CITY OF NEW BRAUNFELS
KLEIN RD PH 2
RECONSTRUCTION PROJECT
S WALNUT AVE TO FM 725

FINAL DESIGN SUBMITTAL
VOLUME II

City of NewBraunfels

NATHAN GARZA, CAPITAL PROJECTS MANAGER
550 LANDA STREET, NEW BRAUNFELS, TX 78130
830.221.4082

CITY COUNCIL

MAYOR AT LARGE	RUSTY BROCKMAN
DISTRICT 1	ANDRES CAMPOS
DISTRICT 2	CHRISTOPHER WILLIS
DISTRICT 3/MAYOR PRO TEM	HARRY BOWERS
DISTRICT 4	LAWRENCE SPRADLEY
DISTRICT 5	JASON E. HURTA
DISTRICT 6	JAMES BLAKEY

CITY MANAGER
ROBERT CAMARENO

DESIGN SPEED - 40 MPH

BY THE ACT OF SUBMITTING A BID FOR THIS PROPOSED CONTRACT, THE BIDDER WARRANTS THAT THE BIDDER, AND ALL SUBCONTRACTORS AND MATERIAL SUPPLIERS HE INTENDS TO USE HAVE CAREFULLY AND THOROUGHLY REVIEWED THE DRAWINGS, SPECIFICATIONS AND ALL OTHER CONTRACT DOCUMENTS AND HAVE FOUND THEM COMPLETE AND FREE FROM AMBIGUITIES AND SUFFICIENT FOR THE PURPOSE INTENDED. THE BIDDER FURTHER WARRANTS THAT TO THE BEST OF HIS OR HIS SUBCONTRACTOR'S AND MATERIAL SUPPLIERS' KNOWLEDGE, ALL MATERIALS AND PRODUCTS SPECIFIED OR INDICATED HEREIN ARE ACCEPTABLE FOR ALL APPLICABLE CODES AND AUTHORITIES.

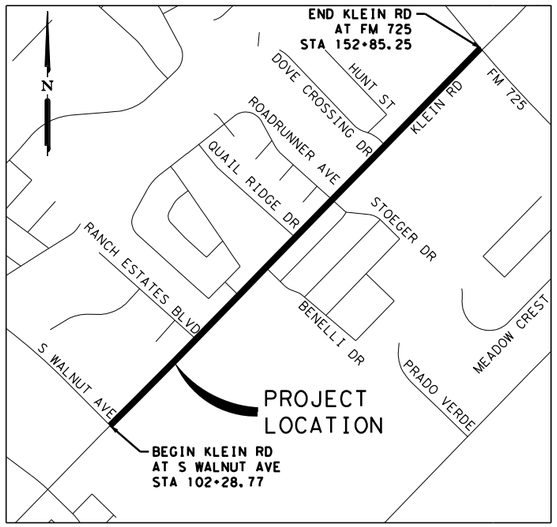
THE LOCATION OF ALL EXISTING UTILITIES SHOWN ON THESE PLANS HAS BEEN BASED UPON RECORD INFORMATION ONLY AND MAY NOT MATCH LOCATION AND/OR DEPTHS AS CONSTRUCTED. THE CONTRACTOR SHALL CONTACT EACH OF THE INDIVIDUAL UTILITIES FOR ASSISTANCE IN DETERMINING EXISTING LOCATION AND DEPTHS PRIOR TO BEGINNING AND CONSTRUCTION. CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ALL EXISTING UTILITY CROSSING'S PRIOR TO BEGINNING CONSTRUCTION.

ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER OF RECORD. IN ACCEPTING THESE PLANS, THE CITY OF NEW RAINFALLS MUST RELY UPON THE ADEQUACY OF THE WORK OF THE ENGINEER OF RECORD.

IF CONSTRUCTION HAS NOT COMMENCED WITHIN ONE-YEAR OF CITY APPROVAL FOR CONSTRUCTION INSPECTION, THAT APPROVAL IS NO LONGER VALID.

GAS UTILITIES ARE NOT INCLUDED IN THE CIVIL CONSTRUCTION PLANS. NO GAS IMPROVEMENTS PROPOSED.

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014



LOCATION MAP
SCALE: NOT TO SCALE

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

STATE OF TEXAS
JOHN A. TYLER
105193
LICENSED
PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E.

1/17/2023
DATE

JOB NO. CSP 23-004 CITY OF NEW BRAUNFELS
KLEIN RD PH 2 RECONSTRUTION PROJECT

Design Filename: H:\Projects\510\30\03\Design\Civil\General\5103003tsh_VOLUME_II.dgn

VOLUME I

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

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

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DRAINAGE DESIGN

STATE OF TEXAS · ANDRES MORALES · 130189 · LICENSED PROFESSIONAL ENGINEER

ANDRES MORALES, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

INDEX OF SHEETS

SHEET 1 OF 2

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	2

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\General\510300 3ind01.dgn

VOLUME II

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392-393	**** (IGMS) - MISCELLANEOUS SLAB DETAILS PRESTR CONCRETE I-GIRGERS
	CROSS SECTIONS
394-560	CROSS SECTIONS

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

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/17/2023 DATE

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TRAFFIC SIGNAL DESIGN

STATE OF TEXAS — JUSTIN W. CLARK — 118715 — LICENSED PROFESSIONAL ENGINEER

JUSTIN W. CLARK, P.E. — 1/17/2023 DATE

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

STRUCTURAL DESIGN

STATE OF TEXAS — A.M. STONE — 91049 — LICENSED PROFESSIONAL ENGINEER

A.M. STONE, P.E. — 4/29/2021 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/17/2023 DATE

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

INDEX OF SHEETS

SHEET 2 OF 2

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	3

Plotted on: 1/17/2023

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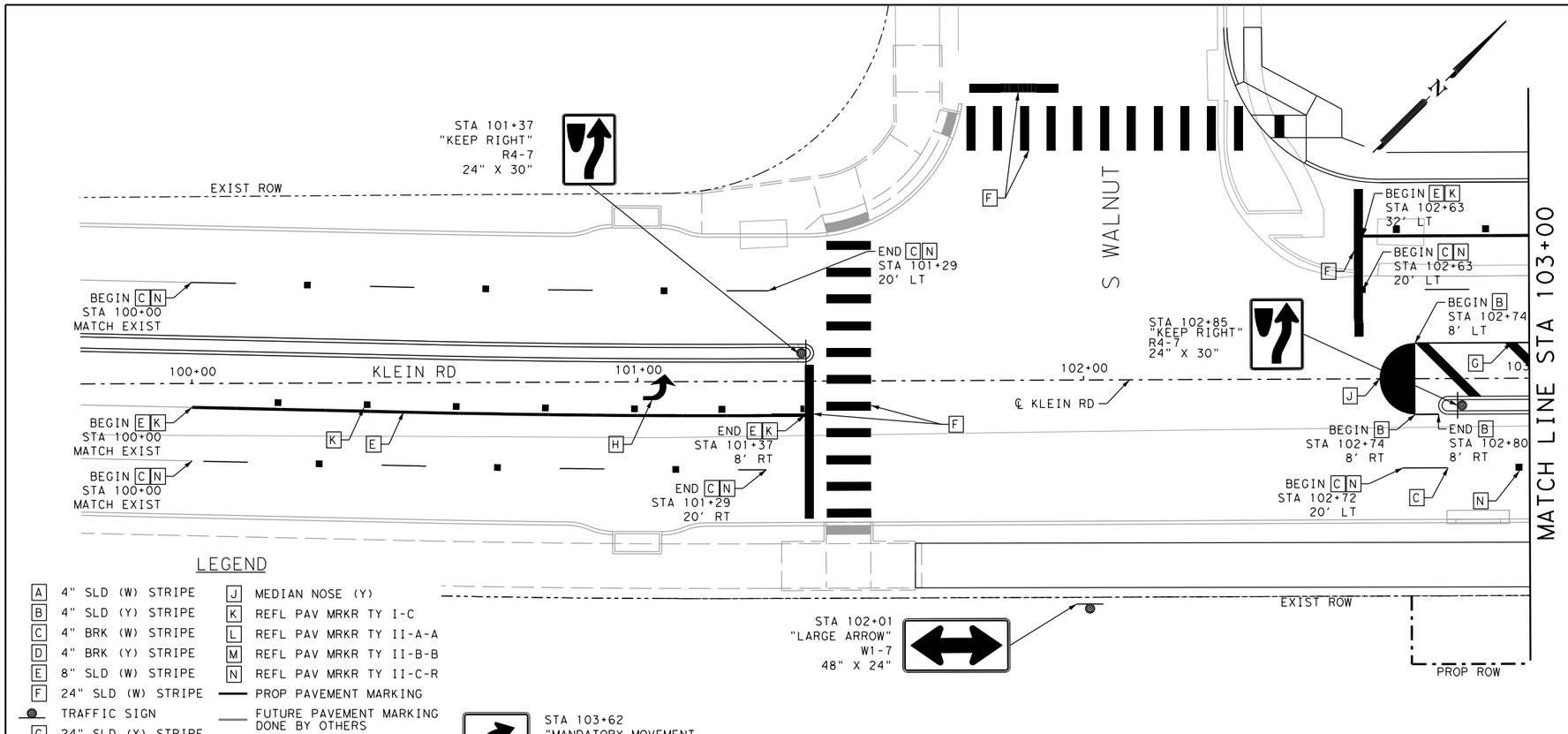
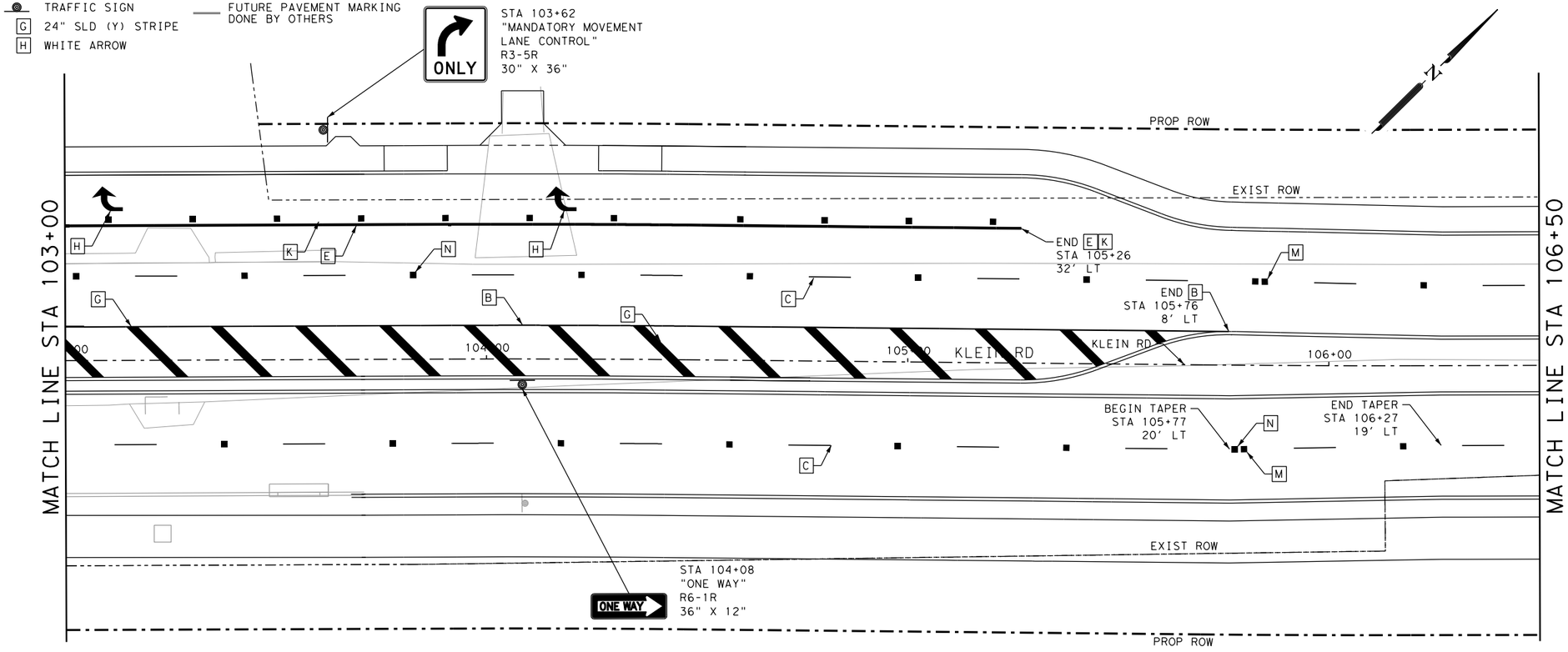


LEGEND

A	4" SLD (W) STRIPE	J	MEDIAN NOSE (Y)
B	4" SLD (Y) STRIPE	K	REFL PAV MRKR TY I-C
C	4" BRK (W) STRIPE	L	REFL PAV MRKR TY II-A-A
D	4" BRK (Y) STRIPE	M	REFL PAV MRKR TY II-B-B
E	8" SLD (W) STRIPE	N	REFL PAV MRKR TY II-C-R
F	24" SLD (W) STRIPE		PROP PAVEMENT MARKING
	TRAFFIC SIGN		FUTURE PAVEMENT MARKING DONE BY OTHERS
G	24" SLD (Y) STRIPE		
H	WHITE ARROW		



ITEM	DESCRIPTION	UNIT	QTY
0644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	5
0644-6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA	1
0644-6060	IN SM RD SN SUP&AM TYTWT(1)WS(P)	EA	1
0644-6061	IN SM RD SN SUP&AM TYTWT(1)WS(T)	EA	1
0644-6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA	1
0666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	339
0666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	434
0666-6054	REFL PAV MRK TY I (W)(ARROW)(100MIL)	EA	3
0666-6078	REFL PAV MRK TY I (W)(WORD)(100MIL)	EA	3
0666-6147	REFL PAV MRK TY I (Y)24"(SLD)(100MIL)	LF	195
0666-6156	REFL PAV MRK TY I(Y)(MED NOSE)(100MIL)	EA	1
0666-6224	PAVEMENT SEALER 4"	LF	559
0666-6226	PAVEMENT SEALER 8"	LF	339
0666-6230	PAVEMENT SEALER 24"	LF	629
0666-6231	PAVEMENT SEALER (ARROW)	EA	3
0666-6232	PAVEMENT SEALER (WORD)	EA	3
0666-6233	PAVEMENT SEALER (MED NOSE)	EA	1
0666-6300	RE PM W/RET REQ TY I (W)4"(BRK)(100MIL)	LF	300
0666-6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	LF	259
0672-5009	REFL PAV MRKR TY II-B-B	EA	2
0672-6007	REFL PAV MRKR TY I-C	EA	17
0672-6010	REFL PAV MRKR TY II-C-R	EA	26
0678-6001	PAV SURF PREP FOR MRK (4")	LF	559
0678-6004	PAV SURF PREP FOR MRK (8")	LF	339
0678-6008	PAV SURF PREP FOR MRK (24")	LF	629
0678-6009	PAV SURF PREP FOR MRK (ARROW)	EA	3
0678-6016	PAV SURF PREP FOR MRK (WORD)	EA	3
0678-6024	PAV SURF PREP FOR MRK (MED NOSE)	EA	1

NOTES

1. FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. ALL REFLECTIVE PAVEMENT MARKINGS SHALL RECEIVE A TY I AND TY II APPLICATION.
4. ALL DIMENSIONS ARE TO FACE OF CURB AND/OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

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City of New Braunfels

KLEIN RD PHASE 2

SIGNING AND PAVEMENT MARKING LAYOUT

BEGIN PROJECT TO STA 106+50

SHEET 1 OF 9

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	261

Plotted on: 1/16/2023

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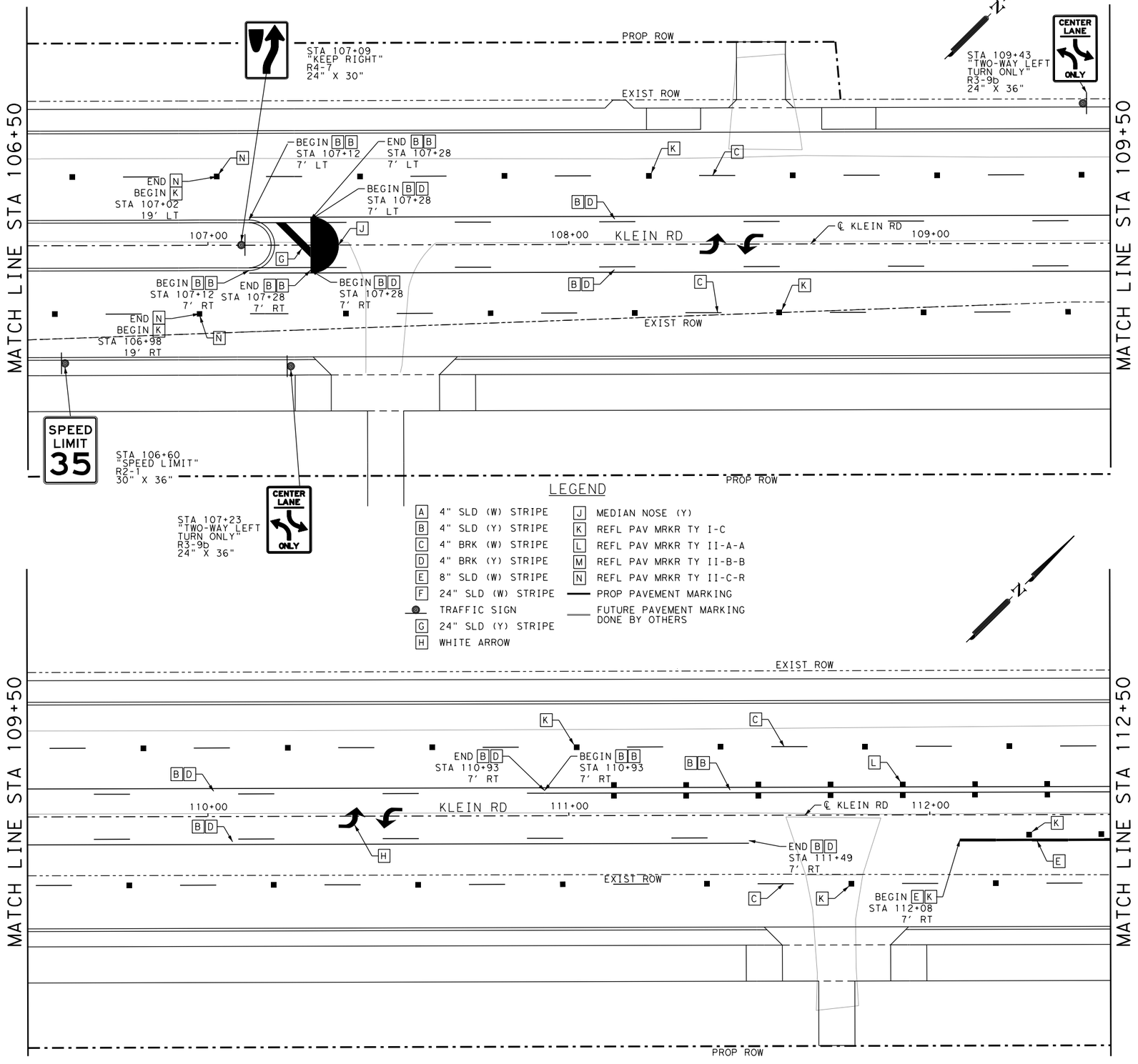

LEGEND

A	4" SLD (W) STRIPE	J	MEDIAN NOSE (Y)
B	4" SLD (Y) STRIPE	K	REFL PAV MRKR TY I-C
C	4" BRK (W) STRIPE	L	REFL PAV MRKR TY II-A-A
D	4" BRK (Y) STRIPE	M	REFL PAV MRKR TY II-B-B
E	8" SLD (W) STRIPE	N	REFL PAV MRKR TY II-C-R
F	24" SLD (W) STRIPE		PROP PAVEMENT MARKING
	TRAFFIC SIGN		FUTURE PAVEMENT MARKING DONE BY OTHERS
G	24" SLD (Y) STRIPE		
H	WHITE ARROW		

ITEM	DESCRIPTION	UNIT	QTY
0644-6060	IN SM RD SN SUP&AM TYTWT(1)WS(P)	EA	4
0666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	42
0666-6054	REFL PAV MRK TY I (W)(ARROW)(100MIL)	EA	4
0666-6147	REFL PAV MRK TY I (Y)24"(SLD)(100MIL)	LF	14
0666-6156	REFL PAV MRK TY I(Y)(MED NOSE)(100MIL)	EA	1
0666-6224	PAVEMENT SEALER 4"	LF	1670
0666-6226	PAVEMENT SEALER 8"	LF	42
0666-6230	PAVEMENT SEALER 24"	LF	14
0666-6231	PAVEMENT SEALER (ARROW)	EA	4
0666-6233	PAVEMENT SEALER (MED NOSE)	EA	1
0666-6300	RE PM W/RET REQ TY I (W)4"(BRK)(100MIL)	LF	300
0666-6312	RE PM W/RET REQ TY I (Y)4"(BRK)(100MIL)	LF	200
0666-6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	LF	1170
0672-6007	REFL PAV MRKR TY I-C	EA	28
0672-6009	REFL PAV MRKR TY II-A-A	EA	14
0672-6010	REFL PAV MRKR TY II-C-R	EA	4
0678-6001	PAV SURF PREP FOR MRK (4")	LF	1670
0678-6004	PAV SURF PREP FOR MRK (8")	LF	42
0678-6008	PAV SURF PREP FOR MRK (24")	LF	14
0678-6009	PAV SURF PREP FOR MRK (ARROW)	EA	4
0678-6024	PAV SURF PREP FOR MRK (MED NOSE)	EA	1

NOTES

1. FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. ALL REFLECTIVE PAVEMENT MARKINGS SHALL RECEIVE A TY I AND TY II APPLICATION.
4. ALL DIMENSIONS ARE TO FACE OF CURB AND/OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SIGNING AND PAVEMENT MARKING LAYOUT

STA 106+50 TO STA 112+50

SHEET 2 OF 9

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	262

Plotted on: 1/16/2023

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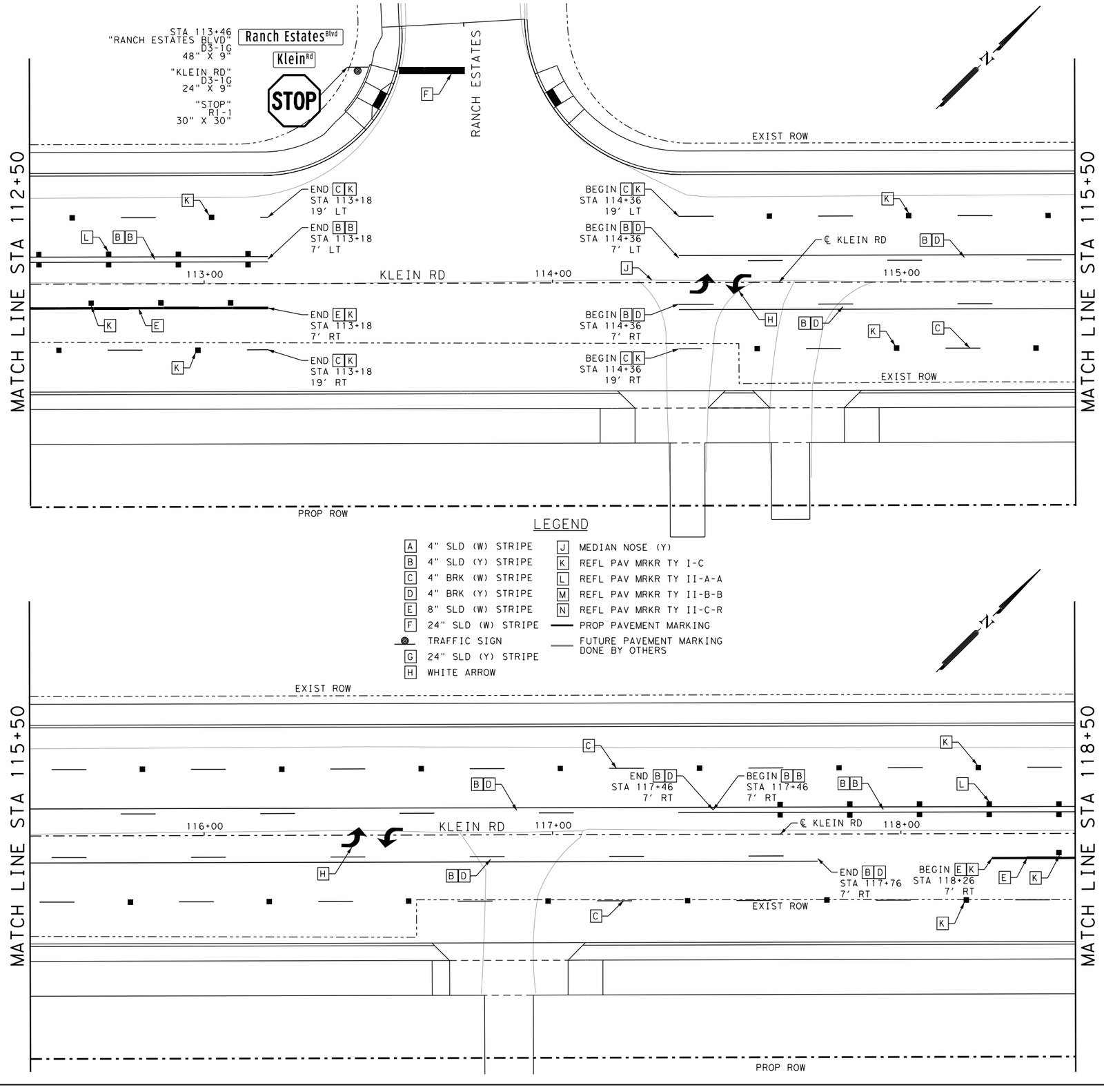

ITEM	DESCRIPTION	UNIT	QTY
0644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	1
0666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	93
0666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	19
0666-6054	REFL PAV MRK TY I (W)(ARROW)(100MIL)	EA	4
0666-6224	PAVEMENT SEALER 4"	LF	1405
0666-6226	PAVEMENT SEALER 8"	LF	93
0666-6230	PAVEMENT SEALER 24"	LF	19
0666-6231	PAVEMENT SEALER (ARROW)	EA	4
0666-6300	RE PM W/RET REQ TY I (W)4"(BRK)(100MIL)	LF	241
0666-6312	RE PM W/RET REQ TY I (Y)4"(BRK)(100MIL)	LF	170
0666-6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	LF	994
0672-6007	REFL PAV MRKR TY I-C	EA	28
0672-6009	REFL PAV MRKR TY II-A-A	EA	18
0678-6001	PAV SURF PREP FOR MRK (4")	LF	1405
0678-6004	PAV SURF PREP FOR MRK (8")	LF	93
0678-6008	PAV SURF PREP FOR MRK (24")	LF	19
0678-6009	PAV SURF PREP FOR MRK (ARROW)	EA	4

NOTES

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DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED · PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED · PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SIGNING AND PAVEMENT MARKING LAYOUT

STA 112+50 TO STA 118+50

SHEET 3 OF 9

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	263

Plotted on: 1/16/2023

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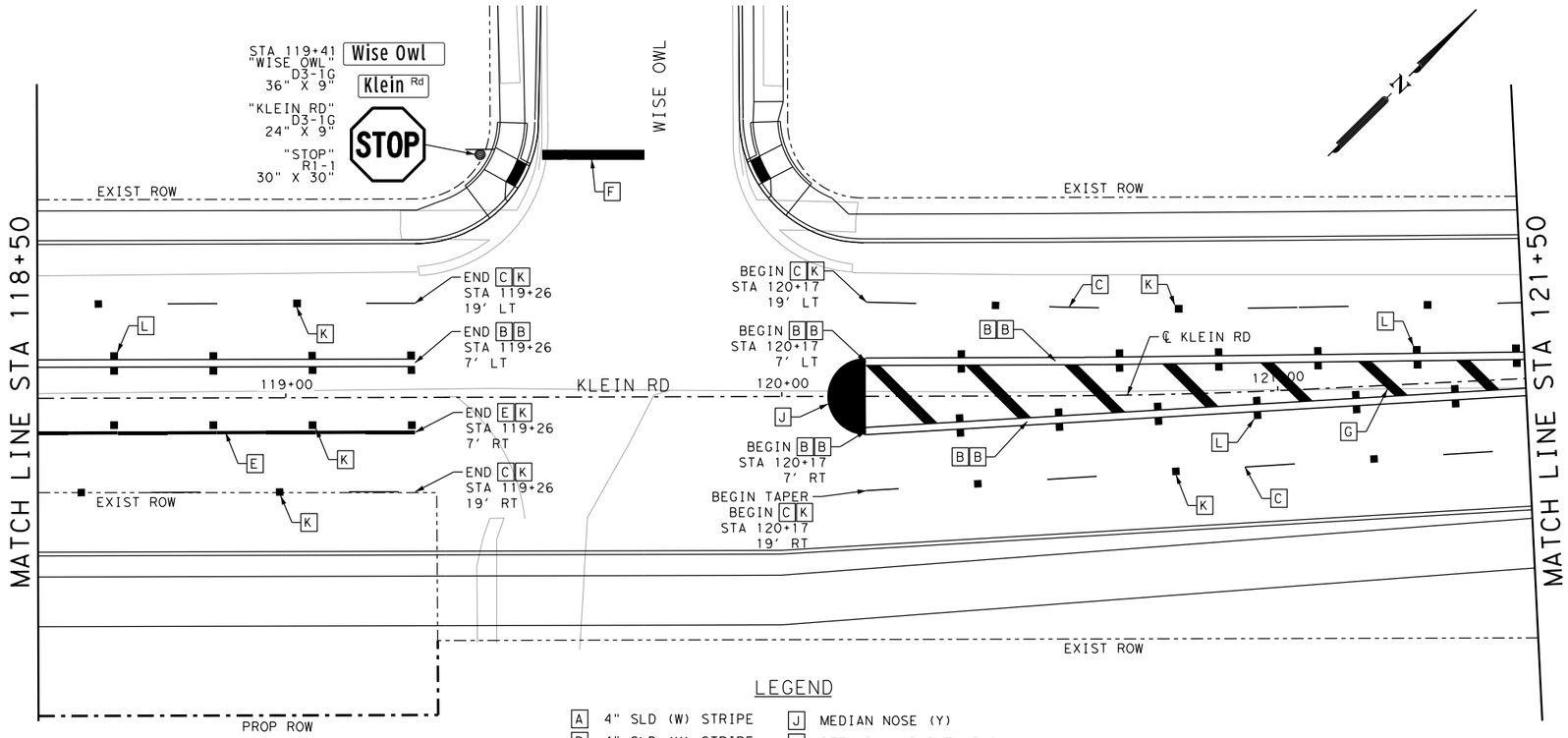
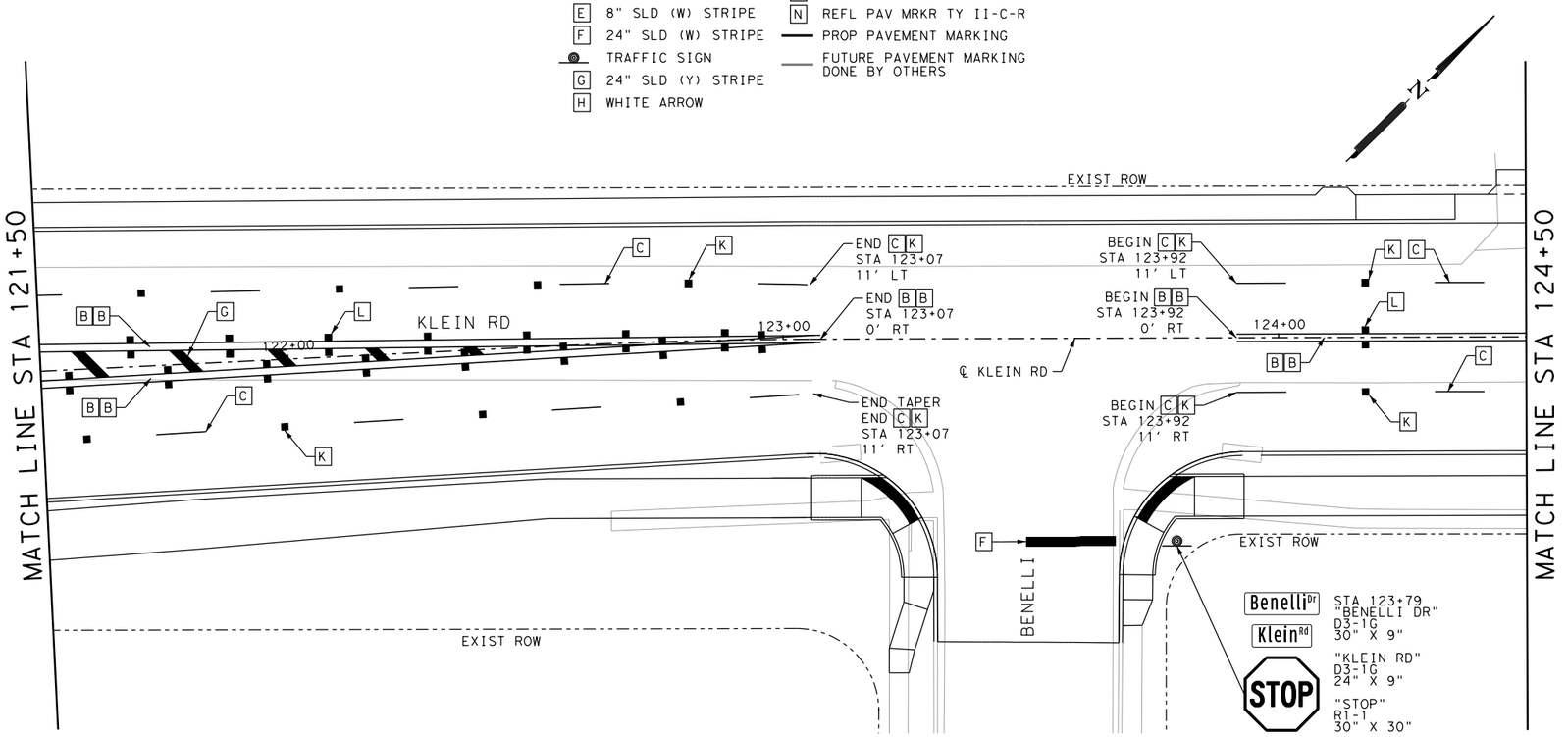


LEGEND

A	4" SLD (W) STRIPE	J	MEDIAN NOSE (Y)
B	4" SLD (Y) STRIPE	K	REFL PAV MRKR TY I-C
C	4" BRK (W) STRIPE	L	REFL PAV MRKR TY II-A-A
D	4" BRK (Y) STRIPE	M	REFL PAV MRKR TY II-B-B
E	8" SLD (W) STRIPE	N	REFL PAV MRKR TY II-C-R
F	24" SLD (W) STRIPE		PROP PAVEMENT MARKING
	TRAFFIC SIGN		FUTURE PAVEMENT MARKING DONE BY OTHERS
G	24" SLD (Y) STRIPE		
H	WHITE ARROW		



ITEM	DESCRIPTION	UNIT	QTY
0644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	1
0644-6060	IN SM RD SN SUP&AM TYTWT(1)WS(P)	EA	1
0666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	76
0666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	39
0666-6147	REFL PAV MRK TY I (Y)24"(SLD)(100MIL)	LF	113
0666-6156	REFL PAV MRK TY I(Y)(MED NOSE)(100MIL)	EA	1
0666-6224	PAVEMENT SEALER 4"	LF	1642
0666-6226	PAVEMENT SEALER 8"	LF	76
0666-6230	PAVEMENT SEALER 24"	LF	152
0666-6233	PAVEMENT SEALER (MED NOSE)	EA	1
0666-6300	RE PM W/RET REQ TY I (W)4"(BRK)(100MIL)	LF	212
0666-6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	LF	1430
0672-6007	REFL PAV MRKR TY I-C	EA	22
0672-6009	REFL PAV MRKR TY II-A-A	EA	68
0678-6001	PAV SURF PREP FOR MRK (4")	LF	1642
0678-6004	PAV SURF PREP FOR MRK (8")	LF	76
0678-6008	PAV SURF PREP FOR MRK (24")	LF	152
0678-6024	PAV SURF PREP FOR MRK (MED NOSE)	EA	1

NOTES

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4. ALL DIMENSIONS ARE TO FACE OF CURB AND/OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SIGNING AND PAVEMENT MARKING LAYOUT

STA 118+50 TO STA 124+50

SHEET 4 OF 9

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	264

Plotted on: 1/16/2023

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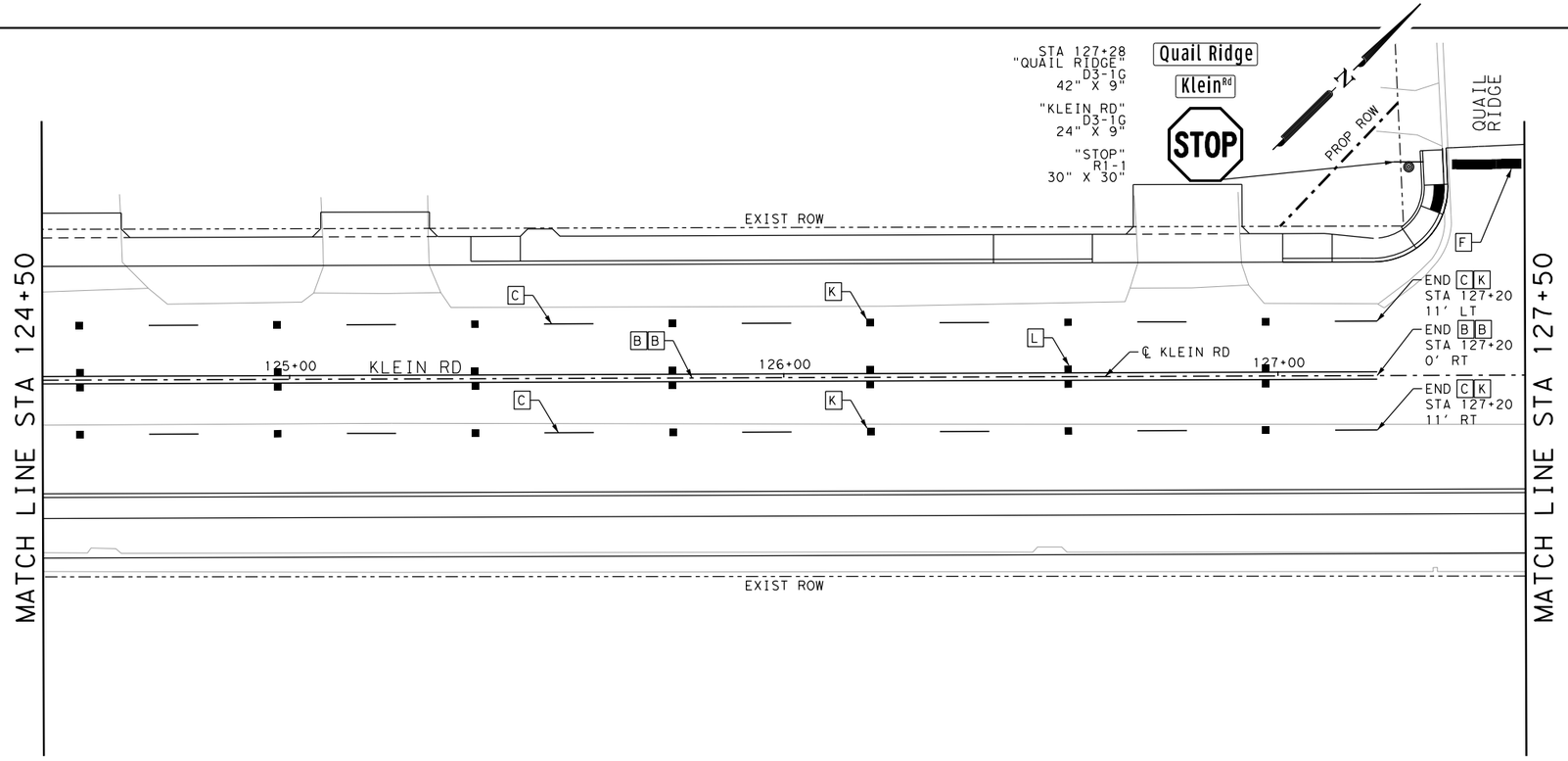

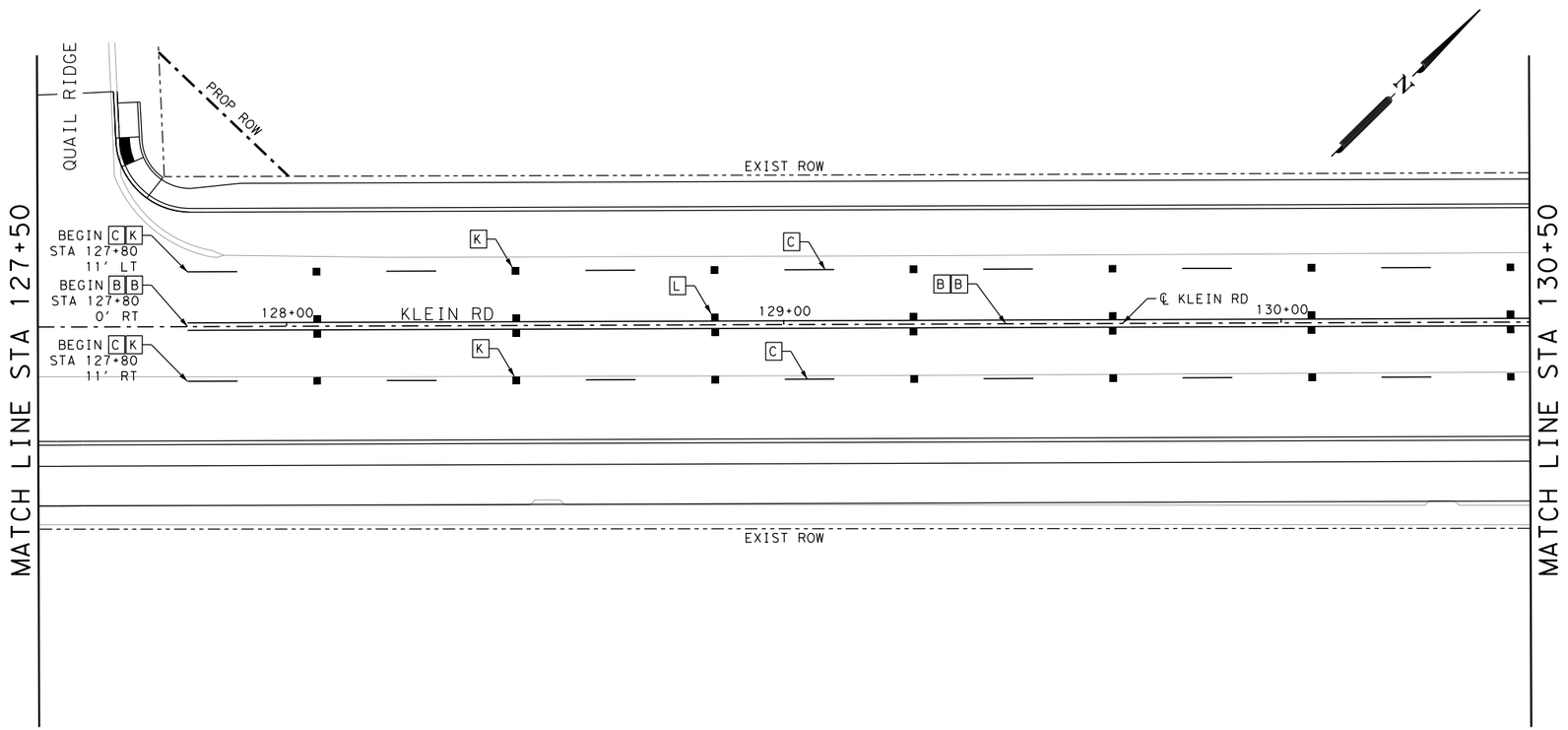

ITEM	DESCRIPTION	UNIT	QTY
0644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	1
0666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	14
0666-6224	PAVEMENT SEALER 4"	LF	1360
0666-6230	PAVEMENT SEALER 24"	LF	14
0666-6300	RE PM W/RET REQ TY I (W)4"(BRK)(100MIL)	LF	280
0666-6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	LF	1080
0672-6007	REFL PAV MRKR TY I-C	EA	28
0672-6009	REFL PAV MRKR TY II-A-A	EA	28
0678-6001	PAV SURF PREP FOR MRK (4")	LF	1360
0678-6008	PAV SURF PREP FOR MRK (24")	LF	14

LEGEND

- A — 4" SLD (W) STRIPE
- B — 4" SLD (Y) STRIPE
- C — 4" BRK (W) STRIPE
- D — 4" BRK (Y) STRIPE
- E — 8" SLD (W) STRIPE
- F — 24" SLD (W) STRIPE
- TRAFFIC SIGN
- G — 24" SLD (Y) STRIPE
- H — WHITE ARROW
- J — MEDIAN NOSE (Y)
- K — REFL PAV MRKR TY I-C
- L — REFL PAV MRKR TY II-A-A
- M — REFL PAV MRKR TY II-B-B
- N — REFL PAV MRKR TY II-C-R
- PROP PAVEMENT MARKING
- FUTURE PAVEMENT MARKING DONE BY OTHERS

NOTES

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DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SIGNING AND PAVEMENT MARKING LAYOUT

STA 124+50 TO STA 130+50

SHEET 5 OF 9

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	265

Plotted on: 1/16/2023

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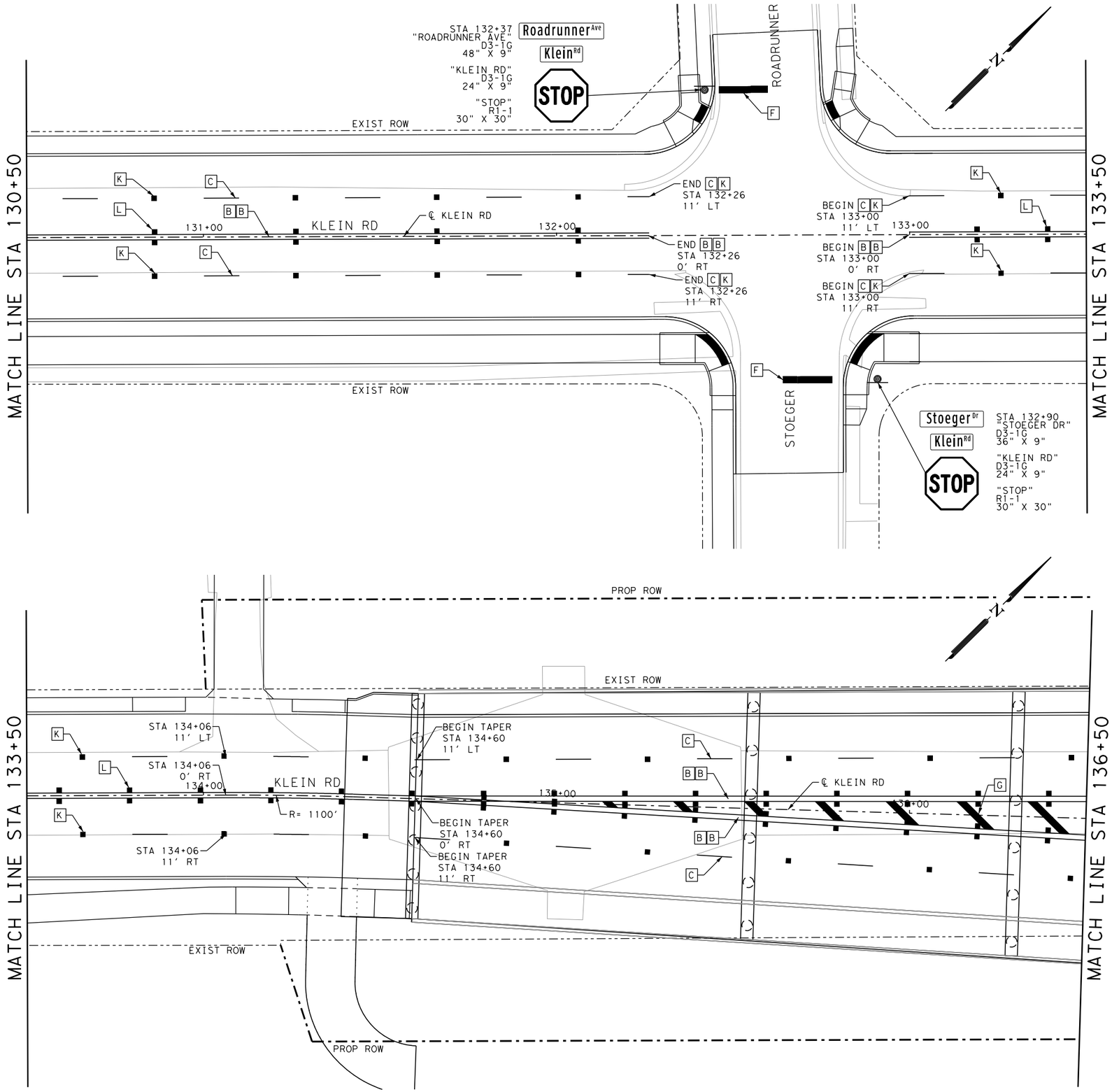

ITEM	DESCRIPTION	UNIT	QTY
0644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	2
0666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	28
0666-6147	REFL PAV MRK TY I (Y)24"(SLD)(100MIL)	LF	55
0666-6224	PAVEMENT SEALER 4"	LF	1697
0666-6230	PAVEMENT SEALER 24"	LF	83
0666-6300	RE PM W/RET REQ TY I (W)4"(BRK)(100MIL)	LF	265
0666-6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	LF	1432
0672-6007	REFL PAV MRKR TY I-C	EA	28
0672-6009	REFL PAV MRKR TY II-A-A	EA	60
0678-6001	PAV SURF PREP FOR MRK (4")	LF	1697
0678-6008	PAV SURF PREP FOR MRK (24")	LF	83

LEGEND

- A 4" SLD (W) STRIPE
- B 4" SLD (Y) STRIPE
- C 4" BRK (W) STRIPE
- D 4" BRK (Y) STRIPE
- E 8" SLD (W) STRIPE
- F 24" SLD (W) STRIPE
- TRAFFIC SIGN
- G 24" SLD (Y) STRIPE
- H WHITE ARROW
- J MEDIAN NOSE (Y)
- K REFL PAV MRKR TY I-C
- L REFL PAV MRKR TY II-A-A
- M REFL PAV MRKR TY II-B-B
- N REFL PAV MRKR TY II-C-R
- PROP PAVEMENT MARKING
- FUTURE PAVEMENT MARKING DONE BY OTHERS

NOTES

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DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SIGNING AND PAVEMENT MARKING LAYOUT

STA 130+50 TO STA 136+50

SHEET 6 OF 9

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	266

Plotted on: 1/16/2023

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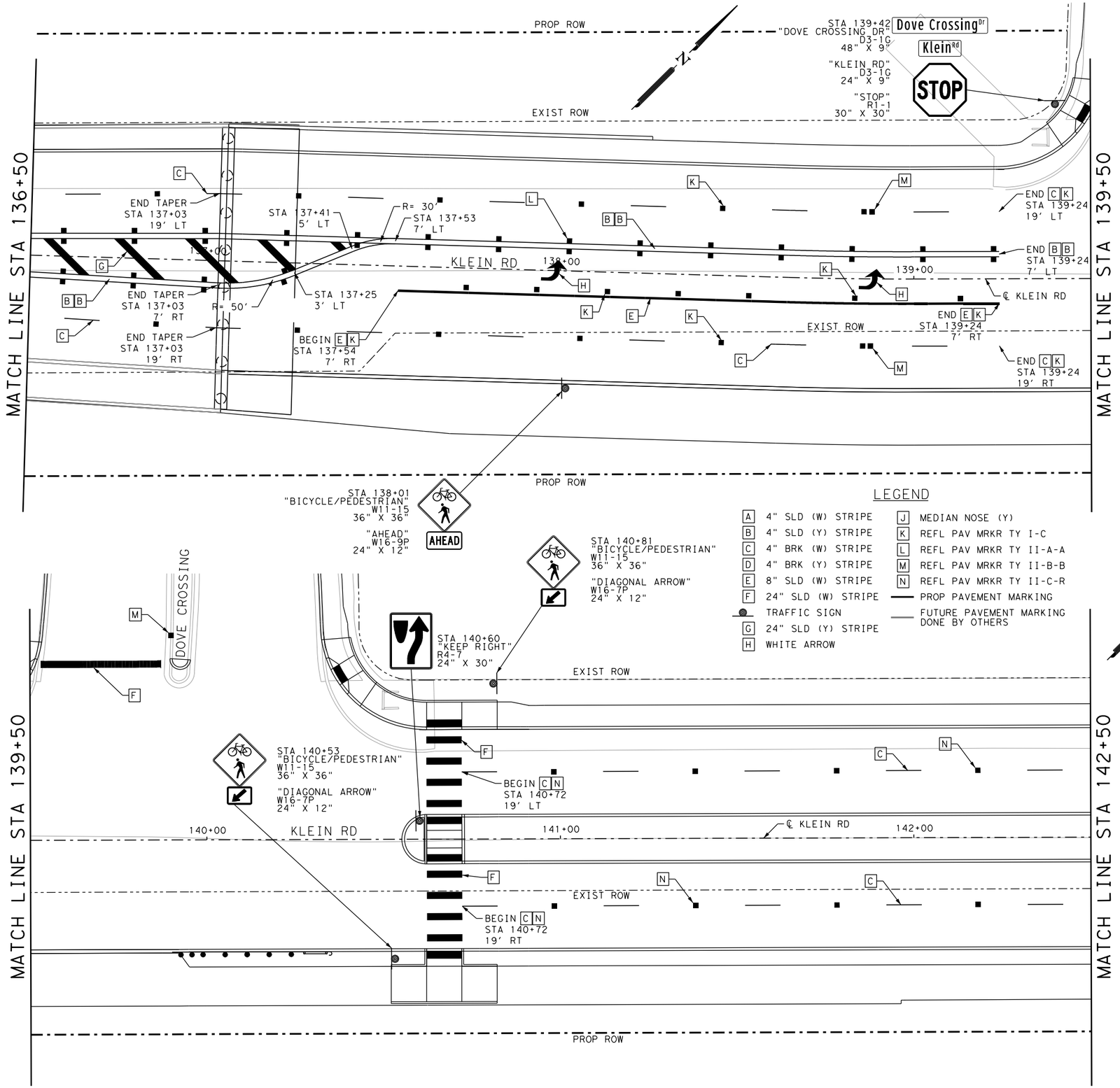

ITEM	DESCRIPTION	UNIT	QTY
0644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	4
0644-6060	IN SM RD SN SUP&AM TYTWT(1)WS(P)	EA	1
0666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	171
0666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	114
0666-6054	REFL PAV MRK TY I (W)(ARROW)(100MIL)	EA	2
0666-6078	REFL PAV MRK TY I (W)(WORD)(100MIL)	EA	2
0666-6147	REFL PAV MRK TY I (Y)24"(SLD)(100MIL)	LF	65
0666-6224	PAVEMENT SEALER 4"	LF	1000
0666-6226	PAVEMENT SEALER 8"	LF	171
0666-6230	PAVEMENT SEALER 24"	LF	179
0666-6231	PAVEMENT SEALER (ARROW)	EA	2
0666-6232	PAVEMENT SEALER (WORD)	EA	2
0666-6300	RE PM W/RET REQ TY I (W)4"(BRK)(100MIL)	LF	240
0666-6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	LF	760
0672-5009	REFL PAV MRKR TY II-B-B	EA	3
0672-6007	REFL PAV MRKR TY I-C	EA	21
0672-6009	REFL PAV MRKR TY II-A-A	EA	36
0672-6010	REFL PAV MRKR TY II-C-R	EA	8
0678-6001	PAV SURF PREP FOR MRK (4")	LF	1000
0678-6004	PAV SURF PREP FOR MRK (8")	LF	171
0678-6008	PAV SURF PREP FOR MRK (24")	LF	179
0678-6009	PAV SURF PREP FOR MRK (ARROW)	EA	2
0678-6016	PAV SURF PREP FOR MRK (WORD)	EA	2

NOTES

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4. ALL DIMENSIONS ARE TO FACE OF CURB AND/OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SIGNING AND PAVEMENT MARKING LAYOUT

STA 136+50 TO STA 142+50

SHEET 7 OF 9

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	267

Plotted on: 1/16/2023

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Plotted on: 1/16/2023

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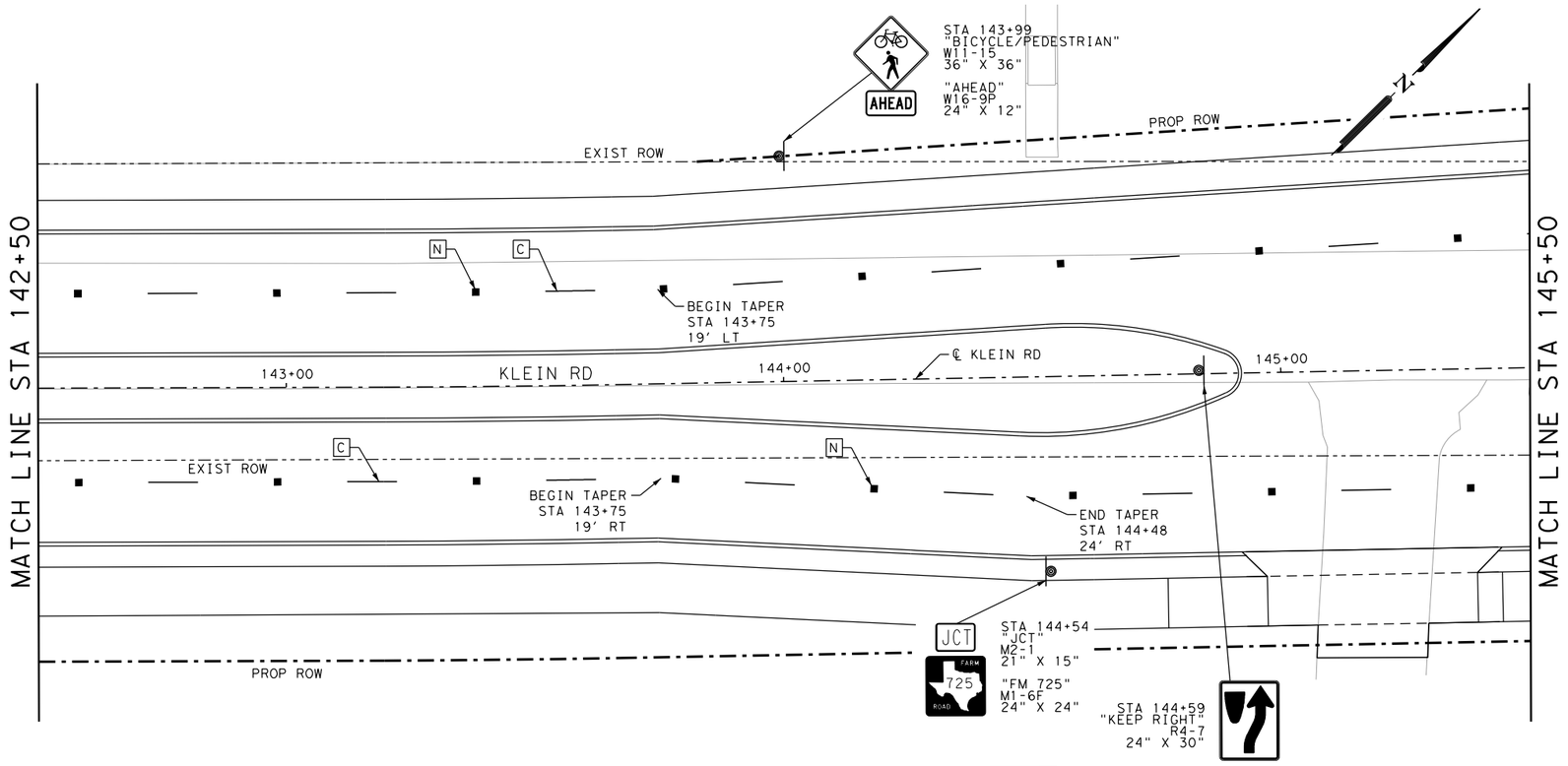


ITEM	DESCRIPTION	UNIT	QTY
0644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	1
0644-6007	IN SM RD SN SUP&AM TY10BWG(1)SA(U)	EA	1
0644-6060	IN SM RD SN SUP&AM TYTWT(1)WS(P)	EA	5
0666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	365
0666-6054	REFL PAV MRK TY I (W)(ARROW)(100MIL)	EA	4
0666-6078	REFL PAV MRK TY I (W)(WORD)(100MIL)	EA	4
0666-6224	PAVEMENT SEALER 4"	LF	300
0666-6226	PAVEMENT SEALER 8"	LF	365
0666-6231	PAVEMENT SEALER (ARROW)	EA	4
0666-6232	PAVEMENT SEALER (WORD)	EA	4
0666-6300	RE PM W/RET REQ TY I (W)4"(BRK)(100MIL)	LF	300
0672-6007	REFL PAV MRKR TY I-C	EA	20
0672-6010	REFL PAV MRKR TY II-C-R	EA	29
0678-6001	PAV SURF PREP FOR MRK (4")	LF	300
0678-6004	PAV SURF PREP FOR MRK (8")	LF	365
0678-6009	PAV SURF PREP FOR MRK (ARROW)	EA	4
0678-6016	PAV SURF PREP FOR MRK (WORD)	EA	4

LEGEND

- A 4" SLD (W) STRIPE
- B 4" SLD (Y) STRIPE
- C 4" BRK (W) STRIPE
- D 4" BRK (Y) STRIPE
- E 8" SLD (W) STRIPE
- F 24" SLD (W) STRIPE
- TRAFFIC SIGN
- G 24" SLD (Y) STRIPE
- H WHITE ARROW
- J MEDIAN NOSE (Y)
- K REFL PAV MRKR TY I-C
- L REFL PAV MRKR TY II-A-A
- M REFL PAV MRKR TY II-B-B
- N REFL PAV MRKR TY II-C-R
- PROP PAVEMENT MARKING
- FUTURE PAVEMENT MARKING DONE BY OTHERS

NOTES

1. FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. ALL REFLECTIVE PAVEMENT MARKINGS SHALL RECEIVE A TY I AND TY II APPLICATION.
4. ALL DIMENSIONS ARE TO FACE OF CURB AND/OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

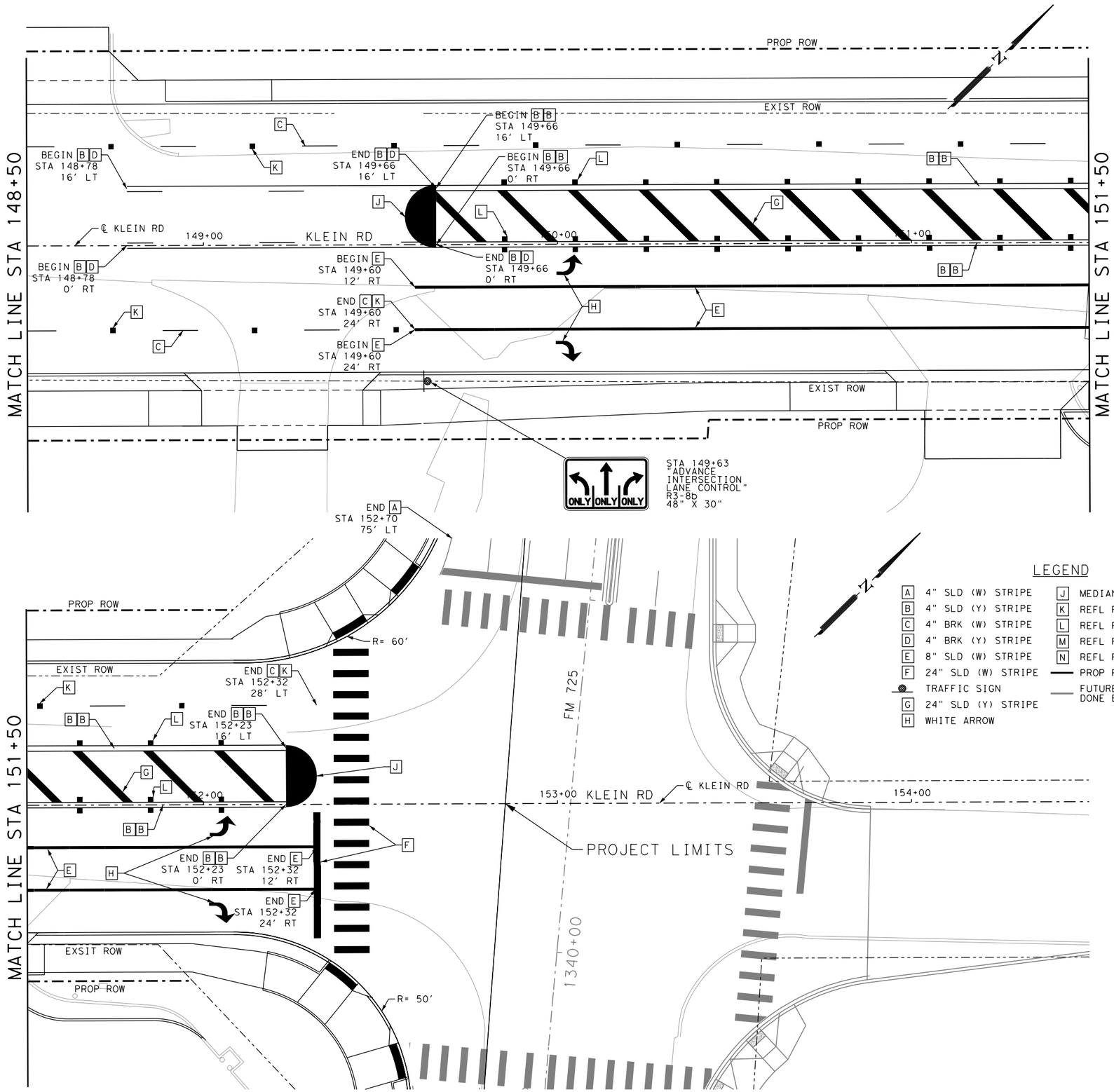
KLEIN RD PHASE 2

SIGNING AND PAVEMENT MARKING LAYOUT

STA 142+50 TO STA 148+50

SHEET 8 OF 9

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	268



ITEM	DESCRIPTION	UNIT	QTY
0644-6061	IN SM RD SN SUP&AM TYTWT(1)WS(T)	EA	1
0666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	546
0666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	186
0666-6054	REFL PAV MRK TY I (W)(ARROW)(100MIL)	EA	4
0666-6078	REFL PAV MRK TY I (W)(WORD)(100MIL)	EA	4
0666-6147	REFL PAV MRK TY I (Y)24"(SLD)(100MIL)	LF	274
0666-6156	REFL PAV MRK TY I(Y)(MED NOSE)(100MIL)	EA	2
0666-6224	PAVEMENT SEALER 4"	LF	1398
0666-6226	PAVEMENT SEALER 8"	LF	546
0666-6230	PAVEMENT SEALER 24"	LF	460
0666-6231	PAVEMENT SEALER (ARROW)	EA	4
0666-6232	PAVEMENT SEALER (WORD)	EA	4
0666-6233	PAVEMENT SEALER (MED NOSE)	EA	2
0666-6300	RE PM W/RET REQ TY I (W)4"(BRK)(100MIL)	LF	130
0666-6312	RE PM W/RET REQ TY I (Y)4"(BRK)(100MIL)	LF	44
0666-6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	LF	1224
0672-6007	REFL PAV MRKR TY I-C	EA	12
0672-6009	REFL PAV MRKR TY II-A-A	EA	39
0678-6001	PAV SURF PREP FOR MRK (4")	LF	1398
0678-6004	PAV SURF PREP FOR MRK (8")	LF	546
0678-6008	PAV SURF PREP FOR MRK (24")	LF	460
0678-6009	PAV SURF PREP FOR MRK (ARROW)	EA	4
0678-6016	PAV SURF PREP FOR MRK (WORD)	EA	4
0678-6024	PAV SURF PREP FOR MRK (MED NOSE)	EA	2

NOTES

1. FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. ALL REFLECTIVE PAVEMENT MARKINGS SHALL RECEIVE A TY I AND TY II APPLICATION.
4. ALL DIMENSIONS ARE TO FACE OF CURB AND/OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.

LEGEND

A	4" SLD (W) STRIPE	J	MEDIAN NOSE (Y)
B	4" SLD (Y) STRIPE	K	REFL PAV MRKR TY I-C
C	4" BRK (W) STRIPE	L	REFL PAV MRKR TY II-A-A
D	4" BRK (Y) STRIPE	M	REFL PAV MRKR TY II-B-B
E	8" SLD (W) STRIPE	N	REFL PAV MRKR TY II-C-R
F	24" SLD (W) STRIPE		PROP PAVEMENT MARKING
	TRAFFIC SIGN		FUTURE PAVEMENT MARKING DONE BY OTHERS
G	24" SLD (Y) STRIPE		
H	WHITE ARROW		

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/17/2023 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/17/2023 DATE

0 10 20 30 60

SCALE: PLAN 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SIGNING AND PAVEMENT MARKING LAYOUT

STA 148+50 TO END PROJECT

SHEET 9 OF 9

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	269

Plotted on: 1/17/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\Traffic\510300spm09.dgn

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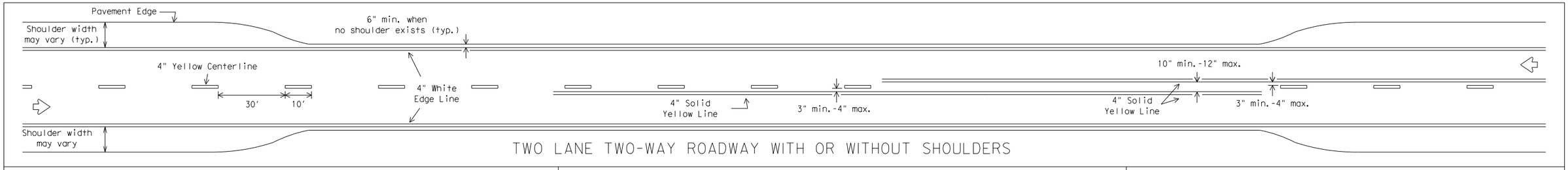
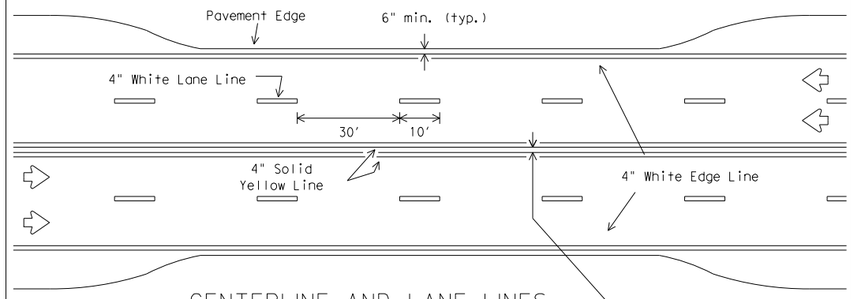
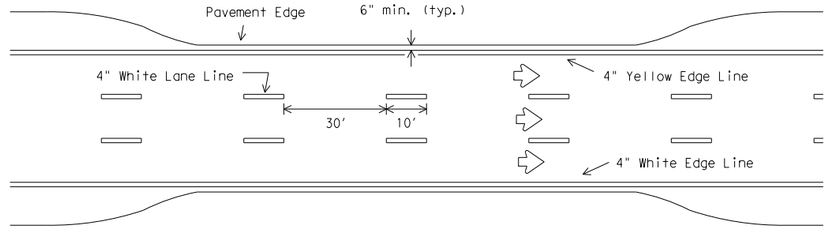


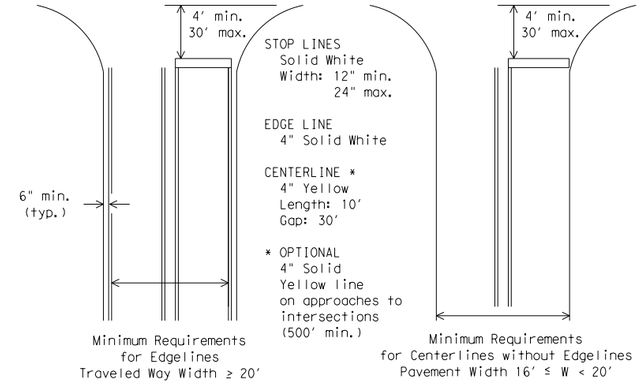
TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



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

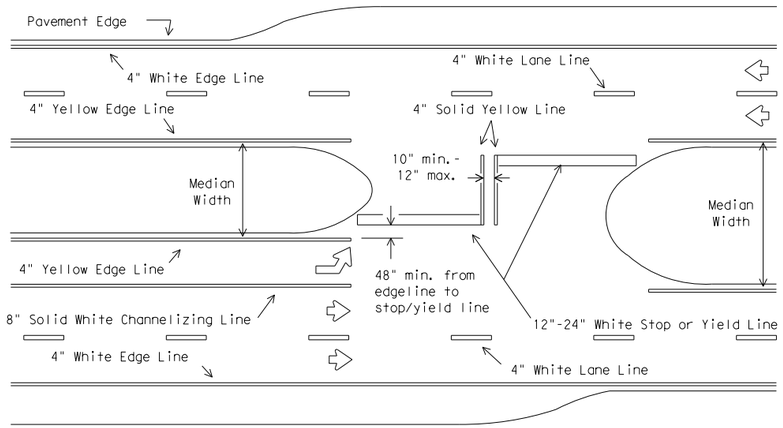


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



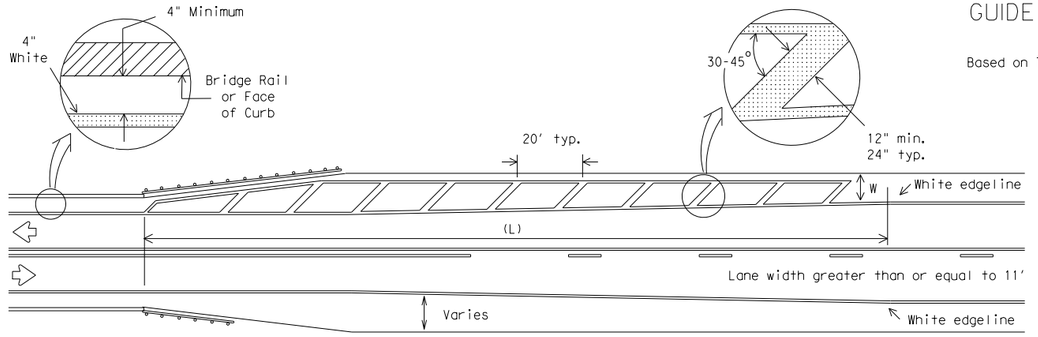
GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Highways



All medians shall be field measured to determine the location of necessary striping. Stop/Yield bars and centerlines shall be placed when the median width is greater than 30 ft. The median width is defined as the area between two roadways of a divided highway measured from edge of traveled way to edge of traveled way. The median excludes turn lanes. The median width might be different between intersections, interchanges and of opposite approaches of the same intersection. The narrow median width will be the controlling width to determine if markings are required.

FOUR LANE DIVIDED ROADWAY INTERSECTIONS



NOTES:

1. No-passing zone on bridge approach is optional but if used, it shall be a minimum 500 feet long.
2. For crosshatching length (L) see Table 1.
3. The width of the offset (W) and the required crosshatching width is the full shoulder width in advance of the bridge.
4. The crosshatching is not required if delineators or barrier reflectors are used along the structure.
5. For guard fence details, refer elsewhere in the plans.

ROADWAYS WITH REDUCED SHOULDER WIDTHS ACROSS BRIDGE OR CULVERT

TABLE 1 - TYPICAL LENGTH (L)

Posted Speed *	Formula
≤ 40	$L = \frac{WS^2}{60}$
≥ 45	L=WS

* 85th Percentile Speed may be used on roads where traffic speeds normally exceed the posted speed limit. Crosshatching length should be rounded up to nearest 5 foot increment.

L=Length of Crosshatching (FT.) W=Width of Offset (FT.)
S=Posted Speed (MPH)

EXAMPLES:

An 8 foot shoulder in advance of a bridge reduces to 4 feet on a 70 MPH roadway. The length of the crosshatching should be:

L = 8 x 70 = 560 ft.

A 4 foot shoulder in advance of a bridge reduces to 2 feet on a 40 MPH roadway. The length of the crosshatching should be:

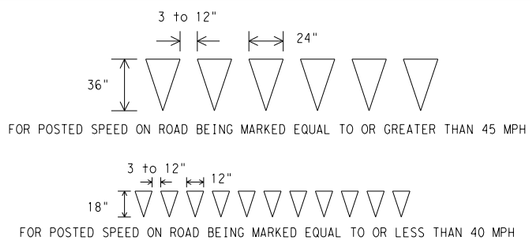
L = 4(40)² / 60 = 106.67 ft. rounded to 110 ft.

GENERAL NOTES

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

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

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



YIELD LINES

Texas Department of Transportation
Traffic Operations Division

TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-12

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DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS	CONT	SECT	JOB	HIGHWAY
8-95 2-12				KLEIN RD
5-00	DIST	COUNTY		SHEET NO.
8-00	SAT	GUADALUPE		270
3-03				

22A

DATE: 1/16/2023 3:44:27 PM
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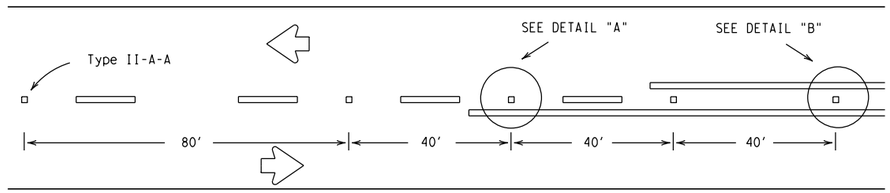
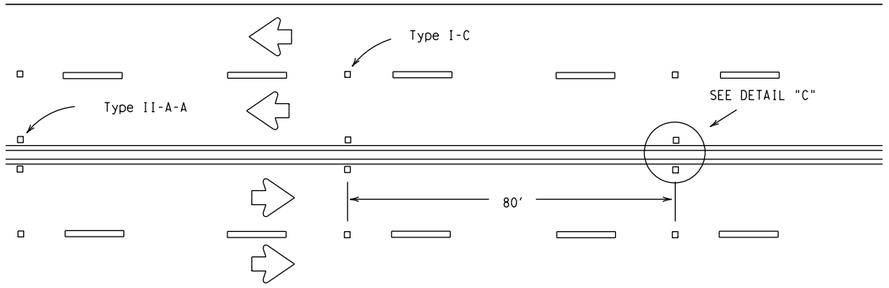
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

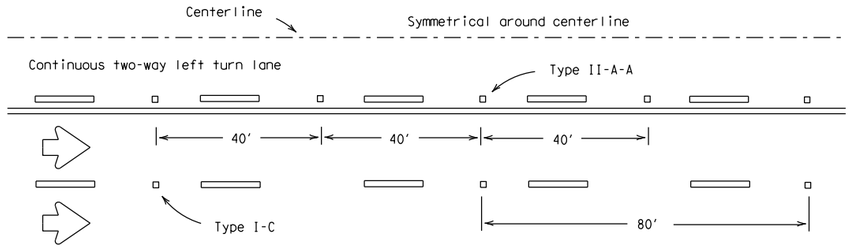


CENTERLINE FOR ALL TWO LANE ROADWAYS

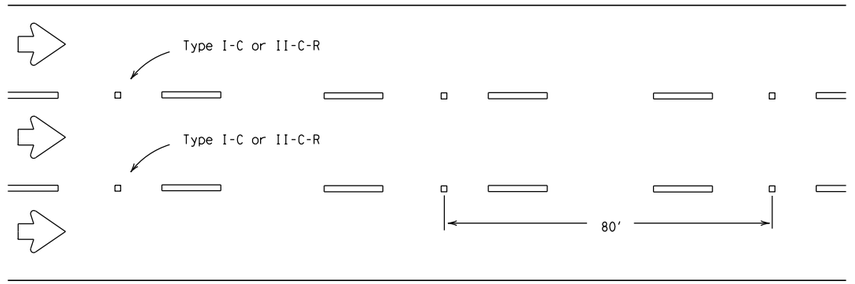


CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY HIGHWAYS

Raised pavement marker Type I-C, clear face toward normal traffic, shall be placed on 80-foot centers.

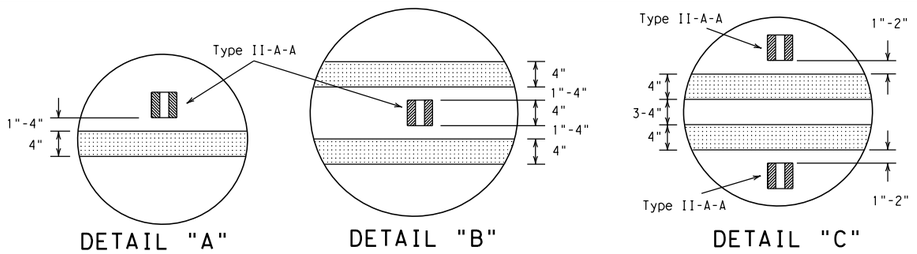


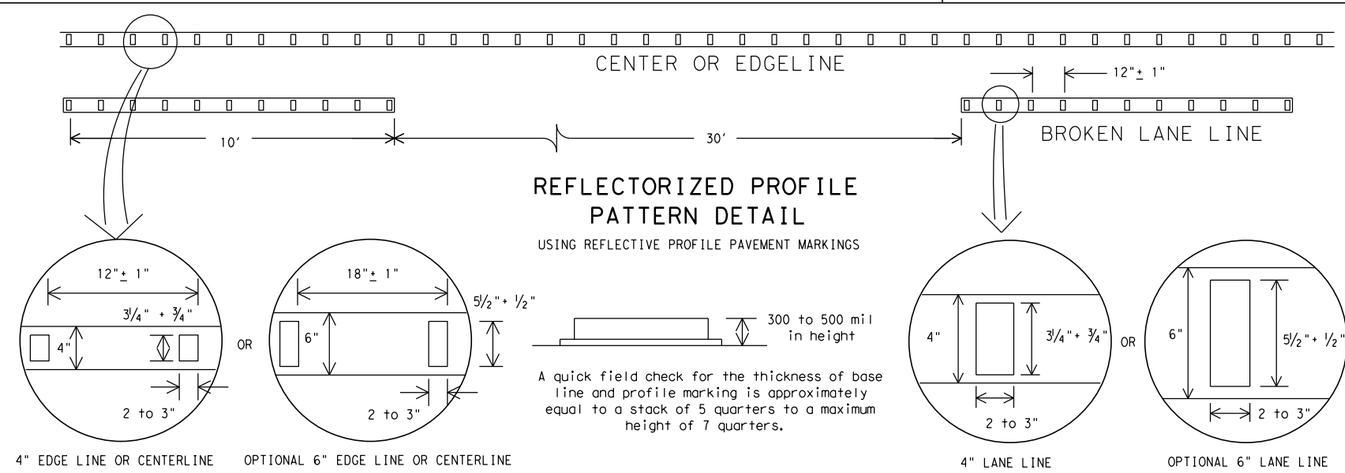
CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



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

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





REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

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

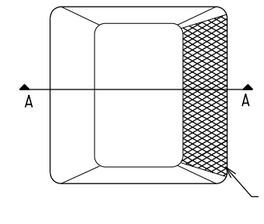
NOTE:
Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

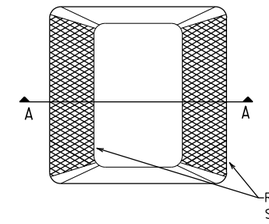
1. All raised pavement markers placed in broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.

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

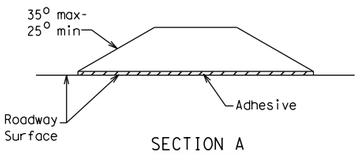
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

Texas Department of Transportation
Traffic Operations Division

POSITION GUIDANCE USING RAISED MARKERS
REFLECTORIZED PROFILE MARKINGS
PM(2)-12

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REVISIONS		DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
4-92	2-10	CONT	SECT	JOB	HIGHWAY
5-00	2-12				KLEIN RD
8-00		DIST	COUNTY		SHEET NO.
2-08		SAT	GUADALUPE		271

22B

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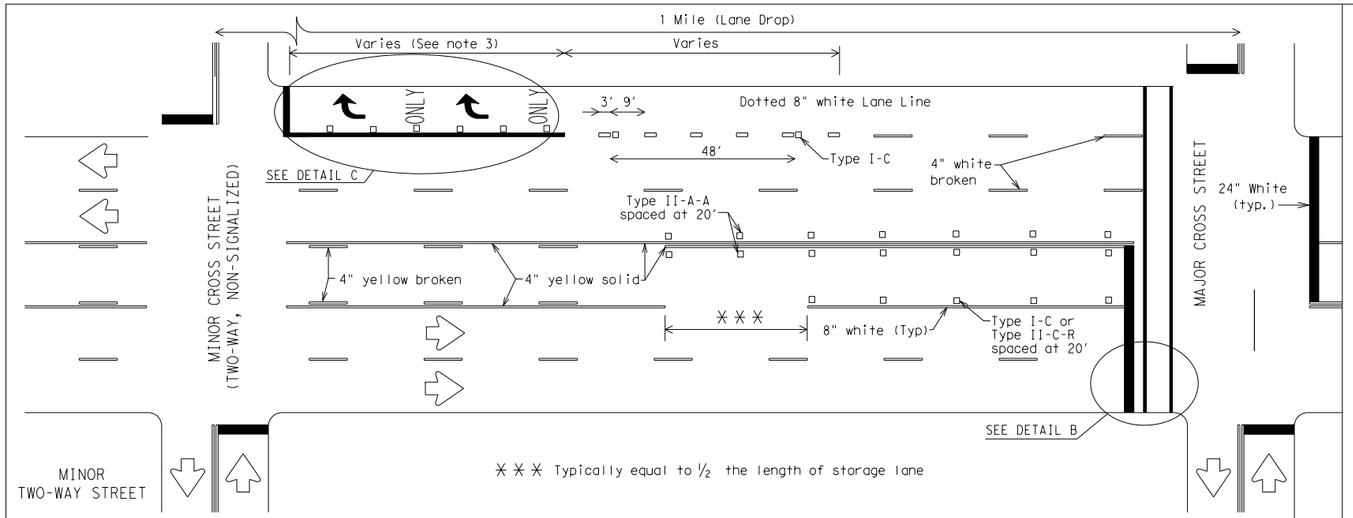
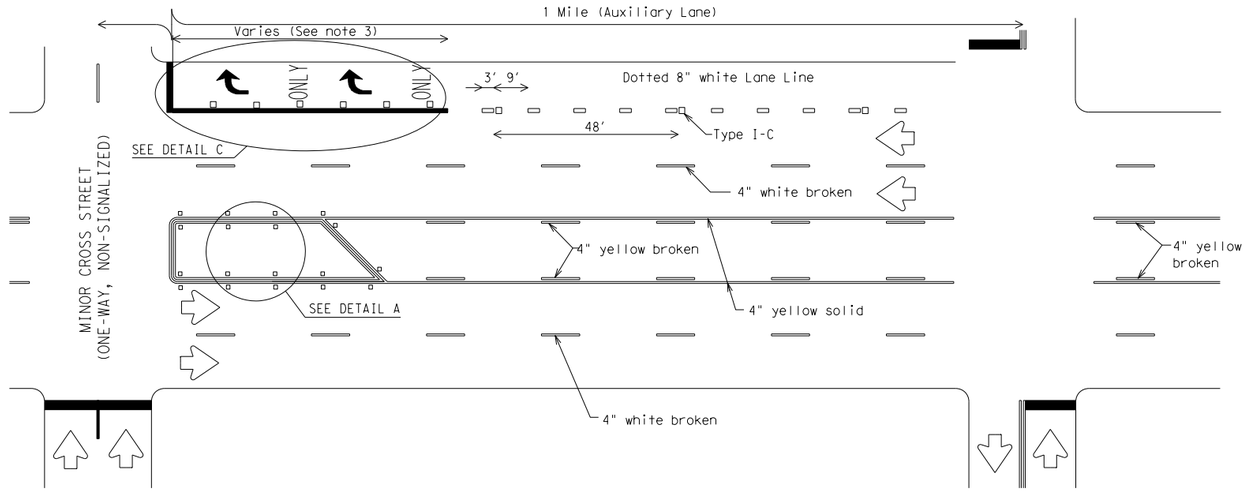
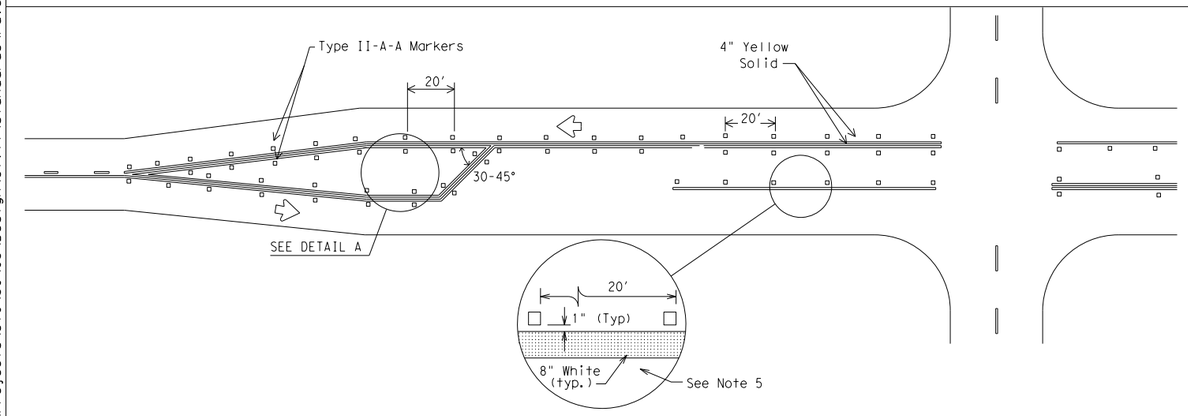


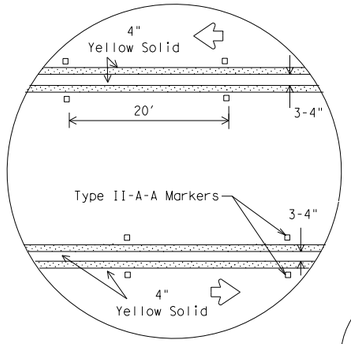
TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



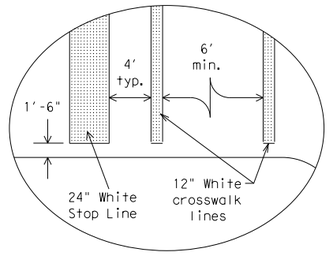
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



TYPICAL TWO-LANE HIGHWAY INTERSECTION WITH LEFT TURN BAYS

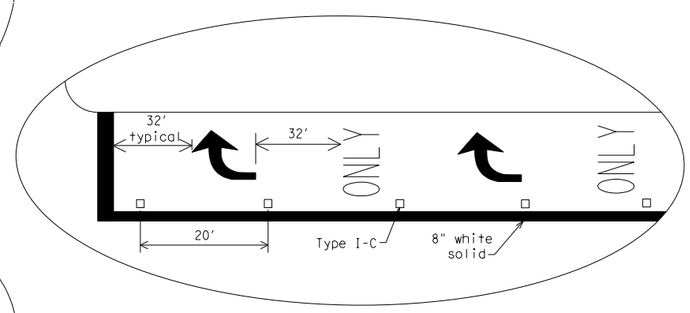


DETAIL A



Final placement of Stop Bar and Crosswalk shall be approved by the Engineer in the field.

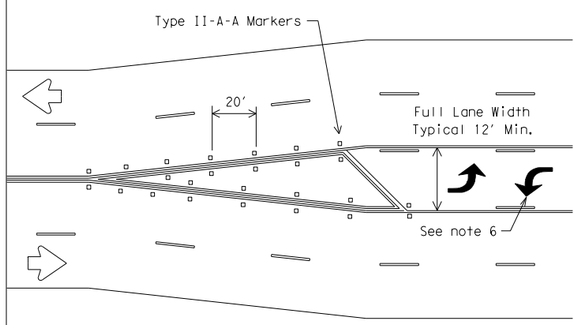
DETAIL B



DETAIL C

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

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



TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

GENERAL NOTES

1. Refer elsewhere in plans for additional RPM placement and details.
2. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows as shown in the Standard Highway Sign Designs for Texas.
3. When lane used word and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
4. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used.
5. Raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Raised pavement marker Type II-C-R with divided highways and raised medians.
6. A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

Texas Department of Transportation
Traffic Operations Division

PAVEMENT MARKINGS FOR TWO-WAY LEFT TURN LANES DIVIDED HIGHWAYS AND RURAL LEFT TURN BAYS

PM(3)-12

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REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
5-00 2-12	CONT	SECT	JOB	HIGHWAY
8-00				KLEIN RD
3-03	DIST	COUNTY		SHEET NO.
2-10	SAT	GUADALUPE		272

22C

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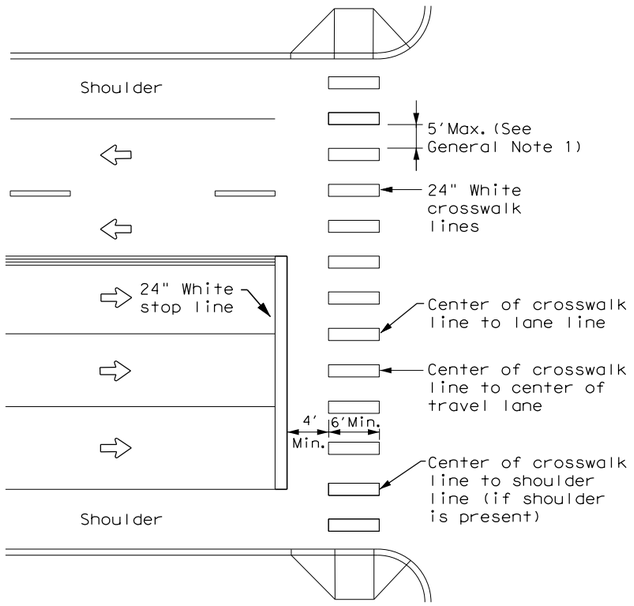


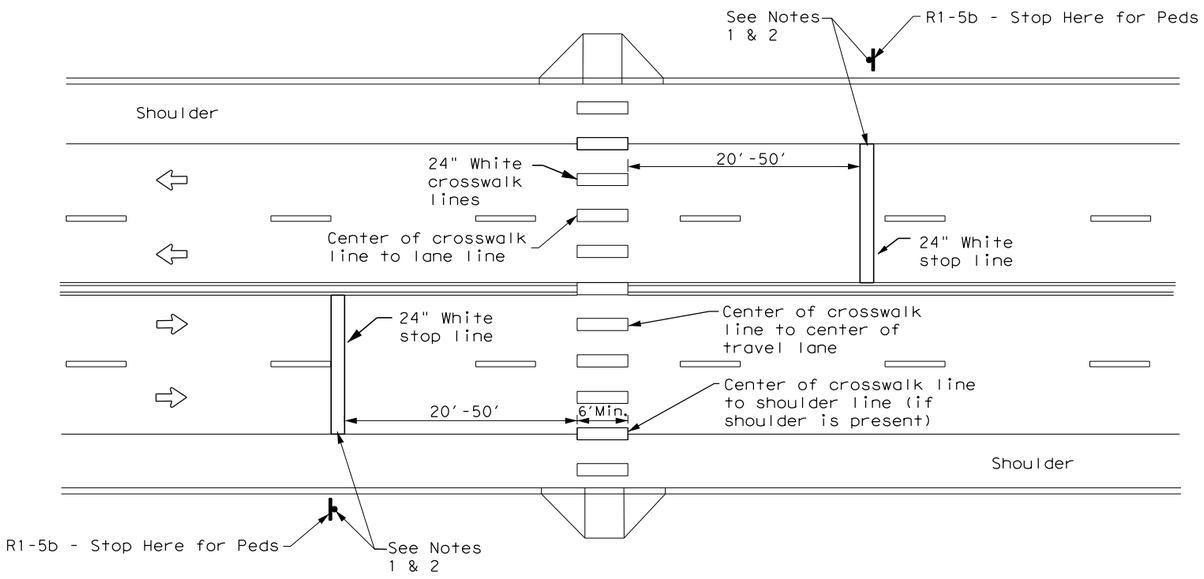
HIGH-VISIBILITY LONGITUDINAL CROSSWALK
AT CONTROLLED APPROACH

GENERAL NOTES

1. Longitudinal crosswalk lines should not be placed in the wheel path of vehicles. Center the crosswalk lines on travel lanes, lane lines, and shoulder lines (if present).
2. A minimum 6" clear distance shall be provided to the curb face. If the last crosswalk line falls into this distance it must be omitted.
3. For divided roadways, adjustments in spacing of the crosswalk lines should be made in the median so that the crosswalk lines are maintained in their proper location across the travel portion of the roadway.
4. At skewed crosswalks, the crosswalk lines are to remain parallel to the lane lines.
5. Each crosswalk shall be a minimum of 6' wide.
6. The High-Visibility Longitudinal Crosswalk is the preferred crosswalk pattern on State Highways. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used. All crosswalk designs and dimension shall comply with the "Texas Manual on Uniform Traffic Control Devices."
7. Final placement of Stop Bar and Crosswalk shall be approved by the Engineer in the field.

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

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



UNSIGNALIZED MID BLOCK HIGH-VISIBILITY
LONGITUDINAL CROSSWALK

NOTES:

1. Use stop bars with "Stop Here for Pedestrians" signs at unsignalized mid block cross walks.
2. Use stop bars with "Stop Here on Red" signs at mid block crosswalks controlled by traffic signals or pedestrian hybrid beacons.

Texas Department of Transportation

Traffic Safety Division Standard

CROSSWALK PAVEMENT MARKINGS

PM(4)-22

FILE: pm4-22.dgn	DN:	CK:	DW:	CK:
© TxDOT June 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS 3-22				KLEIN RD
	DIST	COUNTY		SHEET NO.
	SAT	GUADALUPE		272A

22D

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SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

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

Post Type

FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
TWT = Thin-Walled Tubing (see SMD(TWT))
10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

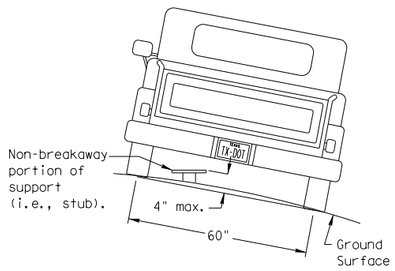
Anchor Type

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

Sign Mounting Designation

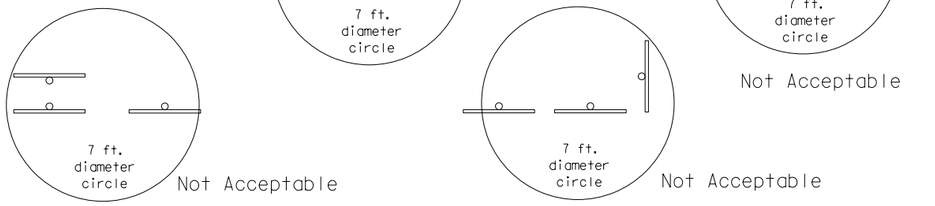
P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-1))

REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



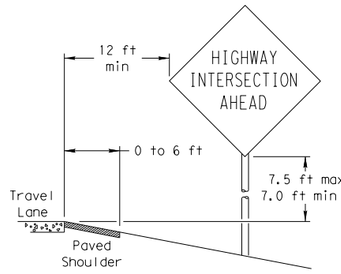
To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

No more than 2 sign posts should be located within a 7 ft. circle.



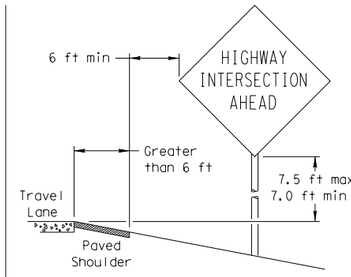
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

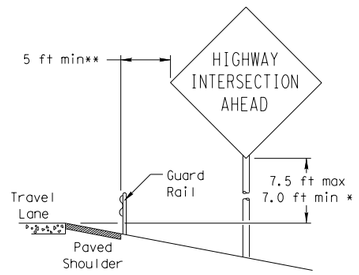
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



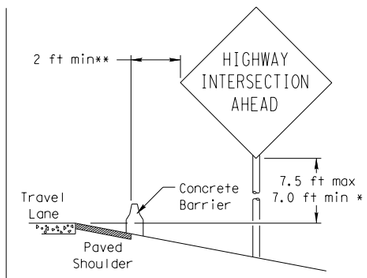
GREATER THAN 6 FT. WIDE

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

BEHIND BARRIER



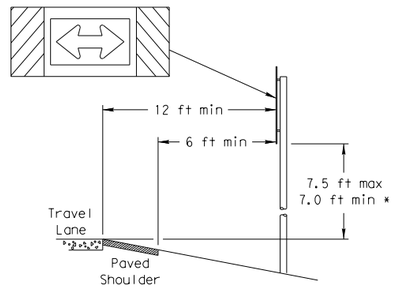
BEHIND GUARDRAIL



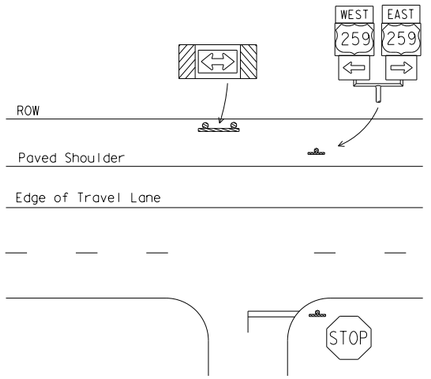
BEHIND CONCRETE BARRIER

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

T-INTERSECTION



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



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

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

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

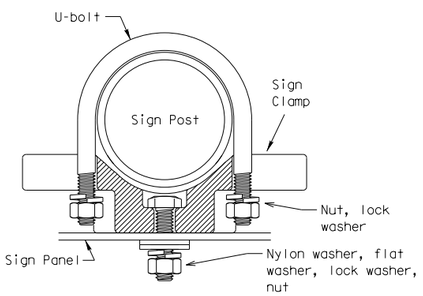
The maximum values may be increased when directed by the Engineer.

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

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

TYPICAL SIGN ATTACHMENT DETAIL

Single Signs

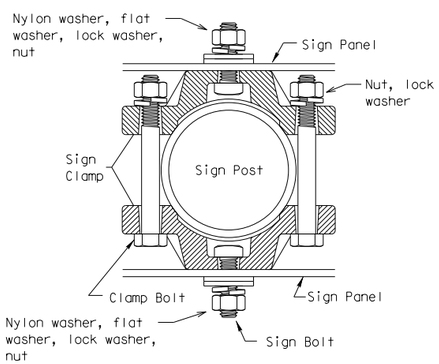


Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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

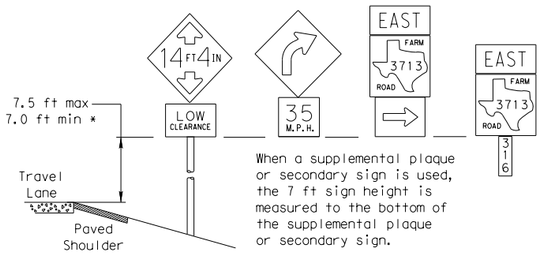
Sign clamps may be either the specific size clamp or the universal clamp.

Back-to-Back Signs



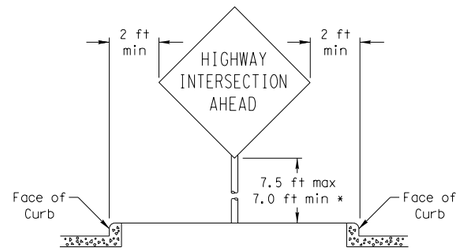
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



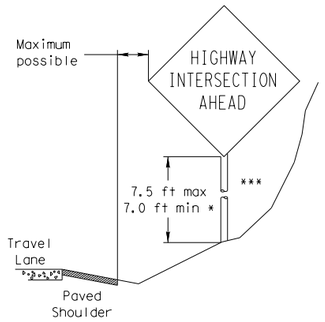
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



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

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

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

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DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
CONT	SECT	JOB	HIGHWAY
			KLEIN RD
DIST	COUNTY		SHEET NO.
SAT	GUADALUPE		273

9-08 REVISIONS

26A

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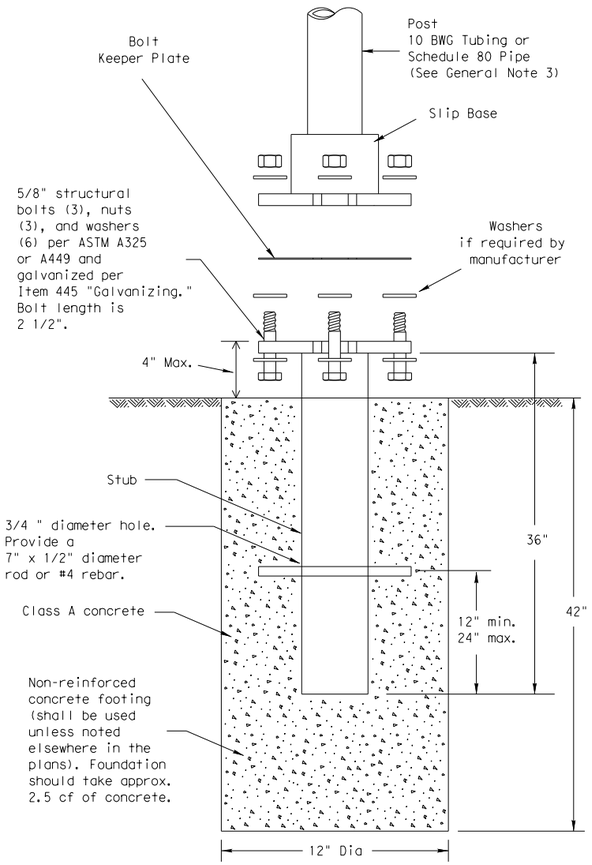
TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



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

NOTE

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

GENERAL NOTES:

1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   - 0.134" nominal wall thickness
   - Seamless or electric-resistance welded steel tubing or pipe
   - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   - Other steels may be used if they meet the following:
     - 55,000 PSI minimum yield strength
     - 70,000 PSI minimum tensile strength
     - 20% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   - Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
   - Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.

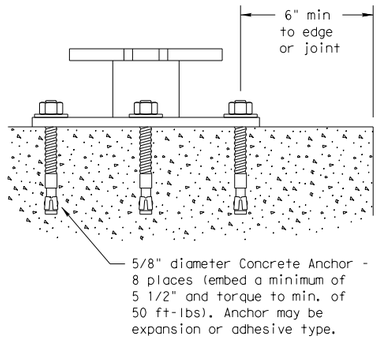
   Schedule 80 Pipe (2.875" outside diameter)
   - 0.276" nominal wall thickness
   - Steel tubing per ASTM A500 Gr C
   - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
     - 46,000 PSI minimum yield strength
     - 62,000 PSI minimum tensile strength
     - 21% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   - Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   - Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

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

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

CONCRETE ANCHOR



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

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

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CONT	SECT	JOB	HIGHWAY
			KLEIN RD
DIST	COUNTY		SHEET NO.
SAT	GUADALUPE		274

9-08 REVISIONS

26B

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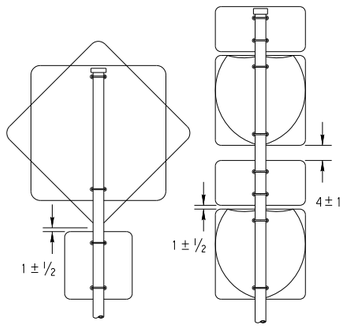

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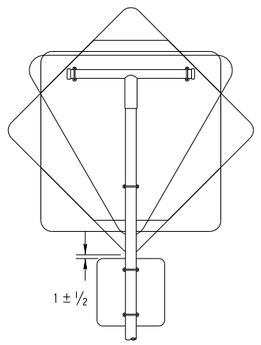

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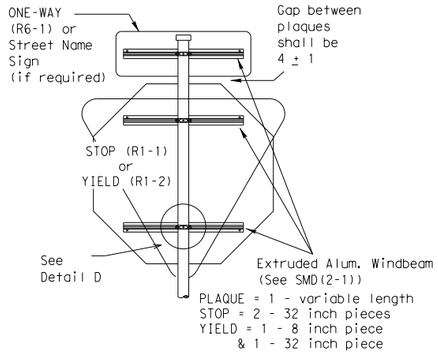
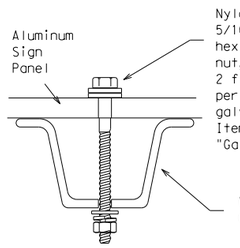
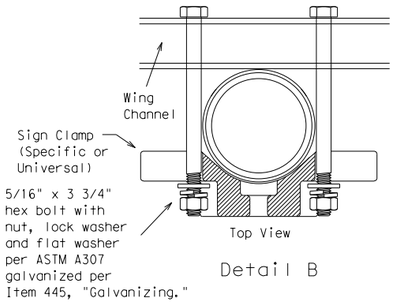


SM RD SGN ASSM TY XXXXX(1)XX(P-BM)



Detail A



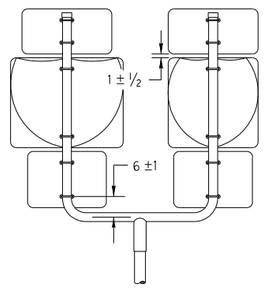
Detail B

GENERAL NOTES:

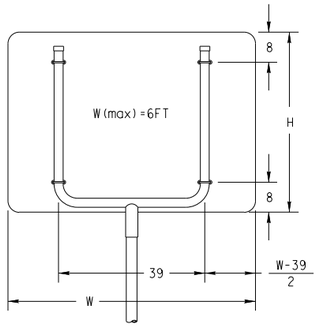
1.

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

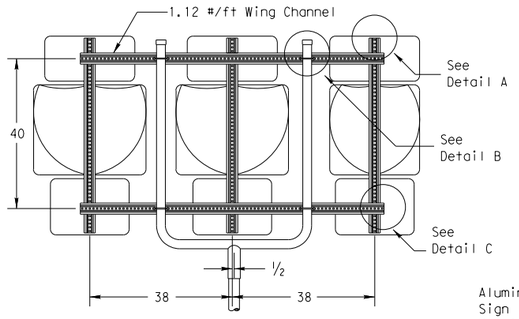
2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material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



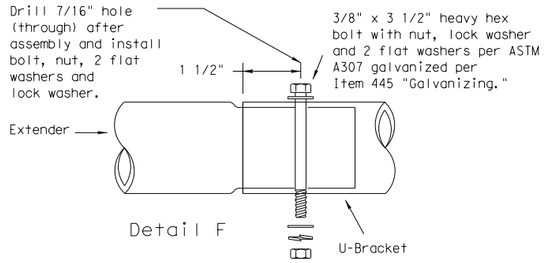
SM RD SGN ASSM TY XXXXX(1)XX(U)



SM RD SGN ASSM TY XXXXX(1)XX(U)

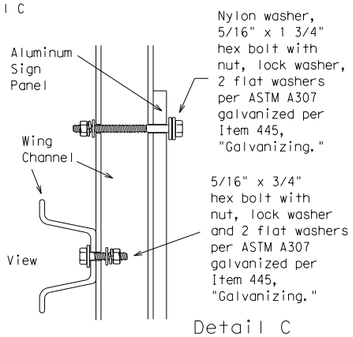


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

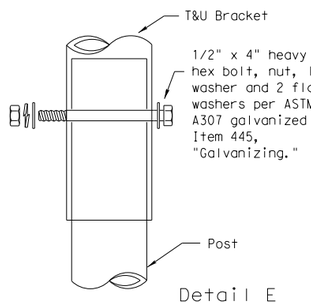


Detail F

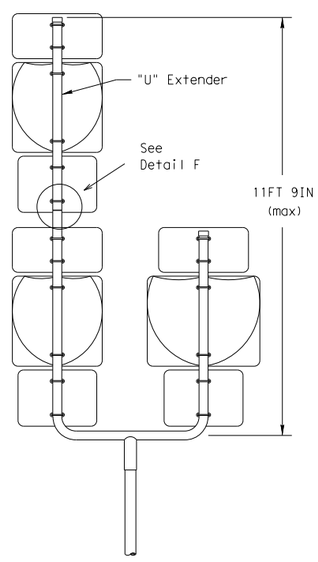
Splices shall only be allowed behind the sign substrate.



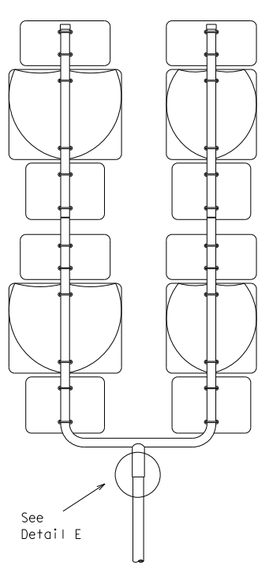
Detail C



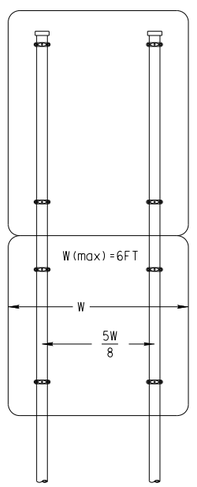
Detail E



SM RD SGN ASSM TY S80(1)XX(U-1EXT)

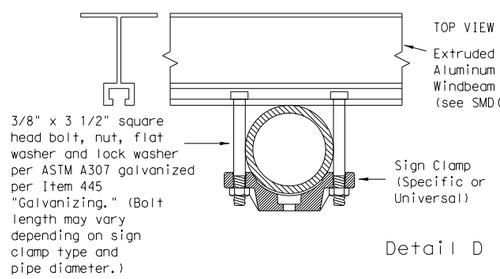


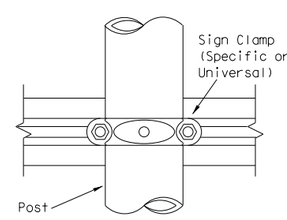
SM RD SGN ASSM TY S80(1)XX(U-2EXT)



SM RD SGN ASSYM TY XXXXX(2)XX(P)

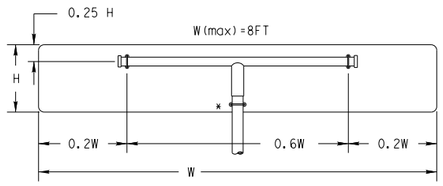
SIDE VIEW





Detail D

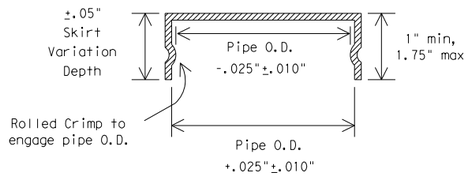
REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)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



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

All dimensions are in english unless detailed otherwise.

FRICTION CAP DETAIL



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

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

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

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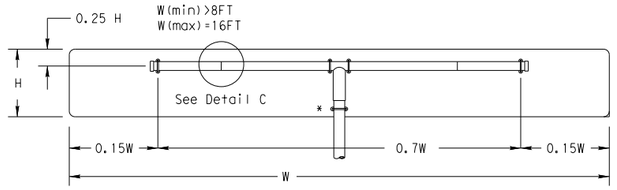
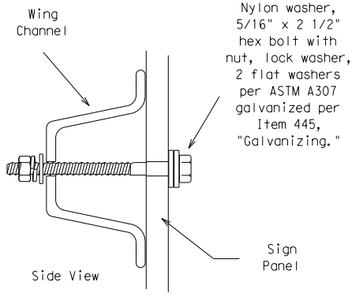
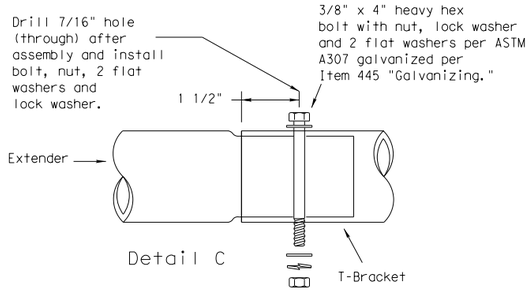


SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)
(* - See Note 12)

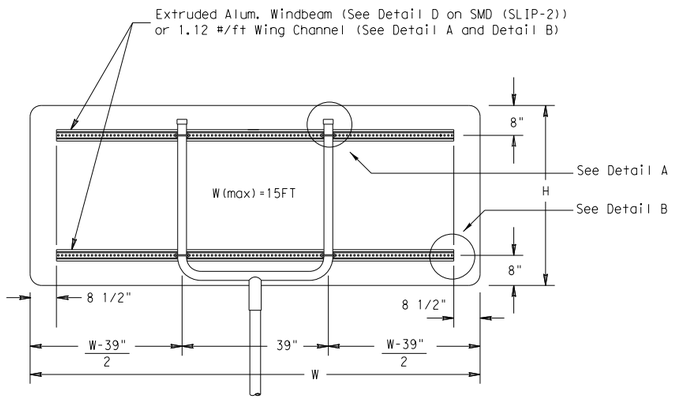


Detail B

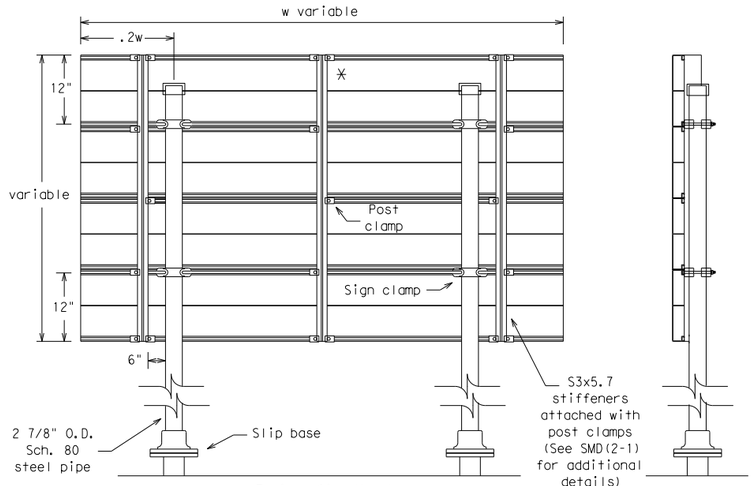


Detail C

Splices shall only be allowed behind the sign substrate.



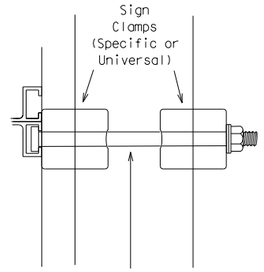
SM RD SGN ASSM TY XXXXX(1)XX(U-XX)



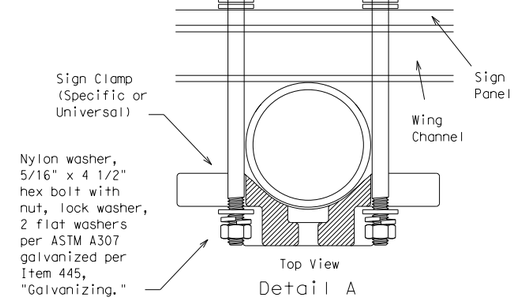
Typical Sign Mount
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.

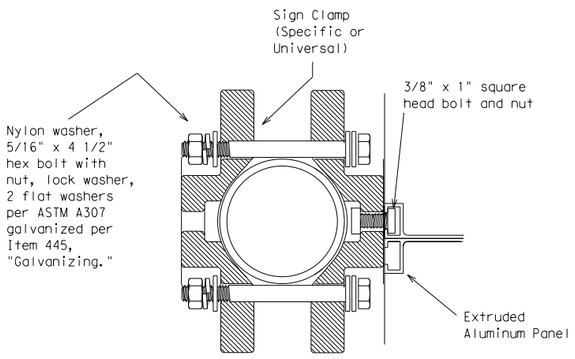
See Detail E
for clamp installation



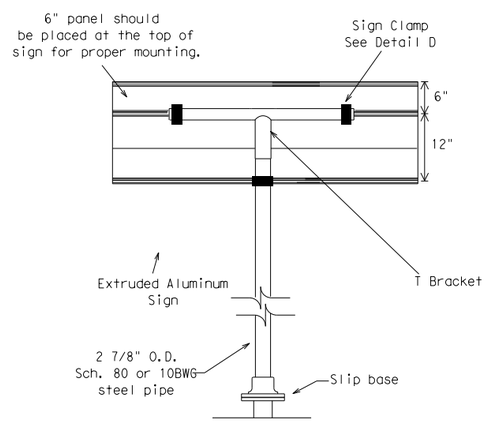
Detail E



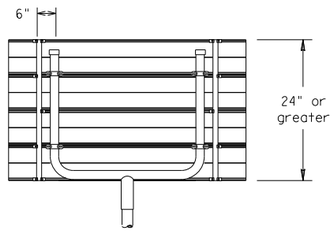
Top View
Detail A



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET



Extruded Aluminum Sign
With T Bracket



Use Extruded Alum. Windbeam as stiffeners
See SMD (2-1) for additional details

See Detail E
for clamp installation

GENERAL NOTES:

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

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

REQUIRED SUPPORT

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

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Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

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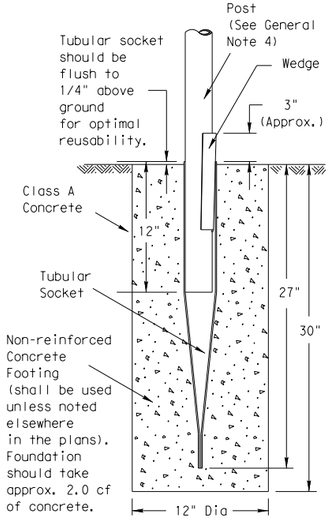
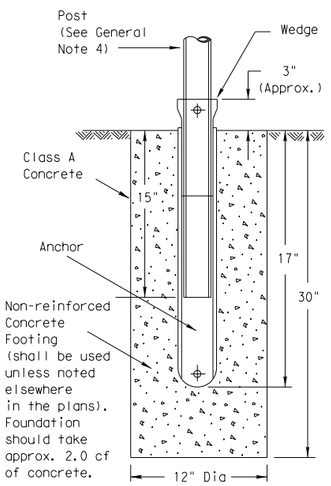
Wedge Anchor Steel System



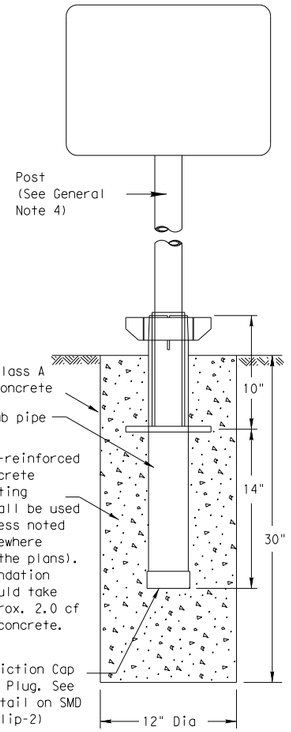
SM RD SGN ASSM TY TWT(X)WS(X)

Wedge Anchor High Density Polyethylene (HDPE) System

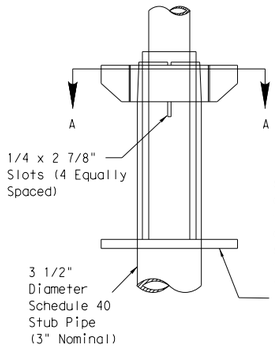


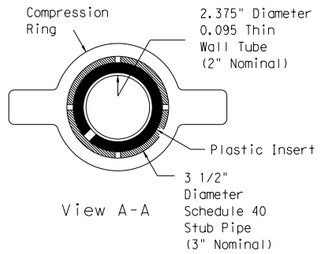
SMD RD SGN ASSM TY TWT(X)WP(X)

Universal Anchor System with Thin-Walled Tubing Post



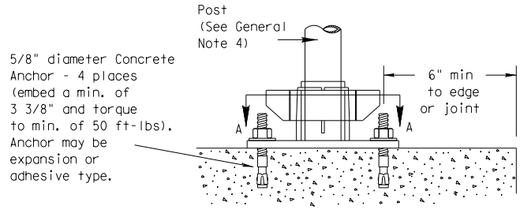
SM RD SGN ASSM TY TWT(X)UA(P)



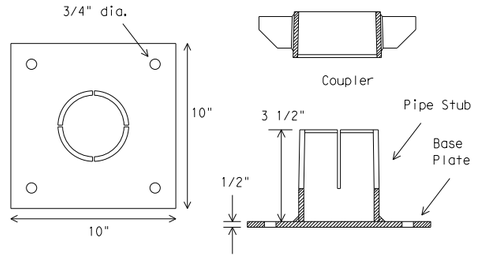


View A-A

Plastic insert must be used when using the TWT with either the Universal Anchor System or the Bolt Down Universal Anchor System. The insert should be approx. 10" long and cover the tubing from just above the top of the stub pipe to the bottom of the sign post when using the Universal Anchor System. The insert should be cut to approx. 4 1/2" when used with the Bolt Down Universal Anchor System.

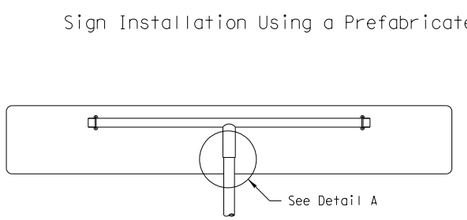


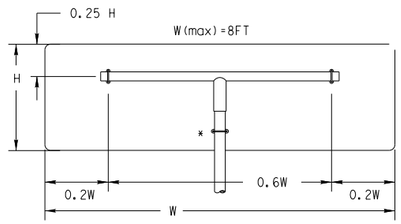
Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.



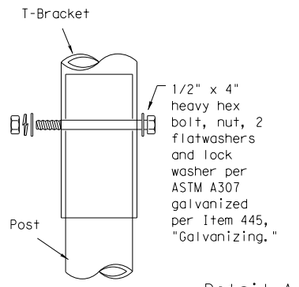
SM RD SGN ASSM TY TWT(X)UB(P)

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





SM RD SGN ASSM TY TWT(X)XX(T)
(* - See General Note 6)



Detail A

9/16" hole may need to be drilled through post to accommodate bolt.

NOTE

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

GENERAL NOTES:

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

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE

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

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

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

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SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST

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FILE: H:\projects\510\30\03\Design\Civil\Standards\Signing\smdtwt.dgn

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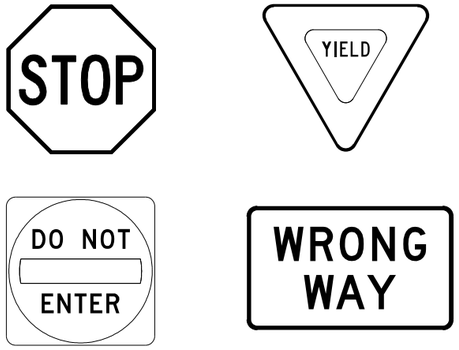
DATE: 1/16/2023 3:44:36 PM
FILE: H:\Projects\510\30\03\Design\Civil\Standards\Signing\tsr4-13.dgn

REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS

(STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	WHITE	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE B OR C SHEETING
LEGEND	RED	TYPE B OR C SHEETING

REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS

(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)

TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND, BORDERS AND SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. Sign legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F).
3. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
4. Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
5. White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
6. Colored legend shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to background sheeting, or combination thereof.
7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
8. Mounting details for roadside mounted signs are shown in the "SMD series" Standard Plan Sheets.

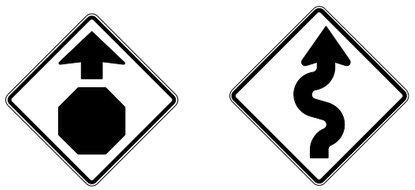
ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

REQUIREMENTS FOR WARNING SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLOURESCENT YELLOW	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR SCHOOL SIGNS

TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	FLOURESCENT YELLOW GREEN	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
SYMBOLS	RED	TYPE B OR C SHEETING

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(4)-13

FILE: tsr4-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS				KLEIN RD
12-03 7-13 9-08	DIST	COUNTY		SHEET NO.
	SAT	GUADALUPE		278

4

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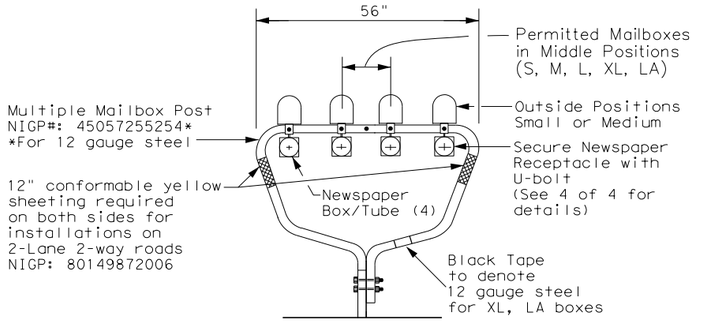
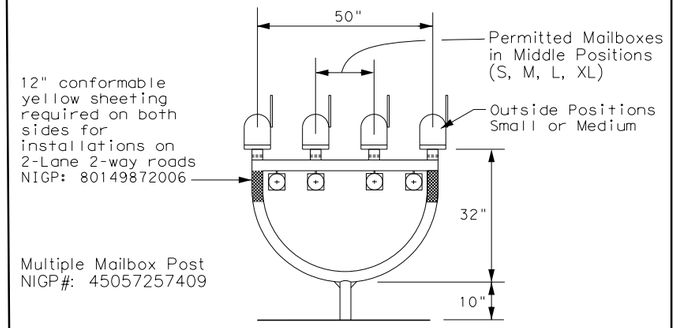
DATE:
FILE:

TYPE 1 - MULTIPLE



TYPE 4 - MULTIPLE



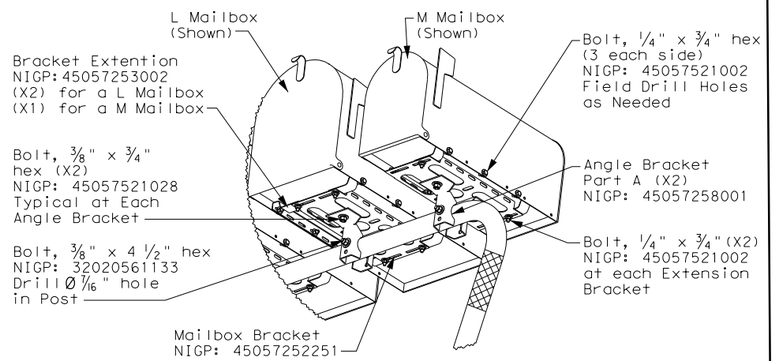
MAILBOX SIZES

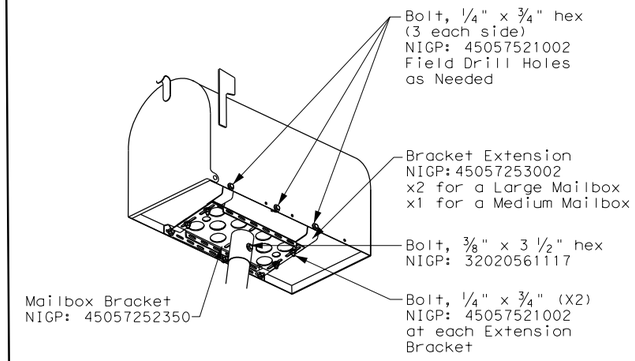
MAILBOX SIZE	TYPICAL DIMENSIONS			MAX **
	LENGTH	WIDTH	HEIGHT	WEIGHT
SMALL	19 ½"	6"	7"	6 LBS
MEDIUM	22 ½" *	8" *	11 ½" *	8 LBS
LARGE	23 ½"	11 ½"	13 ½"	11 LBS
EXTRA LARGE	18"	14"	12"	13 LBS
LOCKABLE	18"	11 ½"	15"	23 LBS

* See Note 1.
** Excluding Molded Plastic on 4 X 4 Post

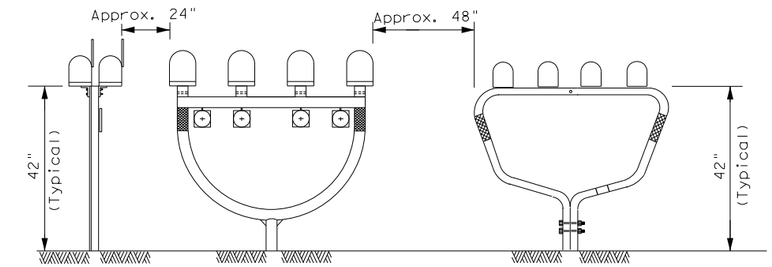
GENERAL NOTES:

1. Dimensions shown (length, width, and height) are typical, not maximums. However, anytime a medium size mailbox is mounted on a single/double mount or on the outside position on a multi mount, the dimensions shown are maximums.
2. Mailboxes shall be made of light weight sheet metal or light weight plastic. Heavy steel, cast iron or decorative mailboxes shall not be used on the state highway system.



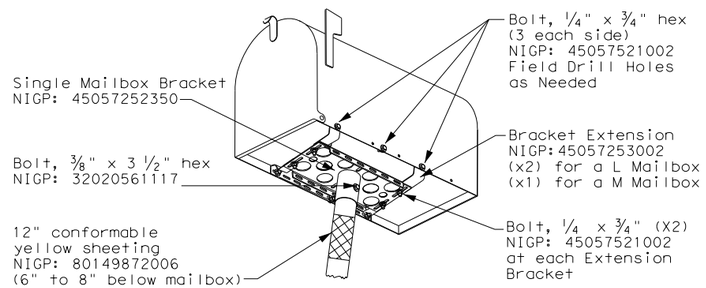


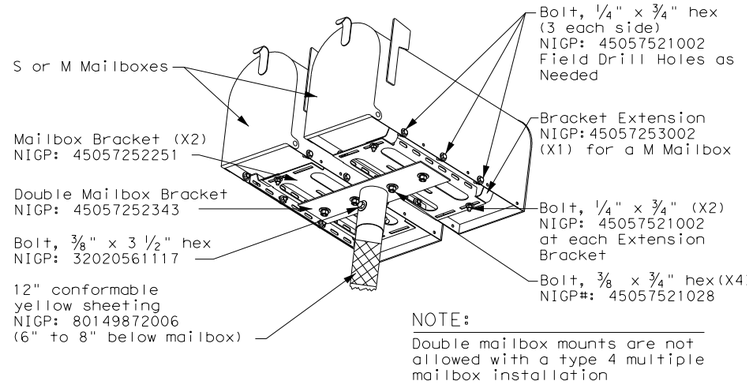
TYPICAL INSTALLATION MEASUREMENTS



NOTE:
Mailbox installations in sidewalk areas shall be in accordance with the latest TxDOT Design Standard sheets PED-Pedestrian Facilities Curb Ramps.

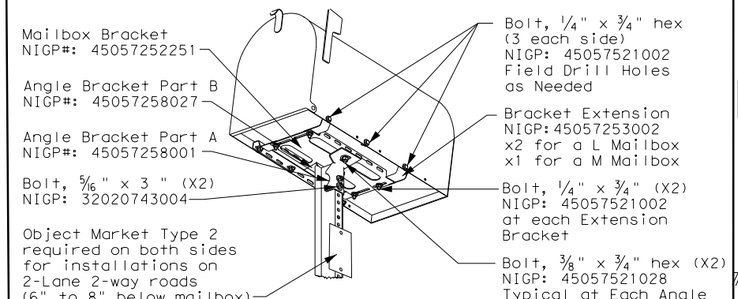
TYPE 2 and 4 - SINGLE/DOUBLE

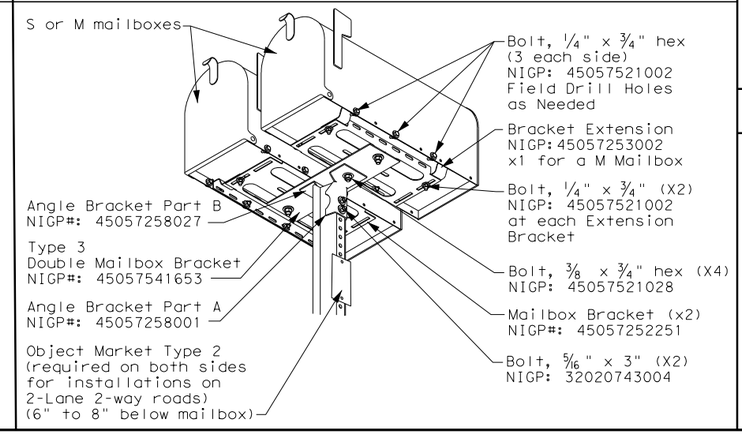




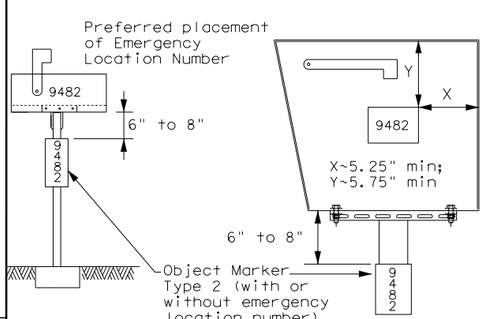
NOTE:
Double mailbox mounts are not allowed with a type 4 multiple mailbox installation

TYPE 3 - SINGLE/DOUBLE





PLACEMENT OF EMERGENCY LOCATION NUMBER

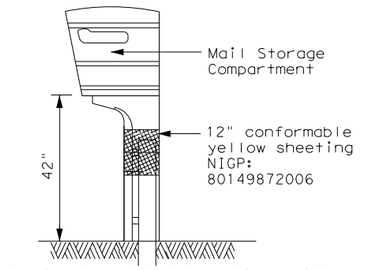


NOTES:

1. Location numbers are provided by homeowner. Minimum size 1" height.
2. Location number is typically placed on the mailbox in a contrasting color.
3. Black numbers may be placed on the Type 2 object marker if the numbers cannot be placed on the mailbox.
4. Alternatively, a green or blue plate with white numbers attached may be mounted below the object marker. Other contrasting color configuration, as approved, may be used.
5. See 3 of 4 for Foundation details.
6. See 4 of 4 for Hardware details.

SHEET 1 OF 4

TYPE 5



Typical Molded Plastic Mailbox

Texas Department of Transportation
Maintenance Division Standard

MAILBOX MOUNTING AND ASSEMBLY

MB(1)-21

FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS 2/2005 11/2009 4/2015 6/2005 1/2011 11/2006 7/2014				KLEIN RD
	DIST	COUNTY		SHEET NO.
	SAT	GUADALUPE		279

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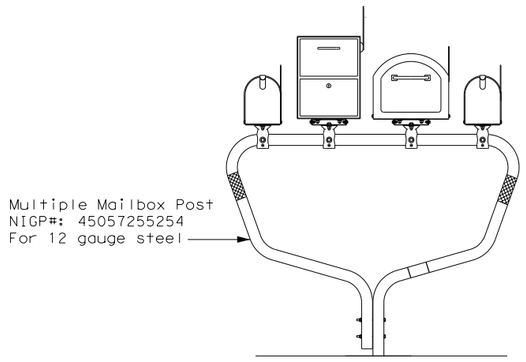
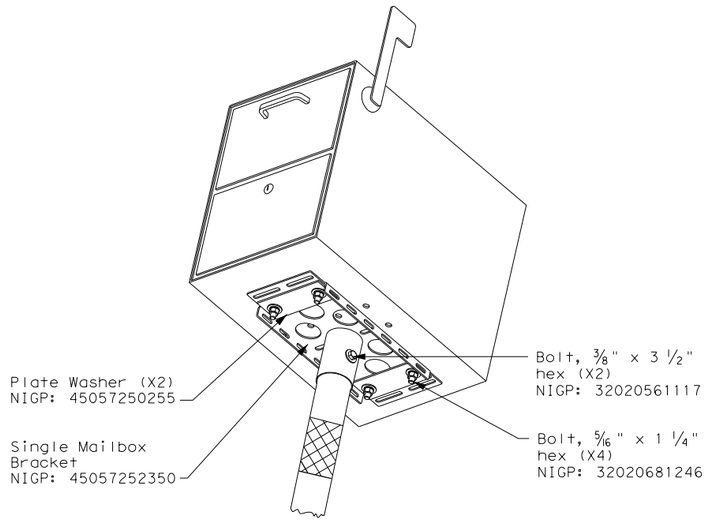
FILE: H:\Projects\510\30\03\Design\Civil\Standards\Roadway\mb-21(1).dgn

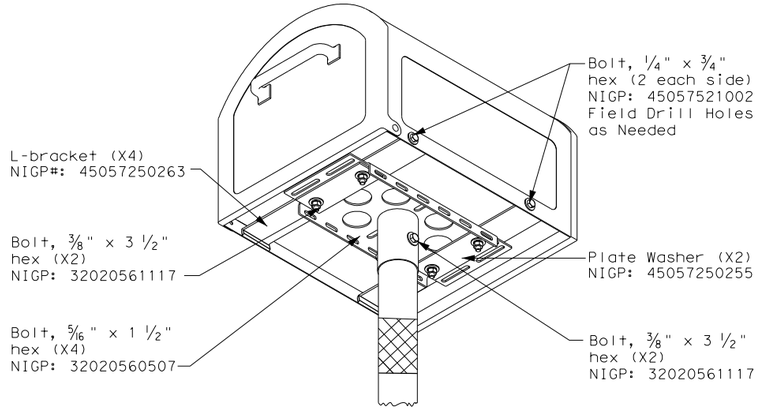
TYPE 1- MULTI LOCKABLE AND XL MAILBOX



TYPE 2/4 - SINGLE LOCKABLE MAILBOX

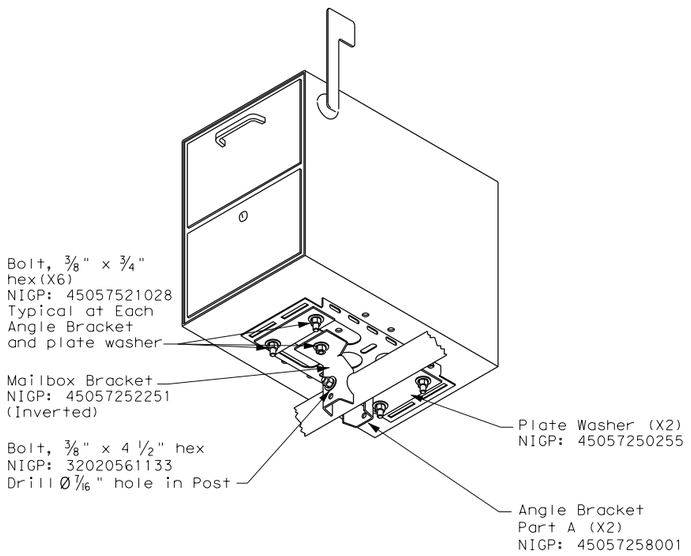


TYPE 2/4 - SINGLE XL MAILBOX

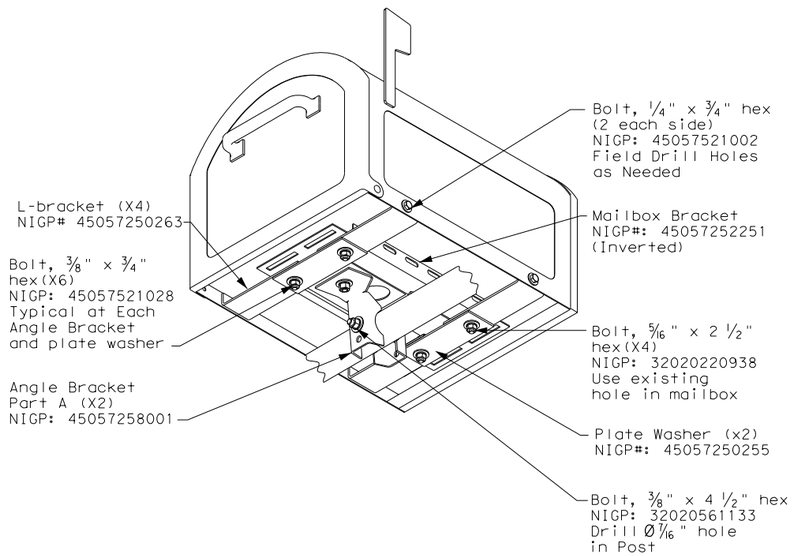


NOTE:
Follow same configuration when mounting an XL mailbox on a Type 4 multi post.

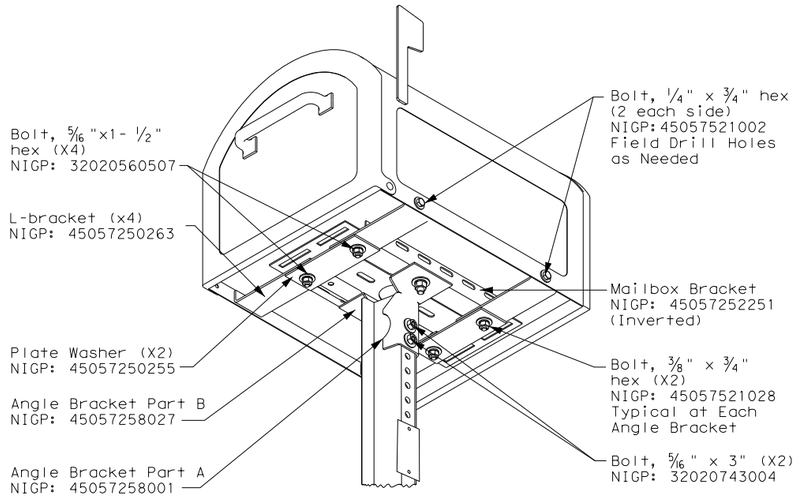
TYPE 1 MULTI – LOCKABLE ARCHITECTURAL (LA)



TYPE 1 MULTI – XL MAILBOX



TYPE 3 - XL MAILBOX MOUNTING



Texas Department of Transportation

Maintenance Division Standard

XL AND LOCKABLE ARCHITECTURAL MAILBOX ASSEMBLY

MB(2)-21

FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS 2/2005 11/2009 4/2015 6/2005 1/2011 11/2006 7/2014				KLEIN RD
	DIST	COUNTY		SHEET NO.
	SAT	GUADALUPE		280

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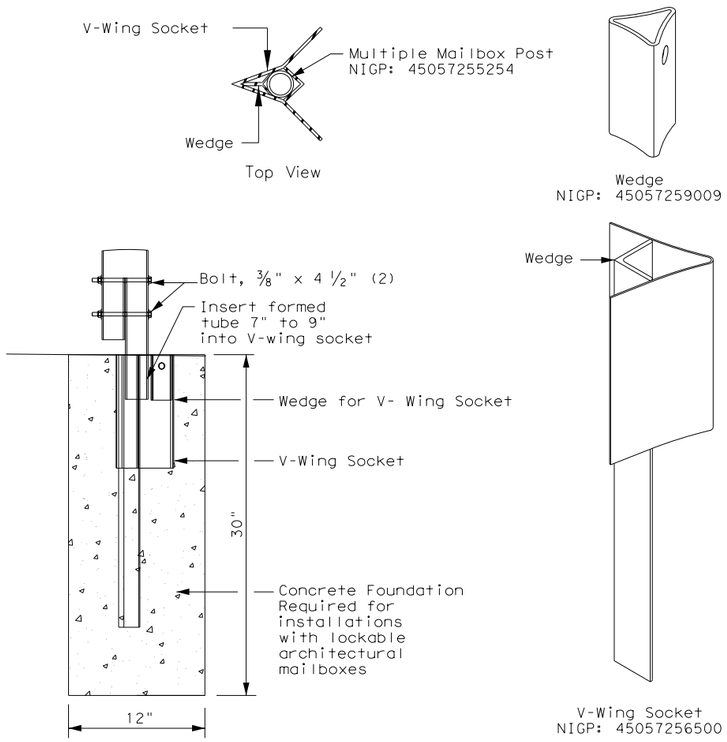
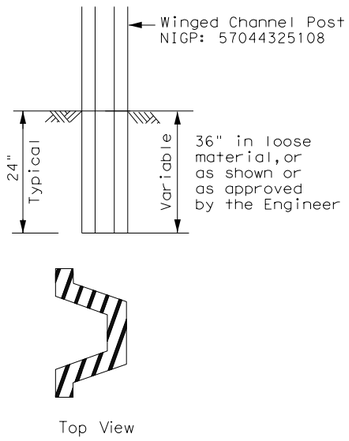
DATE: 1/16/2023 3:44:38PM
FILE: H:\Projects\915\100\Design\Civil\Standards\Roadway\mb21(1).dgn

TYPE 1 - SUPPORT/FOUNDATION
Thin Wall Tube w/ V-LOC Anchorage

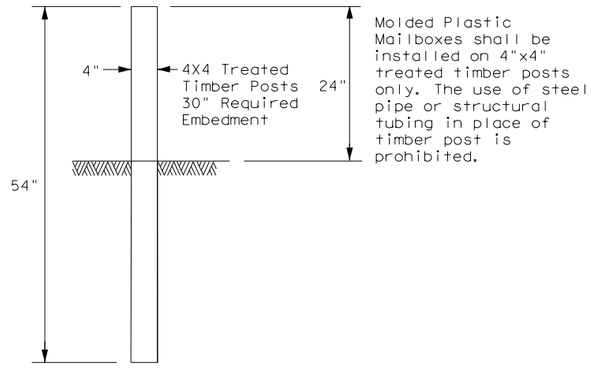


TYPE 3 - SUPPORT/FOUNDATION

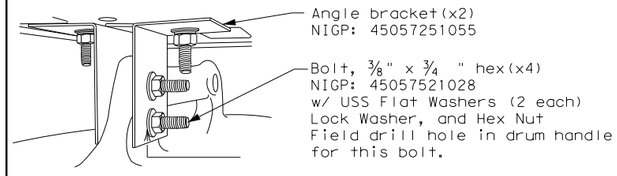


NOTES:
1. Attach Object Marker(OM) facing direction of traffic.
2. OM will also be required on opposite side if installed on a 2-Lane, 2-Way roadway.

TYPE 5 - SUPPORT/FOUNDATION



TYPE 6 - TEMPORARY MAILBOX SUPPORT

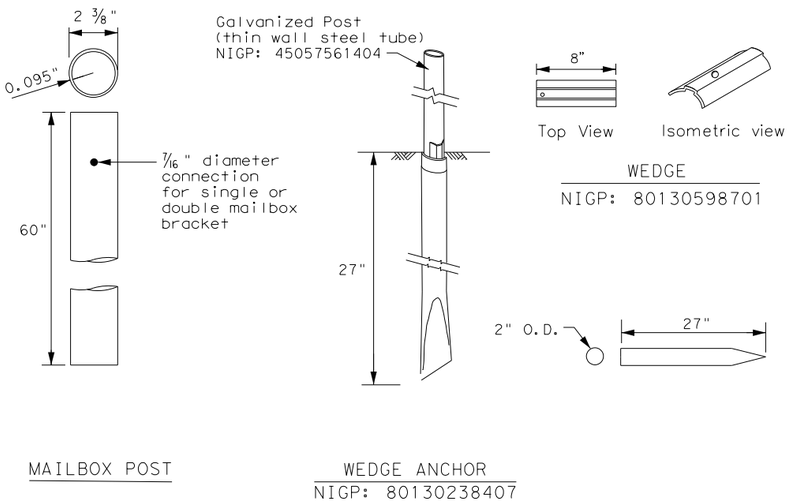


Plastic Drum NIGP: 55093383655
Rubber Collar NIGP: 55093387102

NOTES:
1. Place on approved plastic drum as shown in the Compliant Work Zone Traffic Control Devices (CWZTCD).
2. Existing attachment hardware shall be used unless damaged. Damaged hardware shall be replaced.

GENERAL NOTES:
1. Erect post plumb or vertical.
2. When galvanized part is required galvanize in accordance with Item 445.
3. Use a concrete footing as shown or when directed. Concrete footing will be required when soils do not hold the support/foundations in a stable condition, only on Type 1, Type 2, and Type 4

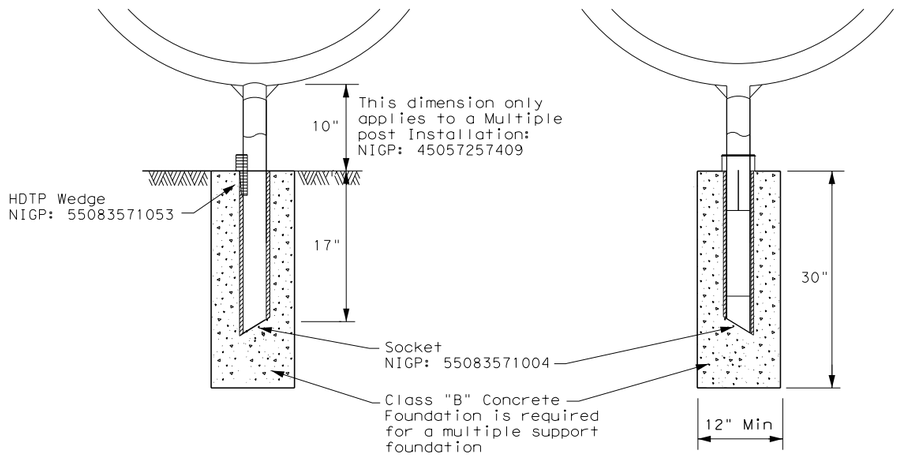
TYPE 2 - SUPPORT/FOUNDATION
Thin Wall Steel Tube w/Wedge Anchor System



MAILBOX POST

WEDGE ANCHOR
NIGP: 80130238407

TYPE 4 - SUPPORT/FOUNDATION
Whitecoated steel post NIGP: 45057561107
Multiple post NIGP: 45057257409
Recycled Rubber post (RR) NIGP: 45057561057



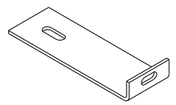
Texas Department of Transportation | Maintenance Division Standard

MAILBOX SUPPORT AND FOUNDATION

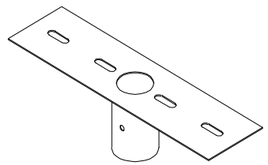
MB(3)-21

FILE: MB-21.dgn	DN:	CK:	DW:	CK:
© TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS 2/2005 11/2009 4/2015 6/2005 1/2011 11/2006 7/2014				KLEIN RD
	DIST	COUNTY		SHEET NO.
	SAT	GUADALUPE		281

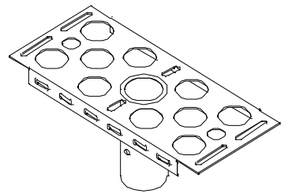
TYPE	TYPE 1	TYPE 2	TYPE 3	TYPE 4			TYPE 5	TYPE 6
Configuration	Multiple	Single or Double	Single or Double	Single	Double	Multiple	Single	Single
Mailbox Size NIGP #	Outside Position: S or M Inside Position: S, M, L, XL, or LA	Single: S, M, L, XL, or LA Double: SS, SM, MM	Single: S, M, L, or XL Double: SS, SM, MM	S, M, L, XL, or LA	SS, SM, or MM	Outside Position: S or M Inside Position: S, M, L, or XL	Molded Plastic	S, or M
Mailbox Post NIGP #	45057255254 (Galvanized Multiple)	45057561404 (Thin Walled Gavanize)	57044325108 (Wing Channel Post)	45057561107 (Thin walled white powder coated) 45057561057 (Recycled Rubber Post: S or M only)	45057561107 (Thin Walled White Powder Coated)	45057257409 (White Powder Coated Multiple)	4x4 Timber	Construction Barrel
Post and Mailbox Hardware NIGP #	45057259009 (Wedge) 45057256500 (V-Wing Socket) 45057253002 (Bracket Extension) 45057252251 (Mailbox Bracket) 45057258001 (Part A Angle Bracket x2) 45057250255 (Plate Washer for XL/LA x2) 45057250263 (L-Bracket for XL x4)	80130598701 (Wedge) 80130238407 (Wedge Anchor) 45057253002 (Bracket Extension) 45057252343 (Double MB Bracket) 45057252350 (S. Mailbox Bracket) 45057252251 (Mailbox Bracket) 45057250255 (Plate Washer for XL/LA x2) 45057250263 (L-Bracket forXL x4)	45057541653 (Type 3 Double Mailbox Bracket) 45057252251 (Mailbox Bracket) 45057253002 (Bracket Extension) 45057258001 (Part A Angle Bracket) 45057258027 (Part B Angle Bracket) 45057250255 (Plate Washer for XL x2) 45057250263 (L-Bracket for XL x4)	55083571053 (Wedge) 55083571004 (Socket) 45057252350 (Single Mailbox Bracket) 45057253002 (Bracket Extension) 45057250255 (Plate Washer for XL/LA x2) 45057250263 (L-Bracket for XL x4)	55083571053 (Wedge) 55083571004 (Socket) 45057253002 (Bracket Extension) 45057252343 (Double Mount Bracket) 45057252251 (Mailbox Bracket x2)	55083571053 (Wedge) 55083571004 (Socket) 45057253002 (Bracket Extension) 45057252350 (Single Mount Bracket) 45057250255 (Plate Washer for XL x2) 45057250263 (L-Bracket for XL x4)	None	45057251055 Angle Bracket (x2)
Foundation Used	Class B Concrete (Required for LA Mailboxes)	Class B Concrete (Required for LA Mailboxes)	None	Class B Concrete (not used with recycled rubber post, required for LA Mailboxes)	Class B Concrete (not required)	Class B Concrete	None	None



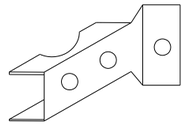
NIGP: 45057250263
L-Bracket x4 for
XL sized mailboxes



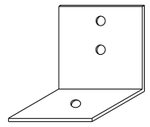
NIGP: 45057252343
Double Mailbox Bracket
For Type 2 and Type 4
double mount



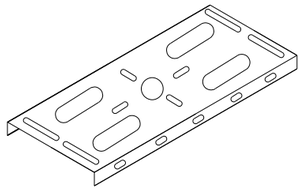
NIGP: 45057252350
Single Mailbox Bracket
For Type 2 single and for
Type 4 single and multi mount



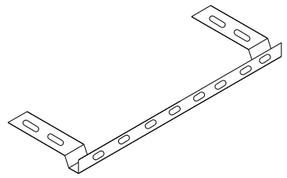
NIGP: 45057258001
Part "A" Angle Bracket
For Type 1 multi (2 per mailbox)
and Type 3 single and double



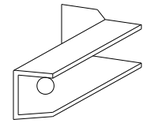
NIGP: 45057251055
Type 6 Angle Bracket
(2 per mailbox)



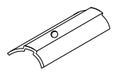
NIGP: 45057252251
Mailbox Bracket
For Type 1 multi and
any double mount (use 2)



NIGP: 45057253002
Bracket Extension
Use 1 for a medium Mailbox
Use 2 for a Large Mailbox



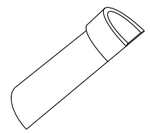
NIGP: 45057258027
Part "B" Angle Bracket
For Type 3 single
and double



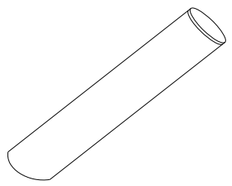
NIGP: 80130598701
Wedge for Type 2

NIGP: 45057250255
Plate Washer for Architecural
and XL Mailboxes

NIGP: 45057541653
Type 3 double mailbox bracket

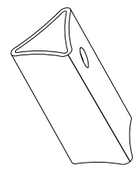


NIGP: 55083571053
Type 4 Mailbox Wedge

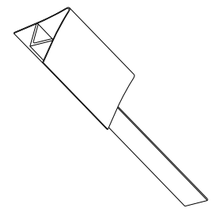


NIGP: 55083571004
Type 4 Mailbox Socket

NIGP: 80130238407
Type 2 Wedge Anchor



NIGP: 45057259009
Wedge for Type 1 V-wing Socket



NIGP: 45057256500
V-wing Socket for
Type 1 Foundation

NIGP #	OBJECT MARKERS AND CONFORMABLE SHEETING
55008311759	Type 2 OM 4"x4" (3 Needed) for Type 3 Wing Channel Post
55008312906	Type 2 OM 6"x12" (1 needed) for Type 3 Wing Channel Post
80149872006	12" Conformable Reflective Yellow Sheeting for Flexible Posts

NOTES:

1. Type 2 object marker in accordance with Traffic Engineering Standard Delineators & Object Markers.
2. A light weight receptacle for newspaper delivery can be attached to mailbox posts if the receptacle does not touch the mailbox, present a hazard to traffic or delivery of the mail, extend beyond the front of the mailbox, or display advertising, except the publication title.

BID CODES FOR CONTRACTS

MB-(X) ASSM TY (XXX) (X)

Type of Mailbox
- S = Single
- D = Double
- M = Multiple
- MP = Molded Plastic

Type of Post
- WC = Winged Channel Post
- RR = Recycled Rubber
- TWW = Thin Walled White Tubing
- TWG = Thin Walled Galvanized Tubing
- TIM = Timber

Type of Foundation
- Ty 1 = V-Loc
- Ty 2 = Wedge Anchor Steel System
- Ty 3 = Winged Channel post
- Ty 4 = Wedge Anchor Plastic System
- Ty 5 = 4 X 4 Post

DISCLAIMER:
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DATE: 1/16/2023 3:44:38 PM
FILE: H:\Projects\5110\30\03\Design\Civil\Standards\Roadway\mb-21(1).dgn

Texas Department of Transportation — Maintenance Division Standard

NIGP PARTS LIST AND COMPATIBILITY

MB(4)-21

FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS 2/2005 11/2009 4/2015 6/2005 1/2011 11/2006 7/2014				KLEIN RD
	DIST	COUNTY		SHEET NO.
	SAT	GUADALUPE		282

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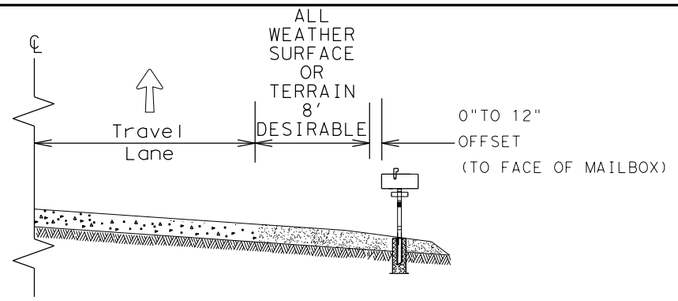
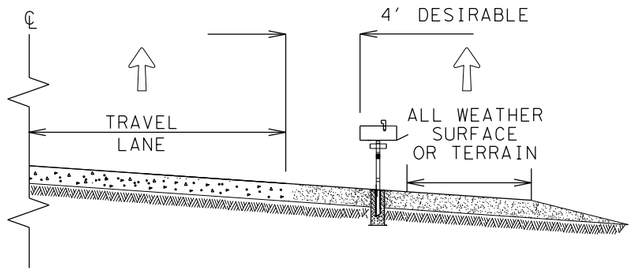
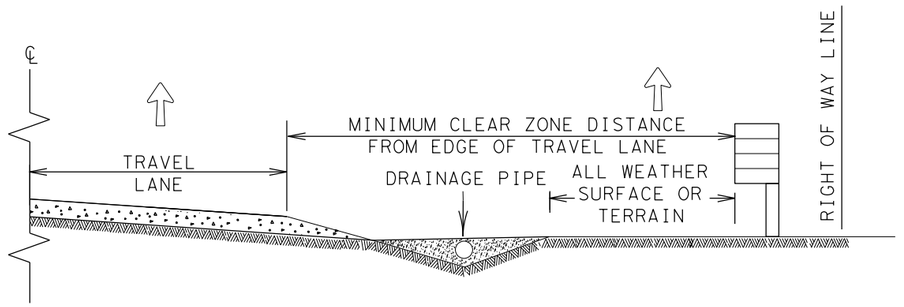


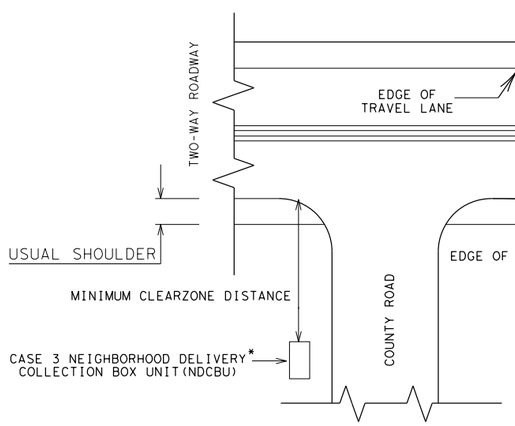
CASE 1. OFF TRAVEL WAY DELIVERY



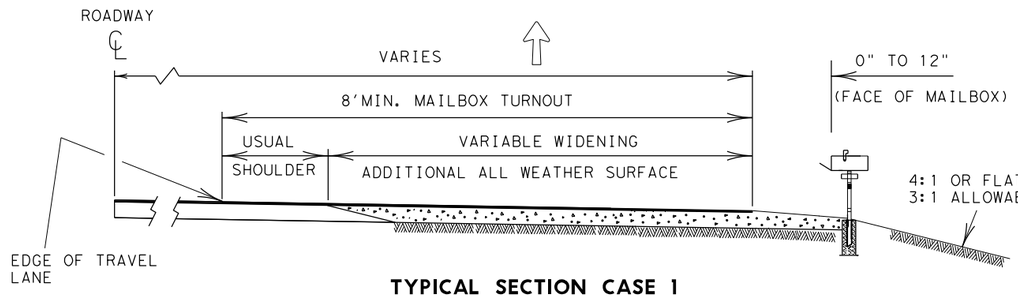
CASE 2. BACK SIDE DELIVERY



CASE 3. DELIVERY NEAR RIGHT OF WAY LINE



TYPICAL PLAN



TYPICAL SECTION CASE 1

GENERAL NOTES:

1. CASE 1 IS THE MOST COMMON METHOD.
2. TURN OUT BEHIND MAILBOX FOR CASE 2 WILL NORMALLY BE ALLOWED FOR NATURAL TERRAIN THAT WILL SERVE AS AN ALL WEATHER SURFACE.
3. ALL WEATHER DRIVEWAYS FOR CASE 3 MAILBOXES LOCATED AT THE RIGHT OF WAY LINE SHOULD NORMALLY BE PLACED IN CONJUNCTION WITH COUNTY ROADS OR OTHER CONNECTING COMMUNITY ROADS OR STREETS. WHEN 3 OR MORE MULTI-RACKS ARE ANTICIPATED, THE USE OF AN NDCBU IS RECOMMENDED. ONLY RURAL PATRONS LOCATED ON STATE MAINTAINED HIGHWAYS MAY HAVE A MAILBOX OR NDCBU SLOT ON TXDOT RIGHT OF WAY.

* NDCBU MAY BE INSTALLED ON COUNTY ROAD ROW WITH APPROVAL OF COUNTY.

MAIL DELIVERY VEHICLE TRAVEL DIRECTION

Texas Department of Transportation | Maintenance Division Standard

Guideline

MAILBOX SIDE ROAD PLACEMENT AND TURNOUTS

MBP(1)-22

FILE: MBP-22.DGN	DN: VS	CK:	DW: VS	CK:	
© TxDOT OCTOBER 2022	CONT	SECT	JOB	HIGHWAY	
REVISIONS				KLEIN RD	
12/2012 5/2014	DIST	COUNTY		SHEET NO.	
	SAT	GUADALUPE		283	

DISCLAIMER:
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DATE: 1/16/2023 3:44:40 PM
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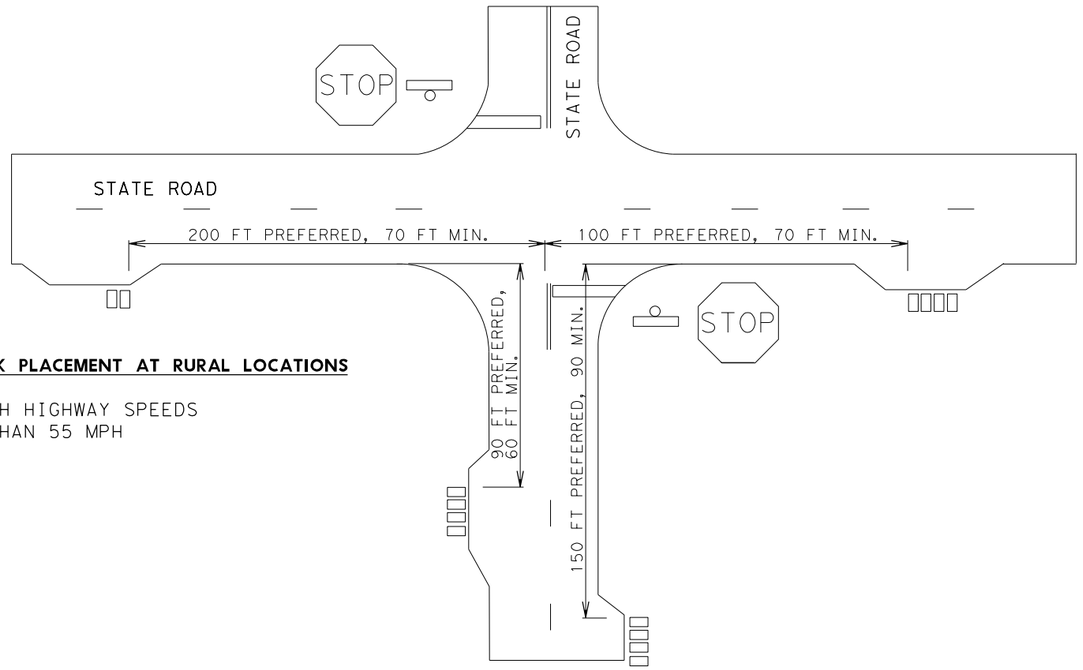
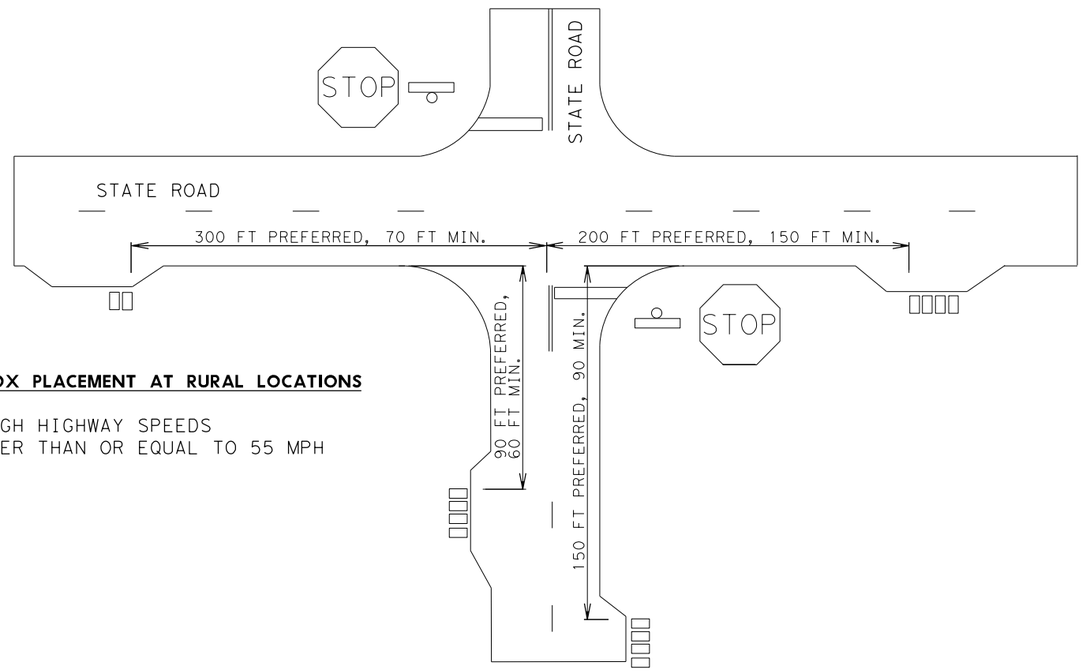


MAILBOX PLACEMENT AT RURAL LOCATIONS

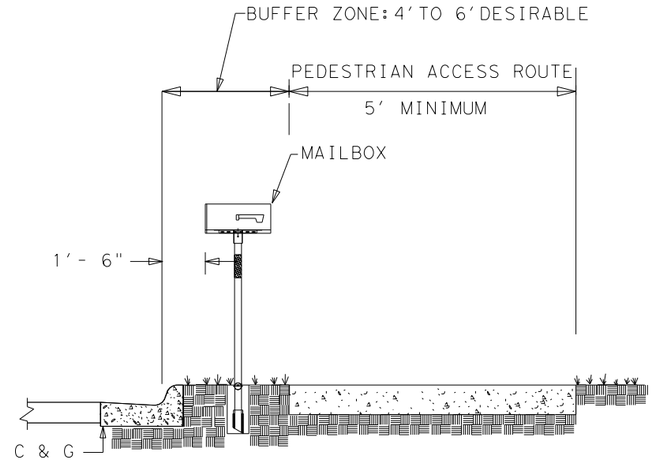
THROUGH HIGHWAY SPEEDS
LESS THAN 55 MPH



MAILBOX PLACEMENT AT RURAL LOCATIONS

THROUGH HIGHWAY SPEEDS
GREATER THAN OR EQUAL TO 55 MPH

CURB AND GUTTER MAILBOX INSTALLATION



NOTES:
1. A NON-TRAVERSABLE SURFACE MUST BE INSTALLED NEAR THE MAILBOX (NATURAL VEGETATION OR OTHER) IN THE BUFFER ZONE. ALTERNATIVELY, A BASE WITH A MINIMUM HEIGHT OF 2.5 INCHES MAY BE INSTALLED SO THAT THE EDGE OF THE MAILBOX DOES NOT EXTEND OUT MORE THAN 4 INCHES HORIZONTALLY BEYOND THE BASE.

2. THE SIDEWALK WIDTH MAY BE REDUCED TO 4 FOOT FOR SHORT DISTANCES AROUND THE MAILBOX IF NEEDED.

3. MAINTAIN A MINIMUM OF 5 FEET BETWEEN OBSTRUCTIONS IN THE PEDESTRIAN ACCESS ROUTE.

Texas Department of Transportation | Maintenance Division Standard

MAILBOX PLACEMENT CURBS & INTERSECTIONS

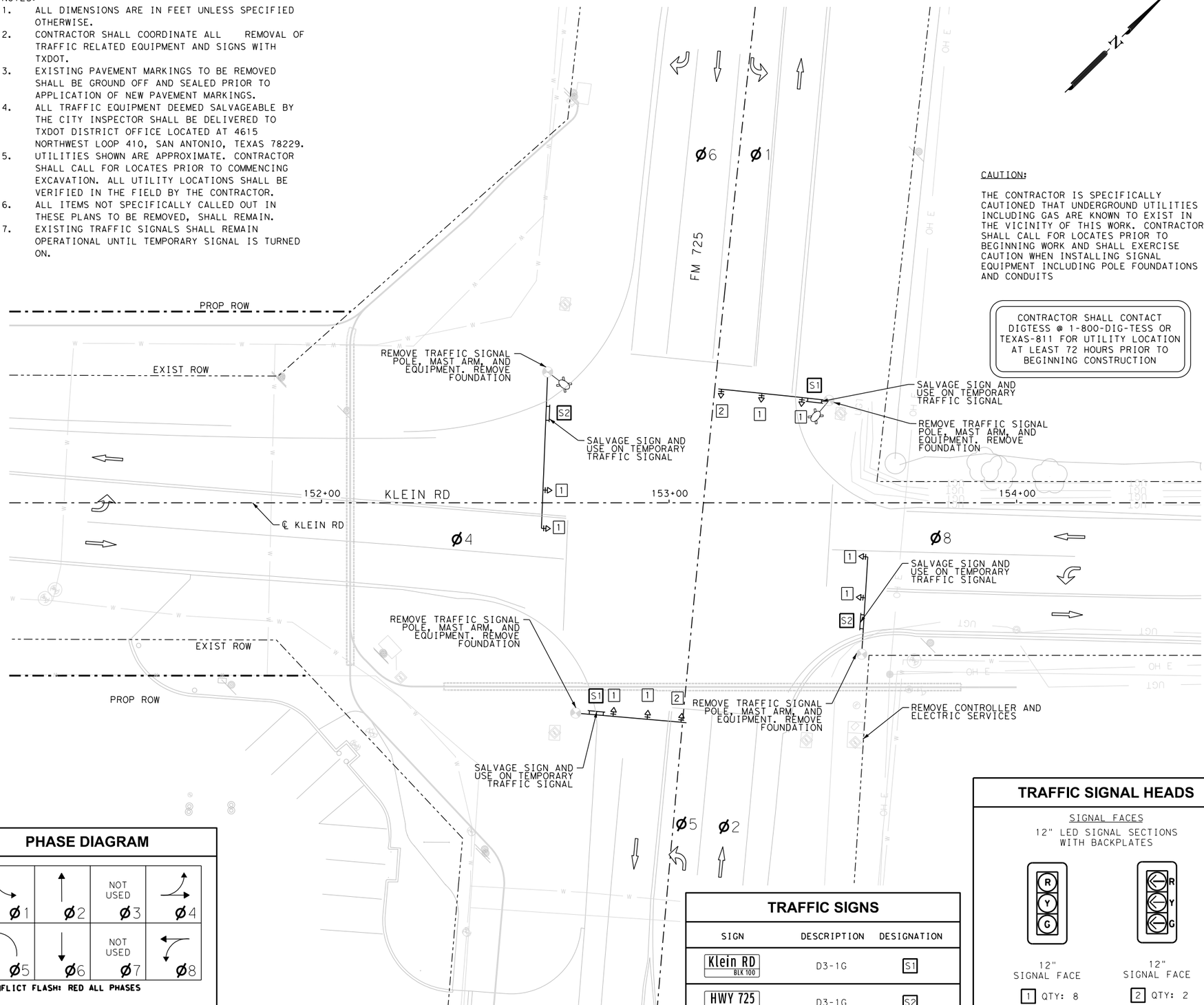
MBP(2)-22

FILE: MBP-22.DGN	DN: VS	CK:	DW: VS	CK:
© TxDOT OCTOBER 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 12/2012 5/2014				KLEIN RD
	DIST	COUNTY		SHEET NO.
	SAT	GUADALUPE		284

ITEM	DESCRIPTION	UNIT	QTY
0680-6004	REMOVING TRAFFIC SIGNALS	EA	1

NOTES:

1. ALL DIMENSIONS ARE IN FEET UNLESS SPECIFIED OTHERWISE.
2. CONTRACTOR SHALL COORDINATE ALL REMOVAL OF TRAFFIC RELATED EQUIPMENT AND SIGNS WITH TXDOT.
3. EXISTING PAVEMENT MARKINGS TO BE REMOVED SHALL BE GROUND OFF AND SEALED PRIOR TO APPLICATION OF NEW PAVEMENT MARKINGS.
4. ALL TRAFFIC EQUIPMENT DEEMED SALVAGEABLE BY THE CITY INSPECTOR SHALL BE DELIVERED TO TXDOT DISTRICT OFFICE LOCATED AT 4615 NORTHWEST LOOP 410, SAN ANTONIO, TEXAS 78229.
5. UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL CALL FOR LOCATES PRIOR TO COMMENCING EXCAVATION. ALL UTILITY LOCATIONS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR.
6. ALL ITEMS NOT SPECIFICALLY CALLED OUT IN THESE PLANS TO BE REMOVED, SHALL REMAIN.
7. EXISTING TRAFFIC SIGNALS SHALL REMAIN OPERATIONAL UNTIL TEMPORARY SIGNAL IS TURNED ON.



CAUTION:

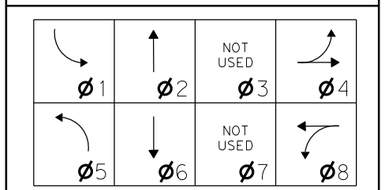
THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT UNDERGROUND UTILITIES INCLUDING GAS ARE KNOWN TO EXIST IN THE VICINITY OF THIS WORK. CONTRACTOR SHALL CALL FOR LOCATES PRIOR TO BEGINNING WORK AND SHALL EXERCISE CAUTION WHEN INSTALLING SIGNAL EQUIPMENT INCLUDING POLE FOUNDATIONS AND CONDUITS

CONTRACTOR SHALL CONTACT DIGTESS @ 1-800-DIG-TESS OR TEXAS-811 FOR UTILITY LOCATION AT LEAST 72 HOURS PRIOR TO BEGINNING CONSTRUCTION

LEGEND

- PEDESTRIAN PUSH BUTTON
- TRAFFIC SIGNAL POLE
- TRAFFIC CONTROLLER BOX
- GROUND BOX
- UTILITY POLE
- LUMINAIRE
- SIGNAL HEAD

PHASE DIAGRAM



CONFLICT FLASH: RED ALL PHASES

TRAFFIC SIGNS

SIGN	DESCRIPTION	DESIGNATION
Klein RD BLK 100	D3-1G	S1
HWY 725 BLK 2700	D3-1G	S2

TRAFFIC SIGNAL HEADS

SIGNAL FACES

12" LED SIGNAL SECTIONS WITH BACKPLATES

12" SIGNAL FACE — 1 QTY: 8

12" SIGNAL FACE — 2 QTY: 2

DESIGN

JUSTIN W. CLARK, 118715, LICENSED PROFESSIONAL ENGINEER, STATE OF TEXAS

JUSTIN W. CLARK, P.E. — 1/16/2023 DATE

APPROVAL

GILMER D. GASTON, 80472, LICENSED PROFESSIONAL ENGINEER, STATE OF TEXAS

GILMER D. GASTON, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

EXISTING TRAFFIC SIGNAL LAYOUT

SHEET 1 OF 1

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	286

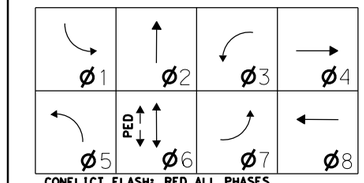
Plotted on: 1/16/2023

Design Filename: H:\Projects\5103003\Design\Civil\Traffic\5103003_WKleinRd_EX Traffic Signal Sheets.dgn

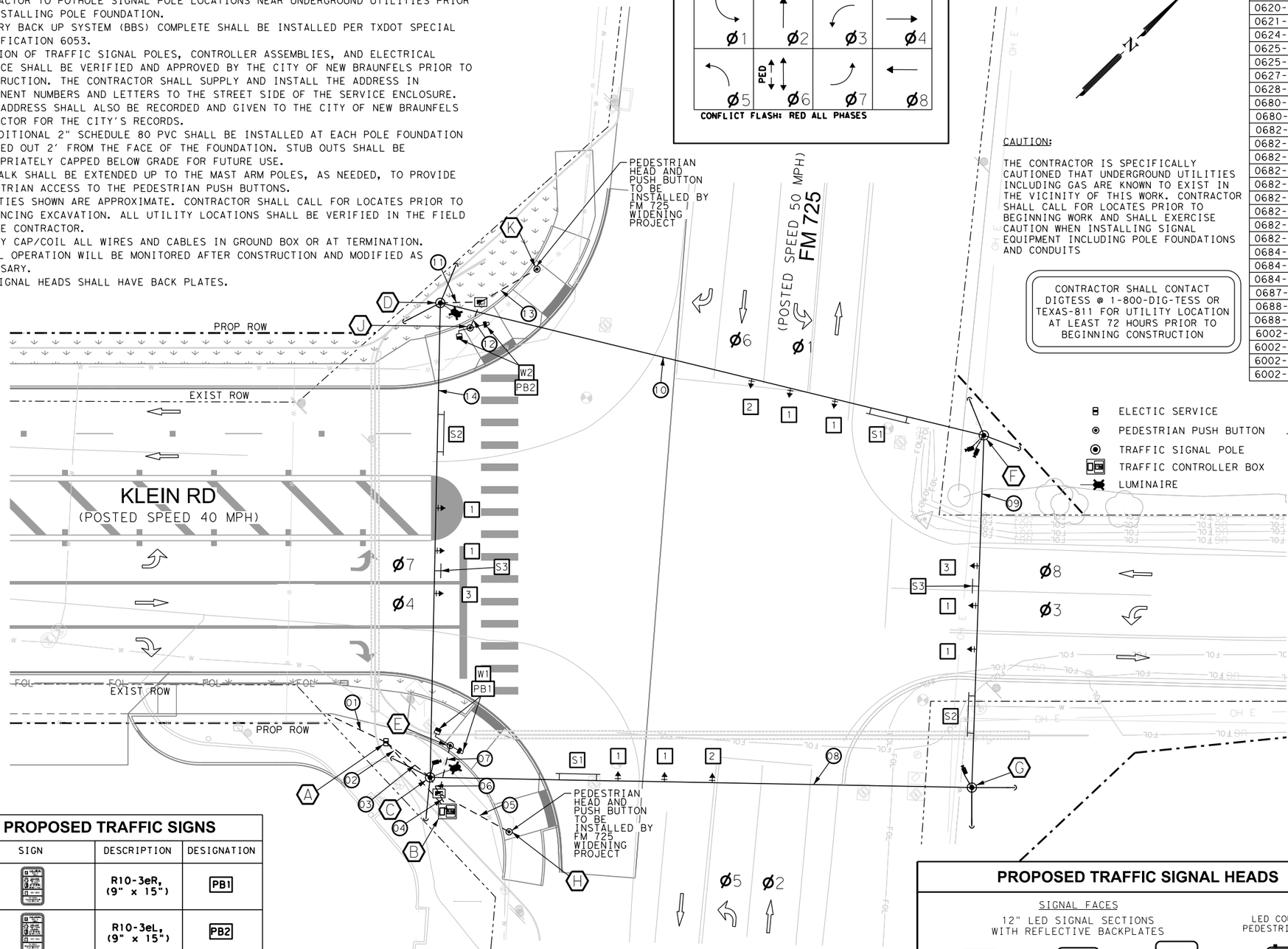
NOTES:

1. ALL DIMENSIONS SHOWN ARE IN FEET UNLESS SPECIFIED OTHERWISE. (ALL EXISTING FEATURES ARE SHOWN SCREENED BACK i.e. FADED).
2. CONTRACTOR TO POTHOLE SIGNAL POLE LOCATIONS NEAR UNDERGROUND UTILITIES PRIOR TO INSTALLING POLE FOUNDATION.
4. BATTERY BACK UP SYSTEM (BBS) COMPLETE SHALL BE INSTALLED PER TXDOT SPECIAL SPECIFICATION 6053.
5. LOCATION OF TRAFFIC SIGNAL POLES, CONTROLLER ASSEMBLIES, AND ELECTRICAL SERVICE SHALL BE VERIFIED AND APPROVED BY THE CITY OF NEW BRAUNFELS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL SUPPLY AND INSTALL THE ADDRESS IN PERMANENT NUMBERS AND LETTERS TO THE STREET SIDE OF THE SERVICE ENCLOSURE. SAID ADDRESS SHALL ALSO BE RECORDED AND GIVEN TO THE CITY OF NEW BRAUNFELS INSPECTOR FOR THE CITY'S RECORDS.
6. AN ADDITIONAL 2" SCHEDULE 80 PVC SHALL BE INSTALLED AT EACH POLE FOUNDATION STUBBED OUT 2' FROM THE FACE OF THE FOUNDATION. STUB OUTS SHALL BE APPROPRIATELY CAPPED BELOW GRADE FOR FUTURE USE.
7. SIDEWALK SHALL BE EXTENDED UP TO THE MAST ARM POLES, AS NEEDED, TO PROVIDE PEDESTRIAN ACCESS TO THE PEDESTRIAN PUSH BUTTONS.
8. UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL CALL FOR LOCATES PRIOR TO COMMENCING EXCAVATION. ALL UTILITY LOCATIONS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR.
9. NEATLY CAP/COIL ALL WIRES AND CABLES IN GROUND BOX OR AT TERMINATION.
10. SIGNAL OPERATION WILL BE MONITORED AFTER CONSTRUCTION AND MODIFIED AS NECESSARY.
11. ALL SIGNAL HEADS SHALL HAVE BACK PLATES.

PROPOSED PHASE DIAGRAM



CONFLICT FLASH: RED ALL PHASES



CAUTION:

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CONTRACTOR SHALL CONTACT DIGTESS @ 1-800-DIG-TESS OR TEXAS-811 FOR UTILITY LOCATION AT LEAST 72 HOURS PRIOR TO BEGINNING CONSTRUCTION

ITEM	DESCRIPTION	UNIT	QTY
0618-6046	CONDT (PVC) (SCH 80) (2")	LF	150
0618-6053	CONDT (PVC) (SCH 80) (3")	LF	70
0620-6009	ELEC CONDR (NO.6) BARE	LF	190
0620-6010	ELEC CONDR (NO.6) INSULATED	LF	70
0621-6005	TRAY CABLE (4 CONDR) (12 AWG)	LF	275
0624-6010	GROUND BOX TY D (162922)W/APRON	EA	2
0625-6002	ZINC-COAT STL WIRE STRAND (3/16")	LF	589
0625-6004	ZINC-COAT STL WIRE STRAND (5/16")	LF	589
0627-6002	TIMBER POLE (CL 2) 40 FT	EA	4
0628-6164	ELC SRV TY D 120/240 070(NS)AL(E)PS(U)	EA	1
0680-6002	INSTALL HWY TRF SIG (ISOLATED)	EA	1
0680-XXX1	LUM MAST ARM & LED FIXTURE	EA	2
0682-6001	VEH SIG SEC (12")LED(GRN)	EA	8
0682-6002	VEH SIG SEC (12")LED(GRN ARW)	EA	4
0682-6003	VEH SIG SEC (12")LED(YEL)	EA	8
0682-6004	VEH SIG SEC (12")LED(YEL ARW)	EA	6
0682-6005	VEH SIG SEC (12")LED(RED)	EA	8
0682-6006	VEH SIG SEC (12")LED(RED ARW)	EA	4
0682-6018	PED SIG SEC (LED)(COUNTDOWN)	EA	2
0682-6049	BACKPLATE W/REFL BRDR(4 SEC)	EA	2
0682-6060	BACKPLATE W/REFL BRDR(3 SEC)	EA	10
0684-6009	TRF SIG CBL (TY A)(12 AWG)(4 CONDR)	LF	485
0684-6012	TRF SIG CBL (TY A)(12 AWG)(7 CONDR)	LF	1960
0684-6080	TRF SIG CBL (TY C)(14 AWG)(2 CONDR)	LF	485
0687-6001	PED POLE ASSEMBLY	EA	4
0688-6001	PED DETECT PUSH BUTTON (APS)	EA	2
0688-6003	PED DETECTOR CONTROLLER UNIT	EA	1
6002-6001	VIVDS PROCESSOR SYSTEM	EA	1
6002-6002	VIVDS CAMERA ASSEMBLY	EA	4
6002-6003	VIVDS SET-UP SYSTEM	EA	1
6002-6005	VIVDS COMMUNICATION CABLE (COAXIAL)	LF	880

LEGEND

- ELECTIC SERVICE
- PEDESTRIAN PUSH BUTTON
- TRAFFIC SIGNAL POLE
- TRAFFIC CONTROLLER BOX
- LUMINAIRE
- TRAFFIC SIGNAL HEAD
- ROAD NAME SIGN
- GROUND BOX (TYPE D)
- CONDUIT (TRENCH)
- MAST ARM SIGN DESIGN
- VIVDS DETECTION CAMERA ASSEMBLY
- CABLE/CONDUIT RUN
- POLE/EQUIPMENT IDENTIFIER
- GUY ANCHOR
- PROP ROW

PROPOSED TRAFFIC SIGNS

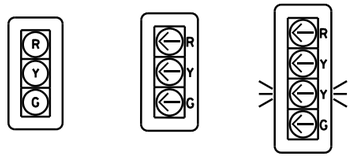
SIGN	DESCRIPTION	DESIGNATION
	R10-3eR, (9" x 15")	PB1
	R10-3eL, (9" x 15")	PB2
Klein Rd	D3-1G (66" x 18")	S1
HWY 725	D3-1G (72" x 18")	S2
LEFT TURN YIELD ON FLASHING YELLOW ARROW	R10-17T (30" X 30")	S3

13. CONTRACTOR SHALL CONTACT THE CITY TRAFFIC ENGINEER AT (830) 221-4020 A MINIMUM OF SEVEN (7) DAYS PRIOR TO BEGINNING OF CONSTRUCTION.
14. CONTRACTOR SHALL FURNISH AND DELIVER CONTROLLER AND CABINET ASSEMBLY TO CITY OF NEW BRAUNFELS SIGNAL SHOP FOR PROGRAMMING FOUR (4) WEEKS IN ADVANCE OF THE EQUIPMENT INSTALLATION IN THE FIELD.
15. CONTRACTOR SHALL CONTACT THE CITY TRAFFIC ENGINEER AT (830) 221-4020 A MINIMUM OF FOURTEEN (14) DAYS PRIOR TO THE TRAFFIC SIGNAL TURN-ON.

PROPOSED TRAFFIC SIGNAL HEADS

SIGNAL FACES

12" LED SIGNAL SECTIONS WITH REFLECTIVE BACKPLATES



12" SIGNAL FACE — 1 QTY: 8

12" SIGNAL FACE — 2 QTY: 2

12" SIGNAL FACE — 3 QTY: 2

LED COUNTDOWN PEDESTRIAN HEADS

12" SIGNAL FACE

W1 THRU W2 QTY: 2

APPROVAL

STATE OF TEXAS — JUSTIN W. CLARK — 118715 — LICENSED PROFESSIONAL ENGINEER

JUSTIN W. CLARK, P.E. — 1/16/2023 DATE

STATE OF TEXAS — GILMER D. GASTON — 80472 — LICENSED PROFESSIONAL ENGINEER

GILMER D. GASTON, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

PROPOSED TRAFFIC SIGNAL LAYOUT

SHEET 1 OF 1

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	287

Plotted on: 1/16/2023

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Plotted on: 2/1/2021

CONDUIT AND CONDUCTOR SCHEDULE

	RUN NUMBER			(01)	(02)	(03)	(04)		(05)	(06)		(07)	(08)	(09)	(10)	(11)	(12)	(13)	(14)
	CONDUIT SIZE IN INCHES			2	2	2	2	3	2	2	3	2	NA	NA	NA	3	2	2	NA
	NUMBER OF CONDUITS			1	1	1	1	2	1	1	2	1	NA	NA	NA	2	1	1	NA
	LENGTH OF RUN (FT)			20	30	20	10	10	25	10	10	15	150	95	155	15	10	20	130
	TRENCH (T) / AERIAL(A)			T	T	T	T	T	T	T	T	T	A	A	A	T	T	T	A
CABLE	CIRCUIT			NUMBER OF CONDUCTORS															
#6 XHHW (SOLID)	120 POWER HOT			CABLES PULLED BY CPS	1														
#6 BARE (SOLID)	120 POWER COMMON				1														
	BARE BOND GROUND				1	1	1	2	1	1	2	1				2	1	1	
7 COND. #12 AWG TYPE "A", STRANDED	SIGNALS	Ø	1 + 6					2			2		2						
		Ø	4 + 7					2			2		2	2					
		Ø	2 + 5					2			2				2				2
		Ø	3 + 8					2			2								2
4 COND. #12 AWG TYPE "A", STRANDED	PED. SIGNALS	POLE	E					1				1							
		POLE	H					1	1										
		POLE	J					1			1					1	1		1
		POLE	K					1			1					1		1	1
2 COND. #14 AWG TYPE "C", STRANDED	PED. PUSH BUTTONS	POLE	E					1				1							
		POLE	H					1	1										
		POLE	J					1			1					1	1		1
		POLE	K					1			1					1		1	1
4 COND, #12 AWG TRAY CABLE	LUMINAIRE	POLE	C		1														
		POLE	D		1														1
VIDS COAX. & 3 COND, #16 AWG POWER CABLE	VIVDS	POLE	C				1				1								
		POLE	F				2				2		2	2					
		POLE	G				1				1		1						

AN EXTRA 4 IN CONDUIT SHALL BE STUBBED OUT & CAPPED 2 FT FROM CONTROLLER FOUNDATION.
(SUBSIDIARY TO ITEM 0680-6002)

ELECTRICAL SERVICE DATA

Electrical Service Description (see ED (4) - 03)	Service Conduit Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amp	Two-Pole Contact or Amps	Panelbd/ Loadcenter Amp Rating	Circuit No.	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
ELEC SERV TY D (120/240) 070 (NS) AL (E) PS (U)	1-1/4"	3/#6	N/A	2P/60	N/A	100	A (SIGNAL) B (LUM)	1P/50 2P/15	40 6	7.2

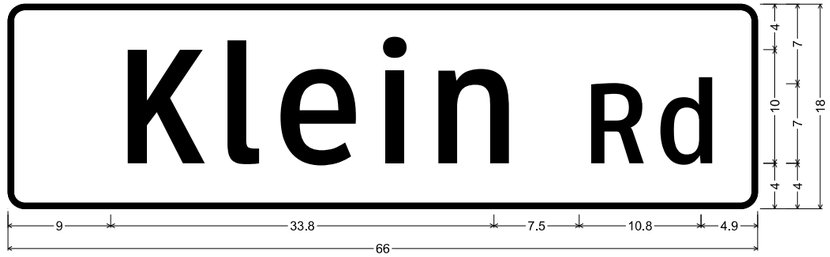
POLE & EQUIPMENT INFORMATION

ID	DESCRIPTION/ATTACHMENTS	NORTHING	EASTING	FND. ELEV
A	INSTALL NBU PEDESTAL SERVICE AND METER WITH TXDOT TYPE D SERVICE	N/A	N/A	N/A
B	INSTALL TXDOT STANDARD NEMA CABINET WITH COBALT ECONOLITE SIGNAL CONTROLLER ASSEMBLY ON CONCRETE FOUNDATION (SEE MTS STANDARD)	N/A	N/A	MIN. 2" ABOVE FG
C	INSTALL 40FT ANSI CLASS 2 TIMBER POLE W/ 2 DOWN GUYS, A LUMINAIRE ARM AND ONE VIVDS CAMERA ASSEMBLY.	13792168.8	2256358.1	N/A
D	INSTALL 40FT ANSI CLASS 2 TIMBER POLE W/ 2 DOWN GUYS AND A LUMINAIRE ARM.	13792259.7	2256268.8	N/A
E	INSTALL 10' ALUMINUM PEDESTAL POLE ON 6 FT DRILLED SHAFT FND. (24-A) WITH ONE PEDESTRIAN SIGNAL HEAD AND ONE APS PUSH BUTTON WITH SIGN AS INDICATED ON LAYOUT.	13792178.6	2256355.7	FLUSH WITH SIDEWALK
F	INSTALL 40FT ANSI CLASS 2 TIMBER POLE W/ 2 DOWN GUYS AND TWO VIVDS CAMERA ASSEMBLIES.	13792339.4	2256396.1	N/A
G	INSTALL 40FT ANSI CLASS 2 TIMBER POLE W/ 2 DOWN GUYS AND ONE VIVDS CAMERA ASSEMBLY.	13792271.1	2256461.6	N/A
H	INSTALL 10' ALUMINUM PEDESTAL POLE ON 6 FT DRILLED SHAFT FND. (24-A) WITH ONE PEDESTRIAN SIGNAL HEAD AND ONE APS PUSH BUTTON WITH SIGN AS INDICATED ON LAYOUT.	13792173.8	2256383.3	FLUSH WITH SIDEWALK
J	INSTALL 10' ALUMINUM PEDESTAL POLE ON 6 FT DRILLED SHAFT FND. (24-A) WITH ONE PEDESTRIAN SIGNAL HEAD AND ONE APS PUSH BUTTON WITH SIGN AS INDICATED ON LAYOUT.	13792260.8	2256279.2	FLUSH WITH SIDEWALK
K	INSTALL 10' ALUMINUM PEDESTAL POLE ON 6 FT DRILLED SHAFT FND. (24-A) WITH ONE PEDESTRIAN SIGNAL HEAD AND ONE APS PUSH BUTTON WITH SIGN AS INDICATED ON LAYOUT.	13792284.7	2256280.4	FLUSH WITH SIDEWALK

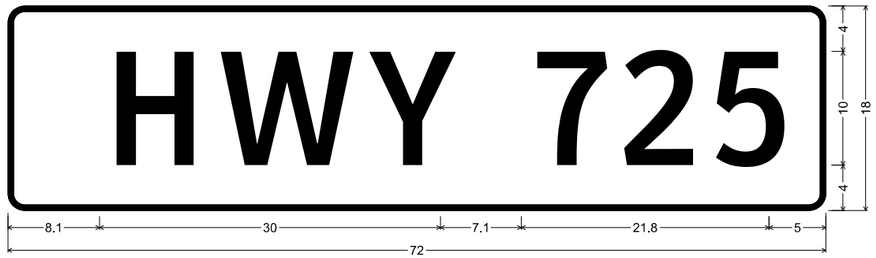
* PEDESTRIAN SIGNAL HEAD AND PUSH BUTTON TO BE ADDED BY OTHERS

* PEDESTRIAN SIGNAL HEAD AND PUSH BUTTON TO BE ADDED BY OTHERS

SIGN DETAILS:



1.5" Radius, 0.5" Border, White on, Green;
"Klein", ClearviewHwy-3-W; "Rd", ClearviewHwy-3-W;



1.5" Radius, 0.5" Border, White on, Green;
"HWY 725", ClearviewHwy-3-W;

DESIGN

STATE OF TEXAS
JUSTIN W. CLARK
118715
LICENSED
PROFESSIONAL ENGINEER

JUSTIN W. CLARK, P.E. — 2/1/2021 DATE

APPROVAL

STATE OF TEXAS
GILMER D. GASTON
80472
LICENSED
PROFESSIONAL ENGINEER

GILMER D. GASTON, P.E. — 2/1/2021 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

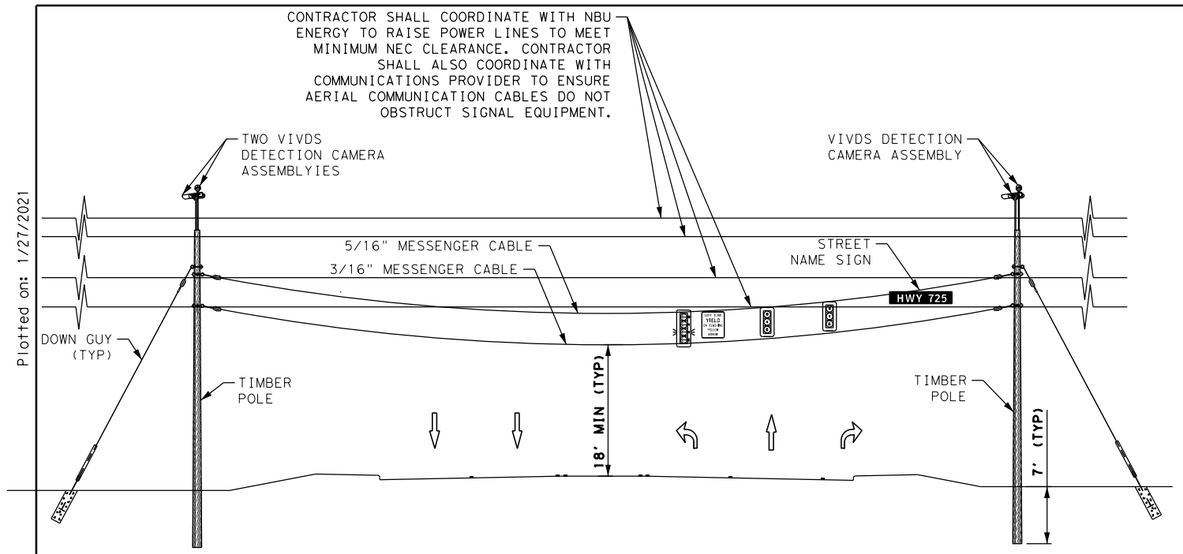
TRAFFIC SIGNAL IMPROVEMENTS CONDUIT & CONDUCTOR SCHEDULE

SHEET 1 OF 1

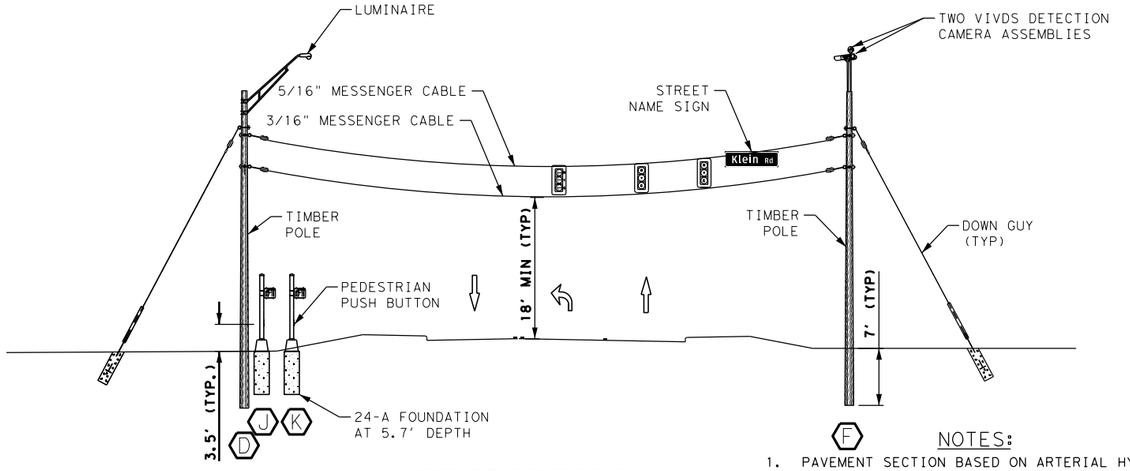
DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	NB 18-026	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	288

Design Filename: H:\Projects\510\30\03\Design\Civil\Traffic\5103003CCS01.dgn

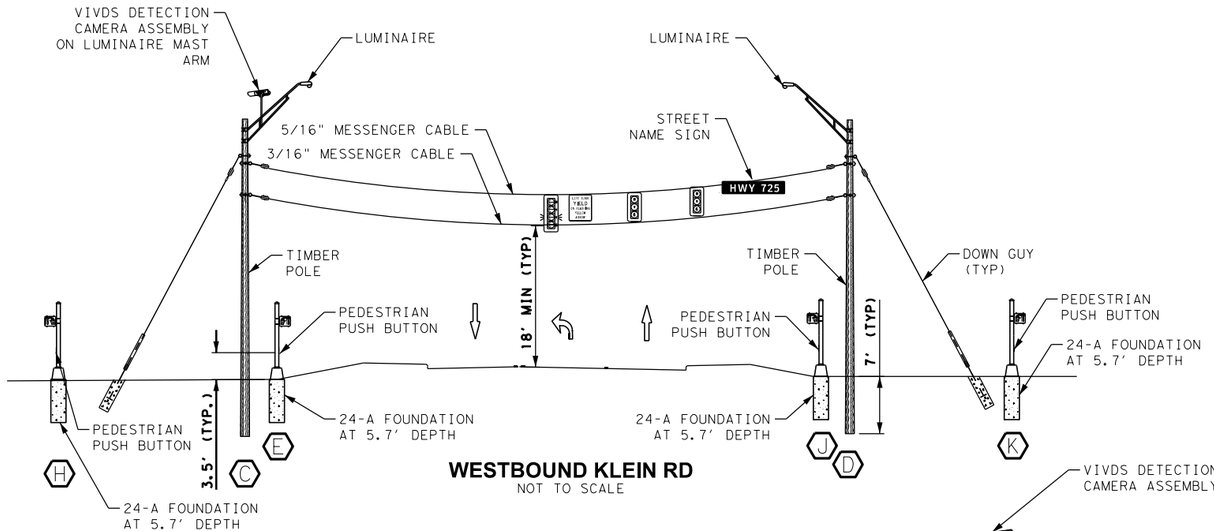
Plotted on: 1/27/2021



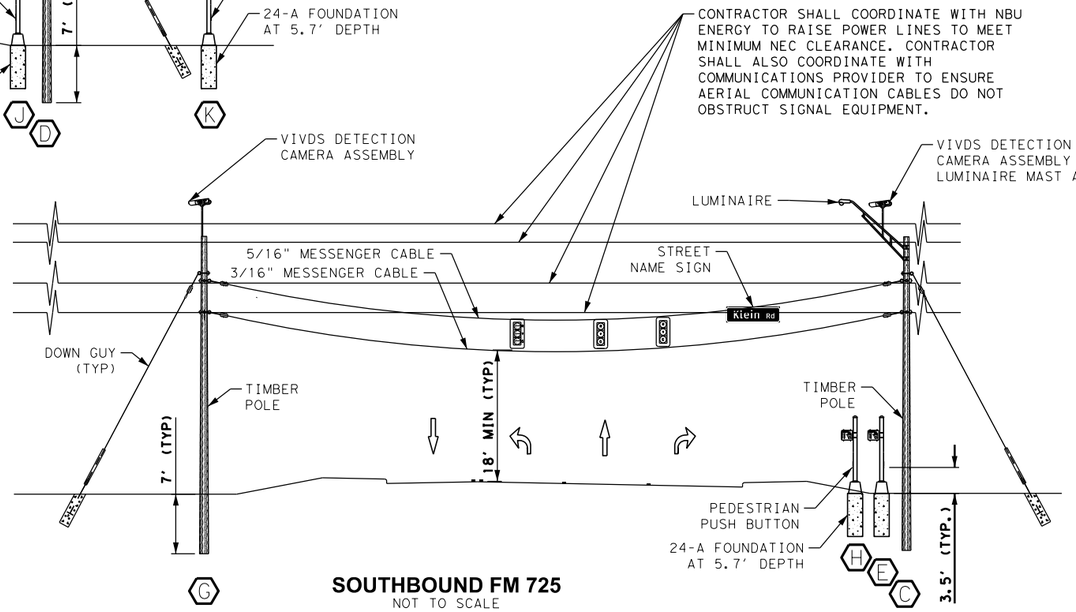
EASTBOUND KLEIN RD
NOT TO SCALE



NORTHBOUND FM 725
NOT TO SCALE



WESTBOUND KLEIN RD
NOT TO SCALE



SOUTHBOUND FM 725
NOT TO SCALE

NOTES:
1. CONTRACTOR SHALL POTHOLE SIGNAL POLE LOCATIONS NEAR UNDERGROUND UTILITIES PRIOR TO INSTALLING POLE FOUNDATION.
2. MINIMUM CLEARANCE OF 40" RADIUS FROM NEUTRAL AND 10' RADIUS FROM PRIMARY OR SECONDARY SHALL BE MAINTAINED BETWEEN PROPOSED TRAFFIC SIGNAL EQUIPMENT AND EXISTING OVERHEAD ELECTRICAL LINES.
3. ALL SIGNAL HEADS SHALL HAVE BACK PLATES.
4. SEE "SINGLE MAST ARM ASSEMBLY (SMA-80)" AND "DUAL MAST ARM ASSEMBLY" (DMA) STANDARDS FOR SIGNAL POLE AND MAST ARM DETAILS.
5. SEE "TRAFFIC SIGNAL POLE FOUNDATION (TS-FD)" STANDARDS FOR DRILLED SHAFT DETAILS.
6. SEE "MISCELLANEOUS TRAFFIC SIGNAL DETAILS (MTS)" STANDARD FOR PEDESTAL POLE DETAILS.
7. SIGNAL HEADS SHALL HAVE A MINIMUM OF 18.5 FEET CLEARANCE ABOVE ROADWAY SURFACE.

NOTES:
1. PAVEMENT SECTION BASED ON ARTERIAL HYBRID OPTION (TYPE B/MSL) RECOMMENDATIONS FROM GEOTECHNICAL ENGINEERING STUDY (PAVEMENTS FOR KLEIN ROAD RECONSTRUCTION PHASE II SOUTH WALNUT TO FM 725, PREPARED BY RABA KISTNER 12/17/2020).
2. DURING CONSTRUCTION OF PAVEMENT SECTION, ENSURE NO PUNCTURING OF PVC MOISTURE BARRIER OCCURS.

DESIGN

STATE OF TEXAS — JUSTIN W. CLARK — 118715 — LICENSED PROFESSIONAL ENGINEER

JUSTIN W. CLARK, P.E. — 1/27/2021 DATE

APPROVAL

STATE OF TEXAS — GILMER D. GASTON — 80472 — LICENSED PROFESSIONAL ENGINEER

GILMER D. GASTON, P.E. — 1/27/2021 DATE

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

TRAFFIC SIGNAL IMPROVEMENTS ELEVATIONS

SHEET 1 OF 1

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	NB 18-026	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	289

Design Filename: H:\Projects\510\30\03\Design\Civil\Traffic\5103003elev.dgn

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GENERAL NOTES FOR ALL ELECTRICAL WORK

1. The location of all conduits, junction boxes, ground boxes, and electrical services is diagrammatic and may be shifted to accommodate field conditions.

2. Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC), TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA), and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association (CSA), Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Where reference is made to NEMA listed devices, International Electrotechnical Commission (IEC) listed devices will not be considered an acceptable equal to a NEMA listed device. Acceptable devices may have both a NEMA and IEC listing. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection. Replace or reinstall rejected material or equipment at no additional cost to the Department.

3. Miscellaneous nuts, bolts and hardware, except for high strength bolts, may be stainless steel when plans specify galvanized, provided the bolt size is ½ in. or less in diameter.

4. Provide the following test equipment as required by the Engineer to confirm compliance with the contract and the NEC: voltmeter, ammeter, megohm meter (1000 volt DC), ground resistance tester, torque wrenches, and torque screwdrivers. Ensure all equipment has been properly calibrated within the last year. Provide calibration certification to the Engineer upon request. Operate test equipment during inspection as requested by the Engineer.

5. Install grounding as shown on the plans and in accordance with the NEC. Ensure all metallic conduits; metal poles; luminaires; and metal enclosures are bonded to the equipment grounding conductor. Provide stranded bare copper or green insulated grounding conductors. Ground rods, connectors, and bonding jumpers are subsidiary to the various bid items.

6. When required by the Engineer, notify the Department in writing of materials from the Material Producers List (MPL) intended for use on each project. Prequalified materials are listed on the MPL on TxDOT's website under "Roadway Illumination and Electrical Supplies." No substitutions will be allowed for materials on this list.

CONDUIT

A. MATERIALS

1. Provide conduit, junction boxes, fittings, and hardware as per TxDOT Departmental Material Specification (DMS) 11030 "Conduit" and Item 618 "Conduit" of TxDOT's "Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges," latest edition. Provide conduits listed under Item 618 on the MPL under "Roadway Illumination and Electrical Supplies." Provide conduit types according to the descriptive code or as shown on the plans. Do not substitute other types of conduits for those shown. Provide liquidtight flexible metal conduit (LFMC) when flexible conduit is called for on galvanized steel rigid metallic conduit (RMC) systems. Provide liquidtight flexible nonmetallic conduit (LFNC) when flexible conduit is called for on polyvinyl chloride (PVC) systems.

2. Provide galvanized steel RMC for all exposed conduits, unless otherwise shown on the plans. Properly bond all metal conduits.

3. Unless otherwise shown on the plans, provide junction boxes with a minimum size as shown in the following table, which applies to the greatest number of conductors entering the box through one conduit with no more than four conduits per box. When a mixture of conductor sizes is present, count the conductors as if all are of the larger size. For situations not applicable to the table, size junction boxes in accordance with NEC.

AWG	3 CONDUCTORS	5 CONDUCTORS	7 CONDUCTORS
#1	10" x 10" x 4"	12" x 12" x 4"	16" x 16" x 4"
#2	8" x 8" x 4"	10" x 10" x 4"	12" x 12" x 4"
#4	8" x 8" x 4"	10" x 10" x 4"	10" x 10" x 4"
#6	8" x 8" x 4"	8" x 8" x 4"	10" x 10" x 4"
#8	8" x 8" x 4"	8" x 8" x 4"	8" x 8" x 4"

4. Junction boxes with an internal volume of less than 100 cu. in. and supported by entering raceways must have threaded entries or hubs identified for the intended purpose and supported by connection of two or more rigid metal conduits. Secure conduit within 3 ft. of the enclosure or within 18 in. of the enclosure if all conduit entries are on the same side. Mechanically secure all junction boxes with an internal volume greater than 100 cu. inches.

5. Provide hot dipped galvanized cast iron or sand cast aluminum outlet boxes for junction boxes containing only 10 AWG or 12 AWG conductors. Do not use die cast aluminum boxes. Size outlet boxes according to the NEC.

6. Do not use intermediate metal conduit (IMC) or electrical metallic tubing (EMT) unless specifically required by the plan sheets. When EMT is called for, provide junction boxes made from galvanized steel sheeting, listed and approved for outdoor use, unless otherwise noted on the plans. Size all galvanized steel junction boxes in accordance with the NEC. Provide junction boxes for IMC conduit systems that meet the same requirements for junction boxes used with RMC systems.

7. Provide PVC junction boxes intended for outdoor use on PVC conduit systems, unless otherwise noted on the plans.

8. Provide PVC elbows in PVC conduit systems, unless otherwise shown on the plans. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system. When galvanized steel RMC elbows are specifically called for in the plans and any portion of the RMC elbow is buried less than 18 in., ground the RMC elbow by means of a grounding bushing on a rigid metal extension. Grounding of the rigid metal elbow is not required if the entire RMC elbow is encased in a minimum of 2 in. of concrete. PVC extensions are allowed on these concrete encased rigid metal elbows. RMC or PVC elbows are subsidiary to various bid items.

9. When required, provide High-Density Polyethylene (HDPE) conduit with factory installed internal conductors according to Item 622 "Duct Cable." At the Contractor's request and with approval by the Engineer, substitute HDPE conduit with no conductors for bored schedule 40 or schedule 80 PVC conduit bid under Item 618. Ensure bored HDPE substituted for PVC is schedule 40 and of the same size PVC called for in the plans. Ensure the substituted HDPE meets the requirements of Item 622, except that the conduit is supplied without factory-installed conductors. Make the transition of the HDPE conduit to PVC (or RMC elbow when required) at the bore pit. Provide conduit of the size and schedule as shown on the plans. Do not extend substituted conduit into ground boxes or foundations. Provide PVC or galvanized steel RMC elbows as called for at all ground boxes and foundations.

10. Use two-hole straps when supporting 2 in. and larger conduits. On electrical service poles, properly sized stainless steel or hot dipped galvanized one-hole standoff straps are allowed on the service riser conduit.

B. CONSTRUCTION METHODS

1. Provide and install expansion joint conduit fittings on all structure-mounted conduits at the structure's expansion joints to allow for movement of the conduit. In addition, provide and install expansion joint fittings on all continuous runs of galvanized steel RMC conduit externally exposed on structures such as bridges at maximum intervals of 150 ft. When requested by the project Engineer, supply manufacturer's specification sheet for expansion joint conduit fittings. Repair or replace expansion joint fittings that do not allow for movement at no additional cost to the Department. Provide the method of determining the amount of expansion to the Engineer upon request. Do not use LFMC or LFNC as a substitute for the required expansion conduit fittings.

2. Space all conduit supports at maximum intervals of 5 ft. Install conduit spacers when attaching metal conduit to surface of concrete structures. See "Conduit Mounting Options" on ED(2). Install conduit support within 3 ft. of all enclosures and conduit terminations.

3. Do not attach conduit supports directly to pre-stressed concrete beams except as shown specifically in the plans or as approved by the Engineer.

4. Unless otherwise shown on the plans, jack or bore conduit placed beneath existing roadways, driveways, sidewalks, or after the base or surfacing operation has begun. Backfill and compact the bore pits below the conduit per Item 476 "Jacking, Boring, or Tunneling Pipe or Box" prior to installing conduit or duct cable to prevent bending of the connections.

5. When placing conduit in the sub-grade of new roadways, backfill all trenches with excavated material unless otherwise noted on the plans. When placing conduit in the sub-base of new roadways, backfill all trenches with cement-stabilized base as per requirements of Items 110 "Excavation", 400 "Excavation and Backfill for Structures", 401 "Flowable Backfill", 402 "Trench Excavation Protection", and 403 "Temporary Special Shoring."

6. Provide and place warning tape approximately 10 in. above all trenched conduit as per Item 618.

7. During construction, temporarily cap or plug open ends of all conduit and raceways immediately after installation to prevent entry of dirt, debris and animals. Temporary caps constructed of durable duct tape are allowed. Tightly fix the tape to the conduit opening. Clean out the conduit and prove it clear in accordance with Item 618 prior to installing any conductors.

8. Ensure conduit entry into the top of any enclosure is waterproof by installing conduit sealing hubs or using boxes with threaded bosses. This includes surface mounted safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes. Grounding bushings on water tight sealing hubs are not required.

9. Fit the ends of all PVC conduit terminations with bushings or bell end fittings. Provide and install a grounding type bushing on all metal conduit terminations.

10. Install a bonding jumper from each grounding bushing to the nearest ground rod, grounding lug, or equipment grounding conductor. Ensure all bonding jumpers are the same size as the equipment grounding conductor. Bonding of conduit used as a casing under roadways for duct cable is not required, if the duct extends the full length through the casing.

11. At all electrical services, install a 6 AWG solid copper grounding electrode conductor.

12. Place conduits entering ground boxes so that the conduit openings are between 3 in. and 6 in. from the bottom of the box. See the ground box detail on sheet ED(4).

13. Seal ends of all conduits with duct seal, expandable foam, or by other methods approved by the Engineer. Seal conduit immediately after completion of conductor installation and pull tests. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a conduit sealant.

14. File smooth the cut ends of all mounting strut and conduit. Before installing, paint the field cut ends of all mounting strut and RMC (threaded or non-threaded) with zinc rich paint (94% or more zinc content) to alleviate overspray. Use zinc rich paint to touch up galvanized material as allowed under Item 445 "Galvanizing." Do not paint non-galvanized material with a zinc rich paint as an alternative for materials required to be galvanized.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUITS & NOTES

ED(1)-14

FILE:	ed1-14.dgn	DN:	CK:	DW:	CK:
© TxDOT	October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS					KLEIN RD
		DIST	COUNTY		SHEET NO.
		SAT	GUADALUPE		290

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ELECTRICAL CONDUCTORS

A. MATERIAL INFORMATION

1. Provide Type XHHW insulated conductors in accordance with Departmental Material Specification (DMS)11040 "Conductors" and Item 620 "Electrical Conductors." Provide conductors as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 620. Color code insulated conductors in conformance with the NEC. Identify grounded (neutral) conductors with white insulation. Identify grounding conductors (ground wires) with green insulation or bare conductors. Identify ungrounded (hot) conductors with any color insulation except green, white, or gray. Keep color scheme consistent throughout the wiring system. Identify conductors 6 American Wire Gauge (AWG) and smaller by continuous color jacket. Identify electrical conductors 4 AWG and larger by continuous color jacket or by colored tape. When identifying conductors with colored tape, mark at least 6 in. of the conductor's insulation with half laps of tape.

2. Provide a solid copper 6 AWG grounding electrode conductor to bond the electrical service equipment to the concrete encased grounding electrode or the ground rod at the service location. Connect the grounding electrode conductor to the ground rod with a UL listed connector in accordance with DMS 11040. Connect the grounding electrode conductor to the concrete encased grounding electrode as shown in the plans.

3. Where two or more circuits are present in one conduit or enclosure, permanently identify the conductors of each branch circuit by attaching a non-metallic tag around both circuit conductors at each accessible location. Provide tags with two straps, large enough to indicate circuit number, letter, or other identification as shown in the plans. Print circuit identification on the tag with a permanent marker.

4. Use listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors for splicing as specified in DMS 11040. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Provide UL listed gel-filled insulating splice covers. Splicing materials, insulating materials, breakaway disconnects, splice covers, and fuse holders are subsidiary to various bid items.

B. CONSTRUCTION METHODS

1. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the conduit system. After installing conductors in conduit, perform conductor pull test. If a conductor cannot be freely pulled, make any needed alterations or repairs at no additional cost to the department. Perform insulation resistance tests in accordance with Item 620. Coordinate with the Engineer to witness the tests.

2. Leave 2 ft. minimum, 3 ft. maximum length for each conductor up to the splice in ground boxes. Leave 3 ft. minimum, 4 ft. maximum length of conductor in ground boxes when pulled through with no splice. Leave 1 ft. minimum, 1.5 ft. maximum length of conductor at enclosures, weatherheads and pole bases.

3. Make splices only in junction boxes, ground boxes, pole bases, or electrical enclosures and use only listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors. Insulate splices with heavy wall heat shrink tubing or gel-filled insulating splice covers to provide a watertight splice. Overlap conductor insulation with heat shrink tubing a minimum of 2 in. past both sides of the splice. Where heat shrink tubing may not shrink sufficiently to provide a watertight seal around the individual conductors, prior to heating the tubing, increase the diameter of the conductor insulation using hot melt adhesive tape to provide a watertight seal between the individual conductors and the heat shrink tubing. Ensure the tape extends past the heat shrink tubing. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Heat shrink tubing that appears to have been burned, or overheated, is considered defective and must be replaced.

4. Size and install gel-filled insulating splice covers according to manufacturer's specifications when used in place of heat shrink tubing.

5. Wire nuts with factory applied waterproof sealant may be used for 8 AWG or smaller conductors in above ground junction boxes, but not in pole bases or ground boxes. Install wire nuts in an upright position to prevent the accumulation of water.

6. Support conductors in illumination poles with a J-hook at the top of the pole.

7. When terminating conductors, remove the insulation and jacketing material without nicking the individual strands of the conductor. Conductors with nicked individual conductor strands or removed strands will be considered damaged.

8. Replace conductors and cables that are damaged beyond repair or that fail an insulation resistance test at no additional cost to the department.

9. Do not repair damaged conductors with duct tape, electrical tape, or wire nuts. Use only approved splicing methods.

10. Do not terminate more than one conductor under a single connector, unless the connector is rated for multiple conductors. Do not exceed the pressure connector's listing for maximum number and size of conductors allowed.

11. Install breakaway connectors on conductors bid under Item 620 whenever those conductors pass through a breakaway support device. Follow manufacturer's instructions when terminating conductors to breakaway connectors. Properly torque threaded connections. Proper terminations are critical to the safe operation of breakaway devices. Trim waterproofing boots on breakaway connectors to fit snugly around the conductor to ensure waterproof connection. Only one conductor may enter a single opening in a boot. Provide waterproof boots with the correct number of openings. Leave unused openings factory sealed. Use prequalified breakaway connectors as shown on the MPL.

12. Provide and install a separate stranded equipment grounding conductor (EGC) in all conduits that contain circuit wiring of 50 volts or more. Unless shown elsewhere, size the EGC to be the same size as the largest current carrying conductor contained in the conduit. Ensure all EGCs are bonded together at every accessible location. For traffic signal installations, provide a minimum size 8 AWG EGC. The EGC is paid for under Item 620.

C. TEMPORARY WIRING

1. Install temporary conductors and electrical equipment in accordance with the NEC article "Temporary Installations" and Department standard sheets.

2. Provide a ground fault circuit interrupter (GFCI) for power outlets for portable electrical equipment, power tools, ice machines, ice storage bins and refrigerators located outdoors at grade. GFCI may be any one of the following: molded cord and plug set, receptacle, or circuit breaker type.

3. Use listed wire nuts with factory applied sealant for temporary wiring where approved.

4. Enclose conductor splices within a listed enclosure or ground box, or ensure the splices are more than 10 ft. above grade vertically and more than 5 ft. horizontally from any metal structure. Where installing temporary conductors in areas subject to vehicle traffic or mobile construction equipment, ensure the vertical clearance to ground is at least 18 ft. when measured at the lowest point. Ground messenger wires that support power conductors in conformance with the NEC.

5. Protect and when necessary repair any existing electrical conduits uncovered during the construction process in a timely manner and in conformance with the NEC.

GROUND RODS & GROUNDING ELECTRODES

A. MATERIAL INFORMATION

1. Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS 11040 and the plans. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets. Concrete encased grounding electrodes may be called for in specific locations including electrical service, see individual plan sheets.

B. CONSTRUCTION METHODS

1. Furnish auxiliary ground rods for lightning protection and install in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil, ensure that the upper end is between 2 to 4 in. below finished grade.

2. Do not place ground rods in the same drilled hole as a timber pole.

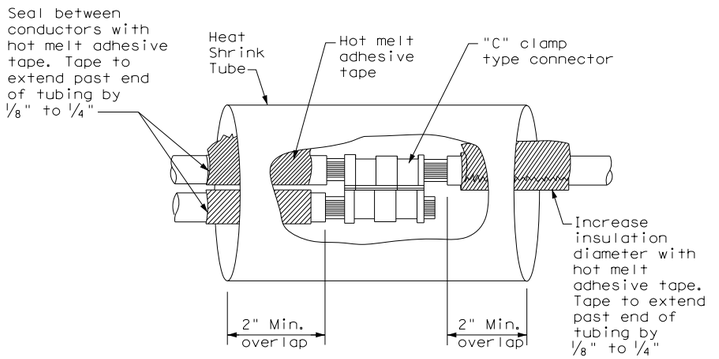
3. Install ground rods so the imprinted part number is at the upper end of the rod.

4. Remove all non-conductive coatings such as concrete splatter from the rod at the clamp location.

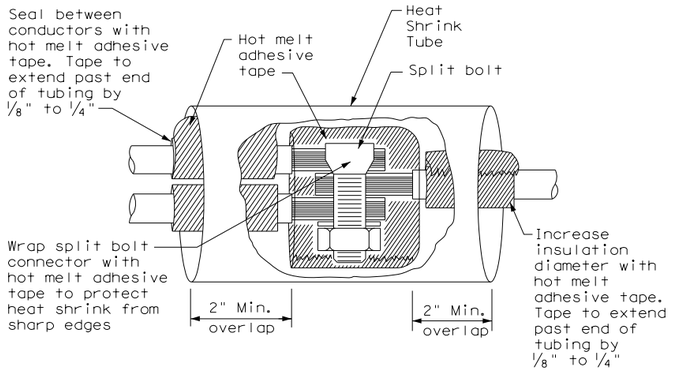
5. Route all conductors as short and straight as possible for connection to lightning protection ground rods. When a bend is required, ensure a minimum radius bend of four inches for these conductors.

6. Unless otherwise called for in the plans, protect grounding electrode conductors with non-metallic conduit. When protecting grounding electrode conductors with metal conduit, provide and install a grounding type bushing and properly sized bonding jumper on each end of the metal conduit.

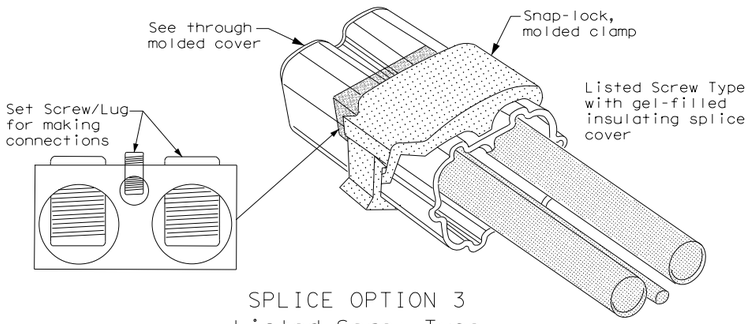
7. Written authorization is required before installing a ground rod in a horizontal trench for rocky soil or a solid rock bottom.



SPLICE OPTION 1
Compression Type



SPLICE OPTION 2
Split Bolt Type



SPLICE OPTION 3
Listed Screw Type

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Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUCTORS

ED(3)-14

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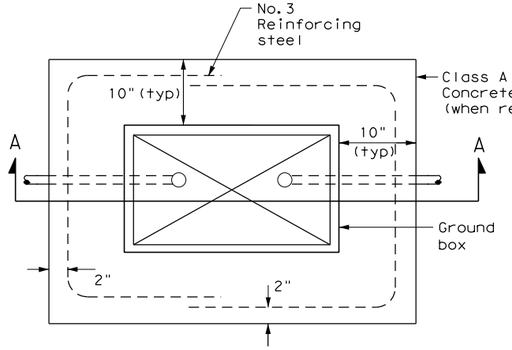
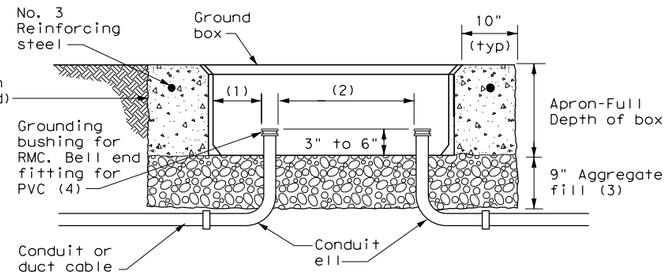


PLAN VIEW



SECTION A - A

APRON FOR GROUND BOX

(1) Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.

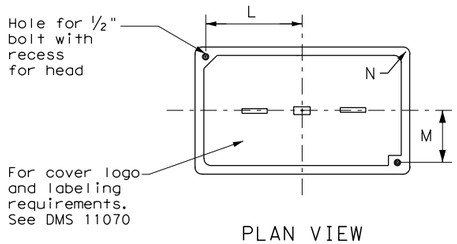
(2) Maintain sufficient space between conduits to allow for proper installation of bushing.

(3) Place aggregate under the box, not in the box. Aggregate should not encroach on the interior volume of the box.

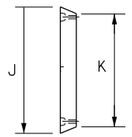
(4) Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.

GROUND BOX DIMENSIONS	
TYPE	OUTSIDE DIMENSIONS (INCHES) (Width x Length X Depth)
A	12 X 23 X 11
B	12 X 23 X 22
C	16 X 29 X 11
D	16 X 29 X 22
E	12 X 23 X 17

GROUND BOX COVER DIMENSIONS								
TYPE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2



PLAN VIEW



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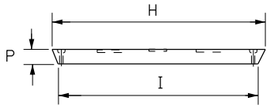

SIDE

GROUND BOX COVER

GROUND BOXES

A. MATERIALS

1. Provide polymer concrete ground boxes measuring 16x30x24 in. (WxLxD) or smaller in accordance with Departmental Material Specification (DMS) 11070 "Ground Boxes" and Item 624 "Ground Boxes."

2. Provide Type A, B, C, D, and E ground boxes as shown in the plans, and as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 624.

3. Ensure ground box cover is correctly labeled in accordance with DMS 11070.

4. Provide larger ground boxes in accordance with Item 624 and as shown in the plans.

B. CONSTRUCTION METHODS

1. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting ground box. Provide Grade 3 or 4 coarse aggregate as shown on Table 2 of Item 302 "Aggregates for Surface Treatments." Ensure aggregate bed is in place and at least 9 inches deep, prior to setting the ground box. Install ground box on top of aggregate.

2. Cast ground box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Ground box aprons, including concrete and reinforcing steel, are subsidiary to ground boxes when called for by descriptive code.

3. Keep bolt holes in the box clear of dirt. Bolt covers down when not working in ground boxes.

4. Install all conduits and ells in a neat and workmanlike manner. Uniformly space conduits so grounding bushings and bell end fittings can easily be installed.

5. Temporarily seal all conduits in the ground box until conductors are installed.

6. Permanently seal conduits immediately after the completion of conductor installation and pull tests. Permanently seal the ends of all conduits with duct seal, expandable foam, or other method as approved. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a sealant.

7. When a ground rod is present in a ground box, bond all equipment grounding conductors together and to the ground rod with listed connectors.

8. When a type B or D ground box is stacked to meet volume requirements, it is allowable to cut an appropriately sized hole for conduit entry in the side wall at least 18 inches below grade.

9. If an existing ground box in the contract has a metal cover, bond the cover to the equipment grounding conductor with a 3 ft. long stranded bonding jumper the same size as the grounding conductor. The bonding jumper is subsidiary to various bid items. Verify existing ground boxes with metal covers are shown on the plans, with notes fully describing the work required.

10. If other ground boxes with metal covers are within the project limits but are not part of the contract, the Engineer may direct the Contractor to bond the metal covers, identifying the specific boxes in writing. This work will be paid for separately.

11. Bond metal ground box covers to the grounding conductor with a tank ground type lug.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
GROUND BOXES

ED(4)-14

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ELECTRICAL SERVICES NOTES

1. Provide new materials. Ensure installation and materials comply with the applicable provisions of the National Electrical Code (NEC) and National Electrical Manufacturers Association (NEMA) standards. Ensure material is Underwriters Laboratories (UL) listed. Provide and install electrical service conduits, conductors, disconnects, contactors, circuit breaker panels, and branch circuit breakers as shown on the Electrical Service Data chart in the plans. Faulty fabrication or poor workmanship in material, equipment, or installation is justification for rejection. Where manufacturers provide warranties and guarantees as a customary trade practice, furnish these to the State.

2. Provide electrical services in accordance with Electrical Details standard sheets, Departmental Material Specification (DMS) 11080 "Electrical Services,"DMS 11081 "Electrical Services-Type A," DMS 11082 "Electrical Services-Type C," DMS 11083 "Electrical Services-Type D," DMS 11084 "Electrical Services-Type T," DMS 11085 "Electrical Services-Pedestal (PS)", and Item 628 "Electrical Services" of the Standard Specifications. Provide electrical service types A, C, and D, as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 628. Provide other service types as detailed on the plans.

3. Provide all work, materials, services, and any incidentals needed to install a complete electrical service as specified in the plans.

4. Coordinate with the Engineer and the utility provider for metering and compliance with utility requirements. Primary line extensions, connection charges, meter charges, and other charges by the utility company to provide power to the location are paid for in accordance with Item 628. Get approval for the costs associated with these charges prior to engaging the utility company to do the work. Consult with the utility provider to determine costs and requirements, and coordinate the work as approved.

5. The enclosure manufacturer will provide Master Lock Type 2 with brass tumblers keyed #2195 for all custom electrical enclosures. Installing Contractor is to provide Master Lock #2195 Type 2 with brass tumblers for "off the shelf" enclosures. Master Lock #2195 keys and locks become property of the State. Unless otherwise approved, do not energize electrical service equipment until locks are installed.

6. Enclosures with external disconnects that de-energize all equipment inside the enclosure do not need a dead front trim. Protect incoming line terminations from incidental contact as required by the NEC.

7. When galvanized is specified for nuts, screws, bolts or miscellaneous hardware, stainless steel may be used.

8. Provide wiring and electrical components rated for 75°C. Provide red, black, and white colored XHHW service entrance conductors of minimum size 6 American Wire Gauge (AWG). Identify size 6 AWG conductors by continuous color jacket. Identify electrical conductors sized 4 AWG and larger by continuous color jacket or by colored tape. Mark at least 6 inches of the conductor's insulation with half laps of colored tape, when identifying conductors. Ensure each service entrance conductor exits through a separately bushed non-metallic opening in the weatherhead. The lengths of the conductors outside the weatherhead are to be 12 inches minimum, 18 inches maximum, or as required by utility.

9. All electrical service conduit and conductors attached to the electrical service including the riser or the elbow below ground are subsidiary to the electrical service. For an underground utility feed, all service conduit and conductors after the elbow, including service conduit and conductors for the utility pole riser when furnished by the Contractor, will be paid for separately.

10. Provide rigid metal conduit (RMC) for all conduits on service, except for the ½ in. PVC conduit containing the electrical service grounding electrode conductor. Size the service entrance conduit as shown in the plans. Ensure conduit for branch circuit entry to enclosure is the same size as that shown on the layout sheets for branch circuit conduit. Extend all rigid metal conduits a minimum of 6 inches underground and then couple to the type and schedule of the conduit shown on the layout for that particular branch circuit. Install a grounding bushing on the RMC where it terminates in the service enclosure.

11. Use of liquidtight flexible metal conduit (LFMC) is allowed between the meter and service enclosure when they are mounted 90 to 180 degrees to each other. Size the LFMC the same size as service entrance conduit. LFMC must not exceed 3 feet in length. Strap LFMC within 1 foot of each end. LFMC less than 12 inches in length need not be strapped. Each end of LFMC must have a grounding bushing or be terminated with a grounding fitting. The LFMC must contain a grounded (neutral) conductor. Ensure any bend in LFMC never exceeds 180 degrees. A pull test is required on all installed conductors, with at least six inches of free conductor movement demonstrated to the satisfaction of the Engineer.

12. Ensure all mounting hardware and installation details of services conform to utility company specifications.

13. For all electrical service enclosures listed under Item 628 on the MPL, the UL 508 enclosure manufacturers will prepare and submit a schematic drawing unique to each service. Before shipment to the job site, place the applicable laminated schematic drawings and the laminated plan sheet showing the electrical service data chart used to build the enclosure in the enclosure's data pocket. The installing contractor will copy and laminate the actual project plan sheets detailing all equipment and branch circuits supplied by that service. The laminated plan sheets are to be placed in the service enclosure's document pocket. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in. before laminating. If the installation differs from the plan sheets, the installing contractor is to redline plan sheets before laminating.

14. When providing an "Off The Shelf" Type D or Type T service, provide laminated plan sheets detailing equipment and branch circuits supplied by that service. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in before laminating. Deliver these drawings before completion of the work to the Engineer, instead of placing in enclosure that has no door pocket.

15. Do not install conduit in the back wall of a service enclosure where it would penetrate the equipment mounting panel inside the enclosure. Provide grounding bushings on all metal conduits, and terminate bonding jumpers to grounding bus. Grounding bushings are not required when the end of the metal conduit is fitted with a conduit sealing hub or threaded boss, such as a meter base hub.

SERVICE ASSEMBLY ENCLOSURE

1. Provide threaded hub for all conduit entries into the top of enclosure.

2. Type galvanized steel (GS) enclosures may be used for Type C panelboards and for Type D and T services that do not use an enclosure mounted photocell or lighting contactor. Provide GS enclosures in accordance with DMS 11080, 11082, 11083, and 11084.

3. Provide aluminum (AL) and stainless steel (SS) enclosures for Types A, C, and D in accordance with DMS 11080, 11081, 11082, 11083, and 11084. Do not paint stainless steel.

4. Provide pedestal service (PS) enclosures in accordance with ED(9) and DMS 11080 and 11085. Do not provide GS pedestal services. If GS is shown in the PS descriptive code, provide an AL enclosure.

MAIN DISCONNECT & BRANCH CIRCUIT BREAKERS

1. Field drill flange-mounted remote operator handle if needed, to ensure handle is lockable in both the "On" and "Off" positions.

2. When the utility company provides a transformer larger than 50 KVA, verify that the available fault current is less than the circuit breaker's ampere interrupting capacity (AIC) rating and provide documentation from the electric utility provider to the Engineer.

PHOTOELECTRIC CONTROL

1. Provide photocell as listed on the MPL. Move, adjust, or shield the photocell from stray or ambient night time light to ensure proper operation. Mount photocell facing north when practical. Mount top of pole photocells as shown on Top Mounted Photocell Detail.

* ELECTRICAL SERVICE DATA

Elec. Service ID	Plan Sheet Number	Electrical Service Description	Service Conduit **Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amps	Two-Pole Contractor Amps	Panelbd/ Loadcenter Amp Rating	Branch Circuit ID	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
SB 183	289	ELC SRV TY A 240/480 100(SS)AL(E)SF(U)	2"	3/#2	100	2P/100	100	N/A	Lighting NB	2P/40	26	28.1
									Lighting SB	2P/40	25	
									Underpass	1P/20	15	
NB Access	30	ELC SRV TY D 120/240 060(NS)SS(E)TS(O)	1 ¼"	3/#6	N/A	2P/60		100	Sig. Controller	1P/30	23	5.3
							30		Luminaires	2P/20	9	
									CCTV	1P/20	3	
2nd & Main	58	ELC SRV TY T 120/240 000(NS)GS(N)SP(O)	1 ¼"	3/#6	N/A	N/A	N/A	70	Flashing Beacon 1	1P/20	4	1.0
									Flashing Beacon 2	1P/20	4	

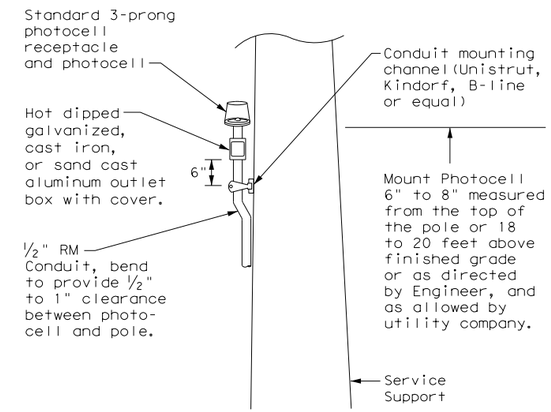
* Example only, not for construction. All new electrical services must have electrical service data chart specific to that service as shown in the plans.

** Verify service conduit size with utility. Size may change due to utility meter requirements. Ensure conduit size meets the National ELectrical Code.

EXPLANATION OF ELECTRICAL SERVICE DESCRIPTIVE CODE

ELEC SERV TY X XXX/XXX XXX (XX) XX (X) XX (X)

- Schematic Type
- Service Voltage V / V
- Disconnect Amp Rating
  000 indicates main lug only/
  Typically Type T
- (SS)= Safety Switch Ahead of Meter-Check with Utility
  (NS)= No safety Switch Ahead of Meter-Check with Utility
- Enclosure Type
  GS= Galvanized steel("off the shelf")
  SS= Stainless steel(Custom Enclosure)See MPL
  AL= Aluminum (Custom Enclosure)See MPL
- Photocell Mounting Location
  (E)= Inside Service/Enclosure Mounted
  (T)= Top of pole
  (L)= Luminaire mounted
  (N)= None/No Photocell or Lighting Contactor Required
- Service Support Type
  GC= Granite concrete
  OC= Other concrete
  TP= Timber pole
  SP= Steel pole
  SF= Steel frame
  OT= Pole by others or paid for separately
  EX= Existing pole
  TS= Service on traffic signal pole
  PS= Pedestal Service
- O= Overhead Service Feed from Utility
  U= Underground Service Feed from Utility



TOP MOUNTED PHOTOCELL

Install conduit strap maximum 3 feet from box. 5 foot maximum spacing between straps supporting conduit.

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Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE NOTES & DATA

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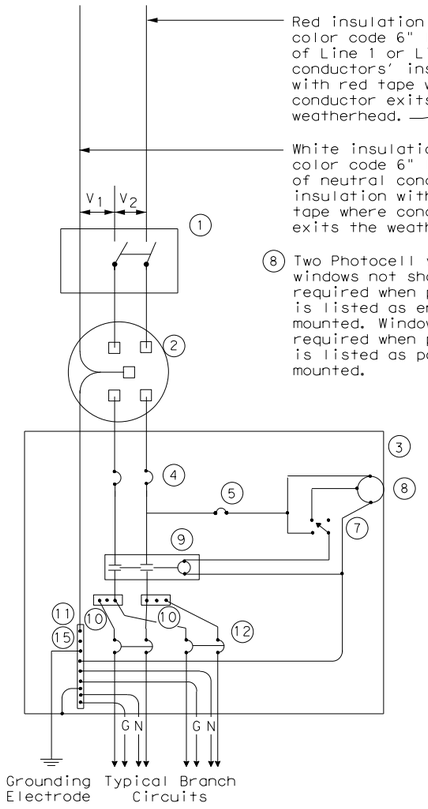
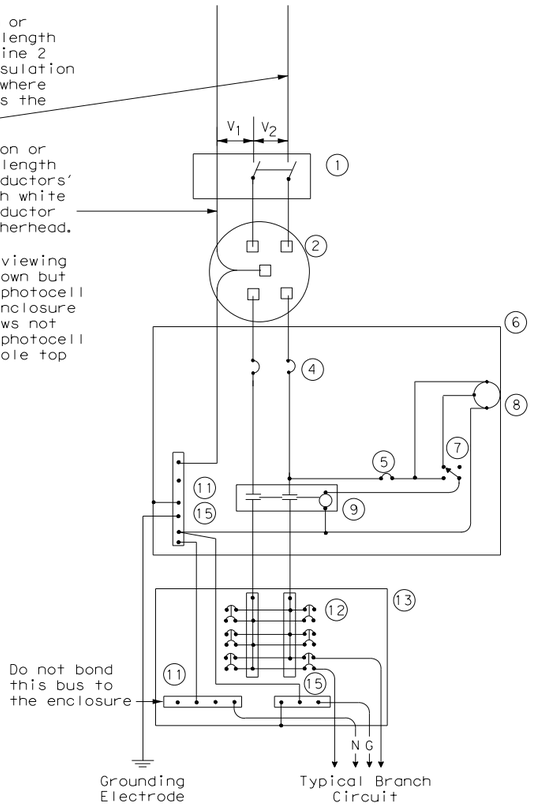
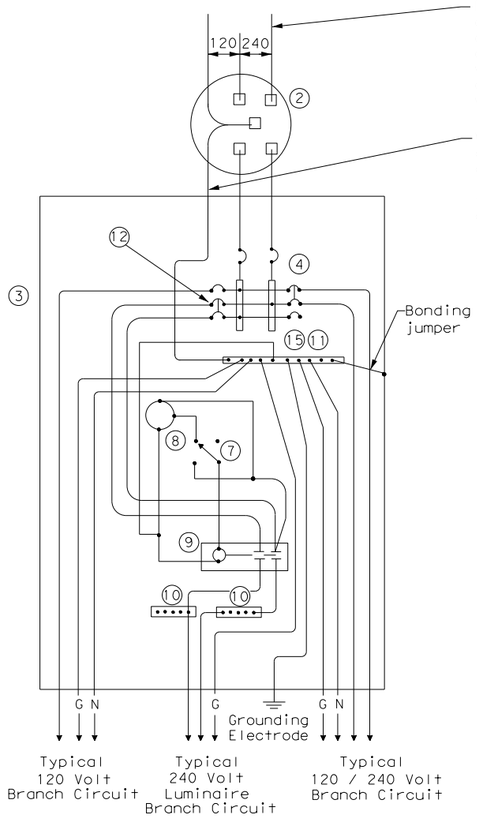


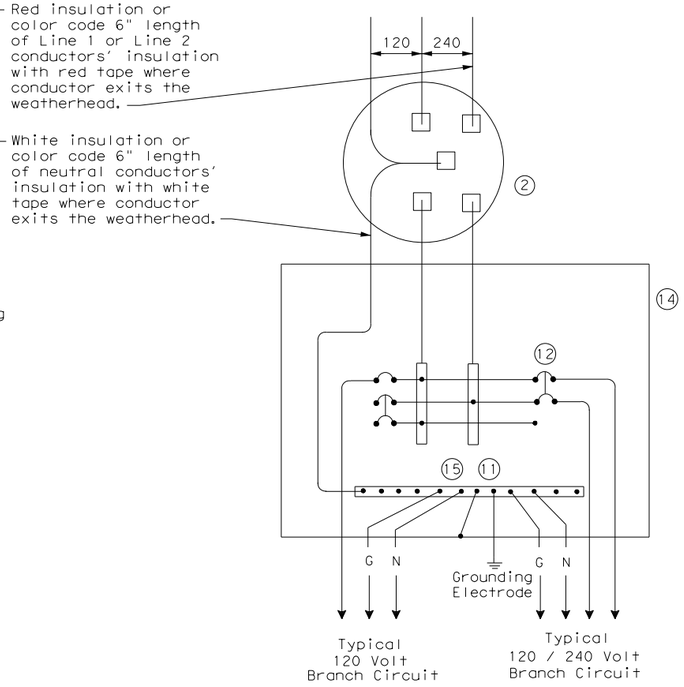
SCHEMATIC TYPE A
THREE WIRE



SCHEMATIC TYPE C
THREE WIRE



SCHEMATIC TYPE D - CUSTOM
120/240 VOLTS - THREE WIRE



SCHEMATIC TYPE T
120/240 VOLTS - THREE WIRE

Galvanized steel-"Buy Off The Shelf" only. When required install photocell top of the pole or on luminaire only, no lighting contractor will be installed.

WIRING LEGEND	
———	Power Wiring
———	Control Wiring
—N—	Neutral Conductor
—G—	Equipment grounding conductor-always required

SCHEMATIC LEGEND	
1	Safety Switch (when required)
2	Meter (when required-verify with electric utility provider)
3	Service Assembly Enclosure
4	Main Disconnect Breaker (See Electrical Service Data)
5	Circuit Breaker, 15 Amp (Control Circuit)
6	Auxiliary Enclosure
7	Control Station ("H-O-A" Switch)
8	Photo Electric Control (enclosure-mounted shown)
9	Lighting Contactor
10	Power Distribution Terminal Blocks
11	Neutral Bus
12	Branch Circuit Breaker (See Electrical Service Data)
13	Separate Circuit Breaker Panelboard
14	Load Center
15	Ground Bus

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE ENCLOSURE AND NOTES

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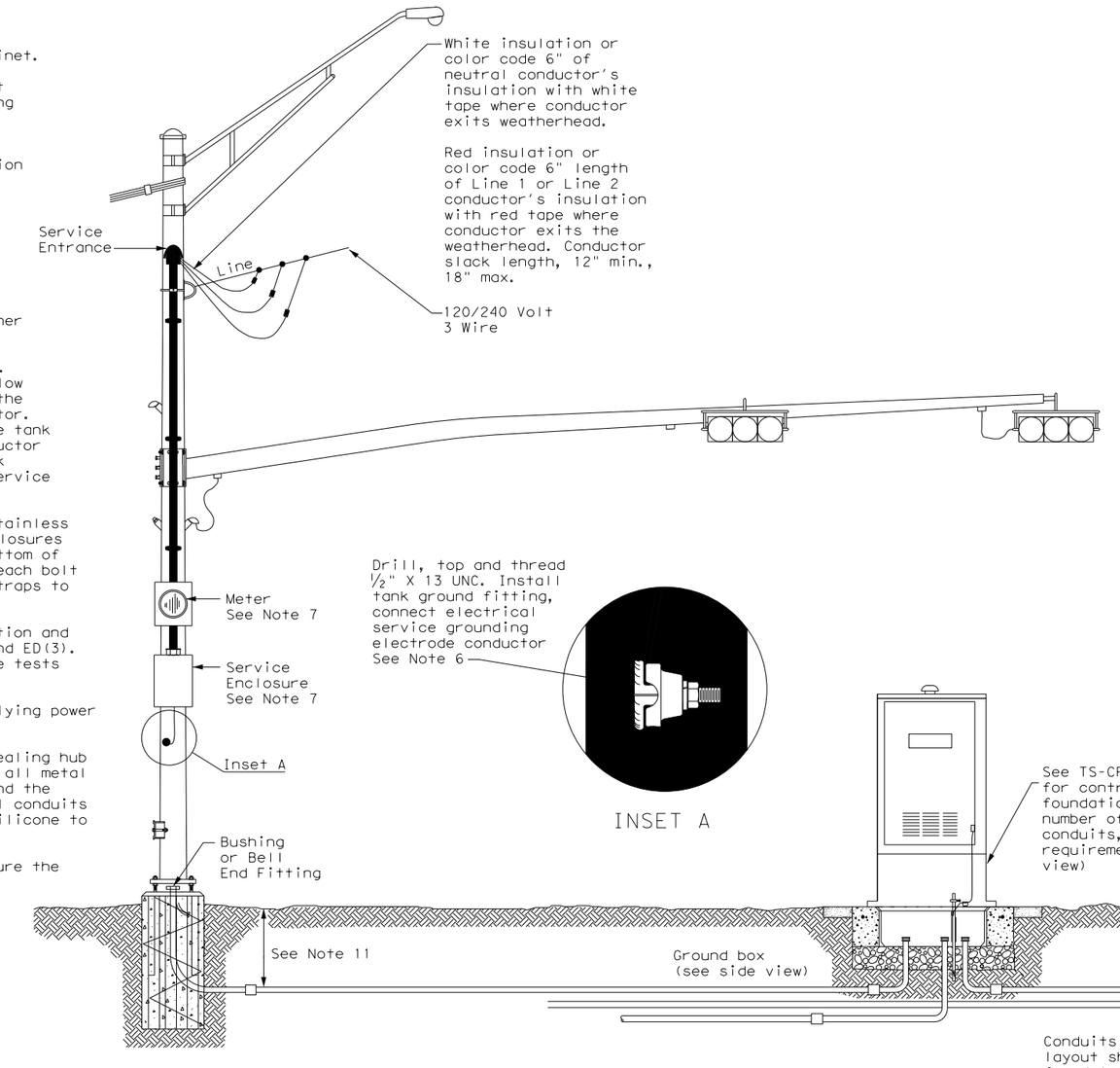
TRAFFIC SIGNAL NOTES

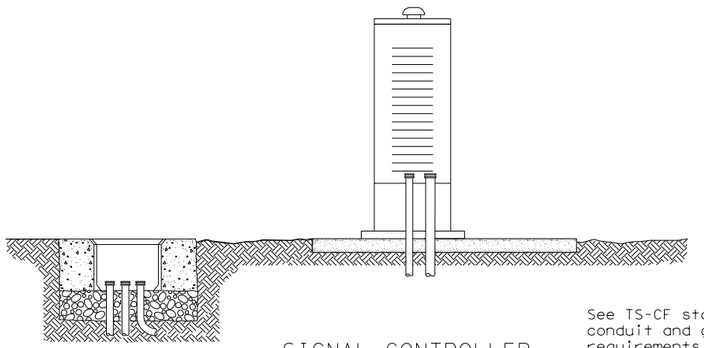
1. Do not pass luminaire conductors through the signal controller cabinet.
2. Include an equipment grounding conductor in all conduits throughout the electrical system. Bond all exposed metal parts to the grounding conductor.
3. Provide roadway luminaires, when required, in accordance with the material and construction sections of Item 610, "Roadway Illumination Assemblies," except for performance testing of luminaires. Test installed roadway luminaires for proper operation as a part of the associated traffic signal system test.
4. If internally illuminated street name signs are approved for use, ground the fixture to the pole with a 12 AWG green XHHW conductor.
5. Bond anchor bolts to rebar cage in two locations using #3 bars or 6 AWG stranded copper conductors. Use listed mechanical connectors rated for embedment in concrete. See TXDOT standard TS-FD for further details.
6. Drill and tap signal poles for ½ in. X 13 UNC tank ground fitting. Provide and install tank ground fitting 4 in. to 6 in. directly below electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Connect the electrical service grounding electrode conductor to the tank ground fitting. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting. See Inset A detail for further information. Size service entrance conduit and branch circuit conduit as shown in the plans.
7. Mount electrical service enclosure and meter to signal pole with stainless steel bands. Ensure bands are a minimum width of ¾ in. Secure enclosures to bands using two-bolt brackets. Install brackets near top and bottom of each enclosure. Install properly sized stainless steel washers on each bolt in the enclosure. Band or drill and tap properly sized stand-off straps to signal pole for attaching conduit.
8. Conduct pull tests and insulation resistance tests on all illumination and power conductors as required in Item 620 "Electrical Conductors" and ED(3). To prevent electronics damage, do not conduct insulation resistance tests on traffic signal cables after termination.
9. Lock all enclosures and bolt down all ground box covers before applying power to the signal installation.
10. Terminate conduits entering the top of enclosures with a conduit-sealing hub or threaded boss such as meter hub. Install a grounding bushing on all metal conduits not connected to conduit-sealing hub or threaded boss. Bond the grounding bushing to the ground bus with a bonding jumper. Seal all conduits entering enclosures with duct seal or expanding foam. Do not use silicone to seal conduit ends.
11. For all conduits, ensure the burial depth is a minimum of 18". Ensure the minimum burial depth for conduit placed under a roadway is 24".



SIGNAL POLE WITH SERVICE

Type T electrical service mounted on signal pole shown as an example. See electrical details, layout sheets, and electrical service data chart for additional details.

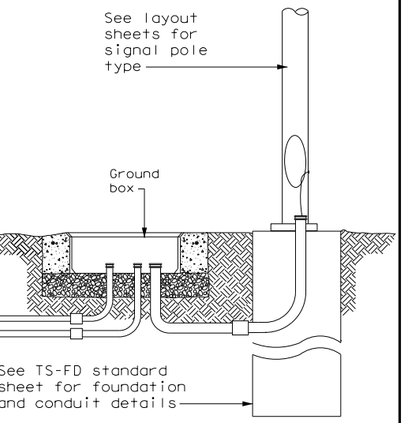
INSET A



SIGNAL CONTROLLER SIDE VIEW

See TS-CF standard for conduit and grounding requirements. See layout sheets for ground box locations and any additional conduits that are required.

SIGNAL CONTROLLER FRONT VIEW



SIGNAL POLE

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS TYPICAL TRAFFIC SIGNAL SYSTEM DETAILS

ED(8)-14

FILE: ed8-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS				KLEIN RD
	DIST	COUNTY		SHEET NO.
	SAT	GUADALUPE		295

71H

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TIMBER POLE(TP)SERVICE SUPPORT NOTES

1. Ensure electrical service support is a class 5 treated timber pole as per Item 627 "Treated Timber Poles." Embed timber pole to depth required in Item 627.
2. Conduit and electrical conductors attached to the electrical service pole and underground within 12 in. of service pole are not paid for directly but are subsidiary to the electrial service.
3. Install pole-top mounted photocell (T) on north side of pole, or in service enclosure (E) as required. See Electrical Service Data chart in plan set.
4. Gain pole as required to provide flat surface for each channel. Gain timber pole to 5/8 in. max. depth and 1 7/8 in. max. height. Gain pole in a neat and workmanlike manner.
5. Mount meter and service equipment on stainless steel or galvanized channel (Unistrut, Kindorf, or equal). Provide channel sized 1 in. to 3 3/4 in. maximum depth, and 1½ in. to 1⅝ in. maximum width. File smooth the cut ends of galvanized channel and paint with zinc rich paint before installing on pole. Secure each channel section to timber pole with two galvanized or SS lag bolts, ¼ in. minimum diameter by 1½ in. minimum length. Use a galvanized or SS flat washer on each lag bolt. Do not stack channel.
6. When excess length must be trimmed from poles, trim from the top end only.

(1) Class 5 pole, height as required

(2) Service drop from utility company (attached below weatherhead)

(3) Service conduit (RMC)and service entrance conductors - One Red, One Black, One White (See Electrical Service Data)

(4) Safety switch (when required)

(5) Meter (when required)

(6) Service enclosure

(7) 6 AWG bare grounding electrode conductor in ½ in. PVC to ground rod - extend ½ in. PVC 6 in. underground.

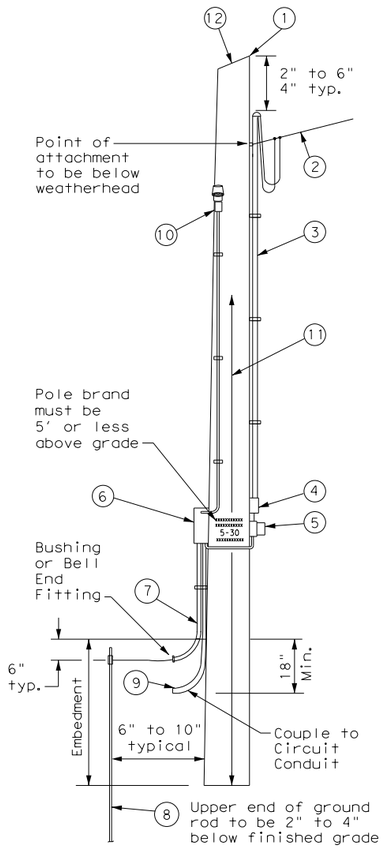
(8) 5/8 in. x 8 ft. Copper clad ground rod - drive ground rod to a depth of 2 in. to 4 in. below grade.

(9) RMC same size as branch circuit conduit.

(10) See pole-top mounted photocell detail on ED(5).

(11) When required by the serving utility provide bare 6 AWG copper conductor. Run wire from pole top to butt wrap or copper butt plate. Protect conductor with non-conductive material to a height of 8 ft. above finished grade.

(12) When required by utility, cut top of pole at an angle to enhance rain run off.

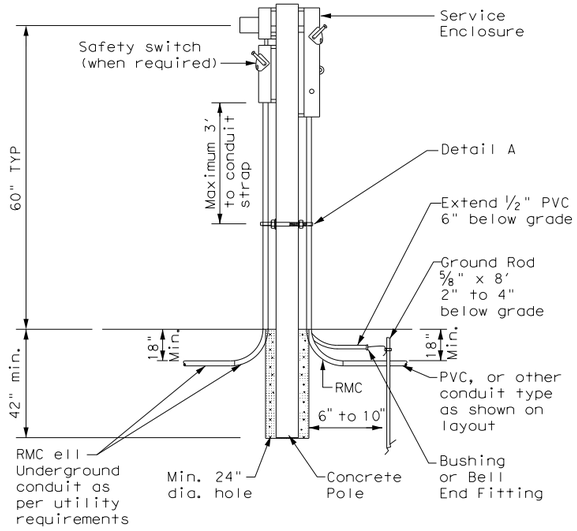


SERVICE SUPPORT TYPE TP (O)

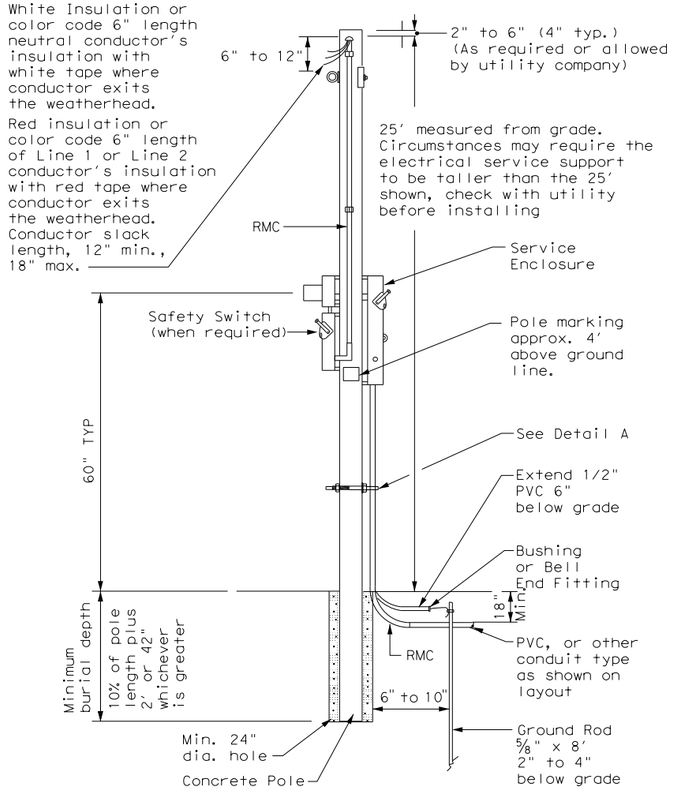
GRANITE CONCRETE(GC)& OTHER CONCRETE(OC)NOTES

Ensure electrical service support structures bid as type Granite Concrete (GC) or Other Concrete (OC) meet the following requirements.

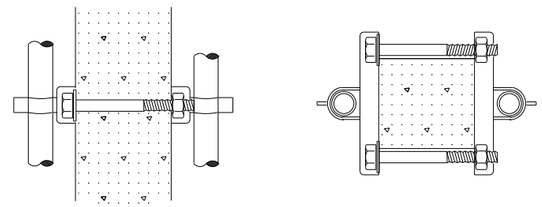
1. Provide GC and OC poles that meet the requirements of DMS 11080 "Electrical Services."
2. Provide prestressed concrete poles suitable for direct embedment into the ground without special foundations.
3. Verify poles are marked as required on DMS 11080. Location of marking should be approximately 4' above final grade. Use the two-point pickup locations when handling pole in horizontal position, and one-point pickup location for use in raising the pole to a vertical position. These marks are small but conspicuous.
4. Embed poles 42 in. or 10% of the length plus 2 ft., whichever is greater.
5. Ensure all installation details of services are in accordance with utility company specifications.
6. Install a one point rack or eye bolt bracket 6 inches to 12 inches below the weatherhead as an overhead service drop anchoring point for the electric utility.
7. Furnish and install galvanized or stainless steel channel strut 1 ½ in. or 1 ⅝ in. wide by 1 in. up to 3 ¾ in. deep (Unistrut, Kindorf, B-line or equal). Attach channel strut with stainless steel concrete anchors (max. 1" depth), square U-bolts or back to back channel strut with long bolts, or other secure mounting as approved by the Engineer. Ensure bolts are galvanized in accordance with ASTM A153. Do not stack channel struts.
8. Backfill the holes thoroughly by tamping in 6 in. lifts. After tamping to grade, place additional backfill material in a 6 inch high cone around the pole to allow for settling. Use material equal in composition and density to the surrounding area. Backfilling will not be paid for directly but is subsidiary to various bid items.



CONCRETE SERVICE SUPPORT
Underground(U)



CONCRETE SERVICE SUPPORT
Overhead(O)



DETAIL A

See Note 7. Before installing channel that has been cut, file sharp edges and paint with zinc-rich paint. Ensure there is no paint splatter on the pole.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE SUPPORT TYPES GC, OC, & TP

ED(10)-14

FILE: ed10-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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	SAT	GUADALUPE		296

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FOUNDATION DESIGN TABLE

FDN TYPE	DRILLED SHAFT DIA	REINFORCING STEEL		EMBEDDED DRILLED SHAFT LENGTH-ft ④, ⑤, ⑥			ANCHOR BOLT DESIGN ①				FOUNDATION DESIGN LOAD ②		TYPICAL APPLICATION
		VERT BARS	SPIRAL & PITCH	TEXAS CONE PENETROMETER N blows/ft			ANCHOR BOLT DIA	Fy (ksi)	BOLT CIR DIA	ANCHOR TYPE	MOMENT K-ft	SHEAR Kips	
				10	15	40							
24-A	24"	4- #5	#2 at 12"	5.7	5.3	4.5	¾"	36	12 ¾"	1	10	1	Pedestal pole, pedestal mounted controller.
30-A	30"	8- #9	#3 at 6"	11.3	10.3	8.0	1 ½"	55	17"	2	87	3	Mast arm assembly. (see Selection Table)
36-A	36"	10- #9	#3 at 6"	13.2	12.0	9.4	1 ¾"	55	19"	2	131	5	Mast arm assembly. (see Selection Table) 30' strain pole with or without luminaire.
36-B	36"	12- #9	#3 at 6"	15.2	13.6	10.4	2"	55	21"	2	190	7	Mast arm assembly. (see Selection Table) Strain pole taller than 30' & strain pole with mast arm
42-A	42"	14- #9	#3 at 6"	17.4	15.6	11.9	2 ¼"	55	23"	2	271	9	Mast arm assembly. (see Selection Table)

NOTES:

① Anchor bolt design develops the foundation capacity given under Foundation Design Loads.

② Foundation Design Loads are the allowable moments and shears at the base of the structure.

③ Foundations may be listed separately or grouped according to similarity of location and type. Quantities are for the Contractor's information only.

④ Field Penetrometer readings at a depth of approximately 3 to 5 feet may be used to adjust shaft lengths.

⑤ If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.

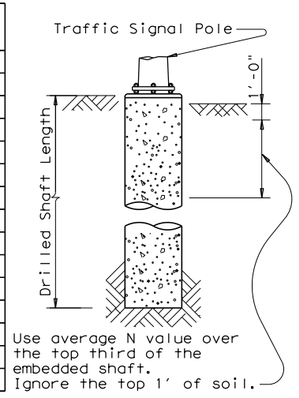
⑥ Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

FOUNDATION SUMMARY TABLE ③

LOCATION IDENTIFICATION	AVG. N BLOW /ft.	FDN TYPE	NO. EA	DRILLED SHAFT LENGTH ⑥ (FEET)				
				24-A	30-A	36-A	36-B	42-A
POLE E	10	24-A	1	6				
POLE H	10	24-A	1	6				
POLE J	10	24-A	1	6				
POLE K	10	24-A	1	6				
TOTAL DRILLED SHAFT LENGTHS				24				

FOUNDATION SELECTION TABLE FOR STANDARD MAST ARM PLUS ILSN SUPPORT ASSEMBLIES (ft)

		FDN 30-A	FDN 36-A	FDN 36-B	FDN 42-A
80 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH	32'	48'		
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS	24' X 24'			
		28' X 28'			
		32' X 28'	32' X 32'		
			36' X 36'		
			40' X 36'		
			44' X 28'	44' X 36'	
100 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH		36'	44'	
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS		24' X 24'		
			28' X 28'		
			32' X 24'	32' X 32'	
				36' X 36'	
				40' x24'	40' X 36'
					44' x 36'



ANCHOR BOLT & TEMPLATE SIZES

BOLT DIA IN.	⑦ BOLT LENGTH	TOP THREAD	BOTTOM THREAD	BOLT CIRCLE	R2	R1
¾"	1'-6"	3"	—	12 ¾"	7 ⅛"	5 ⅝"
1 ½"	3'-4"	6"	4"	17"	10"	7"
1 ¾"	3'-10"	7"	4 ½"	19"	11 ¼"	7 ¾"
2"	4'-3"	8"	5"	21"	12 ½"	8 ½"
2 ¼"	4'-9"	9"	5 ½"	23"	13 ¾"	9 ¼"

⑦ Min dimensions given, longer bolts are acceptable.

DESIGN

STATE OF TEXAS · JUSTIN W. CLARK · 118715 · LICENSED PROFESSIONAL ENGINEER

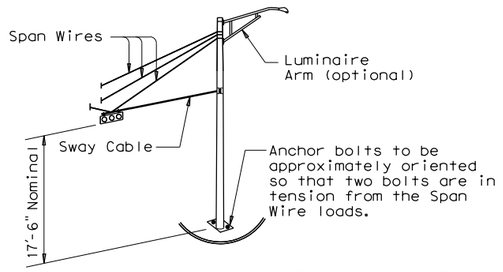
JUSTIN W. CLARK, P.E. — 1/27/2021 DATE

APPROVAL

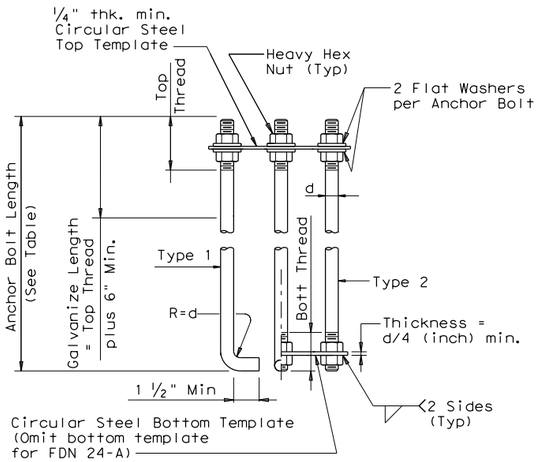
STATE OF TEXAS · GILMER D. GASTON · 80472 · LICENSED PROFESSIONAL ENGINEER

GILMER D. GASTON, P.E. — 1/27/2021 DATE

EXAMPLE:
1. For 80mph design wind speed, foundation 30-A can support up to a 32' arm with another arm up to 28'
2. For 100mph design wind speed, foundation 36-A can support a single 36' mast arm.



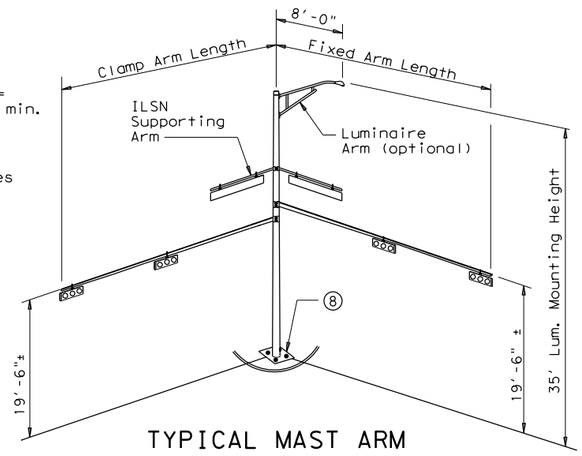
TYPICAL STRAIN POLE ASSEMBLY



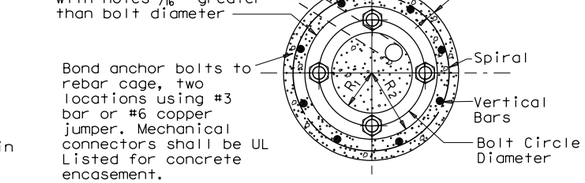
HOOKED ANCHOR (TYPE 1) — NUT ANCHOR (TYPE 2)

ANCHOR BOLT ASSEMBLY

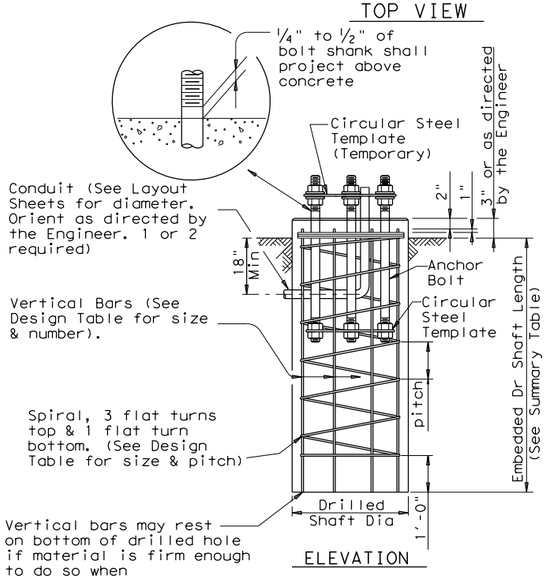
⑧ Orient anchor bolts orthogonal with the fixed arm direction to ensure that two bolts are in tension under dead load.



TYPICAL MAST ARM ASSEMBLY



TOP VIEW



ELEVATION

FOUNDATION DETAILS

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and interim revisions thereto.

Reinforcing steel shall conform to Item 440, "Reinforcing Steel".

Concrete shall be Class "C".

Threads for anchor bolts and nuts shall be rolled or cut threads of 8UN series up to 2" in diameter or UNC series for all sizes. Bolts and nuts shall have Class 2A and 2B fit tolerances. Galvanized nuts shall be tapped after galvanizing.

Anchor bolts that are larger than 1" in diameter shall conform to "alloy steel" or "medium-strength mild steel" per Item 449, "Anchor Bolts". Anchor bolts that are 1" in diameter or less shall conform to ASTM A36. Galvanize a minimum of the top end thread length plus 6" for all anchor bolts unless otherwise noted. Exposed washers and exposed nuts shall be galvanized. All galvanizing shall be in accordance with Item 445, "Galvanizing".

Templates and embedded nuts need not be galvanized. Lubricate and tighten anchor bolts when erecting the structure in accordance with Item 449, "Anchor Bolts".

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL POLE FOUNDATION

TS-FD-12

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REVISIONS: 5-96, 11-98, 1-12

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			KLEIN RD
DIST	COUNTY		SHEET NO.
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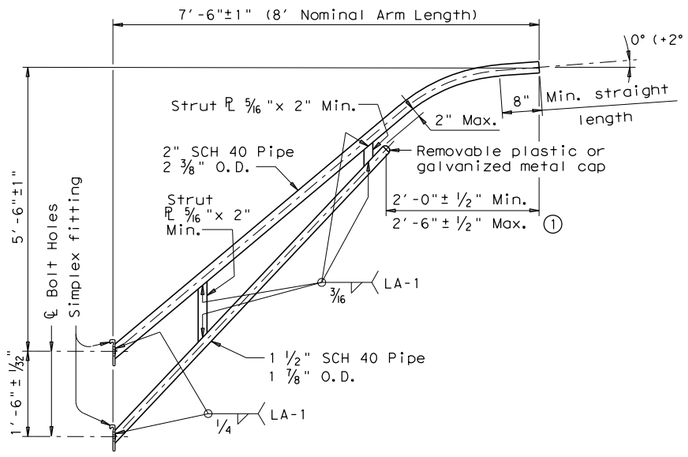
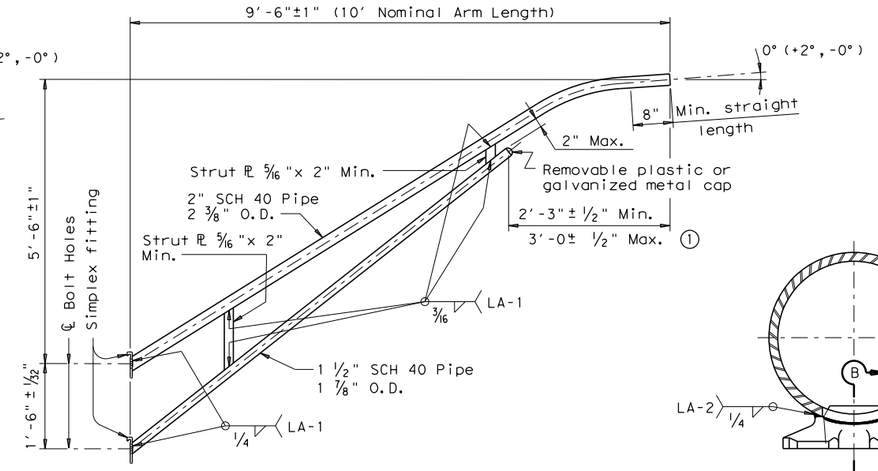


8-FOOT LUMINAIRE ARM



10-FOOT LUMINAIRE ARM

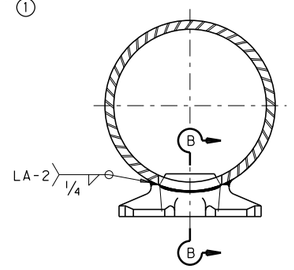
MATERIALS	
Pole or Arm Simplex	ASTM A27 Gr.65-35 or A148 Gr.80-50, A576 Gr.1021 (3), or A36 (Arm only)
Arm Pipes	ASTM A53 Gr.B, A501, A1008 HSLAS-F Gr.50 (4), or A1011 HSLAS-F Gr.50 (4)
Arm Strut Plates (2)	ASTM A36, A572 Gr.50 (4), or A588
Misc.	ASTM designations as noted

(1) Dimensional limits are given to show acceptable variation in design. All of a Fabricator's production of a particular arm length shall have the same dimensions within specified tolerances.

(2) Any of the materials listed for plates may be used where the drawings do not specify a particular ASTM designation.

(3) A576 must be suitable for forging and also meet minimum tensile strength of 65 ksi, minimum yield of 35 ksi, and elongation in 2 inches of 22 percent.

(4) ASTM A572, A1008 HSLAS-F, and A1011 HSLAS-F may have higher yield strengths but shall not have less elongation than the grade indicated.



DIRECT ATTACHMENT DETAIL

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Revisions thereto. Design Wind Speed equals 90 mph plus a 1.3 gust factor. Arms are designed to support a 60 lb. luminaire having an effective projected area (actual area times drag coefficient) of 1.6 sq. ft.

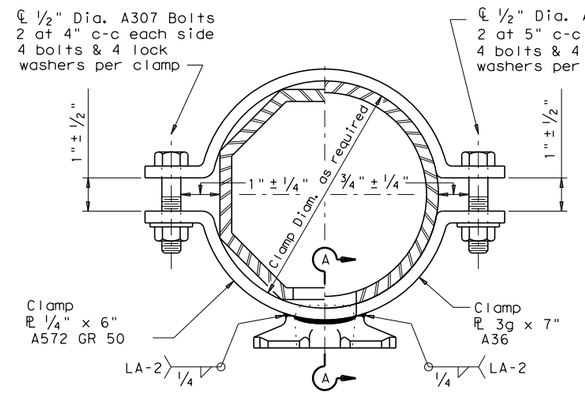
Materials and fabrication shall be in accordance with Item 686, "Traffic Signal Pole Assemblies (Steel)" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. In the absense of specified Fabricaton tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.

Unless otherwise noted, all parts shall be galvanized after fabrication in accordance with Item 445, "Galvanizing".

Deviation from the details and dimensions shown herein require submission of shop drawings in accordance with Item 441, "Steel Structures". Alternate designs are not acceptable.

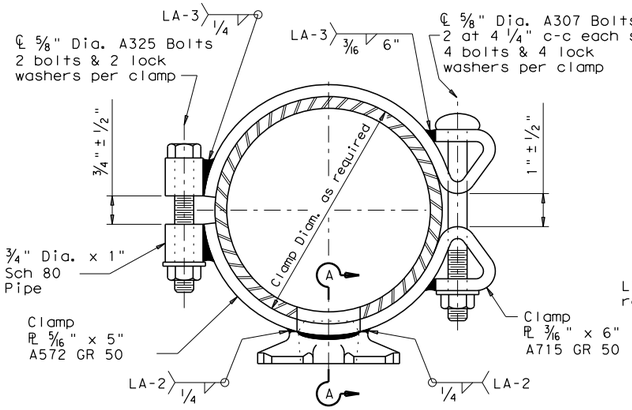
Each pole simplex fitting shall be supplied with 2 ASTM A325 bolts and 2 lock washers of the size specified. The bolts and lock washers shall be secured to the pole with the other hardware items called for in the plans. When clamp attachment is specified, the Fabricator shall ship the clamp assembly securely attached to the pole at the location shown on the plans.

If clamp assemblies are ordered without poles, the Fabricator shall ship one upper and one lower clamp assembly together in a single package, including all nuts and washers required for the clamps and simplex fittings.



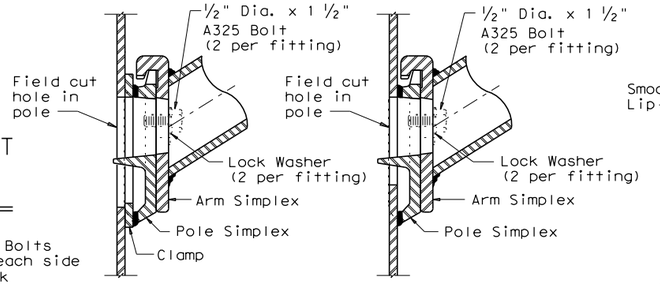
CLAMP ATTACHMENT DETAIL NO. 1 (HALF SECTION)

CLAMP ATTACHMENT DETAIL NO. 2 (HALF SECTION)



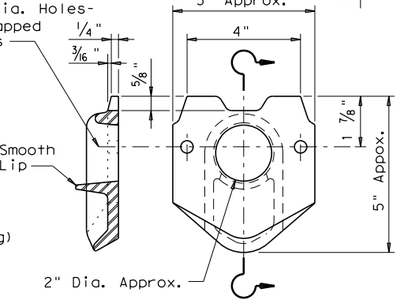
CLAMP ATTACHMENT DETAIL NO. 3 (HALF SECTION)

CLAMP ATTACHMENT DETAIL NO. 4 (HALF SECTION)

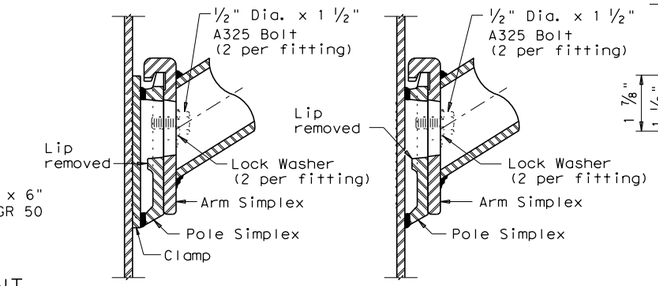


UPPER SIMPLEX FITTING

UPPER SIMPLEX FITTING



POLE SIMPLEX DETAIL

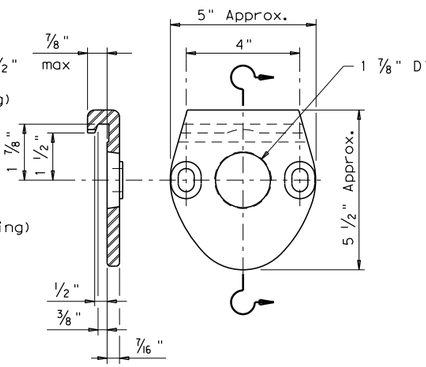


LOWER SIMPLEX FITTING

LOWER SIMPLEX FITTING

SECTON A-A

SECTON B-B



ARM SIMPLEX DETAIL

Texas Department of Transportation
Traffic Operations Division

STANDARD ASSEMBLY DRAWINGS FOR LUMINAIRE SUPPORT STRUCTURES

ARM DETAILS

LUM-A-12

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DN: LEH	CK: JSY	DW: LTT	CK: TEB

REVISIONS
5-96
1-99
1-12

CONT	SECT	JOB	HIGHWAY
			KLEIN RD

DIST	COUNTY	SHEET NO.
SAT	GUADALUPE	298

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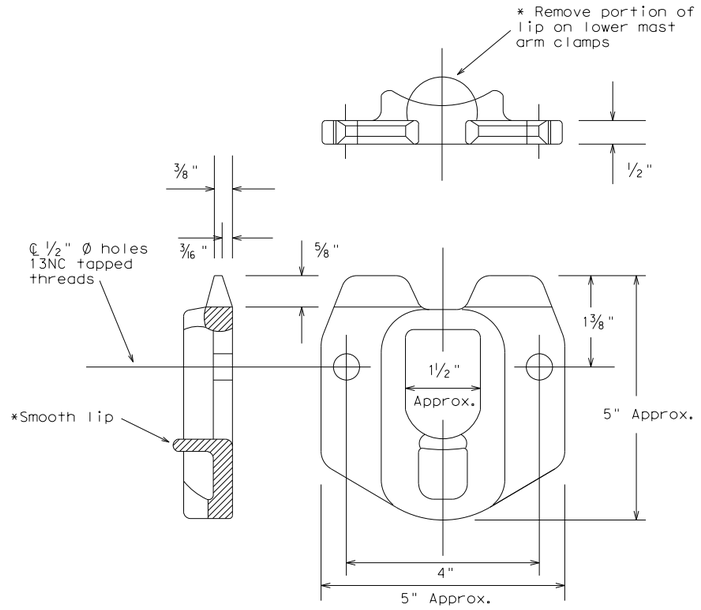
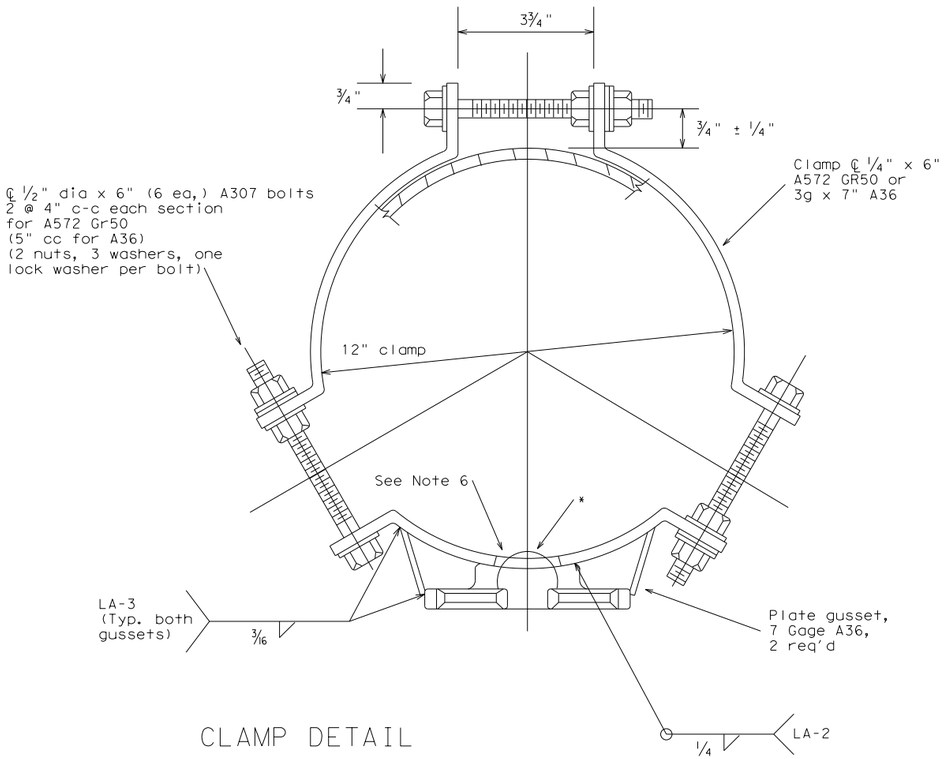
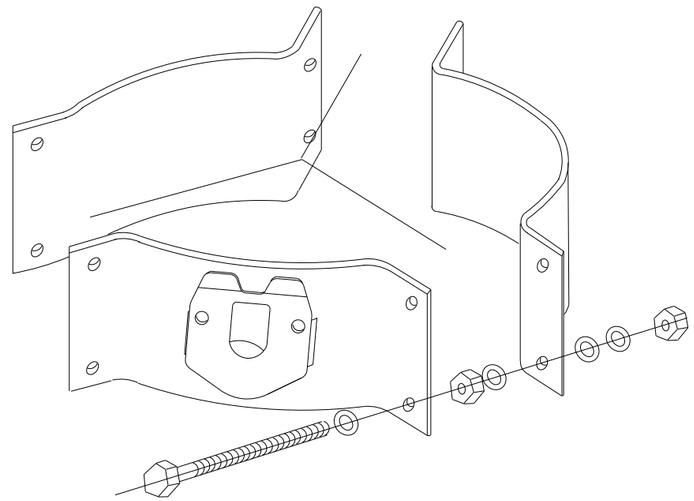


POLE SIMPLEX DETAILS



CLAMP DETAIL



PROJECTION

OTHER MATERIALS:

1. Pole simplex shall be ASTM A27 GR65-35 or A148 GR80-50 or A576 GR1021. ASTM A576 must be suitable for forging and also meet minimum tensile of 65ksi, minimum yield of 35ksi, and a minimum elongation of 22 percent in 2 inches.
2. Welded tabs and backplates shall be ASTM A-36 steel or better.
3. Nylon insert locknuts shall conform to ASTM A563.

GENERAL NOTES:

1. Materials and fabrication shall be in accordance with Standard Sheet "MA-C" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. In the absence of specified fabrication tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.
2. All parts shall be galvanized after fabrication in accordance with Item 445, "Galvanizing". The throat of the Simplex shall be made free of all rough or sharp edges resulting from the galvanizing process.
3. Each simplex fitting shall be supplied with 2 ASTM A325 bolts, 1/2in. X 1 1/2in. and 2 lock washers. The bolts and lock washers shall be secured to the clamp with the other hardware items. The Fabricator shall ship clamp assembly together in a single package, including all bolts, nuts, and washers required for the clamp and simplex fitting.
4. Design conforms to 1994 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals" and interim revisions thereto. Design Wind Speed equals 80 mph plus a 1.3 gust factor. Clamps are designed to support a 60 lb. luminaire having an effective projected area (actual area times drag coefficient) of 1.6 sq.ft.,12 ft. maximum arm length.
5. Each assembly shall consist of one upper piece simplex fitting having a smooth lip and one lower piece simplex fitting with the lip removed.
6. Approximately 2 in. diameter hole in upper mast arm clamp.

For 8.9 - 12 inch diameter Signal Poles
(Two req'd for each mast arm)

Texas Department of Transportation
Traffic Operations Division

CLAMP ON FITTING ASSEMBLY FOR LUMINAIRE MAST ARM

CFA-12

© TxDOT	DN: KAB	CK: RES	DW: FDN	CK: CAL
REVISIONS	CONT	SECT	JOB	HIGHWAY
11-99 1-12				KLEIN RD
	DIST	COUNTY		SHEET NO.
	SAT	GUADALUPE		299

130

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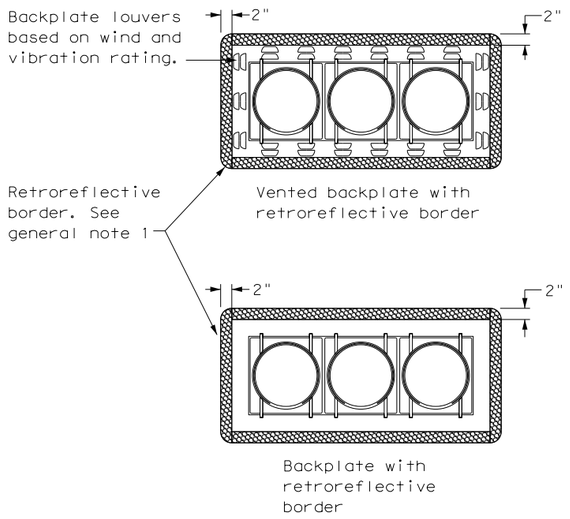

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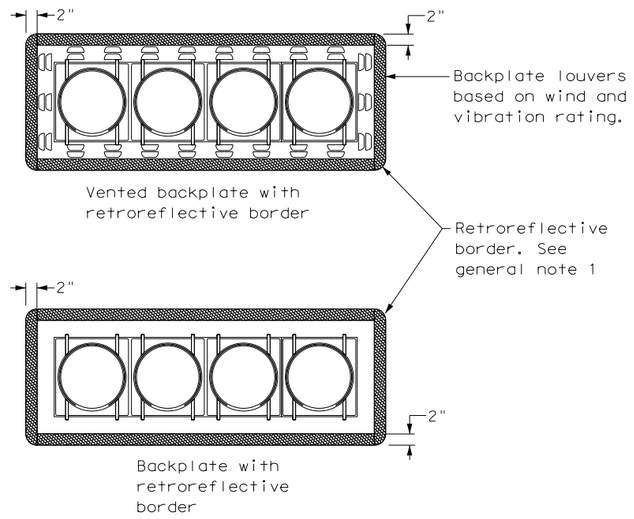

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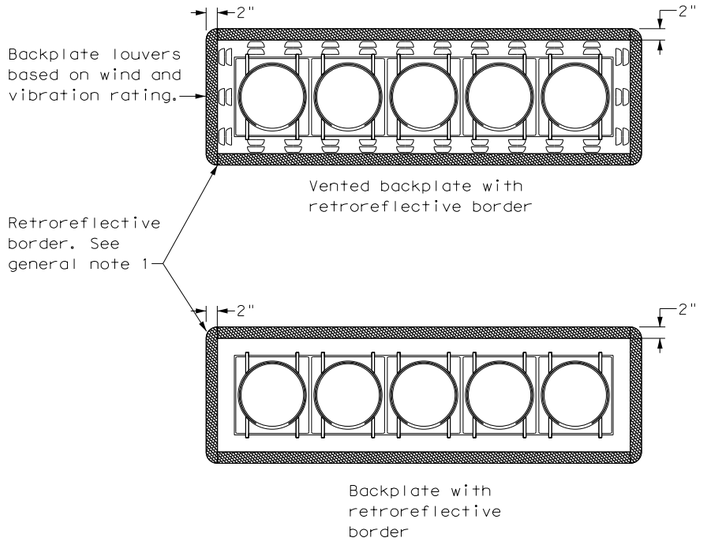

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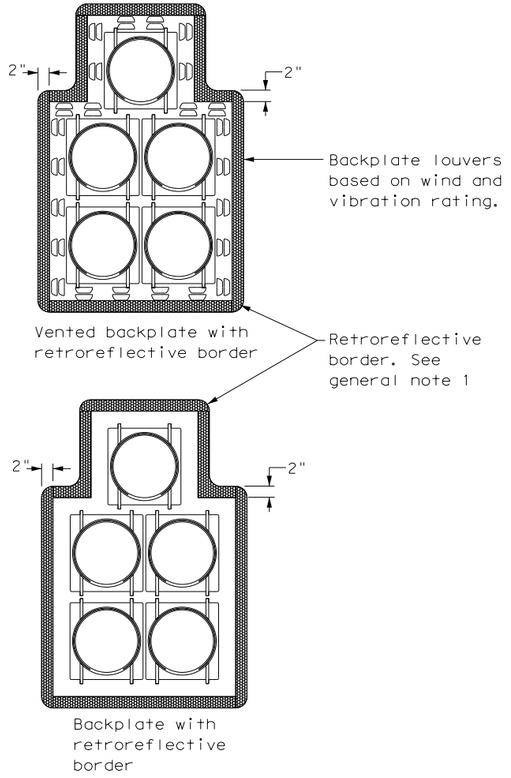
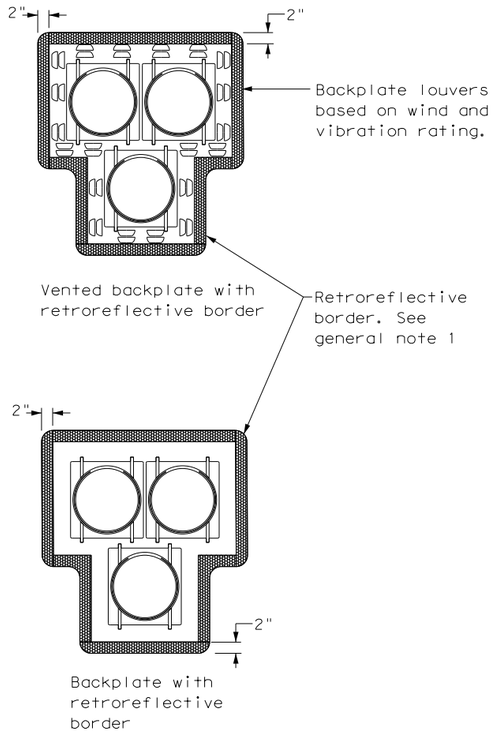


FIVE-SECTION HEAD
CLUSTER



PEDESTRIAN HYBRID
BEACON

GENERAL NOTES:

1. Backplates are optional for traffic signals and pedestrian hybrid beacons. When backplates are used, a 2-inch wide fluorescent yellow AASHTO Type B_{FL} or C_{FL} retroreflective border conforming to TxDOT DMS-8300 is required. Place on all approaches when used.
2. Signal head and backplate compatability must be verified by the contractor prior to installation.
3. When using backplates on signal heads, venting is preferred to reduce cyclic vibration stress.
4. When a vented backplate is used, the retroreflective border must not be placed over the louvers.
5. This standard sheet applies to all signal heads with backplates, including but not limited to:
   - Pole mounted
   - Overhead mounted
   - Span wire mounted
   - Mast arm mounted
   - Vertical signal heads
   - Horizontal signal heads
   - Clustered signal heads
   - Pedestrian hybrid beacons

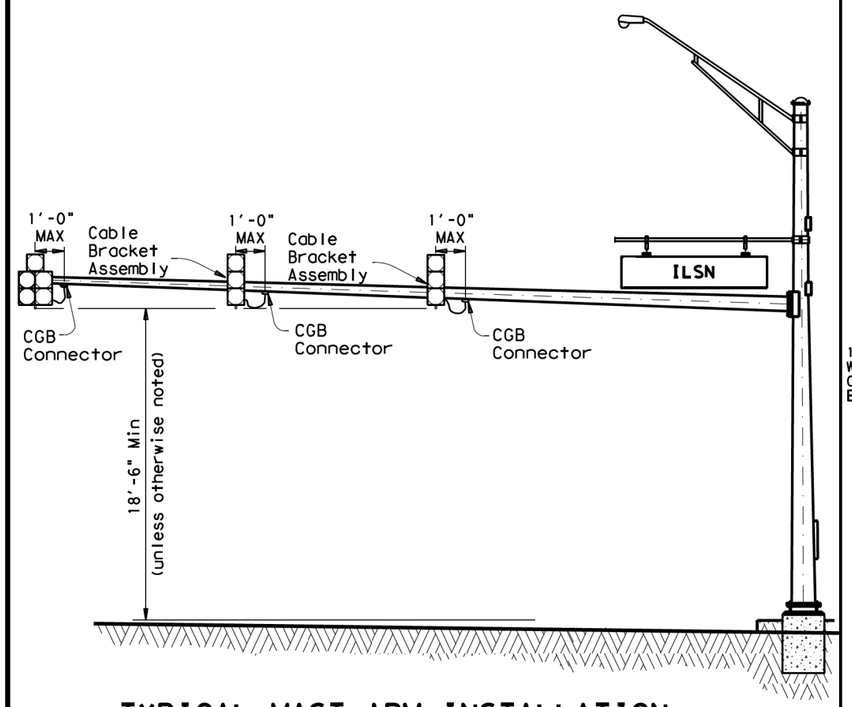
Texas Department of Transportation

Traffic Safety Division Standard

TRAFFIC SIGNAL HEAD WITH BACKPLATE

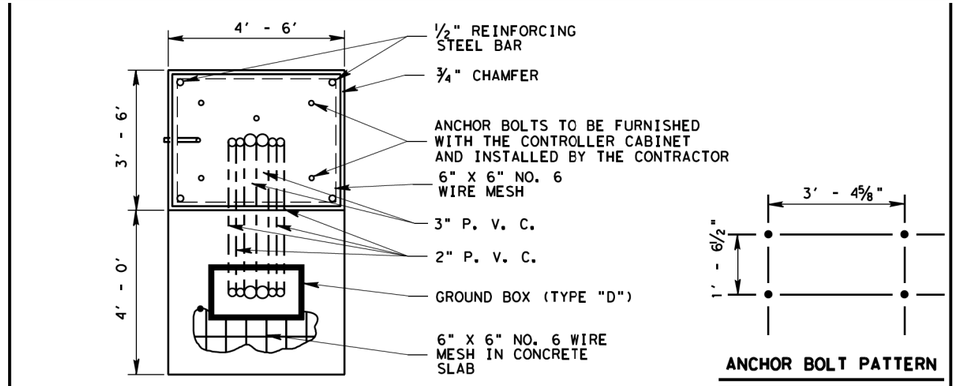
TS-BP-20

FILE: ts-bp-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT June 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				KLEIN RD
	DIST	COUNTY		SHEET NO.
	SAT	GUADALUPE		300

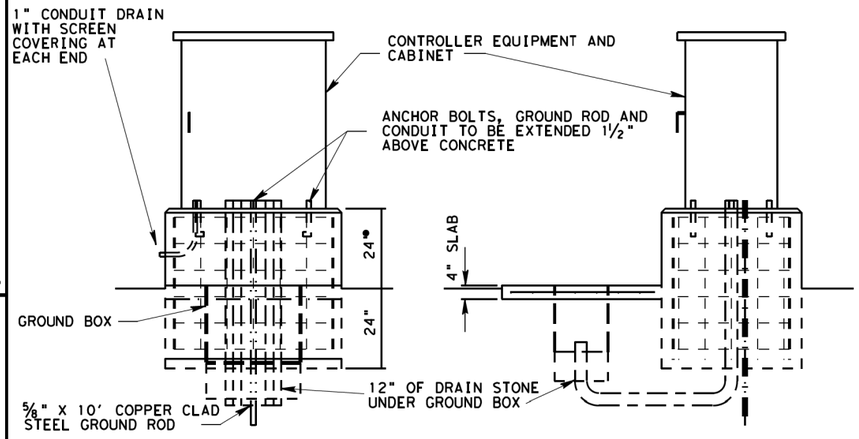


TYPICAL MAST ARM INSTALLATION

BACKPLATES ARE NOT SHOWN FOR CLARITY



ANCHOR BOLT PATTERN



CONTROLLER MOUNT NOTES :

ALL WIRING TERMINATING IN THE CONTROLLER SHALL BE LABELED IN A MANNER THAT CAN BE IDENTIFIED WHEN THE CONTROLLER IS INSTALLED THE CONTRACTOR SHALL CONNECT THE FIELD WIRING TO THE CONTROLLER

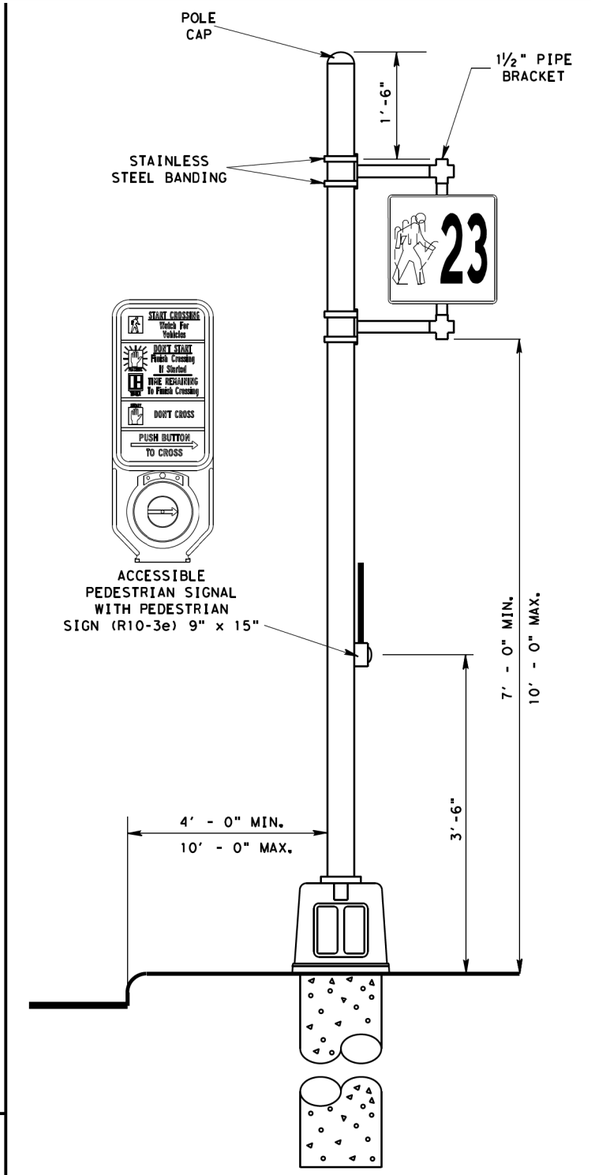
ONE 2" PVC SHALL REMAIN EMPTY FOR FUTURE USE

CONCRETE SHALL BE TESTED AS MISCELLANEOUS CONCRETE

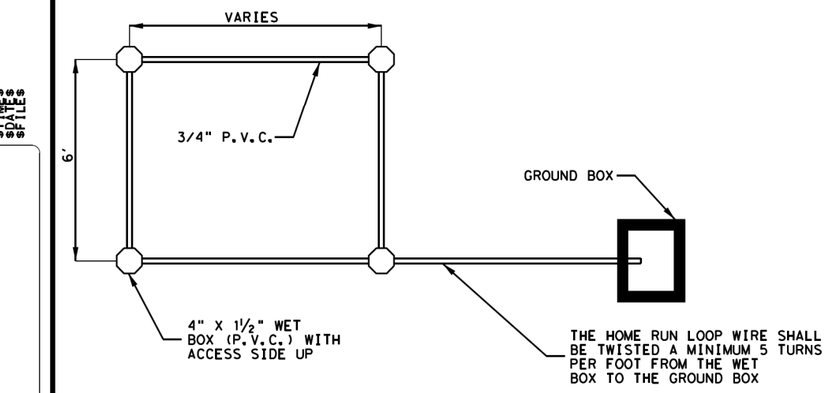
ALL MATERIALS SHOWN AND LABOR TO INSTALL THE CONTROLLER FOUNDATION SHALL BE CONSIDERED SUBSIDIARY TO PERTINENT ITEMS

CONTROLLER FOUNDATION SHALL BE AS SHOWN ON THE PLANS, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

TYPICAL CONTROLLER MOUNT DETAILS



TYPICAL PEDESTAL POLE ASSEMBLY



NOTES:

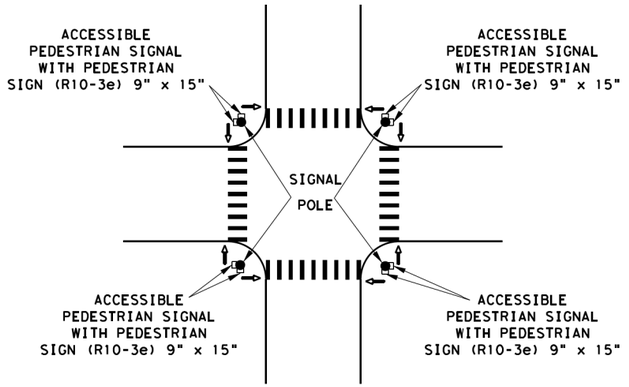
SHALL INSTALL CONDUIT ENCASED LOOPS AT THE LOCATIONS SHOWN ON THE PLANS USING 3/4 " DIAMETER PVC SCHEDULE 40 OR AT NO ADDITIONAL COST 1" DIAMETER PVC SCHEDULE 80.

LOOP LOCATIONS MAY BE STAGGERED SLIGHTLY (6") TO ACCOMMODATE HOME RUN PLACEMENT.

INDIVIDUAL HOME RUN CONDUITS SHALL BE EXTENDED TO THE GROUND BOX SHOWN ON THE PLANS FOR EACH LOOP INSTALLED.

THE NUMBER OF LOOP WIRE TURNS SHALL BE AS SHOWN ON THE TYPICAL LOOP DETECTOR DETAILS.

CONDUIT ENCASED LOOPS



TYPICAL PED PUSH BUTTON LOCATION

THE ENGINEER SHALL VERIFY ALL PEDESTRIAN SIGNAL AND PEDESTRIAN PUSH BUTTON LOCATIONS PRIOR TO INSTALLATION.

$TIMES
$DATES
$FILES

ACC:

LEVELS DISPLAYED

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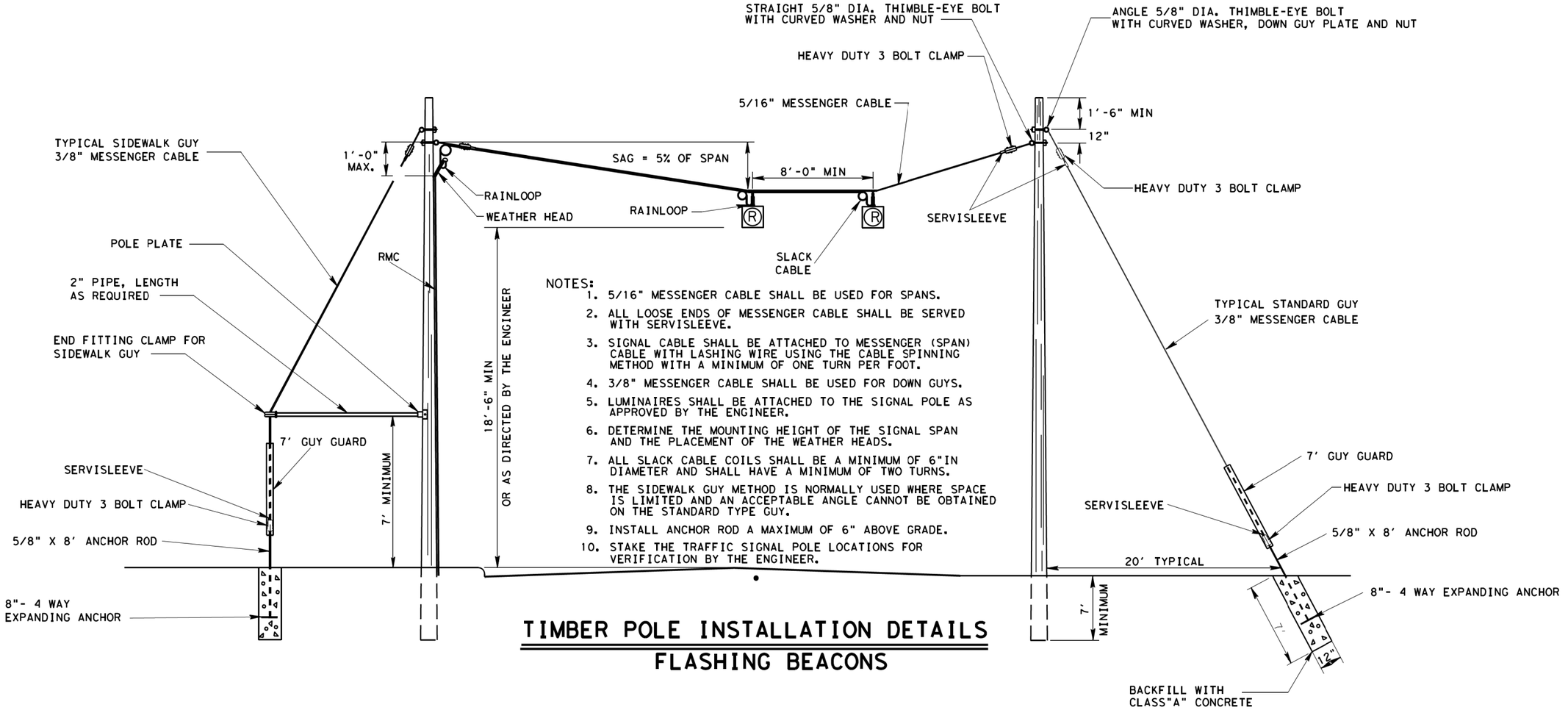
MISCELLANEOUS TRAFFIC SIGNAL DETAILS

SCALE: NS

MTS-18

REVISIONS	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
FEB 2006		CSP 23-004		301
OCT 2007	STATE	DIST.	COUNTY	
MAR 2017	TEXAS	SAT	GUADALUPE	
MAY 2018	CONT.	SECT.	JOB	HIGHWAY NO.
				KLEIN RD

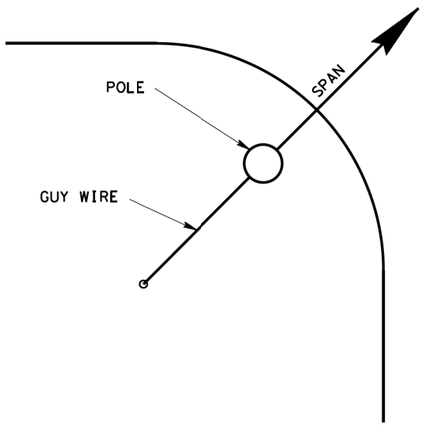


NOTES:

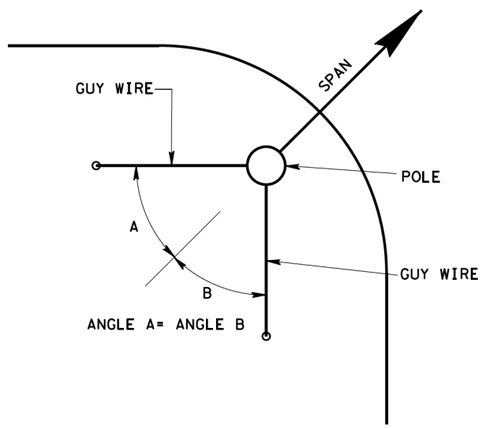
1. 5/16" MESSENGER CABLE SHALL BE USED FOR SPANS.
2. ALL LOOSE ENDS OF MESSENGER CABLE SHALL BE SERVED WITH SERVISLEEVE.
3. SIGNAL CABLE SHALL BE ATTACHED TO MESSENGER (SPAN) CABLE WITH LASHING WIRE USING THE CABLE SPINNING METHOD WITH A MINIMUM OF ONE TURN PER FOOT.
4. 3/8" MESSENGER CABLE SHALL BE USED FOR DOWN GUYS.
5. LUMINAIRES SHALL BE ATTACHED TO THE SIGNAL POLE AS APPROVED BY THE ENGINEER.
6. DETERMINE THE MOUNTING HEIGHT OF THE SIGNAL SPAN AND THE PLACEMENT OF THE WEATHER HEADS.
7. ALL SLACK CABLE COILS SHALL BE A MINIMUM OF 6"IN DIAMETER AND SHALL HAVE A MINIMUM OF TWO TURNS.
8. THE SIDEWALK GUY METHOD IS NORMALLY USED WHERE SPACE IS LIMITED AND AN ACCEPTABLE ANGLE CANNOT BE OBTAINED ON THE STANDARD TYPE GUY.
9. INSTALL ANCHOR ROD A MAXIMUM OF 6" ABOVE GRADE.
10. STAKE THE TRAFFIC SIGNAL POLE LOCATIONS FOR VERIFICATION BY THE ENGINEER.

TIMBER POLE INSTALLATION DETAILS
FLASHING BEACONS

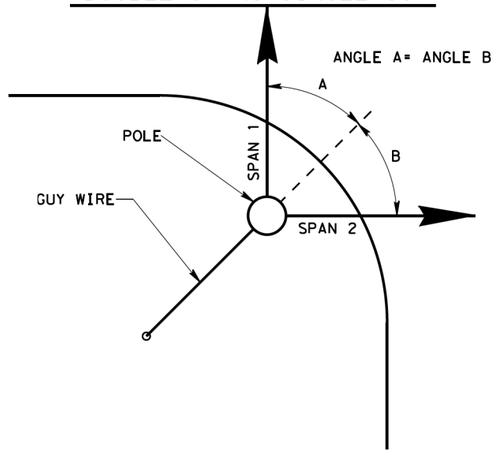
SINGLE SPAN-SINGLE GUY



SINGLE SPAN-DOUBLE GUY



DOUBLE SPANS-SINGLE GUY



TYPICAL GUY ALIGNMENT

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FLASHING BEACON TIMBER POLE INSTALLATION DETAILS

SCALE: NS

FBTP-18

REVISIONS	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
FEB 2006		CSP 23-004		302
OCT 2006	STATE	DIST.	COUNTY	
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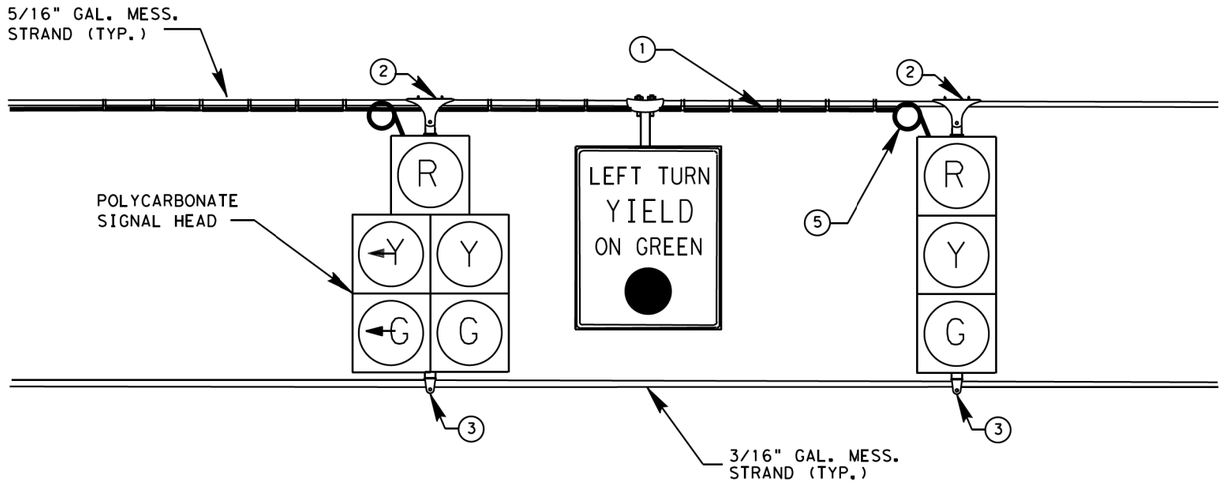

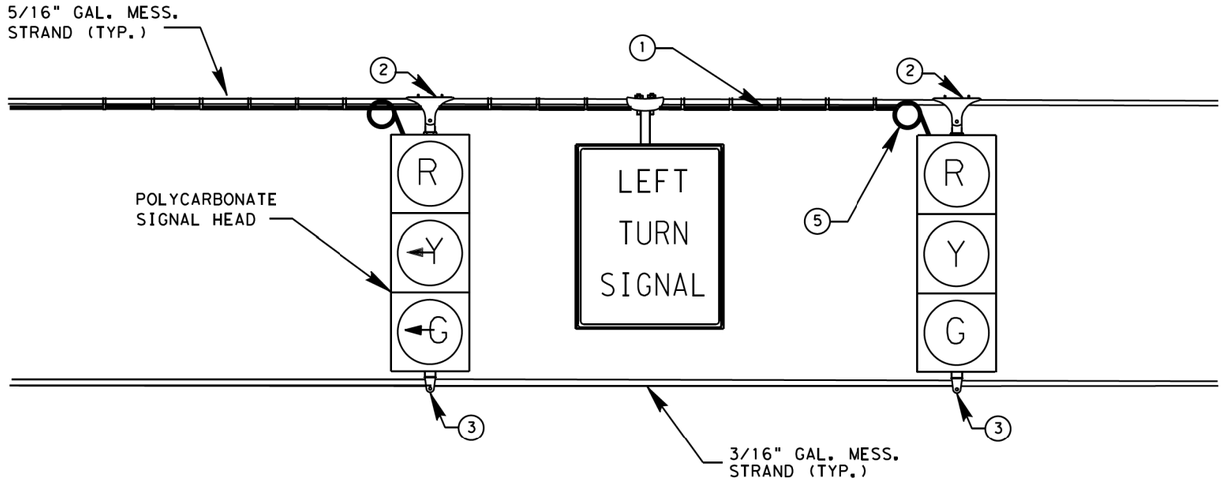

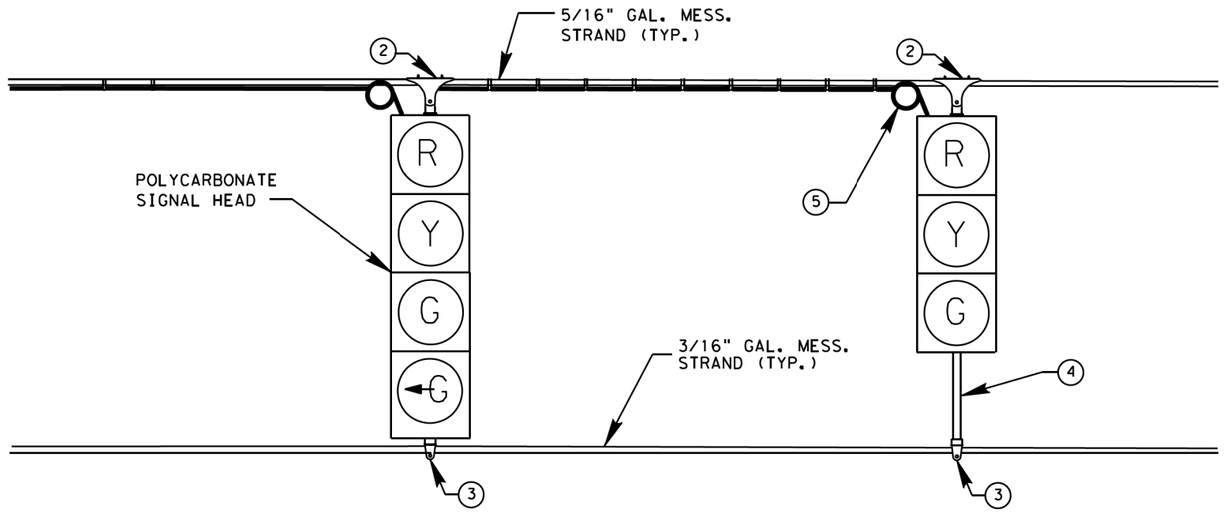

1. LEAD - IN CABLE FROM CONTROLLER TO SIGNAL HEAD.
2. CAST ALUMINUM SPAN WIRE CLAMP AND CLEVIS ADAPTER. SECURE CLEVIS PIN WITH A WASHER (BOTH ENDS) AND HUMP BACK COTTER PIN. DRILL CLEVIS PIN OPENINGS AND FIT WITH A SPLIT BUSHING. CLEVIS PIN, WASHER, COTTER PIN, AND SPLIT BUSHING TO BE STAINLESS STEEL.
3. BREAKAWAY TETHER ASSEMBLY.
4. 1 1/2 ALUM. PIPE (TYP.).
5. ALL SLACK CABLE COILS SHALL BE A MINIMUM OF 6"IN DIAMETER AND SHALL HAVE A MINIMUM OF TWO TURNS.

NOTE: BACKPLATES OMITTED FOR CLARITY.

SETSCREWS SHALL BE INSTALLED IN ALL PIPE FITTINGS.

SIGNAL CABLE AND DETECTOR CABLE SHALL BE ATTACHED TO MESSENGER (SPAN) CABLE WITH LASHING WIRE USING THE CABLE SPINNING METHOD WITH A MINIMUM OF ONE TURN PER FOOT.

SEE FLASHING BEACON STRAIN POLE OR TIMBER POLE INSTALLATION DETAILS FOR ADDITIONAL INFORMATION.

$TIME$
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$FILE$

LEVELS DISPLAYED

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49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	

ACC:

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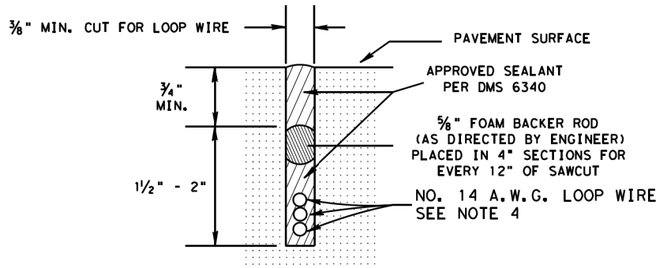
SIGNAL HEAD SPAN WIRE MOUNT DETAILS

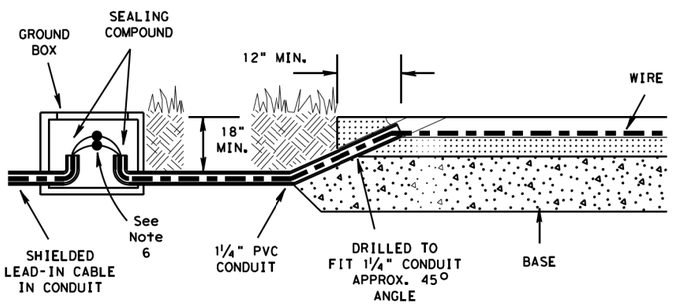
SCALE: NS

SHS(1)-07

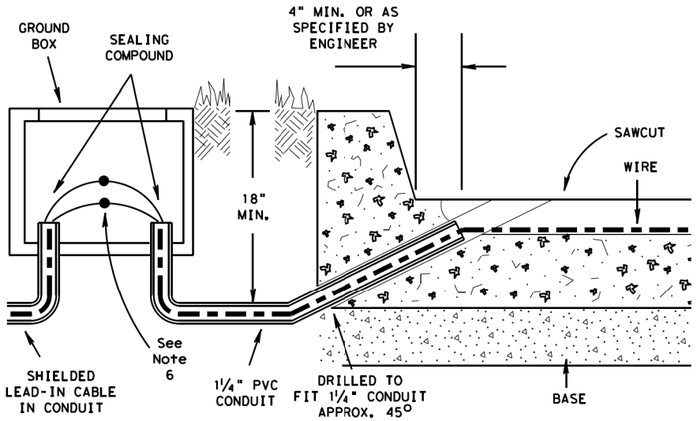
REVISIONS	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
FEB 2006		CSP 23-004		303
OCT 2006	STATE	DIST.	COUNTY	
OCT 2007	TEXAS	SAT	GUADALUPE	
	CONT.	SECT.	JOB	HIGHWAY NO.
				KLEIN RD



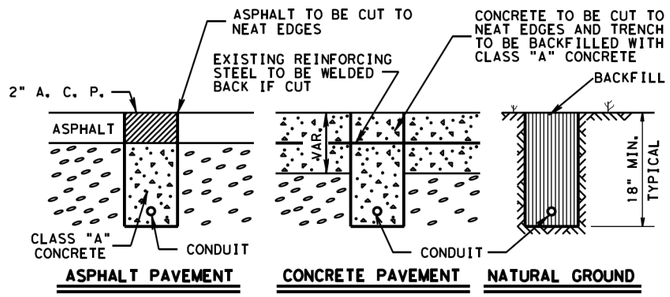
LOOP SAW CUT CROSS-SECTION



TYPICAL LEAD IN CONFIGURATION (WITHOUT CURBING)



TYPICAL LEAD IN CONFIGURATION (WITH CURBING)

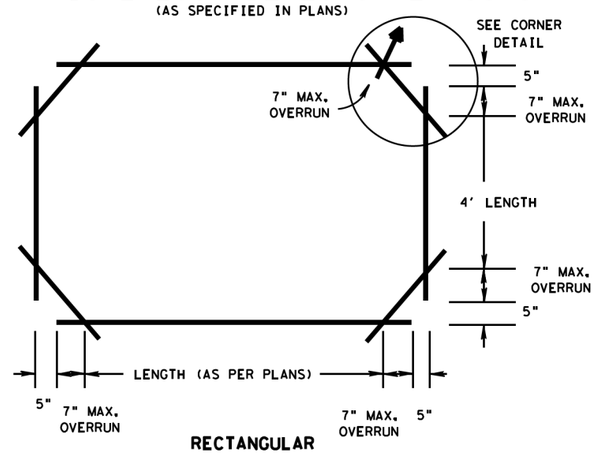


TRENCH DETAILS

CONCRETE TO BE TESTED AS MISCELLANEOUS CONCRETE
WIDTH OF TRENCH SHALL BE WIDE ENOUGH TO ACCOMMODATE CONDUIT

TYPICAL LOOP DETECTOR LAYOUTS

(AS SPECIFIED IN PLANS)



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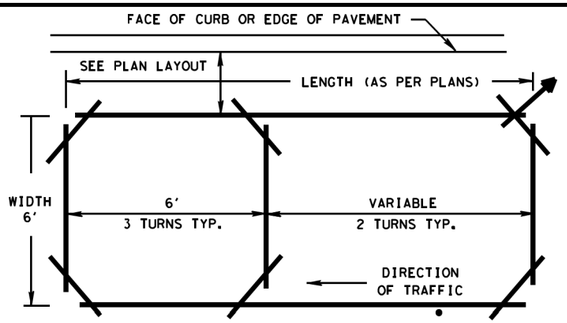
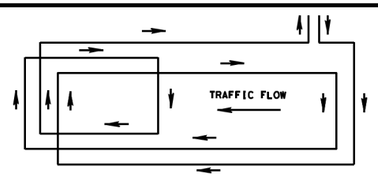
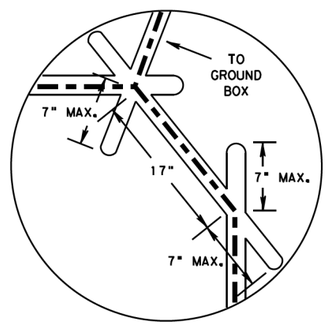


POWER HEADER



LOOP WINDING DETAILS

TYPICAL CORNER DETAILS



SAWCUT CORNER DETAIL

7" OVERRUN BASED ON
24" DIAMETER SAW BLADE

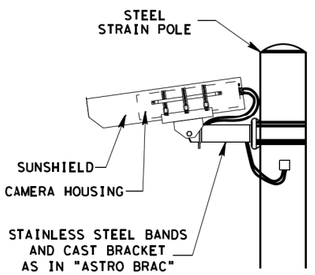
LOOP DETECTOR NOTES :

1. THE PAVEMENT CUT IS TO BE MADE WITH ANY EQUIPMENT THAT WILL PRODUCE A NEAT STRAIGHT LINE OF THE SIZE INDICATED. ALL LOOSE MATERIAL SHALL BE REMOVED. THE CUT SHALL BE CLEAN AND DRY WHEN THE WIRE AND THE SEALANT IS PLACED
2. WHERE MORE THAN ONE LOOP IS PLACED ON AN INTERSECTION APPROACH, THE WIRE FROM LOOP TO GROUND BOX SHALL NOT BE PLACED IN A SAW CUT WITH WIRE FROM OTHER LOOPS UNLESS OTHERWISE SHOWN IN THE PLANS
3. THE LOOP WIRE SHALL BE TWISTED A MINIMUM OF FIVE TURNS PER FOOT FROM THE EDGE OF THE ROAD TO THE GROUND BOX AND NO SPLICES SHALL BE PERMITTED IN THE LOOP OR IN THE RUN TO THE PULL BOX
4. THE 1/C#14 LOOP WIRE SHALL BE SINGLE CONDUCTOR CROSSLINKED POLYETHYLENE (0.045) INSULATED WIRE, TYPE: USE, RHH, RHW,14 AWG STRANDED COPPER RATED AT 600 VOLTS
5. THE 2/C#14 LOOP CABLE SHALL BE TWO CONDUCTOR SHIELDED CABLE, 14 AWG, 19 X 27 STRANDED , 600 VOLT TINNED COPPER, POLYETHYLENE INSULATED, TWISTED PAIR, TWISTED A MINIMUM OF FIVE TWISTS PER FOOT, ALUMINUM-POLYESTER SHIELD, 16 AWG STRANDED TINNED COPPER DRAIN WIRE, CHROME VINYL JACKET, 100 % SHIELD COVERAGE THE LOOP CABLE SHALL BE CONTINUOUS WITHOUT SPLICES
6. THE LOOP WIRE SHALL BE SPLICED TO THE LOOP CABLE BY SOLDERING CONDUCTORS, SECURING WITH A WIRE NUT AND FULLY ENCAPSULATING INTO A WATER TIGHT COMMERCIAL SPLICING KIT
7. ALL LOOP WIRE PLACED IN A SAW CUT SHALL BE SEALED BY FULLY ENCAPSULATING IT WITH LOOP WIRE SEALANT
8. ALL LOOP WIRE AND LOOP CABLE SHALL BE TESTED. WIRE AND CABLE TESTING LESS THAN 50 MEGAOHMS INSULATION RESISTANCE AT 500 VOLTS SHALL BE REPLACED BY THE CONTRACTOR AT HIS EXPENSE. THIS TEST SHOULD BE MADE BEFORE, DURING AND AFTER EACH COMPLETE LOOP DETECTOR INSTALLATION
9. UPON COMPLETION OF THE COMPLETE LOOP DETECTOR SYSTEM, THE FINAL TEST WILL BE MADE AT ITS TERMINATION AT THE CONTROLLER BY THE ENGINEER. ANY LOOP DETECTOR NOT MEETING THE REQUIREMENTS OF NOTE 8 SHALL BE REPLACED. THE FINAL TEST SHALL BE MADE PRIOR TO THE FINAL MAT OF A.C.P.
10. THE LOOP LOCATION, CONFIGURATION AND THE NUMBER OF TURNS SHALL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

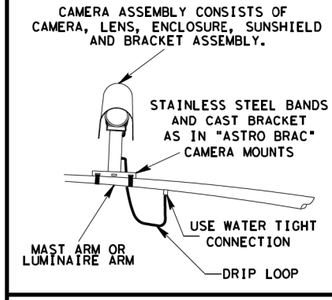
RECOMMENDED NUMBER OF TURNS FOR LOOP DETECTORS

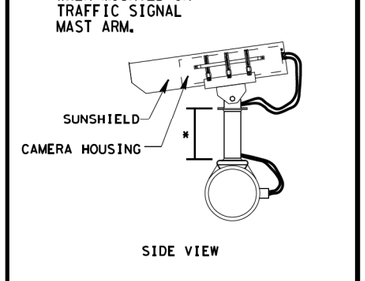
LOOP PERIMETER SIZE (FT.)	NUMBER OF TURNS	APPROXIMATE LOOP SIZES INCLUDED
24' or Less	3 or 4	5' x 5', 6' x 6'
25' - 110'	2 or 3	6' x 10', 6' x 45'
110' or More	1 or 2	6' x 50' or Longer

TYPICAL VIVDS DETAILS



POLE MOUNT





SIDE VIEW

MAST ARM OR LUMINAIRE ARM

VIDEO DETECTION NOTES

1. VIDEO DETECTION PROCESSOR UNIT SHALL BE INSTALLED INSIDE CONTROLLER CABINET.
2. VIDEO DETECTION CAMERA & BRACKET SHALL BE INSTALLED AS DETAILED OR AS DIRECTED BY THE ENGINEER.
3. CAMERAS SHALL BE MOUNTED AS FAR OVER THE ROADWAY AS POSSIBLE.
4. STAINLESS STEEL BANDS AND CAST BRACKETS AS IN "ASTRO-BRAC" SHALL BE USED TO INSTALL THE CAMERAS.
5. WHEN AIMING CAMERA, HORIZON SHALL NOT BE VISIBLE IN THE FIELD OF VIEW.
6. CAMERA ENCLOSURE ASSEMBLY SHALL BE ROTATABLE AFTER INSTALLATION TO PROVIDE PROPER ALIGNMENT.
7. ALL CABLE ENTRY AND EXIT POINTS IN THE MAST ARM AND/OR POLES SHALL BE WATER TIGHT.
8. APPLY SILICON DIELECTRIC COMPOUND INTO CONNECTORS AS APPROVED

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San Antonio District Standard

VEHICLE DETECTOR INSTALLATION DETAILS

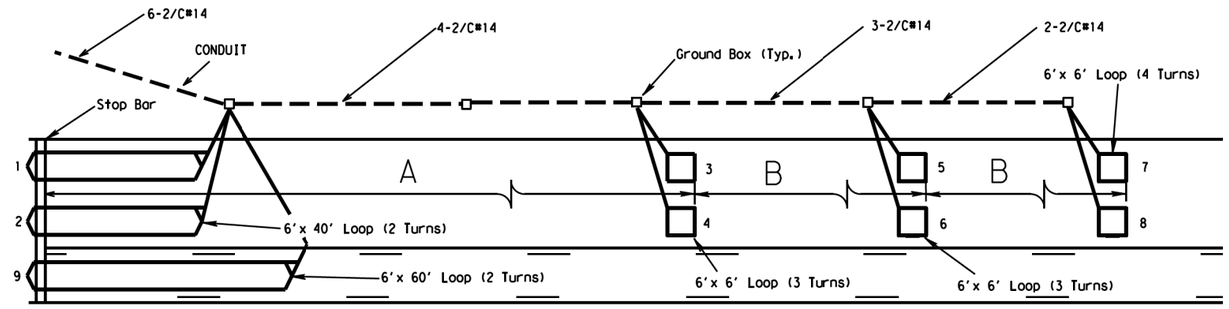
SCALE: NS

VD(1)-06

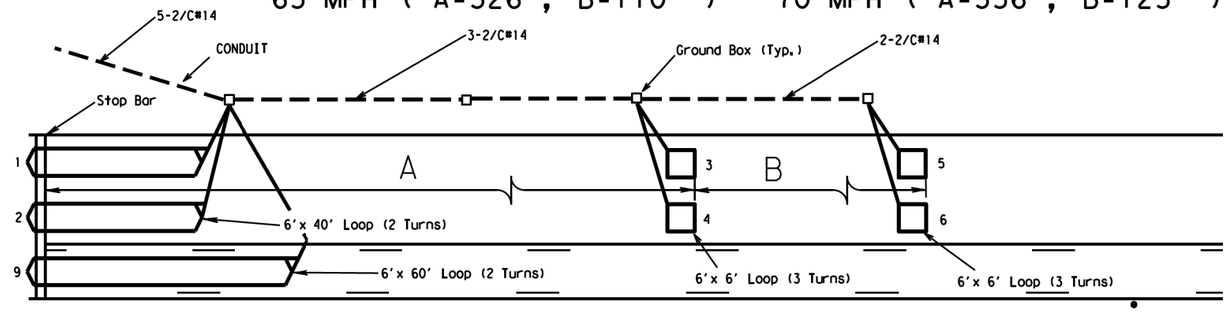
REVISIONS	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
FEB 2006		CSP 23-004		304
OCT 2006	STATE	DIST.	COUNTY	
	TEXAS	SAT	GUADALUPE	
	CONT.	SECT.	JOB	HIGHWAY NO.
				KLEIN RD

TIMES PLOTTED: 9:38:35 AM
LEVELS DISPLAYED
ACC:

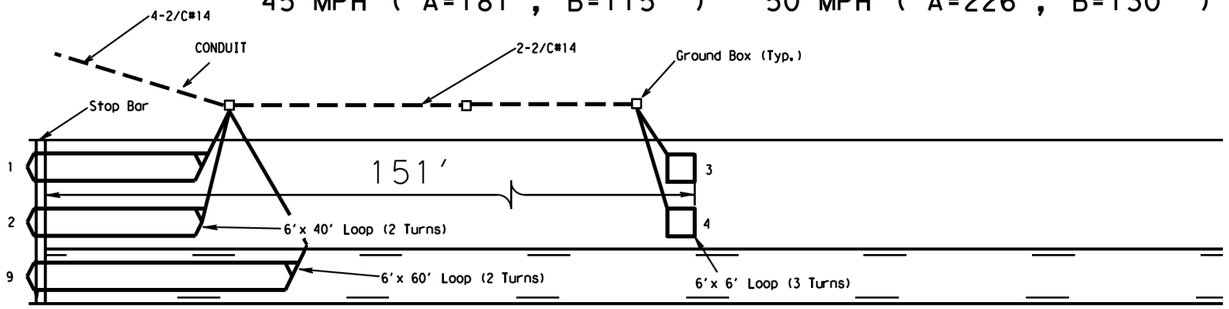
LOOP DETECTOR PLACEMENT DETAILS



55 MPH (A=231', B=95') 60 MPH (A=281', B=100')
65 MPH (A=326', B=110') 70 MPH (A=356', B=125')



35 MPH (A=96', B=100') 40 MPH (A=116', B=130')
45 MPH (A=181', B=115') 50 MPH (A=226', B=130')



30 MPH

LOOP DETECTOR GENERAL NOTES (55 MPH TO 70 MPH):

Loops 1 and 2 shall be connected to the controller cabinet by means of the same loop lead-in (2/C #14 AWG).

Loops 3 and 4 shall be connected to the controller cabinet by means of the same loop lead-in (2/C #14 AWG).

Loops 5 and 6 shall be connected to the controller cabinet by means of the same loop lead-in (2/C #14 AWG).

Loops 7 and 8 shall be connected to the controller cabinet by means of individual loop lead-in (2/C#14 AWG)

Loop 9 shall be connected to the controller cabinet by means of a loop lead-in (2/C #14 AWG). Loop 9 shall be placed only when a left turn lane exists.

LOOP DETECTOR GENERAL NOTES (35 MPH TO 50 MPH):

Loops 1 and 2 shall be connected to the controller cabinet by means of the same loop lead-in (2/C #14 AWG).

Loops 3 and 4 shall be connected to the controller cabinet by means of the same loop lead-in (2/C #14 AWG).

Loops 5 and 6 shall be connected to the controller cabinet by means of individual loop lead-in (2/C #14 AWG).

Loop 9 shall be connected to the controller cabinet by means of a loop lead-in (2/C #14 AWG). Loop 9 shall be placed only when a left turn lane exists.

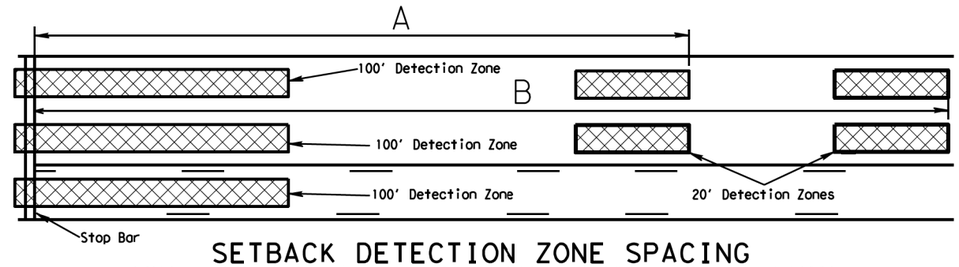
LOOP DETECTOR GENERAL NOTES (30 MPH):

Loops 1 and 2 shall be connected to the controller cabinet by means of the same loop lead-in (2/C #14 AWG).

Loops 3 and 4 shall be connected to the controller cabinet by means of individual loop lead-in (2/C #14 AWG).

Loop 9 shall be connected to the controller cabinet by means of a loop lead-in (2/C #14 AWG). Loop 9 shall be placed only when a left turn lane exists.

VIDEO DETECTION PLACEMENT DETAILS



SETBACK DETECTION ZONE SPACING
(SPEEDS GREATER THAN OR EQUAL TO 45 MPH)

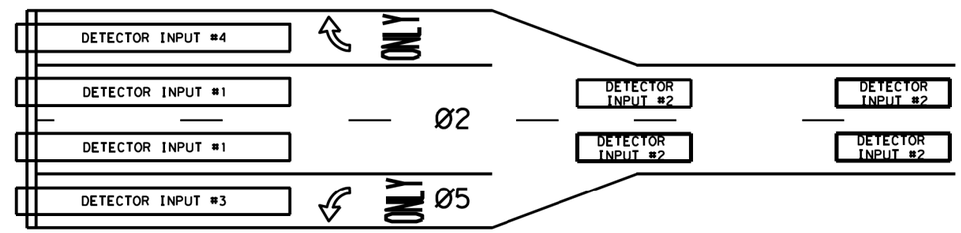
45 MPH (A=210', B=350') 50 MPH (A=235', B=390')
55 MPH (A=255', B=430') 60 MPH (A=280', B=470')
65 MPH (A=305', B=510') 70 MPH (A=330', B=550')

NOTE: SPEEDS EQUAL OR GREATER THAN 45 MPH WILL REQUIRE THE USE OF TWO VIVDS CAMERAS.

UTILIZATION OF CAMERA ONE FOR STOP BAR DETECTION AND CAMERA TWO FOR SET BACK DETECTION ZONES.

STOP BAR DETETCION ZONES SHALL BE PROVIDED FOR EACH LANE OF EACH APPROACH.

STOP BAR DETECTION AND SET BACK DETECTION SHOULD DRIVE A SEPARATE DETECTOR INPUT INTO THE CONTROLLER. IN ADDITION, DETECTORS IN EXCLUSIVE TURN LANES SHOULD DRIVE A SEPARATE DETECTOR INPUT INTO THE CONTROLLER. SEE TYPICAL LAYOUT BELOW.



DETECTOR INPUT #	PHASE
1	Ø2 STOP BAR
2	Ø2 SET BACK
3	Ø5 STOP BAR
4	Ø2 RT LANE

NOTE:
ALL DETECTOR PLACEMENTS ARE BASED ON THE POSTED SPEED LIMIT

Texas Department of Transportation
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San Antonio District Standard

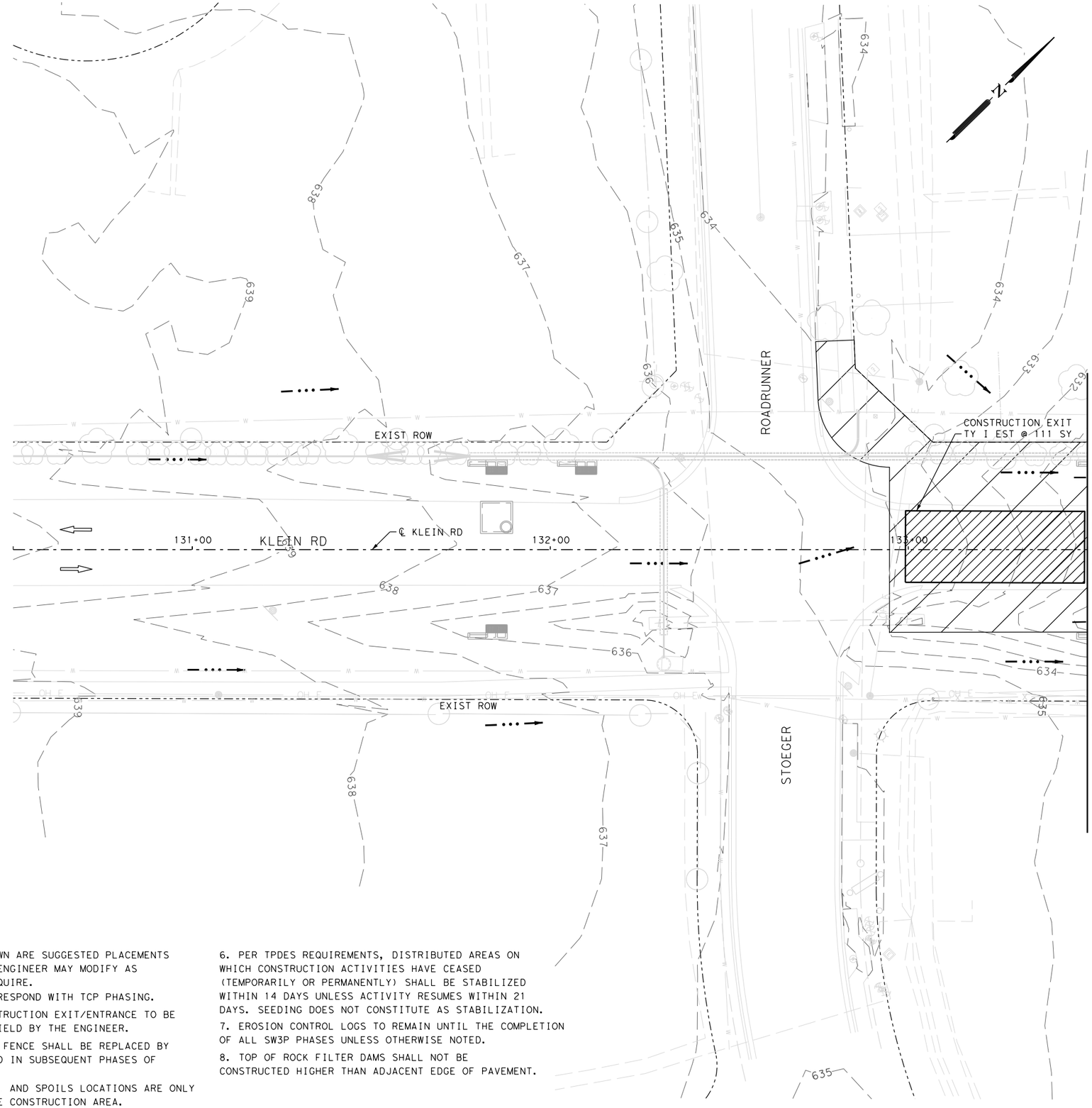
VEHICLE DETECTOR PLACEMENT DETAILS

SCALE: NS **VD(2)-06**

REVISIONS	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
FEB 2006		CSP 23-004		305
	STATE	DIST.	COUNTY	
	TEXAS	SAT	GUADALUPE	
	CONT.	SECT.	JOB	HIGHWAY NO.
				KLEIN RD

$$TIMES
$$DATES
$$FILES
ACC:
LEVELS DISPLAYED

ITEM	DESCRIPTION	UNIT	QTY
0506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	111
0506-6024	CONSTRUCTION EXITS (REMOVE)	SY	111



LEGEND

- TRAFFIC FLOW ARROWS
- FLOW ARROW
- SB — SANDBAGS
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — TY 2 ROCK FILTER DAM
- RFD3 — TY 3 ROCK FILTER DAM
- CONSTRUCTION EXIT
- CL-CI — EROSION CONTROL LOG
- CONSTRUCTION PHASE
- WETLAND AREA

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

NOTES:

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6. PER TPDES REQUIREMENTS, DISTRIBUTED AREAS ON WHICH CONSTRUCTION ACTIVITIES HAVE CEASED (TEMPORARILY OR PERMANENTLY) SHALL BE STABILIZED WITHIN 14 DAYS UNLESS ACTIVITY RESUMES WITHIN 21 DAYS. SEEDING DOES NOT CONSTITUTE AS STABILIZATION.
7. EROSION CONTROL LOGS TO REMAIN UNTIL THE COMPLETION OF ALL SW3P PHASES UNLESS OTHERWISE NOTED.
8. TOP OF ROCK FILTER DAMS SHALL NOT BE CONSTRUCTED HIGHER THAN ADJACENT EDGE OF PAVEMENT.

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 1 STEP 1

SHEET 1 OF 5

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	306

Plotted on: 1/16/2023

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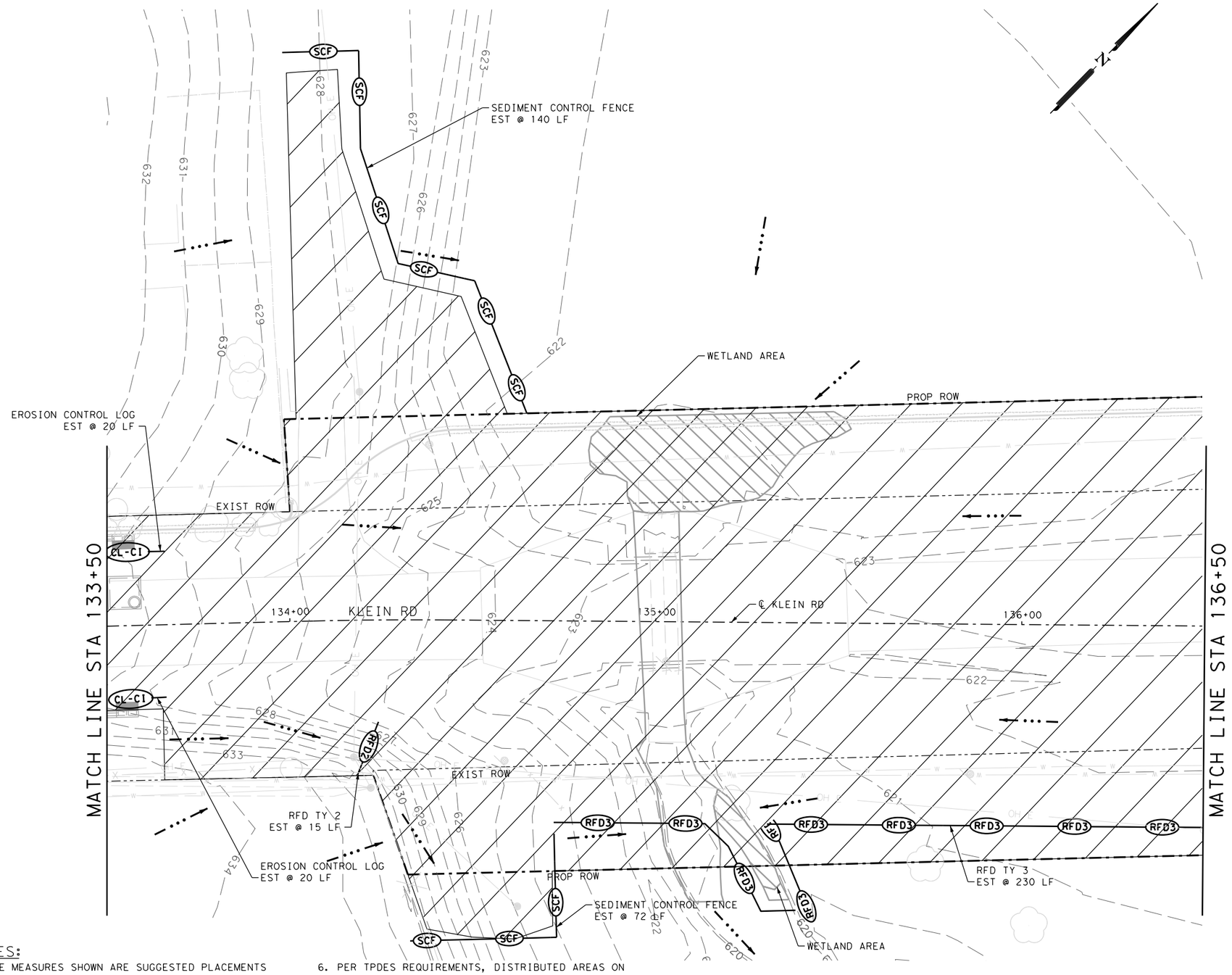
Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase1\5103003sw3p102.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6002	ROCK FILTER DAMS (INSTALL) (TY 2)	LF	15
0506-6003	ROCK FILTER DAMS (INSTALL) (TY 3)	LF	230
0506-6011	ROCK FILTER DAMS (REMOVE)	LF	245
0506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	212
0506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	212
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	40
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	40



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8. TOP OF ROCK FILTER DAMS SHALL NOT BE CONSTRUCTED HIGHER THAN ADJACENT EDGE OF PAVEMENT.

LEGEND

- TRAFFIC FLOW ARROWS
- FLOW ARROW
- SB — SANDBAGS
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — TY 2 ROCK FILTER DAM
- RFD3 — TY 3 ROCK FILTER DAM
- CONSTRUCTION EXIT
- CL-CI — EROSION CONTROL LOG
- CONSTRUCTION PHASE
- WETLAND AREA

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 1 STEP 1

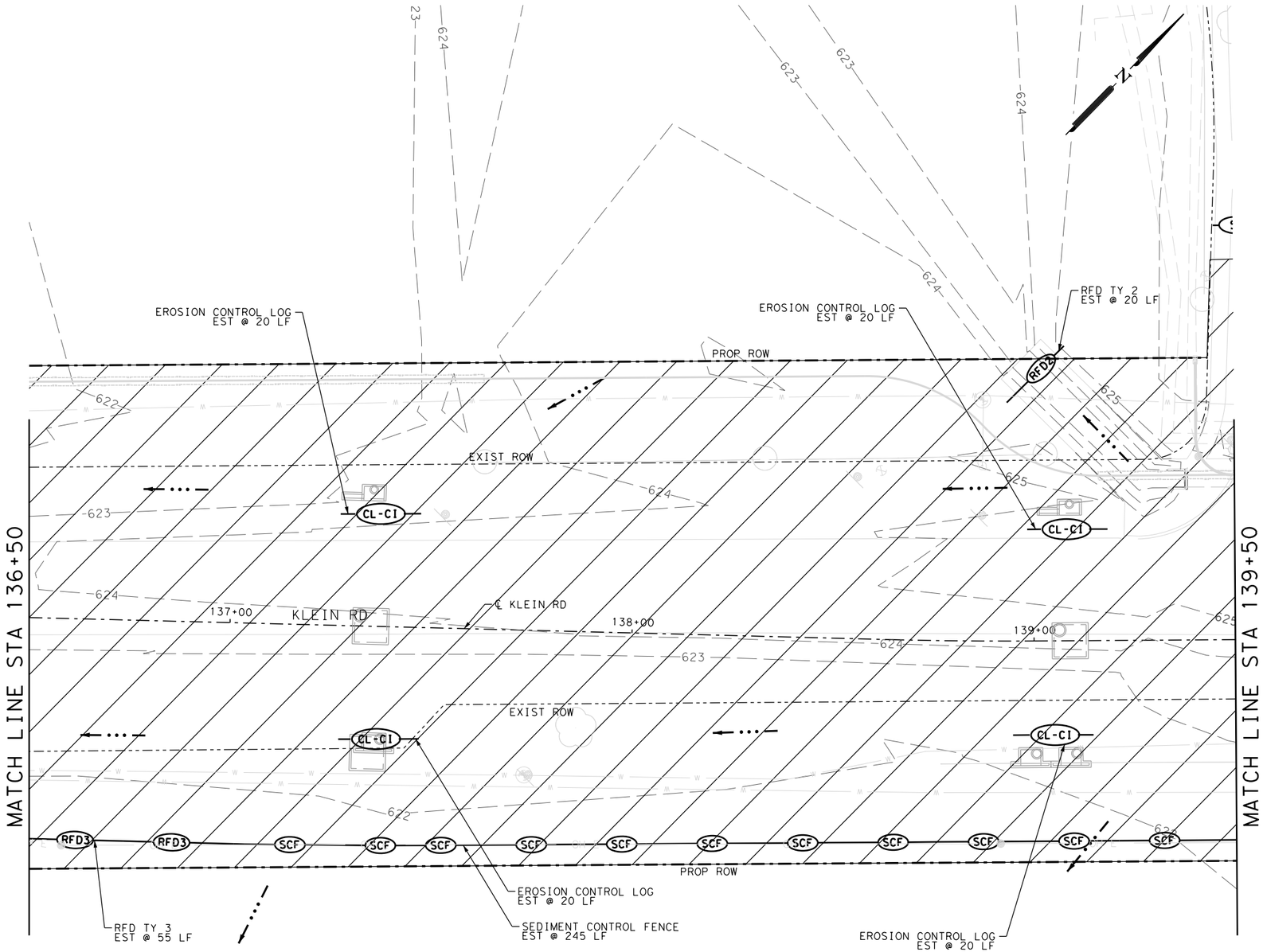
SHEET 2 OF 5

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	307

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase1\5103003sw3p103.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6002	ROCK FILTER DAMS (INSTALL) (TY 2)	LF	20
0506-6003	ROCK FILTER DAMS (INSTALL) (TY 3)	LF	55
0506-6011	ROCK FILTER DAMS (REMOVE)	LF	75
0506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	245
0506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	245
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	80
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	80



LEGEND

- TRAFFIC FLOW ARROWS
- FLOW ARROW
- SB — SANDBAGS
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — TY 2 ROCK FILTER DAM
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- CONSTRUCTION PHASE
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DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 1 STEP 1

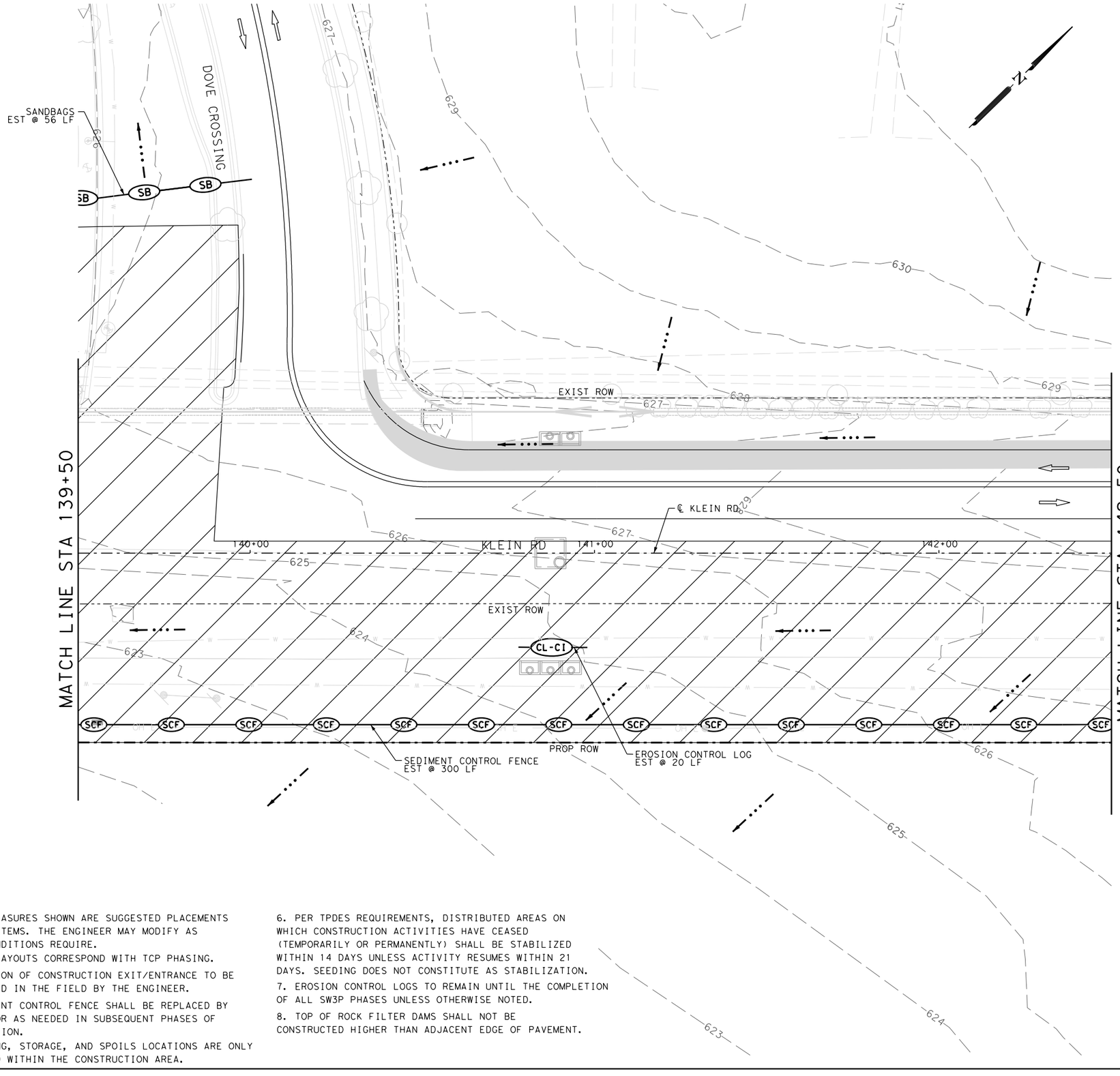
SHEET 3 OF 5

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	308

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase1\5103003sw3p104.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6037	SANDBAGS FOR EROSION CONTROL (12")	LF	56
0506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	300
0506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	300
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	20
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	20



LEGEND

- TRAFFIC FLOW ARROWS
- FLOW ARROW
- SB — SANDBAGS
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — TY 2 ROCK FILTER DAM
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- CONSTRUCTION EXIT
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- CONSTRUCTION PHASE
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STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 1 STEP 1

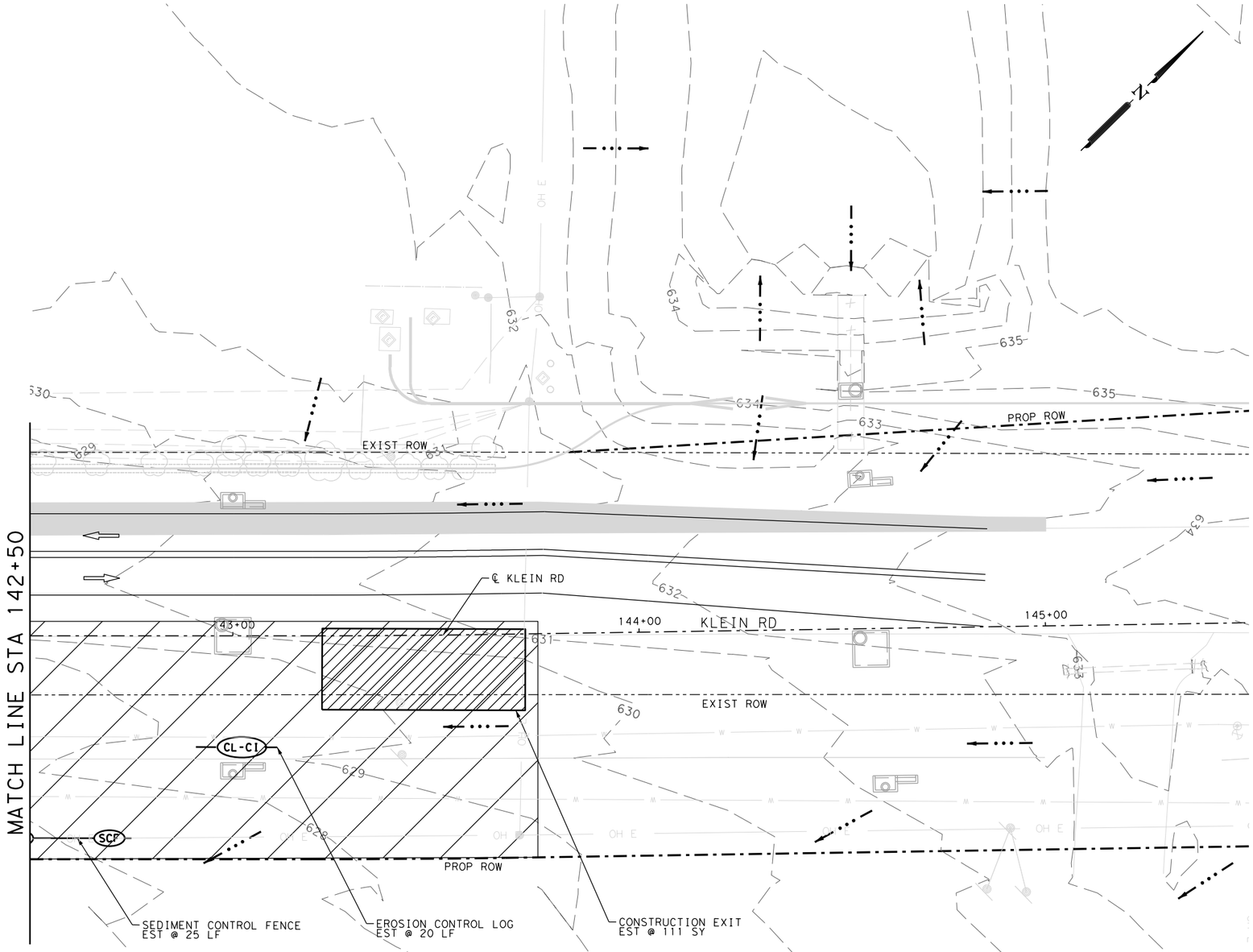
SHEET 4 OF 5

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	309

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase1\5103003sw3p105.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	111
0506-6024	CONSTRUCTION EXITS (REMOVE)	SY	111
0506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	25
0506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	25
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	20
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	20



LEGEND

- TRAFFIC FLOW ARROWS
- FLOW ARROW
- SB — SANDBAGS
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — TY 2 ROCK FILTER DAM
- RFD3 — TY 3 ROCK FILTER DAM
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- CONSTRUCTION PHASE
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NOTES:

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8. TOP OF ROCK FILTER DAMS SHALL NOT BE CONSTRUCTED HIGHER THAN ADJACENT EDGE OF PAVEMENT.

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 1 STEP 1

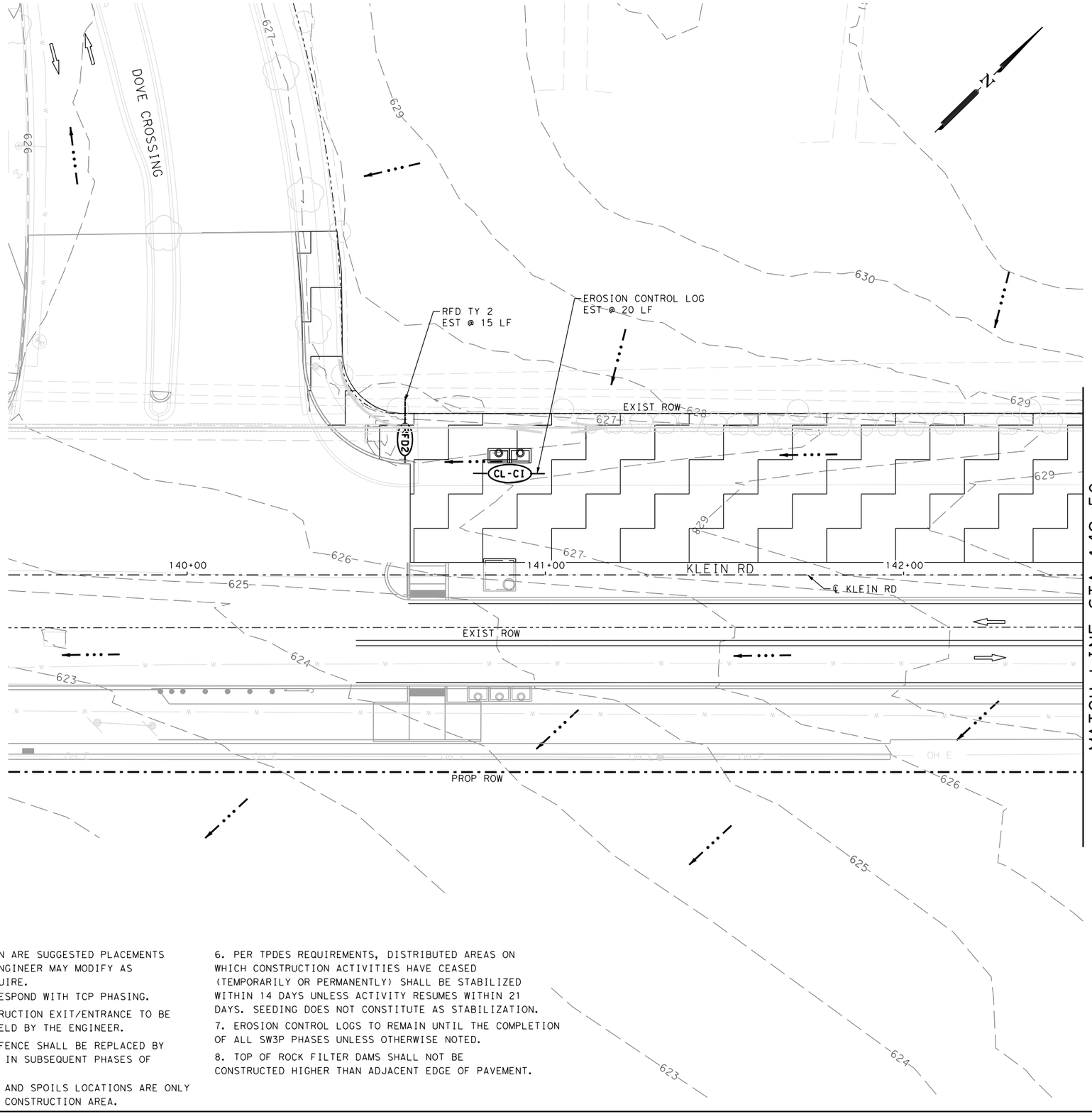
SHEET 5 OF 5

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	310

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase1\5103003sw3p1A01.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6002	ROCK FILTER DAMS (INSTALL) (TY 2)	LF	15
0506-6011	ROCK FILTER DAMS (REMOVE)	LF	15
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	20
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	20



NOTES:

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LEGEND

- TRAFFIC FLOW ARROWS
- FLOW ARROW
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — TY 2 ROCK FILTER DAM
- RFD3 — TY 3 ROCK FILTER DAM
- CONSTRUCTION EXIT
- CL-CI — EROSION CONTROL LOG
- CONSTRUCTION PHASE
- WETLAND AREA

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE I STEP 2

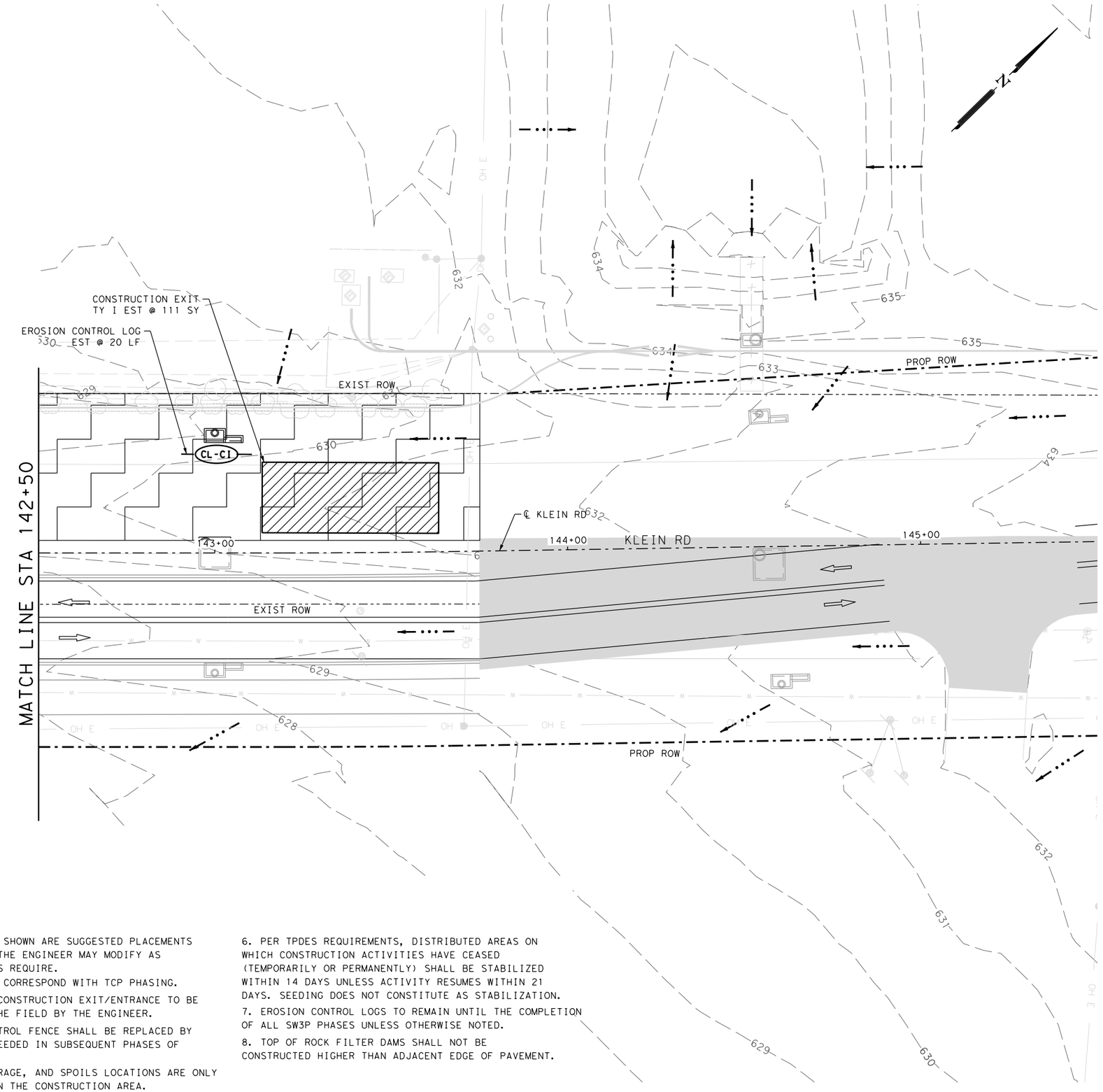
SHEET 1 OF 2

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	311

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase1\5103003sw3p1A02.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	111
0506-6024	CONSTRUCTION EXITS (REMOVE)	SY	111
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	20
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	20



LEGEND

- TRAFFIC FLOW ARROWS
- FLOW ARROW
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — TY 2 ROCK FILTER DAM
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DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

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REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 1 STEP 2

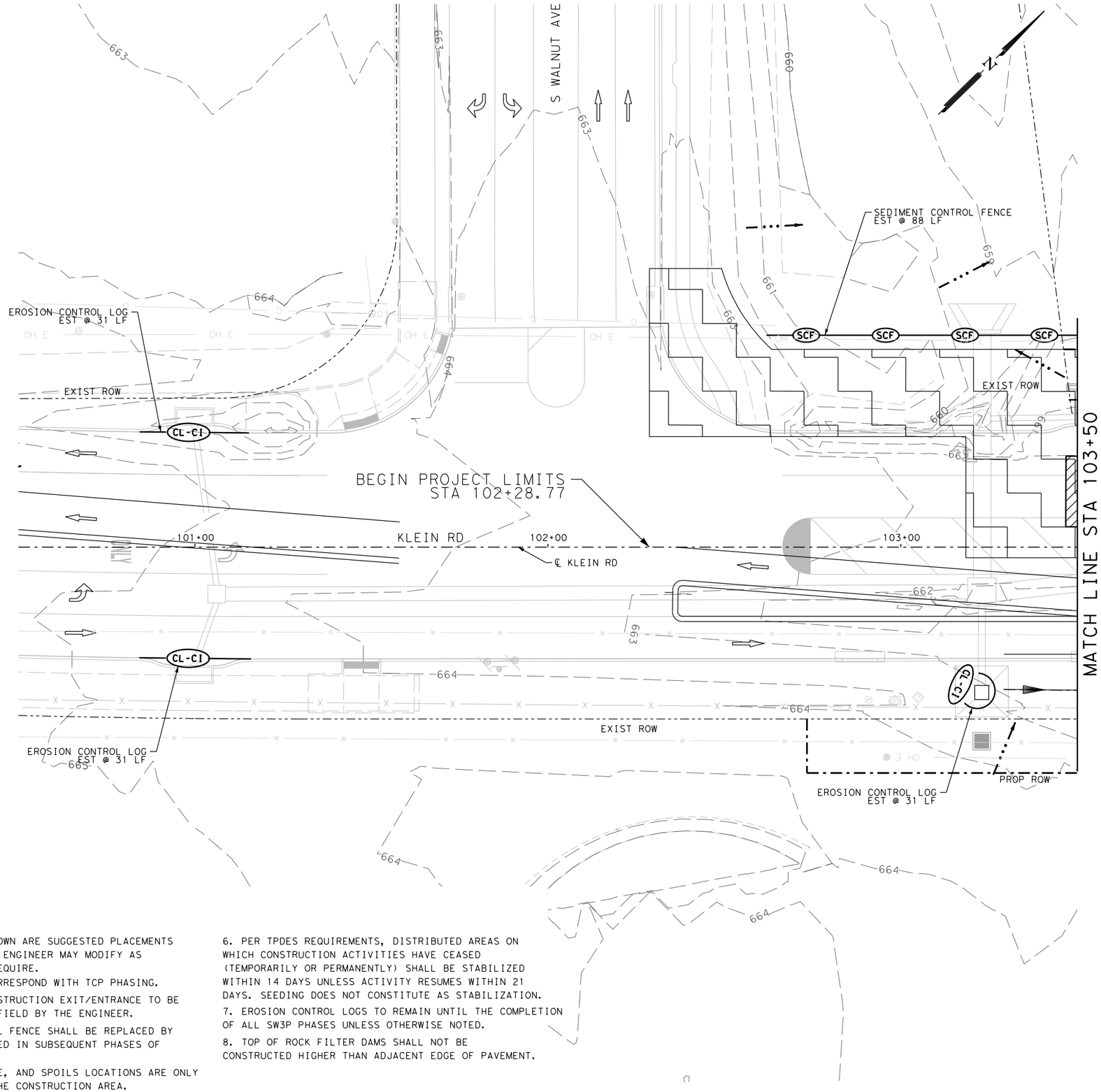
SHEET 2 OF 2

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	312

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p201.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	88
0506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	88
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	93



LEGEND

- TRAFFIC FLOW ARROWS
- FLOW ARROW
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — TY 2 ROCK FILTER DAM
- SB — SAND BAG
- RFD3 — TY 3 ROCK FILTER DAM
- CONSTRUCTION EXIT
- CL-C1 — EROSION CONTROL LOG
- CONSTRUCTION PHASE
- WETLAND AREA

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DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

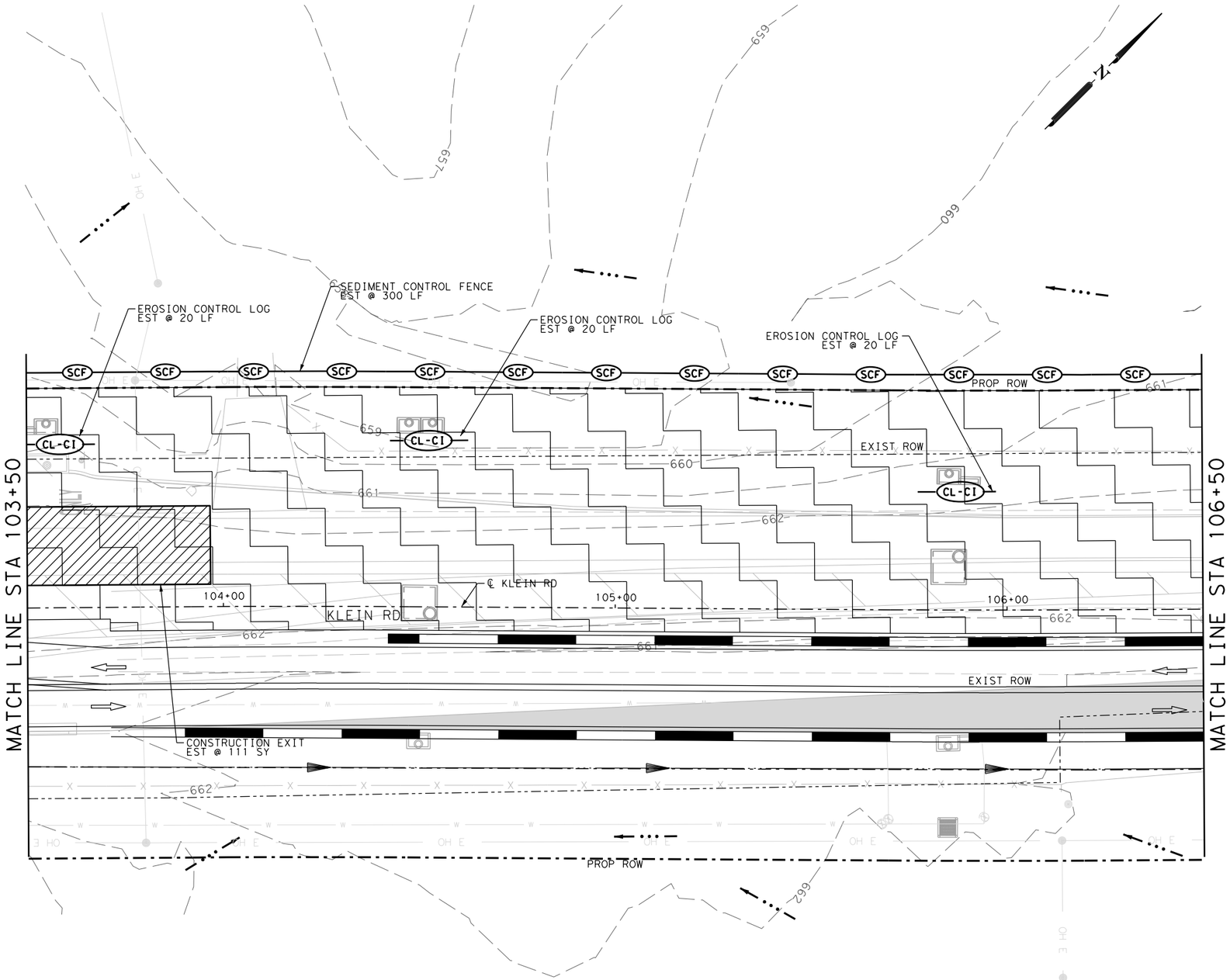
City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 1

SHEET 1 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	313



ITEM	DESCRIPTION	UNIT	QTY
0506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	111
0506-6024	CONSTRUCTION EXITS (REMOVE)	SY	111
0506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	300
0506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	300
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	60
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	20

LEGEND

- TRAFFIC FLOW ARROWS
- FLOW ARROW
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — TY 2 ROCK FILTER DAM
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- CONSTRUCTION EXIT
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- CONSTRUCTION PHASE
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DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 1

SHEET 2 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	314

NOTES:

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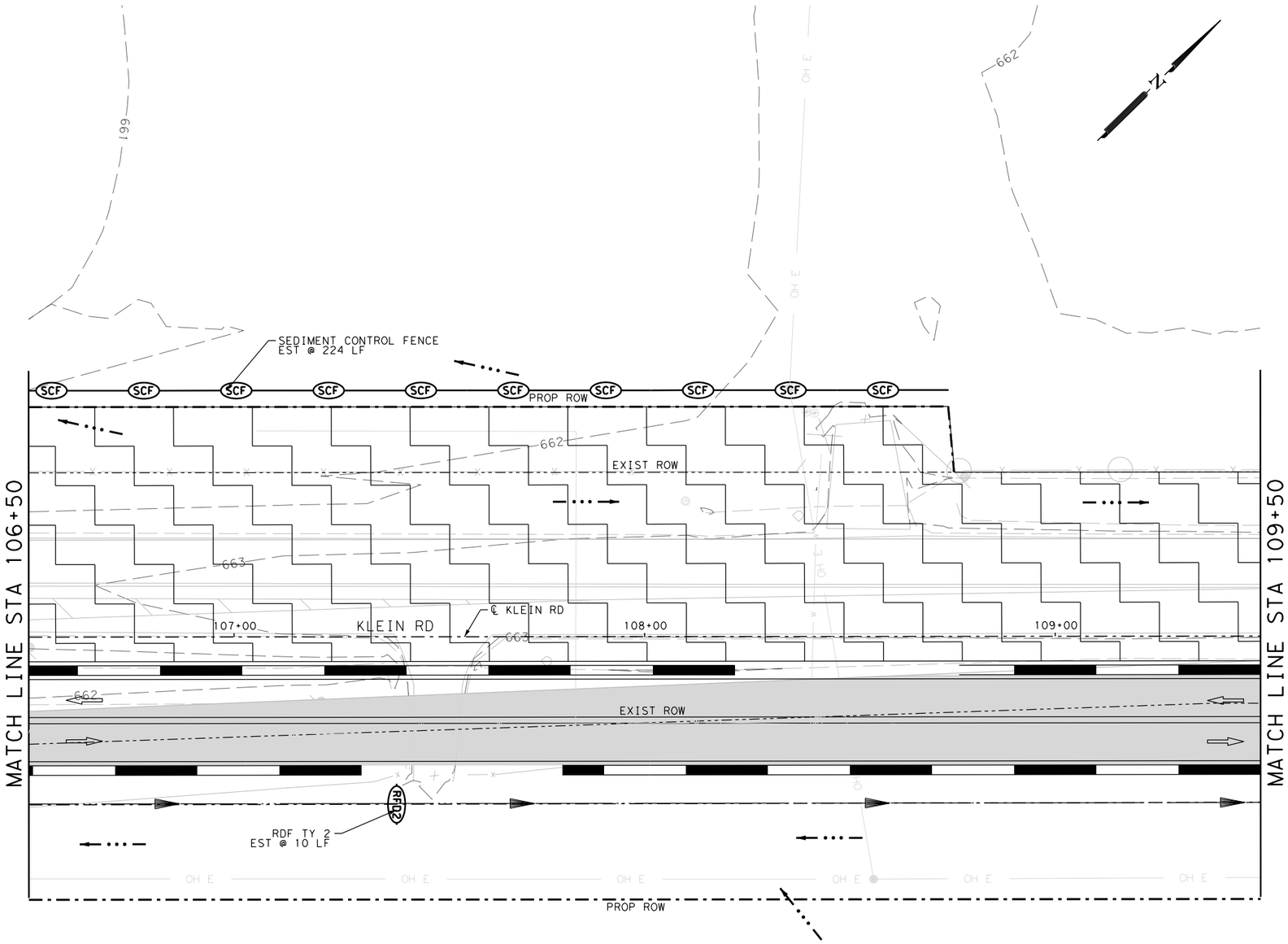
Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p202.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6002	ROCK FILTER DAMS (INSTALL) (TY 2)	LF	10
0506-6011	ROCK FILTER DAMS (REMOVE)	LF	10
0506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	224
0506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	224



LEGEND

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DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 1

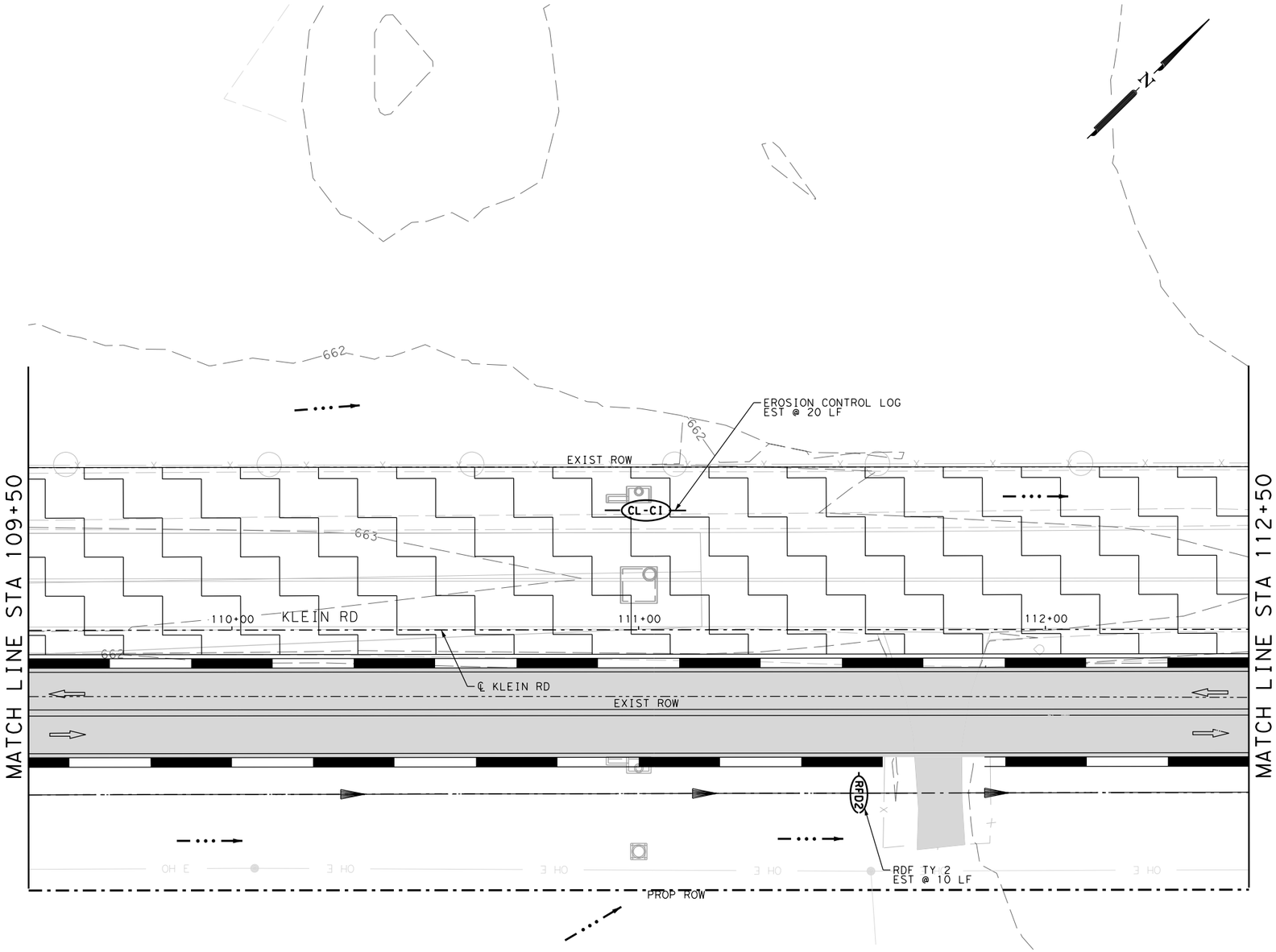
SHEET 3 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	315

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p203.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6002	ROCK FILTER DAMS (INSTALL) (TY 2)	LF	10
0506-6011	ROCK FILTER DAMS (REMOVE)	LF	10
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	20
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	20



LEGEND

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- FLOW ARROW
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — TY 2 ROCK FILTER DAM
- SB — SAND BAG
- RFD3 — TY 3 ROCK FILTER DAM
- CONSTRUCTION EXIT
- CL-CI — EROSION CONTROL LOG
- CONSTRUCTION PHASE
- WETLAND AREA

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

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TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 1

SHEET 4 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	316

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p204.dgn

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p205.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6002	ROCK FILTER DAMS (INSTALL) (TY 2)	LF	10
0506-6011	ROCK FILTER DAMS (REMOVE)	LF	10
0506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	156
0506-6024	CONSTRUCTION EXITS (REMOVE)	SY	156
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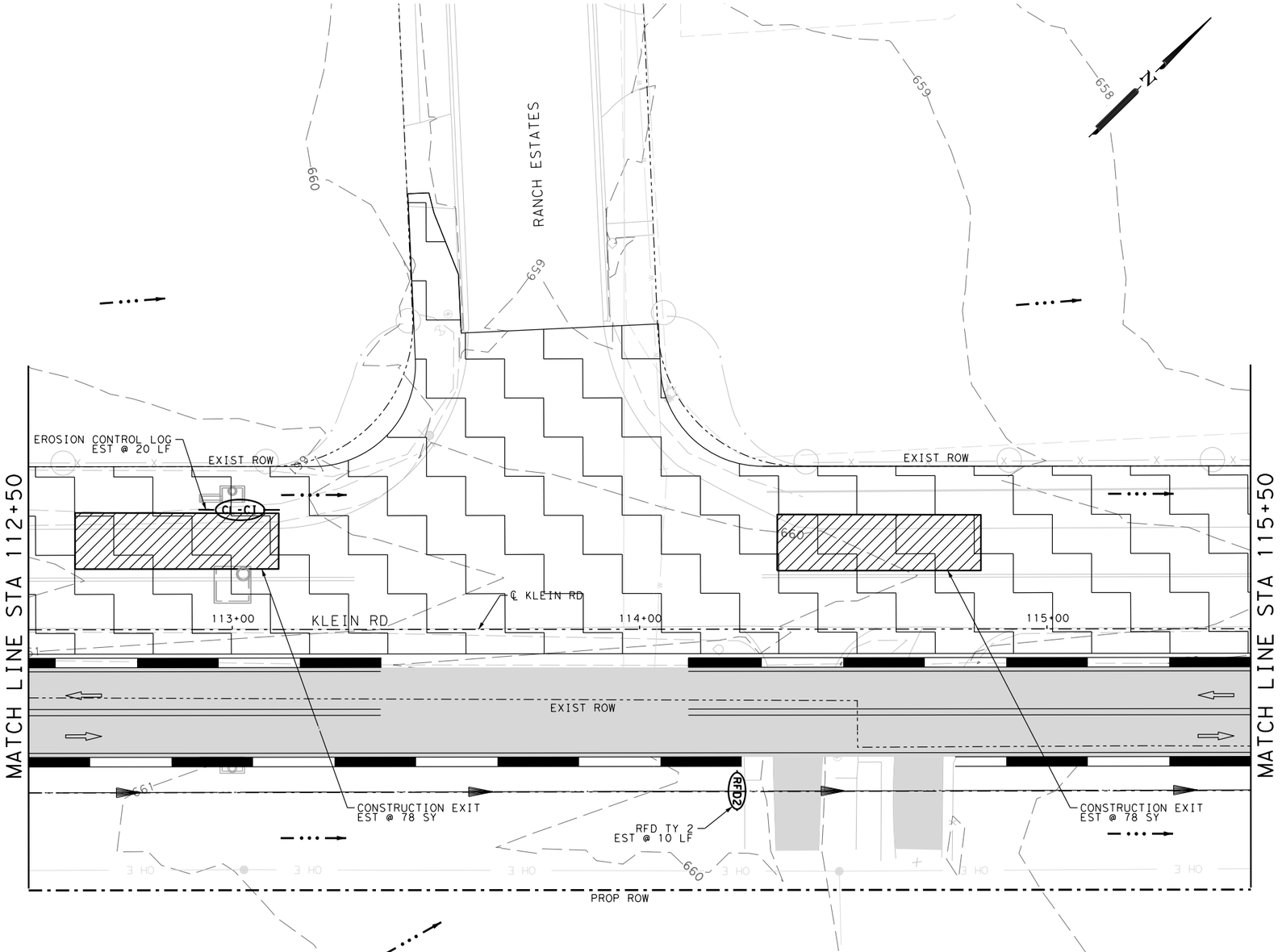

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- WETLAND AREA

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

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SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

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TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

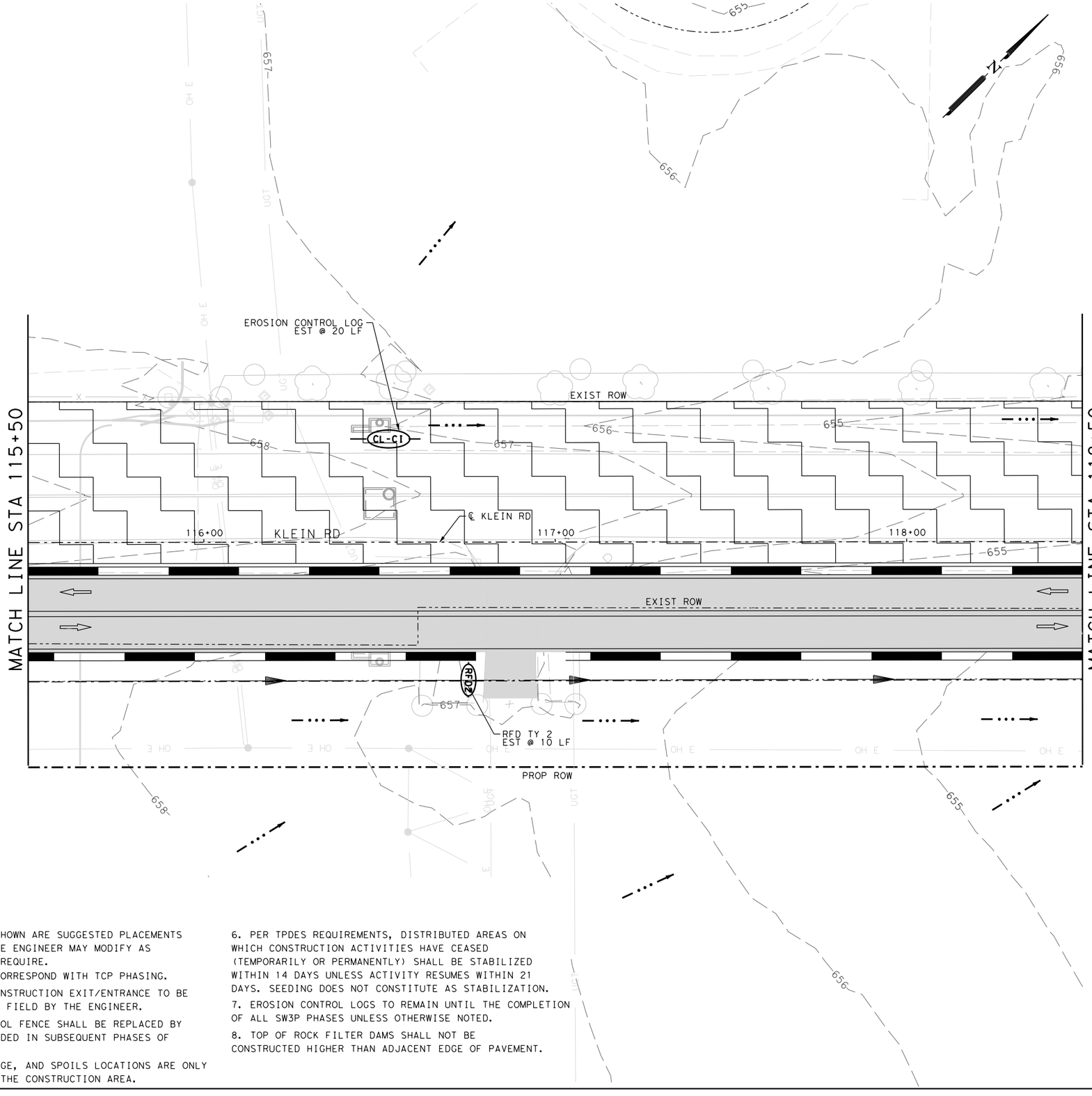
KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 1

SHEET 5 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	317

ITEM	DESCRIPTION	UNIT	QTY
0506-6002	ROCK FILTER DAMS (INSTALL) (TY 2)	LF	10
0506-6011	ROCK FILTER DAMS (REMOVE)	LF	10
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	20
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	20



NOTES:

1. THE MEASURES SHOWN ARE SUGGESTED PLACEMENTS OF SW3P ITEMS. THE ENGINEER MAY MODIFY AS FIELD CONDITIONS REQUIRE.
2. SW3P LAYOUTS CORRESPOND WITH TCP PHASING.
3. LOCATION OF CONSTRUCTION EXIT/ENTRANCE TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
4. SEDIMENT CONTROL FENCE SHALL BE REPLACED BY CONTRACTOR AS NEEDED IN SUBSEQUENT PHASES OF CONSTRUCTION.
5. STAGING, STORAGE, AND SPOILS LOCATIONS ARE ONLY PERMITTED WITHIN THE CONSTRUCTION AREA.
6. PER TPDES REQUIREMENTS, DISTRIBUTED AREAS ON WHICH CONSTRUCTION ACTIVITIES HAVE CEASED (TEMPORARILY OR PERMANENTLY) SHALL BE STABILIZED WITHIN 14 DAYS UNLESS ACTIVITY RESUMES WITHIN 21 DAYS. SEEDING DOES NOT CONSTITUTE AS STABILIZATION.
7. EROSION CONTROL LOGS TO REMAIN UNTIL THE COMPLETION OF ALL SW3P PHASES UNLESS OTHERWISE NOTED.
8. TOP OF ROCK FILTER DAMS SHALL NOT BE CONSTRUCTED HIGHER THAN ADJACENT EDGE OF PAVEMENT.

LEGEND

- TRAFFIC FLOW ARROWS
- FLOW ARROW
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — TY 2 ROCK FILTER DAM
- SB — SAND BAG
- RFD3 — TY 3 ROCK FILTER DAM
- CONSTRUCTION EXIT
- CL-C1 — EROSION CONTROL LOG
- CONSTRUCTION PHASE
- WETLAND AREA

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 1

SHEET 6 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	318

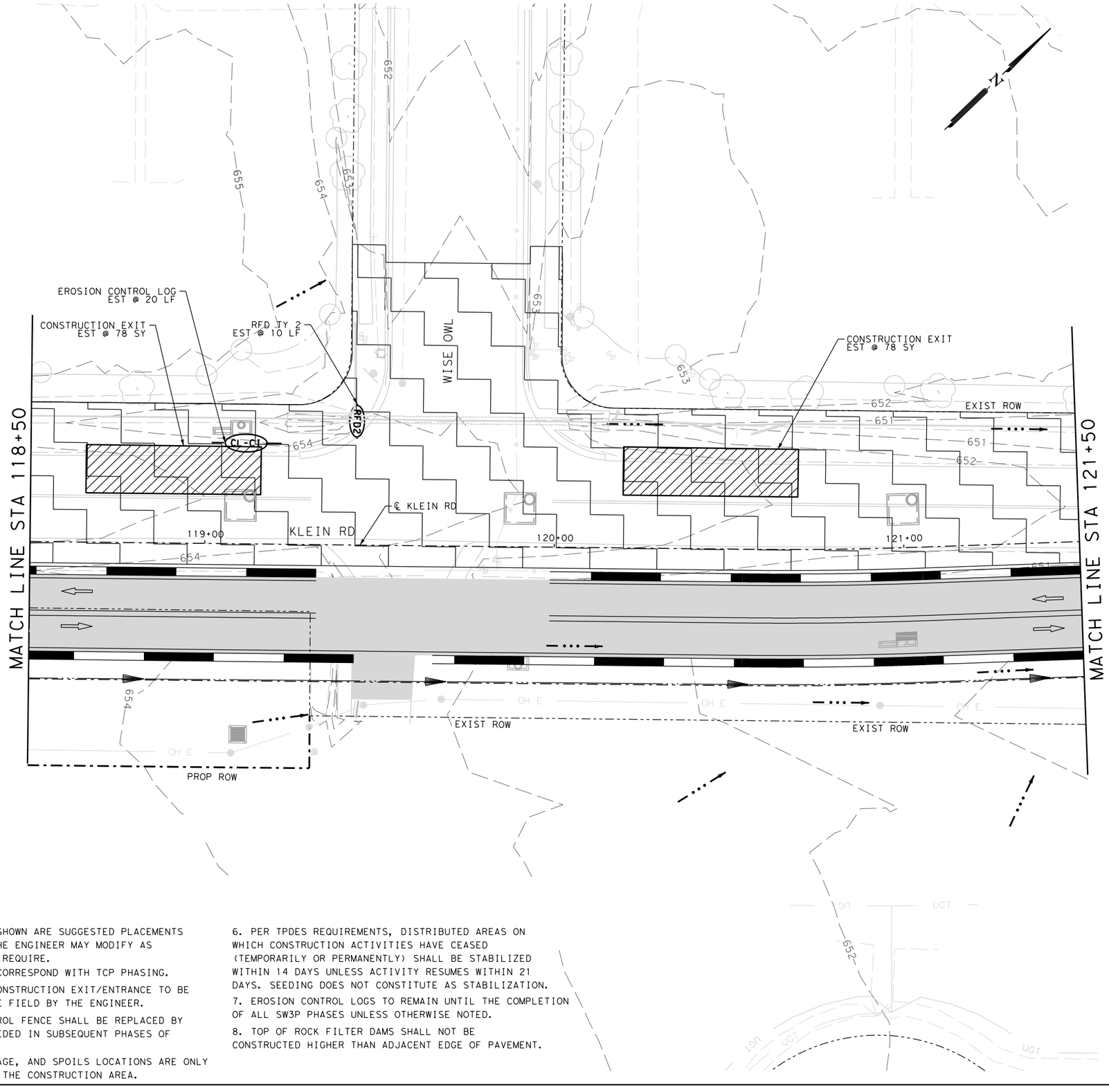
Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p206.dgn

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p207.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6002	ROCK FILTER DAMS (INSTALL) (TY 2)	LF	10
0506-6011	ROCK FILTER DAMS (REMOVE)	LF	10
0506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	156
0506-6024	CONSTRUCTION EXITS (REMOVE)	SY	156
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	20
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	20



NOTES:

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LEGEND

- TRAFFIC FLOW ARROWS
- FLOW ARROW
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — TY 2 ROCK FILTER DAM
- SB — SAND BAG
- RFD3 — TY 3 ROCK FILTER DAM
- CONSTRUCTION EXIT
- CL-CI — EROSION CONTROL LOG
- CONSTRUCTION PHASE
- WETLAND AREA

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

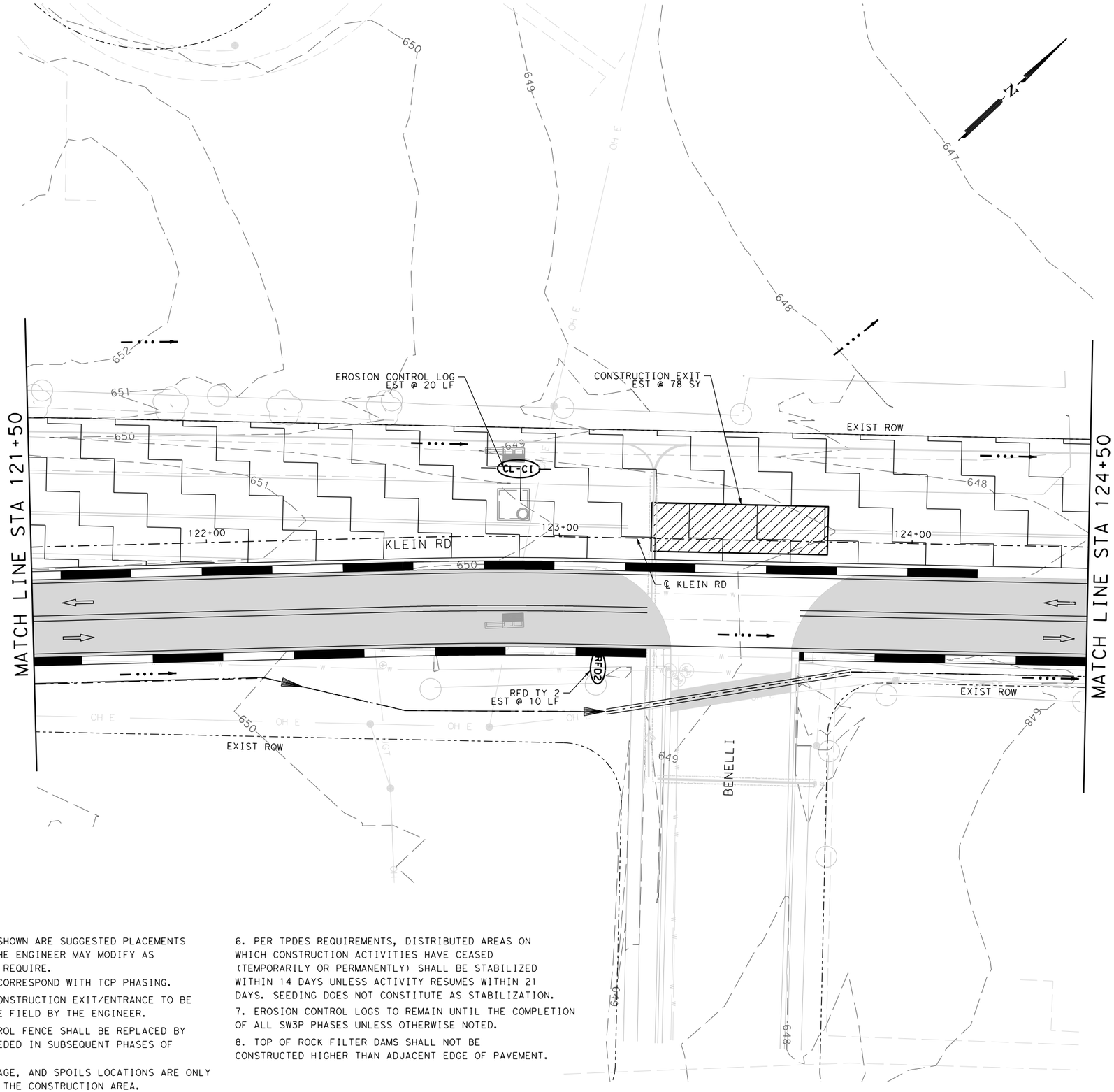
KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 1

SHEET 7 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	319

ITEM	DESCRIPTION	UNIT	QTY
0506-6002	ROCK FILTER DAMS (INSTALL) (TY 2)	LF	10
0506-6011	ROCK FILTER DAMS (REMOVE)	LF	10
0506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	78
0506-6024	CONSTRUCTION EXITS (REMOVE)	SY	78
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	20
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	20



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LEGEND

- TRAFFIC FLOW ARROWS
- FLOW ARROW
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — TY 2 ROCK FILTER DAM
- SB — SAND BAG
- RFD3 — TY 3 ROCK FILTER DAM
- CONSTRUCTION EXIT
- CL-CI — EROSION CONTROL LOG
- CONSTRUCTION PHASE
- WETLAND AREA

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 1

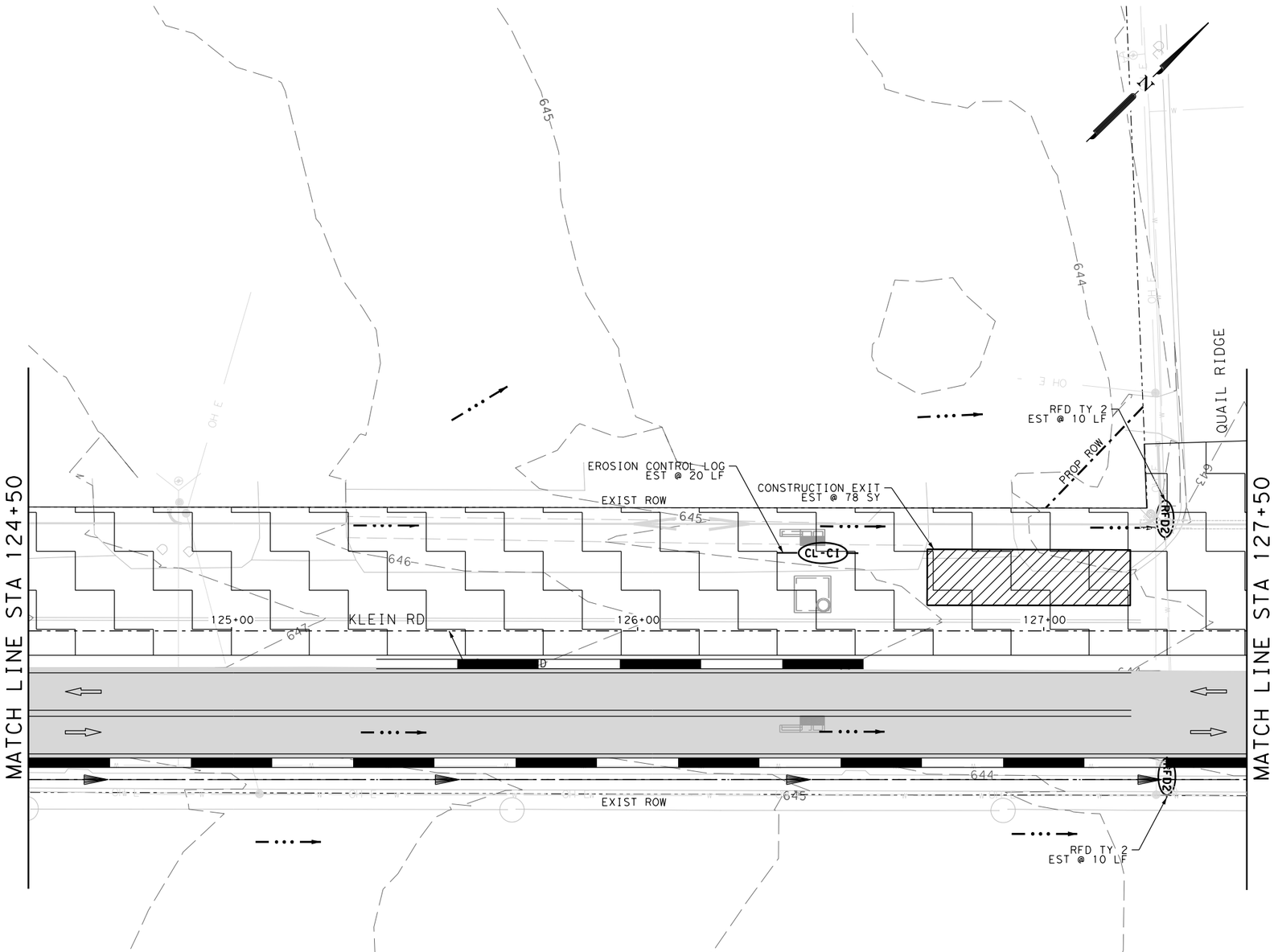
SHEET 8 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	320

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p208.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6002	ROCK FILTER DAMS (INSTALL) (TY 2)	LF	20
0506-6011	ROCK FILTER DAMS (REMOVE)	LF	20
0506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	78
0506-6024	CONSTRUCTION EXITS (REMOVE)	SY	78
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	20
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	20



LEGEND

- TRAFFIC FLOW ARROWS
- FLOW ARROW
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — TY 2 ROCK FILTER DAM
- SB — SAND BAG
- RFD3 — TY 3 ROCK FILTER DAM
- CONSTRUCTION EXIT
- CL-C1 — EROSION CONTROL LOG
- CONSTRUCTION PHASE
- WETLAND AREA

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

NOTES:

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8. TOP OF ROCK FILTER DAMS SHALL NOT BE CONSTRUCTED HIGHER THAN ADJACENT EDGE OF PAVEMENT.

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 1

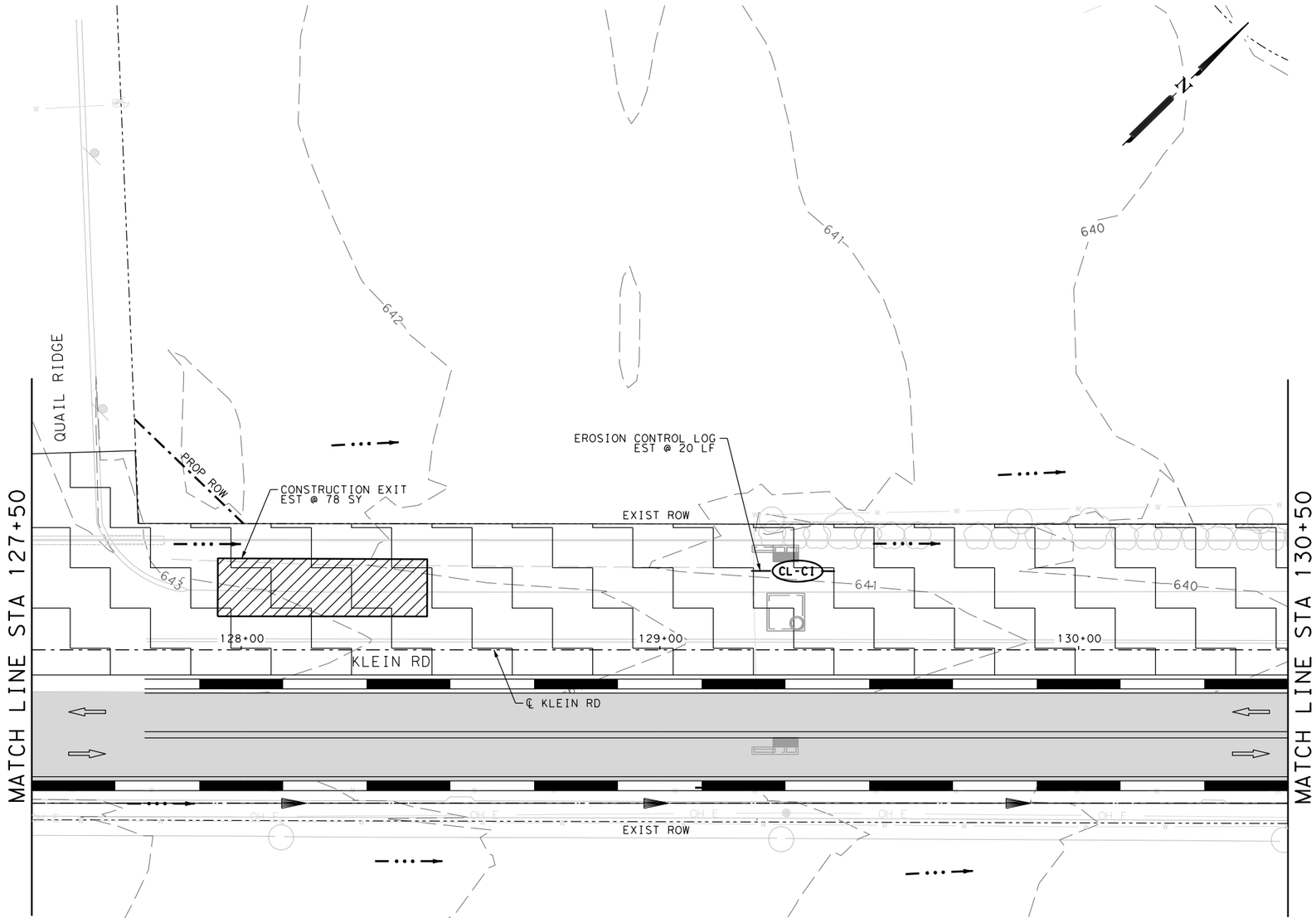
SHEET 9 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	321

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p209.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	78
0506-6024	CONSTRUCTION EXITS (REMOVE)	SY	78
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	20
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	20



LEGEND

- TRAFFIC FLOW ARROWS
- FLOW ARROW
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — TY 2 ROCK FILTER DAM
- SB — SAND BAG
- RFD3 — TY 3 ROCK FILTER DAM
- CONSTRUCTION EXIT
- CL-C1 — EROSION CONTROL LOG
- CONSTRUCTION PHASE
- WETLAND AREA

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 1

SHEET 10 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	322

NOTES:

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Plotted on: 1/16/2023

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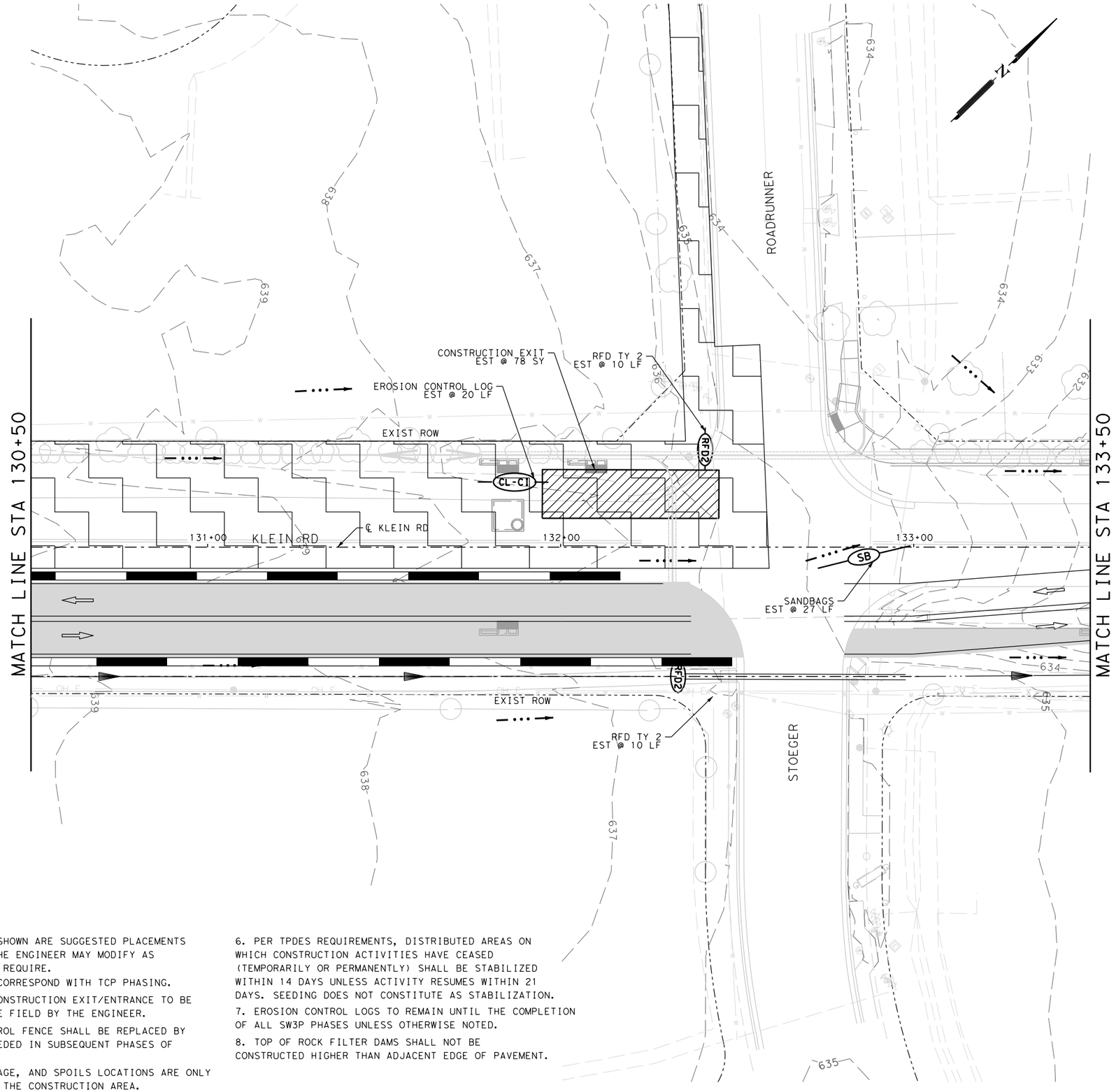
Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p211.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6002	ROCK FILTER DAMS (INSTALL) (TY 2)	LF	20
0506-6011	ROCK FILTER DAMS (REMOVE)	LF	20
0506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	78
0506-6024	CONSTRUCTION EXITS (REMOVE)	SY	78
0506-6037	SANDBAGS FOR EROSION CONTROL (12")	LF	27
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	20
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	20



LEGEND

- TRAFFIC FLOW ARROWS
- FLOW ARROW
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — TY 2 ROCK FILTER DAM
- SB — SAND BAG
- RFD3 — TY 3 ROCK FILTER DAM
- CONSTRUCTION EXIT
- CL-CI — EROSION CONTROL LOG
- CONSTRUCTION PHASE
- WETLAND AREA

DESIGN

STATE OF TEXAS
TYLER PAYNE DUBE
118612
LICENSED
PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS
JOHN A. TYLER
105193
LICENSED
PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

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REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 1

SHEET 11 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	323

Plotted on: 1/16/2023

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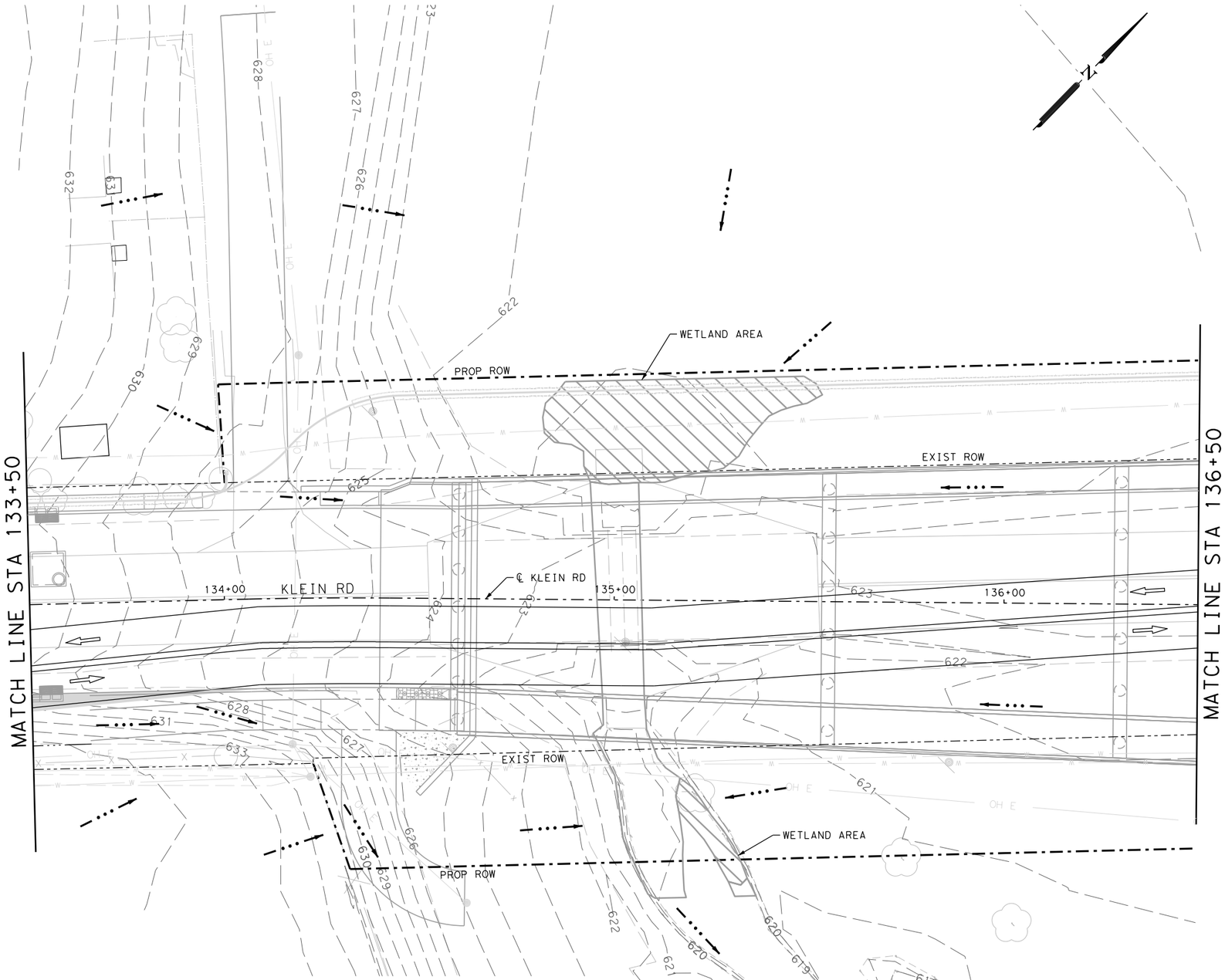

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LEGEND

- TRAFFIC FLOW ARROWS
- FLOW ARROW
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — TY 2 ROCK FILTER DAM
- SB — SAND BAG
- RFD3 — TY 3 ROCK FILTER DAM
- CONSTRUCTION EXIT
- CL-CI — EROSION CONTROL LOG
- CONSTRUCTION PHASE
- WETLAND AREA

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

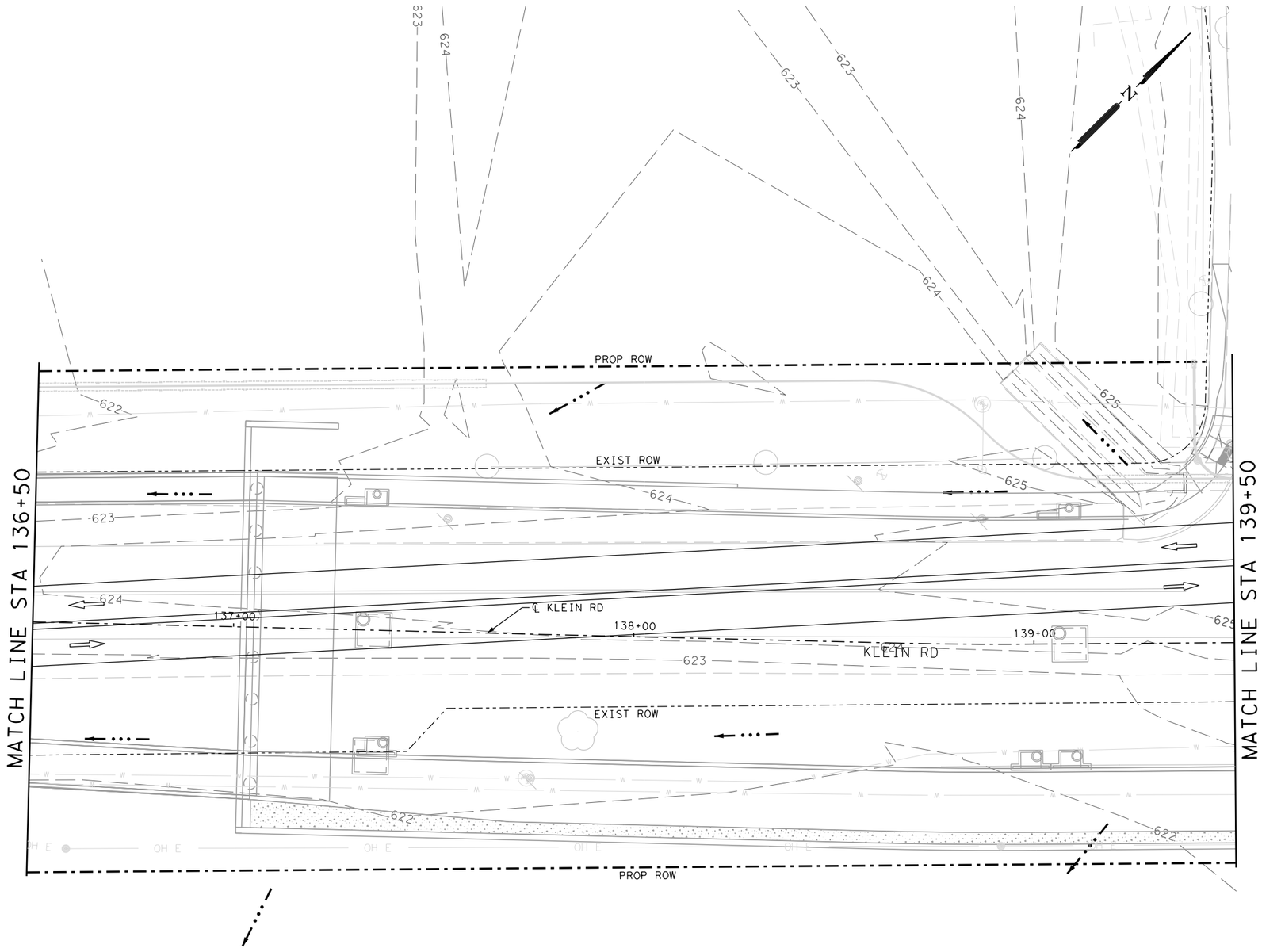
City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 1

SHEET 12 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	324



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LEGEND

- TRAFFIC FLOW ARROWS
- FLOW ARROW
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — TY 2 ROCK FILTER DAM
- SB — SAND BAG
- RFD3 — TY 3 ROCK FILTER DAM
- CONSTRUCTION EXIT
- CL-CI — EROSION CONTROL LOG
- CONSTRUCTION PHASE
- WETLAND AREA

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 1

SHEET 13 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	325

Plotted on: 1/16/2023

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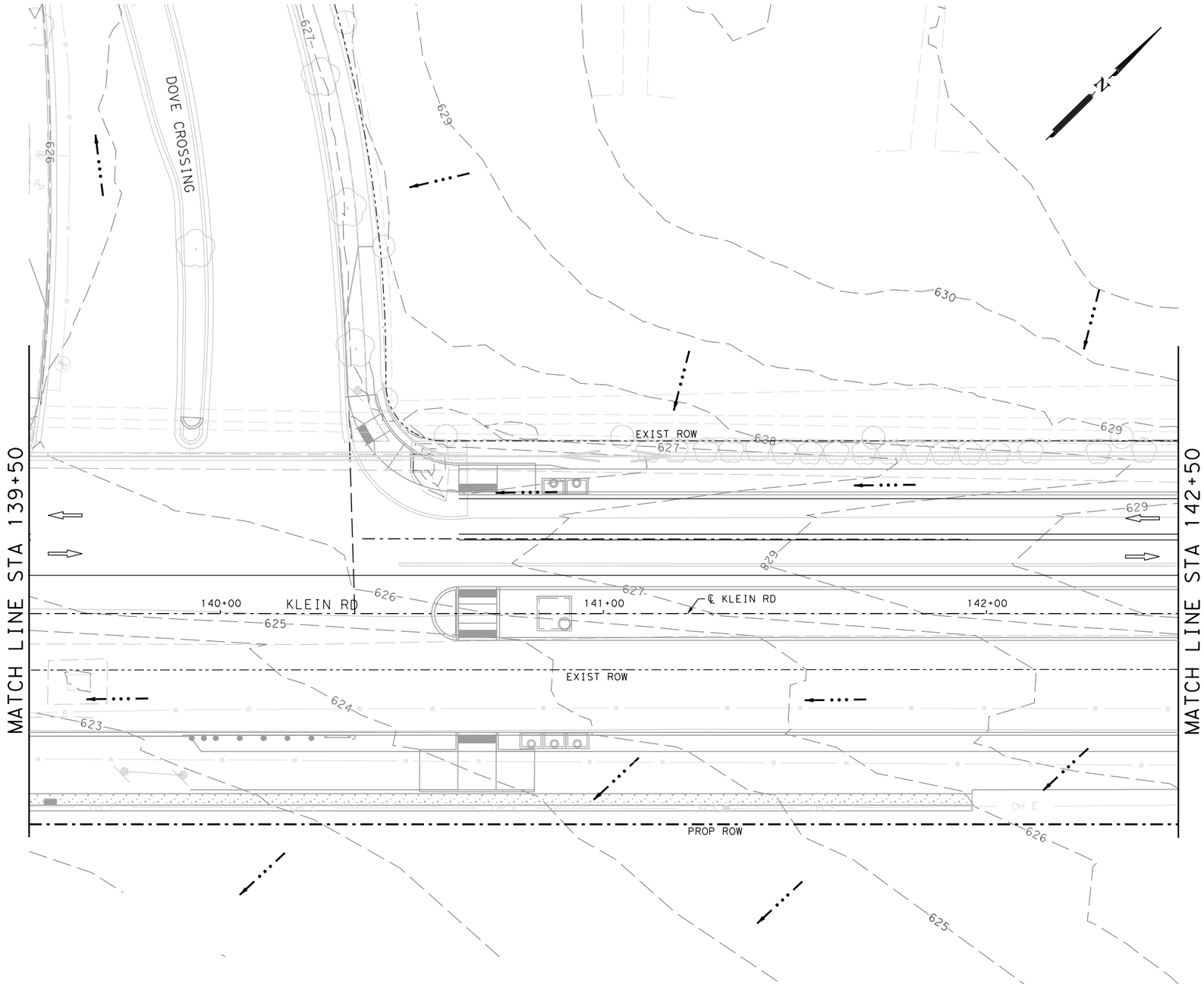

LEGEND

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STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 1

SHEET 14 OF 18

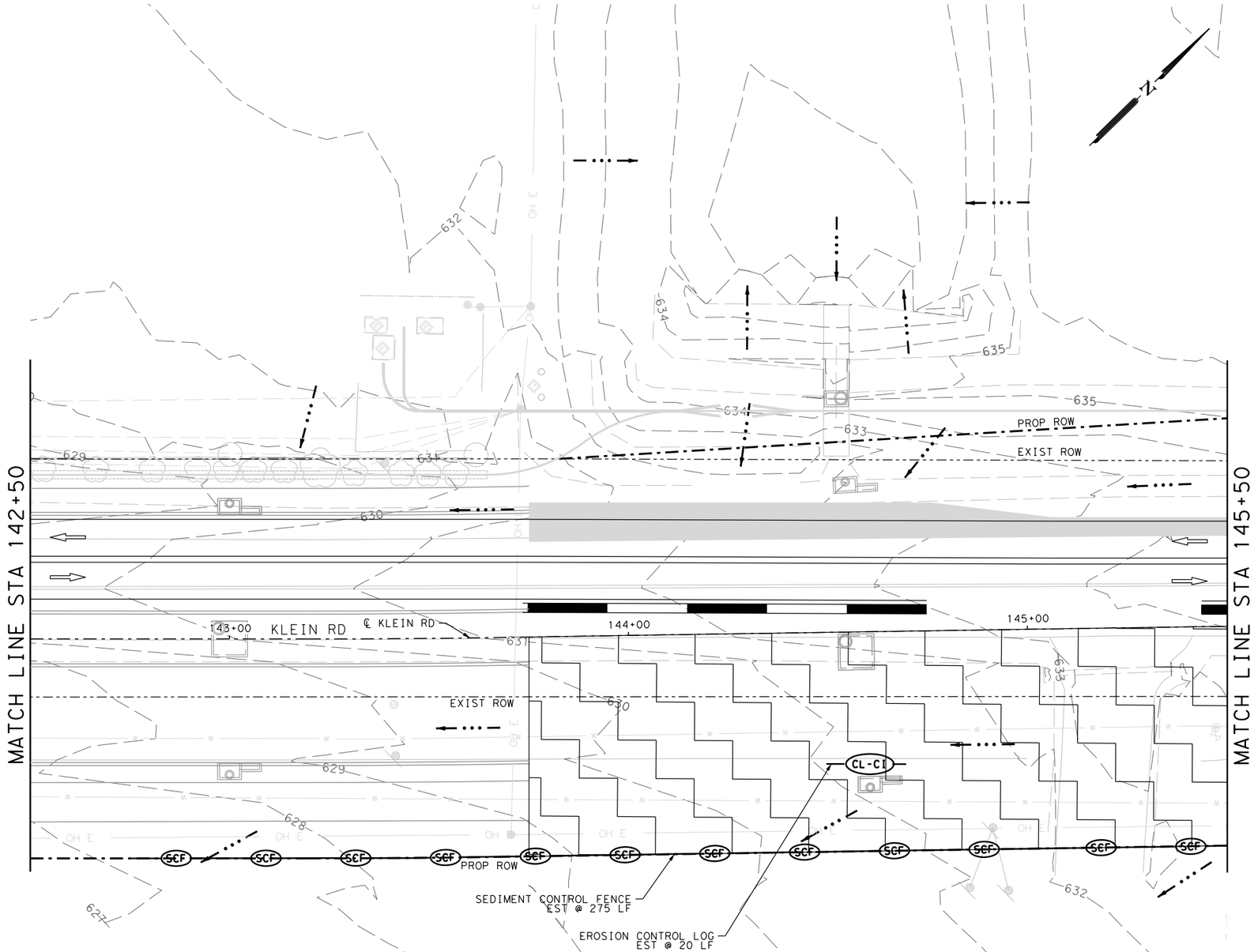
DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	326

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p214.dgn

Plotted on: 1/16/2023

ITEM	DESCRIPTION	UNIT	QTY
0506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	275
0506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	275
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	20
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	20



LEGEND

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STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

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PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 1

SHEET 15 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	327

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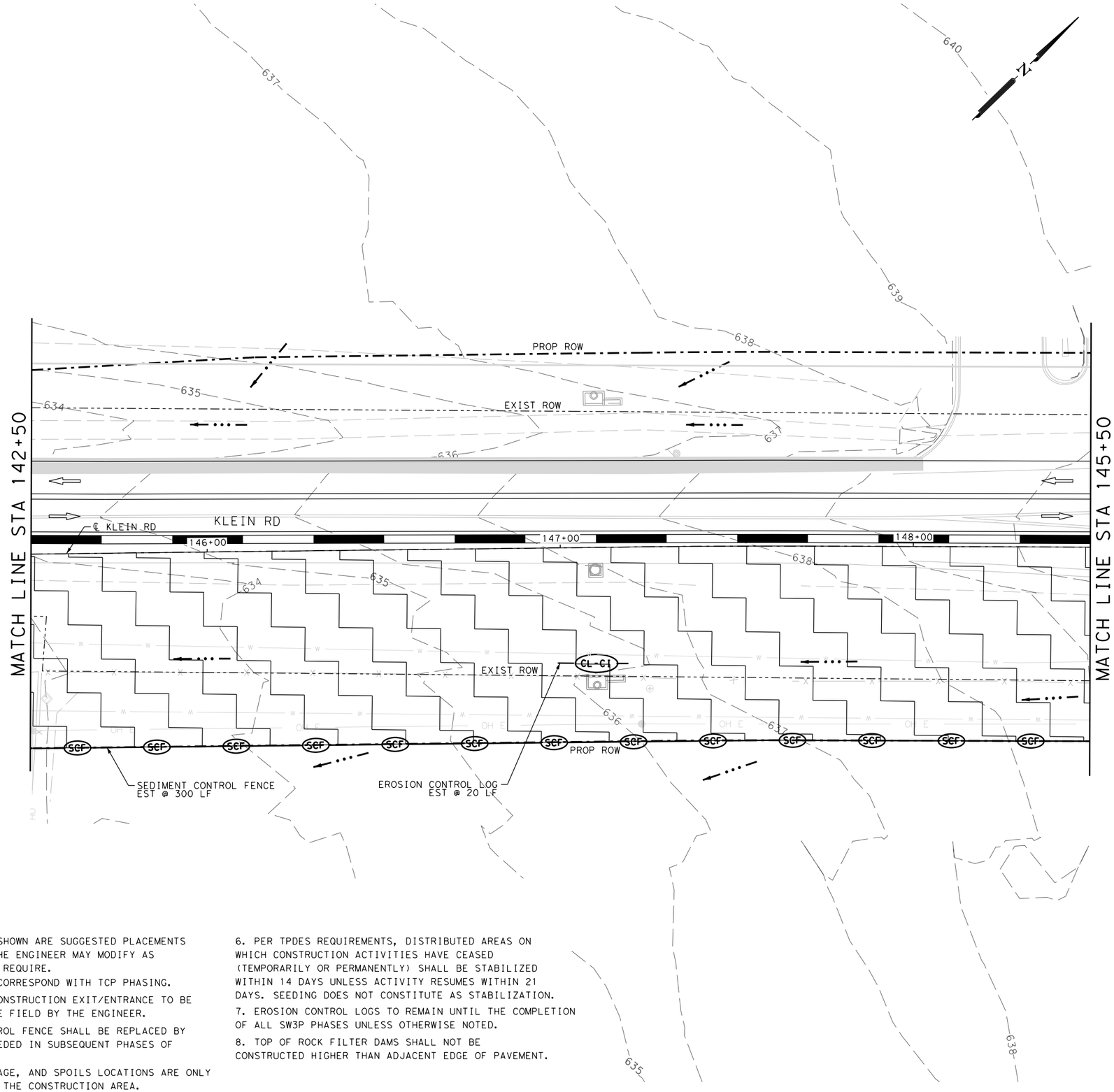
Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p216.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	300
0506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	300
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	20
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	20



N

LEGEND

- TRAFFIC FLOW ARROWS
- FLOW ARROW
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — TY 2 ROCK FILTER DAM
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- WETLAND AREA

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

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SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

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PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 1

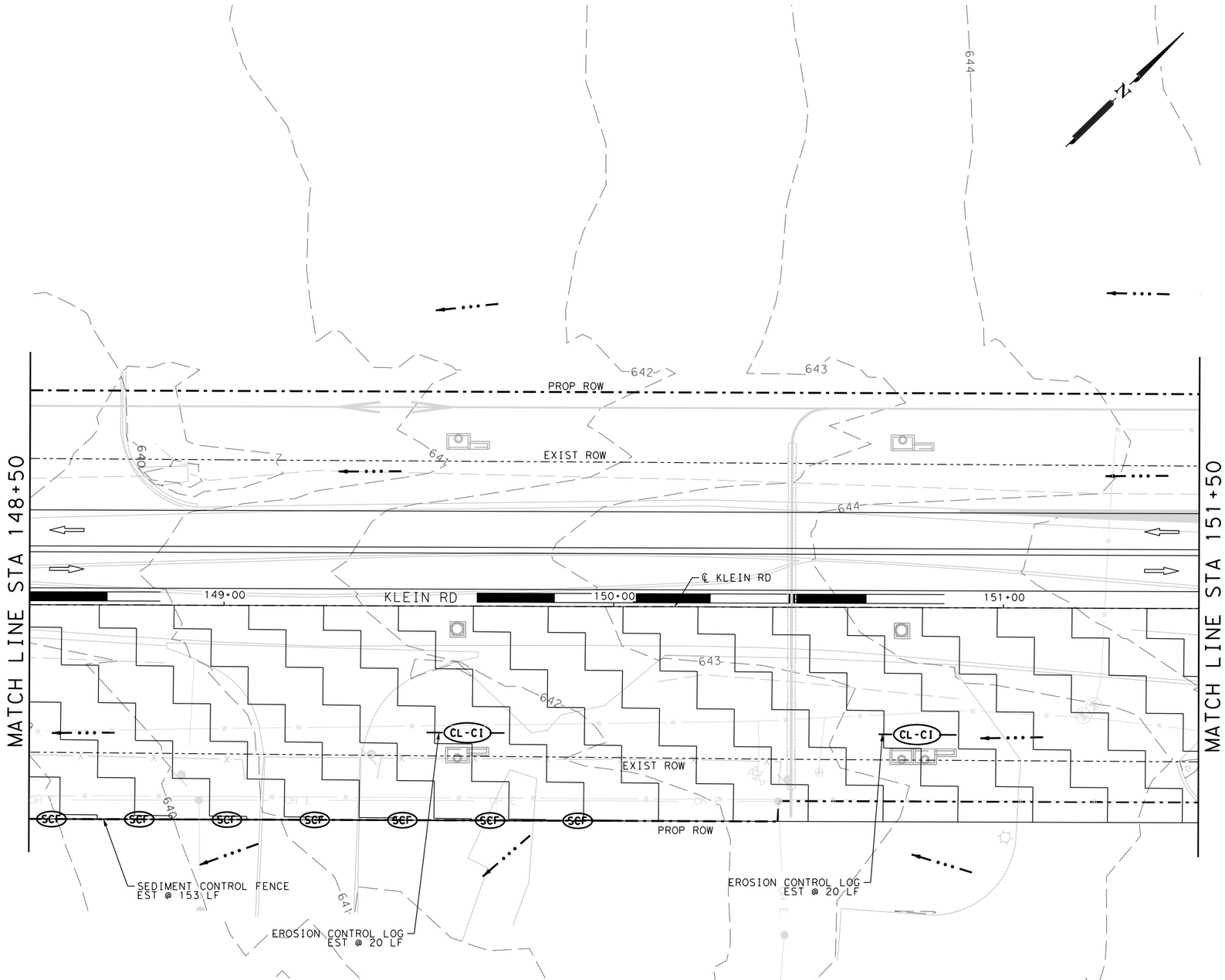
SHEET 16 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	328

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p217.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	153
0506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	153
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	40
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	40



LEGEND

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DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 1

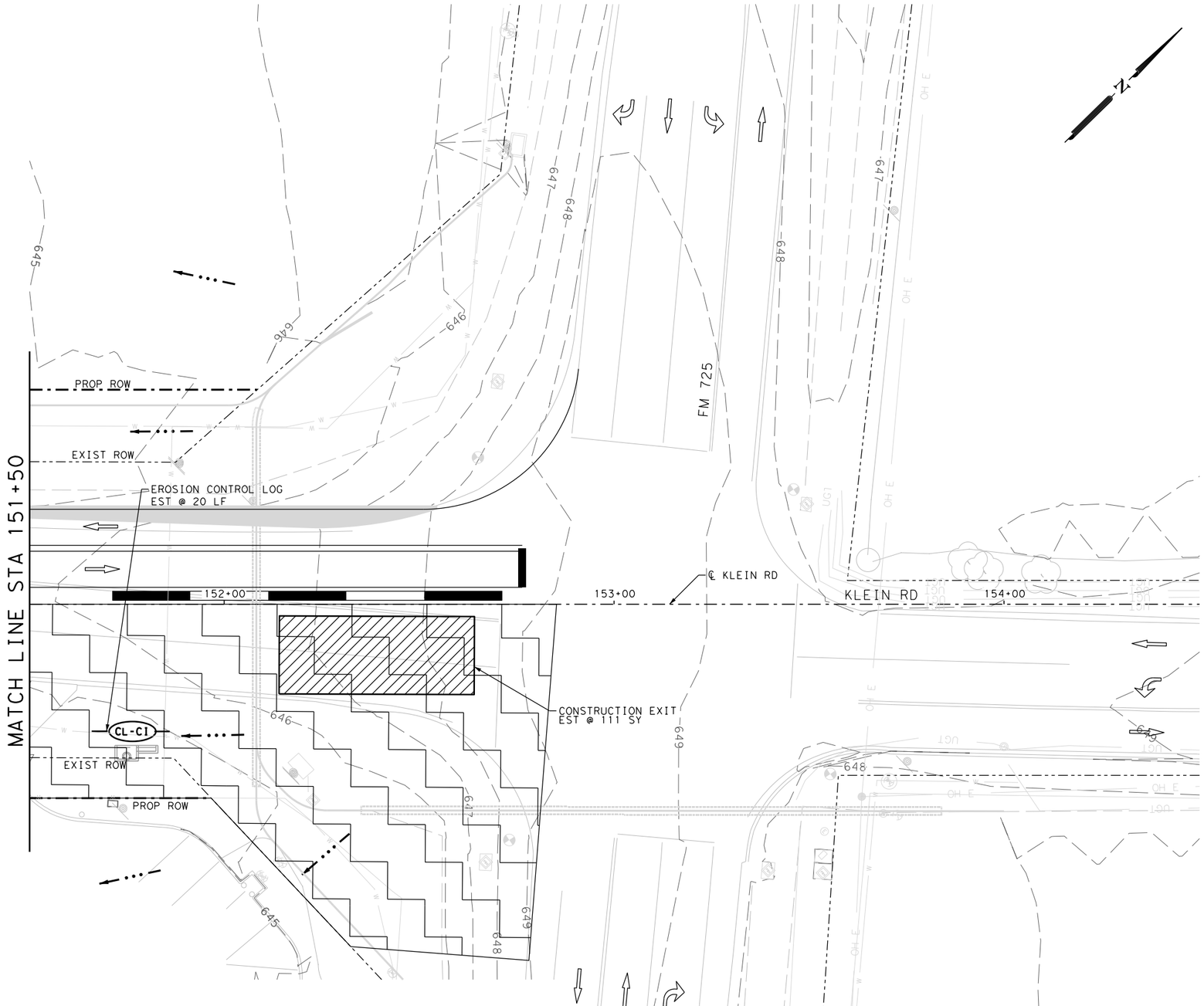
SHEET 17 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	329

Plotted on: 1/17/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p2218.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	111
0506-6024	CONSTRUCTION EXITS (REMOVE)	SY	111
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	20
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	20



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STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/17/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/17/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 1

SHEET 18 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	330

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p2a01.dgn

ITEM	DESCRIPTION	UNIT	QTY
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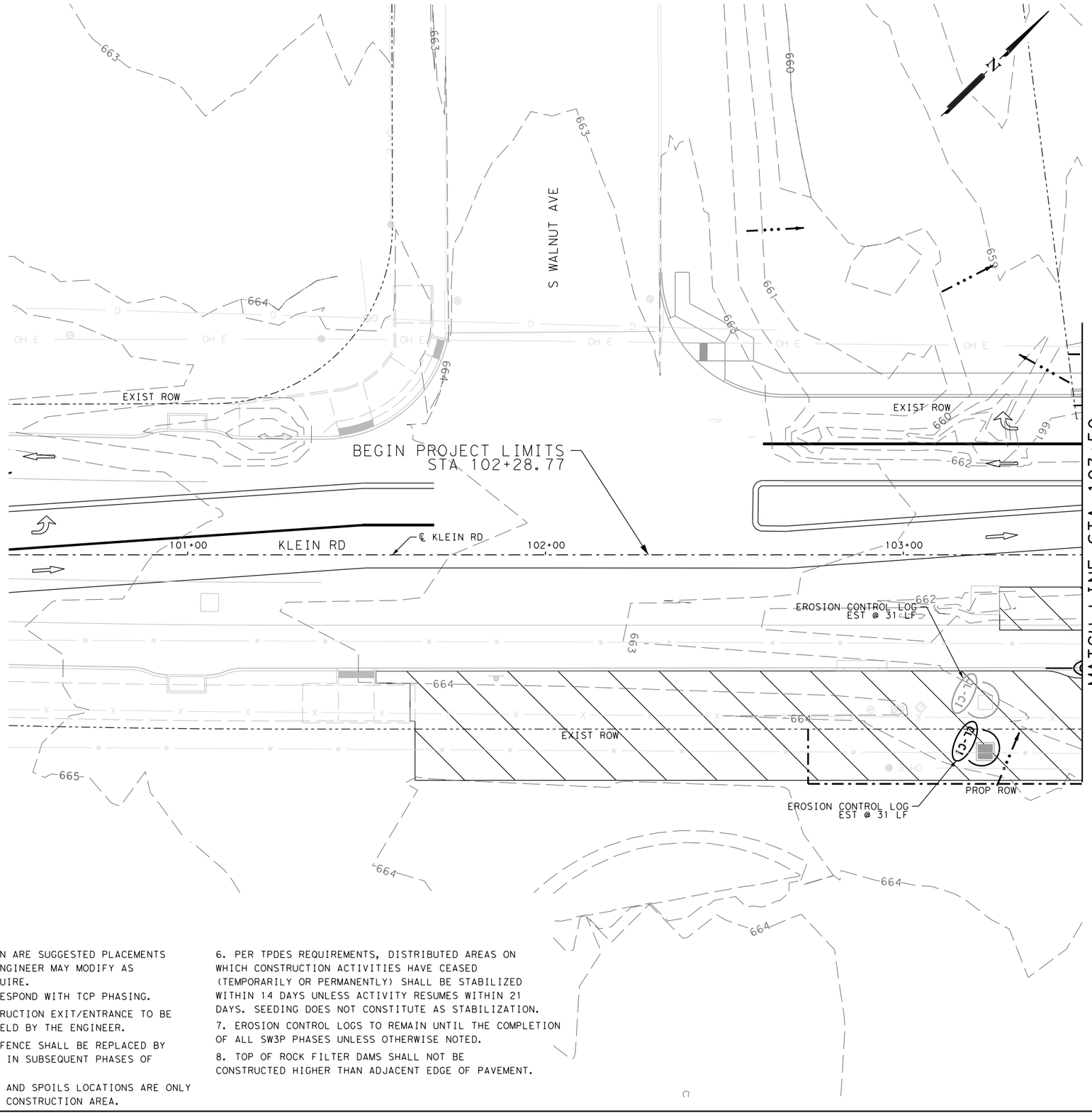
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	31



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STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 2

SHEET 1 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
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Plotted on: 1/16/2023

ITEM	DESCRIPTION	UNIT	QTY
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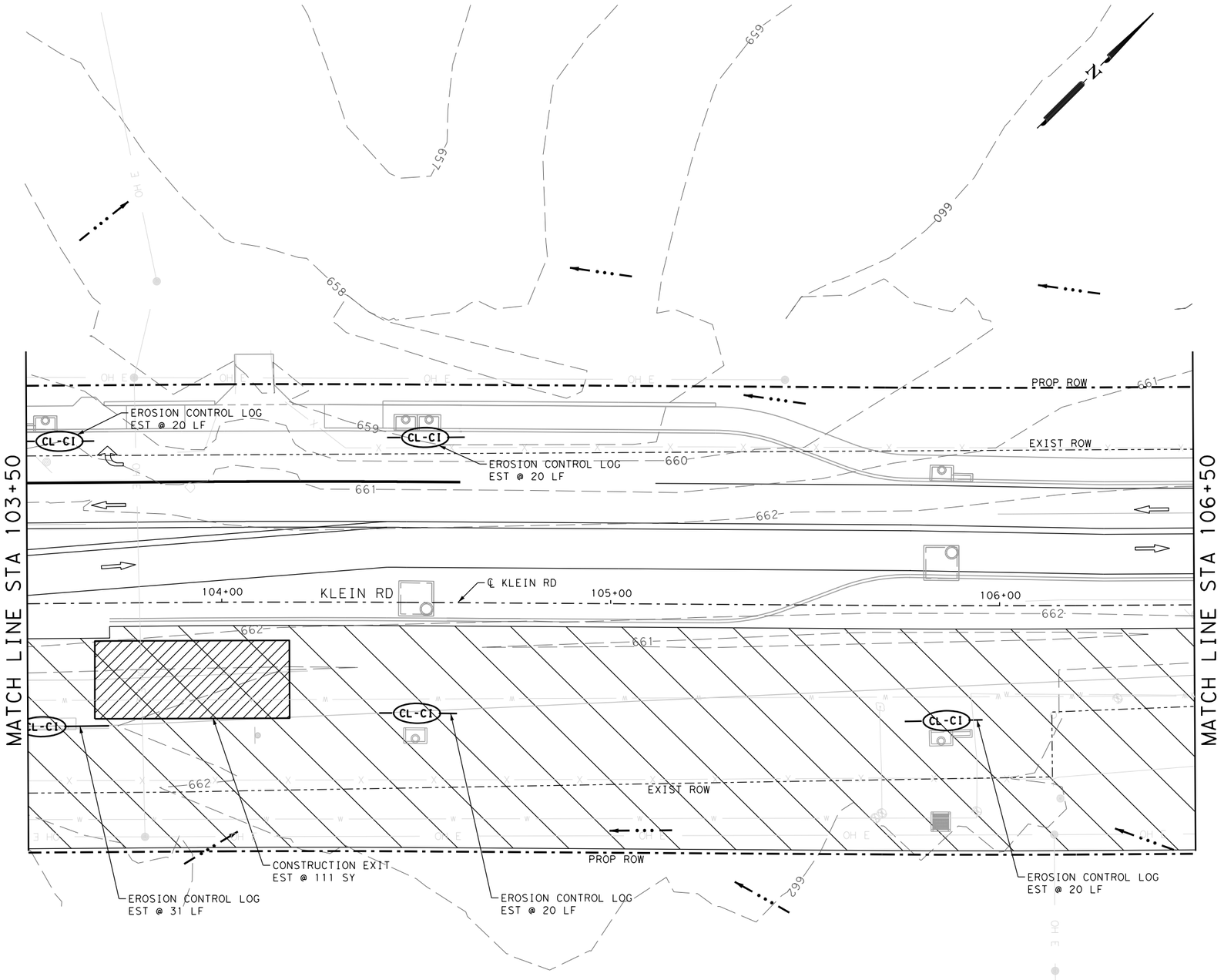
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	20



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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
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TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 2

SHEET 2 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	332

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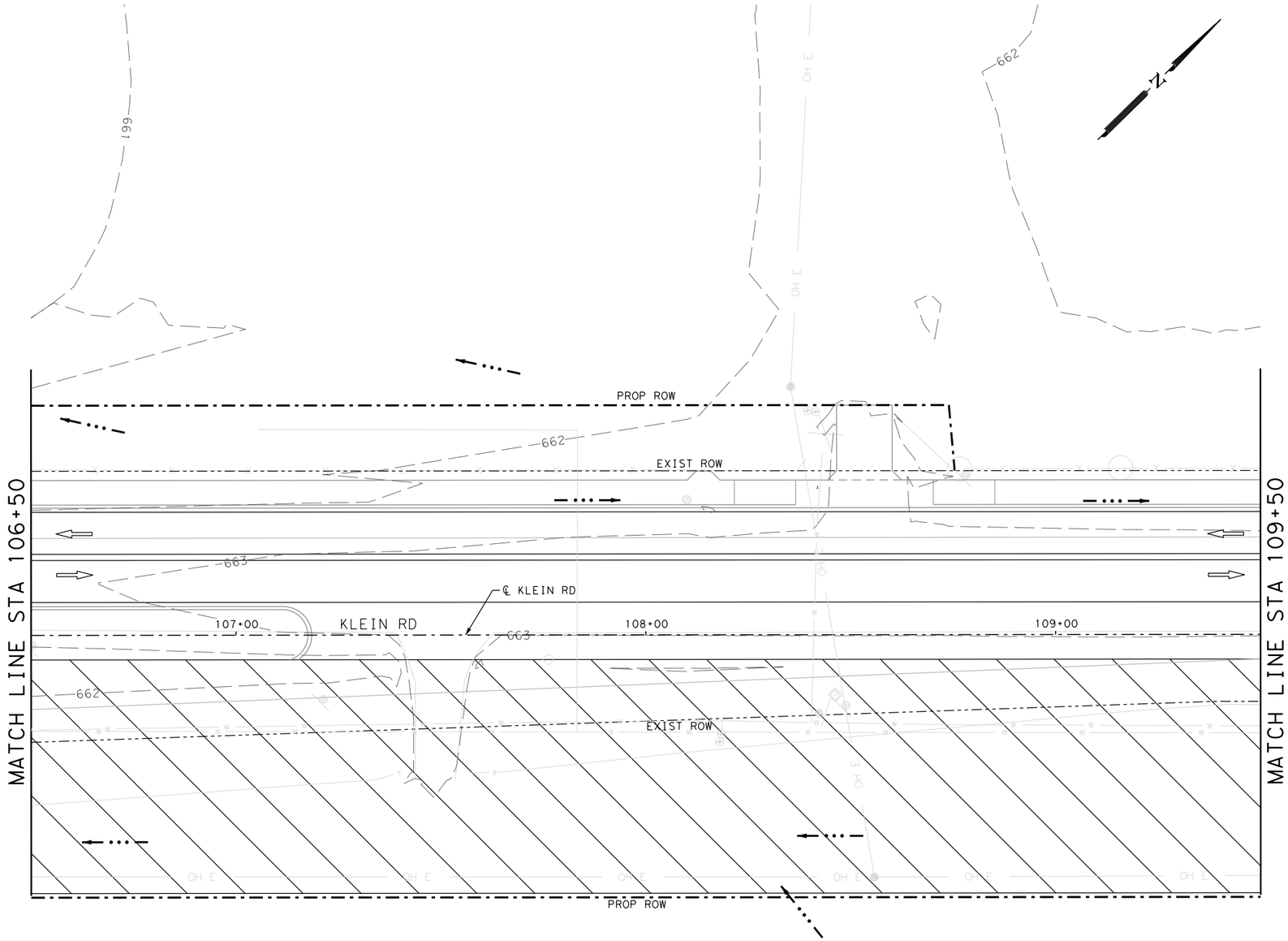
Plotted on: 1/16/2023



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- RFD3 — TY 3 ROCK FILTER DAM
- CONSTRUCTION EXIT
- CL-CI — EROSION CONTROL LOG
- CONSTRUCTION PHASE
- WETLAND AREA

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 2

SHEET 3 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	333

NOTES:

1. THE MEASURES SHOWN ARE SUGGESTED PLACEMENTS OF SW3P ITEMS. THE ENGINEER MAY MODIFY AS FIELD CONDITIONS REQUIRE.
2. SW3P LAYOUTS CORRESPOND WITH TCP PHASING.
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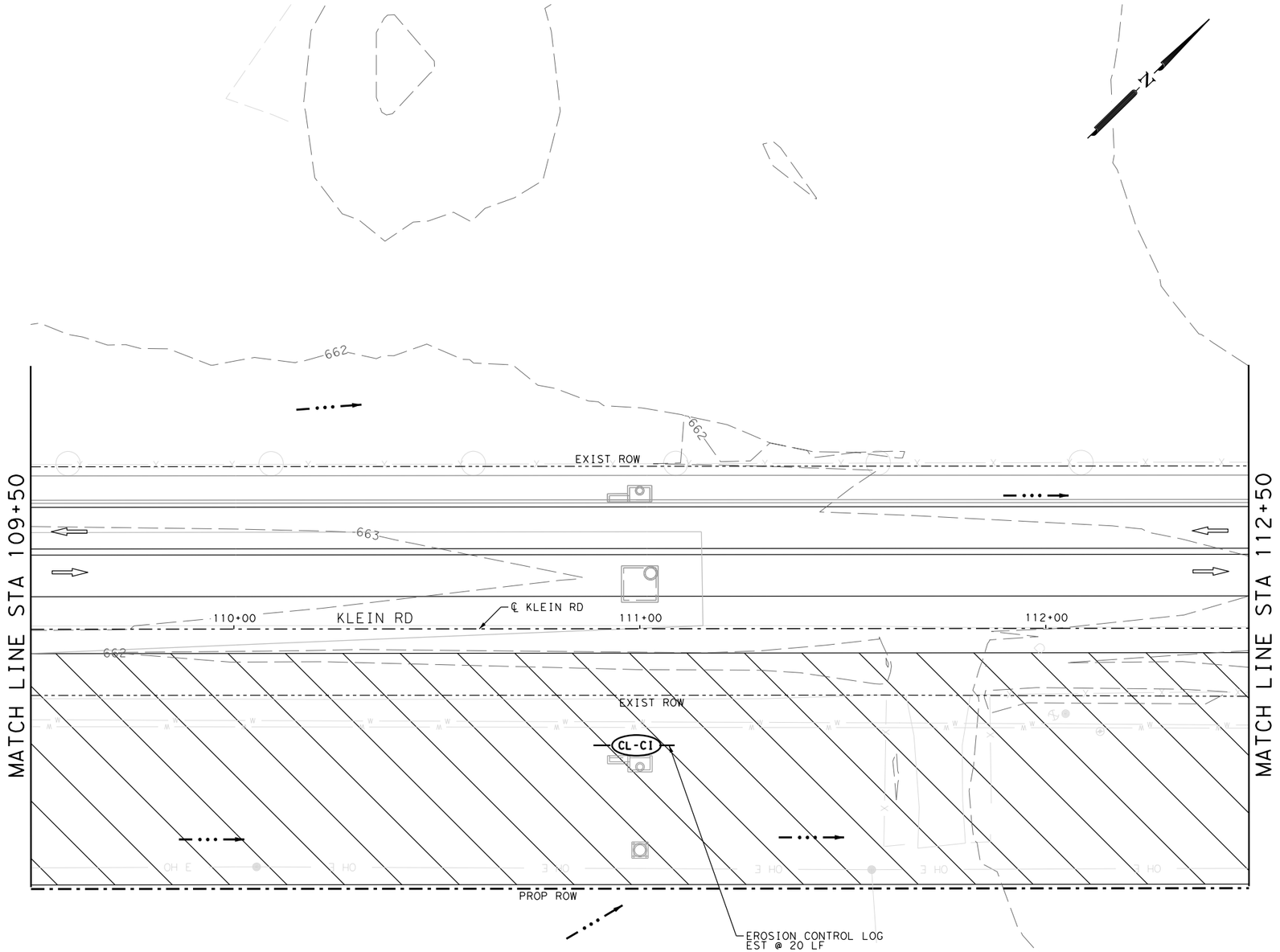
7. EROSION CONTROL LOGS TO REMAIN UNTIL THE COMPLETION OF ALL SW3P PHASES UNLESS OTHERWISE NOTED.
8. TOP OF ROCK FILTER DAMS SHALL NOT BE CONSTRUCTED HIGHER THAN ADJACENT EDGE OF PAVEMENT.

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p2a03.dgn

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p2a04.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	20
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	20



LEGEND

- TRAFFIC FLOW ARROWS
- FLOW ARROW
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — TY 2 ROCK FILTER DAM
- RFD3 — TY 3 ROCK FILTER DAM
- CONSTRUCTION EXIT
- CL-CI — EROSION CONTROL LOG
- CONSTRUCTION PHASE
- WETLAND AREA

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

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REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 2

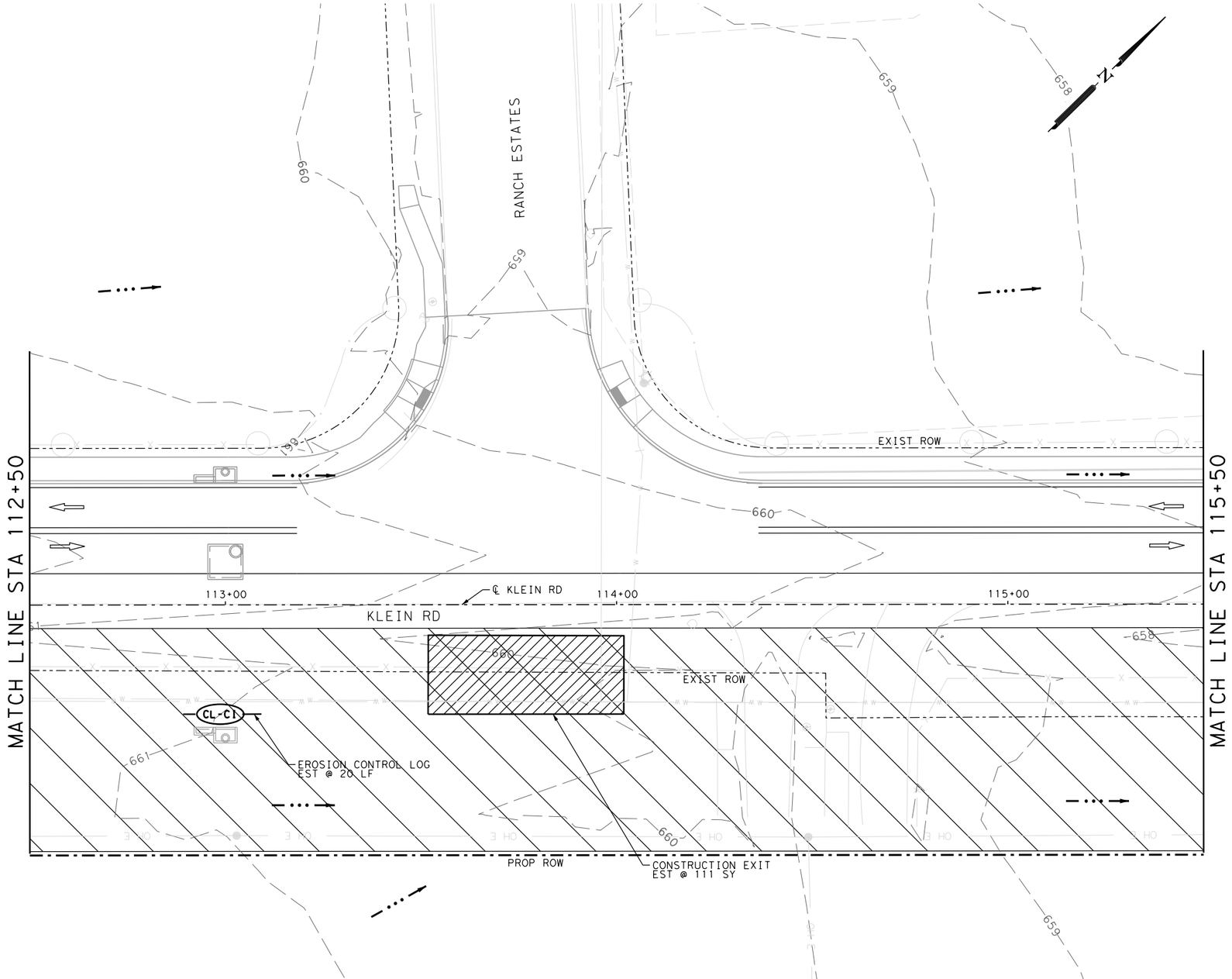
SHEET 4 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	334

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p2a05.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	111
0506-6024	CONSTRUCTION EXITS (REMOVE)	SY	111
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	20
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	20



LEGEND

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- FLOW ARROW
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- CONSTRUCTION PHASE
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DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 2

SHEET 5 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	335

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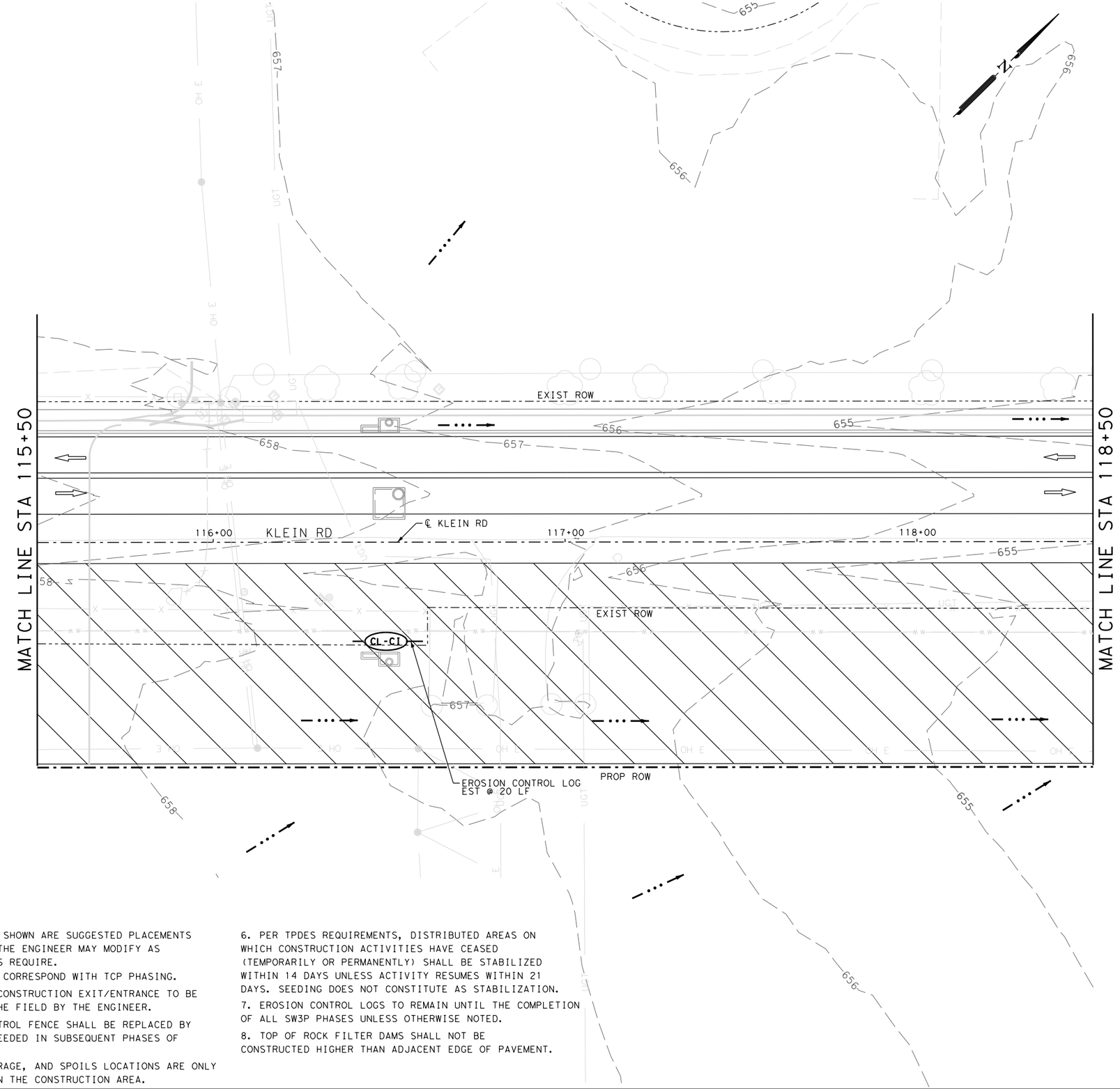
ITEM	DESCRIPTION	UNIT	QTY
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	20
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	20



LEGEND

- TRAFFIC FLOW ARROWS
- FLOW ARROW
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- RFD2 — TY 2 ROCK FILTER DAM
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- CONSTRUCTION PHASE
- WETLAND AREA

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 2

SHEET 6 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	336

NOTES:

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Plotted on: 1/16/2023

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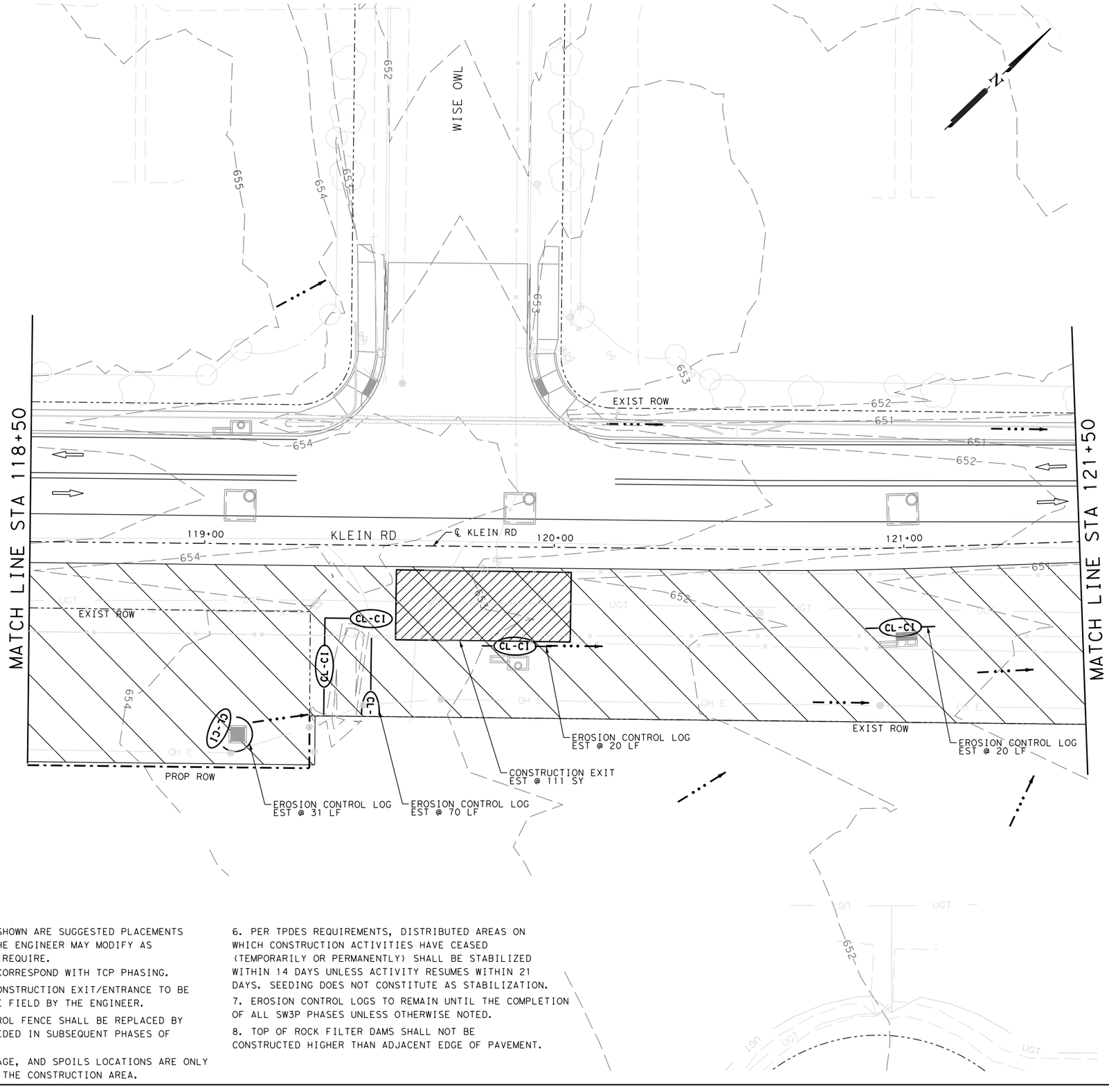
Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p2A07.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	111
0506-6024	CONSTRUCTION EXITS (REMOVE)	SY	111
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	141
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	141



LEGEND

- TRAFFIC FLOW ARROWS
- FLOW ARROW
- SCF — SEDIMENT CONTROL FENCE
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- WETLAND AREA

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DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 2

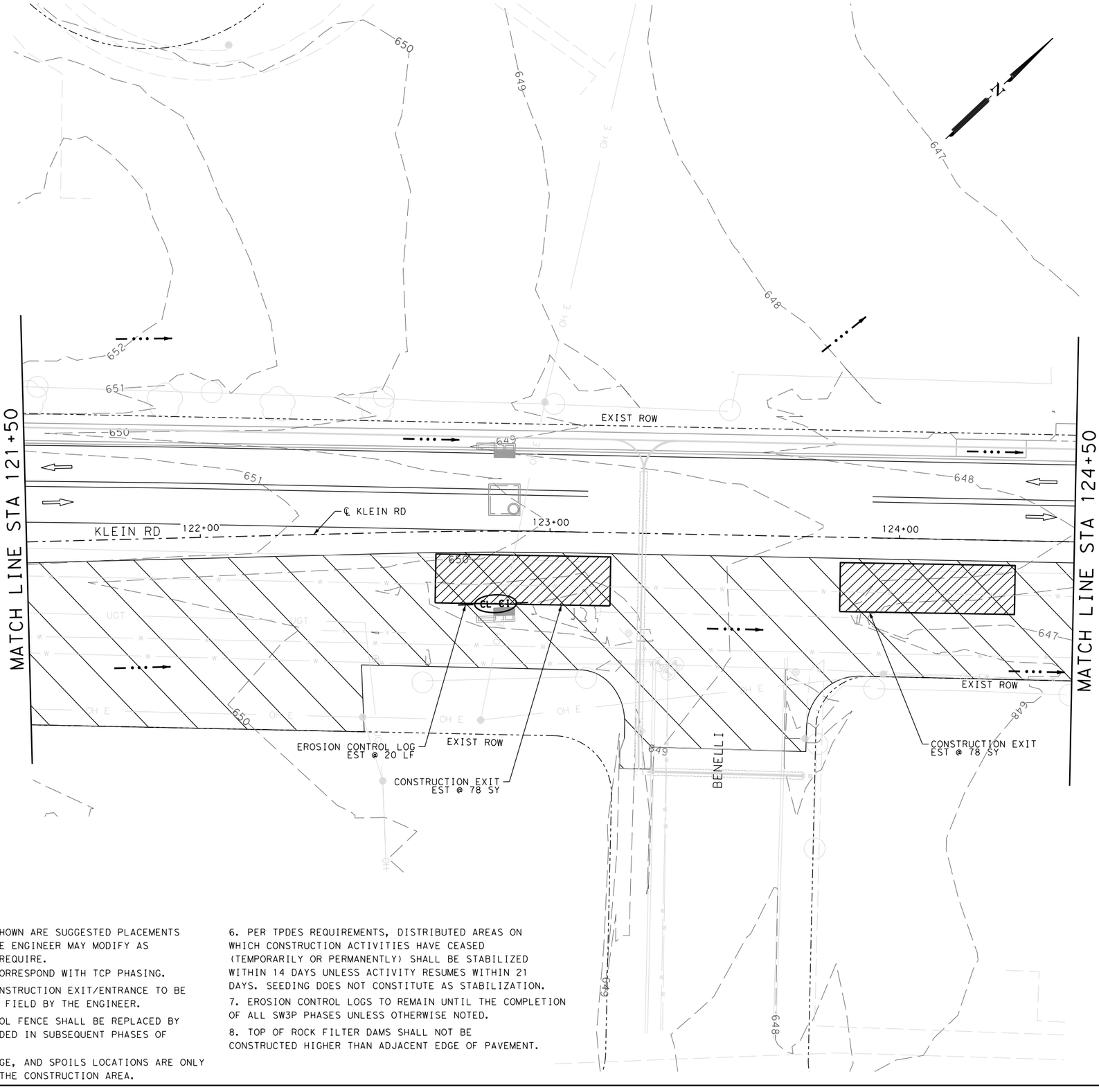
SHEET 7 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	337

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p2a08.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	156
0506-6024	CONSTRUCTION EXITS (REMOVE)	SY	156
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	20
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	20



LEGEND

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- WETLAND AREA

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

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REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 2

SHEET 8 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	338

NOTES:

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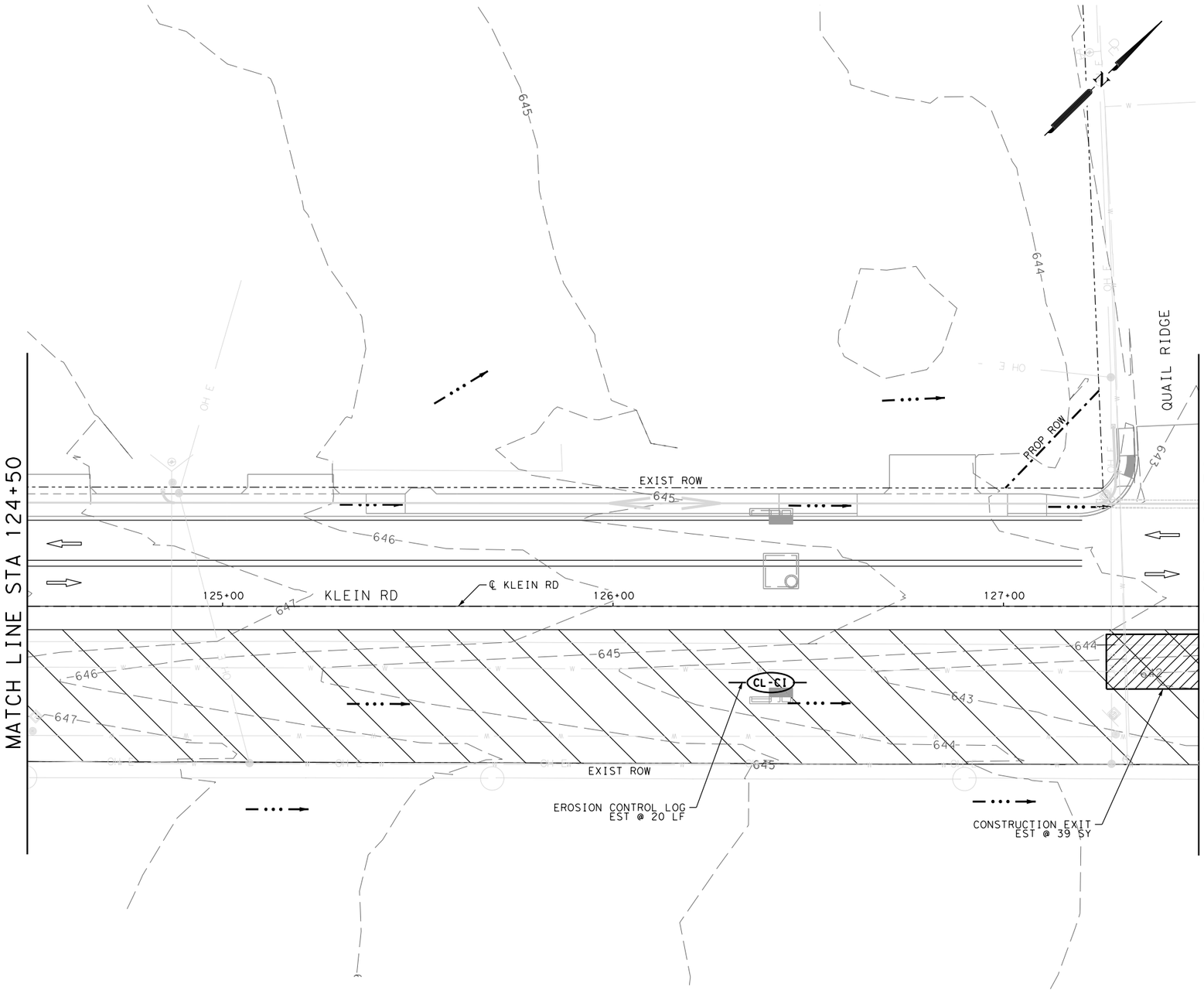
Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p2A09.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	39
0506-6024	CONSTRUCTION EXITS (REMOVE)	SY	39
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	20
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	20



LEGEND

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STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 2

SHEET 9 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	339

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p2a10.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	39
0506-6024	CONSTRUCTION EXITS (REMOVE)	SY	39
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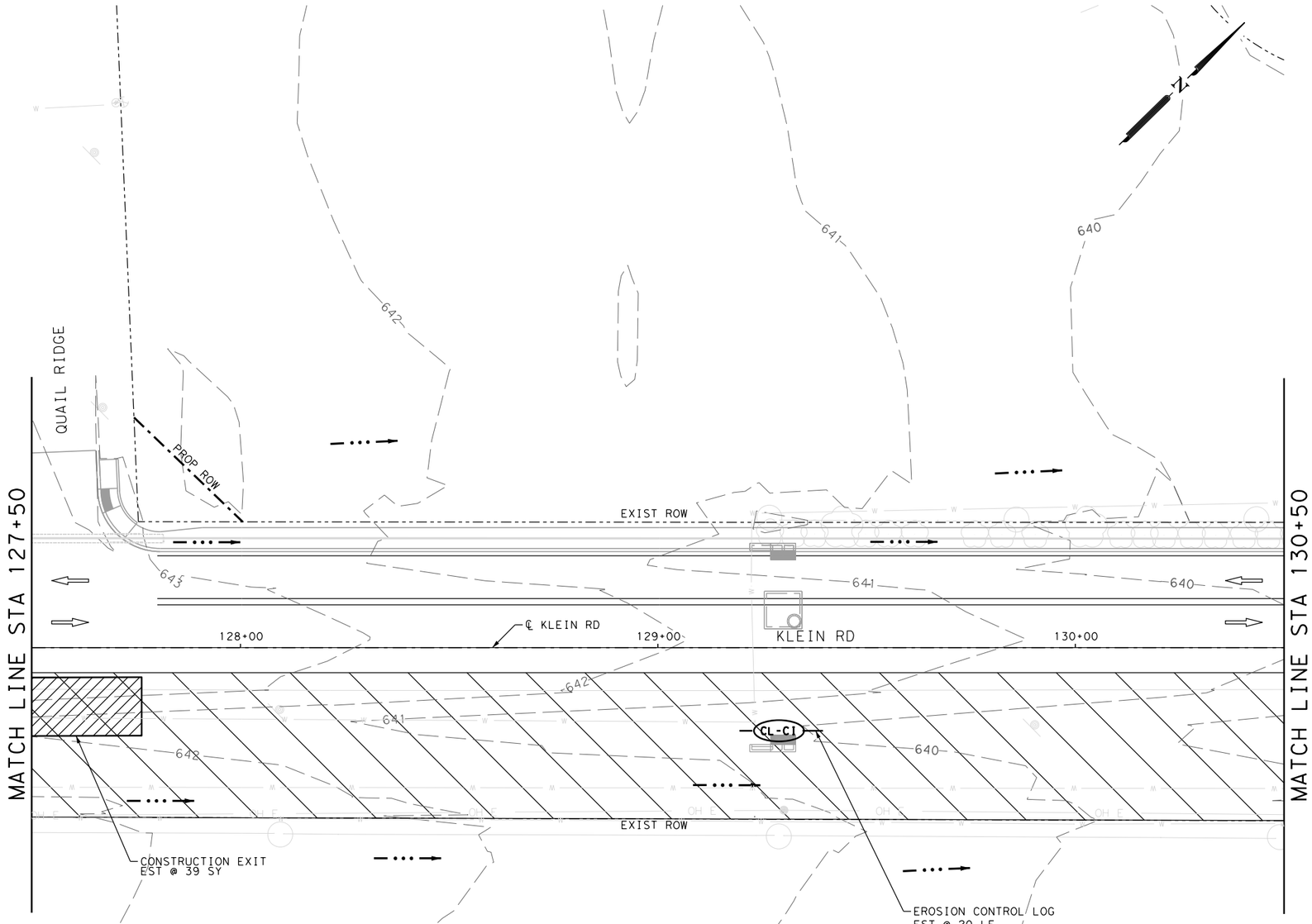

LEGEND

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DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 2

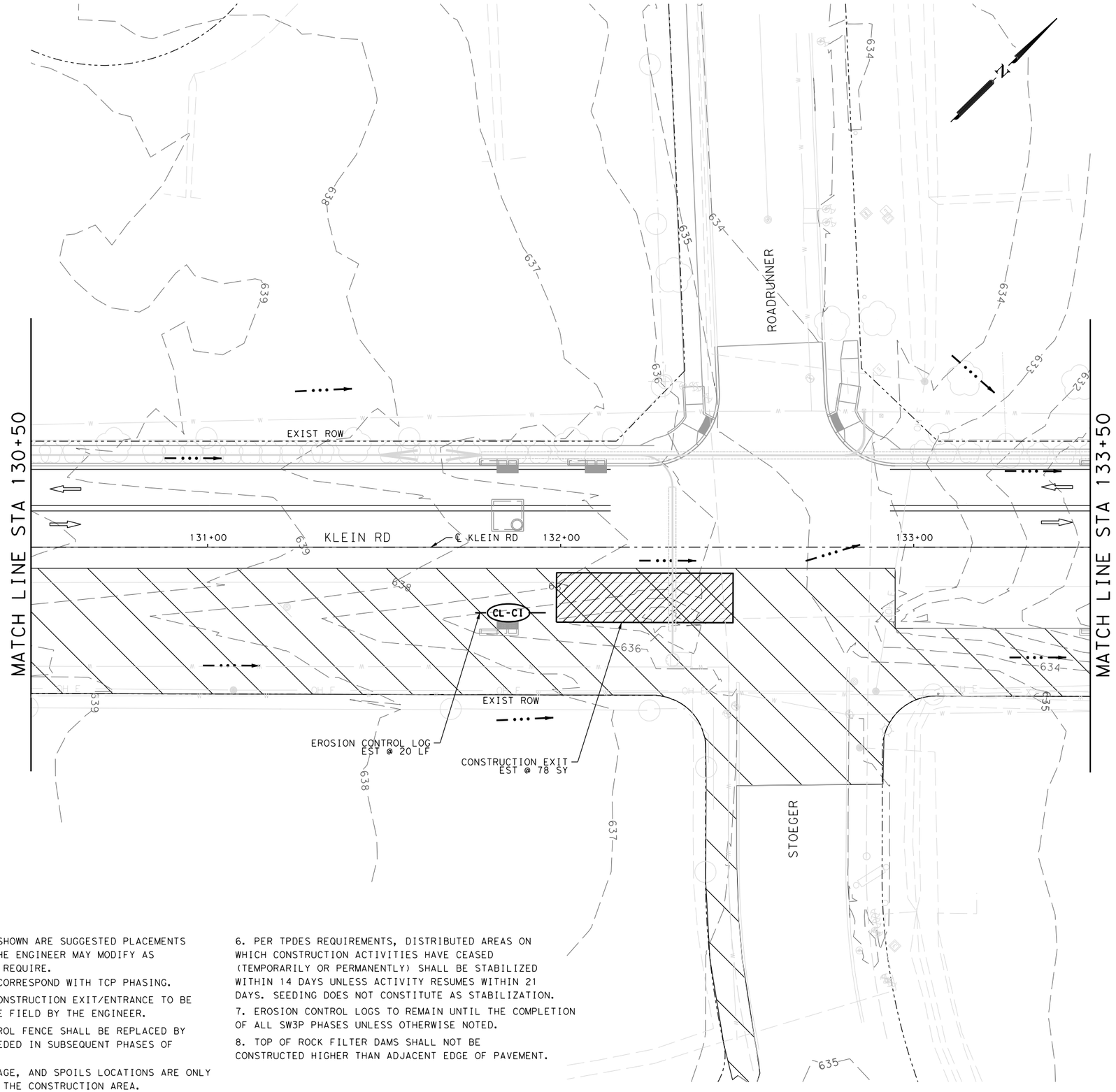
SHEET 10 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	340

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p2a11.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	78
0506-6024	CONSTRUCTION EXITS (REMOVE)	SY	78
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	20
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	20



LEGEND

- TRAFFIC FLOW ARROWS
- FLOW ARROW
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — TY 2 ROCK FILTER DAM
- RFD3 — TY 3 ROCK FILTER DAM
- CONSTRUCTION EXIT
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- CONSTRUCTION PHASE
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NOTES:

1. THE MEASURES SHOWN ARE SUGGESTED PLACEMENTS OF SW3P ITEMS. THE ENGINEER MAY MODIFY AS FIELD CONDITIONS REQUIRE.
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DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 2

SHEET 11 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	341

Plotted on: 1/16/2023

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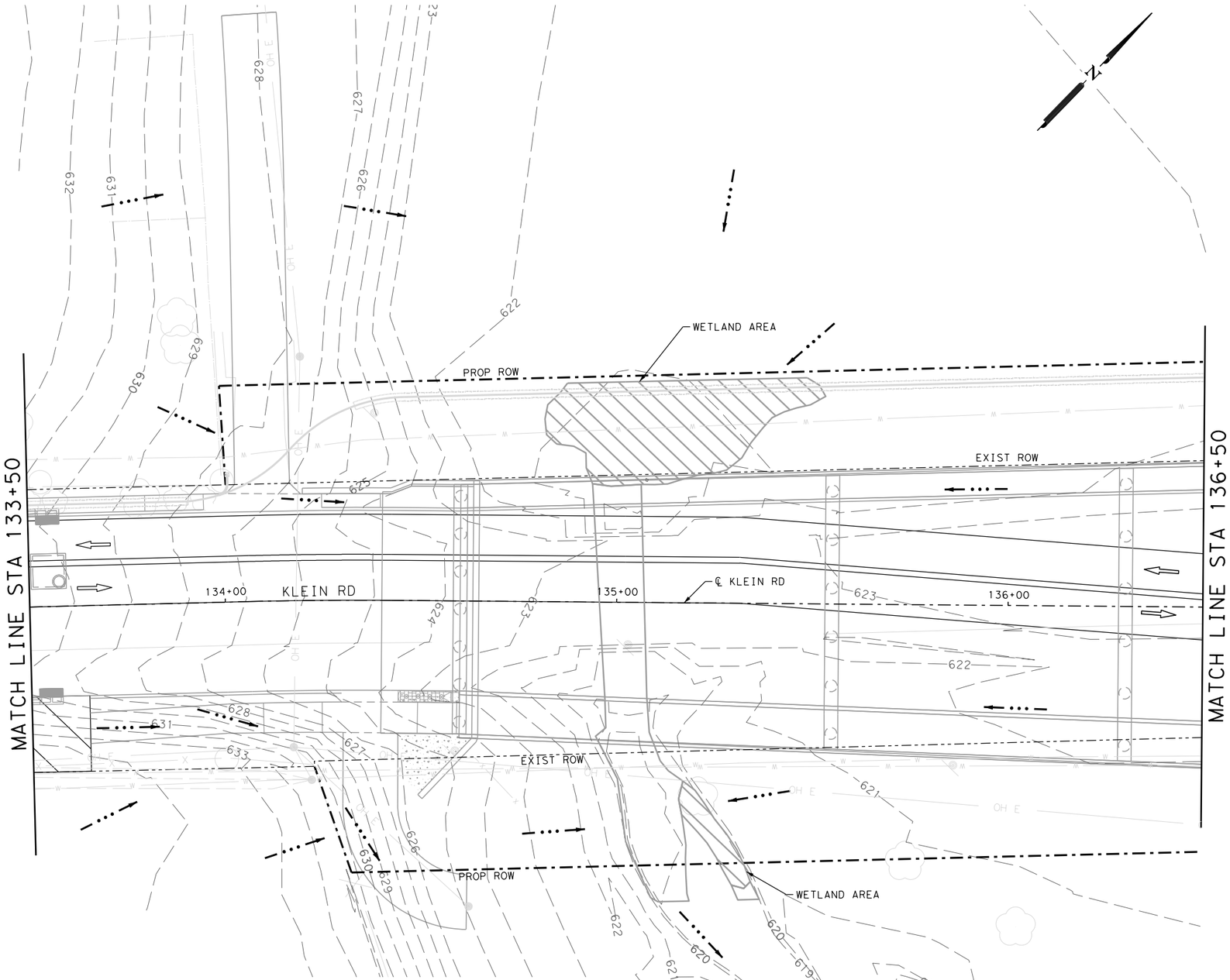

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DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

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REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

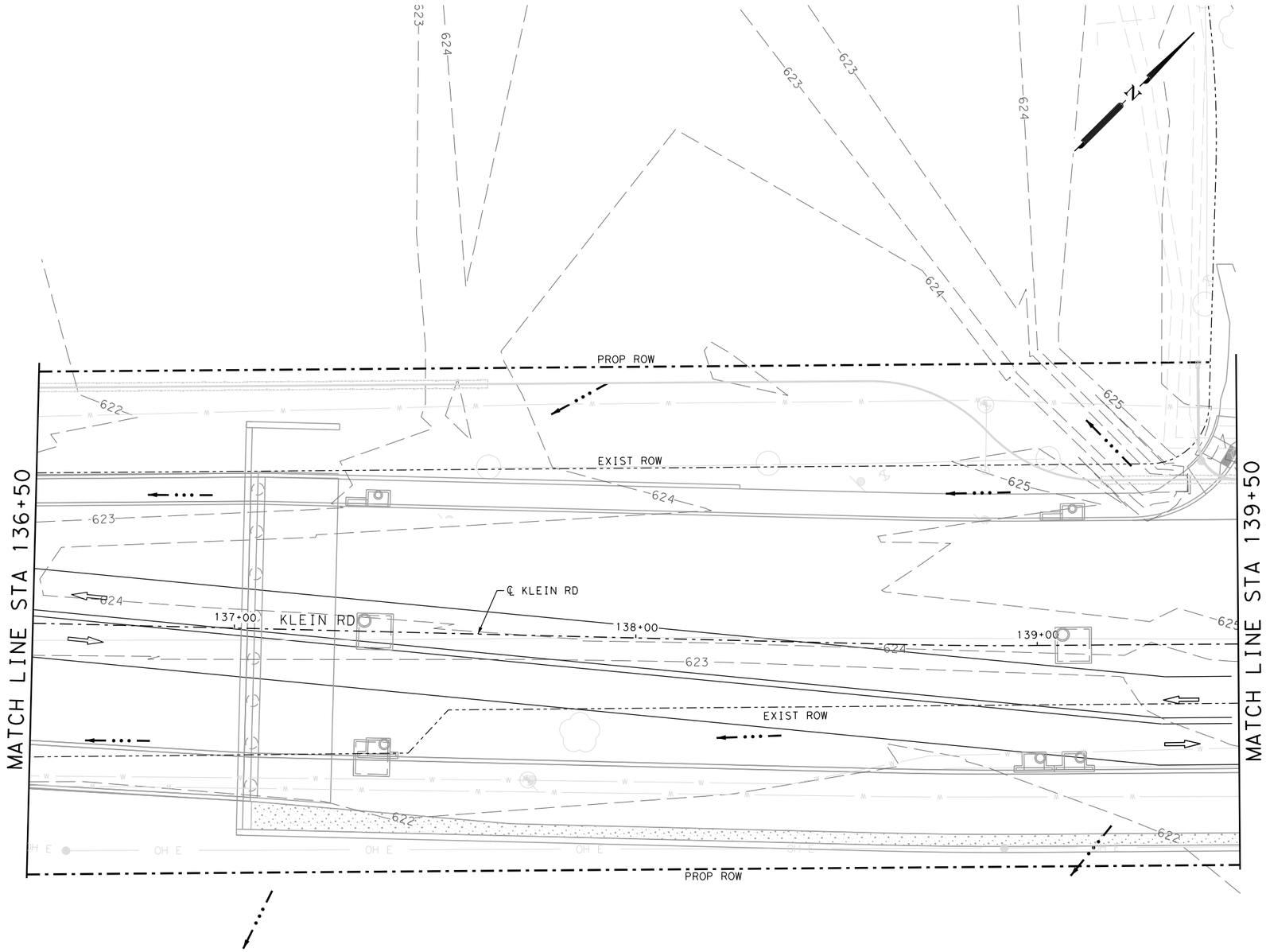
SW3P LAYOUT PHASE 2 STEP 2

SHEET 12 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	342

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p2a13.dgn



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DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 2

SHEET 13 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	343

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Plotted on: 1/16/2023

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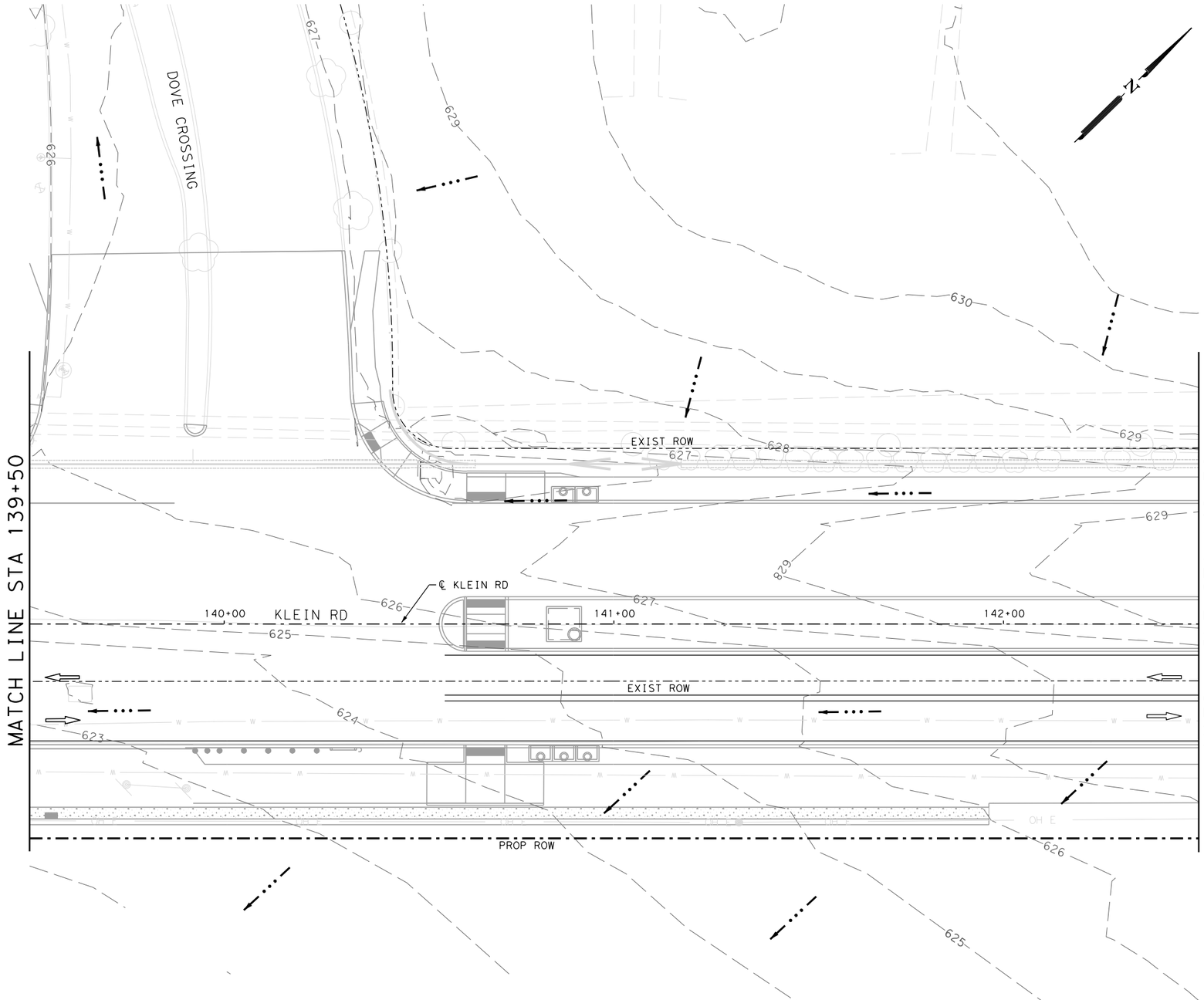

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DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 2

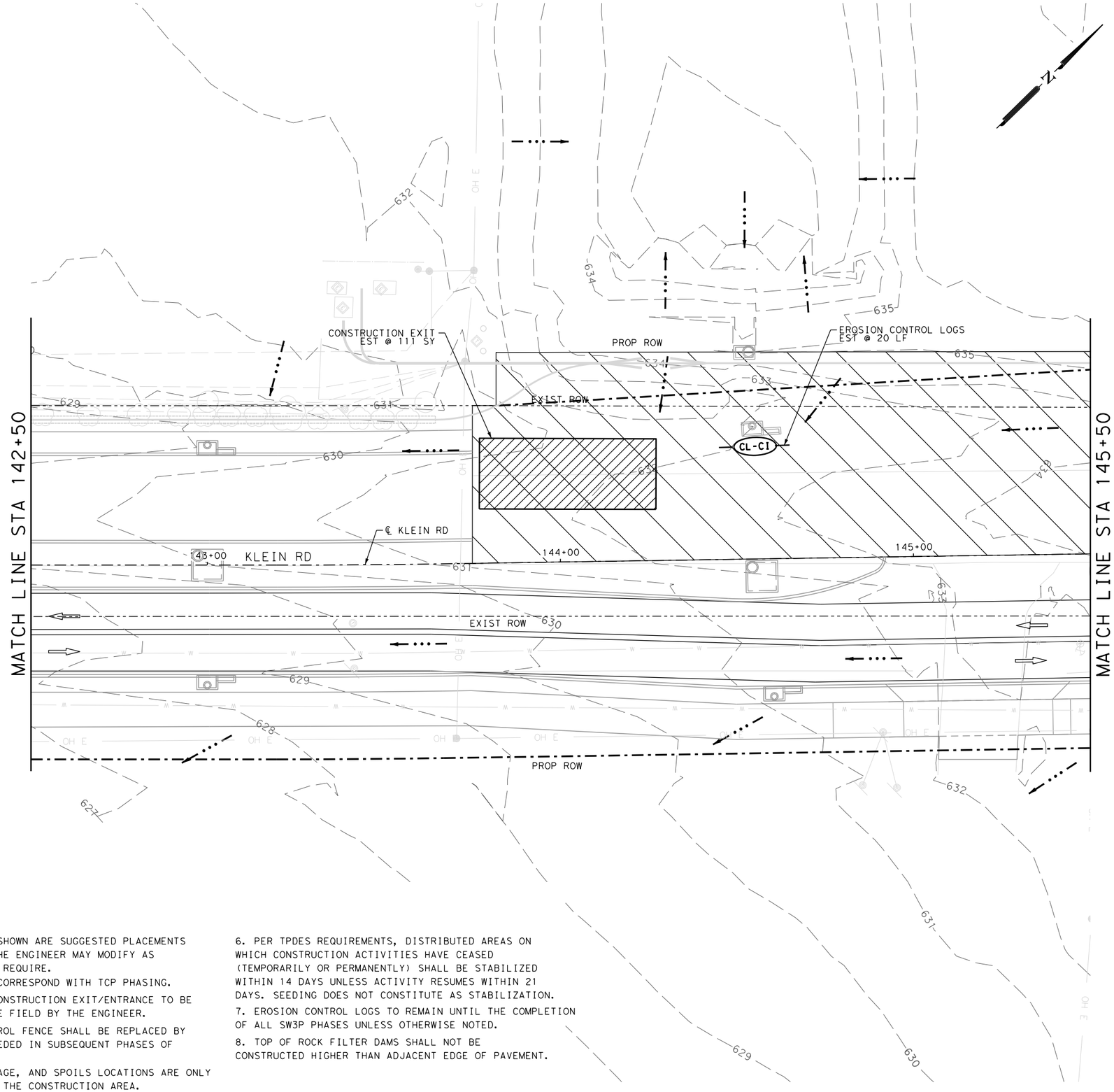
SHEET 14 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	344

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p2a15.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	111
0506-6024	CONSTRUCTION EXITS (REMOVE)	SY	111
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	20
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	20



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DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

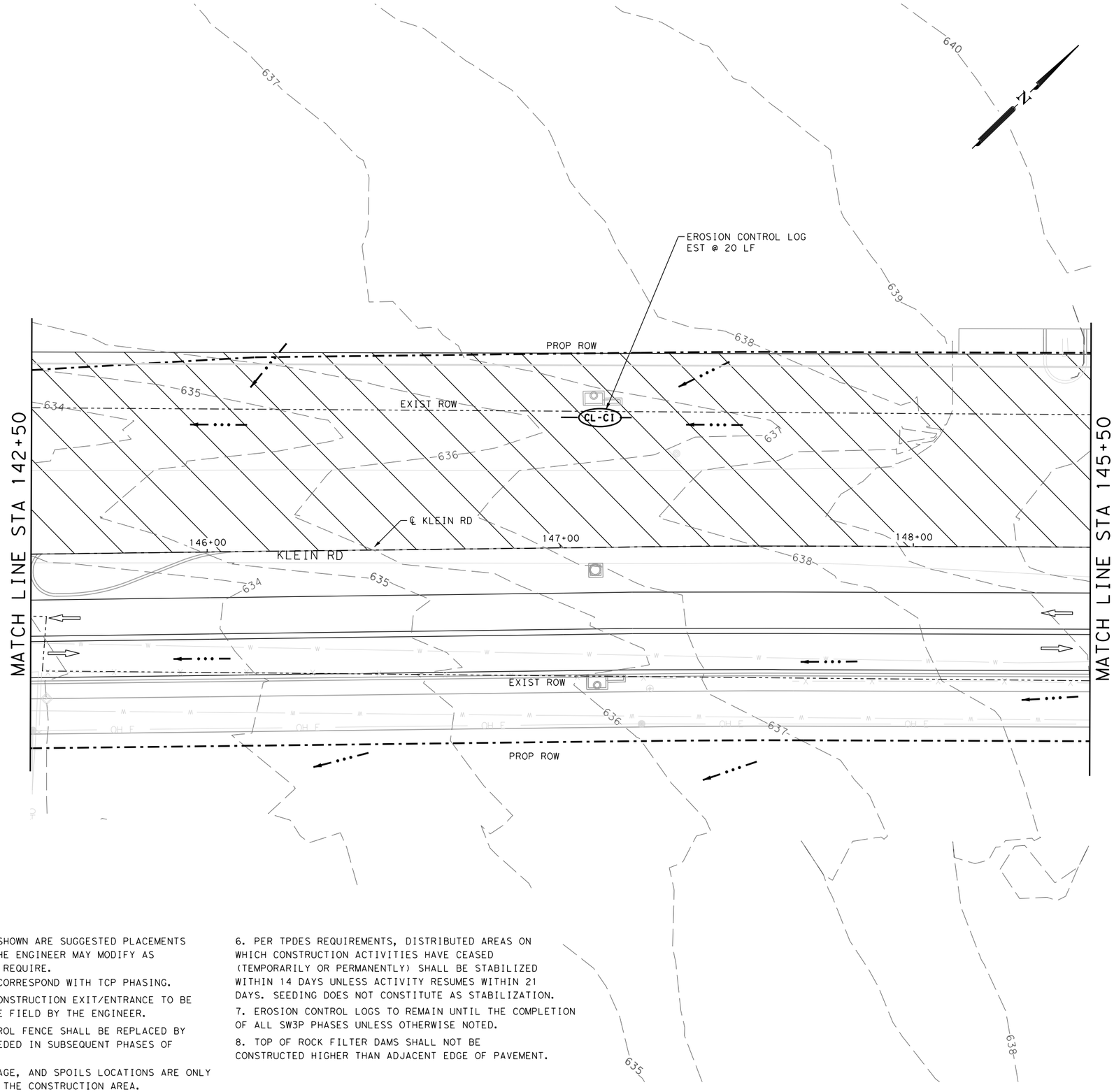
KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 2

SHEET 15 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	345

ITEM	DESCRIPTION	UNIT	QTY
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	20
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	20



LEGEND

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DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 2

SHEET 16 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	346

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p2a16.dgn

ITEM	DESCRIPTION	UNIT	QTY
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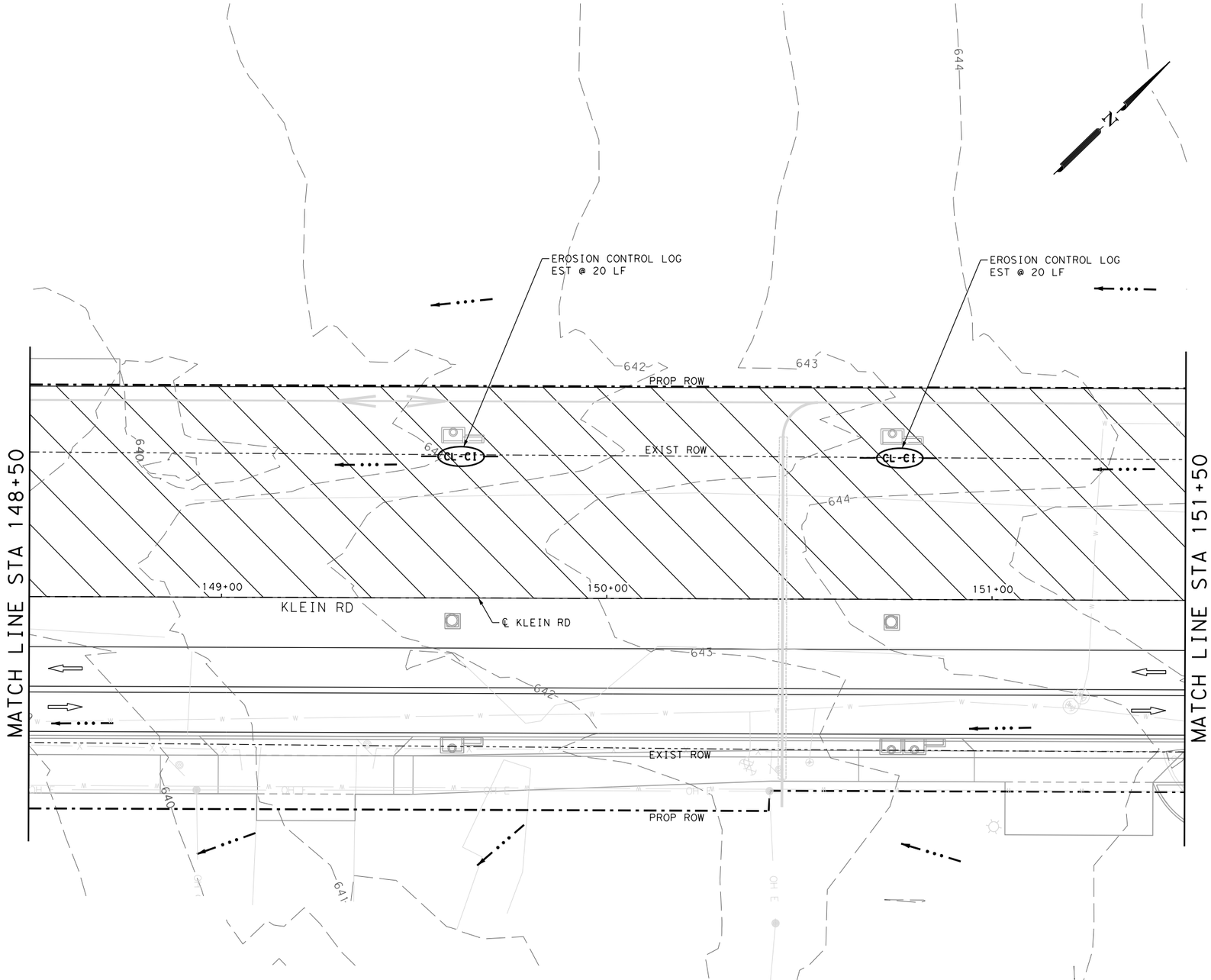

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DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

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PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 2

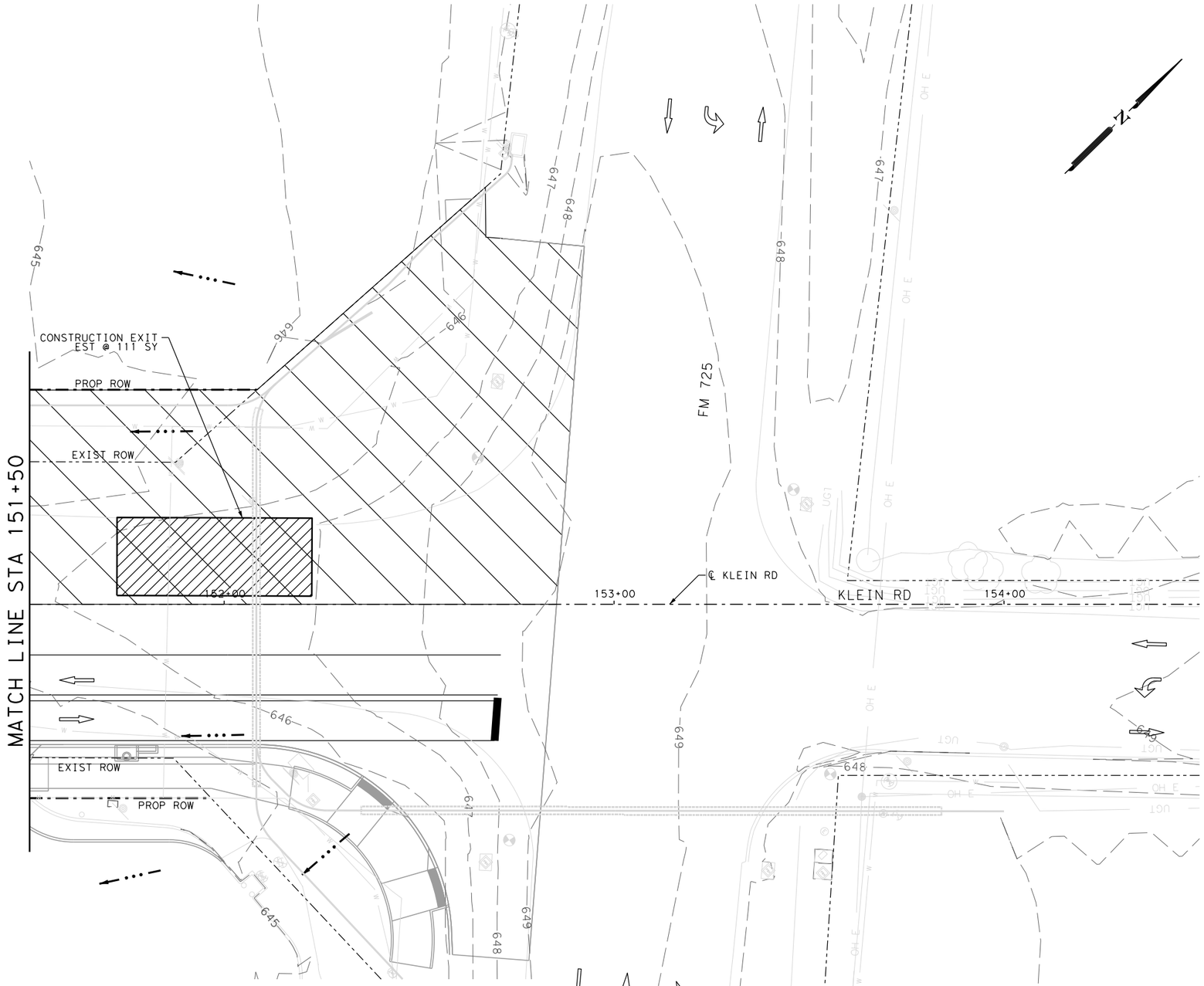
SHEET 17 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	347

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase2\5103003sw3p2A17.dgn

ITEM	DESCRIPTION	UNIT	QTY
0506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	111
0506-6024	CONSTRUCTION EXITS (REMOVE)	SY	111



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STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/17/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/17/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 2 STEP 2

SHEET 18 OF 18

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	348

Plotted on: 1/17/2023

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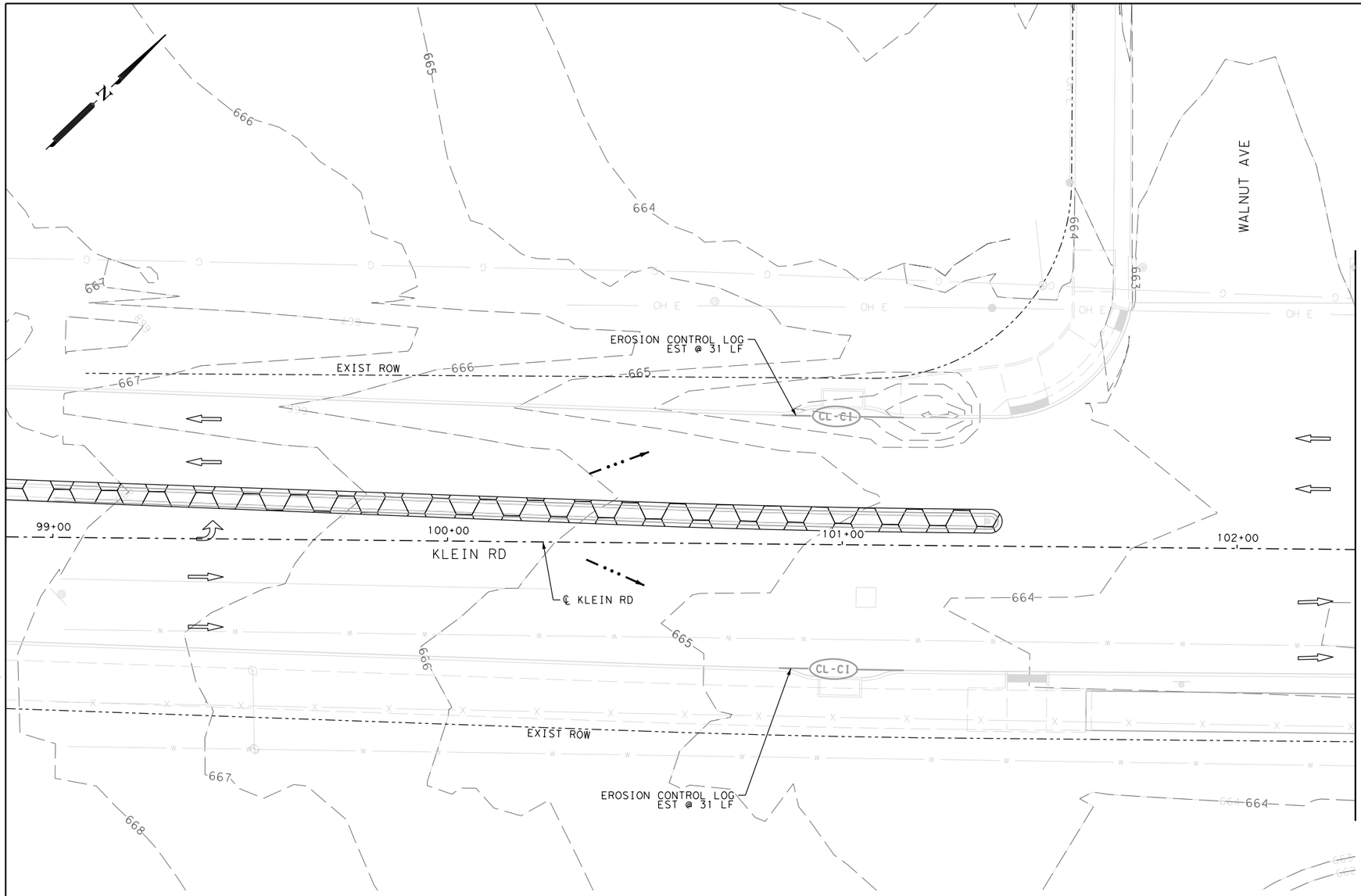

ITEM	DESCRIPTION	UNIT	QTY
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	62

LEGEND

- TRAFFIC FLOW ARROWS
- FLOW ARROW
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — TY 2 ROCK FILTER DAM
- RFD3 — TY 3 ROCK FILTER DAM
- CONSTRUCTION EXIT
- CL-CI — EROSION CONTROL LOG
- CONSTRUCTION PHASE
- WETLAND AREA

NOTES:

1. THE MEASURES SHOWN ARE SUGGESTED PLACEMENTS OF SW3P ITEMS. THE ENGINEER MAY MODIFY AS FIELD CONDITIONS REQUIRE.
2. SW3P LAYOUTS CORRESPOND WITH TCP PHASING.
3. LOCATION OF CONSTRUCTION EXIT/ENTRANCE TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
4. SEDIMENT CONTROL FENCE SHALL BE REPLACED BY CONTRACTOR AS NEEDED IN SUBSEQUENT PHASES OF CONSTRUCTION.
5. STAGING, STORAGE, AND SPOILS LOCATIONS ARE ONLY PERMITTED WITHIN THE CONSTRUCTION AREA.
6. PER TPDES REQUIREMENTS, DISTRIBUTED AREAS ON WHICH CONSTRUCTION ACTIVITIES HAVE CEASED (TEMPORARILY OR PERMANENTLY) SHALL BE STABILIZED WITHIN 14 DAYS UNLESS ACTIVITY RESUMES WITHIN 21 DAYS. SEEDING DOES NOT CONSTITUTE AS STABILIZATION.
7. EROSION CONTROL LOGS TO REMAIN UNTIL THE COMPLETION OF ALL SW3P PHASES UNLESS OTHERWISE NOTED.
8. TOP OF ROCK FILTER DAMS SHALL NOT BE CONSTRUCTED HIGHER THAN ADJACENT EDGE OF PAVEMENT.

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

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

TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 3

SHEET 1 OF 2

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	349

Plotted on: 1/16/2023

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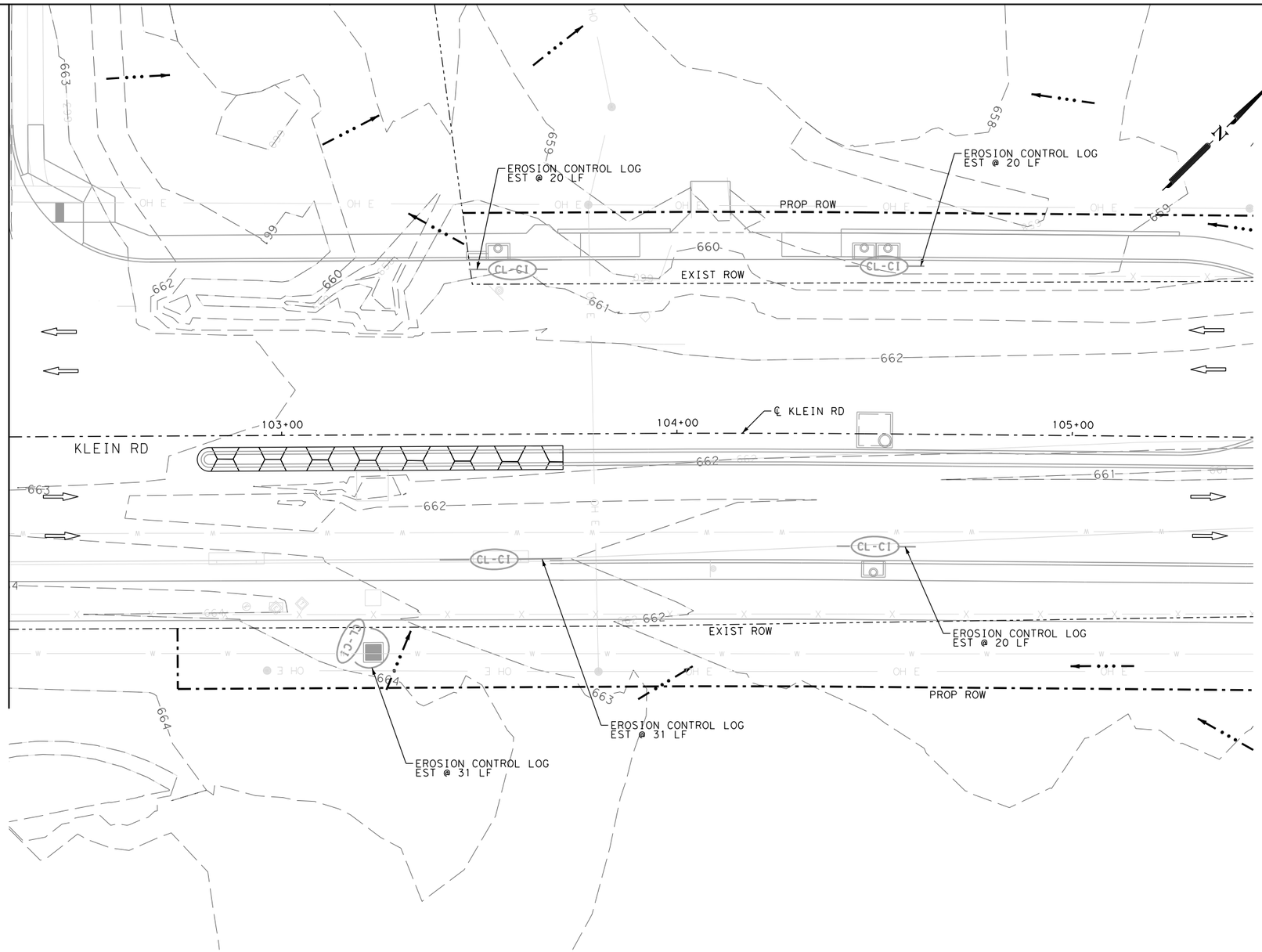

ITEM	DESCRIPTION	UNIT	QTY
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	122

LEGEND

- TRAFFIC FLOW ARROWS
- FLOW ARROW
- SCF — SEDIMENT CONTROL FENCE
- RFD2 — TY 2 ROCK FILTER DAM
- RFD3 — TY 3 ROCK FILTER DAM
- CONSTRUCTION EXIT
- CL-CI — EROSION CONTROL LOG
- CONSTRUCTION PHASE
- WETLAND AREA

NOTES:

1. THE MEASURES SHOWN ARE SUGGESTED PLACEMENTS OF SW3P ITEMS. THE ENGINEER MAY MODIFY AS FIELD CONDITIONS REQUIRE.
2. SW3P LAYOUTS CORRESPOND WITH TCP PHASING.
3. LOCATION OF CONSTRUCTION EXIT/ENTRANCE TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
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8. TOP OF ROCK FILTER DAMS SHALL NOT BE CONSTRUCTED HIGHER THAN ADJACENT EDGE OF PAVEMENT.

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

0 10 20 30 60

SCALE: PLAN 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SW3P LAYOUT PHASE 3

SHEET 2 OF 2

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	350

Plotted on: 1/16/2023

Design Filename: H:\Projects\510\30\03\Design\Civil\SW3P\Phase3\5103003sw3p302.dgn

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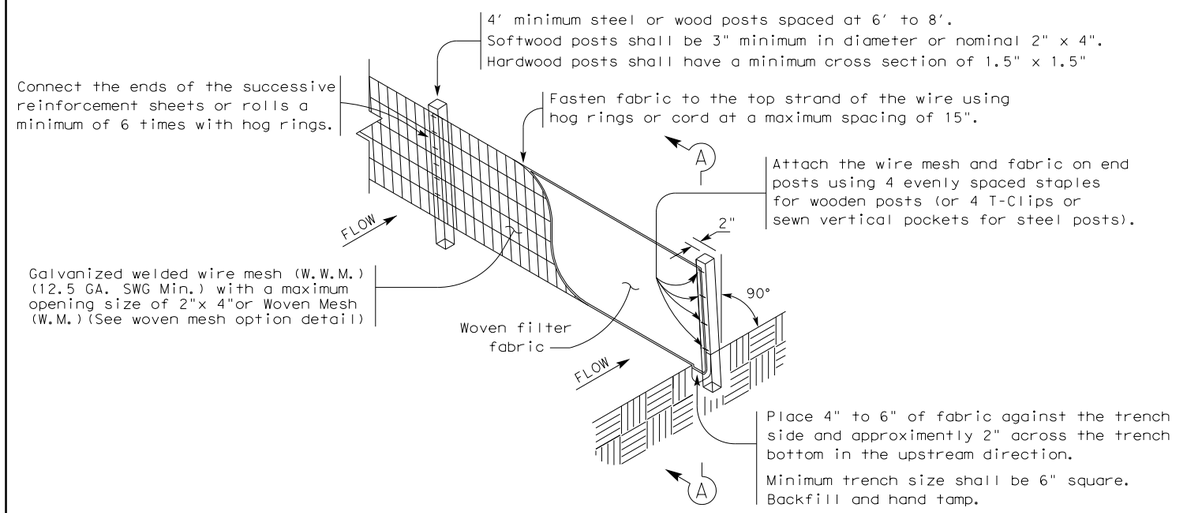
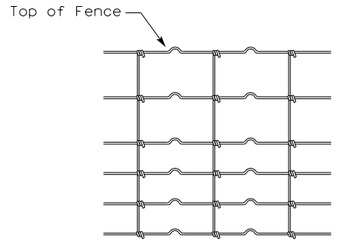
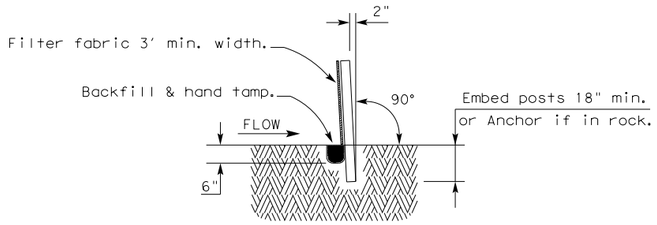


TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA.SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

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 runoff. 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 through rate of 100 GPM/FT^2. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

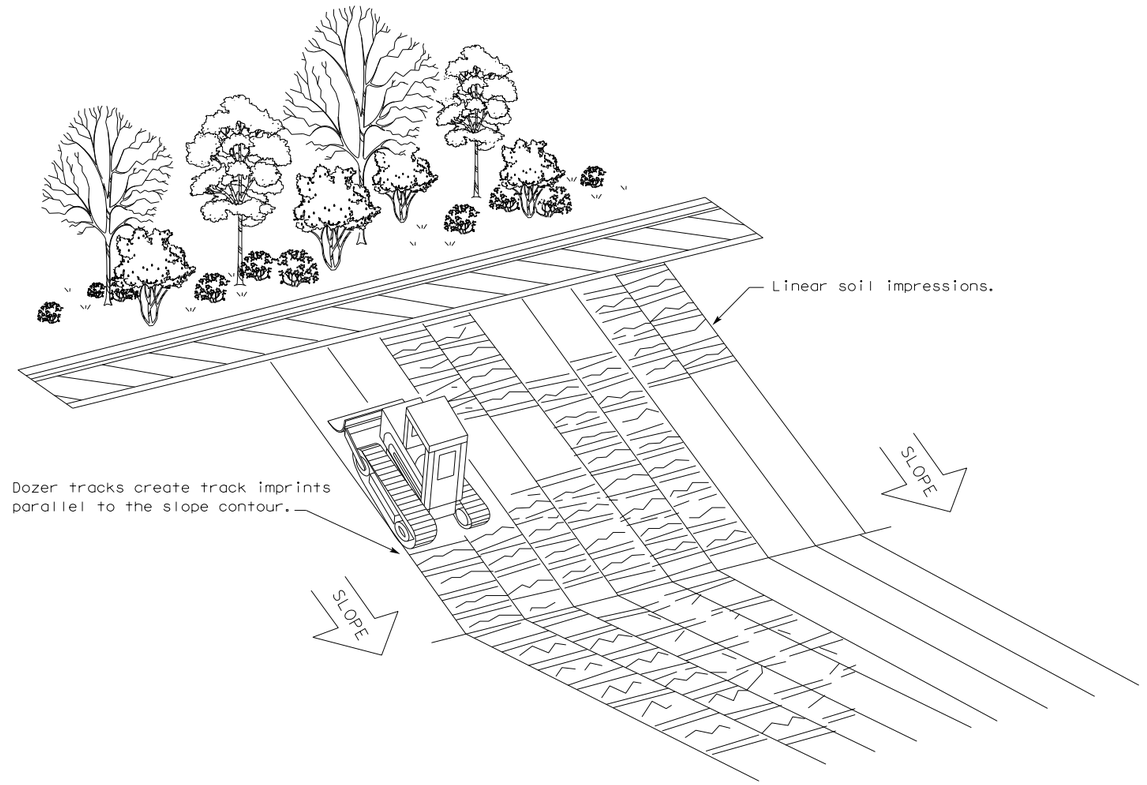
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation

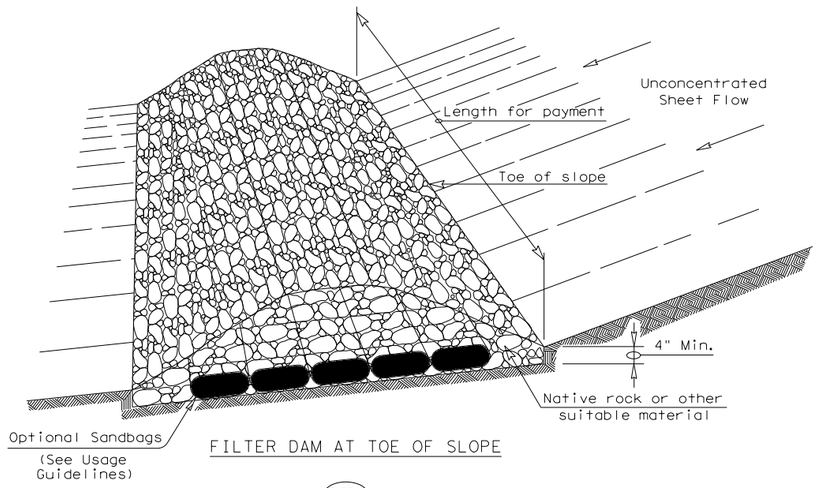
Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & VERTICAL TRACKING

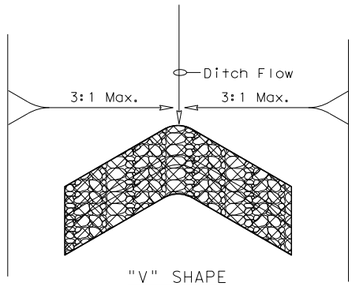
EC(1)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS				KLEIN RD
	DIST	COUNTY		SHEET NO.
	SAT	GUADALUPE		351

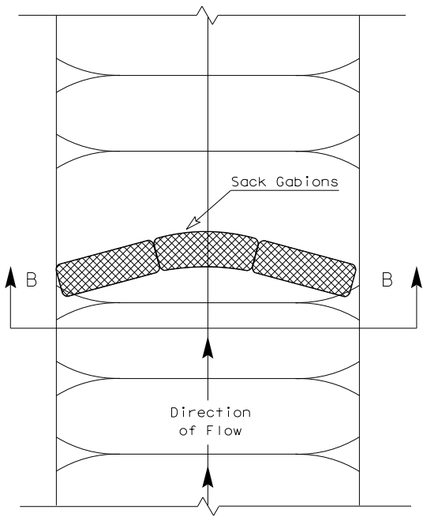


FILTER DAM AT TOE OF SLOPE

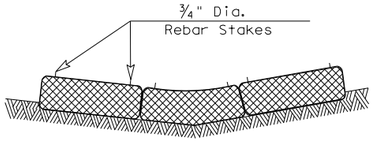
RFD1



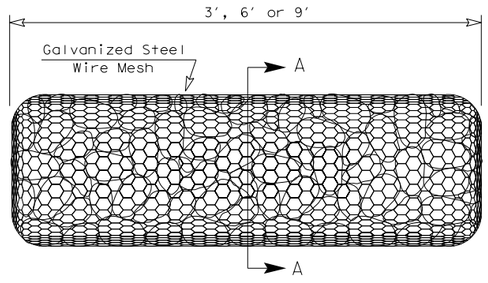
"V" SHAPE
PLAN VIEW



PLAN VIEW

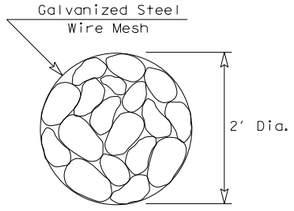


SECTION B-B

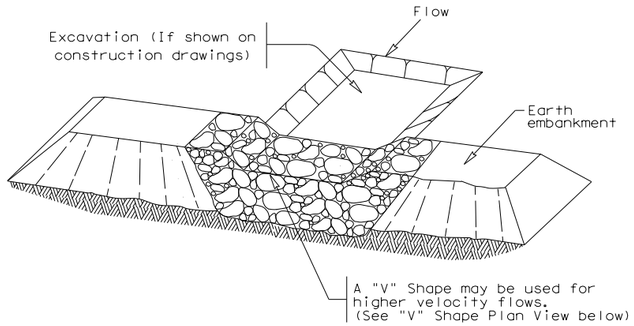


TYPE 4 (SACK GABIONS)

RFD4

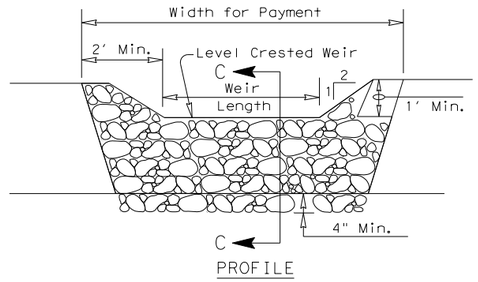


SECTION A-A

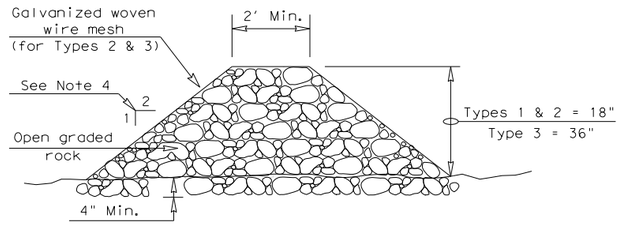


FILTER DAM AT SEDIMENT TRAP

RFD1 OR RFD2



PROFILE



SECTION C-C

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT^2 of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

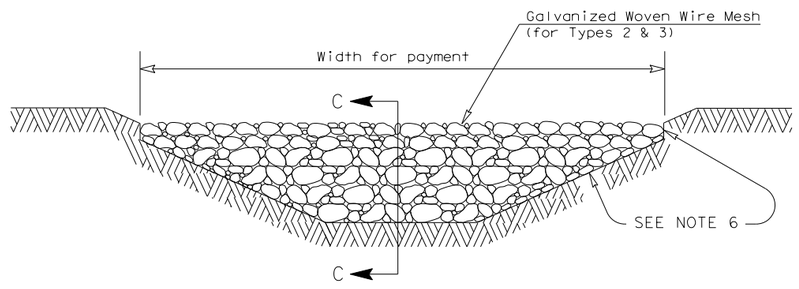
Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approximently 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 directed by the Engineer.

Type 2 (18" high with wire mesh) (3" to 6" aggregate): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh) (4" to 8" aggregate): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions) (3" to 6" aggregate): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

Type 5: Provide rock filter dams as shown on plans.



FILTER DAM AT CHANNEL SECTIONS

RFD1 OR RFD2 OR RFD3

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 SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes 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 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 & 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. For 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 ¾" dia. rebar stakes, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 ½" x 3 ¼"
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.

PLAN SHEET LEGEND

Type 1 Rock Filter Dam — RFD1
Type 2 Rock Filter Dam — RFD2
Type 3 Rock Filter Dam — RFD3
Type 4 Rock Filter Dam — RFD4

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

ROCK FILTER DAMS

EC(2)-16

FILE: ec216	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS				KLEIN RD
	DIST	COUNTY		SHEET NO.
	SAT	GUADALUPE		352

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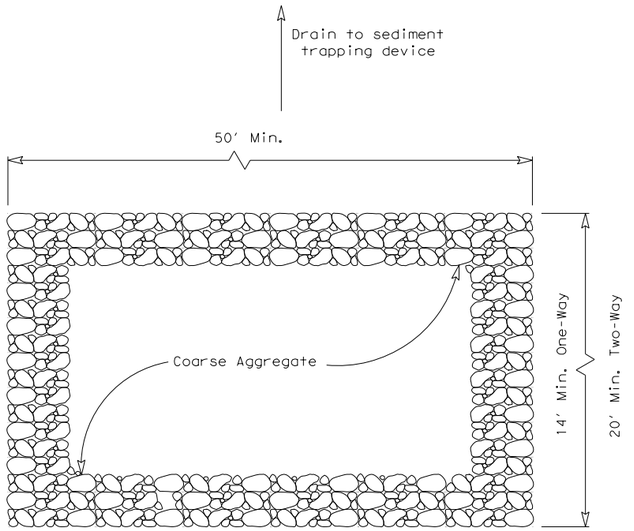
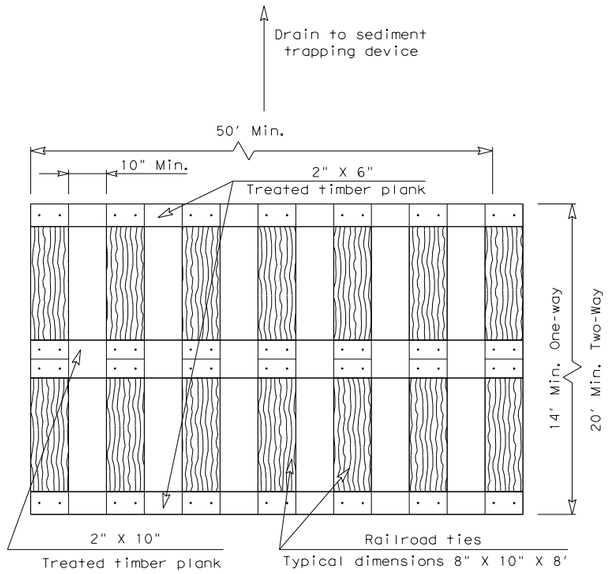
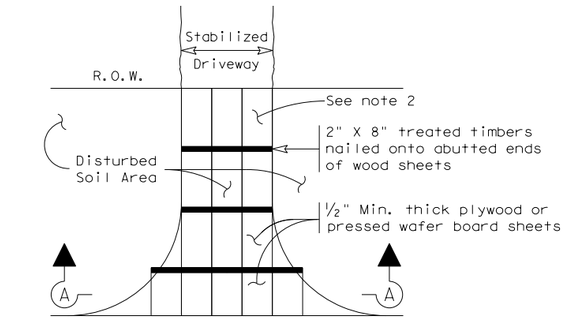


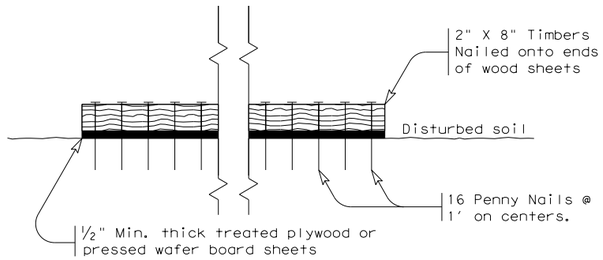
PLAN VIEW



PLAN VIEW



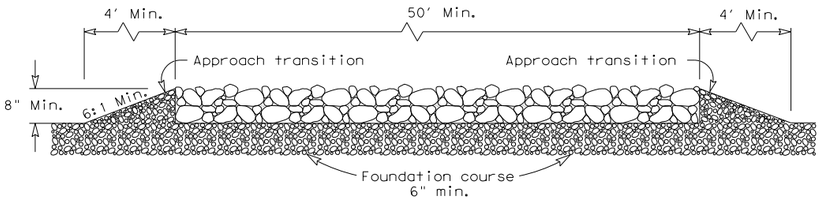
PLAN VIEW



SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

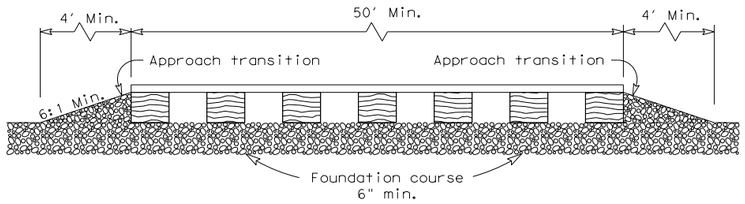
SHORT TERM



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

ROCK CONSTRUCTION (LONG TERM)



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

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 materialas 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.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 2)

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 ½"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 shall 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.
8. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 3)

1. The length of the type 3 construction exit shall be as shown 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 two to four inches spread a min. of 4" 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.

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

EC(3)-16

FILE: ec316	DN: TxDOT	CK: KM	DW: VP		DN/CK: LS
©TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
REVISIONS				KLEIN RD	
	DIST	COUNTY			SHEET NO.
	SAT	GUADALUPE			353

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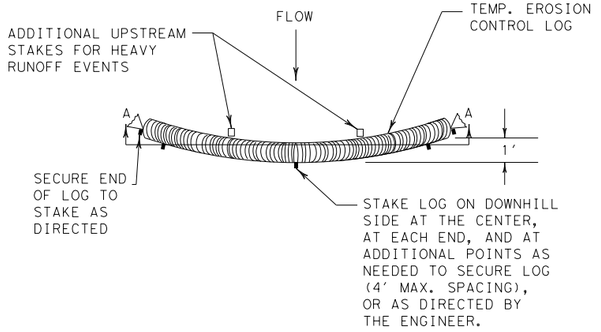
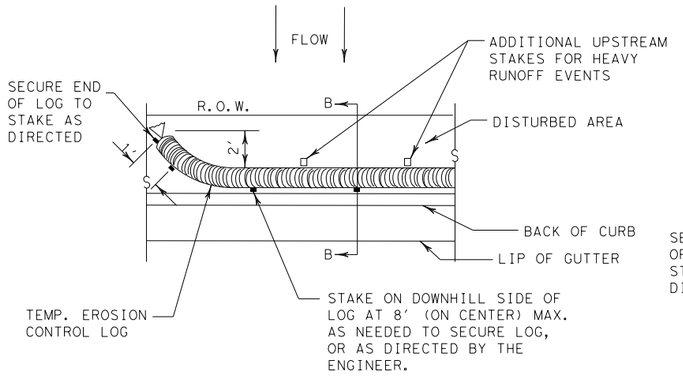
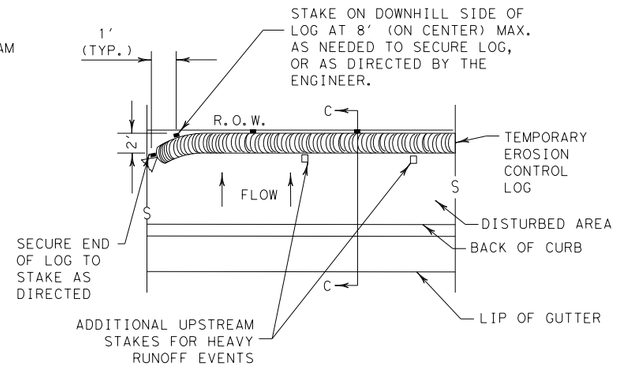


PLAN VIEW



PLAN VIEW



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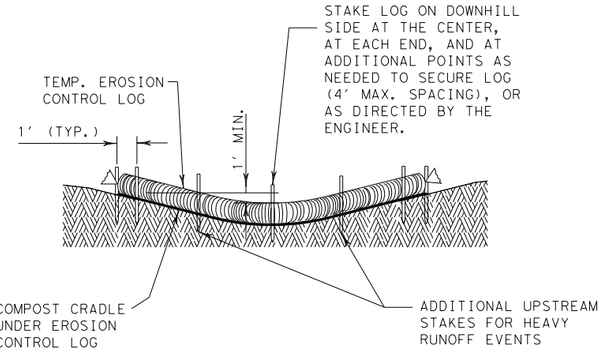
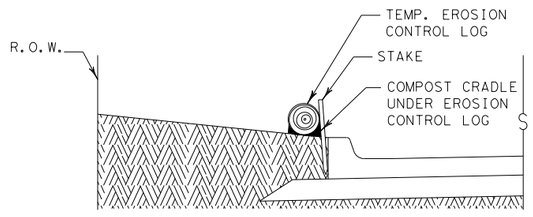


SECTION A-A

EROSION CONTROL LOG DAM

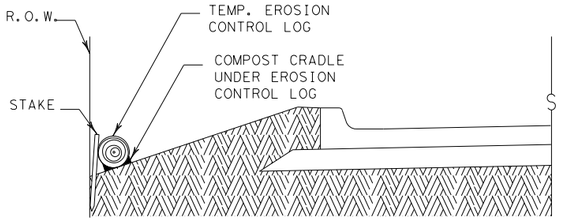
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

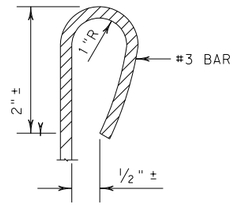
CL-BOC



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



REBAR STAKE DETAIL

LEGEND

- CL-D — EROSION CONTROL LOG DAM
- CL-BOC — EROSION CONTROL LOG AT BACK OF CURB
- CL-ROW — EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
- CL-SST — EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
- CL-SSL — EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
- CL-DI — EROSION CONTROL LOG AT DROP INLET
- CL-CI — EROSION CONTROL LOG AT CURB INLET
- CL-GI — EROSION CONTROL LOG AT CURB & GRATE INLET

GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.

SEDIMENT BASIN & TRAP USAGE GUIDELINES

An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

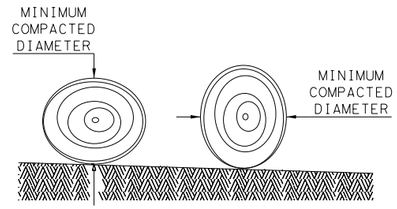
Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:

1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

FILE: ec916	DN: TxDOT		CK: KM		DW: LS/PT		CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY		
REVISIONS					KLEIN RD		
	DIST	COUNTY			SHEET NO.		
	SAT	GUADALUPE			354		

DISCLAIMER:
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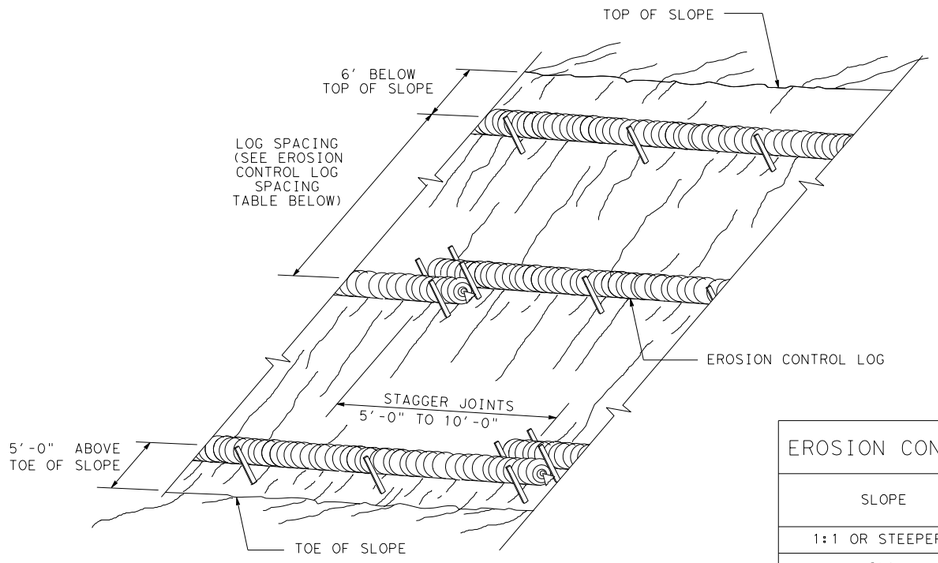
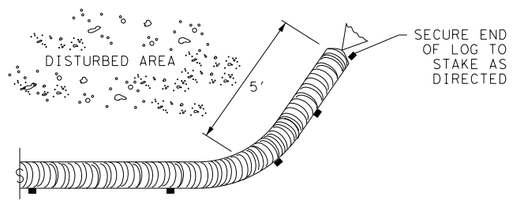
DATE: 1/16/2023
FILE: H:\Projects\510\30\03\Design\Civil\Standards\SW3P\ec916.dgn



EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

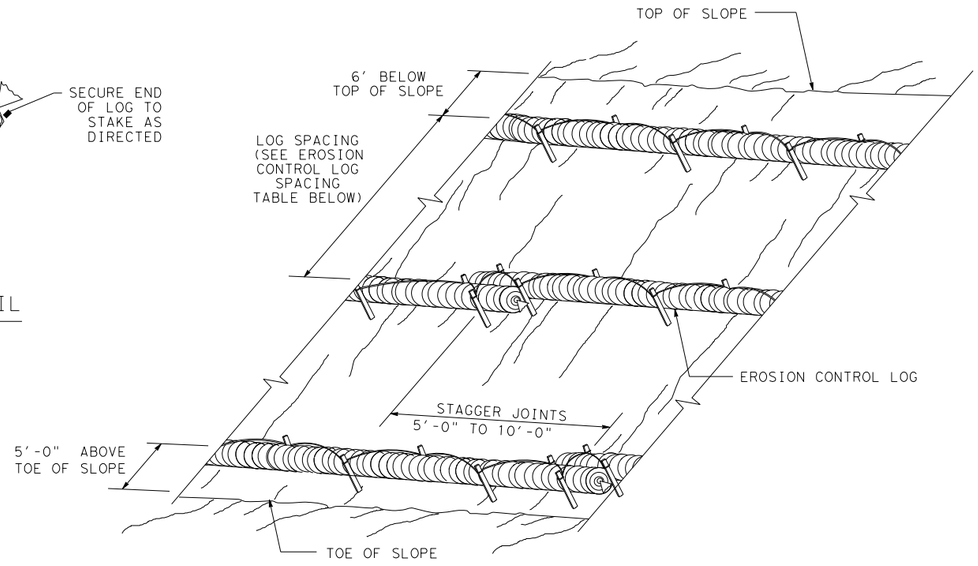
CL-SST



END SECTION RAP DETAIL

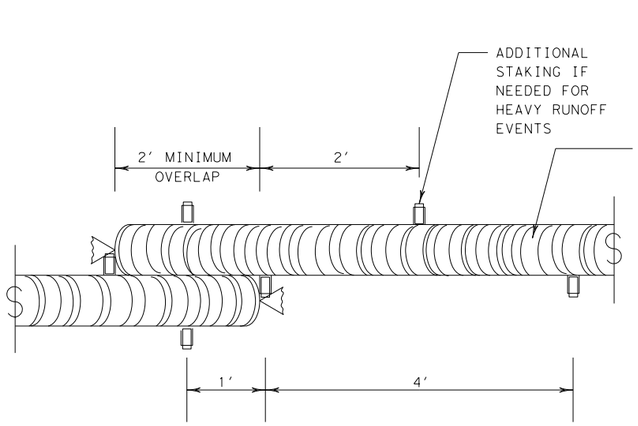
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

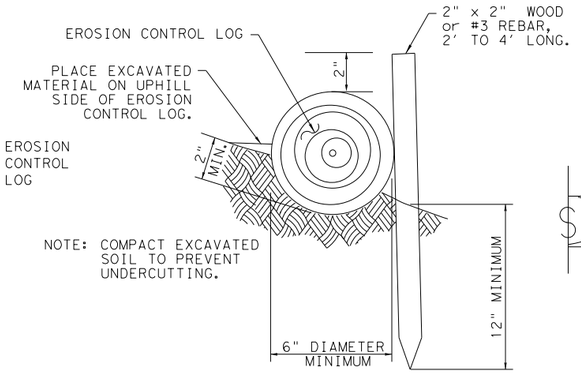
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

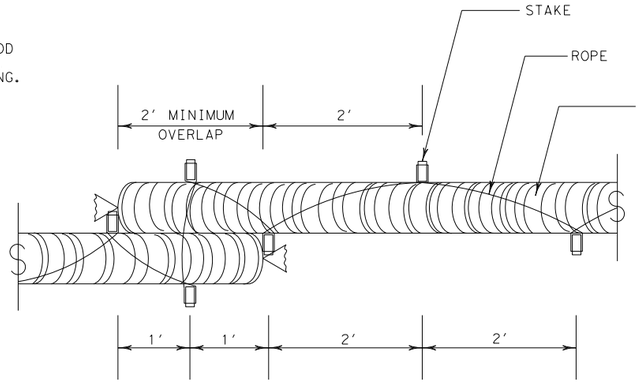




STAKE AND TRENCHING ANCHORING DETAIL

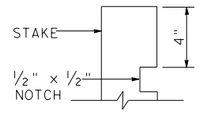
CL-SST

TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"

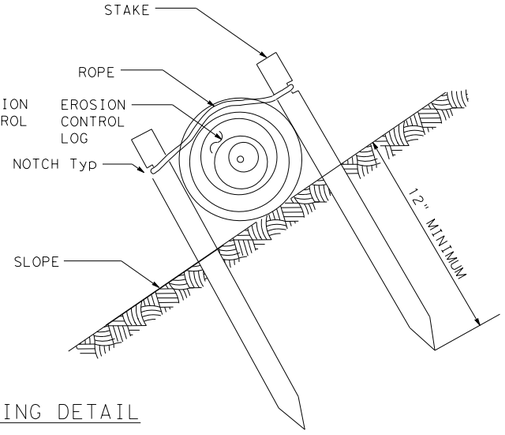


STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL



SHEET 2 OF 3

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

FILE: ec116	DN: TxDOT		CK: KM		DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY	
REVISIONS					KLEIN RD	
	DIST	COUNTY			SHEET NO.	
	SAT	GUADALUPE			355	

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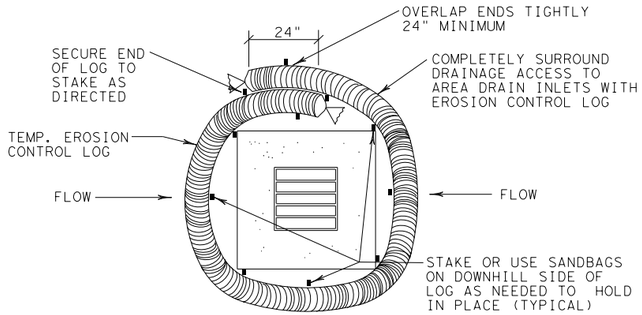
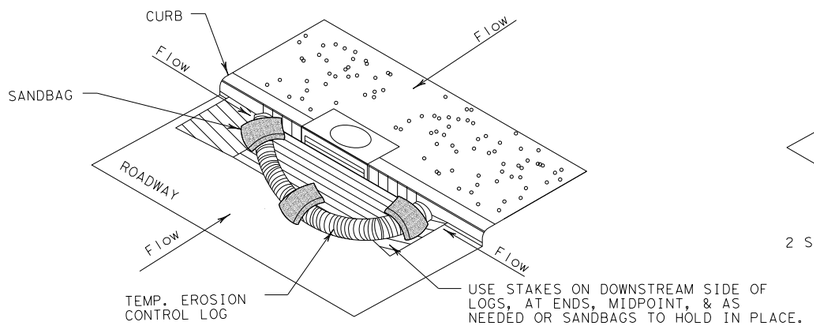
DATE: 1/16/2023
FILE: H:\Projects\510\30\03\Design\Civil\Standards\SW3P\ec916.dgn



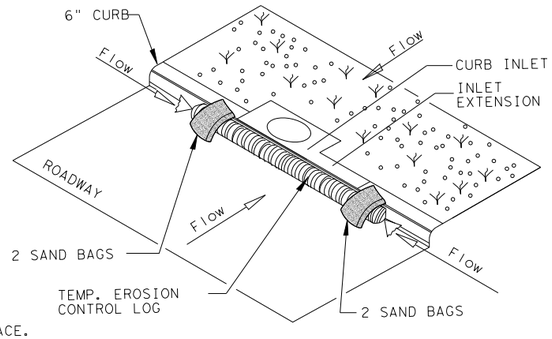
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

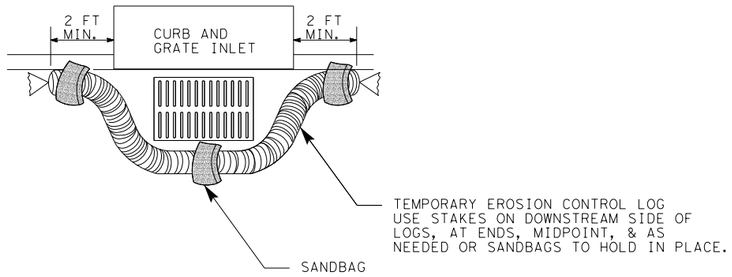
CL-CI



EROSION CONTROL LOG AT CURB INLET

CL-CI

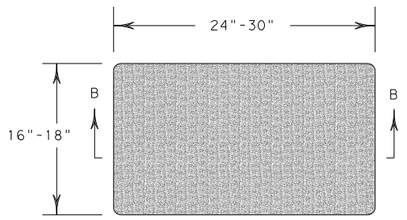
NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.



EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI

SECTION B-B



SANDBAG DETAIL

SHEET 3 OF 3

Texas Department of Transportation | Design Division Standard

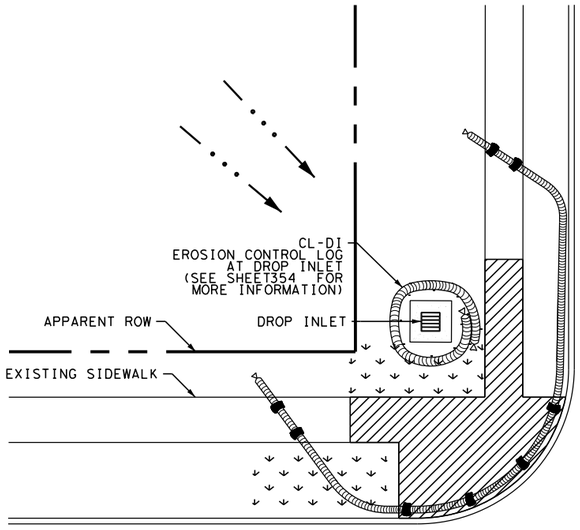
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

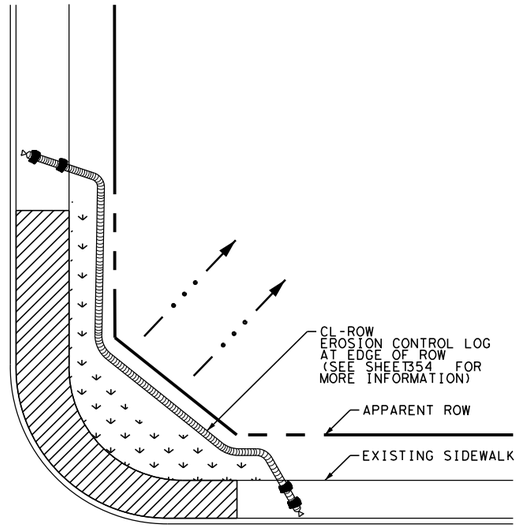
EROSION CONTROL LOG

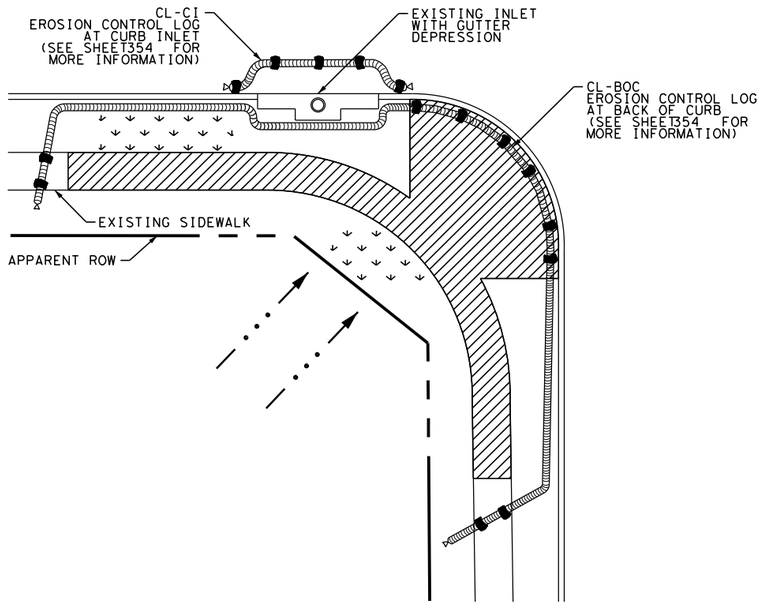
EC(9)-16

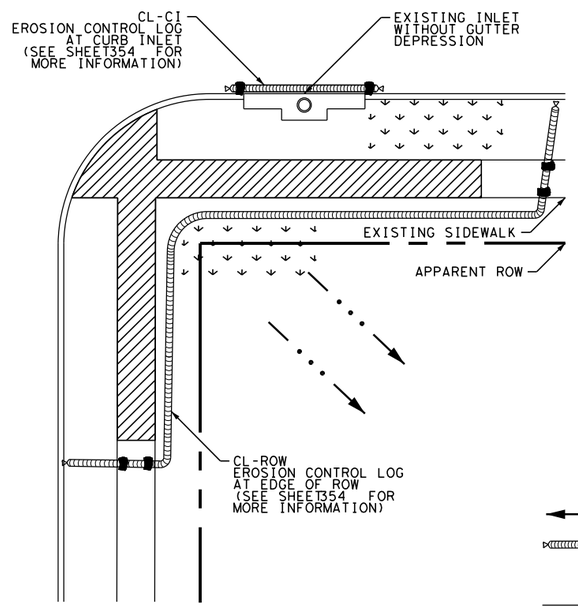
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS			
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY			
REVISIONS				KLEIN RD			
	DIST	COUNTY		SHEET NO.			
	SAT	GUADALUPE		356			

Plotted on: 1/16/2023









LEGEND

- SODDING
- FLOW DIRECTION
- EROSION CONTROL LOG
- SANDBAGS
- EXISTING FEATURES
- PROPOSED WORK AREA

NOTES:

SITE CONDITIONS MAY DICTATE ADDITIONAL COUNTERMEASURES AS DIRECTED BY THE ENGINEER.

USE ADDITIONAL STAKES OR SAND BAGS AS NEEDED TO HOLD IN PLACE (NSPI).

INSTALLATION OF COUNTERMEASURES MUST BE APPROVED BY THE ENGINEER PRIOR TO PLACEMENT.

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 1/16/2023 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 1/16/2023 DATE

NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD PHASE 2

SWPPP EXAMPLE INTERSECTION

SHEET 1 OF 1

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	357

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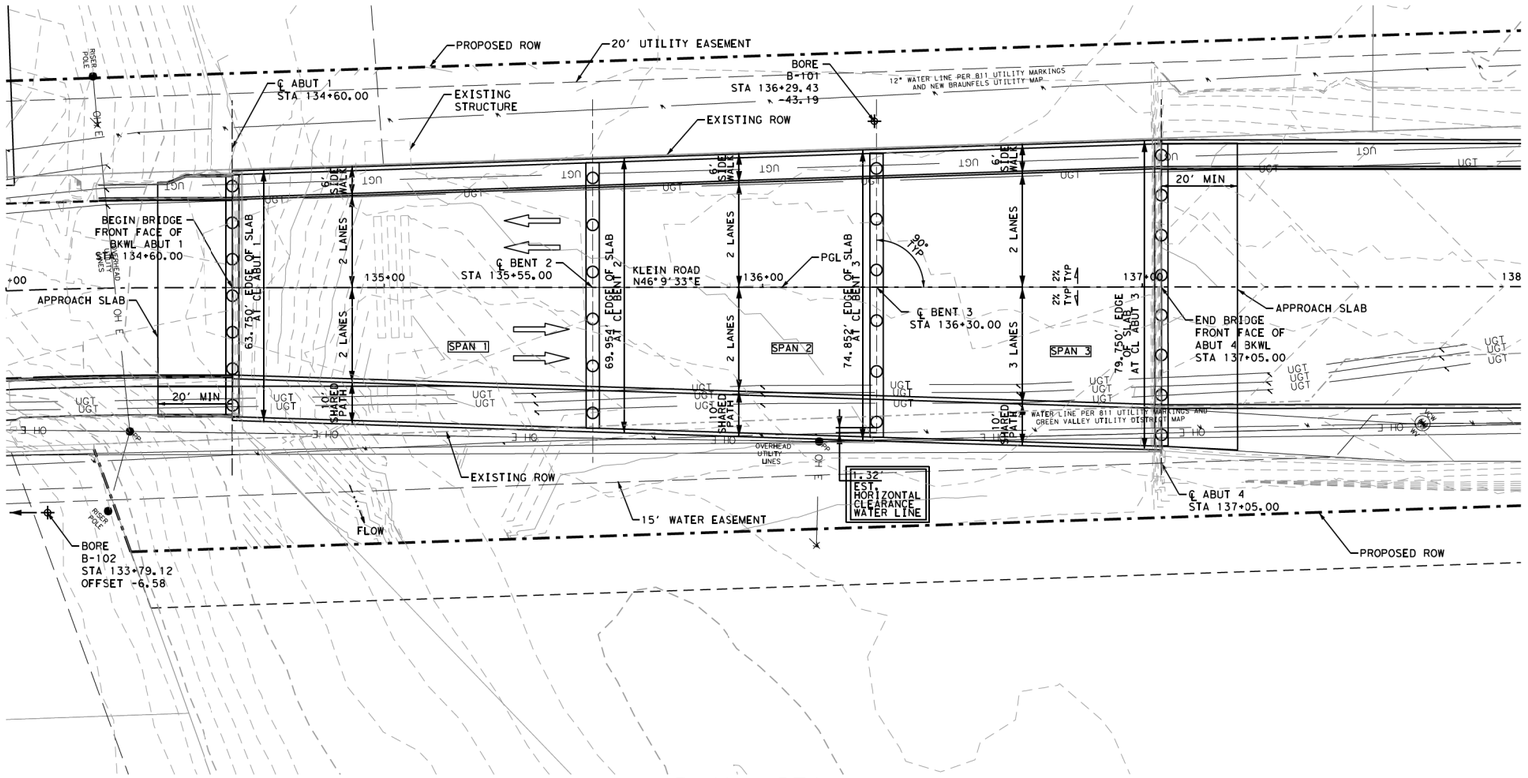
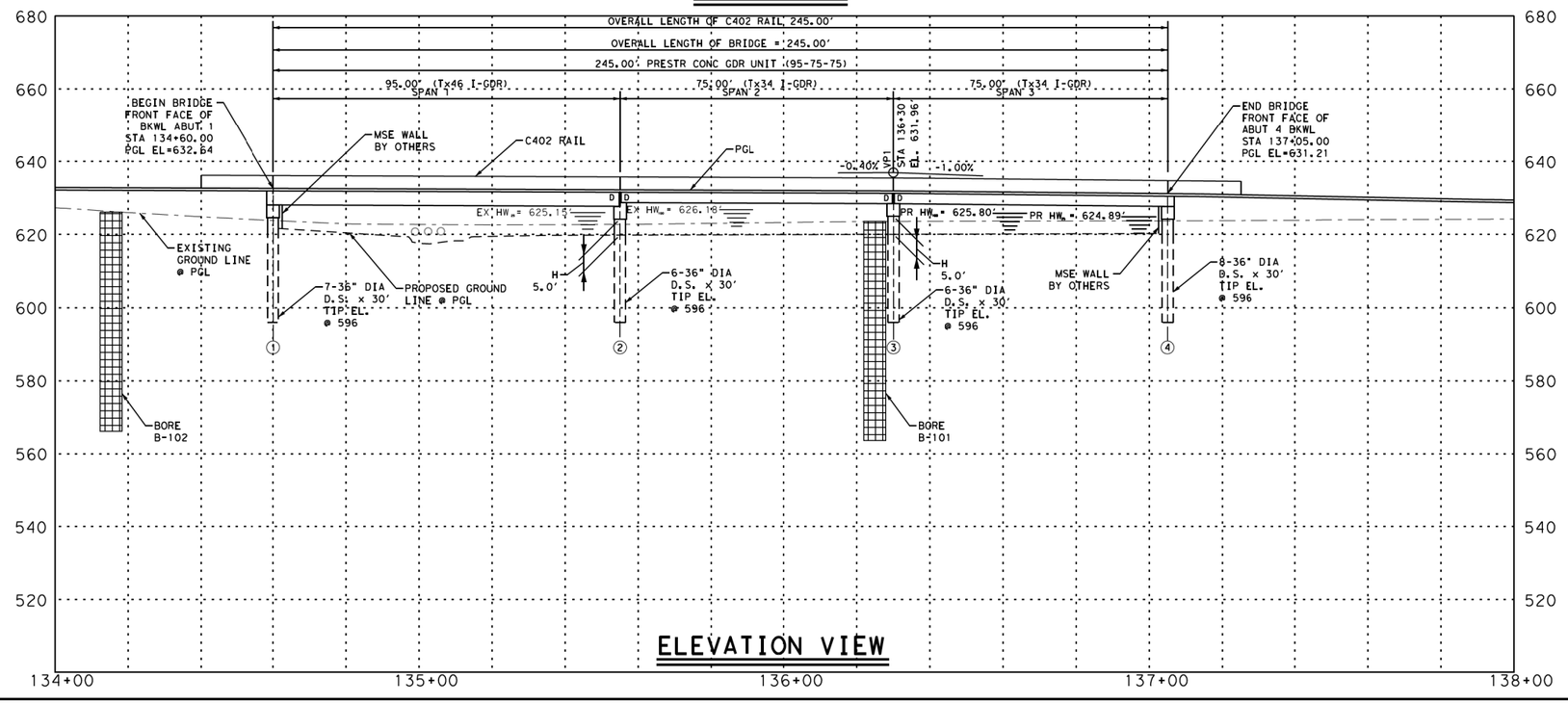


PLAN VIEW



ELEVATION VIEW

ML93 LOADING
NBI XXXXXXXXXX

GENERAL NOTES:

1. BRIDGE DESIGNED TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH ED 2017) PLUS 2016 AND 2017 INTERIM.
2. SEE SHEET x FOR TYPICAL SECTION.
3. SEE TEST HOLE DATA SHEETS IN RABA KISTNER REPORT No. ANA19-039-00 FOR BORING DETAILS NOT SHOWN.
4. SEE CSAB STANDARD FOR CEMENT STABILIZED BACKFILL DETAILS.
5. THE "H" VALUES SHOWN ARE ESTIMATED COLUMN HEIGHTS. THE CONTRACTOR IS RESPONSIBLE FOR CALCULATING THE ACTUAL COLUMN HEIGHTS BASE ON FIELD CONDITIONS.
6. REFER TO ALIGNMENT DATA SHEETS FOR MORE INFORMATION.
7. REFER TO RETAINING WALL SHEETS FOR WALL LAYOUT AND DETAILS.
8. SCOUR IS 5.0 FT FOR THE 50 YEAR AND 5.28 FT FOR THE 100 YEAR EVENTS.

REV. NO.	DATE	DESCRIPTION	BY

M&S ENGINEERING
CIVIL | ELECTRICAL | STRUCTURAL | MEP
TEXAS PROFESSIONAL ENGINEERING FIRM # F-1394
WWW.MSENGR.COM | (830) 228-5446

City of New Braunfels

KLEIN RD PH 2

BRIDGE LAYOUT

BRIDGE PLAN AND PROFILE

STA 134+60 TO STA 137+05

SHEET 1 OF 1

STATE OF TEXAS
A.M. STONE
91049
LICENSED
PROFESSIONAL ENGINEER
12/11/2020

DGN:	STATE	PROJECT NO.	HIGHWAY NO.
CHK DGN:	TEXAS	NB 18-026	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	358

Plotted on:$DATE$

Design Filename: I:\PDENG\014-BRIDGE P&P.dgn

Plotted on: $DATE$

BEARING SEAT ELEVATIONS

	GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5	GIRDER 6	GIRDER 7	GIRDER 8	GIRDER 9	GIRDER 10
ABUT 1 (FWD)	627.012	627.145	627.278	627.411	627.544	627.458	627.326	627.193	627.060	626.927
BENT 2 (BK)	626.579	626.725	626.872	627.018	627.165	627.080	626.933	626.787	626.641	626.494
(FWD)	627.528	627.675	627.822	627.968	628.115	628.030	627.883	627.737	627.590	627.443
BENT 3 (BK)	627.188	627.346	627.503	627.660	627.818	627.733	627.575	627.418	627.261	627.104
(FWD)	627.215	627.372	627.530	627.687	627.845	627.760	627.603	627.445	627.287	627.130
ABUT 4 (BK)	626.437	626.605	626.773	626.942	627.110	627.025	626.857	626.668	626.520	626.352

STATE OF TEXAS
A.M. STONE
91049
LICENSED
PROFESSIONAL ENGINEER

12/7/2020

REV. NO.	DATE	DESCRIPTION	BY

M&S ENGINEERING
CIVIL | ELECTRICAL | STRUCTURAL | MEP
TEXAS PROFESSIONAL ENGINEERING FIRM # F-1394
WWW.MSENGR.COM | (830) 228-5446

City of New Braunfels

KLEIN RD PH 2

BEARING SEAT ELEVATIONS

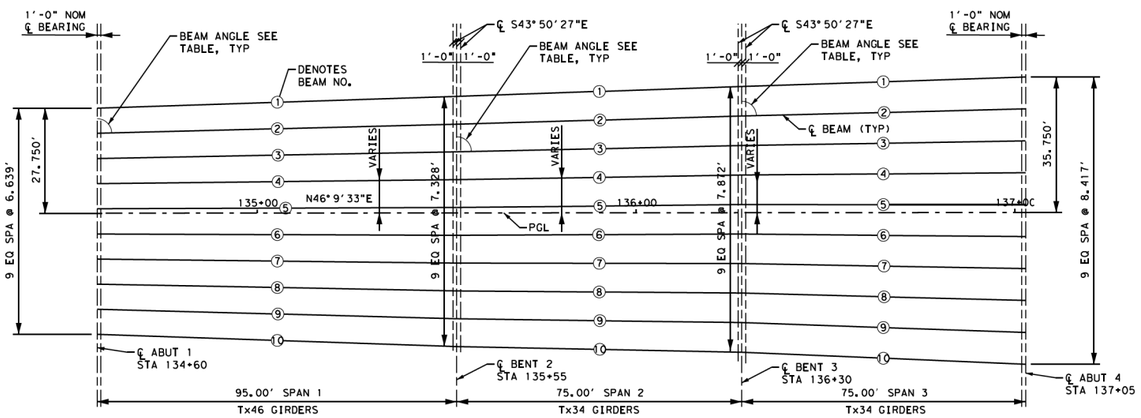
SPANS 1 - 3

STA 134+60 TO STA 137+05

SHEET 1 OF 1

DGN:	STATE	PROJECT NO.	HIGHWAY NO.
CHK DGN:	TEXAS	NB 18-026	KLEIN RD
DWG:	COUNTY	COUNTY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	359

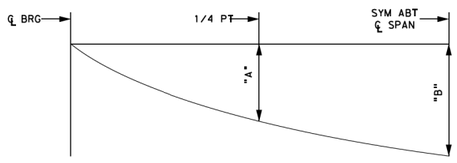
Design Filename: 19PDENG014-QUANT AND BEARING.dgn



SPANS 1 - 3
SCALE: 1" = 40'

BEAM DATA TABLE						
SPAN NO.	BEAM	LENGTH ℄-℄ ABUT/BENT ①	LENGTH OF BEAM ②	LENGTH ℄-℄ NOMINAL BRG ③	GRADE (FT/FT)	ANGLE
1	1	95.051'	94.550'	93.050'	-0.0047	88°07'47"
1	2	95.031'	94.531'	93.030'	-0.0045	88°32'42"
1	3	95.016'	94.516'	93.015'	-0.0044	88°57'37"
1	4	95.006'	94.506'	93.006'	-0.0042	89°22'32"
1	5	95.001'	94.501'	93.001'	-0.0041	89°47'28"
1	6	95.001'	94.501'	93.001'	-0.0041	90°12'24"
1	7	95.006'	94.506'	93.006'	-0.0042	90°37'20"
1	8	95.016'	94.516'	93.015'	-0.0044	91°02'16"
1	9	95.031'	94.530'	93.030'	-0.0045	91°27'11"
1	10	95.051'	94.550'	93.050'	-0.0046	91°52'06"
2	1	75.040'	74.540'	73.039'	-0.0047	88°07'47"
2	2	75.024'	74.524'	73.024'	-0.0045	88°32'42"
2	3	75.012'	74.512'	73.012'	-0.0044	88°57'37"
2	4	75.004'	74.504'	73.004'	-0.0042	89°22'33"
2	5	75.000'	74.500'	73.000'	-0.0041	89°47'29"
2	6	75.000'	74.500'	73.000'	-0.0041	90°12'25"
2	7	75.004'	74.504'	73.004'	-0.0042	90°37'21"
2	8	75.012'	74.512'	73.012'	-0.0044	91°02'17"
2	9	75.024'	74.524'	73.024'	-0.0045	91°27'12"
2	10	75.040'	74.540'	73.039'	-0.0047	91°52'07"
3	1	75.040'	74.540'	73.039'	-0.0106	88°07'47"
3	2	75.024'	74.524'	73.024'	-0.0105	88°32'44"
3	3	75.012'	74.512'	73.012'	-0.0104	88°57'42"
3	4	75.004'	74.504'	73.004'	-0.0102	89°22'21"
3	5	75.000'	74.500'	73.000'	-0.0101	89°47'40"
3	6	75.001'	74.501'	73.000'	-0.0101	90°12'39"
3	7	74.004'	74.504'	73.004'	-0.0102	90°37'37"
3	8	73.012'	74.512'	73.012'	-0.0104	91°02'36"
3	9	75.024'	74.524'	73.024'	-0.0105	91°27'34"
3	10	75.040'	74.540'	73.039'	-0.0106	91°52'32"

① DIMENSIONS SHOWN REPRESENT HORIZONTAL BEAM LENGTH FROM FACE OF ABUTMENT BACKWALL TO CENTERLINE OF BENT.
② FABRICATORS SHALL ADJUST BEAM LENGTHS FOR BEAM SLOPES AS REQUIRED.
③ SEE STANDARD IGEB FOR NOMINAL CENTERLINE BEARING GIRDER END DETAILS. AT TRANSISTION BENT 2, THE (BK) SPAN GIRDER AND THE ELASTOMERIC BEARINGS RECIEVE THE SAME TREATMENT AS SHOWN FOR CONVENTIONAL INTERIOR BENTS, WHEREAS THE (FWD) SPAN GIRDER AND ELASTOMERIC BEARINGS RECIEVE THE SAME AS SHOWN FOR ABUTMENTS.



DEAD LOAD
DEFLECTION DIAGRAM

CALCULATED DEFLECTIONS SHOWN ARE DUE TO CONCRETE SLAB (Ec = 500 ksi). ADJUST VALUES AS REQUIRED IF OPTIONAL SLAB FORMING IS USED. THESE VALUES MAY REQUIRED FIELD VERIFICATION.

DEAD LOAD DEFLECTIONS			
SPAN NO.	BEAM	"A"	"B"
1	A	-0.05	-0.071
1	B-I	-0.048	-0.068
1	J	-0.05	-0.071
2	A-J	-0.044	-0.063
3	A	-0.046	-0.066
3	B-C	-0.047	-0.068
3	D-G	-0.047	-0.067
3	H-I	-0.047	-0.068
3	J	-0.046	-0.066

REV. NO.	DATE	DESCRIPTION	BY

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City of New Braunfels

KLEIN RD PH 2

FRAMING PLAN

SPANS 1 - 3

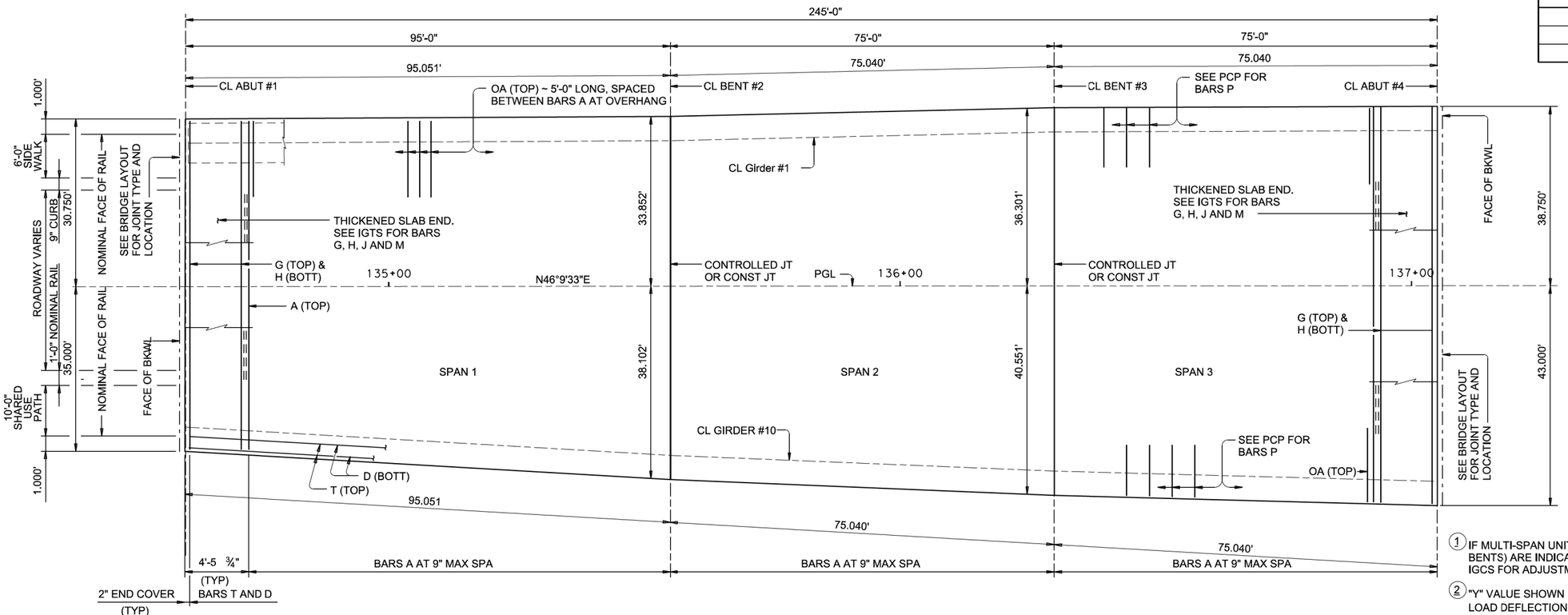
STA 134+60 TO STA 137+05

SHEET 1 OF 1

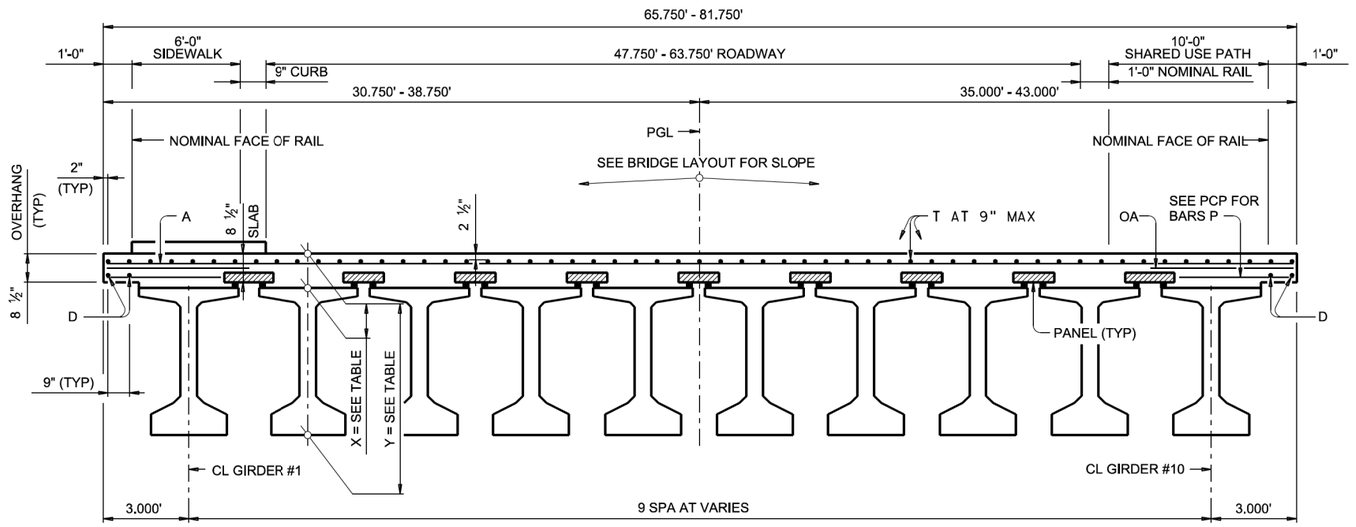
DGN:	STATE	PROJECT NO.	HIGHWAY NO.
CHK DGN:	TEXAS	NB 18-026	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	360

STATE OF TEXAS
A.M. STONE
91049
LICENSED PROFESSIONAL ENGINEER
12/11/2020

Design Filename: 19PDENG014-FRAMING PLAN.dgn



PLAN



TYPICAL TRANSVERSE SECTION

	X	Y
ABUT 1 FWD BENT 2 BCK	12"	4'-10"
BENT 2 FWD BENT 3 BCK	12 1/2"	3'-10 1/2"
BENT 3 FWD ABUT 4 BCK	12"	3'-10"

TABLE OF ESTIMATED QUANTITIES

SPAN	REINF CONC SLAB (SF)	PRESTR CONC GIRDER (LF)	REINF STEEL ③ (LB)
1	6540.94	945.21	15044.16
2	5580.23	745.17	12834.52
3	5947.58	745.20	13679.42

BAR TABLE

BAR	SIZE
A	#4
D	#4
G	#4
H	#4
J	#4
M	#4
OA	#5
P	#4
T	#4

① IF MULTI-SPAN UNITS (WITH SLAB CONTINUOUS OVER INTERIOR BENTS) ARE INDICATED ON THE BRIDGE LAYOUT, SEE STANDARD IGCS FOR ADJUSTMENT TO SLAB REINFORCEMENT AND QUANTITIES.

② "Y" VALUE SHOWN IS BASED ON THEORETICAL GIRDER CAMBER, DEAD LOAD DEFLECTION FROM AN 8 ½" CONCRETE SLAB, A CONSTANT ROADWAY GRADE, AND USING PRECAST PANELS (PCP). THE CONTRACTOR WILL ADJUST THIS VALUE AS NECESSARY FOR ANY ROADWAY VERTICAL CURVE AND/OR IF THE PRECAST OVERHANG PANEL (PCP(O)) OPTION IS USED.

③ REINFORCED STEEL WEIGHT IS CALCULATED USING AN APPROXIMATE FACTOR OF 2.3LB/SF

REV. NO.	DATE	DESCRIPTION	BY

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City of New Braunfels

KLEIN RD PH 2

SPAN AND SLAB DETAILS

SPANS 1 - 3

STA 134+60 TO STA 137+05

SHEET 1 OF 1

STATE OF TEXAS · A.M. STONE · 91049 · LICENSED · PROFESSIONAL ENGINEER

12/11/20

DGN:	STATE	PROJECT NO.	HIGHWAY NO.
CHK DGN:	TEXAS	NB 18-026	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	361

Plotted on: $DATE$

DATE: Design Filename: 19PDENG014-SLAB DETAILS.dgn
FILE:

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DATE:
FILE:

STRUCTURE	DESIGNED GIRDERS									DEPRESSED STRAND PATTERN		CONCRETE		OPTIONAL DESIGN				
	SPAN NO.	GIRDER NO.	GIRDER TYPE	PRESTRESSING STRANDS						NO.	TO END	RELEASE STRGTH (1)	MINIMUM 28 DAY COMP STRGTH	DESIGN LOAD COMP STRESS (TOP CL) (SERVICE I)	DESIGN LOAD TENSILE STRESS (BOTT CL) (SERVICE III)	REQUIRED MINIMUM ULTIMATE MOMENT CAPACITY (STRENGTH I)	LIVE LOAD DISTRIBUTION FACTOR (2)	
				NON-STD STRAND PATTERN	TOTAL NO.	SIZE (in)	STRGTH fpu (ksi)	"e" ℄ (in)	"e" END (in)		(in)	f'ci (ksi)	f'c (ksi)	fct(ksi)	fcb(ksi)	(kip-ft)	Moment	Shear
KLEIN ROAD PH 2 STREAM CROSSING	1	A	Tx46		28	0.6	270	16.60	11.46	4	40.5	4.200	5.000	3.129	-3.230	5094	0.568	0.742
	1	B	Tx46		32	0.6	270	16.23	9.48	6	42.5	4.400	5.000	3.232	-3.325	5201	0.568	0.742
	1	C	Tx46		32	0.6	270	16.23	9.48	6	42.5	4.400	5.000	3.232	-3.324	5201	0.568	0.742
	1	D	Tx46		32	0.6	270	16.60	11.46	4	40.5	4.200	5.000	3.162	-3.085	4802	0.568	0.742
	1	E	Tx46		28	0.6	270	16.60	11.46	4	40.5	4.200	5.000	3.162	-3.084	4802	0.568	0.742
	1	F	Tx46		28	0.6	270	16.60	11.46	4	40.5	4.200	5.000	3.162	-3.084	4802	0.568	0.742
	1	G	Tx46		28	0.6	270	16.60	11.46	4	40.5	4.200	5.000	3.162	-3.085	4802	0.568	0.742
	1	H	Tx46		30	0.6	270	16.40	9.60	4	40.5	4.200	5.000	3.216	-3.274	5116	0.568	0.742
	1	I	Tx46		30	0.6	270	16.40	9.60	4	40.5	4.200	5.000	3.217	-3.274	5117	0.568	0.742
	1	J	Tx46		28	0.6	270	16.60	11.46	4	40.5	4.200	5.000	3.113	-3.179	5010	0.568	0.742
	2	A	Tx34		24	0.6	270	12.18	7.84	4	30.5	4.300	5.000	2.843	-3.411	3402	0.601	0.786
	2	B	Tx34		32	0.6	270	11.64	7.51	6	28.5	5.600	6.100	2.988	-3.553	3513	0.601	0.786
	2	C	Tx34		32	0.6	270	11.64	7.51	6	28.5	5.600	6.100	2.988	-3.553	3513	0.601	0.786
	2	D	Tx34		26	0.6	270	12.09	8.09	4	30.5	4.700	5.300	2.947	-3.319	3250	0.601	0.786
	2	E	Tx34		26	0.6	270	12.09	8.09	4	30.5	4.700	5.300	2.946	-3.318	3250	0.601	0.786
	2	F	Tx34		26	0.6	270	12.09	8.09	4	30.5	4.700	5.300	2.946	-3.318	3250	0.601	0.786
	2	G	Tx34		26	0.6	270	12.09	8.09	4	30.5	4.700	5.300	2.947	-3.319	3250	0.601	0.786
	2	H	Tx34		26	0.6	270	12.09	8.09	4	30.5	4.700	5.300	2.979	-3.503	3443	0.601	0.786
	2	I	Tx34		26	0.6	270	12.09	8.09	4	30.5	4.700	5.300	2.980	-3.504	3444	0.601	0.786
	2	J	Tx34		26	0.6	270	12.01	8.30	4	30.5	5.100	5.700	2.834	-3.362	3350	0.601	0.786
	3	A	Tx34		26	0.6	270	12.09	8.40	4	28.5	4.800	5.400	2.878	-3.490	3516	0.631	0.824
	3	B	Tx34		26	0.6	270	12.09	8.40	4	28.5	4.800	5.600	3.061	-3.669	3633	0.631	0.824
	3	C	Tx34		26	0.6	270	12.09	8.40	4	28.5	4.800	5.600	3.060	-3.668	3633	0.631	0.824
	3	D	Tx34		24	0.6	270	12.18	9.51	4	20.5	4.700	5.400	3.023	-3.668	3388	0.631	0.824
	3	E	Tx34		24	0.6	270	12.18	9.51	4	20.5	4.700	5.400	3.023	-3.668	3388	0.631	0.824
	3	F	Tx34		24	0.6	270	12.18	9.51	4	20.5	4.700	5.400	3.023	-3.668	3388	0.631	0.824
	3	G	Tx34		24	0.6	270	12.18	9.51	4	20.5	4.700	5.400	3.023	-3.668	3388	0.631	0.824
	3	H	Tx34		26	0.6	270	12.09	8.40	4	28.5	4.800	5.400	3.052	-3.619	3581	0.631	0.824
	3	I	Tx34		26	0.6	270	12.09	8.40	4	28.5	4.800	5.400	3.053	-3.620	3582	0.631	0.824
	3	J	Tx34		24	0.6	270	12.18	8.51	4	26.5	4.500	5.300	2.868	-3.440	3464	0.631	0.824

NON-STANDARD STRAND PATTERNS

PATTERN	STRAND ARRANGEMENT AT ℄ OF GIRDER

(1) BASED ON THE FOLLOWING ALLOWABLE STRESSES (KSI):

COMPRESSION = 0.65 F'CI

TENSION = 0.24 $\sqrt{F'CI}$

OPTIONAL DESIGNS MUST LIKEWISE CONFORM.

(2) PORTION OF FULL HL93.

DESIGN NOTES:

DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
OPTIONAL DESIGNS FOR GIRDERS 120 FEET OR LONGER MUST HAVE A CALCULATED RESIDUAL CAMBER EQUAL TO OR GREATER THAN THAT OF THE DESIGNED GIRDER.
PRESTRESS LOSSES FOR THE DESIGNED GIRDERS HAVE BEEN CALCULATED FOR A RELATIVE HUMIDITY OF__PERCENT. OPTIONAL DESIGNS MUST LIKEWISE CONFORM.

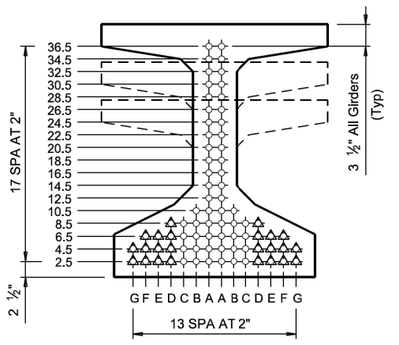
FABRICATION NOTES:

PROVIDE CLASS H CONCRETE.
PROVIDE GRADE 60 REINFORCING STEEL BARS.
USE LOW RELAXATION STRANDS, EACH PRETENSIONED TO 75 PERCENT OF FPU.
STRAND DEBONDING MUST COMPLY WITH ITEM 424.4.2.2.2.4. FULL-LENGTH DEBONDED STRANDS ARE ONLY PERMITTED IN POSITIONS MARKED△. DOUBLE WRAP FULL-LENGTH DEBONDED STRANDS IN OUTER MOST POSITION OF EACH ROW.
WHEN SHOWN ON THIS SHEET, THE FABRICATOR HAS THE OPTION OF FURNISHING EITHER THE DESIGNED GIRDER OR AN APPROVED OPTIONAL DESIGN. ALL OPTIONAL DESIGN SUBMITTALS MUST BE SIGNED, SEALED AND DATED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF TEXAS.
SEAL CRACKS IN GIRDER ENDS EXCEEDING 0.005" IN WIDTH AS DIRECTED BY THE ENGINEER. THE FABRICATOR IS PERMITTED TO DECREASE THE SPACING OF BARS R AND S BY PROVIDING ADDITIONAL BARS TO HELP LIMIT CRACK WIDTH PROVIDED THE DECREASED SPACING RESULTS IN NO LESS THAN 1" CLEAR BETWEEN BARS. THE FABRICATOR MUST TAKE AN APPROVED CORRECTIVE ACTION IF CRACKS GREATER THAN 0.005" FORM ON A REPETITIVE BASIS.

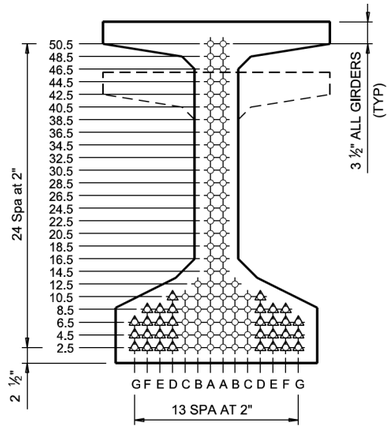
DEPRESSED STRAND DESIGNS:

LOCATE STRANDS FOR THE DESIGNED GIRDER AS LOW AS POSSIBLE ON THE 2" GRID SYSTEM UNLESS A NON-STANDARD STRAND PATTERN IS INDICATED. FILL ROW "2.5", THEN ROW "4.5", THEN ROW "6.5", ETC., BEGINNING EACH ROW IN THE "A" POSITION AND WORKING OUTWARD UNTIL THE REQUIRED NUMBER OF STRANDS IS REACHED. ALL STRANDS IN THE "A" POSITION MUST BE DEPRESSED, MAINTAINING THE 2" SPACING SO THAT, AT THE GIRDER ENDS, THE UPPER TWO STRANDS ARE IN THE POSITION SHOWN IN THE TABLE.

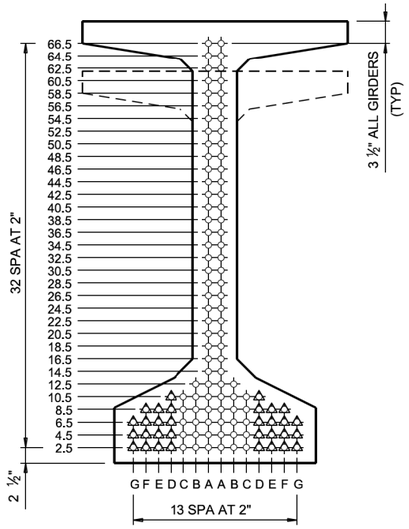
TO COMPLETE THIS SHEET INPUT THE GIRDER DESIGNS IN THE TABLE AND THE RELATIVE HUMIDITY UNDER DESIGN NOTES.
IN ALL CASES, REMOVE THIS BLOCK. THIS SHEET MUST BE SIGNED, SEALED, AND DATED BY A REGISTERED PROFESSIONAL ENGINEER.



TYPE Tx28, Tx34 & Tx40



TYPE Tx46 & Tx54



TYPE Tx62 & Tx70

HL93 LOADING

Texas Department of Transportation | Bridge Division Standard

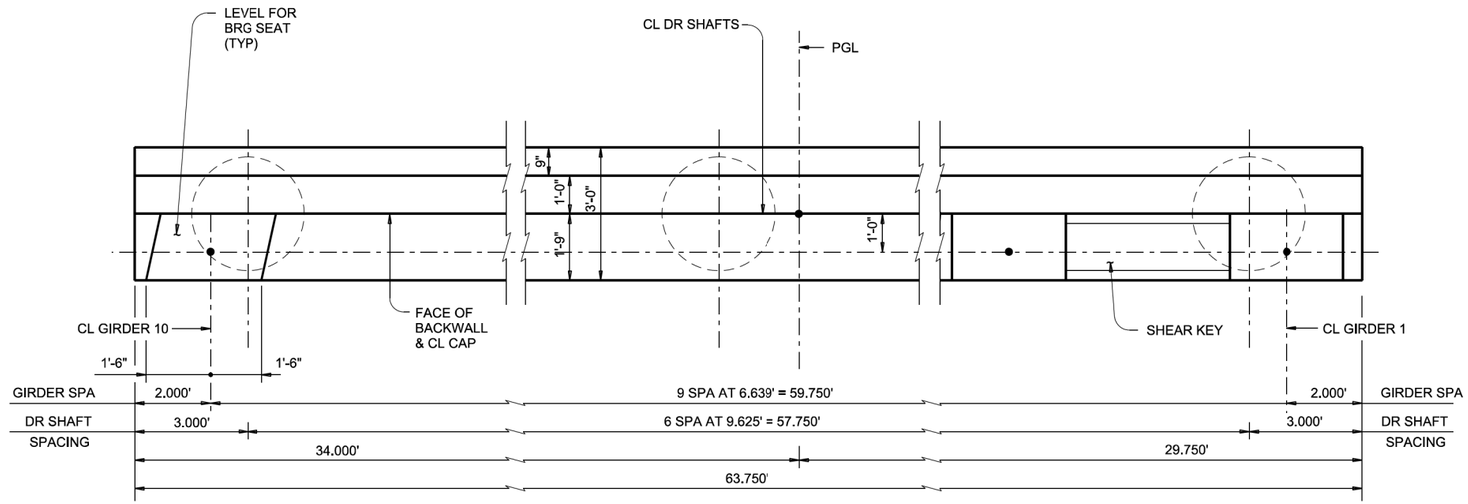
PRESTRESSED CONCRETE I-GIRDER DESIGNS
(NON-STANDARD SPANS)

IGND

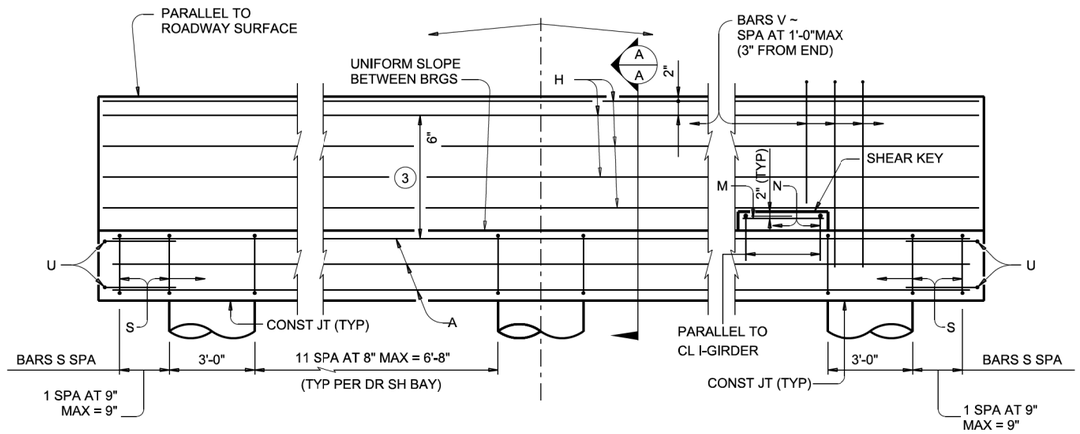
STATE OF TEXAS
A.M. STONE
91049
LICENSED
PROFESSIONAL ENGINEER
12/11/2020

FILE: 19PDENG014-BEAM DESIGN.dgn	DN: TxDOT	CK: TxDOT	DW: EFC	CK: TAR
©TxDOT August 2017	CONT	SECT	JOB	HIGHWAY
REVISIONS 10-19: Modified for depressed strands only.	DIST	COUNTY		SHEET NO. 362

Plotted on: $DATE$



PLAN



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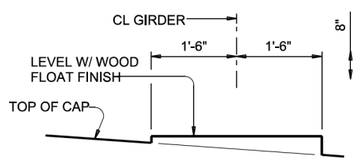
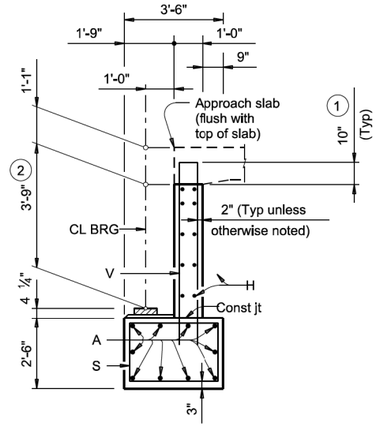


BEARING SEAT DETAIL

(BEARING SURFACE MUST BE CLEAN AND FREE OF ALL LOOSE MATERIAL BEFORE PLACING BEARING PAD.)



SECTION A-A

(With approach slab)

TYPE Tx46 GIRDERS

BAR	NO.	SIZE	LENGTH + LAP	WEIGHT
A*	10	#11	72'-4"	3,843
H*	10	#6	66'-4"	996
M	2	#5	3'-6"	7
N	5	#5	5'-5"	28
S	76	#5	11'-6"	912
U	4	#6	8'-1"	49
V	64	#5	14'-4"	957
Reinforcing Steel			Lb	6792
Class "C" Concrete (Cap) **			CY	49.2

LAP SPLICING

BAR SIZE NO.	UNCOATED LAP LENGTH	COATED LAP LENGTH
3	1'-4"	2'-0"
4	1'-9"	2'-8"
5	2'-2"	3'-3"
6	2'-7"	3'-11"
7	3'-5"	5'-2"
8	4'-6"	6'-9"
9	5'-8"	8'-6"
10	7'-3"	10'-11"
11	8'-11"	13'-5"

GENERAL NOTES:

DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

SEE BRIDGE LAYOUT FOR HEADER SLOPE AND FOUNDATION TYPE, SIZE AND LENGTH.

SEE COMMON FOUNDATION DETAILS (FD) STANDARD SHEET FOR ALL FOUNDATION DETAILS AND NOTES.

COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE.

REINFORCING BAR DIMENSIONS SHOWN ARE OUT-TO-OUT OF BAR.

MATERIAL NOTES:

PROVIDE CLASS C CONCRETE (F'C = 3,600 PSI).

PROVIDE CLASS C (HPC) CONCRETE IF SHOWN ELSEWHERE IN THE PLANS.

PROVIDE GRADE 60 REINFORCING STEEL.

GALVANIZE DOWEL BARS D.

(1) INCREASE AS REQUIRED TO MAINTAIN 3" FROM FINISHED GRADE.

(2) SEE SPAN DETAILS FOR "Y" VALUE.

(3) SPACING BASED ON GIRDER TYPE: TX46 ~ 4 SPACES AT 1'-0" MAX

(*) INCLUDES LAP SPLICE

(**) INCLUDES SHEAR KEY

REV. NO.	DATE	DESCRIPTION	BY

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City of New Braunfels

KLEIN RD PH 2

ABUTMENT #1 DETAILS

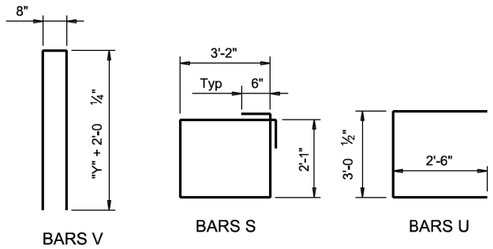
STA 134+60

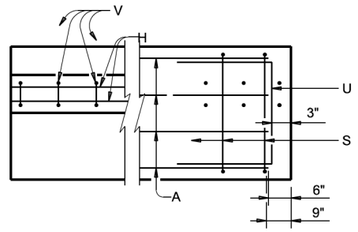
SHEET 1 OF 2

DGN:	STATE	PROJECT NO.	HIGHWAY NO.
CHK: DGN:	TEXAS	NB 18-026	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK: DWG:	GUADALUPE	NEW BRAUNFELS	363

Design Filename: $FILE$

Plotted on: $DATE$





CORNER DETAILS

REV. NO.	DATE	DESCRIPTION	BY

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City of New Braunfels

KLEIN RD PH 2

ABUTMENT #1 DETAILS

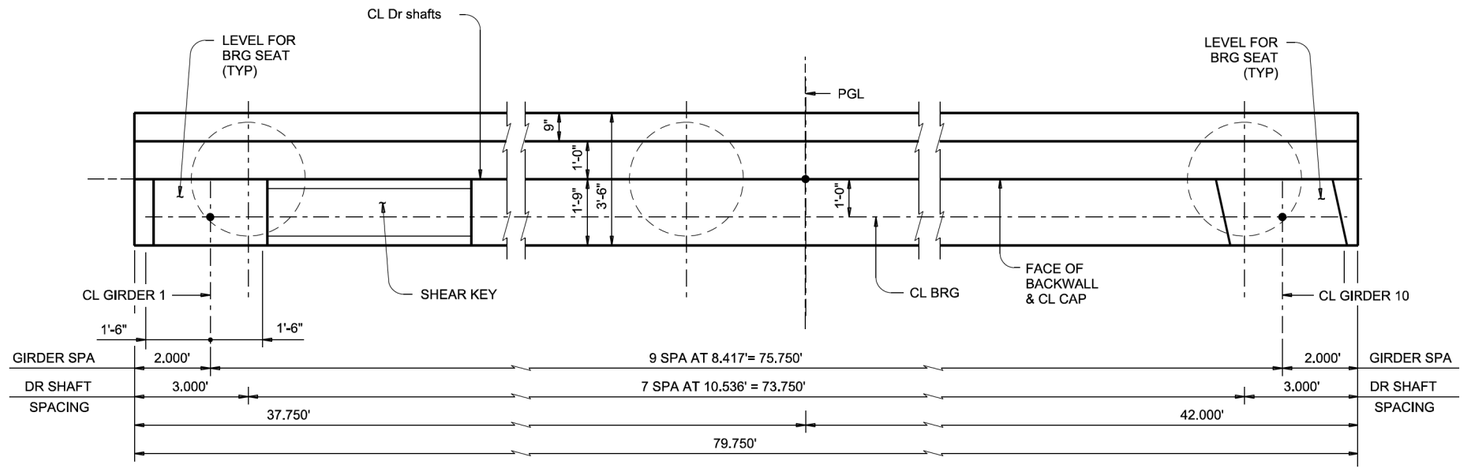
STA 134+60

SHEET 2 OF 2

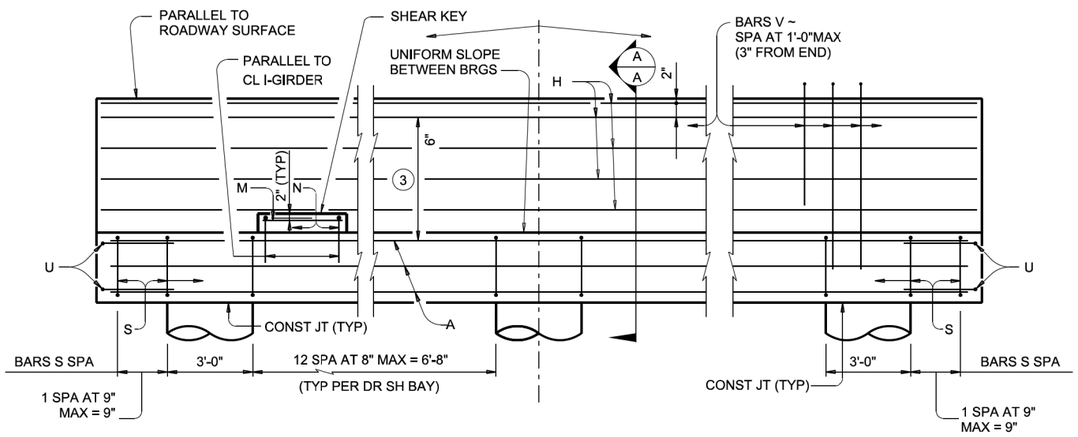
PGNs			
CHK			
PGNs	TEXAS	NB 18-026	KLEIN RD
DWGs	COUNTY	CITY	SHEET NO.
CHK DWGs	GUADALUPE	NEW BRAUNFELS	364

STATE OF TEXAS
A.M. STONE
91049
LICENSED
PROFESSIONAL ENGINEER
12/11/20

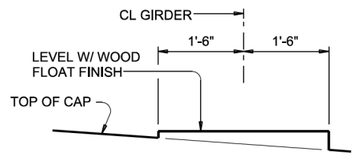
Design Filename: $FILE$



PLAN

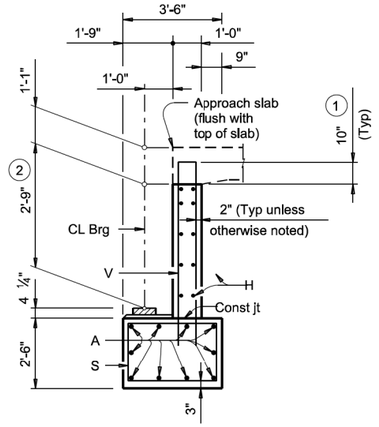


ELEVATION



BEARING SEAT DETAIL

(BEARING SURFACE MUST BE CLEAN AND FREE OF ALL LOOSE MATERIAL BEFORE PLACING BEARING PAD.)



SECTION A-A

(With approach slab)

1. INCREASE AS REQUIRED TO MAINTAIN 3" FROM FINISHED GRADE.
2. SEE SPAN DETAILS FOR "Y" VALUE.
3. SPACING BASED ON GIRDER TYPE: TX46 ~ 4 SPACES AT 1'-0" MAX
- (*) INCLUDES LAP SPLICE
- (**) INCLUDES SHEAR KEY

TYPE Tx34 GIRDERS

BAR	NO.	SIZE	LENGTH + LAP	WEIGHT
A*	10	#11	88'-4"	4,693
H*	10	#6	82'-4"	1,237
M	2	#5	5'-4"	11
N	8	#5	5'-5"	45
S	88	#5	11'-6"	1056
U	4	#6	8'-1"	49
V	80	#5	14'-4"	1,196
REINFORCING STEEL			Lb	8286
CLASS "C" CONCRETE (CAP) **			CY	61.5

LAP SPLICING

BAR SIZE NO.	UNCOATED LAP LENGTH	COATED LAP LENGTH
3	1'-4"	2'-0"
4	1'-9"	2'-8"
5	2'-2"	3'-3"
6	2'-7"	3'-11"
7	3'-5"	5'-2"
8	4'-6"	6'-9"
9	5'-8"	8'-6"
10	7'-3"	10'-11"
11	8'-11"	13'-5"

GENERAL NOTES:

DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

SEE BRIDGE LAYOUT FOR HEADER SLOPE AND FOUNDATION TYPE, SIZE AND LENGTH.

SEE COMMON FOUNDATION DETAILS (FD) STANDARD SHEET FOR ALL FOUNDATION DETAILS AND NOTES.

COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE.

REINFORCING BAR DIMENSIONS SHOWN ARE OUT-TO-OUT OF BAR.

MATERIAL NOTES:

PROVIDE CLASS C CONCRETE (F'C = 3,600 PSI).

PROVIDE CLASS C (HPC) CONCRETE IF SHOWN ELSEWHERE IN THE PLANS.

PROVIDE GRADE 60 REINFORCING STEEL.

GALVANIZE DOWEL BARS D.

REV. NO.	DATE	DESCRIPTION	BY

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City of New Braunfels

KLEIN RD PH 2

ABUTMENT #4 DETAILS

STA 137+05

SHEET 1 OF 2

STATE OF TEXAS · A.M. STONE · 91049 · LICENSED · PROFESSIONAL ENGINEER

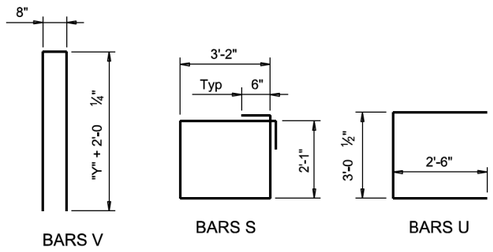
12/11/2025

DGN:	STATE	PROJECT NO.	HIGHWAY NO.
CHK DGN:	TEXAS	NB 18-026	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	365

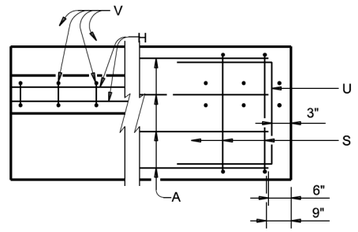
Plotted on: $DATE$

Design Filename: $FILE$

Plotted on: $DATE$



BARS V BARS S BARS U



BACKWALL CAP

CORNER DETAILS

Design Filename: $FILE$

REV. NO.	DATE	DESCRIPTION	BY

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City of New Braunfels

KLEIN RD PH 2

ABUTMENT #4 DETAILS

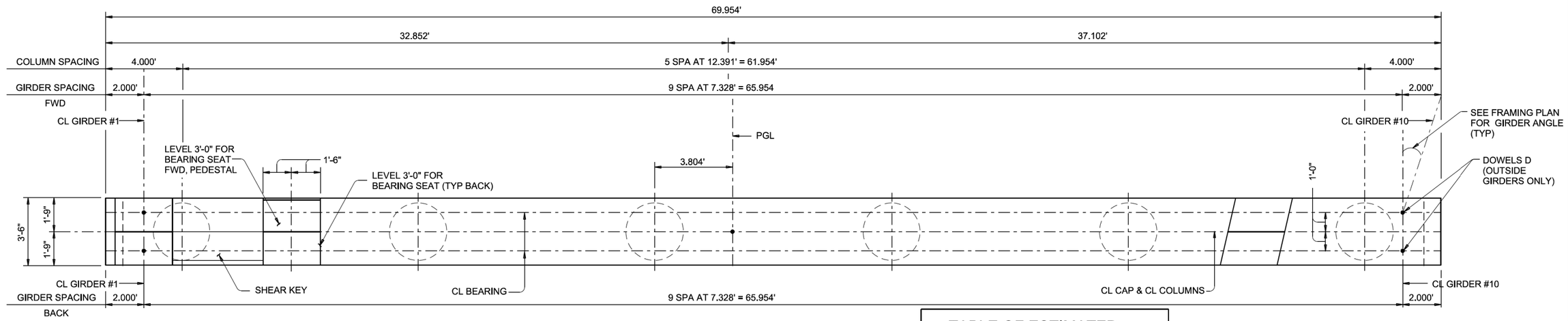
STA 137+05

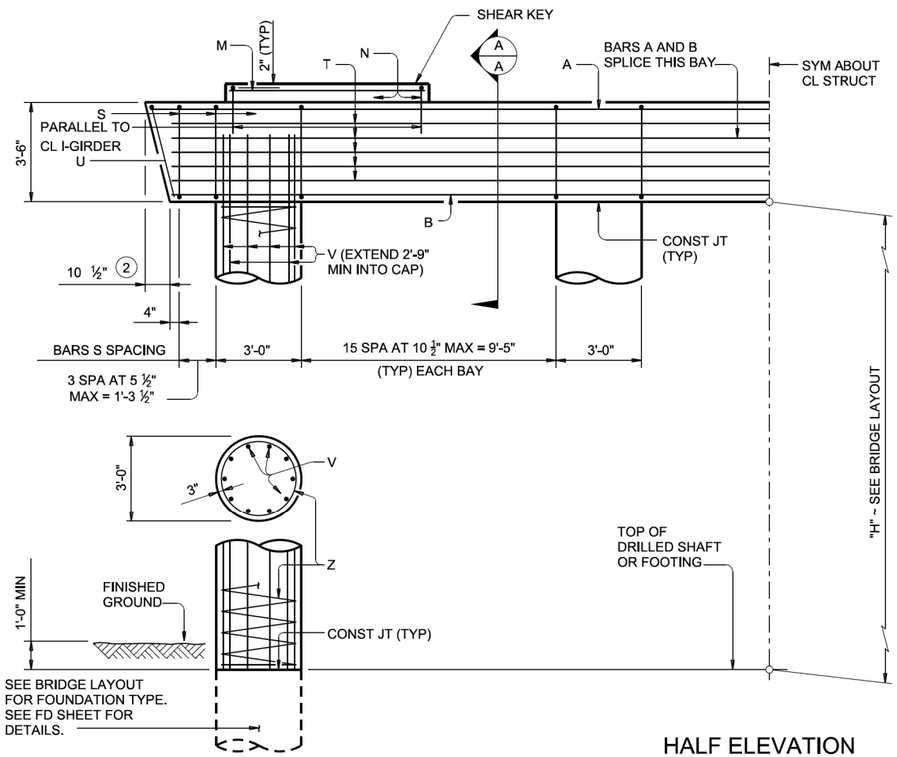
SHEET 2 OF 2

STATE OF TEXAS
A.M. STONE
91049
LICENSED
PROFESSIONAL ENGINEER
12/11/20

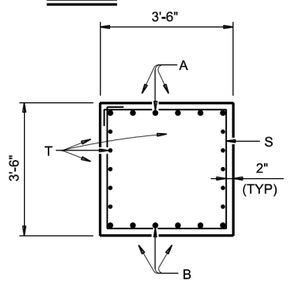
DGN:	STATE	PROJECT NO.	HIGHWAY NO.
CHK:	TEXAS	NB 18-026	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK:	GUADALUPE	NEW BRAUNFELS	366
DWG:			

Plotted on: $DATE$

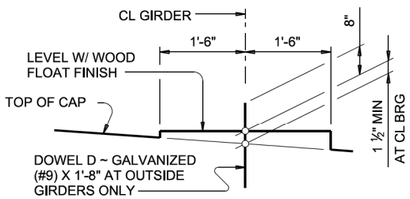




PLAN



SECTION A-A



BEARING SEAT DETAIL

(BEARING SURFACE MUST BE CLEAN AND FREE OF ALL LOOSE MATERIAL BEFORE PLACING BEARING PAD.)

TABLE OF ESTIMATED CAP QUANTITIES (1)

BAR	NO.	SIZE	LENGTH	WEIGHT
A*	6	#11	78'-9"	2,512
B*	6	#11	77'-0"	2,456
D	4	#9	1'-8"	23
E1	30	#5	6'-6"	203
E2	20	#5	7'-9"	162
M	2	#5	4'-2"	9
N	6	#5	5'-5"	34
S	98	#5	12'-7"	1286
T*	10	#5	77'-0"	804
U	2	#5	9'-8"	20
REINFORCING STEEL			Lb	7,489
CLASS "C" CONCRETE (CAP) **			CY	31.5

LAP SPLICING

BAR SIZE NO.	UNCOATED LAP LENGTH	COATED LAP LENGTH
3	1'-4"	2'-0"
4	1'-9"	2'-8"
5	2'-2"	3'-3"
6	2'-7"	3'-11"
7	3'-5"	5'-2"
8	4'-6"	6'-9"
9	5'-8"	8'-6"
10	7'-3"	10'-11"
11	8'-11"	13'-5"

(1) QUANTITIES SHOWN ARE BASED ON AN "H" VALUE OF 36'. FOR EACH LINEAR FOOT VARIATION IN "H" VALUE, MAKE THE FOLLOWING ADJUSTMENTS:
BARS V LENGTH, 1'-0"
BARS Z LENGTH, 31'-5"
REINFORCING STEEL, 220 LB
CLASS "C" CONC (COL), 1.05 CY

(2) MEASURED PARALLEL TO TOP OF CAP CROSS-SLOPE.

(*) INCLUDES 8'-11" LAP SPLICE

(**) INCLUDES SHEAR KEY

GENERAL NOTES:

DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
SEE BRIDGE LAYOUT FOR FOUNDATION TYPE, SIZE AND LENGTH.
SEE COMMON FOUNDATION DETAILS (FD) STANDARD SHEET FOR ALL FOUNDATION DETAILS AND NOTES.
SEE SHEAR KEY (IGSK) STANDARD SHEET FOR ALL SHEAR KEY DETAILS AND NOTES, IF APPLICABLE.
THESE BENT DETAILS MAY BE USED WITH STANDARD SIG-44 ONLY.

COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE. REINFORCING BAR DIMENSIONS SHOWN ARE OUT-TO-OUT OF BAR.

MATERIAL NOTES:

PROVIDE CLASS C CONCRETE (F'C = 3,600 PSI).
PROVIDE GRADE 60 REINFORCING STEEL.
GALVANIZE DOWEL BARS D.

STATE OF TEXAS
A.M. STONE
91049
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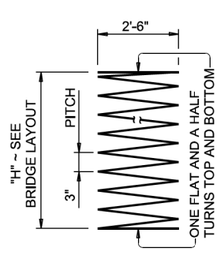
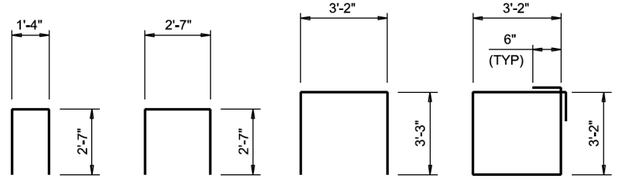
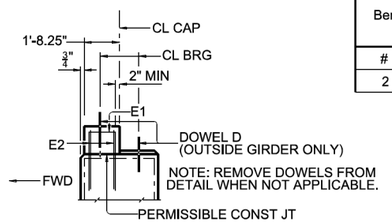
12/11/2020

HALF ELEVATION



BARS Z



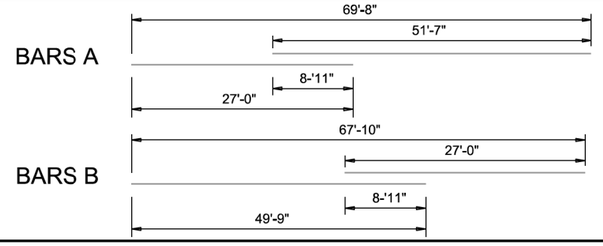


PEDESTAL SECTION

REMOVE ALL LOOSE MATERIAL AND CLEAN THE BEARING SURFACE BEFORE PLACING THE BEARING PAD

TABLE OF ESTIMATED COLUMN QUANTITIES (1)

Bent	"H"	Bars V 60 - #9		Bars Z 6 - #4		REINF STEEL	CLASS "C" CONC (COL)
#	HEIGHT	LENGTH + EMBED	WEIGHT	LENGTH + LAP	WEIGHT	LB	CY
2	5'	7'-9"	1581	180'-8"	724	2305	5.3



REV. NO.	DATE	DESCRIPTION	BY

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City of New Braunfels

KLEIN RD PH 2

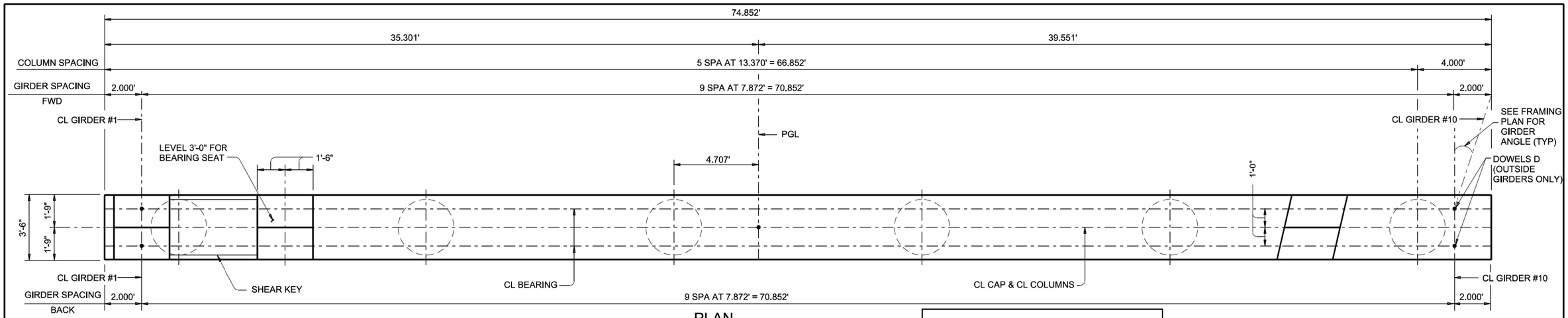
BENT #2 DETAILS

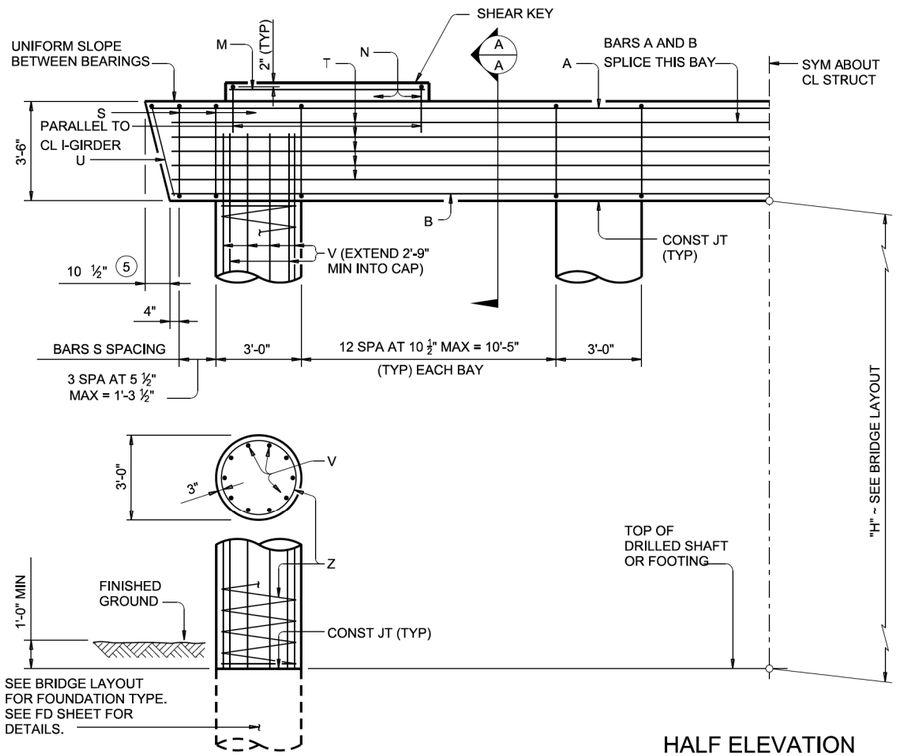
STA 135+55

SHEET 1 OF 1

DGN:	STATE	PROJECT NO.	HIGHWAY NO.
CHK DGN:	TEXAS	NB 18-026	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	367

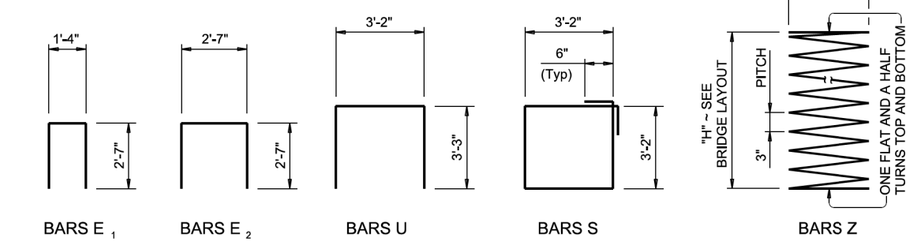
Design Filename: $FILE$



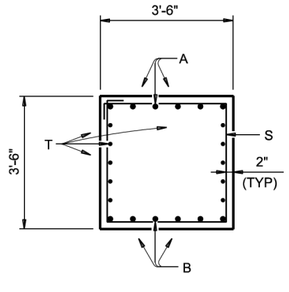


HALF ELEVATION

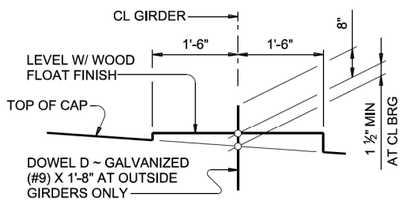
*AS DIRECTED BY THE ENGINEER



PLAN



SECTION A-A



BEARING SEAT DETAIL

(BEARING SURFACE MUST BE CLEAN AND FREE OF ALL LOOSE MATERIAL BEFORE PLACING BEARING PAD.)

TABLE OF ESTIMATED CAP QUANTITIES (1)

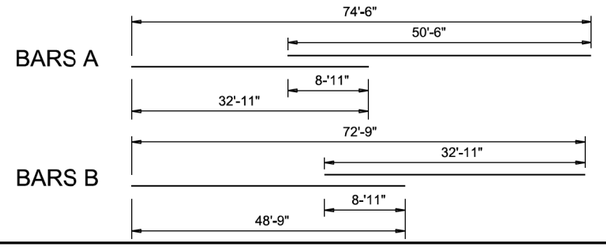
BAR	NO.	SIZE	LENGTH	WEIGHT
A*	6	#11	83'-9"	2,668
B*	6	#11	82'-0"	2,612
D	4	#9	1'-8"	23
E1	30	#5	6'-6"	203
E2	20	#5	7'-9"	162
M	4	#5	4'-9"	20
N	7	#5	7'-2"	52
S	73	#5	12'-7"	958
T*	10	#5	82'-0"	855
U	2	#5	9'-8"	20
REINFORCING STEEL			Lb	7,554
CLASS "C" CONCRETE (CAP) **			CY	34.1

LAP SPLICING

BAR SIZE NO.	UNCOATED LAP LENGTH	COATED LAP LENGTH
3	1'-4"	2'-0"
4	1'-9"	2'-8"
5	2'-2"	3'-3"
6	2'-7"	3'-11"
7	3'-5"	5'-2"
8	4'-6"	6'-9"
9	5'-8"	8'-6"
10	7'-3"	10'-11"
11	8'-11"	13'-5"

TABLE OF ESTIMATED COLUMN QUANTITIES (1)

BENT	"H"	BARS V 60 - #9		BARS Z 6 - #4		REINF STEEL	CLASS "C" CONC (COL)
#	HEIGHT	LENGTH + LAP	WEIGHT	LENGTH + LAP	WEIGHT	LB	CY
3	5'	7'-9"	1528	180'-8"	724	2305	5.3



(1) QUANTITIES SHOWN ARE BASED ON AN "H" VALUE OF 36'. FOR EACH LINEAR FOOT VARIATION IN "H" VALUE, MAKE THE FOLLOWING ADJUSTMENTS:
BARS V LENGTH, 1'-0"
BARS Z LENGTH, 31'-5"
REINFORCING STEEL, 220 LB
CLASS "C" CONC (COL), 1.05 CY

(2) MEASURED PARALLEL TO TOP OF CAP CROSS-SLOPE.

(*) INCLUDES LAP SPLICE

(**) INCLUDES SHEAR KEY

GENERAL NOTES:

DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
SEE BRIDGE LAYOUT FOR FOUNDATION TYPE, SIZE AND LENGTH.
SEE COMMON FOUNDATION DETAILS (FD) STANDARD SHEET FOR ALL FOUNDATION DETAILS AND NOTES.
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COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE. REINFORCING BAR DIMENSIONS SHOWN ARE OUT-TO-OUT OF BAR.

MATERIAL NOTES:

PROVIDE CLASS C CONCRETE (F'C = 3,600 PSI).
PROVIDE GRADE 60 REINFORCING STEEL.
GALVANIZE DOWEL BARS D.

STATE OF TEXAS
A.M. STONE
91049
LICENSED
PROFESSIONAL ENGINEER
12/11/2020

REV. NO.	DATE	DESCRIPTION	BY

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City of New Braunfels

KLEIN RD PH 2

BENT #3 DETAILS

STA 136+30

SHEET 1 OF 1

DGN:	STATE	PROJECT NO.	HIGHWAY NO.
CHK DGN:	TEXAS	NB 18-026	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	368

Plotted on: $DATE$

Design Filename: $FILE$

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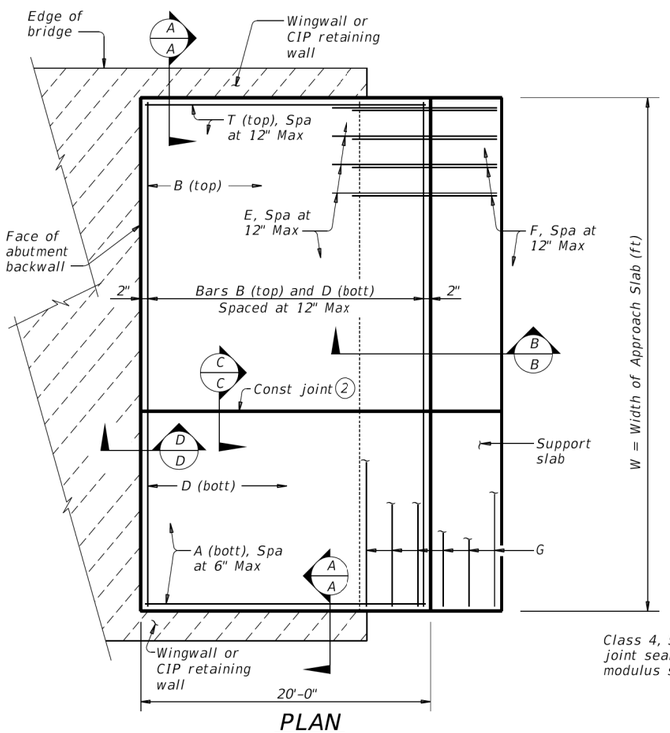
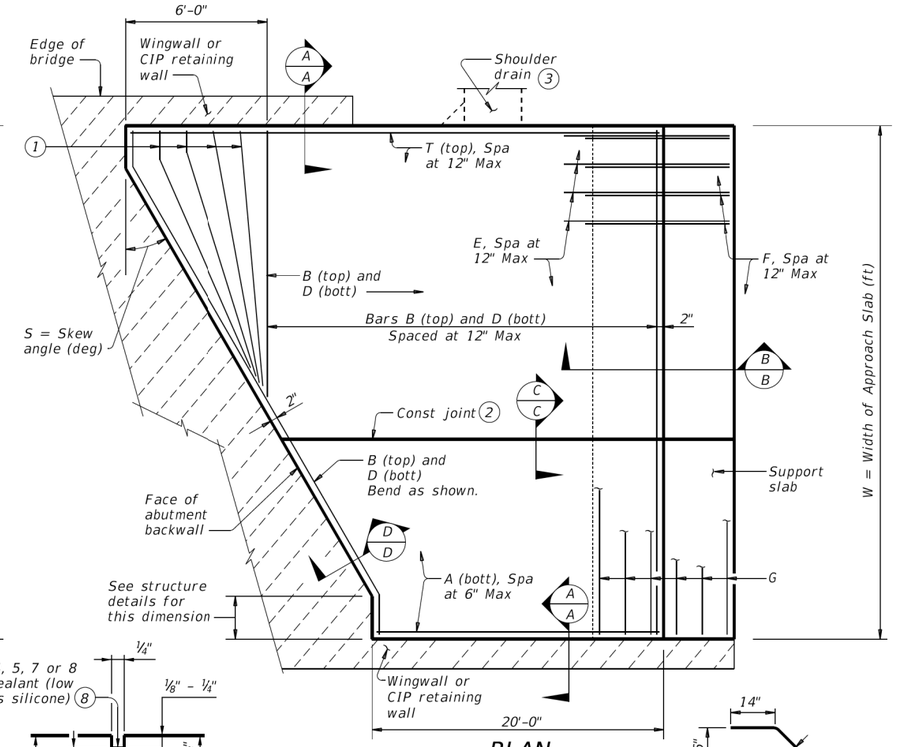
DATE:
FILE:



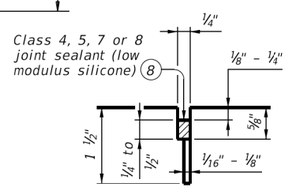
PLAN

(Showing non-skewed approach slab.)

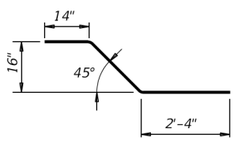


PLAN

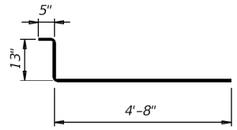
(Showing skewed approach slab.)



LONGITUDINAL SAW CUT JOINT DETAIL



BARS E (#5)



BARS F (#5)

BAR TABLE	
BAR	SIZE
A	#8
B	#5
D	#5
E	#5
F	#5
G	#5
T	#5

APPROXIMATE QUANTITIES 4

Reinf steel weight = 8.5 Lbs/SF of Approach Slab
= 18.4 Lbs/LF of Support Slab

Vol of Appr Slab Conc (CY) = 1.057W – 0.008W x T + 0.02W² Tan S
(Includes Support Slab)

W = Width of Approach Slab (ft)

T = Conc Pavement Thickness (in)

S = Skew Angle (deg)

1. Flare Bars B and D in this region (1'-6" Max Spa, 3" Min Spa). Minimum flared bar length = 2'-6". Bend bars as necessary.
2. Provide longitudinal construction joints that align with longitudinal construction joints in the bridge slab with bridges built in stages. Other longitudinal construction joints must receive approval of the Engineer.
3. See details elsewhere in plans for shoulder drain location and details.
4. For Contractor's information only. Quantities shown are for one approach slab only.
5. On portion of support slab that supports the concrete pavement, adjust top surface elevation, if required, to accommodate concrete pavement thickness. Smooth trowel finish. Oil top of support slab with 60 grade oil and apply heavy coat of powdered graphite. Press down one layer of 30# roofing felt.
6. Multiple piece tie bars are acceptable at longitudinal construction joints provided minimum laps shown are achieved.
7. See details elsewhere in plans for required cross-slope.
8. Place in accordance with Item 438.
9. Provide backer rod that is 25% larger than joint opening and compatible with the sealant.
10. If bridge rail is present at the wingwall or CIP retaining wall, place ½" rebonded recycled tire rubber between concrete railing and top of approach slab as shown when concrete railing projects over the approach slab.

GENERAL NOTES:

Construct approach slab in accordance with Item 422.

Provide Class "S" concrete with a minimum compressive strength of 4,000 psi.

Provide Grade 60 reinforcing steel.

Provide longitudinal joints as shown on the Longitudinal Saw Cut Joint Detail at lane lines and shoulders when width between longitudinal construction joints or edges of approach slab exceeds 16 feet. Saw cut joints within 24 hours of concrete placement to a depth of 1 ½" and seal in accordance with Item 438. Alternately, provide a controlled joint consisting of 1 ½" vinyl or plastic joint former (Stress Cap, Zip Strip, Stress Lock, or equal as approved by the Engineer.)

Provide rebonded recycled tire rubber joint filler that meets the requirements of DMS-6310, "Joint Sealants and Fillers."

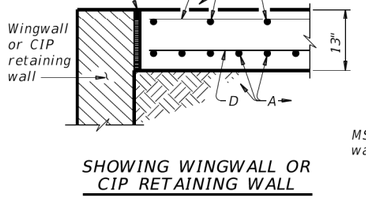
Construct the subgrade or subbase away from the bridge for a minimum distance of 100 feet prior to the approach slab, unless otherwise indicated on the plans.

Compact and finish the subgrade or foundation for the approach slab to the typical cross-section and to the lines and grades shown on the plans.

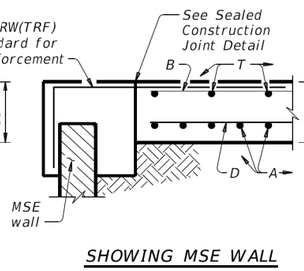
Cure for 4 days using water or membrane curing per Item 422.

All details shown herein are subsidiary to bridge approach slab.

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

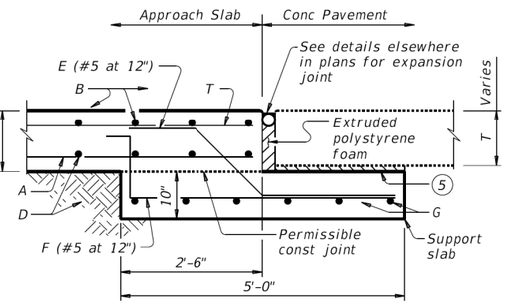


SHOWING WINGWALL OR CIP RETAINING WALL

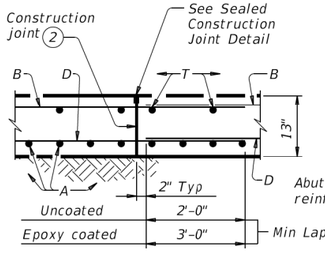


SHOWING MSE WALL

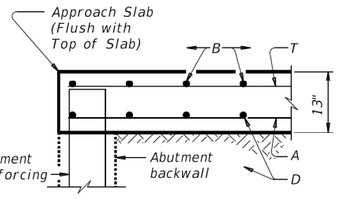
SECTION A-A



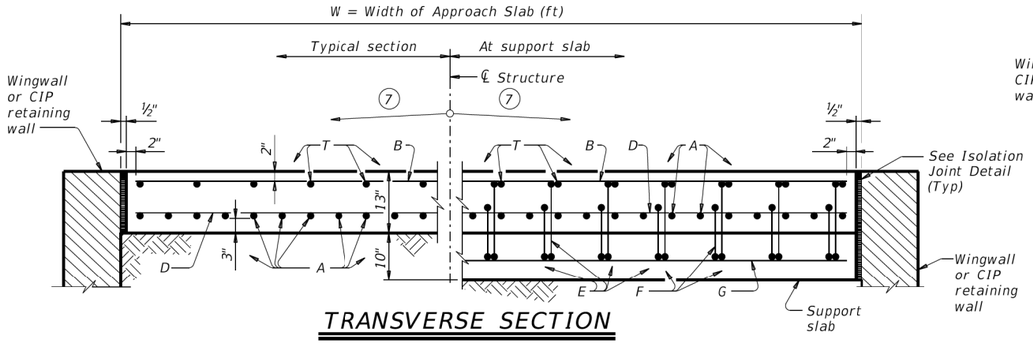
SECTION B-B



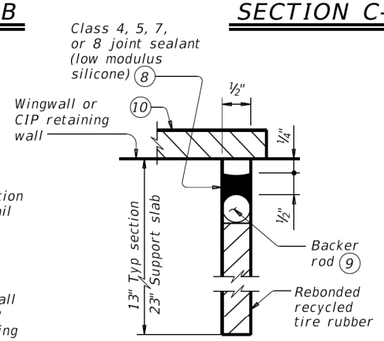
SECTION C-C 6



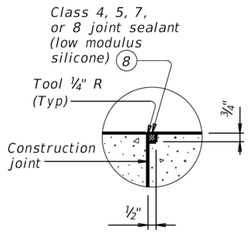
SECTION D-D



TRANSVERSE SECTION



ISOLATION JOINT DETAIL



SEALED CONSTRUCTION JOINT DETAIL

Texas Department of Transportation

Bridge Division Standard

BRIDGE APPROACH SLAB

CONCRETE PAVEMENT

BAS-C

FILE: bascste1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS				
02-20: Removed stress relieving pad.	DIST	COUNTY		SHEET NO.
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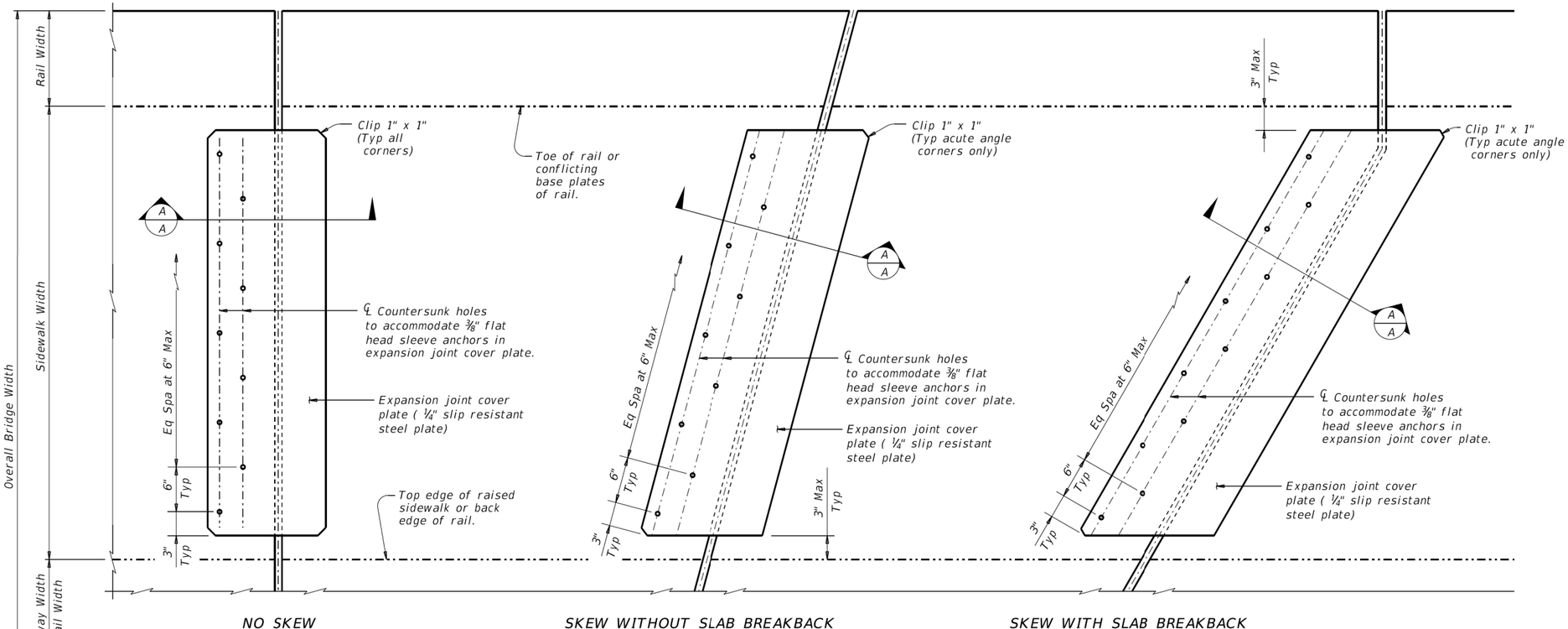
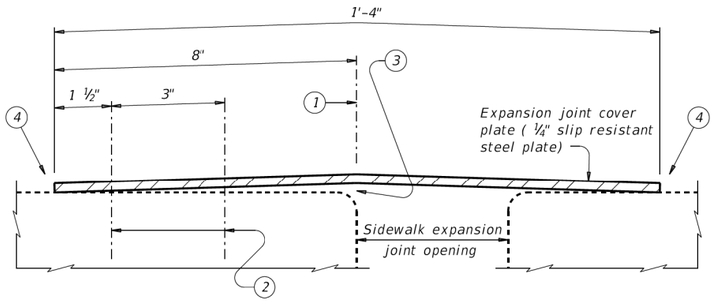


NO SKEW

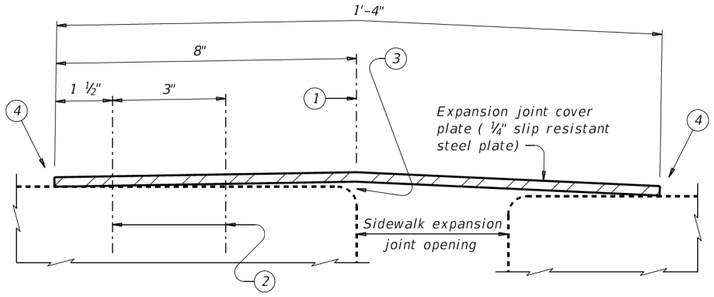
SKEW WITHOUT SLAB BREAKBACK

SKEW WITH SLAB BREAKBACK

PLAN



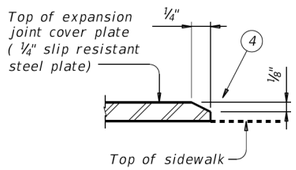
SHOWING LEVEL EXP JOINT



SHOWING UNLEVEL EXP JOINT
(Install sleeve anchors on high side of expansion joint)

SECTION A-A

1. ℄ Expansion joint cover plate and edge of expansion joint.
2. ℄ ⅜" x 2 ½" Min, Flat Head Sleeve Anchors, Stainless Steel. Countersink Flat Head Sleeve Anchors in ¼" Slip Resistant Steel Plate.
3. It is not necessary to remove plate crown provided the plate is firmly secured to the sidewalk.
4. Transverse edges must be in contact with sidewalk surface after installation.

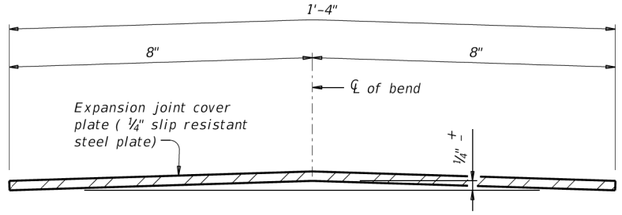


EXP JOINT COVER PLATE BEVEL DETAIL

Bevel all plate edges as shown.

APPROVED SLIP RESISTANT PLATE	
Product	Manufacturer Website
Algrip™, Steel	www.algrip.com
Mebac® #3, Steel	www.harscoikg.com
SlipNOT®Grade 2, Steel	www.slipnot.com

Provide cover plates fabricated with a product from this list. No exceptions are permitted.



BENDING DIAGRAM OF EXP JOINT COVER PLATE

FABRICATION NOTES:

Shop drawings for the fabrication of Bridge Sidewalk Expansion Joint Cover Plate will not require the Engineer's approval if fabrication is in accordance with the details shown on this standard.

A Bridge Sidewalk Expansion Joint Cover Plate Layout which identifies location side of sleeve anchors and orientation of all cover plate sections must be developed by the fabricator. Mark each steel section in accordance with the Bridge Sidewalk Expansion Joint Cover Plate Layout. A copy of the Bridge Sidewalk Expansion Joint Cover Plate Layout is to be provided to the Engineer.

Sidewalk expansion joint cover plates must be hot-dipped galvanized ¼" slip resistant steel plate. Checker plate or diamond plate is not allowed nor are slip resistant tapes, films and non-metallic coatings.

Minimum required yield strength of steel plate is 36 ksi.

Hot-dip galvanize slip resistant steel plate after fabrication in accordance with Item 445, "Galvanizing".

Provide stainless steel flat head sleeve anchors meeting the requirements of ASTM F 593, Group I, Alloy 304. Countersink holes in slip-resistant plate for sleeve anchors. Drill holes in sidewalk as per sleeve anchor manufacturer's recommendations. Install sleeve anchors flush with, or slightly recessed below, top surface of sidewalk expansion joint cover plate.

GENERAL NOTES:

Sidewalk expansion joint cover plates can only accommodate up to a 7" maximum expansion joint opening.

Details provided are applicable to concrete walkway surfaces only.

Payment for sidewalk expansion joint cover plates are by the pound of "Structural Steel (Misc Non-Bridge)" as per Item 442, "Metal for Structures".

Estimated weight of one sidewalk expansion joint cover plate is 14 plf.

Texas Department of Transportation

Bridge Division Standard

BRIDGE SIDEWALK EXPANSION JOINT COVER PLATE (ALL SKEWS)

BS-EJCP

FILE: bsejste1-19.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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	DIST	COUNTY		SHEET NO.
				370

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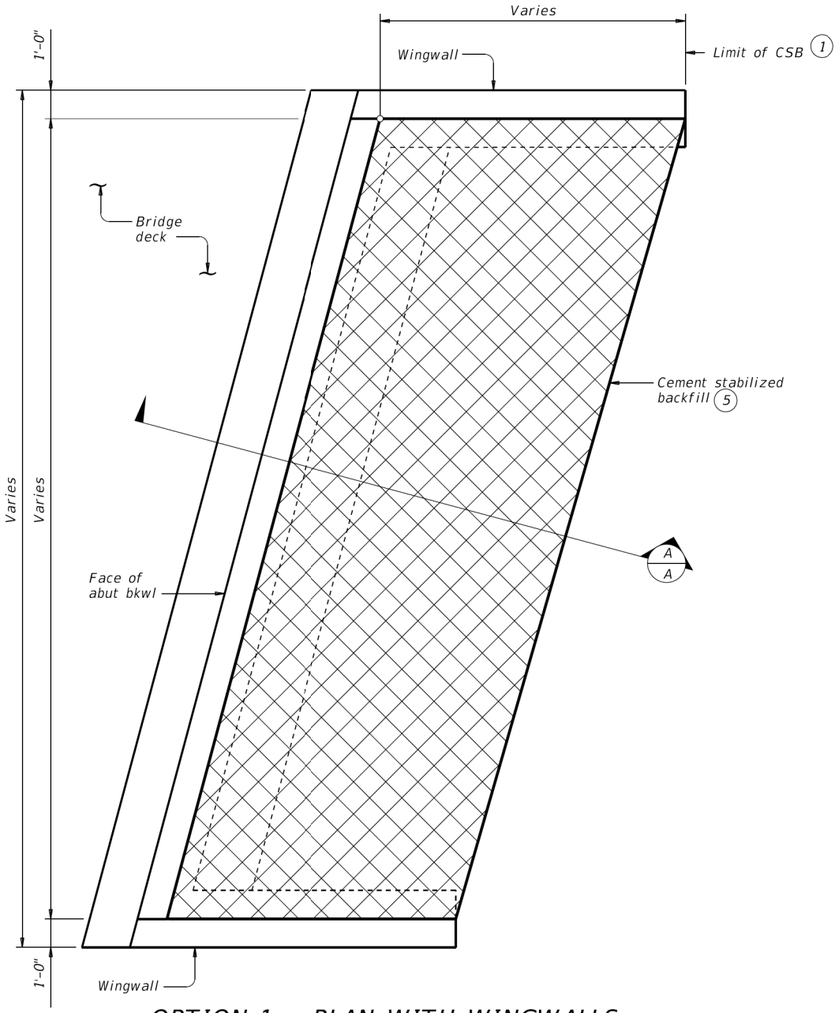
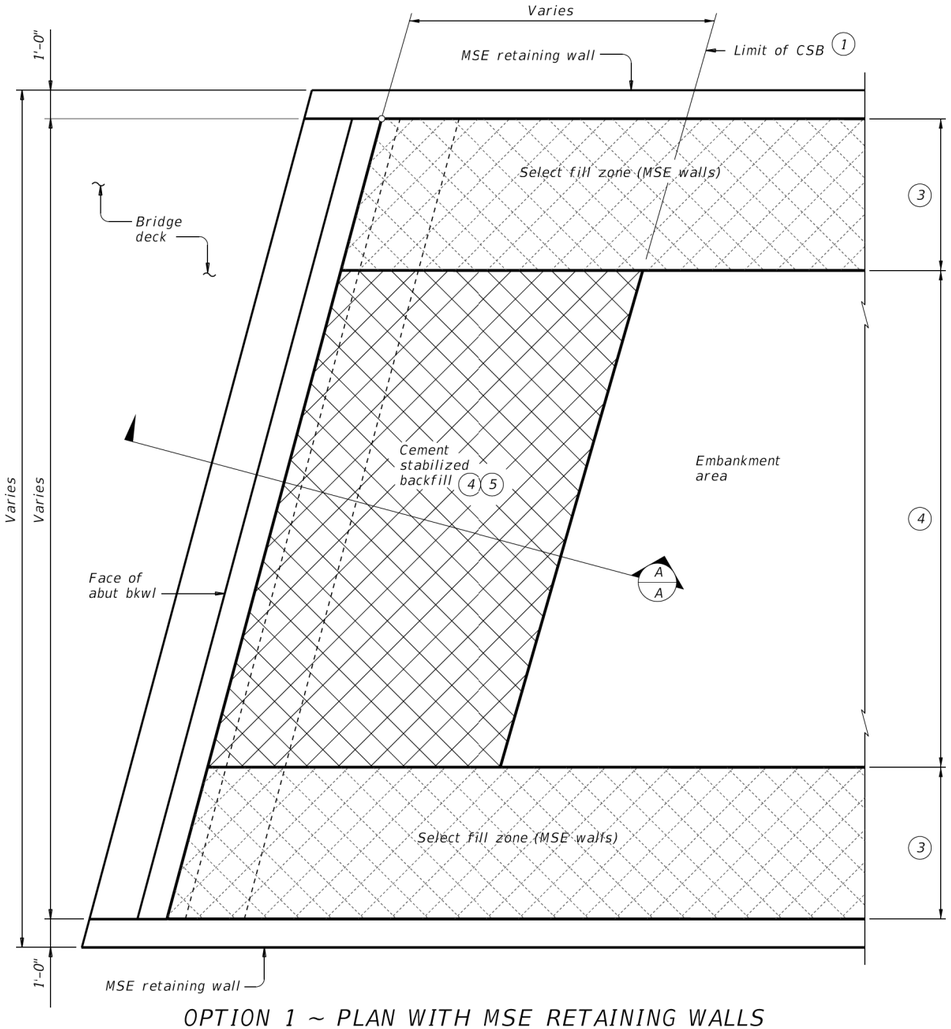


OPTION 1 ~ PLAN WITH WINGWALLS

Cast-in-place retaining walls similar.



OPTION 1 ~ PLAN WITH MSE RETAINING WALLS

(1) Usual limit of Cement Stabilized Backfill is at end of wingwall. Extend CSB limits as required to maintain a slope no steeper than 1:1 at bottom of backfill.

(2) Bench backfill as shown with 12" (approximate) bench depths.

(3) Where MSE retaining walls are present, adjust CSB limits to accommodate the select fill zone. See retaining wall details for additional information.

(4) When distance between select fill zones is less than 5'-0", MSE select fill may be substituted for cement stabilized backfill with approval from the Engineer.

(5) If shown in the plans flowable backfill can be used as a substitute for cement stabilized backfill with the following constraints:
a). If flowable backfill is to be placed over MSE backfill then a filter fabric will be placed over the MSE backfill prior to placement of the flowable fill; and
b). Place flowable fill in lifts not exceeding 2 feet in height, place each successive lift when the previous lift has stiffened/hardened (i.e. has lost its flowability).

GENERAL NOTES:

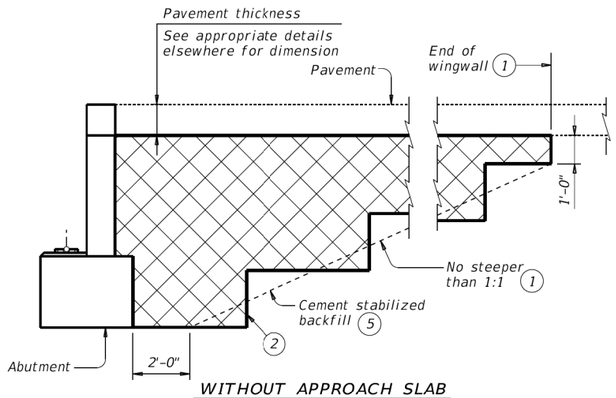
See the Bridge Layout for selected Option. Option 2 is intended for new construction requiring high plasticity embankment fill with a plasticity index (PI) greater than 30 or pavement built in poor native soil. Poor soils are defined as high plasticity clays or expansive clays. Option 1 is intended for construction only requiring PI controlled embankment fill or excavation in competent soils/rocks in order to construct the abutment.

Provide Cement Stabilized Backfill (CSB) meeting the requirements of Item 400, "Excavation and Backfill for Structures", to the limits shown at bridge abutments.

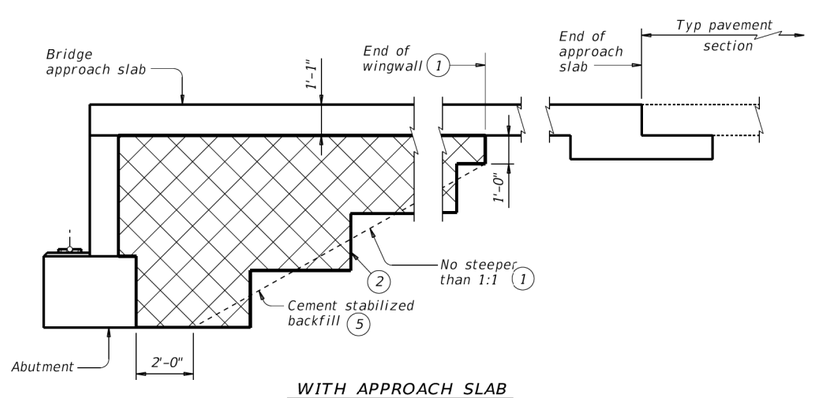
If required elsewhere in the plans, provide Flowable Backfill meeting the requirements of Item 401, "Flowable Backfill", to the limits shown at bridge abutments.

Details are drawn showing left forward skew. See Bridge Layout for actual skew direction.

These details do not apply when Concrete Block retaining walls are used in lieu of wingwalls.



WITHOUT APPROACH SLAB



WITH APPROACH SLAB

(Showing BAS-C, BAS-A similar.)

SECTION A-A

SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

CEMENT STABILIZED ABUTMENT BACKFILL

BRIDGE ABUTMENT

CSAB

FILE: csabste1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS				
02-20: Added Option 2.	DIST	COUNTY		SHEET NO.
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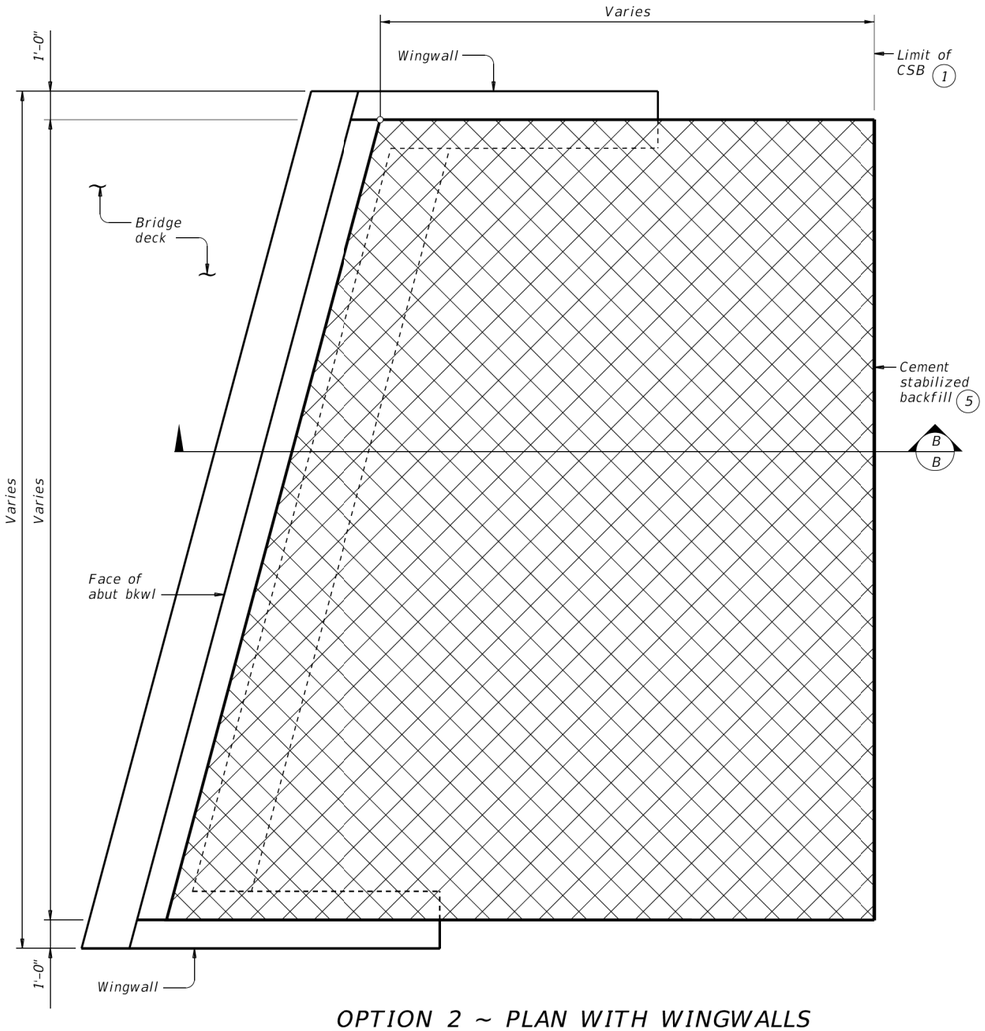
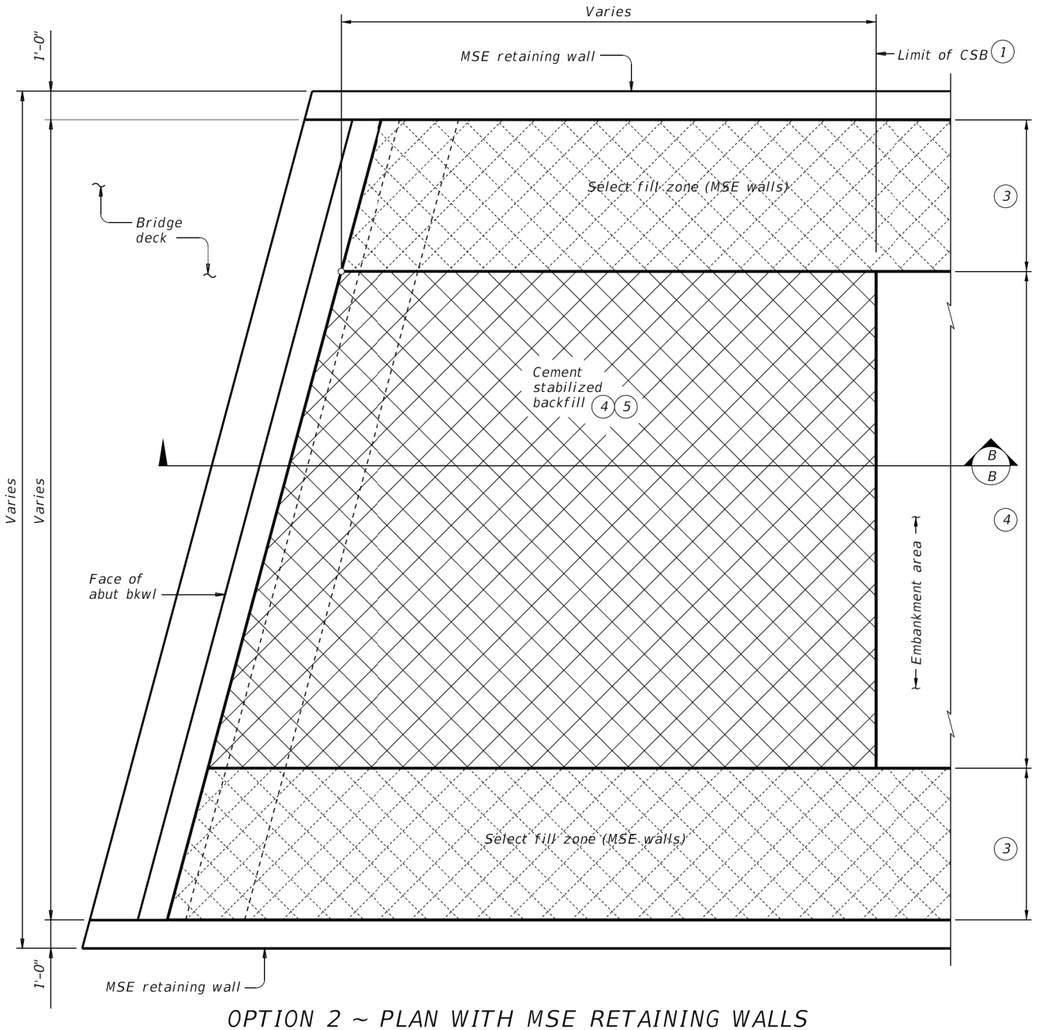


OPTION 2 ~ PLAN WITH WINGWALLS

Cast-in-place retaining walls similar.



OPTION 2 ~ PLAN WITH MSE RETAINING WALLS

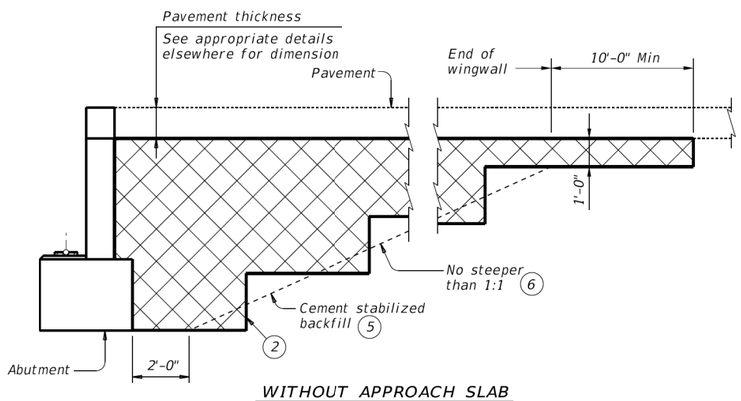
(1) *Usual limit of Cement Stabilized Backfill is at end of wingwall. Extend CSB limits as required to maintain a slope no steeper than 1:1 at bottom of backfill.*

(2) *Bench backfill as shown with 12" (approximate) bench depths.*

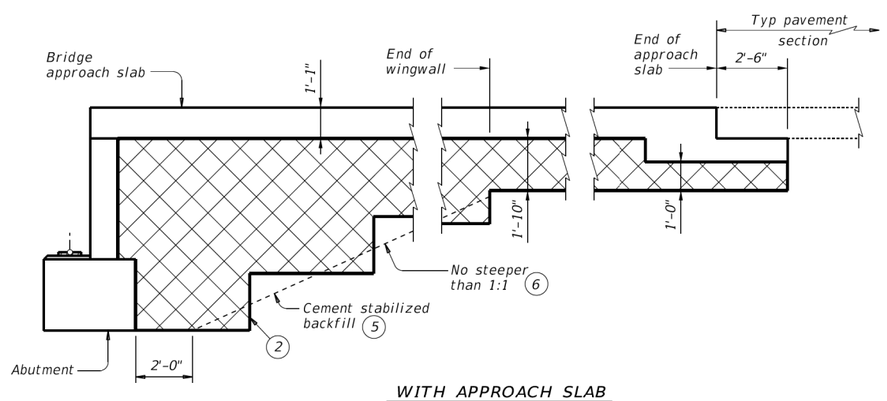
(3) *Where MSE retaining walls are present, adjust CSB limits to accommodate the select fill zone. See retaining wall details for additional information.*

(4) *When distance between select fill zones is less than 5'-0", MSE select fill may be substituted for cement stabilized backfill with approval from the Engineer.*

(5) *If shown in the plans flowable backfill can be used as a substitute for cement stabilized backfill with the following constraints:*
a). If flowable backfill is to be placed over MSE backfill then a filter fabric will be placed over the MSE backfill prior to placement of the flowable fill; and
b). Place flowable fill in lifts not exceeding 2 feet in height, place each successive lift when the previous lift has stiffened/hardened (i.e. has lost its flowability).



WITHOUT APPROACH SLAB



WITH APPROACH SLAB
(Showing BAS-C, BAS-A similar.)

SECTION B-B

SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

CEMENT STABILIZED ABUTMENT BACKFILL

BRIDGE ABUTMENT

CSAB

FILE: csabste1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS				
02-20: Added Option 2.	DIST	COUNTY		SHEET NO.
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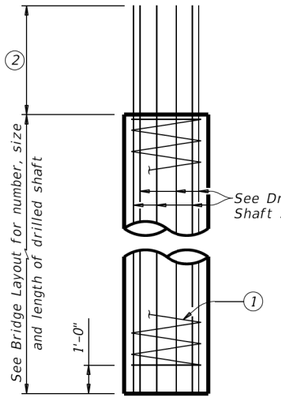
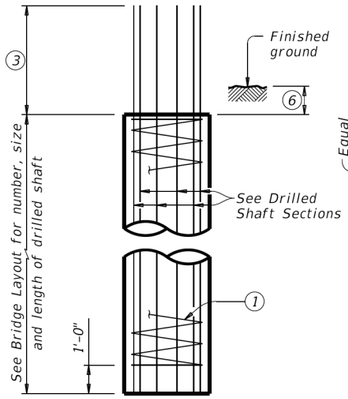
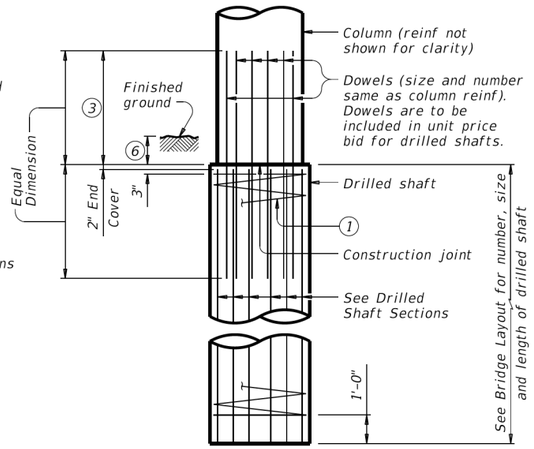


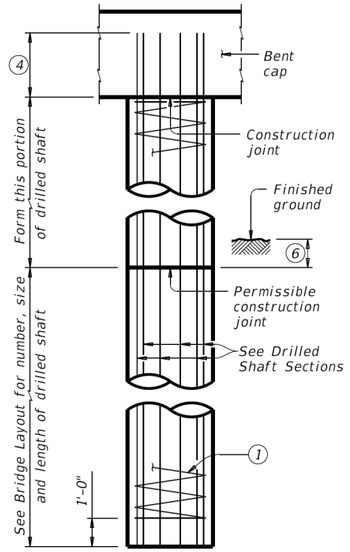
ABUTMENTS, WINGWALLS AND MULTI-DRILLED SHAFT FOOTINGS



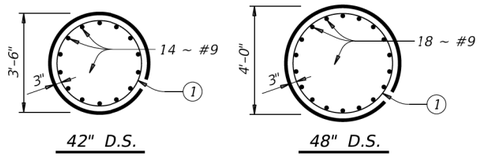
INTERIOR BENTS DRILLED SHAFT DIA EQUAL TO COLUMN DIA



INTERIOR BENTS DRILLED SHAFT DIA GREATER THAN COLUMN DIA



OPTIONAL INTERIOR BENT DRILLED SHAFT DETAIL (5)

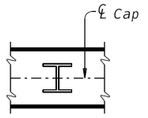


DRILLED SHAFT SECTIONS

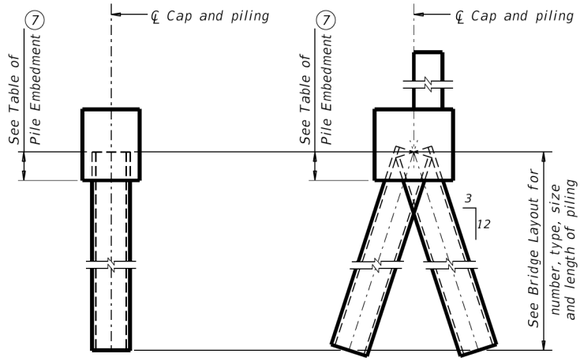
DRILLED SHAFT DETAILS

TABLE OF PILE EMBEDMENT	
Pile Type	Embedment Depth (Ft)
16" Sq Concrete 18" Sq Concrete HP14 Steel HP16 Steel	1'-0"
20" Sq Concrete 24" Sq Concrete HP18 Steel	1'-6"

See Prestressed Concrete Piling (CP) standard for additional details on concrete pile embedment.

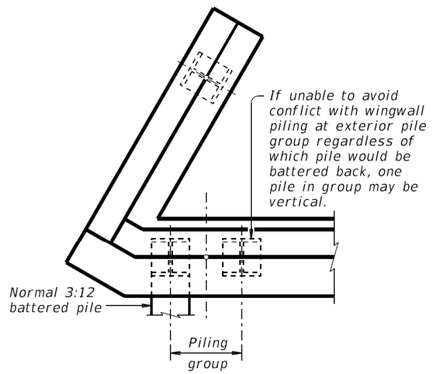


ORIENTATION OF STEEL H-PILING



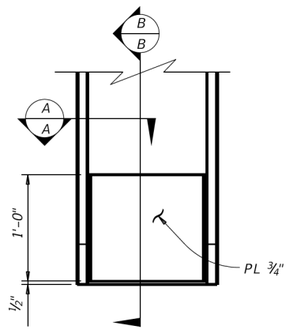
PILING DETAILS

(Concrete or steel H)

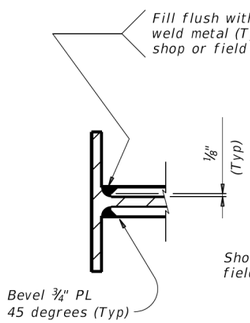


DETAIL "A"

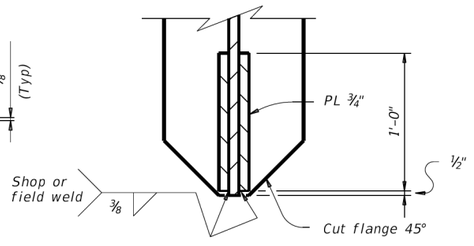
(Showing plan view of a 30° skewed abutment)



ELEVATION



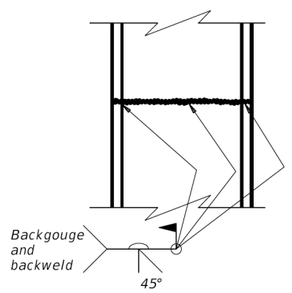
SECTION A-A

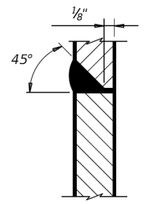


SECTION B-B

STEEL H-PILE TIP REINFORCEMENT

See Item 407 "Steel Piling" to determine when tip reinforcement is required and for options to the details shown.





SECTION THRU FLANGE OR WEB

STEEL H-PILE SPLICE DETAIL

Use when required.

(1) #3 spiral at 6" pitch (one and a half flat turns top and bottom).

(2) Min extension into supported element:
#6 Bars = 1'-11"
#7 Bars = 2'-0"
#9 Bars = 2'-3"

(3) Min lap with column reinf:
#7 Bars = 2'-11"
#9 Bars = 3'-9"
#11 Bars = 4'-8"

(4) Min extension into supported element:
#6 Bars = 1'-11"
#7 Bars = 2'-3"
#9 Bars = 2'-9"

(5) Drilled shafts may extend to the bottom of bent caps for "H" heights of 6 ft and less (as shown on the Bridge Layout), if approved. This option can only be used when the drilled shaft diameter equals the column diameter. Obtain approval of the forming method above the ground line prior to construction. No adjustments in payment will be made if this option is used.

(6) 1'-0" Min, unless shown otherwise on plans.

(7) Or as shown on plans.

Texas Department of Transportation

Bridge Division Standard

COMMON FOUNDATION DETAILS

FD

FILE: fdstde01-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS 01-20: Added #11 bars to the FD bars.	DIST	COUNTY		SHEET NO. 373

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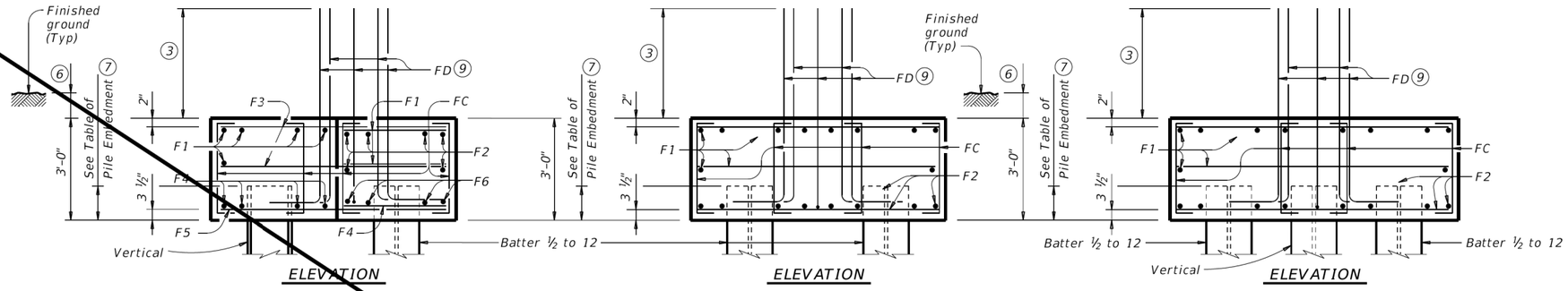
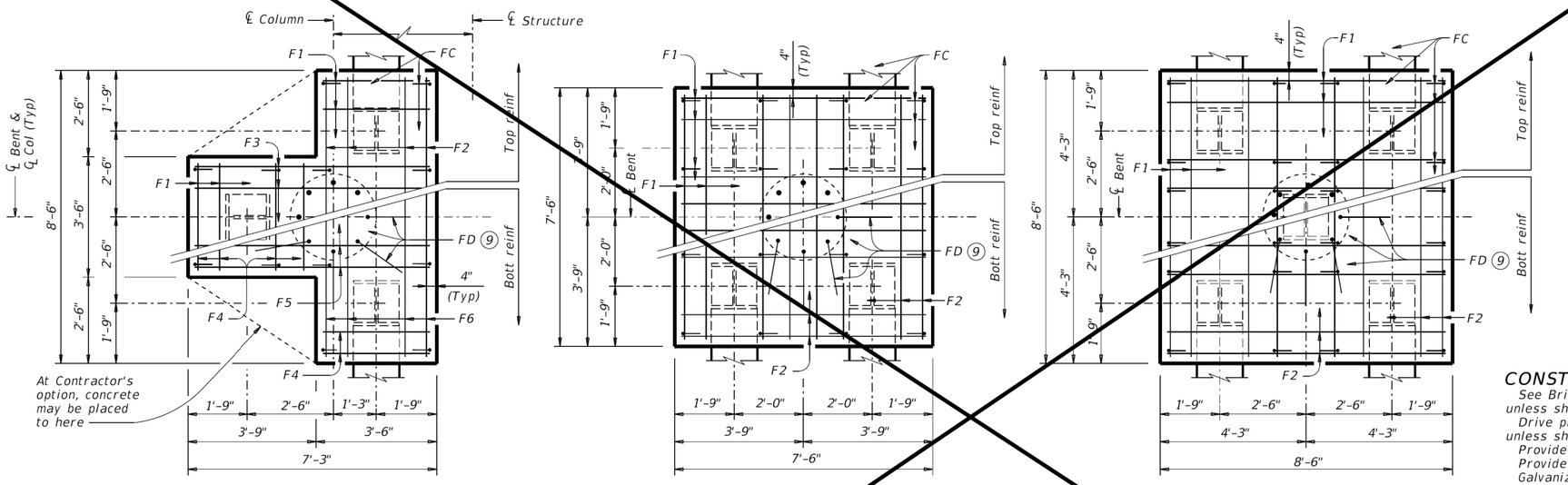




THREE PILE FOOTING (8)

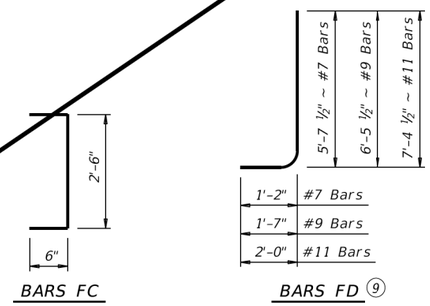
For 36" Dia and smaller columns.

FOUR PILE FOOTING (8)

For 42" Dia and smaller columns.

FIVE PILE FOOTING (8)

For 42" Dia and smaller columns.



(3) Min lap with column reinforcing:
#7 Bars = 2'-11"
#9 Bars = 3'-9"
#11 Bars = 4'-8"

(6) 1'-0" Min, unless shown otherwise on plans.

(7) Or as shown on plans.

(8) See Bridge Layout for type, size and length of piling.

(9) Number and size of FD bars must match column reinforcing. Tie FD bars to the top of the bottom reinforcing mat.

(10) Adjust FD quantity, size and weight as needed to match column reinforcing.

TABLE OF FOOTING QUANTITIES FOR 30" COLUMNS

ONE 3 PILE FOOTING

Bar	No.	Size	Length	Weight
F1	11	#4	3'- 2"	23
F2	6	#4	8'- 2"	33
F3	6	#4	6'- 11"	28
F4	8	#9	3'- 2"	86
F5	4	#9	6'- 11"	94
F6	4	#9	8'- 2"	111
FC	12	#4	3'- 6"	28
FD (10)	8	#9	8'- 1"	220
Reinforcing Steel			Lb	623
Class "C" Concrete			CY	4.8

ONE 4 PILE FOOTING

Bar	No.	Size	Length	Weight
F1	20	#4	7'- 2"	96
F2	16	#8	7'- 2"	306
FC	16	#4	3'- 6"	37
FD (10)	8	#9	8'- 1"	220
Reinforcing Steel			Lb	659
Class "C" Concrete			CY	6.3

ONE 5 PILE FOOTING

Bar	No.	Size	Length	Weight
F1	20	#4	8'- 2"	109
F2	16	#9	8'- 2"	444
FC	24	#4	3'- 6"	56
FD (10)	8	#9	8'- 1"	220
Reinforcing Steel			Lb	829
Class "C" Concrete			CY	8.0

CONSTRUCTION NOTES:

See Bridge Layout for foundation type required. Use these foundation details unless shown otherwise.

Drive piling under abutment wingwalls to a minimum resistance of 10 Tons/Pile unless shown otherwise.

Provide Class C Concrete (f'c = 3,600 psi), unless shown otherwise.

Provide Grade 60 reinforcing steel.

Galvanize reinforcing if shown elsewhere in the plans.

Provide bar laps for drilled shaft reinforcing, where required, as follows:

Uncoated or galvanized (#6) ~ 2'-6"
Uncoated or galvanized (#7) ~ 2'-11"
Uncoated or galvanized (#9) ~ 3'-9"

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

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

DESIGNER NOTES:

Do not use the drilled shaft details shown on this standard for retaining wall, noise wall, barrier, or sign foundations without structural evaluation.

Do not use the footings shown on this standard in direct contact with salt water or exposed to salt water spray.

Maximum allowable pile loads for the footings shown are:

72 Tons/Pile with 24" Dia Columns
80 Tons/Pile with 30" Dia Columns
100 Tons/Pile with 36" Dia Columns
120 Tons/Pile with 42" Dia Columns

Texas Department of Transportation

Bridge Division Standard

COMMON FOUNDATION DETAILS

FD

FILE: fdstde01-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS 01-20: Added #11 bars to the FD bars.	DIST	COUNTY		SHEET NO. 374

DATE:
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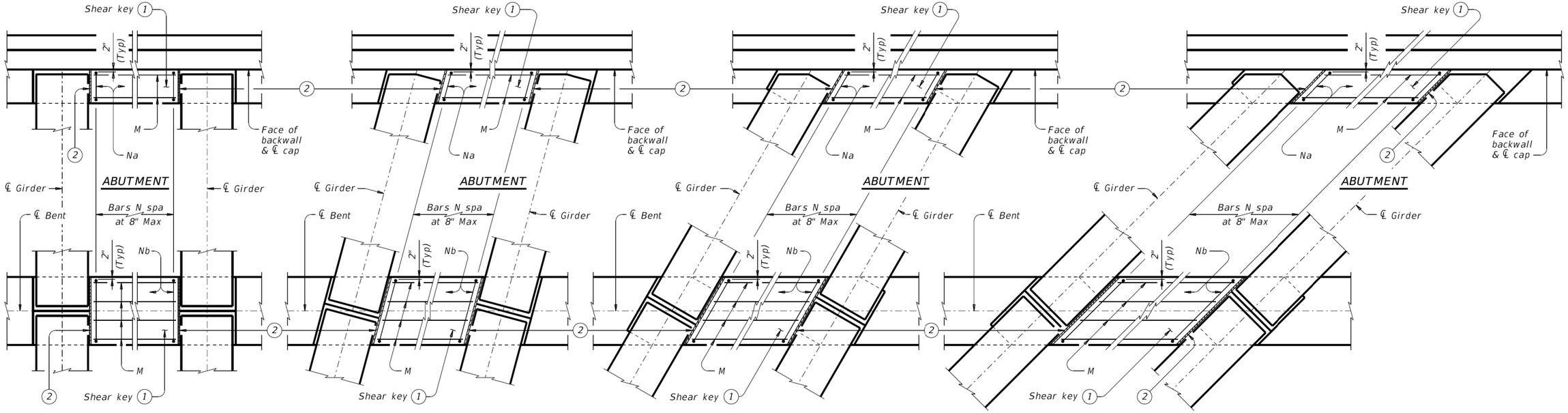


PARTIAL PLANS WITH NO SKEW

Showing shear keys on 3'–6" wide caps. 4'–0" caps similar.

PARTIAL PLANS WITH 15° SKEW

Showing shear keys on 3'–6" wide caps. 4'–0" caps similar.

PARTIAL PLANS WITH 30° SKEW

Showing shear keys on 3'–6" wide caps. 4'–0" caps similar.

PARTIAL PLANS WITH 45° SKEW

Showing shear keys on 3'–6" wide caps. 4'–0" caps similar.

(1) Place shear keys on the upstream side of structure between outside girder and next adjacent girder, unless shown otherwise on plans.

(2) UHMW polyethylene wear pad. (Typ)

(3) Leave a ¼" gap plus or minus between girder and face of wear pad. Cast wear pad with shear key, smooth side facing girder. Care must be taken to keep concrete from flowing under girder. Slope top of shear keys in accordance with Item 420.4.9, "Treatment and Finishing of Horizontal Surfaces."

(4) Measure at higher bearing seat elevation forward or back. Dimension based on typical bearing pad and bearing seat. Increase as necessary to maintain 5" overlap.

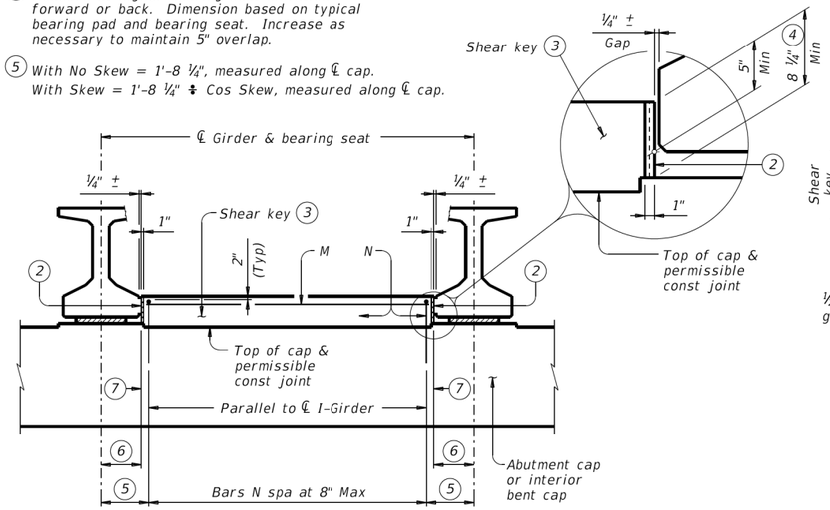
(5) With No Skew = 1'–8 ¼", measured along ℄ cap.
With Skew = 1'–8 ¼" ± Cos Skew, measured along ℄ cap.

(6) With No Skew = 1'–4 ¼", measured along ℄ cap.
With Skew = 1'–4 ¼" ± Cos Skew, measured along ℄ cap.

(7) Face of UHMW polyethylene wear pad. Smooth side of pad facing girder.

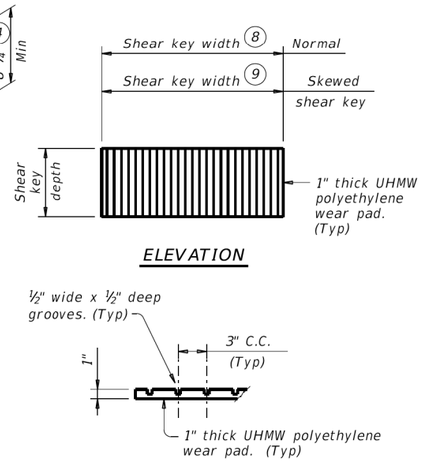
(8) Abutments = ½ Cap width.
Interior bents = Cap width.

(9) Abutments = ½ Cap width ± Cos Skew.
Interior bents = Cap width ± Cos Skew.

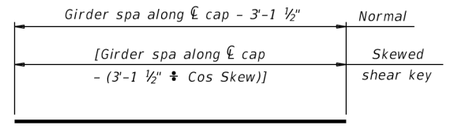


PARTIAL ELEVATION OF ABUTMENT OR INTERIOR BENT CAP (1)

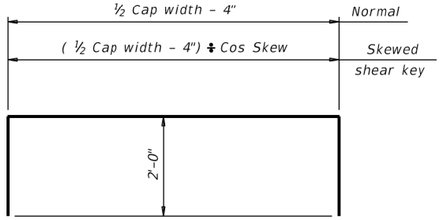
Showing shear key with girder Type Tx46.
Other I-Girder types similar.



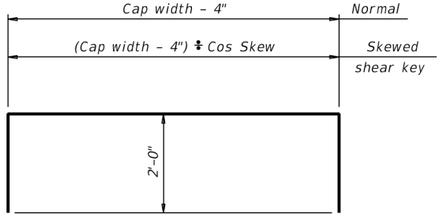
ULTRA HIGH MOLECULAR WEIGHT (UHMW) POLYETHYLENE WEAR PAD DETAILS



BARS M (#5)



BARS Na (#5)
(For abutments)



BARS Nb (#5)
(For interior bents)

CONSTRUCTION NOTES:

Provide Class "C" concrete (f'c = 3,600 psi). Provide Class "C" (HPC) if shown elsewhere on the plans.
Provide Grade 60 reinforcing steel.
Provide epoxy coated reinforcing steel for shear key if abutment or interior bent reinforcing steel is epoxy coated.
Provide Ultra High Molecular Weight (UHMW) polyethylene wear pads in accordance with ASTM D6712.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
Details showing skew are drawn showing right forward skew. See Bridge Layout for actual skew direction.
These details are limited to bridges skewed 45 degrees and less.
This standard is only applicable for I-Girders.
Modify details for bearing conditions, and girder spacing not shown on this standard. Details do not account for sole plate or pedestal bearing seat.
Include shear key concrete in abutment or bent concrete for payment.
UHMW polyethylene wear pads are subsidiary to Class "C" concrete.

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

Texas Department of Transportation

Bridge Division Standard

SHEAR KEY DETAILS
PRESTR CONCRETE I-GIRDERS

IGSK

FILE: igskstds-17.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: AES
©TxDOT August 2017 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.
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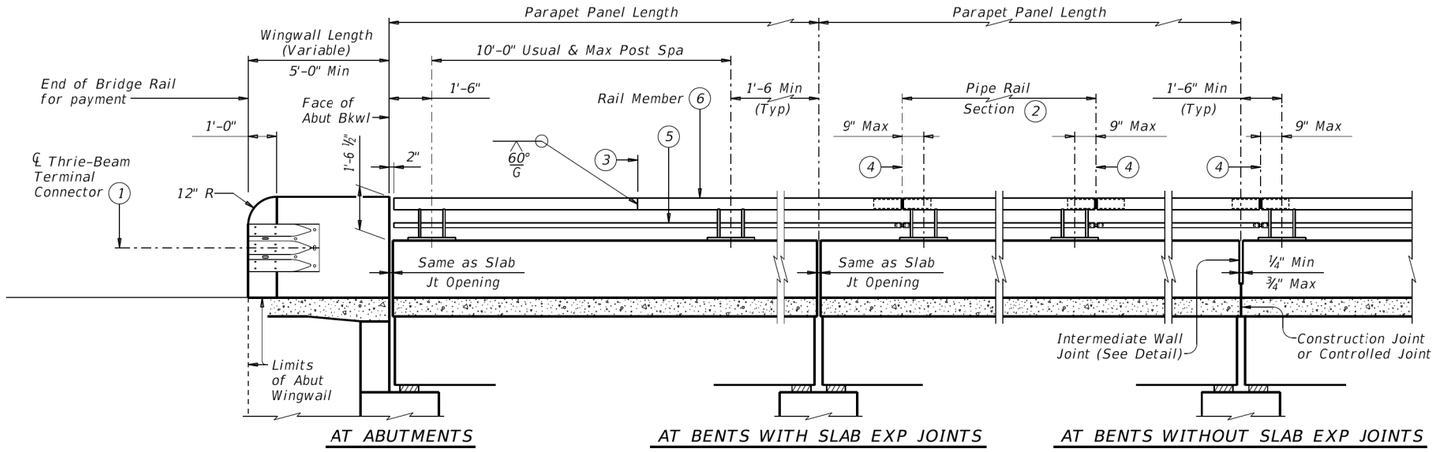
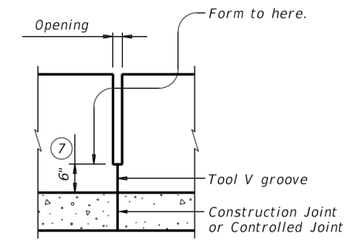


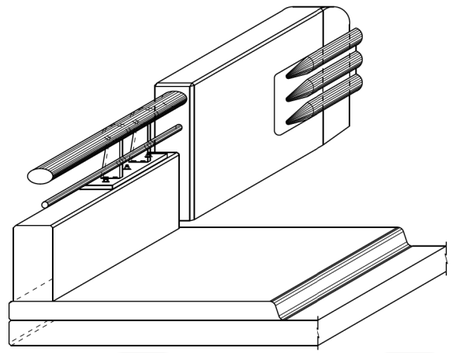
ROADWAY ELEVATION OF RAIL

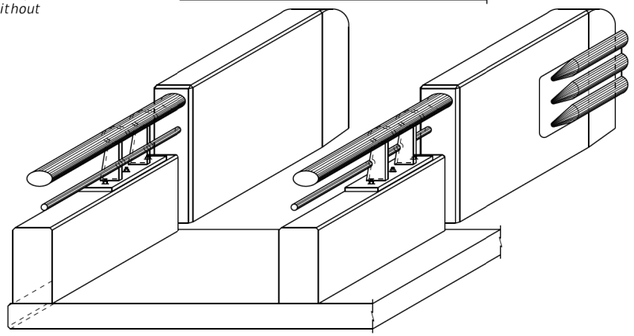
(Rail Member showing Elliptical Tube Option, Rectangular Tube Option similar).



INTERMEDIATE WALL JOINT DETAIL

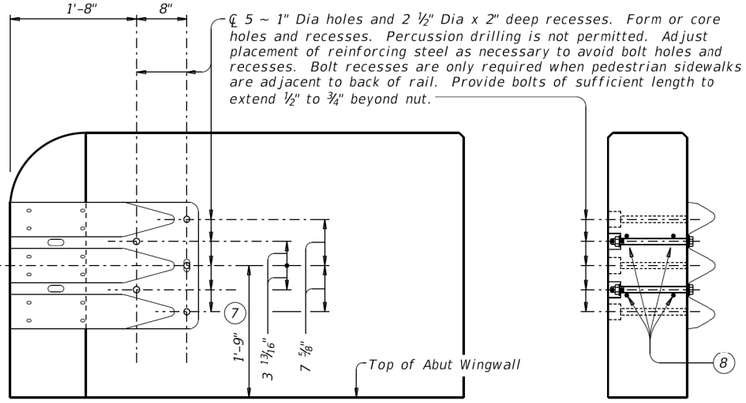
(Showing without raised sidewalk)
Provide at all interior bents without slab expansion joints.



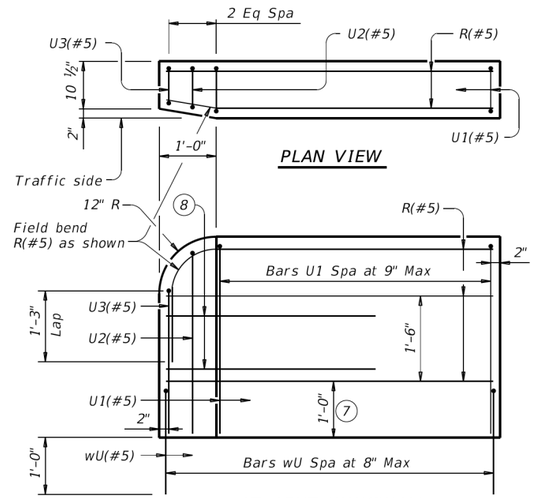


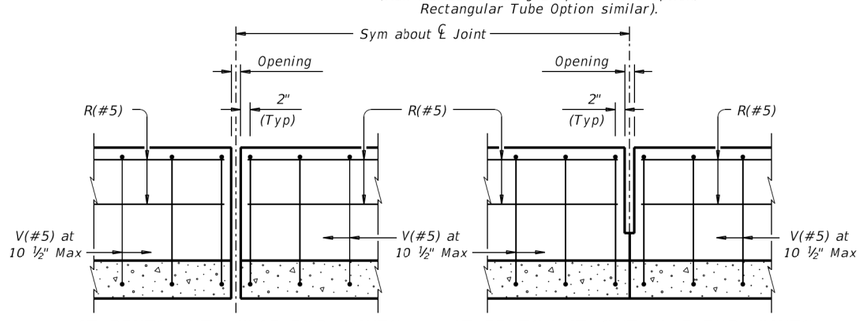
ISOMETRIC VIEWS AT END OF BRIDGE

(Rail Member showing Elliptical Tube Option, Rectangular Tube Option similar).



TERMINAL CONNECTION DETAILS





ELEVATION SHOWING TYPICAL REINFORCING PLACEMENT

(Showing without raised sidewalk)

1. Terminal Connectors and associated hardware are to be paid for under the Item "Metal Beam Guard Fence". Attach Metal Beam Guard Fence Transitions to the bridge rail and extend along the embankment unless otherwise shown in the plans.
2. Pipe rail sections must have at least two posts but not more than four.
3. One shop splice per pipe rail section is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
4. ℄ Exp Jt or Splice Jt as required.
5. 2" Dia Std Pipe (2.375" O.D., 0.154" wall thickness) (ASTM A53 Gr B, A1085 or A500 Gr B). Placed on either side of steel rail post.
6. Unless directed otherwise by the Engineer, the Fabricator may use the rectangular tube in lieu of the elliptical tube for the rail member.
7. Increase 2" for structures with overlay.
8. Place 4 additional Bars R(#5) 3'-8" in length inside Bars U(#5) and centered 2'-0" from end of rail when Terminal Connections are required. Field bend as needed.

Texas Department of Transportation

Bridge Division Standard

COMBINATION RAIL

TYPE C402

FILE: rlstd020-19.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: JMH
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	DIST	COUNTY		SHEET NO.
				376

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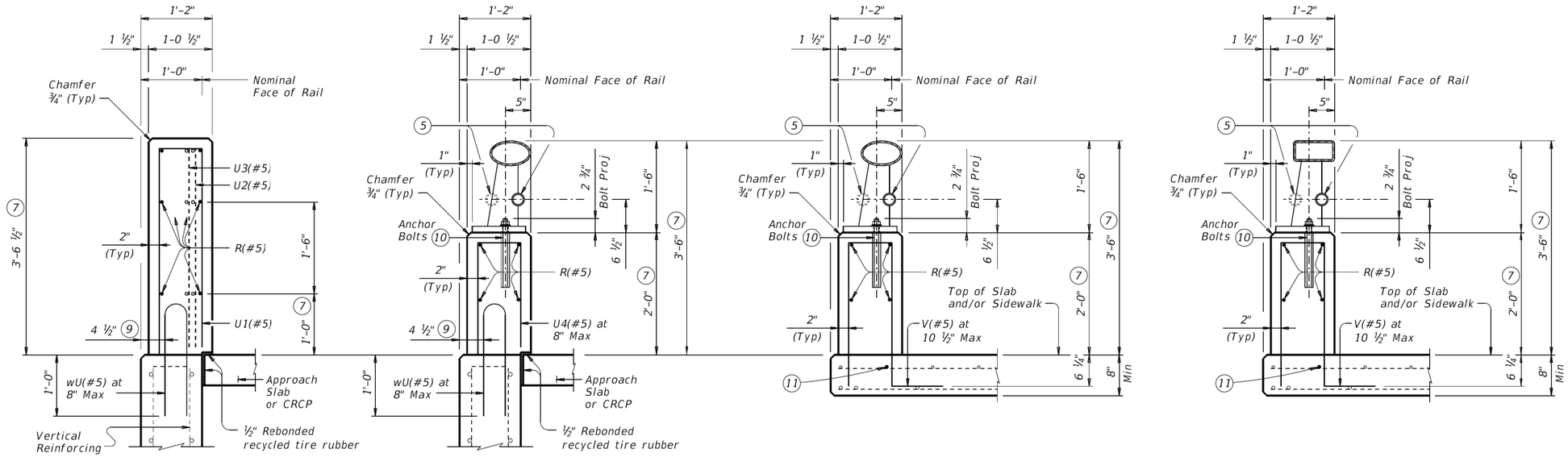


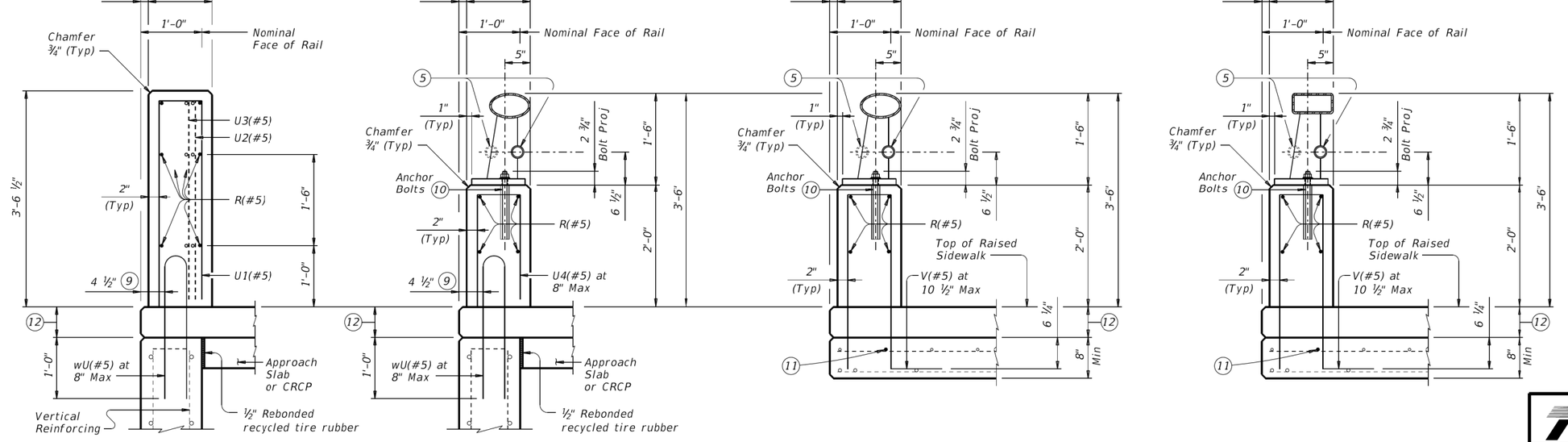
ON ABUTMENT WINGWALLS OR CIP RETAINING WALLS

ON CIP RETAINING WALLS
(Showing Elliptical Tube Option)

ON BRIDGE SLAB
(Showing Elliptical Tube Option)

ON BRIDGE SLAB
(Showing Rectangular Tube Option)

SECTIONS THRU RAIL WITHOUT RAISED SIDEWALK (6)



ON ABUTMENT WINGWALLS OR CIP RETAINING WALLS

ON CIP RETAINING WALLS
(Showing Elliptical Tube Option)

ON BRIDGE SLAB
(Showing Elliptical Tube Option)

ON BRIDGE SLAB
(Showing Rectangular Tube Option)

SECTIONS THRU RAIL WITH RAISED SIDEWALK (6)

(5) 2" Dia Std Pipe (2.375" O.D., 0.154" wall thickness) (ASTM A53 Gr B, A1085 or A500 Gr B). Placed on either side of steel rail post.

(6) Unless directed otherwise by the Engineer, the Fabricator may use the rectangular tube in lieu of the elliptical tube for the rail member.

(7) Increase 2" for structures with overlay.

(9) 5 ¼" when vertical reinforcing has closer clear cover over horizontal reinforcing in abutment wingwalls or retaining walls on traffic side of wall.

(10) See "Material Notes" for anchor bolt information.

(11) Top longitudinal slab bar may be adjusted laterally 3" plus or minus to tie reinforcing.

(12) Raised Sidewalk

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Bridge Division Standard

COMBINATION RAIL

TYPE C402

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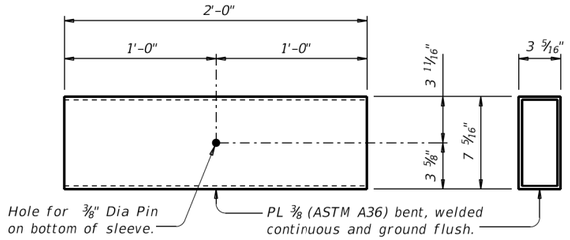
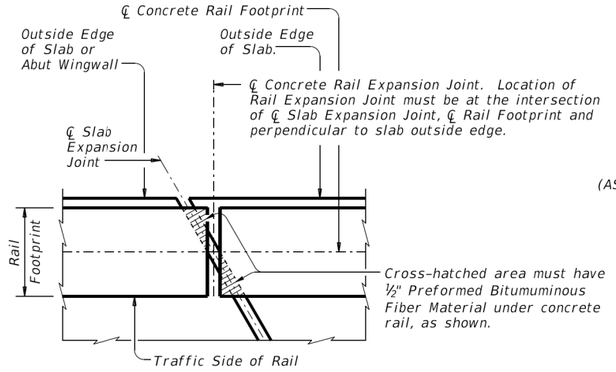


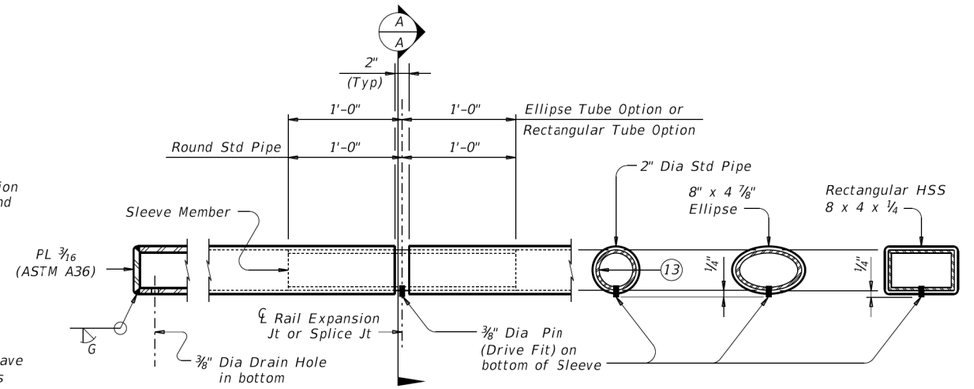
RECTANGULAR TUBE SLEEVE MEMBER DETAIL

(See Tube Fabrication Detail)



PLAN OF RAIL AT EXPANSION JOINTS

Example showing Slab Expansion Joints without breakbacks.



TUBE FABRICATION DETAILS (6)

ELLIPTICAL TUBE & ELLIPTICAL SLEEVE MEMBER

8" x 4 7/8" Ellipse	Elliptical Sleeve Member	
Material	Material	Thickness
6" Dia Std Pipe ASTM A53 E or S Gr B)	ASTM A53 Gr B	0.353"
	ASTM A36 or A500 Gr B	0.339"
	API-5LX52	0.224"
6 5/8" O.D. Pipe x 0.188" API-5LX52	ASTM A53 Gr B	0.339"
	ASTM A36 or A500 Gr B	0.325"
	API-5LX52	0.188"

Notes: Other sections of equal or greater strength are acceptable for elliptical sleeves. The major and minor diameters of the rail member may vary +/- 0.1875" from plan dimension. However, the difference between the outside diameters of the elliptical sleeve and the inside diameters of the rail member must not exceed 0.25 inches.

ELLIPTICAL TUBE WITH RAIL POST & ANCHORAGE DETAILS

(Showing Elliptical Tube Option)

RECTANGULAR TUBE WITH RAIL POST & ANCHORAGE DETAILS (6)

(Showing Rectangular Tube Option)

(5) 2" Dia Std Pipe (2.375" O.D., 0.154" wall thickness) (ASTM A53 Gr B, A1085 or A500 Gr B). Placed on either side of steel rail post.

(6) Unless directed otherwise by the Engineer, the fabricator may use the rectangular tube in lieu of the elliptical tube for the rail member.

(13) Sleeve Member 1 ½" Dia Std Pipe (1.90" O.D., 0.145" wall thickness) (ASTM A53 Gr B or A500 Gr B).

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Bridge Division Standard

COMBINATION RAIL

TYPE C402

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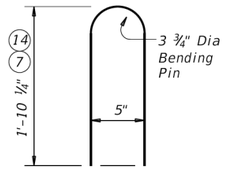
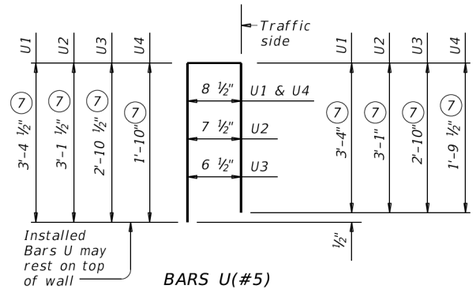
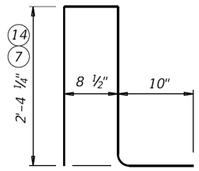


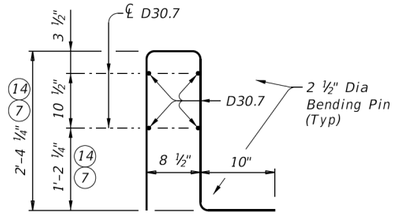
BARS wU(#5)



BARS U(#5)



BARS V(#5)



OPTIONAL WELDED WIRE REINFORCING (WWR)

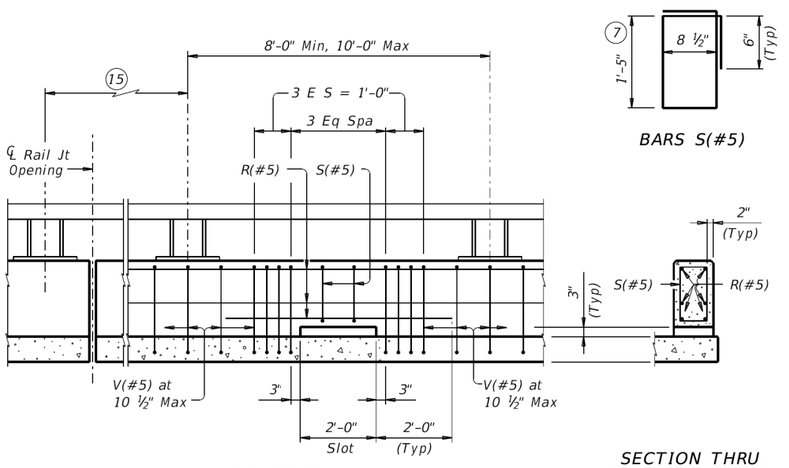
⑦ Increase 2" for structures with overlay.

⑩ See "Material Notes" for anchor bolt information.

⑭ For raised sidewalks, add sidewalk height to total bar height. Use sidewalk height at rail's location.

⑮ Slots are not allowed in areas where there is a joint in the concrete parapet between rail post.

⑯ Shop drawings for approval required for tubular steel sections.



ELEVATION

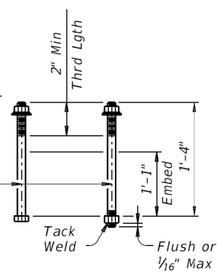
SECTION THRU SIDE SLOT DRAIN

BARS S(#5)

OPTIONAL SIDE SLOT DRAIN DETAILS

Note: Center Side Slot Drains between rail posts within the limits shown. Side Slot Drains may be used where shown elsewhere on the plans or as directed by the Engineer. Do not place drains over railroad tracks, lower roadways, or sidewalks. When this rail is used as a separator between a roadway surface and a sidewalk surface, side drain slots will not be permitted.

℄ ⅞" Dia heavy hex head anchor bolt (ASTM F3125 Gr A325 or A449) or threaded rod (ASTM A193 Gr B7 or F1554 Gr 105) with one hardened steel washer (ASTM F436) and one 2 ¼" O.D. steel washer placed under heavy hex nut (ASTM A563). One additional heavy hex nut must be furnished and tack welded for each threaded rod.



CAST-IN-PLACE ANCHOR BOLT OPTIONS ⑩

RAIL DATA FOR HORIZONTAL CURVES

	RADIUS TO FACE OF RAIL	MAX CHORD LENGTH	CONSTRUCT OR FABRICATE
Rail Members	Over 2800'	29'-0"	Straight rail sections
	Over 1400' thru 2800'	14'-6"	To required radius or to chords shown ⑯
	Over 700' thru 1400'	7'-3"	
	Thru 700'	Zero	To required radius ⑯

CONSTRUCTION NOTES:

This rail may be slipformed if approved by the Engineer when adhesive anchor bolts are used.

At the Contractor's option anchor bolts may be cast with the parapet. See "Material Notes".

Slipforming parapet is not allowed if anchor bolts are cast with parapet wall.

If rail is slipformed, apply an heavy epoxy bead 1" behind toe of traffic side of rail to concrete deck just prior to slip forming. Provide a ⅜" width x ¼" tall heavy epoxy bead with Type III, Class C or a Type V epoxy.

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.

Rail parapet must be plumb unless otherwise approved. Steel posts must be square to the top of parapet. Use Type VIII epoxy mortar under post base plates if gaps larger than 1/16" exist.

Cap all ends of tubular steel sections at parapet.

Pipe rail sections must have at least two posts but not more than four.

Round or chamfer all exposed edges of steel components 1/16" by grinding prior to galvanizing.

Chamfer all exposed concrete corners.

MATERIAL NOTES:

Galvanize all metal components of steel rail system. Apply additional coatings when shown elsewhere on the plans. When plans require paint over gavanizing, follow the requirements for painting galvanized steel in Item 445, "Galvanizing" and when field painting, Item 446, "Field Cleaning and Painting Steel". Sleeve members and anchor bolts must receive galvanization prior to installation and only field paint after installation unless directed otherwise by Engineer.

Anchor bolts must be ⅞" Dia ASTM A193 Gr B7 fully threaded rods with heavy hex nuts, one hardened steel washer (ASTM F436), and one (2 ¼" O.D.) steel washer each. Nuts must conform to ASTM A563 requirements. Embed fully threaded rods into parapet wall with a Type III, Class C, D, E, or F anchor adhesive. Minimum adhesive anchor embedment depth is 8". Anchor adhesive chosen must be able to achieve a nominal bond strength in tension of a single anchor, Na, of 17 kips (edge distance must be accounted for). 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."

Optional cast-in-place anchor bolts must be ⅞" Dia ASTM F3125 Gr A325 or A449 bolts (or A193 Gr B7 or F1554 Gr 105 threaded rods with one tack welded heavy hex nut each) with one heavy hex nut and one hardened steel washer ASTM F436 plus one (2 ¼" O.D.) steel washer at each bolt. Nuts must conform to ASTM A563 requirements.

Provide Class "C" concrete. Provide Class "C" (HPC) if required elsewhere.

Provide Grade 60 reinforcing steel.

Epoxy coat or galvanize all reinforcing steel if slab bars are epoxy coated or galvanized.

Deformed Welded Wire Reinforcement (WWR) ASTM A1064 may be substituted for Bars R, and V, as shown. Provide the same laps as required for reinforcing bars.

Provide bar laps, where required, as follows: Uncoated or galvanized ~ #5 = 2'-0"
Epoxy coated ~ #5 = 3'-0"

GENERAL NOTES:

This rail has been successfully evaluated by full-scale crash test to meet MASH TL-4 criteria. This rail 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.

Do not use this railing on bridges with expansion joints providing more than 5" movement.

Rail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.

Submit erection drawings showing panel lengths, rail post spacing, and anchor bolt setting, to the Engineer for approval.

Average weight of railing with no overlay: 347 plf total
313 plf (Conc)
34 plf (Steel).

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

Texas Department of Transportation

Bridge Division Standard

COMBINATION RAIL

TYPE C402

FILE: rlstd020-19.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: JMH
©TxDOT September 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.
				379

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DATE:
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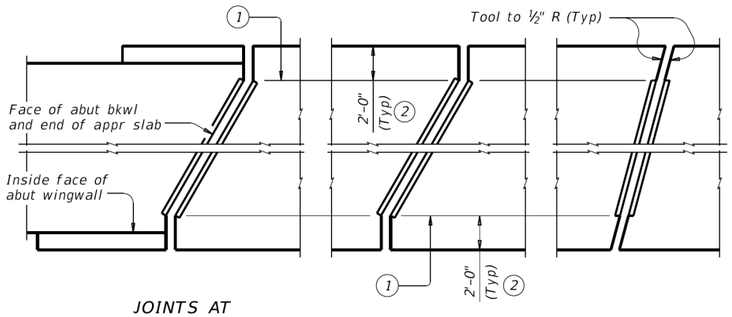
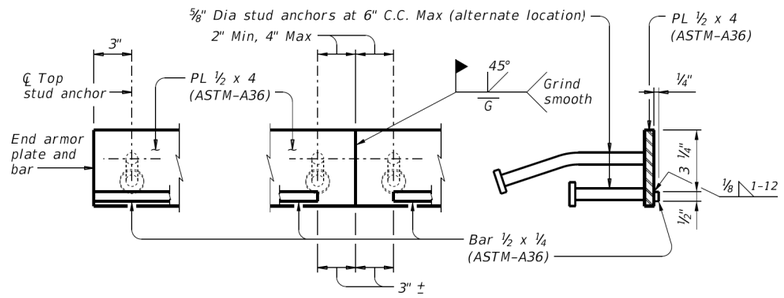


JOINTS AT ABUTMENTS | SKEWS OVER 15° | SKEWS THRU 15°

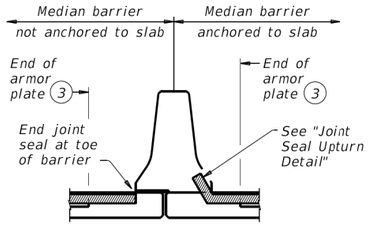
PLANS OF ARMOR PLATES



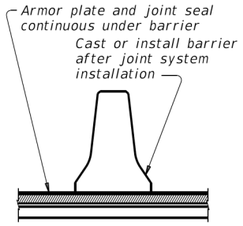
END VIEW | FIELD SPLICE | SECTION

(Studs are not shown for clarity.)

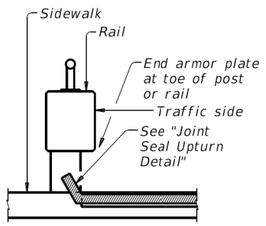
ELEVATION OF ARMOR PLATE



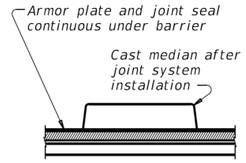
WITH OPEN DECK JOINT BELOW MEDIAN BARRIER



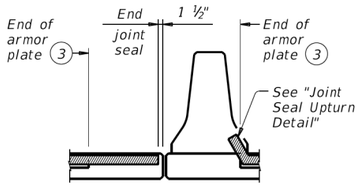
AT MEDIAN BARRIER



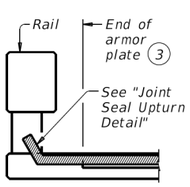
AT SIDEWALK BEHIND BRIDGE RAIL



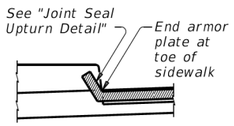
AT RAISED MEDIAN



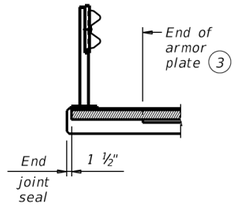
WITH OPEN DECK JOINT ADJACENT TO MEDIAN BARRIER



AT CONCRETE BRIDGE RAIL

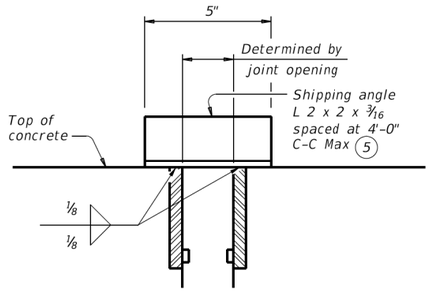


AT SIDEWALK



AT STEEL POST BRIDGE RAIL

TYPICAL SECTIONS OF ARMOR PLATES AND SEALS (4)

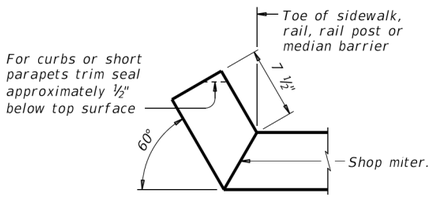


SHOWING ARMOR PLATE

(Studs not shown for clarity)

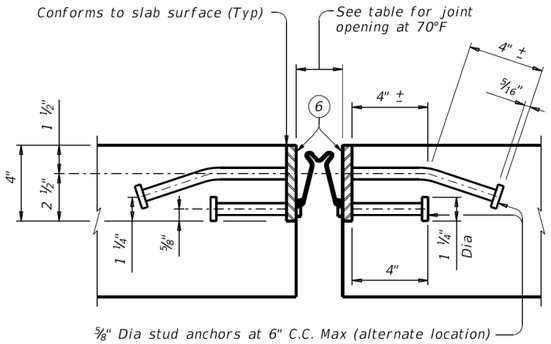
SHIPPING ANGLE

An alternate method of securing joint sections may be used if approved by the Bridge Division. Erection bolts are not allowed.



JOINT SEAL UPTURN DETAIL

Upturn seal only. Terminate armor plates as shown in "Plans of Armor Plates" and "Typical Sections of Armor Plates & Seals."



JOINT SECTION

Showing R J Watson strip seal. Other strip seals are similar.

(1) At Fabricator's option, armor plate may extend up to 6" beyond this point for skews through 15°.

(2) Unless shown otherwise, terminate armor plate at slab break point if break is more than 2'-0" from slab edge.

(3) See "Plans of Armor Plates".

(4) Other conditions affecting the joint profile should be noted elsewhere.

(5) Align shipping angle perpendicular to joint.

(6) Coat with Manufacturer's supplied epoxy primer above bar before installing sealant.

(7) Shape of steel section shown is typical. Variations in sections must be approved by the Engineer.

(8) These openings are also the recommended minimum installation openings.

TABLE OF SEALED EXPANSION JOINT INFORMATION

MANUFACTURER	STEEL SECTION (7)	STRIP SEAL 4" JOINT	
		Seal Type	Joint Opening (8)
D.S. Brown	As shown	V-400	2 ¼"
R.J. Watson	As shown	SF-400	2 ½"
SSI	As shown	SSS-400	2 ½"
Watson Bowman Acme	As shown	SPS-400	2"

REDUCED LONGITUDINAL MOVEMENT RANGE

SKEW (deg)	JOINT SIZE 4"
0	4.0"
15	4.0"
30	3.5"
45	2.8"

DESIGN NOTES:

Joints installed on a skew have reduced ability to accommodate longitudinal movement. Use table values to determine the correct joint size for skewed installations.

For other skews over 25 degrees, calculate reduced movement range by multiplying joint size by cosine (skew).

FABRICATION NOTES:

Temporarily shop assemble corresponding sections of sealed expansion joints (SEJ), check for fit, and match mark for shipment. Secure corresponding sections together for shipment with shipping angle. Do not use erection bolts.

The seal must be continuous and included in the price bid for sealed expansion joint.

Ship steel sections in convenient lengths of 10'-0" Min and 24'-0" Max unless necessary for staged construction or widenings. One shop splice is permitted in each shipping length provided no piece is less than 2'-0" long and sufficient studs are added to limit the stud to shop splice distance to 2" Min and 4" Max.

Weld studs in accordance with AWS D1.1.

Butt weld all shop and field splices and grind smooth areas in contact with seal. Make all necessary field splice joint preparations in the shop.

Paint the entire steel section with System II or IV primer in accordance with Item 446, "Feild Cleaning and Painting Steel." Provide paints in accordance with Item 446.2. Prepare steel and apply paint in accordance with Item 446.4.7.3 and 446.4.7.4.

Shop drawings for the fabrication of sealed expansion joints will not require the Engineer's approval if fabrication is in accordance with the details shown on this standard.

CONSTRUCTION NOTES:

Secure the sealed expansion joint in position and place to the proper grade and alignment by welding braces to adjacent reinforcing steel, to prestressed beam stirrups, or to anchors cast in concrete diaphragms. Include cost of temporary bracing in the price bid for sealed expansion joint.

Remove shipping angle immediately after each joint half is secured in place. Grind smooth, and touch up with organic zinc-rich paint.

Clean and prepare seal cavity for seal installation as per the Manufacturer's installation procedures.

Splice and install seal in accordance with the Manufacturer's directions and with the adhesive provided by the Manufacturer.

Splice in joint seal may be performed in the field.

GENERAL NOTES:

Provide sealed expansion joints in the size and at locations shown on the plans.

Minimum slab and overhang thickness required for the use of SEJ-B is 6 ½".

Texas Department of Transportation

Bridge Division Standard

SEALED EXPANSION JOINT TYPE B WITHOUT OVERLAY

SEJ-B

FILE: sejbste1-19.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: JMH
©TxDOT April 2019 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO. 380

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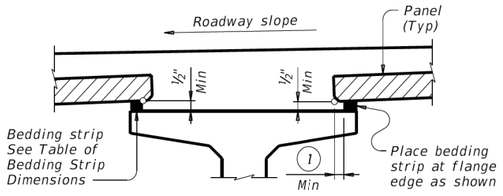
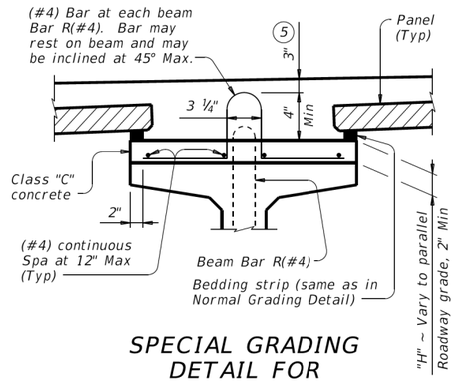


NORMAL GRADING DETAIL (3)

Showing prestressed concrete I-girders.
(Other beam types similar)



SPECIAL GRADING DETAIL FOR CONCRETE BEAMS

Showing prestressed concrete I-girders.
(Other beam types similar)

TABLE OF BEDDING STRIP DIMENSIONS		
WIDTH	HEIGHT (4)	
	Min	Max
1" (Min)	½"	2"
1 ¼"	½"	2 ½"
1 ½"	½"	3"
1 ¾"	½"	3 ½"
2"	½"	4"
2 ¼"	½"	4 ½" (2)
2 ½"	½"	5" (2)
2 ¾"	½"	5 ½" (2)
3" (Max)	½"	6" (2)

(1) 2" Min for I-giders, 1 ½" Min for all other beam types.

(2) Allowed for I-girders, not allowed on other beam types.

(3) To reduce the quantity of cast-in-place concrete, bedding strip thickness may be increased in ¼" increments. Bedding strips must be comprised of one layer. Bond bedding strips to the beams with an adhesive compatible with bedding strips. Bedding strips over 2.5" high may need to be bonded to panels. The same thickness strip must be used under any one panel edge and the maximum change in thickness between adjacent panels is ¼". Alternatively, bedding strips may be cut to grade. Panels may be supported by an alternate method, using a commercial product, if approved by the Engineer of Bridge Design, Bridge Division. If bedding strips exceed 6" high for I-Girders, 4" high for all other beam types, use Special Grading Detail for Concrete Beams or submit an alternate method to the Bridge Division for approval.

(4) Height must not exceed twice the width.

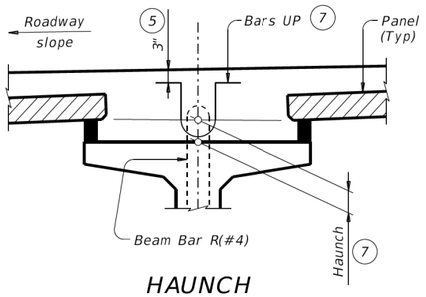
(5) Provide clear cover as indicated unless otherwise shown on Span Details.

(6) See Span Details and Thickened Slab End Details for top slab reinforcement and clear cover. Transverse top slab reinforcement may rest on top of prestressed concrete panels if necessary to maintain clear cover.

(7) Space Bars UP(#4) with Beam Bars R(#4) in all areas where measured haunch exceeds 3 ½" with I-girders, and 3" for all other beam types. Epoxy coating for Bars UP is not required.

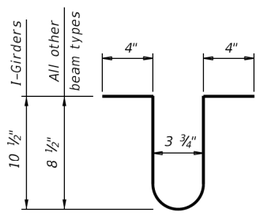
(8) Do not locate construction joints on top of a panel.

(9) Butt adjacent bedding strips together with adhesive. Cut v-notches, approx ¼" deep, in the top of the bedding strips at 8' o.c..

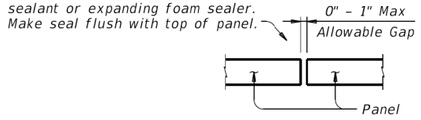


HAUNCH REINFORCING DETAIL

Showing prestressed concrete I-girders.
(Other beam types similar)

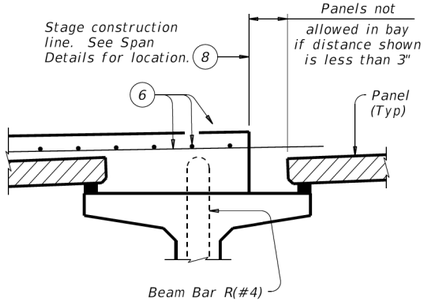


BARS UP (#4) (7)

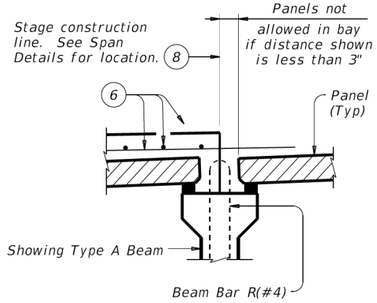


PANEL JOINTS

(Panel reinforcing not shown for clarity.
The gap cannot be considered as a panel fabrication tolerance. Adjust panel placement to minimize joint openings.)



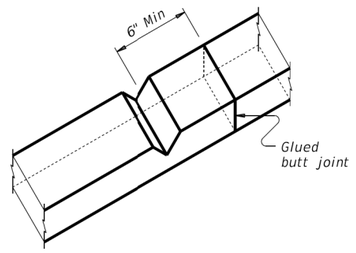
PRESTR CONC I-GIRDERS



PRESTR CONC I-BEAMS

STAGE CONSTRUCTION LIMITATIONS

(Other beam types similar)



BEDDING STRIP DETAIL (9)

CONSTRUCTION NOTES:

Erected panels must bear uniformly on bedding strips of extruded polystyrene placed along top flange edges.

Placing panels to minimize joint openings is recommended.

If additional blocking is needed, special grading details for supporting the panels and extra reinforcing between beam and slab will be considered subsidiary to deck construction.

Bars U, shown on PCP-FAB, may be bent over or cut off if necessary.

Care must be taken to ensure proper cleaning of construction debris and consolidation of concrete material under the edges of the panels. Bedding strips must be placed at beam flange edges so that adequate space is provided for the mortar to flow a minimum of 1 ½" under the panels as the slab concrete is placed.

To allow the proper amount of mortar to flow between beam and panel, the minimum vertical opening must be at least ½". Roadway cross-slope reduces the opening available for entry of the mortar. Bedding strips varying in thickness across the beam are therefore required.

For clear span between U-beams less than or equal to 18", see Permissible Slab Forming Detail on Miscellaneous Slab Detail sheets, UBMS.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel in the cast-in-place slab. See Table of Reinforcing Steel for size and spacing of reinforcement.

If the top and bottom layer of reinforcing steel is shown on the Span Details to be epoxy coated, then the D, E, P, & Z bars must be epoxy coated.

Provide bar Laps, where required, as follows:

Uncoated ~ #4 = 1'-7"
Epoxy Coated ~ #4 = 2'-5"

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

Panel placement may follow either Option 1 or Option 2 except Option 1 must be used if the skew exceeds 45 degrees.

Use of Prestressed Concrete Panels is not permitted for horizontally curved steel plate or tub girders. See Span Details for other possible restrictions on their use.

These details are to be used in conjunction with the Span Details, PCP-FAB and other applicable standard drawings.

When panel support (bedding strips) deviates from what is shown herein, provide details signed and sealed by a professional Engineer.

Any additional reinforcement or concrete required on this standard is considered subsidiary to the bid Item "Reinforced Concrete Slab".

Cover dimensions are clear dimensions, unless noted otherwise.

Reinforcing bar dimensions shown are out-to-out of bar.

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRESTRESSED CONCRETE PANELS DECK DETAILS

PCP

FILE: pcpstde1-19.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: JMH
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	DIST	COUNTY		SHEET NO. 381

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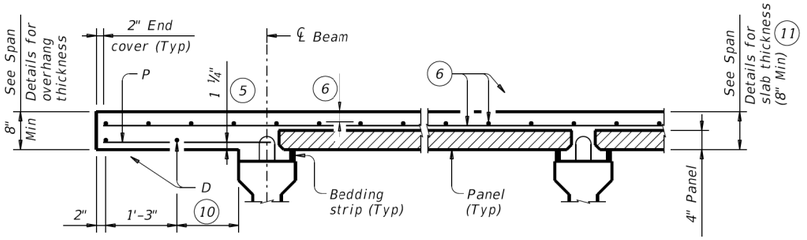
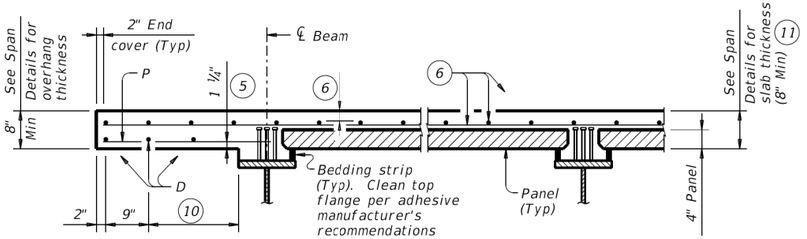
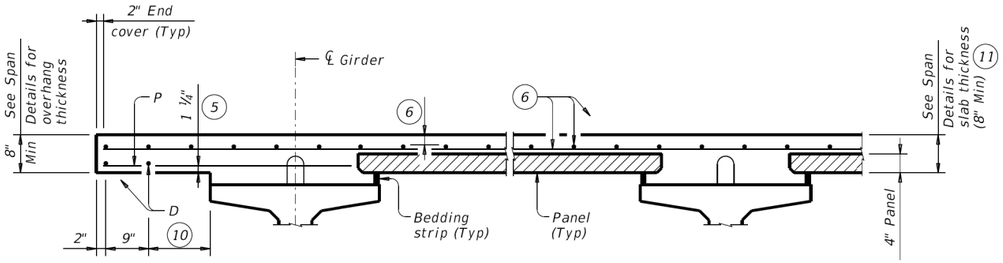


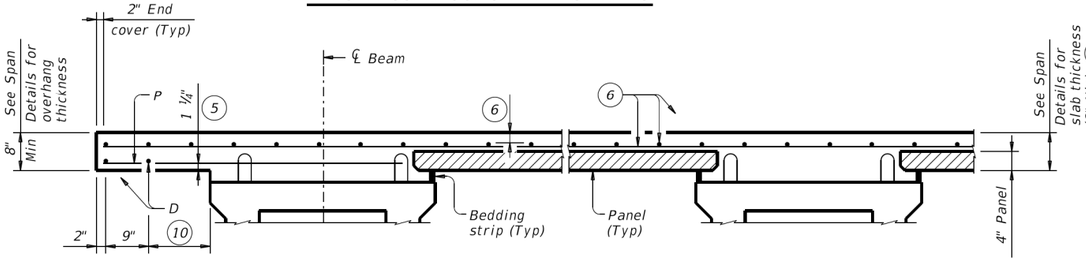
PRESTRESSED CONCRETE I-BEAMS



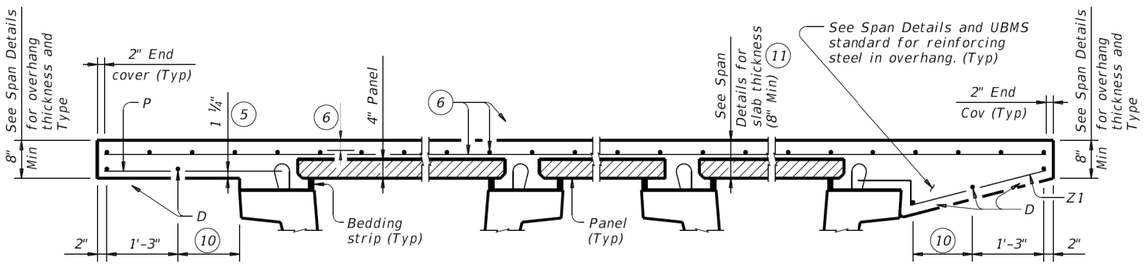
STEEL BEAMS



PRESTRESSED CONCRETE I-GIRDERS



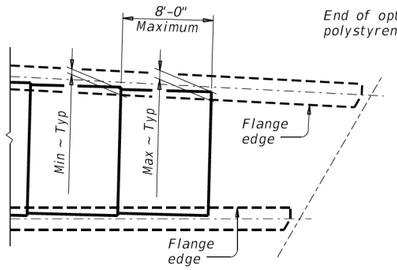
PRESTRESSED CONCRETE X-BEAMS



NORMAL OVERHANG WITH PRESTR CONC U-BEAMS

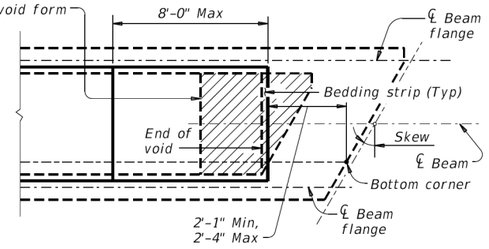
SLOPED OVERHANG WITH PRESTR CONC U-BEAMS

TYPICAL PART TRANSVERSE SECTIONS

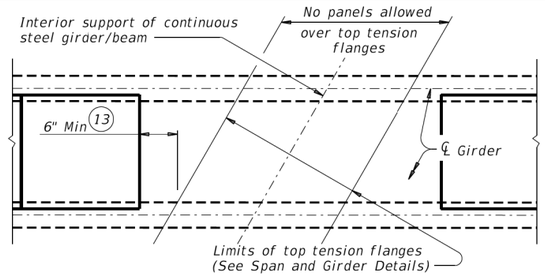


AT FLARED BEAMS OR GIRDERS

See PCP-FAB standard for Min and Max dimensions based on bemm/girder type.



OVER CONC U-BEAMS



AT INT SUPPORTS OF CONTINUOUS STEEL GIRDERS

PART PLANS OF PANEL PLACEMENT

(5) Provide clear cover as indicated unless otherwise shown on Span Details.

(6) See Span Details and Thickened Slab End Details for top slab reinforcement and clear cover. Transverse top slab reinforcement may rest on top of prestressed concrete panels if necessary to maintain clear cover.

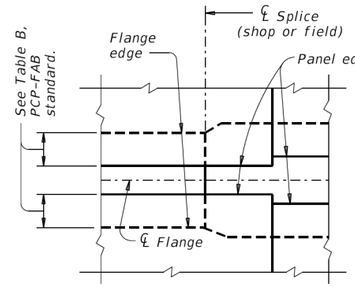
(9) Butt adjacent bedding strips together with adhesive. Cut v-notches, approx ¼" deep, in the top of the bedding strips at 8' o.c..

(10) Equally space additional bar if more than 1'-3" Max.

(11) The actual thickness constructed may exceed the slab thickness shown on the Span Details but the extra thickness may be no more than 2" (1" for prestressed concrete U-beams and steel beams). Bearing seat elevations or finished grade may be adjusted.

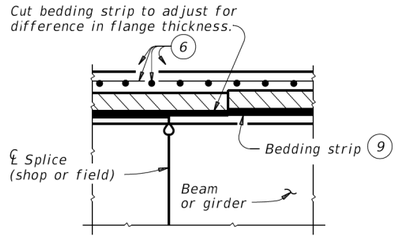
(12) Field adjust Bars Z1(#4) to match actual slope of slab overhangs. Width of slab overhang will vary along span with curved slab edges. Adjust Bar Z1(#4) dimensions to maintain proper cover. Bars Z2(#4) are located at Inverted-Tee stems only.

(13) Location of concrete placement sequence boundaries and bolted field splices should be considered by the contractor in determining panel limits.



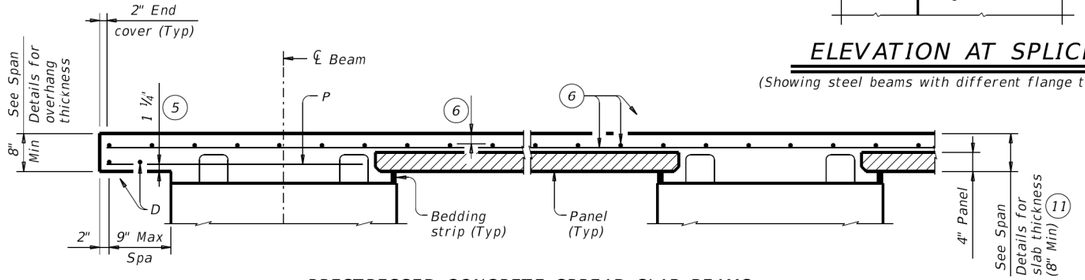
PLAN AT SPLICE

(Showing steel beams with flange width transition)



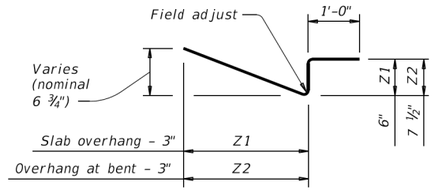
ELEVATION AT SPLICE

(Showing steel beams with different flange thickness)



PRESTRESSED CONCRETE SPREAD SLAB BEAMS

Bars P over exterior beams are still required when no overhang is used. In this case, only one Bar D, 2" from slab edge, is required.



BARS Z (#4) (12)

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Texas Department of Transportation

Bridge Division Standard

PRESTRESSED CONCRETE PANELS DECK DETAILS

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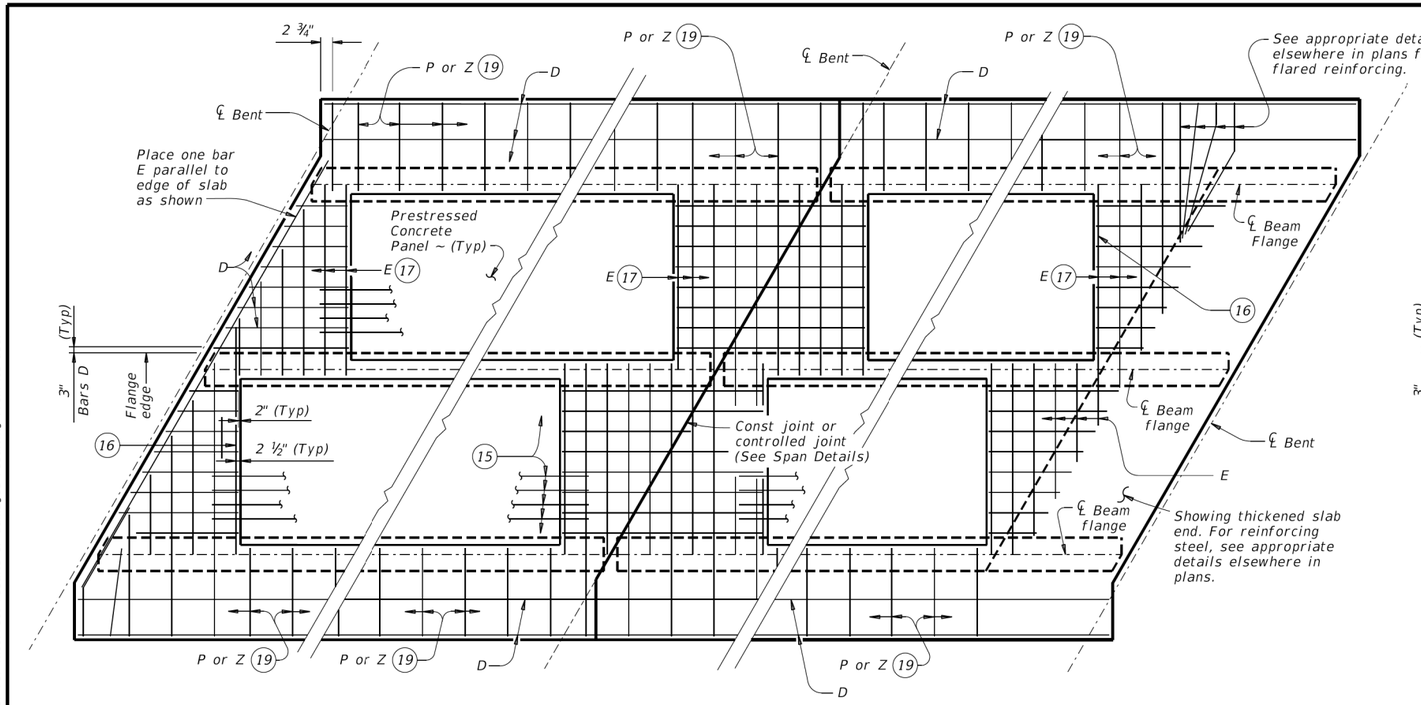
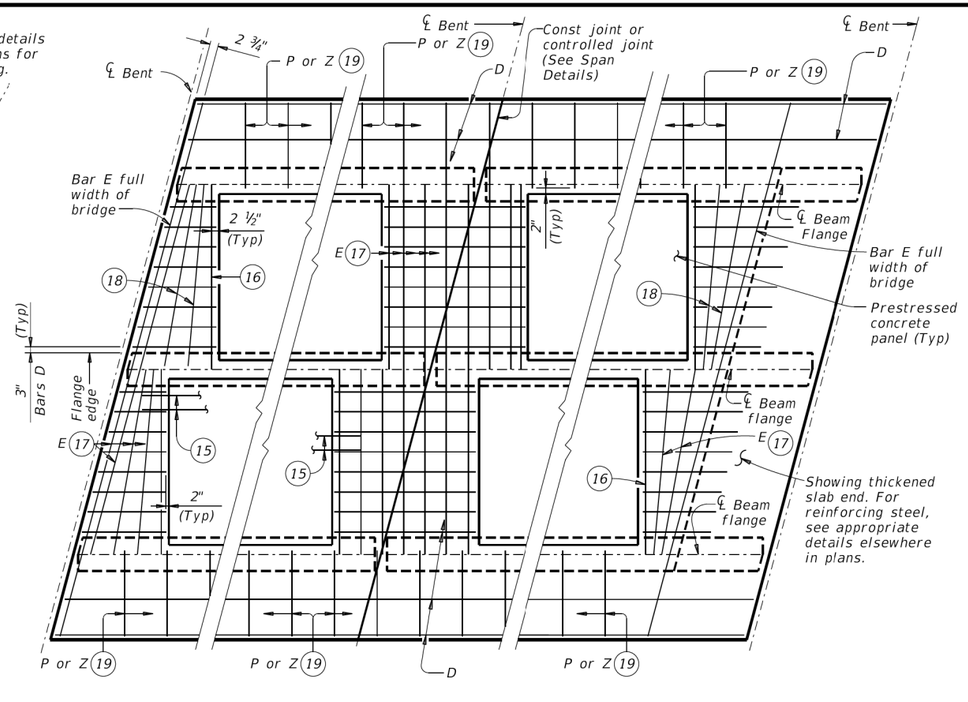


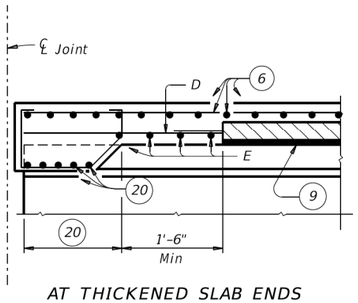
AT ALL SPAN ENDS UNLESS NOTED OTHERWISE | AT INTERIOR BENTS | AT THICKENED END SLABS

OPTION 1 ~ PLAN OF SLABS WITH NORMAL REINFORCEMENT

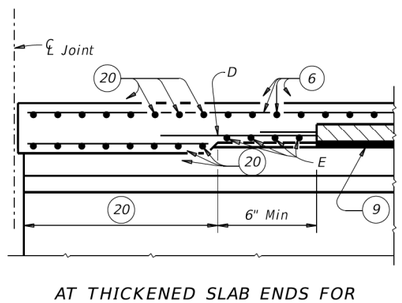


AT ALL SPAN ENDS UNLESS NOTED OTHERWISE | AT INTERIOR BENTS | AT THICKENED END SLABS

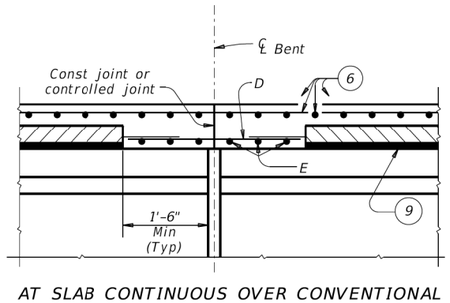
OPTION 1 ~ PLAN OF SLABS WITH SKEWED REINFORCEMENT



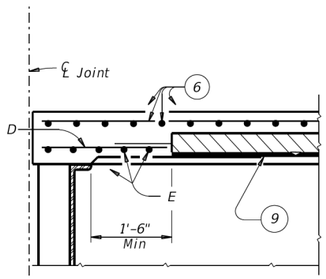
AT THICKENED SLAB ENDS FOR PRESTR CONC U-BMS



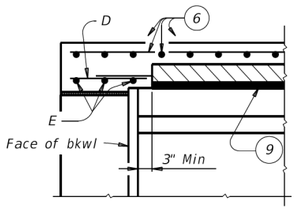
AT THICKENED SLAB ENDS FOR PRESTR CONC I-BMS AND STEEL BMS



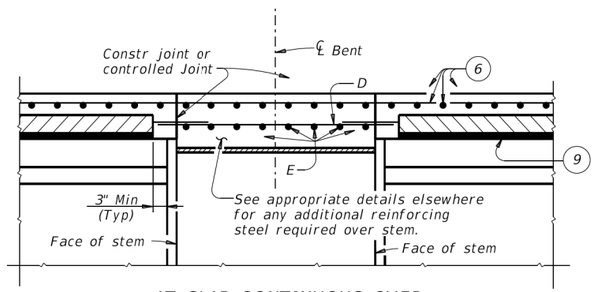
AT SLAB CONTINUOUS OVER CONVENTIONAL INTERIOR BENTS FOR ALL SIMPLE SPAN BMS



AT CONVENTIONAL END DIAPHRAGMS FOR STEEL BMS



AT SLAB OVER ABUTMENT BACKWALL FOR ALL BMS



AT SLAB CONTINUOUS OVER INVERTED-T BENTS FOR ALL BMS

OPTION 1 ~ ELEVATIONS AT BEAM ENDS

(6) See Span Details and Thickened Slab End Details for top slab reinforcement and clear cover. Transverse top slab reinforcement may rest on top of prestressed concrete panels if necessary to maintain clear cover.

(9) Butt adjacent bedding strips together with adhesive. Cut v-notches, approx ¼" deep, in the top of the bedding strips at 8' o.c.

(14) Max Spacing as listed unless otherwise shown.

(15) At connection with cast-in-place slab, extend longitudinal panel reinforcement. See PCP-FAB for details.

(16) Maintain one Bar E(#4) parallel to panel ends (Typ).

(17) Bars E(#4) not continuous over beam flanges must overlap beam flange 6" Min.

(18) Add flared Bars E(#4) (Min Spa = 6", Max Spa = 12") as required at panel ends.

(19) Where possible, Bars E(#4) may be extended into overhangs to replace Bars P(#4). Bars Z(#4) are required for sloped overhangs with U-Beams.

(20) See appropriate thickened slab end details for reinforcing and limits of thickened slab end.

TABLE OF REINFORCING STEEL (14)

BAR	SIZE	Max Spa (in.)
D	#4	9
E	#4	9
P	#4	18
UP	#4	~
Z	#4	18

HL93 LOADING SHEET 3 OF 4

Texas Department of Transportation | Bridge Division Standard

PRESTRESSED CONCRETE PANELS
DECK DETAILS

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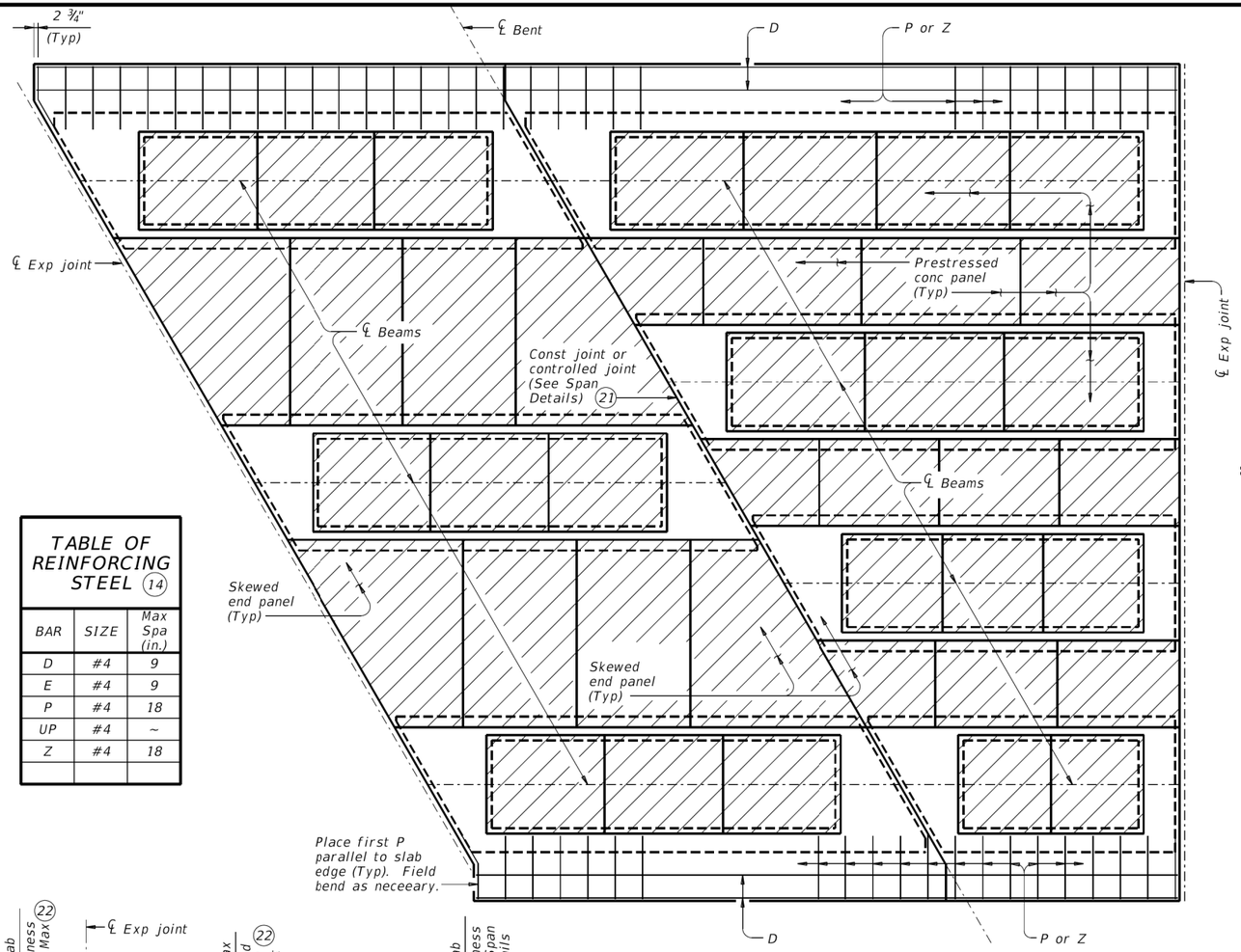
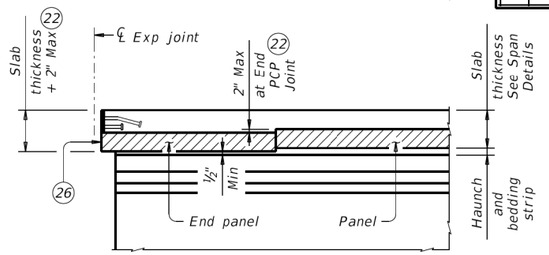


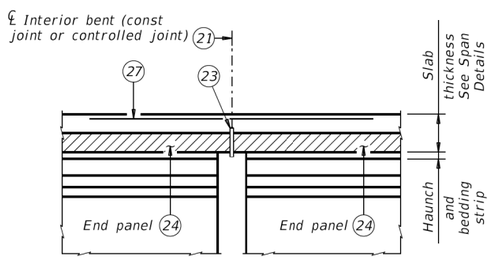
OPTION 2 ~ PLAN OF SLAB

(Showing U-Beams; other beams similar)



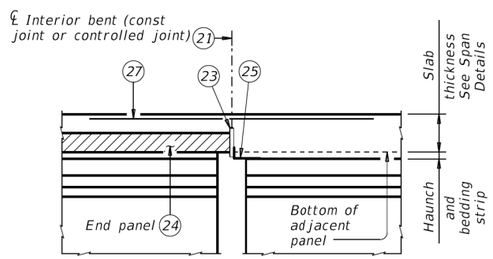
JOINTS (BETWEEN BEAMS/GIRDERS OR AT INV-T STEM)

For SEJ-A, SEJ-S(0), AJ, and Type A expansion joints only.



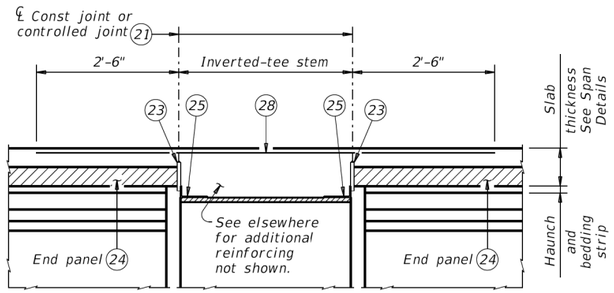
CONVENTIONAL INTERIOR BENT

Panel against panel between beams/girders.



CONVENTIONAL INTERIOR BENT

Panel against beam/girder end in adacent span.

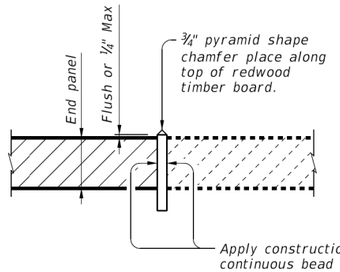


INVERTED-T BENT

Panels against inverted-tee stem

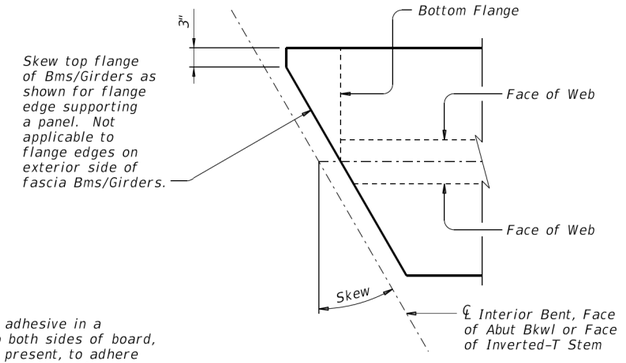
OPTION 2 ~ ELEVATIONS AT BEAM ENDS (6)

TABLE OF REINFORCING STEEL (14)		
BAR	SIZE	Max Spa (in.)
D	#4	9
E	#4	9
P	#4	18
UP	#4	~
Z	#4	18



ELEVATION EXAMPLE OF END PANEL AND TIMBER BOARD (23)

See "Option 2 ~ Elevation At Beam Ends".



OPTION 2 ~ SHOWING MODIFICATION TO BEAM/GIRDER TOP FLANGE FOR SKEWS OVER 5°

Showing I-Bm/I-Girder, U-Bms and Steel Bms similar.

(6) See Span Details and Thickened Slab End Details for top slab reinforcement and clear cover. Transverse top slab reinforcement may rest on top of prestressed concrete panels if necessary to maintain clear cover.

(14) Max Spacing as listed unless otherwise shown.

(21) 1 ½" Vinyl or plastic joint former at controlled joints (Stress Cap, Zip Strip, Stress Lock, or equal as approved by the Engineer.)

(22) End panel may be set up to 2" lower to accommodate expansion joint hardware, provided bedding strip is not less than ½" thick.

(23) ¾" thick redwood timber board, leave in place. Redwood timber board placed flush with top of panel or within ¼" Max above panel. Place ¾" pyramid shape chamfer along top of timber board. See "Elevation Example of End Panel and Timber Board". Place straight, within ¼" of centerline of bent or face of inverted-tee, across bridge width and end board at exterior flange edge of fascia beams/girders. Do not extend into overhang.

(24) Place panel within ½" of ¾" thick board.

(25) Permanent galvanized steel sheet form. Removable formwork is acceptable.

(26) Place end panel within ½" of expansion joint opening. End panel cannot encroach on required expansion joint opening.

(27) Place additional (#4) bar 5'-0" in length between every slab bars T. Center (#4) bar on Joint.

(28) Place additional (#4) bar continuous 2'-6" beyond each side of Inverted-T Stem between every slab bars T.

SPECIAL OPTION 2 CONSTRUCTION NOTES:

When Option 2 is chosen bottom mat of thickened end slab reinforcing is not required. Use the same top mat as shown on the Thickened Slab End Details sheet.

Placing panels adjacent to expansion joints and bent centerlines prior to completing interior panel placement is recommended. Saw cutting panels to fit is acceptable when approved by the Engineer. Minimum distance from a saw cut edge to a panel strand is 1 ½".

Do not extend the longitudinal panel reinforcement into the cast-in-place slab.

Top flanges of beams and girders on skewed bridges must be modified as shown on this drawing. The Contractor is responsible for coordinating this modification with the beam fabricator prior to submitting shop drawings for approval.

Fabricator may optionally skew the whole end. When electing to skew whole end, girder end details and bearing type at conventional interior bent must be changed to use condition at abutment. Fabricator must coordinate change in bearing type, bearing centerline location, and dowel location with Engineer and Contractor. Show appropriate changes on girder and bearing shop drawings.

Bending of anchor studs of expansion joints shown on standards AJ, SEJ-A and SEJ-S(0) is permissible if necessary to clear top of end panels. The Contractor is responsible for coordinating modifications with the joint fabricator. Submit shop drawings for approval when modifications to expansion joint hardware are made.

Bedding strips under skewed end panels must conform to the requirements of Item 422 except their minimum compressive strength must be 60 psi.

Provide Bars AA, G, K and OA from standard IGTS in the slab.

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Texas Department of Transportation | Bridge Division Standard

PRESTRESSED CONCRETE PANELS
DECK DETAILS

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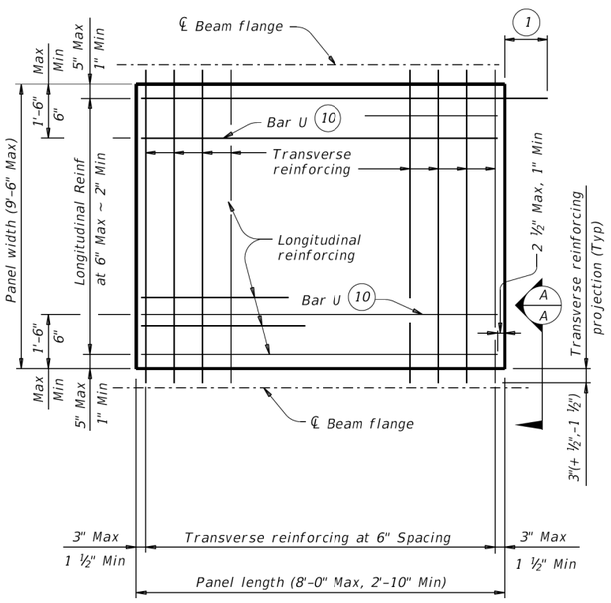
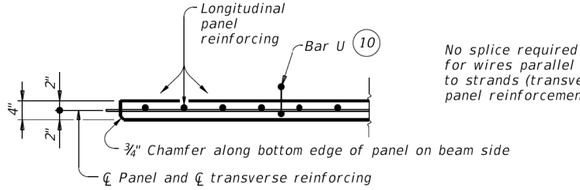
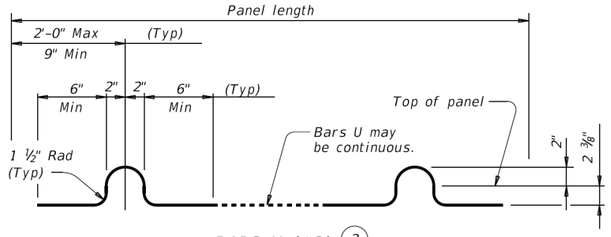


TYPICAL NON-SKEWED PANEL PLAN

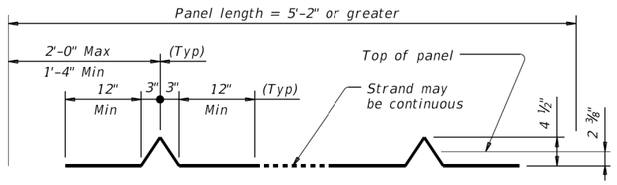


SECTION A-A

(Not showing supplemental #4 bars for skewed end panels.)

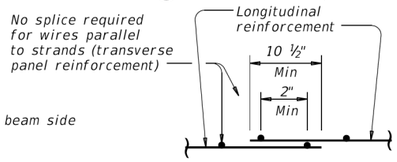


BARS U (#3) 2



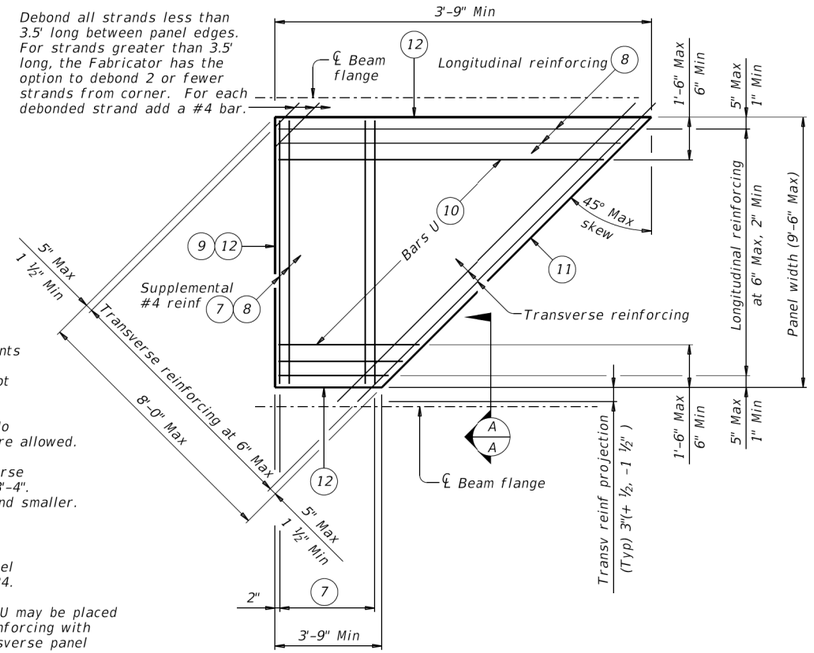
OPTIONAL STRAND FOR BARS U 3

1. At connection with cast-in-place slab, extend longitudinal panel reinforcement 1'-0" (+2",-0") past panel end. Alternatively, provide (#3) x 2'-0" dowels at 6" Max Spacing and extend dowels 1'-0" past panel end.
2. Four loops required per panel.
3. Four loops required per panel. ⅜" or ½" strands may be used.
4. Normal dimensions must be used on spans with parallel beams. Maximum and Minimum dimensions apply only to spans with flared beams.
5. See Normal Grading Detail on PCP standard for lap requirements and bedding strip dimensions. Some laps shown in tables cannot utilize all bedding strip widths.
6. One Splice allowed per panel. No more than two sheets of WWR are allowed.
7. Provide (#4) bars under transverse reinforcing, 10 Spaces at 4" = 3'-4". Omit for 5 degree (1:12) skew and smaller.
8. End Cover 2 ½" Max, 1" Min.
9. Recess strands on indicated panel edge in accordance with Item 424.
10. At the fabricator's option, Bars U may be placed parallel to transverse panel reinforcing with horizontal legs in plane of transverse panel reinforcing.
11. Use length of indicated panel edge as panel width for purpose of determining type of transverse reinforcing.
12. Timber form work permissible this edge.



WELDED WIRE REINFORCEMENT (WWR) SPLICE DETAIL 6

Debond all strands less than 3.5' long between panel edges. For strands greater than 3.5' long, the Fabricator has the option to debond 2 or fewer strands from corner. For each debonded strand add a #4 bar.

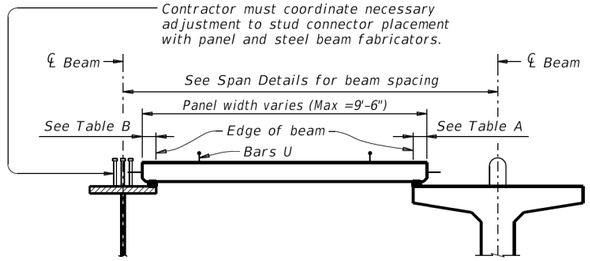


TYPICAL SKEWED END PANEL PLAN

(Only to be used with details shown elsewhere in the plans.)

TABLE A (4) (5)			
Beam Type	Normal (In.)	Min (In.)	Max (In.)
A	3	2 ½	3 ½
B	3	2 ½	3 ½
C	4	3	4 ½
IV	6	4	7 ½
VI	6 ½	4 ½"	8 ½
U40 – 54	5 ½	5 ½	7
Tx28-70	6	5	7 ½
XB20 – 40	4	3	4 ½
XSB12 – 15	4	3	4 ½

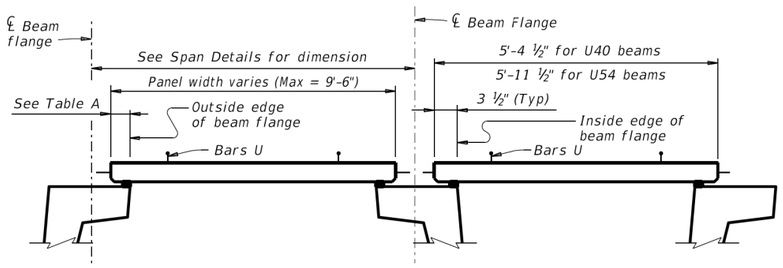
TABLE B (4) (5)			
Top Flange Width	Normal (In.)	Min (In.)	Max (In.)
11" to 12"	2 ¾	2 ½	2 ¾
Over 12" to 15"	3 ¼	3	3 ¼
Over 15" to 18"	4	3	4 ¾
Over 18"	5	3 ½	6 ¼



STEEL BEAMS

PRESTRESSED CONCRETE BEAMS OR GIRDERS

Typ unless noted otherwise



PRESTRESSED CONCRETE U-BEAMS

TYPICAL SECTIONS FOR DETERMINING PANEL WIDTH

GENERAL NOTES:

Provide Class H concrete for panels. Release strength f'ci=3,500 psi. Minimum 28 day strength f'c=5,000 psi.

Provide ¾" chamfer along bottom edge of panel on beam side.

Do not use epoxy-coated reinforcing steel bar or strand in panels.

Remove laitance from top panel surface.

Finish top of panel to a roughness between a No. 6 and No. 9 concrete surface profile, inclusive, as specified by the International Concrete Repair Institute (ICRI).

Shop drawings for the fabrication of panels will not require the Engineer's approval if fabrication is in accordance with the details shown on this standard.

A panel layout which identifies location of each panel must be developed by the Fabricator. Permanently mark each panel in accordance with the panel layout. A copy of the layout is to be provided to the Engineer.

TRANSVERSE PANEL REINFORCEMENT:

For panel widths over 5', use ⅜" or ½" Dia (270k) prestressing strands with a tension of 14.4 kips per strand.

For panel widths over 3'-6" up to and including 5', use ⅜" or ½" Dia (270k) prestressing strands with a tension of 14.4 kip per strand. Optionally, (#4) Grade 60 reinforcing bars may be used in lieu of prestressed strands.

For panel widths up to 3'-6", use (#4) Grade 60 reinforcing bars (prestressed strands alone are not allowed).

Place transverse panel reinforcement at panel centroid and space at 6" Max.

LONGITUDINAL PANEL REINFORCEMENT:

Any of the following options may be used for longitudinal panel reinforcement:

1. (#3) Grade 60 reinforcing steel at 6" Max Spacing. No splices allowed.
2. ⅜" Dia prestressing strands at 4 ½" Max Spacing (unstressed). No splices allowed.
3. ½" Dia prestressing strands at 6" Max Spacing (unstressed). No splices allowed.
4. Deformed Welded Wire Reinforcement (WWR) (ASTM A1064) providing 0.22 sq in per foot of panel width. Wires larger than D11 not permitted. Provide transverse wires to ensure proper handling of reinforcing. One splice per panel is allowed. See WWR Splice Detail.

No combination of longitudinal reinforcement options in a panel is allowed.

Place longitudinal panel reinforcement above or below transverse panel reinforcement. Must be placed above transverse panel reinforcement for skewed end panels with supplemental (#4) reinforcement.

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRESTRESSED CONCRETE PANEL FABRICATION DETAILS

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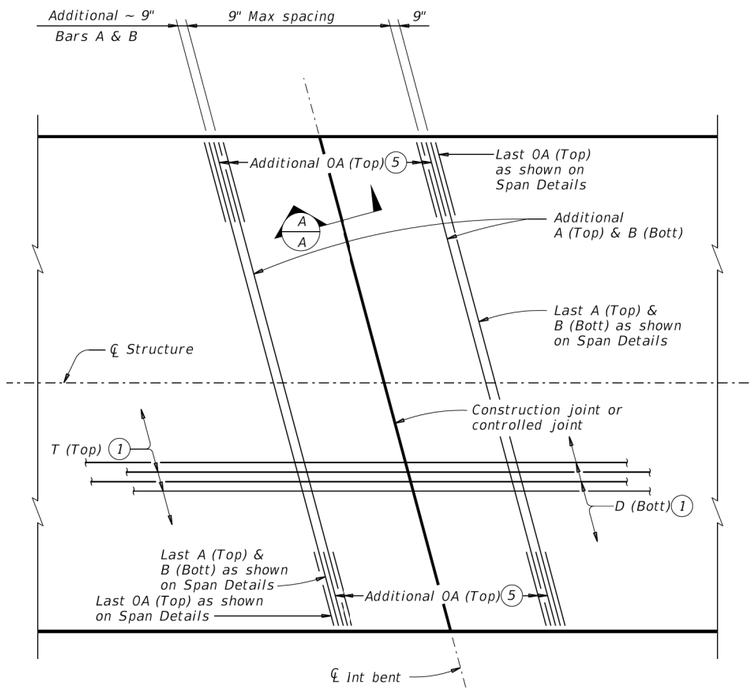
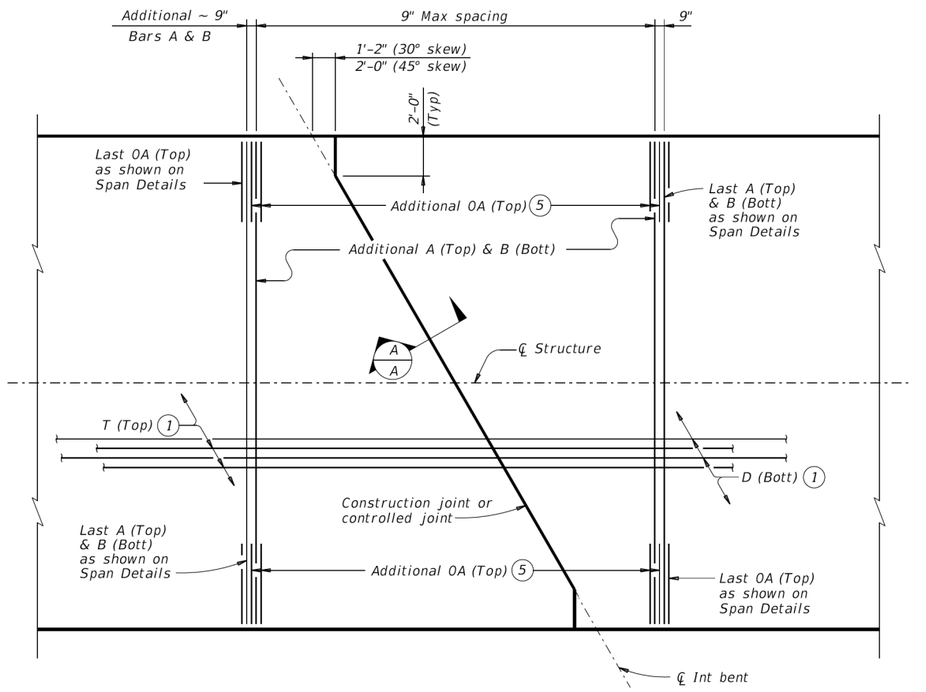


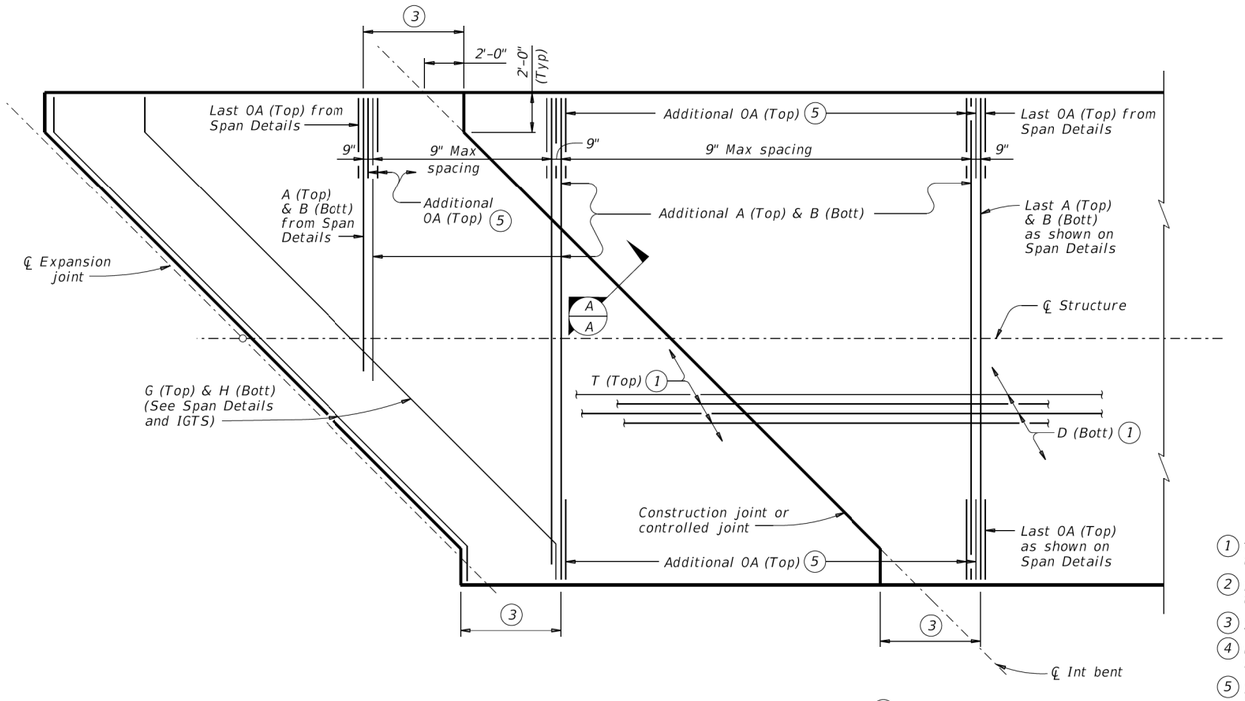
PLAN FOR 0° OR 15° SKEW

(Showing 15° skew)



PLAN FOR 30° OR 45° SKEW

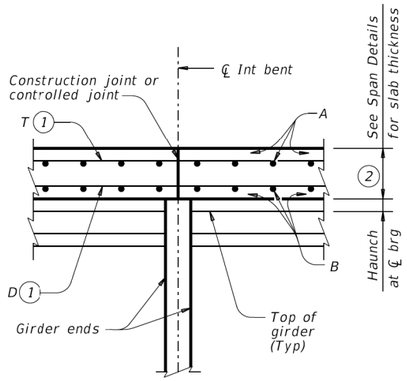
(Showing 30° skew)



PLAN FOR 45° SKEW 4

(Showing short span condition.)

BARS OA (#5)



SECTION A-A

Bars 0A (Top) not shown for clarity.

1. Top and bottom mats must be continuous through joint.
2. Maintain a constant slab thickness over the bent.
3. 5'-4" as shown on Span Details.
4. Use these details when no full slab width bars A and B are shown on Span Details.
5. Bars 0A (Top) at 9" Max spacing between Bars A (Top).
6. Values in table assume a temperature change of 70° F after erection when calculating thermal movement in one direction (not total).

TABLE OF (6) ALLOWABLE UNIT LENGTH

Max Rdwy Grade, Percent	Unit Length Factor
0.00	4.1
1.00	3.9
2.00	3.7
3.00	3.5
4.00	3.3
5.00	3.1

Unit length must not exceed the length of the shortest end span times the Unit Length Factor shown in table or 400', whichever is less.

BAR TABLE

BAR	SIZE
A	#4
B	#4
D	#4
T	#4
0A	#5

The details shown on this sheet are applicable for two and three span units comprised of the same girder type.
Units may be comprised of different span lengths. See "Table of Allowable Unit Length".

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

This standard is drawn showing right forward skew. See Bridge Layout for actual skew direction.

CONSTRUCTION NOTES:

Where multi-span units are indicated on the Bridge Layout, the thickened slab end details and reinforcement shown on IGTS standard (Bars AA, G, H, J, K, and M) and on the Span Details will be omitted where slabs are continuous over interior bents. At these locations, the slab details and reinforcement will be as shown on this sheet or on PCP standard (if using this option).

Thickened slab end reinforcement and details still apply at expansion joint locations (ends of units).

See Span Details for remainder of slab reinforcement and details.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.

Provide Class "S" concrete (f'c = 4,000 psi). Provide Class "S" (HPC) if shown elsewhere on the plans.

Provide bar laps, where required, as follows:
Uncoated ~ #4 = 1'-7"
Epoxy Coated ~ #4 = 2'-5"

The details shown on this sheet are applicable for use only with the Prestressed Concrete I-Girder Standard Designs shown on standards IGSD-24, IGSD-28, IGSD-30, IGSD-32, IGSD-38, IGSD-40 and IGSD-44.

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

CONTINUOUS SLAB DETAILS

PRESTR CONC I-GIRDER SPANS

IGCS

FILE: igcs1sts-19.dgn	DN: JMH	CK: TxDOT	DW: JTR	CK: TxDOT
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REVISIONS 10-19: Added bubble note 6.	DIST	COUNTY		SHEET NO. 386

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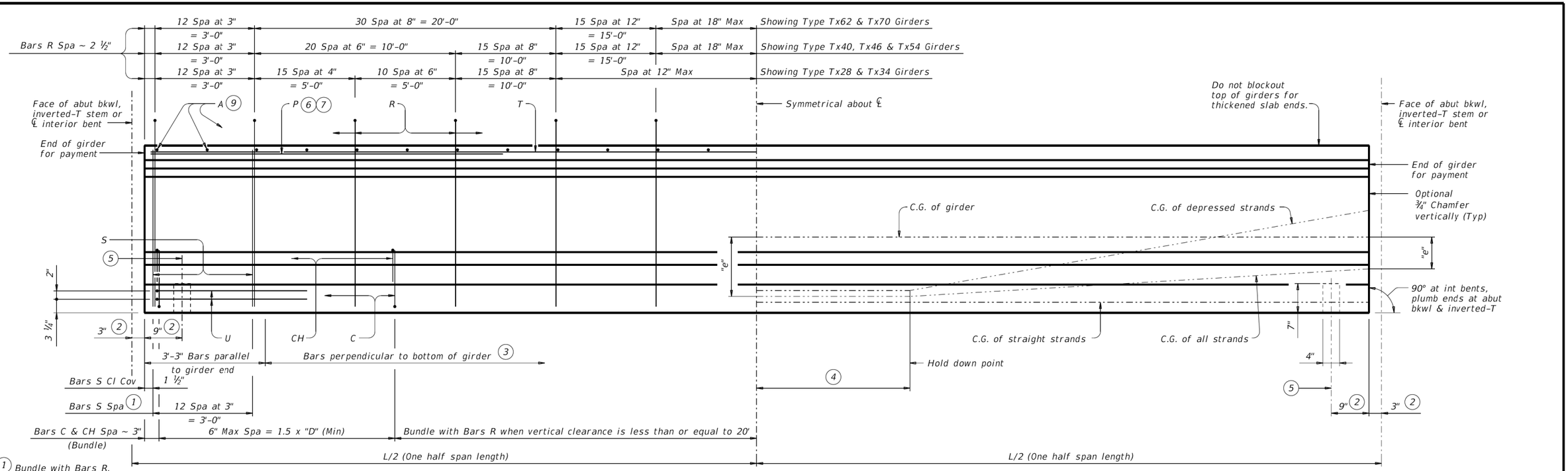


(1) Bundle with Bars R.

(2) Measured along ℄ Girder at interior bents; perpendicular to abutment bkwl or inverted-T stem.

(3) The average of the top and bottom spacing of Bars R cannot exceed the required spacing.

(4) L/20, but not less than 5'-0" (-0,+2').

(5) ℄ 4" x 1 ½" Vertical Slotted Hole at doweled girder end [labeled (D) on Bridge Layout]. Required for outside girder only or as shown on substructure details. Anchorage holes may be tapered (4 ¾" x 1 ⅝") at base. If holes are formed with sheet metal, forms may be left in place.

GIRDER ELEVATION

(6) Bars P (#6 x 15'-0") required in Tx62 and Tx70 girders. At the fabricator's option bars larger than #6 may be used. When L is less than 50 ft, Bars P are to be the same length as Bars T.

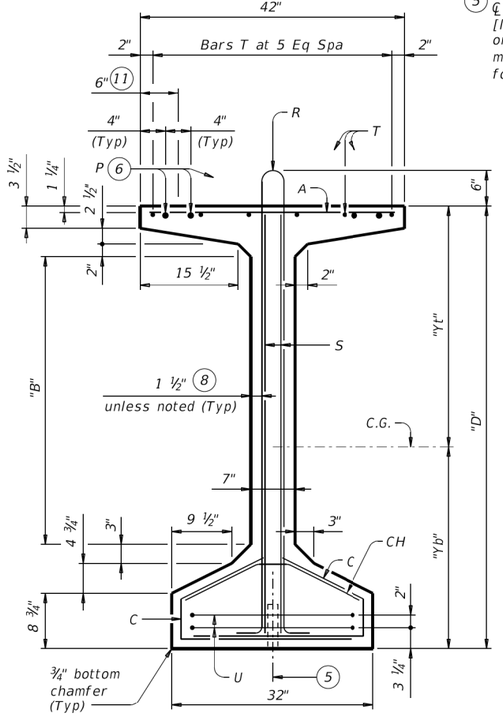
(7) Bars P (#6 x 15'-0") are only required in Tx28, Tx34, Tx40, Tx46, and Tx54 girders when "e" at girder ends exceeds 0.25 x "D". At the fabricator's option bars larger than #6 may be used. When L is less than 50 ft, Bars P are to be the same length as Bars T.

(8) 1 ⅜" Clear Cover to Bars S.

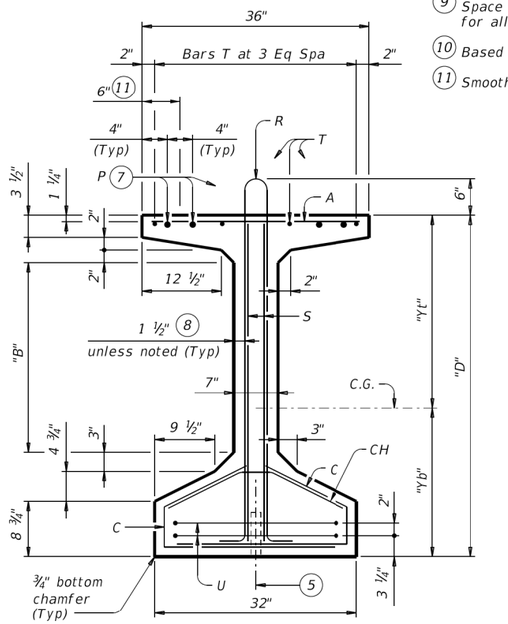
(9) Space Bars A at 6" Max for girders requiring overhang bracket hangers. Space at 12" Max for all other girders. Tie to Bars R as necessary. See standard IGMS for "Deck Forming Notes".

(10) Based on 155 pcf total weight of concrete and reinforcing steel.

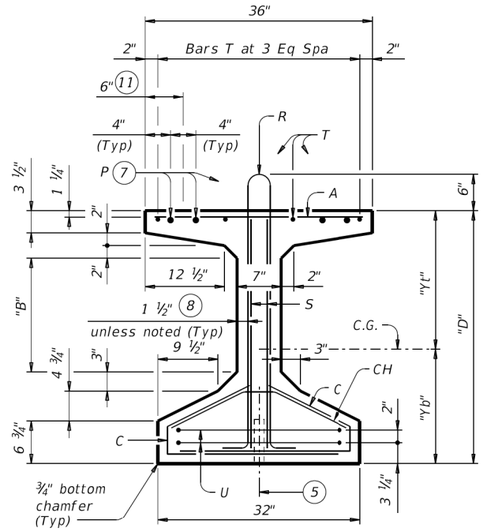
(11) Smooth trowel finish on the slab overhang side of exterior girder.



TYPE Tx62 & Tx70



TYPE Tx46 & Tx54



TYPE Tx28, Tx34 & Tx40

GIRDER DIMENSIONS AND SECTION PROPERTIES

Girder Type	"D" (in.)	"B" (in.)	"Yt" (in.)	"Yb" (in.)	Area (in.²)	"Ix" (in.⁴)	"Iy" (in.⁴)	Weight (10) (plf)
Tx28	28	6	15.02	12.98	585	52,772	40,559	630
Tx34	34	12	18.49	15.51	627	88,355	40,731	675
Tx40	40	18	21.90	18.10	669	134,990	40,902	720
Tx46	46	22	25.90	20.10	761	198,089	46,478	819
Tx54	54	30	30.49	23.51	817	299,740	46,707	880
Tx62	62	37 ½"	33.72	28.28	910	463,072	57,351	980
Tx70	70	45 ½"	38.09	31.91	966	628,747	57,579	1,040

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
Provide Class H concrete.
Provide Grade 60 reinforcing steel.
An equal area of deformed Welded Wire Reinforcement (WWR) (ASTM A1064) may be substituted for Bars A, C, R or T unless otherwise noted.
It is permissible for bars or strands to come in contact with materials used in forming anchor holes.

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

HL93 LOADING

SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

PRESTRESSED CONCRETE I-GIRDER DETAILS

IGD

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REVISIONS				
10-19: Added Bars C and CH full length for VC<= 20'	DIST	COUNTY		SHEET NO. 387

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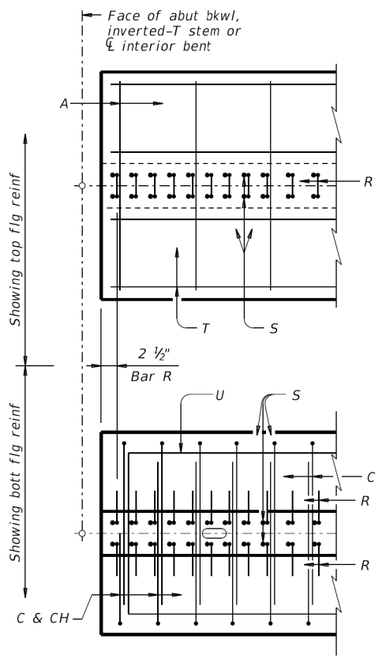
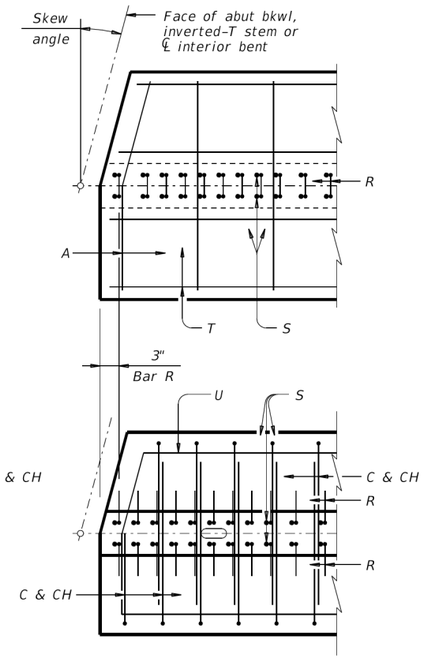
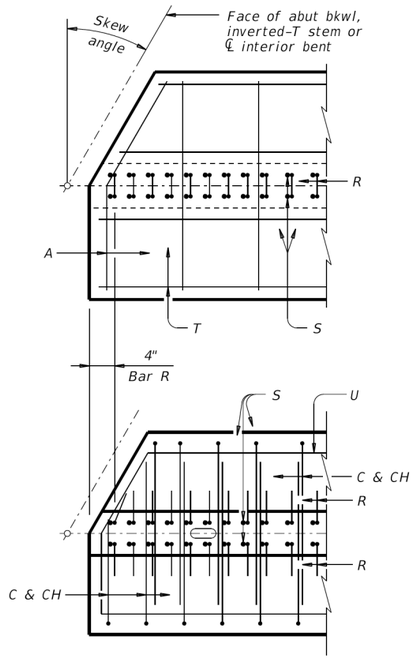


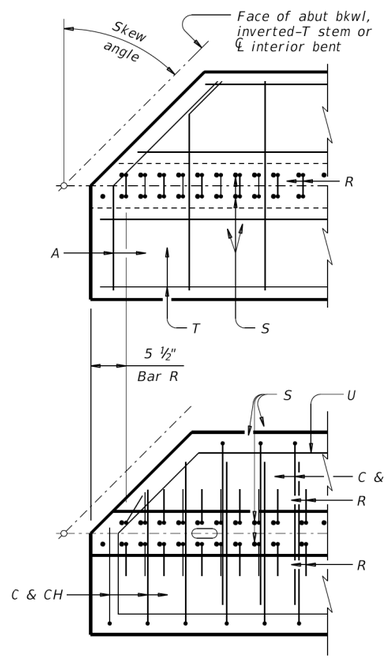
0° SKEW



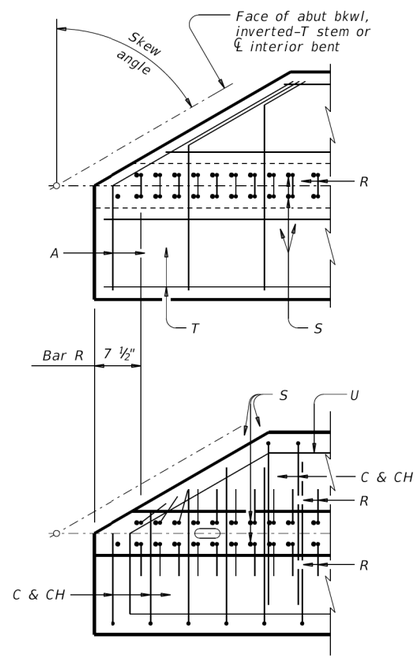
15° SKEW



30° SKEW



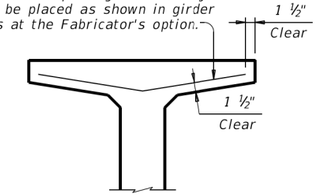
45° SKEW



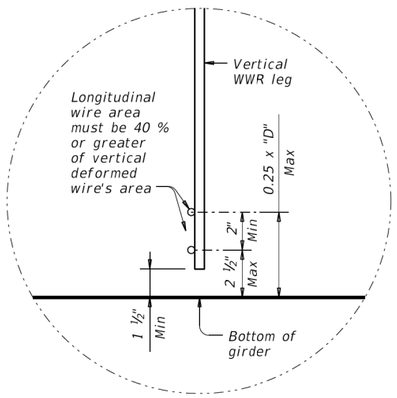
60° SKEW

PLAN OF GIRDER ENDS (12)

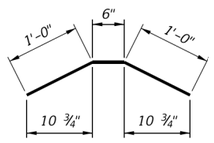
To control top flange cracking that may occur during form removal, additional top flange reinforcing may be placed as shown in girder ends at the Fabricator's option.



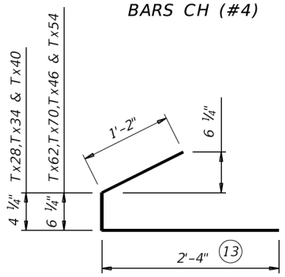
OPTIONAL TOP FLANGE REINFORCING DETAIL



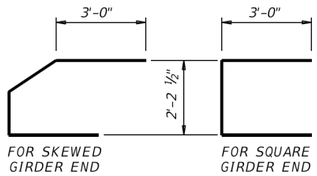
OPTIONAL WELDED WIRE REINFORCEMENT (WWR) DETAIL



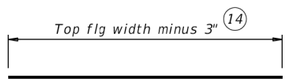
BARS CH (#4)



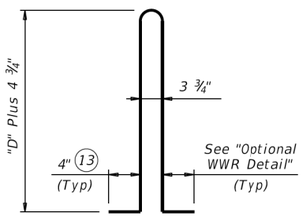
BARS C (#4)



BARS U (#5)

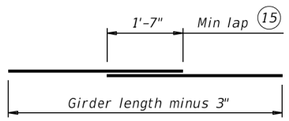


BARS A (#3)



BARS R (#4) (16)

BARS S (#6)



BARS T (#4)

(12) Reinforcing patterns shown are provided as guides to determine reinforcement placement in skewed ends. Place Bars S as close to girder end as cover requirements permit, which may prevent them to be bundled with Bars R.

(13) Bars may be cut or bent at skewed end as required.

(14) Increase as necessary for bars at skewed end.

(15) No portion of bar less than 10 ft.

(16) For Welded Wire Reinforcement (WWR) option, area of Bars R may be reduced in proportion to the increase in reinforcement yield strength over 60 ksi. Yield strength of WWR is limited to 75 ksi.

HL93 LOADING SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

PRESTRESSED CONCRETE I-GIRDER DETAILS

IGD

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REVISIONS				
10-19: Added Bars C and CH full length for VC<= 20'	DIST	COUNTY		SHEET NO.
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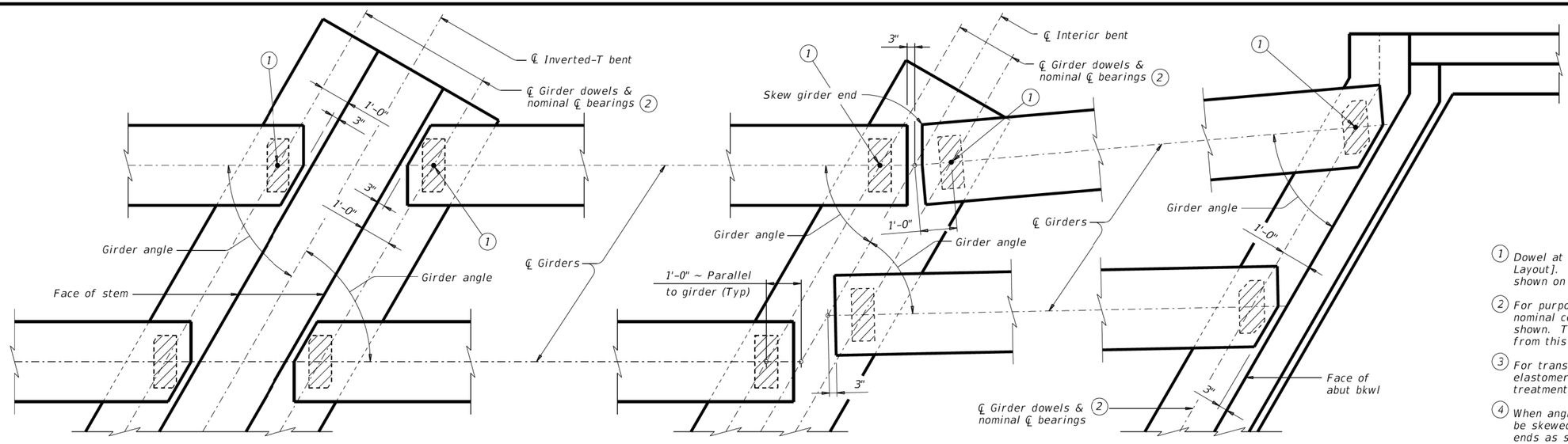
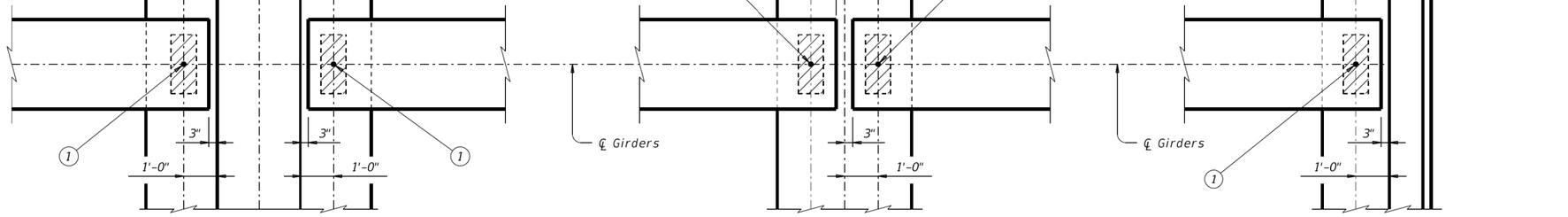


AT INVERTED-T BENT W/SKEW

AT CONVENTIONAL INTERIOR BENT W/SKEW

AT ABUTMENT W/SKEW (3)

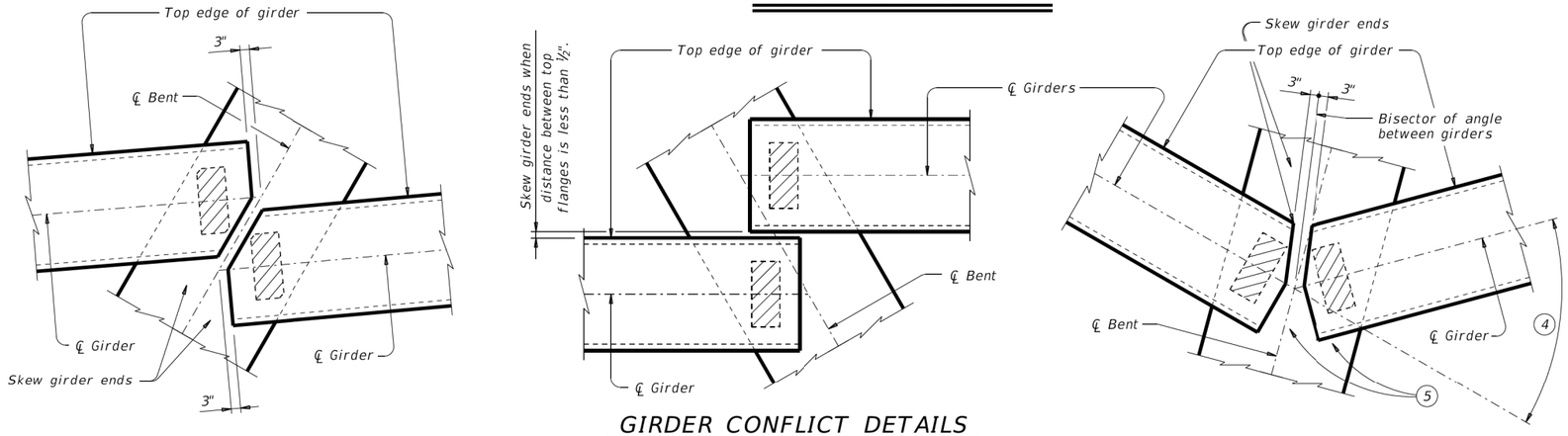


AT INVERTED-T BENT

AT CONVENTIONAL INTERIOR BENT

AT ABUTMENT (3)

GIRDER END DETAILS



GIRDER CONFLICT DETAILS

GENERAL NOTES:

These details accommodate skew angles up to 60°.

Shop drawings for approval are required.

A bearing layout which identifies location and orientation of all bearings must be developed by the bearing fabricator. Permanently mark each bearing in accordance with the bearing layout. A copy of the bearing layout is to be provided to the Engineer.

Cost of furnishing and installing elastomeric bearings, including beveled and embedded steel plates, must be included in unit price bid for "Prestressed Concrete Girders".

HL93 LOADING SHEET 1 OF 3

Texas Department of Transportation

Bridge Division Standard

ELASTOMERIC BEARING AND GIRDER END DETAILS

PRESTR CONCRETE I-GIRDERS

IGEB

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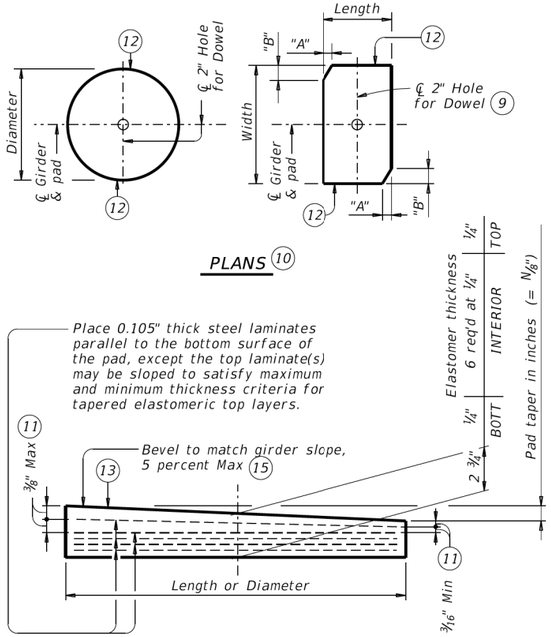
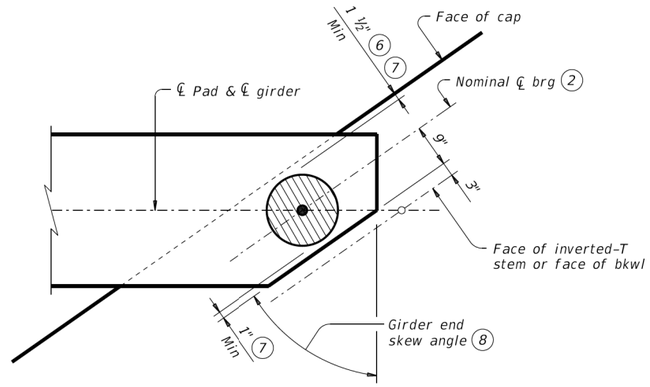
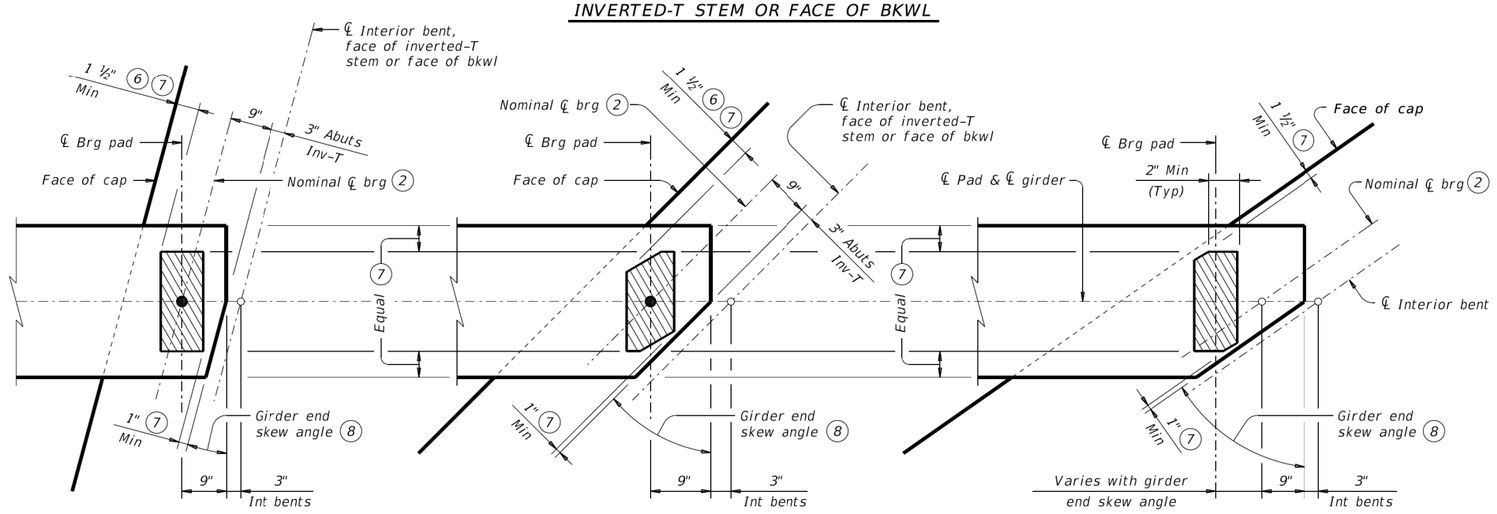


LAMINATED ELASTOMERIC BEARING PAD

(50 DUROMETER)



ROUND BEARINGS FOR SKEWED GIRDER ENDS AT FACE OF INVERTED-T STEM OR FACE OF BKWL



SKEWED GIRDER ENDS AT INT BENTS, FACE OF INVERTED-T STEM OR FACE OF BKWL

SKEWED GIRDER ENDS AT CONVENTIONAL INTERIOR BENTS (16)

(NO GIRDER DOWELS)

BEARING PAD PLACEMENT DIAGRAMS

TABLE OF MINIMUM SUBSTRUCTURE DIMENSIONS (14)

Girder Type	Abutments: Face of Bkwl to Face of Cap	Int Bents: Overall Cap Width	Inv-T Bents: Corbel Width
Tx28 thru Tx54	1'-9"	3'-6"	1'-10 ½"
Tx62 & Tx70	2'-0"	4'-0"	2'-1 ½"

TABLE OF BEARING PAD DIMENSIONS

Bent Type	Girder Type	Bearing Type (13)	Girder End Skew Angle Range	Pad Size Lgth x Wdth	Pad Clip Dimensions "A"	Pad Clip Dimensions "B"
ABUTMENTS, INVERTED-T AND TRANSITION BENTS WITH BACKWALLS	Tx28,Tx34, Tx40,Tx46 & Tx54	G-1-"N"	0° thru 21°	8" x 21"	---	---
		G-2-"N"	21°+ thru 30°	8" x 21"	1 ½"	2 ½"
		G-3-"N"	30°+ thru 45°	9" x 21"	4 ½"	4 ½"
		G-4-"N"	45°+ thru 60°	15" Dia	---	---
	Tx62 & Tx70	G-5-"N"	0° thru 21°	9" x 21"	---	---
		G-6-"N"	21°+ thru 30°	9" x 21"	1 ½"	2 ½"
		G-7-"N"	30°+ thru 45°	10" x 21"	4 ½"	4 ½"
		G-8-"N"	45°+ thru 60°	10" x 21"	7 ¼"	4 ¼"
CONVENTIONAL INTERIOR BENTS	Tx28,Tx34, Tx40,Tx46 & Tx54	---	---	---	---	---
		---	---	---	---	---
		G-1-"N"	0° thru 60°	8" x 21"	---	---
	Tx62 & Tx70	G-5-"N"	0° thru 60°	9" x 21"	---	---
CONVENTIONAL INTERIOR BENTS WITH SKEWED GIRDER ENDS (GIRDER CONFLICTS) (16)	Tx28,Tx34, Tx40,Tx46 & Tx54	G-1-"N"	0° thru 18°	8" x 21"	---	---
		G-2-"N"	18°+ thru 30°	8" x 21"	1 ½"	2 ½"
		G-9-"N"	30°+ thru 45°	8" x 21"	3"	3"
		G-10-"N"	45°+ thru 60°	9" x 21"	6"	3 ½"
	Tx62 & Tx70	G-5-"N"	0° thru 18°	9" x 21"	---	---
		G-5-"N"	18°+ thru 30°	9" x 21"	---	---
		G-11-"N"	30°+ thru 45°	9" x 21"	1 ½"	1 ½"
		G-12-"N"	45°+ thru 60°	9" x 21"	3"	1 ¾"

(2) For purposes of computing bearing seat elevations, nominal centerline of bearing must be defined as shown. The actual center of bearing pad may vary from this line.

(6) 3" for inverted-T.

(7) Place centerline pad as near nominal centerline bearing as possible between limits shown.

(8) Girder end skew angle is equal to 90° minus the girder angle except at some conflicting girders.

(9) Provide 2" dia hole only at locations required. See Substructure details for location.

(10) See Table of Bearing Pad Dimensions for dimensions.

(11) Maximum and minimum layer thicknesses shown are for elastomer only, on tapered layers.

(12) Locate Permanent Mark here.

(13) Indicate BEARING TYPE on all pads. For tapered pads, locate BEARING TYPE on the high side. The Fabricator must include the value of "N" (amount of taper in ⅛" increments) in this mark.
Examples: N=0, (for 0" taper)
N=1, (for ⅛" taper)
N=2, (for ¼" taper)
(etc.)
Fabricated pad top surface slope must not vary from plan girder slope by more than $\left(\frac{0.0625"}{\text{Length or Dia}}\right)$ IN/IN.

(14) Substructure dimensions must satisfy the minimums provided to accommodate the elastomeric bearings shown on this standard.

(15) See sheet 3 of 3 for beveled plate use when slopes exceed 5 percent.

(16) If girder end is skewed for a girder conflict at an interior bent and a beveled sole plate is required, use bearing type for abutments at this location. Location of bearing centerline is to be set as for abutments in this case.

HL93 LOADING SHEET 2 OF 3

Texas Department of Transportation | Bridge Division Standard

ELASTOMERIC BEARING AND GIRDER END DETAILS

PRESTR CONCRETE I-GIRDERS

IGEB

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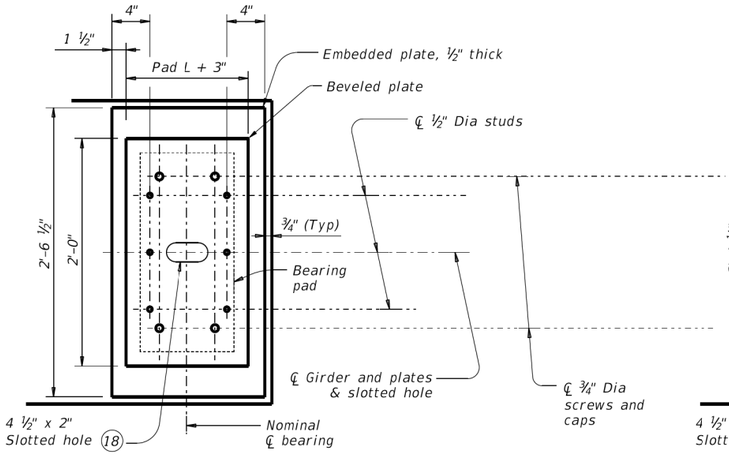
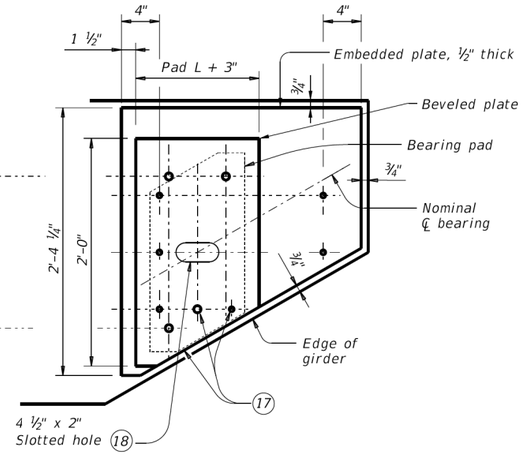
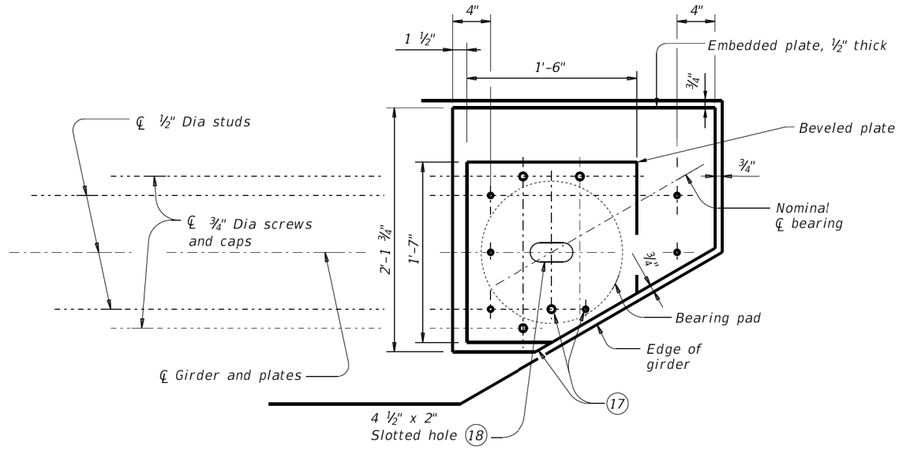


NORMAL GIRDER END
RECTANGULAR BEARING PAD

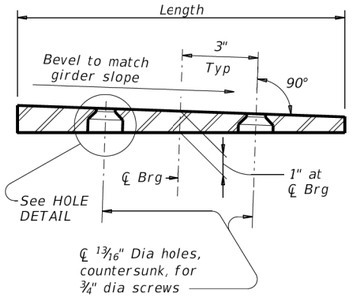


SKEWED GIRDER END
CLIPPED RECTANGULAR BEARING PAD

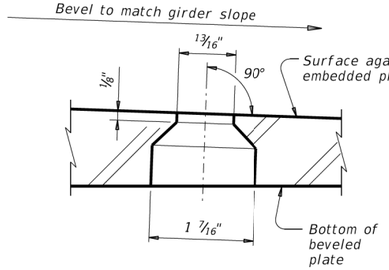


SKEWED GIRDER END
15" DIA BEARING PAD

PLAN VIEW OF SOLE PLATE DETAILS



SECTION



HOLE DETAIL

(17) Cut beveled and embedded plates to match girder end skew. Adjust location of screw and stud as shown when necessary.

(18) Slotted hole is required at doweled girder end locations.

SOLE PLATE NOTES:

Provide constant thickness elastomeric bearings with beveled and embedded steel sole plates in accordance with these details when the girder slope exceeds 5 percent or if otherwise required in the plans. Provide for all girders in the span.

On the shop drawings, dimension sole plates to the nearest 1/16" based on required thickness at centerline of bearing and slope of girder. Thickness tolerance variation from the approved shop drawings is 1/16"+/-, except variation from a plane parallel to the theoretical top surface can not exceed 1/16" total. Bearing surface tolerances listed in Item 424 apply to embedded and beveled plates.

Steel plate must conform to ASTM A36, A572 Gr 50, or A709 Gr 36 or Gr 50. Hot dip galvanize both the embedded plate and beveled sole plate after fabrication. Seal weld caps to embedded plate before galvanizing.

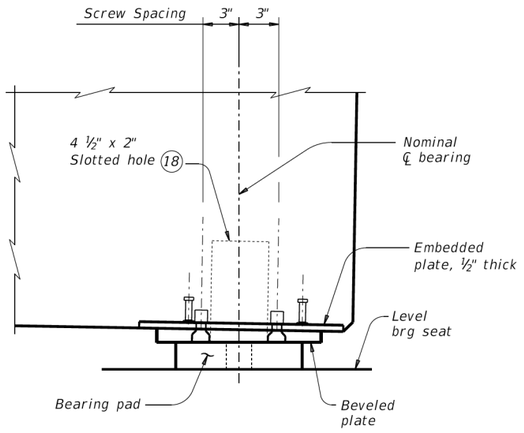
When determining if relocation of screw holes and studs are necessary for skewed girder ends, minimum clearance from screw or stud centerline to plate edge is 1.25".

Tap threads in the embedded plate only. Drill and tap prior to galvanizing.

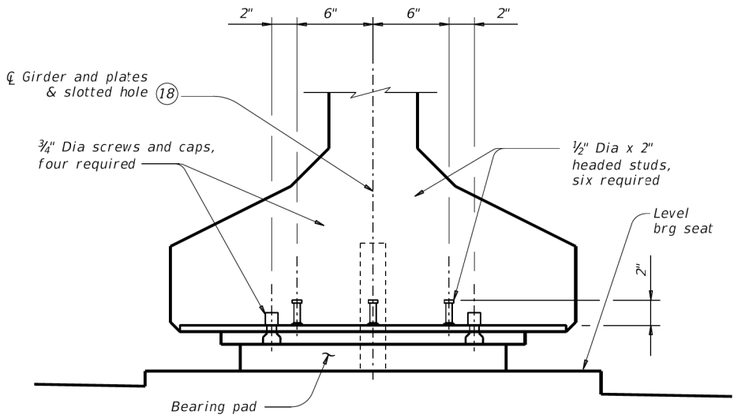
¾" Dia screws must be electroplated, socket flat head countersunk cap screws conforming to ASTM F835. Electroplating must conform to ASTM B633, SC 2, Type I. Provide screws long enough to maintain a ¾" minimum embedment into the embedded plate and galvanized cap. Provide galvanized steel caps (16 ga Min) with a nominal 1" inside diameter and deep enough to accommodate the screws, but not less than ½" deep or deeper than 1".

Install beveled sole plates prior to shipping girders. Installed screw heads must not protrude below the bottom of the beveled plate.

BEVELED PLATE DETAILS



SIDE ELEVATION



END ELEVATION
Showing normal girder end.

GIRDER DETAILS

HL93 LOADING SHEET 3 OF 3

Texas Department of Transportation | Bridge Division Standard

ELASTOMERIC BEARING AND GIRDER END DETAILS

PRESTR CONCRETE I-GIRDERS

IGEB

FILE: igebsts1-17.dgn	DN: AEE	CK: JMH	DW: JTR	CK: TxDOT
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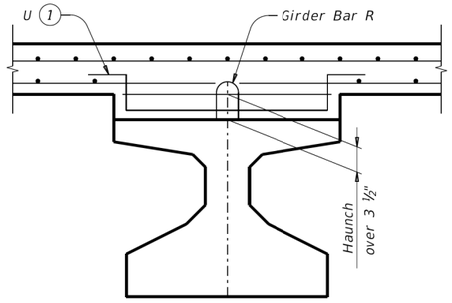
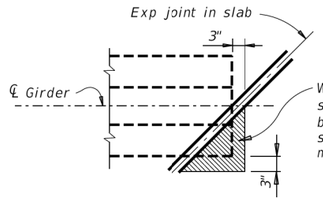
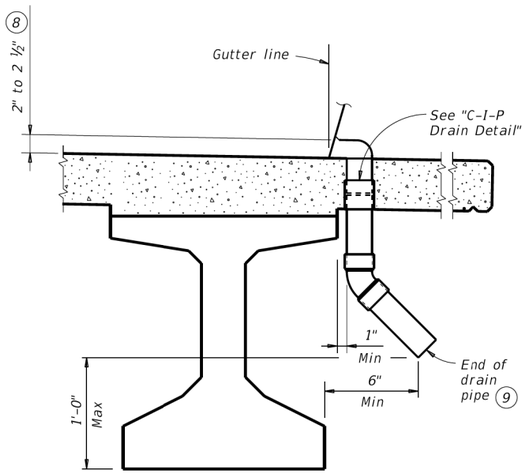


HAUNCH REINFORCING DETAIL

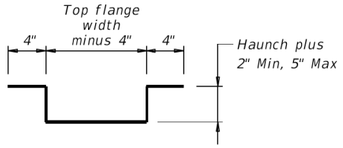


Where flanges project under slab of adjacent span, provide a minimum of ½" clearance between top of girder and bottom of adjacent slab. Polystyrene or other suitable compressible material may be used as a filler.

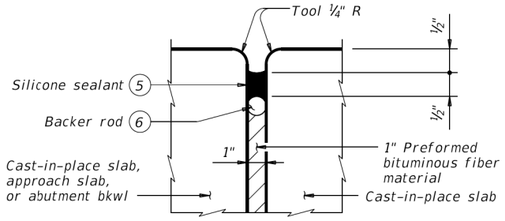
TREATMENT AT GIRDER END FOR SKEWED SPANS



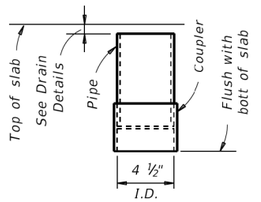
DRAIN DETAIL (10)



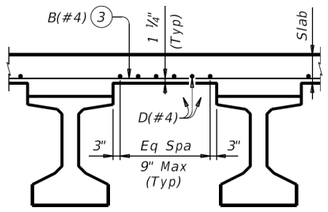
BARS U (#4)



TYPE A JOINT DETAIL (7)



C-I-P DRAIN DETAIL (2)



TYPICAL PART TRANSVERSE SLAB SECTION WITHOUT PCP (4)

Top reinforcing steel not shown for clarity.

(1) Space Bars U with girder Bars R in all areas where measured haunch exceeds 3 ½".

(2) Roughen outside of PVC with coarse rasp or equal to ensure bond with cast-in-place concrete.

(3) Bars B(#4) spaced at 9" Max with 2" end cover. Overhang option, Contractor's may end alternating bars B(#4) at centerline outside girder.

(4) Provide Grade 60 reinforcing steel. Provide bar laps, where required, as follows:
Uncoated ~ #4 = 1'-7"
Epoxy coated ~ #4 = 2'-5"

(5) Class 7 silicone sealant that conforms to DMS-6310. Install when ambient temperature is between 55°F and 85°F and rising. Engineer to determine allowable hours for sealant application.

(6) 1 ¼" backer rod must be compatible with joint sealant. Use of multiple pieces to create a backer rod cross section is not permitted. Top of backer rod must be convex as shown.

(7) The maximum distance between Type A expansion joints is 100'. See Bridge Layout for location of joints.

(8) Drain entrance formed in rail or sidewalk.

(9) Water may not be discharged onto girders.

(10) All drain pipe and fittings to be 4" diameter (Sch 40) PVC. See Item 481 "Pipe for Drains" for pipe, connections and solvent welding. Bend reinforcing steel to clear PVC 1". Drain length and location is as directed by the Engineer. Drains are not permitted over roadways or railways, or within 10'-0" of bent caps. Degrease outside of exposed PVC, apply acrylic water base primer, then coat with same surface finishing material as used for outside girder face. Variations of the above designs, as required for the type of rail used and its location on the structure, may be installed with the approval and direction of the Engineer.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

Payment for Type A joint will be as per Item 454, "Bridge Expansion Joints."

All other items (reinforcing steel, drains, etc.) shown on this sheet are subsidiary to other bid items.

Cover dimensions are clear dimensions, unless noted otherwise.

Reinforcing bar dimensions shown are out-to-out of bar.

DECK FORMWORK NOTES:

Overhang bracket hangers are limited to a safe working load of 3,600 lbs, applied to and along the axis of a coil rod at 45 degrees from vertical, regardless of higher loads permitted by hanger manufacturers. Do not place a hanger less than 12" from girder end. Space hangers accordingly.

Texas Department of Transportation

Bridge Division Standard

MISCELLANEOUS SLAB DETAILS

PRESTR CONCRETE I-GIRDERS

IGMS

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10-19: Modified Note 7. Type A now a pay item.	DIST	COUNTY		SHEET NO.
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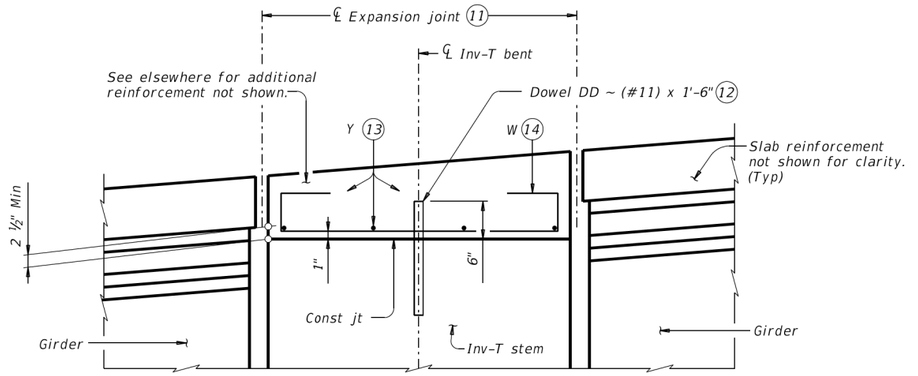

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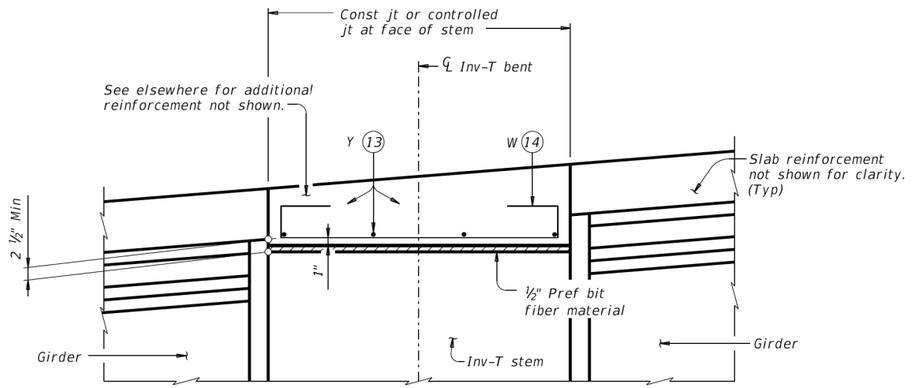
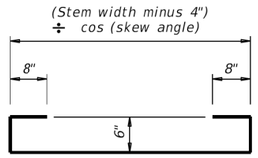
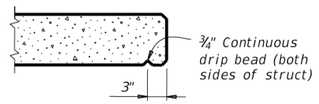


SHOWING CONST JTS OR CONTROLLED JTS

REINFORCEMENT OVER INV-T BENTS



BARS W (#4)



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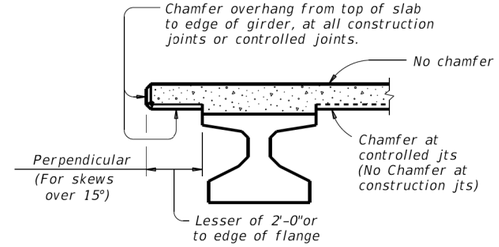
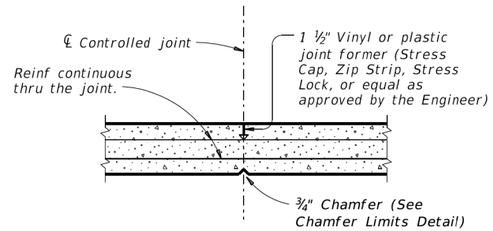


CHAMFER LIMITS DETAIL (15)



CONTROLLED JOINT DETAIL

(Saw-cutting is not allowed)

(11) See Layout for joint type.

(12) Dowels DD (#11) spaced at 5 Ft Max. See Inv-T bents for quantity and location.

(13) Space Bars Y (#4) at 12" Max. Use 2" end cover. Number of Bars Y must satisfy spacing limit. Place parallel to bent.

(14) Space Bars W at 12" Max (3" from end of cap). Tilt if necessary to maintain cover requirements. Place parallel to longitudinal slab reinforcement.

(15) See Span details for type of joint and joint locations.

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Bridge Division Standard

MISCELLANEOUS SLAB DETAILS

PRESTR CONCRETE I-GIRDERS

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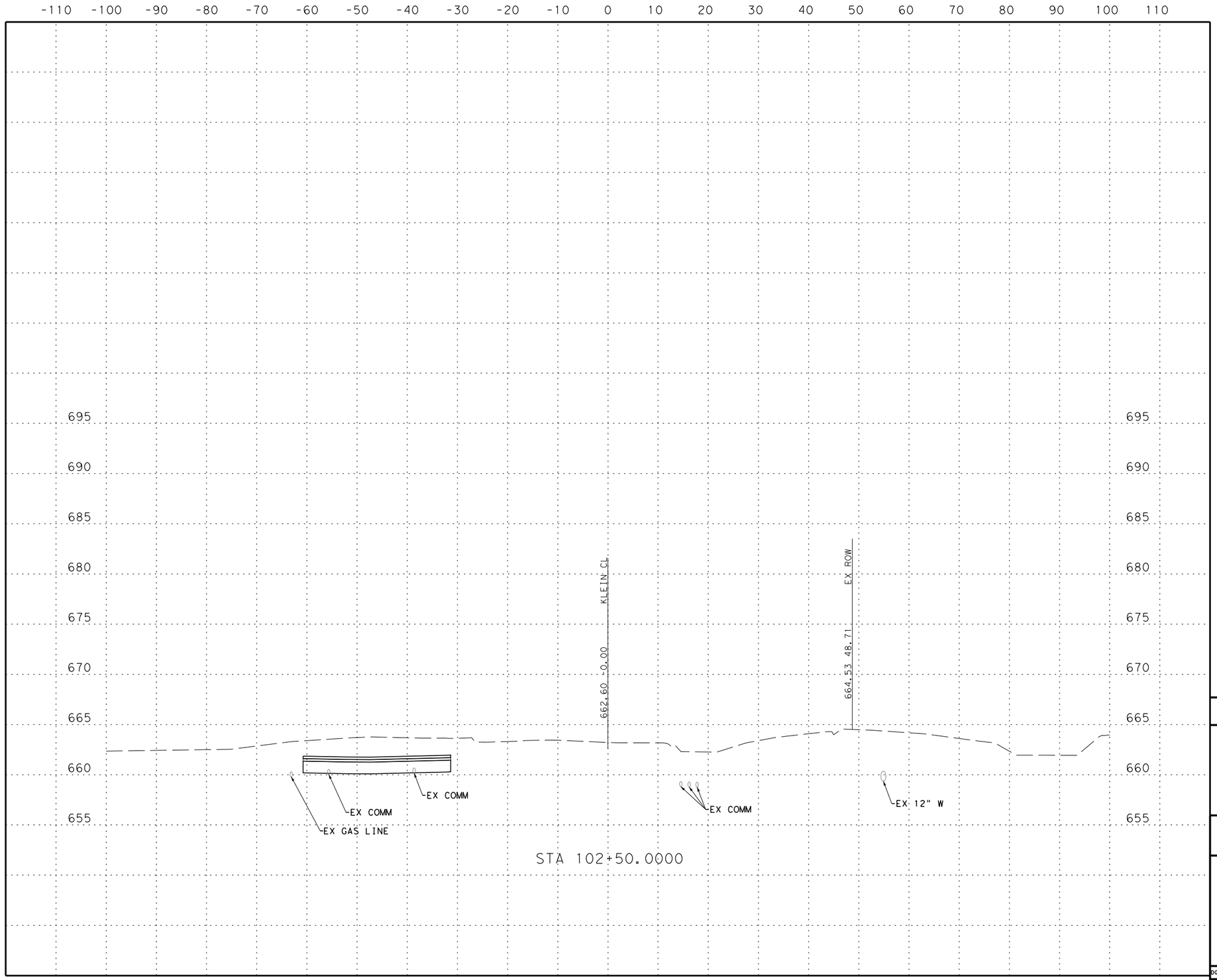

NOTES

1. BRIDGE GIRDERS NOT SHOWN FOR CLARITY
2. EXIST UTILITIES SHOWN FROM BEST AVAILABLE INFORMATION AT ASSUMED 3' BELOW EXIST GROUND, CONTRACTOR SHALL CONFIRM ALL UTILITY LOCATIONS AND DEPTHS PRIOR TO EXCAVATION

SCALE: H: 1"= 20'
V: 1"= 10'

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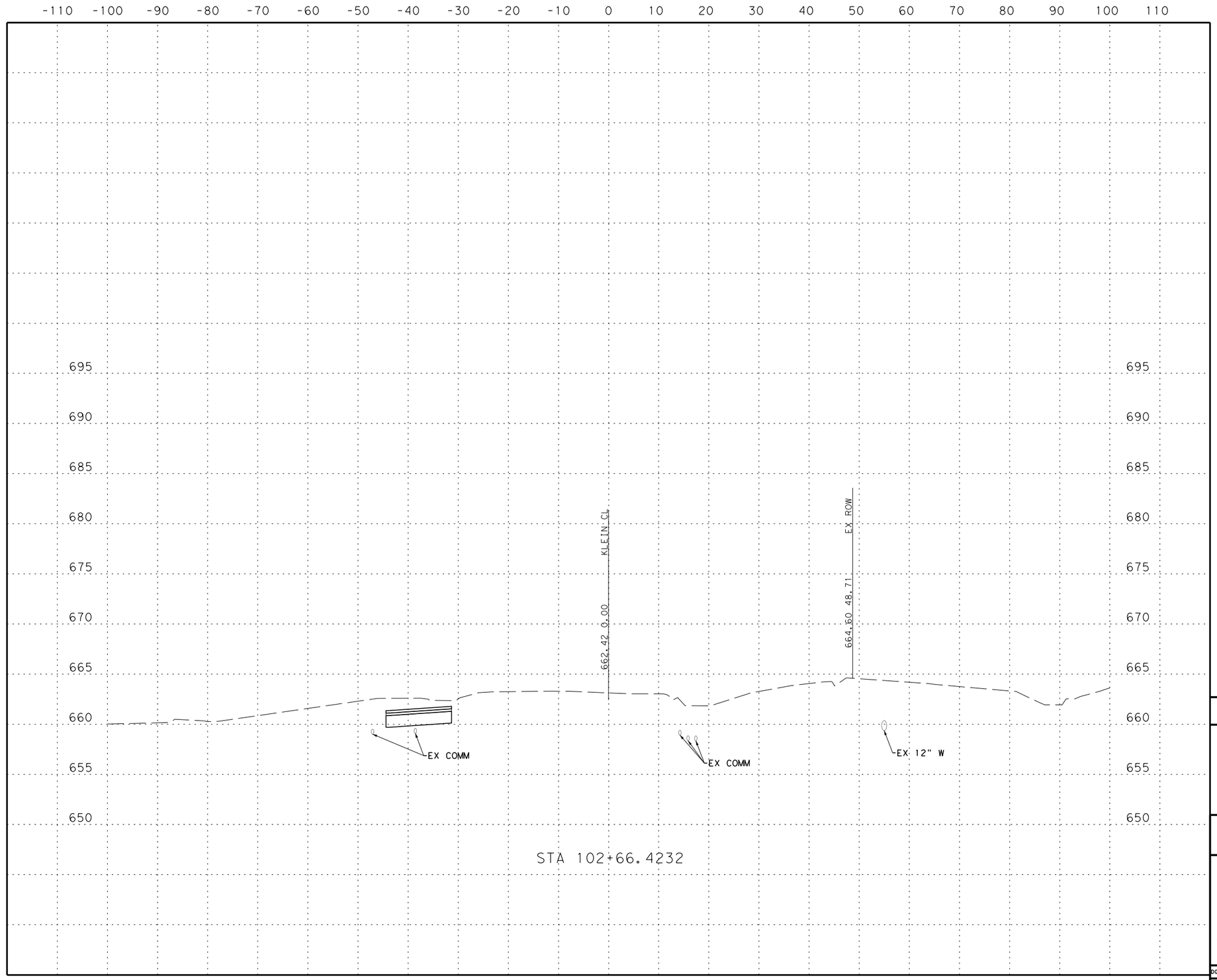

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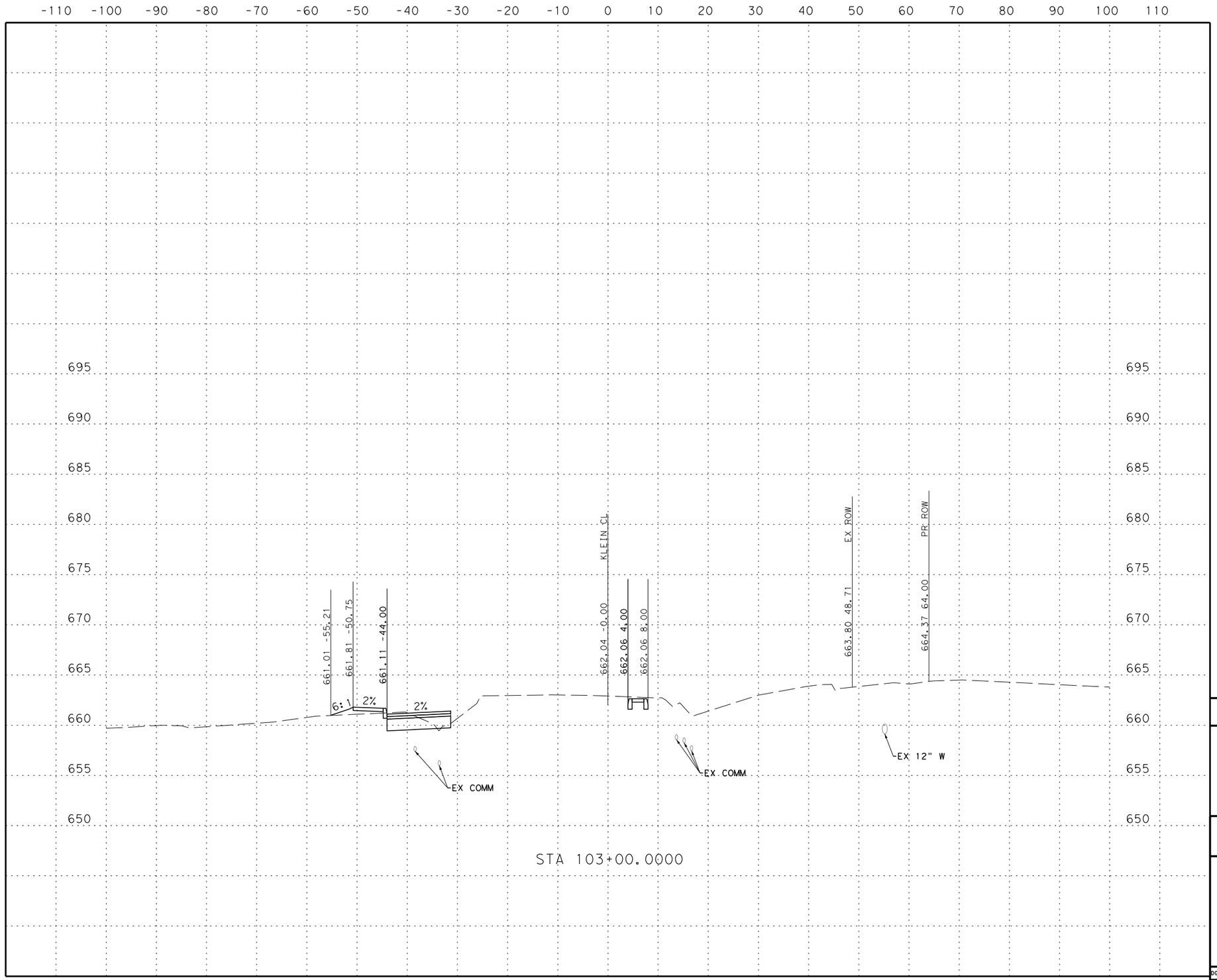

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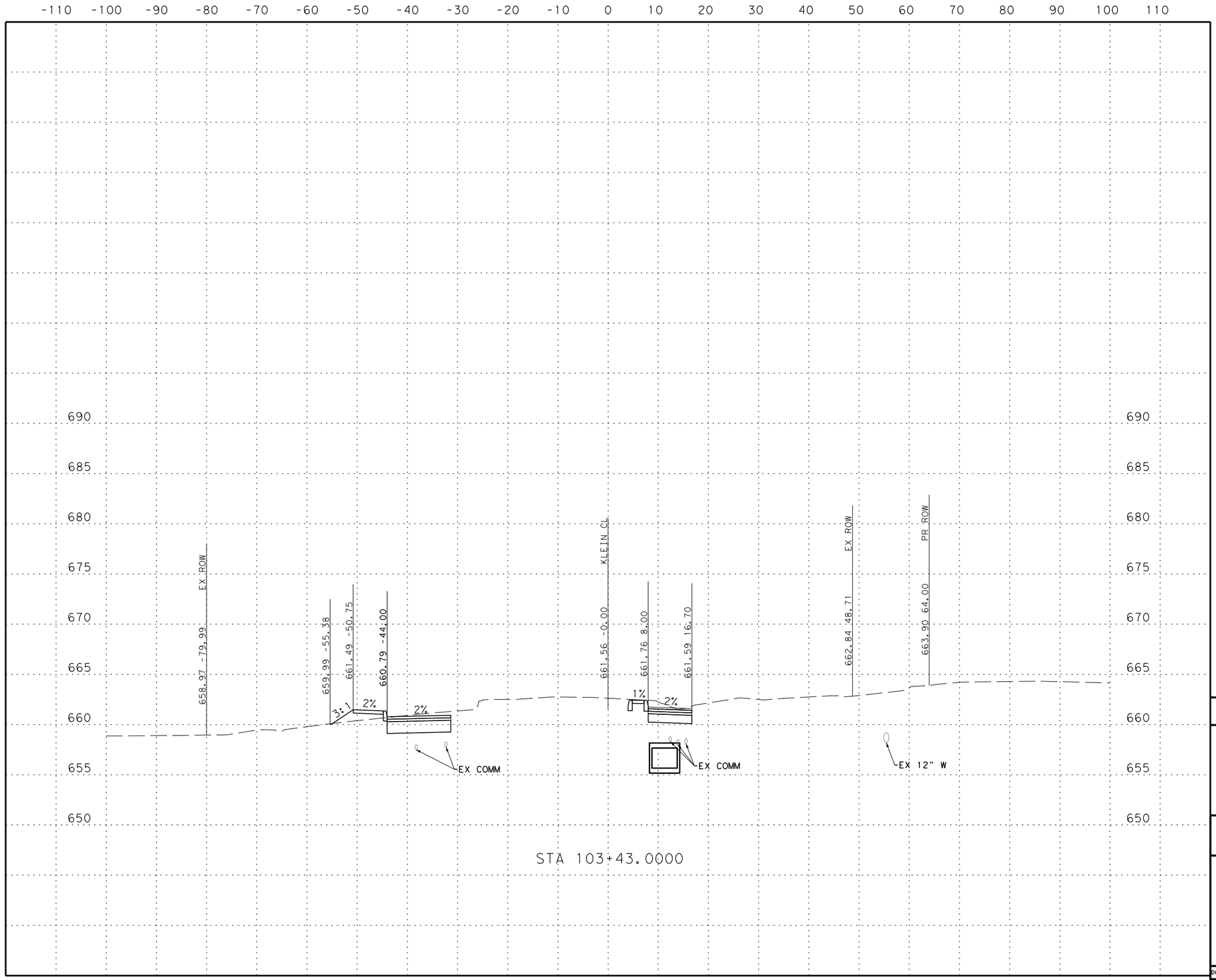

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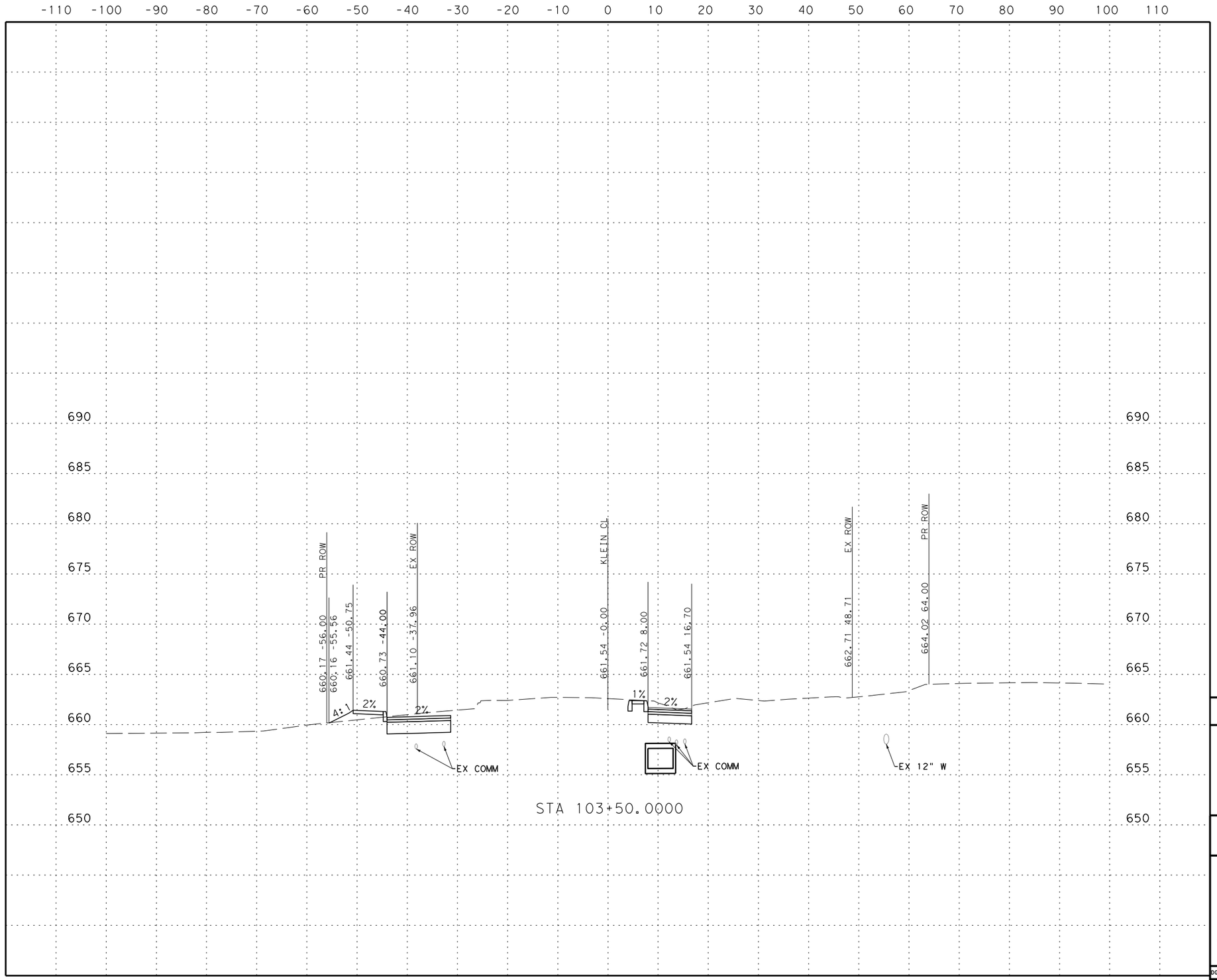

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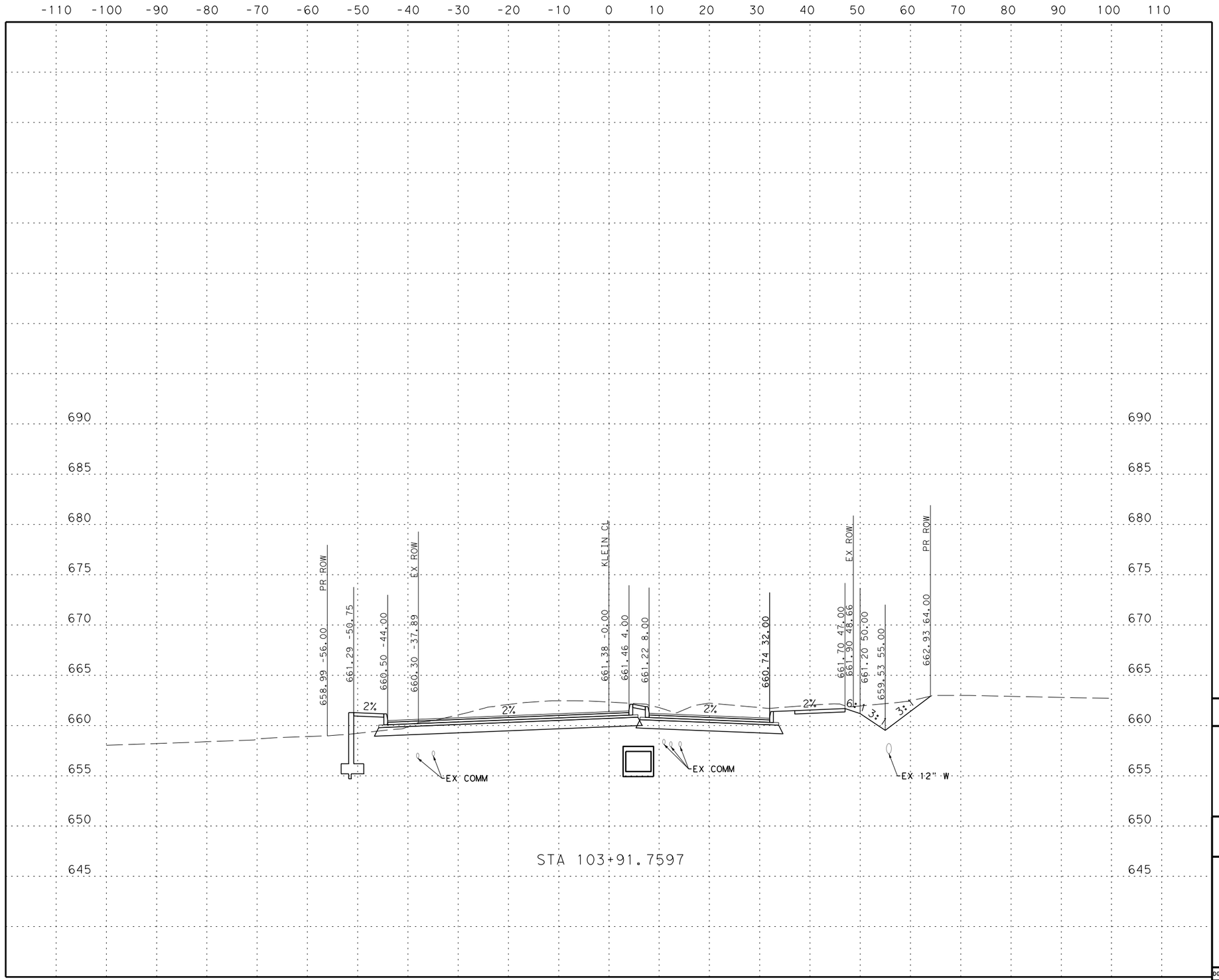

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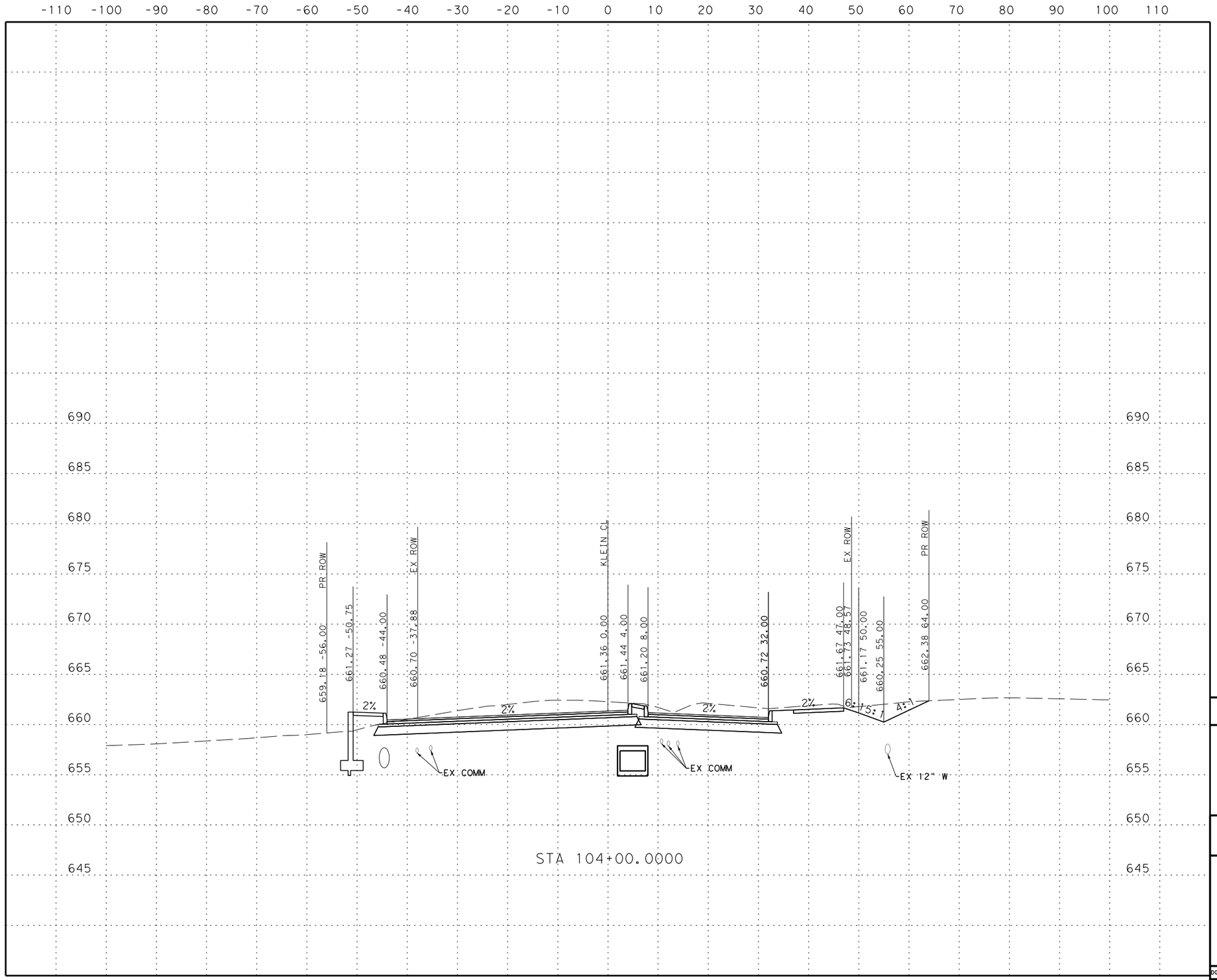

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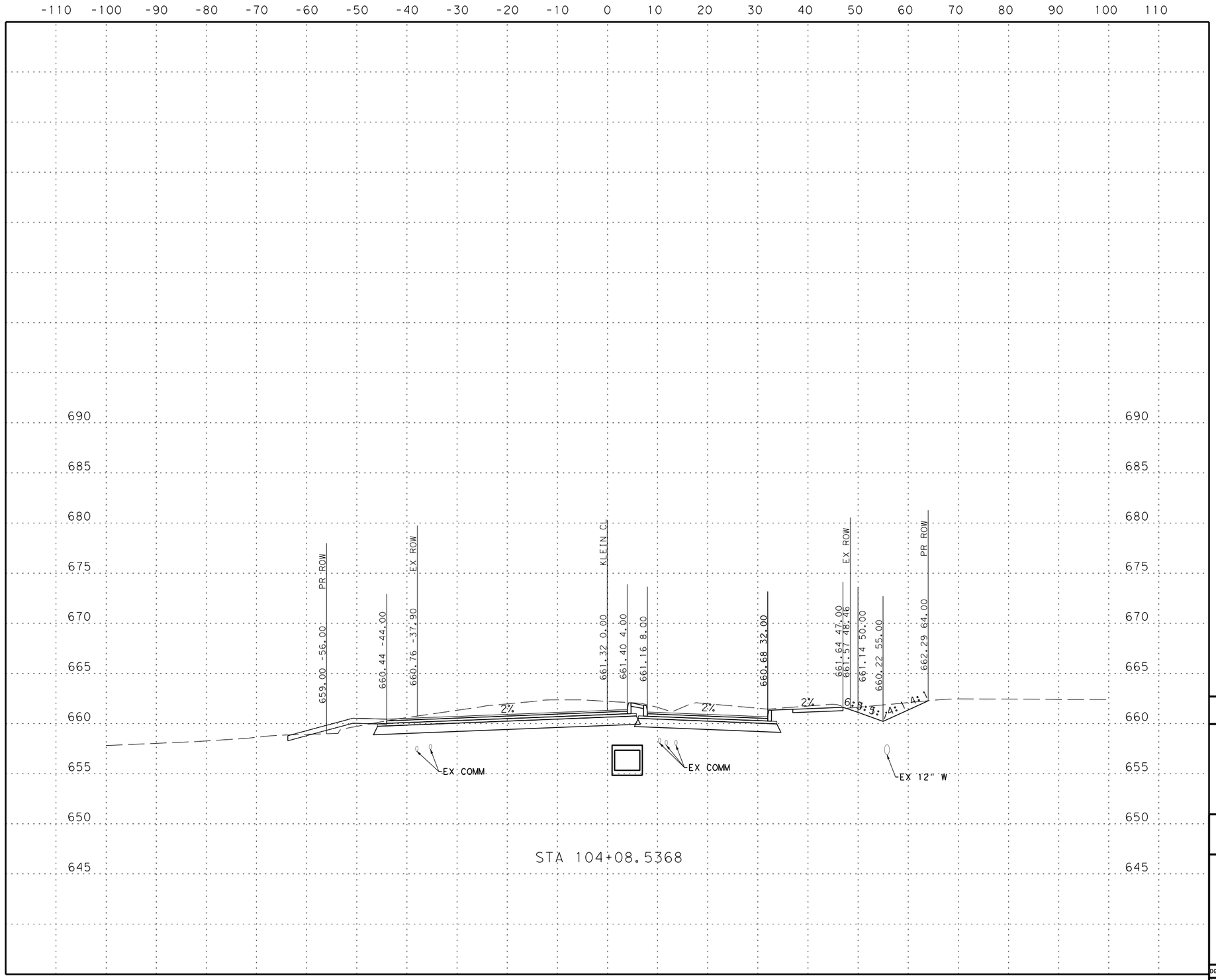

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Plotted on: 1/16/2023

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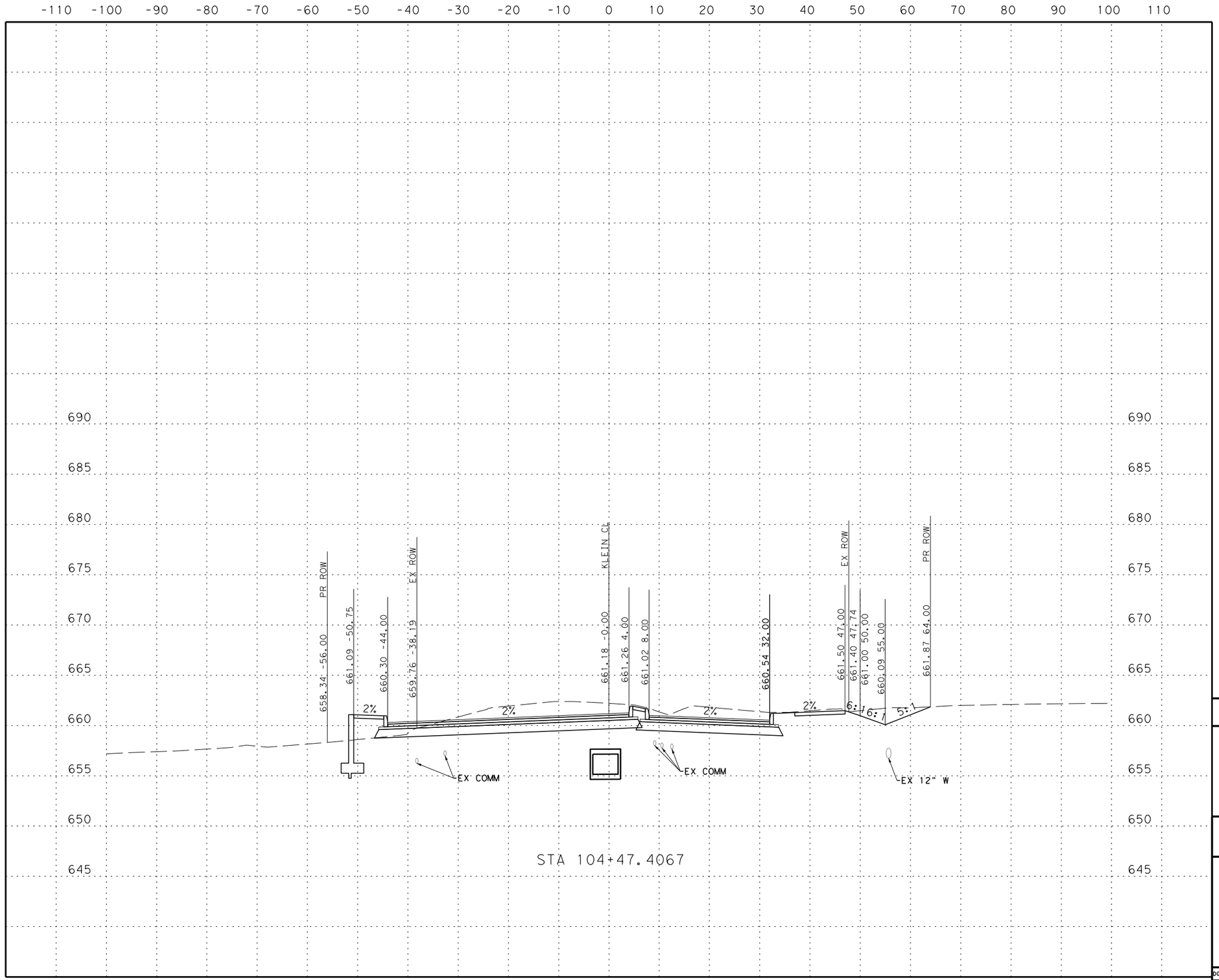

NOTES

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SCALE: H: 1"= 20'
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PAPE-DAWSON ENGINEERS

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2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 104+47.4067 TO STA 104+47.4067

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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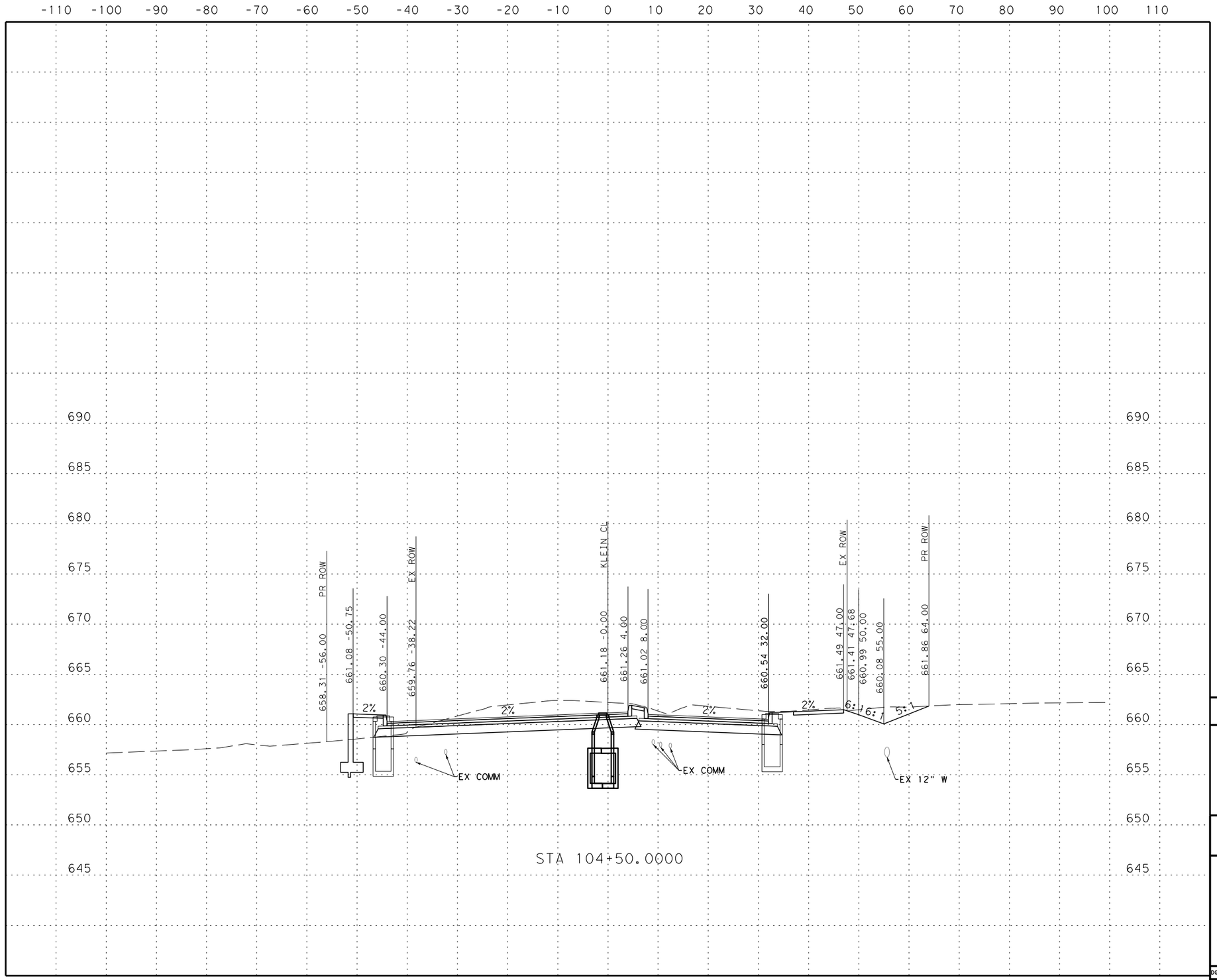

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 104+50.0000 TO STA 104+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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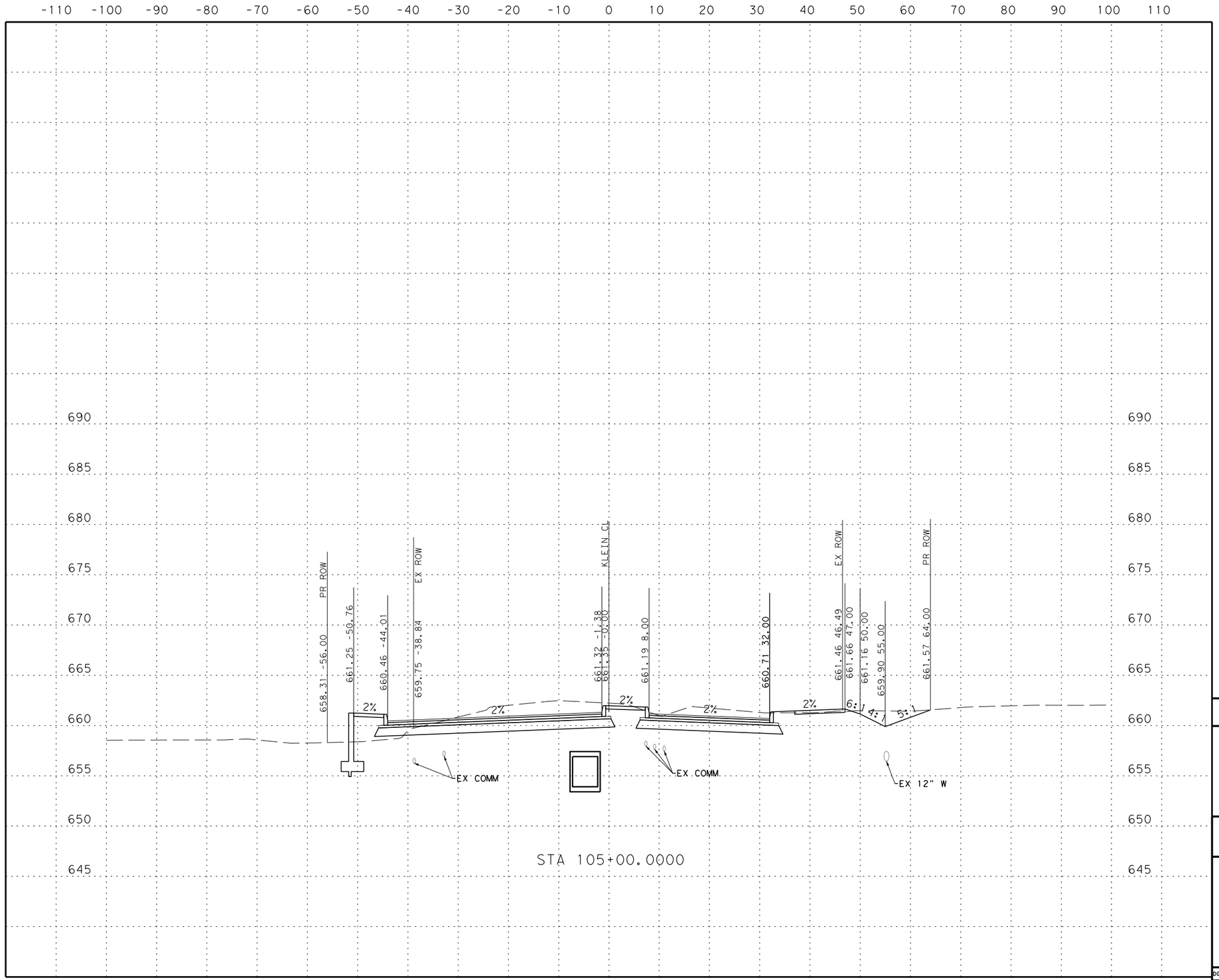

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 105+00.0000 TO STA 105+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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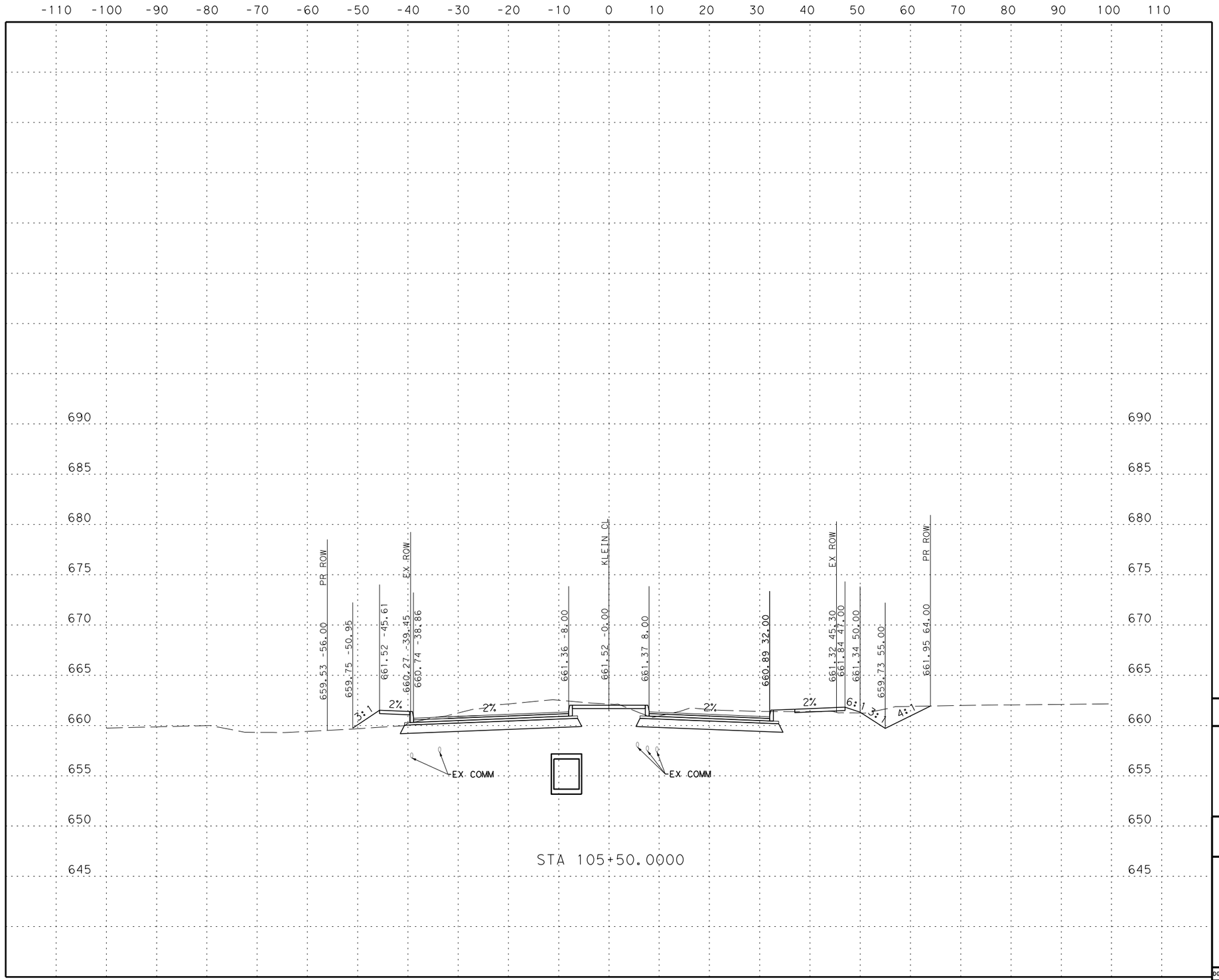

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 105+50.0000 TO STA 105+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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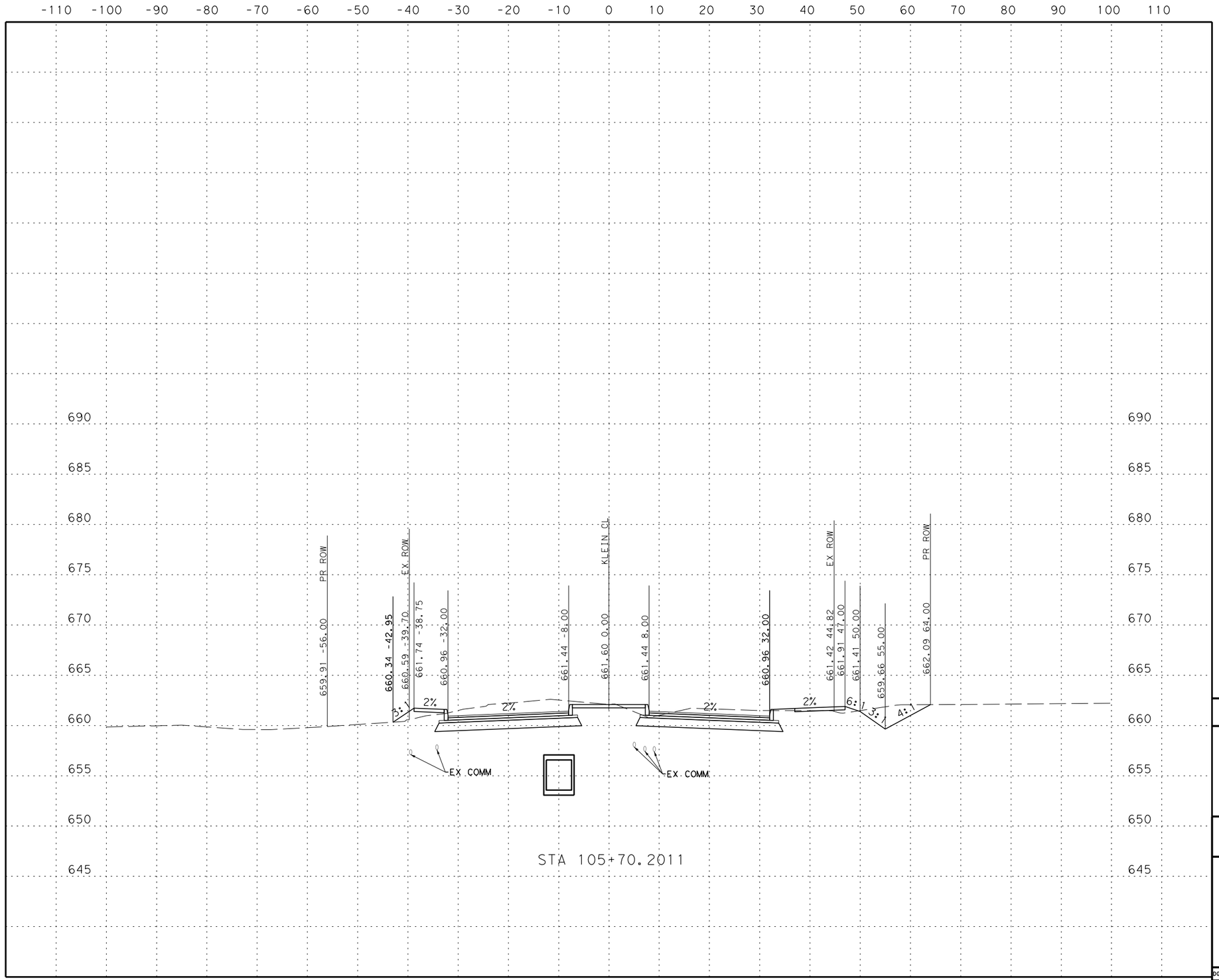

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 105+70.2011 TO STA 105+70.2011

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

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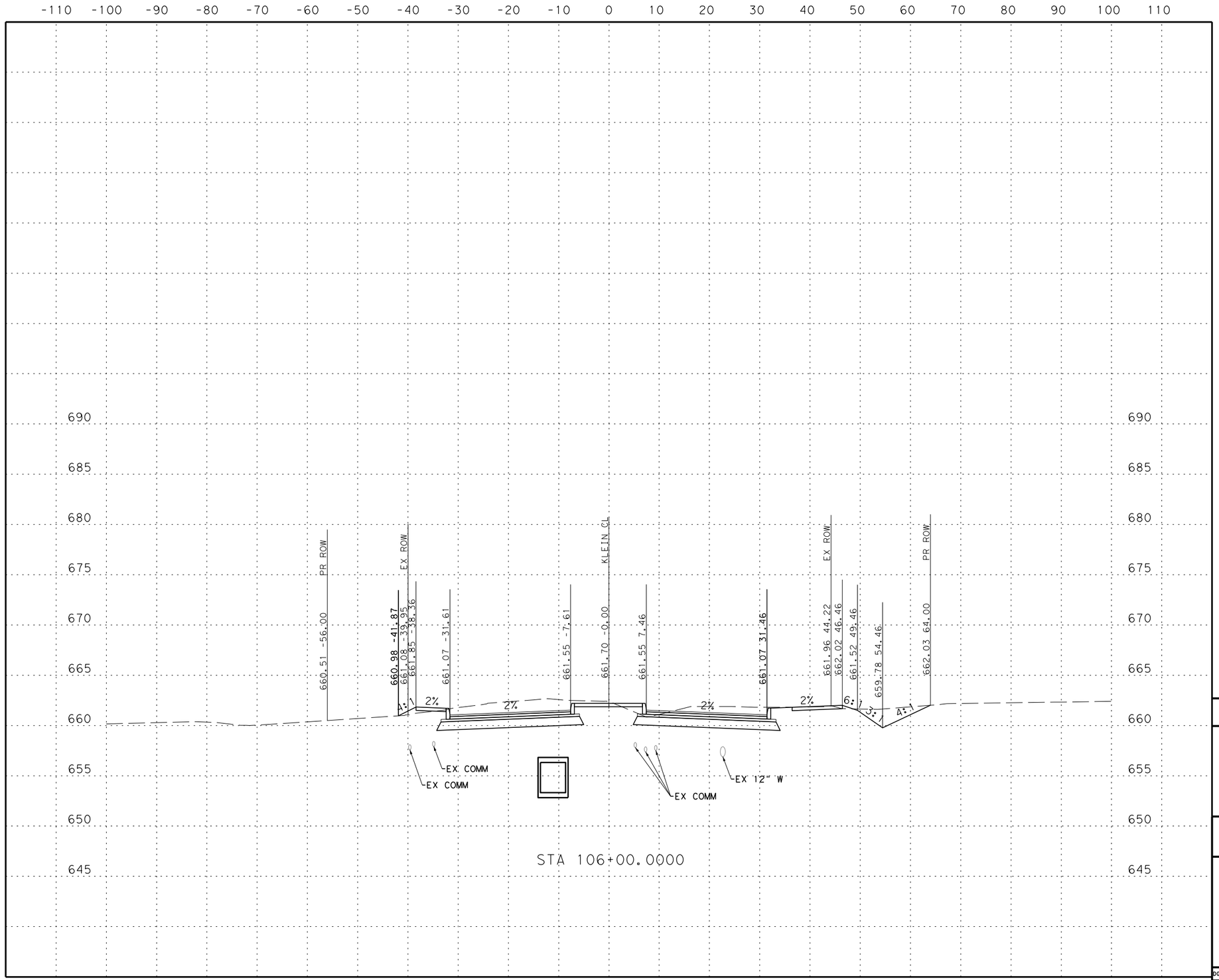

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 106+00.0000 TO STA 106+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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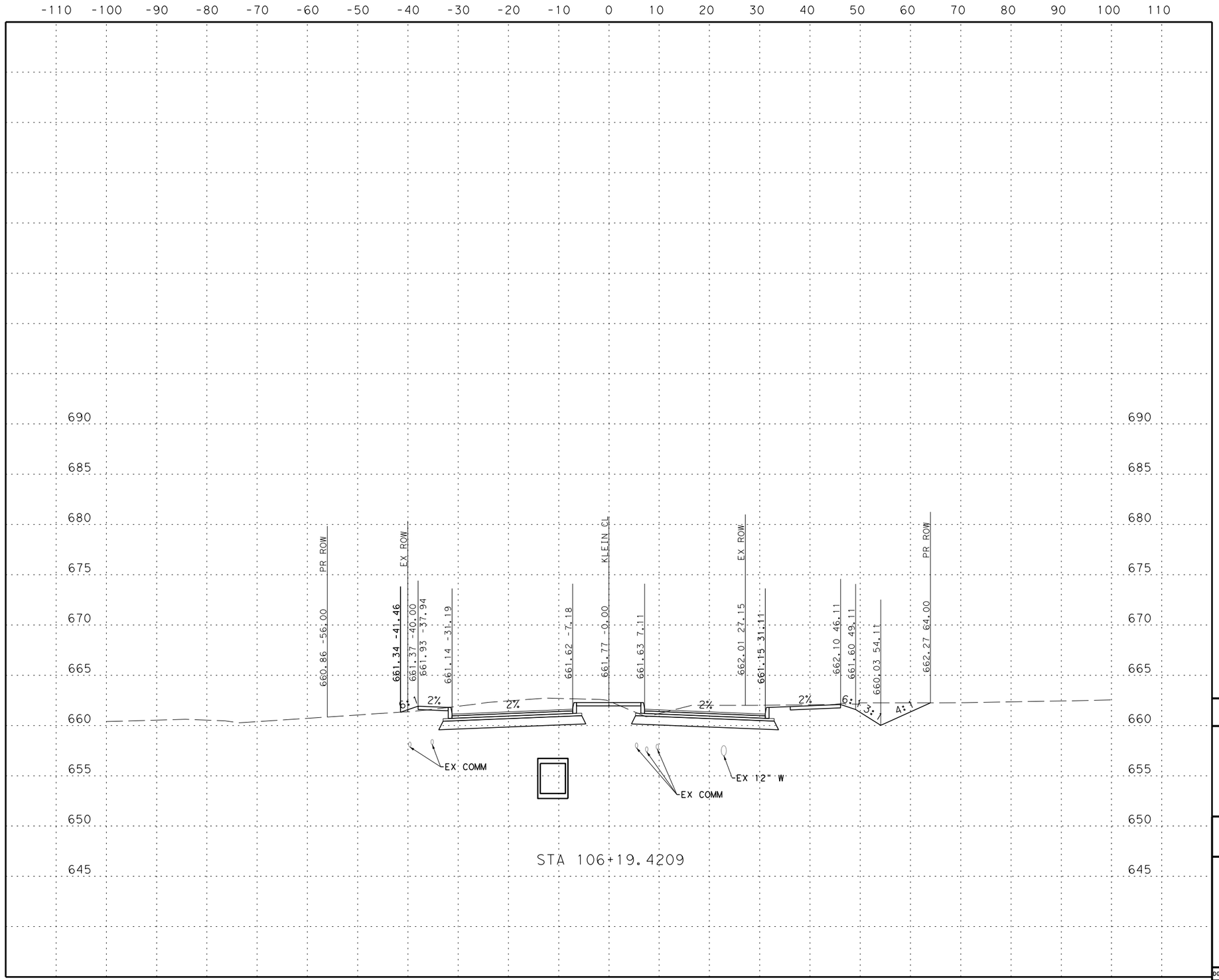

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 106+19.4209 TO STA 106+19.4209

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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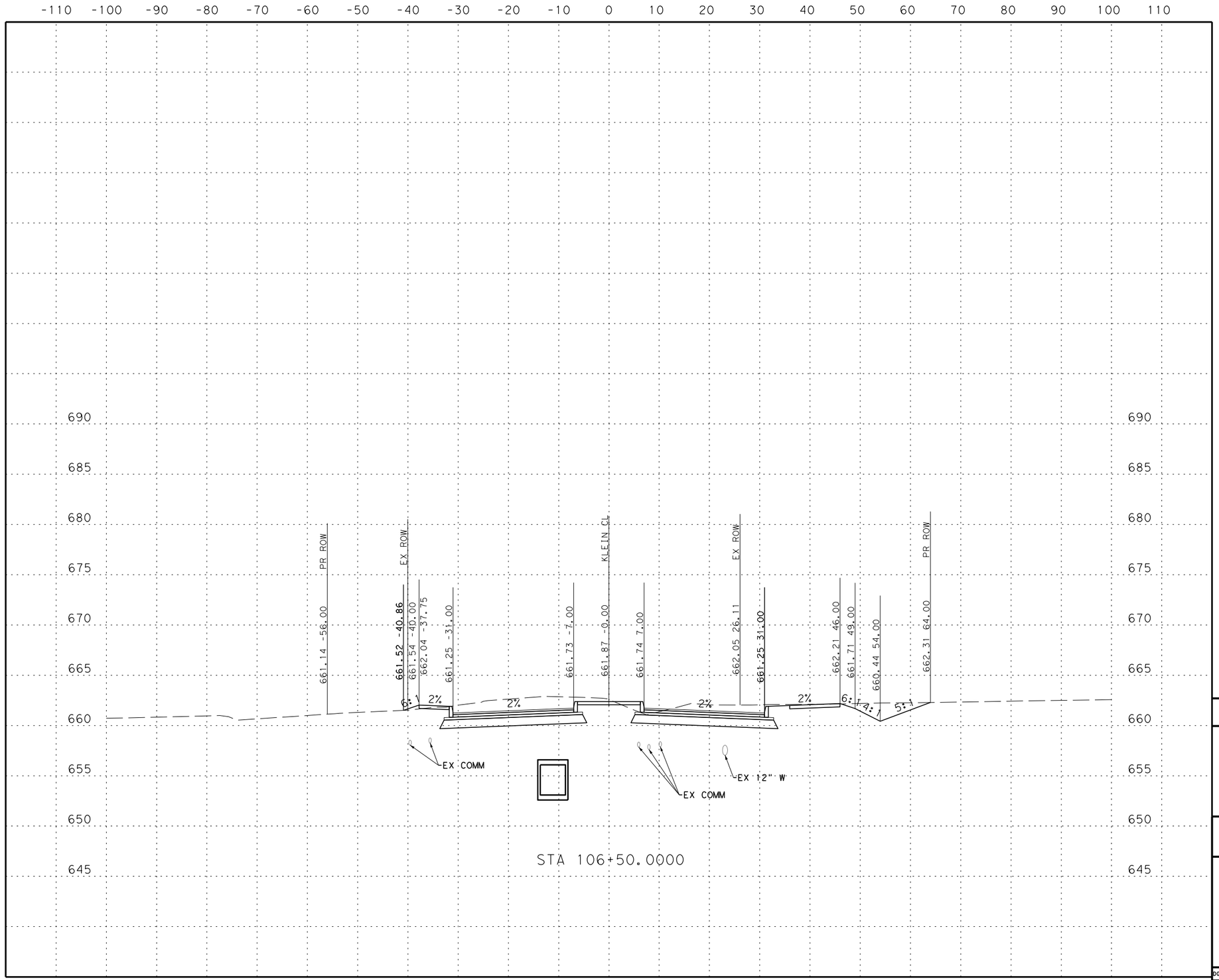

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 106+50.0000 TO STA 106+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

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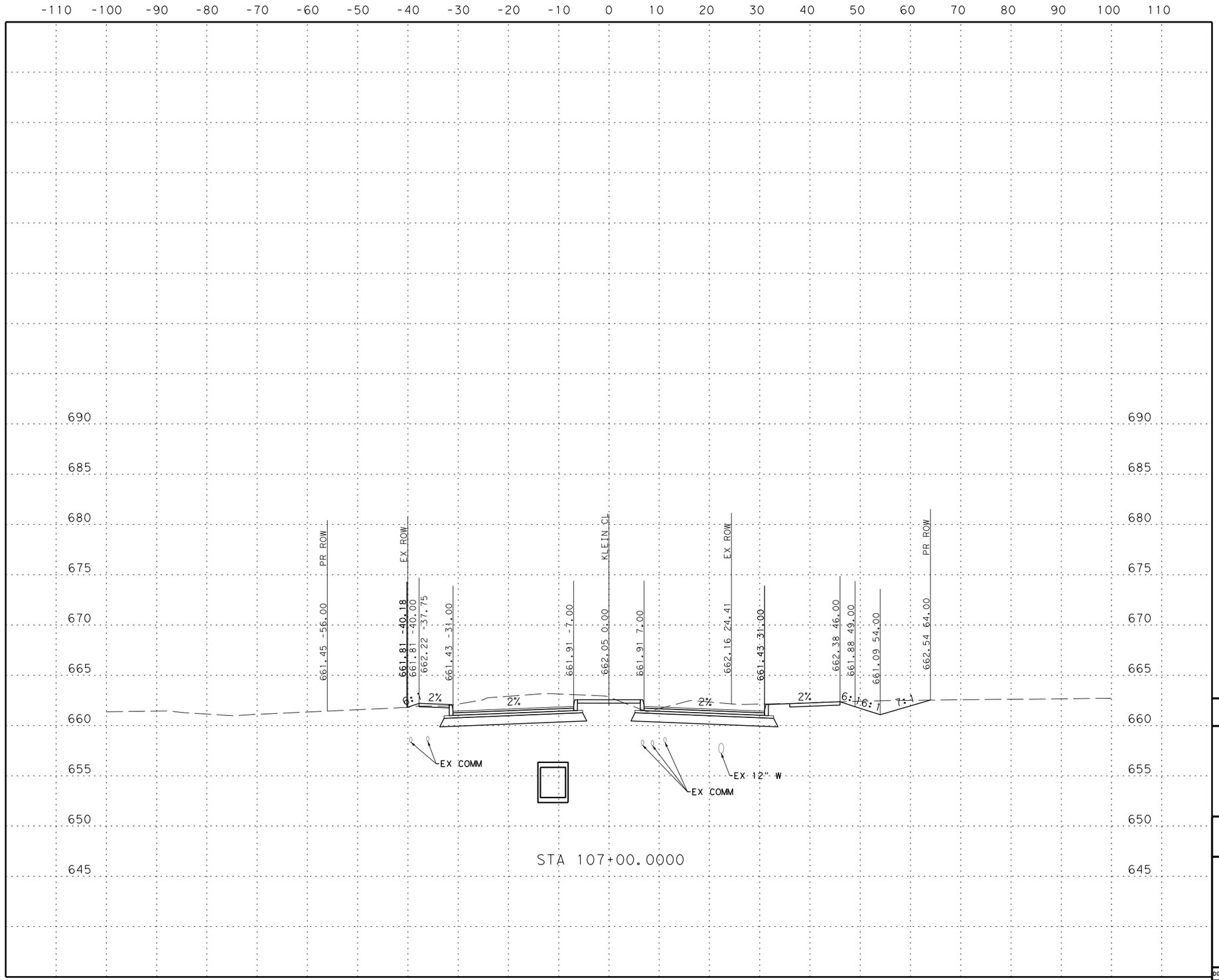

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 107+00.0000 TO STA 107+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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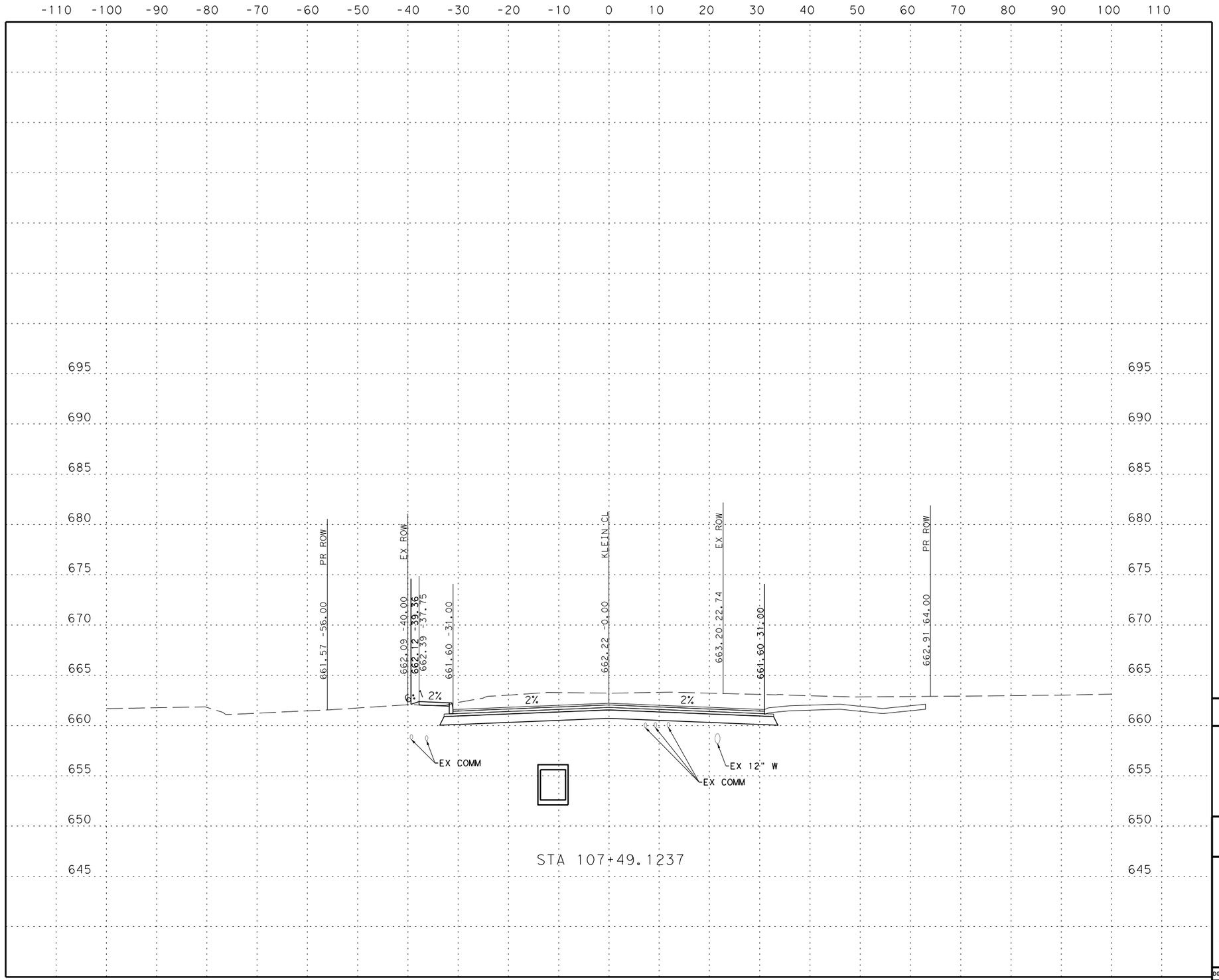

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TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 107+49.1237 TO STA 107+49.1237

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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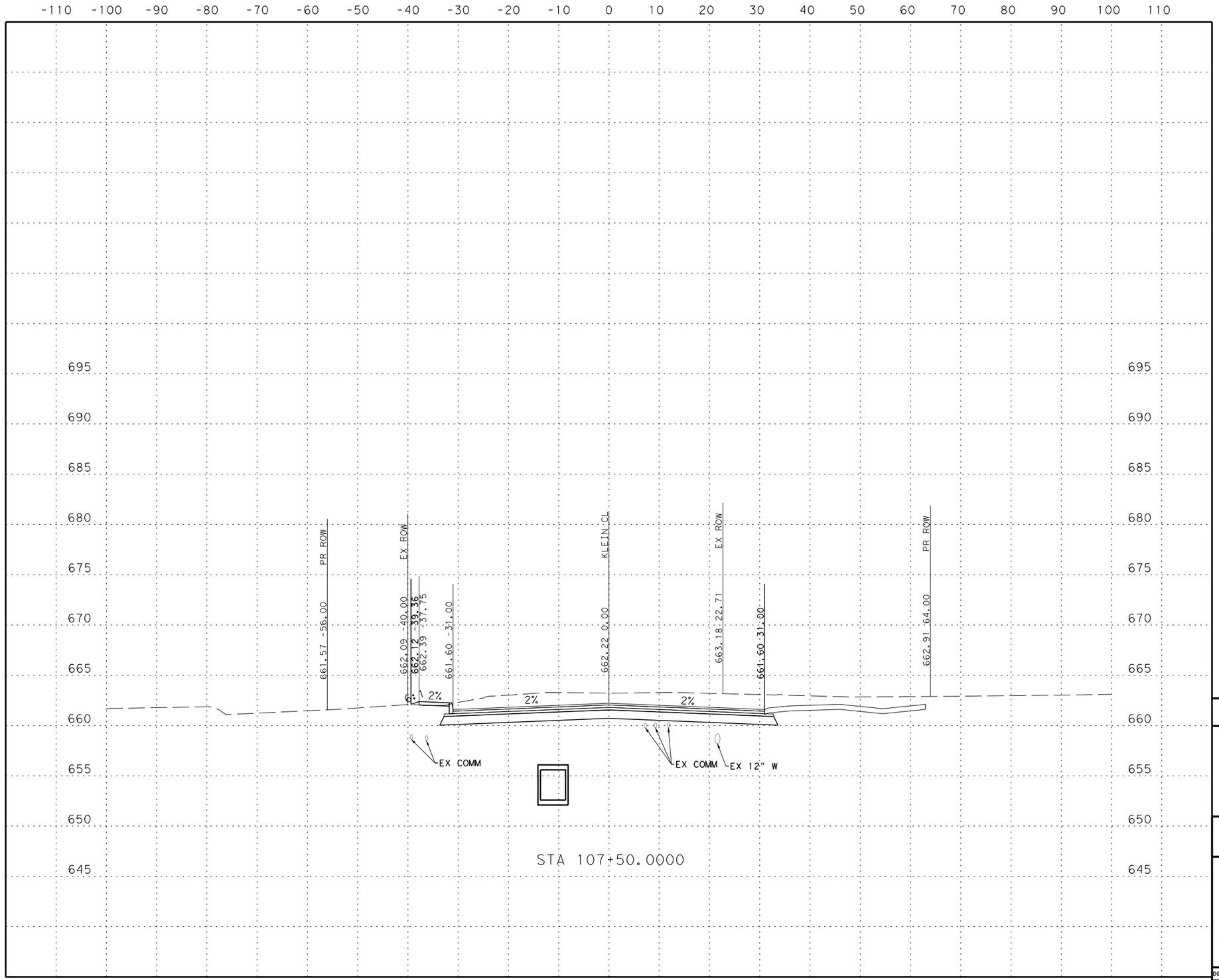

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2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 107+50.0000 TO STA 107+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

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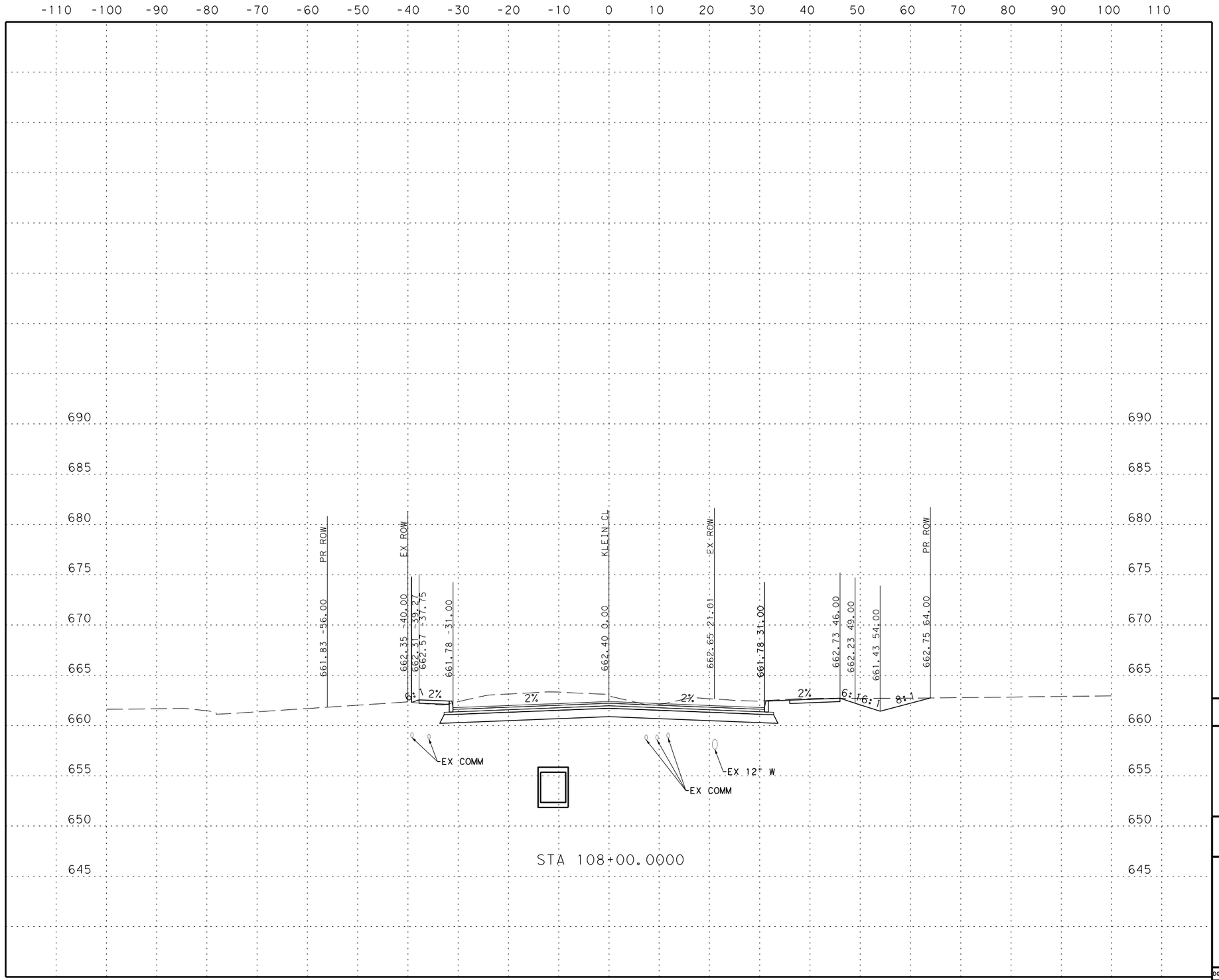

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 108+00.0000 TO STA 108+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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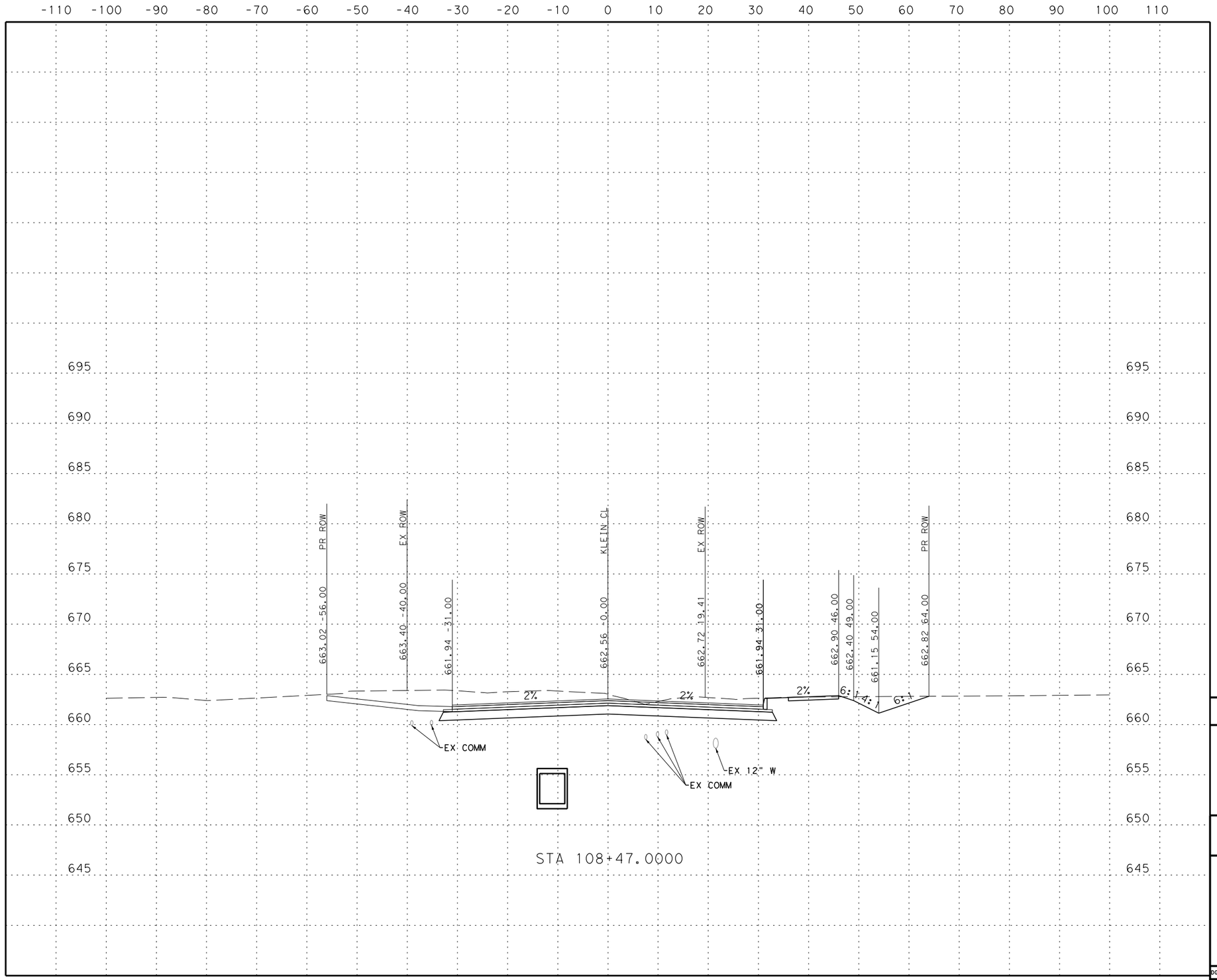

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 108+47.0000 TO STA 108+47.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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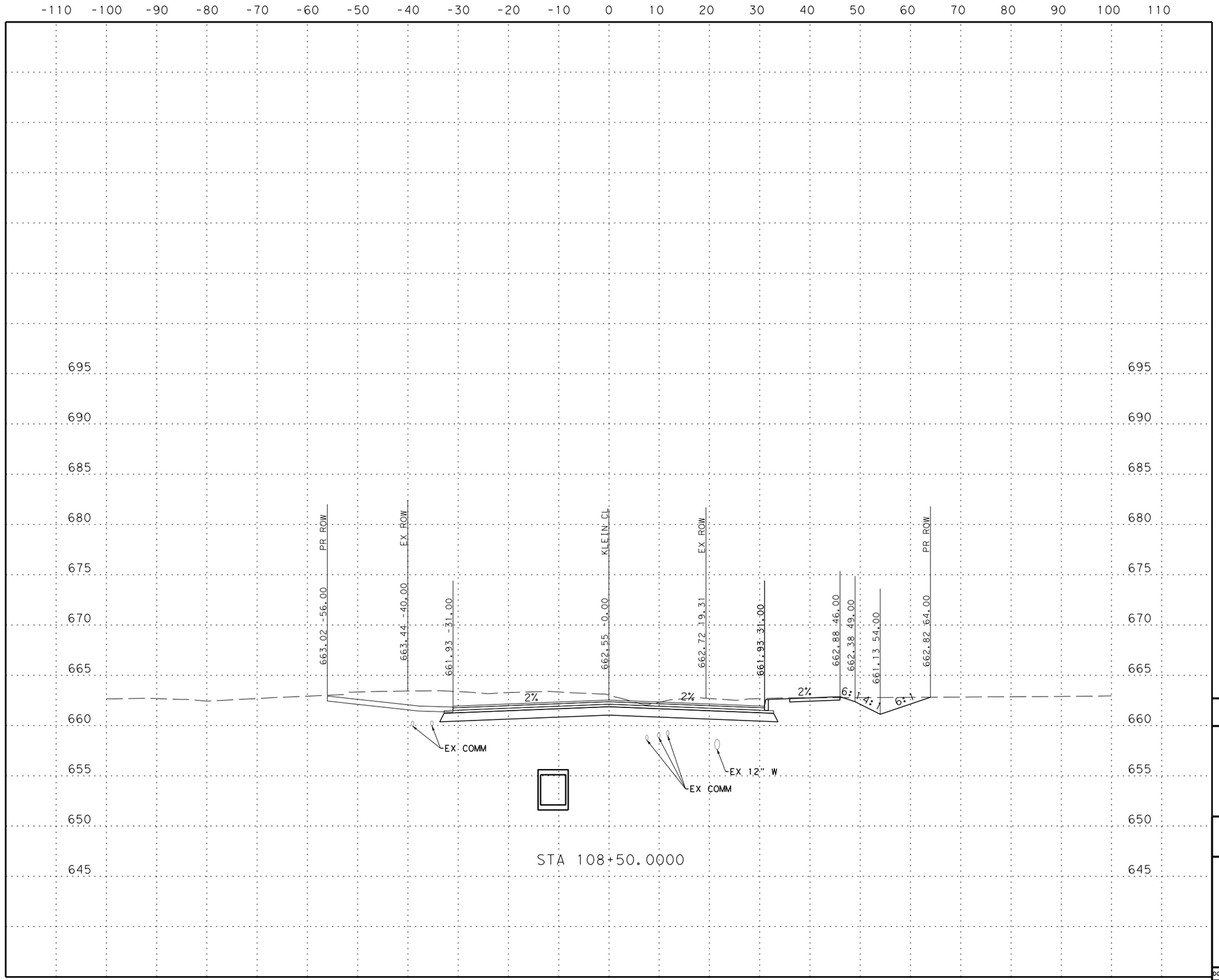

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 108+50.0000 TO STA 108+50.0000

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CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
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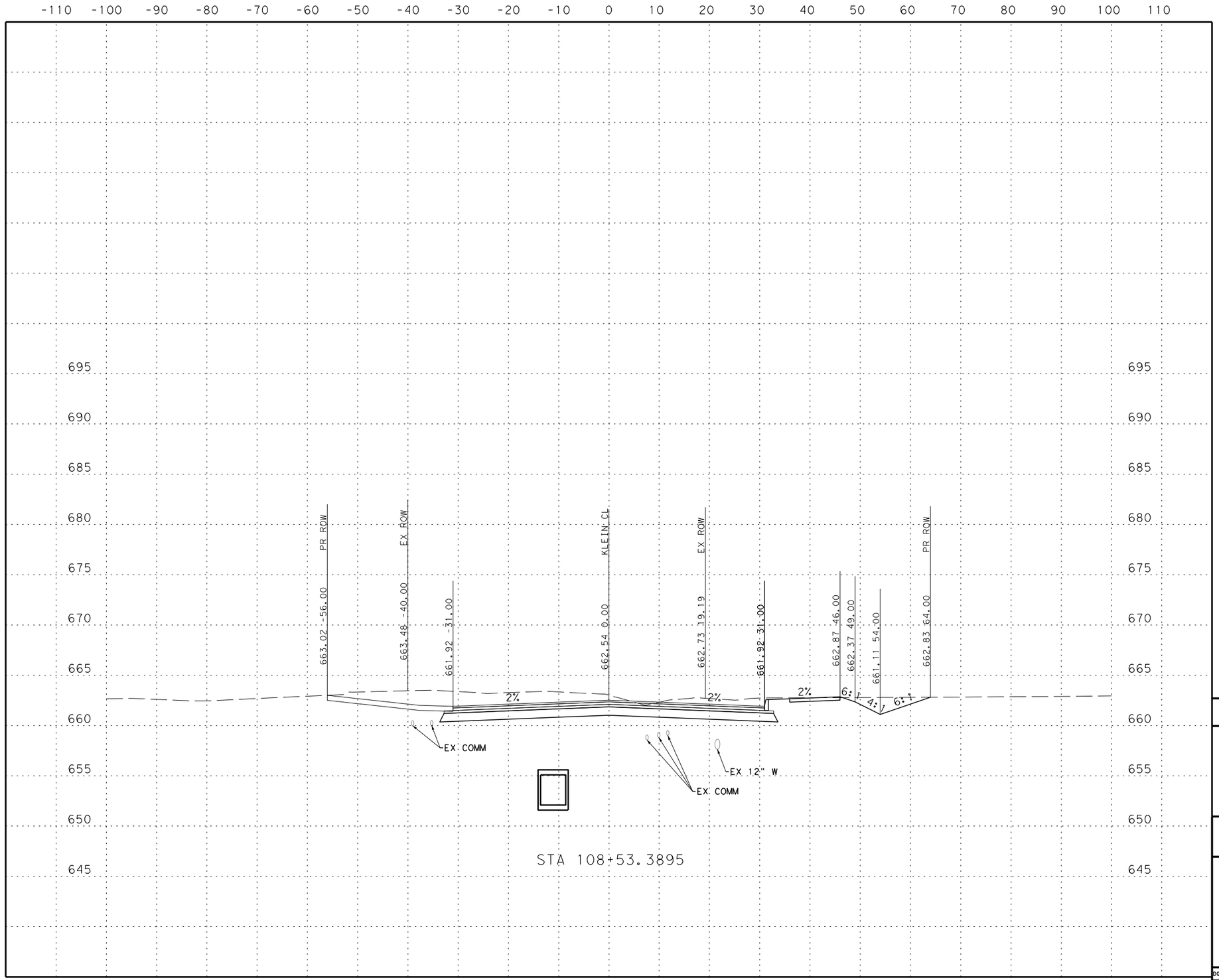

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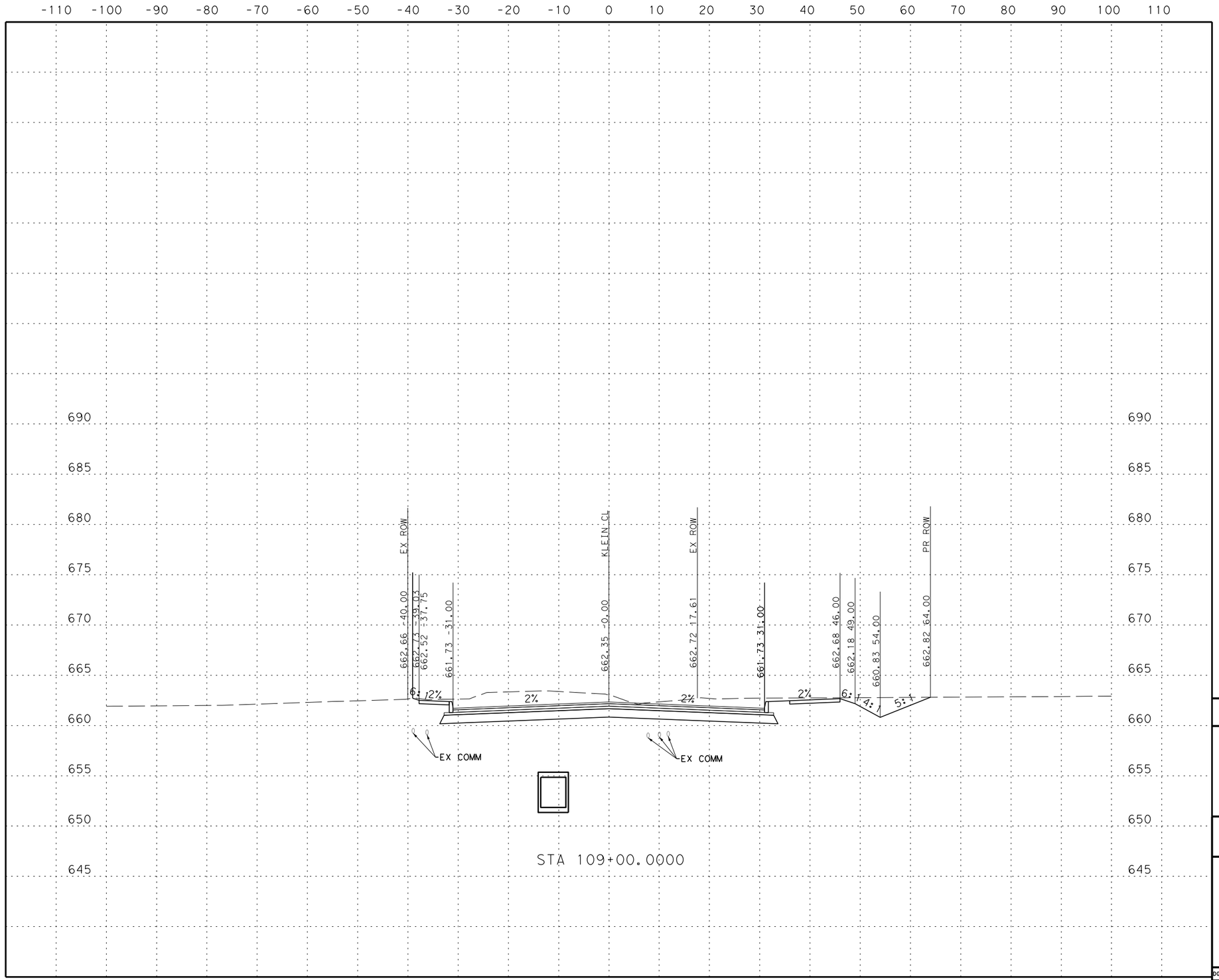
City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 108+53.3895 TO STA 108+53.3895

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	



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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 109+00.0000 TO STA 109+00.0000

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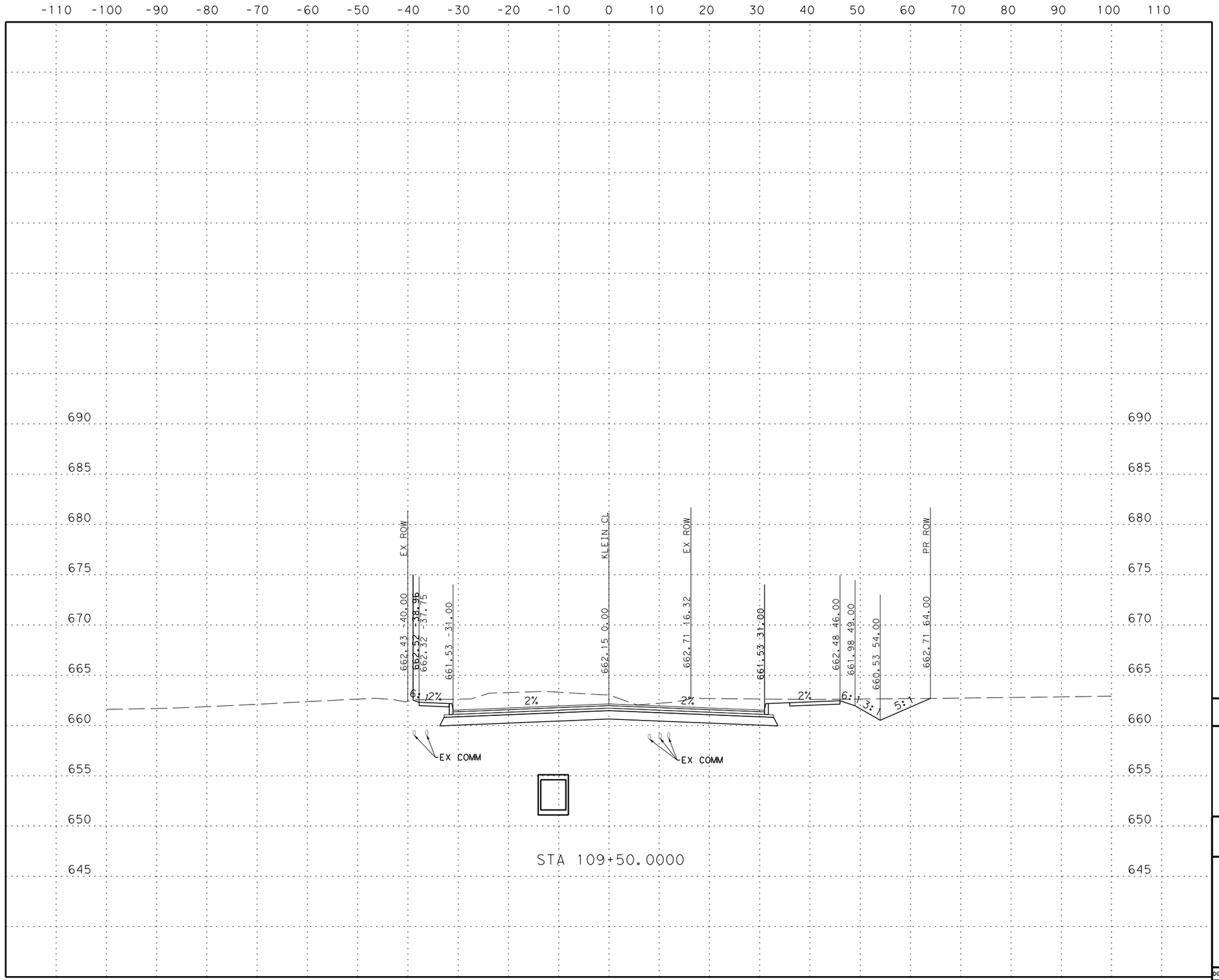

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

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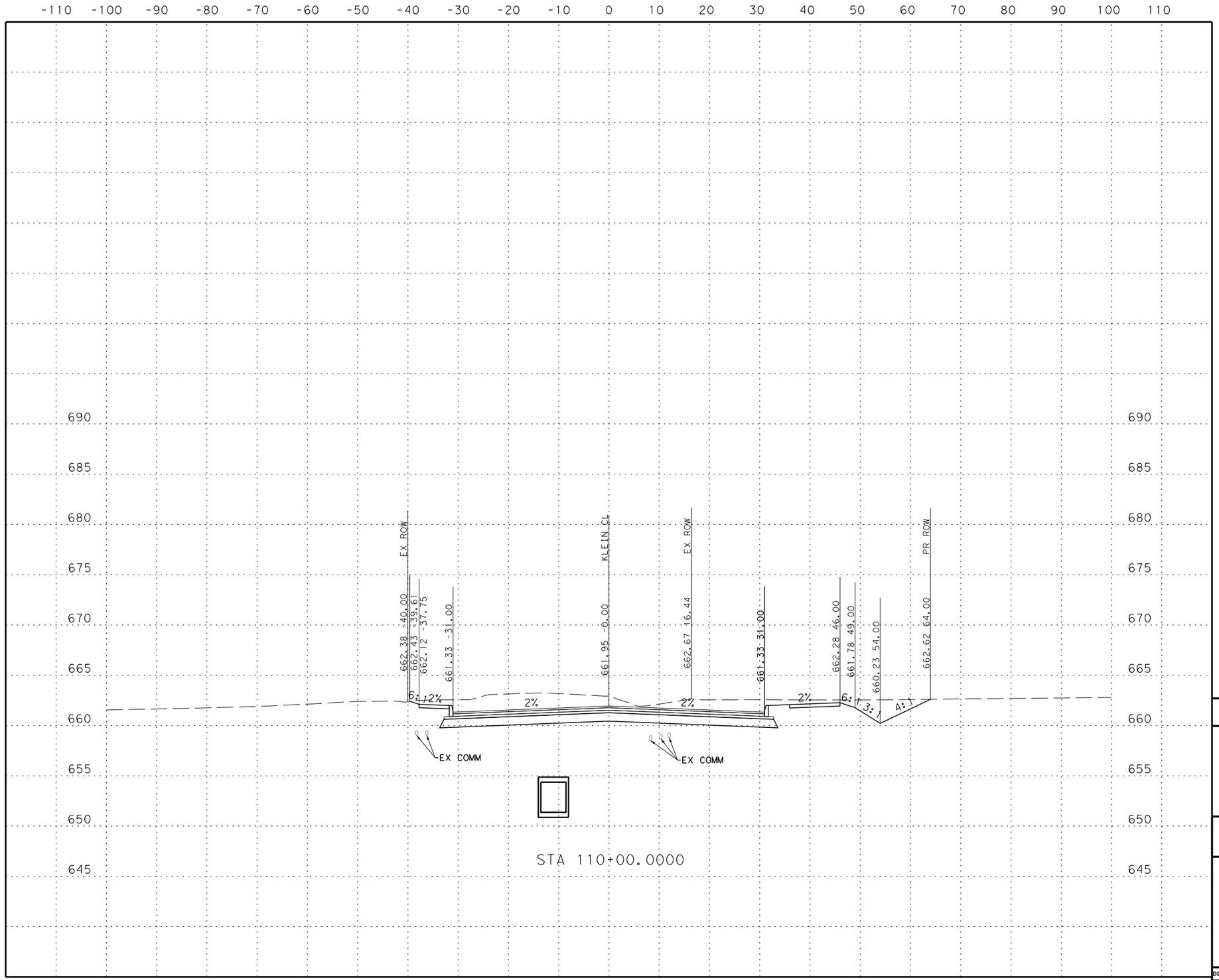

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SCALE: H: 1"= 20'
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PAPE-DAWSON ENGINEERS

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2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

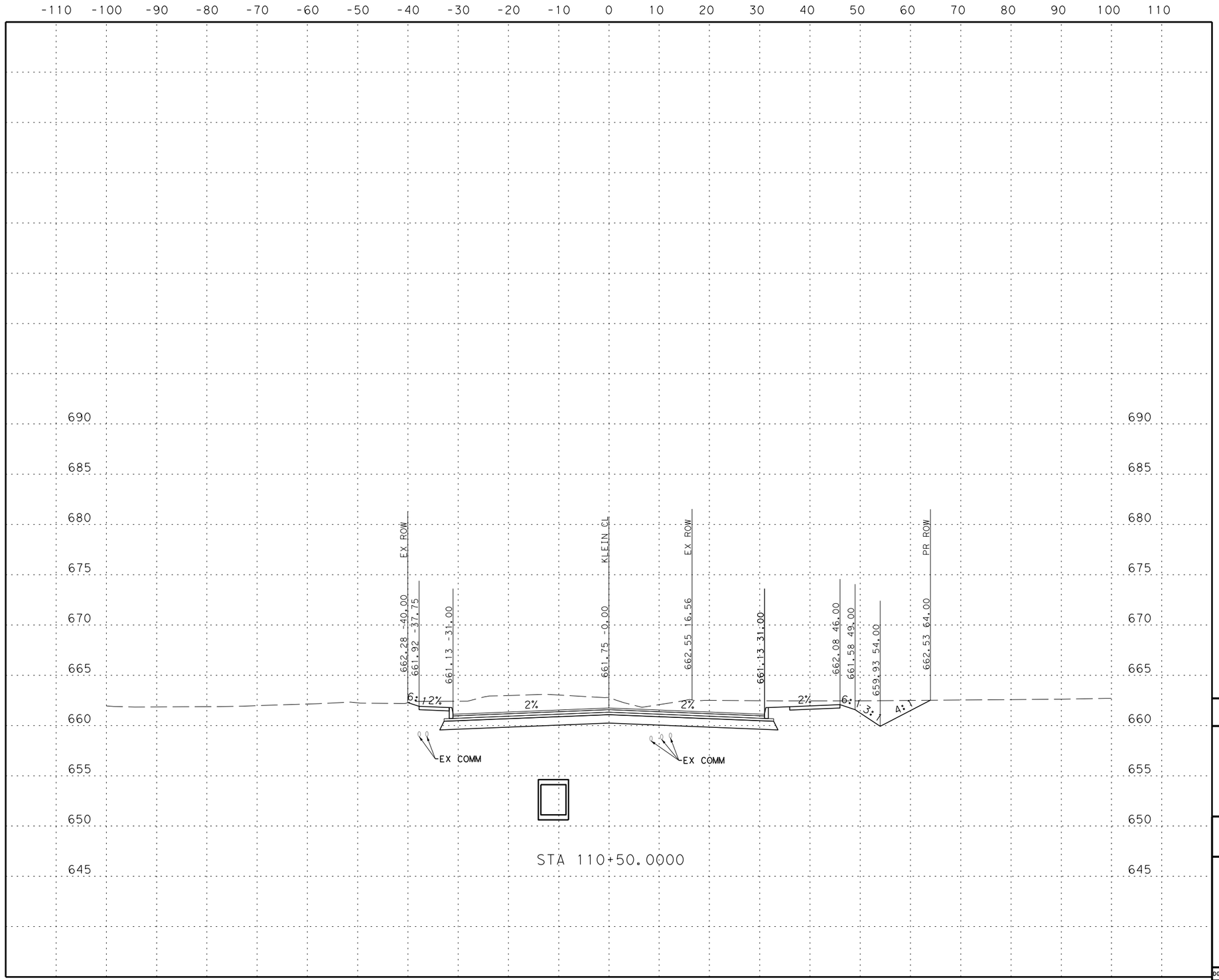
CROSS SECTIONS

STA 110+00.0000 TO STA 110+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

Design Filename: ...\5103003_Klein_XSections_Final.dgn



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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 110+50.0000 TO STA 110+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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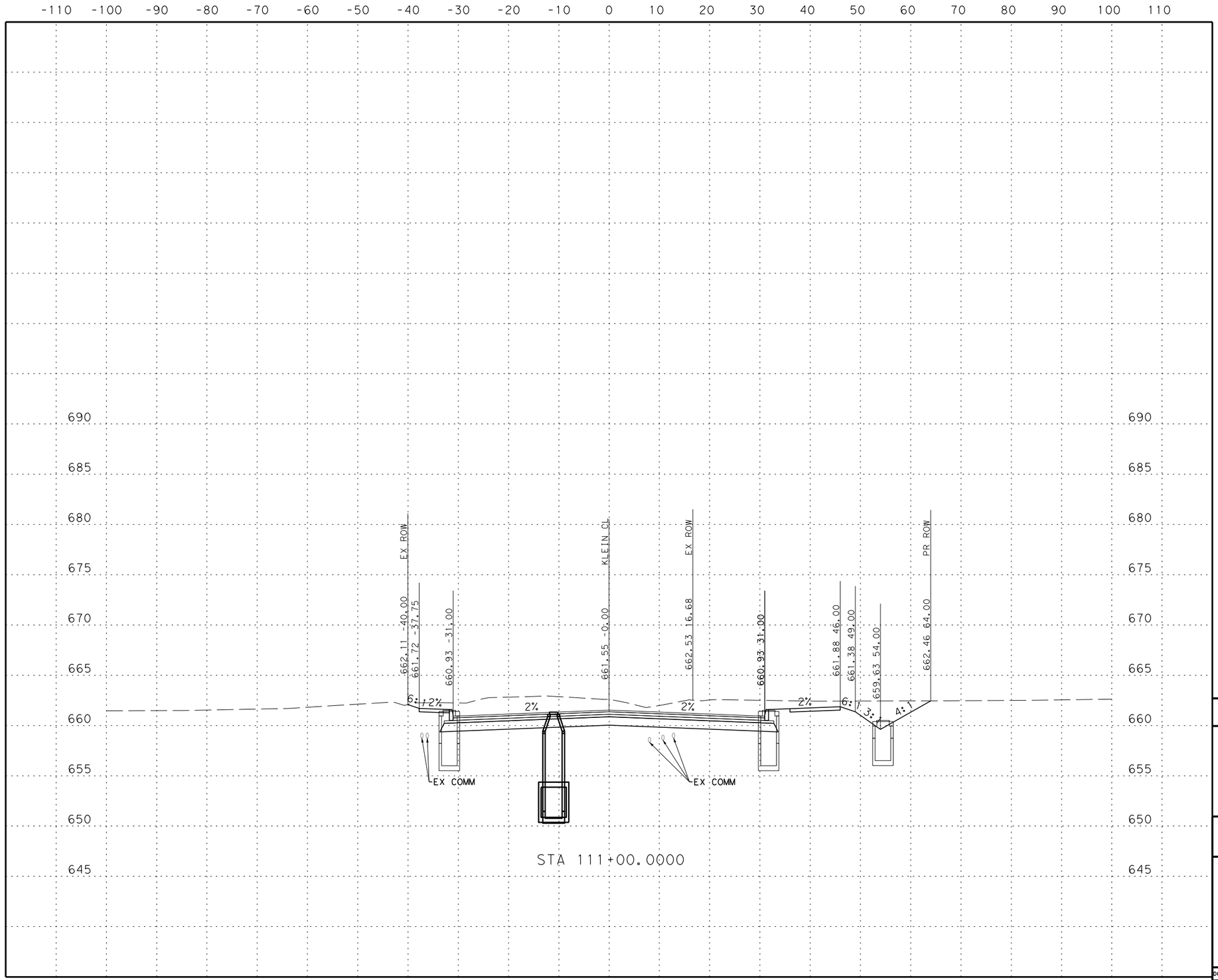

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 111+00.0000 TO STA 111+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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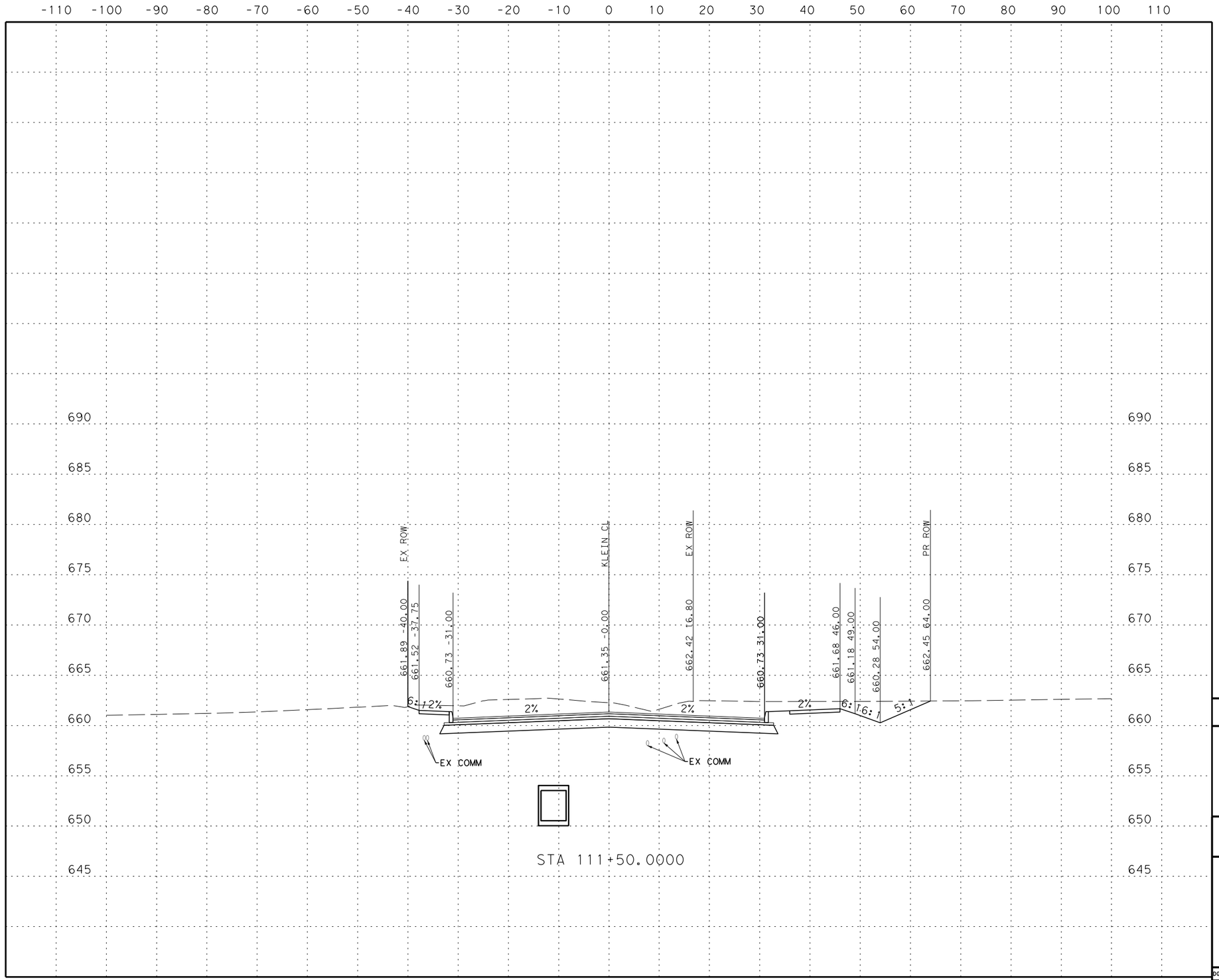

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 111+50.0000 TO STA 111+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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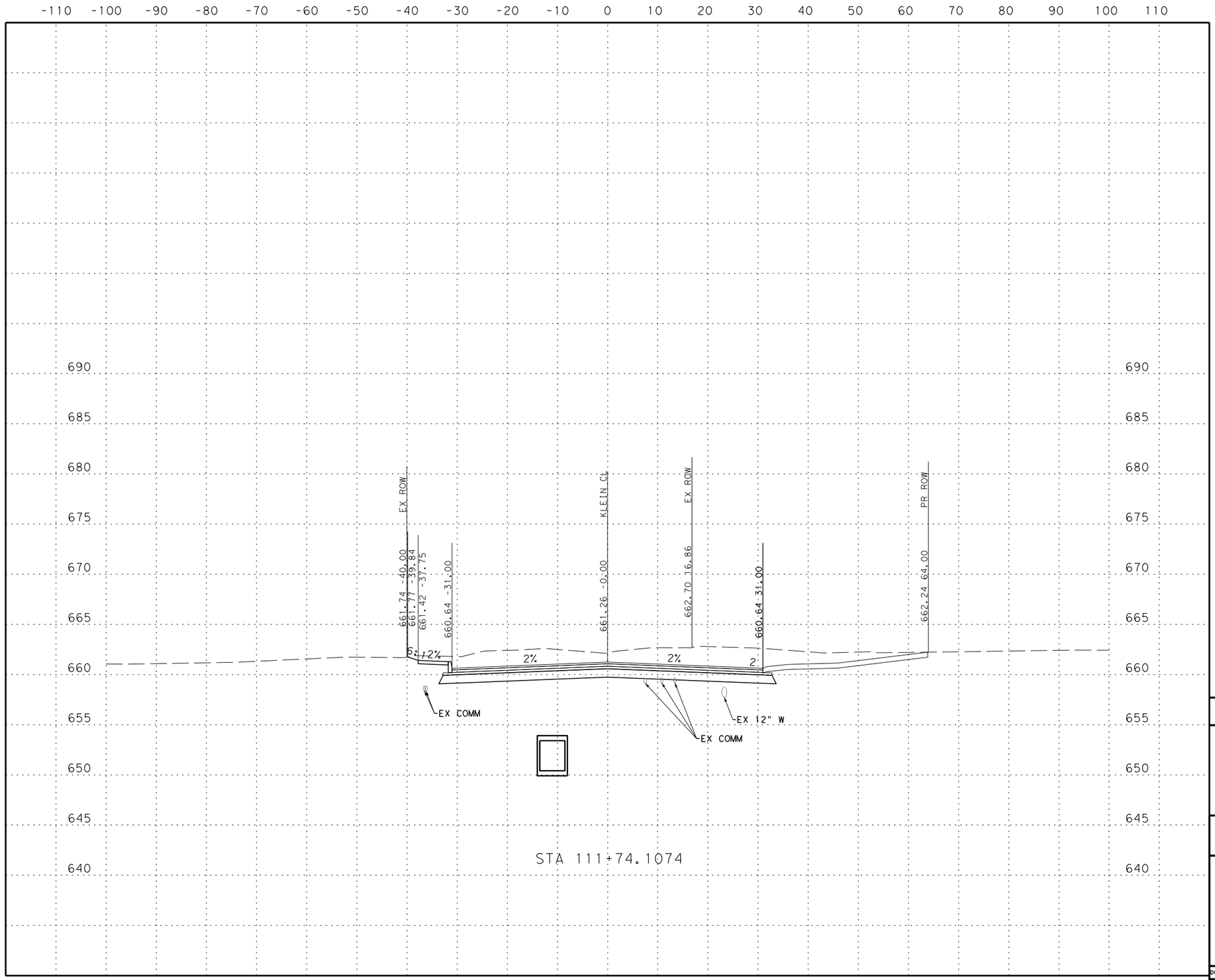

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 111+74.1074 TO STA 111+74.1074

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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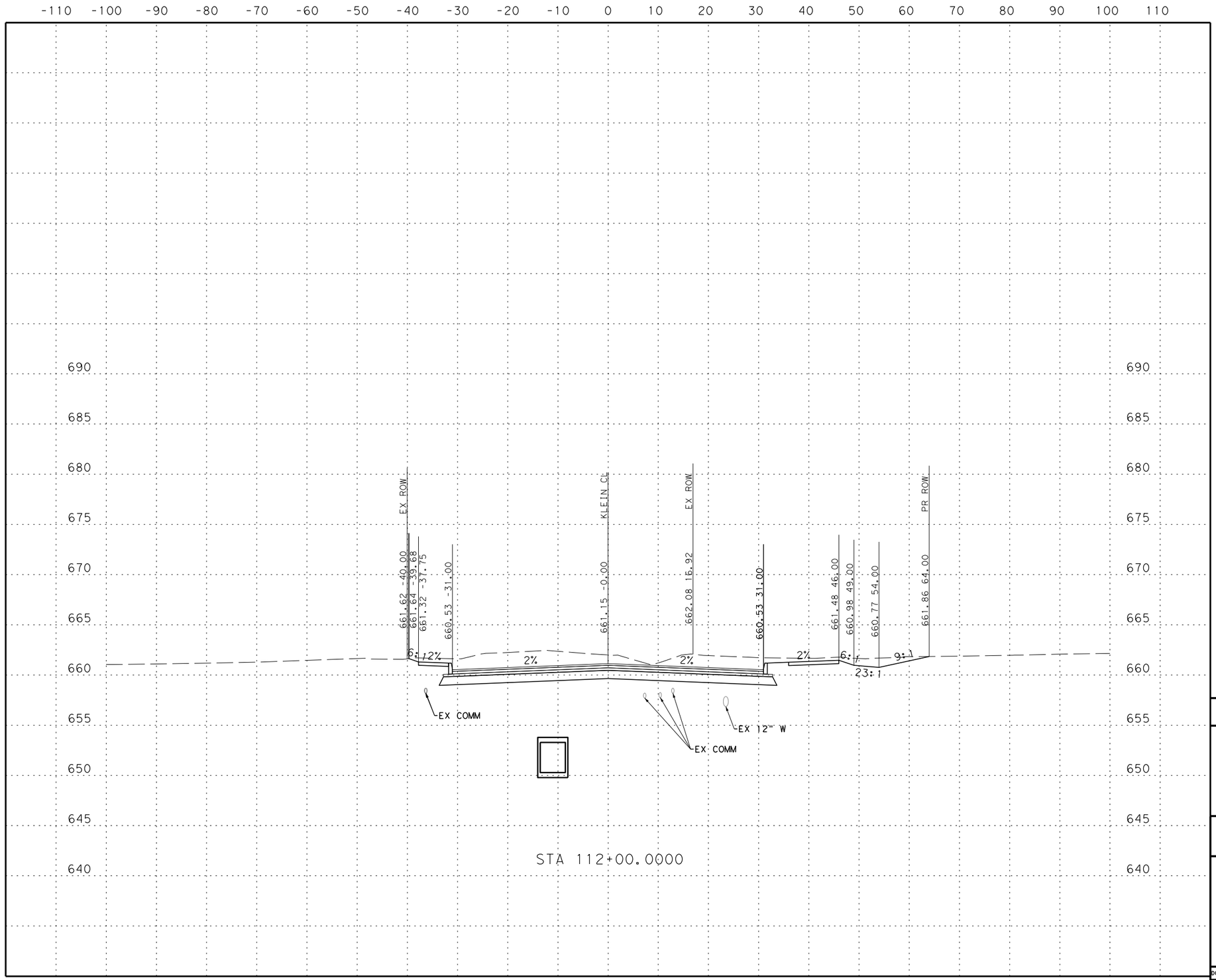

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 112+00.0000 TO STA 112+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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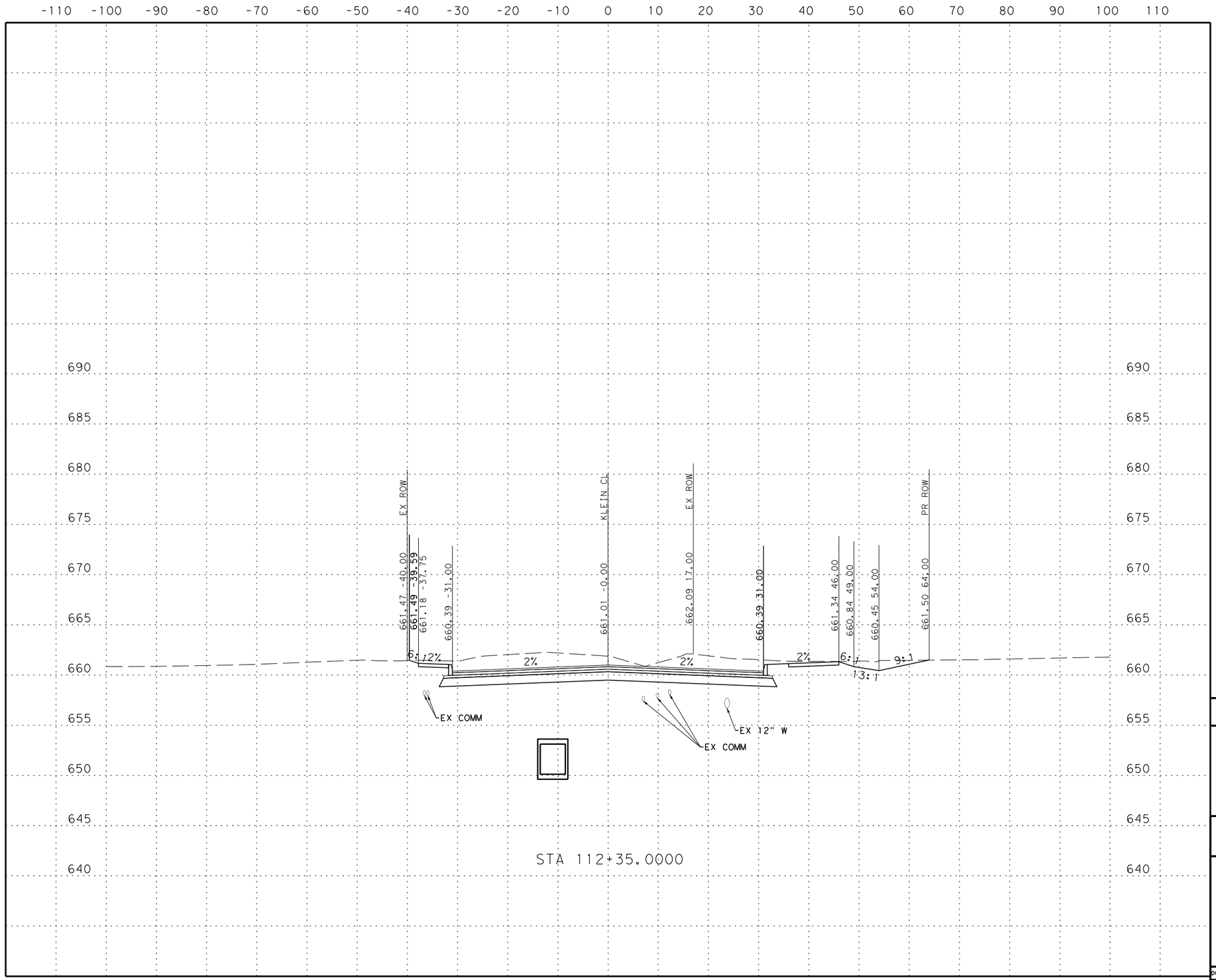

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 112+35.0000 TO STA 112+35.0000

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CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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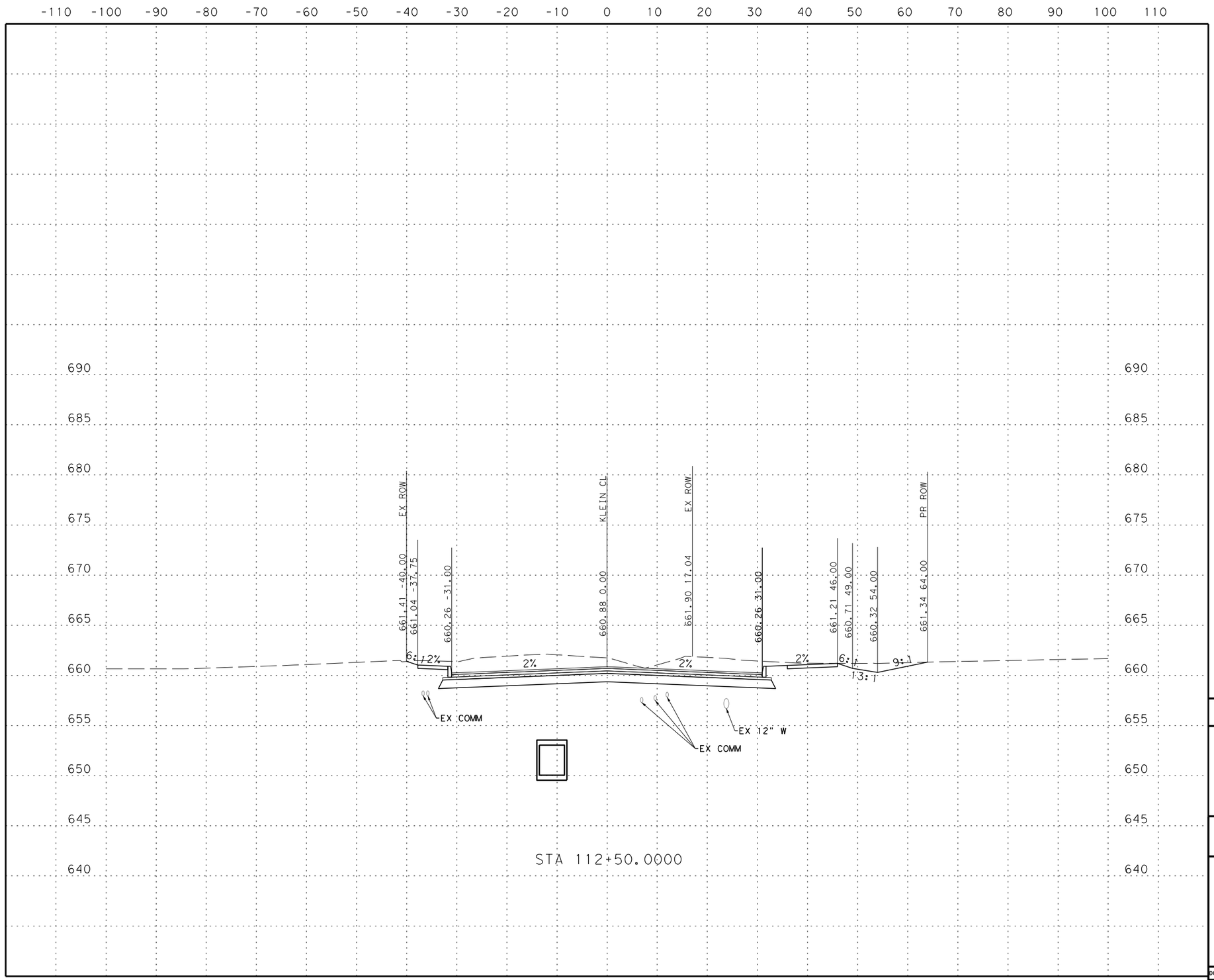

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 112+50.0000 TO STA 112+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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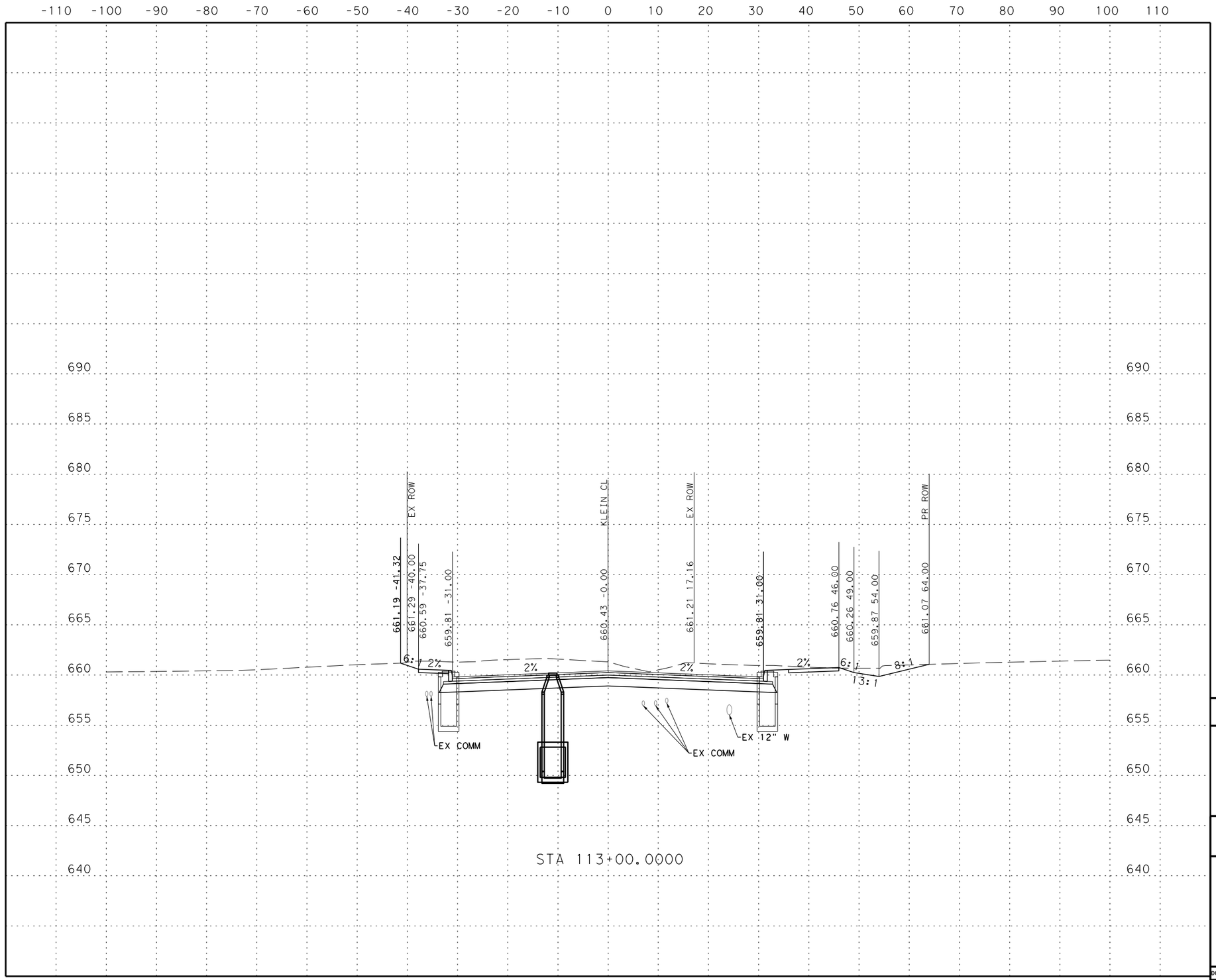

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 113+00.0000 TO STA 113+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
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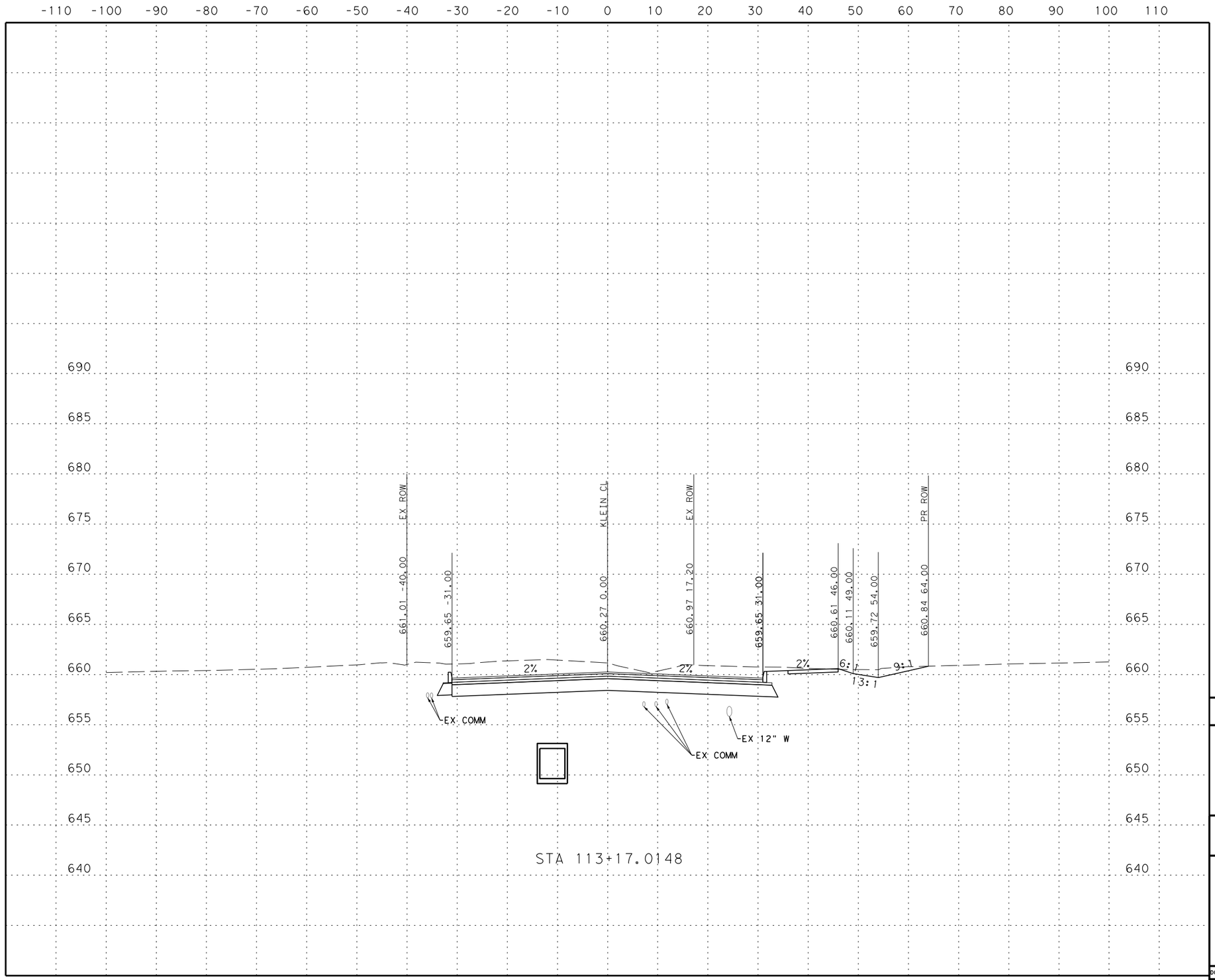

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TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

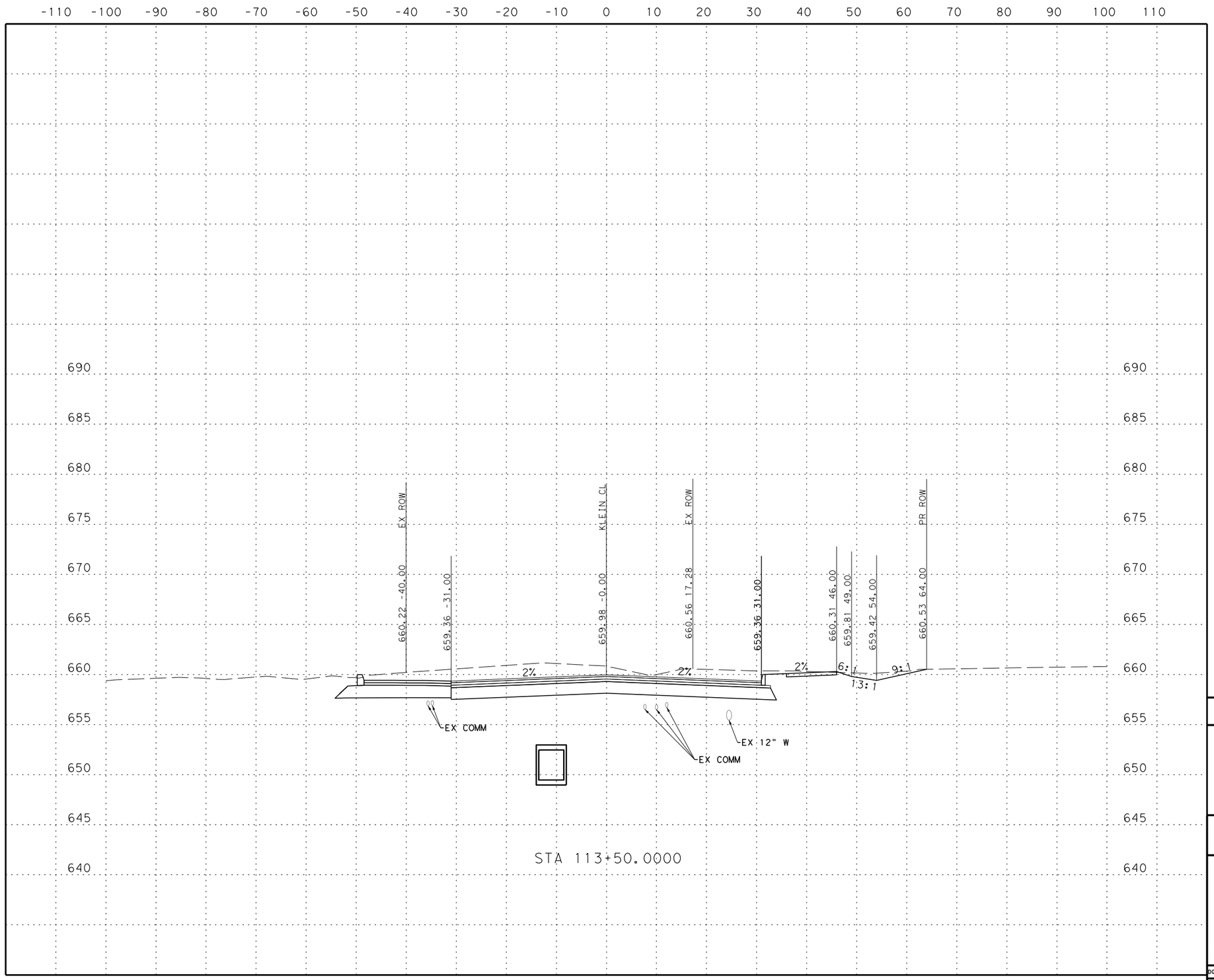
CROSS SECTIONS

STA 113+17.0148 TO STA 113+17.0148

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

Design Filename: ...\5103003_Klein_XSections_Final.dgn



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TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

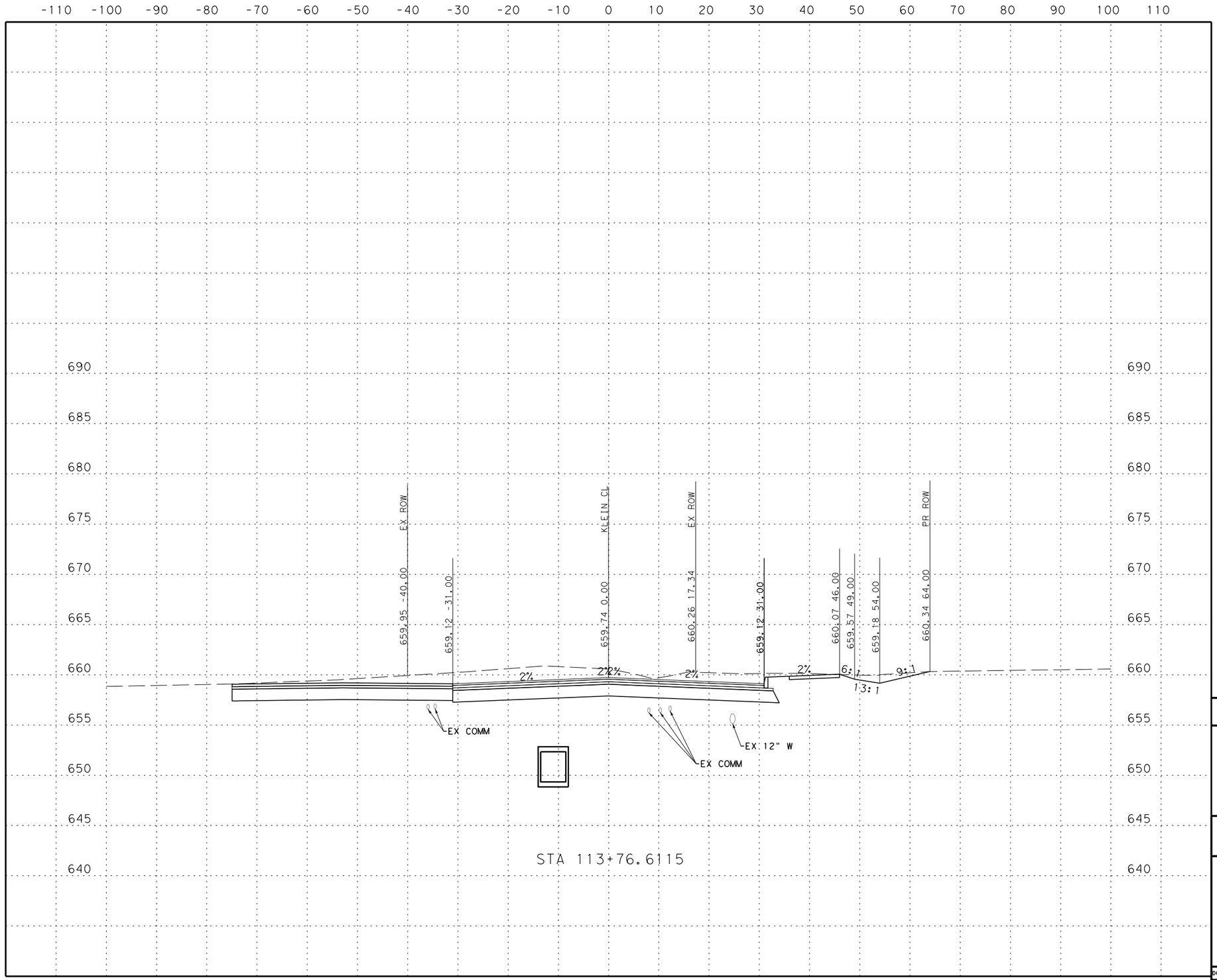
City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 113+50.0000 TO STA 113+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	



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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 113+76.6115 TO STA 113+76.6115

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

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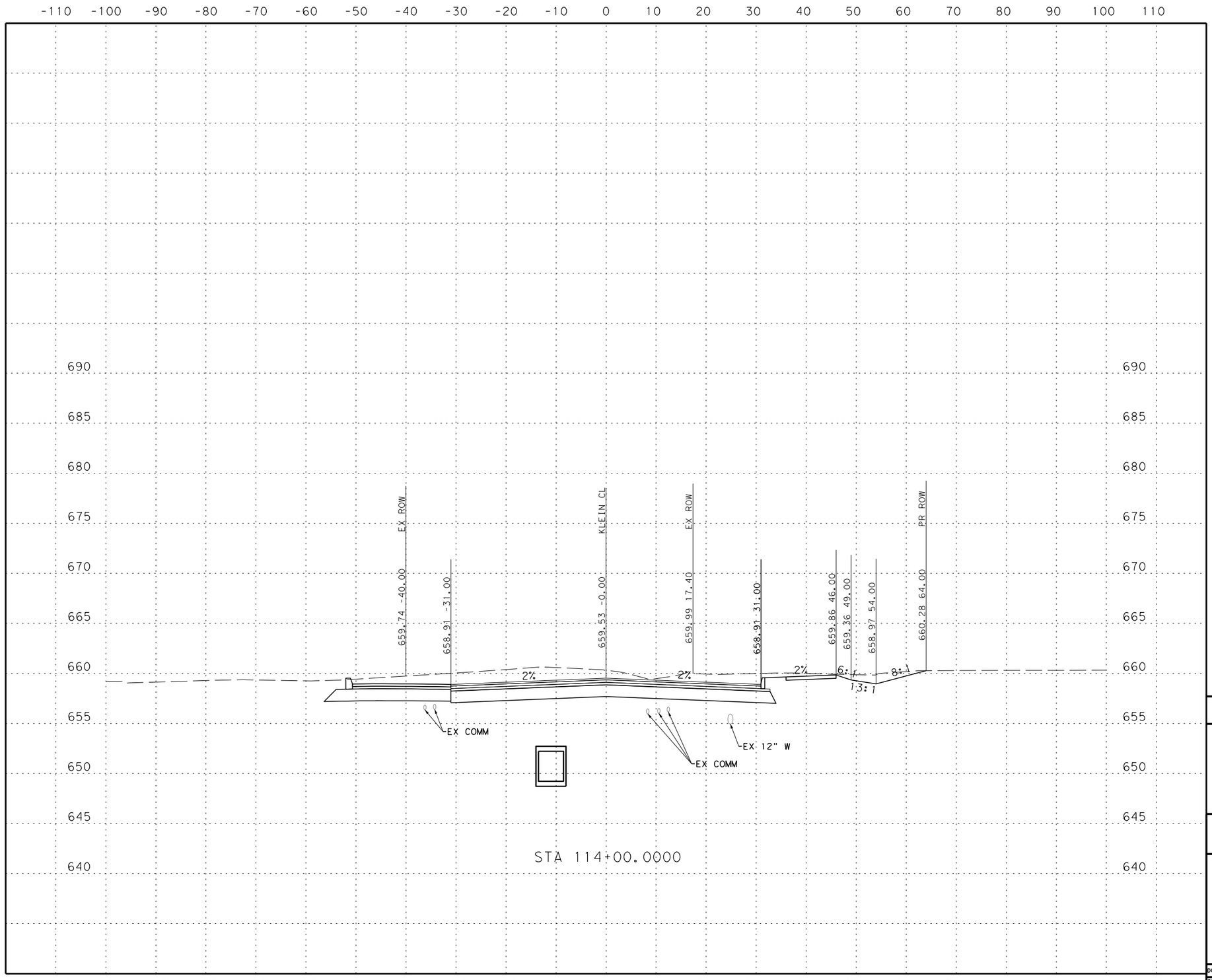

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 114+00.0000 TO STA 114+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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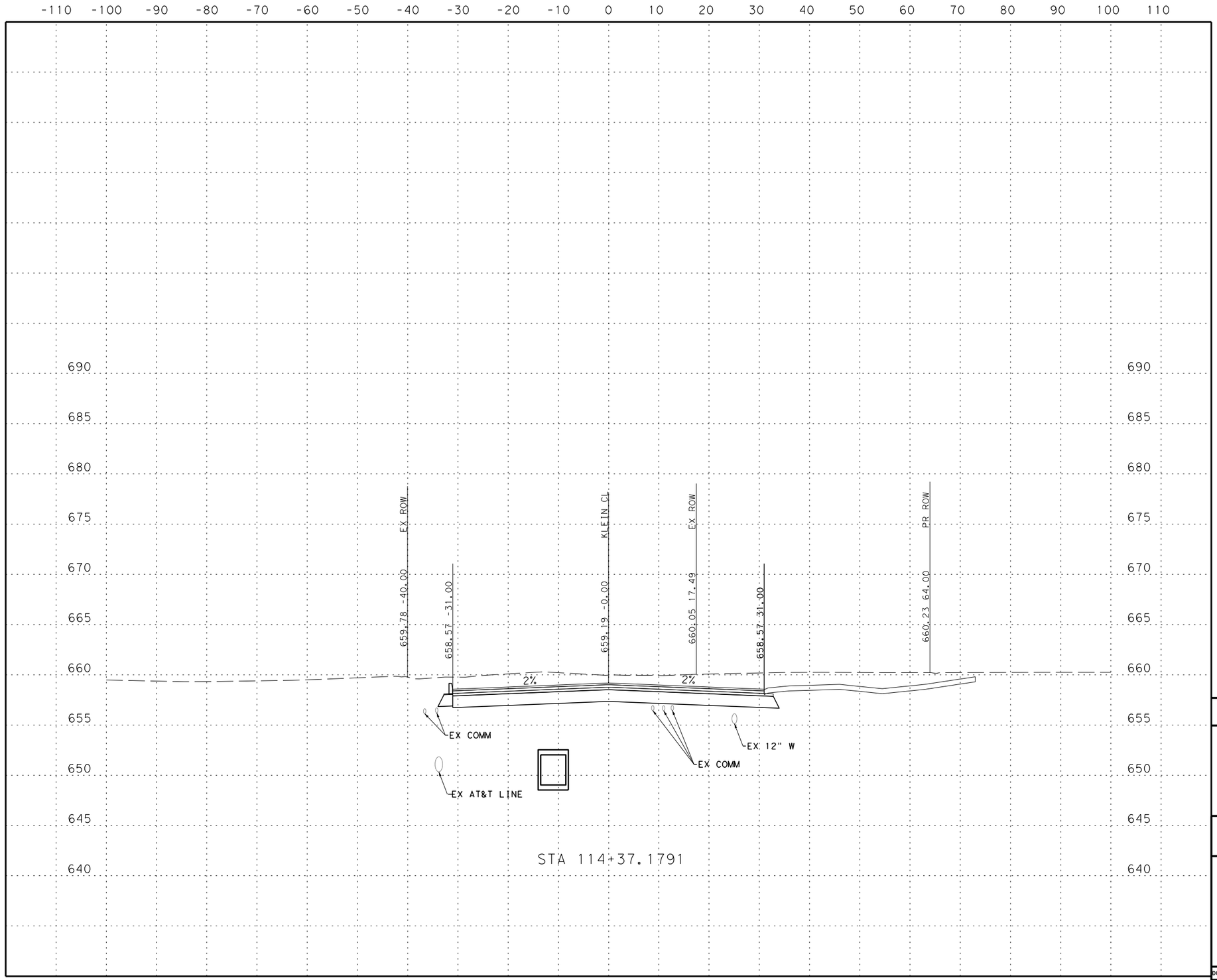

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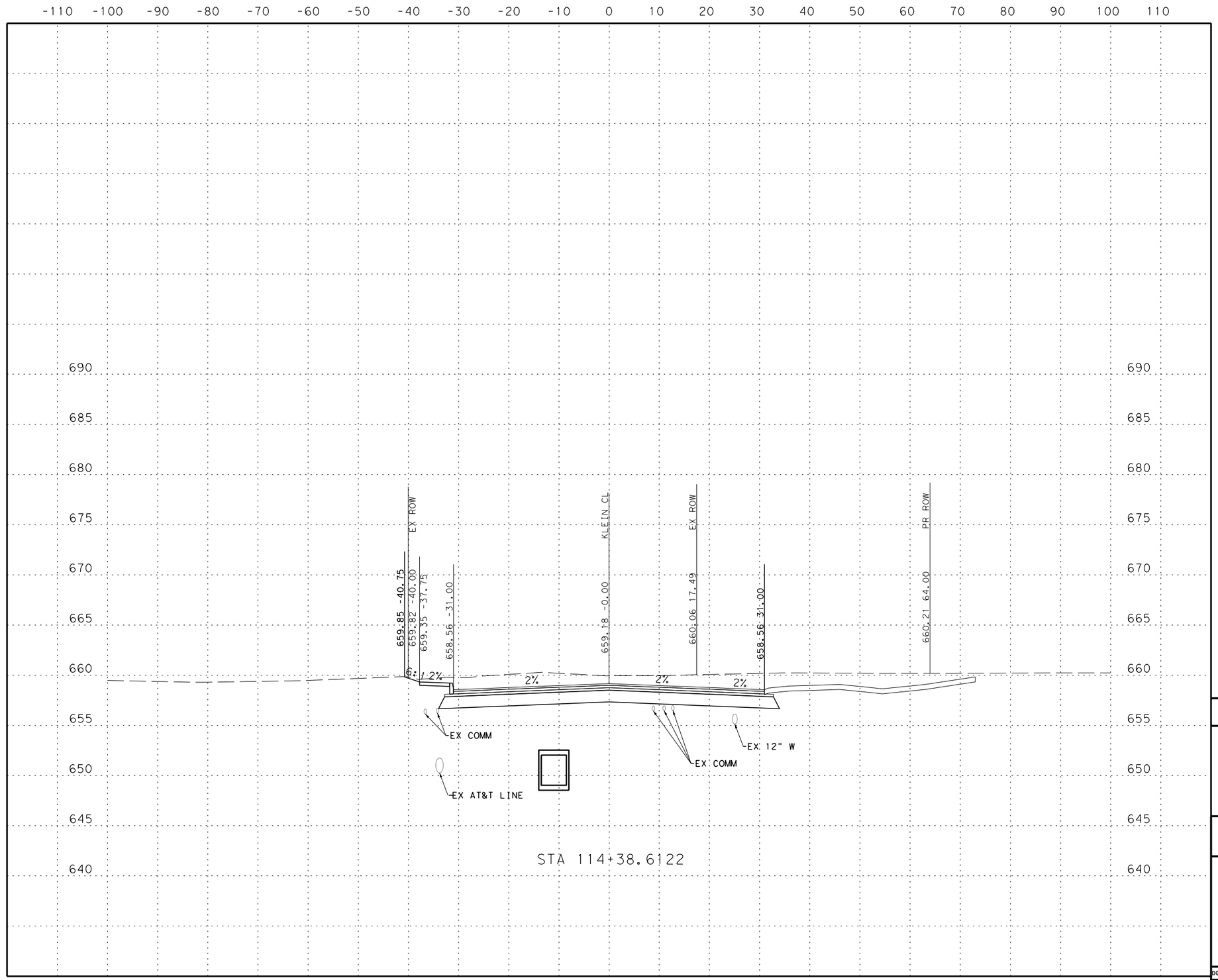
City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 114+37.1791 TO STA 114+37.1791

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	



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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 114+38.6122 TO STA 114+38.6122

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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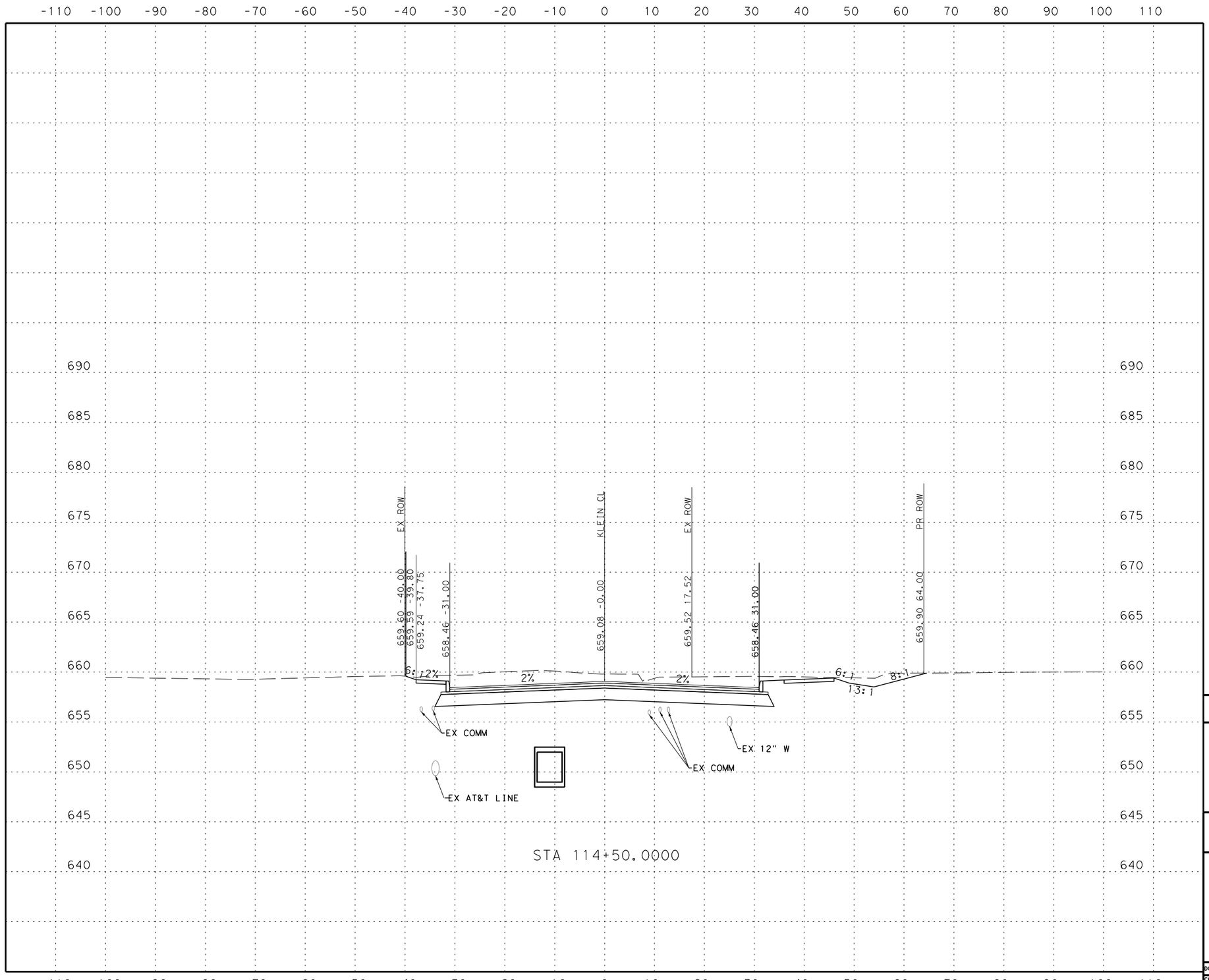

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 114+50.0000 TO STA 114+50.0000

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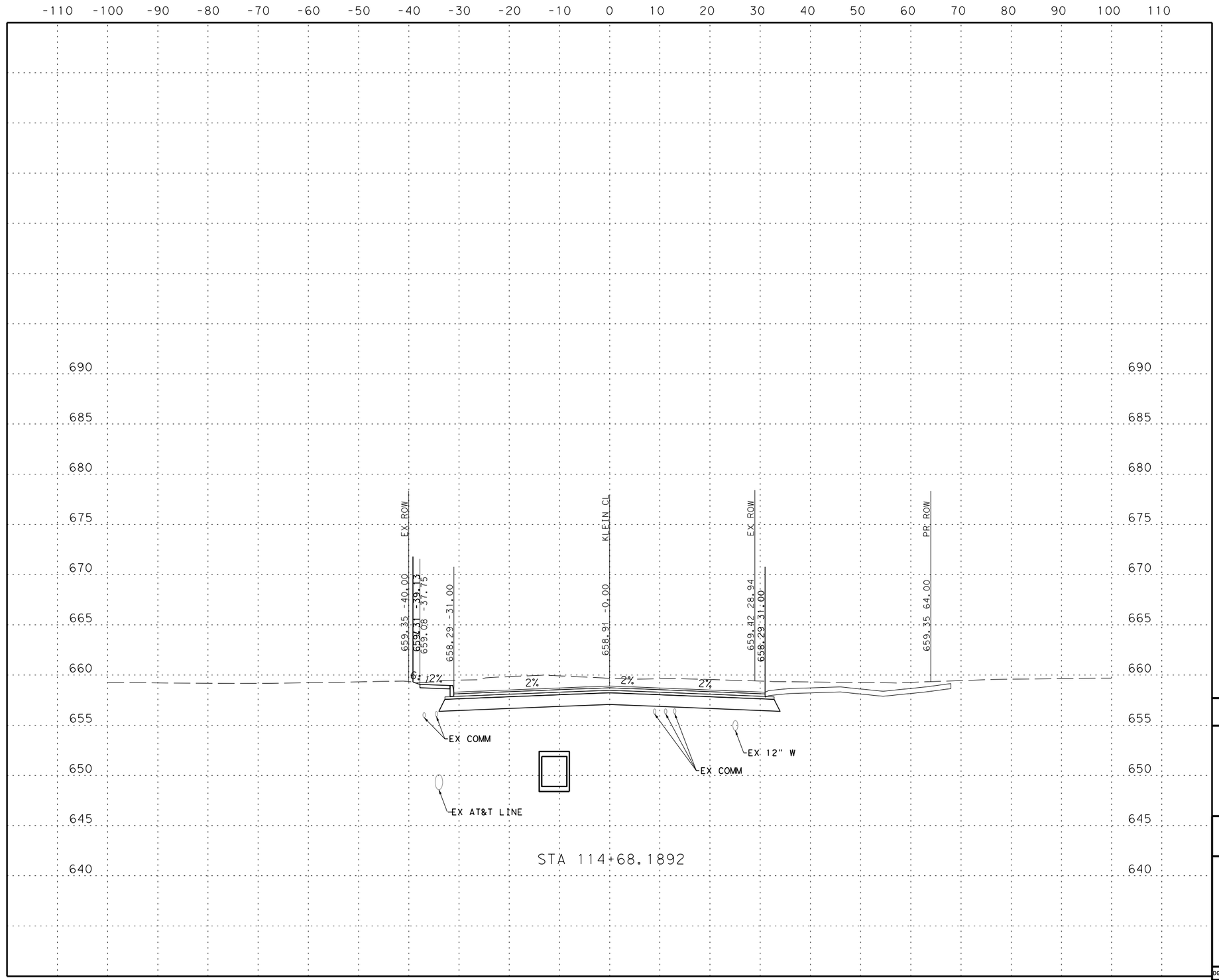

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 114+68.1892 TO STA 114+68.1892

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

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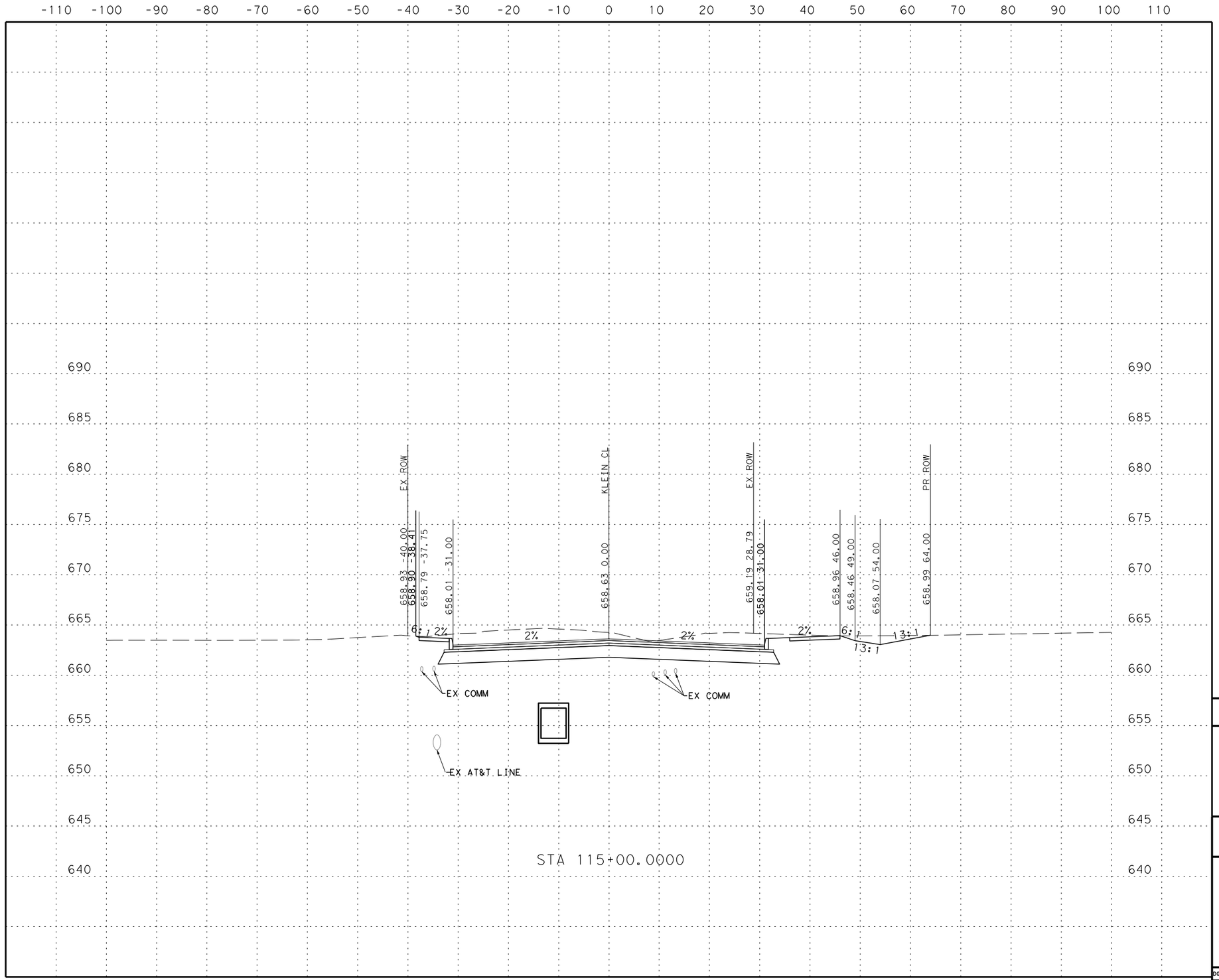

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TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

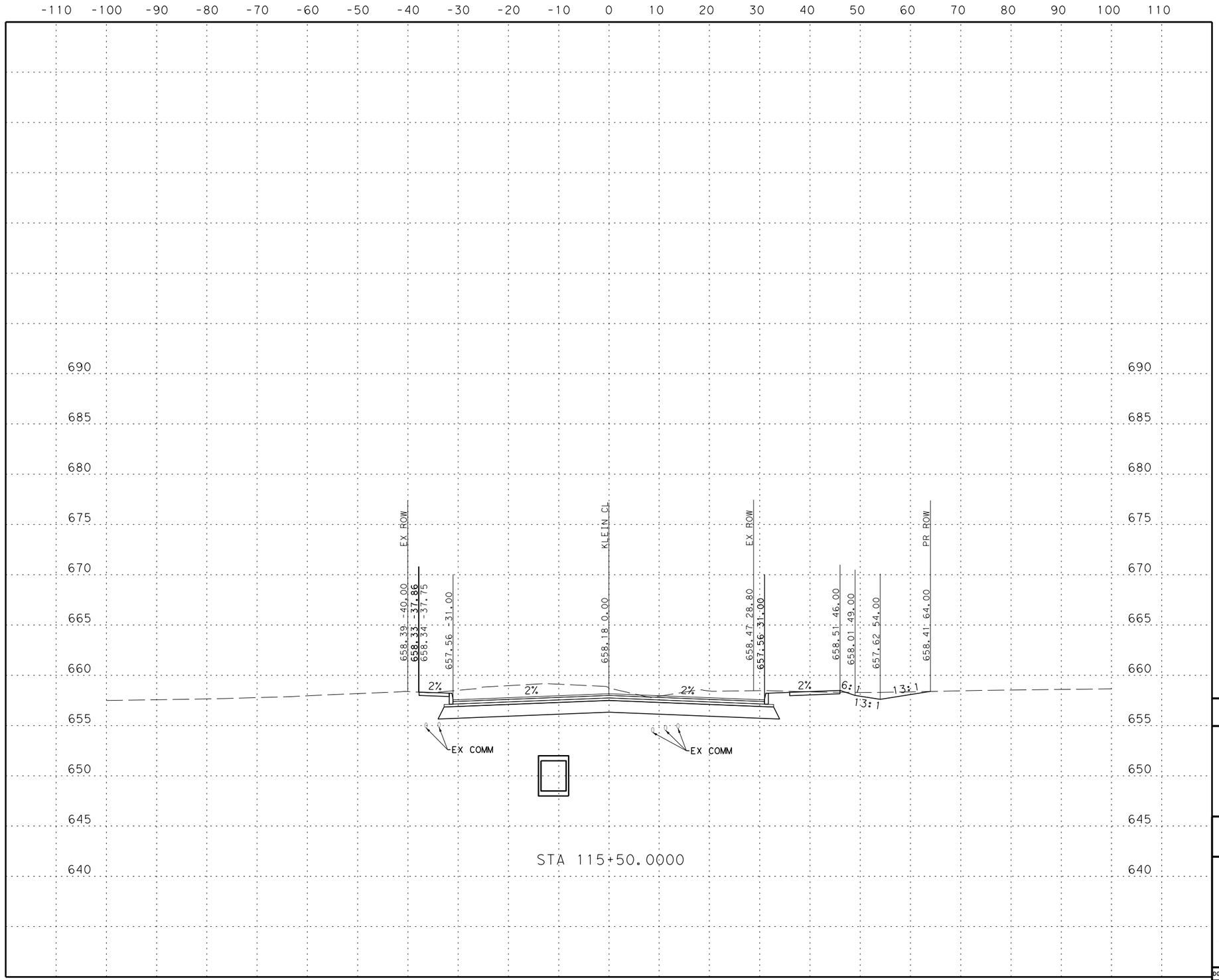
CROSS SECTIONS

STA 115+00.0000 TO STA 115+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

Design Filename: ...\5103003_Klein_XSections_Final.dgn



NOTES

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2. EXIST UTILITIES SHOWN FROM BEST AVAILABLE INFORMATION AT ASSUMED 3' BELOW EXIST GROUND, CONTRACTOR SHALL CONFIRM ALL UTILITY LOCATIONS AND DEPTHS PRIOR TO EXCAVATION

SCALE: H: 1"= 20'
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PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 115+50.0000 TO STA 115+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

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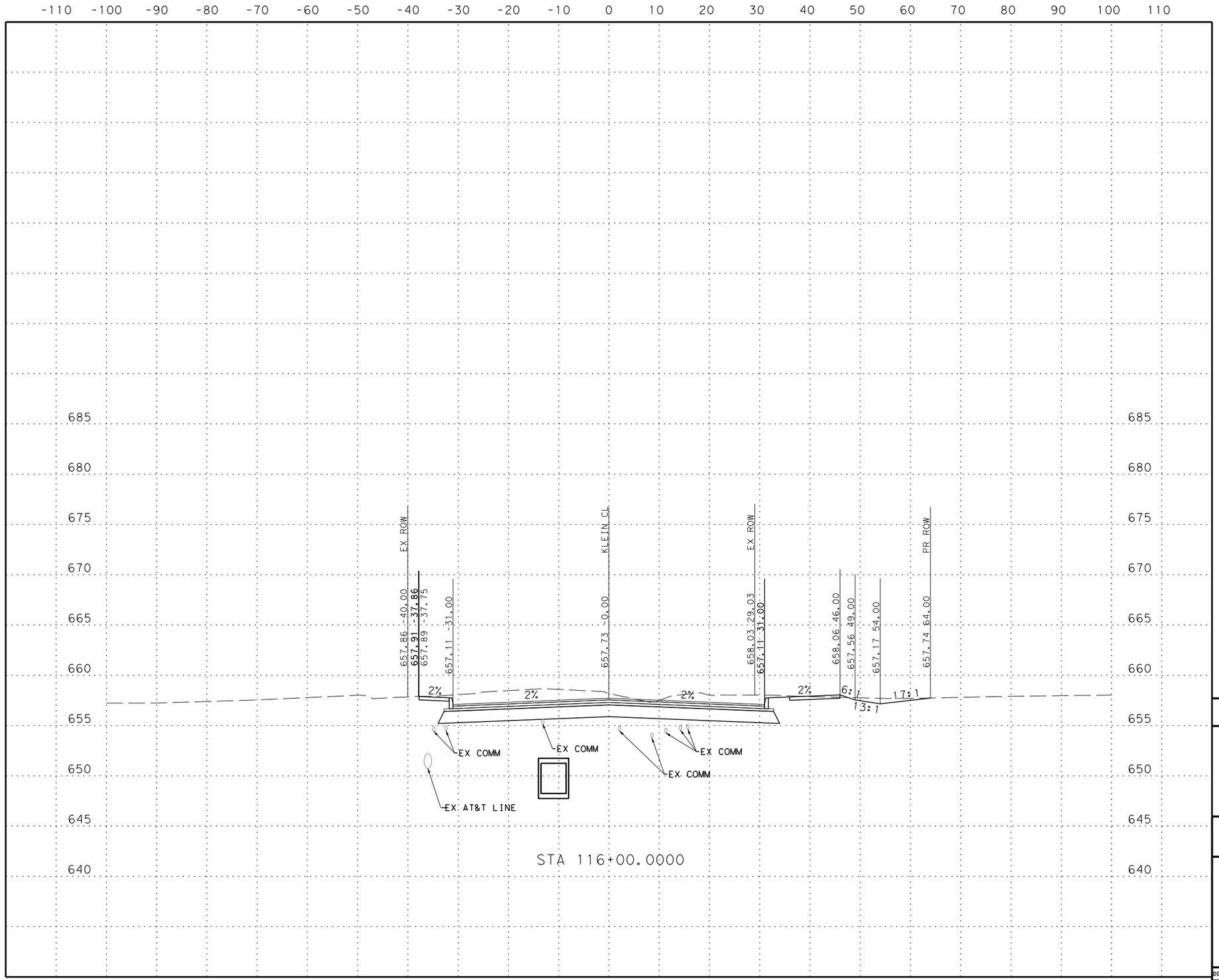

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 116+00.0000 TO STA 116+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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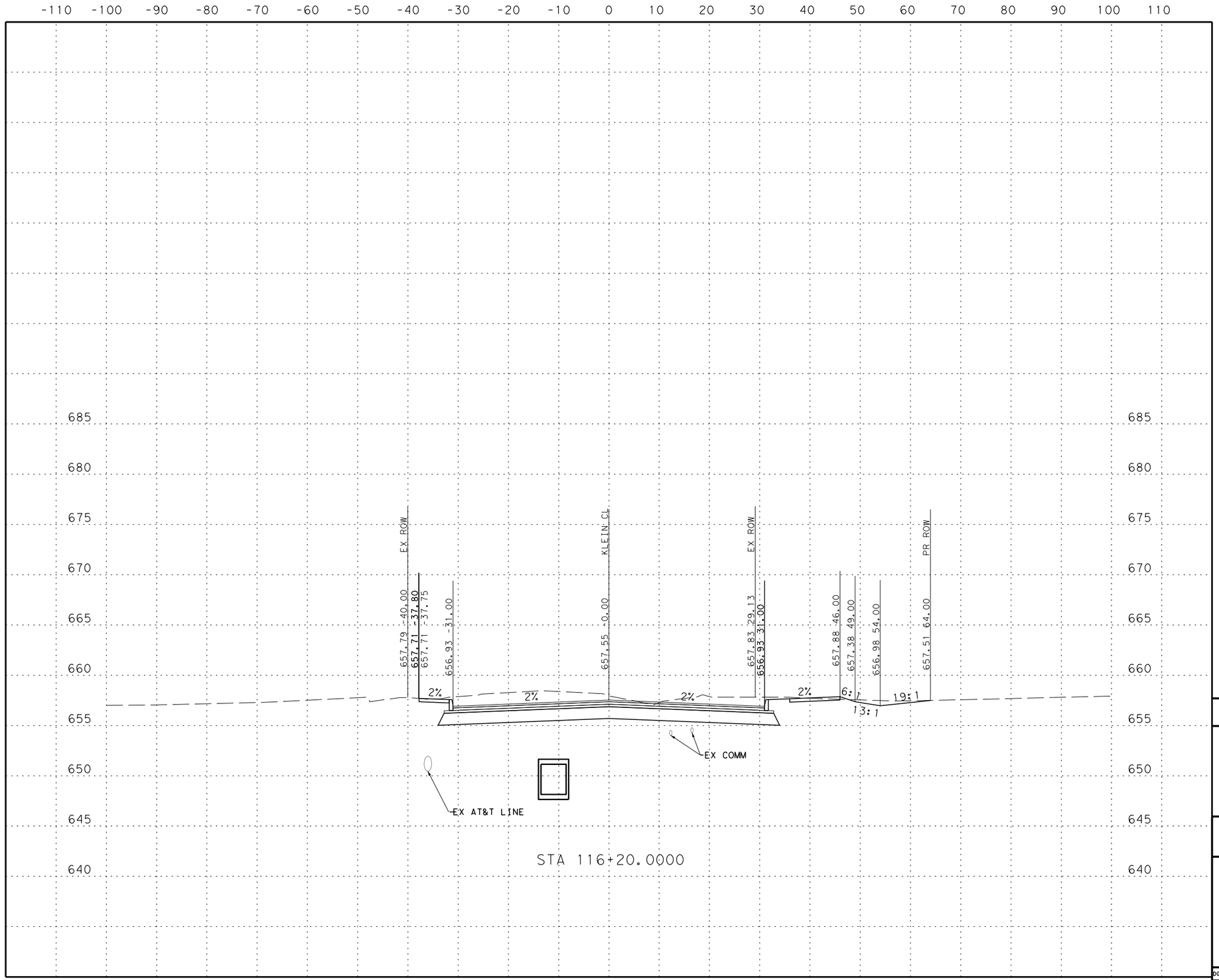

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 116+20.0000 TO STA 116+20.0000

DGN:	STATE	PROJECT NO.	ROADWAY
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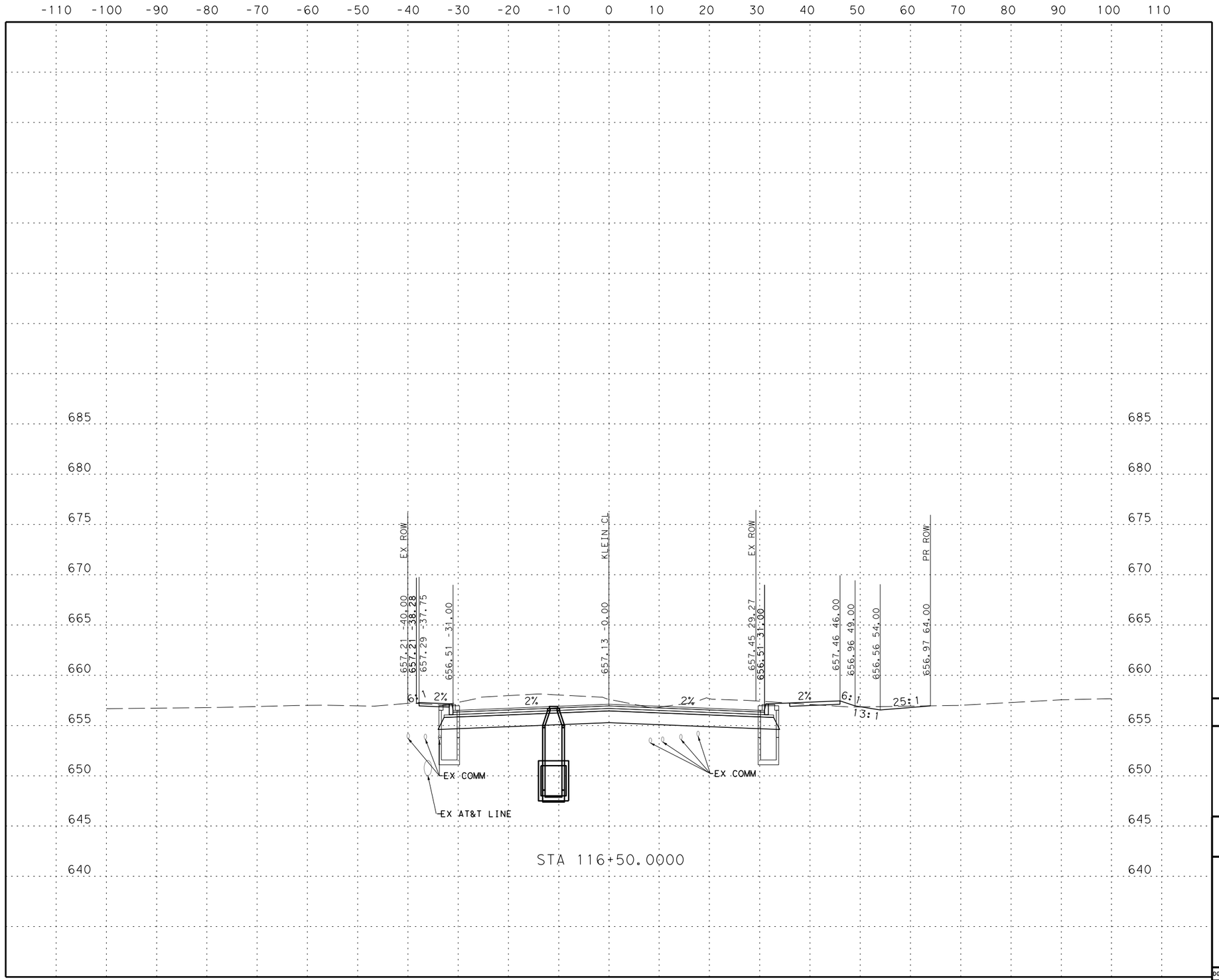

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 116+50.0000 TO STA 116+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
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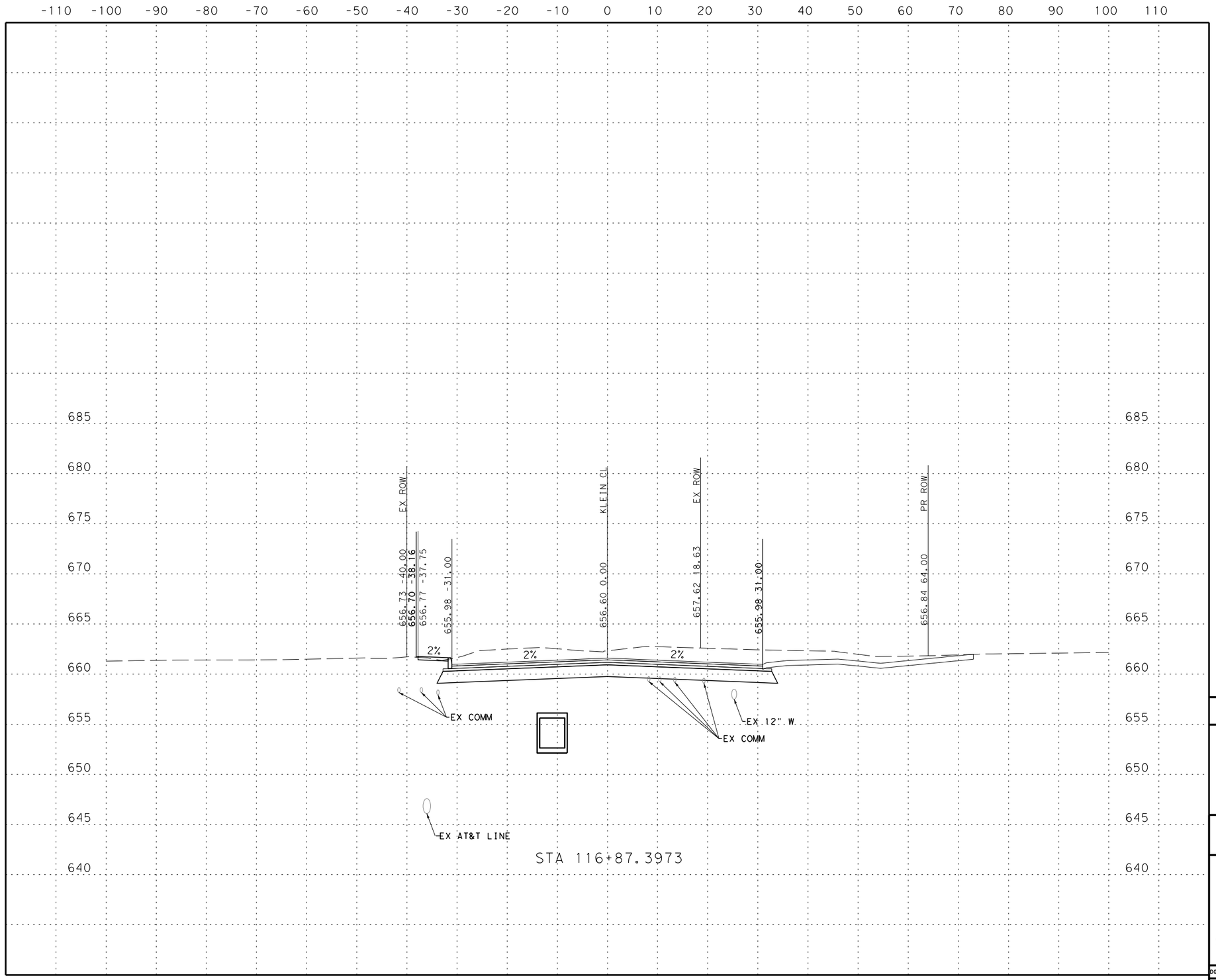

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 116+87.3973 TO STA 116+87.3973

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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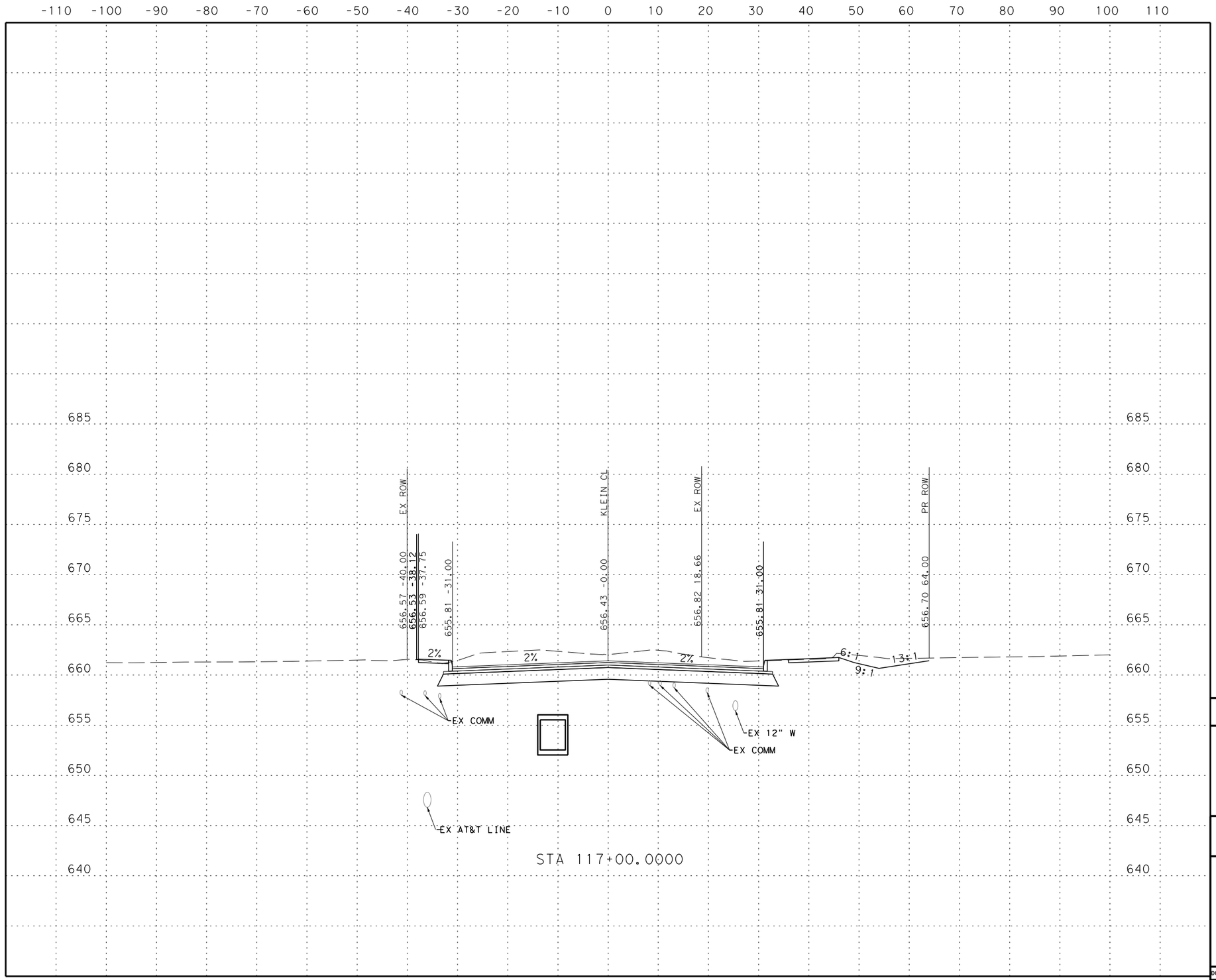

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 117+00.0000 TO STA 117+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
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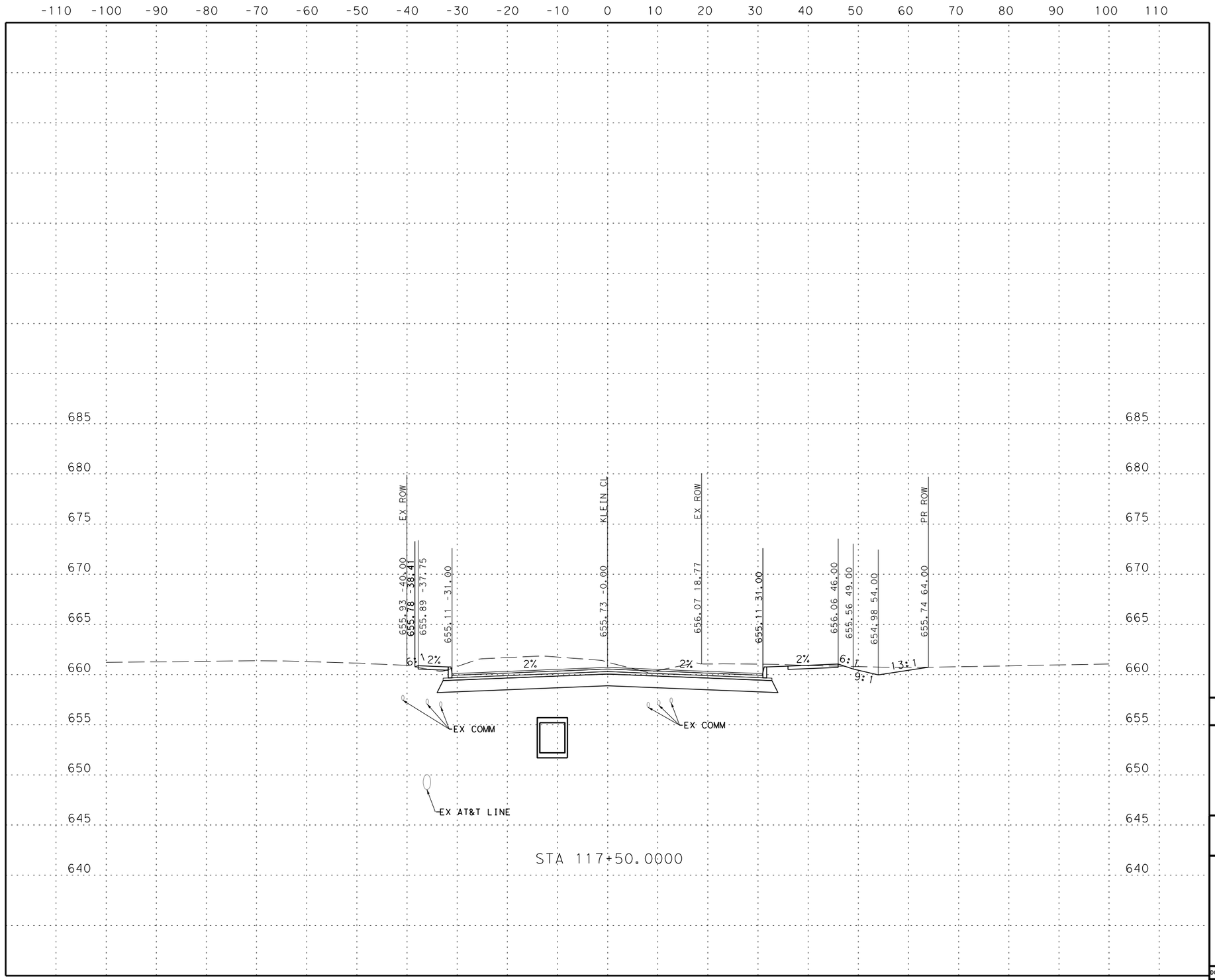

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 117+50.0000 TO STA 117+50.0000

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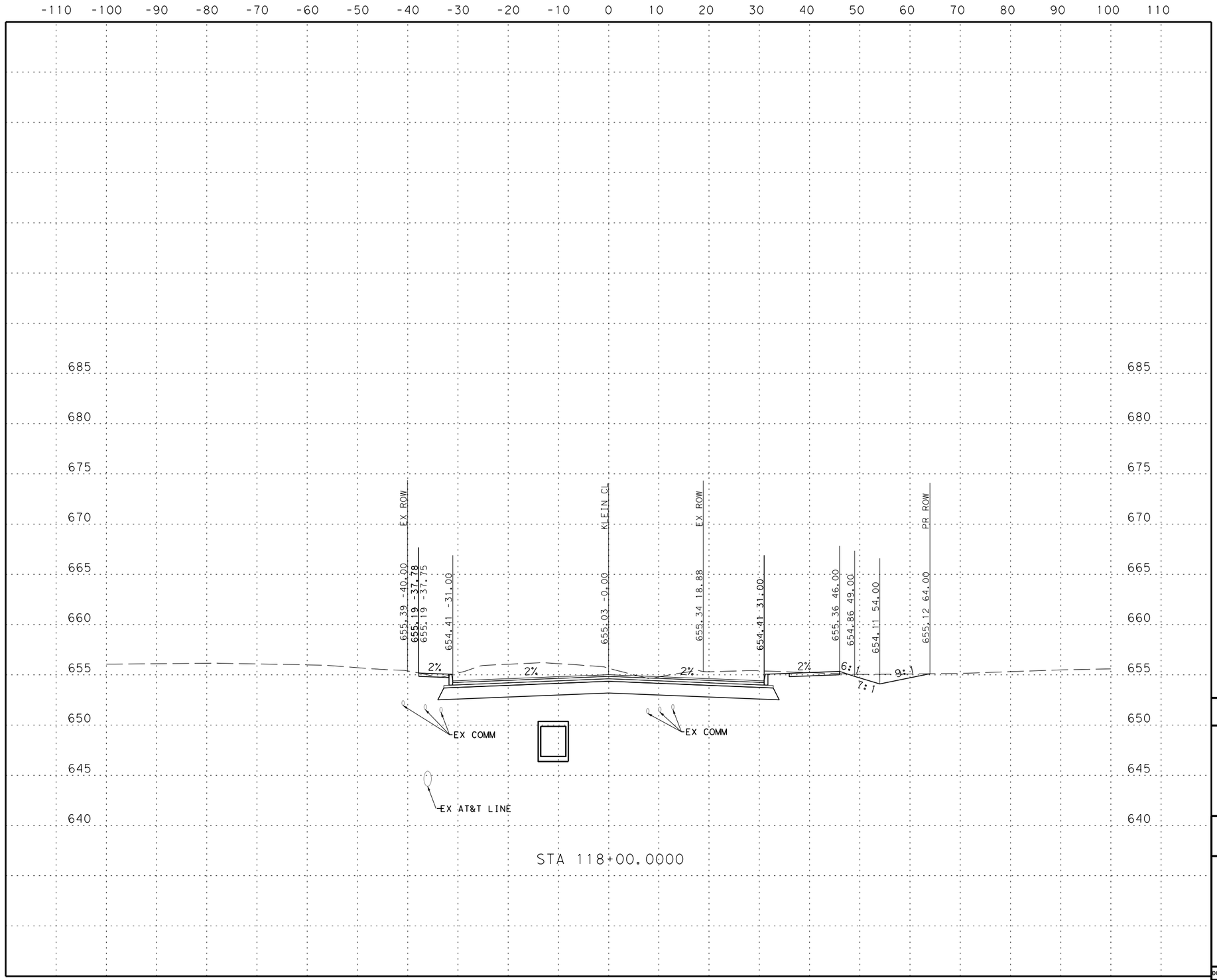

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 118+00.0000 TO STA 118+00.0000

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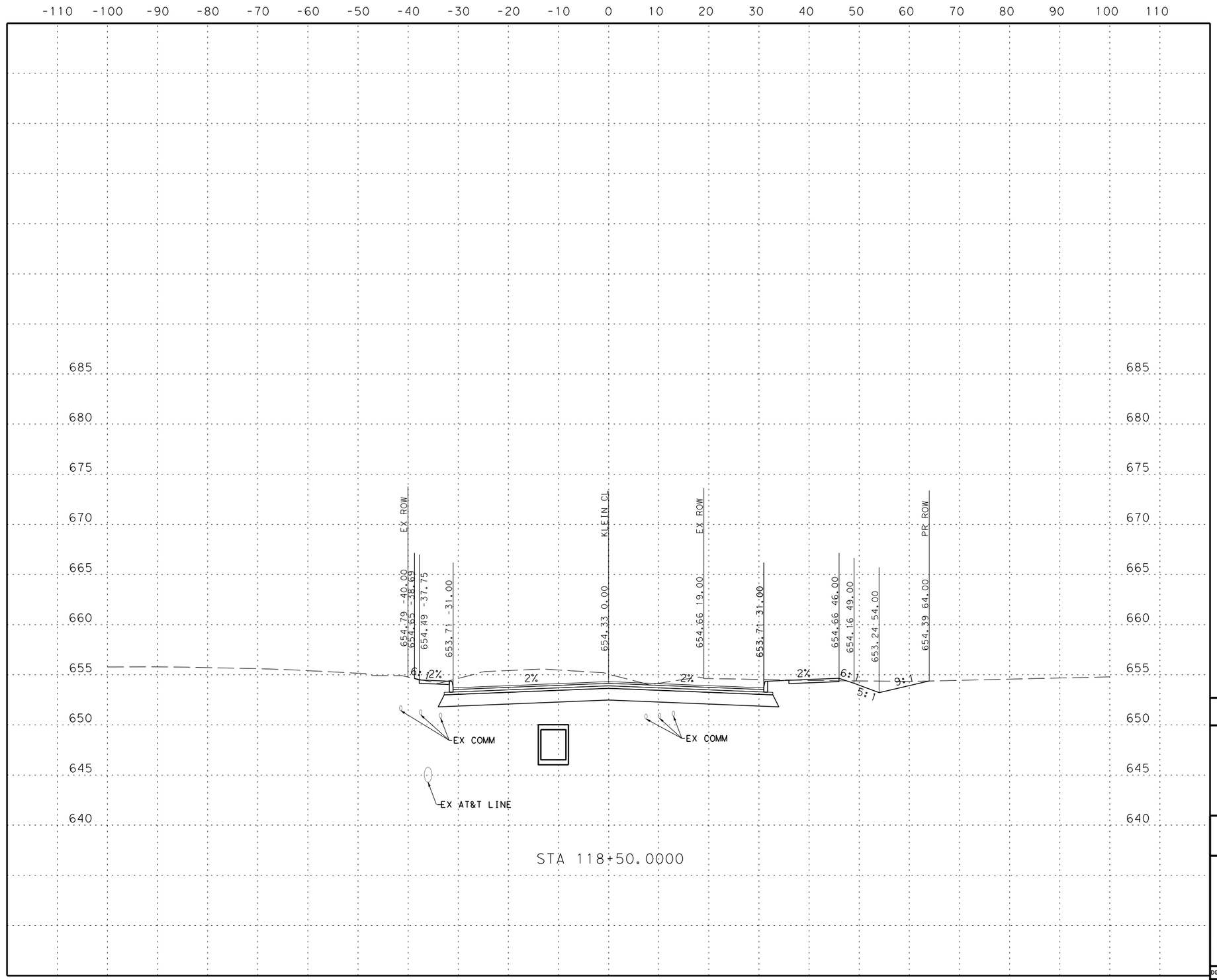

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 118+50.0000 TO STA 118+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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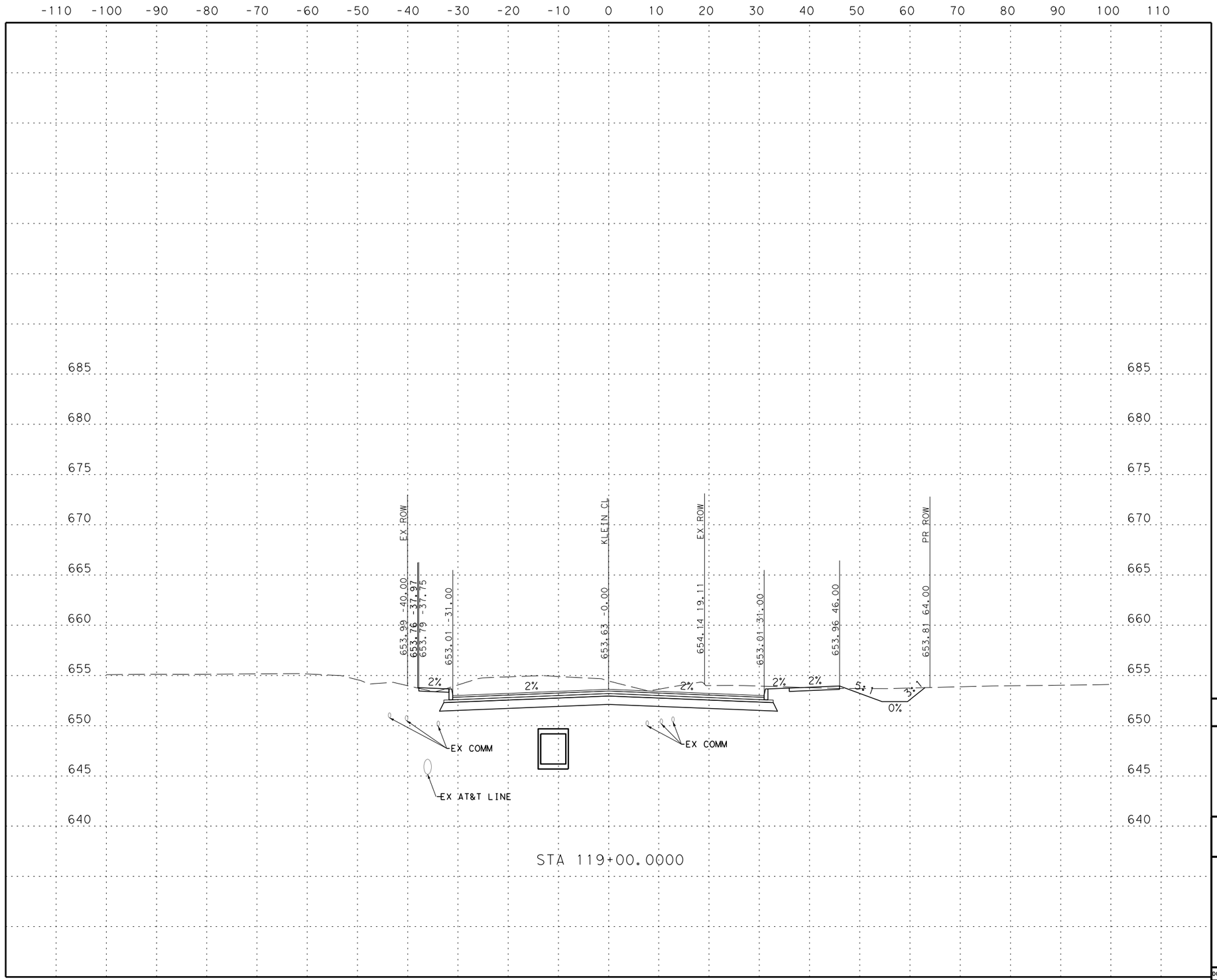

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 119+00.0000 TO STA 119+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
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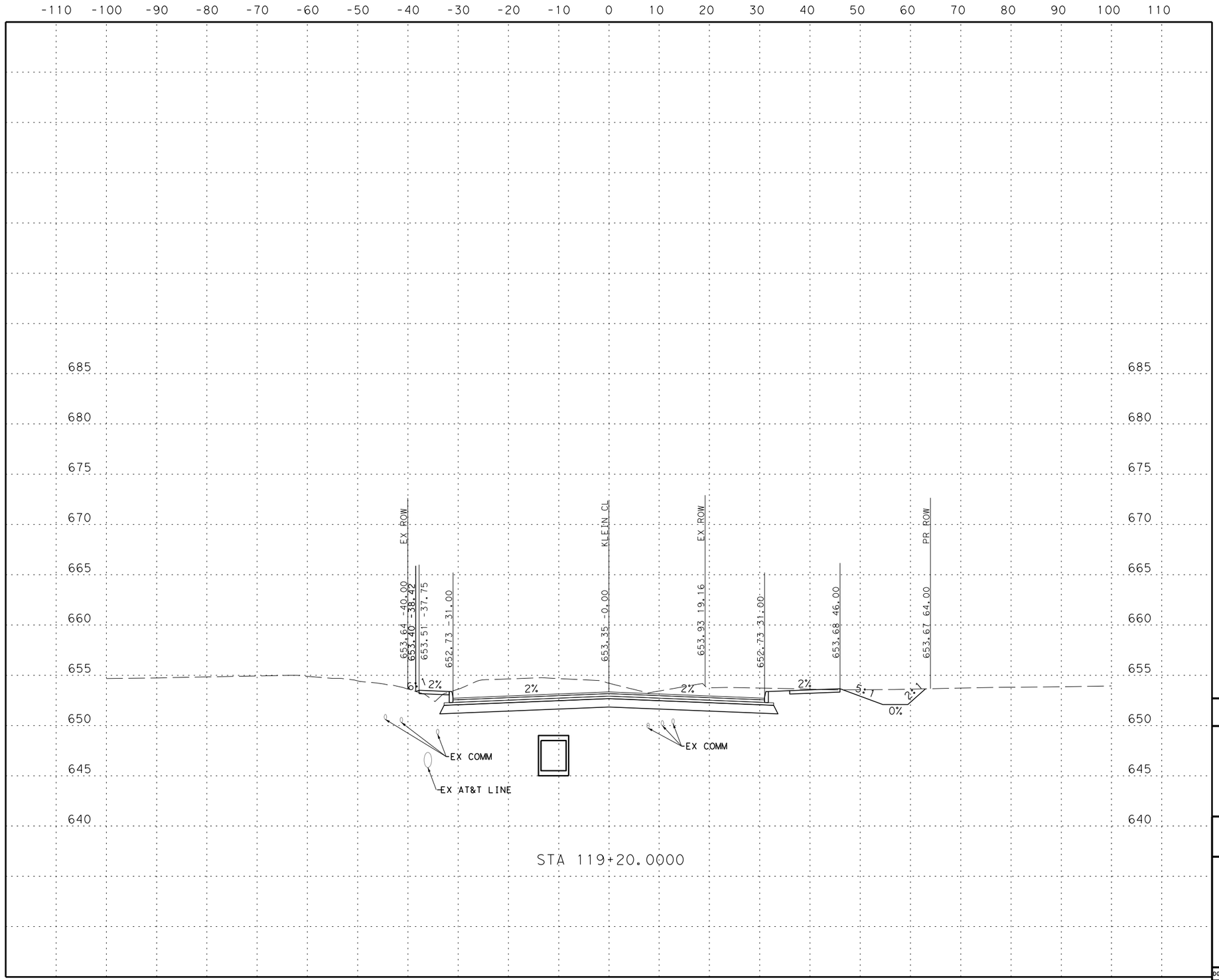

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TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 119+20.0000 TO STA 119+20.0000

DGN:	STATE	PROJECT NO.	ROADWAY
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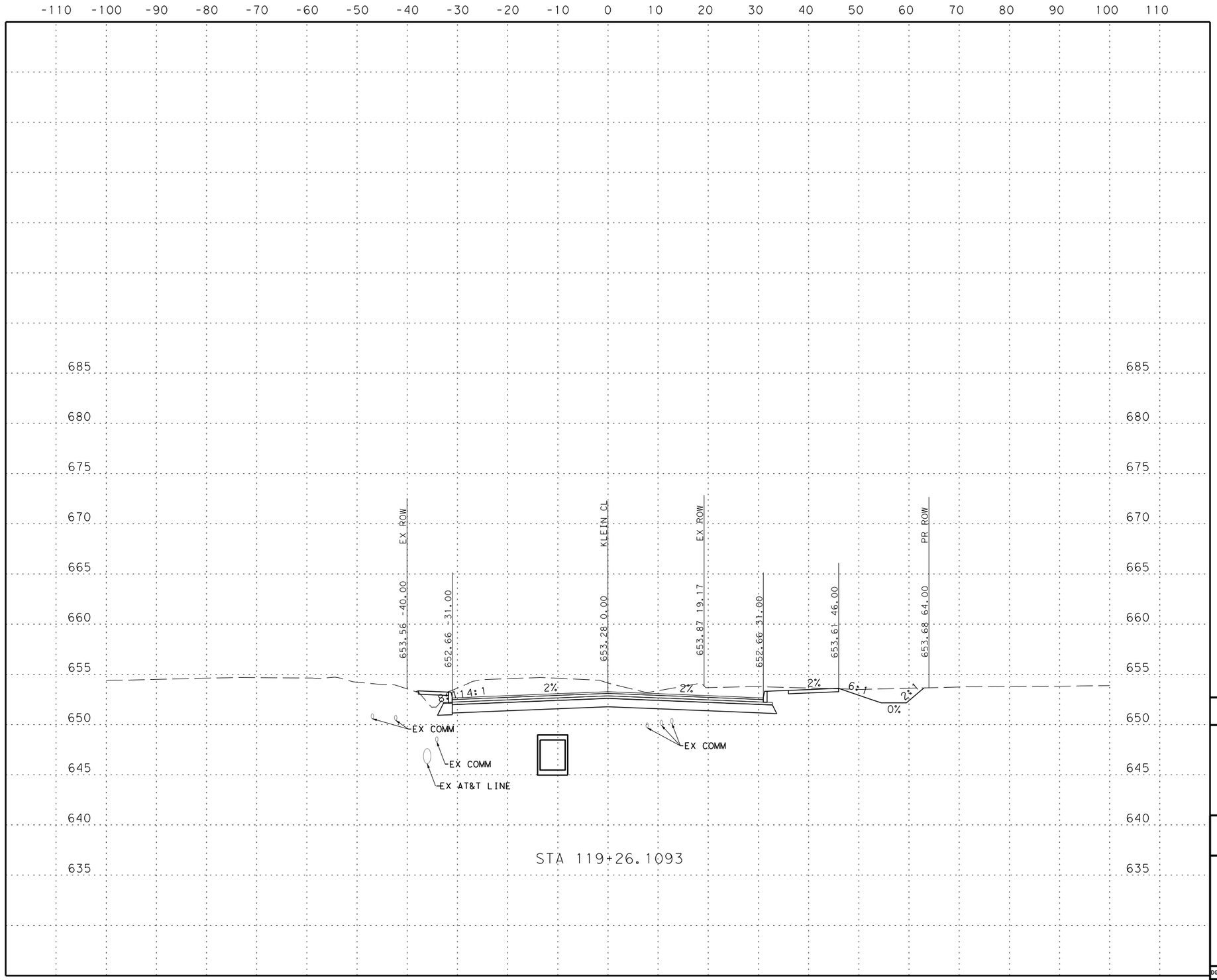

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 119+26.1093 TO STA 119+26.1093

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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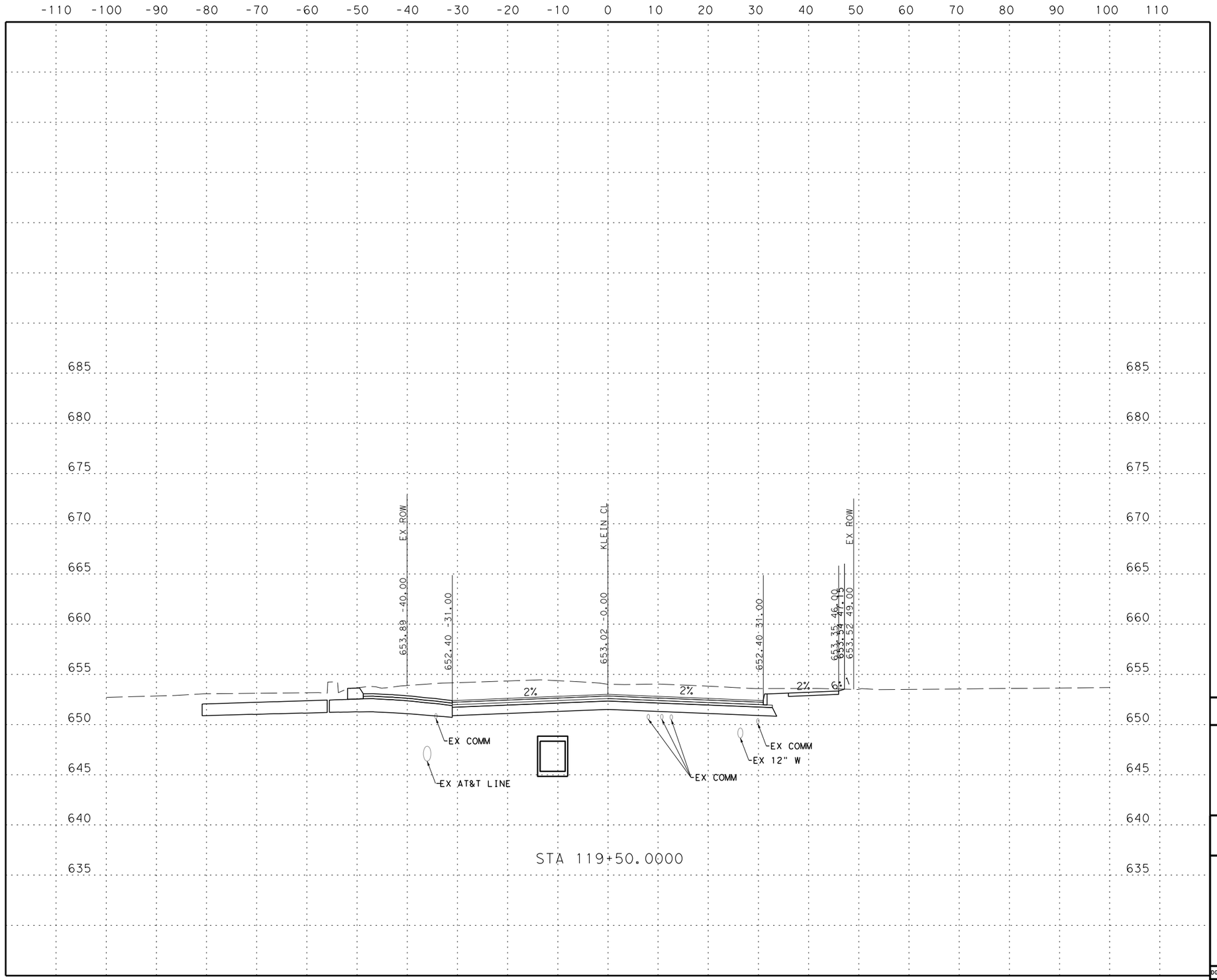

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TBPE FIRM REGISTRATION #470 I TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 119+50.0000 TO STA 119+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
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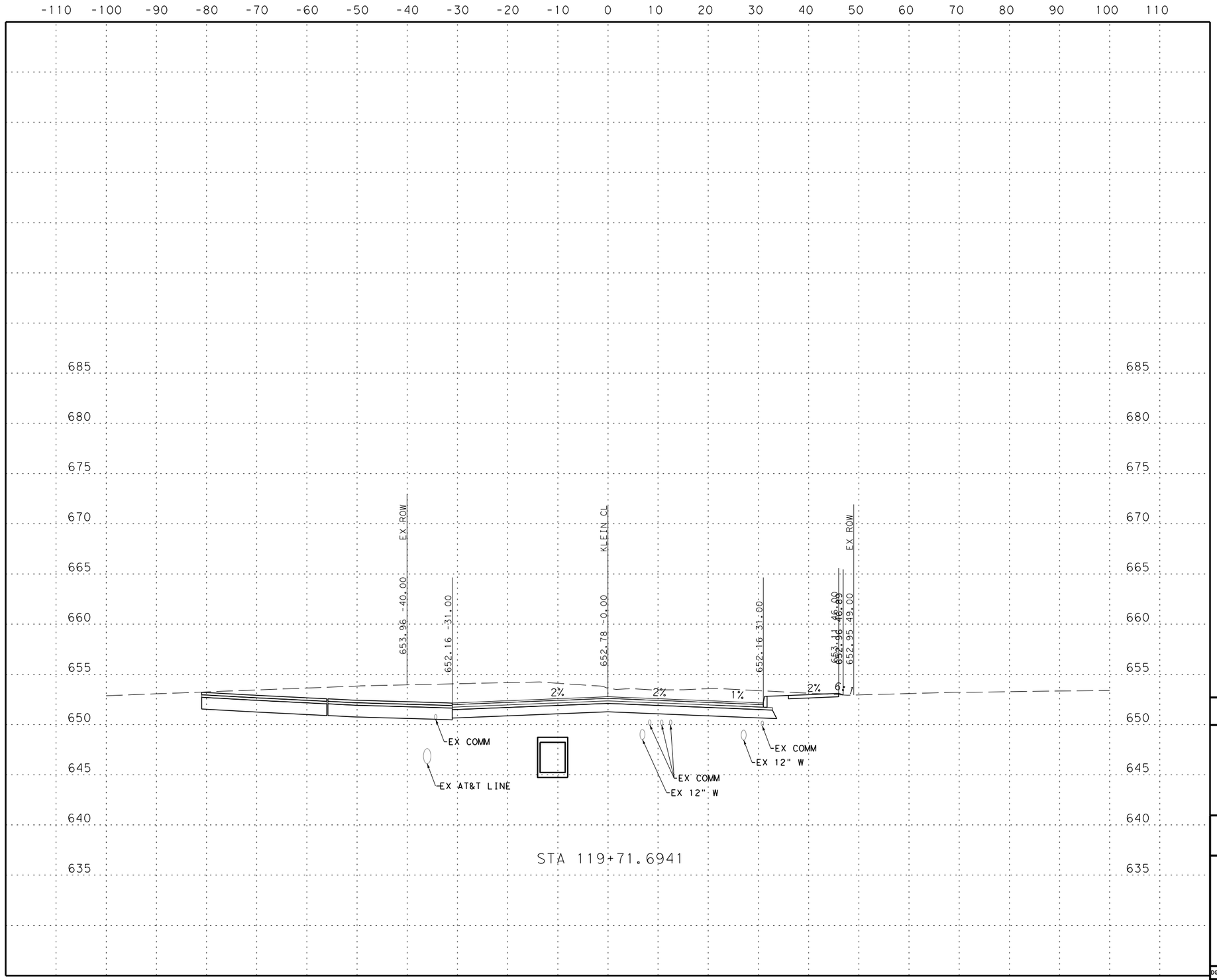

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 119+71.6941 TO STA 119+71.6941

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
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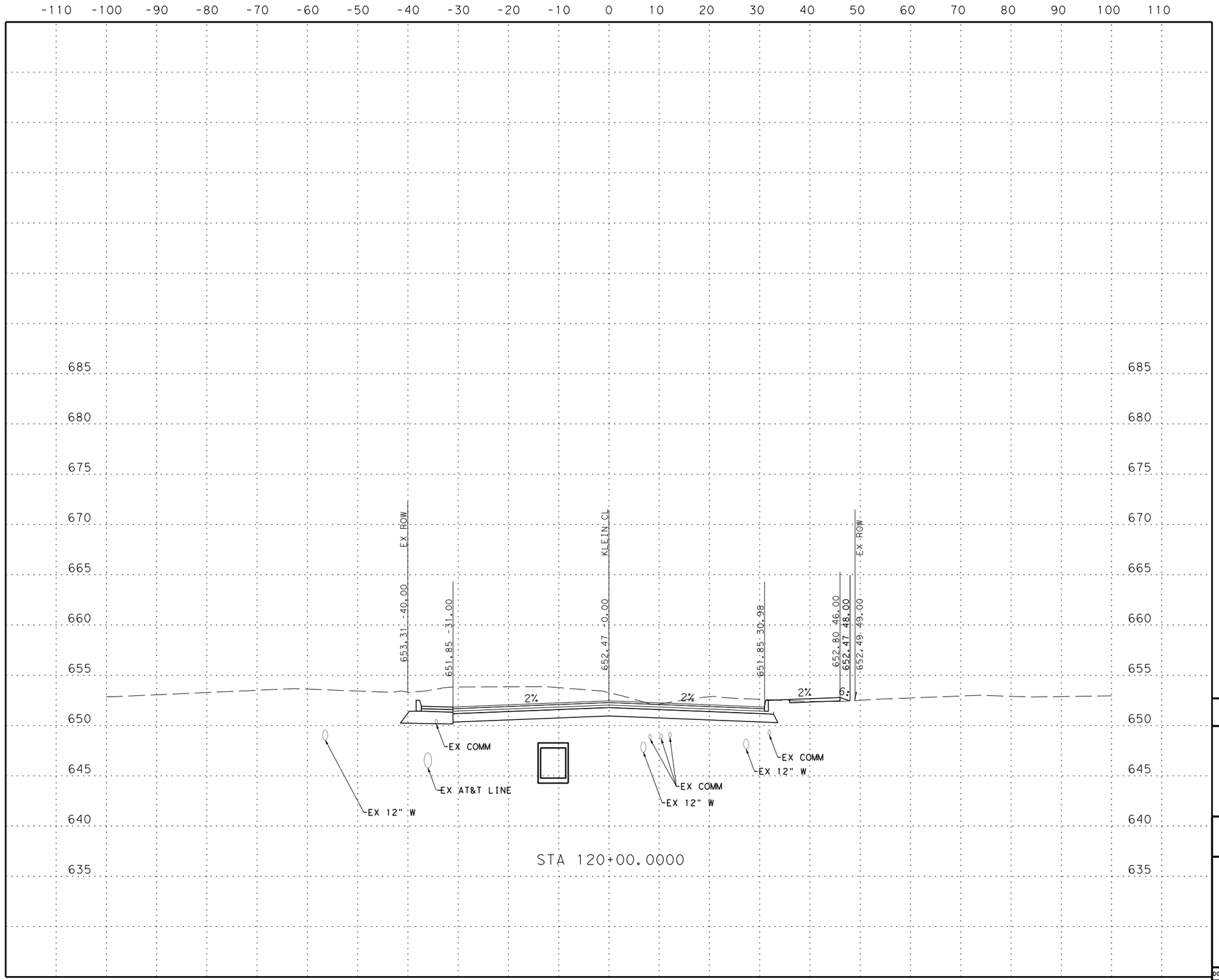

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 120+00.0000 TO STA 120+00.0000

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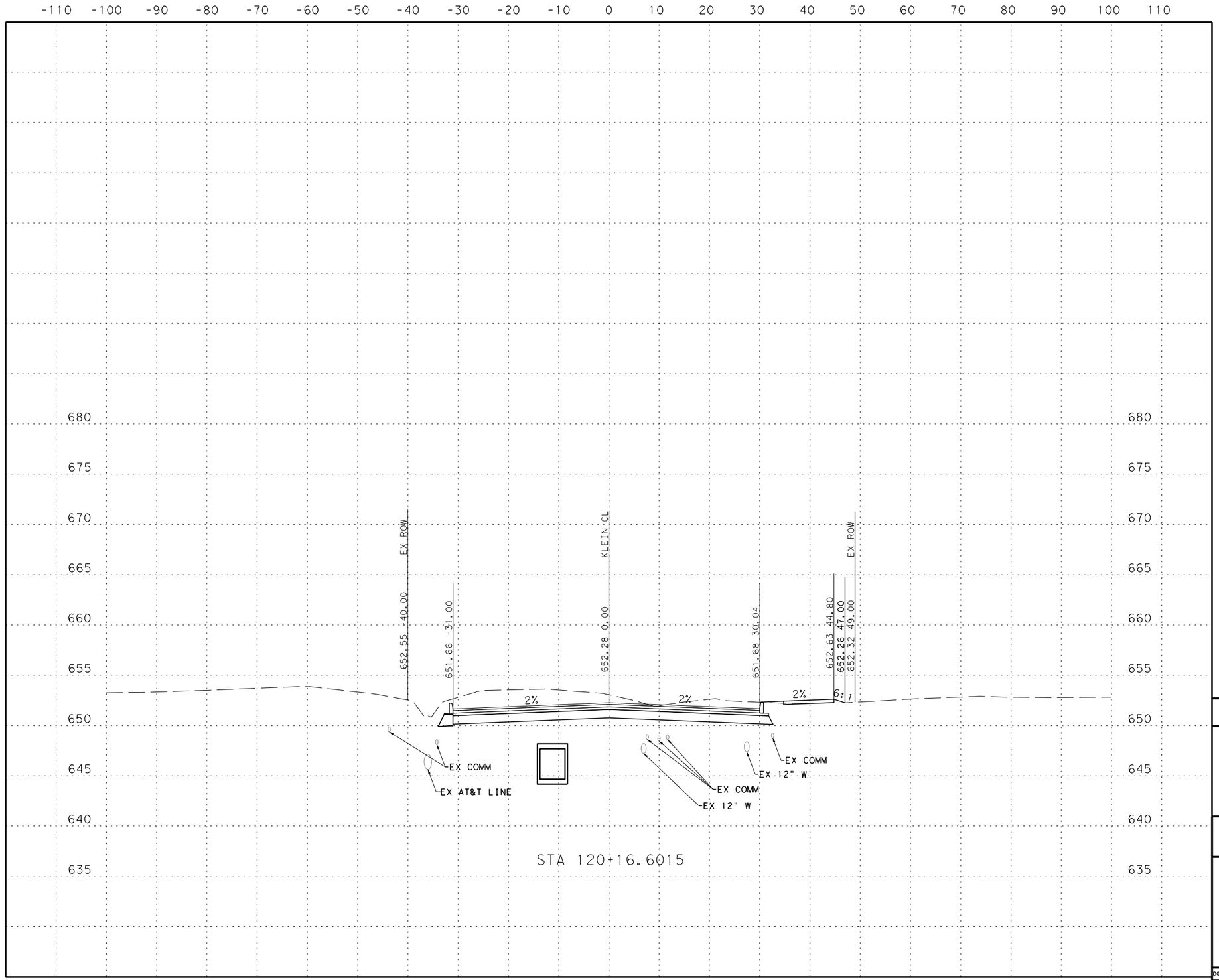

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 120+16.6015 TO STA 120+16.6015

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

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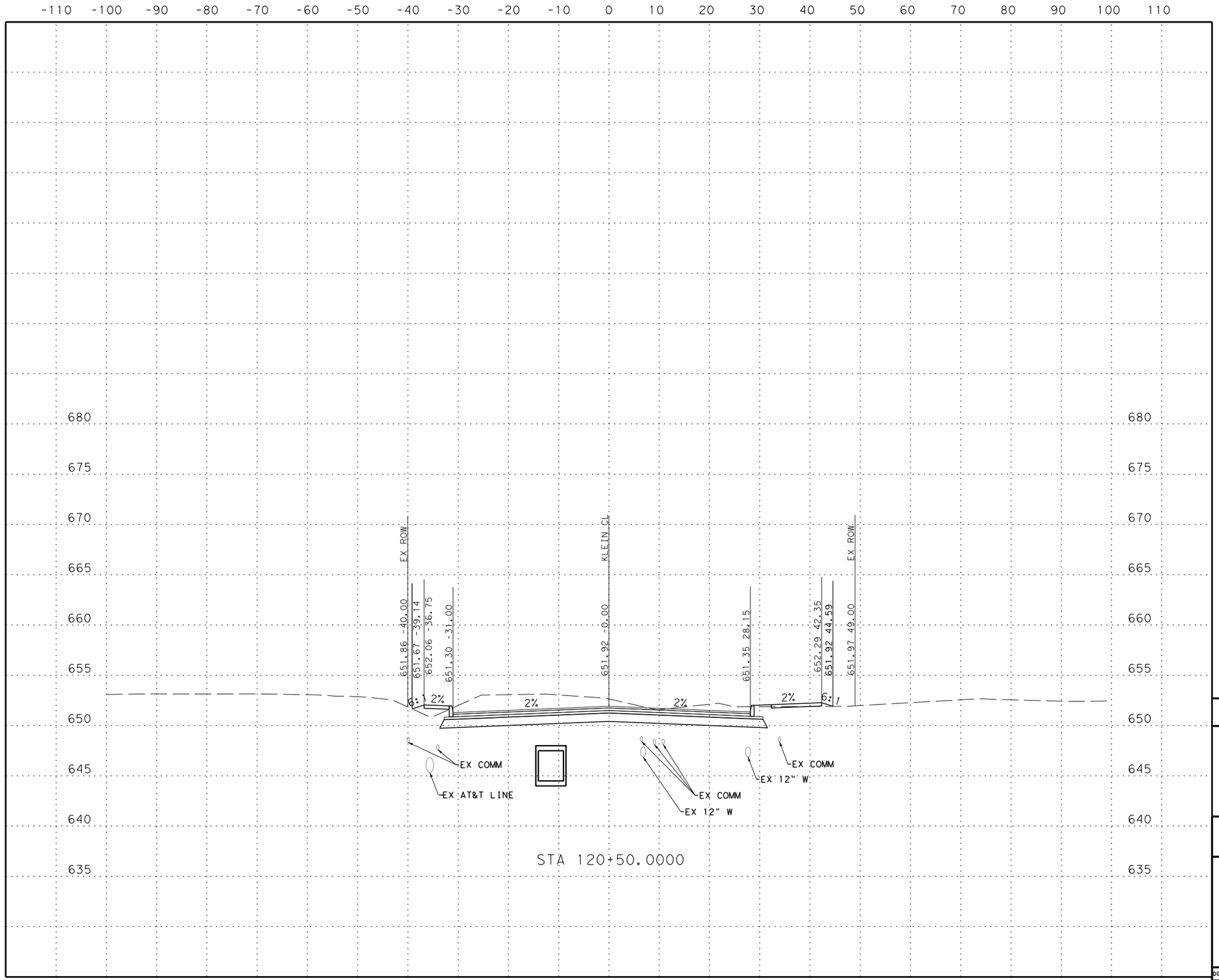

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

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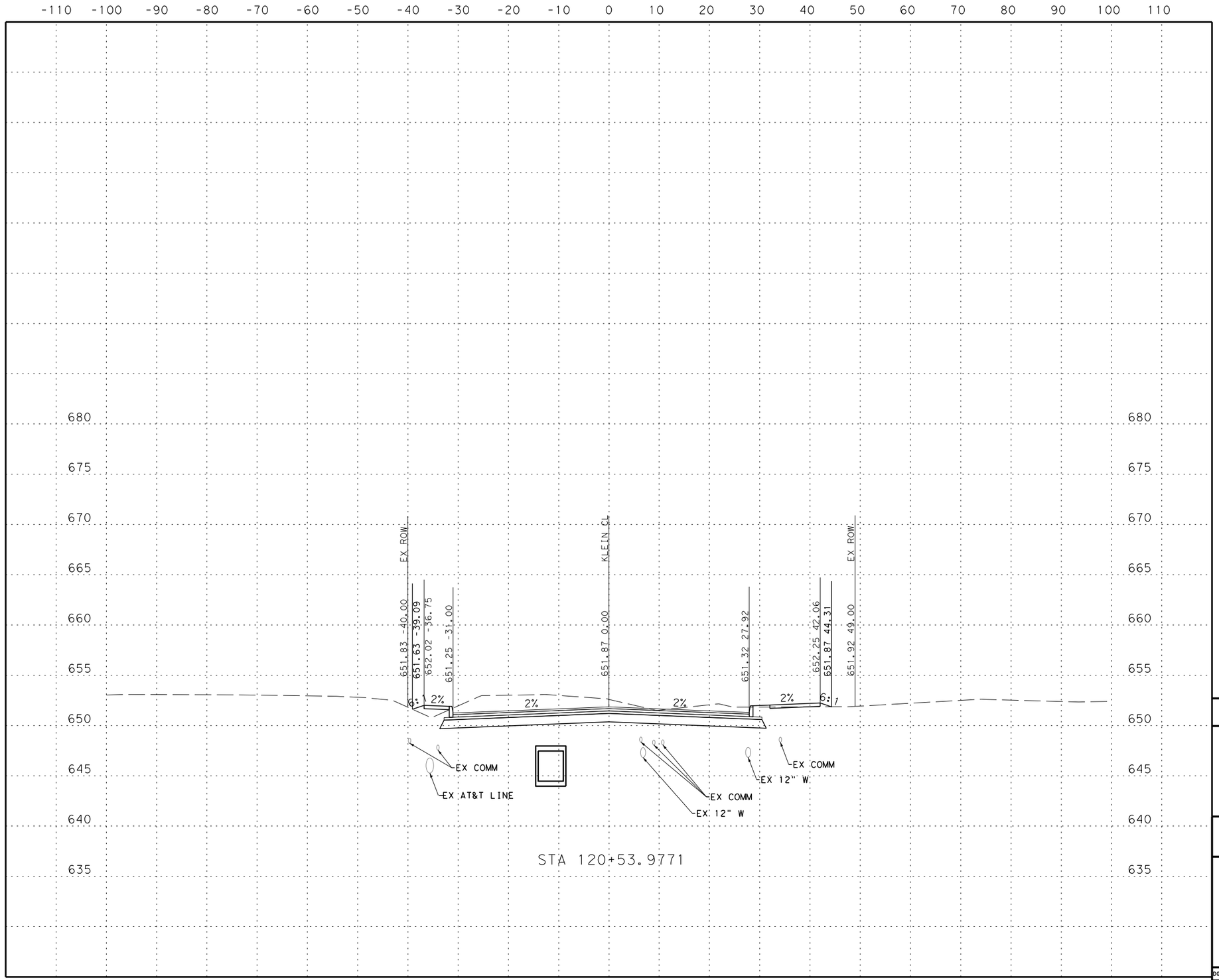

NOTES

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2. EXIST UTILITIES SHOWN FROM BEST AVAILABLE INFORMATION AT ASSUMED 3' BELOW EXIST GROUND, CONTRACTOR SHALL CONFIRM ALL UTILITY LOCATIONS AND DEPTHS PRIOR TO EXCAVATION

SCALE: H: 1"= 20'
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PAPE-DAWSON ENGINEERS

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TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 120+53.9771 TO STA 120+53.9771

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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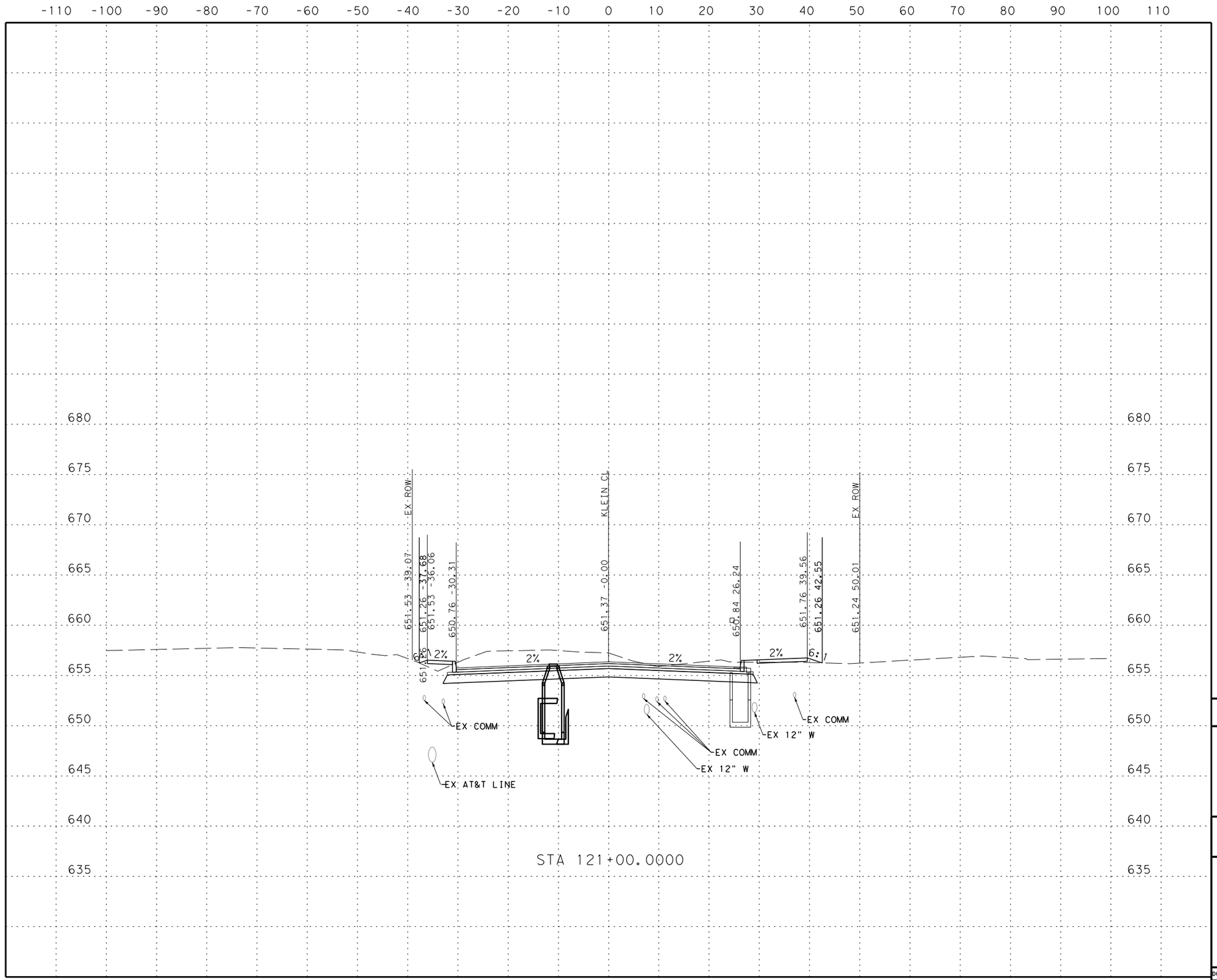

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TBPE FIRM REGISTRATION #470 I TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 121+00.0000 TO STA 121+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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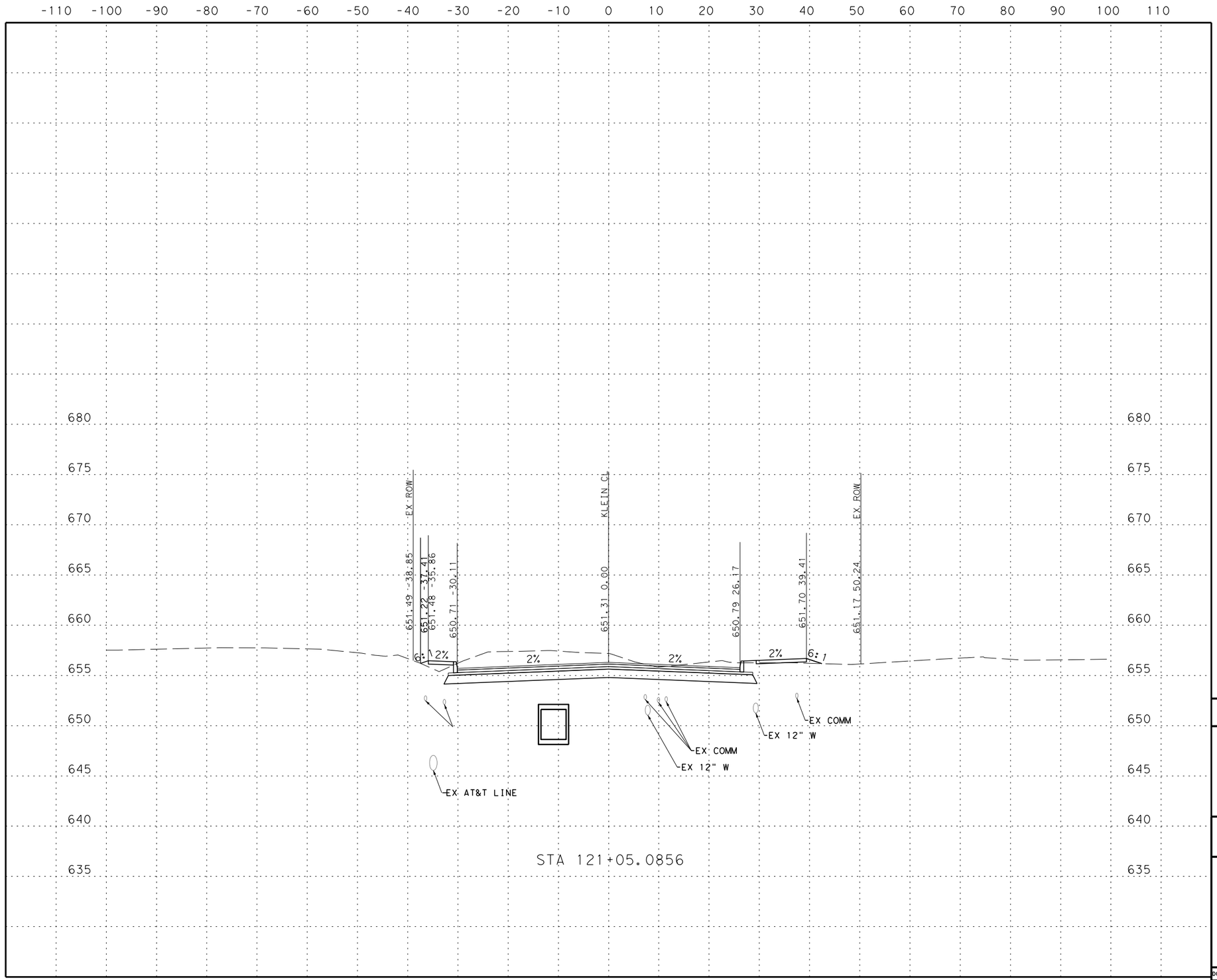

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City of New Braunfels

KLEIN RD

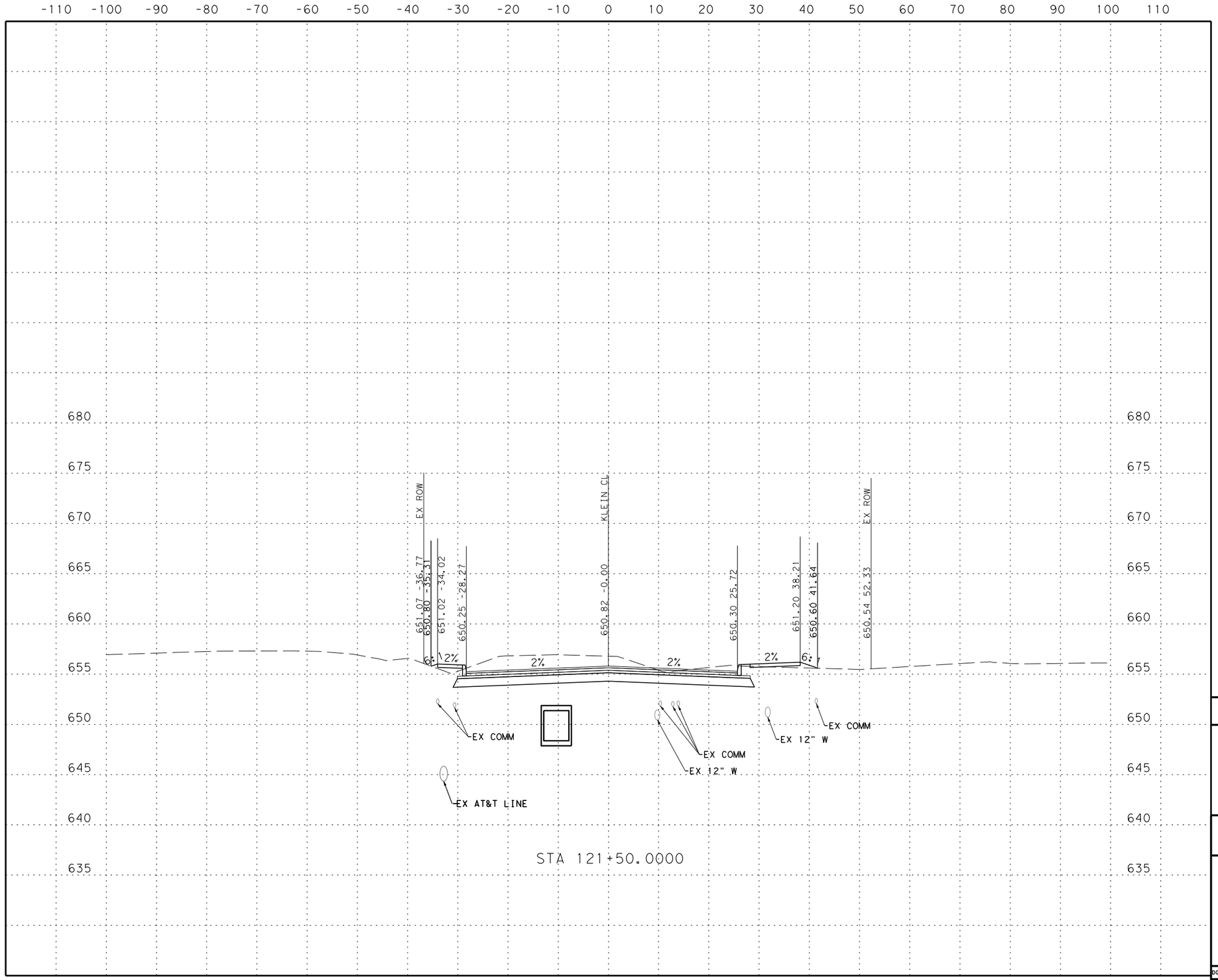
CROSS SECTIONS

STA 121+05.0856 TO STA 121+05.0856

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

Design Filename: ...\5103003_Klein_XSections_Final.dgn



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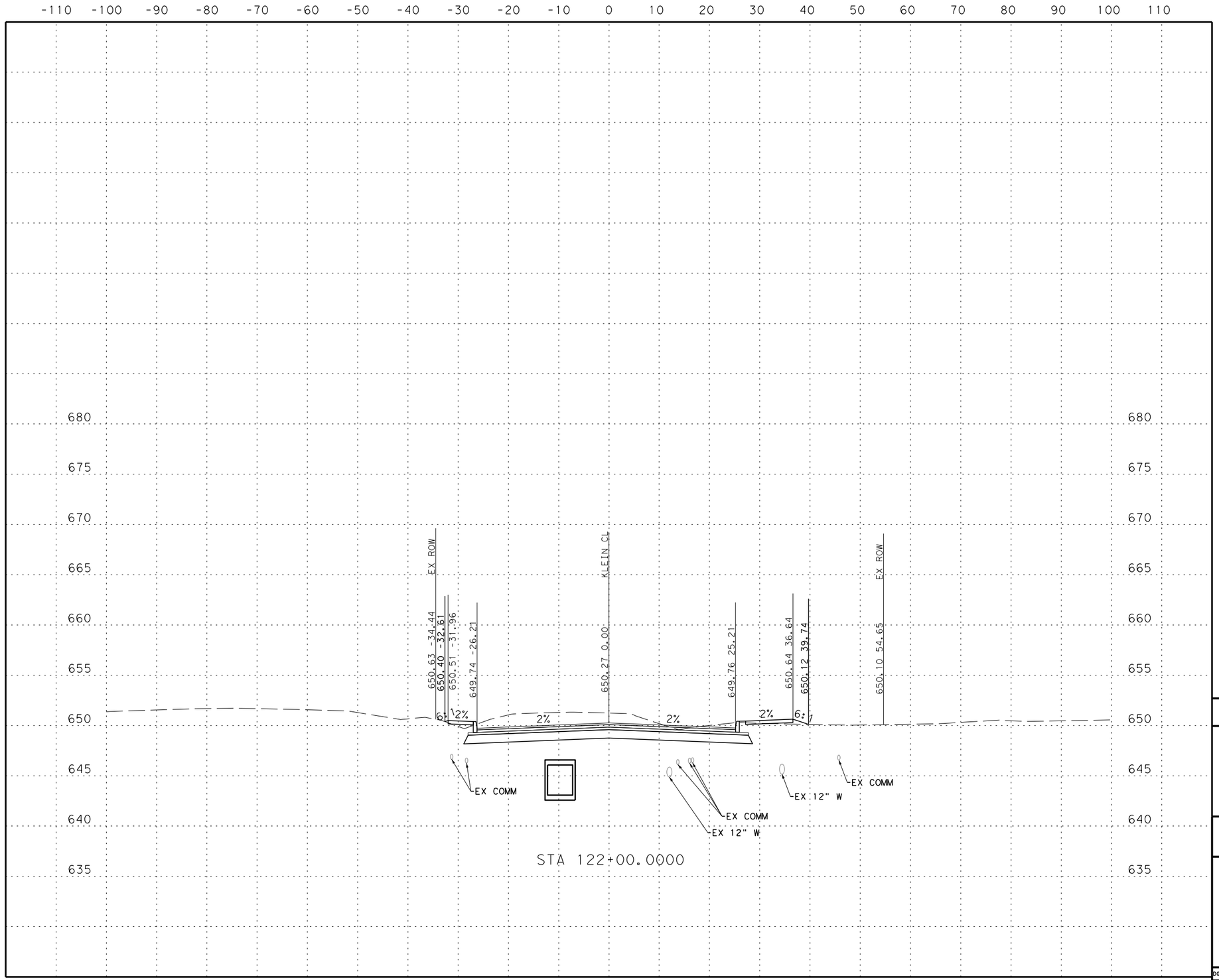
City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 121+50.0000 TO STA 121+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	



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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 122+00.0000 TO STA 122+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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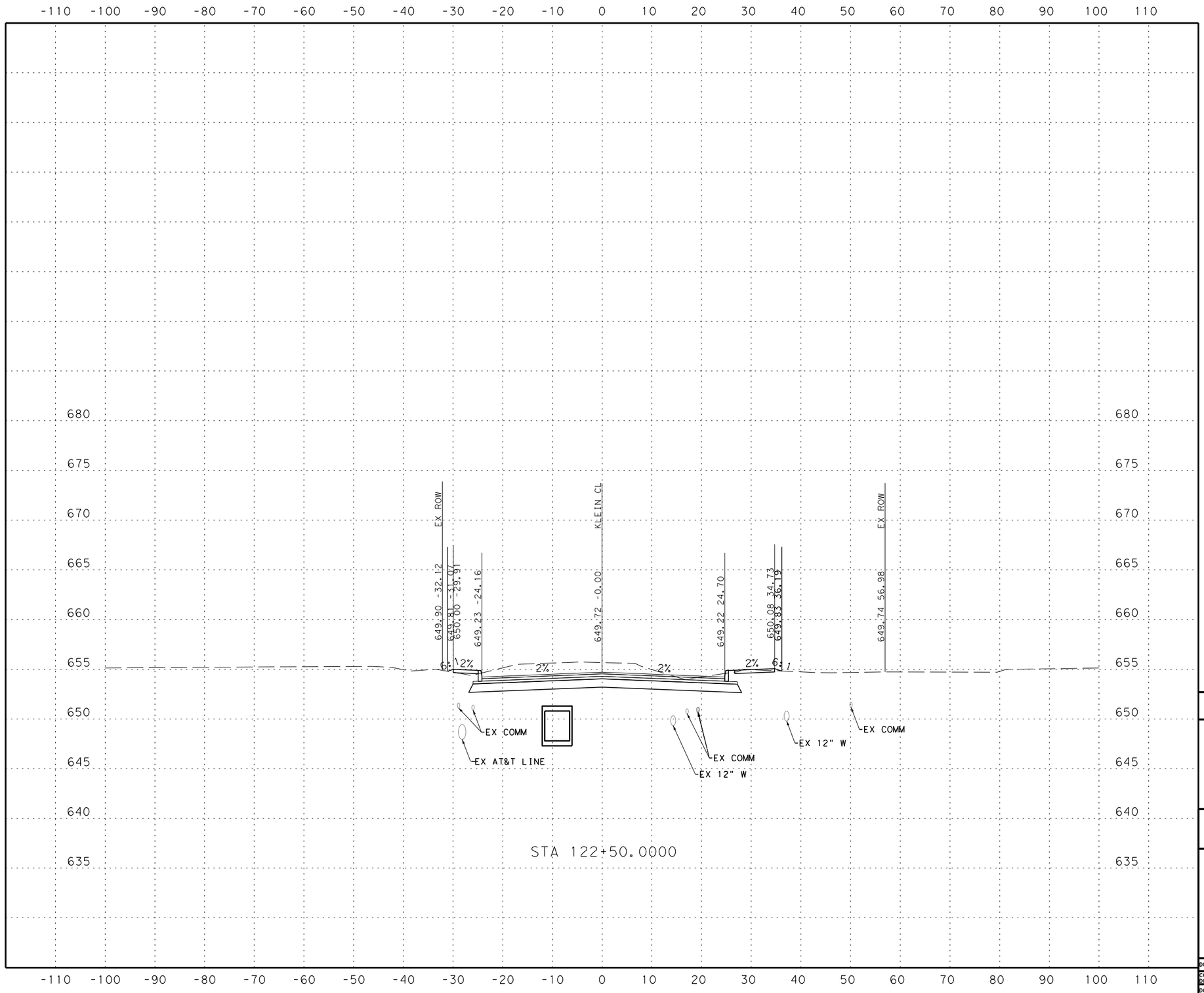

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 122+50.0000 TO STA 122+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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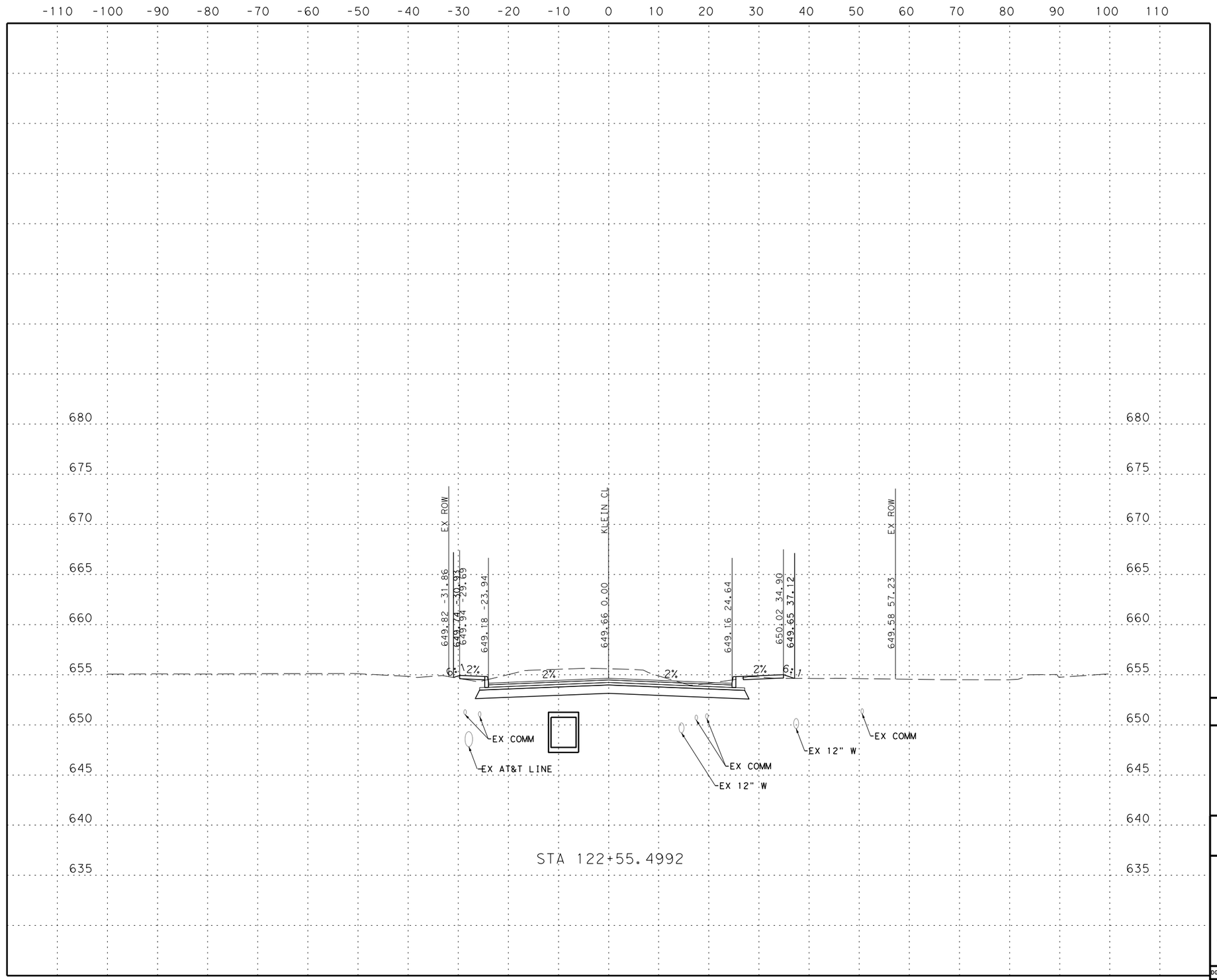

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 122+55.4992 TO STA 122+55.4992

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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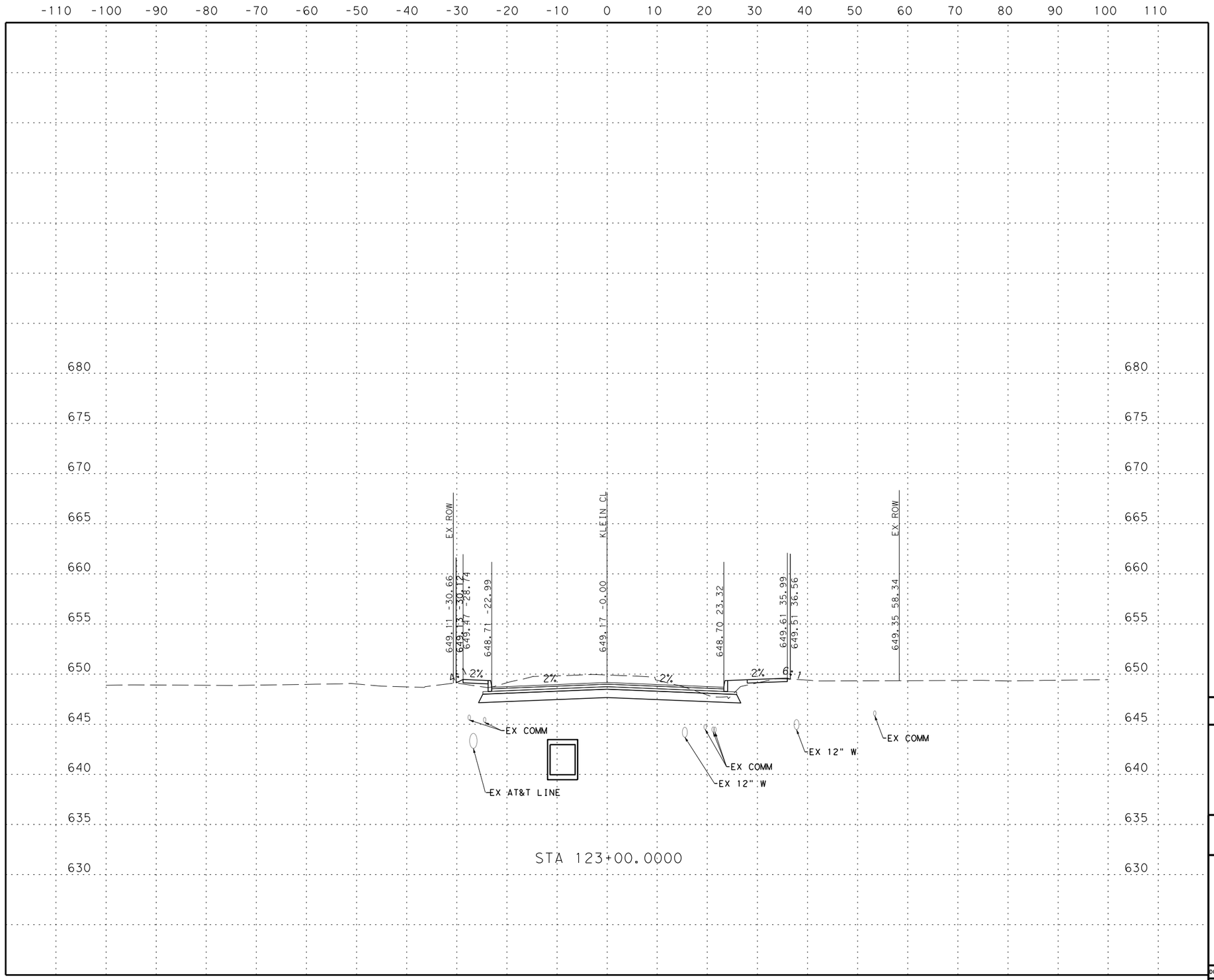

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 123+00.0000 TO STA 123+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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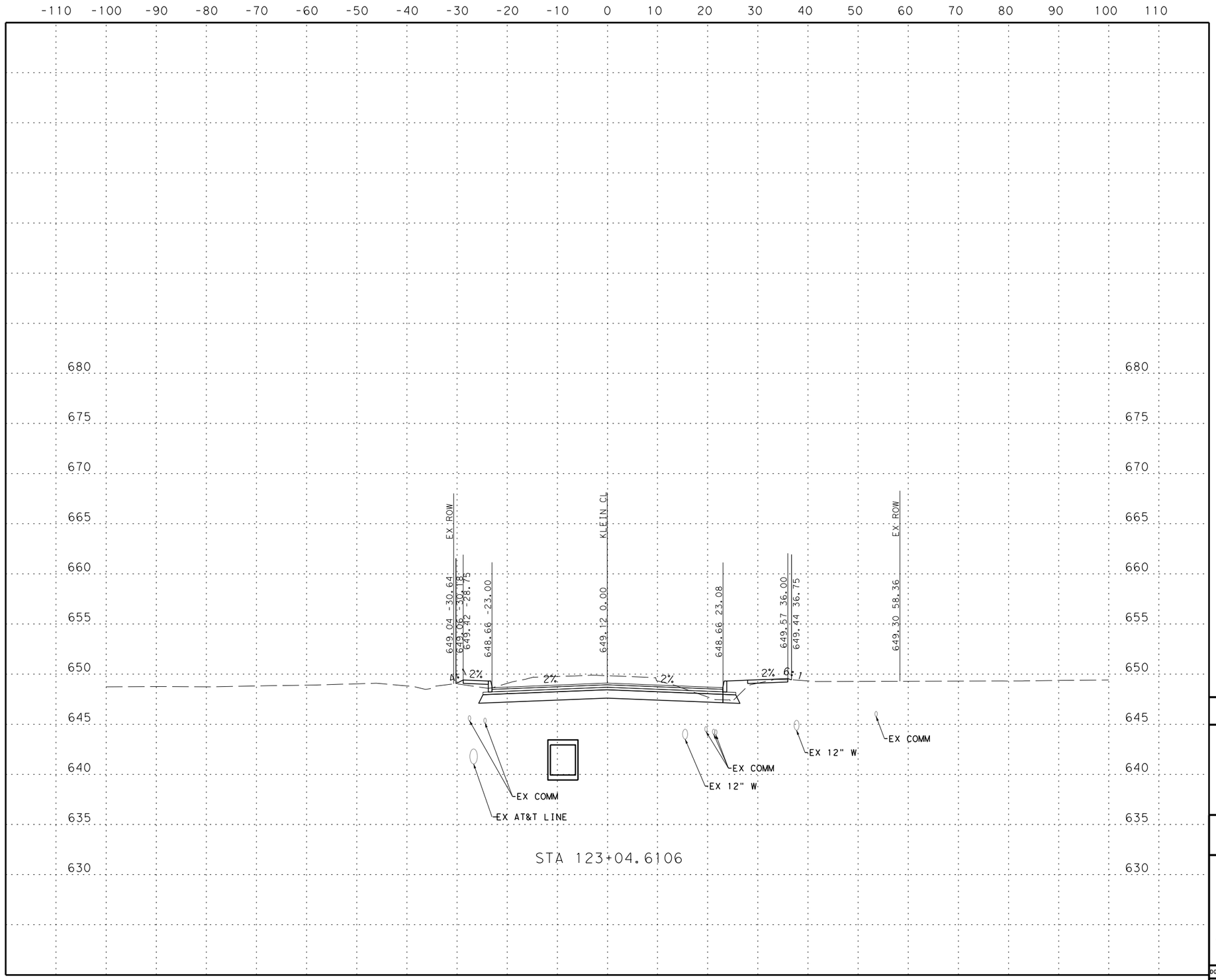

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 123+04.6106 TO STA 123+04.6106

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 123+05.4719 TO STA 123+05.4719

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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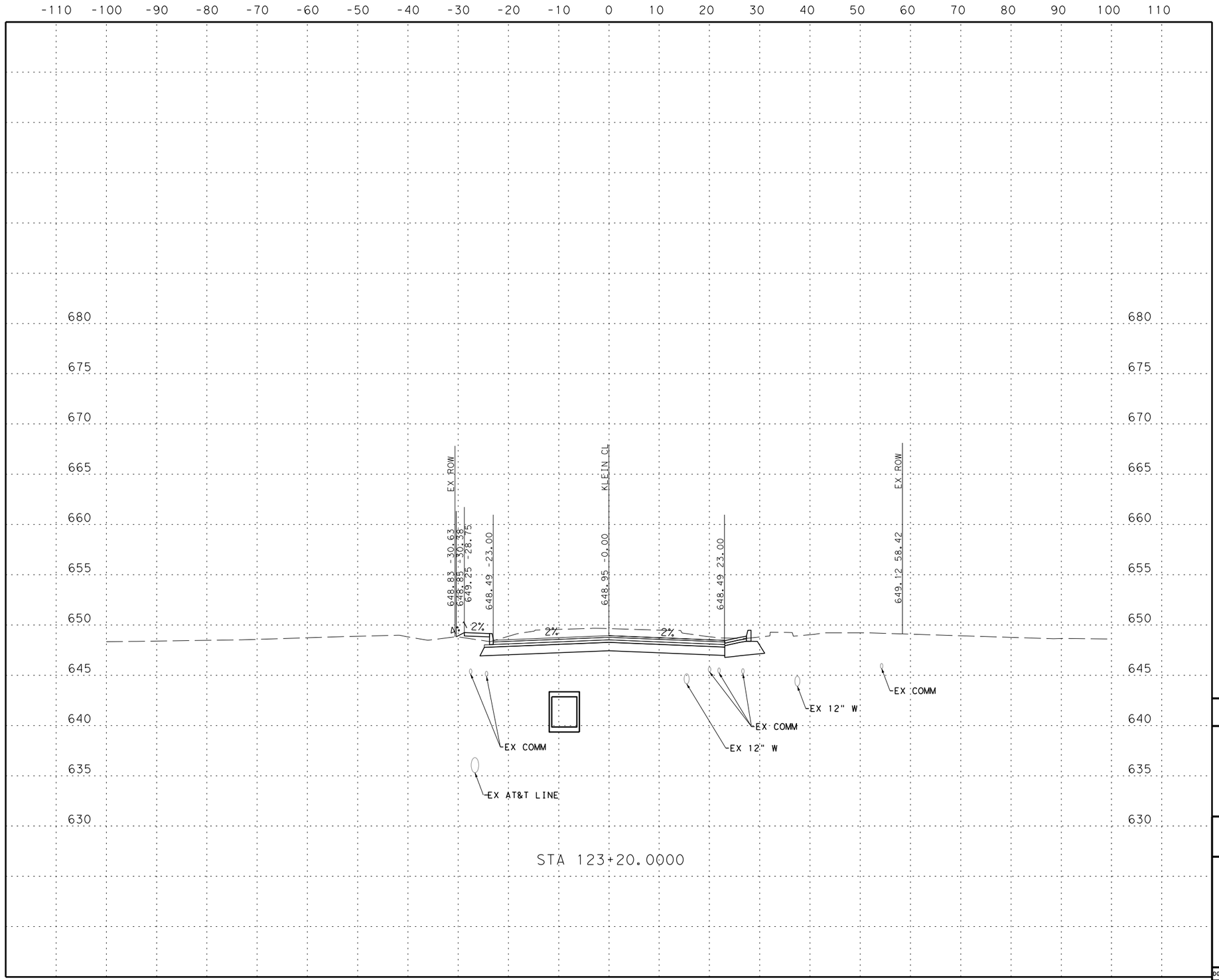

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 123+20.0000 TO STA 123+20.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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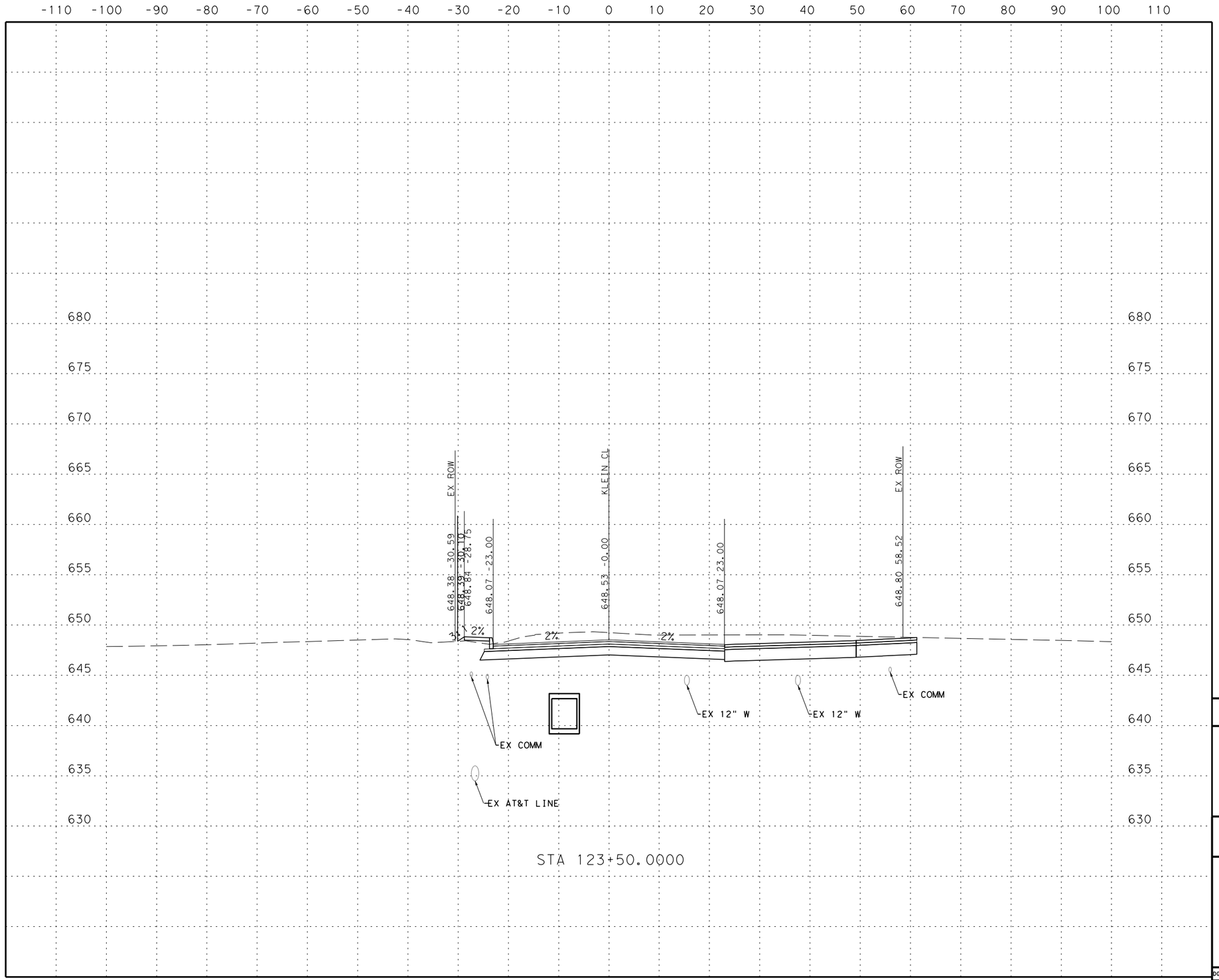

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 123+50.0000 TO STA 123+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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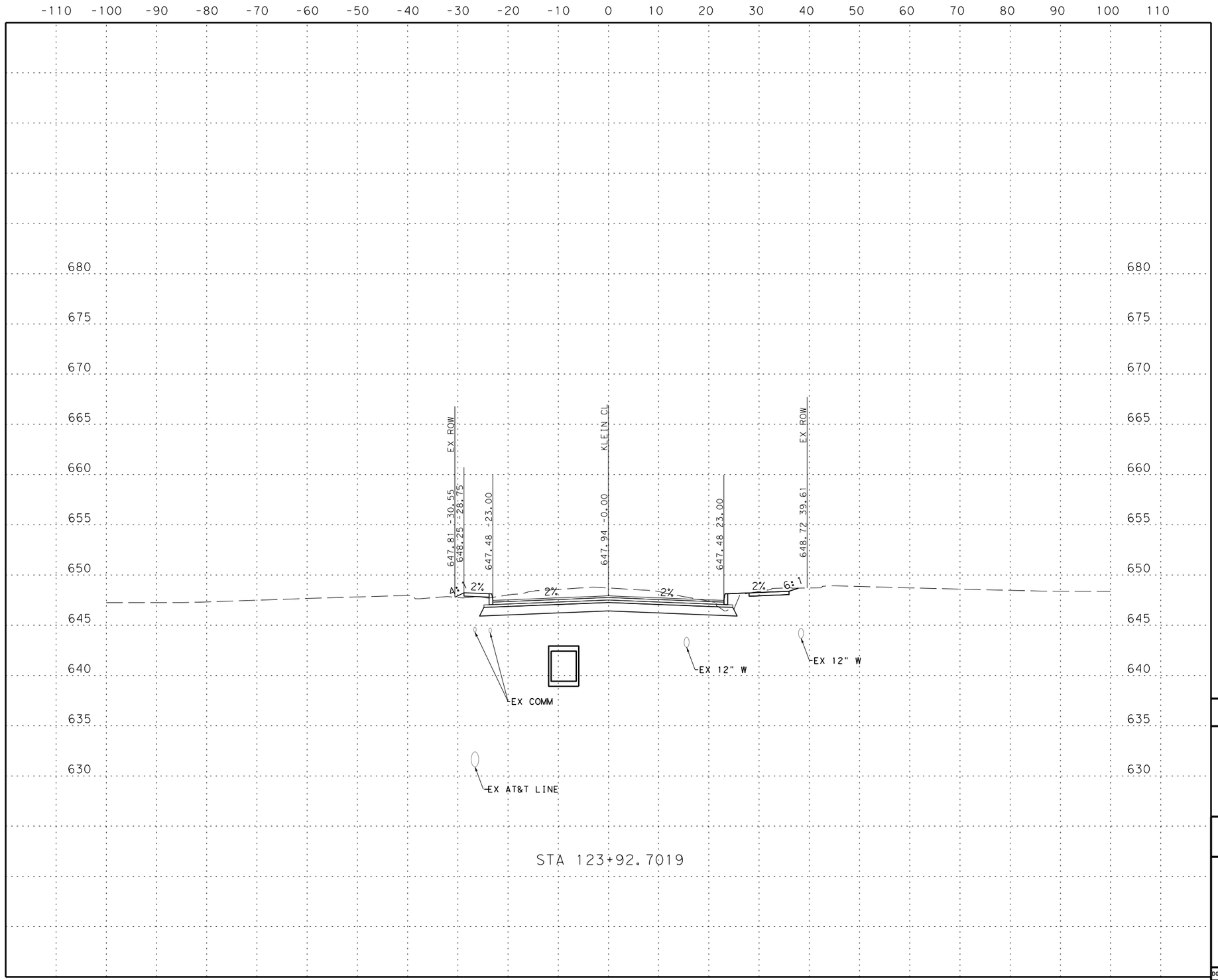

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PAPE-DAWSON ENGINEERS

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 123+92.7019 TO STA 123+92.7019

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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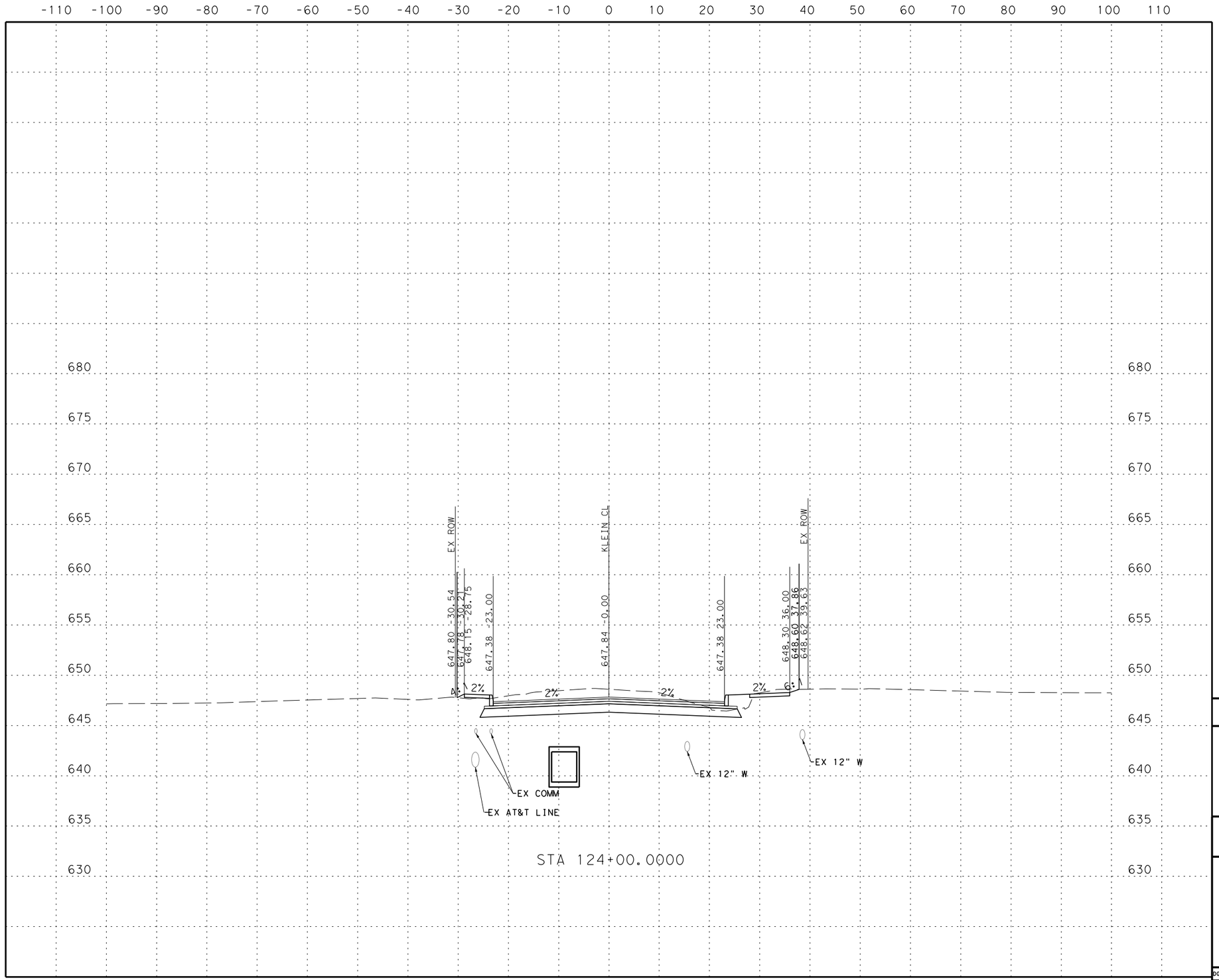

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 124+00.0000 TO STA 124+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

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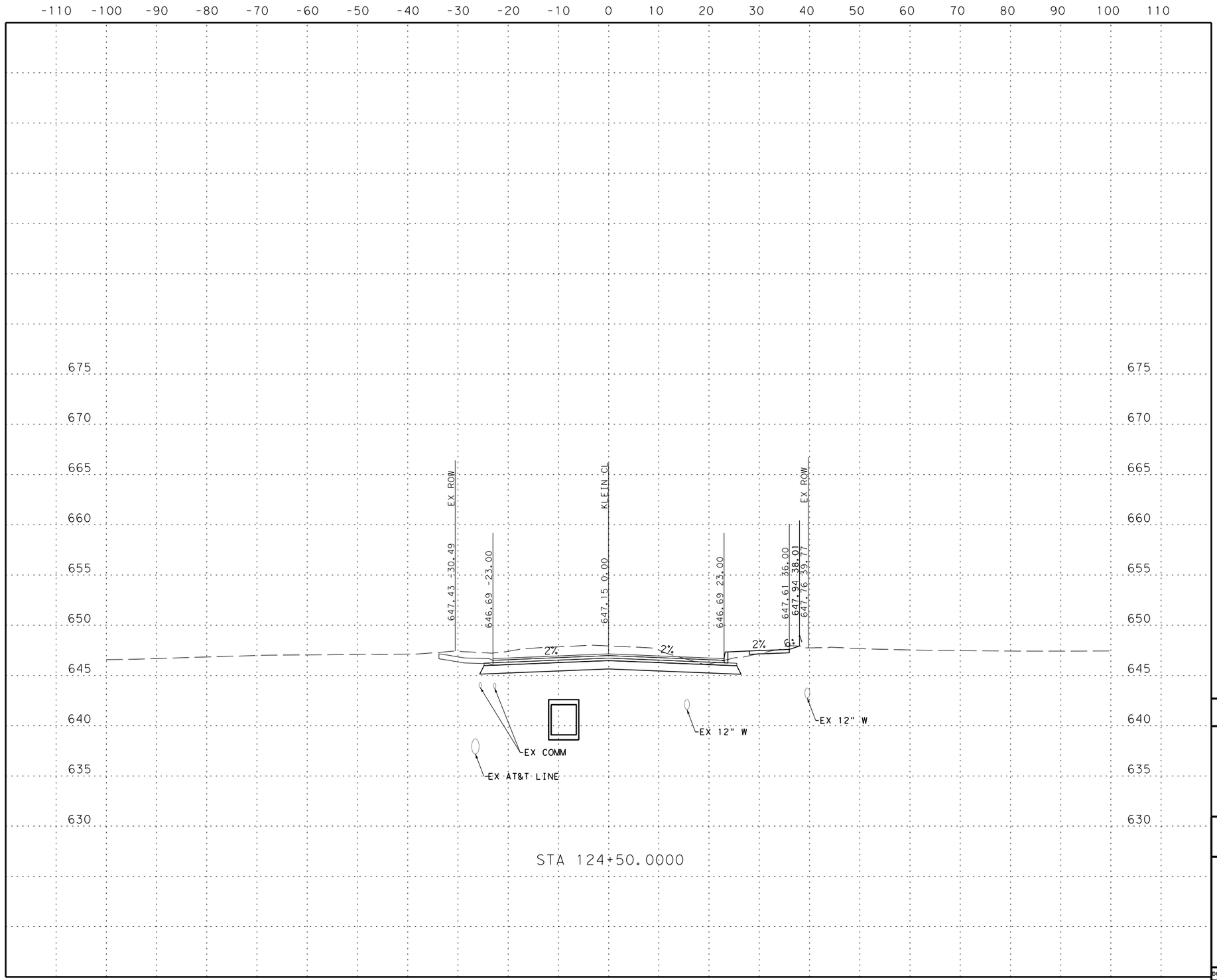

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 124+50.0000 TO STA 124+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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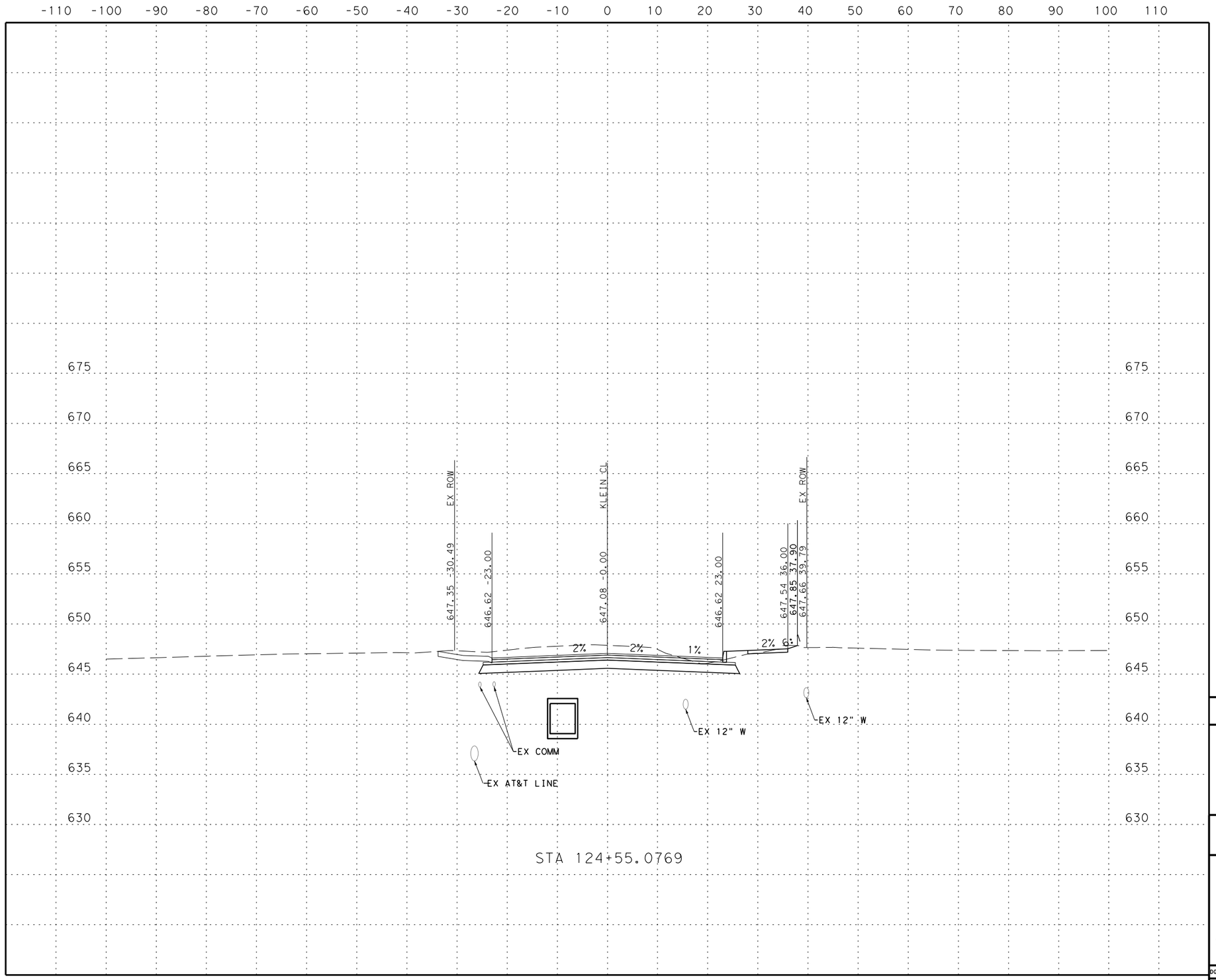

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 124+55.0769 TO STA 124+55.0769

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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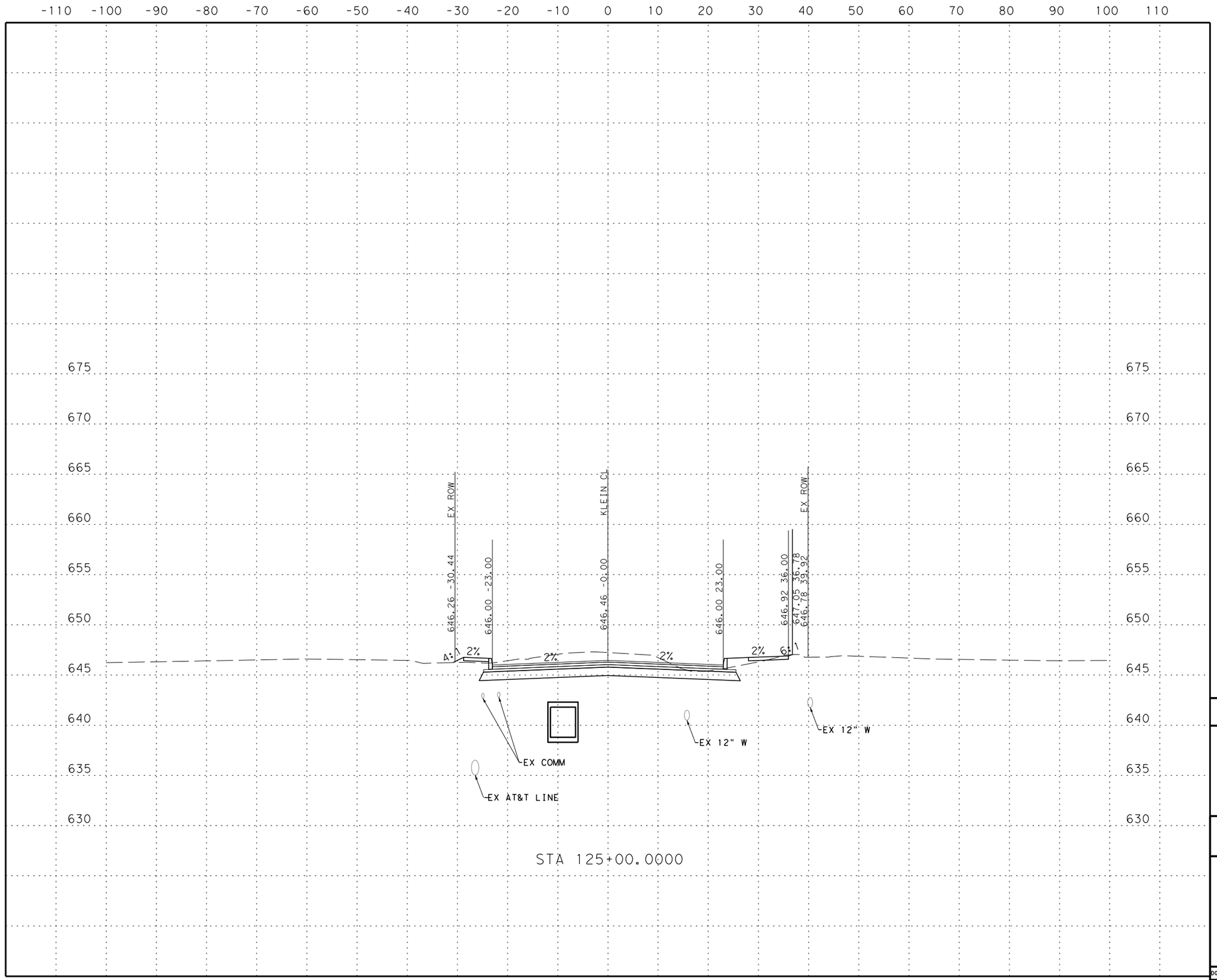

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TBPE FIRM REGISTRATION #470 I TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 125+00.0000 TO STA 125+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

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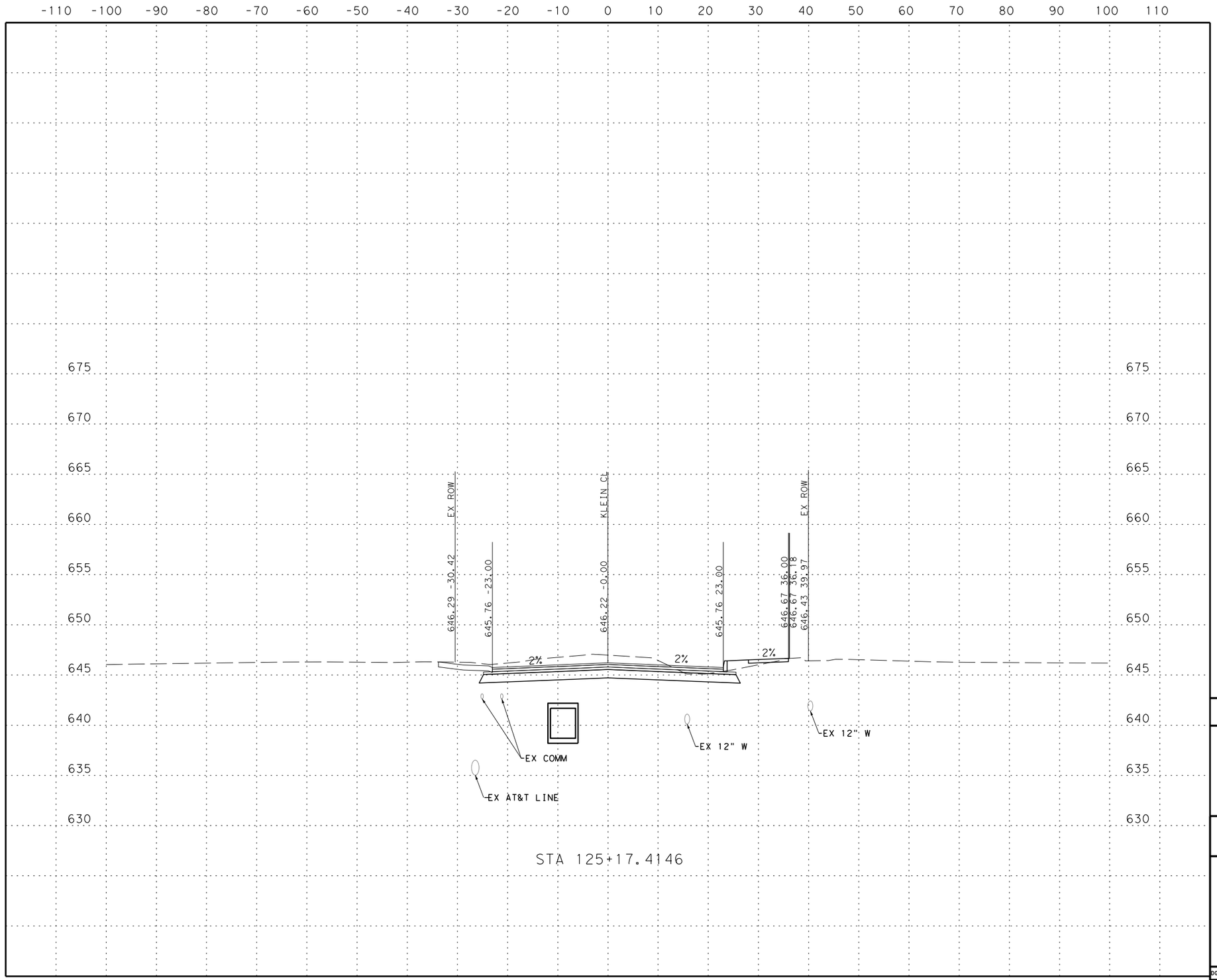

STA 125+17.4146

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PAPE-DAWSON ENGINEERS

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2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

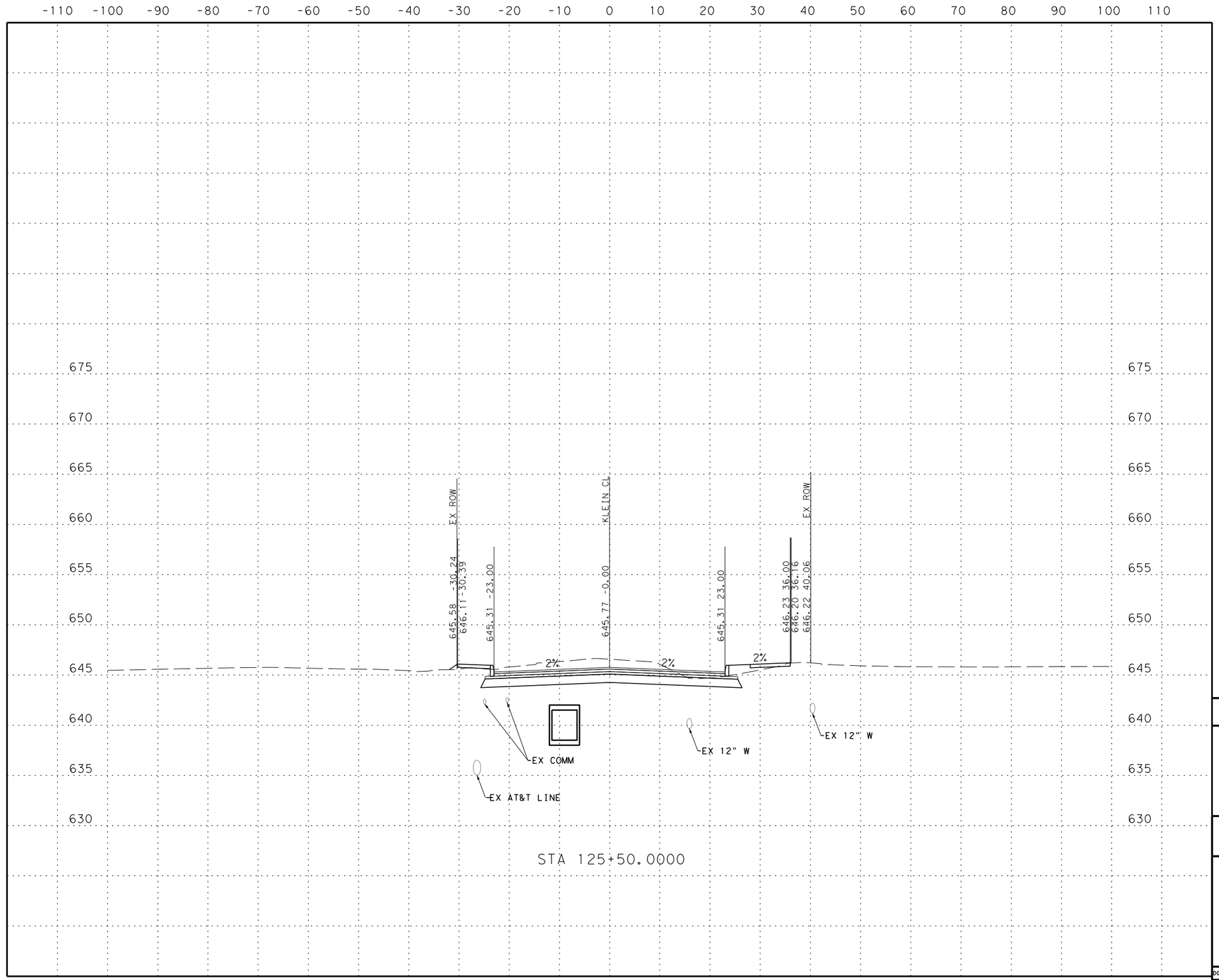
City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 125+17.4146 TO STA 125+17.4146

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	



NOTES

1. BRIDGE GIRDERS NOT SHOWN FOR CLARITY
2. EXIST UTILITIES SHOWN FROM BEST AVAILABLE INFORMATION AT ASSUMED 3' BELOW EXIST GROUND, CONTRACTOR SHALL CONFIRM ALL UTILITY LOCATIONS AND DEPTHS PRIOR TO EXCAVATION

SCALE: H: 1"= 20'
V: 1"= 10'

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 125+50.0000 TO STA 125+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

Design Filename: ...\5103003_Klein_XSections_Final.dgn

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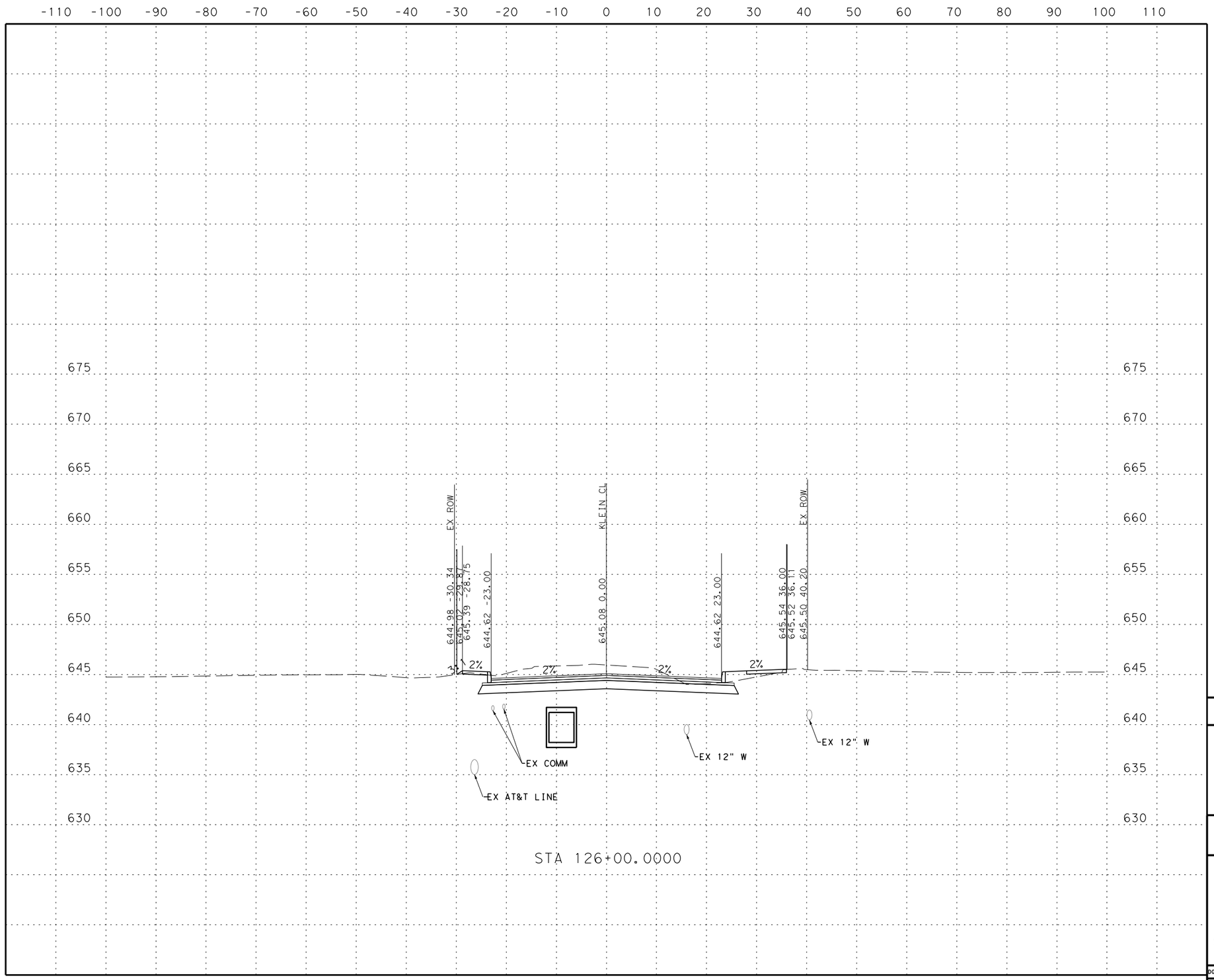

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TBPE FIRM REGISTRATION #470 I TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 126+00.0000 TO STA 126+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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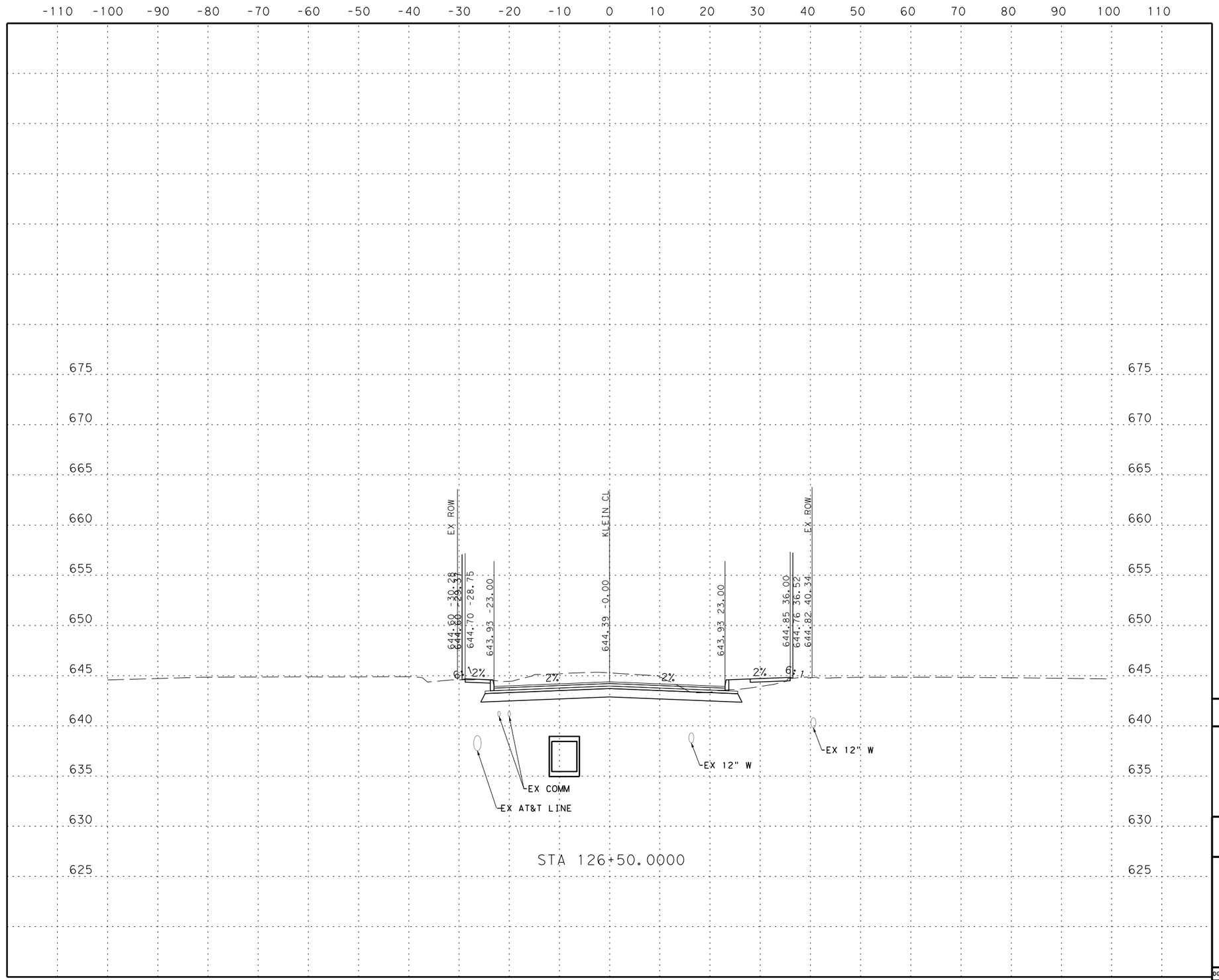

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 126+50.0000 TO STA 126+50.0000

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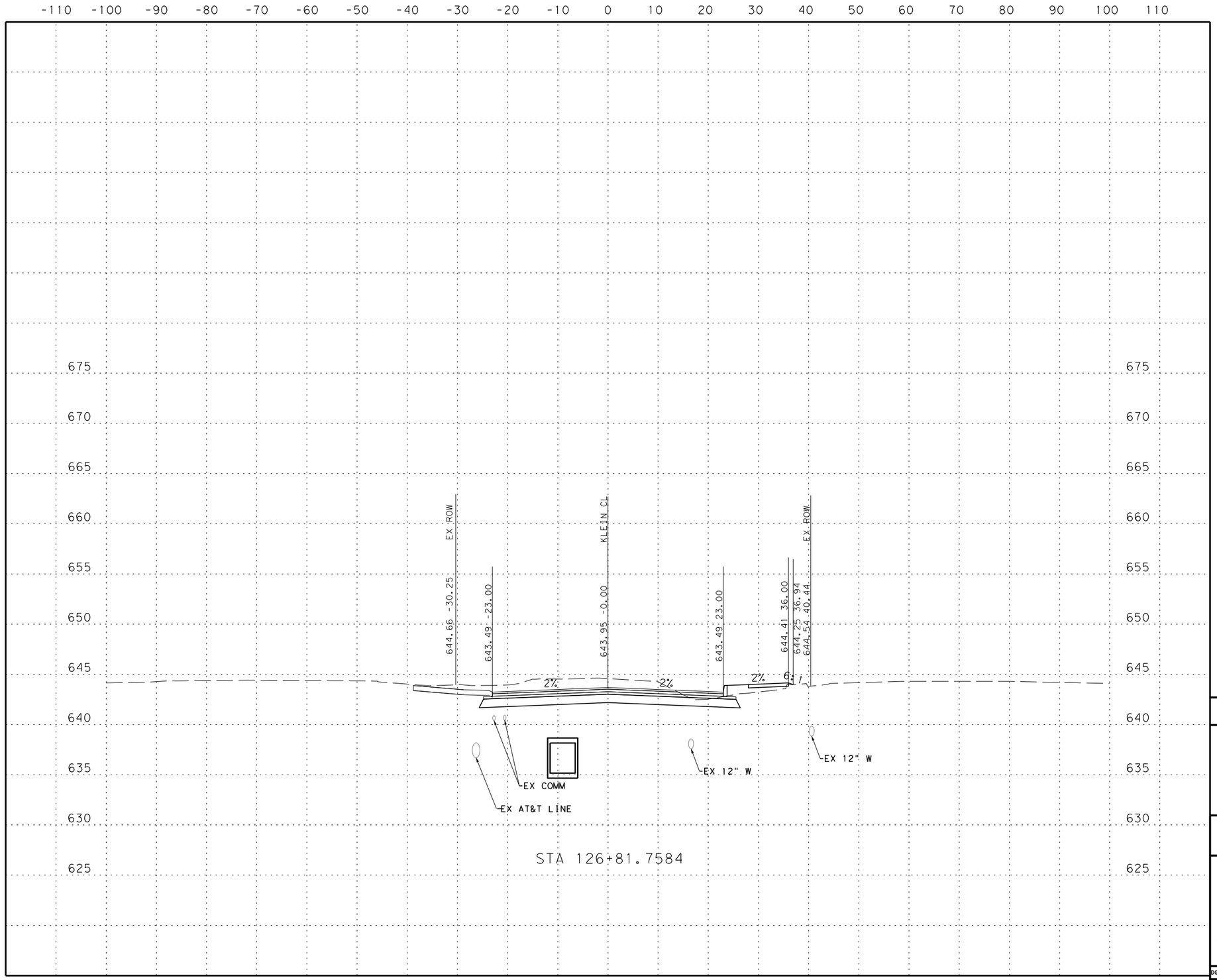

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 126+81.7584 TO STA 126+81.7584

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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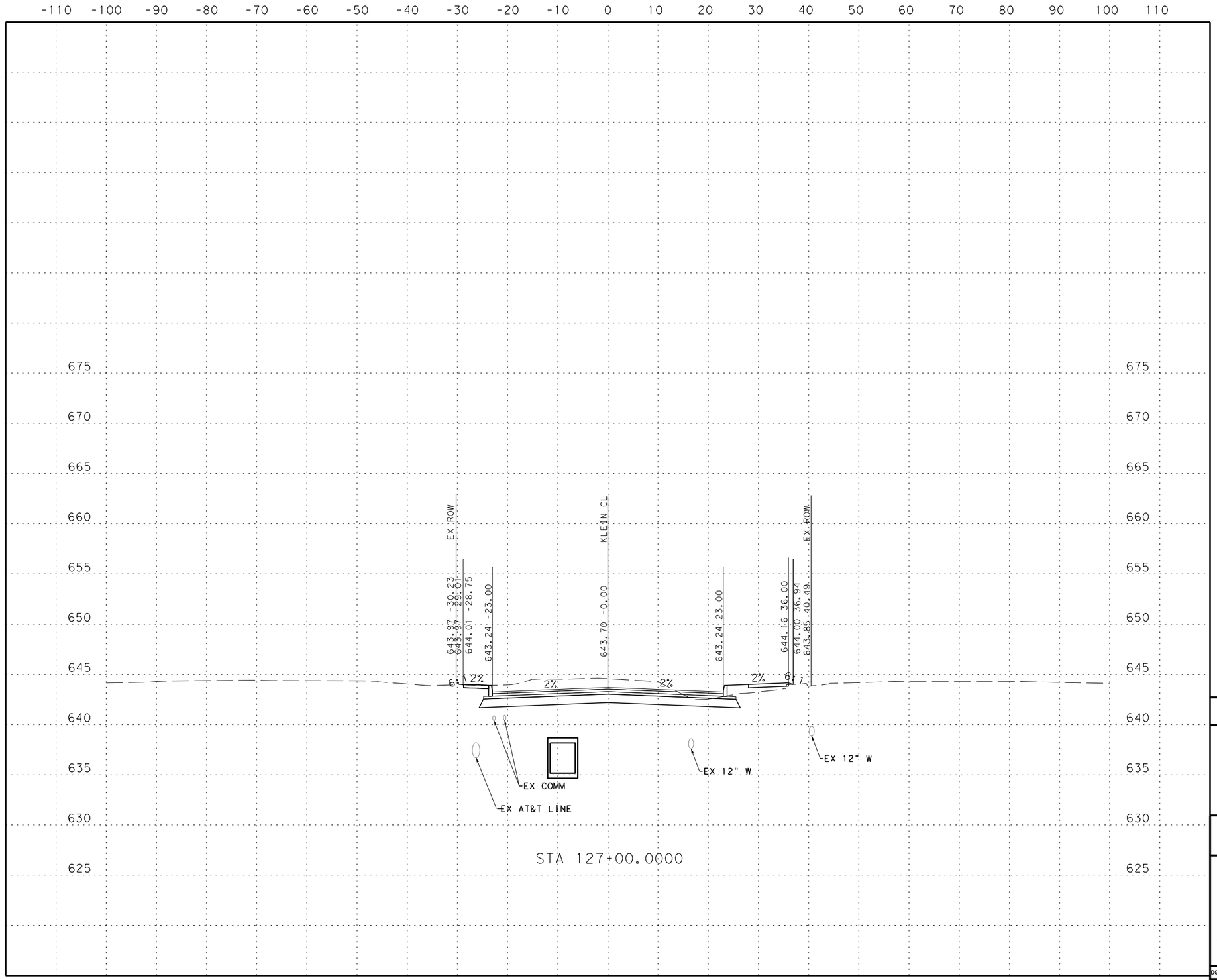

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 127+00.0000 TO STA 127+00.0000

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DWG:	COUNTY	CITY	SHEET NO.
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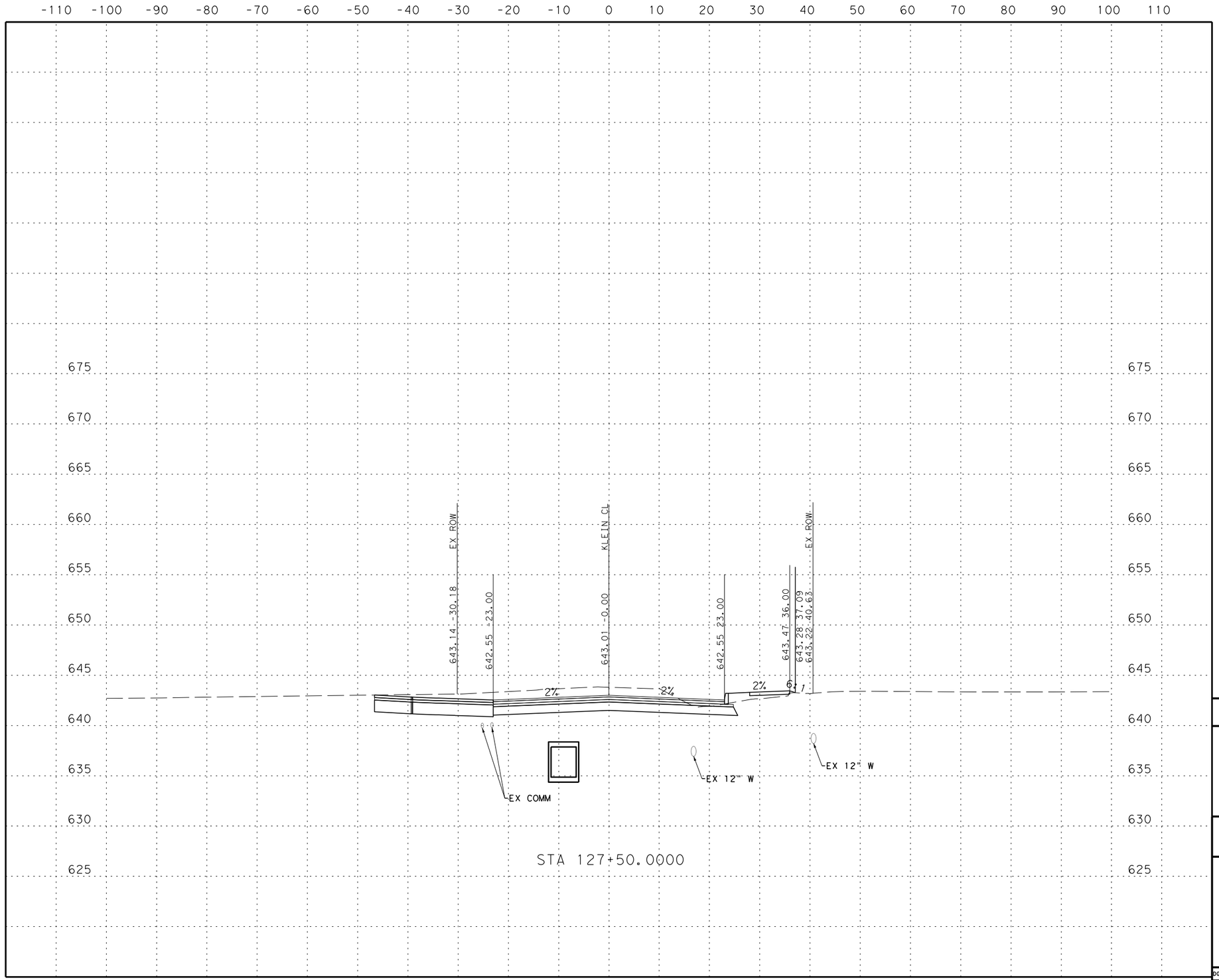

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

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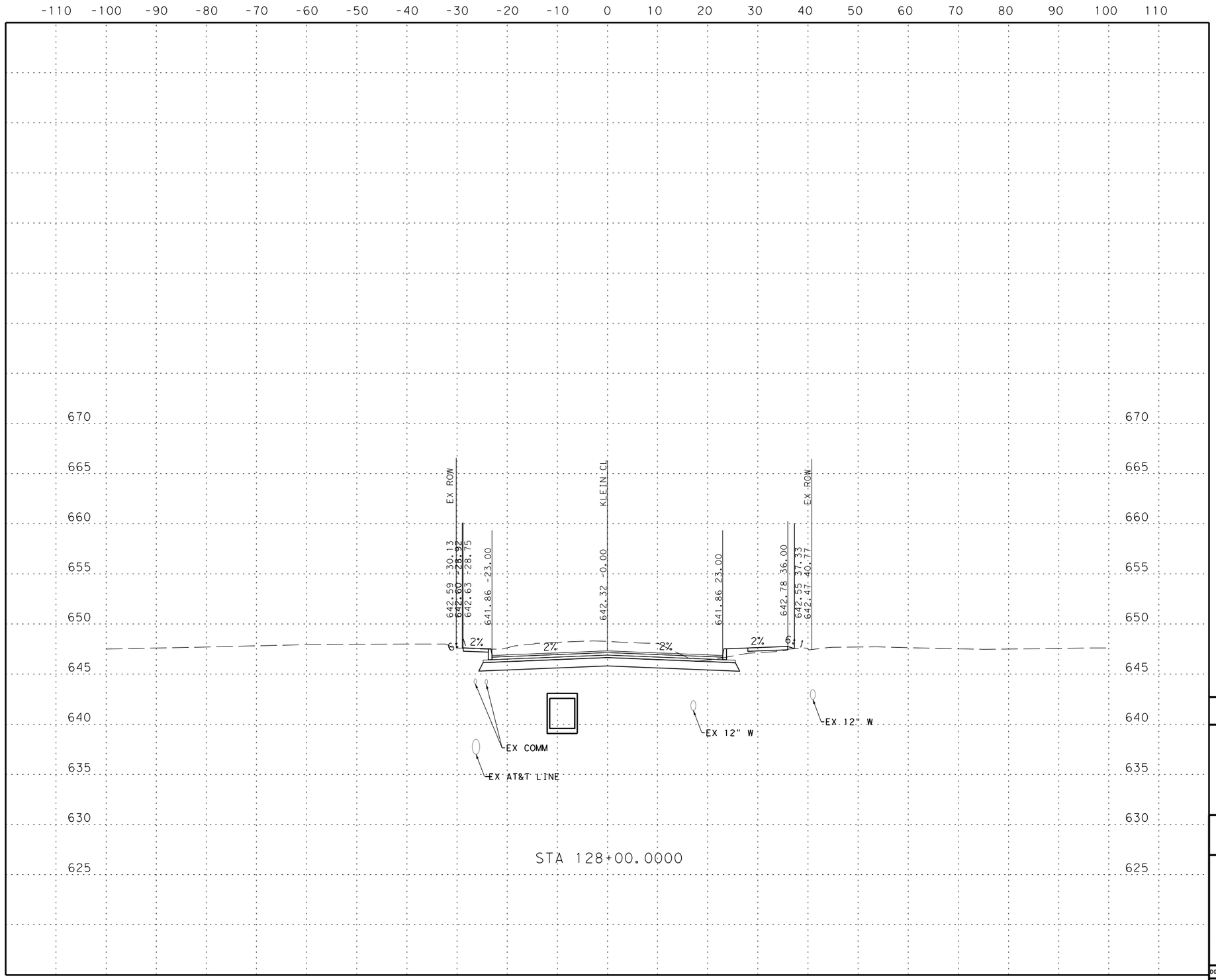

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CROSS SECTIONS

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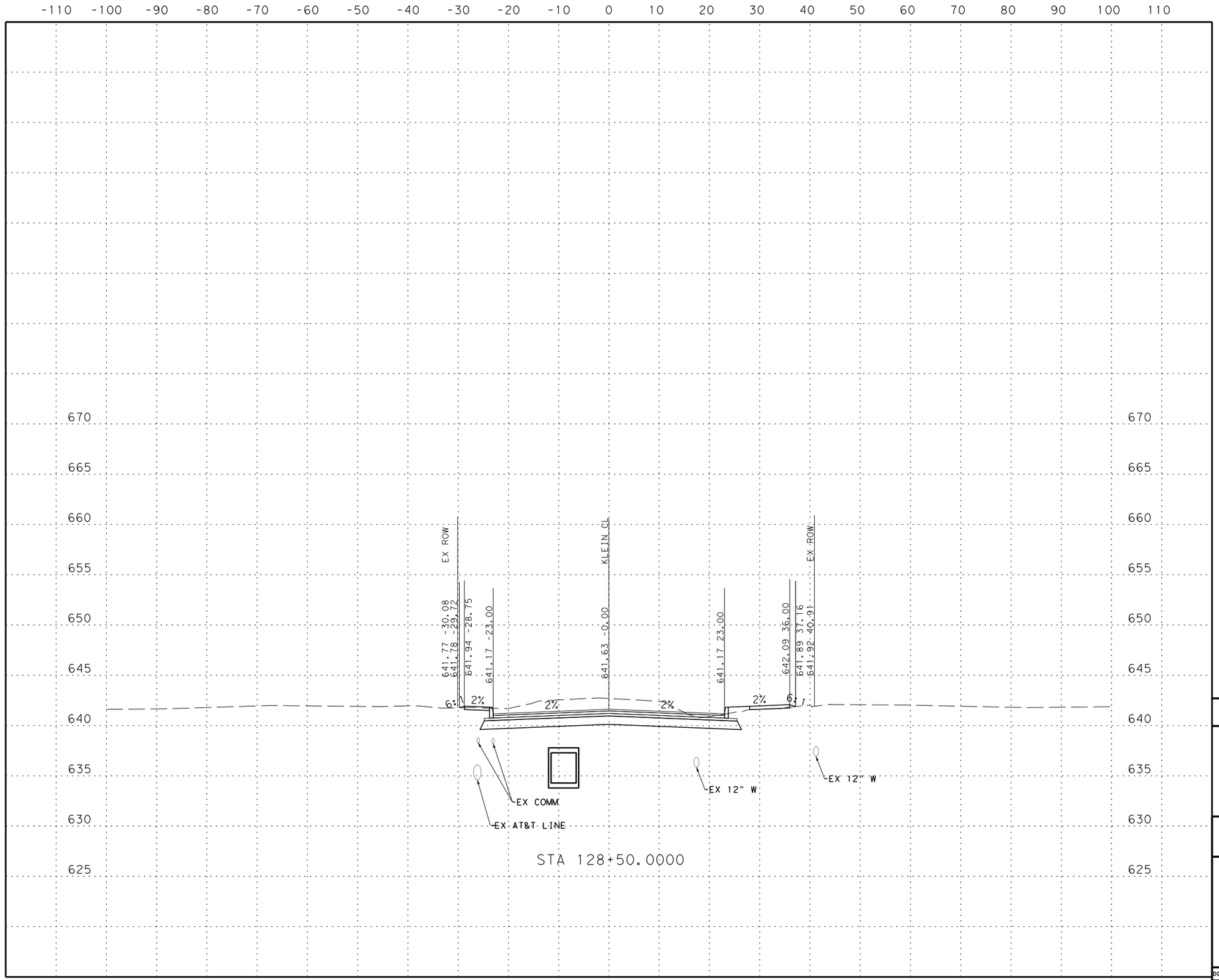

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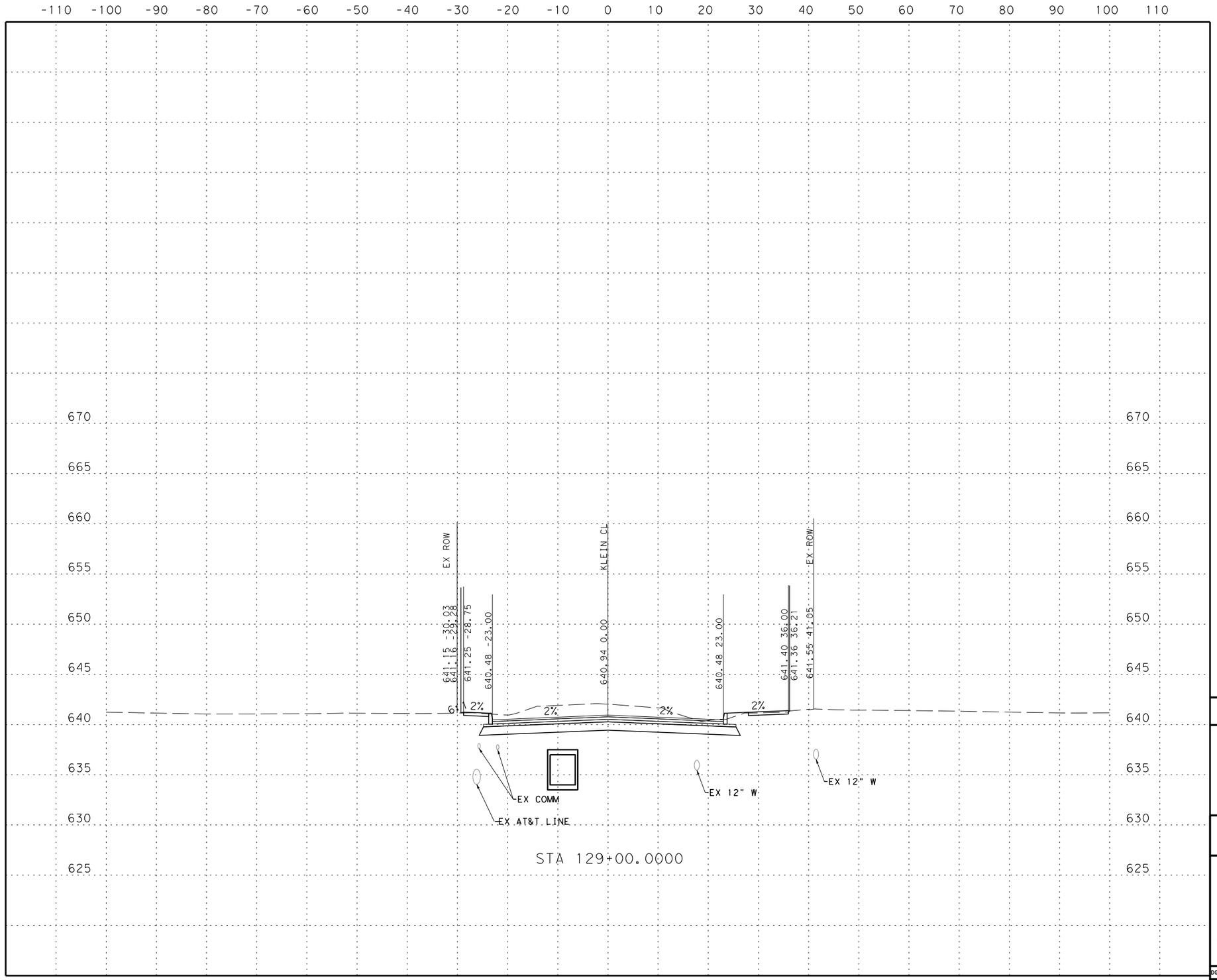

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 129+00.0000 TO STA 129+00.0000

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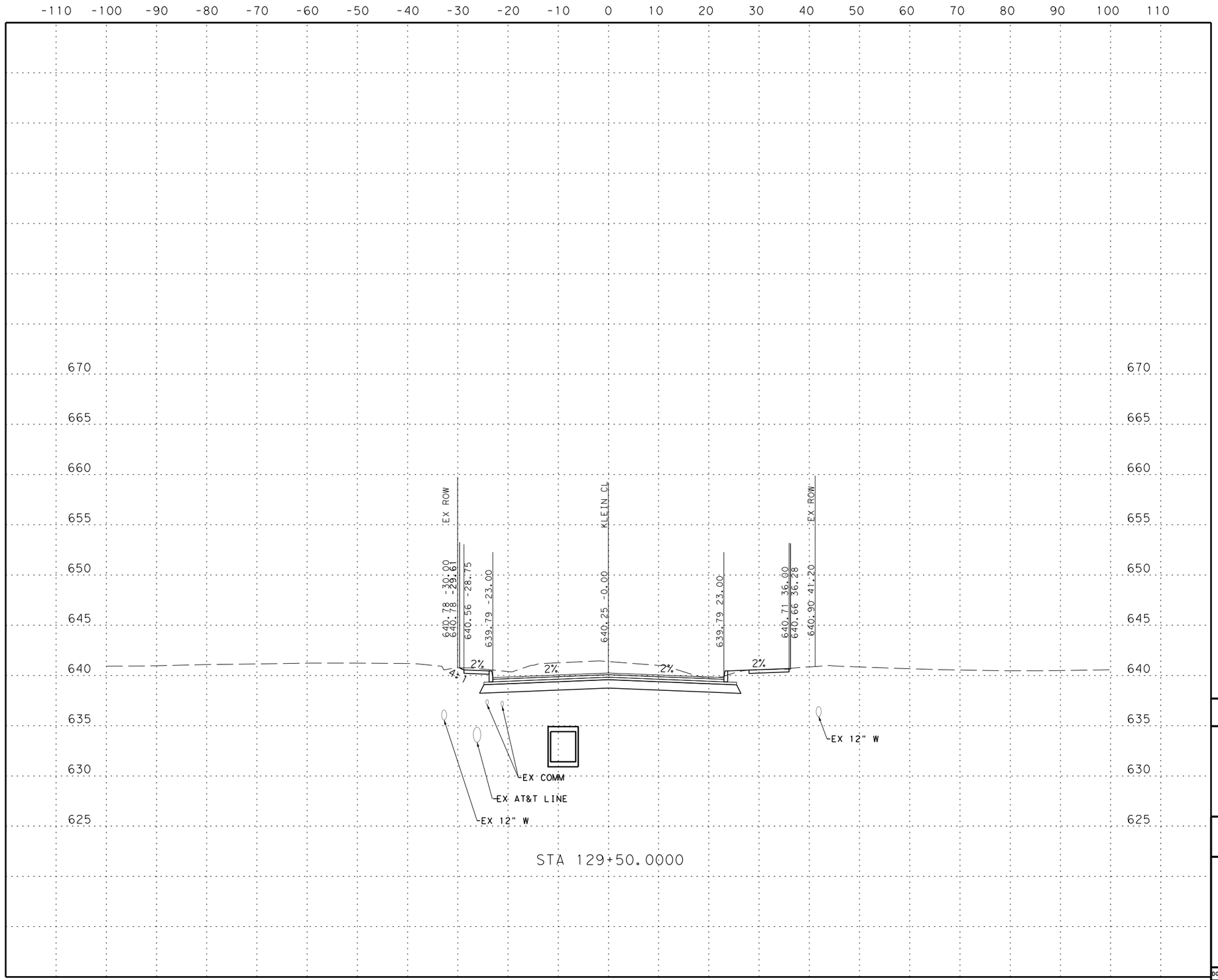

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City of New Braunfels

KLEIN RD

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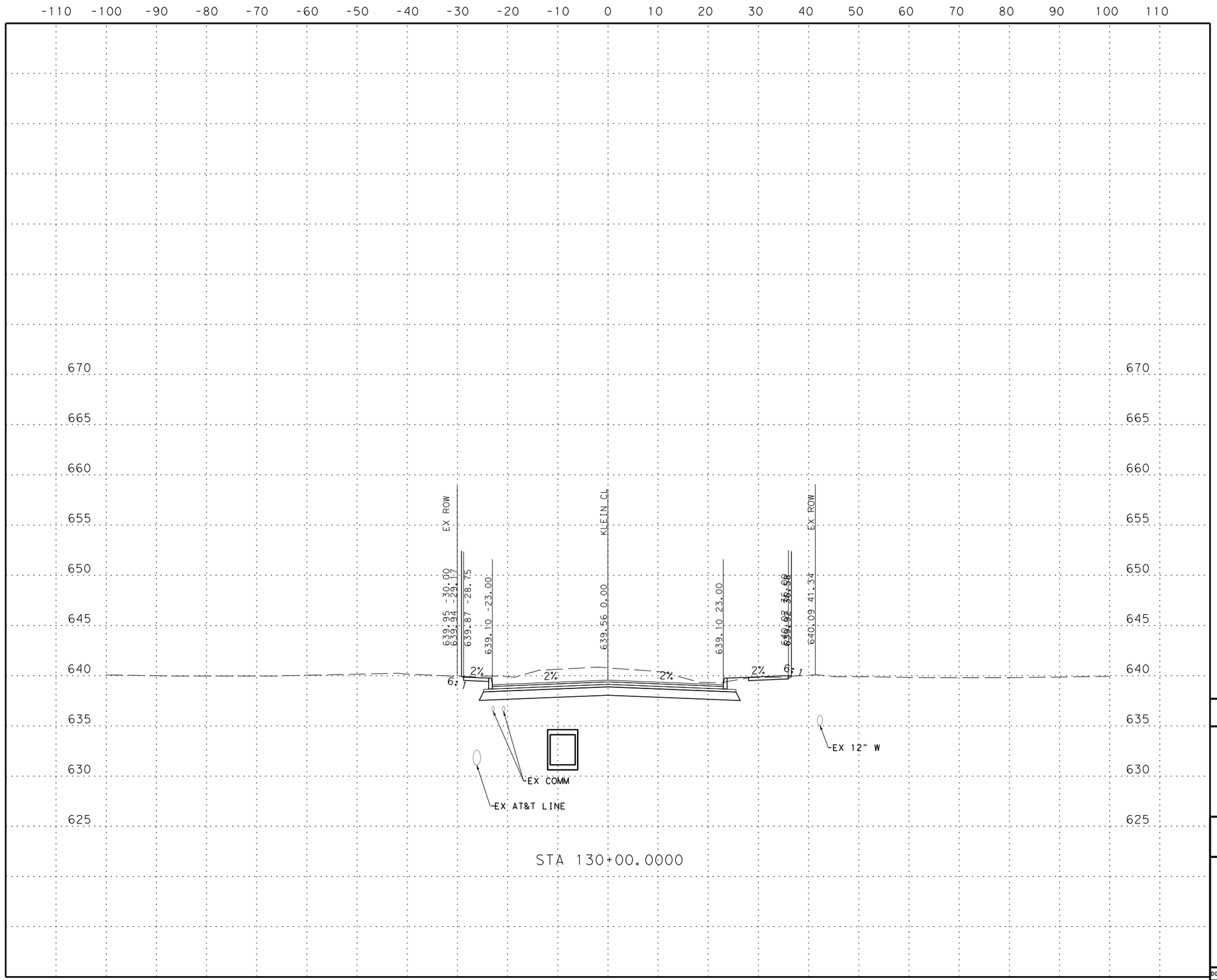

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 130+00.0000 TO STA 130+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
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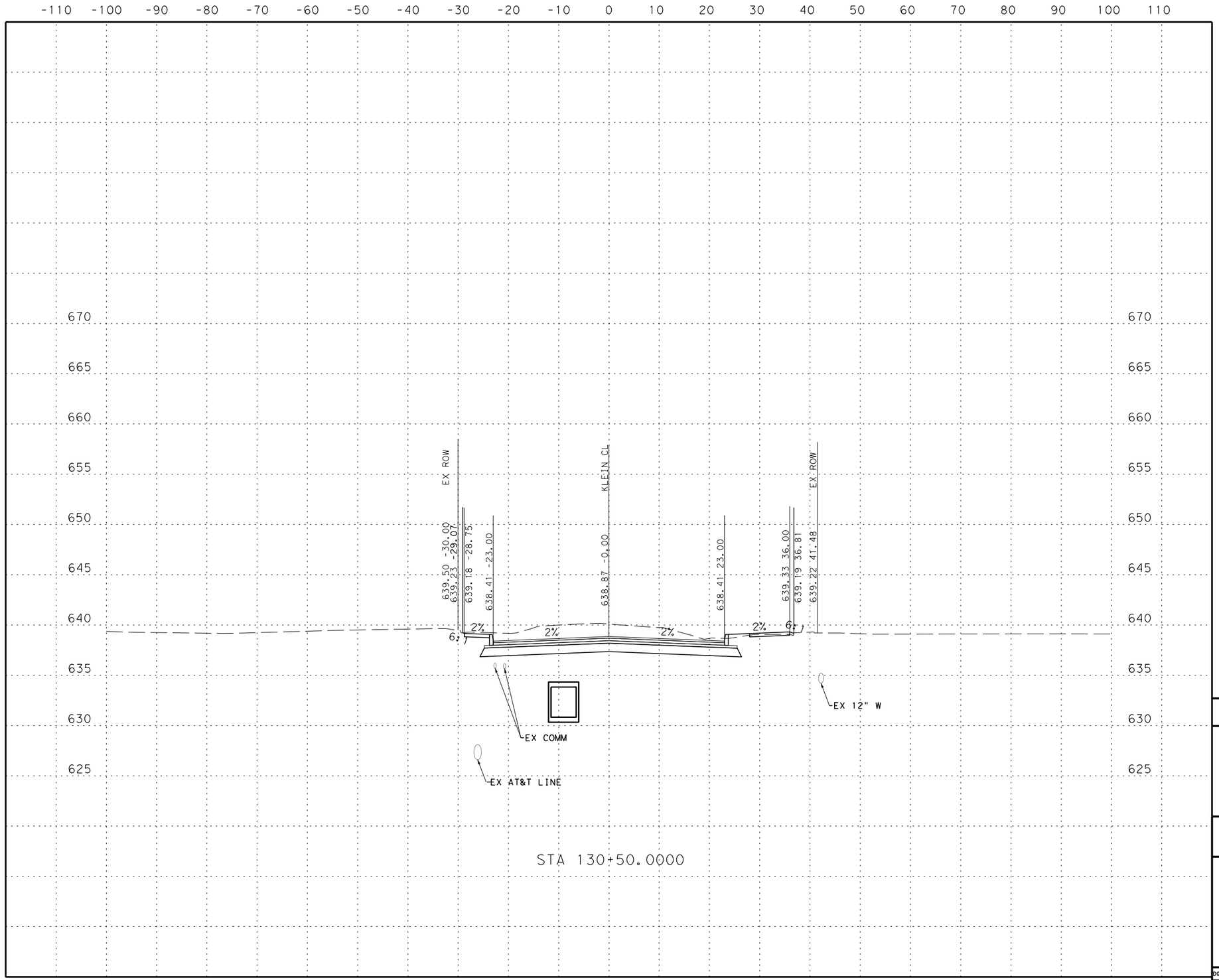

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City of New Braunfels

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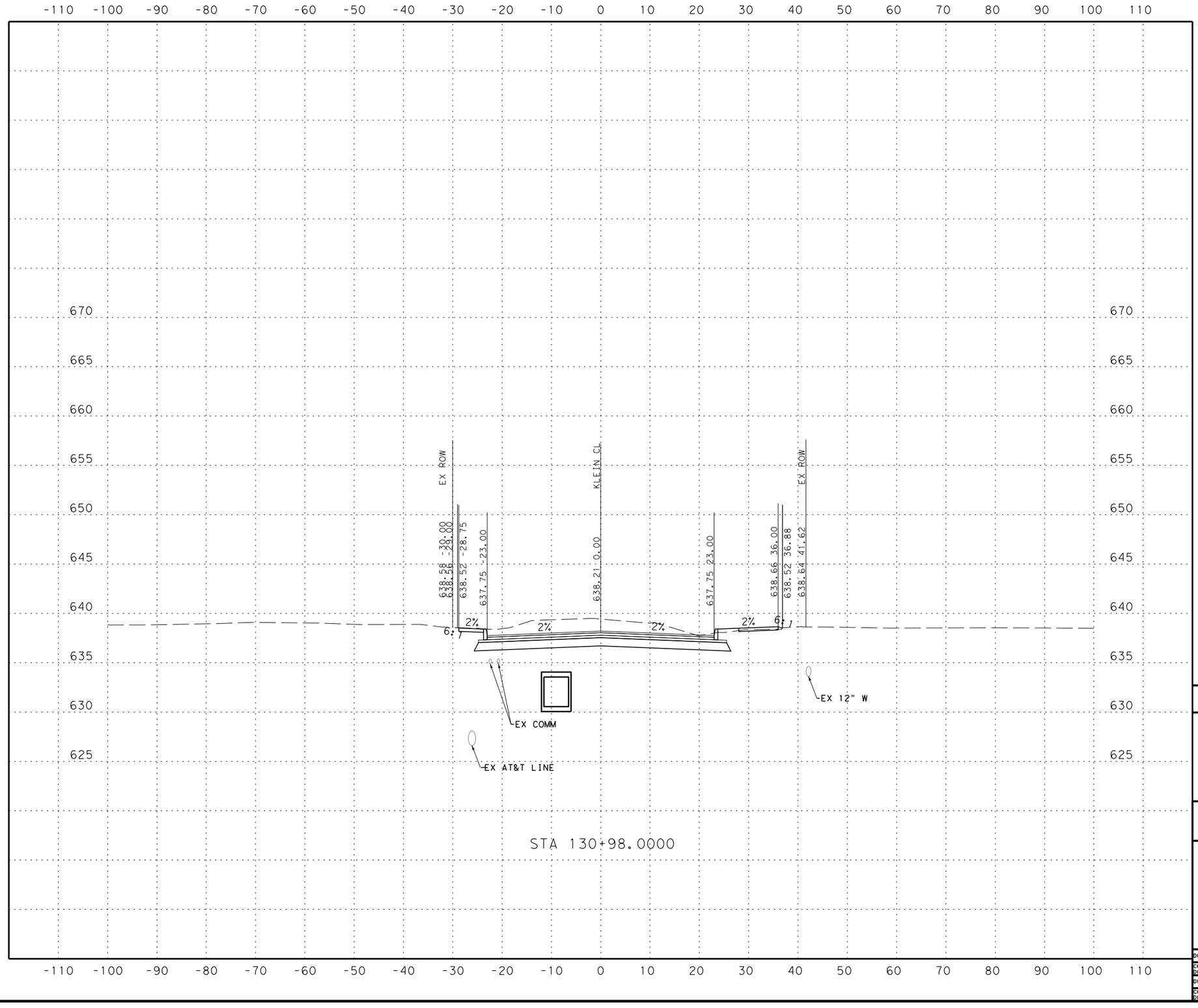

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 130+98.0000 TO STA 130+98.0000

DGN:	STATE	PROJECT NO.	ROADWAY
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DWG:	COUNTY	CITY	SHEET NO.
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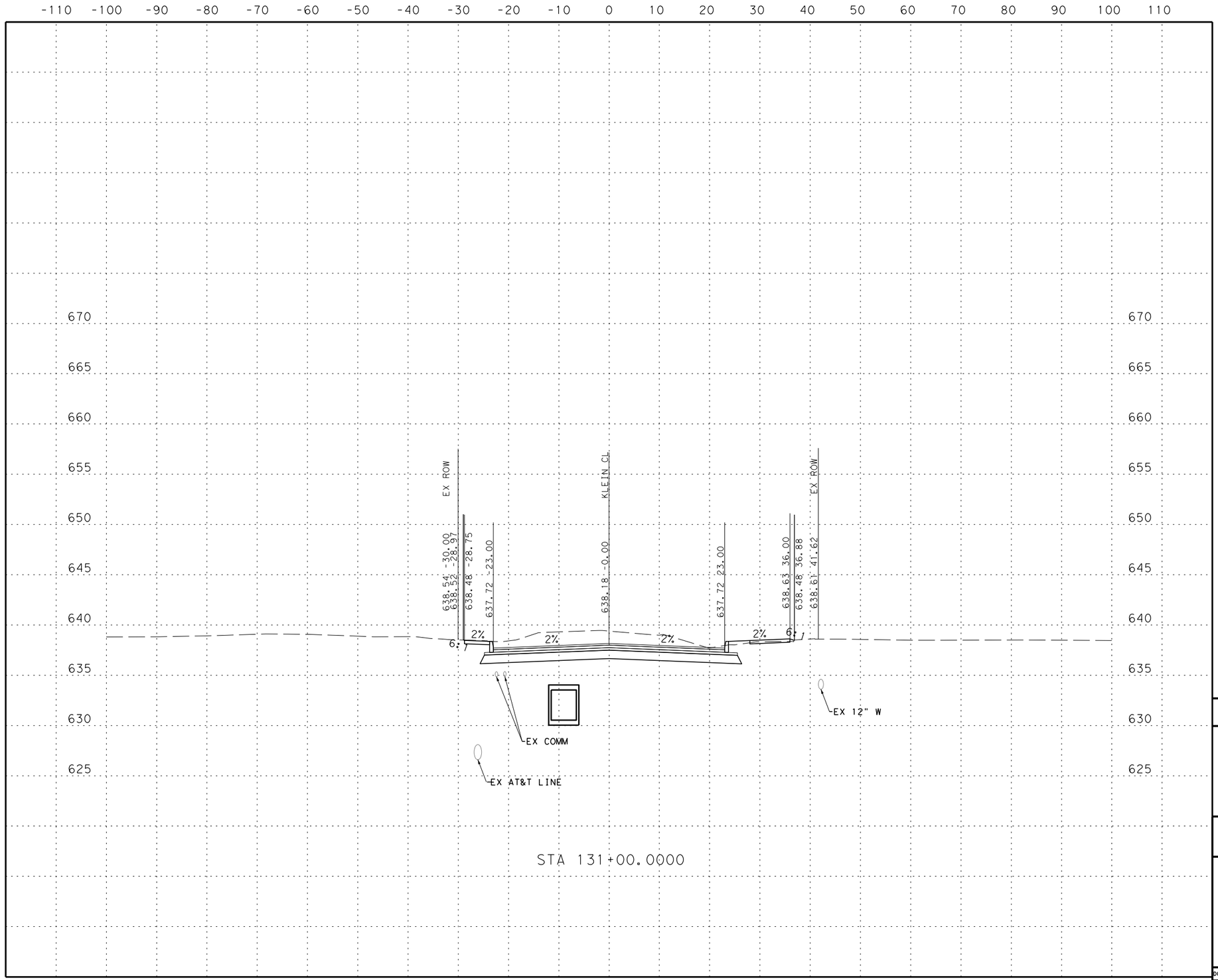

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 131+00.0000 TO STA 131+00.0000

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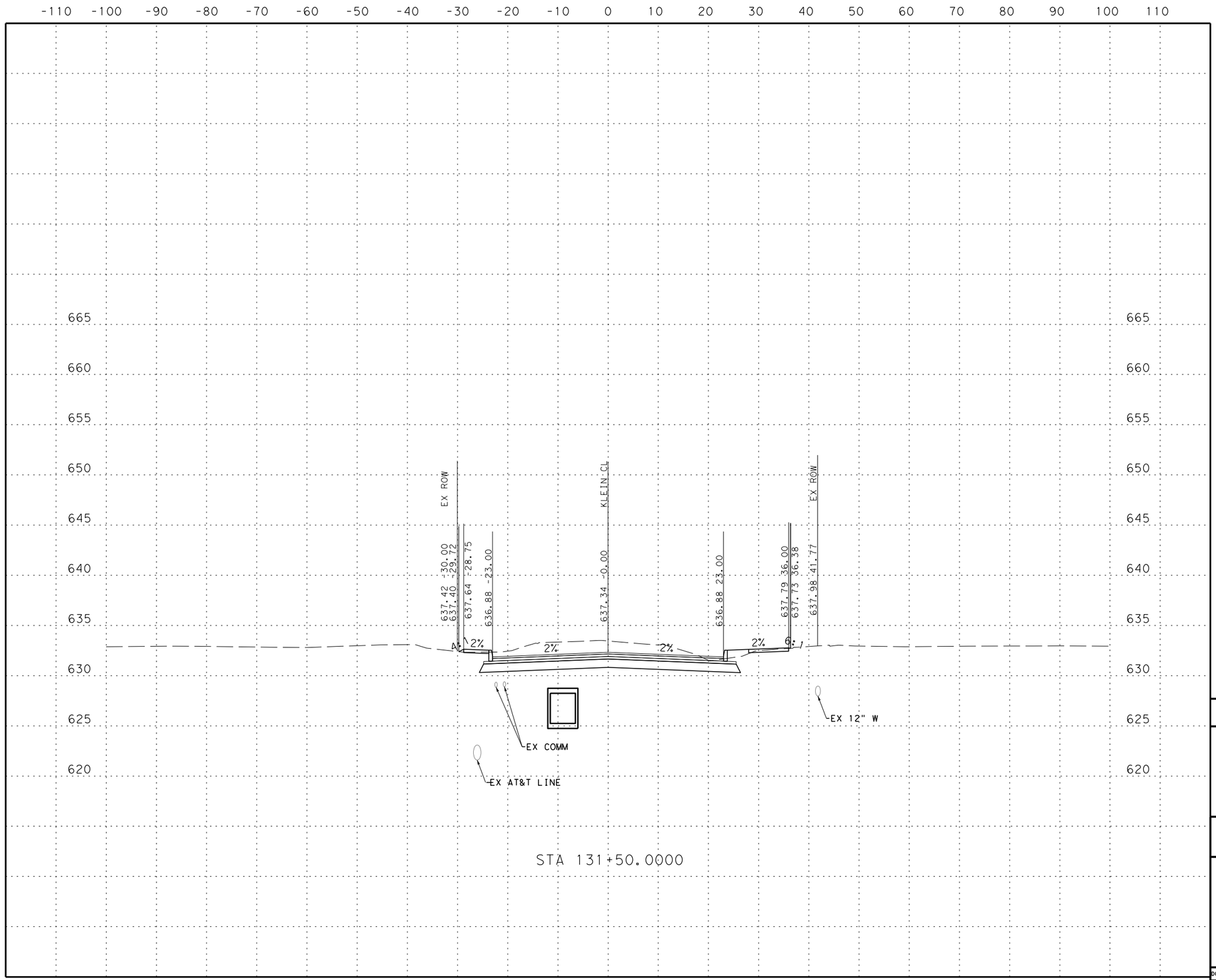

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

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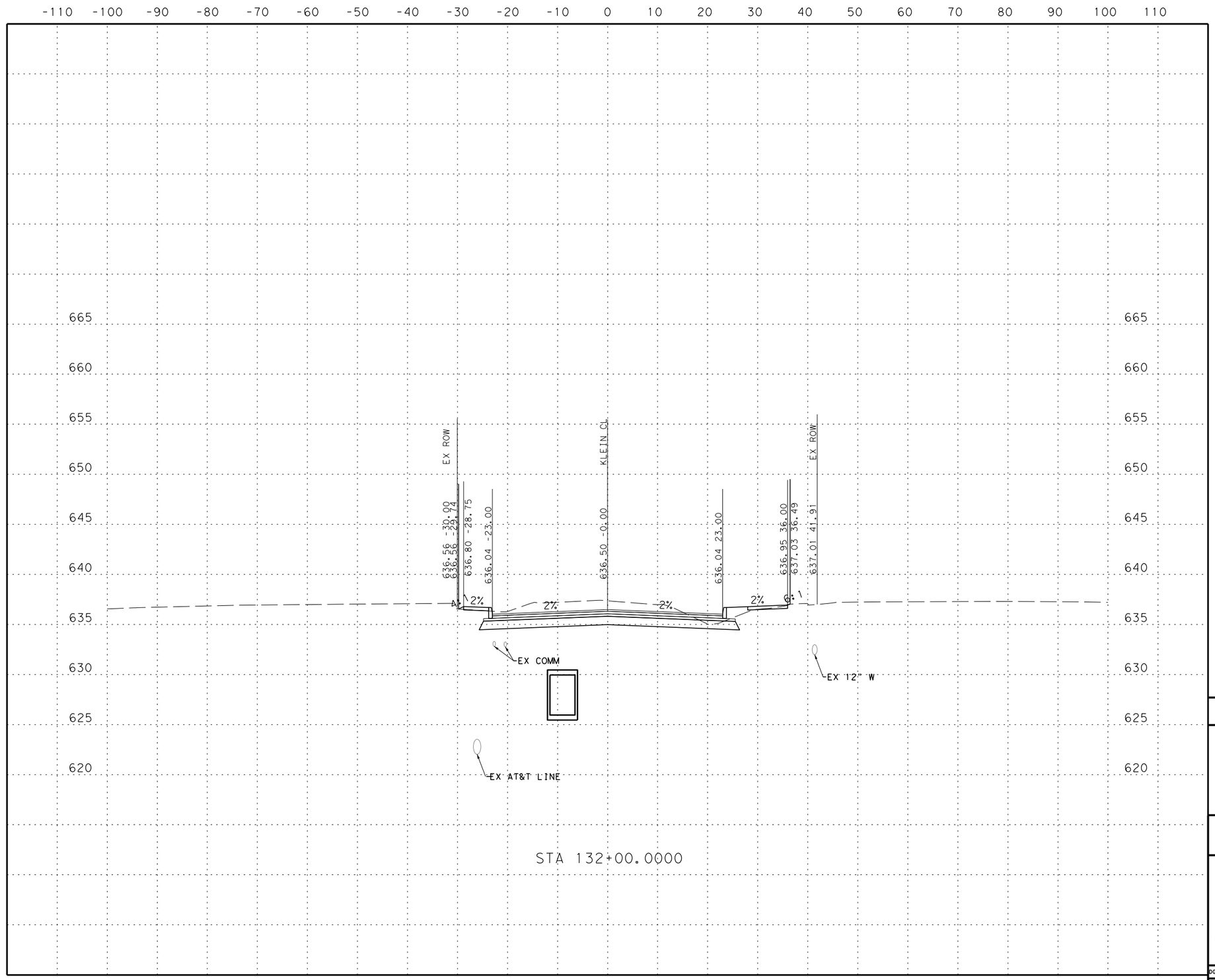

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

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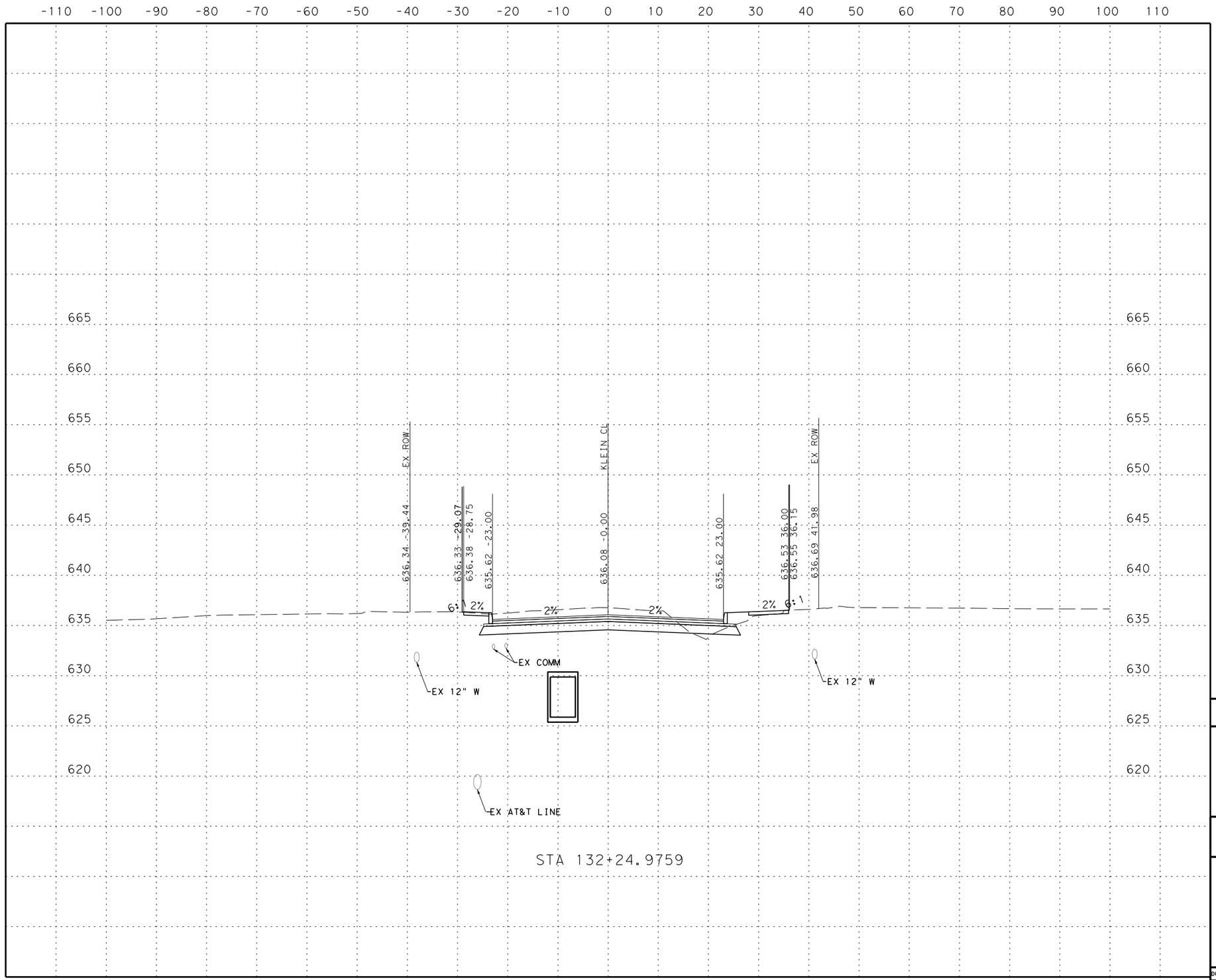

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

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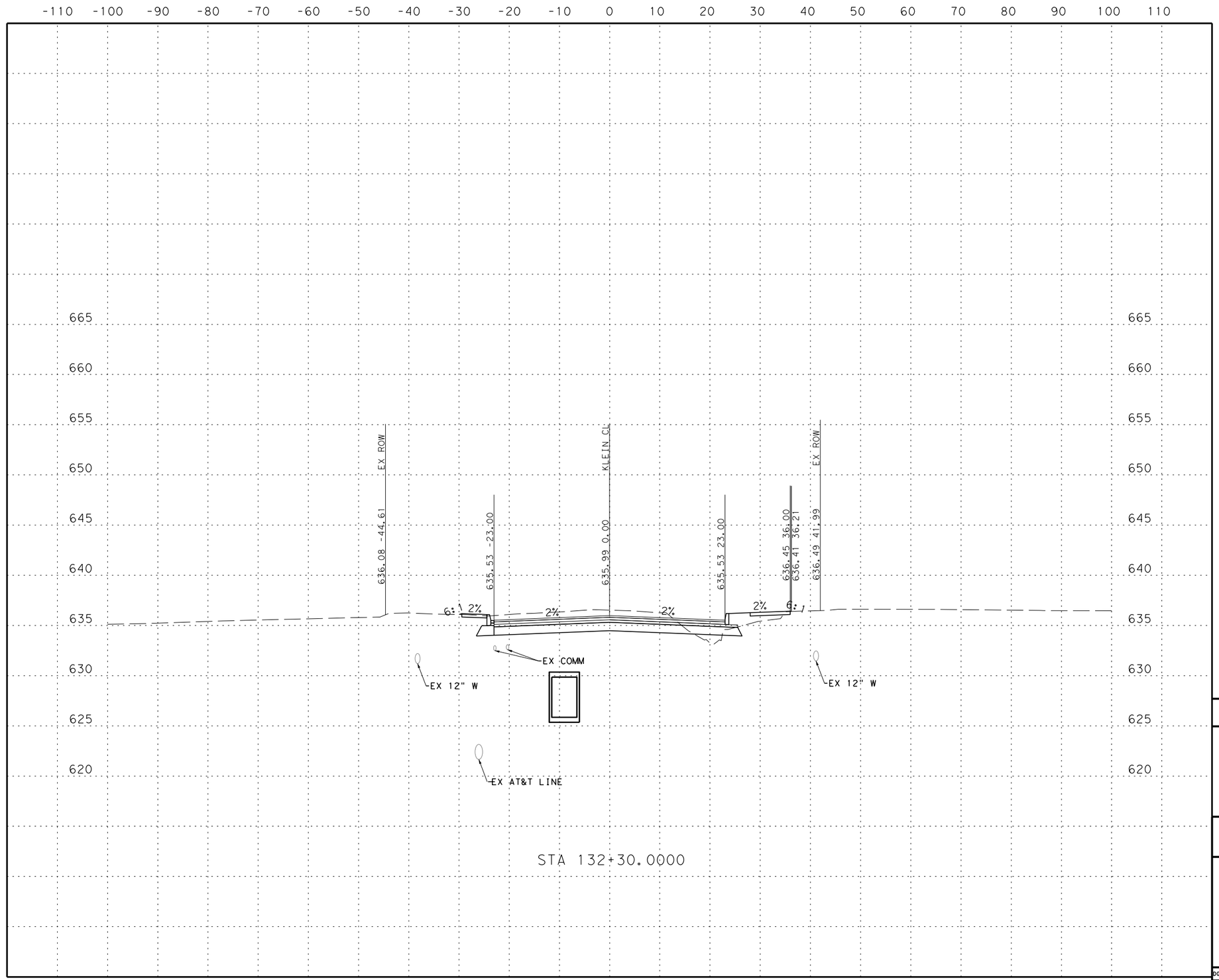
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

Design Filename: ...\5103003_Klein_XSections_Final.dgn



NOTES

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2. EXIST UTILITIES SHOWN FROM BEST AVAILABLE INFORMATION AT ASSUMED 3' BELOW EXIST GROUND, CONTRACTOR SHALL CONFIRM ALL UTILITY LOCATIONS AND DEPTHS PRIOR TO EXCAVATION

SCALE: H: 1"= 20'
V: 1"= 10'

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

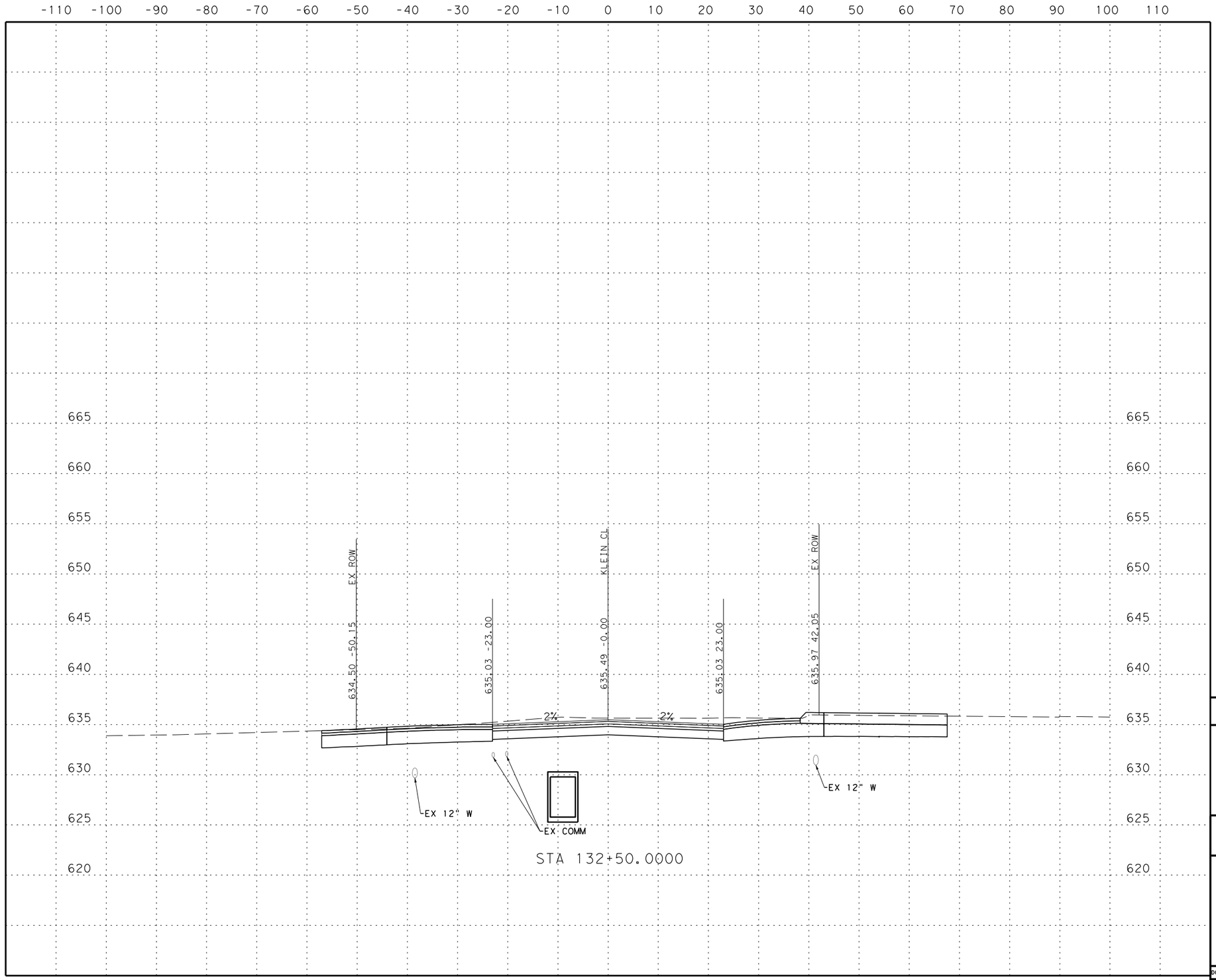
CROSS SECTIONS

STA 132+30.0000 TO STA 132+30.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

Design Filename: ...\5103003_Klein_XSections_Final.dgn



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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 132+50.0000 TO STA 132+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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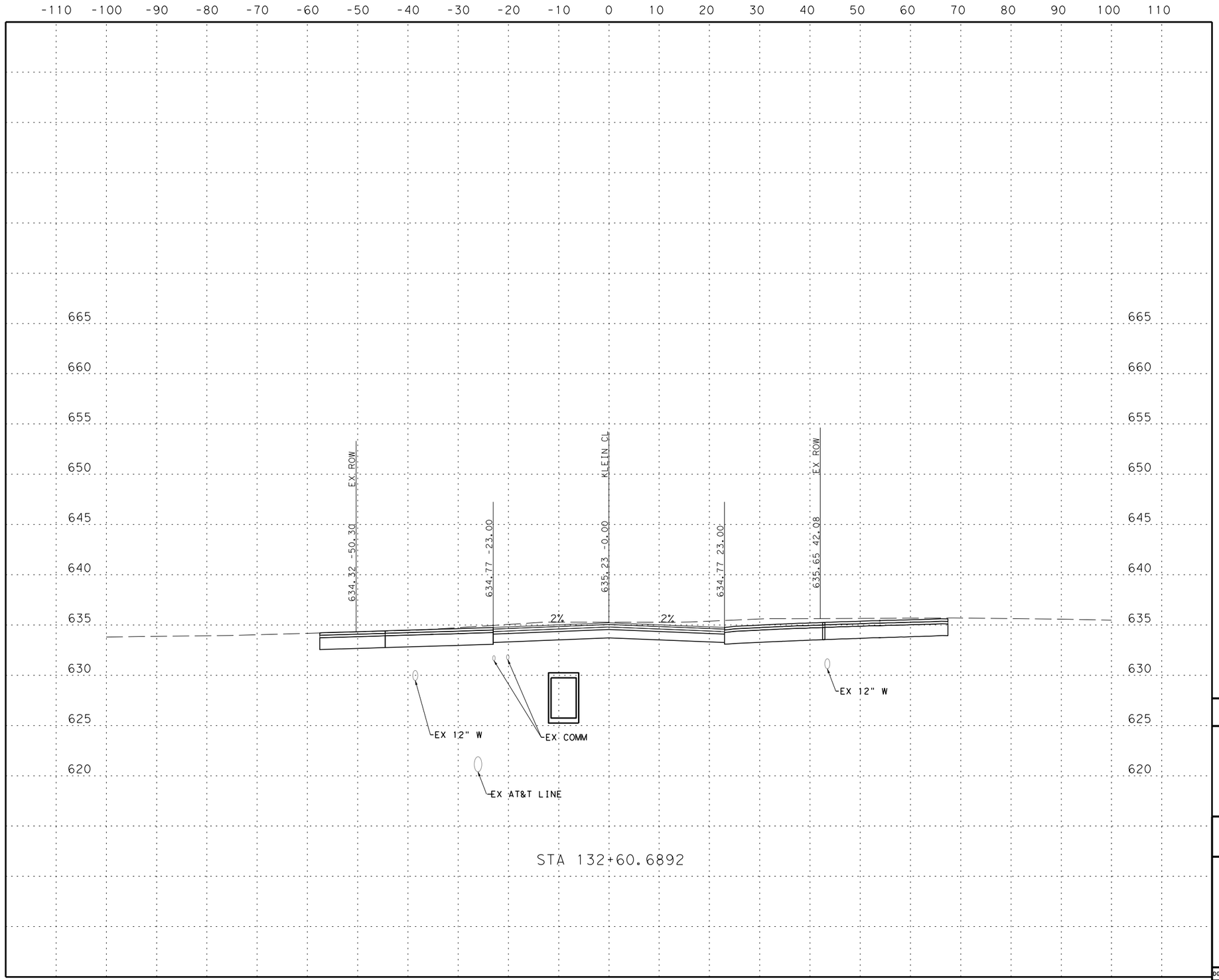

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 132+60.6892 TO STA 132+60.6892

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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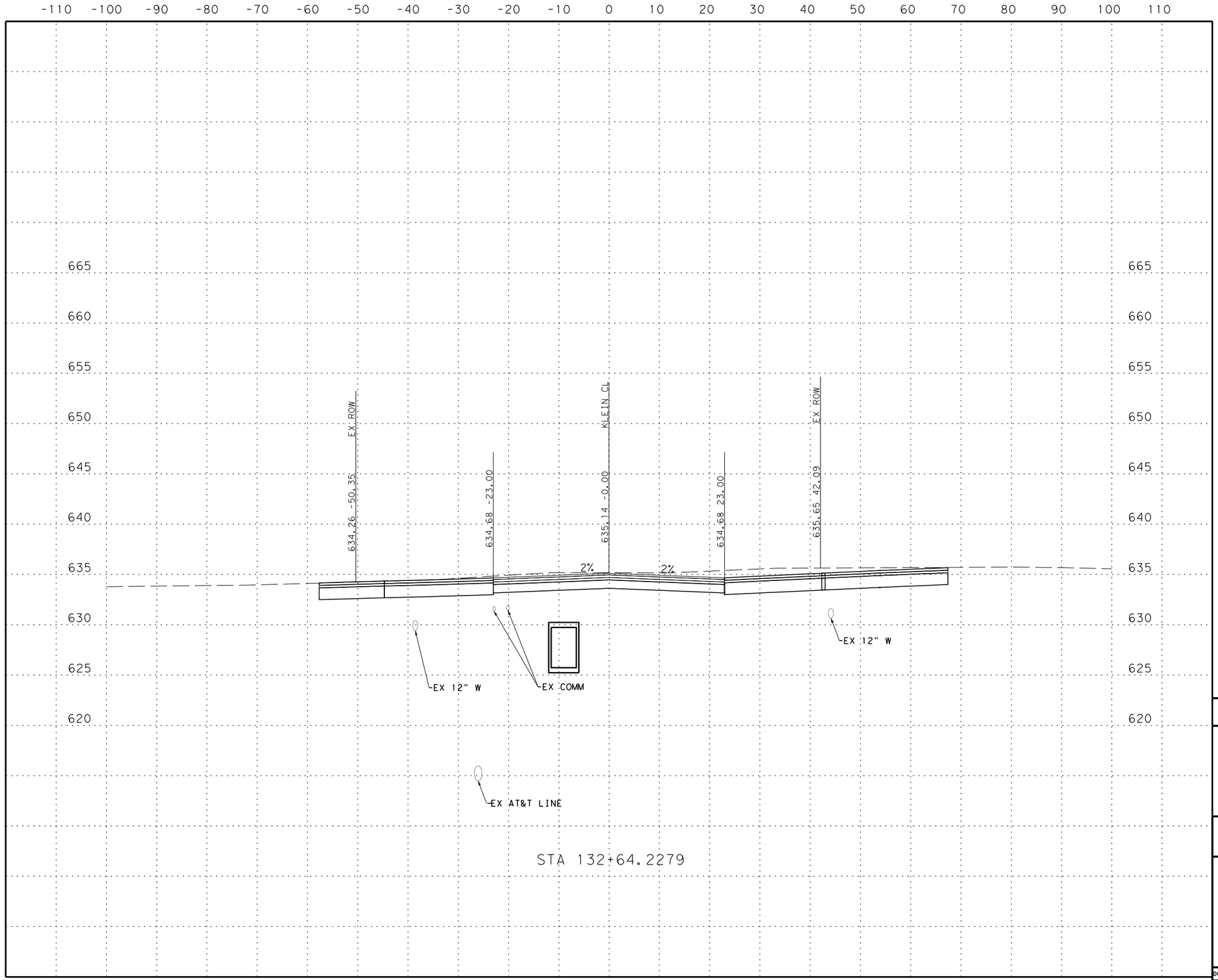

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City of New Braunfels

KLEIN RD

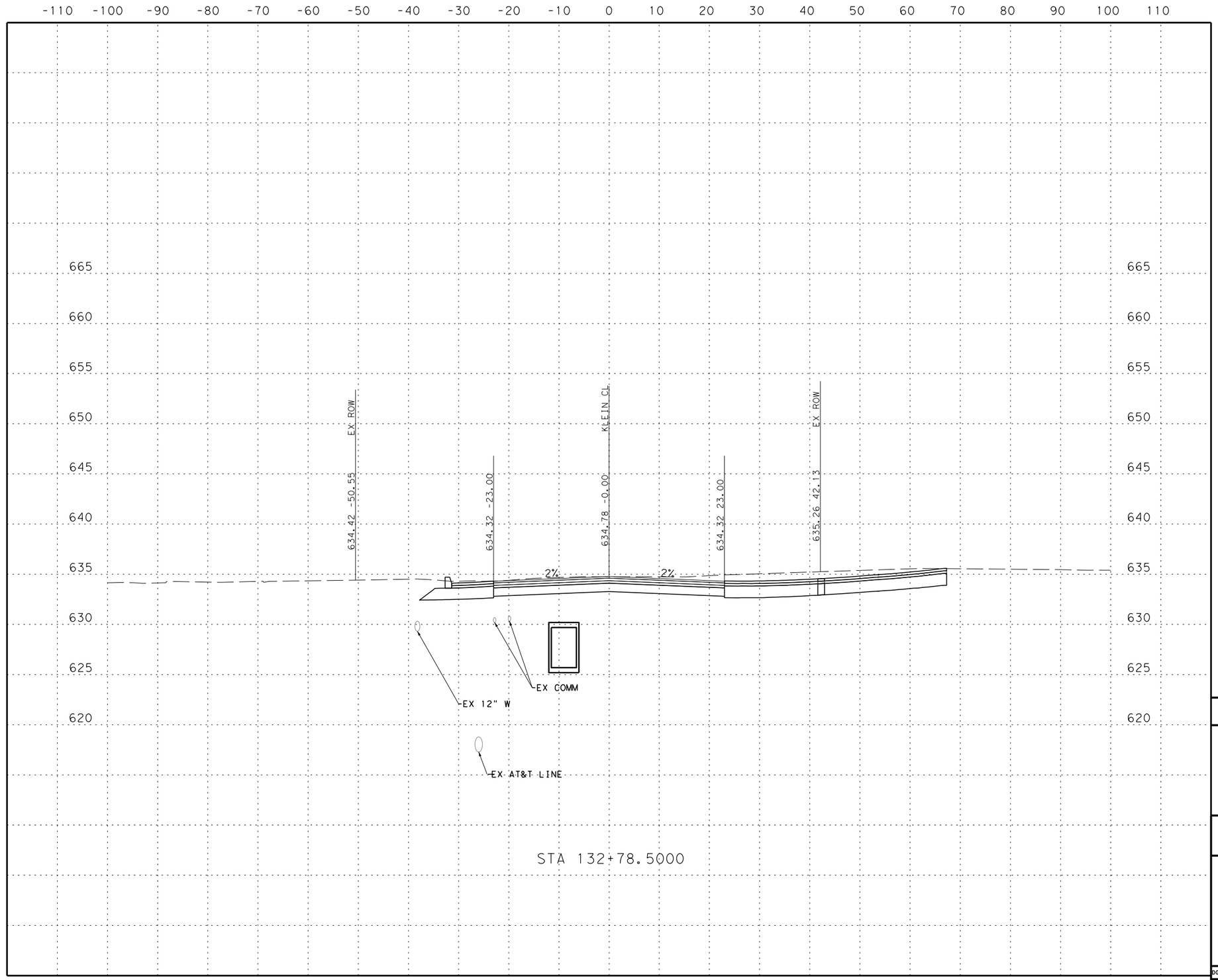
CROSS SECTIONS

STA 132+64.2279 TO STA 132+64.2279

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

Design Filename: ...\5103003_Klein_XSections_Final.dgn



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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 132+78.5000 TO STA 132+78.5000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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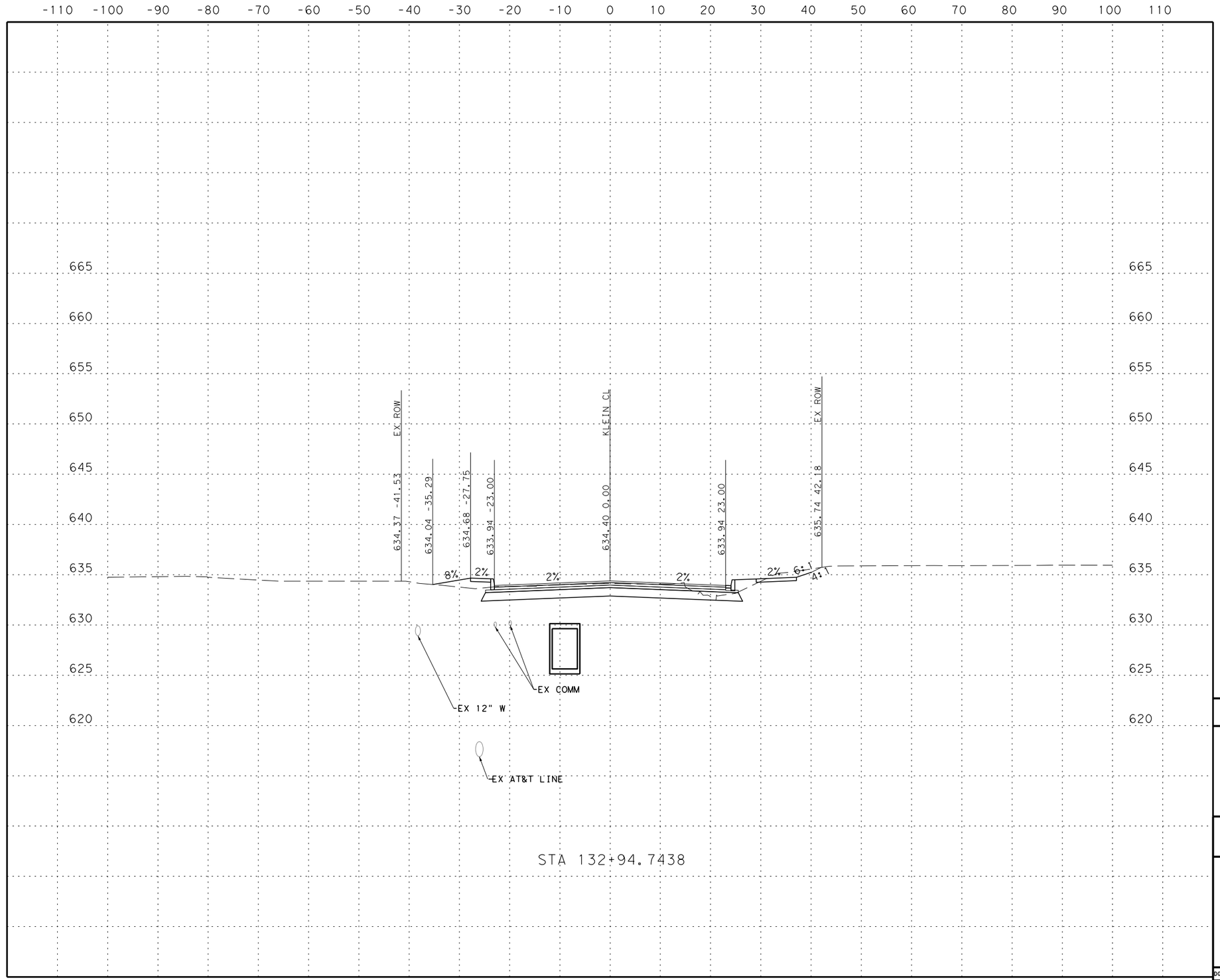

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 132+94.7438 TO STA 132+94.7438

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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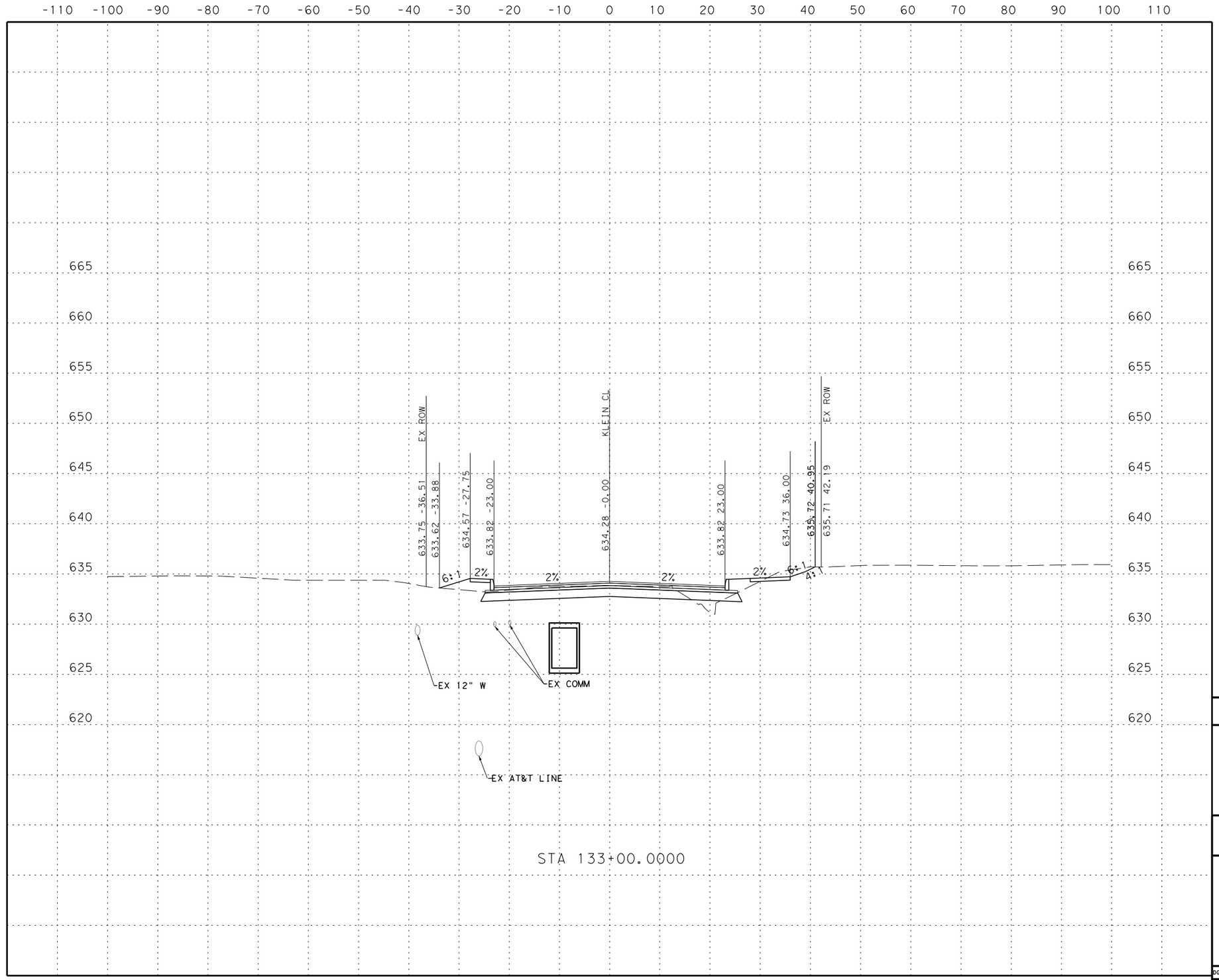

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 133+00.0000 TO STA 133+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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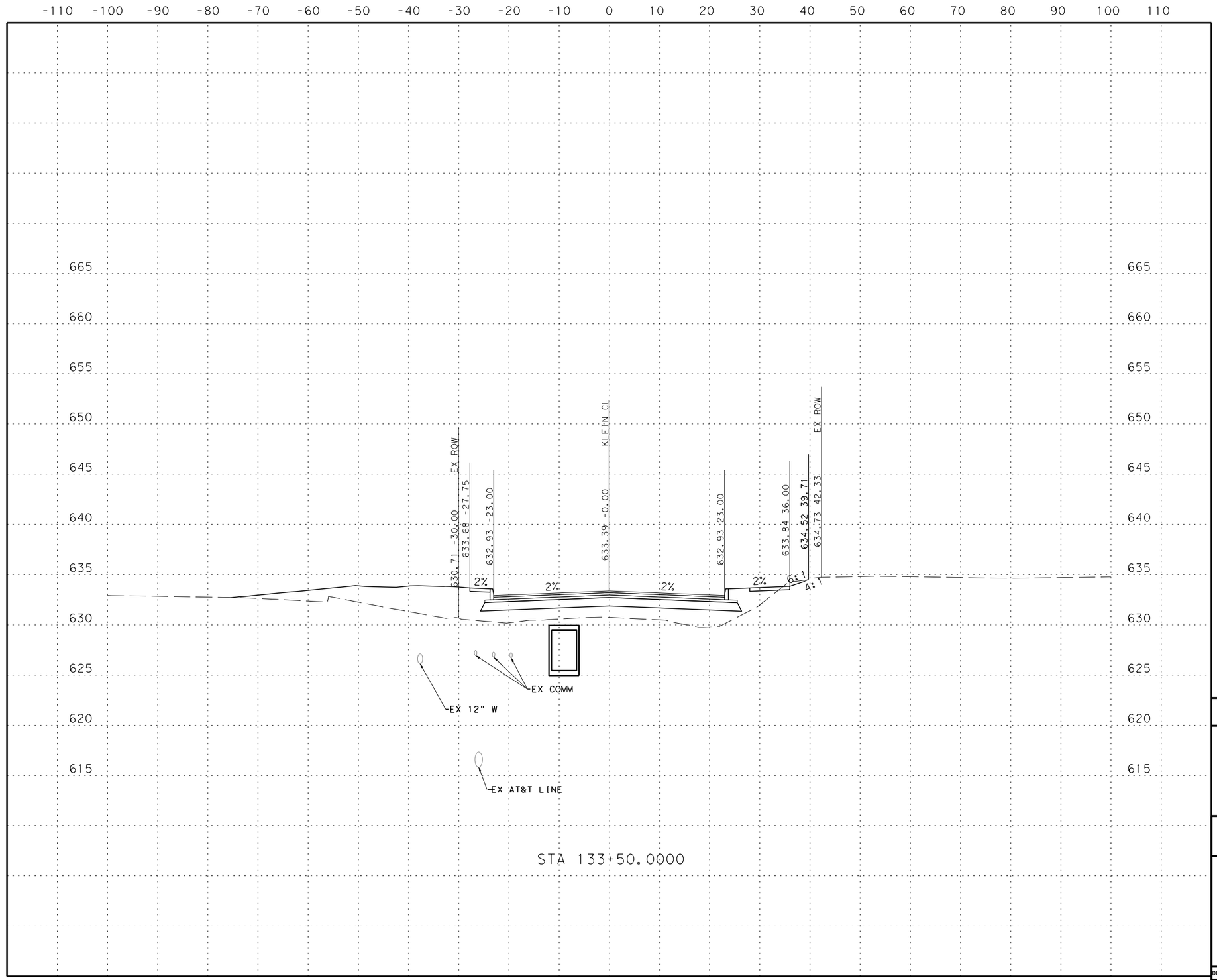

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PAPE-DAWSON ENGINEERS
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2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TBPE FIRM REGISTRATION #470 I TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 133+50.0000 TO STA 133+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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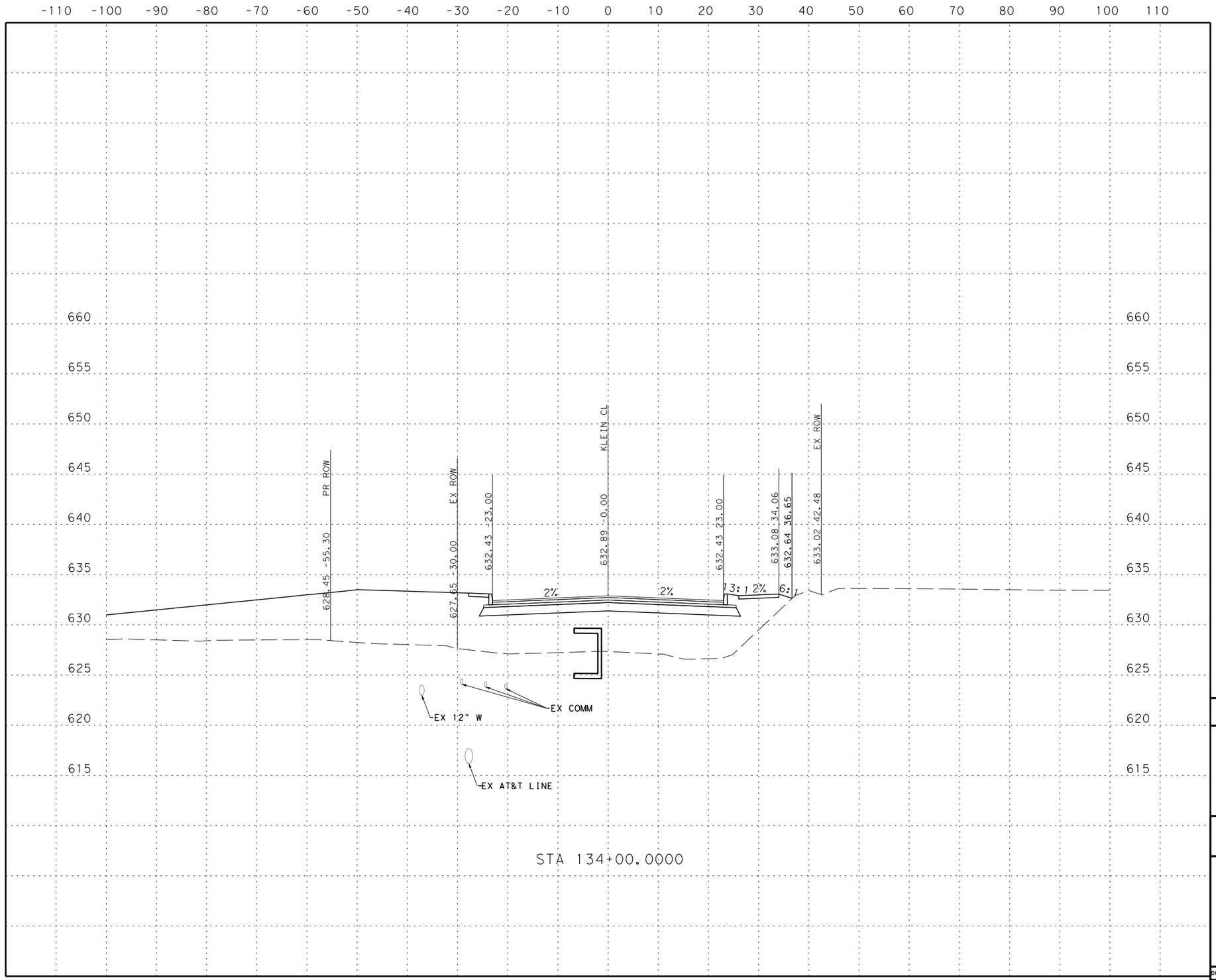

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2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TBPE FIRM REGISTRATION #470 I TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 134+00.0000 TO STA 134+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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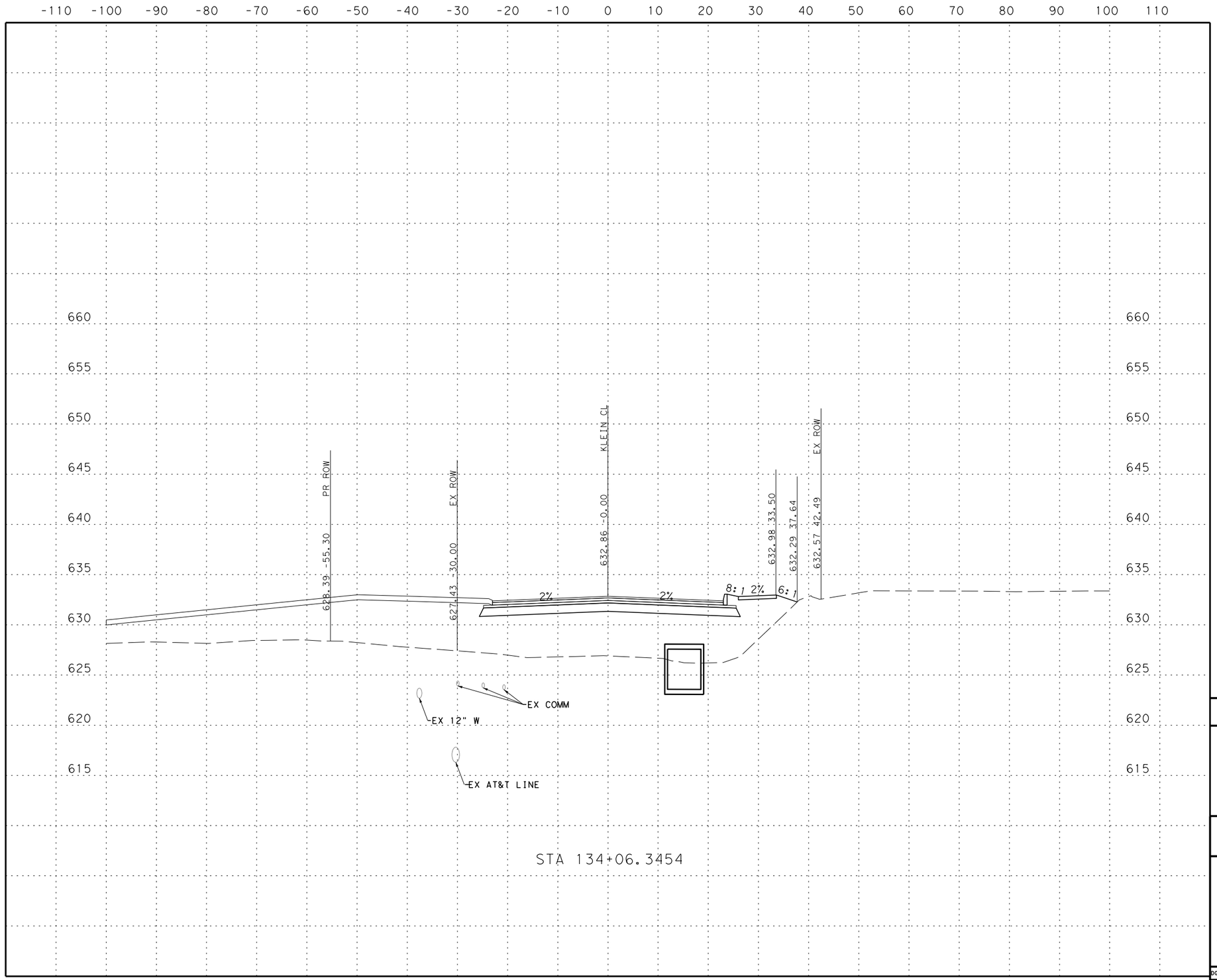

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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

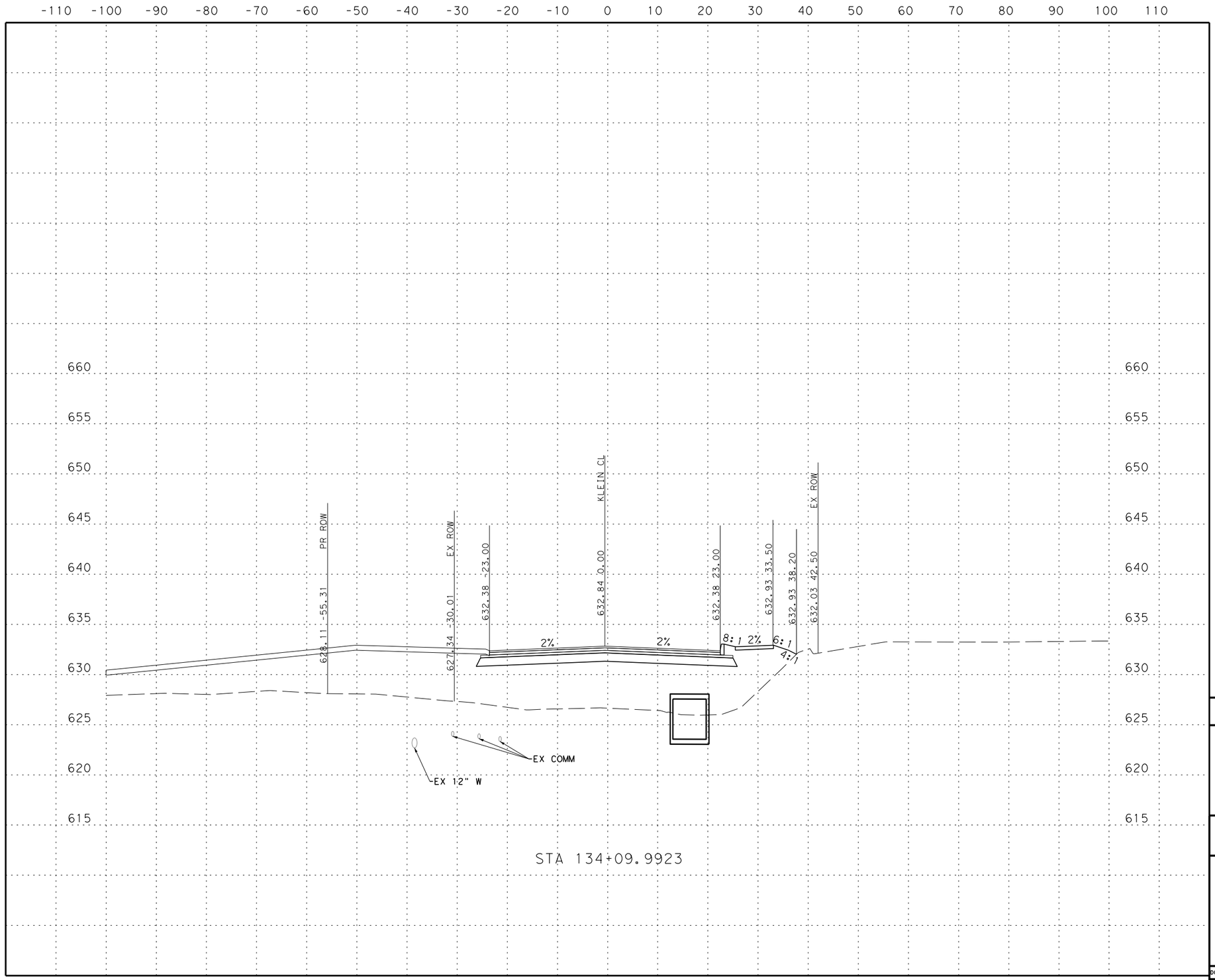
CROSS SECTIONS

STA 134+06.3454 TO STA 134+06.3454

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

Design Filename: ...\5103003_Klein_XSections_Final.dgn



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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
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TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 134+09.9923 TO STA 134+09.9923

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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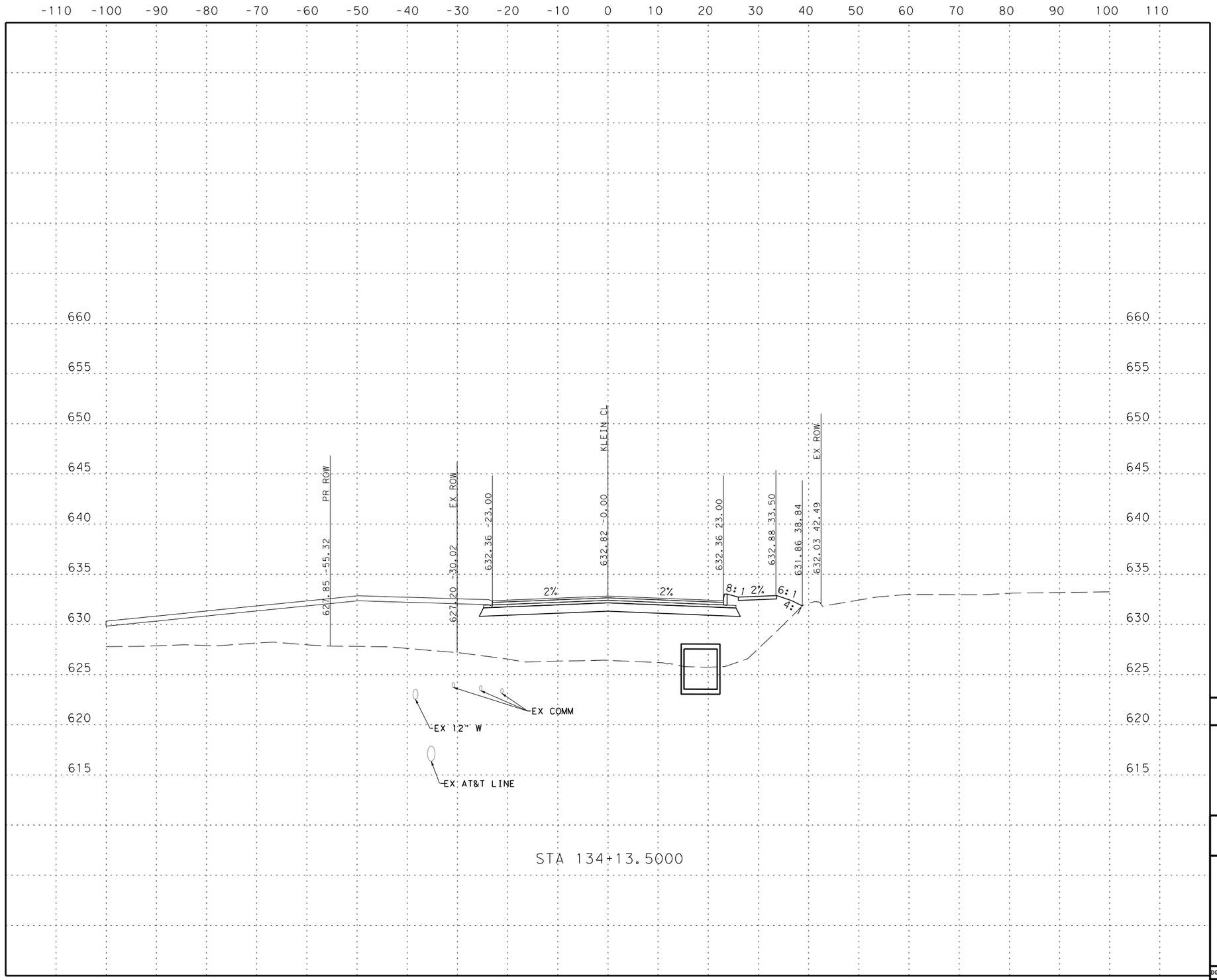

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 134+13.5000 TO STA 134+13.5000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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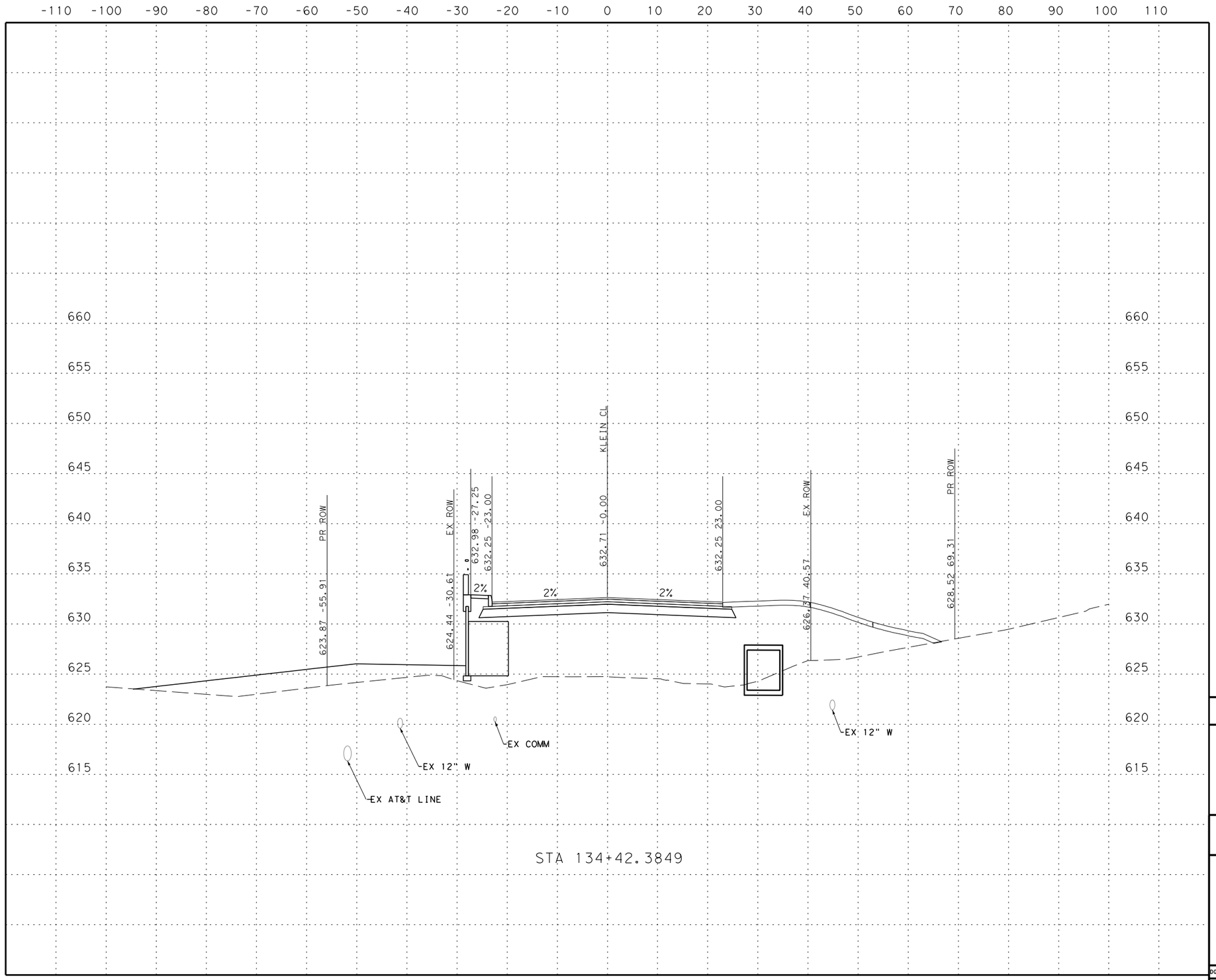

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 134+42.3849 TO STA 134+42.3849

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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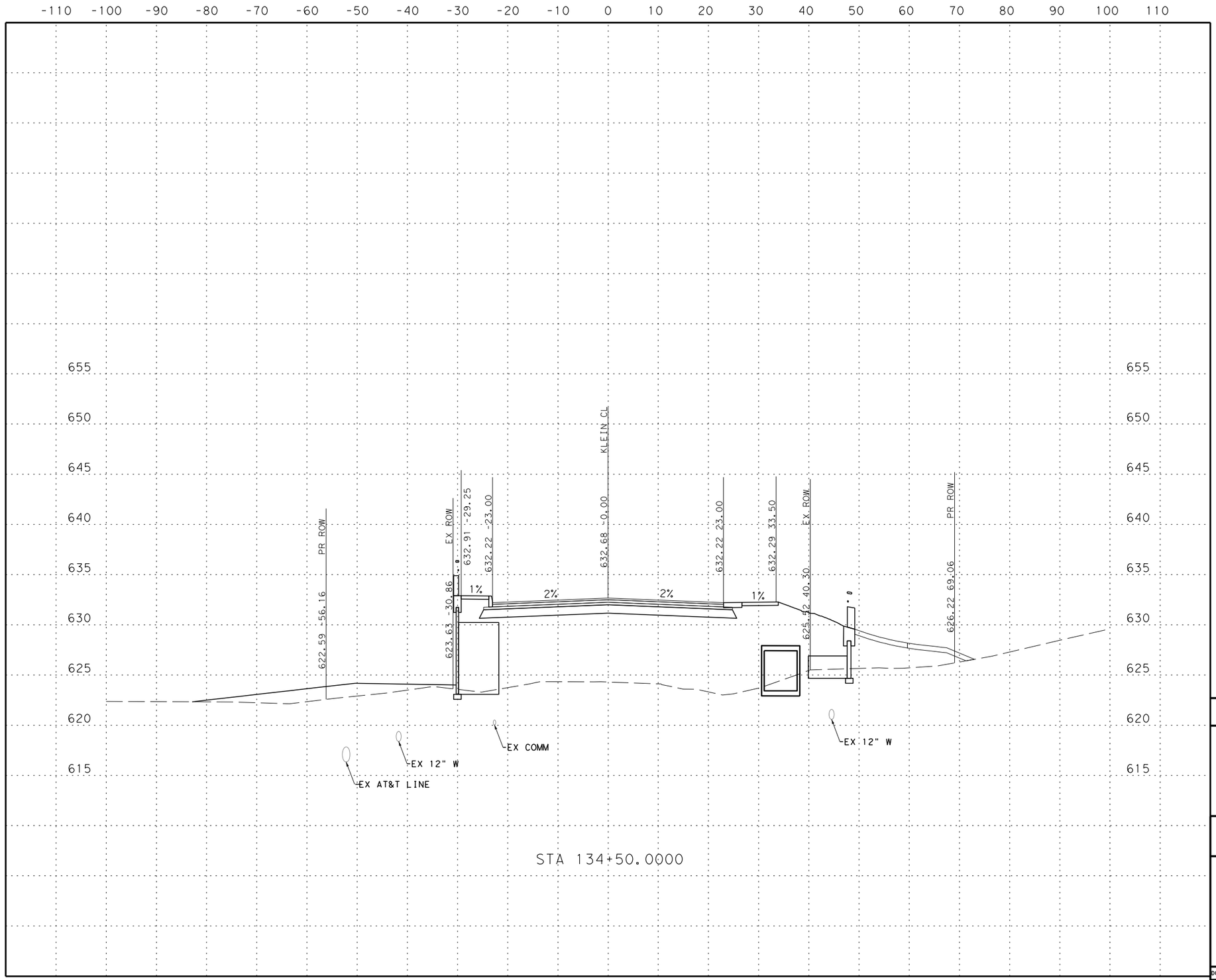

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 134+50.0000 TO STA 134+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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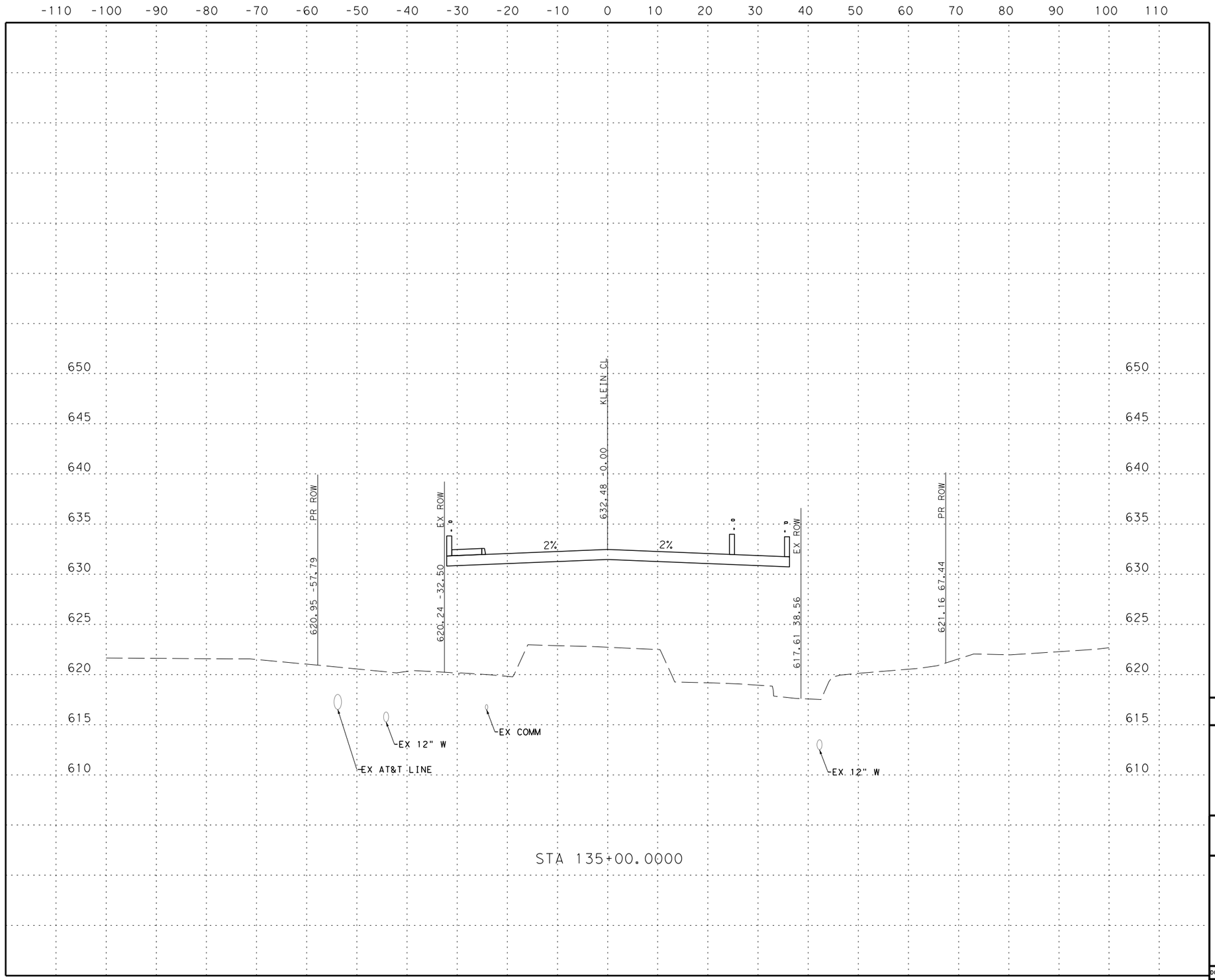

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 135+00.0000 TO STA 135+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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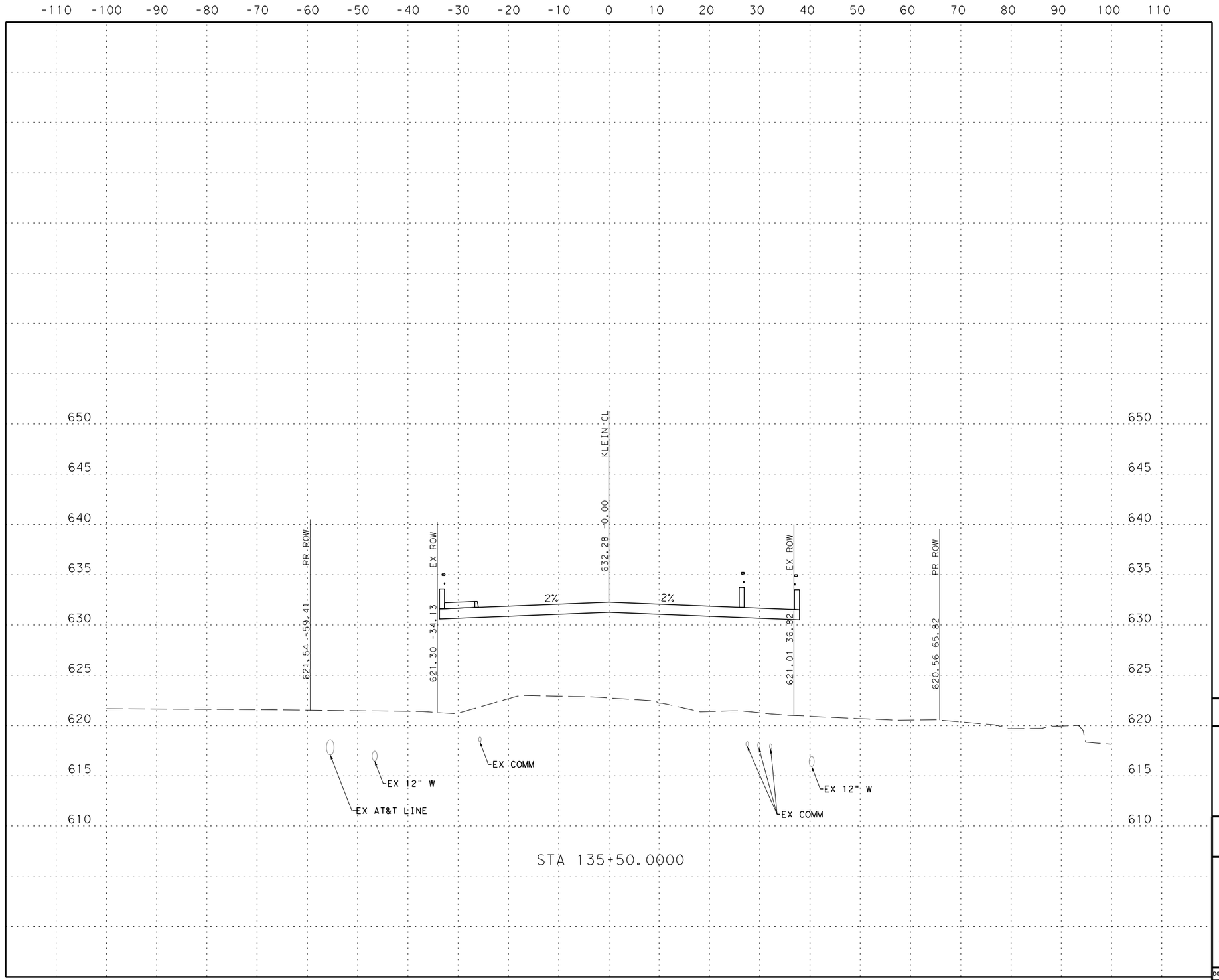

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 135+50.0000 TO STA 135+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
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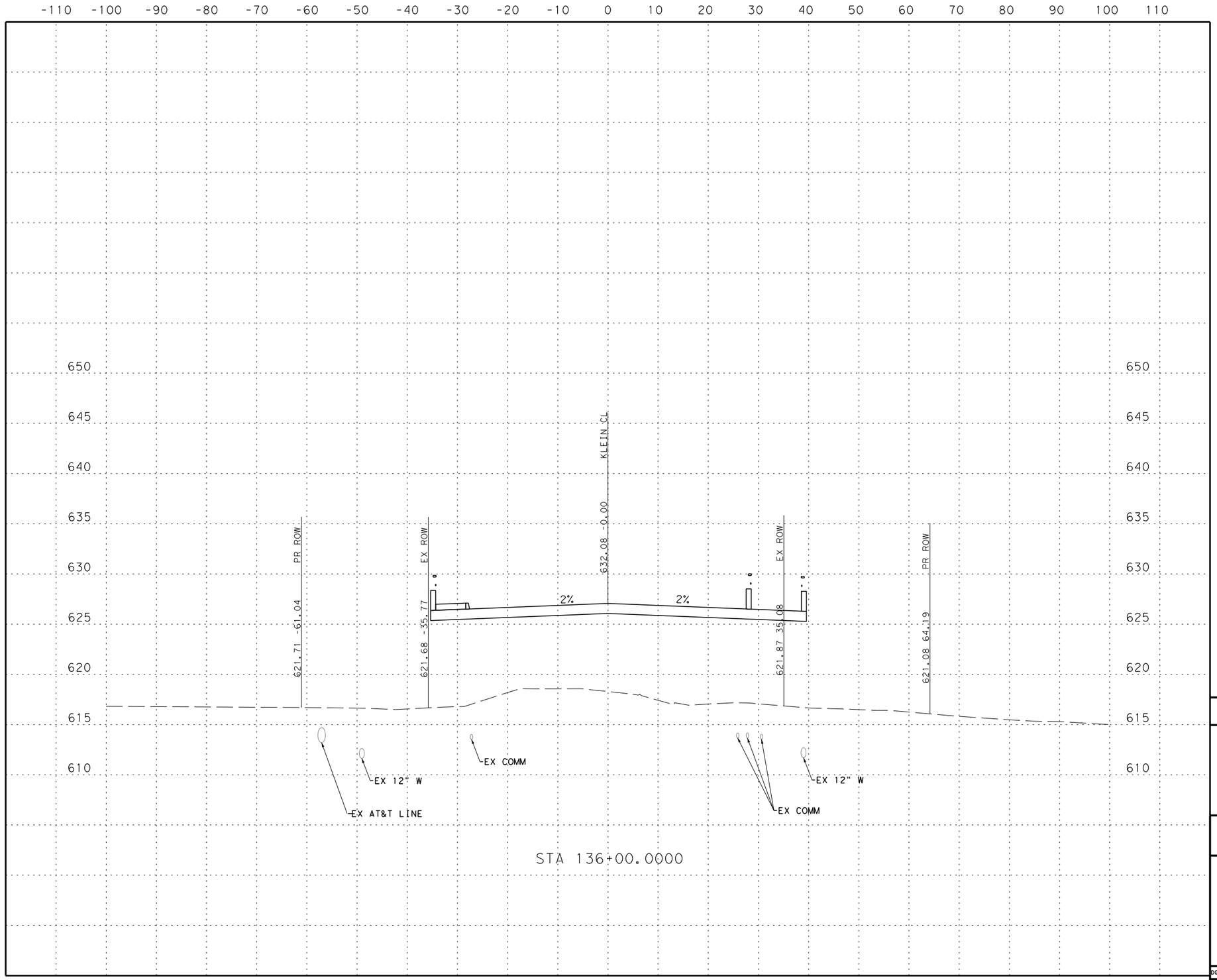

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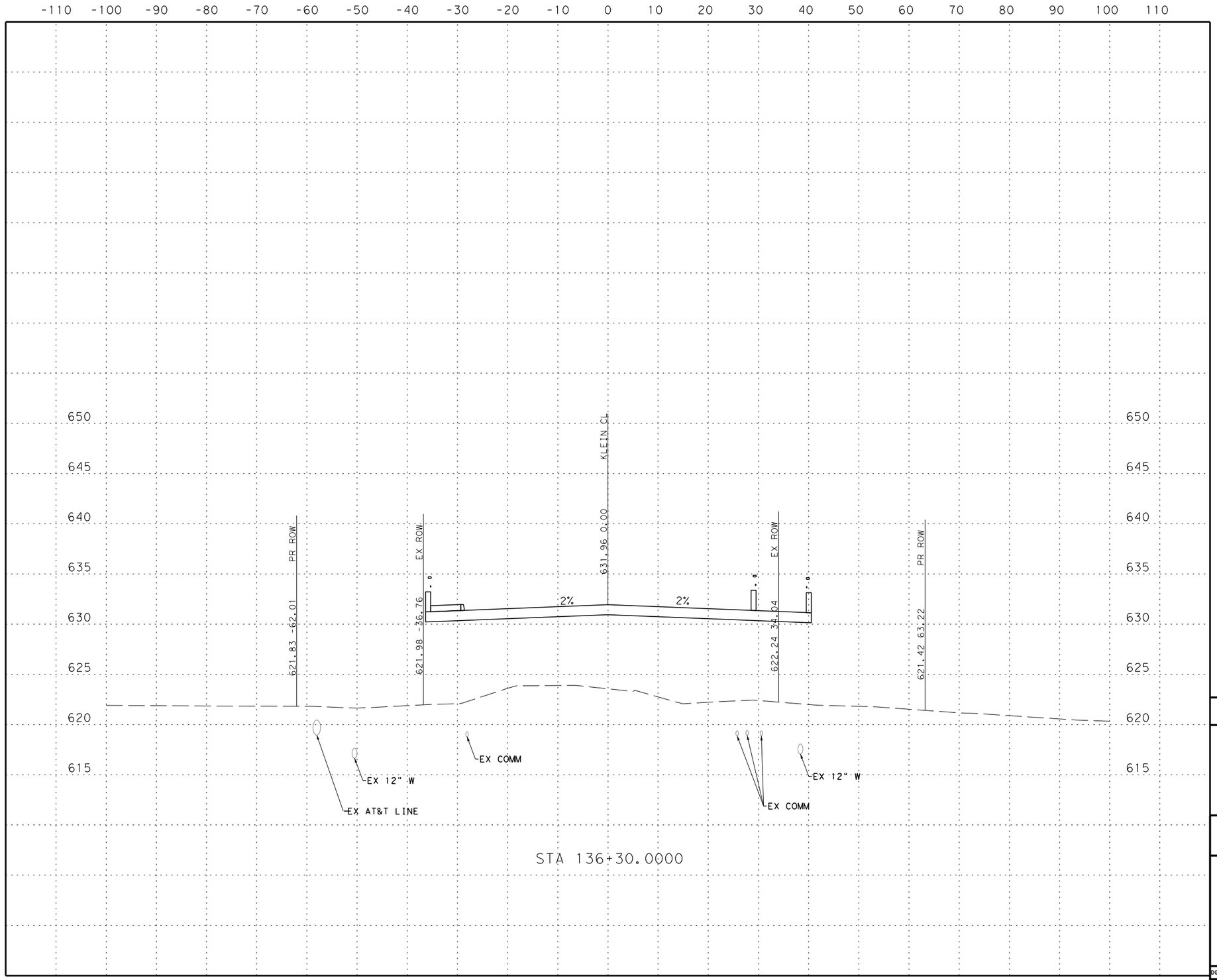
City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 136+00.0000 TO STA 136+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	



Plotted on: 1/16/2023

Design Filename: ...\5103003_Klein_XSections_Final.dgn

NOTES

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SCALE: H: 1"= 20'
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2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 136+30.0000 TO STA 136+30.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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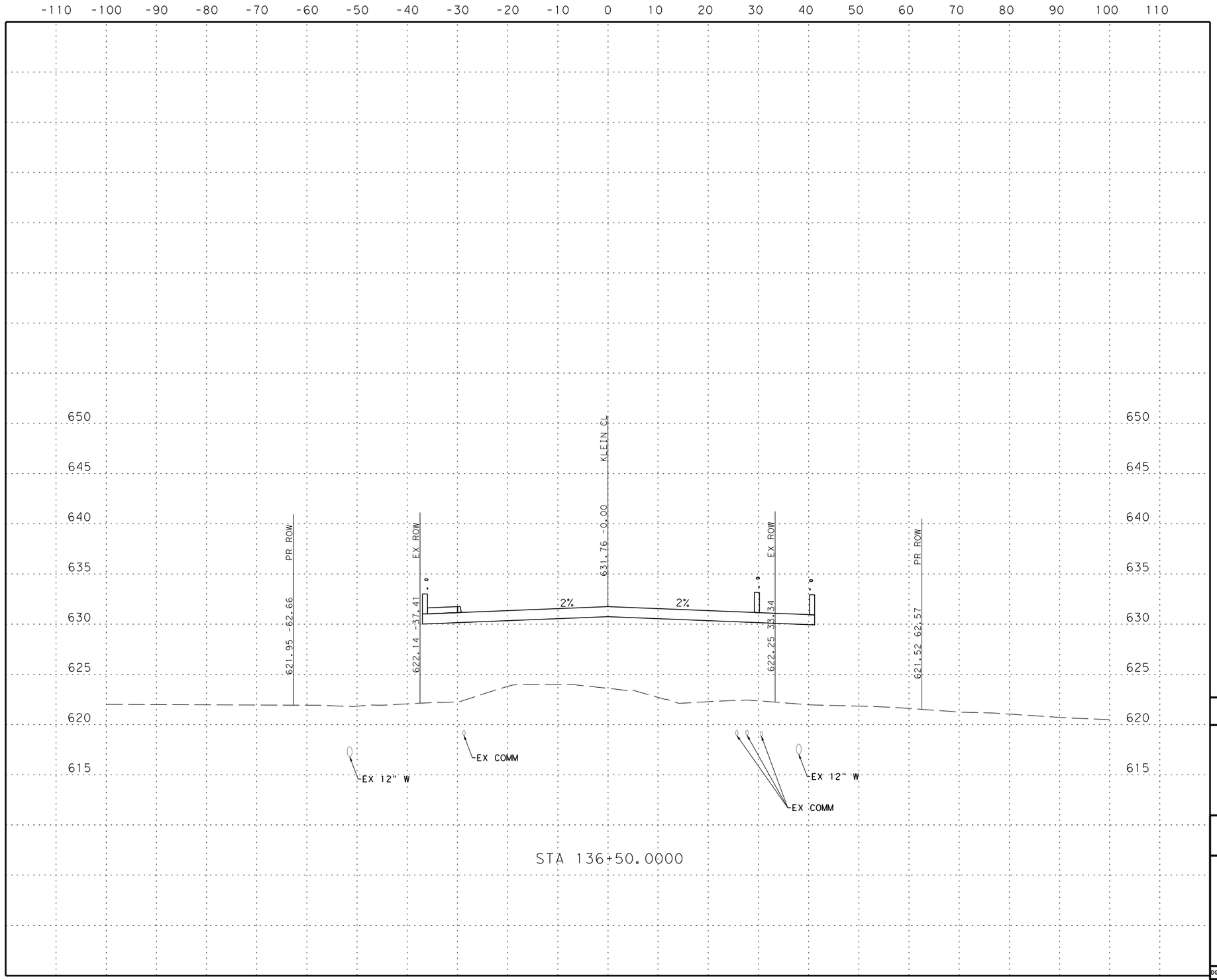

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 136+50.0000 TO STA 136+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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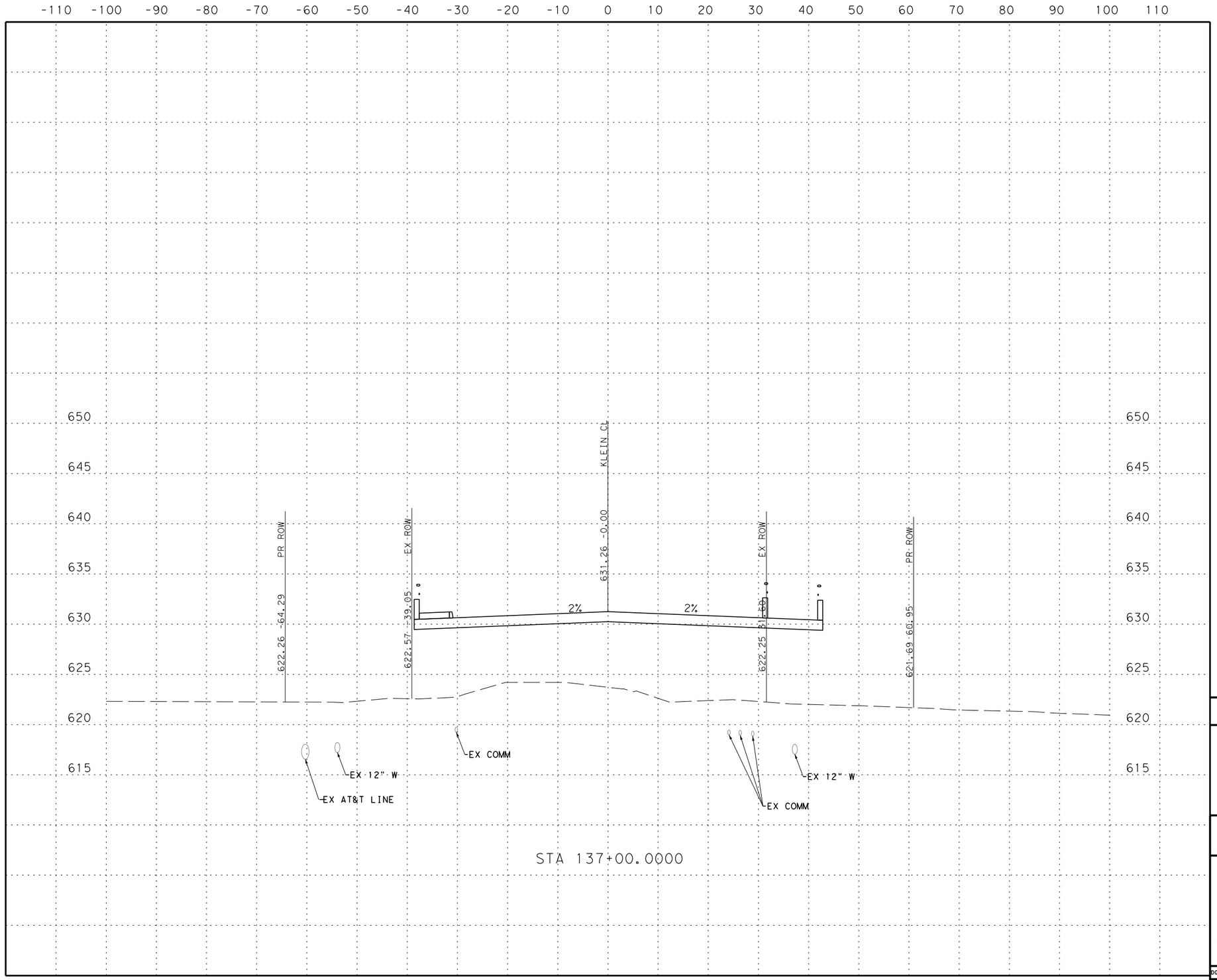

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 137+00.0000 TO STA 137+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

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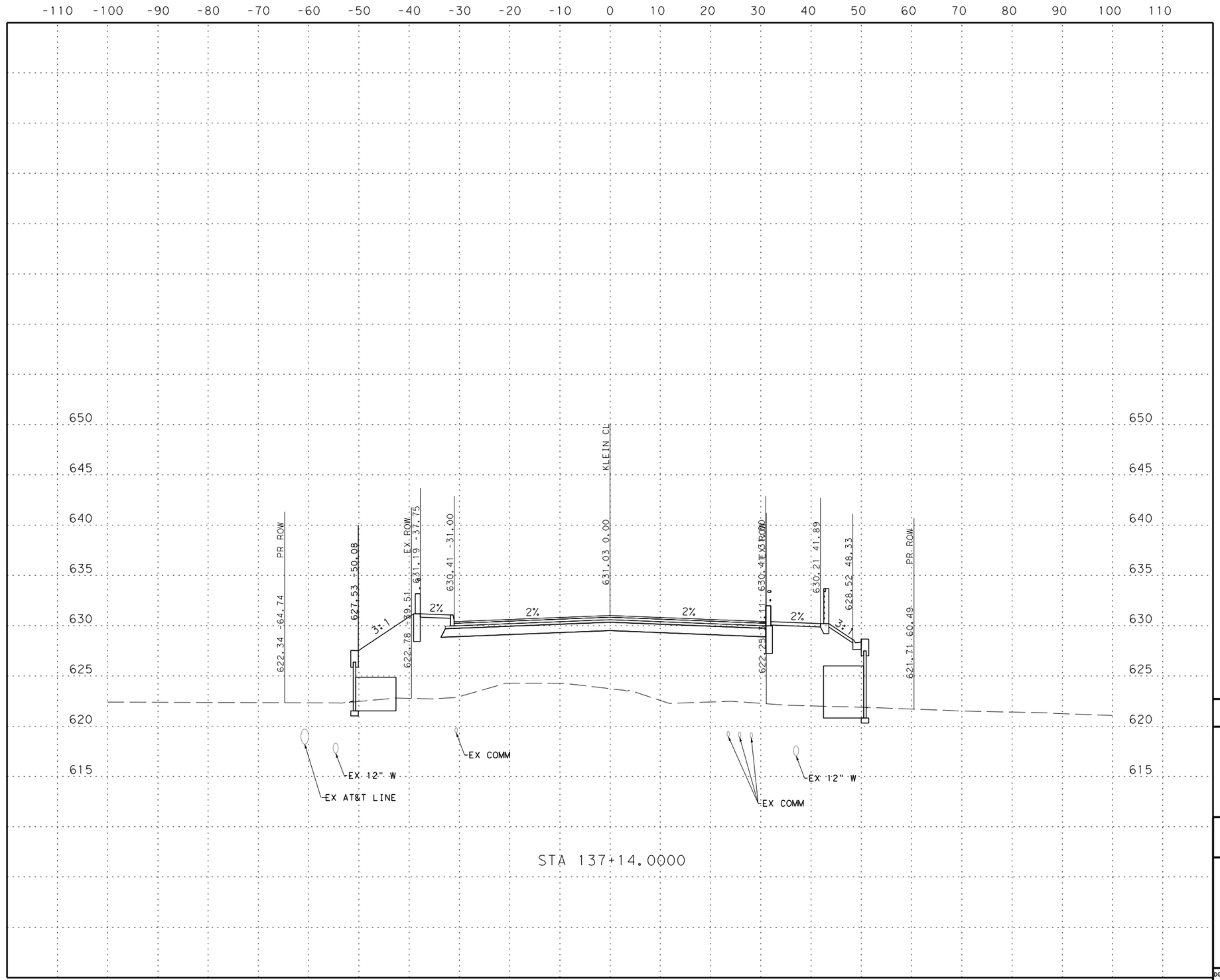

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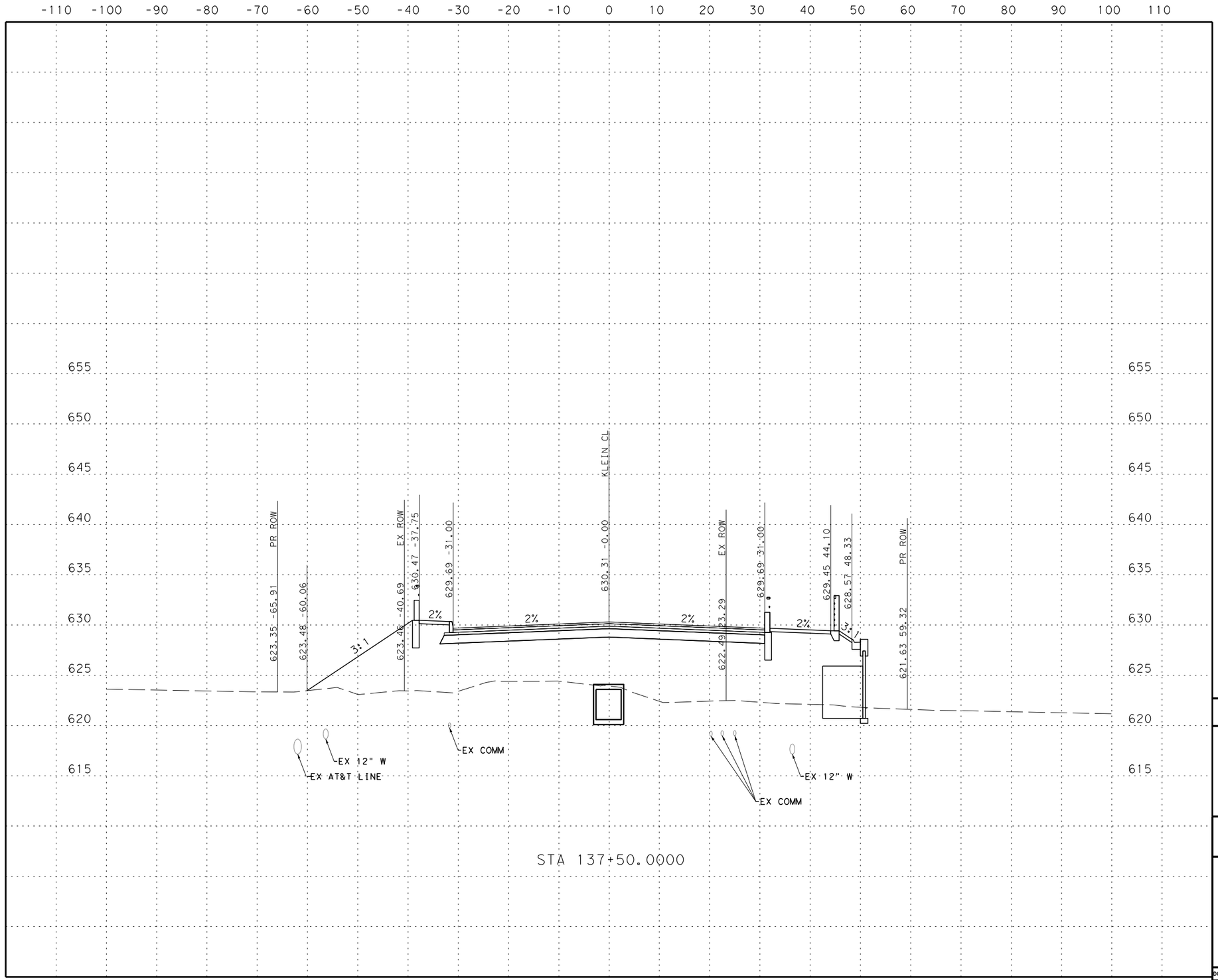
City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 137+14.0000 TO STA 137+14.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	



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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 137+50.0000 TO STA 137+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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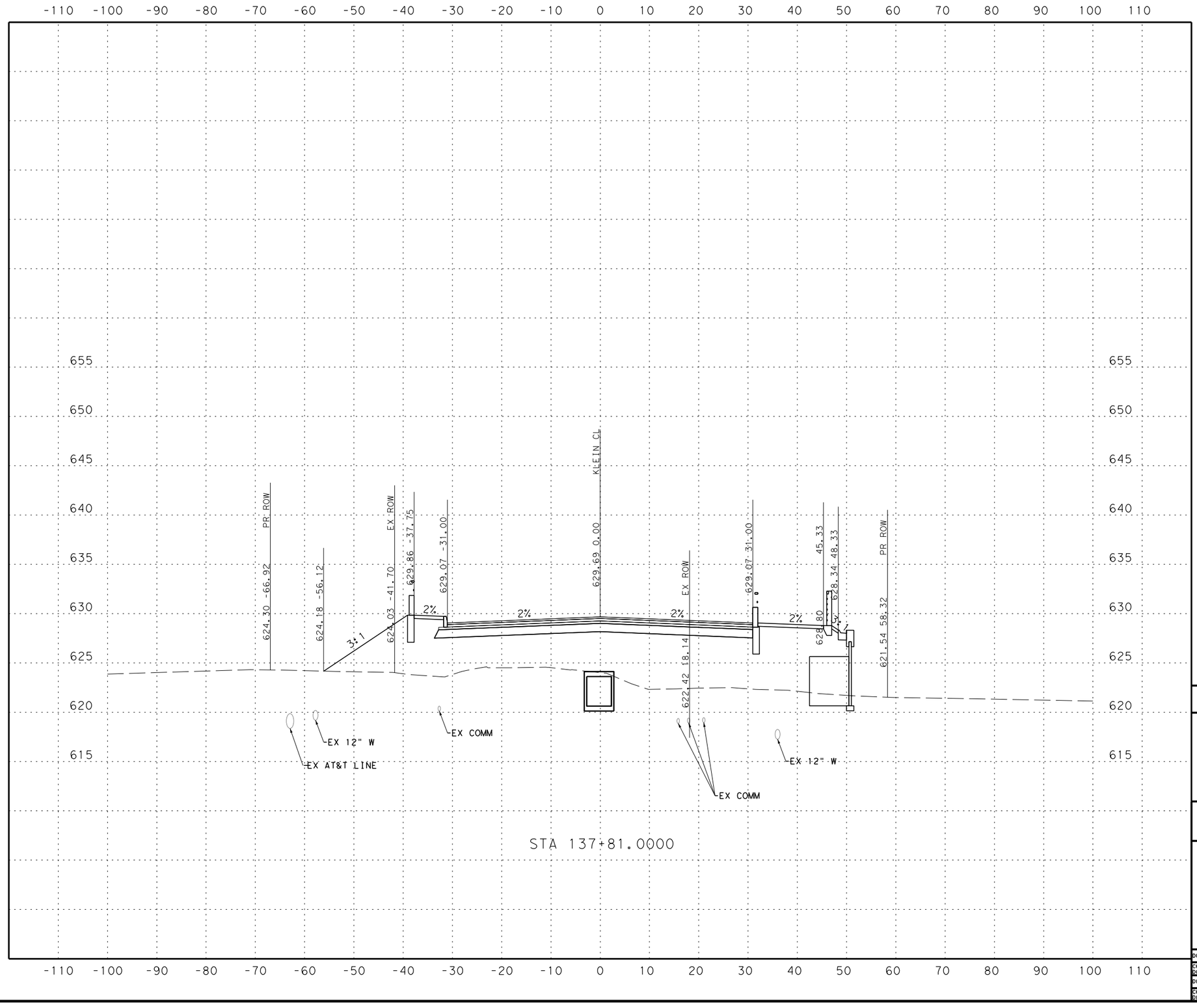

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 137+81.0000 TO STA 137+81.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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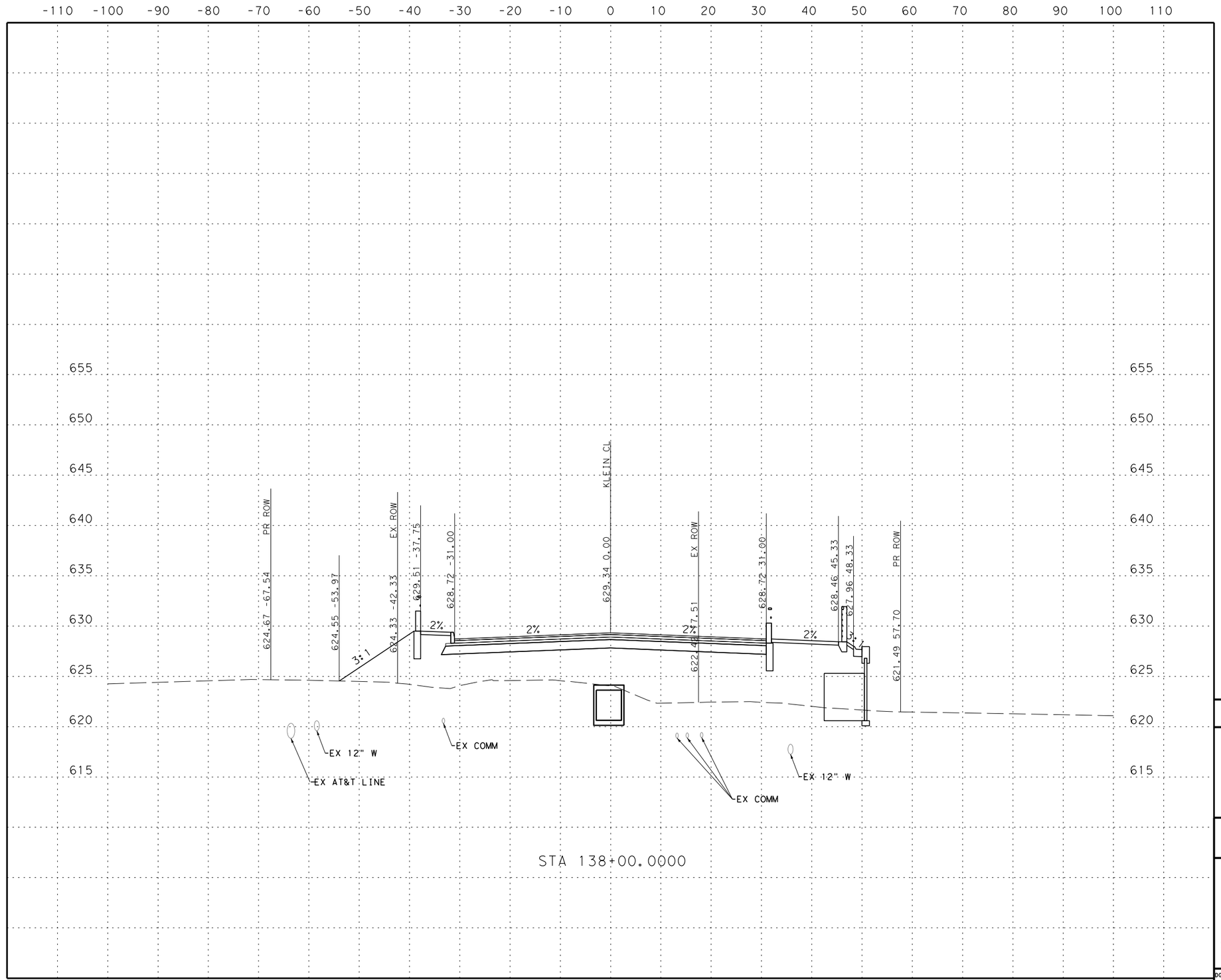

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 138+00.0000 TO STA 138+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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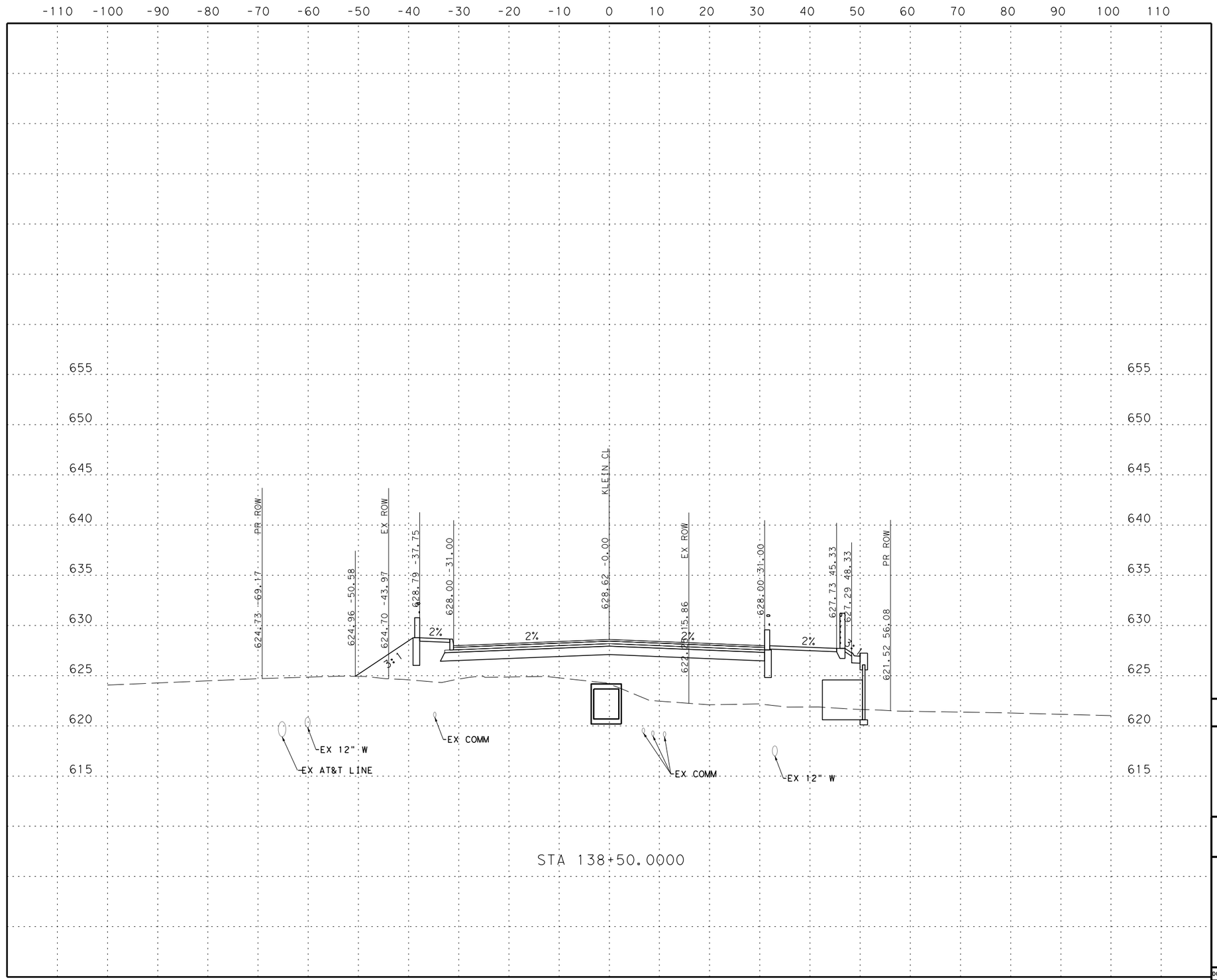

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 138+50.0000 TO STA 138+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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Plotted on: 1/16/2023

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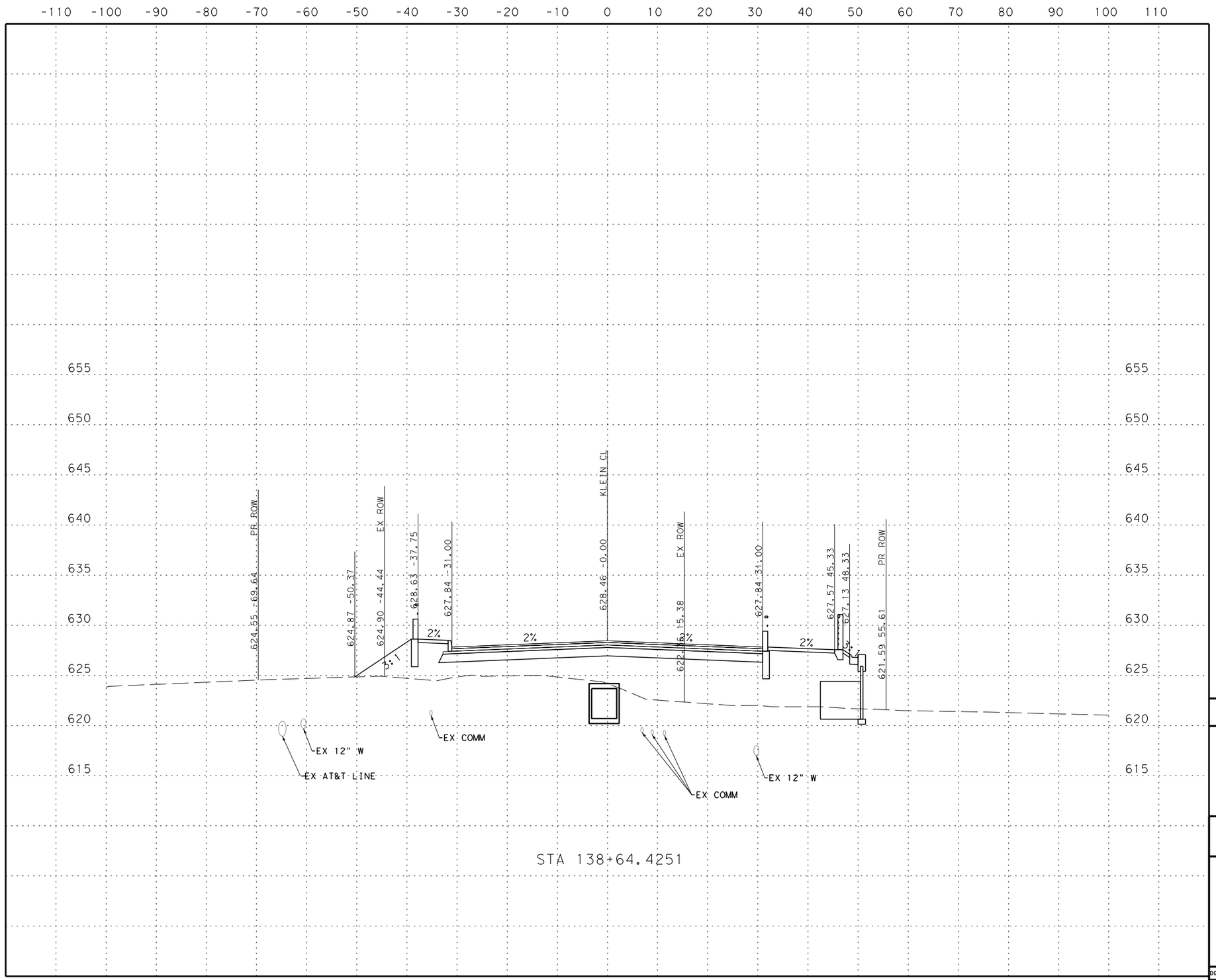

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City of New Braunfels

KLEIN RD

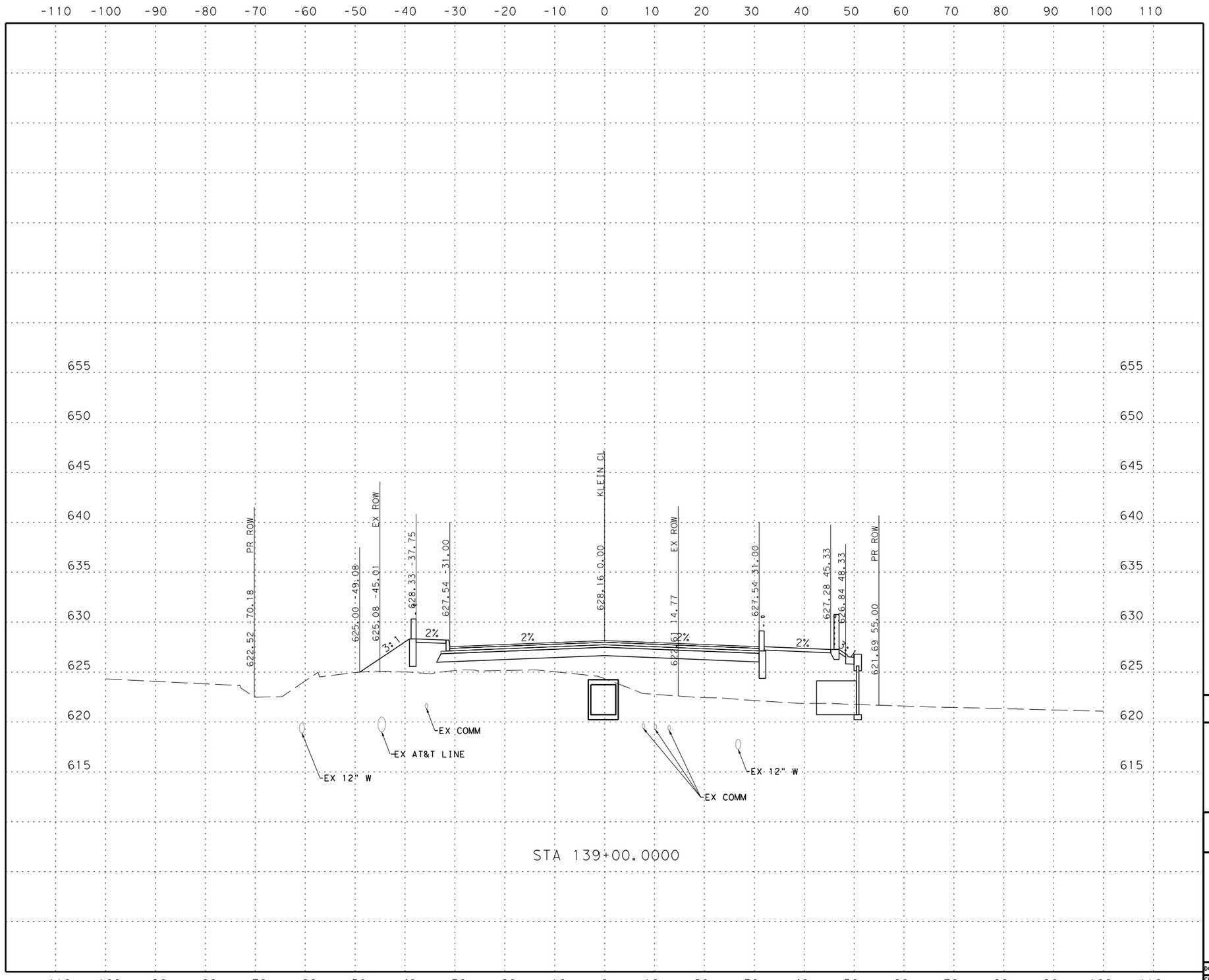
CROSS SECTIONS

STA 138+64.4251 TO STA 138+64.4251

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

Design Filename: ...\5103003_Klein_XSections_Final.dgn



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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 139+00.0000 TO STA 139+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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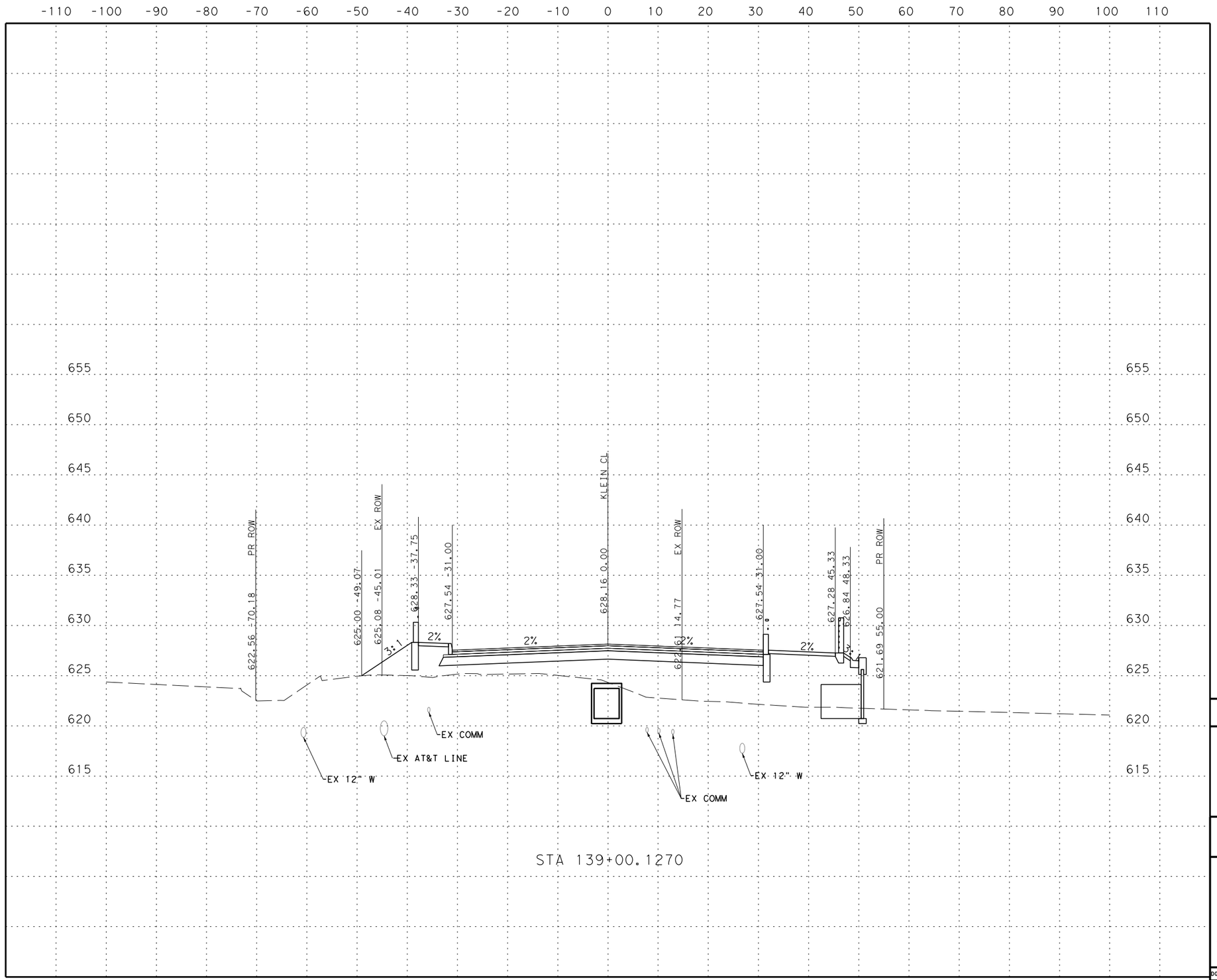

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2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 139+00.1270 TO STA 139+00.1270

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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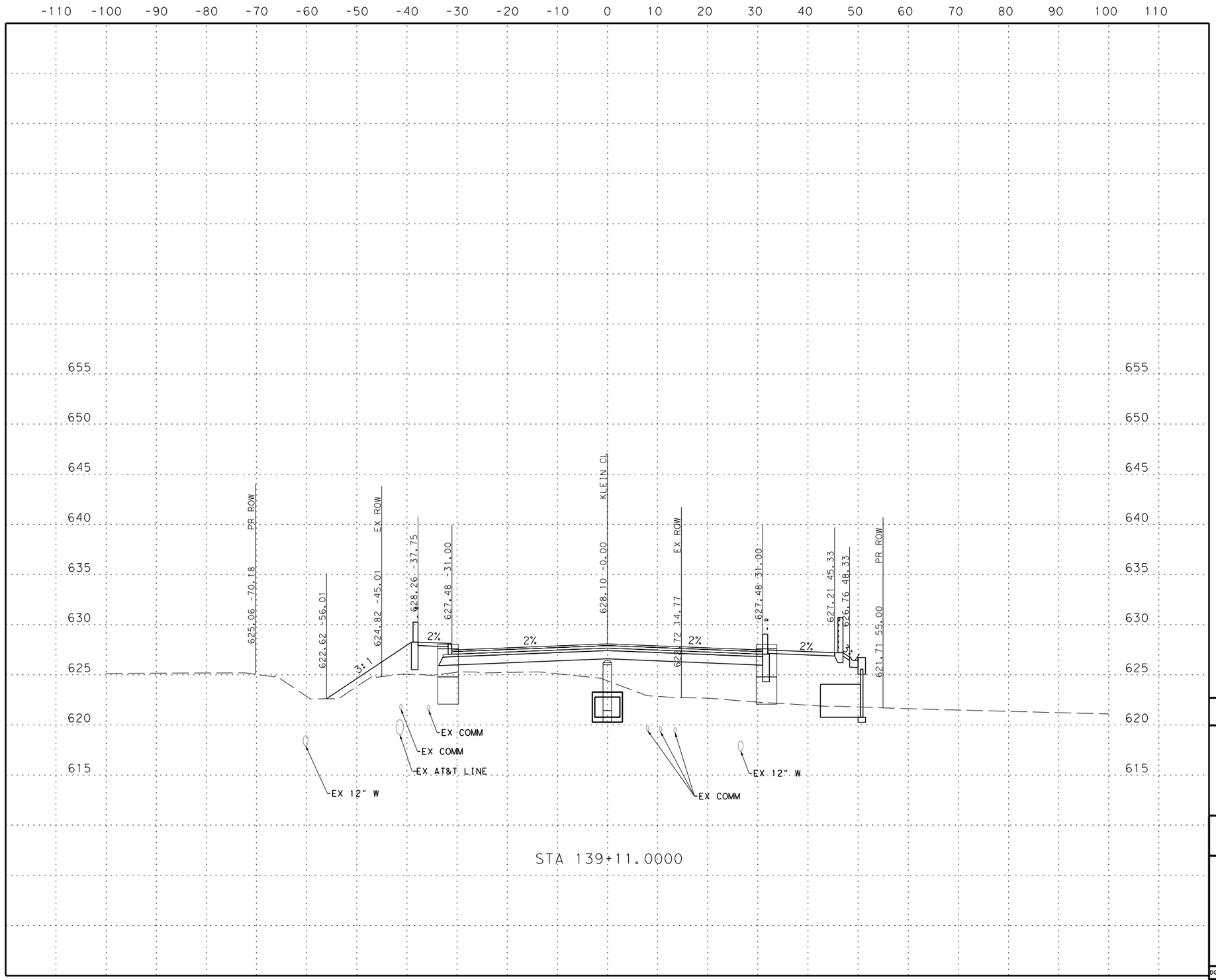

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 139+11.0000 TO STA 139+11.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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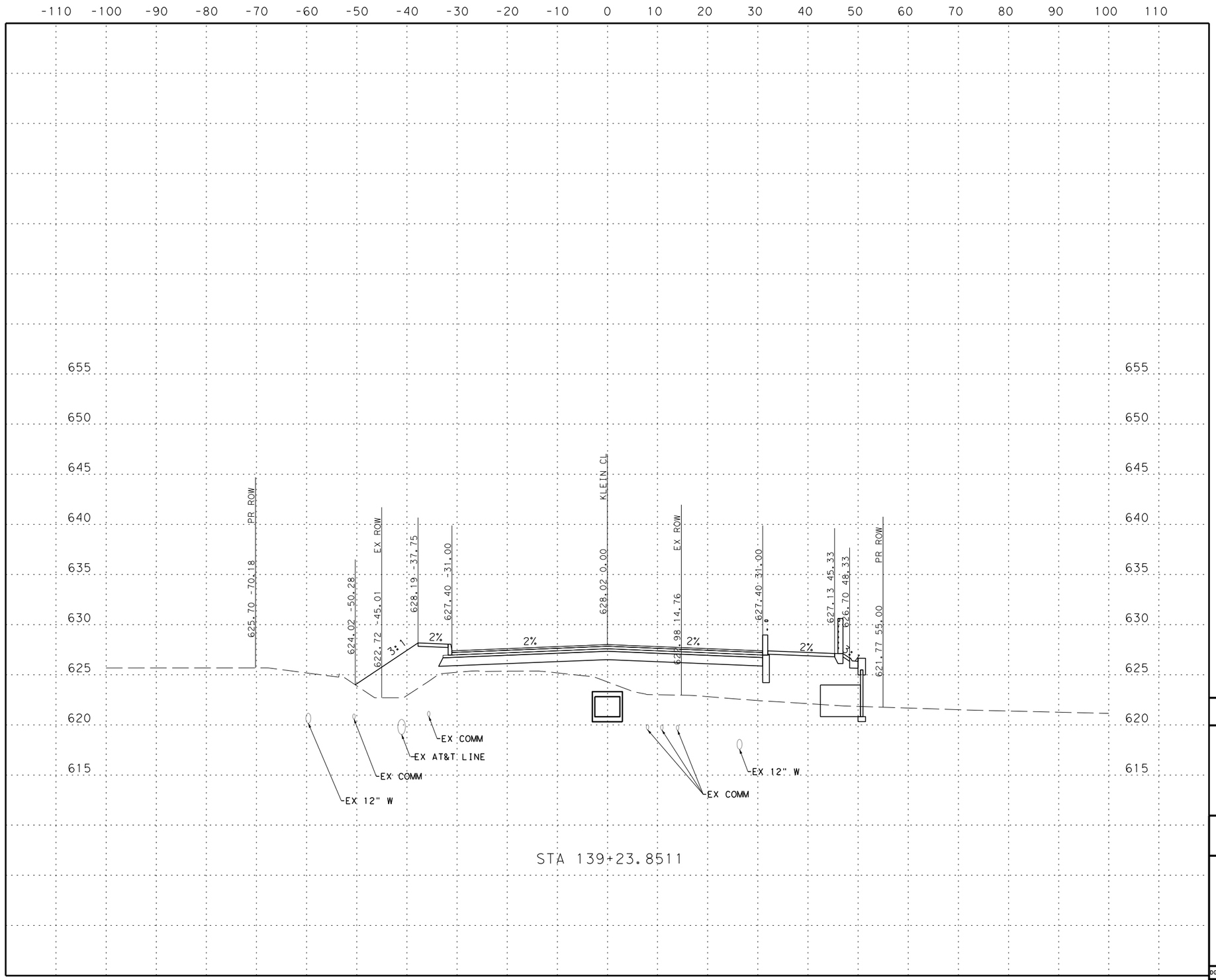

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 139+23.8511 TO STA 139+23.8511

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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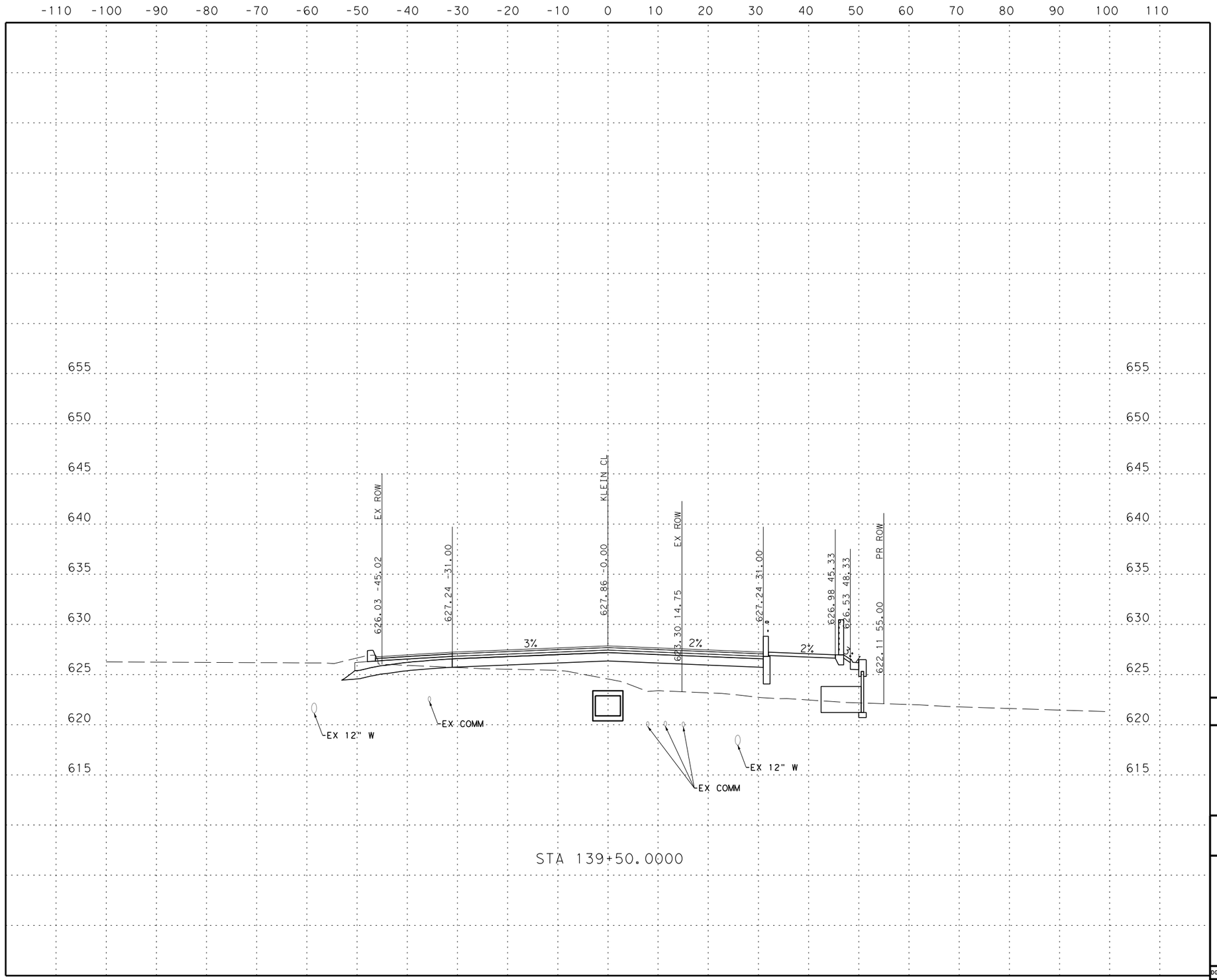

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 139+50.0000 TO STA 139+50.0000

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CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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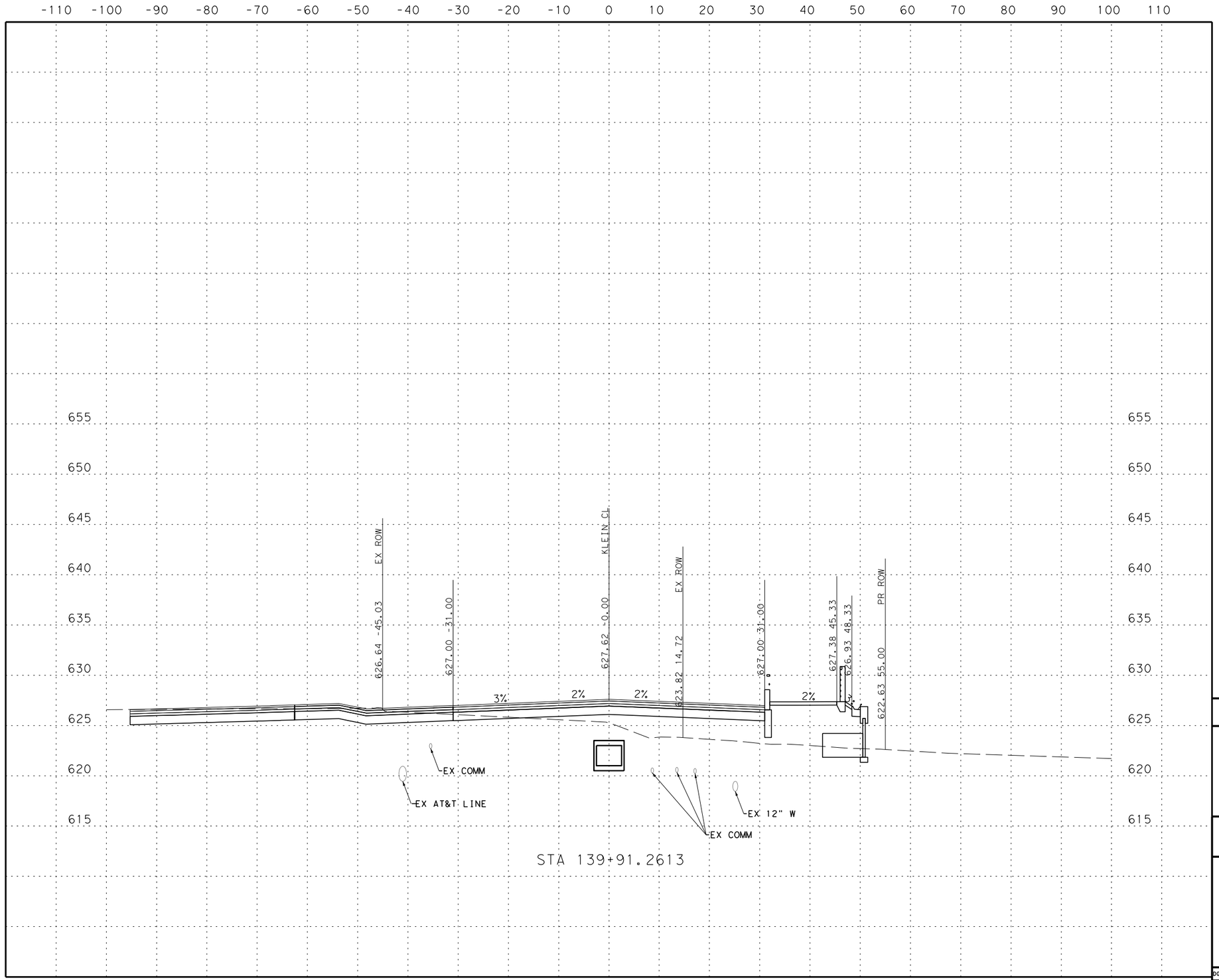

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 139+91.2613 TO STA 139+91.2613

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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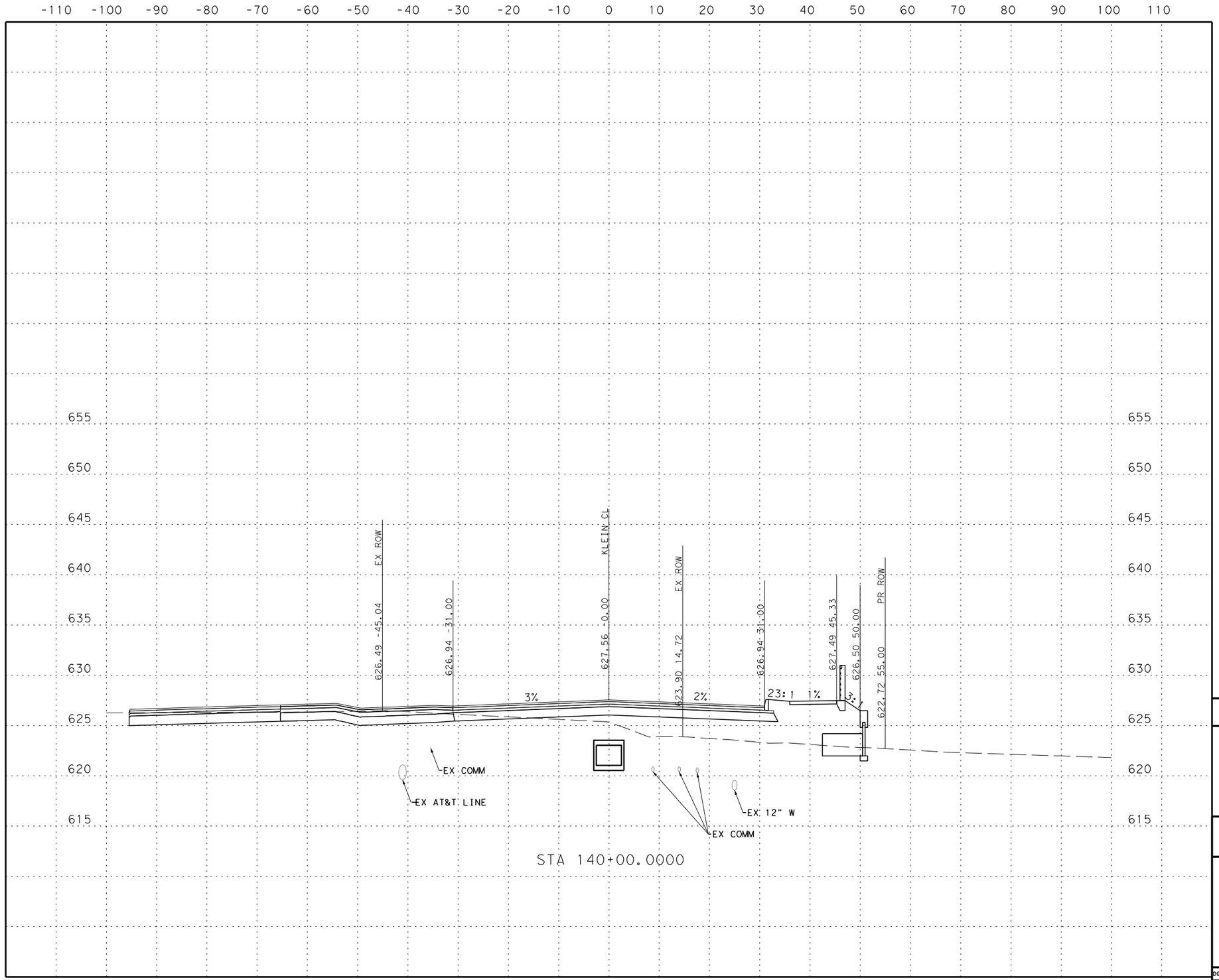

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 140+00.0000 TO STA 140+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

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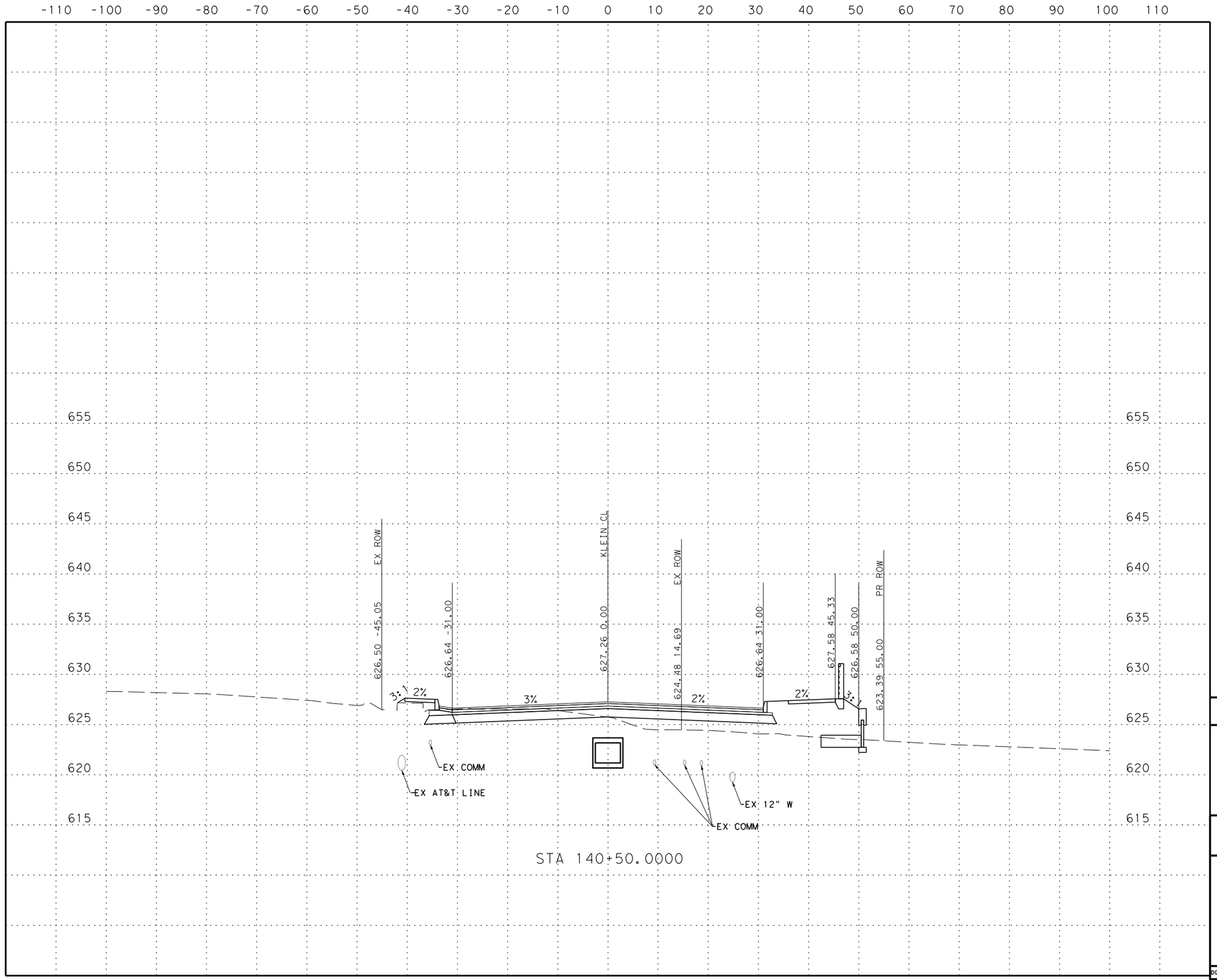

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 140+50.0000 TO STA 140+50.0000

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CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
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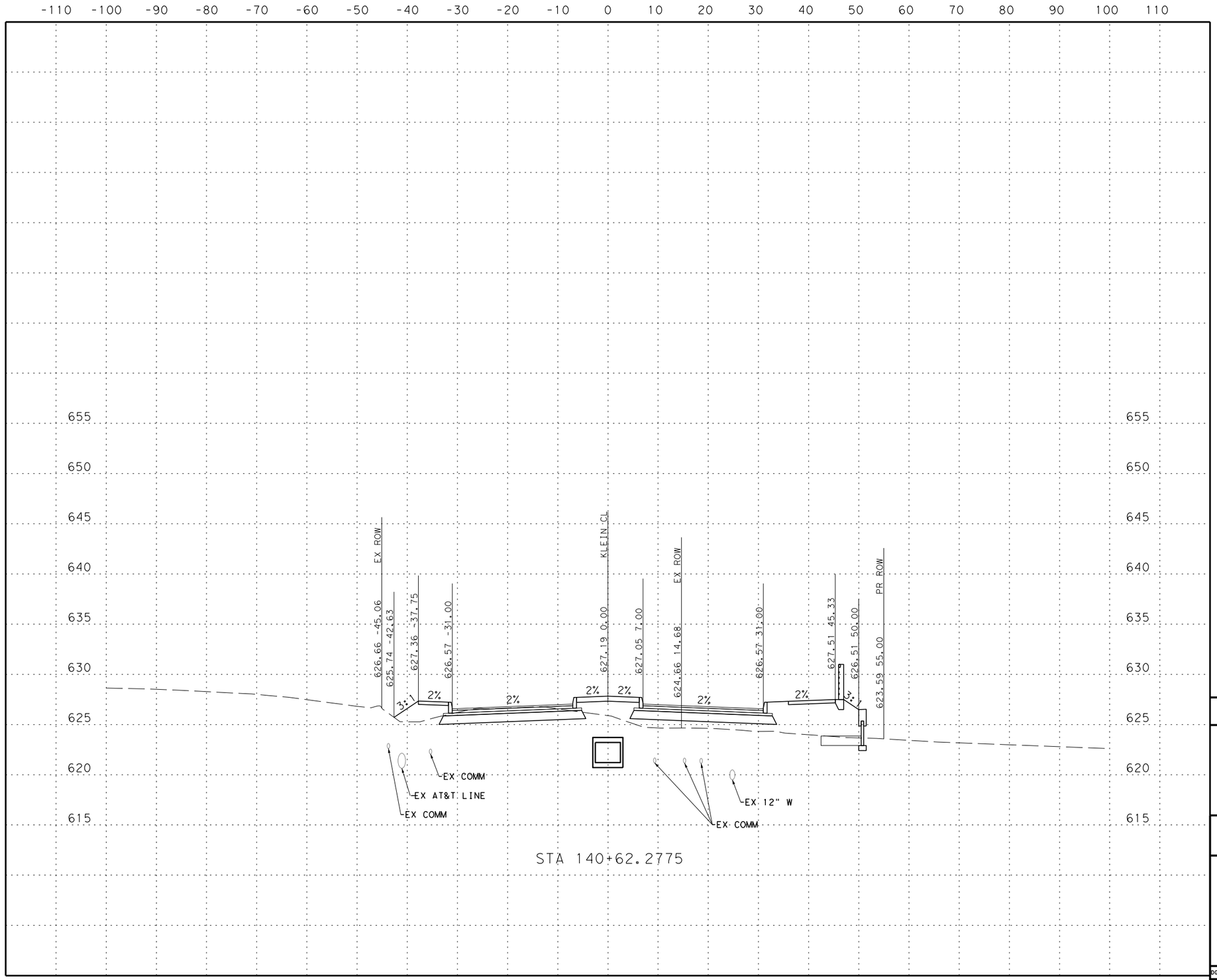

NOTES

1. BRIDGE GIRDERS NOT SHOWN FOR CLARITY
2. EXIST UTILITIES SHOWN FROM BEST AVAILABLE INFORMATION AT ASSUMED 3' BELOW EXIST GROUND, CONTRACTOR SHALL CONFIRM ALL UTILITY LOCATIONS AND DEPTHS PRIOR TO EXCAVATION

SCALE: H: 1"= 20'
V: 1"= 10'

PAPE-DAWSON ENGINEERS

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2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

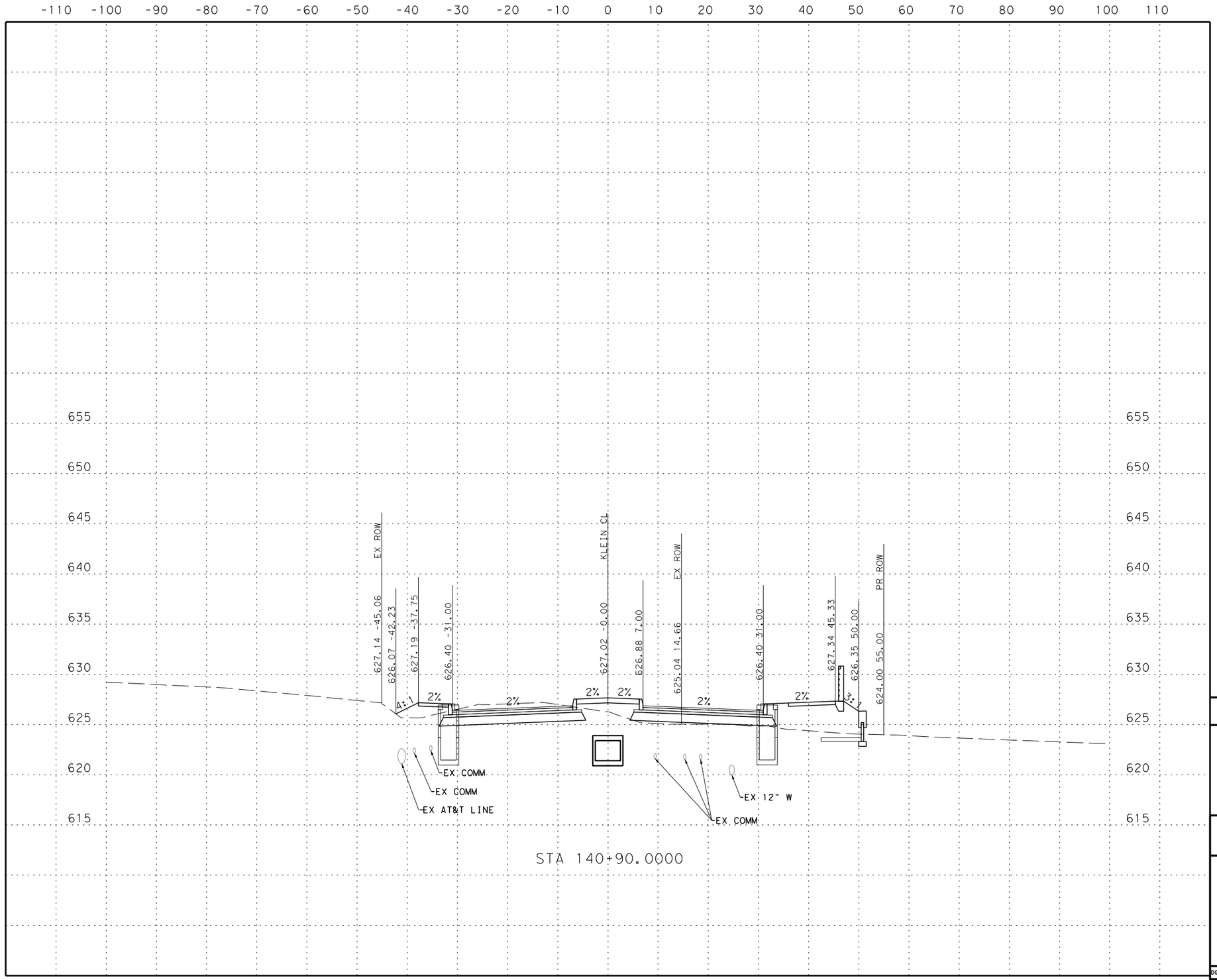
CROSS SECTIONS

STA 140+62.2775 TO STA 140+62.2775

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

Design Filename: ...\5103003_Klein_XSections_Final.dgn



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TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

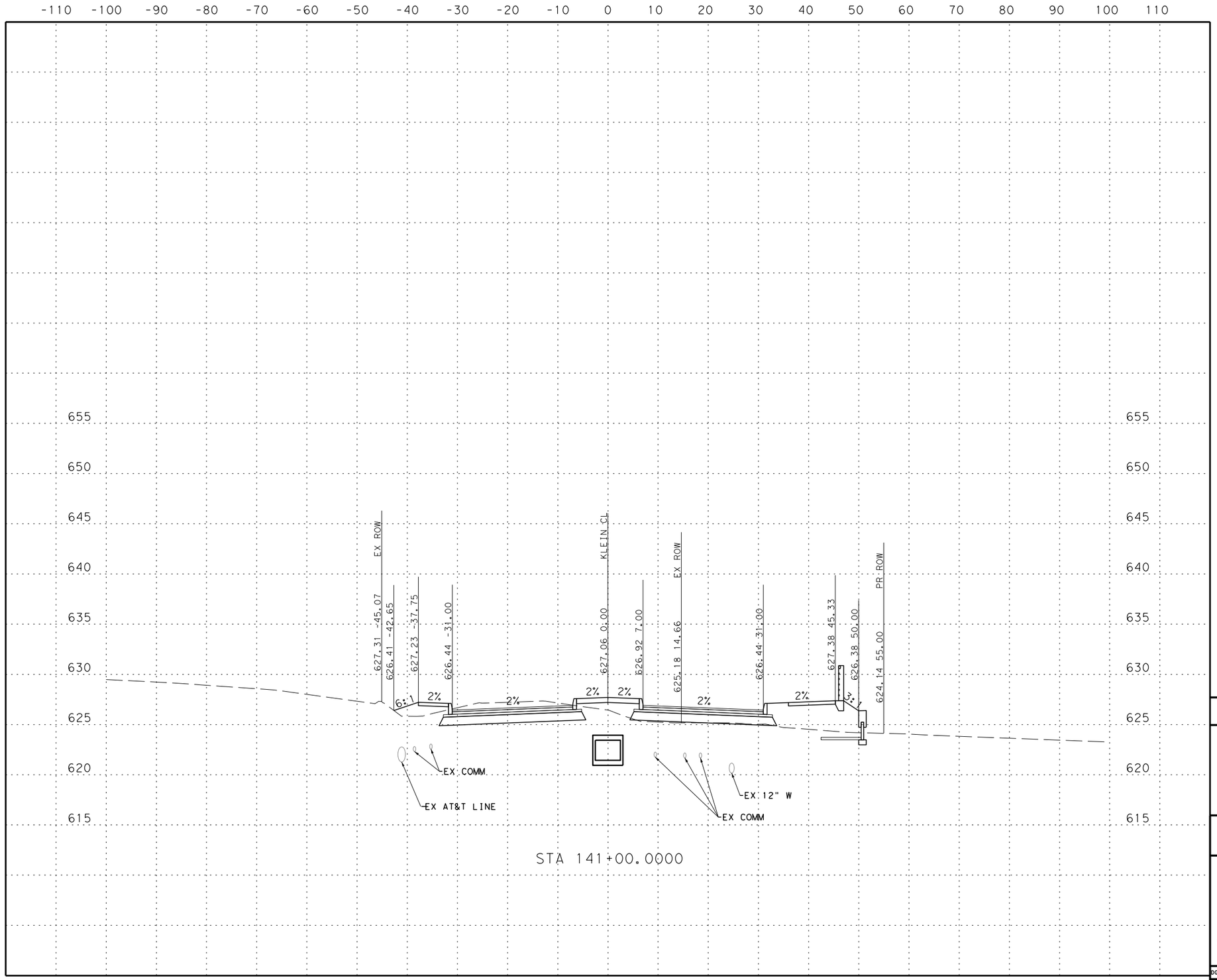
CROSS SECTIONS

STA 140+90.0000 TO STA 140+90.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

Design Filename: ...\5103003_Klein_XSections_Final.dgn



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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 141+00.0000 TO STA 141+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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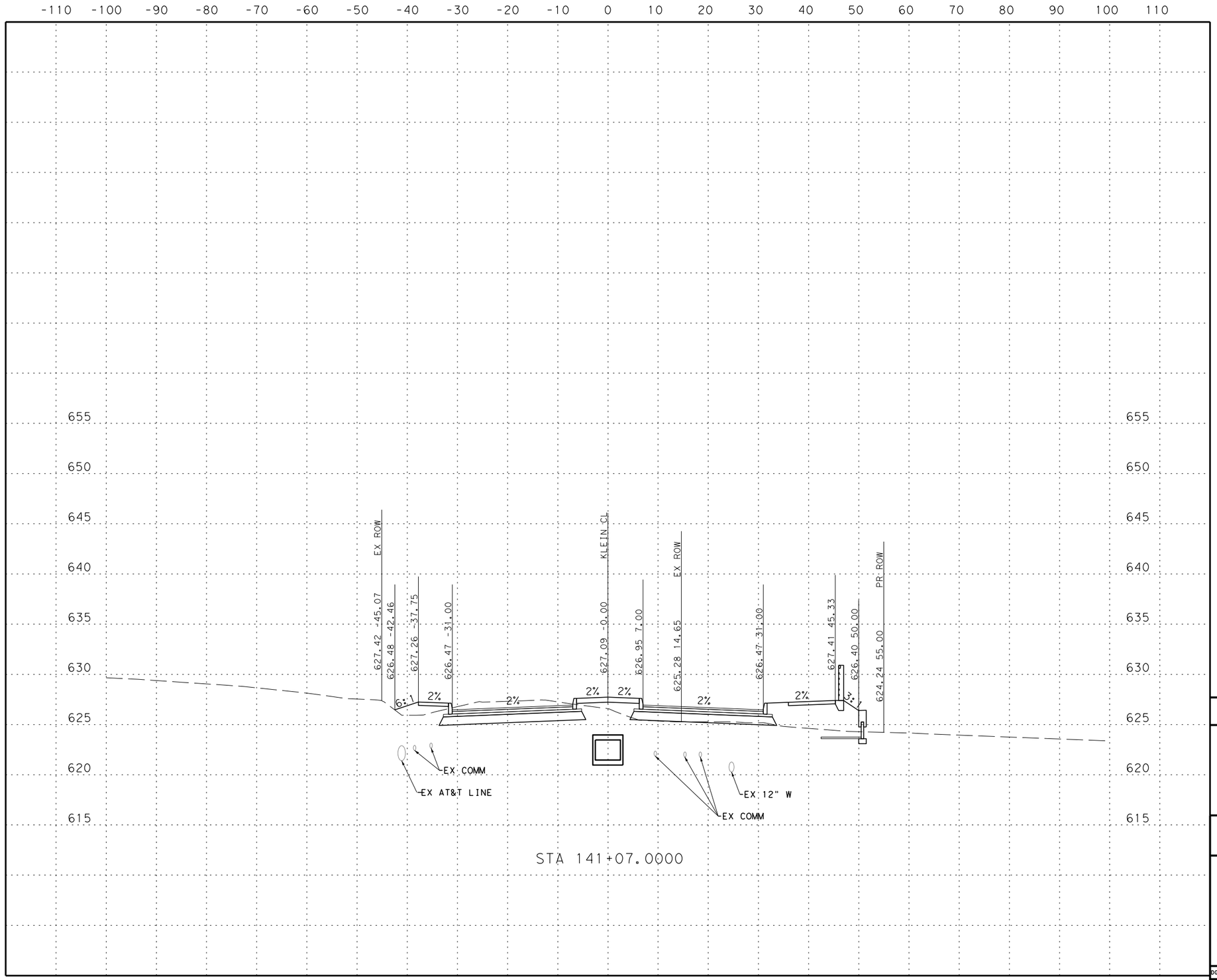

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 141+07.0000 TO STA 141+07.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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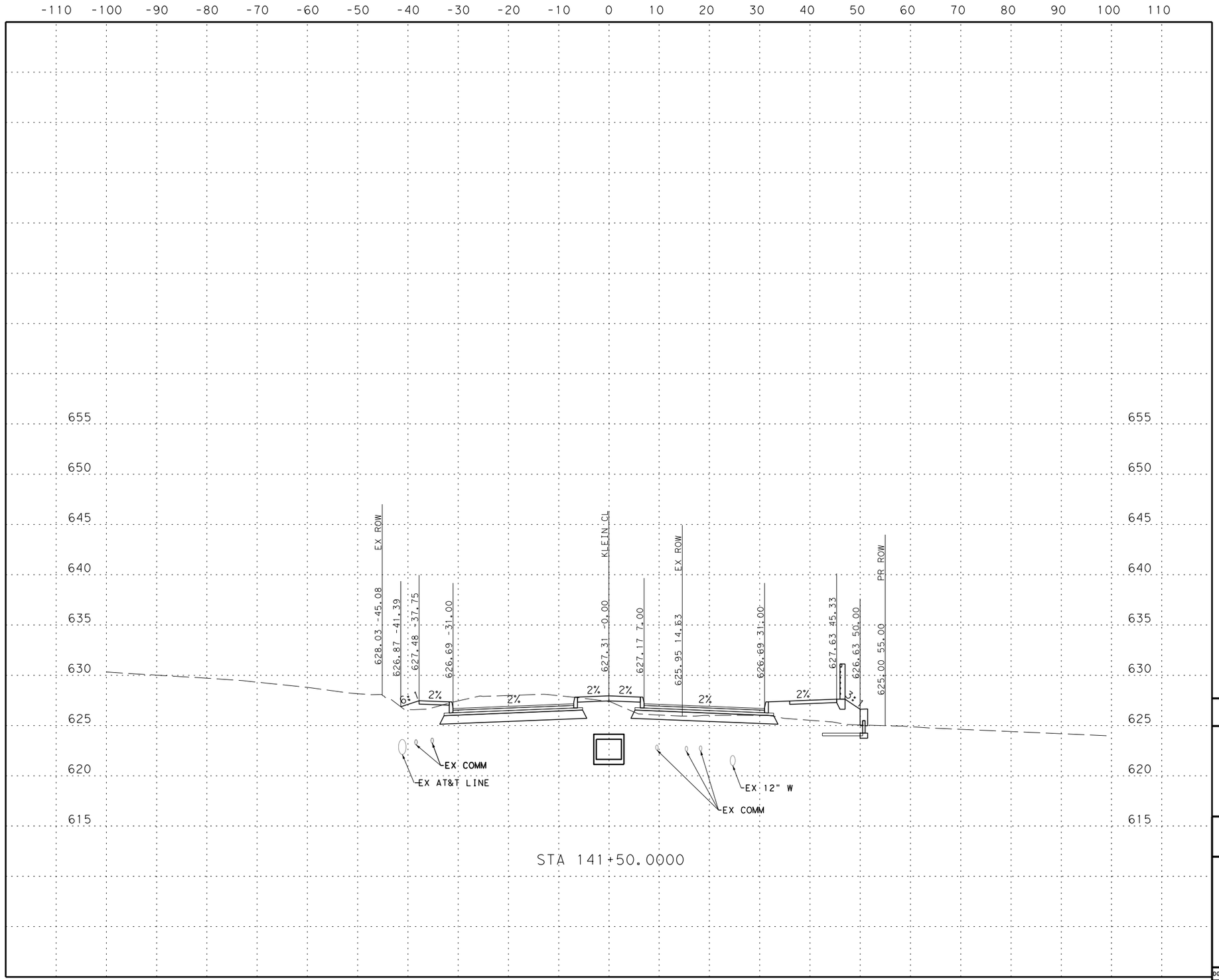

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 141+50.0000 TO STA 141+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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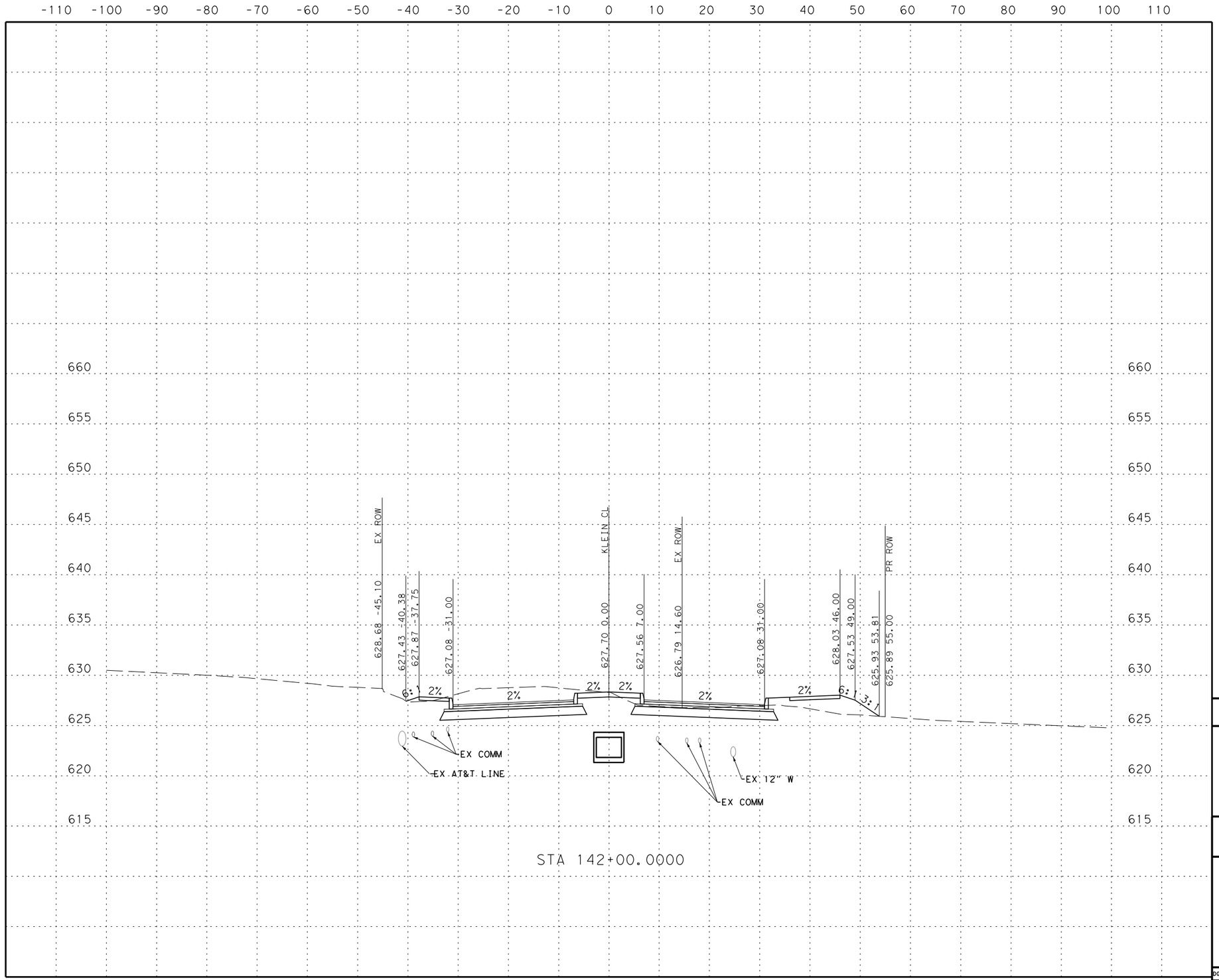

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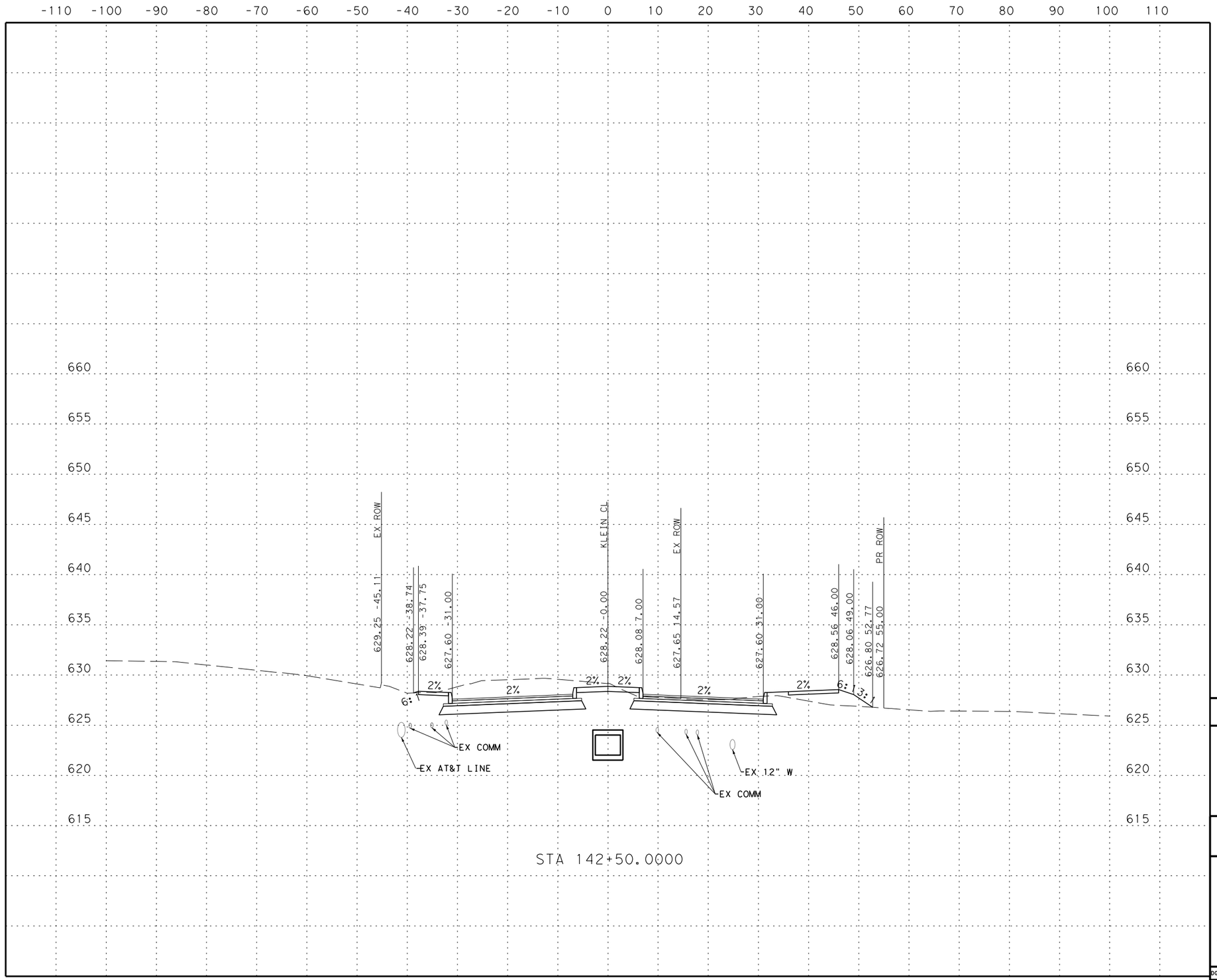
City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 142+00.0000 TO STA 142+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	



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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 142+50.0000 TO STA 142+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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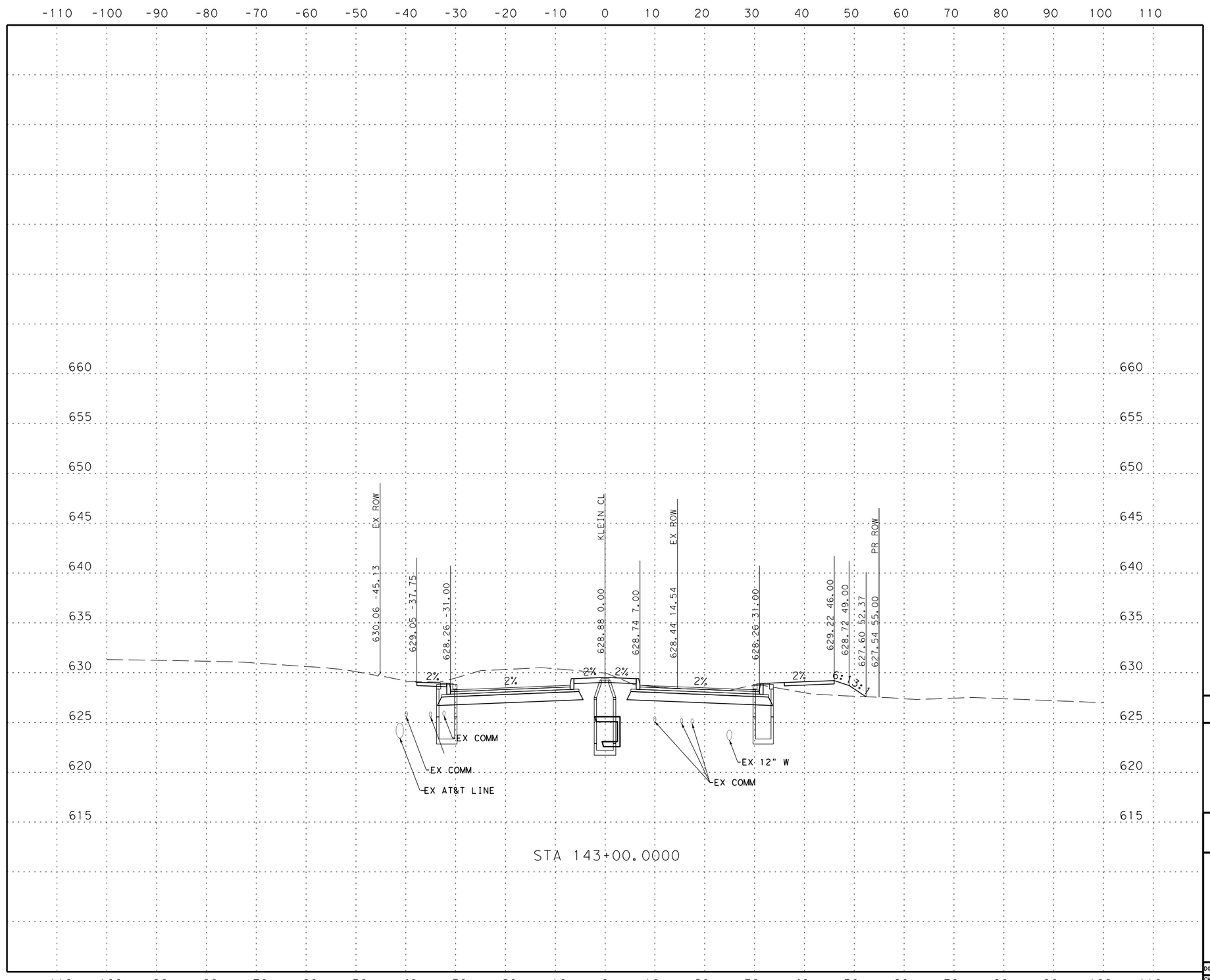

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 143+00.0000 TO STA 143+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

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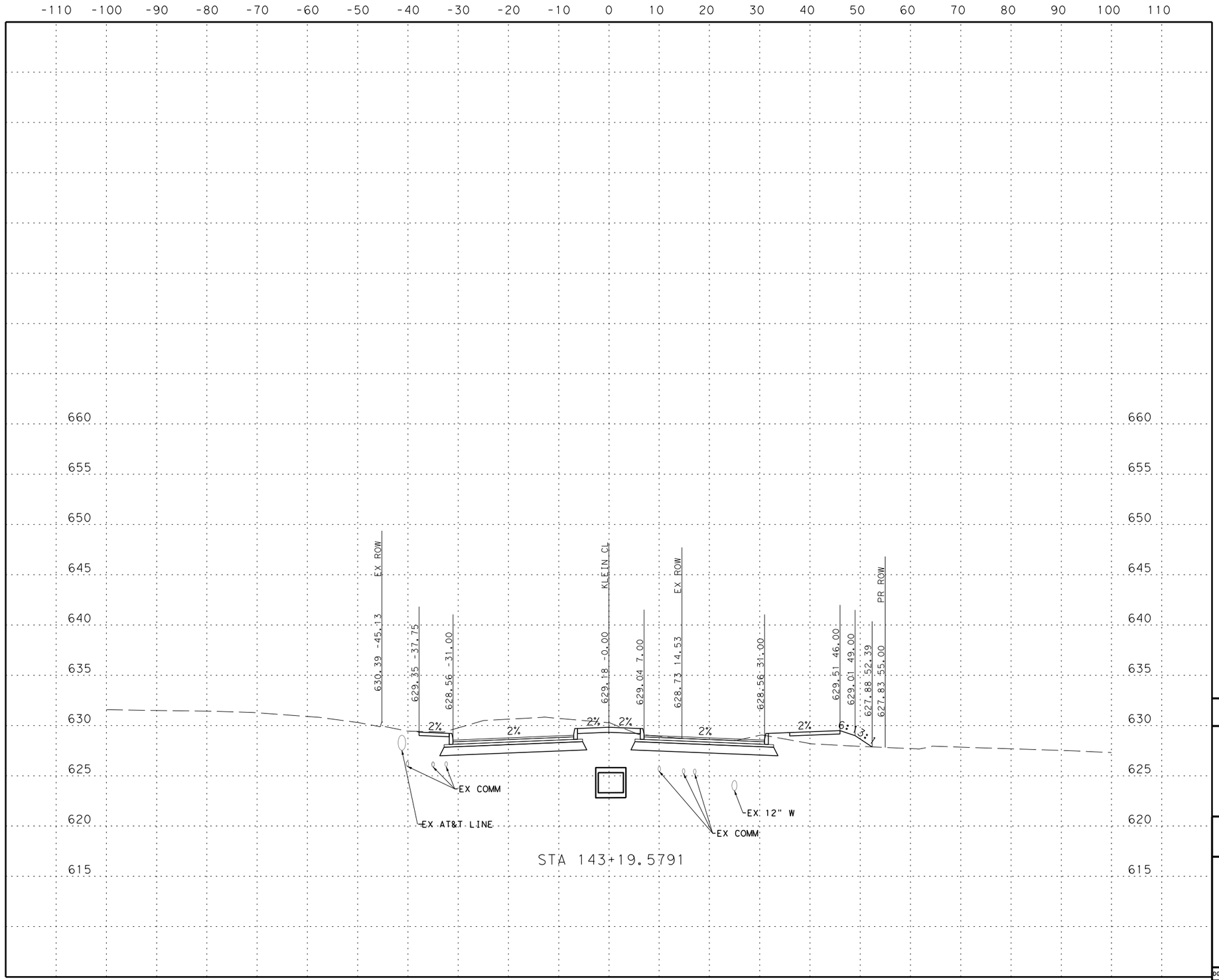

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City of New Braunfels

KLEIN RD

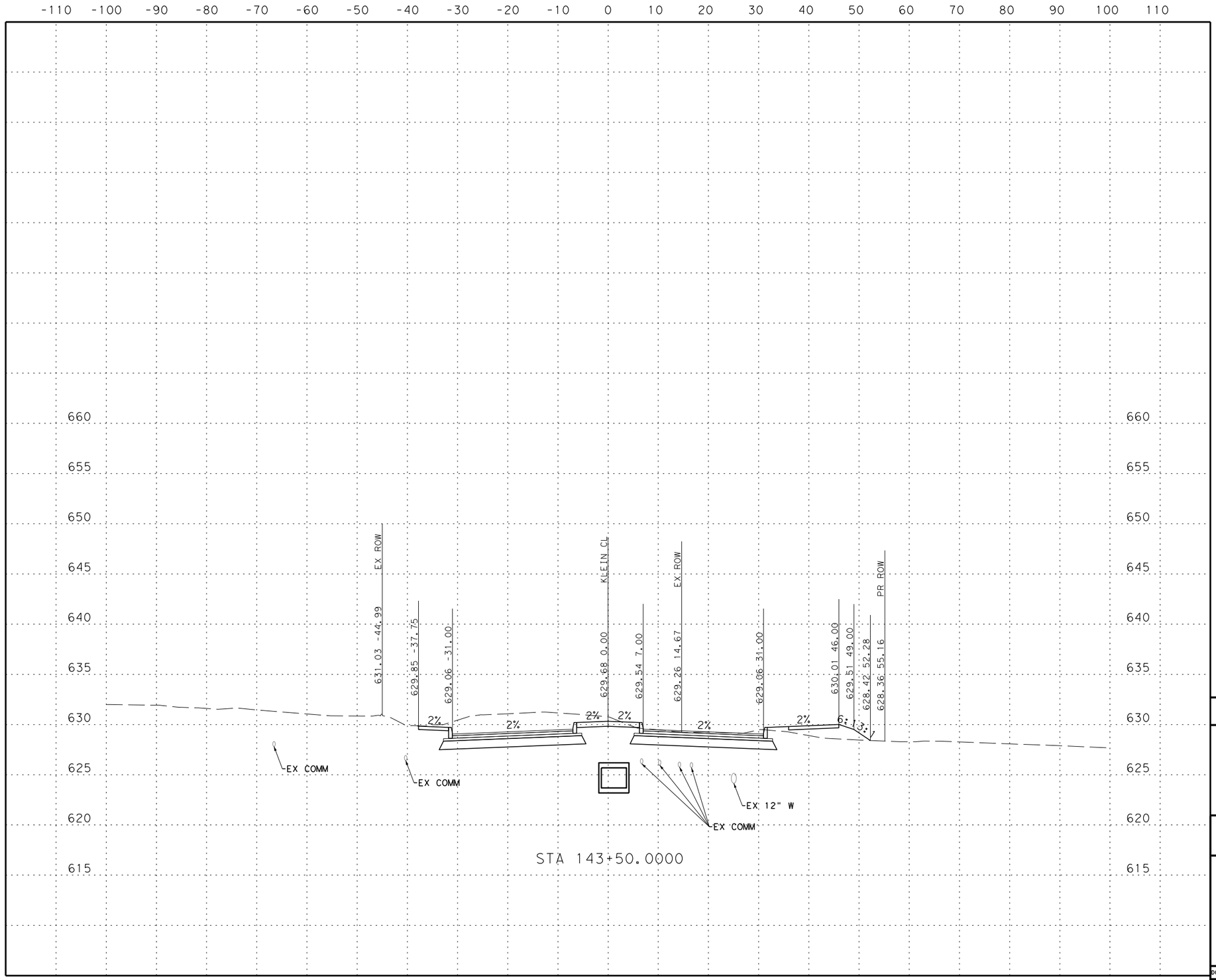
CROSS SECTIONS

STA 143+19.5791 TO STA 143+19.5791

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

Design Filename: ...\5103003_Klein_XSections_Final.dgn



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2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

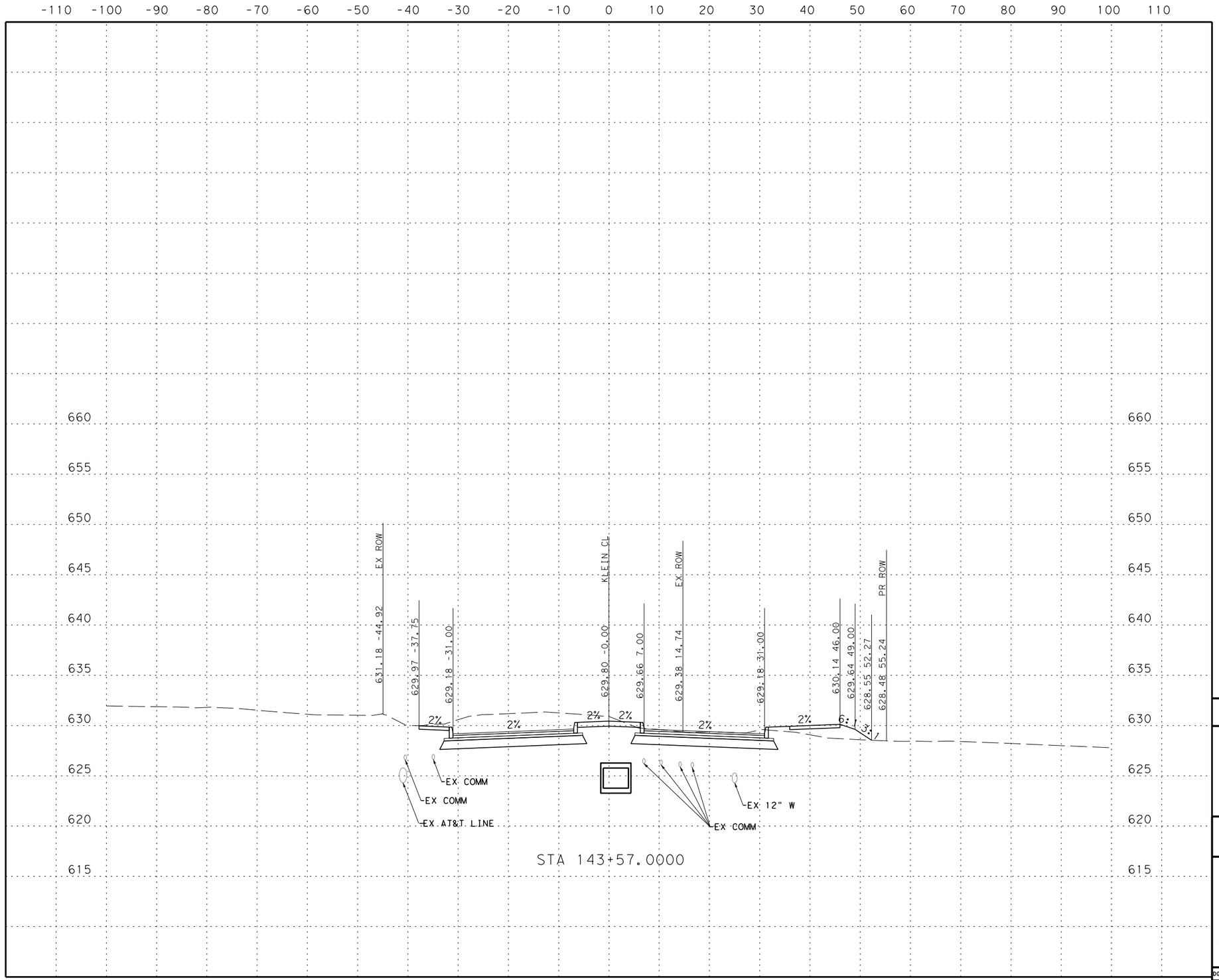
City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 143+50.0000 TO STA 143+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	



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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 143+57.0000 TO STA 143+57.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

Design Filename: ...\5103003_Klein_XSections_Final.dgn

Plotted on: 1/16/2023

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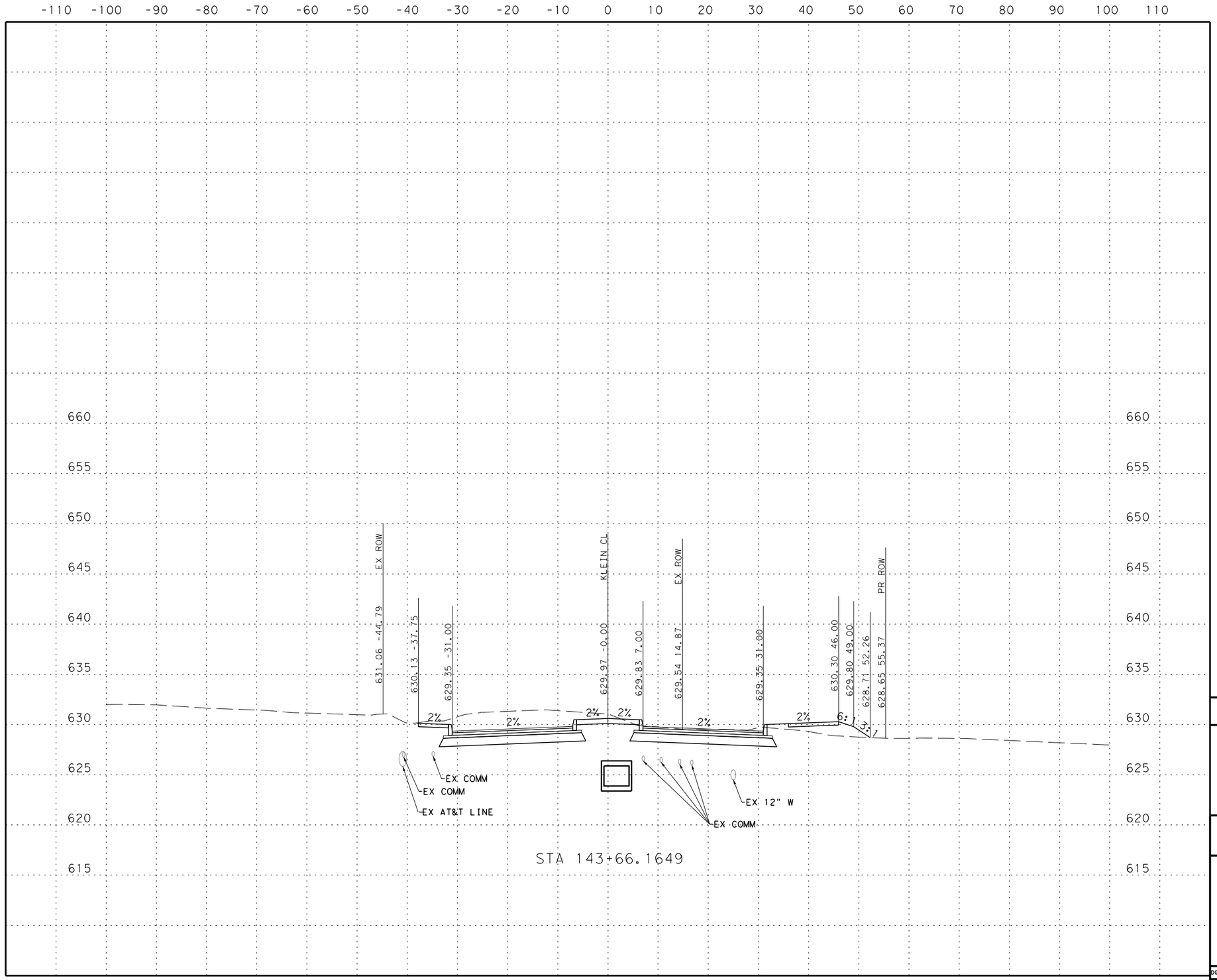

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City of New Braunfels

KLEIN RD

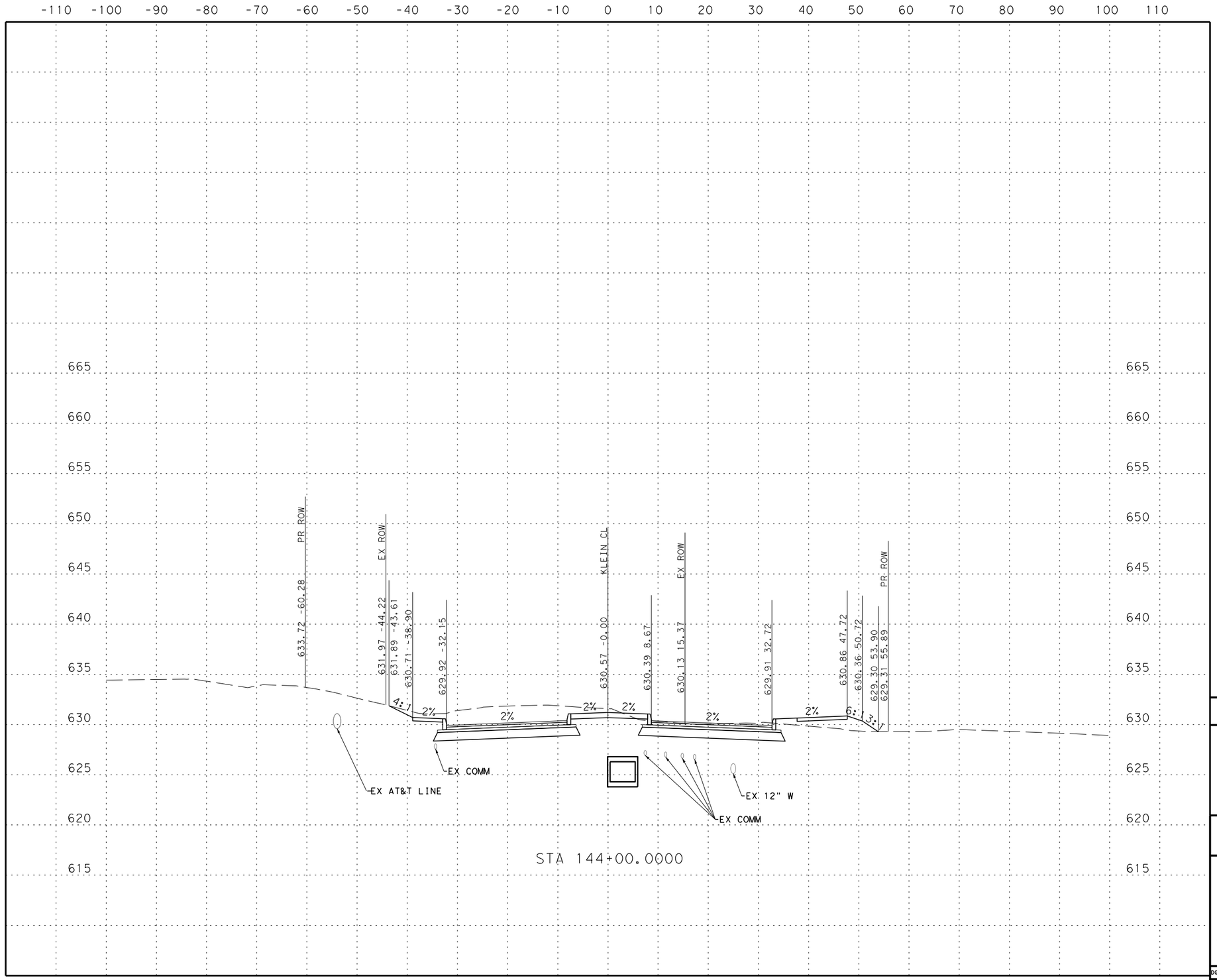
CROSS SECTIONS

STA 143+66.1649 TO STA 143+66.1649

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

Design Filename: ...\5103003_Klein_XSections_Final.dgn



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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 144+00.0000 TO STA 144+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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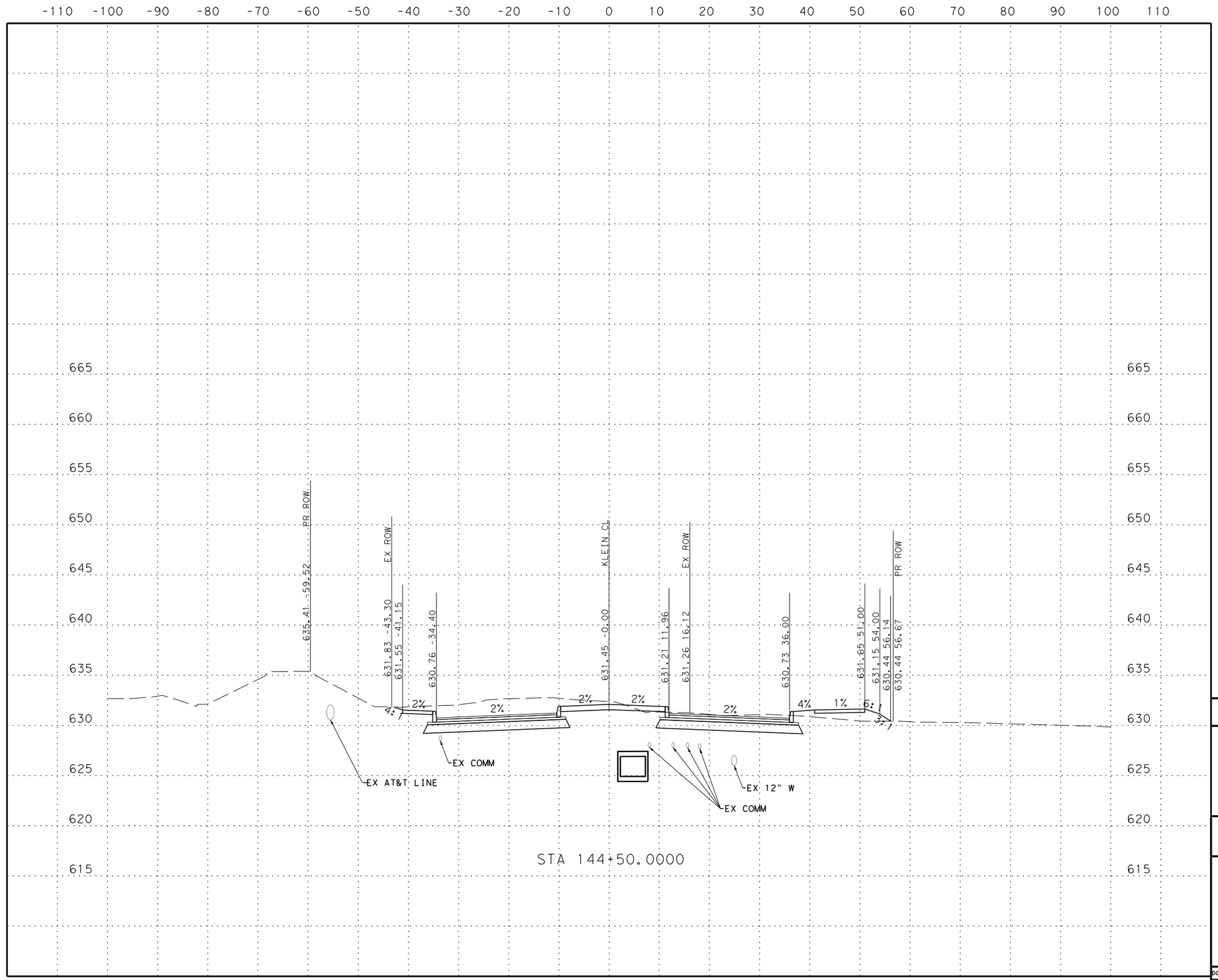

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 144+50.0000 TO STA 144+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

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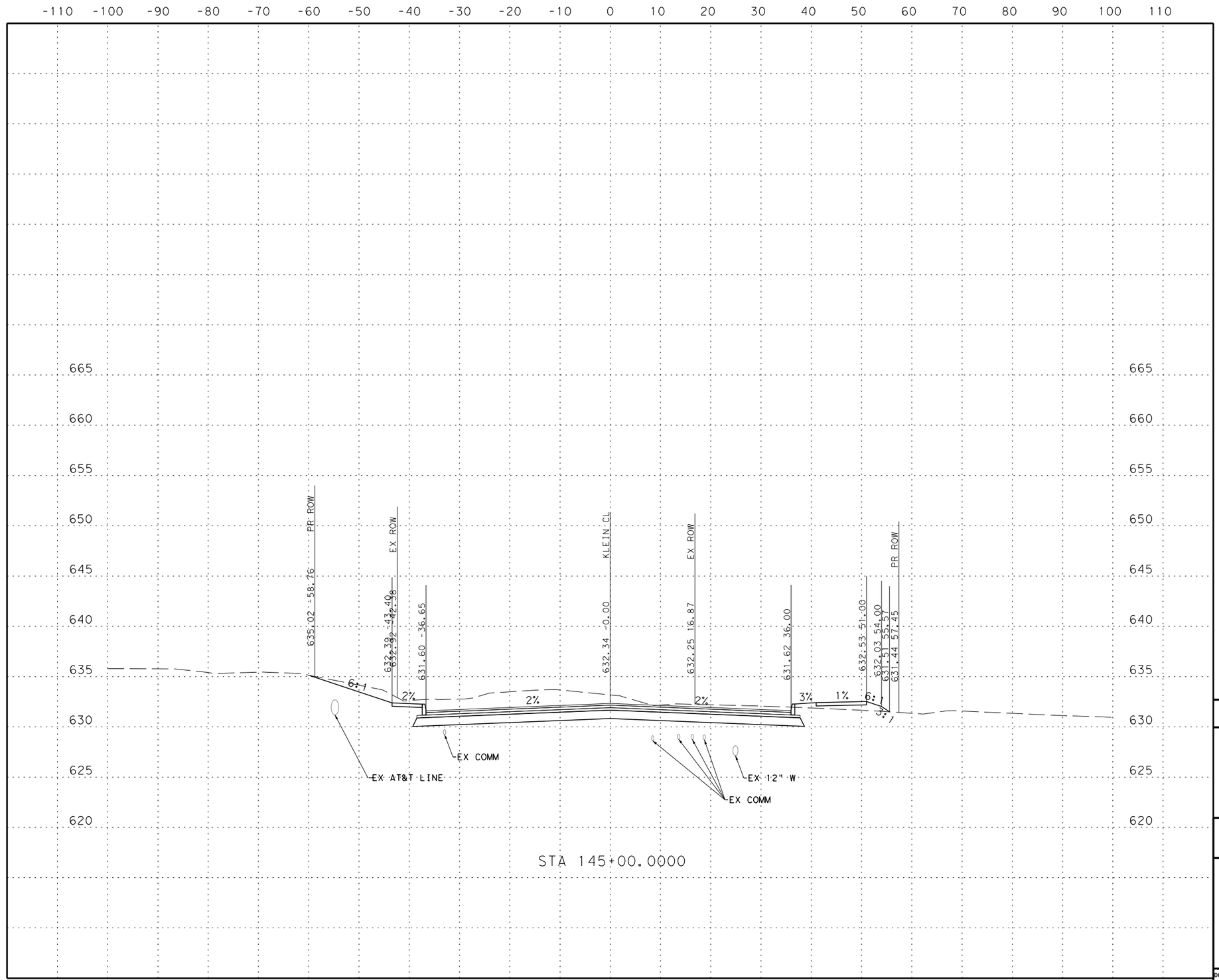

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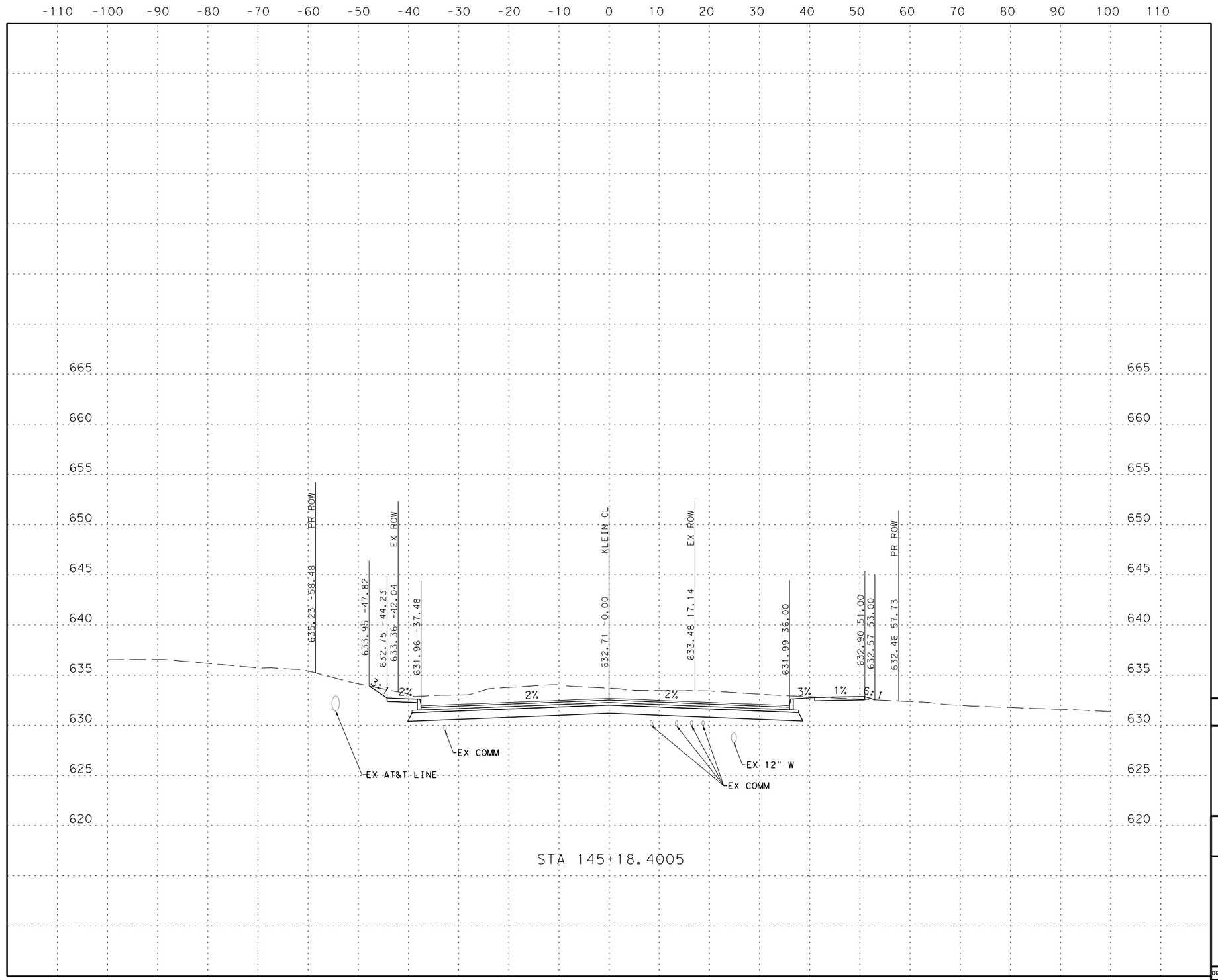
City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 145+00.0000 TO STA 145+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	



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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 145+18.4005 TO STA 145+18.4005

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

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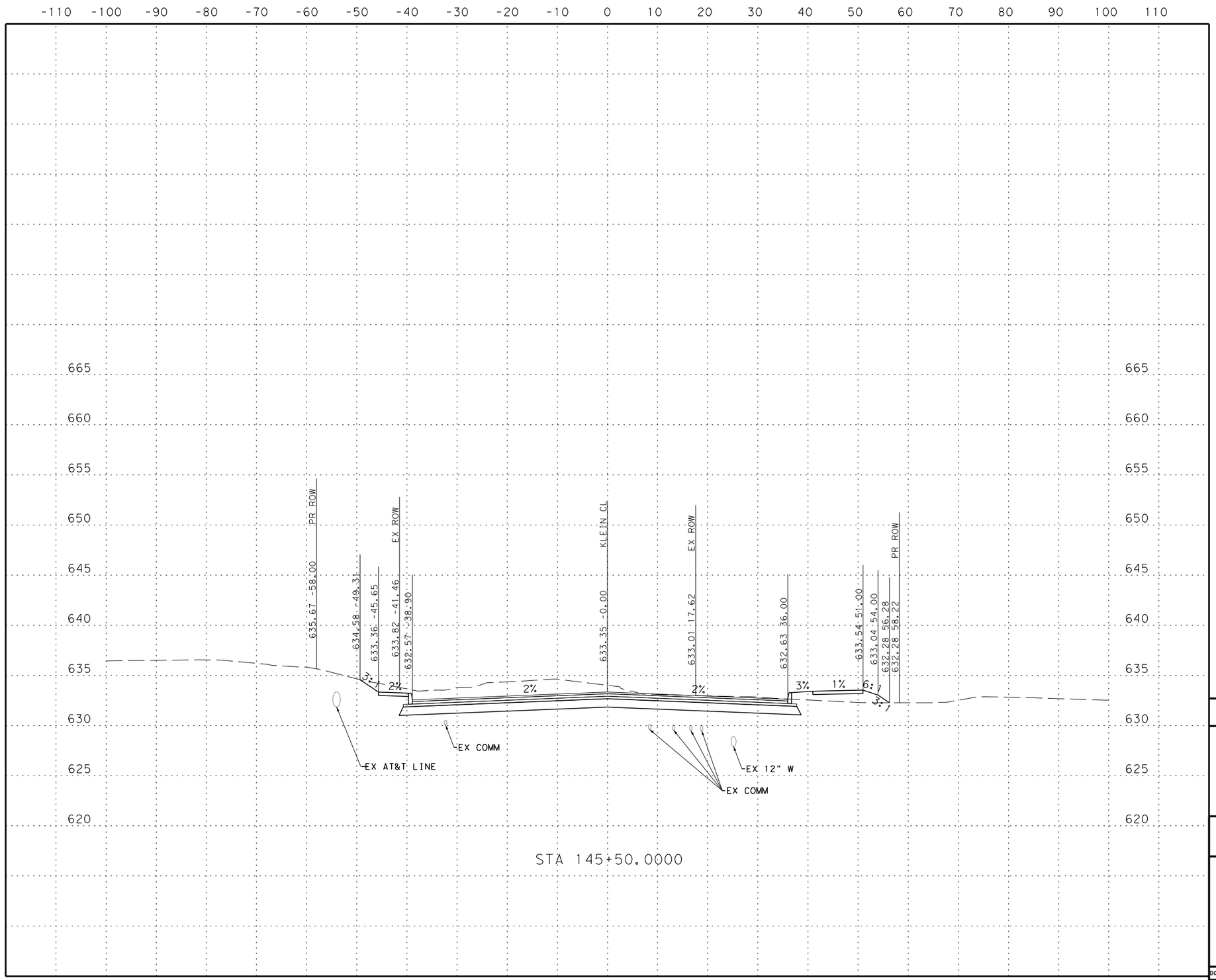

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 145+50.0000 TO STA 145+50.0000

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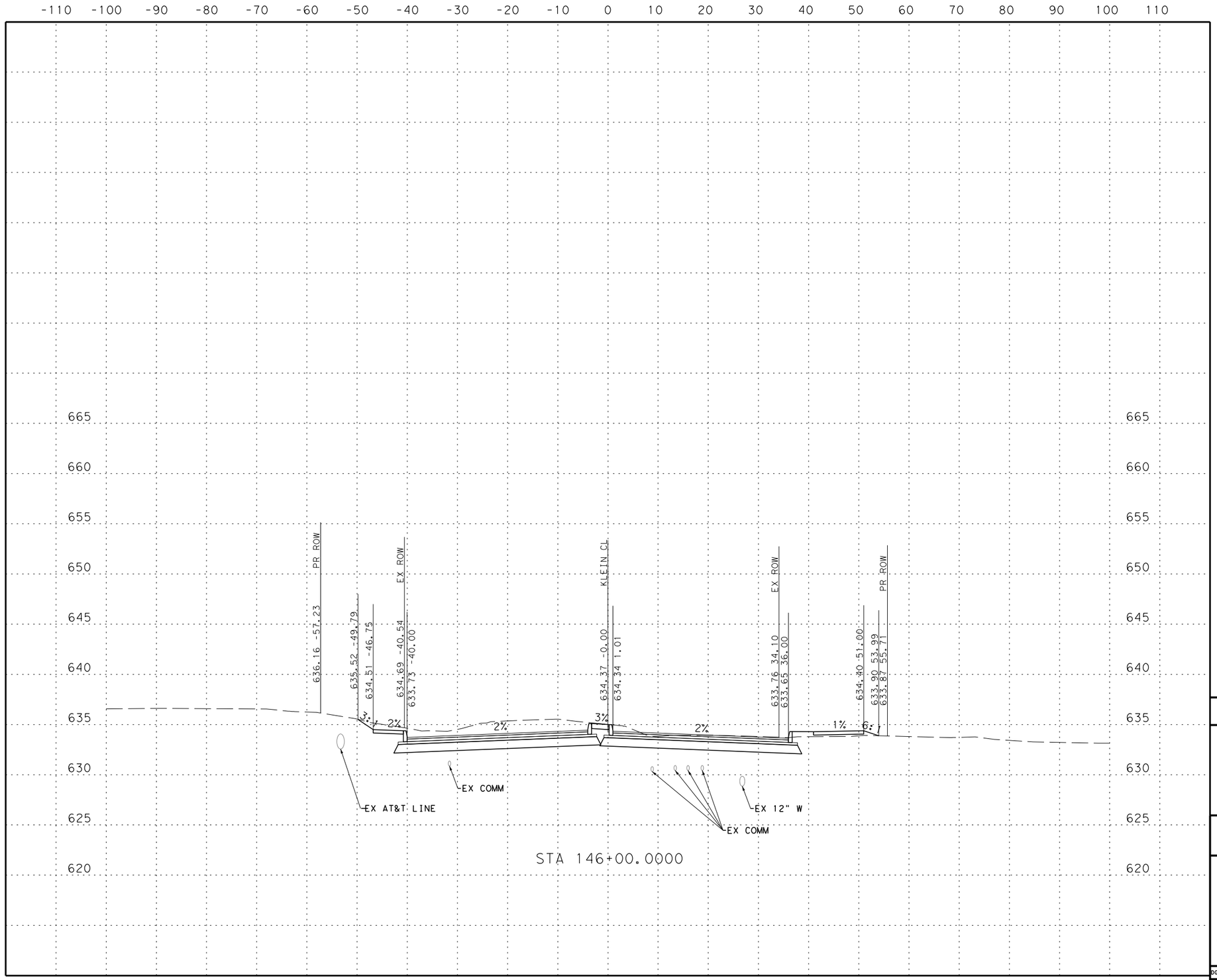

NOTES

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SCALE: H: 1"= 20'
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PAPE-DAWSON ENGINEERS

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2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

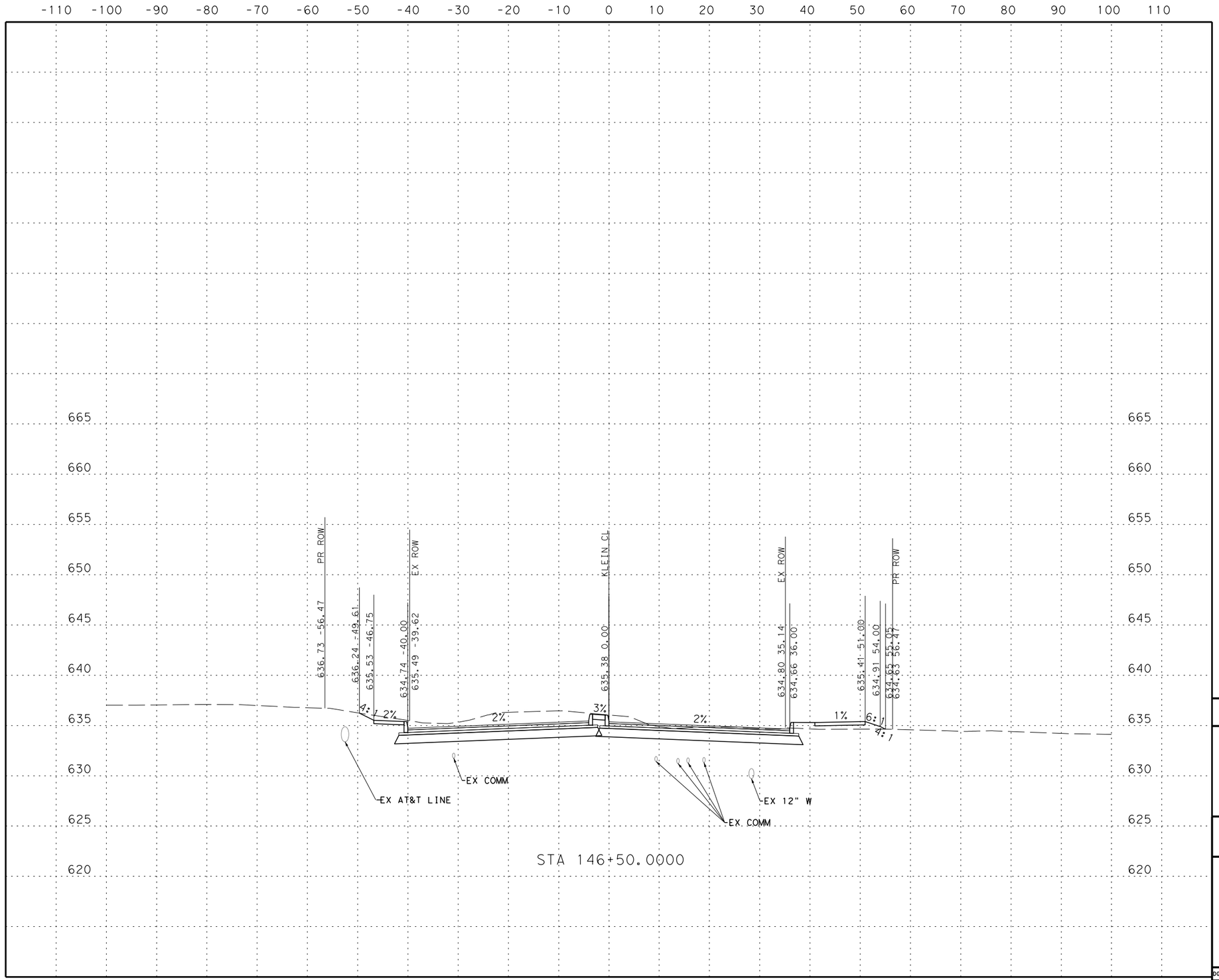
CROSS SECTIONS

STA 146+00.0000 TO STA 146+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

Design Filename: ...\5103003_Klein_XSections_Final.dgn



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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 146+50.0000 TO STA 146+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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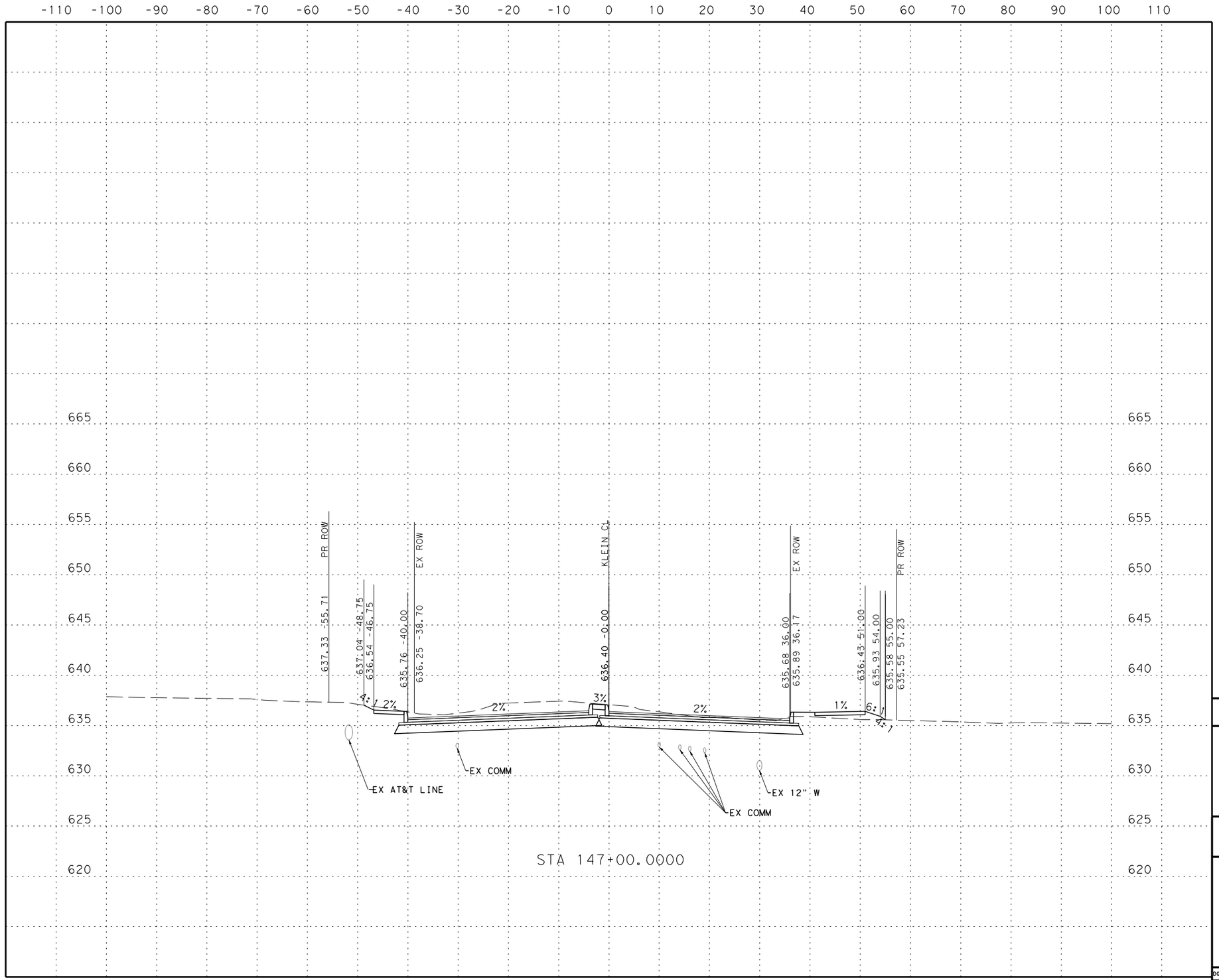

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 147+00.0000 TO STA 147+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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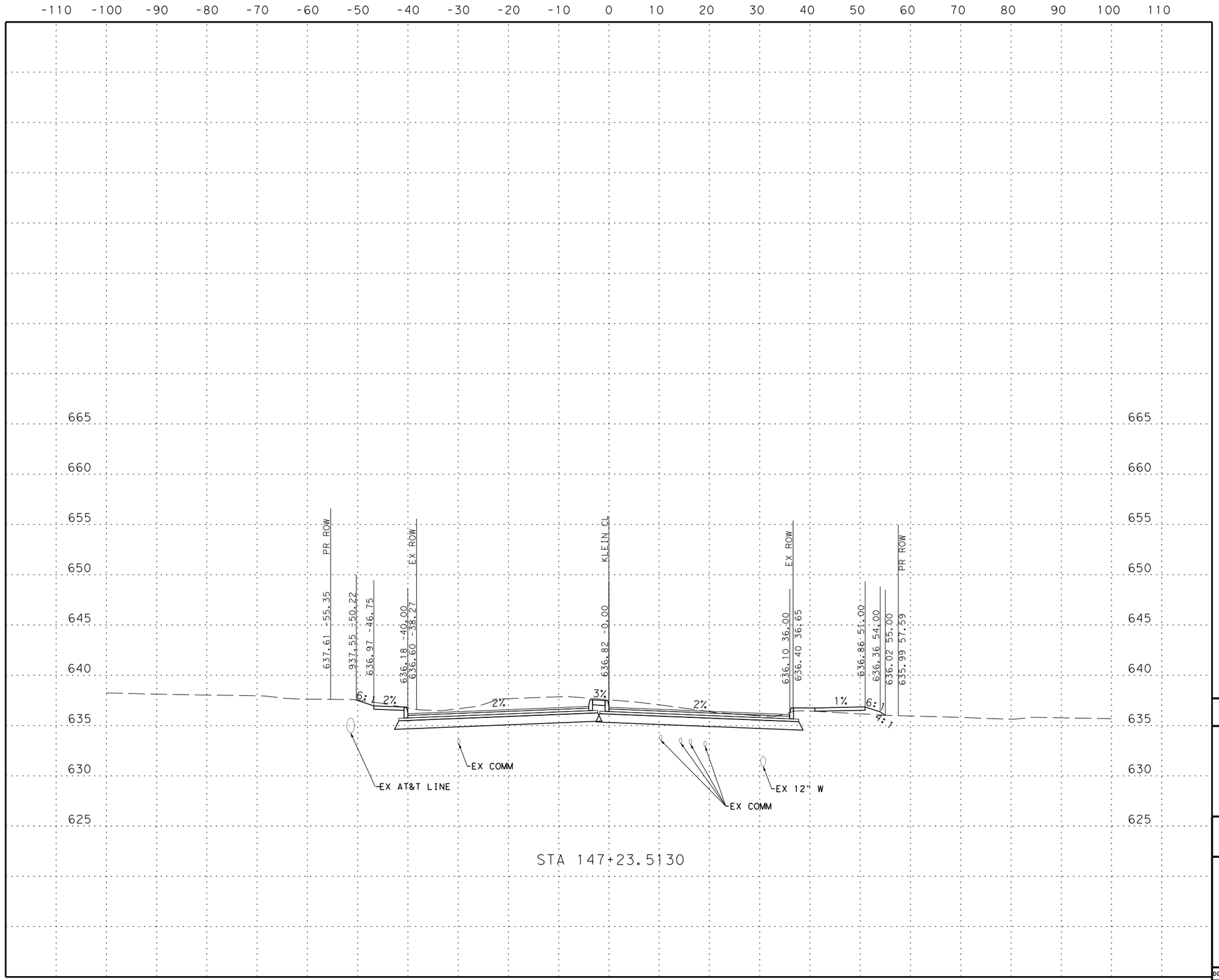

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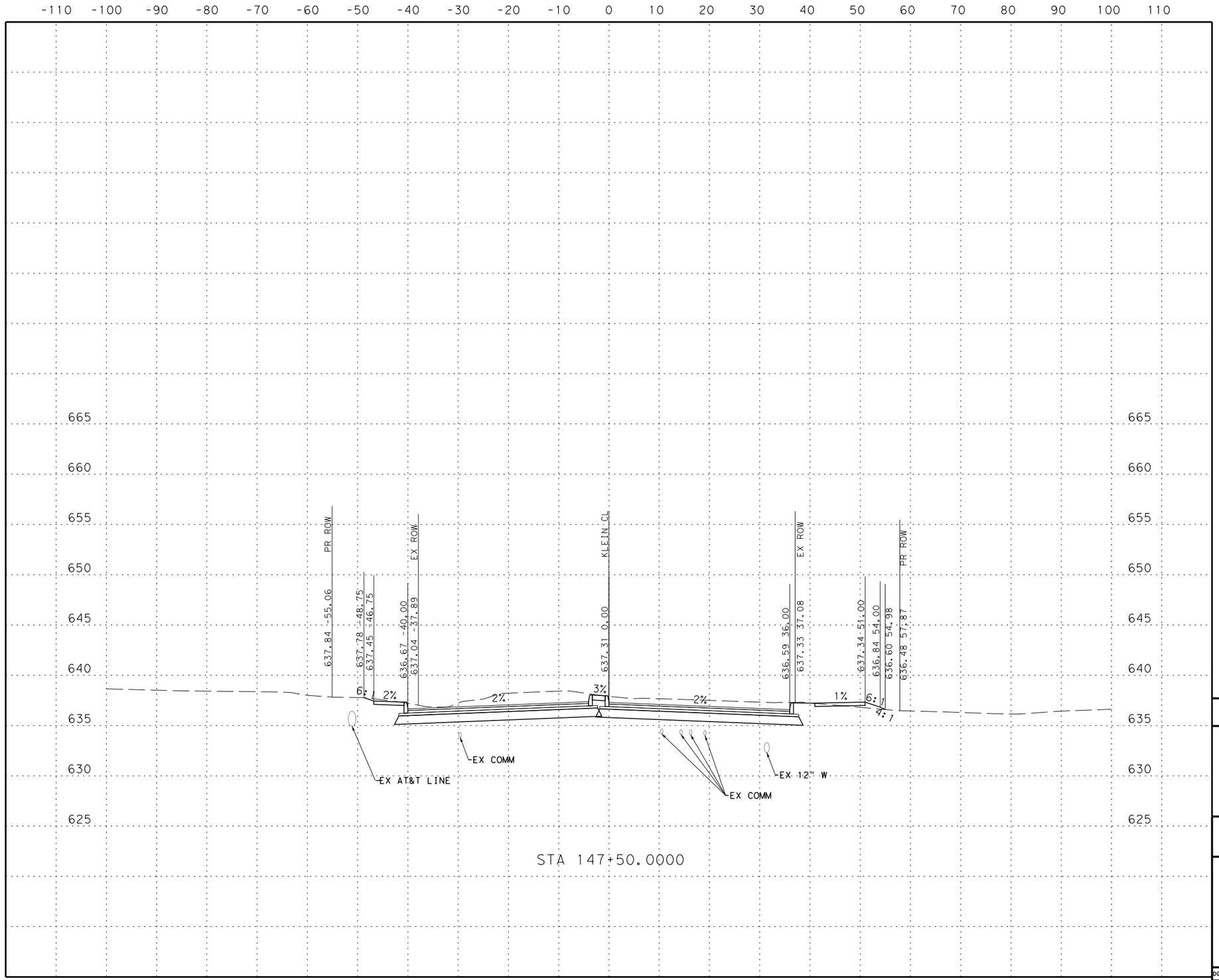
City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 147+23.5130 TO STA 147+23.5130

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	



Plotted on: 1/16/2023

Design Filename: ...\5103003_Klein_XSections_Final.dgn

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 147+50.0000 TO STA 147+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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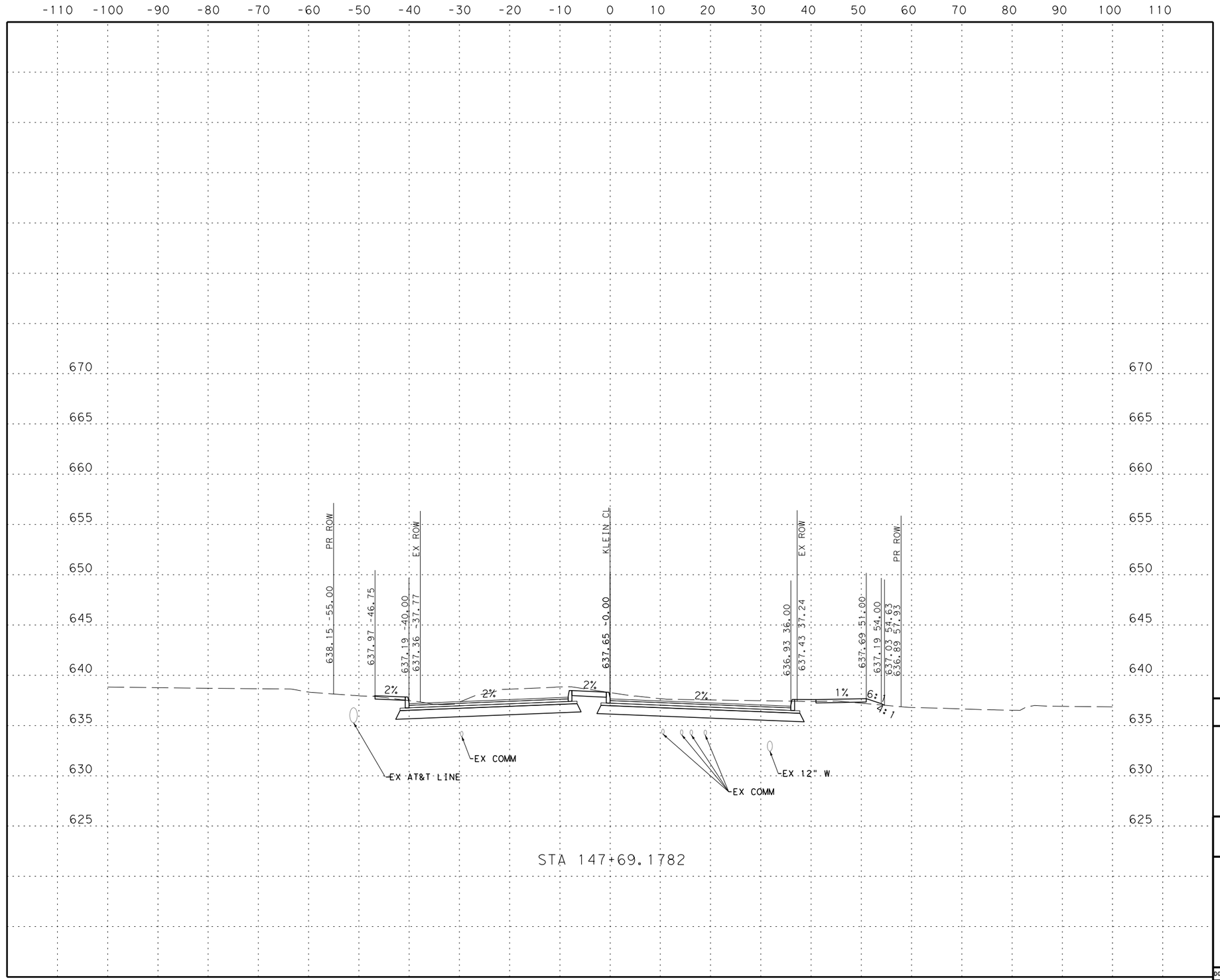

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 147+69.1782 TO STA 147+69.1782

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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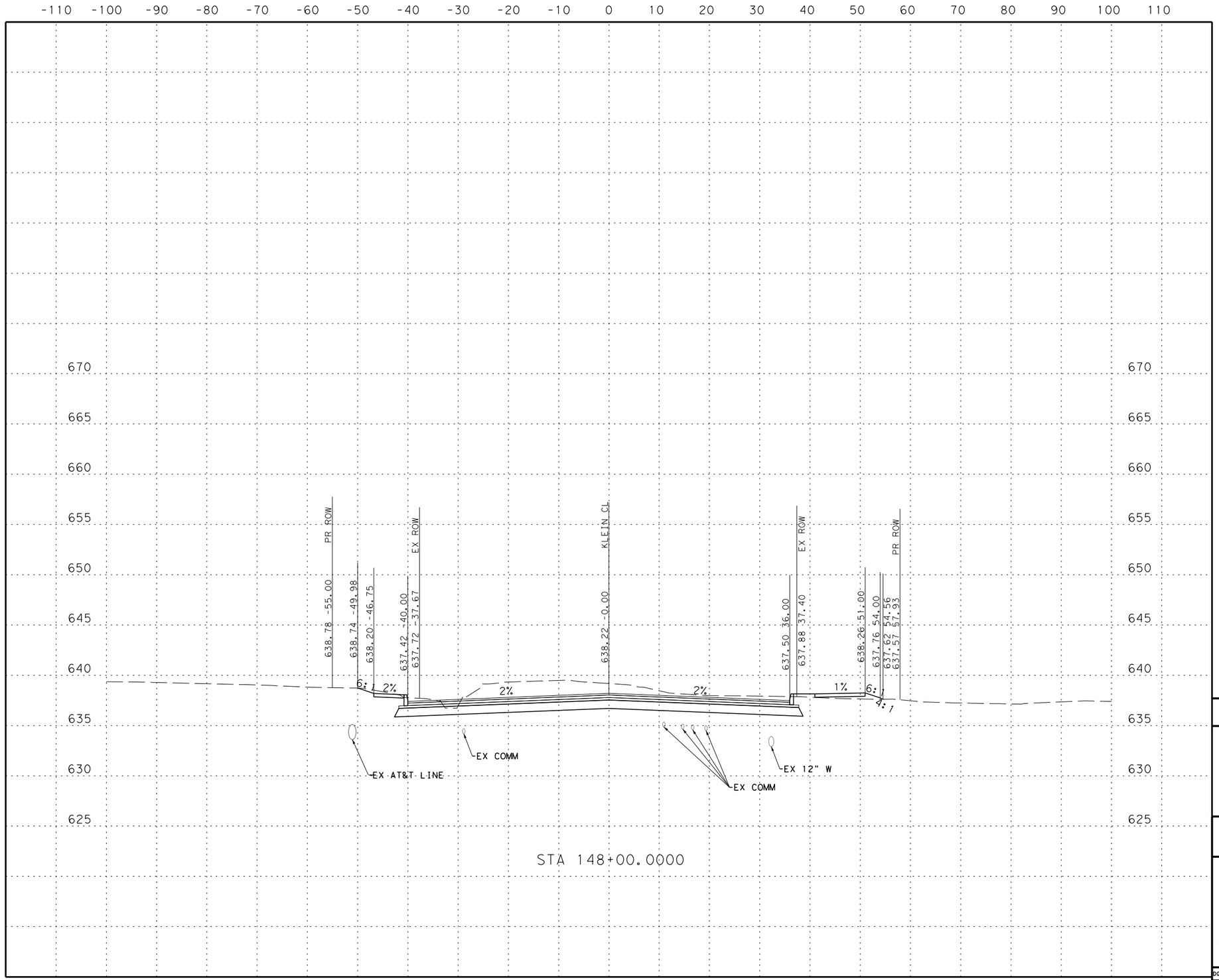

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 148+00.0000 TO STA 148+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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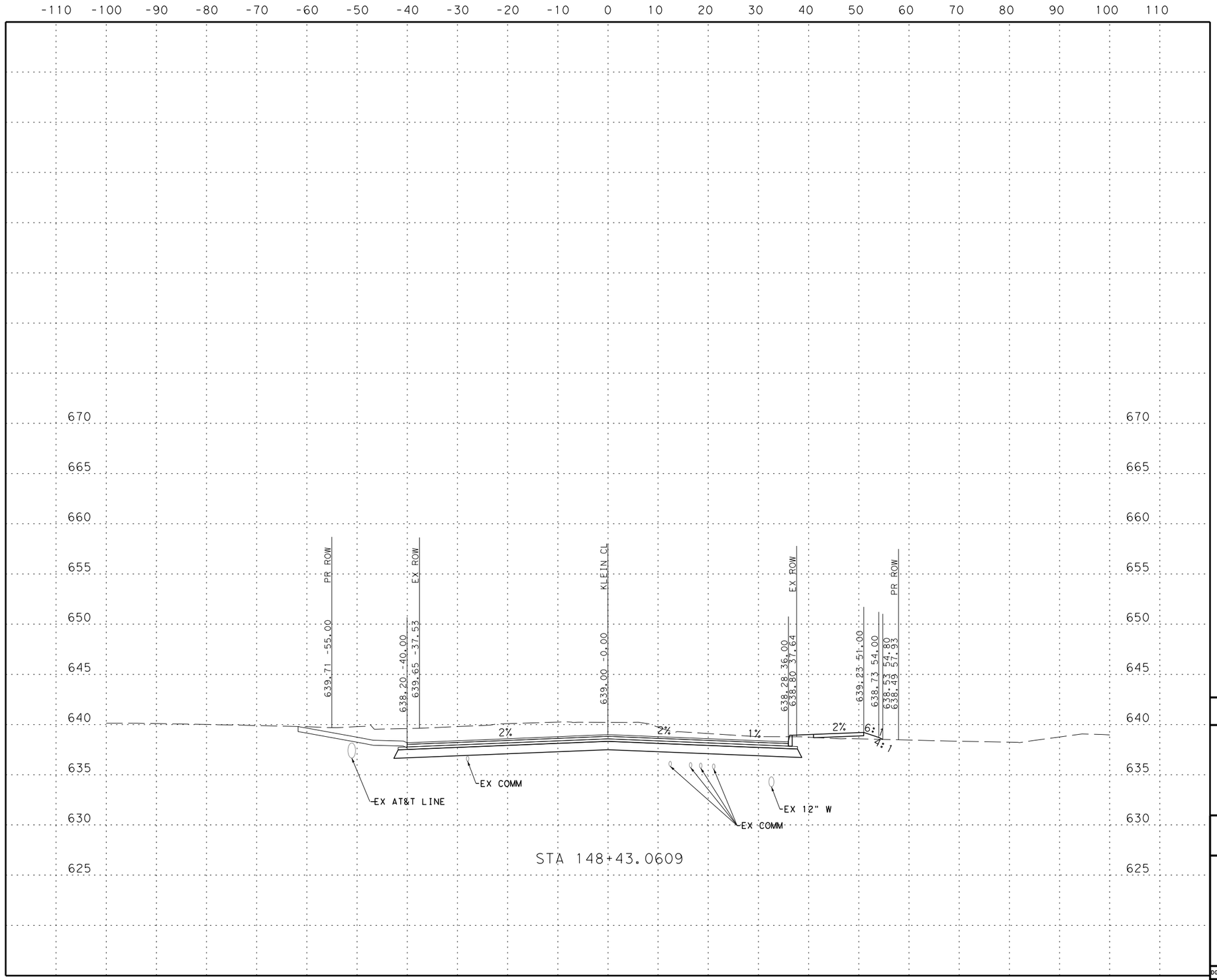

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 148+43.0609 TO STA 148+43.0609

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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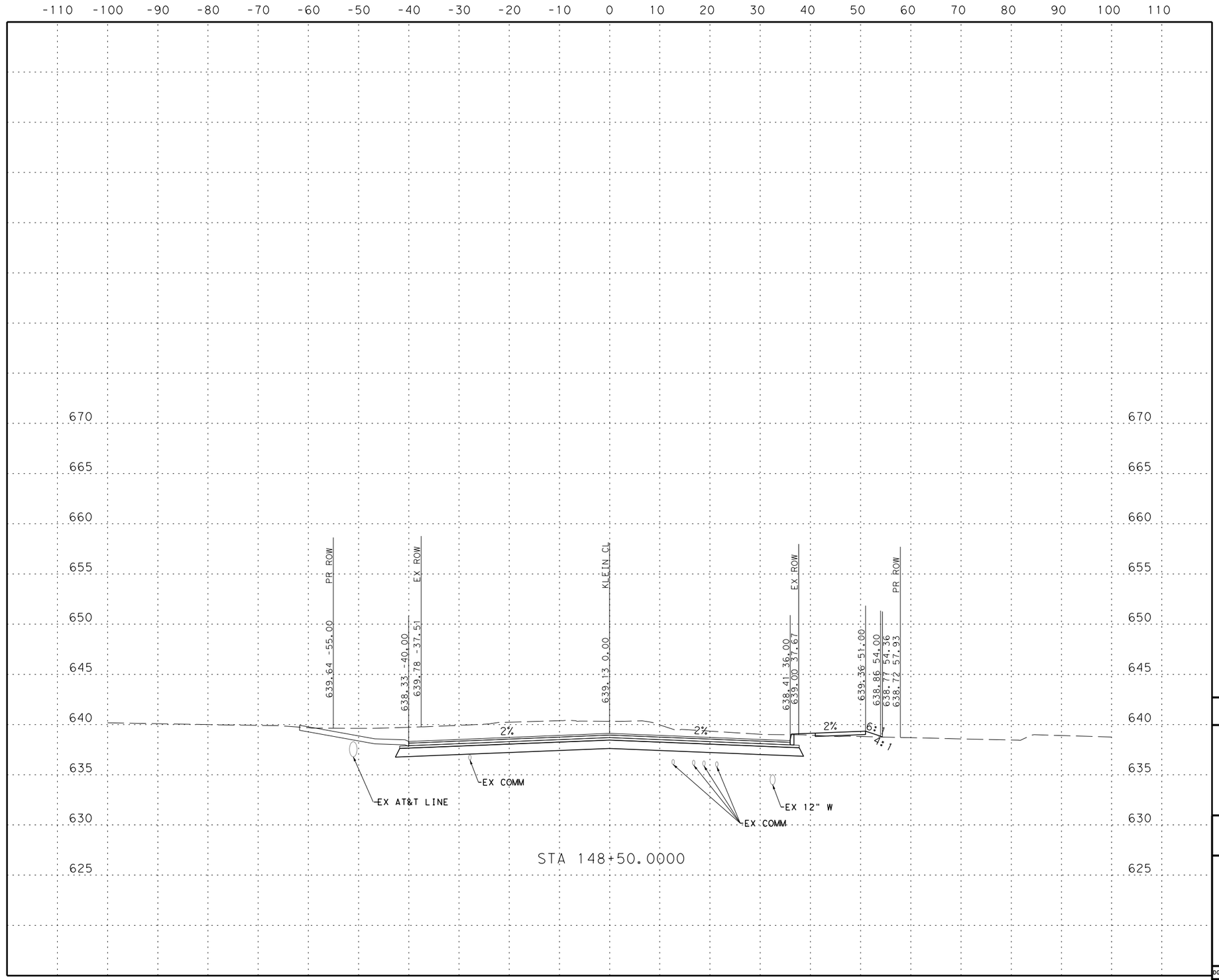

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 148+50.0000 TO STA 148+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

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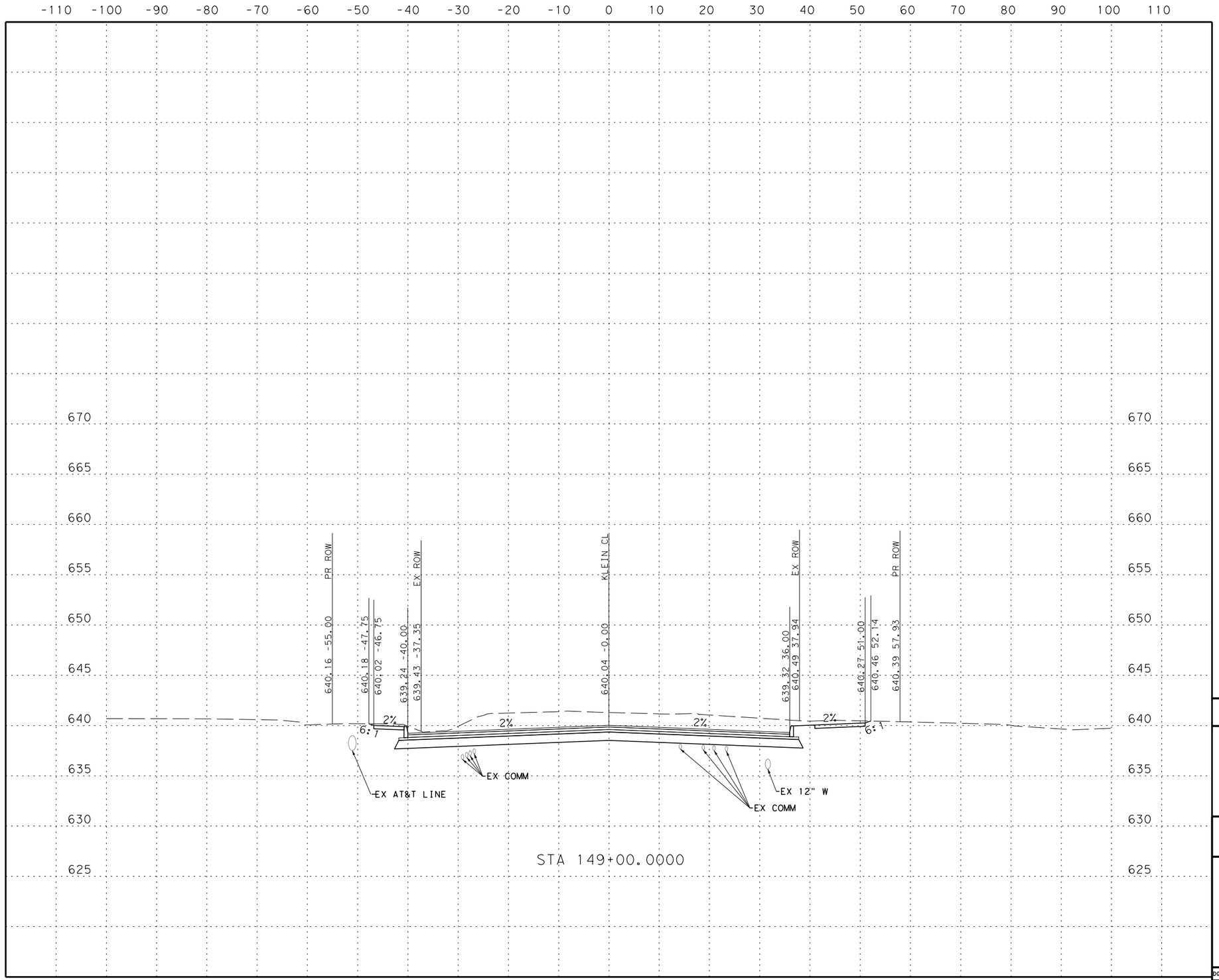

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 149+00.0000 TO STA 149+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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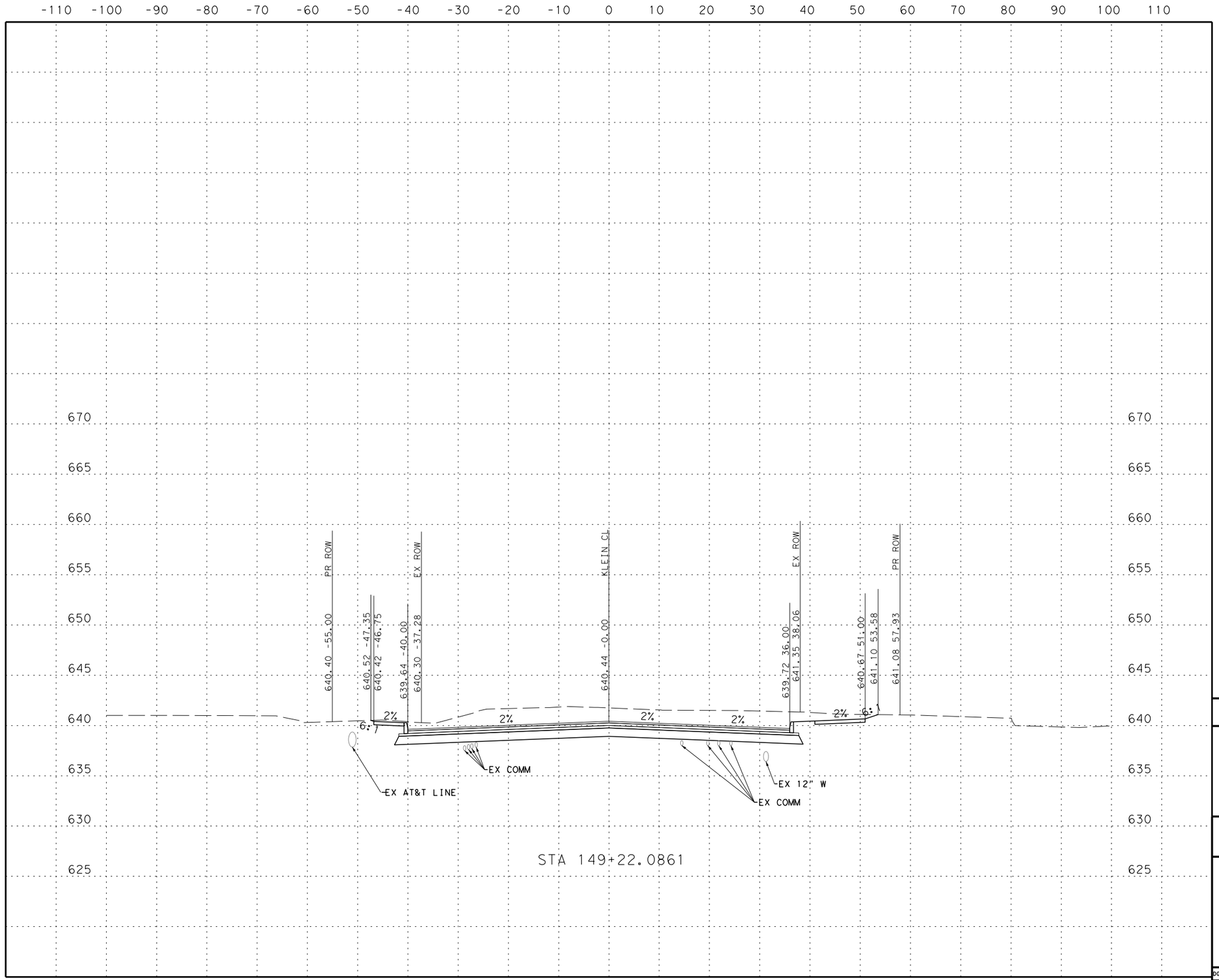

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City of New Braunfels

KLEIN RD

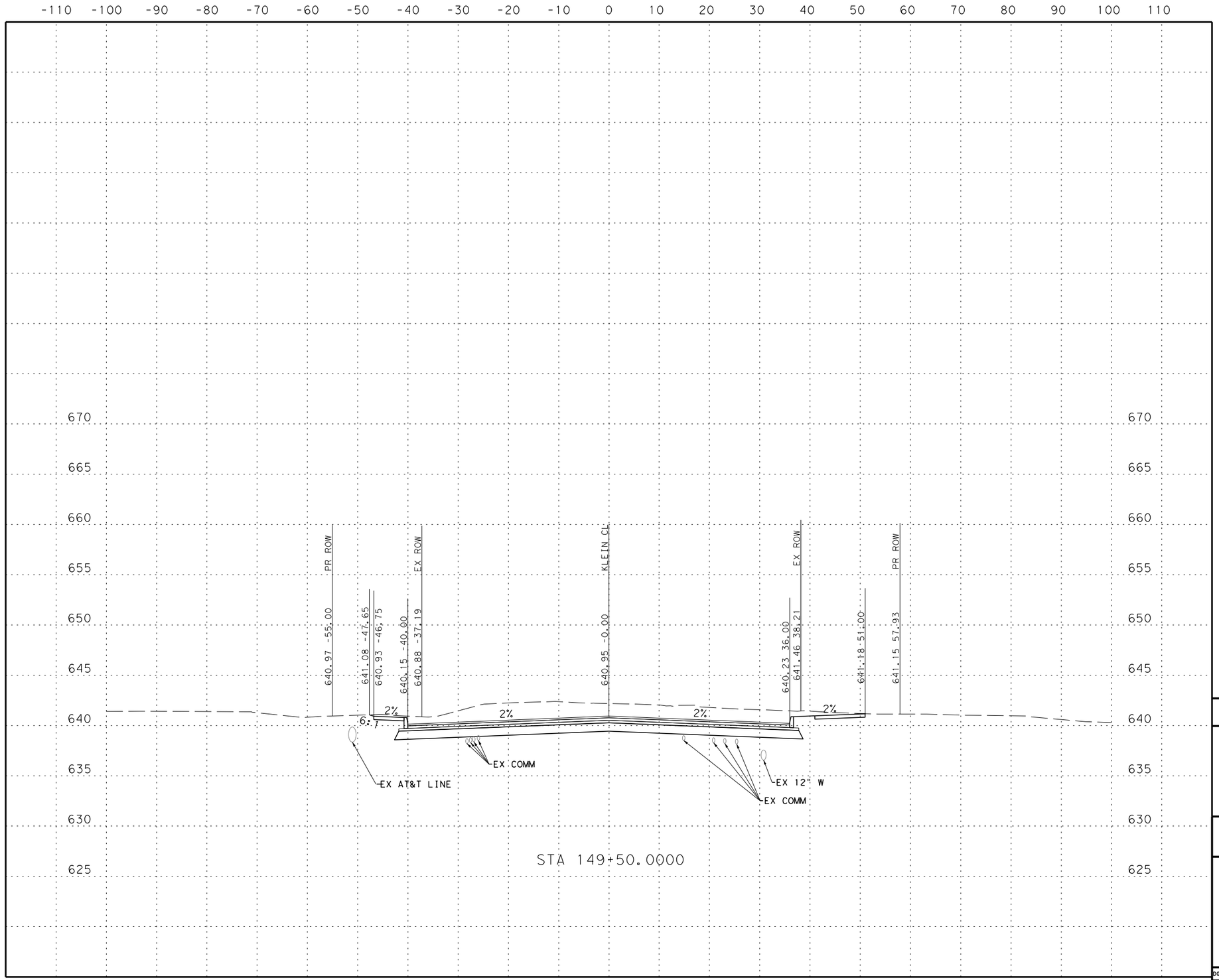
CROSS SECTIONS

STA 149+22.0861 TO STA 149+22.0861

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

Design Filename: ...\5103003_Klein_XSections_Final.dgn



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PAPE-DAWSON ENGINEERS

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 149+50.0000 TO STA 149+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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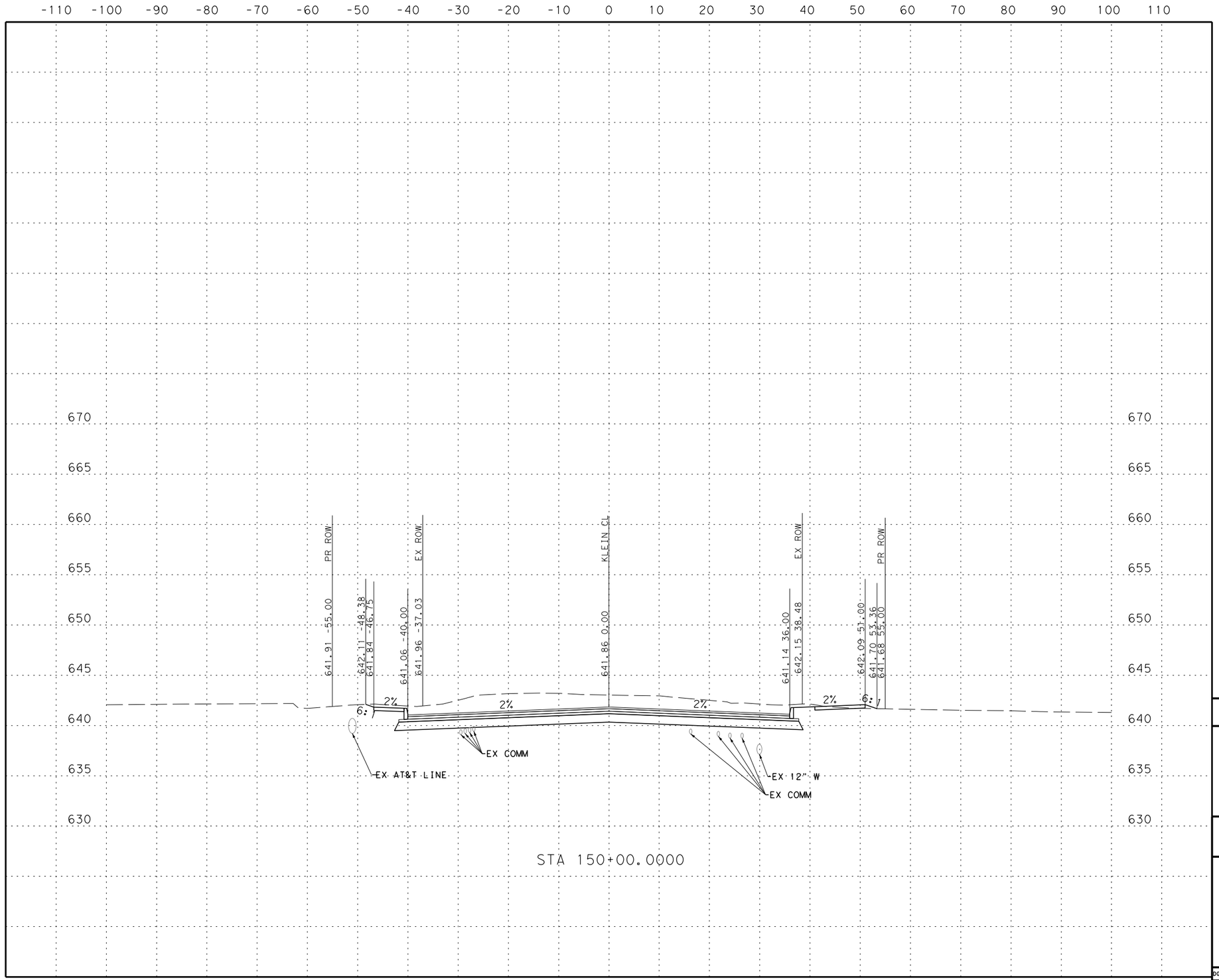

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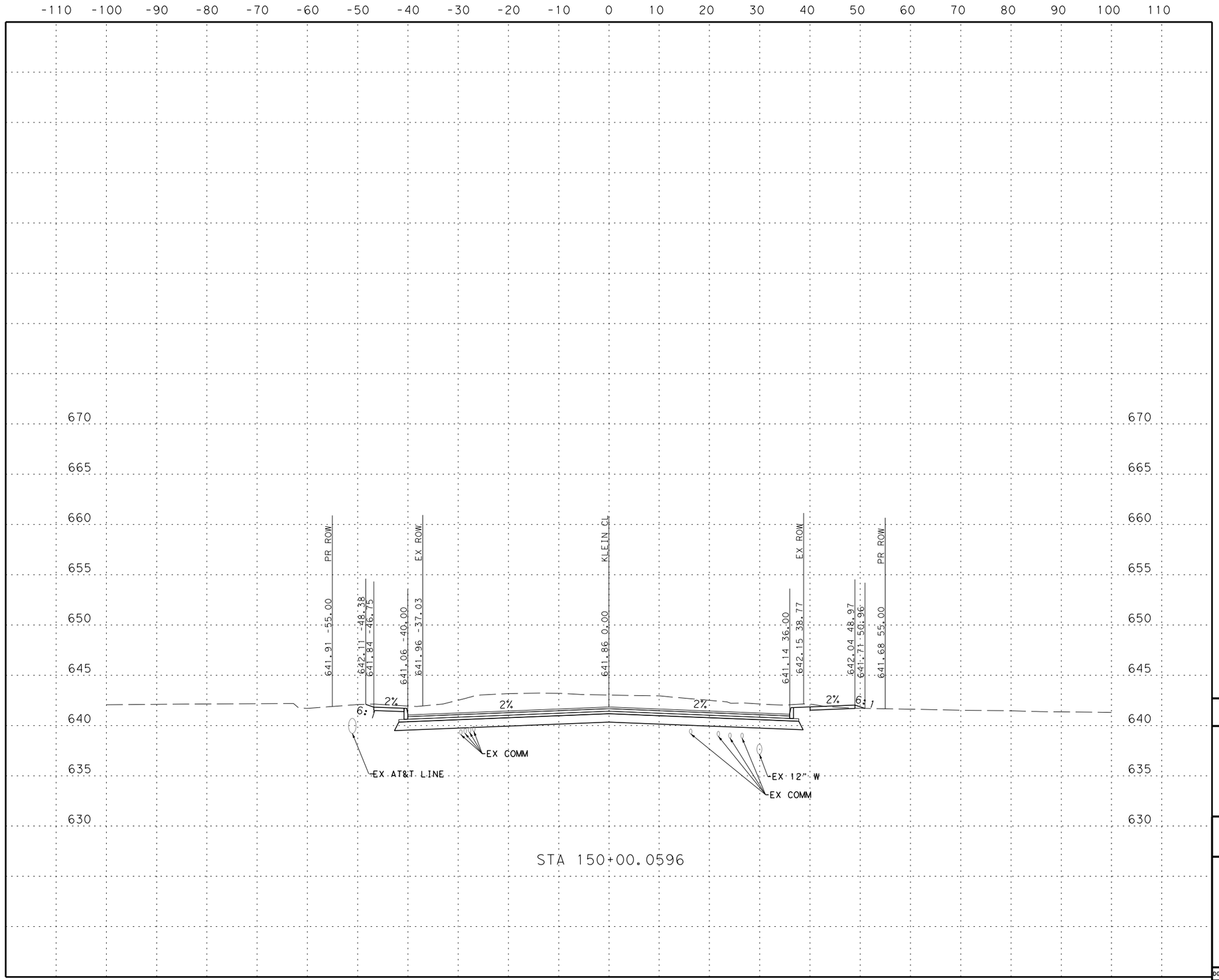
City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 150+00.0000 TO STA 150+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	



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TBPE FIRM REGISTRATION #470 I TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 150+00.0596 TO STA 150+00.0596

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023
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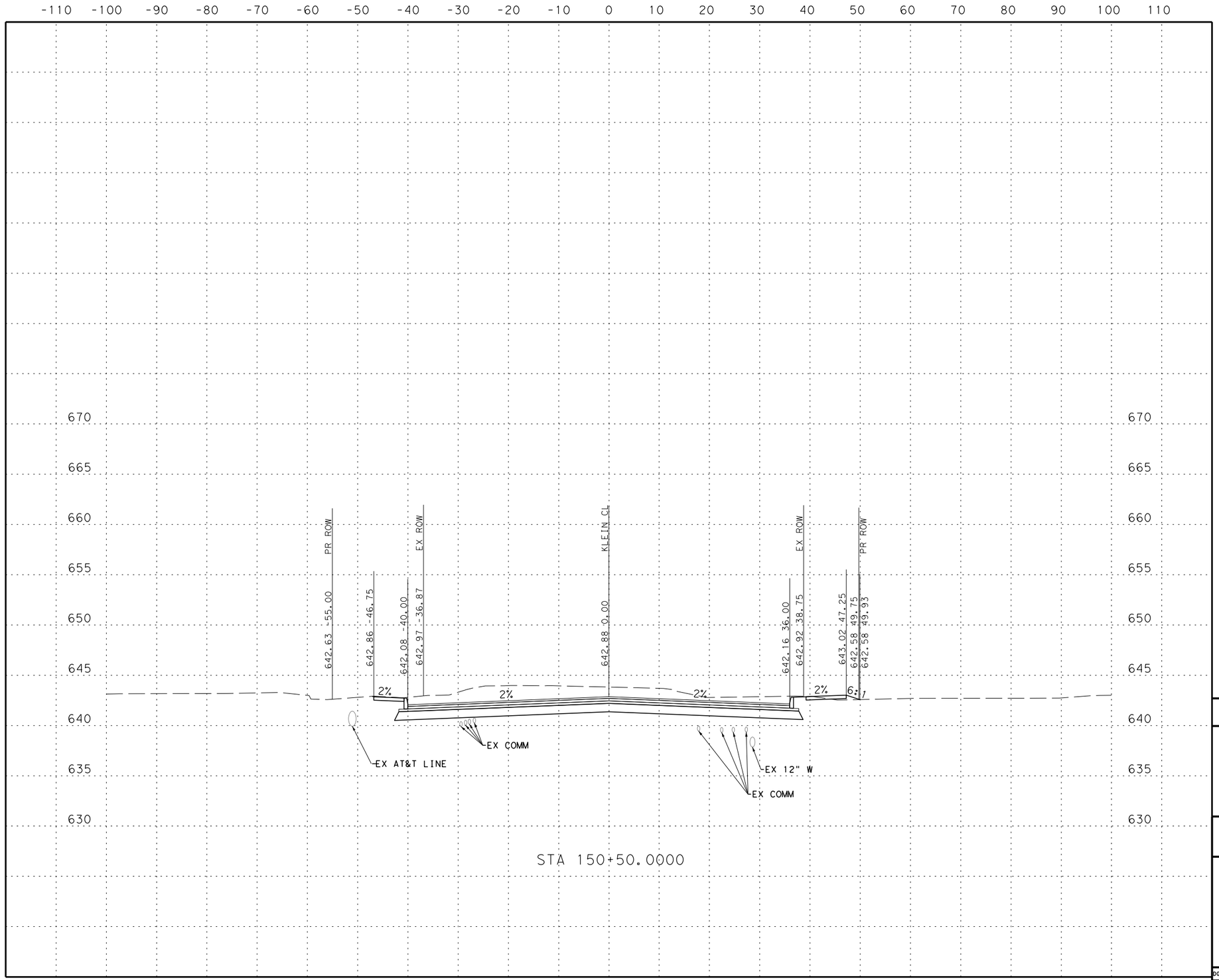

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 150+50.0000 TO STA 150+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
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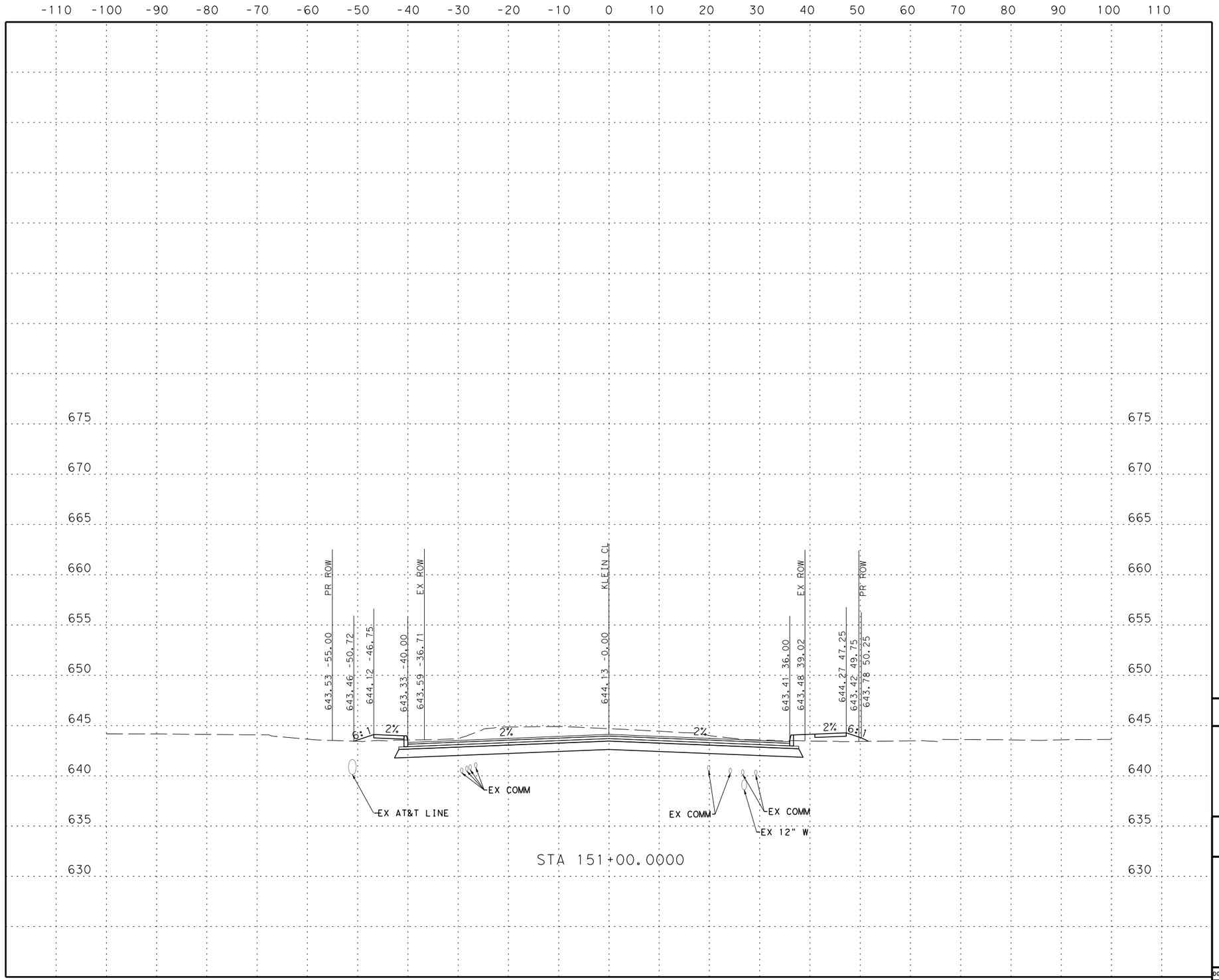

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 151+00.0000 TO STA 151+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

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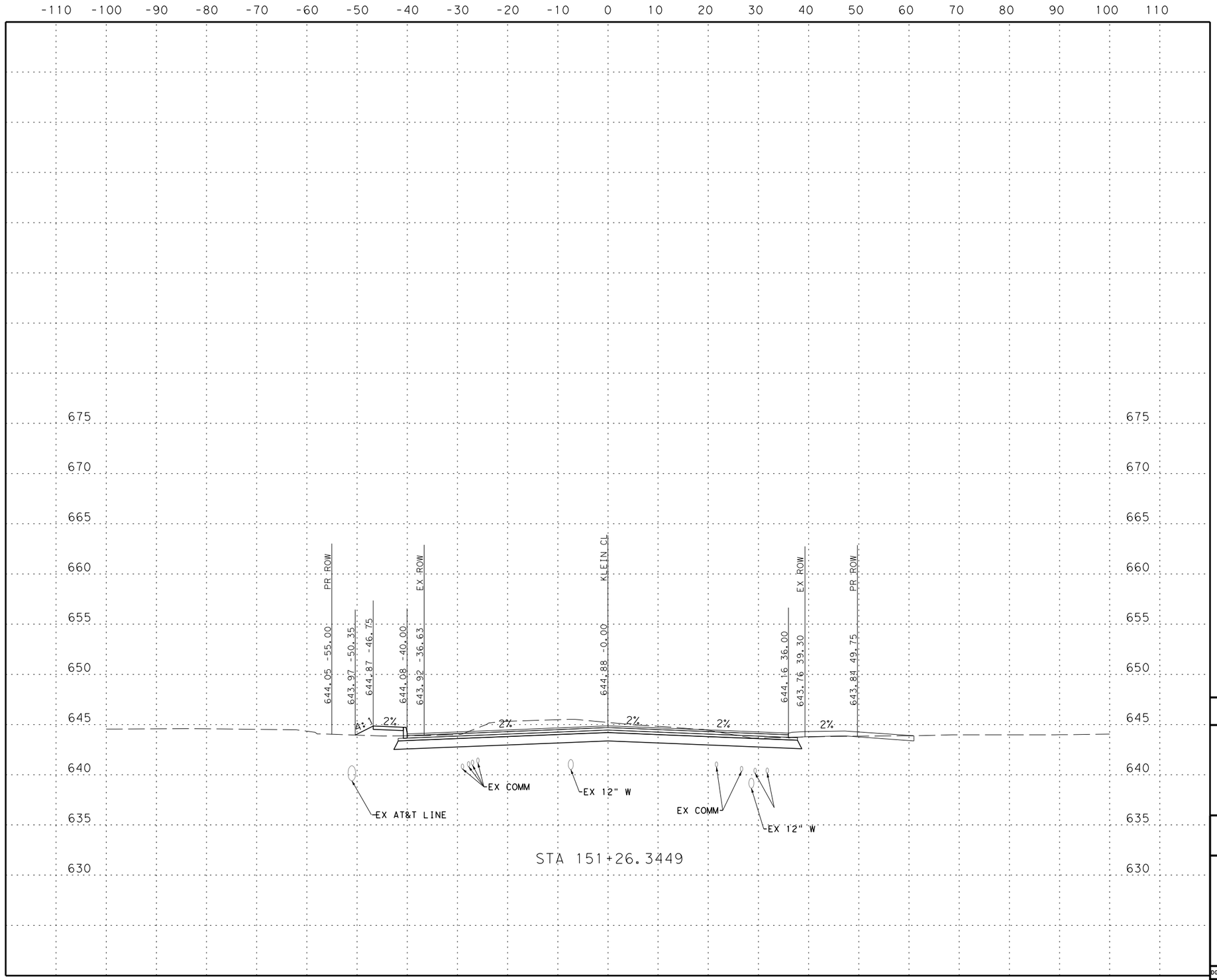

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 151+26.3449 TO STA 151+26.3449

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

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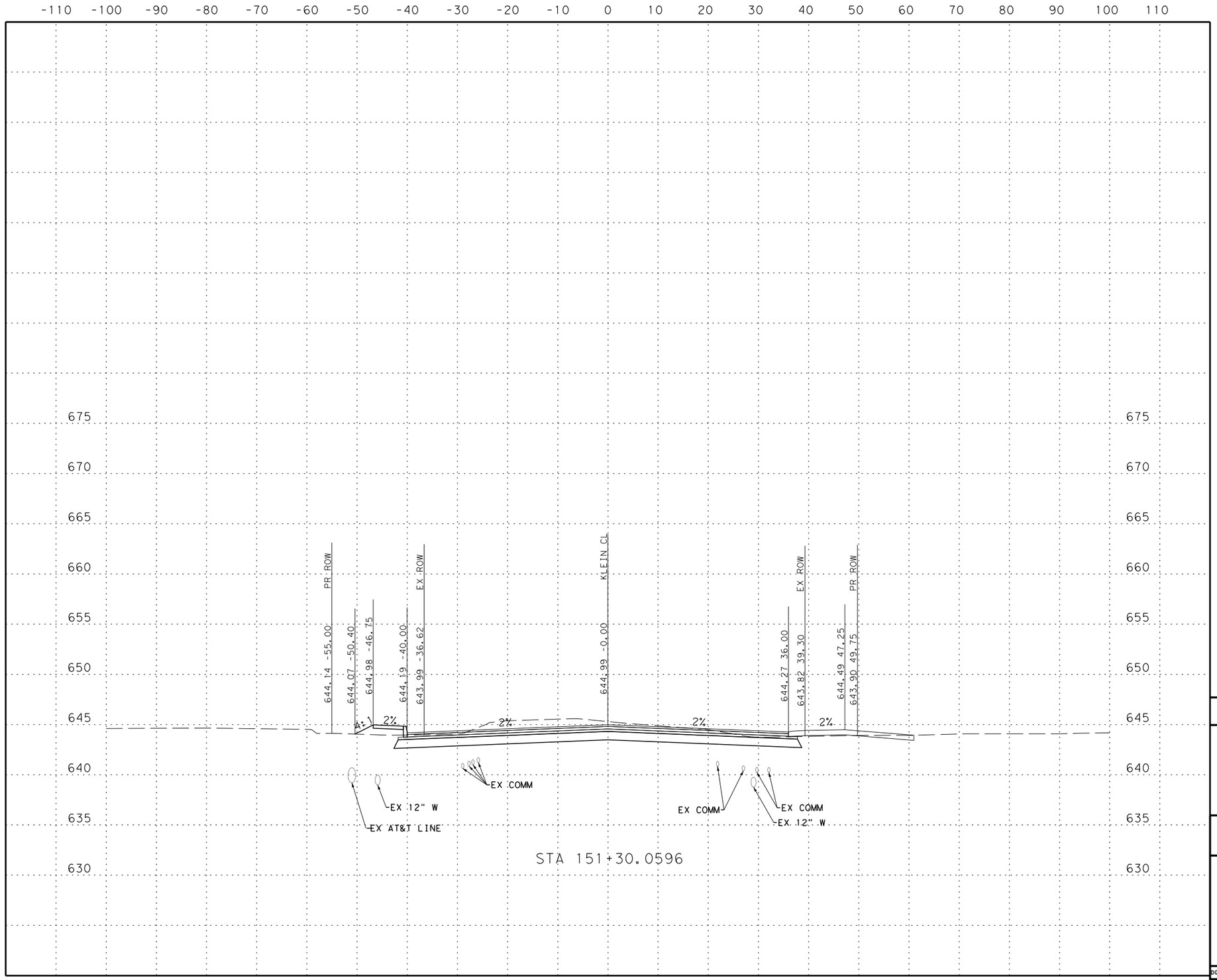

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2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TBPE FIRM REGISTRATION #470 I TBPLS FIRM REGISTRATION #10028800

City of New Braunfels

KLEIN RD

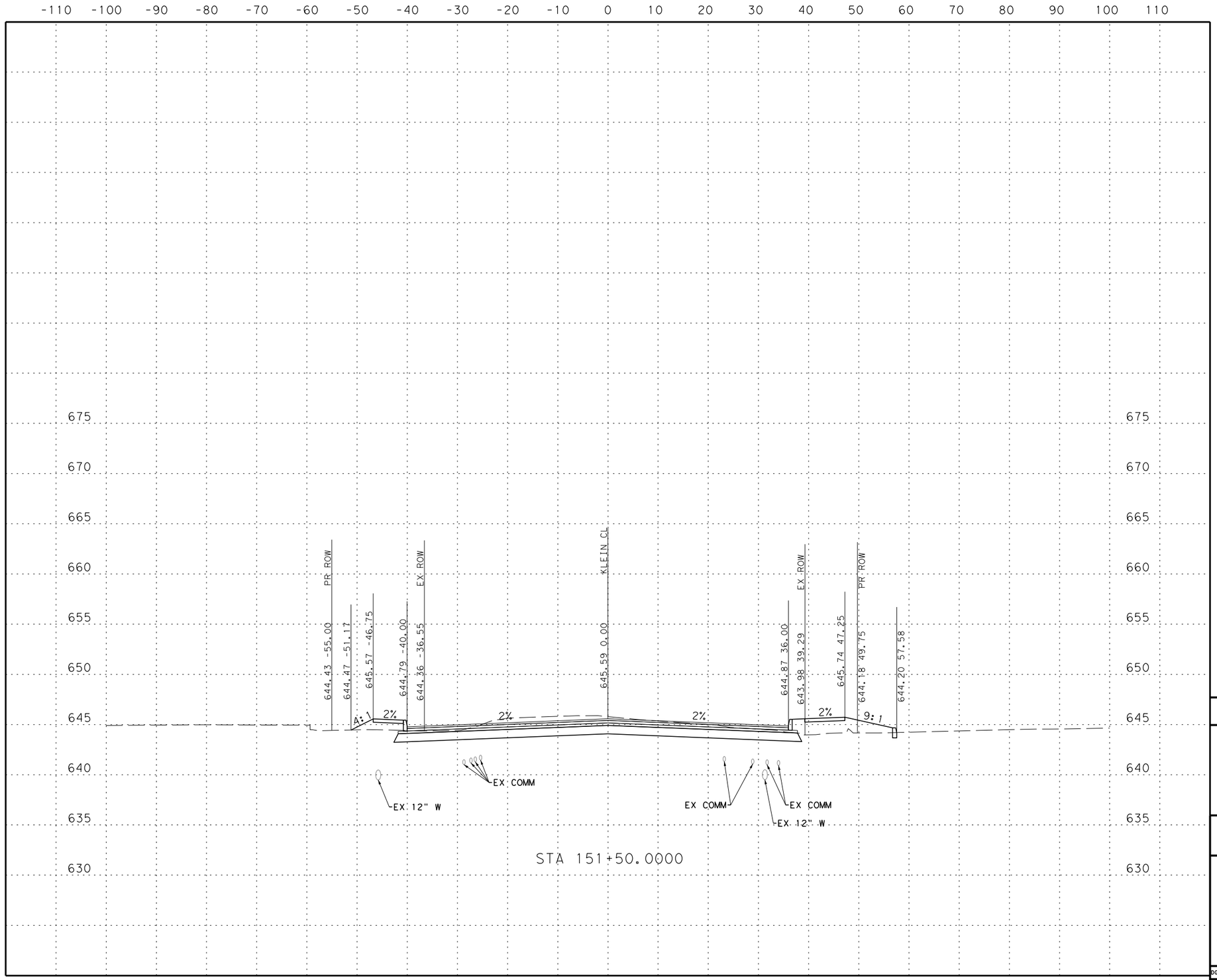
CROSS SECTIONS

STA 151+30.0596 TO STA 151+30.0596

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

Design Filename: ...\5103003_Klein_XSections_Final.dgn



NOTES

1. BRIDGE GIRDERS NOT SHOWN FOR CLARITY
2. EXIST UTILITIES SHOWN FROM BEST AVAILABLE INFORMATION AT ASSUMED 3' BELOW EXIST GROUND, CONTRACTOR SHALL CONFIRM ALL UTILITY LOCATIONS AND DEPTHS PRIOR TO EXCAVATION

SCALE: H: 1"= 20'
V: 1"= 10'

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
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KLEIN RD

CROSS SECTIONS

STA 151+50.0000 TO STA 151+50.0000

DGN:	STATE	PROJECT NO.	ROADWAY
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DWG:	COUNTY	CITY	SHEET NO.
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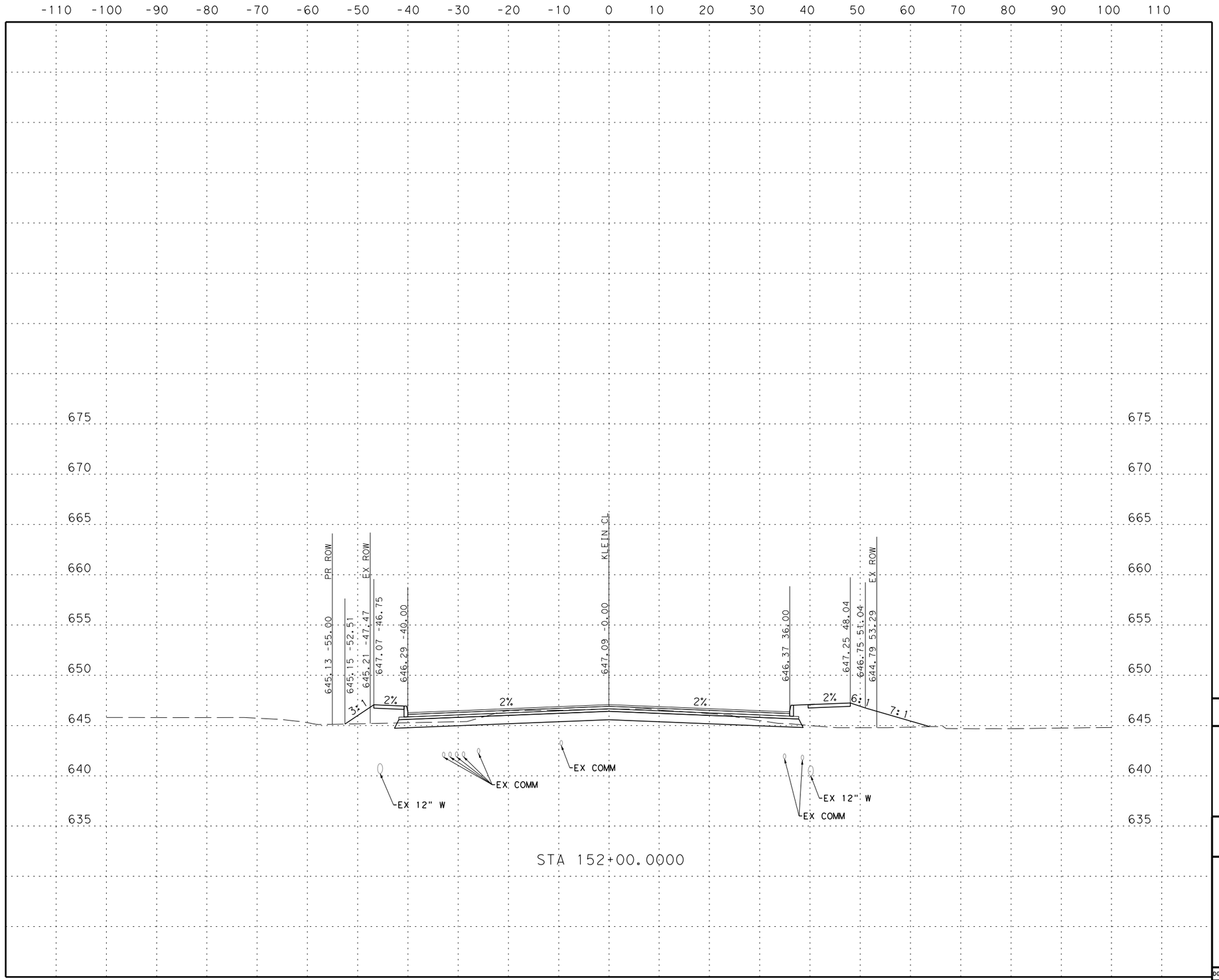
Plotted on: 1/16/2023

Design Filename: ...\5103003_Klein_XSections_Final.dgn



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City of New Braunfels

KLEIN RD

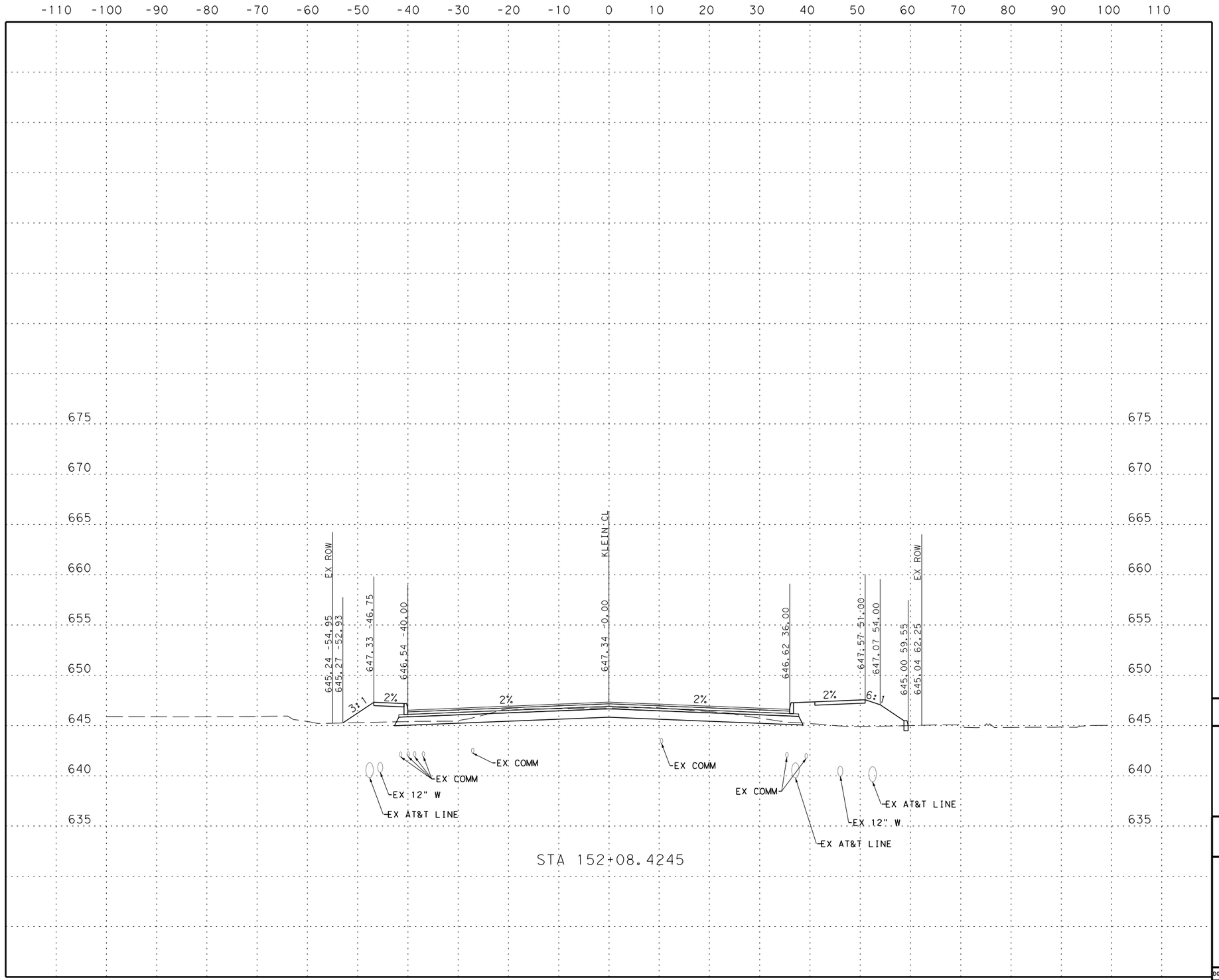
CROSS SECTIONS

STA 152+00.0000 TO STA 152+00.0000

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	

Plotted on: 1/16/2023

Design Filename: ...\5103003_Klein_XSections_Final.dgn



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PAPE-DAWSON ENGINEERS

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City of New Braunfels

KLEIN RD

CROSS SECTIONS

STA 152+08.4245 TO STA 152+08.4245

DGN:	STATE	PROJECT NO.	ROADWAY
CHK DGN:	TEXAS	CSP 23-004	KLEIN RD
DWG:	COUNTY	CITY	SHEET NO.
CHK DWG:	GUADALUPE	NEW BRAUNFELS	