr)					Flows (cfs)				
					I - 2YR	I - 5YR	I - 10YR	I - 25YR	I - 100YR	Q - 2YR	Q - 5YR	Q - 10YR	Q - 25YR	Q - 100YR
Proposed														
I1	4	2.73	11.5	0.82	4.84	6.02	7.05	8.43	10.54	10.88	13.52	15.84	18.94	23.66
I2	4	1.70	10.9	0.79	4.84	6.02	7.05	8.43	10.54	6.47	8.04	9.42	11.27	14.08
I3	4	0.82	16.0	0.89	4.10	5.06	5.87	6.99	8.71	2.98	3.68	4.27	5.08	6.34
I4	4	0.27	7.4	0.96	5.66	7.05	8.26	9.89	12.37	1.44	1.80	2.11	2.53	3.16
I5	4	1.52	8.1	0.96	5.42	6.75	7.92	9.48	11.85	7.91	9.85	11.56	13.84	17.31

NOTES:

1. EXISTING DRAINAGE PATTERNS WERE REVIEWED. AREAS THAT DRAIN AWAY FROM PROJECT LIMITS IN PRE-PROJECT CONDITIONS ALSO DRAIN AWAY IN PROPOSED CONDITIONS. THESE AREAS ARE NOT IMPACTED BY PROPOSED IMPROVEMENTS AND THEREFORE WERE NOT DELINEATED FOR ANALYSES.

2. REFER TO ROADWAY AND CROSS SECTION SHEETS FOR ROADWAY GEOMETRY AND TRANSITIONS FROM CROWN TO SUPERELEVATED SECTION.

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3/31/2025

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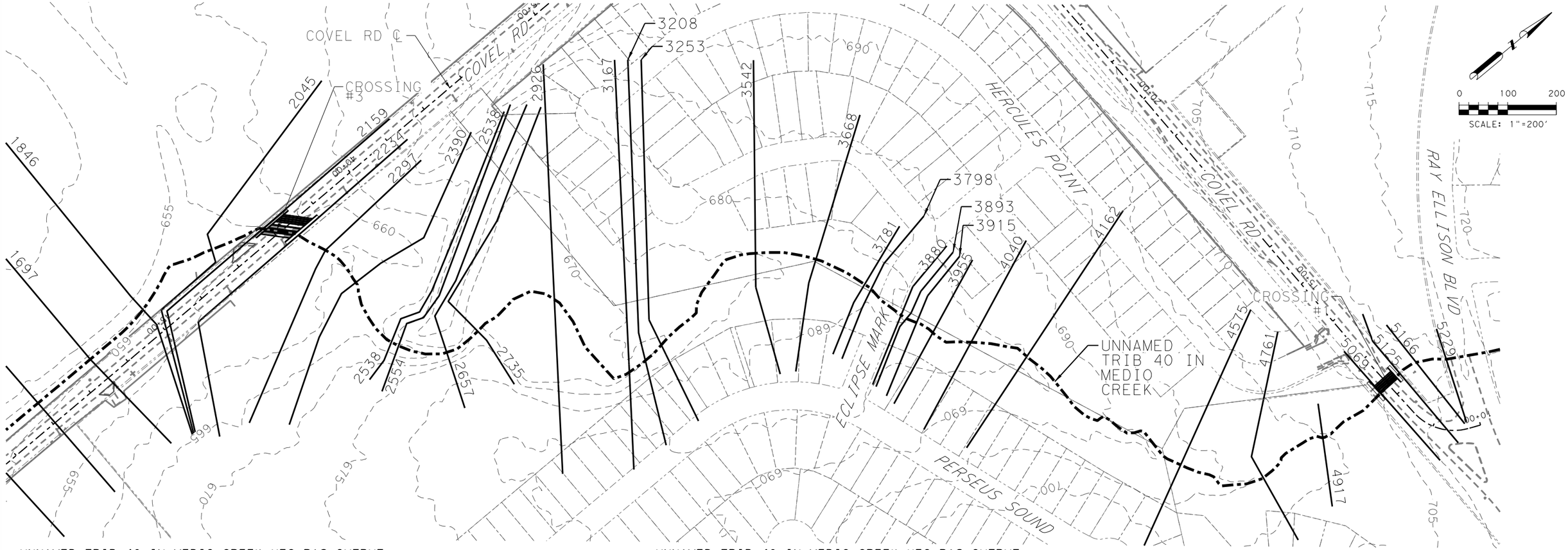
COVEL RD IMPROVEMENTS

INTERNAL DRAINAGE AREA MAP

SHEET 1 OF 1

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 3/31/2025
DRWN. BY: MAE	DSGN. BY: CL	CHKD. BY:	SHT NO.: 139

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UNNAMED TRIB 40 IN MEDIO CREEK HEC-RAS OUTPUT

HEC RAS STATION	FREQUENCY	FLOW (CFS)			WATER SURFACE ELEVATION (FT) NAVD 1988			CHANNEL VELOCITY (FT/S)		
		PRE-PROJECT	POST PROJECT	DIFF (POST-PRE)	PRE-PROJECT	POST PROJECT	DIFF (POST-PRE)	PRE-PROJECT	POST PROJECT	DIFF (POST-PRE)
5229	25-YEAR	294.90	294.90	0.00	711.26	711.26	0.00	6.24	6.24	0.00
	100-YEAR	367.50	367.50	0.00	711.49	711.49	0.00	6.51	6.51	0.00
5166	25-YEAR	294.90	294.90	0.00	708.56	708.14	-0.42	2.75	3.20	0.45
	100-YEAR	367.50	367.50	0.00	708.70	708.48	-0.22	3.26	3.52	0.26
5125	25-YEAR	294.90	294.90	0.00	708.56	708.08	-0.48	1.53	2.65	1.12
	100-YEAR	367.50	367.50	0.00	708.72	708.49	-0.23	1.80	1.97	0.17
5106	CROSSING 1									
5069	25-YEAR	294.90	294.90	0.00	702.70	702.70	0.00	6.98	6.98	0.00
	100-YEAR	367.50	367.50	0.00	702.97	702.97	0.00	7.50	7.50	0.00
4917	25-YEAR	422.40	422.40	0.00	700.17	700.17	0.00	4.19	4.19	0.00
	100-YEAR	526.30	526.30	0.00	700.33	700.33	0.00	4.56	4.56	0.00
4761	25-YEAR	422.40	422.40	0.00	697.20	697.20	0.00	5.77	5.77	0.00
	100-YEAR	526.30	526.30	0.00	697.47	697.47	0.00	5.66	5.66	0.00
4575	25-YEAR	422.40	422.40	0.00	694.04	694.04	0.00	5.45	5.45	0.00
	100-YEAR	526.30	526.30	0.00	694.35	694.35	0.00	5.87	5.87	0.00
4162	25-YEAR	422.40	422.40	0.00	686.35	686.35	0.00	6.90	6.90	0.00
	100-YEAR	526.30	526.30	0.00	686.67	686.67	0.00	7.10	7.10	0.00
4040	25-YEAR	422.40	422.40	0.00	684.85	684.85	0.00	4.05	4.05	0.00
	100-YEAR	526.30	526.30	0.00	685.10	685.10	0.00	4.29	4.29	0.00
3955	25-YEAR	597.40	597.40	0.00	683.38	683.38	0.00	5.88	5.88	0.00
	100-YEAR	744.50	744.50	0.00	683.65	683.65	0.00	6.14	6.14	0.00
3915	25-YEAR	597.40	597.40	0.00	682.72	682.72	0.00	4.78	4.78	0.00
	100-YEAR	744.50	744.50	0.00	683.15	683.15	0.00	4.47	4.47	0.00
3893	25-YEAR	597.40	597.40	0.00	681.94	681.94	0.00	7.85	7.85	0.00
	100-YEAR	744.50	744.50	0.00	682.22	682.22	0.00	8.44	8.44	0.00
3880	25-YEAR	597.40	597.40	0.00	681.47	681.47	0.00	3.15	3.15	0.00
	100-YEAR	744.50	744.50	0.00	682.43	682.43	0.00	3.26	3.26	0.00
3853	CULVERT									
3798	25-YEAR	597.40	597.40	0.00	680.21	680.21	0.00	6.71	6.71	0.00
	100-YEAR	744.50	744.50	0.00	681.64	681.64	0.00	6.56	6.56	0.00
3781	25-YEAR	597.40	597.40	0.00	678.61	678.61	0.00	11.81	11.81	0.00
	100-YEAR	744.50	744.50	0.00	678.55	678.55	0.00	14.96	14.96	0.00
3668	25-YEAR	597.40	597.40	0.00	677.76	677.76	0.00	6.14	6.14	0.00
	100-YEAR	744.50	744.50	0.00	678.07	678.07	0.00	6.72	6.72	0.00
3542	25-YEAR	597.40	597.40	0.00	676.77	676.77	0.00	5.71	5.71	0.00
	100-YEAR	744.50	744.50	0.00	677.09	677.09	0.00	6.08	6.08	0.00
3253	25-YEAR	653.80	653.80	0.00	673.19	673.19	0.00	5.30	5.30	0.00
	100-YEAR	814.70	814.70	0.00	673.41	673.41	0.00	5.77	5.77	0.00
3208	25-YEAR	653.80	653.80	0.00	672.20	672.20	0.00	5.71	5.71	0.00
	100-YEAR	814.70	814.70	0.00	672.41	672.41	0.00	5.99	5.99	0.00
3167	25-YEAR	653.80	653.80	0.00	671.23	671.23	0.00	5.37	5.37	0.00
	100-YEAR	814.70	814.70	0.00	672.09	672.09	0.00	3.41	3.41	0.00
2926	25-YEAR	653.80	653.80	0.00	671.29	671.29	0.00	0.46	0.46	0.00
	100-YEAR	814.70	814.70	0.00	672.09	672.09	0.00	0.48	0.48	0.00

UNNAMED TRIB 40 IN MEDIO CREEK HEC-RAS OUTPUT

2735	25-YEAR	710.10	710.10	0.00	669.43	669.43	0.00	10.41	10.41	0.00
	100-YEAR	884.90	884.90	0.00	669.97	669.97	0.00	11.17	11.17	0.00
2657	25-YEAR	710.10	710.10	0.00	668.54	668.54	0.00	10.89	10.89	0.00
	100-YEAR	884.90	884.90	0.00	669.16	669.16	0.00	11.57	11.57	0.00
2554	25-YEAR	710.10	710.10	0.00	666.43	666.43	0.00	5.81	5.81	0.00
	100-YEAR	884.90	884.90	0.00	666.94	666.94	0.00	6.19	6.19	0.00
2538	25-YEAR	710.10	710.10	0.00	665.38	665.38	0.00	9.24	9.24	0.00
	100-YEAR	884.90	884.90	0.00	665.80	665.80	0.00	9.82	9.82	0.00
2390	25-YEAR	737.20	737.20	0.00	661.41	661.48	0.07	2.89	2.80	-0.09
	100-YEAR	918.70	918.70	0.00	661.61	661.79	0.18	3.33	3.14	-0.19
2297	25-YEAR	737.20	737.20	0.00	659.80	659.71	-0.09	3.65	4.17	0.52
	100-YEAR	918.70	918.70	0.00	659.93	659.71	-0.22	3.87	5.20	1.33
2234	25-YEAR	737.20	737.20	0.00	656.29	657.33	1.04	0.00	4.67	4.67
	100-YEAR	918.70	918.70	0.00	656.45	657.34	0.89	0.28	5.79	5.51
2197	CROSSING 3									
2159	25-YEAR	737.20	737.20	0.00	654.72	655.84	1.12	0.00	2.88	2.88
	100-YEAR	918.70	918.70	0.00	655.11	655.84	0.73	0.00	3.59	3.59
2045	25-YEAR	737.20	737.20	0.00	654.34	654.40	0.06	1.80	1.77	-0.03
	100-YEAR	918.70	918.70	0.00	654.79	654.86	0.07	1.94	1.88	-0.06
1846	25-YEAR	737.20	737.20	0.00	653.49	653.50	0.01	4.99	4.97	-0.02
	100-YEAR	918.70	918.70	0.00	653.93	653.94	0.01	5.35	5.33	-0.02
1697	25-YEAR	756.80	760.50	3.70	651.94	651.95	0.01	8.05	8.06	0.01
	100-YEAR	944.00	948.50	4.50	652.24	652.25	0.01	8.83	8.85	0.02
1557	25-YEAR	756.80	760.50	3.70	650.75	650.76	0.01	6.89	6.90	0.01
	100-YEAR	944.00	948.50	4.50	651.09	651.10	0.01	7.50	7.51	0.01
1411	25-YEAR	756.80	760.50	3.70	648.81	648.82	0.01	8.65	8.66	0.01
	100-YEAR	944.00	948.50	4.50	649.21	649.22	0.01	9.18	9.19	0.01
1258	25-YEAR	756.80	760.50	3.70	645.70	645.71	0.01	7.93	7.94	0.01
	100-YEAR	944.00	948.50	4.50	646.01	646.02	0.01	8.55	8.55	0.00
1114	25-YEAR	824.10	828.10	4.00	643.53	643.54	0.01	8.26	8.26	0.00
	100-YEAR	1027.90	1032.80	4.90	643.87	643.90	0.03	8.87	8.83	-0.04
532	25-YEAR	1645.30	1648.00	2.70	632.03	632.03	0.00	5.37	5.38	0.01
	100-YEAR	2054.10	2057.40	3.30	632.36	632.36	0.00	5.80	5.81	0.01
329	25-YEAR	1645.30	1648.00	2.70	629.41	629.41	0.00	5.08	5.08	0.00
	100-YEAR	2054.10	2057.40	3.30	629.70	629.70	0.00	5.30	5.31	0.01
71	25-YEAR	1678.90	1681.60	2.70	626.27	626.27	0.00	4.65	4.65	0.00
	100-YEAR	2096.00	2099.40	3.40	626.61	626.61	0.00	4.94	4.94	0.00

HYDROLOGIC METHOD

1. SNYDER PARAMETERS AND FLOWS WERE DEVELOPED PER COSA STORM WATER DESIGN GUIDANCE MANUAL AND UTILIZE PARAMETERS ESTABLISHED PER LOWER MEDINA RIVER WATERSHED TRIBUTARIES - FINAL HYDROLOGY REPORT DATED NOVEMEBER 2021.

HYDRAULIC METHOD

1. PRE PROJECT CONDITION WATER SURFACE ELEVATIONS FROM HEC-RAS MODEL PLAN "COVEL_EXIST".
2. POST PROJECT CONDITION WATER SURFACE ELEVATIONS FROM HEC-RAS MODEL PLAN "COVEL_PROPOSED".

NOTE:
PLEASE REFER TO DRAINAGE REPORT DATED APRIL 2025 FOR A COMPARISON OF ALL THE CROSS SECTIONS ANALYZED.

STATE OF TEXAS
CARLOS LUNA III
125042
LICENSED
PROFESSIONAL ENGINEER
3/31/2025

MAESTAS
8122 DATAPOINT DR., STE. 840
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TBPE No.: F-333
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GANNETT FLEMING
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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS
HYDRAULIC DATA SHEET
CROSSING #1 & CROSSING #3

SHEET 1 OF 4

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 3/31/2025
DRWN. BY: MAE	DSGN. BY: CL	CHKD. BY:	SHT NO.: 140

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HY - 8 Culvert Analysis Report

Table 1.1 - Summary of Culvert Flows at Crossing: Existing

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Existing Discharge (cfs)	Roadway Discharge (cfs)	Iterations
687.48	5 year	11.48	11.48	0.00	1.00
687.74	25 year	16.00	16.00	0.00	1.00
687.96	100 year	19.97	19.97	0.00	1.00
690.44	Overtopping	48.10	48.10	0.00	Overtopping

Table 1.2 - Summary of Culvert Flows at Crossing: Proposed

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Proposed Culvert Discharge (cfs)	Roadway Discharge (cfs)	Iterations
687.30	5 year	13.52	13.52	0.00	1
687.61	25 year	18.94	18.94	0.00	1
687.86	100 year	23.66	23.66	0.00	1
689.98	Overtopping	51.75	51.75	0.00	Overtopping

Table 2.1 - Culvert Summary Table: Existing

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
5 year	11.48 cfs	11.48 cfs	687.48	1.28	0	1-S2n	0.68	0.85	0.68	0.31	6.14	2.48
25 year	16.00 cfs	16.00 cfs	687.74	1.54	0	1-S2n	0.81	1.01	0.81	0.37	6.73	2.75
100 year	19.97 cfs	19.97 cfs	687.96	1.76	0	1-S2n	0.91	1.13	0.91	0.42	7.13	2.95

Table 2.2 - Culvert Summary Table: Proposed Culvert

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
5 year	13.52	13.52	686.52	1.34	1.43	2-M2c	1.00	0.92	0.92	0.24	4.78	3.93
25 year	18.94	18.94	686.82	1.65	1.74	2-M2c	1.24	1.10	1.10	0.29	5.35	4.38
100 year	23.66	23.66	687.08	1.9	1.99	2-M2c	1.46	1.24	1.24	0.32	5.81	4.71

****

Straight Culvert

Inlet Elevation (invert): 686.20 ft, Outlet Elevation (invert): 684.40 ft

Culvert Length: 50.0 ft, Culvert Slope: 0.0360

****

Site Data - Existing

Site Data Option: Culvert Invert Data
Inlet Station: 20.00 ft
Inlet Elevation: 686.20 ft
Outlet Station: 70.00 ft
Outlet Elevation: 684.40 ft
Number of Barrels: 2

Culvert Data Summary - Existing

Barrel Shape: Circular
Barrel Diameter: 2.00 ft
Barrel Material: Corrugated steel
Embedment: 0.00 in
Barrel Manning's n: 0.0240
Culvert Type: Straight
Inlet Configuration: Mitered to conform to slope
Inlet Depression: None

****

Straight Culvert

Inlet Elevation (invert): 685.09 ft, Outlet Elevation (invert): 684.91 ft

Culvert Length: 50.0 ft, Culvert Slope: 0.0035

****

Site Data - Proposed Culvert

Site Data Option: Culvert Invert Data
Inlet Station: 20.00 ft
Inlet Elevation: 685.09 ft
Outlet Station: 70.00 ft
Outlet Elevation: 684.91 ft
Number of Barrels: 2

Culvert Data Summary - Proposed

Barrel Shape: Circular
Barrel Diameter: 2.00 ft
Barrel Material: Concrete
Embedment: 0.00 in
Barrel Manning's n: 0.0130
Culvert Type: Straight
Inlet Configuration: Square Edge with Headwall
Inlet Depression: None

HY - 8 Culvert Analysis Report

Table 3 - Downstream Channel Rating Curve (Crossing)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
13.52	685.15	0.24	3.93	0.15	1.54
18.94	685.20	0.29	4.38	0.18	1.58
23.66	685.23	0.32	4.71	0.20	1.61

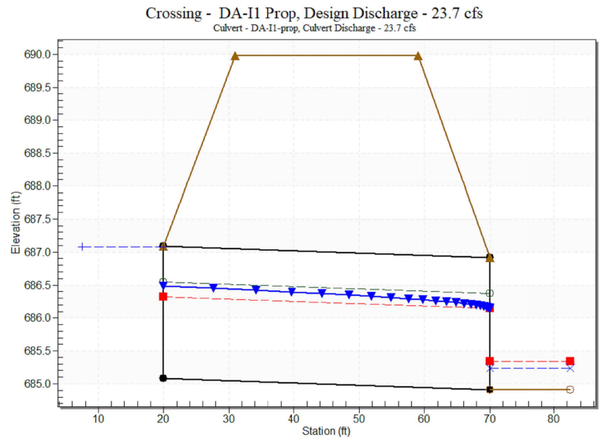
Tailwater Channel Data - Proposed

Tailwater Channel Option: Irregular Channel
Channel Slope: Irregular Channel
User Defined Channel Cross-Section:

Coord No.	Station (ft)	Elevation (ft)	Manning's n
1	0	687.00	0.013
2	36	684.91	0.013
3	48	684.91	0.013
4	61	688.00	0.240

Roadway Data for Crossing: Proposed

Roadway Profile Shape: Constant Roadway Elevation
Irregular Roadway Cross-Section:
Crest Length: 100.00 ft
Crest Elevation: 689.98 ft
Roadway Surface: Paved
Roadway Top Width: 28.00 ft



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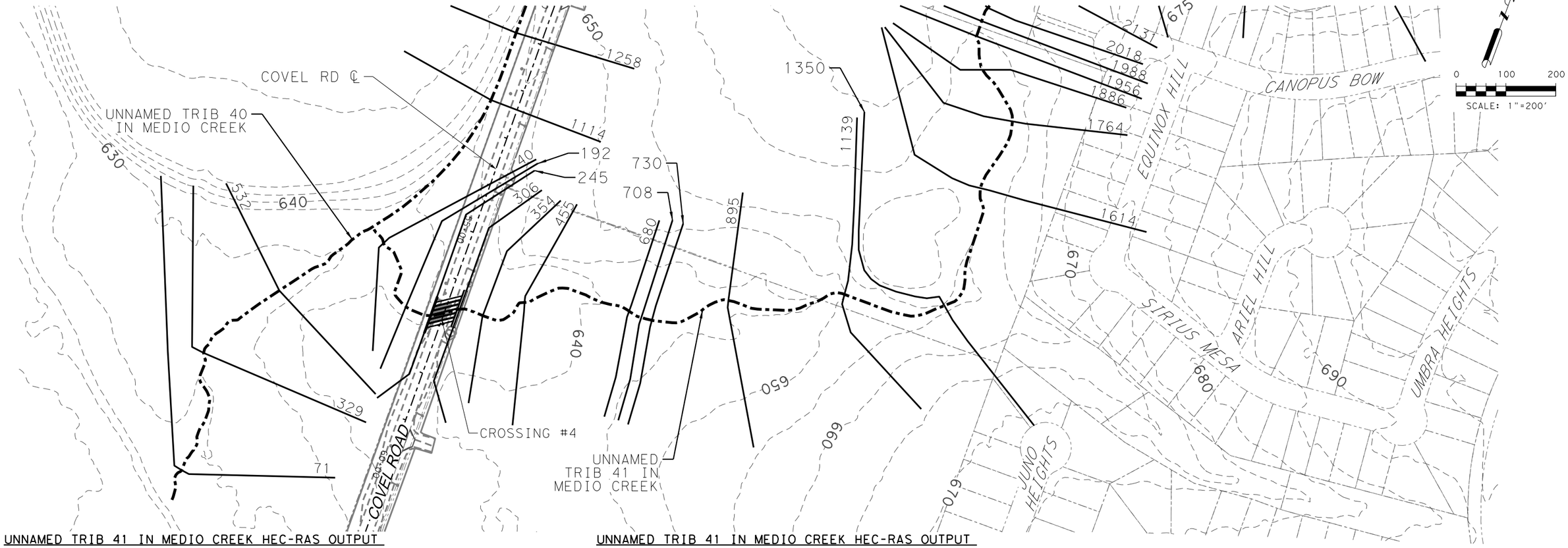
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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS
HYDRAULIC DATA SHEET
CROSSING #2

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 3/31/2025
DRWN. BY: MAE	DSGN. BY: CL	CHKD. BY:	SHT NO.: 141

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UNNAMED TRIB 41 IN MEDIO CREEK HEC-RAS OUTPUT

HEC RAS STATION	FREQUENCY	FLOW (CFS)			WATER SURFACE ELEVATION (FT) NAVD 1988			CHANNEL VELOCITY (FT/S)		
		PRE-PROJECT	POST PROJECT	DIFF (POST-PRE)	PRE-PROJECT	POST PROJECT	DIFF (POST-PRE)	PRE-PROJECT	POST PROJECT	DIFF (POST-PRE)
4878	25-YEAR	191.40	190.90	-0.50	718.75	718.75	0.00	3.65	3.65	0.00
	100-YEAR	238.60	237.90	-0.70	718.91	718.91	0.00	3.97	3.97	0.00
4794	25-YEAR	191.40	190.90	-0.50	716.20	716.20	0.00	5.70	5.70	0.00
	100-YEAR	238.60	237.90	-0.70	716.41	716.40	-0.01	5.90	5.88	-0.02
4697	25-YEAR	191.40	190.90	-0.50	713.93	713.92	-0.01	3.62	3.62	0.00
	100-YEAR	238.60	237.90	-0.70	714.13	714.13	0.00	3.98	3.99	0.01
4562	25-YEAR	191.40	190.90	-0.50	710.75	710.75	0.00	4.37	4.36	-0.01
	100-YEAR	238.60	237.90	-0.70	710.88	710.88	0.00	4.67	4.66	-0.01
4468	25-YEAR	191.40	190.90	-0.50	708.85	708.85	0.00	2.97	2.97	0.00
	100-YEAR	238.60	237.90	-0.70	708.98	708.98	0.00	3.15	3.15	0.00
4320	25-YEAR	191.40	190.90	-0.50	704.54	704.54	0.00	4.70	4.69	-0.01
	100-YEAR	238.60	237.90	-0.70	704.65	704.66	0.01	5.10	5.07	-0.03
4195	25-YEAR	191.40	190.90	-0.50	702.56	702.56	0.00	1.77	1.77	0.00
	100-YEAR	238.60	237.90	-0.70	702.72	702.72	0.00	1.93	1.93	0.00
4151	25-YEAR	191.40	190.90	-0.50	701.45	701.45	0.00	4.90	4.89	-0.01
	100-YEAR	238.60	237.90	-0.70	702.27	702.26	-0.01	2.82	2.83	0.01
4095	25-YEAR	296.20	295.40	-0.80	701.33	701.32	-0.01	2.47	2.47	0.00
	100-YEAR	369.20	368.20	-1.00	702.09	702.08	-0.01	2.63	2.63	0.00
4059	CULVERT									
4020	25-YEAR	296.20	295.40	-0.80	698.29	698.29	0.00	4.99	4.99	0.00
	100-YEAR	369.20	368.20	-1.00	698.54	698.54	0.00	5.54	5.54	0.00
3908	25-YEAR	296.20	295.40	-0.80	695.34	695.34	0.00	4.94	4.94	0.00
	100-YEAR	369.20	368.20	-1.00	695.54	695.54	0.00	5.30	5.28	-0.02
3772	25-YEAR	296.20	295.40	-0.80	693.16	693.16	0.00	2.97	2.97	0.00
	100-YEAR	369.20	368.20	-1.00	693.39	693.38	-0.01	3.22	3.22	0.00
3639	25-YEAR	296.20	295.40	-0.80	689.85	689.85	0.00	6.48	6.48	0.00
	100-YEAR	369.20	368.20	-1.00	689.99	690.00	0.01	7.06	6.99	-0.07
3488	25-YEAR	296.20	295.40	-0.80	685.51	685.51	0.00	4.98	4.97	-0.01
	100-YEAR	369.20	368.20	-1.00	686.02	686.01	-0.01	5.43	5.42	-0.01
3299	25-YEAR	296.20	295.40	-0.80	682.52	682.52	0.00	5.64	5.63	-0.01
	100-YEAR	369.20	368.20	-1.00	682.86	682.85	-0.01	6.26	6.25	-0.01
3145	25-YEAR	296.20	295.40	-0.80	680.23	680.23	0.00	4.24	4.24	0.00
	100-YEAR	369.20	368.20	-1.00	680.62	680.61	-0.01	4.50	4.50	0.00
2965	25-YEAR	442.00	440.90	-1.10	677.72	677.72	0.00	4.74	4.73	-0.01
	100-YEAR	551.00	549.50	-1.50	678.04	678.04	0.00	5.23	5.22	-0.01
2665	25-YEAR	442.00	440.90	-1.10	671.41	671.41	0.00	6.94	6.94	0.00
	100-YEAR	551.00	549.50	-1.50	671.73	671.73	0.00	7.17	7.17	0.00
2383	25-YEAR	442.00	440.90	-1.10	668.44	668.44	0.00	3.24	3.24	0.00
	100-YEAR	551.00	549.50	-1.50	668.80	668.80	0.00	3.50	3.50	0.00
2131	25-YEAR	496.70	495.40	-1.30	663.97	663.97	0.00	7.53	7.52	-0.01
	100-YEAR	619.10	617.50	-1.60	664.28	664.27	-0.01	8.00	7.99	-0.01
2018	25-YEAR	496.70	495.40	-1.30	662.89	662.88	-0.01	2.31	2.31	0.00
	100-YEAR	619.10	617.50	-1.60	663.12	663.11	-0.01	2.62	2.62	0.00

UNNAMED TRIB 41 IN MEDIO CREEK HEC-RAS OUTPUT

HEC RAS STATION	FREQUENCY	FLOW (CFS)			WATER SURFACE ELEVATION (FT) NAVD 1988			CHANNEL VELOCITY (FT/S)		
		PRE-PROJECT	POST PROJECT	DIFF (POST-PRE)	PRE-PROJECT	POST PROJECT	DIFF (POST-PRE)	PRE-PROJECT	POST PROJECT	DIFF (POST-PRE)
1988	25-YEAR	496.70	495.40	-1.30	662.66	662.64	-0.02	3.59	3.59	0.00
	100-YEAR	619.10	617.50	-1.60	662.84	662.84	0.00	4.07	4.07	0.00
1973	CULVERT									
1956	25-YEAR	496.70	495.40	-1.30	660.63	660.62	-0.01	5.82	5.81	-0.01
	100 YEAR	619.10	617.50	1.60	660.95	660.95	0.00	6.53	6.52	0.01
1886	25-YEAR	496.70	495.40	-1.30	660.14	660.14	0.00	3.12	3.12	0.00
	100-YEAR	619.10	617.50	-1.60	660.58	660.57	-0.01	3.14	3.14	0.00
1764	25-YEAR	556.00	554.50	-1.50	659.94	659.93	-0.01	1.59	1.59	0.00
	100-YEAR	693.00	691.20	-1.80	660.37	660.37	0.00	1.77	1.77	0.00
1614	25-YEAR	556.00	554.50	-1.50	659.67	659.67	0.00	2.82	2.81	-0.01
	100-YEAR	693.00	691.20	-1.80	660.13	660.12	-0.01	2.82	2.82	0.00
1350	25-YEAR	733.70	731.70	-2.00	658.12	658.10	-0.02	9.59	9.61	0.02
	100-YEAR	914.50	912.10	-2.40	658.47	658.47	0.00	10.34	10.33	-0.01
1139	25-YEAR	751.90	749.90	-2.00	652.03	652.03	0.00	7.26	7.26	0.00
	100-YEAR	937.20	934.80	-2.40	652.26	652.26	0.00	7.78	7.78	0.00
895	25-YEAR	774.70	772.60	-2.10	645.29	645.27	-0.02	6.97	7.03	0.06
	100-YEAR	965.60	963.10	-2.50	645.56	645.56	0.00	7.32	7.32	0.00
730	25-YEAR	774.70	772.60	-2.10	644.52	644.51	-0.01	3.43	3.43	0.00
	100-YEAR	965.60	963.10	-2.50	644.71	644.70	-0.01	3.90	3.89	-0.01
708	25-YEAR	774.70	772.60	-2.10	644.03	644.02	-0.01	6.08	6.08	0.00
	100-YEAR	965.60	963.10	-2.50	644.22	644.22	0.00	6.30	6.30	0.00
680	25-YEAR	774.70	772.60	-2.10	642.61	642.61	0.00	6.27	6.27	0.00
	100-YEAR	965.60	963.10	-2.50	642.83	642.83	0.00	6.50	6.49	-0.01
455	25-YEAR	893.20	890.80	-2.40	640.12	640.09	-0.03	2.50	2.53	0.03
	100-YEAR	1113.30	1110.40	-2.90	640.39	640.38	-0.01	2.74	2.75	0.01
354	25-YEAR	893.20	890.80	-2.40	639.55	639.49	-0.06	3.43	3.55	0.12
	100-YEAR	1113.30	1110.40	-2.90	639.74	639.72	-0.02	3.89	3.91	0.02
306	25-YEAR	893.20	890.80	-2.40	639.31	639.29	-0.02	3.50	4.54	1.04
	100-YEAR	1113.30	1110.40	-2.90	639.44	639.43	-0.01	4.05	5.36	1.31
273	CROSSING 4									
245	25-YEAR	893.20	890.80	-2.40	636.68	636.69	0.01	6.27	6.05	-0.22
	100-YEAR	1113.30	1110.40	-2.90	636.93	636.95	0.02	7.29	6.98	-0.31
192	25-YEAR	893.20	890.80	-2.40	636.46	636.46	0.00	3.96	3.96	0.00
	100-YEAR	1113.30	1110.40	-2.90	636.76	636.76	0.00	4.24	4.23	-0.01
40	25-YEAR	897.60	896.00	-1.60	633.83	633.82	-0.01	7.89	7.89	0.00
	100-YEAR	1118.70	1116.60	-2.10	634.04	634.03	-0.01	8.46	8.46	0.00

NOTE: PLEASE REFER TO DRAINAGE REPORT DATED APRIL 2025 FOR A COMPARISON OF ALL THE CROSS SECTIONS ANALYZED.

HYDROLOGIC METHOD

1. SNYDER PARAMETERS AND FLOWS WERE DEVELOPED PER COSA STORM WATER DESIGN GUIDANCE MANUAL AND UTILIZE PARAMETERS ESTABLISHED PER LOWER MEDINA RIVER WATERSHED TRIBUTARIES - FINAL HYDROLOGY REPORT DATED NOVEMEBER 2021.

HYDRAULIC METHOD

1. PRE PROJECT CONDITION WATER SURFACE ELEVATIONS FROM HEC-RAS MODEL PLAN "COVEL_EXIST".
2. POST PROJECT CONDITION WATER SURFACE ELEVATIONS FROM HEC-RAS MODEL PLAN "COVEL_PROPOSED".

STATE OF TEXAS
CARLOS LUNA III
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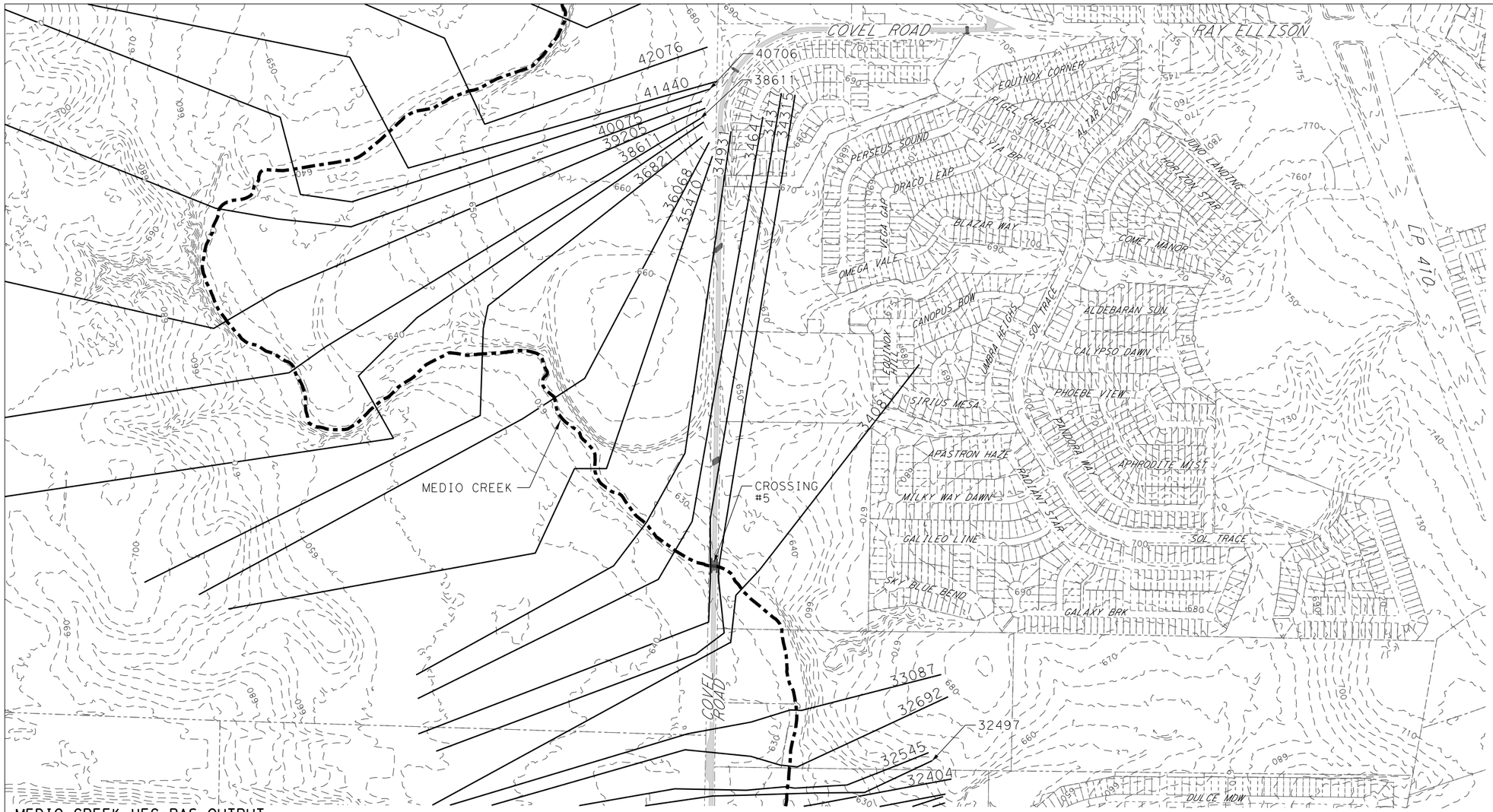
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS
HYDRAULIC DATA SHEET
CROSSING #4

SHEET 3 OF 4

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 3/31/2025
DRWN. BY: MAE	DSGN. BY: CL	CHKD. BY:	SHT NO.: 142

2:11:07 PM
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NOTE: PLEASE REFER TO DRAINAGE REPORT DATED APRIL 2025 FOR A COMPARISON OF ALL THE CROSS SECTIONS ANALYZED.

0 400 800

SCALE: 1"=800'

MEDIO CREEK HEC-RAS OUTPUT

HEC RAS STATION	FREQUENCY	FLOW (CFS)			WATER SURFACE ELEVATION (FT) NAVD 1988			CHANNEL VELOCITY (FT/S)		
		PRE-PROJECT	POST PROJECT	DIFF (POST-PRE)	PRE-PROJECT	POST PROJECT	DIFF (POST-PRE)	PRE-PROJECT	POST PROJECT	DIFF (POST-PRE)
39205	10-YEAR	16,124	16,124	0.00	642.54	642.54	0.00	6.74	6.74	0.00
	100-YEAR	32,823	32,823	0.00	645.72	645.72	0.00	9.20	9.20	0.00
38611	10-YEAR	16,124	16,124	0.00	641.92	641.92	0.00	9.22	9.22	0.00
	100-YEAR	32,823	32,823	0.00	645.32	645.32	0.00	9.35	9.35	0.00
37691	10-YEAR	16,124	16,124	0.00	640.36	640.36	0.00	11.10	11.10	0.00
	100-YEAR	32,823	32,823	0.00	644.29	644.29	0.00	10.66	10.66	0.00
36821	10-YEAR	16,124	16,124	0.00	637.97	637.97	0.00	6.44	6.44	0.00
	100-YEAR	32,823	32,823	0.00	641.65	641.65	0.00	9.02	9.03	0.01
36068	10-YEAR	16,124	16,124	0.00	635.69	635.68	-0.01	11.00	11.01	0.01
	100-YEAR	32,823	32,823	0.00	640.04	640.04	0.00	11.46	11.47	0.01
35470	10-YEAR	16,124	16,124	0.00	634.84	634.83	-0.01	7.76	7.77	0.01
	100-YEAR	32,823	32,823	0.00	638.92	638.92	0.00	10.88	10.89	0.01
34931	10-YEAR	16,124	16,124	0.00	634.51	634.50	-0.01	6.11	6.11	0.00
	100-YEAR	32,823	32,823	0.00	638.62	638.62	0.00	7.70	7.71	0.01
34647	10-YEAR	16,124	16,124	0.00	634.16	634.15	-0.01	6.62	6.63	0.01
	100-YEAR	32,823	32,823	0.00	638.21	638.20	-0.01	8.17	8.17	0.00
34377	10-YEAR	16,155	16,155	0.00	633.18	633.16	-0.02	8.83	8.87	0.04
	100-YEAR	32,987	32,987	0.00	637.53	637.52	-0.01	9.52	9.53	0.01
34357		Culvert								
34315	10-YEAR	16,155	16,155	0.00	633.40	633.40	0.00	6.29	6.29	0.00
	100-YEAR	32,987	32,987	0.00	637.78	637.78	0.00	7.57	7.57	0.00
34081	10-YEAR	16,155	16,155	0.00	633.23	633.23	0.00	6.02	6.02	0.00
	100-YEAR	32,987	32,987	0.00	637.67	637.67	0.00	6.82	6.82	0.00
33087	10-YEAR	16,155	16,155	0.00	630.72	630.72	0.00	10.12	10.12	0.00
	100-YEAR	32,987	32,987	0.00	633.54	633.54	0.00	14.99	14.99	0.00
32692	10-YEAR	16,155	16,155	0.00	629.17	629.17	0.00	12.49	12.49	0.00
	100-YEAR	32,987	32,987	0.00	632.01	632.01	0.00	16.75	16.75	0.00

HYDROLOGIC METHOD

1. MEDIO CREEK HYDROLOGY INFORMATION OBTAINED FROM "LOWER MEDINA RIVER WATERSHED TRIBUTARIES - FINAL HYDROLOGY REPORT" DATED NOVEMBER 2021. PREPARED BY AECOM AND HALFF ASSOCIATES FOR THE SAN ANTONIO RIVER AUTHORITY.

HYDRAULIC METHOD

1. THE MEDIO CREEK BAM MODEL WAS OBTAINED FROM SARA D2MR AND AS DOCUMENTED IN THE LOWER MEDINA RIVER WATERSHED TRIBUTARIES - FINAL HYDROLOGY REPORT DATED NOVEMEBER 2021.
2. PRE PROJECT CONDITION WATER SURFACE ELEVATIONS FROM HEC-RAS MODEL PLAN "MULTI-PROFILE - COVEL EXIST".
3. POST PROJECT CONDITION WATER SURFACE ELEVATIONS FROM HEC-RAS MODEL PLAN "MULTI-PROFILE - COVEL PROP".

STATE OF TEXAS
CARLOS LUNA III
125042
LICENSED
PROFESSIONAL ENGINEER

3/31/2025

MAESTAS
8122 DATAPOINT DR., STE. 840
SAN ANTONIO, TX 78229
(210) 366-1988
TBPE No.: F-333
TBPLS No.: 10194506

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

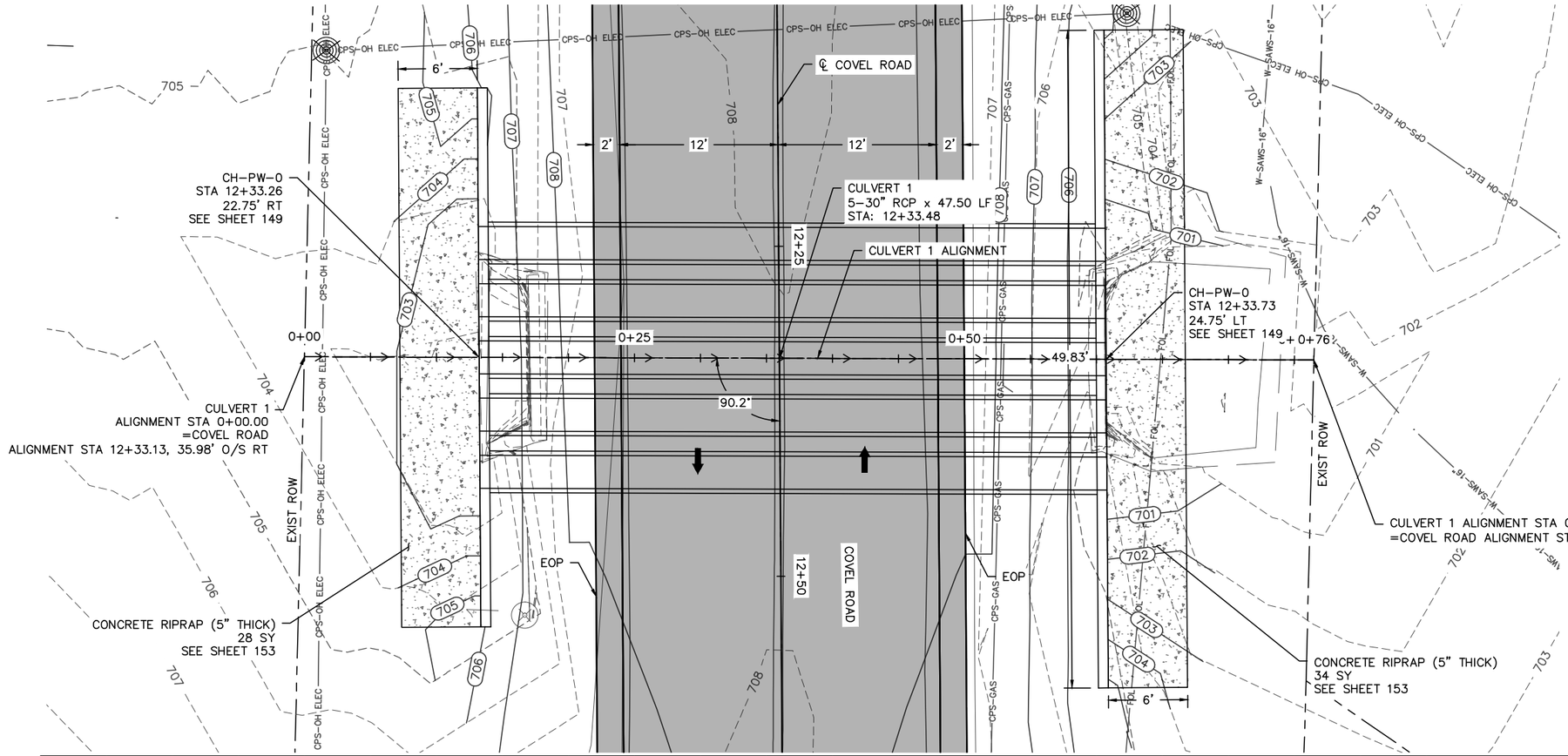
HYDRAULIC DATA SHEET CROSSING #5

SHEET 4 OF 4

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 3/31/2025
DRWN. BY: MAE	DSGN. BY: CL	CHKD. BY:	SHT NO.: 143

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3/31/2025
USER
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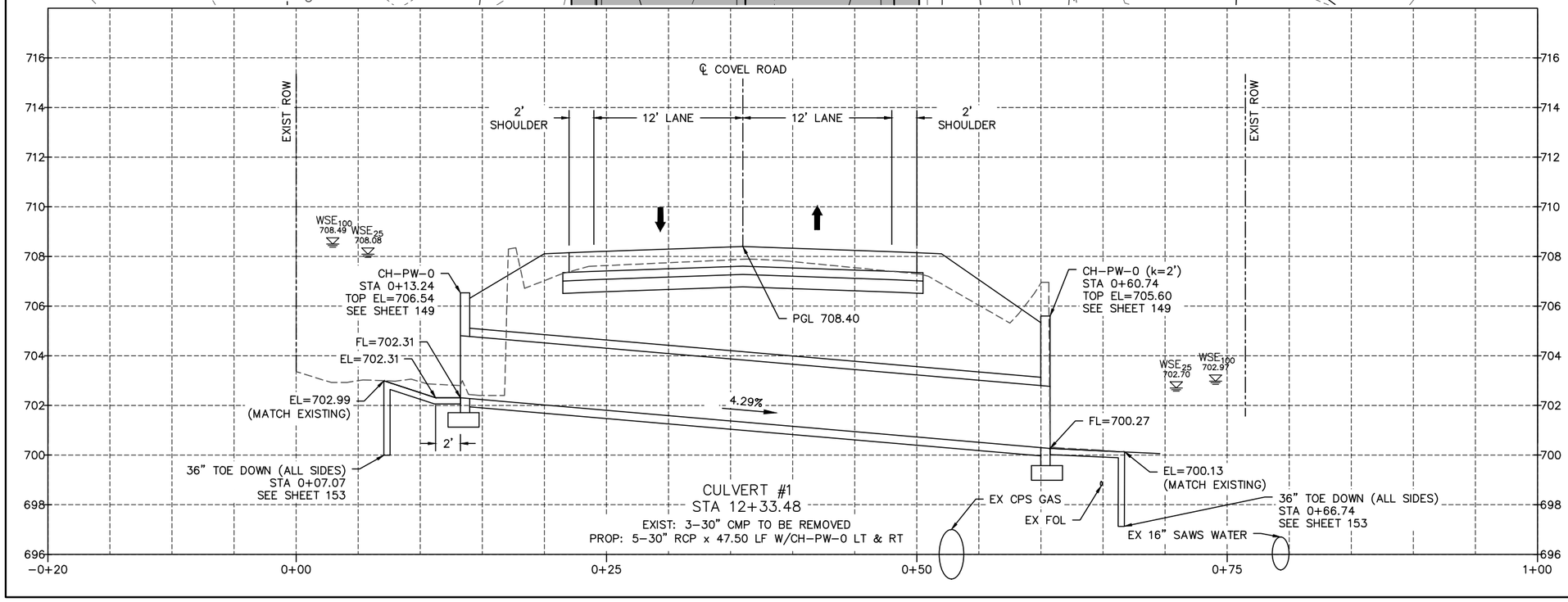
QUANTITY SUMMARY			
ITEM	DESCRIPTION	UNIT	QTY
106.1	BOX CULVERT EXCAVATION AND BACKFILL (< 600 CY)	CY	220
505.1	CONCRETE RIPRAP (5" THICK) (< 100 SY)	SY	62
464-6007	RC PIPE (CL III)(30 IN)	LF	238
466-6099	HEADWALL (CH-PW-0) (DIA=30 IN)	EA	2



LEGEND

- EXISTING ROW
- PROPOSED LIMITS OF CONSTRUCTION
- PROPOSED 9.5" CRCP, 4" ACP & 6" LIME TREATED SUBGRADE
- PROPOSED CONCRETE DRIVEWAY
- (D#) DRIVEWAY NUMBER
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
- CPS-GAS — EXIST GAS LINE
- W-SAWS — EXIST WATER LINE
- WW-SAWS — EXIST WASTE WATER LINE
- AT&T-UG TEL — EXIST UNDERGROUND TELEPHONE LINE
- AT&T-OH TEL — EXIST OVERHEAD TELEPHONE LINE

NOTES:
1. 36" TOE DOWN IS SUBSIDIARY TO CONCRETE RIPRAP (5" THICK), ITEM 505.1.
2. WATER SURFACE ELEVATIONS (WSE) WERE OBTAINED FROM THE DRAINAGE REPORT FOR COVEL RD IMPROVEMENTS PROJECT BY MAESTAS & ASSOCIATES, LLC.
3. PLAN LAYOUT STATIONING REFERENCES COVEL ROAD CENTERLINE ALIGNMENT. PROFILE STATIONING REFERENCES CULVERT ALIGNMENT.



HORIZ: 1" = 10'
VERT: 1" = 5'

STATE OF TEXAS
JEFFREY C. TYLER
106359
LICENSED PROFESSIONAL ENGINEER
6/24/2025

NO.	REVISIONS	DRAWN	APPROVED	DATE

T-Core Engineers
84 NE Loop 410 Ste 380 ◆ San Antonio, Texas 78216 ◆ 210.900.2448 ◆ TBPE Registration No. F-18275 ◆ www.tcore.com

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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL ROAD IMPROVEMENTS

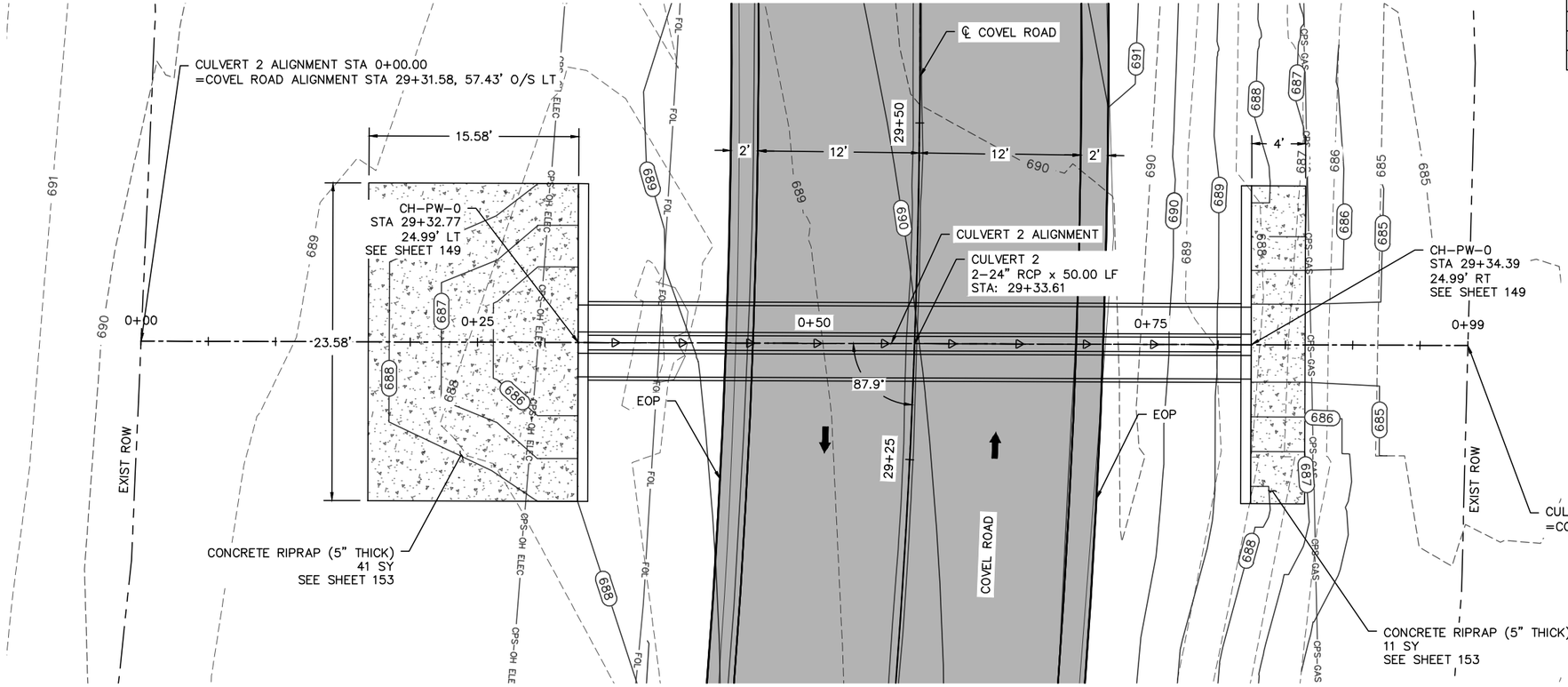
CULVERT 1 LAYOUT

SHEET 1 OF 5

100 % SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/24/2025
DRWN. BY: CT	DSGN. BY: JT	CHKD. BY: JT	SHEET NO.: 144 OF 336

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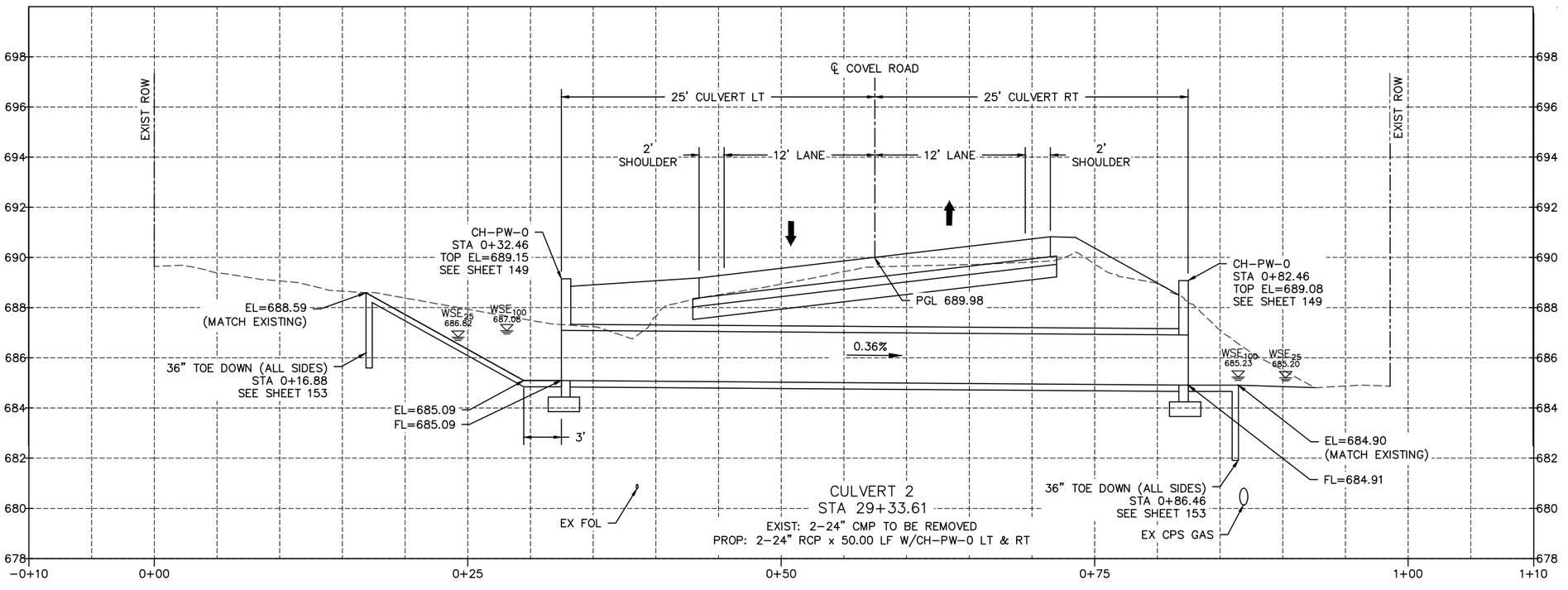
QUANTITY SUMMARY			
ITEM	DESCRIPTION	UNIT	QTY
106.1	BOX CULVERT EXCAVATION AND BACKFILL (< 600 CY)	CY	70
505.1	CONCRETE RIPRAP (5" THICK) (< 100 SY)	SY	52
464-6018	RC PIPE (CL IV) (24 IN)	LF	100
466-6097	HEADWALL (CH-PW-0) (DIA=24 IN)	EA	2



LEGEND

- EXISTING ROW
- PROPOSED LIMITS OF CONSTRUCTION
- PROPOSED 9.5" CRCP, 4" ACP & 6" LIME TREATED SUBGRADE
- PROPOSED CONCRETE DRIVEWAY
- (D#) DRIVEWAY NUMBER
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
- CPS-GAS — EXIST GAS LINE
- W-SAWS — EXIST WATER LINE
- WW-SAWS — EXIST WASTE WATER LINE
- AT&T-UG TEL — EXIST UNDERGROUND TELEPHONE LINE
- AT&T-OH TEL — EXIST OVERHEAD TELEPHONE LINE

NOTES:
1. 36" TOE DOWN IS SUBSIDIARY TO CONCRETE RIPRAP (5" THICK), ITEM 505.1.
2. WATER SURFACE ELEVATIONS (WSE) WERE OBTAINED FROM THE DRAINAGE REPORT FOR COVEL RD IMPROVEMENTS PROJECT BY MAESTAS & ASSOCIATES, LLC.
3. PLAN LAYOUT STATIONING REFERENCES COVEL ROAD CENTERLINE ALIGNMENT. PROFILE STATIONING REFERENCES CULVERT ALIGNMENT.



0 5 10
HORIZ: 1" = 10'
VERT: 1" = 5'

STATE OF TEXAS
JEFFREY C. TYLER
106359
LICENSED
PROFESSIONAL ENGINEER
6/24/2025

NO.	REVISIONS	DRAWN	APPROVED	DATE

T-Core Engineers
84 NE Loop 410 Ste 380 ◆ San Antonio, Texas 78216 ◆ 210.900.2448 ◆ TBPE Registration No. F-18275 ◆ www.tcore.com

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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

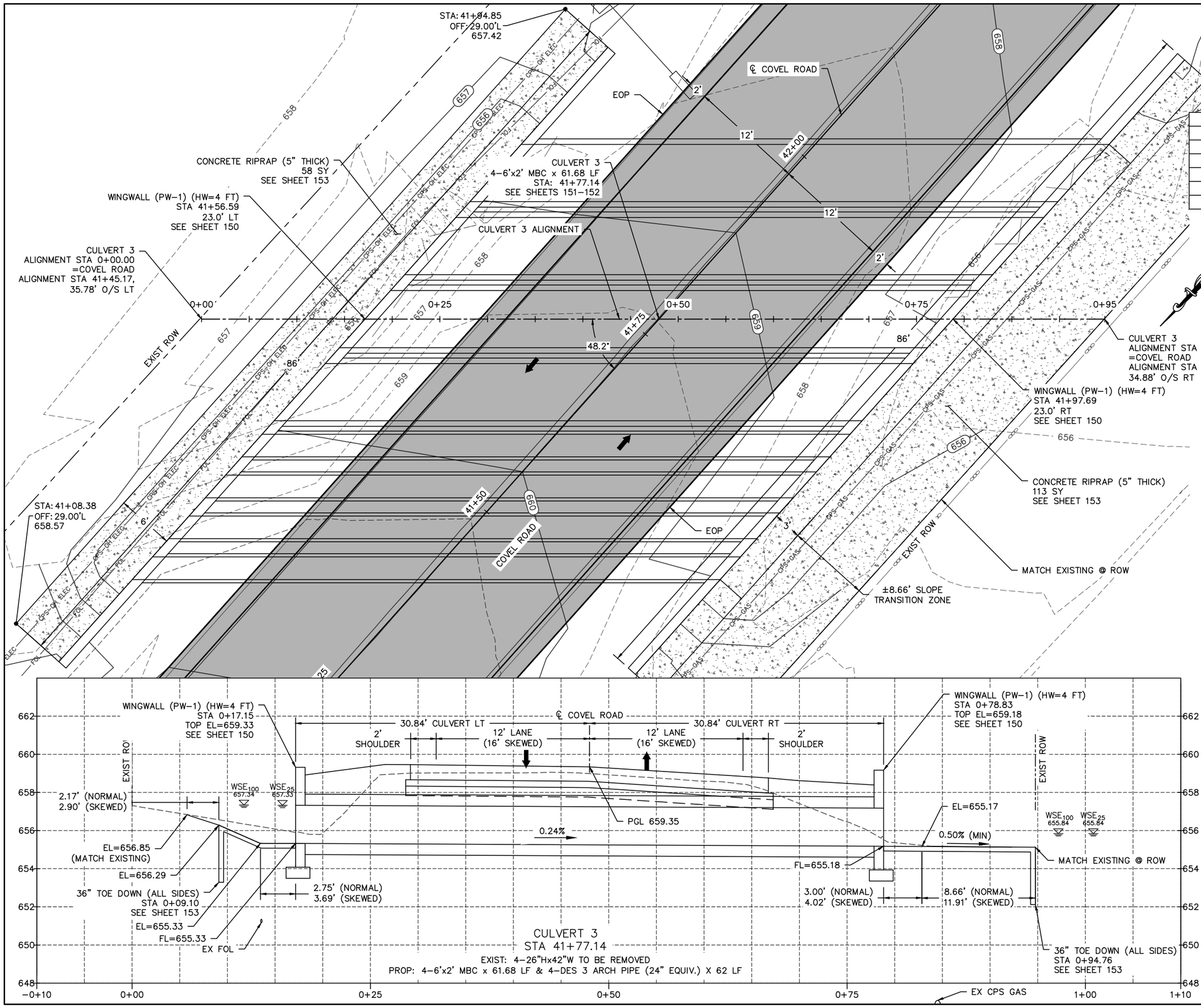
COVEL ROAD IMPROVEMENTS

CULVERT 2 LAYOUT

SHEET 2 OF 5

100 % SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/24/2025
DRWN. BY: CT	DSGN. BY: JT	CHKD. BY: JT	SHEET NO.: 145 OF 336

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QUANTITY SUMMARY			
ITEM	DESCRIPTION	UNIT	QTY
106.1	BOX CULVERT EXCAVATION AND BACKFILL (< 600 CY)	CY	250
505.1	CONCRETE RIPRAP (5" THICK) (< 100 SY)	SY	171
462-6099	CONC BOX CULV (6 FT x 2 FT)	LF	247
464-6064	RC PIPE (ARCH)(CL IV)(DES 3)	LF	247
466-6179	WINGWALL (PW-1) (HW=4 FT)	EA	2

LEGEND

- EXISTING ROW
- PROPOSED LIMITS OF CONSTRUCTION
- PROPOSED 9.5" CRCP, 4" ACP & 6" LIME TREATED SUBGRADE
- PROPOSED CONCRETE DRIVEWAY
- D# DRIVEWAY NUMBER
- CPS–OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
- CPS–GAS — EXIST GAS LINE
- W–SAWS — EXIST WATER LINE
- WW–SAWS — EXIST WASTE WATER LINE
- AT&T–UG TEL — EXIST UNDERGROUND TELEPHONE LINE
- AT&T–OH TEL — EXIST OVERHEAD TELEPHONE LINE

NOTES:

1. 36" TOE DOWN IS SUBSIDIARY TO CONCRETE RIPRAP (5" THICK), ITEM 505.1.
2. WATER SURFACE ELEVATIONS (WSE) WERE OBTAINED FROM THE DRAINAGE REPORT FOR COVEL RD IMPROVEMENTS PROJECT BY MAESTAS & ASSOCIATES, LLC.
3. WATER SURFACE ELEVATIONS (WSE) AT THIS CULVERT DEPICT INTERNAL SECTION ELEVATIONS.
4. PLAN LAYOUT STATIONING REFERENCES COVEL ROAD CENTERLINE ALIGNMENT. PROFILE STATIONING REFERENCES CULVERT ALIGNMENT.
5. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL POINTS WITHIN THE SLOPE TRANSITION ZONE. EXISTING FENCING AND FENCE SUPPORTS SHALL BE PROTECTED AND PRESERVED THROUGHOUT CONSTRUCTION.

0 5 10
HORIZ: 1" = 10'
VERT: 1" = 5'

CULVERT 3
STA 41+77.14
EXIST: 4–26"Hx42"W TO BE REMOVED
PROP: 4–6'x2' MBC x 61.68 LF & 4–DES 3 ARCH PIPE (24" EQUIV.) X 62 LF

EX CPS GAS

STATE OF TEXAS
JEFFREY C. TYLER
106359
LICENSED
PROFESSIONAL ENGINEER
7/7/2025

NO.	REVISIONS	DRAWN	APPROVED	DATE

T-Core Engineers
84 NE Loop 410 Ste 380 ◆ San Antonio, Texas 78216 ◆ 210.900.2448 ◆ TBPE Registration No. F-18275 ◆ www.tcore.com

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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL ROAD IMPROVEMENTS

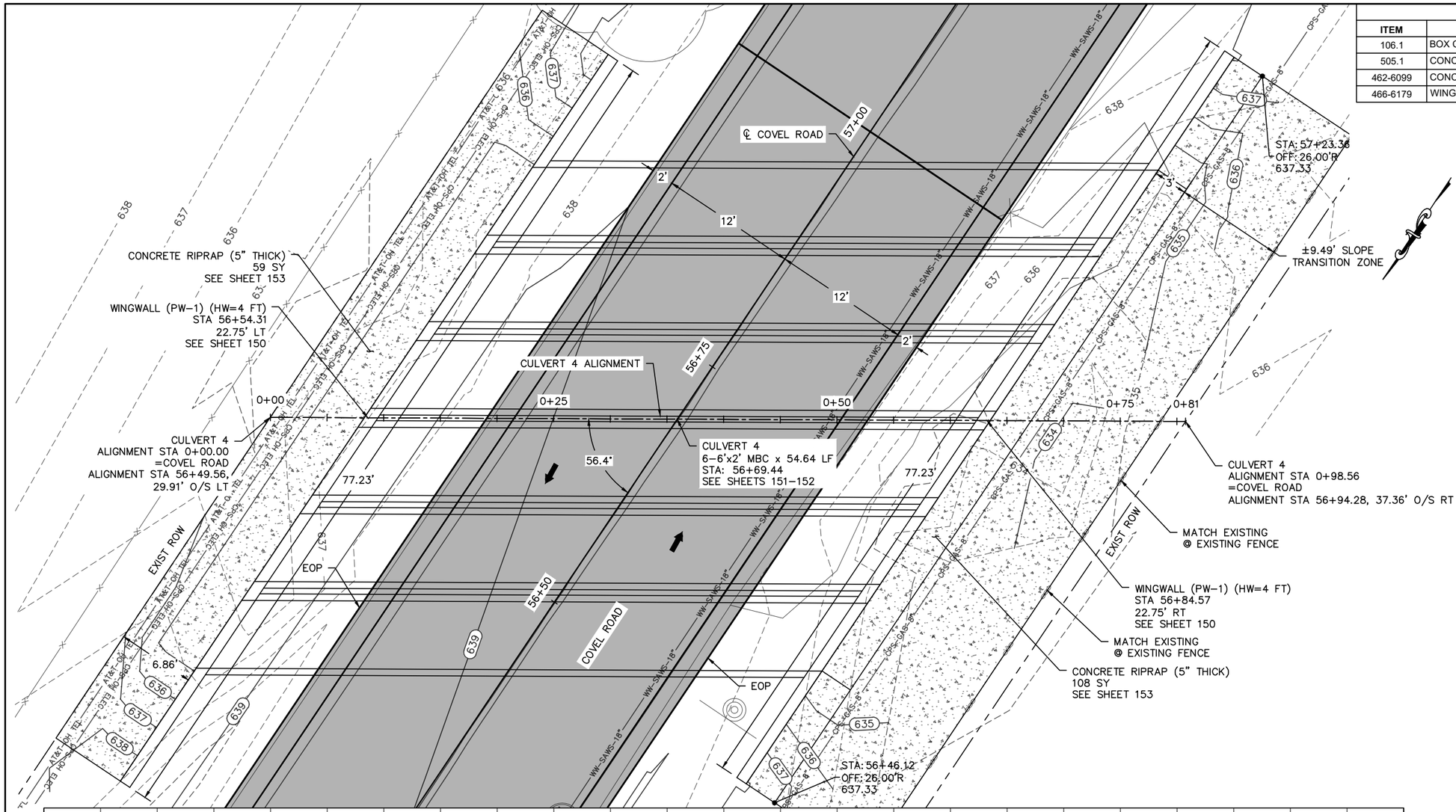
CULVERT 3 LAYOUT

SHEET 3 OF 5

100 % SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/7/2025
DRWN. BY: CT	DSGN. BY: JT	CHKD. BY: JT	SHEET NO.: 146 OF 336

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QUANTITY SUMMARY			
ITEM	DESCRIPTION	UNIT	QTY
106.1	BOX CULVERT EXCAVATION AND BACKFILL (< 600 CY)	CY	410
505.1	CONCRETE RIPRAP (5" THICK) (< 100 SY)	SY	167
462-6099	CONC BOX CULV (6 FT x 2 FT)	LF	328
466-6179	WINGWALL (PW-1) (HW=4 FT)	EA	2

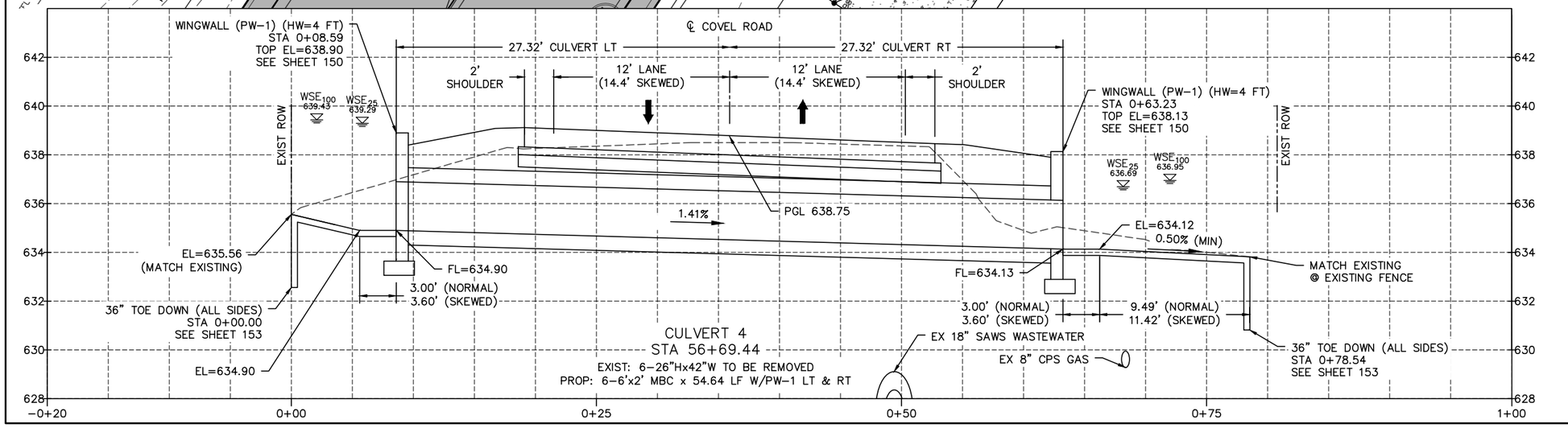


LEGEND

- EXISTING ROW
- PROPOSED LIMITS OF CONSTRUCTION
- PROPOSED 9.5" CRCP, 4" ACP & 6" LIME TREATED SUBGRADE
- PROPOSED CONCRETE DRIVEWAY
- (D#) DRIVEWAY NUMBER
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- FOL — EXIST FIBER OPTIC LINE
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- AT&T-UG TEL — EXIST UNDERGROUND TELEPHONE LINE
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3. PLAN LAYOUT STATIONING REFERENCES COVEL ROAD CENTERLINE ALIGNMENT. PROFILE STATIONING REFERENCES CULVERT ALIGNMENT.
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0 5 10
HORIZ: 1" = 10'
VERT: 1" = 5'



STATE OF TEXAS
JEFFREY C. TYLER
106359
LICENSED
PROFESSIONAL ENGINEER
7/7/2025

NO.	REVISIONS	DRAWN	APPROVED	DATE

T-Core Engineers
84 NE Loop 410 Ste 380 ◆ San Antonio, Texas 78216 ◆ 210.900.2448 ◆ TBPE Registration No. F-18275 ◆ www.tcore.com

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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

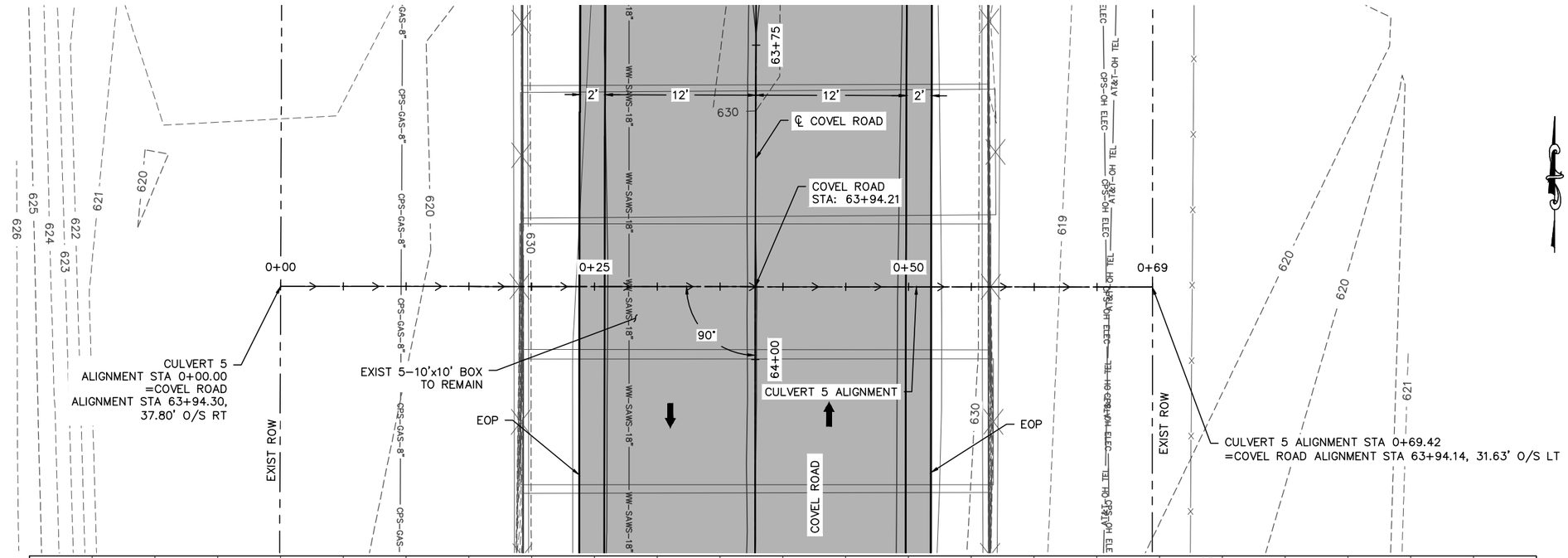
COVEL ROAD IMPROVEMENTS

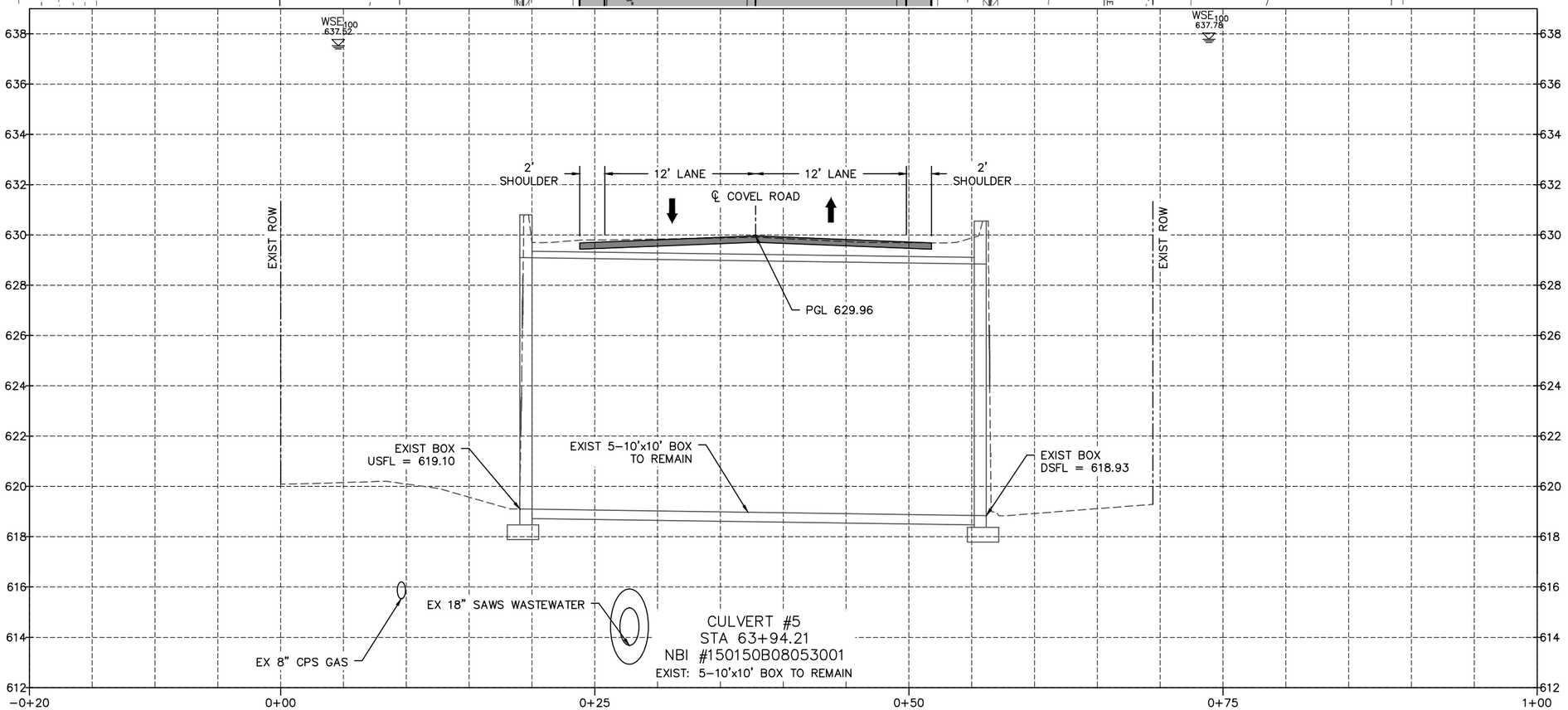
CULVERT 4 LAYOUT

SHEET 4 OF 5

100 % SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/7/2025
DRWN. BY: CT	DSGN. BY: JT	CHKD. BY: JT	SHEET NO.: 147 OF 336

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LEGEND

- EXISTING ROW
- PROPOSED LIMITS OF CONSTRUCTION
- PROPOSED 9.5" CRCP, 4" ACP & 6" LIME TREATED SUBGRADE
- PROPOSED CONCRETE DRIVEWAY
- (D#) DRIVEWAY NUMBER
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
- CPS-GAS — EXIST GAS LINE
- W-SAWS — EXIST WATER LINE
- WW-SAWS — EXIST WASTE WATER LINE
- AT&T-UG TEL — EXIST UNDERGROUND TELEPHONE LINE
- AT&T-OH TEL — EXIST OVERHEAD TELEPHONE LINE

NOTES:
1. WATER SURFACE ELEVATIONS (WSE) WERE OBTAINED FROM THE DRAINAGE REPORT FOR COVEL RD IMPROVEMENTS PROJECT BY MAESTAS & ASSOCIATES, LLC.
2. PLAN LAYOUT STATIONING REFERENCES COVEL ROAD CENTERLINE ALIGNMENT. PROFILE STATIONING REFERENCES CULVERT ALIGNMENT.

0 5 10
HORIZ: 1" = 10'
VERT: 1" = 5'

STATE OF TEXAS
JEFFREY C. TYLER
106359
LICENSED
PROFESSIONAL ENGINEER
6/24/2025

NO.	REVISIONS	DRAWN	APPROVED	DATE

T-Core Engineers
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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL ROAD IMPROVEMENTS

CULVERT 5 LAYOUT

SHEET 5 OF 5

100 % SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/24/2025
DRWN. BY: CT	DSGN. BY: JT	CHKD. BY: JT	SHEET NO.: 148 OF 336

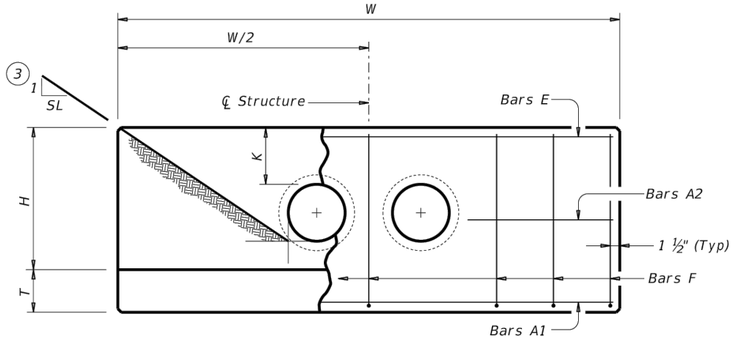
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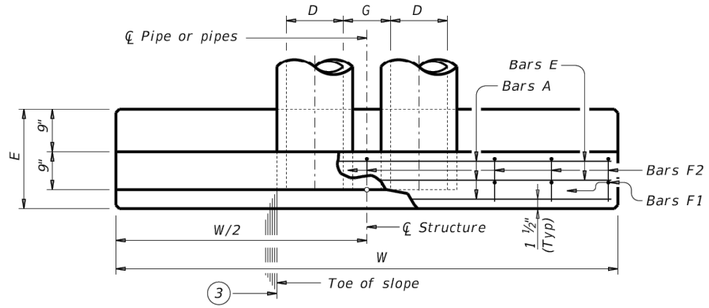
DATE:
FILE:

TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (5)

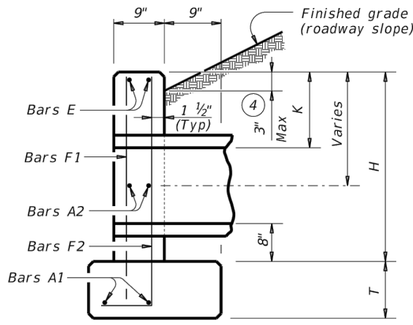
Slope	Dia of Pipe (D)	Values for One Pipe			Values To Be Added for Each Addt'l Pipe		
		W	Reinf (Lbs) (1)	Conc (CY) (2)	W	Reinf (Lbs) (1)	Conc (CY) (2)
2:1	12"	9' – 0"	122	1.1	1' – 9"	15	0.2
	15"	10' – 3"	136	1.3	2' – 2"	16	0.2
	18"	11' – 6"	163	1.5	2' – 8"	19	0.3
	21"	12' – 9"	200	1.8	3' – 1"	31	0.4
	24"	14' – 0"	217	2.1	3' – 7"	34	0.4
	27"	15' – 3"	254	2.4	3' – 11"	37	0.5
	30"	16' – 6"	272	2.7	4' – 4"	40	0.6
	33"	17' – 9"	314	3.1	4' – 8"	43	0.6
	36"	19' – 0"	371	3.9	5' – 1"	46	0.8
	42"	21' – 6"	442	4.9	5' – 10"	52	1.0
	48"	25' – 0"	569	6.4	6' – 7"	59	1.3
	54"	27' – 6"	701	7.5	7' – 6"	82	1.6
	60"	30' – 0"	794	8.8	8' – 3"	90	1.8
	66"	32' – 6"	894	10.2	8' – 9"	96	2.0
	72"	35' – 0"	1,055	11.7	9' – 4"	103	2.3
3:1	12"	13' – 0"	175	1.6	1' – 9"	14	0.2
	15"	14' – 9"	193	1.9	2' – 2"	17	0.2
	18"	16' – 6"	228	2.2	2' – 8"	19	0.3
	21"	18' – 3"	299	2.6	3' – 1"	31	0.4
	24"	20' – 0"	323	3.0	3' – 7"	33	0.4
	27"	21' – 9"	371	3.5	3' – 11"	37	0.5
	30"	23' – 6"	415	4.0	4' – 4"	40	0.5
	33"	25' – 3"	469	4.6	4' – 8"	43	0.6
	36"	27' – 0"	556	5.7	5' – 1"	46	0.8
	42"	30' – 6"	675	7.1	5' – 10"	52	1.0
	48"	35' – 6"	837	9.2	6' – 7"	59	1.3
	54"	39' – 0"	1,015	11.0	7' – 6"	84	1.6
	60"	42' – 6"	1,171	12.9	8' – 3"	91	1.8
	66"	46' – 0"	1,298	14.9	8' – 9"	98	2.0
	72"	49' – 6"	1,561	17.1	9' – 4"	103	2.3
4:1	12"	17' – 0"	229	2.0	1' – 9"	15	0.2
	15"	19' – 3"	266	2.4	2' – 2"	17	0.2
	18"	21' – 6"	308	2.9	2' – 8"	19	0.3
	21"	23' – 9"	382	3.5	3' – 1"	31	0.3
	24"	26' – 0"	430	3.9	3' – 7"	34	0.4
	27"	28' – 3"	486	4.7	3' – 11"	37	0.5
	30"	30' – 6"	539	5.2	4' – 4"	40	0.6
	33"	32' – 9"	603	6.0	4' – 8"	42	0.6
	36"	35' – 0"	738	7.5	5' – 1"	47	0.8
	42"	39' – 6"	881	9.3	5' – 10"	52	1.0
	48"	46' – 0"	1,102	12.1	6' – 7"	61	1.3
	54"	50' – 6"	1,364	14.4	7' – 6"	84	1.6
	60"	55' – 0"	1,547	16.9	8' – 3"	91	1.8
	66"	59' – 6"	1,741	19.5	8' – 9"	98	2.0
	72"	64' – 0"	2,077	22.4	9' – 4"	102	2.3
6:1	12"	25' – 0"	336	3.0	1' – 9"	14	0.2
	15"	28' – 3"	384	3.6	2' – 2"	17	0.2
	18"	31' – 6"	452	4.2	2' – 8"	19	0.3
	21"	34' – 9"	581	5.1	3' – 1"	31	0.4
	24"	38' – 0"	644	5.8	3' – 7"	34	0.4
	27"	41' – 3"	737	6.9	3' – 11"	37	0.5
	30"	44' – 6"	807	7.7	4' – 4"	39	0.6
	33"	47' – 9"	912	8.9	4' – 8"	44	0.6
	36"	51' – 0"	1,108	11.0	5' – 1"	48	0.8
	42"	57' – 6"	1,318	13.7	5' – 10"	54	1.0
	48"	67' – 0"	1,682	17.9	6' – 7"	59	1.3
	54"	73' – 6"	2,072	21.3	7' – 6"	83	1.6
	60"	80' – 0"	2,351	24.9	8' – 3"	89	1.8
	66"	86' – 6"	2,643	28.9	8' – 9"	96	2.0
	72"	93' – 0"	3,121	33.1	9' – 4"	101	2.3



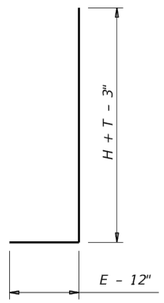
ELEVATION



PLAN OF NON-SKEWED PIPES



SECTION AT CENTER OF PIPE



BARS F2

(1) Total quantities include one 3'–1" lap for bars over 60' in length.

(2) Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.

(3) Indicated slope is perpendicular to centerline pipe or pipes.

(4) For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

(5) Dimensions shown are usual and maximum.

(6) Quantities shown are for one structure end only (one headwall).

TABLE OF CONSTANT DIMENSIONS

Dia of Pipe (D)	G	K (5)	H	T	E
12"	0' – 9"	1' – 0"	2' – 8"	0' – 9"	1' – 9"
15"	0' – 11"	1' – 0"	2' – 11"	0' – 9"	1' – 9"
18"	1' – 2"	1' – 0"	3' – 2"	0' – 9"	1' – 9"
21"	1' – 4"	1' – 0"	3' – 5"	0' – 9"	2' – 0"
24"	1' – 7"	1' – 0"	3' – 8"	0' – 9"	2' – 0"
27"	1' – 8"	1' – 0"	3' – 11"	0' – 9"	2' – 3"
30"	1' – 10"	1' – 0"	4' – 2"	0' – 9"	2' – 3"
33"	1' – 11"	1' – 0"	4' – 5"	0' – 9"	2' – 6"
36"	2' – 1"	1' – 0"	4' – 8"	1' – 0"	2' – 6"
42"	2' – 4"	1' – 0"	5' – 2"	1' – 0"	2' – 9"
48"	2' – 7"	1' – 3"	5' – 11"	1' – 0"	3' – 0"
54"	3' – 0"	1' – 3"	6' – 5"	1' – 0"	3' – 3"
60"	3' – 3"	1' – 3"	6' – 11"	1' – 0"	3' – 6"
66"	3' – 3"	1' – 3"	7' – 5"	1' – 0"	3' – 9"
72"	3' – 4"	1' – 3"	7' – 11"	1' – 0"	4' – 0"

TABLE OF REINFORCING STEEL (6)

Bar	Size	Spa	No.
A1	#5	~	2
A2	#5	1' – 6"	~
E	#5	~	2
F	#5	1' – 0"	~

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide Class C concrete (f'_c = 3,600 psi).

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Do not mount bridge rails of any type directly to these culvert headwalls.
This standard may not be used for wall heights, H, exceeding the values shown.

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

Texas Department of Transportation

Bridge Division Standard

CONCRETE HEADWALLS
WITH PARALLEL WINGS FOR NON-SKEWED PIPE CULVERTS

CH-PW-0

FILE: CD-CH-PW0-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.
				149

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DATE:
FILE:

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

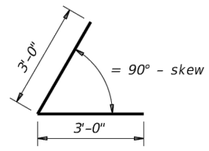
Dimensions					Variable Reinforcing				Estimated Quantities per ft of wing (2~wings) (4)		Estimated Quantities per ft of Toewall (1~toewall)	
Maximum Wingwall Height Hw	W	X	Y	Z	Bars J1		Bars J2					
					Size	Spa	Size	Spa	Reinf Lb/Ft)	Conc (CY/Ft)	Reinf (Lb/Ft)	Conc (CY/Ft)
2'–6"	2'–10"	10"	1'–0"	7"	#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)

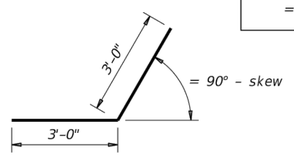
Bar	Size	No.	Spa
D1	#6	~	1'–0"
D2	#6	~	1'–0"
E1	#4	~	1'–0"
F	#4	~	1'–0"
G	#6	~	8"
M1	#4	4	~
P	#4	~	1'–0"
V	#4	~	1'–0"

TABLE OF TOEWALL REINFORCING

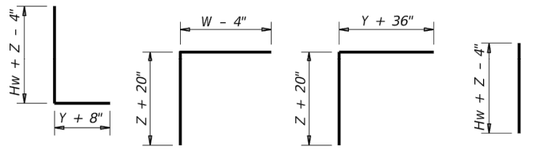
Bar	Size	No.	Spa
J3	#4	~	1'–0"
M2	#4	2	~
E2	#4	~	1'–0"



BARS D1



BARS D2



BARS J1 BARS J2 BARS J3 BARS V

WING DIMENSION FORMULAS:

(All values are in feet.)

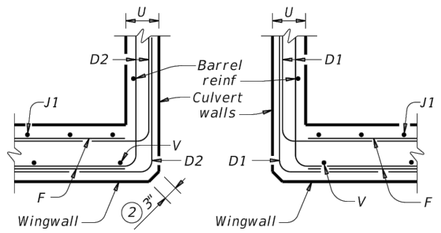
Hw = H + T + C
Lw = (Hw) (SL) ÷ cosine (θ) for Type PW–1
= (Hw – 1') (SL) ÷ cosine (θ) for Type PW–2 and Hw ≥ 4'
= (Hw – 0.5') (SL) ÷ cosine (θ) for Type PW–2 and Hw < 4'

For cast–in–place culverts:
Ltw = [(N) (S) + (N + 1) (U)] ÷ cosine (θ)

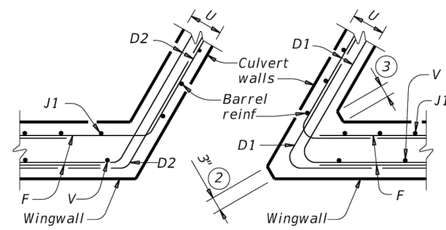
For precast culverts:
Ltw = [(N) (2 U + S) + (N – 1) (0.5')] ÷ cosine (θ)
Total Wingwall Area (two wings ~ SF)
= (2)(Hw)(Lw) for Type PW–1
= (2)(Hw)(Lw) – 6 SF for Type PW–2 and Hw ≥ 4'
= (2)(Hw)(Lw) – 1.5 SF for Type PW–2 and Hw < 4'

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

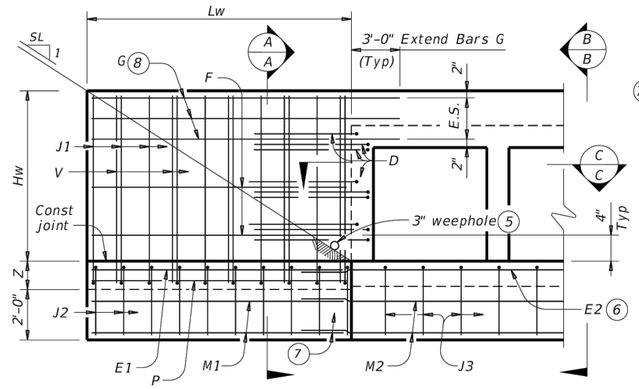
See applicable box culvert standard sheet for S, H, T, and U values.



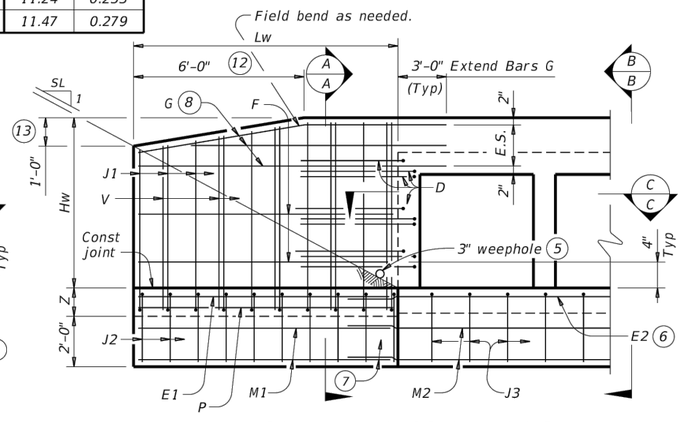
SECTION C-C - PW-1



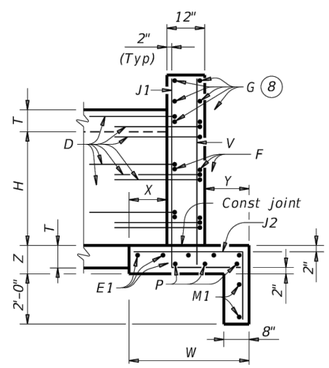
SECTION C-C - PW-2



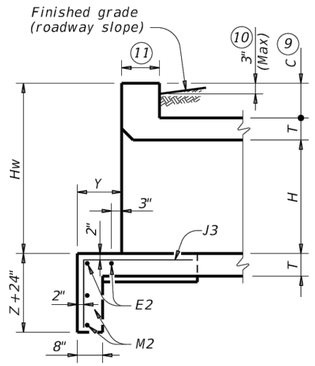
PARTIAL ELEVATION - PW-1



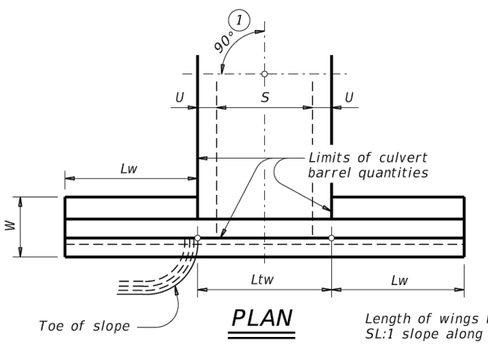
PARTIAL ELEVATION - PW-2



SECTION A-A
(Showing wing reinforcement.)

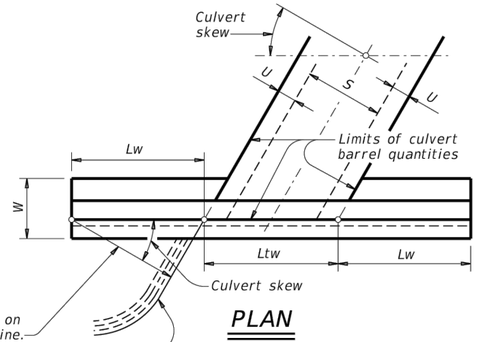


SECTION B-B
(Showing wing reinforcement.)



PLAN

DETAILS FOR NON-SKEWED BOX CULVERTS



PLAN

DETAILS FOR SKEWED BOX CULVERTS
(Showing 30° skew.)

(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'.

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.

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
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REVISIONS				
	DIST	COUNTY		SHEET NO.
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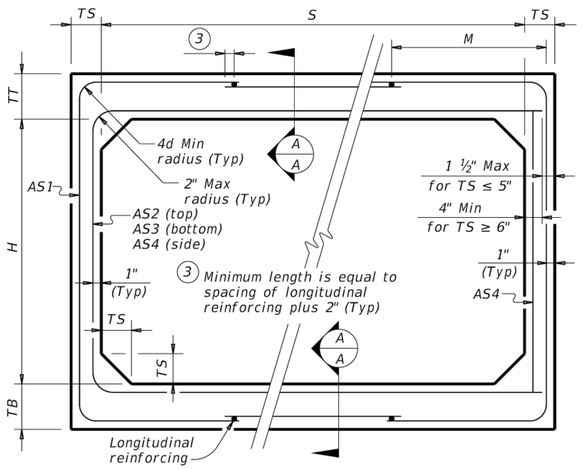
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BOX DATA

SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
6	2	8	7	7	< 2	–	0.23	0.27	0.19	0.17	0.19	0.19	0.17	7.2
6	2	7	7	7	2 < 3	43	0.25	0.21	0.17	0.17	–	–	–	6.8
6	2	7	7	7	3 – 5	43	0.20	0.17	0.17	0.17	–	–	–	6.8
6	2	7	7	7	10	39	0.20	0.17	0.17	0.17	–	–	–	6.8
6	2	7	7	7	15	39	0.26	0.20	0.20	0.17	–	–	–	6.8
6	2	7	7	7	20	39	0.34	0.26	0.26	0.17	–	–	–	6.8
6	2	7	7	7	25	39	0.43	0.32	0.32	0.17	–	–	–	6.8
6	2	7	7	7	30	39	0.52	0.38	0.39	0.17	–	–	–	6.8
6	3	8	7	7	< 2	–	0.20	0.31	0.22	0.17	0.19	0.19	0.17	7.9
6	3	7	7	7	2 < 3	43	0.21	0.24	0.19	0.17	–	–	–	7.5
6	3	7	7	7	3 – 5	39	0.17	0.18	0.17	0.17	–	–	–	7.5
6	3	7	7	7	10	39	0.17	0.18	0.19	0.17	–	–	–	7.5
6	3	7	7	7	15	38	0.22	0.24	0.24	0.17	–	–	–	7.5
6	3	7	7	7	20	38	0.28	0.31	0.31	0.17	–	–	–	7.5
6	3	7	7	7	25	38	0.35	0.38	0.39	0.17	–	–	–	7.5
6	3	7	7	7	30	38	0.42	0.46	0.46	0.17	–	–	–	7.5
6	4	8	7	7	< 2	–	0.19	0.34	0.25	0.17	0.19	0.19	0.17	8.6
6	4	7	7	7	2 < 3	43	0.19	0.27	0.21	0.17	–	–	–	8.2
6	4	7	7	7	3 – 5	39	0.17	0.21	0.19	0.17	–	–	–	8.2
6	4	7	7	7	10	39	0.17	0.20	0.21	0.17	–	–	–	8.2
6	4	7	7	7	15	38	0.18	0.27	0.27	0.17	–	–	–	8.2
6	4	7	7	7	20	38	0.24	0.34	0.35	0.17	–	–	–	8.2
6	4	7	7	7	25	38	0.29	0.43	0.42	0.17	–	–	–	8.2
6	4	7	7	7	30	38	0.35	0.51	0.52	0.17	–	–	–	8.2
6	5	8	7	7	< 2	–	0.19	0.37	0.28	0.17	0.19	0.19	0.17	9.3
6	5	7	7	7	2 < 3	43	0.17	0.30	0.24	0.17	–	–	–	8.9
6	5	7	7	7	3 – 5	43	0.17	0.23	0.21	0.17	–	–	–	8.9
6	5	7	7	7	10	39	0.17	0.22	0.23	0.17	–	–	–	8.9
6	5	7	7	7	15	38	0.17	0.28	0.29	0.17	–	–	–	8.9
6	5	7	7	7	20	38	0.20	0.37	0.38	0.17	–	–	–	8.9
6	5	7	7	7	25	38	0.25	0.45	0.46	0.17	–	–	–	8.9
6	5	7	7	7	30	38	0.30	0.54	0.55	0.17	–	–	–	8.9
6	6	8	7	7	< 2	–	0.19	0.38	0.30	0.17	0.19	0.19	0.17	10
6	6	7	7	7	2 < 3	52	0.17	0.32	0.26	0.17	–	–	–	9.6
6	6	7	7	7	3 – 5	52	0.17	0.24	0.22	0.17	–	–	–	9.6
6	6	7	7	7	10	43	0.17	0.23	0.24	0.17	–	–	–	9.6
6	6	7	7	7	15	39	0.17	0.29	0.31	0.17	–	–	–	9.6
6	6	7	7	7	20	39	0.18	0.38	0.39	0.17	–	–	–	9.6
6	6	7	7	7	25	38	0.23	0.46	0.48	0.17	–	–	–	9.6
6	6	7	7	7	30	38	0.27	0.55	0.57	0.17	–	–	–	9.6

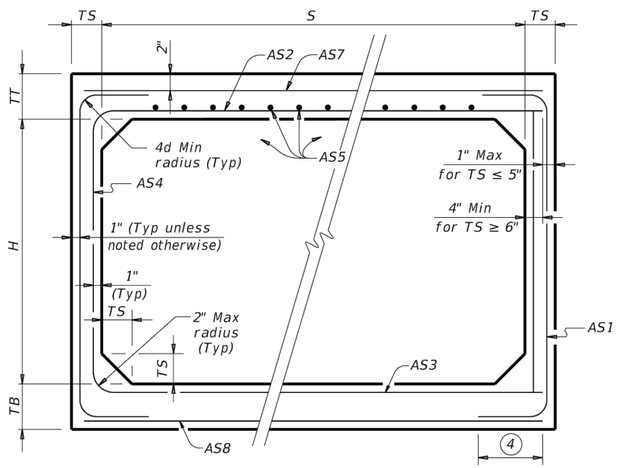
(1) For box length = 8'-0"

(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



CORNER OPTION "A" CORNER OPTION "B"

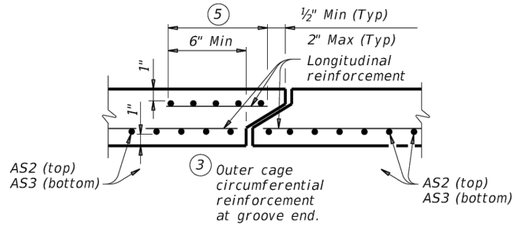
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

(4) Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:

Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.

Provide Class H concrete (f`c = 5,000 psi).

GENERAL NOTES:

Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.

See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.

In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)."

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

SINGLE BOX CULVERTS PRECAST

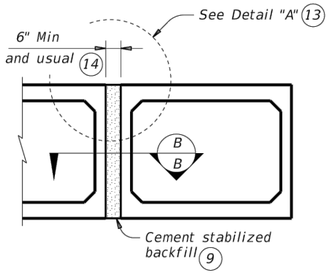
6'-0" SPAN

SCP-6

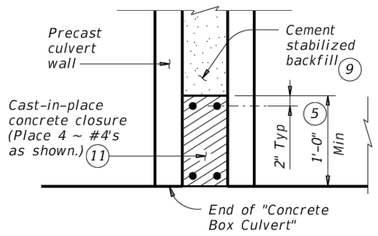
FILE: CD-SCP06-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				151

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.

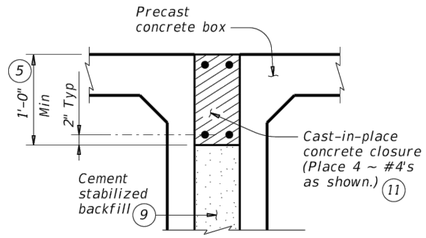
DATE:
FILE:



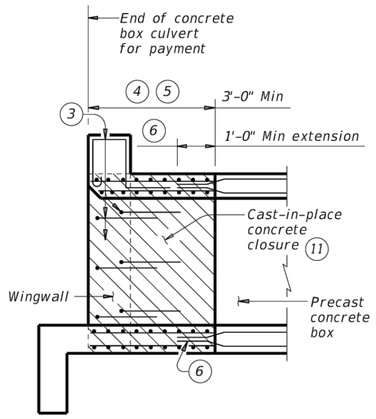
MULTIPLE UNIT PLACEMENT



SECTION B-B

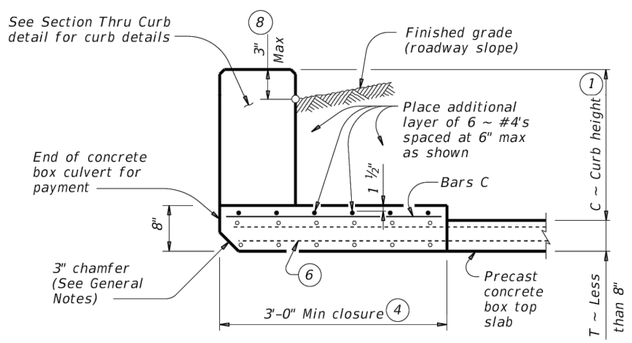


DETAIL "A" (13)

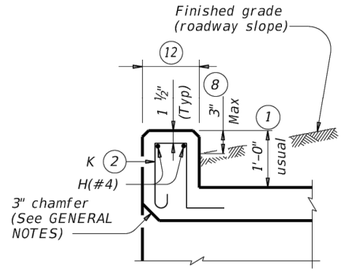


WINGWALL CONNECTION

(Also applies to safety end treatment.)

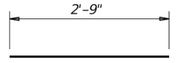


SECTION THRU TOP SLABS LESS THAN 8"

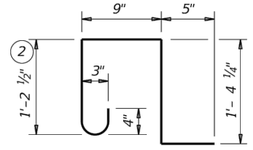


SECTION THRU CURB

QUANTITIES PER FOOT OF CURB (10)	
Reinforcing Steel	4.12 Lb
Concrete	0.037 CY



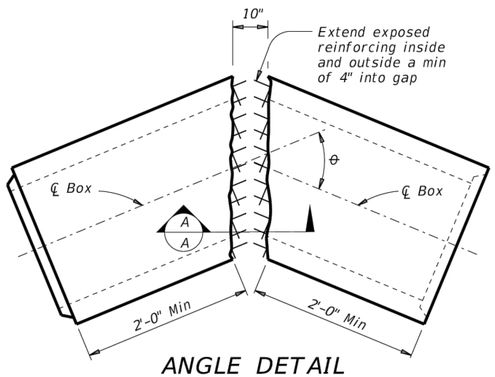
BARS C (#4)
(Spa = 1'–0" Max)



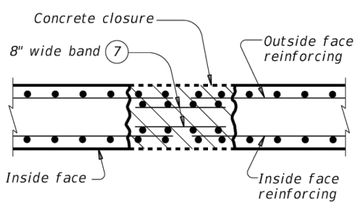
BARS K (#4)
(Spa = 1'–0" Max)
(Length = 4'–2")

1. 0" Min to 5'–0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail, bicycle 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.
2. For curbs less than 1'–0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.
3. Extend curb, wingwall, or safety end treatment reinforcing into concrete closure. Bend or trim, as necessary, any reinforcing that does not fit into closure area.
4. Provide a 3'–0" Min cast–in–place concrete closure. Break back boxes in the field or cast boxes short. Provide bands of reinforcing in the closure that are the same size and spacing as in the precast box section. Provide #4 longitudinal reinforcement spaced at 12 inches Max within the closure. Except where shown otherwise, construct the cast–in–place closure flush with the inside and outside faces of the precast box section.
5. For multiple unit placements, adjust the length of the closure for the interior walls as necessary. Provide a 3'–0" Min cast–in–place closure in the top slab, bottom slab, and exterior wall. See Section B–B detail when interior walls are cast full length.
6. Extend precast box reinforcing a minimum of 1'–0" into concrete closure (Typ).
7. Place bands of reinforcing matching the inside and outside face reinforcing in the gaps of the top and bottom slabs. Place a band matching the outside face reinforcing of the wall in the gaps of the walls (placed in the outside face only). Tack weld the bands to the exposed reinforcing at each point of contact.
8. 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.

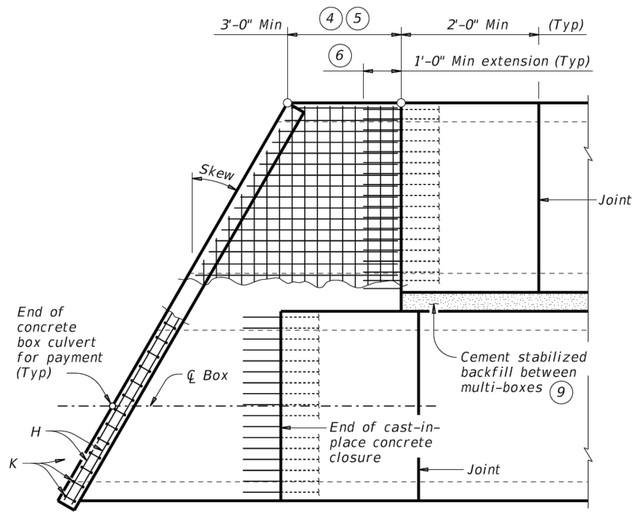
   Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
9. Cement stabilized backfill between boxes is considered part of the box culvert for payment.
10. All curb concrete and reinforcing is considered part of the box culvert for payment.
11. Any additional concrete and reinforcing required for the closures will be considered subsidiary to the box culvert for payment.
12. 1'–0" typical. 2'–3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.
13. For multiple unit placement with overlay, with 1 to 2 course surface treatment, or with the top slab as the final riding surface, provide wall closure as shown in Detail "A".
14. This dimension may be increased with approval of the Engineer to allow the precast boxes to be tunneled or jacked in accordance with Item 476, "Jacking, Boring, or Tunneling Pipe or Box." No payment will be made for any additional material in the gap between adjacent boxes.



ANGLE DETAIL



SECTION A-A



PLAN OF SKEWED ENDS

(Showing multi–box placement.)

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.
Provide ASTM A1064 welded wire reinforcement.
Provide Class C concrete (f'c = 3,600 psi) for the closures.
Provide cement stabilized backfill meeting the requirements of Item 400, "Excavation and Backfill for Structures."
Any additional concrete required for the closures will be considered subsidiary to the box culvert.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
Refer to the Single Box Culverts Precast (SCP) standard sheets for details and notes not shown.
Chamfer the bottom edge of the top slab closure 3 inches at culvert closure ends.

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

HL93 LOADING

Texas Department of Transportation

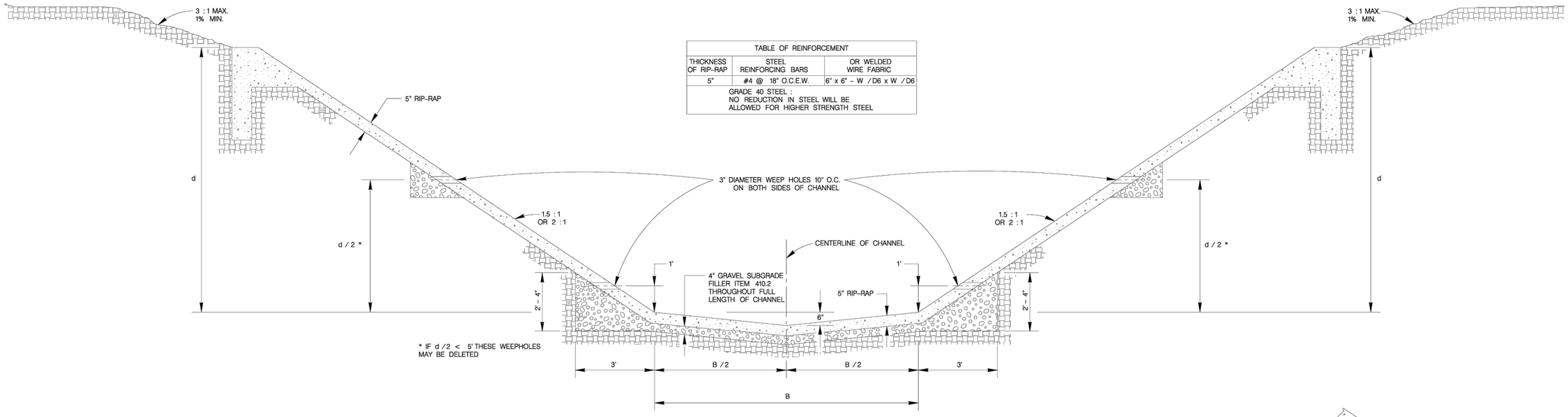
Bridge Division Standard

BOX CULVERTS PRECAST MISCELLANEOUS DETAILS

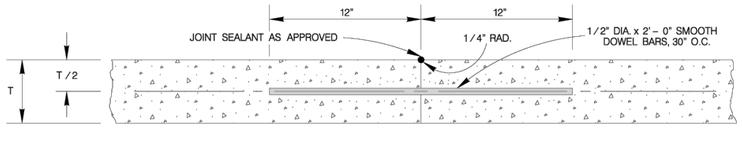
SCP-MD

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				152

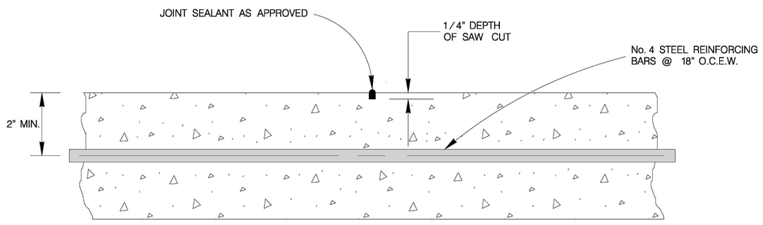
TABLE OF REINFORCEMENT		
THICKNESS OF RIP-RAP	STEEL REINFORCING BARS	OR WELDED WIRE FABRIC
5"	#4 @ 18" O.C.E.W.	6" x 6" – W /D6 x W /D6
GRADE 40 STEEL : NO REDUCTION IN STEEL WILL BE ALLOWED FOR HIGHER STRENGTH STEEL		



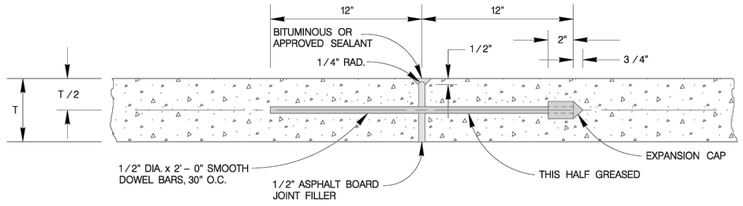
TYPICAL CHANNEL SECTION
LOOKING DOWNSTREAM
SCALE : 1" = 4'



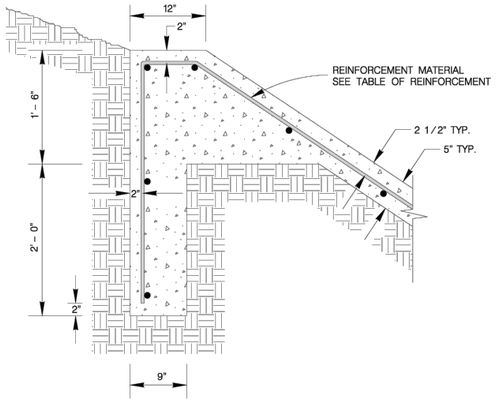
CONVERSE CONTRACTION
OR CONSTRUCTION JOINT
SCALE : 1" = 1'



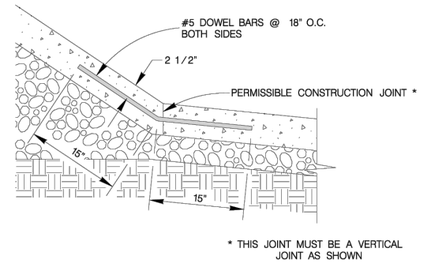
"SAW CUT" CONTRACTION JOINT
SCALE : 1" = 6"



TRANSVERSE EXPANSION JOINT
SCALE : 1" = 1'

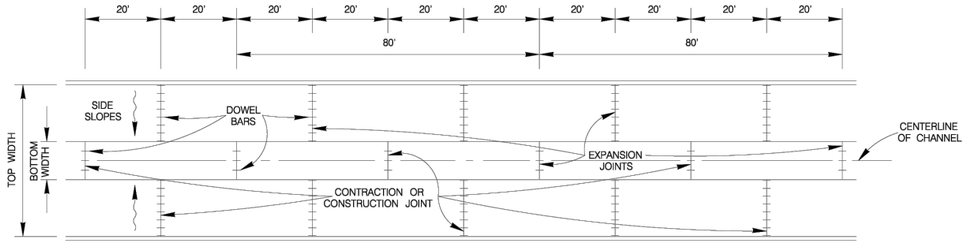


REINFORCEMENT DETAIL
TOE–DOWN
SCALE : 1" = 2'

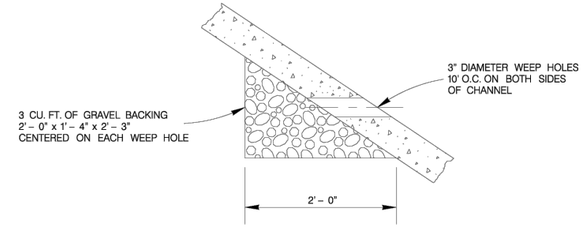


* THIS JOINT MUST BE A VERTICAL JOINT AS SHOWN

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

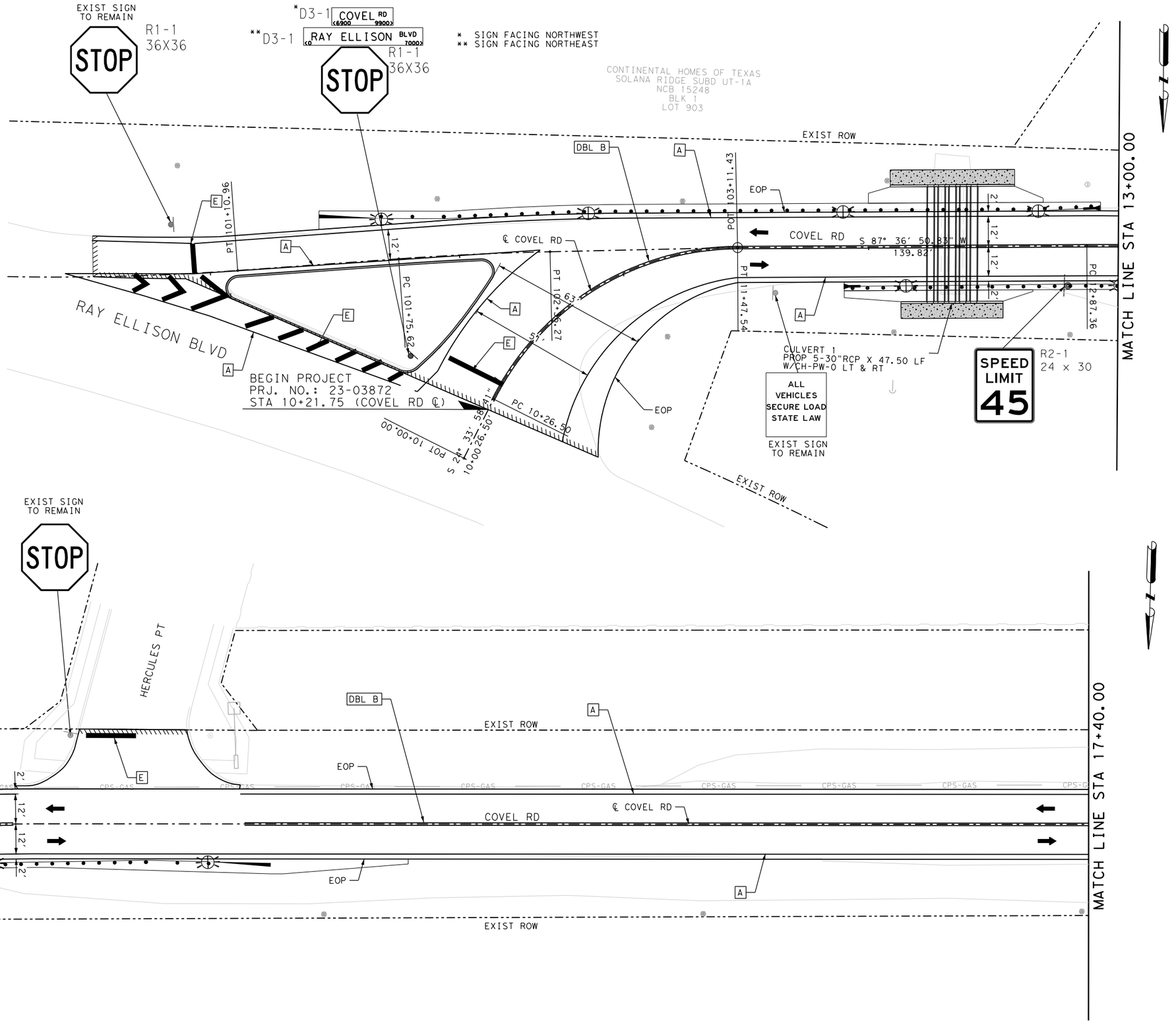
1. CONCRETE FOR CHANNEL RIP-RAP SHALL BE CLASS "A" 3000 P.S.I.
2. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS UNLESS OTHERWISE SHOWN.
3. ALL REINFORCEMENT STEEL SHALL MEET ASTM DESIGNATIONS AS CALLED FOR IN THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION".
4. NEW RIP-RAP 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

% SUBMITTAL	PROJECT NO.:		DATE:
DRWN. BY: V. VASQUEZ	DSGN. BY:	CHKD. BY:	SHEET NO.: 153 OF 336



LEGEND

- EXISTING / REMOVE SIGN
- PROPOSED SIGN
- PROPOSED SIGN (BACK TO BACK)
- TRAFFIC DIRECTION
- INSTL OM ASSM (OM-2Z)(WFLX)GND
- INS DEL ASSM(D-SW)SZ 1(WFLX)GF2(BI)
- INS DEL ASSM(D-SW)SZ 1(BRF)CTB(BI)
- [A] SLD 8" WIDE WHITE LINE
- [B] SLD 4" WIDE YELLOW LINE
- [C] BRKN SLD 4" WIDE YELLOW LINE
- [D] TRAFFIC BUTTON (TYPE II-A-A)
- [E] SLD 24" WIDE WHITE LINE

BID ITEM	DESCRIPTION	UNIT	QTY
531.3	R1-1 STOP (30")(HIGH INTENSITY)	EA	1
531.57	9" STREET NAME SIGN	EA	2
531.6	R2-1 SPEED LIMIT (24" X 30")	EA	1
535.1	4 INCH WIDE YELLOW LINE	LF	1250
535.4	8 INCH WIDE WHITE LINE	LF	1868
535.7	24 INCH WIDE WHITE LINE	LF	162

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER

7/8/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

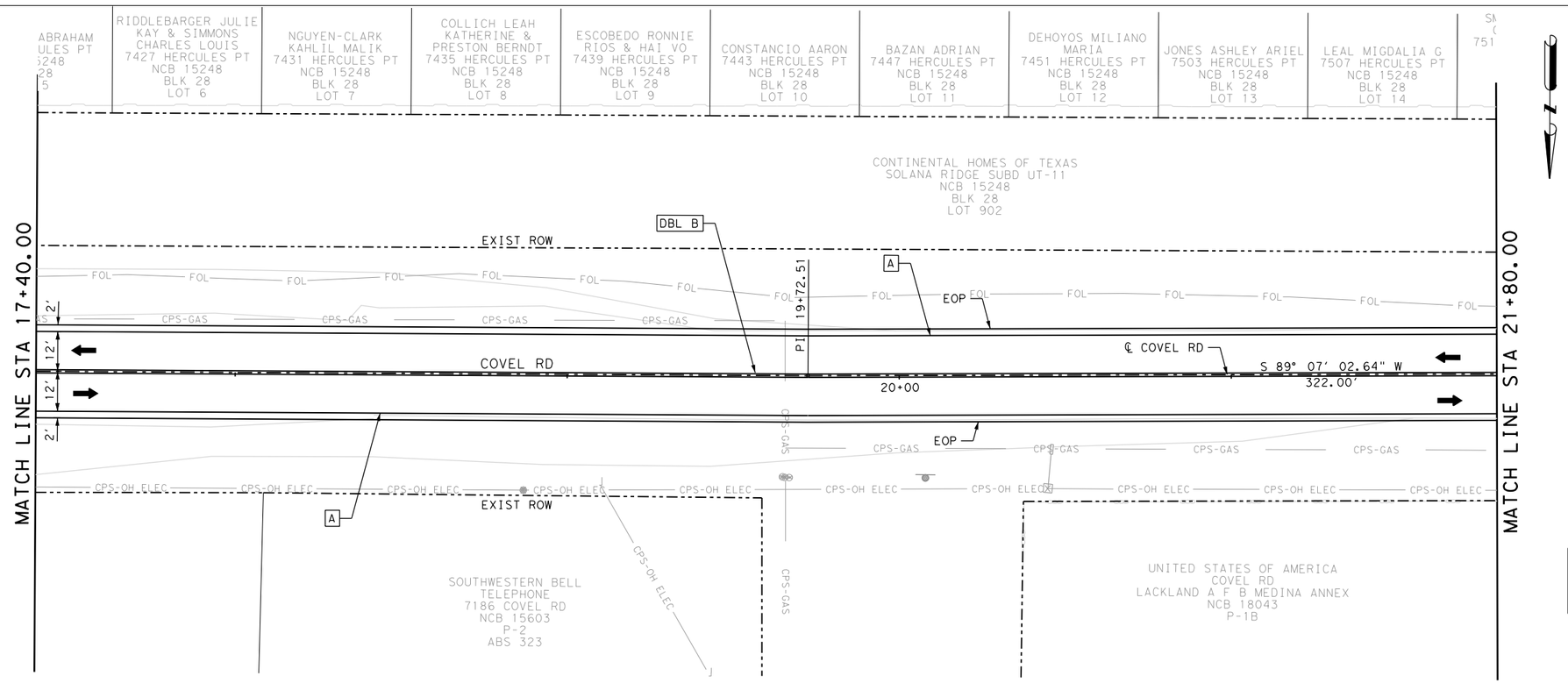
COVEL RD IMPROVEMENTS

SIGN & PAVEMENT MARKINGS LAYOUT

SHEET 1 OF 9

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LEGEND

- EXISTING / REMOVE SIGN
- PROPOSED SIGN
- PROPOSED SIGN (BACK TO BACK)
- TRAFFIC DIRECTION
- INSTL OM ASSM (OM-2Z)(WFLX)GND
- INS DEL ASSM(D-SW)SZ 1(WFLX)GF2(BI)
- INS DEL ASSM(D-SW)SZ 1(BRF)CTB(BI)
- [A] SLD 8" WIDE WHITE LINE
- [B] SLD 4" WIDE YELLOW LINE
- [C] BRKN SLD 4" WIDE YELLOW LINE
- [D] TRAFFIC BUTTON (TYPE II-A-A)
- [E] SLD 24" WIDE WHITE LINE

BID ITEM	DESCRIPTION	UNIT	QTY
531.45	W1-8 CHEVRON ALIGNMENT(18" X 24")	EA	4
535.1	4 INCH WIDE YELLOW LINE	LF	1760
535.4	8 INCH WIDE WHITE LINE	LF	1760

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER

7/8/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

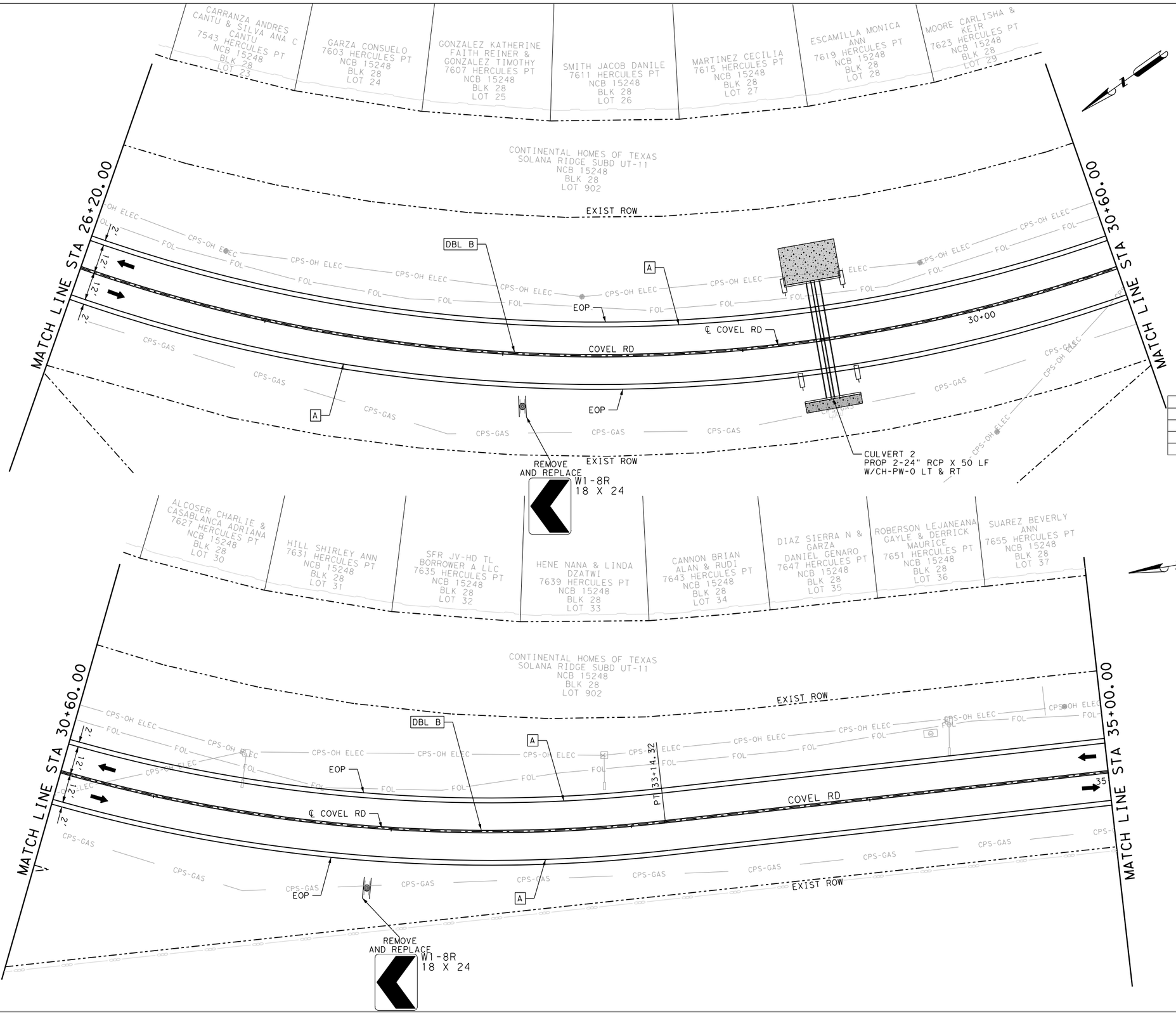
COVEL RD IMPROVEMENTS

SIGN & PAVEMENT MARKINGS LAYOUT

SHEET 2 OF 9

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LEGEND

- EXISTING / REMOVE SIGN
- PROPOSED SIGN
- PROPOSED SIGN (BACK TO BACK)
- TRAFFIC DIRECTION
- INSTL OM ASSM (OM-2Z)(WFLX)GND
- INS DEL ASSM(D-SW)SZ 1(WFLX)GF2(BI)
- INS DEL ASSM(D-SW)SZ 1(BRF)CTB(BI)
- [A] SLD 8" WIDE WHITE LINE
- [B] SLD 4" WIDE YELLOW LINE
- [C] BRKN SLD 4" WIDE YELLOW LINE
- [D] TRAFFIC BUTTON (TYPE II-A-A)
- [E] SLD 24" WIDE WHITE LINE

BID ITEM	DESCRIPTION	UNIT	QTY
531.45	W1-8 CHEVRON ALIGNMENT(18" X 24")	EA	4
535.1	4 INCH WIDE YELLOW LINE	LF	1760
535.4	8 INCH WIDE WHITE LINE	LF	1760
658 6099	INSTL OM ASSM (OM-2Z)(WFLX)GND	EA	4

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
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7/8/2025

GANNETT FLEMING
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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

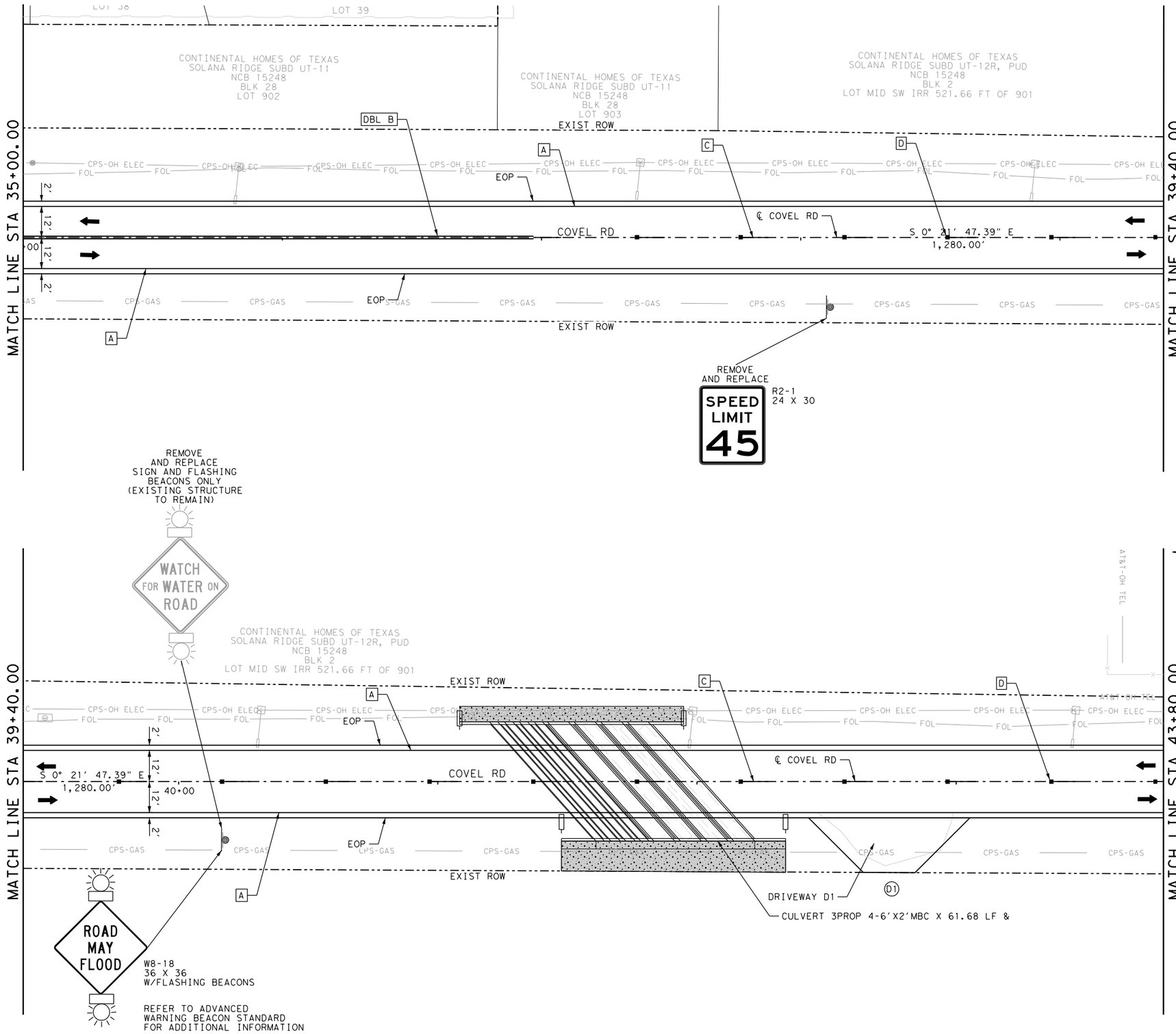
COVEL RD IMPROVEMENTS

SIGN & PAVEMENT MARKINGS LAYOUT

SHEET 3 OF 9

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LEGEND

- EXISTING / REMOVE SIGN
- PROPOSED SIGN
- PROPOSED SIGN (BACK TO BACK)
- TRAFFIC DIRECTION
- INSTL OM ASSM (OM-2Z)(WFLX)GND
- INS DEL ASSM(D-SW)SZ 1(WFLX)GF2(BI)
- INS DEL ASSM(D-SW)SZ 1(BRF)CTB(BI)
- [A] SLD 8" WIDE WHITE LINE
- [B] SLD 4" WIDE YELLOW LINE
- [C] BRKN SLD 4" WIDE YELLOW LINE
- [D] TRAFFIC BUTTON (TYPE II-A-A)
- [E] SLD 24" WIDE WHITE LINE

BID ITEM	DESCRIPTION	UNIT	QTY
531.6	R2-1 SPEED LIMIT (24" X 30")	EA	1
531.9	SPECIAL SIGN	EA	1
535.1	4 INCH WIDE YELLOW LINE	LF	565
535.4	8 INCH WIDE WHITE LINE	LF	1760
537.6	TRAFFIC BUTTON (TYPE II-A-A)	EA	17
685.1	INSTALL FLASHING BEACON ASSEMBLIES	EA	1
658 6099	INSTL OM ASSM (OM-2Z)(WFLX)GND	EA	4

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER

7/8/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

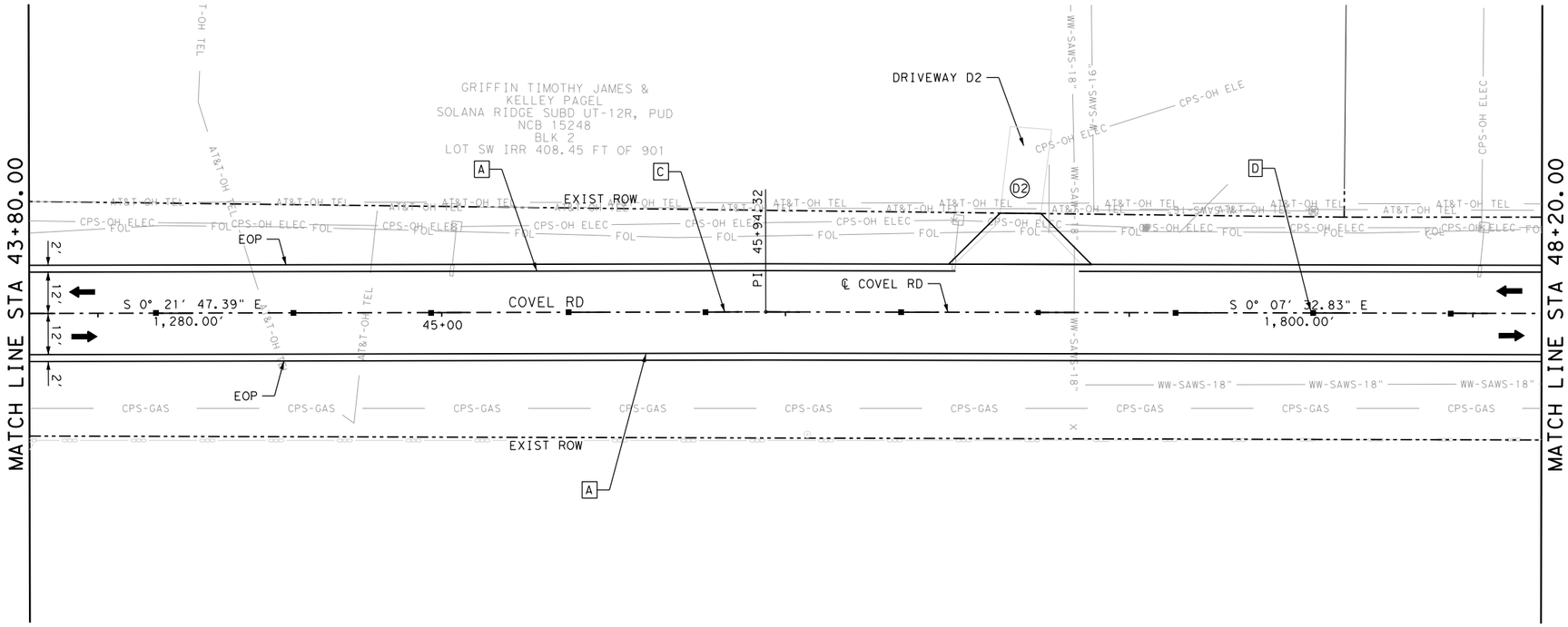
COVEL RD IMPROVEMENTS

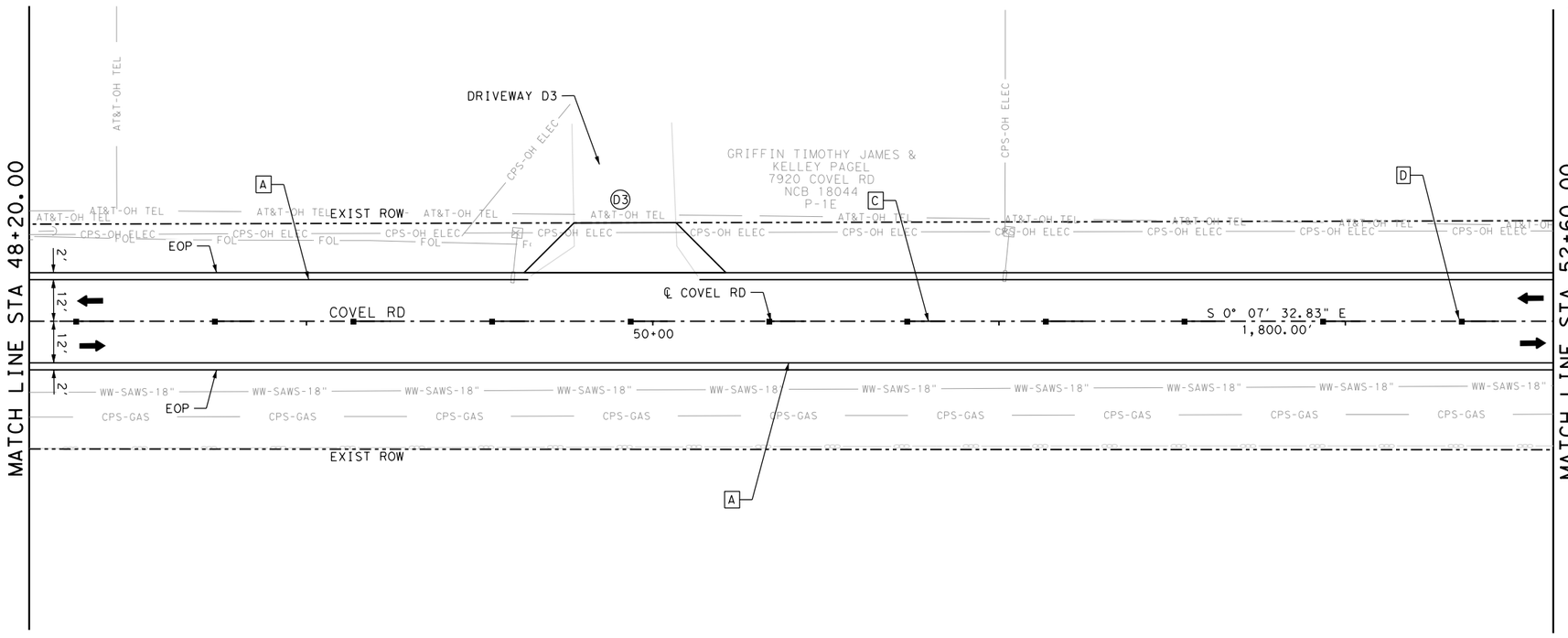
SIGN & PAVEMENT MARKINGS LAYOUT

SHEET 4 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: RT	DSGN. BY: RT	CHKD. BY: DS	SHT NO.: 157

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LEGEND

- EXISTING / REMOVE SIGN
- PROPOSED SIGN
- PROPOSED SIGN (BACK TO BACK)
- TRAFFIC DIRECTION
- INSTL OM ASSM (OM-2Z)(WFLX)GND
- INS DEL ASSM(D-SW)SZ 1(WFLX)GF2(BI)
- INS DEL ASSM(D-SW)SZ 1(BRF)CTB(BI)
- [A] SLD 8" WIDE WHITE LINE
- [B] SLD 4" WIDE YELLOW LINE
- [C] BRKN SLD 4" WIDE YELLOW LINE
- [D] TRAFFIC BUTTON (TYPE II-A-A)
- [E] SLD 24" WIDE WHITE LINE

BID ITEM	DESCRIPTION	UNIT	QTY
535.1	4 INCH WIDE YELLOW LINE	LF	220
535.4	8 INCH WIDE WHITE LINE	LF	1760
537.6	TRAFFIC BUTTON (TYPE II-A-A)	EA	22

20 10 0 20 40

HORIZONTAL SCALE: 1"=40′

STATE OF TEXAS
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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

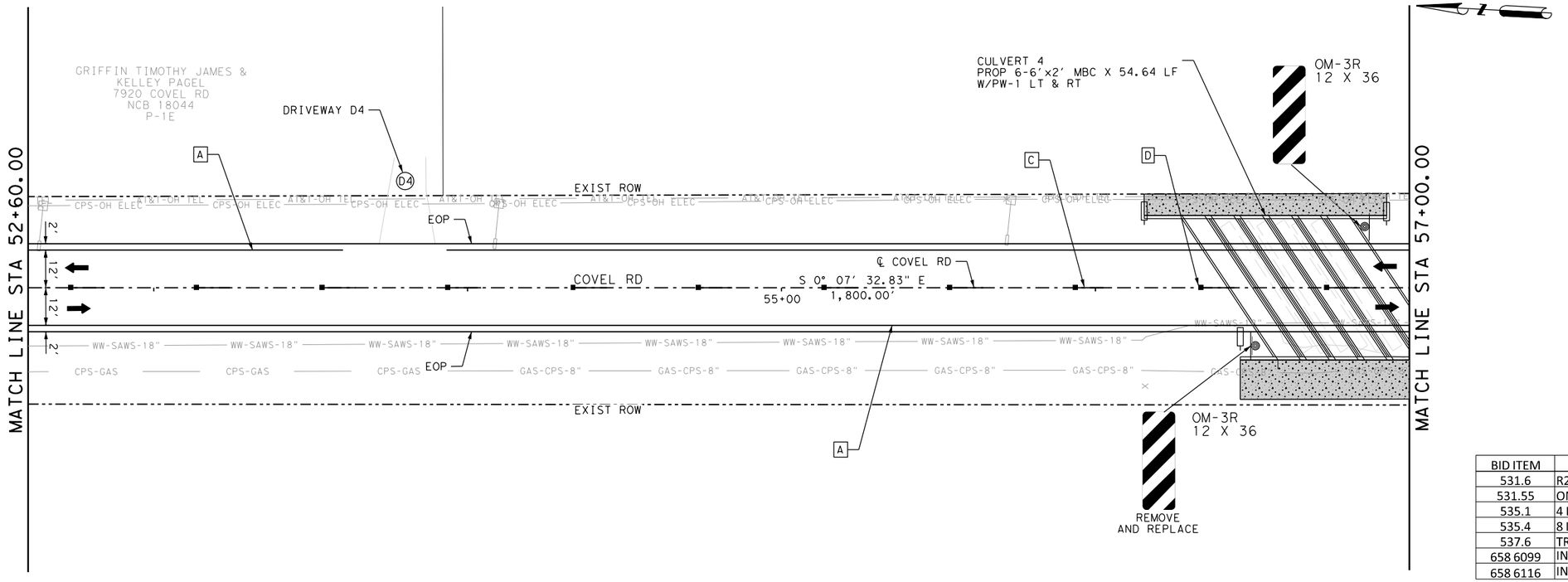
COVEL RD IMPROVEMENTS

SIGN & PAVEMENT MARKINGS LAYOUT

SHEET 5 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
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LEGEND

- EXISTING / REMOVE SIGN
- PROPOSED SIGN
- PROPOSED SIGN (BACK TO BACK)
- TRAFFIC DIRECTION
- INSTL OM ASSM (OM-2Z)(WFLX)GND
- INS DEL ASSM(D-SW)SZ 1(WFLX)GF2(BI)
- INS DEL ASSM(D-SW)SZ 1(BRF)CTB(BI)
- [A] SLD 8" WIDE WHITE LINE
- [B] SLD 4" WIDE YELLOW LINE
- [C] BRKN SLD 4" WIDE YELLOW LINE
- [D] TRAFFIC BUTTON (TYPE II-A-A)
- [E] SLD 24" WIDE WHITE LINE

BID ITEM	DESCRIPTION	UNIT	QTY
531.6	R2-1 SPEED LIMIT (24" X 30")	EA	1
531.55	OM-3 TYPE 3 OBJECT MARKER (12" X 36")	EA	2
535.1	4 INCH WIDE YELLOW LINE	LF	220
535.4	8 INCH WIDE WHITE LINE	LF	1760
537.6	TRAFFIC BUTTON (TYPE II-A-A)	EA	22
658 6099	INSTL OM ASSM (OM-2Z)(WFLX)GND	EA	4
658 6116	INS DEL ASSM(D-SW)SZ 1(WFLX)GF2(BI)	EA	1

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
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LICENSED
PROFESSIONAL ENGINEER
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GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

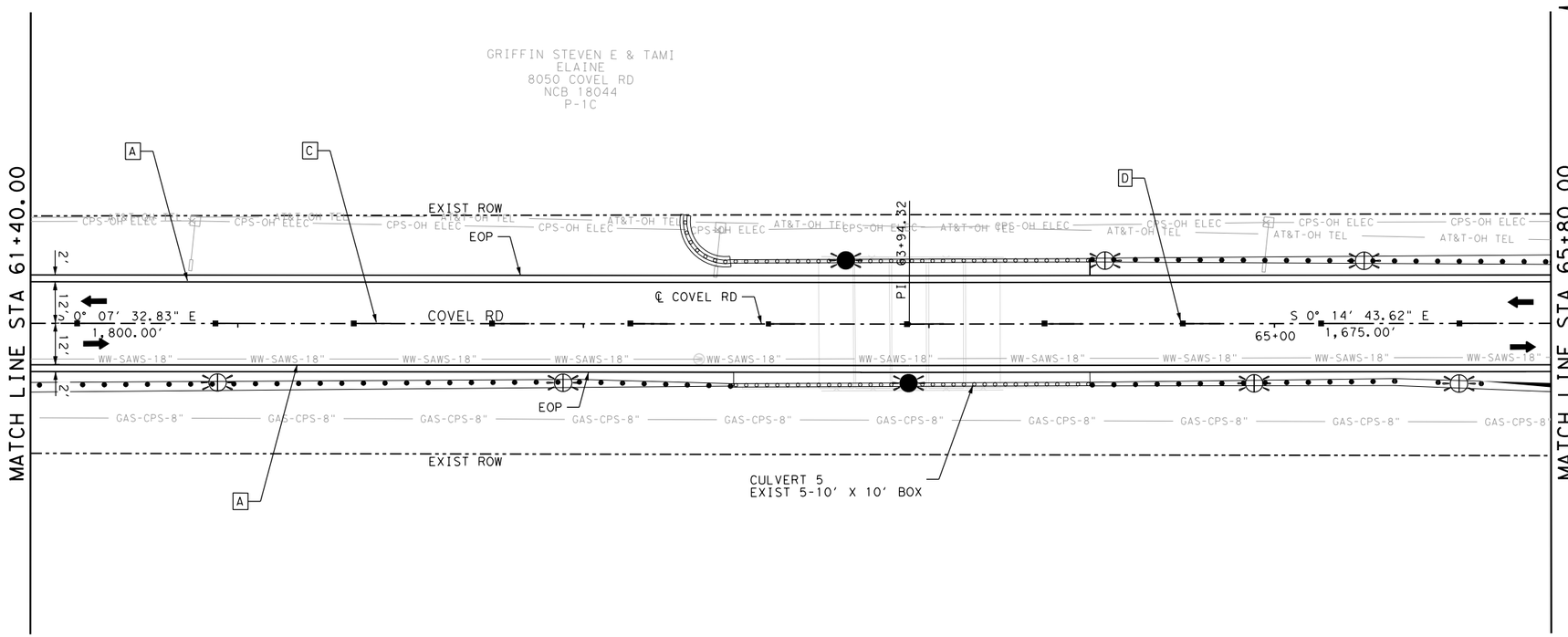
COVEL RD IMPROVEMENTS

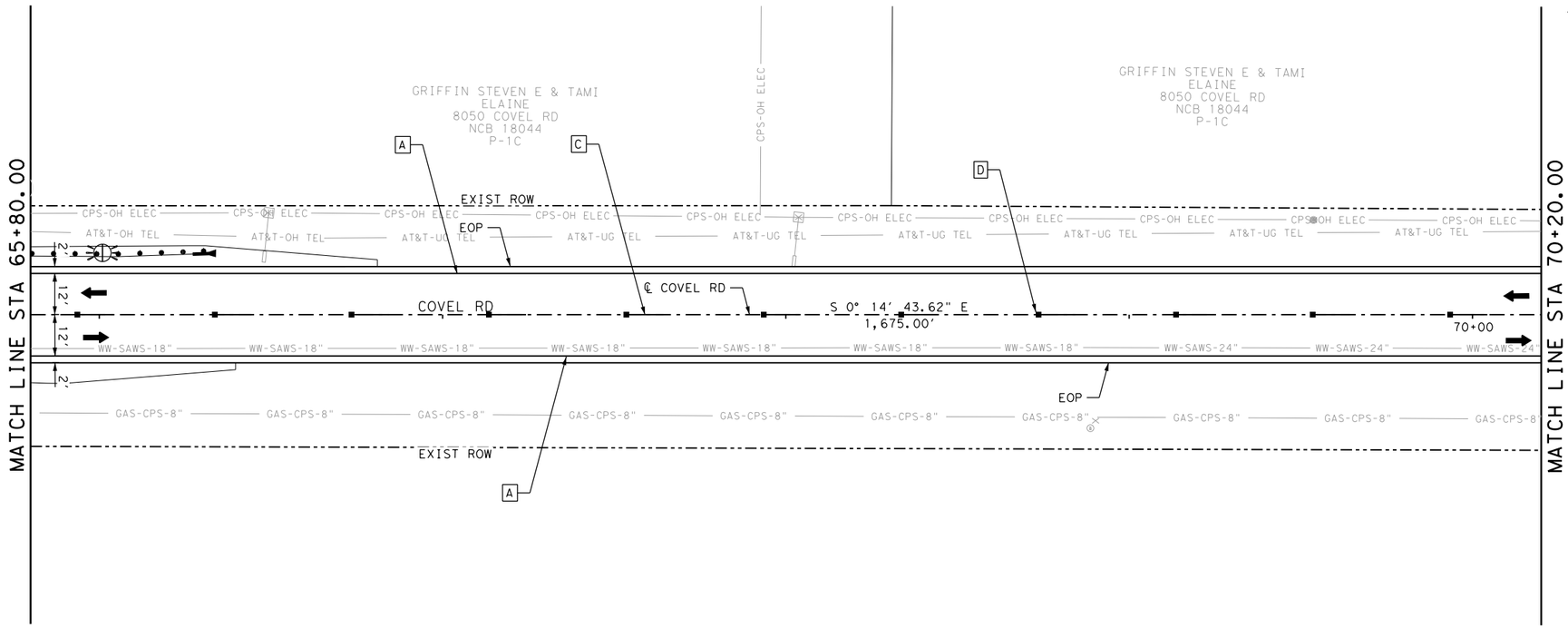
SIGN & PAVEMENT MARKINGS LAYOUT

SHEET 6 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
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LEGEND

- EXISTING / REMOVE SIGN
- PROPOSED SIGN
- PROPOSED SIGN (BACK TO BACK)
- TRAFFIC DIRECTION
- INSTL OM ASSM (OM-2Z)(WFLX)GND
- INS DEL ASSM(D-SW)SZ 1(WFLX)GF2(BI)
- INS DEL ASSM(D-SW)SZ 1(BRF)CTB(BI)
- [A] SLD 8" WIDE WHITE LINE
- [B] SLD 4" WIDE YELLOW LINE
- [C] BRKN SLD 4" WIDE YELLOW LINE
- [D] TRAFFIC BUTTON (TYPE II-A-A)
- [E] SLD 24" WIDE WHITE LINE

BID ITEM	DESCRIPTION	UNIT	QTY
535.1	4 INCH WIDE YELLOW LINE	LF	220
535.4	8 INCH WIDE WHITE LINE	LF	1760
537.6	TRAFFIC BUTTON (TYPE II-A-A)	EA	22
658 6116	INS DEL ASSM(D-SW)SZ 1(WFLX)GF2(BI)	EA	7
658 6120	INS DEL ASSM(D-SW)SZ 1(BRF)CTB(BI)	EA	2

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
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LICENSED
PROFESSIONAL ENGINEER

7/8/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

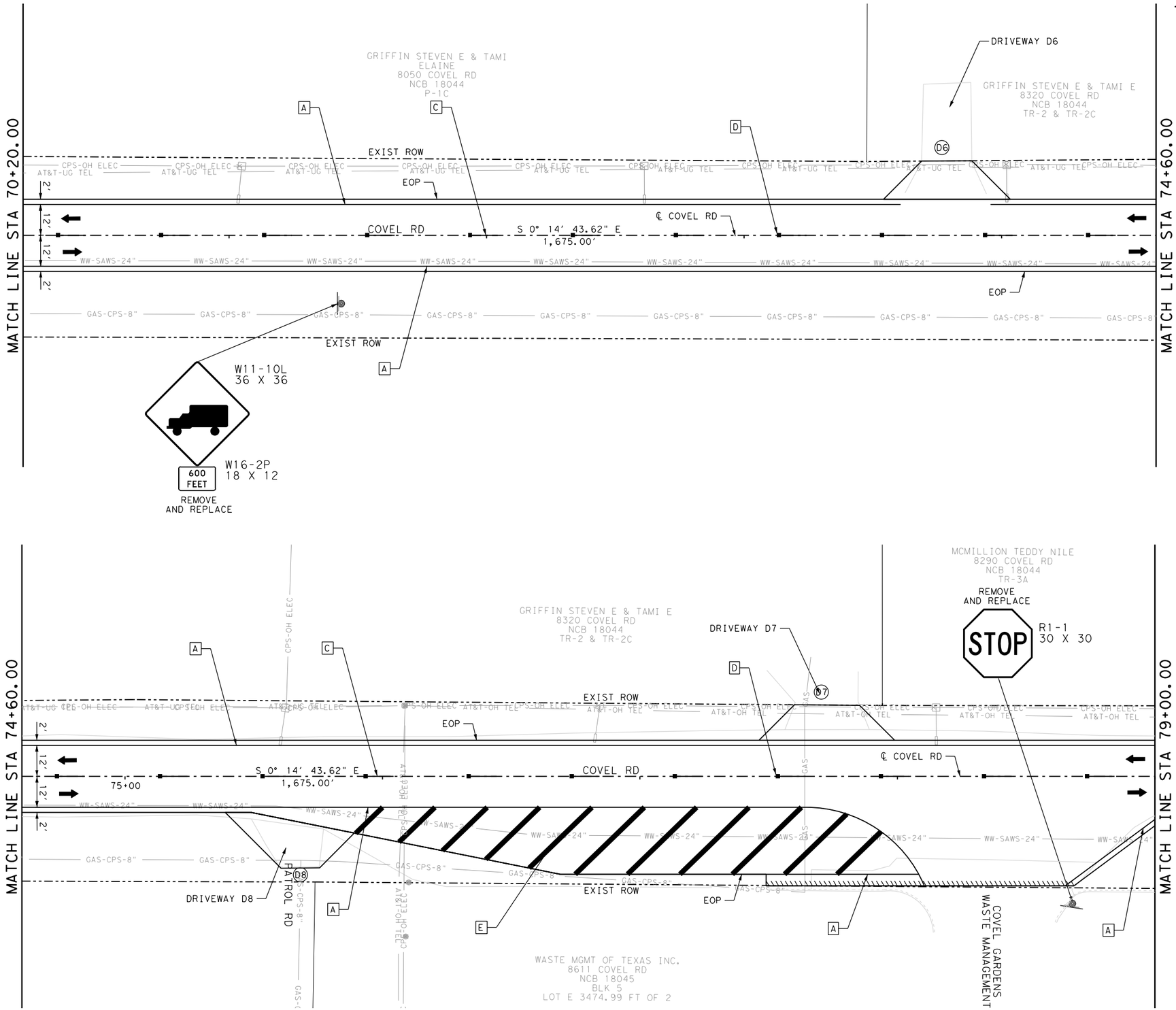
COVEL RD IMPROVEMENTS

SIGN & PAVEMENT MARKINGS LAYOUT

SHEET 7 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
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LEGEND

- EXISTING / REMOVE SIGN
- PROPOSED SIGN
- PROPOSED SIGN (BACK TO BACK)
- TRAFFIC DIRECTION
- INSTL OM ASSM (OM-2Z)(WFLX)GND
- INS DEL ASSM(D-SW)SZ 1(WFLX)GF2(BI)
- INS DEL ASSM(D-SW)SZ 1(BRF)CTB(BI)
- [A] SLD 8" WIDE WHITE LINE
- [B] SLD 4" WIDE YELLOW LINE
- [C] BRKN SLD 4" WIDE YELLOW LINE
- [D] TRAFFIC BUTTON (TYPE II-A-A)
- [E] SLD 24" WIDE WHITE LINE

BID ITEM	DESCRIPTION	UNIT	QTY
531.59	SPECIAL SIGN	EA	2
535.1	4 INCH WIDE YELLOW LINE	LF	220
535.4	8 INCH WIDE WHITE LINE	LF	1750
535.7	24 INCH WIDE WHITE LINE	LF	327
537.6	TRAFFIC BUTTON (TYPE II-A-A)	EA	22

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
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GANNETT FLEMING
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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

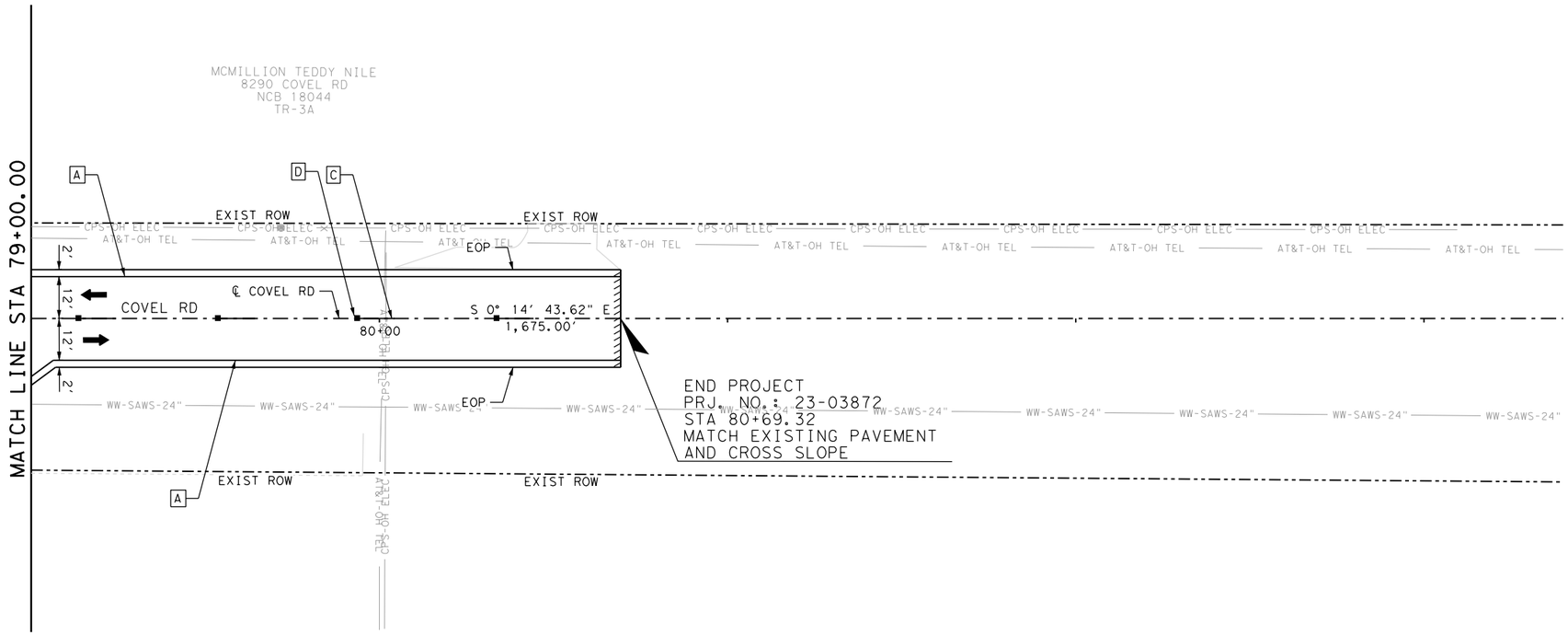
COVEL RD IMPROVEMENTS

SIGN & PAVEMENT MARKINGS LAYOUT

SHEET 8 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
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LEGEND

- EXISTING / REMOVE SIGN
- PROPOSED SIGN
- PROPOSED SIGN (BACK TO BACK)
- TRAFFIC DIRECTION
- INSTL OM ASSM (OM-2Z)(WFLX)GND
- INS DEL ASSM(D-SW)SZ 1(WFLX)GF2(BI)
- INS DEL ASSM(D-SW)SZ 1(BRF)CTB(BI)
- [A] SLD 8" WIDE WHITE LINE
- [B] SLD 4" WIDE YELLOW LINE
- [C] BRKN SLD 4" WIDE YELLOW LINE
- [D] TRAFFIC BUTTON (TYPE II-A-A)
- [E] SLD 24" WIDE WHITE LINE

BID ITEM	DESCRIPTION	UNIT	QTY
535.1	4 INCH WIDE YELLOW LINE	LF	40
535.4	8 INCH WIDE WHITE LINE	LF	340
537.6	TRAFFIC BUTTON (TYPE II-A-A)	EA	4

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER

7/8/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

SIGN & PAVEMENT MARKINGS LAYOUT

SHEET 9 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
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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. SUCH PROTECTION SHALL INCLUDE THE PERIOD AFTER SIGNS ARE REMOVED FROM INSTALLATION AND STORED BY THE CONTRACTOR OR DELIVERED TO TRAFFIC OPERATIONS. THE ASSISTANT TRAFFIC SUPERINTENDENT (207-7765) MUST BE NOTIFIED 48 HOURS IN ADVANCE PRIOR TO DELIVERY.

2.) AFTER SIGNS ARE REMOVED FROM INSTALLATION AND ARE BEING STORED BY THE CONTRACTOR, THE CONTRACTOR SHALL CONTACT THE TRAFFIC OPERATIONS SECTION OF THE PUBLIC WORKS DEPARTMENT (207-7765) AND ARRANGE FOR A CONVENIENT TIME TO DELIVER CITY SIGNS AND POLES.

3.) PRIOR TO THE START OF CONSTRUCTION, ALL EXISTING SIGNS WITHIN THE AREA OF CONSTRUCTION WILL BE INVENTORIED AND DOCUMENTED JOINTLY BY THE TRAFFIC ENGINEERING (207-7720) CONSTRUCTION INSPECTION AND THE CONTRACTOR. THIS DOCUMENT WILL BE JOINTLY SIGNED BY BOTH PARTIES REFLECTING THE SIGN TYPE, SIGN SIZE, SIGN CONDITION, SIGN LOCATION, REFLECTIVITY ADEQUACY, ETC. THE CONTRACTOR IS HELD ACCOUNTABLE FOR THESE SIGNS THROUGHOUT THE PROJECT AND AT THE PROJECTS COMPLETION.

4.) ALL GROUND MOUNTED SIGNS SHALL USE HIGH INTENSITY REFLECTIVE SHEETING.

5.) ALL OVERHEAD SIGNS SHALL USE DIAMOND GRADE REFLECTIVE SHEETING.

6.) ALL BLANKS TO BE ALUMINUM ALLOY NO. 5052-H38.

7.) "T" DENOTES THICKNESS OF SIGN BLANKS.

8.) 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.

9.) SIGN BLANK CORNERS TO BE ROUNDED AS SHOWN ON EACH DETAIL.

10.) ALL SIGN BLANK TO BE ETCHED, DEGREASED, AND HAVE AN ALODINE FINISH PRIOR TO APPLICATION OF LEGENDS.

11.) ALL DETAILS ARE NOT TO SCALE.

12.) ALL DIMENSIONS ARE IN INCHES.

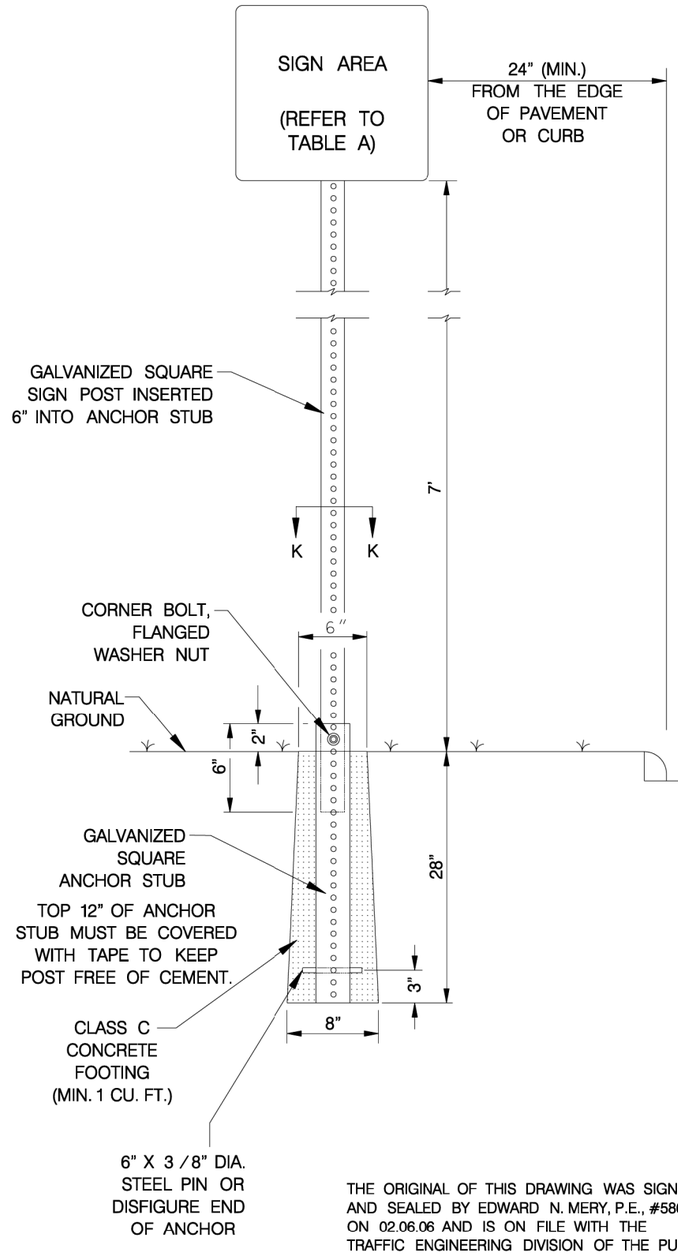
13.) ALL SIGNS SHALL BE MANUFACTURED AND INSTALLED IN CONFORMANCE TO THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND STANDARD HIGHWAY SIGNS (FHWA) LATEST EDITION.

14.) REINSTALLATION OF PREVIOUSLY EXISTING SIGNS, WHERE REQUIRED BY THE CITY TRAFFIC ENGINEER, SHALL BE AT THE CONTRACTOR'S EXPENSE.

TYPICAL GROUND SIGN INSTALLATION

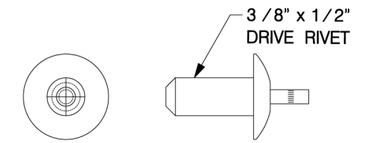
TYPE "U" MOUNT

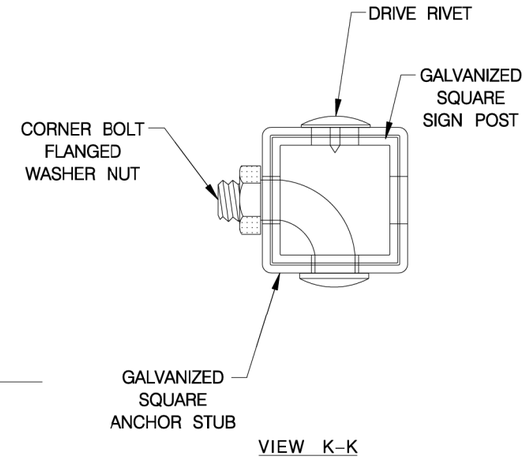
PERFORATED SQUARE METAL TUBING (DRIVEABLE)



METAL TUBING	SIGN AREA	
	≤ 10 SQ. FT.	> 10 SQ. FT.
GALVANIZED SQUARE 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" (14 GAUGE)	2-1/4" x 2-1/4" (14 GAUGE)

TABLE A





VIEW K-K

THE ORIGINAL OF THIS DRAWING WAS SIGNED AND SEALED BY EDWARD N. MERY, P.E., #58698 ON 02.06.06 AND IS ON FILE WITH THE TRAFFIC ENGINEERING DIVISION OF THE PUBLIC WORKS DEPARTMENT, CITY OF SAN ANTONIO.

FEBRUARY 2006

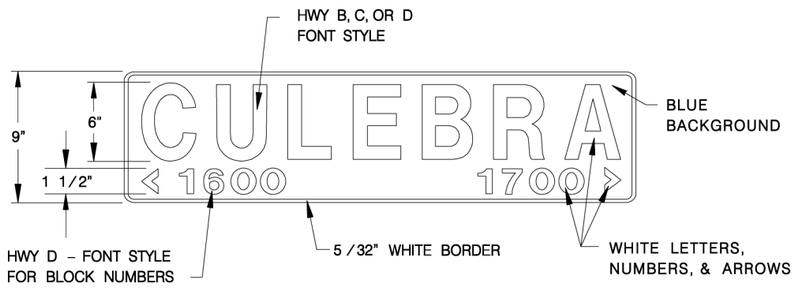
CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS

TRAFFIC SIGN STANDARDS

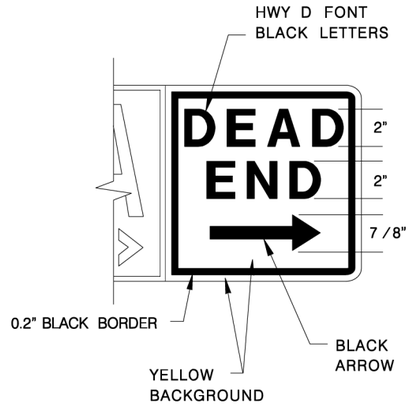
GENERAL NOTES AND GROUND SIGN MOUNTING

SHEET 1 OF 4

100 % SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: A.F.G.	DSGN. BY: E.N.M.	CHKD. BY: J.D.F./E.N.M.	SHEET NO.: 163 OF 330







9" D3 – STREET NAME SIGN

NEW 9" D3 W / DEAD END OR NO OUTLET SIGNAGE

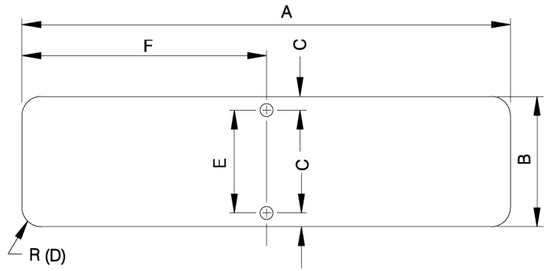
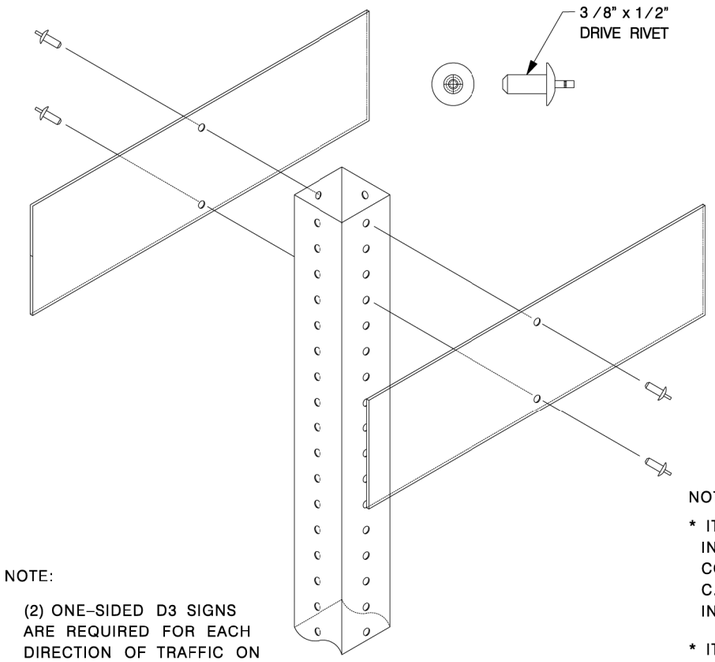


TABLE – D3 SIGNS

A	B	C	D	E	F	T
24"	9"	1/2"	3/4"	8"	12"	0.125"
30"	9"	1/2"	3/4"	8"	15"	0.125"
36"	9"	1/2"	3/4"	8"	18"	0.125"
42"	9"	1/2"	3/4"	8"	21"	0.125"
48"	9"	1/2"	3/4"	8"	24"	0.125"
54"	9"	1/2"	3/4"	8"	27"	0.125"

NOTE: A 30" LONG OR GREATER PLATE SHALL BE USED WHEN A "DEAD END" OR "NO OUTLET" SUPPLEMENT IS REQUIRED.

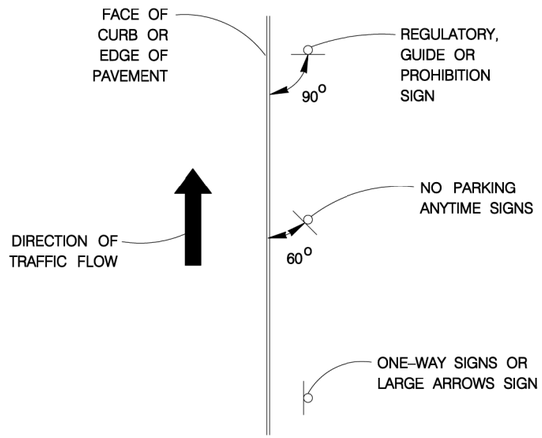


NOTE:

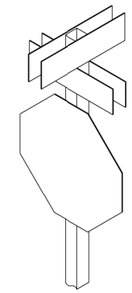
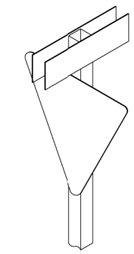
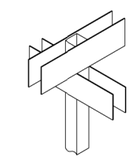
(2) ONE–SIDED D3 SIGNS ARE REQUIRED FOR EACH DIRECTION OF TRAFFIC ON EACH POLE.

D3 SIGN TO POLE INSTALLATION

HEIGHT	9" (228 mm)
LENGTH	24" (600 MM) MIN. 54 (1350 MM) MAX. 6" (150 MM) INCREMENTS OF LENGTH
THICKNESS	0.125" (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	10%



TYPICAL GROUND MOUNTED SIGN PLACEMENT

STREET SIGN ASSEMBLY EXAMPLES	PAY ITEMS			
	ITEM	UNIT	DESCRIPTION	QUANTITY
STOP SIGN WITH 2 STREET NAMES 	531.3	EA.	R1–1 STOP	1
	531.57–P	EA.	9–IN STREET NAME PLATE (4 PLATES)	2
YIELD SIGN WITH 1 STREET NAME 	531.4	EA.	R1–2 YIELD	1
	531.57–P	EA.	9–IN STREET NAME PLATE (2 PLATES)	1
2 STREET SIGNS 	531.57	EA.	9–IN STREET NAME SIGN (2 PLATES)	1
	531.57–P	EA.	9–IN STREET NAME PLATE (2 PLATES)	1

NOTE:

* ITEM 531.57 "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.

* ITEM 531.57–P "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.

THE ORIGINAL OF THIS DRAWING WAS SIGNED AND SEALED BY EDWARD N. MERY, P.E., #58698 ON 02.06.06 AND IS ON FILE WITH THE TRAFFIC ENGINEERING DIVISION OF THE PUBLIC WORKS DEPARTMENT, CITY OF SAN ANTONIO.

JULY 2010

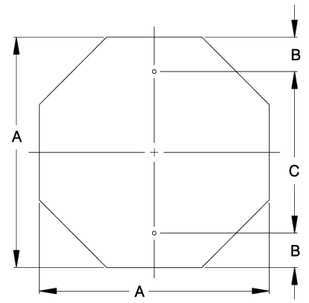
CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS

TRAFFIC SIGN STANDARDS

D3 STREET NAME SIGN AND SIGN MOUNTING

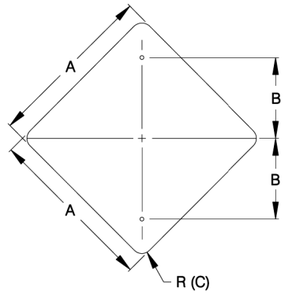
SHEET 2 OF 4

100 % SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: A.F.G.	DSGN. BY: E.N.M.	CHKD. BY: J.D.F./E.N.M.	SHEET NO.: 164 OF 330



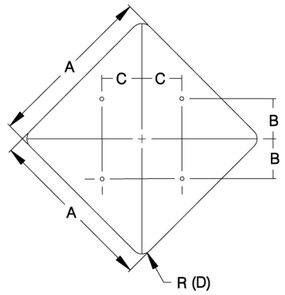
OCTAGONAL

A	B	C	T
24	3	18	0.080
30	3	24	0.080
36	3	30	0.100



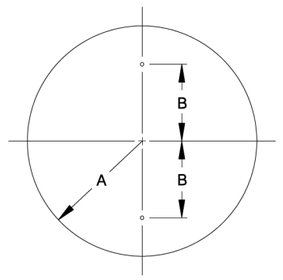
DIAMOND (A)

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



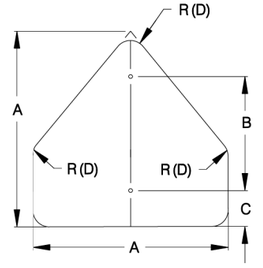
DIAMOND (B)

A	B	C	D	T
48	15	15	3	0.100



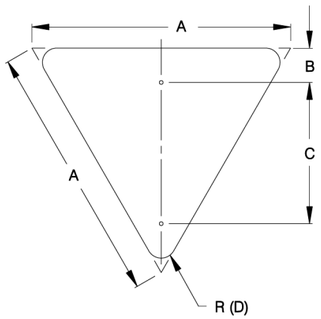
CIRCLE

A	B	T
18	15	0.100



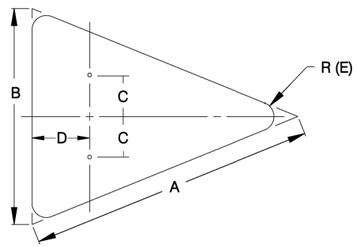
PENTAGON (SCHOOL)

A	B	C	D	T
36	24	3	2 1/4	0.100



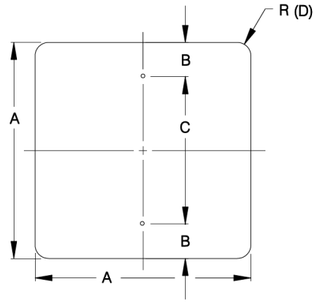
EQUILATERAL TRIANGLE

A	B	C	D	T
36	2	24	2	0.100



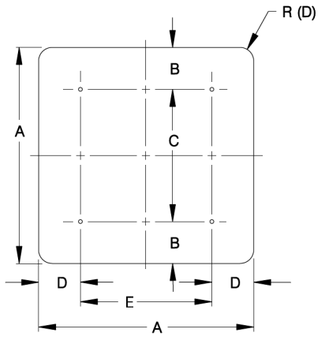
ISOSCELES TRIANGLE

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



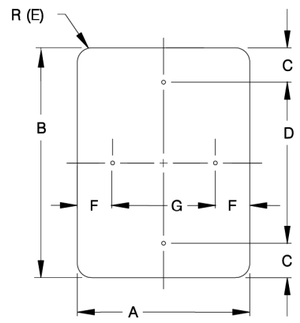
SQUARE (A)

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



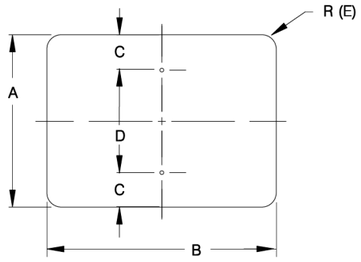
SQUARE (B)

A	B	C	D	E	F	T
48	6	36	9	30	3	0.100



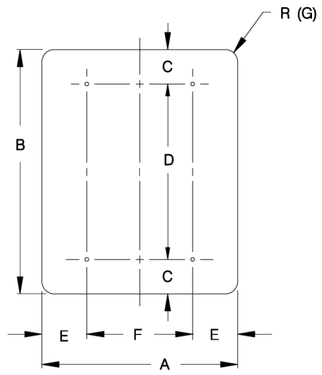
VERTICAL / HORIZONTAL RECTANGLE

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



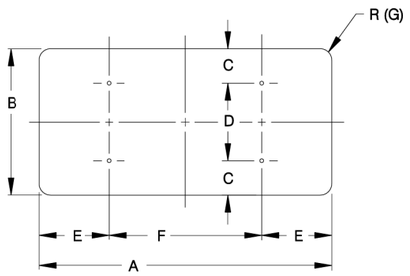
HORIZONTAL RECTANGLE

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



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



HORIZONTAL RECTANGLE

A	B	C	D	E	F	G	T
48	24	2	20	2	44	1 7/8	0.100
48	36	3	30	3	42	2 1/4	0.100
60	24	2	20	2	56	1 1/2	0.100
60	36	3	30	3	54	2 1/4	0.100
48	30	3	24	3	42	1 7/8	0.100
60	30	3	24	3	54	1 7/8	0.100

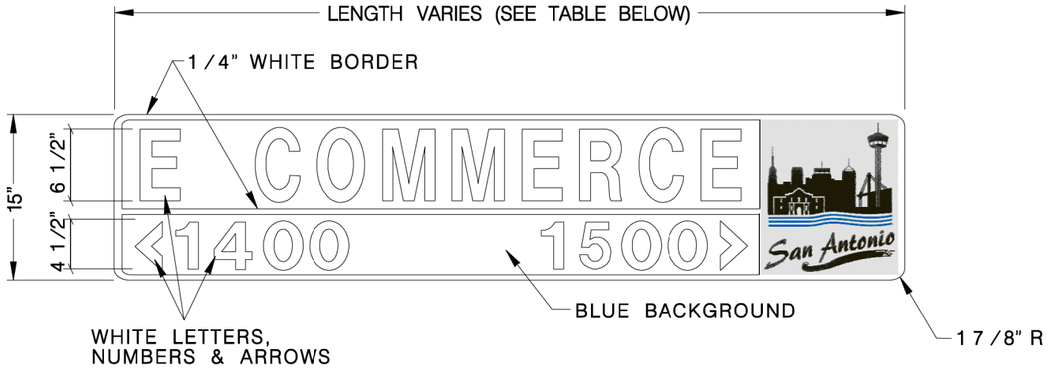
THE ORIGINAL OF THIS DRAWING WAS SIGNED AND SEALED BY EDWARD N. MERY, P.E., #58698 ON 02.06.06 AND IS ON FILE WITH THE TRAFFIC ENGINEERING DIVISION OF THE PUBLIC WORKS DEPARTMENT, CITY OF SAN ANTONIO.

FEBRUARY 2006

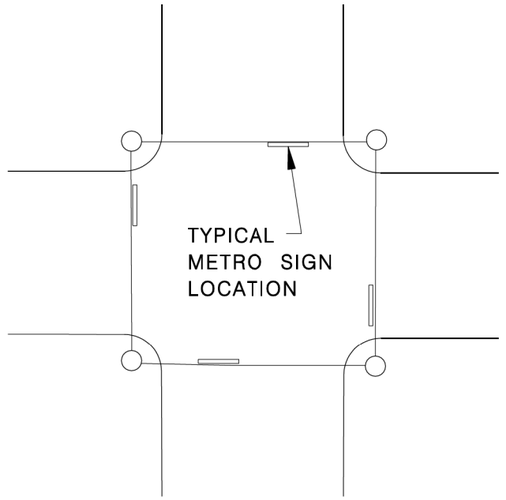
CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS

TRAFFIC SIGN STANDARDS
GROUND MOUNTED SIGN SIZES
SHEET 3 OF 4

100 % SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: A.F.G.	DSGN. BY: E.N.M.	CHKD. BY: J.D.F./E.N.M.	SHEET NO.: 165 OF 330

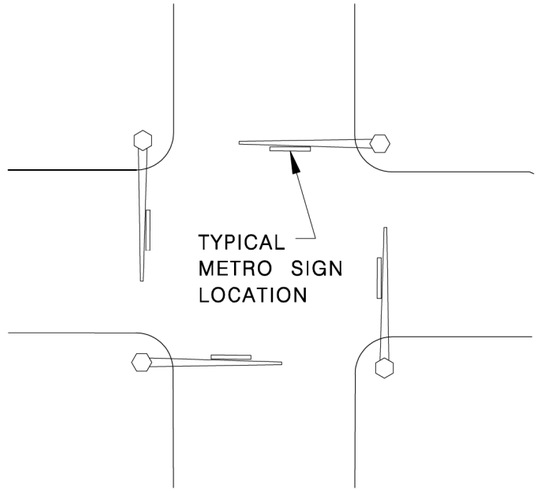


15" METRO – STREET NAME SIGNS



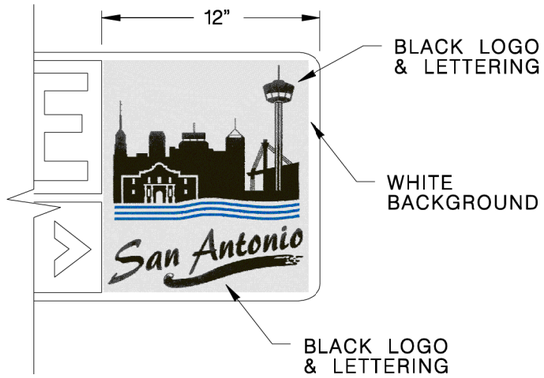
SPAN WIRE INSTALLATION

TYPICAL METRO SIGN PLACEMENT



MAST ARM INSTALLATION

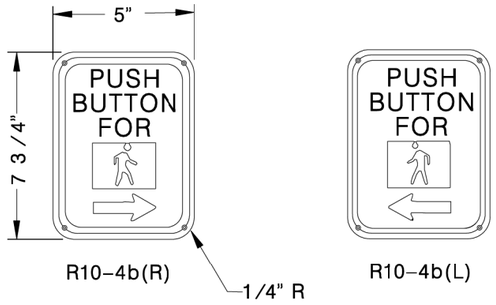
15" METRO w/CITY SKY LINE



HEIGHT	15" (381 MM)
LENGTH	48" (1200 MM) MIN. 72" (1800 MM) MAX.** 1' (300 MM) INCREMENTS OF LENGTH
THICKNESS	0.125" (3 MM)
SUBSTRATE	ALUMINUM ALLOY, 5052–H38 (ASTM B–209) GOLD CHROMATE FINISH
SIGN FACE MATERIALS	BLUE FILM OVER DIAMOND GRADE 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	17% (USUAL) 10% (MIN.)

** SIGN PLATE LONGER THAN 72" MUST BE APPROVED BY THE CITY TRAFFIC ENGINEER

* DIAMOND GRADE SHEETING 5052–H38 ALUMINUM SUBSTRATE



PEDESTRIAN PUSHBUTTON SIGNS



LEFT TURN SIGNS

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FEBRUARY 2006

CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS

TRAFFIC SIGN STANDARDS

METRO STREET NAME SIGN AND SIGN PLACEMENT

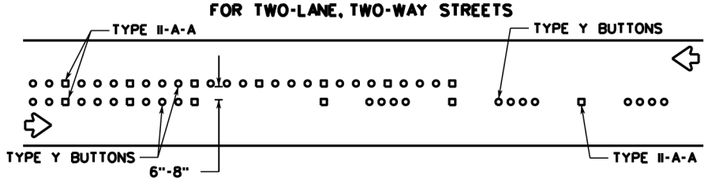
SHEET 4 OF 4

100 % SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: A.F.G.	DSGN. BY: E.N.M.	CHKD. BY: J.D.F./E.N.M.	SHEET NO.: 166 OF 330

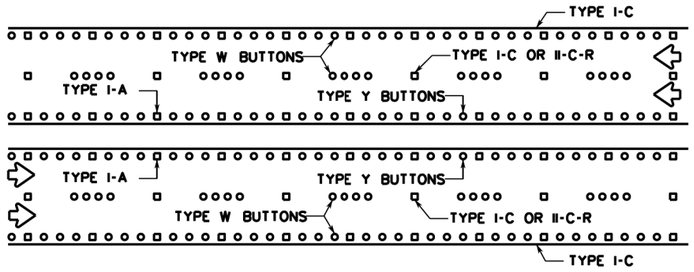
RAISED PAVEMENT MARKING PLACEMENT PATTERNS

PLACED W/ REFLECTION PAVEMENT MARKERS (OPTIONAL)

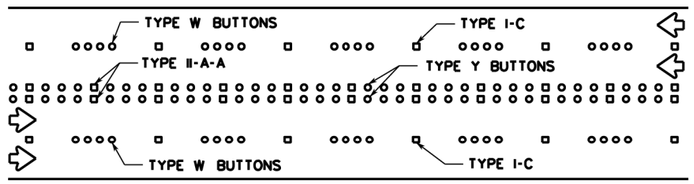
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO-LANE, TWO-WAY STREETS



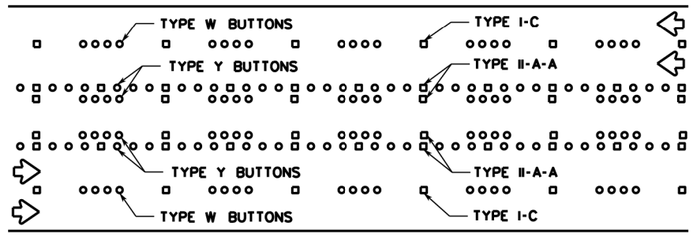
EDGE & LANE LINES FOR DIVIDED STREET



LANE & CENTER LINES FOR MULTILANE UNDIVIDED STREETS

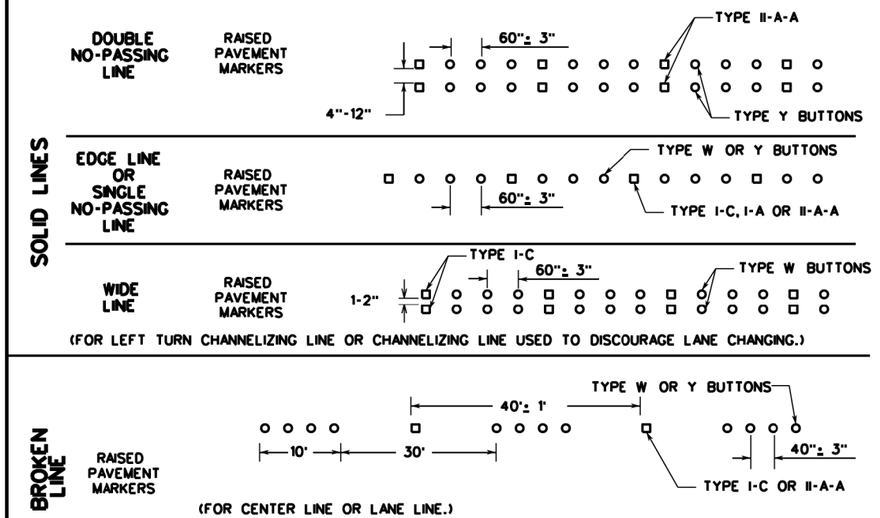


TWO-WAY LEFT TURN LANE



RAISED PAVEMENT MARKINGS PLACEMENT DETAILS

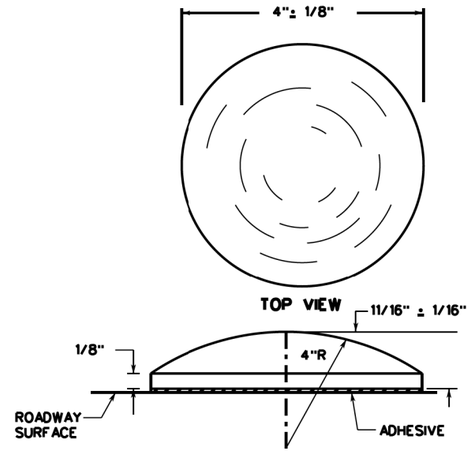
PLACED W/ REFLECTION PAVEMENT MARKERS (OPTIONAL)



TRAFFIC BUTTONS

(NON-REFLECTORIZED)

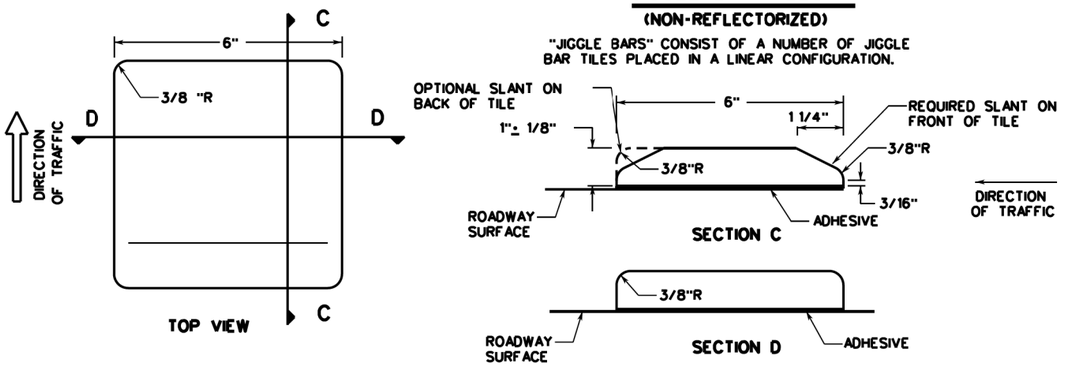
NOTE: MINIMUM AREA OF MARKERS SHALL BE NOT LESS THAN 12.5 SQUARE INCHES.



JIGGLE BAR TILES

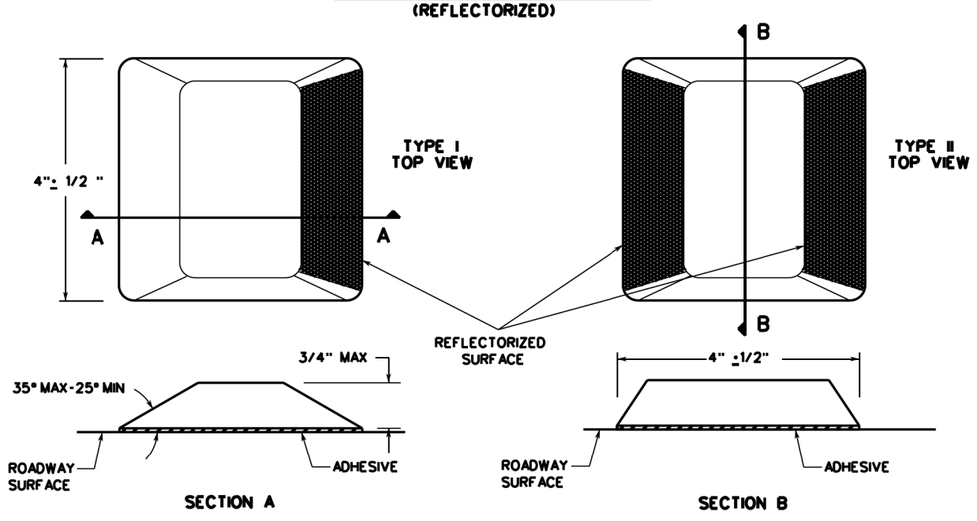
(NON-REFLECTORIZED)

"JIGGLE BARS" CONSIST OF A NUMBER OF JIGGLE BAR TILES PLACED IN A LINEAR CONFIGURATION.



RAISED PAVEMENT MARKERS

(REFLECTORIZED)



NOTES:

1. RAISED PAVEMENT MARKERS (RPMs) MAY CONSIST OF TRAFFIC BUTTONS, PAVEMENT MARKERS AND/OR JIGGLE BAR TILES. PAVEMENT SURFACE SHALL BE PREPARED AND CLEANED SUBJECT TO APPROVAL OF THE CITY TRAFFIC ENGINEER BEFORE ADHESIVE AND RPMs ARE PLACED.
2. JIGGLE BARS SHALL BE ORIENTED PERPENDICULAR TO ROADWAY. JIGGLE BARS SHALL ALSO BE PLACED AT SUCH OTHER LOCATIONS AS SHOWN IN PLANS OR AS DIRECTED BY THE CITY TRAFFIC ENGINEER.
3. MARKERS, BUTTONS AND JIGGLE BAR TILES SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY AND NOT INTENDED TO SPECIFY ANY PARTICULAR PRODUCT. ALL PAVEMENT MARKERS PROVIDED SHALL BE OF THE SAME MANUFACTURER.
4. ALL DIMENSIONS ARE +/- 1/8" UNLESS OTHERWISE NOTED.
5. ALL PAVEMENT MARKING MATERIALS SHALL MEET MATERIAL SPECIFICATIONS AS SPECIFIED BY CITY OF SAN ANTONIO STANDARD SPECIFICATIONS.
6. TRAFFIC BUTTONS AND JIGGLE BAR TILES ARE TO BE USED ONLY FOR TEMPORARY TRAFFIC CONTROL OR AS DIRECTED BY THE CITY TRAFFIC ENGINEER.

SEPTEMBER 2009

CITY OF SAN ANTONIO

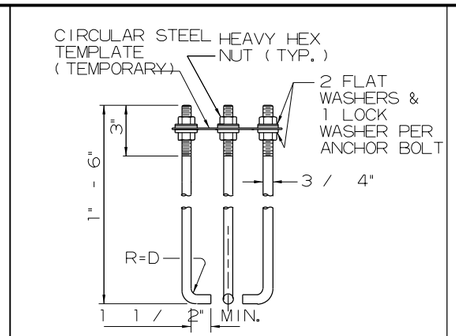
DEPARTMENT OF PUBLIC WORKS

TRAFFIC ENGINEERING STANDARDS

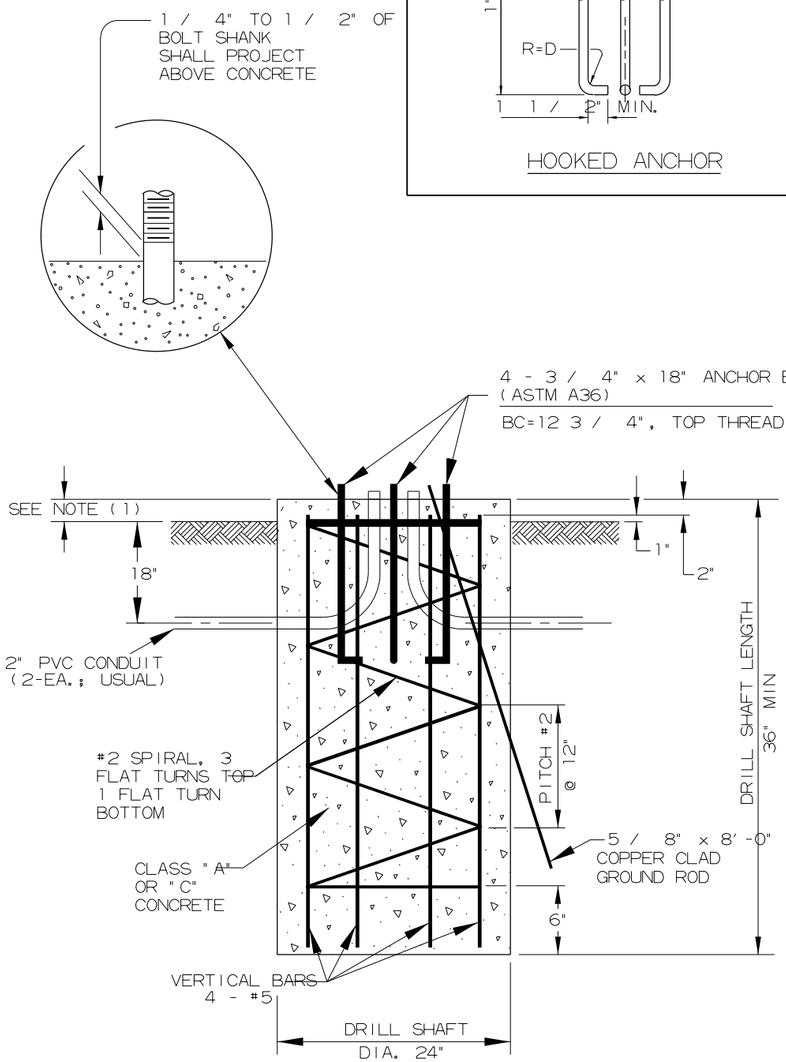
RAISED PAVEMENT MARKERS, REFLECTIVE PAVEMENT MARKERS, TRAFFIC BUTTONS & JIGGLE BAR TILES 2

SHEET 5 OF 16

100 % SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: LAN	DSGN. BY: C.R.V.	CHKD. BY: M.E.	SHEET NO.: 167 OF 330

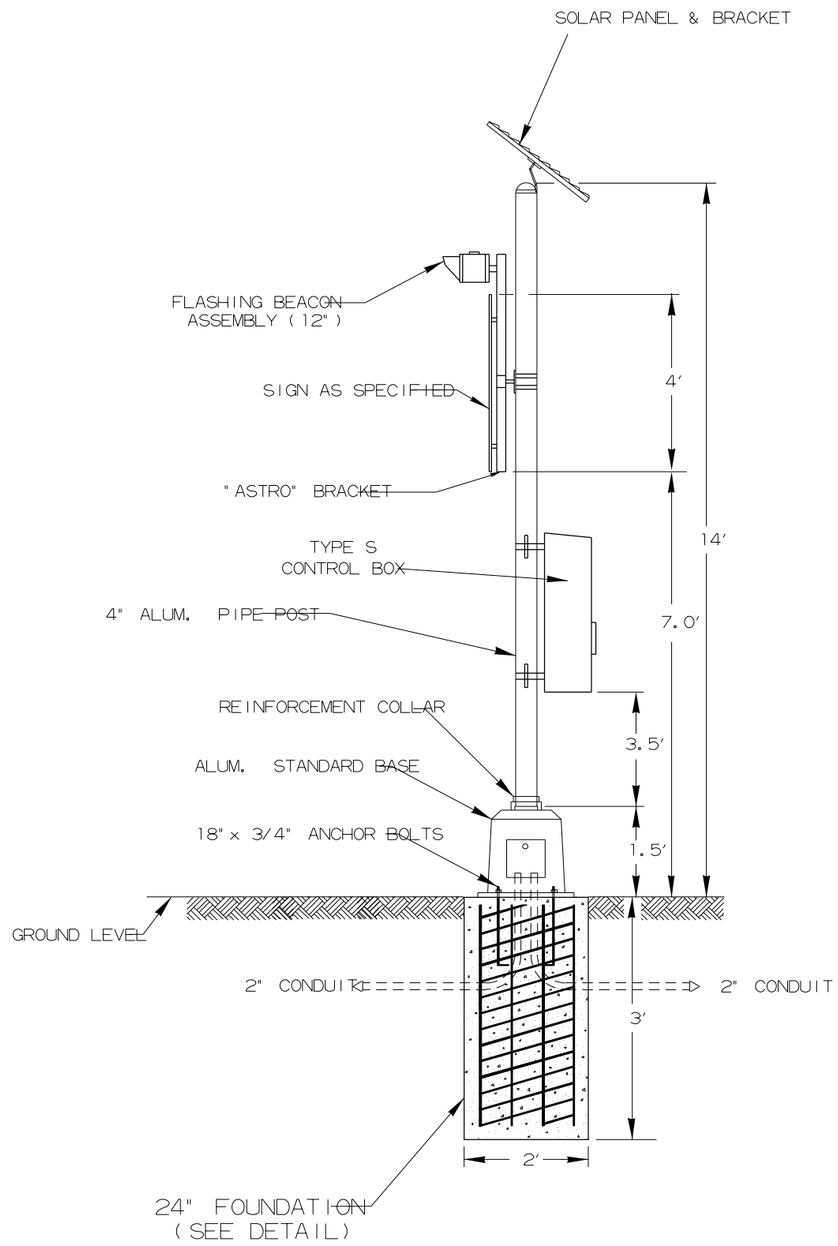


HOOKED ANCHOR



NOTE (1): 3" UNLESS OTHERWISE DIRECTED BY THE ENGINEER

24" FOUNDATION



FLASHER ASSEMBLY - TYPE S

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APRIL 2005

CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS

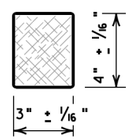
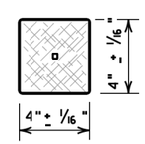
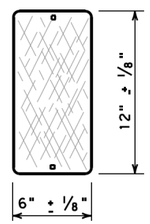
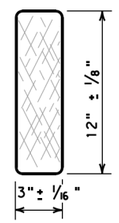
TRAFFIC SIGNAL STANDARDS

ADVANCE WARNING BEACON

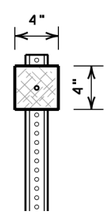
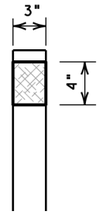
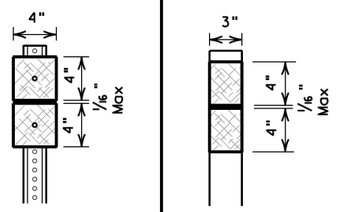
100% SUBMITTAL	PROJECT NO.:		DATE: $DATE$
DRWN. BY: F. G.	DSGN. BY: J. D. F.	CHKD. BY: J. D. F.	168

DISCLAIMER:
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REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

	SIZE 1	SIZE 2	SIZE 3	SIZE 4
DEVICE				
SHEETING	Yellow, White or Red Type B or C reflective sheeting			
NOTE	1. Size 1 and 4 - Direct applied reflective sheeting for use on flexible post (flx). 2. Size 2 and 3 - For use on wing channel (wc) post only. Use approved metal, plastic or fiberglass backplate with 17/64" mounting holes.			

DELINEATORS

	SINGLE		DOUBLE	
DEVICE				
	1-Size 2 reflector unit	1-Size 1 reflector unit	2-Size 2 reflector units	2-Size 1 reflector units
SHEETING	Yellow, White or Red Type B or C Reflective Sheeting			
POST TYPE	WC	YFLX, WFLX	WC	YFLX, WFLX
MOUNT TYPE	GND	GND, SRF	GND	GND, SRF

D & OM DESCRIPTIVE CODES

INSTL DEL ASSM (D-XX)SZ X (XXXX)XXX(XX)

NUMBER OF REFLECTORS
S = Single
D = Double

COLOR OF REFLECTORS
W = White
Y = Yellow
R = Red

REFLECTOR UNIT SIZE
1 or 2

TYPE OF POST OR DELINEATOR
WC = Wing Channel Post
YFLX = Yellow Flexible Post
WFLX = White Flexible Post
BRF = Barrier Reflector

TYPE OF MOUNT
GND = Embedded (drivable or set in concrete)
CTB = Concrete Barrier Mount
GF1 or GF2 = Guard Fence Attachment
SRF = Surface Mount

DIRECTION
If Required
BI = Bi-Directional
BR = Bi-Directional with red on back

INSTL OM ASSM (OM-XX) (XXXX)XXX(XX)

TYPE OF OBJECT MARKER
1, 2, 3, or 4

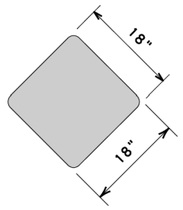
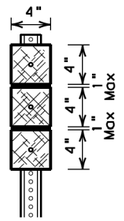
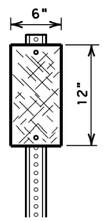
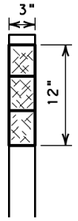
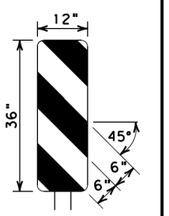
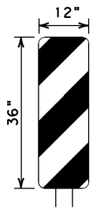
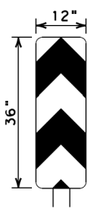
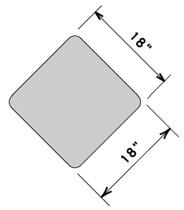
NUMBER OF REFLECTORS OR DIRECTION
X = 3-Size 2 reflector units (Type 2 only)
Y = 1-Size 3 reflector unit (Type 2 only)
Z = 3-Size 1 or 1-Size 4 reflector unit(s) (Type 2 only)
L = Left Side (Type 3 Object Marker only)
R = Right Side (Type 3 Object Marker only)
C = Center (Type 3 Object Marker only)

TYPE OF POST
WC = Wing Channel Post
WFLX = White Flexible Post
TWT = Thin Walled Tubing

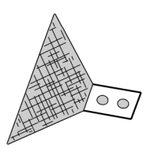
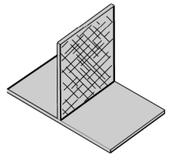
TYPE OF MOUNT
GND = Embedded (drivable)
SRF = Surface Mount
WAS = Wedge Anchor Steel
WAP = Wedge Anchor Plastic

DIRECTION
If Required
BI = Bi-Directional

OBJECT MARKERS

	Type 1 (OM-1)	Type 2 (OM-2)			Type 3 (OM-3)			Type 4 (OM-4)
	OM-1	OM-2X	OM-2Y	OM-2Z	OM-3L	OM-3R	OM-3C	OM-4
DEVICE								
		3-Size 2 reflector units	1-Size 3 reflector unit	3-Size 1 reflector units or 1-Size 4 reflector unit				
SHEETING	Yellow-Type B_{FL} or C_{FL} Sheeting	Yellow - Type B or C Sheeting			Alternating acrylic black and retroflective yellow - Type B_{FL} or C_{FL} Sheeting			Red -Type B_{FL} or C_{FL} Sheeting
POST TYPE	TWT	WC	WC	WFLX	TWT			TWT
MOUNT TYPE	WAS, WAP	GND	GND	GND, SRF	WAS, WAP			WAS, WAP

BARRIER REFLECTORS (BRF)

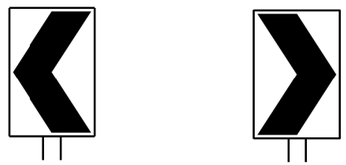
	GF1	GF2	CTB
DEVICE			

1. Barrier reflectors shall meet the requirements of DMS 8600.
2. Approved Barrier Reflectors are listed on the "Barrier Reflectors" Material Producer List at: www.txdot.gov.

SHEETING	Yellow, White, Red
NOTE	1. Reflective sheeting shall have a minimum dimension of 3 inches and minimum surface area of 9 square inches.

CHEVRONS

DEVICE



W1-8

SIZE (W x L)	18"x 24" (Conventional)	24"x 30" (Conventional Oversize)	30"x 36" (Expressway)	36" x 48" (Freeway)
MOUNTING HEIGHT	4'-0" or 7'-0"		7'-0" Only	

NOTE
1. CHEVRON (W1-8) signs and ONE DIRECTION LARGE ARROW (W1-6) Signs shall be installed per Sign Mounting Details (SMD) Standard Sheets and paid under Item 644 (Small Roadside Sign Assemblies).
2. When there is a need to increase conspicuity, the Texas version of the ONE DIRECTION LARGE ARROW sign (W1-9T) may be used instead of the ONE DIRECTION LARGE ARROW (W1-6).

ONE DIRECTION LARGE ARROW

DEVICE



W1-6

SIZE (W x L)	48" x 24" (Conventional)	60" x 30" (Expressway & Freeway)
MOUNTING HEIGHT	7'-0"	

DEPARTMENTAL MATERIAL SPECIFICATIONS

FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

NOTE:

Delineator and object marker substrates and sign substrates shall be 0.080" Aluminum sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION

D & OM(1)-20

FILE: dom1-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS				COVEL RD
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	SAT	BEXAR		169

20A

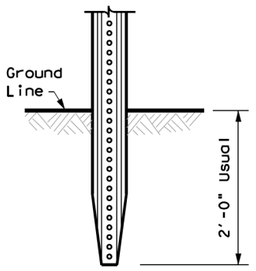
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FILE:

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POST TYPE AND SUPPORT FOUNDATION DETAILS

WING CHANNEL (WC)

GND

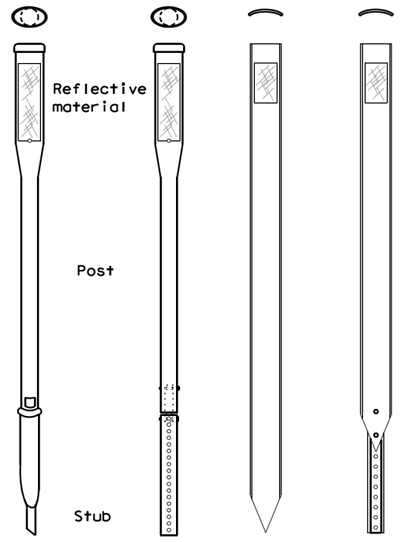


NOTES

1. Embedded Wing Channel (WC) post option may be used for Type 2 Object Markers and Delineators only.
2. 1.12 lbs/ft steel per ASTM A 1011 SS Gr. 50, or ASTM A499.

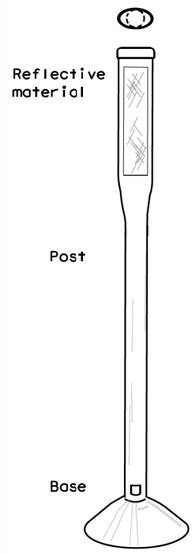
FLEXIBLE POSTS (YFLX, WFLX)

GND



EMBEDDED

SRF



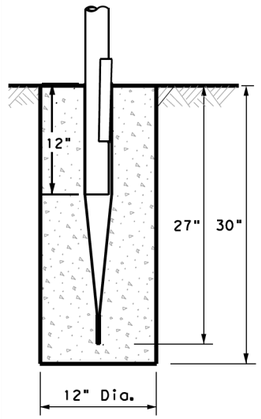
SURFACE MOUNT

NOTES

1. See "Flexible Delineator and Object Marker Posts" Material Producer List for approved devices.
2. Install per manufacturer's recommendations.
3. Post length may vary to meet field conditions.
4. When using yellow delineators with flexible posts to separate opposing direction of travel, such as centerline or median use, the flexible posts shall be yellow.

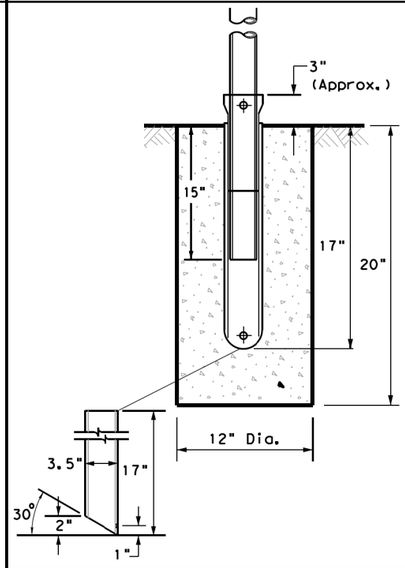
WEDGE ANCHOR SYSTEMS

WAS



STEEL

WAP



PLASTIC

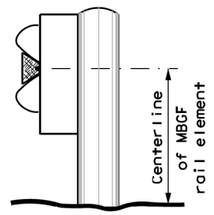
NOTE

1. Install per manufacturer's recommendations.

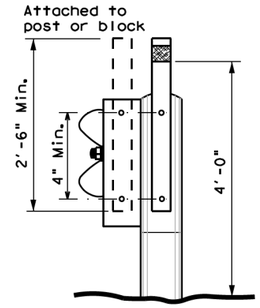
TYPE OF BARRIER MOUNTS

GUARD FENCE ATTACHMENT

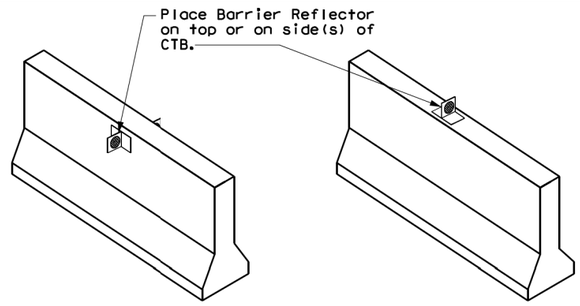
GF1



GF2



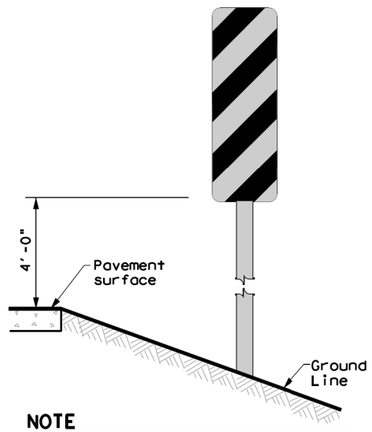
CONCRETE TRAFFIC BARRIER (CTB)



GENERAL NOTES

1. Place delineators on a section of roadway at a consistent distance from the edge of pavement.
2. Where a restriction prevents consistent placement from the pavement edge, place the affected object markers in line with the innermost edge of the obstruction.
3. When Type 2 object markers and delineators are more than 8'-0" from the edge of the pavement, it may not be possible to maintain a height of approximately 4'-0". If this is the case, place the object marker or delineator as close to the desired height as possible.
4. Install all delineators, object markers and barrier reflectors in accordance with the manufacturer's recommendation.
5. Barrier reflectors should be installed a minimum of 18 inches above the edge of the pavement surface.
6. Diagonal stripes on Type 3 object markers shall slope down toward the intended travel lane.

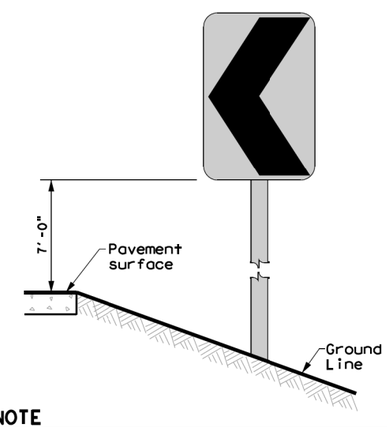
TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS



NOTE

Mounting at 4 feet to the bottom of the chevron is permitted for chevrons that will not exceed a height of 6'-6" to the top of the chevron (sizes 24" x 30" and smaller)

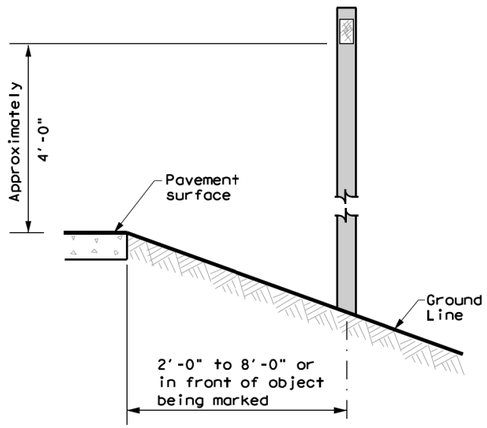
CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN



NOTE

Chevrons 30" x 36" and larger shall be mounted at a height of 7' to the bottom of the chevron. Chevron sign and ONE DIRECTION LARGE ARROW sign (W1-9T) shall be installed per SMD standard sheets and paid under item 644.

DELINEATORS AND TYPE 2 OBJECT MARKERS



See general notes 1, 2 and 3.

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER INSTALLATION

D & OM(2)-20

FILE: dom2-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS				COVEL RD
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	SAT	BEXAR		170

20B

DATE:
FILE:

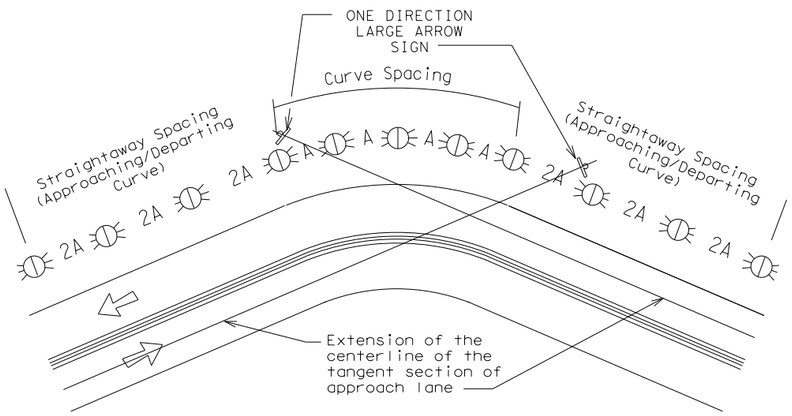
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DATE: 6/27/2025 2:20:27 PM
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MINIMUM WARNING DEVICES AT CURVES WITH ADVISORY SPEEDS

Amount by which Advisory Speed is less than Posted Speed	Curve Advisory Speed	
	Turn (30 MPH or less)	Curve (35 MPH or more)
5 MPH & 10 MPH	• RPMs	• RPMs
15 MPH & 20 MPH	• RPMs and One Direction Large Arrow sign	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons.
25 MPH & more	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons	• RPMs and Chevrons

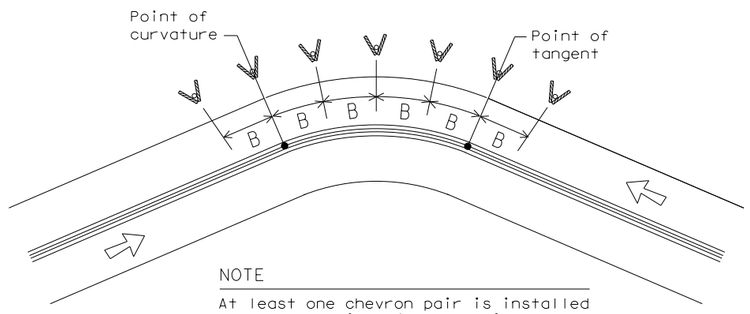
SUGGESTED SPACING FOR DELINEATORS ON HORIZONTAL CURVES



NOTE

ONE DIRECTION LARGE ARROW (W1-6) sign should be located at approximately and perpendicular to the extension of the centerline of the tangent section of approach lane.

SUGGESTED SPACING FOR CHEVRONS ON HORIZONTAL CURVES



NOTE

At least one chevron pair is installed beyond the point of tangent in tangent section.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS KNOWN

Degree of Curve	FEET			
	Radius of Curve	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
		A	2A	B
1	5730	225	450	——
2	2865	160	320	——
3	1910	130	260	200
4	1433	110	220	160
5	1146	100	200	160
6	955	90	180	160
7	819	85	170	160
8	716	75	150	160
9	637	75	150	120
10	573	70	140	120
11	521	65	130	120
12	478	60	120	120
13	441	60	120	120
14	409	55	110	80
15	382	55	110	80
16	358	55	110	80
19	302	50	100	80
23	249	40	80	80
29	198	35	70	40
38	151	30	60	40
57	101	20	40	40

Curve delineator approach and departure spacing should include 3 delineators spaced at 2A. This spacing should be used during design preparation or when the degree of curve is known.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS NOT KNOWN

Advisory Speed (MPH)	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
	A	2xA	B
65	130	260	200
60	110	220	160
55	100	200	160
50	85	170	160
45	75	150	120
40	70	140	120
35	60	120	120
30	55	110	80
25	50	100	80
20	40	80	80
15	35	70	40

If the degree of curve is not known, delineator spacing may be determined based on the Advisory Speed of the curve. Use the delineator curve spacing for each Advisory Speed (MPH).

DELINEATOR AND OBJECT MARKER APPLICATION AND SPACING

CONDITION	REQUIRED TREATMENT	MINIMUM SPACING
Frwy./Exp. Tangent	RPMs	See PM-series and FPM-series standard sheets
Frwy./Exp. Curve	Single delineators on right side	See delineator spacing table
Frwy/Exp.Ramp	Single delineators on at least one side of ramp (should be on outside of curves) (see Detail 3 on D&OM(4))	100 feet on ramp tangents Use delineator spacing table for ramp curves ("straightway spacing" does not apply to ramp curves)
Acceleration/Deceleration Lane	Double delineators (see Detail 3 on D&OM(4))	100 feet (See Detail 3 on D & OM (4))
Truck Escape Ramp	Single red delineators on both sides	50 feet
Bridge Rail (steel or concrete)and Metal Beam Guard Fence	Bi-Directional Delineators when undivided with one lane each direction Single Delineators when multiple lanes each direction	Equal spacing (100'max) but not less than 3 delineators
Concrete Traffic Barrier (CTB) or Steel Traffic Barrier	Barrier reflectors matching the color of the edge line	Equal spacing 100' max
Cable Barrier	Reflectors matching the color of the edge line	Every 5th cable barrier post (up to 100'max)
Guard Rail Terminus/Impact Head	Divided highway - Object marker on approach end Undivided 2-lane highways - Object marker on approach and departure end	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5) and D & OM (6)
Bridges with no Approach Rail	Type 3 Object Marker (OM-3) at end of rail and 3 single delineators approaching rail	See D & OM(5)
Reduced Width Approaches to Bridge Rail	Type 2 and Type 3 Object Markers (OM-3) and 3 single delineators approaching bridge	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5)
Culverts without MBGF	Type 2 Object Markers	See Detail 2 on D & OM(4)
Crossovers	Double yellow delineators and RPMs	See Detail 1 on D & OM (4)
Pavement Narrowing (lane merge) on Freeways/Expressway	Single delineators adjacent to affected lane for full length of transition	100 feet

NOTES

1. Unless indicated otherwise, the delineator or barrier reflector color shall conform to the color of the pavement edge line on the side of the road where the delineators or barrier reflectors are placed.
2. Barrier reflectors may be used to replace required delineators.
3. Single red delineators may be mounted on the back side of delineator posts for wrong way driver applications

LEGEND	
	Bi-directional Delineator
	Delineator
	Sign

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

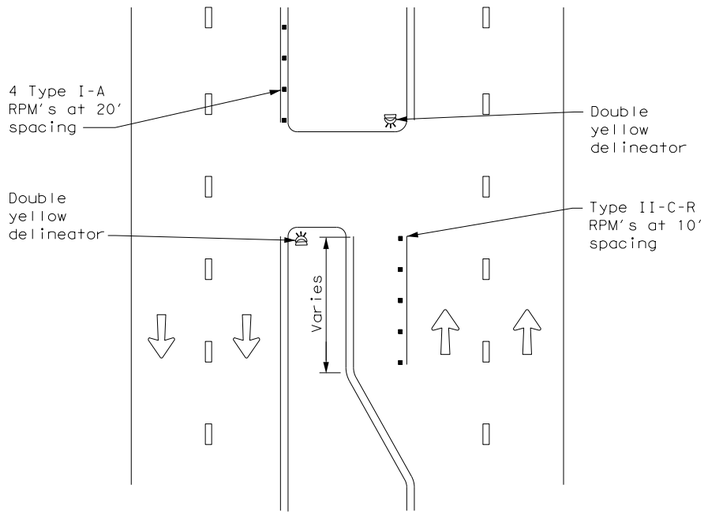
D & OM(3)-20

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3-15 8-15	DIST	COUNTY		SHEET NO.
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20C

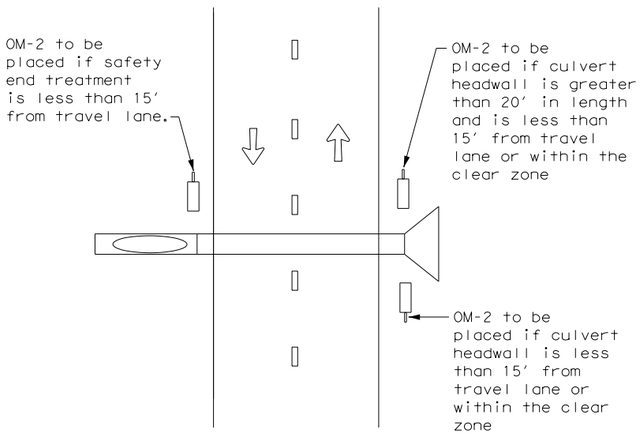
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CROSSOVERS



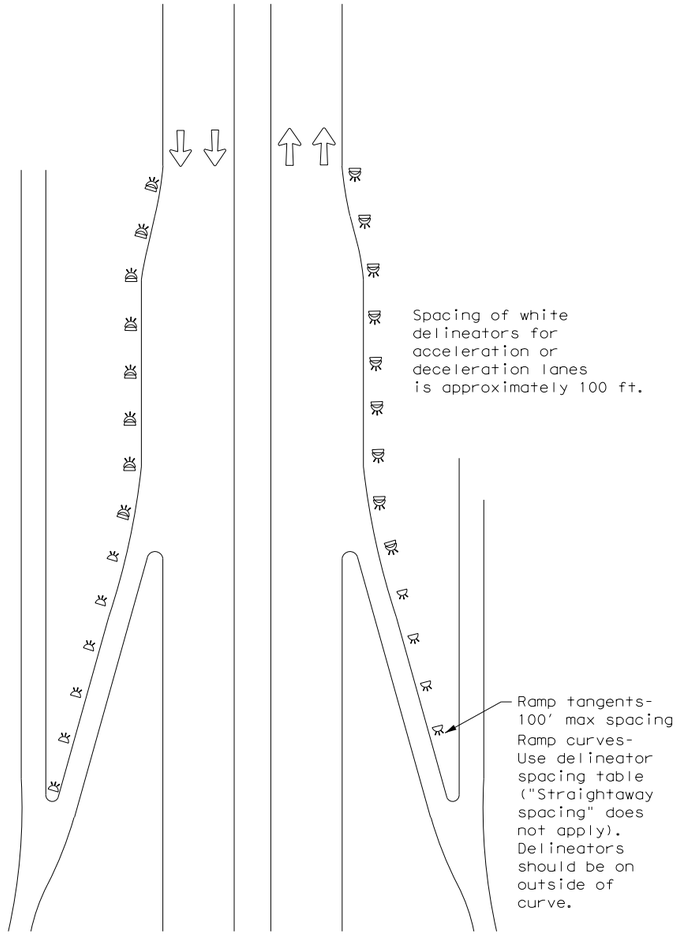
DETAIL 1

FOR CULVERTS WITHOUT MBGF



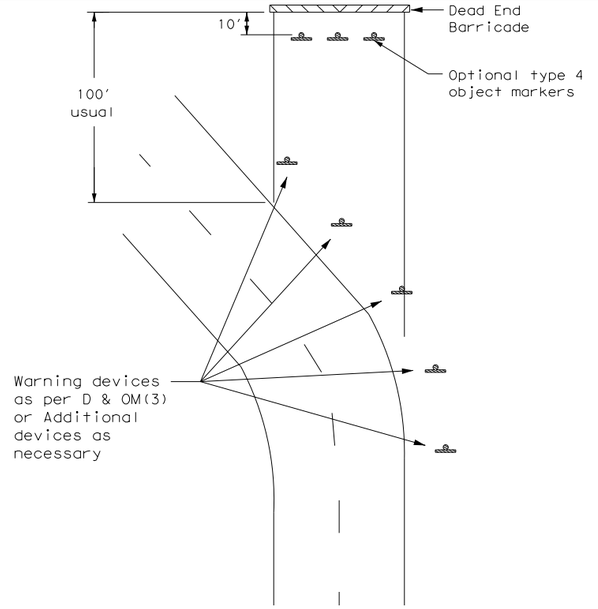
DETAIL 2

FREEWAY DELINEATION FOR RAMPS AND ACCELERATION/DECELERATION LANES



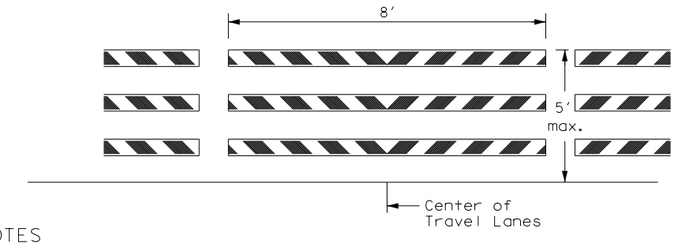
DETAIL 3

TYPICAL APPLICATION OF DEAD END BARRICADE



DETAIL 4

TYPICAL DEAD END BARRICADE INSTALLATION



NOTES

1. Barricade striping shall be red and white reflective sheeting for all permanent road closures.
2. Barricade striping is red and white sloping toward the center of the roadway.
3. Type 3 Barricade Supports should be anchored to soil or pavement as described in compliant Work Zone Traffic Control Devices List, section D.2.f and D.2.g.

DETAIL 5

LEGEND	
	Bidirectional Delineator
	Delineator
	OM-3
	Barricade
	Sign
	OM-2
	Double Delineator

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(4)-20

FILE: dom4-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS				COVEL RD
3-15	DIST	COUNTY		SHEET NO.
7-20	SAT	BEXAR		172

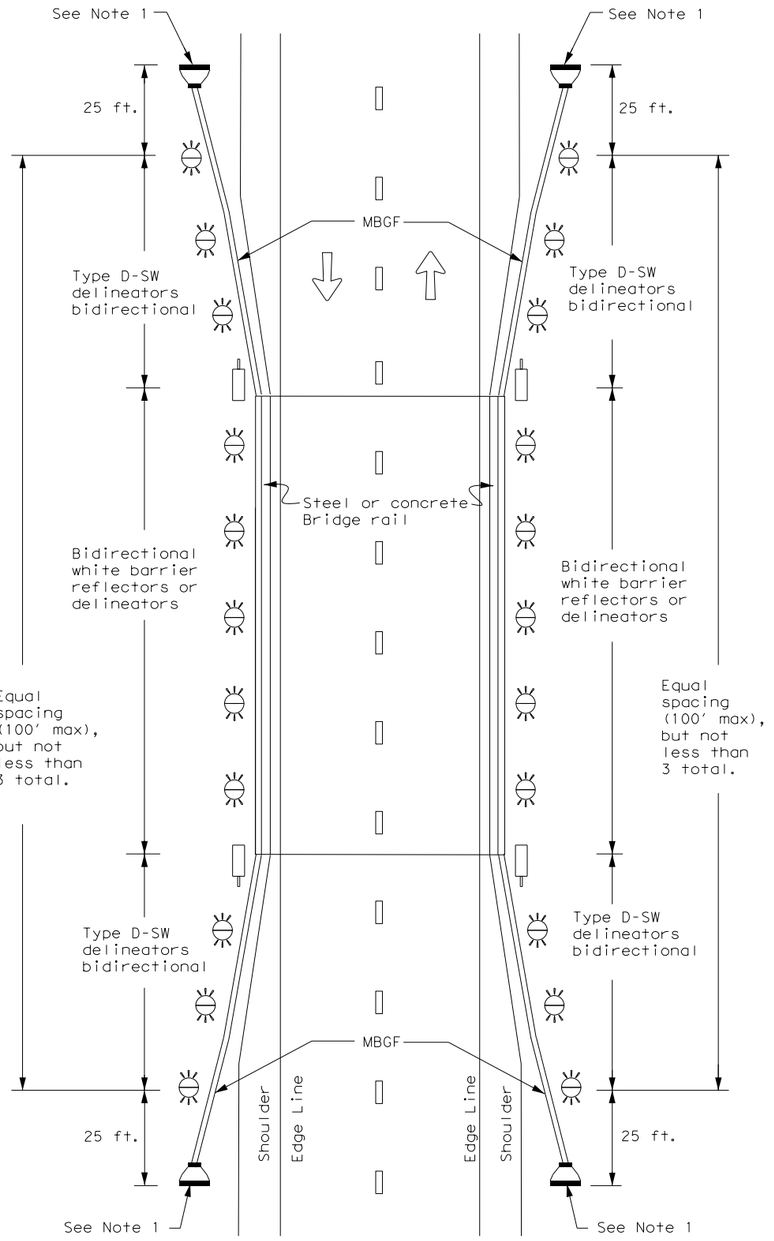
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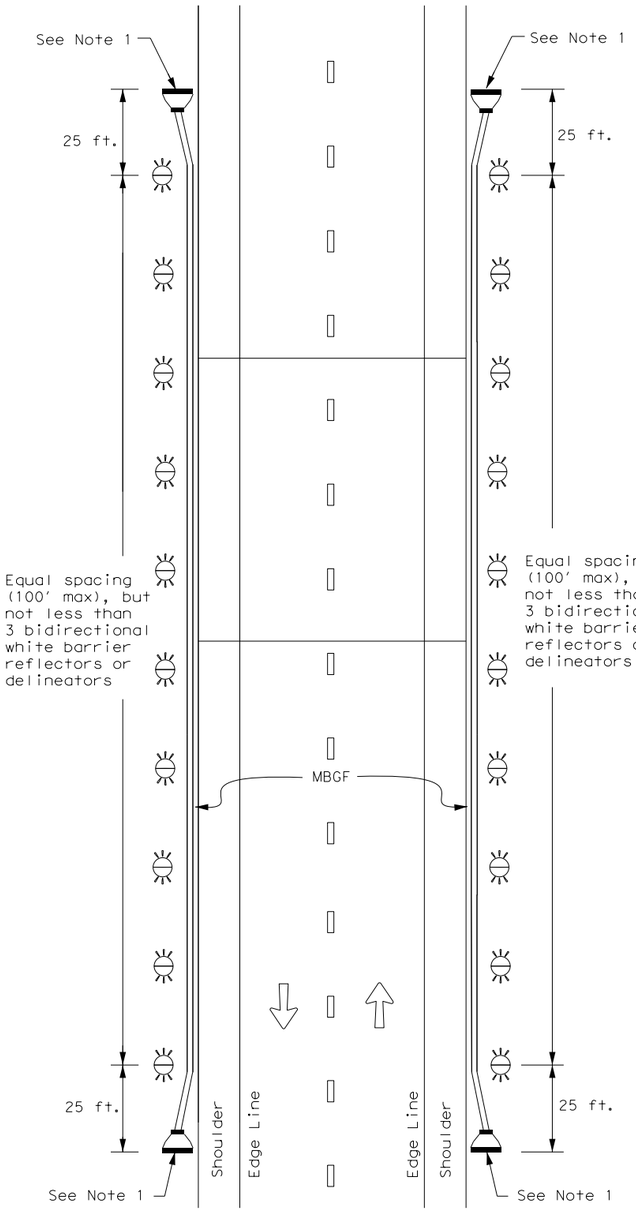
TWO-WAY, TWO LANE ROADWAY WITH REDUCED WIDTH APPROACH RAIL



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

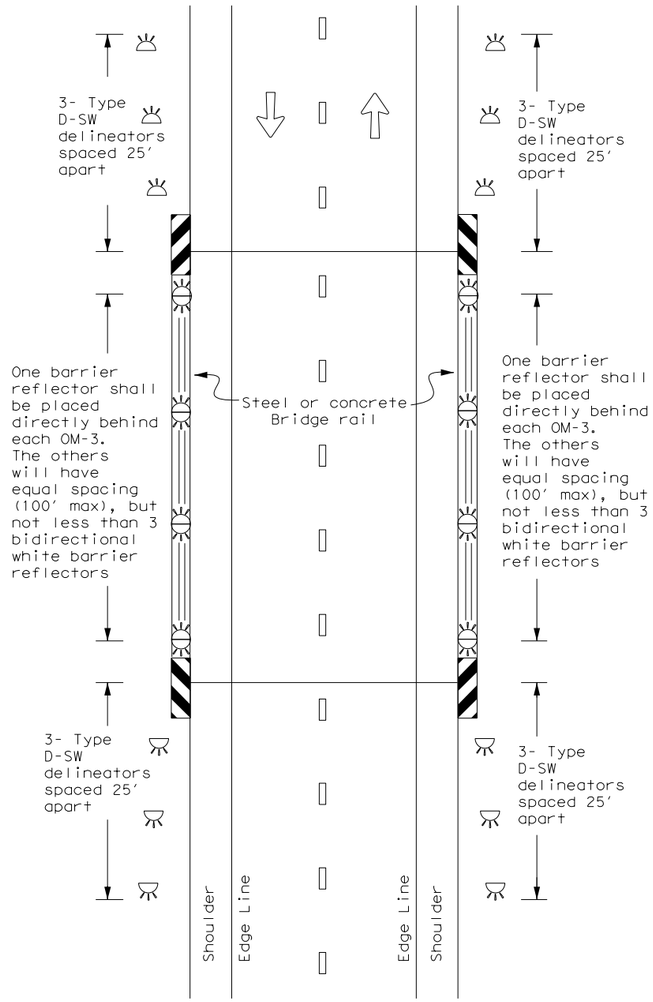
TWO-WAY, TWO LANE ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

TWO-WAY, TWO LANE ROADWAY BRIDGE WITH NO APPROACH RAIL



LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	Traffic Flow

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(5)-20

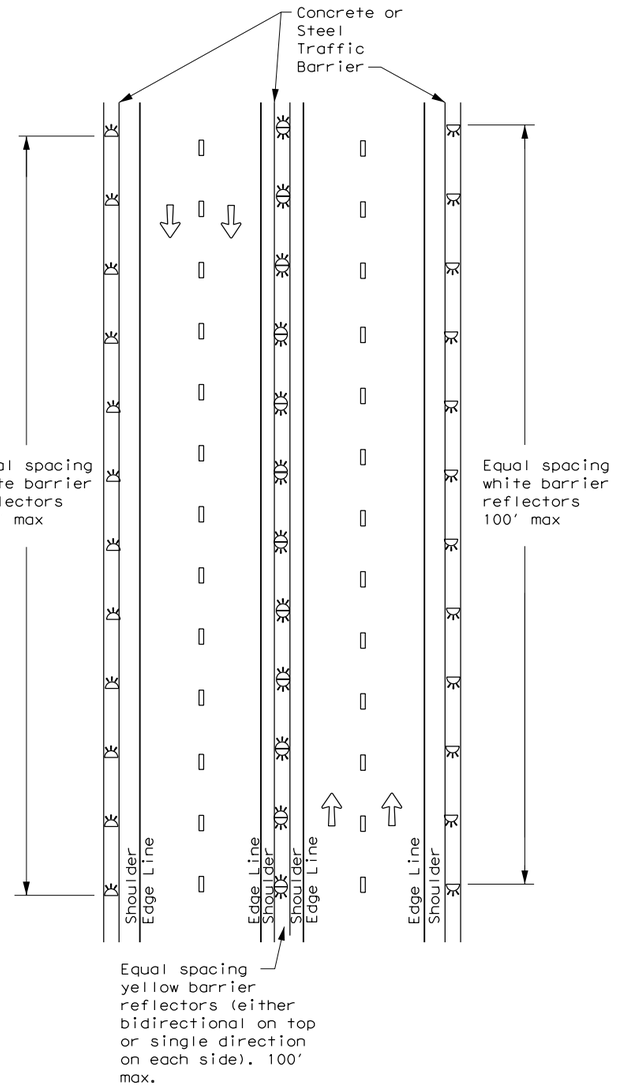
FILE: dom5-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS				COVEL RD
7-20	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		173

20E

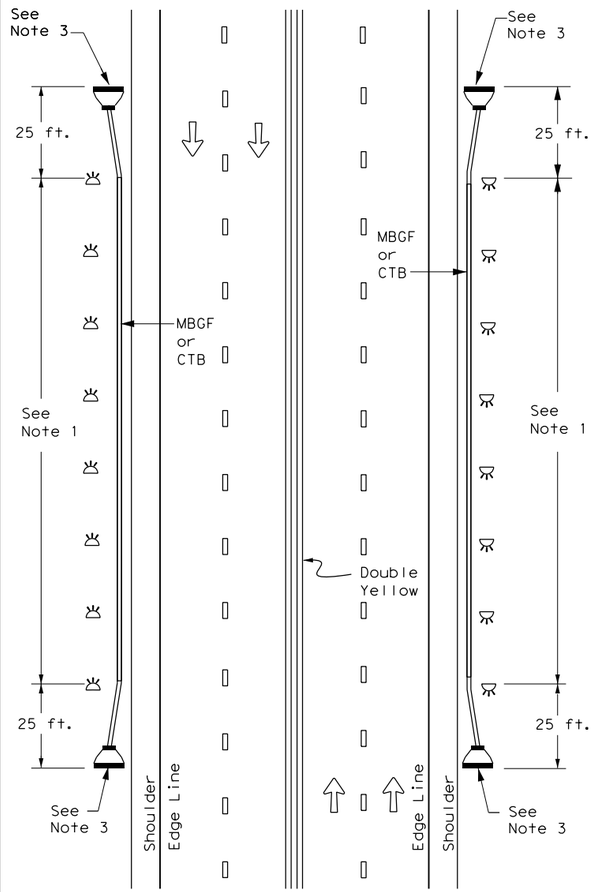
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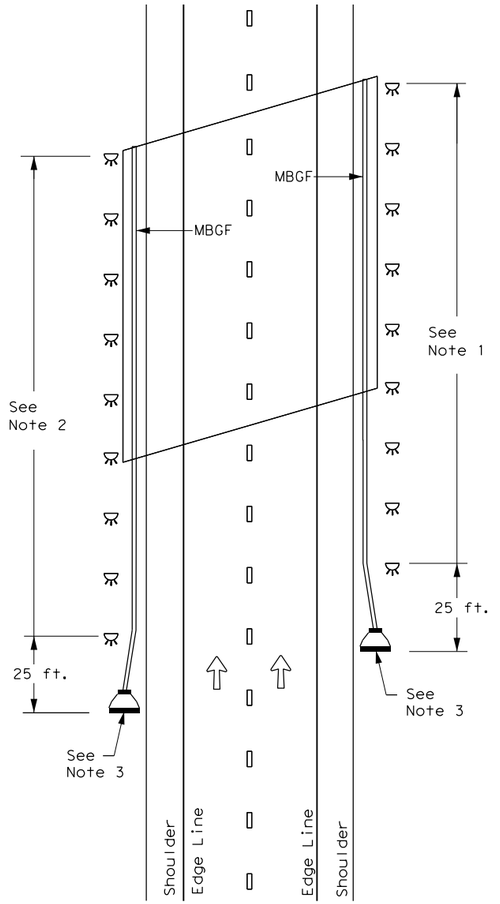
CONTINUOUS CONCRETE OR STEEL BARRIER



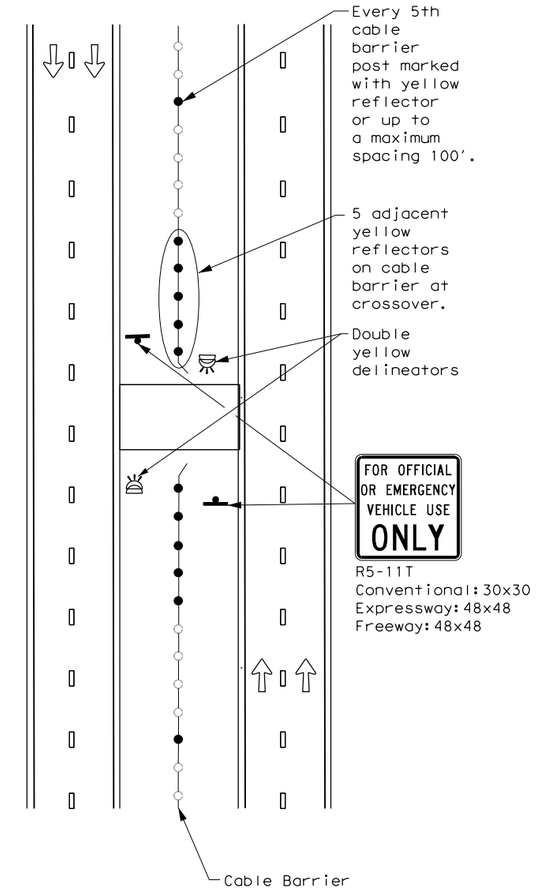
MULTI-LANE UNDIVIDED, TWO-WAY ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



DIVIDED ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



EMERGENCY CROSSOVER



NOTES

1. Equal spacing (100′ max), but not less than 3 single directional white barrier reflectors or delineators. On Continuos Barrier, equal spacing (100′ max.)
2. Equal spacing (100′ max), but not less than 3 single directional yellow barrier reflectors or delineators.
3. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3)in front of the terminal end.

LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	Traffic Flow

Texas Department of Transportation

Traffic Safety Division Standard

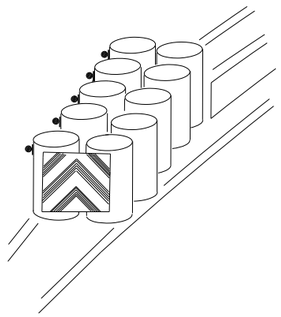
DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

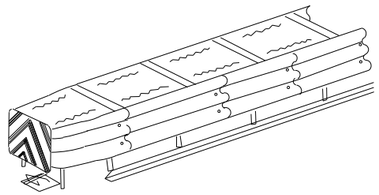
D & OM(6)-20

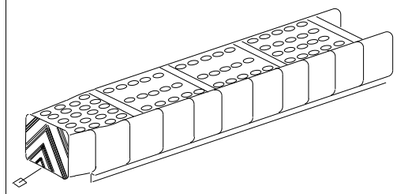
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©TxDOT August 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS				COVEL RD
7-20	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		174

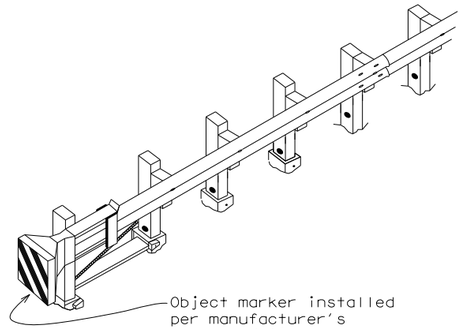
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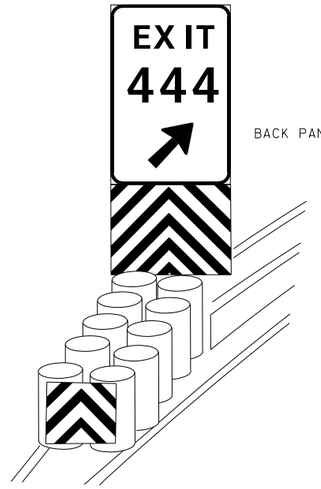
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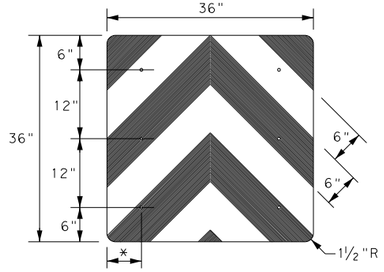


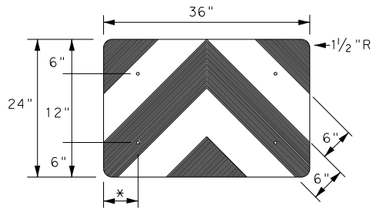




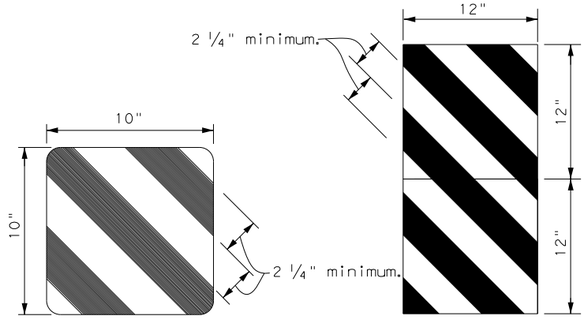




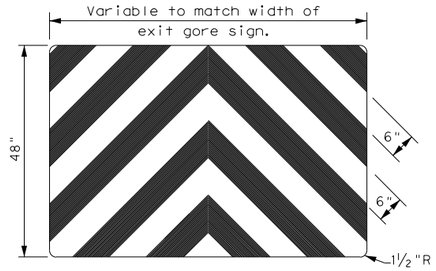


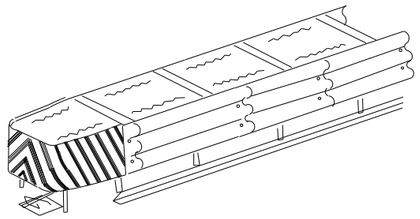


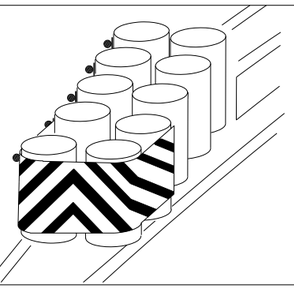
* Adjust to fit attenuator per manufacturer's recommendation, or as directed by the Engineer

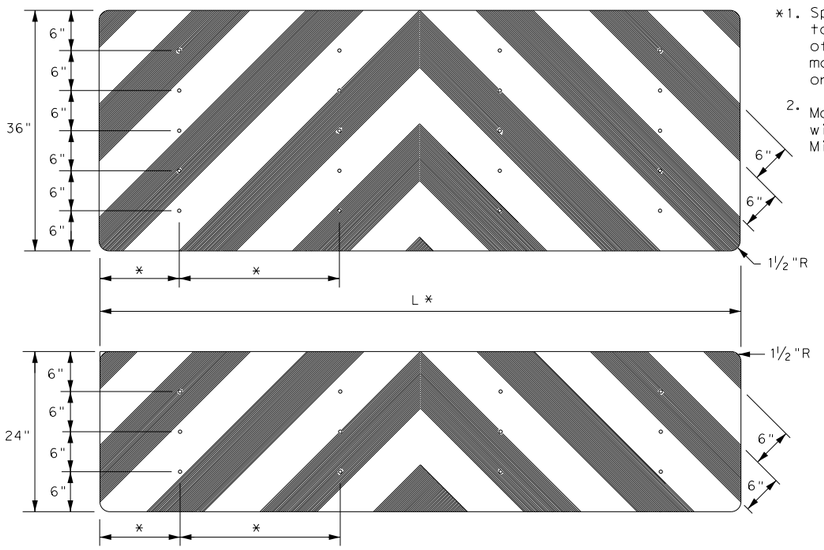


OBJECT MARKERS SMALLER THAN 3 FT^2









NOTES

*1. Spacing should be adjusted to attach through centerline of drum, per attenuator manufacturers recommendation, or as directed by the Engineer.

2. Mounting should be flush with top of attenuator. Minimum size 96" x 24".

NOTES

1. Object Markers shall conform to the Texas MUTCD and meet the color and reflectivity requirement of Department Material Specification DMS 8300. Background shall be yellow reflective sheeting (Type B or C) and Chevron shall be black.

2. Object Markers may be fabricated from adhesive backed reflective sheeting applied directly to guardrail end treatment, or applied directly to an "end cap" as per the manufacturer's recommendation. Direct applied sheeting shall provide a smooth surface and have no wrinkles, air bubbles, cuts or tears. A radius at the corners is not required for direct applied sheeting.

3. Object Marker size may be reduced to fit smaller devices. Width of alternating black and yellow stripes are typically 6". Object Markers smaller than 3ft may have reduced width stripes of a minimum of 2 ¼".

4. Pop rivets, screws, or nuts and bolts may be used to attach object markers and reflectors. Holes, slots or other openings may be cut or drilled through object markers to allow cable or other attachments.

5. Object Marker at nose of attenuator is subsidiary to the attenuator.

6. See D & OM (1-4) for required barrier reflectors.

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER FOR VEHICLE IMPACT ATTENUATORS

D & OM(VIA)-20

FILE: domvia20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TxDOT December 1989	CONT	SECT	JOB	HIGHWAY
REVISIONS				COVEL RD
4-92 8-04	DIST	COUNTY		SHEET NO.
8-95 3-15	SAT	BEXAR		175
4-98 7-20				

20G

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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 inspector in accordance with COSA Ordinance Sec. 34-805(q)

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.

Culvert Crossing 1 - STA 12+33.48 - Tributary to Medio Creek
Culvert Crossing 4 - STA 56+69.44 - Tributary to Medio Creek

Contractor to disturb only those areas shown within the project limits. If additional area is to be disturbed, the Contractor is to notify the City Project Engineer prior to commencing work. Absolutely no work shall be performed within the limits of the jurisdictional waters of the United States, except in the areas shown in this plan set. Absolutely no material shall be stockpiled or allowed to accumulate in or near the jurisdictional waters of the U.S. The Contractor is responsible for reimbursing the City for obtaining permits and payments of fines for work performed not in accordance with this plan set.

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 that 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 practicable, 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.

LIST OF ABBREVIATIONS

BMP:	Best Management Practice	SPCC:	Spill Prevention Control and Countermeasure
CGP:	Construction General Permit	SW3P:	Storm Water Pollution Prevention Plan
DSHS:	Texas Department of State Health Services	PCN:	Pre-Construction Notification
FHWA:	Federal Highway Administration	PSL:	Project Specific Location
MOA:	Memorandum of Agreement	TCEQ:	Texas Commission on Enviornmental Quality
MOU:	Memorandum of Understanding	TPDES:	Texas Pollutant Discharge Elimination System
MS4:	Municipal Separate Stormwater Sewer System	TPWD:	Texas Parks and Wildlife Department
MBTA:	Migratory Bird Treaty Act	TxDOT:	Texas Department of Transportation
NOT:	Notice of Termination	T&E:	Threatened and Endangered Species
NWP:	Nationwide Permit	USACE:	U.S. Army Corps of Engineers
NOI:	Notice of Intent	USFWS:	U.S. Fish and Wildlife Service

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 Engineer 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.

Contact CPS Energy Environmental Department at 210-353-2551 at least one week prior to any excavating activities between Station numbers 45+20 to 80+20 to coordinate management of excavated materials. CPS Energy Environmental Department coordination is required for excavated soil to be moved from the project generation site by COSA/CPS Energy. Excavated soil should be reused on site as open trench backfill after excavation and within the project limits. If excavated soil cannot be reused as backfill they must be placed into a CPS Energy provided rolloff box/dump truck and transported with a manifest to Tessman Road Landfill for disposal.

VII. OTHER ENVIRONMENTAL ISSUES

(includes regional issues such as Edwards Aquifer District, etc.)

☐ No Action Required ☒ Required Action

Action No.

Contractor is responsible for following City Asbestos Removal Specifications when AC pipe removal is required due to City's conflicts. Contractor is required to follow SAWS 3000 specifications when removing SAWS infrastructure.

COVEL RD (RAY ELLISON BLVD. TO PATROL RD.)

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

PROJECT NO.: 23-03872	DN: JM		CK: II	DW: RDA	CK: II
© TxDot: February 2015	CONT	SECT	JOB	HIGHWAY	
REVISIONS					
12-12-2011 (DS)					
05-07-14 ADDED NOTE SECTION IV.	DIST	COUNTY		SHEET NO.	
01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.				176	

EPA & TCEQ Construction General Permit - Checklist of Record Keeping Responsibilities
City of San Antonio (COSA) - January-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
  - Ensure removal of temporary BMPs,
  - Verify correct installation of permanent BMPs,
  - 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 inspection are performed and document every 7 days
- Ensure maintenance of up to date copies of SWP3 and associated records
  - Corrective Action Documentation- within 7 days of time of discovery (EPA)
  - Maintenance- document if unable to fix/install item within 7 days. (EPA)
- Ensure records of rainfall events are being maintained
  - Rainfall during normal business hours that measures 0.25 inches or greater (EPA)
    - 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
  - 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.)
  - 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)
  - 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
  - Ensure removal of temporary BMPs,
  - Verify correct installation of permanent BMPs,
  - Assess final stabilization achieved to allow Notice of Termination

COSA ENVIRONMENTAL GROUP

Pre Construction

Review SWP3 Plans
- File Construction Site Notice with SAWS
- Environmental Preconstruction Meeting
- Conduct SWP3 Training (EPA only)
- Post Construction Site Notice

Construction

- Ensure inspection are performed and document every 7 days
- Ensure a designated SWP3 inspector certifies all inspection reports
- Ensure maintenance of up to date copies of SWP3 and associated records
  - Corrective Action Documentation- within 7 days of time of discovery
  - Maintenance- document if unable to fix/install item within 7 days
- Ensure records of rainfall events are being maintained
  - Rainfall during normal business hours that measures 0.25 inches or greater (EPA)
  - 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
  - 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)
  - 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
  - Ensure removal of temporary BMPs,
  - Verify correct installation of permanent BMPs,
  - Ensure removal of posted SWP3 documents
  - 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
- Terminate Construction Site Notice with SAWS

CONTRACTOR

Pre Construction

- Review SWP3 Plans
- File Construction Site Notice with SAWS
- Environmental Preconstruction Meeting
- File Notice of Intent with TCEQ
- File Primary Operator Construction Site Notice with SAWS
- Provide name and certification of the stormwater inspector to COSA [Ordinance Sec. 34-805 (q)]
- 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
  - Corrective Action Documentation- within 7 days of time of discovery (EPA)
  - Maintenance- document if unable to fix/install item within 7 days. (EPA)
- Record rainfall events and maintain documentation with the SWP3
  - Rainfall during normal business hours that measures 0.25 inches or greater (EPA)
  - 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
  - Notify Construction Site Project Manager immediately of spills above a reportable quantity (e.g., sheen on water, 25 gallons of "oil" to land, etc.)
  - 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)
  - 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.)

CONTRACTOR (Cont'd)

Post Construction

- Close Out Inspection
  - Ensure removal of temporary BMPs,
  - Verify correct installation of permanent BMPs,
  - Assess final stabilization achieved to allow Notice of Termination
  - Ensure removal of posted SW3P documents
- 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
- Notice of Termination
- File Notice of Termination, when appropriate

JANUARY 2015

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

STORM WATER POLLUTION
GENERAL NOTES

100 % SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/24/2025
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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.

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 NUMBER:
23-03872

1.2 PROJECT LIMITS:
From: COVEL RD. FROM RAY ELLISON BLVD.

To: PATROL RD.

1.3 PROJECT COORDINATES:
BEGIN: (Lat) 29.360970 ,(Long) -98.640450

END: (Lat) 29.322565 ,(Long) -98.646306

1.4 TOTAL PROJECT AREA (Acres): 12.34 AC

1.5 TOTAL AREA TO BE DISTURBED (Acres): 6.81 AC

1.6 NATURE OF CONSTRUCTION ACTIVITY:
ROADWAY, DRIVEWAY AND DRAINAGE IMPROVEMENT

1.7 MAJOR SOIL TYPES:

Soil Type	Description
Houston Black Clay, 3-5% Slopes	STA 10+00 to STA 65+00, gravelly clay, slow infiltration rate, high rate of runoff, slight erosion potential
Patrick Soils, 1-3% Slopes	STA 65+00 to STA 75+00, silty clay, moderate infiltration rate, moderate rate of runoff, moderate erosion potential
Lewisville Silty Clay, 0-1% Slopes	STA 75+00 to STA 86+00, silty clay, slow infiltration rate, high rate of runoff, slight erosion potential

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
CONSTRUCTION EXITS	1 OF 9 & 9 OF 9

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 in Attachment 2.5.)

- ☒ 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
UPPER MEDIO CREEK	*MEDIO CREEK (1912); IMPAIRED BY BACTERIA
NO TMDLs or I-PLANS WERE IDENTIFIED	

* 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 Service (SAWS)

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
	23-03872		178
STATE	STATE DIST.	COUNTY	
TEXAS		BEXAR	
CONT.	SECT.	JOB	HIGHWAY NO.
			COVEL RD

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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
- ☐ ☐ Permanent Planting, Sodding or Seeding
- ☐ ☐ Biodegradable Erosion Control Logs
- ☒ ☐ 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
- ☒ ☐ Inlet Protection
- ☒ ☐ Rock Filter Dams/ Rock Check Dams
- ☒ ☐ Sandbag Berms
- ☒ ☐ Sediment Control Fence
- ☒ ☐ Stabilized Construction Exit
- ☐ ☐ Floating Turbidity Barrier
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Vegetated Filter Strips
- ☒ ☐ Other: Disturbed areas shall be stabilized within 14 days unless activities will resume in 21 days.
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of 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
- ☒ ☐ Sedimentation Basin
  - ☒ 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
HYDROMULCHING	BEGIN PROJECT	END PROJECT

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

- ☒ Excess dirt/mud on road removed daily
- ☒ Haul roads dampened for dust control
- ☐ Loaded haul trucks to be covered with tarpaulin
- ☒ Stabilized construction exit
- ☒ Daily street sweeping
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.5 POLLUTION PREVENTION MEASURES:

- ☒ Chemical Management
- ☒ Concrete and Materials Waste Management
- ☒ Debris and Trash Management
- ☒ Dust Control
- ☒ Sanitary Facilities
- ☐ Other: _____
- ☐ 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

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

- ☒ Fire hydrant flushings
- ☒ Irrigation drainage
- ☒ Pavement washwater (where spills or leaks have not occurred, and detergents are not used)
- ☒ Potable water sources
- ☒ Springs
- ☒ Uncontaminated groundwater
- ☒ Water used to wash vehicles or control dust
- ☒ Other allowable non-stormwater discharges as allowed by TPDES GP TXR150000.

2.8 INSPECTIONS:

All disturbed areas and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by the Contractor and documented on a Field Inspection Report and retained in this SWP3.

2.9 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, recorded on the weekly inspection report, and recorded on the report retained in this SWP3.

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

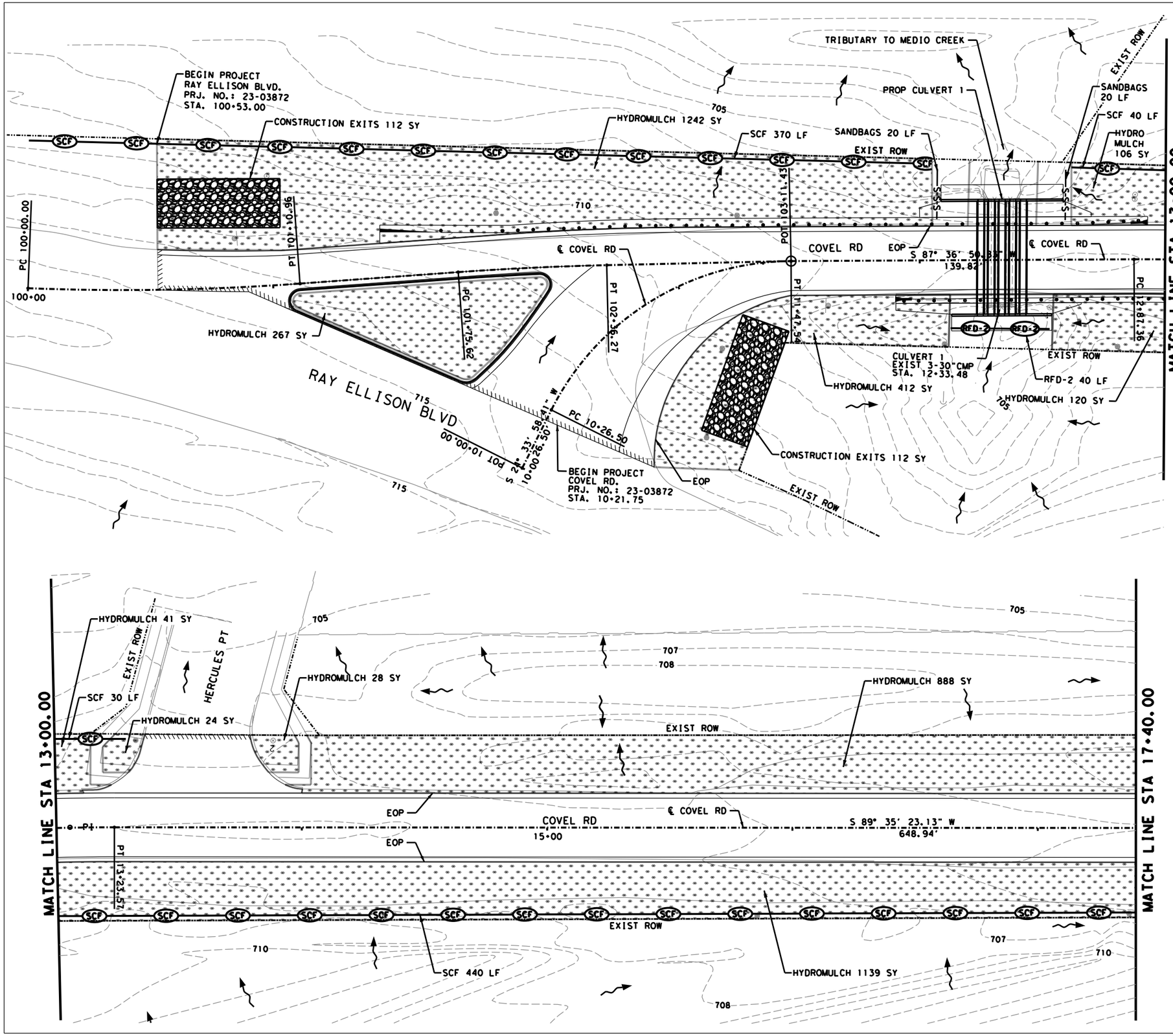
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	23-03872	179

STATE	STATE DIST.	COUNTY
TEXAS		BEXAR

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ITEM NO	DESCRIPTION	UNIT	QTY
520.2	HYDROMULCHING (RESIDENTIAL OR COMMERCIAL)	SY	4239
540.2	ROCK FILTER DAMS (INSTALL/REMOVE) (TYPE 2)	LF	40
540.6	CONSTRUCTION EXITS (INSTALL)	SY	224
540.6	CONSTRUCTION EXITS (REMOVE)	SY	224
540.8	SANDBAGS FOR EROSION CONTROL (6" HIGH)	LF	40
540.9	TEMPORARY SEDIMENT CONTROL FENCE	LF	880



LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD-2 — ROCK FILTER DAM
- -S-S-S- — SANDBAGS
- FLOW DIRECTION
- CONSTRUCTION ENTRANCE
- HYDROMULCHING

NOTES:

1. REFER TO STORMWATER POLLUTION PREVENTION PLAN (SW3P) SUMMARY SHEETS.
2. ALL STATIONS ARE BASELINE STATIONS UNLESS OTHERWISE NOTED.
3. EROSION CONTROL AND SEDIMENT CONTROL QUANTITIES LISTED ARE APPROXIMATE AND MAY NEED TO BE VARIED TO MEET FIELD CONDITIONS.
4. ALL OPERATIONS WILL BE RESTRICTED TO WITHIN PUBLIC ROW THROUGHOUT PROJECT LIMITS ONLY.

0 20 40
SCALE: 1"=40'

STATE OF TEXAS
KRISTINA SAENZ
116984
LICENSED PROFESSIONAL ENGINEER

Kristina Saenz P.E.
6/24/2025

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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

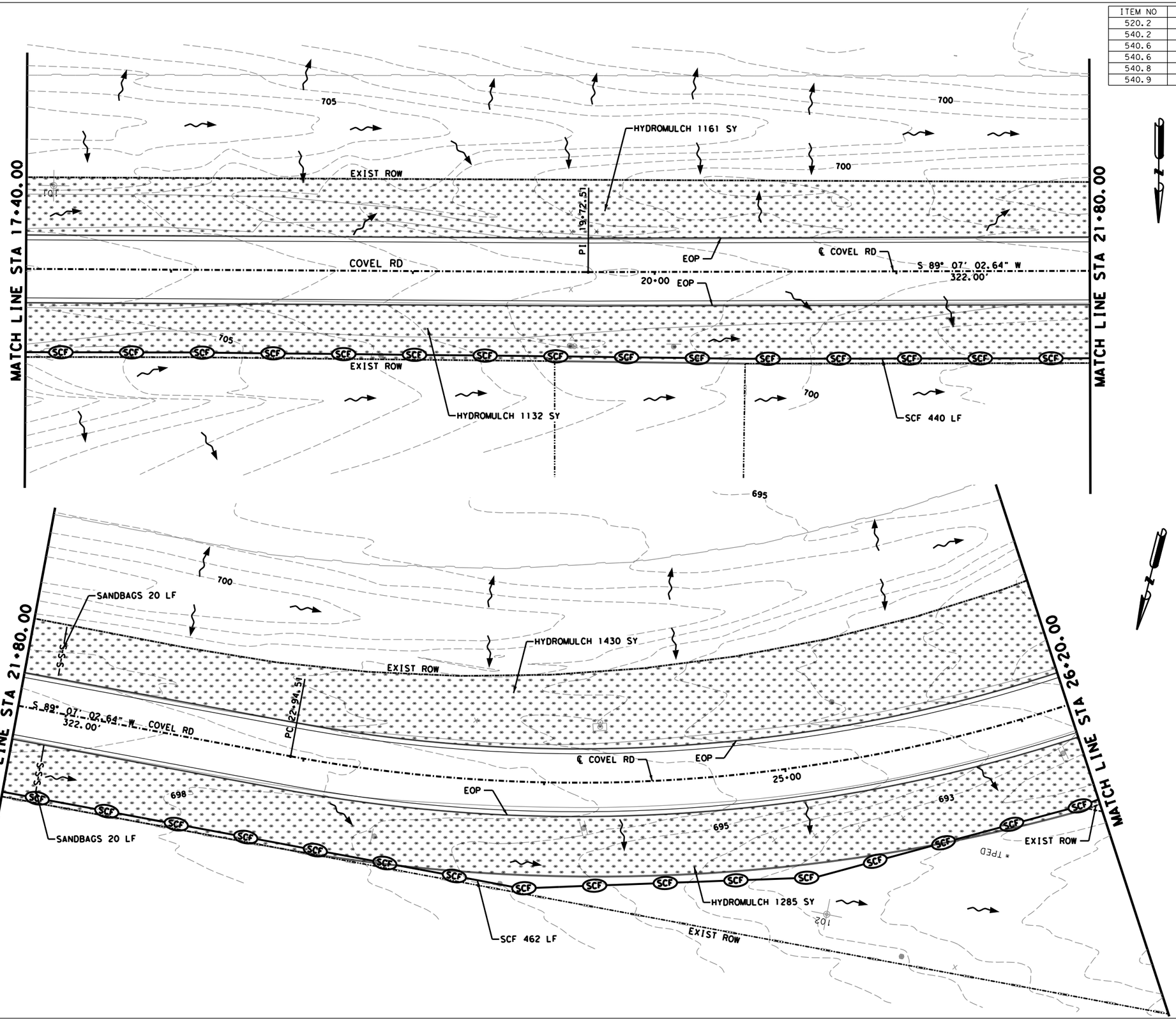
SW3P LAYOUT

SHEET 1 OF 9

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ITEM NO	DESCRIPTION	UNIT	QTY
520.2	HYDROMULCHING (RESIDENTIAL OR COMMERCIAL)	SY	5008
540.2	ROCK FILTER DAMS (INSTALL/REMOVE) (TYPE 2)	LF	0
540.6	CONSTRUCTION EXITS (INSTALL)	SY	0
540.6	CONSTRUCTION EXITS (REMOVE)	SY	0
540.8	SANDBAGS FOR EROSION CONTROL (6" HIGH)	LF	40
540.9	TEMPORARY SEDIMENT CONTROL FENCE	LF	902



LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD-2 — ROCK FILTER DAM
- S-S-S — SANDBAGS
- FLOW DIRECTION
- CONSTRUCTION ENTRANCE
- HYDROMULCHING

NOTES:

1. REFER TO STORMWATER POLLUTION PREVENTION PLAN (SW3P) SUMMARY SHEETS.
2. ALL STATIONS ARE BASELINE STATIONS UNLESS OTHERWISE NOTED.
3. EROSION CONTROL AND SEDIMENT CONTROL QUANTITIES LISTED ARE APPROXIMATE AND MAY NEED TO BE VARIED TO MEET FIELD CONDITIONS.
4. ALL OPERATIONS WILL BE RESTRICTED TO WITHIN PUBLIC ROW THROUGHOUT PROJECT LIMITS ONLY.

0 20 40

SCALE: 1"=40'

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COVEL RD IMPROVEMENTS

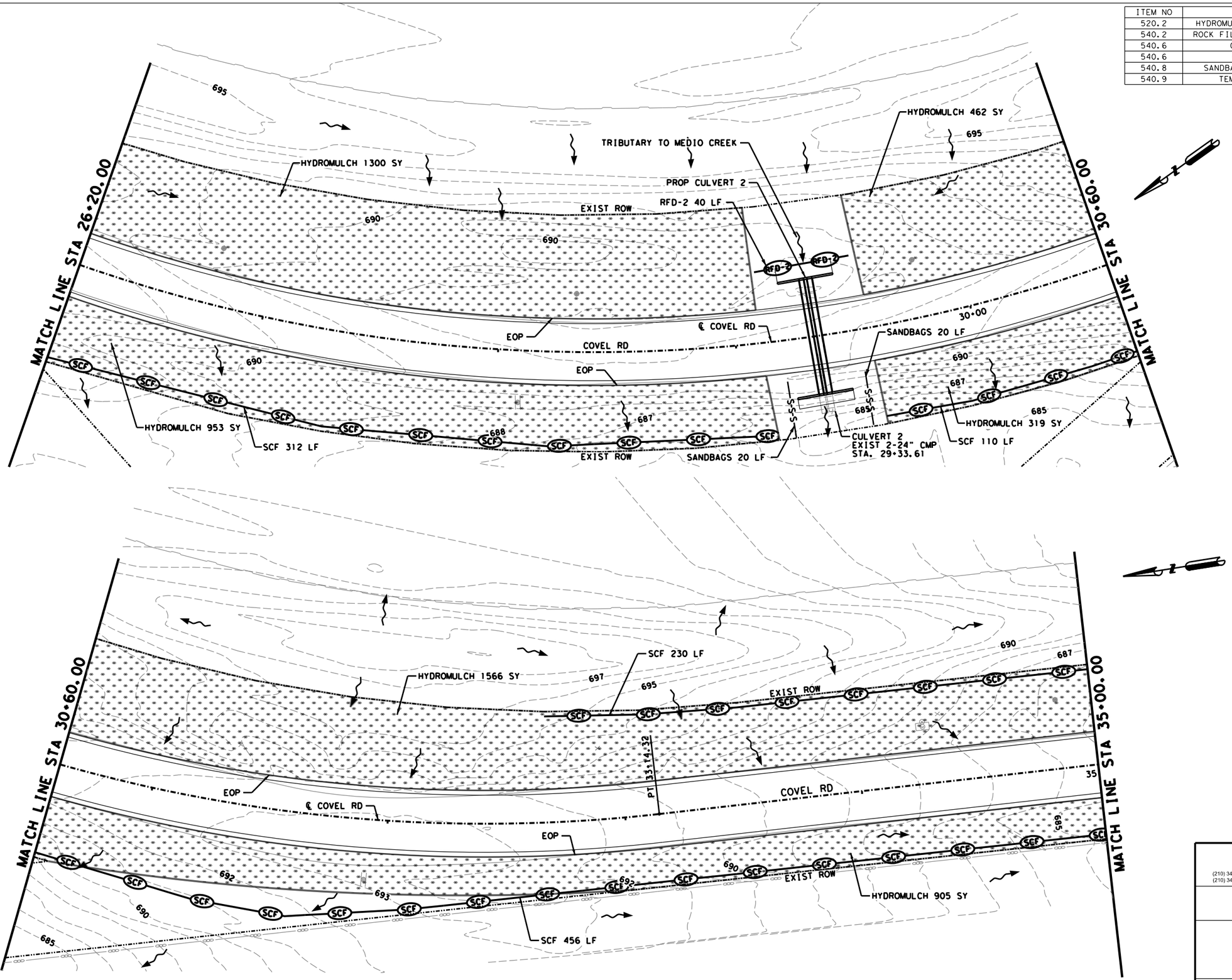
SW3P LAYOUT

SHEET 2 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/24/2025
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ITEM NO	DESCRIPTION	UNIT	QTY
520.2	HYDROMULCHING (RESIDENTIAL OR COMMERCIAL)	SY	5505
540.2	ROCK FILTER DAMS (INSTALL/REMOVE) (TYPE 2)	LF	40
540.6	CONSTRUCTION EXITS (INSTALL)	SY	0
540.6	CONSTRUCTION EXITS (REMOVE)	SY	0
540.8	SANDBAGS FOR EROSION CONTROL (6" HIGH)	LF	40
540.9	TEMPORARY SEDIMENT CONTROL FENCE	LF	1113



LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD-2 — ROCK FILTER DAM
- S-S-S — SANDBAGS
- FLOW DIRECTION
- CONSTRUCTION ENTRANCE
- HYDROMULCHING

NOTES:

1. REFER TO STORMWATER POLLUTION PREVENTION PLAN (SW3P) SUMMARY SHEETS.
2. ALL STATIONS ARE BASELINE STATIONS UNLESS OTHERWISE NOTED.
3. EROSION CONTROL AND SEDIMENT CONTROL QUANTITIES LISTED ARE APPROXIMATE AND MAY NEED TO BE VARIED TO MEET FIELD CONDITIONS.
4. ALL OPERATIONS WILL BE RESTRICTED TO WITHIN PUBLIC ROW THROUGHOUT PROJECT LIMITS ONLY.

0 20 40

SCALE: 1"=40'

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COVEL RD IMPROVEMENTS

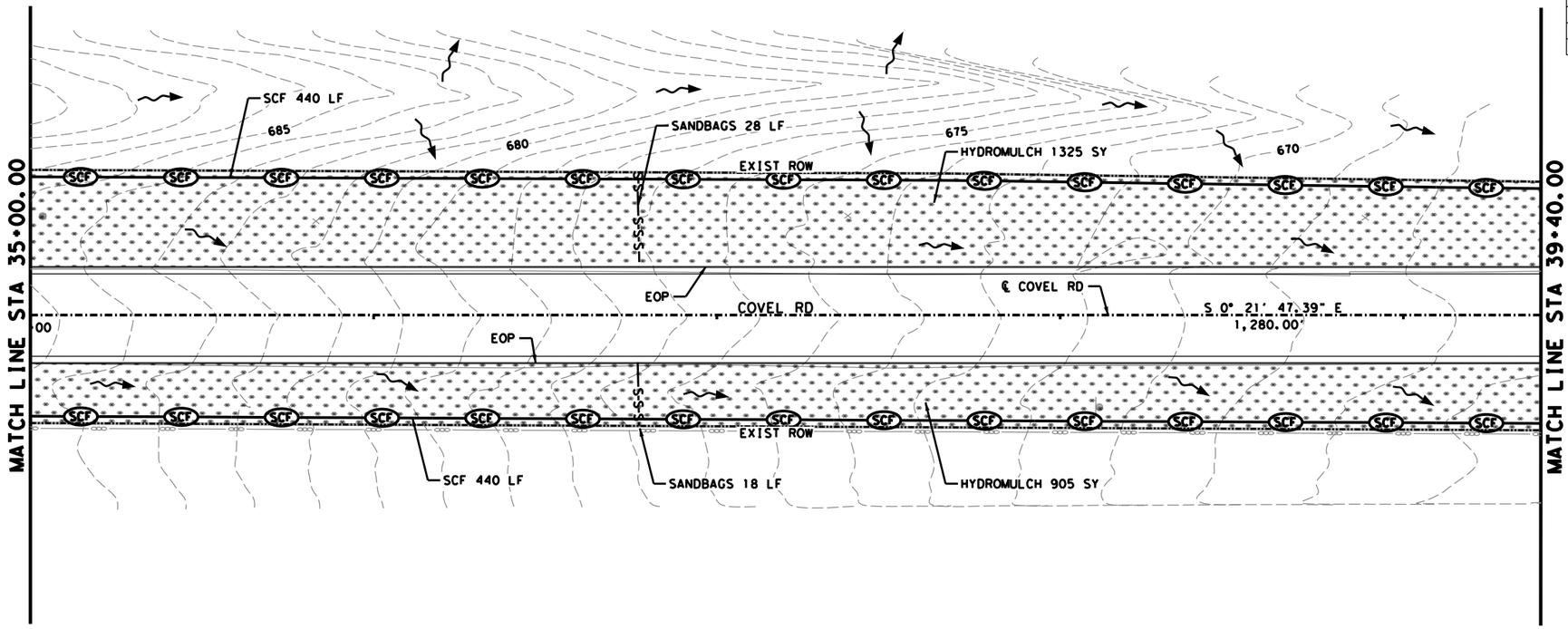
SW3P LAYOUT

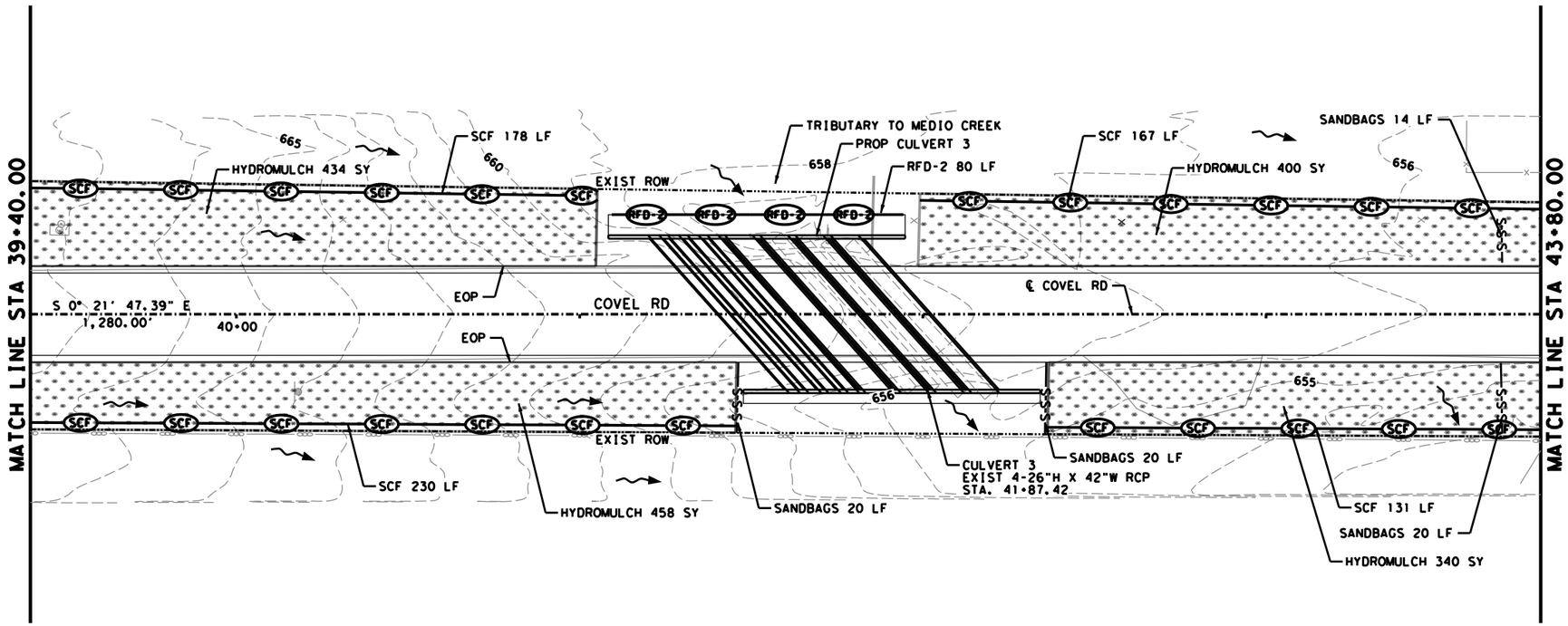
SHEET 3 OF 9

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ITEM NO	DESCRIPTION	UNIT	QTY
520.2	HYDROMULCHING (RESIDENTIAL OR COMMERCIAL)	SY	3862
540.2	ROCK FILTER DAMS (INSTALL/REMOVE) (TYPE 2)	LF	80
540.6	CONSTRUCTION EXITS (INSTALL)	SY	0
540.6	CONSTRUCTION EXITS (REMOVE)	SY	0
540.8	SANDBAGS FOR EROSION CONTROL (6" HIGH)	LF	120
540.9	TEMPORARY SEDIMENT CONTROL FENCE	LF	1586





LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD-2 — ROCK FILTER DAM
- S-S-S — SANDBAGS
- FLOW DIRECTION
- CONSTRUCTION ENTRANCE
- HYDROMULCHING

NOTES:

1. REFER TO STORMWATER POLLUTION PREVENTION PLAN (SW3P) SUMMARY SHEETS.
2. ALL STATIONS ARE BASELINE STATIONS UNLESS OTHERWISE NOTED.
3. EROSION CONTROL AND SEDIMENT CONTROL QUANTITIES LISTED ARE APPROXIMATE AND MAY NEED TO BE VARIED TO MEET FIELD CONDITIONS.
4. ALL OPERATIONS WILL BE RESTRICTED TO WITHIN PUBLIC ROW THROUGHOUT PROJECT LIMITS ONLY.

0 20 40

SCALE: 1"=40'

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PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

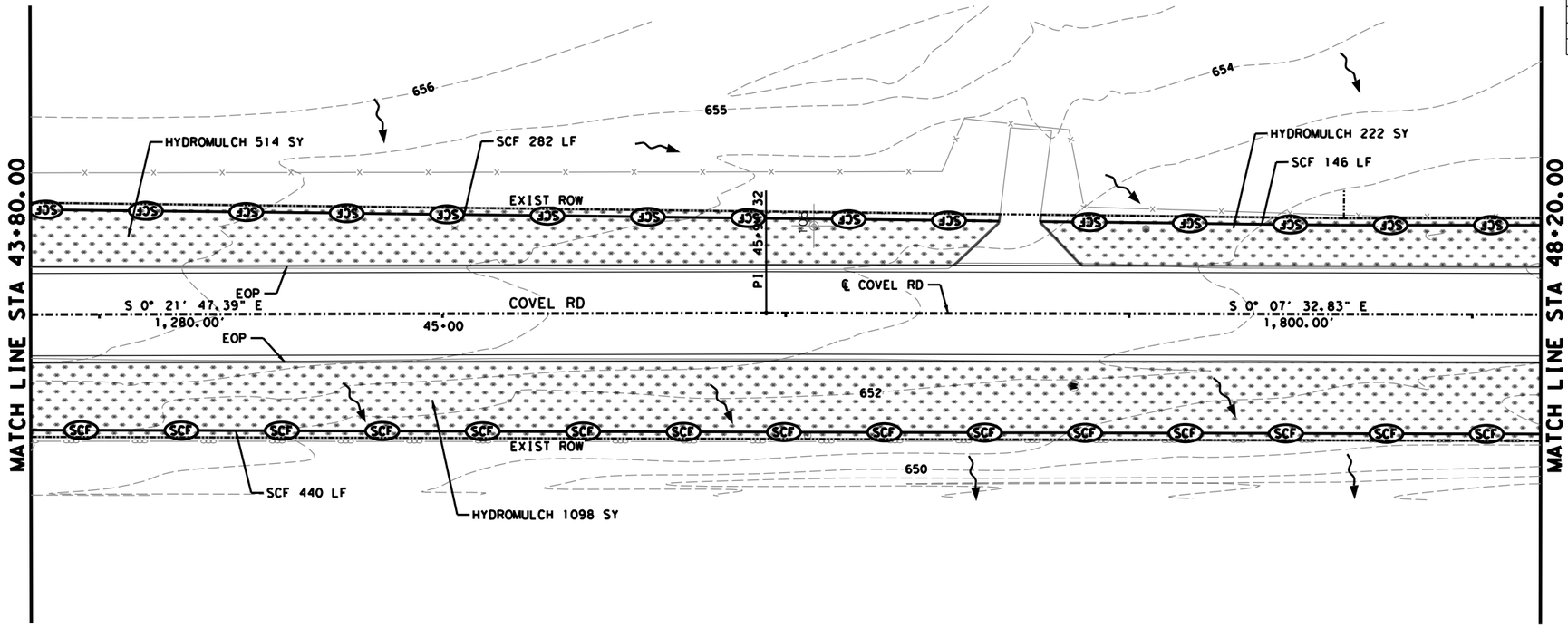
SW3P LAYOUT

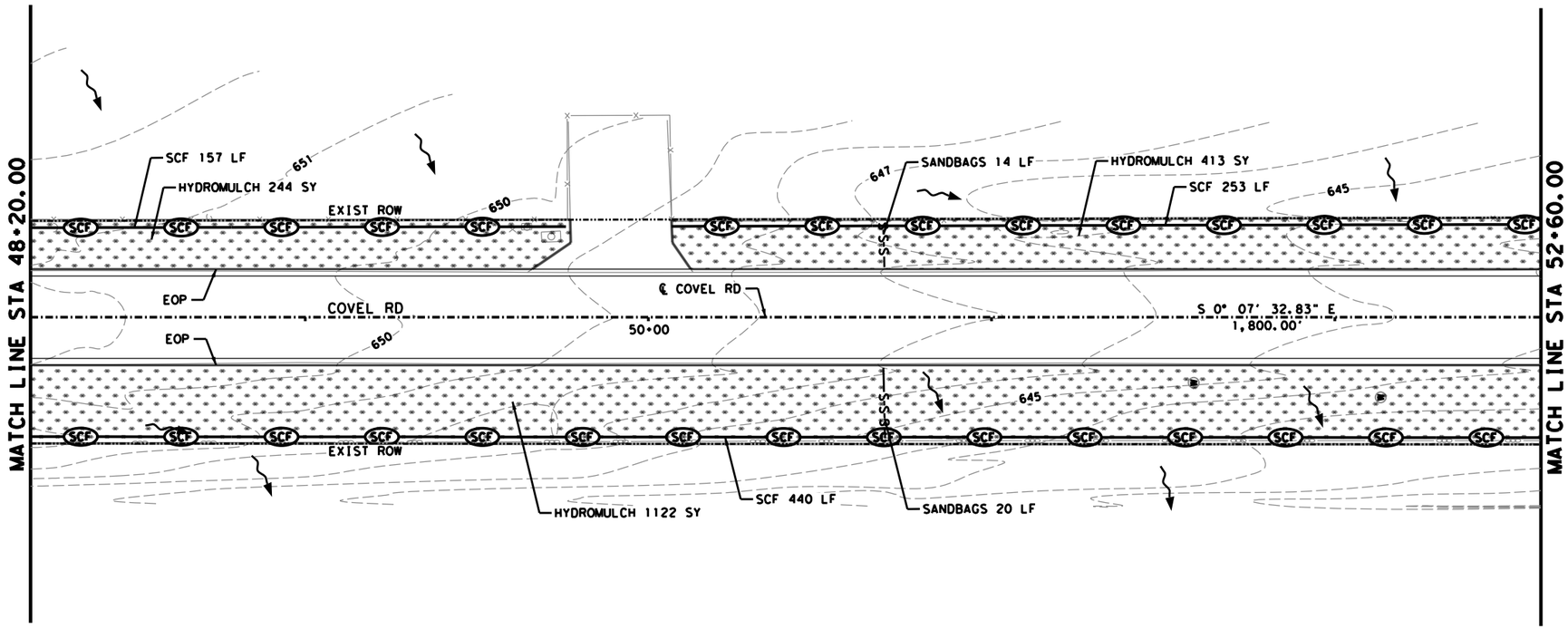
SHEET 4 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/24/2025
DRWN. BY: RA	DSGN. BY: JM	CHKD. BY: II	SHT NO.: 183

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ITEM NO	DESCRIPTION	UNIT	QTY
520.2	HYDROMULCHING (RESIDENTIAL OR COMMERCIAL)	SY	3613
540.2	ROCK FILTER DAMS (INSTALL/REMOVE) (TYPE 2)	LF	0
540.6	CONSTRUCTION EXITS (INSTALL)	SY	0
540.6	CONSTRUCTION EXITS (REMOVE)	SY	0
540.8	SANDBAGS FOR EROSION CONTROL (6" HIGH)	LF	34
540.9	TEMPORARY SEDIMENT CONTROL FENCE	LF	1718





LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD-2 — ROCK FILTER DAM
- S-S-S — SANDBAGS
- FLOW DIRECTION
- CONSTRUCTION ENTRANCE
- HYDROMULCHING

NOTES:

1. REFER TO STORMWATER POLLUTION PREVENTION PLAN (SW3P) SUMMARY SHEETS.
2. ALL STATIONS ARE BASELINE STATIONS UNLESS OTHERWISE NOTED.
3. EROSION CONTROL AND SEDIMENT CONTROL QUANTITIES LISTED ARE APPROXIMATE AND MAY NEED TO BE VARIED TO MEET FIELD CONDITIONS.
4. ALL OPERATIONS WILL BE RESTRICTED TO WITHIN PUBLIC ROW THROUGHOUT PROJECT LIMITS ONLY.

0 20 40

SCALE: 1"=40'

STATE OF TEXAS
KRISTINA SAENZ
116984
LICENSED
PROFESSIONAL ENGINEER

Kristina Saenz P.E.

6/24/2025

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TBPE REG. NO. F-483
http://www.pozcam.com/

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

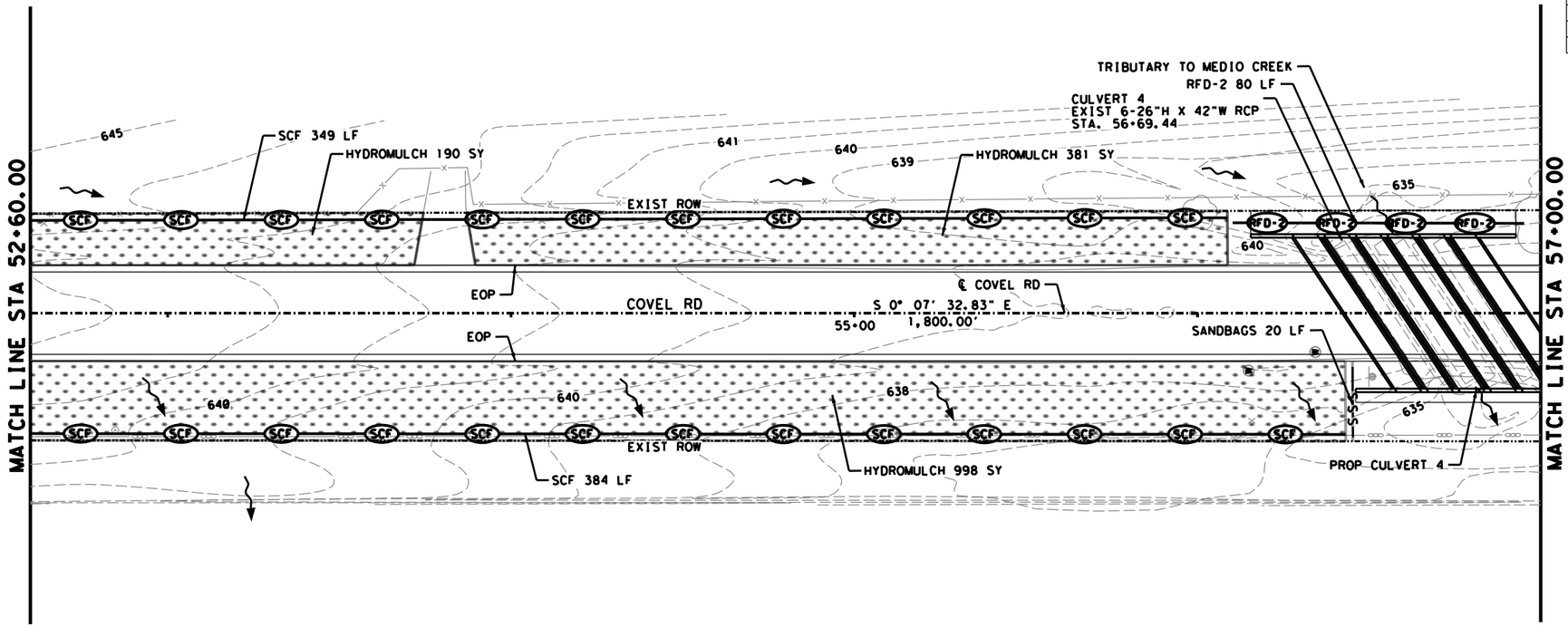
SW3P LAYOUT

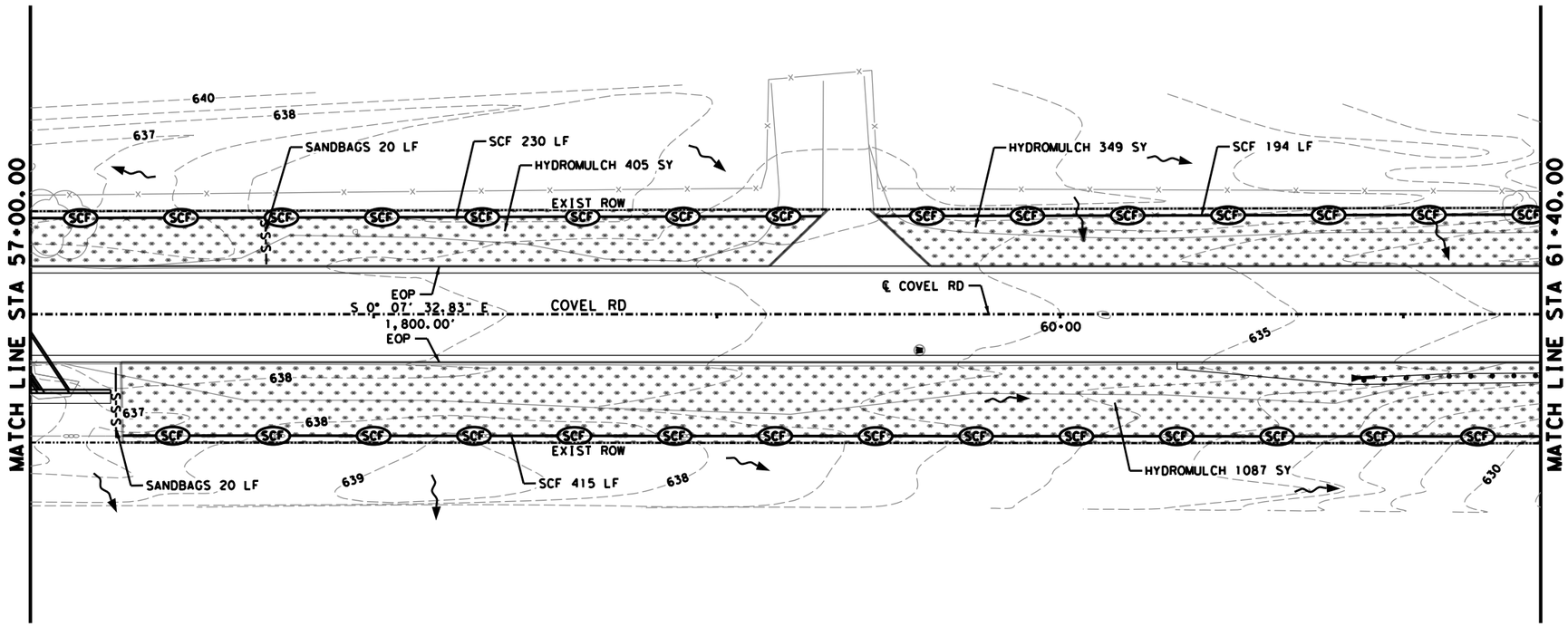
SHEET 5 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/24/2025
DRWN. BY: RA	DSGN. BY: JM	CHKD. BY: II	SHT NO.: 184

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ITEM NO	DESCRIPTION	UNIT	QTY
520.2	HYDROMULCHING (RESIDENTIAL OR COMMERCIAL)	SY	3410
540.2	ROCK FILTER DAMS (INSTALL/REMOVE) (TYPE 2)	LF	80
540.6	CONSTRUCTION EXITS (INSTALL)	SY	0
540.6	CONSTRUCTION EXITS (REMOVE)	SY	0
540.8	SANDBAGS FOR EROSION CONTROL (6" HIGH)	LF	60
540.9	TEMPORARY SEDIMENT CONTROL FENCE	LF	1572





LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD-2 — ROCK FILTER DAM
- S-S-S — SANDBAGS
- FLOW DIRECTION
- CONSTRUCTION ENTRANCE
- HYDROMULCHING

NOTES:

1. REFER TO STORMWATER POLLUTION PREVENTION PLAN (SW3P) SUMMARY SHEETS.
2. ALL STATIONS ARE BASELINE STATIONS UNLESS OTHERWISE NOTED.
3. EROSION CONTROL AND SEDIMENT CONTROL QUANTITIES LISTED ARE APPROXIMATE AND MAY NEED TO BE VARIED TO MEET FIELD CONDITIONS.
4. ALL OPERATIONS WILL BE RESTRICTED TO WITHIN PUBLIC ROW THROUGHOUT PROJECT LIMITS ONLY.

0 20 40

SCALE: 1"=40'

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COVEL RD IMPROVEMENTS

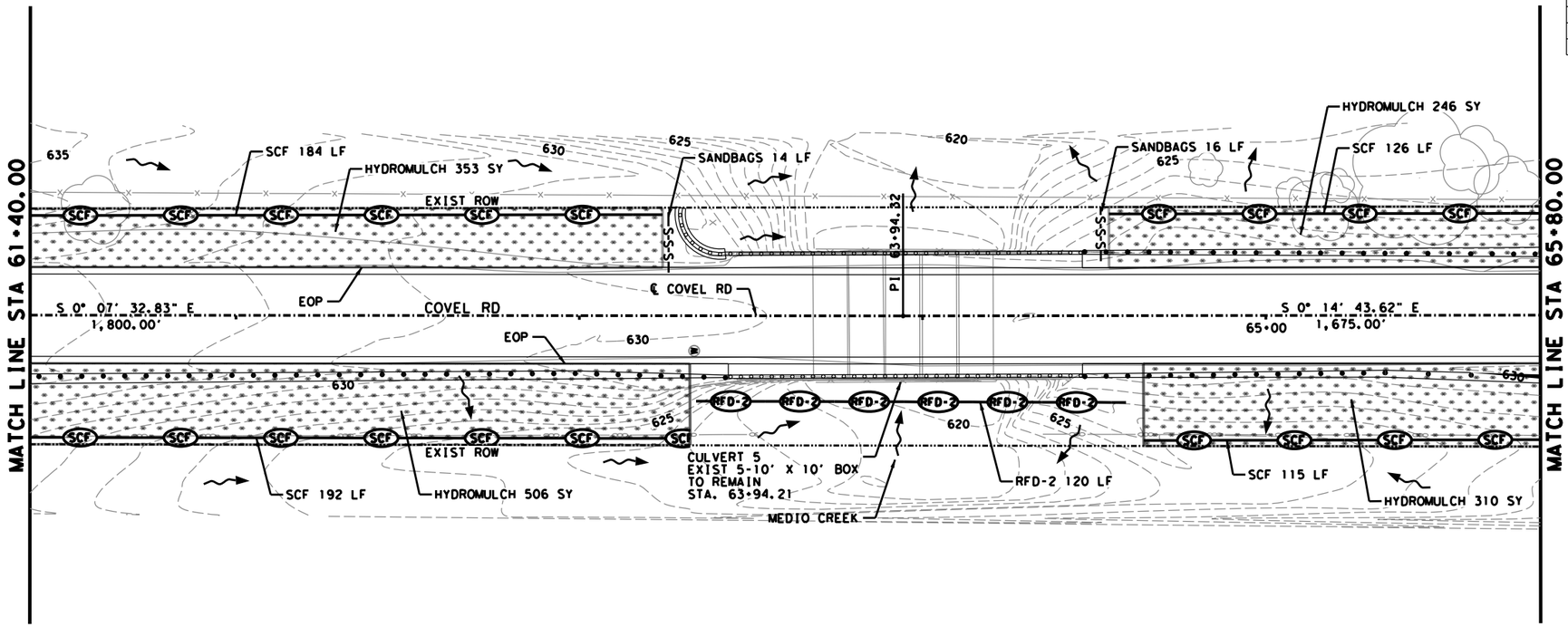
SW3P LAYOUT

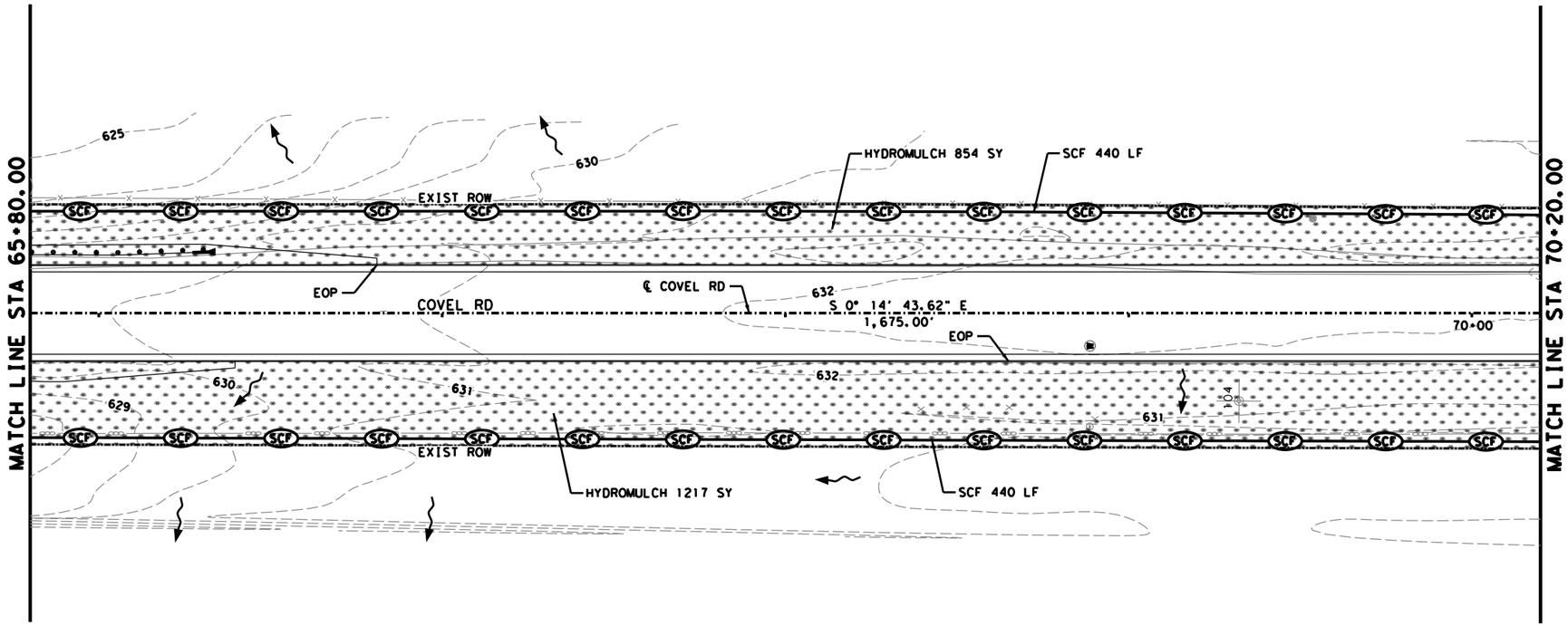
SHEET 6 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/24/2025
DRWN. BY: RA	DSGN. BY: JM	CHKD. BY: II	SHT NO.: 185

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ITEM NO	DESCRIPTION	UNIT	QTY
520.2	HYDROMULCHING (RESIDENTIAL OR COMMERCIAL)	SY	3369
540.2	ROCK FILTER DAMS (INSTALL/REMOVE) (TYPE 2)	LF	120
540.6	CONSTRUCTION EXITS (INSTALL)	SY	0
540.6	CONSTRUCTION EXITS (REMOVE)	SY	0
540.8	SANDBAGS FOR EROSION CONTROL (6" HIGH)	LF	30
540.9	TEMPORARY SEDIMENT CONTROL FENCE	LF	1497





LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD-2 — ROCK FILTER DAM
- —S-S-S— SANDBAGS
- FLOW DIRECTION
- CONSTRUCTION ENTRANCE
- HYDROMULCHING

NOTES:

1. REFER TO STORMWATER POLLUTION PREVENTION PLAN (SW3P) SUMMARY SHEETS.
2. ALL STATIONS ARE BASELINE STATIONS UNLESS OTHERWISE NOTED.
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0 20 40
SCALE: 1"=40'

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COVEL RD IMPROVEMENTS

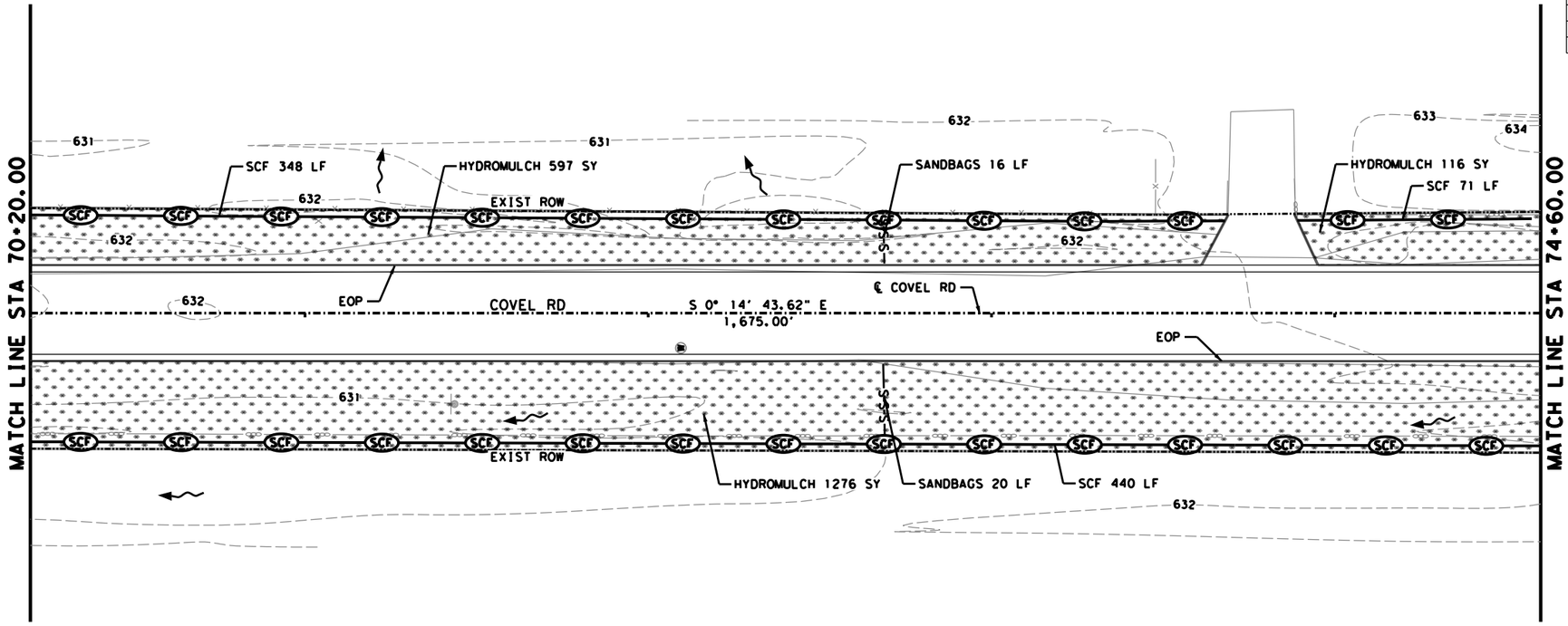
SW3P LAYOUT

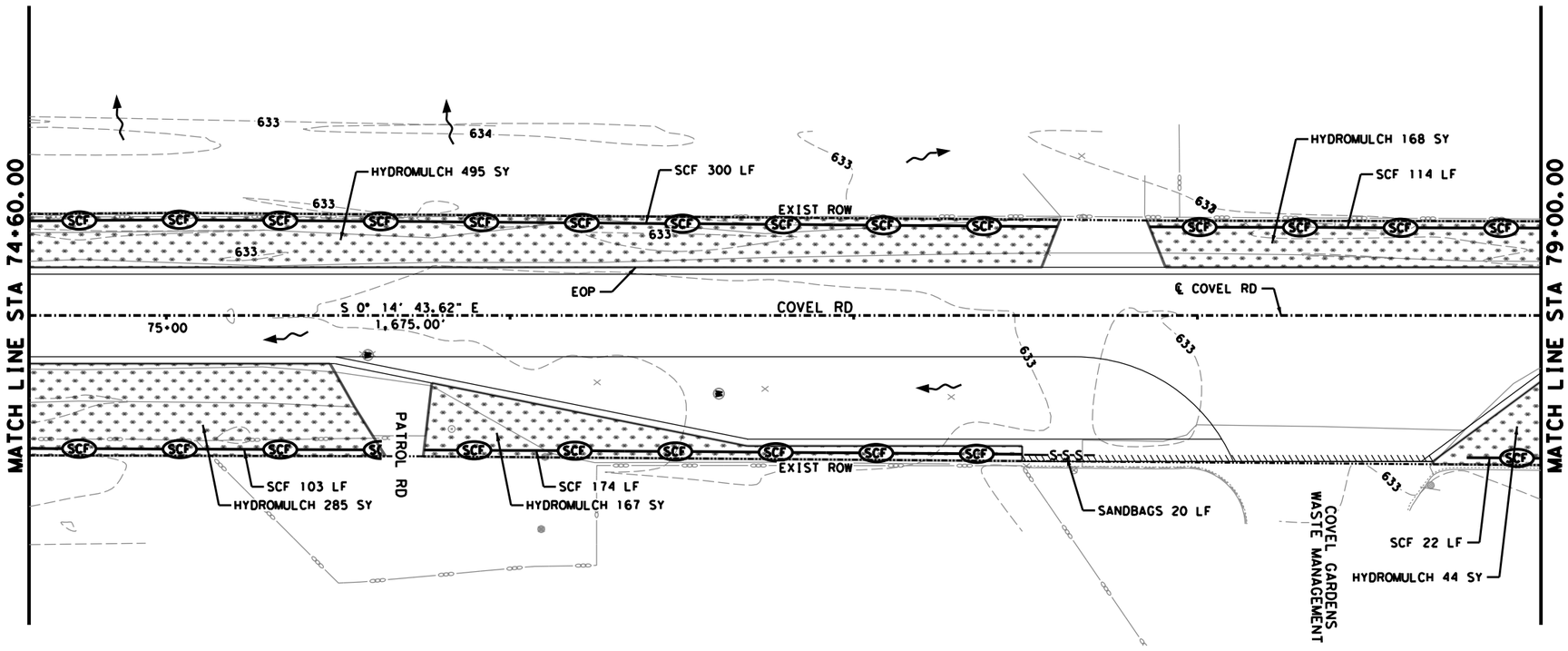
SHEET 7 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/24/2025
DRWN. BY: RA	DSGN. BY: JM	CHKD. BY: II	SHT NO.: 186

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ITEM NO	DESCRIPTION	UNIT	QTY
520.2	HYDROMULCHING (RESIDENTIAL OR COMMERCIAL)	SY	3148
540.2	ROCK FILTER DAMS (INSTALL/REMOVE) (TYPE 2)	LF	0
540.6	CONSTRUCTION EXITS (INSTALL)	SY	0
540.6	CONSTRUCTION EXITS (REMOVE)	SY	0
540.8	SANDBAGS FOR EROSION CONTROL (6" HIGH)	LF	56
540.9	TEMPORARY SEDIMENT CONTROL FENCE	LF	1572





LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD-2 — ROCK FILTER DAM
- S-S-S — SANDBAGS
- FLOW DIRECTION
- CONSTRUCTION ENTRANCE
- HYDROMULCHING

NOTES:

1. REFER TO STORMWATER POLLUTION PREVENTION PLAN (SW3P) SUMMARY SHEETS.
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0 20 40
SCALE: 1"=40'

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PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

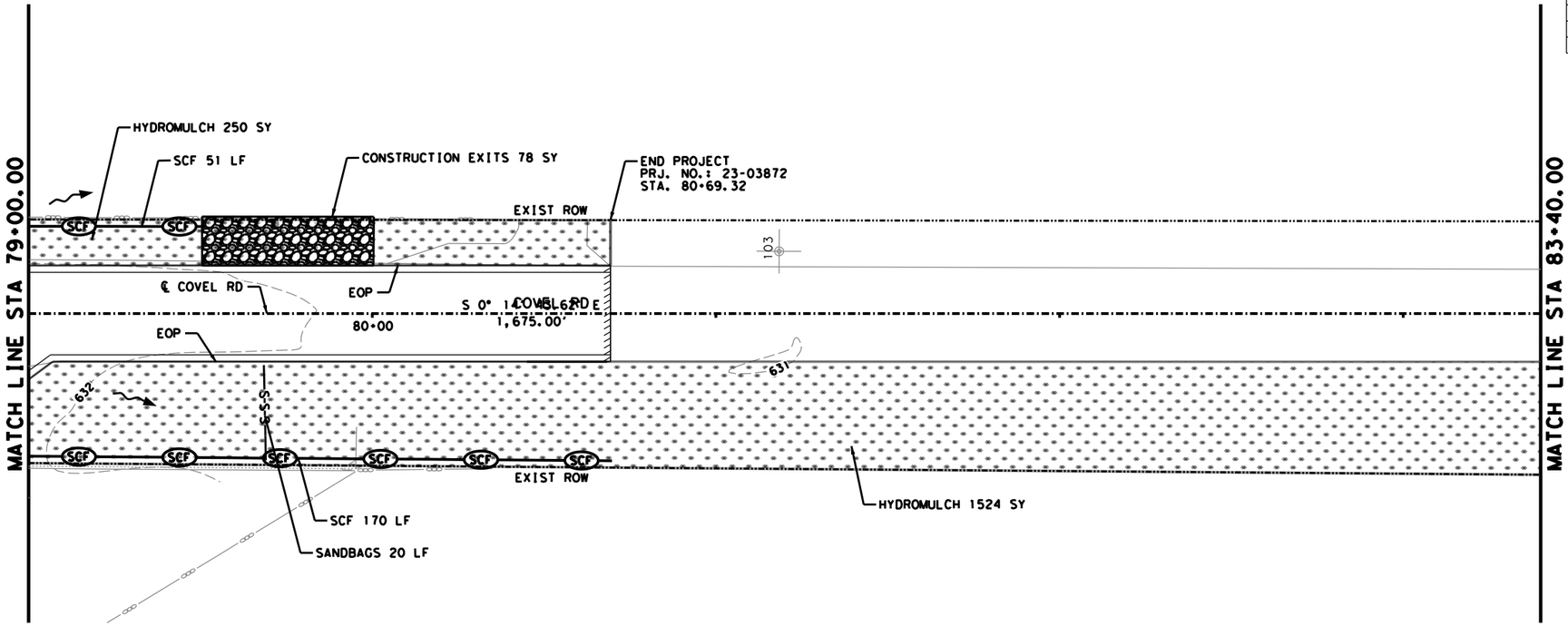
SW3P LAYOUT

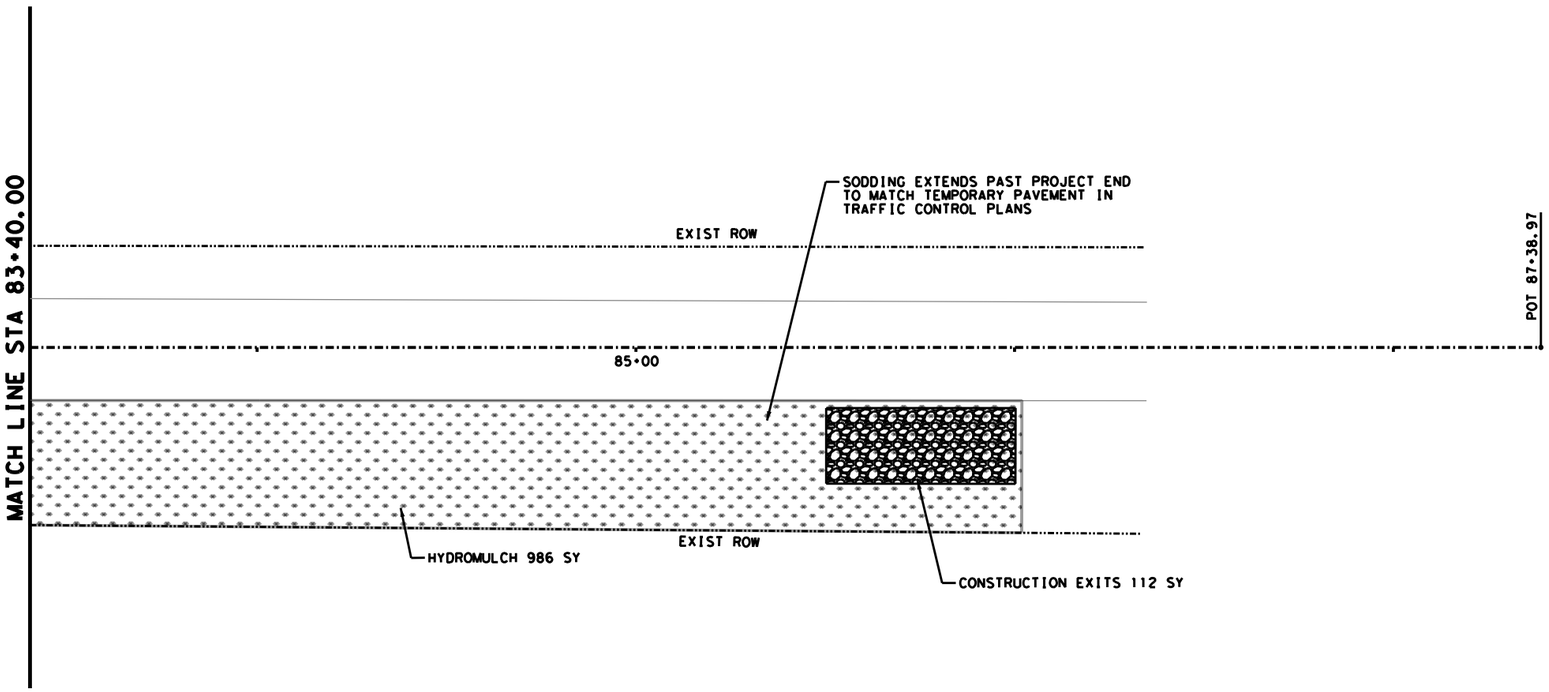
SHEET 8 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/24/2025
DRWN. BY: RA	DSGN. BY: JM	CHKD. BY: II	SHT NO.: 187

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ITEM NO	DESCRIPTION	UNIT	QTY
520.2	HYDROMULCHING (RESIDENTIAL OR COMMERCIAL)	SY	2760
540.2	ROCK FILTER DAMS (INSTALL/REMOVE) (TYPE 2)	LF	0
540.6	CONSTRUCTION EXITS (INSTALL)	SY	190
540.6	CONSTRUCTION EXITS (REMOVE)	SY	190
540.8	SANDBAGS FOR EROSION CONTROL (6" HIGH)	LF	20
540.9	TEMPORARY SEDIMENT CONTROL FENCE	LF	221





LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD-2 — ROCK FILTER DAM
- S-S-S — SANDBAGS
- FLOW DIRECTION
- CONSTRUCTION ENTRANCE
- HYDROMULCHING

NOTES:

1. REFER TO STORMWATER POLLUTION PREVENTION PLAN (SW3P) SUMMARY SHEETS.
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0 20 40

SCALE: 1"=40'

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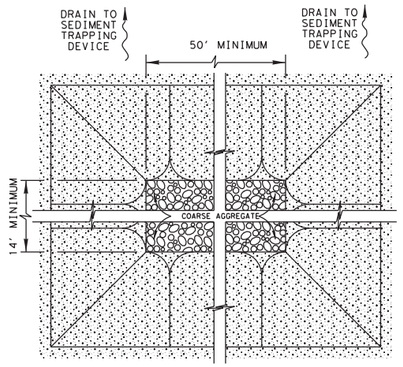
COVEL RD IMPROVEMENTS

SW3P LAYOUT

SHEET 9 OF 9

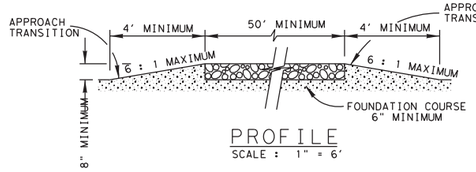
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PLAN

SCALE : 1" = 6'



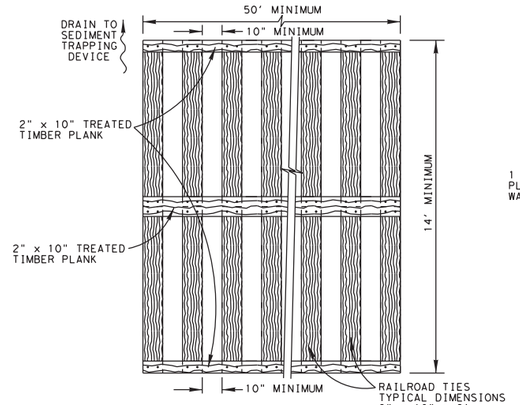
PROFILE

SCALE : 1" = 6'

GENERAL NOTES

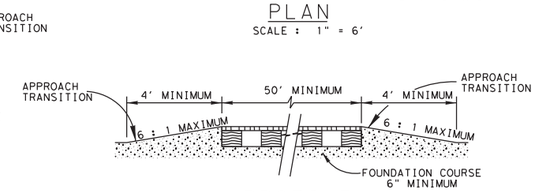
1. THE LENGTH OF THE TYPE 1 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS, BUT NOT LESS THAN 50'.
2. THE COARSE AGGREGATE SHOULD BE OPEN GRADED WITH A SIZE OF 4" TO 8".
3. THE APPROACH TRANSITIONS SHOULD BE NO STEEPER THAN 6 : 1 AND CONSTRUCTED AS DIRECTED BY THE ENGINEER.
4. THE CONSTRUCTION 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'



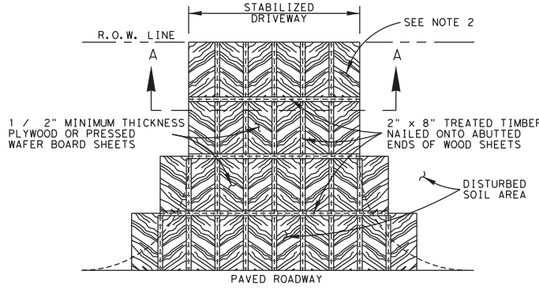
PROFILE

SCALE : 1" = 6'

GENERAL NOTES

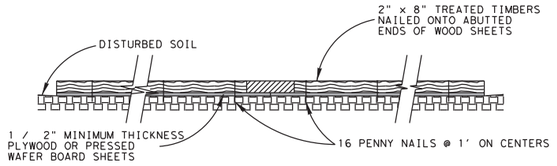
1. THE LENGTH OF THE TYPE 2 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS, BUT NOT LESS THAN 50'.
2. THE TREATED TIMBER PLANKS SHALL BE ATTACHED TO THE RAILROAD TIES WITH 1 / 2" x 6" MIN. LAG BOLTS. OTHER FASTENERS MAY BE USED AS APPROVED BY THE ENGINEER.
3. THE TREATED TIMBER PLANKS SHALL BE #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'



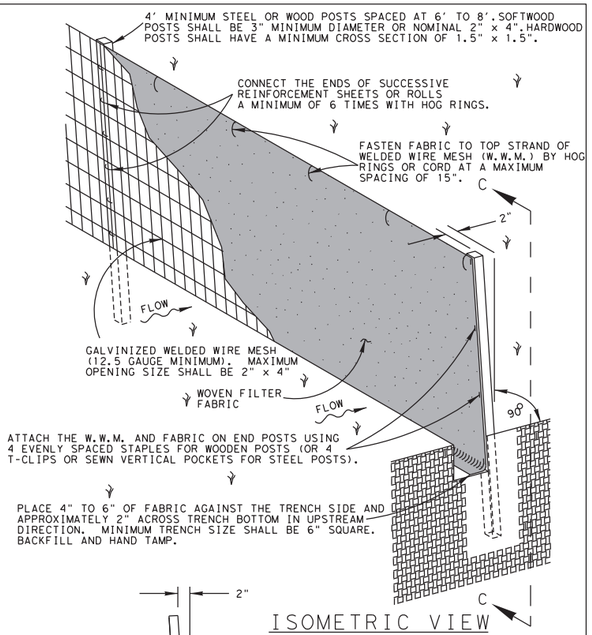
SECTION A-A

SCALE : 1" = 2'

GENERAL NOTES

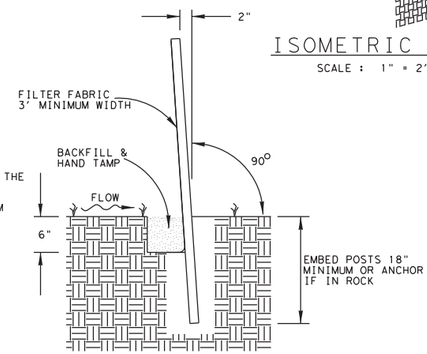
1. THE LENGTH OF THE TYPE 3 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.
2. THE TYPE 3 CONSTRUCTION EXIT MAY BE CONSTRUCTED FROM OPEN GRADED CRUSHED STONE WITH A SIZE OF 2 TO 4 INCHES SPREAD A MINIMUM OF 4 INCHES THICK TO THE LIMITS SHOWN ON THE PLANS.
3. THE 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

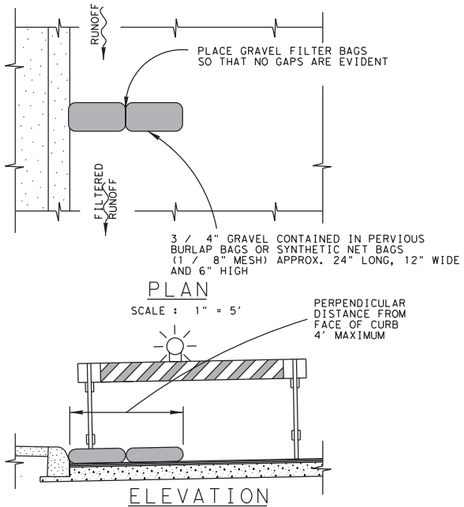
A SEDIMENT CONTROL FENCE MAY BE CONSTRUCTED NEAR THE DOWNSTREAM PERIMETER OF A DISTURBED AREA ALONG A CONTOUR TO INTERCEPT SEDIMENT FROM OVERLAND RUN-OFF. A 2 YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE TO BE FILTERED.

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

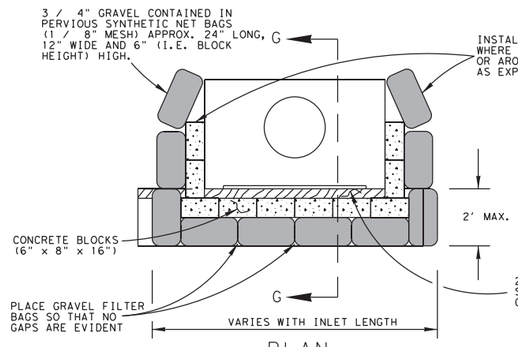
SCALE : 1" = 5'

ELEVATION

SCALE : 1" = 5'

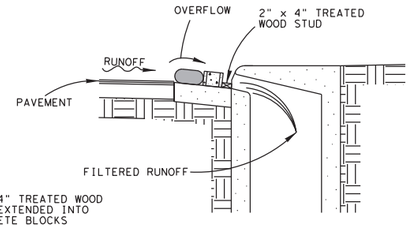
NOTE:
STRADDLE GRAVEL FILTER BAGS WITH TYPE 1 BARRICADES MOUNTED WITH TYPE "A" FLASHING WARNING LIGHT. SEE BARRICADE CONSTRUCTION SIGN DETAILS. PLACE FLASHING LIGHTS AWAY FROM GUTTER, FLUSH WITH OUTSIDE EDGE OF BAG CONFIGURATION.

GRAVEL FILTER BAGS



PLAN

SCALE : 1" = 5'



SECTION G-G

SCALE : 1" = 5'

NOTE:
GRAVEL FILTERS CAN BE USED ON PAVEMENT OR BARE GROUND.

CURB INLET GRAVEL FILTER

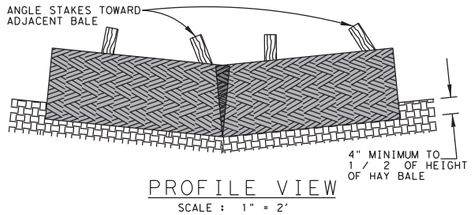
JANUARY 2005 SHEET NO.: 1 OF 2

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 1

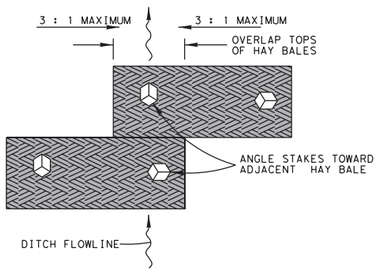
100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/24/2025
DRWN. BY: V. VASQUEZ	DSGN. BY:	CHKD. BY:	SHEET NO. 189

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6/24/2025
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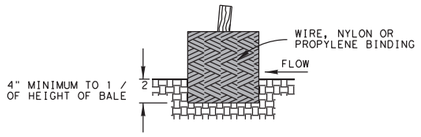
PROFILE VIEW

SCALE : 1" = 2'



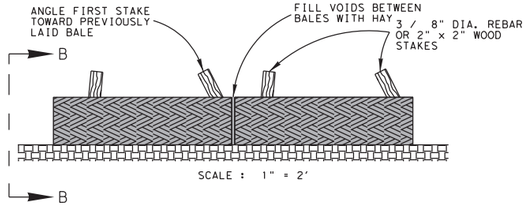
PLAN VIEW

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:

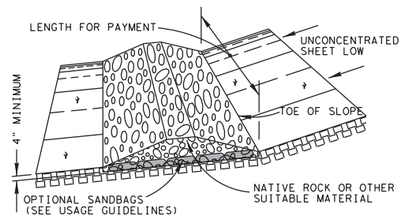
1. THE DITCH SIDESLOPES SHOULD BE GRADED AS FLAT AS POSSIBLE TO MAXIMIZE THE DRAINAGE FLOW RATE THRU THE HAY.
2. THE DITCH SHOULD BE GRADED LARGE ENOUGH TO CONTAIN THE OVERLAPPING DRAINAGE WHEN SEDIMENT HAS FILLED TO THE TOP OF THE BAILED HAY.

BALES SHOULD BE REPLACED USUALLY EVERY 2 MONTHS OR MORE OFTEN DURING WET WEATHER WHEN LOSS OF STRUCTURAL INTERGRITY IS ACCELERATED.

GENERAL NOTES

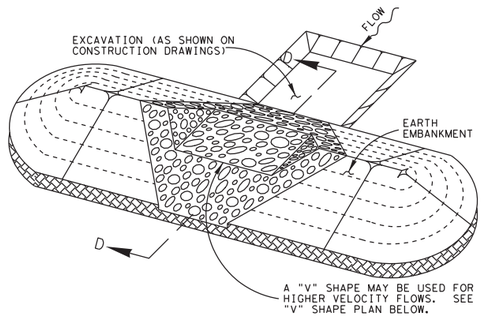
1. HAY BALES SHALL BE A MINIMUM OF 30" IN LENGTH AND WEIGH A MINIMUM OF 50 LBS.
2. HAY BALES SHALL BE BOUND BY EITHER WIRE OR NYLON OR POLYPROPYLENE STRING. THE BALES SHALL BE COMPOSED ENTIRELY OF VEGETABLE MATTER.
3. HAY BALES SHALL BE EMBEDDED IN THE SOIL A MININMUM OF 4" AND, WHERE POSSIBLE, ONE-HALF 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



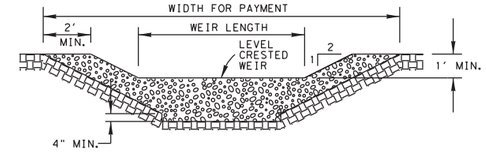
TYPE 1 FILTER DAM AT TOE OF SLOPE

SCALE : 1" = 10'



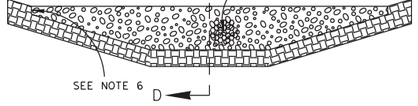
TYPE 1 & 2 FILTER DAM AT SEDIMENT TRAP

SCALE : 1" = 10'



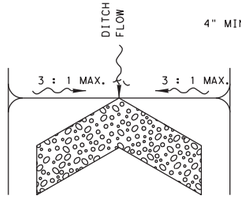
PROFILE OF TYPE 1 & 2 FILTER DAM AT SEDIMENT TRAP

SCALE : 1" = 6'



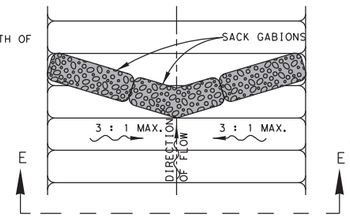
TYPE 1, 2 & 3 FILTER DAM AT CHANNEL SECTIONS

SCALE : 1" = 6'



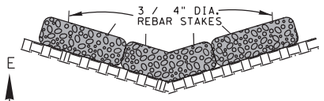
"V" SHAPE PLAN VIEW

NOT TO SCALE



PLAN VIEW

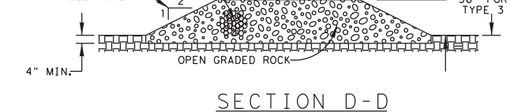
SCALE : 1" = 10'



SECTION E-E

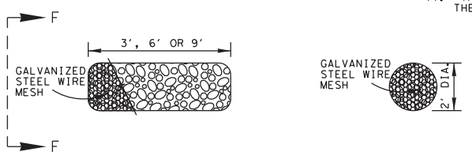
SCALE : 1" = 10'

TYPE 4 FILTER DAM AT DITCHES & SMALLER CHANNELS PLAN VIEW



SECTION D-D

SCALE : 1" = 6'



TYPE 4 SACK GABION DETAIL SECTION F-F

SCALE : 1" = 6'

SCALE : 1" = 6'

ROCK FILTER DAMS

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.

JANUARY 2005

SHEET NO.: 2 OF 2

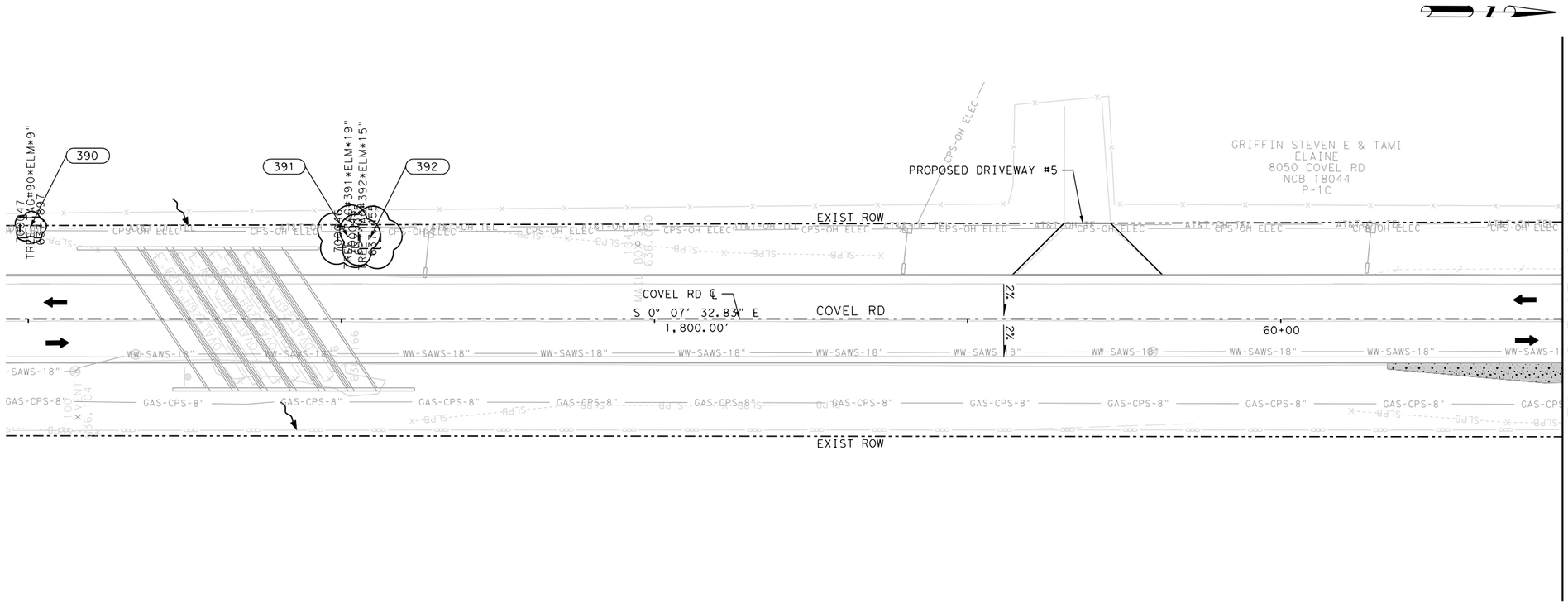
CITY OF SAN ANTONIO

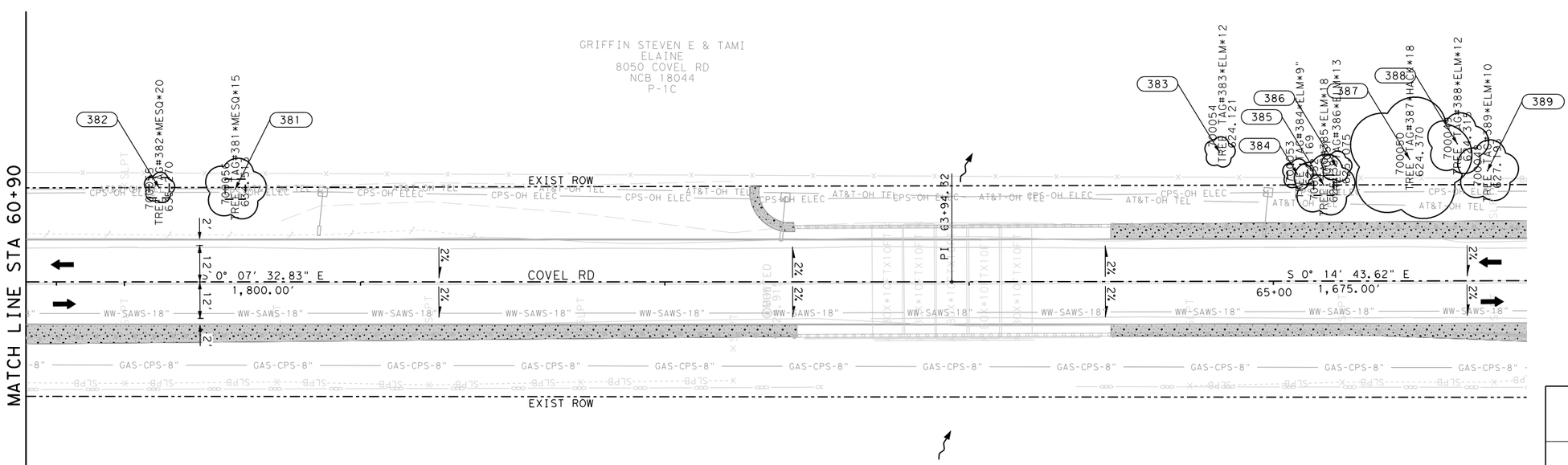
PUBLIC WORKS DEPARTMENT

TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 2

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2:59:49 PM
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LEGEND

- EXIST ROW
- EXISTING TREE
- ### TREE TAG NUMBER
- TREE PROTECTION

NOTES:
1. SEE SUMMARY OF QUANTITIES (TREE PRESERVATION) FOR APPROXIMATE TREE LOCATION AND PAYMENT

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER

6/27/2025

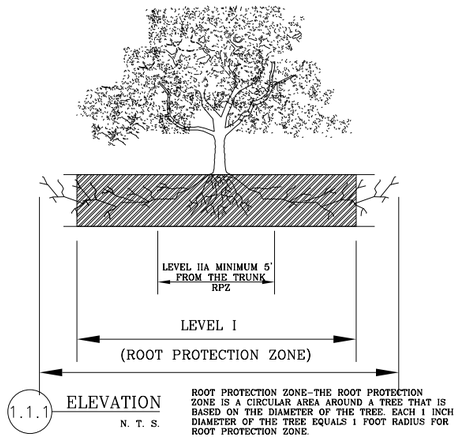
GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

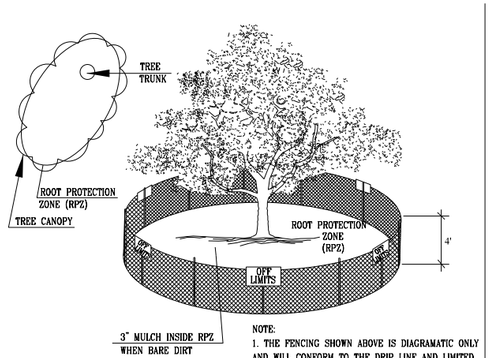
TREE PRESERVATION LAYOUT

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DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: RT	SHT NO.: 191



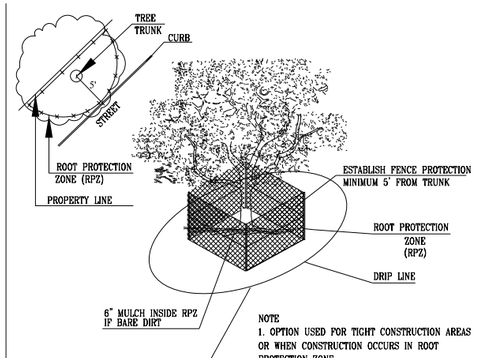
1.1.1 ELEVATION
N. T. S.

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.

TREE PROTECTION NOTES

1. A ROOT PROTECTION ZONE WILL BE ESTABLISHED AROUND EACH TREE OR ANY VEGETATION TO BE PRESERVED TO MEET THE LANDSCAPE OR TREE PRESERVATION ORDINANCES. THE ROOT PROTECTION ZONE SHALL BE AN AREA DEFINED BY THE RADIUS EXTENDING OUTWARD FROM THE TRUNK OF THE TREE A DISTANCE OF (1) LINEAR FOOT FOR EACH INCH DIAMETER INCH AT BREAST HEIGHT (4.5') OF THE TREE. A 10-INCH DIAMETER TREE WILL HAVE A 10 FOOT RADIUS ROOT PROTECTION ZONE.

2. NO WORK SHALL BEGIN WHERE TREE PROTECTION FENCING HAS NOT BEEN COMPLETED AND APPROVED. TREE PROTECTION FENCING SHALL BE INSTALLED, MAINTAINED AND REPAIRED BY THE CONTRACTOR DURING CONSTRUCTION. THE FENCING WILL BE A MINIMUM OF 4' HEIGHT.

3. ALL ROOTS LARGER THAN ONE-INCH IN DIAMETER ARE TO BE CUT CLEANLY AND OAK WOUNDS PAINTED WITHIN 30 MINUTES.

4. EXPOSED ROOTS SHALL BE COVERED AT THE END OF THE WORK DAY USING TECHNIQUES SUCH AS COVERING WITH SOIL, MULCH OR WET BURLAP.

5. NO EQUIPMENT, VEHICLES OR MATERIALS SHALL BE OPERATED OR STORED WITHIN THE ROOT PROTECTION ZONE. NO CLEAN-OUT AREAS WILL BE CONSTRUCTED SO THAT THE MATERIAL WILL BE IN OR MIGRATE TO THE ROOT PROTECTION ZONE.

6. NO GRADE CHANGE MORE THAN 3" IS ALLOWED WITHIN THE ROOT PROTECTION ZONE.

7. ROOTS OR BRANCHES IN CONFLICT WITH CONSTRUCTION SHALL BE CUT CLEANLY ACCORDING TO PROPER PRUNING METHODS. ALL OAK WOUNDS SHALL BE PAINTED WITHIN 30 MINUTES TO PREVENT OAK WILT INFECTION.

8. ANY TREE REMOVAL SHALL BE APPROVED BY THE CITY ARBORIST (207-8053).

9. TREES WHICH ARE DAMAGED OR LOST DUE TO THE CONTRACTOR'S NEGLIGENCE DURING CONSTRUCTION SHALL BE MITIGATED.

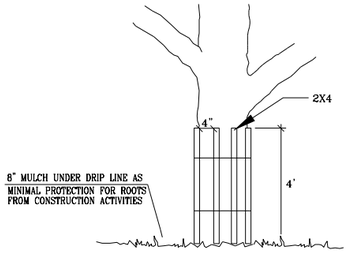
10. TREES MUST BE MAINTAINED IN GOOD HEALTH THROUGHOUT THE CONSTRUCTION PROCESS. MAINTENANCE MAY INCLUDE WATERING THE ROOT PROTECTION ZONE AND/OR WASHING FOLIAGE.

11. NO WIRES, NAILS OR OTHER MATERIALS MAY BE ATTACHED TO PROTECTED TREES.

12. ALL PLANTED TREES, IF ANY, SHALL BE MAINTAINED IN A HEALTHY CONDITION AT ALL TIMES. THIS INCLUDES IRRIGATING, 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.

13. EXISTING PROTECTED TREES SHALL BE MAINTAINED IN A HEALTHY CONDITION AT ALL TIMES. THIS INCLUDES IRRIGATING, FERTILIZING, PRUNING, AND OTHER MAINTENANCE AS NEEDED ON THE PROJECT. TREES THAT DIE WITHIN TWELVE (12) MONTHS OF THE PROJECT SHALL BE REPLACED AT A RATIO OF INCH PER INCH FOR SIGNIFICANT TREES AND AT 3:1 FOR HERITAGE TREES PER THE UNIFIED DEVELOPMENT CODE 35-523, TABLE 523-2.

14. ANY AND ALL CURB AND SIDEWALK WORK SHALL USE ALTERNATIVE CONSTRUCTION METHODS TO MINIMIZE EXTENSIVE ROOT DAMAGE TO TREES. TREE ROOTS SHALL BE SAWCUT PRIOR TO EXCAVATION WITH EQUIPMENT.

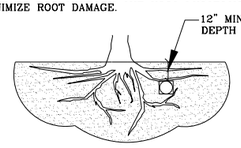


NOTE
WRAP TREE TRUNK WITH 2"X4" STUDS AND ROPE OR BAND IN PLACE AS NEEDED TO PROTECT TREES IN WORK AREAS.

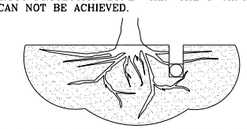
1.1.4 LEVEL II B FENCE PROTECTION
N. T. S.

TREES THAT ARE MARKED TO BE PRESERVED ON A SITE PLAN AND FOR WHICH UTILITIES MUST PASS TROUGH THEIR ROOT PROTECTION ZONES MAY REQUIRE TUNNELING AS OPPOSED TO OPEN TRENCHES. THE DECISION TO TUNNEL WILL BE DETERMINED ON A CASE BY CASE BASIS BY THE ENGINEER.

TUNNELS SHALL BE DUG THROUGH THE ROOT PROTECTION ZONE IN ORDER TO MINIMIZE ROOT DAMAGE.

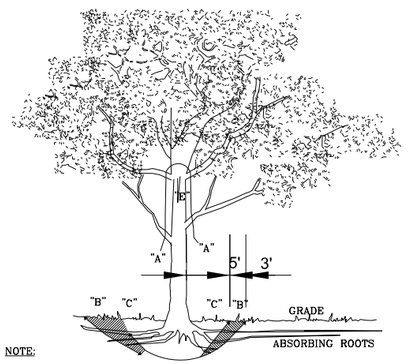


TUNNEL TO MINIMIZE ROOT DAMAGE (TOP) AS OPPOSED TO SURFACE-DUG TRENCHES IN ROOT PROTECTION ZONE WHEN THE 5' MINIMUM DISTANCE FROM TRUNK CAN NOT BE ACHIEVED.



OPEN TRENCHING MAY BE USED IF EXPOSED TREE ROOTS DO NOT EXCEED 3" OR ROOTS CAN BE BENT BACK.

1.2 BORING THRU TREE ROOT ZONE
N. T. S.



NOTE:

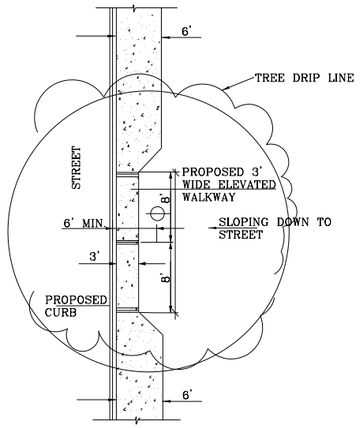
A" REMOVE BULKY TREE PARTS "SHRED" AND/OR HAUL SEPARATELY.

"B" BEGIN EXCAVATION APPROX. 8' FROM THE TRUNK – CUT THRU ANCHOR ROOTS AT AN ANGLE – 3' TO 4' DEEP

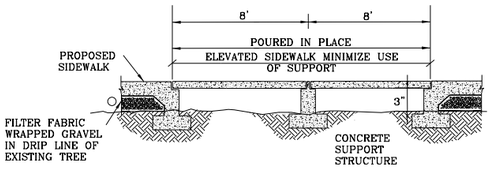
"C" USING TREE TRUNK AS A LEVER PUSH AT POINT "E" TO REMOVE TREE BOLE AND LARGE FEEDER ROOTS (4" TO 10" IN DIAM.)

"D" BACKFILL HOLE AND CLEAN UP.

1.3 TREE REMOVAL DIAGRAM
N. T. S.

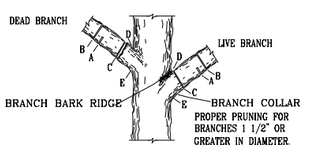


1.7 ELEVATED SIDEWALK
N. T. S.



3.3.4 ELEVATED WALKWAY SECTION
N. T. S.

NOTE:
FOR THOSE TREES THAT DO NOT MEET THE TREE PRESERVATION ORDINANCE REQUIREMENTS PRESERVATION SHALL BE DETERMINED ON A CASE BY CASE BASIS



NOTE: DO NOT CUT FROM D to E.

A. FIRST CUT – TO PREVENT THE BARK FROM BEING PEELED WHEN THE BRANCH FALLS.
B. SECOND CUT – TO REDUCE THE WEIGHT OF BRANCH.
C. FINAL CUT – ALLOW FOR HEALING COLLAR BUT NO STUBS
D. BRANCH RIDGES – INDENT PROPERLY BRANCH RIDGES WHICH ARE SITE FOR DECAY.

FOR OAKS ONLY: PAINT ALL WOUNDS OR CUTS WITH PRUNING PAINT WITHIN 20 MIN TO PREVENT THE SPREAD OF OAK WILT.

1.4 BRANCH PRUNING DETAIL
N. T. S.

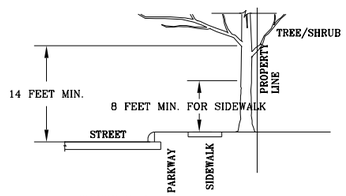
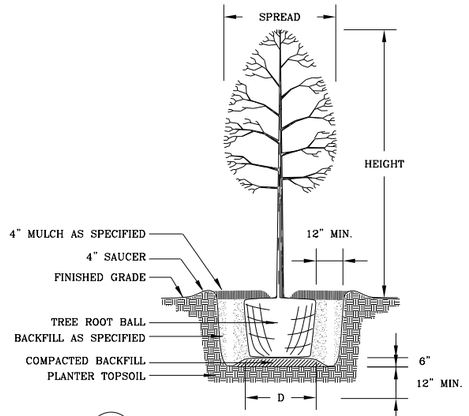


FIGURE No.2:

A MINIMUM BRANCH CLEARANCE OF 14 FEET ABOVE STREET ELEVATION MUST BE MAINTAINED FROM THE PROPERTY LINE TO THE CURB LINE AS PRESCRIBED BY PROJECT MANAGER.

1.5 BRANCH CLEARANCE DETAIL
N. T. S.



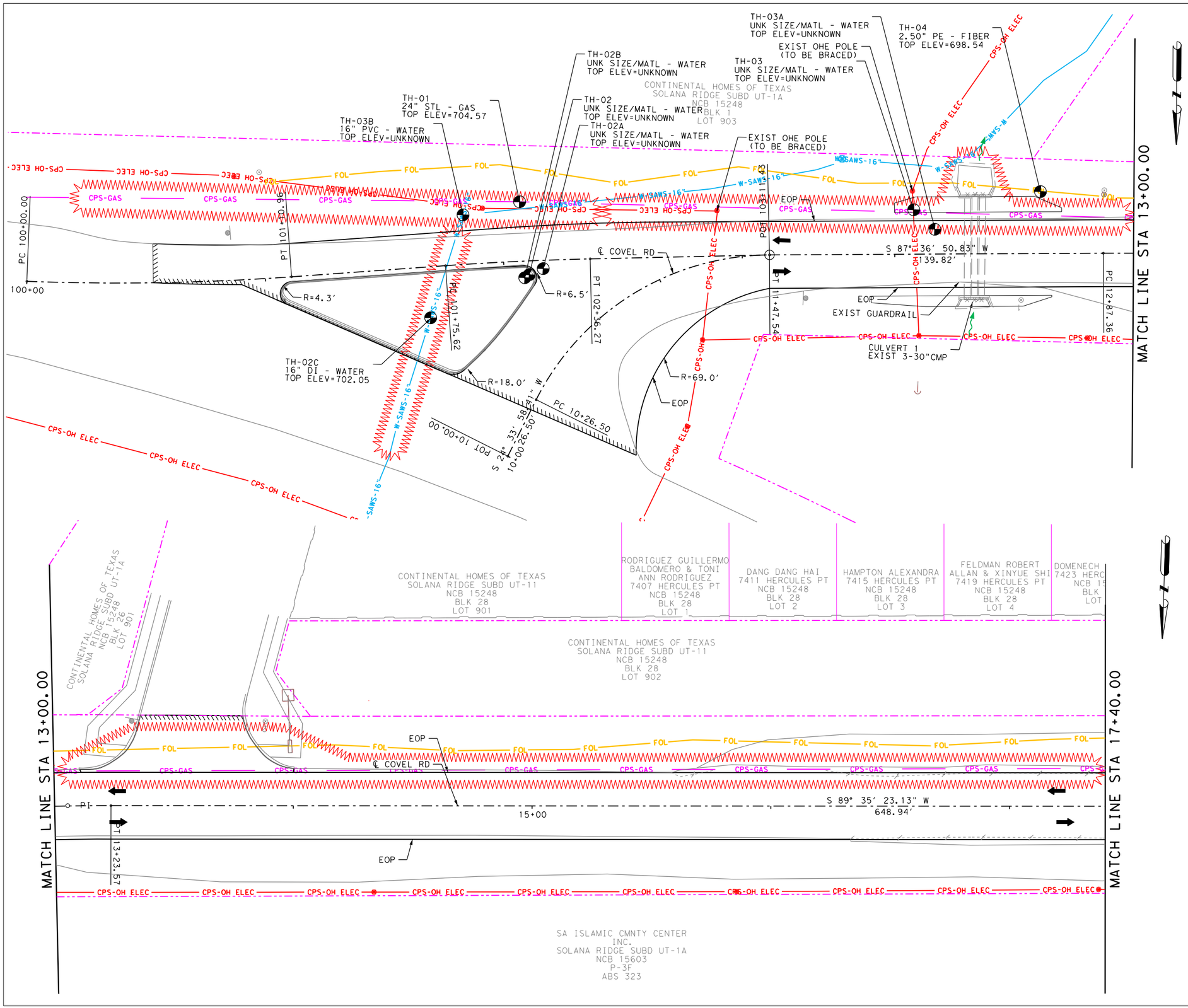
1.6 NEW TREE PLANTING DETAIL
N. T. S.

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT
COVEL RD

TREE PROTECTION NOTES AND DETAILS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY:	DSGN. BY:	CHKD. BY:	SHEET NO.:192

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6/27/2025



LEGEND

- EXIST ROW
- PROP EDGE OF PAVEMENT
- DIRECTION OF TRAFFIC
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
- CPS-GAS — EXIST GAS LINE
- W-SAWS — EXIST WATER LINE
- WW-SAWS — EXIST WASTEWATER LINE
- AT&T-UG TEL — EXIST UNDERGROUND TELEPHONE LINE
- AT&T-OH TEL — EXIST OVERHEAD TELEPHONE LINE
- EXCAVATE WITH CAUTION
- MANHOLE ADJUSTMENT

NOTES:

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8. CONTRACTOR TO NOTIFY COSA PM 30 DAYS PRIOR TO PERFORMING ANY UTILITY ADJUSTMENTS.

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER

6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

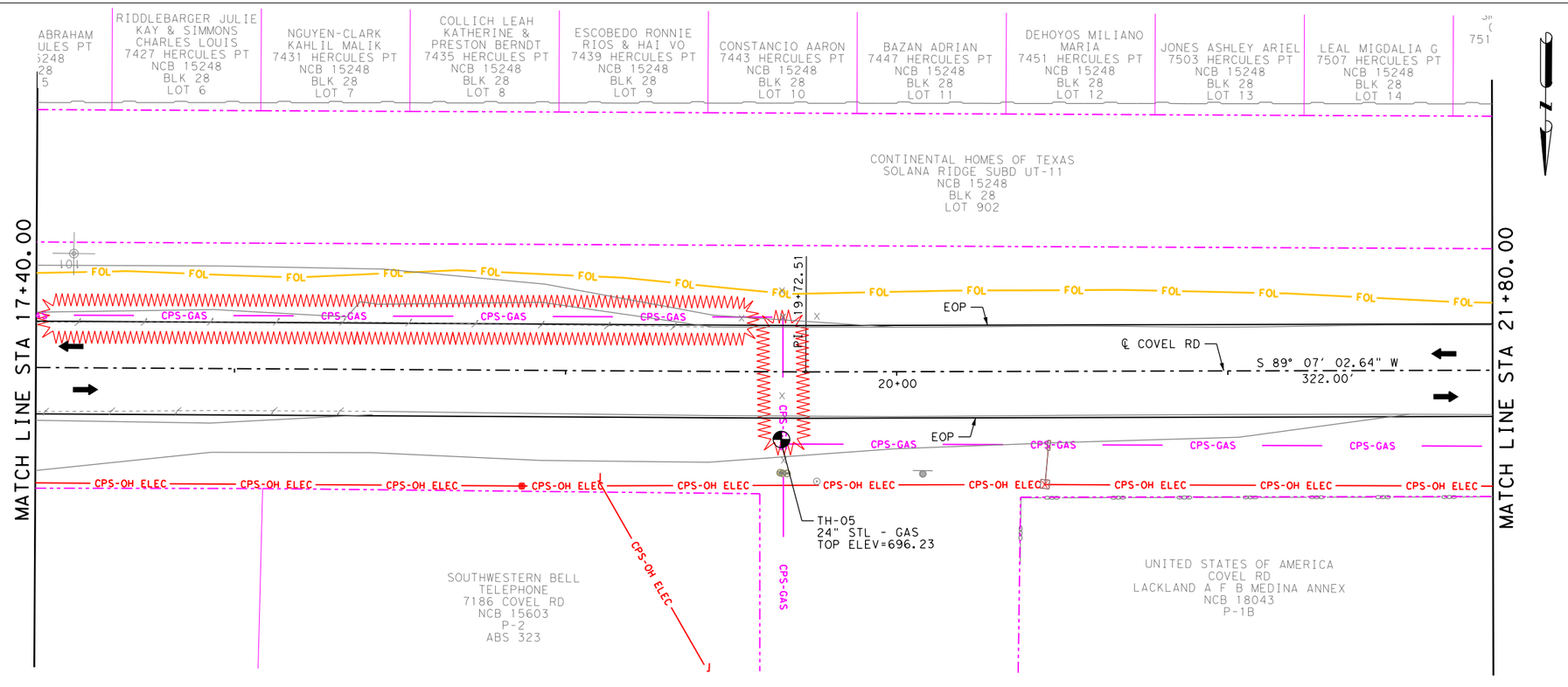
COVEL RD IMPROVEMENTS

UTILITY LAYOUT

SHEET 1 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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jrobles
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LEGEND

- EXIST ROW
- PROP EDGE OF PAVEMENT
- DIRECTION OF TRAFFIC
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
- CPS-GAS — EXIST GAS LINE
- W-SAWS — EXIST WATER LINE
- WW-SAWS — EXIST WASTEWATER LINE
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20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO

PUBLIC WORKS DEPARTMENT

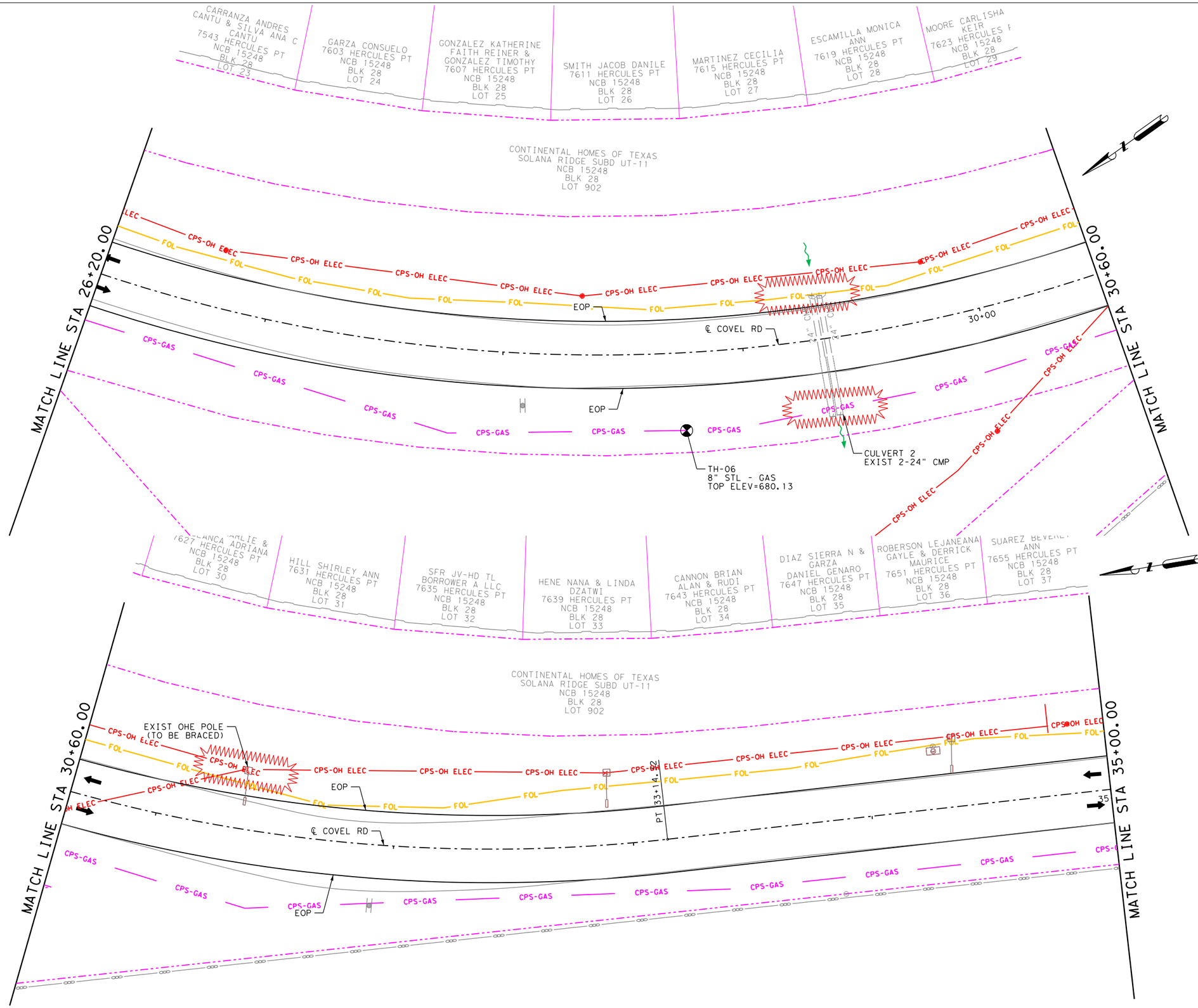
COVEL RD IMPROVEMENTS

UTILITY LAYOUT

SHEET 2 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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LEGEND

- EXIST ROW
- PROP EDGE OF PAVEMENT
- DIRECTION OF TRAFFIC
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
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20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

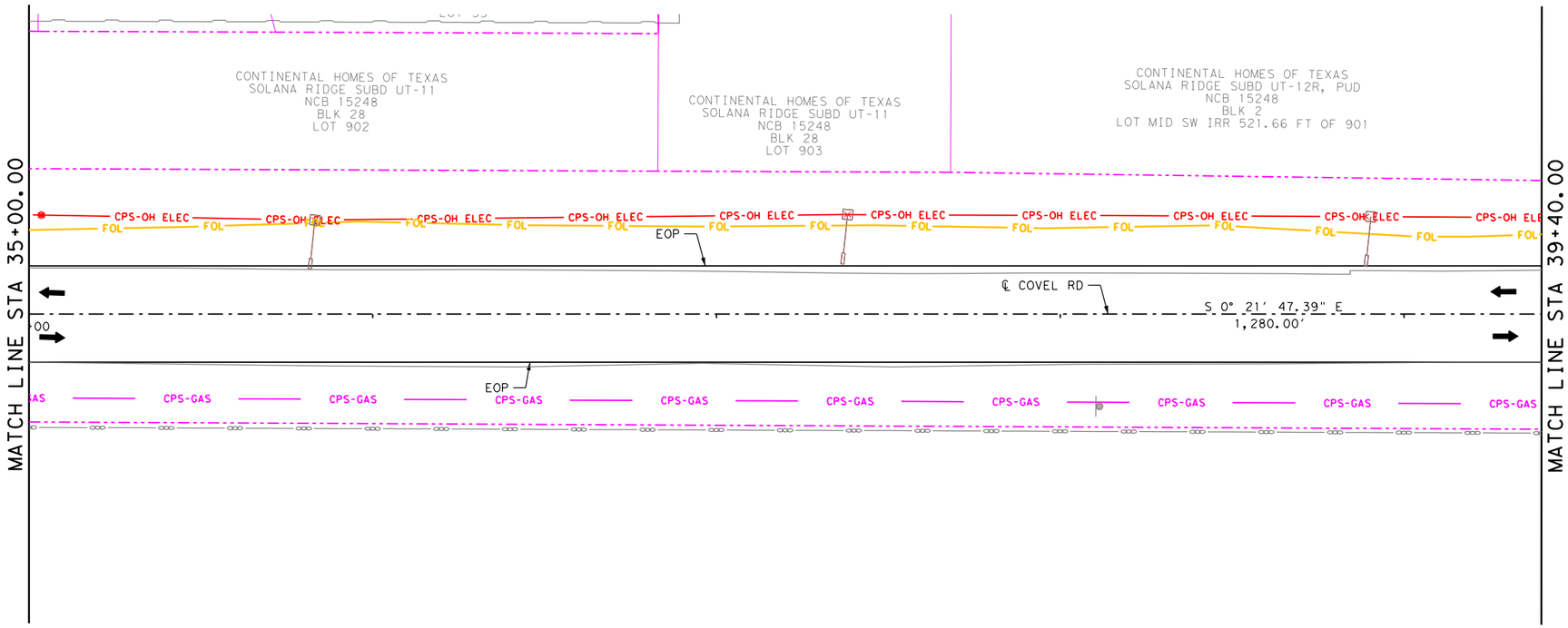
COVEL RD IMPROVEMENTS

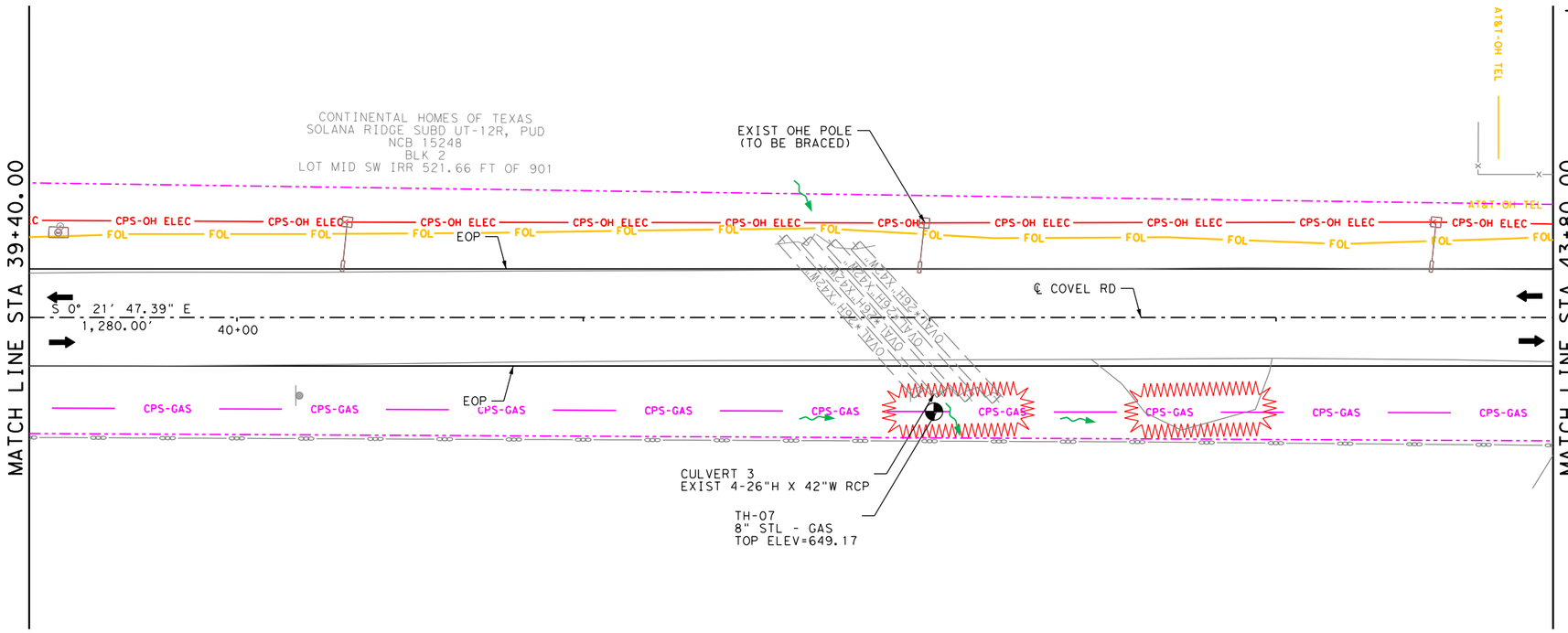
UTILITY LAYOUT

SHEET 3 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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LEGEND

- EXIST ROW
- PROP EDGE OF PAVEMENT
- DIRECTION OF TRAFFIC
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
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20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

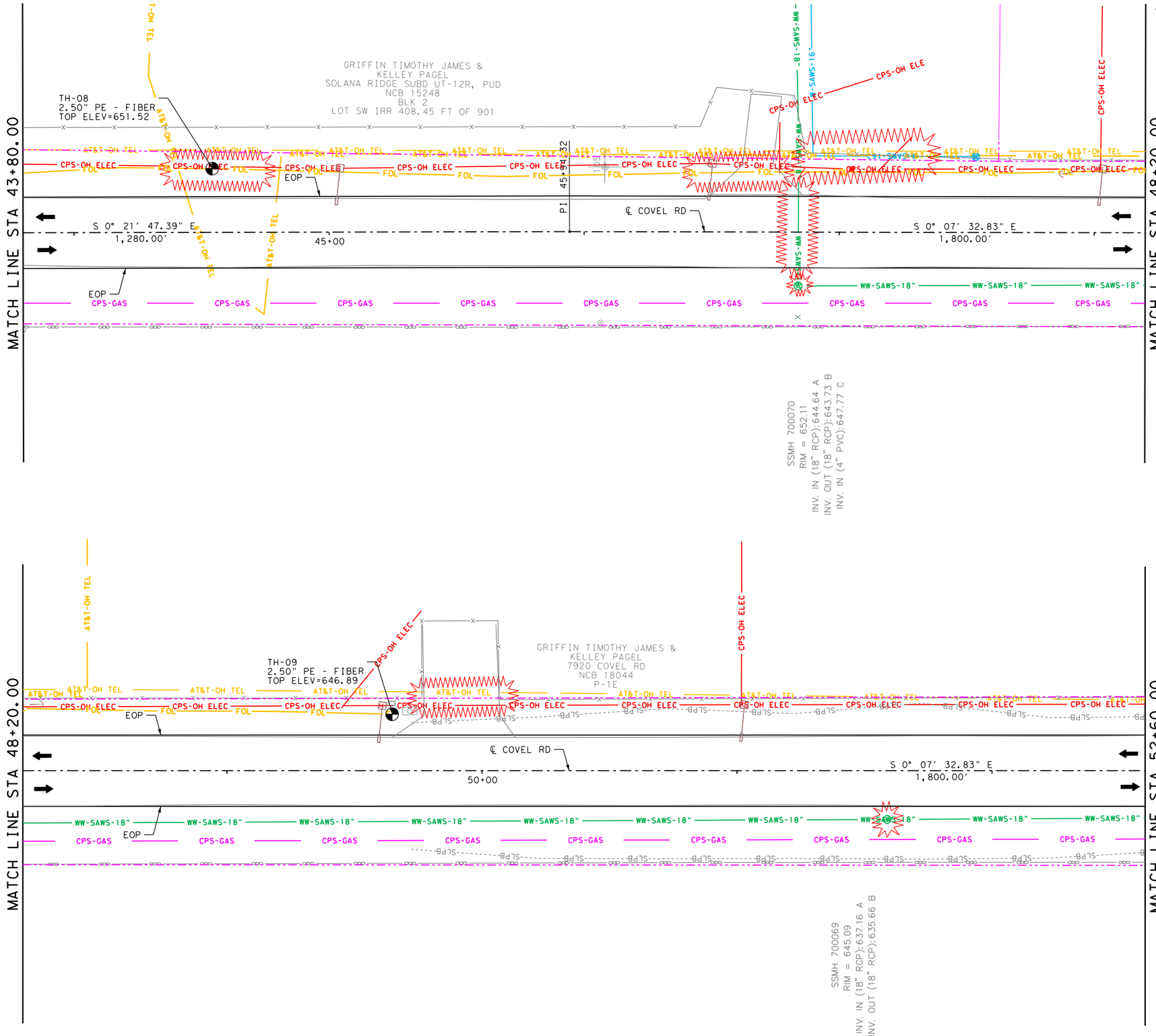
COVEL RD IMPROVEMENTS

UTILITY LAYOUT

SHEET 4 OF 9

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LEGEND

- EXIST ROW
- PROP EDGE OF PAVEMENT
- DIRECTION OF TRAFFIC
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
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20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO

PUBLIC WORKS DEPARTMENT

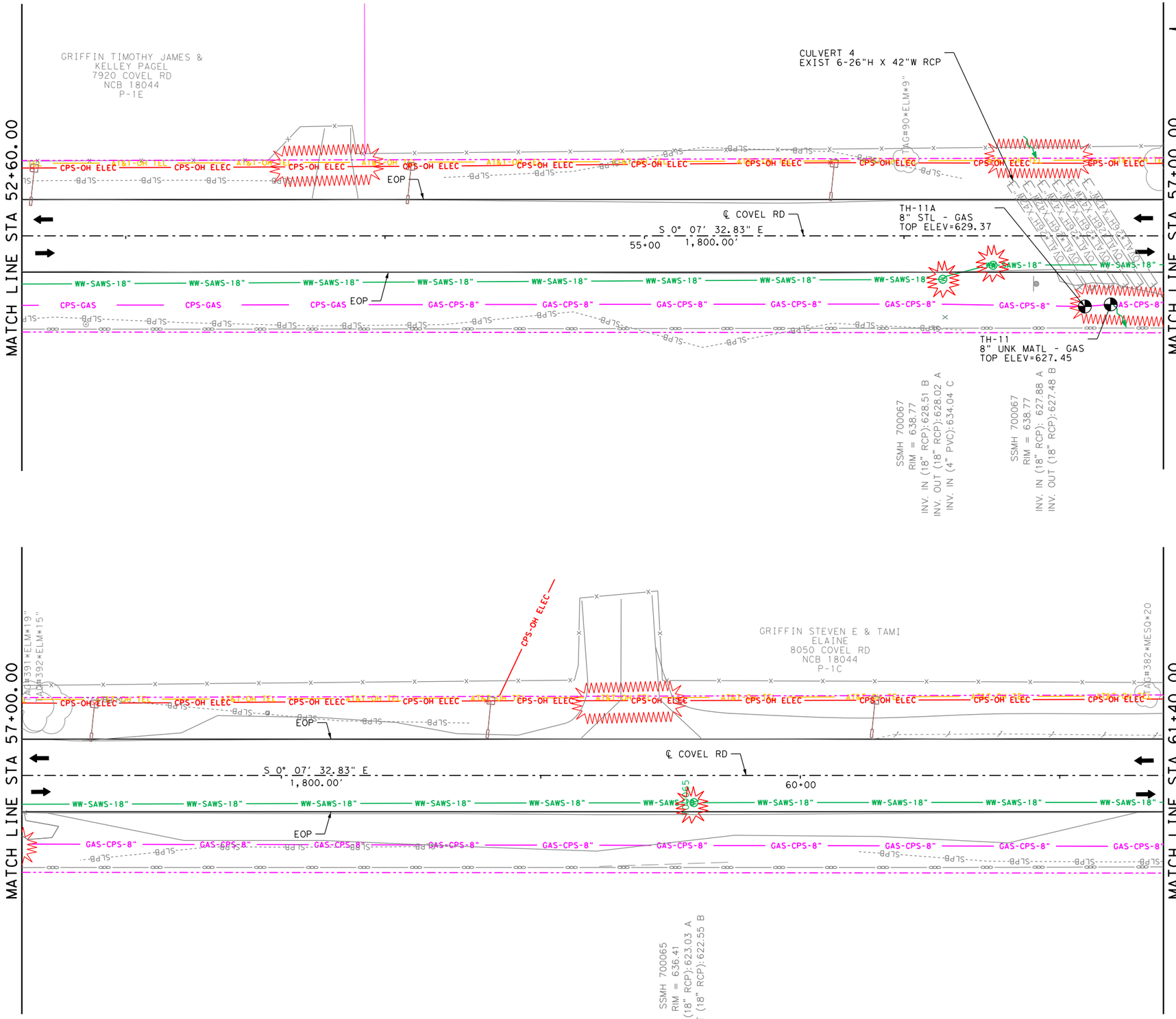
COVEL RD IMPROVEMENTS

UTILITY LAYOUT

SHEET 5 OF 9

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LEGEND

- EXIST ROW
- PROP EDGE OF PAVEMENT
- DIRECTION OF TRAFFIC
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
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20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

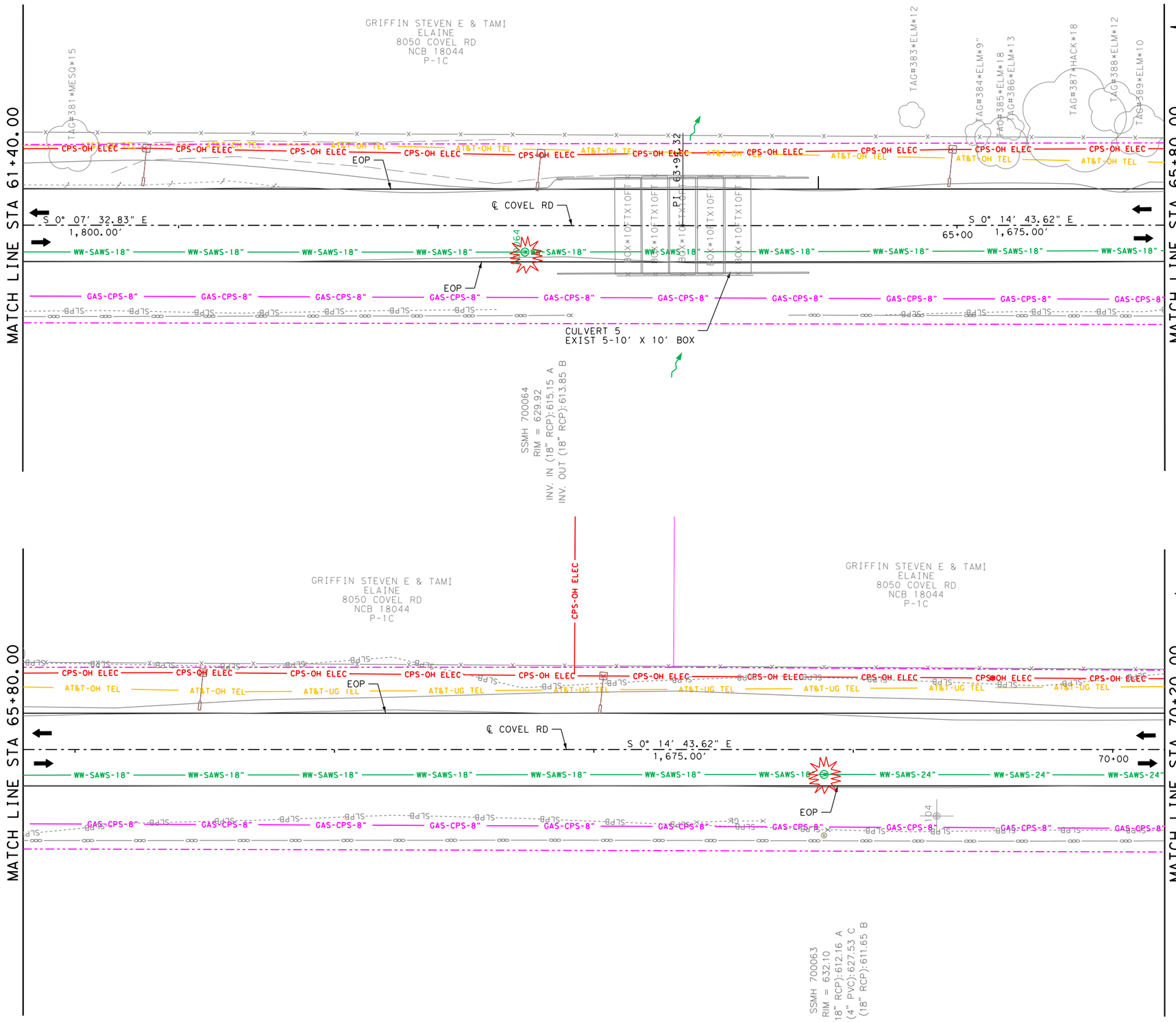
COVEL RD IMPROVEMENTS

UTILITY LAYOUT

SHEET 6 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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LICENSED
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6/27/2025

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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

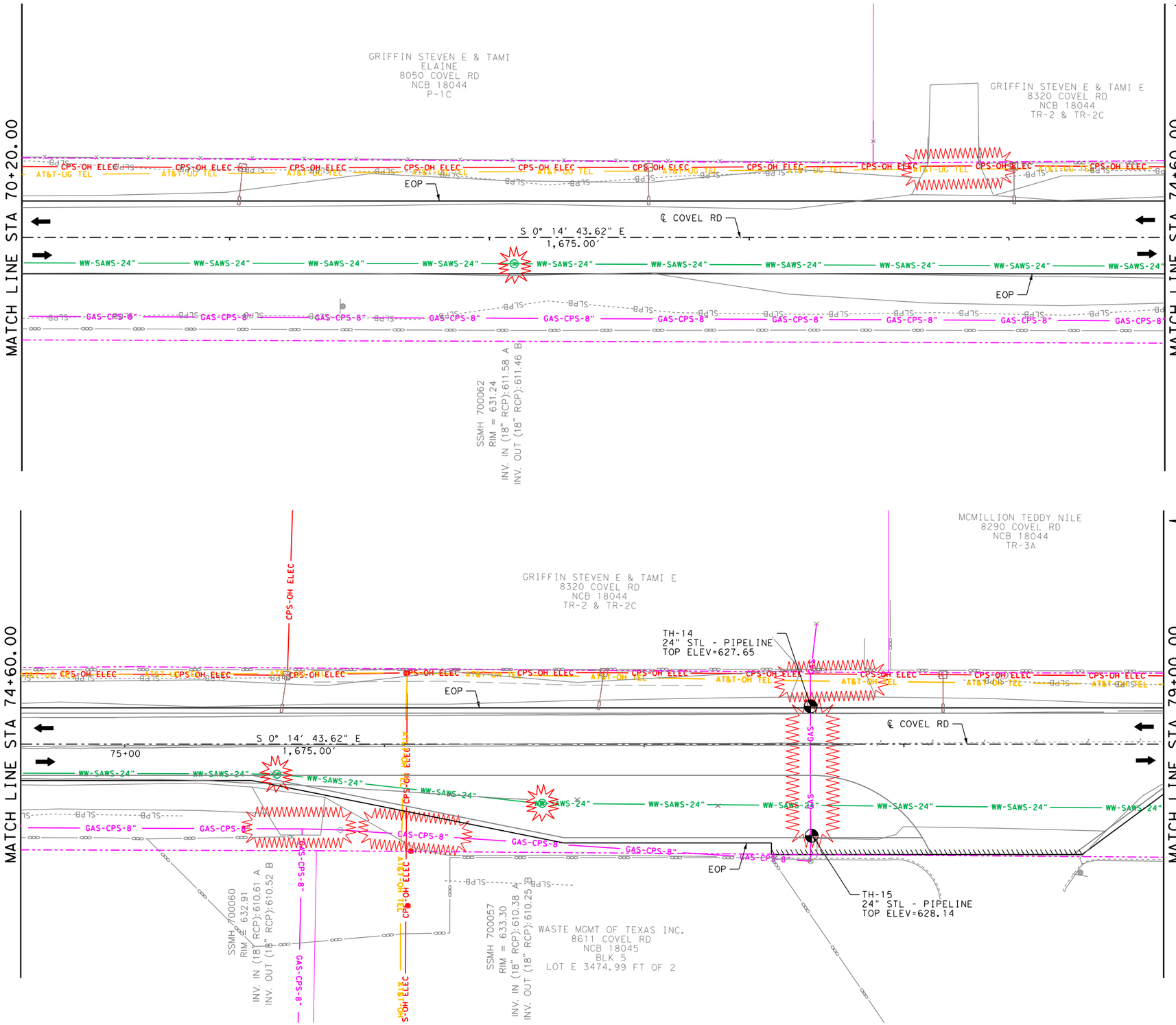
COVEL RD IMPROVEMENTS

UTILITY LAYOUT

SHEET 7 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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LEGEND

- EXIST ROW
- PROP EDGE OF PAVEMENT
- DIRECTION OF TRAFFIC
- CPS-OH ELEC — EXIST OVERHEAD ELECTRIC
- FOL — EXIST FIBER OPTIC LINE
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20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED PROFESSIONAL ENGINEER
6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO

PUBLIC WORKS DEPARTMENT

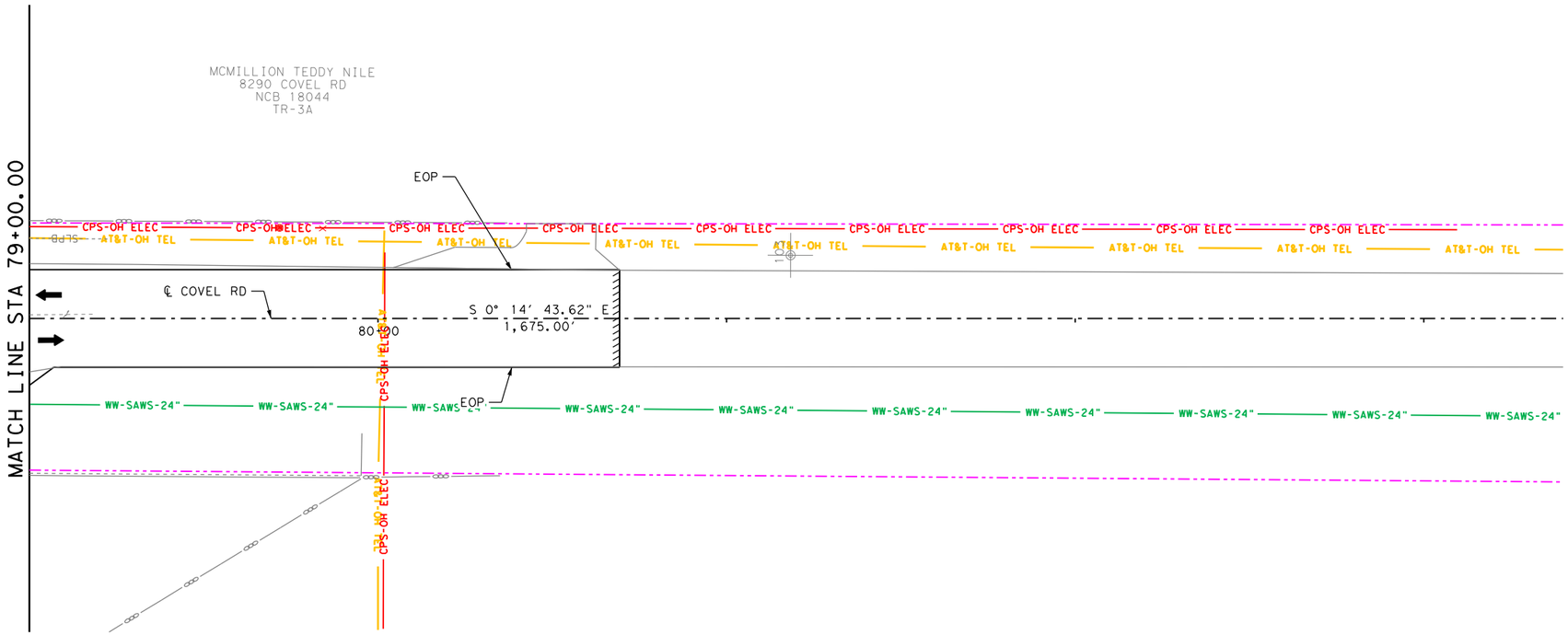
COVEL RD IMPROVEMENTS

UTILITY LAYOUT

SHEET 8 OF 9

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
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LEGEND

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4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING OPERATION OF ALL EXISTING UTILITIES AFFECTED BY PROPOSED CONSTRUCTION.
5. LOCATIONS OF EXISTING UTILITIES SHOWN ARE APPROXIMATE AND BASED ON AVAILABLE DRAWINGS AND FIELD SURVEY. CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITIES AND NOTIFY COSA PM OF ANY DISCREPANCY FOUND ON PLANS PRIOR TO CONSTRUCTION.
6. REFER TO CPS GAS PLANS FOR PROPOSED 16" STEEL PIPE INSTALLATION DETAILS.
7. REFER TO SAWS SANITARY SEWER PLANS FOR PROPOSED MANHOLE ADJUSTMENT DETAILS.
8. CONTRACTOR TO NOTIFY COSA PM 30 DAYS PRIOR TO PERFORMING ANY UTILITY ADJUSTMENTS.

20 10 0 20 40

HORIZONTAL SCALE: 1"=40'

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED PROFESSIONAL ENGINEER

6/27/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

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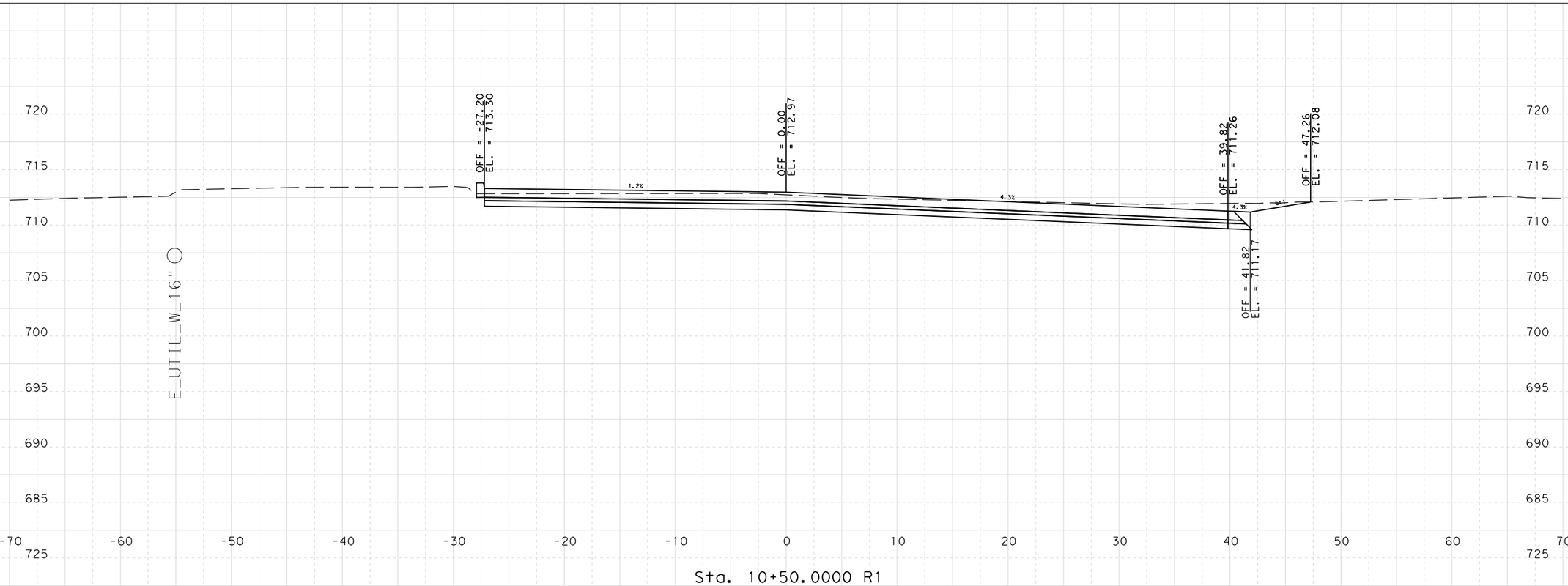
COVEL RD IMPROVEMENTS

UTILITY LAYOUT

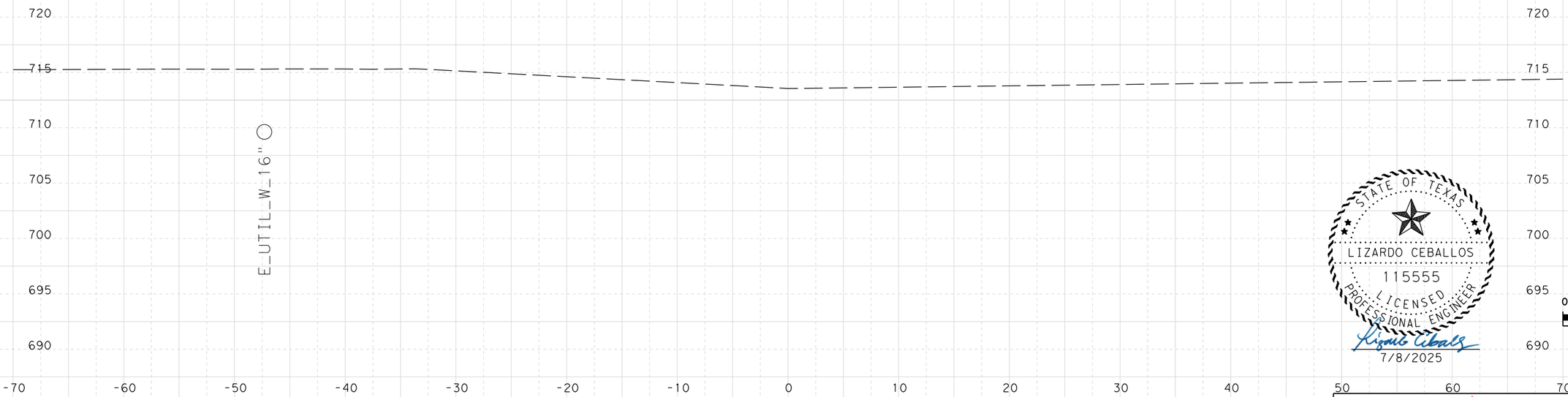
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100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 6/27/2025
DRWN. BY: RT	DSGN. BY: FR	CHKD. BY: LC	SHT NO.: 201

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STATE OF TEXAS
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0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

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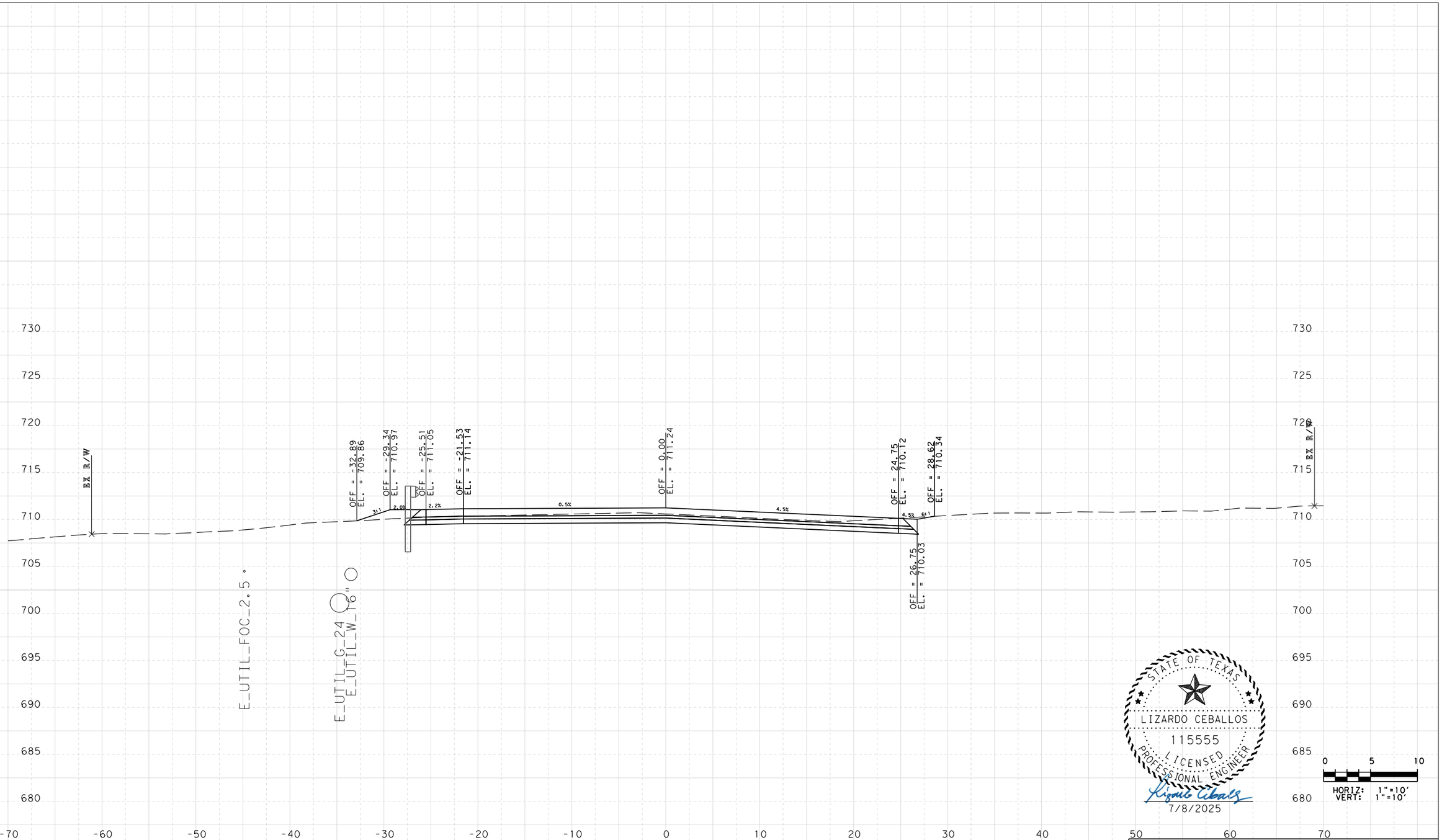
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COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
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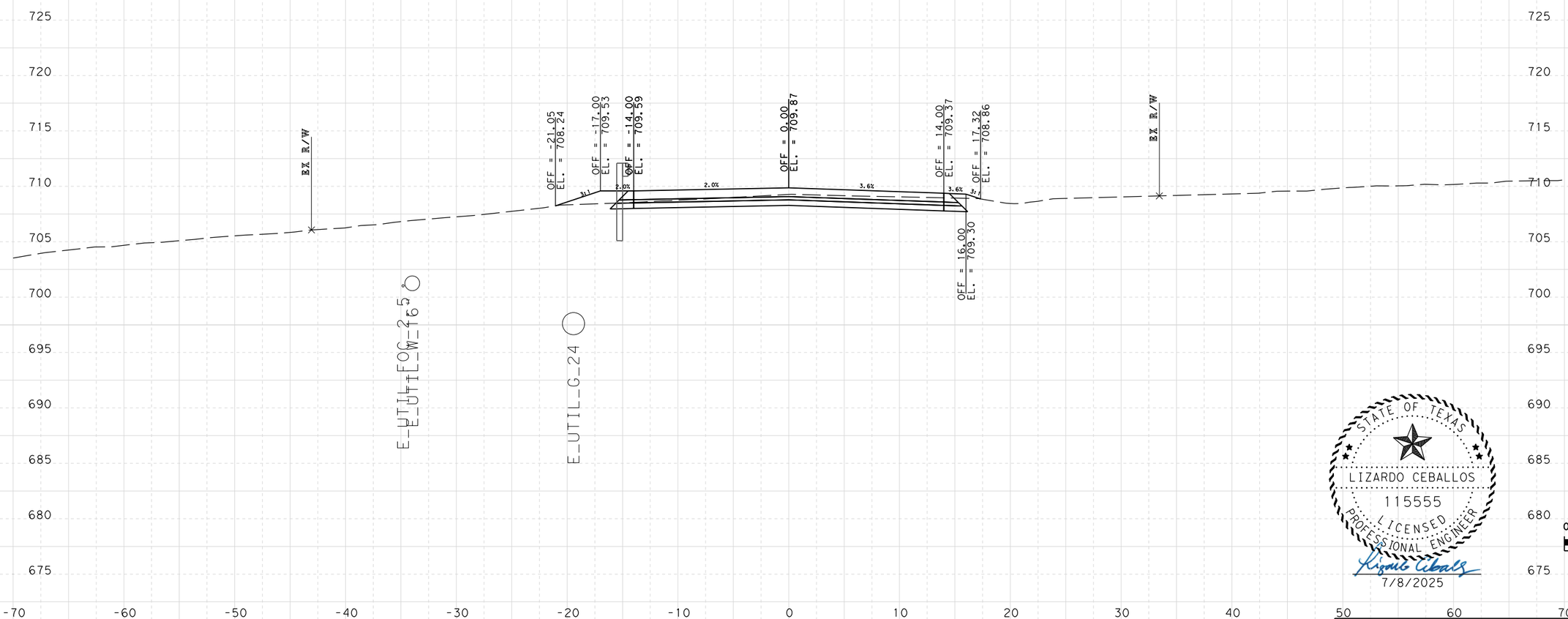
CITY OF SAN ANTONIO
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COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
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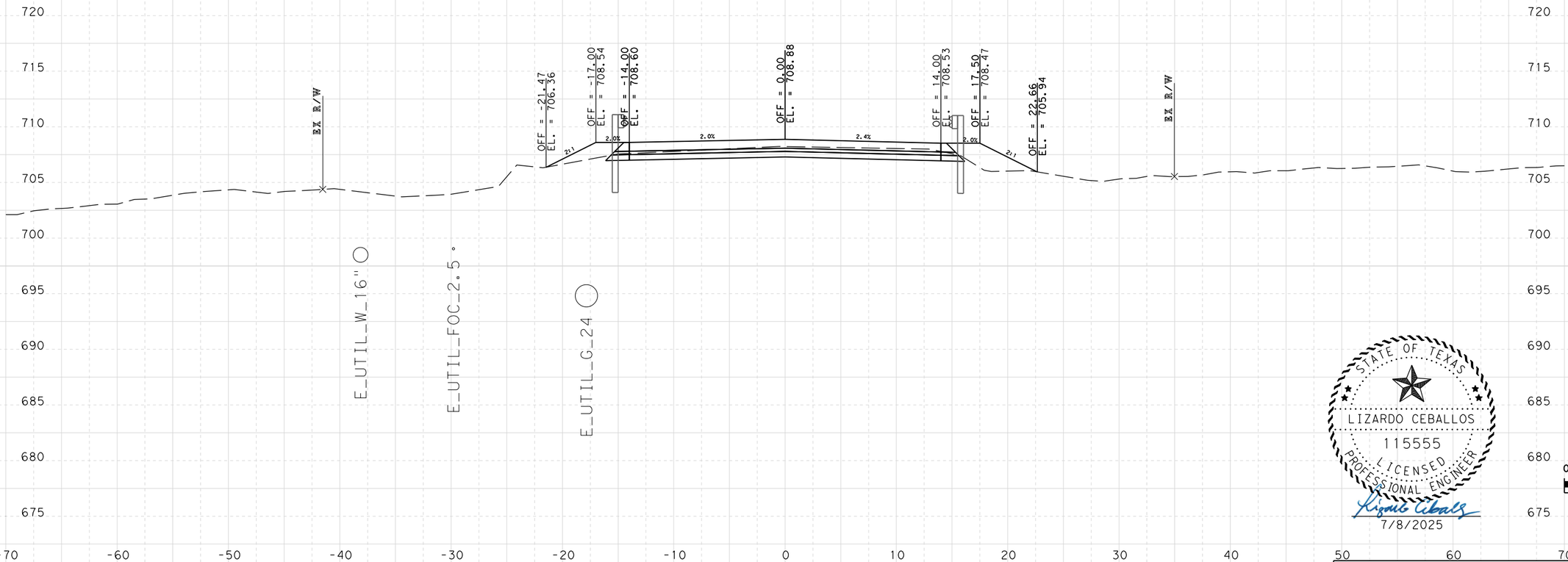
CITY OF SAN ANTONIO
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COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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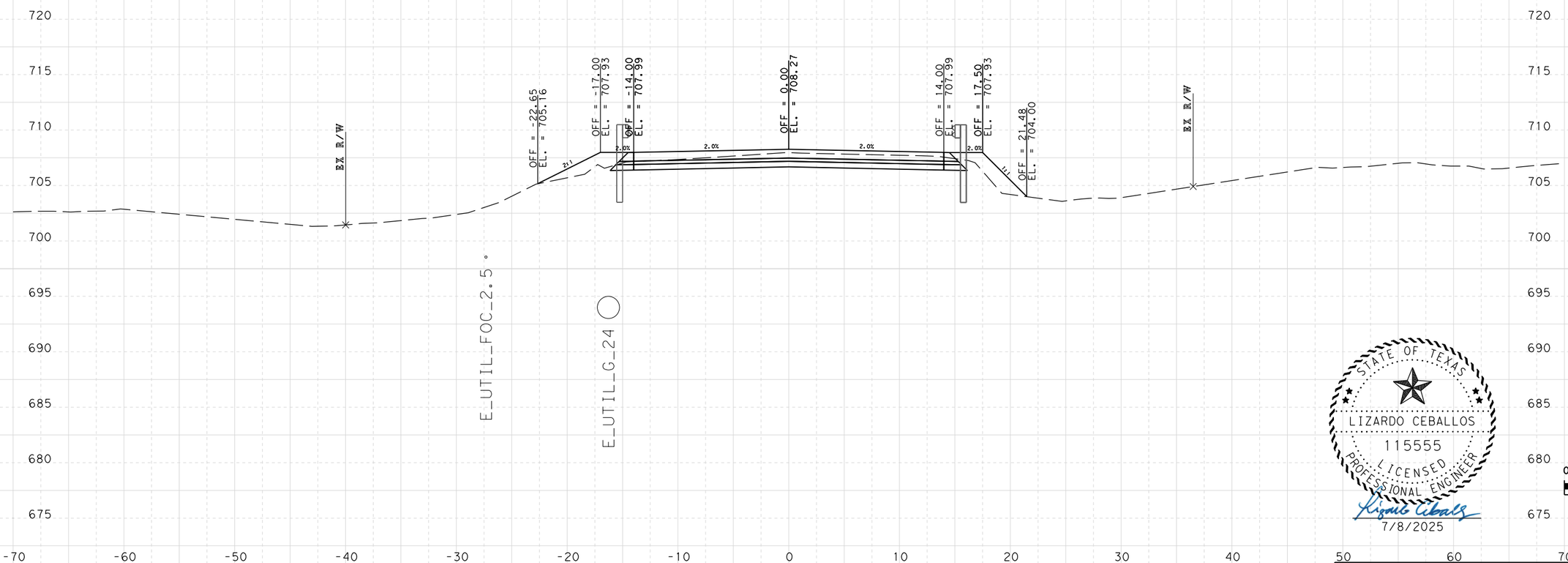
CITY OF SAN ANTONIO
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COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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16414 SAN PEDRO AVE. SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

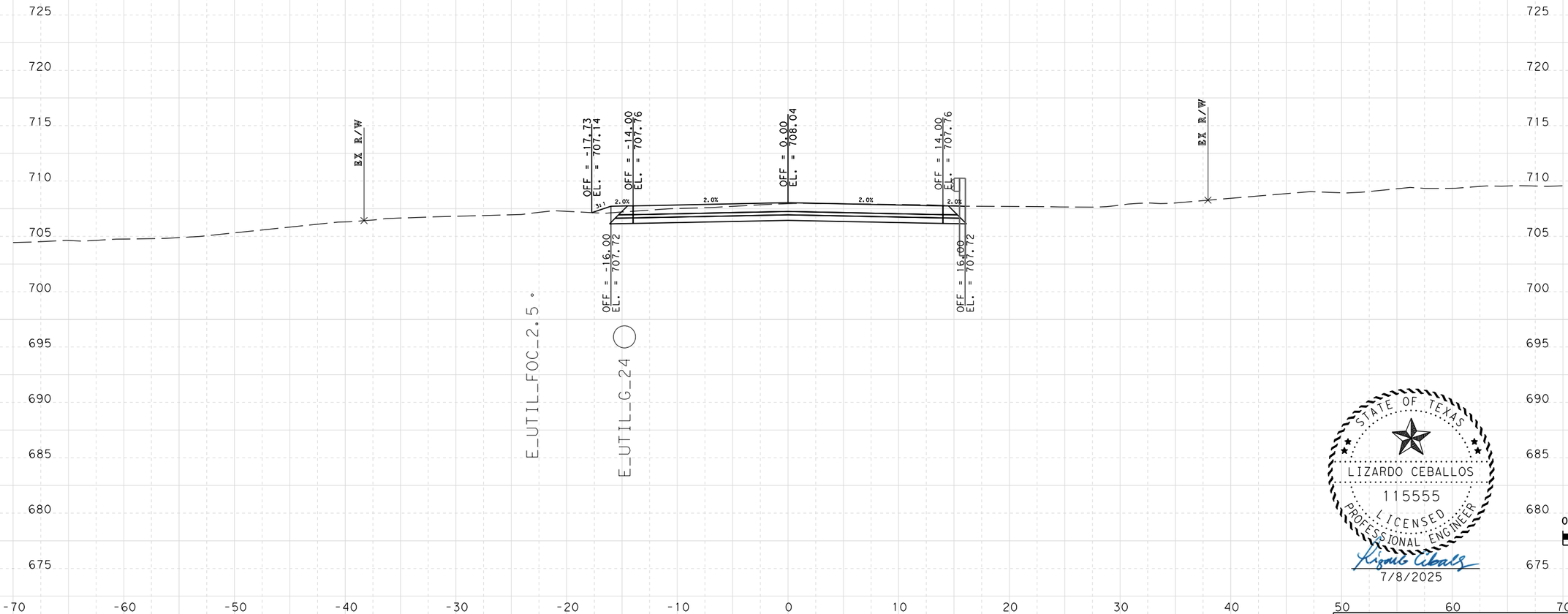
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COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

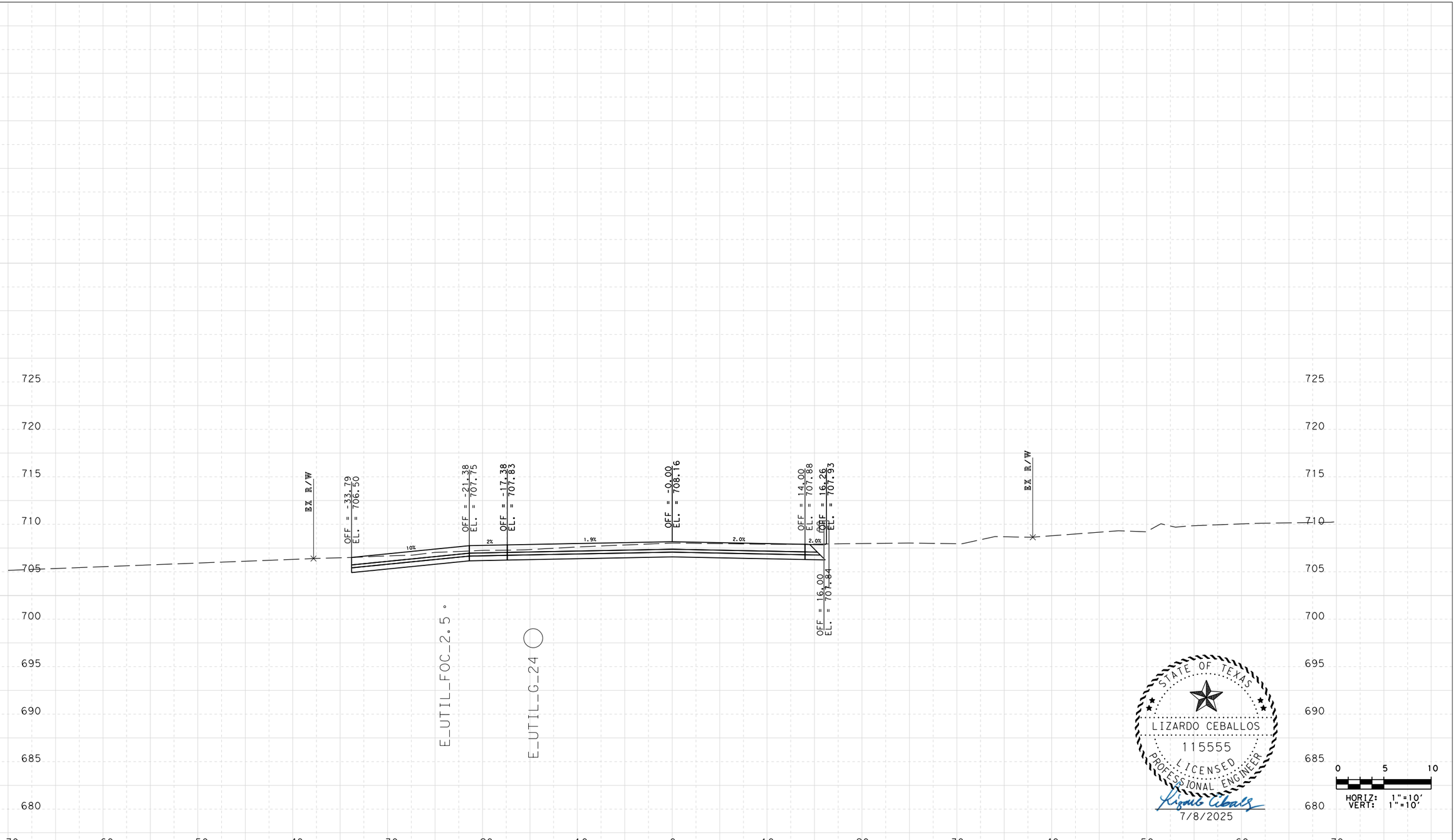
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COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
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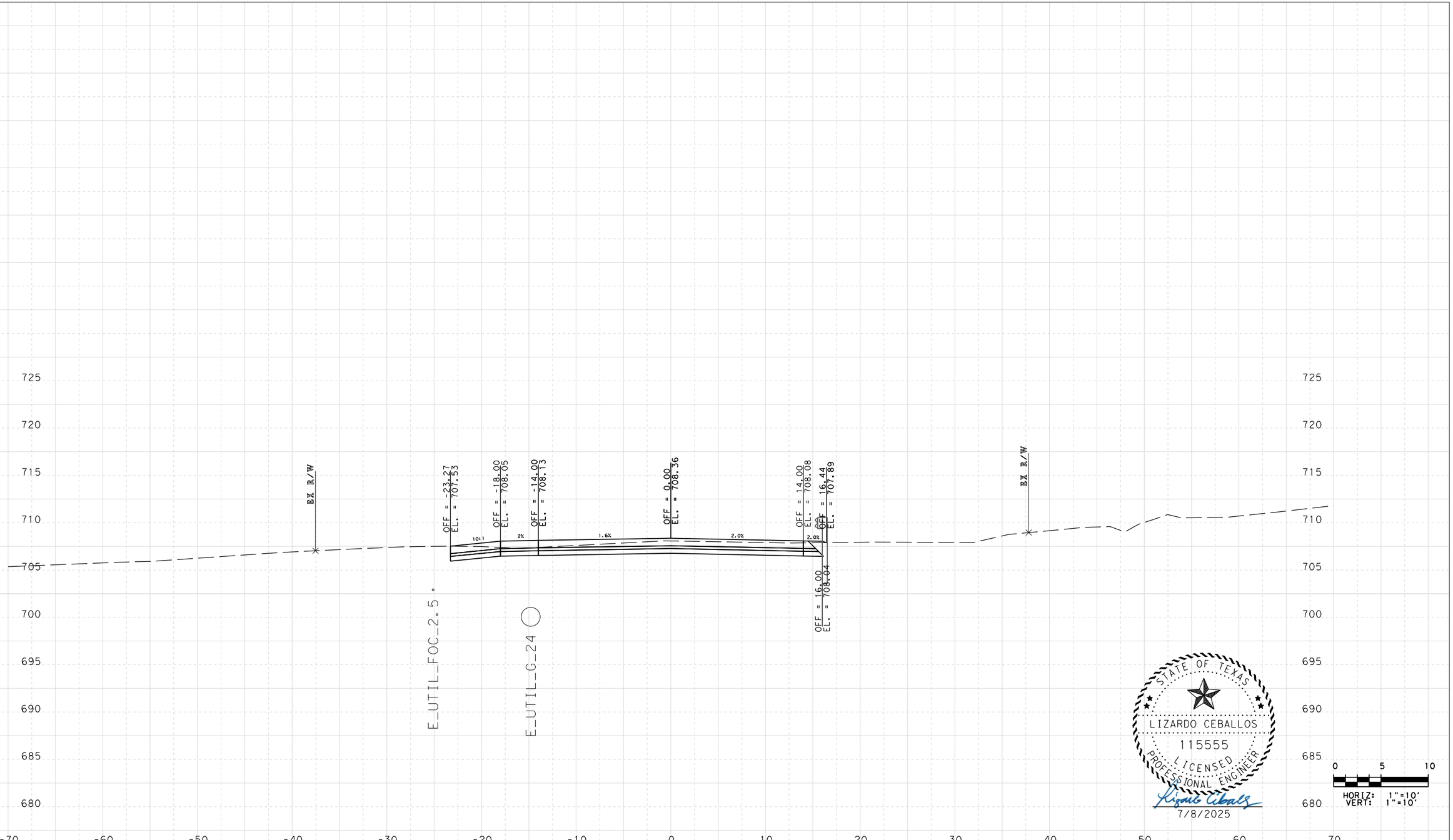
CITY OF SAN ANTONIO
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COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
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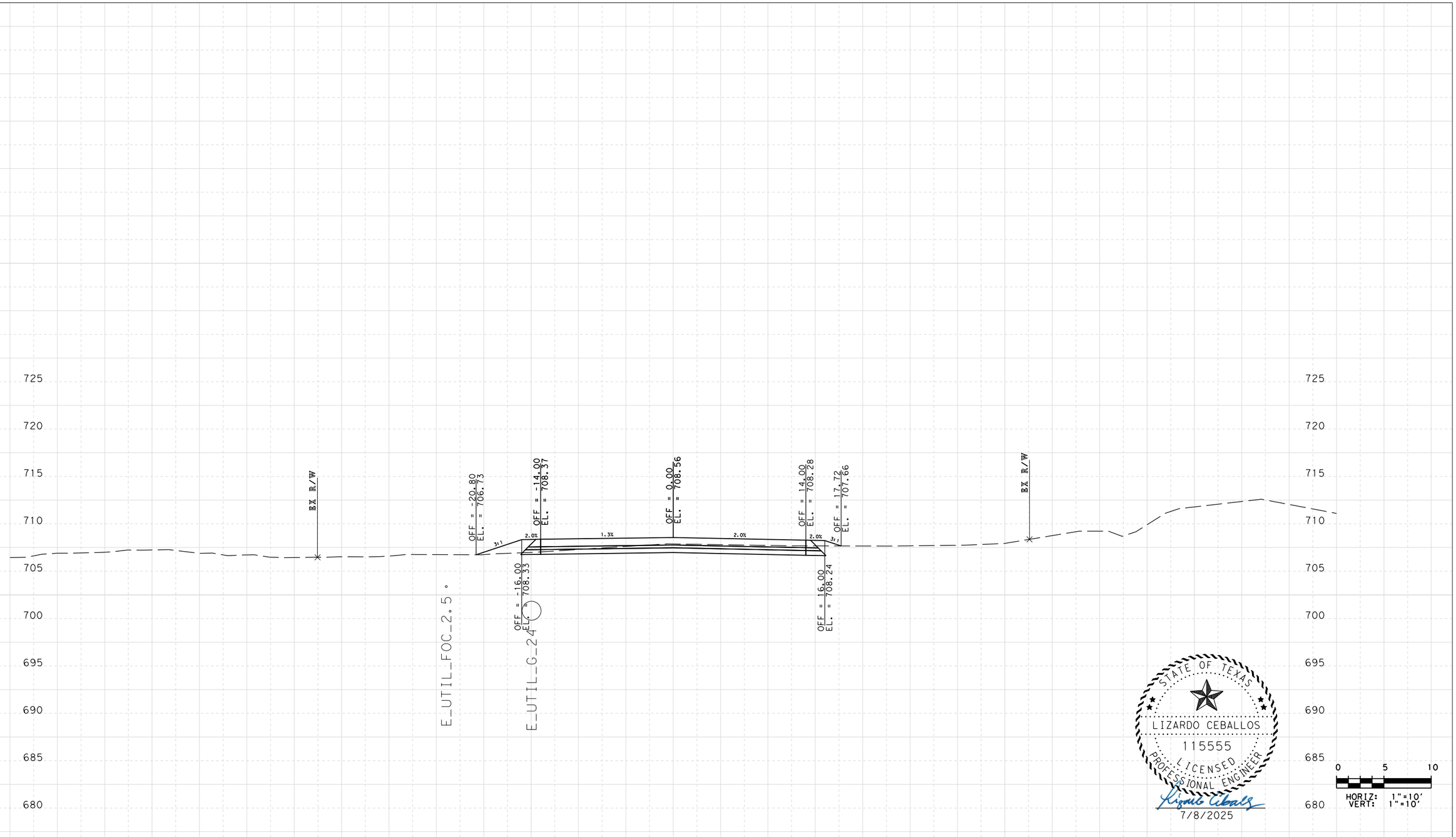
CITY OF SAN ANTONIO
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COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
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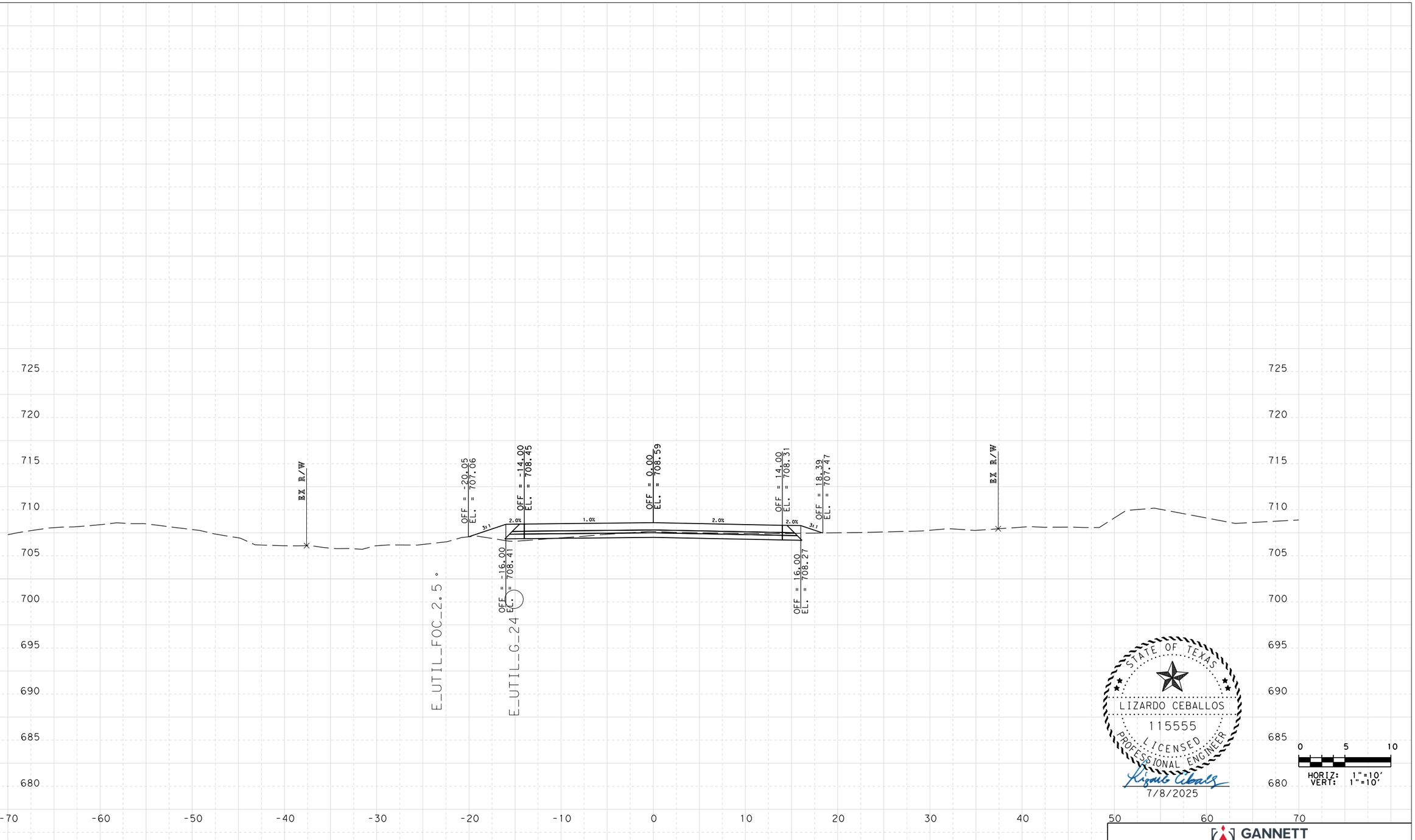
CITY OF SAN ANTONIO
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COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
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7/8/2025

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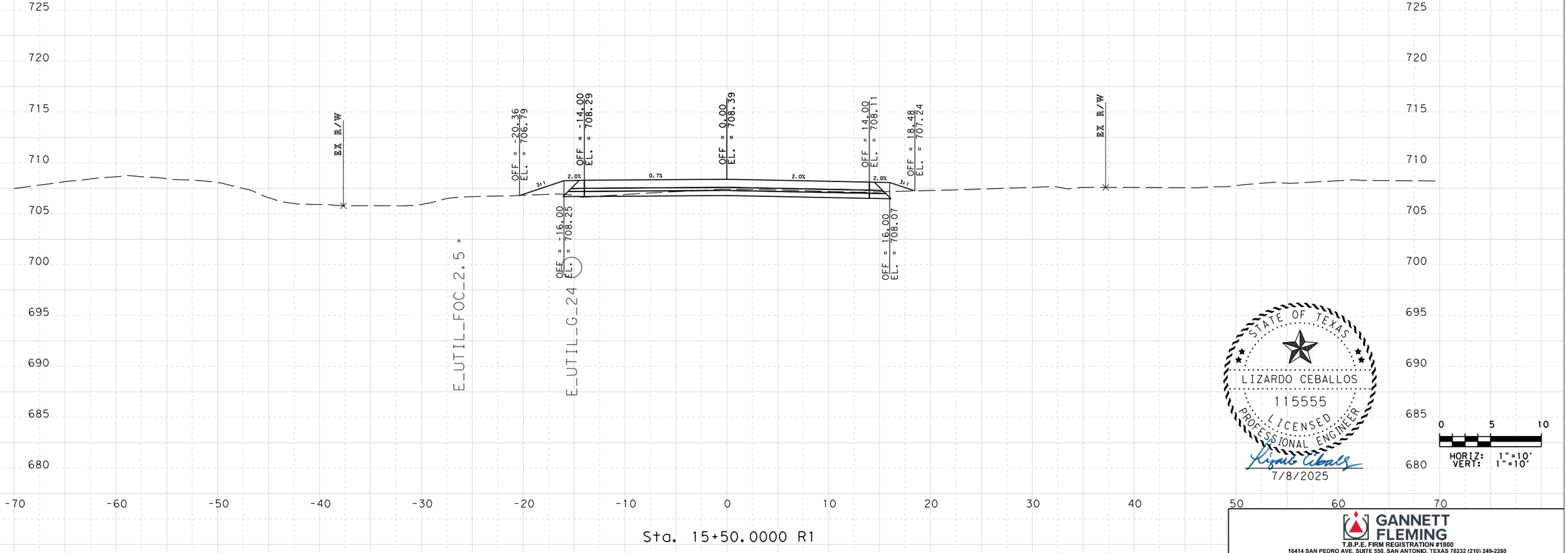
CITY OF SAN ANTONIO
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COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

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HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

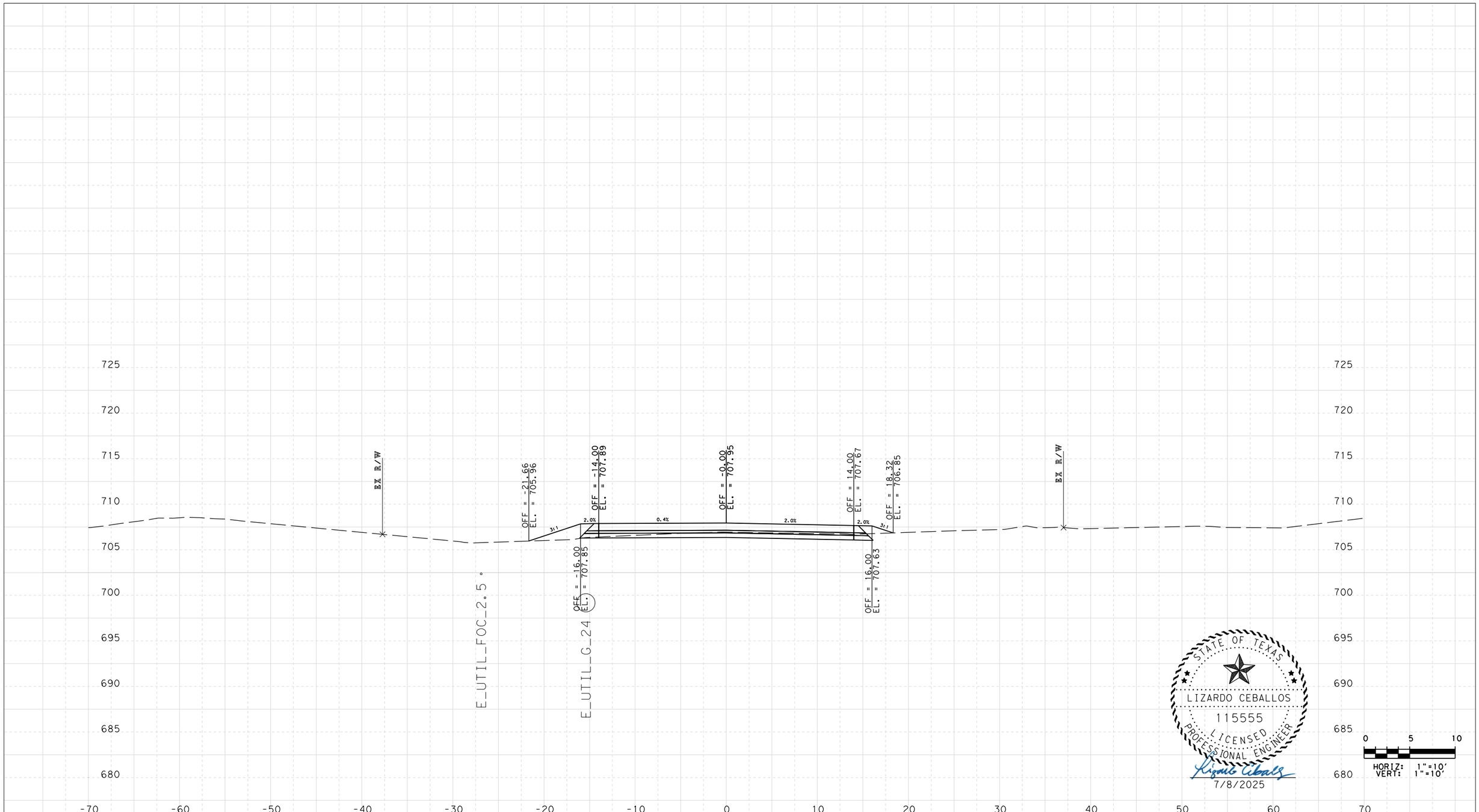
CITY OF SAN ANTONIO
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COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
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7/8/2025

HORIZ: 1"=10'
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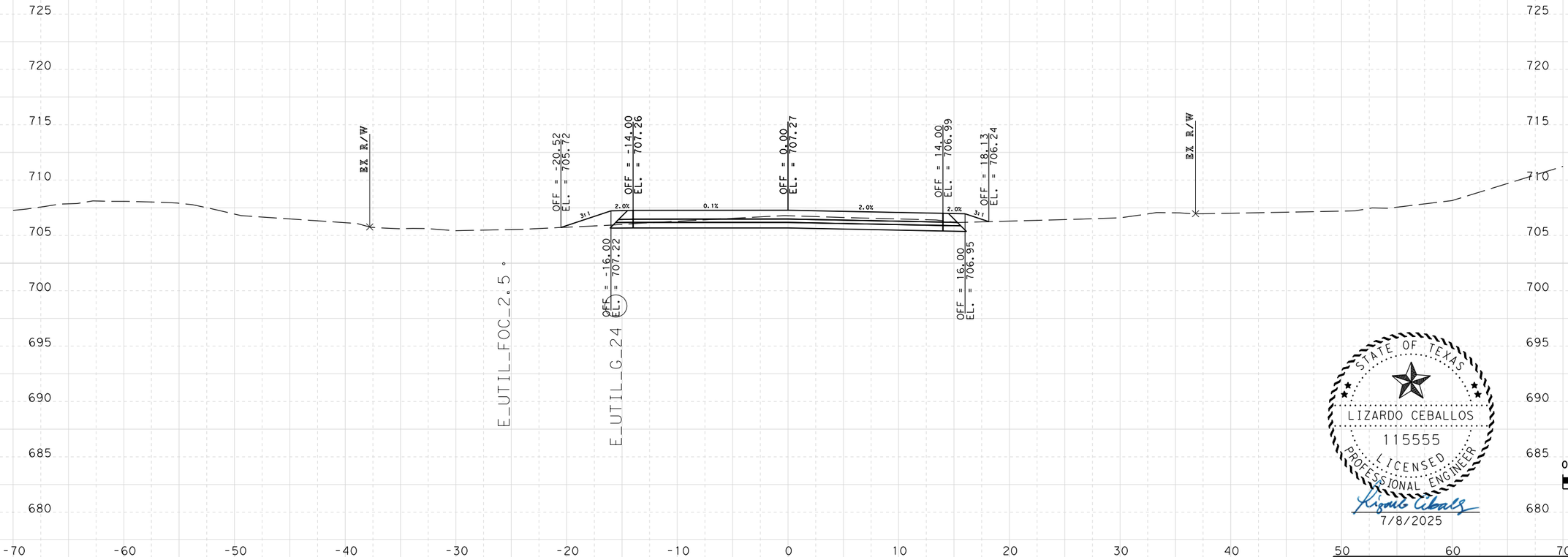
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COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
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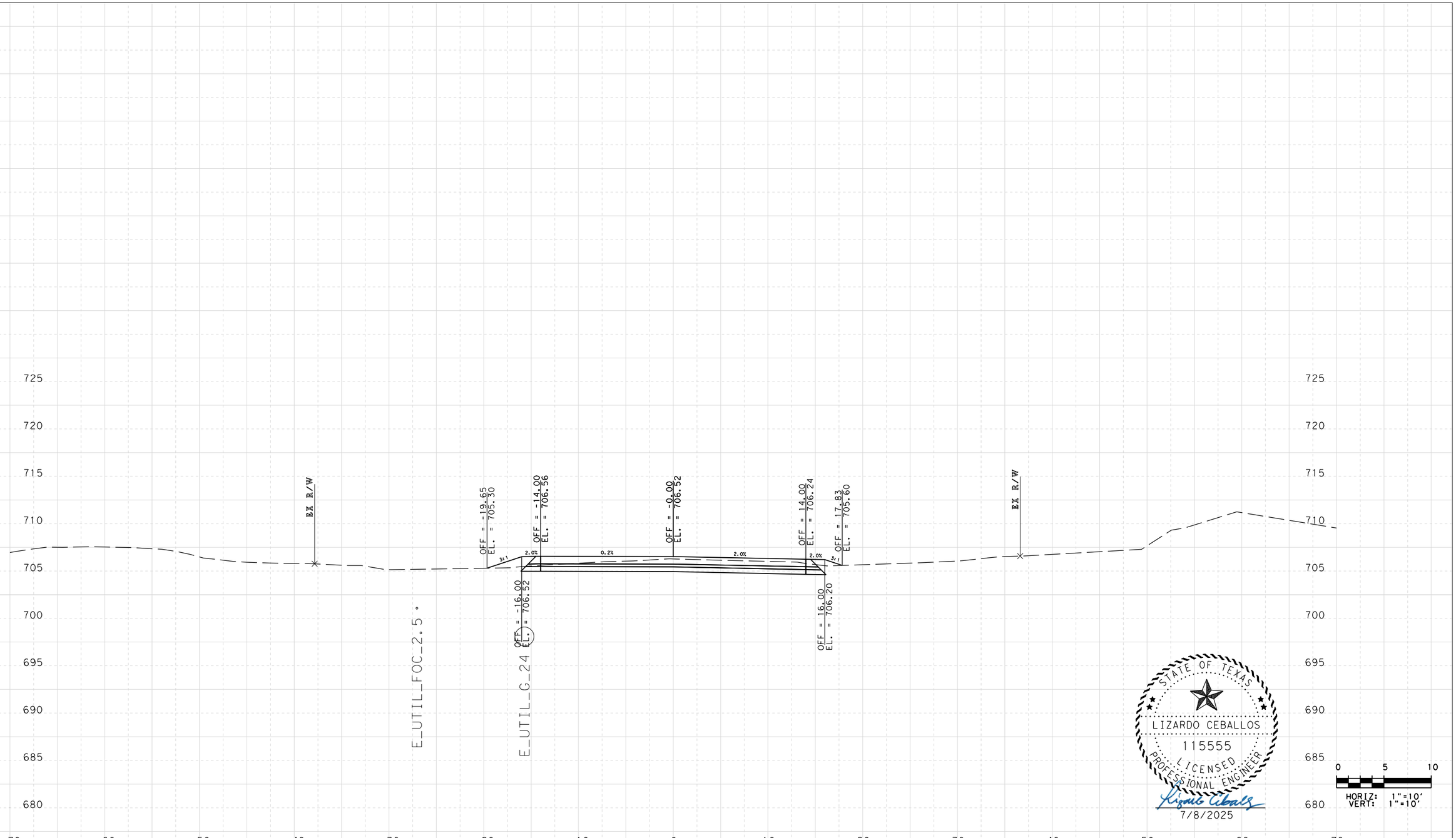
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COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
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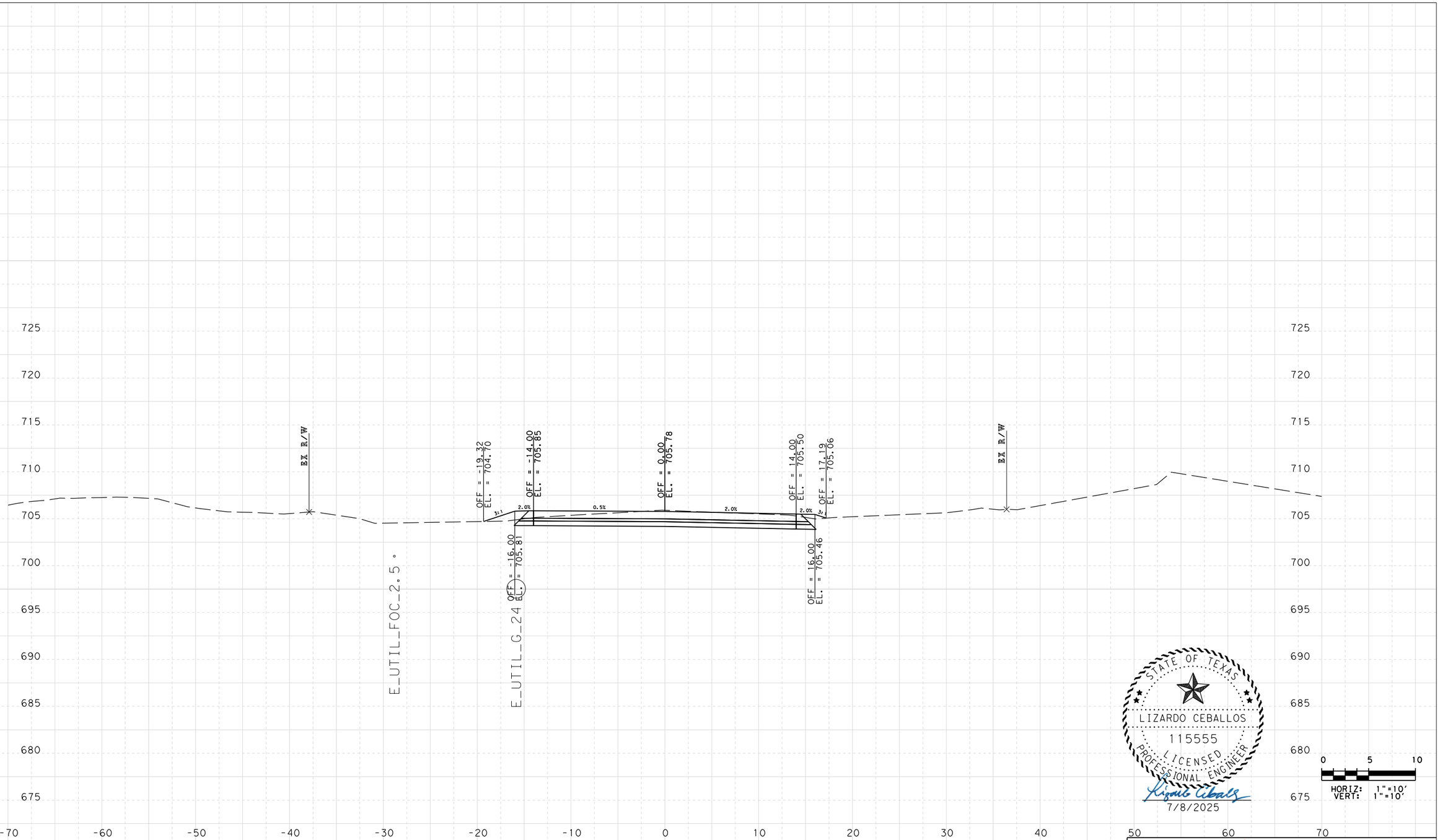
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COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
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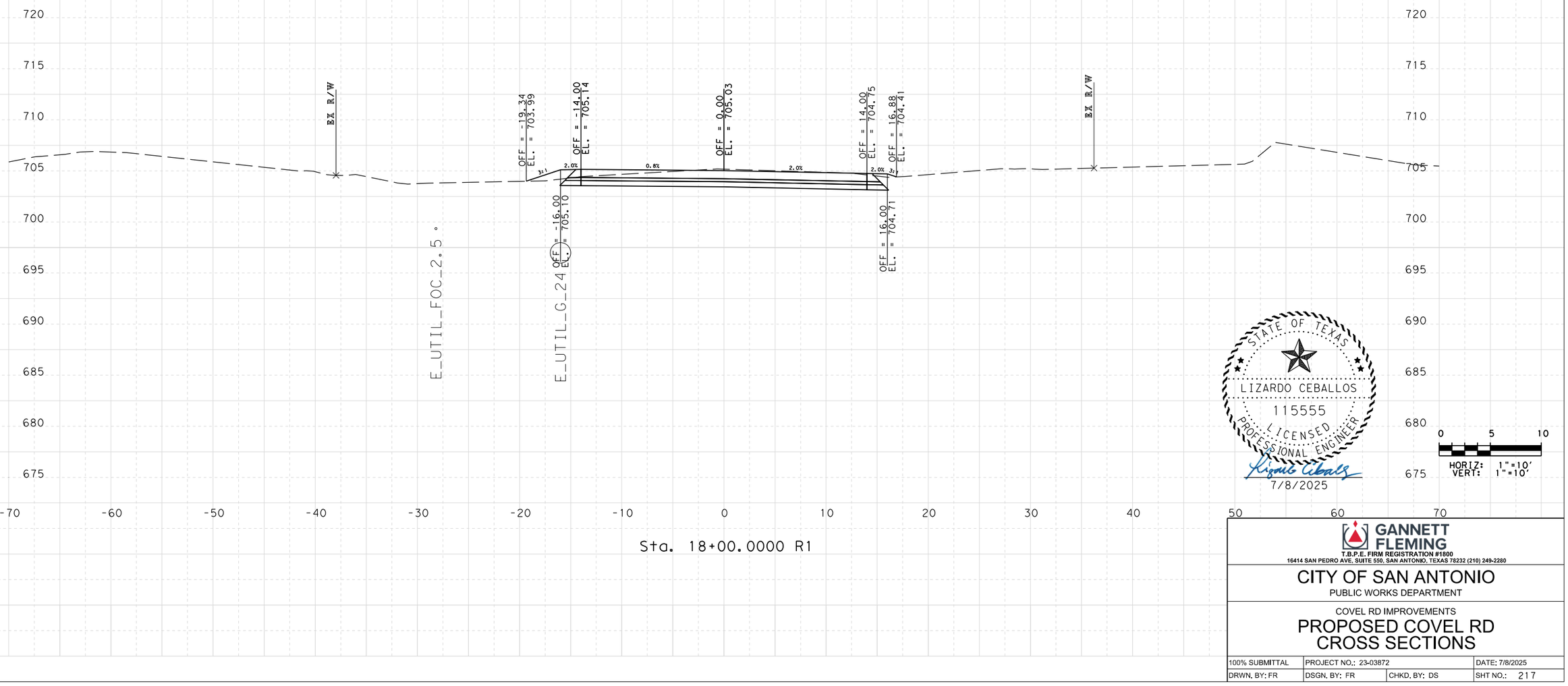
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COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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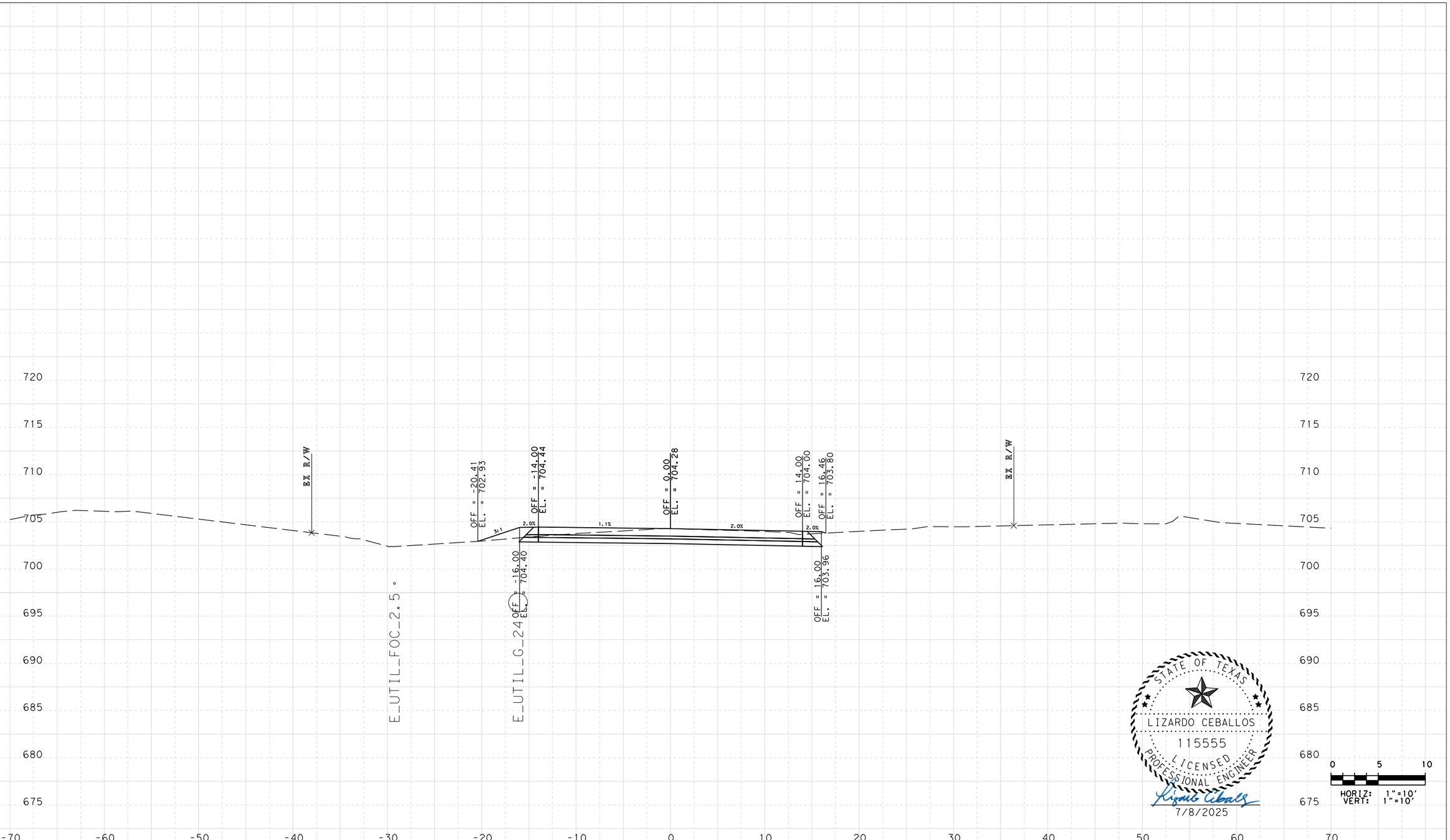
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COVEL RD IMPROVEMENTS

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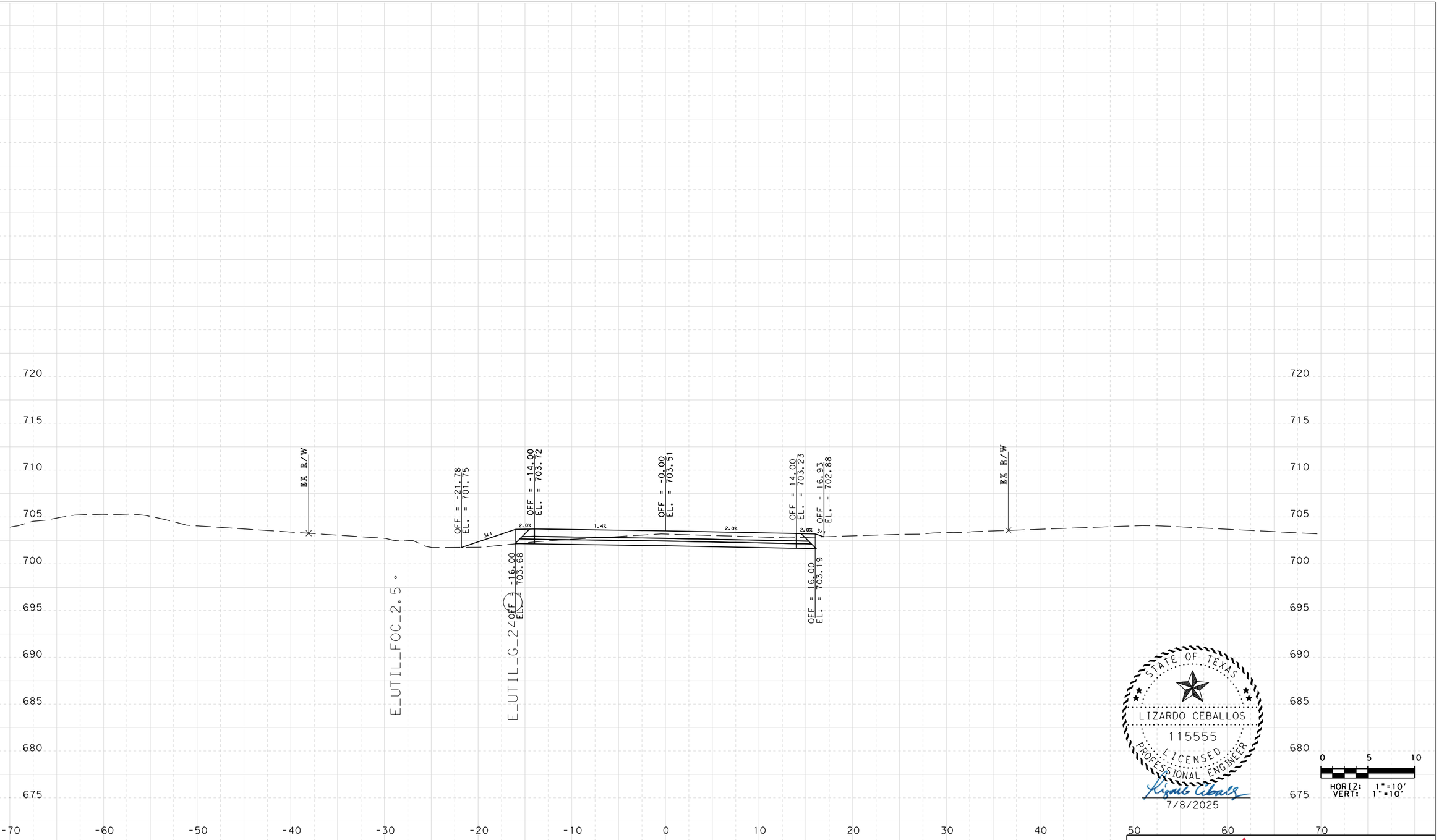
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COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

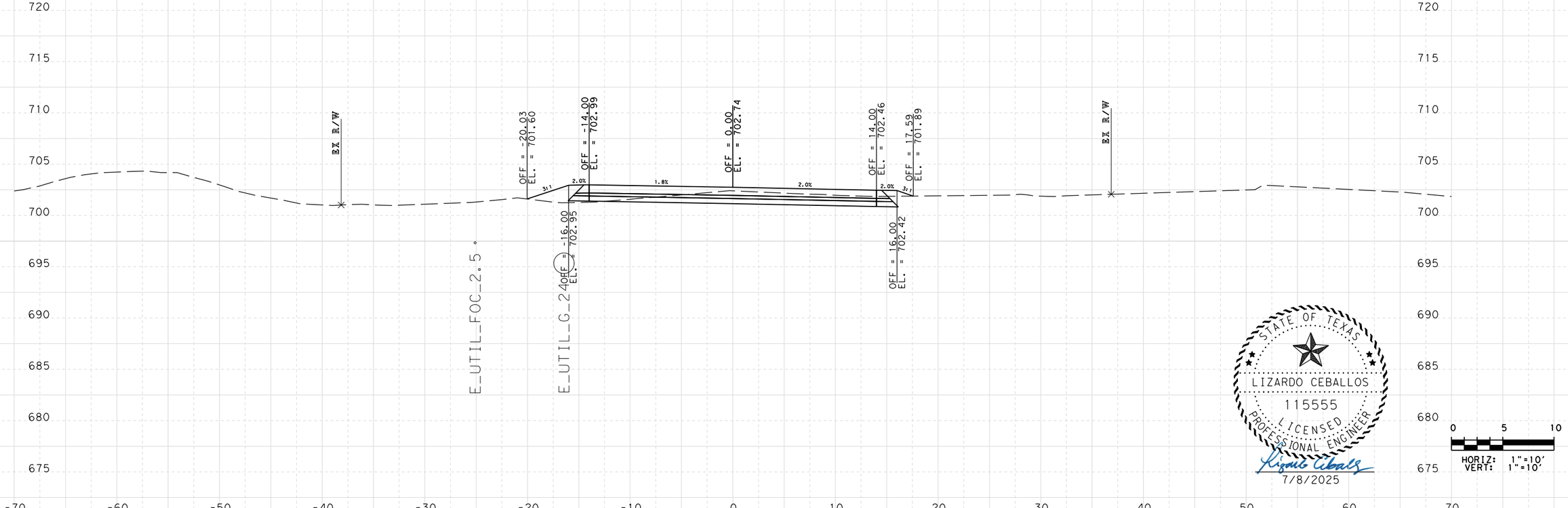
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: DS	SHT NO.: 219

9:58:00 AM
7/8/2025
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Sta. 19+50.0000 R1

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

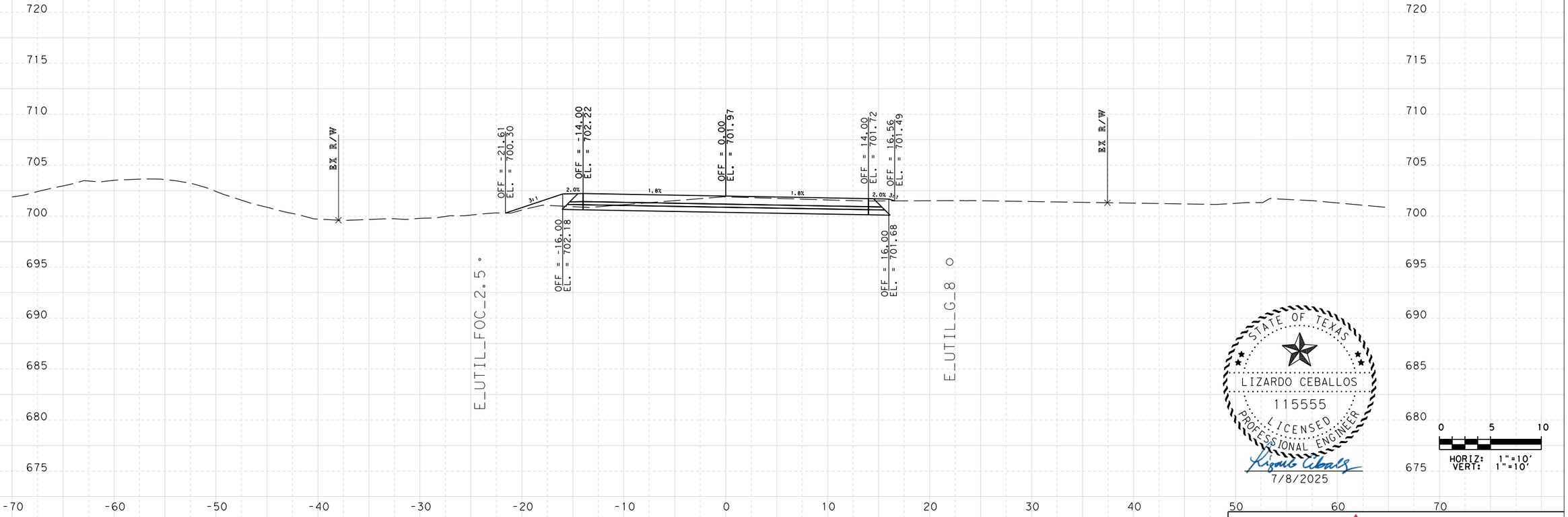
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: DS	SHT NO.: 220

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7/8/2025
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c:\projectwise\dannenbaum\workdir\jose.robles\d0168579\XS_PROP_COVEL_RD.dgn



Sta. 20+00.0000 R1

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

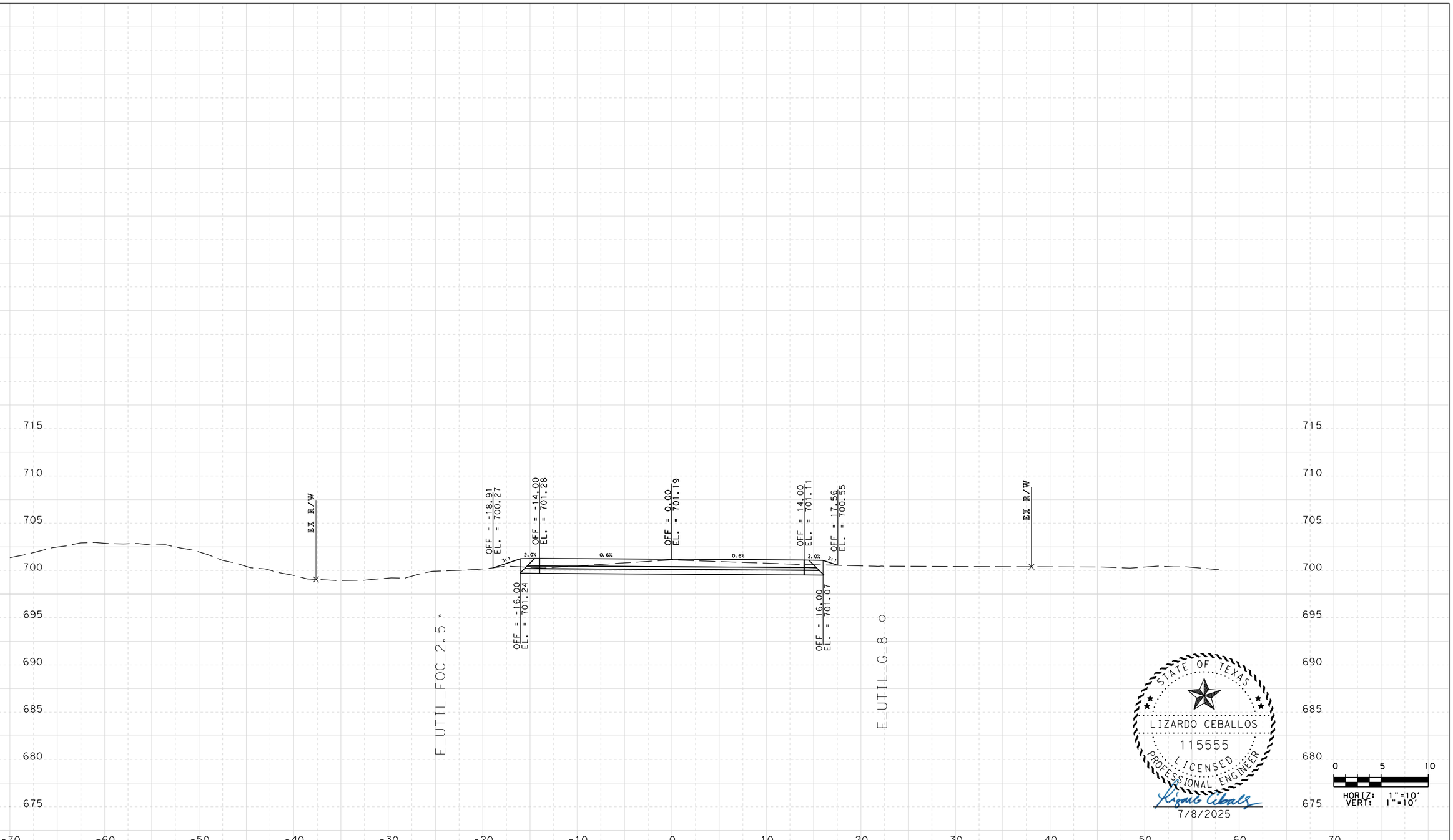
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: DS	SHT NO.: 221

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7/8/2025
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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

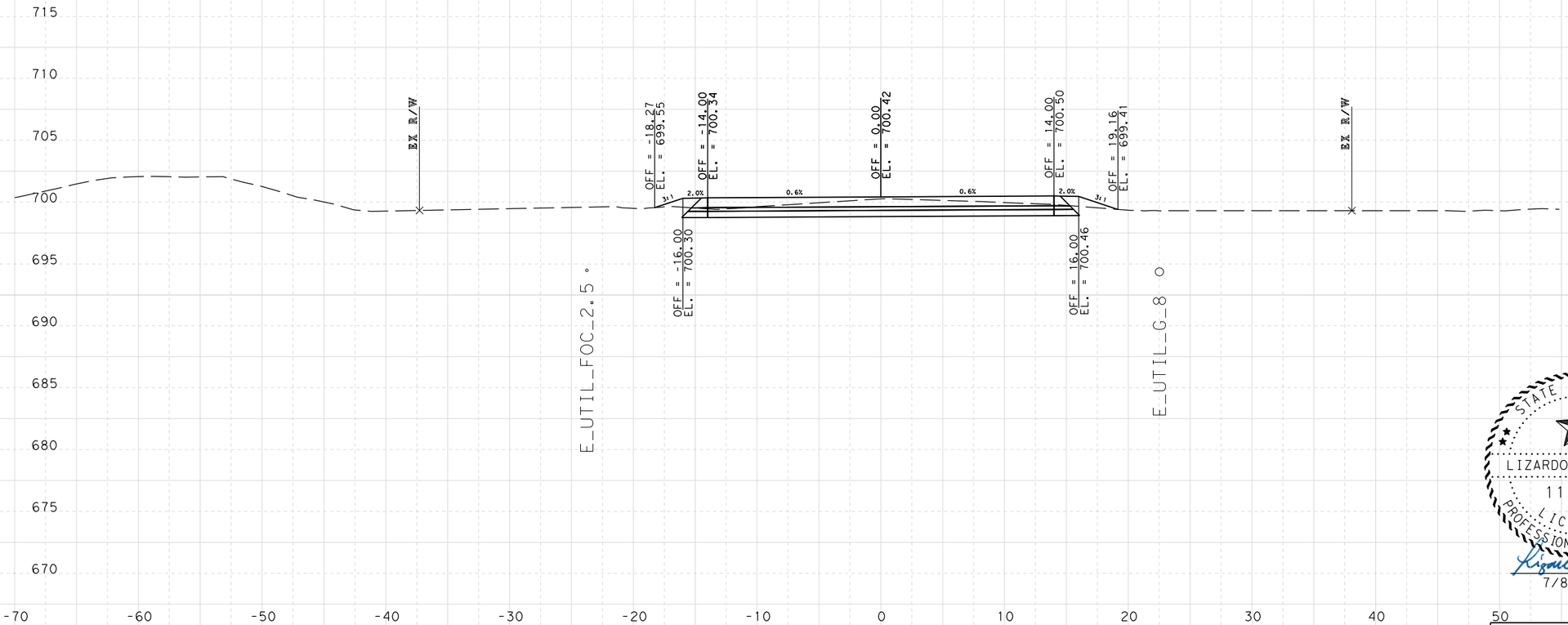
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

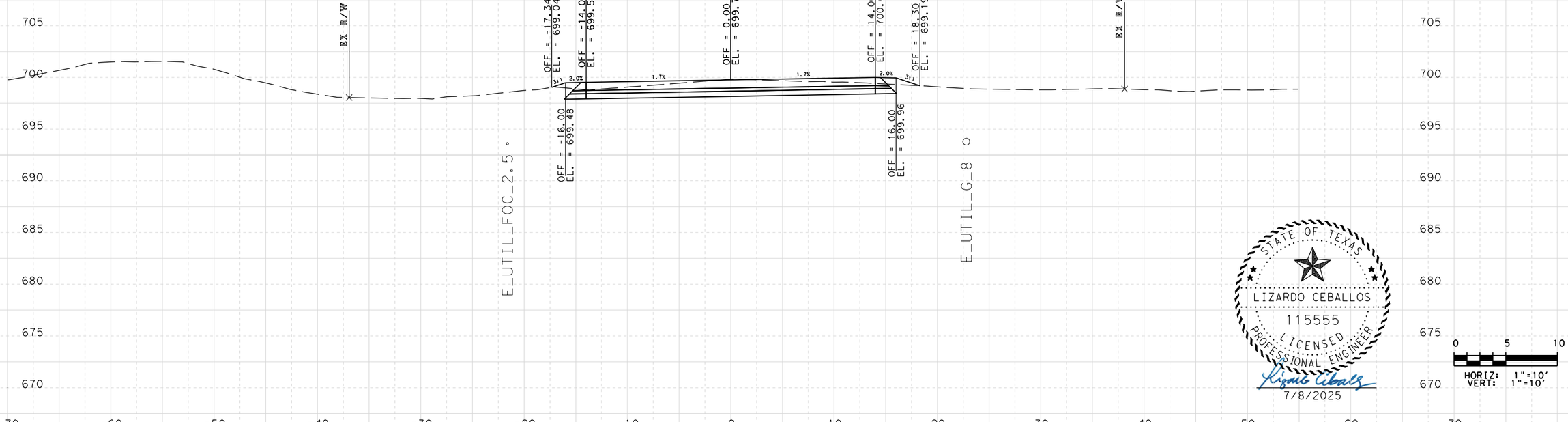
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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Sta. 21+50.0000 R1

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE. SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

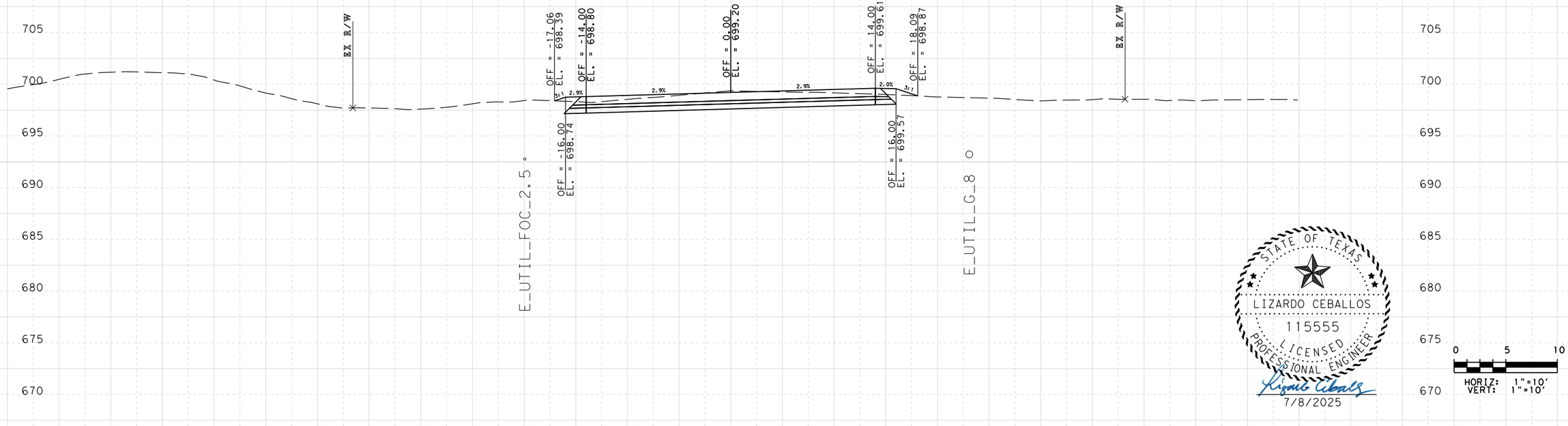
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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Sta. 22+00.0000 R1

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

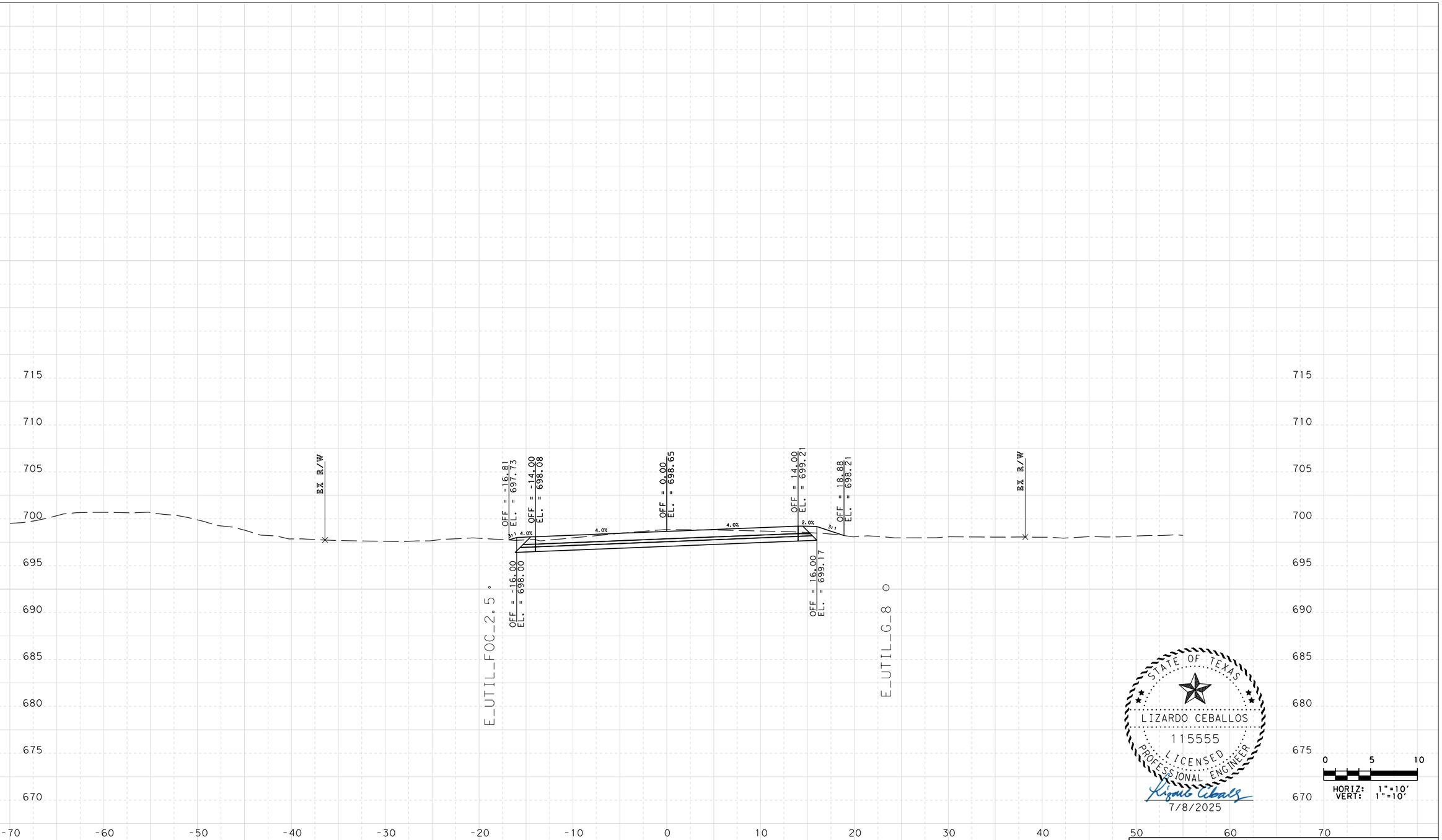
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

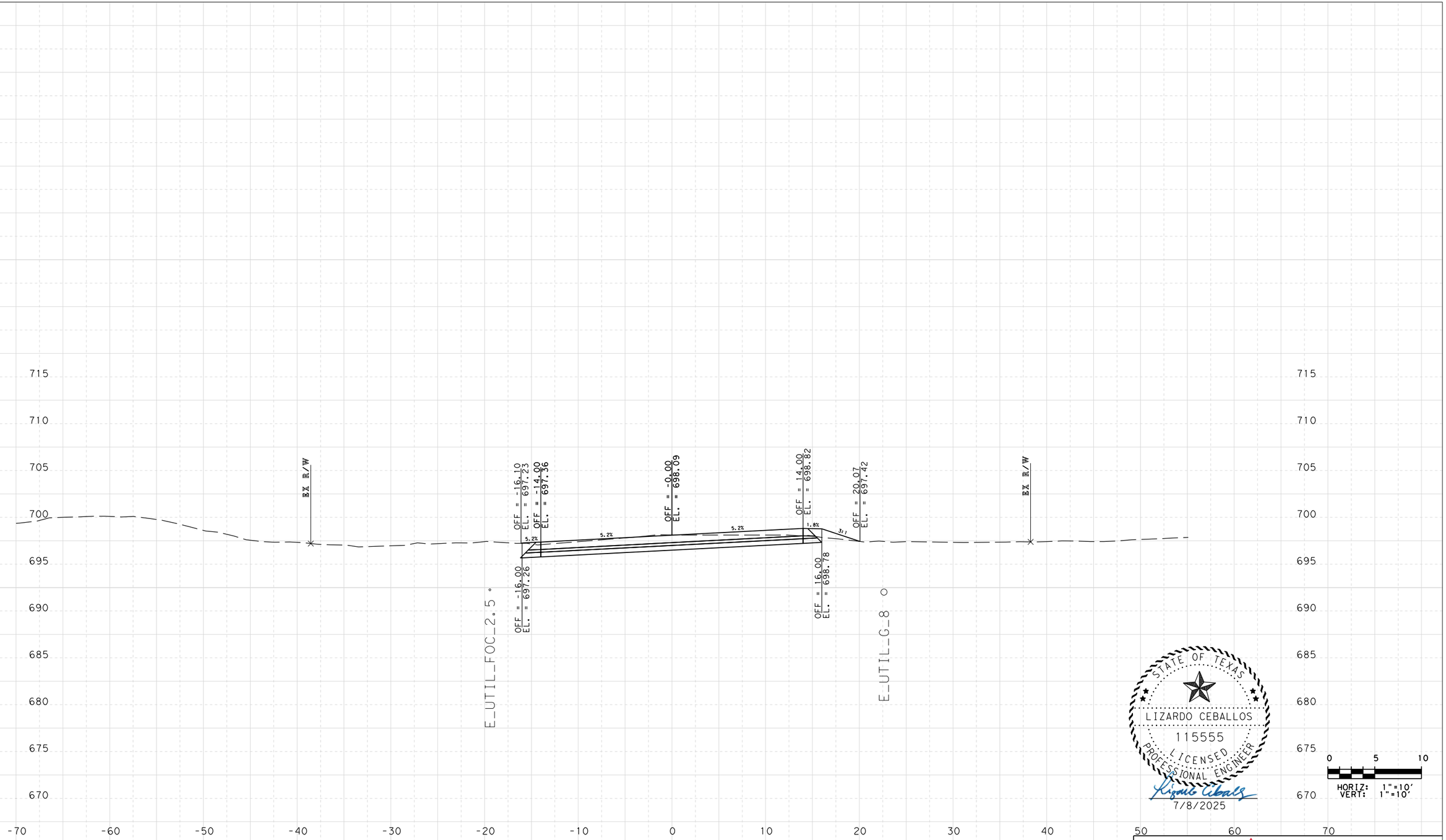
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

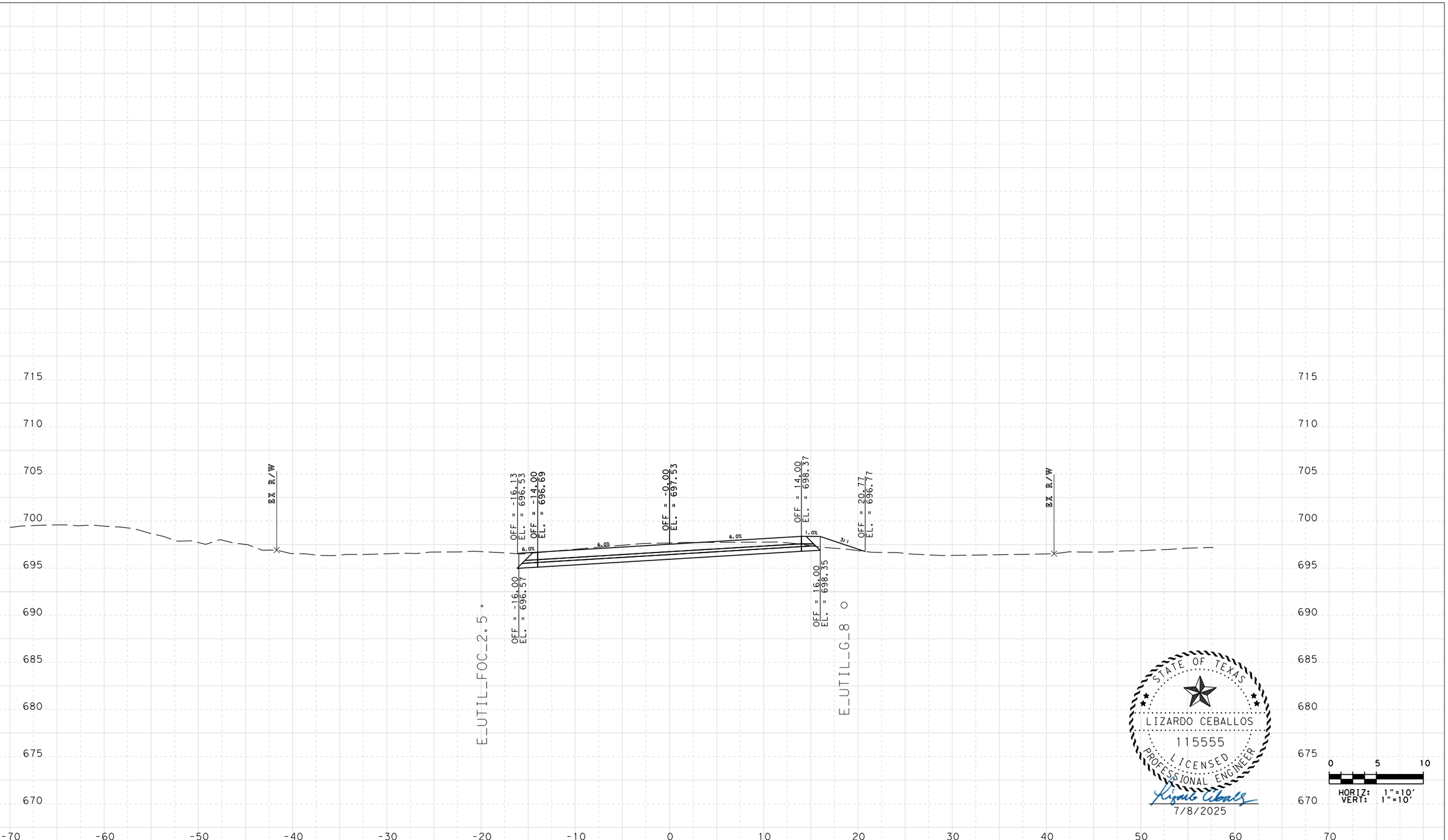
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

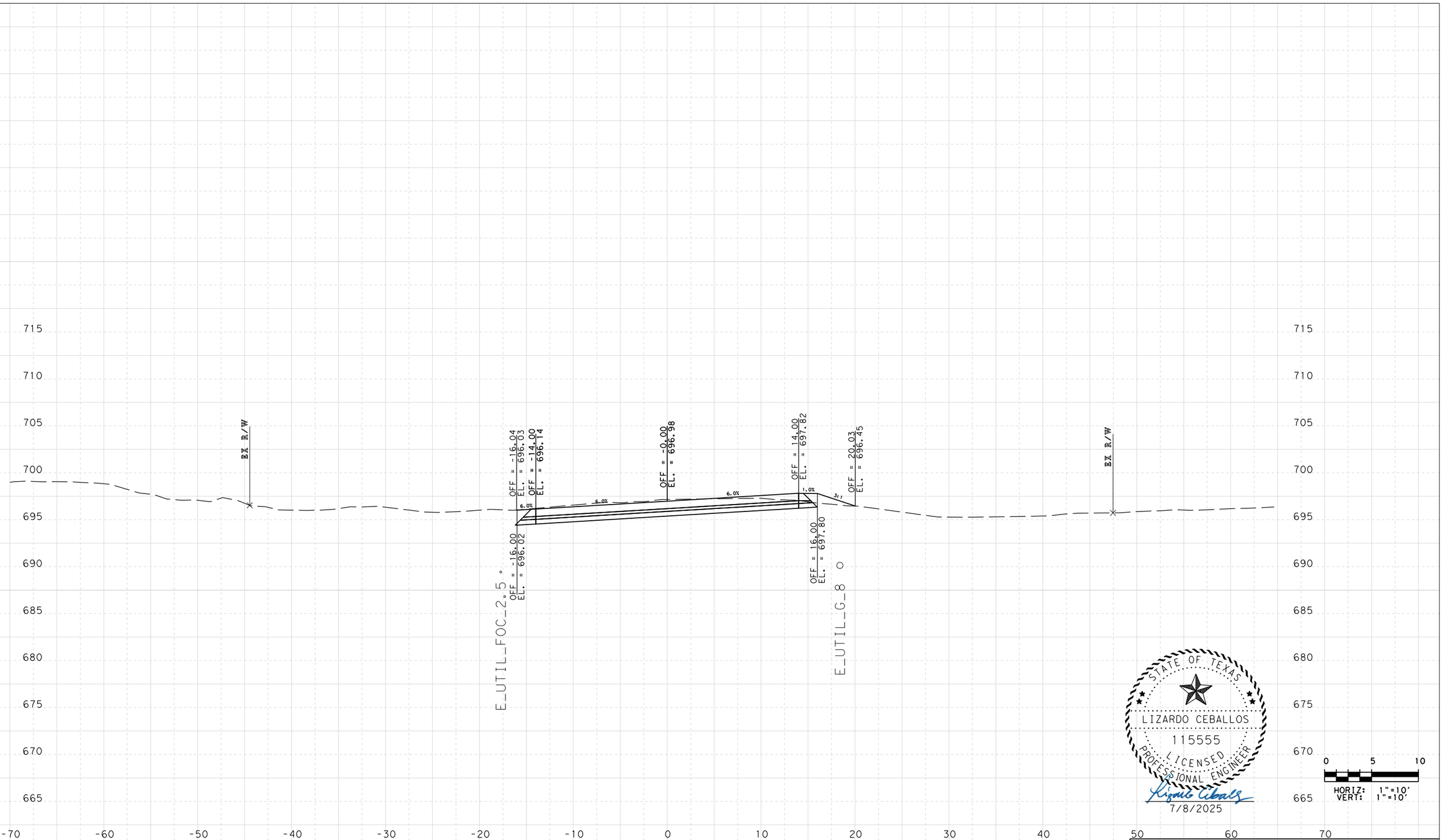
GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS
PROPOSED COVEL RD
CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
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Sta. 24+00.0000 R1

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

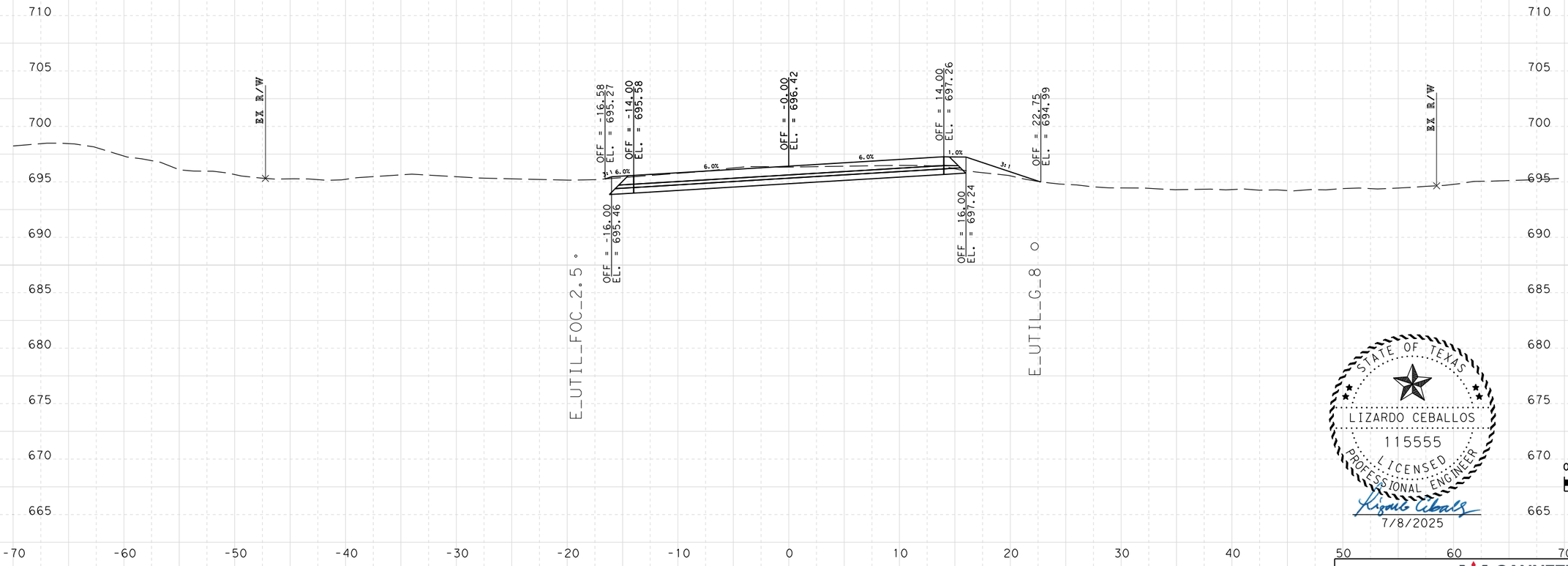
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

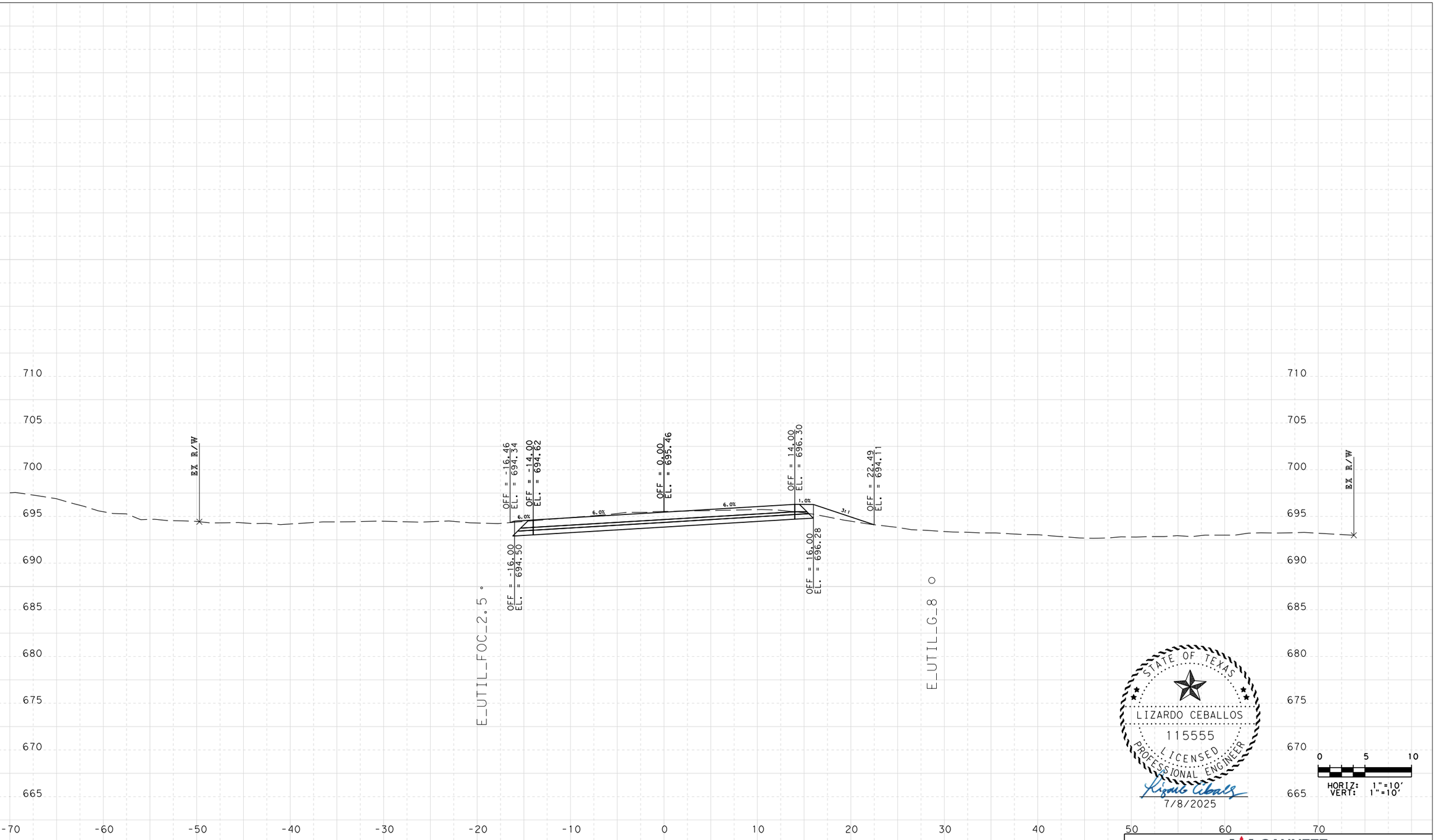
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

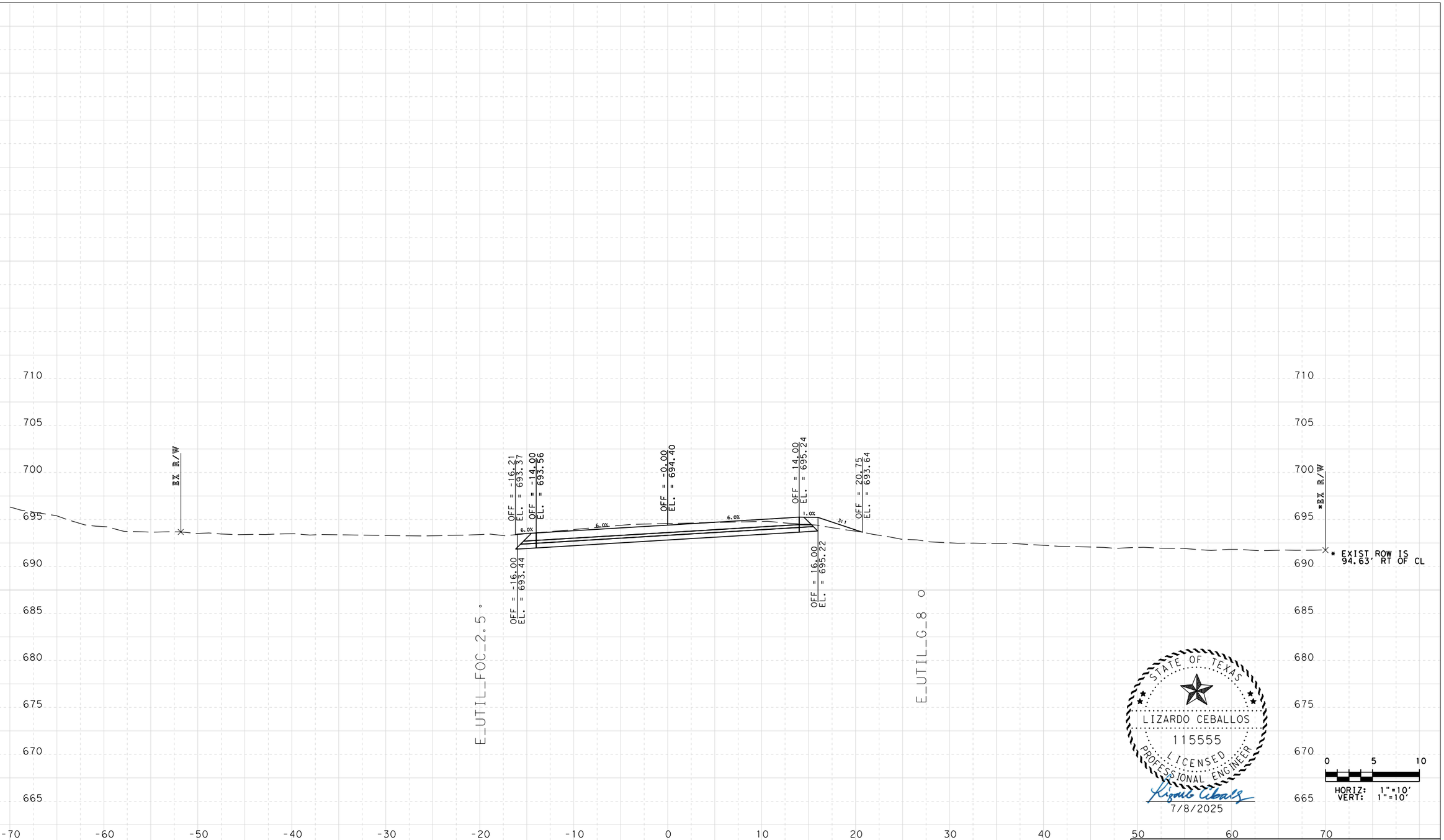
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

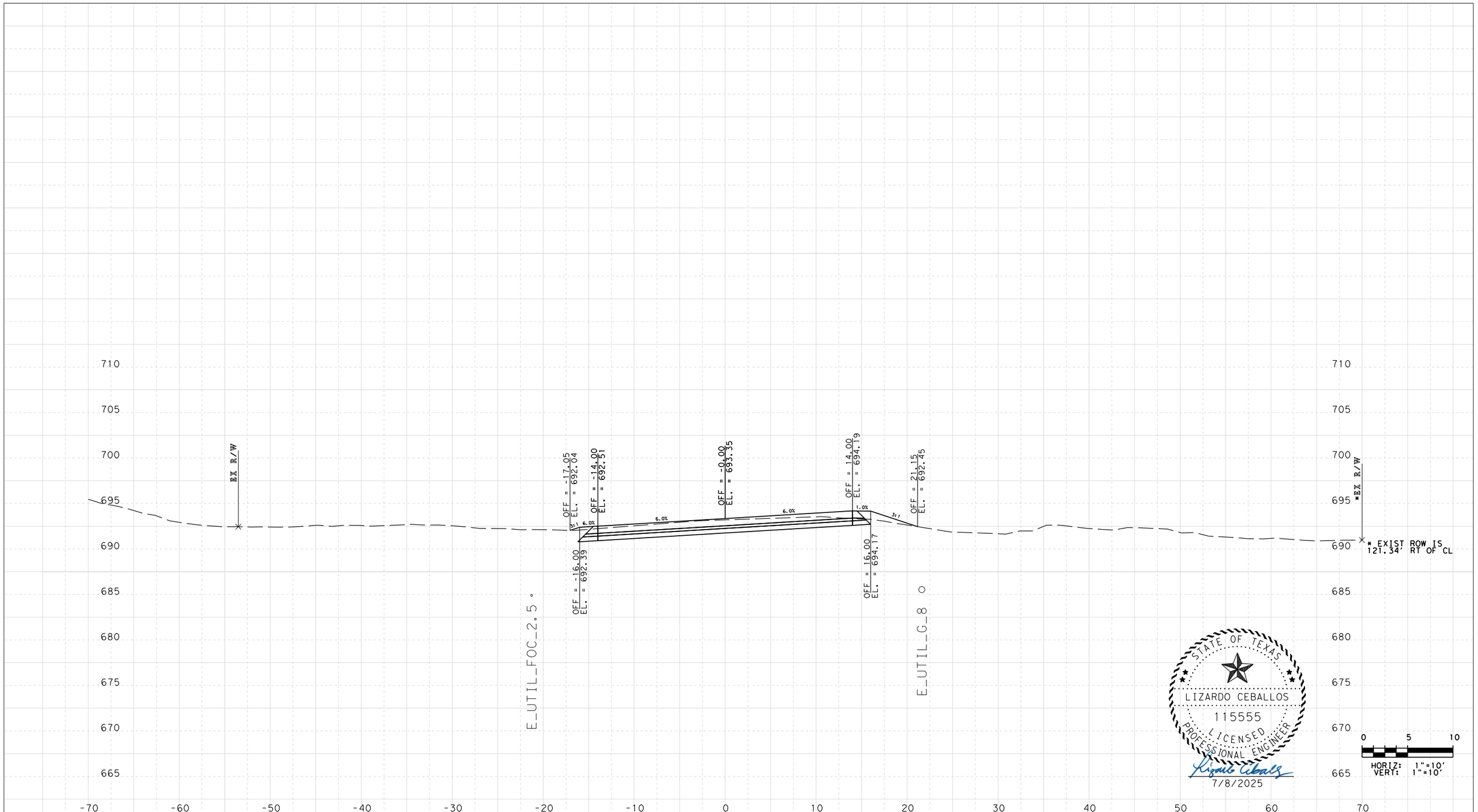
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

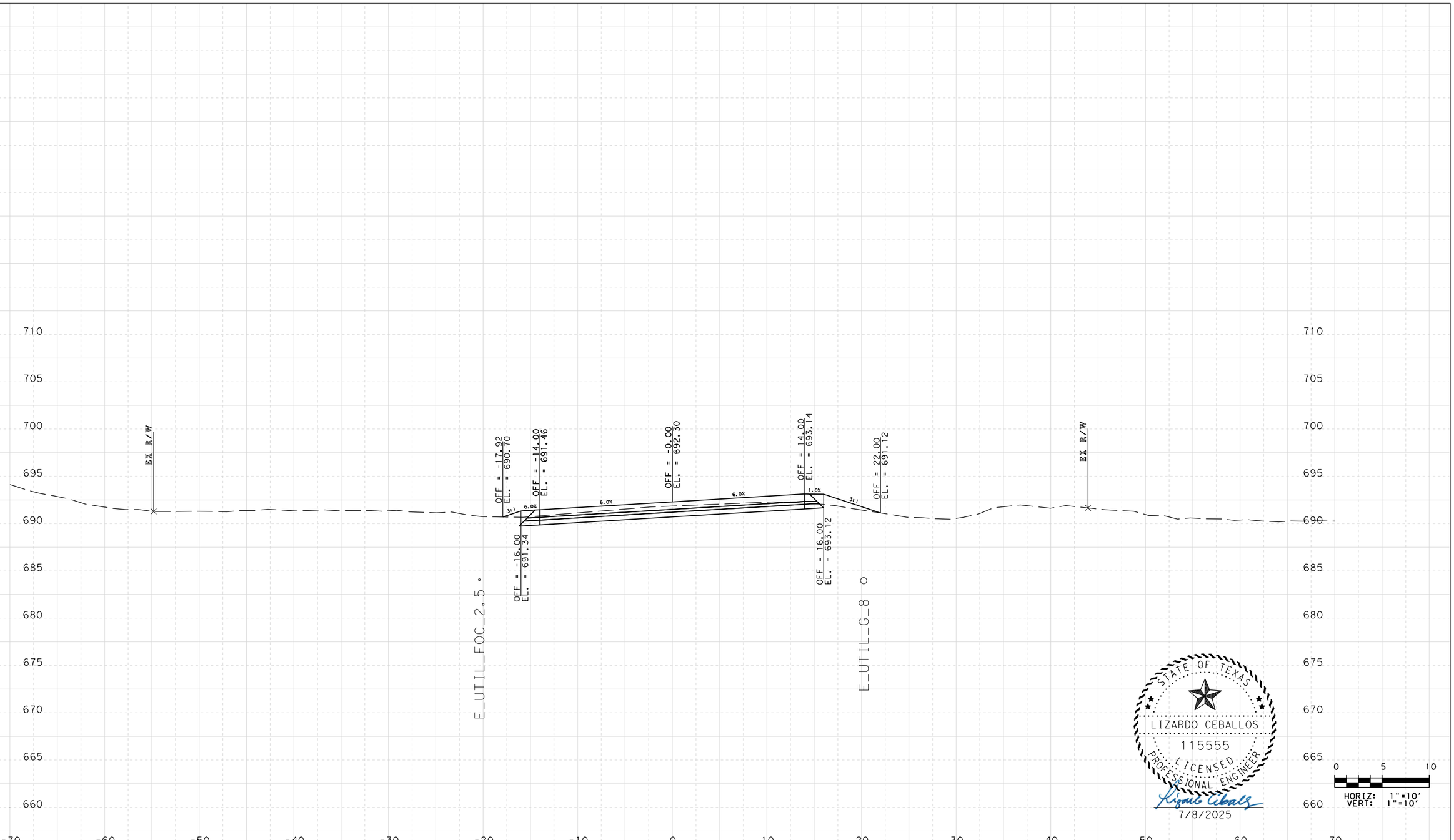
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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7/8/2025
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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

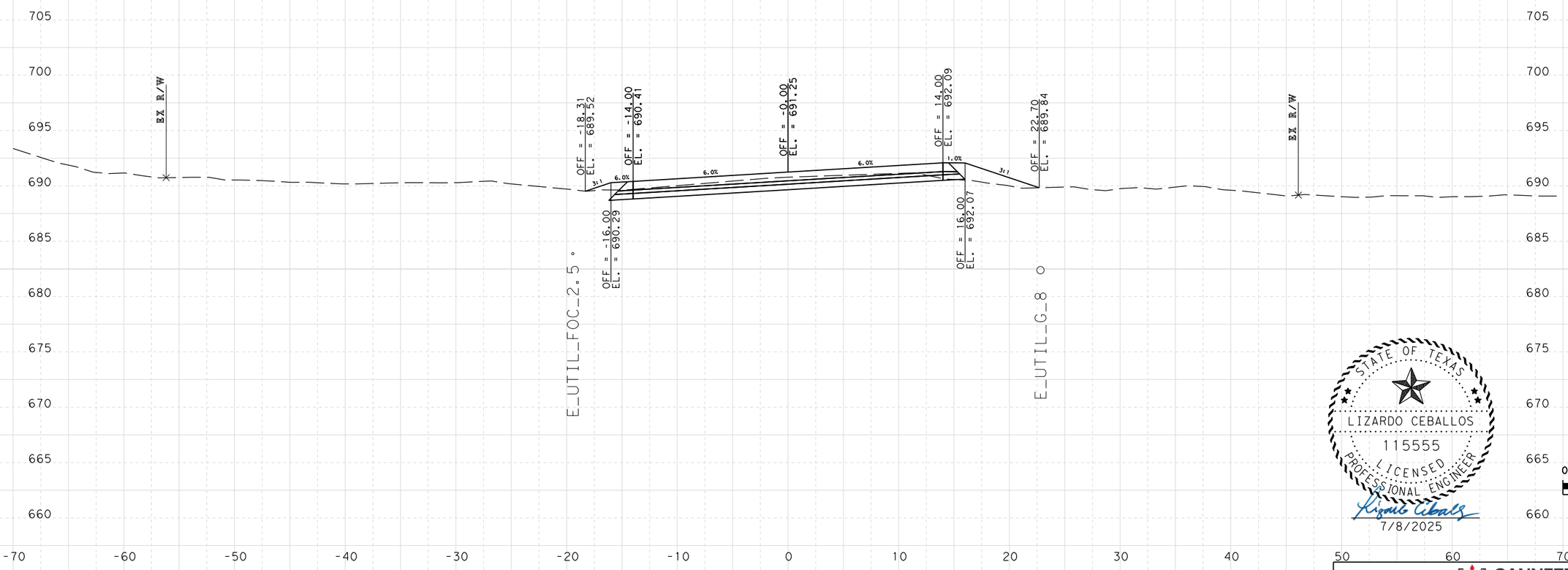
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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LIZARDO CEBALLOS
115555
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

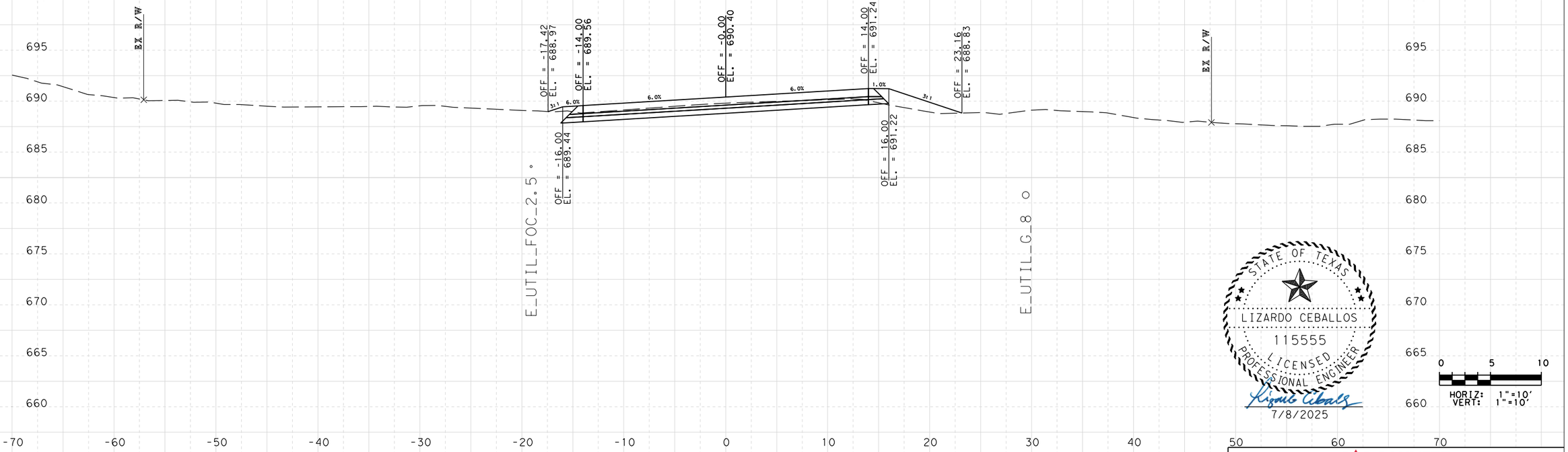
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

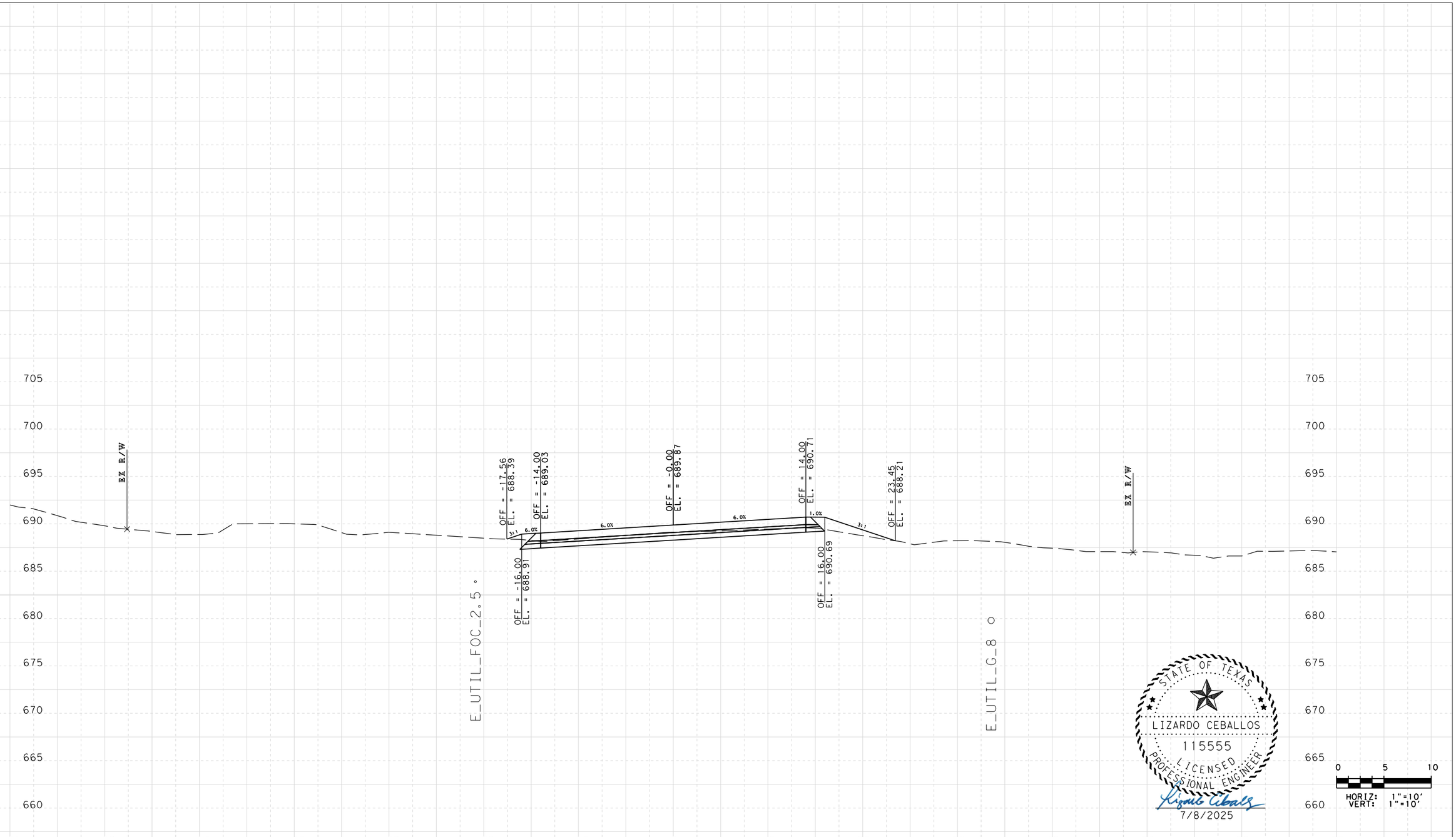
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

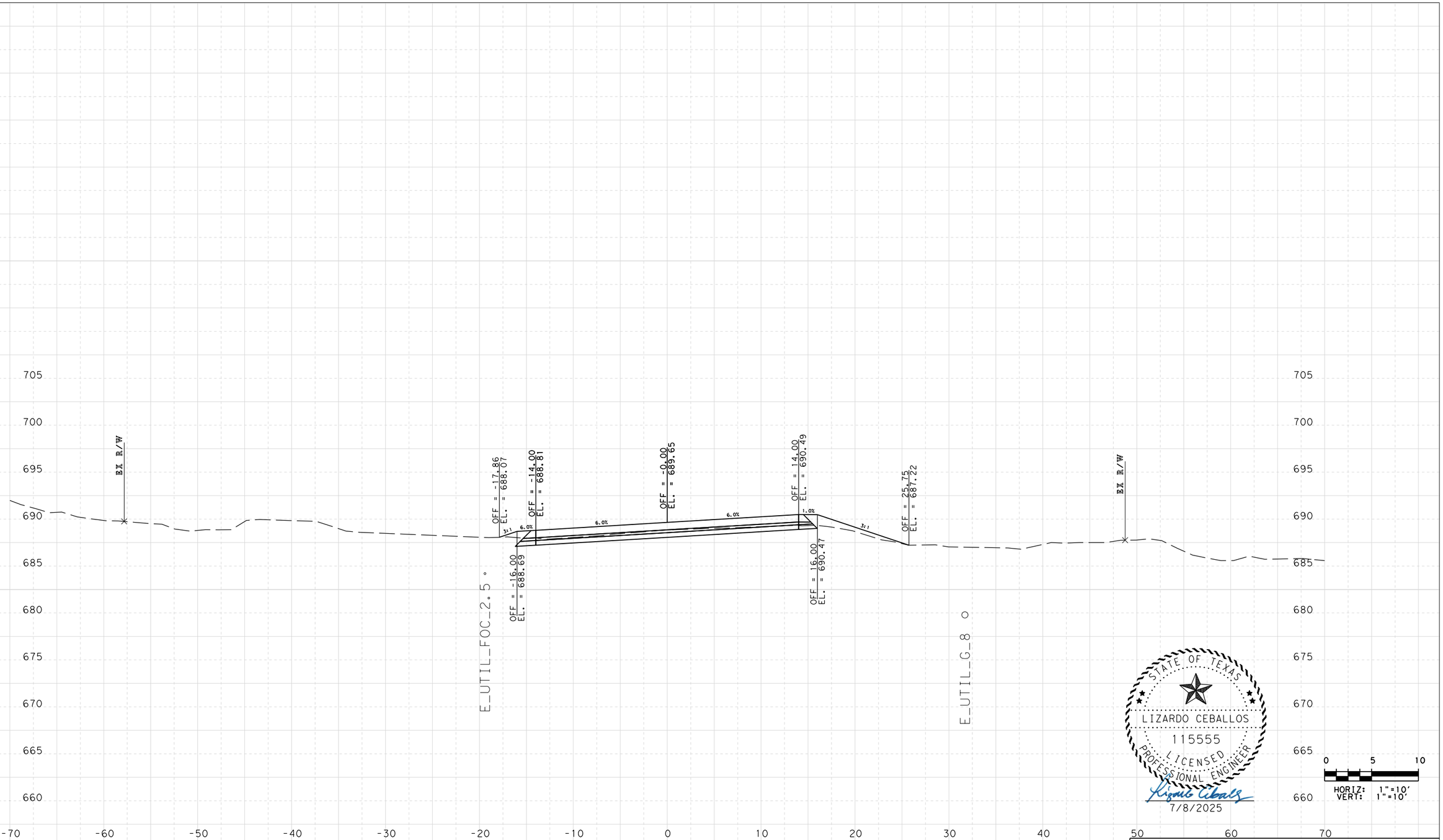
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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7/8/2025
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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

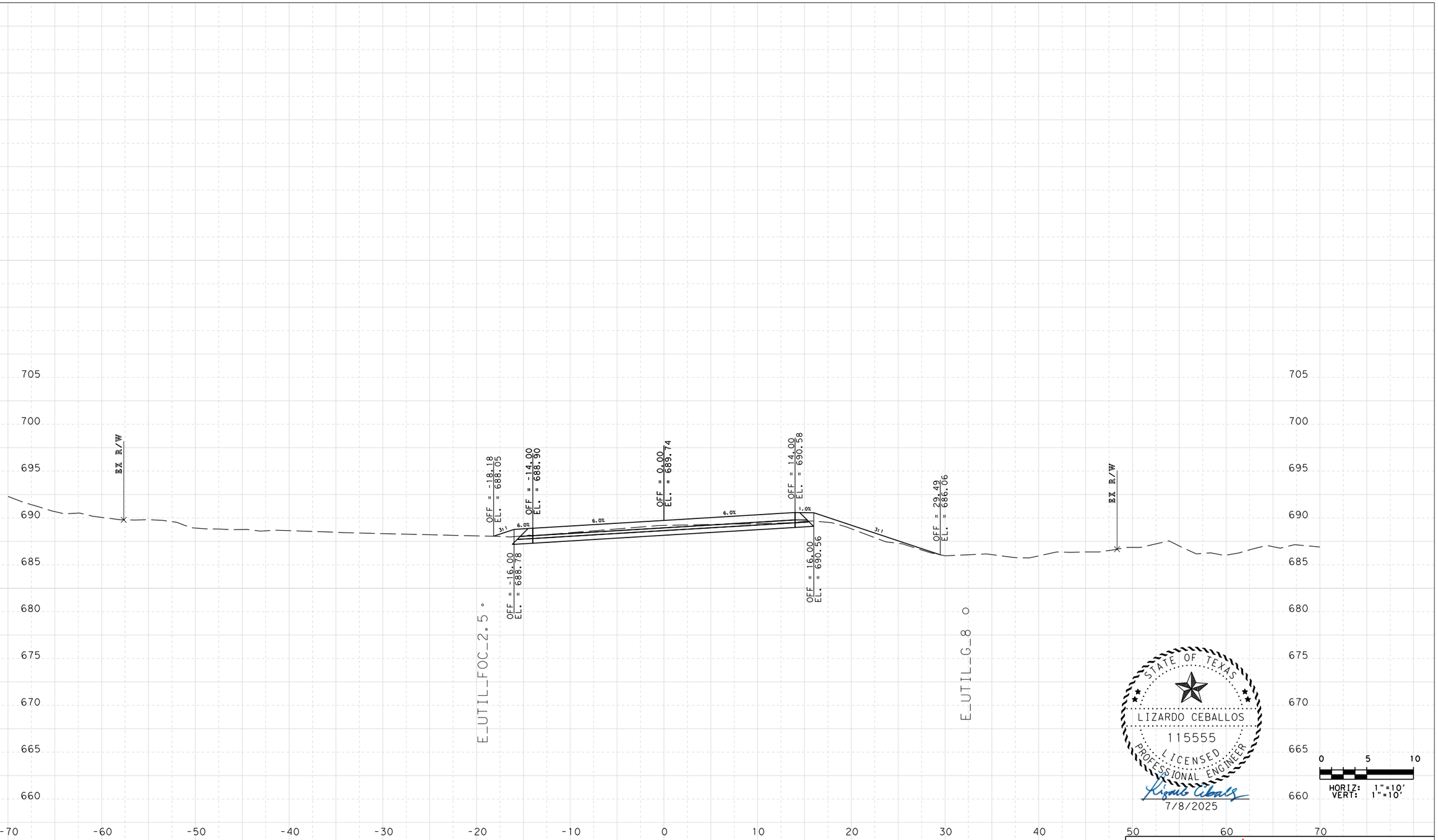
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: DS	SHT NO.: 238

9:58:09 AM
7/8/2025
jrobles
c:\projectwise\dannenbaum\workdir\jose.robles\d0168579\XS_PROP_COVEL_RD.dgn



STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

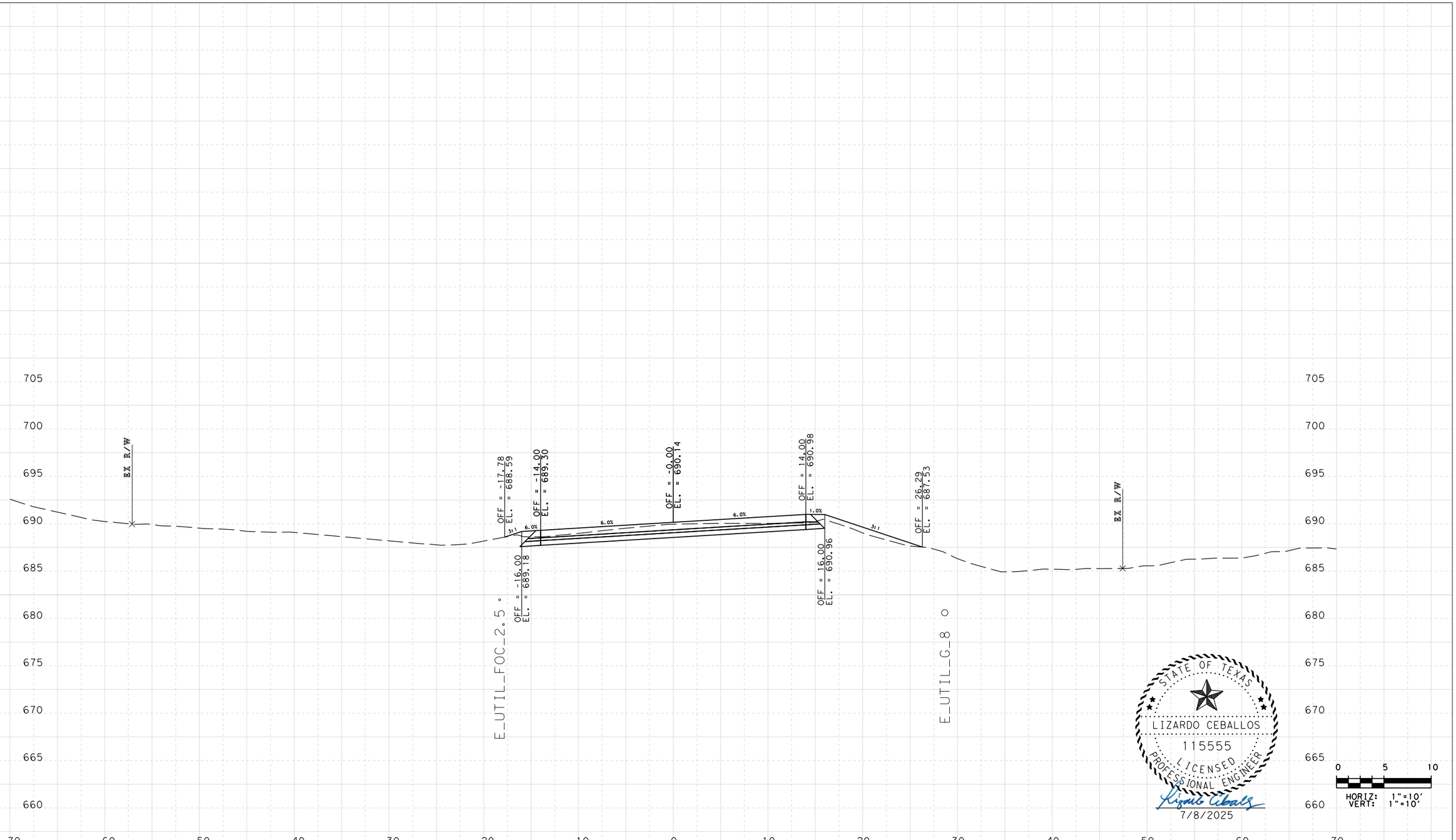
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: DS	SHT NO.: 239

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7/8/2025
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c:\projectwise\dannenbaum\workdir\jose.robles\d0168579\XS_PROP_COVEL_RD.dgn



STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

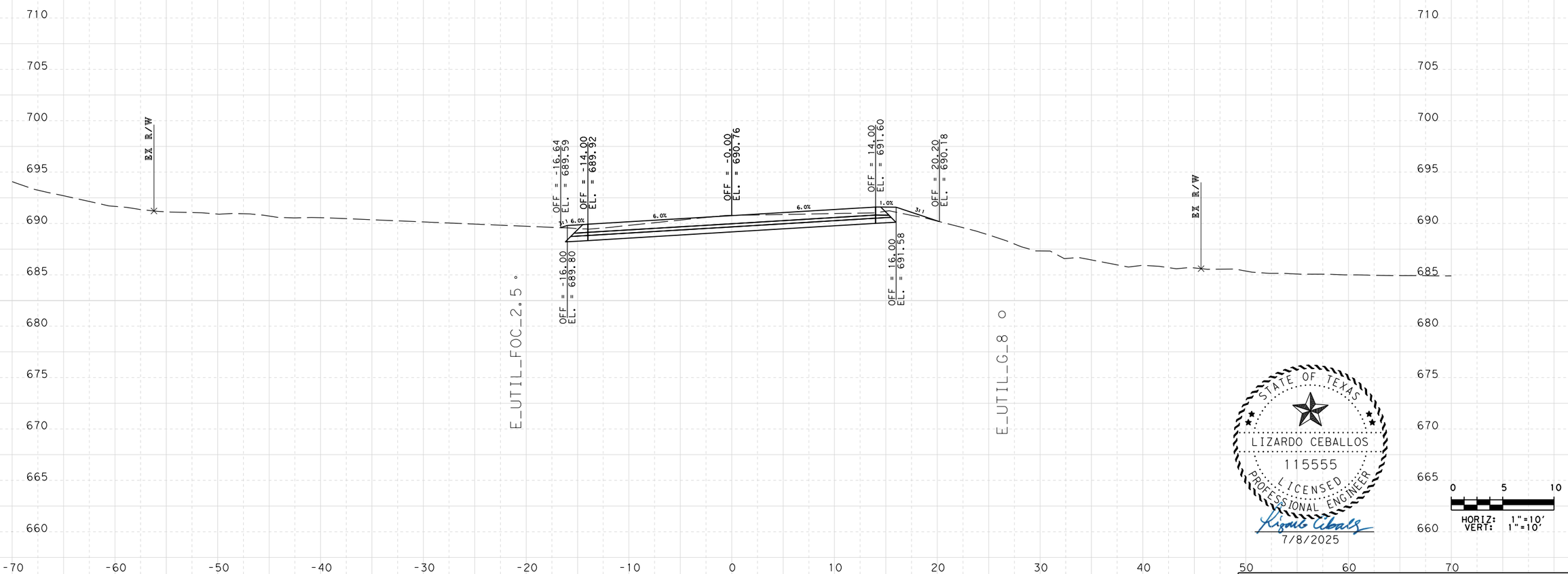
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: DS	SHT NO.: 240

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7/8/2025
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Sta. 30+00.0000 R1

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

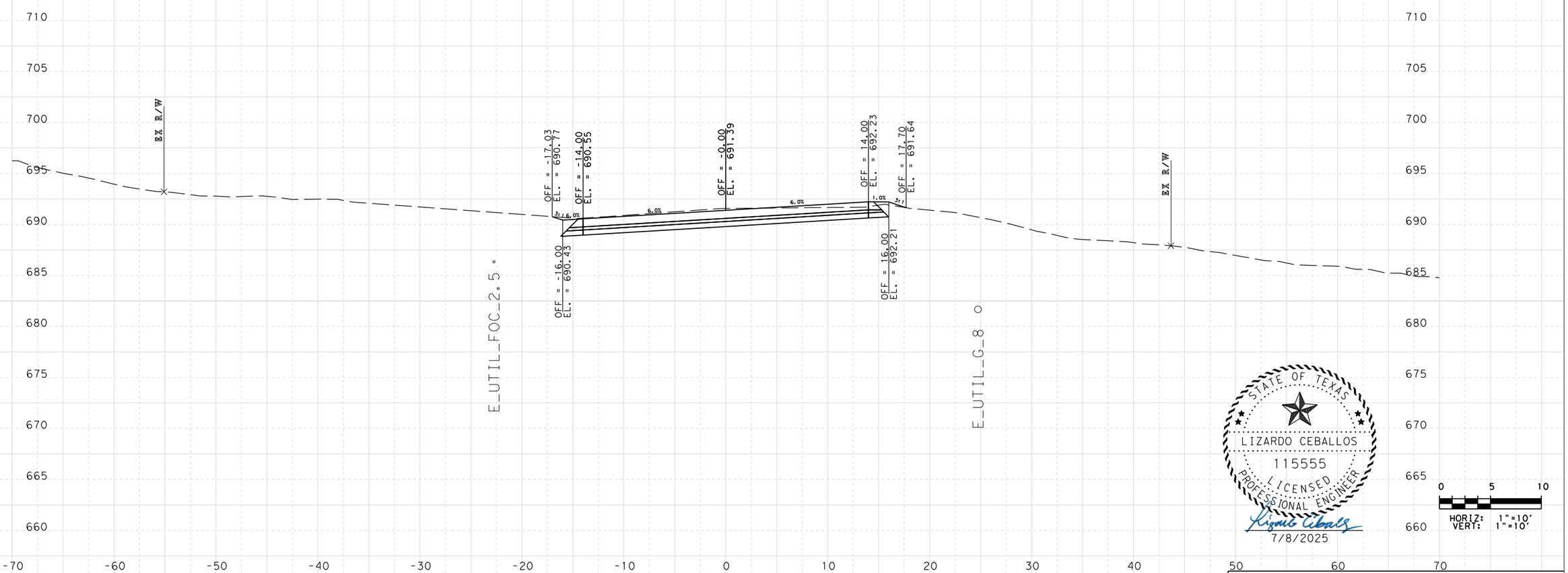
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: DS	SHT NO.: 241

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

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HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

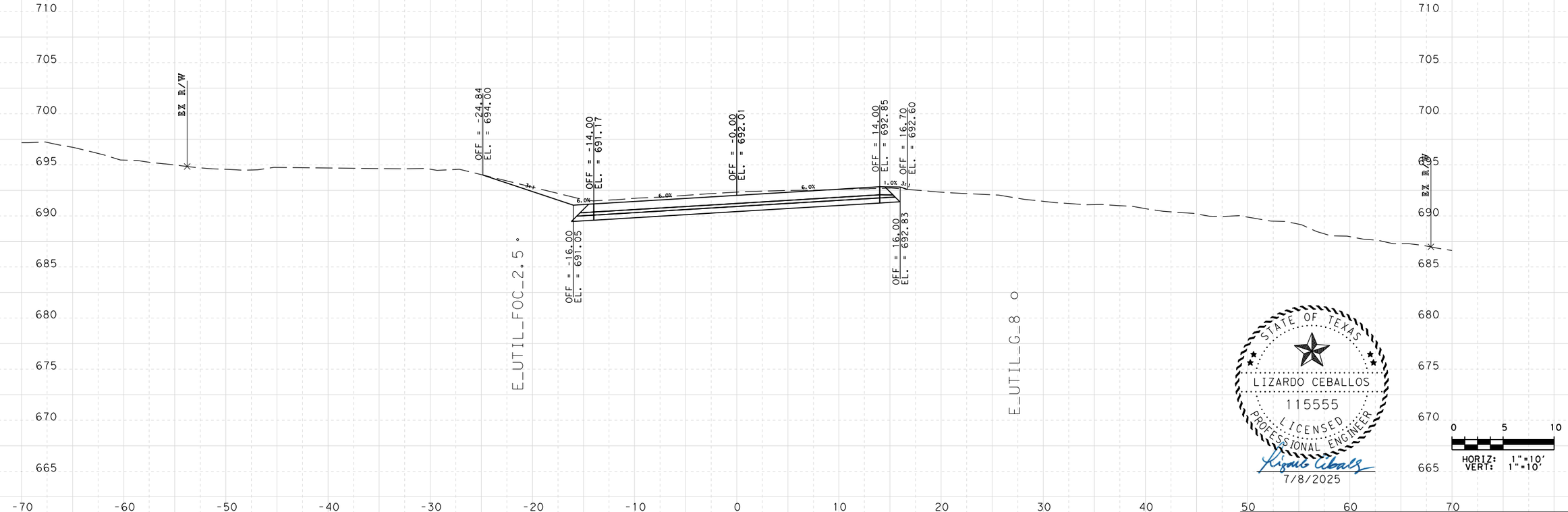
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: DS	SHT NO.: 242

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7/8/2025
jrobles
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STATE OF TEXAS
LIZARDO CEBALLOS
115555
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7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

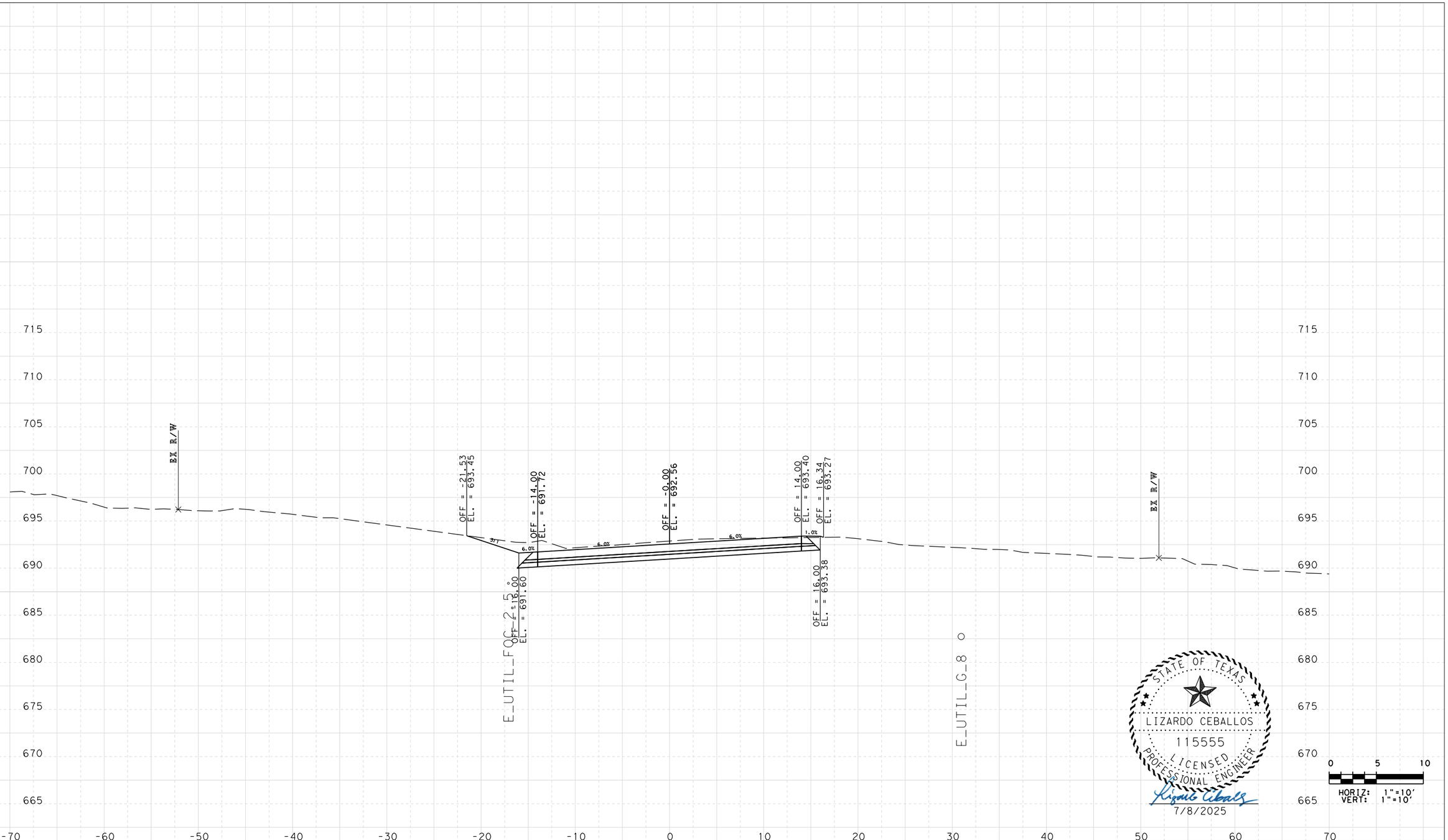
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: DS	SHT NO.: 243

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

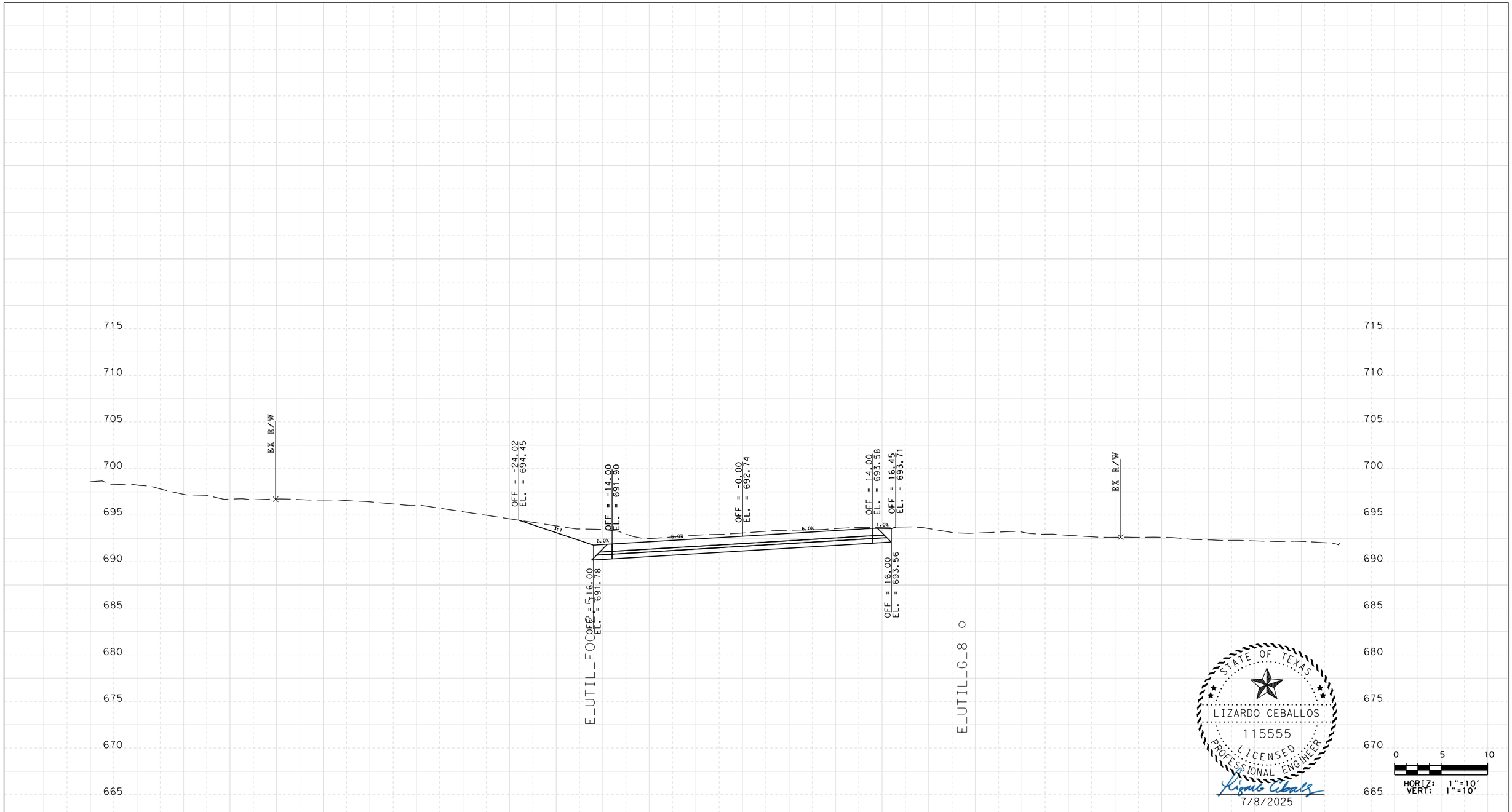
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: DS	SHT NO.: 244

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jrobles
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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

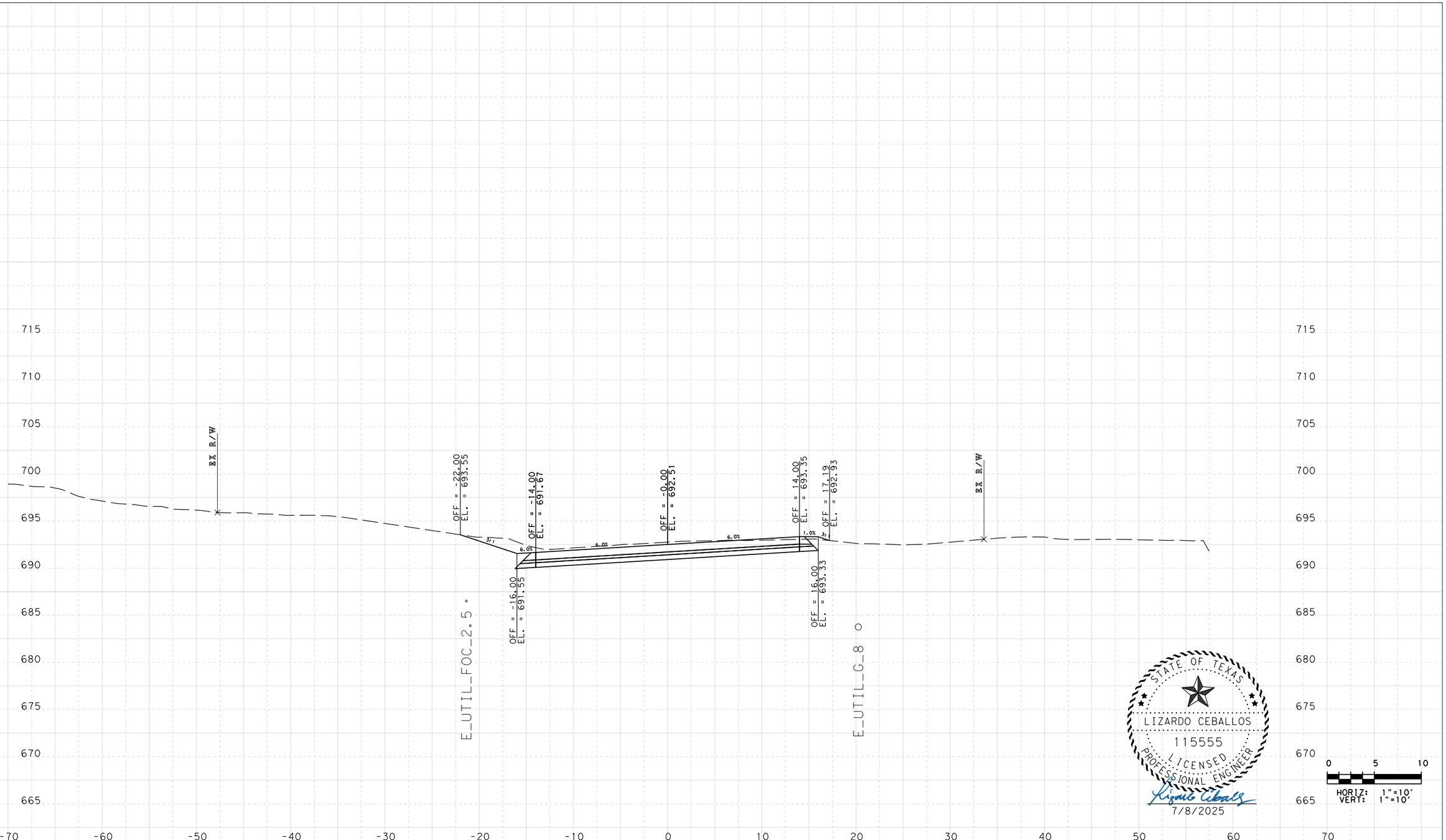
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

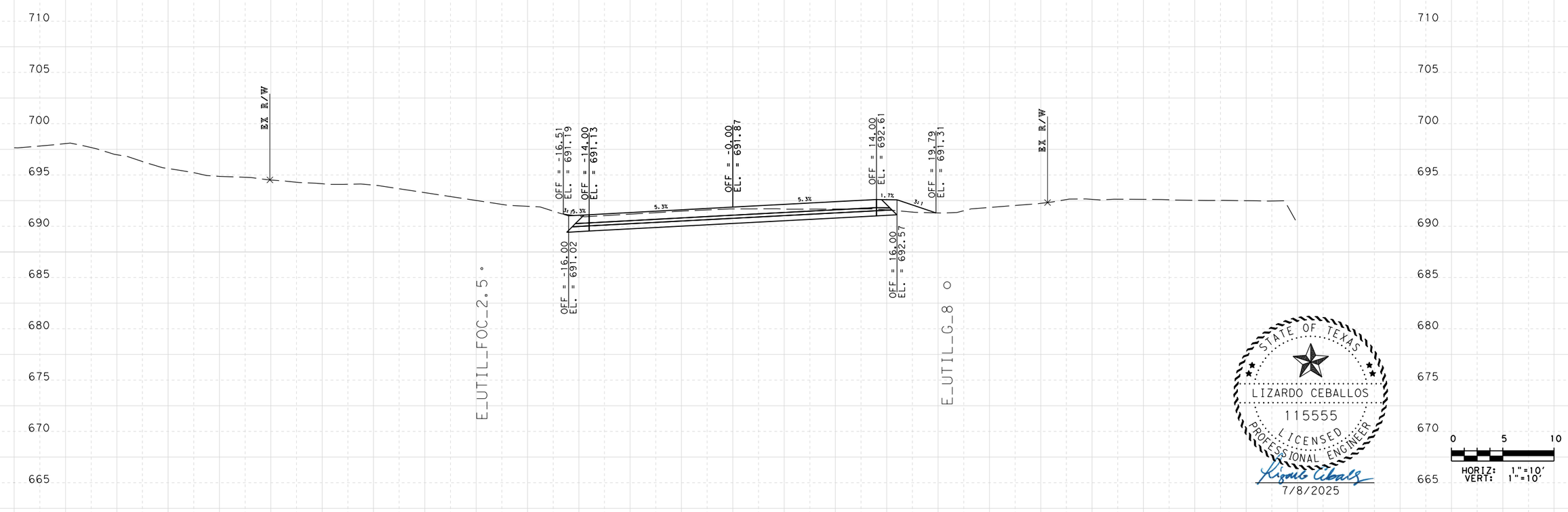
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

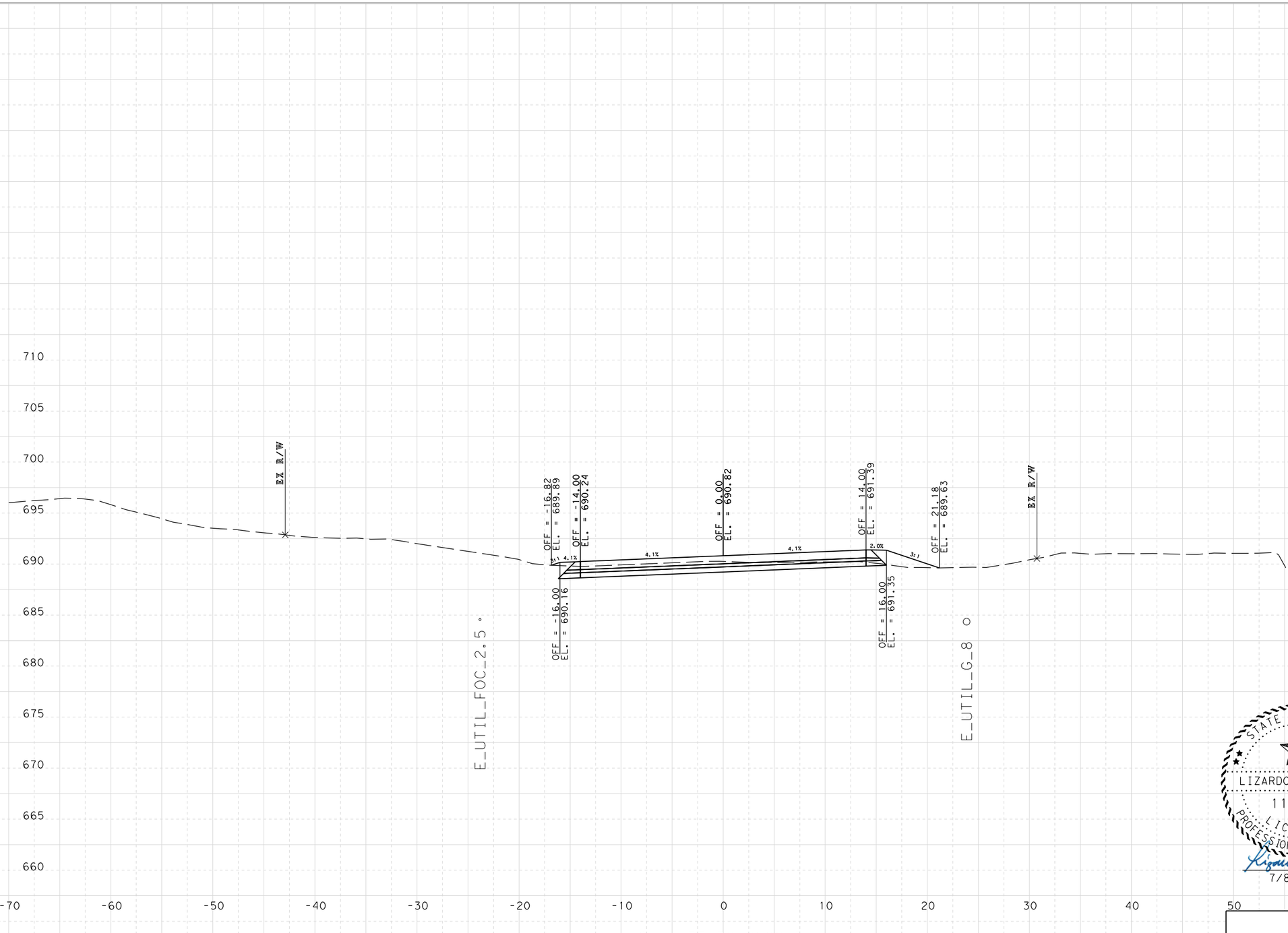
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: DS	SHT NO.: 247

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7/8/2025
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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
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VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE. SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

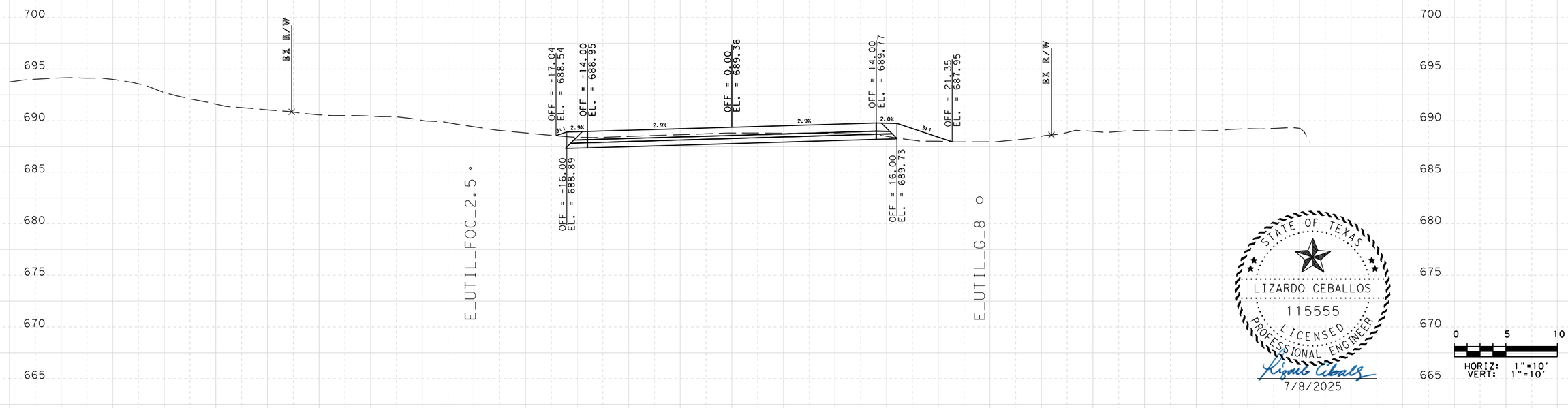
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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7/8/2025
jrobles
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Sta. 34+00.0000 R1

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

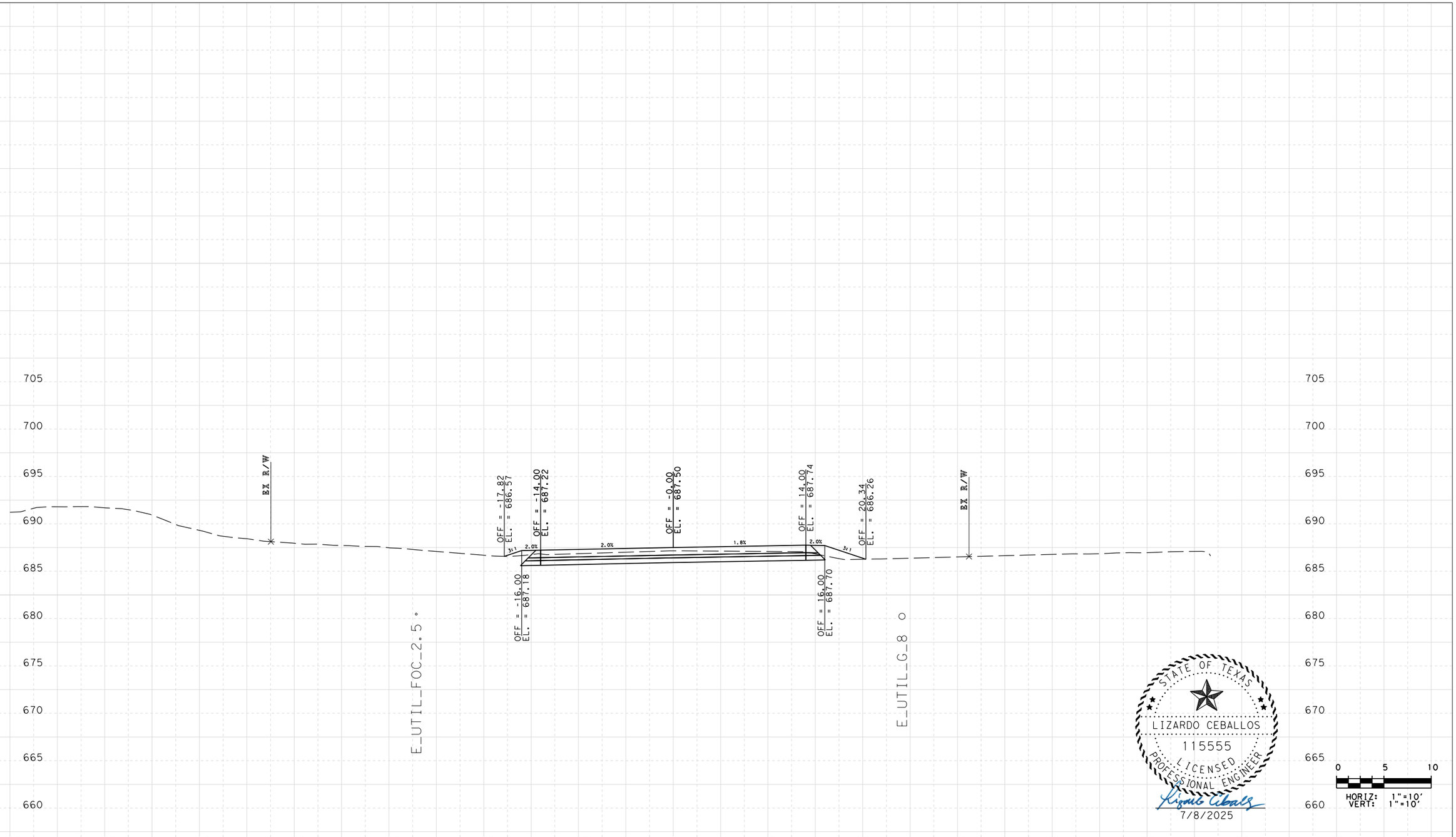
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

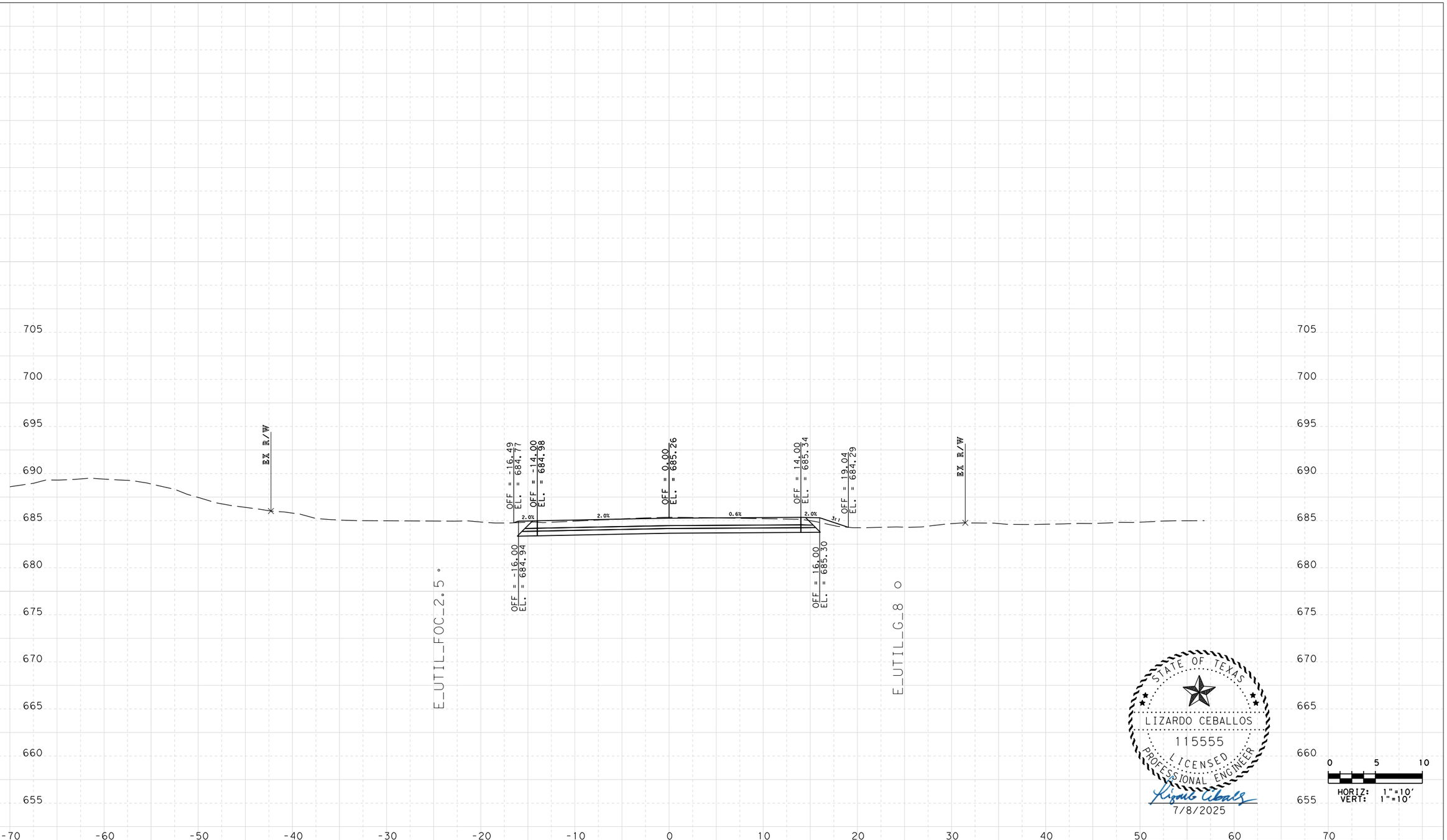
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

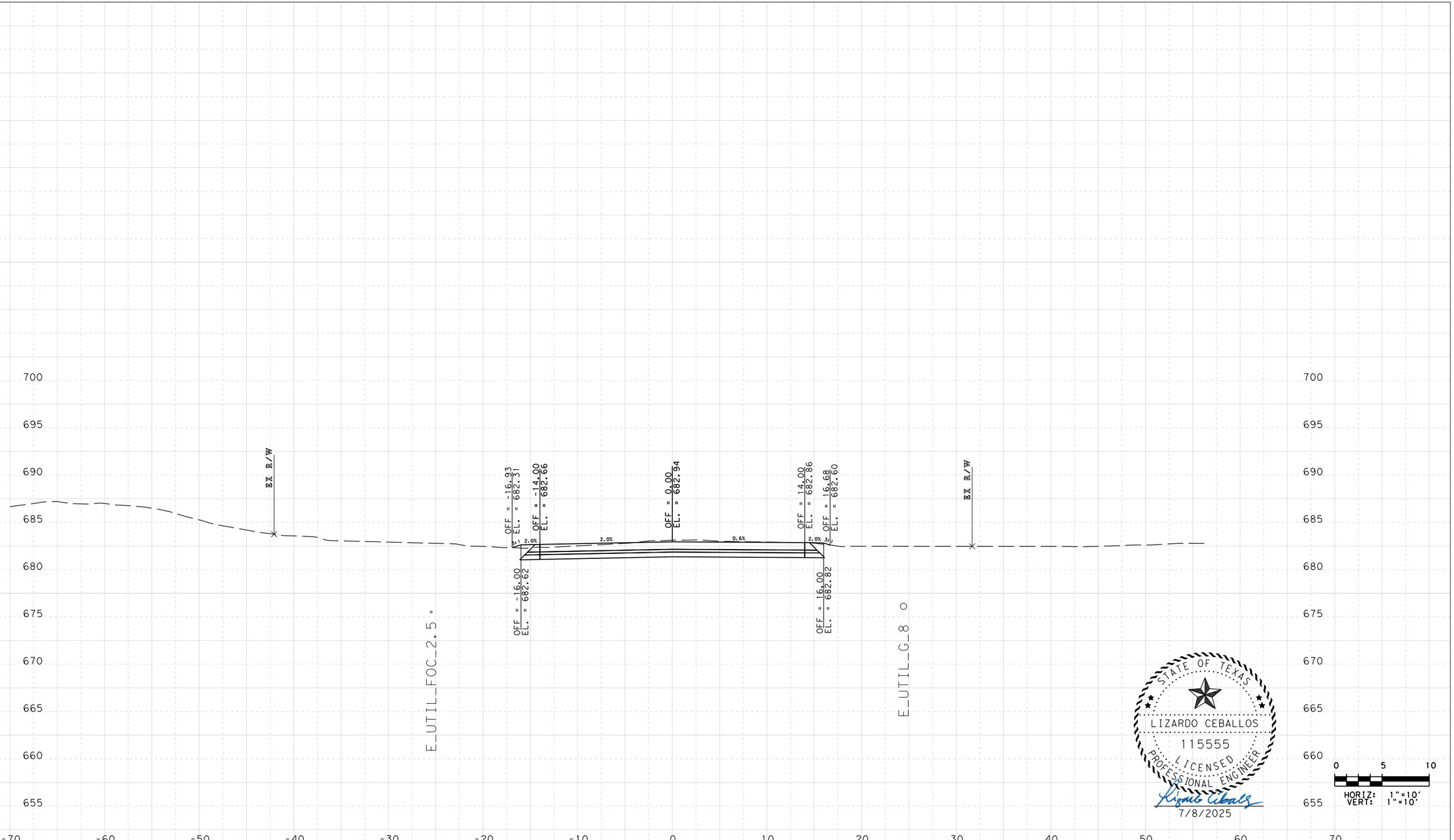
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

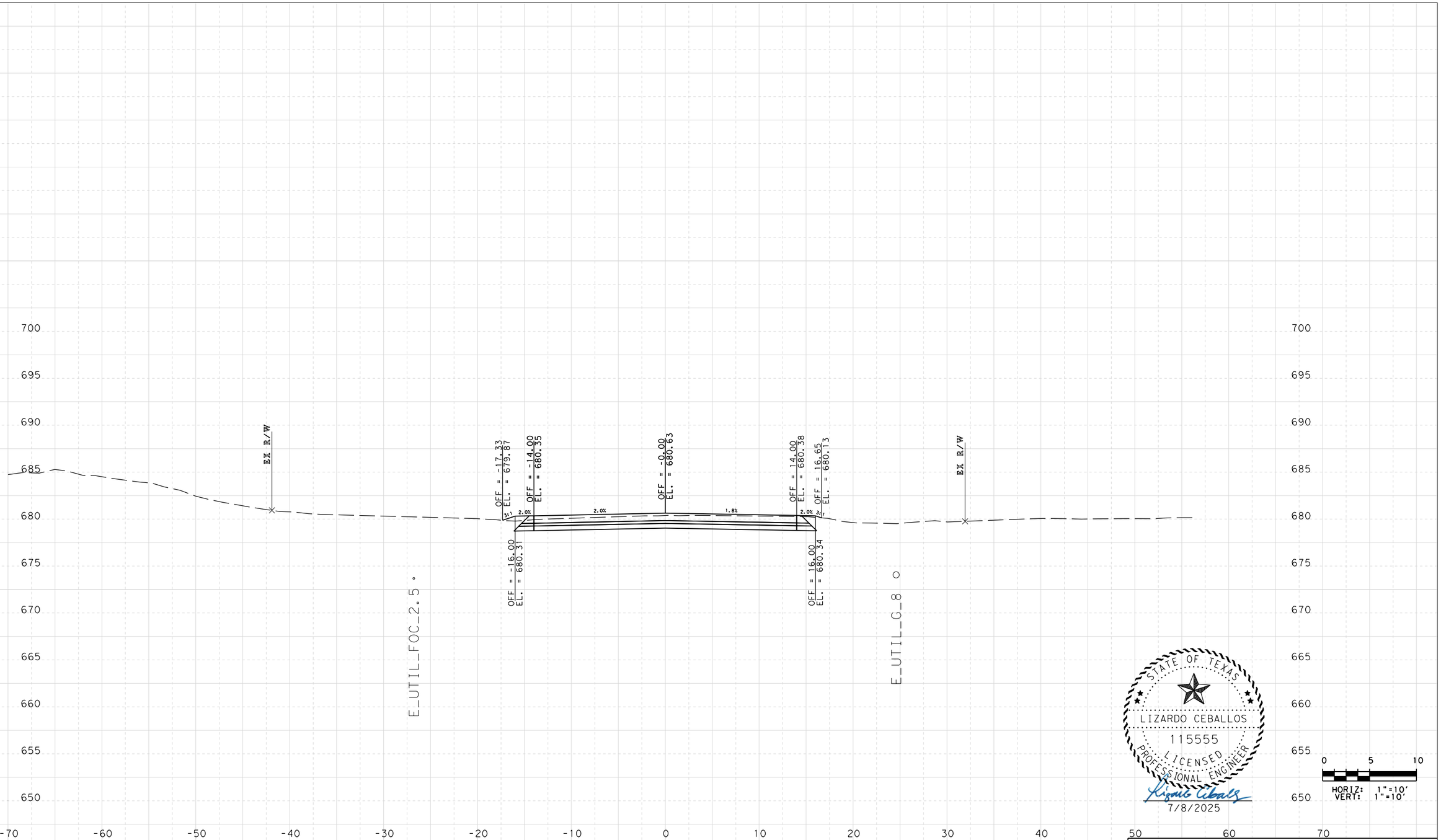
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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7/8/2025
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STATE OF TEXAS
LIZARDO CEBALLOS
115555
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7/8/2025

0 5 10
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GANNETT FLEMING
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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

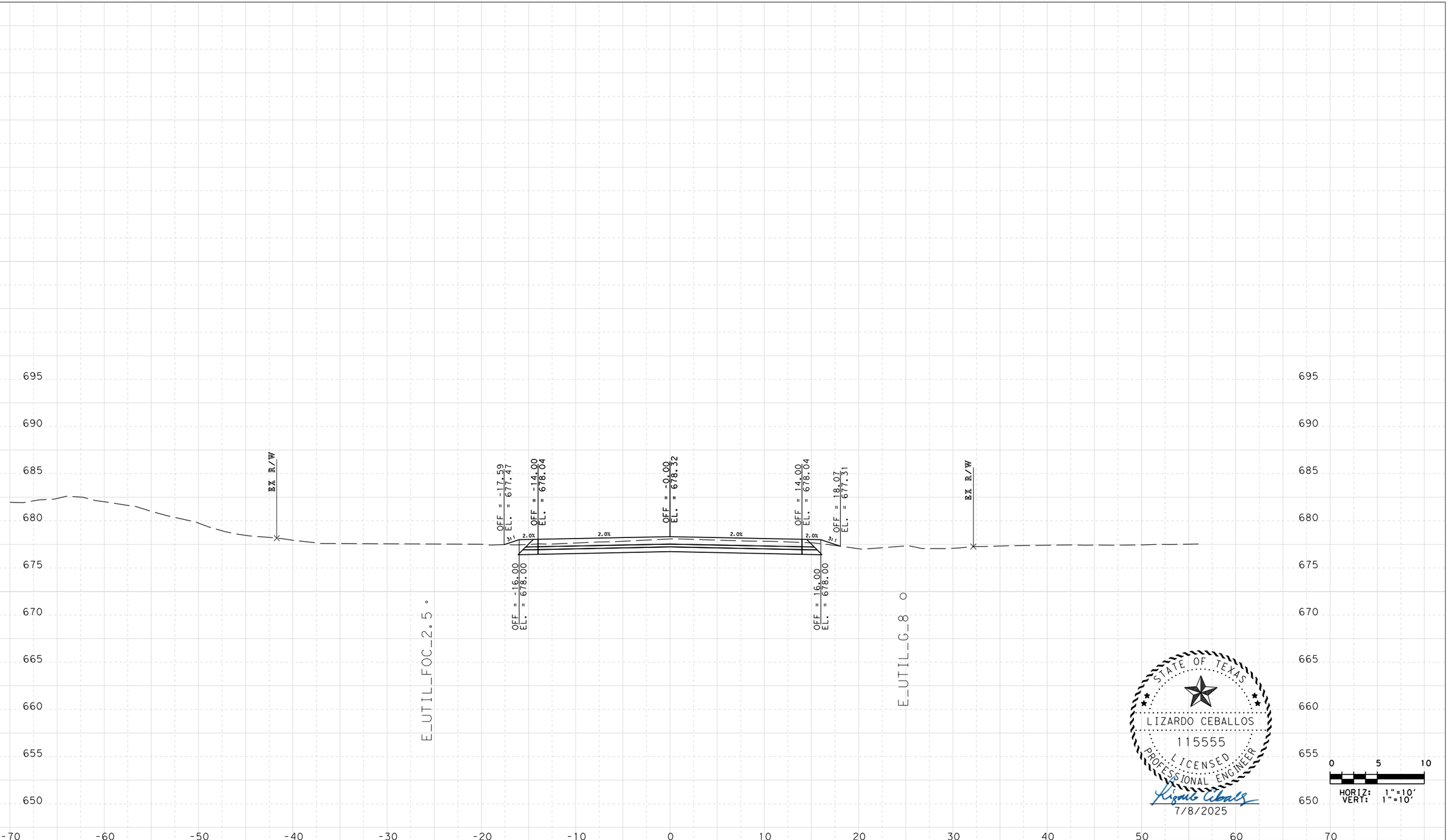
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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7/8/2025
jrobles
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Sta. 36+50.0000 R1

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

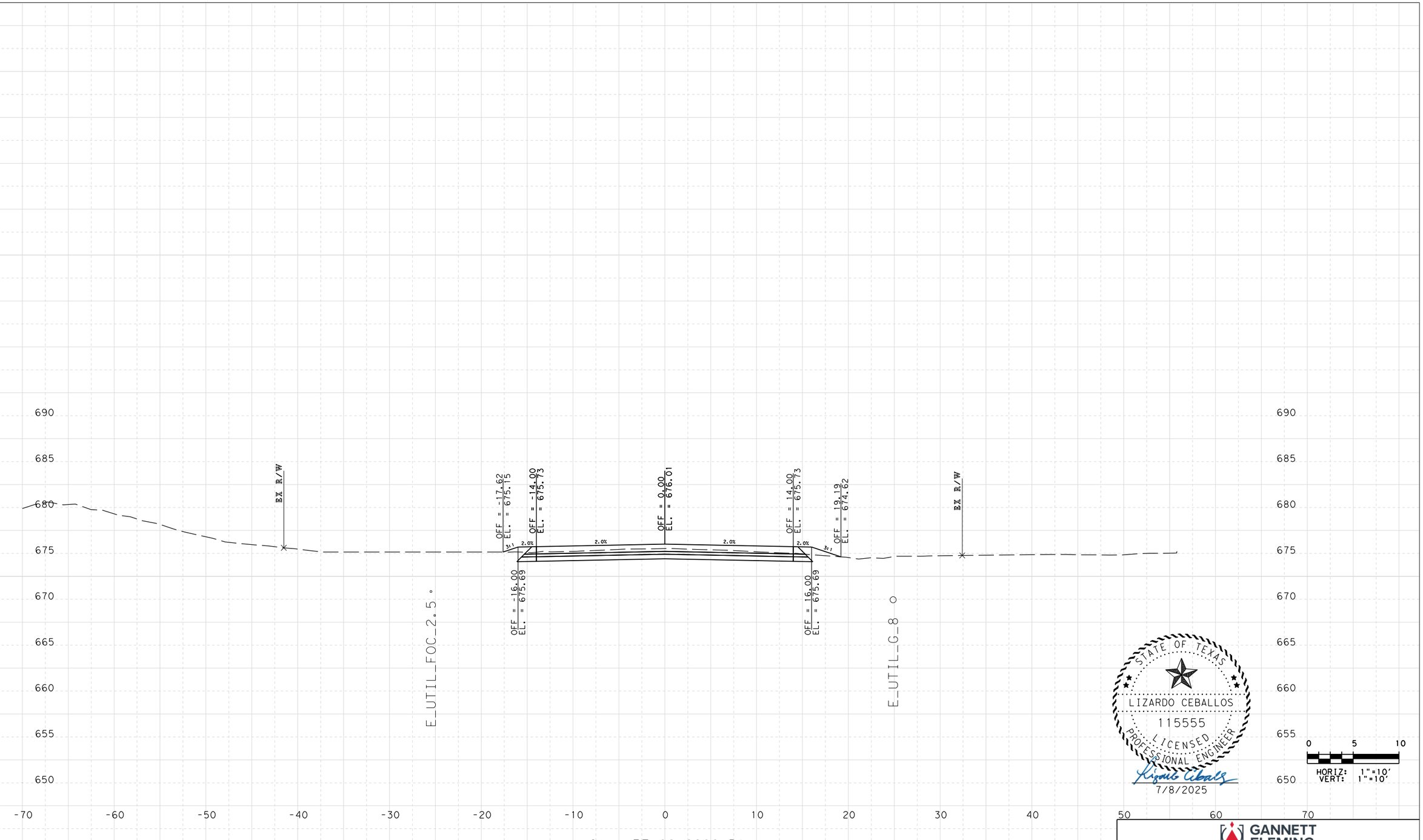
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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7/8/2025
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Sta. 37+00.0000 R1

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
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GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE. SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

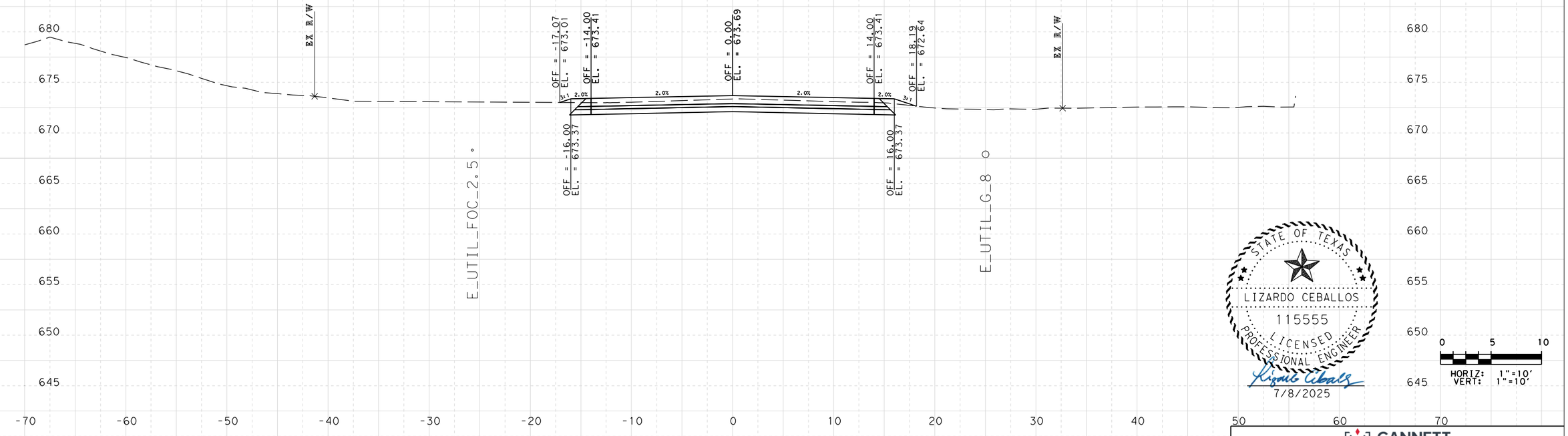
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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7/8/2025
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STATE OF TEXAS
LIZARDO CEBALLOS
115555
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PROFESSIONAL ENGINEER
7/8/2025

0 5 10
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GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

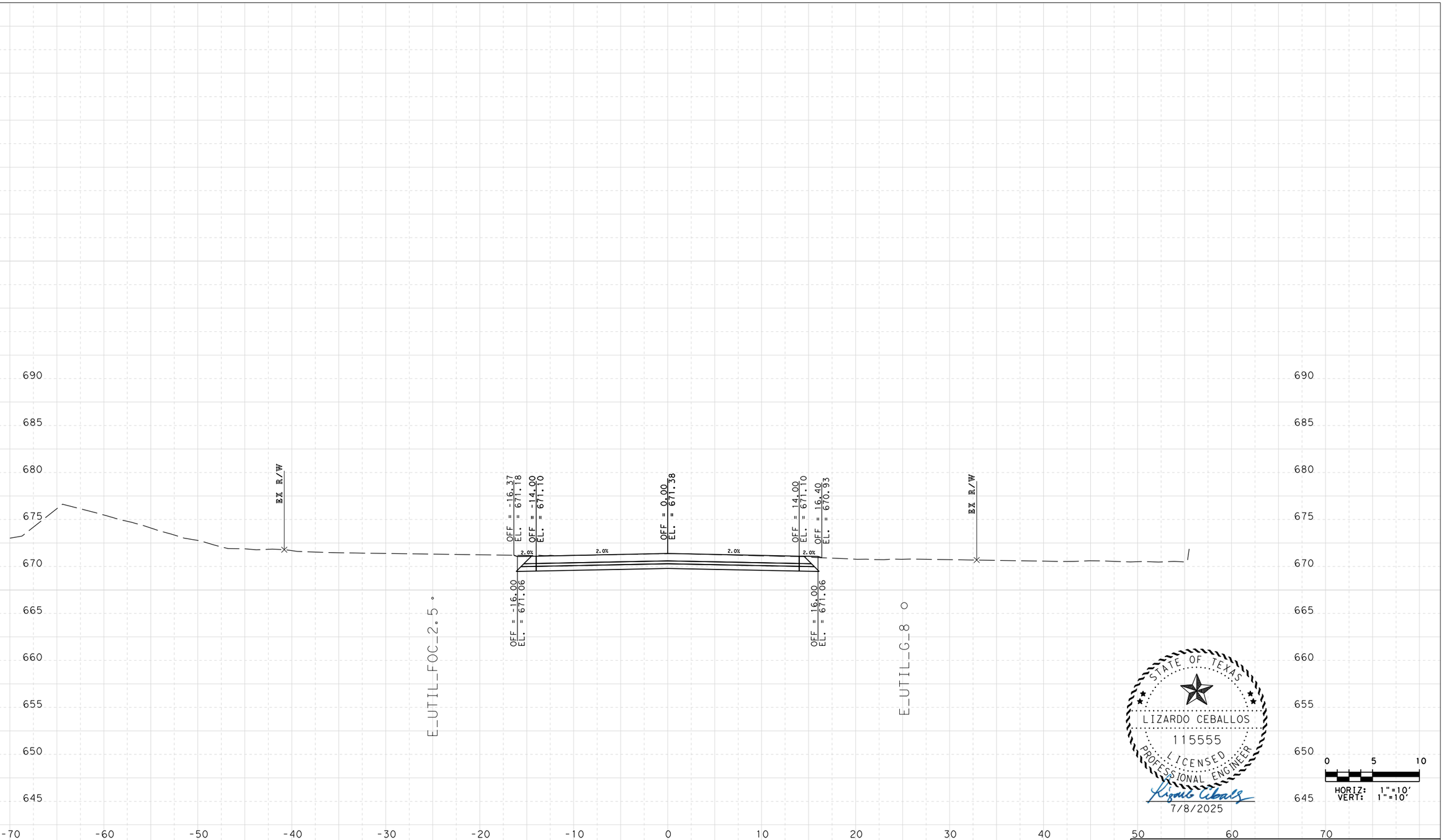
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

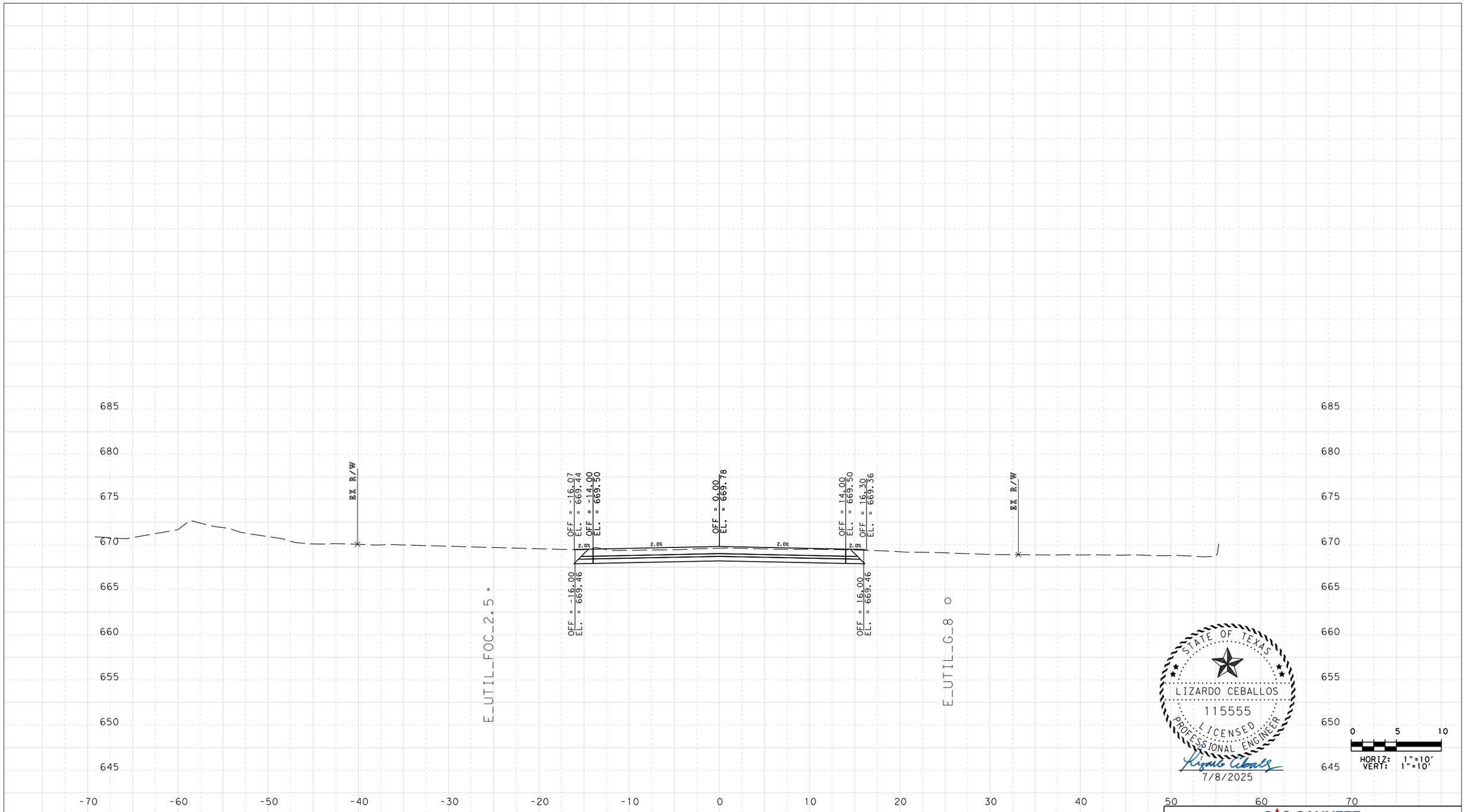
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

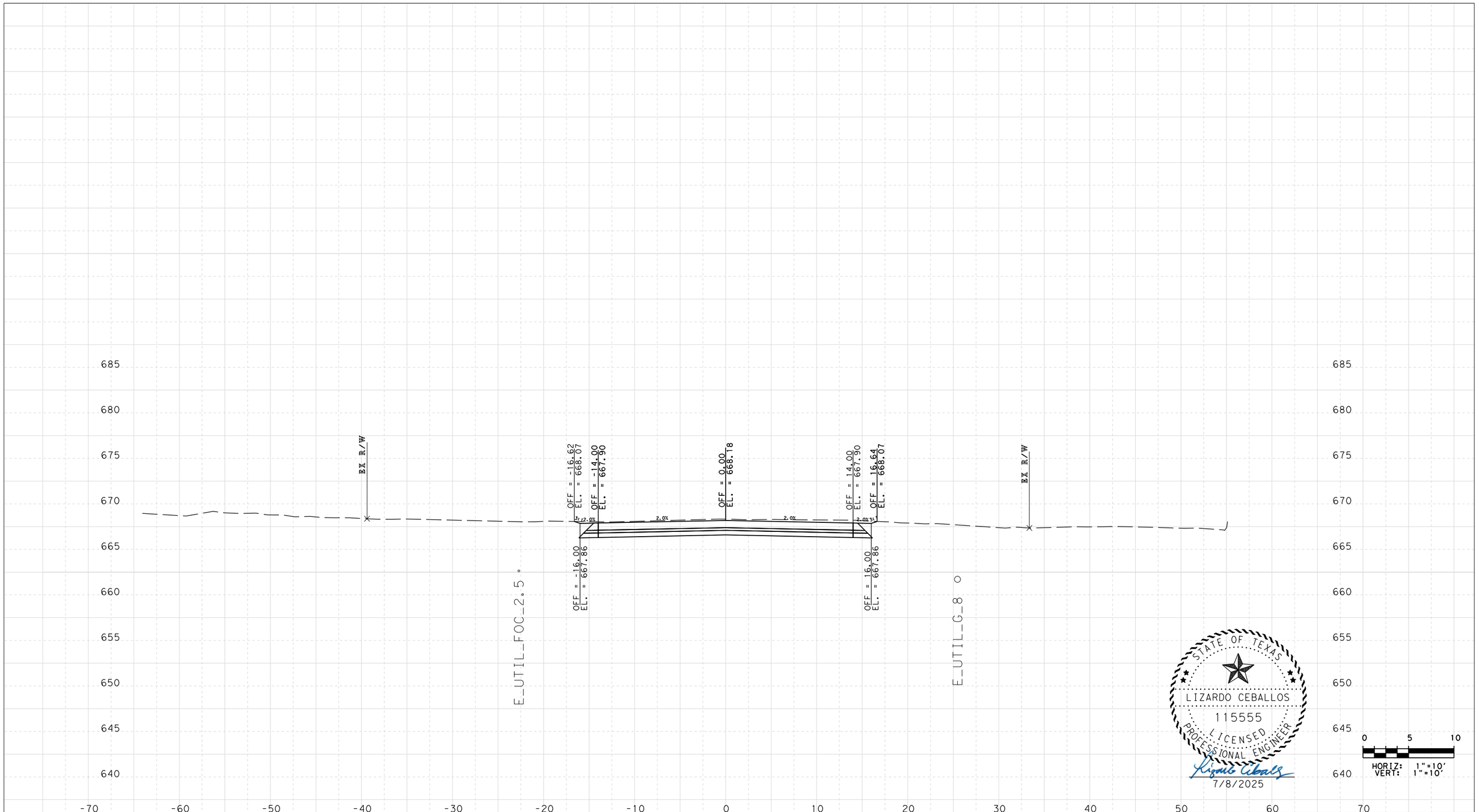
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: DS	SHT NO.: 258

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7/8/2025
jrobles
c:\projectwise\dannenbaum\workdir\jose.robles\d0168579\XS_PROP_COVEL_RD.dgn



Sta. 39+00.0000 R1

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

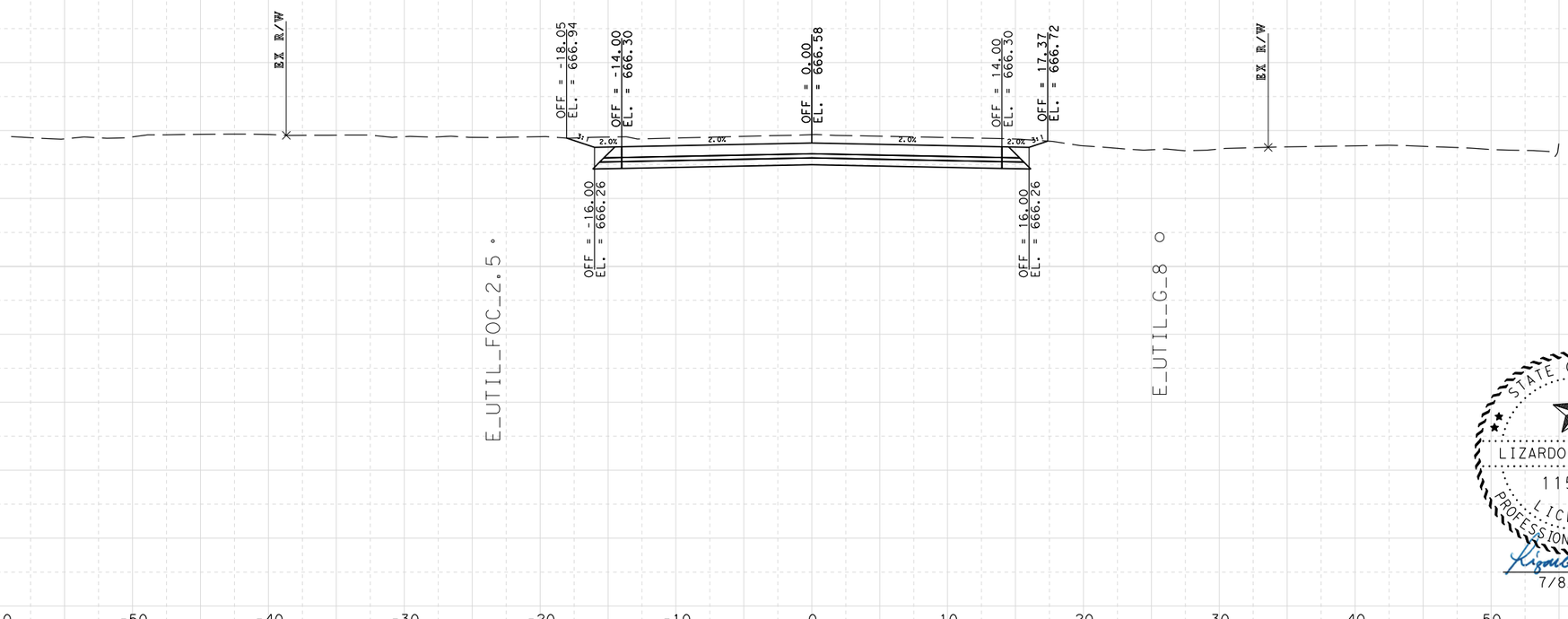
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: DS	SHT NO.: 259

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7/8/2025
jrobles
c:\projectwise\dannenbaum\workdir\jose.robles\d0168579\XS_PROP_COVEL_RD.dgn



STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

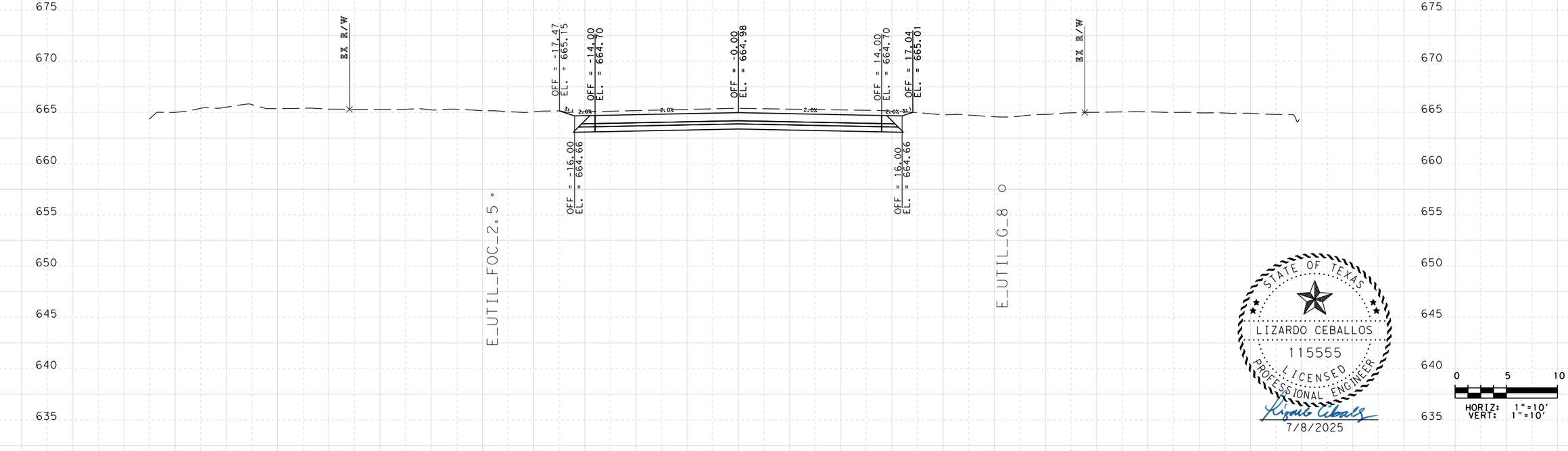
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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jrobles
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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

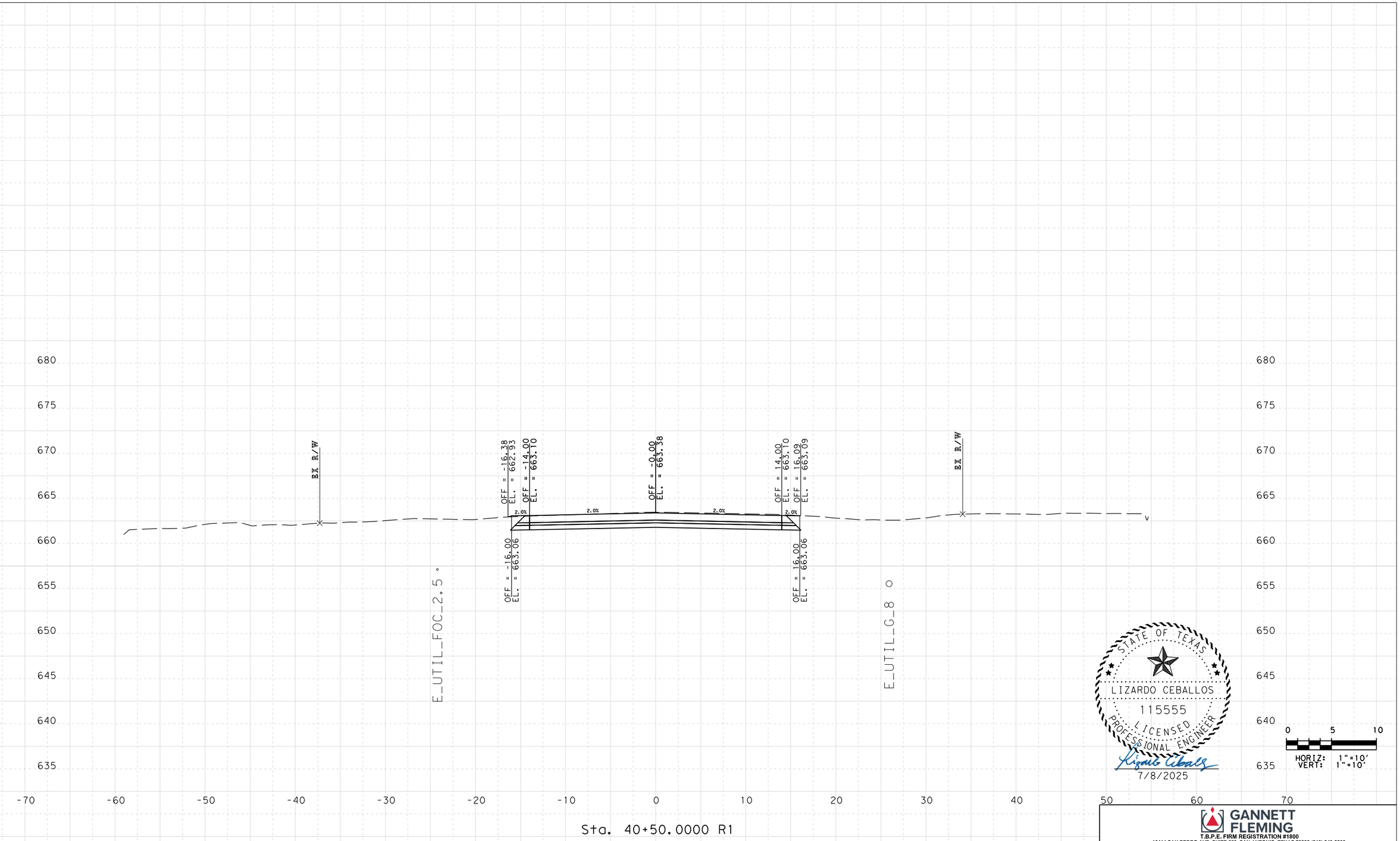
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE. SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

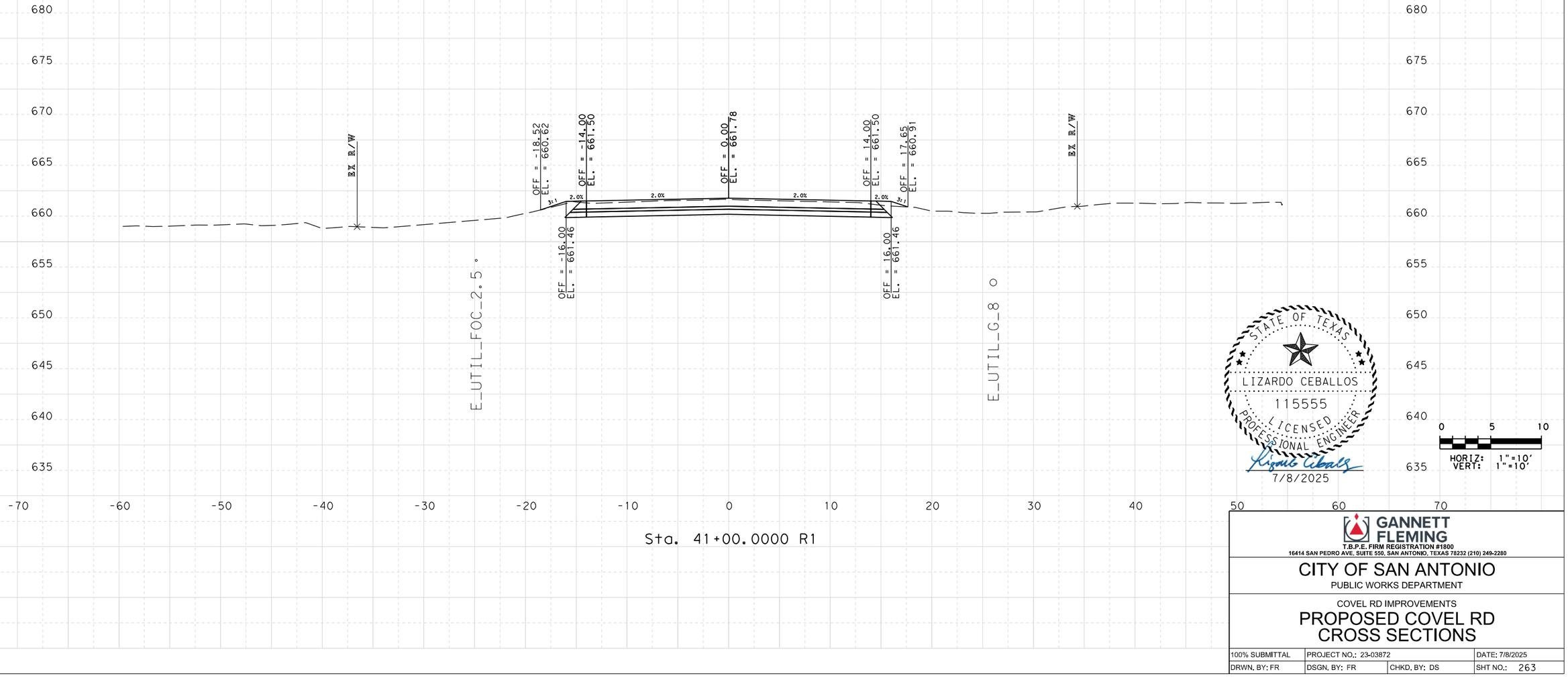
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
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7/8/2025
jrobles
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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

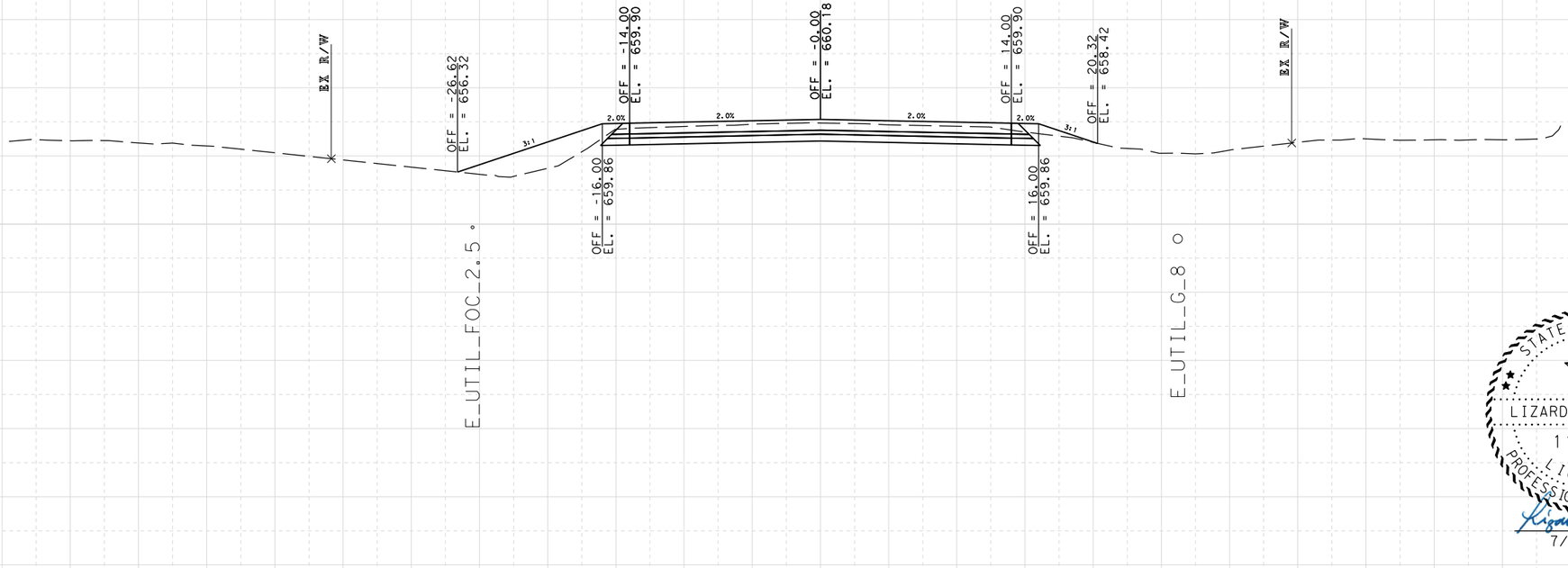
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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Sta. 41+50.0000 R1

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE. SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

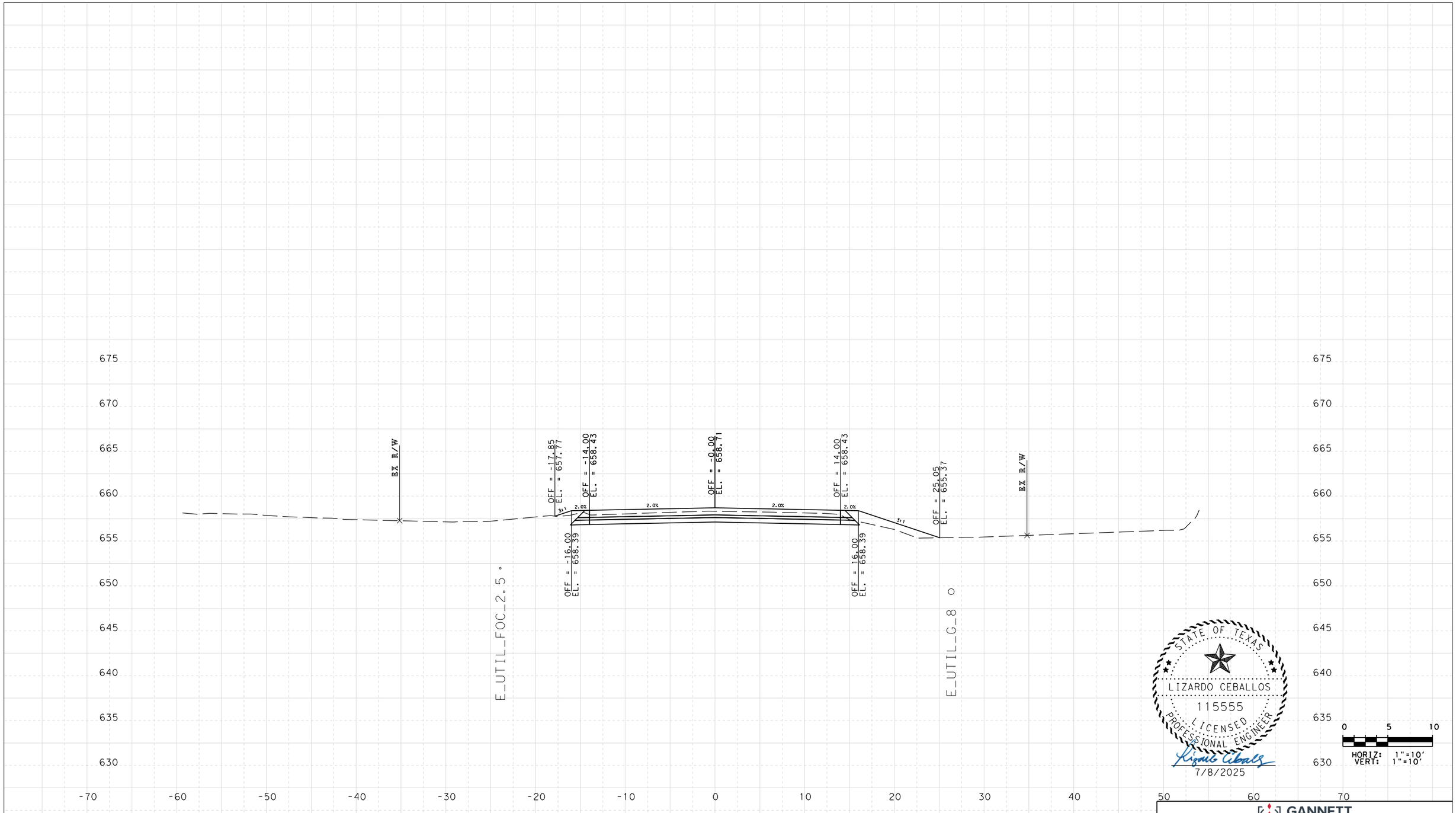
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: DS	SHT NO.: 264

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7/8/2025
jrobles
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Sta. 42+00.0000 R1

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

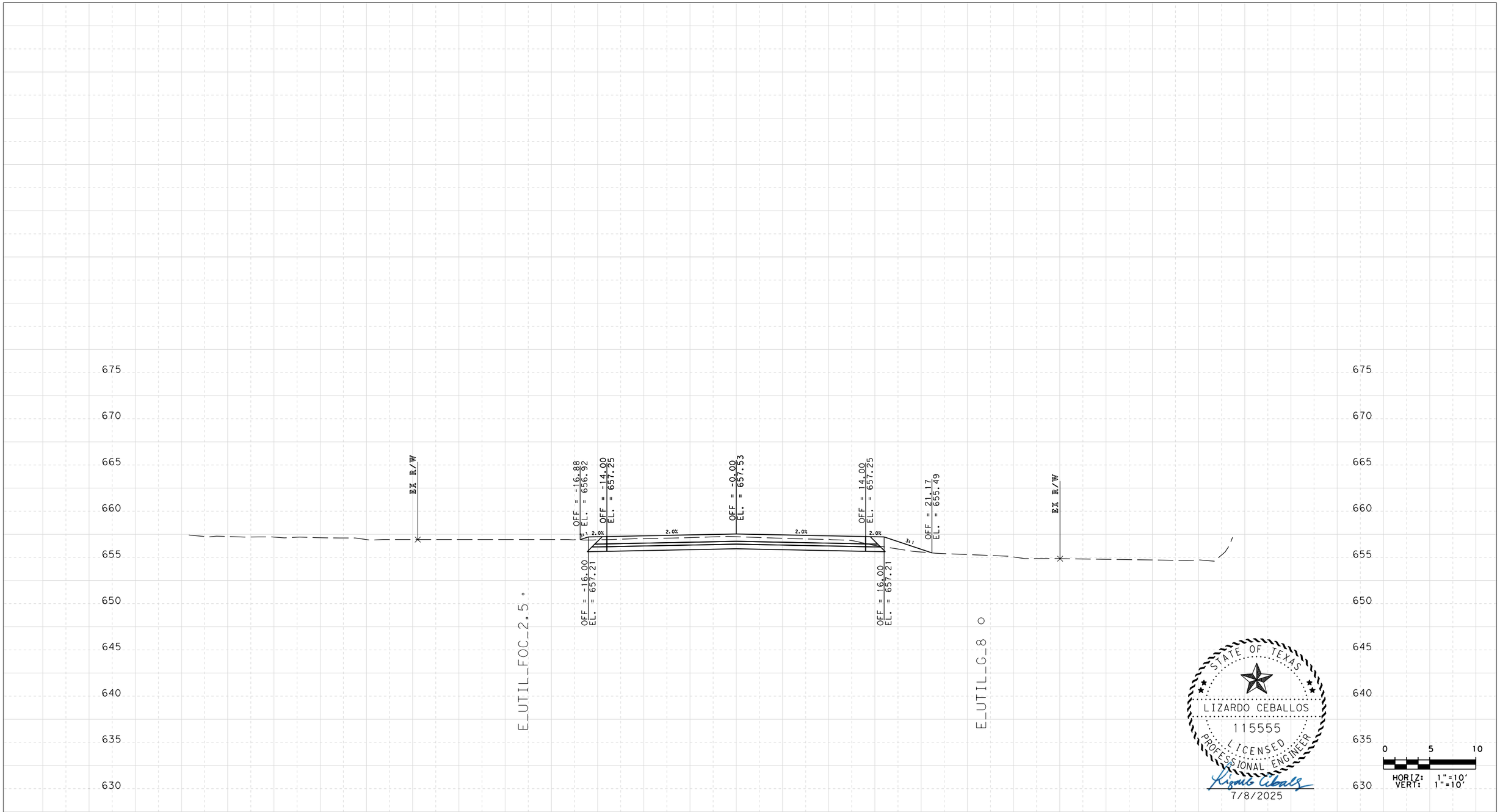
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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7/8/2025
jrobles
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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

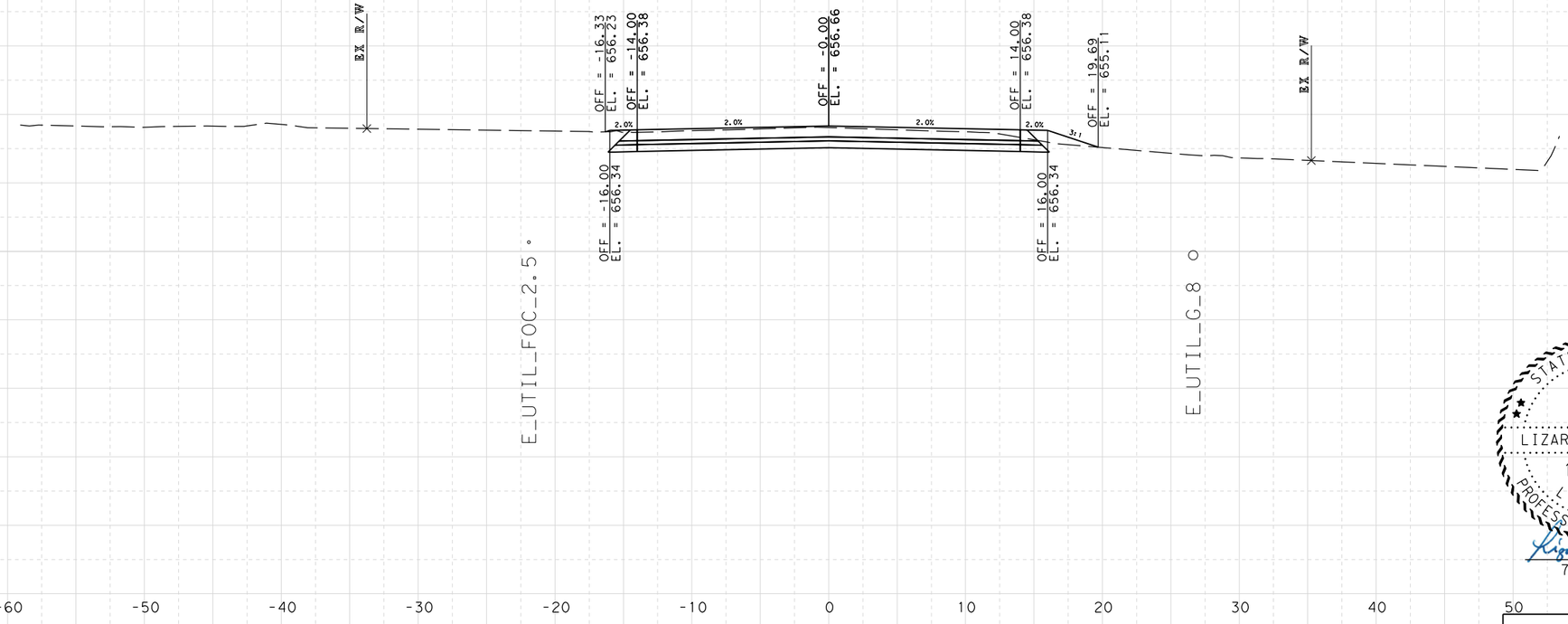
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE. SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

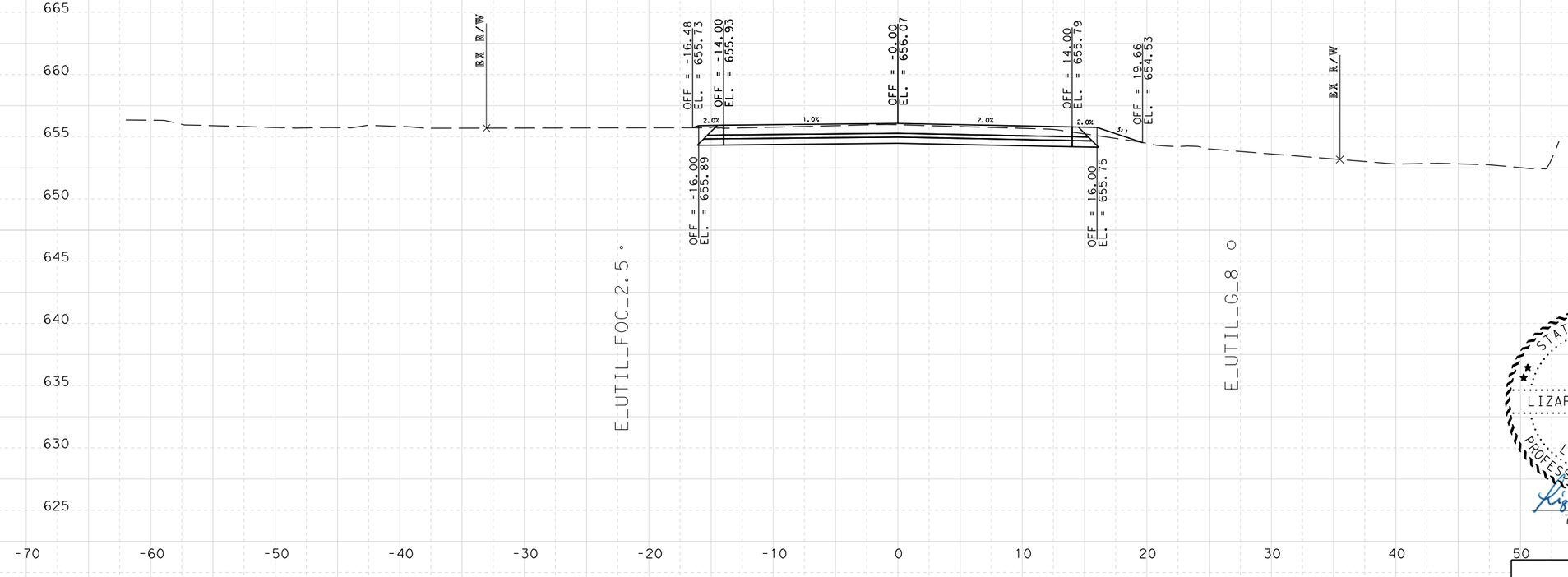
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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Sta. 43+50.0000 R1

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

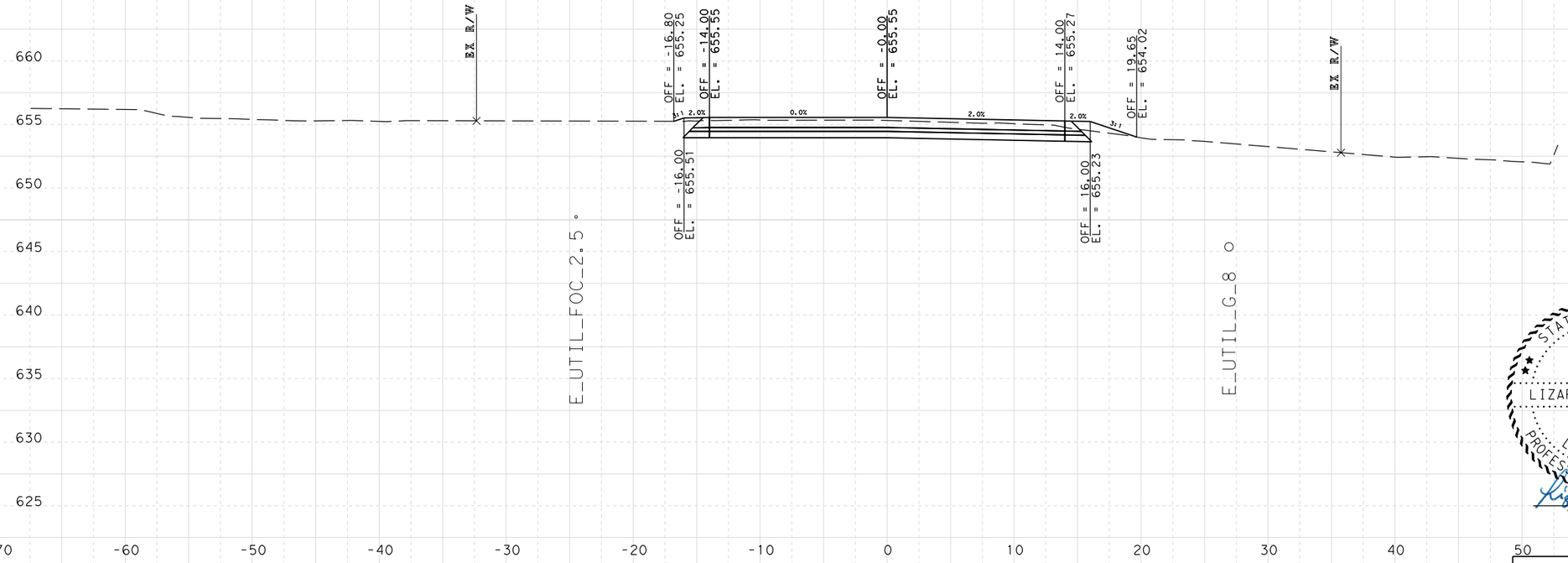
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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7/8/2025
jrobles
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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

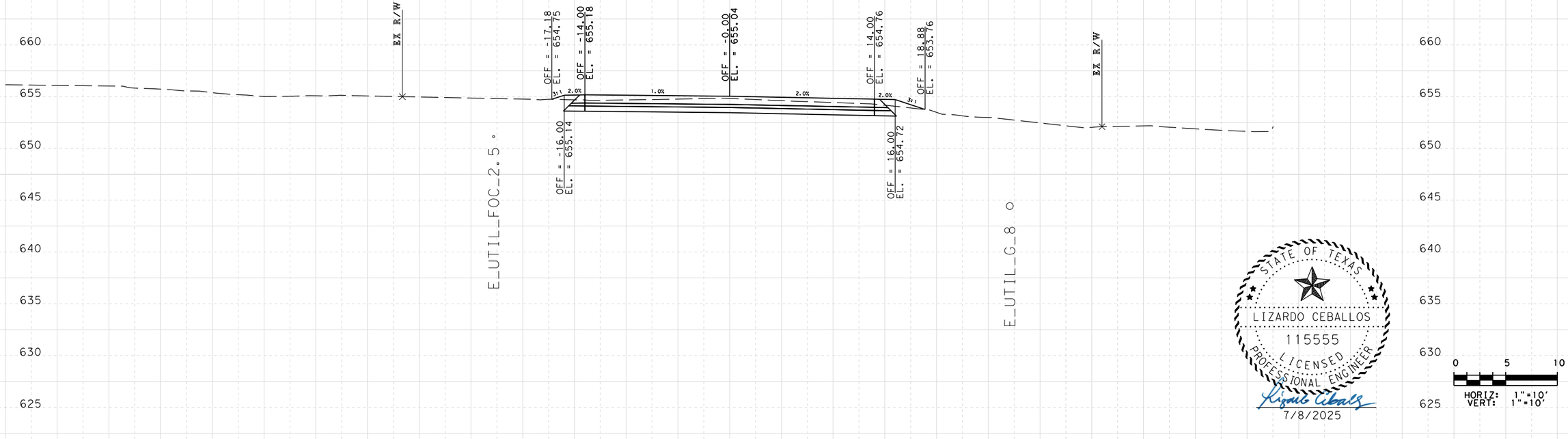
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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Sta. 44+50.0000 R1

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

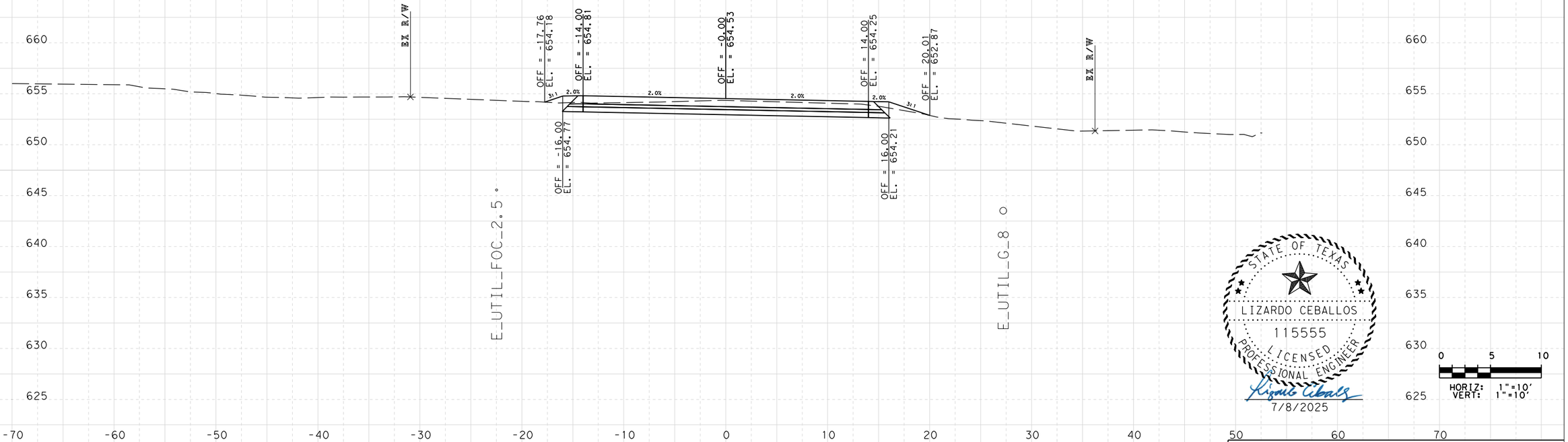
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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Sta. 45+00.0000 R1

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

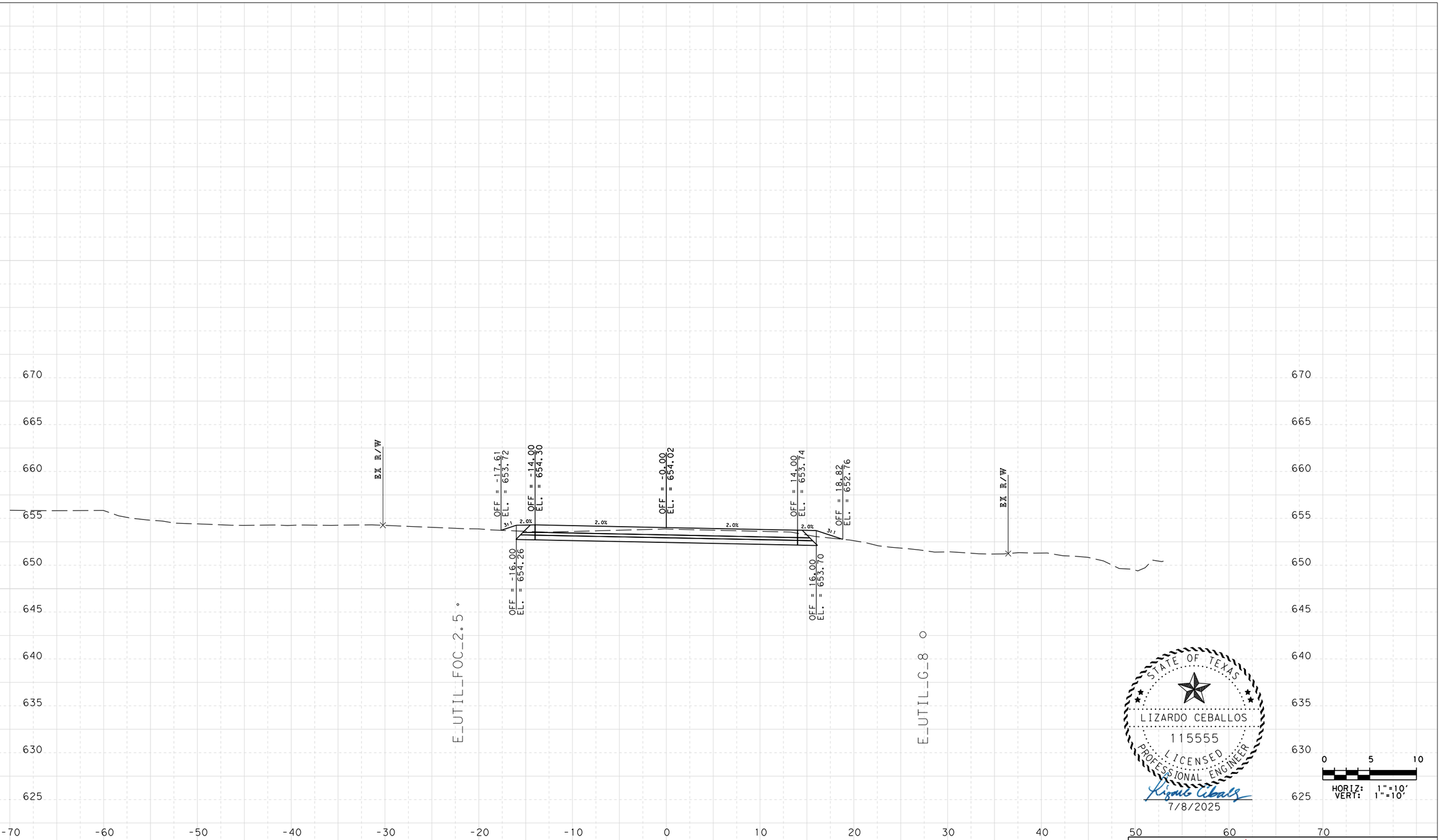
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

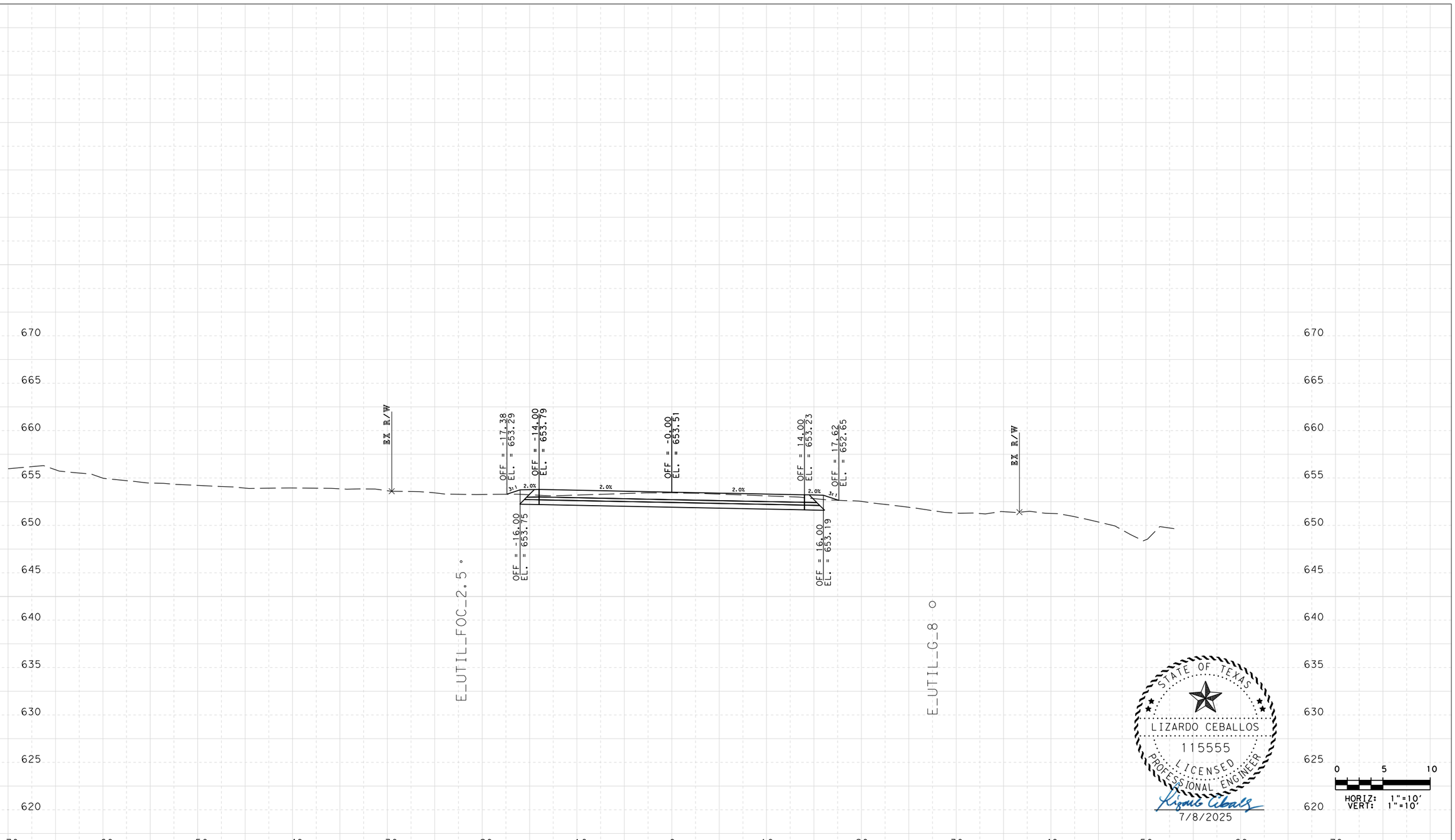
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

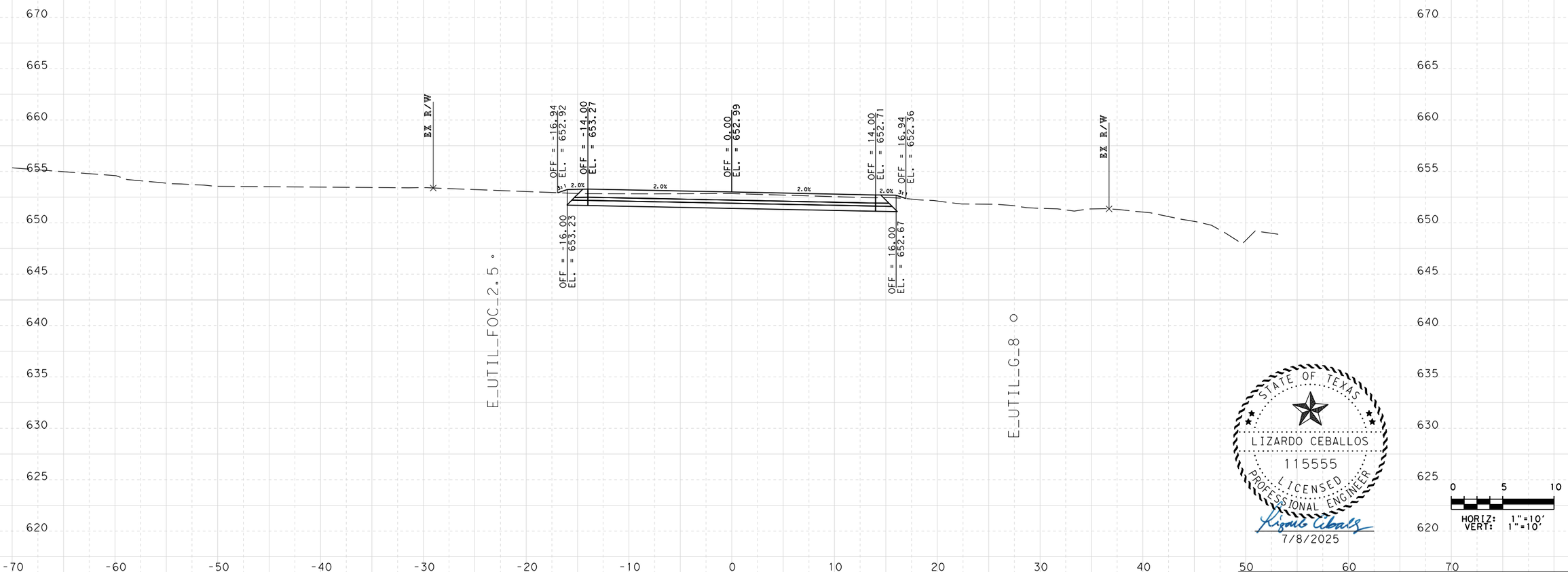
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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jrobles
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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

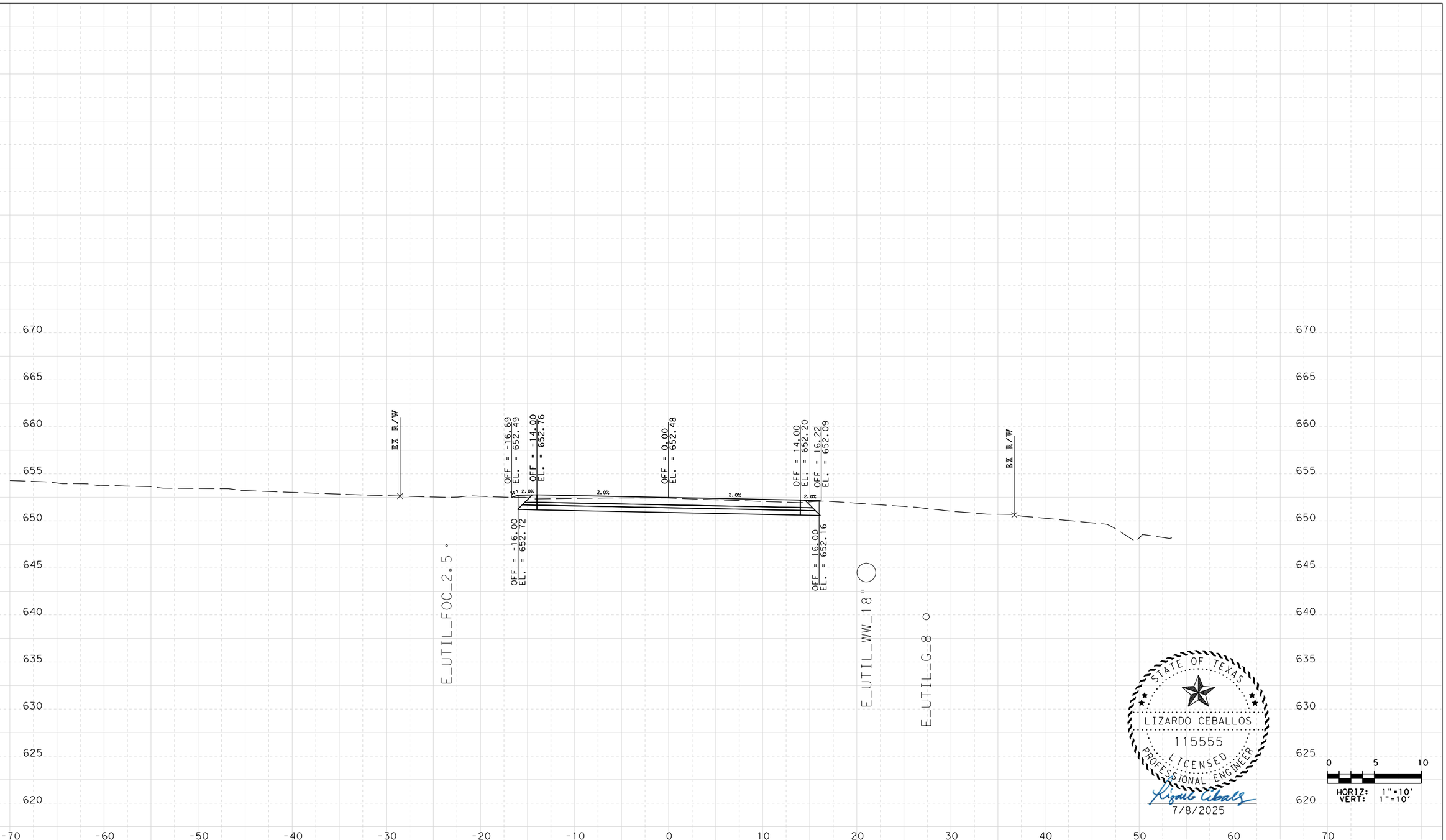
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

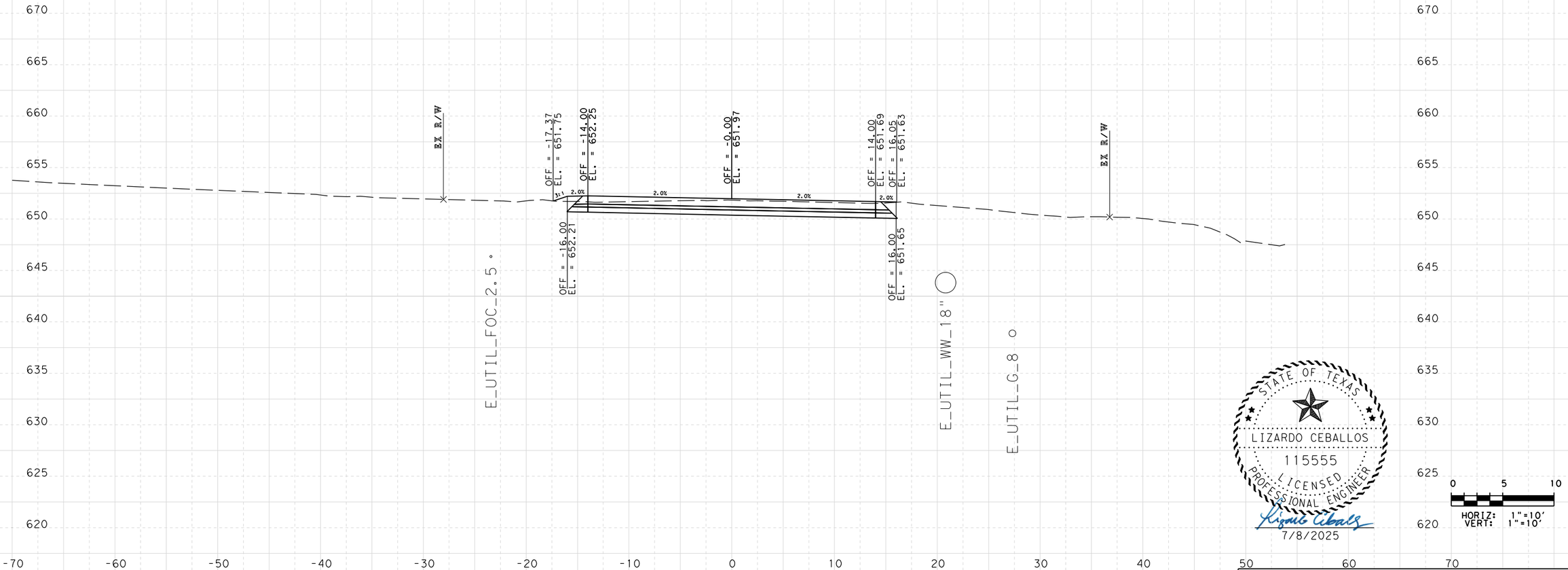
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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7/8/2025
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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

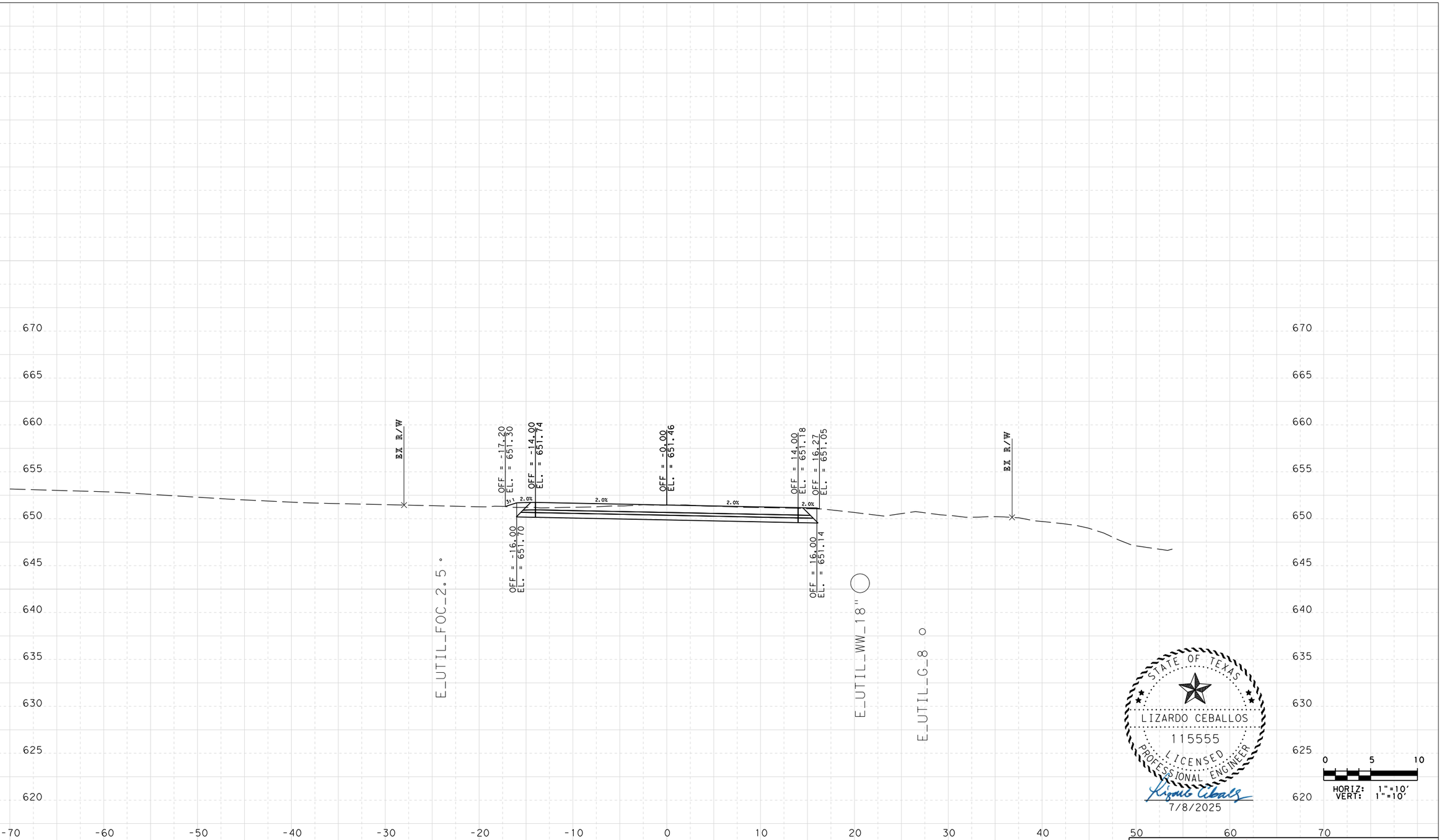
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
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7/8/2025
jrobles
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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

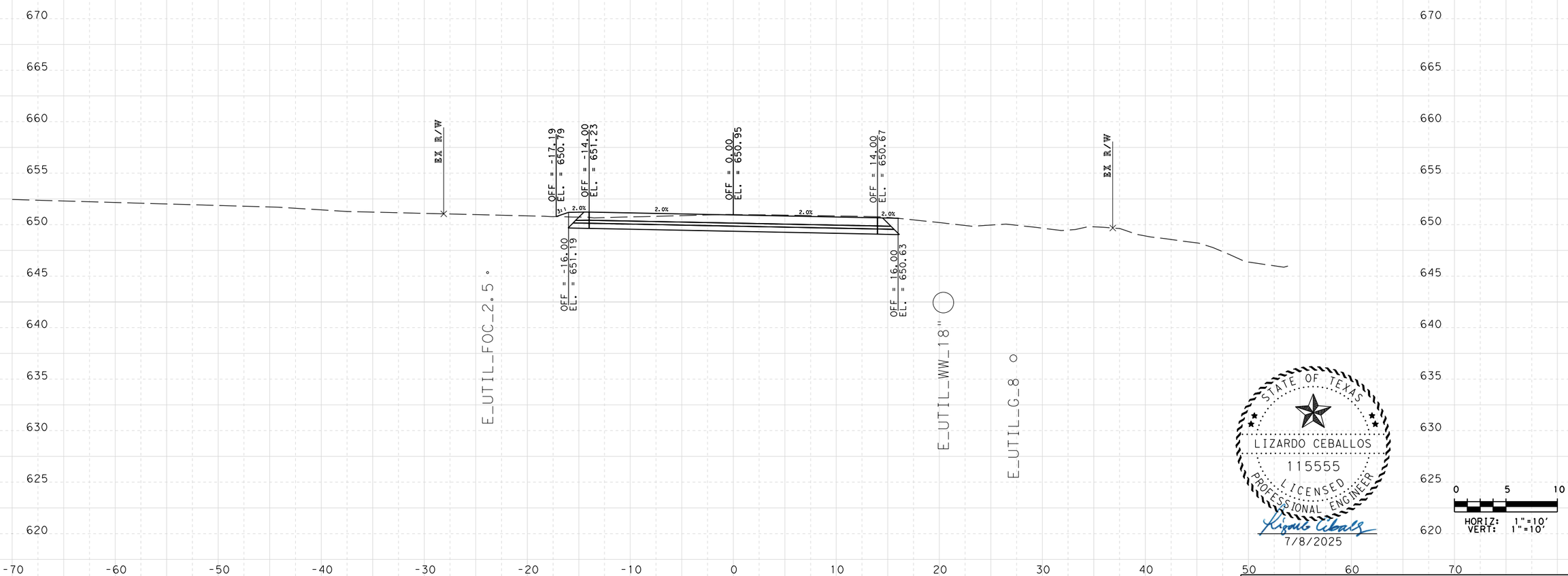
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: DS	SHT NO.: 277

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7/8/2025
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c:\projectwise\dannenbaum\workdir\jose.robles\d0168579\VS_PROP_COVEL_RD.dgn



STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

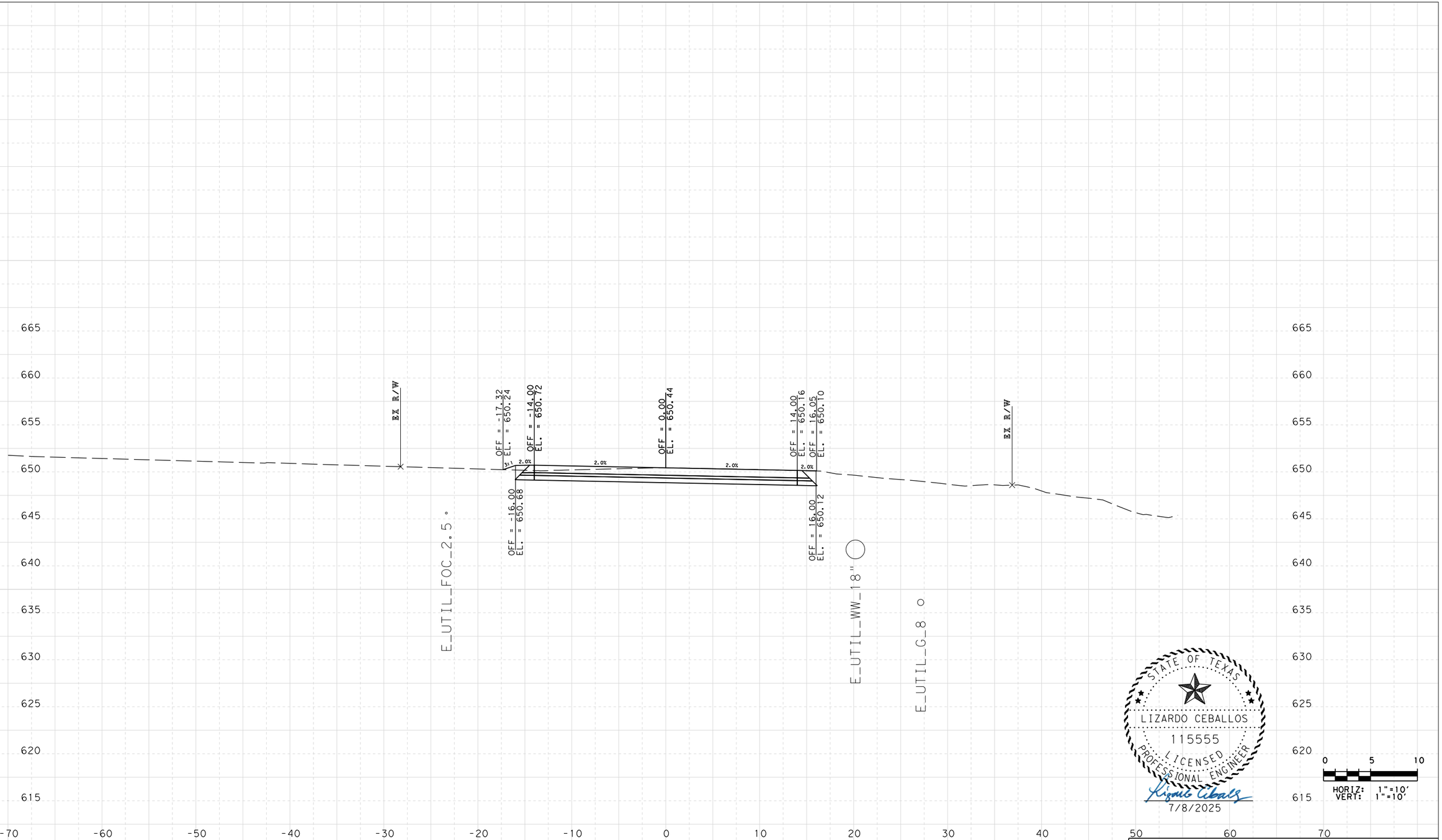
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
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7/8/2025
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STATE OF TEXAS
LIZARDO CEBALLOS
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GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

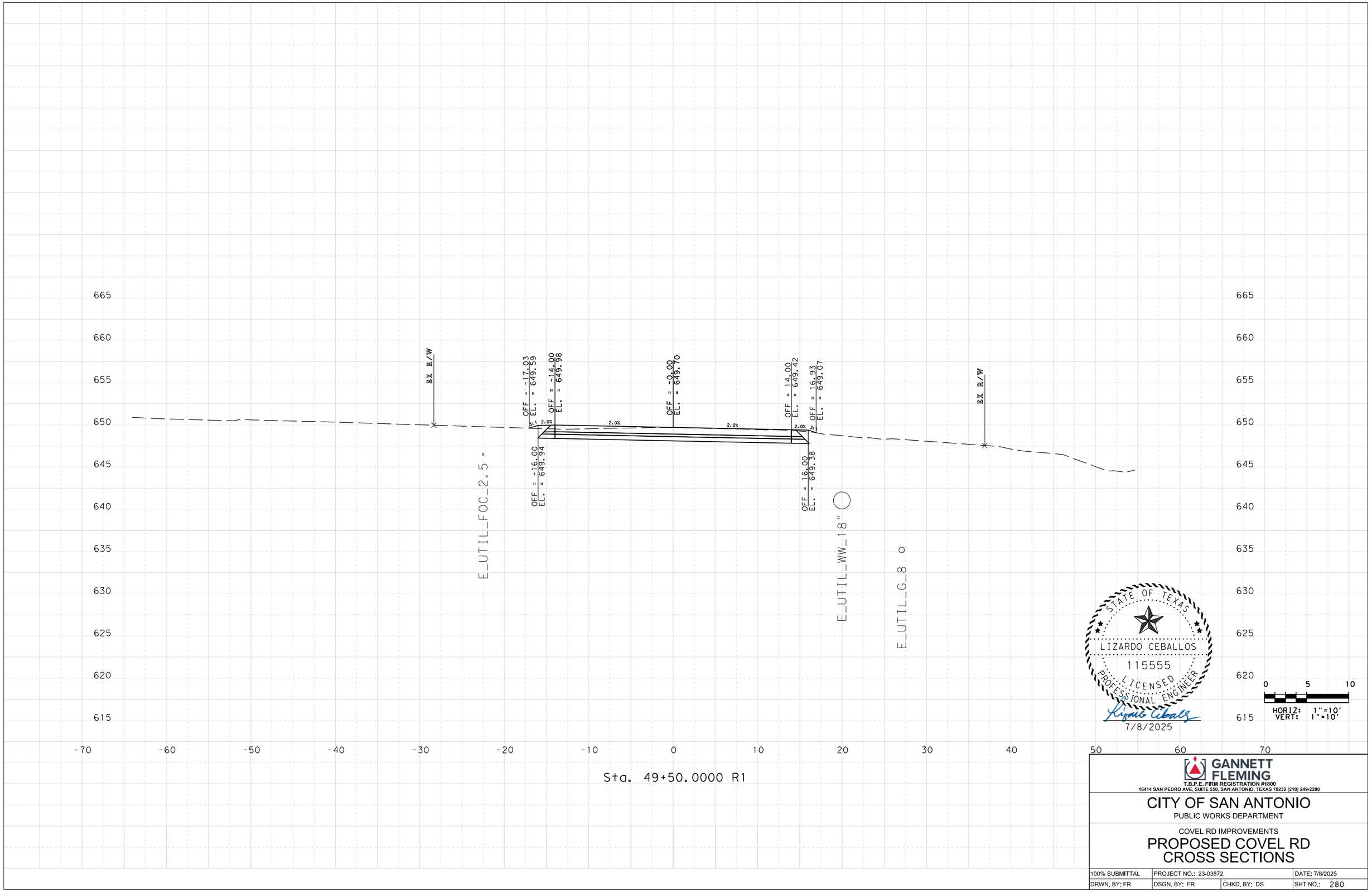
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
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7/8/2025

0 5 10
HORIZ: 1"=10'
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GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

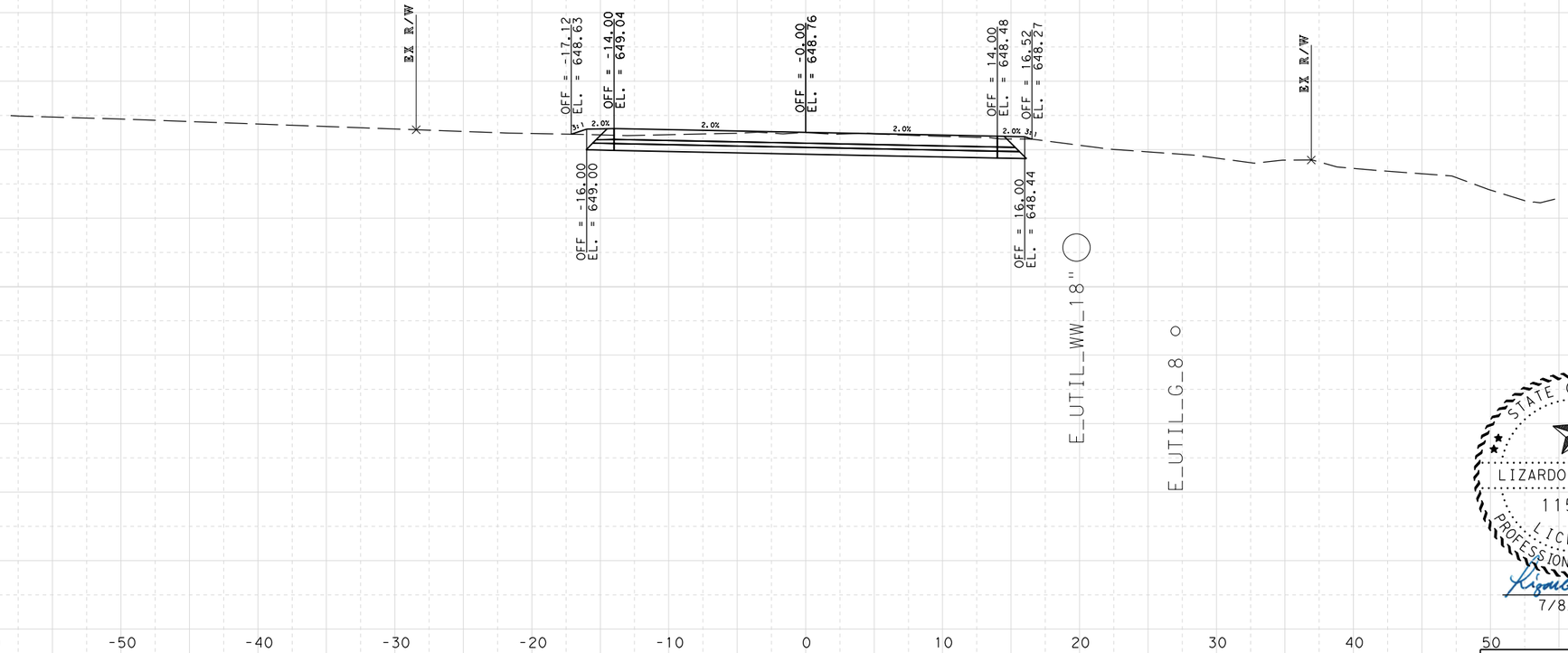
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
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7/8/2025

0 5 10
HORIZ: 1"=10'
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GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

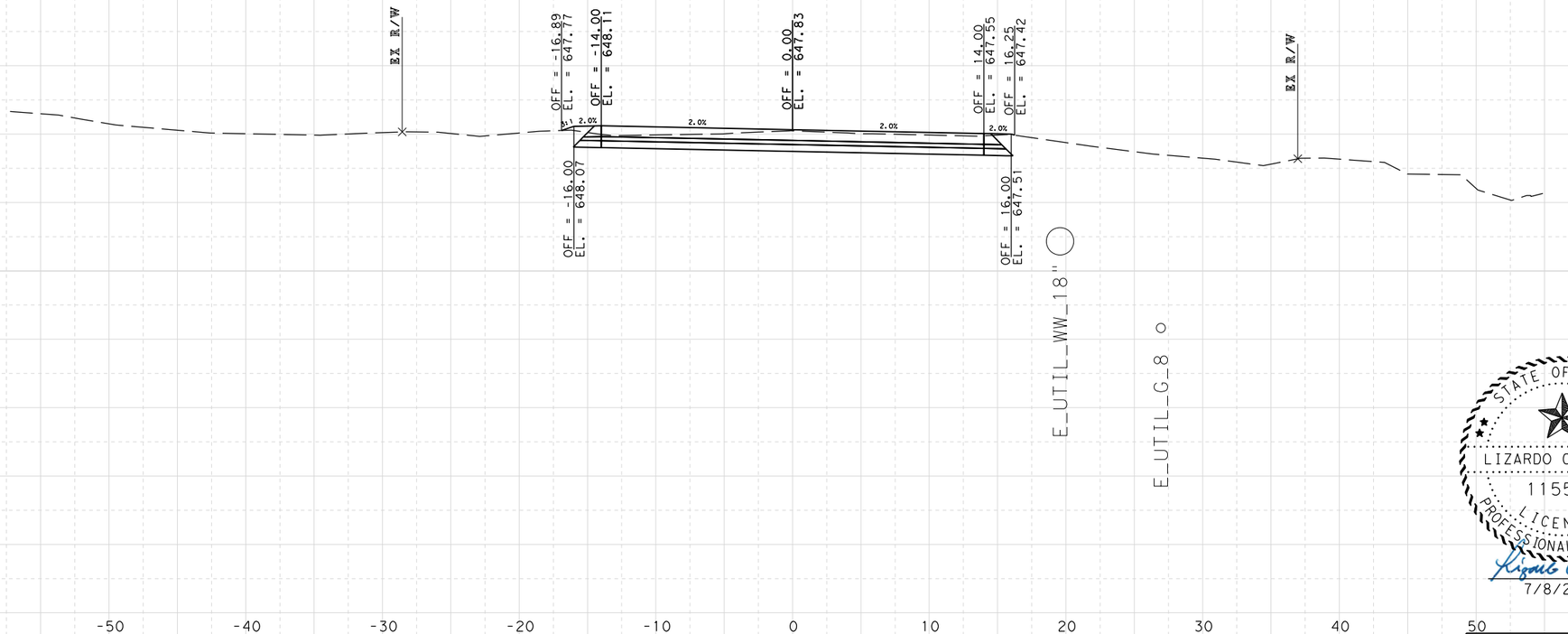
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PUBLIC WORKS DEPARTMENT

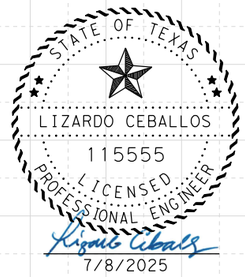
COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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0 5 10

HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

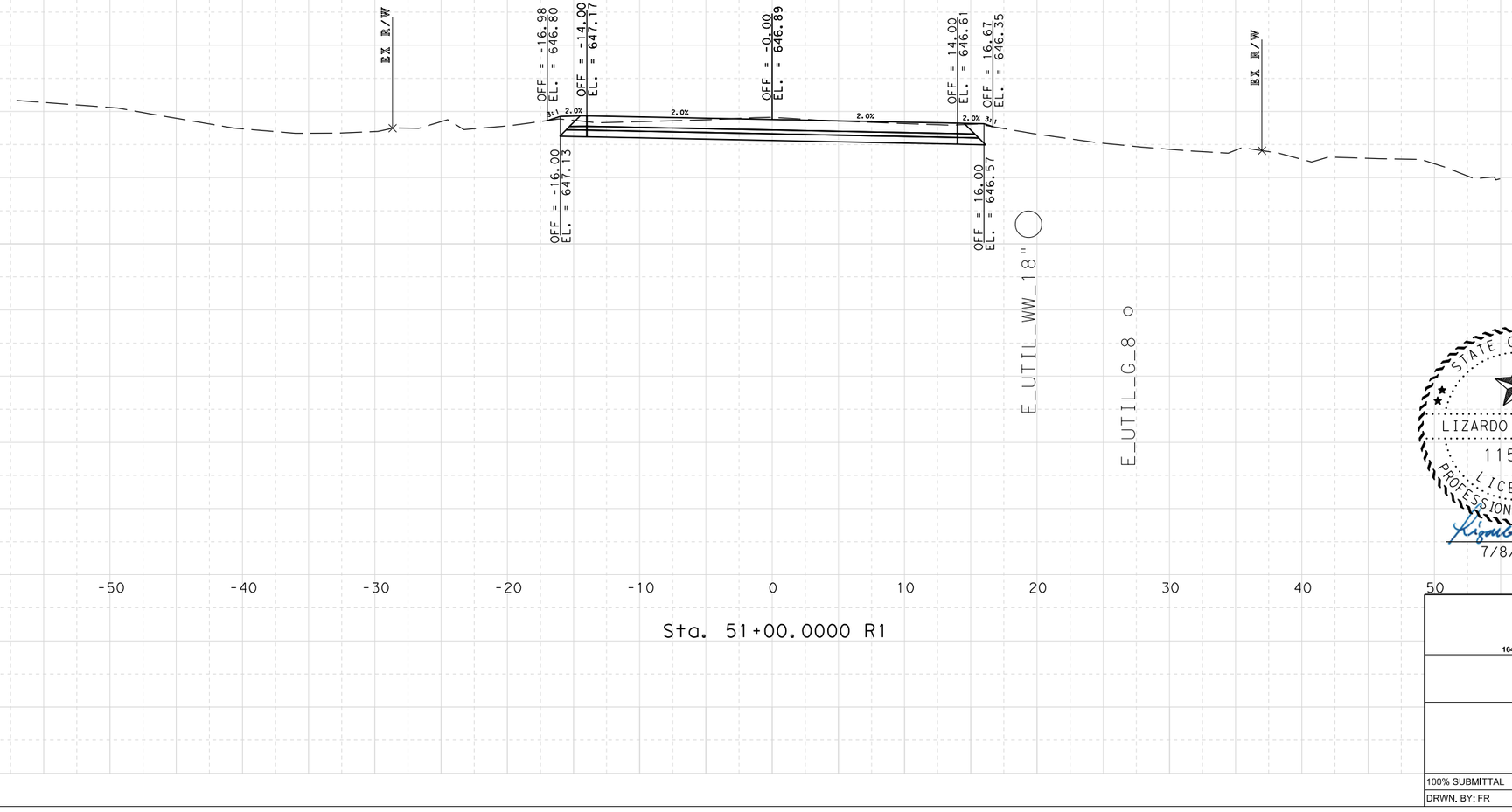
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

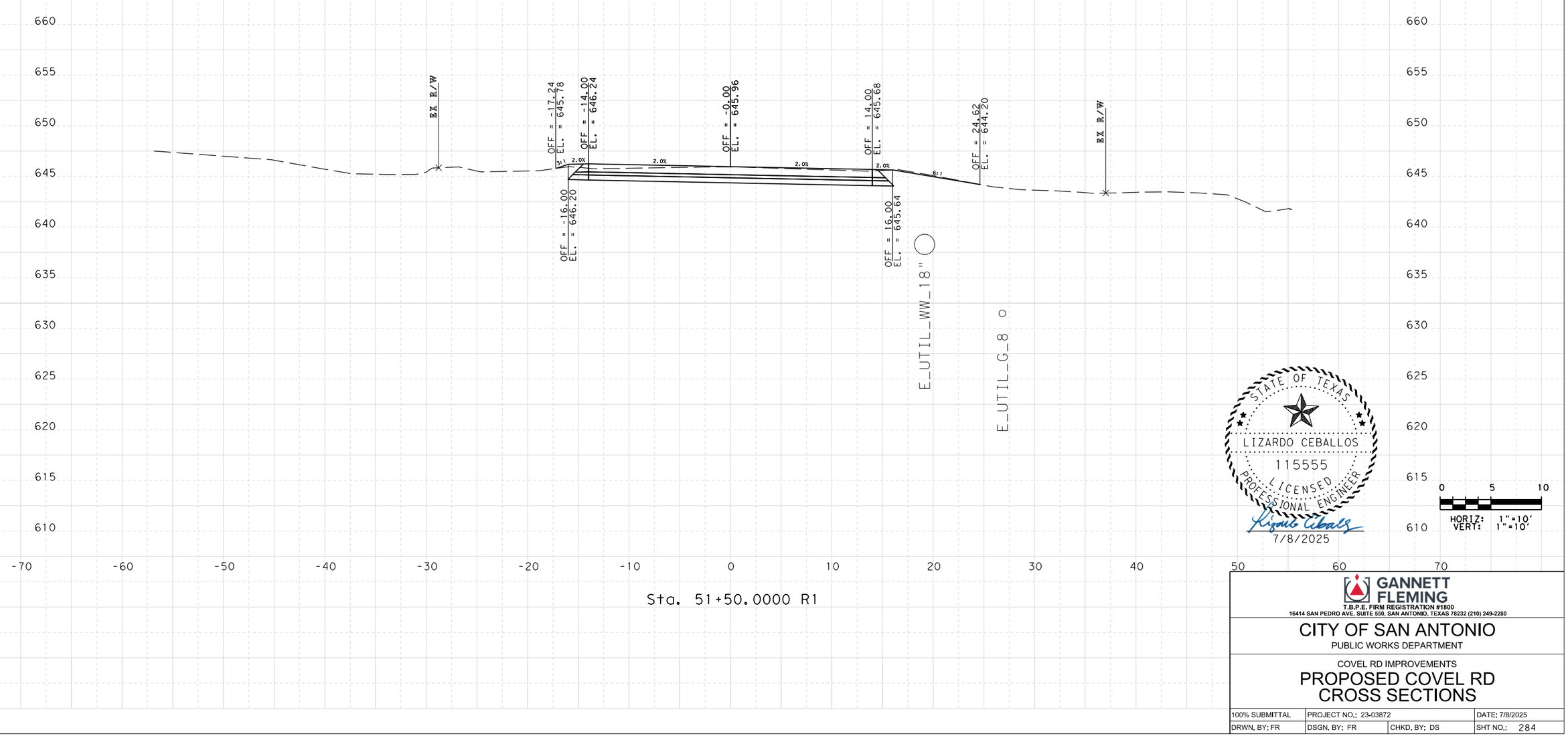
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
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7/8/2025

0 5 10
HORIZ: 1"=10'
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GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

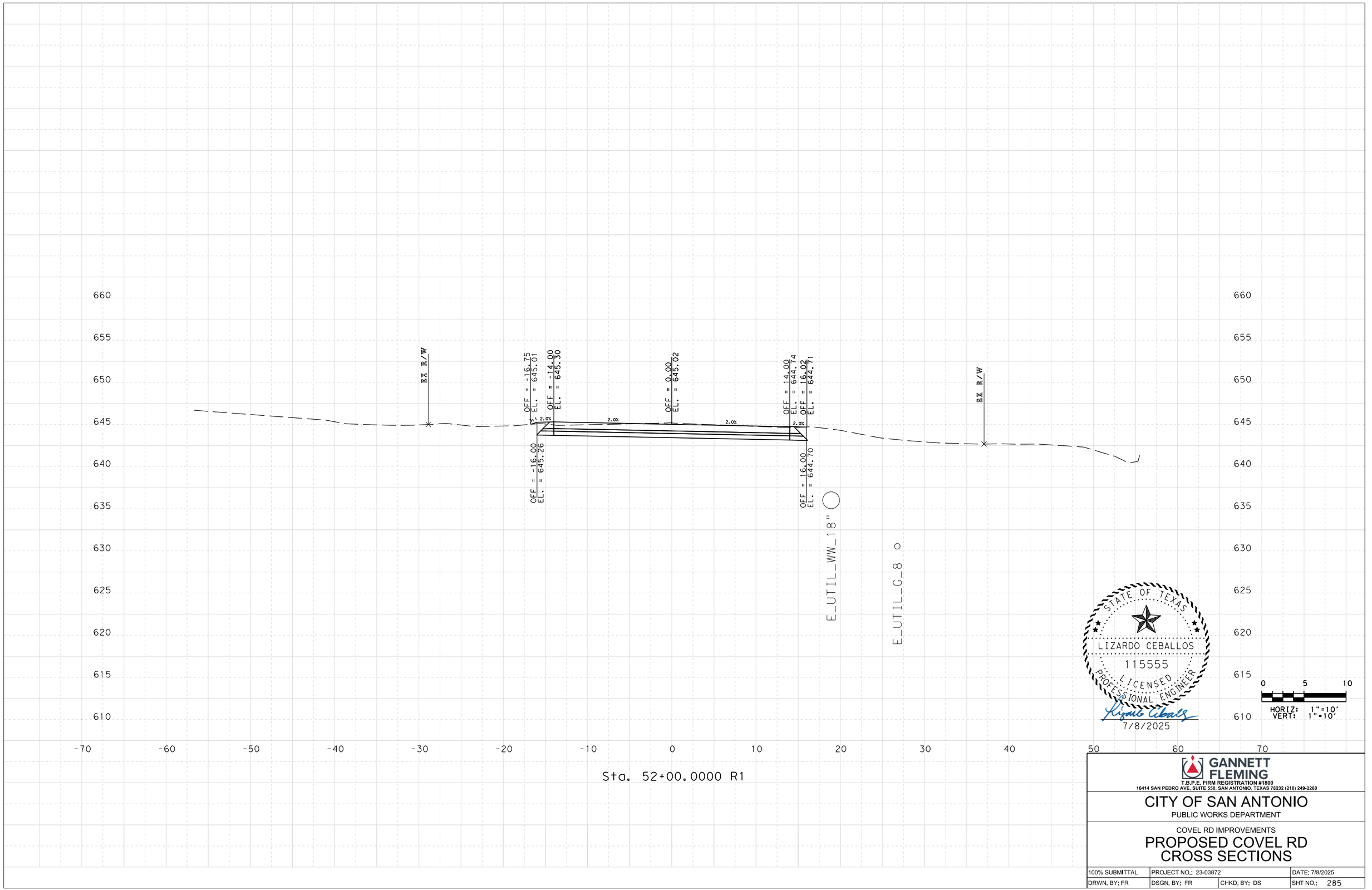
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
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7/8/2025

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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

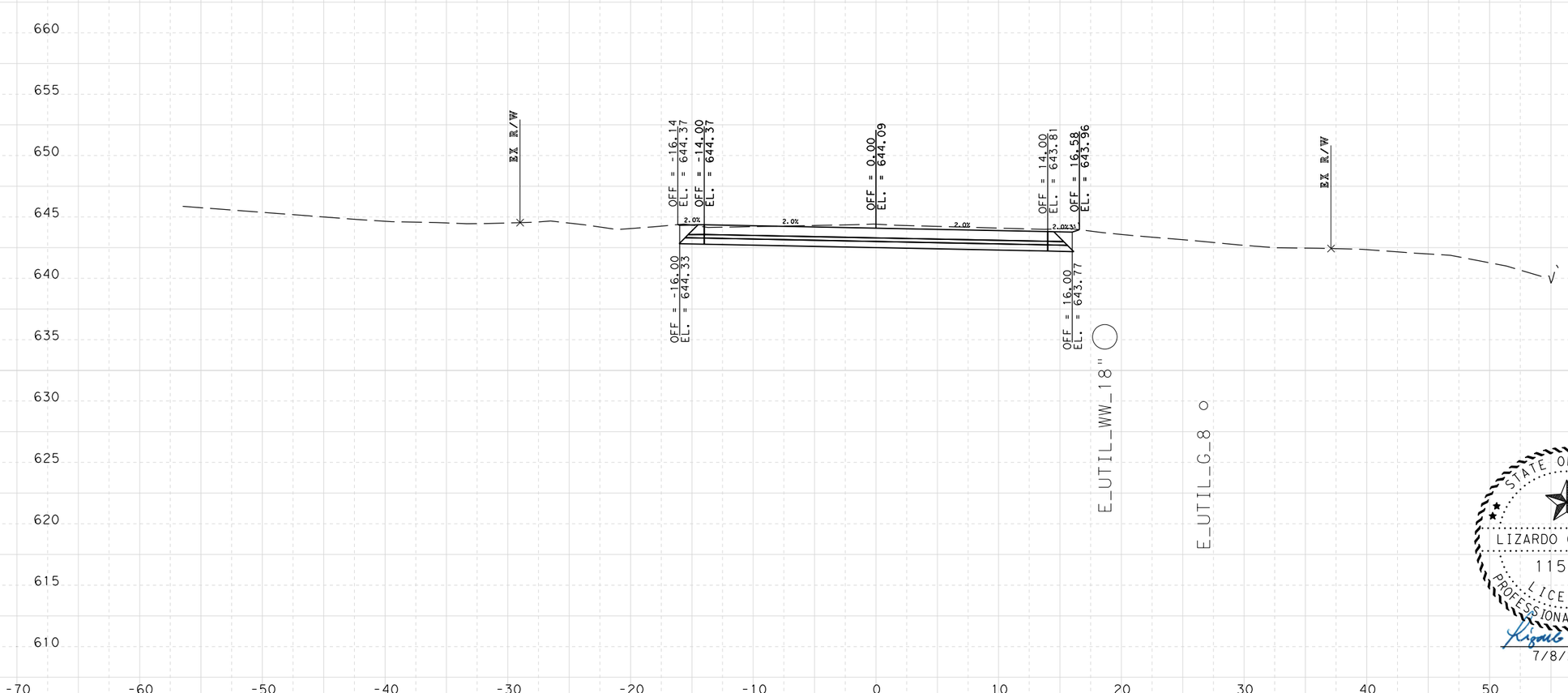
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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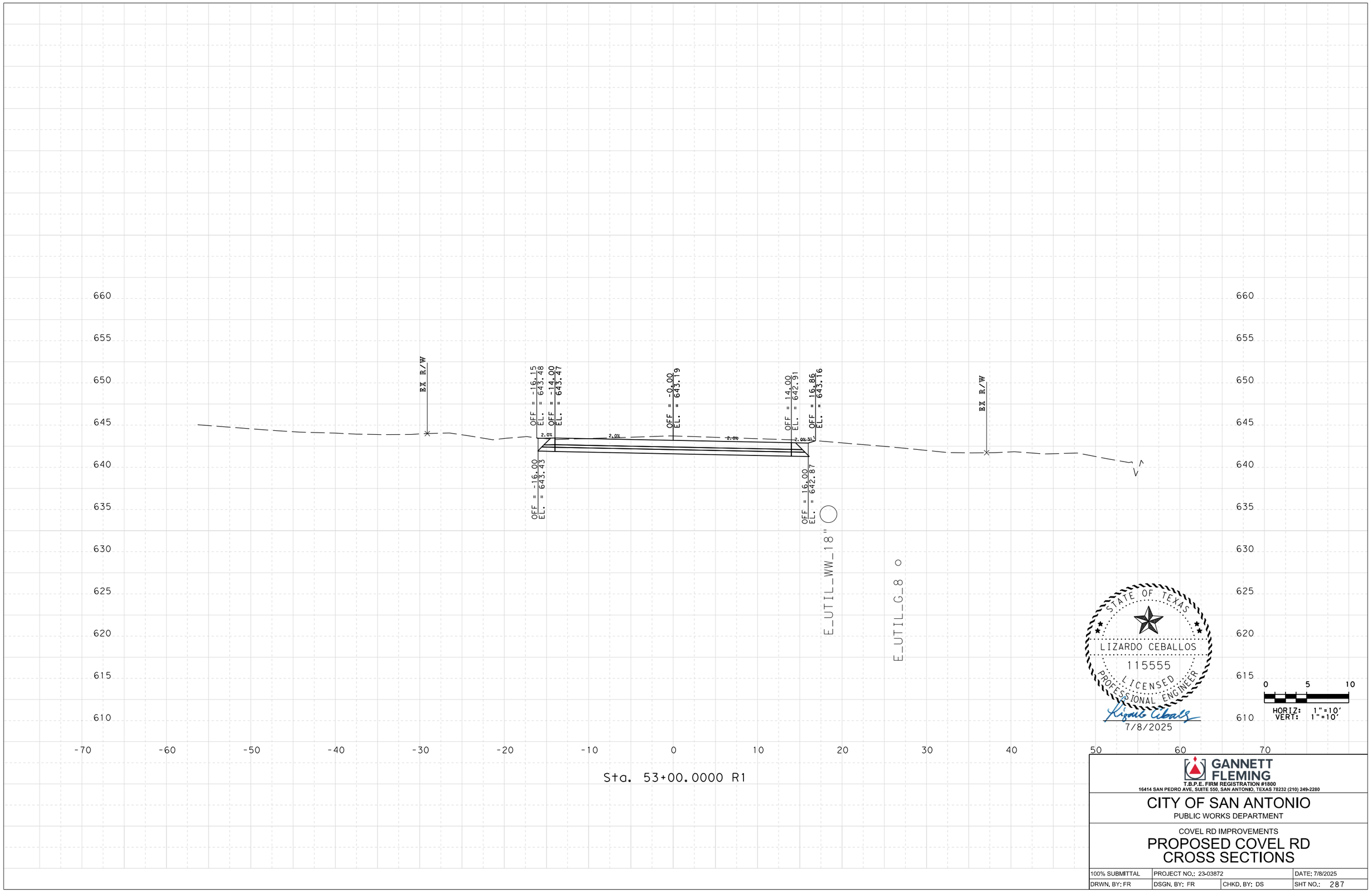
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: DS	SHT NO.: 286

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7/8/2025
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STATE OF TEXAS
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GANNETT FLEMING
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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

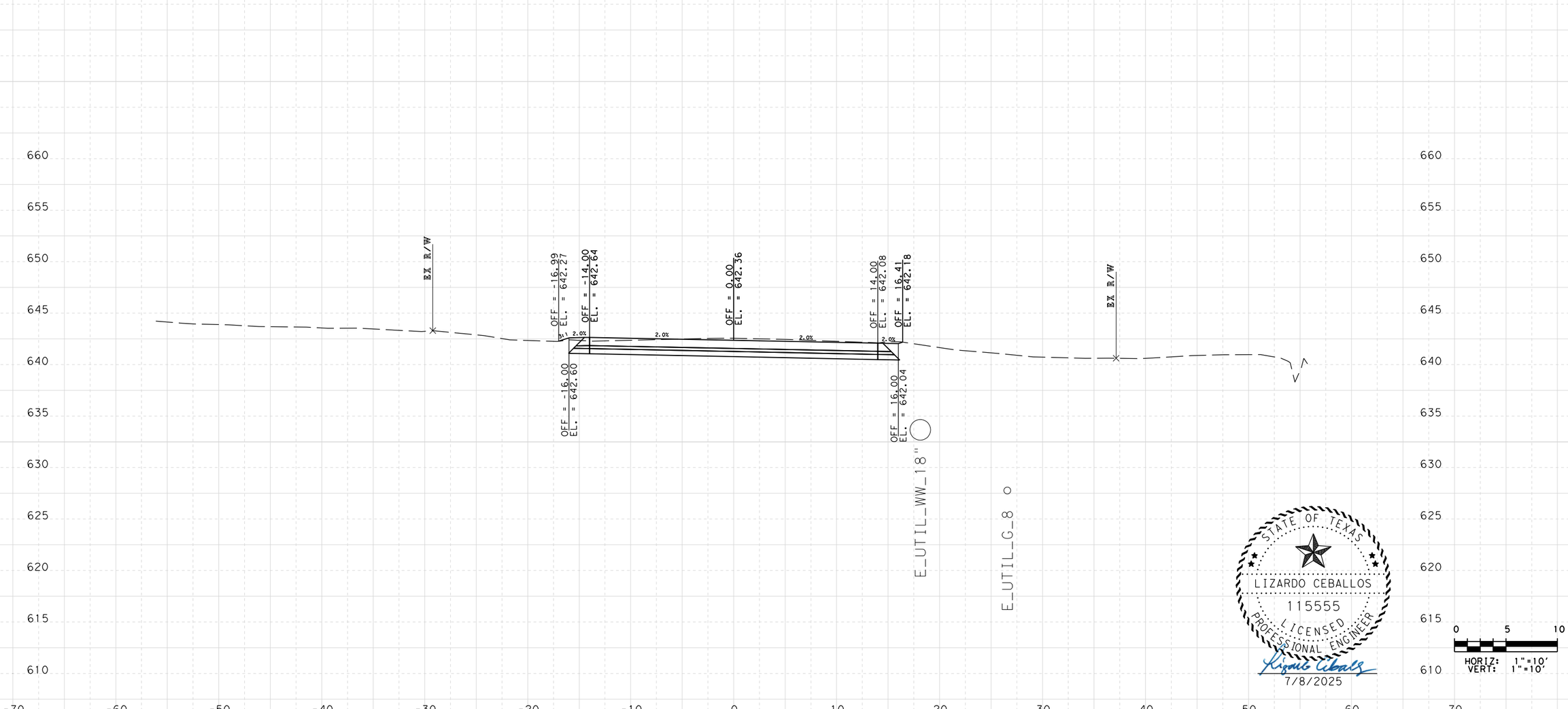
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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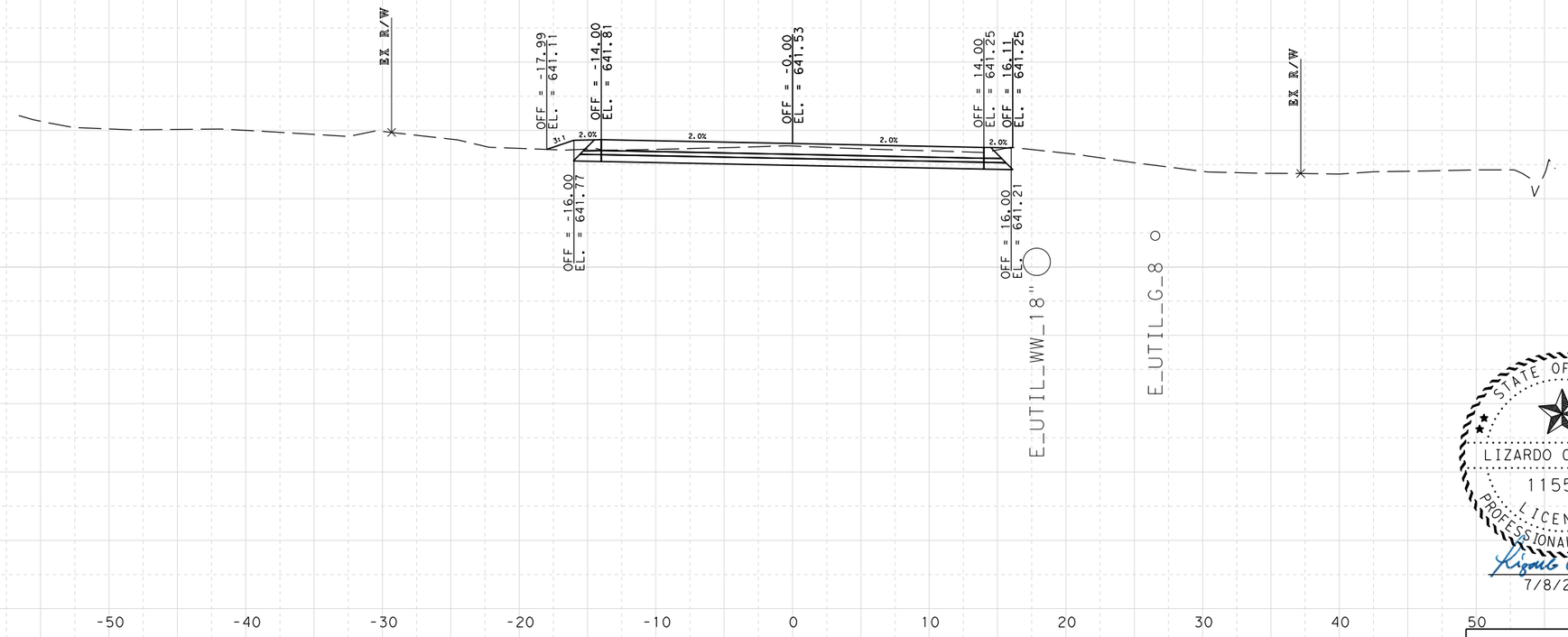
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
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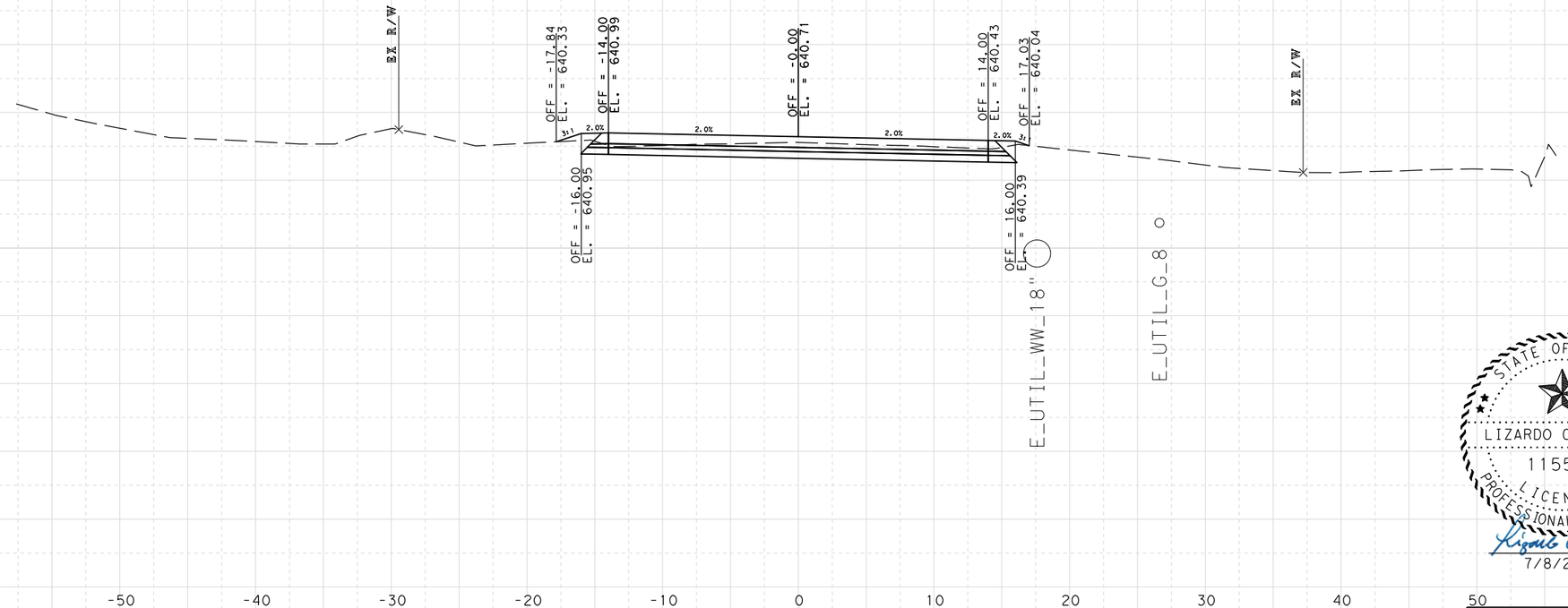
CITY OF SAN ANTONIO
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COVEL RD IMPROVEMENTS

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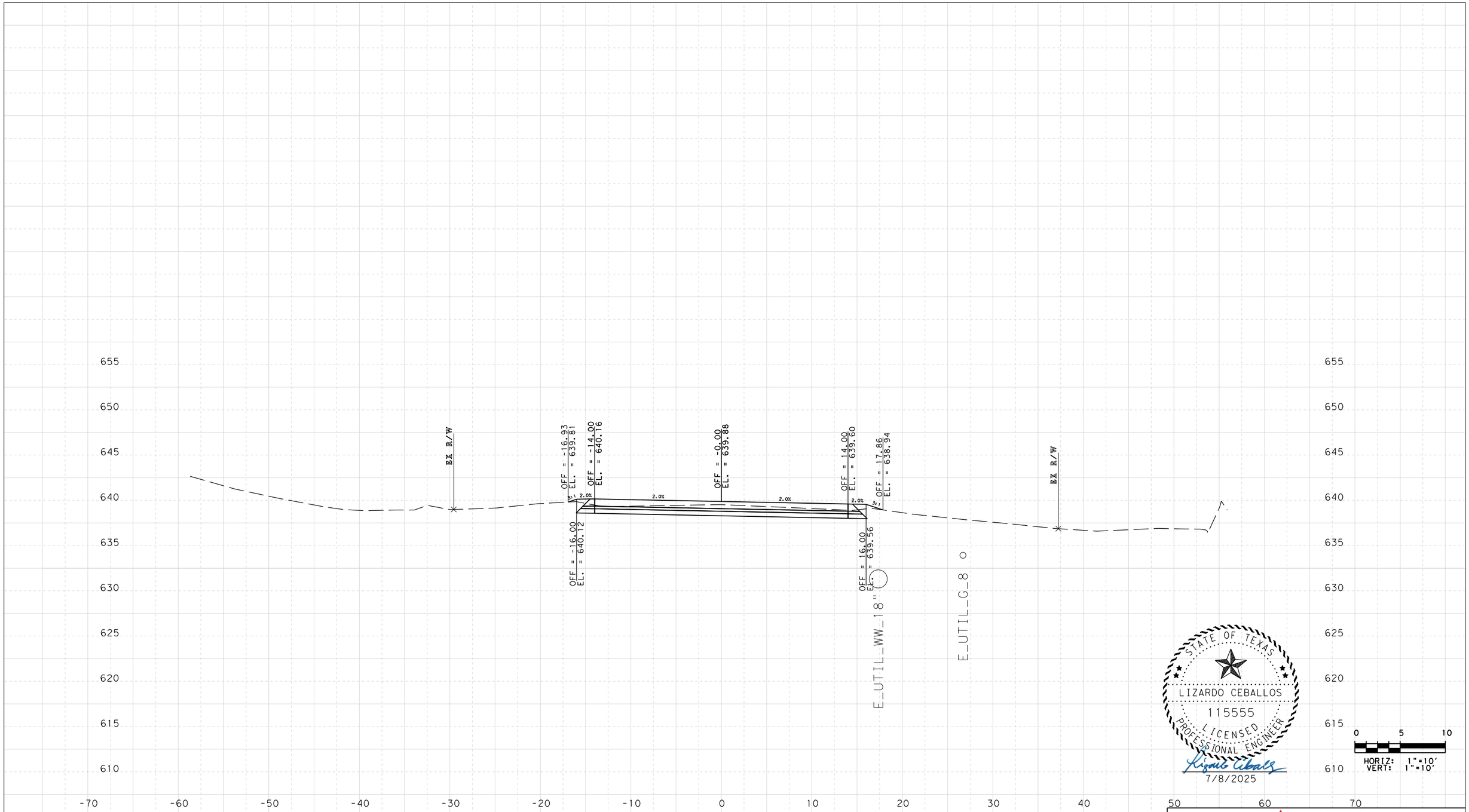
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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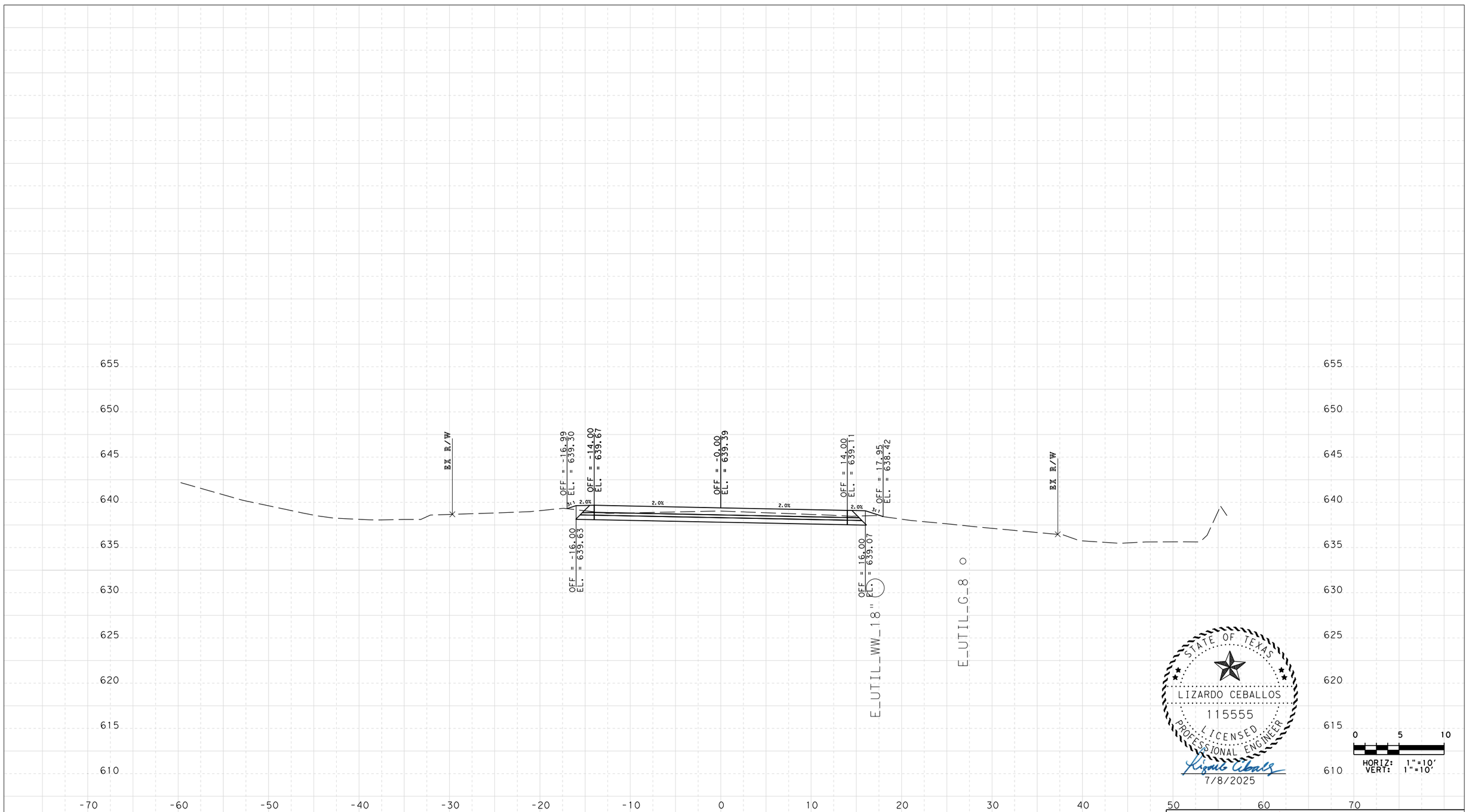
CITY OF SAN ANTONIO
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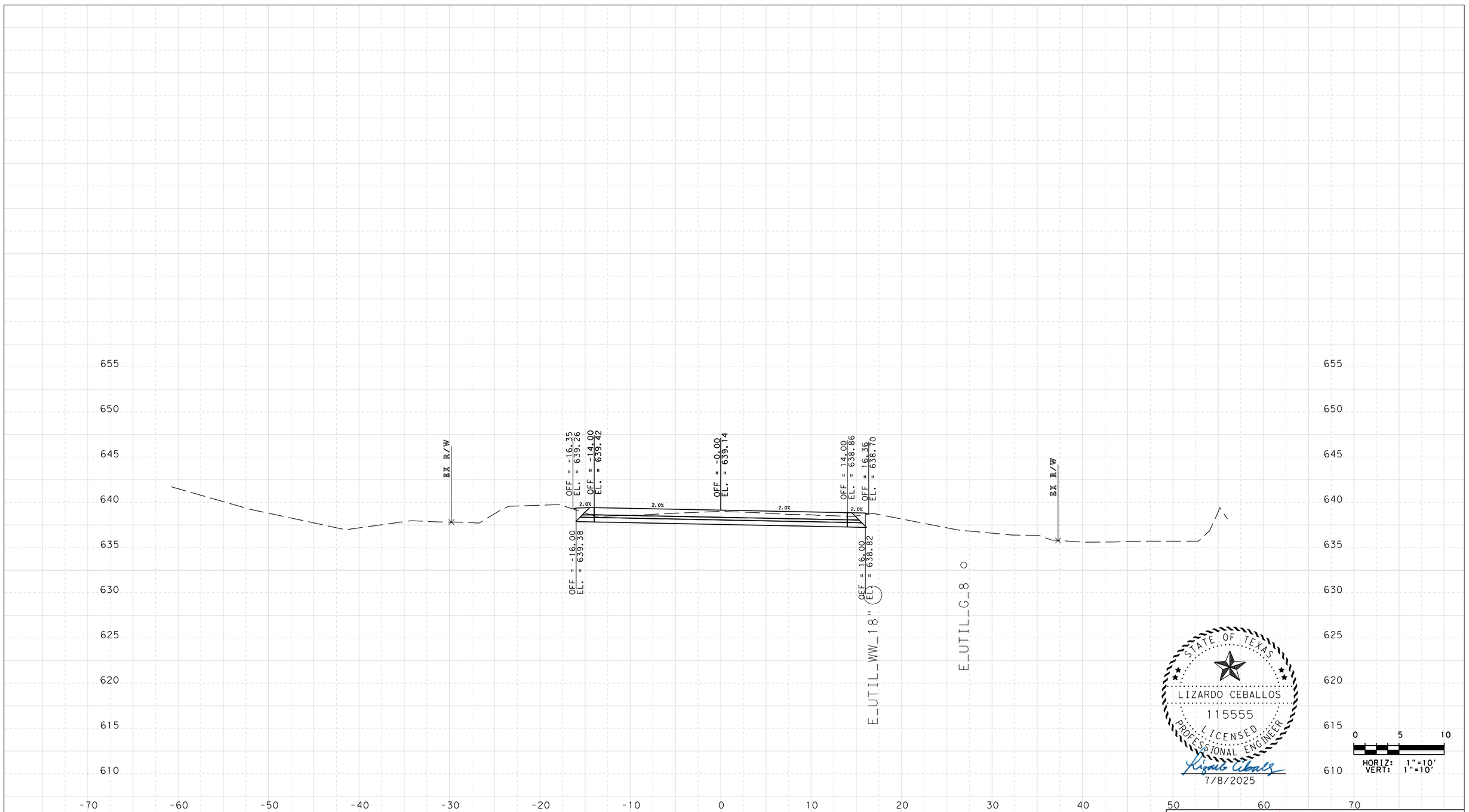
CITY OF SAN ANTONIO
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COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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7/8/2025
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STATE OF TEXAS
LIZARDO CEBALLOS
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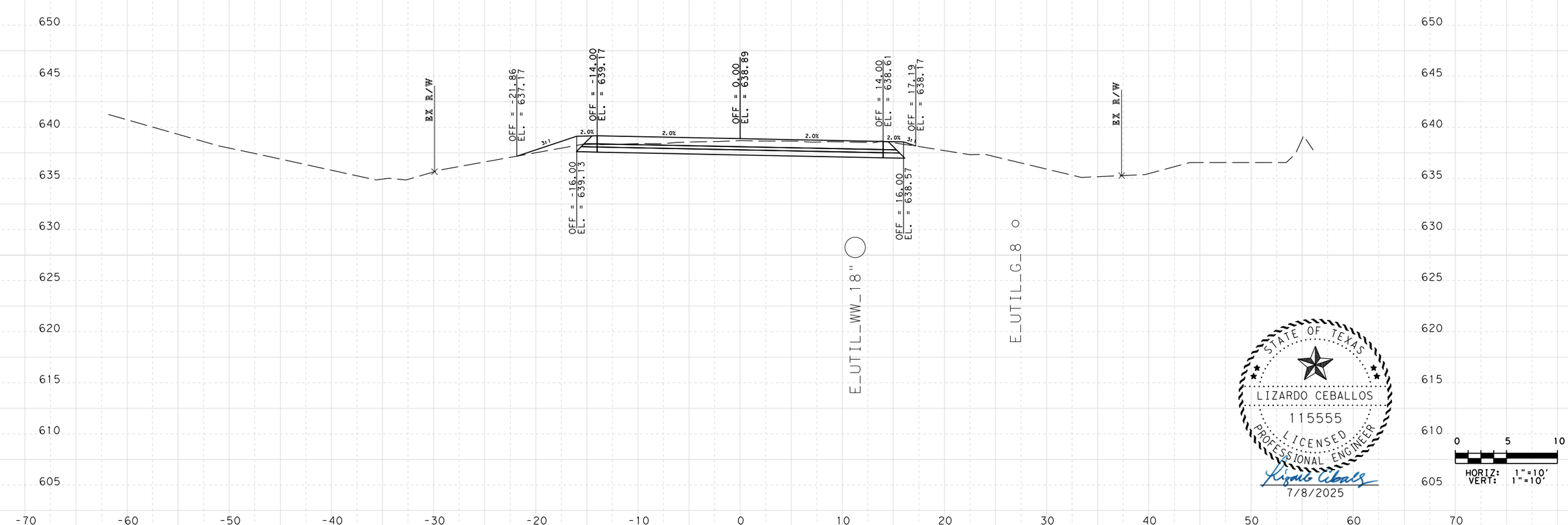
CITY OF SAN ANTONIO
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COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
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0 5 10
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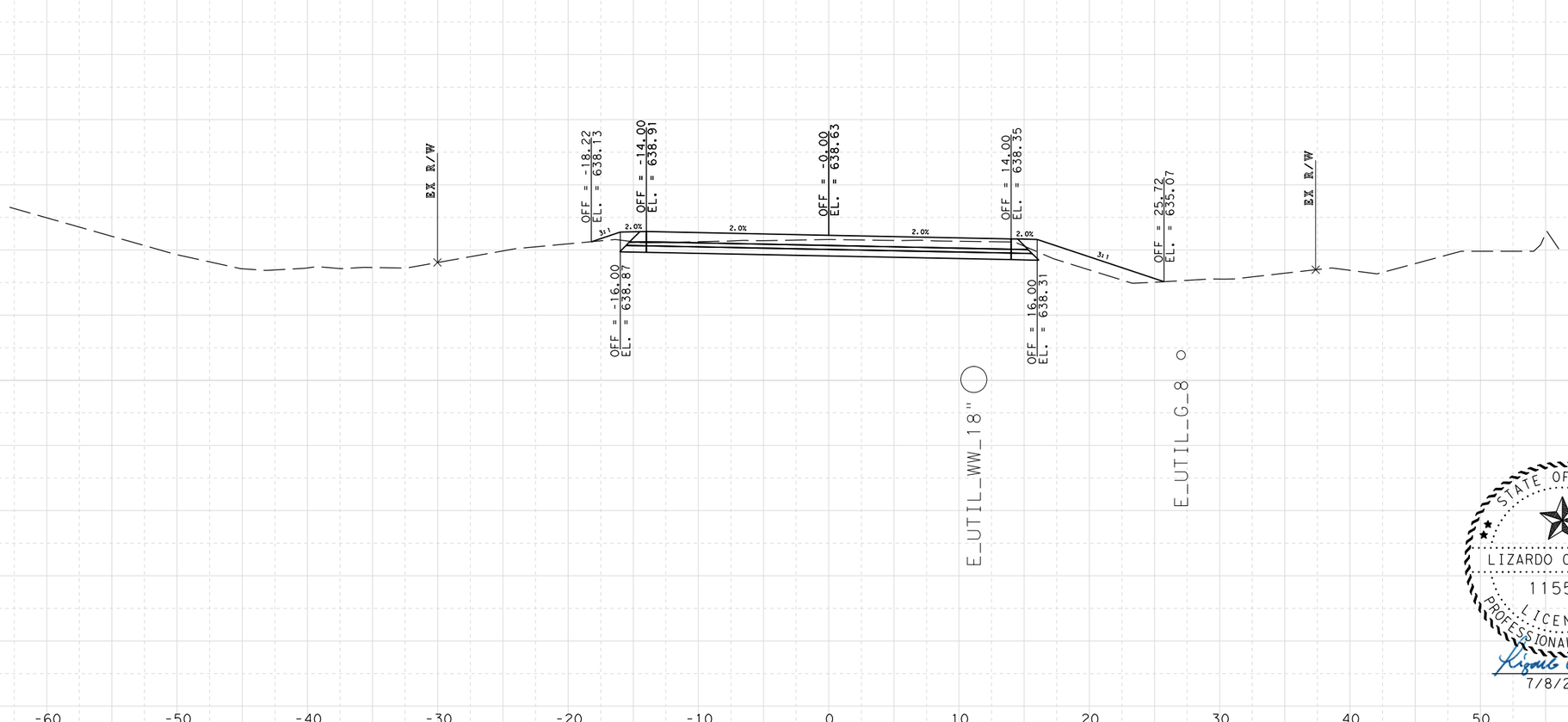
CITY OF SAN ANTONIO
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COVEL RD IMPROVEMENTS

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STATE OF TEXAS
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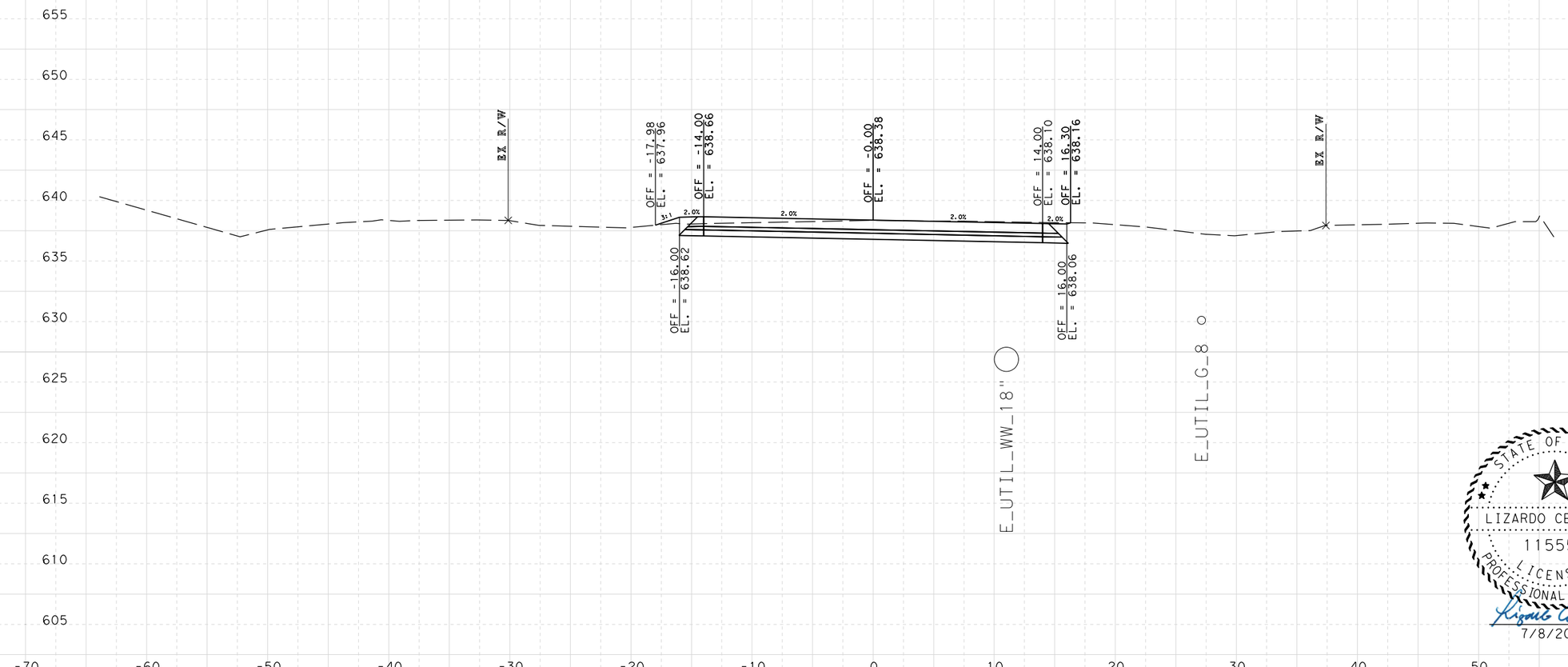
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COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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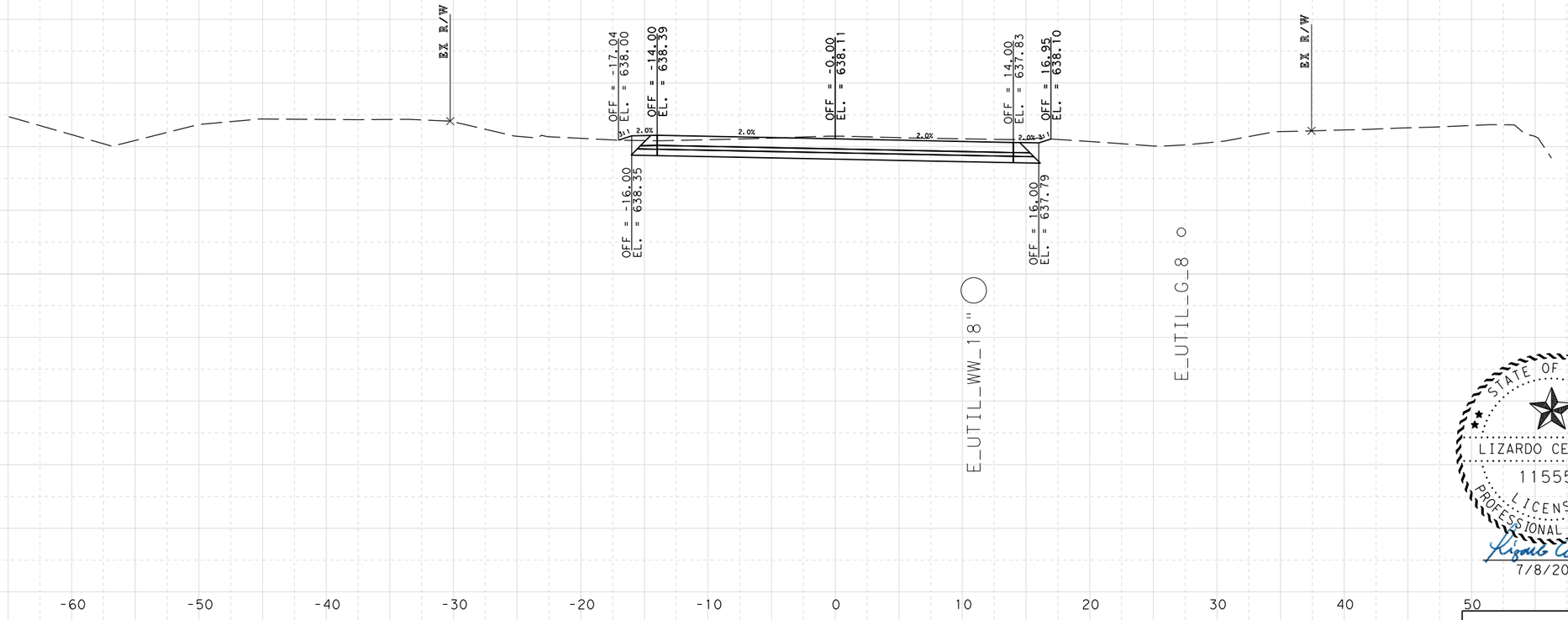
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PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: DS	SHT NO.: 296

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7/8/2025
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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE. SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

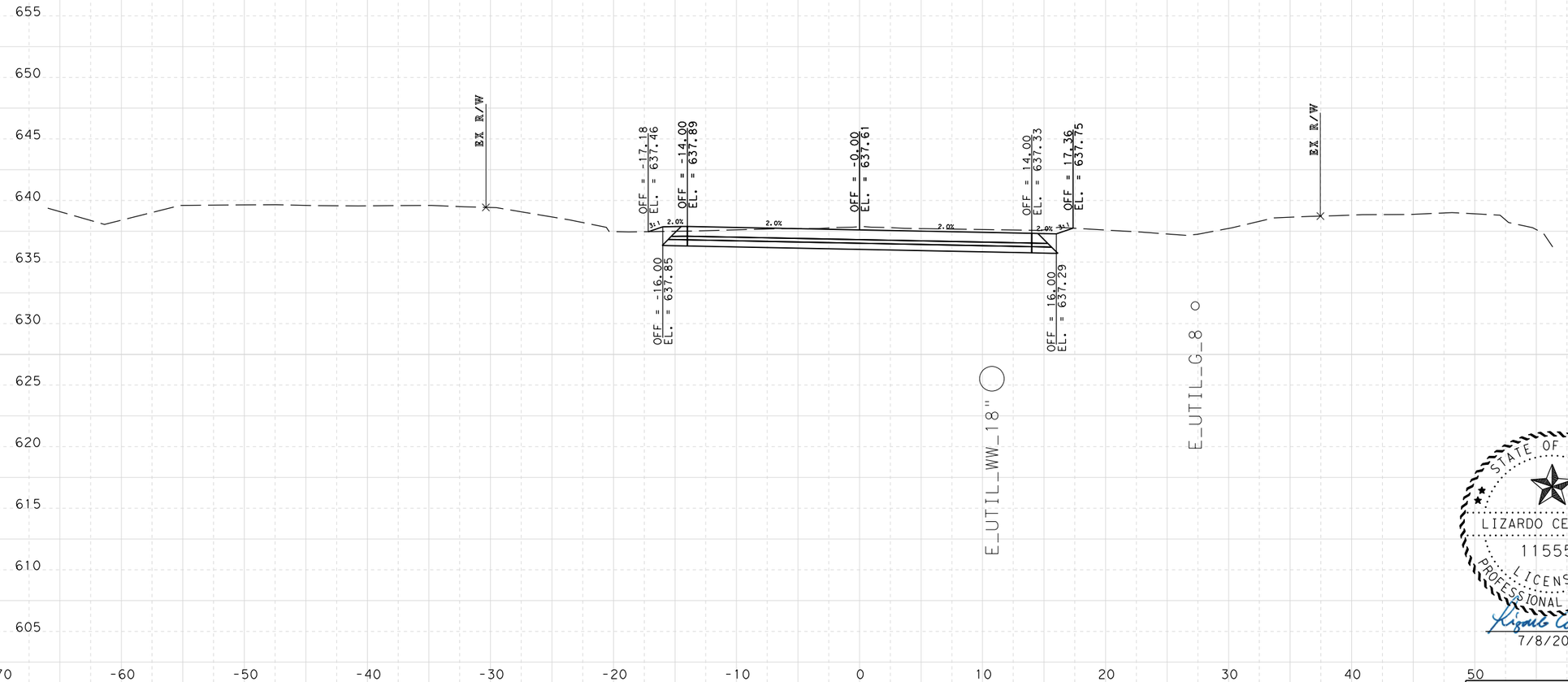
CITY OF SAN ANTONIO
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COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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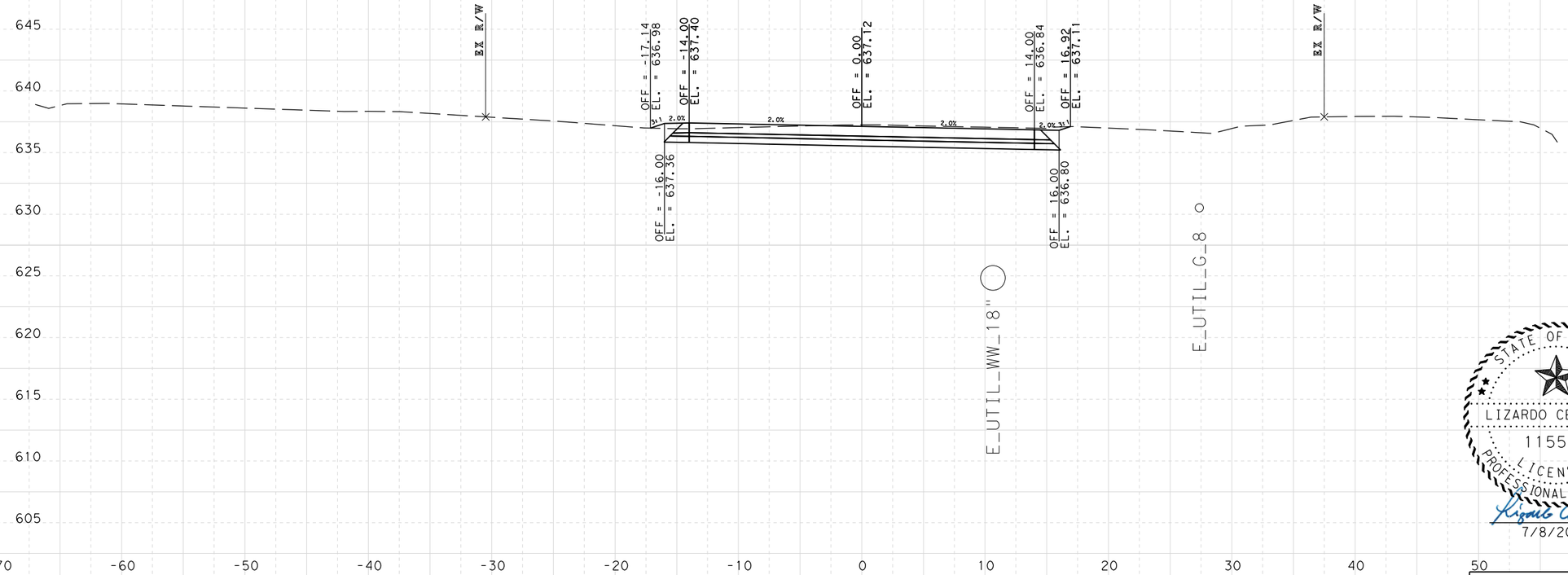
CITY OF SAN ANTONIO
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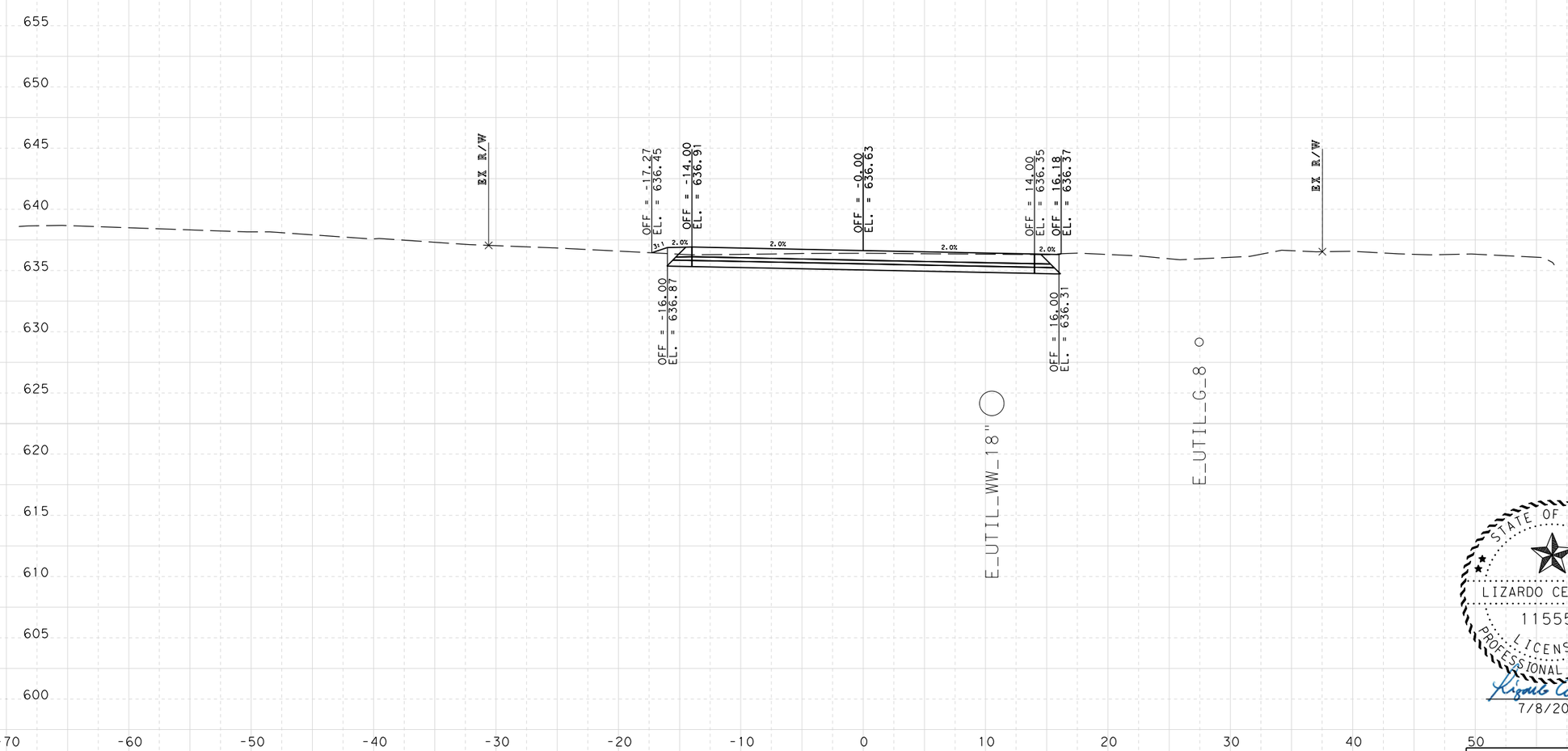
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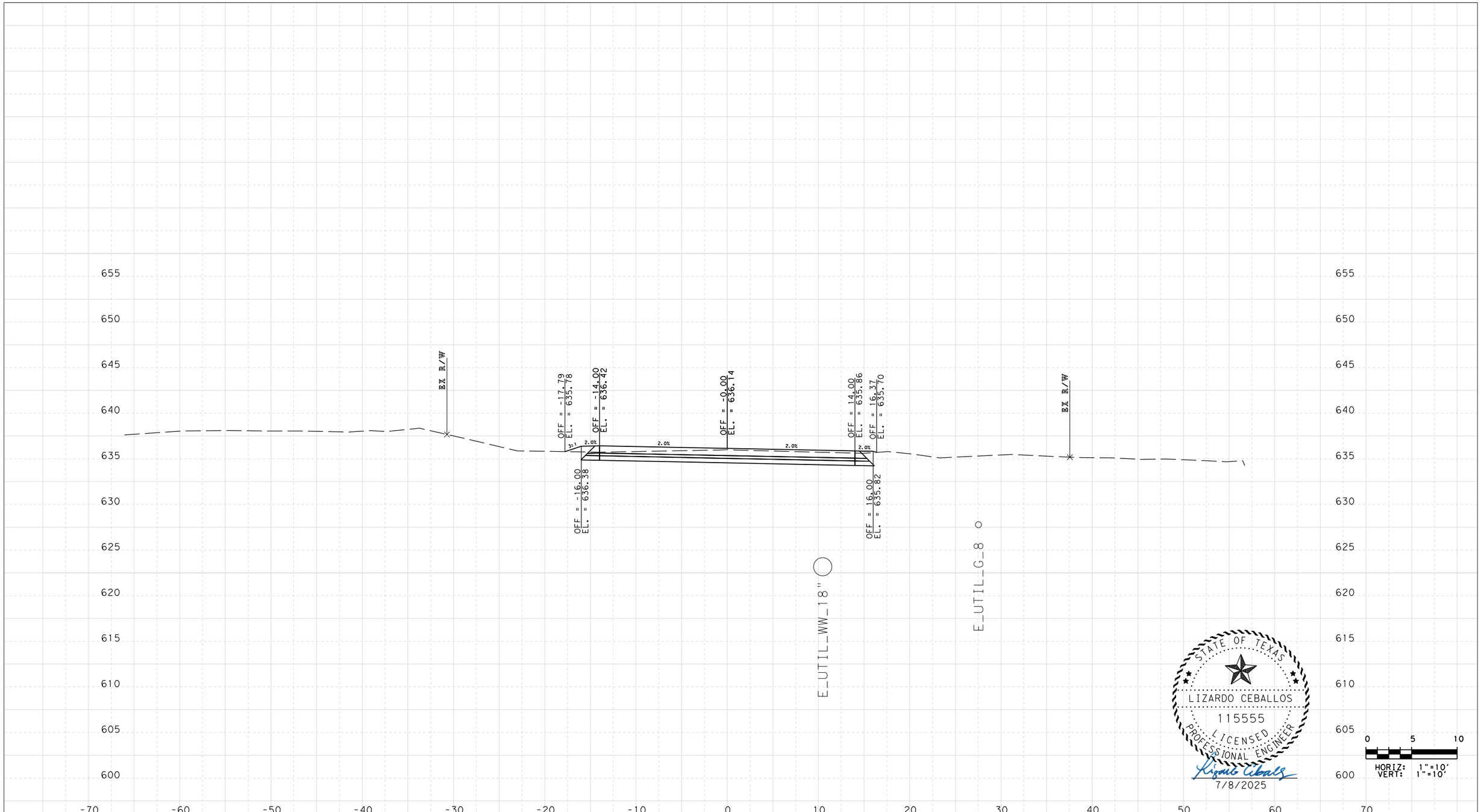
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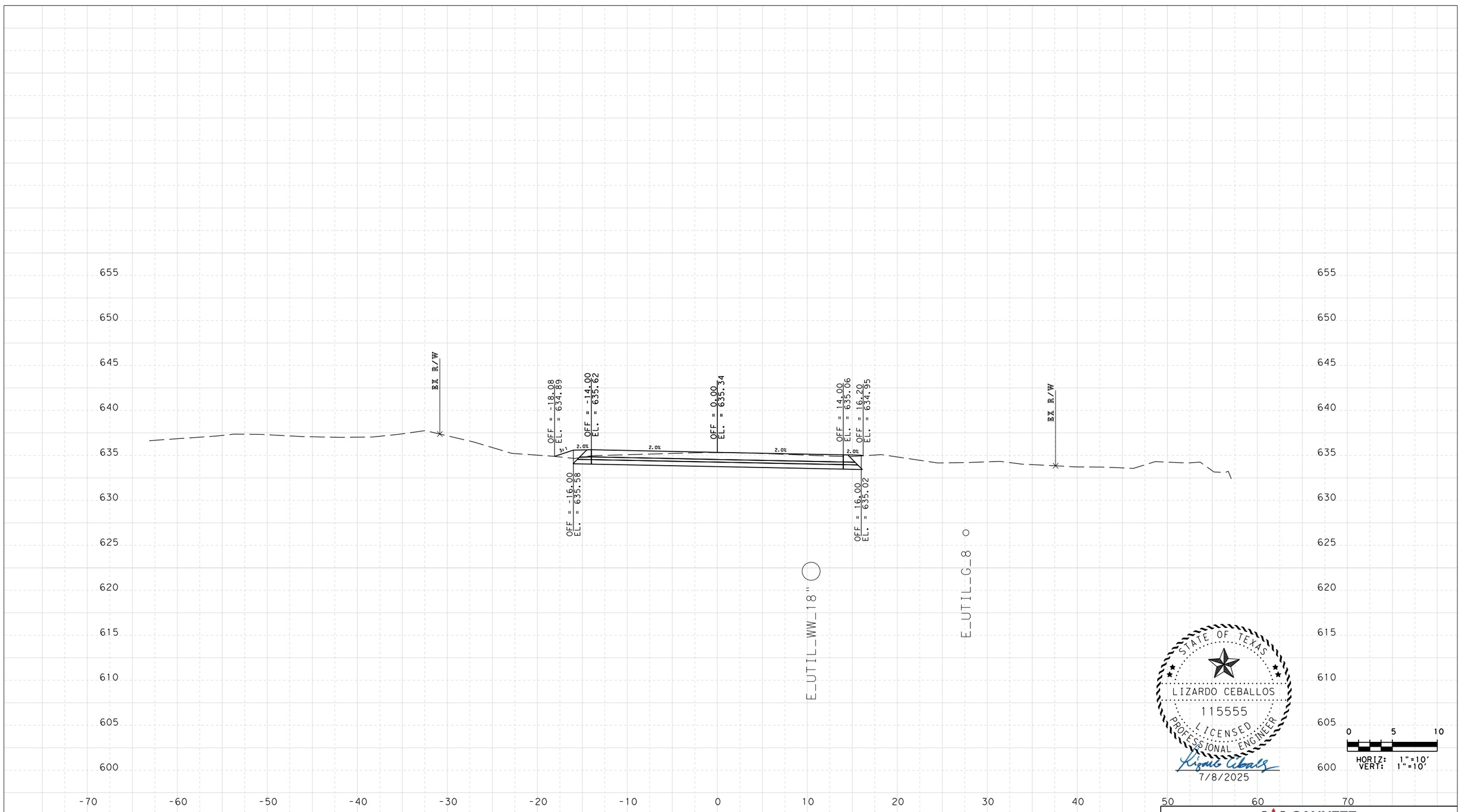
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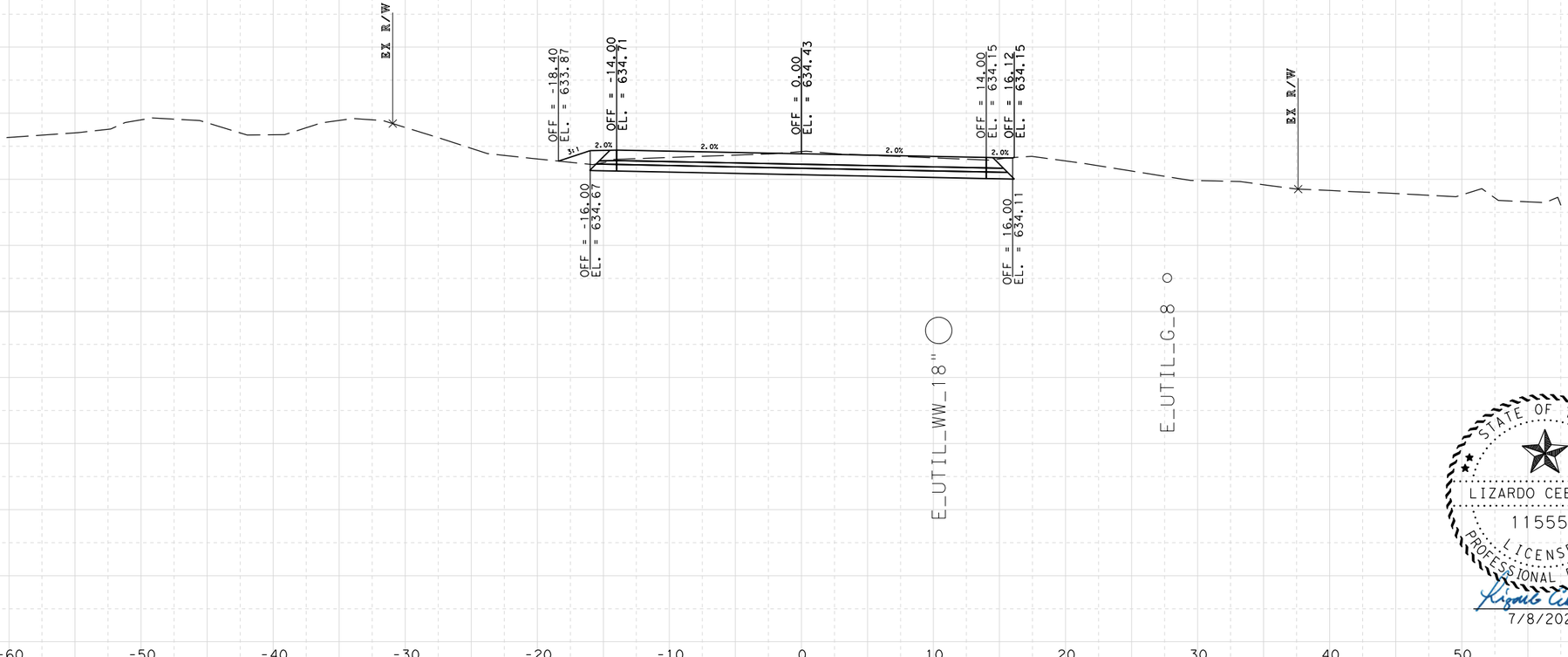
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COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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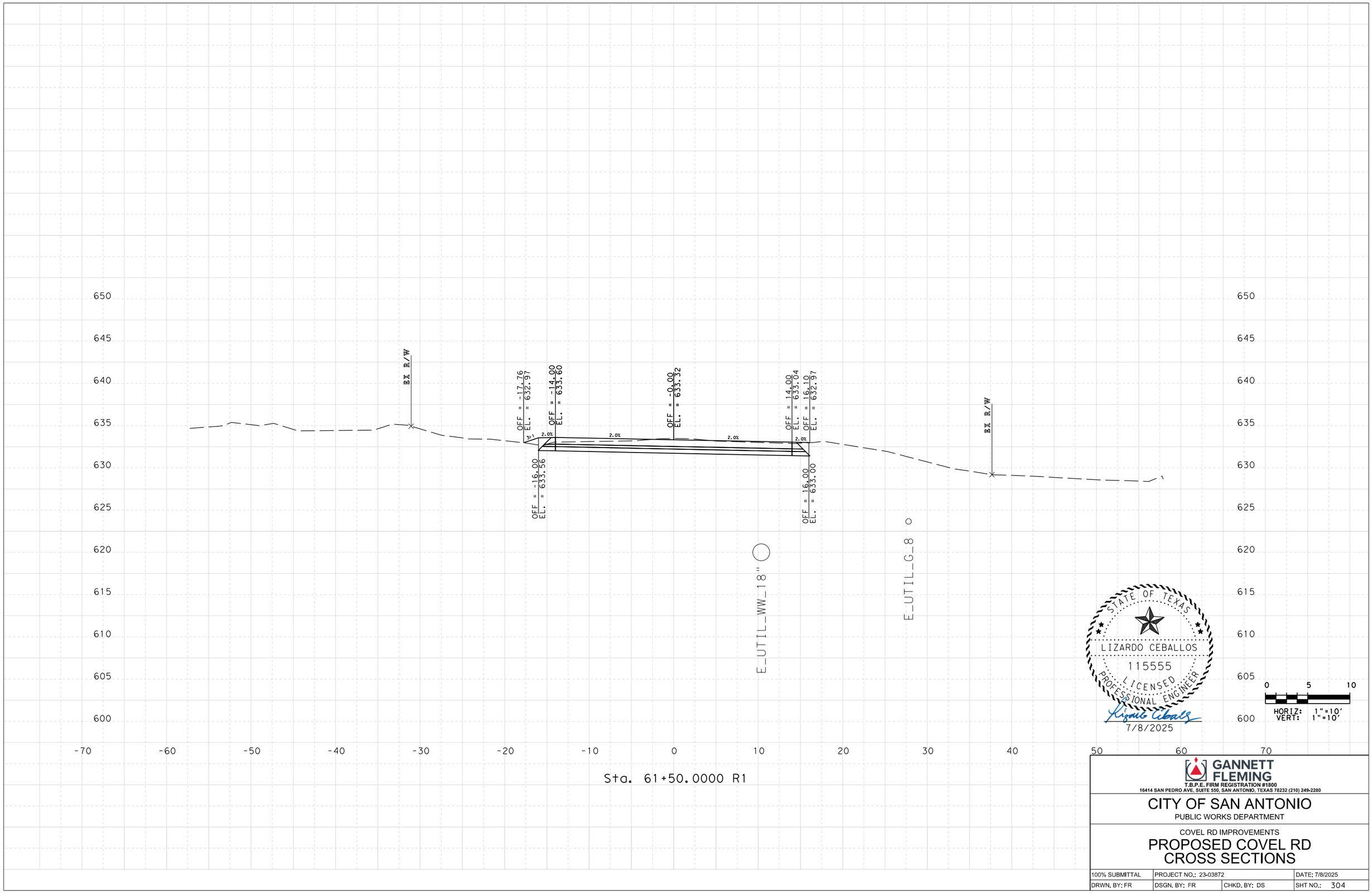
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COVEL RD IMPROVEMENTS

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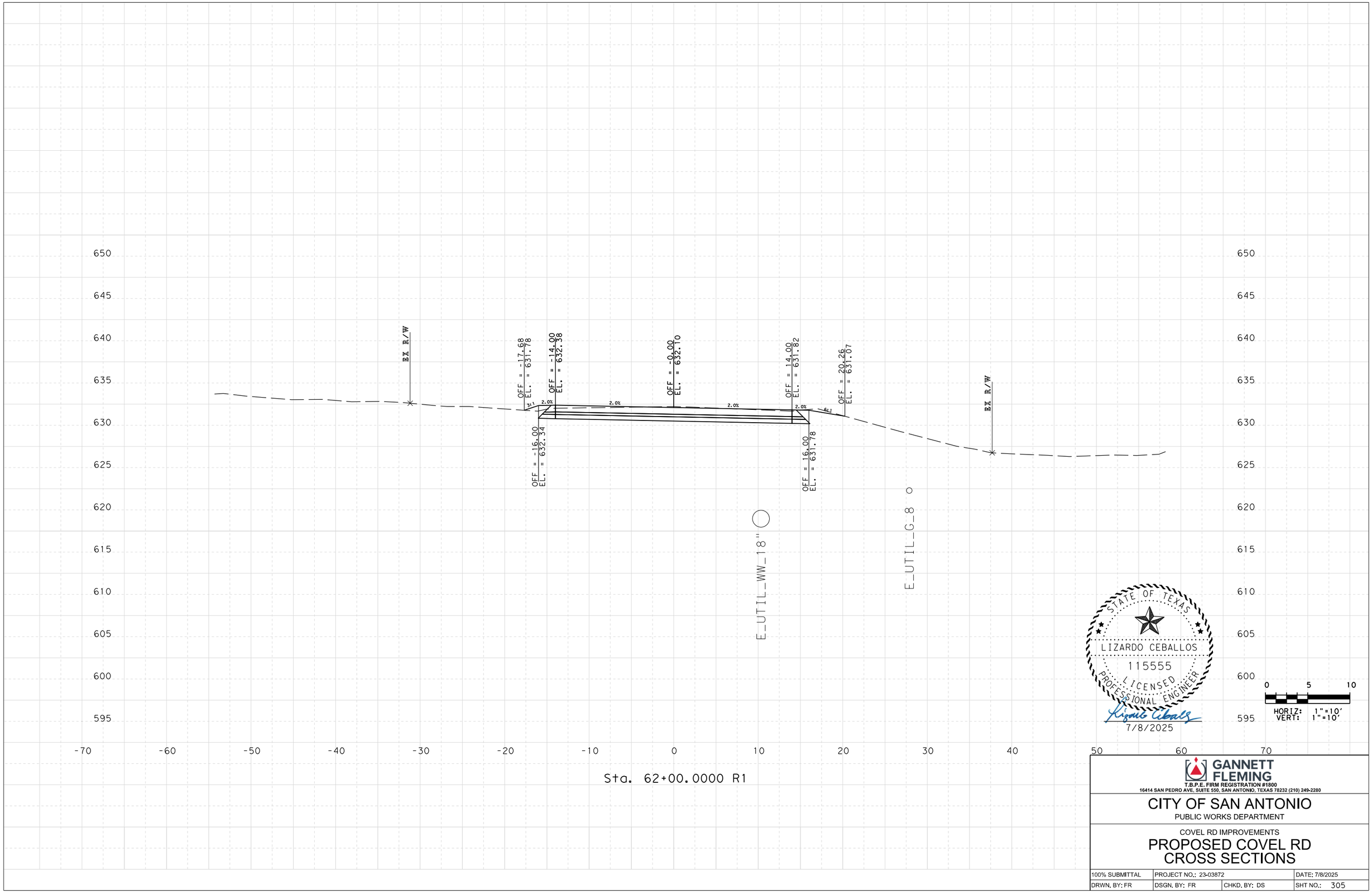
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COVEL RD IMPROVEMENTS

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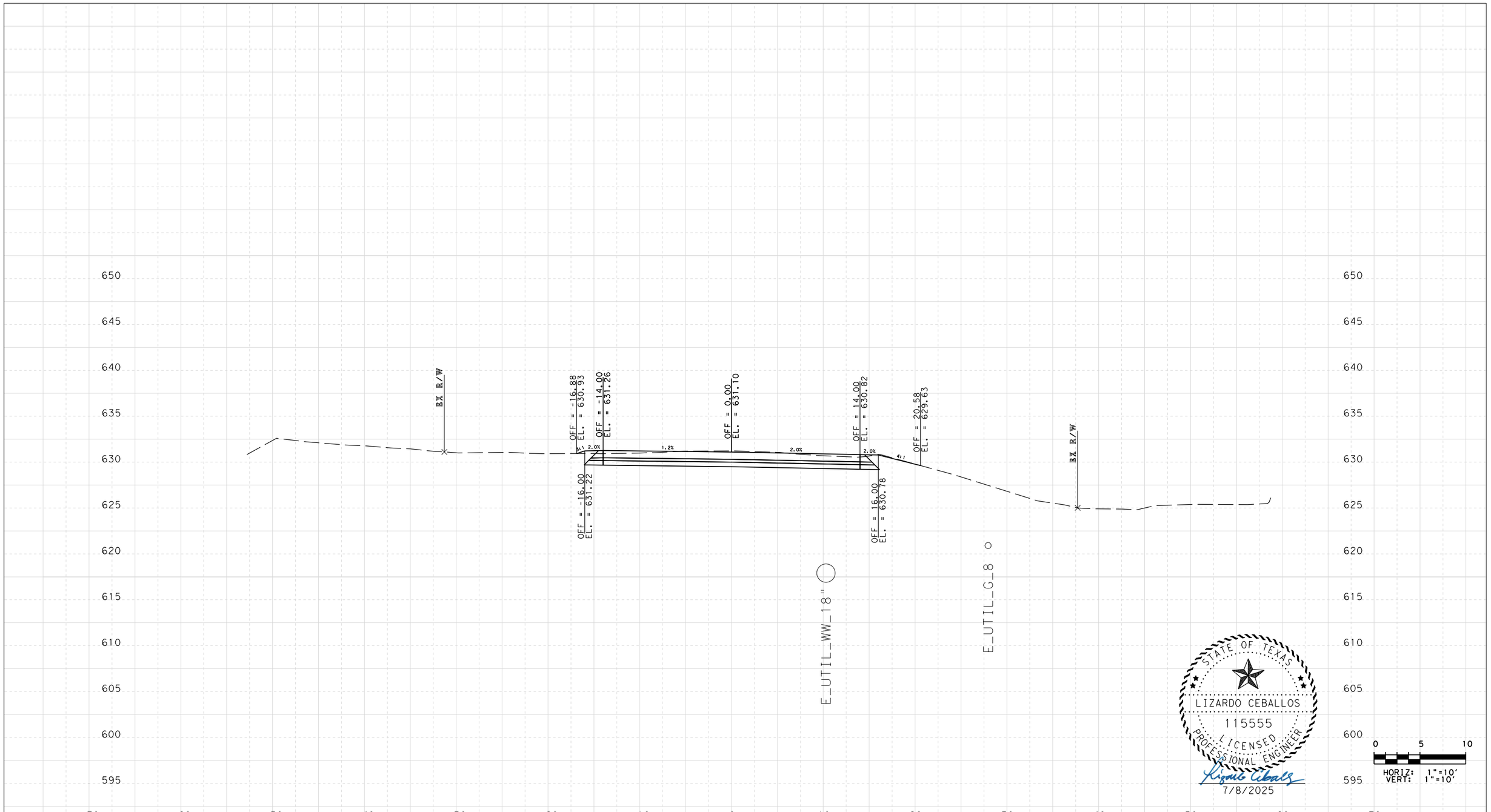
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COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
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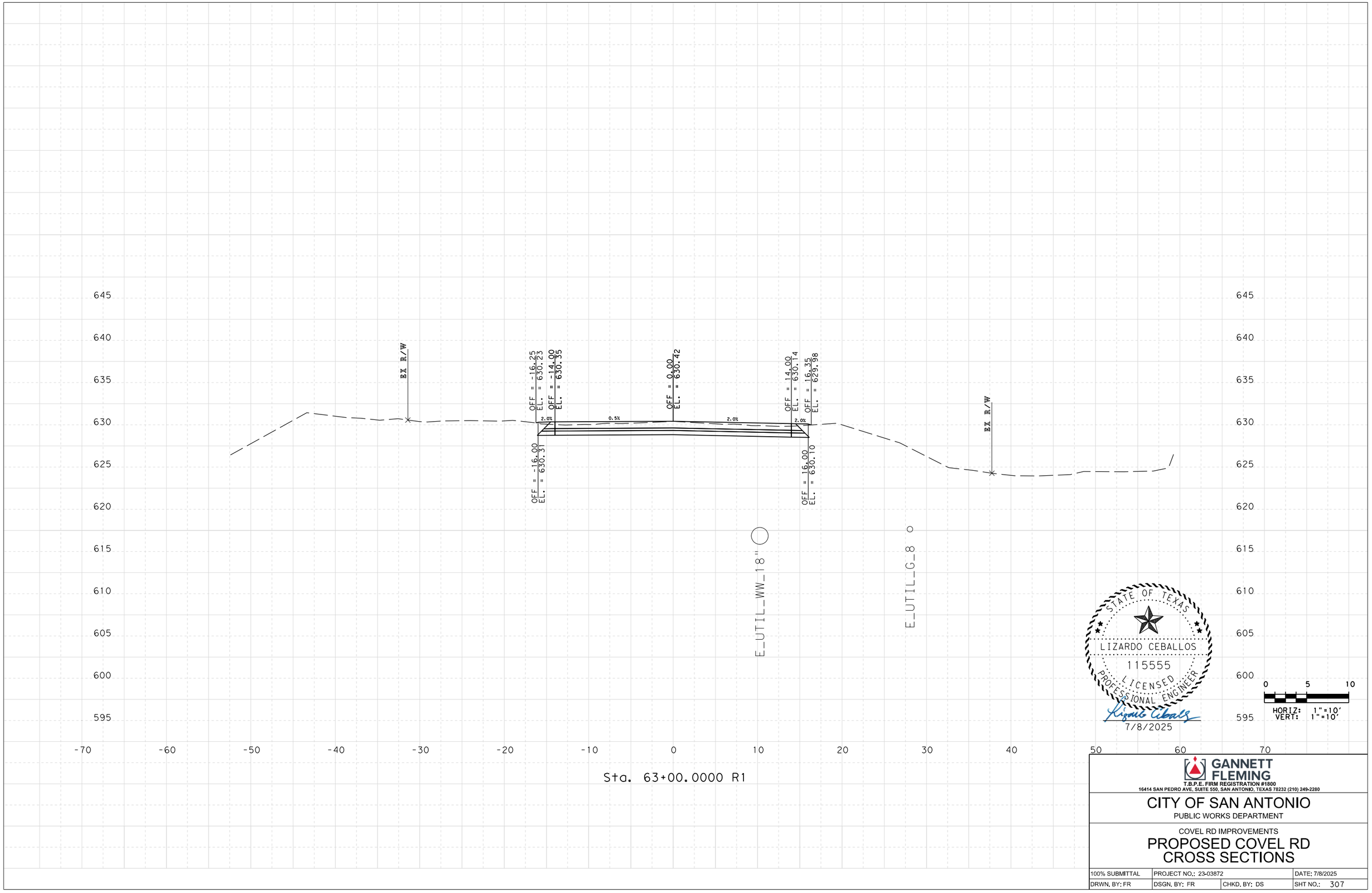
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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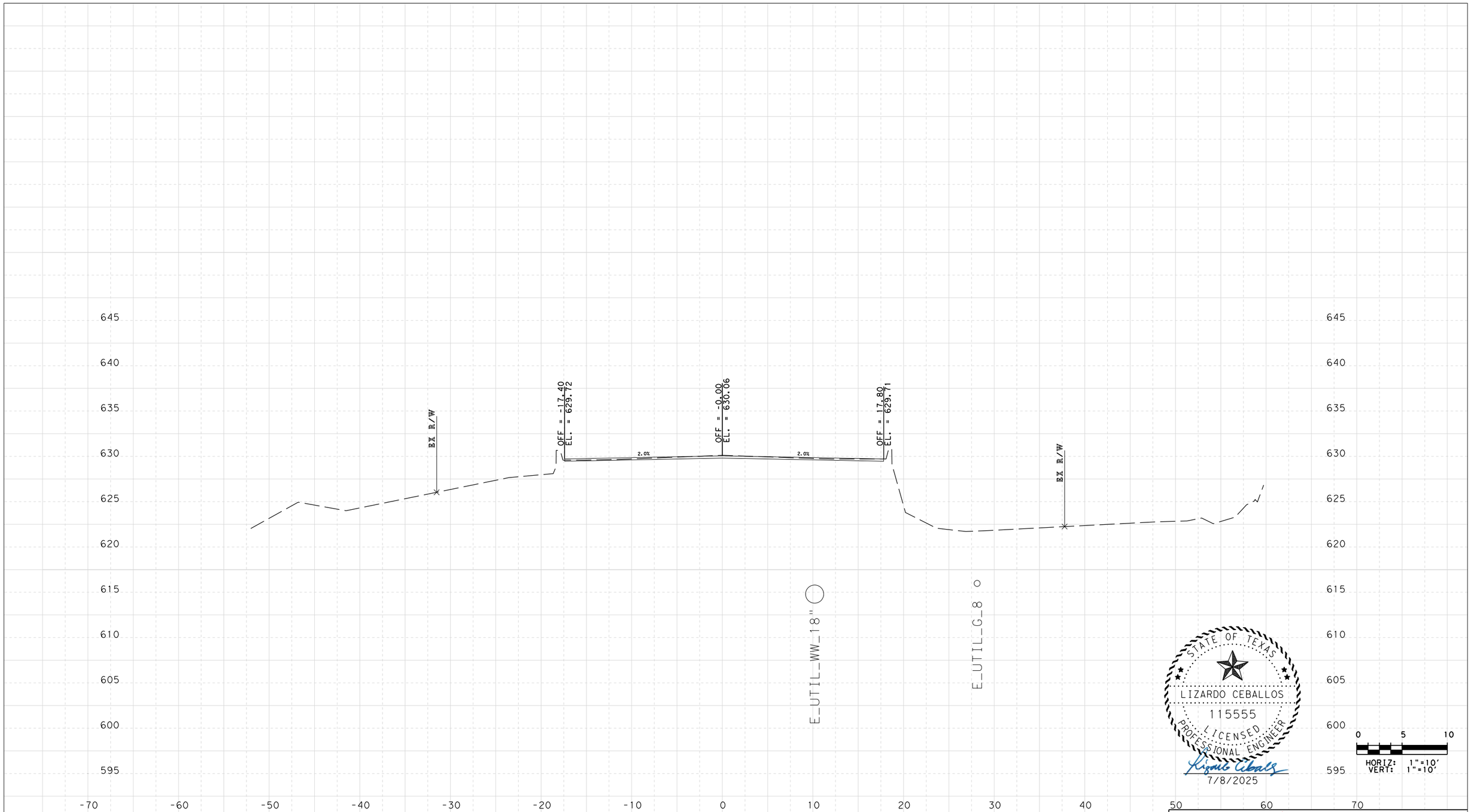
CITY OF SAN ANTONIO
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COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

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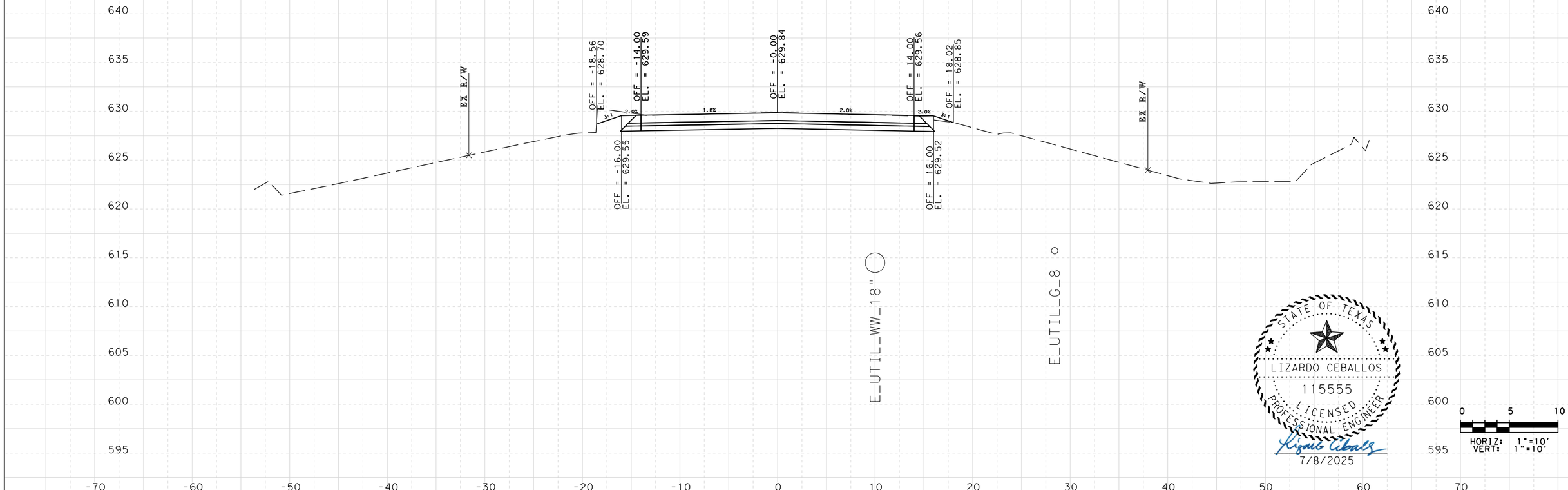
CITY OF SAN ANTONIO
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COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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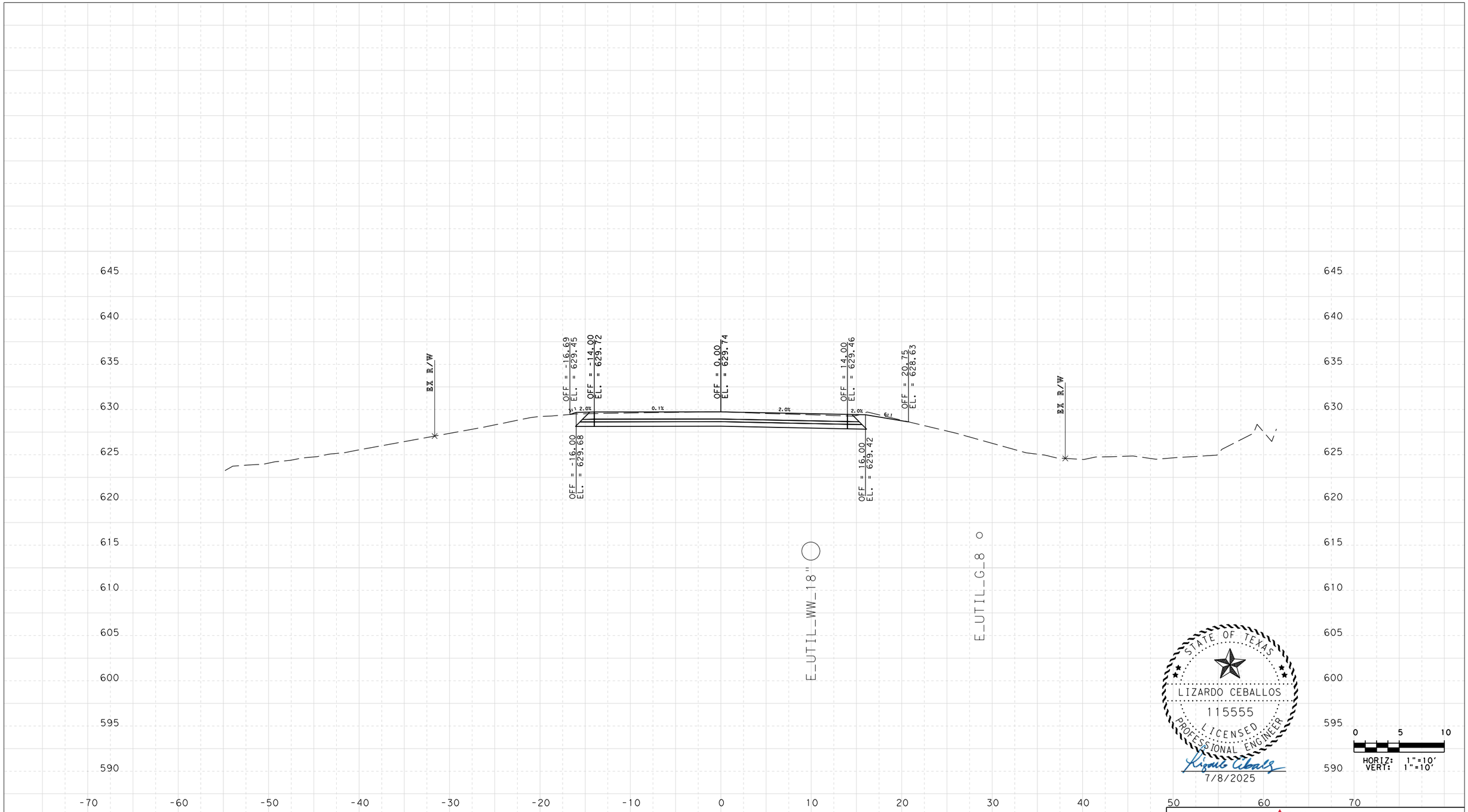
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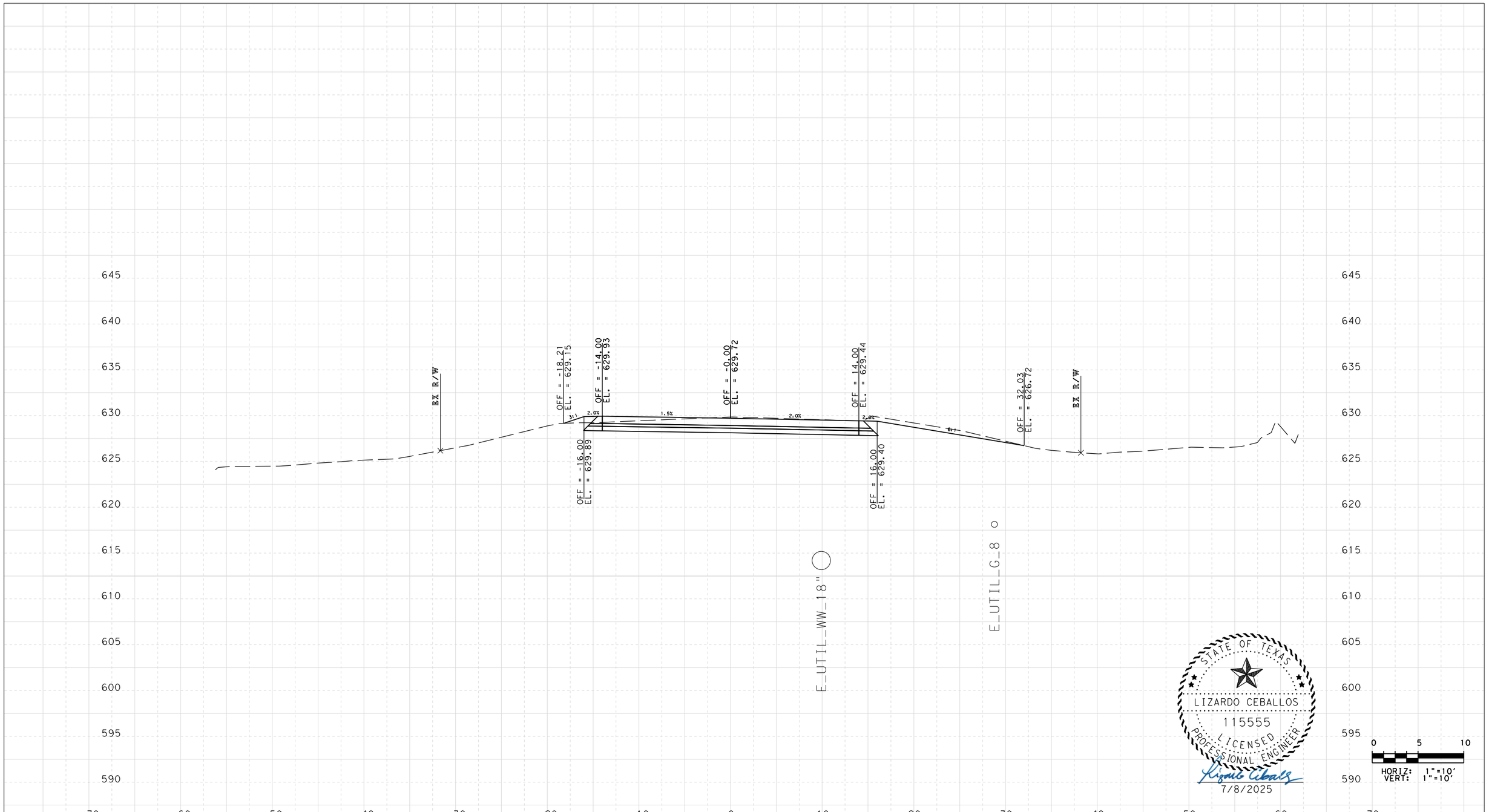
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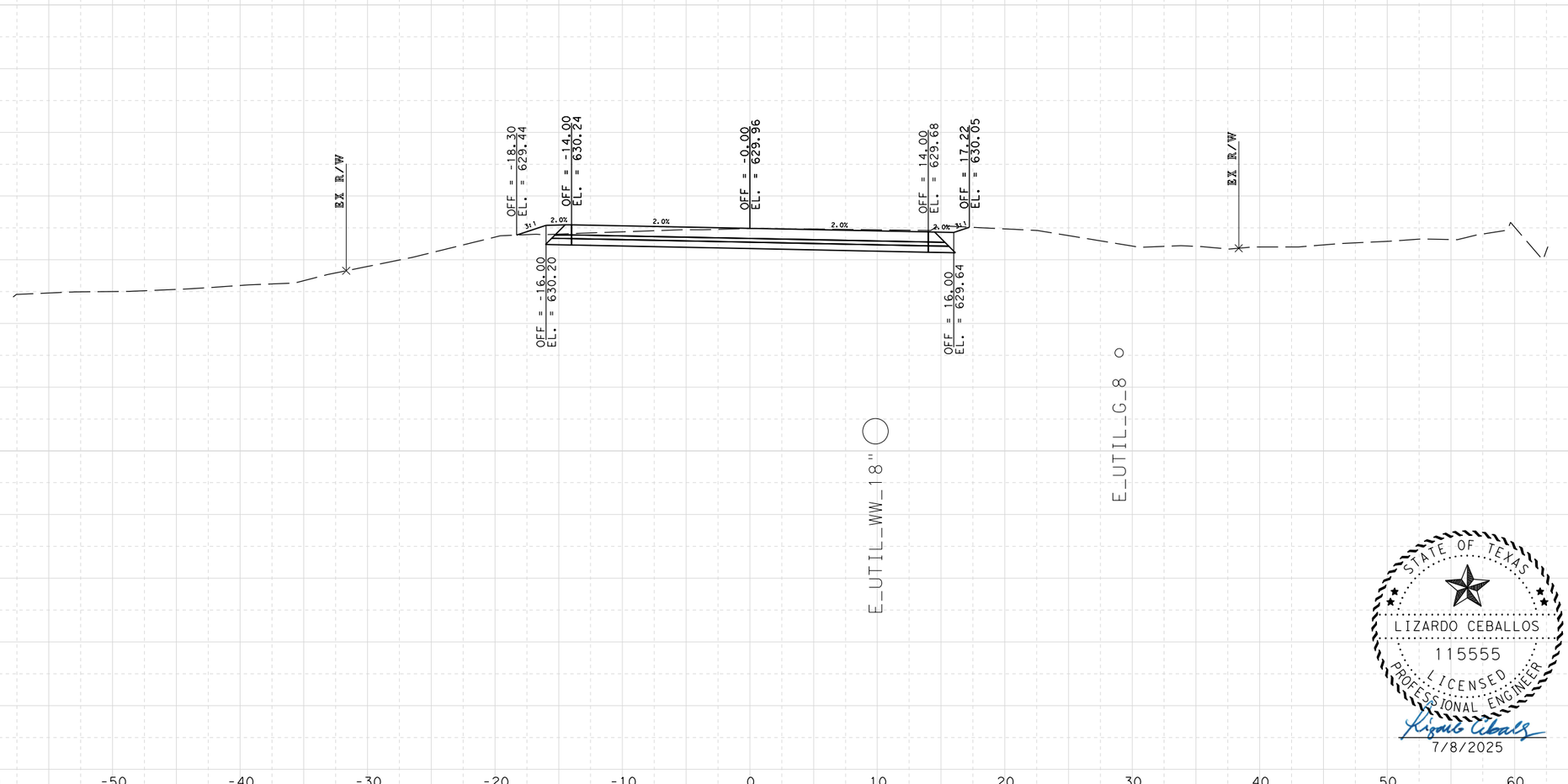
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COVEL RD IMPROVEMENTS

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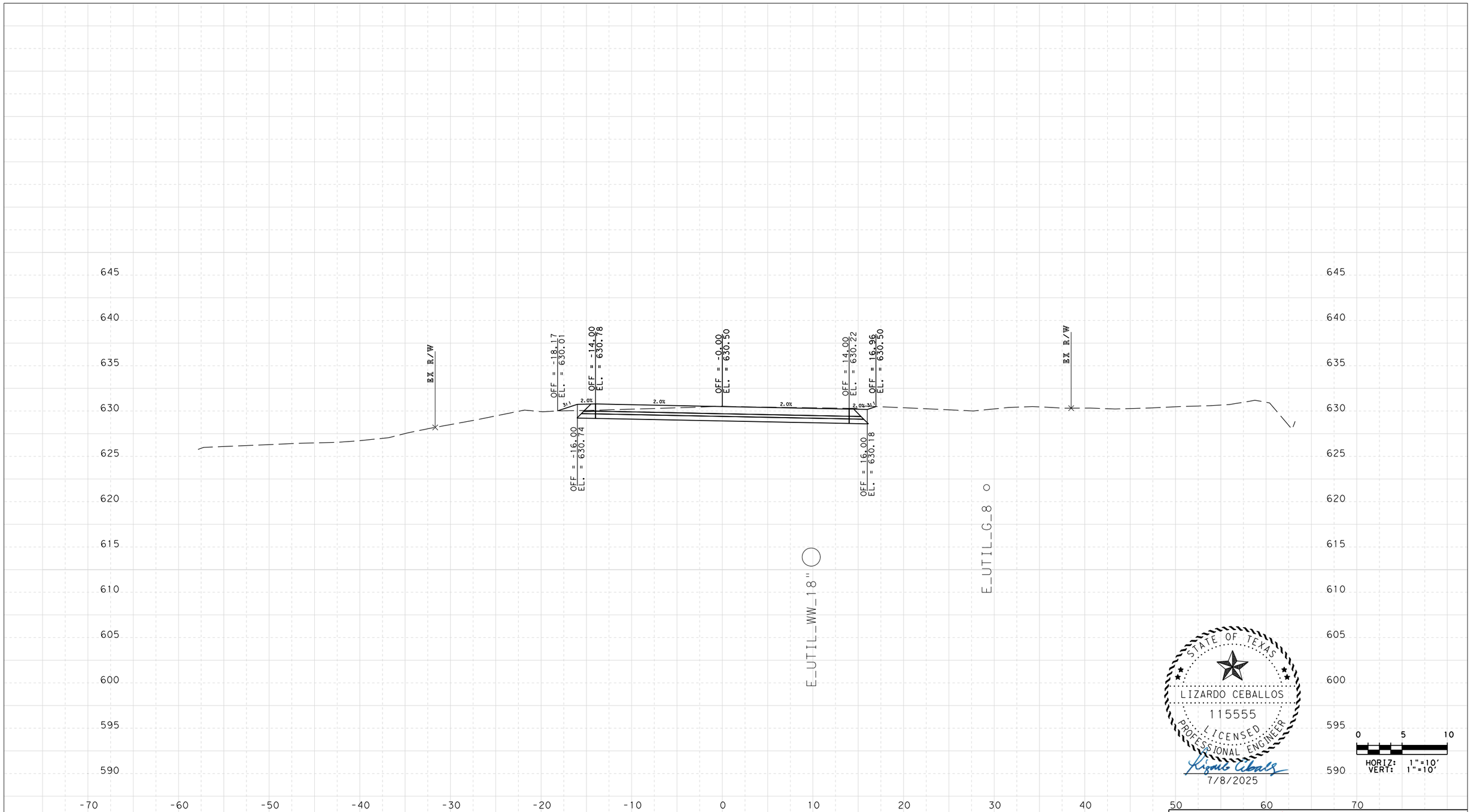
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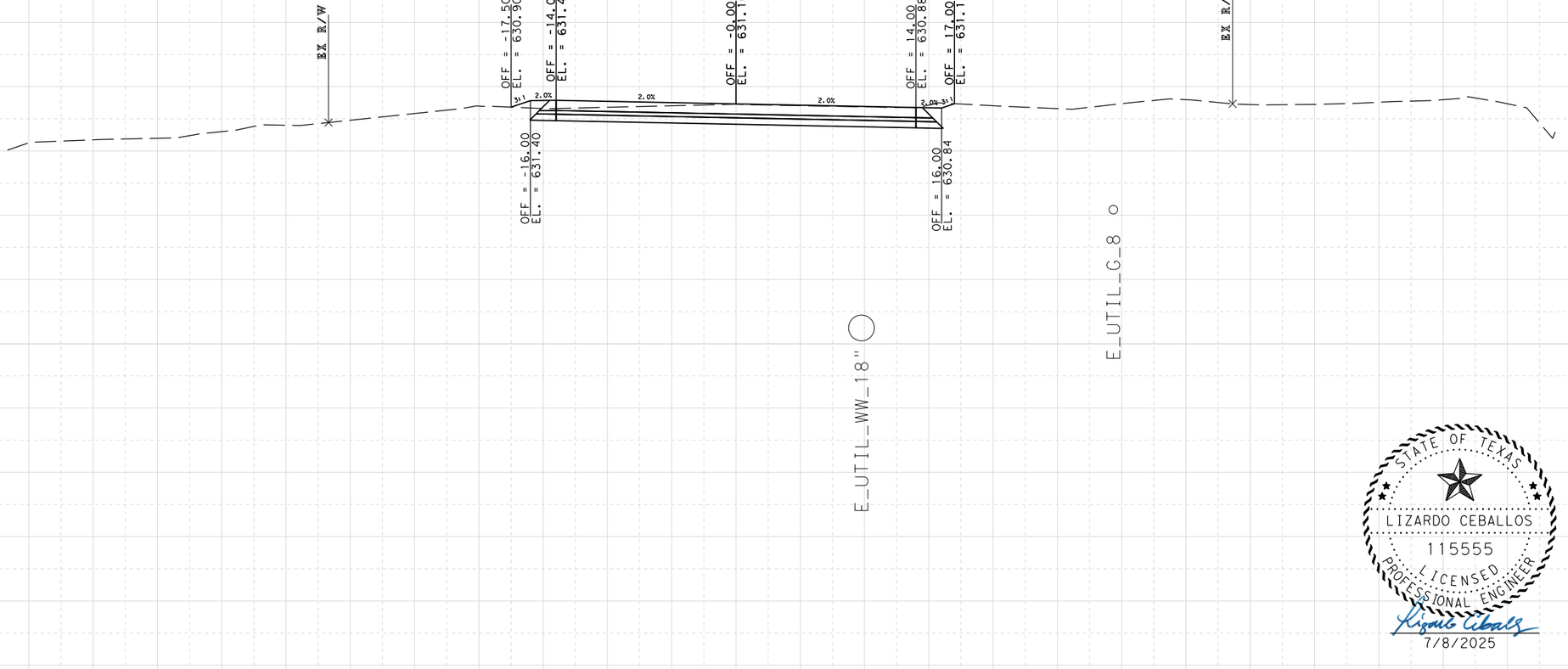
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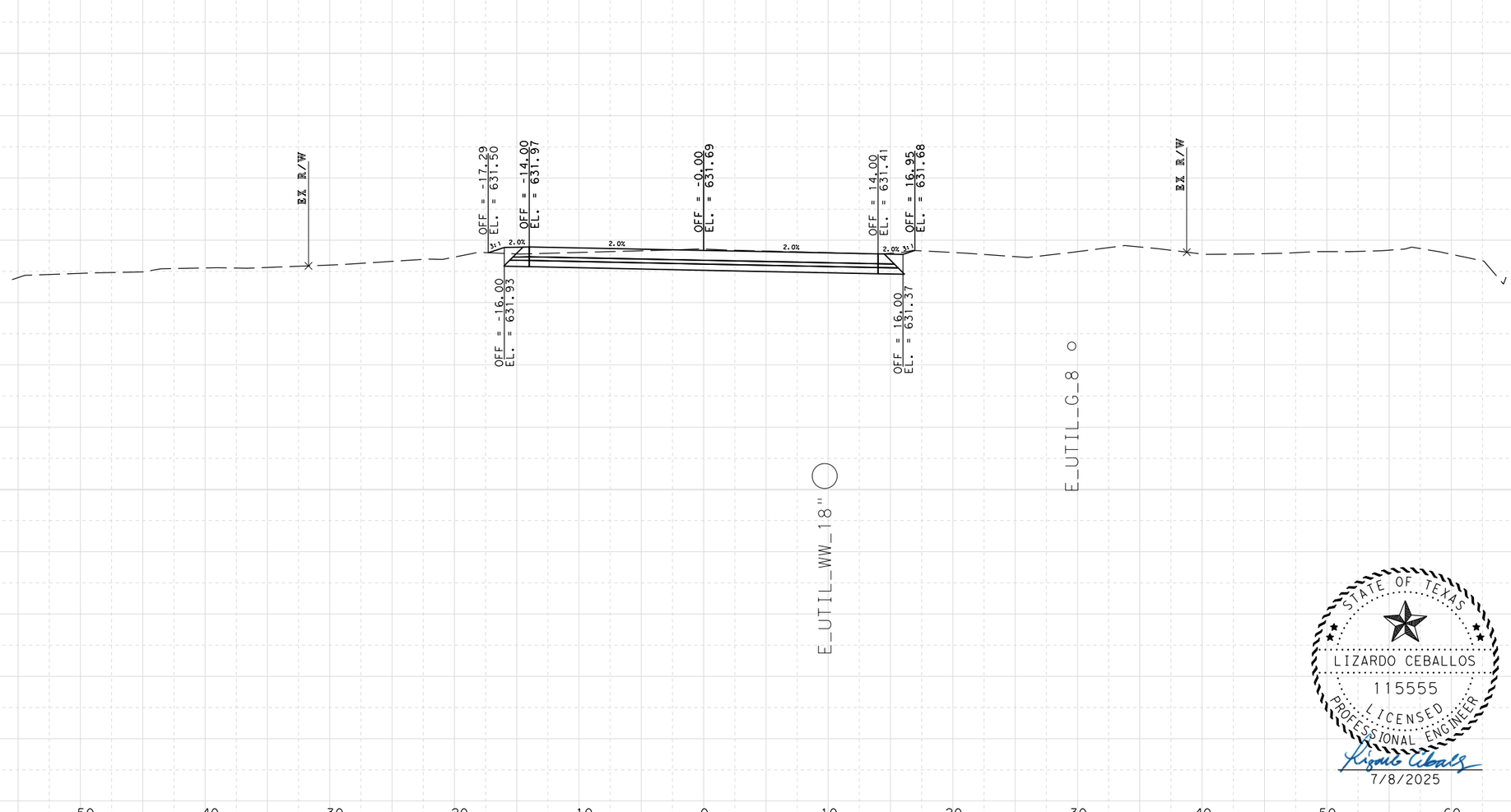
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T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

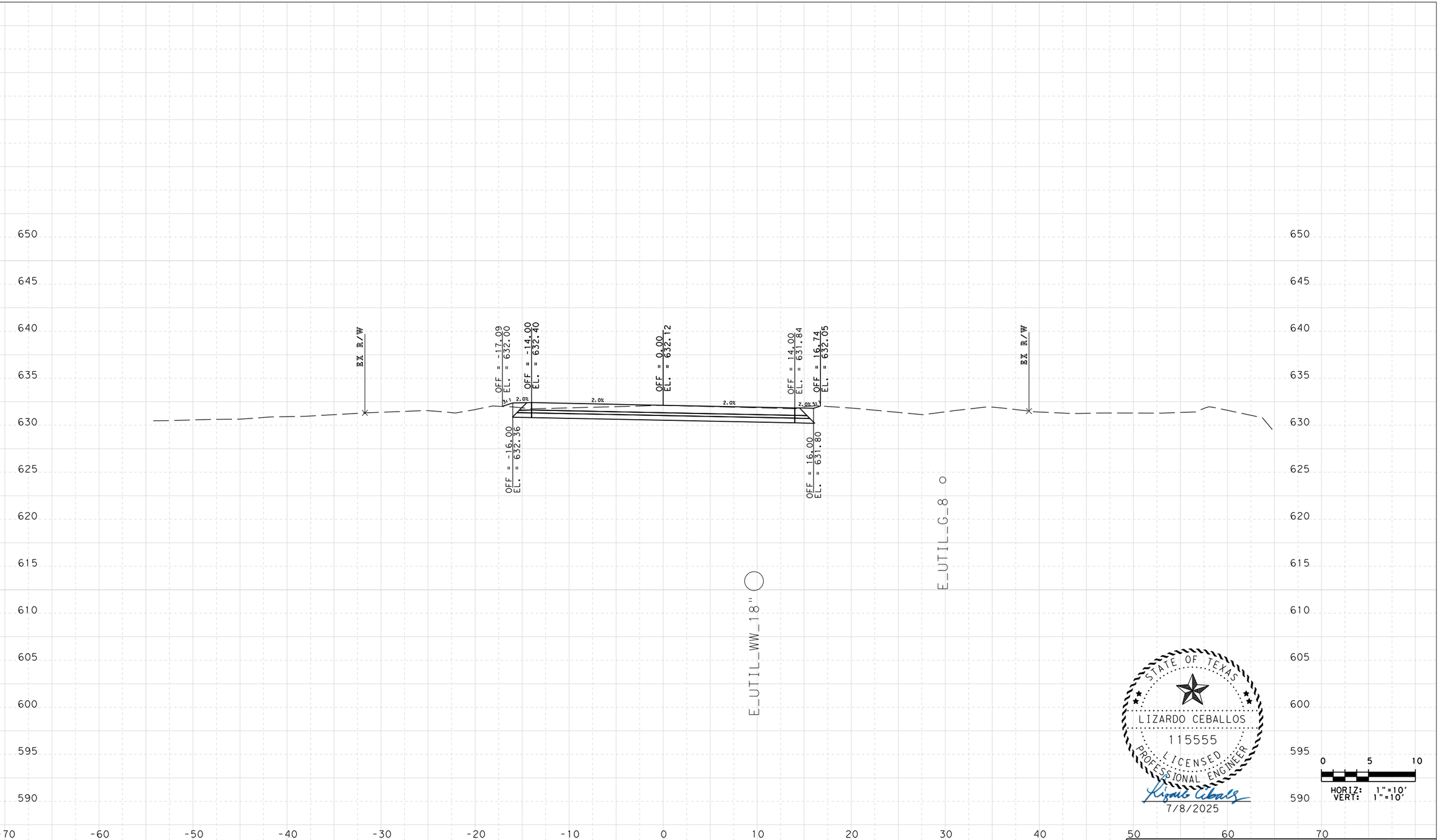
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: DS	SHT NO.: 316

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7/8/2025
jrobles
c:\projectwise\dannenbaum\workdir\jose.robles\d0168579\XS_PROP_COVEL_RD.dgn



STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

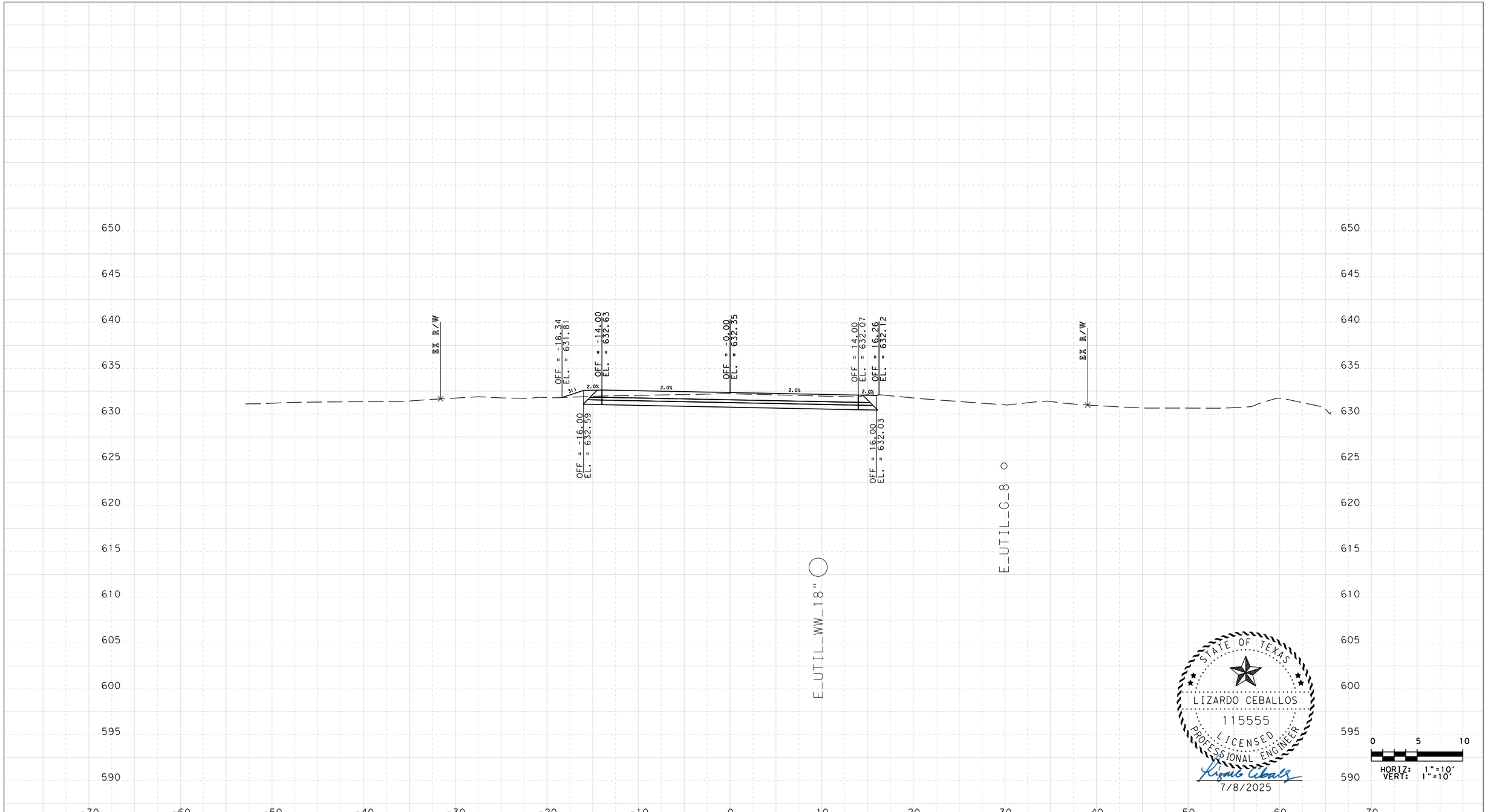
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
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7/8/2025
jrobles
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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

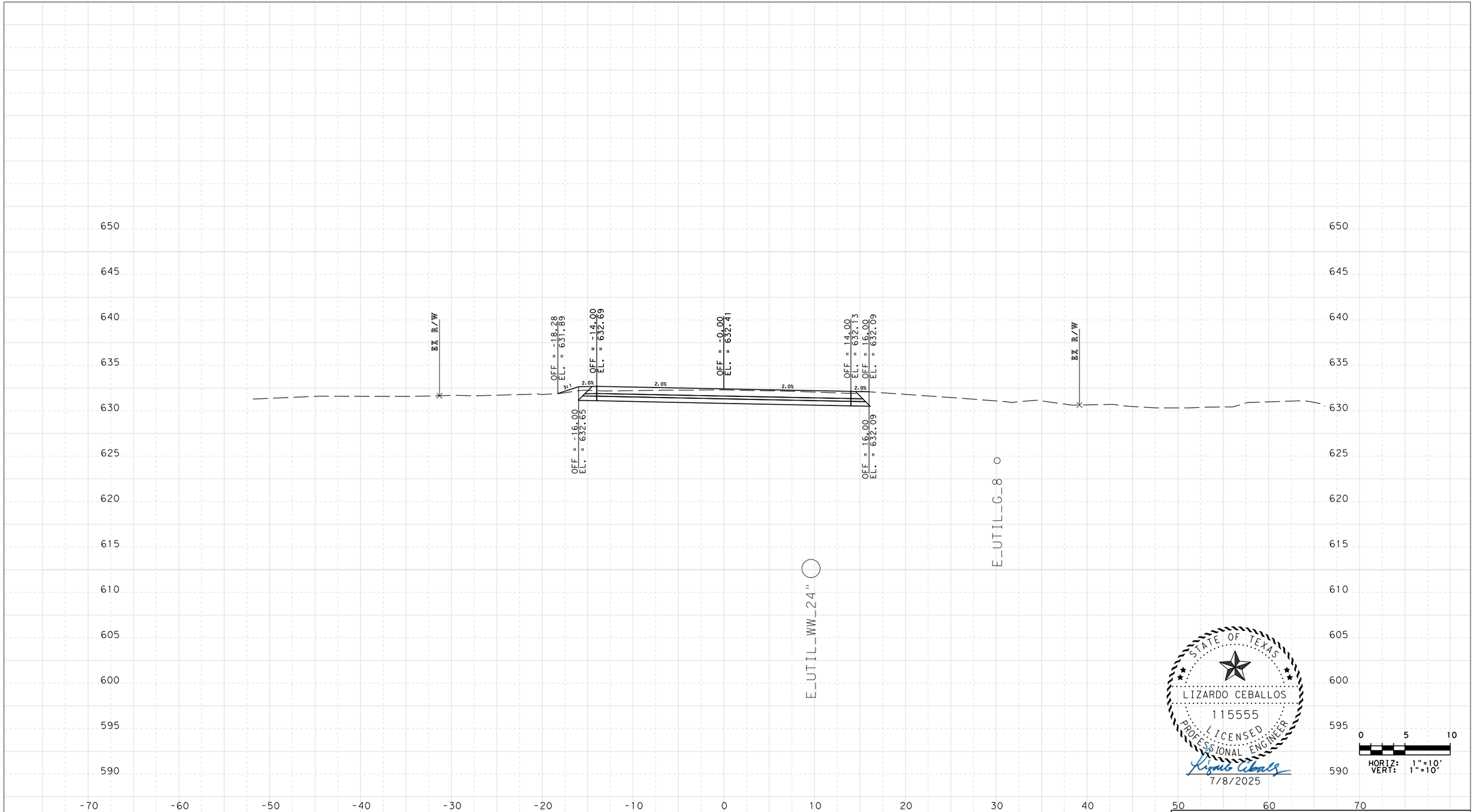
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: DS	SHT NO.: 318

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7/8/2025
jrobles
c:\projectwise\dannenbaum\workdir\jose.robles\d0168579\XS_PROP_COVEL_RD.dgn



STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

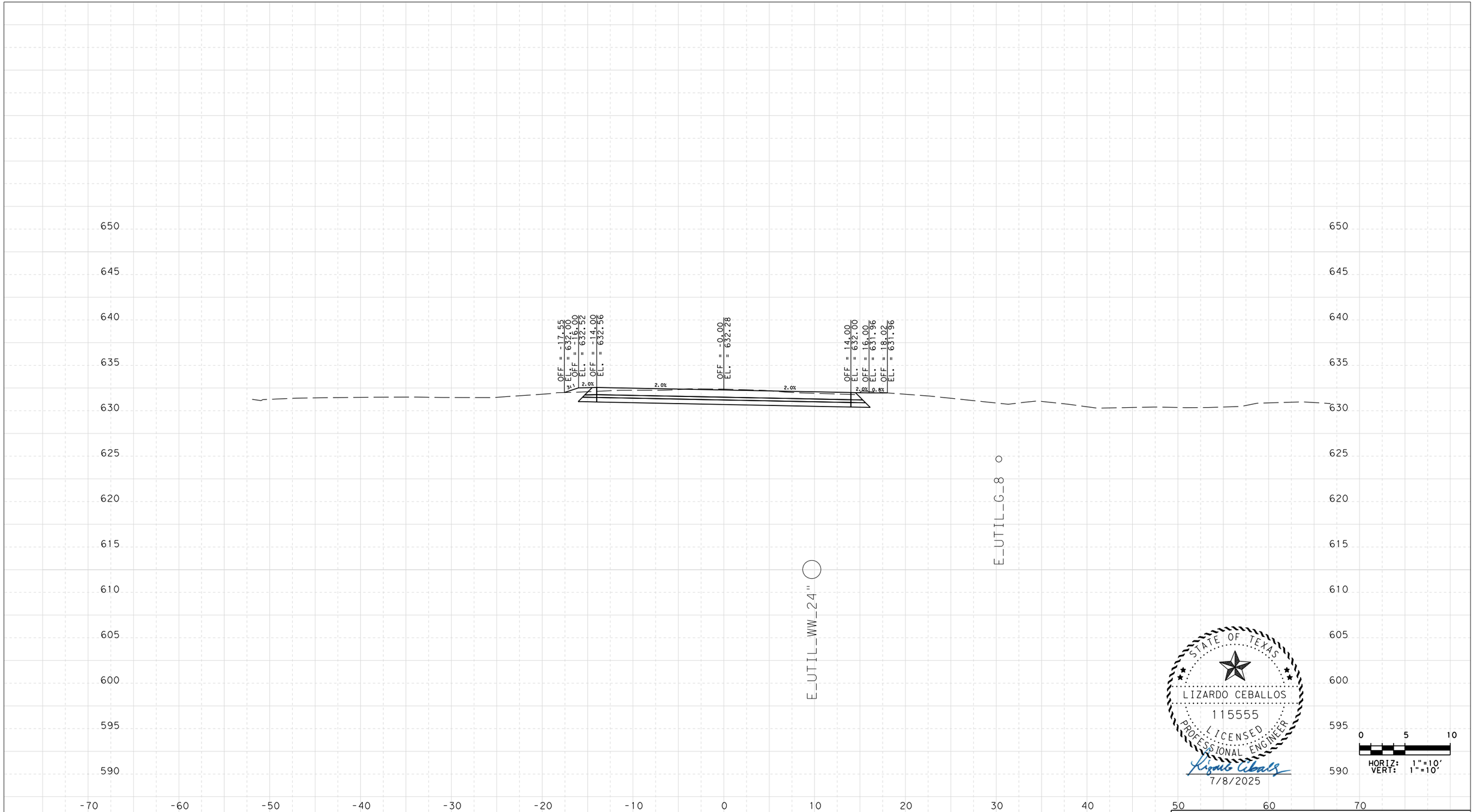
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: DS	SHT NO.: 319

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7/8/2025
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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

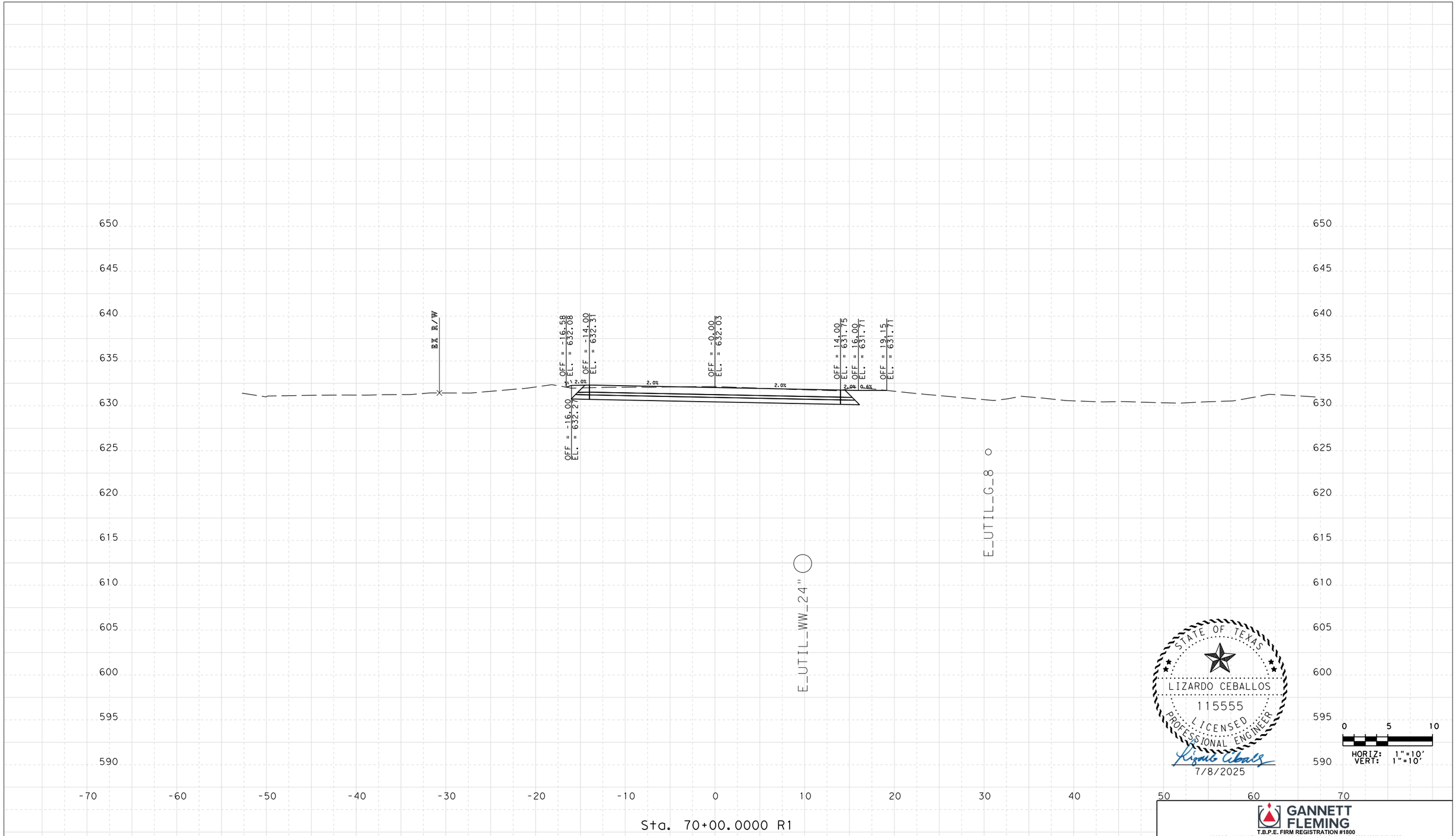
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

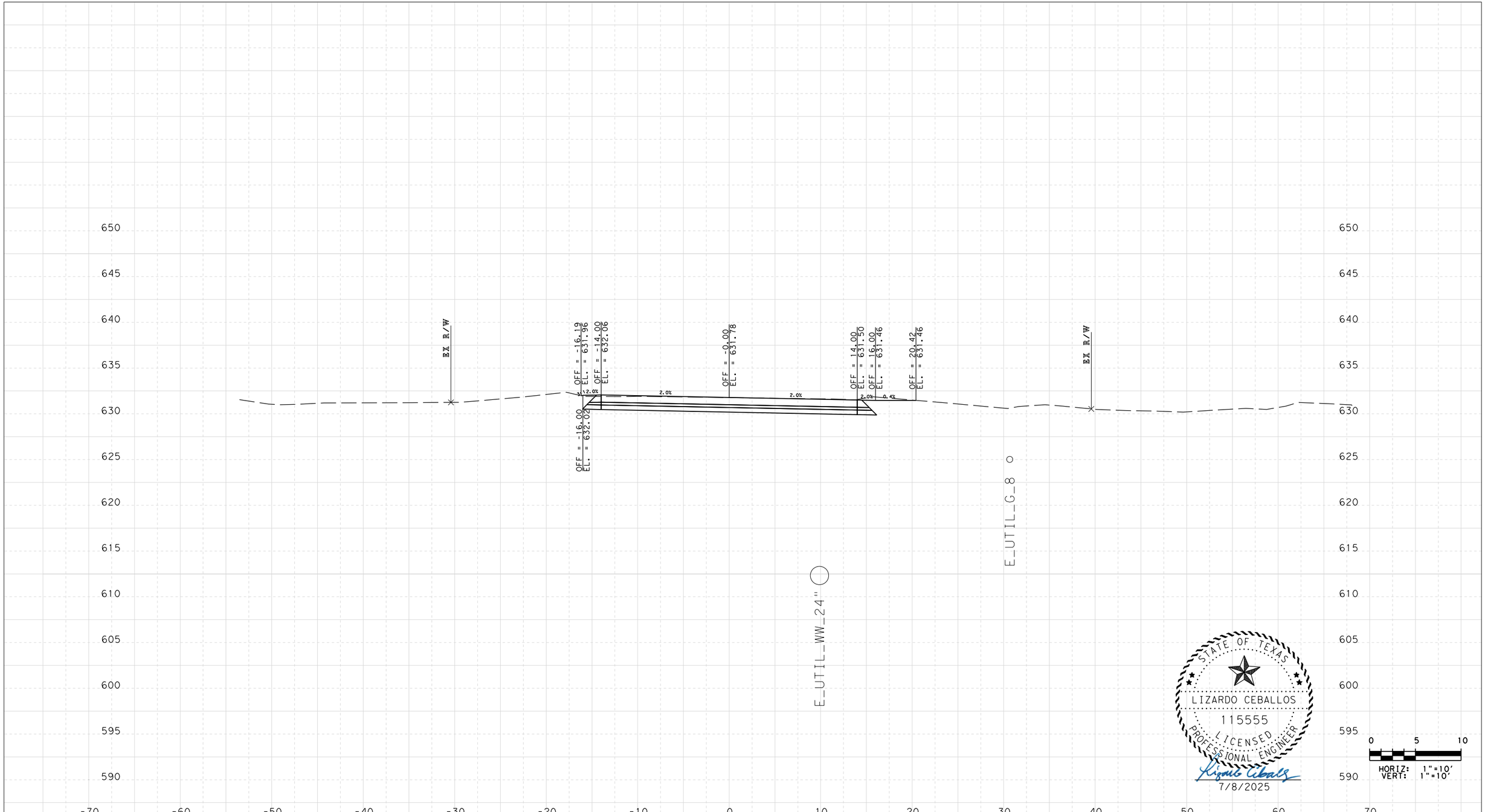
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

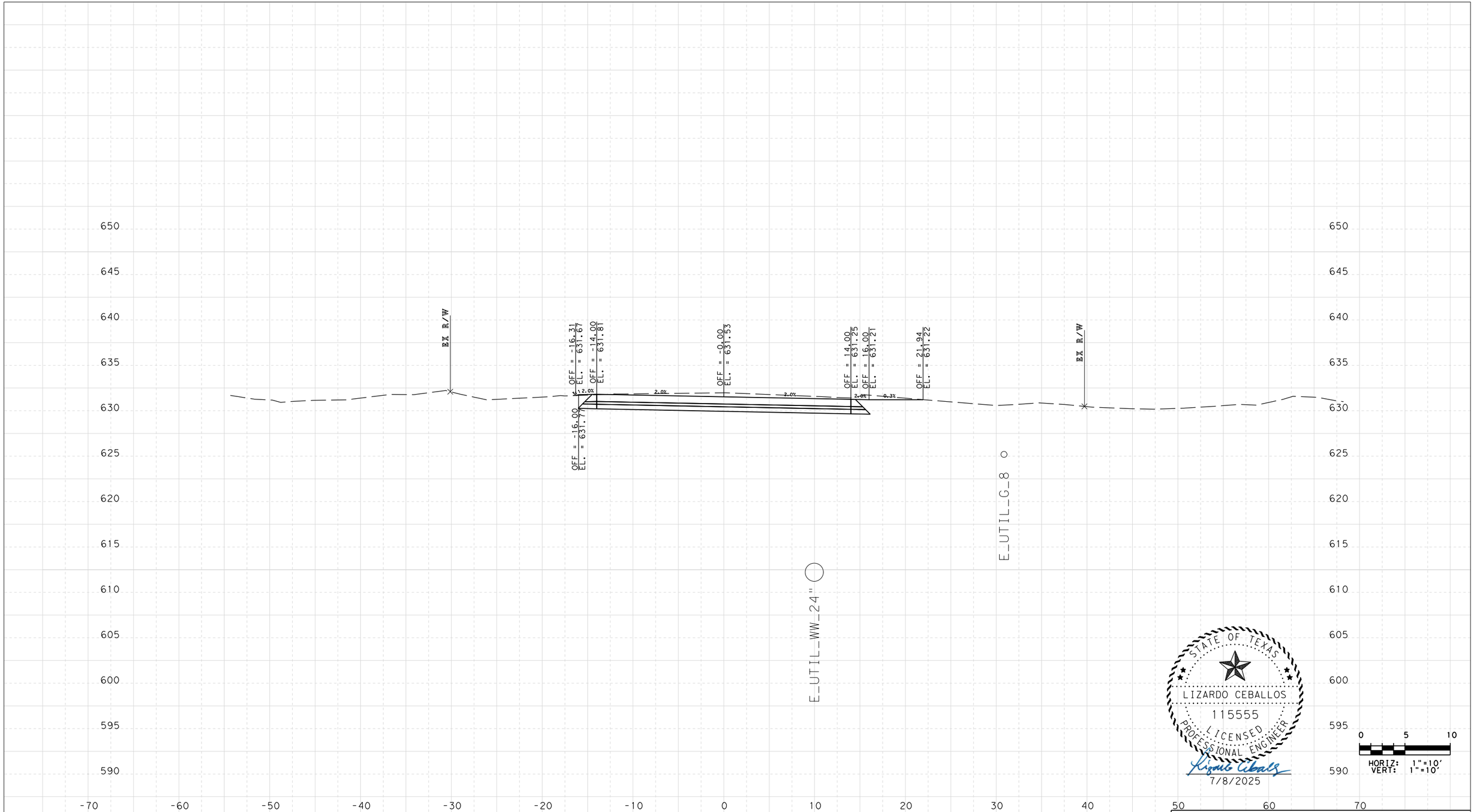
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: DS	SHT NO.: 322

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7/8/2025
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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

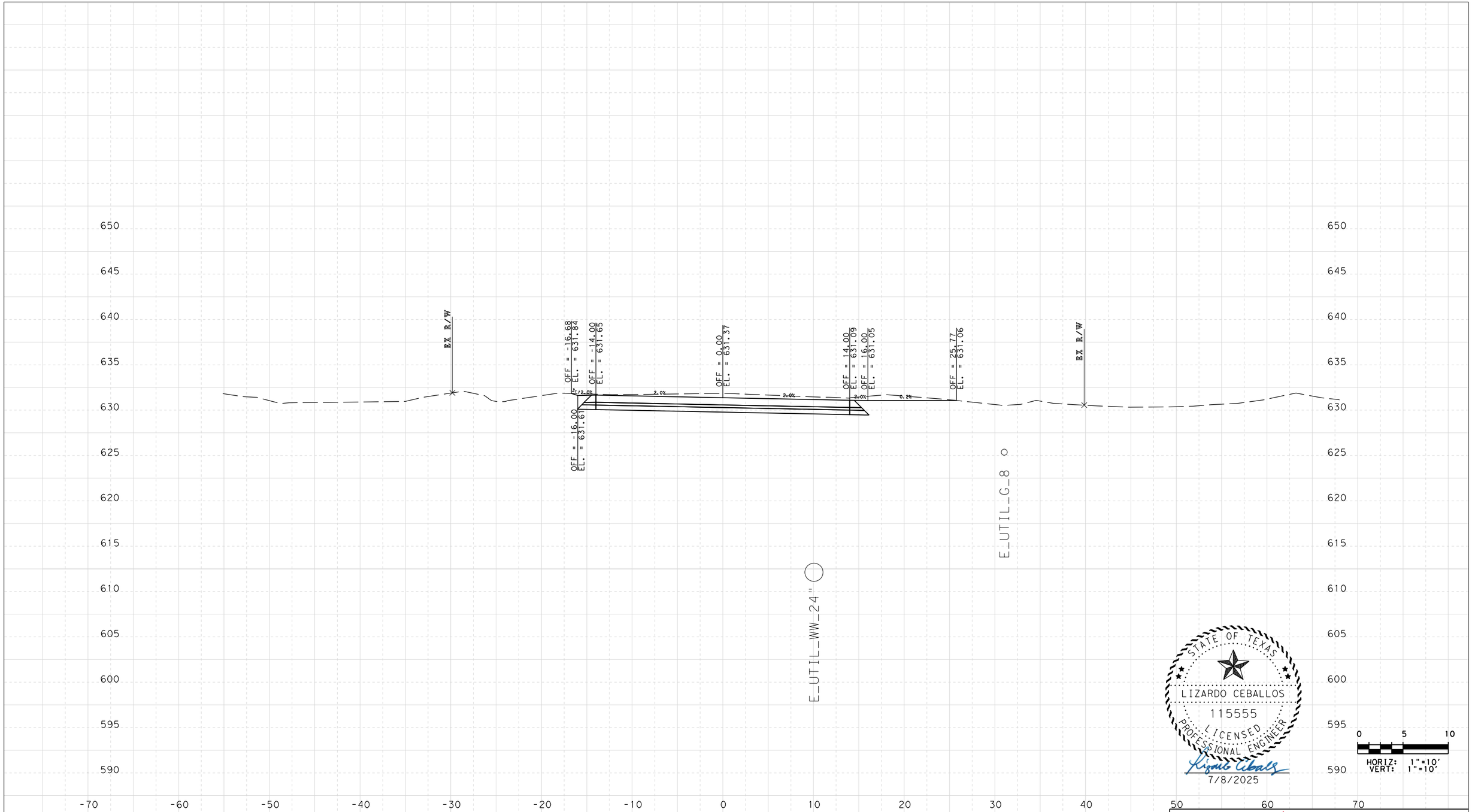
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

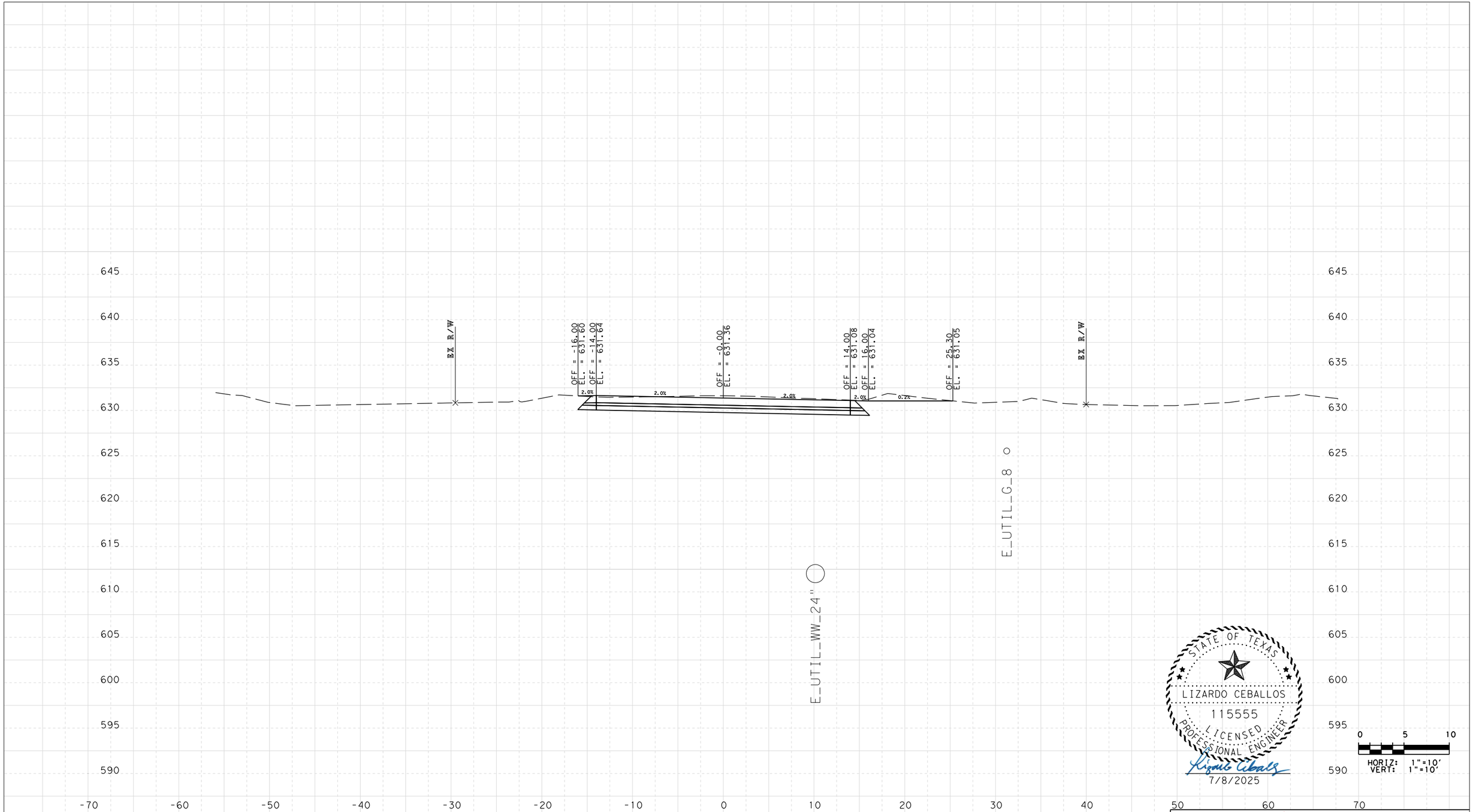
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

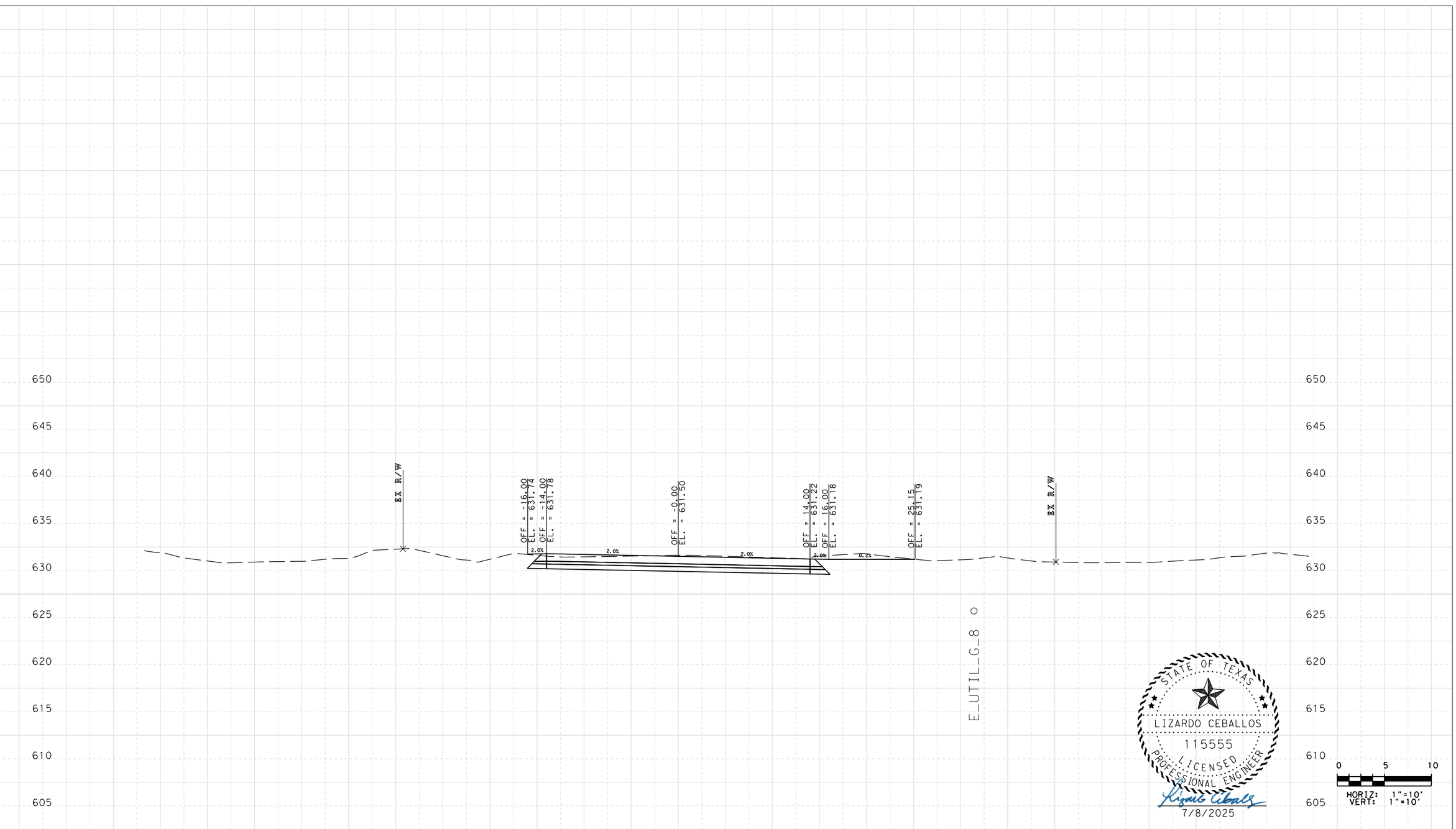
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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7/8/2025
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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

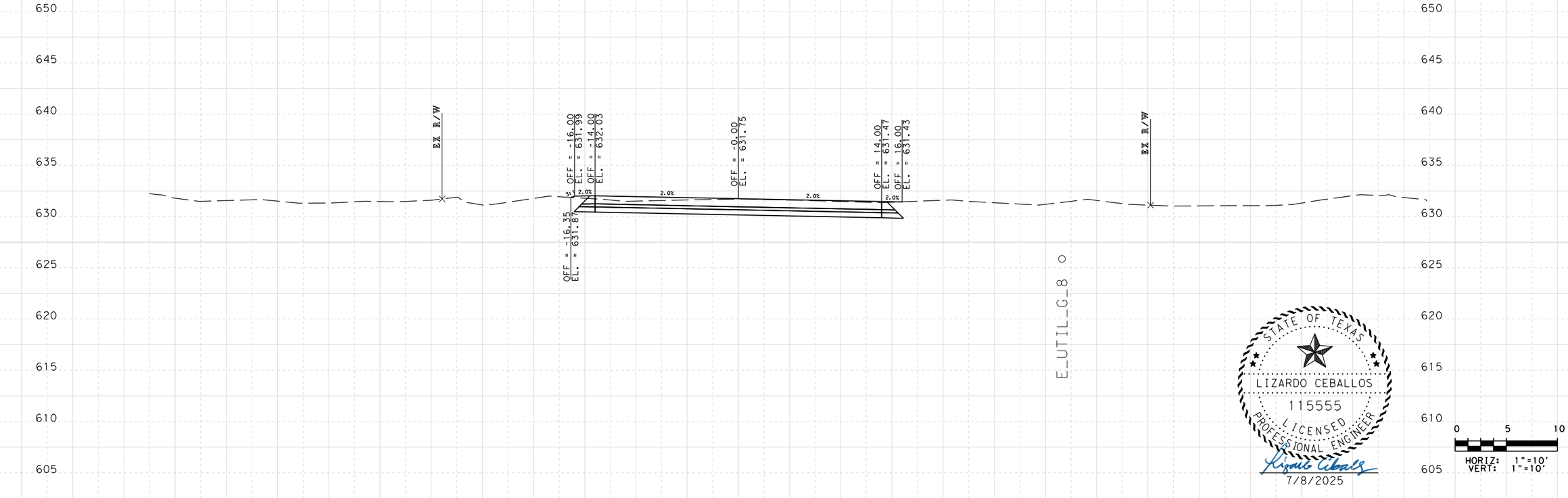
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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Sta. 73+00.0000 R1

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

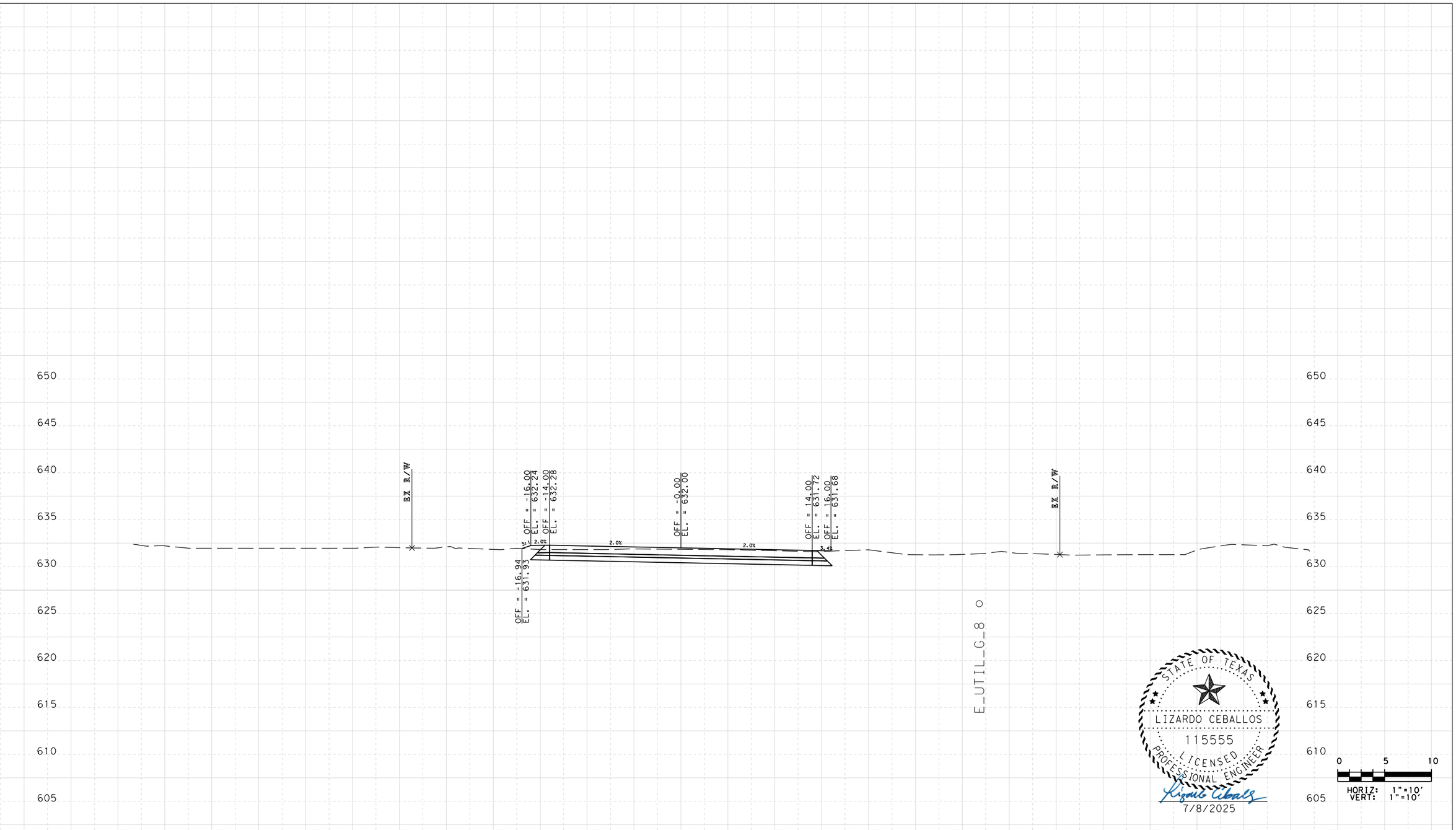
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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Sta. 73+50.0000 R1

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

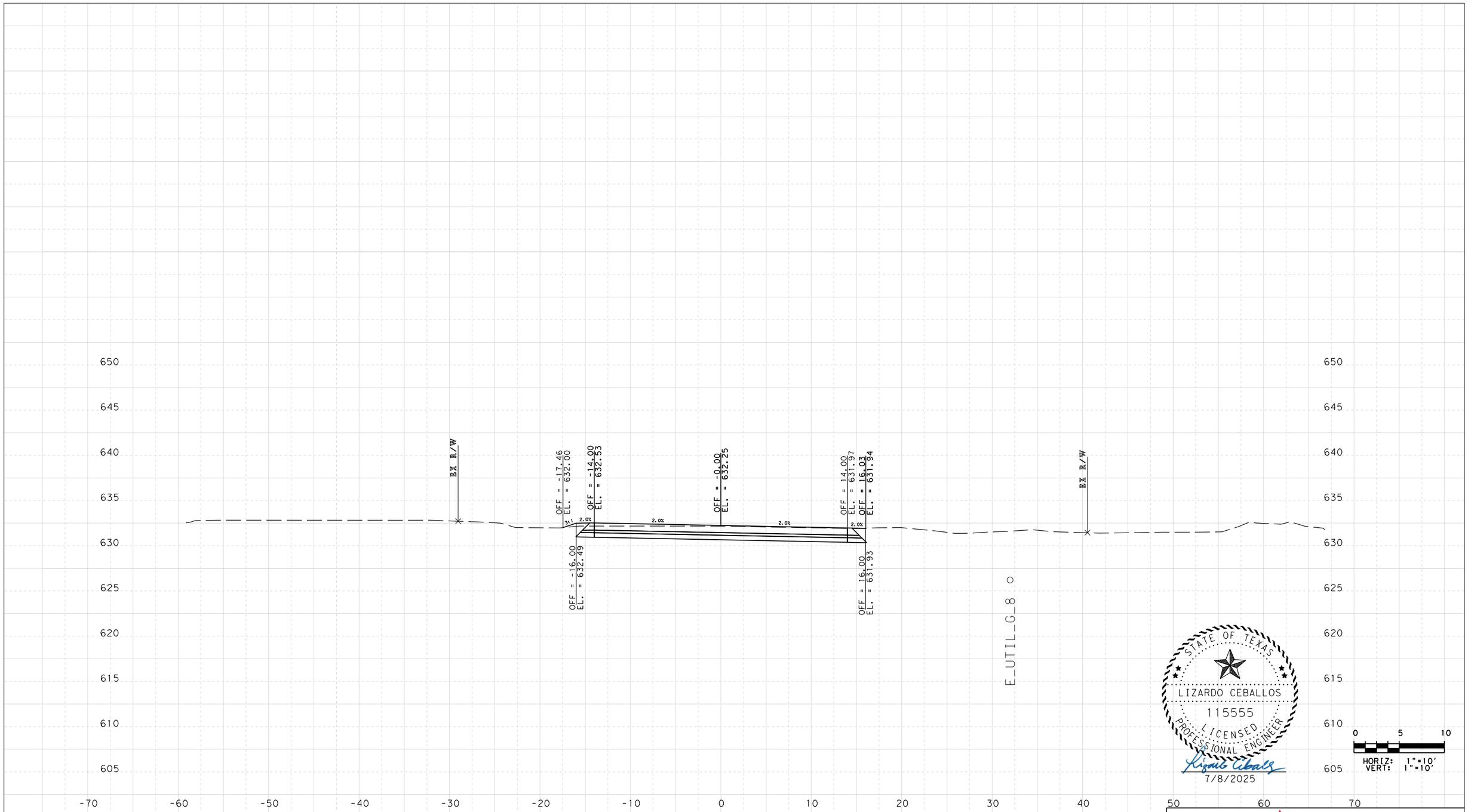
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
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9:59:25 AM
7/8/2025
jrobles
c:\projectwise\dannenbaum\workdir\jose.robles\d0168579\XS_PROP_COVEL_RD.dgn



Sta. 74+00.0000 R1

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

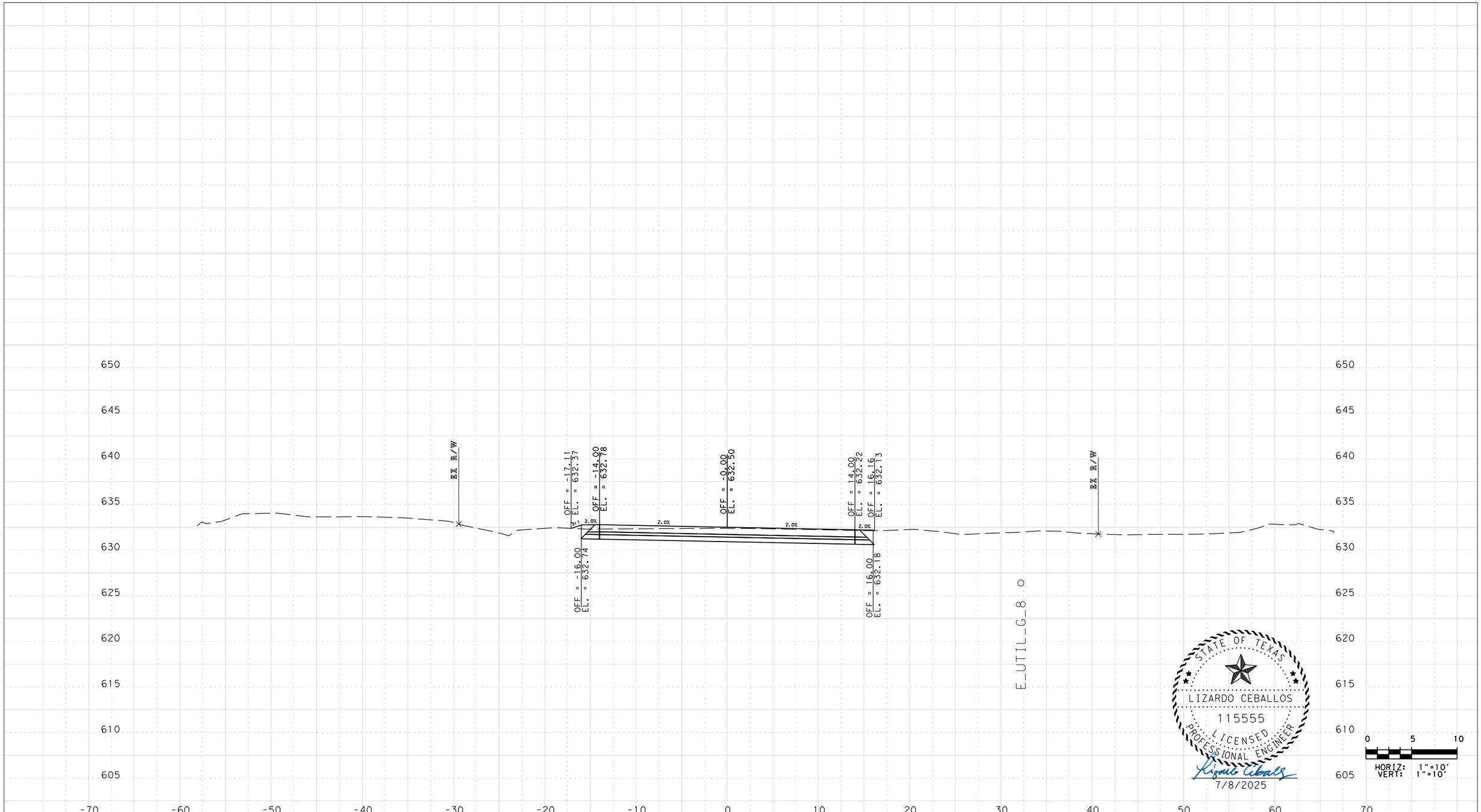
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: DS	SHT NO.: 329

9:59:25 AM
7/8/2025
jrobles
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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
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GANNETT FLEMING
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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

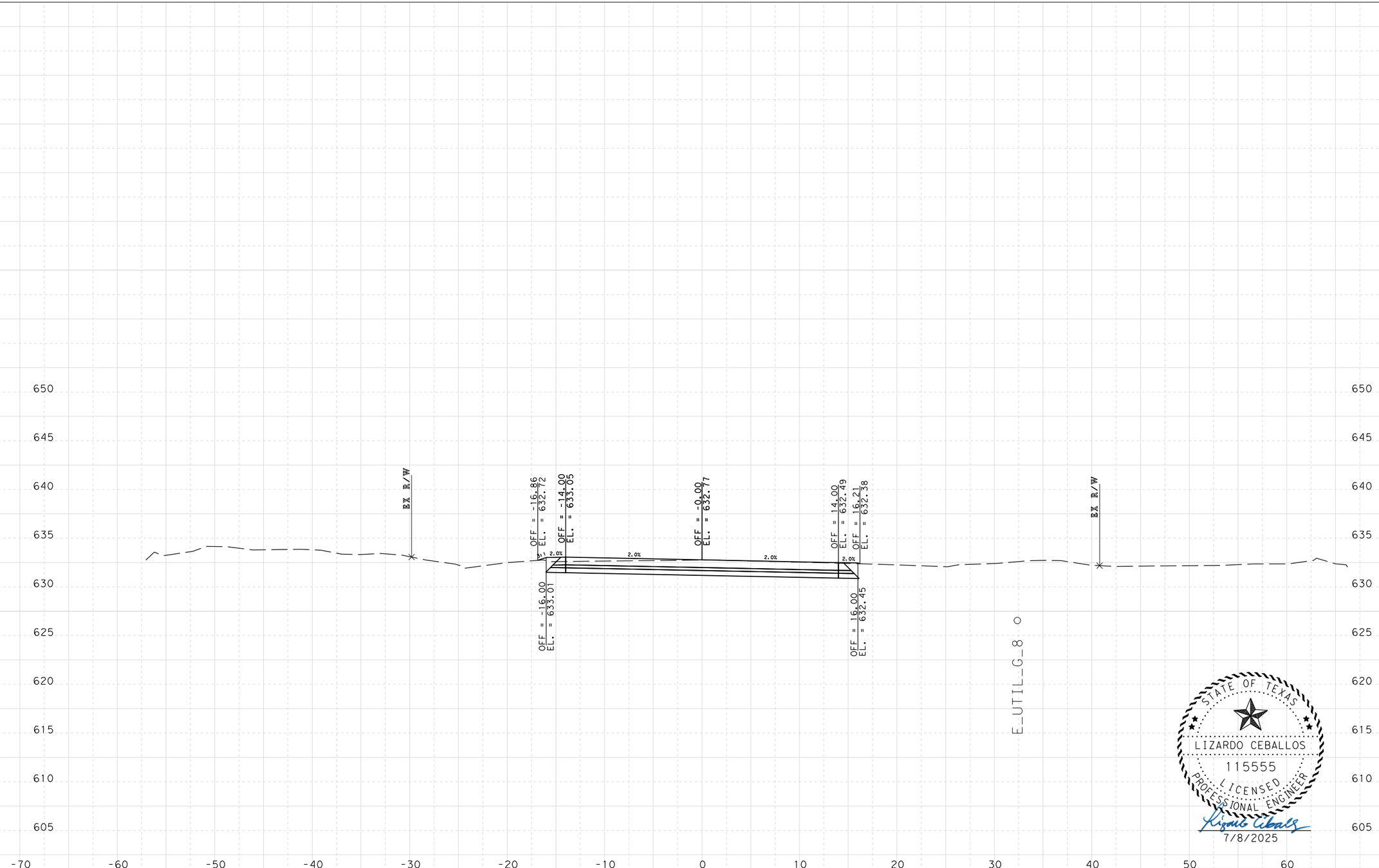
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: DS	SHT NO.: 330

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7/8/2025
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Sta. 75+00.0000 R1

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

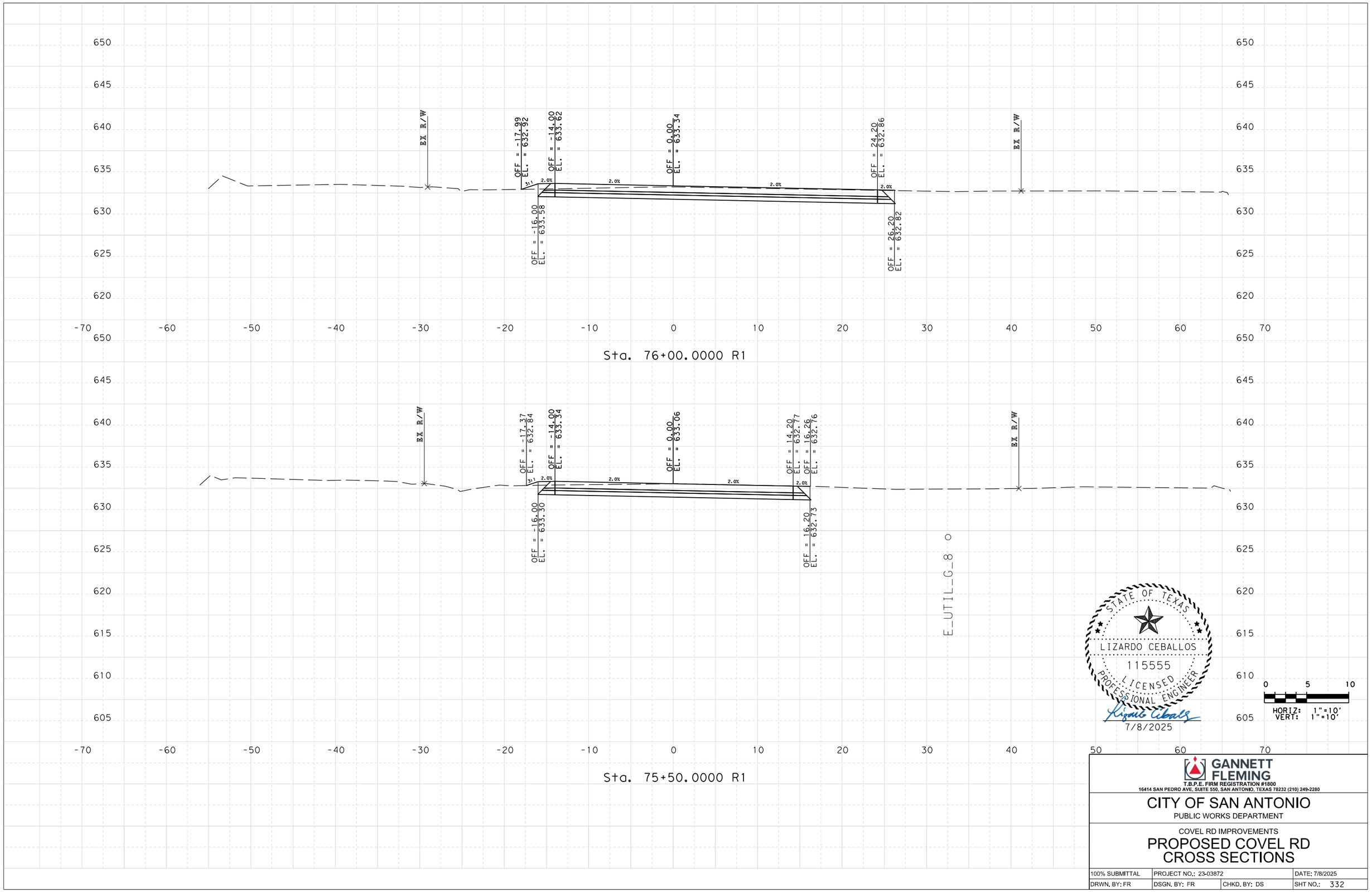
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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7/8/2025
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16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

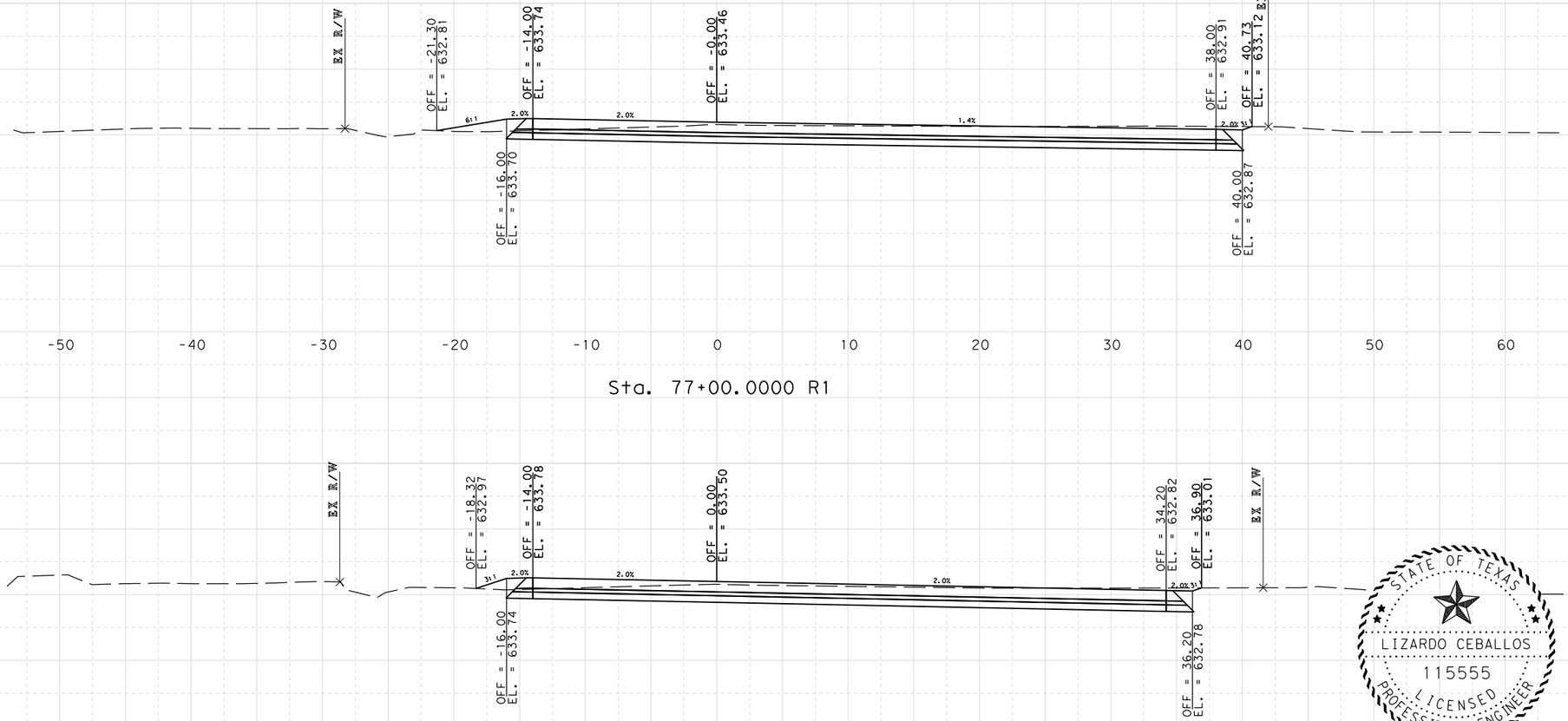
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

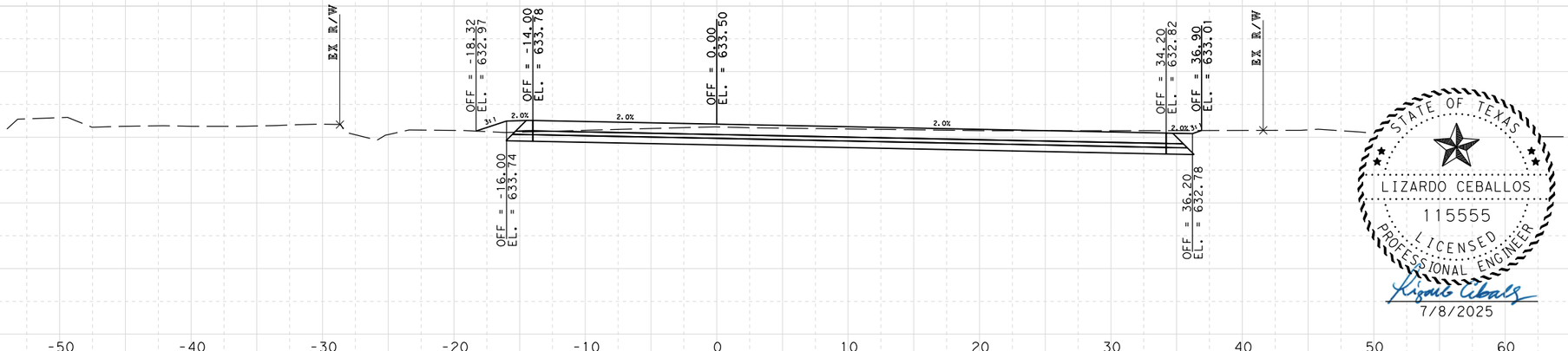
PROPOSED COVEL RD CROSS SECTIONS

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7/8/2025
jrobles
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Sta. 77+00.0000 R1



Sta. 76+50.0000 R1

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

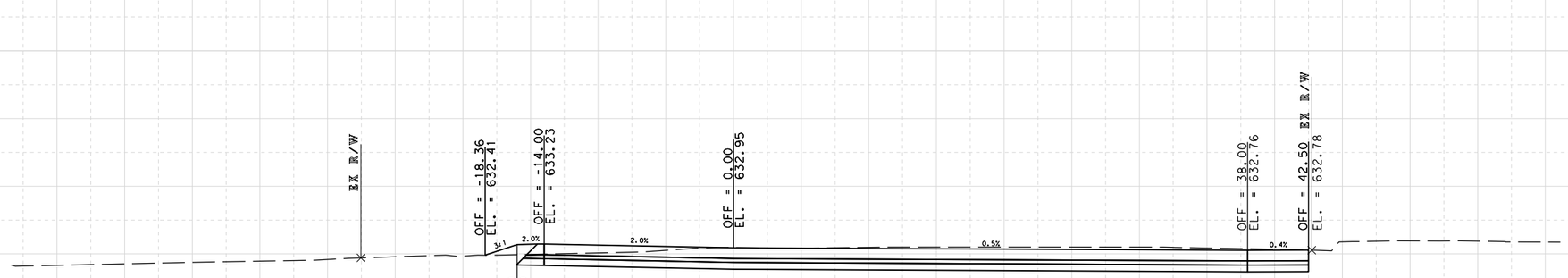
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

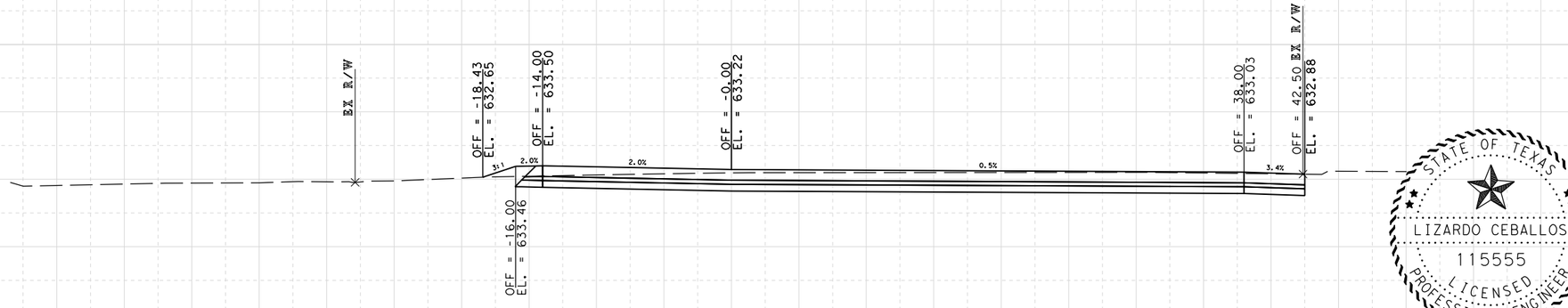
PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
DRWN. BY: FR	DSGN. BY: FR	CHKD. BY: DS	SHT NO.: 333

9:59:28 AM
7/8/2025
jrobles
c:\projectwise\dannenbaum\workdir\jose.robles\d0168579\XS_PROP_COVEL_RD.dgn



Sta. 78+00.0000 R1



Sta. 77+50.0000 R1

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

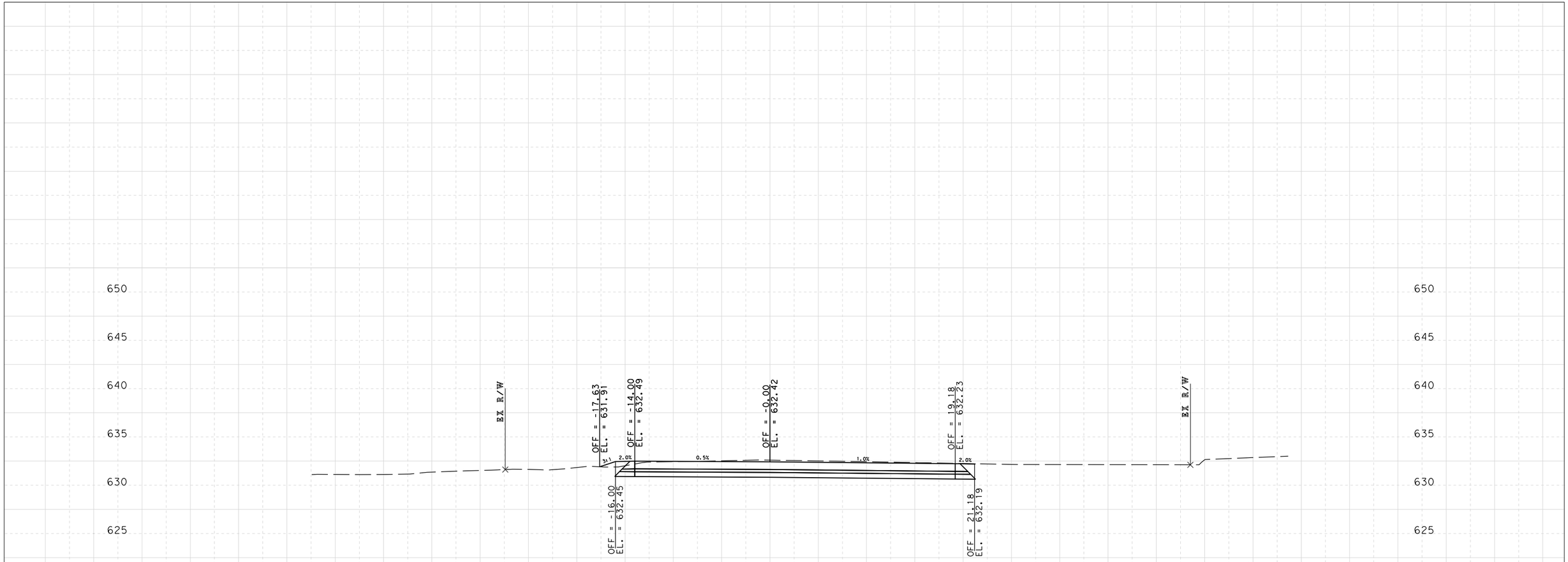
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

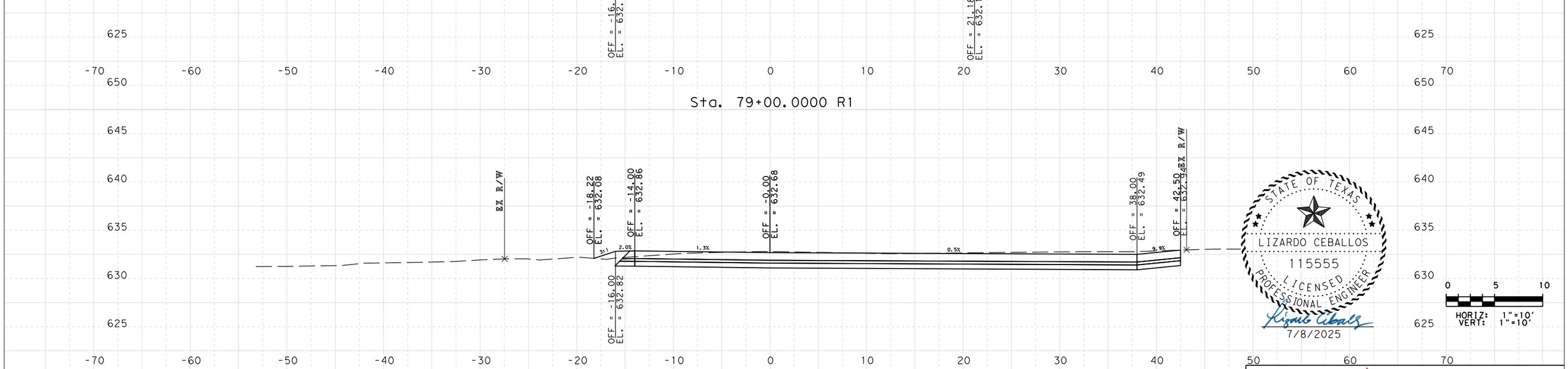
PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
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Sta. 78+50.0000 R1

LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

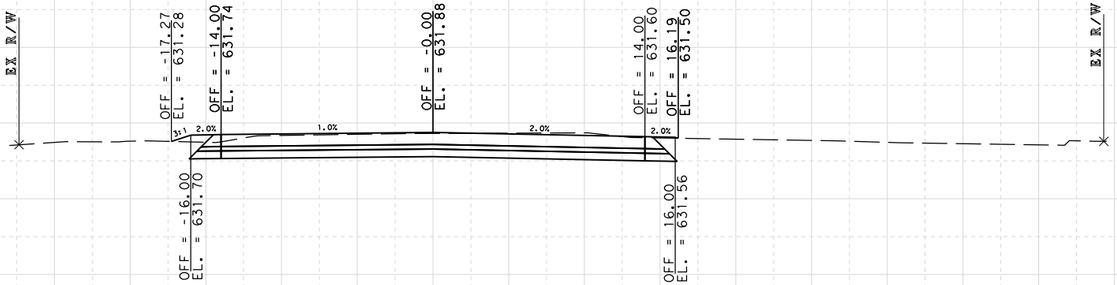
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

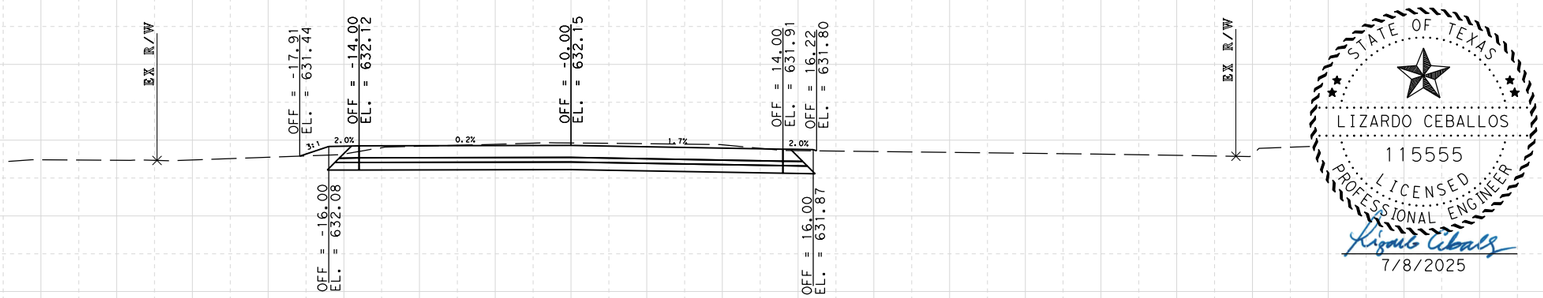
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Sta. 80+00.0000 R1



Sta. 79+50.0000 R1

LIZARDO CEBALLOS
115555
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

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T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE. SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280

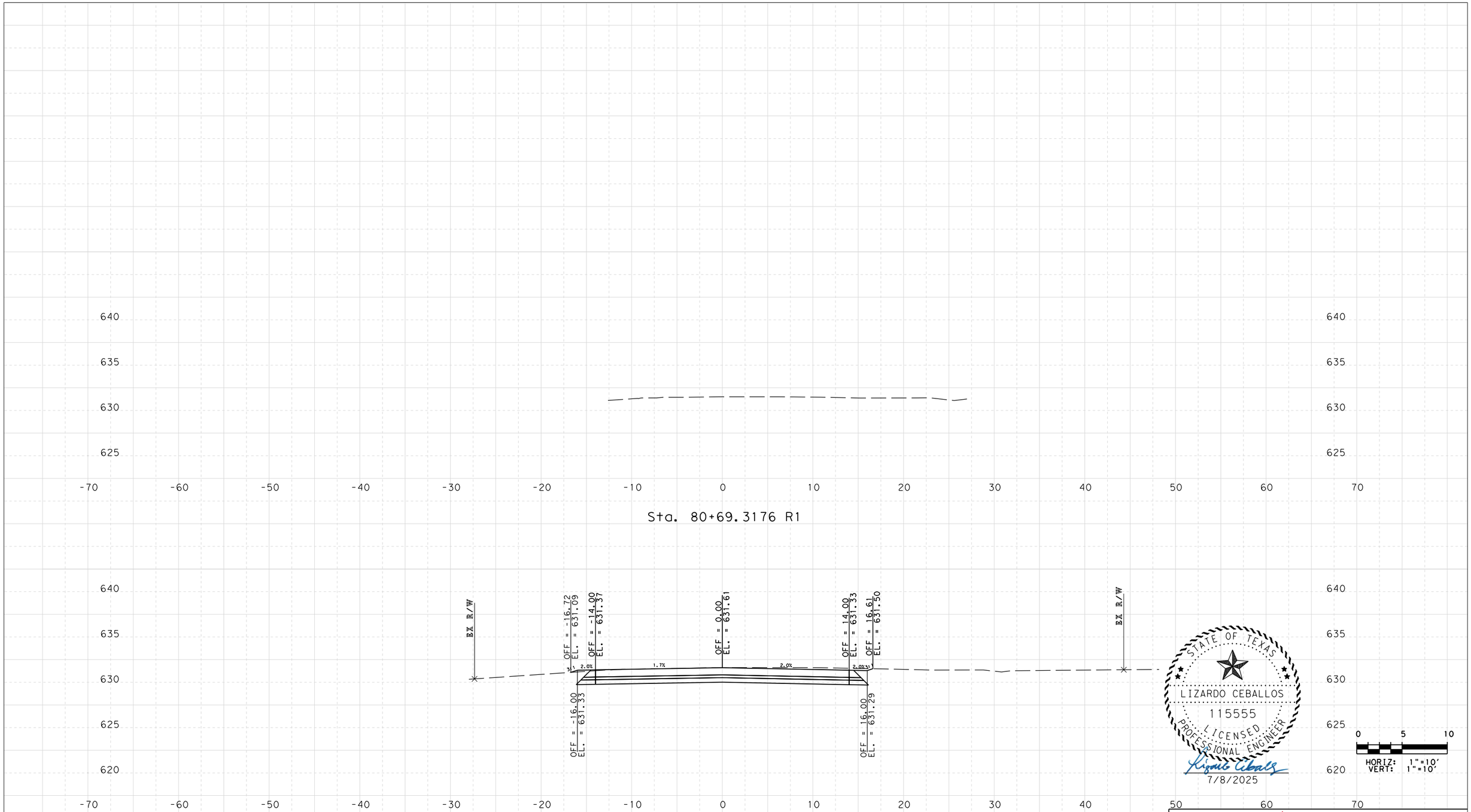
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

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STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER
7/8/2025

0 5 10
HORIZ: 1"=10'
VERT: 1"=10'

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
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CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

COVEL RD IMPROVEMENTS

PROPOSED COVEL RD CROSS SECTIONS

100% SUBMITTAL	PROJECT NO.: 23-03872		DATE: 7/8/2025
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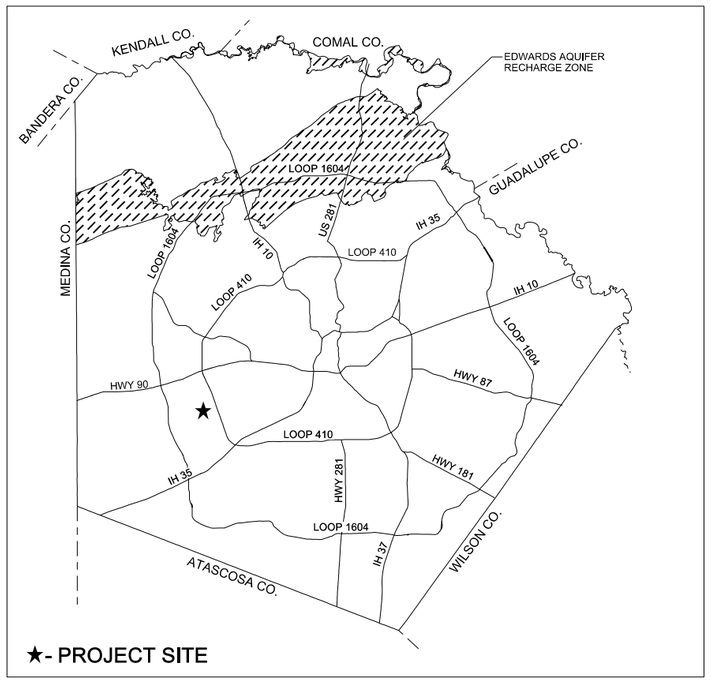
SAN ANTONIO WATER SYSTEM

JOB NO: 23-5517

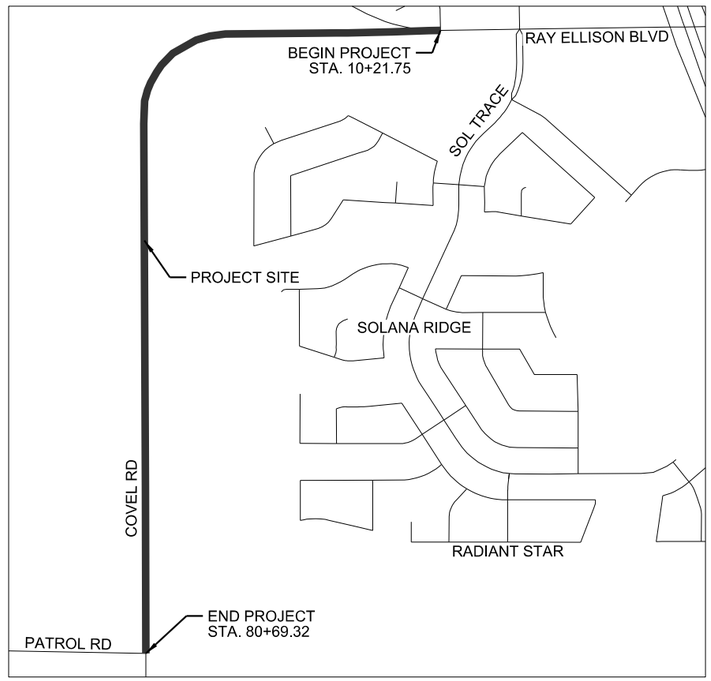
COVEL RD (RAY ELLISON BLVD. TO PATROL RD.) SEWER IMPROVEMENTS

MAESTAS
8122 DATAPOINT DR., STE. 840 SAN ANTONIO, TX 78229
(210) 366-1988 TBPE No.: F-333 TBPLS No.: 10194506

GANNETT FLEMING
T.B.P.E. FIRM REGISTRATION #1800
16414 SAN PEDRO AVE, SUITE 550, SAN ANTONIO, TEXAS 78232 (210) 249-2280



CITY LOCATION MAP
N. T. S



VICINITY MAP
N. T. S

STATE OF TEXAS
ELVIS TREVIÑO
126752
LICENSED
PROFESSIONAL ENGINEER
3/31/2025

100% SUBMITTAL

MARCH 2025

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INDEX OF SHEETS

TABLE OF CONTENTS

SHEET No.	DESCRIPTION
1	COVER SHEET
2	INDEX OF SHEETS & SUMMARY OF QUANTITIES
3	SANITARY SEWER GENERAL NOTES
4	PROJECT LAYOUT
5 - 9	SANITARY SEWER ADJUSTMENTS

SUMMARY OF QUANTITIES

Item No	Description	Unit	Sheet No.				Total
			5	6	7	8	
100	Mobilization (Max 10%)	LS					**1**
101	Preparation of Right-of-Way (Max 5%)	LS					**1**
851	Adjust Existing Manholes	EA	1	3	2	3	**9**
855	Reconstruction of Existing Manhole	EA					**1**
1103	Point Repairs and Obstruction Removals	EA					**2**

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(210) 366-1988 TBPE No.: F-333 TBPLS No.: 10194506

No.	Revision	Drawn	Approved	Date

REVISIONS

COVEL RD
(RAY ELLISON BLVD. TO PATROL RD.)
SEWER IMPROVEMENTS

INDEX OF SHEETS & SUMMARY OF QUANTITIES

DEVELOPER: SAN ANTONIO WATER SYSTEM

CONT. | BUDGET PROJ. #

SUBMITTED

APPROVED

MAP No. 112552, 112550, 112548

SECT. No.

DR. VV | CK. ET | JOB No. 23-5517

SHEET 2 OF 9

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SAWS STANDARD GENERAL CONSTRUCTION NOTES
ASSOCIATED WITH 2021 SAWS STANDARD SPECS

GENERAL CONSTRUCTION

1. All materials and construction procedures within the scope of this contract shall be approved by the San Antonio Water System (SAWS) and comply with the Plans, Specifications, General Conditions and with the following as applicable:

   A. Current Texas Commission on Environmental Quality (TCEQ) "Design Criteria for Domestic Wastewater System", Texas Administrative Code (TAC) Title 30 Part 1 Chapter 217 and "Public Drinking Water", TAC Title 30 Part 1 Chapter 290.
   B. Current TXDOT "Standard Specifications for Construction of Highways, Streets and Drainage."
   C. Current "San Antonio Water System Standard Specifications for Water and Sanitary Sewer Construction."
   D. Current City of San Antonio "Standard Specifications for Construction."
   E. Current City of San Antonio "Utility Excavation Criteria Manual" (UECM).

2. The Contractor shall obtain SAWS Standard Details from SAWS website, https://apps.saws.org/business_center/specs/constspecs/ unless otherwise noted within design plans.

3. The Contractor is to notify and make arrangements with the SAWS Construction Inspection Division at 210-233-3500 (during regular SAWS working hours), and provide notification procedures the Contractor will use to notify affected home residents and/or property owners two (2) weeks prior to excavation. Outside of regular SAWS working hours the SAWS EOC should be contacted at 210-704-7297.

4. If necessary, Contractor will coordinate use of SAWS premises at no additional cost to SAWS. Such efforts include, but are not limited to, obtaining security identification badges required for access to SAWS facilities.

5. Locations and depths of existing utilities and service laterals shown on the plans are understood to be approximate. Actual locations and depths must be field verified by the Contractor prior to construction. It shall be the Contractor's responsibility to locate utility service lines as required for construction and to protect them during construction at no cost to SAWS.

6. The Contractor shall verify the exact location of underground utilities and drainage structures prior to construction whether shown on plans or not. As-builts for SAWS infrastructure can be obtained at website below. Contractor shall coordinate physical locates for SAWS infrastructure through the SAWS Inspector. Please allow up to 7 business days for locates requesting pipe location markers on SAWS infrastructure. The following contact information are supplied for verification purposes:

San Antonio Water System:	
Request as-builts:	https://www.saws.org/service/locates-service/
COSA Drainage	210-206-8433
COSA Traffic Signal Operations	210-207-7720
Texas Statewide One Call Locator	1-800-545-6005 or 811

7. The Contractor shall be responsible for restoring existing fences, curbs, streets, driveways, sidewalks, landscaping and structures to its original or better condition as a result of damages done by the project's construction.

8. Contractor shall not make use of dumpsters or waste bins that are intended to serve residents and/or businesses.

9. All work in Texas Department of Transportation and Bexar County right-of-way shall be done in accordance with respective construction specifications and permit.

10. The Contractor shall comply with City of San Antonio or other governing Municipality's tree ordinances when excavating near trees.

11. All work within the 100-year Floodplain shall be done in accordance with Floodplain Development Permit.

12. Any work completed without prior written authorization which is not included in these plans and specifications will not be compensated by the San Antonio Water System.

13. Holiday Work: Contractors will not be allowed to perform SAWS work on SAWS recognized holidays.

    Weekend Work: Contractors are required to submit request to the SAWS Inspection Construction department by 12:00pm on the Wednesday prior to the weekend being requested. Request should be sent to constworkreq@saws.org.

    Any and all SAWS utility work installed without weekend approval will be subject to be uncovered for proper inspection at no cost to SAWS.

14. PRE CON SITE VIDEO: Before the start of any construction. The site must be video recorded by the contractor with one copy submitted to SAWS Inspections. A pre-site video will provide accurate documentation of the existing conditions (NSPI).

15. POWER POLE BRACING: Contractors should be advised that there are existing overhead utility poles along the project corridor. Contractors should further be advised that if the distance from the outside face of a utility trench to the face of a utility pole is less than 5 feet, said utility pole is subject to bracing, based on a determination made by utility pole owner. Costs incurred by contractor for bracing of these utility poles is subsidiary to that respective utility company's work. It is advisable for the contractor to review the construction documents and visit the construction site to determine potential impacts.

16. CONSTRUCTION SEQUENCING: It is the Contractor's sole responsibility to schedule sequencing for removal and installation of existing and proposed SAWS utilities in conjunction with general project construction. Sequence of construction activities shall be considered in order to minimize the extent and duration of disturbances.

17. Contractor shall comply with applicable regulations including, but not limited to, those overseen by the U.S. Occupational Safety and Health Administration (OSHA). OSHA information and related materials may be obtained at https://www.osha.gov/ or at the OSHA San Antonio Office located at Fountainhead Tower, Suite 605 8200 W. Interstate 10 San Antonio, TX 78230 which is also reachable by phone at (210) 472-5040.

18. TRENCH EXCAVATION SAFETY PROTECTION: Contractor and/or Contractor's independently retained employee or structural design/geotechnical/safety/equipment consultant, if any, shall review these plans and available geotechnical information and the anticipated installation site(s) within the project work areas in order to implement Contractor's trench excavation safety protection systems, programs and/or procedures. The Contractor's implementation of the systems, programs and/or procedures shall provide for adequate trench excavation safety protection that complies with, as a minimum, OSHA standards for trench excavations. Specifically, Contractor and/or Contractor's independently retained employee or safety consultant shall implement a trench safety program in accordance with OSHA standards governing the presence and activities of individuals working in and around trench excavation.

SEWER:

19. The Contractor is responsible for ensuring that no sanitary sewer overflow (SSO) occurs as a result of their work. All contractor personnel responsible for SSO prevention and control shall be trained on proper response. Should an SSO occur, the contractor shall:

    A. Identify the source of the SSO and notify SAWS Emergency Operations Center (EOC) immediately at 210-704-SAWS (210-704-7297). Provide the address of the spill and an estimated volume or flow.
    B. Attempt to eliminate the source of the SSO.
    C. Contain sewage from the SSO to the extent of preventing a possible contamination of waterways.
    D. Clean up spill site (return contained sewage to the collection system if possible) and properly dispose of contaminated soil/materials.
    E. Clean the affected sewer mains and remove any debris.
    F. Meet all post-SSO requirements as per the EPA Consent Decree, including line cleaning and televising the affected sewer mains (at SAWS direction) within 24 hours.

    Should the Contractor fail to address an SSO immediately and to SAWS satisfaction, they will be responsible for all costs incurred by SAWS, including any fines from EPA.

    No separate measurement or payment shall be made for this work. All work shall be done according to guidelines set by the TCEQ and SAWS.

20. The Contractor shall provide bypass pumping of sewage around each segment of pipe to be replaced, in accordance with SAWS Standard Specification Item No. 865, "Bypass Pumping Small Diameter Sanitary Sewer Mains" and Standard Specification Item No. 864, "Bypass Pumping Large Diameter Sanitary Sewer Mains" as applicable. Payment for such work will be made under the appropriate bid item associated with Sanitary Sewer Bypass Pumping in accordance with SAWS Standard Specifications 865 and 864.

21. Prior to tie-ins, any shutdowns of existing force mains of any size must be coordinated with the SAWS Construction Inspection Division at 210-233-3500 and/or SAWS Production groups at least two weeks or more in advance of the shutdown. The Contractor must also provide a sequence of work as related to the tie-ins; this is at no additional cost to SAWS or the project and it is the responsibility of the Contractor to sequence the work accordingly.

22. ELEVATIONS POSTED FOR TOP OF MANHOLES ARE FOR REFERENCE ONLY: It shall be the responsibility of the Contractor to make allowances and adjustments for top of manholes to match the finished grade of the project's improvements (NSPI).

23. MANHOLE REMOVAL: Where existing manholes are to be replaced by the contractor, the existing manholes shall be removed. (NSPI)

24. SMART MANHOLE COVERS: The Contractor shall notify SAWS EOC at 210-704-SAWS (210-233-7297) and either America Espinoza at 210-233-2934 or Jose A. Martinez at 210-233-3071 a minimum of 72 hours, not counting weekends or SAWS holidays, before working on the pipe or manhole, in order to have SAWS remove the Smart Cover. Any damage done to the Smart Cover will be charged to the Contractor through a change order.

GENERAL CONSTRUCTION NOTES

26. All fittings and appurtenances not identified by a specific pay item shall be included in the bid price for the pipeline.

27. All limits of work outside of the project scope or beyond what is considered incidental to normal utility construction will be addressed by the SAWS Inspector. All communication from SAWS will be coordinated through the SAWS Inspector. SAWS Inspector will also determine if additional compensation is warranted if limits exceed incidentals.

28. Contractor shall protect and/or repair (if damaged) any existing water/sewer service laterals and irrigation shown or not shown (NSPI).

29. Contractor shall coordinate with SAWS and property owners to access to sites located in easements and private properties.

PLAN OF RECORD

30. Contractor shall furnish the Engineer with a complete "Plan-of-Record" redline set of plans prior to submitting "final" pay request. Redlines are required for all monthly payments.

31. Contractor is required to complete plan of record drawings for completed work as work progresses and shall be required to demonstrate progress to the inspector and engineer prior to payment of testing related bid items on associated segments of the project. Said drawings shall indicate the actual measurements and locations of the installed pipeline, fittings, valves, and appurtenances with offset distances to easement lines and other features.

MOBILIZATION AND PREPARATION OF RIGHT-OF-WAY NOTES

32. The combined total bids for SAWS Mobilization Item No. 100 and SAWS Preparing Right-of-Way, Item No.101 shall not exceed 15% of the SAWS Base Bid. A SAWS Base Bid shall be defined as all SAWS bid items excluding Mobilization, Item No. 100 and Preparing Right-of-Way, Item No. 101.

STATE OF TEXAS
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(210) 366-1988 TBPE No.: F-333 TBPLS No.: 10194506

No.	Revision	Drawn	Approved	Date

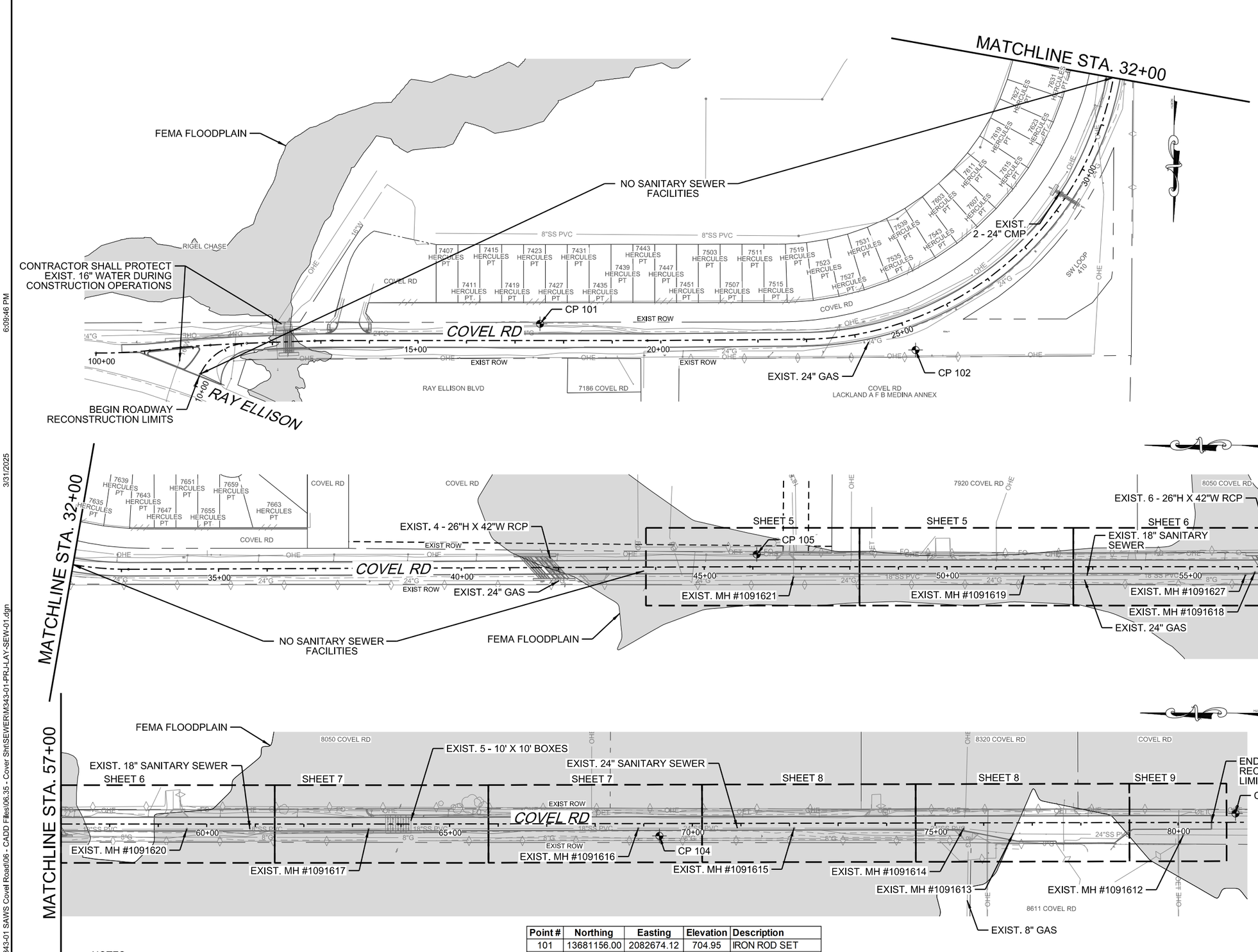
REVISIONS

COVEL RD
(RAY ELLISON BLVD. TO PATROL RD.)
SEWER IMPROVEMENTS

SANITARY SEWER GENERAL NOTES
SHEET 1 OF 1

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. BUDGET PROJ. #
SUBMITTED
APPROVED
MAP No. 112552, 112550, 112548
SECT. No.
DR. VV CK. ET JOB No. 23-5517
SHEET 3 OF 9

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0 100 200

SCALE: 1" = 200'

LEGEND

- BENCHMARK/ CONTROL POINT
- SHEET BORDER
- EXIST APPARENT RIGHT OF WAY
- EXIST PROPERTY LINE
- BASELINE/ALIGNMENT

Point #	Northing	Easting	Elevation	Description
101	13681156.00	2082674.12	704.95	IRON ROD SET
102	13681204.26	2081900.41	692.40	IRON ROD SET
103	13675722.95	2081476.50	630.26	IRON ROD SET
104	13676908.99	2081476.50	630.93	IRON ROD SET
105	13679233.16	2081521.31	653.31	IRON ROD SET

NOTES:
1. REFER TO COVEL RD (RAY ELLISON BLVD. TO PATROL RD.) PROJECT (23-03872) FOR THE CENTERLINES, ADDITIONAL CONTROL POINTS, AND BENCHMARK INFORMATION.
2. CONTRACTOR TO REFER TO CPS GAS PLANS FOR PROPOSED GAS LINE CONSTRUCTION DETAILS.

STATE OF TEXAS
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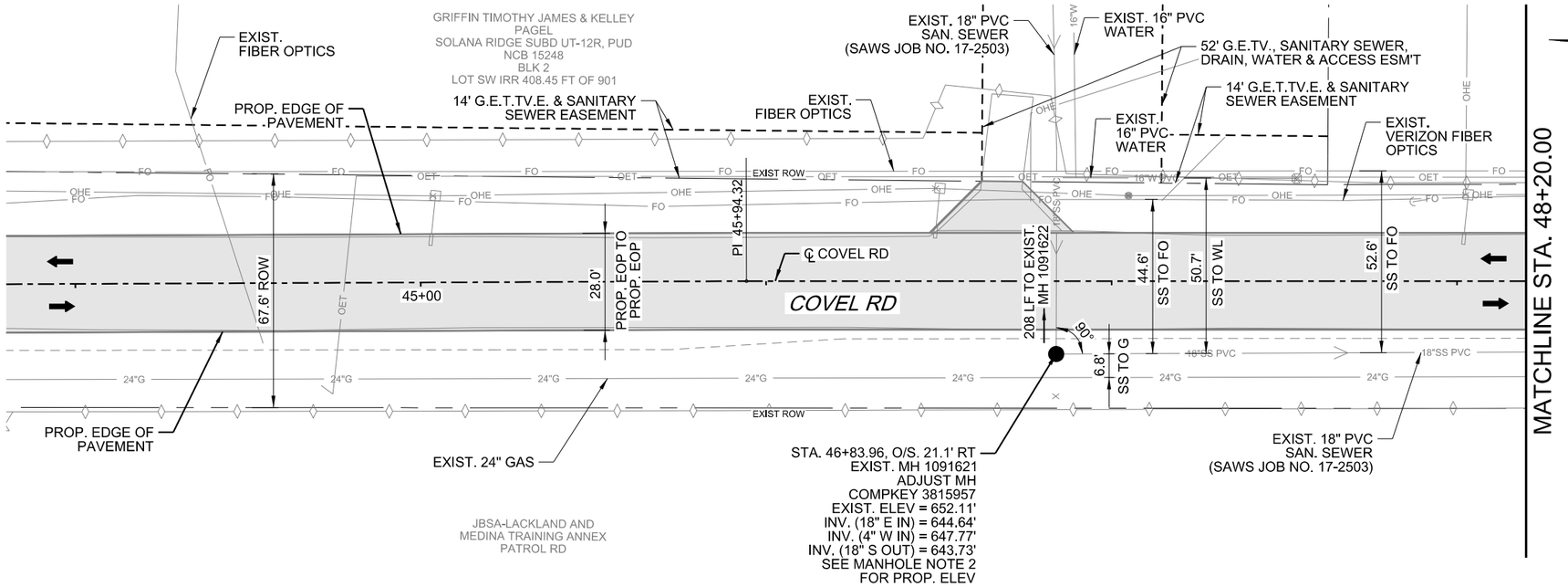
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SEWER IMPROVEMENTS

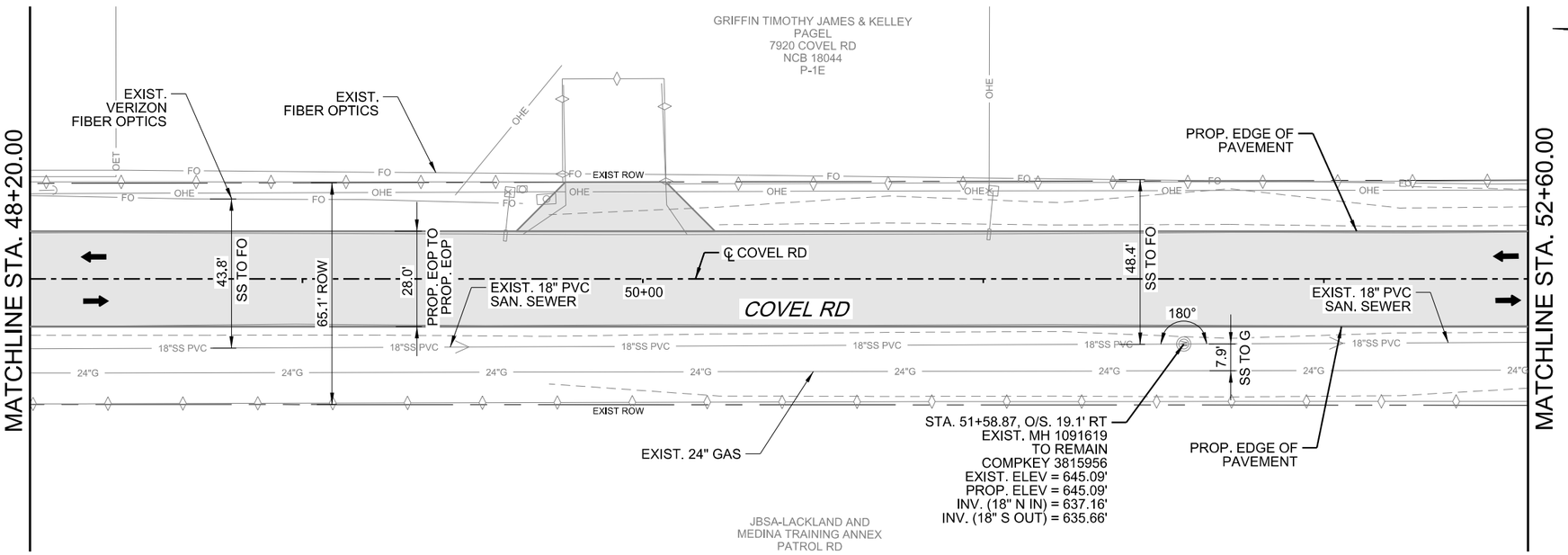
PROJECT LAYOUT
SHEET 1 OF 1

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. BUDGET PROJ. #
SUBMITTED
APPROVED
MAP No. 112552, 112550, 112548
SECT. No.
DR. VV CK. ET JOB No. 23-5517
SHEET 4 OF 9

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ESTIMATED QUANTITIES (BASE BID)				
ITEM	DESCRIPTION	UNIT	EST	FINAL
851	Adjust Existing Manholes	EA	1	





MANHOLE NOTES:

1. CONTRACTOR SHALL COORDINATE WITH THE SAWS INSPECTOR AND/OR ENGINEER ON THE MANHOLE CONDITION AND GET APPROVAL FROM THE SAWS INSPECTOR PRIOR TO ADJUSTING ANY MANHOLES.
2. CONTRACTOR SHALL FIELD VERIFY FINAL MANHOLE COVER ELEVATION TO ROAD/PARKWAY ELEVATION.
3. CONTRACTOR SHALL MATCH THE PROPOSED CRCP CONCRETE CLASS, STRENGTH, AND REINFORCEMENT FOR ALL PROPOSED MANHOLE CONCRETE COLLARS (NSPI).

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0 20 40
SCALE: 1" = 40'

NOTES

1. DUE TO FEDERAL REGULATION TITLE 49, PART 92.181 CPS 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.
2. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROTECTING CPS OVERHEAD AND UNDERGROUND ELECTRIC FACILITIES ADJACENT TO THE WORK AREAS.
3. THE CONTRACTOR WILL HAVE RESPONSIBILITY TO PROTECT AND SUPPORT CABLE TV AND TELEPHONE COMPANY FACILITIES DURING CONSTRUCTION.
4. THE EXISTENCE AND LOCATION OF UTILITIES INDICATED ON THE PLAN ARE TAKEN FROM AVAILABLE RECORDS AND ARE NOT GUARANTEED TO BE ACCURATE.

MAESTAS
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LEGEND

- PROP. SAN SEWER
- LATERAL WITH TWO WAY CLEAN OUT
- EXIST. WATER MAIN — 6"C.I.W.
- GAS MAIN — G
- SANITARY SEWER — 8"SS
- PROP STORM SEWER
- UTILITY POLE LINE
- OH TELE CABLE — OHT
- OH ELECTRIC/TELE — OET
- TELEPHONE PED
- EXIST RIGHT OF WAY
- EXIST PROPERTY LINE
- EXIST. TOPO
- TREES
- PROP. DRIVEWAY/ PAVEMENT

No.	Revision	Drawn	Approved	Date

REVISIONS

COVEL RD
(RAY ELLISON BLVD. TO PATROL RD.)
SEWER IMPROVEMENTS

SANITARY SEWER ADJUSTMENTS
SHEET 1 OF 5

DEVELOPER: SAN ANTONIO WATER SYSTEM

CONT. | BUDGET PROJ. #

SUBMITTED

APPROVED

MAP No. 112552, 112550, 112548 | SHEET 5 OF 9

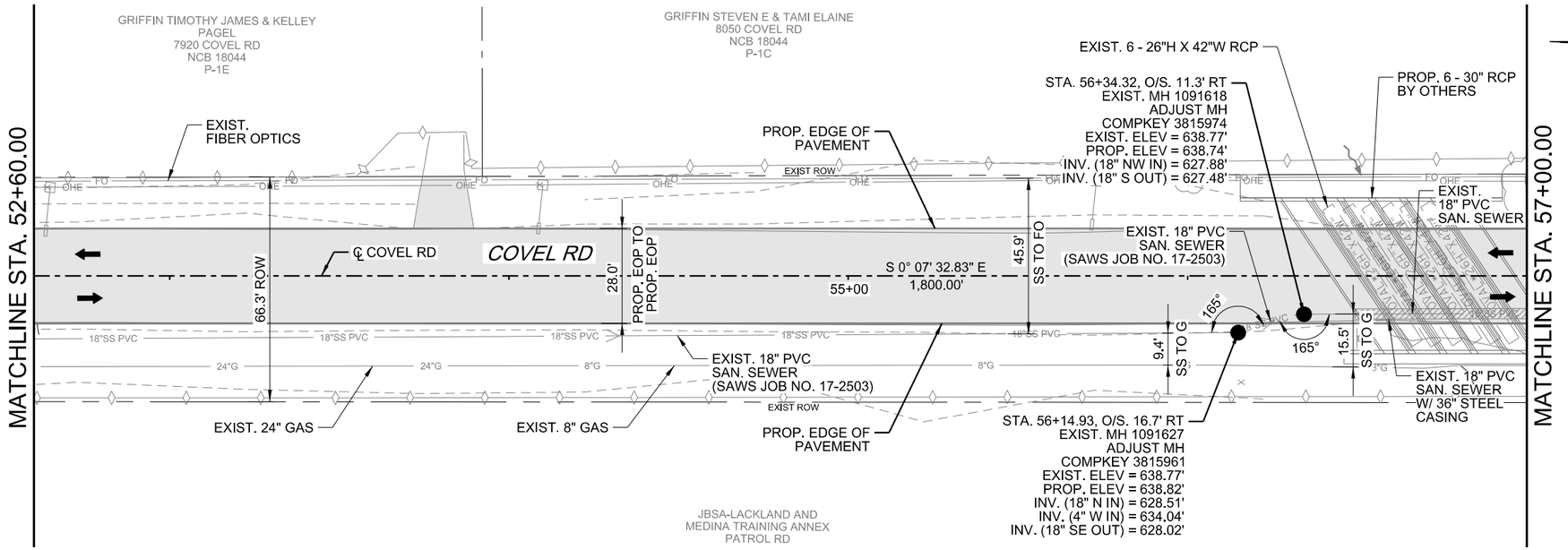
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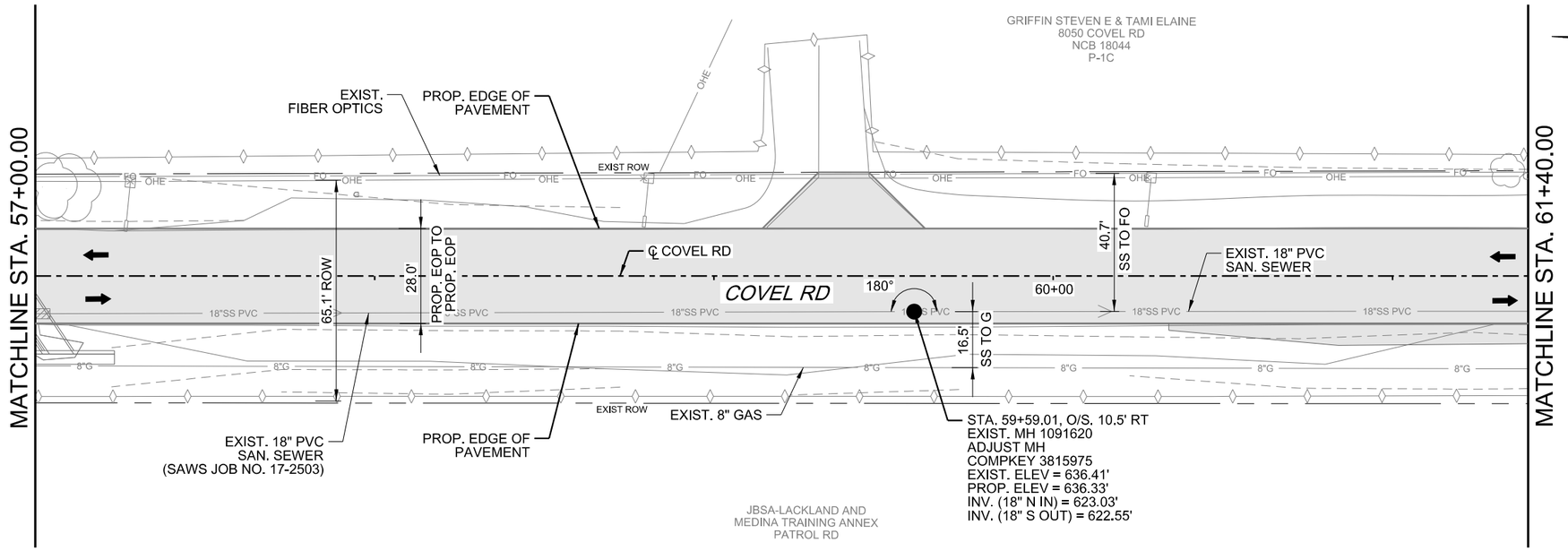
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ESTIMATED QUANTITIES (BASE BID)				
ITEM	DESCRIPTION	UNIT	EST	FINAL
851	Adjust Existing Manholes	EA	3	





MANHOLE NOTES:

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0 20 40
SCALE: 1" = 40'

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MAESTAS
8122 DATAPOINT DR., STE. 840 SAN ANTONIO, TX 78229
(210) 366-1988 TBPE No.: F-333 TBPLS No.: 10194506

LEGEND

- PROP. SAN SEWER
- LATERAL WITH TWO WAY CLEAN OUT
- EXIST. WATER MAIN — 6"C.I.W.
- GAS MAIN — G
- SANITARY SEWER — 8"SS
- PROP STORM SEWER
- UTILITY POLE LINE
- OH TELE CABLE — OHT
- OH ELECTRIC/TELE — OET
- TELEPHONE PED
- EXIST RIGHT OF WAY
- EXIST PROPERTY LINE
- EXIST. TOPO
- TREES
- PROP. DRIVEWAY/ PAVEMENT

No.	Revision	Drawn	Approved	Date

REVISIONS

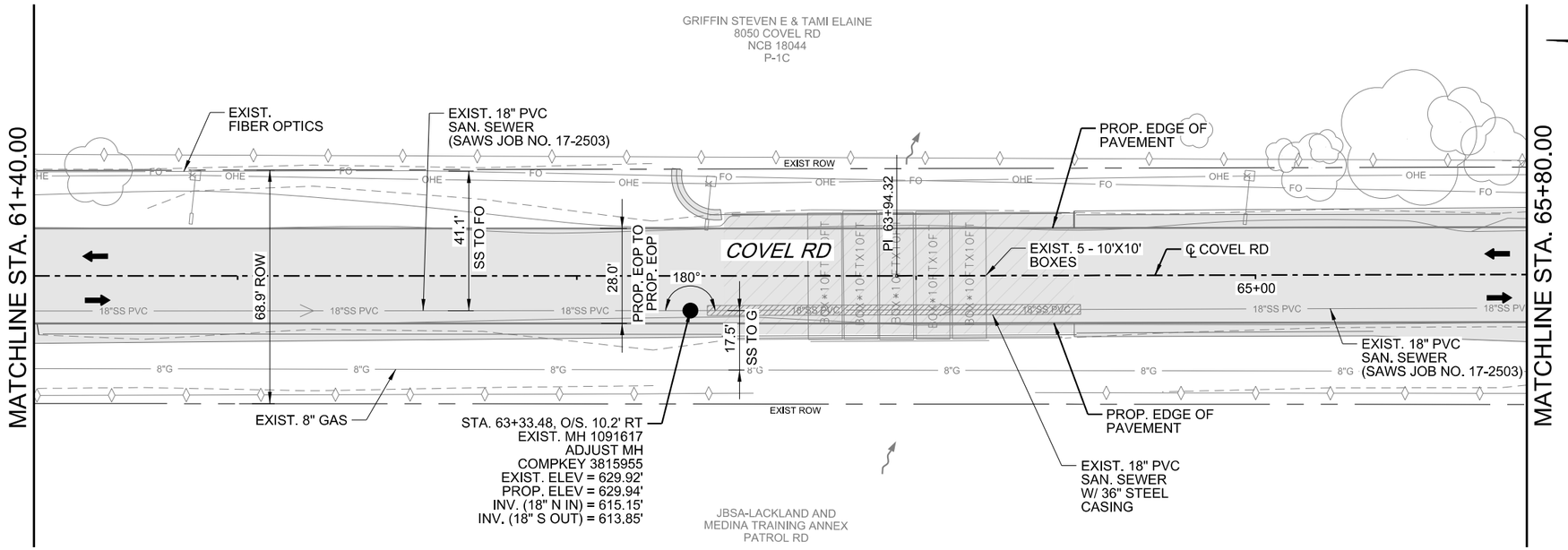
COVEL RD
(RAY ELLISON BLVD. TO PATROL RD.)
SEWER IMPROVEMENTS

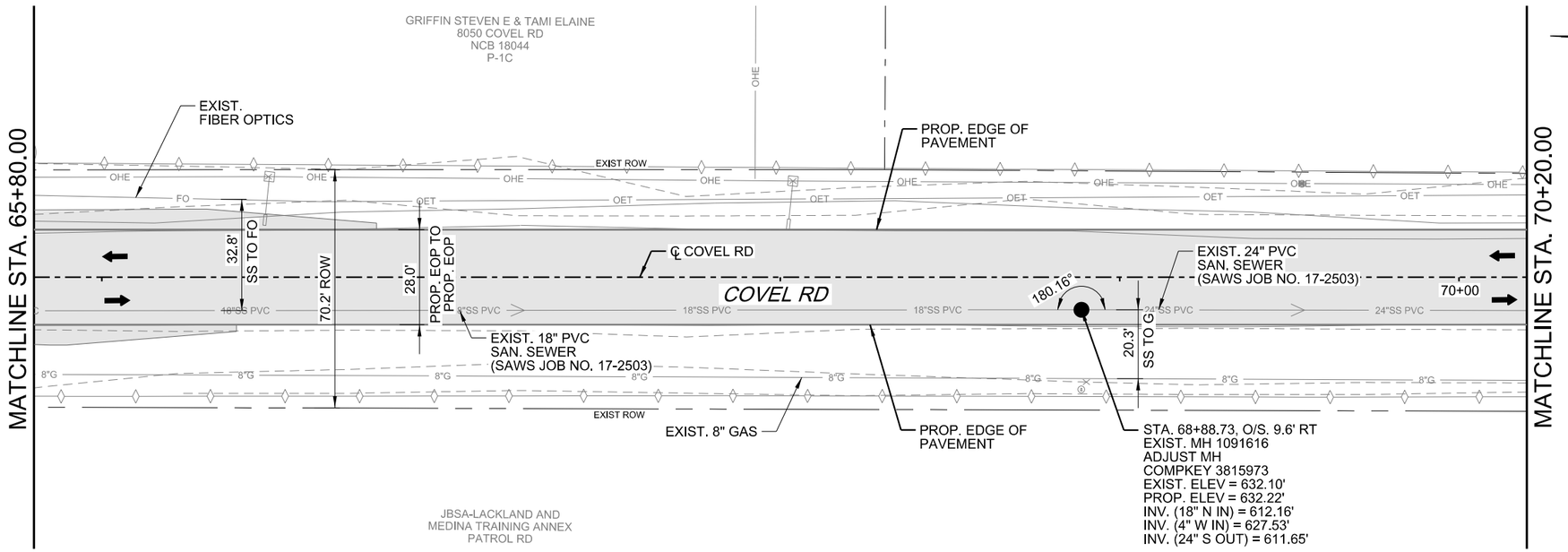
SANITARY SEWER ADJUSTMENTS
SHEET 2 OF 5

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ. #
SUBMITTED
APPROVED
MAP No. 112552, 112550, 112548
SECT. No.
DR. VV | CK. ET | JOB No. 23-5517
SHEET 6 OF 9

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ESTIMATED QUANTITIES (BASE BID)				
ITEM	DESCRIPTION	UNIT	EST	FINAL
851	Adjust Existing Manholes	EA	2	





MANHOLE NOTES:

1. CONTRACTOR SHALL COORDINATE WITH THE SAWS INSPECTOR AND/OR ENGINEER ON THE MANHOLE CONDITION AND GET APPROVAL FROM THE SAWS INSPECTOR PRIOR TO ADJUSTING ANY MANHOLES.
2. CONTRACTOR SHALL FIELD VERIFY FINAL MANHOLE COVER ELEVATION TO ROAD/PARKWAY ELEVATION.
3. CONTRACTOR SHALL MATCH THE PROPOSED CRCP CONCRETE CLASS, STRENGTH, AND REINFORCEMENT FOR ALL PROPOSED MANHOLE CONCRETE COLLARS (NSPI).

STATE OF TEXAS
ELVIS TREVIÑO
126752
LICENSED
PROFESSIONAL ENGINEER
3/31/2025

100% SUBMITTAL

0 20 40
SCALE: 1" = 40'

NOTES

1. DUE TO FEDERAL REGULATION TITLE 49, PART 92.181 CPS 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.
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(210) 366-1988 TBPE No.: F-333 TBPLS No.: 10194506

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REVISIONS

COVEL RD
(RAY ELLISON BLVD. TO PATROL RD.)
SEWER IMPROVEMENTS

SANITARY SEWER ADJUSTMENTS
SHEET 3 OF 5

DEVELOPER: SAN ANTONIO WATER SYSTEM

CONT. | BUDGET PROJ. #

SUBMITTED

APPROVED

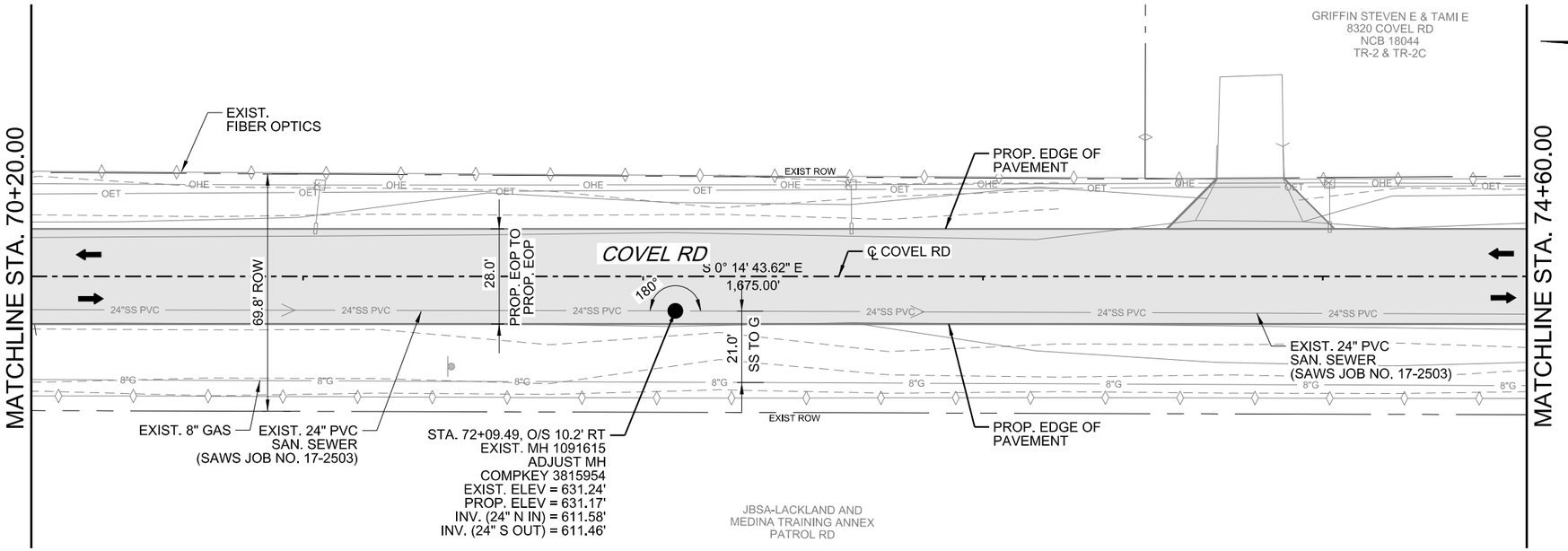
MAP No. 112552, 112550, 112548 | SECT. No. | SHEET 7 OF 9

DR. VV | CK. ET | JOB No. 23-5517

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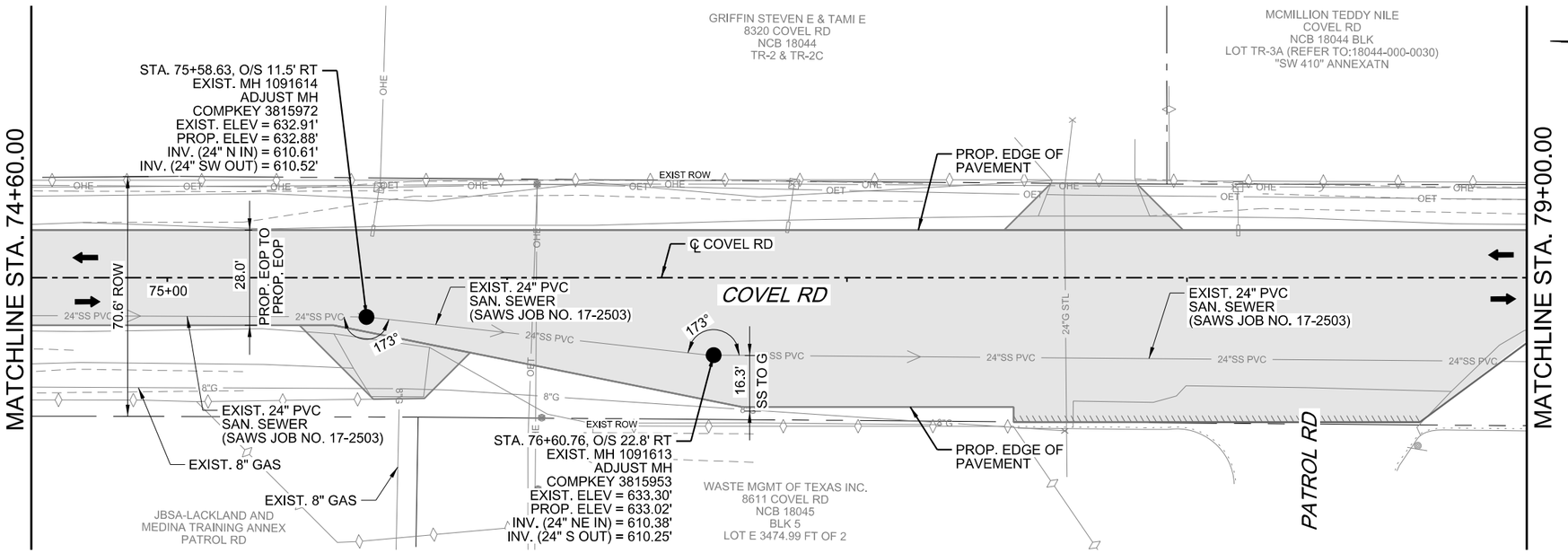
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ESTIMATED QUANTITIES (BASE BID)				
ITEM	DESCRIPTION	UNIT	EST	FINAL
851	Adjust Existing Manholes	EA	3	



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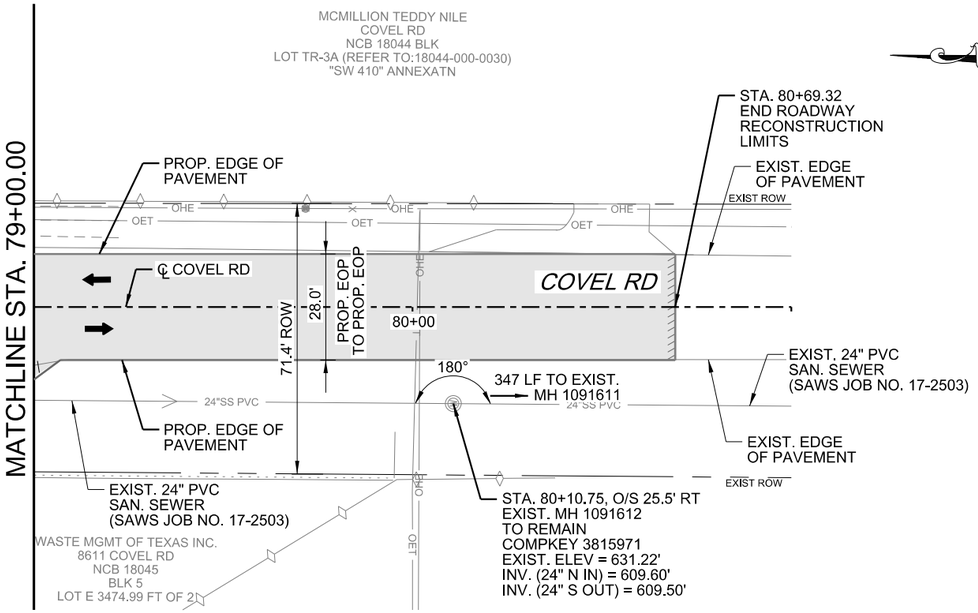
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COVEL RD
(RAY ELLISON BLVD. TO PATROL RD.)
SEWER IMPROVEMENTS

SANITARY SEWER ADJUSTMENTS
SHEET 4 OF 5

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ. #
SUBMITTED
APPROVED
MAP No. 112552, 112550, 112548
SECT. No.
DR. VV | CK. ET | JOB No. 23-5517
SHEET 8 OF 9

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SHEET 9 OF 9

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Civic Improvement Project

Contract Exhibit GAS–6

General Notes

1. All proposed gas mains are to be installed at 5'-0" of cover unless otherwise noted on the sketch, indicated on the Location Data Table, or as directed by the CPS Inspector or Field Representative. All proposed gas services are to be installed at the elevations indicated on the Location Data Table or as directed by the CPS Inspector or Field Representative.

2. All services labeled with an "R" are to be rerun from main to meter and services labeled with a "R1" are to be rerun from main to 1' inside the property line. From main to 1' inside the property line, the services are to be installed at the elevation indicated on the Location Data Table. For services labeled with a "T", the existing service is to be tied over to the new main and services labeled with an "A" are to be abandoned.

3. Gas main is to be abandoned in sections no longer than 300 feet. Each section is to be purged of gas with compressed air, and then the ends are to be sealed with concrete. All abandoned services are to be plugged. All valve boxes on abandoned mains are to be removed.

4. If the general contractor requires temporary tie-ins that are not shown on the CPS Energy sketch due to project phasing or to accommodate this project in any way, this work will be done at the general contractor's expense. General Contractor will also be responsible for all costs associated with power pole bracing whenever bracing is required for the installation of proposed gas facilities.

5. The locations of underground utilities indicated on the job sketch are taken from the best records available and are not guaranteed to be accurate. Foreman/Contractor shall verify location and depth of all existing utilities, whether shown on the plans or not, and shall be responsible for the protection of existing utilities during construction. Foreman/Contractor shall notify 811 for all utility locates and maintain an open ticket for the duration of the gas work.

6. Gas valves and underground gas facility access points should remain accessible at all times. Contractor must notify John Offer with CPS Energy project engineer at least 48 hours prior to construction in order to adjust existing valve covers or access points within the proposed area of construction.

7. In accordance with the Texas Administrative Code Title 30, Part 1, Ch.305 and in compliance with the Clean Water Act, 33 U.S.C. 1251, for projects that will disturb 5 or more acres of land or will disturb less than 5 acres of land but is part of a common plan of development that will ultimately disturb 5 or more acres, the General Contractor is responsible for submitting the Notice of Intent (NOI) through the Texas Commission on Environmental Quality (TCEQ) Electronic State of Texas Environmental Electronic Reporting System (STEERS) and pay permit fee. The General Contractor will need to ensure Sub-Contractor compliance under TCEQ Construction General Permit requirements. NOI must be certified prior to earth disturbing activities, in accordance with Texas Pollutant Discharge Elimination System (TPDES) TCEQ Construction General Permit. Permit becomes active the same day that the NOI is certified.

8. All gas facilities will require proper connection for cathodic protection and locating purposes as indicated by CPS. Call Corrosion Control at 353-3237 prior to installing, adjusting, or abandoning gas lines and before connecting or disconnecting wires to any CPTLB.

9. All new polyethylene gas services and mains are to be joined by butt fusion. Compression couplings shall not be used on new gas line construction.

10. TRENCH EXCAVATION PROTECTION: Contractor and/or Contractor's independently retained employee or structural design/geotechnical/ safety/equipment consultant, if any, shall review these plans and any available geotechnical information and the anticipated installation site(s) in order to develop the Contractor's plans to implement the project described in the Contract Documents. The Contractor's plans shall provide for adequate trench safety systems that comply with, as a minimum, OSHA standards for trench safety consultant shall develop and implement a trench safety program in accordance with OSHA standards governing the presence and activities of individuals working in and around trench excavation.

11. The Contractor is hereby notified that all coal tar pipe coating and asphaltic pipe insulation is assumed to contain non-friable asbestos materials. The Contractor must follow all requirements in OSHA 1926.1101 to protect workers when removing the coating materials. The coal tar/asphaltic pipe insulation coating shall be removed using wet methods. All removed coal tar pipe coating and asphaltic pipe insulation must be gathered, contained in 6-mil polyethylene sheeting, sealed with tape and delivered to the CPS Energy Mission Road Construction Center at 613 Mission Road, 78210. These requirements must be followed unless otherwise noted on the plans.

12. In accordance with 49 CFR 192.383 & 192.385, The operator shall install either a manual service line shut-off valve or, if possible, based on sound engineering analysis and availability, an EFV for any new or replaced service line with installed meter capacity exceeding 1,000 SCFH. An EFV or manual service valve shall also be installed for all services operating at 10 PSIG or greater and having a total meter capacity of 1,000 SCFH or less.

13. When casing is used, the casing pipe ends shall be sealed to protect the gas main or service pipe from damage after insertion. Additionally, the leading end of gas main or service pipe shall be closed before inserting into casing pipe.

14. Pipe supports must be installed to prevent external loading on plastic pipe when anodeless risers are utilized for regulator stations. The risers must also be installed with appropriate measures to resist lateral movement.

Pressure Control & Project Notes

1. Contact Jason P Guillemette at jguillemett@cpsenergy.com at least 48 hr prior to all gas main tie-ins to request a pressure control operations plan meeting.

2. All excess soil must be tested by CPSE Environmental. Coordinate with Bruce Wik (210) 353-2551. DO NOT REMOVE SOIL FROM PROJECT SITE. Refer to the project Enviornment Permits, Issues & Concerns (EPIC) sheet.

3. Contact Jason P Guillemette @ (210) 353-4285 or jguillemett@cpsenergy.com to schedule a mandatory on-site preconstruction meeting at least one week prior to mobilizing equpment and materials to the site.

4. Coordinate with project contacts below as necessary:

CPSE Gas Engineering	-	Jason P Guillemette	(210) 353-4285
CPSE Corrosion Control	-	Joel Settles	(210) 353-6917
CPSE Pressure Control	-	John Reeves	(210) 353-3431
CPSE Contractor Services	-	Phillp Guillen	(210) 353-2559

5. All fences, landscaping, pavement , structures, curbs sidewalks and pavement markings shall be restored to existing or better condition if damaged while installing the facilities related to this project.

Steel Material Specification

Open Cut Installation:

Pipe: 24.000" OD x 0.375" WT, X-52 to X-60, API 5L,
16.000" OD x 0.312" WT, X-52 to X-60, API 5L
8.000" OD x 0.250" WT, X-42 to X-60, API 5L
4.000" OD x 0.250" WT, X-42 to X-60, API 5L

Coating: Fusion Bond Epoxy (F.B.E.)

Fittings: 16.000" O.D. x 0.312" W.T., X-52 min

Trenchless Installation (Bore/HDD):

Pipe: 16.000" OD x 0.312" WT, X-52 to X-60, API 5L
Coating: Fusion Bond Epoxy (F.B.E.) /

Abrasion-Resistant Overcoat (A.R.O.)

Project Notes

1. All R.O.W. acquisition/clearing and OHE pole relocations must be completed before gas adjustments. General Contractor will be responsible for all cost associated with power pole bracing where necessary for the installation of gas facilities.

2. Contact CPS Energy project manager at least 48-hours prior to all gas main tie-ins to coordinate pressure control operation. A minimum two-week notice must be submitted prior to performing tie-in on any supply-pressure gas mains.

3. Contractor will be responsible for all costs associated with removing abandoned utilities or structures that conflict with the installation of the proposed gas facilities.

SWPPP & Enviornmental General Notes

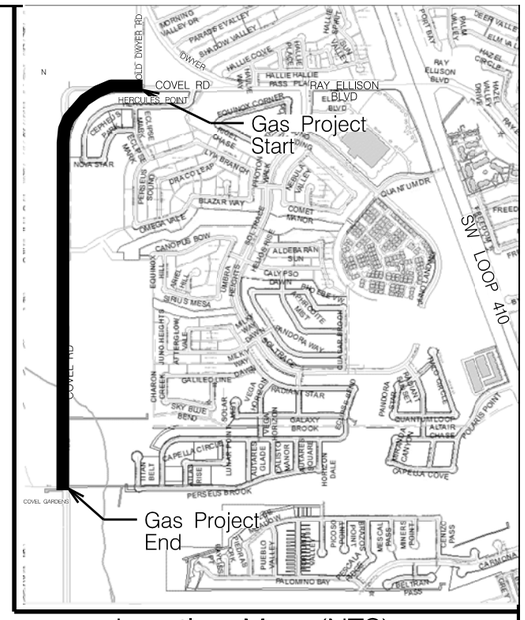
1. As this is a City of San Antonio (CoSA) joint-bid construction project, the installation Contractor will be Managed under CoSA, and the existing Memorandum of Understanding (MOU) in place. CoSA shall provide and is responsible for the Stormwater Pollution Prevention Plan (SWPPP) & all Environmental-related permits for the project. (Refer to the CoSA overall project SWPPP).

2. Do Not Disturb Vegetated Areas (Trees, Grass, Weeds, Brush, Etc.) Any More Than Necessary For Construction. 1

3. The possibility of soil contaminants within project limits during construction should always be considered. If anything usual (i.e. odors, soil staining, obstructions, and/or buried waste) is encounteredduring any excavation or drilling, excerise Stop Work immediately & notify the CoSA & CPSE Gas Inspectors. Some low level metals (lead, arsenic) are anticipated to be present in excavation spoils.

4. Excavation spoils (free from objectionable materials) shall be re-used On Site as open trench backfill after excavation & within the project limits. If anything, including spoils, cannot be re-used as backfill, STA 45+20 to STA 80+20 the waste will be profiled for disposal at Republic Tessman Rd Landfill. Contractor is responsible for spoils management, which is included in the associated bid item. No additional compensation applies for loading roll-off containers, labor/vehicle/materials etc. Contractor to contact Jason Guillemette @ (210) 353-4285 or jguillemett@cpsenergy.com 72-hrs prior to coordinate containers.

5. Contractor shall perform Pre-Construction Site Meeting with CPS Energy Gas representatives prior to Any soil disturbance to discuss coordination for SWPPP and any Environmental or Cultural Monitoring Requirements. Contractor Shall Provide Written NoticeTo Cps Energy Gas Inspections Office Once The 48-Hour Notice For The Planned Construction Start Date Has Been Provided To Stormcon Or Any Other Swppp Inspector



Location Map (NTS)

Pressure Test
Department of Transportation
Section 192.507
Proposed M.A.O.P. 274 P.S.I.G

Pipe Size: 24 IN / 16 IN / 8 IN / 4 IN
Test Medium: Air / Gas / Nitrogen
Minimum Test Pressure: 411 P.S.I.G.
Maximum Test Pressure: 450 P.S.I.G.
Minimum Test Duration: 1 Hour

Tested By: _____
Date Tested: _____
Test Equipment Serial#: _____

	Pressure	Ambient Temperature	Pipe Temperature
Start Test			
15 minutes			
30 minutes			
45 minutes			
60 minutes			
75 minutes			
90 minutes			
105 minutes			
120 minutes			
End Test			

NOTE: All fields on the CPS Energy Pipeline Pressure Test Report Form shall be completed for each pressure test. CPS Energy Engineer shall be present during all pressure tests.

UTILITY LOCATING REQUIREMENTS

1. Call 811 to request utility locates at least two working days (excluding weekends and holidays) prior to excavating.

2. Contact water and sewer utilities directly to request utility locates prior to excavating. Request for locates shall be submitted within the time frame required by the utility.

3. Call 811 to request emergency gas utility locates.

4. Contact TxDOT and Railroad directly, in addition to 811 and water/sewer utilities, to coordinate utility locates within TxDOT or Railroad right-of-way.

5. Utility locate markings should remain visible throughout the duration of excavation activities.

811 Know what's below. Call before you dig.

Construction Points		Install			Abandon	
From	To	Pipe Size	Length	MAOP	Pipe Size	Length
1	2	16–SP	6139	274	8–SP	5770
1		24–SP	24	274		
15		8–SP	10	274	8–SP / 4–SP	5 / 5
		Total 16	6139	274	Total 8	5770

STATE OF TEXAS
JASON P GUILLEMETTE
129463
LICENSED PROFESSIONAL ENGINEER
2025.06.23

Legend

- Center Line
- Existing Property Line
- Proposed Property Line
- Easement Line
- Existing Gas Service
- Existing Gas Main
- Install Gas Service
- Install Gas Main
- Abandon Gas
- Cable TV
- Telephone
- Sanitary Sewer
- Proposed Drainage
- Existing Drainage
- Electric
- Water

Pressure Test

Test Medium: Air / Nitrogen / Gas
Minimum Test Pressure: 411 PSIG
Minimum Test Duration: 1 Hour
Test Pressure: _____ PSIG
Test Duration: _____

CPS Inspector: _____
Tested By: _____
Date Tested: _____
Segment Tested: _____

Construction Completed

Contractor: _____
Center: _____
By: _____
Start Date: _____
Completion Date: _____
CPSE Inspector: _____

No.	Drawing Revision	Date
0	DESIGN COMPLETE	06–23–25
1		

Checked By: _____ Date Approved 06-23-25

Manager Approval: William T Fey Date Approved 6/23/2025

Designed By: Jason P Guillemette Ext. 4285
Customer Design Gas Engineering / MRCC

Map Quadrant: NAD: 11 – 55
GIS: X = 2,082,065 Y = 13,678,885
Project No. G–0272

Job Title: Covel Rd (Ray Ellison – Covel Gardens Landfill)

CPS ENERGY
P.O. BOX 1771
SAN ANTONIO, TX 78296

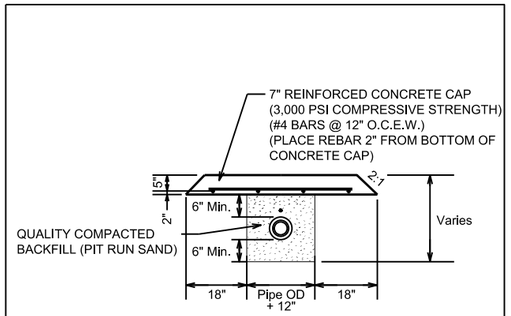
Job No. 40872395

All proposed gas mains and services are to be installed at the planned Gas Top of Pipe Elevation indicated on the Location Data Table.

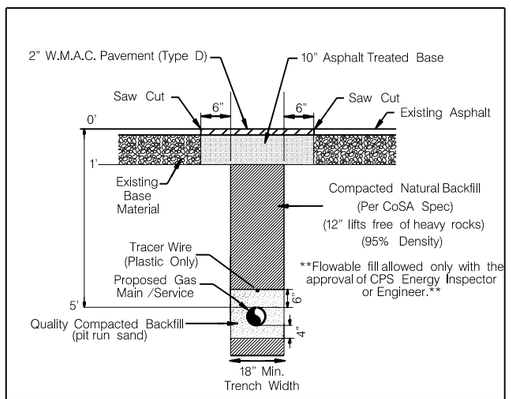
Contract Exhibit GAS-6

Location Data Table

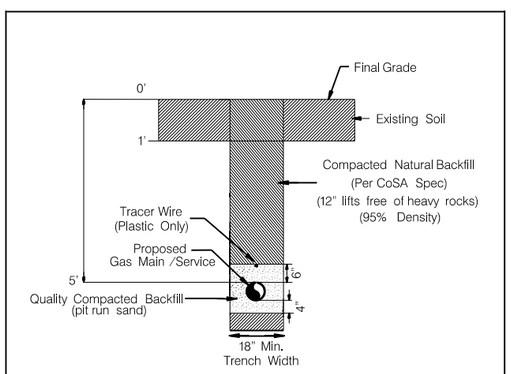
CS4 Item #	Location		Station Marker	Grade Elevations			Gas Requirements		Planned Depth of Gas			Potential Conflicting Facility			Clearance	
	CP / 'Address	Location Description		Existing Grade	Proposed Final Grade	Estimated Subgrade	Gas Pipe Size	Planned Gas T.O.P. Elevation	From Existing Grade	From Final Grade	From Estimated Subgrade	Proposed Facility Description	Top Elevation	Bottom Elevation	Above Prop. Facility	Below Prop. Facility
	CP 1	Project Start Exist 24-SP	19+69	702.3	702.6	701.0	16-SP	695.0	7.3	7.6	6.0	24-SP Exist Gas	699.0	697.0		2.0
	CP 2	Project End Capped 16-SP	80+20	631.0	631.8	631.8	16-SP	626.0	5.0	5.8	5.8					
	CP 3	Open Trench Start Culvert 2	29+07	684.9	684.9	683.4	16-SP	679.9	5.0	5.0	3.5					
	CP 4	Open Trench End Culvert 2	29+67	684.9	684.9	684.9	16-SP	679.9	5.0	5.0	5.0					
	CP 5	Open Trench Start Culvert 3	41+40	655.1	655.1	653.6	16-SP	650.1	5.0	5.0	3.5					
	CP 6	Open Trench End Culvert 3	42+40	655.1	655.1	655.1	16-SP	650.1	5.0	5.0	5.0					
	CP 7	Open Trench Start Culvert 4	56+34	633.8	633.8	632.3	16-SP	628.8	5.0	5.0	3.5					
	CP 8	Open Trench End Culvert 4	57+34	633.8	633.8	633.8	16-SP	628.8	5.0	5.0	5.0					
	CP 9	Bore Entry Bore #1	59+50	695.0	695.0	693.5	16-SP	690.0	8.0	8.0	8.0					
	CP 10	Bore Exit Bore #1	65+50	626.2	626.2	626.2	16-SP	624.2	8.0	8.0	8.0	Culvert 4 Flood Plain				
	CP 11	Bore Entry Bore #2	77+00	633.5	633.3	633.3	16-SP	631.3	8.0	8.0	8.0	Culvert 5 Flood Plain				
	CP 12	Bore Exit Bore #2	80+00	631.0	631.8	631.8	16-SP	614.1	19.4	19.2	19.2					
	CP 13	16-SP Alignment Change	22+00	697.9	697.9	697.9	16-SP	687.2	10.7	10.7	10.7	8-SP Exist Gas	689.9	689.2		2.0
	CP 14	16-SP Alignment Change	32+00	692.6	692.6	692.6	16-SP	681.9	10.7	10.7	10.7	8-SP Exist Gas	684.6	683.9		2.0
	CP 15	8-SP Tie-in Exist 8-SP Gas	76+04	633.2	633.3	633.3	16-SP	628.2	5.0	5.1	5.1					
	CP 20	Culvert #2	29+33	684.9	684.9	684.9	16-SP	676.9	8.0	8.0	8.0	Culvert #2	684.9	684.9		8.0
	CP 21	Culvert #3	41+75	655.1	655.1	655.1	16-SP	647.1	8.0	8.0	8.0	Culvert #3 Toe Down	655.1	652.1		5.0
	CP 22	Culvert #4	56+75	633.8	633.8	633.8	16-SP	625.8	8.0	8.0	8.0	Culvert #4 Toe Down	634.8	631.8		6.0
	CP 23	Culvert #5	56+75	620.0	620.0	620.0	16-SP	612.0	8.0	8.0	8.0	Culvert #5 Exist Swale	633.8	619.1		7.1
	CP 24	24" Enterprise Gas Crossing	77+61	633.5	633.3	633.3	16-SP	614.1	19.4	19.2	19.2	24 Gas Enterprise	629.1	619.1		5.0



REINFORCED CONCRETE CAP DETAIL



Trench & Backfill Detail Under Pavement



Trench Detail For Earth Excavation Only

NOTES:

1. Clearance of proposed facilities represents the distance (feet) between the outside diameter of the gas line and the outside edge of the proposed buried utility. All dimensions are in feet.
2. Contractor must verify location and depth of all existing utilities prior to installation of gas facilities.

STATE OF TEXAS
JASON P GUILLEMETTE
129463
LICENSED PROFESSIONAL ENGINEER
2025.06.23

No.	Drawing Revision	Date
0	DESIGN COMPLETE	06-23-25
1		

Checked By: Date Approved 06-23-25
Manager Approval: William T Fey Date Approved 6/23/2025

Designed By: Jason P Guillemette Ext. 4285
Customer Design Gas Engineering / MRCC

Map Quadrant: NAD: 11 – 55
GIS: X = 2,082,065 Y = 13,678,885
Project No. G–0272

Job Title: Covel Rd (Ray Ellison – Covel Gardens Landfill)

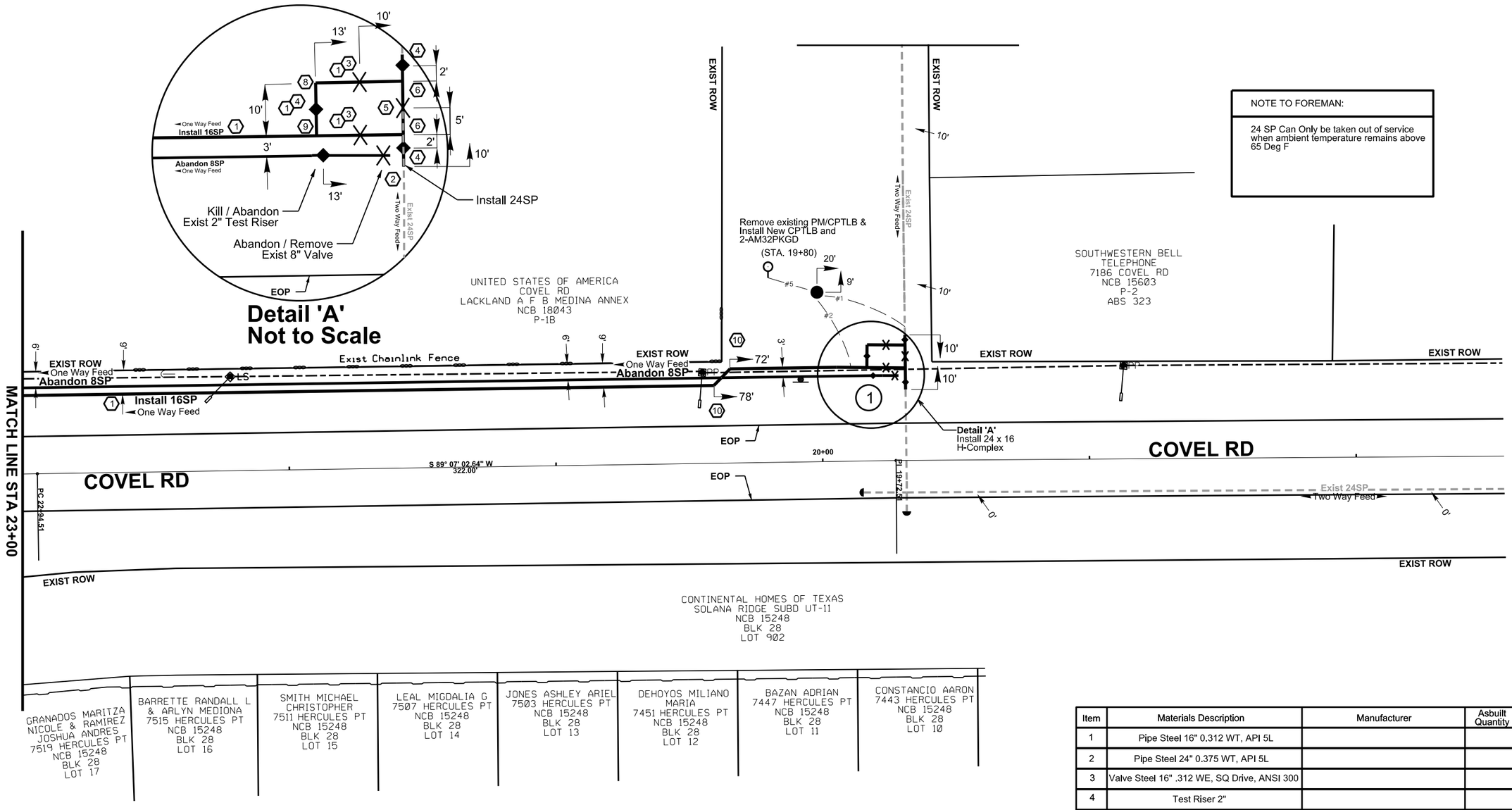
CPS ENERGY
P.O. BOX 1771
SAN ANTONIO, TX 78296

Job No. 40872395

All proposed gas mains and services are to be installed at the planned Gas Top of Pipe Elevation indicated on the Location Data Table.

Contract Exhibit GAS-6

Scale:
1" = 40'



NOTE TO FOREMAN:

24 SP Can Only be taken out of service when ambient temperature remains above 65 Deg F

Item	Materials Description	Manufacturer	Asbuilt Quantity	Quantity	Stock #
1	Pipe Steel 16" 0.312 WT, API 5L			355 LF	1014850
2	Pipe Steel 24" 0.375 WT, API 5L			24 LF	Non Stock
3	Valve Steel 16" .312 WE, SQ Drive, ANSI 300			2 EA	Non Stock
4	Test Riser 2"			3 EA	1018487
5	Valve Steel 24" .375 WE SQ Drive ANSI 300			1 EA	Non Stock
6	Tee, 24" x 16", WE, CS			2 EA	Non Stock
8	16" 90deg bend, WE, LR			1 EA	1017863
9	16" Tee, Straight, WE, CS			1 EA	1021107
10	Elbow 45 Deg 16" Weld LR			2 EA	1017864

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GIS: X = 2,082,065 Y = 13,678,885
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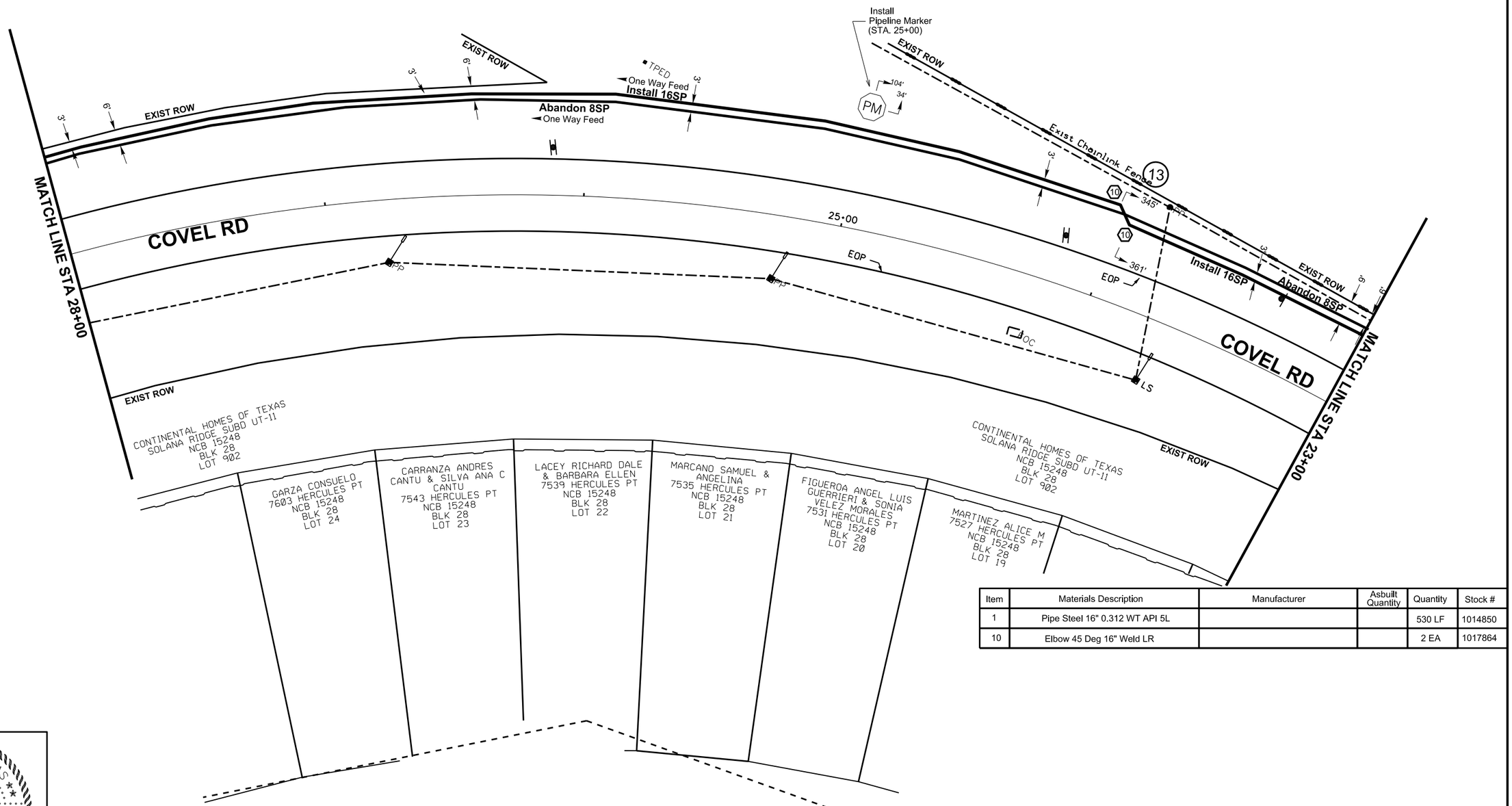
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Contract Exhibit GAS-6

Scale:
1" = 40'



Item	Materials Description	Manufacturer	Asbuilt Quantity	Quantity	Stock #
1	Pipe Steel 16" 0.312 WT API 5L			530 LF	1014850
10	Elbow 45 Deg 16" Weld LR			2 EA	1017864

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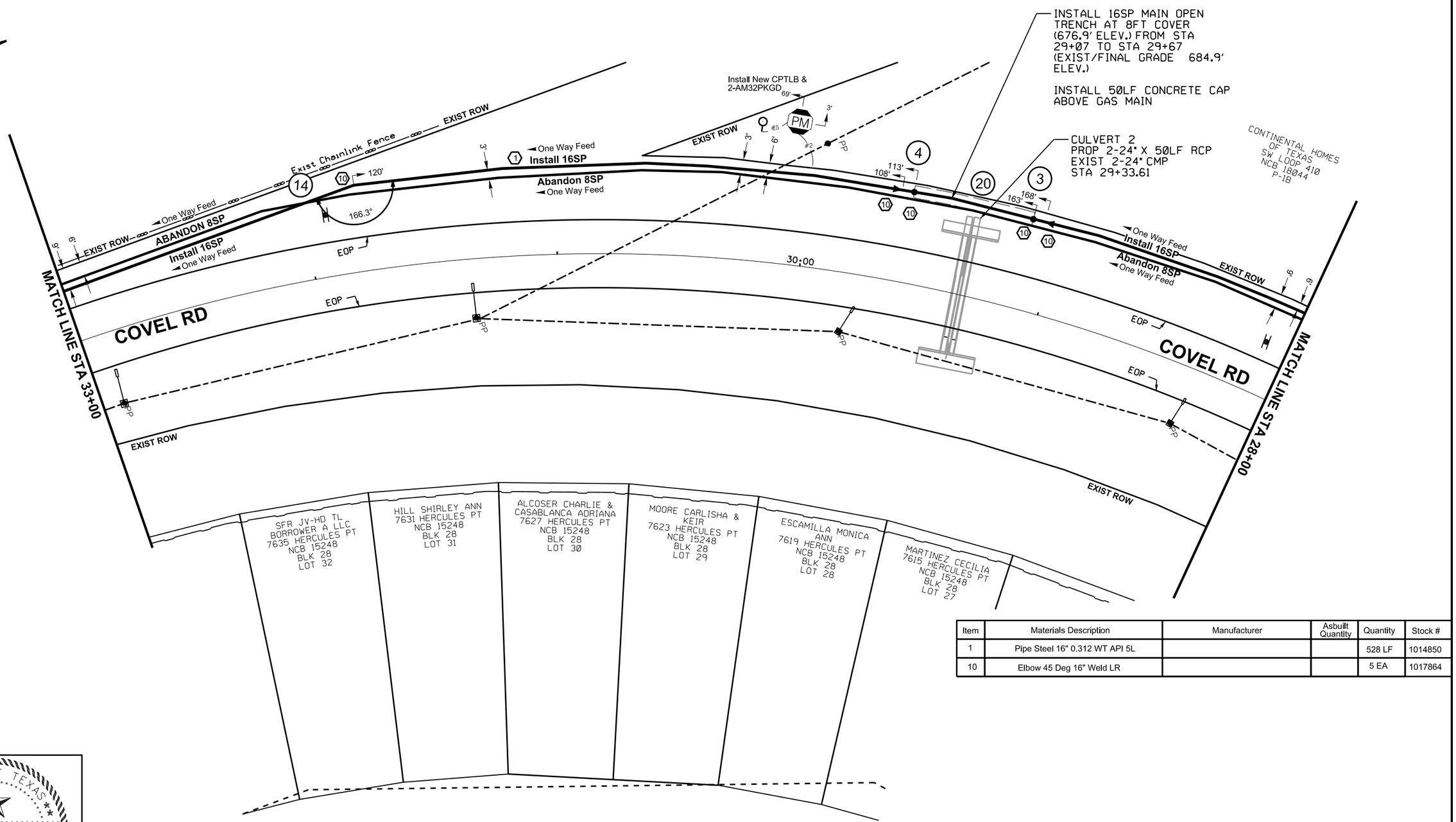
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Scale:
1" = 40'



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1	Pipe Steel 16" 0.312 WT API 5L			528 LF	1014850
10	Elbow 45 Deg 16" Weld LR			5 EA	1017864

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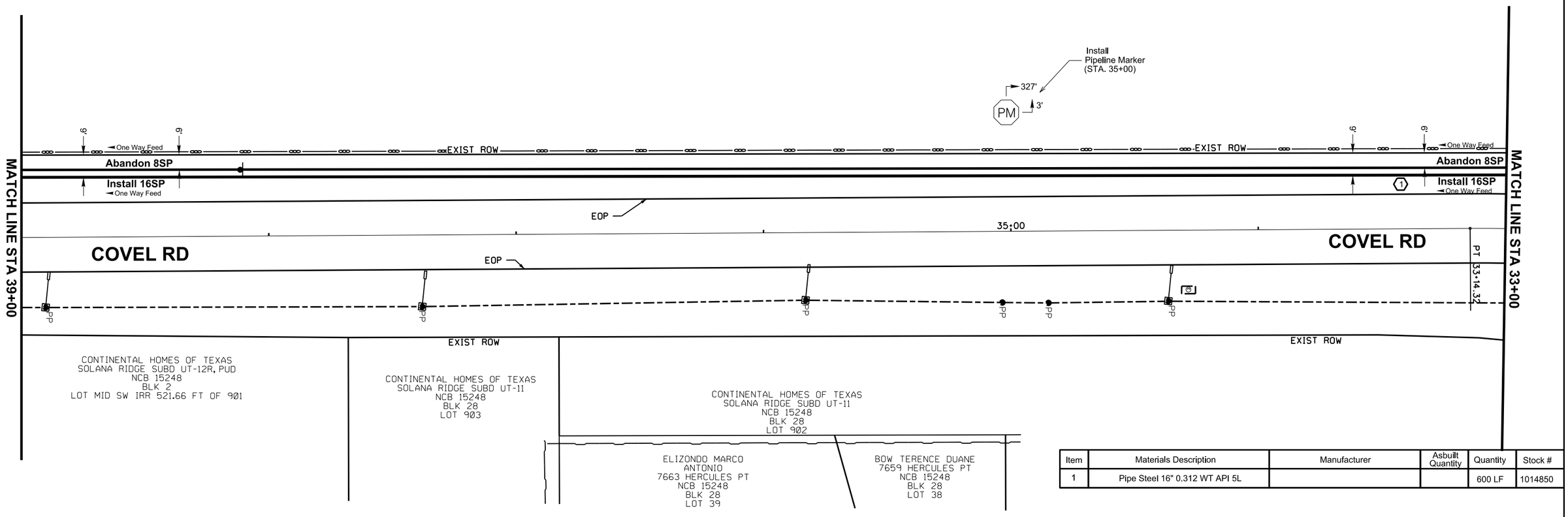
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SAN ANTONIO, TX 78296

Job No. 40872395

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Contract Exhibit GAS-6

Scale:
1" = 40'



Item	Materials Description	Manufacturer	Asbuilt Quantity	Quantity	Stock #
1	Pipe Steel 16" 0.312 WT API 5L			600 LF	1014850

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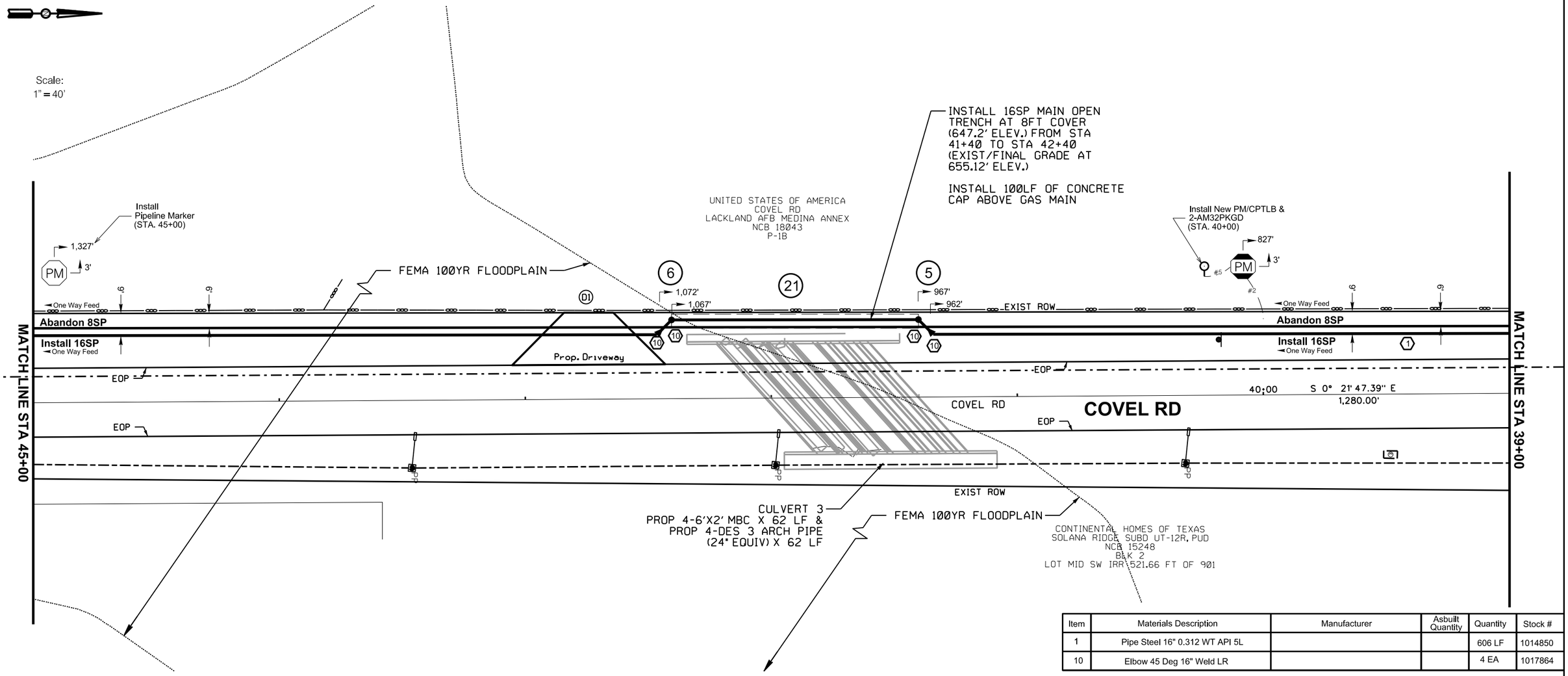
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Contract Exhibit GAS-6

Scale:
1" = 40'



Item	Materials Description	Manufacturer	Asbuilt Quantity	Quantity	Stock #
1	Pipe Steel 16" 0.312 WT API 5L			606 LF	1014850
10	Elbow 45 Deg 16" Weld LR			4 EA	1017864

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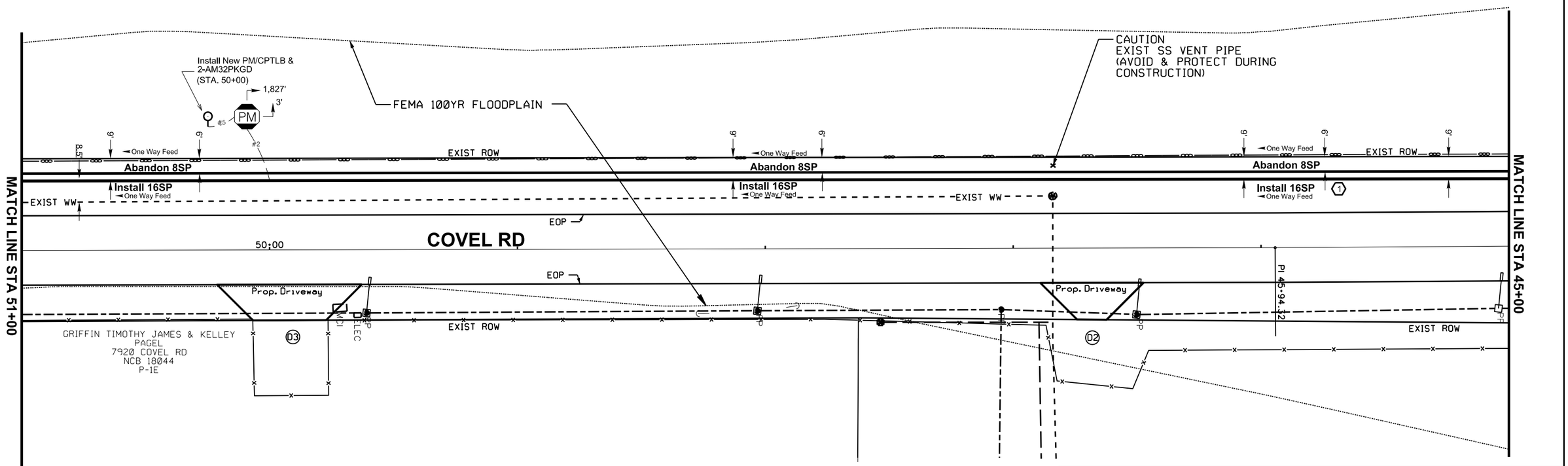
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Job No. 40872395

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Contract Exhibit GAS-6

Scale:
1" = 40'



Item	Materials Description	Manufacturer	Asbuilt Quantity	Quantity	Stock #
1	Pipe Steel 16" 0.312 WT API 5L FBE Coated			600 LF	1014850
10	Elbow 45 Deg 16" Weld LR			2 EA	1017864

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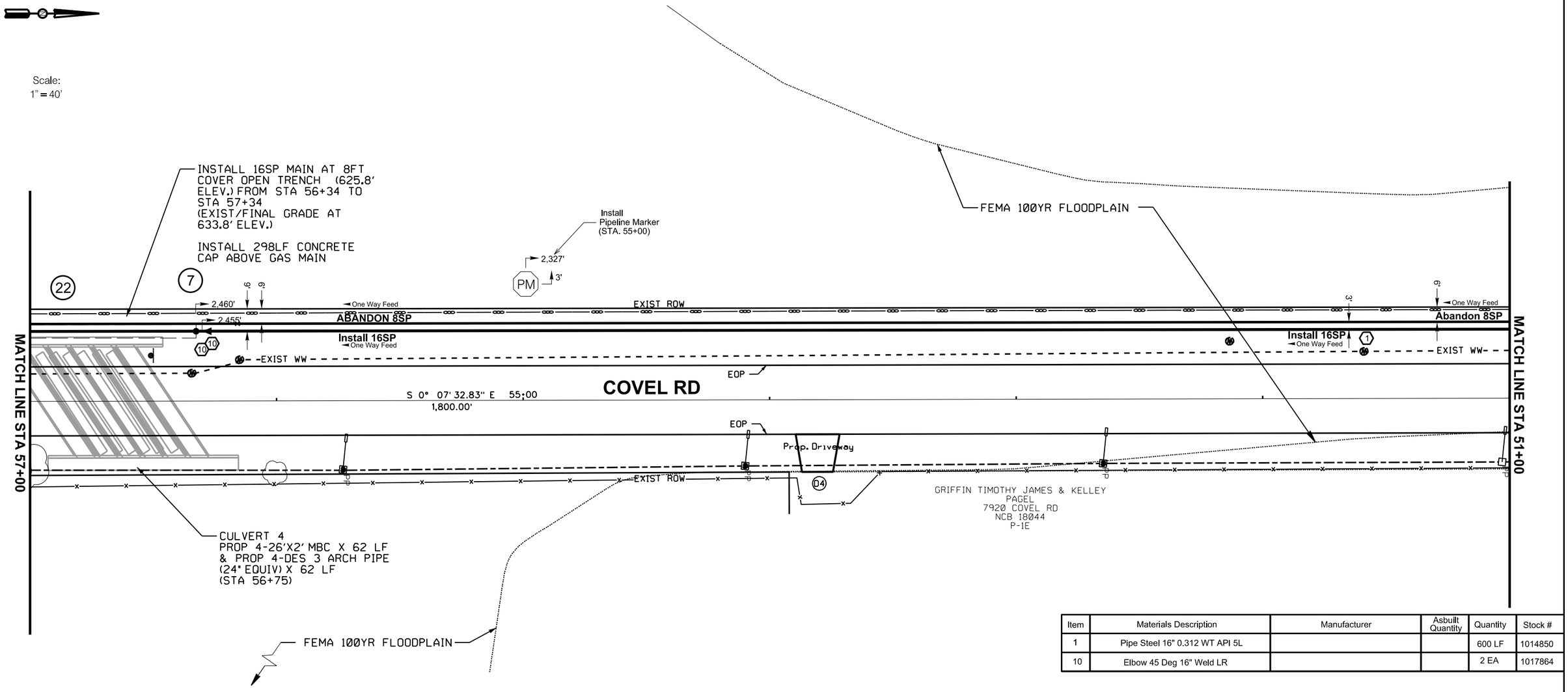
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Scale:
1" = 40'



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1	Pipe Steel 16" 0.312 WT API 5L			600 LF	1014850
10	Elbow 45 Deg 16" Weld LR			2 EA	1017864

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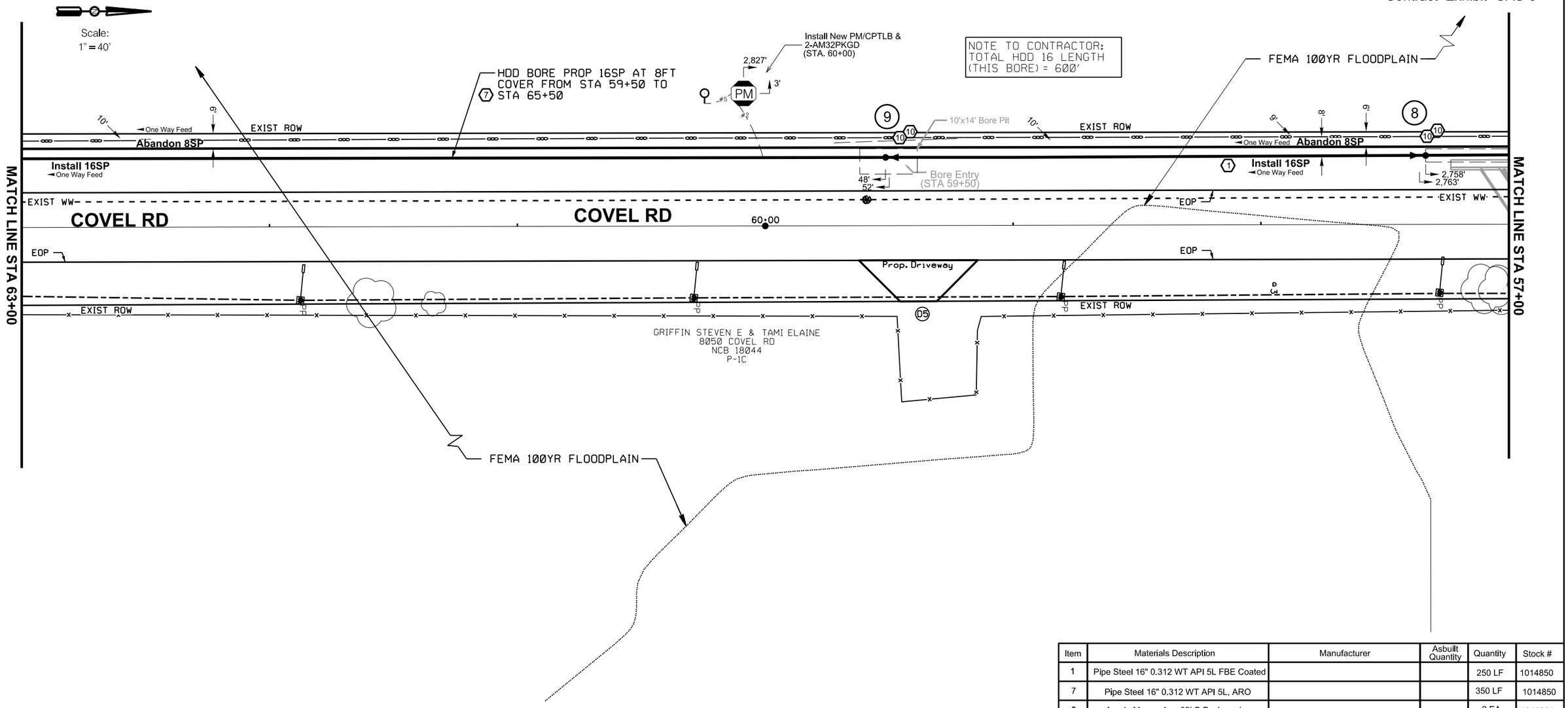
Job Title: Covel Rd (Ray Ellison – Covel Gardens Landfill)

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Job No. 40872395

All proposed gas mains and services are to be installed at the planned Gas Top of Pipe Elevation indicated on the Location Data Table.

Contract Exhibit GAS-6



Item	Materials Description	Manufacturer	Asbuilt Quantity	Quantity	Stock #
1	Pipe Steel 16" 0.312 WT API 5L FBE Coated			250 LF	1014850
7	Pipe Steel 16" 0.312 WT API 5L, ARO			350 LF	1014850
8	Anode Magnesium 32LB Packaged			2 EA	1016921

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Map Quadrant: NAD: 112 – 552
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Job Title: Covel Rd (Ray Ellison – Covel Gardens Landfill)

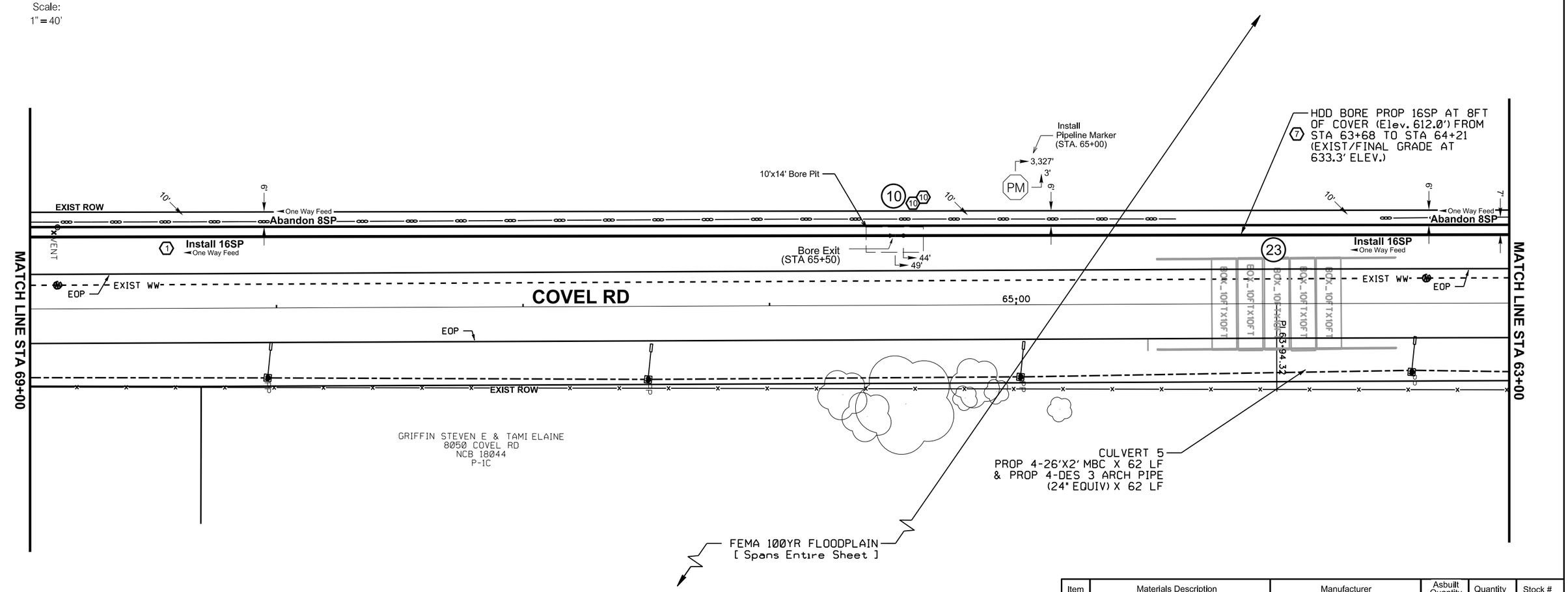
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Job No. 40872395

All proposed gas mains and services are to be installed at the planned Gas Top of Pipe Elevation indicated on the Location Data Table.

Contract Exhibit GAS-6

Scale:
1" = 40'



Item	Materials Description	Manufacturer	Asbuilt Quantity	Quantity	Stock #
1	Pipe Steel 16" 0.312 WT API 5L FBE Coated			350 LF	1014850
7	Pipe Steel 16" 0.312 WT API 5L, ARO			250 LF	1014850
10	Elbow 45 Deg 16" Weld LR			1 EA	1017864
				250 LF	

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Designed By: Jason P Guillemette Ext. 4285
Customer Design Gas Engineering / MRCC

Map Quadrant: 112 – 550
GIS: NAD: X = 2,082,065 Y = 13,678,885
Project No. G-0272

Job Title: Covel Rd (Ray Ellison – Covel Gardens Landfill)

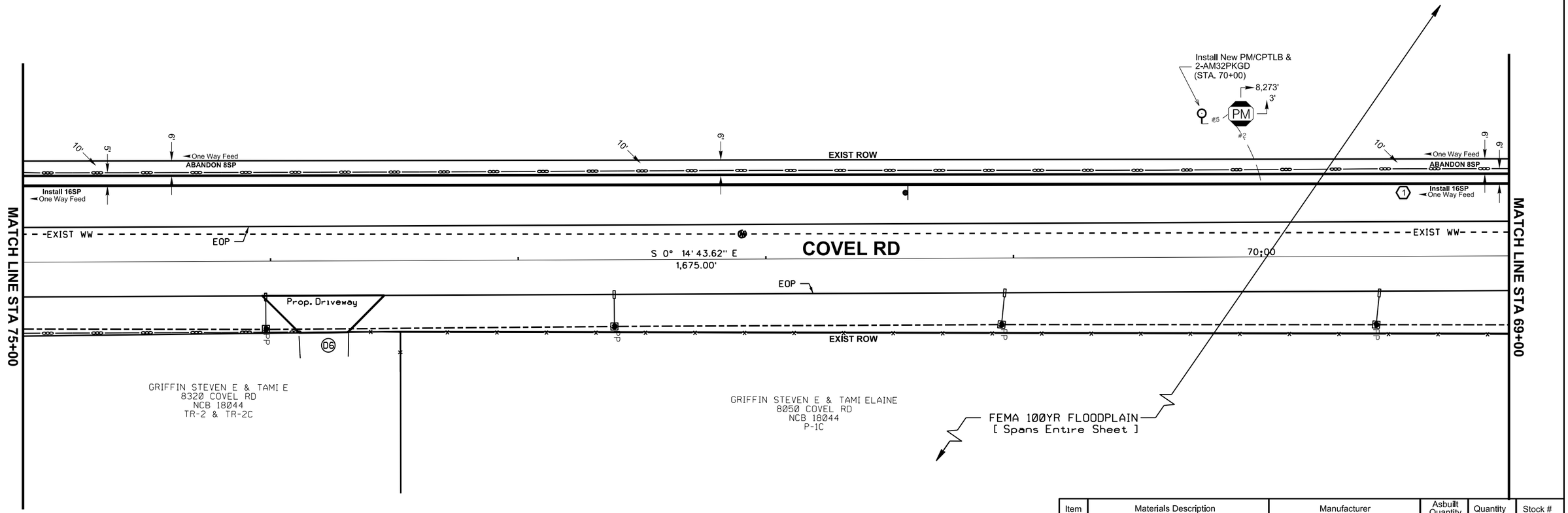
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Job No. 40872395

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Contract Exhibit GAS-6

Scale:
1" = 40'



Item	Materials Description	Manufacturer	Asbuilt Quantity	Quantity	Stock #
1	Pipe Steel 16" 0.312 WT API 5L			600 LF	1014850

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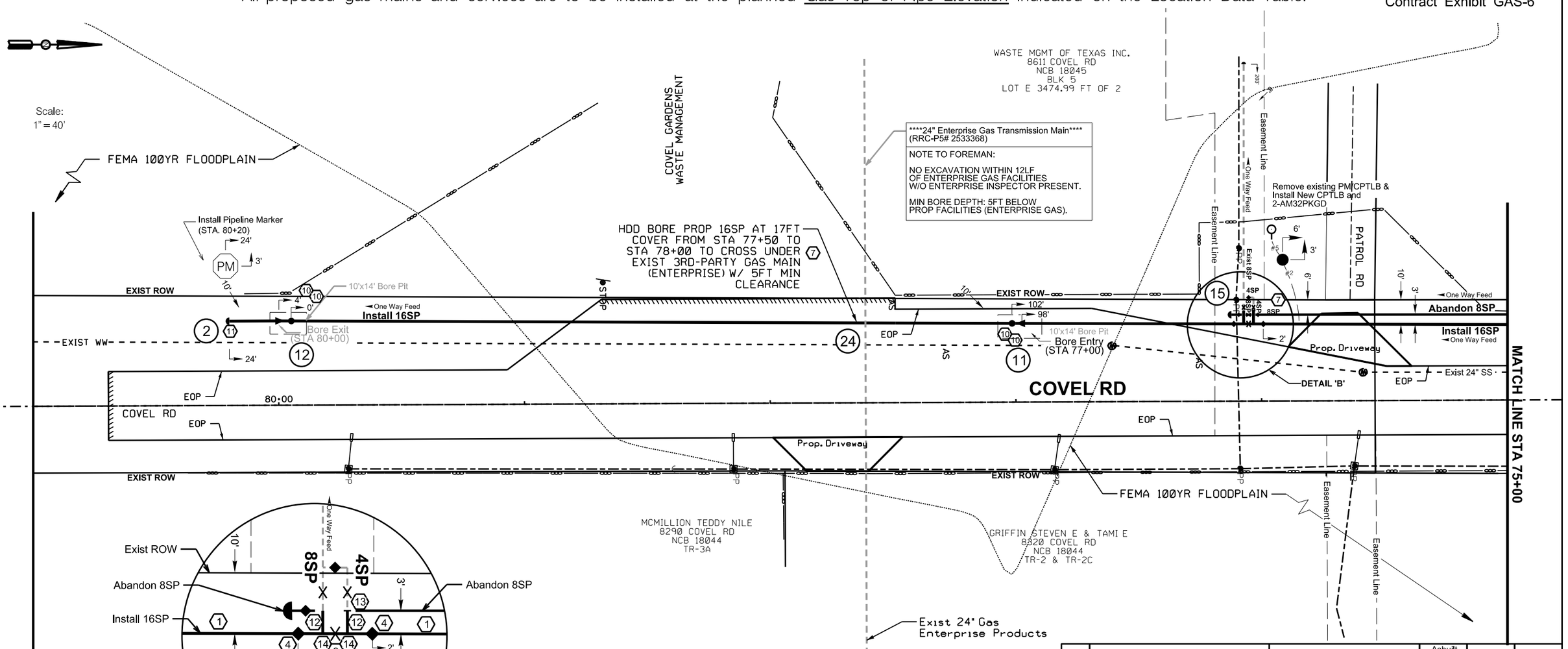
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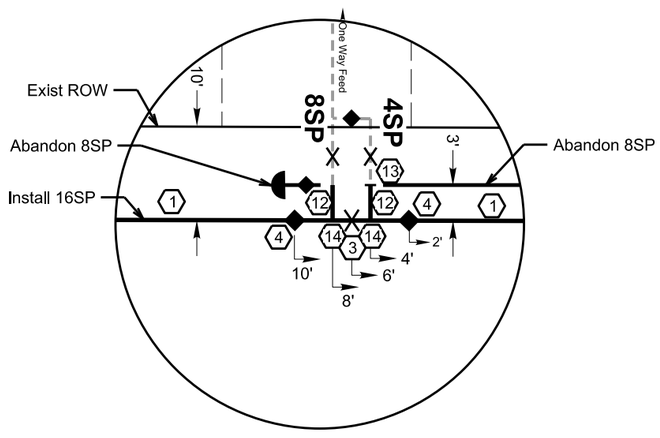
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Scale:
1" = 40'





Detail 'B'
Not to Scale

NOTE TO CONTRACTOR:
TOTAL HDD 16 LENGTH
(THIS BORE) = 300'

Item	Materials Description	Manufacturer	Asbuilt Quantity	Quantity	Stock #
1	Pipe Steel 16" 0.312 WT API 5L			220 LF	1014850
3	Valve Steel 16" .312 WE SQ Drive ANSI 300			1 EA	Non Stock
4	Test Riser 2"			3 EA	1018487
7	Pipe Steel 16" 0.312 WT API 5L, ARO			300 LF	1014850
10	Elbow 45 Deg 16" Weld LR			4 EA	1017864
11	Cap Steel 16" WE			1 EA	1016661
12	Pipe Steel 8" API 5L			10 LF	1014758
13	Reducer 8x4, Steel, CS			1 EA	1020570
14	Tee, Reducing, 16x16x8, Steel, CS			2 EA	Non Stock

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