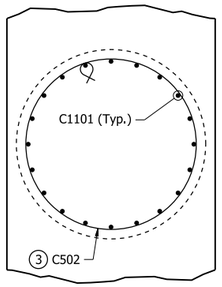
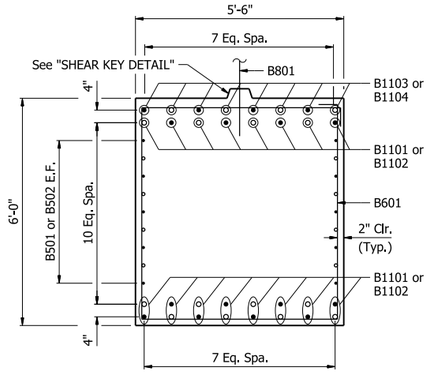
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	442	809
		07685 - INT. BENTS - 67502				

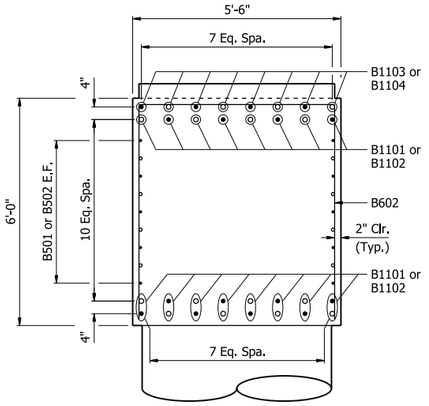
Notes:
For locations of "SECTION A-A", "SECTION B-B", & "VIEW C-C", see Dwg. No. 67501.



SECTION D-D
½" = 1'-0"
(Cap reinforcing not shown for clarity)

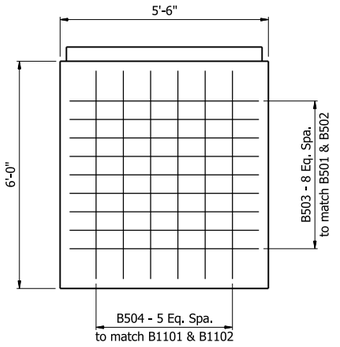


SECTION A-A
½" = 1'-0"

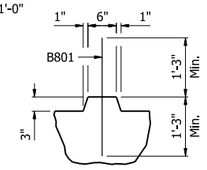


SECTION B-B
½" = 1'-0"
(Pedestal and column reinforcing not shown for clarity)

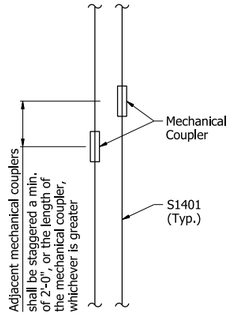
Note:
Contractor shall adjust B1101 thru B1104 bar spacing to accommodate dowels or vertical column steel. Contractor shall maintain a minimum and maximum spacing of 5" and 11", respectively.



VIEW C-C
½" = 1'-0"



SHEAR KEY DETAIL
No Scale



DRILLED SHAFT BAR SPLICE DETAIL
No Scale

MECHANICAL COUPLER AND SPLICE NOTES:
Contractor shall be required to use mechanical couplers to splice reinforcing bars whose lengths given in the Bar List exceed 60'-0". The bars shall be assembled as shown in "DRILLED SHAFT BAR SPLICE DETAIL".

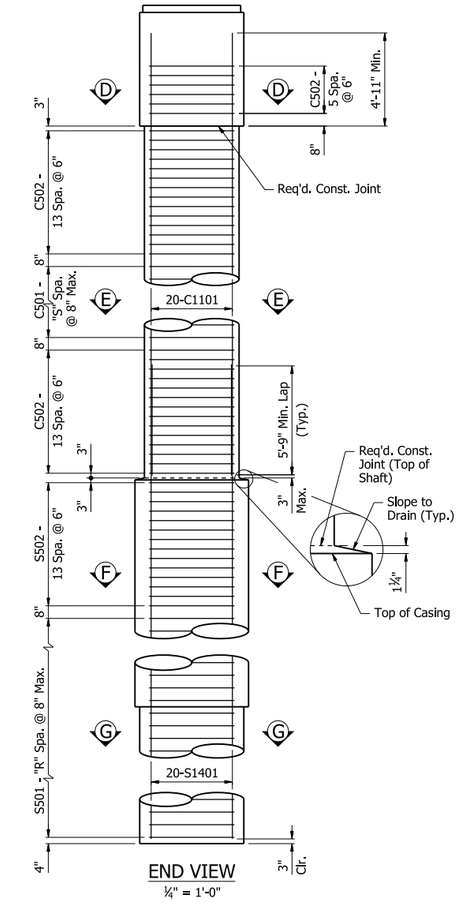
The Contractor may choose location of splices for convenience, so long as no bar to be spliced is less than 5'-0" in length and no closer than 6'-2" from top of shaft.

The Contractor may also elect to splice bars whose lengths are less than 60'-0" to provide ease of construction, so long as the previous mentioned requirements are met.

Mechanical couplers shall maintain the clearances shown in "DRILLED SHAFT BAR SPLICE DETAIL". Not more than alternate bars shall be spliced at a given location. Payment for mechanical couplers shall be subsidiary to the item "DRILLED SHAFT (66" DIA.)". The couplers shall develop at least 125% of the specified yield strength of the bar.

TABLE OF VARIABLES

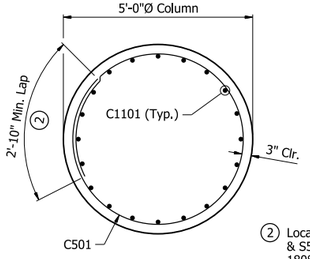
Bent No.	"R"	"S"
10	74	32
11	76	34



END VIEW
¼" = 1'-0"

Notes:
Dimensions, details, & reinforcing steel shown are typical for all columns and drilled shafts.

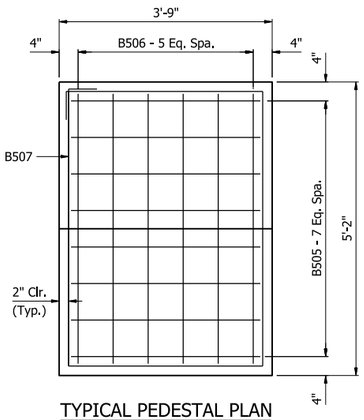
If column, cased section, or drilled shaft length changes during construction, number of ties shall be adjusted accordingly to maintain the maximum spacing of ties in the regions identified above.



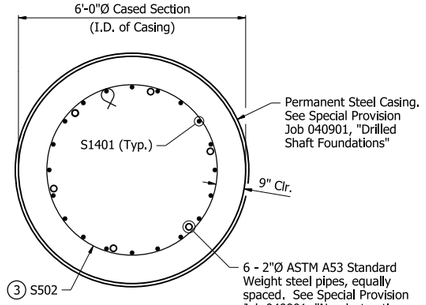
SECTION E-E
½" = 1'-0"

② Location of lap splices in C501 & S501 ties shall be alternated 180° at adjacent ties.

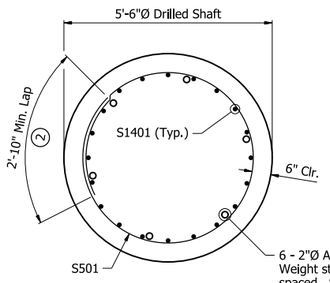
③ Location of end hooks in C502 & S502 ties shall be alternated 180° at adjacent ties.



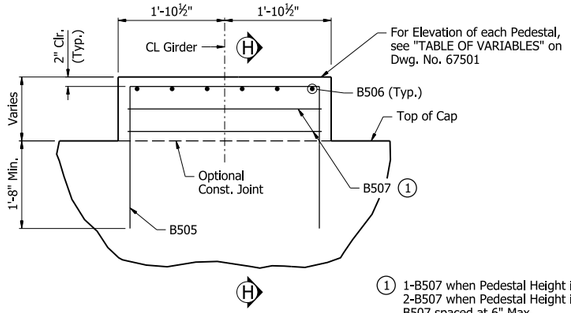
TYPICAL PEDESTAL PLAN
¾" = 1'-0"



SECTION F-F
½" = 1'-0"

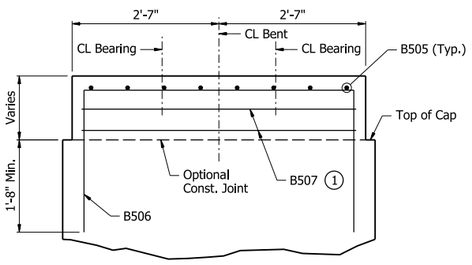


SECTION G-G
½" = 1'-0"



TYPICAL PEDESTAL ELEVATION
¾" = 1'-0"

1 1-B507 when Pedestal Height is less than 11";
2-B507 when Pedestal Height is greater than 11";
B507 spaced at 6" Max.



SECTION H-H
¾" = 1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 2 OF 3
DETAILS OF INTERMEDIATE BENT NOS. 10 & 11
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MGG DATE: 11/11/23
CHECKED BY: QL DATE: 11/29/23
DESIGNED BY: MGG DATE: 8/22/23
FILENAME: b040901116_b102.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67502

PRINT DATE: 4/8/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	443	809
		07685 - INT. BENTS - 67503				

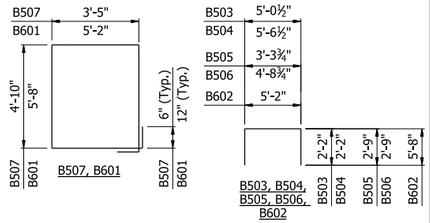
TABLE OF VARIABLES

Bent No.	"CN"	"CL"	"SN"	"SL"
10	132	40'-8"	300	62'-9"
11	140	41'-7"	308	63'-9"

BAR LIST - PER BENT

	Mark	Number Required	Length	Pin Dia.
	B501	18	60'-0"	Str.
	B502	18	41'-4"	Str.
	B503	18	9'-2"	2½"
	B504	12	9'-8"	2½"
	B505	96	8'-7"	2½"
	B506	72	10'-0"	2½"
	B507	16	17'-0"	2½"
	B601	159	22'-10"	4½"
	B602	20	16'-2"	4½"
	B801	121	2'-6"	Str.
	B1101	24	60'-0"	Str.
	B1102	24	46'-0"	Str.
	B1103	8	60'-0"	11¼"
	B1104	8	49'-0"	11¼"
	C501	"CN"	16'-10"	-
	C502	136	15'-4"	2½"
	C1101	80	"CL"	Str.
(1)	S501	"SN"	16'-10"	-
(1)	S502	56	15'-4"	2½"
(1)	S1401	80	"SL"	Str.

Bending Diagrams
(Dimensions are out to out of bars)



All bars designated with an "E" suffix are to be epoxy coated.

(1) S1401 longitudinal reinforcement and S501 & S502 tie reinforcement are non-pay items which are subsidiary to item "DRILLED SHAFT (66" DIA.)". Individual lengths shall be determined by the Contractor.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 3 OF 3
DETAILS OF INTERMEDIATE
BENT NOS. 10 & 11
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

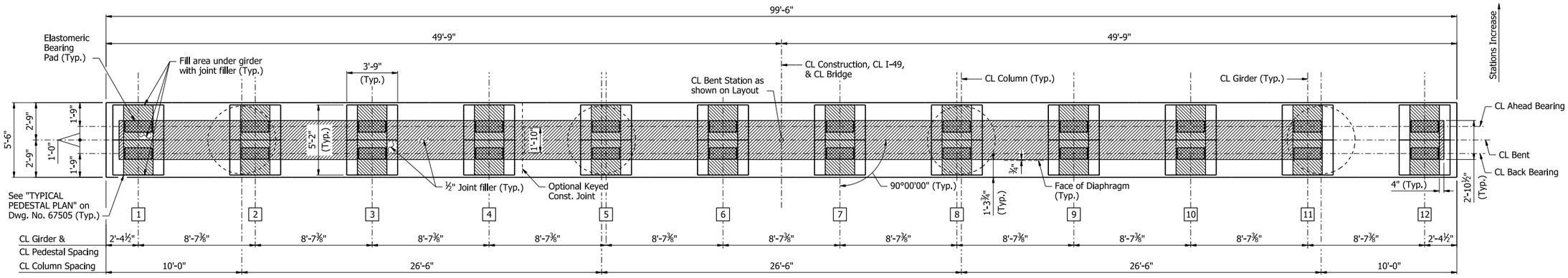
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MGG DATE: 11/11/23
CHECKED BY: QL DATE: 11/29/23
DESIGNED BY: MGG DATE: 8/22/23
FILENAME: b040901116_b103.dgn
SCALE: NO SCALE

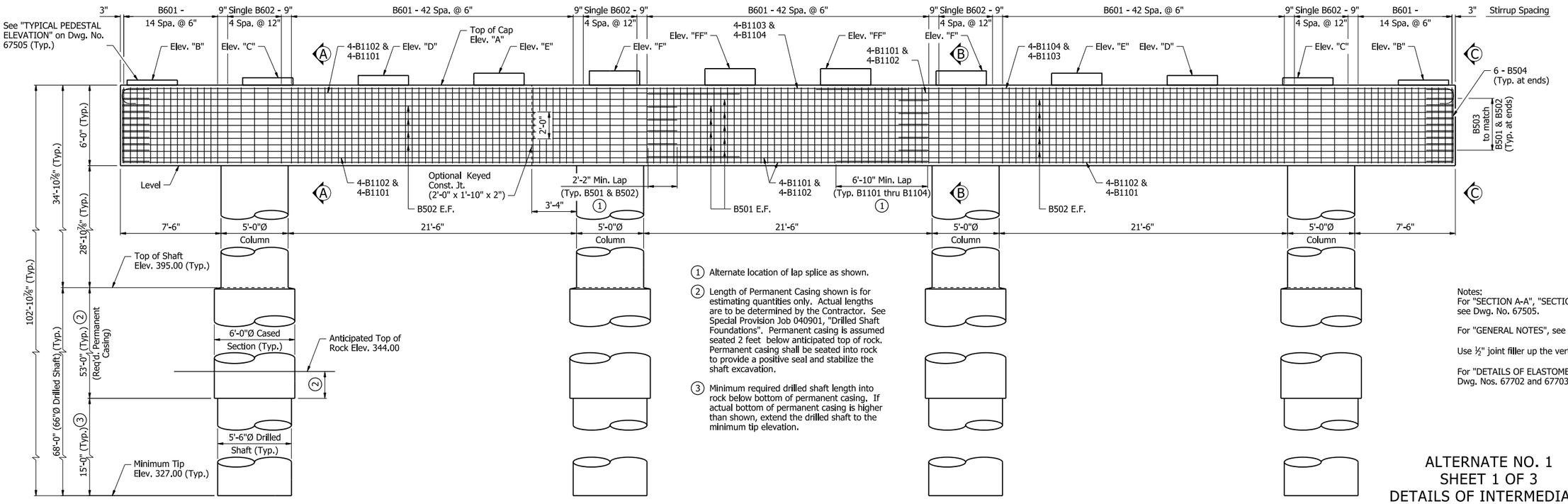
BRIDGE NO. 07685 DRAWING NO. 67503

PRINT DATE: 4/8/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	444	809
		07685 - INT. BENTS - 67504				



PLAN



ELEVATION
(Looking Upstation)

1. Alternate location of lap splice as shown.
2. Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined by the Contractor. See Special Provision Job 040901, "Drilled Shaft Foundations". Permanent casing is assumed seated 2 feet below anticipated top of rock. Permanent casing shall be seated into rock to provide a positive seal and stabilize the shaft excavation.
3. Minimum required drilled shaft length into rock below bottom of permanent casing. If actual bottom of permanent casing is higher than shown, extend the drilled shaft to the minimum tip elevation.

TABLE OF VARIABLES

"A"	"B"		"C"		"D"		"E"		"F"		"FF"	
	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing
429.91	430.32	430.29	430.49	430.46	430.67	430.63	430.84	430.81	431.01	430.98	431.18	431.15

Notes:
For "SECTION A-A", "SECTION B-B", & "VIEW C-C", see Dwg. No. 67505.

For "GENERAL NOTES", see Dwg. No. 67372.

Use ½" joint filler up the vertical face of pedestals.

For "DETAILS OF ELASTOMERIC BEARINGS", see Dwg. Nos. 67702 and 67703.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 1 OF 3
DETAILS OF INTERMEDIATE BENT NO. 12
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

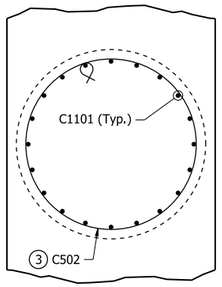
DRAWN BY: MGG DATE: 11/11/23
CHECKED BY: QL DATE: 11/22/23
DESIGNED BY: MGG DATE: 8/22/23
FILENAME: b040901116_b121.dgn
SCALE: ¼" = 1'-0"

BRIDGE NO. 07685 DRAWING NO. 67504

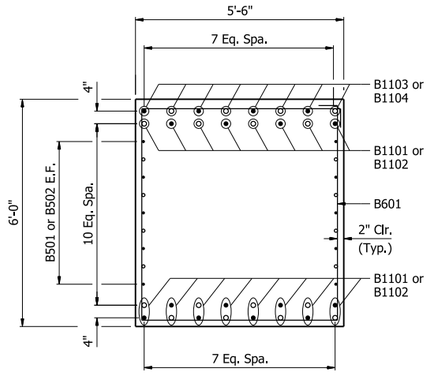
PRINT DATE: 4/8/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	445	809
		07685 - INT. BENTS - 67505				

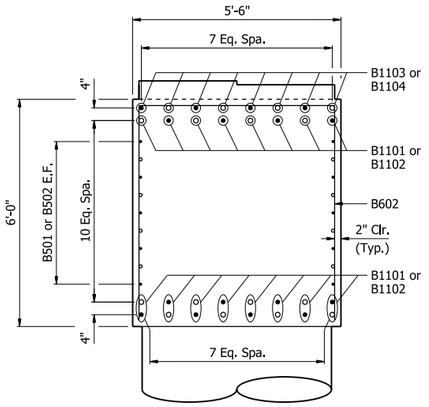
Notes:
For locations of "SECTION A-A", "SECTION B-B", & "VIEW C-C", see Dwg. No. 67504.



SECTION D-D
½" = 1'-0"
(Cap reinforcing not shown for clarity)

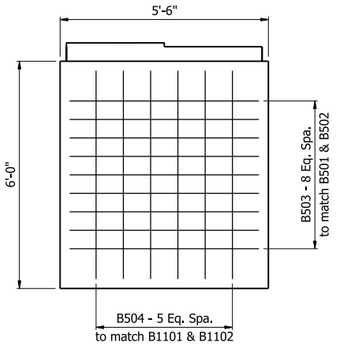


SECTION A-A
½" = 1'-0"

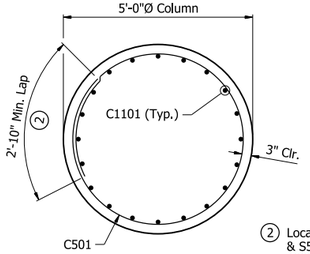


SECTION B-B
½" = 1'-0"
(Pedestal and column reinforcing not shown for clarity)

Note:
Contractor shall adjust B1101 and B1102 bar spacing to accommodate vertical column steel. Contractor shall maintain a minimum and maximum spacing of 5" and 11", respectively.



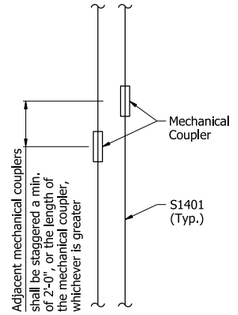
VIEW C-C
½" = 1'-0"



SECTION E-E
½" = 1'-0"

② Location of lap splices in C501 & S501 ties shall be alternated 180° at adjacent ties.

③ Location of end hooks in C502 & S502 ties shall be alternated 180° at adjacent ties.



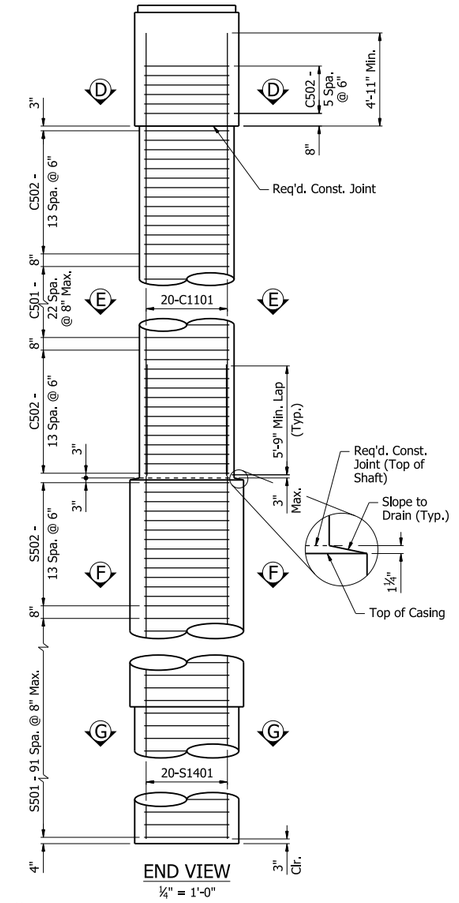
DRILLED SHAFT BAR SPLICE DETAIL
No Scale

MECHANICAL COUPLER AND SPLICE NOTES:
Contractor shall be required to use mechanical couplers to splice reinforcing bars whose lengths given in the Bar List exceed 60'-0". The bars shall be assembled as shown in "DRILLED SHAFT BAR SPLICE DETAIL".

The Contractor may choose location of splices for convenience, so long as no bar to be spliced is less than 5'-0" in length and no closer than 6'-2" from top of shaft.

The Contractor may also elect to splice bars whose lengths are less than 60'-0" to provide ease of construction, so long as the previous mentioned requirements are met.

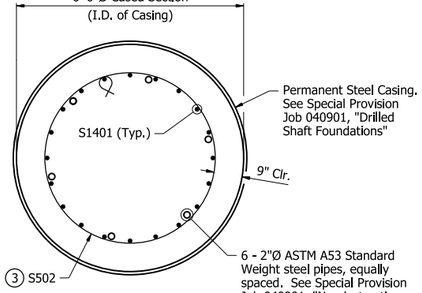
Mechanical couplers shall maintain the clearances shown in "DRILLED SHAFT BAR SPLICE DETAIL". Not more than alternate bars shall be spliced at a given location. Payment for mechanical couplers shall be subsidiary to the item "DRILLED SHAFT (66" DIA.)". The couplers shall develop at least 125% of the specified yield strength of the bar.



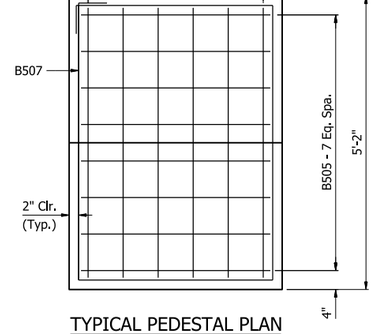
END VIEW
¼" = 1'-0"

Notes:
Dimensions, details, & reinforcing steel shown are typical for all columns and drilled shafts.

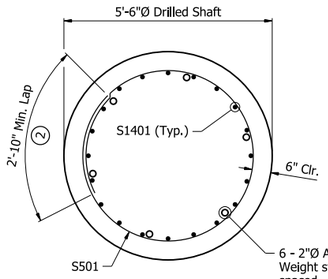
If column, cased section, or drilled shaft length changes during construction, number of ties shall be adjusted accordingly to maintain the maximum spacing of ties in the regions identified above.



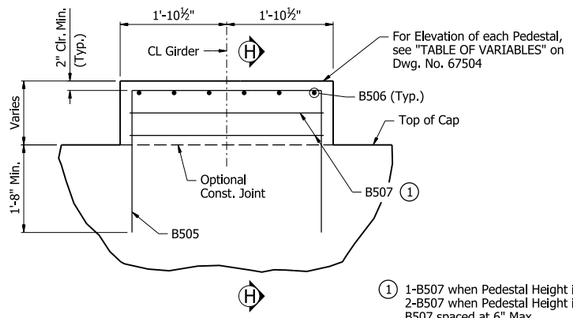
SECTION F-F
½" = 1'-0"



TYPICAL PEDESTAL PLAN
¾" = 1'-0"

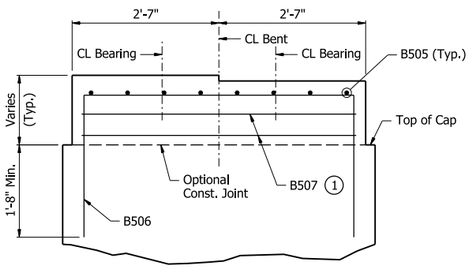


SECTION G-G
½" = 1'-0"



TYPICAL PEDESTAL ELEVATION
¾" = 1'-0"

1 1-B507 when Pedestal Height is less than 11";
2-B507 when Pedestal Height is greater than 11";
B507 spaced at 6" Max.



SECTION H-H
¾" = 1'-0"

ALTERNATE NO. 1
SHEET 2 OF 3
DETAILS OF INTERMEDIATE
BENT NO. 12
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

DRAWN BY: MGG DATE: 11/11/23
CHECKED BY: QL DATE: 11/22/23
DESIGNED BY: MGG DATE: 8/22/23
FILENAME: b040901116_b122.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67505

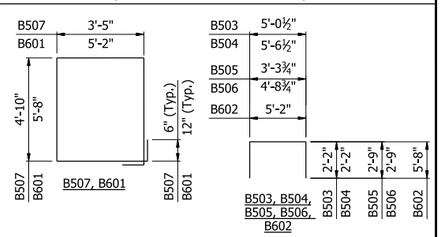
PRINT DATE: 4/8/2024

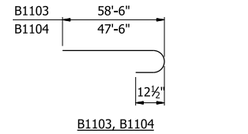
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	446	809
		07685 - INT. BENTS - 67506				

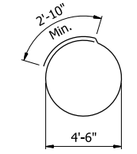
BAR LIST - PER BENT

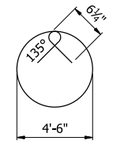
	Mark	Number Required	Length	Pin Dia.
	B501	18	60'-0"	Str.
	B502	18	41'-4"	Str.
	B503	18	9'-2"	2½"
	B504	12	9'-8"	2½"
	B505	96	8'-7"	2½"
	B506	72	10'-0"	2½"
	B507	16	17'-0"	2½"
	B601	159	22'-10"	4½"
	B602	20	16'-2"	4½"
	B1101	24	60'-0"	Str.
	B1102	24	46'-0"	Str.
	B1103	8	60'-0"	11¼"
	B1104	8	49'-0"	11¼"
	C501	92	16'-10"	-
	C502	136	15'-4"	2½"
	C1101	80	33'-7"	Str.
(1)	S501	368	16'-10"	-
(1)	S502	56	15'-4"	2½"
(1)	S1401	80	73'-9"	Str.

Bending Diagrams
(Dimensions are out to out of bars)









All bars designated with an "E" suffix are to be epoxy coated.

(1) S1401 longitudinal reinforcement and S501 & S502 tie reinforcement are non-pay items which are subsidiary to item "DRILLED SHAFT (66" DIA.)". Individual lengths shall be determined by the Contractor.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 21697
W. JOSEPH STURGEON

4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 3 OF 3
DETAILS OF INTERMEDIATE
BENT NO. 12

I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

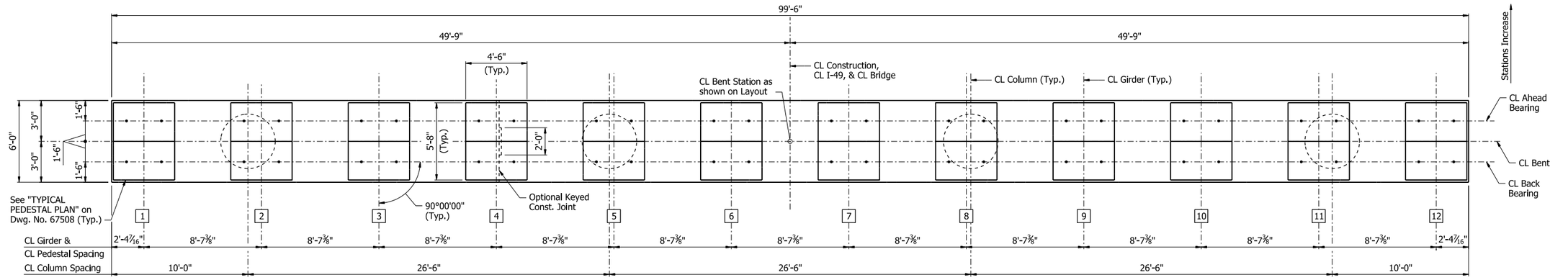
DRAWN BY: MGG DATE: 11/11/23
CHECKED BY: QL DATE: 11/22/23
DESIGNED BY: MGG DATE: 8/22/23

FILENAME: b040901116_b123.dgn
SCALE: NO SCALE

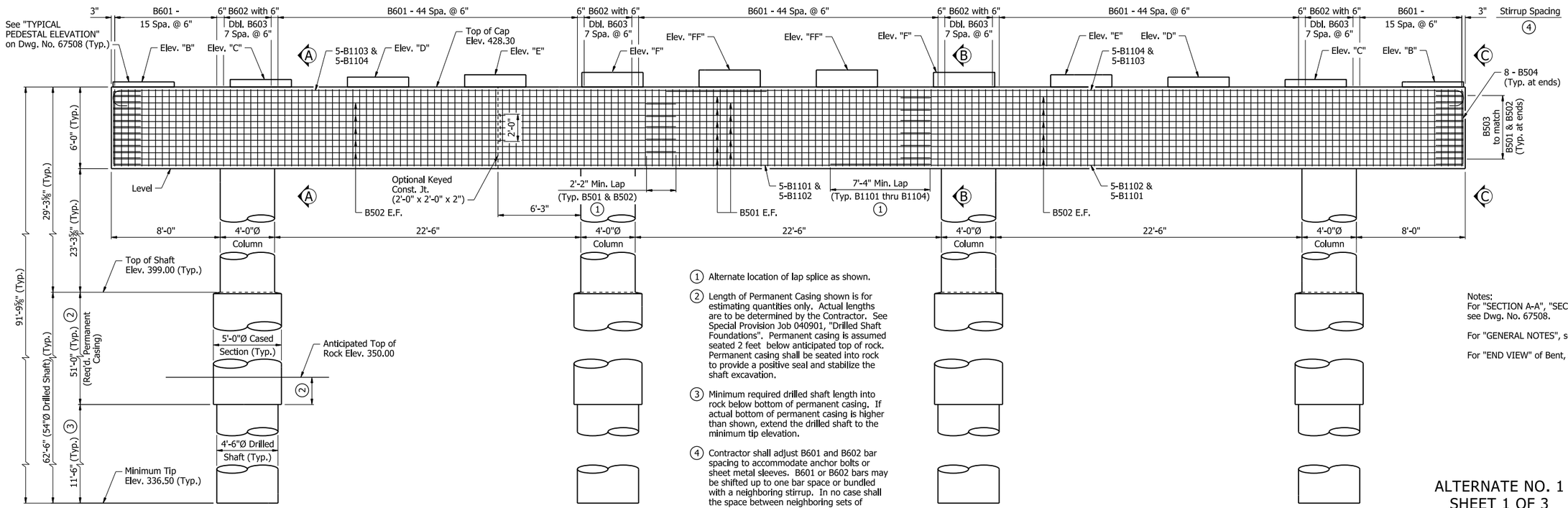
BRIDGE NO. 07685 DRAWING NO. 67506

PRINT DATE: 4/8/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	447	809
		07685 - INT. BENTS - 67507				



PLAN



1. Alternate location of lap splice as shown.
2. Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined by the Contractor. See Special Provision Job 040901, "Drilled Shaft Foundations". Permanent casing is assumed seated 2 feet below anticipated top of rock. Permanent casing shall be seated into rock to provide a positive seal and stabilize the shaft excavation.
3. Minimum required drilled shaft length into rock below bottom of permanent casing. If actual bottom of permanent casing is higher than shown, extend the drilled shaft to the minimum tip elevation.
4. Contractor shall adjust B601 and B602 bar spacing to accommodate anchor bolts or sheet metal sleeves. B601 or B602 bars may be shifted up to one bar space or bundled with a neighboring stirrup. In no case shall the space between neighboring sets of stirrups exceed twice the detailed spacing.

ELEVATION
(Looking Upstation)

Notes:
For "SECTION A-A", "SECTION B-B", & "VIEW C-C", see Dwg. No. 67508.

For "GENERAL NOTES", see Dwg. No. 67372.

For "END VIEW" of Bent, see Dwg. No. 67508.

TABLE OF VARIABLES

"B"		"C"		"D"		"E"		"F"		"FF"	
Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing
428.68	428.91	428.85	429.08	429.03	429.26	429.20	429.43	429.37	429.60	429.54	429.77

STATE OF ARKANSAS
W. JOSEPH STURGEON
LICENSED PROFESSIONAL ENGINEER
No. 21697
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 1 OF 3
DETAILS OF INTERMEDIATE BENT NO. 13
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

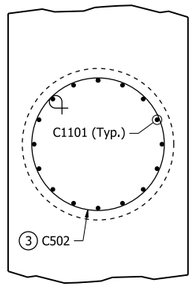
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MGG DATE: 11/18/23
CHECKED BY: QL DATE: 11/29/23
DESIGNED BY: MGG DATE: 8/28/23
FILENAME: b040901116_b131.dgn
SCALE: 1/4" = 1'-0"

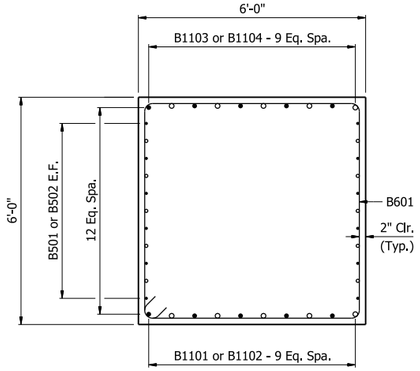
BRIDGE NO. 07685 DRAWING NO. 67507

PRINT DATE: 4/8/2024

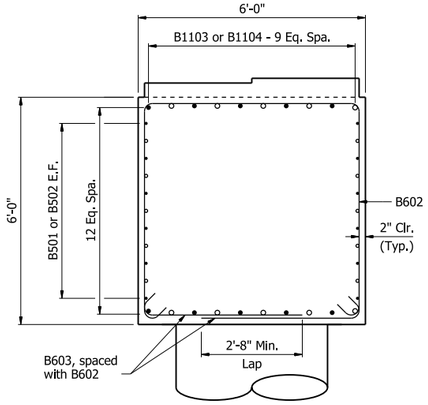
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	448	809
		07685 - INT. BENTS - 67508				



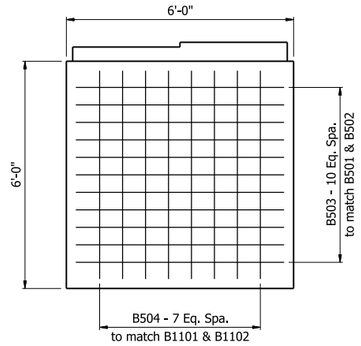
SECTION D-D
½" = 1'-0"
(Cap reinforcing not shown for clarity)



SECTION A-A
½" = 1'-0"

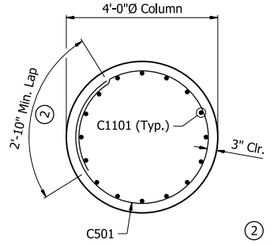


SECTION B-B
½" = 1'-0"
(Pedestal and column reinforcing not shown for clarity)



VIEW C-C
½" = 1'-0"

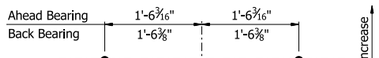
Note:
Contractor shall adjust B1101 thru B1104 bar spacing to accommodate anchor bolts, sheet metal sleeves, or vertical column steel. Contractor shall maintain a minimum and maximum spacing of 5" and 9", respectively. B1101 thru B1104 bars may be bundled as required to maintain the minimum spacing so long as the maximum spacing is not exceeded.



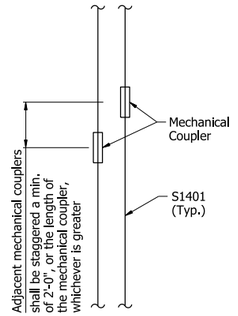
SECTION E-E
½" = 1'-0"

② Location of lap splices in C501 & S501 ties shall be alternated 180° at adjacent ties.

③ Location of end hooks in C502 & S502 ties shall be alternated 180° at adjacent ties.



TYPICAL ANCHOR BOLT LAYOUT
1" = 1'-0"



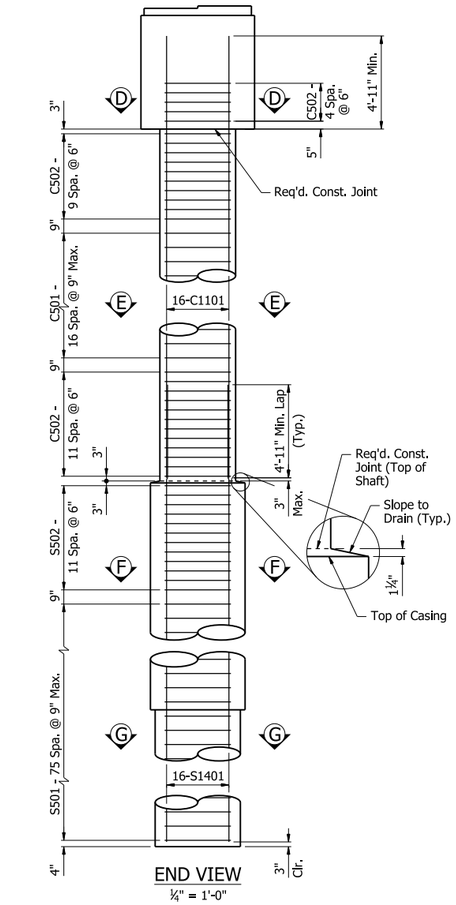
DRILLED SHAFT BAR SPLICE DETAIL
No Scale

MECHANICAL COUPLER AND SPLICE NOTES:
Contractor shall be required to use mechanical couplers to splice reinforcing bars whose lengths given in the Bar List exceed 60'-0". The bars shall be assembled as shown in "DRILLED SHAFT BAR SPLICE DETAIL".

The Contractor may choose location of splices for convenience, so long as no bar to be spliced is less than 5'-0" in length and no closer than 4'-1" from top of shaft.

The Contractor may also elect to splice bars whose lengths are less than 60'-0" to provide ease of construction, so long as the previous mentioned requirements are met.

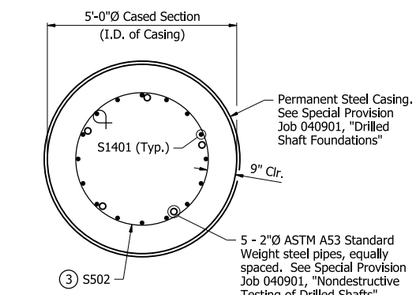
Mechanical couplers shall maintain the clearances shown in "DRILLED SHAFT BAR SPLICE DETAIL". Not more than alternate bars shall be spliced at a given location. Payment for mechanical couplers shall be subsidiary to the item "DRILLED SHAFT (54" DIA.)". The couplers shall develop at least 125% of the specified yield strength of the bar.



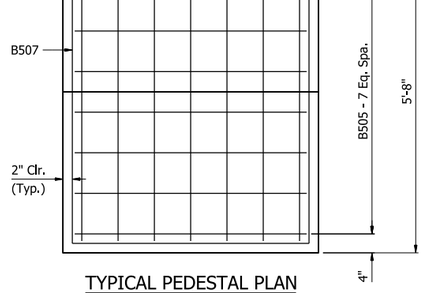
END VIEW
¼" = 1'-0"

Notes:
Dimensions, details, & reinforcing steel shown are typical for all columns and drilled shafts.

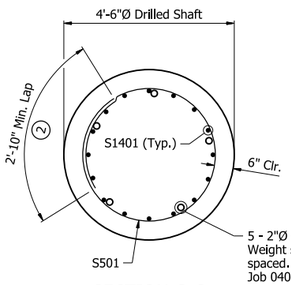
If column, cased section, or drilled shaft length changes during construction, number of ties shall be adjusted accordingly to maintain the maximum spacing of ties in the regions identified above.



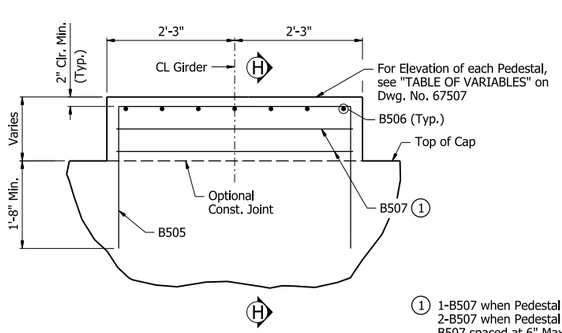
SECTION F-F
½" = 1'-0"



TYPICAL PEDESTAL PLAN
¾" = 1'-0"

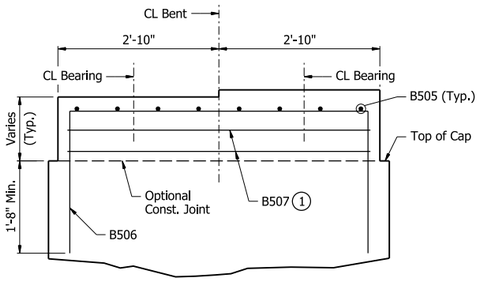


SECTION G-G
½" = 1'-0"



TYPICAL PEDESTAL ELEVATION
¾" = 1'-0"

1 1-B507 when Pedestal Height is less than 11";
2-B507 when Pedestal Height is greater than 11";
B507 spaced at 6" Max.



SECTION H-H
¾" = 1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 2 OF 3
DETAILS OF INTERMEDIATE BENT NO. 13
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MGG DATE: 11/19/23
CHECKED BY: QL DATE: 11/29/23
DESIGNED BY: MGG DATE: 8/28/23
FILENAME: b040901116_b132.dgn
SCALE: AS NOTED
BRIDGE NO. 07685
DRAWING NO. 67508

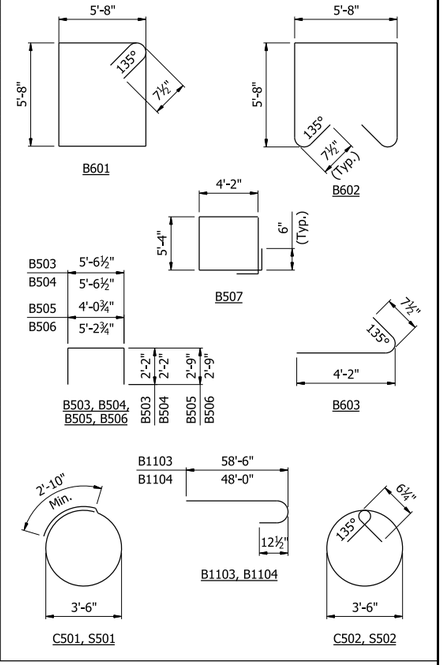
PRINT DATE: 4/8/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	449	809
		07685 - INT. BENTS - 67509				

BAR LIST

Mark	Number Required	Length	Pin Dia.
B501	22	60'-0"	Str.
B502	22	41'-4"	Str.
B503	22	9'-8"	2½"
B504	16	9'-8"	2½"
B505	96	9'-4"	2½"
B506	84	10'-6"	2½"
B507	16	19'-6"	2½"
B601	167	23'-6"	4½"
B602	32	18'-0"	4½"
B603	64	4'-10"	4½"
B1101	10	60'-0"	Str.
B1102	10	46'-6"	Str.
B1103	10	60'-0"	11¼"
B1104	10	49'-6"	11¼"
C501	68	13'-8"	-
C502	108	12'-2"	2½"
C1101	64	28'-0"	Str.
(1) S501	304	13'-8"	-
(1) S502	48	12'-2"	2½"
(1) S1401	64	67'-5"	Str.

Bending Diagrams
(Dimensions are out to out of bars)



All bars designated with an "E" suffix are to be epoxy coated.

(1) S1401 longitudinal reinforcement and S501 & S502 tie reinforcement are non-pay items which are subsidiary to item "DRILLED SHAFT (54" DIA.)". Individual lengths shall be determined by the Contractor.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 21697
W. JOSEPH STURGEON

4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 3 OF 3
DETAILS OF INTERMEDIATE BENT NO. 13
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

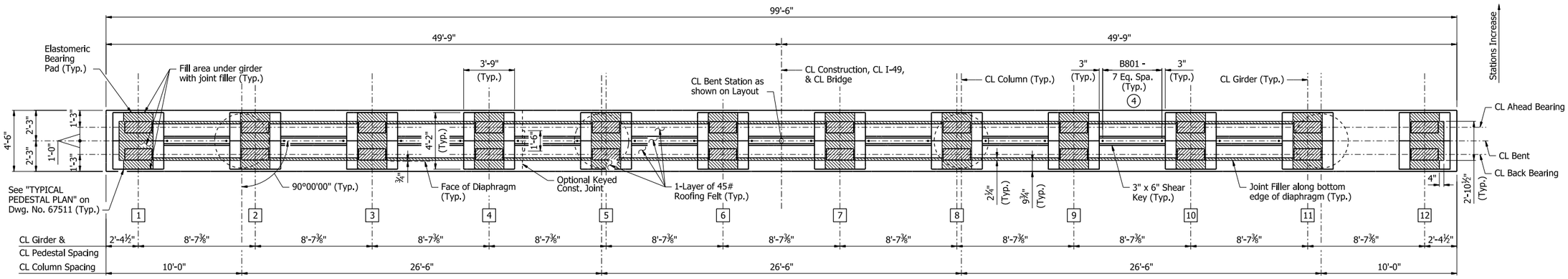
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MGG DATE: 11/19/23
CHECKED BY: QL DATE: 11/29/23
DESIGNED BY: MGG DATE: 8/28/23
FILENAME: b040901116_b133.dgn
SCALE: NO SCALE

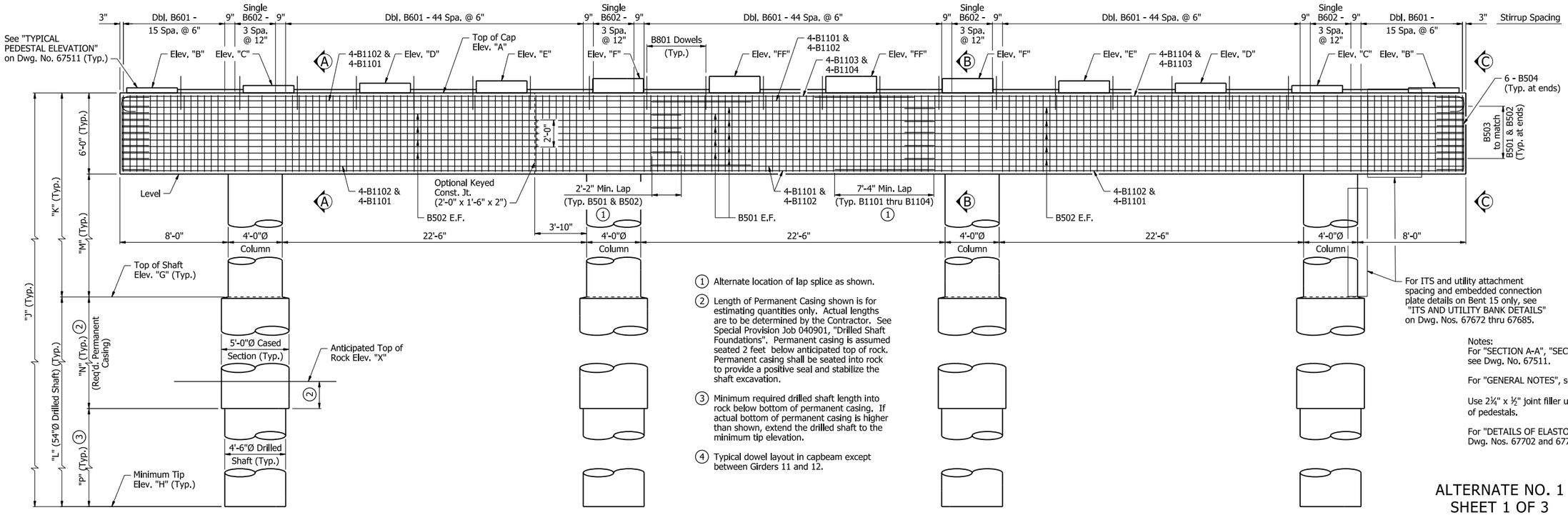
BRIDGE NO. 07685 DRAWING NO. 67509

PRINT DATE: 4/8/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	450	809
		07685 - INT. BENTS - 67510				



PLAN



1. Alternate location of lap splice as shown.
2. Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined by the Contractor. See Special Provision Job 040901, "Drilled Shaft Foundations". Permanent casing is assumed seated 2 feet below anticipated top of rock. Permanent casing shall be seated into rock to provide a positive seal and stabilize the shaft excavation.
3. Minimum required drilled shaft length into rock below bottom of permanent casing. If actual bottom of permanent casing is higher than shown, extend the drilled shaft to the minimum tip elevation.
4. Typical dowel layout in capbeam except between Girders 11 and 12.

ELEVATION
(Looking Upstation)

Notes:
For "SECTION A-A", "SECTION B-B", & "VIEW C-C", see Dwg. No. 67511.

For "GENERAL NOTES", see Dwg. No. 67372.

Use 2¼" x ½" joint filler up the vertical face of pedestals.

For "DETAILS OF ELASTOMERIC BEARINGS", see Dwg. Nos. 67702 and 67703.

TABLE OF VARIABLES

Bent No.	"A"	"B" Back Bearing	"B" Ahead Bearing	"C" Back Bearing	"C" Ahead Bearing	"D" Back Bearing	"D" Ahead Bearing	"E" Back Bearing	"E" Ahead Bearing	"F" Back Bearing	"F" Ahead Bearing	"FF" Back Bearing	"FF" Ahead Bearing	"G"	"H"	"J"	"K"	"L"	"M"	"N"	"P"	"X"
14	426.95	427.46	427.33	427.63	427.50	427.81	427.68	427.98	427.85	428.15	428.02	428.32	428.19	399.00	333.50	93'-5⅜"	27'-11⅜"	66'-6"	21'-11⅜"	54'-0"	11'-6"	347.00
15	424.31	424.69	424.75	424.86	424.93	425.03	425.10	425.21	425.27	425.38	425.44	425.55	425.62	398.00	336.50	87'-9¾"	26'-3¾"	61'-6"	20'-3¾"	50'-0"	11'-6"	350.00

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 1 OF 3
DETAILS OF INTERMEDIATE BENT NOS. 14 & 15
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

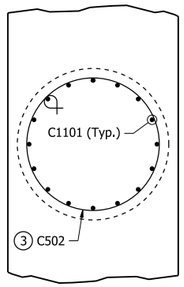
DRAWN BY: MGG DATE: 11/12/23
CHECKED BY: QL DATE: 11/27/23
DESIGNED BY: MGG DATE: 8/28/23
FILENAME: b040901116_b141.dgn
SCALE: ¼" = 1'-0"

BRIDGE NO. 07685 DRAWING NO. 67510

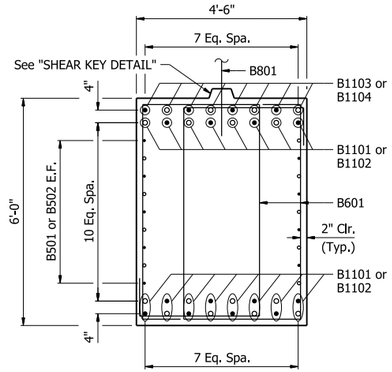
PRINT DATE: 4/8/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	451	809
		07685 - INT. BENTS - 67511				

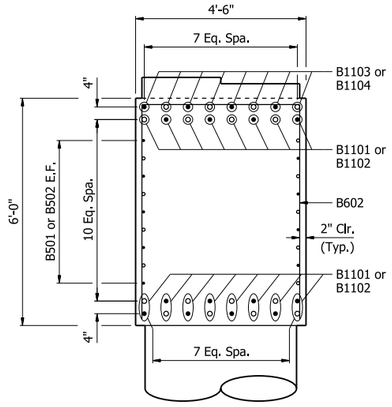
Notes:
For locations of "SECTION A-A", "SECTION B-B", & "VIEW C-C", see Dwg. No. 67510.



SECTION D-D
½" = 1'-0"
(Cap reinfrocing not shown for clarity)

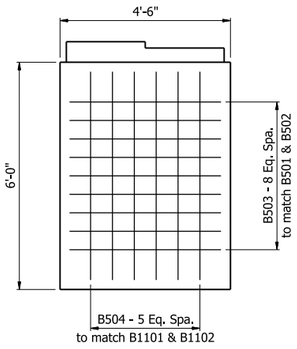


SECTION A-A
½" = 1'-0"

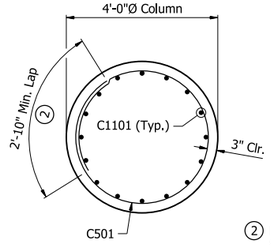


SECTION B-B
½" = 1'-0"
(Pedestal and column reinforcing not shown for clarity)

Note:
Contractor shall adjust B1101 thru B1104 bar spacing to accommodate dowels or vertical column steel. Contractor shall maintaina minimum and maximum spacing of 5" and 9", respectively.



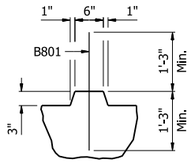
VIEW C-C
½" = 1'-0"



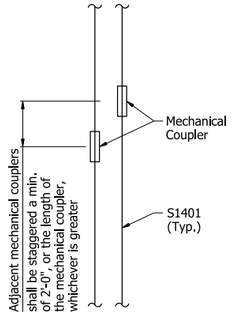
SECTION E-E
½" = 1'-0"

2 Location of lap splices in C501 & S501 ties shall be alternated 180° at adjacent ties.

3 Location of end hooks in C502 & S502 ties shall be alternated 180° at adjacent ties.



SHEAR KEY DETAIL
No Scale



DRILLED SHAFT BAR SPLICE DETAIL
No Scale

MECHANICAL COUPLER AND SPLICE NOTES;
Contractor shall be required to use mechanical couplers to splice reinforcing bars whose lengths given in the Bar List exceed 60'-0". The bars shall be assembled as shown in "DRILLED SHAFT BAR SPLICE DETAIL".

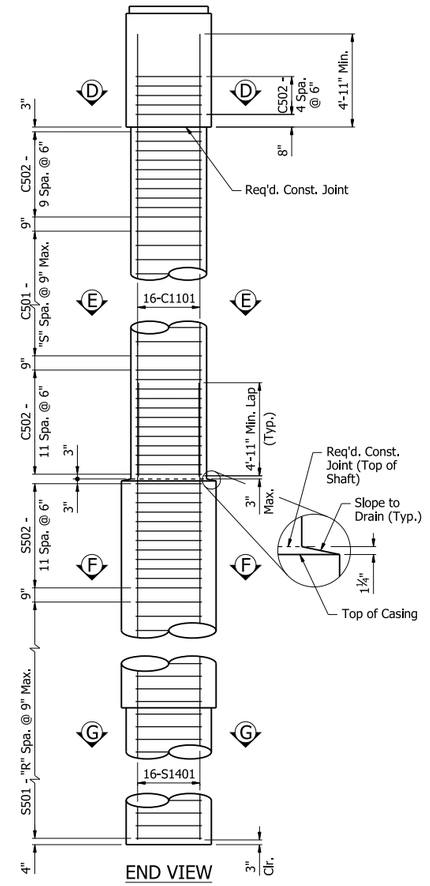
The Contractor may choose location of splices for convenience, so long as no bar to be spliced is less than 5'-0" in length and no closer than 5'-1" from top of shaft.

The Contractor may also elect to splice bars whose lengths are less than 60'-0" to provide ease of construction, so long as the previous mentioned requirements are met.

Mechanical couplers shall maintain the clearances shown in "DRILLED SHAFT BAR SPLICE DETAIL". Not more than alternate bars shall be spliced at a given location. Payment for mechanical couplers shall be subsidiary to the item "DRILLED SHAFT (54" DIA.)". The couplers shall develop at least 125% of the specified yield strength of the bar.

TABLE OF VARIABLES

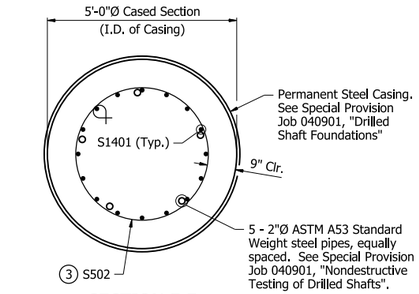
Bent No.	"R"	"S"
14	79	14
15	73	12



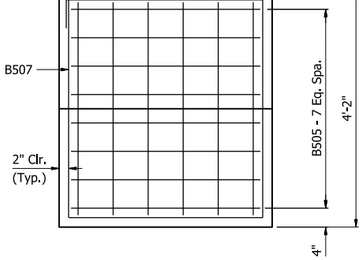
END VIEW
¼" = 1'-0"

Notes:
Dimensions, details, & reinforcing steel shown are typical for all columns and drilled shafts.

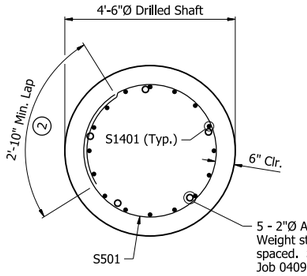
If column, cased section, or drilled shaft length changes during construction, number of ties shall be adjusted accordingly to maintain the maximum spacing of ties in the regions identified above.



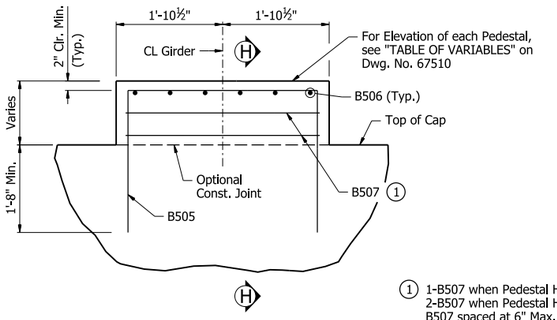
SECTION F-F
½" = 1'-0"



TYPICAL PEDESTAL PLAN
¾" = 1'-0"

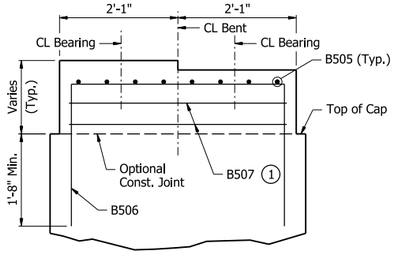


SECTION G-G
½" = 1'-0"



TYPICAL PEDESTAL ELEVATION
¾" = 1'-0"

1 1-B507 when Pedestal Height is less than 11";
2-B507 when Pedestal Height is greater than 11";
B507 spaced at 6" Max.



SECTION H-H
¾" = 1'-0"

STATE OF ARKANSAS
W. JOSEPH STURGEON
LICENSED PROFESSIONAL ENGINEER
No. 21697
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 2 OF 3
DETAILS OF INTERMEDIATE BENT NOS. 14 & 15
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MGG DATE: 11/11/23
CHECKED BY: QL DATE: 11/27/23
DESIGNED BY: MGG DATE: 8/28/23
FILENAME: b040901116_b142.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67511

PRINT DATE: 4/8/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	452	809
		07685 - INT. BENTS - 67512				

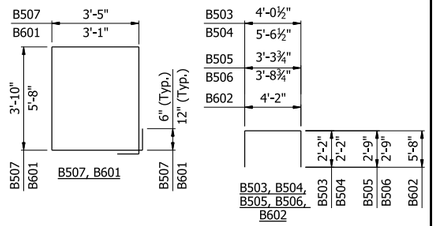
TABLE OF VARIABLES

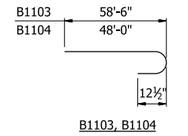
Bent No.	"CN"	"CL"	"SN"	"SL"
14	60	26'-8"	320	70'-5"
15	52	25'-0"	296	66'-5"

BAR LIST - PER BENT

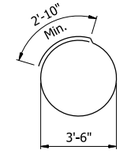
Mark	Number Required	Length	Pin Dia.
B501	18	60'-0"	Str.
B502	18	41'-4"	Str.
B503	18	8'-2"	2½"
B504	12	9'-8"	2½"
B505	96	8'-7"	2½"
B506	72	9'-0"	2½"
B507	16	15'-0"	2½"
B601	334	18'-8"	4½"
B602	16	15'-2"	4½"
B801	88	2'-6"	Str.
B1101	24	60'-0"	Str.
B1102	24	46'-6"	Str.
B1103	8	60'-0"	11¼"
B1104	8	49'-6"	11¼"
C501	"CN"	13'-8"	-
C502	108	12'-2"	2½"
C1101	64	"CL"	Str.
(1) S501	"SN"	13'-8"	-
(1) S502	48	12'-2"	2½"
(1) S1401	64	"SL"	Str.

Bending Diagrams (Dimensions are out to out of bars)

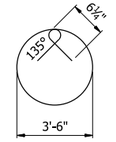




B1103, B1104



C501, S501



C502, S502

All bars designated with an "E" suffix are to be epoxy coated.

(1) S1401 longitudinal reinforcement and S501 & S502 tie reinforcement are non-pay items which are subsidiary to item "DRILLED SHAFT (54" DIA.)". Individual lengths shall be determined by the Contractor.

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★★★
No. 21697
W. JOSEPH STURGEON

4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 3 OF 3
DETAILS OF INTERMEDIATE BENT NOS. 14 & 15
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MGG DATE: 11/11/23
CHECKED BY: QL DATE: 11/27/23
DESIGNED BY: MGG DATE: 8/28/23
FILENAME: b040901116_b143.dgn
SCALE: NO SCALE

BRIDGE NO. 07685 DRAWING NO. 67512

PRINT DATE: 4/8/2024

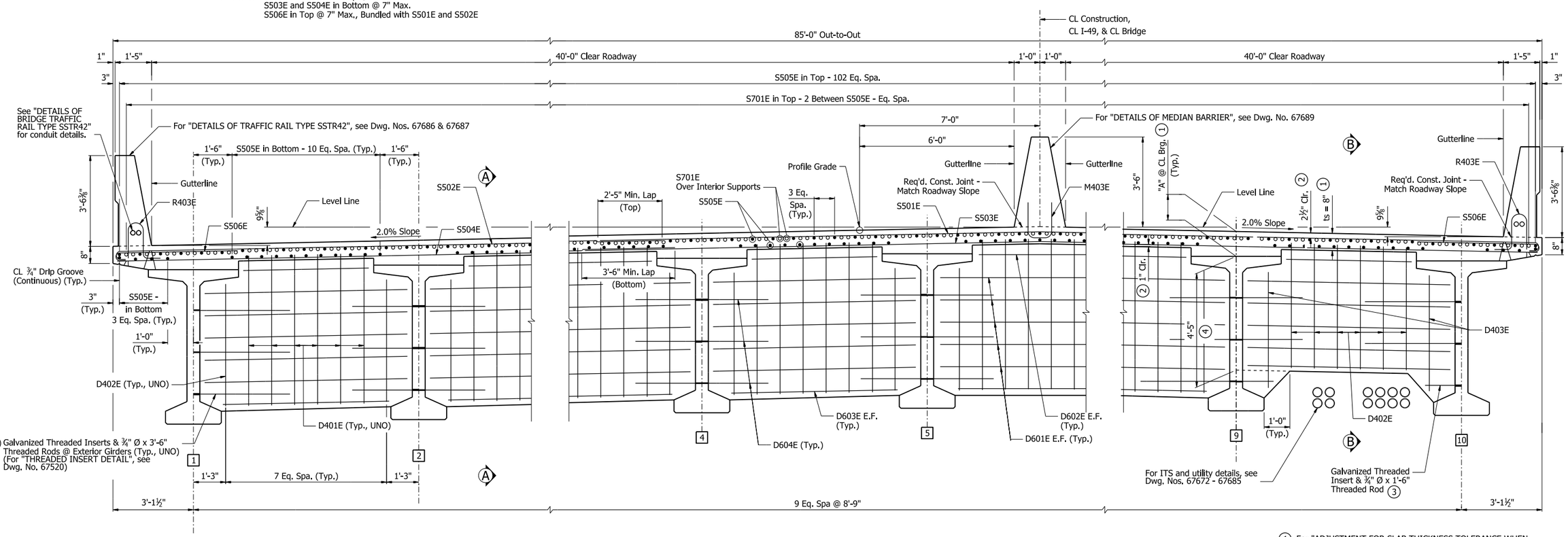
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	453	809
		07685 - UNIT 1 - 67513				

SLAB REINFORCING:

Longitudinal: S505E in Top and Bottom placed as shown
S701E in Top placed as shown over Interior Bents

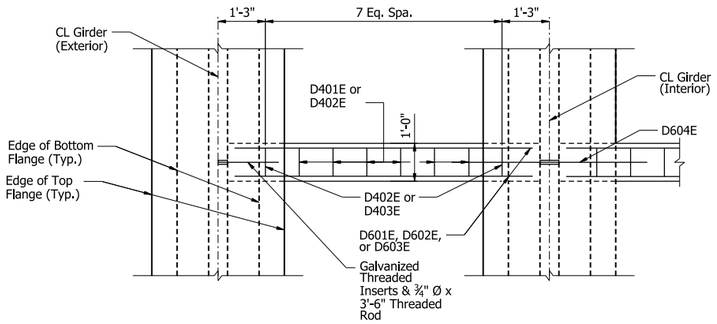
Transverse: S501E and S502E in Top @ 7" Max.
S503E and S504E in Bottom @ 7" Max.
S506E in Top @ 7" Max., Bundled with S501E and S502E

Bar positions or clearances from the forms shall be maintained by means of stays, ties, hangers, or other approved devices per Subsection 804.06. Placement of slab bolsters or high-chairs with full-length lower runners directly on removable deck forms will not be allowed.

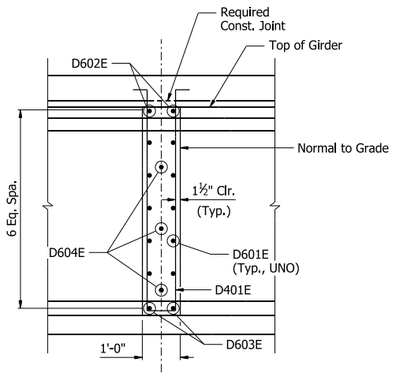


TYPICAL SECTION AT MID-SPAN CONCRETE DIAPHRAGMS

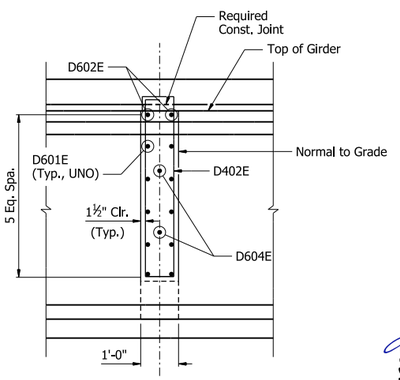
(Looking Upstation)



PLAN
Mid-Span Diaphragm



SECTION A-A



SECTION B-B

	TABLE OF SECTION DEPTHS
	Girders 1-10
	"A"
Span 1	1'-0⅞"
Span 2	1'-0"
Span 3	1'-0"
Span 4	1'-0"

1 For "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED", see Dwg. No. 67518.

2 Tolerance: Minus = ¼" ; Plus = to the amount of slab thickening used to meet slab thickness tolerance. For "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED", see Dwg. No. 67518.

3 Galvanized threaded inserts shall be Dayton-Richmond F-42 Loop Ferrule Inserts or an approved equal. ¾" Ø threaded rods shall be AASHTO M270, Grade 36 or AASHTO M31 or M322 Type A, Gr. 60. Galvanized inserts and threaded rods are to be subsidiary to the item "PRESTRESSED CONCRETE GIRDERS (TYPE BT-72)". Galvanizing shall be in accordance with AASHTO M232 Class C or ASTM B695, Class 50.

4 Measured from top of girder to bottom of projected diaphragm.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 22537
JORDAN R. GREENE
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 1 OF 8
DETAILS OF 520'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 1
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

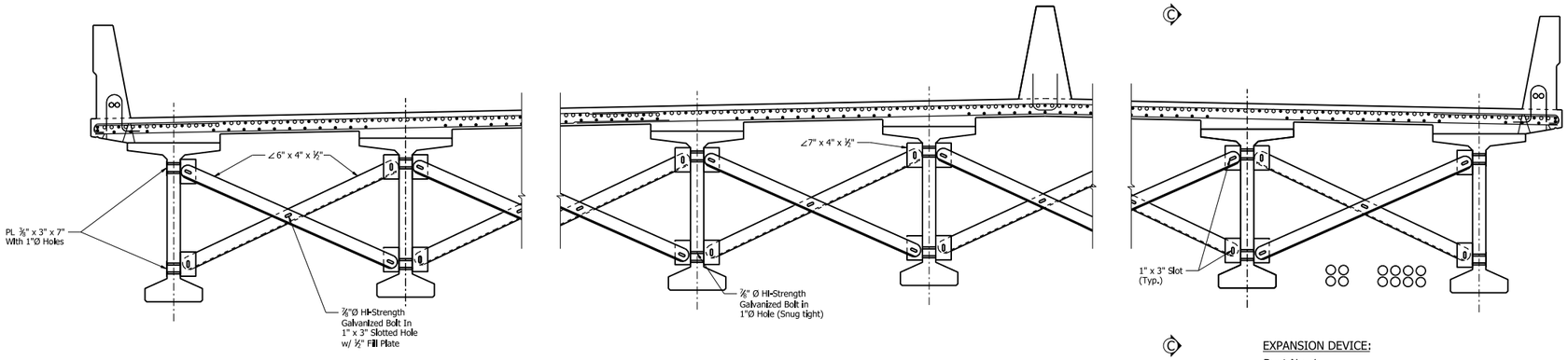
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: EMC DATE: 10/26/23
CHECKED BY: CZ DATE: 10/31/23
DESIGNED BY: RAM DATE: 5/2/23
FILENAME: b040901116_s11.dgn
SCALE: 1/2" = 1'-0"

BRIDGE NO. 07685 DRAWING NO. 67513

PRINT DATE: 4/8/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	454	809
		07685 - UNIT 1- 67514				



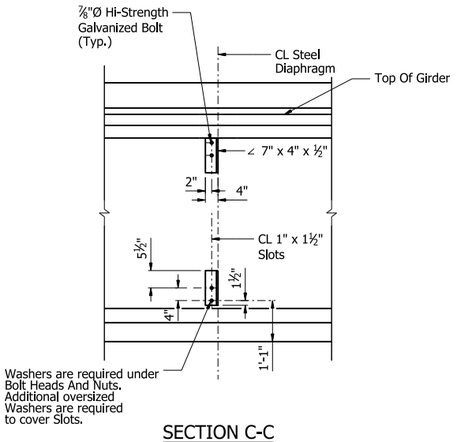
ALTERNATE TYPICAL SECTION AT MID-SPAN STEEL DIAPHRAGMS

(Looking Upstation)
⅜" = 1'-0"

EXPANSION DEVICE:

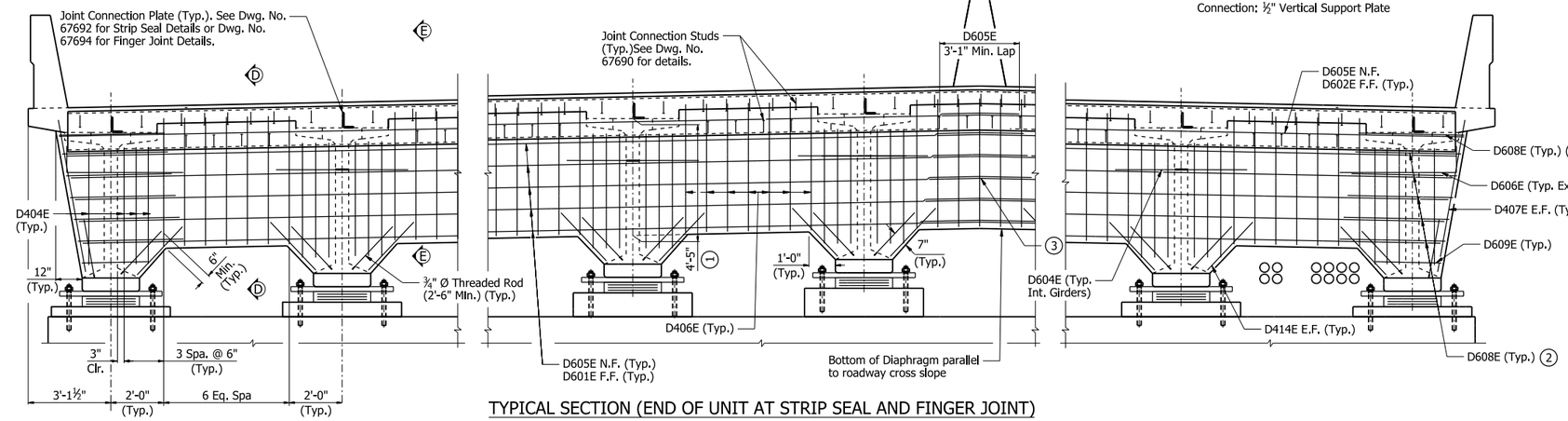
Bent No. 1
Roadway Channel: C 15x33.9
Connection: MC 18x42.7 (Cope One Flange)

Bent No. 5
Roadway Channel: MC 18x42.7
Connection: ½" Vertical Support Plate



SECTION C-C

½" = 1'-0"



TYPICAL SECTION (END OF UNIT AT STRIP SEAL AND FINGER JOINT)

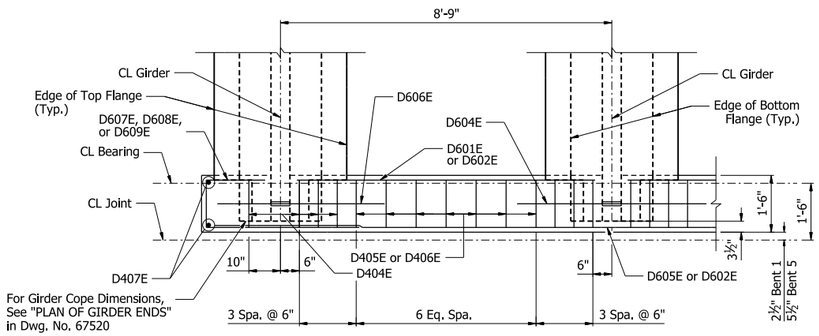
(Shown Looking Ahead At Bent 1, Bent 5 Similar)
⅜" = 1'-0"

1. Measured from top of girder to bottom of projected diaphragm.
2. Spaced with D605E or D602E
3. Field bend Bars D605E at roadway crown as necessary to maintain contact through lap splice and minimum clear. Bars D601E are straight at this location.

Notes:
For Slab Reinforcing details, see Dwg. No. 67513.

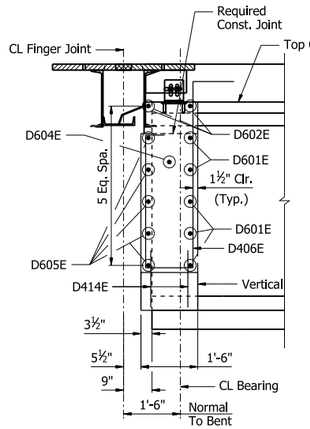
For ITS and utility details, see Dwg. Nos. 67672 & 67685.

For Finger Joint Details, see Dwg. No. 67694. For Strip Seal Joint Details, see Dwg. No. 67692.



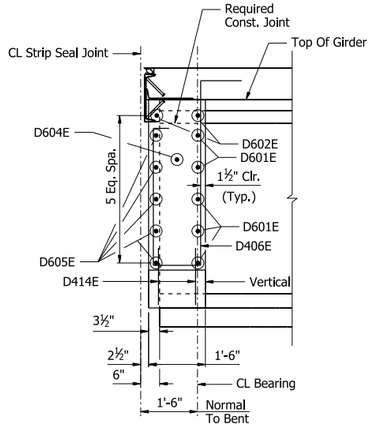
PLAN

End Diaphragm
(Bent 1 Shown, Bent 5 Similar)
½" = 1'-0"



SECTION D-D

Finger Joint at Bent 5
½" = 1'-0"



SECTION E-E

Strip Seal Joint at Bent 1
½" =1'-0"

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LICENSED PROFESSIONAL ENGINEER
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No. 22537
JORDAN R. GREENE
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 2 OF 8
DETAILS OF 520'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 1
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

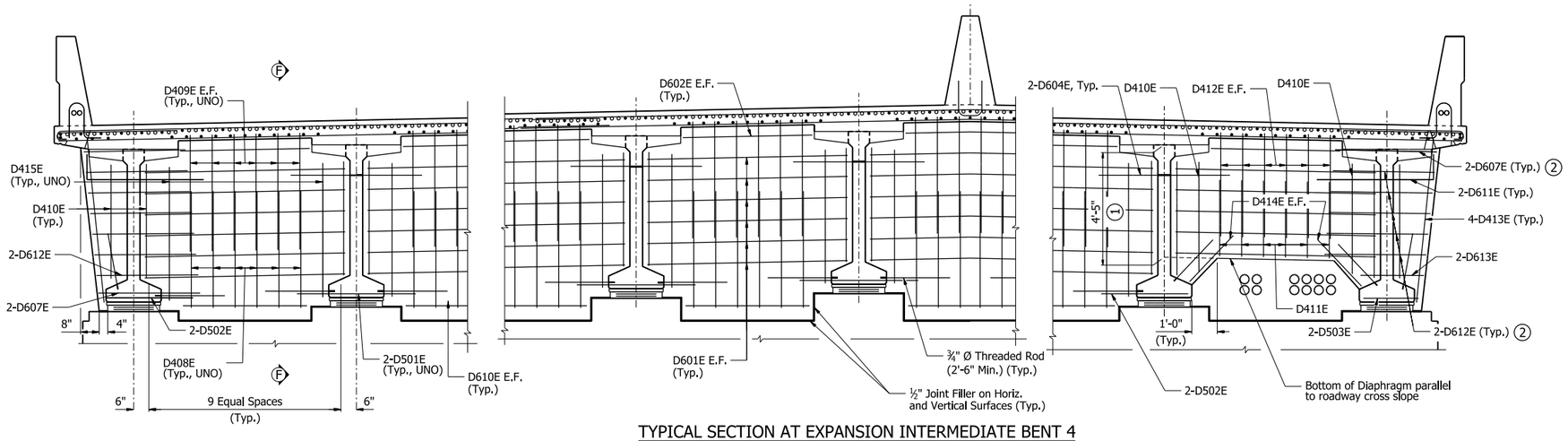
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: EMC DATE: 7/25/23
CHECKED BY: SAS DATE: 10/27/23
DESIGNED BY: RAM DATE: 5/2/23
FILENAME: b040901116_s12.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67514

PRINT DATE: 4/11/2024

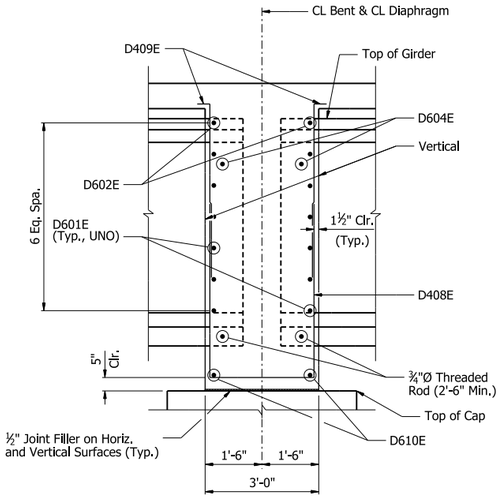
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	455	809
		07685 - UNIT 1 - 67515				



TYPICAL SECTION AT EXPANSION INTERMEDIATE BENT 4

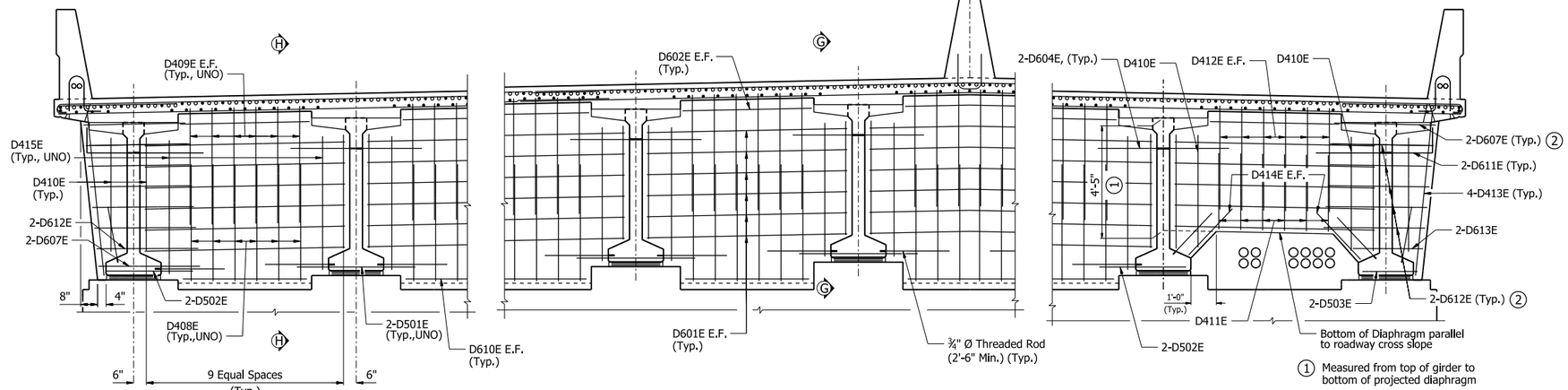
(Dowel Bars Not Shown For Clarity)

⅜" = 1'-0"



SECTION F-F

½" = 1'-0"



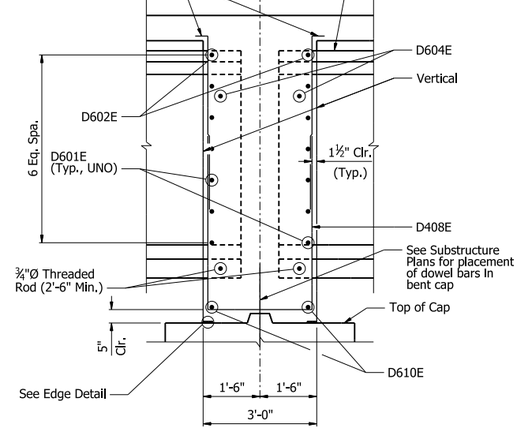
(1) Measured from top of girder to bottom of projected diaphragm

(2) Spaced with D605E or D602E

TYPICAL SECTION AT FIXED INTERMEDIATE BENTS 2 & 3

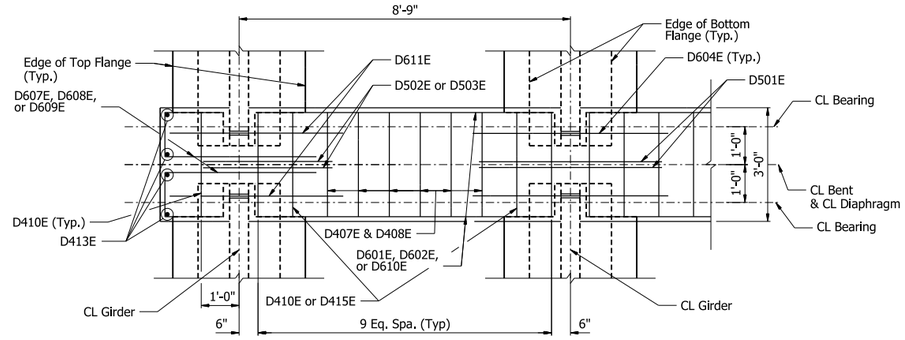
(Dowel Bars Not Shown For Clarity)

⅜" = 1'-0"



SECTION H-H

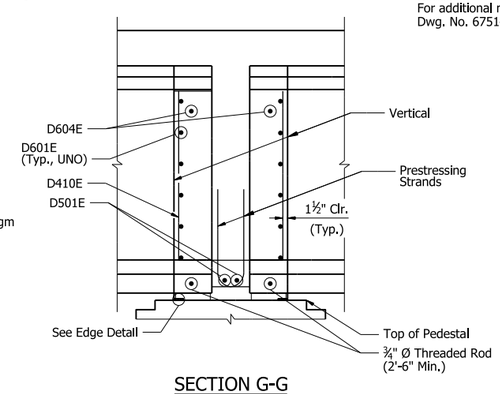
½" = 1'-0"



PLAN

Intermediate Bent Diaphragm

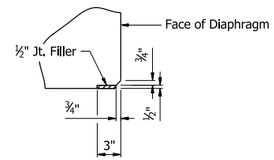
½" = 1'-0"



SECTION G-G

½" = 1'-0"

Notes:
For additional notes, see
Dwg. No. 67514.



EDGE DETAIL

(At Fixed Bents)

1" = 1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
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JORDAN R. GREENE

4/18/24

BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 3 OF 8
DETAILS OF 520'-0" CONTINUOUS
PRESTRESSED CONCRETE GIRDER UNIT 1
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

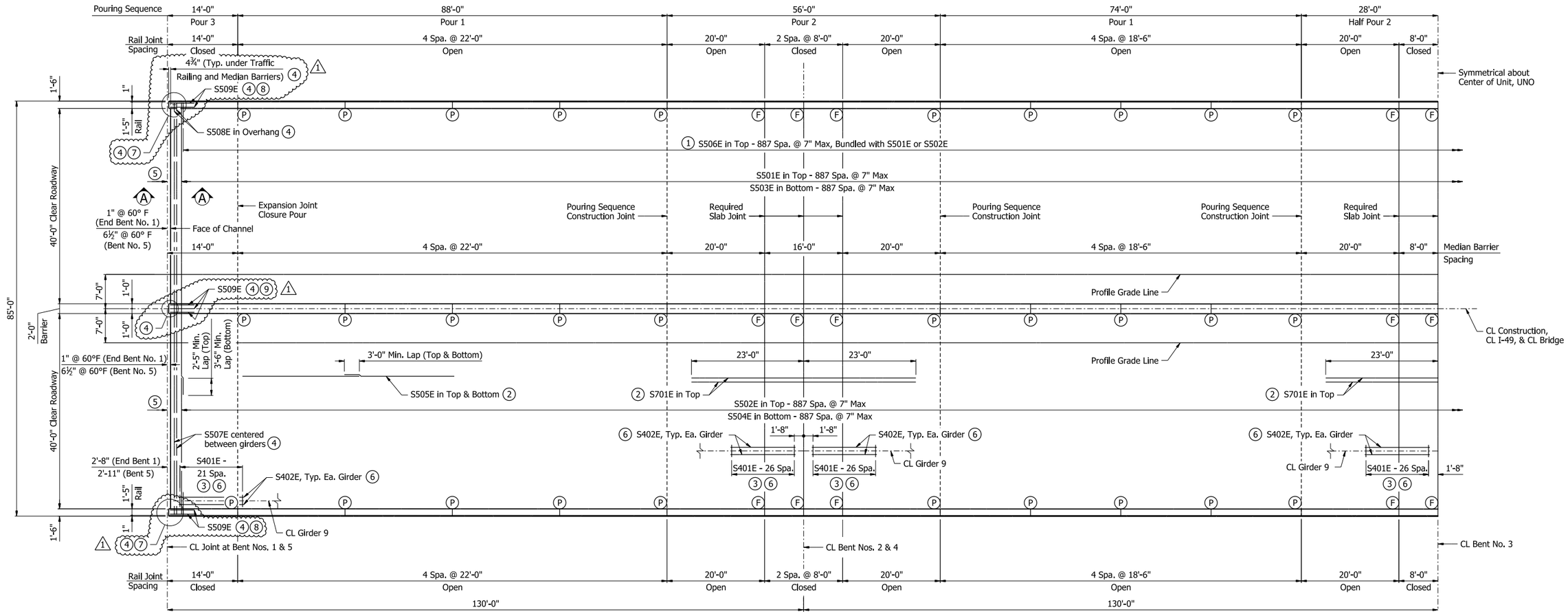
DRAWN BY:	EMC	DATE:	7/25/23	FILENAME:	b040901116_s13.dgn
CHECKED BY:	SAS	DATE:	10/27/23	SCALE:	AS NOTED
DESIGNED BY:	RAM	DATE:	5/2/23		

BRIDGE NO. 07685 DRAWING NO. 67515

PRINT DATE: 4/8/2024

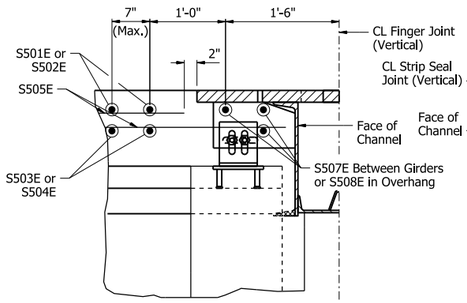
DATE REVISED	DATE REVISED	FED. RD. DST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
8/9/2024		6	ARK.	040901	456	809
		07685 - Unit 1 - 67516				

1 Slab extension added below Rail and Median Barriers at Finger Joint locations. 8/9/2024

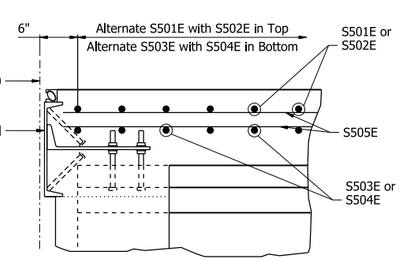


HALF REINFORCING PLAN AND POURING SEQUENCE

$\frac{3}{32}$" = 1'-0"



SECTION A-A
Finger Joint
(Bent 5 Only)
1" = 1'-0"



SECTION A-A
Strip Seal
(Bent 1 Only)
1" = 1'-0"

Slab Pouring Sequence Notes:

Pours with the same number may be placed simultaneously or separately. All Pour(s) 1 must be placed before Pour(s) 2 and 3 can be placed. A minimum of 48 hours shall elapse between the end of a pour and the start of the next pour. A minimum of 72 hours shall elapse between adjacent pours.

Concrete in bridge superstructure shall be placed, consolidated, and screeded off for entire pour before any concrete has taken its initial set. This may require the use of a retarding agent.

All end of unit and mid-span diaphragms shall be cast in place and poured a minimum of 48 hours before the slab is poured, unless otherwise noted. Intermediate bent diaphragms shall be cast monolithically with the slab.

At Finger Joints, after all incremental pours on both Units adjacent to the Finger Joint are complete, closure pour 3 on each side of the Finger Joint shall be poured simultaneously. At Strip Seal Joints, after the incremental pours on the unit are complete, the backwall will be poured past the construction joint simultaneously with closure pour 3. A minimum of 48 hours shall elapse between the last incremental pour and the closure pours.

A minimum of 72 hours shall elapse between completion of the slab and the pouring of the bridge railing. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence(s) shown.

Notes:
Span lengths, slab pour lengths, and transverse reinforcement spacing shown are measured along Profile Grade Line.

Rail spacings shown are measured along respective gutterlines.

Required slab joints and pouring sequence joints shall align with rail joints at the gutterline.

For "TRANSVERSE SLAB JOINT DETAIL", see Std. Dwg. No. 55007.

For "DETAILS FOR BRIDGE TRAFFIC RAIL TYPE SSTR42", see Dwg. Nos. 67686 & 67687.

For "DETAILS OF MEDIAN BARRIER", see Dwg. No. 67689.

1 Typical both sides, see "REINFORCING DETAIL" on Dwg. No. 67517

2 Place as shown in "TYPICAL SECTION AT MID-SPAN CONCRETE DIAPHRAGMS", see Dwg. No. 67513.

3 S401E spaced with G401E, typical each Girder. See Dwg. No. 67519 for details.

4 At Bent No. 5 Finger Joint only

5 6" at Bent No. 1
2'-6" at Bent No. 5

6 For S401E and S402E placement, see "HAUNCH REINFORCEMENT DETAIL" on Dwg. No. 67476.

F CL Full-Depth Rail Joint

P CL Partial-Depth Rail Joint

1 7 In the slab extension, cut R403E 8" leg to maintain concrete cover.

1 8 2-S509E in Top, 3-S509E in Bottom.

1 9 3-S509E @ Eq. Spa., Top and Bottom.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 22537
JORDAN R. GREENE
8/9/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 4 OF 8
DETAILS OF 520'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 1
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: EMC DATE: 10/26/23
CHECKED BY: CZ DATE: 10/26/23
DESIGNED BY: RAM DATE: 5/2/23
FILENAME: b040901116_s14.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67516

PRINT DATE: 8/15/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
8/9/2024		6	ARK.	040901	457	809
		07685 - UNIT 1 - 67517				

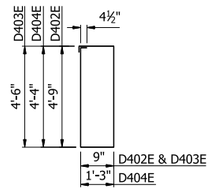
1 Slab extension added below Rail and Median Barriers at Finger Joint locations. 8/9/2024

BAR LIST-PER UNIT

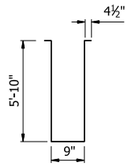
Mark	Number Required	Length	Pin Dia.
S401E	2060	4'-4"	3"
S402E	160	13'-4"	Str.
S501E	888	60'-0"	3¾"
S502E	888	28'-3"	3¾"
S503E	888	60'-0"	Str.
S504E	888	28'-2"	Str.
S505E	2100	54'-8"	Str.
S506E	1776	7'-8"	3¾"
S507E	27	7'-5"	Str.
S508E	6	1'-1"	Str.
1 S509E	16	5'-0"	Str.
S701E	612	46'-0"	Str.
D401E	384	12'-10"	2"
D402E	176	11'-4"	2"
D403E	16	10'-10"	2"
D404E	112	11'-6"	2"
D405E	63	11'-1"	2"
D406E	63	10'-10"	2"
D407E	8	5'-7"	Str.
D408E	144	11'-9"	2"
D409E	288	4'-10"	2"
D410E	66	11'-3"	2"
D411E	18	8'-7"	2"
D412E	36	4'-4"	2"
D413E	24	5'-7"	Str.
D414E	84	2'-6"	Str.
D415E	48	13'-1"	2"
D501E	42	4'-8"	Str.
D502E	12	3'-5"	Str.
D503E	6	2'-2"	Str.
D601E	1128	8'-0"	Str.
D602E	234	5'-0"	Str.
D603E	128	6'-5"	Str.
D604E	256	5'-6"	Str.
D605E	20	42'-9"	Str.
D606E	4	5'-3"	4½"
D607E	18	5'-0"	4½"
D608E	20	5'-7"	4½"
D609E	4	4'-1"	4½"
D610E	48	4'-11"	Str.
D611E	12	5'-5"	4½"
D612E	66	5'-10"	4½"
D613E	6	4'-4"	4½"
	1 2080		
R400E	352	6'-3"	3"
R401E	2080	7'-6"	3"
R402E	160	5'-6"	Str.
R403E	~~2070~~	3'-8"	3"
R417E	160	21'-8"	Str.
R418E	120	7'-8"	Str.
R422E	40	13'-8"	Str.
R423E	160	18'-2"	Str.
R428E	120	19'-8"	Str.
M401E	1040	9'-0"	2"
M402E	80	5'-6"	Str.
M403E	1040	4'-10"	3"
M417E	80	21'-8"	Str.
M418E	60	7'-8"	Str.
M422E	20	13'-8"	Str.
M423E	80	18'-2"	Str.
M428E	60	19'-8"	Str.

All bars designated with an "E" suffix are to be epoxy coated.

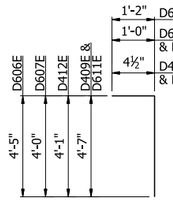
Bending Diagrams
(Dimensions are out to out of bars)



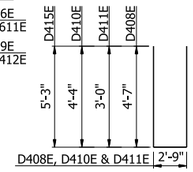
D402E, D403E & D404E



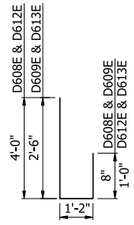
D401E



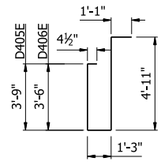
D409E, D412E,
D606E, D607E, & D611E



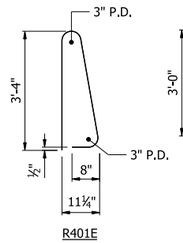
D408E, D410E,
D411E, & D415E



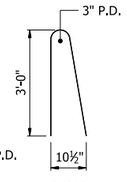
D608E, D609E,
D612E, & D613E



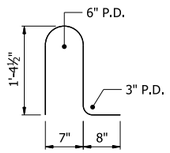
D405 & D406E



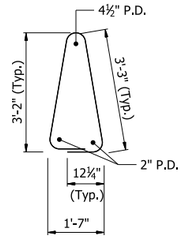
R401E



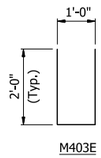
R400E



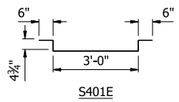
R403E



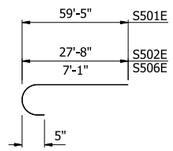
M401E



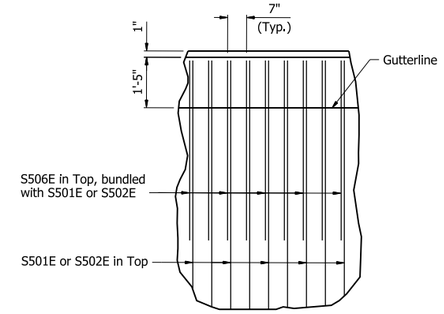
M403E



S401E



S501E, S502E, & S506E



REINFORCING DETAIL
½" = 1'-0"

PRINT DATE: 8/15/2024

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 22537
JORDAN R. GREENE
8/9/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 5 OF 8
DETAILS OF 520'-0" CONTINUOUS
PRESTRESSED CONCRETE GIRDER UNIT 1
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

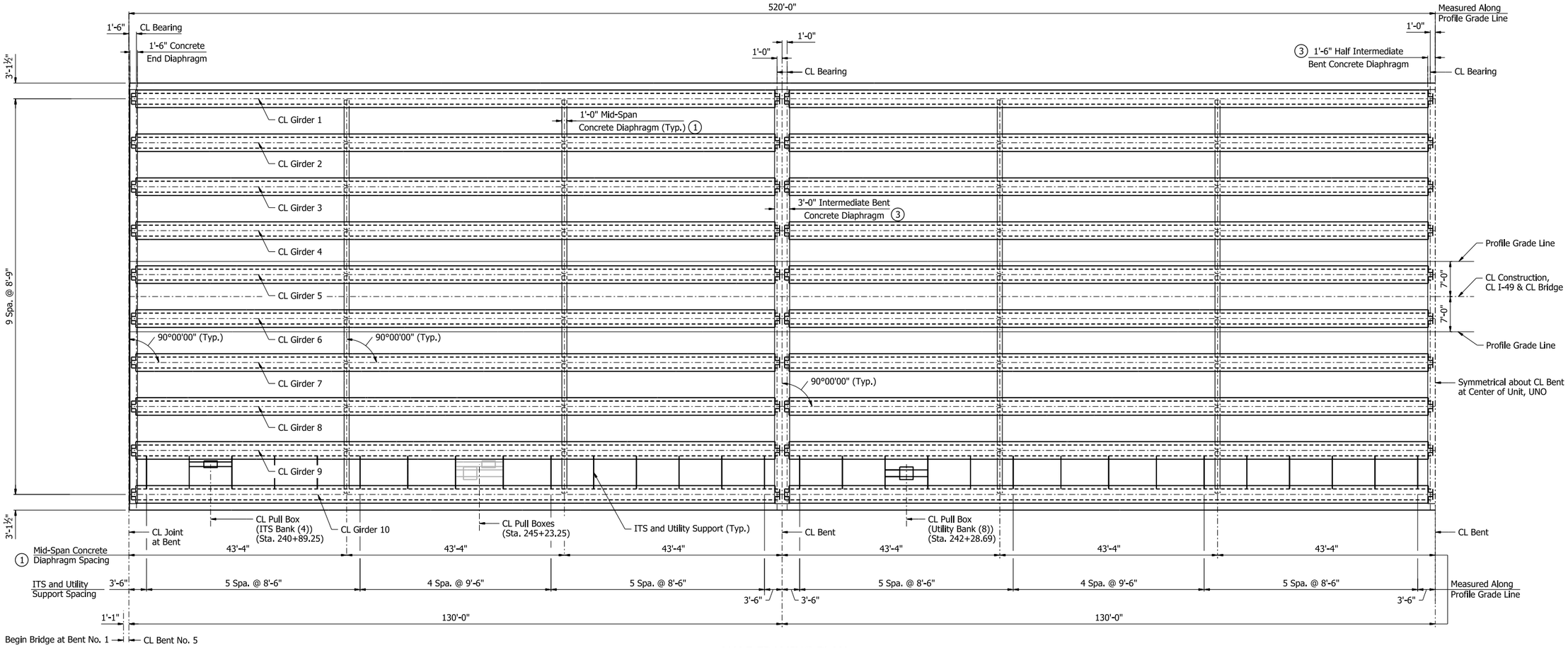
ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

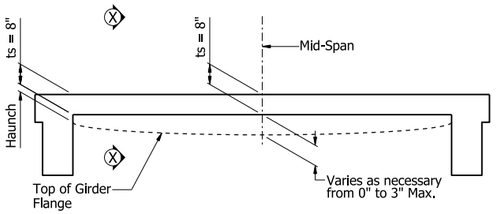
DRAWN BY: RAM DATE: 12/7/23
CHECKED BY: CCD DATE: 12/8/23
DESIGNED BY: RAM DATE: 12/8/23
FILENAME: b040901116_s15.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67517

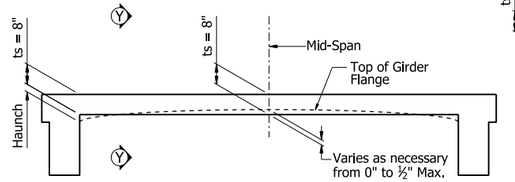
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	458	809
		07685 - UNIT 1 - 67518				



HALF FRAMING PLAN
$\frac{3}{32}$" = 1'-0"



GIRDER ELEVATION
No Scale



GIRDER ELEVATION
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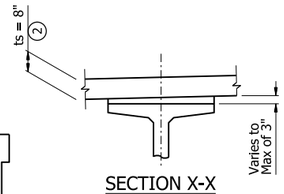
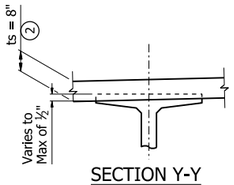


SECTION X-X
No Scale



SECTION Y-Y
No Scale

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE
WHEN REMOVABLE DECK FORMING IS USED

Notes:

For Details of ITS and Utility Supports, see Dwg. No.s 67672-67685

1. Galvanized steel diaphragms may be used in place of concrete diaphragms at mid-span diaphragm locations only.
2. Tolerance : Minus =¼ "; Plus=½ ". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance. See Std. Dwg. No. 55005 for tolerances when permanent steel deck forms are used.

   "GIRDER ELEVATION" sketches show the range of acceptability of the top of girder relative to bottom of slab after the placement of the slab. When the top of the girder projects more than a ½" into the slab, a rise in grade will be necessary. Girders shall be set in a sufficient number of spans so when adjustment is necessary the profile grade can be adjusted over suitable increments so the revised grade line will produce a smooth riding surface. Variation of haunch height will be at the Contractor's expense.
3. 3'-0" Concrete Fix. Bent Diaphragm at Bent Nos. 2 & 3
   3'-0" Concrete Exp. Bent Diaphragm at Bent. No. 4

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 22537
JORDAN R. GREENE
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 6 OF 8
DETAILS OF 520'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 1
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

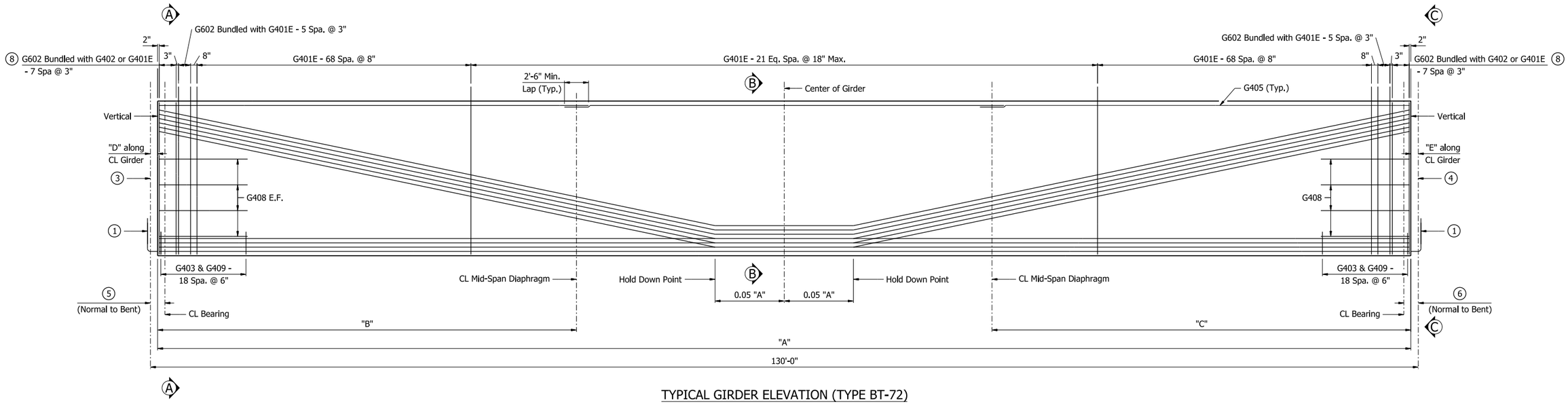
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: AB DATE: 9/14/23
CHECKED BY: KSM DATE: 10/11/23
DESIGNED BY: RAM DATE: 05/02/23
FILENAME: b040901116_s16.dgn
SCALE: AS NOTED

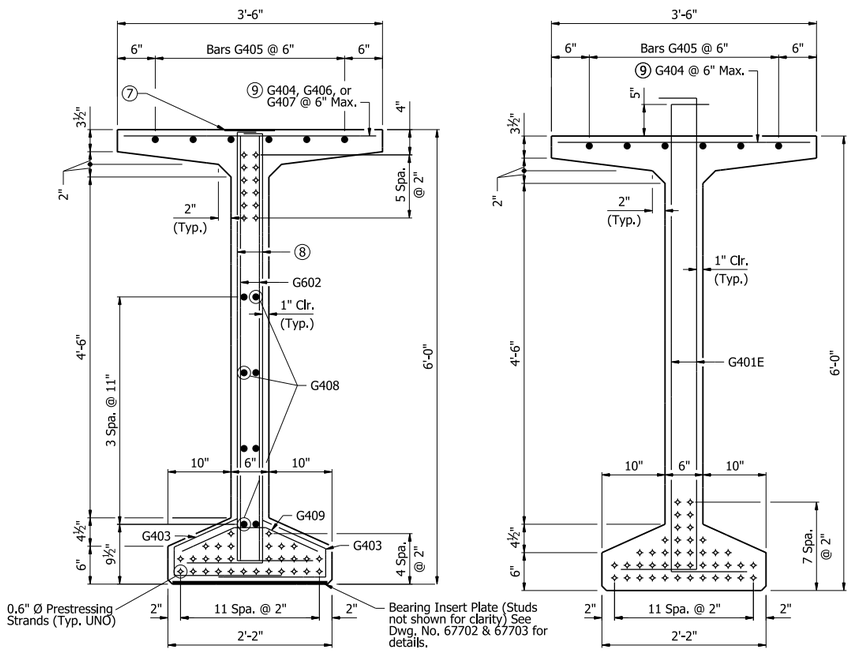
BRIDGE NO. 07685 DRAWING NO. 67518

PRINT DATE: 4/8/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	459	809
		07685 - UNIT 1 - 67519				



TYPICAL GIRDER ELEVATION (TYPE BT-72)

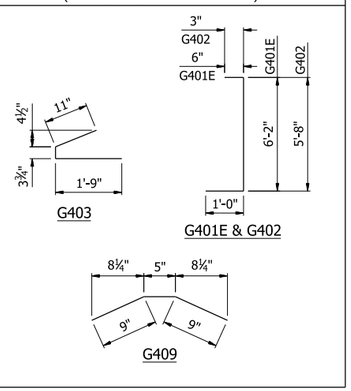


SECTION A-A

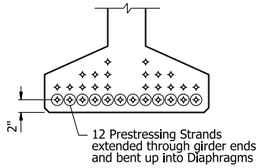
SECTION B-B

BAR LIST - PER GIRDER

	Mark	Number Required	Length	Pin Dia.	Bending Diagrams (Dimensions are out to out of bars)
Spans 1 & 4	G301	(2) 24	1'-3"	Str.	
	G401E	356	7'-6"	2"	
	G402	16	6'-9"	2"	
	G403	76	2'-11"	2"	
	G404	255	3'-2"	Str.	
	G405	18	44'-7"	Str.	
	G406	2	6"	Str.	
	G407	2	1'-2"	Str.	
	G408	16	9'-2"	Str.	
	G409	38	1'-11"	2"	
	G602	56	5'-6"	Str.	
Spans 2 & 3	G301	(2) 24	1'-3"	Str.	
	G401E	372	7'-6"	2"	
	G403	76	2'-11"	2"	
	G404	255	3'-2"	Str.	
	G405	18	44'-7"	Str.	
	G406	4	6"	Str.	
	G408	16	9'-2"	Str.	
	G409	38	1'-11"	2"	
	G602	56	5'-6"	Str.	



All bars designated with an "E" suffix are to be epoxy coated.



VIEW C-C

Notes:
For "General Notes", see Dwg. No. 67372.

UNO denotes unless noted otherwise.

ITS and Utility Support bolt sleeves must be cast into girder web. Bolt sleeves may be shifted vertically no more than 1" as necessary to avoid prestressing strands. For ITS and Utility Support details, see Dwg. Nos. 67672 - 67685. For ITS and Utility Support Locations, see "HALF FRAMING PLAN" on Dwg. No. 67518

For additional details, see Dwg. No. 67520

Drawings show general features of design only. Shop drawing shall be submitted to the Engineer and approval secured before fabrication has begun.

TABLE OF VARIABLES

Span	(3)	(4)	(5)	(6)
1	CL Joint at End Bent No. 1	CL Bent No. 2	1'-6" (End Bent No. 1)	1'-0" (Bent No. 2)
2	CL Bent No. 2	CL Bent No. 3	1'-0" (Bent No. 2)	1'-0" (Bent No. 3)
3	CL Bent No. 3	CL Bent No. 4	1'-0" (Bent No. 3)	1'-0" (Bent No. 4)
4	CL Bent No. 4	CL Joint at Bent No. 5	1'-0" (Bent No. 4)	1'-6" (Bent No. 5)

TABLE OF VARIABLES - DIMENSIONS

Span	Girder	"A"	"B"	"C"	"D"	"E"
1	1-10	129'-0"	42'-10"	42'-10"	6"	6"
2 & 3	1-10	129'-0"	42'-10"	42'-10"	6"	6"
4	1-10	128'-9"	42'-10"	42'-7"	6"	9"

(1) Prestressing strands at Bent Nos. 1 and 5 shall be sawn flush with the end of the girder. Prestressing strands at Bent No. 2, 3, and 4 shall be bent up into diaphragms as shown in the "THREADED INSERT DETAIL", see Dwg. No. 67520.

(2) 12-G301 bars required for exterior girder.

(7) Bearing Plate, Bent No. 5 End of Span 4, (Studs not shown for clarity). See Dwg. Nos. 67694 & 67695 for details.

(8) G402 at ends of units, G401E at all other locations.

(9) G406 and G407 in Girder Ends, see Dwg. No. 67520 for details.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
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No. 22537
JORDAN R. GREENE
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 7 OF 8
DETAILS OF 520'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 1
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: AB DATE: 10/18/23
CHECKED BY: KSM DATE: 10/19/23
DESIGNED BY: RAM DATE: 5/2/23
FILENAME: b040901116_s17.dgn
SCALE: No Scale

BRIDGE NO. 07685 DRAWING NO. 67519

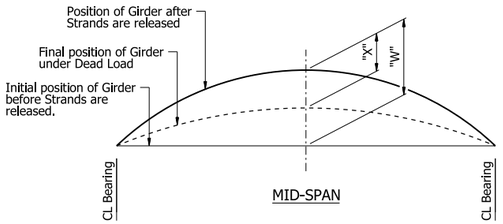
PRINT DATE: 4/8/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	460	809
		07685 - UNIT 1 - 67520				

TABLE OF VARIABLES

	Girder 1		Girders 2-8		Girder 9		Girder 10	
	"X"	"W"	"X"	"W"	"X"	"W"	"X"	"W"
Span 1	1⅞"	4⅝"	2¼"	4⅝"	2⅜"	4⅝"	2"	4⅝"
Span 2	1⅞"	4⅝"	2¼"	4⅝"	2¼"	4⅝"	1⅞"	4⅝"
Span 3	1⅞"	4⅝"	2¼"	4⅝"	2¼"	4⅝"	1⅞"	4⅝"
Span 4	1⅞"	4⅝"	2¼"	4⅝"	2¼"	4⅝"	1⅞"	4⅝"

Note:
Camber and deflection values shown are based on a concrete girder strength, f'c = 9000 psi. Greater strengths may require adjustments. The Contractor shall be responsible for any adjustments necessary to meet slab thickness tolerance and to achieve an acceptable finished grade.



"W" is expected camber of girder at 90 days after release (prestress + dead load of girder).

"X" is dead load deflection of slab + diaphragms + composite dead load.

CAMBER & DEFLECTIONS (INCHES)

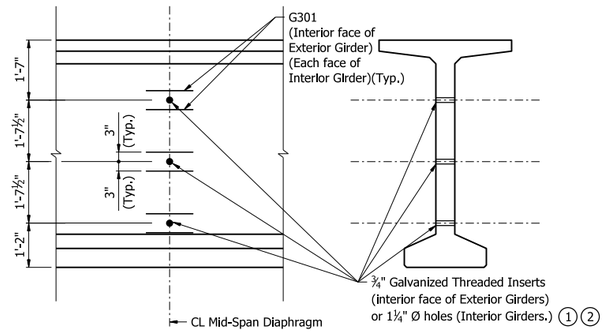
Notes:
Concrete Strength for Prestressed Girders shall be f'c = 9,000 psi, f'ci = 7,000 psi

For ITS and Utility Support details, including cast-in bolt sleeves, see Dwg. Nos. 67672 & 67685.

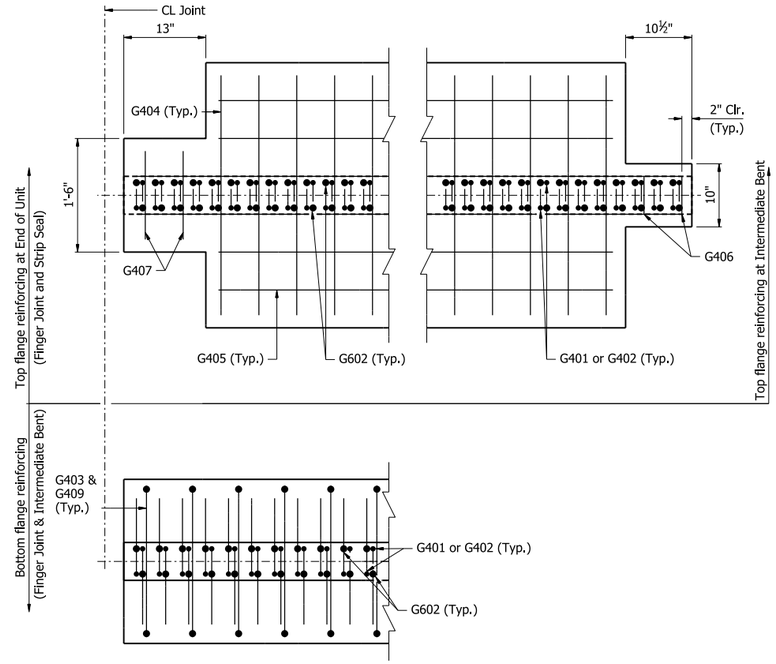
For "General Notes", see Dwg. No. 67372.

(1) Inserts shown are for mid-span concretre diaphragms, see Dwg. No. 67514 for alternate steel diaphragms.

(2) Galvanized ¾"Ø Dayton-Richmond F-42 Loop Ferrule insert or an approved equal. These are to be subsidiary to the item "PRESTRESSED CONCRETE GIRDERS (TYPE BT-72)".

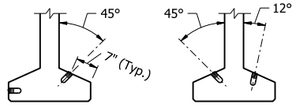


THREADED INSERT DETAIL
Mid-Span Diaphragm
Scale: ¼" = 1'-0"



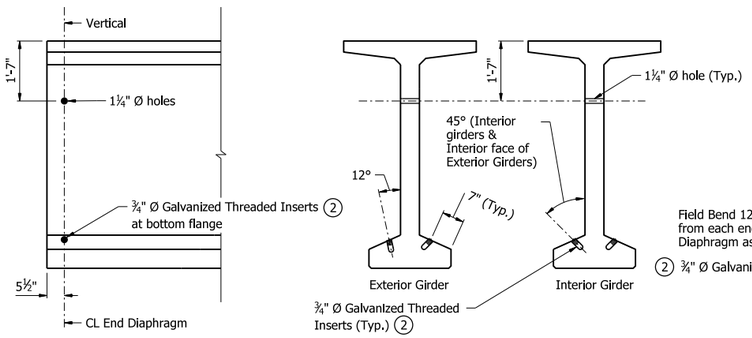
PLAN OF GIRDER ENDS
Scale: ½" = 1'-0"

Galvanized ¾"Ø Dayton-Richmond F-42 Loop Ferrule insert or an approved equal. These are to be subsidiary to the item "PRESTRESSED CONCRETE GIRDERS (TYPE BT-72)".

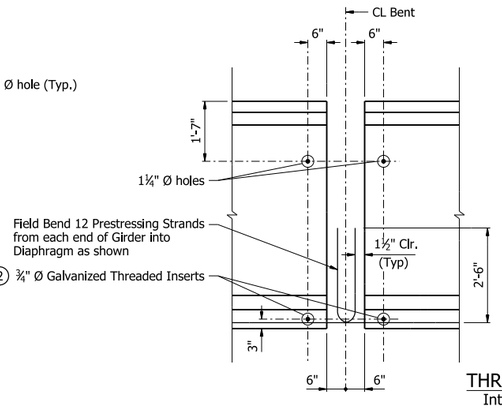


DETAIL A
Scale: ¼" = 1'-0"

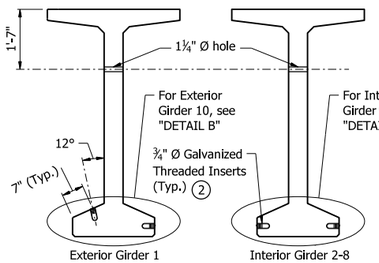
DETAIL B
Scale: ¼" = 1'-0"



THREADED INSERT DETAIL
End Diaphragm
Scale: ¼" = 1'-0"



THREADED INSERT DETAIL
Intermediate Bent Diaphragm
(Fixed and Expansion)
Scale: ¼" = 1'-0"



STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 22537
JORDAN R. GREENE
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 8 OF 8
DETAILS OF 520'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 1
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: AB DATE: 10/6/23
CHECKED BY: KSM DATE: 10/20/23
DESIGNED BY: RAM DATE: 5/2/23
FILENAME: b040901116_s18.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67520

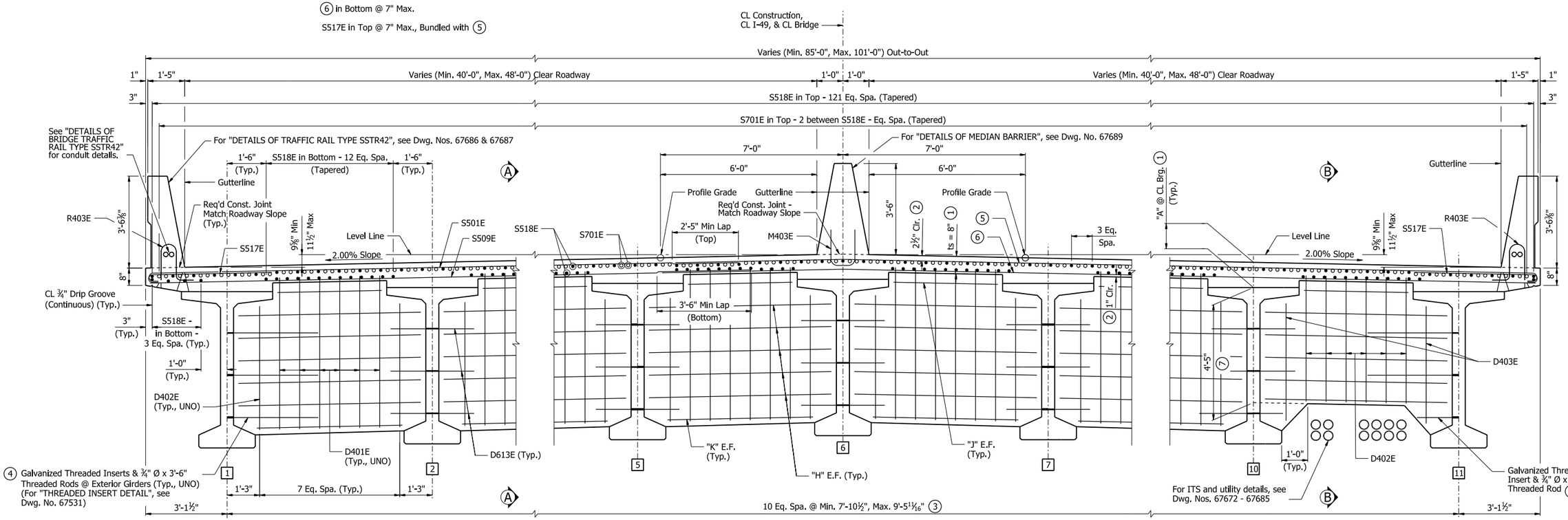
PRINT DATE: 4/8/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	461	809
		07685 - UNIT 2 - 67521				

SLAB REINFORCING:
Longitudinal: S518E Top and Bottom placed as shown
S701E in Top as shown over Interior Bents

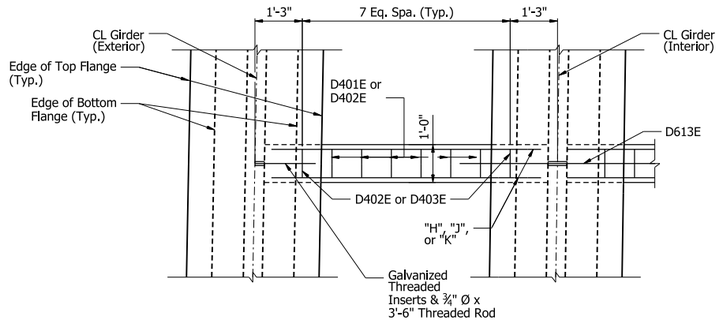
Transverse: (5) in Top @ 7" Max.
(6) in Bottom @ 7" Max.
S517E in Top @ 7" Max., Bundled with (5)

Bar positions or clearances from the forms shall be maintained by means of stays, ties, hangers, or other approved devices per Subsection 804.06. Placement of slab bolsters or high-chairs with full-length lower runners directly on removable deck forms will not be allowed.

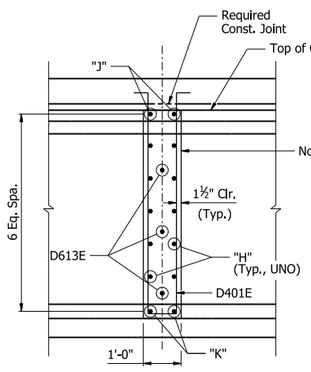


TYPICAL SECTION AT MID-SPAN CONCRETE DIAPHRAGMS

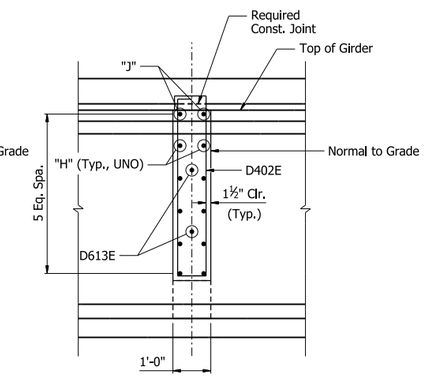
(Looking Upstation)



PLAN
Mid-Span Diaphragm



SECTION A-A



SECTION B-B

TABLE OF SECTION DEPTHS

Girders 1-11		
Span	Bent	"A"
5	5	10¾"
	6	10⅞"
6	6	10⅞"
	7	11¼"
7	7	11⅝"
	8	11⅝"
8	8	11"
	9	11"

BAR TABLE

	"H"	"J"	"K"
Span 5	D601E	D602E	D603E
Span 6	D604E	D605E	D606E
Span 7	D607E	D608E	D609E
Span 8	D610E	D611E	D612E

(1) See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED", on Dwg. No. 67527.

(2) Tolerance: Minus = ¼" ; Plus = to the amount of slab thickening used to meet slab thickness tolerance. See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED", see Dwg. No. 67527.

(3) Measured along CL Bent or CL Joint

(4) Galvanized threaded inserts shall be Dayton-Richmond F-42 Loop Ferrule Inserts or an approved equal. ¾" Ø threaded rods shall be AASHTO M270, Grade 36 or AASHTO M31 or M322 type A, Gr. 60. Galvanized inserts and threaded rods are to be subsidiary to the item "PRESTRESSED CONCRETE GIRDERS (TYPE BT-72)". Galvanizing shall be in accordance with AASHTO M 232 Class C or ASTM B695, Class 50.

(5) S501E, S502E, S503E, S504E, S505E, S506E, S507E, or S508E, see Dwg. Nos. 67524 & 67525 for layout.

(6) S509E, S510E, S511E, S512E, S513E, S514E, S515E, or S516E, see Dwg. Nos. 67524 & 67525 for layout.

(7) Measured from top of girder to bottom of projected diaphragm

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 22537
JORDAN R. GREENE
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 1 OF 11
DETAILS OF 420'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 2
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

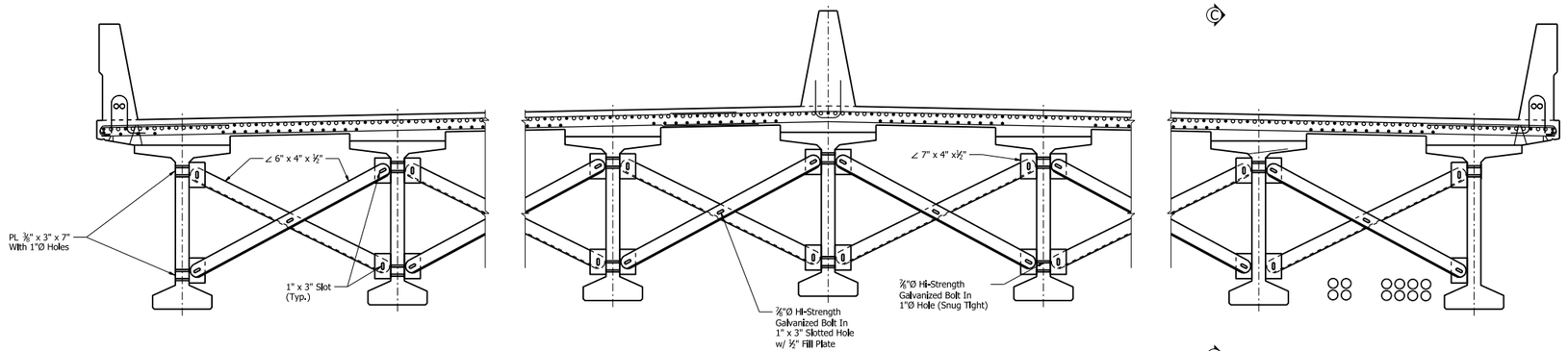
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KNK DATE: 8/3/23
CHECKED BY: JRG DATE: 11/14/23
DESIGNED BY: RAM DATE: 9/26/23
FILENAME: b040901116_s21.dgn
SCALE: 1/2" = 1'-0"

BRIDGE NO. 07685 DRAWING NO. 67521

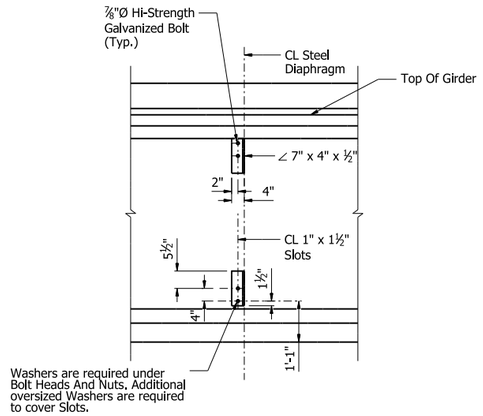
PRINT DATE: 4/8/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	462	809
		07685 - UNIT 2 - 67522				



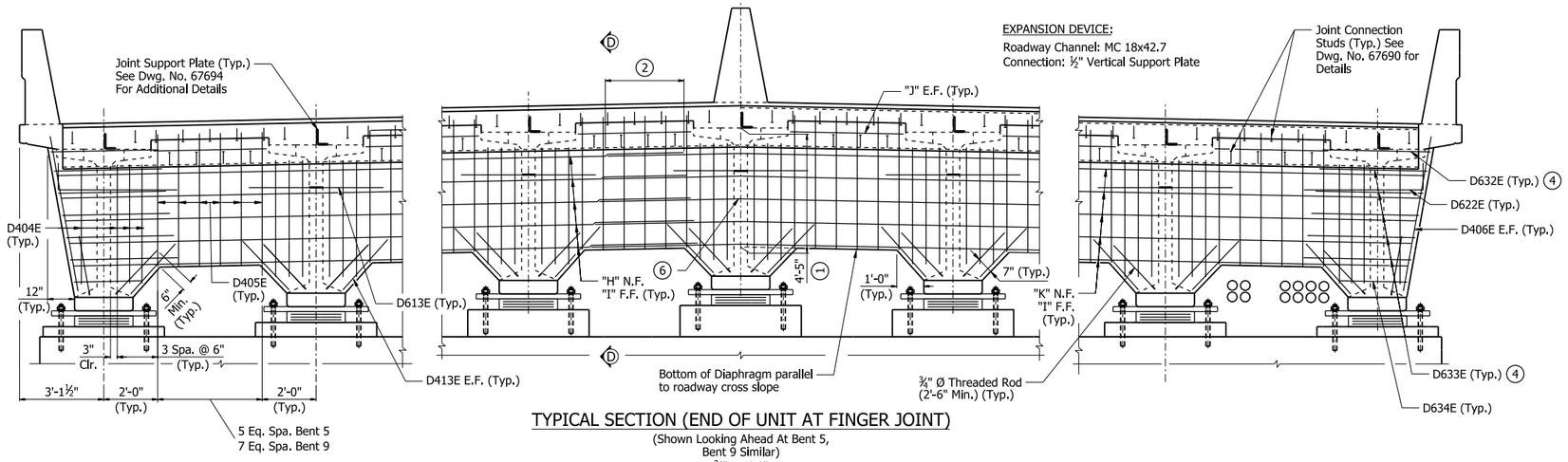
ALTERNATE TYPICAL SECTION AT MID-SPAN STEEL DIAPHRAGMS

(Looking Upstation)
⅜" = 1'-0"



SECTION C-C

½" = 1'-0"



TYPICAL SECTION (END OF UNIT AT FINGER JOINT)

(Shown Looking Ahead At Bent 5, Bent 9 Similar)
⅜" = 1'-0"

Notes:
For Slab Reinforcing details, see Dwg. No. 67521.

For ITS and Utility Support details, including cast-in bolts, see Dwg. Nos. 67672 - 67685.

① Measured from top of girder to bottom of projected diaphragm

② 3'-1" minimum lap between "H" and "K" bars

③ Measured normal to CL Bent at intersection of CL Girder

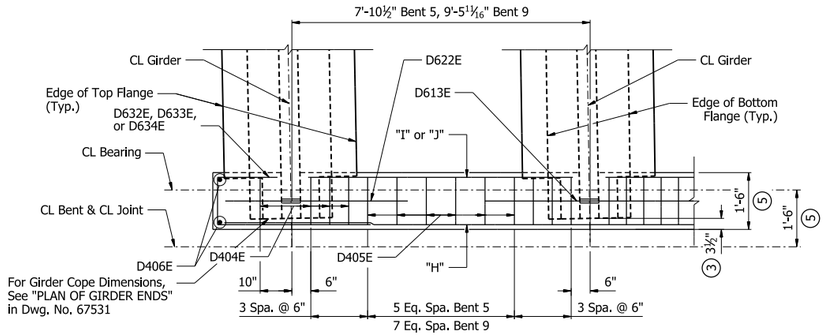
④ Spaced with "H" or "J"

⑤ Measured normal to CL Joint

⑥ Field bend Bars D605E at roadway crown as necessary to maintain contact through lap splice and minimum clear. Bars D601E are straight at this location.

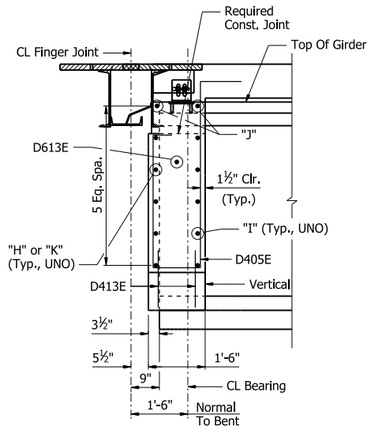
BAR TABLE

	"H"	"I"	"J"	"K"
Bent 5	D614E	D616E	D618E	D620E
Bent 9	D615E	D617E	D619E	D621E



PLAN

End Diaphragm at Finger Joint
(Bent 5 Shown, Bent 9 Similar)
½" = 1'-0"



SECTION D-D

½" = 1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
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No. 22537
JORDAN R. GREENE
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 2 OF 11
DETAILS OF 420'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 2
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

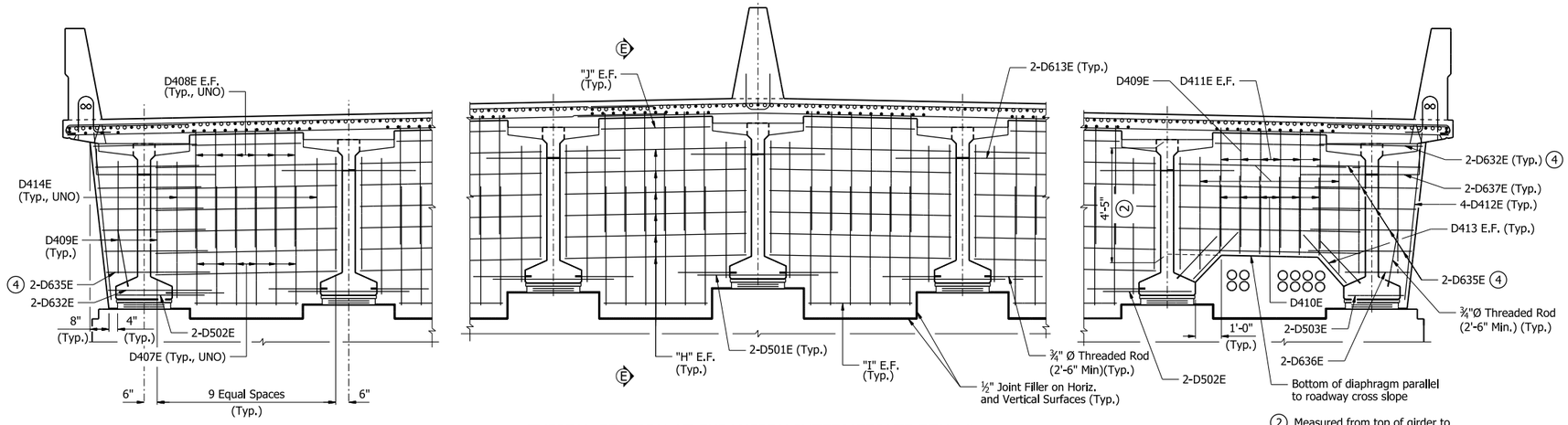
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KNK DATE: 8/3/23
CHECKED BY: SAS DATE: 11/15/23
DESIGNED BY: RAM DATE: 5/2/23
FILENAME: b040901116_s22.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67522

PRINT DATE: 4/8/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	463	809
		07685 - UNIT 2 - 67523				



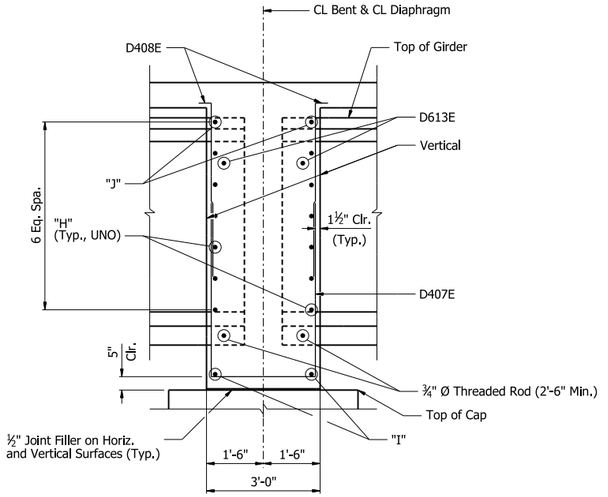
TYPICAL SECTION AT EXPANSION INTERMEDIATE BENT 8

⅜" = 1'-0"

2 Measured from top of girder to bottom of projected diaphragm.

3 Measured along CL Bent

4 Spaced with "H" or "J"

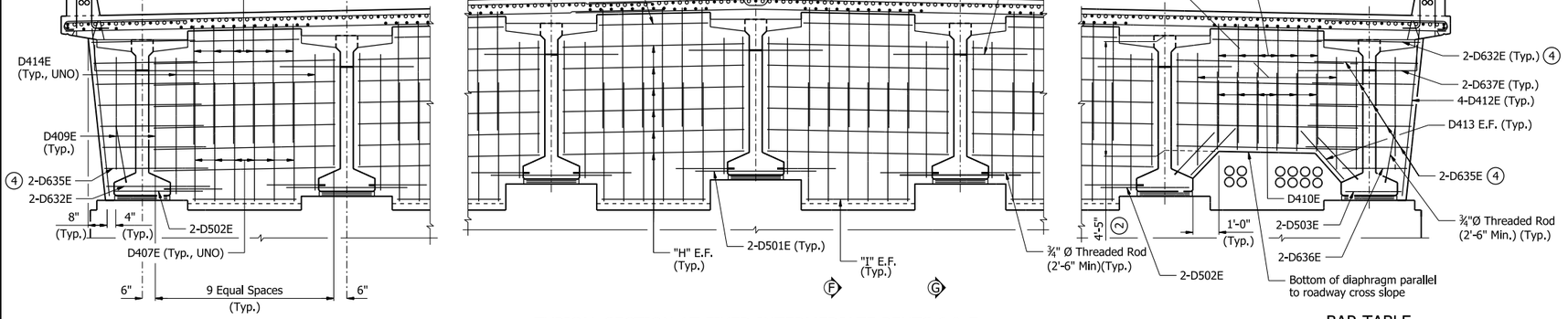


SECTION E-E

½" =1'-0"

Notes:
For Slab Reinforcing details, see Dwg. No. 67521.

For ITS and Utility Support details, see Dwg. Nos. 67672 - 67685.



TYPICAL SECTION AT FIXED INTERMEDIATE BENTS 6 & 7

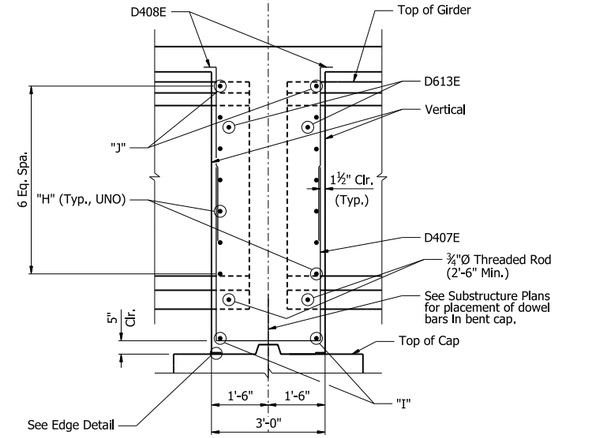
(Dowel Bars not Shown for Clarity)

⅜" = 1'-0"

1 8'-2⅝" Bent 6
8'-8⅜₁₆" Bent 7
9'-1⅛" Bent 8

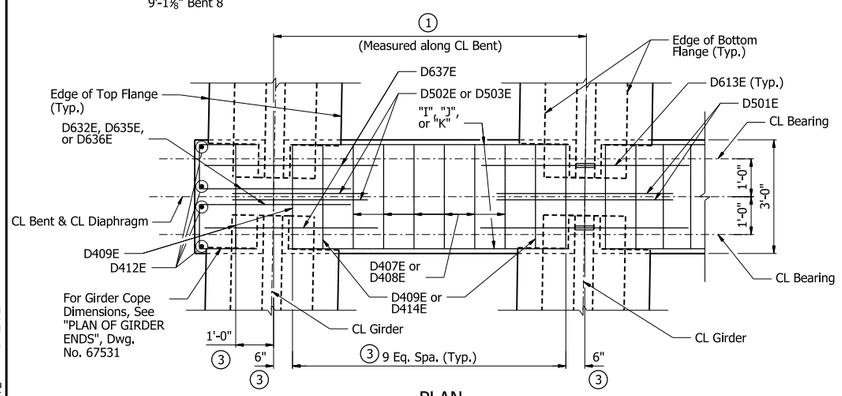
BAR TABLE

	"H"	"I"	"J"
Bent 6	D623E	D626E	D629E
Bent 7	D624E	D627E	D630E
Bent 8	D625E	D628E	D631E



SECTION F-F

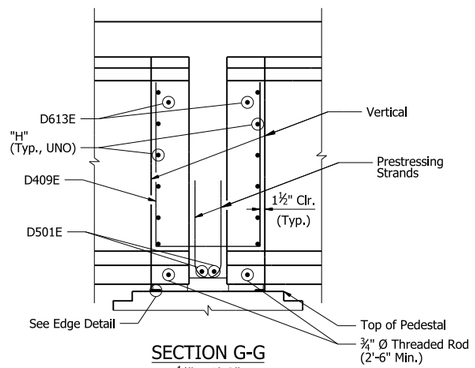
½" =1'-0"



PLAN

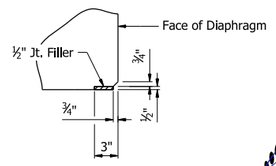
Intermediate Bent Diaphragm

½" =1'-0"



SECTION G-G

½" =1'-0"



EDGE DETAIL

(Bents 6 & 7)

1" = 1-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 22537
JORDAN R. GREENE

4/18/24

BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 3 OF 11
DETAILS OF 420'-0" CONTINUOUS
PRESTRESSED CONCRETE GIRDER UNIT 2
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KNK DATE: 8/3/23
CHECKED BY: SAS DATE: 11/15/223
DESIGNED BY: RAM DATE: 5/2/23

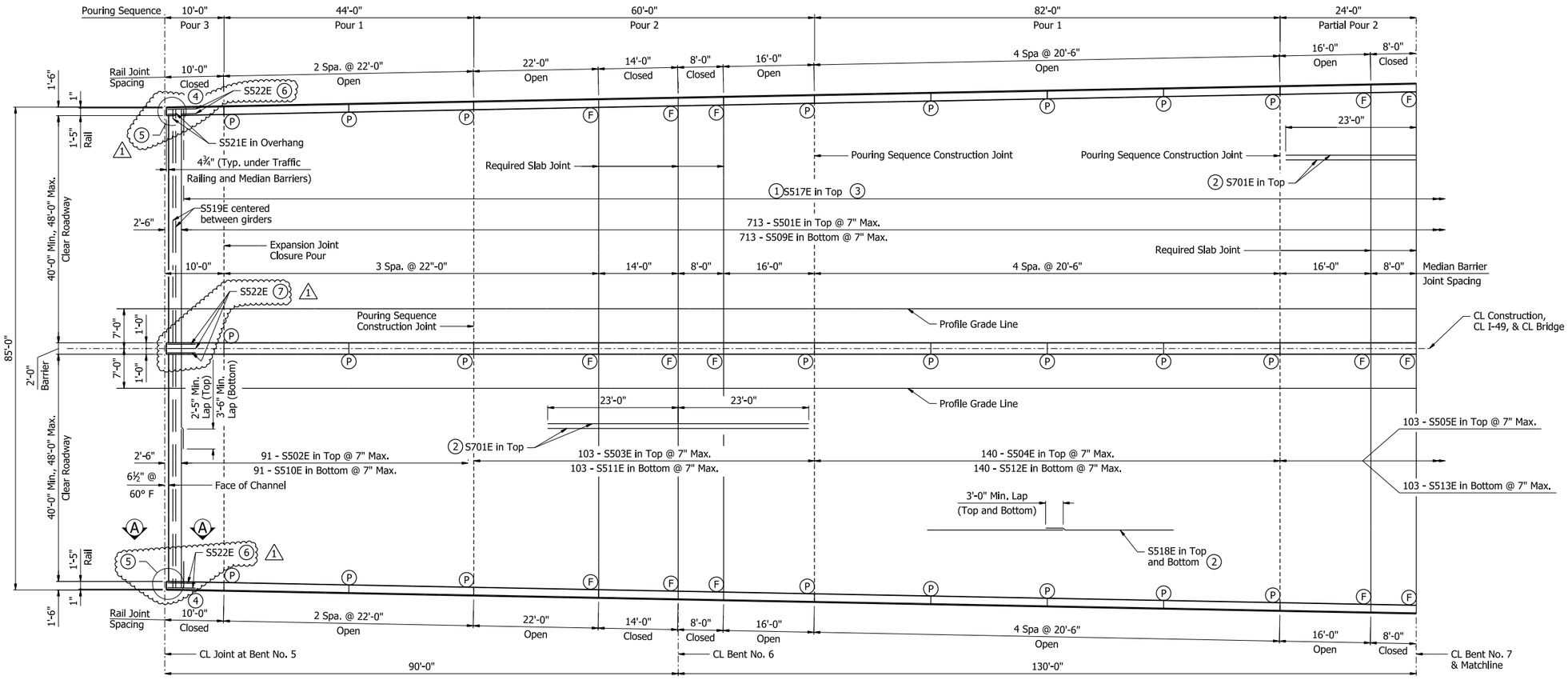
FILENAME: b040901116_s23.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67523

PRINT DATE: 4/8/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
8/9/2024		6	ARK.	040901	464	809
		07685 - UNIT 2 - 67524				

1 Slab extension added below Rail and Median Barriers at Finger Joint locations. 8/9/2024



PARTIAL REINFORCING PLAN AND POURING SEQUENCE

$\frac{3}{32}$" = 1'-0"

Notes:
Slab width varies linearly between Bent Nos. 5 & 8 and is Symmetric about CL Bridge.

Span lengths and slab pour lengths shown are measured along Profile Grade Line.

Rail spacings shown are measured along respective gutterlines.

Required slab joints and pouring sequence joints shall align with rail joints at the gutterline.

For "TRANSVERSE SLAB JOINT DETAIL", see Dwg. No. 55007.

For "DETAILS OF BRIDGE TRAFFIC RAIL TYPE SSTR42", see Dwg. Nos. 67686

For "DETAILS OF MEDIAN BARRIER", see Dwg. No. 67689.

For "DETAILS OF FINGER JOINTS", see Dwg. Nos. 67694 & 67695

For "SECTION A-A", see Dwg. No. 67525& 67687.

(1) Typical both sides, see "REINFORCING DETAIL", Dwg. No. 67525.

(2) Place as shown in "TYPICAL SECTION AT MID-SPAN CONCRETE DIAPHRAGMS", see Dwg. No. 67521.

(3) Bundled with S501E, S502E, S503E, S504E, S505E, S506E, S507E, or S508E.

(4) For Rail Transition details at Finger Joints, see Dwg. No. 67695.

(F) CL Full-Depth Rail Joint

(P) CL Partial-Depth Rail Joint

1 (5) In the slab extension, cut R403E 8" leg to maintain concrete cover.

1 (6) 2-S522E in Top, 3-S522E in Bottom.

1 (7) 3-S522E @ Eq. Spa., Top and Bottom.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 22537
JORDAN R. GREENE
8/9/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 4 OF 11
DETAILS OF 420'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 2
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KNK DATE: 8/3/23
CHECKED BY: JRG DATE: 11/20/23
DESIGNED BY: RAM DATE: 5/2/23
FILENAME: b040901116_s24.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67524

PRINT DATE: 8/15/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
8/9/2024		6	ARK.	040901	465	809
		07685 - UNIT 2 - 67525				

(1) Typical Both Sides, see "REINFORCING DETAIL".

(2) Place as shown in "TYPICAL SECTION AT MID-SPAN CONCRETE DIAPHRAGMS", see Dwg. No. 67521

(3) Bundled with S501E, S502E, S503E, S504E, S505E, S506E, S507E, or S508E.

(4) For Rail Transition details at Finger Joints, see Dwg. No. 67695

1 (5) In the slab extension, cut R403E 8" leg to maintain concrete cover.

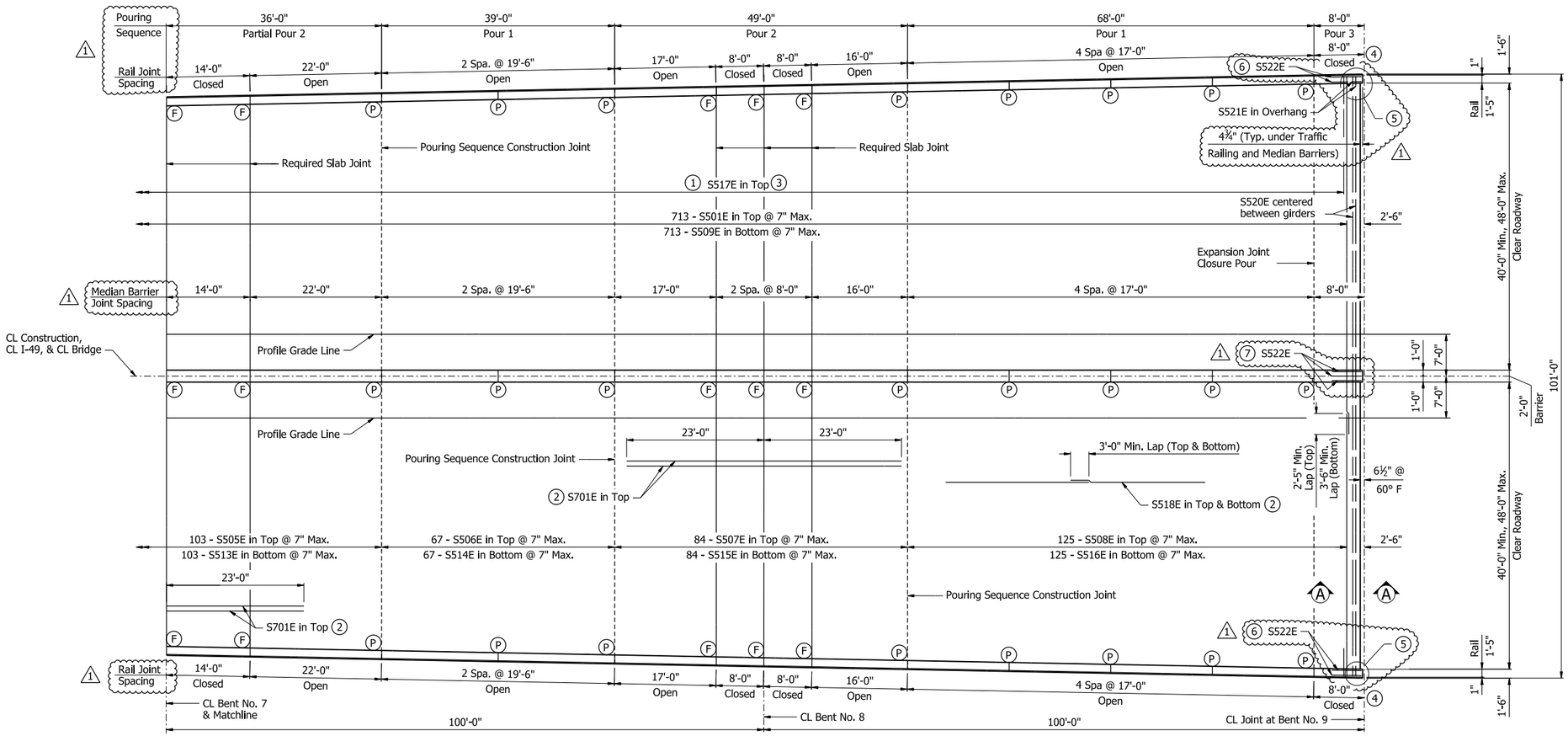
1 (6) 2-S522E in Top, 3-S522E in Bottom.

1 (7) 3-S522E @ Eq. Spa., Top and Bottom.

(F) CL Full-Depth Rail Joint

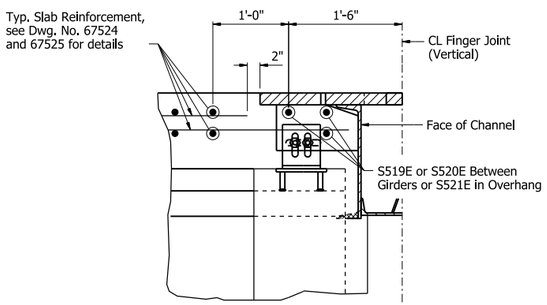
(P) CL Partial-Depth Rail Joint

1 Slab extension added below Rail and Median Barriers at Finger Joint locations. 8/9/2024



PARTIAL REINFORCING PLAN AND POURING SEQUENCE

3/32" = 1'-0"



SECTION A-A

1" = 1'-0"

Slab Pouring Sequence Notes:

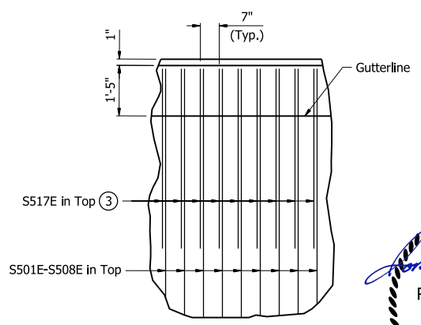
Pours with the same number may be placed simultaneously or separately. All Pour(s) 1 must be placed before Pour(s) 2 and 3 can be placed. A minimum of 48 hours shall elapse between the end of a pour and the start of the next pour. A minimum of 72 hours shall elapse between adjacent pours.

Concrete in bridge superstructure shall be placed, consolidated, and screeded off for entire pour before any concrete has taken its initial set. This may require the use of a retarding agent.

All end of unit and mid-span diaphragms shall be cast in place and poured a minimum of 48 hours before the slab is poured, unless otherwise noted. Intermediate bent diaphragms shall be cast monolithically with the slab.

At Finger Joints, after all incremental pours on both Units adjacent to the Finger Joint are complete, closure pour 3 on each side of joint shall be poured simultaneously. A minimum of 48 hours shall elapse between the last incremental pour and the closure pours.

A minimum of 72 hours shall elapse between completion of the slab and pouring of the bridge railing. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence(s) shown.



REINFORCING DETAIL

½" = 1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 22537
JORDAN R. GREENE
8/9/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 5 OF 11
DETAILS OF 420'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 2
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KNK DATE: 8/3/23
CHECKED BY: JRG DATE: 11/20/23
DESIGNED BY: RAM DATE: 5/2/23
FILENAME: b040901116_s25.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67525

PRINT DATE: 8/15/2024

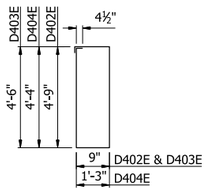
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
8/9/2024		6	ARK.	040901	466	809
		07685 - UNIT 2 - 67526				

1 Slab extension added below Rail and Median Barriers at Finger Joint locations. 8/9/2024

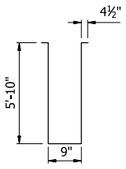
BAR LIST

Mark	Number Required	Length	Pin Dia.
S501E	713	60'-0"	3¾"
S502E	91	30'-5"	3¾"
S503E	103	32'-8"	3¾"
S504E	140	35'-10"	3¾"
S505E	103	38'-1"	3¾"
S506E	67	39'-7"	3¾"
S507E	84	41'-5"	3¾"
S508E	125	44'-3"	3¾"
S509E	713	60'-0"	Str.
S510E	91	30'-11"	Str.
S511E	103	33'-2"	Str.
S512E	140	36'-4"	Str.
S513E	103	38'-7"	Str.
S514E	67	40'-1"	Str.
S515E	84	41'-11"	Str.
S516E	125	44'-9"	Str.
S517E	1426	7'-8"	3¾"
S518E	2080	55'-1"	Str.
S519E	30	7'-4"	Str.
S520E	30	8'-11"	Str.
1 S521E	12	2'-9"	Str.
S522E	32	5'-0"	Str.
S701E	726	46'-0"	Str.
D401E	432	12'-10"	2"
D402E	192	11'-4"	2"
D403E	16	10'-10"	2"
D404E	124	11'-6"	2"
D405E	140	10'-9"	2"
D406E	8	5'-7"	Str.
D407E	162	11'-9"	2"
D408E	324	4'-10"	2"
D409E	72	11'-3"	2"
D410E	18	8'-7"	2"
D411E	36	4'-4"	2"
D412E	24	6'-5"	Str.
D413E	92	2'-6"	Str.
D414E	54	13'-1"	2"
D501E	48	4'-8"	Str.
D502E	12	3'-7"	Str.
D503E	6	2'-2"	Str.
D601E	200	7'-2"	Str.
D602E	40	4'-2"	Str.
D603E	36	5'-6"	Str.
D604E	200	7'-7"	Str.
D605E	40	4'-7"	Str.
D606E	36	5'-11"	Str.
D607E	200	8'-1"	Str.
D608E	40	5'-1"	Str.
D609E	36	6'-5"	Str.
D610E	200	8'-5"	Str.
D611E	40	5'-5"	Str.
D612E	36	6'-9"	Str.
D613E	288	5'-6"	Str.
D614E	5	38'-9"	Str.
D615E	5	45'-11"	Str.
D616E	50	7'-1"	Str.
D617E	50	8'-8"	Str.
D618E	20	4'-1"	Str.
D619E	20	5'-8"	Str.
D620E	5	46'-8"	Str.
D621E	5	55'-5"	Str.
D622E	4	5'-3"	4½"
D623E	118	7'-5"	Str.
D624E	118	7'-11"	Str.
D625E	118	8'-4"	Str.
D626E	18	4'-1"	Str.
D627E	18	4'-7"	Str.
D628E	18	5'-0"	Str.
D629E	20	4'-5"	Str.
D630E	20	4'-11"	Str.
D631E	20	5'-4"	Str.
D632E	22	5'-0"	4½"
D633E	20	5'-6"	4½"
D634E	4	4'-0"	4½"

Bending Diagrams
(Dimensions are out to out of bars)



D402E, D403E, & D404E



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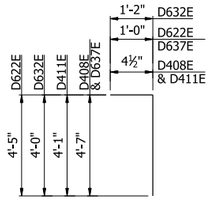
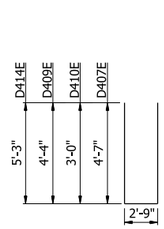
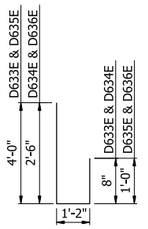


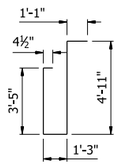
D408E, D411E, D622E, D632E, & D637E



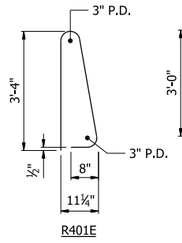
D407E, D409E, D410E, & D414E



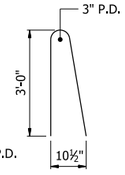
D633E, D634E, D635E, & D636E



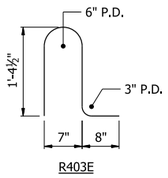
D405E



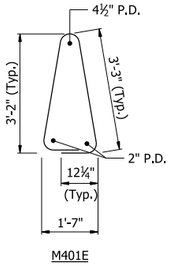
R401E



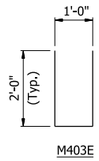
R400E



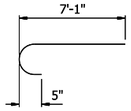
R403E



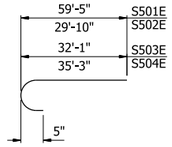
M401E



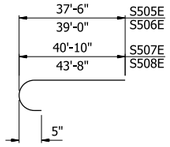
M403E



S517E



S501E, S502E, S503E, & S504E



S505E, S506E, S507E, & S508E

All bars designated with an "E" suffix are to be epoxy coated.

BAR LIST

Mark	Number Required	Length	Pin Dia.
D635E	66	5'-10"	4½"
D636E	6	4'-4"	4½"
D637E	12	5'-5"	4½"
	1 1662		
R400E	288	6'-3"	3"
R401E	1662	7'-6"	3"
R402E	128	5'-6"	Str.
R403E	~~1642~~	3'-8"	3"
R413E	60	15'-8"	Str.
R414E	100	16'-8"	Str.
R417E	80	21'-8"	Str.
R418E	100	7'-8"	Str.
R419E	20	9'-8"	Str.
R422E	40	13'-8"	Str.
R427E	40	19'-2"	Str.
R429E	80	20'-2"	Str.
M401E	840	9'-0"	2"
M402E	64	5'-6"	Str.
M403E	830	4'-10"	3"
M413E	30	15'-8"	Str.
M414E	50	16'-8"	Str.
M417E	40	21'-8"	Str.
M418E	50	7'-8"	Str.
M419E	10	9'-8"	Str.
M422E	20	13'-8"	Str.
M427E	20	19'-2"	Str.
M429E	40	20'-2"	Str.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 22537
JORDAN R. GREENE
8/9/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 6 OF 11
DETAILS OF 420'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 2
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RAM DATE: 12/11/23
CHECKED BY: JRG DATE: 12/20/23
DESIGNED BY: RAM DATE: 12/11/23
FILENAME: b040901116_s26.dgn
SCALE: NO SCALE

BRIDGE NO. 07685 DRAWING NO. 67526

PRINT DATE: 8/28/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
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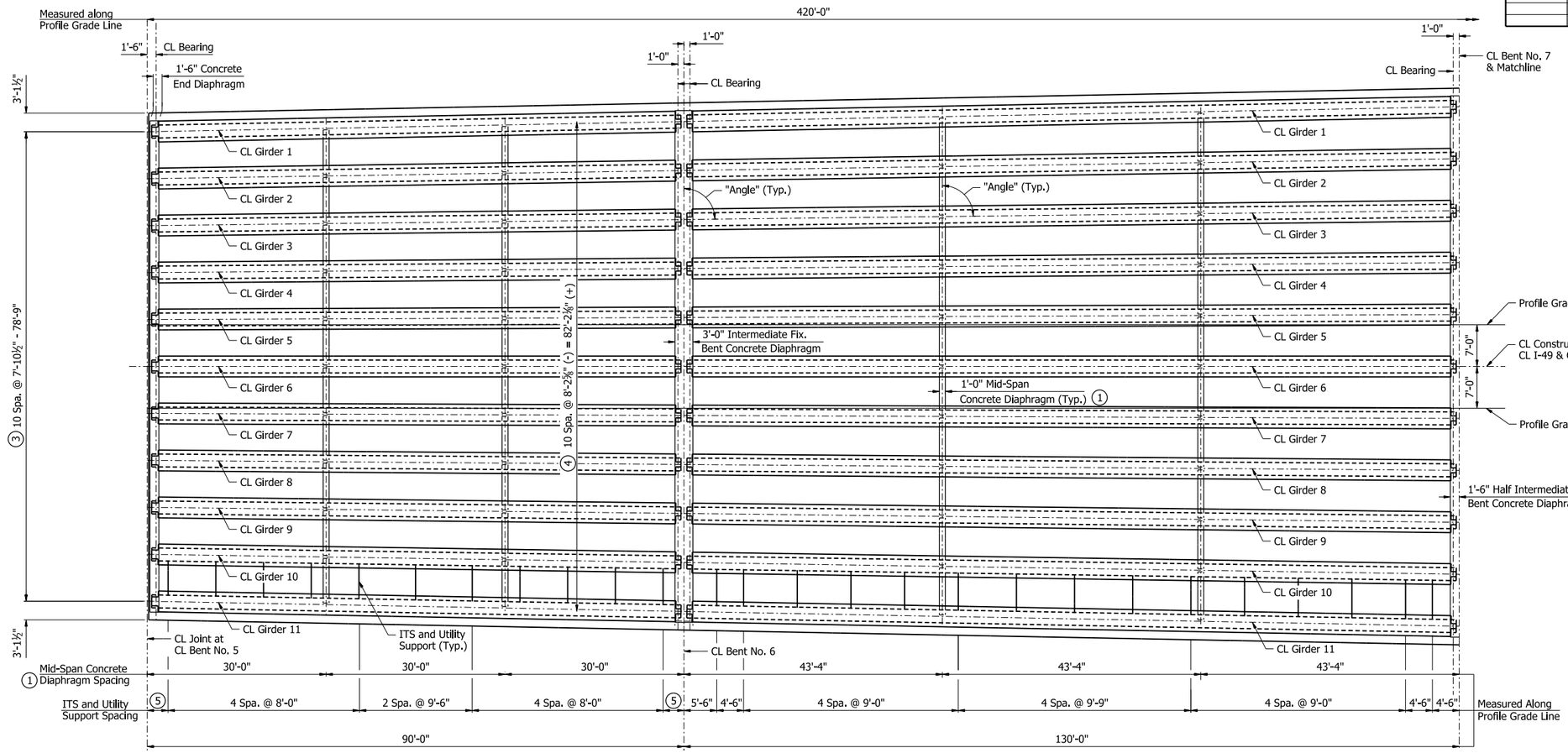
		07685 - UNIT 2 - 67527				



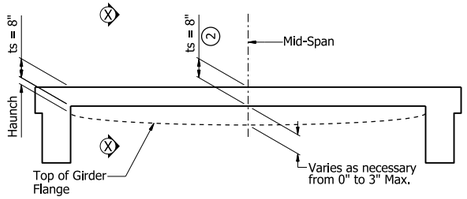
PARTIAL FRAMING PLAN

3/32" = 1'-0"

Notes:

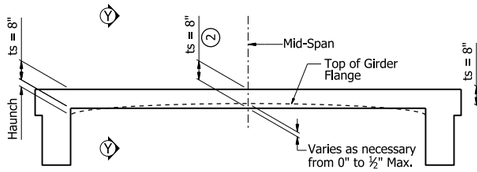
For Details of ITS and Utility Supports, see Dwg. Nos. 67672 & 67685.

For Diaphragm details, see Dwg. Nos. 67521 - 67523.



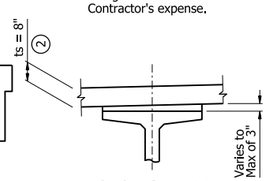
GIRDER ELEVATION

No Scale



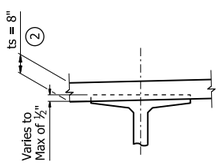
GIRDER ELEVATION

No Scale



SECTION X-X

No Scale



SECTION Y-Y

No Scale

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED

(1) Galvanized steel diaphragms may be used in place of concrete diaphragms at mid-span diaphragm locations only.

(2) Tolerance : Minus =¼"; Plus=½". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance. See Std. Dwg. No. 55005 for tolerances when permanent steel deck forms are used.

"GIRDER ELEVATION" sketches show the range of acceptability of the top of girder relative to bottom of slab after the placement of the slab. When the top of the girder projects more than a ½" into the slab, a rise in grade will be necessary. Girders shall be set in a sufficient number of spans so when adjustment is necessary the profile grade can be adjusted over suitable increments so the revised grade line will produce a smooth riding surface. Variation of haunch height will be at the Contractor's expense.

(3) Measured along CL Joint

(4) Measured along CL Bent

(5) 3'-6"

Girder	"Angle"
1	88°54'31.62"
2	89°07'37.16"
3	89°20'42.79"
4	89°33'48.49"
5	89°46'54.23"
6	90°00'00"
7	90°13'05.77"
8	90°26'11.51"
9	90°39'17.21"
10	90°52'22.84"
11	91°5'28.38"

"Angle" Measured CW From CL Bent to CL Girder (Typical All Bents) and CL Mid-Span Diaphragm to CL Girder (Typical All Mid-Span Diaphragms)

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 22537
JORDAN R. GREENE

4/18/24

BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 7 OF 11
DETAILS OF 420'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 2
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

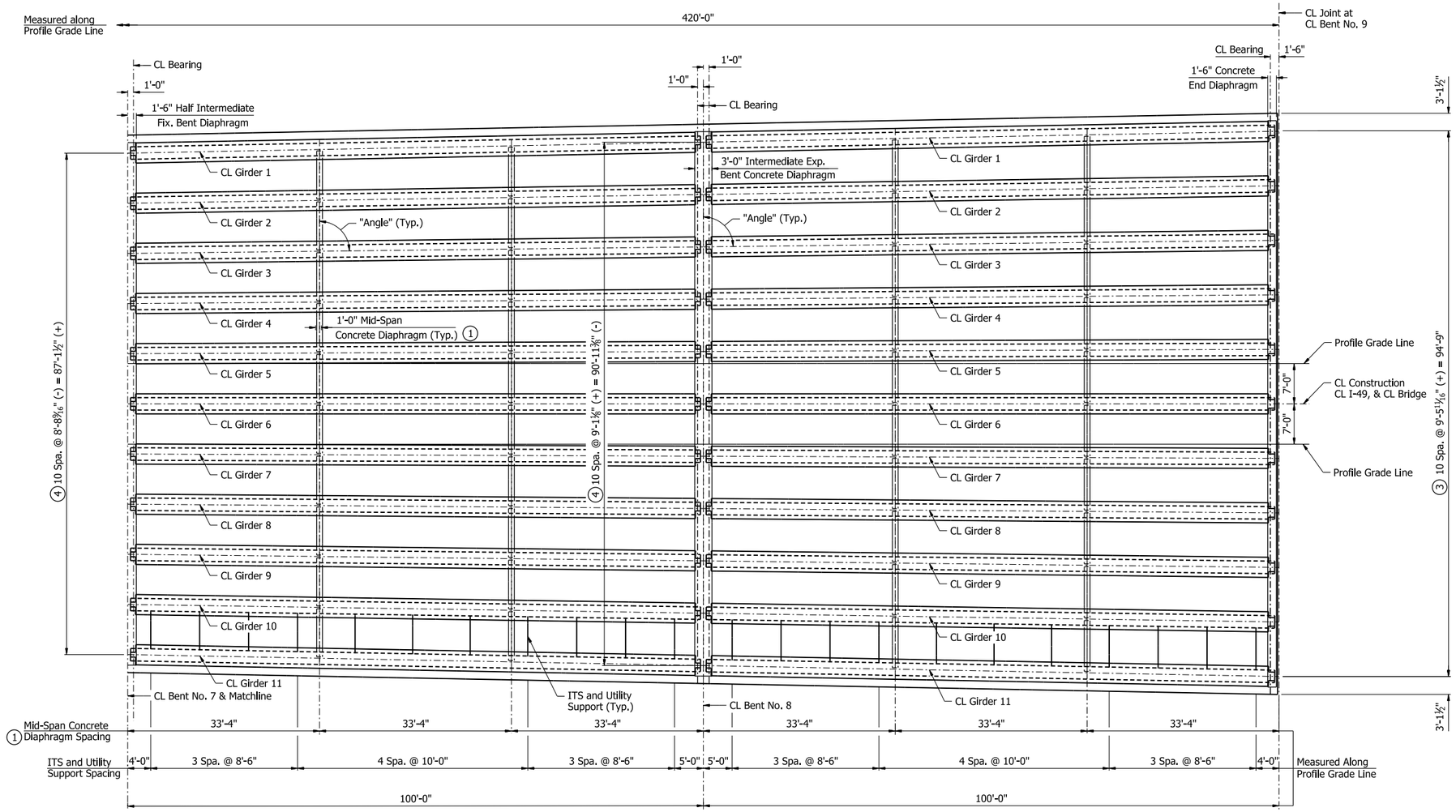
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RAM DATE: 9/22/23
CHECKED BY: JRG DATE: 10/3/23
DESIGNED BY: JRG DATE: 8/8/23
FILENAME: b040901116_s27.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67527

PRINT DATE: 4/8/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	468	809
		07685 - UNIT 2 - 67528				



PARTIAL FRAMING PLAN

3/32" = 1'-0"

Girder	Angle
1	88°54'31.62"
2	89°07'37.16"
3	89°20'42.79"
4	89°33'48.49"
5	89°46'54.23"
6	90°00'00"
7	90°13'05.77"
8	90°26'11.51"
9	90°39'17.21"
10	90°52'22.84"
11	91°05'28.38"

"Angle" Measured CW From CL Bent to CL Girder (Typical All Bents) and CL Mid-Span Diaphragm to CL Girder (Typical All Mid-Span Diaphragms)

Notes:
For details of ITS and Utility Supports, see Dwg. Nos. 67672 & 67685.

For Diaphragm details, see Dwg. Nos. 67521 - 67523.

(1) Galvanized steel diaphragms may be used in place of concrete diaphragms at mid-span diaphragm locations only

(3) Measured along CL Joint

(4) Measured along CL Bent

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
JORDAN R. GREENE
No. 22537
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 8 OF 11
DETAILS OF 420'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 2
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

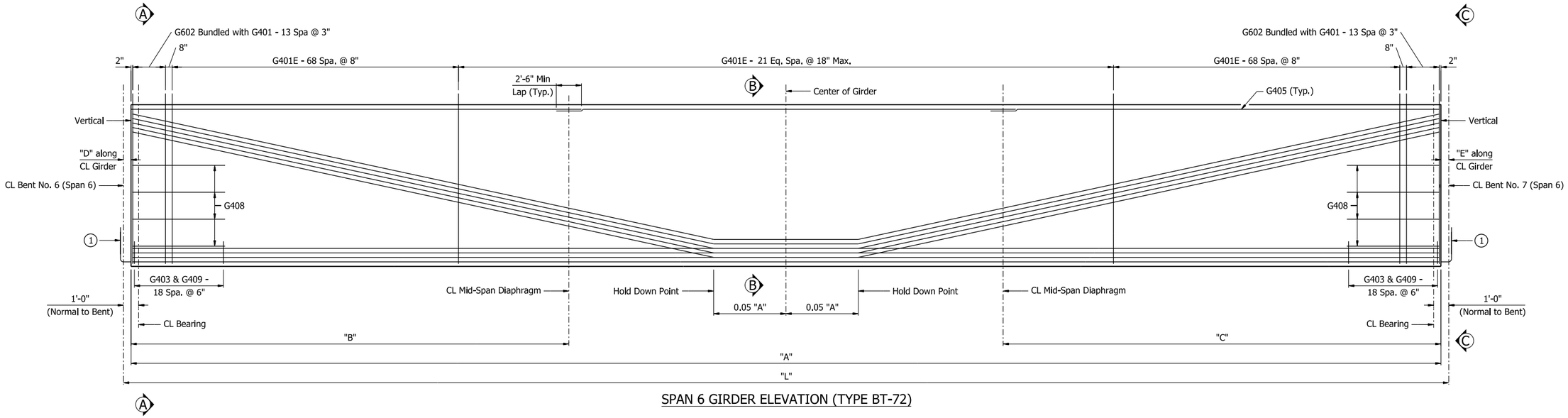
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RAM DATE: 9/19/23
CHECKED BY: KSM DATE: 10/12/23
DESIGNED BY: RAM DATE: 5/26/23
FILENAME: b040901116_s28.dgn
SCALE: NO SCALE

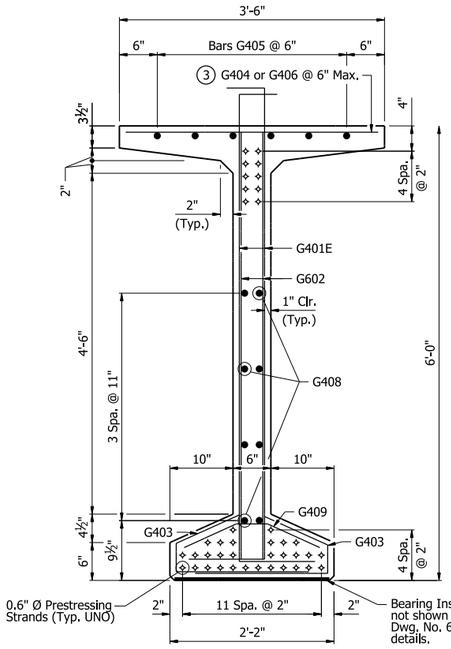
BRIDGE NO. 07685 DRAWING NO. 67528

PRINT DATE: 4/9/2024

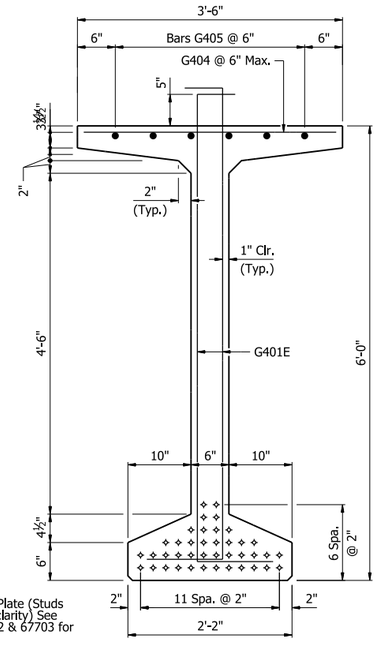
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	469	809
		07685 - UNIT 2 - 67529				



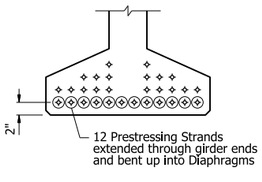
SPAN 6 GIRDER ELEVATION (TYPE BT-72)



SECTION A-A



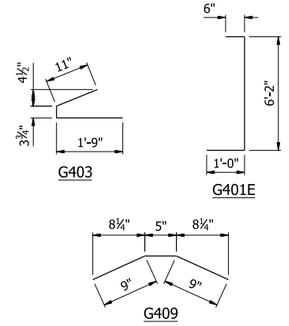
SECTION B-B



VIEW C-C

BAR LIST - PER GIRDER

Mark	Number Required	Length	Pin Dia.	Bending Diagrams (Dimensions are out to out of bars)
G301	(2) 24	1'-3"	Str.	
G401E	372	7'-6"	2"	
G403	76	2'-11"	2"	
G404	255	3'-2"	Str.	
G405	18	44'-7"	Str.	
G406	4	6"	Str.	
G408	16	9'-2"	Str.	
G409	38	1'-11"	2"	
G602	56	5'-6"	Str.	



All bars designated with an "E" suffix are to be epoxy coated.

TABLE OF VARIABLES - DIMENSIONS

	Girder	"L"	"A"	"B"	"C"	"D"	"E"
Span 6	1 & 11	130'-0¼"	129'-0¼"	42'-10⅛"	42'-10⅛"	6	6
	2 & 10	130'-0⅛"	129'-0⅛"	42'-10"	42'-10"	6	6
	3 & 9	130'-0⅛"	129'-0⅛"	42'-10"	42'-10"	6	6
	4-8	130'-0"	129'-0"	42'-10"	42'-10"	6	6

(1) Prestressing strands shall be bent up into diaphragms as shown in the "THREADED INSERT DETAIL", see Dwg. No. 67531.

(2) 12-G301 bars required for exterior girders.

(3) G406 in Girder Ends, see Dwg. No. 67531, for details.

Notes:
For "General Notes", see Dwg. No. 67372.

ITS and Utility Support bolt sleeves must be cast into girder web. Bolt sleeves may be shifted vertically no more than 1" as necessary to avoid prestressing strands. For details of ITS and Utility Supports, see Dwg. Nos. 67672 - 67685. For ITS and Utility Support locations, see "PARTIAL FRAMING PLAN" on Dwg. Nos. 67527 & 67528

For additional details, see Dwg. No. 67531

Drawings show general features of design only. Shop drawing shall be submitted to the Engineer and approval secured before fabrication has begun.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 22537
JORDAN R. GREENE
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 9 OF 11
DETAILS OF 420'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 2
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

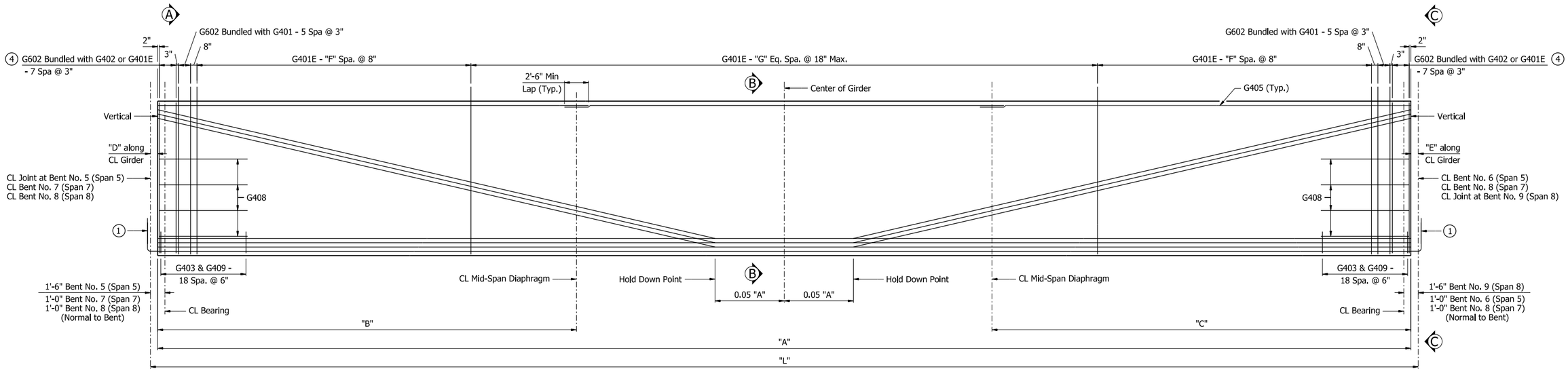
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KNK DATE: 8/3/23
CHECKED BY: SAS DATE: 10/16/23
DESIGNED BY: RAM DATE: 5/25/23
FILENAME: b040901116_s29.dgn
SCALE: NO SCALE

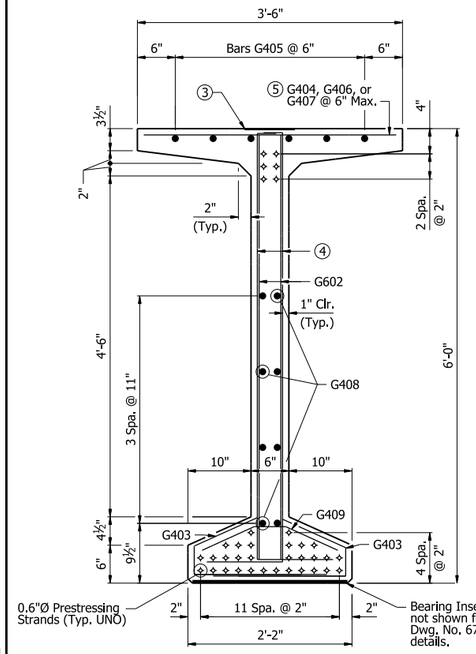
BRIDGE NO. 07685 DRAWING NO. 67529

PRINT DATE: 4/9/2024

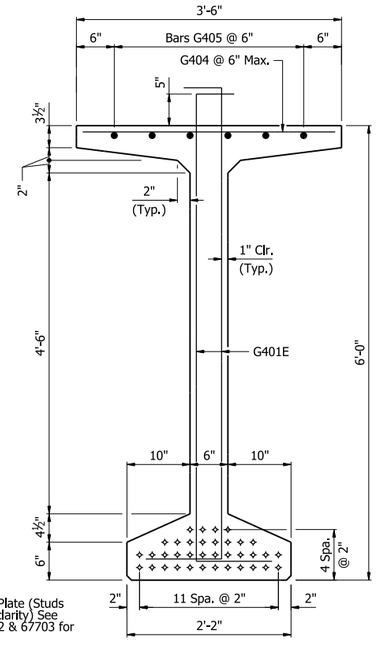
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	470	809
		07685 - UNIT 2 - 67530				



SPANS 5 & 7-8 GIRDER ELEVATION (TYPE BT-72)



SECTION A-A

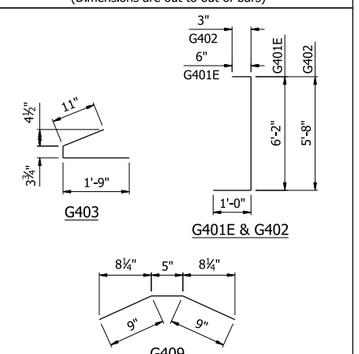


SECTION B-B

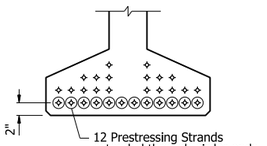
BAR LIST - PER GIRDER

	Mark	Number Required	Length	Pin Dia.
Span 5	G301	(2) 24	1'-3"	Str.
	G401E	214	7'-6"	2"
	G402	16	6'-9"	2"
	G403	76	2'-11"	2"
	G404	174	3'-2"	Str.
	G405	18	31'-2"	Str.
	G406	2	6"	Str.
	G407	2	1'-2"	Str.
	G408	16	9'-2"	Str.
	G409	38	1'-11"	2"
	G602	56	5'-6"	Str.
Span 7	G301	(2) 24	1'-3"	Str.
	G401E	258	7'-6"	2"
	G403	76	2'-11"	2"
	G404	195	3'-2"	Str.
	G405	18	34'-7"	Str.
	G406	4	6"	Str.
	G408	16	9'-2"	Str.
	G409	38	1'-11"	2"
	G602	56	5'-6"	Str.
Span 8	G301	(2) 24	1'-3"	Str.
	G401E	242	7'-6"	2"
	G402	16	6'-9"	2"
	G403	76	2'-11"	2"
	G404	195	3'-2"	Str.
	G405	18	34'-7"	Str.
	G406	2	6"	Str.
	G407	2	1'-2"	Str.
	G408	16	9'-2"	Str.
	G409	38	1'-11"	2"
	G602	56	5'-6"	Str.

Bending Diagrams (Dimensions are out to out of bars)



All bars designated with an "E" suffix are to be epoxy coated.



VIEW C-C

Drawings show general features of design only. Shop drawing shall be submitted to the Engineer and approval secured before fabrication has begun.

TABLE OF VARIABLES

	Girder	"L"	"A"	"B"	"C"	"D"	"E"	"F"	"G"
Span 5	1 & 11	90'-¼"	88'-9¼"	29'-3⅜"	29'-6⅛"	9	6	28	30
	2 & 10	90'-0⅜"	88'-9⅛"	29'-3"	29'-6"	9	6	28	30
	3 & 9	90'-0⅛"	88'-9⅛"	29'-3"	29'-6"	9	6	28	30
	4-8	90'-0"	88'-9"	29'-3"	29'-6"	9	6	28	30
Span 7	1 & 11	100'-0¼"	99'-0¼"	32'-10⅛"	32'-10⅛"	6	6	35	30
	2 & 10	100'-0⅜"	99'-0⅜"	32'-10"	32'-10"	6	6	35	30
	3 & 9	100'-0⅛"	99'-0⅛"	32'-10"	32'-10"	6	6	35	30
	4-8	100'-0"	99'-0"	32'-10"	32'-10"	6	6	35	30
Span 8	1 & 11	100'-0¼"	98'-9¼"	32'-10⅛"	32'-7⅛"	6	9	35	30
	2 & 10	100'-0⅜"	98'-9⅛"	32'-10"	32'-7"	6	9	35	30
	3 & 9	100'-0⅛"	98'-9⅛"	32'-10"	32'-7"	6	9	35	30
	4-8	100'-0"	98'-9"	32'-10"	32'-7"	6	9	35	30

(1) Prestressing strands at Bent No. 5 and 9 shall be sawn flush with the end of the girder. Prestressing strands at Bent No. 6, 7, and 8 shall be bent up into diaphragms as shown in the "THREADED INSERT DETAIL", see Dwg. No. 67531.

(2) 12-G301 bars required for exterior girders.

(3) Bearing Plate, Begin of Span 5, End of Span 8 (Studs not shown for clarity). See Dwg. Nos. 67694 & 67695 for details.

(4) G402 at ends of units, G401E at all other locations.

(5) G406 and G407 in Girder Ends, see Dwg. No. 67531, for details.

Notes:
For "General Notes", see Dwg. No. 67372.

ITS and Utility Support bolt sleeves must be cast into girder web. Bolt sleeves may be shifted vertically no more than 1" as necessary to avoid prestressing strands. For details of ITS and Utility Supports, see Dwg. Nos. 67672 - 67685. For ITS and Utility Support locations, see "PARTIAL FRAMING PLAN" on Dwg. Nos. 67527 & 67528.

For additional details, see Dwg. No. 67531

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
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No. 22537
JORDAN R. GREENE

4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 10 OF 11
DETAILS OF 420'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 2
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KNK DATE: 8/3/23
CHECKED BY: SAS DATE: 10/16/23
DESIGNED BY: RAM DATE: 5/25/23
FILENAME: b040901116_s210.dgn
SCALE: NO SCALE

BRIDGE NO. 07685 DRAWING NO. 67530

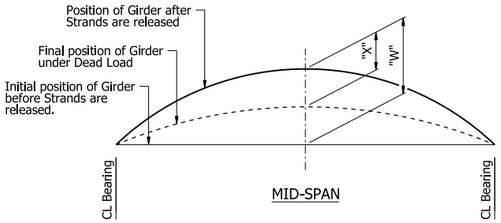
PRINT DATE: 4/10/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	471	809
		07685 - UNIT 2 - 67531				

TABLE OF VARIABLES

	Girder 1		Girders 2-4		Girders 5-7		Girders 8-9		Girder 10		Girder 11	
	"X"	"W"	"X"	"W"	"X"	"W"	"X"	"W"	"X"	"W"	"X"	"W"
Span 5	0⅜"	2¾"	0½"	2¾"	0½"	2¾"	0½"	2¾"	0½"	2¾"	0⅜"	2¾"
Span 6	1⅛"	4¼"	2⅛"	4¾"	2¼"	4¾"	2⅛"	4¾"	2¼"	4¾"	1⅛"	4¼"
Span 7	0⅝"	3⅛"	0¾"	3¼"	0¾"	3¼"	0¾"	3¼"	0¾"	3¼"	0⅝"	3⅛"
Span 8	0⅝"	3⅛"	0⅞"	3⅛"	0⅞"	3⅛"	0⅞"	3⅛"	0⅞"	3⅛"	0¾"	3⅛"

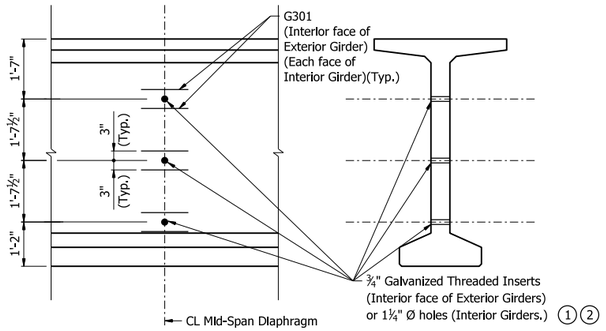
Note:
Camber and deflection values shown are based on a concrete girder strength, f'c = 9000 psi. Greater strengths may require adjustments. The Contractor shall be responsible for any adjustments necessary to meet slab thickness tolerance and to achieve an acceptable finished grade.



"W" is expected camber of girder at 90 days after release (prestress + dead load of girder).

"X" is dead load deflection of slab + diaphragms + composite dead load.

CAMBER & DEFLECTIONS (INCHES)



THREADED INSERT DETAIL
Mid-Span Diaphragm
Scale: ¼" = 1'-0"

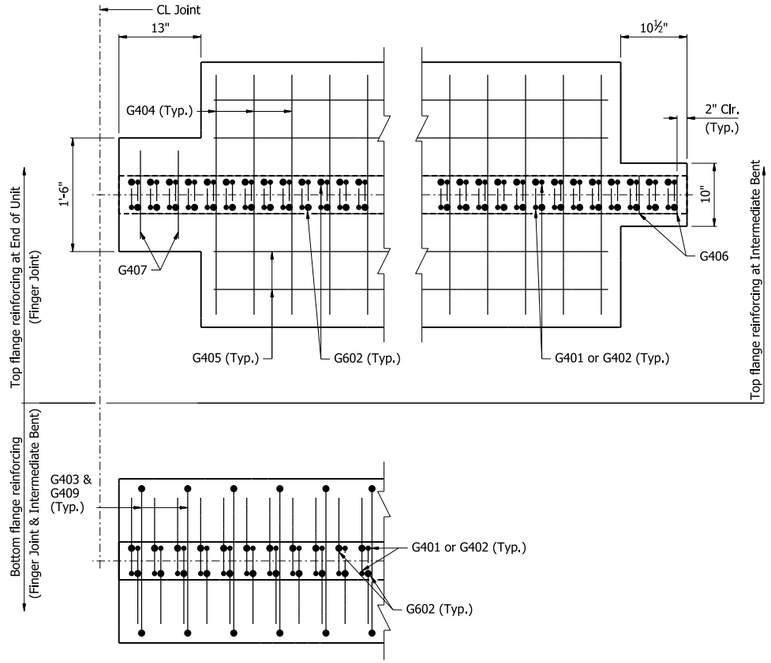
Notes:
Concrete Strength for Prestressed Girders shall be f'c = 9,000 psi, f'ci = 7,000 psi

For ITS and Utility Support details, including cast-in bolt sleeves, see Dwg. Nos. 67672 - 67685.

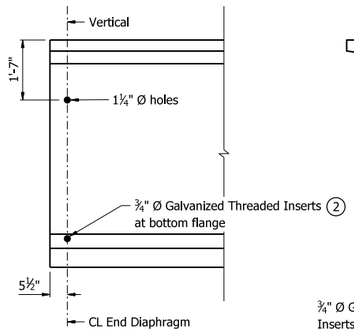
For "General Notes", see Dwg. No. 67372.

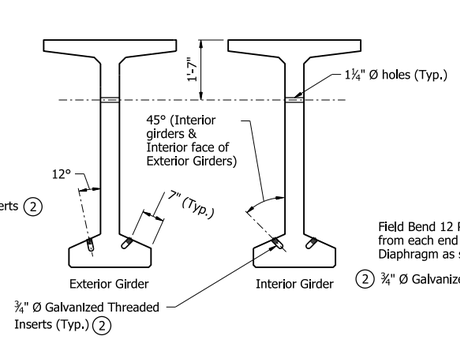
① Inserts shown are for mid-span concrete diaphragms, see Dwg. No. 67522 for alternate steel diaphragms.

② Galvanized ¾"Ø Dayton-Richmond F-42 Loop Ferrule insert or an approved equal. These are to be subsidiary to the item "PRESTRESSED CONCRETE GIRDERS (TYPE BT-72)".

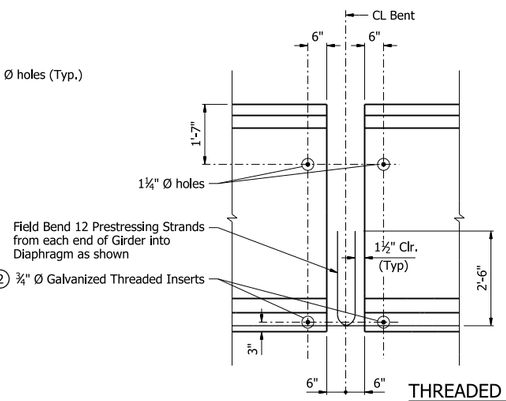


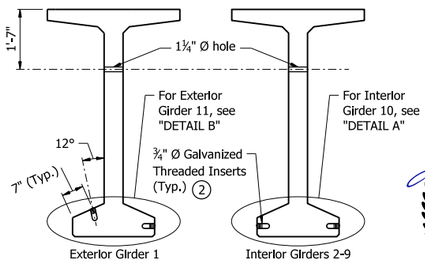
PLAN OF GIRDER ENDS
Scale: ½" = 1'-0"



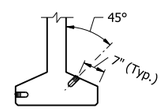


THREADED INSERT DETAIL
End Diaphragm
Scale: ¼" = 1'-0"

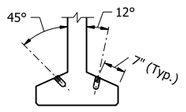




THREADED INSERT DETAIL
Intermediate Bent Diaphragm
(Fixed and Expansion)
Scale: ¼" = 1'-0"



DETAIL A
Scale: ¼" = 1'-0"



DETAIL B
Scale: ¼" = 1'-0"

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4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 11 OF 11
DETAILS OF 420'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 2
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KNK DATE: 8/3/23
CHECKED BY: SAS DATE: 10/16/23
DESIGNED BY: RAM DATE: 5/25/23
FILENAME: b040901116_s211.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67531

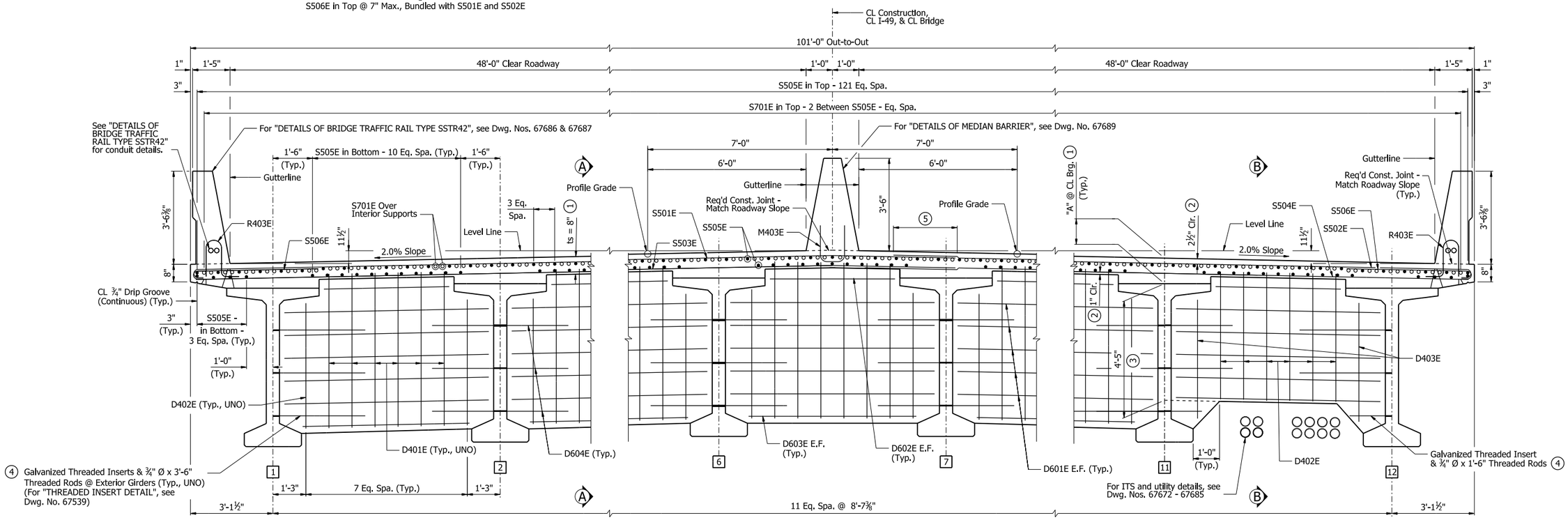
PRINT DATE: 4/10/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	472	809
		07685 - UNIT 3 - 67532				

SLAB REINFORCING:
Longitudinal: S505E in Top and Bottom placed as shown
S701E in Top placed as shown over Interior Bents

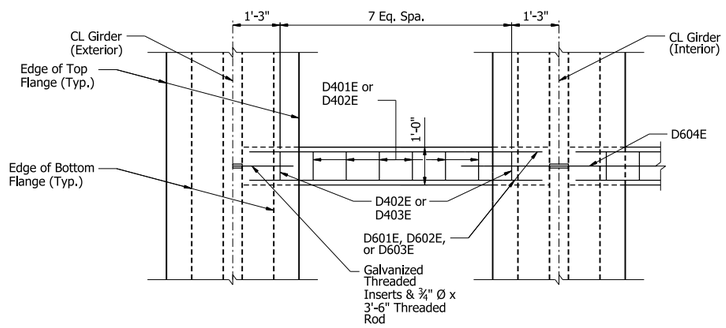
Transverse: S501E and S502E in Top @ 7" Max.
S503E and S504E in Bottom @ 7" Max.
S506E in Top @ 7" Max., Bundled with S501E and S502E

Bar positions or clearances from the forms shall be maintained by means of stays, ties, hangers, or other approved devices per Subsection 804.06. Placement of slab bolsters or high-chairs with full-length lower runners directly on removable deck forms will not be allowed.

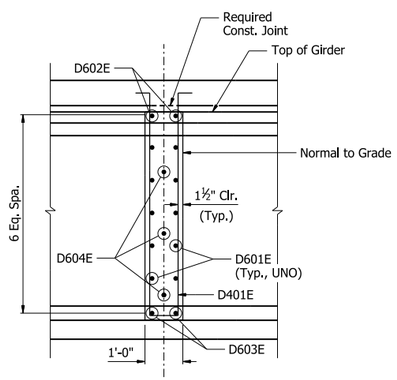


TYPICAL SECTION AT MID-SPAN CONCRETE DIAPHRAGMS

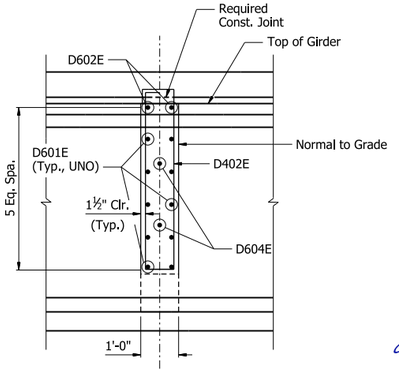
(Looking Upstation)



PLAN
Mid-Span Diaphragm



SECTION A-A



SECTION B-B

TABLE OF SECTION DEPTHS

	Girders 1 - 12
	"A"
Span 9	11¼"
Span 10	11¼"
Span 11	11½"
Span 12	11½"

(1) For "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED", see Dwg. No. 67537.

(2) Tolerance: Minus = ¼" ; Plus = to the amount of slab thickening used to meet slab thickness tolerance. See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED", see Dwg. No. 67537.

(3) Measured from top of girder to bottom of projected diaphragm.

(4) Galvanized threaded inserts shall be Dayton-Richmond F-42 Loop Ferrule Inserts or an approved equal. ¾" Ø threaded rods shall be AASHTO M270, Grade 36 or AASHTO M31 or M322 Type A, Gr. 60. Galvanized inserts and threaded rods are to be subsidiary to the item "PRESTRESSED CONCRETE GIRDERS (TYPE BT-72)". Galvanizing shall be in accordance with AASHTO M232 Class C or ASTM B695, Class 50.

(5) 2'-5" Min. Lap (Top)
3'-6" Min. Lap (Bottom)

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4/18/24
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ALTERNATE NO. 1
SHEET 1 OF 8
DETAILS OF 520'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 3
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

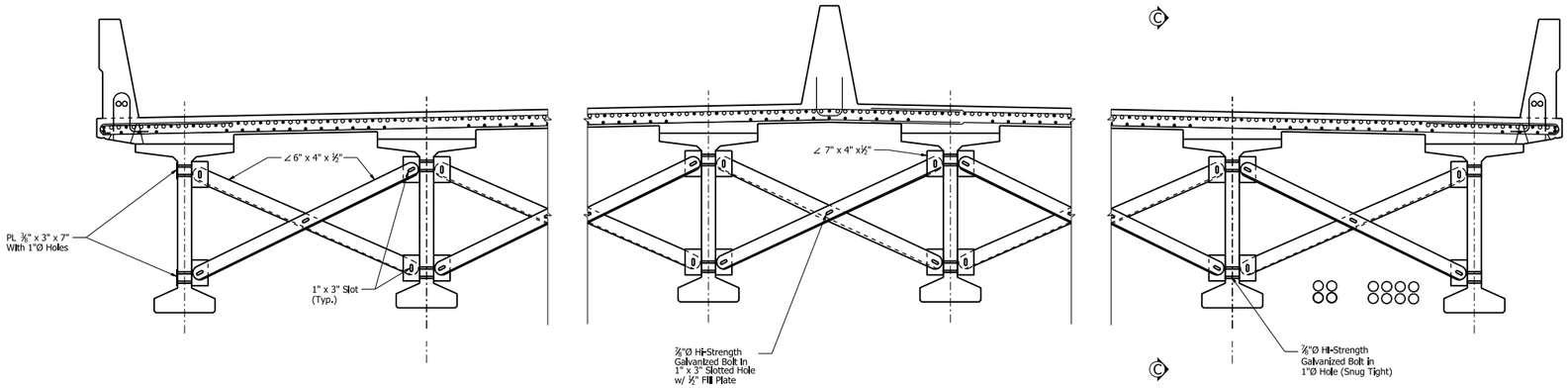
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: EMC DATE: 10/25/23
CHECKED BY: CZ DATE: 11/1/23
DESIGNED BY: RAM DATE: 5/2/23
FILENAME: b040901116_s31.dgn
SCALE: 1/2" = 1-0"

BRIDGE NO. 07685 DRAWING NO. 67532

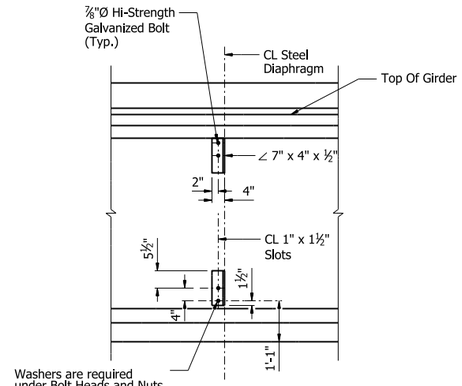
PRINT DATE: 4/9/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	473	809
		07685 - UNIT 3 - 67533				



ALTERNATE TYPICAL SECTION AT MID-SPAN STEEL DIAPHRAGMS

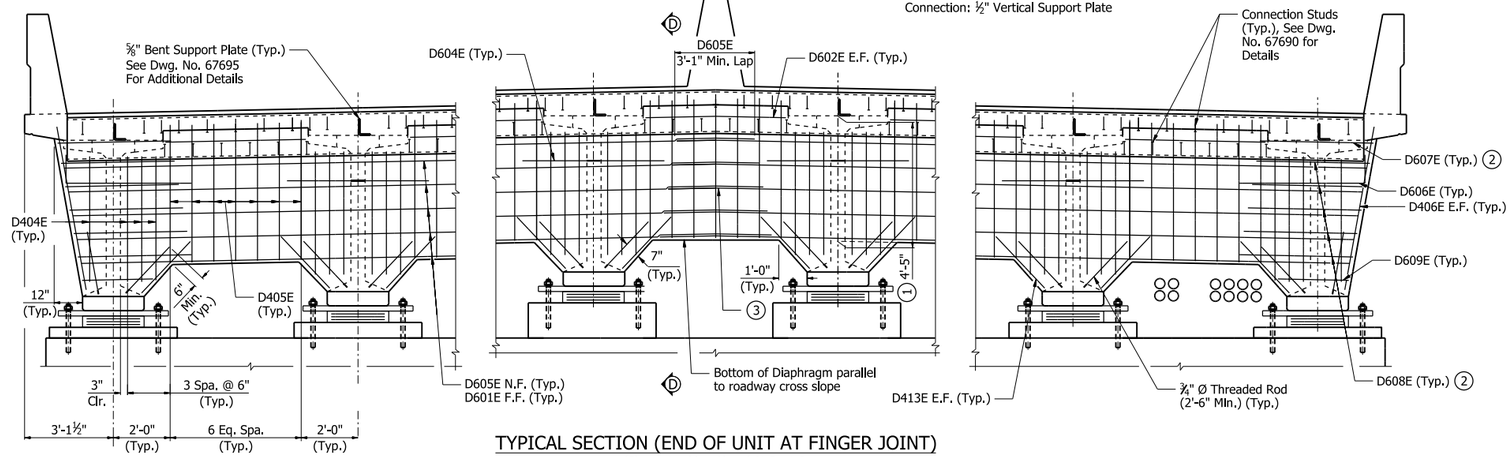
(Looking Upstation)
⅜" = 1'-0"



SECTION C-C

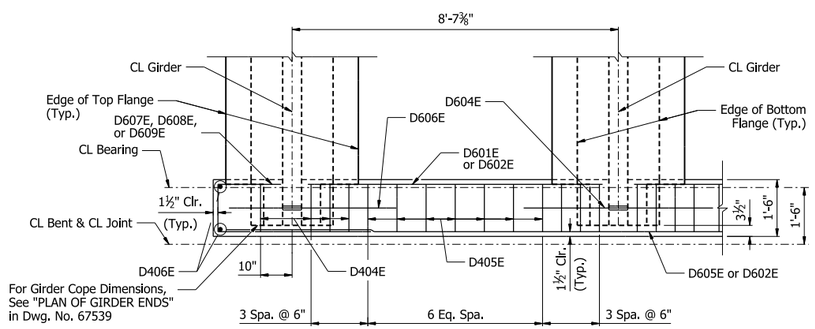
½" = 1'-0"

EXPANSION DEVICE:
Roadway Channel: MC18x42.7
Connection: ½" Vertical Support Plate



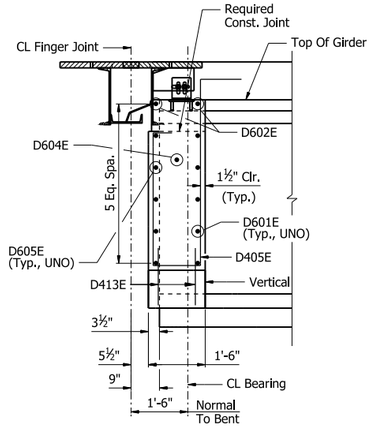
TYPICAL SECTION (END OF UNIT AT FINGER JOINT)

(Shown Looking Ahead At Bent 9, Bent 13 Similar)
⅜" = 1'-0"



PLAN

End Diaphragm at Finger Joint
(Bent No. 9 Shown, Bent No. 13 Similar)
½" = 1'-0"



SECTION D-D

½" = 1'-0"

Notes:
For Slab Reinforcing details, see Dwg. No. 67532.

For ITS and Utility Support details, see Dwg. Nos. 67672 - 67685.

(1) Measured from top of girder to bottom of projected diaphragm

(2) Spaced with D605E or D602E

(3) Field bend Bars D605E at roadway crown as necessary to maintain contact through lap splice and minimum clear. Bars D601E are straight at this location.

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ALTERNATE NO. 1
SHEET 2 OF 8
DETAILS OF 520'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 3
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

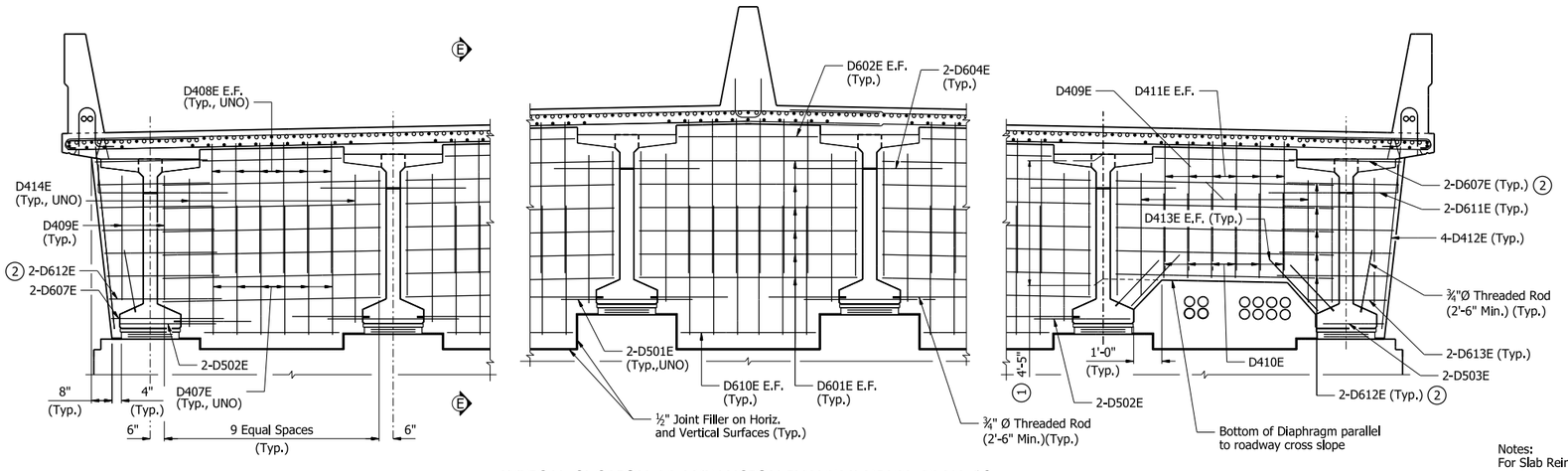
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KNK DATE: 8/3/23
CHECKED BY: SAS DATE: 11/6/23
DESIGNED BY: RAM DATE: 5/2/23
FILENAME: b040901116_s32.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67533

PRINT DATE: 4/9/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	474	809
		07685 - UNIT 3 - 67534				



TYPICAL SECTION AT EXPANSION INTERMEDIATE BENT 12

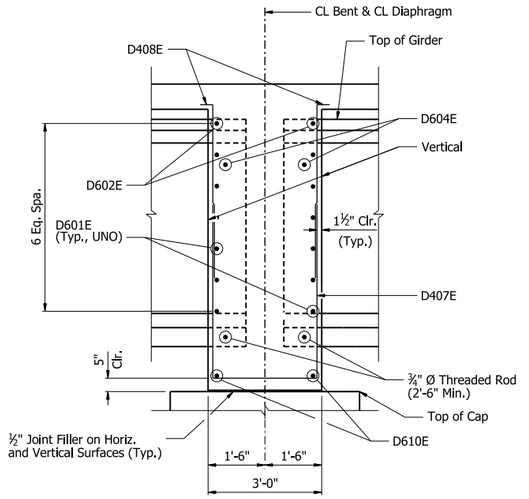
⅜" = 1'-0"

Notes:
For Slab Reinforcing details, see Dwg. No. 67532.

For ITS and Utility Support details, see Dwg. Nos. 67672 - 67685.

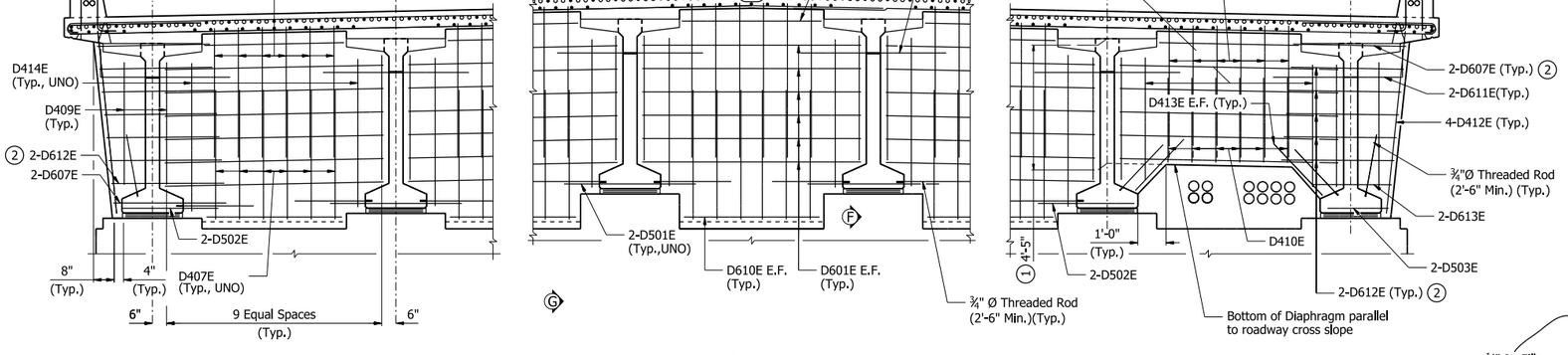
(1) Measured from top of girder to bottom of projected diaphragm

(2) Spaced with D601E or D602E



SECTION E-E

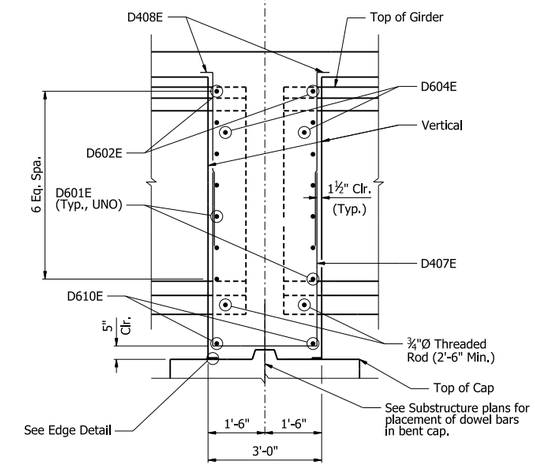
½" = 1'-0"



TYPICAL SECTION AT FIXED INTERMEDIATE BENTS 10 & 11

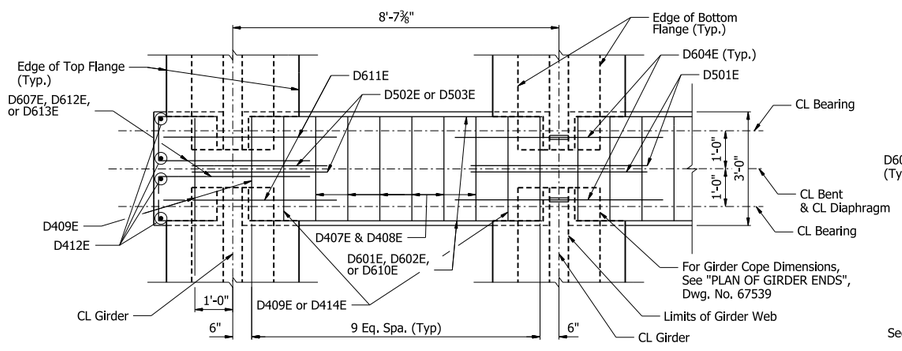
(Dowel Bars not Shown for Clarity)

⅜" = 1'-0"



SECTION G-G

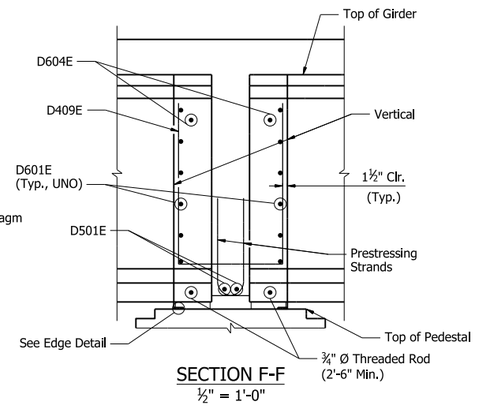
½" = 1'-0"



PLAN

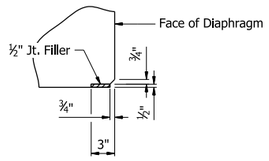
Intermediate Bent Diaphragm

½" = 1'-0"



SECTION F-F

½" = 1'-0"



EDGE DETAIL

(Bents 10 & 11)

1" = 1'-0"

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4/18/24

BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 3 OF 8
DETAILS OF 520'-0" CONTINUOUS
PRESTRESSED CONCRETE GIRDER UNIT 3
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

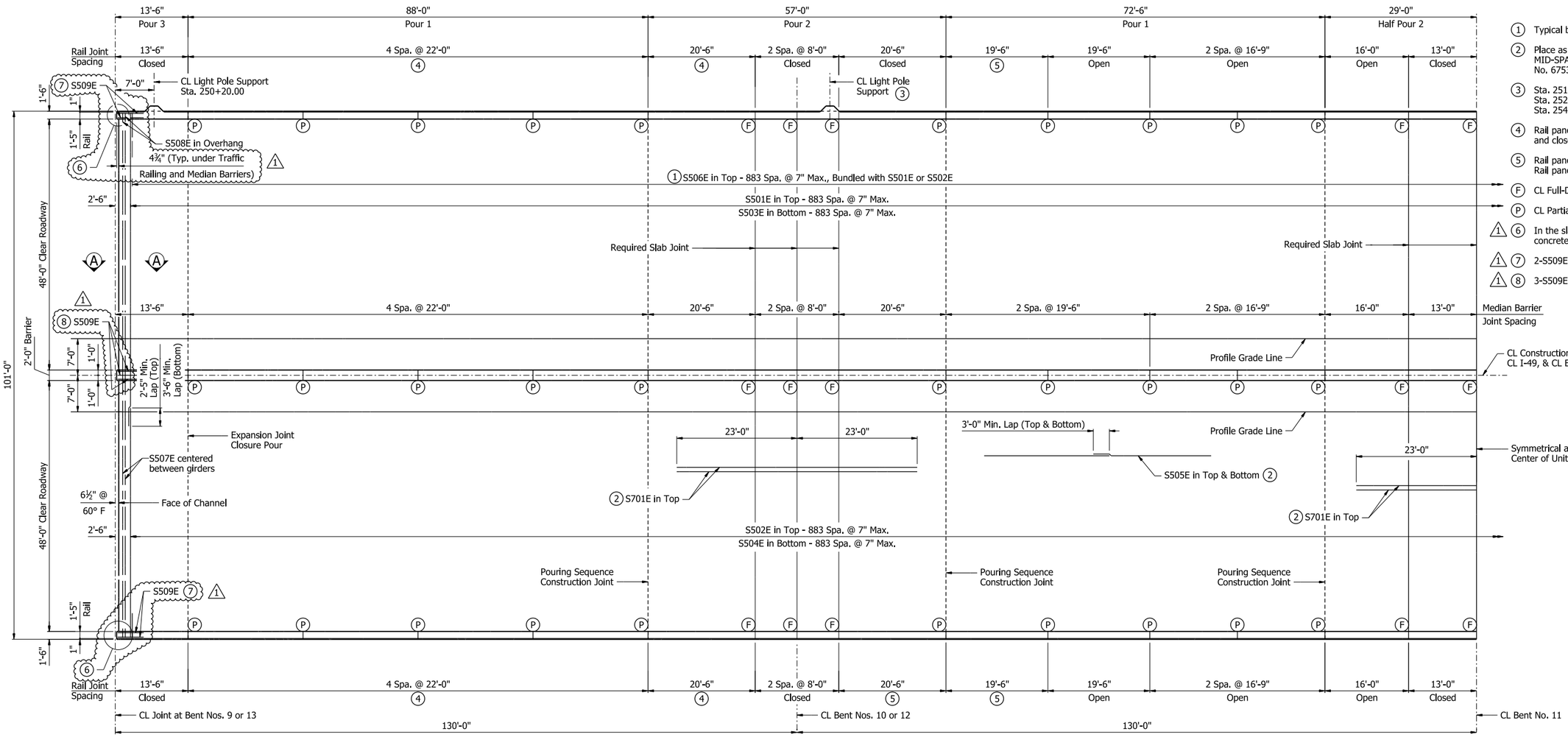
DRAWN BY: KNK DATE: 8/3/23
CHECKED BY: SAS DATE: 11/6/23
DESIGNED BY: RAM DATE: 5/2/23
FILENAME: b040901116_s33.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67534

PRINT DATE: 4/9/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
8/9/2024		6	ARK.	040901	475	809
		07685 - UNIT 3 - 67535				

1 Slab extension added below Rail and Median Barriers at Finger Joint locations. 8/9/2024



1 Typical both sides, see "REINFORCING DETAIL".

2 Place as shown in "TYPICAL SECTION AT MID-SPAN CONCRETE DIAPHRAGMS", see Dwg. No. 67532

3 Sta. 251+56.00 between Bent Nos. 10 & 11
Sta. 252+79.25 between Bent Nos. 11 & 12
Sta. 254+16.00 between Bent Nos. 12 & 13

4 Rail panels are open between Bent Nos. 9 & 10 and closed between Bent Nos. 12 & 13.

5 Rail panels are open between Bent Nos. 10 & 11. Rail panels are closed between Bent Nos. 11 & 12.

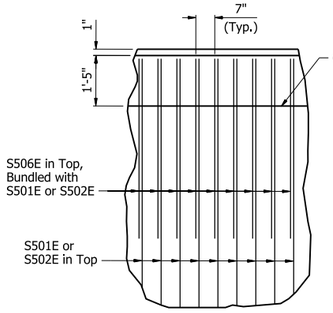
F CL Full-Depth Rail Joint

P CL Partial-Depth Rail Joint

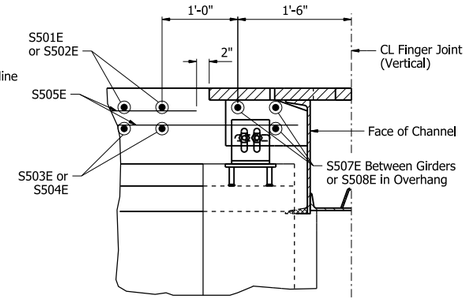
1 6 In the slab extension, cut R403E 8" leg to maintain concrete cover.

1 7 2-S509E in Top, 3-S509E in Bottom.

1 8 3-S509E @ Eq. Spa., Top and Bottom.



REINFORCING DETAIL
½" = 1'-0"



SECTION A-A
Finger Joint
1" = 1'-0"

HALF REINFORCING PLAN AND POURING SEQUENCE

3/32" = 1'-0"

Slab Pouring Sequence Notes:

Pours with the same number may be placed simultaneously or separately. All Pour(s) 1 must be placed before Pour(s) 2 and 3 can be placed. A minimum of 48 hours shall elapse between the end of a pour and the start of the next pour. A minimum of 72 hours shall elapse between adjacent pours.

Concrete in bridge superstructure shall be placed, consolidated, and screeded off for entire pour before any concrete has taken its initial set. This may require the use of a retarding agent.

All end of unit and mid-span diaphragms shall be cast in place and poured a minimum of 48 hours before the slab is poured, unless otherwise noted. Intermediate bent diaphragms shall be cast monolithically with the slab.

At Finger Joints, after all incremental pours on both Units adjacent to the Finger Joint are complete, closure pour 3 on each side of joint shall be poured simultaneously. A minimum of 48 hours shall elapse between the last incremental pour and the closure pours.

A minimum of 72 hours shall elapse between completion of the slab and the pouring of the bridge railing. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence(s) shown.

Notes:

Span lengths, slab pour lengths, and transverse reinforcement spacing shown are measured along Profile Grade Line.

Rail spacings shown are measured along respective gutterlines.

Required slab joints and pouring sequence joints shall align with rail joints at the gutterline.

For "TRANSVERSE SLAB JOINT DETAIL", see Dwg. No. 55007.

For "DETAILS FOR BRIDGE TRAFFIC RAIL TYPE SSTR42", see Dwg. No 67686 & 67687.

For "DETAILS OF MEDIAN BARRIER", see Dwg. No. 67689.

For "PLAN OF REINFORCING AT DECK DRAINS", see Dwg. No. 67707.

DECK DRAIN LOCATIONS	
Left Gutter	Right Gutter
252+38.67	252+38.67
253+79.00	253+79.00
254+36.33	254+36.33
254+98.00	254+98.00

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 22537
JORDAN R. GREENE

8/9/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 4 OF 8
DETAILS OF 520'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 3
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KNK DATE: 10/24/23
CHECKED BY: CZ DATE: 10/30/23
DESIGNED BY: RAM DATE: 5/2/23
FILENAME: b040901116_s34.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67535

PRINT DATE: 8/15/2024

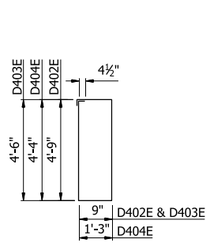
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
8/9/2024		6	ARK.	040901	476	809
		07685 - UNIT 3 - 67536				

1 Slab extension added below Rail and Median Barriers at Finger Joint locations. 8/9/2024

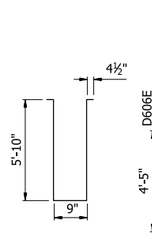
BAR LIST

Mark	Number Required	Length	Pin Dia.
S501E	884	60'-0"	3¾"
S502E	884	44'-3"	3¾"
S503E	884	60'-0"	Str.
S504E	884	44'-2"	Str.
S505E	2510	54'-8"	Str.
S506E	1768	7'-8"	3¾"
S507E	66	7'-5"	Str.
S508E	12	2'-9"	Str.
S509E	32	5'-0"	Str.
S701E	726	46'-0"	Str.
D401E	480	12'-10"	2"
D402E	208	11'-4"	2"
D403E	16	10'-10"	2"
D404E	136	11'-6"	2"
D405E	154	10'-10"	2"
D406E	8	5'-7"	Str.
D407E	180	11'-9"	2"
D408E	360	4'-10"	2"
D409E	78	11'-3"	2"
D410E	18	8'-7"	2"
D411E	36	4'-4"	2"
D412E	24	6'-5"	Str.
D413E	100	2'-6"	Str.
D414E	60	13'-1"	2"
D501E	54	4'-8"	Str.
D502E	12	3'-5"	Str.
D503E	6	2'-2"	Str.
D601E	1380	7'-10"	Str.
D602E	286	4'-10"	Str.
D603E	160	6'-5"	Str.
D604E	320	5'-6"	Str.
D605E	20	51'-2"	Str.
D606E	4	5'-3"	4½"
D607E	22	5'-0"	4½"
D608E	20	5'-6"	4½"
D609E	4	4'-0"	4½"
D610E	60	4'-7"	Str.
D611E	12	5'-5"	4½"
D612E	66	5'-10"	4½"
D613E	6	4'-4"	4½"
	1 2074		
R400E	232	6'-3"	3"
R401E	2074	7'-6"	3"
R402E	160	5'-6"	Str.
R403E	~~2054~~	3'-8"	3"
R413E	40	15'-8"	Str.
R417E	160	21'-8"	Str.
R418E	80	7'-8"	Str.
R421E	40	13'-2"	Str.
R426E	40	12'-8"	Str.
R427E	80	19'-2"	Str.
R429E	80	20'-2"	Str.
R430E	80	16'-5"	Str.
R501E	24	10'-6"	3¾"
R502E	12	5'-11"	2½"
R503E	44	3'-3"	Str.
M401E	1042	9'-0"	2"
M402E	80	5'-6"	Str.
M403E	1032	4'-10"	3"
M413E	20	15'-8"	Str.
M417E	80	21'-8"	Str.
M418E	40	7'-8"	Str.
M421E	20	13'-2"	Str.
M426E	20	12'-8"	Str.
M427E	40	19'-2"	Str.
M429E	40	20'-2"	Str.
M430E	40	16'-5"	Str.
X601E	96	9'-0"	Str.
X602E	96	6'-2"	Str.
X603E	192	5'-0"	Str.

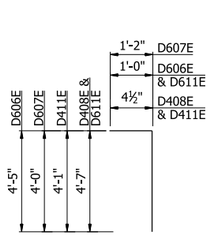
Bending Diagrams
(Dimensions are out to out of bars)



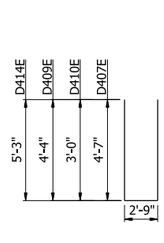
D402E, D403E, & D404E



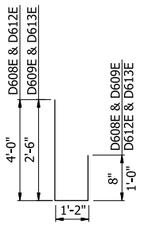
D401E



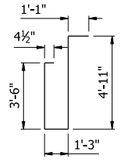
D408E, D411E, D606E, D607E, & D611E



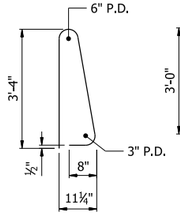
D407E, D409E, D410E, & D414E



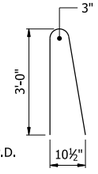
D608E, D609E, D612E & D613E



D405E



R401E



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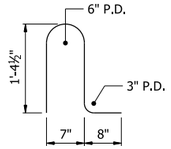

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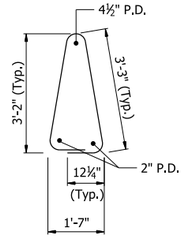
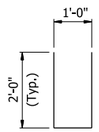
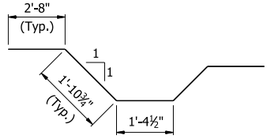


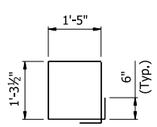
M401E



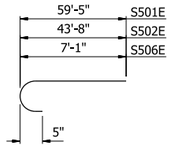
M403E



R501E



R502E



S501E, S502E, & S506E

All bars designated with an "E" suffix are to be epoxy coated.

PRINT DATE: 8/15/2024

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 22537
JORDAN R. GREENE
8/9/24
BRIDGE ENGINEER

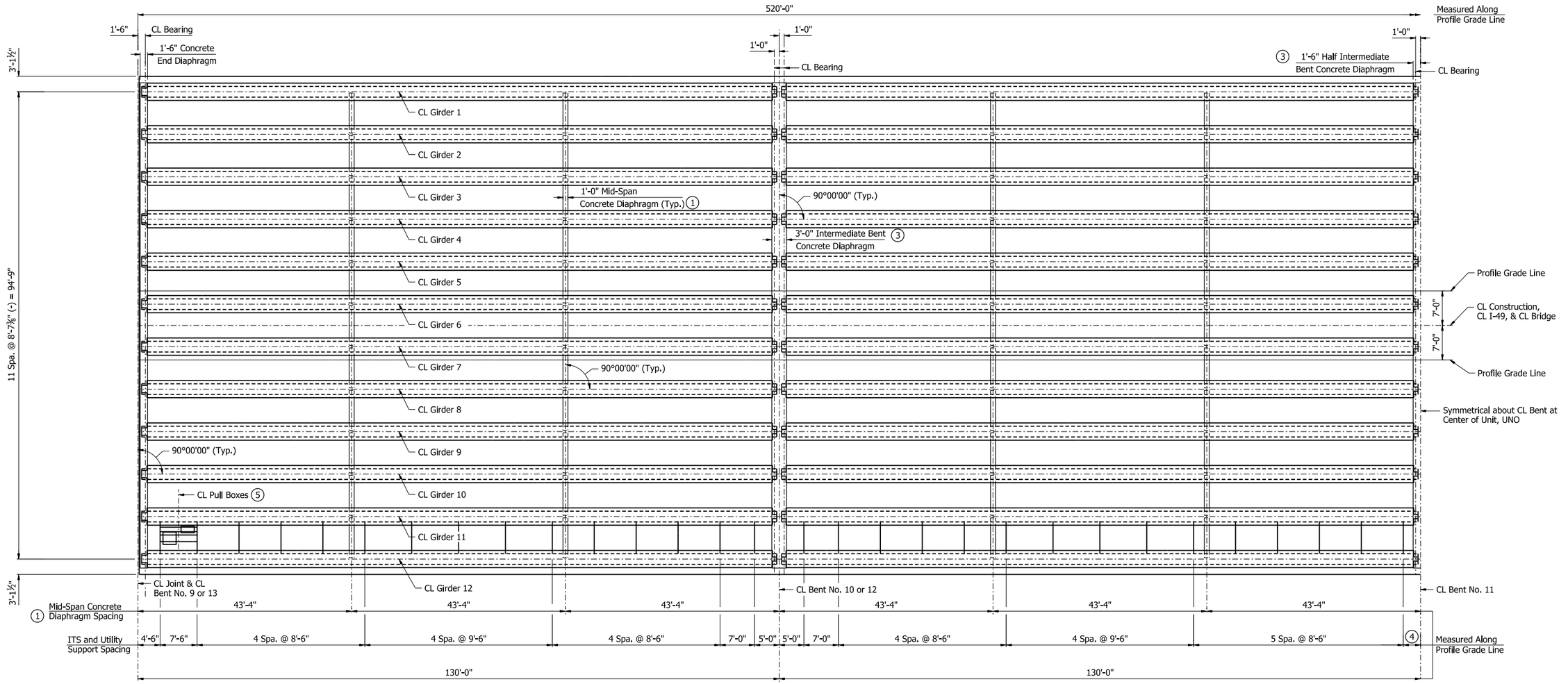
ALTERNATE NO. 1
SHEET 5 OF 8
DETAILS OF 520'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 3
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RAM DATE: 12/7/23
CHECKED BY: CCD DATE: 12/8/23
DESIGNED BY: RAM DATE: 12/8/23
FILENAME: b040901116_s35.dgn
SCALE: NO SCALE

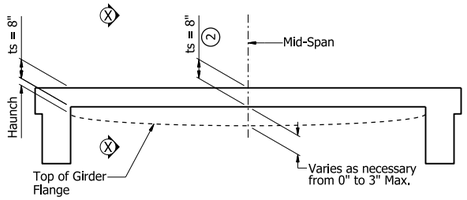
BRIDGE NO. 07685 DRAWING NO. 67536

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	477	809
		07685 - UNIT 3 - 67537				



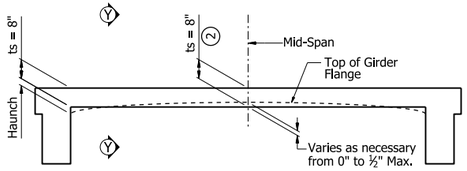
HALF FRAMING PLAN

3/32" = 1'-0"



GIRDER ELEVATION

No Scale



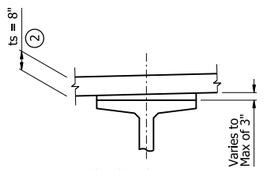
GIRDER ELEVATION

No Scale

Notes:

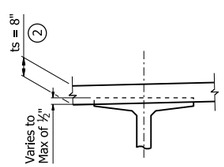
For Details of ITS and Utility Supports, see Dwg. Nos. 67672-67685

For Diaphragm details, see Dwg. Nos. 67532 - 67534.



SECTION X-X

No Scale



SECTION Y-Y

No Scale

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED

1. Galvanized steel diaphragms may be used in place of concrete diaphragms at mid-span diaphragm locations only.
2. Tolerance : Minus =¼ "; Plus=½ ". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance. See Std. Dwg. No. 55005 for tolerances when permanent steel deck forms are used.

   "GIRDER ELEVATION" sketches show the range of acceptability of the top of girder relative to bottom of slab after the placement of the slab. When the top of the girder projects more than a ½" into the slab, a rise in grade will be necessary. Girders shall be set in a sufficient number of spans so when adjustment is necessary the profile grade can be adjusted over suitable increments so the revised grade line will produce a smooth riding surface. Variation of haunch height will be at the Contractor's expense.
3. 3'-0" Concrete Fix Bent Diaphragm at Bent No. 10 & 11
   3'-0" Concrete Exp. Bent Diaphragm at Bent. No. 12
4. 3'-6"
5. Sta. 250+21.25
   Sta. 254+82.25

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 22537
JORDAN R. GREENE

4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 6 OF 8
DETAILS OF 520'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 3
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RAM DATE: 9/8/23
CHECKED BY: KSM DATE: 10/11/23
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BRIDGE NO. 07685
DRAWING NO. 67537

PRINT DATE: 4/9/2024

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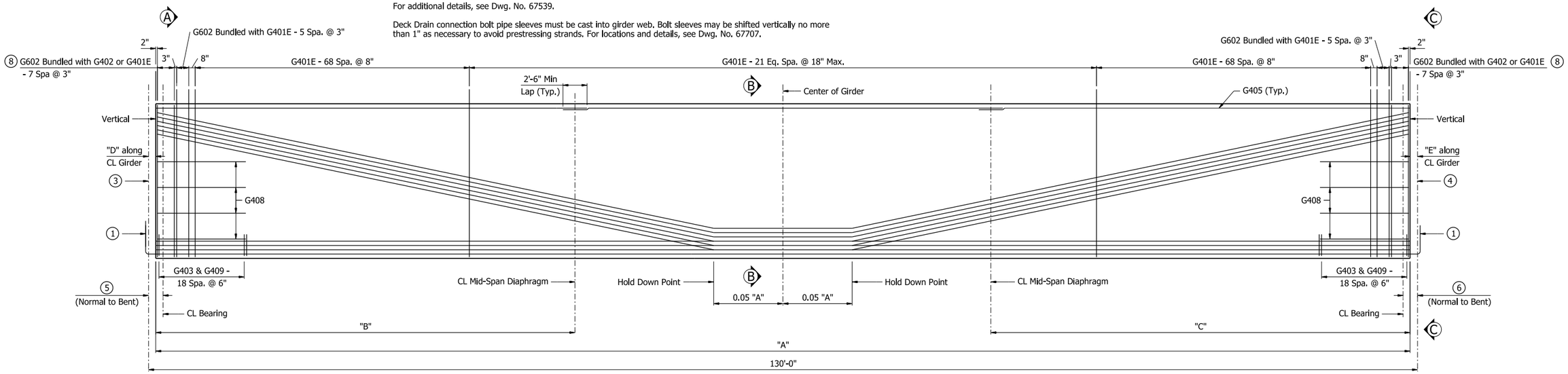
		6	ARK.	040901	478	809
		07685 - UNIT 3 - 67538				

Notes:
For "General Notes", see Dwg. No. 67372.

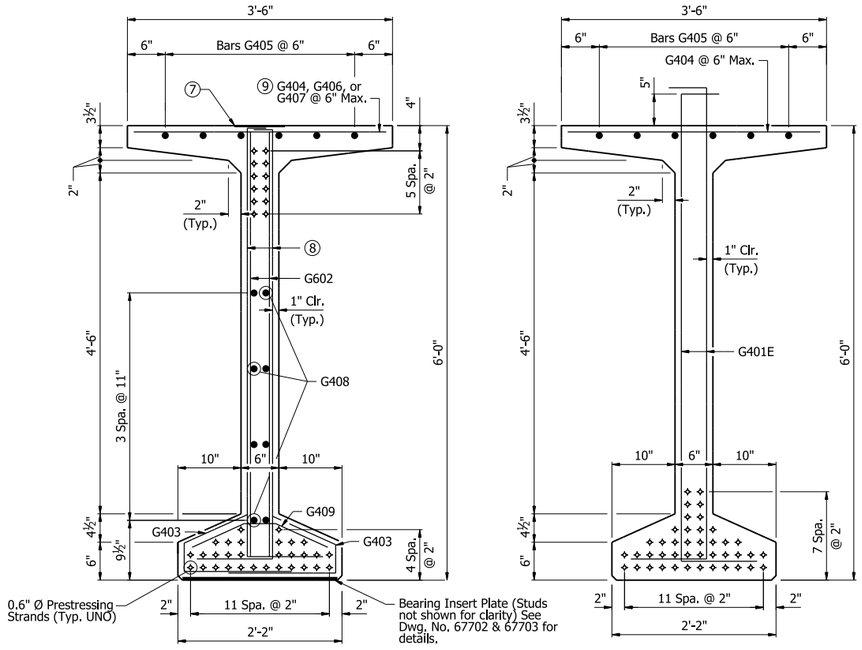
ITS and Utility Support bolt sleeves must be cast into girder web. Bolt sleeves may be shifted vertically no more than 1" as necessary to avoid prestressing strands. For ITS and Utility Support details, see Dwg. Nos. 67672 - 67685.
For ITS and Utility support locations, see "HALF FRAMING PLAN" on Dwg. No. 67537.

For additional details, see Dwg. No. 67539.

Deck Drain connection bolt pipe sleeves must be cast into girder web. Bolt sleeves may be shifted vertically no more than 1" as necessary to avoid prestressing strands. For locations and details, see Dwg. No. 67707.



TYPICAL GIRDER ELEVATION (TYPE BT-72)

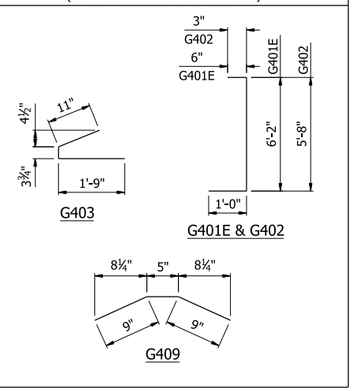


SECTION A-A

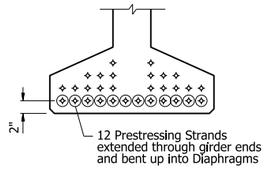
SECTION B-B

BAR LIST - PER GIRDER

	Mark	Number Required	Length	Pin Dia.	Bending Diagrams (Dimensions are out to out of bars)
Spans 9 & 12	G301	(2) 24	1'-3"	Str.	
	G401E	356	7'-6"	2"	
	G402	16	6'-9"	2"	
	G403	76	2'-11"	2"	
	G404	255	3'-2"	Str.	
	G405	18	44'-7"	Str.	
	G406	2	6"	Str.	
	G407	2	1'-2"	Str.	
	G408	16	9'-2"	Str.	
	G409	38	1'-11"	2"	
	G602	56	5'-6"	Str.	
Spans 10 & 11	G301	(2) 24	1'-3"	Str.	
	G401E	372	7'-6"	2"	
	G403	76	2'-11"	2"	
	G404	255	3'-2"	Str.	
	G405	18	44'-7"	Str.	
	G406	4	6"	Str.	
	G408	16	9'-2"	Str.	
	G409	38	1'-11"	2"	
	G602	56	5'-6"	Str.	



All bars designated with an "E" suffix are to be epoxy coated.



VIEW C-C

Drawings show general features of design only. Shop drawing shall be submitted to the Engineer and approval secured before fabrication has begun.

TABLE OF VARIABLES

Span	(3)	(4)	(5)	(6)
9	CL Joint at Bent No. 9	CL Bent No. 10	1'-6" (Bent No. 9)	1'-0" (Bent No. 10)
10	CL Bent No. 10	CL Bent No. 11	1'-0" (Bent No. 10)	1'-0" (Bent No. 11)
11	CL Bent No. 11	CL Bent No. 12	1'-0" (Bent No. 11)	1'-0" (Bent No. 12)
12	CL Bent No. 12	CL Joint at Bent No. 13	1'-0" (Bent No. 12)	1'-6" (Bent No. 13)

TABLE OF VARIABLES

Span	Girder	"A"	"B"	"C"	"D"	"E"
9	1-12	128'-9"	42'-7"	42'-10"	9"	6"
10 & 11	1-12	129'-0"	42'-10"	42'-10"	6"	6"
12	1-12	128'-9"	42'-10"	42'-7"	6"	9"

(1) Prestressing strands at Bent No. 9 and 13 shall be sawn flush with the end of the girder. Prestressing strands at Bent No. 10, 11, 12 shall be bent up into diaphragms as shown in the "THREADED INSERT DETAIL", see Dwg. No. 67539.

(2) 12-G301 Bars are required for exterior girders.

(7) Bearing Plate, Beg. of Span 9, End of Span 12 (Studs not shown for clarity). See Dwg. Nos. 67694 & 67695 for details.

(8) G402 at ends of units, G401E at all other locations.

(9) G406 and G407 in Girder Ends, see Dwg. No. 67539, for details.

ALTERNATE NO. 1
SHEET 7 OF 8
DETAILS OF 520'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 3
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 22537
JORDAN R. GREENE
4/18/24
BRIDGE ENGINEER

DRAWN BY: RAM DATE: 9/11/23
CHECKED BY: KSM DATE: 10/18/23
DESIGNED BY: RAM DATE: 5/30/23
FILENAME: b040901116_s37.dgn
SCALE: NO SCALE

BRIDGE NO. 07685 DRAWING NO. 67538

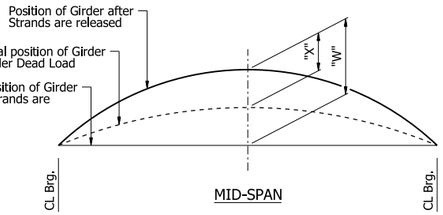
PRINT DATE: 4/13/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	479	809
		07685 - UNIT 3 - 67539				

TABLE OF VARIABLES

	Girder 1		Girders 2-3		Girder 4		Girders 5-8		Girder 9		Girder 10		Girder 11		Girder 12	
	"X'	"W"	"X"	"W"	"X"	"W"	"X"	"W"	"X"	"W"	"X"	"W"	"X"	"W"	"X"	"W"
Span 9	1⅞"	4⅝"	2¼"	4⅝"	2⅛"	4⅝"	2¼"	4⅝"	2⅛"	4⅜"	2¼"	4⅜"	2¼"	4⅜"	1⅞"	4⅝"
Span 10	1⅞"	4⅝"	2⅛"	4⅝"	2⅛"	4⅝"	2¼"	4⅝"	2⅛"	4⅜"	2⅛"	4⅝"	2¼"	4⅝"	1⅞"	4⅝"
Span 11	1⅞"	4⅝"	2⅛"	4⅝"	2⅛"	4⅝"	2¼"	4⅝"	2⅛"	4⅝"	2⅛"	4⅝"	2¼"	4⅝"	1⅞"	4⅝"
Span 12	1⅞"	4⅝"	2¼"	4⅝"	2⅛"	4⅝"	2¼"	4⅝"	2⅛"	4⅝"	2¼"	4⅝"	2¼"	4⅝"	1⅞"	4⅝"

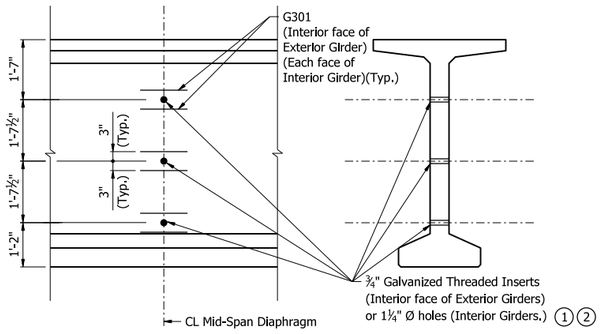
Note:
Camber and deflection values shown are based on a concrete girder strength, f'c = 9000 psi. Greater strengths may require adjustments. The Contractor shall be responsible for any adjustments necessary to meet slab thickness tolerance and to achieve an acceptable finished grade.



"W" is expected camber of girder at 90 days after release (prestress + dead load of girder).

"X" is dead load deflection of slab + diaphragms + composite dead load.

CAMBER & DEFLECTIONS (INCHES)



THREADED INSERT DETAIL
Mid-Span Diaphragm
Scale: ¼" = 1'-0"

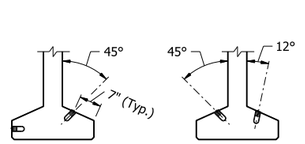
Notes:
Concrete Strength for Prestressed Girders shall be f'c = 9,000 psi, f'ci = 7,000 psi

For ITS and Utility Support details, including cast-in bolt sleeves, see Dwg. Nos. 67672 - 67685.

For "General Notes", see Dwg. No. 67372.

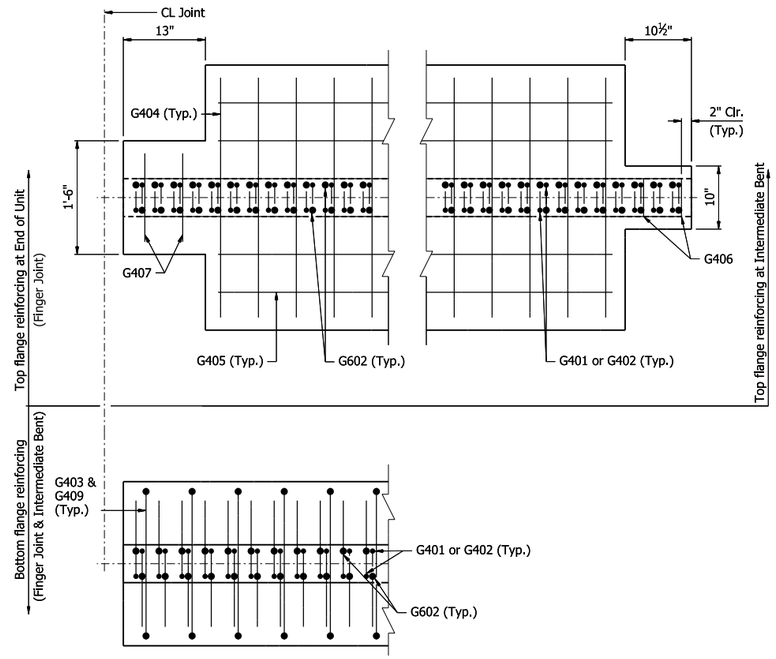
① Inserts shown are for mid-span concrete diaphragms, see Dwg. No. 67533 for alternate steel diaphragms.

② Galvanized ¾"Ø Dayton-Richmond F-42 Loop Ferrule insert or an approved equal. These are to be subsidiary to the item "PRESTRESSED CONCRETE GIRDERS (TYPE BT-72)".

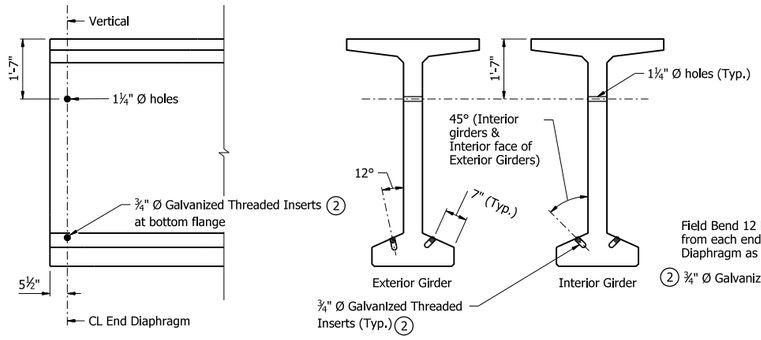


DETAIL A
Scale: ¼" = 1'-0"

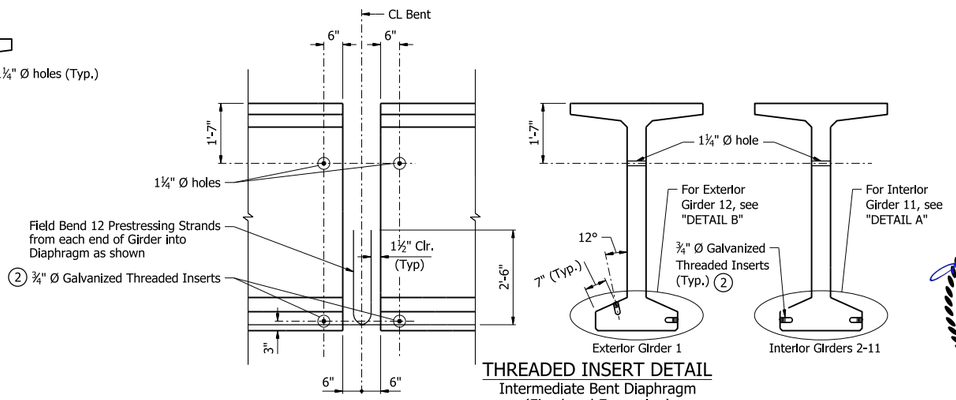
DETAIL B
Scale: ¼" = 1'-0"



PLAN OF GIRDER ENDS
Scale: ½" = 1'-0"



THREADED INSERT DETAIL
End Diaphragm
Scale: ¼" = 1'-0"



THREADED INSERT DETAIL
Intermediate Bent Diaphragm
(Fixed and Expansion)
Scale: ¼" = 1'-0"

STATE OF ARKANSAS
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JORDAN R. GREENE
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 8 OF 8
DETAILS OF 520'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 3
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RAM DATE: 10/6/23
CHECKED BY: KSM DATE: 10/20/23
DESIGNED BY: RAM DATE: 5/30/23
FILENAME: b040901116_s38.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67539

PRINT DATE: 4/9/2024

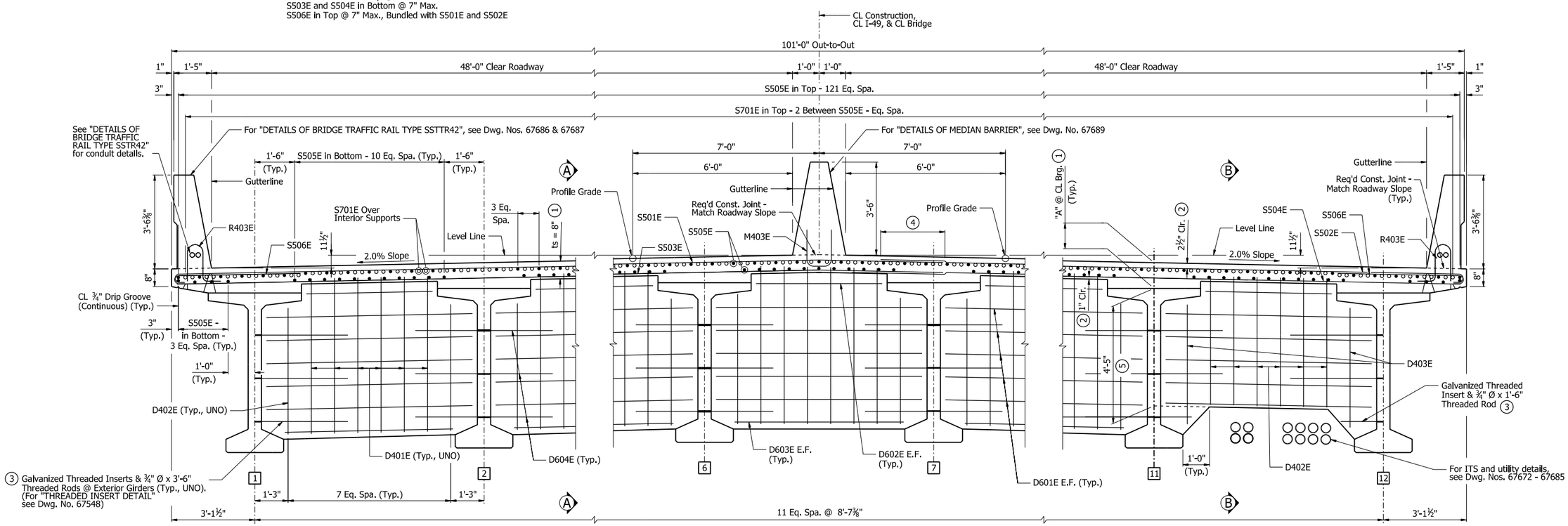
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	480	809
		07685 - UNIT 4 - 67540				

SLAB REINFORCING;

Longitudinal: S505E in Top and Bottom placed as shown
S701E in Top placed as shown over Interior Bents

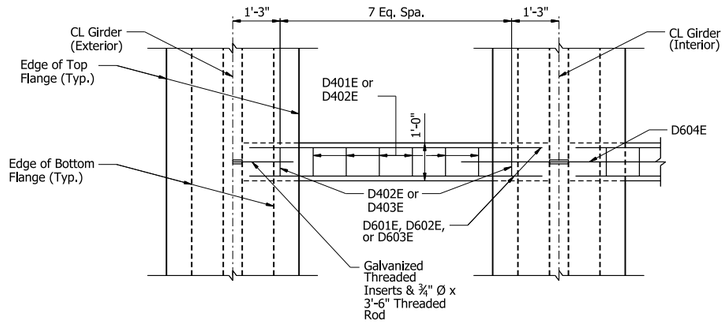
Transverse: S501E and S502E in Top @ 7" Max.
S503E and S504E in Bottom @ 7" Max.
S506E in Top @ 7" Max., Bundled with S501E and S502E

Bar positions or clearances from the forms shall be maintained by means of stays, ties, hangers, or other approved devices per Subsection 804.06. Placement of slab bolsters or high-chairs with full-length lower runners directly on removable deck forms will not be allowed.



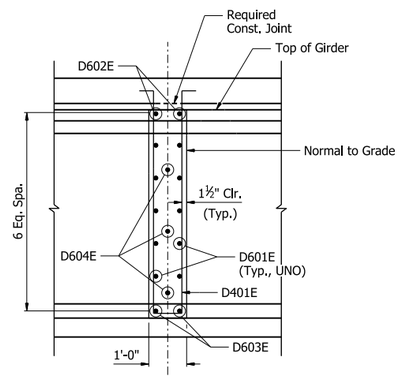
TYPICAL SECTION AT MID-SPAN CONCRETE DIAPHRAGMS

(Looking Upstation)

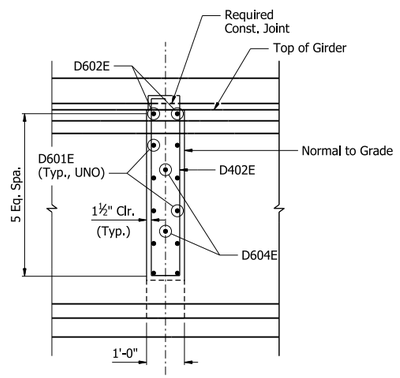


PLAN

Mid-Span Diaphragm



SECTION A-A



SECTION B-B

	Girders 1 - 12
	"A"
Span 13	10"
Span 14	11¼"
Span 15	10"

TABLE OF SECTION DEPTHS

1. For "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED", see Dwg. No. 67545.
2. Tolerance: Minus = ¼" ; Plus = to the amount of slab thickening used to meet slab thickness tolerance. For "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED", see Dwg. No. 67545.
3. Galvanized threaded inserts shall be Dayton-Richmond F-42 Loop Ferrule Inserts or an approved equal. ¾" Ø threaded rods shall be AASHTO M270, Grade 36 or AASHTO M31 or M322 Type A, Gr. 60. Galvanized inserts and threaded rods are to be subsidiary to the item "PRESTRESSED CONCRETE GIRDERS (TYPE BT-72)". Galvanizing shall be in accordance with AASHTO M232 Class C or ASTM B695, Class 50.
4. 2'-5" Min. Lap (Top)
   3'-6" Min. Lap (Bottom)
5. Measured from top of girder to bottom of projected diaphragm

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 22537
JORDAN R. GREENE
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 1 OF 9
DETAILS OF 360'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 4
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION

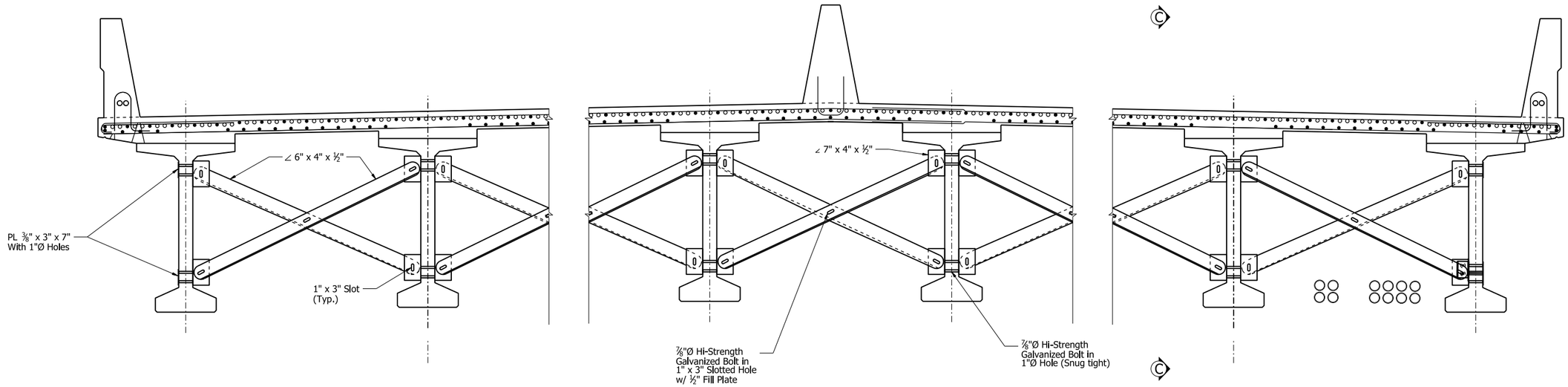
LITTLE ROCK, ARK.

DRAWN BY: EMC DATE: 10/19/23
CHECKED BY: CCD DATE: 11/1/23
DESIGNED BY: RAM DATE: 5/10/23
FILENAME: b040901116_s41.dgn
SCALE: 1/2" = 1'-0"

BRIDGE NO. 07685 DRAWING NO. 67540

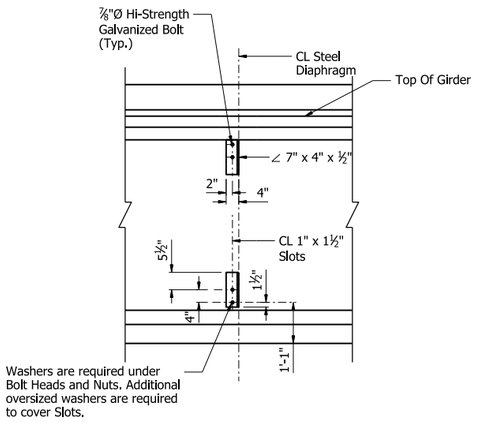
PRINT DATE: 4/10/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	481	809
		07685 - UNIT 4 - 67541				



ALTERNATE TYPICAL SECTION AT MID-SPAN STEEL DIAPHRAGMS

(LOOKING UPSTATION)



SECTION C-C

Notes:
For details of ITS and Utility Supports, see Dwg. Nos. 67672 - 67676.

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JORDAN R. GREENE
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 2 OF 9
DETAILS OF 360'-0" CONTINUOUS
PRESTRESSED CONCRETE GIRDER UNIT 4
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: EMC DATE: 8/3/23 FILENAME: b040901116_s42.dgn
CHECKED BY: SAS DATE: 11/15/23 SCALE: 1/2" = 1'-0"
DESIGNED BY: RAM DATE: 5/2/23

BRIDGE NO. 07685 DRAWING NO. 67541

PRINT DATE: 4/10/2024

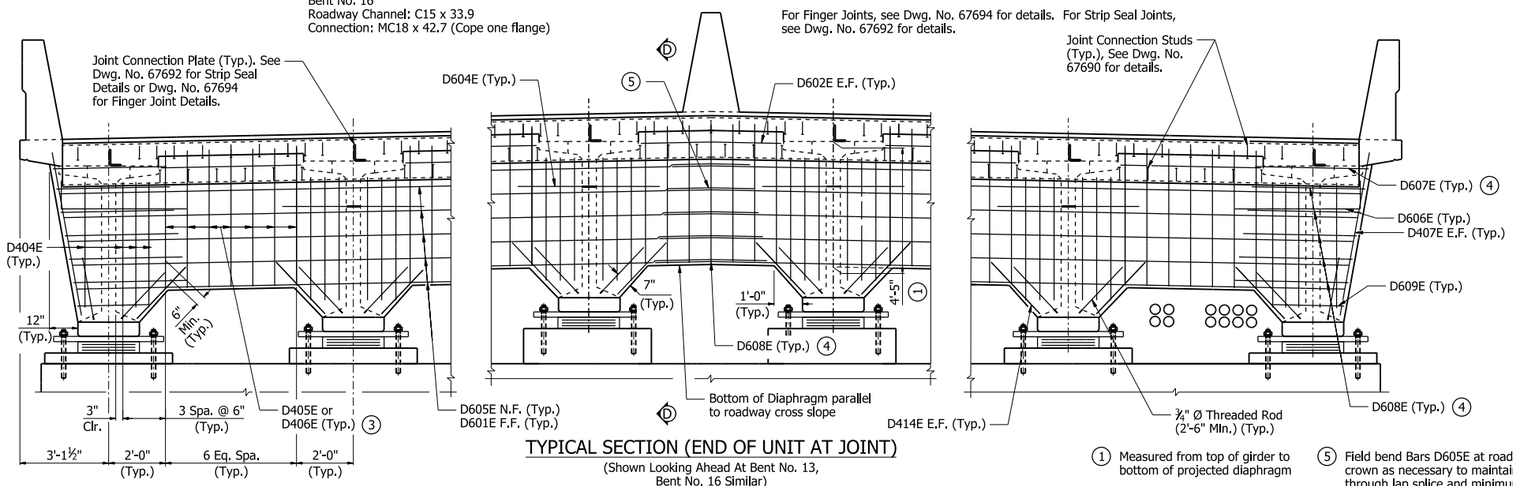
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	482	809
		07685 - UNIT 4 - 67542				

EXPANSION DEVICE:
Bent No. 13
Roadway Channel: MC 18 x 42.7
Connection: ½" Vertical Support Plate
Bent No. 16
Roadway Channel: C15 x 33.9
Connection: MC18 x 42.7 (Cope one flange)

Notes:
For Slab Reinforcing Details, see Dwg. No. 67540.

For details of ITS and Utility Supports, see Dwg. Nos. 67672 - 67685.

For Finger Joints, see Dwg. No. 67694 for details. For Strip Seal Joints, see Dwg. No. 67692 for details.



TYPICAL SECTION (END OF UNIT AT JOINT)

(Shown Looking Ahead At Bent No. 13, Bent No. 16 Similar)
⅜" = 1'-0"

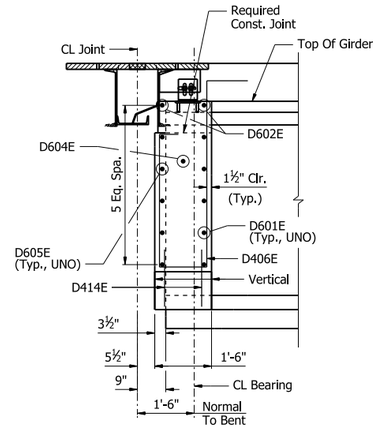
(1) Measured from top of girder to bottom of projected diaphragm

(2) Spaced with D601E or D602E

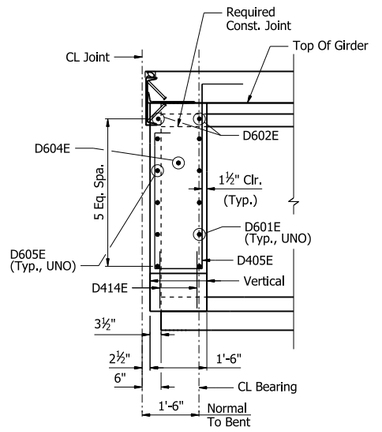
(3) Strip Seal Joint - D405E
Finger Joint - D406E

(4) Spaced with D605E or D602E

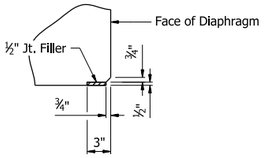
(5) Field bend Bars D605E at roadway crown as necessary to maintain contact through lap splice and minimum clear. Bars D601E are straight at this location.



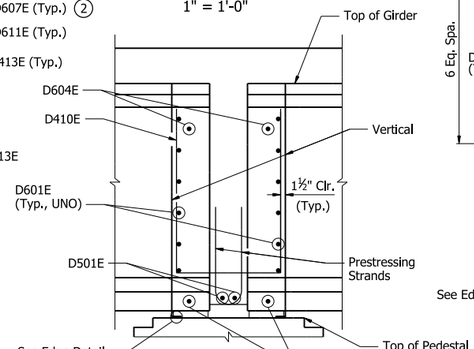
SECTION D-D
Finger Joint
½" = 1'-0"



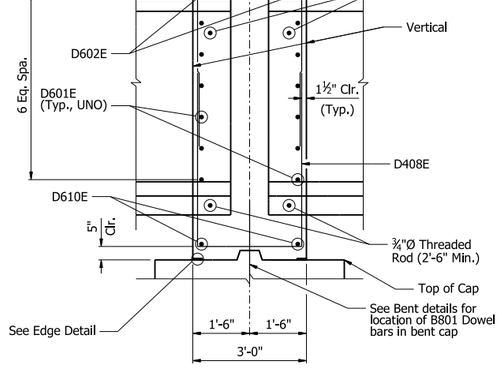
SECTION D-D
Strip Seal Joint
½" = 1'-0"



EDGE DETAIL
(Bent Nos. 14 & 15)
1" = 1'-0"

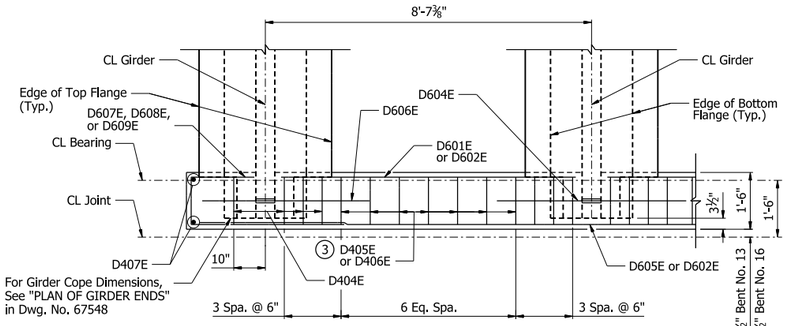


SECTION F-F
½" = 1'-0"

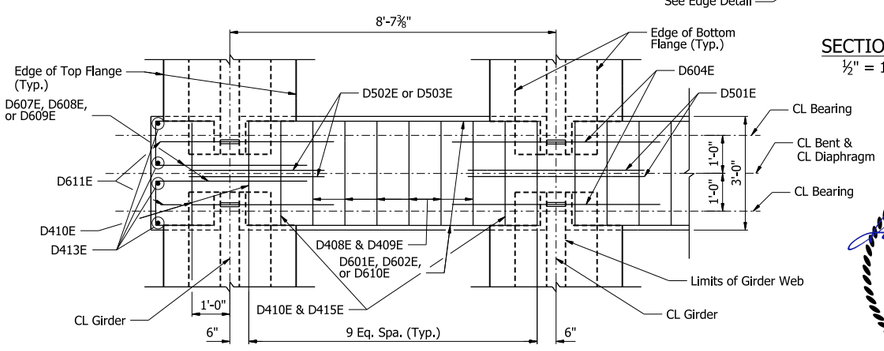


SECTION E-E
½" = 1'-0"

TYPICAL SECTION AT FIXED INTERMEDIATE BENTS
⅜" = 1'-0"



PLAN
End Diaphragm
(Bent No. 13 Shown, Bent No. 16 Similar)
½" = 1'-0"



PLAN
Intermediate Bent Diaphragm
½" = 1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 22537
JORDAN R. GREENE
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 3 OF 9
DETAILS OF 360'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 4
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

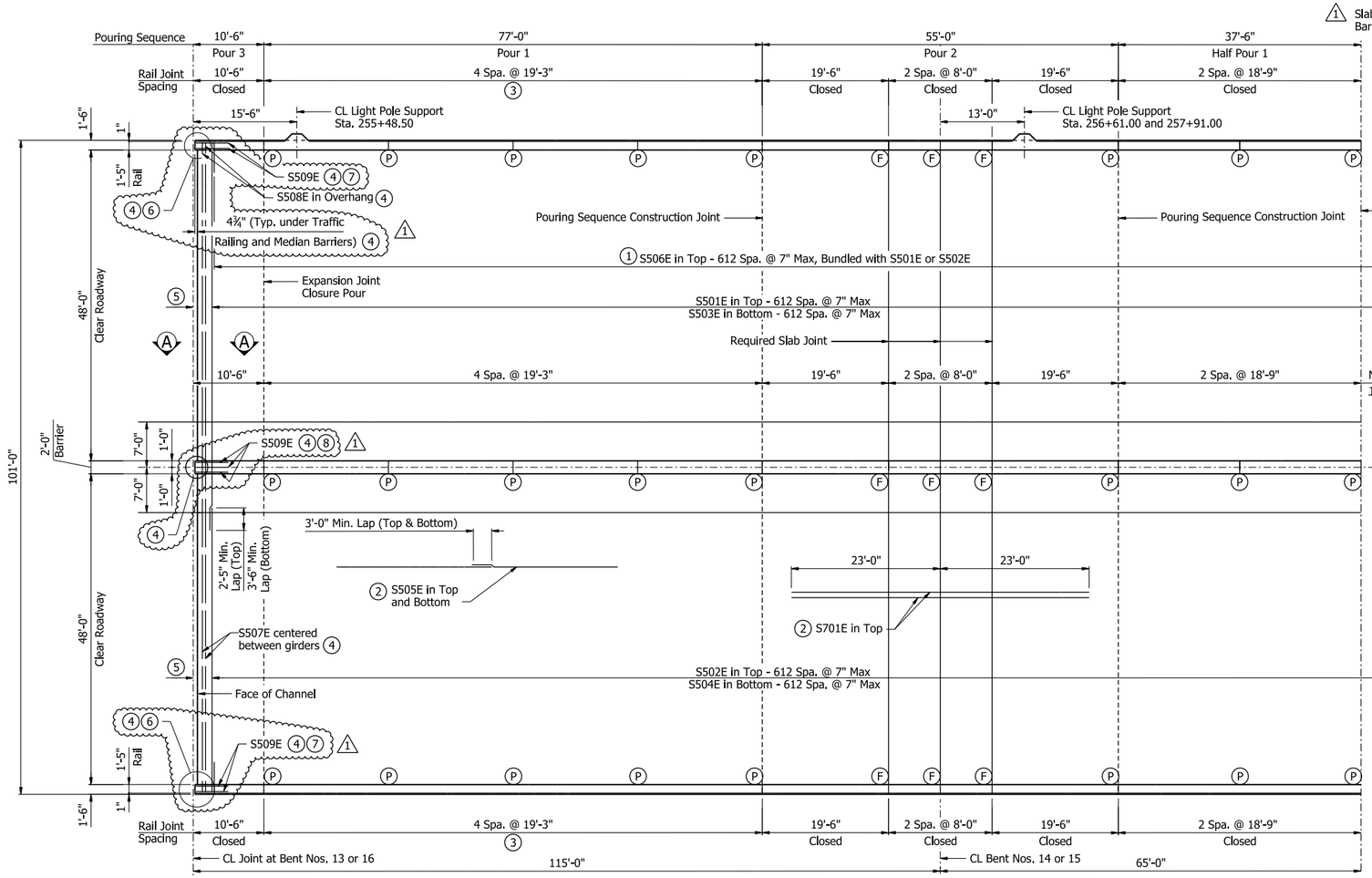
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY:	EMC	DATE:	8/3/23	FILENAME:	b040901116_s43.dgn
CHECKED BY:	SAS	DATE:	11/7/23	SCALE:	AS NOTED
DESIGNED BY:	RAM	DATE:	5/2/23		

BRIDGE NO. 07685 DRAWING NO. 67542

PRINT DATE: 4/10/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
8/9/2024		6	ARK.	040901	483	809
		07685 - Unit 4 - 67543				



1 Slab extension added below Rail and Median Barriers at Finger Joint locations. 8/9/2024

Notes:
Span lengths, slab pour lengths, and transverse reinforcement spacing shown are measured along Profile Grade Line.

Rail spacings shown are measured along respective gutterlines.

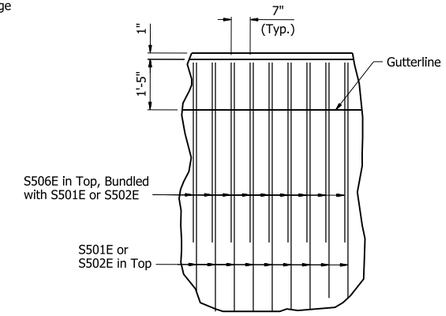
Required slab joints and pouring sequence joints shall align with rail joints at the gutterline.

For "TRANSVERSE SLAB JOINT DETAIL", see Dwg. No. 55007.

For "DETAILS OF BRIDGE TRAFFIC RAIL TYPE SSTR42", see Dwg.Nos. 67686 & 67687.

For "DETAILS OF MEDIAN BARRIER", see Dwg. Nos. 67689.

For "PLAN OF REINFORCING AT DECK DRAINS", see Dwg. No. 67707.



REINFORCING DETAIL
½" = 1'-0"

(1) Typical both sides, see "REINFORCING DETAIL".

(2) Place as shown in "TYPICAL SECTION AT MID-SPAN CONCRETE DIAPHRAGMS", see Dwg. No. 67540.

(3) Closed between Bent Nos. 13 & 14.
Open between Bent Nos. 15 & 16.

(4) At Bent No. 13 only

(5) 6" at Bent No. 16
2'-6" at Bent No. 13

(F) CL Full-Depth Rail Joint

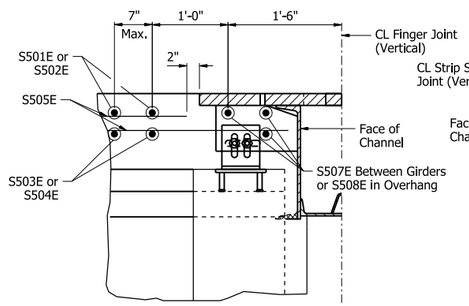
(P) CL Partial-Depth Rail Joint

1 (6) In the slab extension, cut R403E 8" leg to maintain concrete cover.

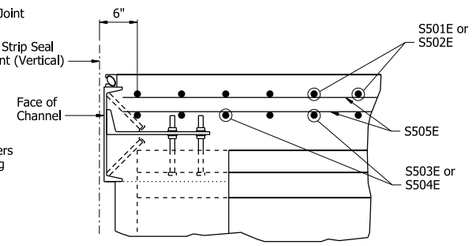
1 (7) 2-S509E in Top, 3-S509E in Bottom.

1 (8) 3-S509E @ Eq. Spa., Top and Bottom.

HALF REINFORCING PLAN AND POURING SEQUENCE
3/32" = 1'-0"



SECTION A-A
Finger Joint
(Bent 13 Only)
1" = 1'-0"



SECTION A-A
Strip Seal
(Bent 16 Only)
1" = 1'-0"

DECK DRAIN LOCATIONS	
Left Gutter	Right Gutter
255+59.00	255+59.00
256+16.00	256+16.00
256+81.50	256+81.50
257+44.50	257+44.50
258+10.00	258+10.00

Slab Pouring Sequence Notes:

Pours with the same number may be placed simultaneously or separately. All Pour(s) 1 must be placed before Pour(s) 2 and 3 can be placed. A minimum of 48 hours shall elapse between the end of a pour and the start of the next pour. A minimum of 72 hours shall elapse between adjacent pours.

Concrete in bridge superstructure shall be placed, consolidated, and screeded off for entire pour before any concrete has taken its initial set. This may require the use of a retarding agent.

All end of unit and mid-span diaphragms shall be cast in place and poured a minimum of 48 hours before the slab is poured, unless otherwise noted. Intermediate bent diaphragms shall be cast monolithically with the slab.

At Finger Joints, after all incremental pours on both Units adjacent to the Finger Joint are complete, closure pour 3 on each side of the Finger Joint shall be poured simultaneously. For pours adjacent to Strip Seal Joints, see Dwg. No. 67692 to coordinate pours with joint installation.

A minimum of 72 hours shall elapse between completion of the slab and pouring of the bridge railing. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence(s) shown.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
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No. 22537
JORDAN R. GREENE

8/9/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 4 OF 9
DETAILS OF 360'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 4
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: EMC DATE: 10/24/23
CHECKED BY: CZ DATE: 10/30/23
DESIGNED BY: RAM DATE: 5/2/23
FILENAME: b040901116_s44.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67543

PRINT DATE: 8/15/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
8/9/2024		6	ARK.	040901	484	809
		07685 - UNIT 4 - 67544				

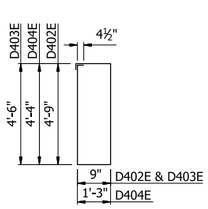
1 Slab extension added below Rail and Median Barriers at Finger Joint locations. 8/9/2024

BAR LIST

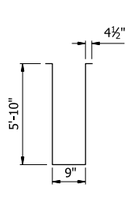
Mark	Number Required	Length	Pin Dia.
S501E	613	60'-0"	3¾"
S502E	613	44'-3"	3¾"
S503E	613	60'-0"	Str.
S504E	613	44'-2"	Str.
S505E	1757	55'-0"	Str.
S506E	1226	7'-8"	3¾"
S507E	33	7'-5"	Str.
S508E	6	2'-9"	Str.
S509E	16	5'-0"	Str.
S701E	484	46'-0"	Str.
D401E	360	12'-10"	2"
D402E	156	11'-4"	2"
D403E	12	10'-10"	2"
D404E	136	11'-6"	2"
D405E	77	11'-0"	2"
D406E	77	10'-9"	2"
D407E	8	5'-7"	Str.
D408E	120	11'-9"	2"
D409E	240	4'-10"	2"
D410E	52	11'-3"	2"
D411E	16	8'-7"	2"
D412E	32	4'-4"	2"
D413E	12	6'-6"	Str.
D414E	96	2'-6"	Str.
D415E	40	13'-1"	2"
D501E	36	4'-8"	Str.
D502E	8	3'-5"	Str.
D503E	4	2'-2"	Str.
D601E	1030	7'-10"	Str.
D602E	220	4'-10"	Str.
D603E	120	6'-5"	Str.
D604E	240	5'-6"	Str.
D605E	20	51'-2"	Str.
D606E	4	5'-3"	4½"
D607E	16	5'-0"	4½"
D608E	20	5'-6"	4½"
D609E	4	4'-0"	4½"
D610E	40	4'-7"	Str.
D611E	8	5'-5"	4½"
D612E	44	5'-10"	4½"
D613E	4	4'-4"	4½"
	1 1444		
R400E	64	6'-3"	3"
R401E	1444	7'-6"	3"
R402E	160	5'-6"	Str.
R403E	~~1434~~	3'-8"	3"
R418E	80	7'-8"	Str.
R420E	40	10'-2"	Str.
R424E	80	18'-5"	Str.
R425E	160	18'-11"	Str.
R427E	80	19'-2"	Str.
R501E	18	10'-6"	3¾"
R502E	9	5'-11"	2½"
R503E	33	3'-3"	Str.
M401E	726	9'-0"	2"
M402E	80	5'-6"	Str.
M403E	721	4'-10"	3"
M418E	40	7'-8"	Str.
M420E	20	10'-2"	Str.
M424E	40	18'-5"	Str.
M425E	80	18'-11"	Str.
M427E	40	19'-2"	Str.
X601E	120	9'-0"	Str.
X602E	120	6'-2"	Str.
X603E	240	5'-0"	Str.

All bars designated with an "E" suffix are to be epoxy coated.

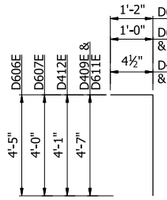
Bending Diagrams
(Dimensions are out to out of bars)



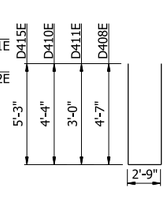
D402E, D403E & D404E



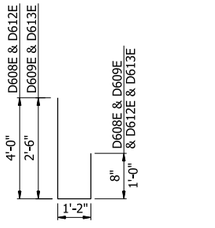
D401E



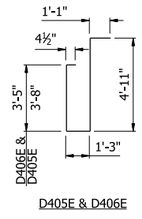
D409E, D412E,
D606E, D607E, & D611E



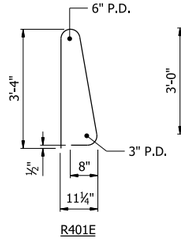
D408E, D410E,
D411E, & D415E



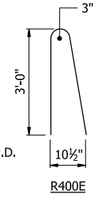
D608E, D609E, D612E, & D613E



D405E & D406E



R401E



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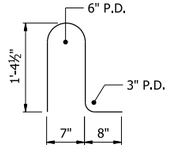

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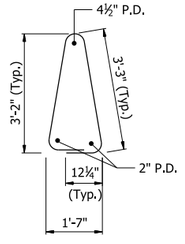
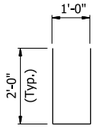
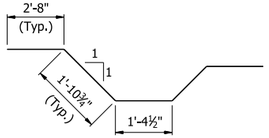


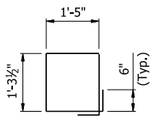
M401E



M403E



R501E



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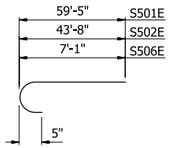


S501E, S502E, & S506E

PRINT DATE: 8/15/2024

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 22537
JORDAN R. GREENE
8/9/24
BRIDGE ENGINEER

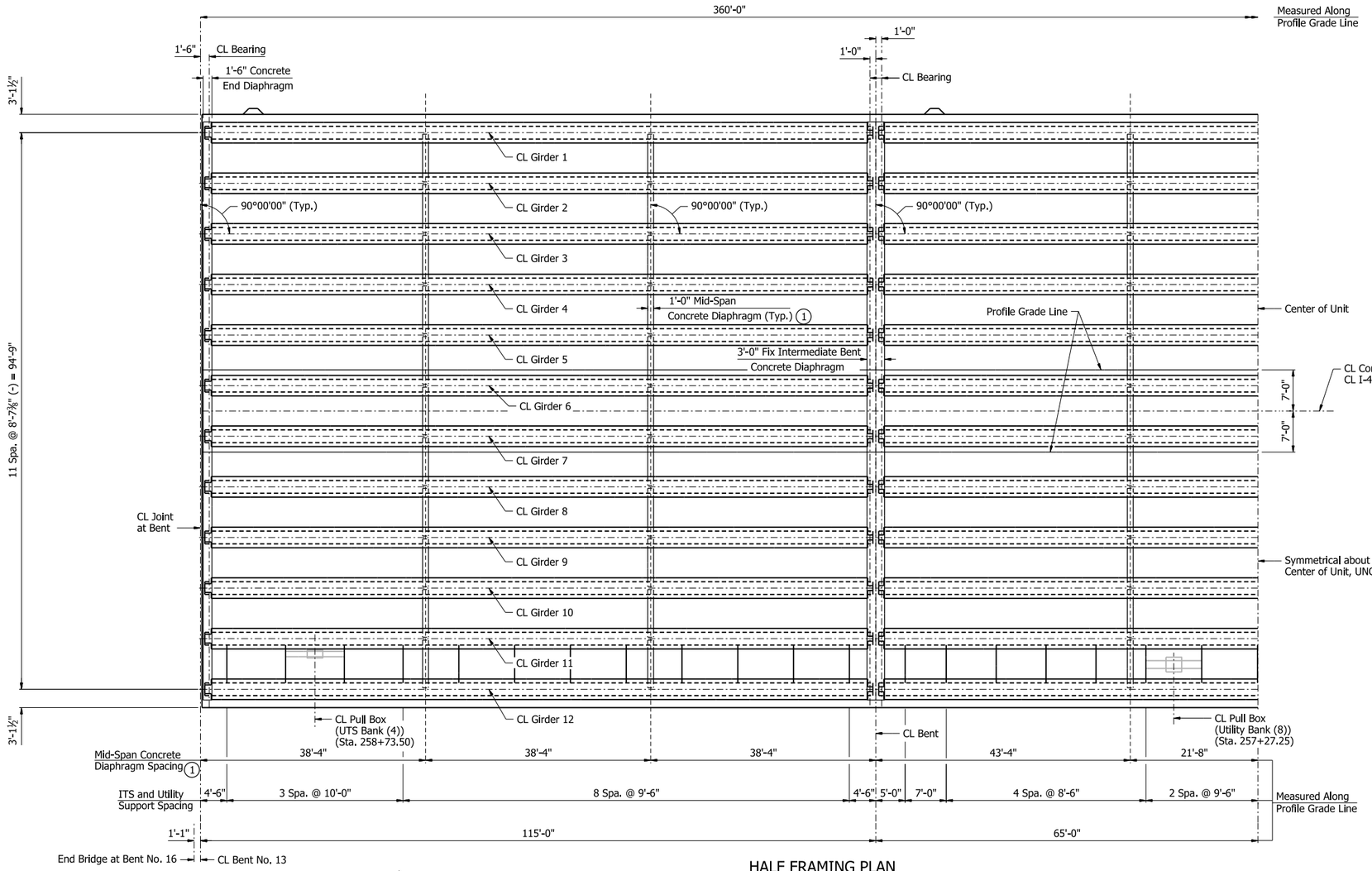
ALTERNATE NO. 1
SHEET 5 OF 9
DETAILS OF 360'-0" CONTINUOUS
PRESTRESSED CONCRETE GIRDER UNIT 4
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RAM DATE: 12/7/23
CHECKED BY: CCD DATE: 12/8/23
DESIGNED BY: RAM DATE: 12/8/23
FILENAME: b040901116_s45.dgn
SCALE: NO SCALE

BRIDGE NO. 07685 DRAWING NO. 67544

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	485	809
		07685 - UNIT 4 - 67545				



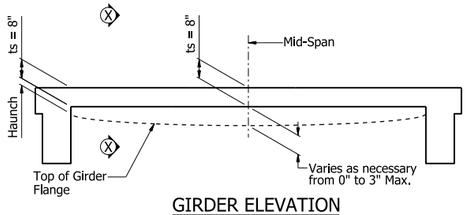
HALF FRAMING PLAN
3/32" = 1'-0"

Notes:
For details of ITS and Utility Supports, see Dwg. Nos. 67672 -67685.

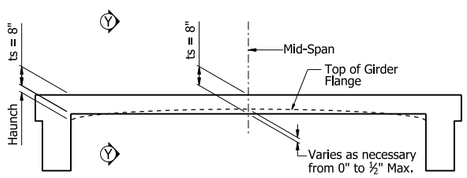
(1) Galvanized steel diaphragms may be used in place of concrete diaphragms at mid-span diaphragm locations only.

(2) Tolerance :Minus = ¼" ; Plus = ½". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance. See Std. Dwg. No. 55005 for tolerances when permanent steel deck forms are used.

"GIRDER ELEVATION" sketches show the range of acceptability of the top of girder relative to bottom of slab after the placement of the slab. When the top of the girder projects more than a ½" into the slab, a rise in grade will be necessary. Girders shall be set in a sufficient number of spans so when adjustment is necessary the profile grade can be adjusted over suitable increments so the revised grade line will produce a smooth riding surface. Variation of haunch height will be at the Contractor' expense.



GIRDER ELEVATION
No Scale



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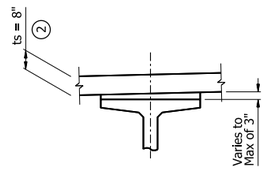
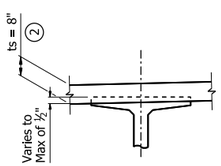


SECTION X-X
No Scale



SECTION Y-Y
No Scale

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 22537
JORDAN R. GREENE
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 6 OF 9
DETAILS OF 360'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 4
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

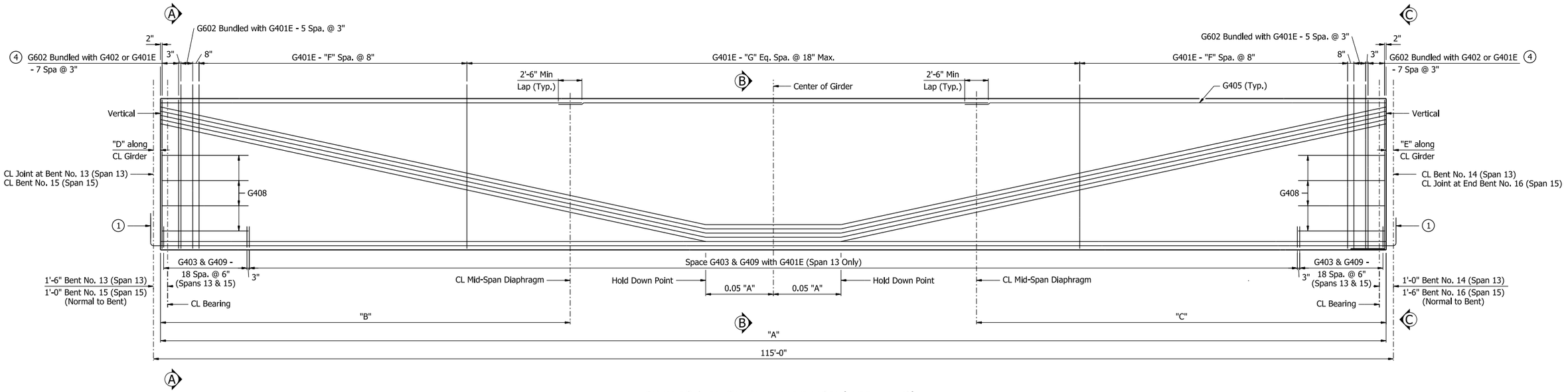
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RAM DATE: 9/11/23
CHECKED BY: KSM DATE: 10/13/23
DESIGNED BY: RAM DATE: 5/10/23
FILENAME: b040901116_s46.dgn
SCALE: AS NOTED

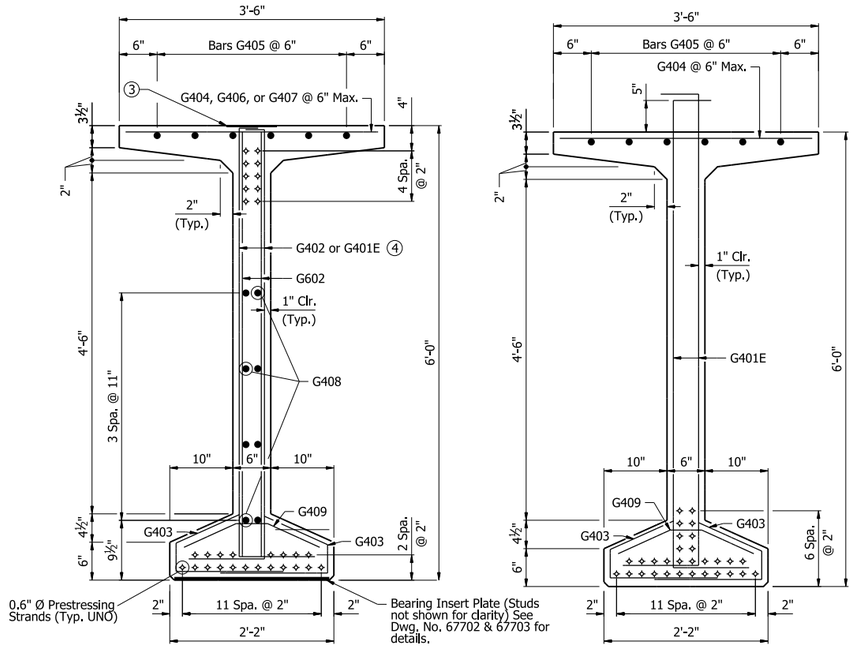
BRIDGE NO. 07685 DRAWING NO. 67545

PRINT DATE: 4/10/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	486	809
		07685 - UNIT 4 - 67546				



SPAN 13 & 15 GIRDER ELEVATION (TYPE BT-72)

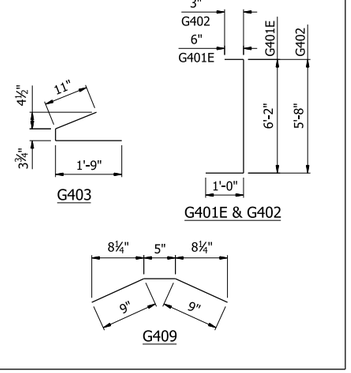


SECTION A-A

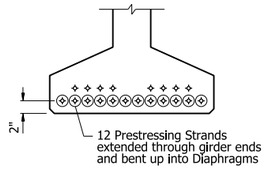
SECTION B-B

BAR LIST - PER GIRDER

	Mark	Number Required	Length	Pin Dia.	Bending Diagrams (Dimensions are out to out of bars)
Spans 13	G301	(2) 24	1'-3"	Str.	
	G401E	334	7'-6"	2"	
	G402	16	6'-9"	2"	
	G403	336	2'-11"	2"	
	G404	224	3'-2"	Str.	
	G405	18	39'-8"	Str.	
	G406	2	6"	Str.	
	G407	2	1'-2"	Str.	
	G408	16	9'-2"	Str.	
	G409	168	1'-11"	2"	
	G602	56	5'-6"	Str.	
Spans 15	G301	(2) 24	1'-3"	Str.	
	G401E	336	7'-6"	2"	
	G402	16	6'-9"	2"	
	G403	76	2'-11"	2"	
	G404	225	3'-2"	Str.	
	G405	18	39'-8"	Str.	
	G406	4	6"	Str.	
	G408	16	9'-2"	Str.	
	G409	38	1'-11"	2"	
	G602	56	5'-6"	Str.	



All bars designated with an "E" suffix are to be epoxy coated.



VIEW C-C

Notes:
For "General Notes", see Dwg. No. 67372.

ITS and Utility Support bolt sleeves must be cast into girder web. Bolts may be shifted vertically no more than 1" as necessary to avoid prestressing strands. For details of ITS and Utility Supports, see Dwg. No. 67672 - 67685. For ITS and Utility Support Locations, see "HALF FRAMING PLAN" on Dwg. No. 67545.

For additional details, see Dwg. No. 67548.

Drawings show general features of design only. Shop drawing shall be submitted to the Engineer and approval secured before fabrication has begun.

TABLE OF VARIABLES - DIMENSIONS

Span	Girder	"A"	"B"	"C"	"D"	"E"	"F"	"G"
13	1-12	113'-9"	37'-7"	37'-10"	9"	6"	68	10
15	1-12	114'-0"	37'-10"	37'-10"	6"	6"	68	11

(1) Prestressing strands at Bent No. 13 and 16 shall be sawn flush with the end of the girder. Prestressing strands at Bent No. 14 and 15 shall be bent up into diaphragms as shown in the "THREADED INSERT DETAIL", see Dwg. No. 67548.

(2) 12-G301 bars required for exterior girder.

(3) Bearing Plate, Beg. of Span 13 (Studs not shown for clarity). See Dwg. No. 67694 & 67695 for details.

G402 at ends of units,
(4) G401E at all other locations.

4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 7 OF 9
DETAILS OF 360'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 4
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

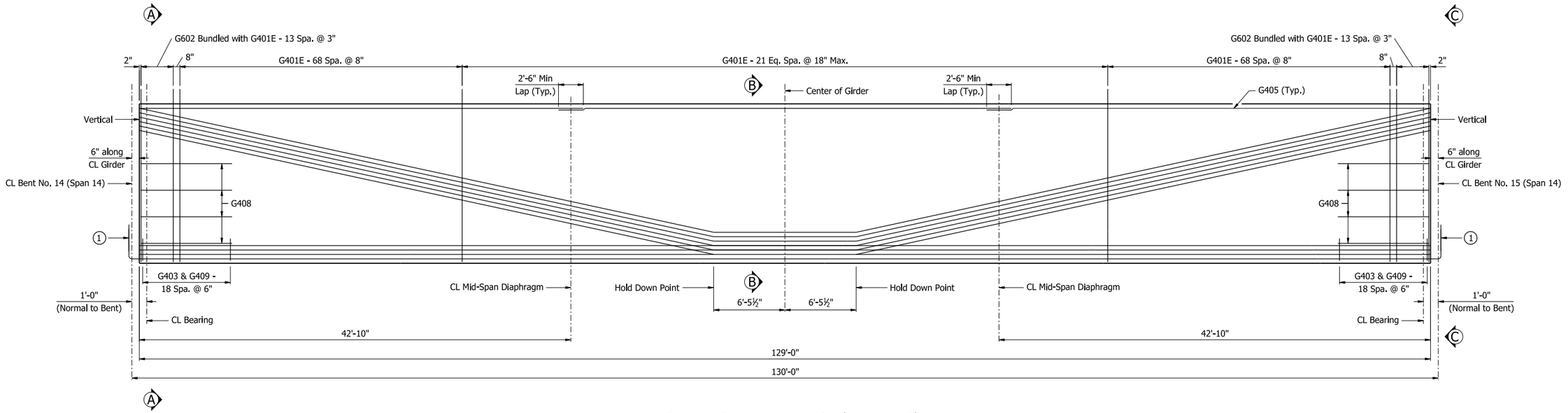
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: EMC DATE: 8/9/23
CHECKED BY: SAS DATE: 10/19/23
DESIGNED BY: RAM DATE: 5/30/2023
FILENAME: b040901116_s47.dgn
SCALE: NO SCALE

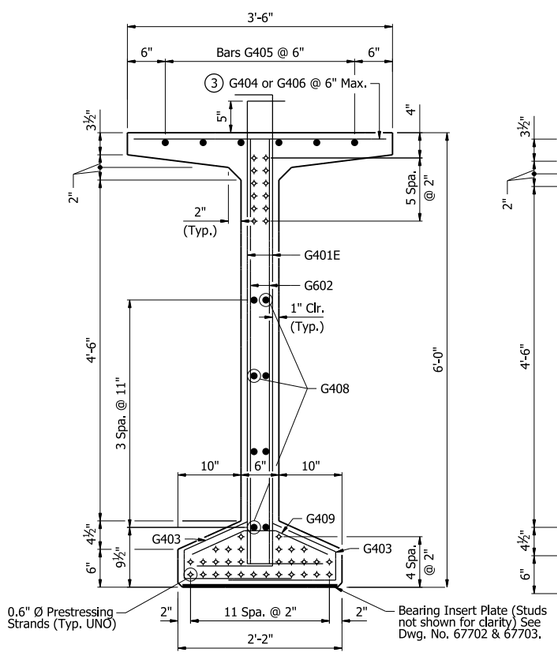
BRIDGE NO. 07685 DRAWING NO. 67546

PRINT DATE: 4/10/2024

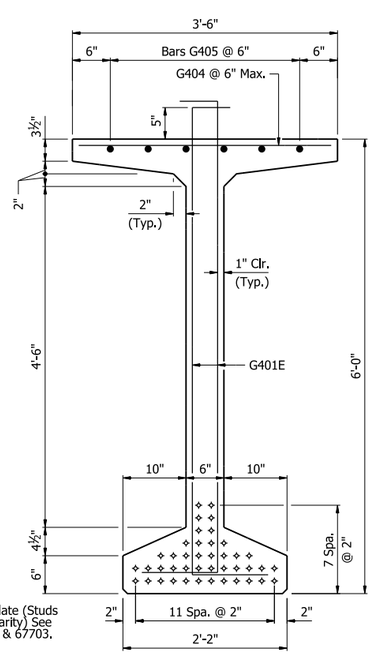
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	487	809
		07685 - UNIT 4 - 67547				



SPAN 14 GIRDER ELEVATION (TYPE BT-72)



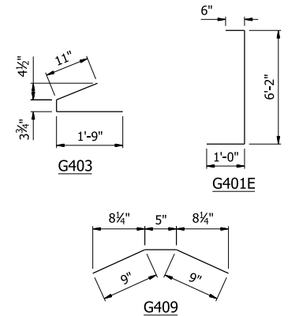
SECTION A-A



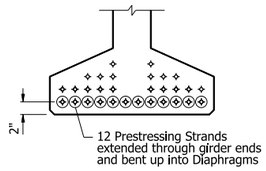
SECTION B-B

BAR LIST - PER GIRDER

Mark	Number Required	Length	Pin Dia.	Bending Diagrams (Dimensions are out to out of bars)
G301	(2) 24	1'-3"	Str.	
G401E	372	7'-6"	2"	
G403	76	2'-11"	2"	
G404	255	3'-2"	Str.	
G405	18	44'-8"	Str.	
G406	4	6"	Str.	
G408	16	9'-2"	Str.	
G409	38	1'-11"	2"	
G602	56	5'-6"	Str.	



All bars designated with an "E" suffix are to be epoxy coated.



VIEW C-C

(1) Prestressing strands shall be bent up into diaphragms as shown in the "THREADED INSERT DETAIL", see Dwg. No. 67548.

(2) 12-G301 bars required for exterior girders.

(3) G406 in Girder Ends, see Dwg. No. 67548, for details.

Notes:
For General Notes, see Dwg. No. 67372

ITS and Utility Support bolt sleeves must be cast into girder web. Bolt sleeves may be shifted vertically no more than 1" as necessary to avoid prestressing strands. For details of ITS and Utility Supports, see Dwg. Nos. 67672 - 67685. For ITS and Utility Support Locations, see "HALF FRAMING PLAN" on Dwg. No. 67545.

For additional details, see Dwg. No. 67548

Drawings show general features of design only. Shop drawing shall be submitted to the Engineer and approval secured before fabrication has begun.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 22537
JORDAN R. GREENE

4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 8 OF 9
DETAILS OF 360'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 4
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: EMC DATE: 8/10/23
CHECKED BY: SAS DATE: 10/19/23
DESIGNED BY: RAM DATE: 5/30/2023
FILENAME: b040901116_s48.dgn
SCALE: NO SCALE

BRIDGE NO. 07685 DRAWING NO. 67547

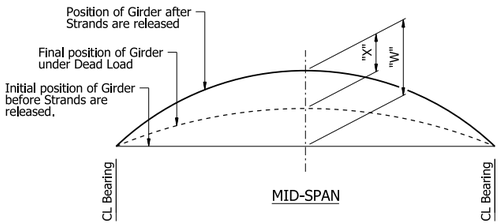
PRINT DATE: 4/15/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	488	809
		07685 - UNIT 4 - 67548				

TABLE OF VARIABLES

	Girder 1		Girders 2-3		Girder 4		Girder 5-8		Girder 9		Girder 10		Girder 11		Girder 12	
	"X'	"W"	"X"	"W"	"X"	"W"	"X"	"W"	"X"	"W"	"X"	"W"	"X"	"W"	"X'	"W"
Span 13	1⅛"	2⅝"	1⅜"	2⅝"	1¼"	2⅝"	1⅜"	2⅝"	1¼"	2⅝"	1⅜"	2⅝"	1⅜"	2⅝"	1⅛"	2⅝"
Span 14	1⅞"	4⅜"	2⅛"	4⅜"	2⅛"	4⅜"	2¼"	4⅜"	2⅛"	4⅜"	2⅛"	4⅜"	2¼"	4⅜"	1⅞"	4⅜"
Span 15	1⅛"	2⅝"	1⅜"	2⅝"	1¼"	2⅝"	1⅜"	2⅝"	1¼"	2⅝"	1⅜"	2⅝"	1⅜"	2⅝"	1⅛"	2⅝"

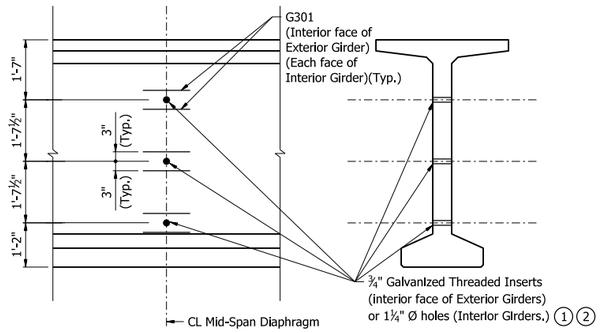
Note:
Camber and deflection values shown are based on a concrete girder strength, f'c = 9000 psi. Greater strengths may require adjustments. The Contractor shall be responsible for any adjustments necessary to meet slab thickness tolerance and to achieve an acceptable finished grade.



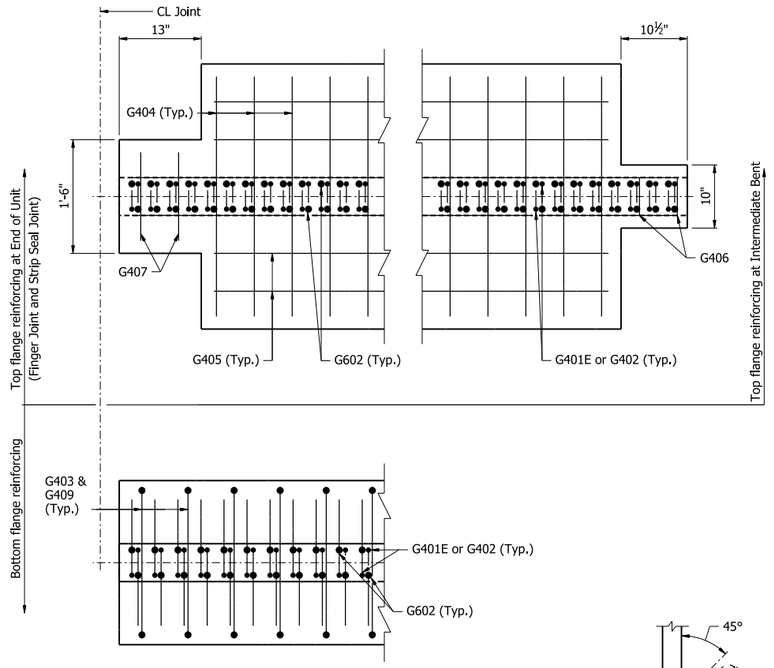
"W" is expected camber of girder at 90 days after release (prestress + dead load of girder).

"X" is dead load deflection of slab + diaphragms + composite dead load.

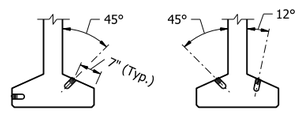
CAMBER & DEFLECTIONS (INCHES)



THREADED INSERT DETAIL
Mid-Span Diaphragm
Scale: ¼" = 1'-0"



PLAN OF GIRDER ENDS
Scale: ½" = 1'-0"



DETAIL A
Scale: ¼" = 1'-0"

DETAIL B
Scale: ¼" = 1'-0"

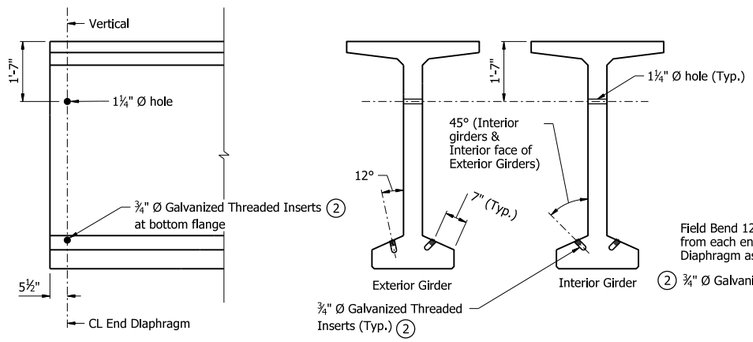
Notes:
Concrete Strength for Prestressed Girders shall be f'c = 9,000 psi, f'ci = 7,000 psi

For details of ITS and Utility Supports, including cast-in bolt sleeves, see Dwg. Nos. 67672 & 67685.

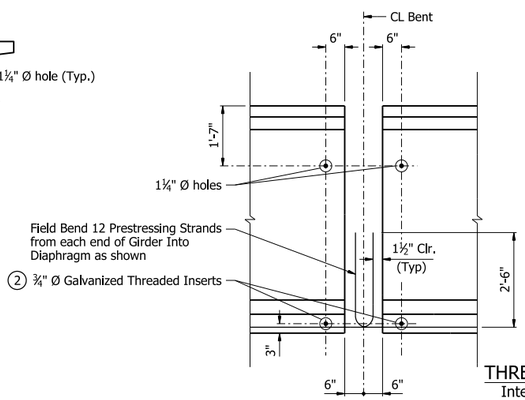
For General Notes, see Dwg. No. 67372.

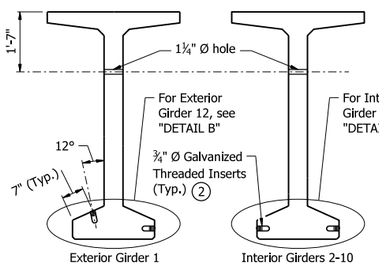
① Inserts shown are for mid-span concrete diaphragms, see Dwg. No. 67541 for alternate steel diaphragms.

② Galvanized ¾"Ø Dayton-Richmond F-42 Loop Ferrule insert or an approved equal. These are to be subsidiary to the item "PRESTRESSED CONCRETE GIRDERS (TYPE BT-72)".



THREADED INSERT DETAIL
End Diaphragm
Scale: ¼" = 1'-0"





THREADED INSERT DETAIL
Intermediate Bent Diaphragm
Scale: ¼" = 1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 22537
JORDAN R. GREENE

4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 9 OF 9
DETAILS OF 360'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT 4
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: EMC DATE: 8/11/23
CHECKED BY: SAS DATE: 10/19/23
DESIGNED BY: RAM DATE: 5/10/23
FILENAME: b040901116_s49.dgn
SCALE: 3/32" = 1'-0"

BRIDGE NO. 07685 DRAWING NO. 67548

PRINT DATE: 4/10/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	489	809
		07684 - BRIDGE LAYOUTS - 67549				

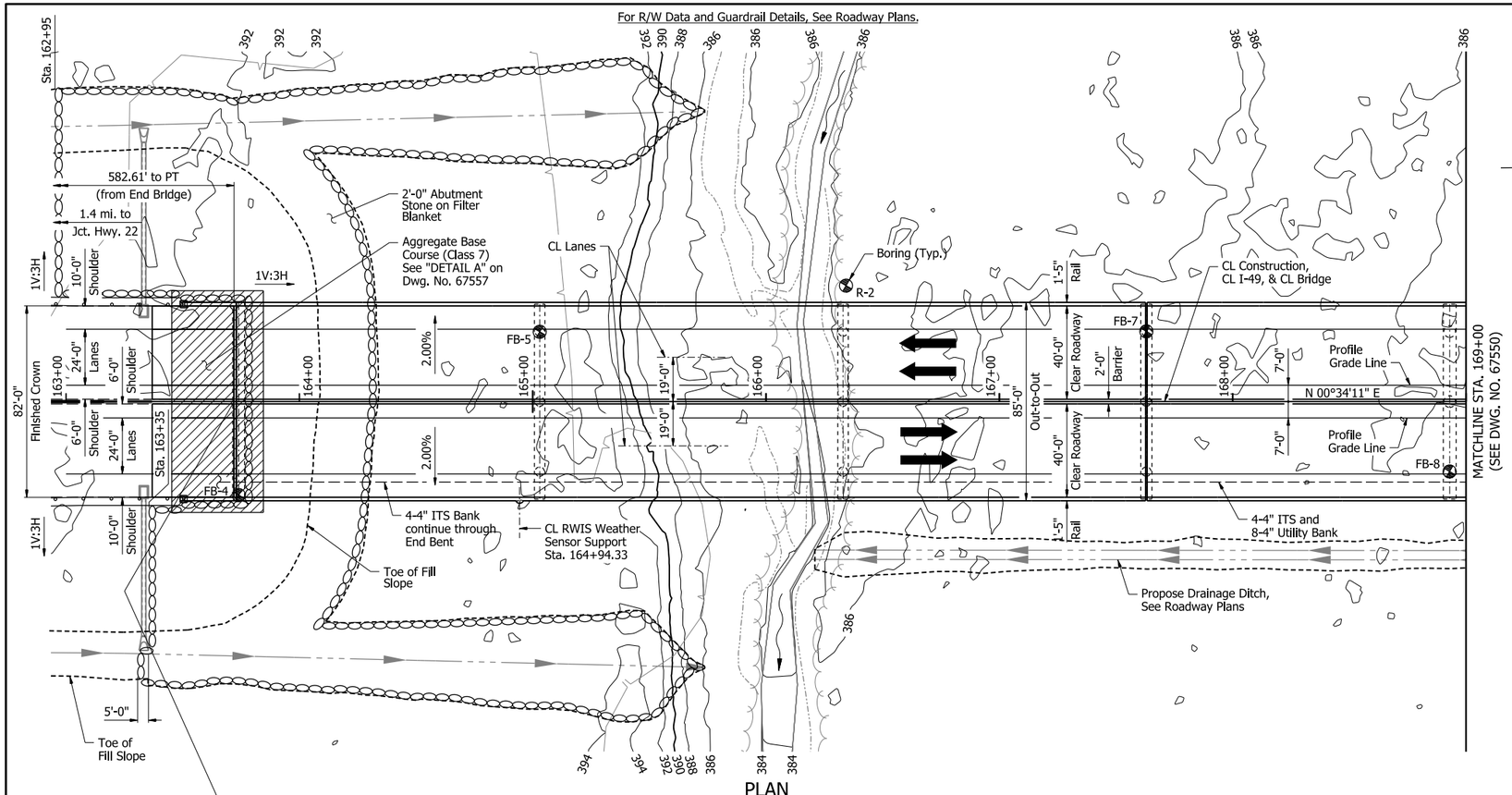
Notes:
Use Type F Approach Gutters, Type F Approach Slabs (W=36'-0") and Type 1 Special Median Approach Slab (W=6'-0") at beginning of bridge. See Dwg. No. 67712 for Bridge Approach Details.

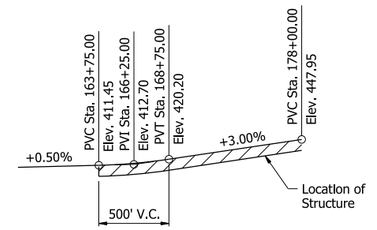
For General Notes, see Dwg. No. 67372.

All bents are normal to CL I-49.

For details of ITS and Utility Banks, see "ITS AND UTILITY BANK DETAILS".

For details of RWIS Weather Sensor Support, see Dwg. No. 67686 and ITS Plans.





VERTICAL ALIGNMENT DATA

(Stations are along CL I-49, Elevations are along Profile Grade Line)

Note:
Elevations shown are actual top of deck elevations at CL I-49. Any vertical dimension referenced to Top of Deck is based on actual top of deck elevation at CL I-49. Stations shown are along CL I-49.

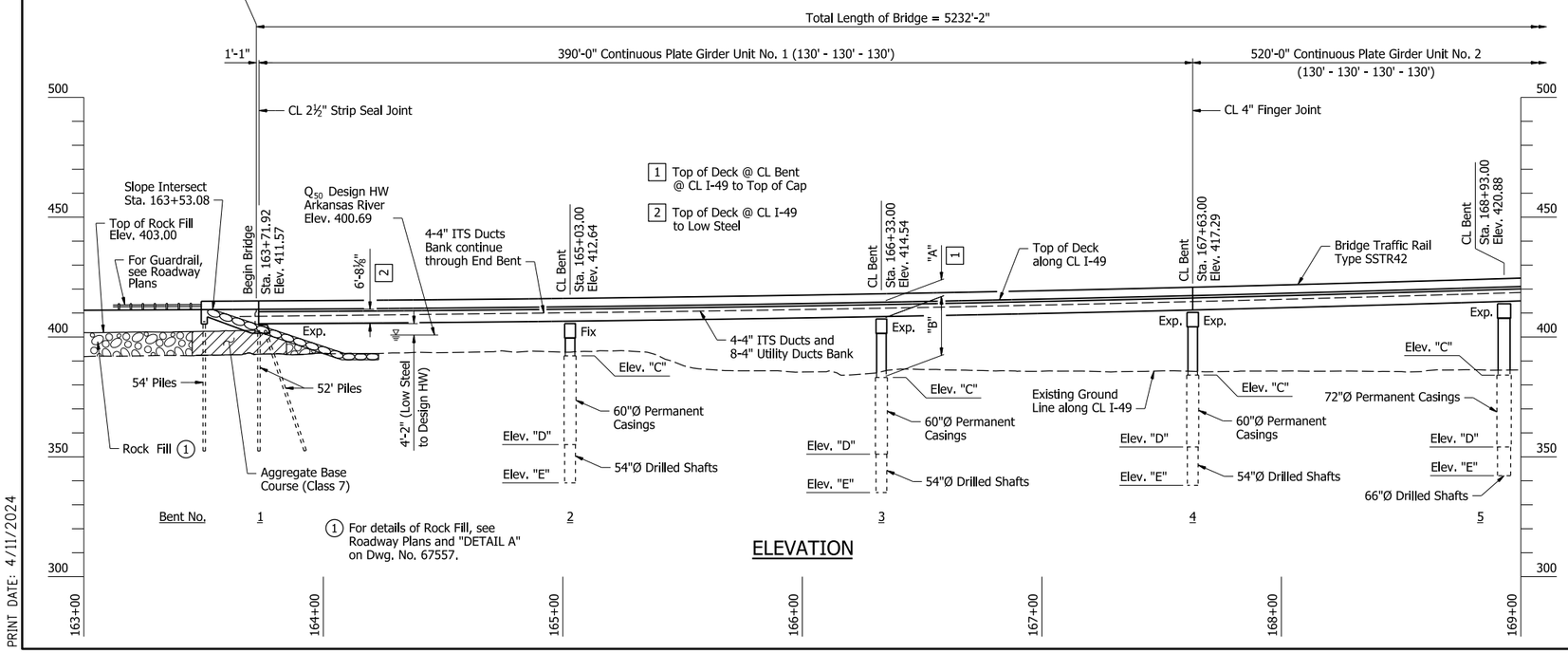
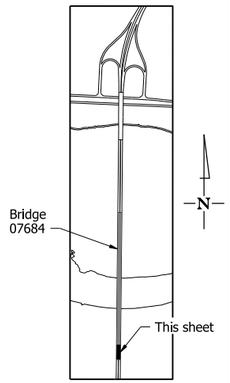


TABLE OF VARIABLES

Location	"A"	"B"	"C"	"D"	"E"
Bent No. 2	7'-4⅞"	13'-2¾"	392.00	355.00	339.00
Bent No. 3	7'-5⅜"	24'-1⅛"	383.00	351.00	335.00
Bent No. 4	7'-7⅝"	25'-7¾"	384.00	354.00	338.00
Bent No. 5	7'-6⅜"	29'-4¼"	384.00	354.00	342.00



SITE PLAN
No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15778
NATALIE MCCOMBS
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 10
LAYOUT OF BRIDGE
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 6/14/22
CHECKED BY: CPS DATE: 11/21/23
DESIGNED BY: NAM DATE: 5/15/22
FILENAME: b04090121_l1.dgn
SCALE: 1" = 30'-0"

BRIDGE NO. 07684 DRAWING NO. 67549

PRINT DATE: 4/11/2024

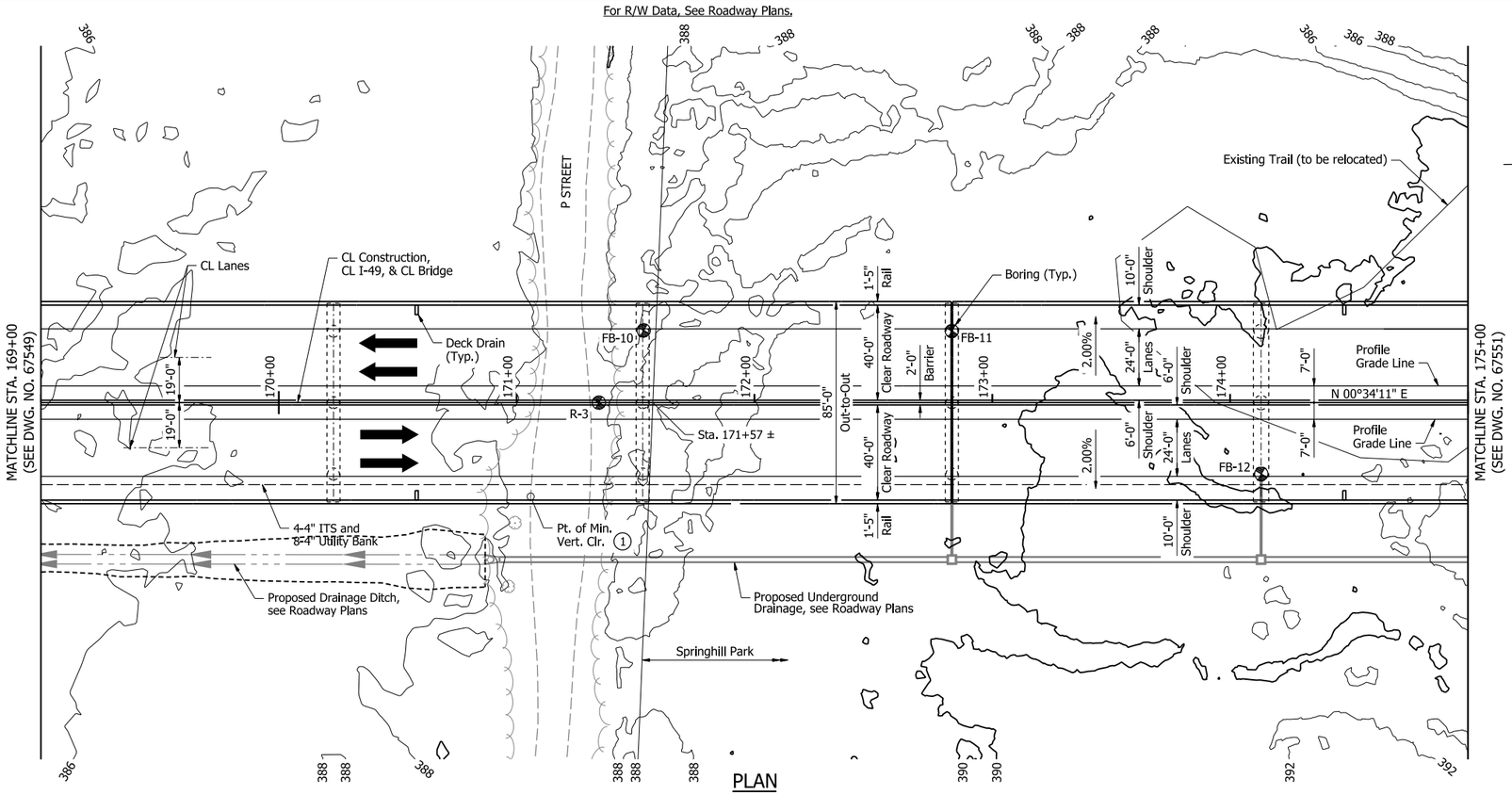
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	490	809
		07684 - BRIDGE LAYOUTS - 67550				

Notes:
For General Notes, see Dwg. No. 67372.

All bents are normal to CL I-49.

For details of ITS and Utility Banks, see "ITS AND UTILITY BANK DETAILS".

For "DETAILS OF DECK DRAINAGE", see Dwg. Nos. 67707 thru 67711.



PLAN

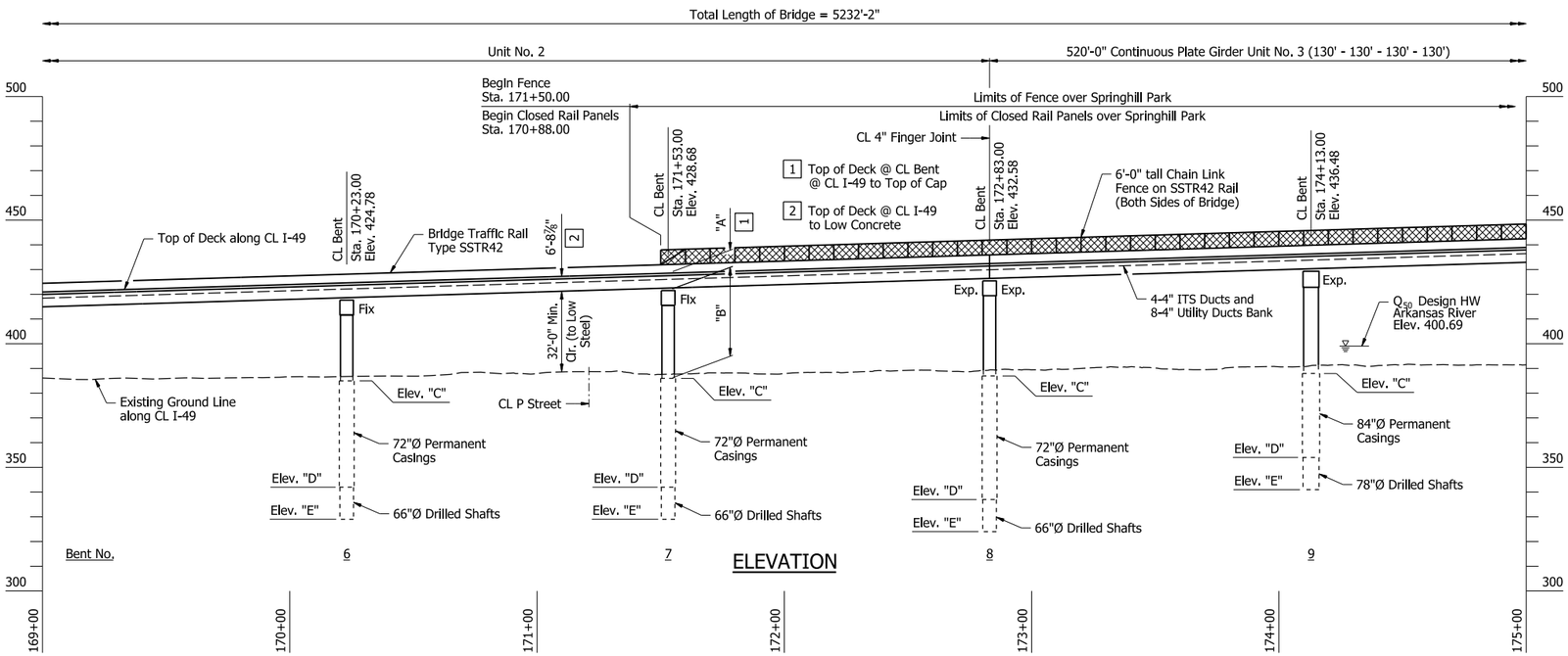
1 Sta. 171+05.92, Offset 39.33' Rt.

VESSEL COLLISION FORCES

BENT NO.	FORCES (KIPS)	ELEVATION (FEET)
13-15	3100	380.00

DRIFT BARGE COLLISION FORCES

BENT NO.	FORCES (KIPS)	ELEVATION (FEET)
6-11 & 19-32	300	413.00
12-16	1410	413.00
17-18	600	413.00

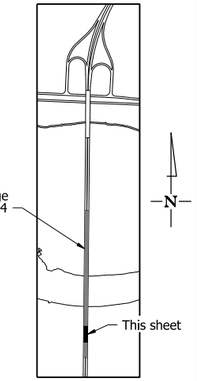


ELEVATION

Note:
Elevations shown are actual top of deck elevations at CL I-49. Any vertical dimension referenced to Top of Deck is based on actual top of deck elevation at CL I-49. Stations shown are along CL I-49.

TABLE OF VARIABLES

Location	"A"	"B"	"C"	"D"	"E"
Bent No. 6	7'-6½"	32'-2⅞"	385.00	342.00	329.00
Bent No. 7	7'-5¾"	35'-2⅜"	386.00	342.00	329.00
Bent No. 8	7'-8⅜"	37'-10½"	387.00	337.00	324.00
Bent No. 9	7'-6⅜"	40'-11⅜"	388.00	354.00	341.00



SITE PLAN
No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15778
NATALIE MCCOMBS
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 2 OF 10
LAYOUT OF BRIDGE
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

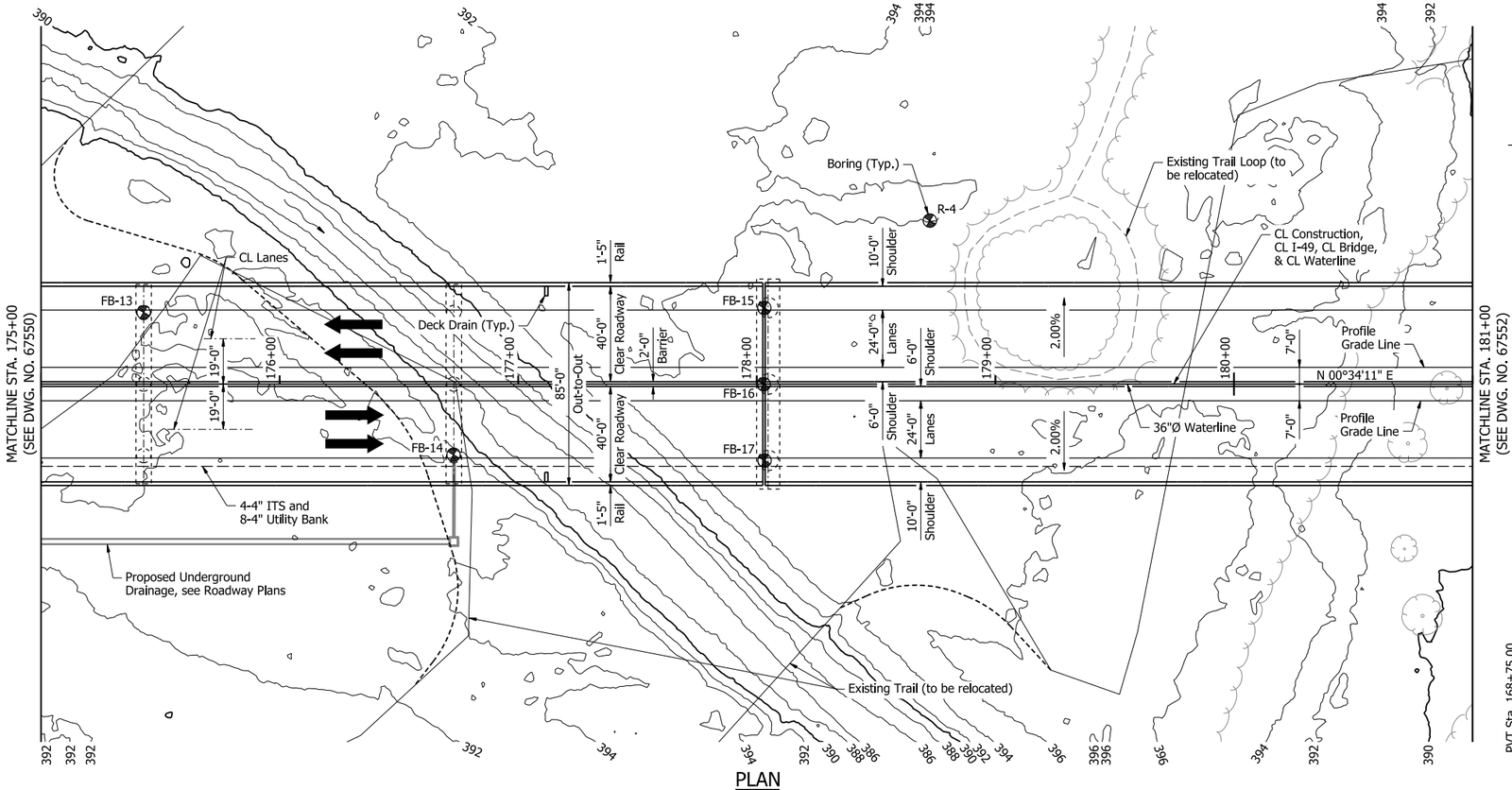
DRAWN BY: CTK DATE: 6/14/22 FILENAME: b04090121_l2.dgn
CHECKED BY: CPS DATE: 11/21/23 SCALE: 1" = 30'-0"
DESIGNED BY: NAM DATE: 5/15/22

BRIDGE NO. 07684 DRAWING NO. 67550

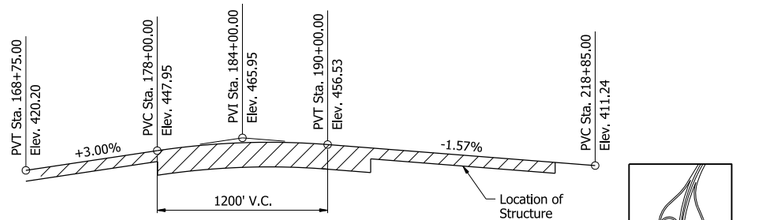
PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	491	809
		07684 - BRIDGE LAYOUTS - 67551				

For R/W Data, See Roadway Plans.



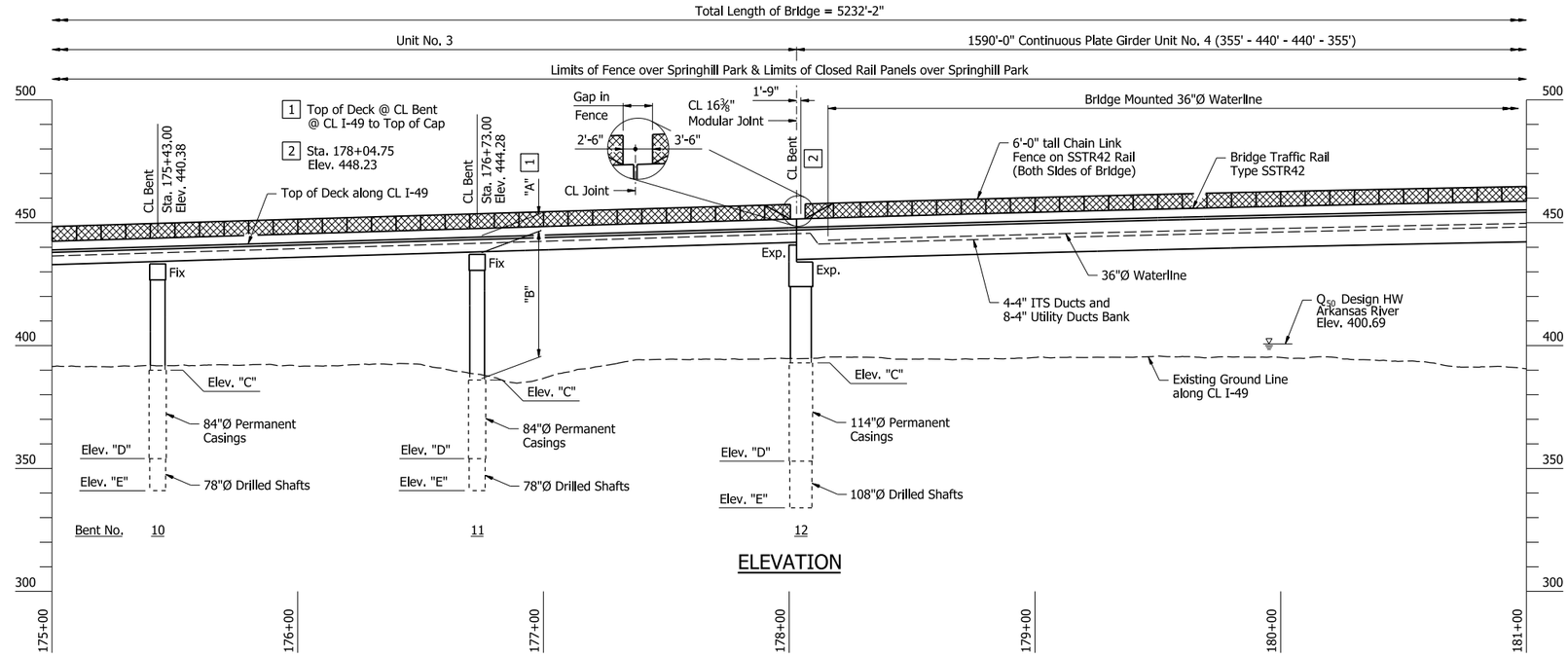
PLAN



VERTICAL ALIGNMENT DATA

(Stations are along CL I-49, Elevations are along Profile Grade Line)

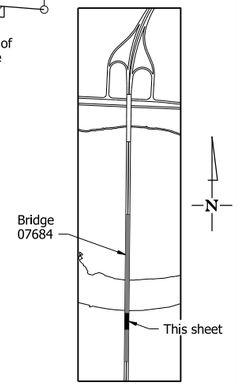
Note:
Elevations shown are actual top of deck elevations at CL I-49. Any vertical dimension referenced to Top of Deck is based on actual top of deck elevation at CL I-49. Stations shown are along CL I-49.



ELEVATION

TABLE OF VARIABLES

Location	"A"	"B"	"C"	"D"	"E"
Bent No. 10	7'-6⅜"	42'-10¼"	390.00	354.00	341.00
Bent No. 11	7'-5⅝"	50'-9¾"	386.00	354.00	341.00
Bent No. 12	15'-0⅜"	40'-2⅜"	393.00	352.00	329.50



SITE PLAN
No Scale

Notes:
For General Notes, see Dwg. No. 67372.

All bents are normal to CL I-49.

For details of ITS and Utility Banks, see "ITS AND UTILITY BANK DETAILS".

For details of 36"Ø Waterline, see "DETAILS OF INSPECTION ACCESS AND WATERLINE SUPPORTS" and Waterline Plans.

For "DETAILS OF DECK DRAINAGE", see Dwg. Nos. 67707 thru 67711.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15778
NATALIE MCCOMBS
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 3 OF 10
LAYOUT OF BRIDGE
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 6/14/22
CHECKED BY: CPS DATE: 11/21/23
DESIGNED BY: NAM DATE: 5/15/22
FILENAME: b04090121_l3.dgn
SCALE: 1" = 30'-0"

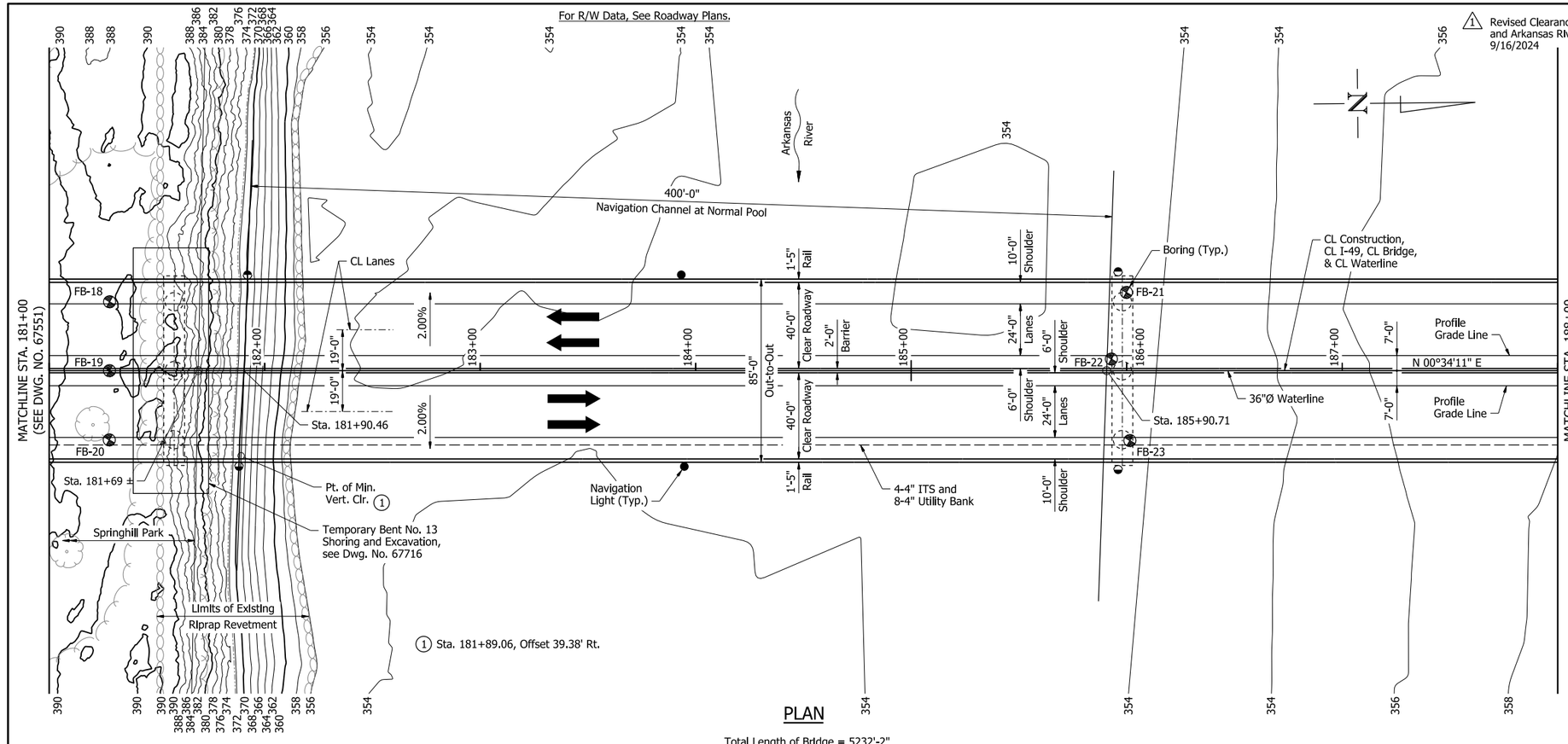
BRIDGE NO. 07684 DRAWING NO. 67551

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9/16/2024		6	ARK.	040901	492	809
		07684 - BRIDGE LAYOUTS - 67552				

1 Revised Clearance Envelope and Arkansas River Elevations. 9/16/2024

For R/W Data, See Roadway Plans.

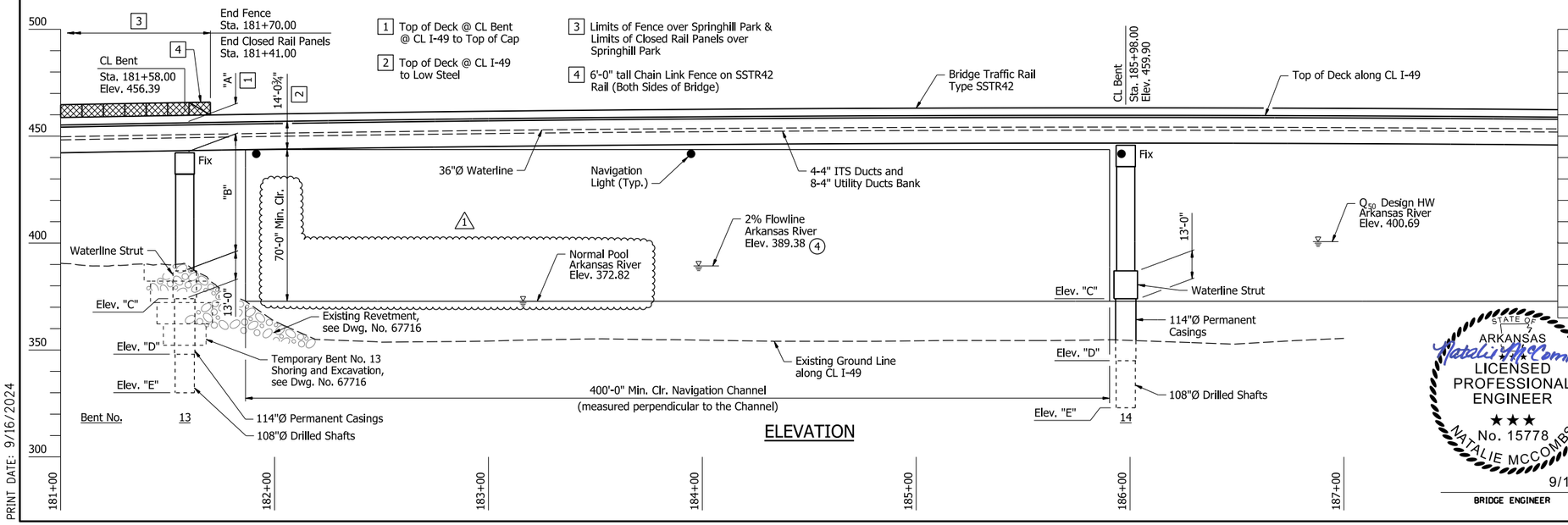


PLAN

Total Length of Bridge = 5232'-2"

Unit No. 4

Bridge Mounted 36"Ø Waterline



ELEVATION

Notes:
For General Notes, see Dwg. No. 67372.

All bents are normal to CL I-49.

For details of Navigation Lighting, see Illumination Plans.

For details of ITS and Utility Banks, see "ITS AND UTILITY BANK DETAILS".

For details of 36"Ø Waterline, see "DETAILS OF INSPECTION ACCESS AND WATERLINE SUPPORTS" and Waterline Plans.

1 Elevations shown are based on the NAVD88 datum.

Datum difference: NAVD88 - 0.32' = NGVD29

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	(3) TOTAL DISCHARGE	DISCHARGE BRIDGE 07684	(2) NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	CFS	FEET	FEET
Design	50	415,000	394,364	401.34	401.36
Base	100	480,000	453,722	403.37	403.37
Extreme	500	600,000	565,525	405.38	405.39
Overtopping	>500	615,000	579,313	405.83	405.85

(2) Unconstricted water surface without structure or roadway approaches.

(3) The total discharge includes flow at this site and at Bridge 07685 (Flat Rock Creek relief bridge).

(4) Based on hydraulic analysis for the final bridge design.

Q100 backwater elevation for existing structure = N/A, no existing structure

Proposed Bridge Low Chord Elevation = 404.92 feet at Station 163+76.50

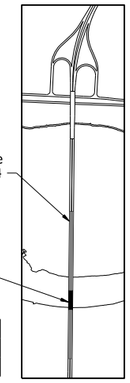
Drainage Area = 151,000 square miles.

Historical H.W. Elev. = 406.96 feet (from upstream USGS stream gage 07250550 on June 1, 2019 with a discharge of 570,000 cfs)

Note:
Elevations shown are actual top of deck elevations at CL I-49. Any vertical dimension referenced to Top of Deck is based on actual top of deck elevation at CL I-49. Stations shown are along CL I-49.

TABLE OF VARIABLES

Location	"A"	"B"	"C"	"D"	"E"
Bent No. 13	15'-4¼"	67'-0½"	374.00	348.00	321.00
Bent No. 14	15'-4¼"	70'-6⅝"	374.00	345.00	318.00



SITE PLAN
No Scale

PRINT DATE: 9/16/2024

STATE OF ARKANSAS
Natalie McCombs
LICENSED PROFESSIONAL ENGINEER
No. 15778
NATALIE MCCOMBS
9/16/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 4 OF 10
LAYOUT OF BRIDGE
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

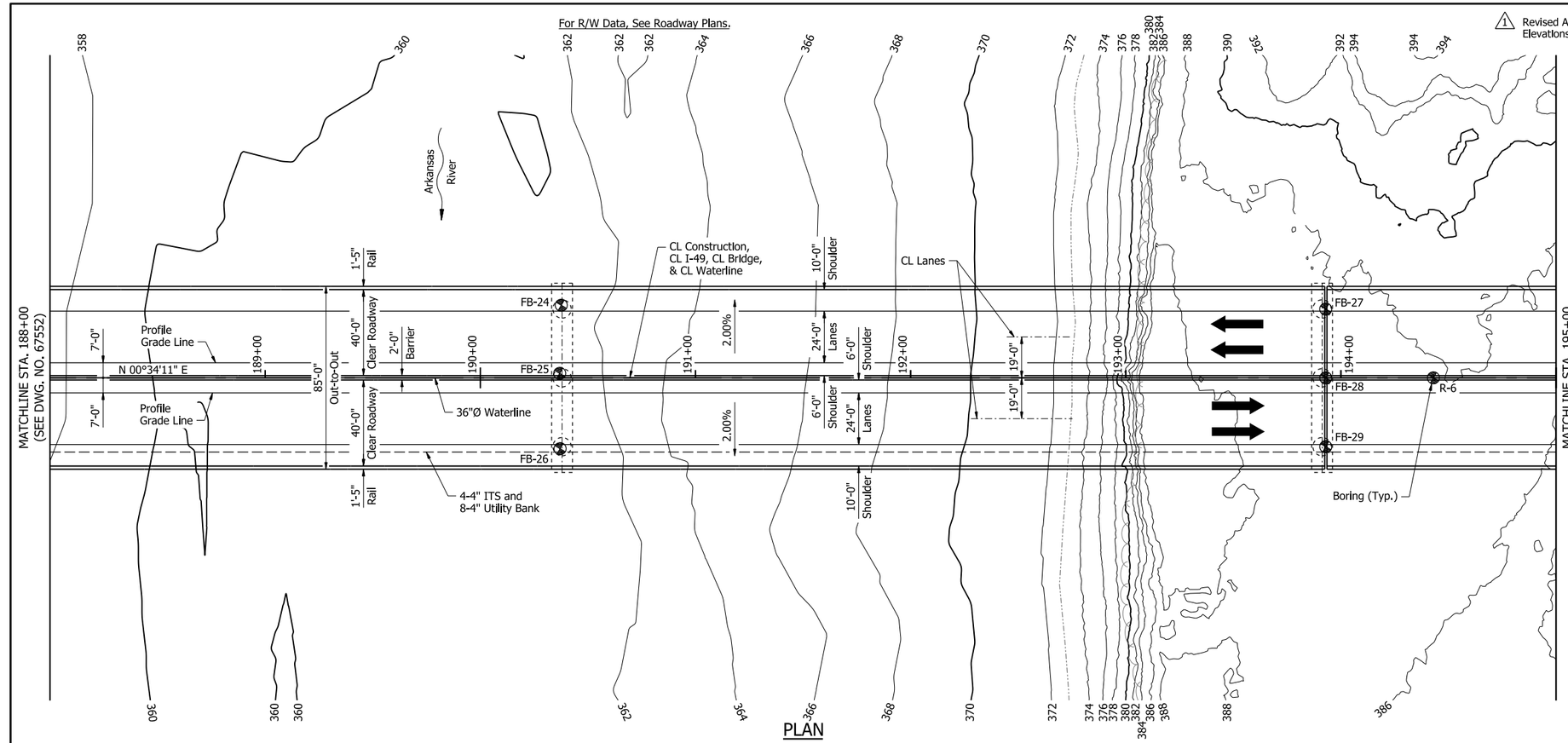
DRAWN BY:	CTK	DATE:	6/14/22	FILENAME:	b04090121_l4.dgn
CHECKED BY:	CPS	DATE:	12/1/23	SCALE:	1" = 30'-0"
DESIGNED BY:	NAM	DATE:	5/15/22		

BRIDGE NO. 07684 DRAWING NO. 67552

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9/16/2024		6	ARK.	040901	493	809
		07684 - BRIDGE LAYOUTS - 67553				

1 Revised Arkansas River Elevations. 9/16/2024

For R/W Data, See Roadway Plans.



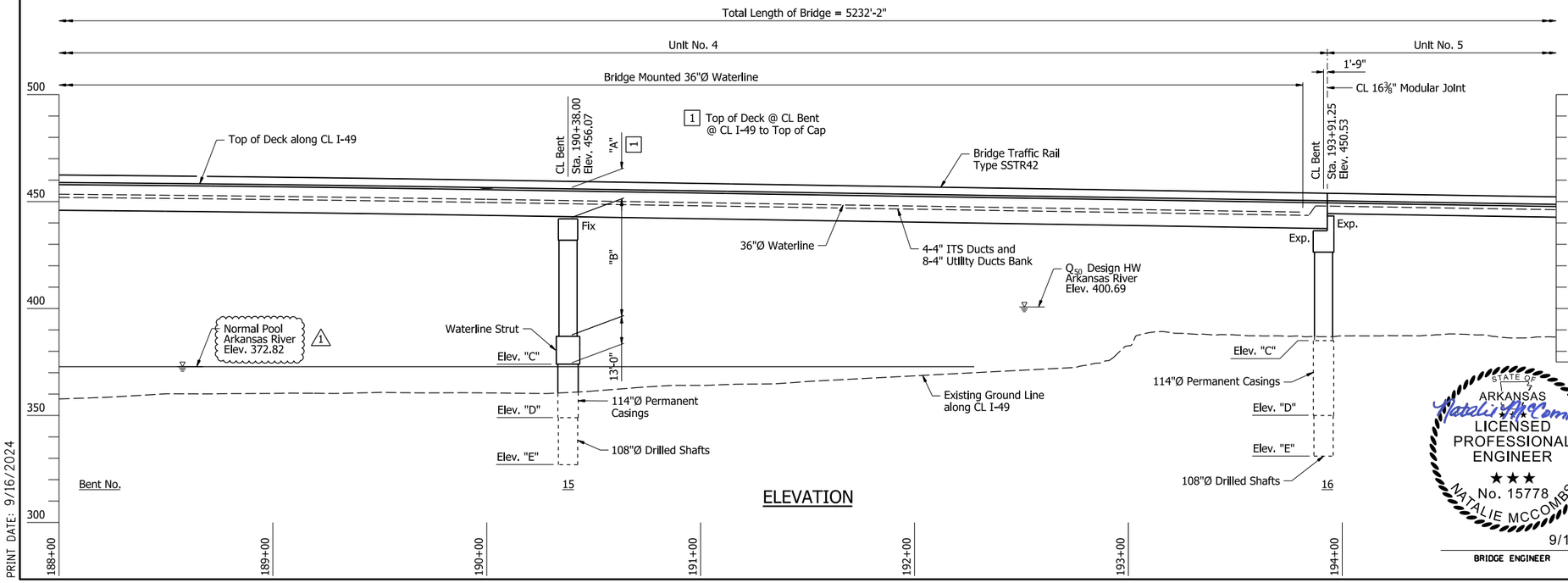
PLAN

Notes:
For General Notes, see Dwg. No. 67372.

All bents are normal to CL I-49.

For details of ITS and Utility Banks, see "ITS AND UTILITY BANK DETAILS".

For details of 36"Ø Waterline, see "DETAILS OF INSPECTION ACCESS AND WATERLINE SUPPORTS" and Waterline Plans.

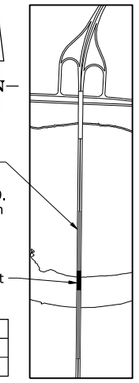


ELEVATION

Note:
Elevations shown are actual top of deck elevations at CL I-49. Any vertical dimension referenced to Top of Deck is based on actual top of deck elevation at CL I-49. Stations shown are along CL I-49.

TABLE OF VARIABLES

Location	"A"	"B"	"C"	"D"	"E"
Bent No. 15	15'-4⅛"	66'-8¾"	374.00	349.00	322.00
Bent No. 16	15'-0⅝"	50'-5¾"	385.00	349.00	326.50



SITE PLAN
No Scale

STATE OF ARKANSAS
Natalie McCombs
LICENSED PROFESSIONAL ENGINEER
No. 15778
NATALIE MCCOMBS
9/16/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 5 OF 10
LAYOUT OF BRIDGE
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 6/14/22
CHECKED BY: CPS DATE: 12/1/23
DESIGNED BY: NAM DATE: 5/15/22
FILENAME: b04090121_I5.dgn
SCALE: 1" = 30'-0"

BRIDGE NO. 07684 DRAWING NO. 67553

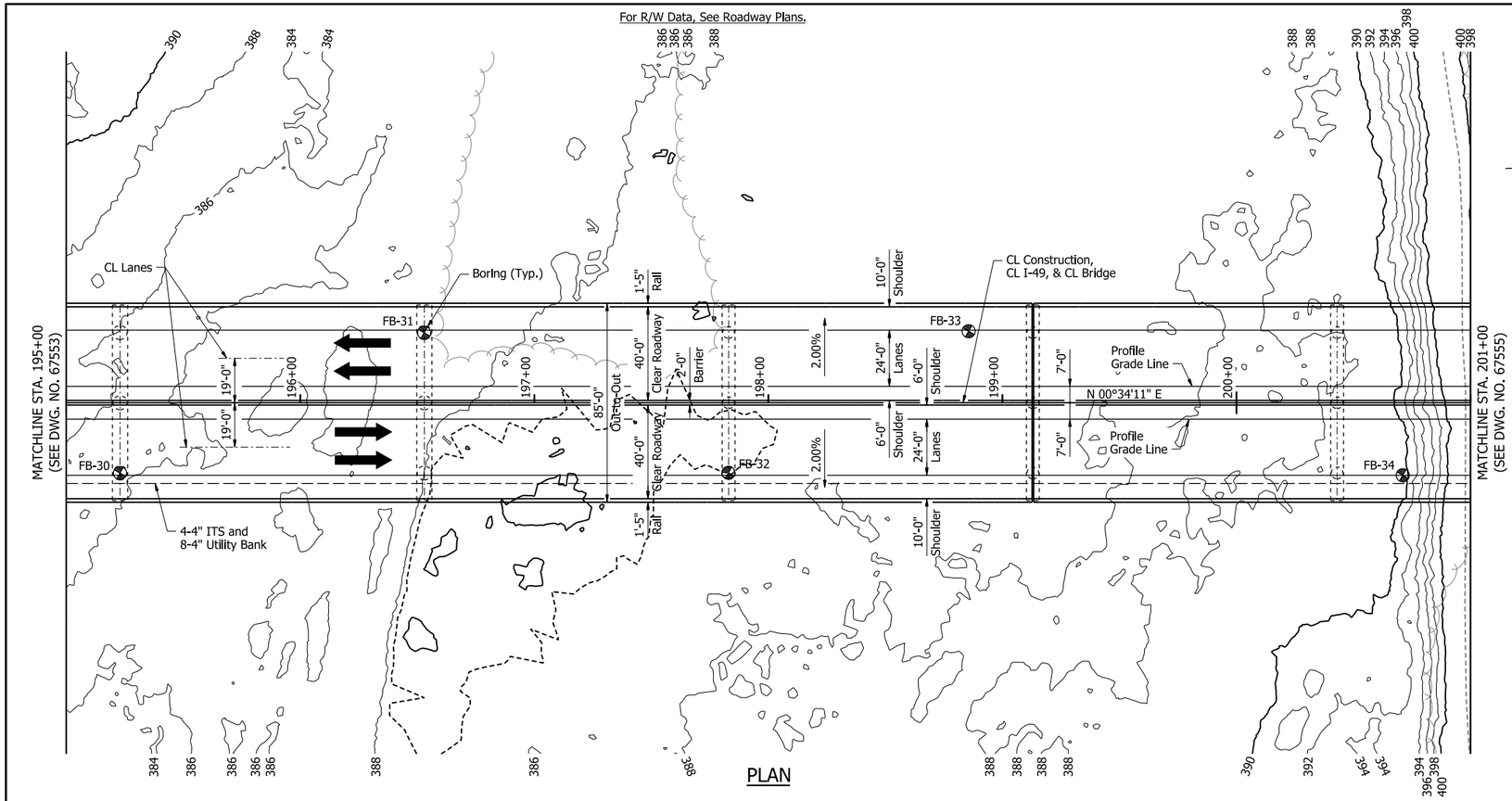
PRINT DATE: 9/16/2024

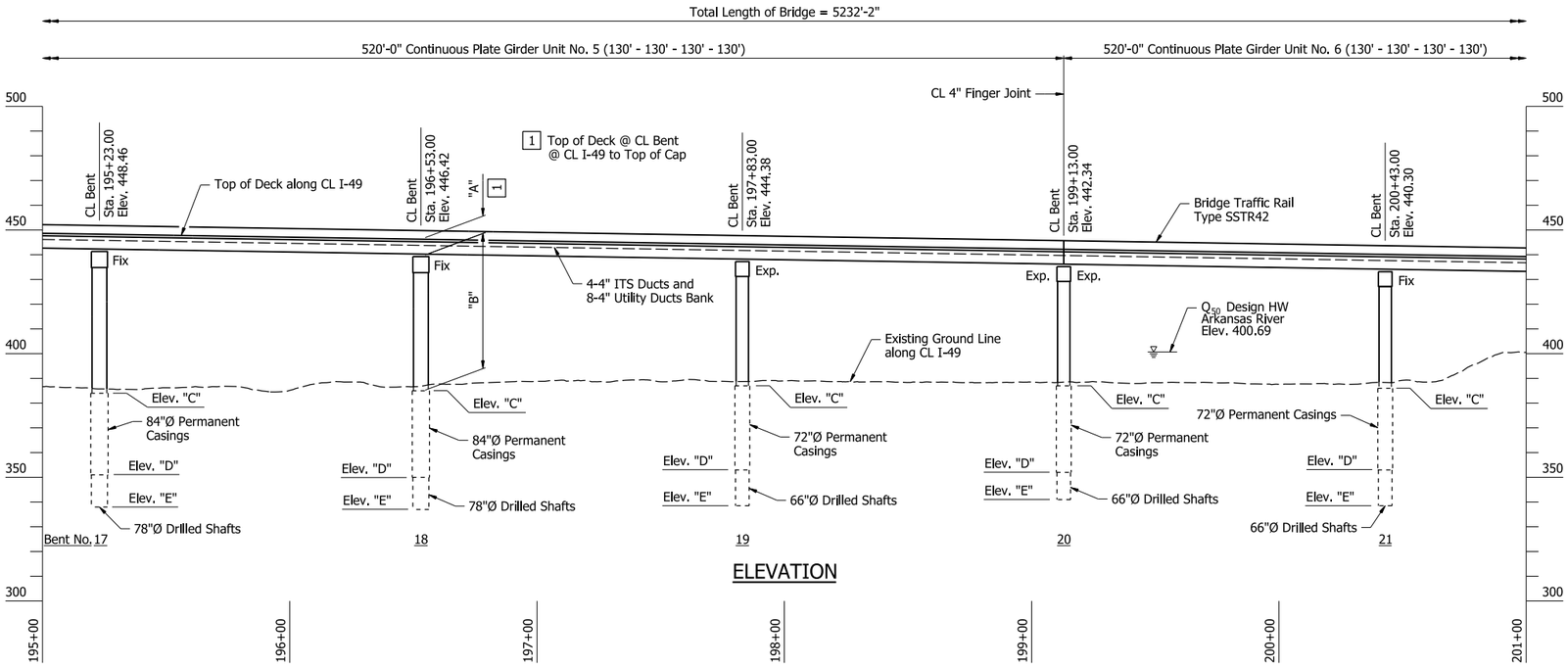
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	494	809
		07684 - BRIDGE LAYOUTS - 67554				

Notes:
For General Notes, see Dwg. No. 67372.

All bents are normal to CL I-49.

For details of ITS and Utility Banks, see "ITS AND UTILITY BANK DETAILS".

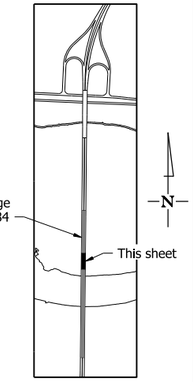




Note:
Elevations shown are actual top of deck elevations at CL I-49. Any vertical dimension referenced to Top of Deck is based on actual top of deck elevation at CL I-49. Stations shown are along CL I-49.

TABLE OF VARIABLES

Location	"A"	"B"	"C"	"D"	"E"
Bent No. 17	7'-5¾"	56'-11¾"	384.00	352.00	334.50
Bent No. 18	7'-6½"	53'-10½"	385.00	351.00	333.50
Bent No. 19	7'-6⅜"	49'-10¼"	387.00	353.00	338.50
Bent No. 20	7'-8⅜"	47'-7⅞"	387.00	352.00	337.50
Bent No. 21	7'-5¾"	46'-9⅝"	386.00	353.00	338.50



SITE PLAN
No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15778
NATALIE MCCOMBS
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 6 OF 10
LAYOUT OF BRIDGE
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 6/14/22
CHECKED BY: NAM DATE: 8/9/22
DESIGNED BY: NAM DATE: 5/15/22
FILENAME: b04090121_l6.dgn
SCALE: 1" = 30'-0"

BRIDGE NO. 07684 DRAWING NO. 67554

PRINT DATE: 4/11/2024

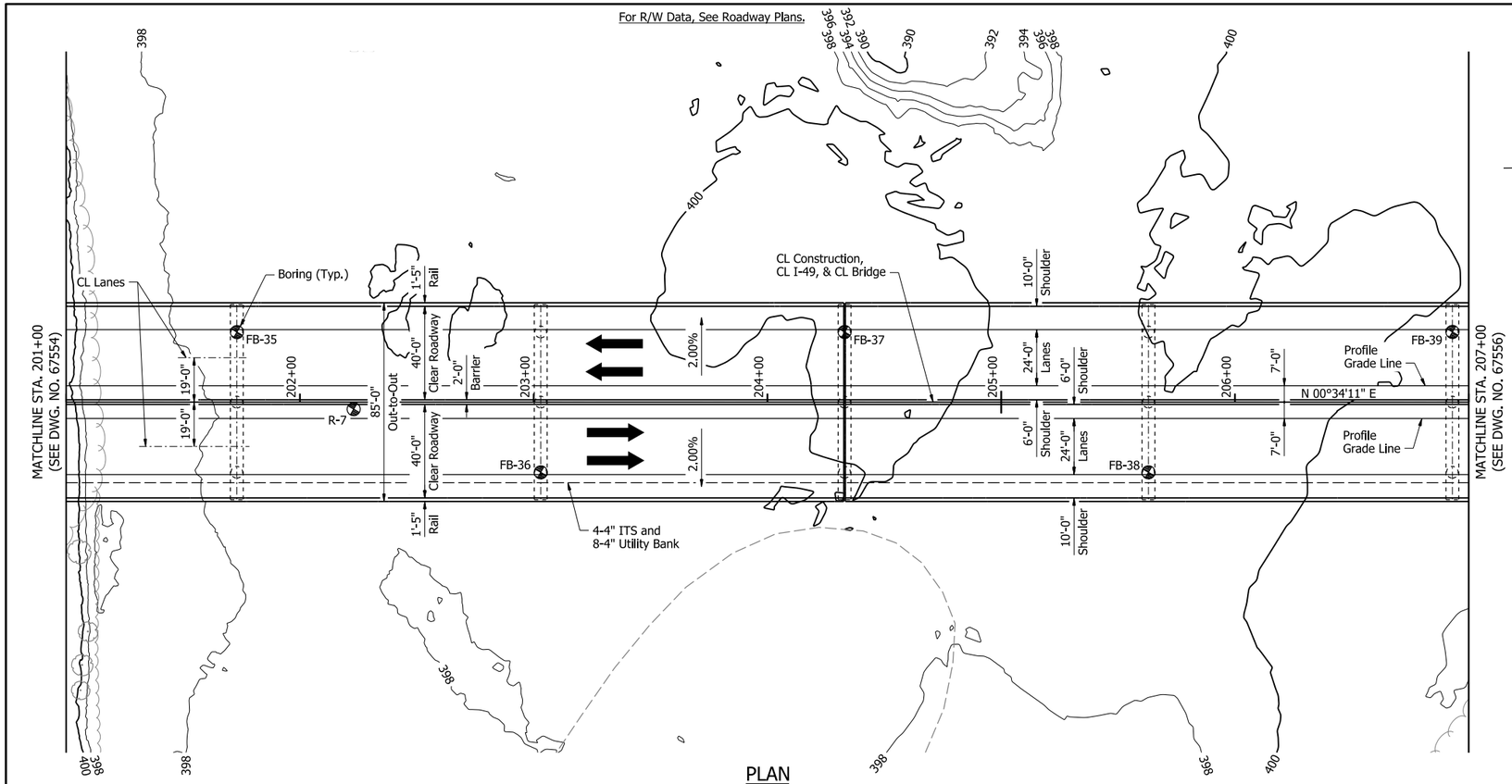
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	495	809
		07684 - BRIDGE LAYOUTS - 67555				

Notes:
For General Notes, see Dwg. No. 67372.

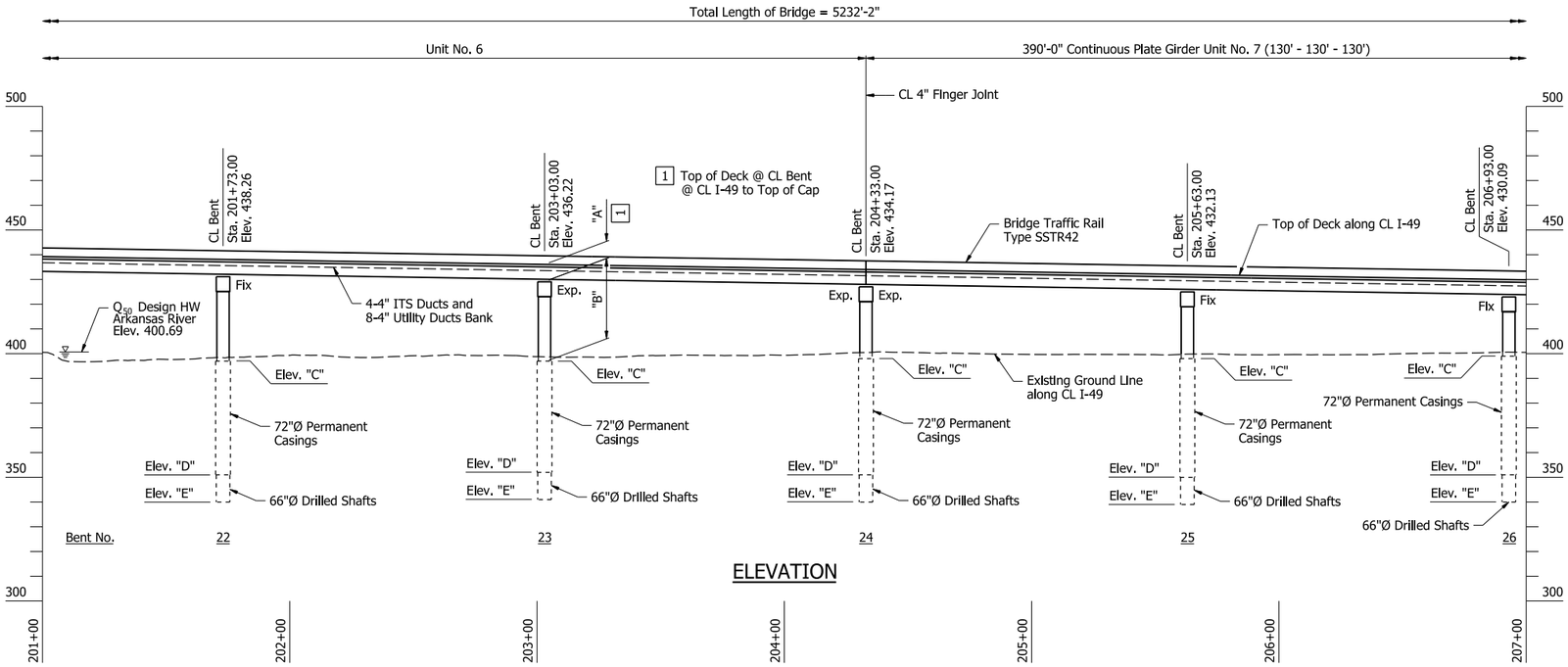
All bents are normal to CL I-49.

For details of ITS and Utility Banks, see "ITS AND UTILITY BANK DETAILS".

For R/W Data, See Roadway Plans.



PLAN

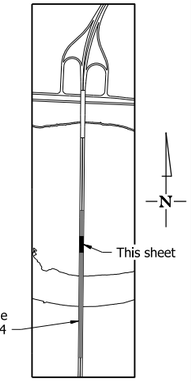


ELEVATION

Note:
Elevations shown are actual top of deck elevations at CL I-49. Any vertical dimension referenced to Top of Deck is based on actual top of deck elevation at CL I-49. Stations shown are along CL I-49.

TABLE OF VARIABLES

Location	"A"	"B"	"C"	"D"	"E"
Bent No. 22	7'-6½"	33'-8⅝"	397.00	351.00	340.00
Bent No. 23	7'-6⅜"	31'-8¼"	397.00	352.00	341.00
Bent No. 24	7'-7¾"	28'-6¼"	398.00	351.00	340.00
Bent No. 25	7'-4¾"	26'-8¾"	398.00	350.00	339.00
Bent No. 26	7'-4¾"	23'-8¼"	399.00	351.00	340.00



SITE PLAN
No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15778
NATALIE MCCOMBS
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 7 OF 10
LAYOUT OF BRIDGE
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 6/14/22
CHECKED BY: NAM DATE: 8/9/22
DESIGNED BY: NAM DATE: 5/15/22
FILENAME: b04090121_l7.dgn
SCALE: 1" = 30'-0"

BRIDGE NO. 07684 DRAWING NO. 67555

PRINT DATE: 4/11/2024

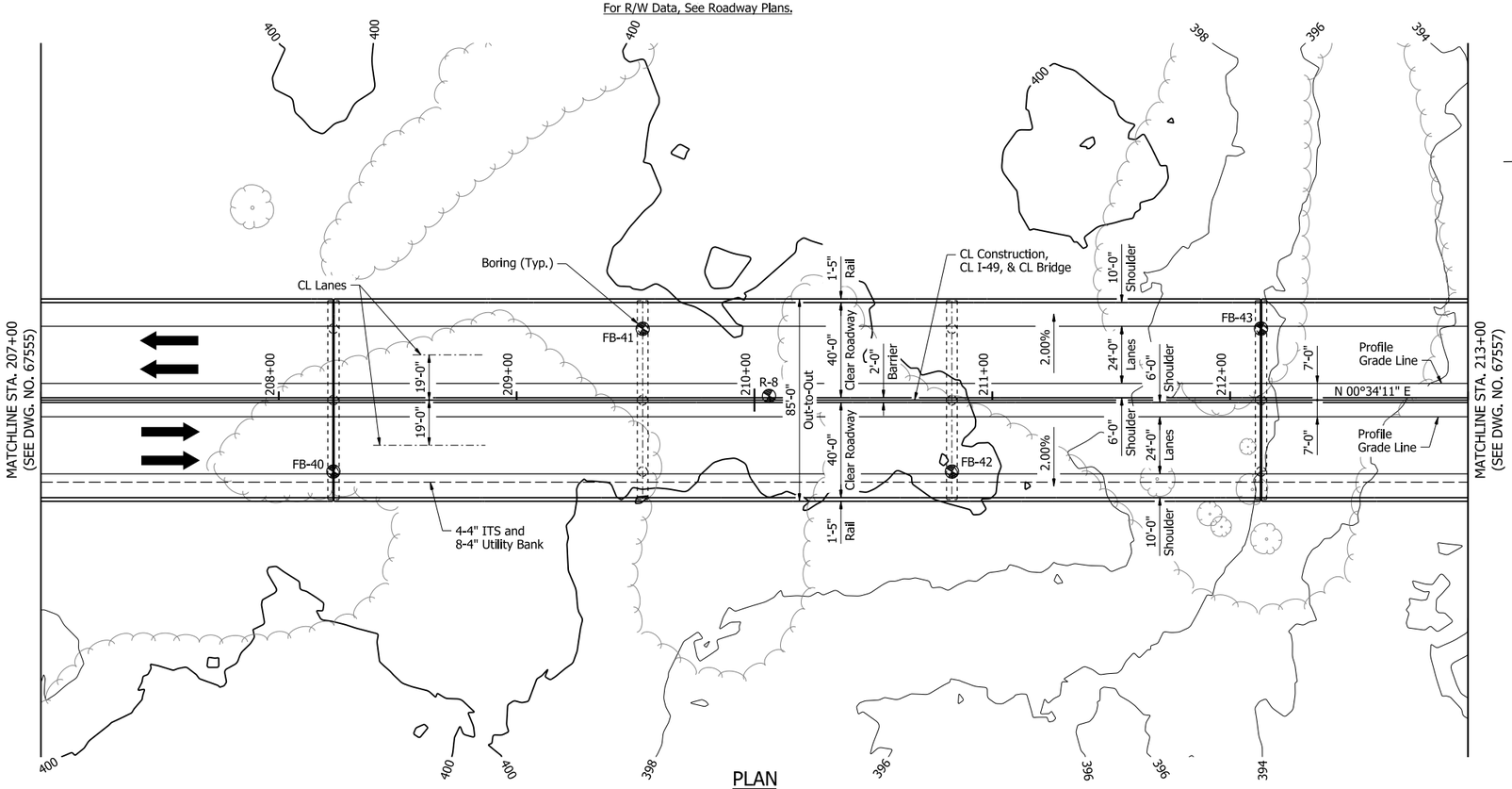
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	496	809
		07684 - BRIDGE LAYOUTS - 67556				

Notes:
For General Notes, see Dwg. No. 67372.

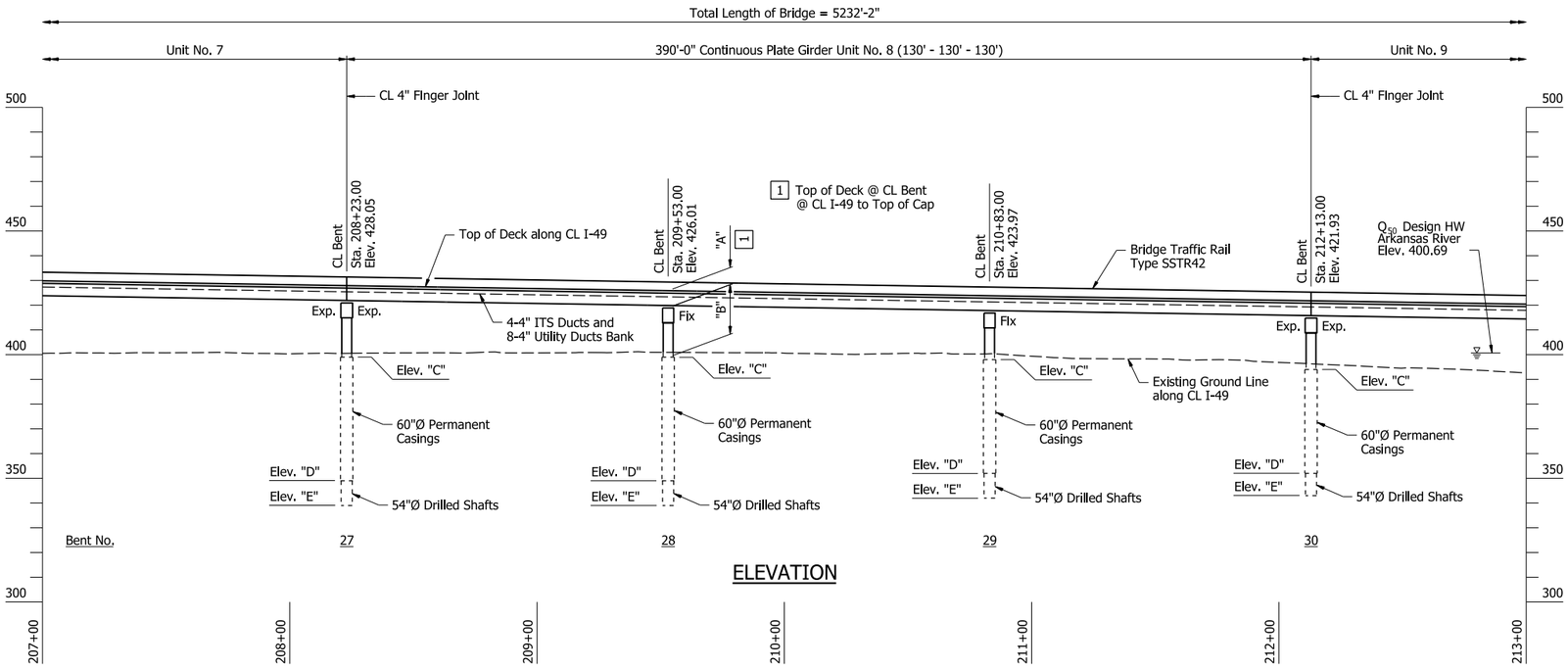
All bents are normal to CL I-49.

For details of ITS and Utility Banks, see "ITS AND UTILITY BANK DETAILS".

For R/W Data, See Roadway Plans.



PLAN

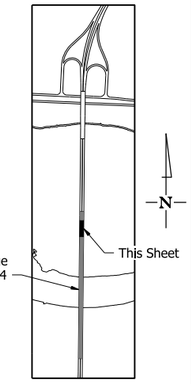


ELEVATION

Note:
Elevations shown are actual top of deck elevations at CL I-49. Any vertical dimension referenced to Top of Deck is based on actual top of deck elevation at CL I-49. Stations shown are along CL I-49.

TABLE OF VARIABLES

Location	"A"	"B"	"C"	"D"	"E"
Bent No. 27	7'-7"	21'-5⅝"	399.00	349.00	339.00
Bent No. 28	7'-4¾"	19'-7⅜"	399.00	349.00	339.00
Bent No. 29	7'-4⅞"	18'-6¾"	398.00	352.00	342.00
Bent No. 30	7'-7"	20'-4¼"	394.00	352.00	343.00



SITE PLAN
No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15778
NATALIE MCCOMBS
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 8 OF 10
LAYOUT OF BRIDGE
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

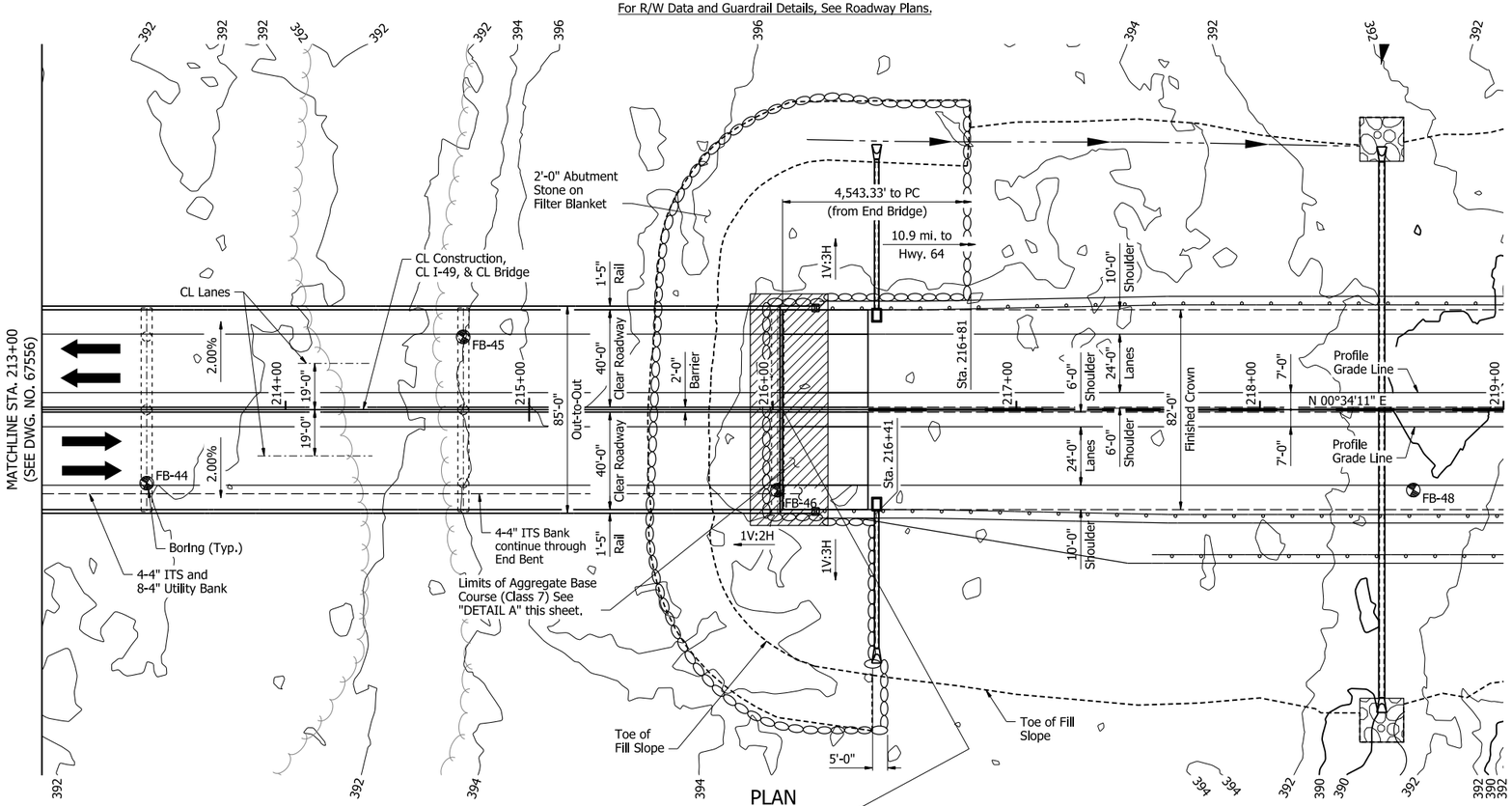
DRAWN BY: CTK DATE: 6/14/22
CHECKED BY: NAM DATE: 8/9/22
DESIGNED BY: NAM DATE: 5/15/22
FILENAME: b04090121_l8.dgn
SCALE: 1" = 30'-0"

BRIDGE NO. 07684 DRAWING NO. 67556

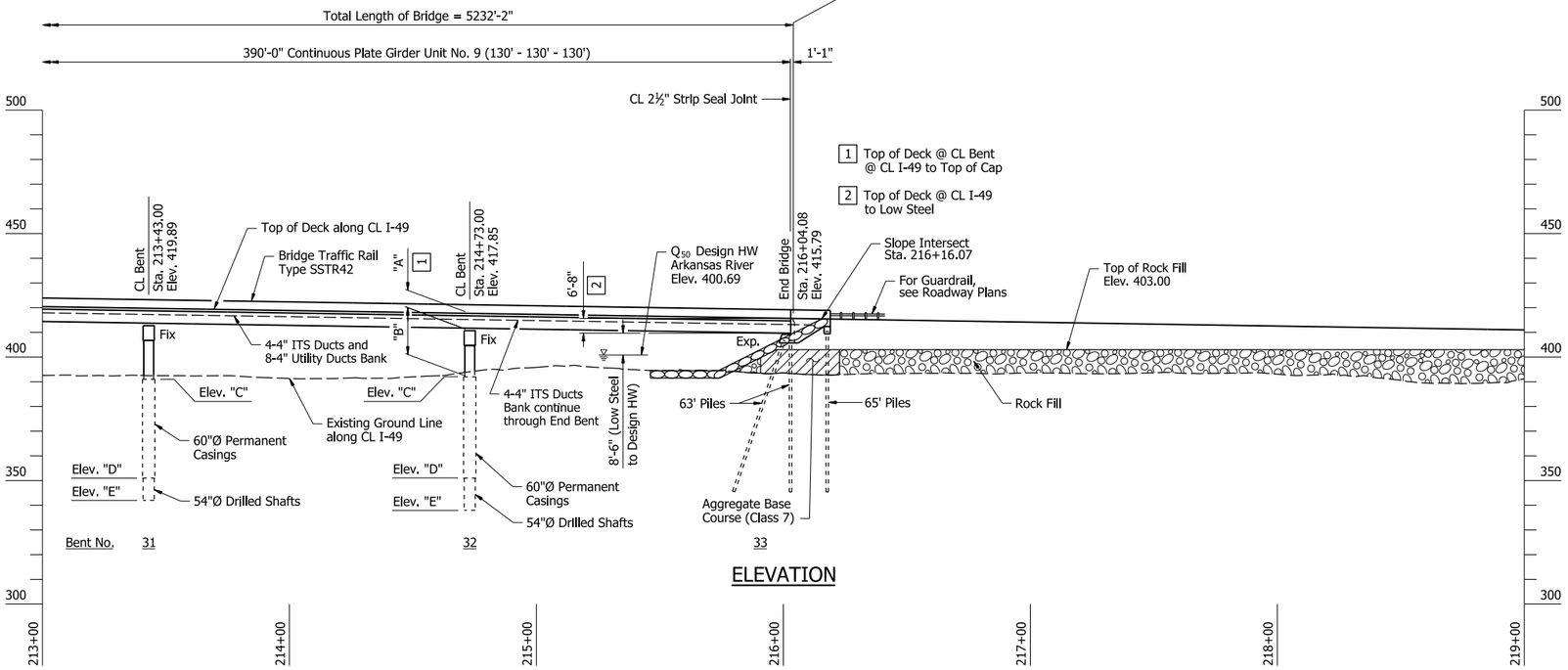
PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	497	809
		07684 - BRIDGE LAYOUTS - 67557				

For R/W Data and Guardrail Details, See Roadway Plans.



PLAN



ELEVATION

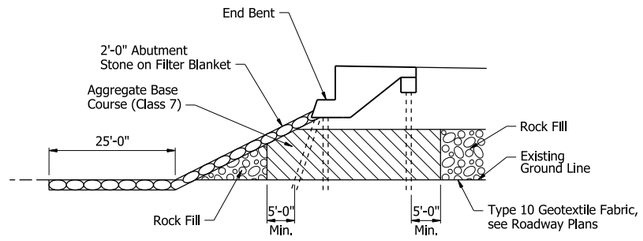
PRINT DATE: 4/11/2024

Notes:
Use Type F Approach Gutters, Type F Approach Slabs (W=36'-0") and Type 1 Special Median Approach Slab (W=6'-0") at end of bridge. See Dwg. No. 67712 for Bridge Approach Details.

For General Notes, see Dwg. No. 67372.

All bents are normal to CL I-49.

For details of ITS and Utility Banks, see "ITS AND UTILITY BANK DETAILS".



Where rock fill is used for embankment construction, aggregate base course (Class 7), in accordance with Section 303.02, shall be placed as shown in areas where piling will be located. Aggregate base course (Class 7) shall be paid for as "Rock Fill".

At the Contractor's option, preboring or other methods as approved by the Engineer may be used to facilitate pile installation thru the aggregate base course (Class 7) material at these locations. Preboring or other methods used for installation of piles where rock fill is used for embankment construction will not be paid for separately, but shall be included in item "Steel Piling".

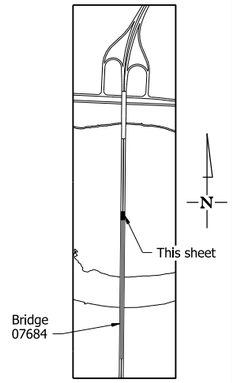
DETAIL A

No Scale

Note:
Elevations shown are actual top of deck elevations at CL I-49. Any vertical dimension referenced to Top of Deck is based on actual top of deck elevation at CL I-49. Stations shown are along CL I-49.

TABLE OF VARIABLES

Location	"A"	"B"	"C"	"D"	"E"
Bent No. 31	7'-4⅞"	21'-5¾"	391.00	351.00	342.00
Bent No. 32	7'-4⅞"	18'-5¼"	392.00	351.00	338.00



SITE PLAN

No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15778
NATALIE MCCOMBS
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 9 OF 10
LAYOUT OF BRIDGE
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 6/14/22
CHECKED BY: NAM DATE: 8/9/22
DESIGNED BY: NAM DATE: 5/15/22
FILENAME: b04090121_I9.dgn
SCALE: 1" = 30'-0"

BRIDGE NO. 07684 DRAWING NO. 67557

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	498	809
		07684 - BRIDGE LAYOUTS - 67558				

GENERAL NOTES

GENERAL NOTES: For project specific general notes, see Dwg. No. 67372

DETAIL DRAWINGS:	DRAWING NO(S).
Schedule of Bridge Quantities	67369 - 67370
General Notes	67372
Layout of Bridge	67549 - 67558
Elevation of Soil Borings	67384 - 67391
End Bents 1 & 33	67559 - 67564
Bent Nos. 2 & 3	67565 - 67566
Bent Nos. 4, 27, & 30	67567 - 67568
Bent Nos. 5, 6, 7, 19, 21, 22, 23, 25, & 26	67569 - 67570
Bent Nos. 8, 20, & 24	67571 - 67572
Bent Nos. 9, 10, & 11	67573 - 67574
Bent Nos. 12 & 16	67414 - 67419
Bent Nos. 13, 14, & 15	67420 - 67424
Bent Nos. 17 & 18	67575 - 67576
Bent Nos. 28, 29, 31, & 32	67577 - 67578
390'-0" Continuous Plate Girder Units 1 & 7-9	67579 - 67586
520'-0" Continuous Plate Girder Units 2, 3, 5, & 6	67587 - 67598
1590'-0" Continuous Plate Girder Unit 4	67450 - 67464
Inspection Access and Waterline Supports	67465 - 67471
ITS and Utility Bank Supports	67672 - 67675, 67677, 67680 - 67681, & 67684 - 67685
Bridge Traffic Rail Type SSTR42	67686 - 67688
Median Barrier	67689
Sections Near Joints	67691
Armored Joint with Neoprene Strip Seal	67693
Finger Joints	67696 - 67697
Modular Joints	67700 - 67701
Elastomeric Bearings	67704 - 67705
HMLR Bearings	67706
Deck Drainage	67707 - 67711
Bridge Approaches	67712
Revetment at Bent No. 13	67716
Navigation Clearance Gauge	67717
Dumped Riprap and Filter Blanket	55001
Permanent Steel Deck Forms	55005
General Notes for Steel Bridge Structures	55006
Details For Steel Bridge Structures	55007
Type D Name Plate	55010
Standard Details for Chain Link Fence	55018
Steel H-Piling	55020
Type F Approach Gutters	55030F
Type F Approach Slabs	55040F1
Bridge Traffic Rail Type SSTR42	55071

PRINT DATE: 4/11/2024

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 15778
NATALIE MCCOMBS

Natalie McCombs

4/18/24

BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 10 OF 10
LAYOUT OF BRIDGE
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

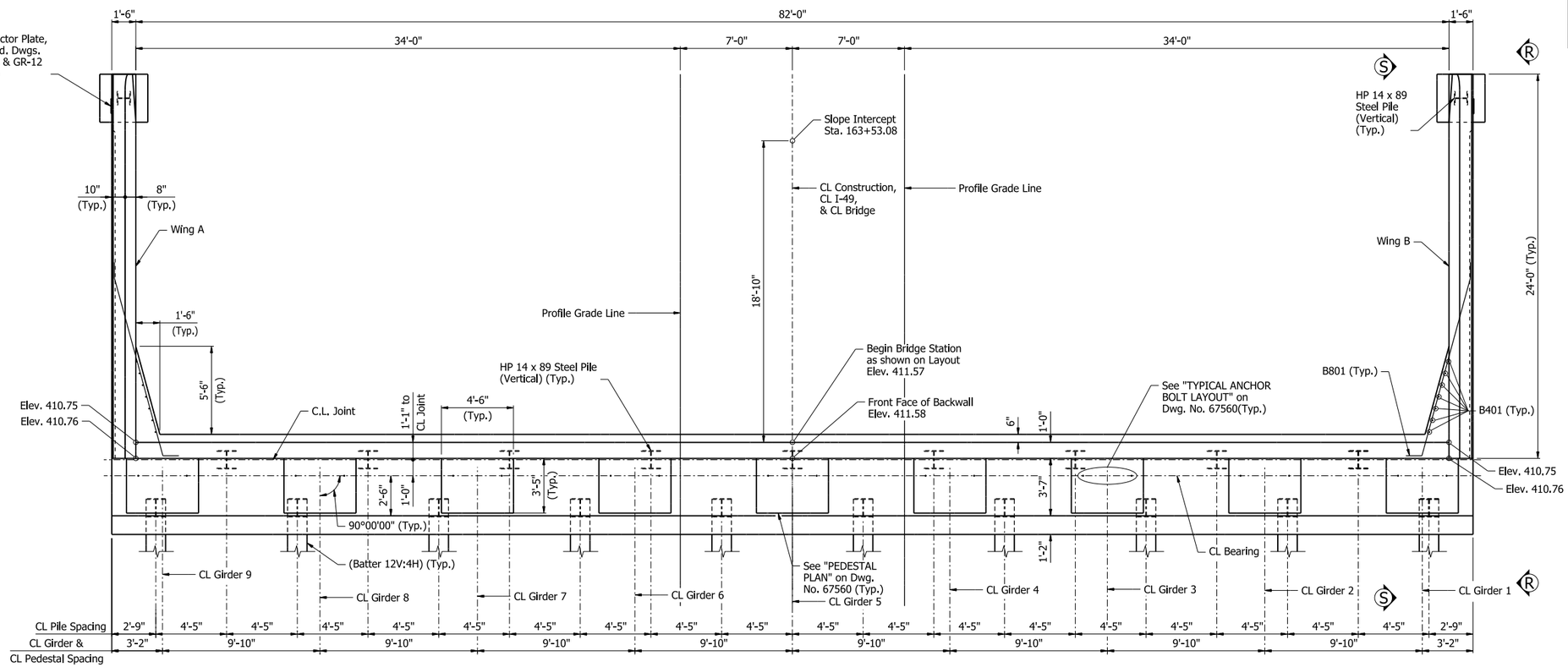
ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 12/2/23
CHECKED BY: BTJ DATE: 12/15/23
DESIGNED BY: NAM DATE: 5/15/22
FILENAME: b04090121_l10.dgn
SCALE: No Scale

BRIDGE NO. 07684 DRAWING NO. 67558

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	499	809
		07684 - END BENTS - 67559				



PLAN - BENT NO.1

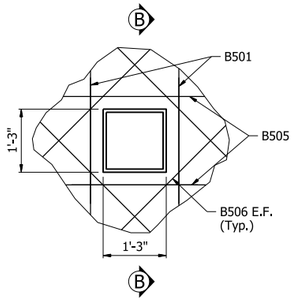
NOTES:
For general notes, see Dwg. No. 67372.

For details of steel piling, see Std. Dwg. No. 55020.

For "Section A-A", "VIEW R-R" & "VIEW S-S", see Dwg. No. 67560

Class 2 Protective Surface Treatment shall be applied to the roadway face and top of the wing rails, and the top of the backwall.

All exposed corners shall be chamfered ¾" UNO.

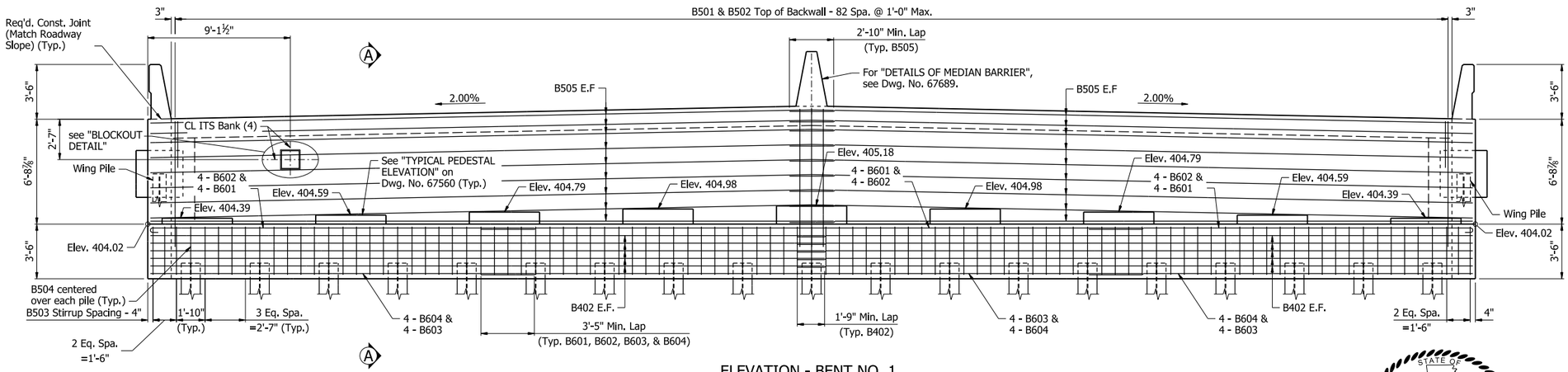


BLOCKOUT DETAIL

No Scale

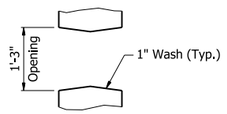
Contractor shall adjust B501 and B505 Bars to accommodate blockout.

For Blockout Details and Construction Sequencing Notes, see Dwg. No. 67672.



ELEVATION - BENT NO. 1

Looking Back



SECTION B-B

No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
W. JOSEPH STURGEON
No. 21697
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 3
DETAILS OF END BENT NO. 1
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION

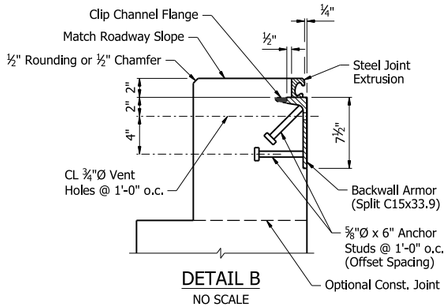
LITTLE ROCK, ARK.

DRAWN BY: JVS DATE: 10/16/23
CHECKED BY: AT DATE: 10/23/23
DESIGNED BY: MJ DATE: 9/21/23
FILENAME: b04090121_b11.dgn
SCALE: ¼" = 1'-0"

BRIDGE NO. 07684 DRAWING NO. 67559

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	500	809
		07684 - END BENTS - 67560				

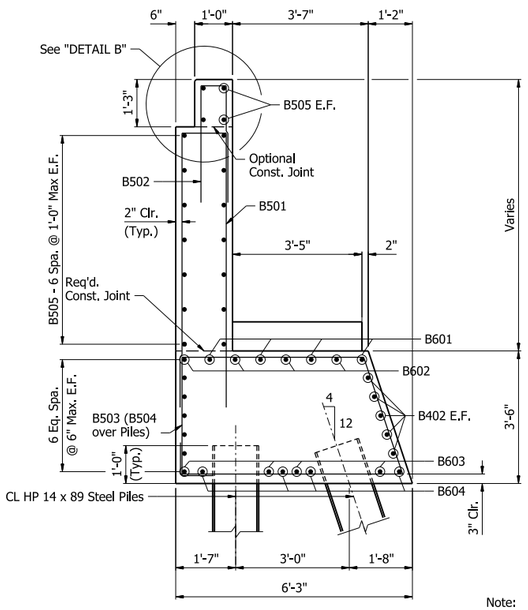


DETAIL B
NO SCALE

For additional joint details, see Std. Dwg. No. 55009.

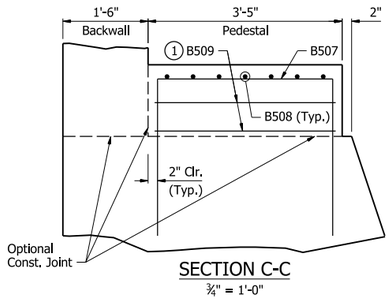
Concrete shall be hand-packed under the joint armor in the backwall.

Transverse spacing between top anchor studs and vent holes shall be 6".

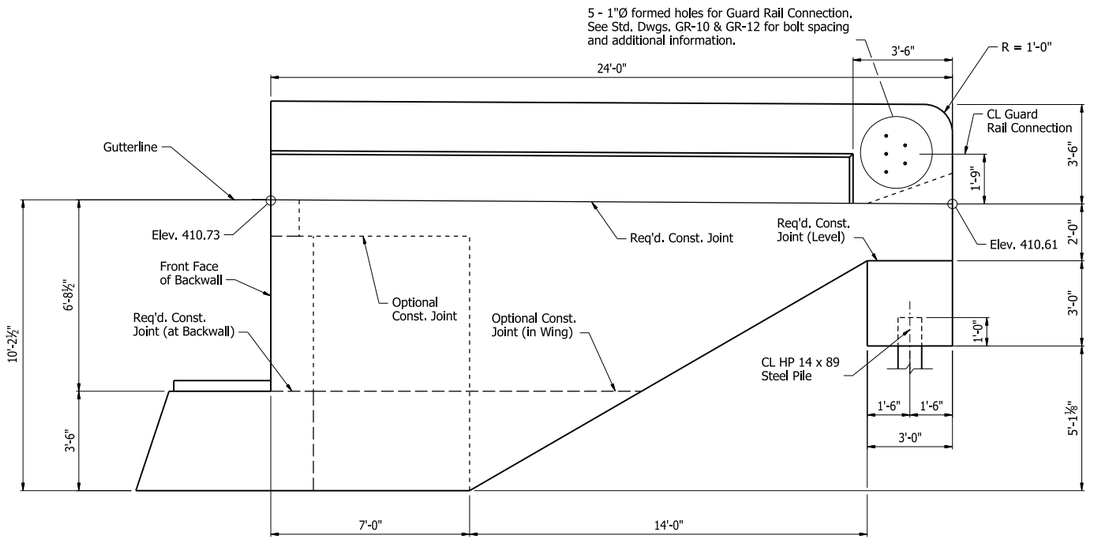


SECTION A-A
½" = 1'-0"

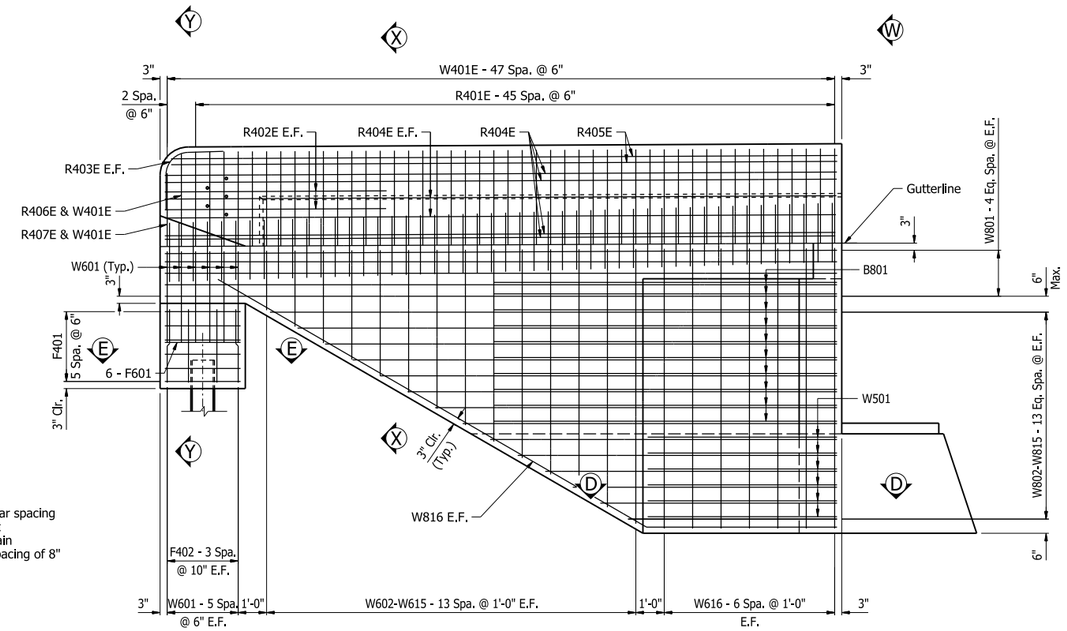
Note:
Contractor shall adjust B601 & B602 bar spacing to accommodate anchor bolts or sheet metal sleeves. Contractor shall maintain a minimum spacing of 3", and max. spacing of 8"



SECTION C-C
¾" = 1'-0"



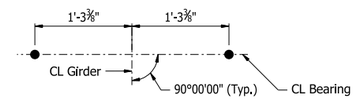
VIEW R-R
⅜" = 1'-0"



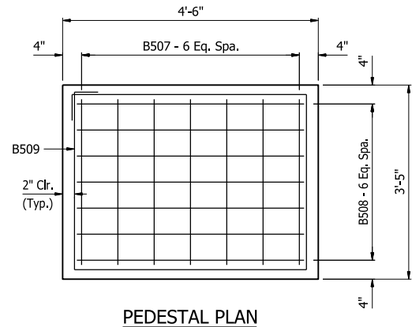
VIEW S-S
⅜" = 1'-0"

Notes:
For "VIEW W-W", "SECTION X-X" & "SECTION Y-Y", see Dwg. No. 67561.

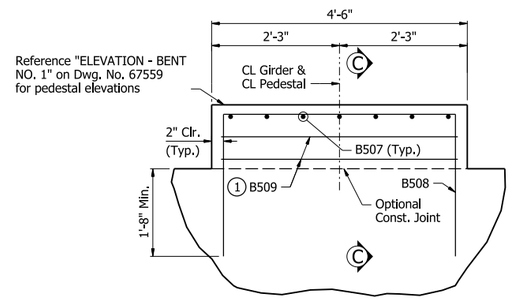
For "DETAILS OF ELASTOMERIC BEARINGS", see Dwg. Nos. 67704 and 67705.



TYPICAL ANCHOR BOLT LAYOUT
1" = 1'-0"



PEDESTAL PLAN
¾" = 1'-0"



TYPICAL PEDESTAL ELEVATION
¾" = 1'-0"

(1) 1-B509 when Pedestal Height less than 11";
2-B509 when Pedestal Height is greater than 11";
B509 spaced at 6" Max.

ALTERNATE NO. 2
SHEET 2 OF 3
DETAILS OF END BENT NO. 1
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

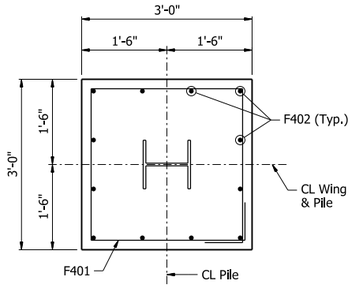
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
W. JOSEPH STURGEON
No. 21697
4/18/24
BRIDGE ENGINEER

DRAWN BY: JVS DATE: 10/18/23
CHECKED BY: AT DATE: 10/23/23
DESIGNED BY: MJ DATE: 9/19/23
FILENAME: b04090121_b12.dgn
SCALE: AS NOTED

BRIDGE NO. 07684 DRAWING NO. 67560

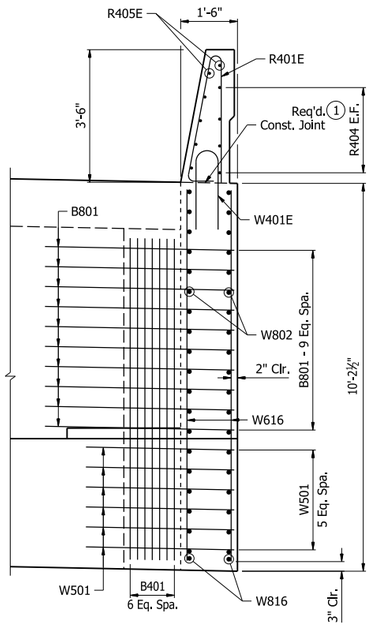
PRINT DATE: 4/11/2024

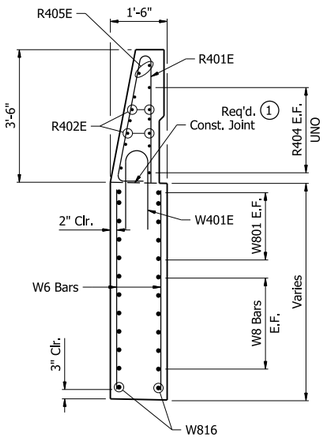
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	501	809
		07684 - END BENTS - 67561				



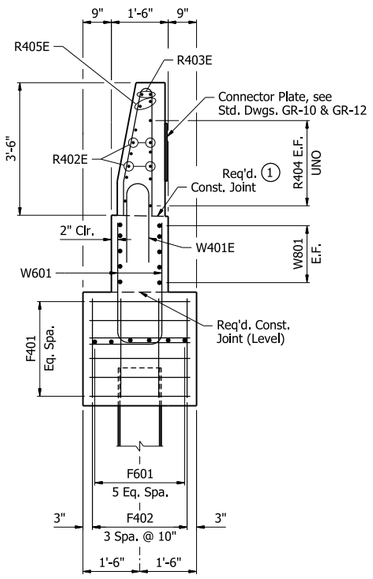
SECTION E-E
¾" = 1'-0"

Match roadway slope for both Wingwalls (1)





SECTION X-X
½" = 1'-0"

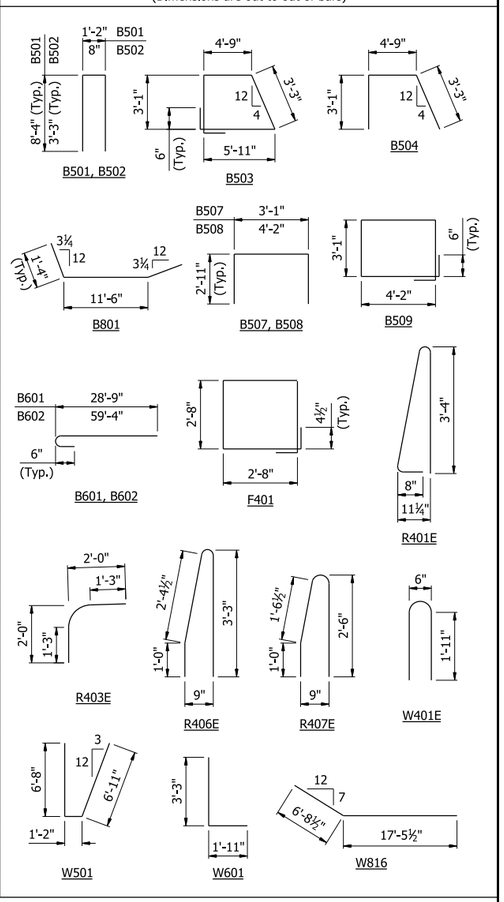


SECTION Y-Y
½" = 1'-0"

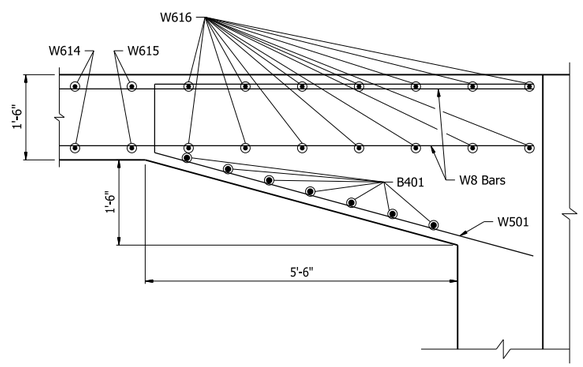
BAR LIST - PER BENT

Mark	Number Required	Length	Pin Dia.
B401	14	8'-8"	Str.
B402	20	43'-5"	Str.
B501	83	17'-7"	3¾"
B502	83	6'-11"	3¾"
B503	78	17'-8"	2½"
B504	19	10'-11"	2½"
B505	36	43'-9"	Str.
B506	8	2'-0"	Str.
B507	63	8'-9"	2½"
B508	63	9'-10"	2½"
B509	12	15'-0"	2½"
B601	8	29'-5"	4½"
B602	8	60'-0"	4½"
B603	8	28'-1"	Str.
B604	8	60'-0"	Str.
B801	20	14'-1"	6"
F401	12	11'-0"	2"
F402	24	2'-7"	Str.
F601	12	2'-8"	Str.
R401E	92	7'-6"	3"
R402E	8	5'-6"	Str.
R403E	4	3'-8"	8½"
R404E	16	23'-8"	Str.
R405E	4	23'-6"	Str.
R406E	2	6'-8"	3"
R407E	2	5'-1"	3"
W401E	96	4'-7"	3"
W501	12	14'-7"	2½"
W601	24	5'-0"	4½"
W602 To	4 Each	2'-2" To	Str.
W615		9'-9"	
W616	28	9'-11"	Str.
W801	20	23'-8"	Str.
W802 To	4 Each	7'-5" To	Str.
W815		20'-1"	
W816	4	24'-0"	6"

Bending Diagrams (Dimensions are out to out of bars)

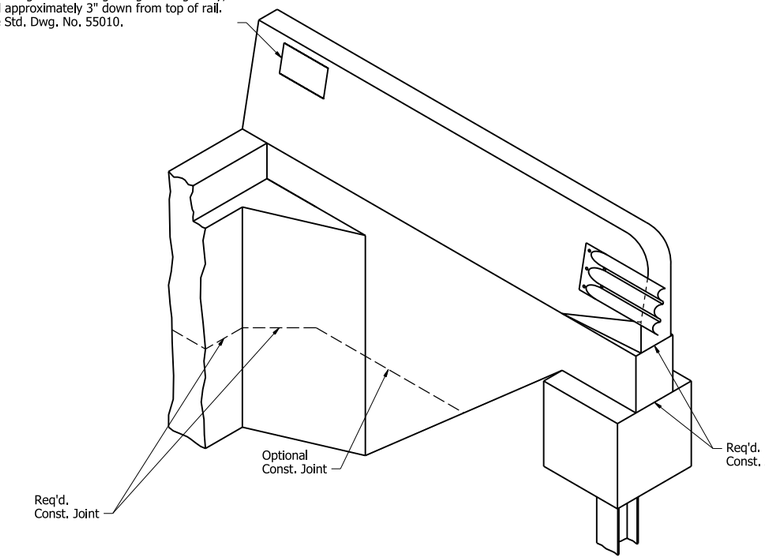


All bars designated with an "E" suffix are to be epoxy coated.



SECTION D-D
¾" = 1'-0"

Place Type D Bridge Name Plate on front face of wing rail approximately 1'-0" from end of rail on right side of beginning of bridge only, and approximately 3" down from top of rail. See Std. Dwg. No. 55010.



THREE DIMENSIONAL VIEW OF WING WALLS AND RAIL
No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 21697
W. JOSEPH STURGEON

4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 3 OF 3
DETAILS OF END BENT NO. 1
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

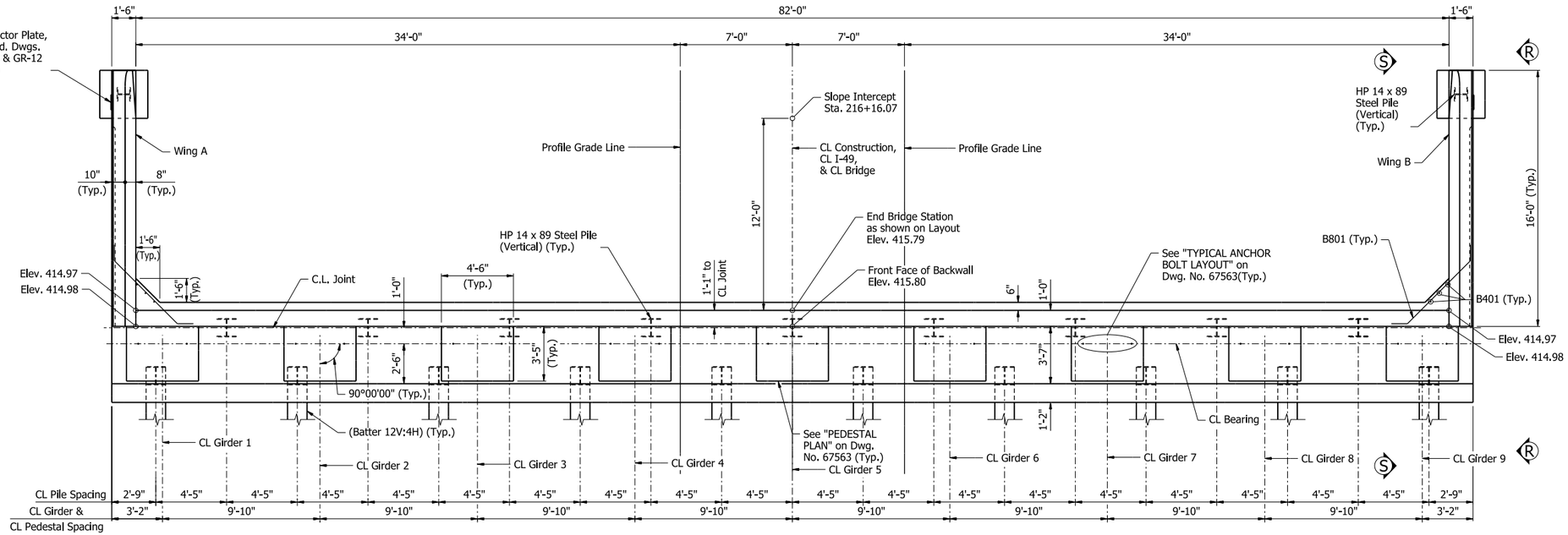
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JVS DATE: 10/18/23
CHECKED BY: AT DATE: 10/23/23
DESIGNED BY: MJ DATE: 9/19/23
FILENAME: b04090121_b13.dgn
SCALE: AS NOTED

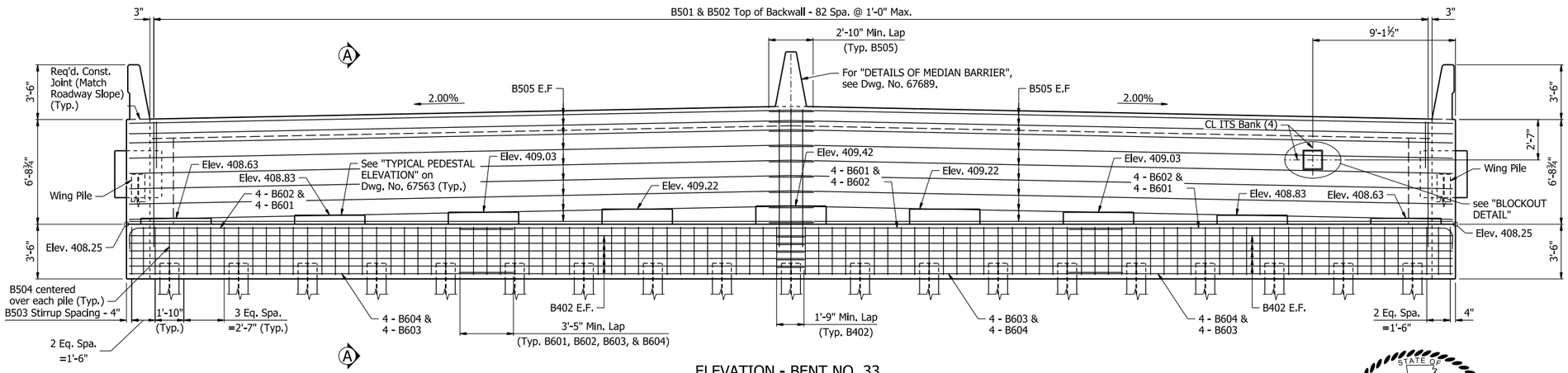
BRIDGE NO. 07684 DRAWING NO. 67561

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	502	809
		07684 - END BENTS - 67562				



PLAN - BENT NO.33



ELEVATION - BENT NO. 33

Looking Back

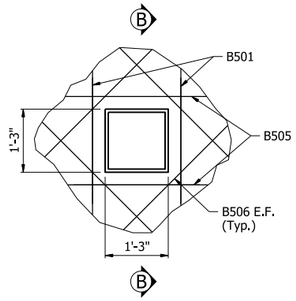
NOTES:
For general notes, see Dwg. No. 67372.

For details of steel piling, see Std. Dwg. No. 55020.

For "Section A-A", "VIEW R-R" & "VIEW S-S", see Dwg. No. 67563

Class 2 Protective Surface Treatment shall be applied to the roadway face and top of the wing rails, and the top of the backwall.

All exposed corners shall be chamfered ¾" UNO.

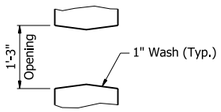


BLOCKOUT DETAIL

No Scale

Contractor shall adjust B501 and B505 Bars to accommodate blockout.

For Blockout Details and Construction Sequencing Notes, see Dwg. No. 67672.



SECTION B-B

No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
W. JOSEPH STURGEON
No. 21697

4/18/24

BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 3
DETAILS OF END BENT NO. 33
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

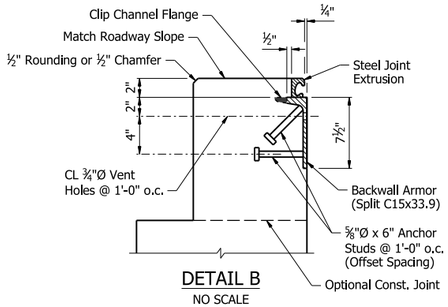
DRAWN BY: JVS DATE: 10/16/23
CHECKED BY: AT DATE: 10/31/23
DESIGNED BY: MJ DATE: 9/21/23

FILENAME: b04090121_b331.dgn
SCALE: ¼" = 1'-0"

BRIDGE NO. 07684 DRAWING NO. 67562

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	503	809
		07684 - END BENTS - 67563				

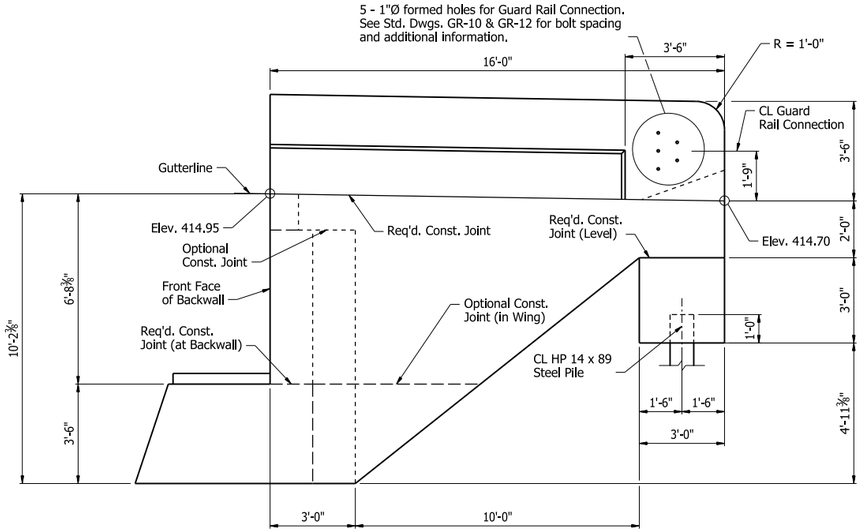


DETAIL B
NO SCALE

For additional joint details, see Std. Dwg. No. 55009.

Concrete shall be hand-packed under the joint armor in the backwall.

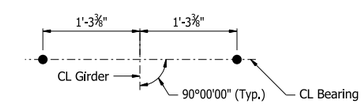
Transverse spacing between top anchor studs and vent holes shall be 6".



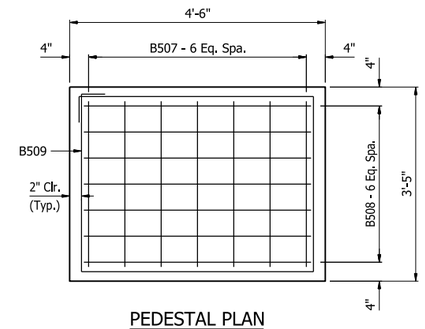
VIEW R-R
⅜" = 1'-0"

Notes:
For "VIEW W-W", "SECTION X-X" & "SECTION Y-Y", see Dwg. No. 67564.

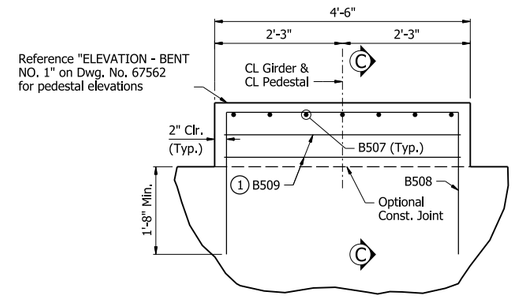
For "DETAILS OF ELASTOMERIC BEARINGS", see Dwg. Nos. 67704 and 67705.



TYPICAL ANCHOR BOLT LAYOUT
1" = 1'-0"

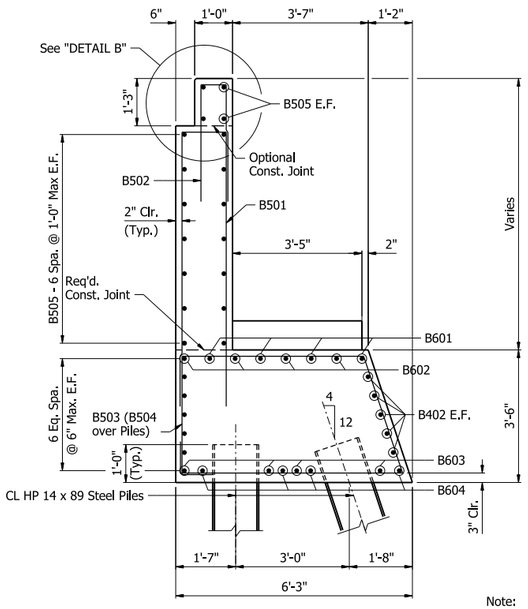


PEDESTAL PLAN
¾" = 1'-0"



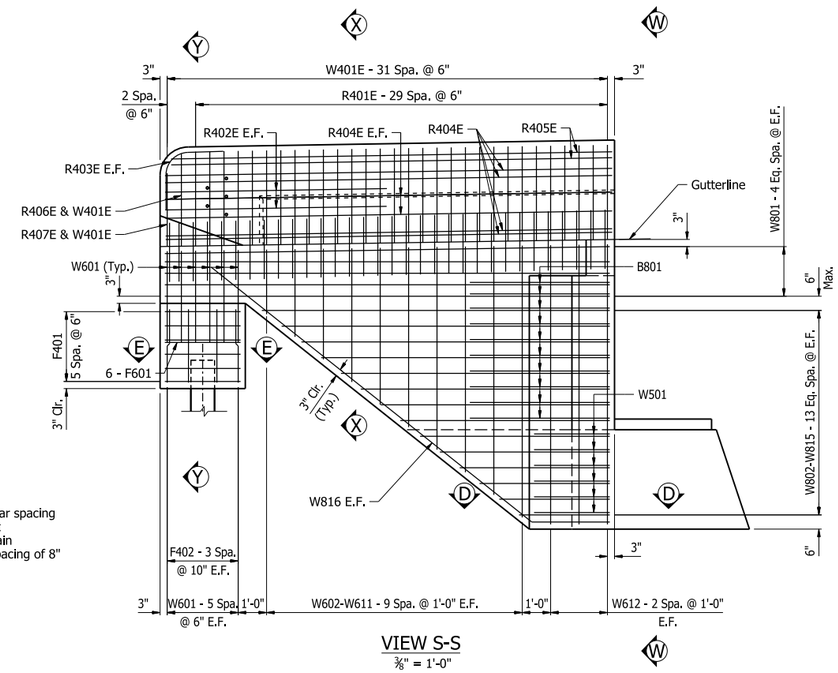
TYPICAL PEDESTAL ELEVATION
¾" = 1'-0"

(1) 1-B509 when Pedestal Height is 4½" to 12";
2-B509 when Pedestal Height is greater than 12";
B509 spaced at 6" Max.

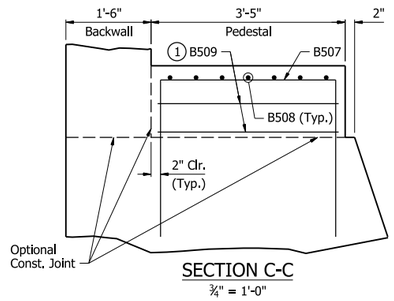


SECTION A-A
½" = 1'-0"

Note:
Contractor shall adjust B601 & B602 bar spacing to accommodate anchor bolts or sheet metal sleeves. Contractor shall maintain a minimum spacing of 3", and max. spacing of 8"



VIEW S-S
⅜" = 1'-0"



SECTION C-C
¾" = 1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 2 OF 3
DETAILS OF END BENT NO. 33
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

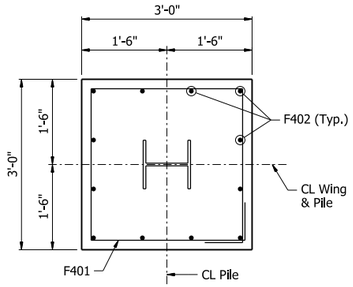
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JVS DATE: 10/18/23
CHECKED BY: AT DATE: 10/31/23
DESIGNED BY: MJ DATE: 9/21/23
FILENAME: b04090121_b332.dgn
SCALE: AS NOTED

BRIDGE NO. 07684 DRAWING NO. 67563

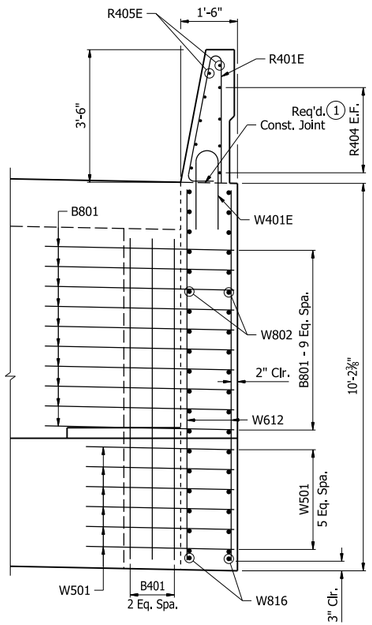
PRINT DATE: 4/13/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	504	809
		07684 - END BENTS - 67564				

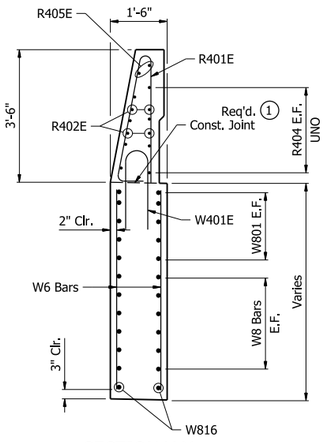


SECTION E-E
¾" = 1'-0"

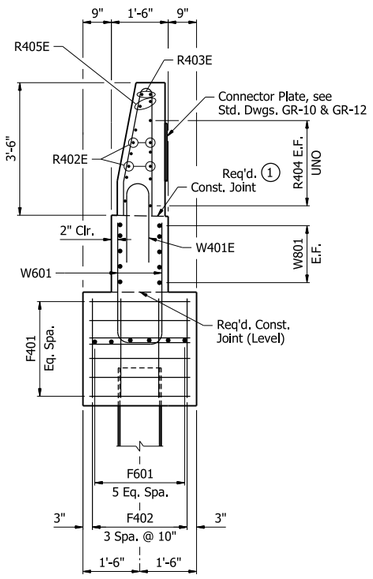
Match roadway slope for both Wingwalls (1)



VIEW W-W
½" = 1'-0"



SECTION X-X
½" = 1'-0"

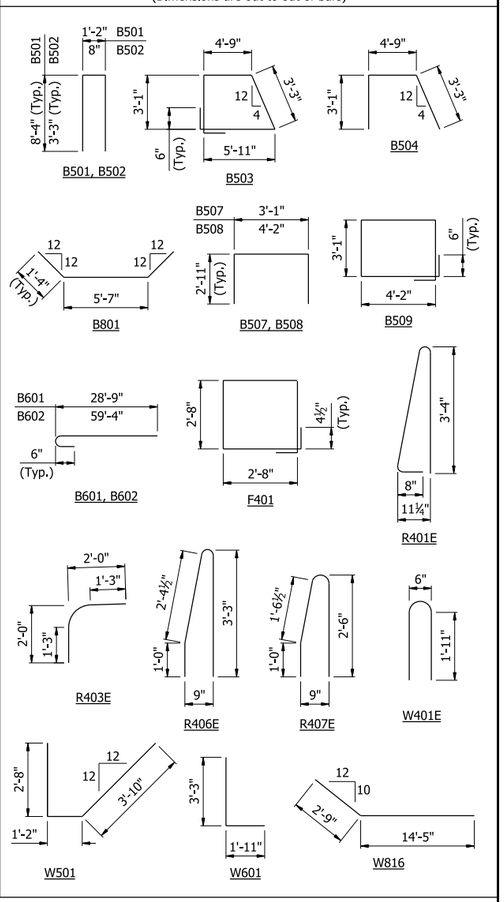


SECTION Y-Y
½" = 1'-0"

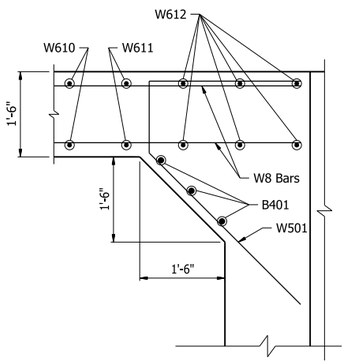
BAR LIST - PER BENT

Mark	Number Required	Length	Pin Dia.
B401	6	8'-8"	Str.
B402	20	43'-5"	Str.
B501	83	17'-7"	3¾"
B502	83	6'-11"	3¾"
B503	78	17'-8"	2½"
B504	19	10'-11"	2½"
B505	36	43'-9"	Str.
B506	8	2'-0"	Str.
B507	63	8'-9"	2½"
B508	63	9'-10"	2½"
B509	12	15'-0"	2½"
B601	8	29'-5"	4½"
B602	8	60'-0"	4½"
B603	8	28'-1"	Str.
B604	8	60'-0"	Str.
B801	20	8'-3"	6"
F401	12	11'-0"	2"
F402	24	2'-7"	Str.
F601	12	2'-8"	Str.
R401E	60	7'-6"	3"
R402E	8	5'-6"	Str.
R403E	4	3'-8"	8½"
R404E	16	15'-9"	Str.
R405E	4	15'-7"	Str.
R406E	2	6'-8"	3"
R407E	2	5'-1"	3"
W401E	64	4'-7"	3"
W501	12	7'-5"	3¾"
W601	24	5'-0"	4½"
W602 To W611	4 Each	2'-4" To 9'-7"	Str.
W612	12	9'-10"	Str.
W801	20	15'-8"	Str.
W802 To W815	4 Each	3'-3" To 12'-3"	Str.
W816	4	17'-0"	6"

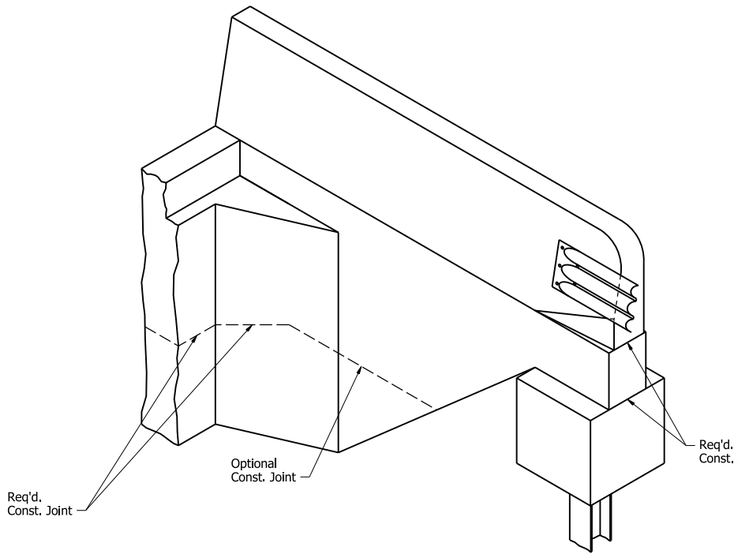
Bending Diagrams (Dimensions are out to out of bars)



All bars designated with an "E" suffix are to be epoxy coated.



SECTION D-D
¾" = 1'-0"



THREE DIMENSIONAL VIEW OF WING WALLS AND RAIL
No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 21697
W. JOSEPH STURGEON

4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 3 OF 3
DETAILS OF END BENT NO. 33
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JVS DATE: 10/30/23
CHECKED BY: AT DATE: 10/31/23
DESIGNED BY: MJ DATE: 9/21/23
FILENAME: b04090121_b333.dgn
SCALE: AS NOTED

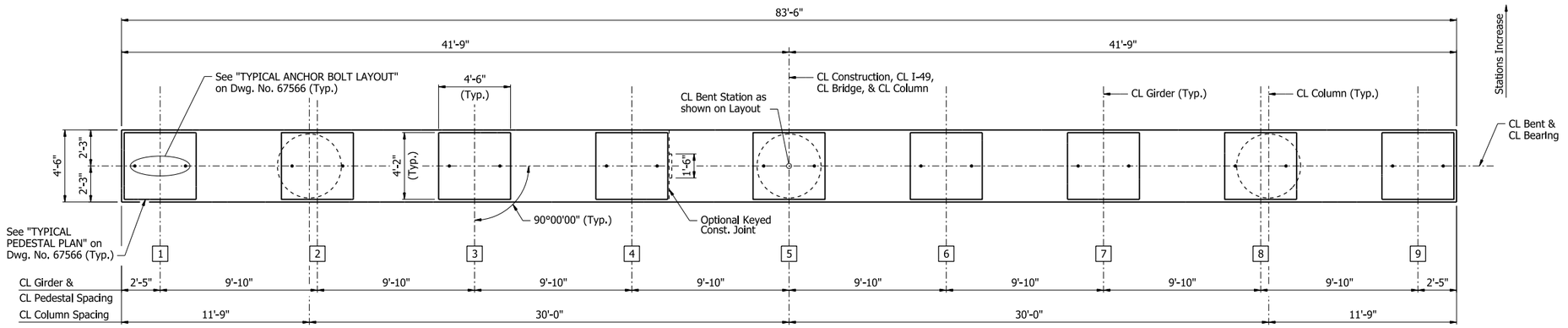
BRIDGE NO. 07684 DRAWING NO. 67564

PRINT DATE: 4/11/2024

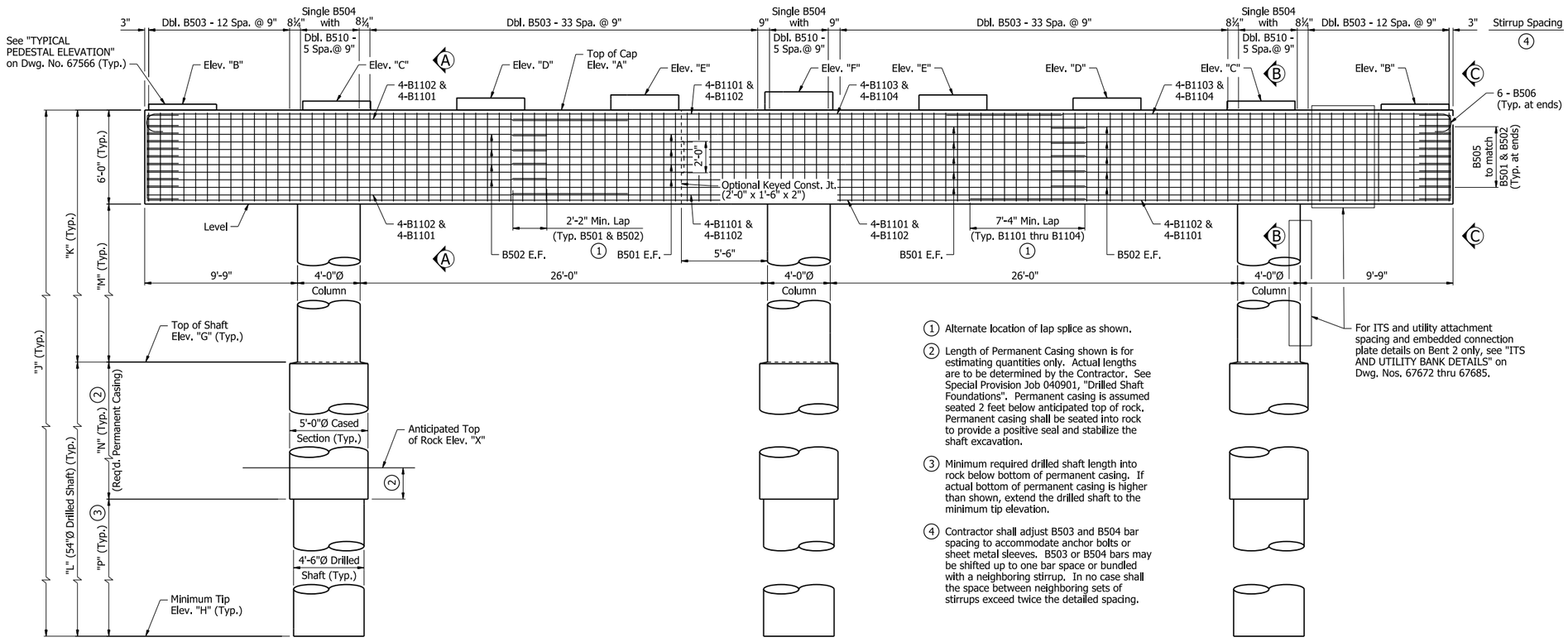
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	505	809
		07684 - INT. BENTS - 67565				

Notes:
For "SECTION A-A", "SECTION B-B", "VIEW C-C", "SECTION D-D" thru "SECTION G-G", see Dwg. No. 67566.

For "GENERAL NOTES", see Dwg. No. 67372.

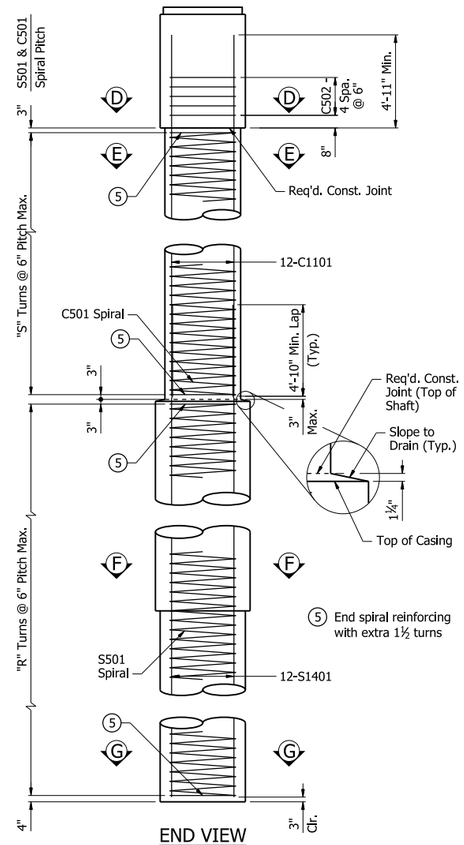


PLAN



ELEVATION
(Looking Upstation)

1. Alternate location of lap splice as shown.
2. Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined by the Contractor. See Special Provision Job 040901, "Drilled Shaft Foundations". Permanent casing is assumed seated 2 feet below anticipated top of rock. Permanent casing shall be seated into rock to provide a positive seal and stabilize the shaft excavation.
3. Minimum required drilled shaft length into rock below bottom of permanent casing. If actual bottom of permanent casing is higher than shown, extend the drilled shaft to the minimum tip elevation.
4. Contractor shall adjust B503 and B504 bar spacing to accommodate anchor bolts or sheet metal sleeves. B503 or B504 bars may be shifted up to one bar space or bundled with a neighboring stirrup. In no case shall the space between neighboring sets of stirrups exceed twice the detailed spacing.



END VIEW

Notes:
Dimensions, details, & reinforcing steel shown are typical for all columns and drilled shafts.

If column, cased section, or drilled shaft length changes during construction, number of turns shall be adjusted accordingly to maintain the maximum pitch in the regions identified above.

TABLE OF VARIABLES

Bent No.	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"	"L"	"M"	"N"	"P"	"R"	"S"	"X"
2	405.23	405.61	405.81	406.00	406.20	406.40	392.00	339.00	66'-2¾"	13'-2¾"	53'-0"	7'-2¾"	37'-0"	16'-0"	105	14	357.00
3	407.09	407.46	407.66	407.86	408.05	408.25	383.00	335.00	72'-1⅛"	24'-1⅛"	48'-0"	18'-1⅛"	32'-0"	16'-0"	95	36	353.00

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
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No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 2
DETAILS OF INTERMEDIATE BENT NOS. 2 & 3
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

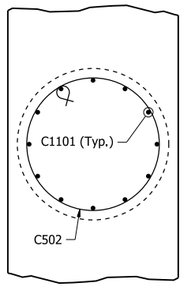
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JCP DATE: 8/31/23
CHECKED BY: MGG DATE: 9/28/23
DESIGNED BY: CZ DATE: 6/27/23
FILENAME: b04090121_b21.dgn
SCALE: ¼" = 1'-0"

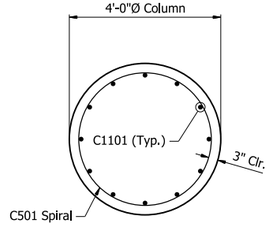
BRIDGE NO. 07684 DRAWING NO. 67565

PRINT DATE: 4/11/2024

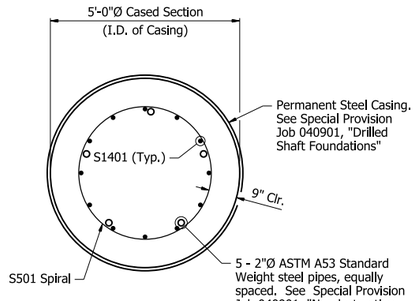
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	506	809
		07684 - INT. BENTS - 67566				



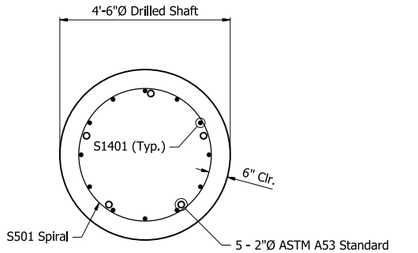
SECTION D-D
½" = 1'-0"
(Cap reinforcing not shown for clarity)



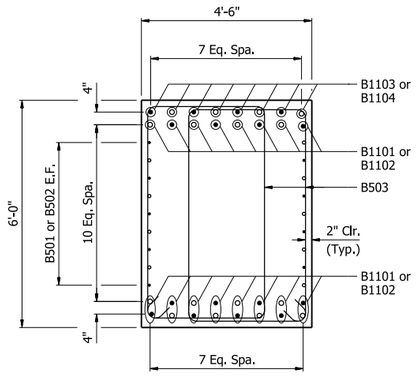
SECTION E-E
½" = 1'-0"



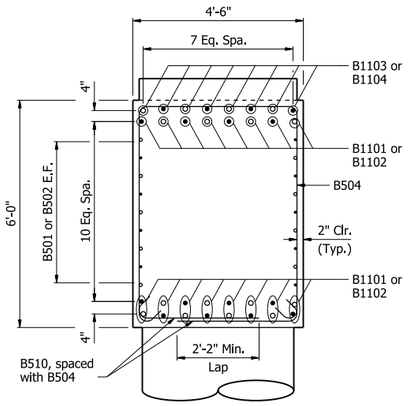
SECTION F-F
½" = 1'-0"



SECTION G-G
½" = 1'-0"

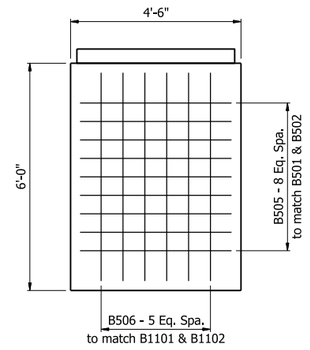


SECTION A-A
½" = 1'-0"

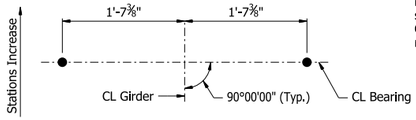


SECTION B-B
½" = 1'-0"
(Pedestal and column reinforcing not shown for clarity)

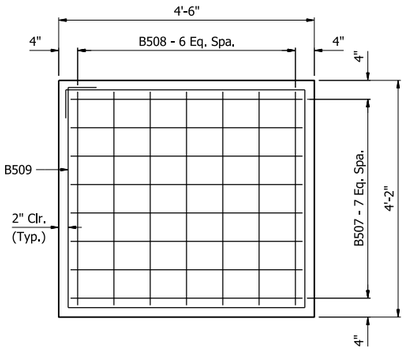
Note:
Contractor shall adjust B1101 thru B1104 bar spacing to accommodate anchor bolts, sheet metal sleeves, or vertical column steel. Contractor shall maintain a minimum and maximum spacing of 5" and 8", respectively.



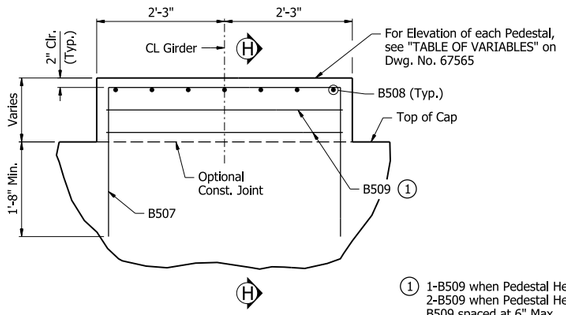
VIEW C-C
½" = 1'-0"



TYPICAL ANCHOR BOLT LAYOUT
1" = 1'-0"

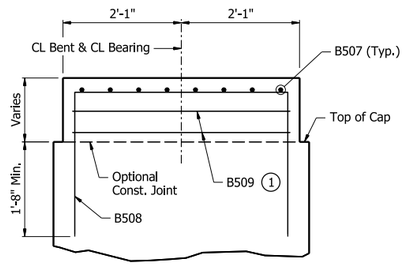


TYPICAL PEDESTAL PLAN
¾" = 1'-0"

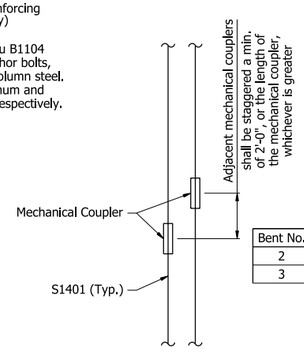


TYPICAL PEDESTAL ELEVATION
¾" = 1'-0"

(1) 1-B509 when Pedestal Height is lss than 11";
2-B509 when Pedestal Height is greater than 11";
B509 spaced at 6" Max.



SECTION H-H
¾" = 1'-0"



DRILLED SHAFT BAR SPLICE DETAIL
No Scale

MECHANICAL COUPLER AND SPLICE NOTES:
Contractor shall be required to use mechanical couplers to splice reinforcing bars whose lengths given in the Bar List exceed 60'-0". The bars shall be assembled as shown in "DRILLED SHAFT BAR SPLICE DETAIL".

The Contractor may choose location of splices for convenience, so long as no bar to be spliced is less than 5'-0" in length and no closer than 4'-0" from top of shaft.

The Contractor may also elect to splice bars whose lengths are less than 60'-0" to provide ease of construction, so long as the previous mentioned requirements are met.

Mechanical couplers shall maintain the clearances shown in "DRILLED SHAFT BAR SPLICE DETAIL". Not more than alternate bars shall be spliced at a given location. Payment for mechanical couplers shall be subsidiary to the item "DRILLED SHAFT (54" DIA.)". The couplers shall develop at least 125% of the specified yield strength of the bar.

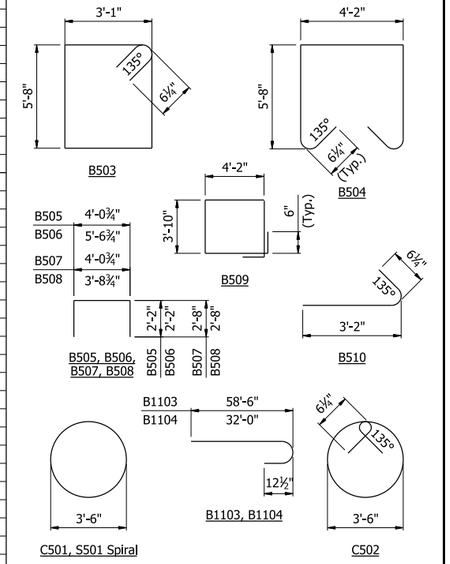
TABLE OF VARIABLES

Bent No.	"CS"	"CL"	"SS"	"SL"
2	184'-2"	11'-11"	1,170'-6"	57'-10"
3	422'-8"	22'-10"	1,062'-2"	53'-3"

BAR LIST - PER BENT

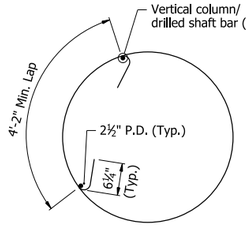
Mark	Number Required	Length	Pin Dia.
B501	18	60'-0"	Str.
B502	18	25'-4"	Str.
B503	188	18'-3"	2½"
B504	18	16'-4"	2½"
B505	18	8'-2"	2½"
B506	12	9'-8"	2½"
B507	72	9'-2"	2½"
B508	63	8'-10"	2½"
B509	12	16'-6"	2½"
B510	36	3'-8"	2½"
B1101	24	60'-0"	Str.
B1102	24	30'-6"	Str.
B1103	8	60'-0"	11¼"
B1104	8	33'-6"	11¼"
C501	3	"CS"	Spiral
C502	15	12'-2"	2½"
C1101	36	"CL"	Str.
(2) S501	3	"SS"	Spiral
(2) S1401	36	"SL"	Str.

Bending Diagrams (Dimensions are out to out of bars)



All bars designated with an "E" suffix are to be epoxy coated.

(2) S1401 longitudinal reinforcement and S501 spiral reinforcement are non-pay items which are subsidiary to item "DRILLED SHAFT (54" DIA.)". Individual lengths shall be determined by the Contractor.



SPIRAL SPLICE DETAIL
No Scale

Notes:
For locations of "SECTION A-A", "SECTION B-B", "VIEW C-C", "SECTION D-D" thru "SECTION G-G", see Dwg. No. 67565.

For "DETAILS OF ELASTOMERIC BEARINGS", see Dwg. Nos. 67704 and 67705.

SPIRAL REINFORCING NOTES:
Spiral reinforcing shall be plain round or deformed steel bars meeting the requirements of AASHTO M31 or M322, Type A with mill test report (Grade 60) or shall be cold drawn wire meeting the requirements of AASHTO M32 or M225 (Grade 70) with a minimum diameter of 0.625".

Spiral reinforcement shall be paid for at the contract unit price bid per pound for "Reinforcing Steel-Bridge (Grade 60)". No additional payment shall be made for spacers, optional splices, or bracing needed for assembly, shipping, handling, or erecting.

Contractor may elect to lap splice the spiral reinforcing. In no case shall a spiral be lapped within the entire column and the top 4'-0" of shaft for bent 2, and 4'-0" of the top or bottom of column for bent 3.

Splices in spiral reinforcing shall be a minimum of 80 bar diameters.

Spiral reinforcing at lapped splices shall be terminated by a 135° hook with a 6¼" tail around a vertical bar. See "SPIRAL SPLICE DETAIL". Hook may be field bent. Ends of spirals not lapped shall be terminated with 1½ turns.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 2 OF 2
DETAILS OF INTERMEDIATE BENT NOS. 2 & 3
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JCP DATE: 8/31/23
CHECKED BY: MGG DATE: 9/29/23
DESIGNED BY: CZ DATE: 6/27/23
FILENAME: b04090121_b22.dgn
SCALE: AS NOTED

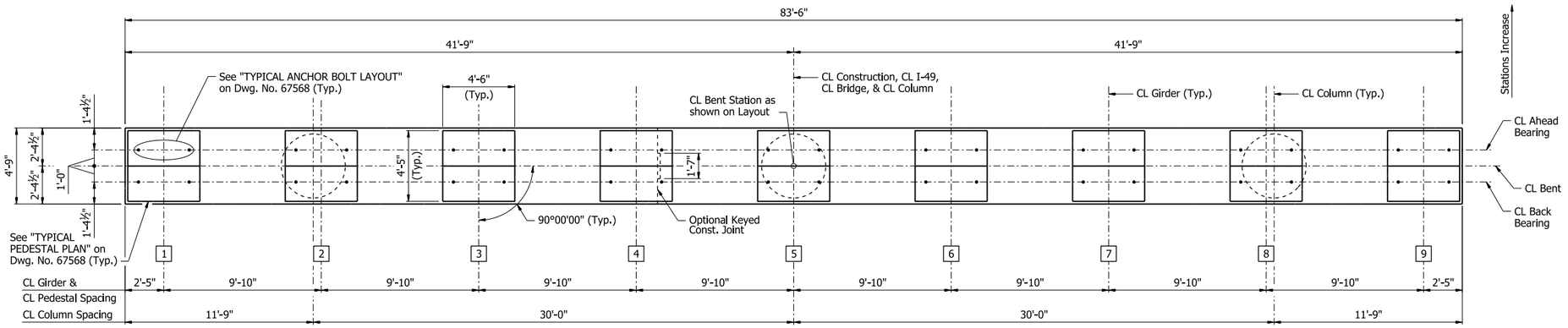
BRIDGE NO. 07684 DRAWING NO. 67566

PRINT DATE: 4/11/2024

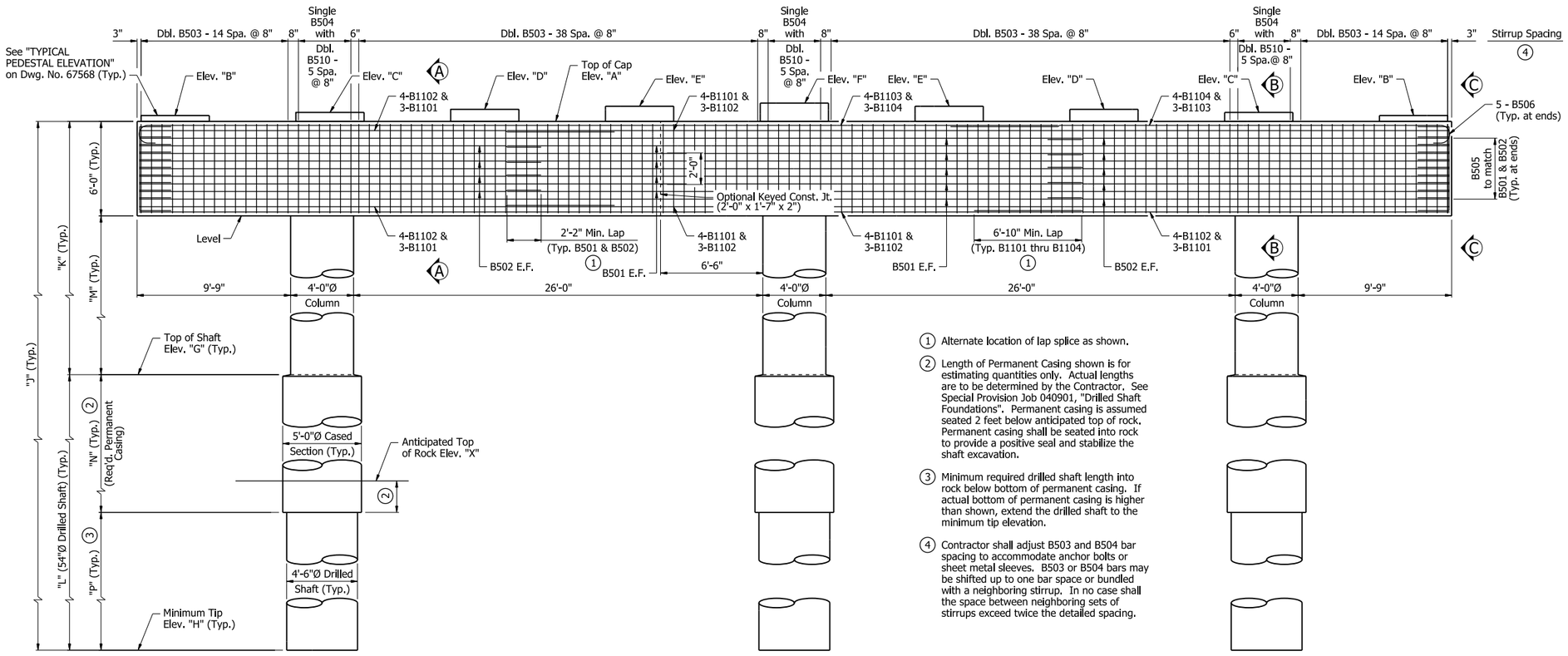
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	507	809
		07684 - INT. BENTS - 67567				

Notes:
For "SECTION A-A", "SECTION B-B", "VIEW C-C", "SECTION D-D" thru "SECTION G-G", see Dwg. No. 67568.

For "GENERAL NOTES", see Dwg. No. 67372.

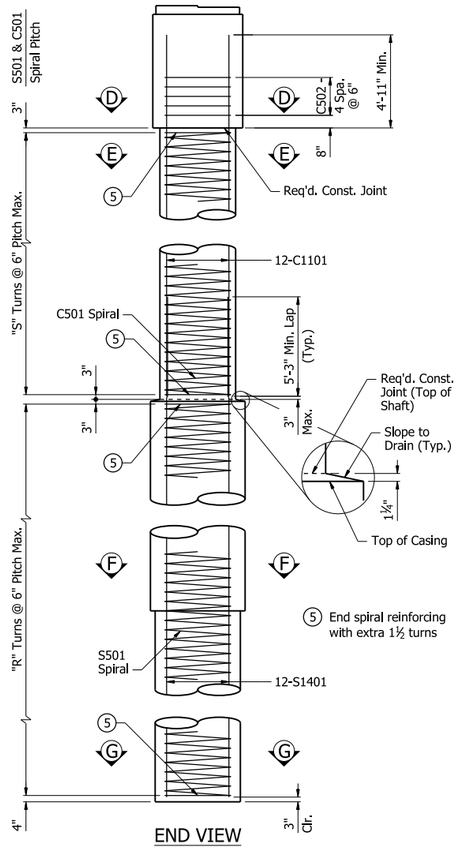


PLAN



ELEVATION
(Looking Upstation)

1. Alternate location of lap splice as shown.
2. Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined by the Contractor. See Special Provision Job 040901, "Drilled Shaft Foundations". Permanent casing is assumed seated 2 feet below anticipated top of rock. Permanent casing shall be seated into rock to provide a positive seal and stabilize the shaft excavation.
3. Minimum required drilled shaft length into rock below bottom of permanent casing. If actual bottom of permanent casing is higher than shown, extend the drilled shaft to the minimum tip elevation.
4. Contractor shall adjust B503 and B504 bar spacing to accommodate anchor bolts or sheet metal sleeves. B503 or B504 bars may be shifted up to one bar space or bundled with a neighboring stirrup. In no case shall the space between neighboring sets of stirrups exceed twice the detailed spacing.



END VIEW

Notes:
Dimensions, details, & reinforcing steel shown are typical for all columns and drilled shafts.

If column, cased section, or drilled shaft length changes during construction, number of turns shall be adjusted accordingly to maintain the maximum pitch in the regions identified above.

TABLE OF VARIABLES

Bent No.	"A"	"B"		"C"		"D"		"E"		"F"		"G"	"H"	"J"	"K"	"L"	"M"	"N"	"P"	"R"	"S"	"X"
		Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing											
4	409.65	410.08	410.03	410.27	410.22	410.47	410.42	410.67	410.62	410.86	410.81	384.00	338.00	71'-7¾"	25'-7¾"	46'-0"	19'-7¾"	30'-0"	16'-0"	91	39	356.00
27	420.47	420.88	420.85	421.07	421.04	421.27	421.24	421.47	421.44	421.66	421.63	399.00	339.00	81'-5⅝"	21'-5⅝"	60'-0"	15'-5⅝"	50'-0"	10'-0"	119	30	351.00
30	414.35	414.75	414.72	414.95	414.92	415.15	415.12	415.34	415.31	415.54	415.51	394.00	343.00	71'-4¼"	20'-4¼"	51'-0"	14'-4¼"	42'-0"	9'-0"	101	28	354.00

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 2
DETAILS OF INTERMEDIATE BENT NOS. 4, 27, & 30
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

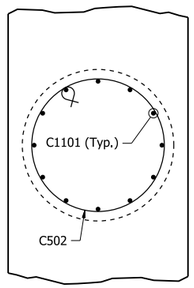
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JCP DATE: 9/14/23
CHECKED BY: PEG DATE: 10/20/23
DESIGNED BY: CZ/MGG DATE: 7/10/23
FILENAME: b04090121_b41.dgn
SCALE: ¼" = 1'-0"

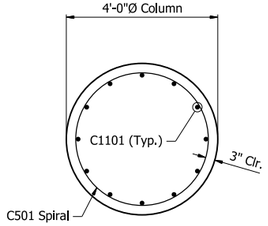
BRIDGE NO. 07684 DRAWING NO. 67567

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	508	809
		07684 - INT. BENTS - 67568				

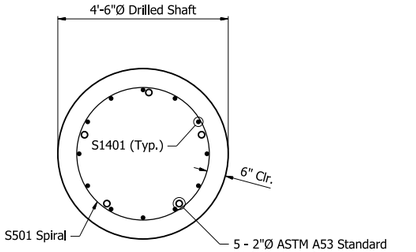


SECTION D-D
½" = 1'-0"
(Cap reinforcing not shown for clarity)

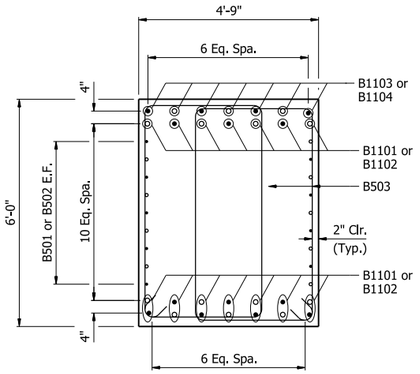


SECTION E-E
½" = 1'-0"

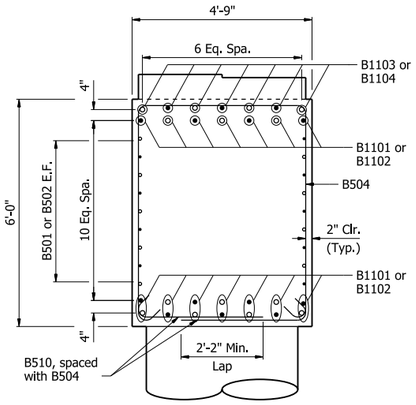
SECTION F-F
½" = 1'-0"



SECTION G-G
½" = 1'-0"

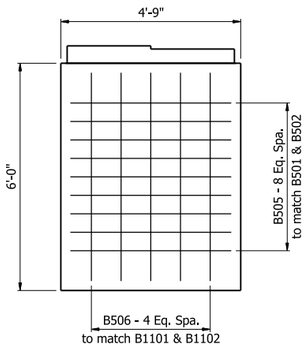


SECTION A-A
½" = 1'-0"

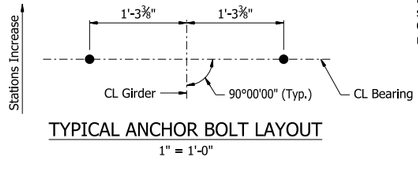


SECTION B-B
½" = 1'-0"
(Pedestal and column reinforcing not shown for clarity)

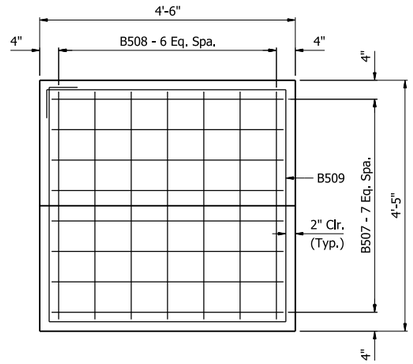
Note:
Contractor shall adjust B1101 thru B1104 bar spacing to accommodate anchor bolts, sheet metal sleeves, or vertical column steel. Contractor shall maintain a minimum and maximum spacing of 5" and 8", respectively.



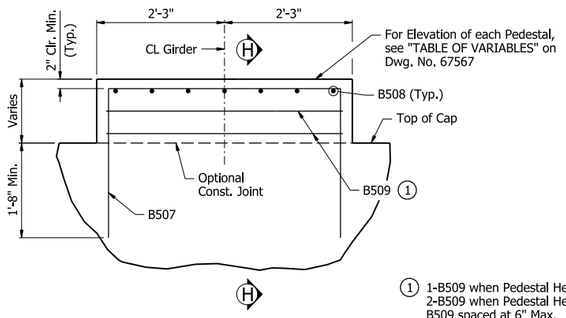
VIEW C-C
½" = 1'-0"



TYPICAL ANCHOR BOLT LAYOUT
1" = 1'-0"

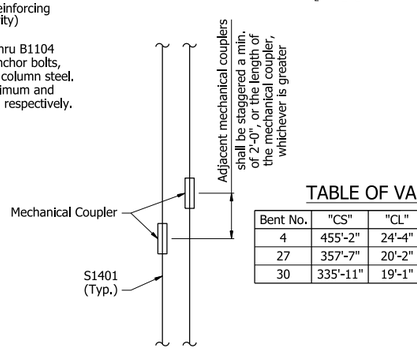


TYPICAL PEDESTAL PLAN
¾" = 1'-0"



TYPICAL PEDESTAL ELEVATION
¾" = 1'-0"

(1) 1-B509 when Pedestal Height is less than 11";
2-B509 when Pedestal Height is greater than 11";
B509 spaced at 6" Max.



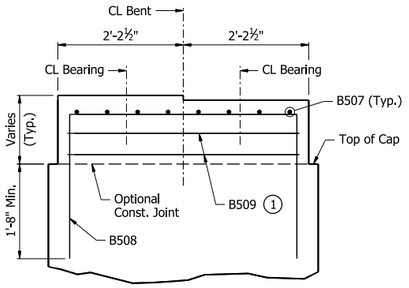
DRILLED SHAFT BAR SPLICE DETAIL
No Scale

MECHANICAL COUPLER AND SPLICE NOTES:
Contractor shall be required to use mechanical couplers to splice reinforcing bars whose lengths given in the Bar List exceed 60'-0". The bars shall be assembled as shown in "DRILLED SHAFT BAR SPLICE DETAIL".

The Contractor may choose location of splices for convenience, so long as no bar to be spliced is less than 5'-0" in length and no closer than 5'-6" from top of shaft.

The Contractor may also elect to splice bars whose lengths are less than 60'-0" to provide ease of construction, so long as the previous mentioned requirements are met.

Mechanical couplers shall maintain the clearances shown in "DRILLED SHAFT BAR SPLICE DETAIL". Not more than alternate bars shall be spliced at a given location. Payment for mechanical couplers shall be subsidiary to the item "DRILLED SHAFT (54" DIA.)". The couplers shall develop at least 125% of the specified yield strength of the bar.



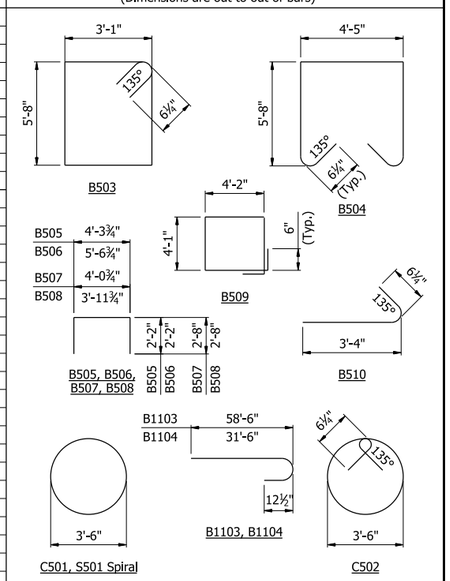
SECTION H-H
¾" = 1'-0"

TABLE OF VARIABLES

Bent No.	"CS"	"CL"	"SL"	"SS"
4	455'-2"	24'-4"	51'-3"	1,018'-8"
27	357'-7"	20'-2"	65'-3"	1,322'-2"
30	335'-11"	19'-1"	56'-3"	1,127'-1"

BAR LIST - PER BENT

	Mark	Number Required	Length	Pin Dia.	Bending Diagrams (Dimensions are out to out of bars)
	B501	18	60'-0"	Str.	
	B502	18	25'-4"	Str.	
	B503	216	18'-3"	2½"	
	B504	18	16'-7"	2½"	
	B505	18	8'-5"	2½"	
	B506	10	9'-8"	2½"	
	B507	72	9'-2"	2½"	
	B508	63	9'-1"	2½"	
	B509	12	17'-0"	2½"	
	B510	36	3'-10"	2½"	
	B1101	21	60'-0"	Str.	
	B1102	21	30'-0"	Str.	
	B1103	7	60'-0"	11¼"	
	B1104	7	33'-0"	11¼"	
	C501	3	"CS"	Spiral	
	C502	15	12'-2"	2½"	
	C1101	36	"CL"	Str.	
(2)	S501	3	"SS"	Spiral	
(2)	S1401	36	"SL"	Str.	

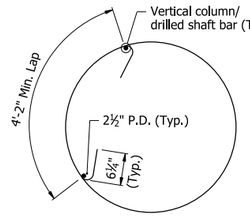


All bars designated with an "E" suffix are to be epoxy coated.

(2) S1401 longitudinal reinforcement and S501 spiral reinforcement are non-pay items which are subsidiary to item "DRILLED SHAFT (54" DIA.)". Individual lengths shall be determined by the Contractor.

Notes:
For locations of "SECTION A-A", "SECTION B-B", "VIEW C-C", "SECTION D-D" thru "SECTION G-G", see Dwg. No. 67567.

For "DETAILS OF ELASTOMERIC BEARINGS", see Dwg. Nos. 67704 and 67705.



SPIRAL SPLICE DETAIL
No Scale

SPIRAL REINFORCING NOTES:
Spiral reinforcing shall be plain round or deformed steel bars meeting the requirements of AASHTO M31 or M322, Type A with mill test report (Grade 60) or shall be cold drawn wire meeting the requirements of AASHTO M32 or M225 (Grade 70) with a minimum diameter of 0.625".

Spiral reinforcement shall be paid for at the contract unit price bid per pound for "Reinforcing Steel-Bridge (Grade 60)". No additional payment shall be made for spacers, optional splices, or bracing needed for assembly, shipping, handling, or erecting.

Contractor may elect to lap splice the spiral reinforcing. In no case shall a spiral be lapped within 5'-6" of the top or bottom of the column.

Splices in spiral reinforcing shall be a minimum of 80 bar diameters.

Spiral reinforcing at lapped splices shall be terminated by a 135° hook with a 6¼" tail around a vertical bar. See "SPIRAL SPLICE DETAIL". Hook may be field bent. Ends of spirals not lapped shall be terminated with 1½ turns.

ALTERNATE NO. 2
SHEET 2 OF 2
DETAILS OF INTERMEDIATE
BENT NOS. 4, 27, & 30
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

DRAWN BY: JCP DATE: 9/14/23
CHECKED BY: PEG DATE: 10/20/23
DESIGNED BY: CZ/MGG DATE: 7/10/23
FILENAME: b04090121_b42.dgn
SCALE: AS NOTED

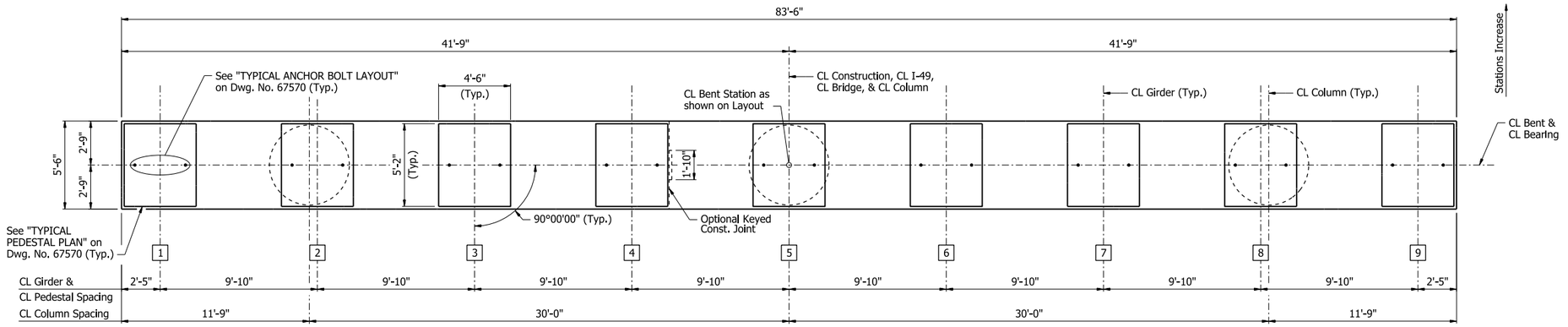
BRIDGE NO. 07684 DRAWING NO. 67568

PRINT DATE: 4/11/2024

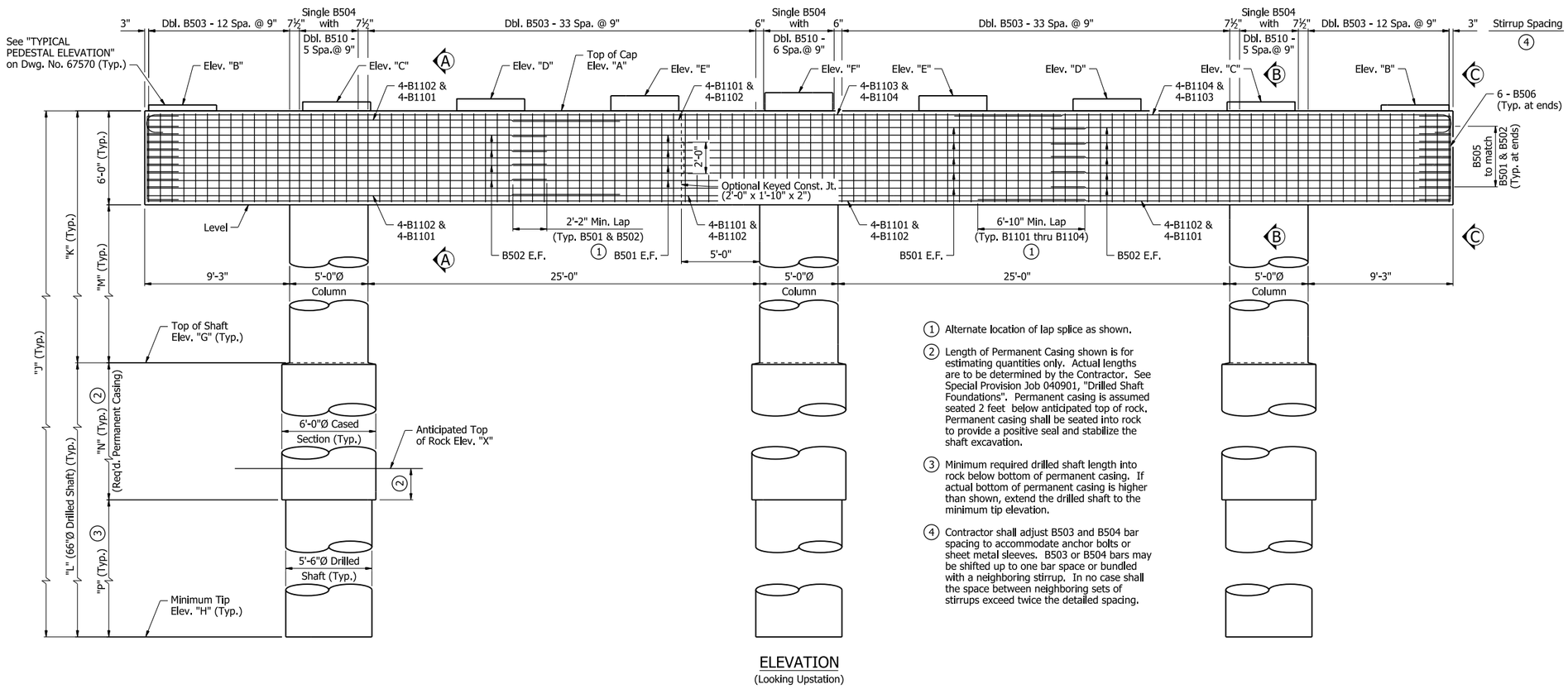
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	509	809
		07684 - INT. BENTS - 67569				

Notes:
For "SECTION A-A", "SECTION B-B", "VIEW C-C", "SECTION D-D" thru "SECTION G-G", see Dwg. No. 67570.

For "GENERAL NOTES", see Dwg. No. 67372.

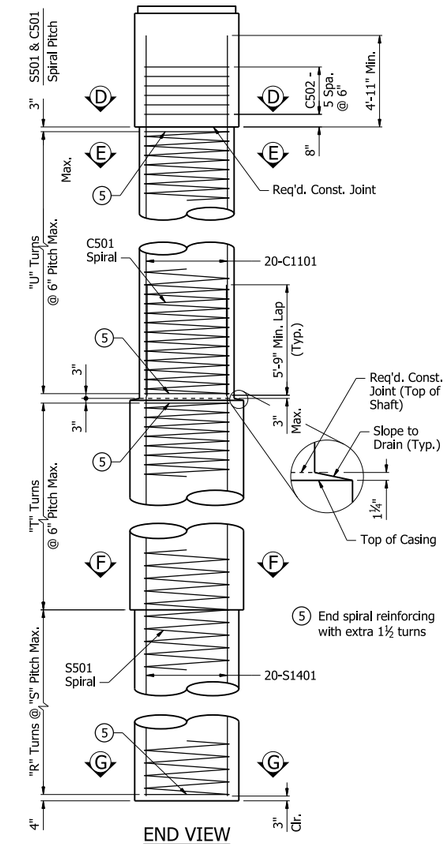


PLAN



ELEVATION
(Looking Upstation)

1. Alternate location of lap splice as shown.
2. Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined by the Contractor. See Special Provision Job 040901, "Drilled Shaft Foundations". Permanent casing is assumed seated 2 feet below anticipated top of rock. Permanent casing shall be seated into rock to provide a positive seal and stabilize the shaft excavation.
3. Minimum required drilled shaft length into rock below bottom of permanent casing. If actual bottom of permanent casing is higher than shown, extend the drilled shaft to the minimum tip elevation.
4. Contractor shall adjust B503 and B504 bar spacing to accommodate anchor bolts or sheet metal sleeves. B503 or B504 bars may be shifted up to one bar space or bundled with a neighboring stirrup. In no case shall the space between neighboring sets of stirrups exceed twice the detailed spacing.



END VIEW

Notes:
Dimensions, details, & reinforcing steel shown are typical for all columns and drilled shafts.

If column, cased section, or drilled shaft length changes during construction, number of turns shall be adjusted accordingly to maintain the maximum pitch in the regions identified above.

TABLE OF VARIABLES

Bent No.	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"	"L"	"M"	"N"	"P"	"R"	"S"	"T"	"U"	"X"
5	413.35	413.73	413.92	414.12	414.32	414.51	384.00	342.00	71'-4¼"	29'-4¼"	42'-0"	23'-4¼"	30'-0"	12'-0"	24	6"	60	46	356.00
6	417.24	417.62	417.81	418.01	418.21	418.40	385.00	329.00	88'-2⅞"	32'-2⅞"	56'-0"	26'-2⅞"	43'-0"	13'-0"	26	6"	86	52	344.00
7	421.20	421.58	421.77	421.97	422.17	422.36	386.00	329.00	92'-2⅜"	35'-2⅜"	57'-0"	29'-2⅜"	44'-0"	13'-0"	26	6"	88	58	344.00
19	436.85	437.23	437.42	437.62	437.82	438.01	387.00	338.50	98'-4¼"	49'-10¼"	48'-6"	43'-10¼"	34'-0"	14'-6"	31	5½"	68	87	355.00
21	432.82	433.19	433.39	433.59	433.78	433.98	386.00	338.50	94'-3⅞"	46'-9⅞"	47'-6"	40'-9⅞"	33'-0"	14'-6"	31	5½"	66	81	355.00
22	430.72	431.09	431.29	431.49	431.68	431.88	397.00	340.00	90'-8⅝"	33'-8⅝"	57'-0"	27'-8⅝"	46'-0"	11'-0"	22	6"	92	55	353.00
23	428.69	429.06	429.26	429.46	429.65	429.85	397.00	341.00	87'-8¼"	31'-8¼"	56'-0"	25'-8¼"	45'-0"	11'-0"	22	6"	90	51	354.00
25	424.73	425.10	425.30	425.50	425.69	425.89	398.00	339.00	85'-8¾"	26'-8¾"	59'-0"	20'-8¾"	48'-0"	11'-0"	22	6"	96	41	352.00
26	422.69	423.06	423.26	423.46	423.65	423.85	399.00	340.00	82'-8¼"	23'-8¼"	59'-0"	17'-8¼"	48'-0"	11'-0"	22	6"	96	35	353.00

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 2
DETAILS OF INTERMEDIATE BENT
NOS. 5, 6, 7, 19, 21, 22, 23, 25, & 26
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

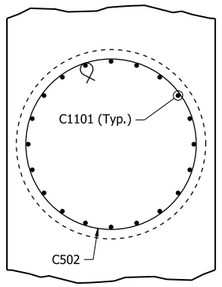
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 8/30/23
CHECKED BY: MGG DATE: 9/20/23
DESIGNED BY: CZ/MGG DATE: 7/21/23
FILENAME: b04090121_b51.dgn
SCALE: ¼" = 1'-0"

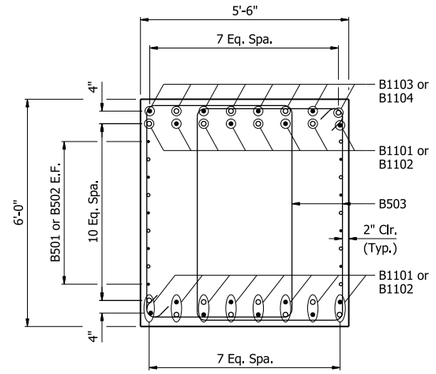
BRIDGE NO. 07684 DRAWING NO. 67569

PRINT DATE: 4/11/2024

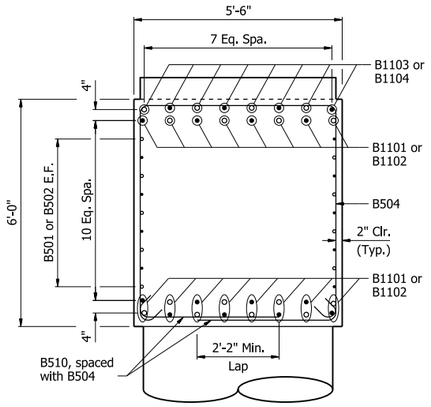
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	510	809
		07684 - INT. BENTS - 67570				



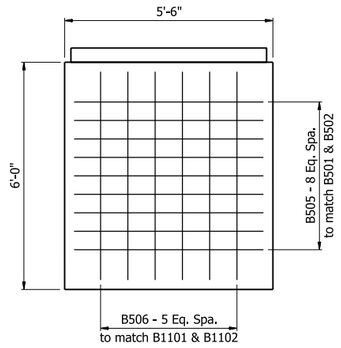
SECTION D-D
½" = 1'-0"
(Cap reinforcing not shown for clarity)



SECTION A-A
½" = 1'-0"

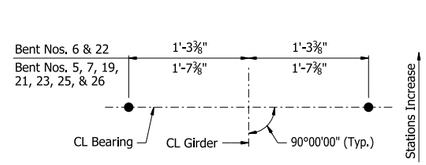


SECTION B-B
½" = 1'-0"
(Pedestal and column reinforcing not shown for clarity)



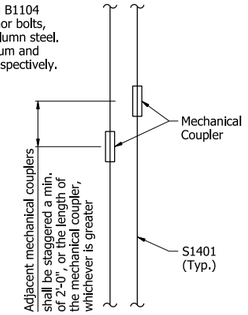
VIEW C-C
½" = 1'-0"

Note:
Contractor shall adjust B1101 thru B1104 bar spacing to accommodate anchor bolts, sheet metal sleeves, or vertical column steel. Contractor shall maintain a minimum and maximum spacing of 5" and 9", respectively.



SECTION E-E
½" = 1'-0"

TYPICAL ANCHOR BOLT LAYOUT
1" = 1'-0"



DRILLED SHAFT BAR SPLICE DETAIL
No Scale

MECHANICAL COUPLER AND SPLICE NOTES:
Contractor shall be required to use mechanical couplers to splice reinforcing bars whose lengths given in the Bar List exceed 60'-0". The bars shall be assembled as shown in "DRILLED SHAFT BAR SPLICE DETAIL".

The Contractor may choose location of splices for convenience, so long as no bar to be spliced is less than 5'-0" in length and no closer than 7'-3" from top of shaft.

The Contractor may also elect to splice bars whose lengths are less than 60'-0" to provide ease of construction, so long as the previous mentioned requirements are met.

Mechanical couplers shall maintain the clearances shown in "DRILLED SHAFT BAR SPLICE DETAIL". Not more than alternate bars shall be spliced at a given location. Payment for mechanical couplers shall be subsidiary to the item "DRILLED SHAFT (66" DIA.)". The couplers shall develop at least 125% of the specified yield strength of the bar.

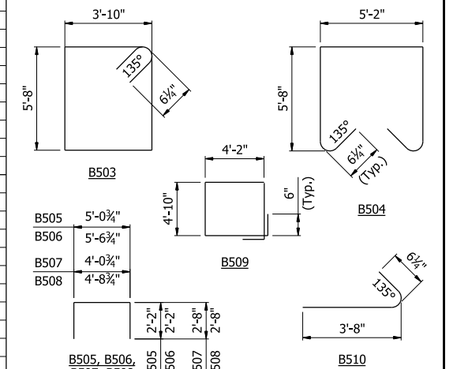
TABLE OF VARIABLES

Bent No.	"CS"	"CL"	"SS"	"SL"
5	684'-10"	28'-1"	1215'-8"	47'-9"
6	768'-7"	31'-0"	1607'-1"	61'-9"
7	852'-5"	33'-11"	1635'-0"	62'-9"
19	1257'-10"	48'-7"	1425'-5"	54'-3"
21	1173'-11"	45'-6"	1397'-5"	53'-3"
22	810'-6"	32'-6"	1635'-0"	62'-9"
23	754'-7"	30'-5"	1607'-1"	61'-9"
25	614'-11"	25'-5"	1690'-10"	64'-9"
26	531'-0"	22'-5"	1690'-10"	64'-9"

BAR LIST - PER BENT

Mark	Number Required	Length	Pin Dia.
B501	18	60'-0"	Str.
B502	18	25'-4"	Str.
B503	188	19'-9"	2½"
B504	19	17'-4"	2½"
B505	18	9'-2"	2½"
B506	12	9'-8"	2½"
B507	72	9'-2"	2½"
B508	63	9'-10"	2½"
B509	12	18'-6"	2½"
B510	38	4'-2"	2½"
B1101	24	60'-0"	Str.
B1102	24	30'-0"	Str.
B1103	8	60'-0"	1¼"
B1104	8	33'-0"	1¼"
C501	3	"CS"	Spiral
C502	18	15'-4"	2½"
C1101	60	"CL"	Str.
(2) S501	3	"SS"	Spiral
(2) S1401	60	"SL"	Str.

Bending Diagrams (Dimensions are out to out of bars)



All bars designated with an "E" suffix are to be epoxy coated.

(2) S1401 longitudinal reinforcement and S501 spiral reinforcement are non-pay items which are subsidiary to item "DRILLED SHAFT (66" DIA.)". Individual lengths shall be determined by the Contractor.

Notes:
For locations of "SECTION A-A", "SECTION B-B", "VIEW C-C", "SECTION D-D" thru "SECTION G-G", see Dwg. No. 67569.

For "DETAILS OF ELASTOMERIC BEARINGS", see Dwg. Nos. 67704 and 67705.

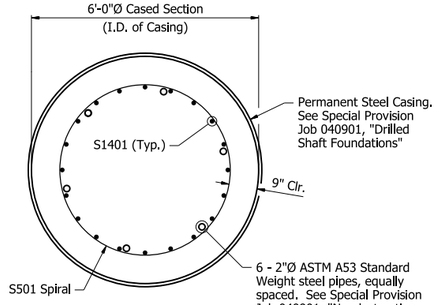
SPIRAL REINFORCING NOTES:
Spiral reinforcing shall be plain round or deformed steel bars meeting the requirements of AASHTO M31 or M322, Type A with mill test report (Grade 60) or shall be cold drawn wire meeting the requirements of AASHTO M32 or M225 (Grade 70) with a minimum diameter of 0.625".

Spiral reinforcement shall be paid for at the contract unit price bid per pound for "Reinforcing Steel-Bridge (Grade 60)". No additional payment shall be made for spacers, optional splices, or bracing needed for assembly, shipping, handling, or erecting.

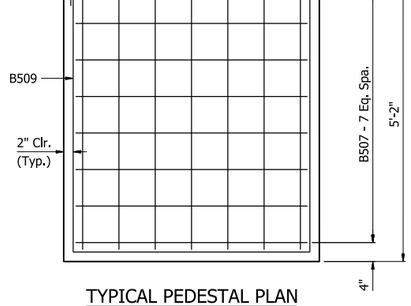
Contractor may elect to lap splice the spiral reinforcing. In no case shall a spiral be lapped within 7'-3" of the top or bottom of the column.

Splices in spiral reinforcing shall be a minimum of 80 bar diameters.

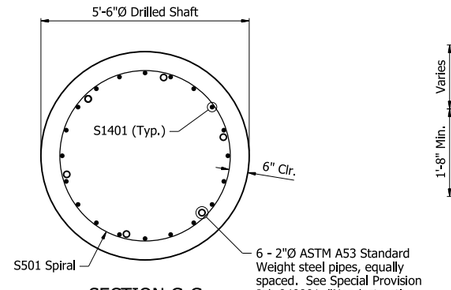
Spiral reinforcing at lapped splices shall be terminated by a 135° hook with a 6¼" tail around a vertical bar. See "SPIRAL SPLICE DETAIL". Hook may be field bent. Ends of spirals not lapped shall be terminated with 1½ turns.



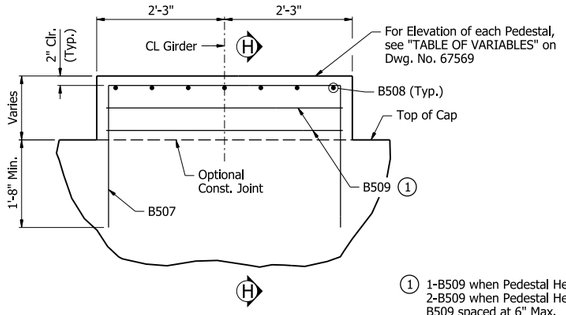
SECTION F-F
½" = 1'-0"



TYPICAL PEDESTAL PLAN
¾" = 1'-0"

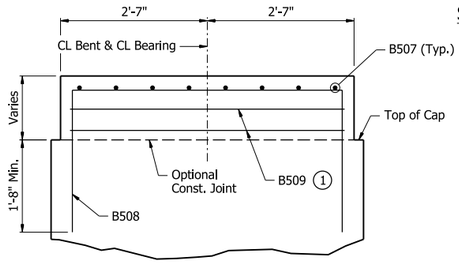


SECTION G-G
½" = 1'-0"

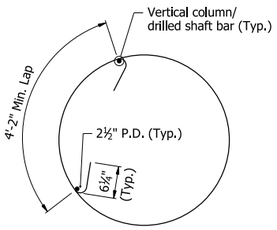


TYPICAL PEDESTAL ELEVATION
¾" = 1'-0"

(1) 1-B509 when Pedestal Height is less than 11";
2-B509 when Pedestal Height is greater than 11";
B509 spaced at 6" Max.



SECTION H-H
¾" = 1'-0"



SPIRAL SPLICE DETAIL
No Scale

STATE OF ARKANSAS
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ALTERNATE NO. 2
SHEET 2 OF 2
DETAILS OF INTERMEDIATE BENT NOS. 5, 6, 7, 19, 21, 22, 23, 25, & 26
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

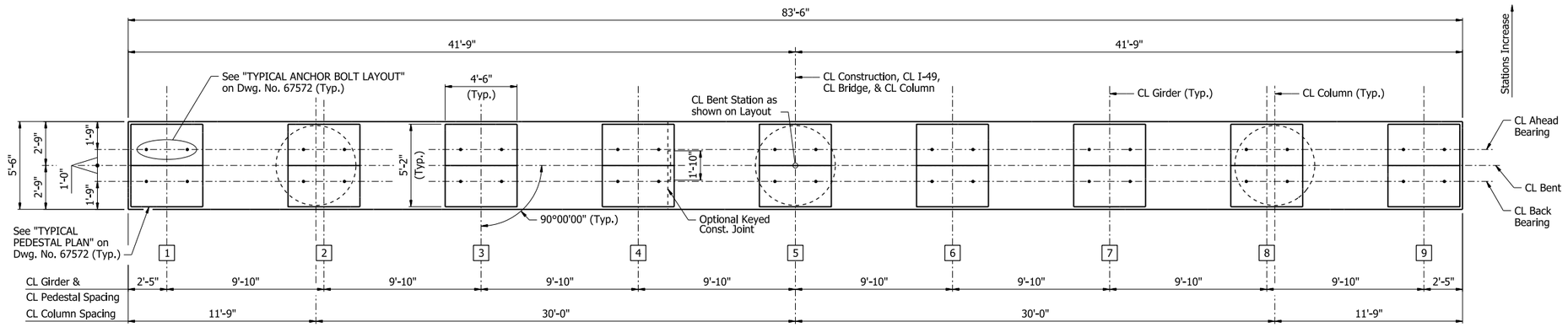
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 8/30/23
CHECKED BY: MGG DATE: 9/20/23
DESIGNED BY: CZ/MGG DATE: 7/20/23
FILENAME: b04090121_b52.dgn
SCALE: AS NOTED

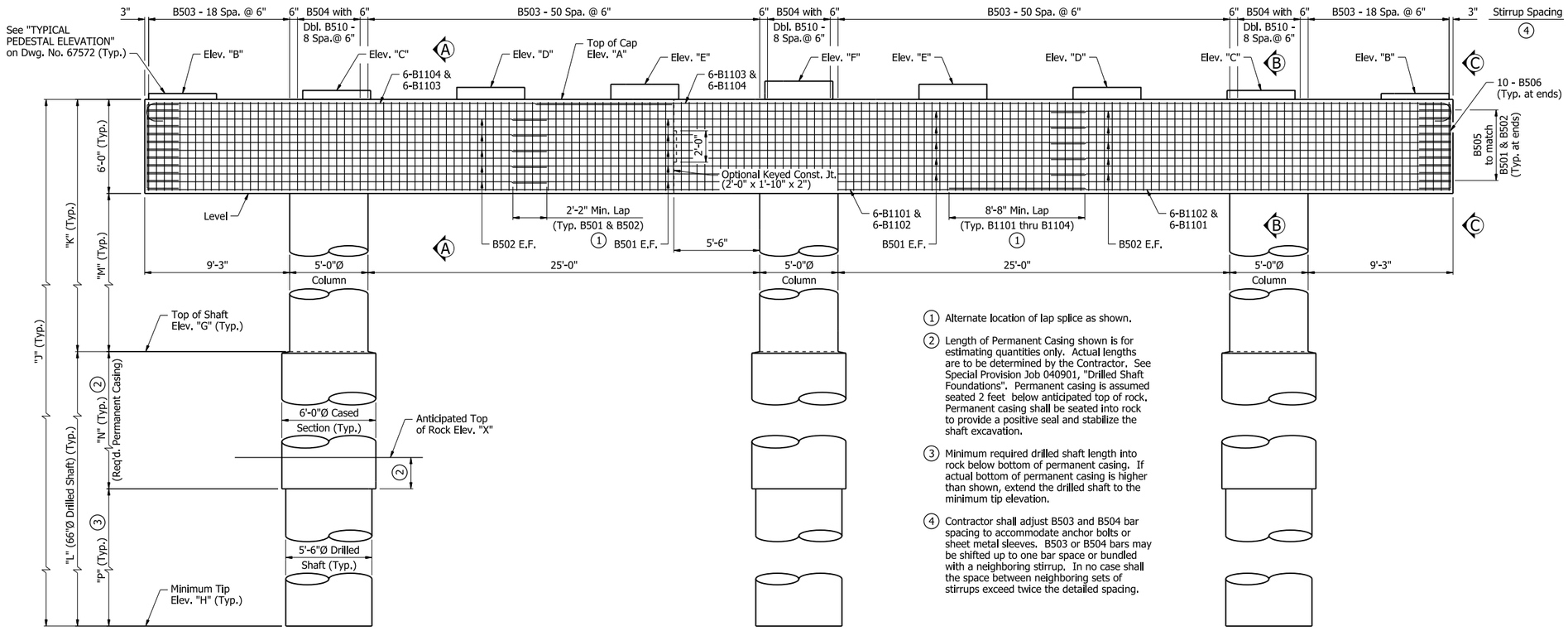
BRIDGE NO. 07684 DRAWING NO. 67570

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	511	809
		07684 - INT. BENTS - 67571				



PLAN



ELEVATION
(Looking Upstation)

1. Alternate location of lap splice as shown.
2. Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined by the Contractor. See Special Provision Job 040901, "Drilled Shaft Foundations". Permanent casing is assumed seated 2 feet below anticipated top of rock. Permanent casing shall be seated into rock to provide a positive seal and stabilize the shaft excavation.
3. Minimum required drilled shaft length into rock below bottom of permanent casing. If actual bottom of permanent casing is higher than shown, extend the drilled shaft to the minimum tip elevation.
4. Contractor shall adjust B503 and B504 bar spacing to accommodate anchor bolts or sheet metal sleeves. B503 or B504 bars may be shifted up to one bar space or bundled with a neighboring stirrup. In no case shall the space between neighboring sets of stirrups exceed twice the detailed spacing.

Notes:
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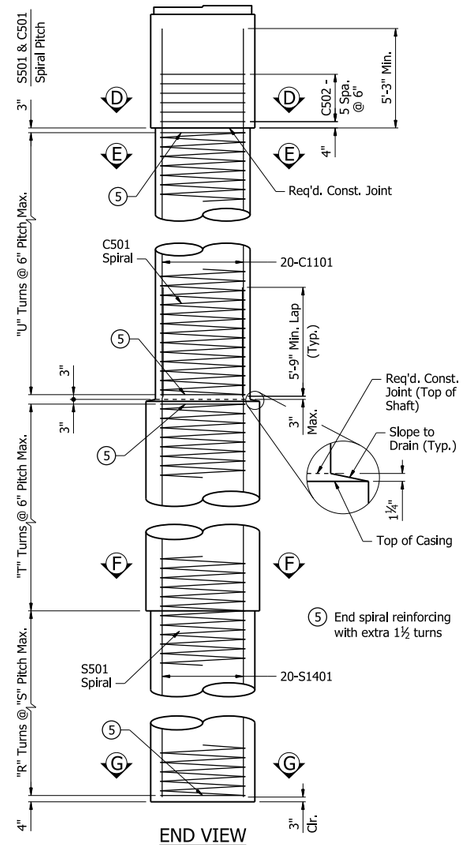
For "GENERAL NOTES", see Dwg. No. 67372.



END VIEW

Notes:
Dimensions, details, & reinforcing steel shown are typical for all columns and drilled shafts.

If column, cased section, or drilled shaft length changes during construction, number of turns shall be adjusted accordingly to maintain the maximum pitch in the regions identified above.

TABLE OF VARIABLES

Bent No.	"A"	"B"		"C"		"D"		"E"		"F"		"G"	"H"	"J"	"K"	"L"	"M"	"N"	"P"	"R"	"S"	"T"	"U"	"X"
		Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing													
8	424.88	425.26	425.32	425.45	425.51	425.65	425.71	425.85	425.91	426.04	426.10	387.00	324.00	100'-10½"	37'-10½"	63'-0"	31'-10½"	50'-0"	13'-0"	26	6"	100	63	339.00
20	434.66	435.06	435.03	435.26	435.23	435.46	435.42	435.65	435.62	435.85	435.82	387.00	337.50	97'-1⅞"	47'-7⅞"	49'-6"	41'-7⅞"	35'-0"	14'-6"	31	5½"	70	83	354.00
24	426.52	426.90	426.97	427.10	427.16	427.29	427.36	427.49	427.56	427.69	427.75	398.00	340.00	86'-6¼"	28'-6¼"	58'-0"	22'-6¼"	47'-0"	11'-0"	22	6"	94	45	353.00

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 2
DETAILS OF INTERMEDIATE BENT NOS. 8, 20, & 24
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

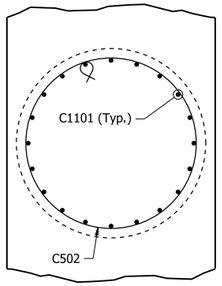
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 9/14/23
CHECKED BY: DJB DATE: 10/6/23
DESIGNED BY: CZ/MGG DATE: 7/28/23
FILENAME: b04090121_b81.dgn
SCALE: ¼" = 1'-0"

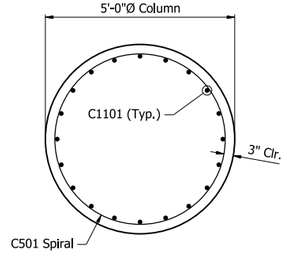
BRIDGE NO. 07684 DRAWING NO. 67571

PRINT DATE: 4/11/2024

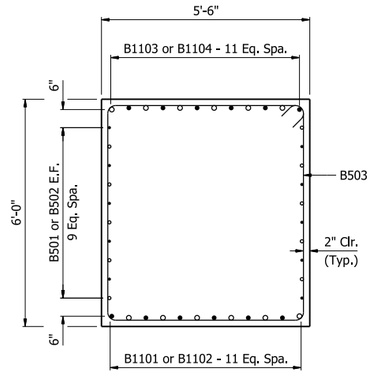
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	512	809
		07684 - INT. BENTS - 67572				



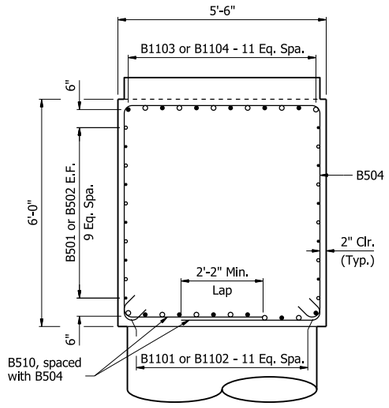
SECTION D-D
½" = 1'-0"
(Cap reinforcing not shown for clarity)



SECTION E-E
½" = 1'-0"

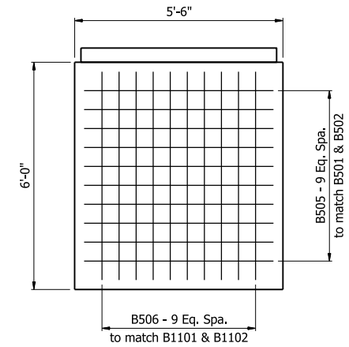


SECTION A-A
½" = 1'-0"

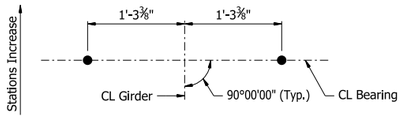


SECTION B-B
½" = 1'-0"
(Pedestal and column reinforcing
not shown for clarity)

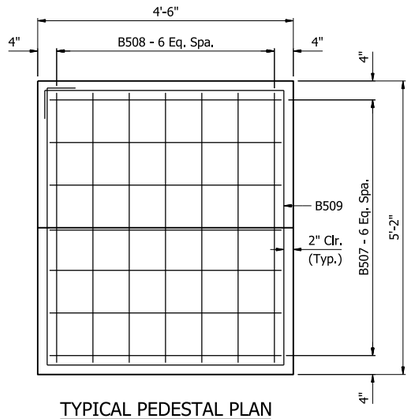
Note:
Contractor shall adjust B1101 thru B1104 bar spacing to accommodate anchor bolts, sheet metal sleeves, or vertical column steel. Contractor shall maintain a minimum and maximum spacing of 5" and 8", respectively. B1101 thru B1104 bars may be bundled as required to maintain the minimum spacing so long as the maximum spacing is not exceeded.



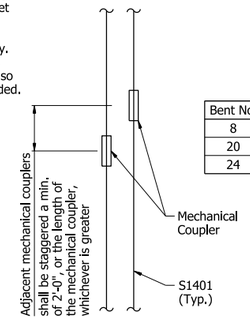
VIEW C-C
½" = 1'-0"



TYPICAL ANCHOR BOLT LAYOUT
1" = 1'-0"



TYPICAL PEDESTAL PLAN
¾" = 1'-0"



DRILLED SHAFT BAR SPLICE DETAIL
No Scale

MECHANICAL COUPLER AND SPLICE NOTES:
Contractor shall be required to use mechanical couplers to splice reinforcing bars whose lengths given in the Bar List exceed 60'-0". The bars shall be assembled as shown in "DRILLED SHAFT BAR SPLICE DETAIL".

The Contractor may choose location of splices for convenience, so long as no bar to be spliced is less than 5'-0" in length and no closer than 7'-3" from top of shaft.

The Contractor may also elect to splice bars whose lengths are less than 60'-0" to provide ease of construction, so long as the previous mentioned requirements are met.

Mechanical couplers shall maintain the clearances shown in "DRILLED SHAFT BAR SPLICE DETAIL". Not more than alternate bars shall be spliced at a given location. Payment for mechanical couplers shall be subsidiary to the item "DRILLED SHAFT (66" DIA.)". The couplers shall develop at least 125% of the specified yield strength of the bar.

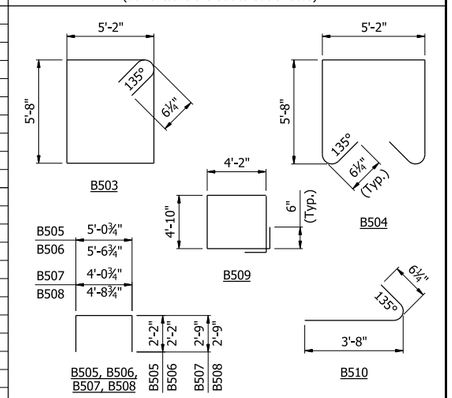
TABLE OF VARIABLES

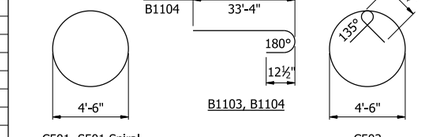
Bent No.	"CS"	"CL"	"SS"	"SL"
8	922'-4"	36'-11"	1802'-8"	69'-0"
20	1201'-9"	46'-8"	1453'-5"	55'-6"
24	670'-9"	27'-7"	1662'-11"	64'-0"

BAR LIST - PER BENT

	Mark	Number Required	Length	Pin Dia.
	B501	20	60'-0"	Str.
	B502	20	25'-4"	Str.
	B503	140	22'-5"	2½"
	B504	27	17'-4"	2½"
	B505	20	9'-2"	2½"
	B506	20	9'-8"	2½"
	B507	63	9'-4"	2½"
	B508	63	10'-0"	2½"
	B509	12	18'-6"	2½"
	B510	54	4'-2"	2½"
	B1101	12	60'-0"	Str.
	B1102	12	31'-10"	Str.
	B1103	12	60'-0"	1¼"
	B1104	12	34'-10"	1¼"
	C501	3	"CS"	Spiral
	C502	18	15'-4"	2½"
	C1101	60	"CL"	Str.
(2)	S501	3	"SS"	Spiral
(2)	S1401	60	"SL"	Str.

Bending Diagrams
(Dimensions are out to out of bars)





All bars designated with an "E" suffix are to be epoxy coated.

(2) S1401 longitudinal reinforcement and S501 spiral reinforcement are non-pay items which are subsidiary to item "DRILLED SHAFT (66" DIA.)". Individual lengths shall be determined by the Contractor.

Notes:
For locations of "SECTION A-A", "SECTION B-B", "VIEW C-C", "SECTION D-D" thru "SECTION G-G", see Dwg. No. 67571.

For "DETAILS OF ELASTOMERIC BEARINGS", see Dwg. Nos. 67704 and 67705.

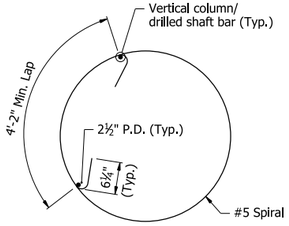
SPIRAL REINFORCING NOTES:
Spiral reinforcing shall be plain round or deformed steel bars meeting the requirements of AASHTO M31 or M322, Type A with mill test report (Grade 60) or shall be cold drawn wire meeting the requirements of AASHTO M32 or M225 (Grade 70) with a minimum diameter of 0.625".

Spiral reinforcement shall be paid for at the contract unit price bid per pound for "Reinforcing Steel-Bridge (Grade 60)". No additional payment shall be made for spacers, optional splices, or bracing needed for assembly, shipping, handling, or erecting.

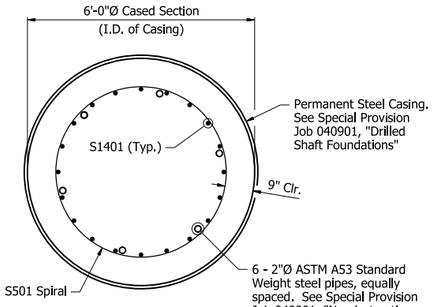
Contractor may elect to lap splice the spiral reinforcing. In no case shall a spiral be lapped within 7'-3" of the top or bottom of the column.

Splices in spiral reinforcing shall be a minimum of 80 bar diameters.

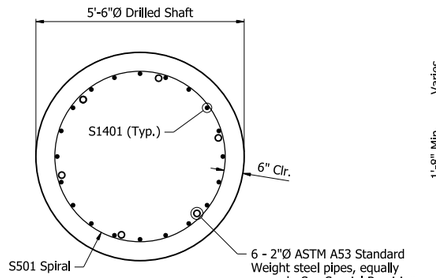
Spiral reinforcing at lapped splices shall be terminated by a 135° hook with a 6¼" tail around a vertical bar. See "SPIRAL SPLICE DETAIL". Hook may be field bent. Ends of spirals not lapped shall be terminated with 1½ turns.



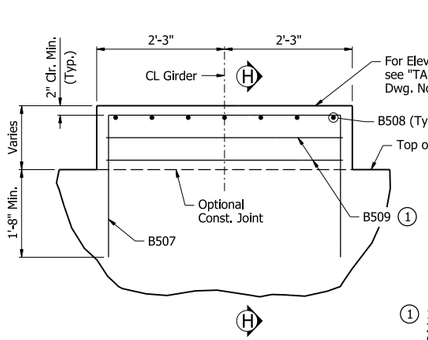
SPIRAL SPLICE DETAIL
No Scale



SECTION F-F
½" = 1'-0"

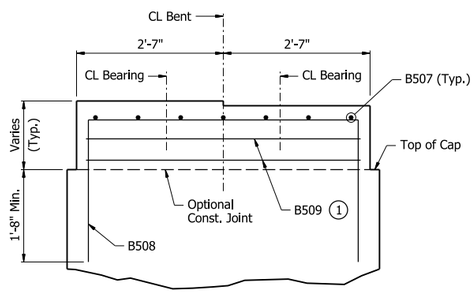


SECTION G-G
½" = 1'-0"



TYPICAL PEDESTAL ELEVATION
¾" = 1'-0"

(1) 1-B509 when Pedestal Height is less than 11";
2-B509 when Pedestal Height is greater than 11";
B509 spaced at 6" Max.



SECTION H-H
¾" = 1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 2 OF 2
DETAILS OF INTERMEDIATE
BENT NOS. 8, 20, & 24
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 9/14/23
CHECKED BY: DJB DATE: 10/6/23
DESIGNED BY: CZ/MGG DATE: 7/28/23
FILENAME: b04090121_b82.dgn
SCALE: AS NOTED

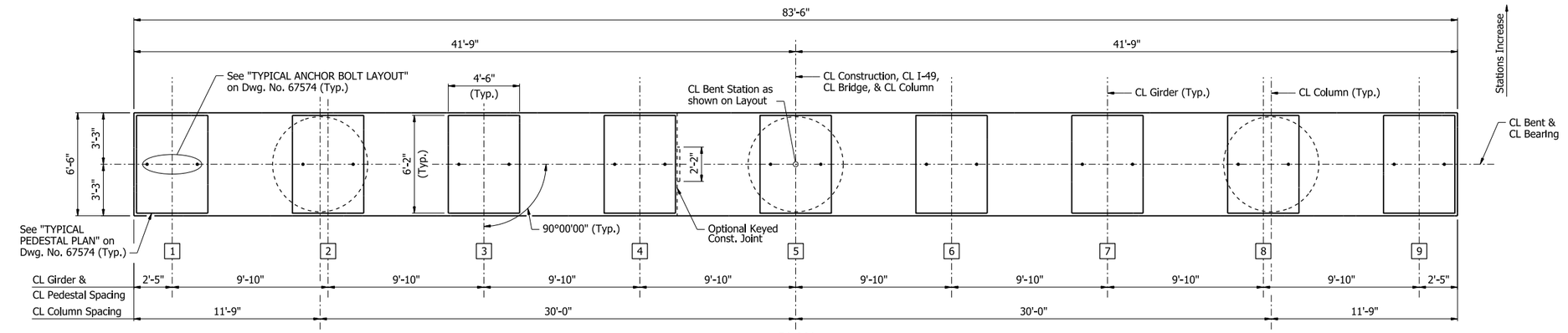
BRIDGE NO. 07684 DRAWING NO. 67572

PRINT DATE: 4/11/2024

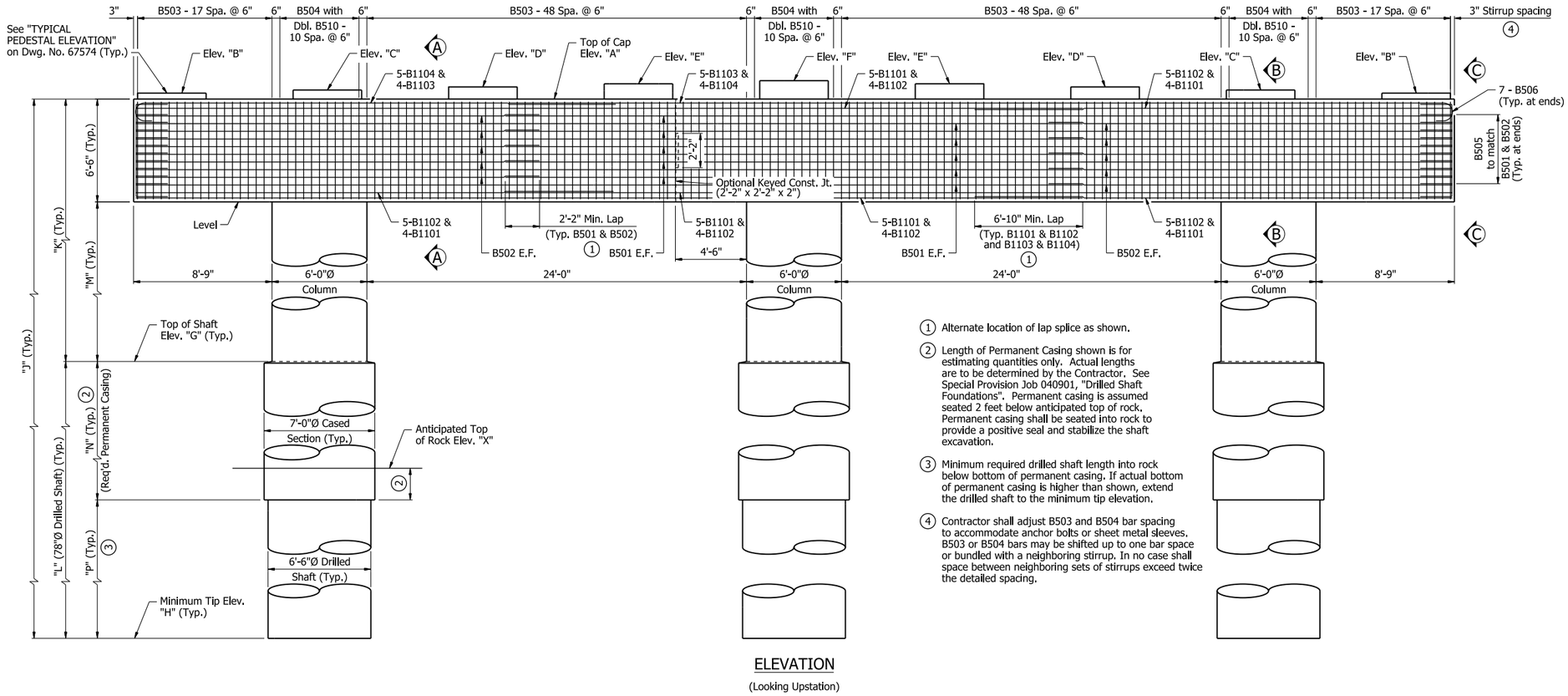
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	513	809
		07684 - INT. BENTS - 67573				

Notes:
For "SECTION A-A", "SECTION B-B", "VIEW C-C", "SECTION D-D" thru "SECTION G-G", see Dwg. No. 67574.

For "GENERAL NOTES", see Dwg. No. 67372.



PLAN



ELEVATION

(Looking Upstation)

(1) Alternate location of lap splice as shown.

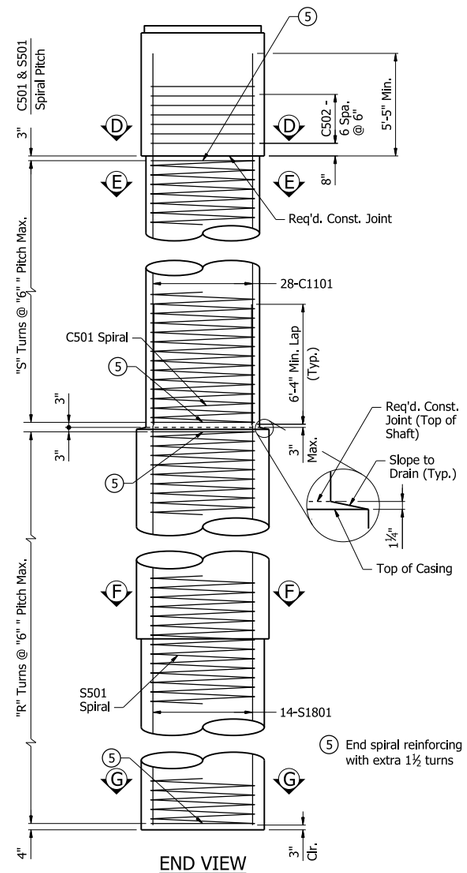
(2) Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined by the Contractor. See Special Provision Job 040901, "Drilled Shaft Foundations". Permanent casing is assumed seated 2 feet below anticipated top of rock. Permanent casing shall be seated into rock to provide a positive seal and stabilize the shaft excavation.

(3) Minimum required drilled shaft length into rock below bottom of permanent casing. If actual bottom of permanent casing is higher than shown, extend the drilled shaft to the minimum tip elevation.

(4) Contractor shall adjust B503 and B504 bar spacing to accommodate anchor bolts or sheet metal sleeves. B503 or B504 bars may be shifted up to one bar space or bundled with a neighboring stirrup. In no case shall space between neighboring sets of stirrups exceed twice the detailed spacing.

TABLE OF VARIABLES

Bent No.	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"	"L"	"M"	"N"	"P"	"R"	"S"	"X"
9	428.95	429.33	429.52	429.72	429.92	430.11	388.00	341.00	87'-11⅜"	40'-11⅜"	47'-0"	34'-5⅜"	34'-0"	13'-0"	93	68	356.00
10	432.85	433.22	433.41	433.61	433.81	434.00	390.00	341.00	91'-10¼"	42'-10¼"	49'-0"	36'-4¼"	36'-0"	13'-0"	97	72	356.00
11	436.81	437.18	437.37	437.57	437.77	437.96	386.00	341.00	95'-9¾"	50'-9¾"	45'-0"	44'-3¾"	32'-0"	13'-0"	89	88	356.00



END VIEW

(5) End spiral reinforcing with extra 1½ turns

Notes:
Dimensions, details, & reinforcing steel shown are typical for all columns and drilled shafts.
If column, cased section, or drilled shaft length changes during construction, number of turns shall be adjusted accordingly to maintain the maximum pitch in the regions identified above.

ALTERNATE NO. 2
SHEET 1 OF 2
DETAILS OF INTERMEDIATE BENT NOS. 9, 10, & 11
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

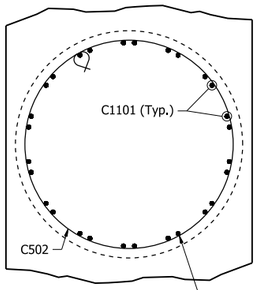
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

DRAWN BY: JCP DATE: 9/7/23
CHECKED BY: DJB DATE: 10/9/23
DESIGNED BY: CZ DATE: 7/17/23
FILENAME: b04090121_b91.dgn
SCALE: ¼" = 1'-0"

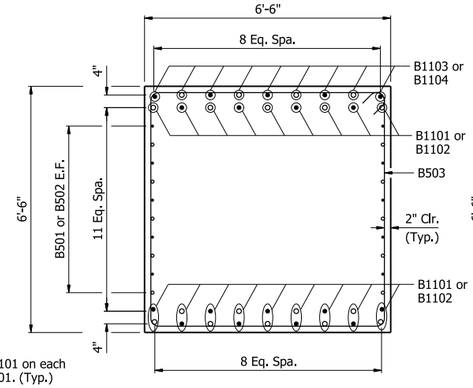
BRIDGE NO. 07684 DRAWING NO. 67573

PRINT DATE: 4/11/2024

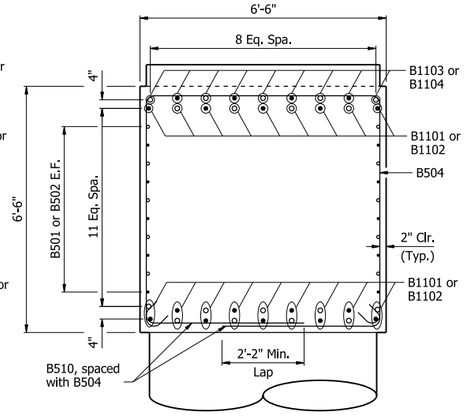
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	514	809
		07684 - INT. BENTS - 67574				



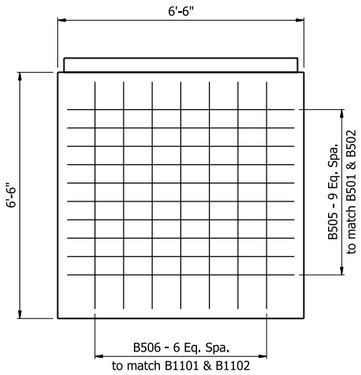
SECTION D-D
½" = 1'-0"
(Cap reinforcing not shown for clarity)



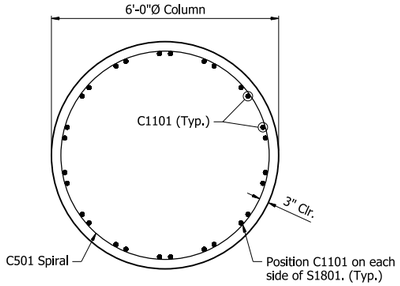
SECTION A-A
½" = 1'-0"



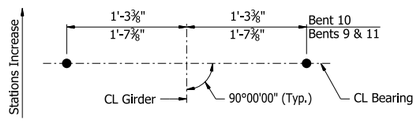
SECTION B-B
½" = 1'-0"
(Pedestal and column reinforcing not shown for clarity)



VIEW C-C
½" = 1'-0"

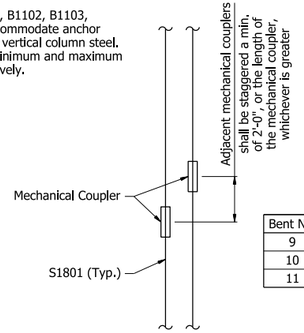


SECTION E-E
½" = 1'-0"



TYPICAL ANCHOR BOLT LAYOUT
1" = 1'-0"

Note:
Contractor shall adjust B1101, B1102, B1103, and B1104 bar spacing to accommodate anchor bolts, sheet metal sleeves, or vertical column steel. Contractor shall maintain a minimum and maximum spacing of 5" and 8", respectively.



DRILLED SHAFT BAR SPLICE DETAIL
No Scale

MECHANICAL COUPLER AND SPLICE NOTES:
Contractor shall be required to use mechanical couplers to splice reinforcing bars whose lengths given in the Bar List exceed 60'-0". The bars shall be assembled as shown in "DRILLED SHAFT BAR SPLICE DETAIL".

The Contractor may choose location of splices for convenience, so long as no bar to be spliced is less than 5'-0" in length and no closer than 7'-4" from top of shaft.

The Contractor may also elect to splice bars whose lengths are less than 60'-0" to provide ease of construction, so long as the previous mentioned requirements are met.

Mechanical couplers shall maintain the clearances shown in "DRILLED SHAFT BAR SPLICE DETAIL". Not more than alternate bars shall be spliced at a given location. Payment for mechanical couplers shall be subsidiary to the item "DRILLED SHAFT (78" DIA.)". The couplers shall develop at least 125% of the specified yield strength of the bar.

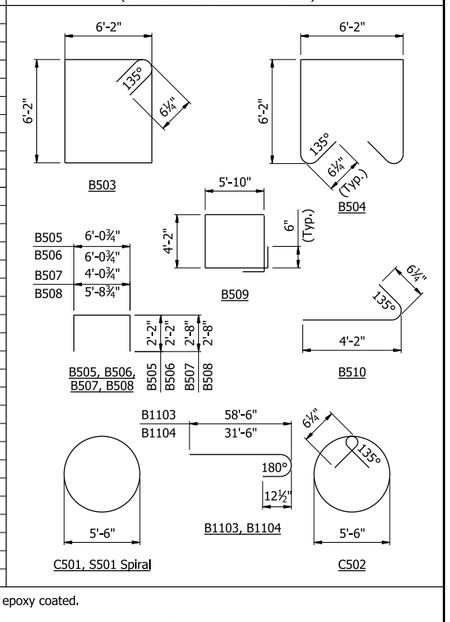
TABLE OF VARIABLES

Bent No.	"CS"	"CL"	"SS"	"SL"
9	1215'-1"	39'-8"	1642'-11"	53'-4"
10	1283'-6"	41'-7"	1711'-4"	55'-4"
11	1557'-4"	49'-6"	1574'-5"	51'-4"

BAR LIST - PER BENT

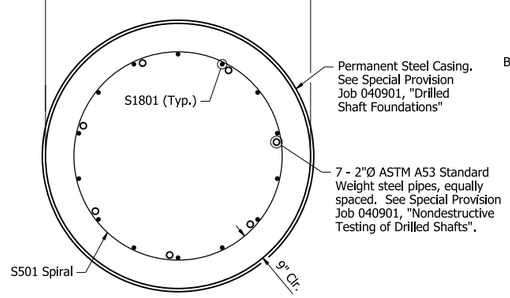
Mark	Number Required	Length	Pin Dia.
B501	20	60'-0"	Str.
B502	20	25'-4"	Str.
B503	134	25'-5"	2½"
B504	33	19'-4"	2½"
B505	20	10'-2"	2½"
B506	14	10'-2"	2½"
B507	90	9'-2"	2½"
B508	63	10'-10"	2½"
B509	12	20'-6"	2½"
B510	66	4'-8"	2½"
B1101	27	60'-0"	Str.
B1102	27	30'-0"	Str.
B1103	9	60'-0"	1¼"
B1104	9	33'-0"	1¼"
C501	3	"CS"	Spiral
C502	21	18'-5"	2½"
C1101	84	"CL"	Str.
(2) S501	3	"SS"	Spiral
(2) S1801	42	"SL"	Str.

Bending Diagrams (Dimensions are out to out of bars)

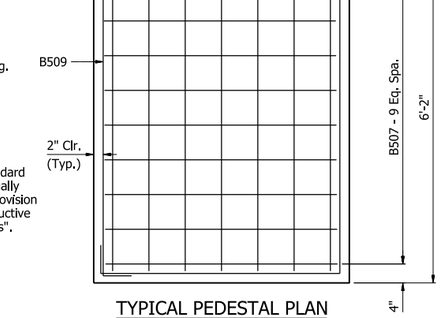


All bars designated with an "E" suffix are to be epoxy coated.

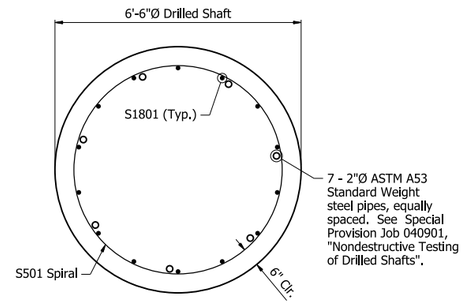
(2) S1801 Longitudinal reinforcement and S501 spiral reinforcement are non-pay items which are subsidiary to item "Drilled Shaft (78" Dia.)". Individual lengths shall be determined by the Contractor.



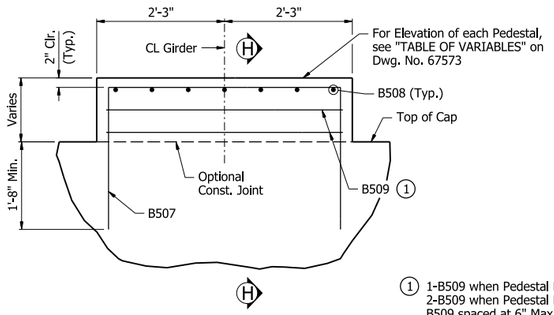
SECTION F-F
½" = 1'-0"



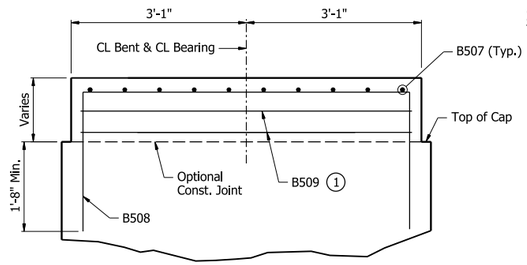
TYPICAL PEDESTAL PLAN
¾" = 1'-0"



SECTION G-G
½" = 1'-0"

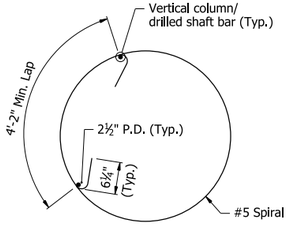


TYPICAL PEDESTAL ELEVATION
¾" = 1'-0"



SECTION H-H
¾" = 1'-0"

(1) 1-B509 when Pedestal Height is less than 11";
2-B509 when Pedestal Height is greater than 11";
B509 spaced at 6" Max.



SPIRAL SPLICE DETAIL
No Scale

SPIRAL REINFORCING NOTES:
Spiral reinforcing shall be plain round or deformed steel bars meeting the requirements of AASHTO M31 or M322, Type A with mill test report (Grade 60) or shall be cold drawn wire meeting the requirements of AASHTO M32 or M225 (Grade 70) with a minimum diameter of 0.625".

Spiral reinforcement shall be paid for at the contract unit price bid per pound for "Reinforcing Steel-Bridge (Grade 60)". No additional payment shall be made for spacers, optional splices, or bracing needed for assembly, shipping, handling, or erecting.

Contractor may elect to lap splice the spiral reinforcing. In no case shall a spiral be lapped within 7'-4" of the top or bottom of the column.

Splices in spiral reinforcing shall be a minimum of 80 bar diameters.

Spiral reinforcing at lapped splices shall be terminated by a 135° hook with a 6¼" tail around a vertical bar. See "SPIRAL SPLICE DETAIL". Hook may be field bent. Ends of spirals not lapped shall be terminated with 1½ turns.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 2 OF 2
DETAILS OF INTERMEDIATE BENT NOS. 9, 10, & 11
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JCP DATE: 9/7/23
CHECKED BY: DJB DATE: 10/9/23
DESIGNED BY: CZ DATE: 7/17/23
FILENAME: b04090121_b92.dgn
SCALE: AS NOTED

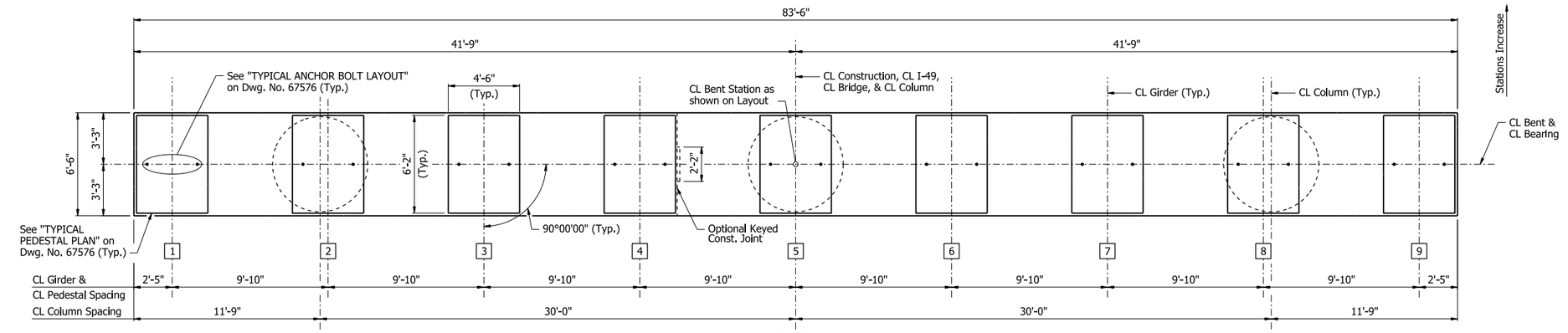
BRIDGE NO. 07684 DRAWING NO. 67574

PRINT DATE: 4/11/2024

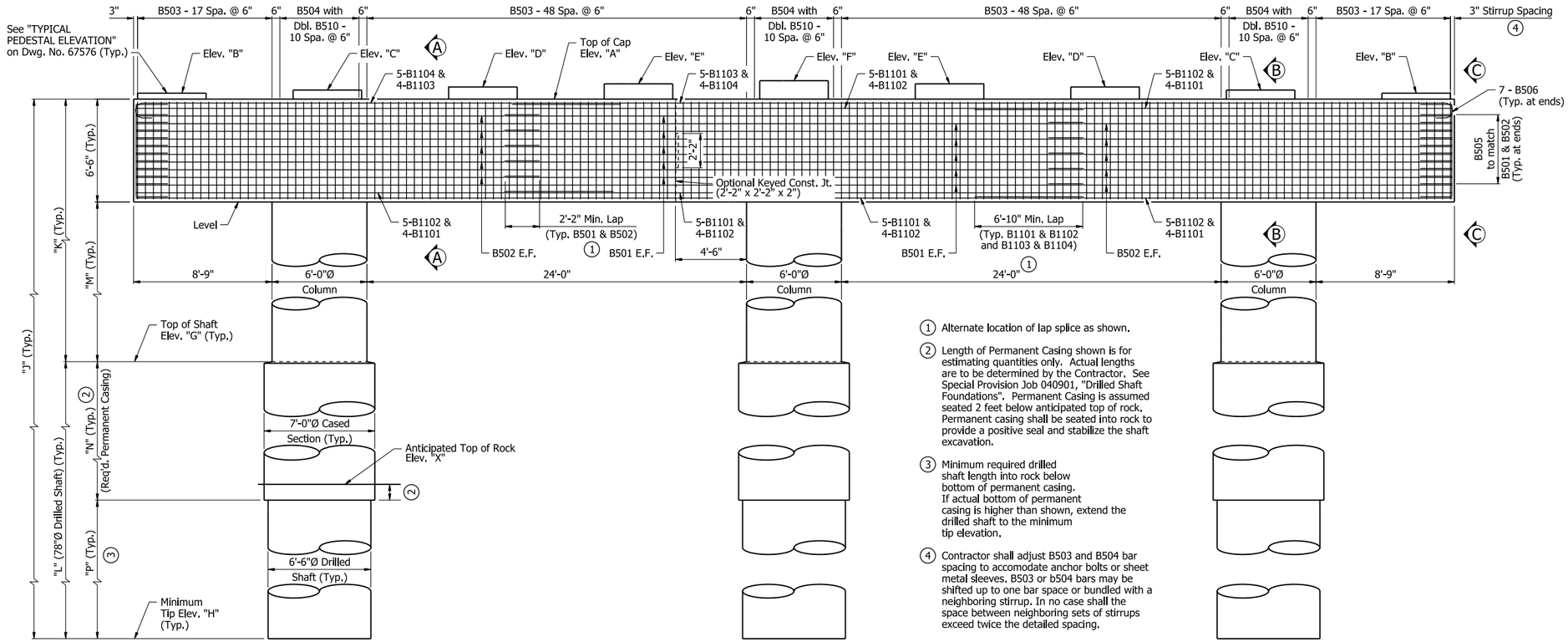
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	515	809
		07684 - INT. BENTS - 67575				

Notes:
For "SECTION A-A", "SECTION B-B", "VIEW C-C", "SECTION D-D" thru "SECTION G-G", see Dwg. No. 67576.

For "GENERAL NOTES", see Dwg. No. 67372.



PLAN



ELEVATION

(Looking Upstation)

(1) Alternate location of lap splice as shown.

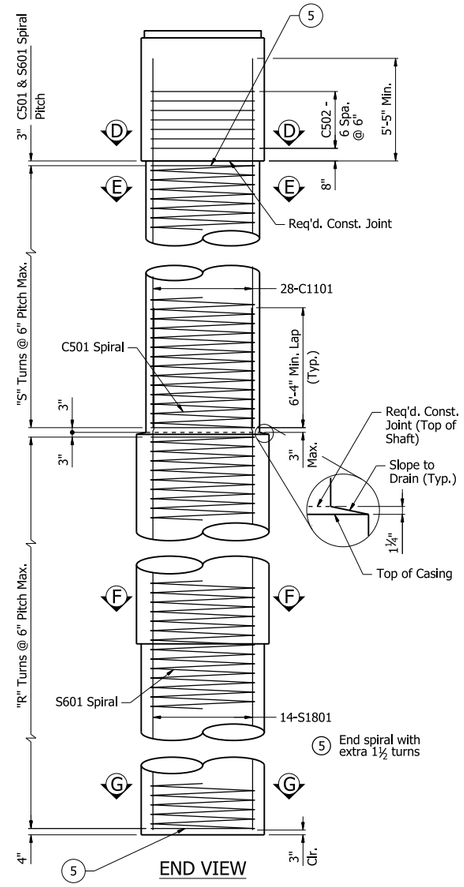
(2) Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined by the Contractor. See Special Provision Job 040901, "Drilled Shaft Foundations". Permanent Casing is assumed seated 2 feet below anticipated top of rock. Permanent casing shall be seated into rock to provide a positive seal and stabilize the shaft excavation.

(3) Minimum required drilled shaft length into rock below bottom of permanent casing. If actual bottom of permanent casing is higher than shown, extend the drilled shaft to the minimum tip elevation.

(4) Contractor shall adjust B503 and B504 bar spacing to accomodate anchor bolts or sheet metal sleeves. B503 or b504 bars may be shifted up to one bar space or bundled with a neighboring stirrup. In no case shall the space between neighboring sets of stirrups exceed twice the detailed spacing.

TABLE OF VARIABLES

Bent No.	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"	"L"	"M"	"N"	"P"	"R"	"S"	"X"
17	440.98	441.36	441.55	441.75	441.95	442.14	384.00	334.50	106'-5¾"	56'-11¾"	49'-6"	50'-5¾"	32'-0"	17'-6"	98	100	354.00
18	438.88	439.26	439.45	439.65	439.85	440.04	385.00	333.50	105'-4½"	53'-10½"	51'-6"	47'-4½"	34'-0"	17'-6"	102	94	353.00



END VIEW

Notes:
Dimensions, details, & reinforcing steel shown are typical for all columns and drilled shafts.
If column, cased section, or drilled shaft length changes during construction, number of turns shall be adjusted accordingly to maintain the maximun pitch in the regions identified above.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 2
DETAILS OF INTERMEDIATE BENT NOS. 17 & 18
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION

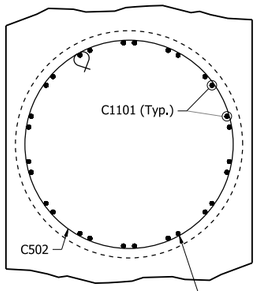
LITTLE ROCK, ARK.

DRAWN BY: JCP DATE: 9/13/23
CHECKED BY: MGG DATE: 10/19/23
DESIGNED BY: MGG DATE: 7/21/23
FILENAME: b04090121_b171.dgn
SCALE: ¼"=1'-0"

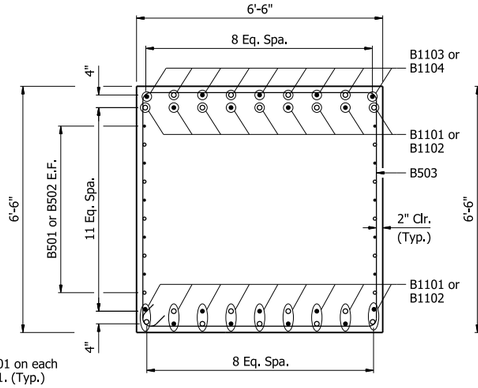
BRIDGE NO. 07684 DRAWING NO. 67575

PRINT DATE: 4/11/2024

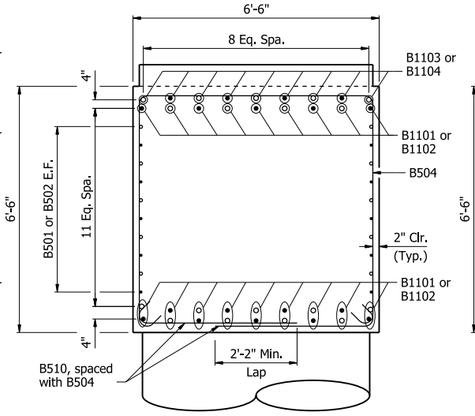
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	516	809
		07684 - INT. BENTS - 67576				



SECTION D-D
½" = 1'-0"
(cap reinforcing not shown for clarity)

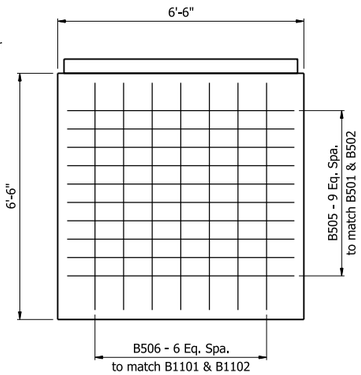


SECTION A-A
½" = 1'-0"

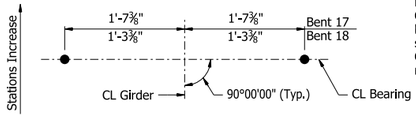


SECTION B-B
½" = 1'-0"
(Pedestal and column reinforcing not shown for clarity)

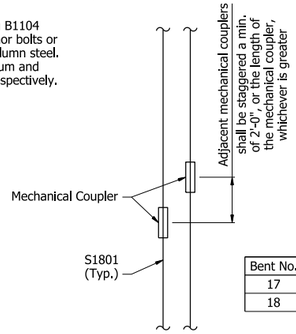
Note:
Contractor shall adjust B1101 thru B1104 bar spacing to accommodate anchor bolts or sheet metal sleeves, or vertical column steel. Contractor shall maintain a minimum and maximum spacing of 5" and 8", respectively.



VIEW C-C
½" = 1'-0"



TYPICAL ANCHOR BOLT LAYOUT
1" = 1'-0"



DRILLED SHAFT BAR SPLICE DETAIL
No Scale

MECHANICAL COUPLER AND SPLICE NOTES:
Contractor shall be required to use mechanical couplers to splice reinforcing bars whose lengths given in the Bar List exceed 60'-0". The bars shall be assembled as shown in "DRILLED SHAFT BAR SPLICE DETAIL".

The Contractor may choose location of splices for convenience, so long as no bar to be spliced is less than 5'-0" in length and no closer than 8'-4" from top of shaft.

The Contractor may also elect to splice bars whose lengths are less than 60'-0" to provide ease of construction, so long as the previous mentioned requirements are met.

Mechanical couplers shall maintain the clearances shown in "DRILLED SHAFT BAR SPLICE DETAIL". Not more than alternate bars shall be spliced at a given location. Payment for mechanical couplers shall be subsidiary to the item "DRILLED SHAFT (78" DIA.)". The couplers shall develop at least 125% of the specified yield strength of the bar.

TABLE OF VARIABLES

Bent No.	"CS"	"CL"	"SS"	"SL"
17	1,762'-8"	55'-8"	1,725'-4"	55'-6"
18	1,659'-11"	52'-7"	1,793'-5"	57'-6"

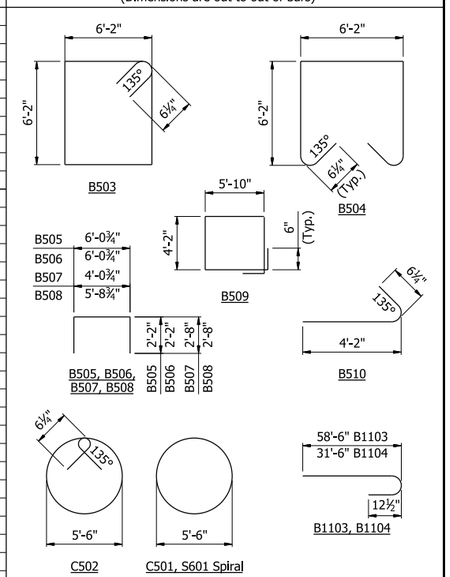
Notes:
For locations of "SECTION A-A", "SECTION B-B", "VIEW C-C", "SECTION D-D" thru "SECTION G-G", see Dwg. No. 67575.

For "DETAILS OF ELASTOMERIC BEARINGS", see Dwg. Nos. 67704 and 67705.

BAR LIST - PER BENT

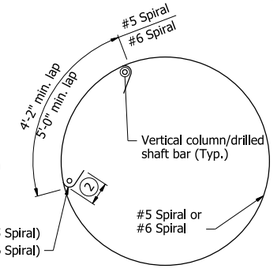
	Mark	Number Required	Length	Pin Dia.
	B501	20	60'-0"	Str.
	B502	20	25'-4"	Str.
	B503	134	25'-5"	2½"
	B504	33	19'-4"	2½"
	B505	20	10'-2"	2½"
	B506	14	10'-2"	2½"
	B507	90	9'-2"	2½"
	B508	63	10'-10"	2½"
	B509	12	20'-6"	2½"
	B510	66	4'-8"	2½"
	B1101	27	60'-0"	Str.
	B1102	27	30'-0"	Str.
	B1103	9	60'-0"	11¼"
	B1104	9	33'-0"	11¼"
	C501	3	"CS"	Spiral
	C502	21	18'-5"	2½"
	C1101	84	"CL"	Str.
(2)	S601	3	"SS"	Spiral
(2)	S1801	42	"SL"	Str.

Bending Diagrams (Dimensions are out to out of bars)



All bars designated with an "E" suffix are to be epoxy coated.

(2) S1801 Longitudinal reinforcement and S601 spiral reinforcement are non-pay items which are subsidiary to item"Drilled Shaft (78" Dia.)". Individual lengths shall be determined by the Contractor.



SPIRAL SPLICE DETAIL
No Scale

(2)
6¼" (Typ.) (#5 Spiral)
7½" (Typ.) (#6 Spiral)

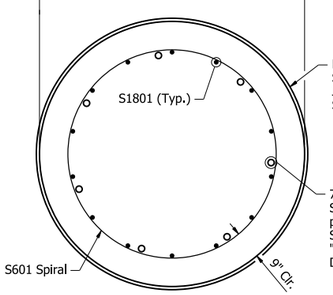
SPIRAL REINFORCING NOTES:
Spiral reinforcing shall be plain round or deformed steel bars meeting the requirements of AASHTO M31 or M322, Type A with mill test report (Grade 60) or shall be cold drawn wire meeting the requirements of AASHTO M32 or M225 (Grade 70) with a minimum diameter of 0.625".

Spiral reinforcement shall be paid for at the contract unit price bid per pound for "Reinforcing Steel-Bridge (Grade 60)". No additional payment shall be made for spacers, optional splices, or bracing needed for assembly, shipping, handling, or erecting.

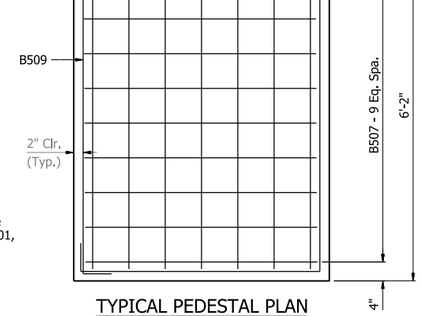
Contractor may elect to lap splice the spiral reinforcing. In no case shall a spiral be lapped within 8'-4" of the top or bottom of the column.

Splices in spiral reinforcing shall be a minimum of 80 bar diameters.

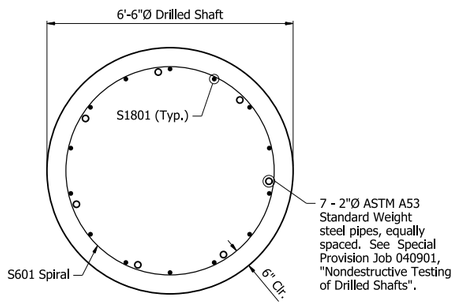
Spiral reinforcing at lapped splices shall be terminated by a 135° hook with a 6¼" tail at #5 spiral and a 7½" tail at #6 spiral around a vertical bar. See "SPIRAL SPLICE DETAIL". Hook may be field bent. Ends of spirals not lapped shall be terminated with 1½ turns.



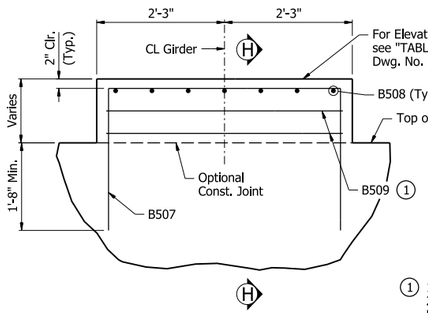
SECTION F-F
½" = 1'-0"



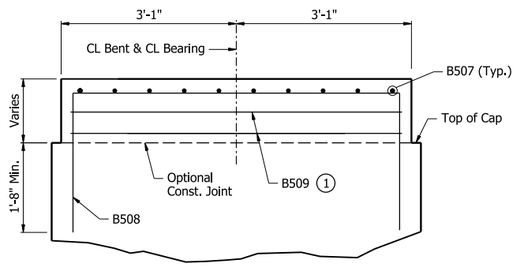
TYPICAL PEDESTAL PLAN
¾" = 1'-0"



SECTION G-G
½" = 1'-0"



TYPICAL PEDESTAL ELEVATION
¾" = 1'-0"



SECTION H-H
¾" = 1'-0"

(1) 1-B509 when Pedestal Height is less than 11";
2-B509 when Pedestal Height is greater than 11";
B509 spaced at 6" Max.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 2 OF 2
DETAILS OF INTERMEDIATE BENT NOS. 17 & 18
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

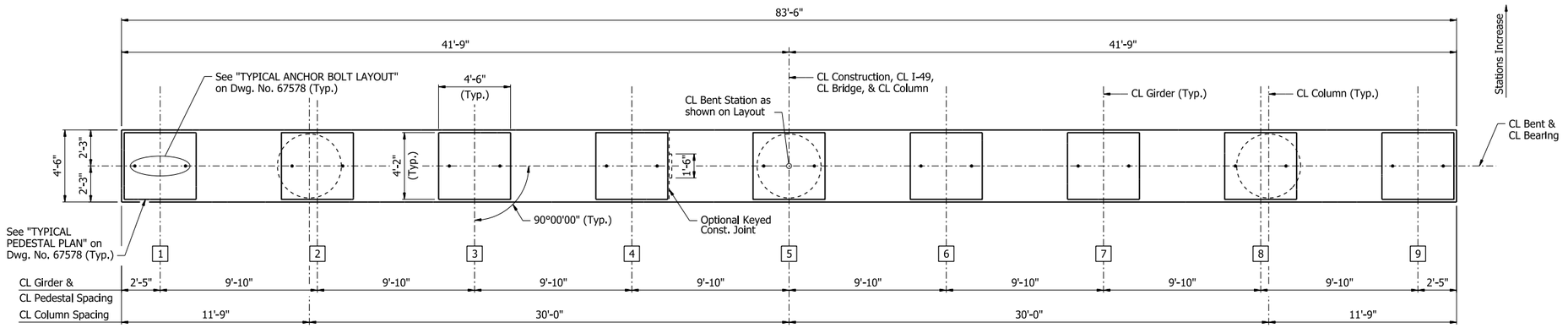
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JCP DATE: 9/13/23
CHECKED BY: MGG DATE: 10/19/23
DESIGNED BY: MGG DATE: 7/21/23
FILENAME: b04090121_b172.dgn
SCALE: 1/4"=1'-0"

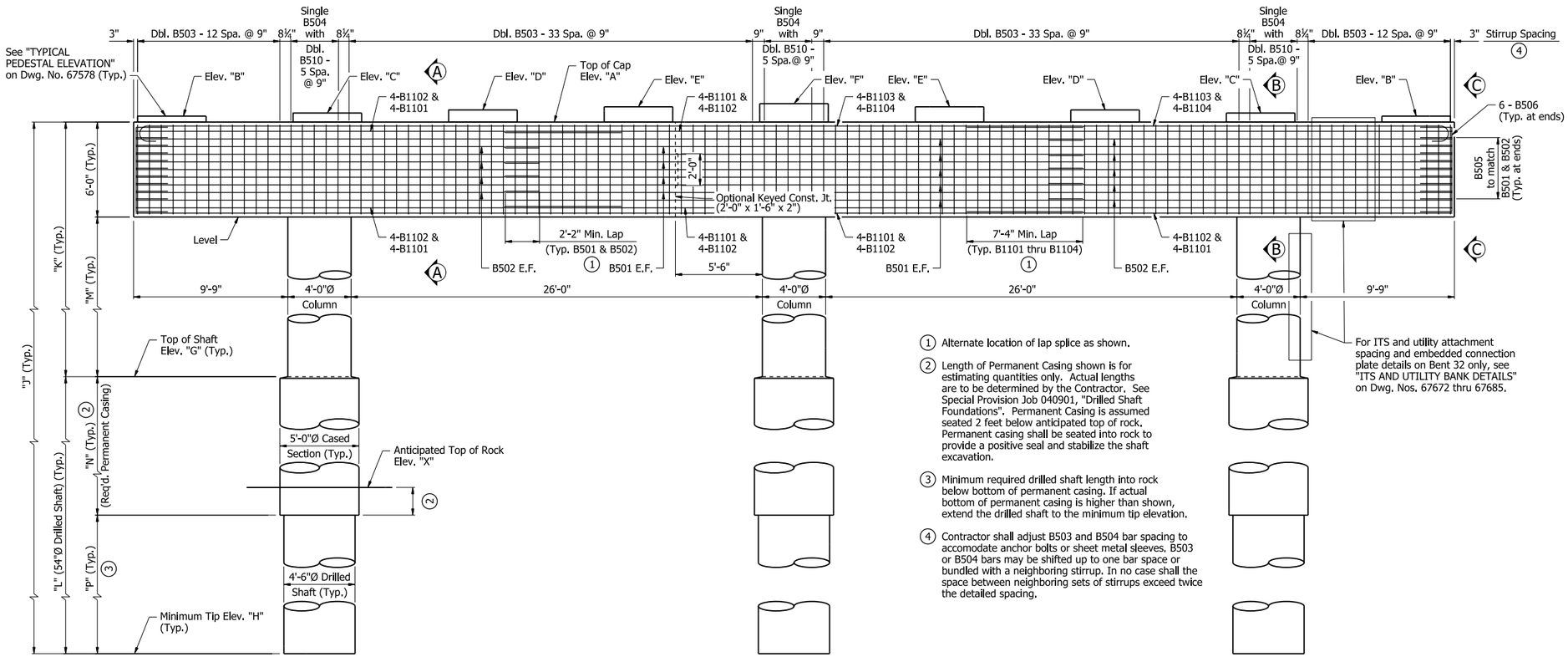
BRIDGE NO. 07684 DRAWING NO. 67576

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	517	809
		07684 - INT. BENTS - 67577				



PLAN



ELEVATION

(Looking Upstation)

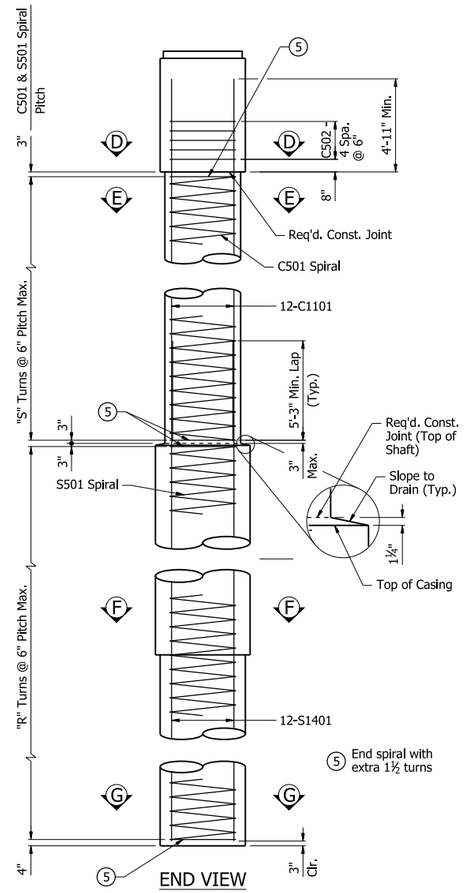
1. Alternate location of lap splice as shown.
2. Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined by the Contractor. See Special Provision Job 040901, "Drilled Shaft Foundations". Permanent Casing is assumed seated 2 feet below anticipated top of rock. Permanent casing shall be seated into rock to provide a positive seal and stabilize the shaft excavation.
3. Minimum required drilled shaft length into rock below bottom of permanent casing. If actual bottom of permanent casing is higher than shown, extend the drilled shaft to the minimum tip elevation.
4. Contractor shall adjust B503 and B504 bar spacing to accomodate anchor bolts or sheet metal sleeves. B503 or B504 bars may be shifted up to one bar space or bundled with a neighboring stirrup. In no case shall the space between neighboring sets of stirrups exceed twice the detailed spacing.

TABLE OF VARIABLES

Bent No.	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"	"L"	"M"	"N"	"P"	"R"	"S"	"X"
28	418.61	418.98	419.18	419.37	419.57	419.77	399.00	339.00	79'-7⅜"	19'-7⅜"	60'-0"	13'-7⅜"	50'-0"	10'-0"	119	27	351
29	416.56	416.94	417.14	417.33	417.53	417.73	398.00	342.00	74'-6¾"	18'-6¾"	56'-0"	12'-6¾"	46'-0"	10'-0"	111	25	354
31	412.48	412.86	413.05	413.25	413.45	413.64	391.00	342.00	70'-5¾"	21'-5¾"	49'-0"	15'-5¾"	40'-0"	9'-0"	97	30	353
32	410.44	410.82	411.01	411.21	411.41	411.60	392.00	338.00	72'-5¼"	18'-5¼"	54'-0"	12'-5¼"	41'-0"	13'-0"	107	24	353

Notes:
For "SECTION A-A", "SECTION B-B", "VIEW C-C", "SECTION D-D" thru "SECTION G-G", see Dwg. No. 67578.

For "GENERAL NOTES", see Dwg. No. 67372.



END VIEW

Notes:
Dimensions, details, & reinforcing steel shown are typical for all columns and drilled shafts.
If column, cased section, or drilled shaft length changes during construction, number of turns shall be adjusted accordingly to maintain the maximum pitch in the regions identified above.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 2
DETAILS OF INTERMEDIATE BENT NOS. 28, 29, 31, & 32
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JCP DATE: 9/13/23
CHECKED BY: MGG DATE: 9/28/23
DESIGNED BY: MGG DATE: 6/16/23
FILENAME: b04090121_b281.dgn
SCALE: 1/4" = 1'-0"

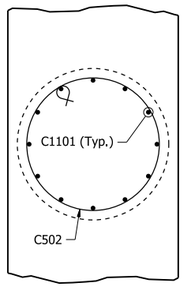
BRIDGE NO. 07684 DRAWING NO. 67577

PRINT DATE: 4/11/2024

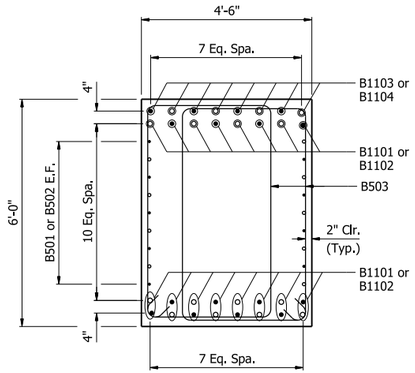
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	518	809
		07684 - INT. BENTS - 67578				

Notes:
For locations of "SECTION A-A", "SECTION B-B", "VIEW C-C", "SECTION D-D" thru "SECTION G-G", see Dwg. No. 67577.

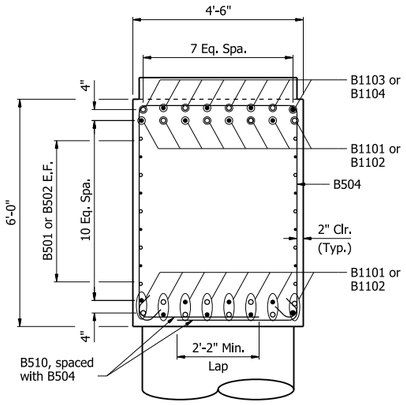
For "DETAILS OF ELASTOMERIC BEARINGS", see Dwg. Nos. 67704 and 67705



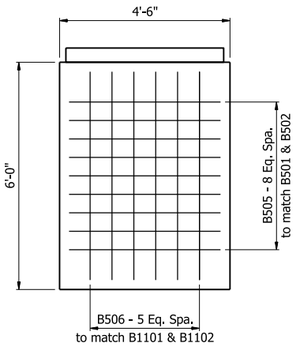
SECTION D-D
½" = 1'-0"
(Cap reinforcing not shown for clarity)



SECTION A-A
½" = 1'-0"

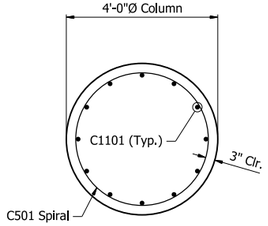


SECTION B-B
½" = 1'-0"

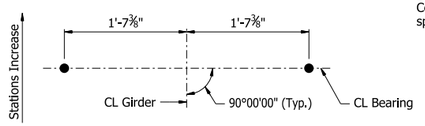


VIEW C-C
½" = 1'-0"

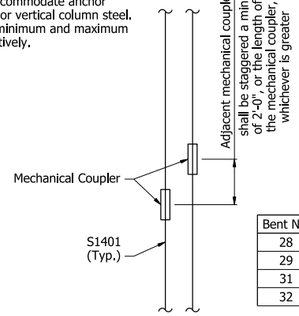
Note:
Contractor shall adjust B1101, B1102, B1103, and B1104 bar spacing to accommodate anchor bolts or sheet metal sleeves or vertical column steel. Contractor shall maintain a minimum and maximum spacing of 5" and 8", respectively.



SECTION E-E
½" = 1'-0"



TYPICAL ANCHOR BOLT LAYOUT
1" = 1'-0"



DRILLED SHAFT BAR SPLICE DETAIL
No Scale

MECHANICAL COUPLER AND SPLICE NOTES:
Contractor shall be required to use mechanical couplers to splice reinforcing bars whose lengths given in the Bar List exceed 60'-0". The bars shall be assembled as shown in "DRILLED SHAFT BAR SPLICE DETAIL".

The Contractor may choose location of splices for convenience, so long as no bar to be spliced is less than 5'-0" in length and no closer than 5'-6" from top of shaft.

The Contractor may also elect to splice bars whose lengths are less than 60'-0" to provide ease of construction, so long as the previous mentioned requirements are met.

Mechanical couplers shall maintain the clearances shown in "DRILLED SHAFT BAR SPLICE DETAIL". Not more than alternate bars shall be spliced at a given location. Payment for mechanical couplers shall be subsidiary to the item "DRILLED SHAFT (54" DIA.)". The couplers shall develop at least 125% of the specified yield strength of the bar.

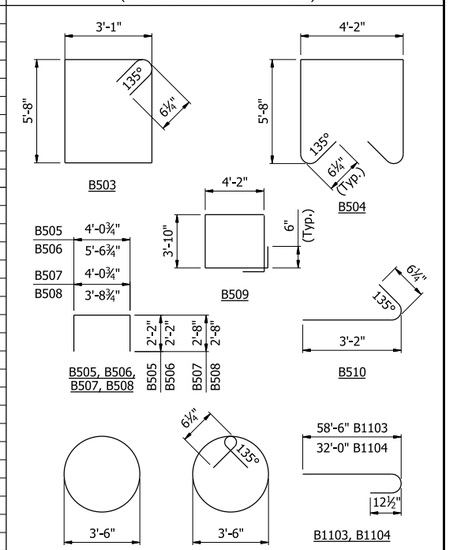
TABLE OF VARIABLES

Bent No.	"CS"	"CL"	"SS"	"SL"
28	325'-1"	18'-4"	1,322'-2"	65'-3"
29	303'-5"	17'-3"	1,235'-7"	61'-3"
31	357'-7"	20'-2"	1,083'-10"	54'-3"
32	292'-7"	17'-2"	1,192'-2"	59'-3"

BAR LIST - PER BENT

Mark	Number Required	Length	Pin Dia.
B501	18	60'-0"	Str.
B502	18	25'-4"	Str.
B503	188	18'-3"	2½"
B504	18	16'-4"	2½"
B505	18	8'-2"	2½"
B506	12	9'-8"	2½"
B507	72	9'-2"	2½"
B508	63	8'-10"	2½"
B509	12	16'-6"	2½"
B510	36	3'-8"	2½"
B1101	24	60'-0"	Str.
B1102	24	30'-6"	Str.
B1103	8	60'-0"	1¼"
B1104	8	33'-6"	1¼"
C501	3	"CS"	Spiral
C502	15	12'-2"	2½"
C1101	36	"CL"	Str.
(2) S501	3	"SS"	Spiral
(2) S1401	36	"SL"	Str.

Bending Diagrams (Dimensions are out to out of bars)



All bars designated with an "E" suffix are to be epoxy coated.

(2) S1401 Longitudinal reinforcement and S501 spiral reinforcement are non-pay items which are subsidiary to item "Drilled Shaft (54" Dia.)". Individual lengths shall be determined by the Contractor.

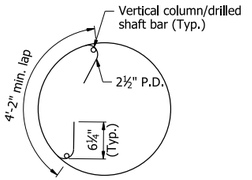
SPIRAL REINFORCING NOTES:
Spiral reinforcing shall be plain round or deformed steel bars meeting the requirements of AASHTO M31 or M322, Type A with mill test report (Grade 60) or shall be cold drawn wire meeting the requirements of AASHTO M32 or M225 (Grade 70) with a minimum diameter of 0.625".

Spiral reinforcement shall be paid for at the contract unit price bid per pound for "Reinforcing Steel-Bridge (Grade 60)". No additional payment shall be made for spacers, optional splices, or bracing needed for assembly, shipping, handling, or erecting.

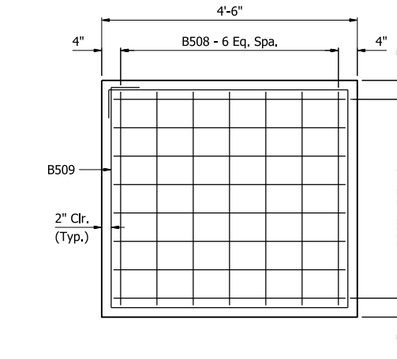
Contractor may elect to lap splice the spiral reinforcing. In no case shall a spiral be lapped within 5'-6" of the top or bottom of the column.

Splices in spiral reinforcing shall be a minimum of 80 bar diameters.

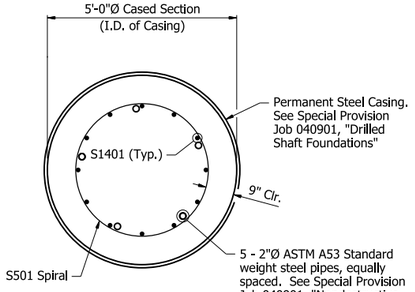
Spiral reinforcing at lapped splices shall be terminated by a 135° hook with a 6¼" tail around a vertical bar. See "SPIRAL SPLICE DETAIL". Hook may be field bent. Ends of spirals not lapped shall be terminated with 1½ turns.



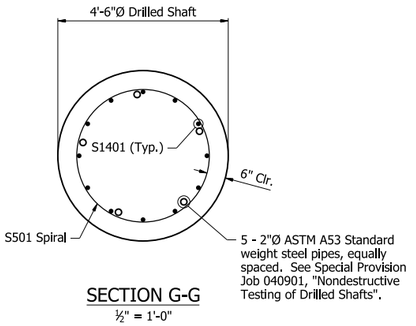
SPIRAL SPLICE DETAIL
No Scale



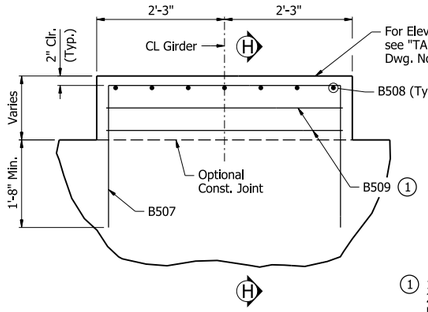
TYPICAL PEDESTAL PLAN
¾" = 1'-0"



SECTION F-F
½" = 1'-0"

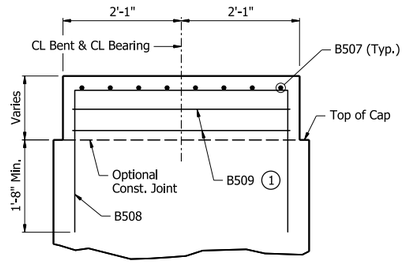


SECTION G-G
½" = 1'-0"



TYPICAL PEDESTAL ELEVATION
¾" = 1'-0"

(1) 1-B509 when Pedestal Height is less than 11";
2-B509 when Pedestal Height is greater than 11";
B509 spaced at 6" Max.



SECTION H-H
¾" = 1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 2 OF 2
DETAILS OF INTERMEDIATE BENT NOS. 28, 29, 31, & 32
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

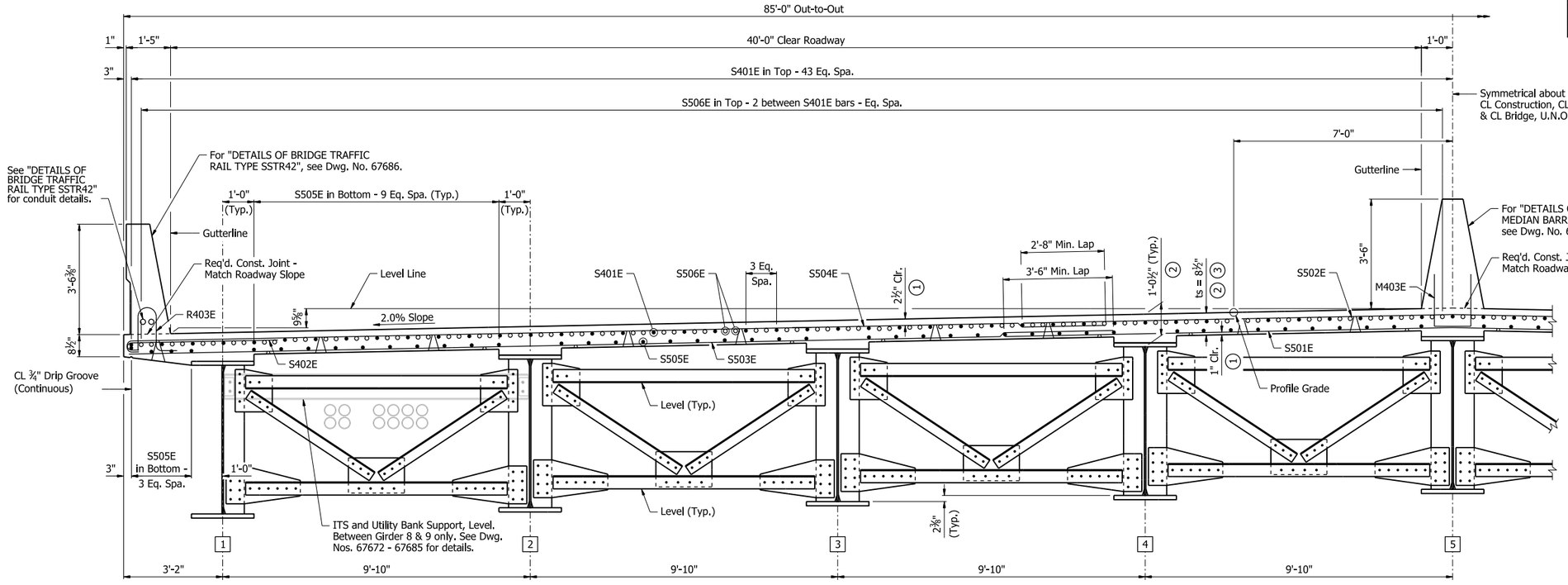
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JCP DATE: 9/13/23
CHECKED BY: MGG DATE: 9/28/23
DESIGNED BY: MGG DATE: 6/16/23
FILENAME: b04090121_b282.dgn
SCALE: AS NOTED

BRIDGE NO. 07684 DRAWING NO. 67578

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	519	809
		07684 - UNITS 1 & 7-9 - 67579				



TYPICAL ROADWAY SECTION

(Looking Upstation)
½" = 1'-0"

Notes:
Bar positions or clearances from the forms shall be maintained by means of stays, ties, hangers, or other approved devices per Subsection 804.06. Placement of slab bolsters or high-chairs with full-length lower runners directly on removable deck forms will not be allowed.

For details of Bridge Finishes and Protective Surface Treatment, see Dwg No. 67372.

For "HALF REINFORCING PLAN AND POURING SEQUENCE", see Dwg. No. 67585.

For "COMMON DETAILS OF SECTIONS NEAR JOINTS", see Dwg. No. 67691.

For K-Frame detail, see Dwg. Nos. 67582 & 67583.

(1) Tolerance: Minus = ¼"; Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE".

(2) Haunch dimensions may vary within the following limits to maintain the grade and slab thickness tolerance. :

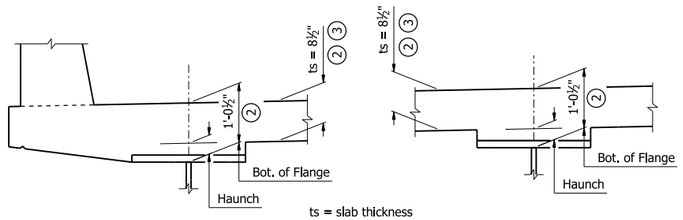
Top Flange	Haunch Adjustment Tolerance	
	Plus	Minus
¾" x 13"	1⅝"	2⅛"
1" x 16"	1¾"	1¾"
1½" x 24"	2¼"	1¼"

No increase in concrete and structural steel quantities will be made to maintain tolerances. Tolerances shown are applicable for both removable deck forming and permanent steel deck forms. Payment for concrete shall be based on removable deck forming.

(3) Tolerance: Minus = ¼"; Plus = ½". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

SLAB REINFORCING:
Longitudinal: S401E in Top placed as shown
S506E in Top placed as shown over Intermediate Bents
S505E In Bottom placed as shown

Transverse: Alternate S502E and S504E in Top @ 6" Max.
Alternate S501E and S503E in Bottom @ 7½" Max.
S402E in Top @ 12" Max., Bundled with S502E or S504E



ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

¾" = 1'-0"

STATE OF
ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 8
DETAILS OF 390'-0" CONTINUOUS
PLATE GIRDER UNITS 1 & 7-9
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

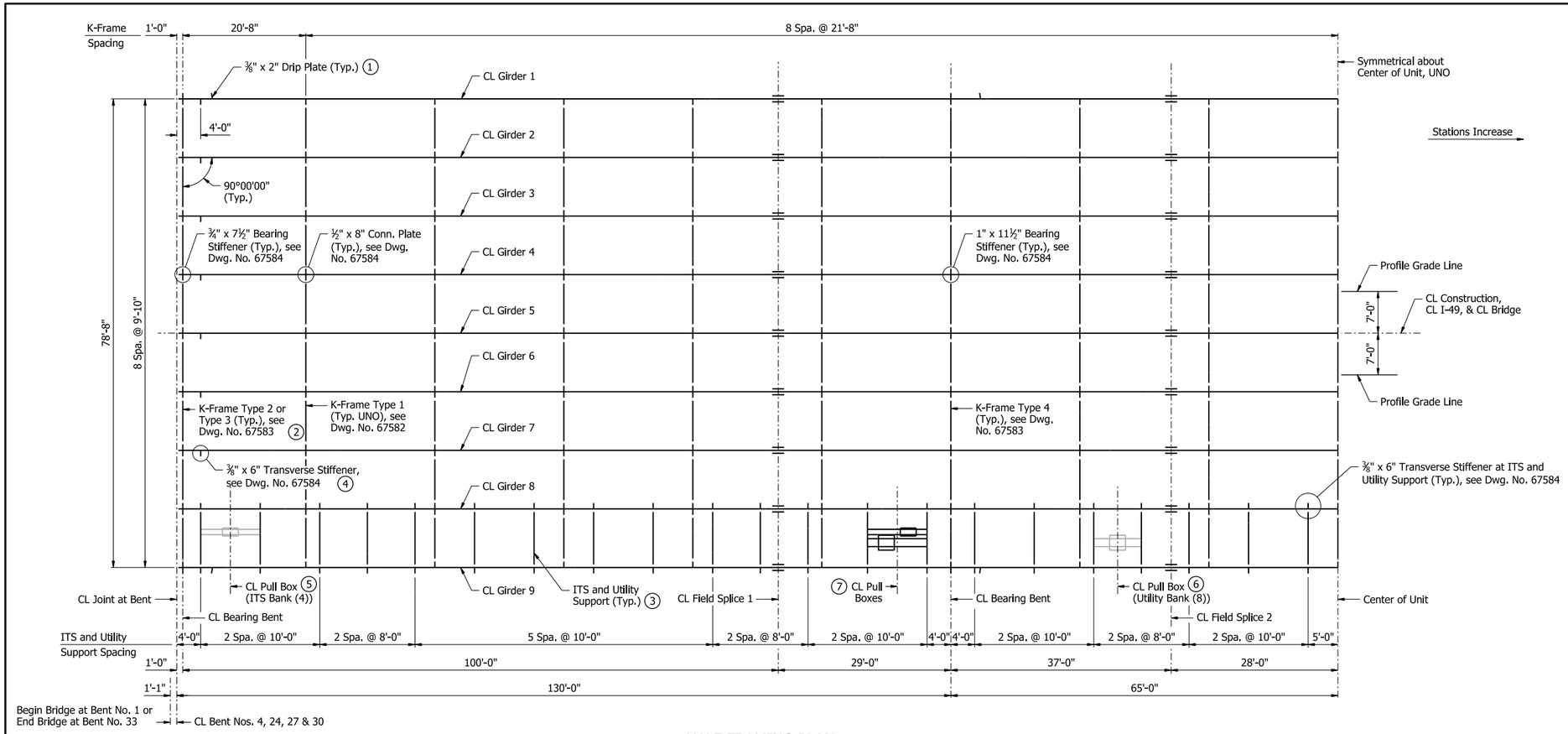
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 8/14/23
CHECKED BY: RLW DATE: 10/27/23
DESIGNED BY: RCR DATE: 7/21/22
FILENAME: b04090121_s11.dgn
SCALE: AS NOTED

BRIDGE NO. 07684 DRAWING NO. 67579

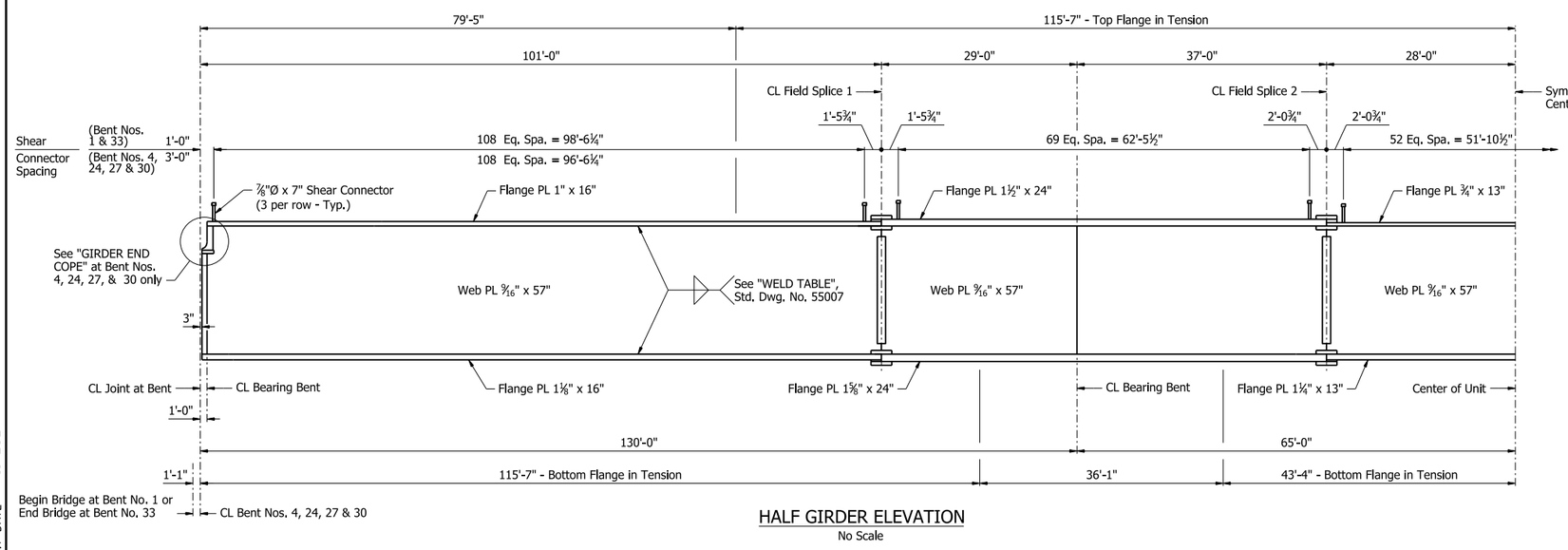
PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	520	809
		07684 - UNITS 1 & 7-9 - 67580				



HALF FRAMING PLAN

3/32" = 1'-0"



HALF GIRDER ELEVATION

No Scale

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-GR50W)."

For "DETAILS OF FIELD SPLICES", see Dwg. No. 67581.

For Dead Load Deflections, see Dwg. No. 67584.

For ITS and Utility bank details, see Dwg. Nos. 67672 - 67685.

(1) Location of drip plate is not symmetrical about Center of Unit. It shall be placed on the up-hill side of each bent. Stop weld 1" from edge of flange. See Std. Dwg. No. 55007 for additional details.

(2) K-Frame Type 2 - End Bent Nos. 1 & 33;
K-Frame Type 3 - Bent Nos. 4, 24, 27, & 30.

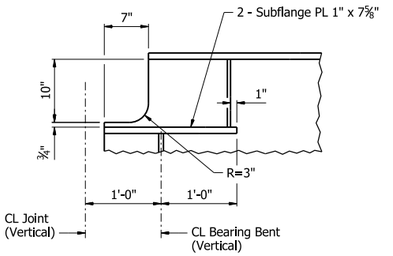
(3) ITS and Utility Supports will not be placed at K-Frame locations.

(4) At Bent Nos. 4, 24, 27 & 30 only.

(5) Sta. 163+82.00 (Unit 1)
Sta. 215+94.00 (Unit 9)

(6) Sta. 165+31.00 (Unit 1)
Sta. 214+45.00 (Unit 9)

(7) Sta. 207+02.00 (Unit 7)
Sta. 211+85.00 (Unit 8)



GIRDER END COPE

1" = 1'-0"

STATE OF
ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 2 OF 8
DETAILS OF 390'-0" CONTINUOUS PLATE GIRDER UNITS 1 & 7-9 I-49 OVER ARKANSAS RIVER HWY. 22 - GUN CLUB RD. (F) CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 9/5/23
CHECKED BY: CZ DATE: 9/29/23
DESIGNED BY: KBJ DATE: 6/12/23
FILENAME: b04090121_s12.dgn
SCALE: AS NOTED

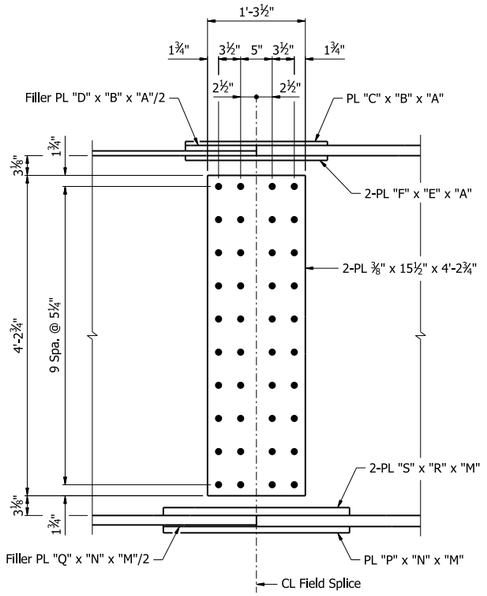
BRIDGE NO. 07684 DRAWING NO. 67580

PRINT DATE: 4/11/2024

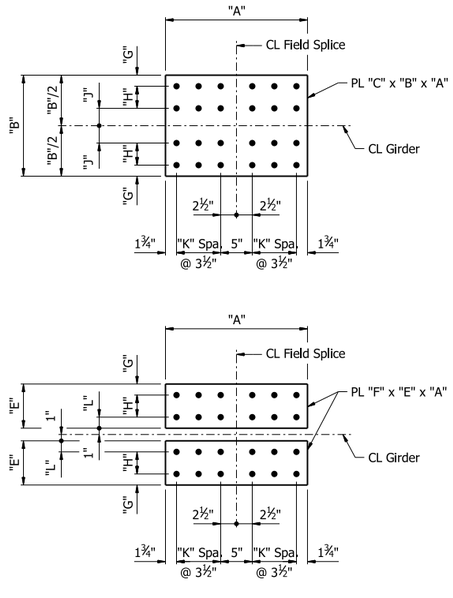
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	521	809
		07684 - UNITS 1 & 7-9 - 67581				

TABLE OF VARIABLES

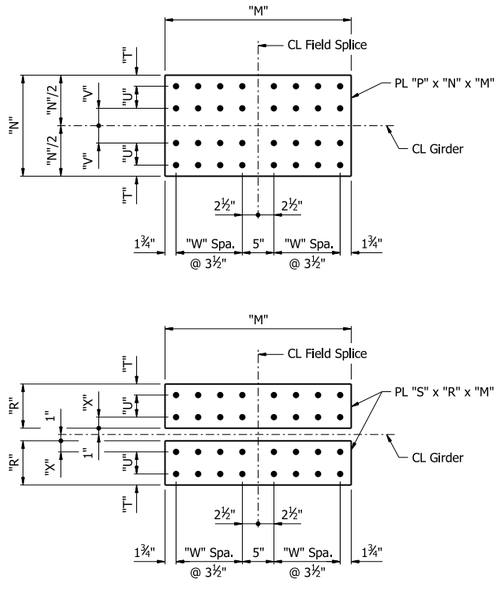
Field Splice	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"	"L"	"M"	"N"	"P"	"Q"	"R"	"S"	"T"	"U"	"V"	"W"	"X"
1	2'-5½"	16"	⅝"	½"	7"	¾"	1¾"	3½"	2¾"	3	1¾"	1'-10½"	16"	⅞"	½"	7"	1"	1¾"	3½"	2¾"	2	1¾"
2	3'-7½"	13"	½"	¾"	5½"	⅝"	3½"	-	3"	5	2"	4'-9½"	13"	¾"	⅜"	5½"	⅞"	3½"	-	3"	7	2"



WEB SPLICE



TOP FLANGE SPLICE



BOTTOM FLANGE SPLICE

DETAILS OF FIELD SPLICES

Notes:
For location of field splices, see Dwg. No. 67580.

All field splice bolts shall be ASTM F3125, Gr. A325, 1"Ø H.S. bolts.

All holes for splice bolts shall be 1⅛"Ø.

All structural steel shall be ASTM A709, Grade 50W, unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-GR50W)."

Bolted field splices may either be eliminated or shop weld splices may be substituted with the approval of the Engineer. Payment will be made on the basis of plan quantities.

STATE OF
PROFESSIONAL ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

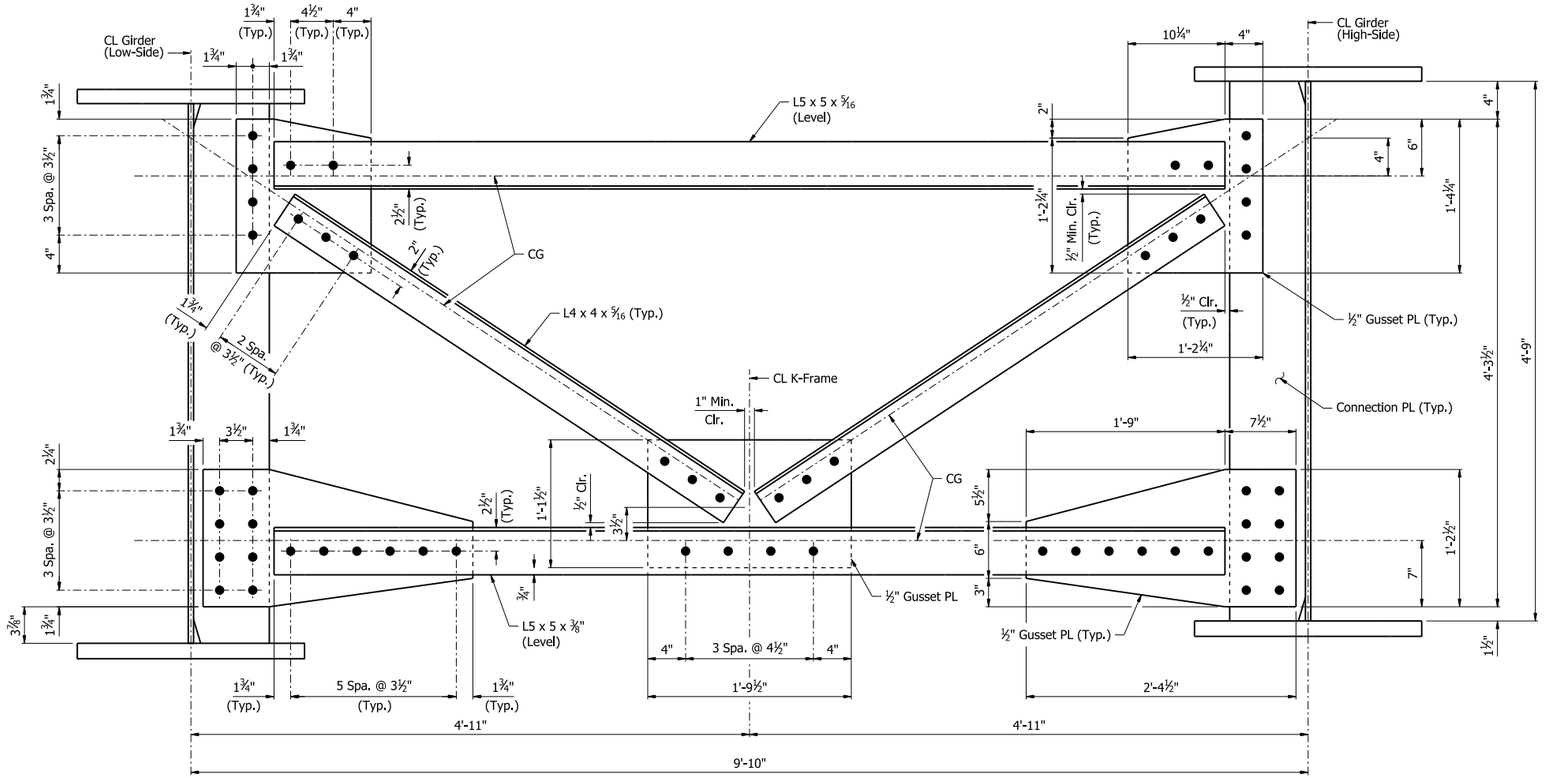
ALTERNATE NO. 2
SHEET 3 OF 8
DETAILS OF 390'-0" CONTINUOUS
PLATE GIRDER UNITS 1 & 7-9
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 8/14/23
CHECKED BY: MJ DATE: 9/6/23
DESIGNED BY: KBJ DATE: 6/12/23
FILENAME: b04090121_s13.dgn
SCALE: NO SCALE

BRIDGE NO. 07684 DRAWING NO. 67581

PRINT DATE: 4/11/2024



DETAIL OF TYPE 1 K-FRAMES

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	522	809
		07684 - UNITS 1 & 7-9 - 67582				

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-GR50W)."

For location of K-Frames, see Dwg. No. 67580.

Cross frames shall be shop bolted using pins to align the holes prior to bolting. Disassembling of cross frames is not allowed.

All bolts shall be ASTM F3125, Gr. A325, 1"Ø H.S. bolts.

All holes shall be drilled for K-Frames connection and shall be 1⅛"Ø.

For Connection Plate details, see Dwg. No. 67584.

Conduits and Utility Supports not shown. See Dwg. Nos. 67672 - 67685 for details.

K-Frames are symmetric about CL, UNO.

PRINT DATE: 4/11/2024

STATE OF
PROFESSIONAL ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

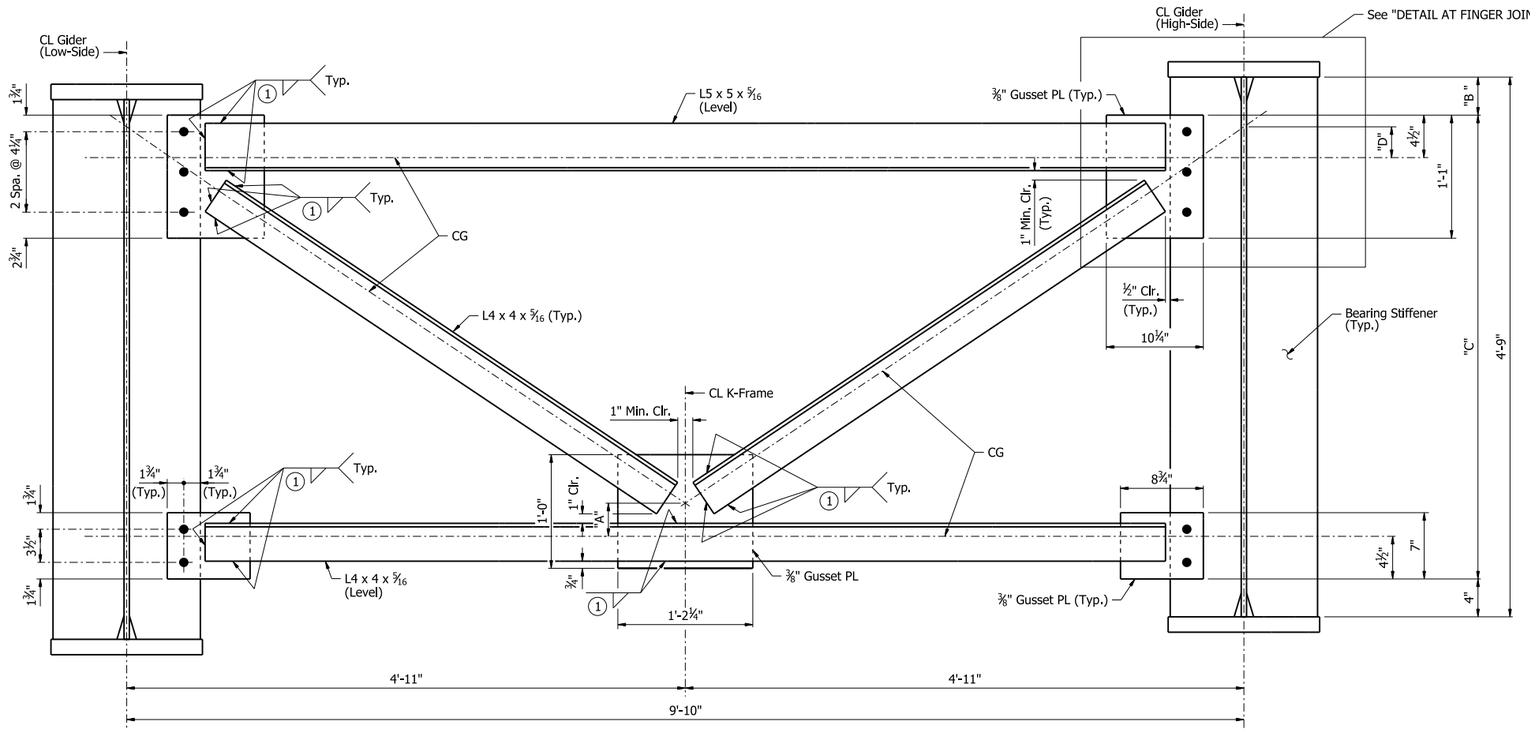
ALTERNATE NO. 2
SHEET 4 OF 8
DETAILS OF 390'-0" CONTINUOUS
PLATE GIRDER UNITS 1 & 7-9
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 9/5/23
CHECKED BY: CZ DATE: 9/29/23
DESIGNED BY: KBJ DATE: 6/12/23
FILENAME: b04090121_s14.dgn
SCALE: 1½" = 1'-0"

BRIDGE NO. 07684 DRAWING NO. 67582

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	523	809
		07684 - UNITS 1 & 7-9 - 67583				



DETAIL OF TYPE 2, 3, & 4 K-FRAMES

TABLE OF VARIABLES

K-Frame Type	"A"	"B"	"C"	"D"
2	3½"	4"	4'-1"	3¼"
3	4¼"	15½"	3'-1½"	½"
4	3½"	4"	4'-1"	7"

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-GR50W)."

For location of K-Frames, see Dwg. No. 67580.

All bolts shall be ASTM F3125, Gr. A325, 1"Ø H.S. bolts.

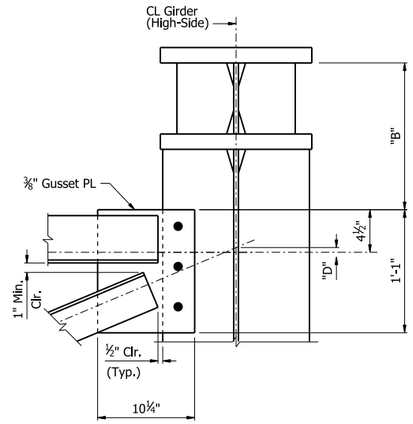
All holes shall be drilled for K-Frames connection and shall be 1⅛"Ø.

For Bearing Stiffener Details, see Dwg. No. 67584.

Conduits and ITS and Utility Supports not shown, see Dwg. Nos. 67672 - 67685 for details.

K-Frames are symmetric about CL, UNO.

(1) See "WELD TABLE", Std. Dwg. No. 55007.



DETAIL AT FINGER JOINT
(Type 3 only)

STATE OF
ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 5 OF 8
DETAILS OF 390'-0" CONTINUOUS
PLATE GIRDER UNITS 1 & 7-9
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 8/14/23
CHECKED BY: CZ DATE: 9/29/23
DESIGNED BY: KBJ DATE: 6/12/23
FILENAME: b04090121_s15.dgn
SCALE: 1½" = 1'-0"

BRIDGE NO. 07684 DRAWING NO. 67583

PRINT DATE: 4/11/2024

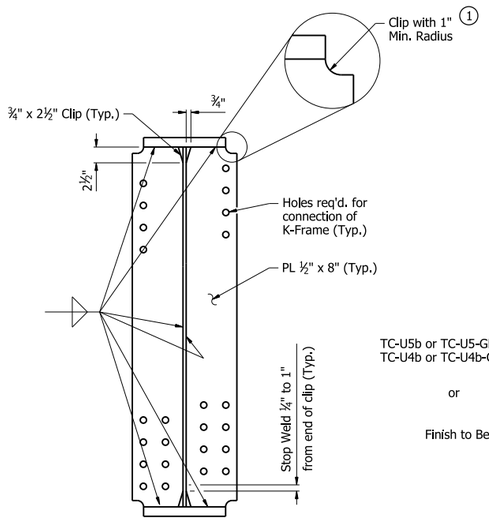
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	524	809
		07684 - UNITS 1 & 7-9 - 67584				

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-GR50W)."

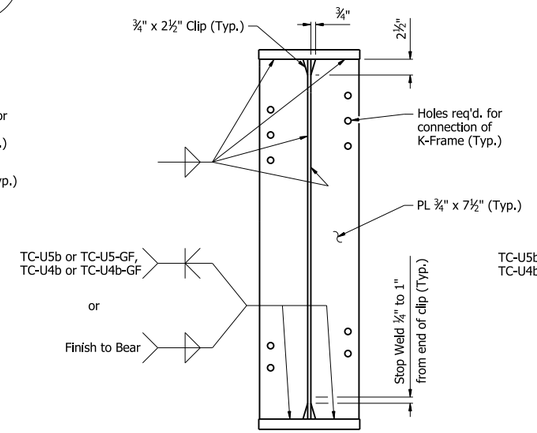
For location of stiffeners and connection plates, see Dwg. No. 67580.

For details of K-Frames, see Dwg. Nos. 67582 & 67583.

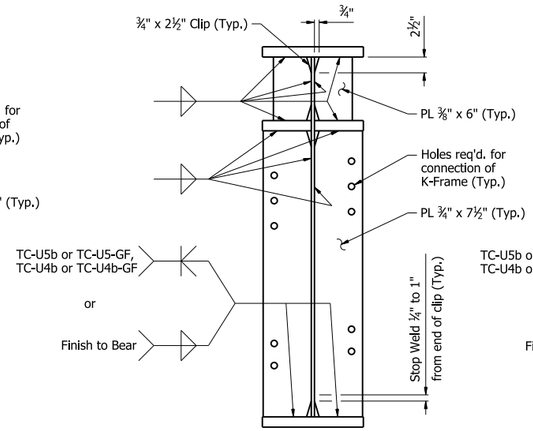
See "WELD TABLE" for minimum weld sizes on Std. Dwg. No. 55007.



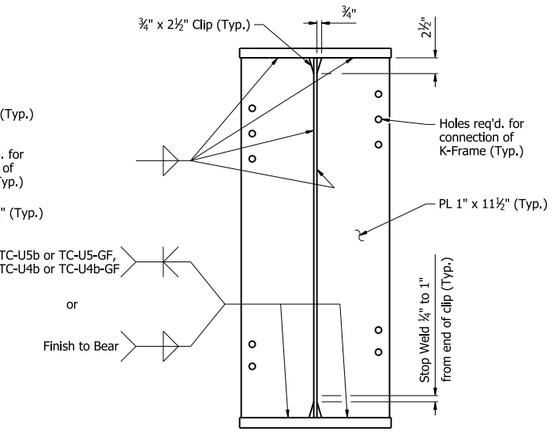
CONNECTION PLATES
(Located at K-Frame Type 1)



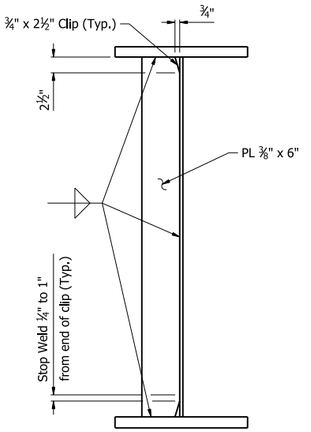
BEARING STIFFENERS
AT END BENT NOS. 1 & 33
(Located at K-Frame Type 2)



BEARING STIFFENERS
AT BENT NOS. 4. 24, 27, & 30
(Located at K-Frame Type 3)



BEARING STIFFENERS
AT BENT NOS. 2, 3, 25, 26, 28, 29, 31, & 32
(Located at K-Frame Type 4)

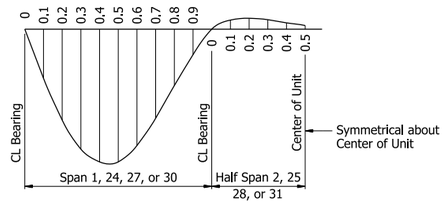


TRANSVERSE STIFFENER

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Span	Point of Deflection	Structural Steel									Structural Steel + Slab									Structural Steel + Slab + Rail								
		Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6	Girder 7	Girder 8	Girder 9	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6	Girder 7	Girder 8	Girder 9	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6	Girder 7	Girder 8	Girder 9
Span 1, 24, 27, or 30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.1	0.258	0.262	0.264	0.266	0.268	0.271	0.278	0.288	0.295	1.389	1.445	1.479	1.497	1.503	1.502	1.493	1.471	1.425	1.580	1.555	1.561	1.584	1.615	1.597	1.593	1.614	1.663
	0.2	0.476	0.483	0.488	0.491	0.494	0.501	0.513	0.531	0.544	2.564	2.665	2.729	2.762	2.774	2.772	2.754	2.713	2.632	2.912	2.872	2.882	2.923	2.976	2.948	2.942	2.979	3.064
	0.3	0.630	0.639	0.645	0.649	0.654	0.663	0.679	0.702	0.719	3.391	3.523	3.608	3.651	3.668	3.665	3.641	3.586	3.481	3.847	3.799	3.813	3.866	3.931	3.899	3.892	3.941	4.047
	0.4	0.705	0.715	0.722	0.726	0.732	0.742	0.760	0.785	0.805	3.795	3.940	4.034	4.083	4.102	4.098	4.072	4.010	3.895	4.301	4.251	4.266	4.325	4.396	4.363	4.355	4.409	4.524
	0.5	0.697	0.707	0.714	0.719	0.724	0.734	0.752	0.777	0.796	3.754	3.895	3.986	4.035	4.054	4.050	4.024	3.964	3.852	4.252	4.203	4.218	4.277	4.346	4.314	4.306	4.360	4.473
	0.6	0.611	0.619	0.625	0.629	0.634	0.643	0.658	0.680	0.697	3.286	3.408	3.487	3.529	3.545	3.543	3.520	3.469	3.372	3.723	3.677	3.691	3.743	3.807	3.776	3.768	3.815	3.916
	0.7	0.467	0.474	0.478	0.481	0.485	0.492	0.503	0.520	0.532	2.513	2.604	2.662	2.694	2.707	2.705	2.688	2.650	2.578	2.847	2.809	2.820	2.859	2.911	2.885	2.879	2.914	2.994
	0.8	0.297	0.301	0.304	0.306	0.309	0.313	0.320	0.331	0.338	1.599	1.655	1.691	1.711	1.719	1.718	1.707	1.685	1.640	1.810	1.784	1.792	1.817	1.853	1.834	1.830	1.851	1.903
	0.9	0.132	0.133	0.135	0.136	0.137	0.139	0.142	0.147	0.150	0.713	0.736	0.752	0.761	0.765	0.764	0.759	0.750	0.731	0.804	0.793	0.798	0.809	0.825	0.816	0.815	0.823	0.845
Half Span 2, 25, 28, or 31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.1	-0.048	-0.048	-0.049	-0.050	-0.051	-0.052	-0.053	-0.053	-0.055	-0.305	-0.303	-0.308	-0.313	-0.316	-0.315	-0.312	-0.309	-0.312	-0.308	-0.330	-0.336	-0.335	-0.325	-0.340	-0.344	-0.339	-0.320
	0.2	-0.056	-0.055	-0.056	-0.058	-0.060	-0.062	-0.063	-0.062	-0.065	-0.397	-0.383	-0.386	-0.394	-0.399	-0.399	-0.393	-0.390	-0.405	-0.371	-0.417	-0.430	-0.424	-0.403	-0.432	-0.442	-0.427	-0.382
	0.3	-0.047	-0.045	-0.045	-0.047	-0.050	-0.053	-0.054	-0.051	-0.053	-0.380	-0.352	-0.351	-0.360	-0.366	-0.365	-0.359	-0.358	-0.387	-0.316	-0.383	-0.401	-0.390	-0.359	-0.399	-0.414	-0.388	-0.320
	0.4	-0.031	-0.029	-0.029	-0.031	-0.035	-0.038	-0.038	-0.033	-0.035	-0.316	-0.275	-0.268	-0.278	-0.285	-0.284	-0.277	-0.279	-0.320	-0.218	-0.298	-0.321	-0.305	-0.267	-0.315	-0.333	-0.299	-0.215
	0.5	-0.024	-0.021	-0.021	-0.023	-0.027	-0.030	-0.029	-0.024	-0.026	-0.280	-0.233	-0.225	-0.234	-0.241	-0.240	-0.233	-0.237	-0.282	-0.169	-0.253	-0.277	-0.259	-0.220	-0.269	-0.288	-0.251	-0.162

← Symmetrical about Center of Unit



DEAD LOAD DEFLECTION DIAGRAM

Notes:
Camber for dead load deflection +/- ¼" tolerance. Deflections shown are along CL Girder from a chord from CL Bearing to CL Bearing. Negative sign (-) indicates point above chord. Vertical curve corrections are not included. Superelevation transition corrections not included.

The additional weight for the permanent steel deck forms are included in the slab dead load deflections.

The additional weight of the ITS and utility support brackets are included with the steel dead load deflections. The weight of the conduits are included in the steel + slab + rail dead load deflections.

(1) If permanent steel bridge deck forms are used, the Fabricator shall clip the plates as necessary to accommodate the deck form support.

STATE OF
ALLIE WAGNER
PROFESSIONAL ENGINEER
★★★
No. 22390
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 6 OF 8
DETAILS OF 390'-0" CONTINUOUS
PLATE GIRDER UNITS 1 & 7-9
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

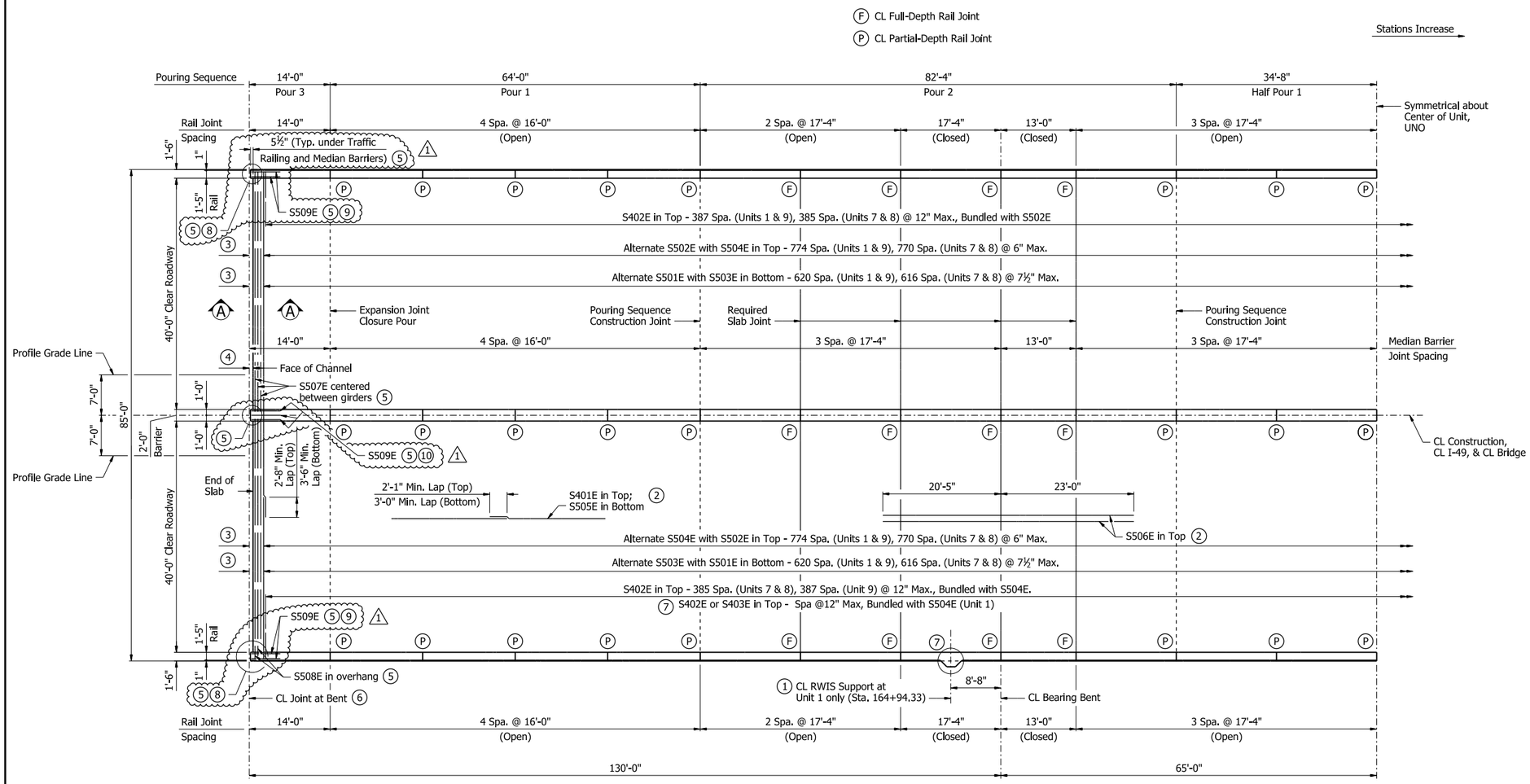
DRAWN BY: CTK DATE: 8/14/23
CHECKED BY: MJ DATE: 9/5/23
DESIGNED BY: KBJ DATE: 6/12/23
FILENAME: b04090121_s16.dgn
SCALE: ½" = 1'-0"

BRIDGE NO. 07684 DRAWING NO. 67584

PRINT DATE: 4/11/2024

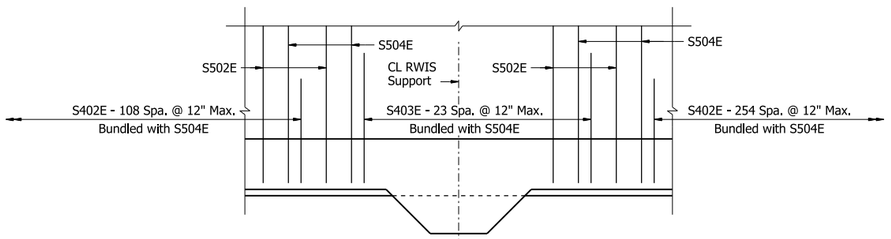
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
8/9/2024		6	ARK.	040901	525	809
		07684 - UNITS 1 & 7-9 - 67585				

1 Slab extension added below Rail and Median Barriers at Finger Joint locations. 8/9/2024



HALF REINFORCING PLAN AND POURING SEQUENCE

3/32" = 1'-0"



(7) SLAB REINFORCING DETAIL AT RWIS SUPPORT

(Unit 1 only)
(No Scale)

Notes:
Required slab joints and pouring sequence joints shall align with rail joints at the gutterline.

For "TRANSVERSE SLAB JOINT DETAIL", see Dwg. No. 55007.

For "DETAILS OF BRIDGE TRAFFIC RAIL TYPE SSTR42", see Dwg. No. 67686.

For "DETAILS OF MEDIAN BARRIER", see Dwg. No. 67689.

For "SECTION A-A", see Dwg. No. 67586.

Slab Pouring Sequence Notes;
Pours with the same number may be placed simultaneously or separately. All Pour(s) 1 must be placed before Pour(s) 2 can be placed. A minimum of 48 hours shall elapse between the end of a pour and the start of the next pour. A minimum of 72 hours shall elapse between adjacent pours.

Concrete in bridge superstructure shall be placed, consolidated, and screeded off for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent.

At Finger Joints, after all incremental pours on both Units adjacent to the Finger Joint are complete, closure pour 3 on each side of Finger Joint shall be poured simultaneously. For details of Finger Joint, see Dwg. Nos. 67696 & 67697. For pours adjacent to Strip Seal Joints, see Dwg. No. 67693 to coordinate pours with joint installation.

A minimum of 72 hours shall elapse between completion of the slab and the pouring of the bridge railing. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence(s) shown.

(1) For reinforcing details of RWIS support, see "DETAILS FOR BRIDGE TRAFFIC RAIL TYPE SSTR42", Dwg. No. 67686.

(2) Placed as shown in "TYPICAL ROADWAY SECTION", see Dwg. No. 67579.

(3) 6" at End Bent Nos. 1 & 33;
2'-6" at Bent Nos. 4, 24, 27, & 30

(4) 1" @ 60° F at End Bent Nos. 1 & 33;
7½" @ 60° F at Bent Nos. 4, 24, 27, & 30

(5) At Bent Nos. 4, 24, 27, & 30 only

(6) For Joint types, see Dwg. Nos. 67549 - 67558.

1 (8) In the slab extension, cut R403E 8" leg to maintain concrete cover.

1 (9) 2-S509E in Top, 3-S509E in Bottom.

1 (10) 3-S509E @ Eq. Spa., Top and Bottom.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 22535
RACHEL L. WESSON
8/9/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 7 OF 8
DETAILS OF 390'-0" CONTINUOUS PLATE GIRDER UNITS 1 & 7-9
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 8/28/23
CHECKED BY: RLW DATE: 10/27/23
DESIGNED BY: RCR DATE: 7/21/22
FILENAME: b04090121_s17.dgn
SCALE: AS NOTED

BRIDGE NO. 07684 DRAWING NO. 67585

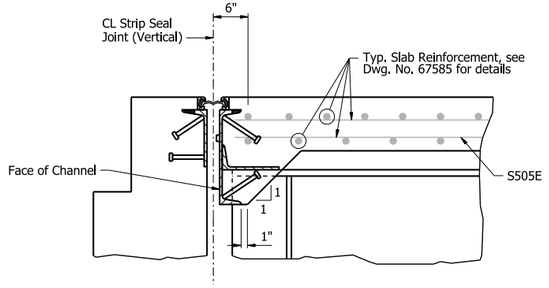
PRINT DATE: 7/31/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
8/9/2024		6	ARK.	040901	526	809
		07684 - UNITS 1 & 7-9 - 67586				

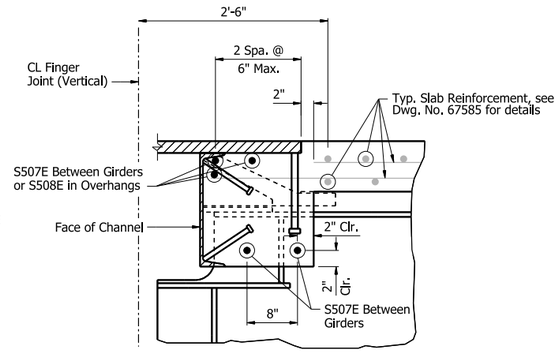
1 Slab extension added below Rail and Median Barriers at Finger Joint locations. 8/9/2024

Notes:
For details of Strip Seal Joint, see Dwg. No. 67693.

For details of Finger Joint, see Dwg. Nos. 67696 & 67697.



AT BENTS WITH STRIP SEAL JOINTS



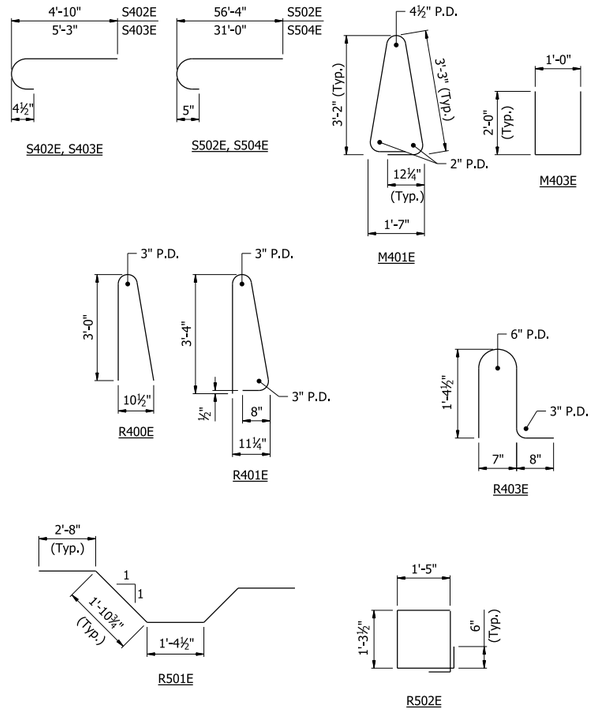
AT BENTS WITH FINGER JOINTS

SECTION A-A

BAR LIST - PER UNIT

Mark	Number Required				Length				Pin Dia.
	Unit 1	Unit 7	Unit 8	Unit 9	Unit 1	Unit 7	Unit 8	Unit 9	
S401E	870	783	783	870	40'-8"	44'-9"	44'-9"	40'-8"	Str.
S402E	752	772	772	776	5'-4"	5'-4"	5'-4"	5'-4"	3"
S403E	24	-	-	-	5'-9"	-	-	-	3"
S501E	621	617	617	621	56'-9"	56'-9"	56'-9"	56'-9"	Str.
S502E	775	771	771	775	56'-11"	56'-11"	56'-11"	56'-11"	3¾"
S503E	621	617	617	621	31'-5"	31'-5"	31'-5"	31'-5"	Str.
S504E	775	771	771	775	31'-7"	31'-7"	31'-7"	31'-7"	3¾"
S505E	616	616	616	616	58'-2"	58'-1"	58'-1"	58'-2"	Str.
S506E	344	344	344	344	43'-5"	43'-5"	43'-5"	43'-5"	Str.
S507E	40	80	80	40	8'-2"	8'-2"	8'-2"	8'-2"	Str.
S508E	6	12	12	6	2'-2"	2'-2"	2'-2"	2'-2"	Str.
1 S509E	16	32	32	16	5'-0"	5'-0"	5'-0"	5'-0"	Str.
R400E	288	288	288	288	6'-3"	6'-3"	6'-3"	6'-3"	3"
R401E	1516	1516	1516	1516	7'-6"	7'-6"	7'-6"	7'-6"	3"
R402E	120	120	120	120	5'-6"	5'-6"	5'-6"	5'-6"	Str.
R403E	~~1506~~	~~1496~~	~~1496~~	~~1506~~	3'-8"	3'-8"	3'-8"	3'-8"	3"
R411E	40	40	40	40	12'-8"	12'-8"	12'-8"	12'-8"	Str.
R412E	40	40	40	40	13'-8"	13'-8"	13'-8"	13'-8"	Str.
R413E	160	160	160	160	15'-8"	15'-8"	15'-8"	15'-8"	Str.
R415E	240	240	240	240	17'-0"	17'-0"	17'-0"	17'-0"	Str.
	1 1516		1 1516						
R501E	6	-	-	-	10'-6"	-	-	-	3¾"
R502E	3	-	-	-	5'-11"	-	-	-	2½"
R503E	11	-	-	-	3'-3"	-	-	-	Str.
M401E	784	784	784	784	9'-0"	9'-0"	9'-0"	9'-0"	2"
M402E	60	60	60	60	5'-6"	5'-6"	5'-6"	5'-6"	Str.
M403E	779	774	774	779	4'-10"	4'-10"	4'-10"	4'-10"	3"
M411E	20	20	20	20	12'-8"	12'-8"	12'-8"	12'-8"	Str.
M412E	20	20	20	20	13'-8"	13'-8"	13'-8"	13'-8"	Str.
M413E	80	80	80	80	15'-8"	15'-8"	15'-8"	15'-8"	Str.
M415E	120	120	120	120	17'-0"	17'-0"	17'-0"	17'-0"	Str.

Bending Diagrams
(Dimensions are out to out of bars)



All bars designated with an "E" suffix are to be epoxy coated.

PRINT DATE: 8/5/2024

STATE OF ARKANSAS
RACHEL L. WESSON
LICENSED PROFESSIONAL ENGINEER
No. 22535
8/9/24
BRIDGE ENGINEER

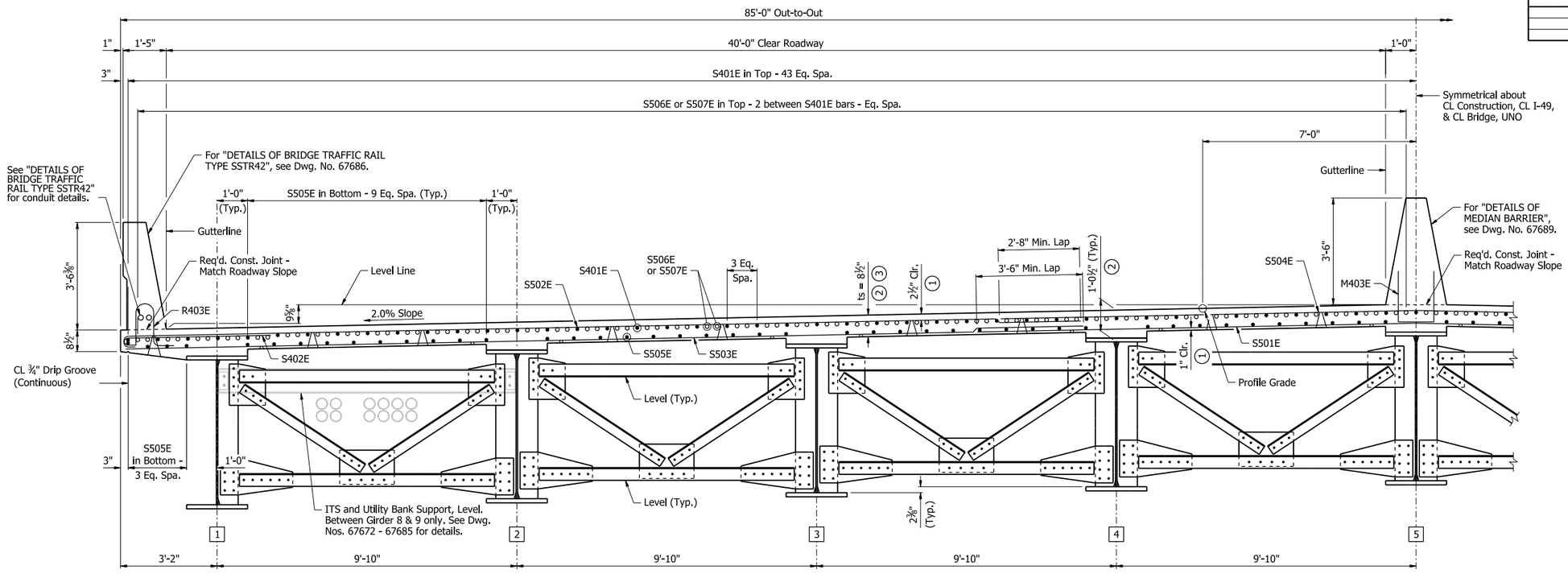
ALTERNATE NO. 2
SHEET 8 OF 8
DETAILS OF 390'-0" CONTINUOUS
PLATE GIRDER UNITS 1 & 7-9
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 9/4/23
CHECKED BY: RLW DATE: 10/27/23
DESIGNED BY: RCR DATE: 7/21/22
FILENAME: b04090121_s18.dgn
SCALE: 1" = 1'-0"

BRIDGE NO. 07684 DRAWING NO. 67586

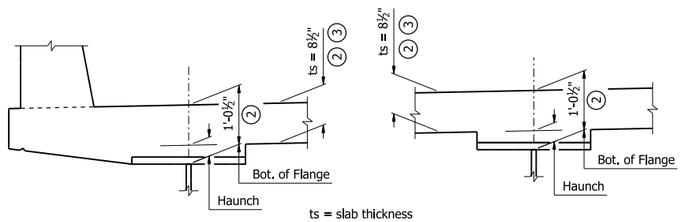
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	527	809
		07684 - UNIT 2, 3, 5, & 6 - 67587				



TYPICAL ROADWAY SECTION

(Looking Upstation)

½" = 1'-0"



ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

¾" = 1'-0"

Notes:
Bar positions or clearances from the forms shall be maintained by means of stays, ties, hangers, or other approved devices per Subsection 804.06. Placement of slab bolsters or high-chairs with full-length lower runners directly on removable deck forms will not be allowed.

For details of Bridge Finishes and Protective Surface Treatment, see Dwg No. 67372.

For "REINFORCING PLAN AND POURING SEQUENCE", see Dwg. Nos. 67594 - 67596.

For "COMMON DETAILS OF SECTIONS NEAR JOINTS", see Dwg. No. 67691.

For K-Frame details, see Dwg. Nos. 67591 & 67592.

(1) Tolerance: Minus = ¼"; Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE".

(2) Haunch dimensions may vary within the following limits to maintain the grade and slab thickness tolerance. :

Top Flange	Haunch Adjustment Tolerance	
	Plus	Minus
1" x 13"	1⅞"	1⅞"
1" x 16"	1¾"	1¾"
1½" x 16"	2¼"	1¼"
1⅝" x 24"	2⅜"	1⅛"

No increase in concrete and structural steel quantities will be made to maintain tolerances. Tolerances shown are applicable for both removable deck forming and permanent steel deck forms. Payment for concrete shall be based on removable deck forming.

(3) Tolerance: Minus = ¼"; Plus = ½". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

SLAB REINFORCING:
Longitudinal: S401E in Top placed as shown
S506E in Top placed as shown over Intermediate Bents
S505E in Bottom placed as shown

Transverse: Alternate S502E and S504E in Top @ 6" Max.
Alternate S501E and S503E in Bottom @ 7½" Max.
S402E in Top @ 12" Max., Bundled with S502E or S504E

STATE OF
ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 12
DETAILS OF 520'-0" CONTINUOUS PLATE GIRDER UNITS 2, 3, 5, & 6
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION

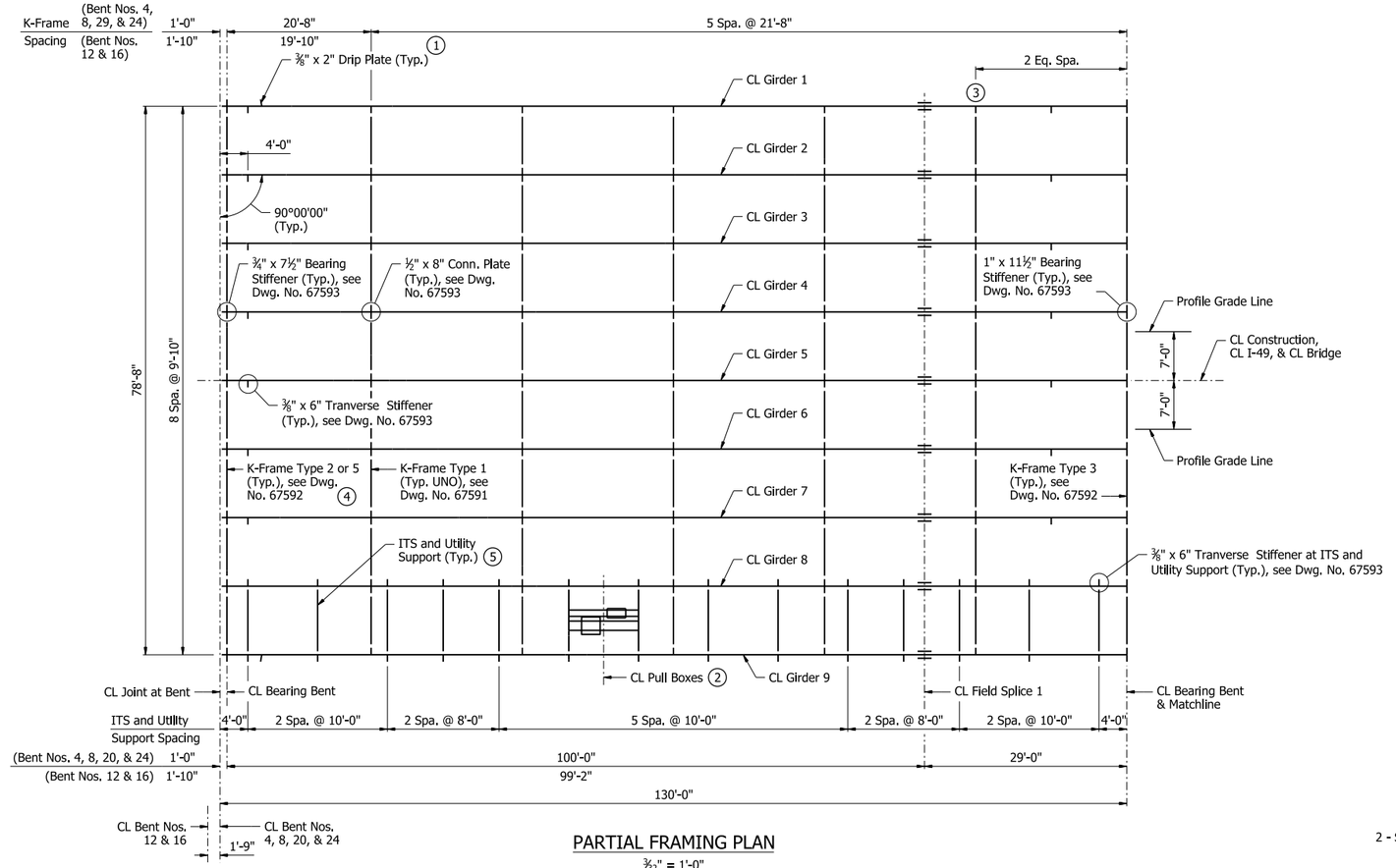
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 9/4/23
CHECKED BY: RLW DATE: 10/27/23
DESIGNED BY: RCR DATE: 7/21/22
FILENAME: b04090121_s21.dgn
SCALE: AS NOTED

BRIDGE NO. 07684 DRAWING NO. 67587

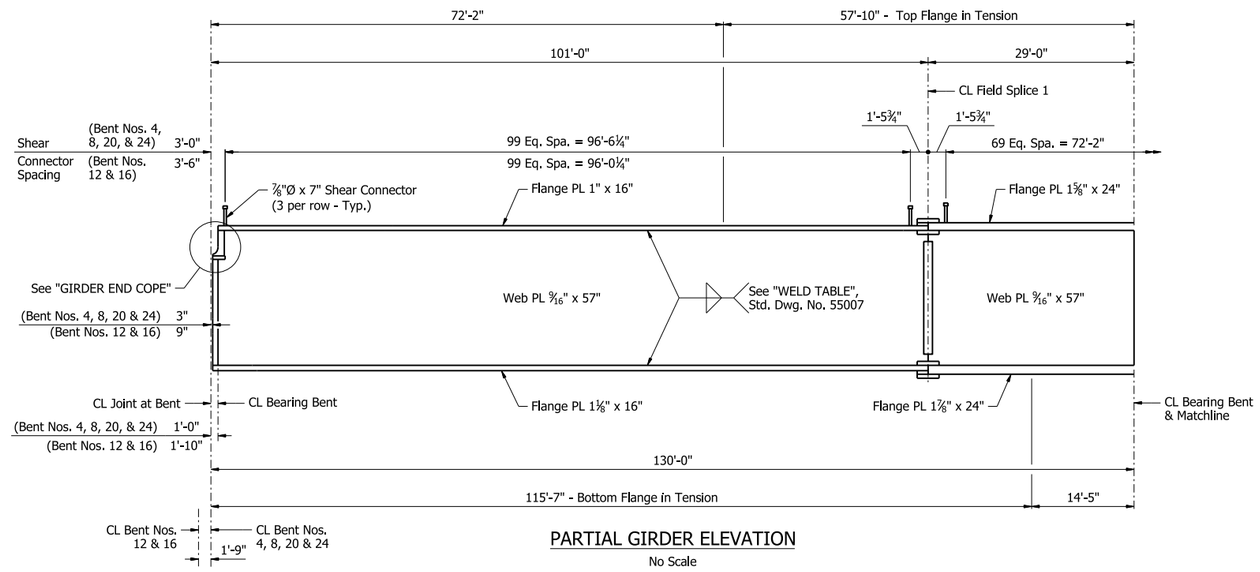
PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	528	809
		07684 - UNITS 2, 3, 5 & 6 - 67588				



PARTIAL FRAMING PLAN

3/32" = 1'-0"



PARTIAL GIRDER ELEVATION

No Scale

Stations Increase

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-GR50W)."

For "DETAILS OF FIELD SPLICES", see Dwg. No. 67590.

For Dead Load Deflections, see Dwg. No. 67593.

For ITS and Utility bank details, see Dwg. Nos. 67672 - 67685.

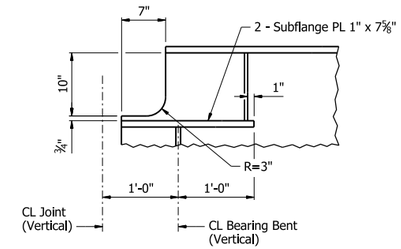
(1) Location of drip plate is not symmetrical about Center of Unit. It shall be placed on the up-hill side of each bent. Stop weld 1" from edge of flange. See Std. Dwg. No. 55007 for additional details.

(2) Sta. 168+18.00 (Unit No. 2);
Sta. 173+11.00 (Unit No. 3);
Sta. 177+75.00 (Unit No. 3);
Sta. 197+55.00 (Unit No. 5);
Sta. 202+28.00 (Unit No. 6).

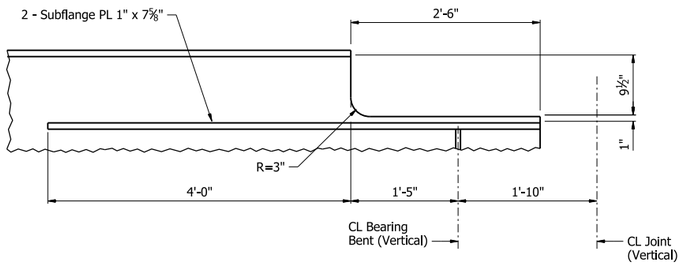
(3) Connection Plates acting as transverse stiffeners. (Typical for all girders.)

(4) K-Frame Type 2 - Bent Nos. 4, 8, 20, & 24;
K-Frame Type 5 - Bent Nos. 12 & 16

(5) ITS and Utility Supports will not be placed at Bent K-Frame locations.



AT BENT NOS. 4, 8, 20, & 24



AT BENT NOS. 12 & 16

GIRDER END COPE

1" = 1'-0"

ALTERNATE NO. 2
SHEET 2 OF 12
DETAILS OF 520'-0" CONTINUOUS
PLATE GIRDER UNITS 2, 3, 5, & 6
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

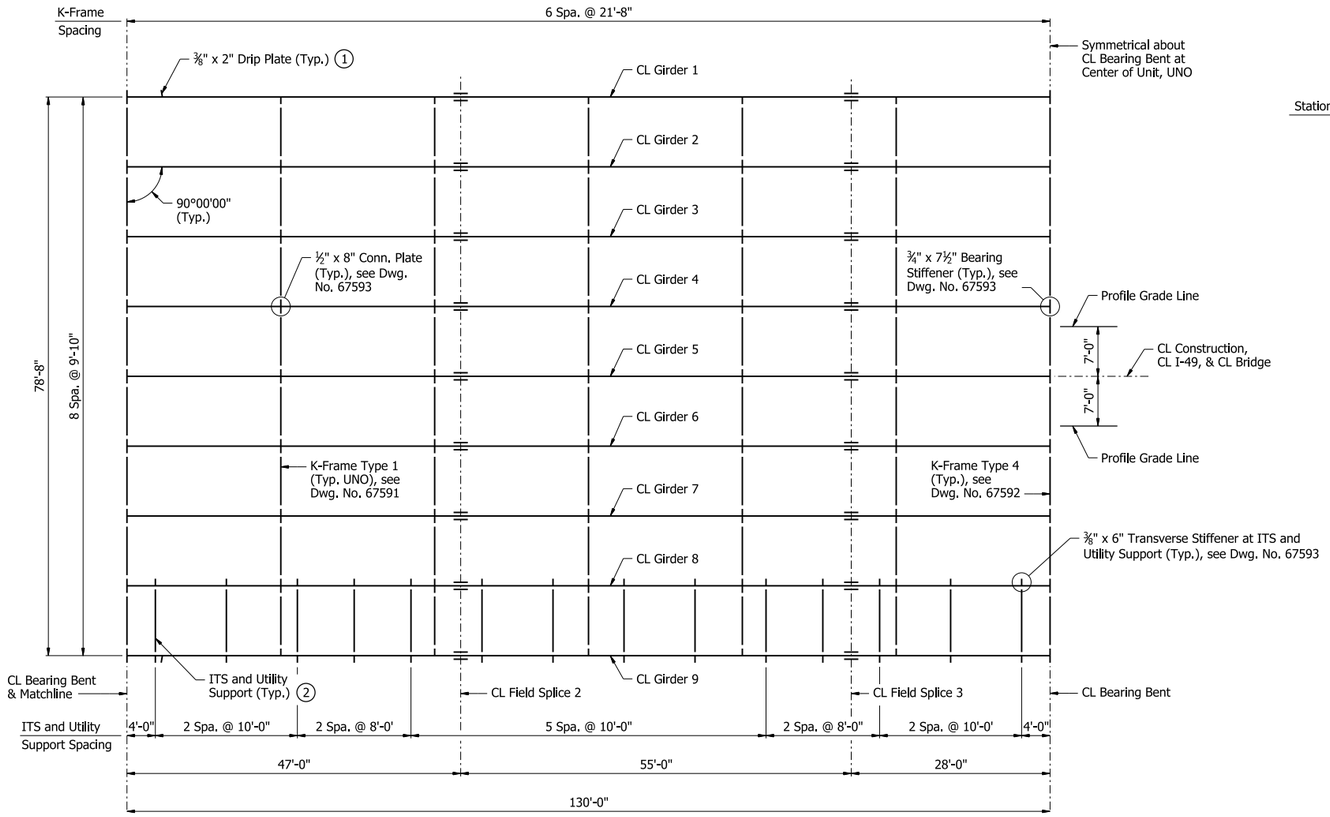
STATE OF
ENGINEER
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

DRAWN BY: CTK DATE: 9/5/23 FILENAME: b04090121_s22.dgn
CHECKED BY: RLW DATE: 9/28/23 SCALE: AS NOTED
DESIGNED BY: MJ DATE: 4/28/23

BRIDGE NO. 07684 DRAWING NO. 67588

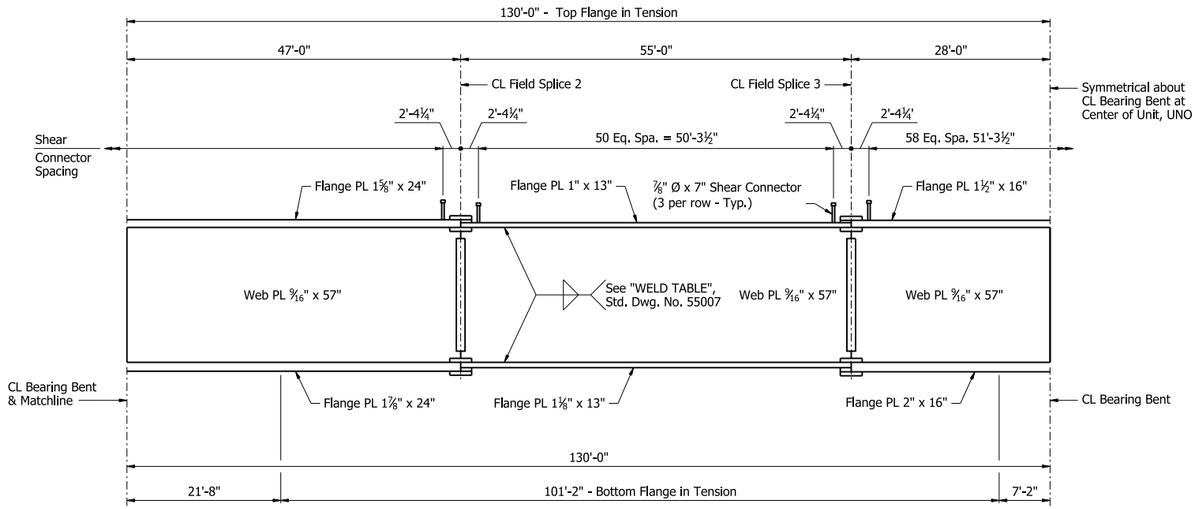
PRINT DATE: 4/13/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	529	809
		07684 - UNITS 2, 3, 5 & 6 - 67589				



PARTIAL FRAMING PLAN

3/32" = 1'-0"
(Unit 2 shown. Units 3, 5 & 6 similar, UNO.)



PARTIAL GIRDER ELEVATION

No Scale
(Unit 2 shown. Units 3, 5 & 6 similar, UNO.)

Notes:
For additional notes, see DWG. No. 67588.

(1) Location of drip plate is not symmetrical about Center of Unit. It shall be placed on the up-hill side of each bent. Stop weld 1" from edge of flange. See Std. Dwg. No. 55007 for additional details.

(2) ITS and Utility Supports will not be place at Bent K-Frame locations.

For locations of predrilled holes for drainage, see Dwg. No. 67707.

STATE OF
ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 3 OF 12
DETAILS OF 520'-0" CONTINUOUS PLATE GIRDER UNITS 2, 3, 5, & 6
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 9/5/23
CHECKED BY: RLW DATE: 9/28/23
DESIGNED BY: MJ DATE: 4/28/23
FILENAME: b04090121_s23.dgn
SCALE: AS NOTED

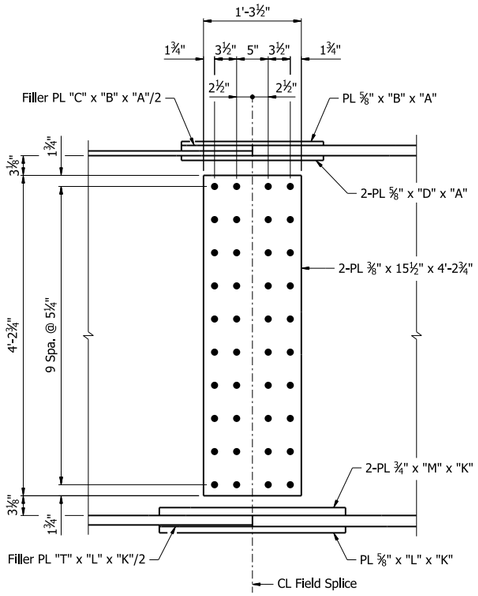
BRIDGE NO. 07684 DRAWING NO. 67589

PRINT DATE: 4/13/2024

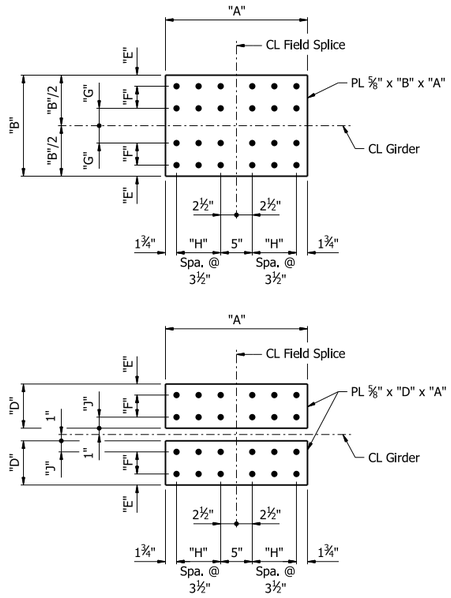
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	530	809
		07684 - Units 2, 3, 5 & 6- 67590				

TABLE OF VARIABLES

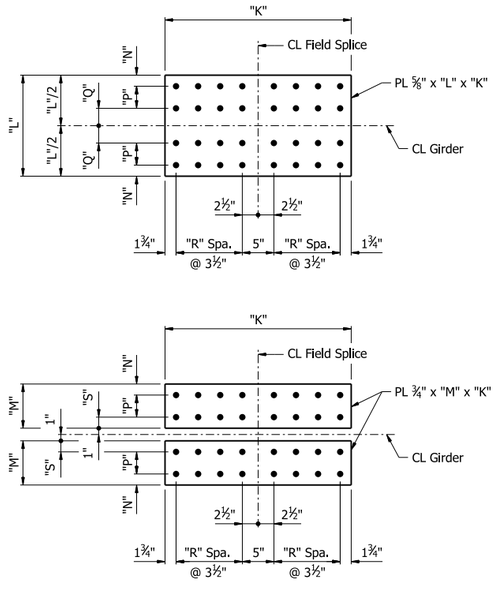
Field Splice	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"	"L"	"M"	"N"	"P"	"Q"	"R"	"S"	"T"
1	2'-5½"	16"	⅝"	7"	1¾"	3½"	2¾"	3	1¾"	2'-5½"	16"	7"	1¾"	3½"	2¾"	3	1⅜"	¾"
2	4'-2½"	13"	⅝"	5½"	3½"	0"	3"	6	2"	4'-9½"	13"	5½"	3½"	0"	3"	7	2"	¾"
3	4'-2½"	13"	½"	5½"	3½"	0"	3"	6	2"	4'-9½"	13"	5½"	3½"	0"	3"	7	2"	⅞"



WEB SPLICE



TOP FLANGE SPLICE



BOTTOM FLANGE SPLICE

DETAILS OF FIELD SPLICES

Notes:
For location of field splices, see Dwg. Nos. 67588 & 67589.

All field splice bolts shall be ASTM F3125, Gr. A325, 1"Ø H.S. bolts.

All holes for splice bolts shall be 1⅛"Ø.

All structural steel shall be ASTM A709, Grade 50W, unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-GR50W)."

Bolted field splices may either be eliminated or shop weld splices may be substituted with the approval of the Engineer. Payment will be made on the basis of plan quantities.

STATE OF
PROFESSIONAL ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 4 OF 12
DETAILS OF 520'-0" CONTINUOUS
PLATE GIRDER UNITS 2, 3, 5, & 6
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

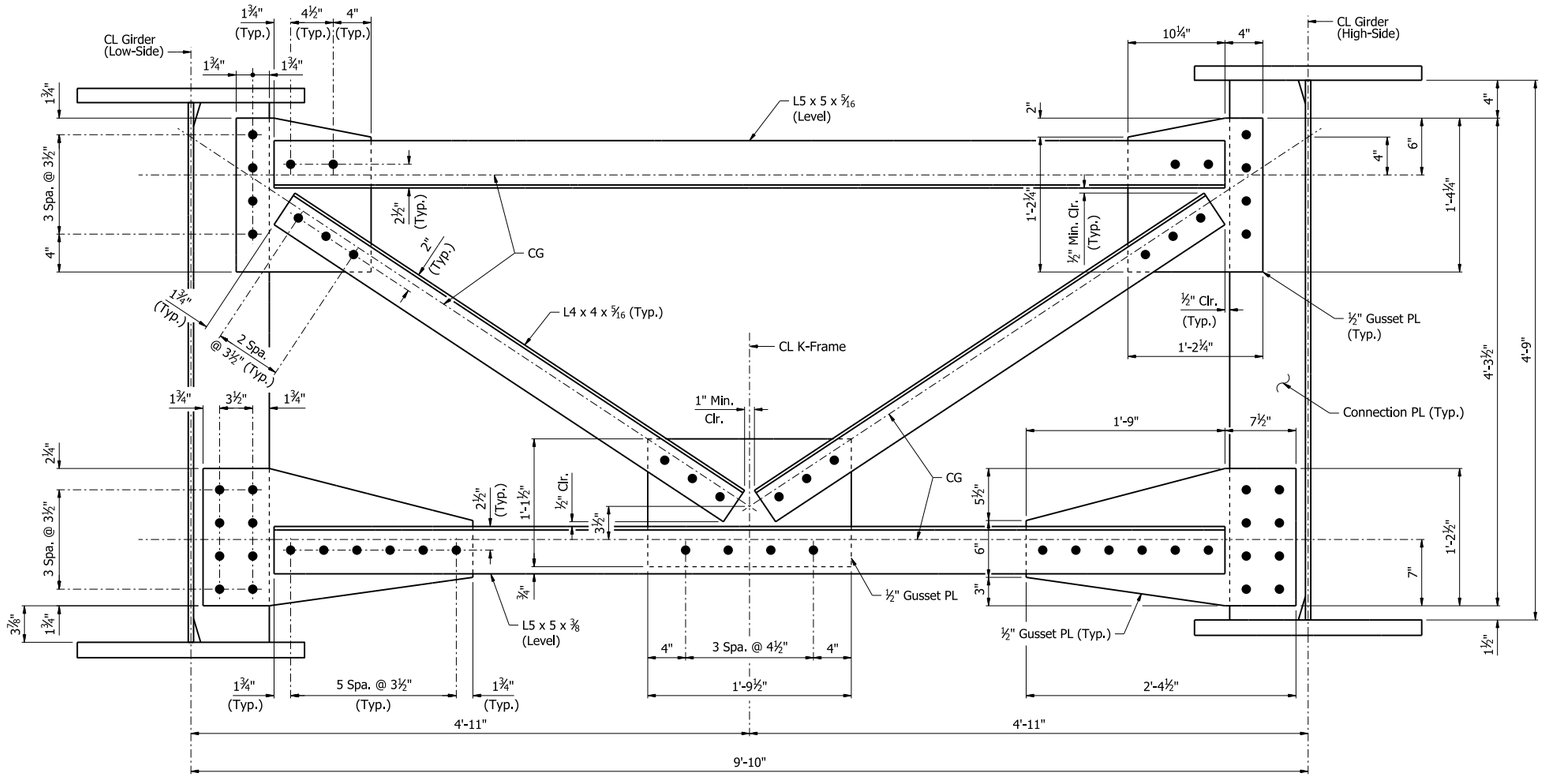
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 7/14/23
CHECKED BY: MJ DATE: 9/6/23
DESIGNED BY: MJ DATE: 4/28/23
FILENAME: b04090121_s24.dgn
SCALE: NO SCALE

BRIDGE NO. 07684 DRAWING NO. 67590

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	531	809
		07684 - Units 2, 3, 5 & 6 - 67591				



DETAIL OF TYPE 1 K-FRAMES

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-GR50W)."

For location of K-Frames, see Dwg. No. 67588 & 67589.

Cross frames shall be shop bolted using pins to align the holes prior to bolting. Disassembling of cross frames is not allowed.

All bolts shall be ASTM F3125, Gr. A325, 1"Ø H.S. bolts.

All holes shall be drilled for K-Frames connection and shall be 1⅛"Ø.

For Connection Plate details, see Dwg. No. 67593.

Conduits and ITS and Utility Supports not shown, see Dwg. Nos. 67672 - 67685 for details.

K-Frames are symmetric about CL, UNO.

PRINT DATE: 4/11/2024

STATE OF
PROFESSIONAL ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

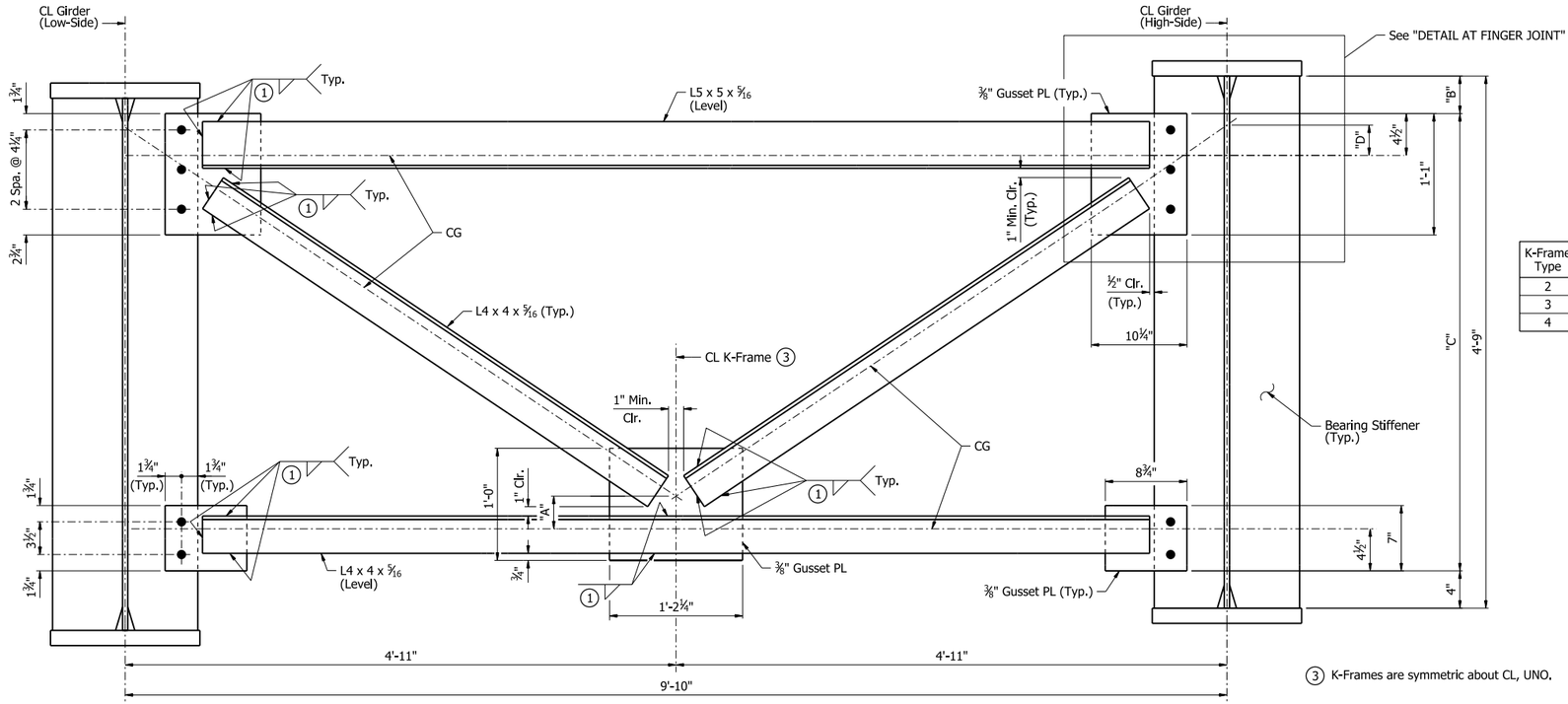
ALTERNATE NO. 2
SHEET 5 OF 12
DETAILS OF 520'-0" CONTINUOUS
PLATE GIRDER UNITS 2, 3, 5, & 6
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 9/6/23
CHECKED BY: RLW DATE: 9/28/23
DESIGNED BY: MJ DATE: 4/28/23
FILENAME: b04090121_s25.dgn
SCALE: 1½" = 1'-0"

BRIDGE NO. 07684 DRAWING NO. 67591

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	532	809
		07684 - Units 2, 3, 5 & 6 - 67592				



DETAIL OF TYPE 2, 3, & 4 K-FRAMES

1½" = 1'-0"

TABLE OF VARIABLES

K-Frame Type	"A"	"B"	"C"	"D"
2	4¼"	1'-3½"	3'-1½"	½"
3	3½"	4"	4'-1"	7"
4	3½"	4"	4'-1"	3¼"

(3) K-Frames are symmetric about CL, UNO.

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-GR50W)."

For location of K-Frames, see Dwg. No. 67588 & 67589.

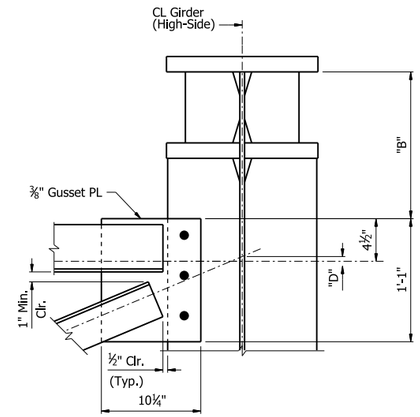
All bolts shall be ASTM F3125, Gr. A325, 1"Ø H.S. bolts.

All holes shall be drilled for K-Frames connection and shall be 1⅛"Ø.

For Bearing Stiffener details, see Dwg. No. 67593.

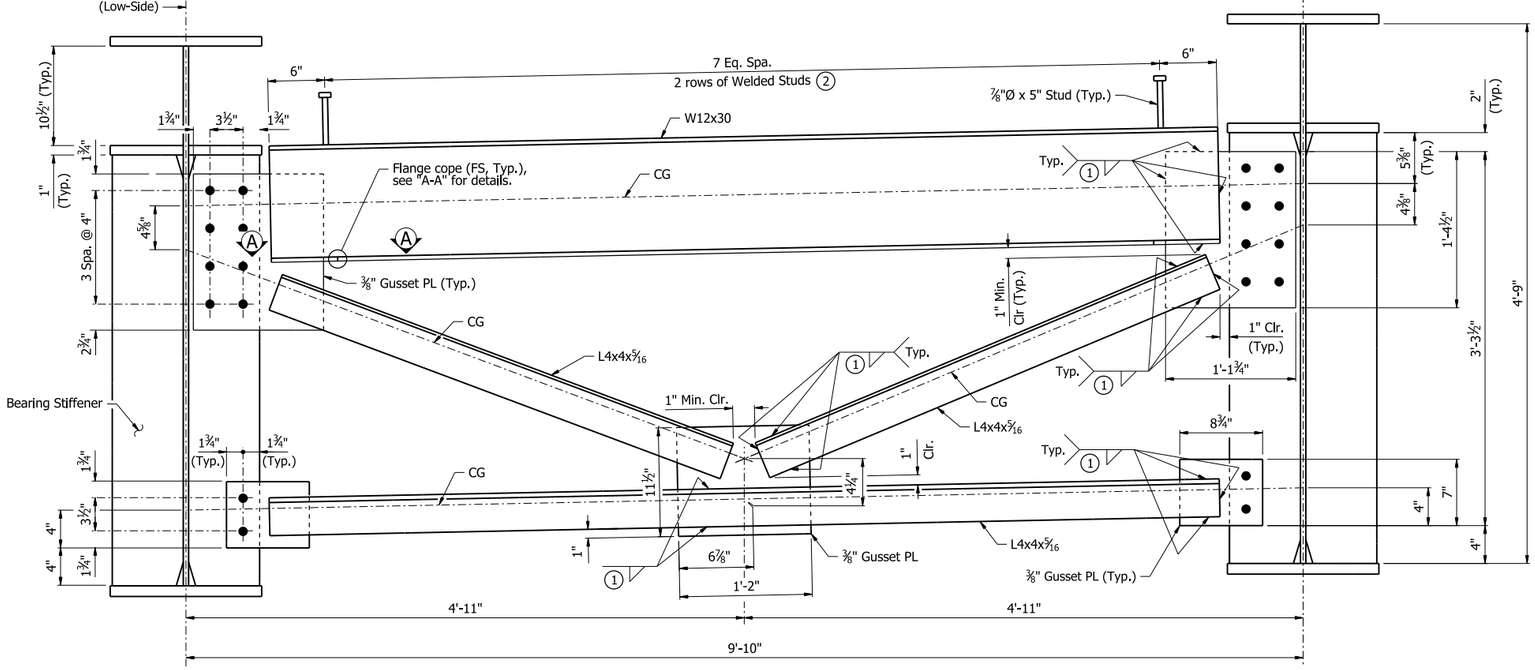
Conduits and ITS and Utility Supports are not shown, see Dwg. Nos. 67672 - 67685 for details.

(1) See "WELD TABLE", Std. Dwg. No. 55007.



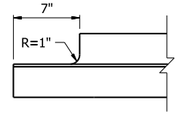
DETAIL AT FINGER JOINT

(Type 2 only)
1½" = 1'-0"

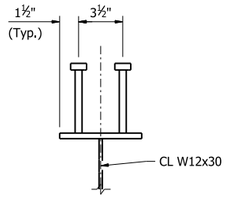


DETAILS OF TYPE 5 K-FRAMES

1½" = 1'-0"



SECTION A-A



(2) SHEAR CONNECTOR DETAIL

2" = 1'-0"

STATE OF ARKANSAS
ALLIE WAGNER
PROFESSIONAL ENGINEER
No. 22390
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 6 OF 12
DETAILS OF 520'-0" CONTINUOUS PLATE GIRDER UNITS 2, 3, 5, & 6 I-49 OVER ARKANSAS RIVER HWY. 22 - GUN CLUB RD. (F) CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION

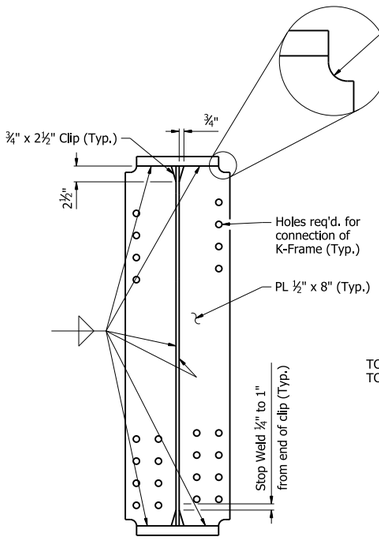
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 9/6/23
CHECKED BY: RLW DATE: 9/28/23
DESIGNED BY: MJ DATE: 4/28/23
FILENAME: b04090121_s26.dgn
SCALE: AS NOTED

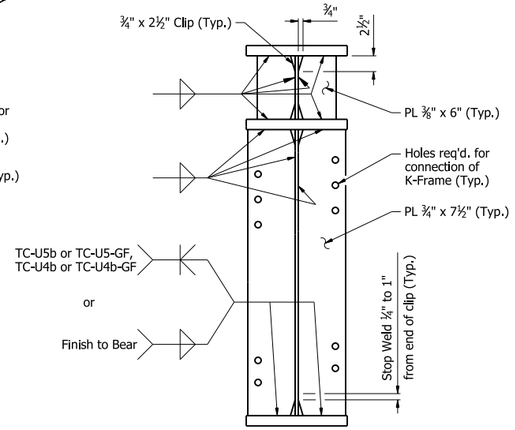
BRIDGE NO. 07684 DRAWING NO. 67592

PRINT DATE: 4/11/2024

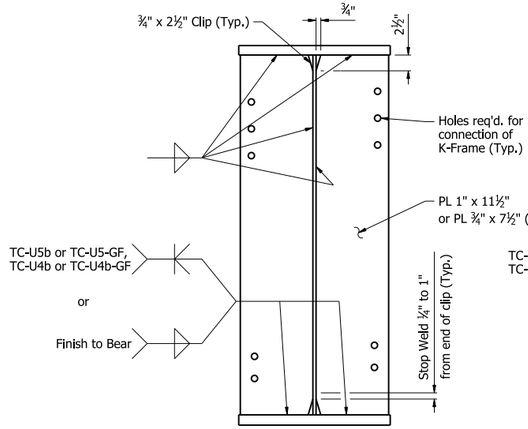
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	533	809
		07684 - Units 2, 3, 5 & 6- 67593				



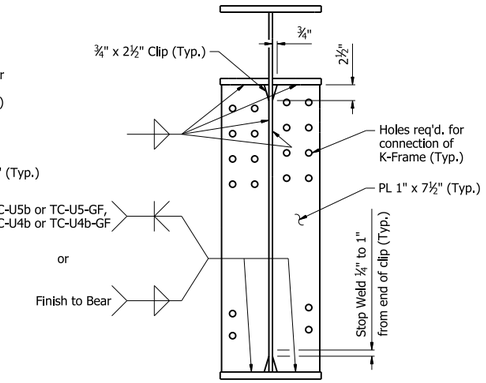
CONNECTION PLATES
(Located at K-Frame Type 1)



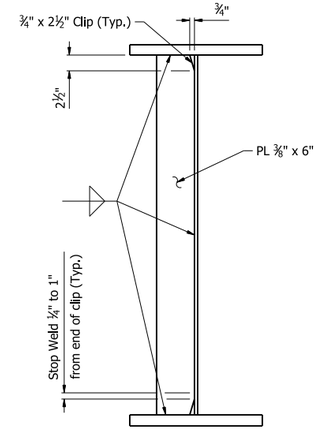
BEARING STIFFENERS
AT BENT NOS. 4, 8, 20, & 24
(Located at K-Frame Type 2)



BEARING STIFFENERS
AT BENT NOS. 5-7, 9-11, 17-19, & 21-23
(Located at K-Frame Type 3 & 4)



BEARING STIFFENERS
AT BENT NOS. 12 & 16
(Located at K-Frame Type 5)



TRANSVERSE STIFFENER

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Span	Point of Deflection	Structural Steel									Structural Steel + Slab									Structural Steel + Slab + Rail								
		Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6	Girder 7	Girder 8	Girder 9	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6	Girder 7	Girder 8	Girder 9	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6	Girder 7	Girder 8	Girder 9
Span 4, 8, 16, or 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.1	0.225	0.229	0.232	0.233	0.235	0.238	0.244	0.252	0.258	1.215	1.270	1.303	1.320	1.326	1.325	1.315	1.292	1.248	1.392	1.371	1.377	1.396	1.425	1.408	1.405	1.424	1.466
	0.2	0.413	0.420	0.425	0.428	0.431	0.436	0.447	0.462	0.473	2.229	2.328	2.389	2.420	2.432	2.429	2.411	2.369	2.289	2.549	2.517	2.526	2.561	2.609	2.584	2.579	2.613	2.685
	0.3	0.540	0.550	0.556	0.559	0.563	0.571	0.585	0.604	0.618	2.920	3.046	3.126	3.168	3.183	3.180	3.155	3.100	2.998	3.335	3.297	3.308	3.355	3.412	3.384	3.378	3.422	3.513
	0.4	0.595	0.605	0.612	0.616	0.620	0.629	0.644	0.665	0.681	3.220	3.358	3.446	3.492	3.509	3.505	3.479	3.418	3.306	3.678	3.637	3.650	3.700	3.763	3.733	3.727	3.776	3.875
	0.5	0.575	0.585	0.591	0.596	0.600	0.608	0.623	0.643	0.658	3.121	3.253	3.338	3.383	3.399	3.396	3.370	3.311	3.204	3.566	3.526	3.538	3.587	3.647	3.619	3.614	3.662	3.758
	0.6	0.488	0.496	0.501	0.505	0.509	0.516	0.528	0.545	0.558	2.654	2.767	2.838	2.876	2.890	2.887	2.865	2.816	2.725	3.039	3.000	3.009	3.052	3.107	3.080	3.074	3.116	3.203
	0.7	0.356	0.363	0.367	0.369	0.372	0.377	0.386	0.399	0.408	1.950	2.033	2.085	2.112	2.122	2.120	2.104	2.070	2.002	2.239	2.205	2.212	2.244	2.288	2.264	2.260	2.292	2.360
	0.8	0.214	0.218	0.220	0.222	0.224	0.227	0.232	0.240	0.245	1.182	1.231	1.261	1.278	1.284	1.283	1.273	1.254	1.213	1.359	1.335	1.340	1.359	1.390	1.372	1.369	1.388	1.433
	0.9	0.087	0.089	0.090	0.090	0.091	0.092	0.095	0.098	0.100	0.491	0.511	0.523	0.530	0.533	0.532	0.528	0.520	0.504	0.565	0.554	0.556	0.564	0.579	0.570	0.569	0.576	0.596
Span 5, 9, 17, or 21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.1	0.005	0.005	0.005	0.005	0.005	0.004	0.004	0.004	0.004	-0.055	-0.049	-0.050	-0.052	-0.054	-0.053	-0.052	-0.050	-0.056	-0.041	-0.058	-0.061	-0.059	-0.049	-0.061	-0.064	-0.059	-0.043
	0.2	0.051	0.053	0.054	0.053	0.052	0.052	0.053	0.055	0.055	0.110	0.132	0.137	0.136	0.134	0.135	0.136	0.134	0.114	0.169	0.135	0.129	0.137	0.159	0.135	0.128	0.142	0.180
	0.3	0.113	0.117	0.118	0.117	0.116	0.116	0.119	0.124	0.124	0.382	0.423	0.438	0.439	0.437	0.438	0.439	0.430	0.393	0.496	0.449	0.440	0.456	0.487	0.455	0.445	0.468	0.525
	0.4	0.170	0.175	0.177	0.176	0.176	0.176	0.180	0.187	0.189	0.664	0.723	0.747	0.751	0.750	0.751	0.750	0.735	0.683	0.827	0.772	0.762	0.784	0.823	0.786	0.773	0.803	0.875
	0.5	0.204	0.209	0.212	0.212	0.211	0.212	0.217	0.225	0.229	0.862	0.930	0.960	0.967	0.967	0.968	0.965	0.946	0.886	1.054	0.997	0.987	1.013	1.054	1.016	1.002	1.036	1.114
	0.6	0.197	0.202	0.204	0.204	0.204	0.205	0.209	0.218	0.221	0.872	0.939	0.968	0.976	0.976	0.976	0.974	0.955	0.897	1.061	1.005	0.998	1.023	1.064	1.027	1.013	1.045	1.120
	0.7	0.155	0.159	0.160	0.160	0.160	0.161	0.165	0.172	0.175	0.706	0.759	0.782	0.788	0.789	0.789	0.786	0.772	0.726	0.858	0.812	0.806	0.827	0.862	0.830	0.819	0.844	0.906
	0.8	0.093	0.095	0.096	0.097	0.096	0.097	0.099	0.104	0.105	0.430	0.463	0.476	0.480	0.480	0.481	0.479	0.471	0.443	0.526	0.494	0.491	0.504	0.530	0.506	0.499	0.514	0.556
	0.9	0.033	0.034	0.035	0.035	0.035	0.035	0.036	0.037	0.038	0.156	0.168	0.172	0.173	0.174	0.174	0.173	0.171	0.160	0.193	0.178	0.177	0.182	0.195	0.183	0.180	0.186	0.204
	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

← Symmetrical about CL Bearing Bent at Center of Unit

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-GR50W)."

For location of stiffeners and connection plates, see Dwg. No. 67588 & 67589.

For details of K-frames, see Dwg. Nos. 67591 & 67592.

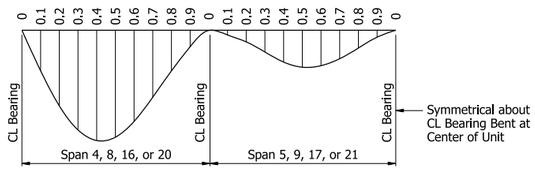
See "WELD TABLE" for minimum weld sizes on Std. Dwg. No. 55007.

(1) If permanent steel bridge deck forms are used, the Fabricator shall clip the plates as necessary to accommodate the deck form support.

Notes:
Camber for dead load deflection +/- 1#4" tolerance. Deflections shown are along CL Girder from a chord from CL Bearing to CL Bearing. Negative sign (-) indicates point above chord. Vertical curve corrections are not included. Superelevation transition corrections not included.

The additional weight for the permanent steel deck forms are included in the slab dead load deflections.

The additional weight of the ITS and utility support brackets are included with the steel dead load deflections. The weight of the conduits are included in the steel + slab + rail dead load deflections.



DEAD LOAD DEFLECTION DIAGRAM

STATE OF
ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 7 OF 12
DETAILS OF 520'-0" CONTINUOUS
PLATE GIRDER UNITS 2, 3, 5, & 6
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

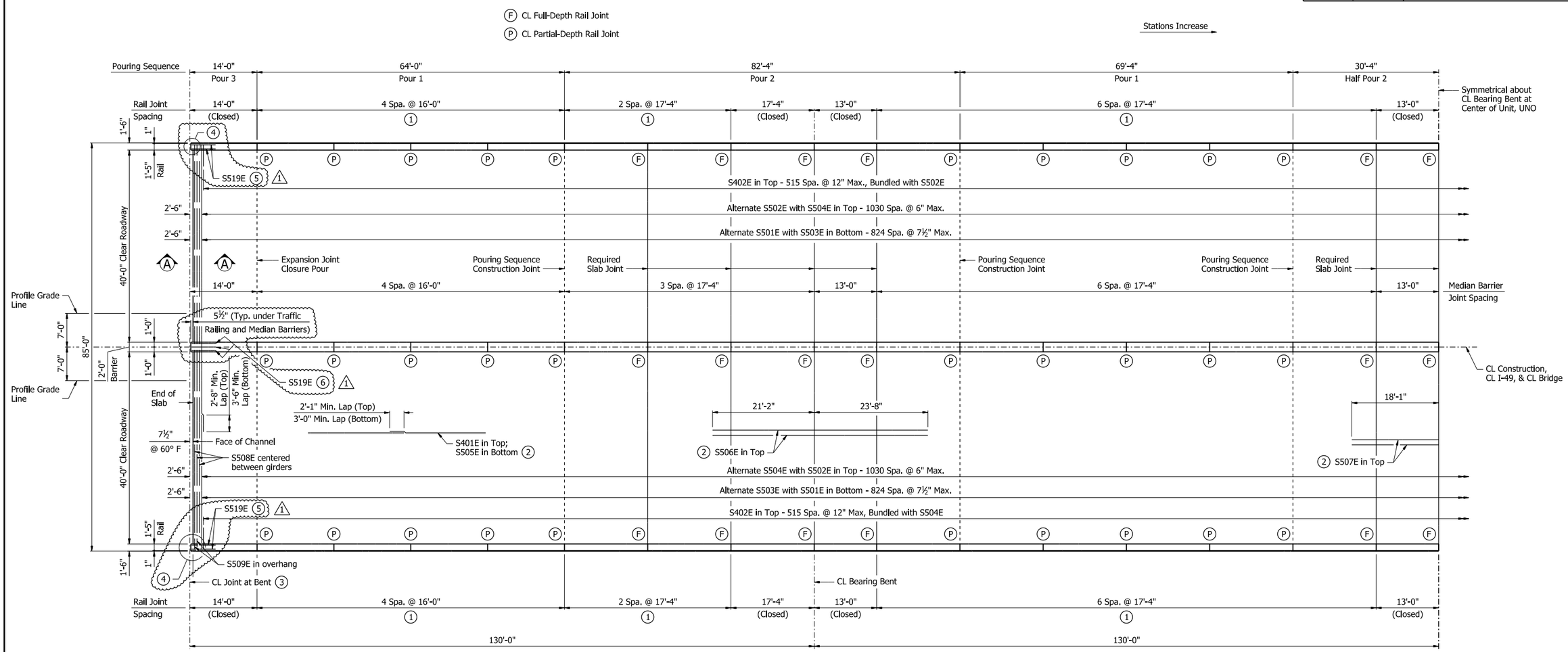
DRAWN BY: CTK DATE: 9/5/23
CHECKED BY: MJ DATE: 9/7/23
DESIGNED BY: MJ DATE: 4/28/23
FILENAME: b04090121_s27.dgn
SCALE: 1" = 1'-0"

BRIDGE NO. 07684 DRAWING NO. 67593

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
8/9/2024		6	ARK.	040901	534	809
		07684 - UNITS 2, 3, 5, & 6 - 67594				

1 Slab extension added below Rail and Median Barriers at Finger Joint locations. 8/9/2024



HALF REINFORCING PLAN AND POURING SEQUENCE - UNIT NOS. 2 & 6

DECK DRAIN LOCATIONS	
Left Gutter	Right Gutter
170+57.83	170+57.83
174+47.83	174+47.83
177+11.67	177+11.67

Slab Pouring Sequence Notes:
Pours with the same number may be placed simultaneously or separately. All Pour(s) 1 must be placed before Pour(s) 2 can be placed. A minimum of 48 hours shall elapse between the end of a pour and the start of the next pour. A minimum of 72 hours shall elapse between adjacent pours.

Concrete in bridge superstructure shall be placed, consolidated, and screeded off for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent.

After all incremental pours on both Units adjacent to the Finger Joint are complete, closure pour 3 on each side of Finger Joint shall be poured simultaneously. For details of Finger Joint, see Dwg. Nos. 67696 and 67697. A minimum of 48 hours shall elapse between the last incremental pour and the closure pours.

A minimum of 72 hours shall elapse between completion of the slab and the pouring of the bridge railing. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence(s) shown.

Notes:
Required slab joints and pouring sequence joints shall align with rail joints at the gutterline.

For "TRANSVERSE SLAB JOINT DETAIL", see Dwg. No. 55007.

For "DETAILS OF BRIDGE TRAFFIC RAIL TYPE SSTR42", see Dwg. No. 67686.

For "DETAILS OF MEDIAN BARRIER", see Dwg. No. 67689.

For "SECTION A-A", see Dwg. No. 67597.

For "PLAN OF REINFORCING AT DECK DRAINS", see Dwg. No. 67707.

(1) Unit 2: Rail panels are open, Sta. 167+77.00 to Sta. 168+75.67, Sta. 169+06.00 to Sta. 170+10.00, Sta. 170+36.00 to Sta. 170+88.00. Rail panels are closed, Sta. 170+88.00 to Sta. 172+69.00.
Unit 6: Rail panels are open in this location.

(2) Place as shown in "TYPICAL ROADWAY SECTION", see Dwg. No. 67587.

(3) For Joint types, see Dwg. Nos. 67549 - 67558.

1 (4) In the slab extension, cut R403E 8" leg to maintain concrete cover.

1 (5) 2-S519E in Top, 3-S519E in Bottom.

1 (6) 3-S519E @ Eq. Spa., Top and Bottom.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 22535
RACHEL L. WESSON
8/9/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 8 OF 12
DETAILS OF 520'-0" CONTINUOUS PLATE GIRDER UNITS 2, 3, 5, & 6
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

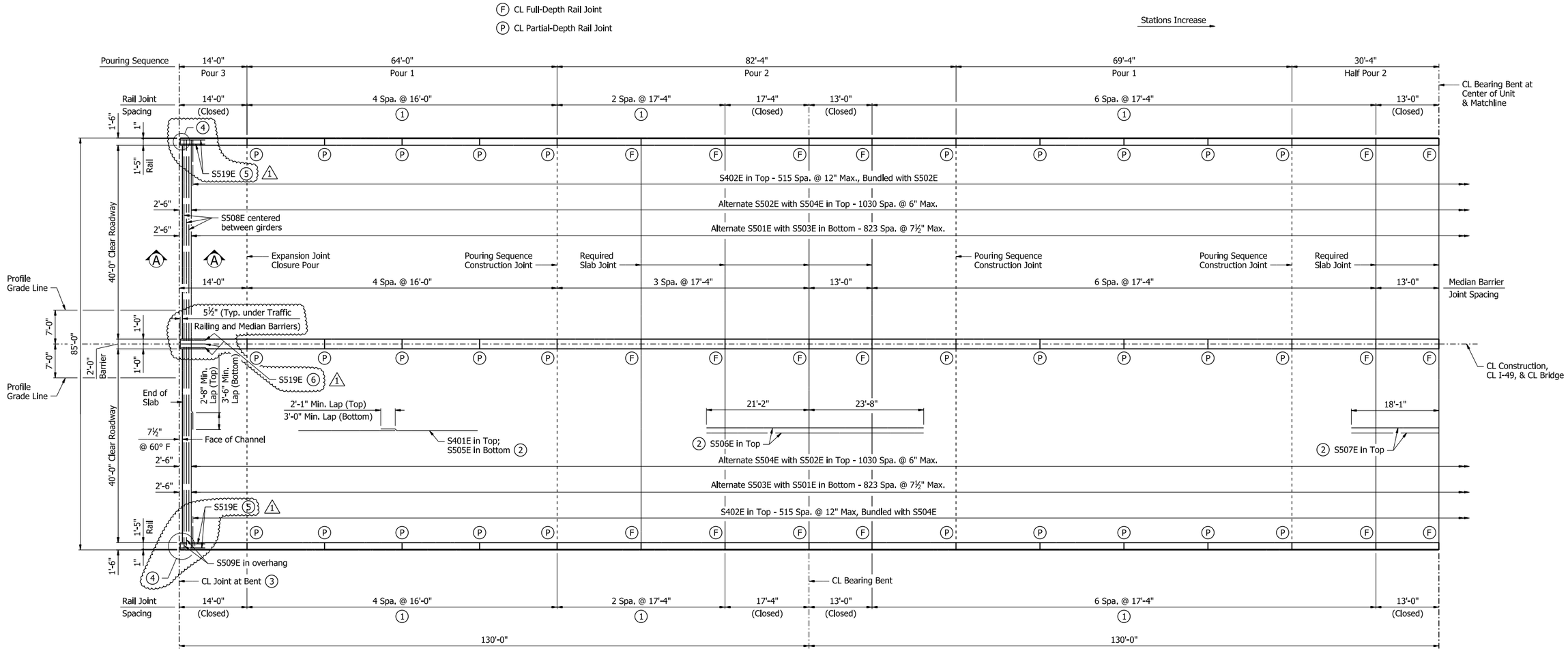
DRAWN BY: CEM DATE: 9/1/23 FILENAME: b04090121_s28.dgn
CHECKED BY: RLW DATE: 10/27/23 SCALE: 3/32" = 1'-0"
DESIGNED BY: RCR DATE: 7/21/22

BRIDGE NO. 07684 DRAWING NO. 67594

PRINT DATE: 7/31/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
8/9/2024		6	ARK.	040901	535	809
		07684 - UNITS 2, 3, 5, & 6 - 67595				

1 Slab extension added below Rail and Median Barriers at Finger Joint locations. 8/9/2024



PARTIAL REINFORCING PLAN AND POURING SEQUENCE - UNITS 3 & 5

(Unit 3 shown; Unit 5 similar)

Slab Pouring Sequence Notes:
Pours with the same number may be placed simultaneously or separately. All Pour(s) 1 must be placed before Pour(s) 2 can be placed. A minimum of 48 hours shall elapse between the end of a pour and the start of the next pour. A minimum of 72 hours shall elapse between adjacent pours.

Concrete in bridge superstructure shall be placed, consolidated, and screeded off for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent.

At Finger Joint and Modular Joint, after all incremental pours on both Units adjacent to the Joint are complete, closure pour 3 on each side of Joint shall be poured simultaneously. For details of Finger Joint, see Dwg. Nos. 67696 and 67697. For Modular Joint details, see Dwg. Nos. 67700 and 67701. A minimum of 48 hours shall elapse between the last incremental pour and the closure pours.

A minimum of 72 hours shall elapse between completion of the slab and the pouring of the bridge railing. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence(s) shown.

Notes:
Required slab joints and pouring sequence joints shall align with rail joints at the gutterline.

For "TRANSVERSE SLAB JOINT DETAIL", see Dwg. No. 55007.

For "DETAILS OF BRIDGE TRAFFIC RAIL TYPE SSTR42", see Dwg. No. 67686.

For "DETAILS OF MEDIAN BARRIER", see Dwg. No. 67689.

For "SECTION A-A", see Dwg. No. 67597.

(1) Unit 3: Rail panels are closed in this location.
Unit 5: Rail panels are open in this location.

(2) Place as shown in "TYPICAL ROADWAY SECTION", see Dwg. No. 67587.

(3) For Joint types, see Dwg. Nos. 67549 - 67558.

1 (4) In the slab extension, cut R403E 8" leg to maintain concrete cover.

1 (5) 2-S519E in Top, 3-S519E in Bottom.

1 (6) 3-S519E @ Eq. Spa., Top and Bottom.

STATE OF ARKANSAS
Rachel L. Wesson
LICENSED PROFESSIONAL ENGINEER
No. 22535
RACHEL L. WESSON
8/9/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 9 OF 12
DETAILS OF 520'-0" CONTINUOUS PLATE GIRDER UNITS 2, 3, 5, & 6
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

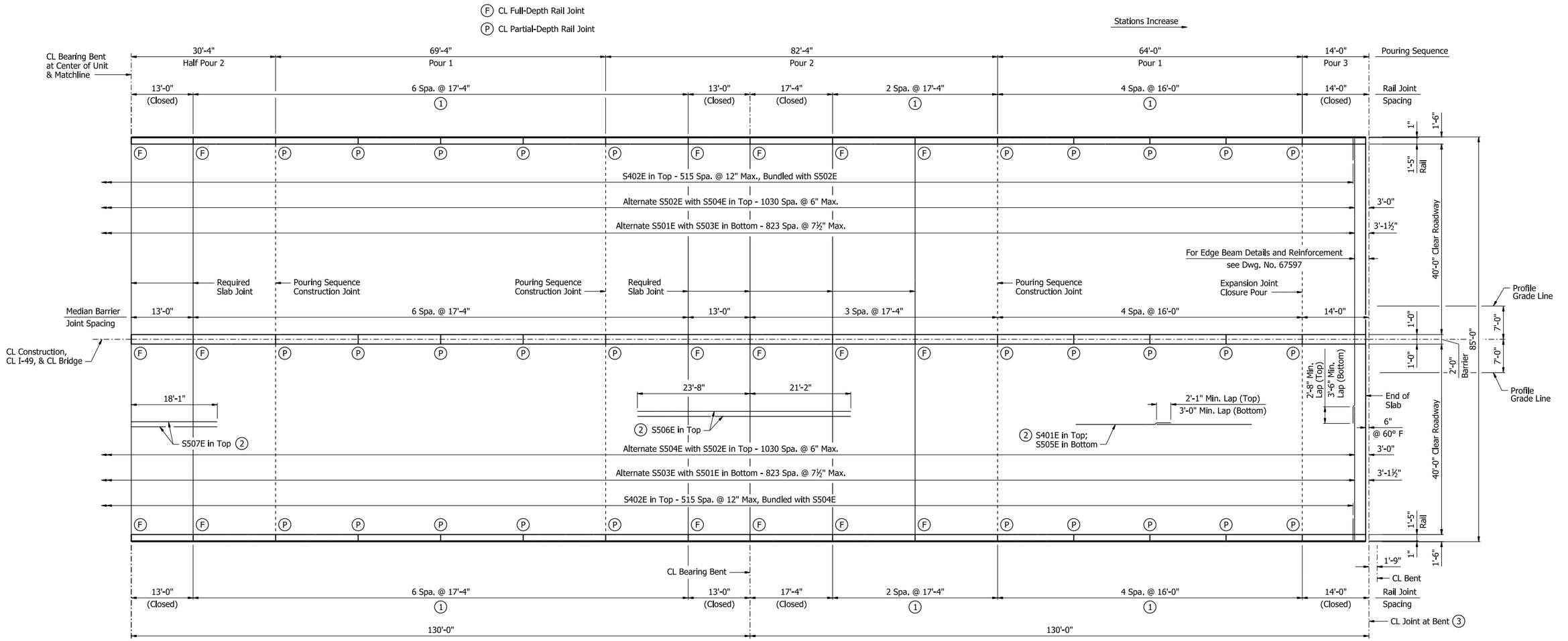
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 9/4/23
CHECKED BY: RLW DATE: 10/27/23
DESIGNED BY: RCR DATE: 7/21/22
FILENAME: b04090121_s29.dgn
SCALE: 3/32" = 1'-0"

BRIDGE NO. 07684 DRAWING NO. 67595

PRINT DATE: 7/31/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	536	809
		07684 - UNITS 2, 3, 5, & 6 - 67596				



PARTIAL REINFORCING PLAN AND POURING SEQUENCE - UNITS 3 & 5

(Unit 3 shown; Unit 5 similar)

Slab Pouring Sequence Notes:

Pours with the same number may be placed simultaneously or separately. All Pour(s) 1 must be placed before Pour(s) 2 can be placed. A minimum of 48 hours shall elapse between the end of a pour and the start of the next pour. A minimum of 72 hours shall elapse between adjacent pours.

Concrete in bridge superstructure shall be placed, consolidated, and screeded off for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent.

At Finger Joint and Modular Joint, after all incremental pours on both Units adjacent to the Joint are complete, closure pour 3 on each side of the Joint shall be poured simultaneously. For details of Finger Joint, see Dwg. Nos. 67696 and 67697. For Modular Joint details, see Dwg. Nos. 67700 and 67701. A minimum of 48 hours shall elapse between the last incremental pour and the closure pours.

A minimum of 72 hours shall elapse between completion of the slab and the pouring of the bridge railing. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence(s) shown.

Notes:

Required slab joints and pouring sequence joints shall align with rail joints at the gutterline.

For "TRANSVERSE SLAB JOINT DETAIL", see Dwg. No. 55007.

For "DETAILS OF BRIDGE TRAFFIC RAIL TYPE SSTR42", see Dwg. No. 67686.

For "DETAILS OF MEDIAN BARRIER", see Dwg. No. 67689.

For "SECTION A-A", see Dwg. No. 67597.

(1) Unit 3: Rail panels are closed in this location.
Unit 5: Rail panels are open in this location.

(2) Place as shown in "TYPICAL ROADWAY SECTION", see Dwg. No. 67587.

(3) For Joint types, see Dwg. Nos. 67549 - 67558.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 22535
RACHEL L. WESSON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 10 OF 12
DETAILS OF 520'-0" CONTINUOUS PLATE GIRDER UNITS 2, 3, 5, & 6
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

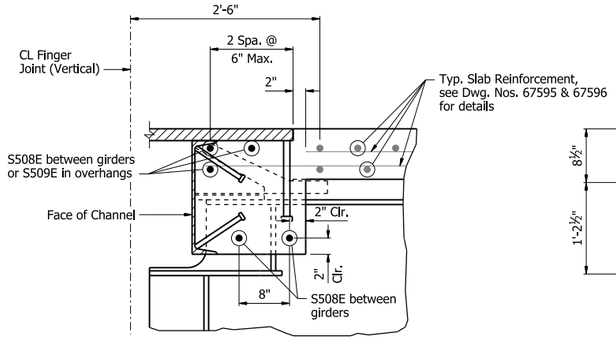
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM	DATE: 9/1/23	FILENAME: b04090121_s210.dgn	
CHECKED BY: RLW	DATE: 10/27/23	SCALE: 3/32" = 1'=0"	
DESIGNED BY: RCR	DATE: 7/21/22		

BRIDGE NO. 07684 DRAWING NO. 67596

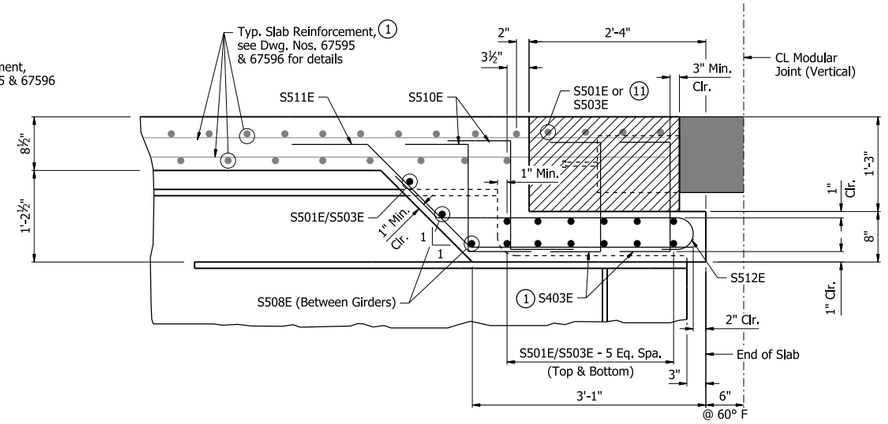
PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	537	809
		07684 - UNITS 2, 3, 5 & 6 - 67597				



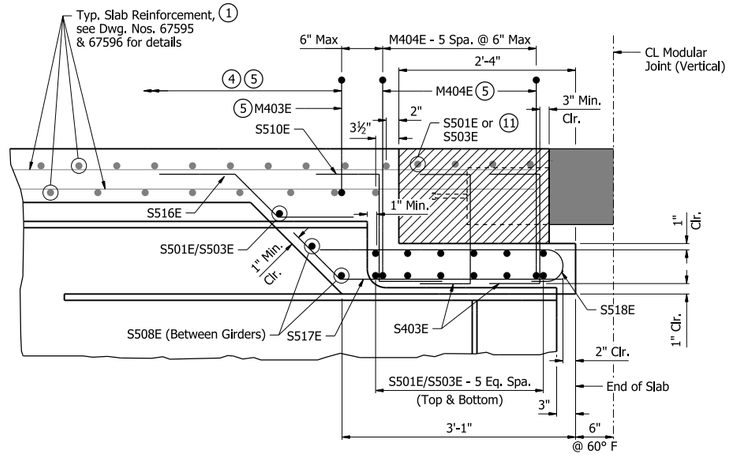
AT BENTS WITH FINGER JOINTS

SECTION A-A
1" = 1'-0"



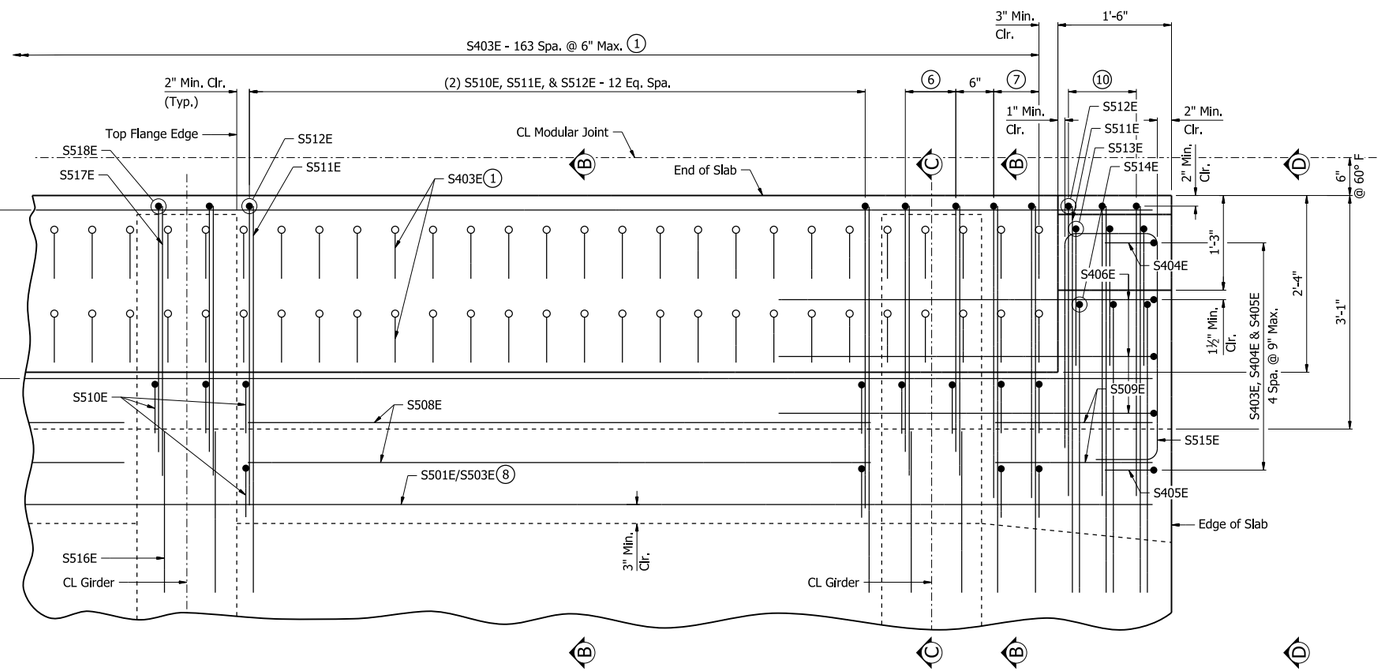
AT BENTS WITH MODULAR JOINTS - BETWEEN GIRDERS & PARTIAL OVERHANG

SECTION B-B
1" = 1'-0"

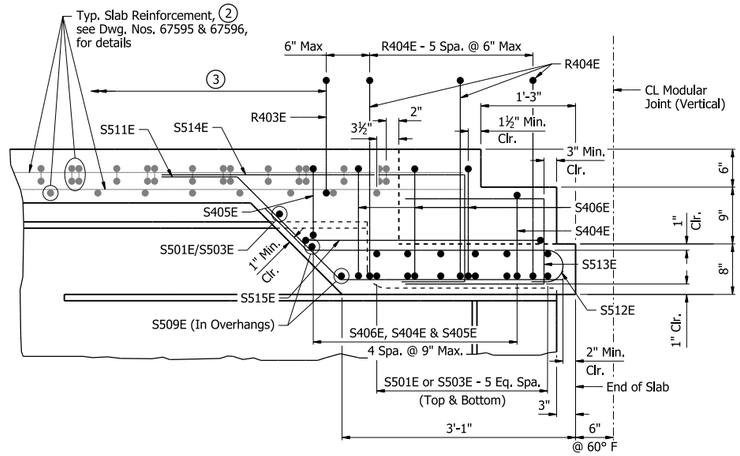


AT BENTS WITH MODULAR JOINTS - AT GIRDERS
(Same as Section B-B, UNO)

SECTION C-C
1" = 1'-0"



PARTAIL REINFORCING PLAN AT BENTS WITH MODULAR JOINTS 9
No Scale



AT BENTS WITH MODULAR JOINTS - UNDER RAIL
(Same as Section B-B, UNO)

SECTION D-D
1" = 1'-0"

Notes:
For details of Finger Joint, see Dwg. Nos. 67696 & 67697.

For details of Modular Joint, see Dwg. Nos. 67700 & 67701.

1. Cut bars as necessary to clear support boxes.
2. Cut longitudinal slab bars 2" from step.
3. For R403E spacing, see Dwg. No. 67686.
4. For M403E spacing, see Dwg. No. 67689.
5. M403E & M404E bars are at Median Barrier location only.
6. S510E, S516E, S517E & S518E - 1 Spa. @ 8" Max, centered around CL Girder.
7. (2) S510E, S511E & S512E - 1 Spa. @ 6".
8. Field bend as necessary to maintain clearance.
9. Typical slab reinforcement not shown.
10. S511E, S512E, S513E & S514E - 2 Spa. @ 5¼" Max.
11. Modular Joint Blockout Reinforcing, see Dwg. No. 67700 for details. Extend 2" from edge of slab where possible.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 22535
RACHEL L. WESSON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 11 OF 12
DETAILS OF 520'-0" CONTINUOUS PLATE GIRDER UNITS 2, 3, 5, & 6
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 11/20/23
CHECKED BY: RCR DATE: 11/20/23
DESIGNED BY: RCR DATE: 7/21/22
FILENAME: b04090121_s211.dgn
SCALE: AS NOTED
BRIDGE NO. 07684
DRAWING NO. 67597

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
8/9/2024		6	ARK.	040901	538	809
		07684 - UNITS 2, 3, 5 & 6 - 67598				

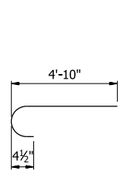
1 Slab extension added below Rail and Median Barriers at Finger Joint locations. 8/9/2024

BAR LIST - PER UNIT

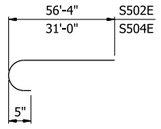
Mark	Number Required				Length				Pin Dia.
	Unit No. 2	Unit No. 3	Unit No. 5	Unit No. 6	Unit No. 2	Unit No. 3	Unit No. 5	Unit No. 6	
S401E	1044	1131	1131	1044	44'-11"	41'-9"	41'-9"	44'-11"	Str.
S402E	1032	1032	1032	1032	5'-4"	5'-4"	5'-4"	5'-4"	3"
S403E	-	328	328	-	-	2'-8"	2'-8"	-	3"
S404E	-	2	2	-	-	2'-3"	2'-3"	-	3"
S405E	-	2	2	-	-	2'-0"	2'-0"	-	3"
S406E	-	6	6	-	-	7'-0"	7'-0"	-	3"
S501E	825	841	841	825	56'-9"	56'-9"	56'-9"	56'-9"	Str.
S502E	1031	1031	1031	1031	56'-11"	56'-11"	56'-11"	56'-11"	3¾"
S503E	825	841	841	825	31'-5"	31'-5"	31'-5"	31'-5"	Str.
S504E	1031	1031	1031	1031	31'-7"	31'-7"	31'-7"	31'-7"	3¾"
S505E	880	880	880	880	54'-7"	54'-7"	54'-7"	54'-7"	Str.
S506E	344	344	344	344	44'-10"	44'-10"	44'-10"	44'-10"	Str.
S507E	172	172	172	172	36'-2"	36'-2"	36'-2"	36'-2"	Str.
S508E	80	56	56	80	8'-2"	8'-2"	8'-2"	8'-2"	Str.
S509E	12	10	10	12	2'-2"	2'-2"	2'-2"	2'-2"	Str.
S510E	-	234	234	-	-	3'-0"	3'-0"	-	3¾"
S511E	-	114	114	-	-	5'-9"	5'-9"	-	3¾"
S512E	-	114	114	-	-	4'-10"	4'-10"	-	3¾"
S513E	-	6	6	-	-	4'-6"	4'-6"	-	3¾"
S514E	-	6	6	-	-	6'-2"	6'-2"	-	3¾"
S515E	-	2	2	-	-	7'-7"	7'-7"	-	3¾"
S516E	-	18	18	-	-	2'-6"	2'-6"	-	3¾"
S517E	-	18	18	-	-	3'-11"	3'-11"	-	3¾"
S518E	-	18	18	-	-	3'-11"	3'-11"	-	3¾"
1 S519E	32	16	16	32	5'-0"	5'-0"	5'-0"	5'-0"	Str.
R400E	240	-	384	384	6'-3"	-	6'-3"	6'-3"	3"
R401E	2054	2092	2028	2028	7'-6"	7'-6"	7'-6"	7'-6"	3"
R402E	160	160	160	160	5'-6"	5'-6"	5'-6"	5'-6"	Str.
R403E	~~2034~~	~~2070~~	~~2006~~	~~2008~~	3'-8"	3'-8"	3'-8"	3'-8"	3"
R404E	-	12	12	-	-	6'-1"	6'-1"	-	3"
R411E	80	80	80	80	12'-8"	12'-8"	12'-8"	12'-8"	Str.
R412E	40	40	40	40	13'-8"	13'-8"	13'-8"	13'-8"	Str.
R413E	160	160	160	160	15'-8"	15'-8"	15'-8"	15'-8"	Str.
R415E	360	360	360	360	17'-0"	17'-0"	17'-0"	17'-0"	Str.
	1 2054	2080 1	1 2016	2028 1					
M401E	1046	1046	1046	1046	9'-0"	9'-0"	9'-0"	9'-0"	2"
M402E	80	80	80	80	5'-6"	5'-6"	5'-6"	5'-6"	Str.
M403E	1036	1035	1035	1036	4'-10"	4'-10"	4'-10"	4'-10"	3"
M404E	-	6	6	-	-	7'-2"	7'-2"	-	3"
M411E	40	40	40	40	12'-8"	12'-8"	12'-8"	12'-8"	Str.
M412E	20	20	20	20	13'-8"	13'-8"	13'-8"	13'-8"	Str.
M413E	80	80	80	80	15'-8"	15'-8"	15'-8"	15'-8"	Str.
M415E	180	180	180	180	17'-0"	17'-0"	17'-0"	17'-0"	Str.
X601E	24	48	-	-	9'-0"	9'-0"	-	-	Str.
X602E	24	48	-	-	6'-2"	6'-2"	-	-	Str.
X603E	48	96	-	-	5'-0"	5'-0"	-	-	Str.

All bars designated with an "E" suffix are to be epoxy coated.

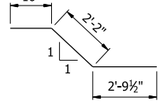
Bending Diagrams
(Dimensions are out to out of bars)



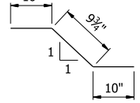
S402E



S502E, S504E



S511E



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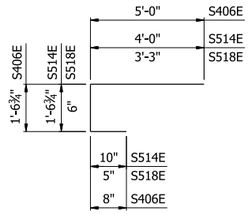
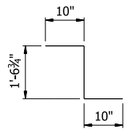
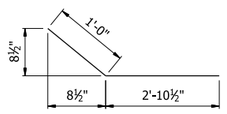


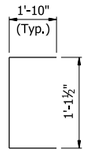
S406E, S514E, S518E



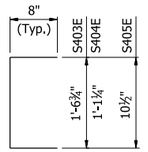
S510E



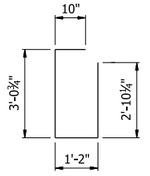
S517E



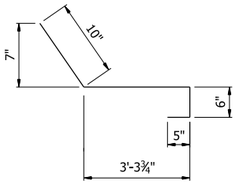
S513E



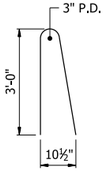
S403E, S404E, S405E



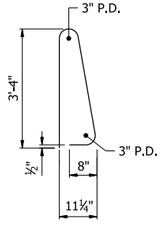
S515E



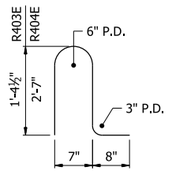
S512E



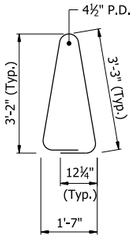
R400E



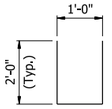
R401E



R403E, R404E



M401E



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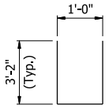


M404E

PRINT DATE: 8/14/2024

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 22535
RACHEL L. WESSON
8/9/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 12 OF 12
DETAILS OF 520'-0" CONTINUOUS
PLATE GIRDER UNITS 2, 3, 5, & 6
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RLW DATE: 11/21/23
CHECKED BY: RCR DATE: 11/29/23
DESIGNED BY: RCR DATE: 7/21/22
FILENAME: b04090121_s212.dgn
SCALE: NO SCALE

BRIDGE NO. 07684 DRAWING NO. 67598

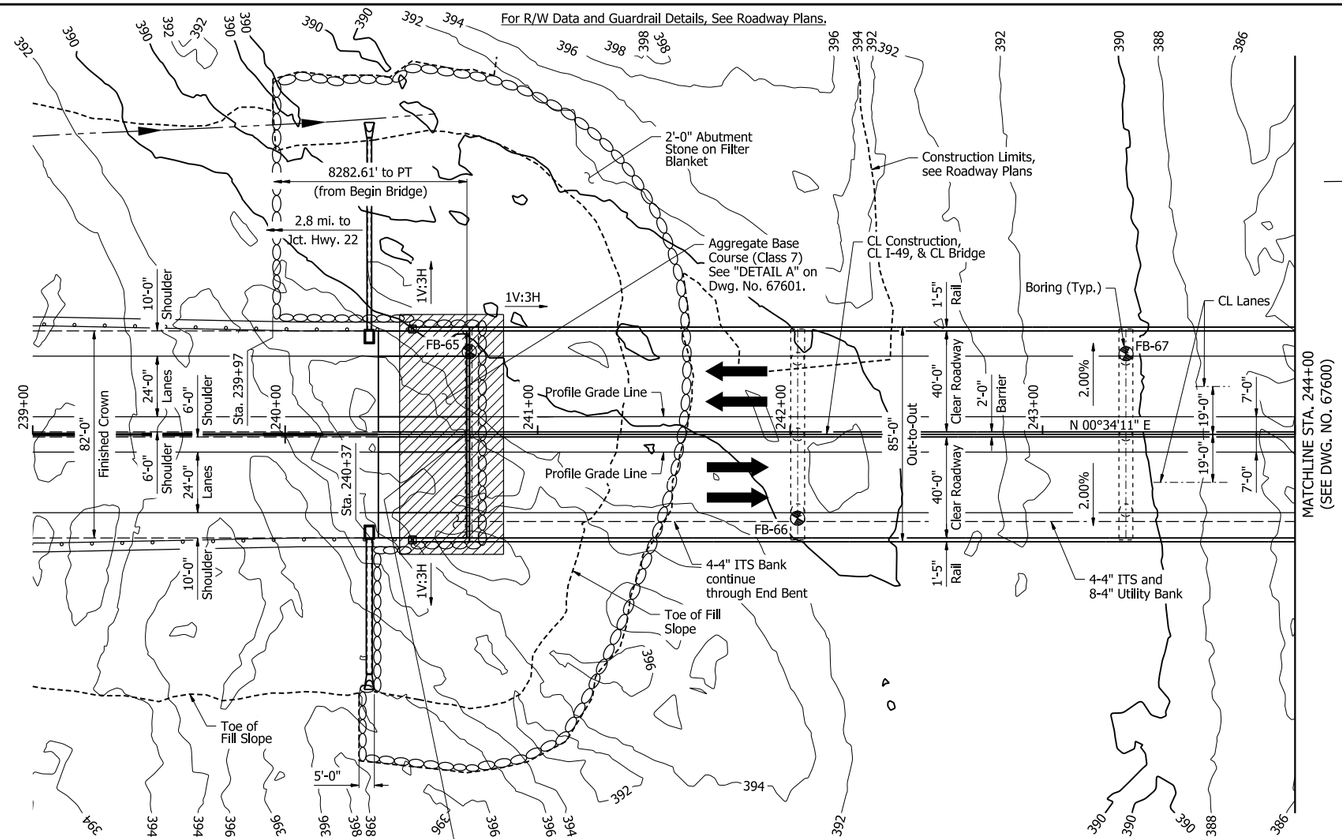
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	539	809
		07685 - BRIDGE LAYOUTS - 67599				

Notes:
Use Type F Approach Gutters & Type F Approach Slab at beginning of bridge.

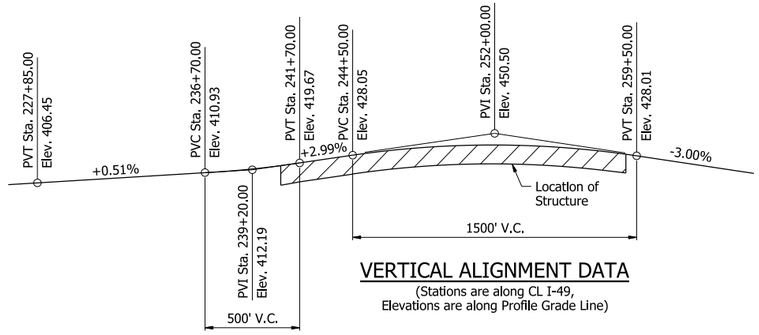
For General Notes, see Dwg. No. 67372.

All bents are normal to CL I-49.

For details of ITS and Utility Banks, see "ITS AND UTILITY BANK DETAILS".

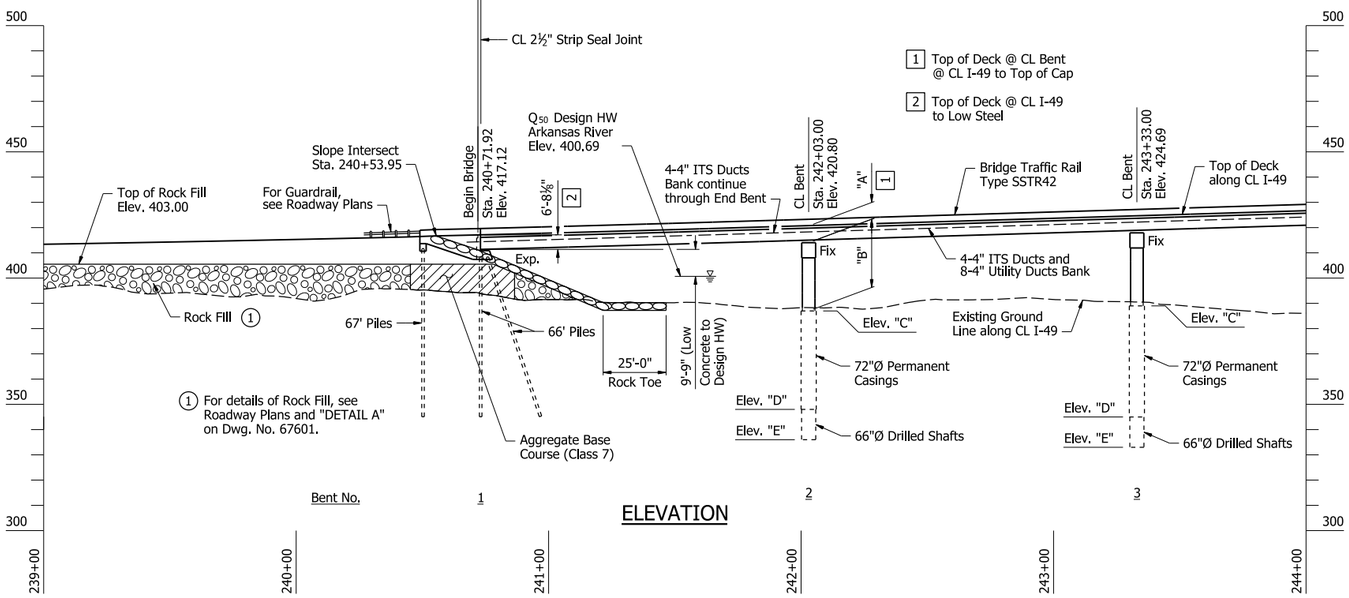


PLAN



VERTICAL ALIGNMENT DATA

(Stations are along CL I-49, Elevations are along Profile Grade Line)

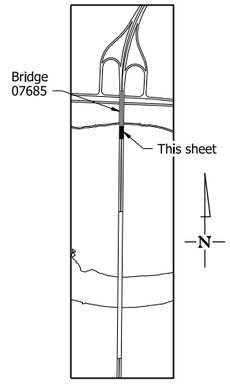


ELEVATION

Note:
Elevations shown are actual top of deck elevations at CL I-49. Any vertical dimension referenced to Top of Deck is based on actual top of deck elevation at CL I-49. Stations shown are along CL I-49.

TABLE OF VARIABLES

Location	"A"	"B"	"C"	"D"	"E"
Bent No. 2	7'-5¾"	26'-3⅜"	387.00	348.00	322.00
Bent No. 3	7'-6½"	28'-1¾"	389.00	345.00	321.00



SITE PLAN
No Scale

ALTERNATE NO. 2
SHEET 1 OF 5
LAYOUT OF BRIDGE
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 19996
BRENT T. JONES
4/18/24
BRIDGE ENGINEER

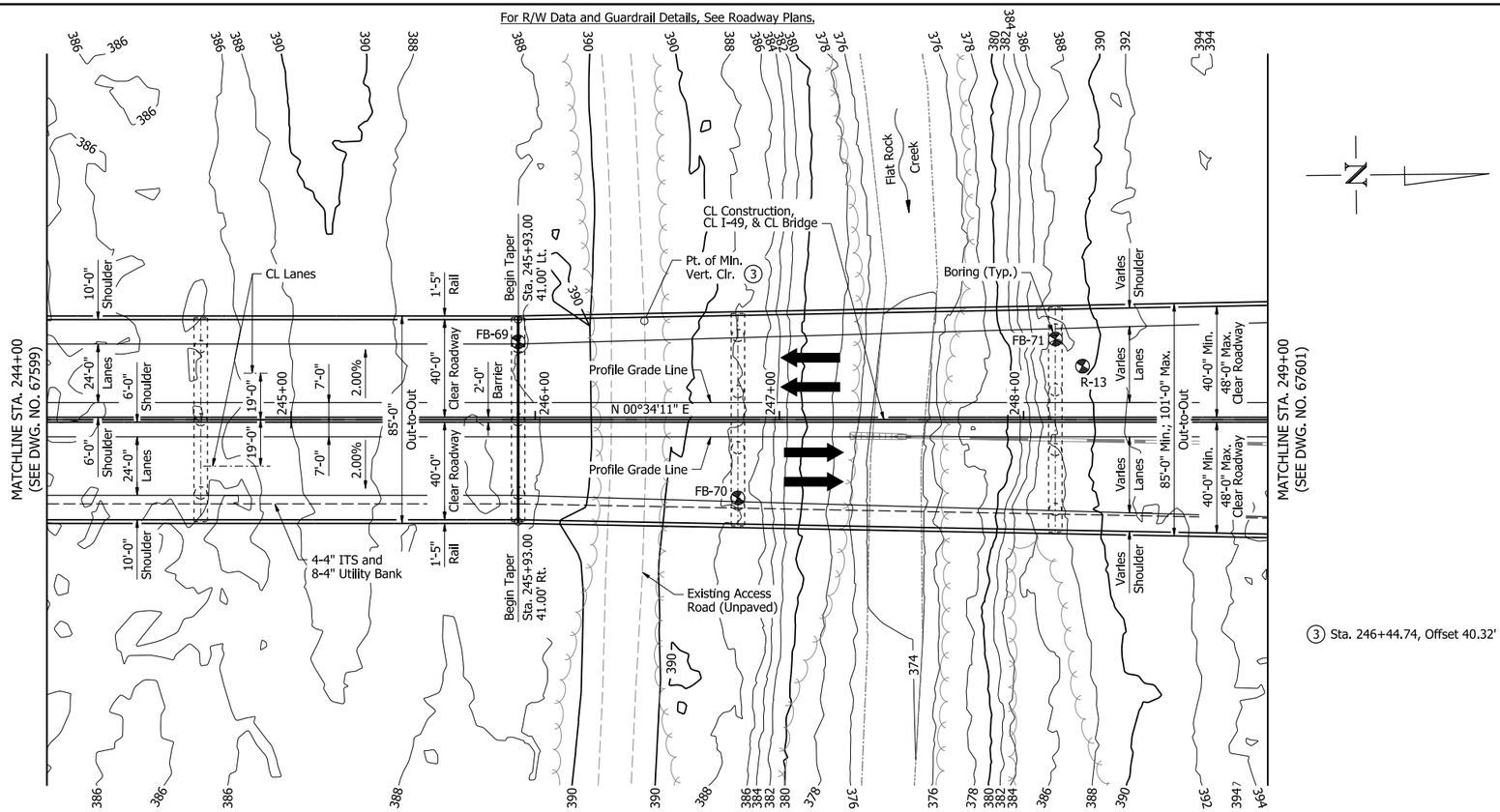
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 12/19/22
CHECKED BY: QL DATE: 11/27/23
DESIGNED BY: BTJ DATE: 12/2/22
FILENAME: b040901216_l1.dgn
SCALE: 1" = 30'-0"

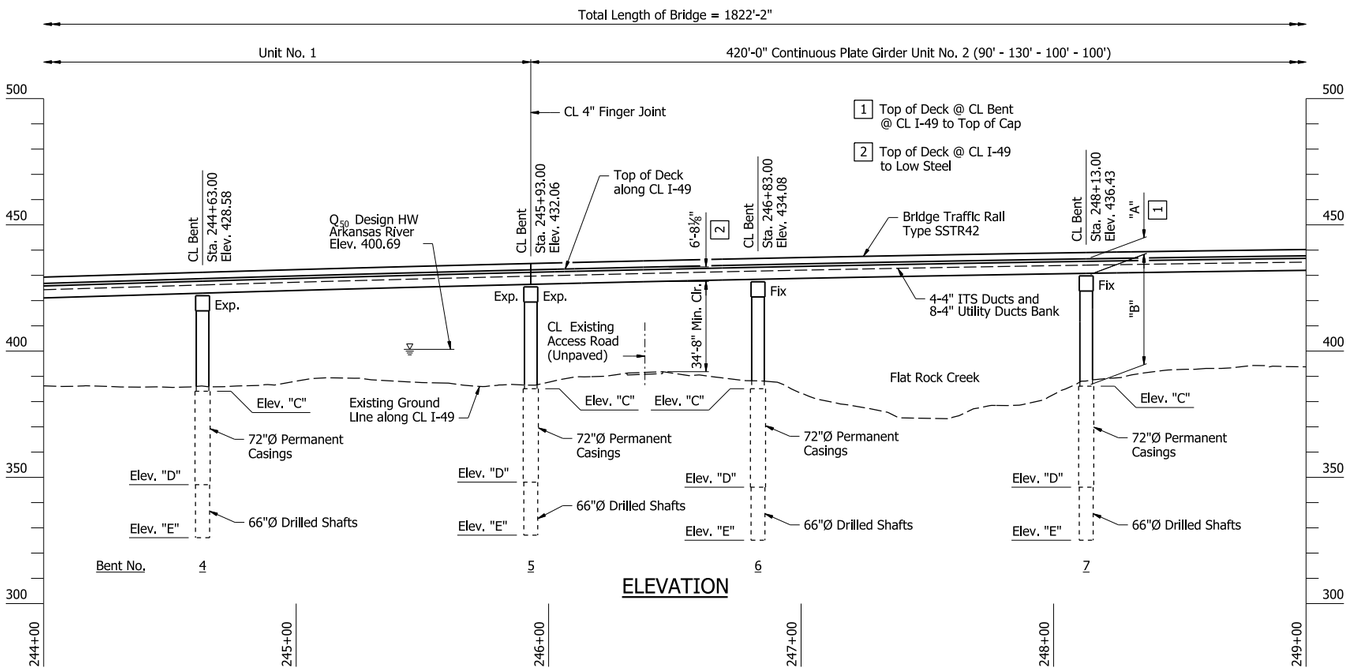
BRIDGE NO. 07685 DRAWING NO. 67599

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	540	809
		07685 - BRIDGE LAYOUTS - 67600				



PLAN



ELEVATION

3 Sta. 246+44.74, Offset 40.32' Lt.

Notes:
For General Notes, see Dwg. No. 67372.

All bents are normal to CL I-49.

For details of ITS and Utility Banks, see "ITS AND UTILITY BANK DETAILS".

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	TOTAL (1) DISCHARGE	DISCHARGE BRIDGE 07685	(2) NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	CFS	FEET	FEET
Design	50	415,000	20,636	401.34	401.36
Base	100	480,000	26,278	403.37	403.37
Extreme	500	600,000	34,475	405.38	405.39
Overtopping	>500	615,000	35,687	405.83	405.85

(1) The total discharge includes flow at this site and at Bridge 07684 (Arkansas River Channel)

(2) Unconstricted water surface without structure or roadway approaches.

Q100 backwater elevation for existing structure = N/A, no existing structure

Proposed Bridge Low Chord Elevation = 410.52 feet at Station 240+75.25.

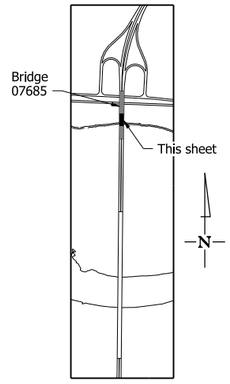
Drainage Area (Bridge 07684 and 07685) = 151,000 square miles.

Historical H.W. Elev. = 406.96 feet (from upstream USGS stream gage 07250550 on June 1, 2019 with a discharge of 570,000 cfs)

Note:
Elevations shown are actual top of deck elevations at CL I-49. Any vertical dimension referenced to Top of Deck is based on actual top of deck elevation at CL I-49. Stations shown are along CL I-49.

TABLE OF VARIABLES

Location	"A"	"B"	"C"	"D"	"E"
Bent No. 4	7'-6⅜"	37'-0⅝"	384.00	345.00	321.00
Bent No. 5	7'-8¼"	39'-4½"	385.00	348.00	334.00
Bent No. 6	7'-6"	41'-7"	385.00	346.00	331.00
Bent No. 7	7'-6¾"	42'-10½"	386.00	346.00	331.00



SITE PLAN
No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 19996
BRENT T. JONES
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 2 OF 5
LAYOUT OF BRIDGE
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

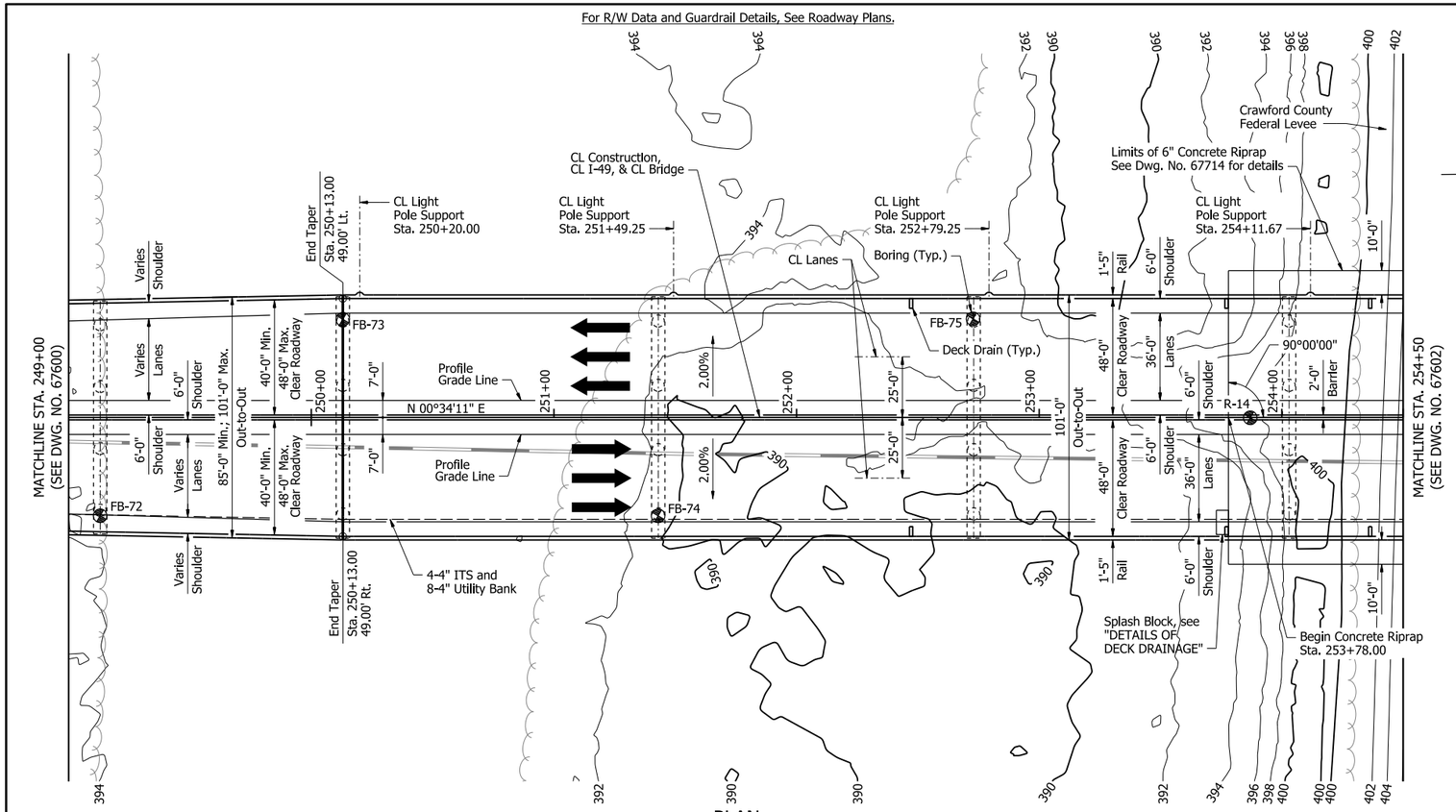
DRAWN BY: CTK DATE: 12/19/22
CHECKED BY: QL DATE: 11/27/23
DESIGNED BY: BTJ DATE: 12/2/22
FILENAME: b040901216_l2.dgn
SCALE: 1" = 30'-0"

BRIDGE NO. 07685 DRAWING NO. 67600

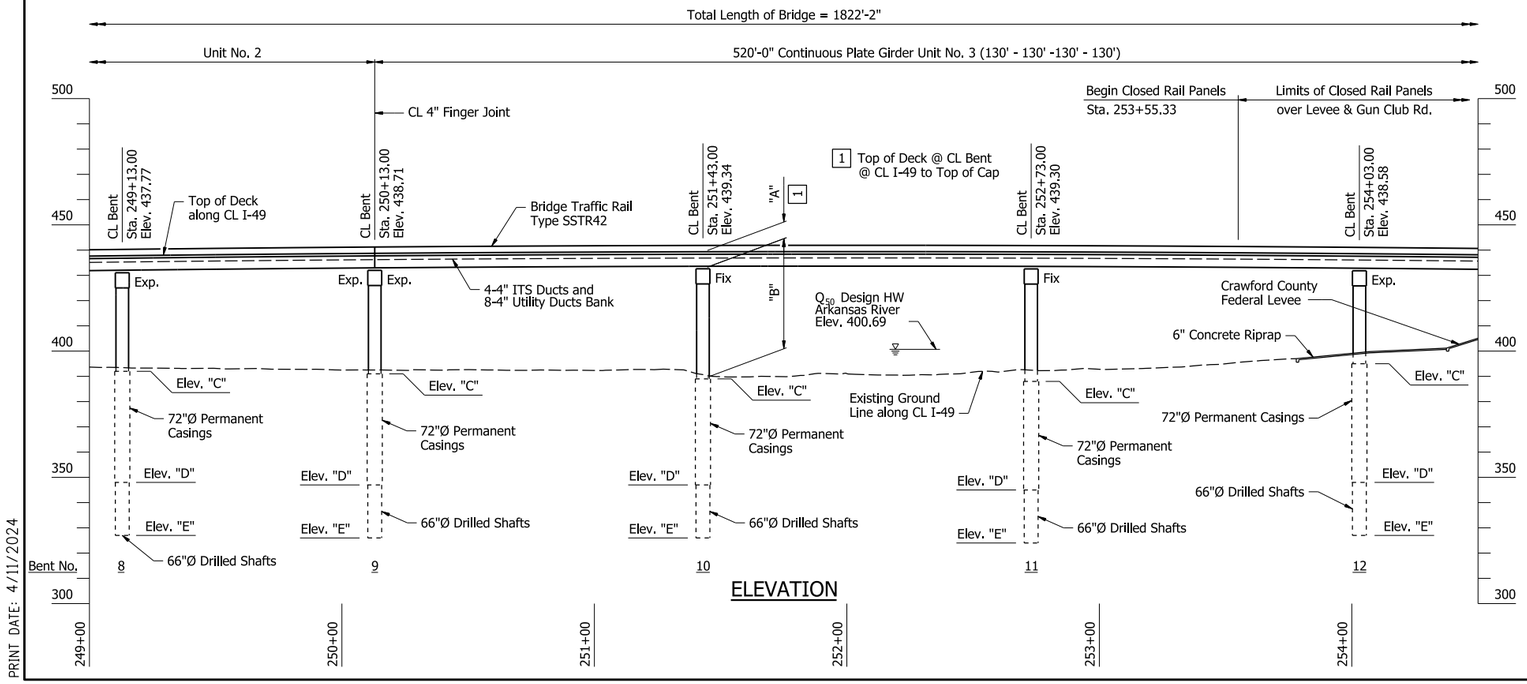
PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	541	809
		07685 - BRIDGE LAYOUTS - 67601				

For R/W Data and Guardrail Details, See Roadway Plans.



PLAN



ELEVATION

PRINT DATE: 4/11/2024

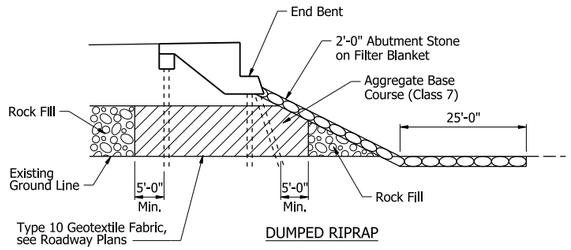
Notes:
For General Notes, see Dwg. No. 67372.

All bents are normal to CL I-49.

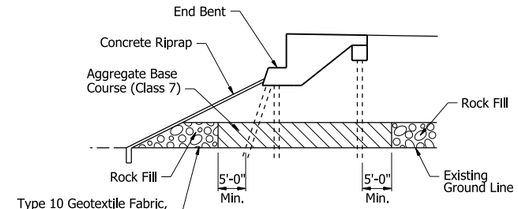
For details of ITS and Utility Banks, see "ITS AND UTILITY BANK DETAILS".

For details of Light Pole Support, see Dwg. No. 67686.

For "DETAILS OF DECK DRAINAGE", see Dwg. Nos. 67707 thru 67711.



DUMPED RIPRAP



CONCRETE RIPRAP

Where rock fill is used for embankment construction, aggregate base course (Class 7), in accordance with Section 303.02, shall be placed as shown in areas where piling will be located. Aggregate base course (Class 7) shall be paid for as "Rock Fill".

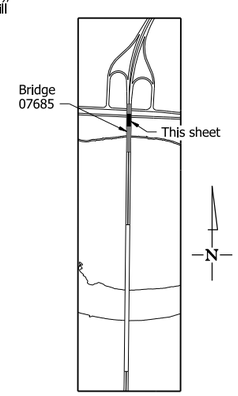
At the Contractor's option, preboring or other methods as approved by the Engineer may be used to facilitate pile installation thru the aggregate base course (Class 7) material at these locations. Preboring or other methods used for installation of piles where rock fill is used for embankment construction will not be paid for separately, but shall be included in item "Steel Piling".

DETAIL A
No Scale

Note:
Elevations shown are actual top of deck elevations at CL I-49. Any vertical dimension referenced to Top of Deck is based on actual top of deck elevation at CL I-49. Stations shown are along CL I-49.

TABLE OF VARIABLES

Location	"A"	"B"	"C"	"D"	"E"
Bent No. 8	7'-7¼"	38'-2"	392.00	348.00	331.00
Bent No. 9	7'-10"	39'-10½"	391.00	347.00	332.00
Bent No. 10	7'-8⅜"	42'-7⅝"	389.00	347.00	332.00
Bent No. 11	7'-8⅜"	43'-7½"	388.00	345.00	330.00
Bent No. 12	7'-8½"	35'-10½"	395.00	342.00	327.00



SITE PLAN
No Scale

ALTERNATE NO. 2
SHEET 3 OF 5
LAYOUT OF BRIDGE
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER ★★★ No. 19996 BRENT T. JONES

4/18/24
BRIDGE ENGINEER

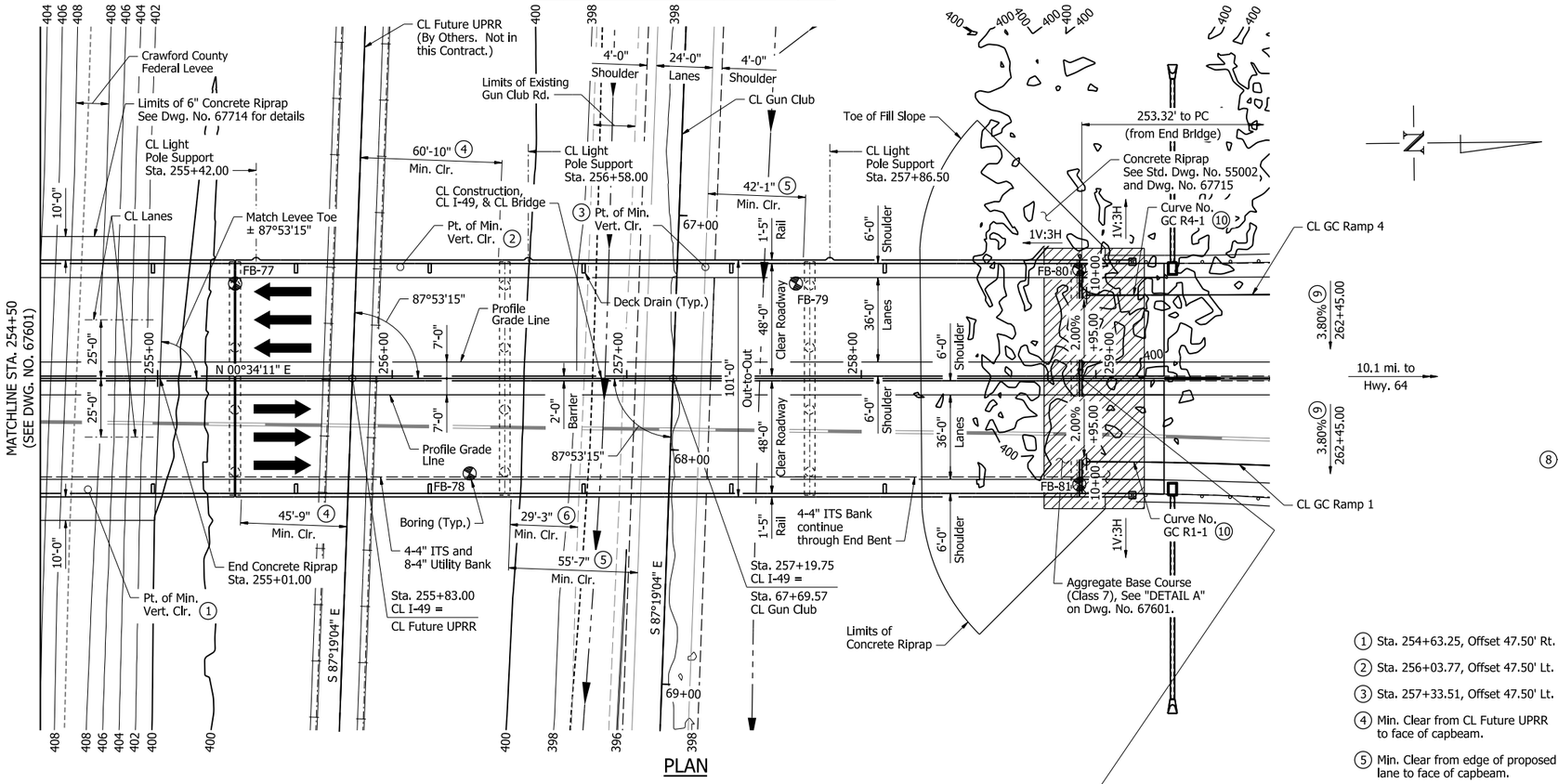
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 12/19/22
CHECKED BY: QL DATE: 11/27/23
DESIGNED BY: BTJ DATE: 12/2/22
FILENAME: b040901216_l3.dgn
SCALE: 1" = 30'-0"

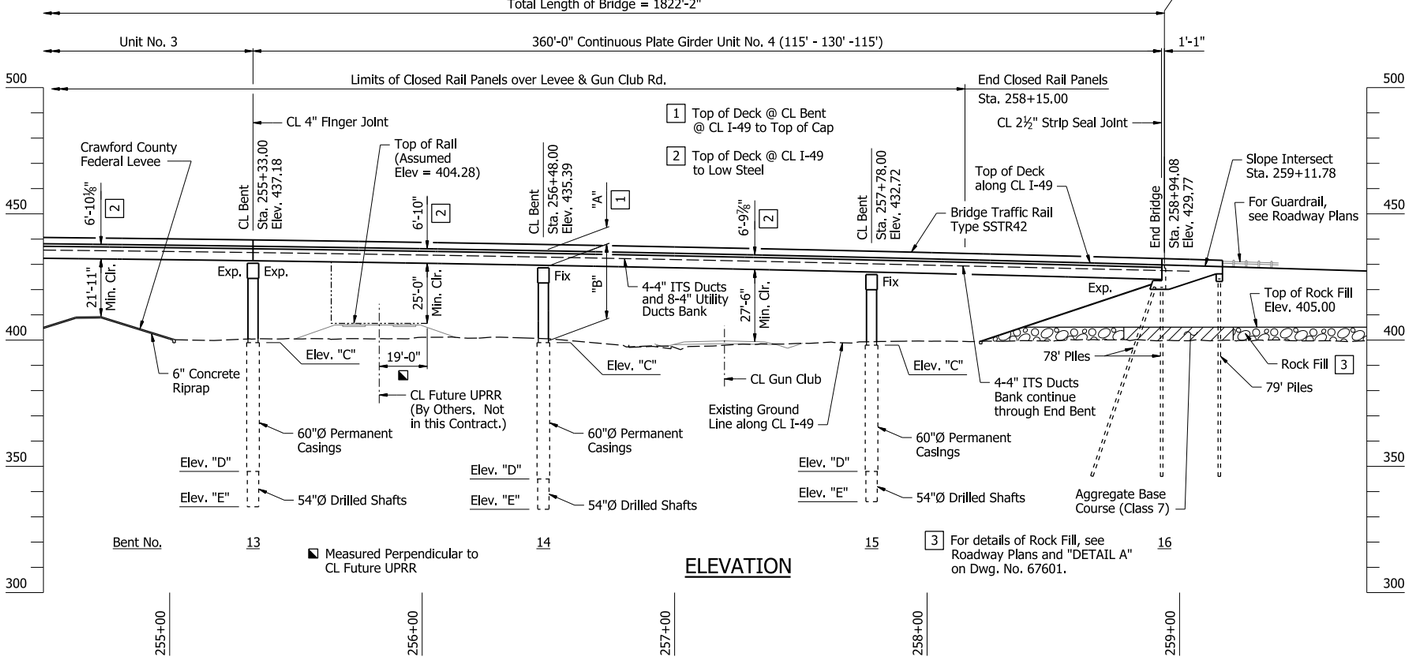
BRIDGE NO. 07685 DRAWING NO. 67601

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	542	809
		07685 - BRIDGE LAYOUTS - 67602				

For R/W Data and Guardrail Details, See Roadway Plans.



PLAN



ELEVATION

Notes:
Use Type F Approach Gutters & Type F Approach Slab at end of bridge.

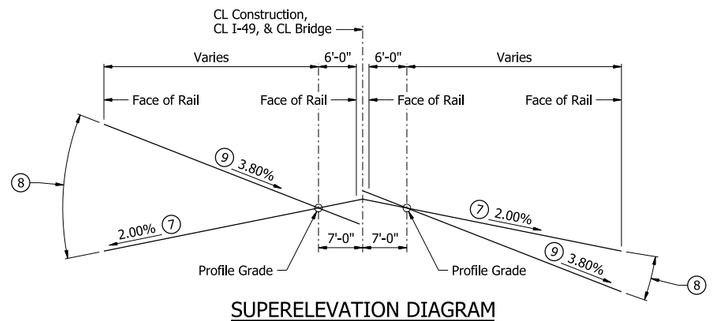
For General Notes, see Dwg. No. 67372.

All bents are normal to CL I-49.

For details of ITS and Utility Banks, see "ITS AND UTILITY BANK DETAILS".

For details of Light Pole Support, see Dwg. No. 67686.

For "DETAILS OF DECK DRAINAGE", see Dwg. Nos. 67707 thru 67711.



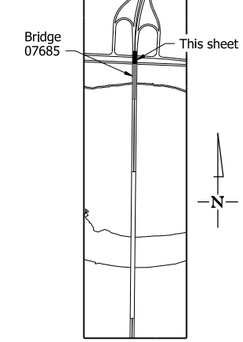
SUPERELEVATION DIAGRAM
Looking Ahead

1. Sta. 254+63.25, Offset 47.50' Rt.
2. Sta. 256+03.77, Offset 47.50' Lt.
3. Sta. 257+33.51, Offset 47.50' Lt.
4. Min. Clear from CL Future UPRR to face of capbeam.
5. Min. Clear from edge of proposed lane to face of capbeam.
6. Min. Clear from edge of existing lane to face of capbeam.
7. Cross Slope constant 2.00% (Sta. 160+52.00 to Sta. 258+95.00)
8. Cross Slope varies from 2.00% (Sta. 258+95.00) to 3.80% (Sta. 262+45.00)
9. Cross Slope constant 3.80% (Sta. 262+45.00 to Sta. 320+50.00)
10. See Roadway for ramp curve data

Note:
Elevations shown are actual top of deck elevations at CL I-49. Any vertical dimension referenced to Top of Deck is based on actual top of deck elevation at CL I-49. Stations shown are along CL I-49.

TABLE OF VARIABLES

Location	"A"	"B"	"C"	"D"	"E"
Bent No. 13	7'-10"	30'-4¼"	399.00	348.00	336.50
Bent No. 14	7'-7⅛"	28'-9⅝"	399.00	345.00	333.50
Bent No. 15	7'-7"	27'-1⅜"	398.00	348.00	336.50



SITE PLAN
No Scale

ALTERNATE NO. 2
SHEET 4 OF 5
LAYOUT OF BRIDGE
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 19996
BRENT T. JONES
4/18/24
BRIDGE ENGINEER

DRAWN BY:	CTK	DATE:	12/19/22
CHECKED BY:	QL	DATE:	11/27/23
DESIGNED BY:	BTJ	DATE:	12/2/22

FILENAME: b040901216_l4.dgn
SCALE: 1" = 30'-0"
BRIDGE NO. 07685
DRAWING NO. 67602

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	543	809
		07685 - BRIDGE LAYOUTS - 67603				

GENERAL NOTES

GENERAL NOTES: For project specific general notes, see Dwg. No. 67372

DETAIL DRAWINGS:	DRAWING NO(S).
Schedule of Bridge Quantities	67371
General Notes	67372
Layout of Bridge	67599 - 67603
Elevation of Soil Borings	67477 - 67480
End Bents 1 & 16	67604 - 67609
Bent Nos. 2-4	67610 - 67611
Bent No. 5	67612 - 67613
Bent Nos. 6 & 7	67614 - 67615
Bent No. 8	67616 - 67618
Bent No. 9	67619 - 67621
Bent Nos. 10, 11, & 12	67622 - 67624
Bent No. 13	67625 - 67627
Bent Nos. 14 & 15	67628 - 67630
520'-0" Continuous Plate Girder Unit 1	67631 - 67639
420'-0" Continuous Plate Girder Unit 2	67640 - 67654
520'-0" Continuous Plate Girder Unit 3	67655 - 67663
360'-0" Continuous Plate Girder Unit 4	67664 - 67671
ITS and Utility bank Supports	67672 - 67675, 67677, & 67681 - 67685
Bridge Traffic Rail Type SSTR42	67686 - 67688
Median Barrier	67689
Sections Near Joints	67691
Armored Joint with Neoprene Strip Seal	67693
Finger Joints	67696 - 67697
Elastomeric Bearings	67704 - 67705
Deck Drainage	67707 - 67711
Bridge Approaches	67712 - 67713
Levee Concrete Riprap	67714
Supplemental Details of Concrete Riprap	67715
Dumped Riprap and Filter Blanket	55001
Concrete Riprap	55002
Permanent Steel Deck Forms	55005
General Notes for Steel Bridge Structures	55006
Details For Steel Bridge Structures	55007
Type D Name Plate	55010
Steel H-Piling	55020
Type F Approach Gutters	55030F
Type F Approach Slabs	55040F1
Bridge Traffic Railing Type SSTR42	55071

PRINT DATE: 4/11/2024

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 19996
BRENT T. JONES
4/18/24
BRIDGE ENGINEER

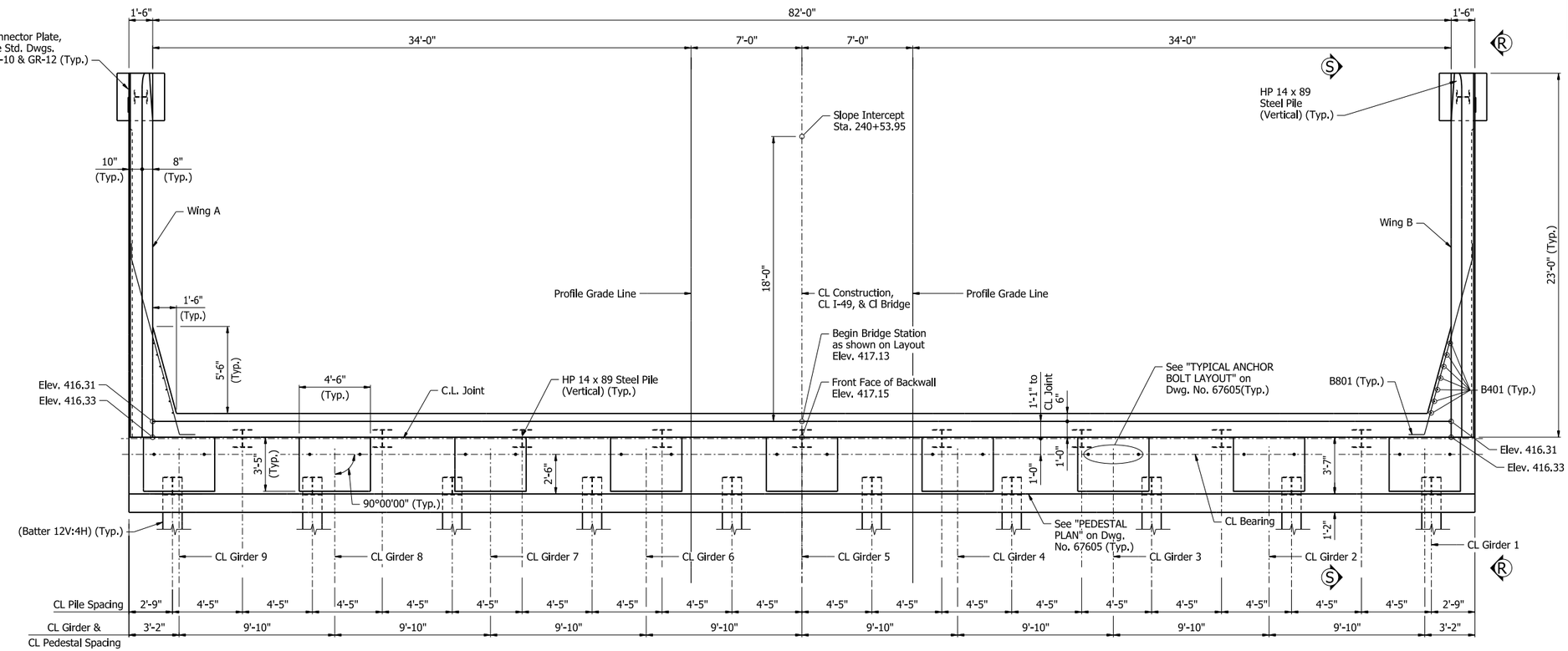
ALTERNATE NO. 2
SHEET 5 OF 5
LAYOUT OF BRIDGE
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 12/2/23
CHECKED BY: CPS DATE: 12/15/23
DESIGNED BY: BTJ DATE: 12/2/22
FILENAME: b040901216_l5.dgn
SCALE: No Scale

BRIDGE NO. 07685 DRAWING NO. 67603

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	544	809
		07685 - END BENTS - 67604				



PLAN - BENT NO.1

NOTES:

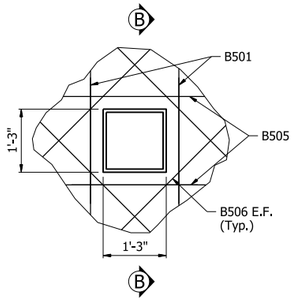
For general notes, see Dwg. No. 67372.

For details of steel piling, see Std. Dwg. No. 55020.

For "Section A-A", "VIEW R-R" & "VIEW S-S", see Dwg. No. 67605.

Class 2 Protective Surface Treatment shall be applied to the roadway face and top of the wing rails, and the top of the backwall.

All exposed corners shall be chamfered ¾" UNO.

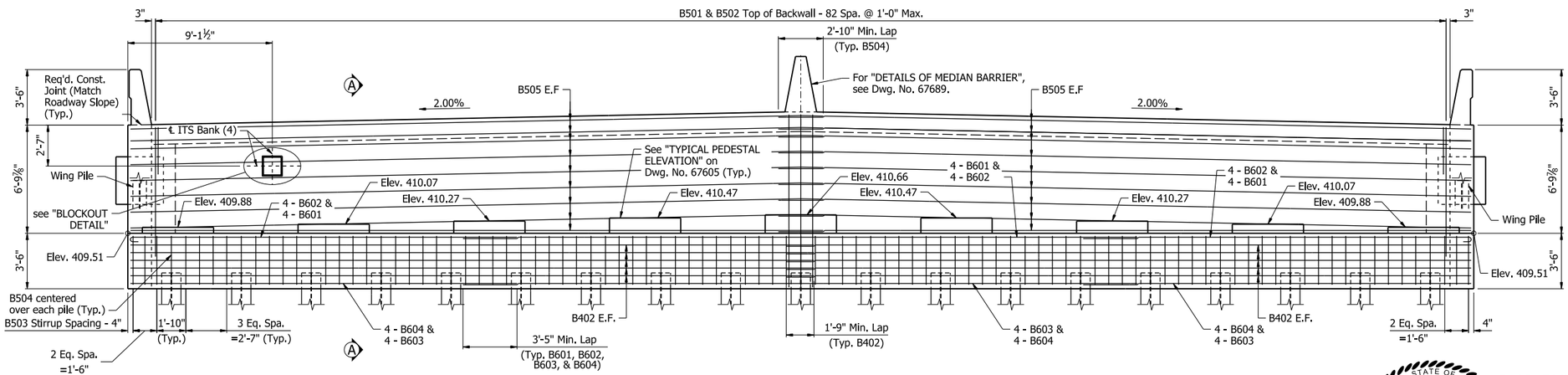


BLOCKOUT DETAIL

No Scale

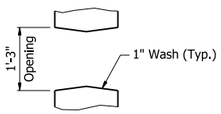
Contractor shall adjust B501 and B505 Bars to accommodate blockout.

For Blockout Details and Construction Sequencing Notes, see Dwg. No. 67672.



ELEVATION - BENT NO. 1

Looking Back



SECTION B-B

No Scale

ALTERNATE NO. 2
SHEET 1 OF 3
DETAILS OF END BENT NO. 1
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
W. JOSEPH STURGEON
No. 21697
4/18/24
BRIDGE ENGINEER

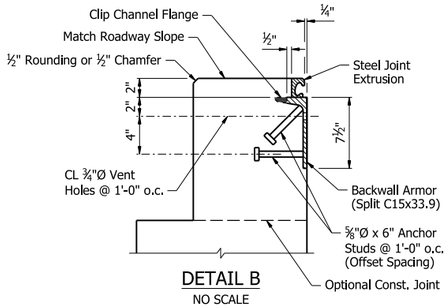
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MJ DATE: 11/08/23
CHECKED BY: AT DATE: 11/15/23
DESIGNED BY: MJ DATE: 9/18/23
FILENAME: b040901216_b11.dgn
SCALE: ¼" = 1'-0"

BRIDGE NO. 07685 DRAWING NO. 67604

PRINT DATE: 4/10/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	545	809
		07685 - END BENTS - 67605				



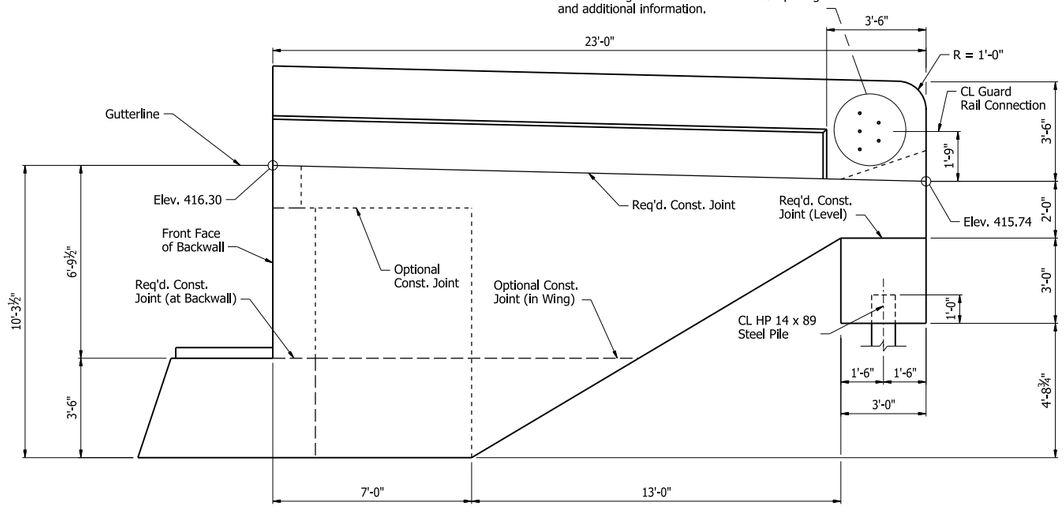
DETAIL B
NO SCALE

For additional joint details, see Std. Dwg. No. 55009.

Concrete shall be hand-packed under the joint armor in the backwall.

Transverse spacing between top anchor studs and vent holes shall be 6".

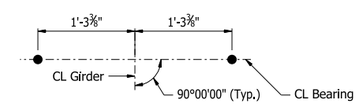
5 - 1"Ø formed holes for Guard Rail Connection. See Std. Dwgs. GR-10 & GR-12 for bolt spacing and additional information.



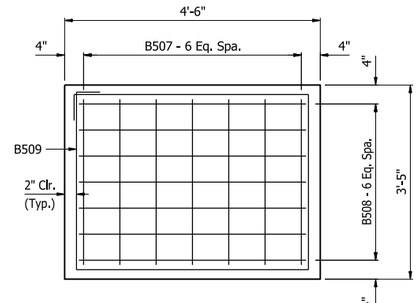
VIEW R-R
⅜" = 1'-0"

Notes:
For "VIEW W-W", "SECTION X-X" & "SECTION Y-Y", see Dwg. No. 67606.

For "DETAILS OF ELASTOMERIC BEARINGS", see Dwg. Nos. 67704 and 67705.



TYPICAL ANCHOR BOLT LAYOUT
1" = 1'-0"

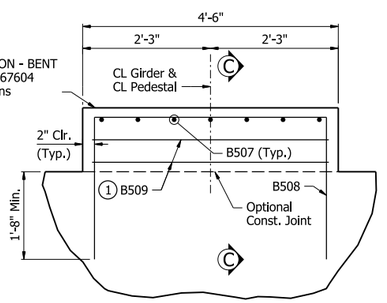


PEDESTAL PLAN
¾" = 1'-0"

SECTION A-A
½" = 1'-0"

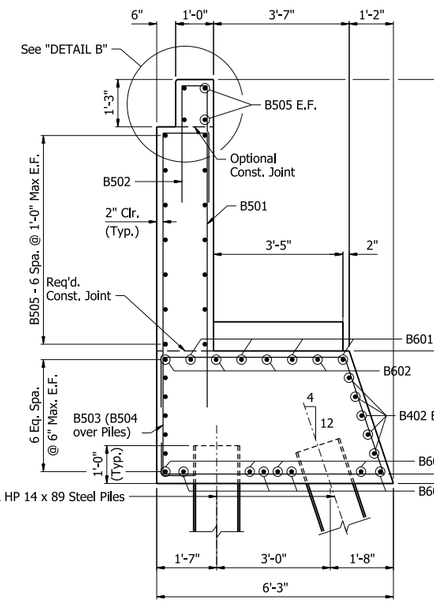
Note:
Contractor shall adjust B601 & B602 bar spacing to accommodate anchor bolts or sheet metal sleeves. Contractor shall maintain a minimum spacing of 3", and max. spacing of 8"

VIEW S-S
⅜" = 1'-0"



TYPICAL PEDESTAL ELEVATION
¾" = 1'-0"

1 1-B509 when Pedestal Height is less than 11";
2-B509 when Pedestal Height is greater than 11";
B509 spaced at 6" Max.



SECTION C-C
¾" = 1'-0"

ALTERNATE NO. 2
SHEET 2 OF 3
DETAILS OF END BENT NO. 1
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

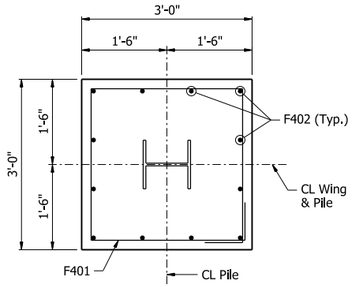
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

DRAWN BY: MJ DATE: 11/02/23
CHECKED BY: AT DATE: 11/15/23
DESIGNED BY: MJ DATE: 9/19/23
FILENAME: b040901216_b12.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67605

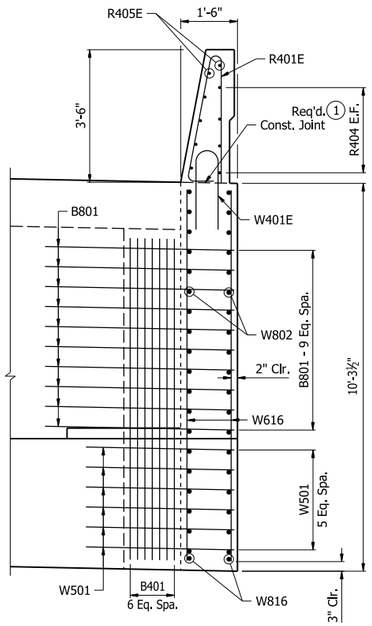
PRINT DATE: 4/10/2024

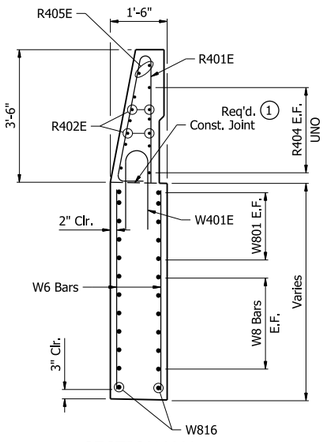
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	546	809
		07685 - END BENTS - 67606				



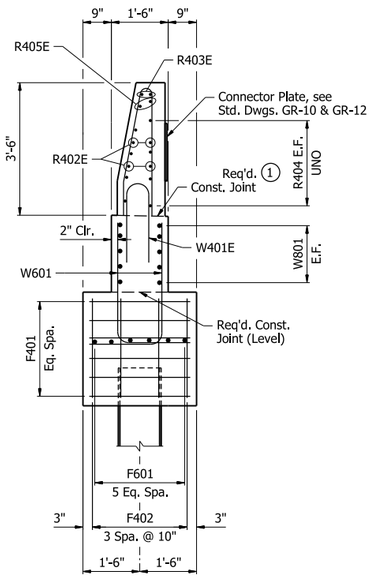
SECTION E-E
¾" = 1'-0"

Match roadway slope for both Wingwalls (1)

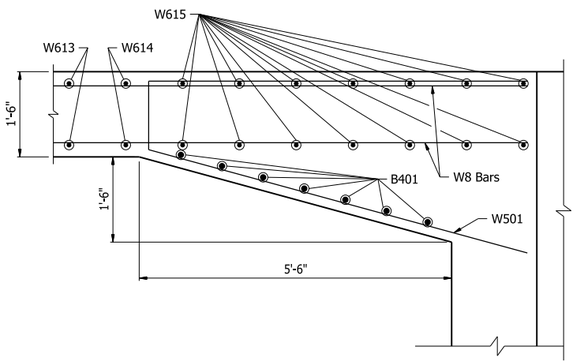




SECTION X-X
½" = 1'-0"

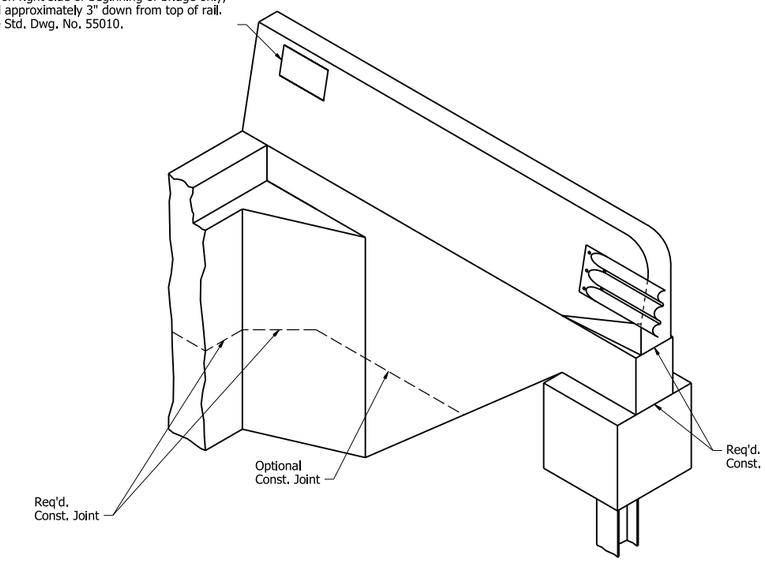


SECTION Y-Y
½" = 1'-0"



SECTION D-D
¾" = 1'-0"

Place Type D Bridge Name Plate on front face of wing rail approximately 1'-0" from end of rail on right side of beginning of bridge only, and approximately 3" down from top of rail. See Std. Dwg. No. 55010.

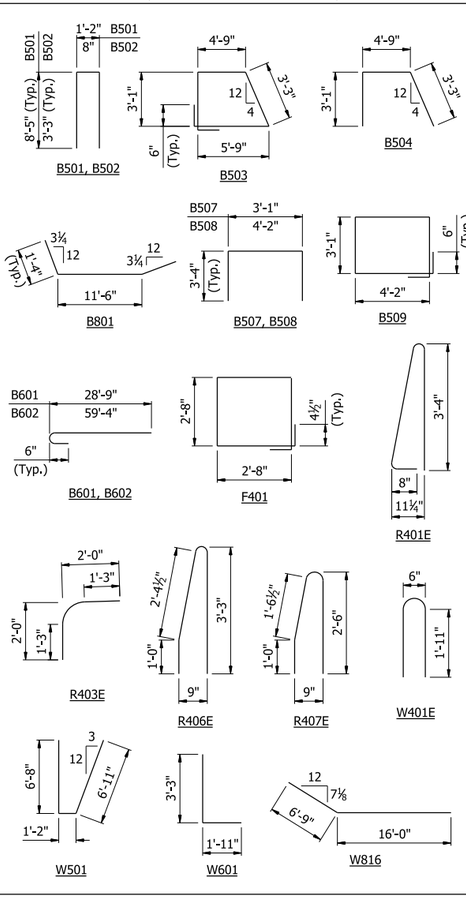


THREE DIMENSIONAL VIEW OF WING WALLS AND RAIL
No Scale

BAR LIST - PER BENT

Mark	Number Required	Length	Pin Dia.
B401	14	8'-9"	Str.
B402	20	43'-3"	Str.
B501	83	17'-9"	3¾"
B502	83	6'-11"	3¾"
B503	78	17'-8"	2½"
B504	19	10'-11"	2½"
B505	36	43'-9"	Str.
B506	8	2'-0"	Str.
B507	63	9'-7"	2½"
B508	63	10'-8"	2½"
B509	12	15'-0"	2½"
B601	8	29'-5"	4½"
B602	8	60'-0"	4½"
B603	8	28'-1"	Str.
B604	8	60'-0"	Str.
B801	20	14'-1"	6"
F401	12	11'-0"	2"
F402	24	2'-7"	Str.
F601	12	2'-8"	Str.
R401E	88	7'-6"	3"
R402E	8	5'-6"	Str.
R403E	4	3'-8"	8½"
R404E	16	22'-8"	Str.
R405E	4	22'-6"	Str.
R406E	2	6'-8"	3"
R407E	2	5'-1"	3"
W401E	92	4'-7"	3"
W501	12	14'-6"	3¾"
W601	24	5'-0"	4½"
W602 To W614	4 Each	2'-3" To 9'-8"	Str.
W615	28	9'-11"	Str.
W801	20	22'-8"	Str.
W802 To W815	4 Each	7'-4" To 19'-1"	Str.
W816	4	22'-7"	6"

Bending Diagrams (Dimensions are out to out of bars)



All bars designated with an "E" suffix are to be epoxy coated.

ALTERNATE NO. 2
SHEET 3 OF 3
DETAILS OF END BENT NO. 1
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

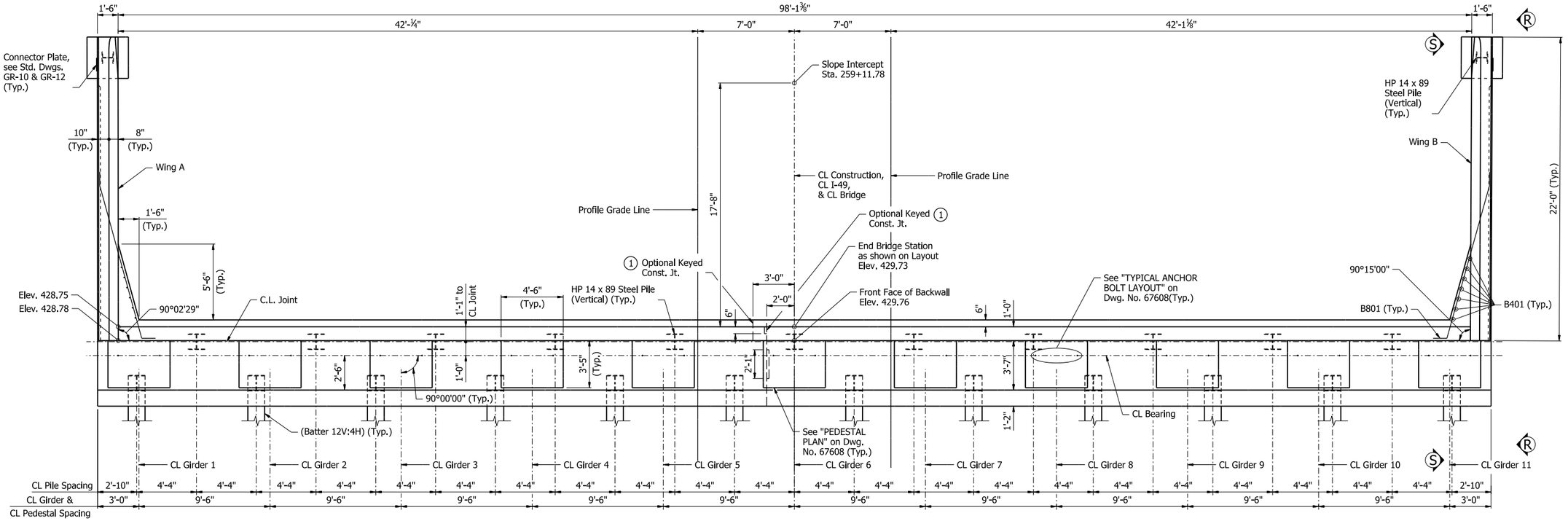
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

DRAWN BY: MJ DATE: 11/02/23
CHECKED BY: AT DATE: 11/15/23
DESIGNED BY: MJ DATE: 9/19/23
FILENAME: b040901216_b13.dgn
SCALE: AS NOTED

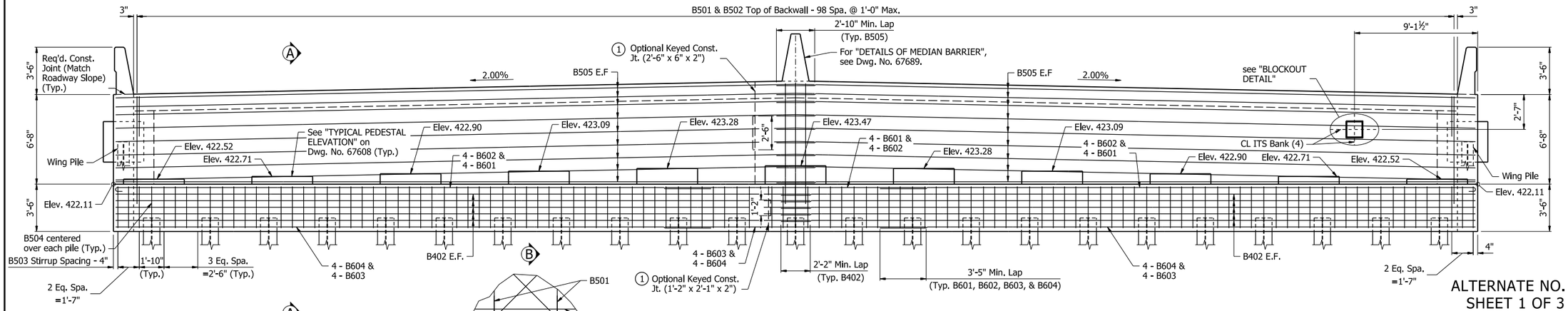
BRIDGE NO. 07685 DRAWING NO. 67606

PRINT DATE: 4/10/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	547	809
		07685 - END BENTS - 67607				



PLAN - BENT NO.16



NOTES:
For general notes, see Dwg. No. 67372.

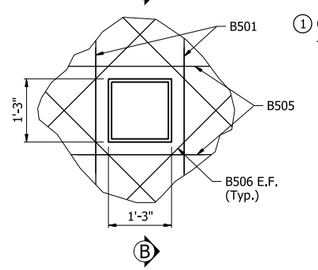
For details of steel piling, see Std. Dwg. No. 55020.

For "Section A-A", "VIEW R-R" & "VIEW S-S", see Dwg. No. 67608

Class 2 Protective Surface Treatment shall be applied to the roadway face and top of the wing rails, and the top of the backwall.

All exposed corners shall be chamfered ¾" UNO.

(1) Membrane Waterproofing, Type C, or approved equal shall encompass the optional construction joint on both fill face and front face of backwall and capbeam. Membrane shall extend a minimum of 9" each side of joint. Quantity and payment is considered subsidiary to backwall construction.

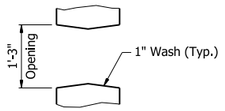


BLOCKOUT DETAIL
No Scale

ELEVATION - BENT NO. 16
Looking Back

Contractor shall adjust B501 and B505 Bars to accommodate blockout.

For Blockout Details and Construction Sequencing Notes, see Dwg. No. 67672.



SECTION B-B
No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 3
DETAILS OF END BENT NO. 16
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

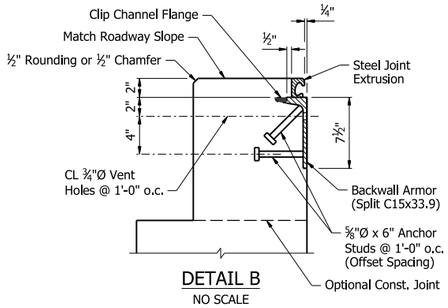
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JVS	DATE: 10/16/23	FILENAME: b040901216_b161.dgn	
CHECKED BY: AT	DATE: 11/13/23	SCALE: ¼" = 1'-0"	
DESIGNED BY: AT	DATE: 9/26/23		

BRIDGE NO. 07685 DRAWING NO. 67607

PRINT DATE: 4/10/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	548	809
		07685 - END BENTS - 67608				

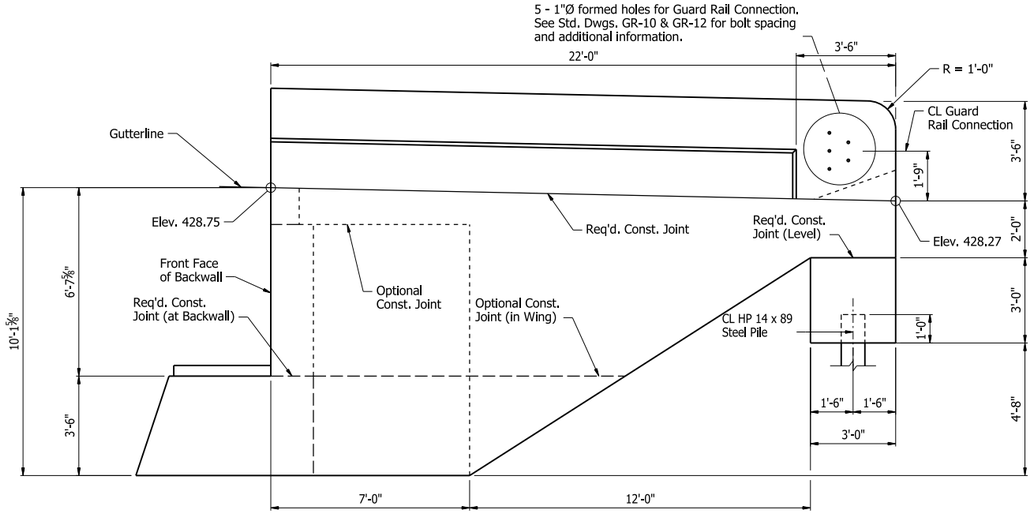


DETAIL B
NO SCALE

For additional joint details, see Std. Dwg. No. 55009.

Concrete shall be hand-packed under the joint armor in the backwall.

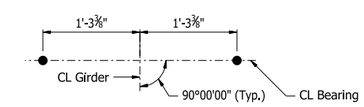
Transverse spacing between top anchor studs and vent holes shall be 6".



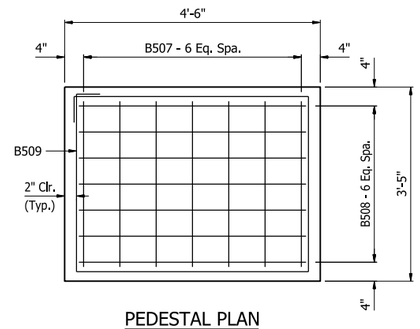
VIEW R-R
⅜" = 1'-0"

Notes:
For "VIEW W-W", "SECTION X-X" & "SECTION Y-Y", see Dwg. No. 67609.

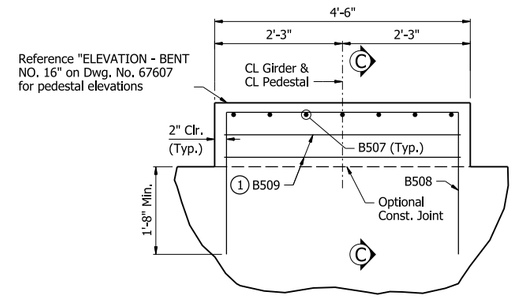
For "DETAILS OF ELASTOMERIC BEARINGS", see Dwg. Nos. 67704 and 67705
.



TYPICAL ANCHOR BOLT LAYOUT
1" = 1'-0"

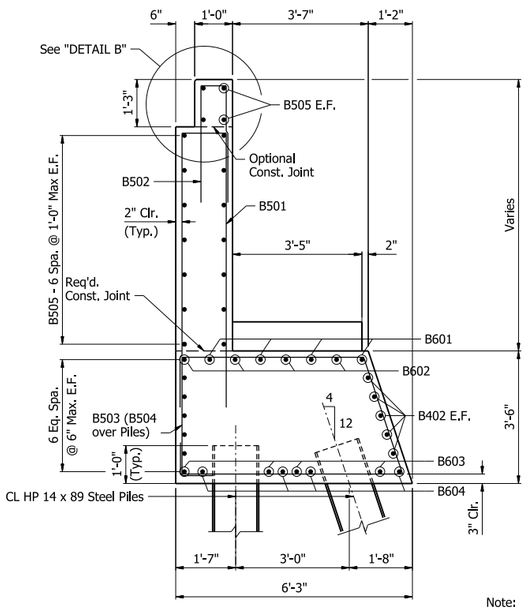


PEDESTAL PLAN
¾" = 1'-0"



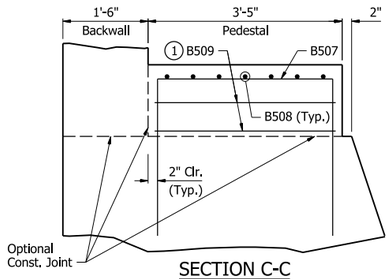
TYPICAL PEDESTAL ELEVATION
¾" = 1'-0"

(1) 1-B509 when Pedestal Height less than 11";
2-B509 when Pedestal Height is greater than 11";
B509 spaced at 6" Max.

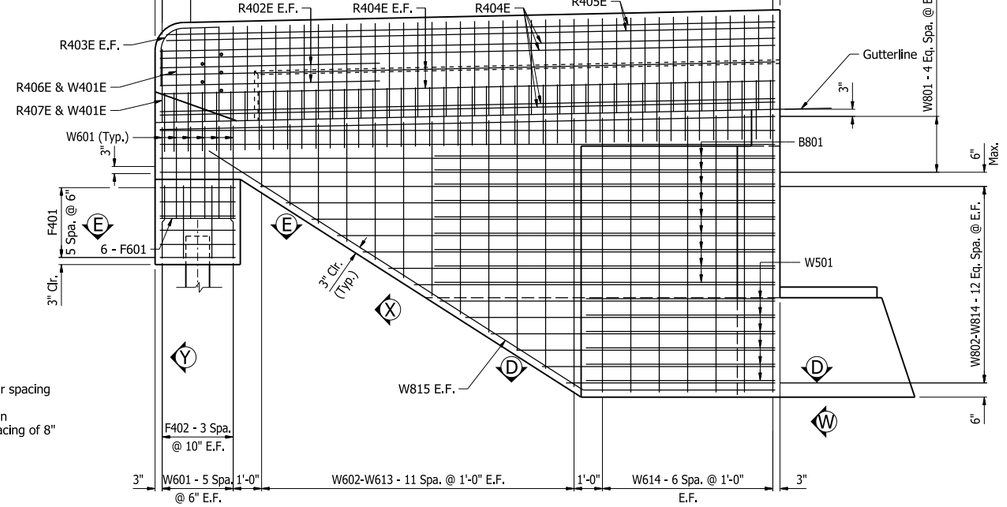


SECTION A-A
½" = 1'-0"

Note:
Contractor shall adjust B601 & B602 bar spacing to accommodate anchor bolts or sheet metal sleeves. Contractor shall maintain a minimum spacing of 3", and max. spacing of 8"



SECTION C-C
¾" = 1'-0"



VIEW S-S
⅜" = 1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
W. JOSEPH STURGEON
No. 21697
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 2 OF 3
DETAILS OF END BENT NO. 16
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

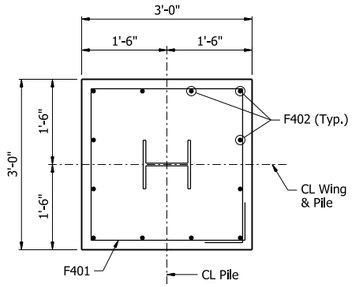
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JVS DATE: 10/18/23
CHECKED BY: AT DATE: 11/13/23
DESIGNED BY: AT DATE: 9/26/23
FILENAME: b040901216_b162.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67608

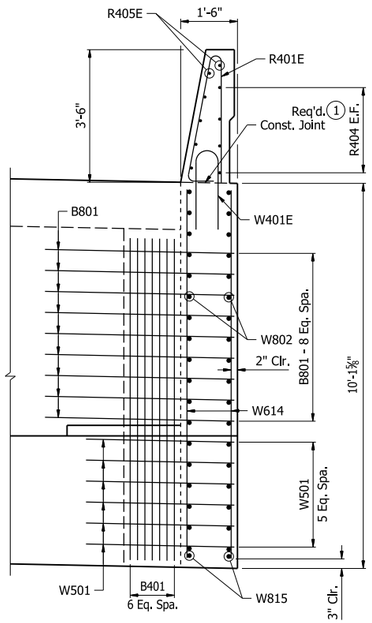
PRINT DATE: 4/10/2024

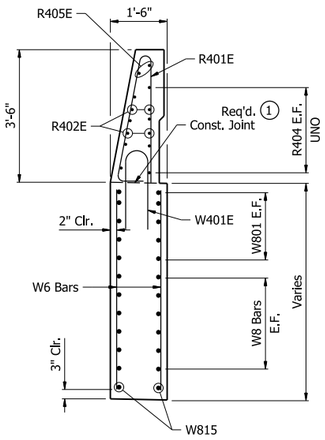
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	549	809
		07685 - END BENTS - 67609				



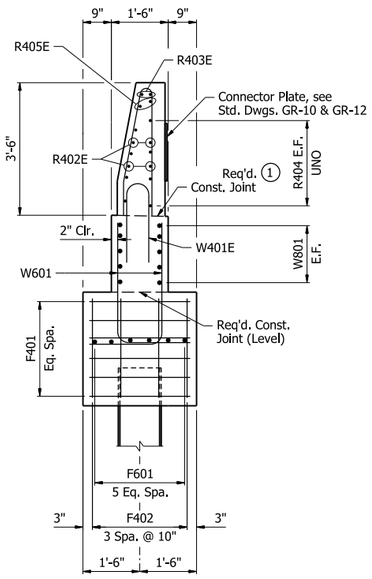
SECTION E-E
¾" = 1'-0"

Match roadway slope for both Wingwalls (1)



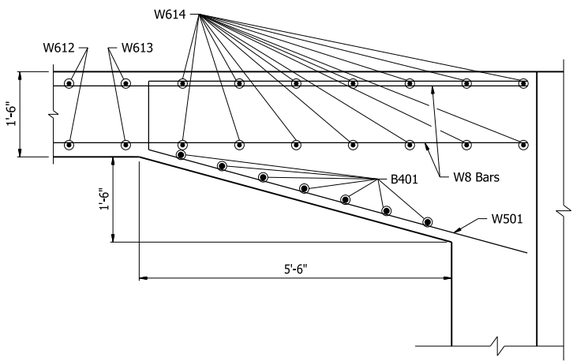


SECTION X-X
½" = 1'-0"

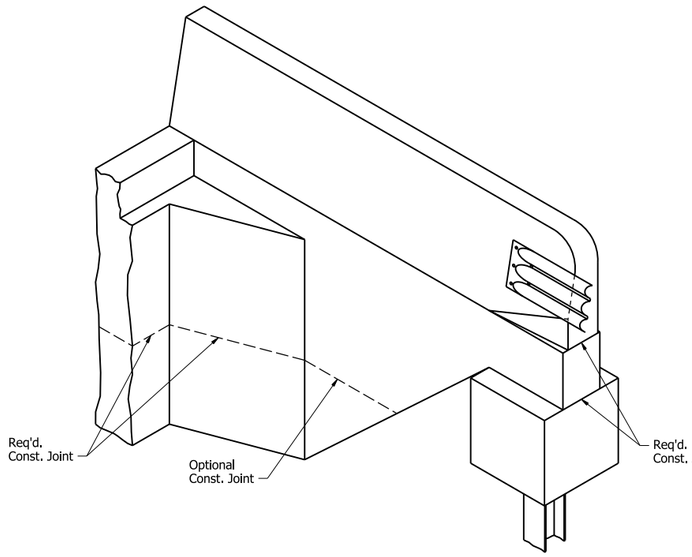


SECTION Y-Y
½" = 1'-0"

VIEW W-W
½" = 1'-0"



SECTION D-D
¾" = 1'-0"

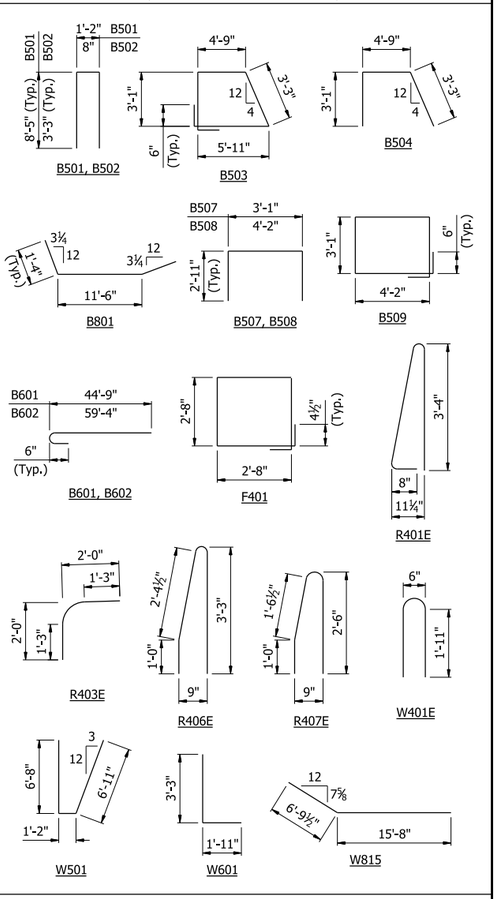


THREE DIMENSIONAL VIEW OF WING WALLS AND RAIL
No Scale

BAR LIST - PER BENT

Mark	Number Required	Length	Pin Dia.
B401	14	8'-7"	Str.
B402	20	51'-5"	Str.
B501	99	17'-9"	3¾"
B502	99	6'-11"	3¾"
B503	94	17'-8"	2½"
B504	23	10'-11"	2½"
B505	36	51'-9"	Str.
B506	8	2'-0"	Str.
B507	77	8'-9"	2½"
B508	77	9'-10"	2½"
B509	16	15'-0"	2½"
B601	8	45'-5"	4½"
B602	8	60'-0"	4½"
B603	8	44'-1"	Str.
B604	8	60'-0"	Str.
B801	18	14'-1"	6"
F401	12	11'-0"	2"
F402	24	2'-7"	Str.
F601	12	2'-8"	Str.
R401E	84	7'-6"	3"
R402E	8	5'-6"	Str.
R403E	4	3'-8"	8½"
R404E	16	21'-8"	Str.
R405E	4	21'-6"	Str.
R406E	2	6'-8"	3"
R407E	2	5'-1"	3"
W401E	88	4'-7"	3"
W501	12	14'-6"	3¾"
W601	24	5'-0"	4½"
W602 To W613	4 Each	2'-3" To 9'-6"	Str.
W614	28	9'-10"	Str.
W801	20	21'-8"	Str.
W802 To W814	4 Each	7'-5" To 18'-2"	Str.
W815	4	22'-3"	6"

Bending Diagrams (Dimensions are out to out of bars)



All bars designated with an "E" suffix are to be epoxy coated.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 21697
W. JOSEPH STURGEON

4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 3 OF 3
DETAILS OF END BENT NO. 16
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JVS DATE: 10/18/23
CHECKED BY: AT DATE: 11/14/23
DESIGNED BY: AT DATE: 9/26/23
FILENAME: b040901216_b163.dgn
SCALE: AS NOTED

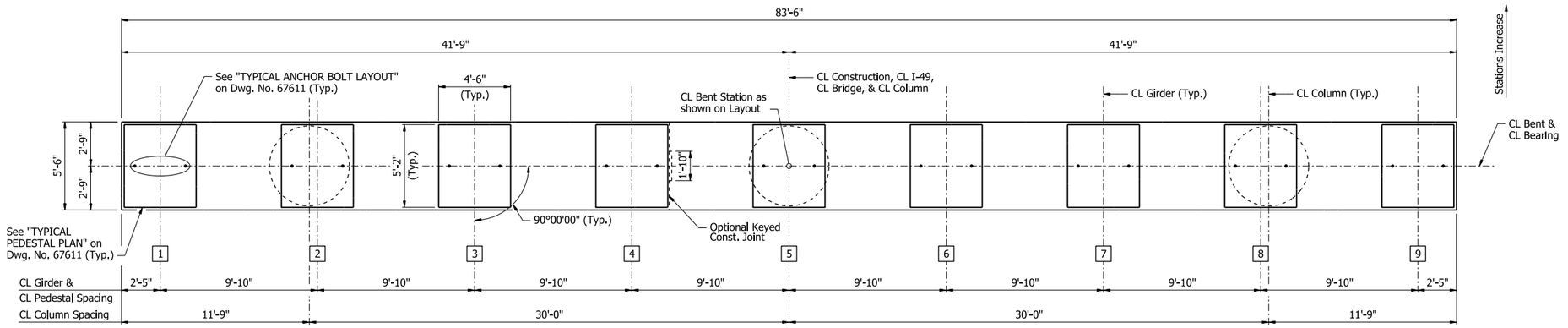
BRIDGE NO. 07685 DRAWING NO. 67609

PRINT DATE: 4/10/2024

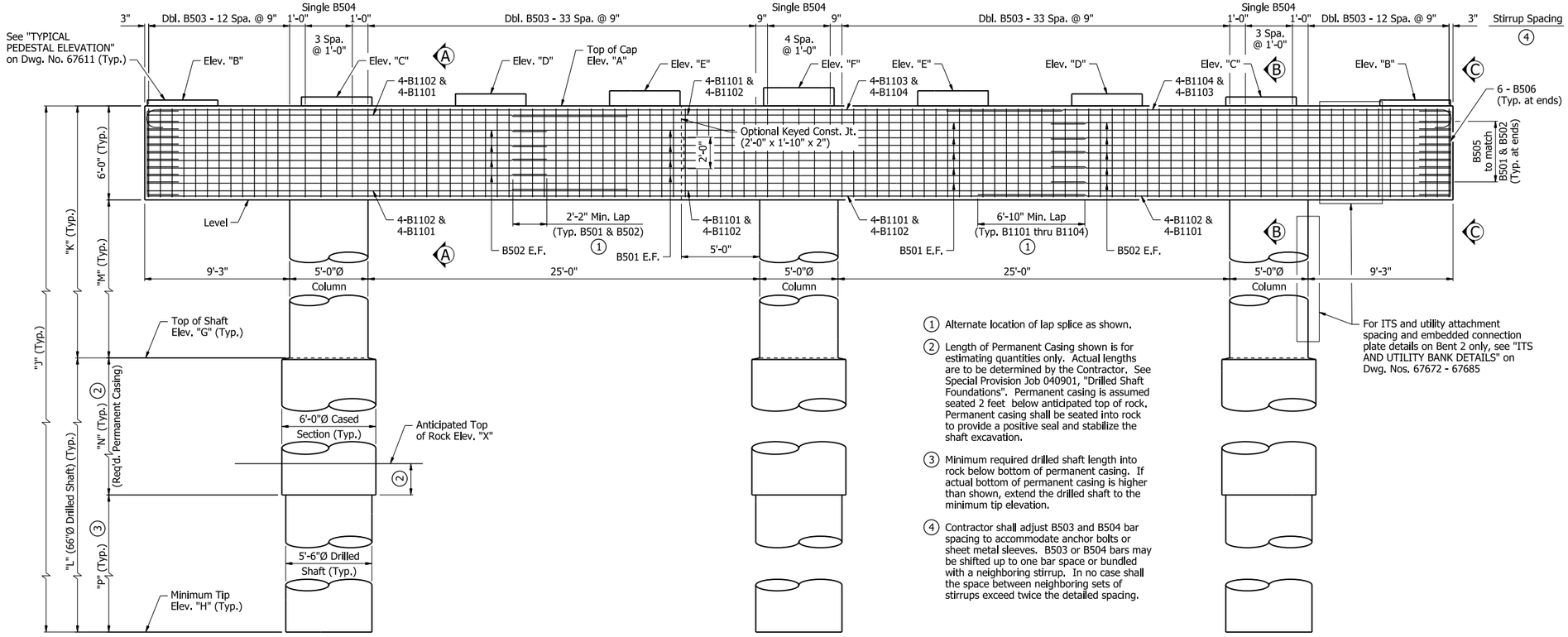
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	550	809
		07685 - INT. BENTS - 67610				

Notes:
For "SECTION A-A", "SECTION B-B", "VIEW C-C", "SECTION D-D" thru "SECTION G-G", see Dwg. No. 67611.

For "GENERAL NOTES", see Dwg. No. 67372.

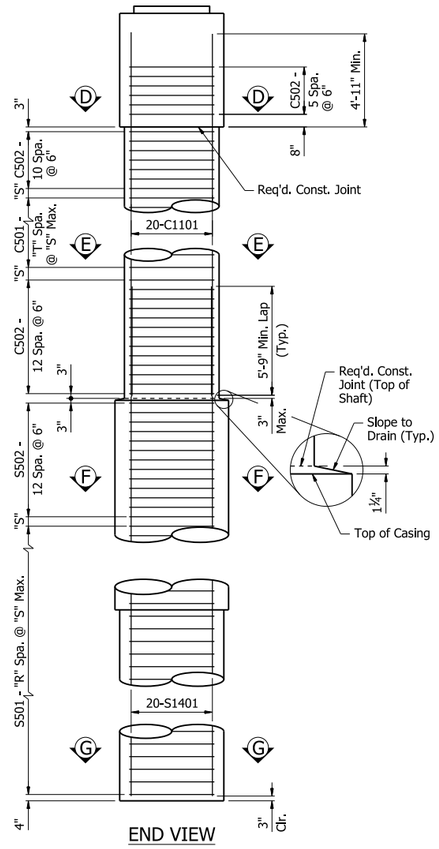


PLAN



ELEVATION
(Looking Upstation)

1. Alternate location of lap splice as shown.
2. Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined by the Contractor. See Special Provision Job 040901, "Drilled Shaft Foundations". Permanent casing is assumed seated 2 feet below anticipated top of rock. Permanent casing shall be seated into rock to provide a positive seal and stabilize the shaft excavation.
3. Minimum required drilled shaft length into rock below bottom of permanent casing. If actual bottom of permanent casing is higher than shown, extend the drilled shaft to the minimum tip elevation.
4. Contractor shall adjust B503 and B504 bar spacing to accommodate anchor bolts or sheet metal sleeves. B503 or B504 bars may be shifted up to one bar space or bundled with a neighboring stirrup. In no case shall the space between neighboring sets of stirrups exceed twice the detailed spacing.



END VIEW

Notes:
Dimensions, details, & reinforcing steel shown are typical for all columns and drilled shafts.

If column, cased section, or drilled shaft length changes during construction, number of ties shall be adjusted accordingly to maintain the maximum spacing of ties in the regions identified above.

TABLE OF VARIABLES

Bent No.	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"	"L"	"M"	"N"	"P"	"R"	"S"	"T"	"X"
2	413.32	413.70	413.89	414.09	414.29	414.48	387.00	322.00	91'-3⅞"	26'-3⅞"	65'-0"	20'-3⅞"	39'-0"	26'-0"	87	8"	12	350.00
3	417.15	417.53	417.72	417.92	418.12	418.31	389.00	321.00	96'-1¾"	28'-1¾"	68'-0"	22'-1¾"	44'-0"	24'-0"	92	8"	14	347.00
4	421.05	421.43	421.62	421.82	422.02	422.21	384.00	321.00	100'-0⅝"	37'-0⅝"	63'-0"	31'-0⅝"	39'-0"	24'-0"	75	9"	25	347.00

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

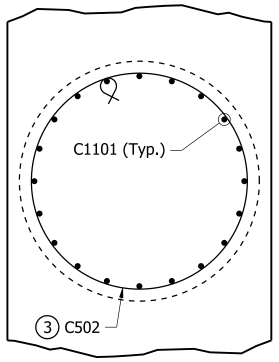
ALTERNATE NO. 2
SHEET 1 OF 2
DETAILS OF INTERMEDIATE BENT NOS. 2 - 4
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

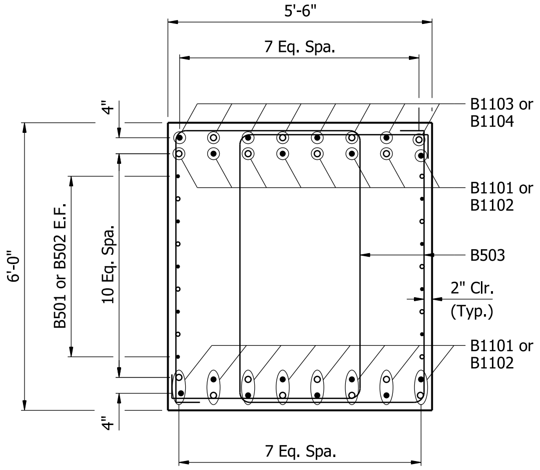
DRAWN BY: CEM DATE: 10/19/23
CHECKED BY: QL DATE: 10/30/23
DESIGNED BY: CZ/PEG DATE: 7/26/23
FILENAME: b040901216_b21.dgn
SCALE: ¼" = 1'-0"

BRIDGE NO. 07685 DRAWING NO. 67610

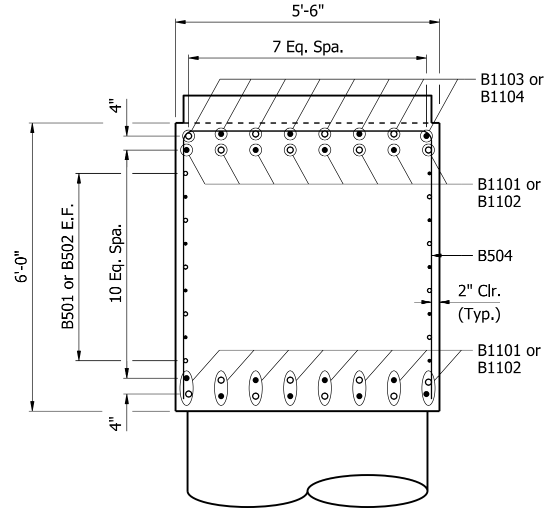
PRINT DATE: 4/10/2024



SECTION D-D
½" = 1'-0"
(Cap reinforcing not shown for clarity)

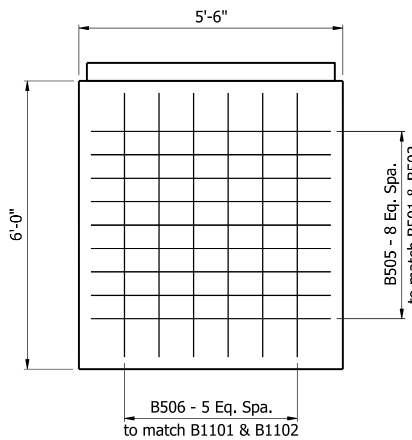


SECTION A-A
½" = 1'-0"



SECTION B-B
½" = 1'-0"
(Pedestal and column reinforcing not shown for clarity)

Note:
Contractor shall adjust B1101 thru B1104 bar spacing to accommodate anchor bolts, sheet metal sleeves, or vertical column steel. Contractor shall maintain a minimum and maximum spacing of 5" and 9", respectively.

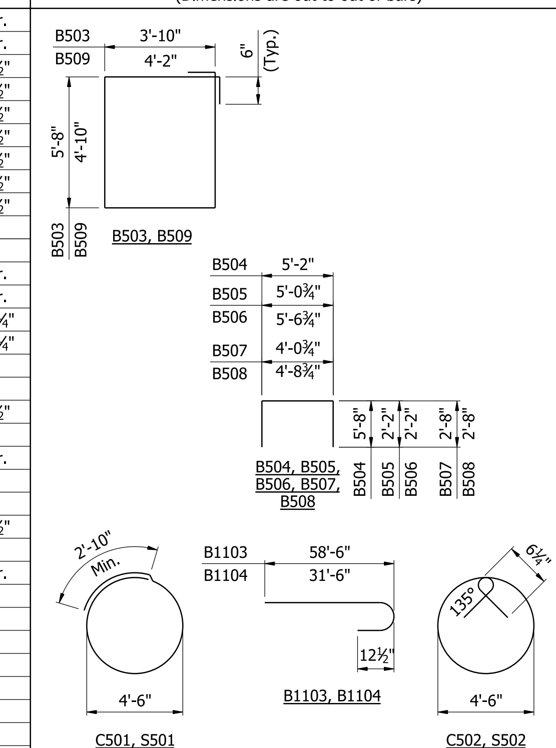


VIEW C-C
½" = 1'-0"

BAR LIST - PER BENT

Mark	Number Required	Length	Pin Dia.
B501	18	60'-0"	Str.
B502	18	25'-4"	Str.
B503	188	19'-6"	2½"
B504	13	16'-4"	2½"
B505	18	9'-2"	2½"
B506	12	9'-8"	2½"
B507	72	9'-2"	2½"
B508	63	9'-10"	2½"
B509	12	18'-6"	2½"
B1101	24	60'-0"	Str.
B1102	24	30'-0"	Str.
B1103	8	60'-0"	11¼"
B1104	8	33'-0"	11¼"
C501	"CN"	16'-10"	-
C502	90	15'-4"	2½"
C1101	60	"CL"	Str.
(4) S501	"SN"	16'-10"	-
(4) S502	39	15'-4"	2½"
(4) S1401	60	"SL"	Str.

Bending Diagrams
(Dimensions are out to out of bars)

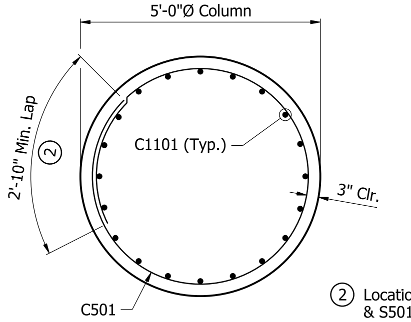


All bars designated with an "E" suffix are to be epoxy coated.

(4) S1401 longitudinal reinforcement and S501 & S502 tie reinforcement are non-pay items which are subsidiary to item "DRILLED SHAFT (66" DIA.)". Individual lengths shall be determined by the Contractor.

Notes:
For locations of "SECTION A-A", "SECTION B-B", "VIEW C-C", "SECTION D-D" thru "SECTION G-G", see Dwg. No. 67610.

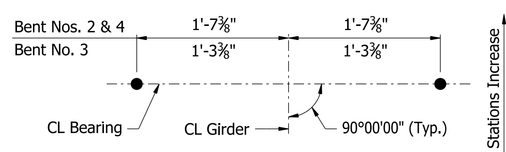
For "DETAILS OF ELASTOMERIC BEARINGS", see Dwg. Nos. 67704 and 67705.



SECTION E-E
½" = 1'-0"

(2) Location of lap splices in C501 & S501 ties shall be alternated 180° at adjacent ties.

(3) Location of end hooks in C502 & S502 ties shall be alternated 180° at adjacent ties.



TYPICAL ANCHOR BOLT LAYOUT
1" = 1'-0"

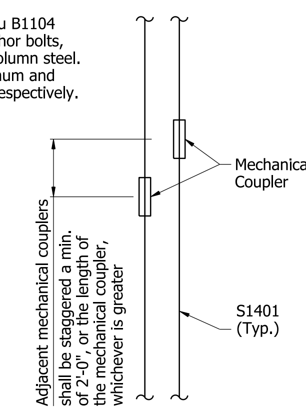


TABLE OF VARIABLES

Bent No.	"CN"	"CL"	"SN"	"SL"
2	39	25'-0"	264	70'-9"
3	45	26'-10"	279	73'-9"
4	78	35'-9"	228	68'-9"

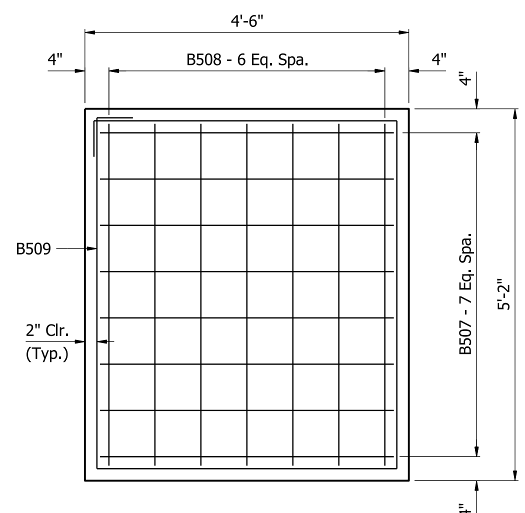
DRILLED SHAFT BAR SPLICE DETAIL
No Scale

MECHANICAL COUPLER AND SPLICE NOTES:
Contractor shall be required to use mechanical couplers to splice reinforcing bars whose lengths given in the Bar List exceed 60'-0". The bars shall be assembled as shown in "DRILLED SHAFT BAR SPLICE DETAIL".

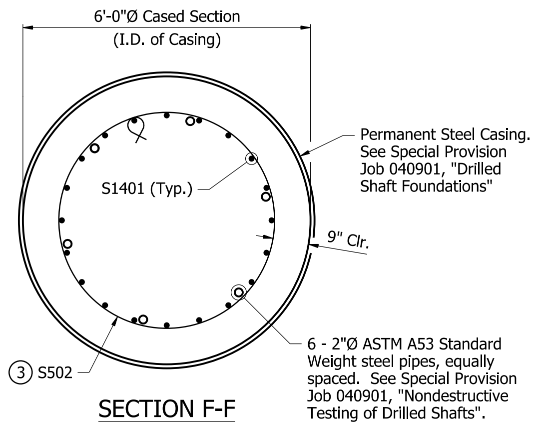
The Contractor may choose location of splices for convenience, so long as no bar to be spliced is less than 5'-0" in length and no closer than 6'-0" from top of shaft.

The Contractor may also elect to splice bars whose lengths are less than 60'-0" to provide ease of construction, so long as the previous mentioned requirements are met.

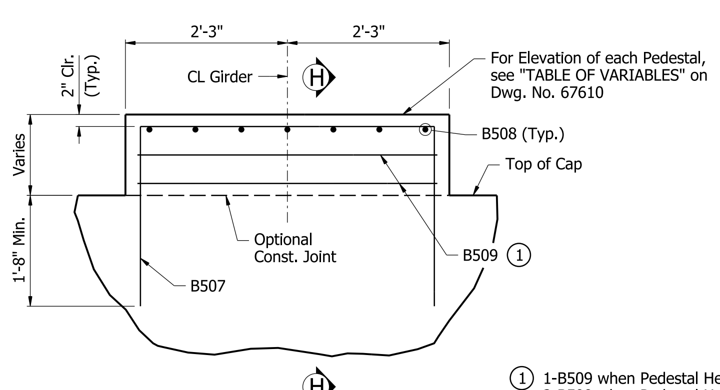
Mechanical couplers shall maintain the clearances shown in "DRILLED SHAFT BAR SPLICE DETAIL". Not more than alternate bars shall be spliced at a given location. Payment for mechanical couplers shall be subsidiary to the item "DRILLED SHAFT (66" DIA.)". The couplers shall develop at least 125% of the specified yield strength of the bar.



TYPICAL PEDESTAL PLAN
¾" = 1'-0"

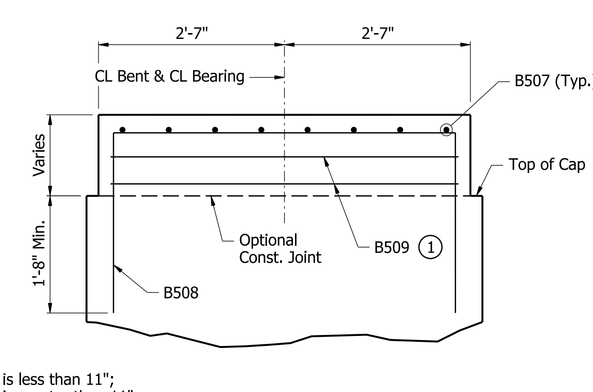


SECTION F-F
½" = 1'-0"

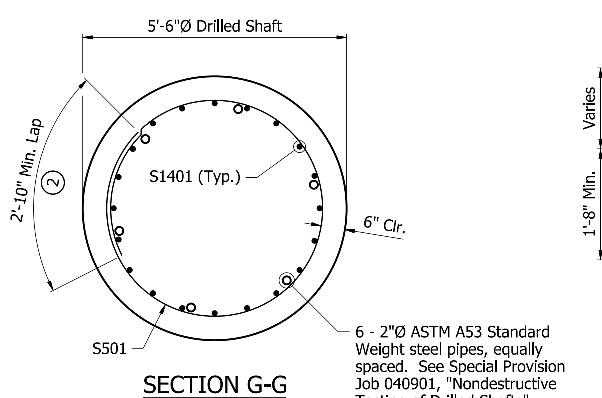


TYPICAL PEDESTAL ELEVATION
¾" = 1'-0"

(1) 1-B509 when Pedestal Height is less than 11";
2-B509 when Pedestal Height is greater than 11";
B509 spaced at 6" Max.



SECTION H-H
¾" = 1'-0"



SECTION G-G
½" = 1'-0"

PRINT DATE: 4/10/2024

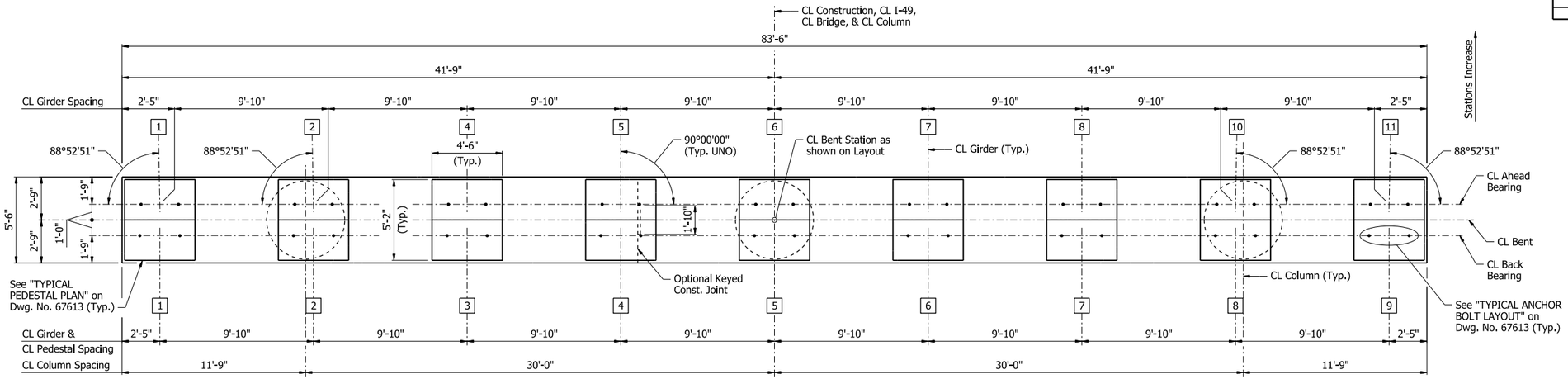
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 2 OF 2
DETAILS OF INTERMEDIATE BENT NOS. 2 - 4
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

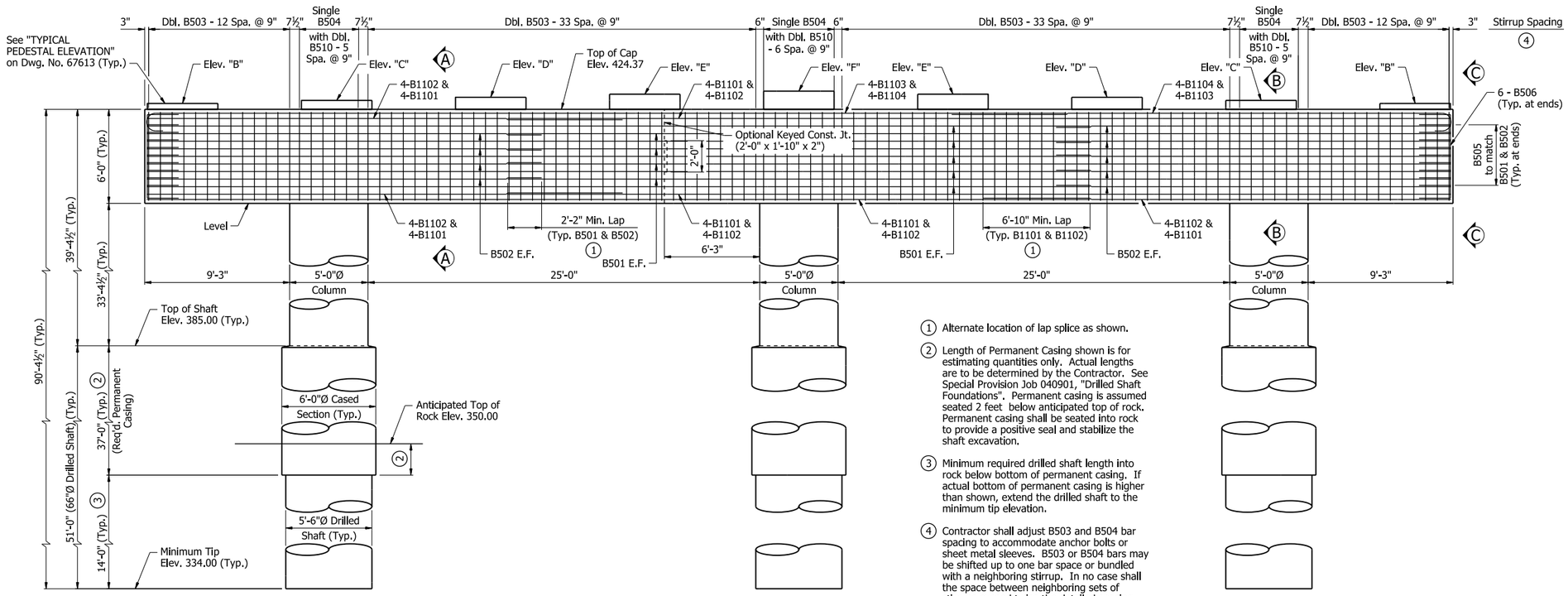
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 10/19/23 FILENAME: b040901216_b22.dgn
CHECKED BY: QL DATE: 10/30/23 SCALE: AS NOTED
DESIGNED BY: CZ/PEG DATE: 7/26/23
BRIDGE NO. 07685 DRAWING NO. 67611

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	552	809
		07685 - INT. BENTS - 67612				



PLAN



ELEVATION
(Looking Upstation)

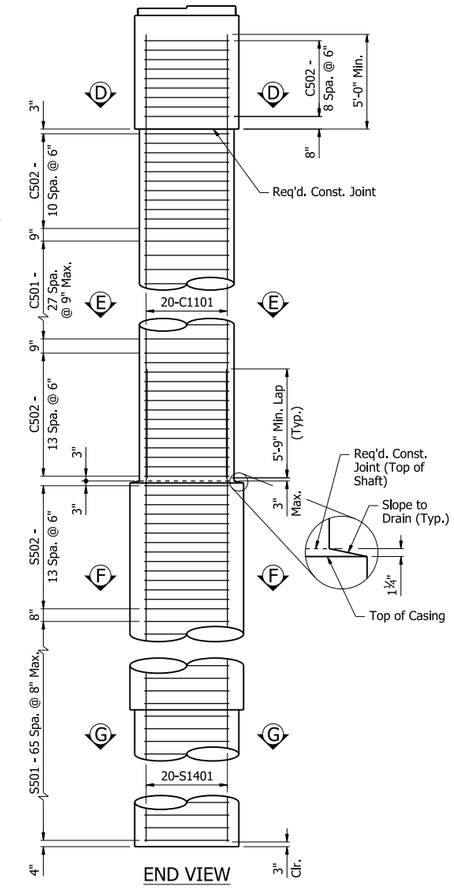
1. Alternate location of lap splice as shown.
2. Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined by the Contractor. See Special Provision Job 040901, "Drilled Shaft Foundations". Permanent casing is assumed seated 2 feet below anticipated top of rock. Permanent casing shall be seated into rock to provide a positive seal and stabilize the shaft excavation.
3. Minimum required drilled shaft length into rock below bottom of permanent casing. If actual bottom of permanent casing is higher than shown, extend the drilled shaft to the minimum tip elevation.
4. Contractor shall adjust B503 and B504 bar spacing to accommodate anchor bolts or sheet metal sleeves. B503 or B504 bars may be shifted up to one bar space or bundled with a neighboring stirrup. In no case shall the space between neighboring sets of stirrups exceed twice the detailed spacing.

TABLE OF VARIABLES

"B"		"C"		"D"		"E"		"F"	
Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing
424.75	424.90	424.94	425.10	425.14	425.30	425.34	425.50	425.53	425.69

Notes:
For "SECTION A-A", "SECTION B-B", "VIEW C-C", "SECTION D-D" thru "SECTION G-G", see Dwg. No. 67613.

For "GENERAL NOTES", see Dwg. No. 67372.



END VIEW

Notes:
Dimensions, details, & reinforcing steel shown are typical for all columns and drilled shafts.

If column, cased section, or drilled shaft length changes during construction, number of ties shall be adjusted accordingly to maintain the maximum spacing of ties in the regions identified above.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
W. JOSEPH STURGEON
No. 21697
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 2
DETAILS OF INTERMEDIATE BENT NO. 5
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

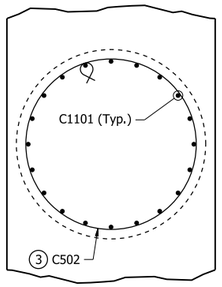
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 11/3/23
CHECKED BY: QL DATE: 11/17/23
DESIGNED BY: PEG DATE: 8/10/23
FILENAME: b040901216_b51.dgn
SCALE: ¼" = 1'-0"

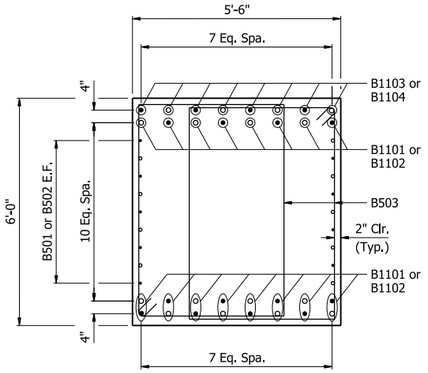
BRIDGE NO. 07685 DRAWING NO. 67612

PRINT DATE: 4/10/2024

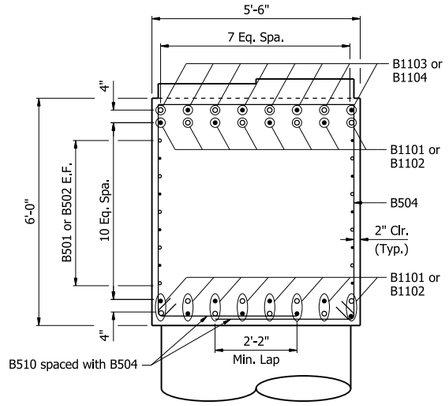
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	553	809
		07685 - INT. BENTS - 67613				



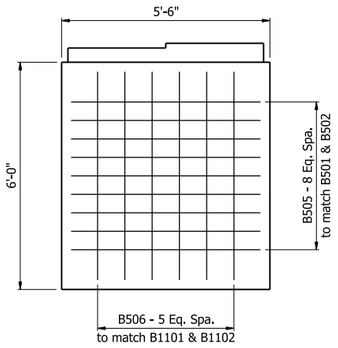
SECTION D-D
½" = 1'-0"
(Cap reinforcing not shown for clarity)



SECTION A-A
½" = 1'-0"

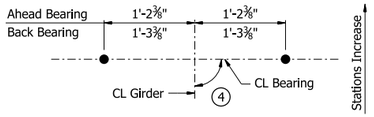


SECTION B-B
½" = 1'-0"
(Pedestal and column reinforcing not shown for clarity)



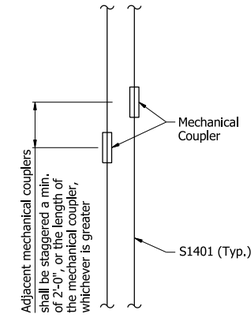
VIEW C-C
½" = 1'-0"

Note:
Contractor shall adjust B1101 thru B1104 bar spacing to accommodate anchor bolts, sheet metal sleeves, or vertical column steel. Contractor shall maintain a minimum and maximum spacing of 5" and 9", respectively.



TYPICAL ANCHOR BOLT LAYOUT
1" = 1'-0"

4 Angle between CL Girder and CL Bearing varies by bearing location, as shown in Plan view on Dwg. No. 67612. Position anchor bolts parallel to the CL Bearing and CL Bent.



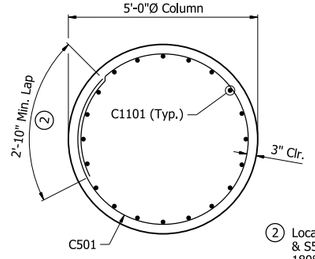
DRILLED SHAFT BAR SPLICE DETAIL
No Scale

MECHANICAL COUPLER AND SPLICE NOTES:
Contractor shall be required to use mechanical couplers to splice reinforcing bars whose lengths given in the Bar List exceed 60'-0". The bars shall be assembled as shown in "DRILLED SHAFT BAR SPLICE DETAIL".

The Contractor may choose location of splices for convenience, so long as no bar to be spliced is less than 5'-0" in length and no closer than 6'-0" from top of shaft.

The Contractor may also elect to splice bars whose lengths are less than 60'-0" to provide ease of construction, so long as the previous mentioned requirements are met.

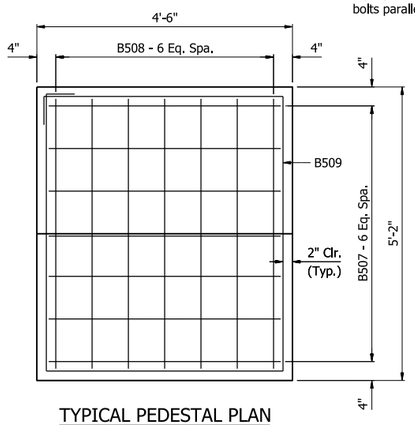
Mechanical couplers shall maintain the clearances shown in "DRILLED SHAFT BAR SPLICE DETAIL". Not more than alternate bars shall be spliced at a given location. Payment for mechanical couplers shall be subsidiary to the item "DRILLED SHAFT (66" DIA.)". The couplers shall develop at least 125% of the specified yield strength of the bar.



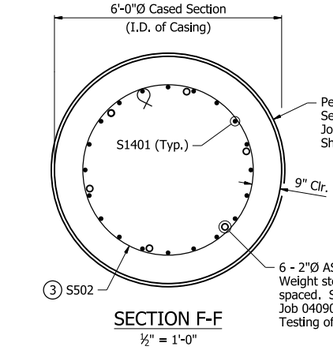
SECTION E-E
½" = 1'-0"

2 Location of lap splices in C501 & S501 ties shall be alternated 180° at adjacent ties.

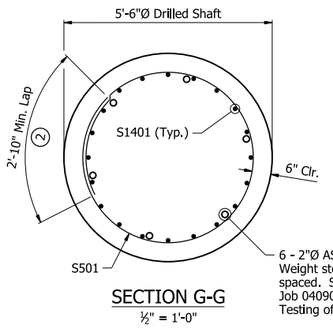
3 Location of end hooks in C502 & S502 ties shall be alternated 180° at adjacent ties.



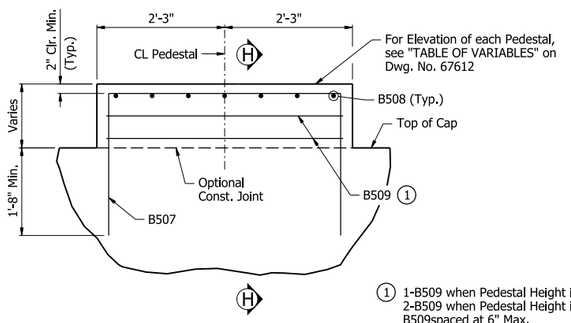
TYPICAL PEDESTAL PLAN
¾" = 1'-0"



SECTION F-F
½" = 1'-0"

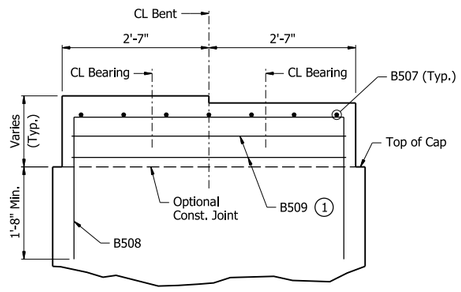


SECTION G-G
½" = 1'-0"



TYPICAL PEDESTAL ELEVATION
¾" = 1'-0"

1 1-B509 when Pedestal Height is less than 11";
2-B509 when Pedestal Height is greater than 11";
B509spaced at 6" Max.

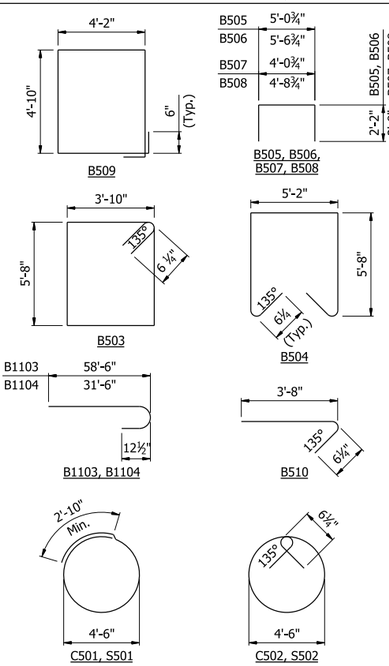


SECTION H-H
¾" = 1'-0"

BAR LIST

	Mark	Number Required	Length	Pin Dia.
	B501	18	60'-0"	Str.
	B502	18	25'-4"	Str.
	B503	188	19'-9"	2½"
	B504	19	17'-4"	2½"
	B505	18	9'-2"	2½"
	B506	12	9'-8"	2½"
	B507	63	9'-2"	2½"
	B508	63	9'-10"	2½"
	B509	12	18'-6"	2½"
	B510	38	4'-2"	2½"
	B1101	24	60'-0"	Str.
	B1102	24	30'-0"	Str.
	B1103	8	60'-0"	11¼"
	B1104	8	33'-0"	11¼"
	C501	84	16'-10"	-
	C502	102	15'-4"	2½"
	C1101	60	38'-2"	Str.
5	S501	198	16'-10"	-
5	S502	42	15'-4"	2½"
5	S1401	60	56'-9"	Str.

Bending Diagrams (Dimensions are out to out of bars)



All bars designated with an "E" suffix are to be epoxy coated.

5 S1401 longitudinal reinforcement and S501 & S502 tie reinforcement are non-pay items which are subsidiary to item "DRILLED SHAFT (66" DIA.)". Individual lengths shall be determined by the Contractor.

Notes:
For locations of "SECTION A-A", "SECTION B-B", "VIEW C-C", "SECTION D-D" thru "SECTION G-G", see Dwg. No. 67612.

For "DETAILS OF ELASTOMERIC BEARINGS", see Dwg. Nos. 67704 and 67705.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 2 OF 2
DETAILS OF INTERMEDIATE BENT NO. 5
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

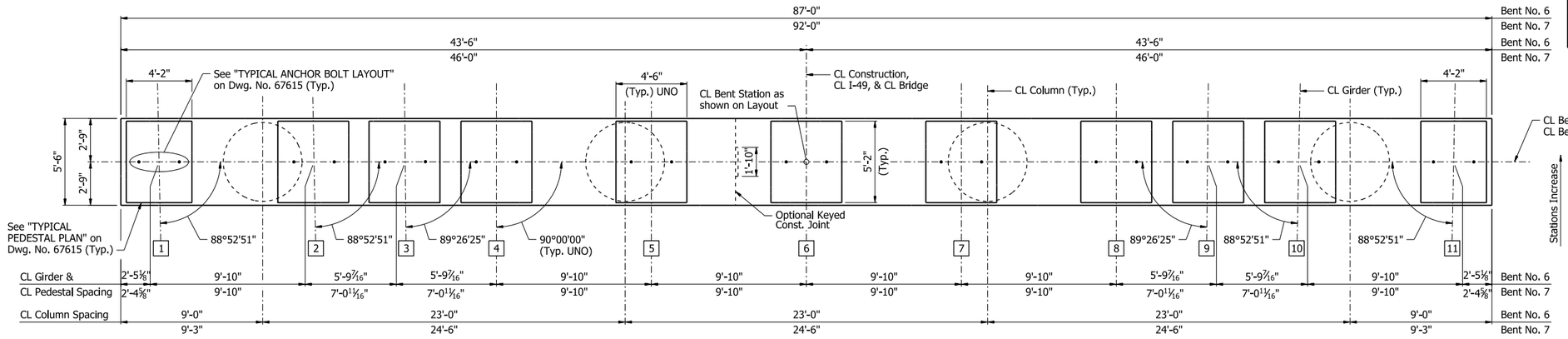
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 11/3/23
CHECKED BY: QL DATE: 11/17/23
DESIGNED BY: PEG DATE: 8/10/23
FILENAME: b040901216_b52.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67613

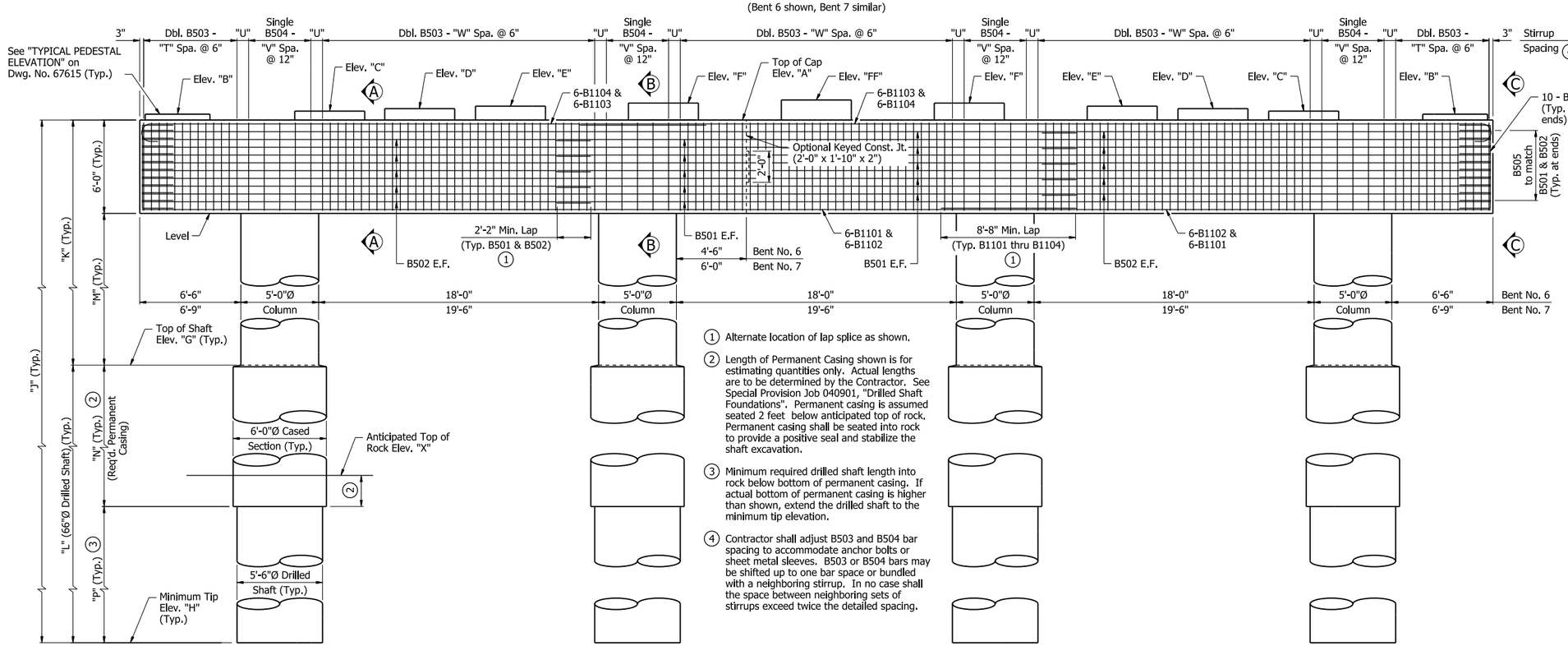
PRINT DATE: 4/10/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	554	809
		07685 - INT. BENTS - 67614				



PLAN

(Bent 6 shown, Bent 7 similar)



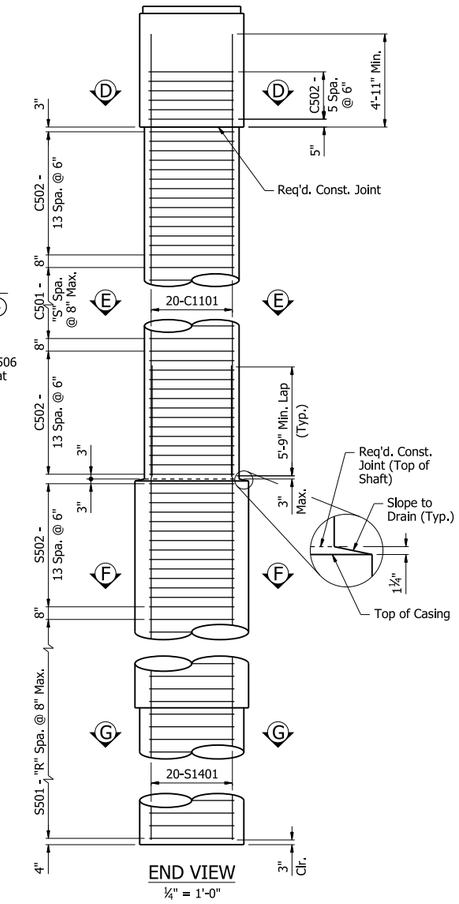
1. Alternate location of lap splice as shown.
2. Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined by the Contractor. See Special Provision Job 040901, "Drilled Shaft Foundations". Permanent casing is assumed seated 2 feet below anticipated top of rock. Permanent casing shall be seated into rock to provide a positive seal and stabilize the shaft excavation.
3. Minimum required drilled shaft length into rock below bottom of permanent casing. If actual bottom of permanent casing is higher than shown, extend the drilled shaft to the minimum tip elevation.
4. Contractor shall adjust B503 and B504 bar spacing to accommodate anchor bolts or sheet metal sleeves. B503 or B504 bars may be shifted up to one bar space or bundled with a neighboring stirrup. In no case shall the space between neighboring sets of stirrups exceed twice the detailed spacing.

ELEVATION

(Looking Upstation)
(Bent 6 shown, Bent 7 similar)

Notes:
For "SECTION A-A", "SECTION B-B", "VIEW C-C", "SECTION D-D" thru "SECTION G-G", see Dwg. No. 67615.

For "GENERAL NOTES", see Dwg. No. 67372.



END VIEW

¼" = 1'-0"

Notes:
Dimensions, details, & reinforcing steel shown are typical for all columns and drilled shafts.

If column, cased section, or drilled shaft length changes during construction, number of ties shall be adjusted accordingly to maintain the maximum spacing of ties in the regions identified above.

TABLE OF VARIABLES

Bent No.	"A"	"B"	"C"	"D"	"E"	"F"	"FF"	"G"	"H"	"J"	"K"	"L"	"M"	"N"	"P"	"R"	"S"	"T"	"U"	"V"	"W"	"X"
6	426.58	426.95	427.15	427.27	427.38	427.58	427.77	385.00	331.00	95'-7"	41'-7"	54'-0"	35'-7"	39'-0"	15'-0"	70	32	12	9"	4	35	348.00
7	428.87	429.25	429.44	429.58	429.72	429.92	430.12	386.00	331.00	97'-10½"	42'-10½"	55'-0"	36'-10½"	40'-0"	15'-0"	71	34	13	12"	3	39	348.00

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 2
DETAILS OF INTERMEDIATE BENT NOS. 6 & 7
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

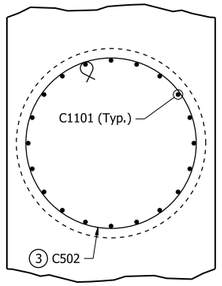
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 11/2/23
CHECKED BY: DJB DATE: 11/10/23
DESIGNED BY: CZ DATE: 9/8/23
FILENAME: b040901216_b61.dgn
SCALE: ¼" = 1'-0"

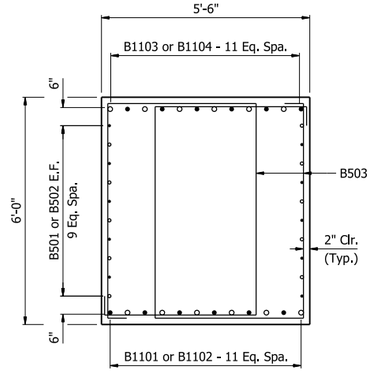
BRIDGE NO. 07685 DRAWING NO. 67614

PRINT DATE: 4/10/2024

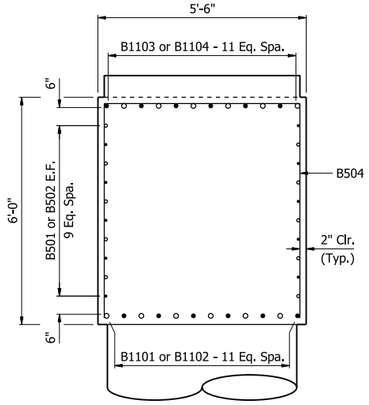
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	555	809
		07685 - INT. BENTS - 67615				



SECTION D-D
½" = 1'-0"
(Cap reinforcing not shown for clarity)

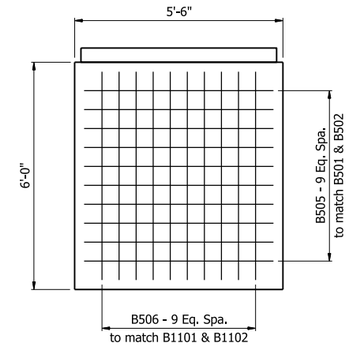


SECTION A-A
½" = 1'-0"

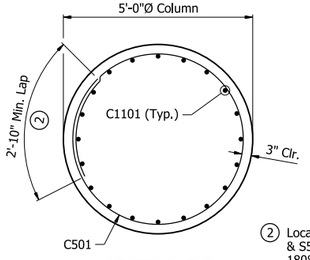


SECTION B-B
½" = 1'-0"
(Pedestal and column reinforcing not shown for clarity)

Note:
Contractor shall adjust B1101 thru B1104 bar spacing to accommodate anchor bolts, sheet metal sleeves, or vertical column steel. Contractor shall maintain a minimum and maximum spacing of 5" and 8", respectively. B1101 thru B1104 bars may be bundled as required to maintain the minimum spacing so long as the maximum spacing is not exceeded.



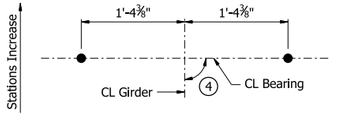
VIEW C-C
½" = 1'-0"



SECTION E-E
½" = 1'-0"

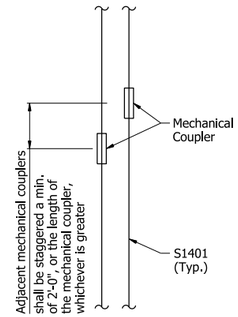
2 Location of lap splices in C501 & S501 ties shall be alternated 180° at adjacent ties.

3 Location of end hooks in C502 & S502 ties shall be alternated 180° at adjacent ties.



TYPICAL ANCHOR BOLT LAYOUT
1" = 1'-0"

4 Angle between CL Girder and CL Bearing varies by bearing locations, as shown in Plan view on Dwg. No. 67614. Position anchor bolts parallel to the CL Bearing and CL Bent



DRILLED SHAFT BAR SPLICE DETAIL
No Scale

MECHANICAL COUPLER AND SPLICE NOTES:
Contractor shall be required to use mechanical couplers to splice reinforcing bars whose lengths given in the Bar List exceed 60'-0". The bars shall be assembled as shown in "DRILLED SHAFT BAR SPLICE DETAIL".

The Contractor may choose location of splices for convenience, so long as no bar to be spliced is less than 5'-0" in length and no closer than 6'-0" from top of shaft.

The Contractor may also elect to splice bars whose lengths are less than 60'-0" to provide ease of construction, so long as the previous mentioned requirements are met.

Mechanical couplers shall maintain the clearances shown in "DRILLED SHAFT BAR SPLICE DETAIL". Not more than alternate bars shall be spliced at a given location. Payment for mechanical couplers shall be subsidiary to the item "DRILLED SHAFT (66" DIA.)". The couplers shall develop at least 125% of the specified yield strength of the bar.

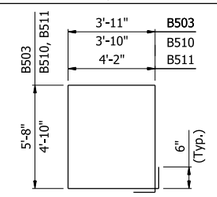
TABLE OF VARIABLES

Bent No.	"BN1"	"BN2"	"BL1"	"BL2"	"BL3"	"CN"	"CL"	"SN"	"SL"
6	268	20	28'-10"	35'-4"	38'-4"	132	40'-3"	284	59'-9"
7	296	16	33'-10"	40'-4"	43'-4"	140	41'-7"	288	60'-9"

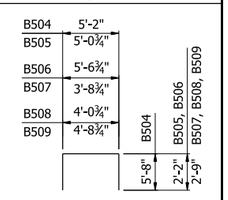
BAR LIST - PER BENT

	Mark	Number Required	Length	Pin Dia.
	B501	20	60'-0"	Str.
	B502	20	"BL1"	Str.
	B503	"BN1"	19'-8"	2½"
	B504	"BN2"	16'-4"	2½"
	B505	20	9'-2"	2½"
	B506	20	9'-8"	2½"
	B507	16	9'-0"	2½"
	B508	72	9'-4"	2½"
	B509	77	10'-0"	2½"
	B510	2	17'-10"	2½"
	B511	12	18'-6"	2½"
	B1101	12	60'-0"	Str.
	B1102	12	"BL2"	Str.
	B1103	12	60'-0"	11¼"
	B1104	12	"BL3"	11¼"
	C501	"CN"	16'-10"	-
	C502	136	15'-4"	2½"
	C1101	80	"CL"	Str.
5	S501	"SN"	16'-10"	-
5	S502	56	15'-4"	2½"
5	S1401	80	"SL"	Str.

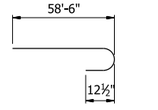
Bending Diagrams
(Dimensions are out to out of bars)



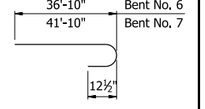
B503, B510, B511



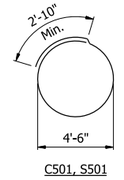
B504, B505, B506, B507, B508, B509



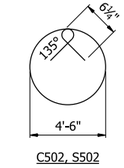
B1103



B1104



C501, S501



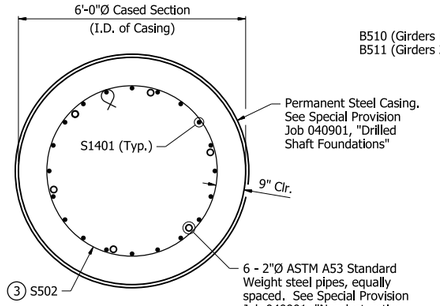
C502, S502

All bars designated with an "E" suffix are to be epoxy coated.

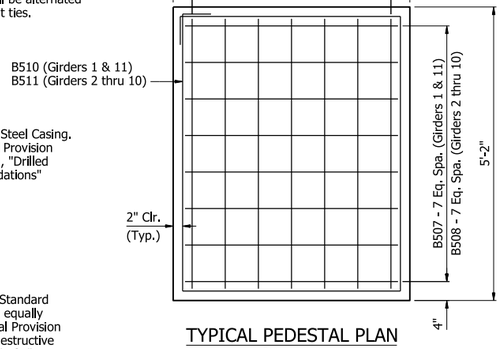
5 S1401 longitudinal reinforcement and S501 & S502 tie reinforcement are non-pay items which are subsidiary to item "DRILLED SHAFT (66" DIA.)". Individual lengths shall be determined by the Contractor.

Notes:
For locations of "SECTION A-A", "SECTION B-B", "VIEW C-C", "SECTION D-D" thru "SECTION G-G", see Dwg. No. 67614.

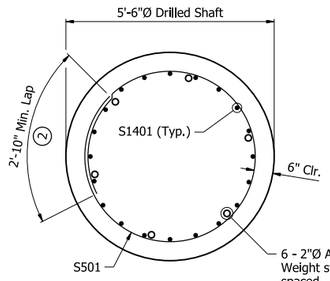
For "DETAILS OF ELASTOMERIC BEARINGS", see Dwg. Nos. 67704 and 67705.



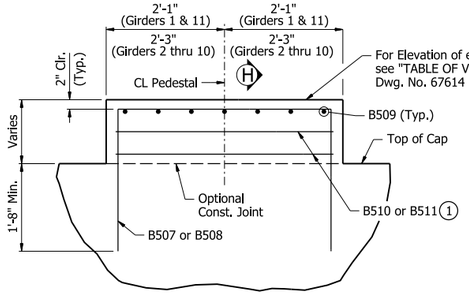
SECTION F-F
½" = 1'-0"



TYPICAL PEDESTAL PLAN
¾" = 1'-0"

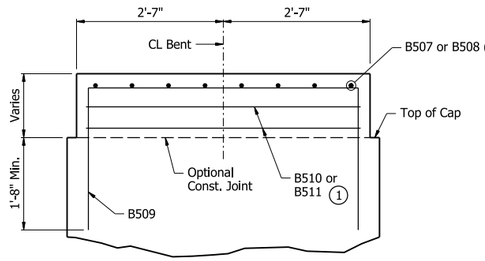


SECTION G-G
½" = 1'-0"



TYPICAL PEDESTAL ELEVATION
¾" = 1'-0"

1 1-B510 or 1-B511 when Pedestal Height is less than 11";
2-B511 when Pedestal Height is greater than 11";
B511 spaced at 6" Max.



SECTION H-H
¾" = 1'-0"

ALTERNATE NO. 2
SHEET 2 OF 2
DETAILS OF INTERMEDIATE BENT NOS. 6 & 7
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

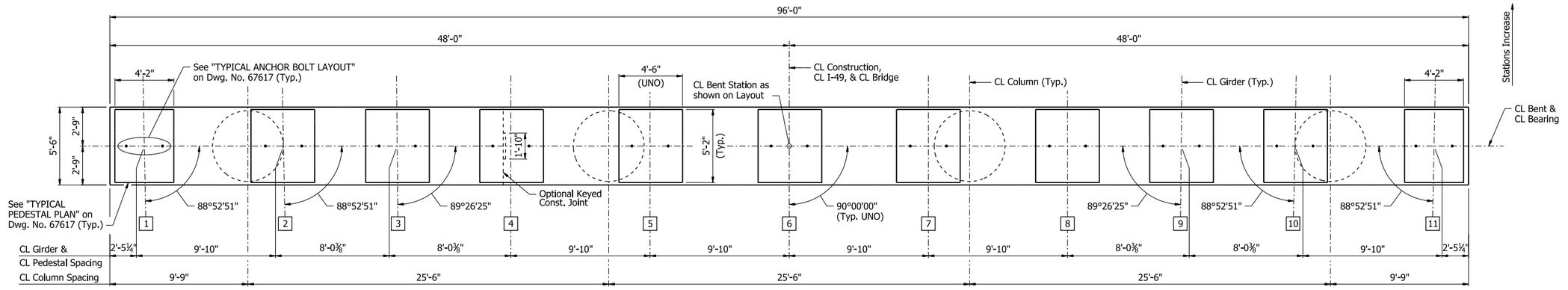
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

DRAWN BY: CEM DATE: 11/2/23
CHECKED BY: DJB DATE: 11/10/23
DESIGNED BY: CZ DATE: 9/8/23
FILENAME: b040901216_b62.dgn
SCALE: AS NOTED

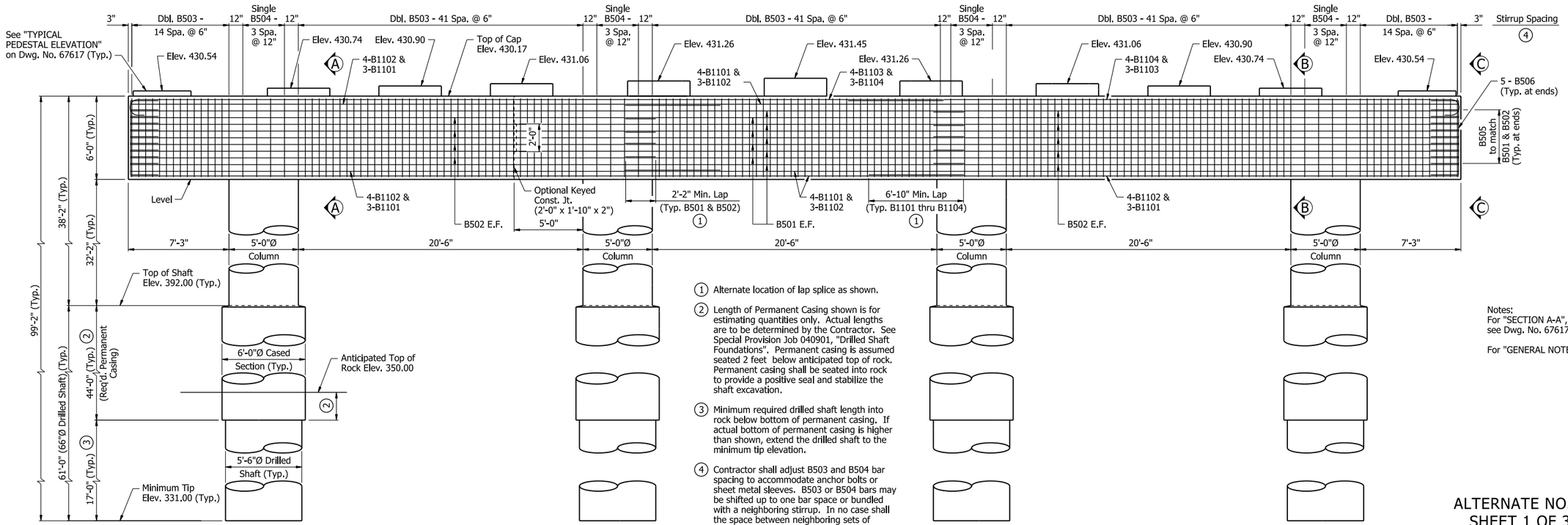
BRIDGE NO. 07685 DRAWING NO. 67615

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	556	809
		07685 - INT. BENTS - 67616				



PLAN



1. Alternate location of lap splice as shown.
2. Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined by the Contractor. See Special Provision Job 040901, "Drilled Shaft Foundations". Permanent casing is assumed seated 2 feet below anticipated top of rock. Permanent casing shall be seated into rock to provide a positive seal and stabilize the shaft excavation.
3. Minimum required drilled shaft length into rock below bottom of permanent casing. If actual bottom of permanent casing is higher than shown, extend the drilled shaft to the minimum tip elevation.
4. Contractor shall adjust B503 and B504 bar spacing to accommodate anchor bolts or sheet metal sleeves. B503 or B504 bars may be shifted up to one bar space or bundled with a neighboring stirrup. In no case shall the space between neighboring sets of stirrups exceed twice the detailed spacing.

ELEVATION
(Looking Upstation)

Notes:
For "SECTION A-A", "SECTION B-B", & "VIEW C-C", see Dwg. No. 67617.

For "GENERAL NOTES", see Dwg. No. 67372.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 3
DETAILS OF INTERMEDIATE BENT NO. 8
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

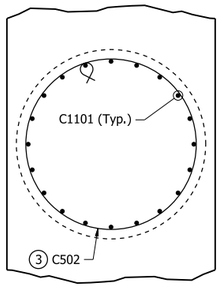
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 11/1/23
CHECKED BY: DJB DATE: 11/8/23
DESIGNED BY: MGG DATE: 8/22/23
FILENAME: b040901216_b81.dgn
SCALE: ¼" = 1'-0"

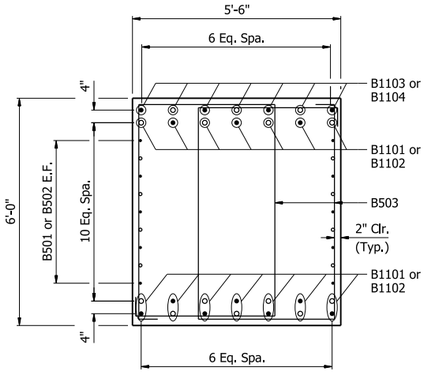
BRIDGE NO. 07685 DRAWING NO. 67616

PRINT DATE: 4/10/2024

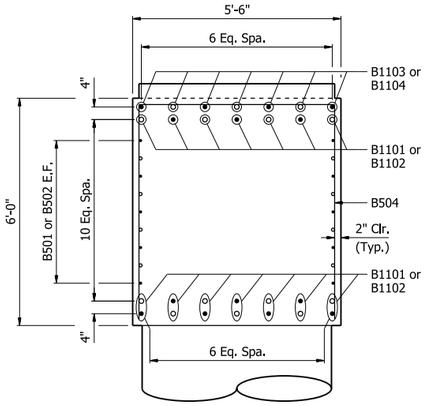
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	557	809
		07685 - INT. BENTS - 67617				



SECTION D-D
½" = 1'-0"
(Cap reinforcing not shown for clarity)

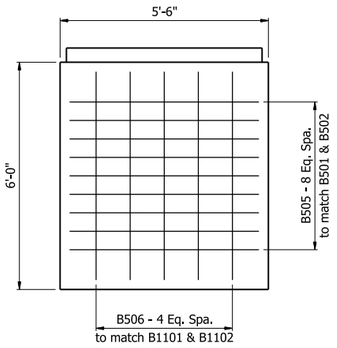


SECTION A-A
½" = 1'-0"

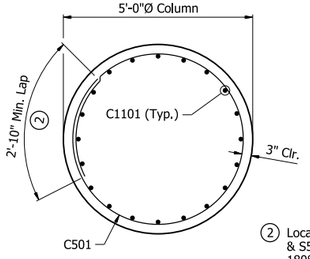


SECTION B-B
½" = 1'-0"
(Pedestal and column reinforcing not shown for clarity)

Note:
Contractor shall adjust B1101 thru B1104 bar spacing to accommodate anchor bolts, sheet metal sleeves, or vertical column steel. Contractor shall maintain a minimum and maximum spacing of 5" and 11", respectively.



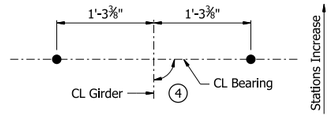
VIEW C-C
½" = 1'-0"



SECTION E-E
½" = 1'-0"

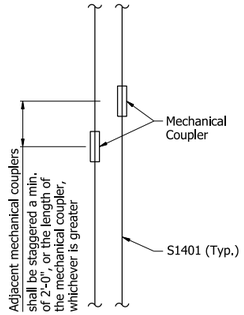
② Location of lap splices in C501 & S501 ties shall be alternated 180° at adjacent ties.

③ Location of end hooks in C502 & S502 ties shall be alternated 180° at adjacent ties.



TYPICAL ANCHOR BOLT LAYOUT
1" = 1'-0"

④ Angle between CL Girder and CL Bearing varies by bearing location, as shown in Plan view on Dwg. No. 67616. Position anchor bolts parallel to the CL Bearing and CL Bent.



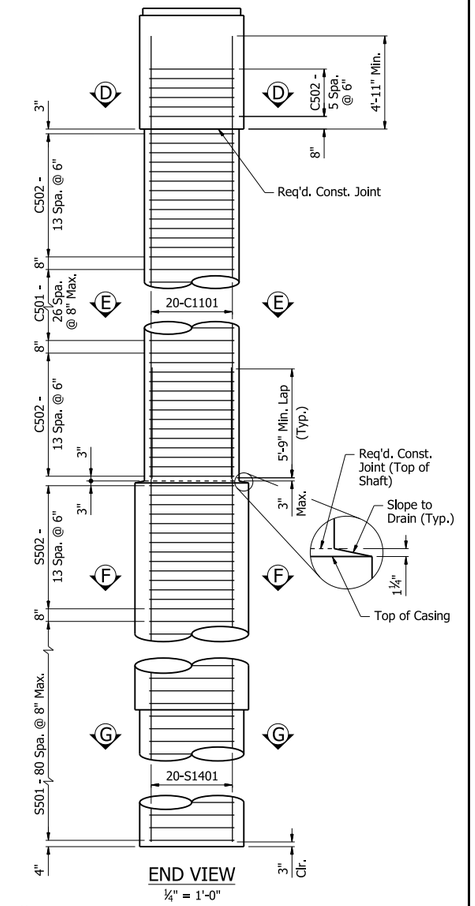
DRILLED SHAFT BAR SPLICE DETAIL
No Scale

MECHANICAL COUPLER AND SPLICE NOTES:
Contractor shall be required to use mechanical couplers to splice reinforcing bars whose lengths given in the Bar List exceed 60'-0". The bars shall be assembled as shown in "DRILLED SHAFT BAR SPLICE DETAIL".

The Contractor may choose location of splices for convenience, so long as no bar to be spliced is less than 5'-0" in length and no closer than 6'-2" from top of shaft.

The Contractor may also elect to splice bars whose lengths are less than 60'-0" to provide ease of construction, so long as the previous mentioned requirements are met.

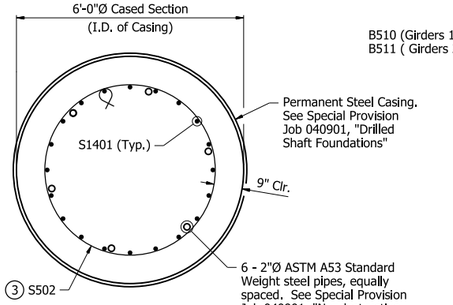
Mechanical couplers shall maintain the clearances shown in "DRILLED SHAFT BAR SPLICE DETAIL". Not more than alternate bars shall be spliced at a given location. Payment for mechanical couplers shall be subsidiary to the item "DRILLED SHAFT (66" DIA.)". The couplers shall develop at least 125% of the specified yield strength of the bar.



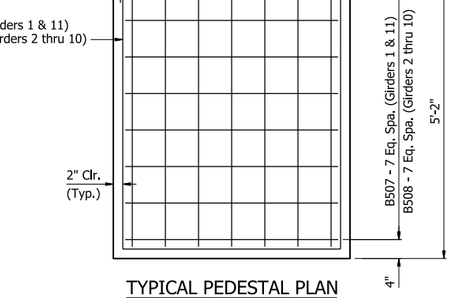
END VIEW
¼" = 1'-0"

Notes:
Dimensions, details, & reinforcing steel shown are typical for all columns and drilled shafts.

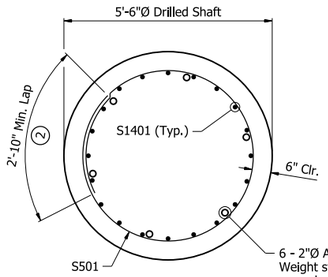
If column, cased section, or drilled shaft length changes during construction, number of ties shall be adjusted accordingly to maintain the maximum spacing of ties in the regions identified above.



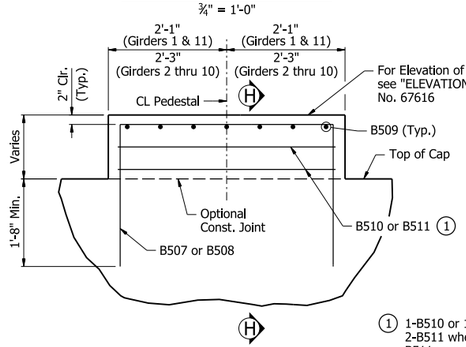
SECTION F-F
½" = 1'-0"



TYPICAL PEDESTAL PLAN
¾" = 1'-0"

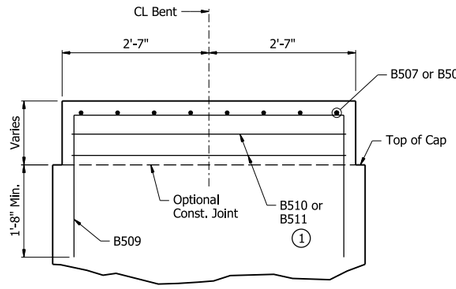


SECTION G-G
½" = 1'-0"



TYPICAL PEDESTAL ELEVATION
¾" = 1'-0"

① 1-B510 or 1-B511 when Pedestal Height is less than 11";
2-B511 when Pedestal Height is greater than 11";
B511 spaced at 6" Max.



SECTION H-H
¾" = 1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 2 OF 3
DETAILS OF INTERMEDIATE BENT NO. 8
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 11/1/23
CHECKED BY: DJB DATE: 11/8/23
DESIGNED BY: MGG DATE: 8/22/23
FILENAME: b040901216_b82.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67617

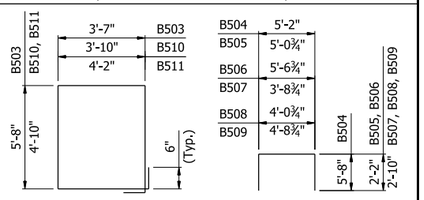
PRINT DATE: 4/10/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	558	809
		07685 - INT. BENTS - 67618				

BAR LIST

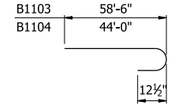
Mark	Number Required	Length	Pin Dia.
B501	18	60'-0"	Str.
B502	18	37'-10"	Str.
B503	312	19'-0"	2½"
B504	16	16'-4"	2½"
B505	18	9'-2"	2½"
B506	10	9'-8"	2½"
B507	16	9'-2"	2½"
B508	72	9'-6"	2½"
B509	77	10'-2"	2½"
B510	2	17'-10"	2½"
B511	12	18'-6"	2½"
B1101	21	60'-0"	Str.
B1102	21	42'-6"	Str.
B1103	7	60'-0"	11¼"
B1104	7	45'-6"	11¼"
C501	108	16'-10"	-
C502	136	15'-4"	2½"
C1101	80	36'-11"	Str.
(1) S501	324	16'-10"	-
(1) S502	56	15'-4"	2½"
(1) S1401	80	66'-9"	Str.

Bending Diagrams
(Dimensions are out to out of bars)

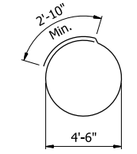


B503, B510, B511

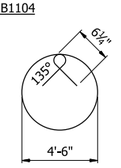
B504, B505, B506, B507, B508, B509



B1103, B1104



C501, S501



C502, S502

All bars designated with an "E" suffix are to be epoxy coated.

(1) S1401 longitudinal reinforcement and S501 & S502 tie reinforcement are non-pay items which are subsidiary to item "DRILLED SHAFT (66" DIA.)". Individual lengths shall be determined by the Contractor.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
W. JOSEPH STURGEON
No. 21697
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 3 OF 3
DETAILS OF INTERMEDIATE BENT NO. 8
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

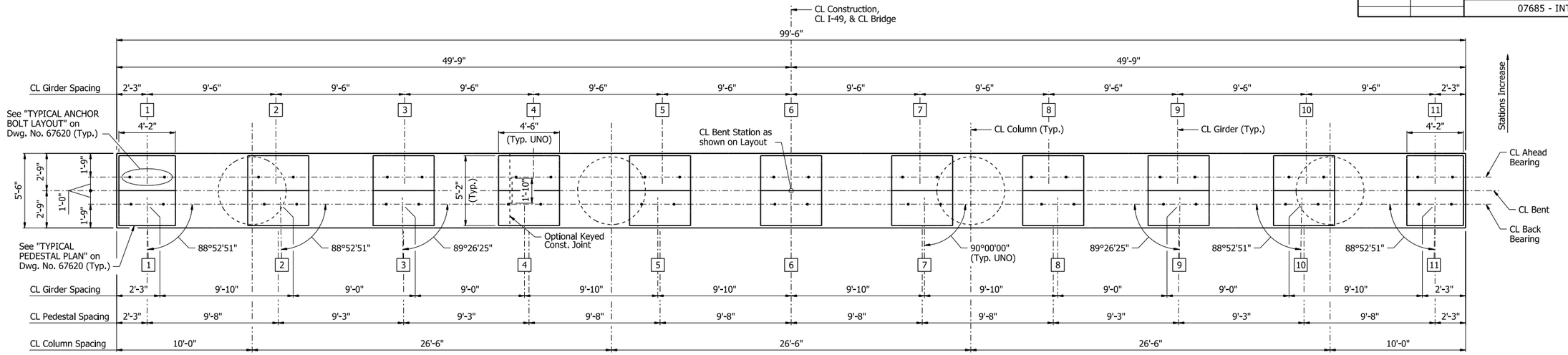
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 11/1/23
CHECKED BY: DJB DATE: 11/8/23
DESIGNED BY: MGG DATE: 8/22/23
FILENAME: b040901216_b83.dgn
SCALE: NO SCALE

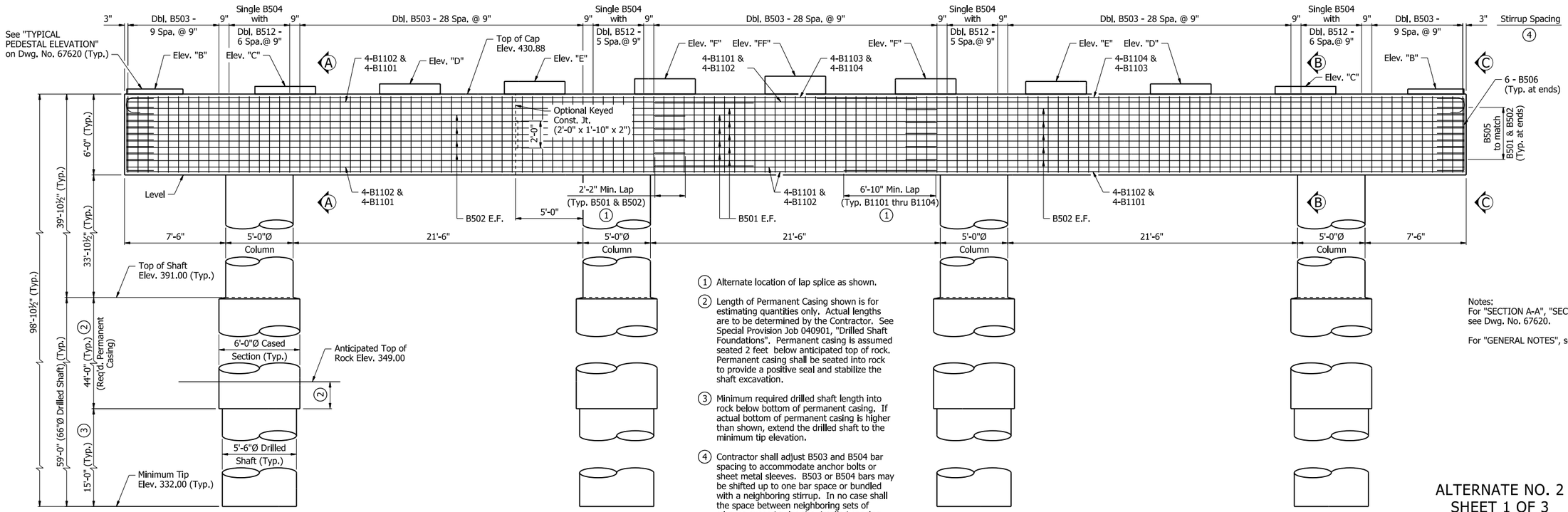
BRIDGE NO. 07685 DRAWING NO. 67618

PRINT DATE: 4/10/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	559	809
		07685 - INT. BENTS - 67619				



PLAN



ELEVATION

(Looking Upstation)

① Alternate location of lap splice as shown.

② Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined by the Contractor. See Special Provision Job 040901, "Drilled Shaft Foundations". Permanent casing is assumed seated 2 feet below anticipated top of rock. Permanent casing shall be seated into rock to provide a positive seal and stabilize the shaft excavation.

③ Minimum required drilled shaft length into rock below bottom of permanent casing. If actual bottom of permanent casing is higher than shown, extend the drilled shaft to the minimum tip elevation.

④ Contractor shall adjust B503 and B504 bar spacing to accommodate anchor bolts or sheet metal sleeves. B503 or B504 bars may be shifted up to one bar space or bundled with a neighboring stirrup. In no case shall the space between neighboring sets of stirrups exceed twice the detailed spacing.

Notes:
For "SECTION A-A", "SECTION B-B", & "VIEW C-C", see Dwg. No. 67620.

For "GENERAL NOTES", see Dwg. No. 67372.

TABLE OF VARIABLES

"B"		"C"		"D"		"E"		"F"		"FF"	
Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing
431.36	431.25	431.56	431.44	431.74	431.63	431.92	431.82	432.11	432.01	432.31	432.20

STATE OF ARKANSAS
W. JOSEPH STURGEON
LICENSED PROFESSIONAL ENGINEER
No. 21697
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 3
DETAILS OF INTERMEDIATE BENT NO. 9
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION

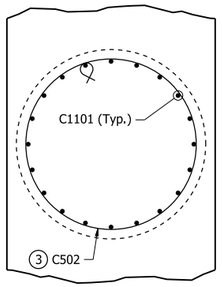
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 10/23/23
CHECKED BY: DJB DATE: 11/6/23
DESIGNED BY: PEG DATE: 8/22/23
FILENAME: b040901216_b91.dgn
SCALE: ¼" = 1'-0"

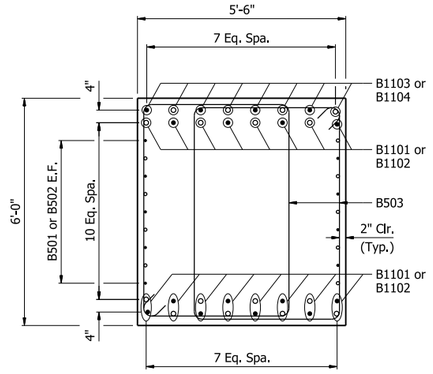
BRIDGE NO. 07685 DRAWING NO. 67619

PRINT DATE: 4/10/2024

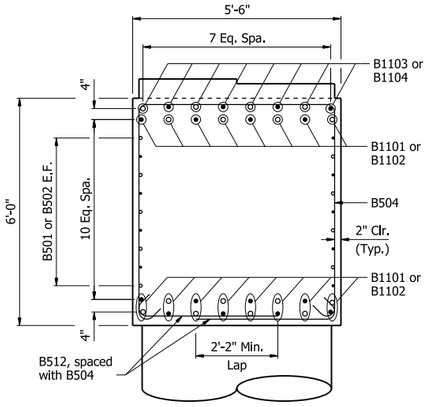
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	560	809
		07685 - INT. BENTS - 67620				



SECTION D-D
½" = 1'-0"
(Cap reinforcing not shown for clarity)

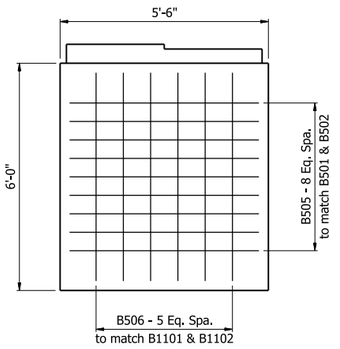


SECTION A-A
½" = 1'-0"

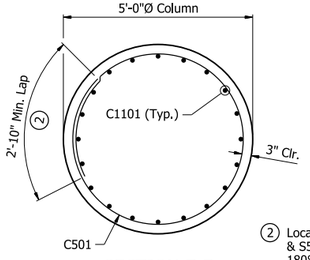


SECTION B-B
½" = 1'-0"
(Pedestal and column reinforcing not shown for clarity)

Note:
Contractor shall adjust B1101 thru B1104 bar spacing to accommodate anchor bolts, sheet metal sleeves, or vertical column steel. Contractor shall maintain a minimum and maximum spacing of 5" and 9", respectively.



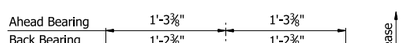
VIEW C-C
½" = 1'-0"



SECTION E-E
½" = 1'-0"

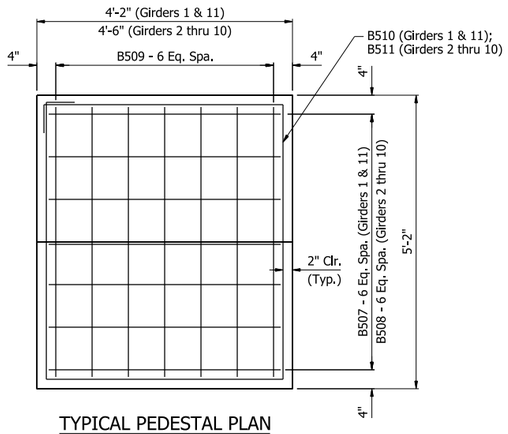
② Location of lap splices in C501 & S501 ties shall be alternated 180° at adjacent ties.

③ Location of end hooks in C502 & S502 ties shall be alternated 180° at adjacent ties.

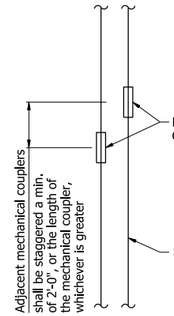


TYPICAL ANCHOR BOLT LAYOUT
1" = 1'-0"

④ Angle between CL Girder and CL Bearing varies by bearing location, as shown in Plan view on Dwg. No. 67619. Position anchor bolts parallel to the CL bearing and CL Bent.



TYPICAL PEDESTAL PLAN
¾" = 1'-0"



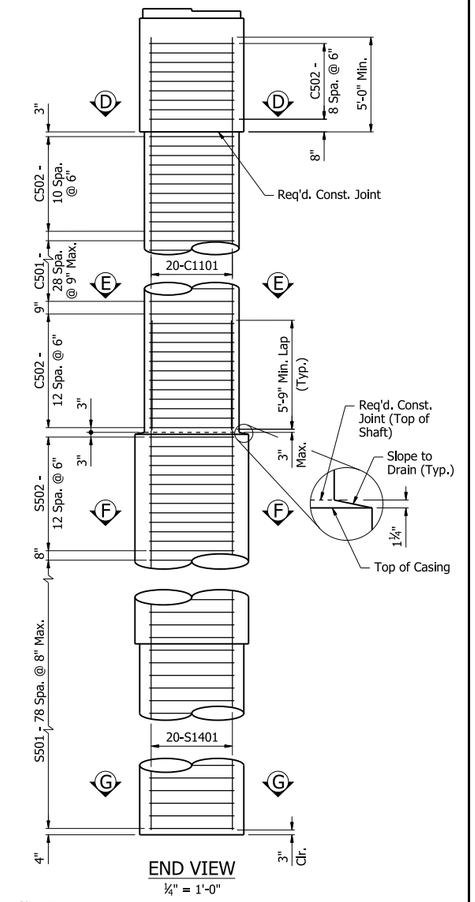
DRILLED SHAFT BAR SPLICE DETAIL
No Scale

MECHANICAL COUPLER AND SPLICE NOTES:
Contractor shall be required to use mechanical couplers to splice reinforcing bars whose lengths given in the Bar List exceed 60'-0". The bars shall be assembled as shown in "DRILLED SHAFT BAR SPLICE DETAIL".

The Contractor may choose location of splices for convenience, so long as no bar to be spliced is less than 5'-0" in length and no closer than 6'-0" from top of shaft.

The Contractor may also elect to splice bars whose lengths are less than 60'-0" to provide ease of construction, so long as the previous mentioned requirements are met.

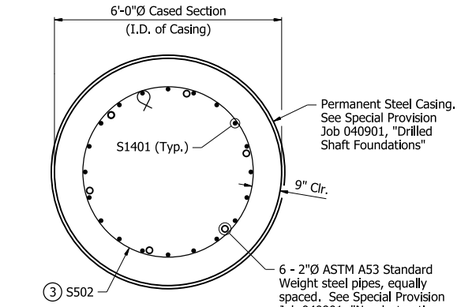
Mechanical couplers shall maintain the clearances shown in "DRILLED SHAFT BAR SPLICE DETAIL". Not more than alternate bars shall be spliced at a given location. Payment for mechanical couplers shall be subsidiary to the item "DRILLED SHAFT (66" DIA.)". The couplers shall develop at least 125% of the specified yield strength of the bar.



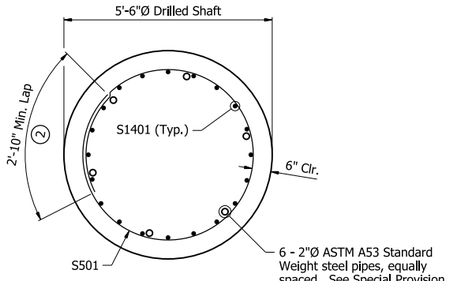
END VIEW
¼" = 1'-0"

Notes:
Dimensions, details, & reinforcing steel shown are typical for all columns and drilled shafts.

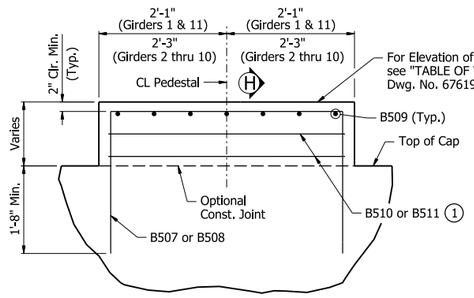
If column, cased section, or drilled shaft length changes during construction, number of ties shall be adjusted accordingly to maintain the maximum spacing of ties in the regions identified above.



SECTION F-F
½" = 1'-0"

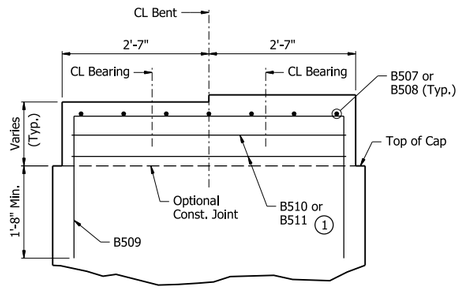


SECTION G-G
½" = 1'-0"



TYPICAL PEDESTAL ELEVATION
¾" = 1'-0"

1 1-B510 or 1-B511 when Pedestal Height is less than 11"; 2-B511 when Pedestal Height is greater than 11"; B511 spaced at 6" Max.



SECTION H-H
¾" = 1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 2 OF 3
DETAILS OF INTERMEDIATE BENT NO. 9
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 10/23/23
CHECKED BY: DJB DATE: 11/6/23
DESIGNED BY: PEG DATE: 8/22/23
FILENAME: b040901216_b92.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67620

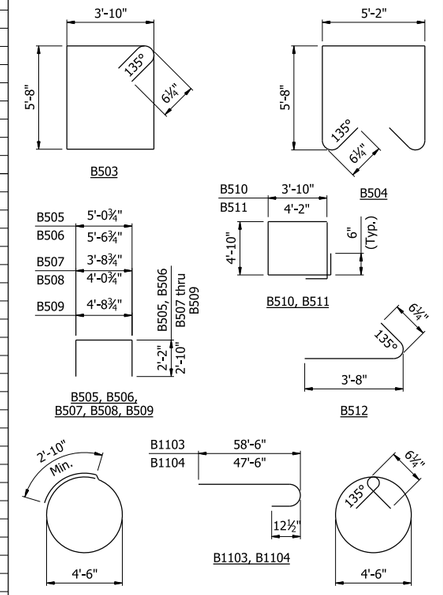
PRINT DATE: 4/10/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	561	809
		07685 - INT. BENTS - 67621				

BAR LIST

	Mark	Number Required	Length	Pin Dia.
	B501	18	60'-0"	Str.
	B502	18	41'-4"	Str.
	B503	214	19'-9"	2½"
	B504	26	17'-4"	2½"
	B505	18	9'-2"	2½"
	B506	12	9'-8"	2½"
	B507	14	9'-2"	2½"
	B508	63	9'-6"	2½"
	B509	77	10'-2"	2½"
	B510	2	17'-10"	2½"
	B511	14	18'-6"	2½"
	B512	52	4'-2"	2½"
	B1101	24	60'-0"	Str.
	B1102	24	46'-0"	Str.
	B1103	8	60'-0"	1¼"
	B1104	8	49'-0"	1¼"
	C501	116	16'-10"	-
	C502	132	15'-4"	2½"
	C1101	80	38'-8"	Str.
(1)	S501	316	16'-10"	-
(1)	S502	52	15'-4"	2½"
(1)	S1401	80	64'-9"	Str.

Bending Diagrams
(Dimensions are out to out of bars)



All bars designated with an "E" suffix are to be epoxy coated.

(1) S1401 longitudinal reinforcement and S501 & S502 tie reinforcement are non-pay items which are subsidiary to item "DRILLED SHAFT (66" DIA.)". Individual lengths shall be determined by the Contractor.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
W. JOSEPH STURGEON
No. 21697
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 3 OF 3
DETAILS OF INTERMEDIATE BENT NO. 9
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

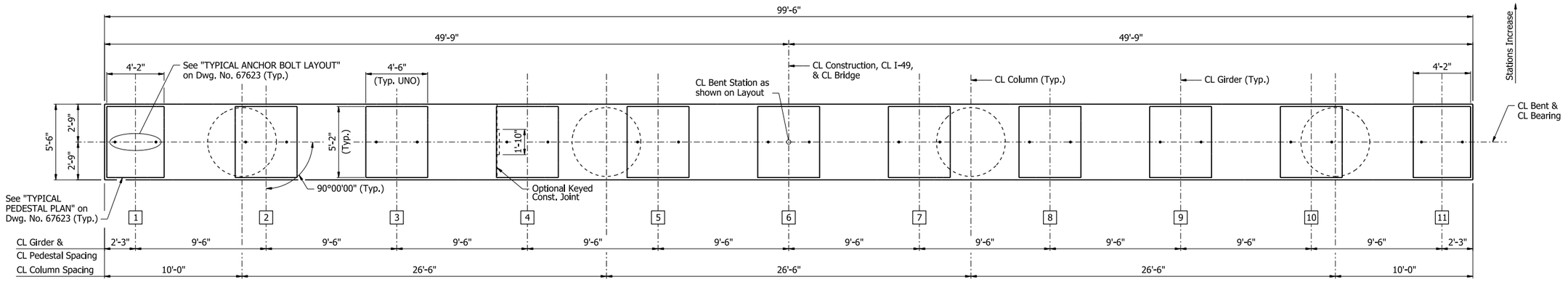
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 10/23/23
CHECKED BY: DJB DATE: 11/6/23
DESIGNED BY: PEG DATE: 8/22/23
FILENAME: b040901216_b93.dgn
SCALE: NO SCALE

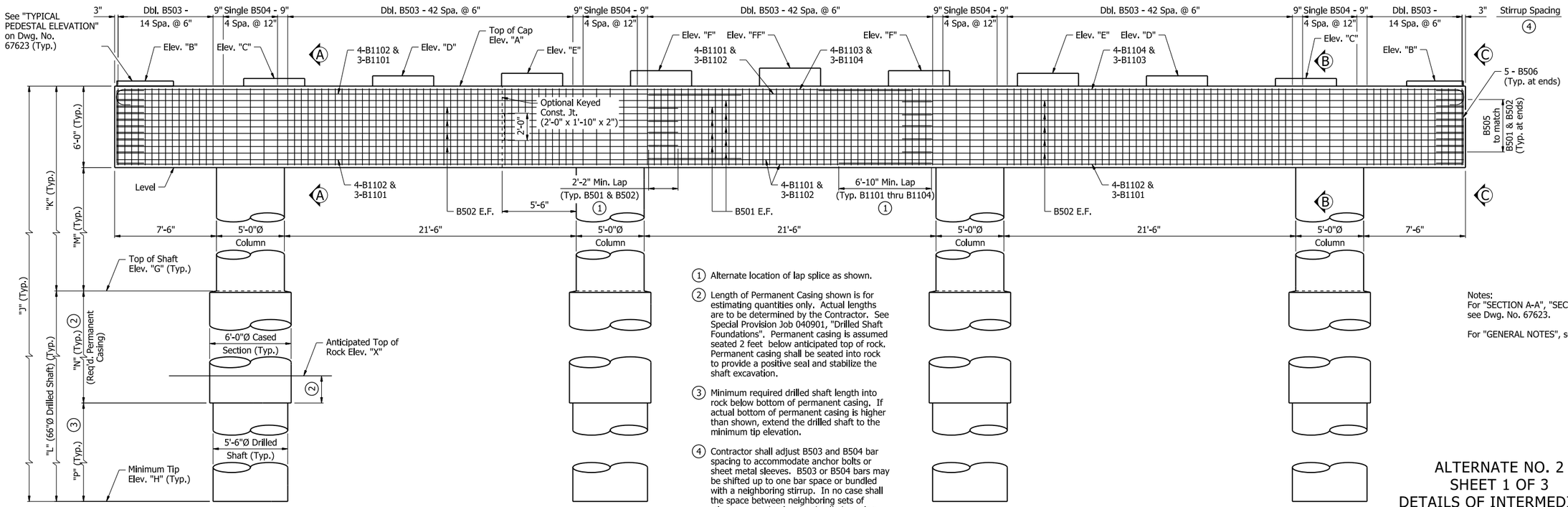
BRIDGE NO. 07685 DRAWING NO. 67621

PRINT DATE: 4/10/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	562	809
		07685 - INT. BENTS - 67622				



PLAN



(1) Alternate location of lap splice as shown.

(2) Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined by the Contractor. See Special Provision Job 040901, "Drilled Shaft Foundations". Permanent casing is assumed seated 2 feet below anticipated top of rock. Permanent casing shall be seated into rock to provide a positive seal and stabilize the shaft excavation.

(3) Minimum required drilled shaft length into rock below bottom of permanent casing. If actual bottom of permanent casing is higher than shown, extend the drilled shaft to the minimum tip elevation.

(4) Contractor shall adjust B503 and B504 bar spacing to accommodate anchor bolts or sheet metal sleeves. B503 or B504 bars may be shifted up to one bar space or bundled with a neighboring stirrup. In no case shall the space between neighboring sets of stirrups exceed twice the detailed spacing.

ELEVATION
(Looking Upstation)

Notes:
For "SECTION A-A", "SECTION B-B", & "VIEW C-C", see Dwg. No. 67623.

For "GENERAL NOTES", see Dwg. No. 67372.

TABLE OF VARIABLES

Bent No.	"A"	"B"	"C"	"D"	"E"	"F"	"FF"	"G"	"H"	"J"	"K"	"L"	"M"	"N"	"P"	"X"
10	431.64	432.01	432.20	432.39	432.58	432.77	432.96	389.00	332.00	99'-7⅝"	42'-7⅝"	57'-0"	36'-7⅝"	42'-0"	15'-0"	349.00
11	431.62	431.99	432.18	432.37	432.56	432.75	432.94	388.00	330.00	101'-7½"	43'-7½"	58'-0"	37'-7½"	43'-0"	15'-0"	347.00
12	430.87	431.25	431.44	431.63	431.82	432.01	432.20	395.00	327.00	103'-10½"	35'-10½"	68'-0"	29'-10½"	53'-0"	15'-0"	344.00

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 3
DETAILS OF INTERMEDIATE
BENT NOS. 10, 11, & 12
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

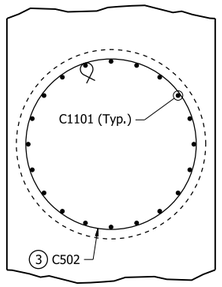
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 10/31/23
CHECKED BY: DJB DATE: 11/6/23
DESIGNED BY: MGG DATE: 8/22/23
FILENAME: b040901216_b101.dgn
SCALE: ¼" = 1'-0"

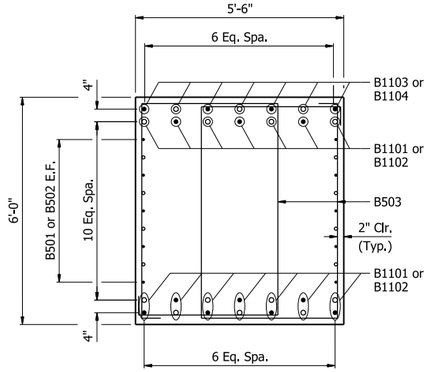
BRIDGE NO. 07685 DRAWING NO. 67622

PRINT DATE: 4/10/2024

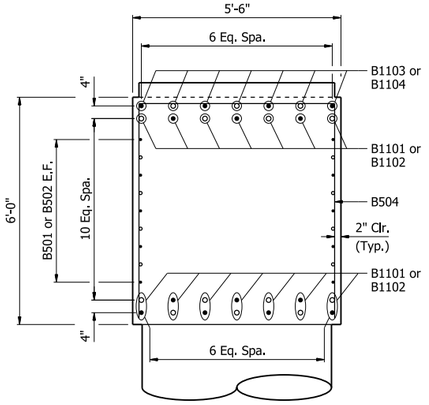
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	563	809
		07685 - INT. BENTS - 67623				



SECTION D-D
½" = 1'-0"
(Cap reinforcing not shown for clarity)

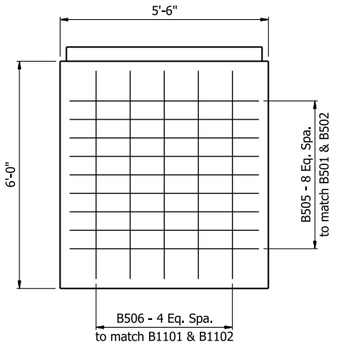


SECTION A-A
½" = 1'-0"



SECTION B-B
½" = 1'-0"
(Pedestal and column reinforcing not shown for clarity)

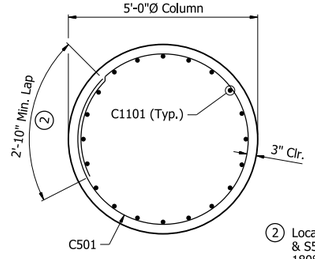
Note:
Contractor shall adjust B1101 thru B1104 bar spacing to accommodate anchor bolts, sheet metal sleeves, or vertical column steel. Contractor shall maintain a minimum and maximum spacing of 5" and 11", respectively.



VIEW C-C
½" = 1'-0"

Notes:
For locations of "SECTION A-A", "SECTION B-B", & "VIEW C-C", see Dwg. No. 67622.

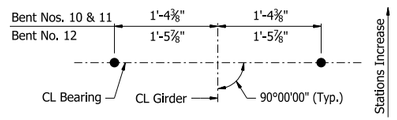
For "DETAILS OF ELASTOMERIC BEARINGS", see Dwg. Nos. 67704 and 67705.



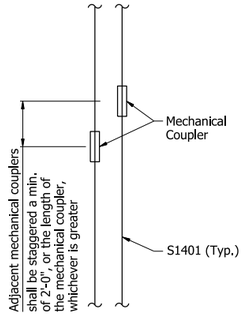
SECTION E-E
½" = 1'-0"

2 Location of lap splices in C501 & S501 ties shall be alternated 180° at adjacent ties.

3 Location of end hooks in C502 & S502 ties shall be alternated 180° at adjacent ties.



TYPICAL ANCHOR BOLT LAYOUT
1" = 1'-0"



DRILLED SHAFT BAR SPLICE DETAIL
No Scale

MECHANICAL COUPLER AND SPLICE NOTES:
Contractor shall be required to use mechanical couplers to splice reinforcing bars whose lengths given in the Bar List exceed 60'-0". The bars shall be assembled as shown in "DRILLED SHAFT BAR SPLICE DETAIL".

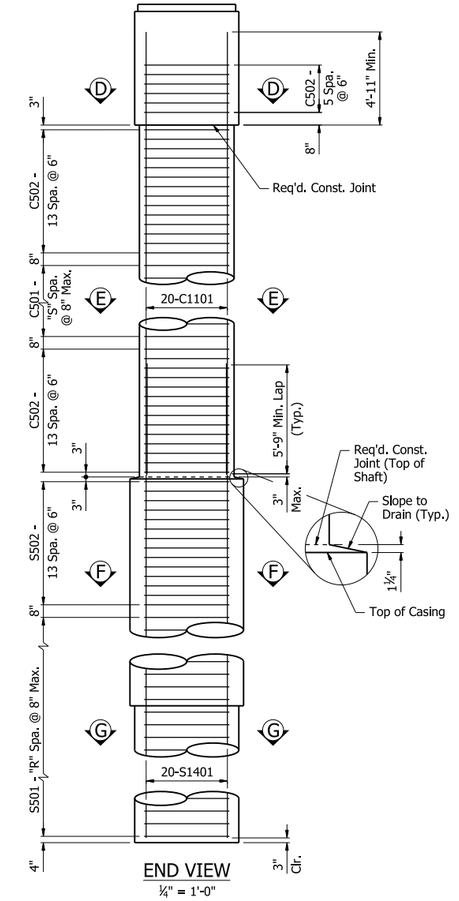
The Contractor may choose location of splices for convenience, so long as no bar to be spliced is less than 5'-0" in length and no closer than 6'-2" from top of shaft.

The Contractor may also elect to splice bars whose lengths are less than 60'-0" to provide ease of construction, so long as the previous mentioned requirements are met.

Mechanical couplers shall maintain the clearances shown in "DRILLED SHAFT BAR SPLICE DETAIL". Not more than alternate bars shall be spliced at a given location. Payment for mechanical couplers shall be subsidiary to the item "DRILLED SHAFT (66" DIA.)". The couplers shall develop at least 125% of the specified yield strength of the bar.

TABLE OF VARIABLES

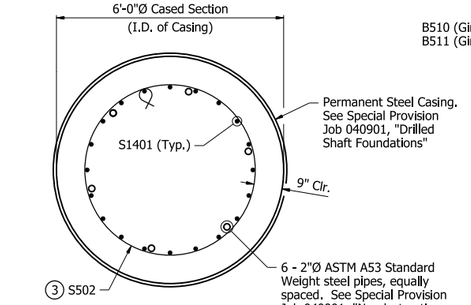
Bent No.	"R"	"S"
10	74	33
11	76	35
12	91	23



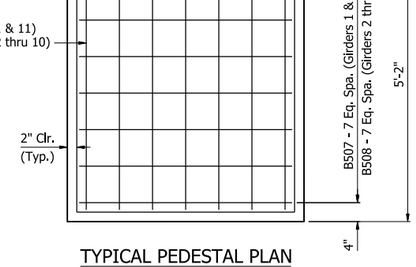
END VIEW
¼" = 1'-0"

Notes:
Dimensions, details, & reinforcing steel shown are typical for all columns and drilled shafts.

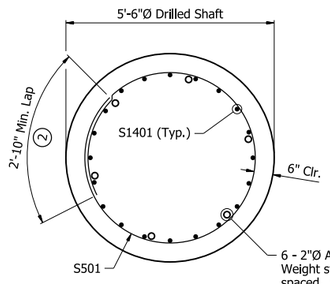
If column, cased section, or drilled shaft length changes during construction, number of ties shall be adjusted accordingly to maintain the maximum spacing of ties in the regions identified above.



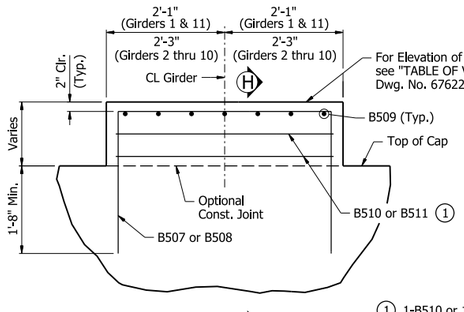
SECTION F-F
½" = 1'-0"



TYPICAL PEDESTAL PLAN
¾" = 1'-0"

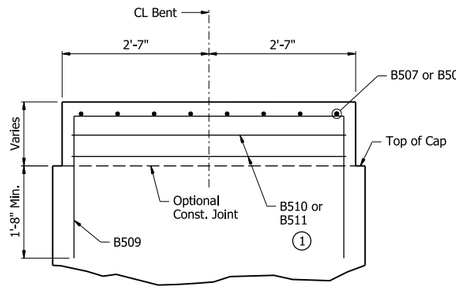


SECTION G-G
½" = 1'-0"



TYPICAL PEDESTAL ELEVATION
¾" = 1'-0"

1 1-B510 or 1-B511 when Pedestal Height is less than 11"; 2-B511 when Pedestal Height is greater than 11"; B511 spaced at 6" Max.



SECTION H-H
¾" = 1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 2 OF 3
DETAILS OF INTERMEDIATE BENT NOS. 10, 11, & 12
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 10/31/23
CHECKED BY: DJB DATE: 11/6/23
DESIGNED BY: MGG DATE: 8/22/23
FILENAME: b040901216_b102.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67623

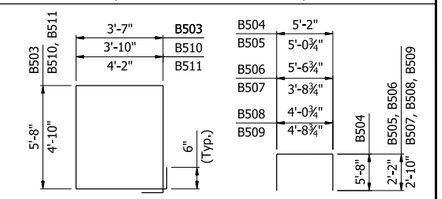
PRINT DATE: 4/10/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	564	809
		07685 - INT. BENTS - 67624				

BAR LIST - PER BENT

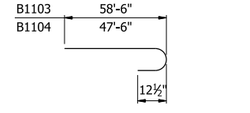
Mark	Number Required	Length	Pin Dia.
B501	18	60'-0"	Str.
B502	18	41'-4"	Str.
B503	318	19'-0"	2½"
B504	20	16'-4"	2½"
B505	18	9'-2"	2½"
B506	10	9'-8"	2½"
B507	16	9'-2"	2½"
B508	72	9'-6"	2½"
B509	77	10'-2"	2½"
B510	2	17'-10"	2½"
B511	14	18'-6"	2½"
B1101	21	60'-0"	Str.
B1102	21	46'-0"	Str.
B1103	7	60'-0"	1¼"
B1104	7	49'-0"	1¼"
C501	"CN"	16'-10"	-
C502	136	15'-4"	2½"
C1101	80	"CL"	Str.
(1) S501	"SN"	16'-10"	-
(1) S502	56	15'-4"	2½"
(1) S1401	80	"SL"	Str.

Bending Diagrams
(Dimensions are out to out of bars)

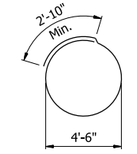


B503, B510, B511

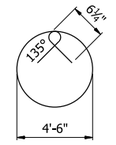
B504, B505, B506, B507, B508, B509



B1103, B1104



C501, S501



C502, S502

All bars designated with an "E" suffix are to be epoxy coated.

(1) S1401 longitudinal reinforcement and S501 & S502 tie reinforcement are non-pay items which are subsidiary to item "DRILLED SHAFT (66" DIA.)". Individual lengths shall be determined by the Contractor.

TABLE OF VARIABLES

Bent No.	"CN"	"CL"	"SN"	"SL"
10	136	41'-4"	300	62'-9"
11	144	42'-4"	308	63'-9"
12	96	34'-7"	368	73'-9"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
W. JOSEPH STURGEON
No. 21697

4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 3 OF 3
DETAILS OF INTERMEDIATE
BENT NOS. 10, 11, & 12
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

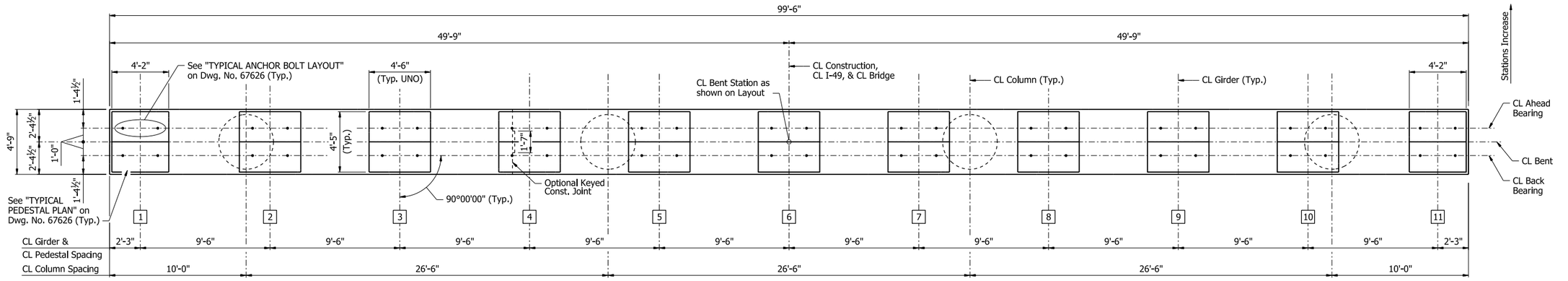
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 10/31/23
CHECKED BY: DJB DATE: 11/6/23
DESIGNED BY: MGG DATE: 8/22/23
FILENAME: b040901216_b103.dgn
SCALE: NO SCALE

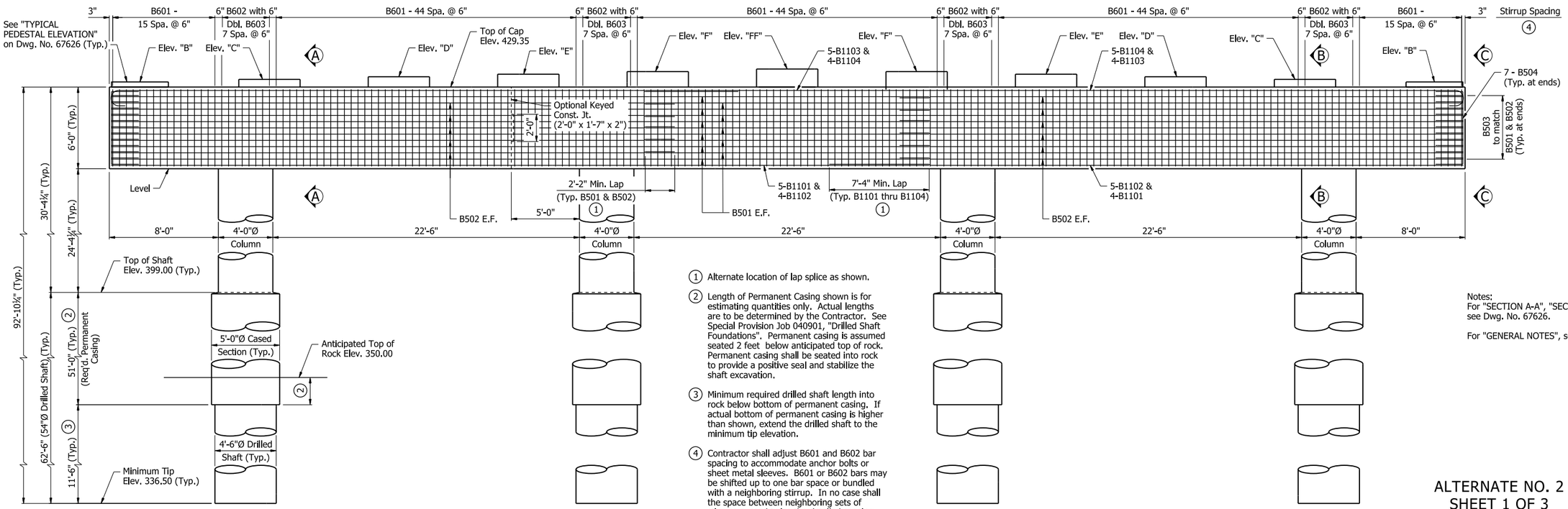
BRIDGE NO. 07685 DRAWING NO. 67624

PRINT DATE: 4/10/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	565	809
		07685 - INT. BENTS - 67625				



PLAN



① Alternate location of lap splice as shown.

② Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined by the Contractor. See Special Provision Job 040901, "Drilled Shaft Foundations". Permanent casing is assumed seated 2 feet below anticipated top of rock. Permanent casing shall be seated into rock to provide a positive seal and stabilize the shaft excavation.

③ Minimum required drilled shaft length into rock below bottom of permanent casing. If actual bottom of permanent casing is higher than shown, extend the drilled shaft to the minimum tip elevation.

④ Contractor shall adjust B601 and B602 bar spacing to accommodate anchor bolts or sheet metal sleeves. B601 or B602 bars may be shifted up to one bar space or bundled with a neighboring stirrup. In no case shall the space between neighboring sets of stirrups exceed twice the detailed spacing.

ELEVATION
(Looking Upstation)

Notes:
For "SECTION A-A", "SECTION B-B", & "VIEW C-C", see Dwg. No. 67626.

For "GENERAL NOTES", see Dwg. No. 67372.

TABLE OF VARIABLES

"B"		"C"		"D"		"E"		"F"		"FF"	
Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing	Back Bearing	Ahead Bearing
429.73	429.86	429.92	430.05	430.11	430.24	430.30	430.43	430.49	430.62	430.68	430.81

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
W. JOSEPH STURGEON
No. 21697
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 3
DETAILS OF INTERMEDIATE BENT NO. 13
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

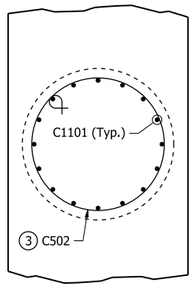
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MGG DATE: 11/7/23
CHECKED BY: DJB DATE: 11/16/23
DESIGNED BY: MGG DATE: 8/28/23
FILENAME: b040901216_b131.dgn
SCALE: ¼" = 1'-0"

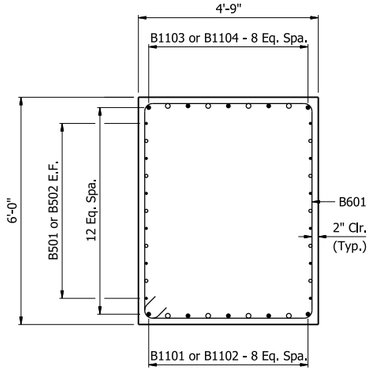
BRIDGE NO. 07685 DRAWING NO. 67625

PRINT DATE: 4/10/2024

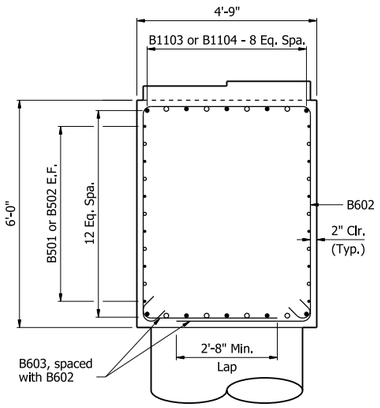
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	566	809
		07685 - INT. BENTS - 67626				



SECTION D-D
½" = 1'-0"
(Cap reinforcing not shown for clarity)

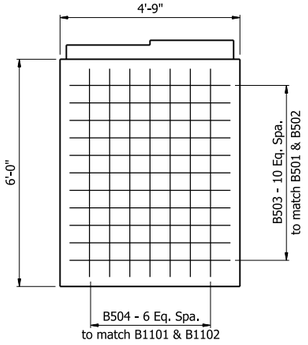


SECTION A-A
½" = 1'-0"



SECTION B-B
½" = 1'-0"
(Pedestal and column reinforcing not shown for clarity)

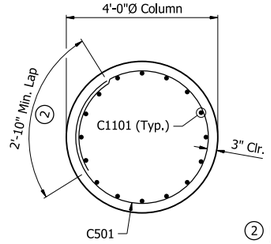
Note:
Contractor shall adjust B1101 thru B1104 bar spacing to accommodate anchor bolts, sheet metal sleeves, or vertical column steel. Contractor shall maintain a minimum and maximum spacing of 5" and 9", respectively. B1101 thru B1104 bars may be bundled as required to maintain the minimum spacing so long as the maximum spacing is not exceeded.



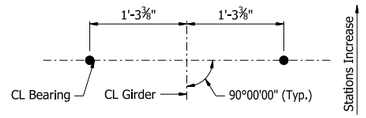
VIEW C-C
½" = 1'-0"

Notes:
For locations of "SECTION A-A", "SECTION B-B", & "VIEW C-C", see Dwg. No. 67625.

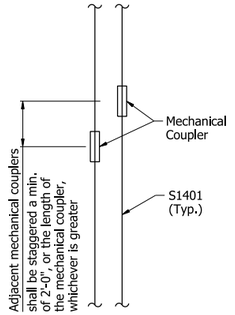
For "DETAILS OF ELASTOMERIC BEARINGS", see Dwg. Nos. 67704 and 67705.



SECTION E-E
½" = 1'-0"



TYPICAL ANCHOR BOLT LAYOUT
1" = 1'-0"



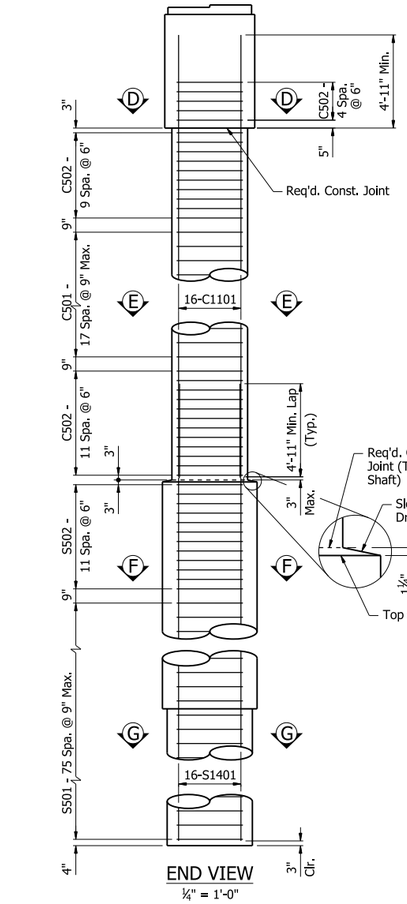
DRILLED SHAFT BAR SPLICE DETAIL
No Scale

MECHANICAL COUPLER AND SPLICE NOTES:
Contractor shall be required to use mechanical couplers to splice reinforcing bars whose lengths given in the Bar List exceed 60'-0". The bars shall be assembled as shown in "DRILLED SHAFT BAR SPLICE DETAIL".

The Contractor may choose location of splices for convenience, so long as no bar to be spliced is less than 5'-0" in length and no closer than 4'-1" from top of shaft.

The Contractor may also elect to splice bars whose lengths are less than 60'-0" to provide ease of construction, so long as the previous mentioned requirements are met.

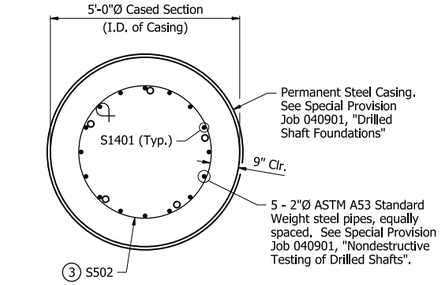
Mechanical couplers shall maintain the clearances shown in "DRILLED SHAFT BAR SPLICE DETAIL". Not more than alternate bars shall be spliced at a given location. Payment for mechanical couplers shall be subsidiary to the item "DRILLED SHAFT (54" DIA.)". The couplers shall develop at least 125% of the specified yield strength of the bar.



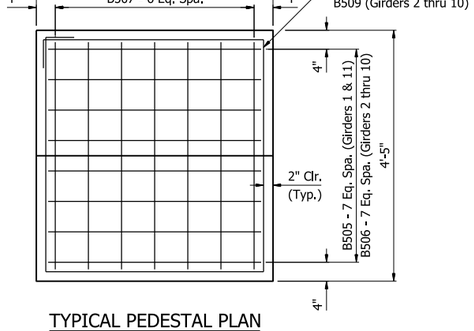
END VIEW
¼" = 1'-0"

Notes:
Dimensions, details, & reinforcing steel shown are typical for all columns and drilled shafts.

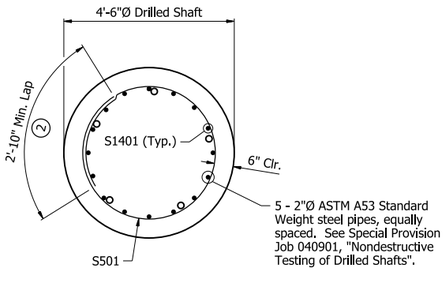
If column, cased section, or drilled shaft length changes during construction, number of ties shall be adjusted accordingly to maintain the maximum spacing of ties in the regions identified above.



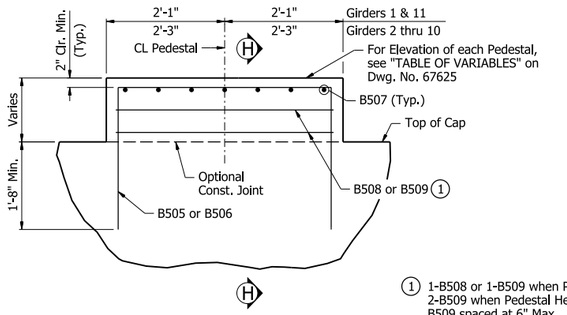
SECTION F-F
½" = 1'-0"



TYPICAL PEDESTAL PLAN
¾" = 1'-0"

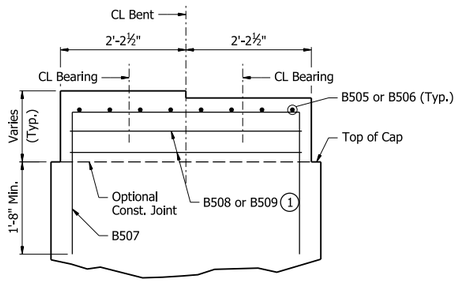


SECTION G-G
½" = 1'-0"



TYPICAL PEDESTAL ELEVATION
¾" = 1'-0"

1 1-B508 or 1-B509 when Pedestal Height is less than 11";
2-B509 when Pedestal Height is greater than 11";
B509 spaced at 6" Max.



SECTION H-H
¾" = 1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 2 OF 3
DETAILS OF INTERMEDIATE BENT NO. 13
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MGG DATE: 11/7/23
CHECKED BY: DJB DATE: 11/16/23
DESIGNED BY: MGG DATE: 8/28/23
FILENAME: b040901216_b132.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67626

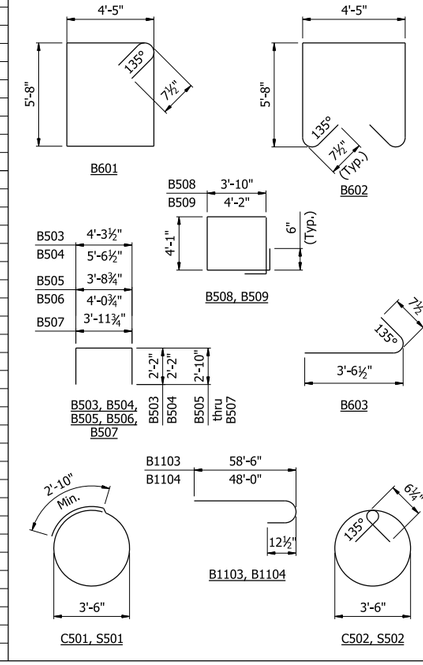
PRINT DATE: 4/10/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	567	809
		07685 - INT. BENTS - 67627				

BAR LIST

	Mark	Number Required	Length	Pin Dia.
	B501	22	60'-0"	Str.
	B502	22	41'-4"	Str.
	B503	22	8'-5"	2½"
	B504	14	9'-8"	2½"
	B505	16	9'-2"	2½"
	B506	72	9'-6"	2½"
	B507	77	9'-5"	2½"
	B508	2	16'-4"	2½"
	B509	14	17'-0"	2½"
	B601	167	21'-0"	4½"
	B602	32	16'-9"	4½"
	B603	64	4'-2"	4½"
	B1101	9	60'-0"	Str.
	B1102	9	46'-6"	Str.
	B1103	9	60'-0"	11¼"
	B1104	9	49'-6"	11¼"
	C501	72	13'-8"	-
	C502	108	12'-2"	2½"
	C1101	64	29'-1"	Str.
(1)	S501	304	13'-8"	-
(1)	S502	48	12'-2"	2½"
(1)	S1401	64	67'-5"	Str.

Bending Diagrams
(Dimensions are out to out of bars)



All bars designated with an "E" suffix are to be epoxy coated.

(1) S1401 longitudinal reinforcement and S501 & S502 tie reinforcement are non-pay items which are subsidiary to item "DRILLED SHAFT (54" DIA.)". Individual lengths shall be determined by the Contractor.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 21697
W. JOSEPH STURGEON

4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 3 OF 3
DETAILS OF INTERMEDIATE BENT NO. 13
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

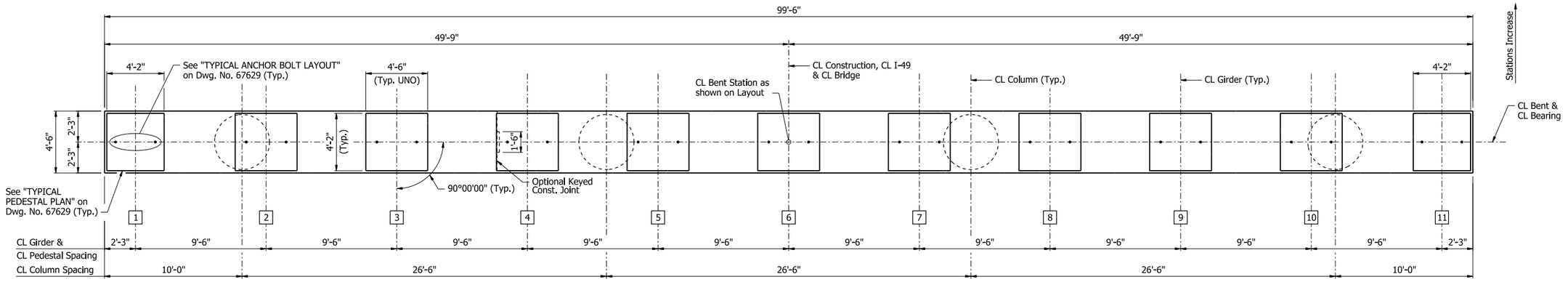
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MGG DATE: 11/7/23
CHECKED BY: DJB DATE: 11/16/23
DESIGNED BY: MGG DATE: 8/28/23
FILENAME: b040901216_b133.dgn
SCALE: NO SCALE

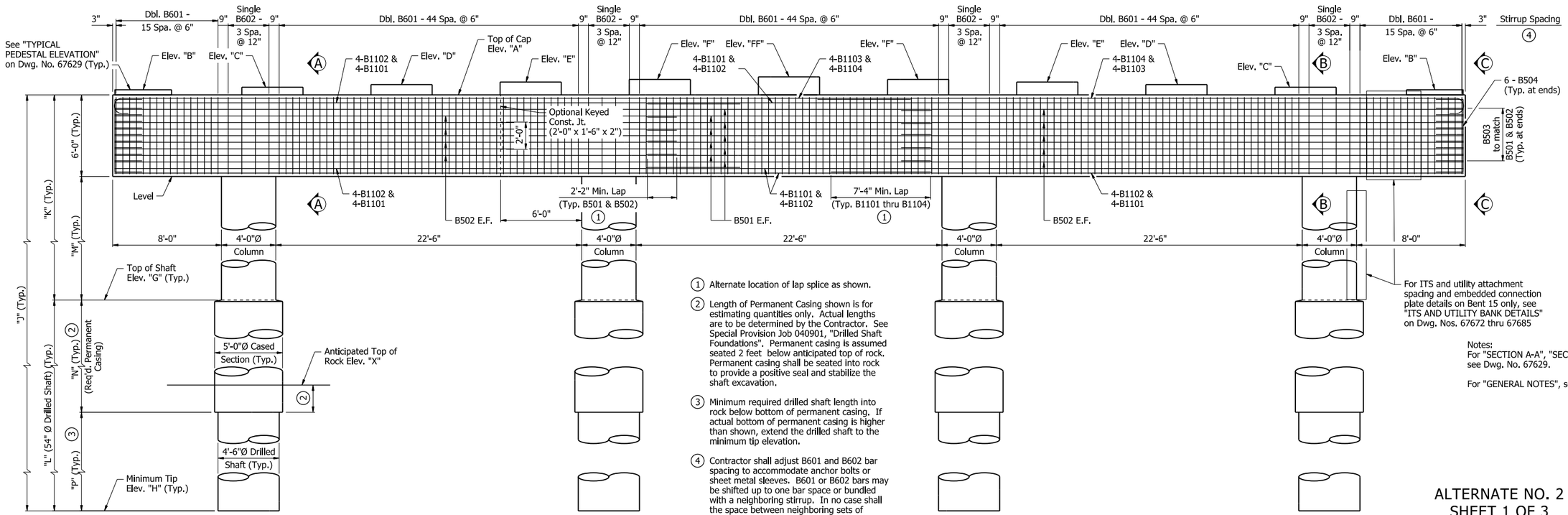
BRIDGE NO. 07685 DRAWING NO. 67627

PRINT DATE: 4/10/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	568	809
		07685 - INT. BENTS - 67628				



PLAN



(1) Alternate location of lap splice as shown.

(2) Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined by the Contractor. See Special Provision Job 040901, "Drilled Shaft Foundations". Permanent casing is assumed seated 2 feet below anticipated top of rock. Permanent casing shall be seated into rock to provide a positive seal and stabilize the shaft excavation.

(3) Minimum required drilled shaft length into rock below bottom of permanent casing. If actual bottom of permanent casing is higher than shown, extend the drilled shaft to the minimum tip elevation.

(4) Contractor shall adjust B601 and B602 bar spacing to accommodate anchor bolts or sheet metal sleeves. B601 or B602 bars may be shifted up to one bar space or bundled with a neighboring stirrup. In no case shall the space between neighboring sets of stirrups exceed twice the detailed spacing.

Notes:
For "SECTION A-A", "SECTION B-B", & "VIEW C-C", see Dwg. No. 67629.

For "GENERAL NOTES", see Dwg. No. 67372.

ELEVATION
(Looking Upstation)

TABLE OF VARIABLES

Bent No.	"A"	"B"	"C"	"D"	"E"	"F"	"FF"	"G"	"H"	"J"	"K"	"L"	"M"	"N"	"P"	"X"
14	427.80	428.18	428.37	428.56	428.75	428.94	429.13	399.00	333.50	94'-3⅜"	28'-9⅝"	65'-6"	22'-9⅝"	54'-0"	11'-6"	347.00
15	425.14	425.51	425.70	425.89	426.08	426.27	426.46	398.00	336.50	88'-7⅝"	27'-1⅝"	61'-6"	21'-1⅝"	50'-0"	11'-6"	350.00

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 3
DETAILS OF INTERMEDIATE BENT NOS. 14 & 15
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

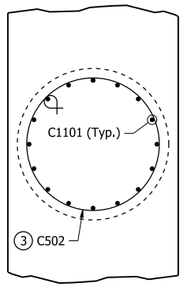
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 11/4/23
CHECKED BY: DJB DATE: 11/8/23
DESIGNED BY: MGG DATE: 8/28/23
FILENAME: b040901216_b141.dgn
SCALE: ¼" = 1'-0"

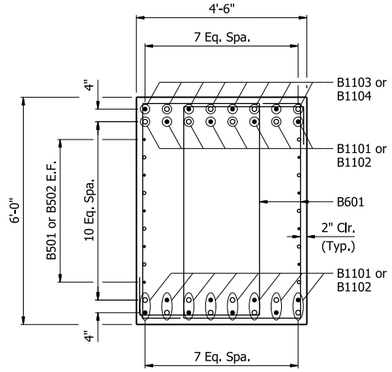
BRIDGE NO. 07685 DRAWING NO. 67628

PRINT DATE: 4/10/2024

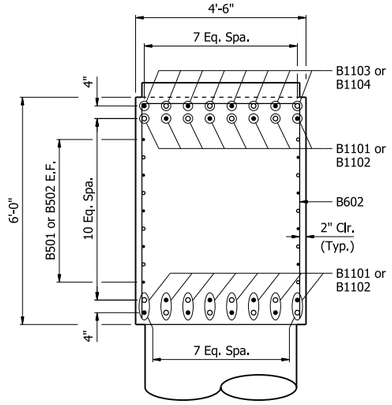
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	569	809
		07685 - INT. BENTS - 67629				



SECTION D-D
½" = 1'-0"
(Cap reinforcing not shown for clarity)

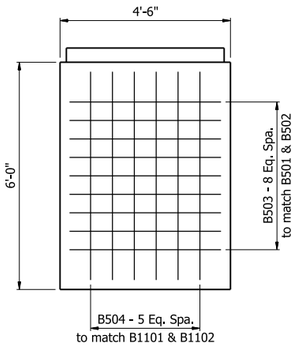


SECTION A-A
½" = 1'-0"



SECTION B-B
½" = 1'-0"
(Pedestal and column reinforcing not shown for clarity)

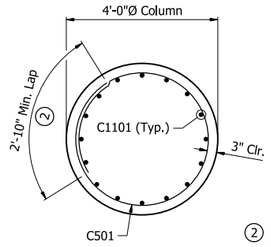
Note:
Contractor shall adjust B1101 thru B1104 bar spacing to accommodate anchor bolts, sheet metal sleeves, or vertical column steel. Contractor shall maintain a minimum and maximum spacing of 5" and 9", respectively.



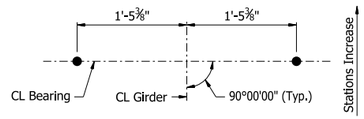
VIEW C-C
½" = 1'-0"

Notes:
For locations of "SECTION A-A", "SECTION B-B", & "VIEW C-C", see Dwg. No. 67628.

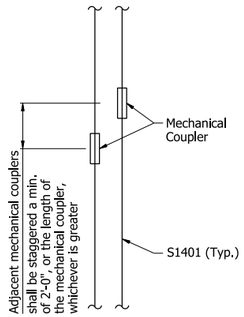
For "DETAILS OF ELASTOMERIC BEARINGS", see Dwg. Nos. 67704 and 67705.



SECTION E-E
½" = 1'-0"



TYPICAL ANCHOR BOLT LAYOUT
1" = 1'-0"



DRILLED SHAFT BAR SPLICE DETAIL
No Scale

MECHANICAL COUPLER AND SPLICE NOTES;
Contractor shall be required to use mechanical couplers to splice reinforcing bars whose lengths given in the Bar List exceed 60'-0". The bars shall be assembled as shown in "DRILLED SHAFT BAR SPLICE DETAIL".

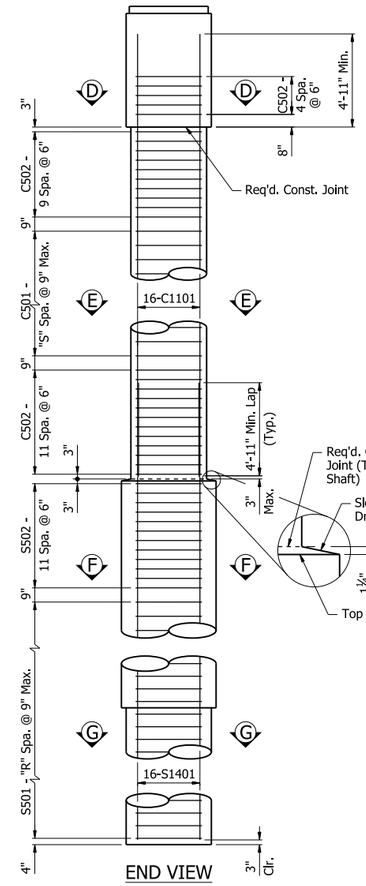
The Contractor may choose location of splices for convenience, so long as no bar to be spliced is less than 5'-0" in length and no closer than 5'-2" from top of shaft.

The Contractor may also elect to splice bars whose lengths are less than 60'-0" to provide ease of construction, so long as the previous mentioned requirements are met.

Mechanical couplers shall maintain the clearances shown in "DRILLED SHAFT BAR SPLICE DETAIL". Not more than alternate bars shall be spliced at a given location. Payment for mechanical couplers shall be subsidiary to the item "DRILLED SHAFT (54" DIA.)". The couplers shall develop at least 125% of the specified yield strength of the bar.

TABLE OF VARIABLES

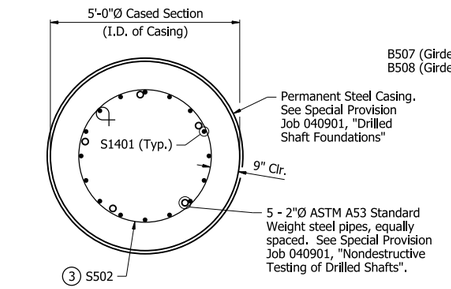
Bent No.	"R"	"S"
14	79	15
15	73	13



END VIEW
¼" = 1'-0"

Notes:
Dimensions, details, & reinforcing steel shown are typical for all columns and drilled shafts.

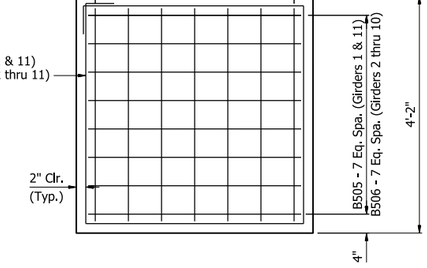
If column, cased section, or drilled shaft length changes during construction, number of ties shall be adjusted accordingly to maintain the maximum spacing of ties in the regions identified above.



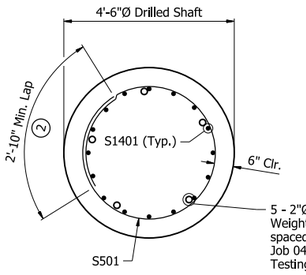
SECTION F-F
½" = 1'-0"

2 Location of lap splices in C501 & S501 ties shall be alternated 180° at adjacent ties.

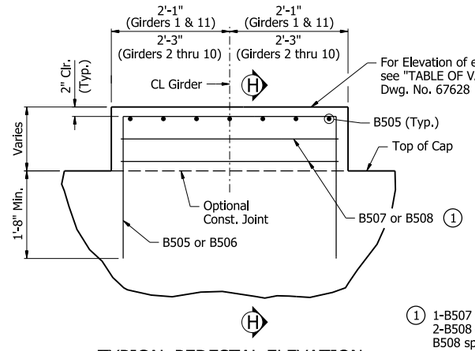
3 Location of end hooks in C502 & S502 ties shall be alternated 180° at adjacent ties.



TYPICAL PEDESTAL PLAN
¾" = 1'-0"

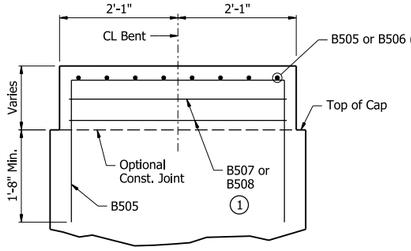


SECTION G-G
½" = 1'-0"



TYPICAL PEDESTAL ELEVATION
¾" = 1'-0"

1 1-B507 or 1-B508 when Pedestal Height is less than 11";
2-B508 when Pedestal Height is greater than 11";
B508 spaced at 6" Max.



SECTION H-H
¾" = 1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 21697
W. JOSEPH STURGEON
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 2 OF 3
DETAILS OF INTERMEDIATE BENT NOS. 14 & 15
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 11/4/23
CHECKED BY: DJB DATE: 11/8/23
DESIGNED BY: MGG DATE: 8/28/23
FILENAME: b040901216_b142.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67629

PRINT DATE: 4/10/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	570	809
		07685 - INT. BENTS - 67630				

BAR LIST - PER BENT

	Mark	Number Required	Length	Pin Dia.
	B501	18	60'-0"	Str.
	B502	18	41'-4"	Str.
	B503	18	8'-2"	2½"
	B504	12	9'-8"	2½"
	B505	93	9'-2"	2½"
	B506	72	9'-6"	2½"
	B507	2	15'-10"	2½"
	B508	14	16'-6"	2½"
	B601	334	18'-8"	4½"
	B602	16	15'-2"	4½"
	B1101	24	60'-0"	Str.
	B1102	24	46'-0"	Str.
	B1103	8	60'-0"	11¼"
	B1104	8	49'-0"	11¼"
	C501	"CN"	13'-8"	-
	C502	108	12'-2"	2½"
	C1101	64	"CL"	Str.
(1)	S501	"SN"	13'-8"	-
(1)	S502	48	12'-2"	2½"
(1)	S1401	64	"SL"	Str.

Bending Diagrams (Dimensions are out to out of bars)

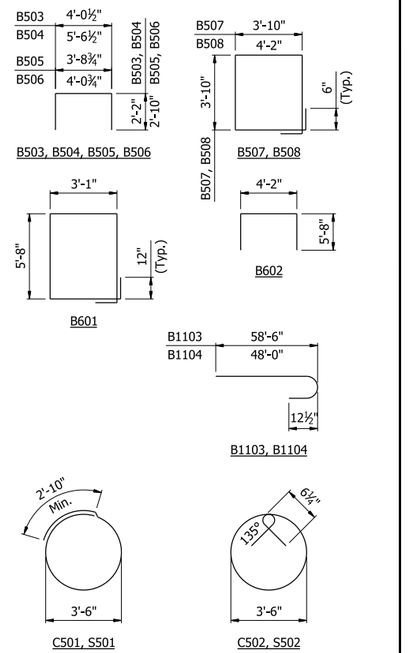


TABLE OF VARIABLES

Bent No.	"CN"	"CL"	"SN"	"SL"
14	64	27'-6"	320	70'-5"
15	56	25'-10"	296	66'-5"

All bars designated with an "E" suffix are to be epoxy coated.

(1) S1401 longitudinal reinforcement and S501 & S502 tie reinforcement are non-pay items which are subsidiary to item "DRILLED SHAFT (54" DIA.)". Individual lengths shall be determined by the Contractor.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 21697
W. JOSEPH STURGEON

4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 3 OF 3
DETAILS OF INTERMEDIATE BENT NOS. 14 & 15
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

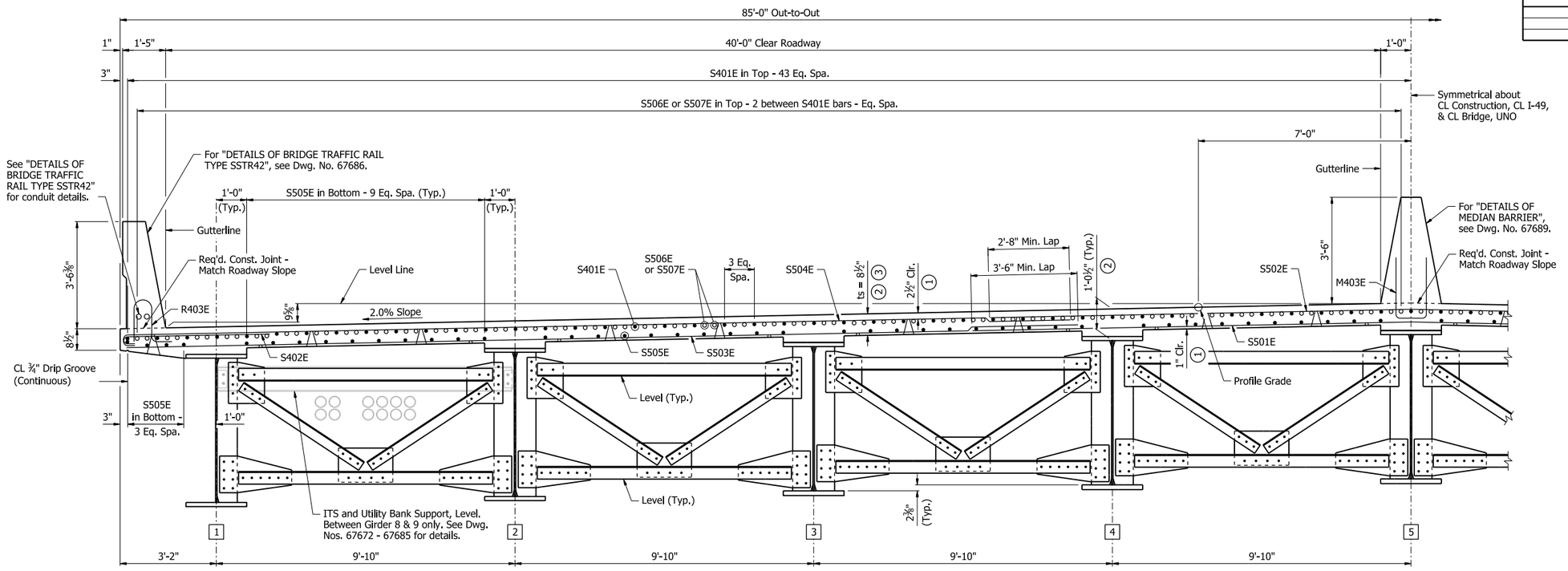
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 11/4/23
CHECKED BY: DJB DATE: 11/8/23
DESIGNED BY: MGG DATE: 8/28/23
FILENAME: b040901216_b143.dgn
SCALE: NO SCALE

BRIDGE NO. 07685 DRAWING NO. 67630

PRINT DATE: 4/10/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	571	809
		07685 - UNIT 1 - 67631				



TYPICAL ROADWAY SECTION
(Looking Upstation)
½" = 1'-0"

Notes:
For details of Bridge Finishes and Protective Surface Treatment, see Dwg No. 67372.

For "HALF REINFORCING PLAN AND POURING SEQUENCE", see Dwg. No. 67638.

For "COMMON DETAILS OF SECTIONS NEAR JOINTS", see Dwg. No. 67691.

For K-Frame details, see Dwg. Nos. 67635 & 67636.

(1) Tolerance: Minus = ¼"; Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE".

Bar positions or clearances from the forms shall be maintained by means of stays, ties, hangers, or other approved devices per Subsection 804.06. Placement of slab bolsters or high-chairs with full-length lower runners directly on removable deck forms will not be allowed.

(2) Haunch dimensions may vary within the following limits to maintain the grade and slab thickness tolerance:

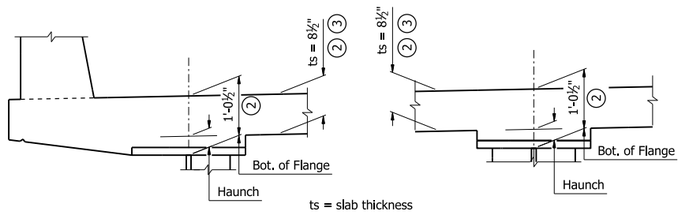
Top Flange	Haunch Adjustment Tolerance	
	Plus	Minus
1" x 13"	1⅛"	1⅛"
1" x 16"	1¾"	1¾"
1½" x 16"	2¼"	1¼"
1⅝" x 24"	2⅜"	1⅛"

No increase in concrete and structural steel quantities will be made to maintain tolerances. Tolerances shown are applicable for both removable deck forming and permanent steel deck forms. Payment for concrete shall be based on removable deck forming.

(3) Tolerance: Minus = ¼"; Plus = ½". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

SLAB REINFORCING:
Longitudinal: S401E in Top placed as shown
S506E or S507E In Top placed as shown over Intermediate Bents
S505E in Bottom placed as shown

Transverse: Alternate S502E and S504E in Top @ 6" Max.
Alternate S501E and S503E in Bottom @ 7½" Max.
S402E in Top @ 12" Max., Bundled with S502E or S504E



ADJUSTMENT FOR SLAB THICKNESS TOLERANCE
¾" = 1'-0"

STATE OF ARKANSAS
ALLIE WAGNER
PROFESSIONAL ENGINEER
★★★
No. 22390
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 9
DETAILS OF 520'-0" CONTINUOUS PLATE GIRDER UNIT 1
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

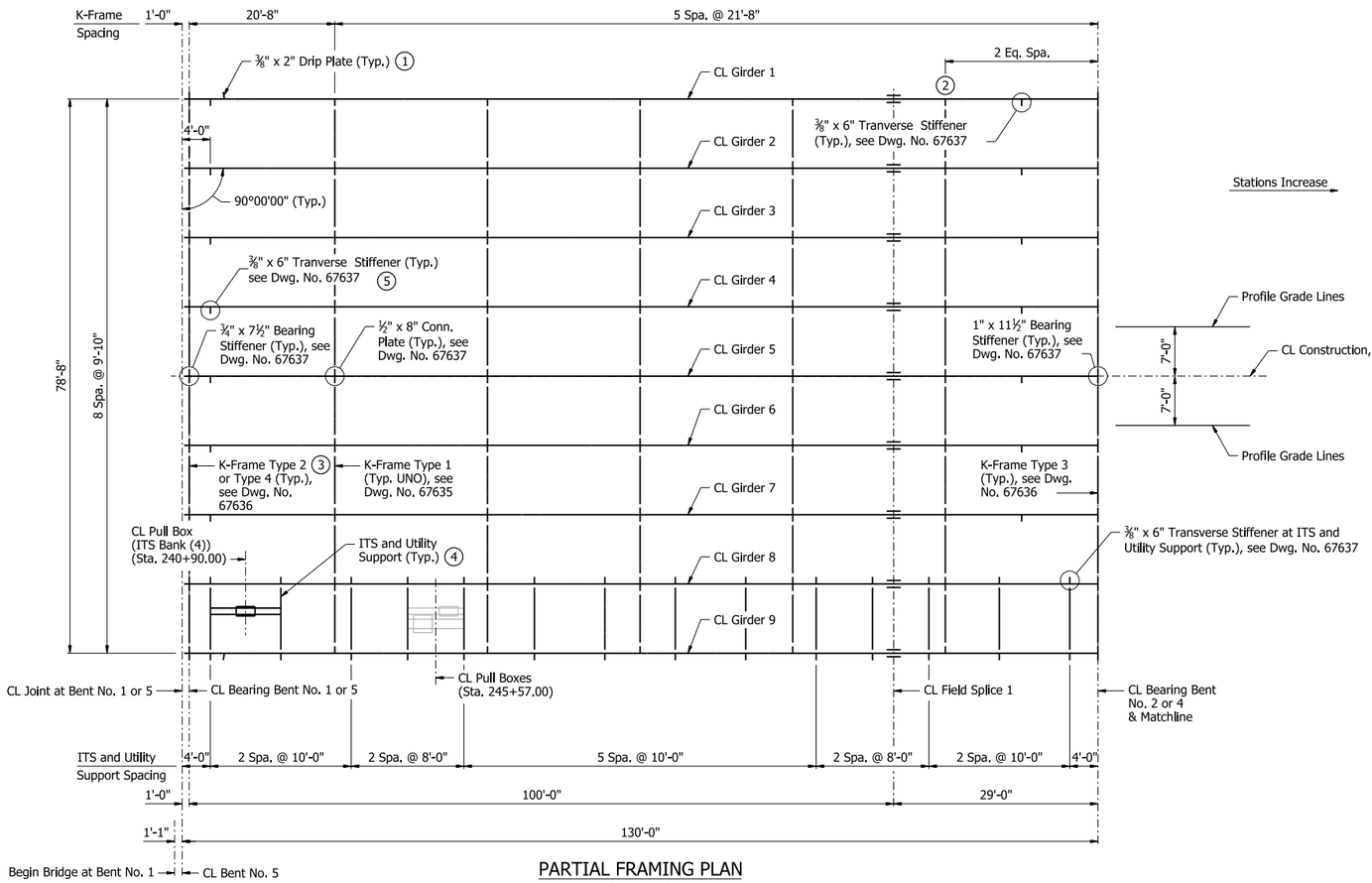
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 11/20/23
CHECKED BY: RCR DATE: 11/21/23
DESIGNED BY: RCR DATE: 7/21/22
FILENAME: b040901216_s11.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67631

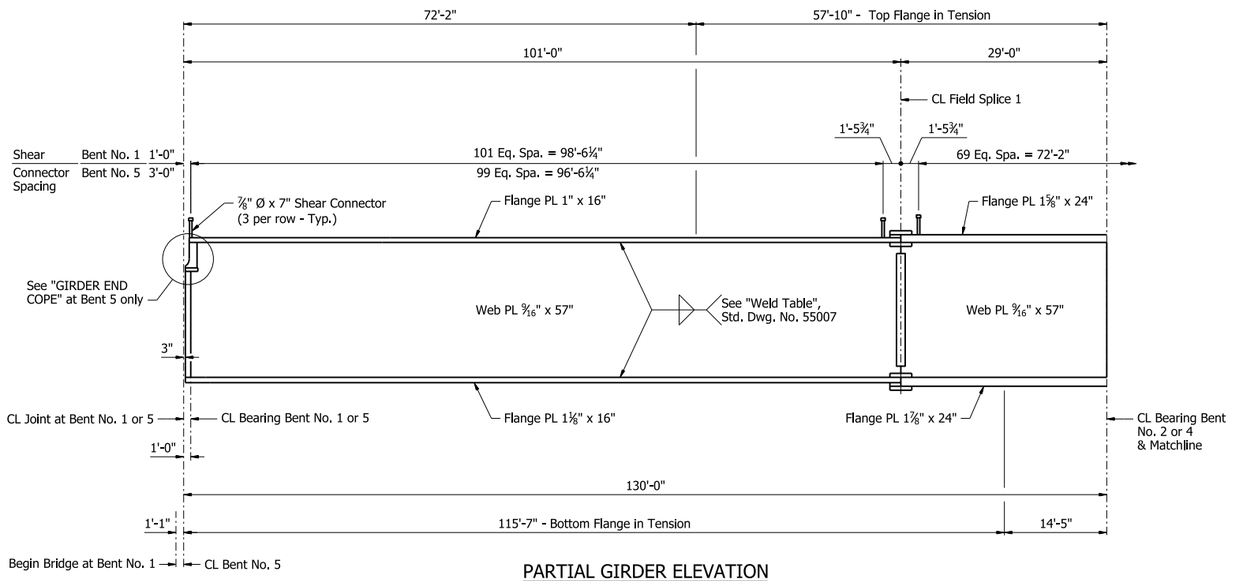
PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	572	809
		07685 - UNIT 1 - 67632				



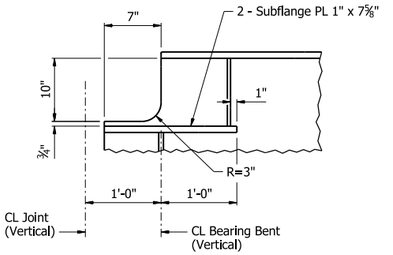
PARTIAL FRAMING PLAN

$\frac{3}{32}$" = 1'-0"



PARTIAL GIRDER ELEVATION

No Scale



GIRDER END COPE

1" = 1'-0"

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)."

For "DETAILS OF FIELD SPLICES", see Dwg. No. 67634.

For Dead Load Deflections, see Dwg. No. 67637.

For ITS and Utility bank details, see Dwg. Nos. 67672 - 67685.

1. Location of drip plate is not symmetrical about Center of Unit. It shall be placed on the up-hill side of each bent. Stop weld 1" from edge of flange. See Std. Dwg. No. 55007 for additional details.
2. Connection Plates acting as transverse stiffeners. (Typical all girders.)
3. K-Frame Type 2 - Bent Nos. 1 & 3; K-Frame Type 4 - Bent No. 5.
4. ITS and Utility Support will not be placed at K-Frame locations.
5. At Bent No. 5 only.

STATE OF ARKANSAS
ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 2 OF 9
DETAILS OF 520'-0" CONTINUOUS
PLATE GIRDER UNIT 1
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

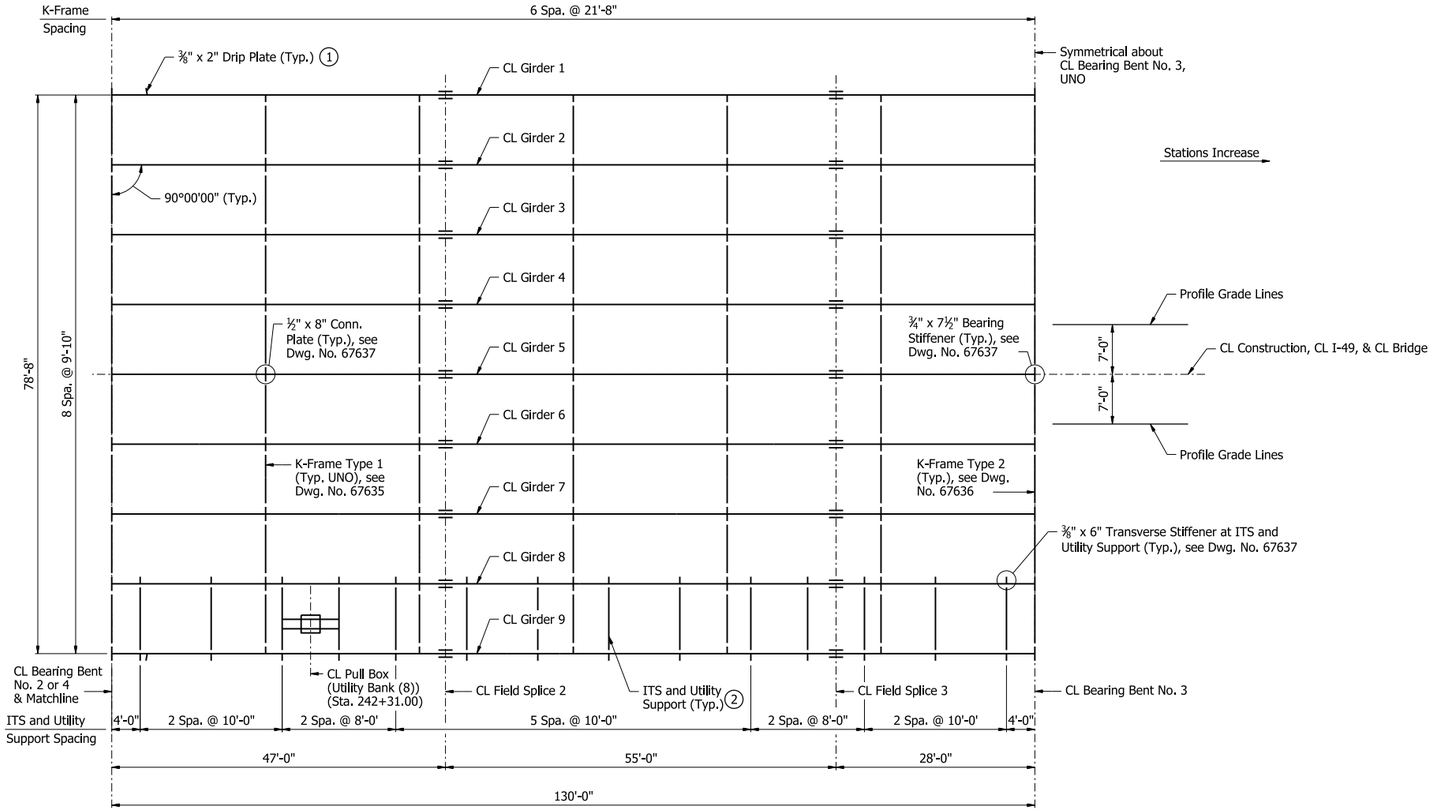
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 9/22/23 FILENAME: b040901216_s12.dgn
CHECKED BY: RLW DATE: 9/28/23 SCALE: AS NOTED
DESIGNED BY: MJ DATE: 4/28/23

BRIDGE NO. 07685 DRAWING NO. 67632

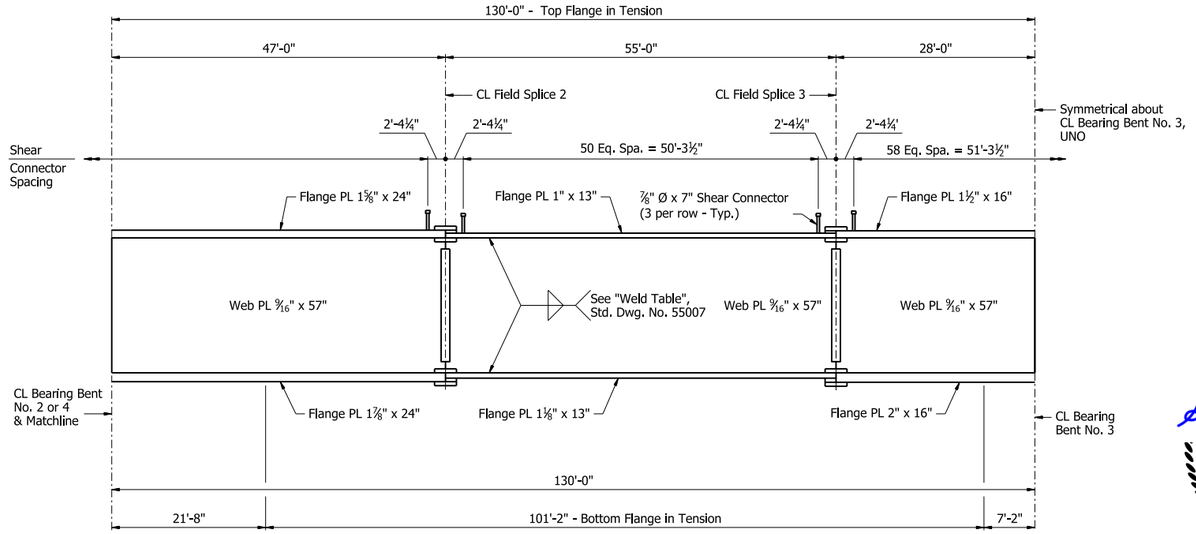
PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	573	809
		07685 - UNIT 1 - 67633				



PARTIAL FRAMING PLAN

$\frac{3}{32}$" = 1'-0"



PARTIAL GIRDER ELEVATION

No Scale

Notes:
For additional notes, see Dwg. No. 67632.

(1) Location of drip plate is not symmetrical about Center of Unit. It shall be placed on the up-hill side of each bent. Stop weld 1" from edge of flange. See Std. Dwg. No. 55007 for additional details.

(2) ITS and Utility Support will not be placed at K-Frame locations.

ALTERNATE NO. 2
SHEET 3 OF 9
DETAILS OF 520'-0" CONTINUOUS
PLATE GIRDER UNIT 1
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

STATE OF ARKANSAS
PROFESSIONAL ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

DRAWN BY: CTK DATE: 9/21/23
CHECKED BY: RLW DATE: 9/28/23
DESIGNED BY: MJ DATE: 4/28/23
FILENAME: b040901216_s13.dgn
SCALE: AS NOTED

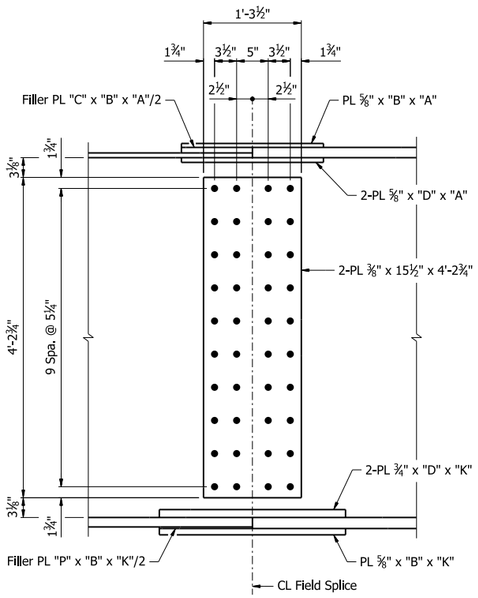
BRIDGE NO. 07685 DRAWING NO. 67633

PRINT DATE: 4/11/2024

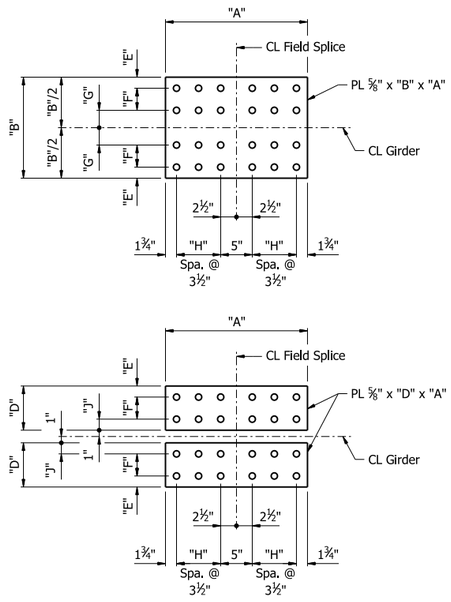
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	574	809
		07685 - UNIT 1 - 67634				

TABLE OF VARIABLES

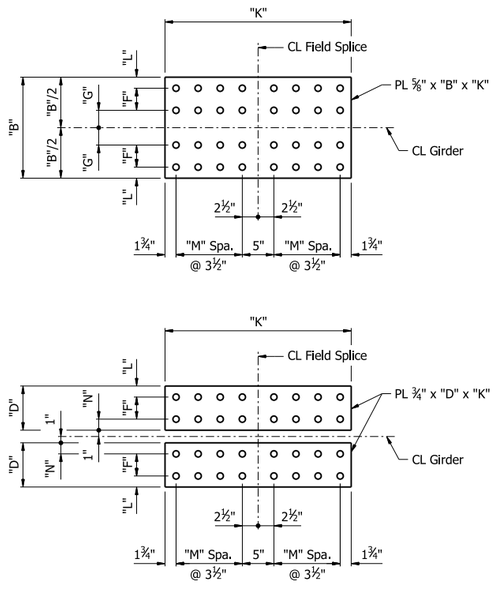
Field Splice	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"	"L"	"M"	"N"	"P"
1	2'-5½"	16"	⅝"	7"	1¾"	3½"	2¾"	3	1¾"	2'-5½"	1¾"	3	1¾"	¾"
2	4'-2½"	13"	⅝"	5½"	3½"	0"	3"	6	2"	4'-9½"	3½"	7	2"	¾"
3	4'-2½"	13"	½"	5½"	3½"	0"	3"	6	2"	4'-9½"	3½"	7	2"	⅞"



WEB SPLICE



TOP FLANGE SPLICE



BOTTOM FLANGE SPLICE

DETAILS OF FIELD SPLICES

Notes:
For location of field splices, see Dwg. Nos. 67632 & 67633.

All field splice bolts shall be ASTM F3125, Gr. A325, 1"Ø H.S. bolts.

All holes for splice bolts shall be 1⅛"Ø.

All structural steel shall be ASTM A709, Grade 50W, unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)."

Bolted field splices may either be eliminated or shop weld splices may be substituted with the approval of the Engineer. Payment will be made on the basis of plan quantities.

STATE OF
PROFESSIONAL ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 4 OF 9
DETAILS OF 520'-0" CONTINUOUS
PLATE GIRDER UNIT 1
- 49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

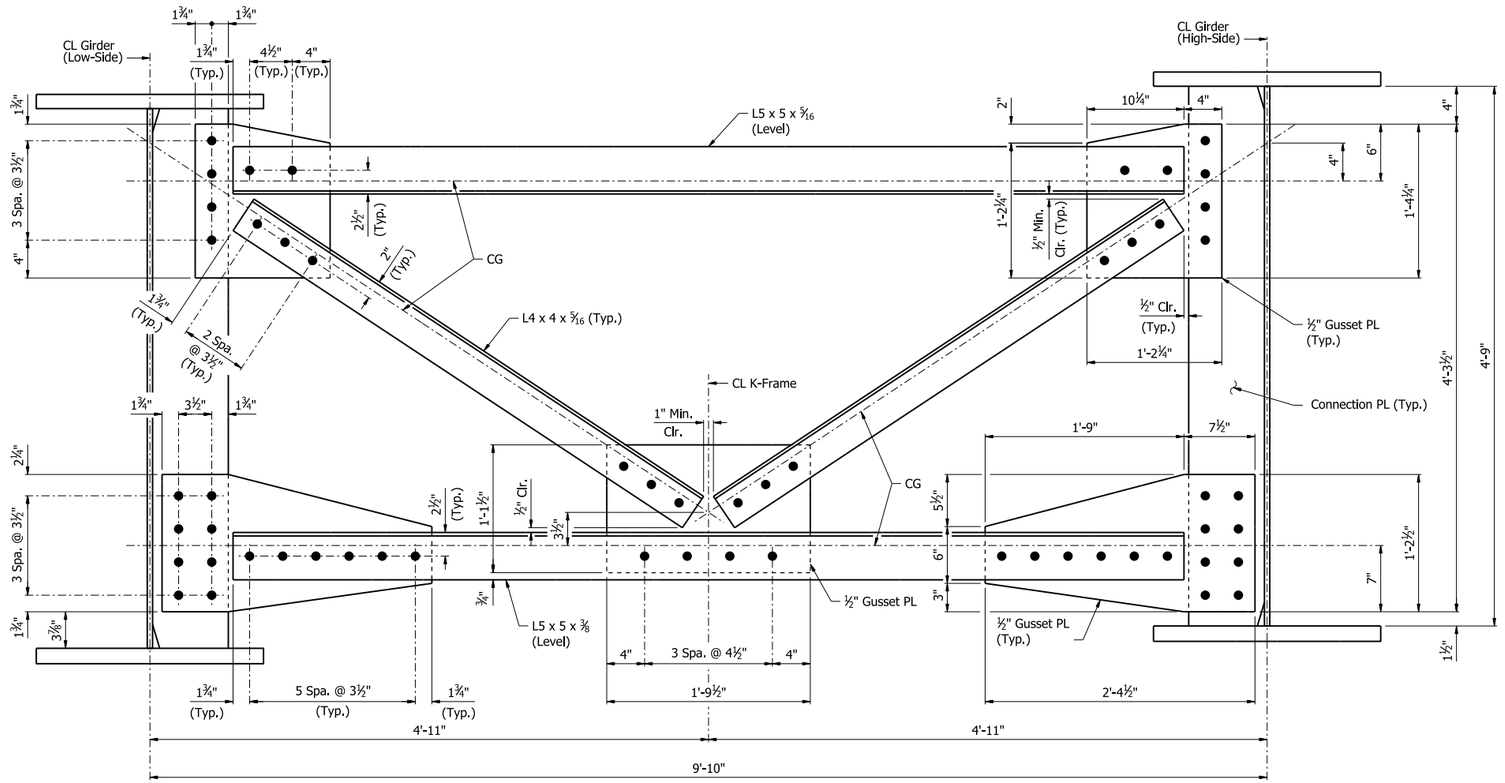
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 8/17/23
CHECKED BY: MJ DATE: 10/04/23
DESIGNED BY: MJ DATE: 4/28/23
FILENAME: b040901216_s14.dgn
SCALE: No Scale

BRIDGE NO. 07685 DRAWING NO. 67634

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	575	809
		07685 - UNIT 1 - 67635				



DETAIL OF TYPE 1 K-FRAMES

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)."

For location of K-Frames, see Dwg. No. 67632 & 67633.

Cross frames shall be shop bolted using pins to align the holes prior to bolting. Disassembling of cross frames is not allowed.

All bolts shall be ASTM F3125, Gr. A325, 1"Ø H.S. bolts.

All holes shall be drilled for K-Frames connection and shall be 1⅛"Ø.

For Connection Plate details, see Dwg. No. 67637.

Conduits and ITS and Utility Supports not shown, see Dwg. Nos. 67672 - 67685 for details.

K-Frames are symmetric about CL, UNO.

PRINT DATE: 4/11/2024

STATE OF
PROFESSIONAL ENGINEER
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No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

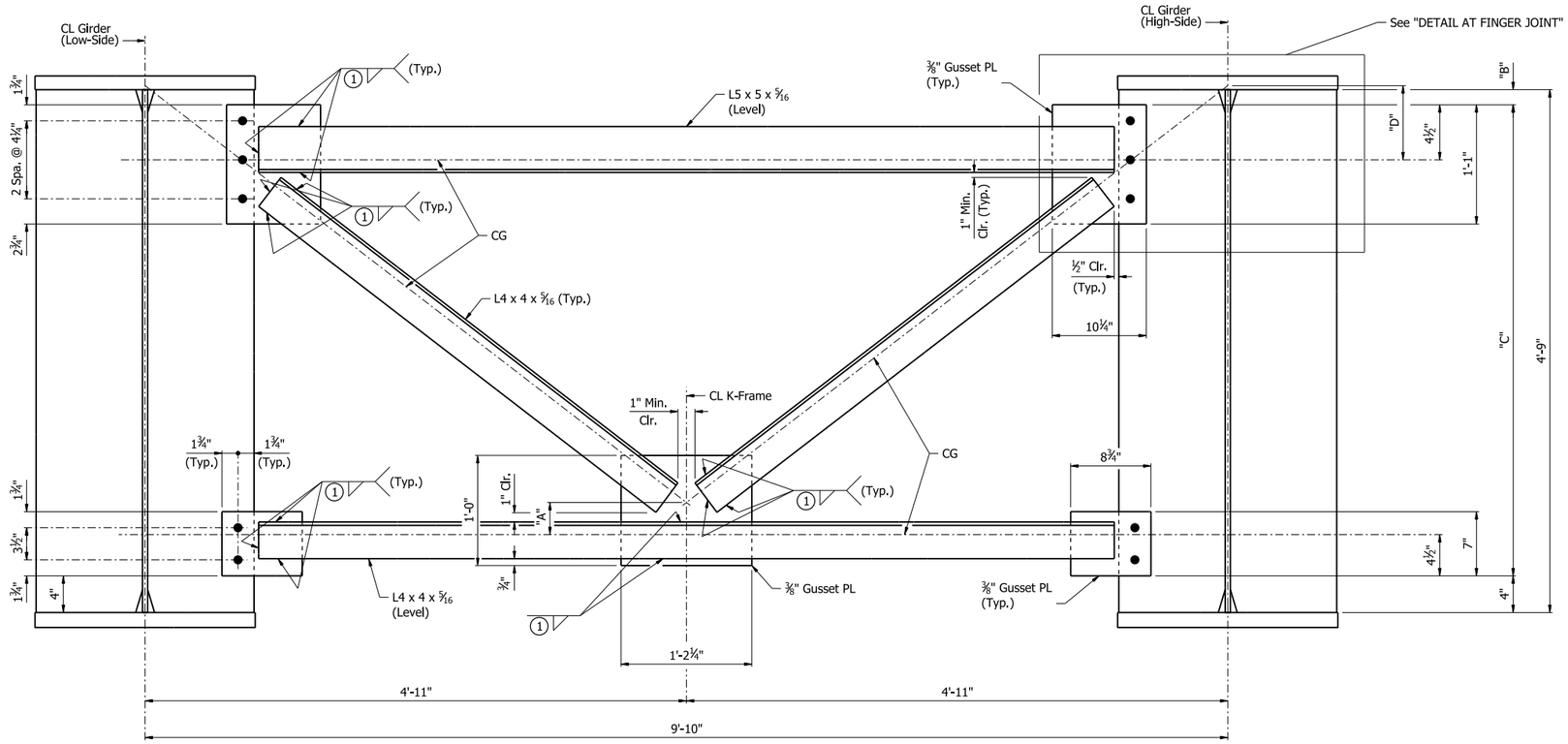
ALTERNATE NO. 2
SHEET 5 OF 9
DETAILS OF 520'-0" CONTINUOUS
PLATE GIRDER UNIT 1
49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 9/21/23
CHECKED BY: RLW DATE: 9/28/23
DESIGNED BY: MJ DATE: 4/28/23
FILENAME: b040901216_s15.dgn
SCALE: 1½" = 1'-0"

BRIDGE NO. 07685 DRAWING NO. 67635

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	576	809
		07685 - UNIT 1 - 67636				



DETAIL OF TYPE 2, 3, & 4 K-FRAMES

TABLE OF VARIABLES

K-Frame Type	"A"	"B"	"C"	"D"
2	3½"	4"	4'-1"	3¼"
3	3½"	4"	4'-1"	7"
4	4¼"	1-3½"	3'-1½"	½"

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)."

For location of K-Frames, see Dwg. Nos. 67632 & 67633.

All bolts shall be ASTM F3125, Gr. A325, 1"Ø H.S. bolts.

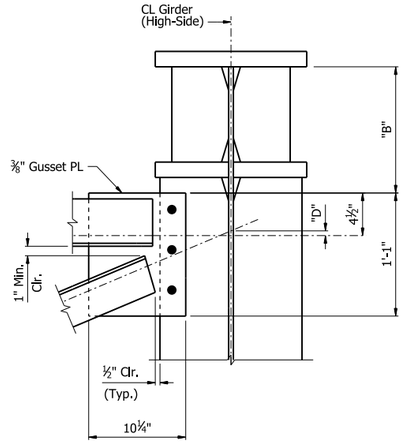
All holes shall be drilled for K-Frames connection and shall be 1⅛"Ø.

For Bearing Stiffeners details, see Dwg. No. 67637.

ITS and Utility Supports are not shown, see Dwg. Nos. 67672 - 67685 for details.

K-Frames are symmetric about CL, UNO.

(1) See "WELD TABLE", Std. Dwg. No. 55007.



DETAIL AT FINGER JOINT
Type 4 only

STATE OF ARKANSAS
PROFESSIONAL ENGINEER
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4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 6 OF 9
DETAILS OF 520'-0" CONTINUOUS
PLATE GIRDER UNIT 1
49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

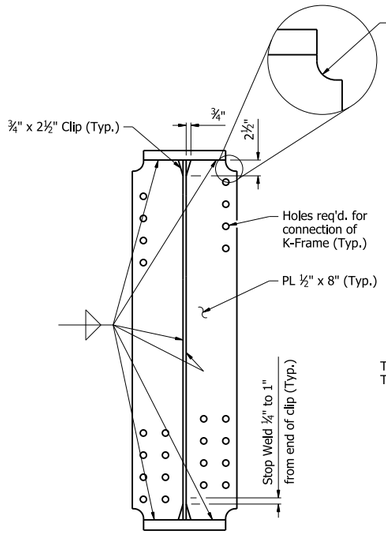
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 9/21/23
CHECKED BY: RLW DATE: 9/28/23
DESIGNED BY: MJ DATE: 4/28/23
FILENAME: b040901216_s16.dgn
SCALE: 1½" = 1'-0"

BRIDGE NO. 07685 DRAWING NO. 67636

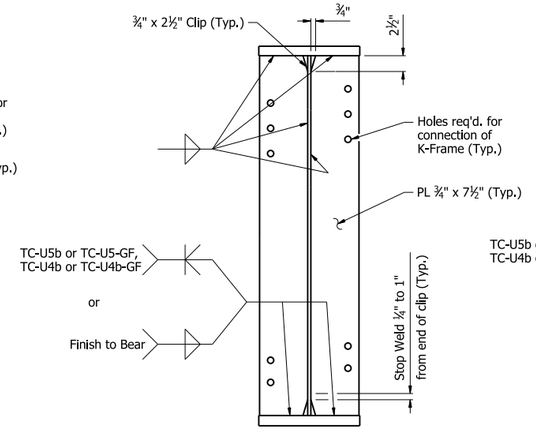
PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	577	809
		07685 - UNIT 1 - 67637				

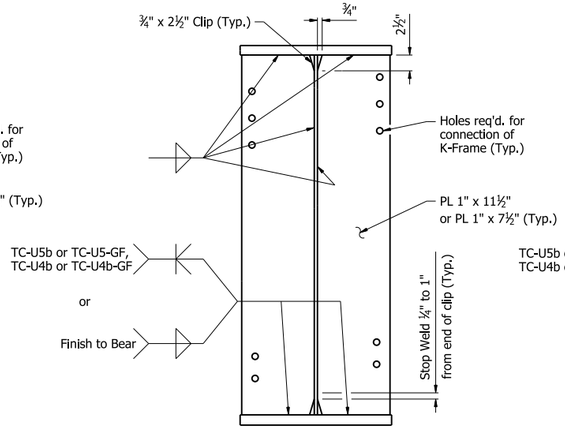


CONNECTION PLATES
(Located at K-Frame Type 1)

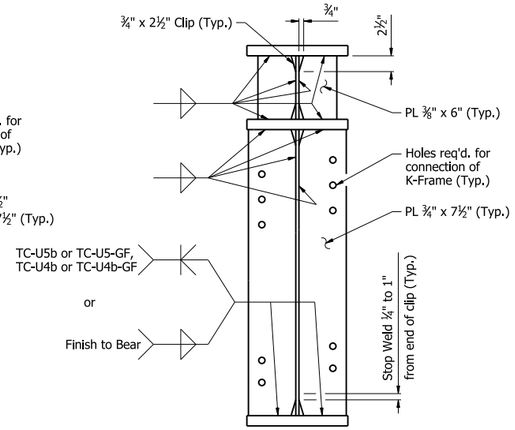
(1) If permanent steel bridge deck forms are used, the Fabricator shall clip the plates as necessary to accommodate the deck form support.



BEARING STIFFENERS
AT BENT NO. 1
(Located at K-Frame Type 2)



BEARING STIFFENERS
AT BENT NOS. 2-4
(Located at K-Frame Type 2 & 3)



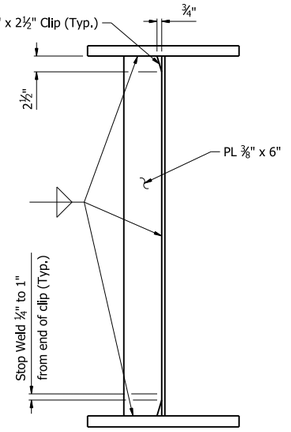
BEARING STIFFENERS
AT BENT NO. 5
(Located at K-Frame Type 4)

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)."

For location of stiffeners and connection plates, see Dwg. No. 67632 & 67633.

For details of K-Frames, see Dwg. Nos. 67635 & 67636.

See "WELD TABLE" for minimum weld sizes on Std. Dwg. No. 55007.

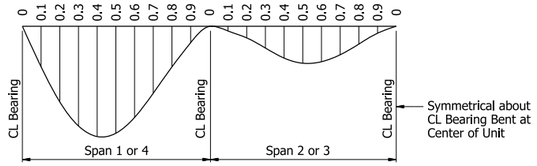


TRANSVERSE STIFFENER

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Span	Point of Deflection	Structural Steel									Structural Steel + Slab									Structural Steel + Slab + Rail								
		Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6	Girder 7	Girder 8	Girder 9	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6	Girder 7	Girder 8	Girder 9	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6	Girder 7	Girder 8	Girder 9
Span 1 or 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.1	0.225	0.229	0.232	0.233	0.235	0.238	0.244	0.252	0.258	1.215	1.270	1.303	1.320	1.326	1.325	1.315	1.292	1.248	1.392	1.371	1.377	1.396	1.425	1.408	1.405	1.424	1.466
	0.2	0.413	0.420	0.425	0.428	0.431	0.436	0.447	0.462	0.473	2.229	2.328	2.389	2.420	2.432	2.429	2.411	2.369	2.289	2.549	2.517	2.526	2.561	2.609	2.584	2.579	2.613	2.685
	0.3	0.540	0.550	0.556	0.559	0.563	0.571	0.585	0.604	0.618	2.920	3.046	3.126	3.168	3.183	3.180	3.155	3.100	2.998	3.335	3.297	3.308	3.355	3.412	3.384	3.378	3.422	3.513
	0.4	0.595	0.605	0.612	0.616	0.620	0.629	0.644	0.665	0.681	3.220	3.358	3.446	3.492	3.509	3.505	3.479	3.418	3.306	3.678	3.637	3.650	3.700	3.763	3.733	3.727	3.776	3.875
	0.5	0.575	0.585	0.591	0.596	0.600	0.608	0.623	0.643	0.658	3.121	3.253	3.338	3.383	3.399	3.396	3.370	3.311	3.204	3.566	3.526	3.538	3.587	3.647	3.619	3.614	3.662	3.758
	0.6	0.488	0.496	0.501	0.505	0.509	0.516	0.528	0.545	0.558	2.654	2.767	2.838	2.876	2.890	2.887	2.865	2.816	2.725	3.039	3.000	3.009	3.052	3.107	3.080	3.074	3.116	3.203
	0.7	0.356	0.363	0.367	0.369	0.372	0.377	0.386	0.399	0.408	1.950	2.033	2.085	2.112	2.122	2.120	2.104	2.070	2.002	2.239	2.205	2.212	2.244	2.288	2.264	2.260	2.292	2.360
	0.8	0.214	0.218	0.220	0.222	0.224	0.227	0.232	0.240	0.245	1.182	1.231	1.261	1.278	1.284	1.283	1.273	1.254	1.213	1.359	1.335	1.340	1.359	1.390	1.372	1.369	1.388	1.433
	0.9	0.087	0.089	0.090	0.090	0.091	0.092	0.095	0.098	0.100	0.491	0.511	0.523	0.530	0.533	0.532	0.528	0.520	0.504	0.565	0.554	0.556	0.564	0.579	0.570	0.569	0.576	0.596
Span 2 or 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.1	0.005	0.005	0.005	0.005	0.005	0.004	0.004	0.004	0.004	-0.055	-0.049	-0.050	-0.052	-0.054	-0.053	-0.052	-0.050	-0.056	-0.041	-0.058	-0.061	-0.059	-0.049	-0.061	-0.064	-0.059	-0.043
	0.2	0.051	0.053	0.054	0.053	0.052	0.052	0.053	0.055	0.055	0.110	0.132	0.137	0.136	0.134	0.135	0.136	0.134	0.114	0.169	0.135	0.129	0.137	0.159	0.135	0.128	0.142	0.180
	0.3	0.113	0.117	0.118	0.117	0.116	0.116	0.119	0.124	0.124	0.382	0.423	0.438	0.439	0.437	0.438	0.439	0.430	0.393	0.496	0.449	0.440	0.456	0.487	0.455	0.445	0.468	0.525
	0.4	0.170	0.175	0.177	0.176	0.176	0.176	0.180	0.187	0.189	0.664	0.723	0.747	0.751	0.750	0.751	0.750	0.735	0.683	0.827	0.772	0.762	0.784	0.823	0.786	0.773	0.803	0.875
	0.5	0.204	0.209	0.212	0.212	0.211	0.212	0.217	0.225	0.229	0.862	0.930	0.960	0.967	0.967	0.968	0.965	0.946	0.886	1.054	0.997	0.987	1.013	1.054	1.016	1.002	1.036	1.114
	0.6	0.197	0.202	0.204	0.204	0.204	0.205	0.209	0.218	0.221	0.872	0.939	0.968	0.976	0.976	0.976	0.974	0.955	0.897	1.061	1.005	0.998	1.023	1.064	1.027	1.013	1.045	1.120
	0.7	0.155	0.159	0.160	0.160	0.160	0.161	0.165	0.172	0.175	0.706	0.759	0.782	0.788	0.789	0.789	0.786	0.772	0.726	0.858	0.812	0.806	0.827	0.862	0.830	0.819	0.844	0.906
	0.8	0.093	0.095	0.096	0.097	0.096	0.097	0.099	0.104	0.105	0.430	0.463	0.476	0.480	0.480	0.481	0.479	0.471	0.443	0.526	0.494	0.491	0.504	0.530	0.506	0.499	0.514	0.556
	0.9	0.033	0.034	0.035	0.035	0.035	0.035	0.036	0.037	0.038	0.156	0.168	0.172	0.173	0.174	0.174	0.173	0.171	0.160	0.193	0.178	0.177	0.182	0.195	0.183	0.180	0.186	0.204
	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

← Symmetrical about CL Bearing Bent at Center of Unit



DEAD LOAD DEFLECTION DIAGRAM

Notes:
Camber for dead load deflection +/- ¼" tolerance. Deflections shown are along CL Girder from a chord from CL Bearing to CL Bearing. Negative sign (-) indicates point above chord. Vertical curve corrections are not included. Superelevation transition corrections not included.

The additional weight for the permanent steel deck forms are included in the slab dead load deflections.

The additional weight of the ITS and utility support brackets are included with the steel dead load deflections. The weight of the conduits are included in the steel + slab + rail dead load deflections.

STATE OF
ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 7 OF 9
DETAILS OF 520'-0" CONTINUOUS
PLATE GIRDER UNIT 1
49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

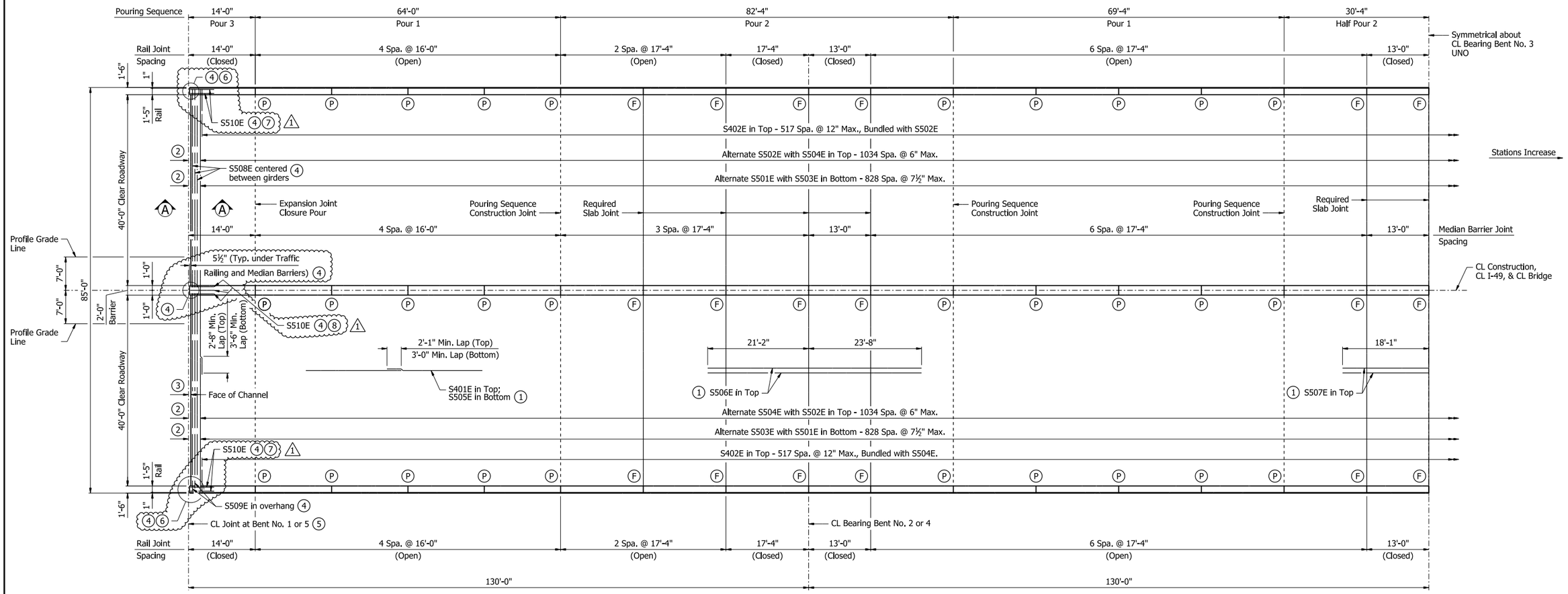
DRAWN BY: CTK DATE: 8/17/23
CHECKED BY: MJ DATE: 10/04/23
DESIGNED BY: MJ DATE: 4/28/23
FILENAME: b040901216_s17.dgn
SCALE: 1" = 1'-0"

BRIDGE NO. 07685 DRAWING NO. 67637

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
8/9/2024		6	ARK.	040901	578	809
		07685 - UNIT 1 - 67638				

1 Slab extension added below Rail and Median Barriers at Finger Joint locations. 8/9/2024



HALF REINFORCING PLAN AND POURING SEQUENCE

Slab Pouring Sequence Notes:
Pours with the same number may be placed simultaneously or separately. All Pour(s) 1 must be placed before Pour(s) 2 can be placed. A minimum of 48 hours shall elapse between the end of a pour and the start of the next pour. A minimum of 72 hours shall elapse between adjacent pours.

Concrete in bridge superstructure shall be placed, consolidated, and screeded off for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent.

At Finger Joints, after all incremental pours on both Units adjacent to the Finger Joint are complete, closure pour 3 on each side of Finger Joint shall be poured simultaneously. For details of Finger Joint, see Dwg. Nos. 67696 & 67697. For pours adjacent to Strip Seal Joints, see Dwg. No. 67693 to coordinate pours with joint installation. A minimum of 48 hours shall elapse between the last incremental pour and the closure pours.

A minimum of 72 hours shall elapse between completion of the slab and the pouring of the bridge railing. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence(s) shown.

Notes:
Required slab joints and pouring sequence joints shall align with rail joints at the gutterline.

For "TRANSVERSE SLAB JOINT DETAIL", see Dwg. No. 55007.

For "DETAILS OF BRIDGE TRAFFIC RAIL TYPE SSTR42", see Dwg. No. 67686.

For "DETAILS OF MEDIAN BARRIER", see Dwg. No. 67689.

For "SECTION A-A", see Dwg. No. 67639.

(1) Place as shown in "TYPICAL ROADWAY SECTION", see Dwg. No. 67631.

(2) 6" at End Bent No. 1; 2'-6" at Bent No. 5

(3) 1" @ 60° F at End Bent No. 1; 7½" @ 60° F at Bent No. 5

(4) At Bent No. 5 only.

(5) For Joint types, see Dwg. Nos 67599 - 67603.

(F) CL Full-Depth Rail Joint

(P) CL Partial-Depth Rail Joint

1 (6) In the slab extension, cut R403E 8" leg to maintain concrete cover.

1 (7) 2-S510E in Top, 3-S510E in Bottom.

1 (8) 3-S510E @ Eq. Spa., Top and Bottom.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 22535
RACHEL L. WESSON
8/9/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 8 OF 9
DETAILS OF 520'-0" CONTINUOUS PLATE GIRDER UNIT 1
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 11/20/23
CHECKED BY: RCR DATE: 11/21/23
DESIGNED BY: RCR DATE: 7/21/22
FILENAME: b040901216_s18.dgn
SCALE: 3/32" = 1'-0"

BRIDGE NO. 07685 DRAWING NO. 67638

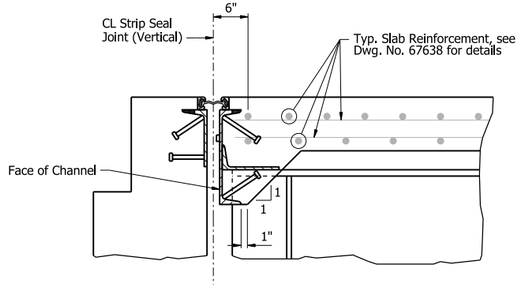
PRINT DATE: 7/31/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
8/9/2024		6	ARK.	040901	579	809
		07685 - UNIT 1 - 67639				

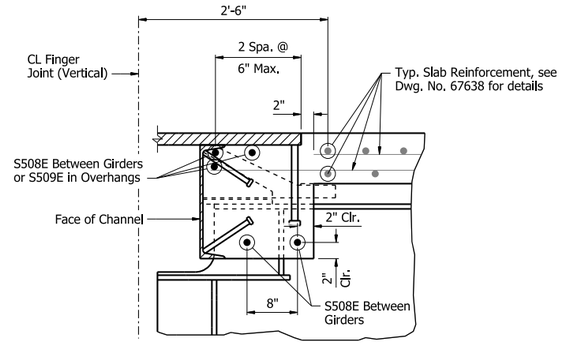
1 Slab extension added below Rail and Median Barriers at Finger Joint locations. 8/9/2024

Notes:
For details of Strip Seal Joint, see Dwg. No. 67693.

For details of Finger Joint, see Dwg. Nos. 67696 & 67697.



AT BENTS WITH STRIP SEAL JOINTS



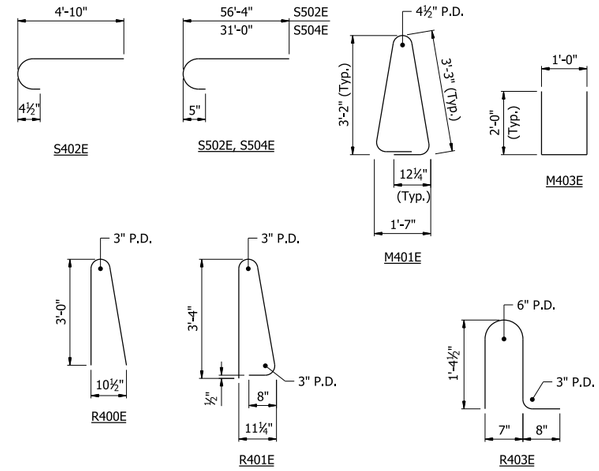
AT BENTS WITH FINGER JOINTS

SECTION A-A

BAR LIST

Mark	Number Required	Length	Pin Dia.
S401E	1131	41'-9"	Str.
S402E	1036	5'-4"	3"
S501E	829	56'-9"	Str.
S502E	1035	56'-11"	3¾"
S503E	829	31'-5"	Str.
S504E	1035	31'-7"	3¾"
S505E	880	54'-8"	Str.
S506E	344	44'-10"	Str.
S507E	172	36'-2"	Str.
S508E	40	8'-2"	Str.
S509E	6	2'-2"	Str.
1 S510E	16	5'-0"	Str.
R400E	384	6'-3"	3"
R401E	2028	7'-6"	3"
R402E	160	5'-6"	Str.
R403E	~~2018~~	3'-8"	3"
R411E	80	12'-8"	Str.
R412E	40	13'-8"	Str.
R413E	160	15'-8"	Str.
R415E	360	17'-0"	Str.
	1 2028		
M401E	1046	9'-0"	2"
M402E	80	5'-6"	Str.
M403E	1041	4'-10"	3"
M411E	40	12'-8"	Str.
M412E	20	13'-8"	Str.
M413E	80	15'-8"	Str.
M415E	180	17'-0"	Str.

Bending Diagrams
(Dimensions are out to out of bars)



All bars designated with an "E" suffix are to be epoxy coated.

PRINT DATE: 8/14/2024

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 22535
RACHEL L. WESSON
8/9/24
BRIDGE ENGINEER

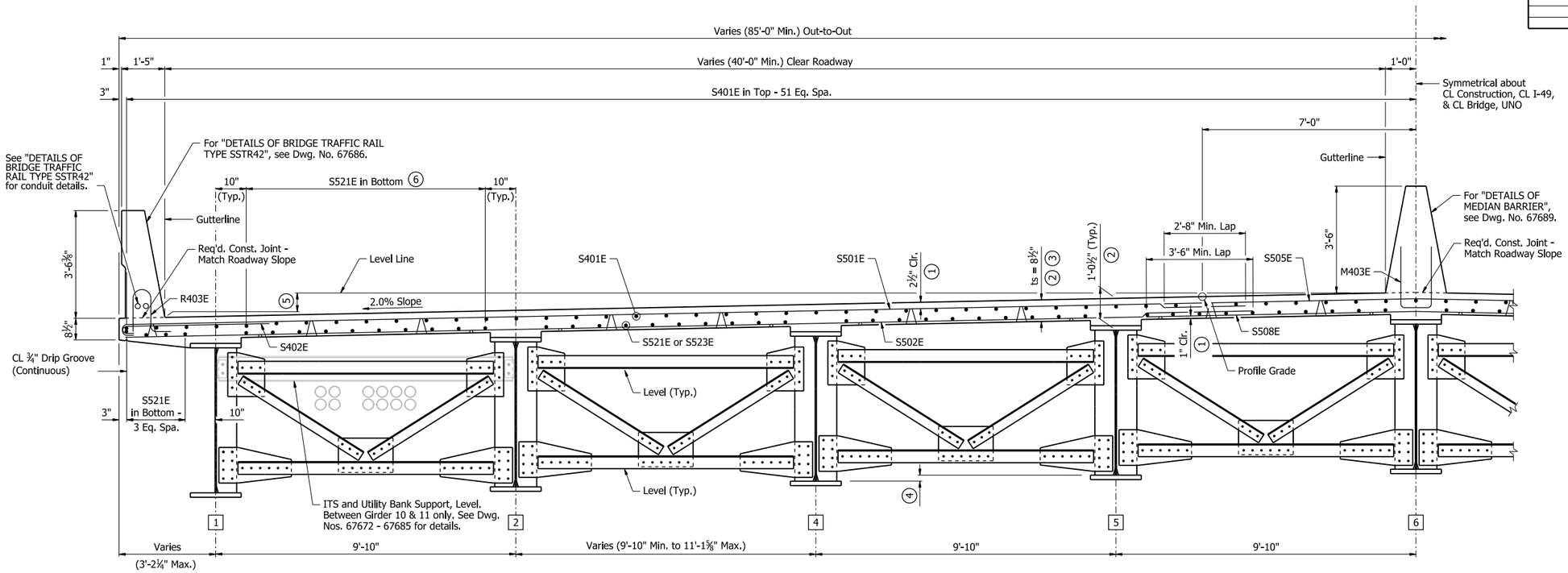
ALTERNATE NO. 2
SHEET 9 OF 9
DETAILS OF 520'-0" CONTINUOUS PLATE GIRDER UNIT 1
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 11/20/23
CHECKED BY: RCR DATE: 11/21/23
DESIGNED BY: RCR DATE: 7/21/22
FILENAME: b040901216_s19.dgn
SCALE: 1" = 1'-0"

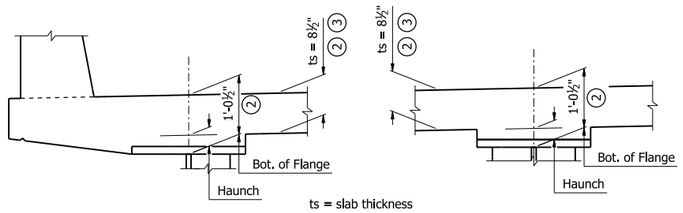
BRIDGE NO. 07685 DRAWING NO. 67639

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	580	809
		07685 - UNIT 2 - 67640				



TYPICAL ROADWAY SECTION

(Looking Upstation)
(Downstation of Termination Diaphragm at Girders 3 & 9)
½" = 1'-0"



ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

¾" = 1'-0"

Notes:
For details of Bridge Finishes and Protective Surface Treatment, see Dwg No. 67372.

For "PARTIAL REINFORCING PLAN AND POURING SEQUENCE", see Dwg. No. 67652 & 67653.

For "COMMON DETAILS OF SECTIONS NEAR JOINTS", see Dwg. No. 67691.

K-Frames shown. For details see Dwg. Nos. 67646 & 67647. For X-Frame details, see Dwg. No. 67648. For Termination Diaphragm details, see Dwg. No. 67649.

(1) Tolerance: Minus = ¼"; Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE".

Bar positions or clearances from the forms shall be maintained by means of stays, ties, hangers, or other approved devices per Subsection 804.06. Placement of slab bolsters or high-chairs with full-length lower runners directly on removable deck forms will not be allowed.

(2) Haunch dimensions may vary within the following limits to maintain the grade and slab thickness tolerance:

Top Flange	Haunch Adjustment Tolerance	
	Plus	Minus
⅞" x 14"	1¾"	2"
1" x 14"	1⅞"	1⅞"
1¼" x 16"	2"	1½"
1¾" x 18"	2½"	1"
1¾" x 20"	2½"	1"

No increase in concrete and structural steel quantities will be made to maintain tolerances. Tolerances shown are applicable for both removable deck forming and permanent steel deck forms. Payment for concrete shall be based on removable deck forming.

(3) Tolerance: Minus = ¼"; Plus = ½". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

(4) 2⅜" for 9'-10" Girder spacing. All others vary, 1⅜" Min. to $2\frac{11}{16}$" Max.

(5) Varies (11½" Max.)

(6) 9 Eq. Spa. for 9'-10" Girder spacing. 11 Eq. Spa. for varying Girder spacing.

SLAB REINFORCING:
Longitudinal: S401E in Top placed as shown
S521E in Bottom placed as shown

Transverse: S501E & S505E in Top @ 6"
S502E & S508E in Bottom @ 7½"
S402E in Top @ 12", Bundled with S501E or S505E.

STATE OF ARKANSAS
ALLIE WAGNER
PROFESSIONAL ENGINEER
★★★
No. 22390
4/18/24
BRIDGE ENGINEER

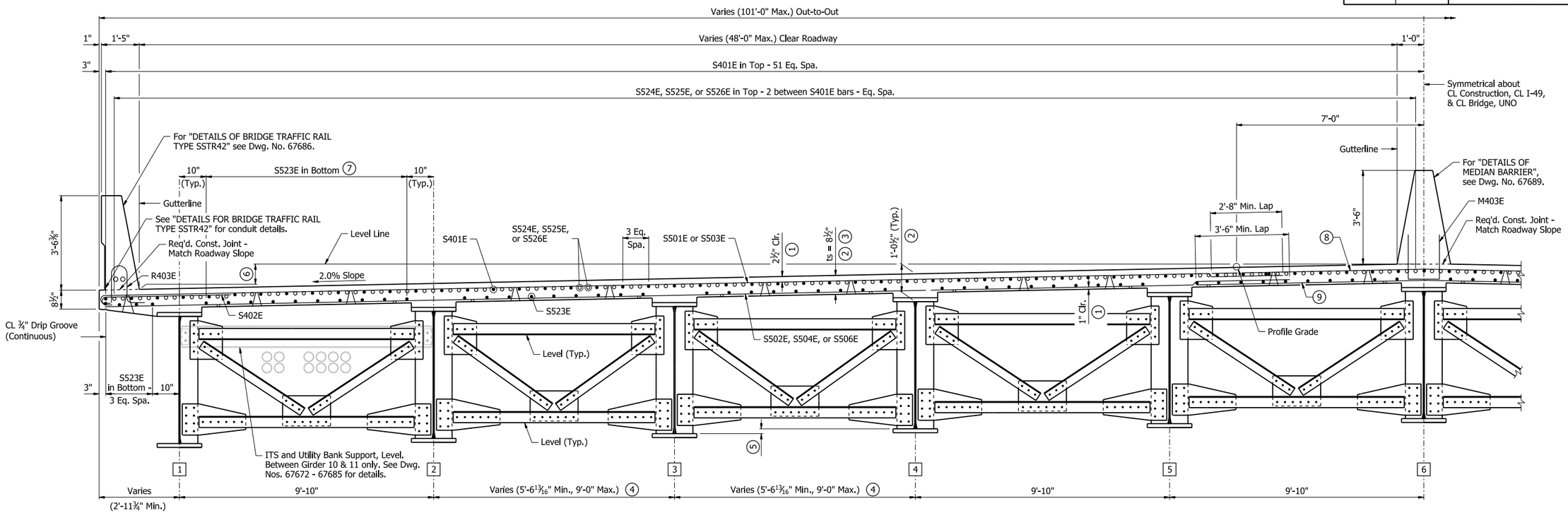
ALTERNATE NO. 2
SHEET 1 OF 15
DETAILS OF 420'-0" CONTINUOUS PLATE GIRDER UNIT 2
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 12/1/23 FILENAME: b040901216_s21.dgn
CHECKED BY: RLW DATE: 12/5/23 SCALE: AS NOTED
DESIGNED BY: RCR DATE: 7/21/22
BRIDGE NO. 07685 DRAWING NO. 67640

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	581	809
		07685 - UNIT 2 - 67641				



TYPICAL ROADWAY SECTION

(Looking Upstation)
(Upstation of Termination Diaphragm at Girder 3 & 9)
½" = 1'-0"

Notes:
For details of Bridge Finishes and Protective Surface Treatment, see Dwg No. 67372.

For "PRTIAL REINFORCING PLAN AND POURING SEQUENCE", see Dwg. No. 67652 & 67653.

For "COMMON DETAILS OF SECTIONS NEAR JOINTS", see Dwg. No. 67691.

K-Frames shown. For details see Dwg. Nos. 67646 & 67647. For X-Frame details, see Dwg. No. 67648. For Termination Diaphragm details, see Dwg. No. 67649.

(1) Tolerance: Minus = ¼"; Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE".

Bar positions or clearances from the forms shall be maintained by means of stays, ties, hangers, or other approved devices per Subsection 804.06. Placement of slab bolsters or high-chairs with full-length lower runners directly on removable deck forms will not be allowed.

(2) Haunch dimensions may vary within the following limits to maintain the grade and slab thickness tolerance:

Top Flange	Haunch Adjustment Tolerance	
	Plus	Minus
⅞" x 14"	1¾"	2"
1" x 14"	1⅞"	1⅞"
1¼" x 16"	2"	1½"
1¾" x 18"	2½"	1"
1¾" x 20"	2½"	1"

No increase in concrete and structural steel quantities will be made to maintain tolerances. Tolerances shown are applicable for both removable deck forming and permanent steel deck forms. Payment for concrete shall be based on removable deck forming.

(3) Tolerance: Minus = ¼"; Plus = ½". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

(4) Girders 3 & 9 begin between Bent Nos. 5 & 6. For Framing Plan, see Dwg. Nos. 67642 & 67644.

(5) 2⅜" for 9'-10" Girder spacing. All others vary, 1⅜" Min. to 2 3/16" Max.

(6) Varies (11½" Max.)

(7) 9 Eq. Spa. for 9'-10" Girder spacing. 8 Eq. Spa. for varying Girder spacing.

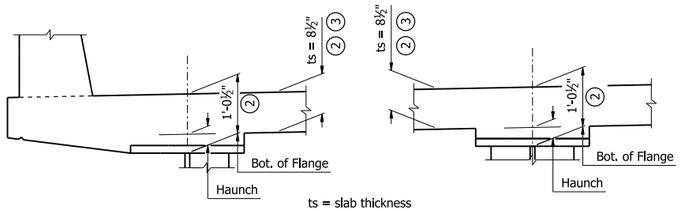
(8) S505E, S507E, S509E, S511E, S513E, S515E, S517E or S519E.

(9) S508E, S510E, S512E, S514E, S516E, S518E, S520E or S522E.

SLAB REINFORCING:

Longitudinal: S401E in Top placed as shown
S524E, S525E, and S526E in Top placed as shown over Intermediate Bents
S523E in Bottom placed as shown

Transverse: S501E, S503E, S505E, S507E, S509E, S511E, S513E, S515E, S517E and S519E in Top @ 6", placed as shown on reinforcing plans.
S502E, S504E, S506E, S508E, S510E, S512E, S514E, S516E, S518E, S520E and S522E in Bottom @ 7½", placed as shown on reinforcing plans.
S402E in Top @ 12" Max., Bundled with S501E, S503E, S505E, S507E, S509E, S511E, S513E, S515E, S517E or S519E.



ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

¾" = 1'-0"

STATE OF ARKANSAS
PROFESSIONAL ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 2 OF 15
DETAILS OF 420'-0" CONTINUOUS PLATE GIRDER UNIT 2
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

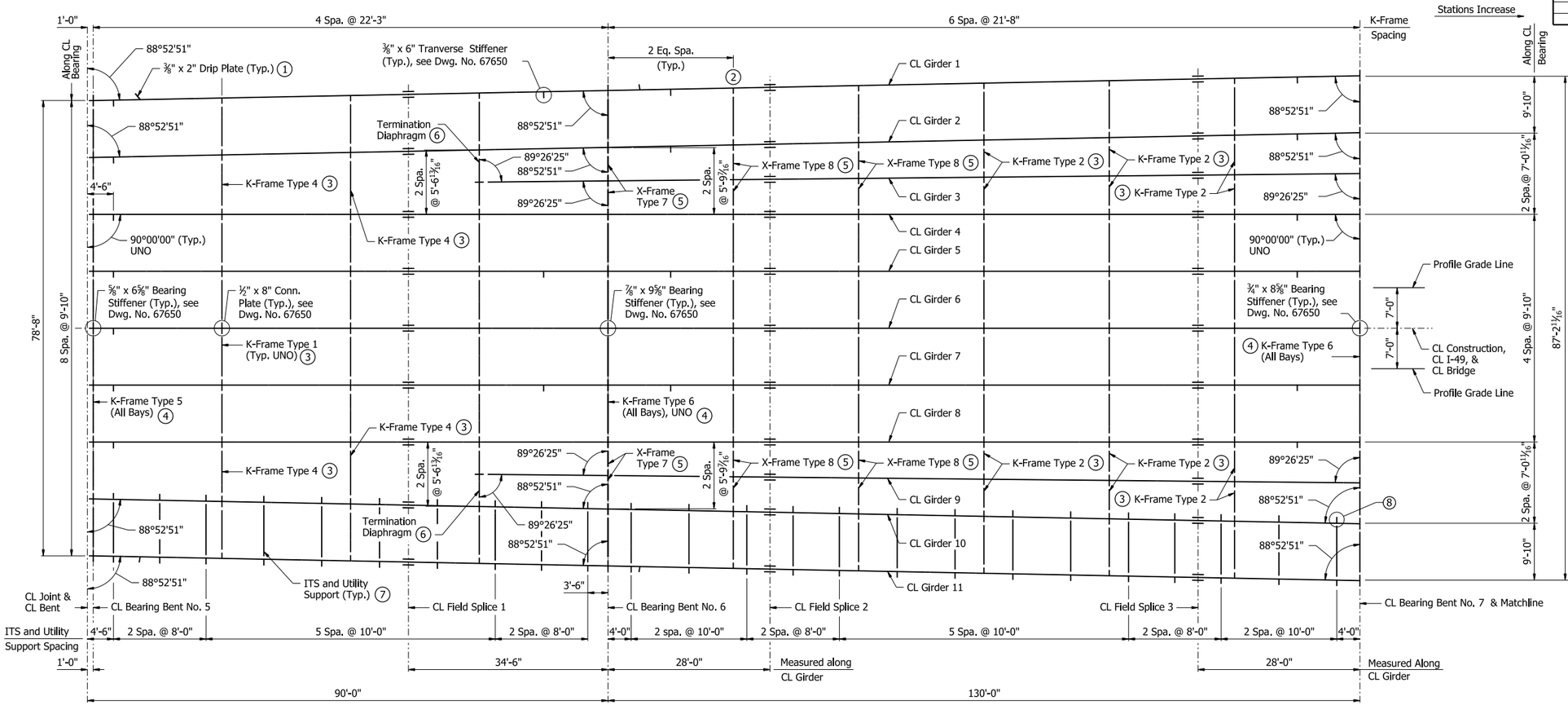
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 12/1/23
CHECKED BY: RLW DATE: 12/5/23
DESIGNED BY: RCR DATE: 7/21/22
FILENAME: b040901216_s22.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67641

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	582	809
		07685 - UNIT 2 - 67642				



PARTIAL FRAMING PLAN

$\frac{3}{32}$" = 1'-0"

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)."

For "DETAILS OF FIELD SPLICES", see Dwg. No. 67645.

For Dead Load Deflections, see Dwg. No. 67651.

For ITS and Utility bank details, see Dwg. Nos. 67672 - 67685.

Longitudinal dimensions in the Framing Plan are horizontal and measured along CL bridge UNO.

Cross frames and diaphragms are normal to CL Bridge.

(1) Location of drip plate is not symmetrical about Center of Unit. It shall be placed on the up-hill side of each bent. Stop weld 1" from edge of flange. See Std. Dwg. No. 55007 for additional details.

(2) Connection Plates acting as transverse stiffeners. (Typical all girders.)

(3) See Dwg. No. 67646.

(4) See Dwg. No. 67647.

(5) See. Dwg. No. 67648.

(6) See. Dwg. No. 67649.

(7) ITS and Utility Supports will not be place at K-Frame locations.

(8) ⅜" x 6" Transverse Stiffener at ITS and Utility Support (Typ.), see Dwg. No. 67650.

STATE OF
ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 3 OF 15
DETAILS OF 420'-0" CONTINUOUS
PLATE GIRDER UNIT 2
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

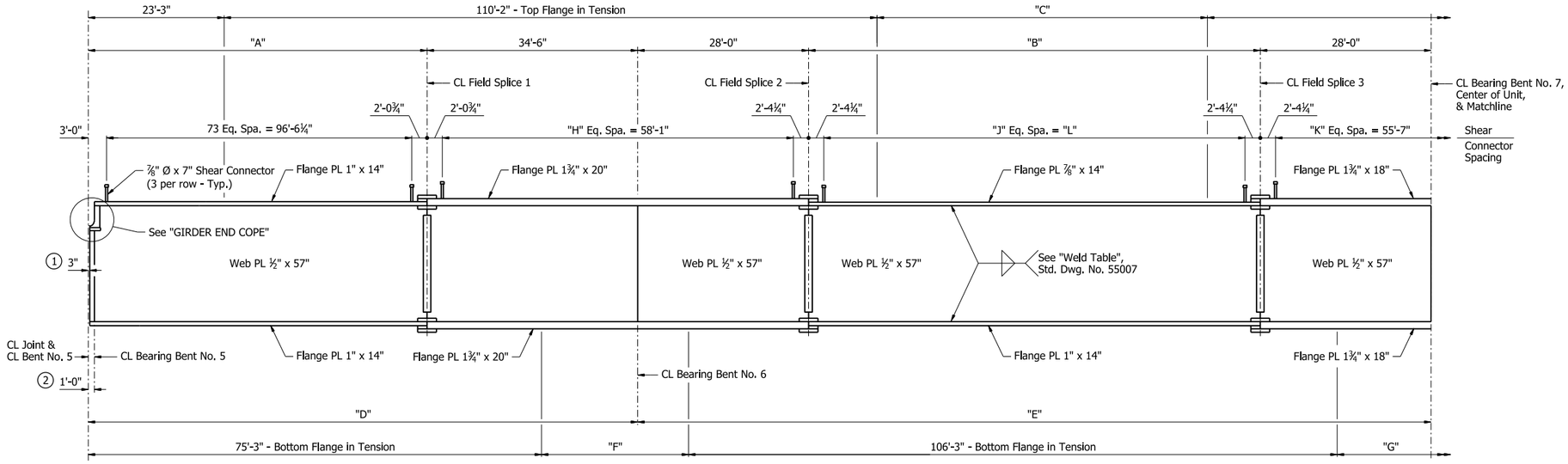
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 10/12/23
CHECKED BY: CZ DATE: 10/12/23
DESIGNED BY: DJG DATE: 4/18/23
FILENAME: b040901216_s23.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67642

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	583	809
		07685 - UNIT 2 - 67643				



PARTIAL GIRDER ELEVATION - GIRDERS 1, 2, 4-8, 10, & 11

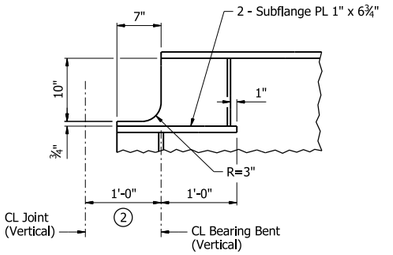
No Scale

1 Measured normal to CL joint at CL girder.

2 Measured normal to CL joint.

TABLE OF VARIABLES

Girder	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"	"L"
1-2 & 10-11	56'-6 3/16"	74'-0 5/16"	50'-11 7/16"	90'-0 3/16"	130'-0 5/16"	24'-1 3/16"	22'-9½"	66	67	59	69'-3 13/16"
4-8	55'-6"	74'-0"	50'-11"	90'-0"	130'-0"	24'-1"	22'-9"	73	63	71	69'-3½"



GIRDER END COPE

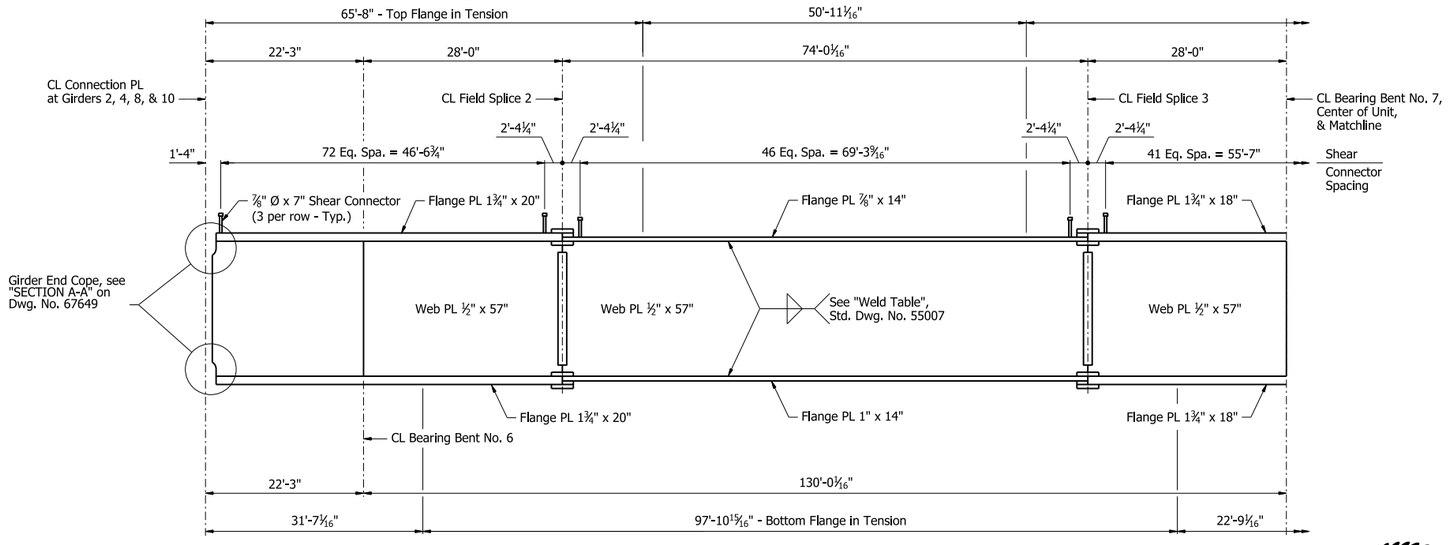
1" = 1'-0"

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)."

For "DETAILS OF FIELD SPLICES", see Dwg. No. 67645.

For Dead Load Delfections, see Dwg. No. 67651.

Longitudinal dimensions in the Girder Elevation are measured along CL girder.



PARTIAL GIRDER ELEVATION - GIRDERS 3 & 9

No Scale

STATE OF ARKANSAS
PROFESSIONAL ENGINEER
★★★
No. 22390
ALLIE WAGNER

4/18/24

BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 4 OF 15
DETAILS OF 420'-0" CONTINUOUS
PLATE GIRDER UNIT 2
49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

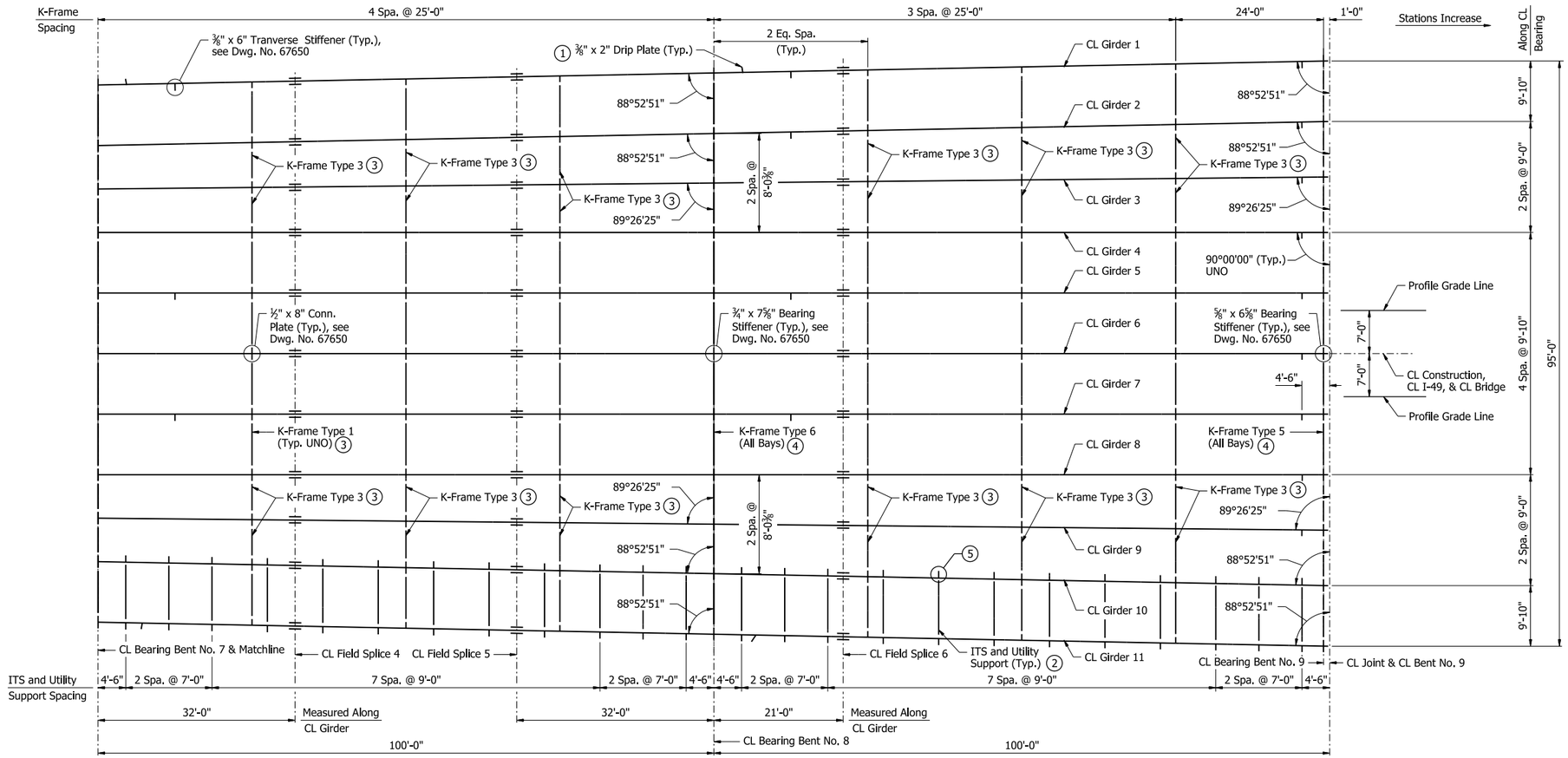
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: PAR DATE: 10/12/23
CHECKED BY: CZ DATE: 10/12/23
DESIGNED BY: DJG DATE: 4/18/23
FILENAME: b040901216_s24.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67643

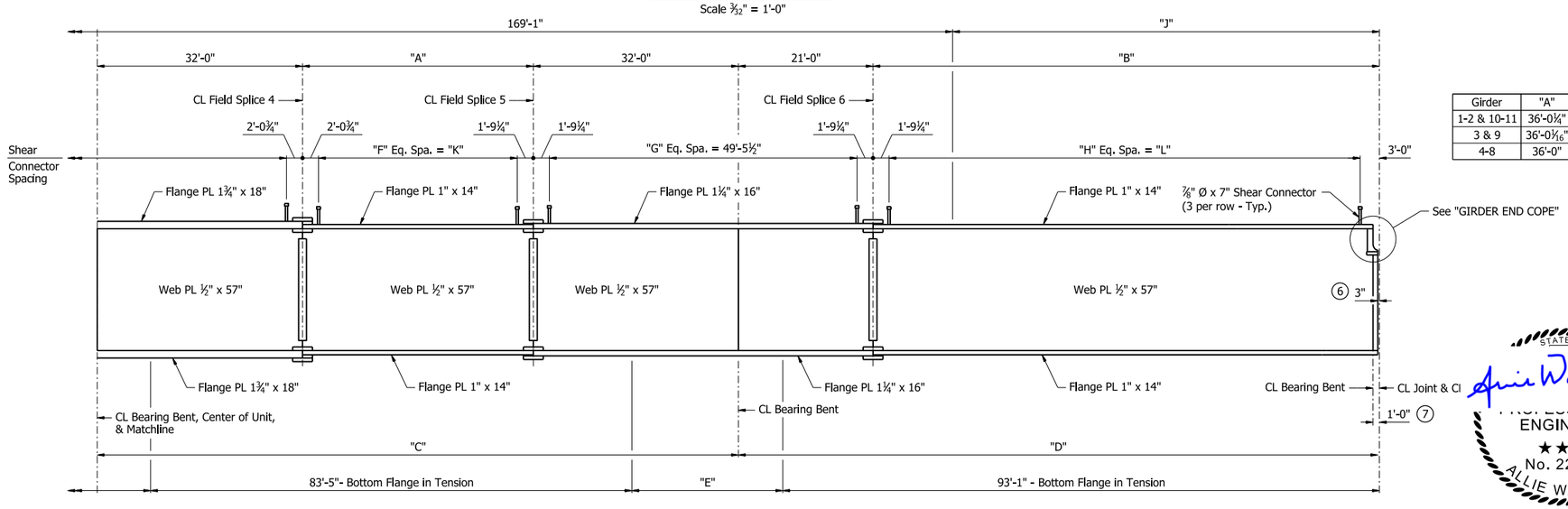
PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	584	809
		07685 - UNIT 2 - 67644				



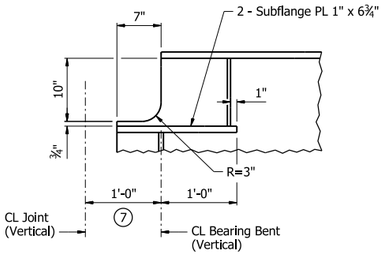
PARTIAL FRAMING PLAN

Scale 3/32" = 1'-0"



PARTIAL GIRDER ELEVATION

No Scale



GIRDER END COPE

1" = 1'-0"

Notes:
For additional notes, see Dwg. No. 67642.

1. Location of drip plate is not symmetrical about Center of Unit. It shall be placed on the up-hill side of each bent. Stop weld 1" from edge of flange. See Std. Dwg. No. 55007 for additional details.
2. ITS and Utility Supports will not be place at K-Frame locations.
3. See Dwg. No. 67646.
4. See Dwg. No. 67647.
5. 3/8" x 6" Transverse Stiffener at ITS and Utility Support (Typ.), see Dwg. No. 67650.
6. Measured normal to CL joint at CL girder.
7. Measured normal to CL joint.

TABLE OF VARIABLES

Girder	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"	"J"
1-2 & 10-11	36'-0 1/4"	79'-0 1/4"	100'-0 1/4"	100'-0 1/4"	15'-2 5/16"	27	72	71	66'-7 9/16"	32'-2 1/4"	74'-3"
3 & 9	36'-0 1/16"	79'-0 1/16"	100'-0 1/16"	100'-0 1/16"	15'-2 1/16"	26	66	60	66'-7 1/16"	32'-2 1/16"	74'-2 13/16"
4-8	36'-0"	79'-0"	100'-0"	100'-0"	15'-2"	33	78	67	66'-7"	32'-2"	74'-2 3/4"

ALTERNATE NO. 2
SHEET 5 OF 15
DETAILS OF 420'-0" CONTINUOUS PLATE GIRDER UNIT 2
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

STATE OF ARKANSAS
PROFESSIONAL ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 10/12/23
CHECKED BY: CZ DATE: 10/12/23
DESIGNED BY: DJG DATE: 4/18/23
FILENAME: b040901216_s25.dgn
SCALE: AS NOTED

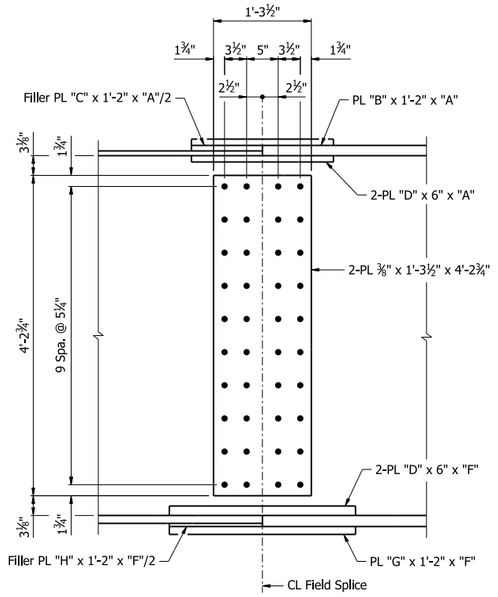
BRIDGE NO. 07685 DRAWING NO. 67644

PRINT DATE: 4/11/2024

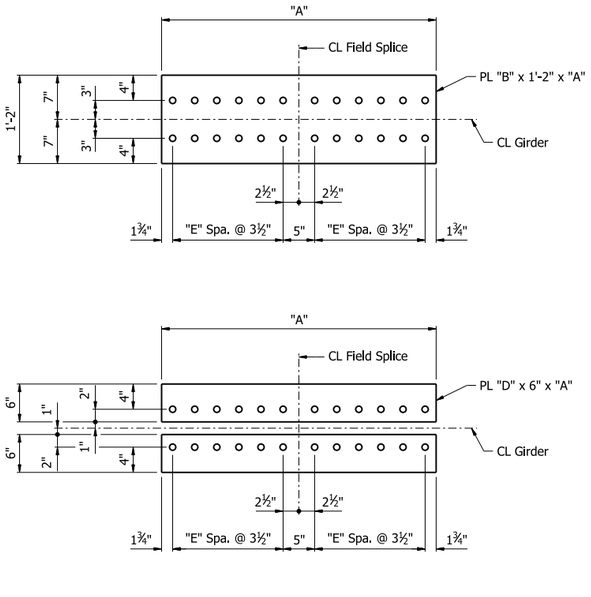
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	585	809
		07685 - UNIT 2 - 67645				

TABLE OF VARIABLES

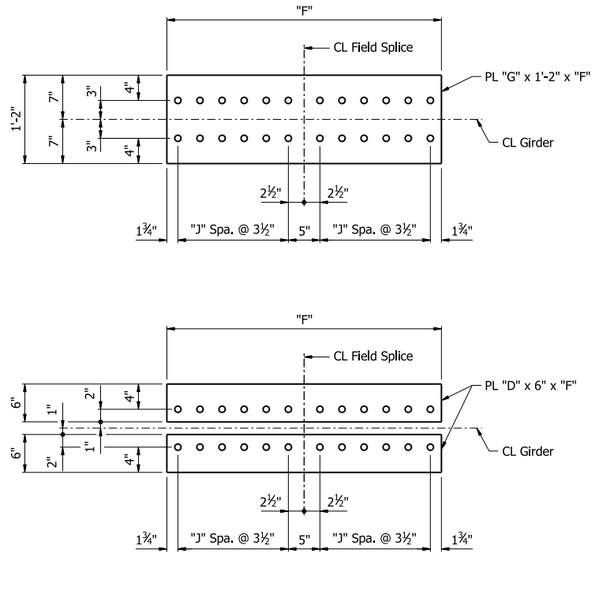
Field Splice	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"
1 & 4	3'-7½"	⅞"	¾"	1"	5	3'-7½"	⅞"	¾"	5
2 & 3	4'-2½"	½"	⅞"	⅝"	6	4'-9½"	⅝"	¾"	7
5 & 6	3'-0½"	⅞"	¼"	1"	4	3'-0½"	⅞"	¼"	4



WEB SPLICE



TOP FLANGE SPLICE



BOTTOM FLANGE SPLICE

DETAILS OF FIELD SPLICES

Notes:
For location of field splices, see Dwg. Nos. 67642 & 67644.

All field splice bolts shall be ASTM F3125, Gr. A325, 1"Ø H.S. bolts.

All holes for splice bolts shall be 1⅛"Ø.

All structural steel shall be ASTM A709, Grade 50W, unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)."

Bolted field splices may either be eliminated or shop weld splices may be substituted with the approval of the Engineer. Payment will be made on the basis of plan quantities.

PRINT DATE: 4/11/2024

STATE OF
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No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 6 OF 15
DETAILS OF 420'-0" CONTINUOUS
PLATE GIRDER UNIT 2
- 49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 10/12/23
CHECKED BY: CCD DATE: 10/17/23
DESIGNED BY: DJG DATE: 4/18/23
FILENAME: b040901216_s26.dgn
SCALE: No Scale

BRIDGE NO. 07685 DRAWING NO. 67645

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	586	809
		07685 - UNIT 2 - 67646				

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)."

For location of K-Frames, see Dwg. No. 67642 & 67644.

Cross frames shall be shop bolted using pins to align the holes prior to bolting. Disassembling of cross frames is not allowed.

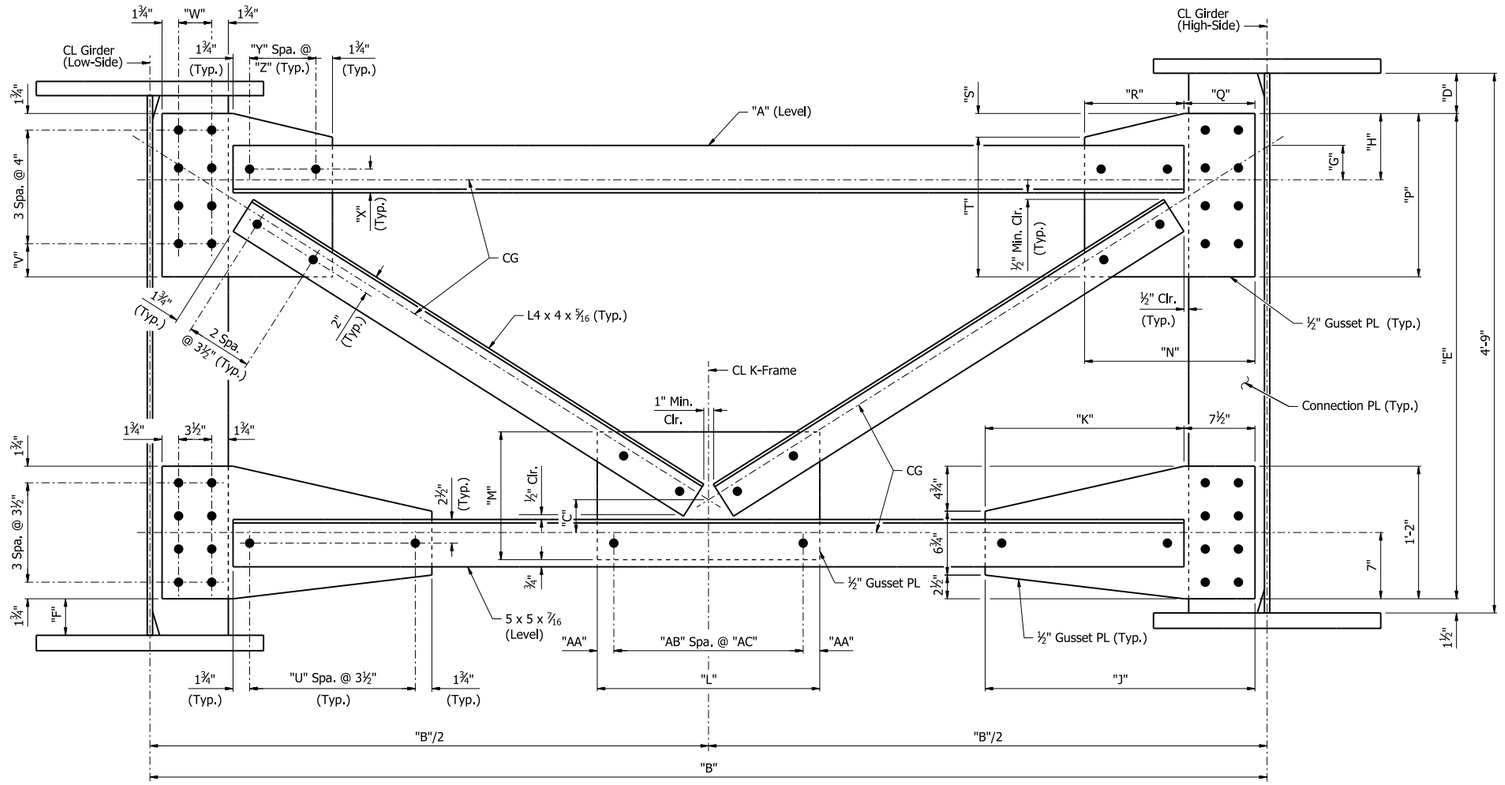
All bolts shall be ASTM F3125, Gr. A325, 1"Ø H.S. bolts.

All holes shall be drilled for K-Frames connection and shall be 1⅛"Ø.

For Connection Plate details, see Dwg. No. 67650.

Conduits and ITS and Utility Supports not shown, see Dwg. Nos. 67672 - 67685 for details.

K-Frames are symmetric about CL, UNO.



DETAIL OF TYPE 1, 2, 3 & 4 K-FRAMES

TABLE OF VARIABLES

K-Frame Type	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"	"L"	"M"	"N"	"P"	"Q"	"R"	"S"	"T"	"U"	"V"	"W"	"X"	"Y"	"Z"	"AA"	"AB"	"AC"
1	5x5x5/16	9'-10"	3½"	4¼"	4'-3¼"	3⅜"	3½"	7"	2'-4½"	1'-9"	1'-11½"	1'-1½"	1'-2½"	1'-5¼"	4"	10½"	2½"	1'-2¾"	5	3½"	0	2½"	2	3½"	1¾"	5	4"
2	4x4x5/16	VARIES	1¾" Min., 2" Max.	4"	4'-3½"	3 1/16" Min., 3⅛" Max.	10" Min., 11¾" Max.	5"	2'-1"	1'-5½"	1'-7½"	1'-3¼"	1'-5½"	1'-4¾"	1'-5½"	0	0	1'-4¾"	4	3"	3½"	2"	1	4¼"	2¾"	4	3½"
3	4x4x5/16	VARIES	2½" Min., 3" Max.	4"	4'-3½"	3¼" Min., 3⅜" Max.	5¾" Min., 9" Max.	5"	2'-1"	1'-5½"	1'-9½"	1'-3"	1'-5½"	1'-4¾"	1'-5½"	0	0	1'-4¾"	4	3"	3½"	2"	1	4¼"	2"	5	3½"
4	5x5x5/16	VARIES	3½"	4¼"	4'-3¼"	3 15/16" Min., 4 1/16 Max.	3"	7"	2'-4½"	1'-9"	1'-11½"	1'-1½"	1'-2½"	1'-5¼"	4"	10½"	2½"	1'-2¾"	5	3½"	0	2½"	2	3½"	1¾"	5	4"

ALTERNATE NO. 2
SHEET 7 OF 15
DETAILS OF 420'-0" CONTINUOUS
PLATE GIRDER UNIT 2
49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

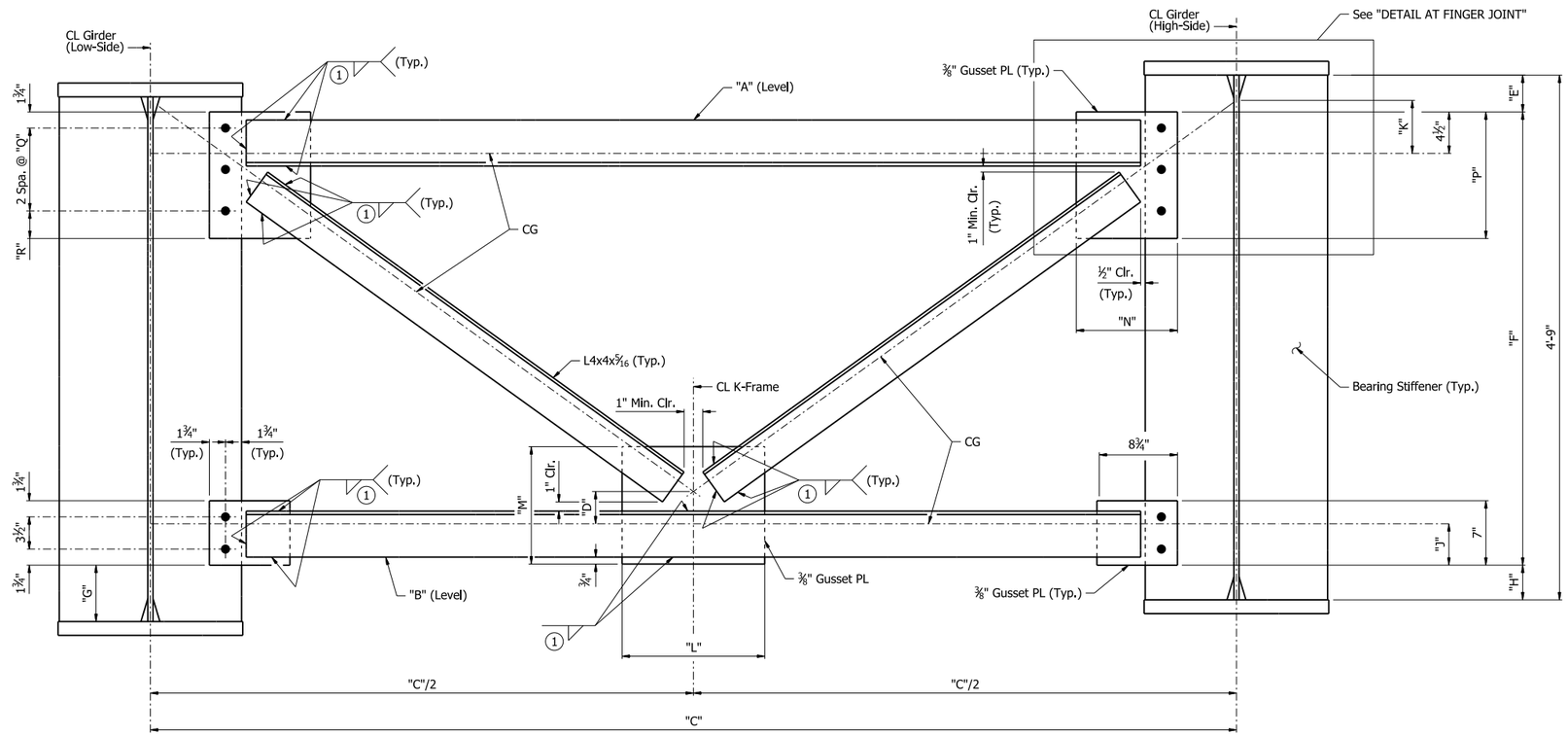
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

STATE OF ARKANSAS
PROFESSIONAL ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

DRAWN BY: CTK DATE: 10/12/23
CHECKED BY: CZ DATE: 10/12/23
DESIGNED BY: DJG DATE: 4/18/23
FILENAME: b040901216_s27.dgn
SCALE: 1½" = 1'-0"
BRIDGE NO. 07685
DRAWING NO. 67646

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	587	809
		07685 - UNIT 2 - 67647				



DETAILS OF TYPE 5 & 6 K-FRAMES

(Type 6 shown, Type 5 similar)

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)."

For location of K-Frames, see Dwg. Nos. 67642 & 67644.

All bolts shall be ASTM F3125, Gr. A325, 1"Ø H.S. bolts.

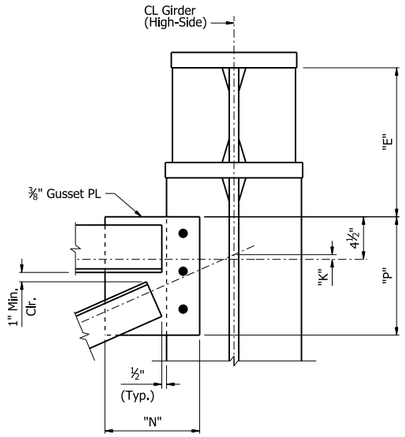
All holes shall be drilled for K-Frames connection and shall be 1⅛"Ø.

For Bearing Stiffener details, see Dwg. No. 67650.

Conduits and ITS and Utility Supports not shown, see Dwg. Nos. 67672 - 67685 for details.

K-Frames are symmetric about CL, UNO.

(1) See "WELD TABLE", Std. Dwg. No. 55007.



DETAIL AT FINGER JOINT

(Type 5 only)

TABLE OF VARIABLES

K-Frame Type	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"	"L"	"M"	"N"	"P"	"Q"	"R"
5	5x5x⅜	4x4x⅜	VARIES	4" Min., 4¼" Max.	1'-3¾"	3'-1¼"	6 3/16" Min., 6⅜" Max.	4"	4"	0" Min., ½" Max.	1'-2½"	11½"	10"	1'-0½"	4"	2¾"
6	5x5x5/16	4x4x5/16	VARIES	2½" Min., 3½" Max.	4"	4'-1¼"	5 5/16" Min., 6⅛" Max.	3¾"	4½"	3½" Min., 9¾" Max.	1'-3½"	1'-0¾"	11"	1'-1¾"	4½"	3"

ALTERNATE NO. 2
SHEET 8 OF 15
DETAILS OF 420'-0" CONTINUOUS
PLATE GIRDER UNIT 2
49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

STATE OF ARKANSAS
PROFESSIONAL ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 10/12/23
CHECKED BY: CZ DATE: 10/12/23
DESIGNED BY: DJG DATE: 4/18/23
FILENAME: b040901216_s28.dgn
SCALE: 1½" - 1'-0"

BRIDGE NO. 07685 DRAWING NO. 67647

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	588	809
		07685 - UNIT 2 - 67648				

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)."

For location of X-Frames, see Dwg. No. 67642 & 67644.

Intermediate cross frames shall be shop bolted using pins to align the holes prior to bolting. Disassembling of cross frames is not allowed.

All bolts shall be ASTM F3125, Gr. A325, 1"Ø H.S. bolts.

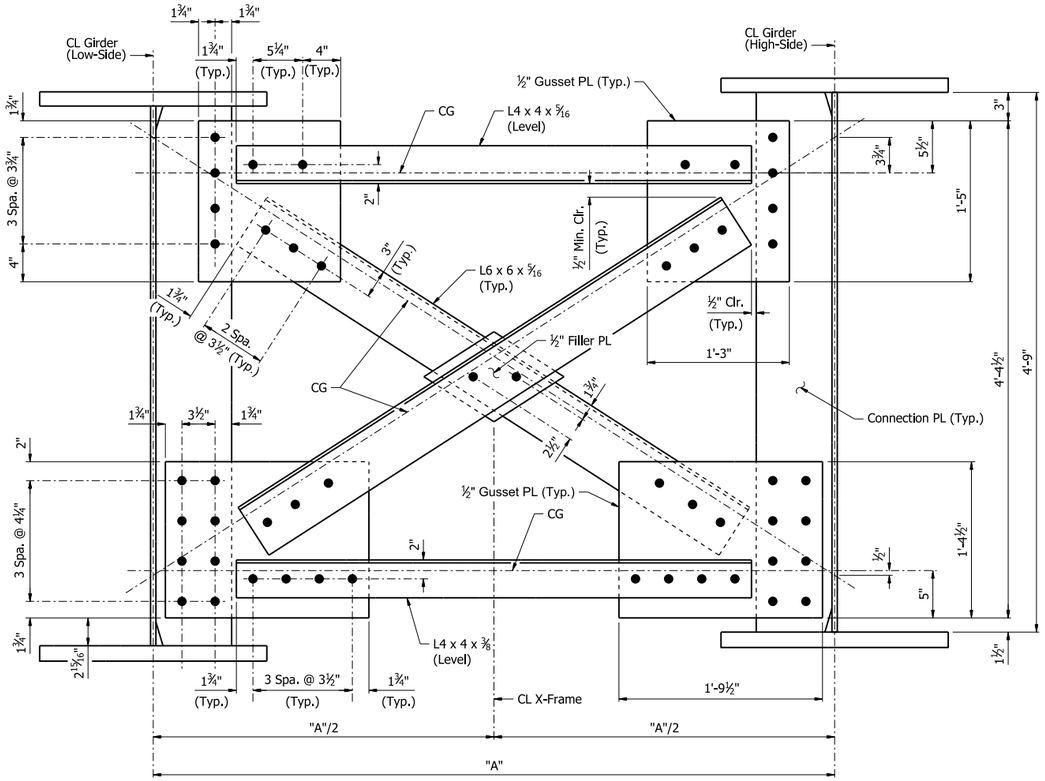
All holes shall be drilled for K-Frames connection and shall be 1⅛"Ø.

For Connection Plate and Bearing Stiffener details, see Dwg. No. 67650.

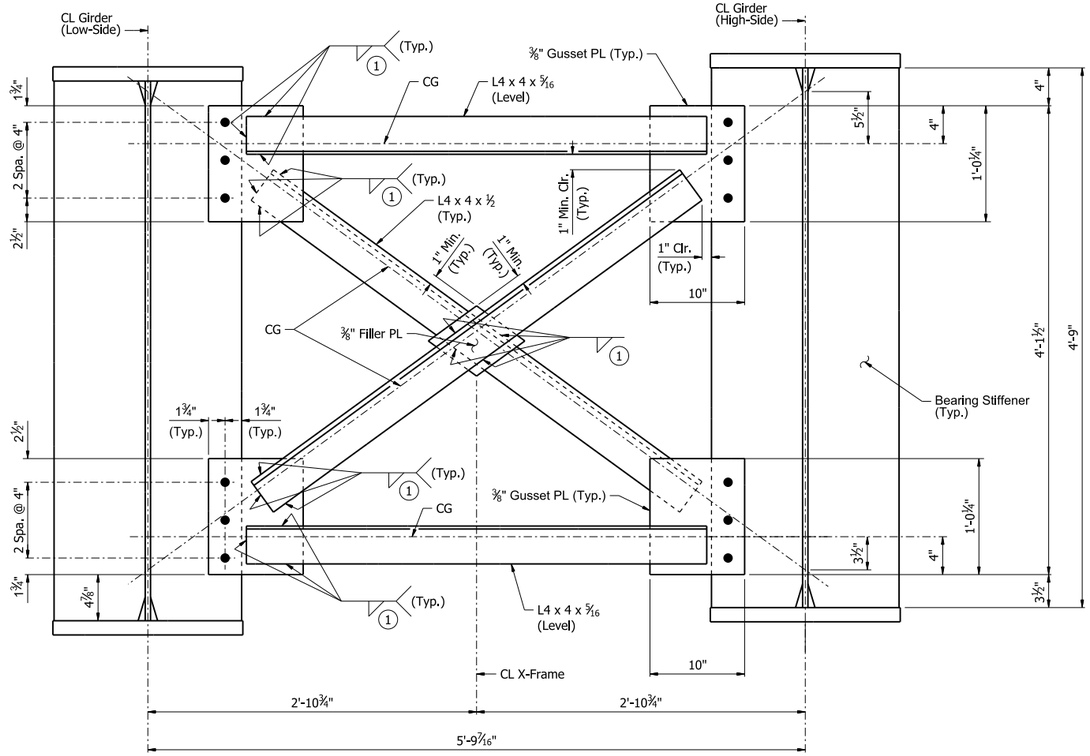
Conduits and ITS and Utility Supports not shown, see Dwg. Nos. 67672 - 67685 for details.

X-Frames are symmetric about CL, UNO.

(1) See "WELD TABLE", Std. Dwg. No. 55007.



DETAIL OF TYPE 8 X-FRAMES



DETAIL OF TYPE 7 X-FRAMES

TABLE OF VARIABLES

X-Frame Type	"A"
8	VARIES

PRINT DATE: 4/11/2024

STATE OF ARKANSAS
ENGINEER
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No. 22390
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4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 9 OF 15
DETAILS OF 420'-0" CONTINUOUS
PLATE GIRDER UNIT 2
49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 10/12/23
CHECKED BY: CZ DATE: 10/12/23
DESIGNED BY: DJG DATE: 4/18/23
FILENAME: b040901216_s29.dgn
SCALE: 1½" = 1'-0"

BRIDGE NO. 07685 DRAWING NO. 67648

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	589	809
		07685 - UNIT 2 - 67649				

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)."

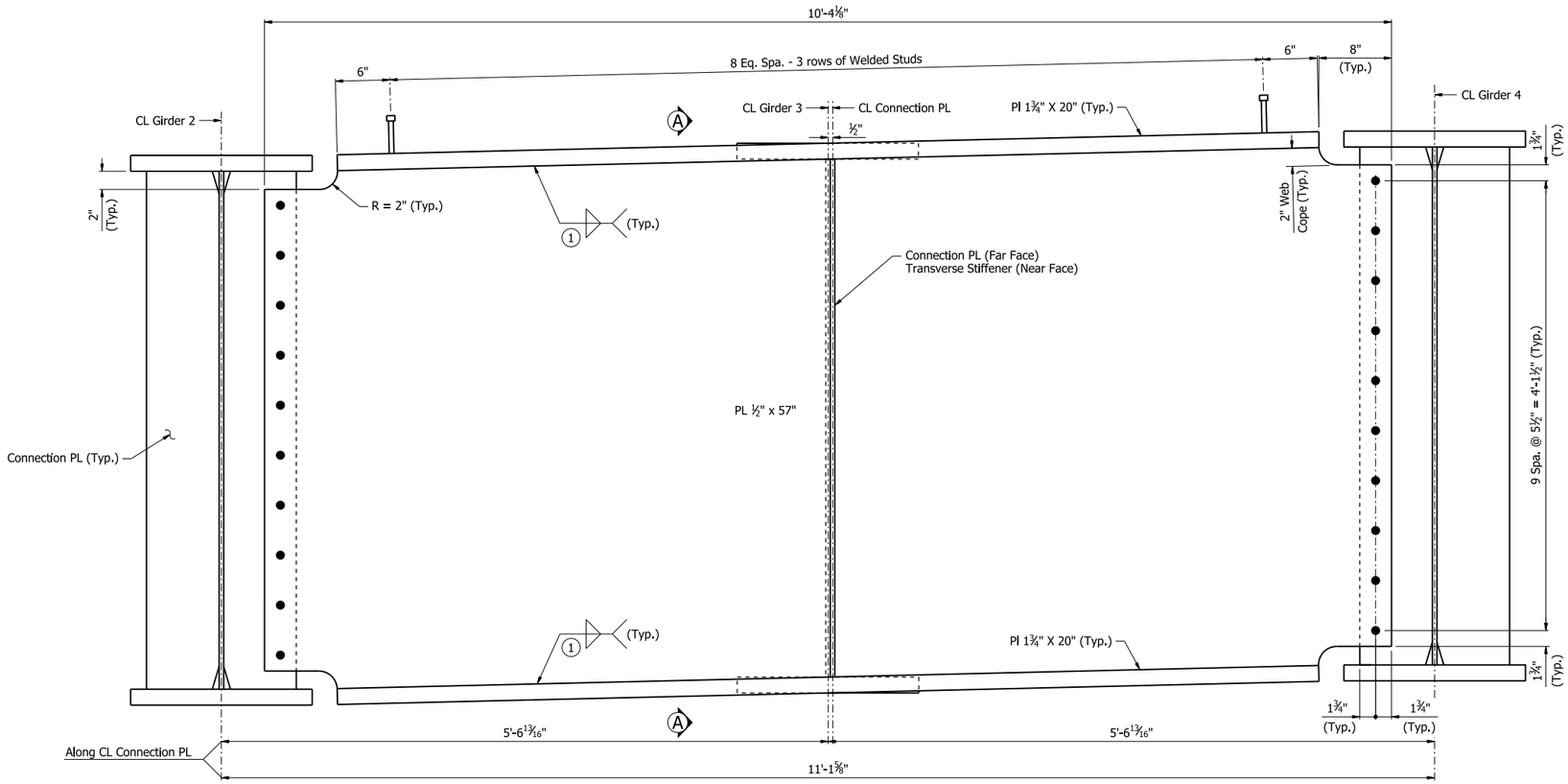
For location of Termination Diaphragm, see Dwg. No. 67642 & 67644.

All bolts shall be ASTM F3125, Gr. A325, 1"Ø H.S. bolts.

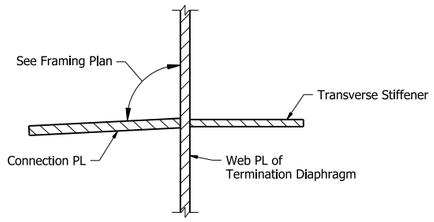
All holes shall be drilled for Termination Diaphragm connection and shall be 1⅛"Ø.

For Transverse Stiffener and Connection Plate details, see Dwg. No. 67650.

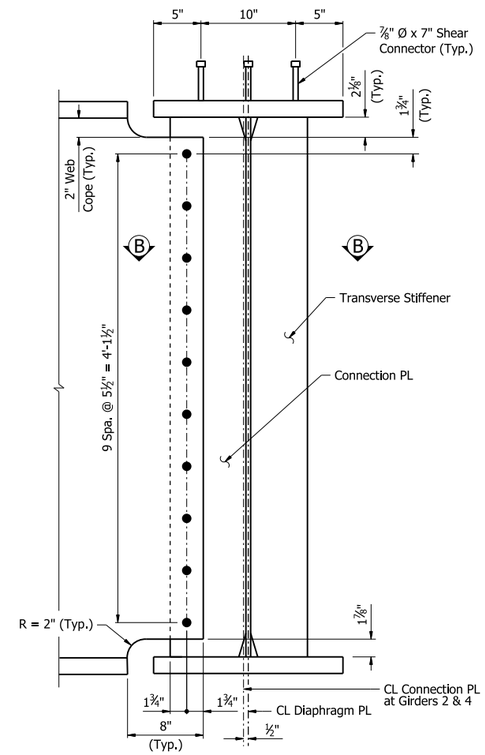
(1) See "WELD TABLE", Std. Dwg. No. 55007.



TERMINATION DIAPHRAGM
(Girder 3 shown. Girder 9 similar, UNO.)



SECTION B-B



SECTION A-A

STATE OF ARKANSAS
ENGINEER
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No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 10 OF 15
DETAILS OF 420'-0" CONTINUOUS
PLATE GIRDER UNIT 2
49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 10/12/23
CHECKED BY: CZ DATE: 10/12/23
DESIGNED BY: DJG DATE: 4/18/23
FILENAME: b040901216_s210.dgn
SCALE: 1½" = 1'-0"
BRIDGE NO. 07685
DRAWING NO. 67649

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	590	809
		07685 - UNIT 2 - 67650				

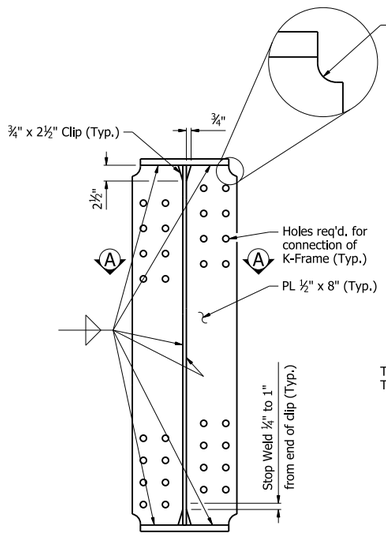
Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)."

For location of stiffeners and connection plates, see Dwg. Nos. 67642 & 67644.

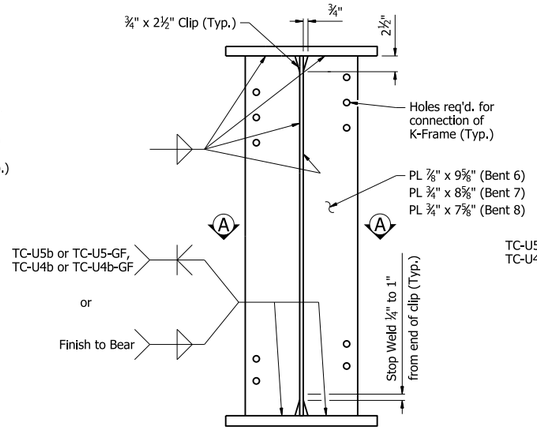
For details of K-Frames, see Dwg. Nos. 67646 - 67649.

See "WELD TABLE" for minimum weld sizes on Std. Dwg. No. 55007.

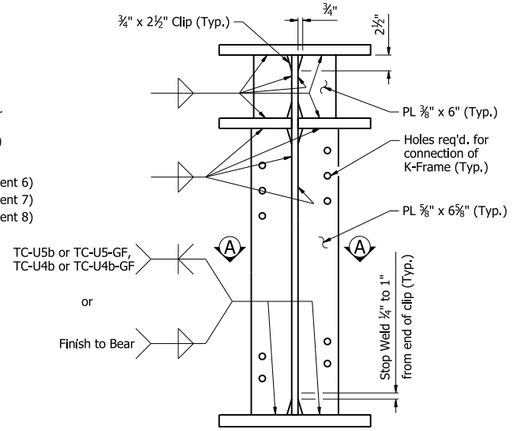
(1) If permanent steel bridge deck forms are used, the Fabricator shall clip the plates as necessary to accommodate the deck for support.



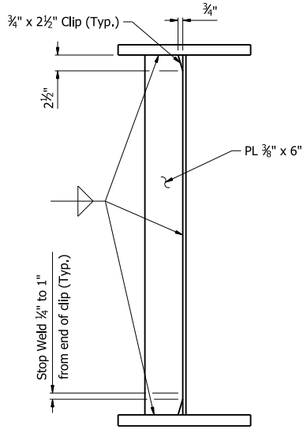
CONNECTION PLATES
(Located at K-Frame Type 1-4)



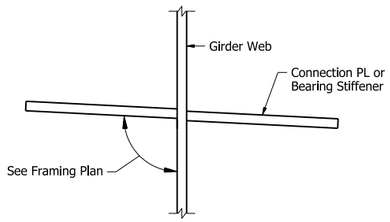
BEARING STIFFENERS
AT BENT NOS. 6-8
(Located at K-Frame Type 6)



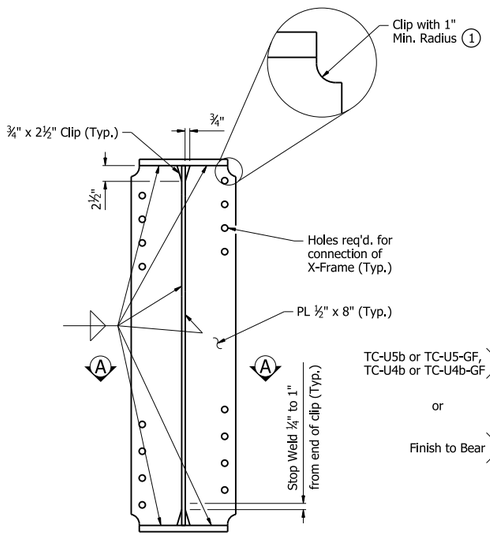
BEARING STIFFENERS
AT BENT NOS. 5 & 9
(Located at K-Frame Type 5)



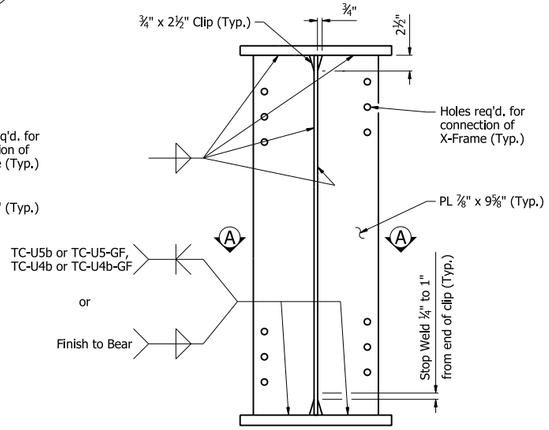
TRANSVERSE STIFFENER



SECTION A-A



CONNECTION PLATES
(Located at X-Frame Type 8)



BEARING STIFFENERS
AT BENT NO. 6
(Located at X-Frame Type 7)

ALTERNATE NO. 2
SHEET 11 OF 15
DETAILS OF 420'-0" CONTINUOUS
PLATE GIRDER UNIT 2
49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

STATE OF ARKANSAS
PROFESSIONAL ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 10/12/23
CHECKED BY: CCD DATE: 10/18/23
DESIGNED BY: KBJ DATE: 7/4/23
FILENAME: b040901216_s211.dgn
SCALE: 1" = 1'-0"

BRIDGE NO. 07685 DRAWING NO. 67650

PRINT DATE: 4/16/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	591	809
				07685 - UNIT 2 - 67651		

Notes;
Camber for dead load deflection +/- ¼" tolerance. Deflections shown are along CL Girder from a chord from CL Bearing to CL Bearing. Negative sign (-) indicates point above chord. Vertical curve corrections are not included. Superelevation transition corrections not included.

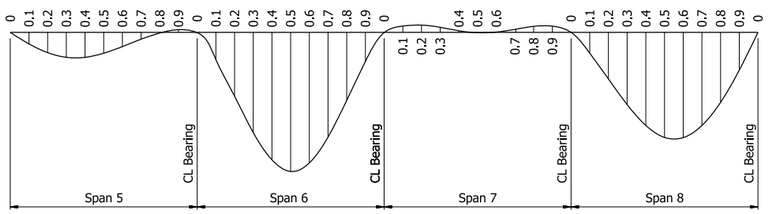
The additional weight for the permanent steel deck forms are included in the slab dead load deflections.

The additional weight of the ITS and utility support brackets are included with the steel dead load deflections. The weight of the conduits are included in the steel + slab + rail dead load deflections.

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Span	Point of Deflection	Structural Steel											Structural Steel + Slab										
		Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6	Girder 7	Girder 8	Girder 9	Girder 10	Girder 11	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6	Girder 7	Girder 8	Girder 9	Girder 10	Girder 11
Span 4	0.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.030	0.029	0.000	0.030	0.032	0.033	0.031	0.030	0.000	0.033	0.036	0.165	0.174	0.000	0.180	0.188	0.194	0.188	0.181	0.000	0.177	0.171
	0.2	0.053	0.051	0.000	0.052	0.056	0.058	0.055	0.053	0.000	0.057	0.063	0.288	0.300	0.000	0.312	0.329	0.339	0.329	0.313	0.000	0.306	0.298
	0.3	0.065	0.061	0.000	0.063	0.069	0.072	0.068	0.064	0.000	0.069	0.078	0.350	0.358	0.000	0.374	0.402	0.417	0.402	0.375	0.000	0.366	0.363
	0.4	0.066	0.060	0.000	0.061	0.070	0.073	0.069	0.062	0.000	0.067	0.078	0.346	0.342	0.000	0.359	0.400	0.419	0.399	0.359	0.000	0.350	0.359
	0.5	0.056	0.047	0.000	0.048	0.059	0.063	0.058	0.048	0.000	0.053	0.066	0.282	0.261	0.000	0.276	0.330	0.352	0.329	0.276	0.000	0.267	0.293
	0.6	0.038	0.027	0.000	0.028	0.040	0.044	0.039	0.027	0.000	0.031	0.045	0.178	0.139	0.000	0.151	0.214	0.235	0.213	0.150	0.000	0.144	0.186
	0.7	0.018	0.006	0.000	0.007	0.020	0.023	0.019	0.006	0.000	0.008	0.022	0.070	0.021	0.000	0.027	0.091	0.109	0.090	0.026	0.000	0.022	0.074
	0.8	0.001	-0.008	-0.010	-0.008	0.002	0.004	0.001	-0.009	-0.011	-0.008	0.002	-0.015	-0.058	-0.064	-0.055	-0.006	0.006	-0.007	-0.057	-0.064	-0.058	-0.014
	0.9	-0.007	-0.012	-0.010	-0.012	-0.007	-0.006	-0.007	-0.013	-0.011	-0.013	-0.008	-0.049	-0.071	-0.059	-0.071	-0.048	-0.043	-0.048	-0.072	-0.059	-0.072	-0.050
Span 5	0.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.072	0.075	0.075	0.075	0.073	0.072	0.074	0.078	0.079	0.082	0.082	0.383	0.389	0.385	0.398	0.410	0.413	0.411	0.401	0.390	0.395	0.393
	0.2	0.166	0.171	0.171	0.171	0.169	0.168	0.171	0.177	0.181	0.186	0.190	0.889	0.891	0.889	0.916	0.953	0.964	0.955	0.922	0.898	0.907	0.913
	0.3	0.262	0.267	0.269	0.269	0.267	0.267	0.271	0.278	0.284	0.292	0.301	1.418	1.414	1.415	1.455	1.523	1.545	1.526	1.465	1.431	1.438	1.456
	0.4	0.334	0.339	0.340	0.341	0.340	0.341	0.345	0.353	0.361	0.371	0.383	1.816	1.808	1.814	1.863	1.954	1.986	1.958	1.875	1.834	1.840	1.865
	0.5	0.367	0.371	0.373	0.374	0.374	0.375	0.379	0.387	0.396	0.407	0.422	2.002	1.992	2.002	2.055	2.156	2.194	2.161	2.069	2.025	2.028	2.056
	0.6	0.344	0.348	0.349	0.350	0.351	0.353	0.356	0.363	0.371	0.382	0.396	1.883	1.875	1.884	1.935	2.030	2.065	2.034	1.948	1.905	1.909	1.934
	0.7	0.276	0.279	0.280	0.281	0.282	0.283	0.286	0.291	0.297	0.306	0.317	1.512	1.507	1.513	1.555	1.630	1.658	1.634	1.566	1.531	1.534	1.553
	0.8	0.180	0.182	0.183	0.183	0.184	0.185	0.187	0.190	0.194	0.200	0.207	0.987	0.985	0.988	1.016	1.064	1.081	1.066	1.023	0.999	1.003	1.013
	0.9	0.080	0.081	0.081	0.081	0.082	0.082	0.083	0.085	0.086	0.089	0.092	0.441	0.441	0.442	0.455	0.475	0.482	0.476	0.458	0.447	0.449	0.452
	1.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Span 6	0.1	-0.018	-0.018	-0.018	-0.018	-0.018	-0.018	-0.019	-0.020	-0.020	-0.020	-0.021	-0.120	-0.124	-0.129	-0.128	-0.126	-0.127	-0.127	-0.129	-0.131	-0.126	-0.123
	0.2	-0.019	-0.019	-0.019	-0.019	-0.019	-0.020	-0.021	-0.022	-0.022	-0.021	-0.022	-0.152	-0.161	-0.171	-0.166	-0.157	-0.156	-0.158	-0.169	-0.174	-0.164	-0.155
	0.3	-0.013	-0.012	-0.012	-0.012	-0.012	-0.013	-0.014	-0.016	-0.016	-0.014	-0.015	-0.137	-0.151	-0.165	-0.155	-0.137	-0.134	-0.139	-0.159	-0.169	-0.154	-0.139
	0.4	-0.004	-0.003	-0.003	-0.003	-0.003	-0.004	-0.006	-0.008	-0.007	-0.005	-0.005	-0.105	-0.123	-0.140	-0.126	-0.100	-0.094	-0.102	-0.130	-0.144	-0.125	-0.106
	0.5	0.001	0.002	0.002	0.002	0.002	0.001	-0.001	-0.002	-0.002	0.001	0.001	-0.082	-0.104	-0.120	-0.105	-0.075	-0.067	-0.077	-0.110	-0.124	-0.105	-0.082
	0.6	-0.001	0.000	0.000	0.000	0.000	-0.001	-0.002	-0.004	-0.004	-0.001	-0.001	-0.089	-0.110	-0.128	-0.113	-0.084	-0.076	-0.086	-0.117	-0.131	-0.111	-0.089
	0.7	-0.008	-0.007	-0.007	-0.007	-0.007	-0.008	-0.009	-0.011	-0.011	-0.009	-0.009	-0.118	-0.136	-0.151	-0.140	-0.118	-0.112	-0.120	-0.144	-0.155	-0.138	-0.119
	0.8	-0.015	-0.015	-0.015	-0.015	-0.015	-0.016	-0.017	-0.018	-0.018	-0.017	-0.018	-0.140	-0.154	-0.166	-0.160	-0.146	-0.143	-0.147	-0.162	-0.169	-0.156	-0.143
	0.9	-0.016	-0.016	-0.016	-0.016	-0.016	-0.016	-0.017	-0.018	-0.018	-0.018	-0.019	-0.118	-0.126	-0.133	-0.131	-0.126	-0.125	-0.127	-0.132	-0.135	-0.128	-0.121
	1.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Span 7	0.1	0.055	0.055	0.056	0.056	0.056	0.056	0.056	0.058	0.059	0.062	0.064	0.333	0.344	0.349	0.357	0.363	0.365	0.364	0.359	0.353	0.350	0.342
	0.2	0.122	0.124	0.124	0.125	0.125	0.125	0.126	0.128	0.132	0.137	0.143	0.736	0.758	0.770	0.787	0.804	0.809	0.805	0.791	0.777	0.772	0.756
	0.3	0.189	0.192	0.193	0.193	0.194	0.194	0.195	0.199	0.204	0.213	0.221	1.133	1.166	1.184	1.211	1.239	1.248	1.241	1.217	1.195	1.188	1.165
	0.4	0.244	0.247	0.248	0.249	0.249	0.250	0.251	0.256	0.263	0.274	0.285	1.455	1.497	1.519	1.555	1.593	1.604	1.594	1.562	1.534	1.524	1.496
	0.5	0.277	0.280	0.281	0.282	0.283	0.283	0.285	0.289	0.298	0.311	0.323	1.644	1.689	1.716	1.757	1.799	1.813	1.801	1.764	1.733	1.720	1.690
	0.6	0.277	0.281	0.282	0.283	0.283	0.284	0.285	0.290	0.298	0.312	0.324	1.644	1.691	1.717	1.758	1.801	1.815	1.803	1.765	1.734	1.722	1.691
	0.7	0.245	0.248	0.250	0.250	0.251	0.251	0.252	0.257	0.264	0.276	0.286	1.453	1.495	1.518	1.554	1.592	1.605	1.594	1.560	1.532	1.522	1.494
	0.8	0.184	0.187	0.188	0.188	0.188	0.189	0.190	0.193	0.198	0.207	0.215	1.091	1.123	1.140	1.167	1.196	1.205	1.197	1.172	1.151	1.143	1.122
	0.9	0.100	0.101	0.101	0.102	0.102	0.102	0.102	0.104	0.107	0.112	0.116	0.589	0.607	0.616	0.631	0.646	0.652	0.647	0.633	0.622	0.618	0.606
	1.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Span	Point of Deflection	Structural Steel + Slab + Rail										
		Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6	Girder 7	Girder 8	Girder 9	Girder 10	Girder 11
Span 4	0.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.212	0.184	0.000	0.183	0.198	0.219	0.198	0.185	0.000	0.193	0.226
	0.2	0.371	0.318	0.000	0.316	0.346	0.382	0.346	0.320	0.000	0.335	0.395
	0.3	0.455	0.381	0.000	0.378	0.422	0.470	0.422	0.382	0.000	0.401	0.485
	0.4	0.457	0.365	0.000	0.360	0.420	0.476	0.419	0.364	0.000	0.385	0.488
	0.5	0.383	0.279	0.000	0.274	0.346	0.402	0.345	0.277	0.000	0.297	0.411
	0.6	0.258	0.149	0.000	0.143	0.223	0.275	0.222	0.144	0.000	0.161	0.278
	0.7	0.123	0.021	0.000	0.017	0.095	0.136	0.093	0.016	0.000	0.028	0.135
	0.8	0.012	-0.063	-0.140	-0.066	-0.008	0.020	-0.009	-0.068	-0.142	-0.061	0.016
	0.9	-0.042	-0.077	-0.112	-0.079	-0.051	-0.039	-0.052	-0.080	-0.119	-0.078	-0.042
Span 5	0.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.444	0.419	0.410	0.420	0.435	0.449	0.438	0.426	0.420	0.435	0.466
	0.2	1.028	0.963	0.944	0.964	1.011	1.046	1.017	0.979	0.967	0.999	1.081
	0.3	1.635	1.530	1.502	1.532	1.614	1.670	1.623	1.555	1.540	1.587	1.720
	0.4	2.089	1.957	1.926	1.961	2.070	2.141	2.082	1.990	1.974	2.029	2.197
	0.5	2.297	2.158	2.127	2.164	2.284	2.362	2.297	2.196	2.180	2.237	2.415
	0.6	2.160	2.030	2.001	2.038	2.152	2.227	2.164	2.068	2.050	2.104	2.270
	0.7	1.734	1.631	1.609	1.640	1.730	1.792	1.740	1.664	1.648	1.691	1.821
	0.8	1.131	1.065	1.051	1.073	1.131	1.172	1.137	1.088	1.076	1.104	1.186
	0.9	0.503	0.476	0.472	0.482	0.506	0.525	0.509	0.489	0.483	0.493	0.527
	1.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Span 6	0.1	-0.115	-0.137	-0.143	-0.142	-0.136	-0.127	-0.137	-0.145	-0.147	-0.139	-0.117
	0.2	-0.129	-0.179	-0.195	-0.190	-0.170	-0.150	-0.173	-0.195	-0.199	-0.180	-0.130
	0.3	-0.093	-0.170	-0.196	-0.186	-0.150	-0.118	-0.154	-0.192	-0.200	-0.169	-0.089
	0.4	-0.042	-0.140	-0.173	-0.160	-0.110	-0.070	-0.115	-0.167	-0.178	-0.137	-0.034
	0.5	-0.012	-0.117	-0.153	-0.139	-0.083	-0.039	-0.088	-0.146	-0.157	-0.113	-0.002
	0.6	-0.025	-0.125	-0.159	-0.144	-0.091	-0.048	-0.096	-0.151	-0.163	-0.121	-0.016
	0.7	-0.070	-0.151	-0.179	-0.167	-0.126	-0.090	-0.129	-0.173	-0.183	-0.150	-0.066
	0.8	-0.116	-0.169	-0.187	-0.180	-0.154	-0.131	-0.157	-0.185	-0.191	-0.171	-0.117
	0.9	-0.114	-0.137	-0.145	-0.142	-0.132	-0.122	-0.134	-0.145	-0.148	-0.140	-0.117
	1.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Span 7	0.1	0.382	0.368	0.366	0.371	0.382	0.394	0.384	0.376	0.374	0.381	0.402
	0.2	0.847	0.811	0.805	0.817	0.845	0.871	0.848	0.826	0.822	0.842	0.890
	0.3	1.305	1.248	1.236	1.256	1.302	1.342	1.306	1.269	1.262	1.295	1.373
	0.4	1.677	1.603	1.584	1.611	1.672	1.723	1.677	1.627	1.618	1.663	1.764
	0.5	1.894	1.811	1.789	1.818	1.888	1.945	1.894	1.836	1.827	1.879	1.993
	0.6	1.898	1.811	1.788	1.818	1.890	1.948	1.896	1.836	1.826	1.879	1.998
	0.7	1.679	1.601	1.580	1.606	1.670	1.723	1.675	1.622	1.613	1.661	1.768
	0.8	1.263	1.202	1.186	1.206	1.254	1.296	1.258	1.217	1.211	1.247	1.329
	0.9	0.684	0.649	0.640	0.651	0.678	0.702	0.680	0.657	0.654	0.674	0.720
	1.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000



DEAD LOAD DEFLECTION DIAGRAM

PRINT DATE: 4/11/2024

STATE OF ARKANSAS
ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 12 OF 15
DETAILS OF 420'-0" CONTINUOUS
PLATE GIRDER UNIT 2
49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

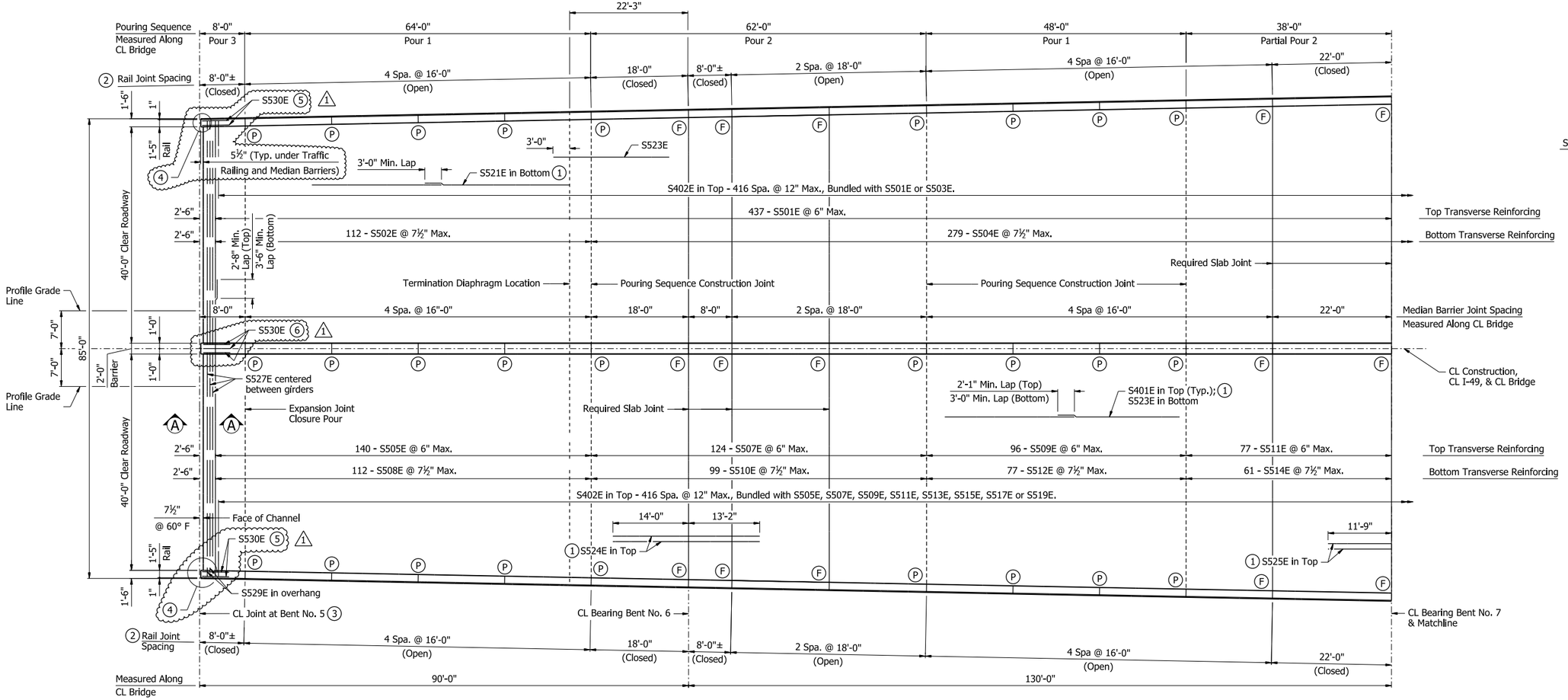
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 10/12/23
CHECKED BY: CCD DATE: 10/18/23
DESIGNED BY: DJG DATE: 4/18/23
FILENAME: b040901216_s212.dgn
SCALE: NO SCALE

BRIDGE NO. 07685 DRAWING NO. 67651

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
8/9/2024		6	ARK.	040901	592	809
		07685 - UNIT 2 - 67652				

1 Slab extension added below Rail and Median Barriers at Finger Joint locations. 8/9/2024



PARTIAL REINFORCING PLAN AND POURING SEQUENCE

Slab Pouring Sequence Notes:
Pours with the same number may be placed simultaneously or separately. All Pour(s) 1 must be placed before Pour(s) 2 can be placed. A minimum of 48 hours shall elapse between the end of a pour and the start of the next pour. A minimum of 72 hours shall elapse between adjacent pours.

Concrete in bridge superstructure shall be placed, consolidated, and screeded off for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent.

After all incremental pours on both Units adjacent to the Finger Joint are complete, closure pour 3 on each side of Finger Joint shall be poured simultaneously. For details of Finger Joint, see Dwg. Nos. 67696 & 67697. A minimum of 48 hours shall elapse between the last incremental pour and the closure pours.

A minimum of 72 hours shall elapse between completion of the slab and the pouring of the bridge railing. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence(s) shown.

Notes:
Required slab joints and pouring sequence joints shall align with rail joints at the gutterline.

Slab varies lineraly between Bent Nos. 5 & 8 and is Symmetric about CL Bridge.

For "TRANSVERSE SLAB JOINT DETAIL", see Dwg. No. 55007.

For "DETAILS OF BRIDGE TRAFFIC RAIL TYPE SSTR42", see Dwg. No. 67686.

For "DETAILS OF MEDIAN BARRIER", see Dwg. No. 67689.

For "SECTION A-A", see Dwg. No. 67654.

(1) Place as shown in "TYPICAL ROADWAY SECTION", see Dwg. Nos. 67640 & 67641.

(2) Measured along Gutterline.

(3) For Joint types, see Dwg. Nos. 67599 - 67603.

(F) CL Full-Depth Rail Joint

(P) CL Partial-Depth Rail Joint

1 (4) In the slab extension, cut R403E 8" leg to maintain concrete cover.

1 (5) 2-S530E in Top, 3-S530E in Bottom.

1 (6) 3-S530E @ Eq. Spa., Top and Bottom.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 22535
RACHEL L. WESSON
8/9/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 13 OF 15
DETAILS OF 420'-0" CONTINUOUS PLATE GIRDER UNIT 2
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

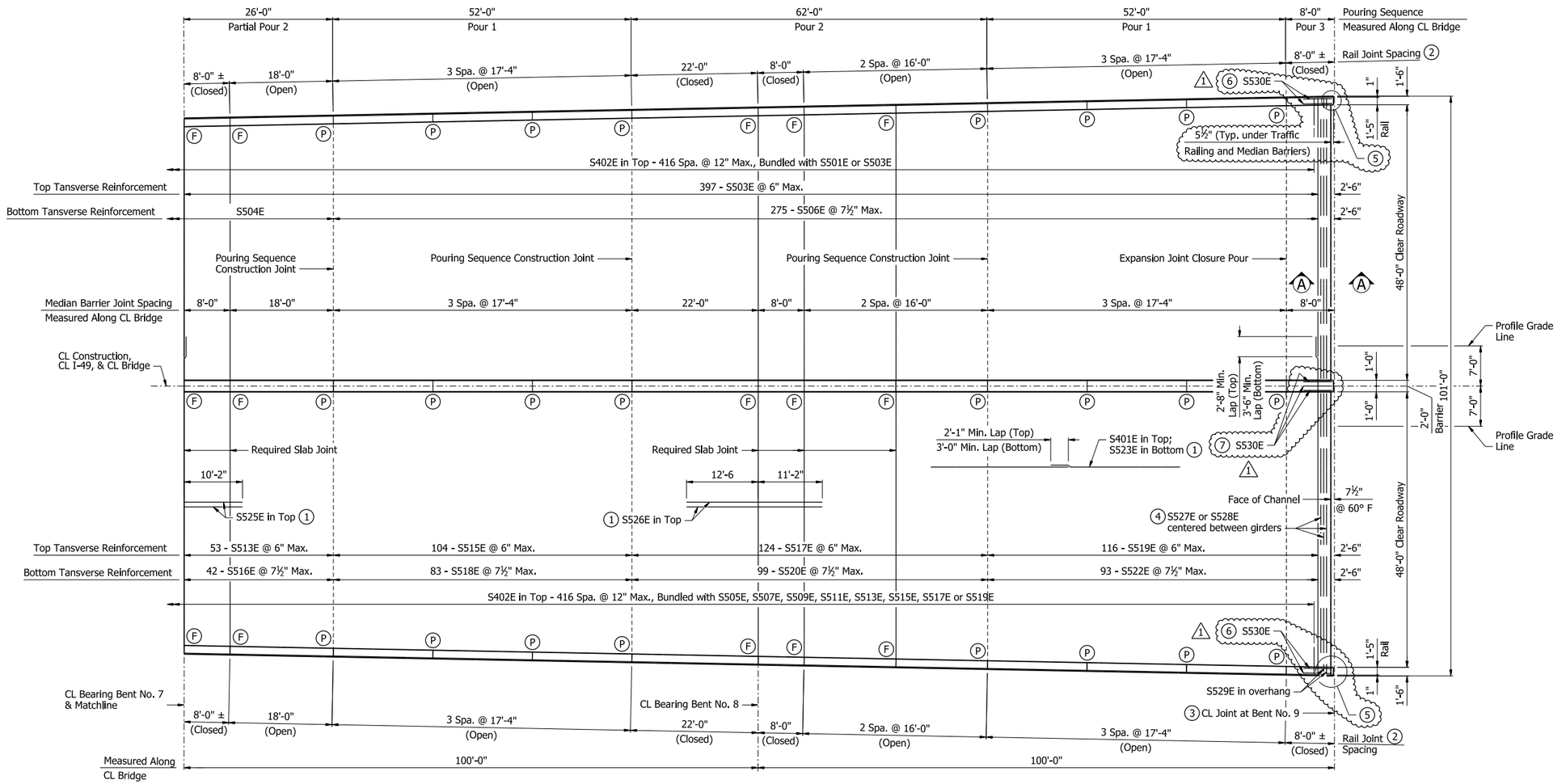
DRAWN BY: CTK DATE: 12/1/23
CHECKED BY: RLW DATE: 12/5/23
DESIGNED BY: RCR DATE: 7/21/22
FILENAME: b040901216_s213.dgn
SCALE: 3/32" = 1'-0"

BRIDGE NO. 07685 DRAWING NO. 67652

PRINT DATE: 8/15/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
8/9/2024		6	ARK.	040901	593	809
		07685 - UNIT 2 - 67653				

1 Slab extension added below Rail and Median Barriers at Finger Joint locations. 8/9/2024



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After all incremental pours on both Units adjacent to the Finger Joint are complete, closure pour 3 on each side of Finger Joint shall be poured simultaneously. For details of Finger Joint, see Dwg. Nos. 67696 & 67697. A minimum of 48 hours shall elapse between the last incremental pour and the closure pours.

A minimum of 72 hours shall elapse between completion of the slab and the pouring of the bridge railing. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence(s) shown.

Notes:
Required slab joints and pouring sequence joints shall align with rail joints at the gutterline.

Slab varies linearly between Bent Nos. 5 & 8 and is symmetric about CL Bridge.

For "TRANSVERSE SLAB JOINT DETAIL", see Dwg. No. 55007.

For "DETAILS OF BRIDGE TRAFFIC RAIL TYPE SSTR42", see Dwg. No. 67686.

For "DETAILS OF MEDIAN BARRIER", see Dwg. No. 67689.

For "SECTION A-A", see Dwg. No. 67654.

(1) Place as shown in "TYPICAL ROADWAY SECTION", see Dwg. Nos. 67640 & 67641.

(2) Measured Along Gutter Line.

(3) For Joint types, see Dwg. Nos. 67599 - 67603.

(4) S527E - between girders with 9'-10" spacing;
S528E - between girders with 9'-0" spacing.

(F) CL Full-Depth Rail Joint

(P) CL Partial-Depth Rail Joint

1 (5) In the slab extension, cut R403E 8" leg to maintain concrete cover.

1 (6) 2-S530E in Top, 3-S530E in Bottom.

1 (7) 3-S530E @ Eq. Spa., Top and Bottom.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 22535
RACHEL L. WESSON
8/9/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 14 OF 15
DETAILS OF 420'-0" CONTINUOUS PLATE GIRDER UNIT 2
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 12/1/23
CHECKED BY: RLW DATE: 12/5/23
DESIGNED BY: RCR DATE: 7/21/22
FILENAME: b040901216_s214.dgn
SCALE: 3/32" = 1'-0"

BRIDGE NO. 07685 DRAWING NO. 67653

PRINT DATE: 8/15/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
8/9/2024		6	ARK.	040901	594	809
		07685 - UNIT 2 - 67654				

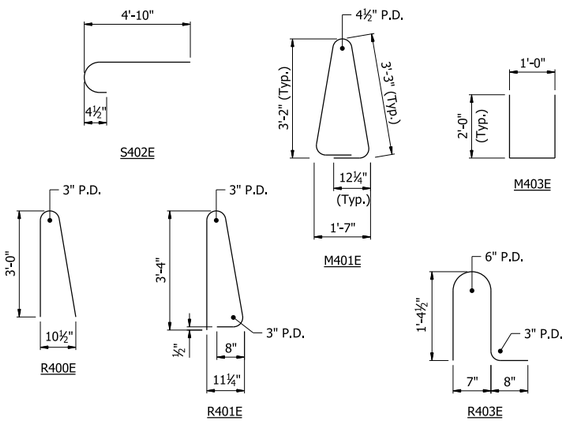
1 Slab extension added below Rail and Median Barriers at Finger Joint locations. 8/9/2024

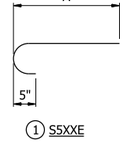
Notes:
For details of Finger Joint, see Dwg. Nos. 67696 & 67697.

BAR LIST

Mark	Number Required	Length	Pin Dia.
S401E	1030	43'-6"	Str.
S402E	834	5'-4"	3"
S501E	437	42'-1"	3¾"
S502E	112	39'-8"	Str.
S503E	397	45'-10"	3¾"
S504E	278	42'-6"	Str.
S505E	140	49'-2"	3¾"
S506E	275	46'-0"	Str.
S507E	124	51'-7"	3¾"
S508E	112	51'-3"	Str.
S509E	96	53'-4"	3¾"
S510E	99	50'-10"	Str.
S511E	77	54'-10"	3¾"
S512E	77	52'-8"	Str.
S513E	53	52'-1"	3¾"
S514E	61	54'-1"	Str.
S515E	104	54'-1"	3¾"
S516E	42	55'-1"	Str.
S517S	124	56'-5"	3¾"
S518E	83	53'-10"	Str.
S519E	116	58'-7"	3¾"
S520E	99	55'-11"	Str.
S521E	168	35'-0"	Str.
S522E	93	58'-2"	Str.
S523E	672	53'-3"	Str.
S524E	204	27'-2"	Str.
S525E	204	21'-11"	Str.
S526E	204	23'-8"	Str.
S527E	70	8'-2"	Str.
S528E	20	7'-6"	Str.
S529E	12	2'-2"	Str.
1 S530E	32	5'-0"	Str.
R400E	304	6'-3"	3"
R401E	1620	7'-6"	3"
R402E	136	5'-6"	Str.
R403E	~~1600~~	3'-8"	3"
R413E	200	15'-8"	Str.
R415E	120	17'-0"	Str.
R416E	80	17'-8"	Str.
R417E	40	21'-8"	Str.
R418E	100	7'-8"	Str.
	1 1620		
M401E	842	9'-0"	2"
M402E	68	5'-6"	Str.
M403E	832	4'-10"	3"
M413E	100	15'-8"	Str.
M415E	60	17'-0"	Str.
M416E	40	21'-8"	Str.
M417E	20	21'-8"	Str.
M418E	50	7'-8"	Str.

Bending Diagrams
(Dimensions are out to out of bars)

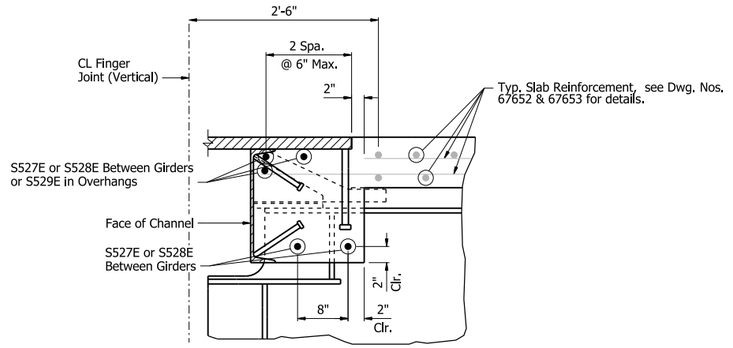




1 S5XXE

Mark 1	A
S501E	41'-6"
S503E	45'-3"
S505E	48'-7"
S507E	51'-0"
S509E	52'-9"
S511E	54'-3"
S513E	51'-6"
S515E	53'-6"
S517E	55'-10"
S519E	58'-0"

All bars designated with an "E" suffix are to be epoxy coated.



AT BENTS WITH FINGER JOINTS

SECTION A-A

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 22535
RACHEL L. WESSON
8/9/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 15 OF 15
DETAILS OF 420'-0" CONTINUOUS
PLATE GIRDER UNIT 2
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

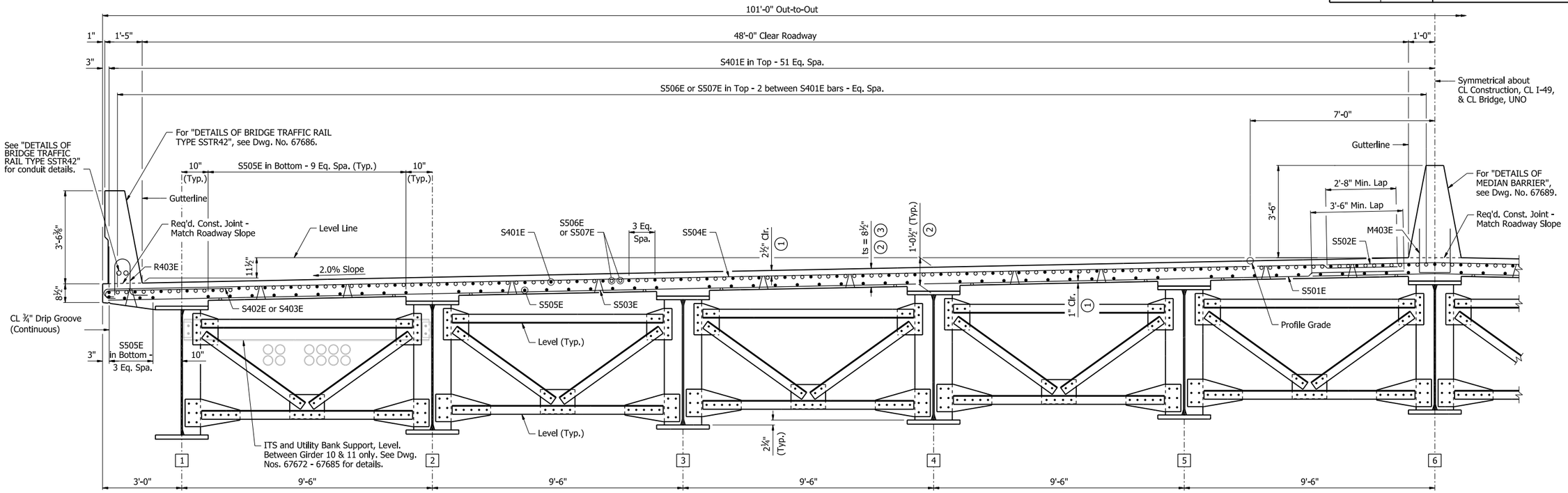
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 12/1/23
CHECKED BY: RLW DATE: 12/5/23
DESIGNED BY: RCR DATE: 7/21/22
FILENAME: b040901216_s215.dgn
SCALE: 1" = 1'-0"

BRIDGE NO. 07685 DRAWING NO. 67654

PRINT DATE: 8/15/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	595	809
		07685 - UNIT 3 - 67655				



TYPICAL ROADWAY SECTION

(Looking Upstation)
½" = 1'-0"

Notes:
For details of Bridge Finishes and Protective Surface Treatment, see Dwg No. 67372.

For "HALF REINFORCING PLAN AND POURING SEQUENCE", see Dwg. No. 67662.

For "COMMON DETAILS OF SECTIONS NEAR JOINTS", see Dwg. No. 67691.

For K-Frame details, see Dwg. Nos. 67659 & 67660.

SLAB REINFORCING:
Longitudinal: S401E in Top placed as shown
S506E or S507E in Top placed as shown over Intermediate Bents
S505E in Bottom placed as shown

Transverse: Alternate S502E and S504E in Top @ 6" Max.
Alternate S501E and S503E in Bottom @ 7½" Max.
S402E or S403E in Top @ 12" Max., Bundled with S502E or S504E

(1) Tolerance: Minus =¼"; Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE".

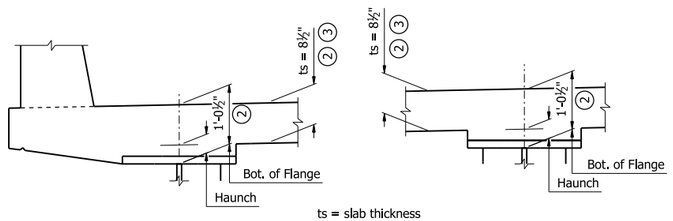
Bar positions or clearances from the forms shall be maintained by means of stays, ties, hangers, or other approved devices per Subsection 804.06. Placement of slab bolsters or high-chairs with full-length lower runners directly on removable deck forms will not be allowed.

(2) Haunch dimensions may vary within the following limits to maintain the grade and slab thickness tolerance:

Top Flange	Haunch Adjustment Tolerance	
	Plus	Minus
1" x 14"	1⅞"	1⅞"
1" x 16"	1¾"	1¾"
1½" x 16"	2¼"	1¼"
1⅞" x 20"	2⅝"	1"

No increase in concrete and structural steel quantities will be made to maintain tolerances. Tolerances shown are applicable for both removable deck forming and permanent steel deck forms. Payment for concrete shall be based on removable deck forming.

(3) Tolerance: Minus = ¼"; Plus = ½". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.



ts = slab thickness

EXTERIOR GIRDER INTERIOR GIRDER

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

¾" = 1'-0"

STATE OF ARKANSAS
ALLIE WAGNER
PROFESSIONAL ENGINEER
★★★
No. 22390
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 9
DETAILS OF 520'-0" CONTINUOUS PLATE GIRDER UNIT 3
49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

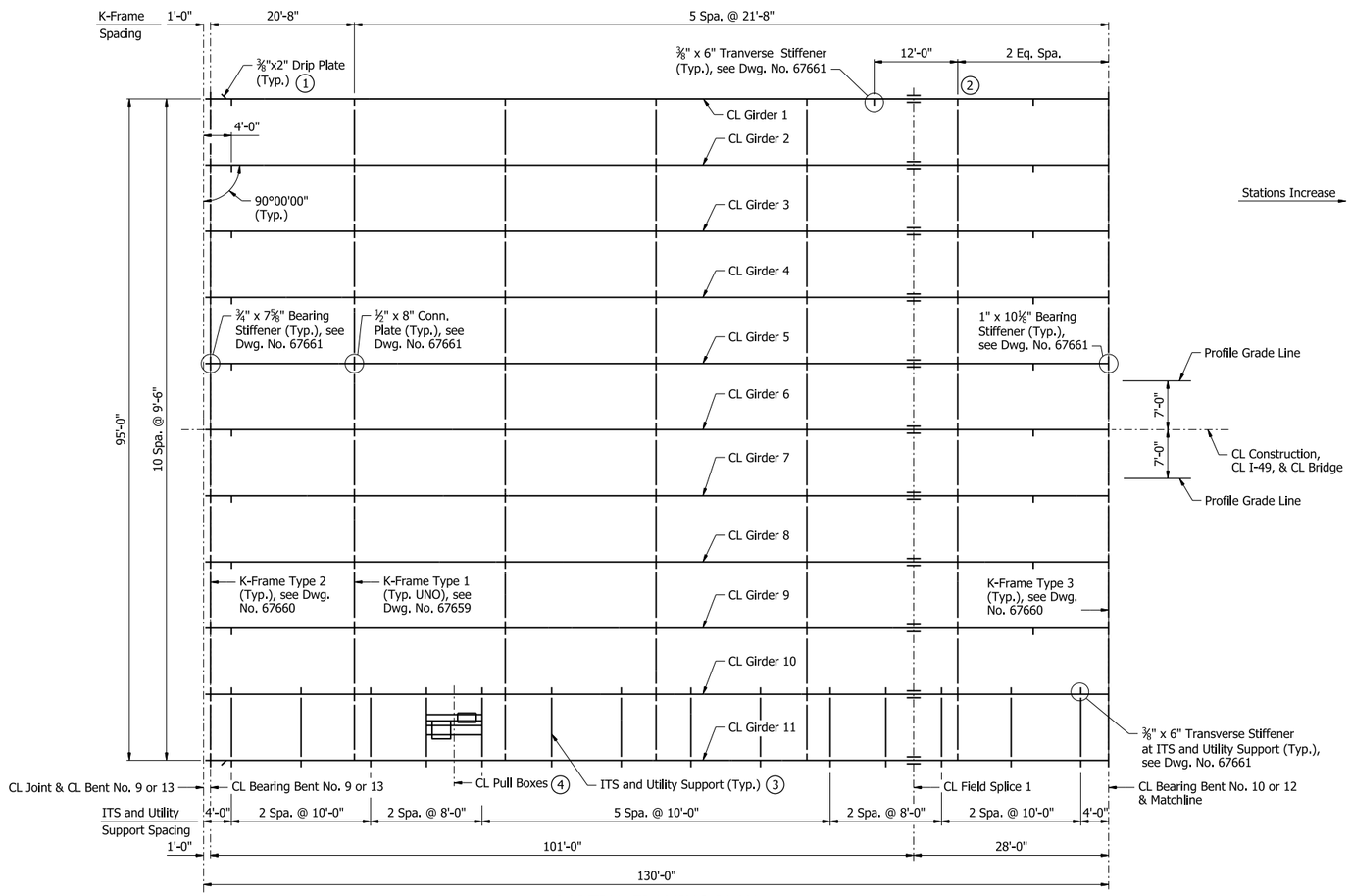
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 11/21/23 FILENAME: b040901216_s31.dgn
CHECKED BY: RCR DATE: 11/21/23 SCALE: AS NOTED
DESIGNED BY: RCR DATE: 7/21/22

BRIDGE NO. 07685 DRAWING NO. 67655

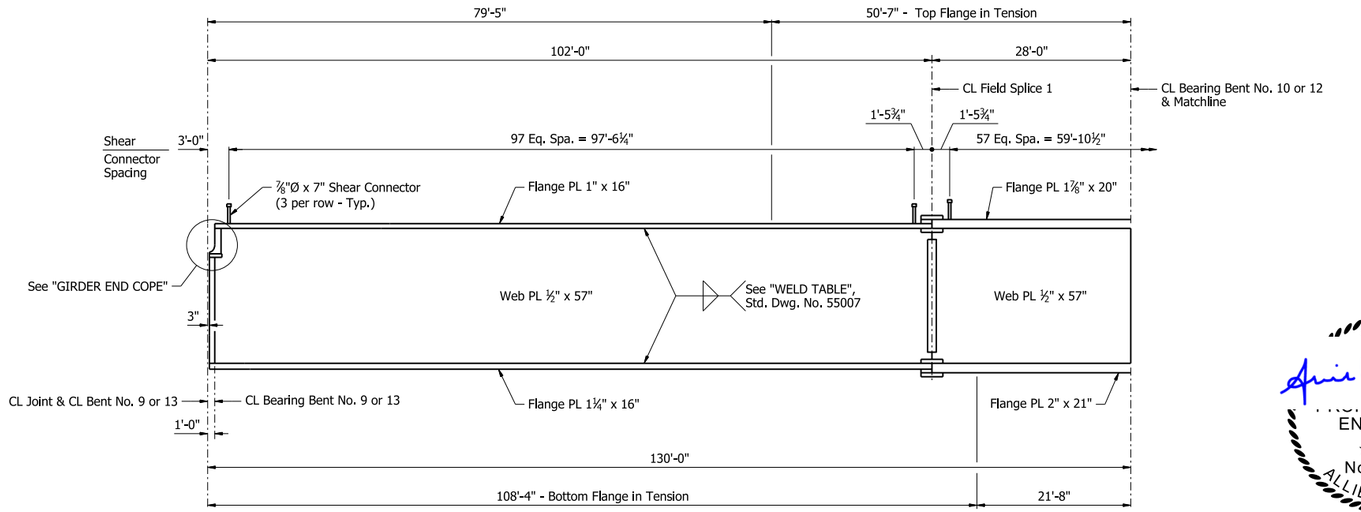
PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	596	809
		07685 - UNIT 3 - 67656				



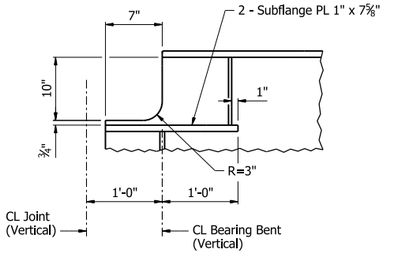
PARTIAL FRAMING PLAN

3/32" = 1'-0"



PARTIAL GIRDER ELEVATION

NO SCALE



GIRDER END COPE

1" = 1'-0"

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)."

For "DETAILS OF FIELD SPLICES", see Dwg. No. 67658.

For Dead Load deflections, see Dwg. No. 67661.

For ITS and Utility bank details, see Dwg. Nos. 67672 - 67685.

1. Location of drip plate is not symmetrical about Center of Unit. It shall be placed on the up-hill side of each bent. Stop weld 1" from edge of flange. See Std. Dwg. No. 55007 for additional details.
2. Connection Plates acting as transverse stiffeners. (Typical all girders.)
3. ITS and Utility Supports will not be placed at K-Frame locations.
4. Sta. 250+49.00
   Sta. 254+78.00

STATE OF ARKANSAS
ALLIE WAGNER
PROFESSIONAL ENGINEER
★★★
No. 22390
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 2 OF 9
DETAILS OF 520'-0" CONTINUOUS
PLATE GIRDER UNIT 3
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

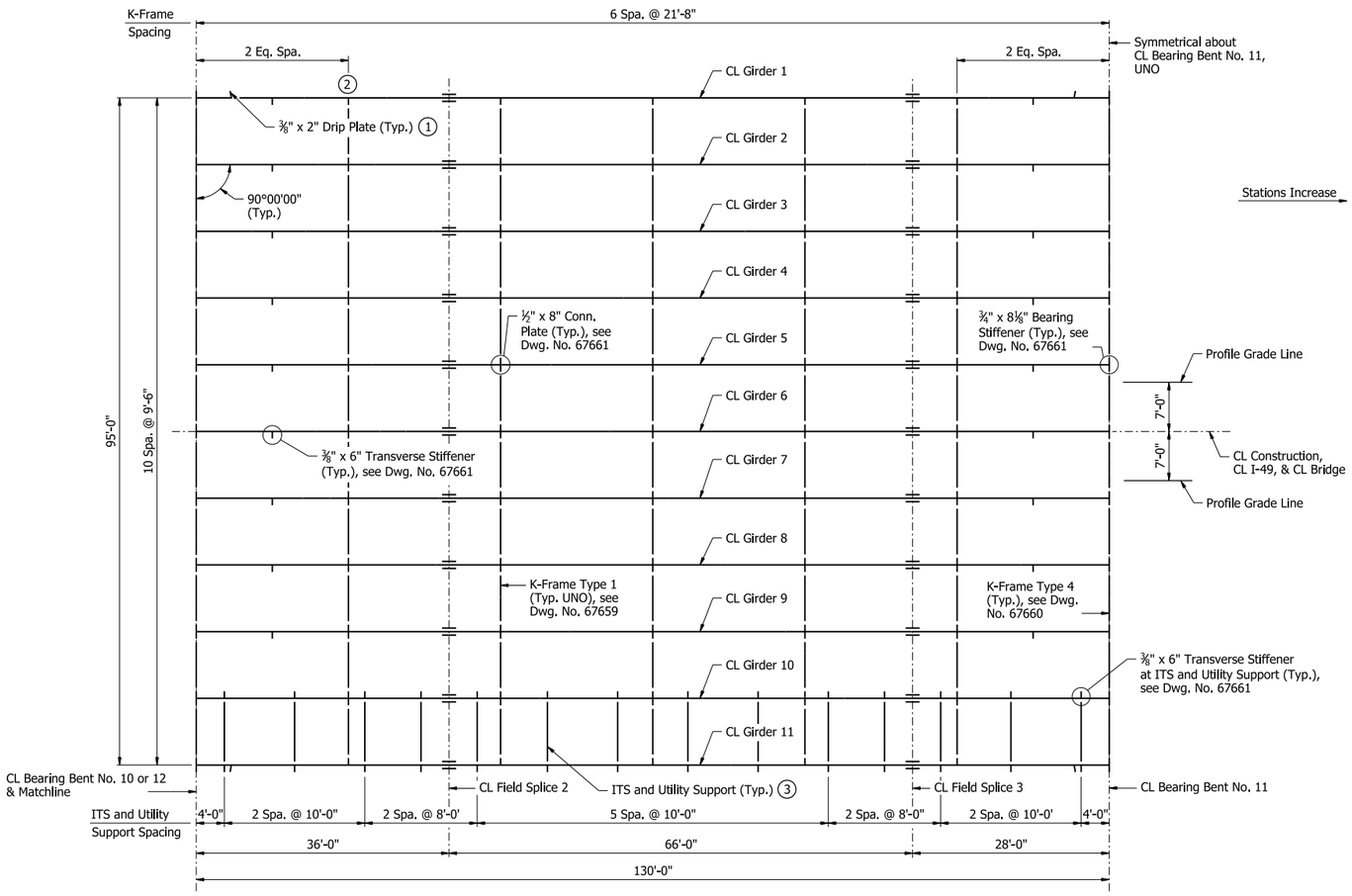
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 9/21/23
CHECKED BY: RLW DATE: 9/29/23
DESIGNED BY: SCB DATE: 4/24/23
FILENAME: b040901216_s32.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67656

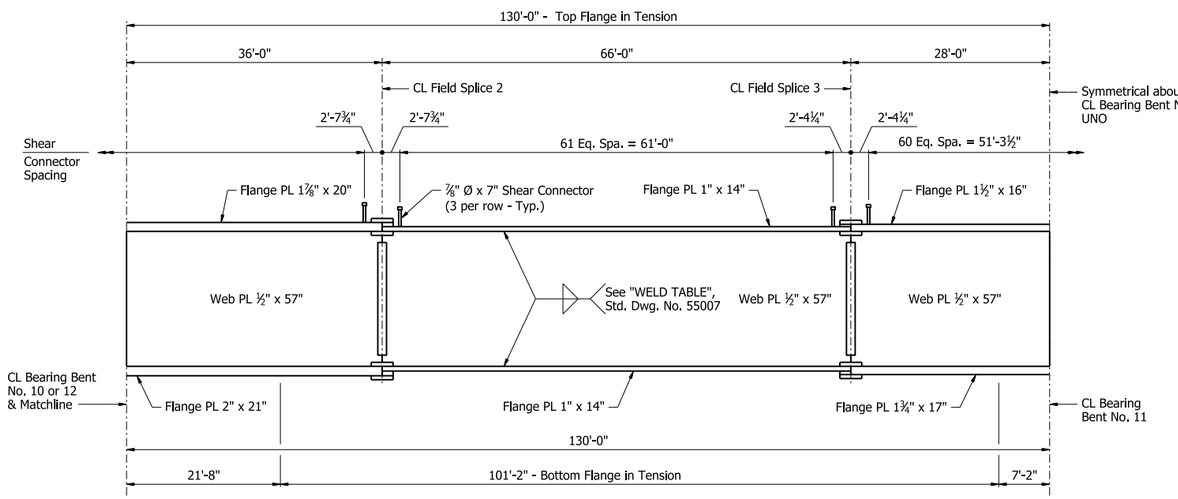
PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	597	809
		07685 - UNIT 3 - 67657				



PARTIAL FRAMING PLAN

3/32" = 1'-0"



PARTIAL GIRDER ELEVATION

No Scale

Notes:
For additional notes, see Dwg. No. 67656.

1. Location of drip plate is not symmetrical about Center of Unit. It shall be placed on the up-hill side of each bent. Stop weld 1" from edge of flange. See Std. Dwg. No. 55007 for additional details.
2. Connection Plates acting as transverse stiffeners. (Typical all girders.)
3. ITS and Utility Supports will not be placed at K-Frame locations.

For locations of predrilled holes for drainage, see Dwg. No. 67707.

STATE OF ARKANSAS
PROFESSIONAL ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 3 OF 9
DETAILS OF 520'-0" CONTINUOUS PLATE GIRDER UNIT 3
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 9/21/23
CHECKED BY: RLW DATE: 10/2/23
DESIGNED BY: SCB DATE: 4/24/23
FILENAME: b040901216_s33.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67657

PRINT DATE: 4/13/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	598	809
		07685 - UNIT 3 - 67658				

TABLE OF VARIABLES

Field Splice	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"	"L"	"M"	"N"	"P"	"Q"
1	2'-5½"	1'-4"	⅞"	7"	⅝"	1¾"	3½"	2¾"	3	1¾"	3'-0½"	¾"	¾"	⅞"	4
2	4'-9½"	1'-2"	⅞"	6"	¾"	4"	0"	3"	7	2"	4'-9½'	⅝"	1"	¾"	7
3	4'-2½"	1'-2"	½"	6"	¾"	4"	0"	3"	6	2"	4'-9½"	⅝"	¾"	⅝"	7

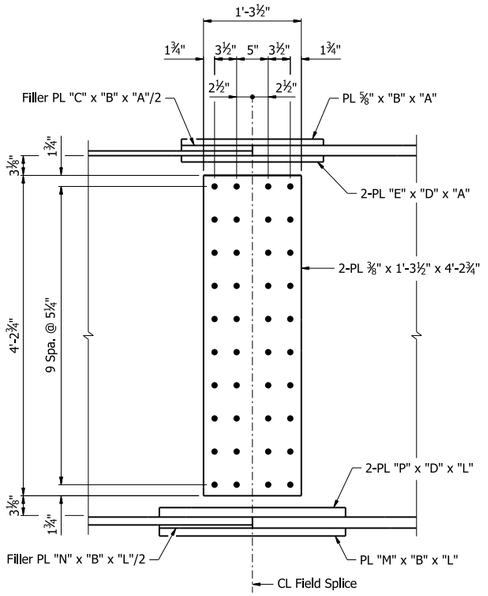
Notes:
For location of field splices, see Dwg. Nos. 67656 & 67657.

All field splice bolts shall be ASTM F3125, Gr. A325, 1"Ø H.S. bolts.

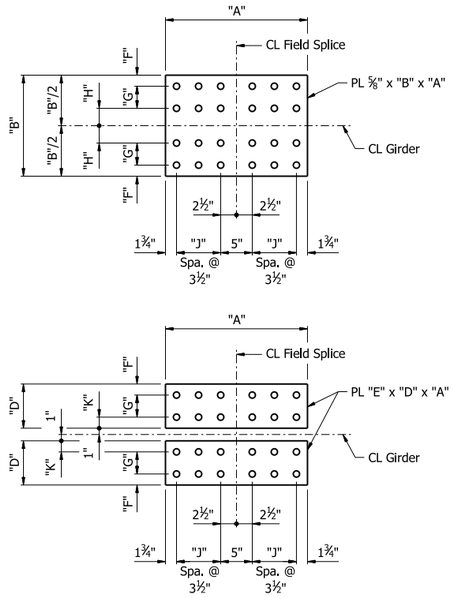
All holes for splice bolts shall be 1⅛"Ø.

All structural steel shall be ASTM A709, Grade 50W, unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)."

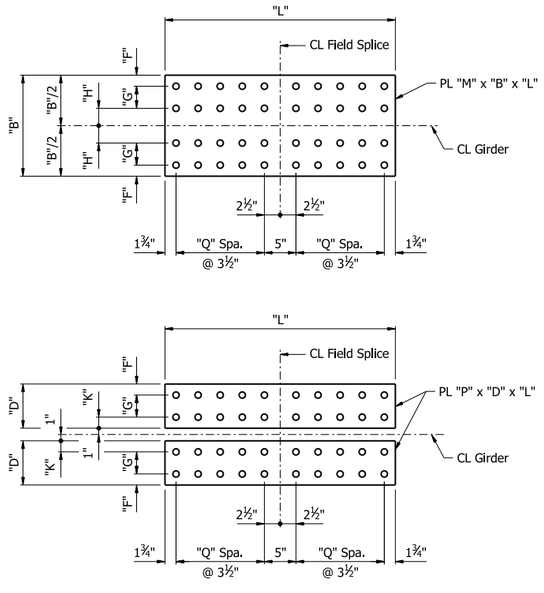
Bolted field splices may either be eliminated or shop weld splices may be substituted with the approval of the Engineer. Payment will be made on the basis of plan quantities.



WEB SPLICE



TOP FLANGE SPLICE



BOTTOM FLANGE SPLICE

TOP FLANGE SPLICE

BOTTOM FLANGE SPLICE

DETAILS OF FIELD SPLICES

PRINT DATE: 4/11/2024

STATE OF ARKANSAS
PROFESSIONAL ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 4 OF 9
DETAILS OF 520'-0" CONTINUOUS
PLATE GIRDER UNIT 3
- 49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 9/7/23
CHECKED BY: MJ DATE: 10/5/23
DESIGNED BY: SCB DATE: 4/24/23
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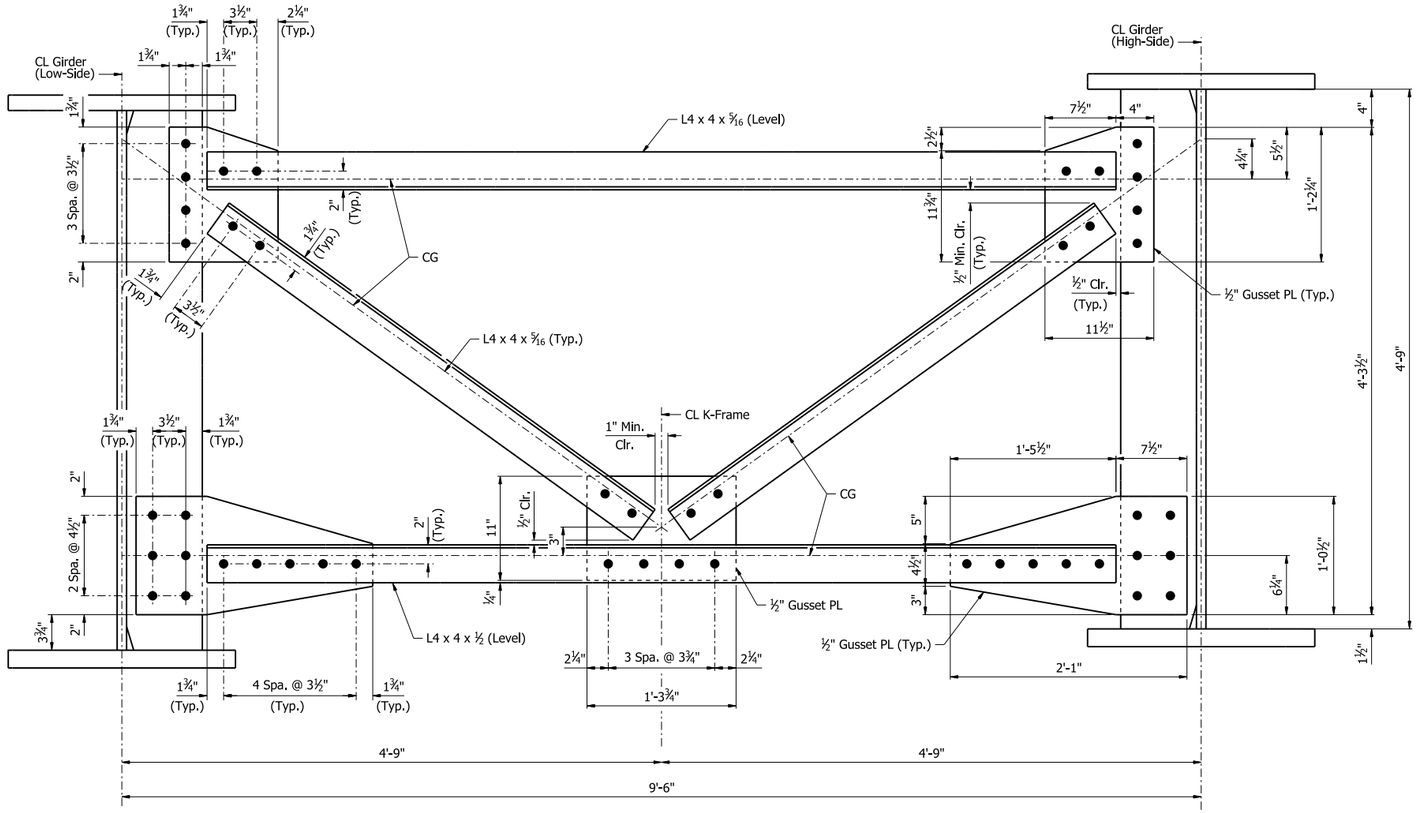
SCALE: No Scale

BRIDGE NO. 07685 DRAWING NO. 67658

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	599	809
		07685 - UNIT 3 - 67659				



DETAIL OF TYPE 1 K-FRAMES

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)."

For location of K-Frames, see Dwg. No. 67656 & 67657.

Cross frames shall be shop bolted using pins to align the holes prior to bolting. Disassembling of cross frames is not allowed.

All bolts shall be ASTM F3125, Gr. A325, 1"Ø H.S. bolts.

All holes shall be drilled for K-Frames connection and shall be 1⅛"Ø.

For Connections Plate details, see Dwg. No. 67661.

Conduits and ITS and Utility Supports not shown, see Dwg. Nos. 67672 - 67685 for details.

K-Frames are symmetric about CL, UNO.

STATE OF
ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 5 OF 9
DETAILS OF 520'-0" CONTINUOUS
PLATE GIRDER UNIT 3
49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

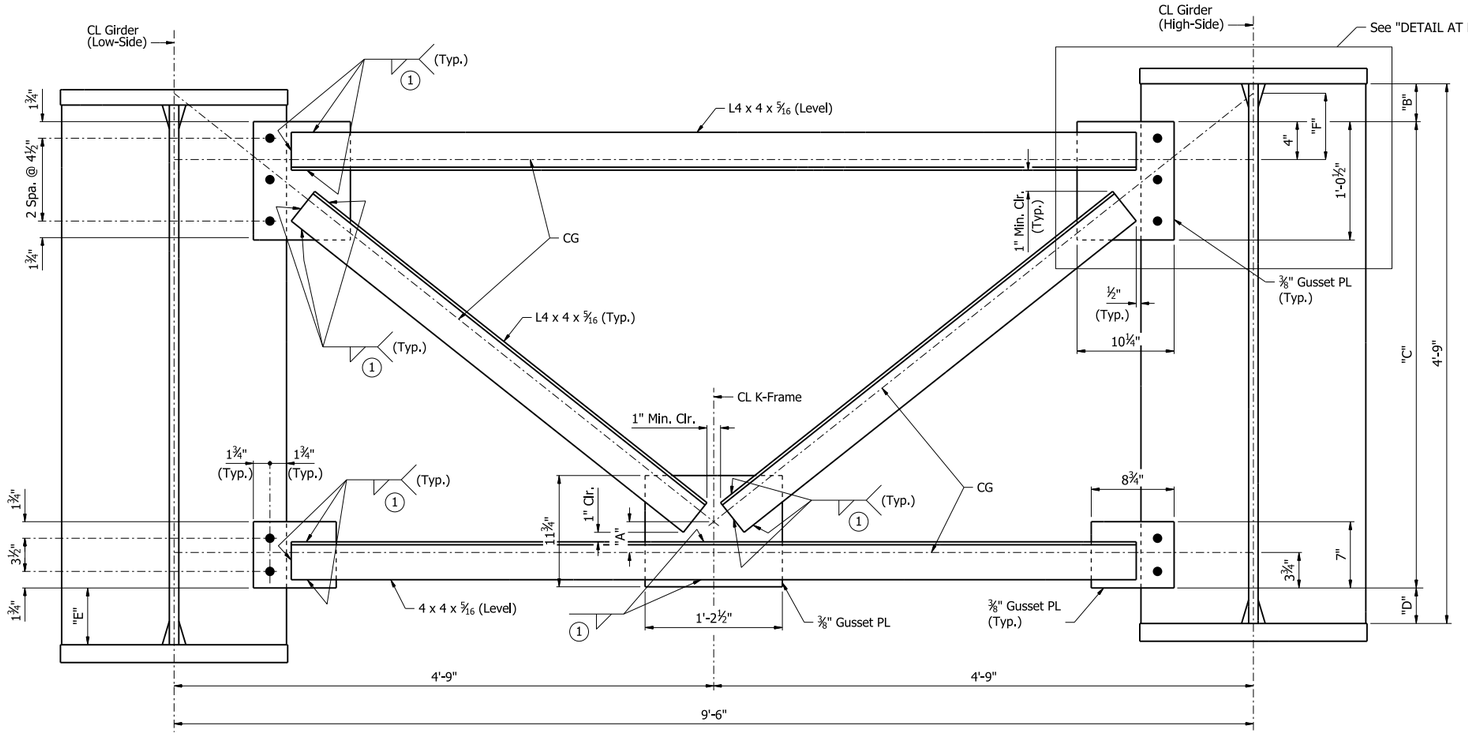
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 9/21/23
CHECKED BY: RLW DATE: 10/3/23
DESIGNED BY: SCB DATE: 4/24/23
FILENAME: b040901216_s35.dgn
SCALE: 1½" = 1'-0"

BRIDGE NO. 07685 DRAWING NO. 67659

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	600	809
		07685 - UNIT 3 - 67660				



DETAIL OF TYPE 2, 3 & 4 K-FRAMES

TABLE OF VARIABLES

K-Frame Type	"A"	"B"	"C"	"D"	"E"	"F"
2	4"	1'-3¼"	3'-0¾"	5"	7¼"	1¼"
3	3¼"	4"	4'-1¼"	3¾"	6"	7"
4	3¼"	4"	4'-1¼"	3¾"	6"	5"

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)."

For location of K-Frames, see Dwg. Nos. 67656 & 67657.

All bolts shall be ASTM F3125, Gr. A325, 1"Ø H.S. bolts.

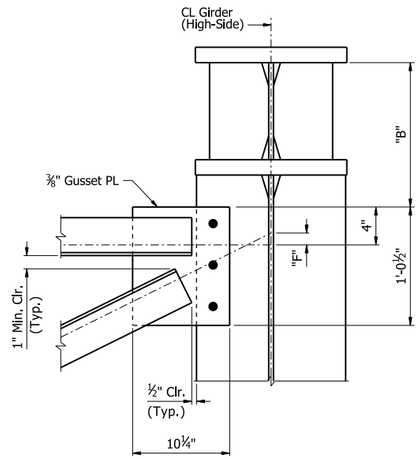
All holes shall be drilled for K-Frames connection and shall be 1⅛"Ø.

For Bearing Stiffeners details, see Dwg. No. 67661.

Conduits and ITS and Utility Supports are not shown, see Dwg. Nos. 67672 - 67685 for details.

K-Frames are symmetric about CL, UNO.

(1) See "WELD TABLE", Std. Dwg. No. 55007.



DETAIL AT FINGER JOINT

Type 2 only

STATE OF ARKANSAS
PROFESSIONAL ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

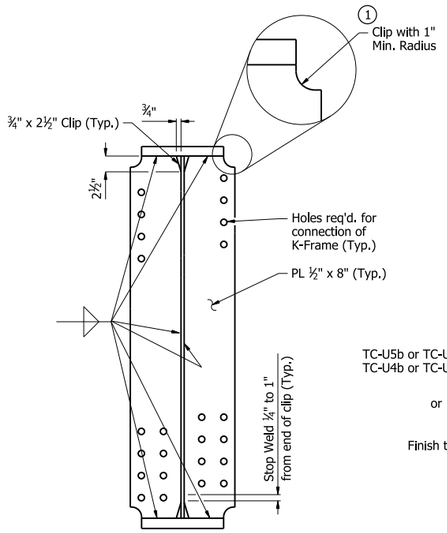
ALTERNATE NO. 2
SHEET 6 OF 9
DETAILS OF 520'-0" CONTINUOUS
PLATE GIRDER UNIT 3
HWY. 49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

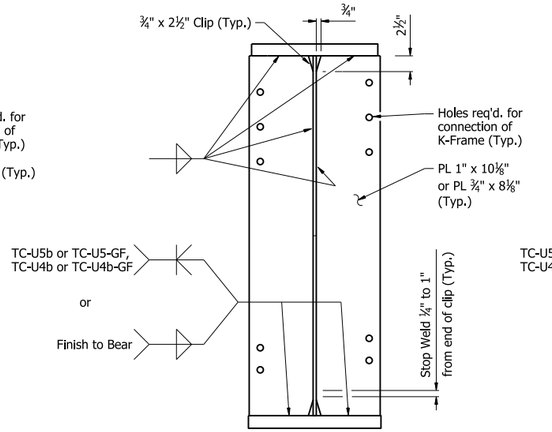
DRAWN BY: CTK DATE: 9/21/23 FILENAME: b040901216_s36.dgn
CHECKED BY: CZ DATE: 10/5/23 SCALE: 1½" = 1'-0"
DESIGNED BY: SCB DATE: 4/24/23
BRIDGE NO. 07685 DRAWING NO. 67660

PRINT DATE: 4/11/2024

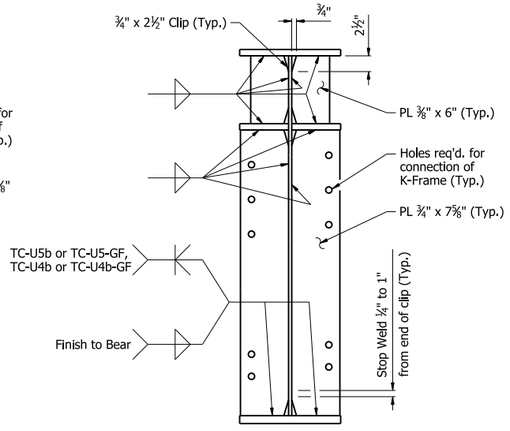
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	601	809
		07685 - UNIT 3 - 67661				



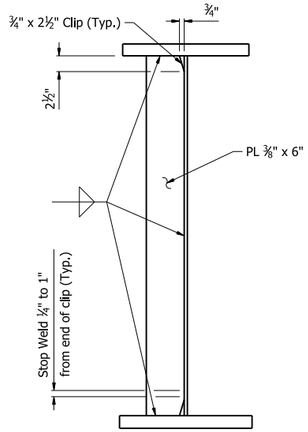
CONNECTION PLATES
(Located at K-Frame Type 1)



BEARING STIFFENERS
AT BENT NOS. 10-12
(Located at K-Frame Type 3 & 4)



BEARING STIFFENERS
AT BENT NOS. 9 & 13
(Located at K-Frame Type 2)



TRANSVERSE STIFFENER

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)."

For location of stiffeners and connection plates, see Dwg. Nos. 67656 & 67657.

For details of K-Frames, see Dwg. Nos. 67659 & 67660.

See "WELD TABLE" for minimum weld sizes on Std. Dwg. No. 55007.

(1) If permanent steel bridge deck forms are used, the Fabricator shall clip the plates as necessary to accommodate the deck form support.

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

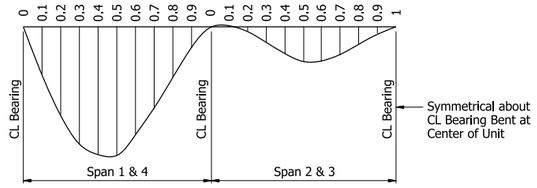
Span	Point of Deflection	Structural Steel											Structural Steel + Slab											Structural Steel + Slab + Rail										
		Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6	Girder 7	Girder 8	Girder 9	Girder 10	Girder 11	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6	Girder 7	Girder 8	Girder 9	Girder 10	Girder 11	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6	Girder 7	Girder 8	Girder 9	Girder 10	Girder 11
Span 1 or 4	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.218	0.222	0.225	0.226	0.226	0.226	0.227	0.230	0.236	0.245	0.251	1.144	1.194	1.225	1.240	1.246	1.248	1.247	1.245	1.236	1.216	1.177	1.316	1.286	1.281	1.287	1.304	1.328	1.309	1.299	1.308	1.335	1.381
	0.2	0.403	0.411	0.415	0.416	0.417	0.417	0.419	0.425	0.436	0.452	0.464	2.110	2.202	2.259	2.287	2.297	2.301	2.300	2.295	2.279	2.243	2.171	2.424	2.373	2.363	2.374	2.405	2.447	2.414	2.397	2.413	2.462	2.544
	0.3	0.538	0.548	0.553	0.556	0.556	0.557	0.559	0.567	0.581	0.603	0.619	2.814	2.934	3.010	3.048	3.062	3.067	3.065	3.059	3.038	2.989	2.895	3.225	3.164	3.151	3.165	3.207	3.258	3.219	3.197	3.218	3.283	3.388
	0.4	0.585	0.595	0.601	0.604	0.604	0.605	0.608	0.616	0.632	0.655	0.672	3.051	3.180	3.262	3.304	3.319	3.325	3.323	3.316	3.293	3.240	3.138	3.494	3.431	3.417	3.432	3.477	3.532	3.490	3.467	3.490	3.561	3.674
	0.5	0.593	0.603	0.609	0.611	0.612	0.612	0.616	0.624	0.640	0.663	0.680	3.083	3.212	3.295	3.337	3.353	3.359	3.357	3.350	3.326	3.273	3.171	3.529	3.467	3.453	3.468	3.514	3.570	3.528	3.504	3.527	3.599	3.713
	0.6	0.494	0.502	0.507	0.509	0.510	0.511	0.513	0.520	0.533	0.552	0.567	2.560	2.667	2.734	2.769	2.783	2.788	2.786	2.780	2.760	2.717	2.632	2.932	2.878	2.866	2.879	2.918	2.968	2.930	2.909	2.928	2.988	3.087
	0.7	0.379	0.386	0.389	0.391	0.391	0.392	0.394	0.399	0.409	0.424	0.434	1.954	2.035	2.085	2.112	2.123	2.127	2.126	2.121	2.105	2.073	2.009	2.241	2.195	2.187	2.197	2.228	2.270	2.237	2.221	2.235	2.281	2.361
	0.8	0.233	0.237	0.239	0.240	0.240	0.241	0.242	0.245	0.251	0.260	0.266	1.190	1.239	1.269	1.285	1.292	1.295	1.294	1.291	1.281	1.262	1.224	1.366	1.335	1.331	1.338	1.357	1.386	1.362	1.353	1.361	1.388	1.441
	0.9	0.098	0.100	0.101	0.101	0.101	0.101	0.102	0.103	0.106	0.110	0.112	0.499	0.518	0.530	0.537	0.540	0.542	0.541	0.540	0.535	0.528	0.513	0.571	0.558	0.557	0.560	0.568	0.582	0.570	0.566	0.570	0.580	0.603
	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Span 2 or 3	0.1	-0.004	-0.003	-0.003	-0.003	-0.004	-0.004	-0.004	-0.005	-0.005	-0.004	-0.005	-0.032	-0.025	-0.025	-0.027	-0.029	-0.030	-0.030	-0.028	-0.026	-0.026	-0.033	-0.007	-0.028	-0.033	-0.034	-0.029	-0.017	-0.030	-0.036	-0.036	-0.028	-0.009
	0.2	0.022	0.025	0.025	0.025	0.025	0.024	0.023	0.023	0.024	0.027	0.026	0.100	0.123	0.128	0.126	0.122	0.121	0.121	0.124	0.127	0.124	0.104	0.174	0.131	0.119	0.118	0.131	0.156	0.129	0.115	0.118	0.137	0.180
	0.3	0.072	0.076	0.077	0.077	0.076	0.075	0.075	0.075	0.077	0.083	0.083	0.366	0.409	0.423	0.424	0.418	0.416	0.416	0.421	0.423	0.416	0.378	0.500	0.441	0.421	0.422	0.444	0.479	0.441	0.419	0.425	0.459	0.525
	0.4	0.123	0.128	0.131	0.131	0.130	0.129	0.128	0.129	0.133	0.141	0.143	0.655	0.715	0.739	0.742	0.737	0.735	0.735	0.740	0.741	0.727	0.675	0.841	0.771	0.747	0.749	0.778	0.822	0.776	0.748	0.756	0.802	0.886
	0.5	0.157	0.163	0.166	0.166	0.166	0.165	0.164	0.165	0.170	0.180	0.183	0.853	0.922	0.953	0.958	0.953	0.952	0.952	0.957	0.957	0.938	0.879	1.066	0.995	0.970	0.973	1.005	1.051	1.004	0.974	0.984	1.034	1.125
	0.6	0.159	0.165	0.167	0.168	0.167	0.166	0.166	0.167	0.172	0.182	0.185	0.869	0.935	0.965	0.971	0.968	0.966	0.966	0.970	0.969	0.952	0.895	1.073	1.006	0.985	0.988	1.019	1.064	1.018	0.990	0.999	1.047	1.133
	0.7	0.130	0.134	0.136	0.137	0.136	0.135	0.135	0.136	0.140	0.148	0.151	0.707	0.760	0.783	0.788	0.786	0.785	0.785	0.788	0.787	0.773	0.728	0.869	0.815	0.799	0.803	0.828	0.866	0.827	0.805	0.812	0.848	0.919
	0.8	0.080	0.083	0.084	0.084	0.084	0.084	0.084	0.084	0.087	0.091	0.093	0.434	0.466	0.480	0.483	0.482	0.481	0.481	0.483	0.482	0.474	0.446	0.535	0.498	0.489	0.492	0.507	0.535	0.507	0.493	0.497	0.519	0.567
	0.9	0.031	0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.033	0.035	0.035	0.164	0.176	0.181	0.183	0.182	0.182	0.182	0.182	0.182	0.180	0.169	0.205	0.187	0.185	0.186	0.192	0.205	0.192	0.186	0.187	0.196	0.217
	1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Symmetrical about CL Bearing Bent at Center of Unit

Notes:
Camber for dead load deflection +/- ¼" tolerance. Deflections shown are along CL Girder from a chord from CL Bearing to CL Bearing. Negative sign (-) indicates point above chord. Vertical curve corrections are not included. Superelevation transition corrections not included.

The additional weight for the permanent steel deck forms are included in the slab dead load deflections.

The additional weight of the ITS and utility support brackets are included with the steel dead load deflections. The weight of the conduits are included in the steel + slab + rail dead load deflections.



DEAD LOAD DEFLECTION DIAGRAM

PRINT DATE: 4/11/2024

STATE OF ARKANSAS
ALLIE WAGNER
PROFESSIONAL ENGINEER
No. 22390
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 7 OF 9
DETAILS OF 520'-0" CONTINUOUS PLATE GIRDER UNIT 3
49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

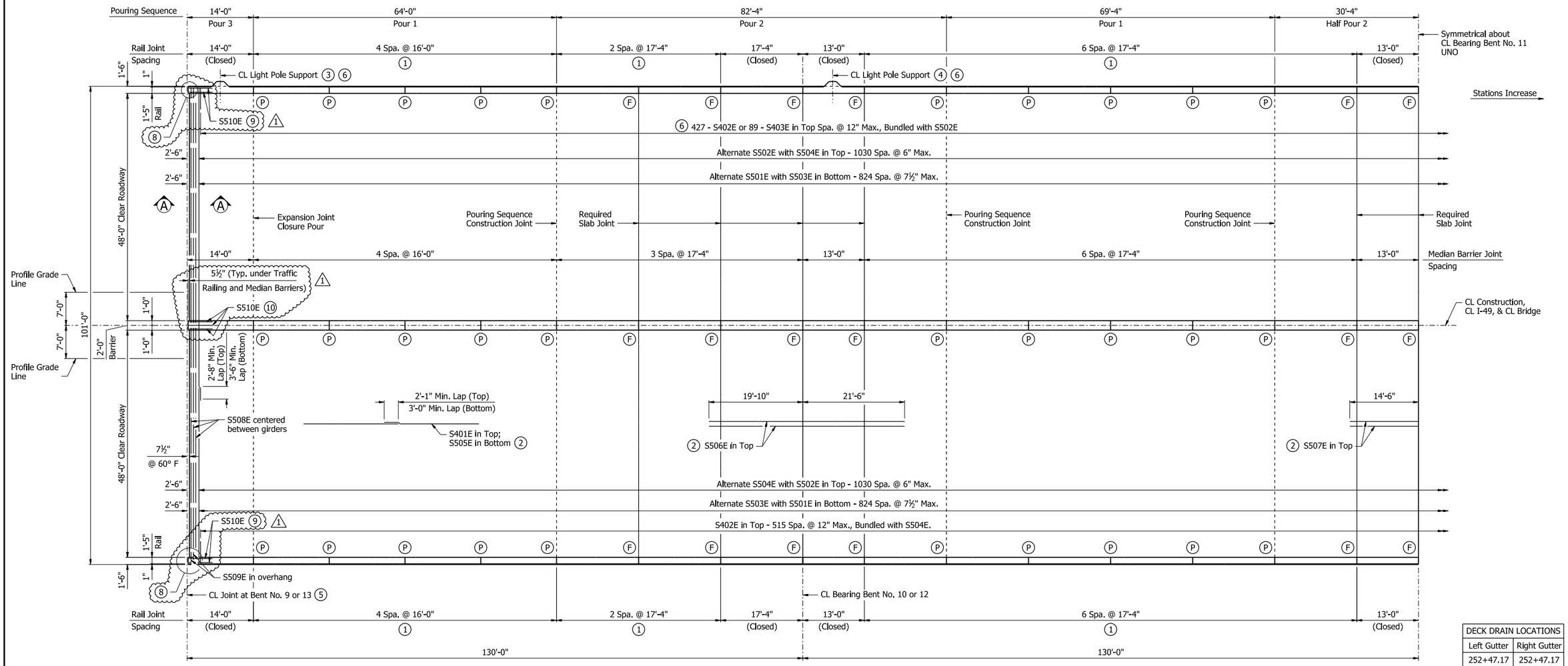
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 9/21/23
CHECKED BY: MJ DATE: 10/5/23
DESIGNED BY: SCB DATE: 4/24/23
FILENAME: b040901216_s37.dgn
SCALE: 1" = 1'-0"

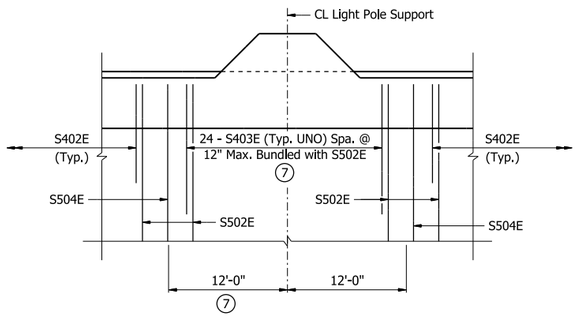
BRIDGE NO. 07685
DRAWING NO. 67661

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
8/9/2024		6	ARK.	040901	602	809
		07685 - UNIT 3 - 67662				

1 Slab extension added below Rail and Median Barriers at Finger Joint locations. 8/9/2024



DECK DRAIN LOCATIONS	
Left Gutter	Right Gutter
252+47.17	252+47.17
253+77.17	253+77.17
254+36.33	254+36.33
254+98.00	254+98.00



6 SLAB REINFORCING DETAIL AT LIGHT POLE SUPPORT

(No Scale)

Notes:
Replace S402E Bars within 12'-0" of CL Light Pole Support with S403E bars.

7 For Light Pole Sta. 250+20.00, replace S402E bars from CL Light Pole Support to the end of the slab. 17 - S403E bars at this location.

HALF REINFORCING PLAN AND POURING SEQUENCE

3/32" = 1'-0"

Notes:
Required slab joints and pouring sequence joints shall align with rail joints at the gutterline.

For "TRANSVERSE SLAB JOINT DETAIL", see Dwg. No. 55007.

For "DETAILS OF BRIDGE TRAFFIC RAIL TYPE SSTR42", see Dwg. No. 67686.

For "DETAILS OF MEDIAN BARRIER", see Dwg. No. 67689.

For "SECTION A-A", see Dwg. No. 67663.

For "PLAN OF REINFORCING AT DECK DRAINS", see Dwg. No. 67707.

1 Rail panels are open, Sta. 250+27.00 to Sta. 251+25.67, Sta 251+56.00 to Sta. 252+60.00, Sta. 252+86.00 to 253+55.33. Rail panels are closed, Sta. 253+55.33 to Sta. 255+19.00.

2 Place as shown in "TYPICAL ROADWAY SECTION", see Dwg. No. 67655.

3 Sta. 250+20.00 (Span 1 of Unit); Sta. 254+11.67 (Span 4 of Unit).

4 Sta. 251+49.25 (Span 2 of Unit); Sta. 252+79.25 (Span 3 of Unit).

5 For Joint types, see Dwg. Nos. 67599 - 67603.

Slab Pouring Sequence Notes:
Pours with the same number may be placed simultaneously or separately. All Pour(s) 1 must be placed before Pour(s) 2 can be placed. A minimum of 48 hours shall elapse between the end of a pour and the start of the next pour. A minimum of 72 hours shall elapse between adjacent pours.

Concrete in bridge superstructure shall be placed, consolidated, and screeded off for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent.

After all incremental pours on both Units adjacent to the Finger Joint are complete, closure pour 3 on each side of Finger Joint shall be poured simultaneously. For details of Finger Joint, see Dwg. Nos. 67696 & 67697. A minimum of 48 hours shall elapse between the last incremental pour and the closure pours.

A minimum of 72 hours shall elapse between completion of the slab and the pouring of the bridge railing. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence(s) shown

(F) CL Full-Depth Rail Joint

(P) CL Partial-Depth Rail Joint

1 (8) In the slab extension, cut R403E 8" leg to maintain concrete cover.

1 (9) 2-S510E in Top, 3-S510E in Bottom.

1 (10) 3-S510E @ Eq. Spa., Top and Bottom.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 22535
RACHEL L. WESSON
8/9/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 8 OF 9
DETAILS OF 520'-0" CONTINUOUS PLATE GIRDER UNIT 3
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 11/20/23
CHECKED BY: RCR DATE: 11/21/23
DESIGNED BY: RCR DATE: 7/21/22
FILENAME: b040901216_s38.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67662

PRINT DATE: 8/15/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
8/9/2024		6	ARK.	040901	603	809
		07685 - UNIT 3 - 67663				

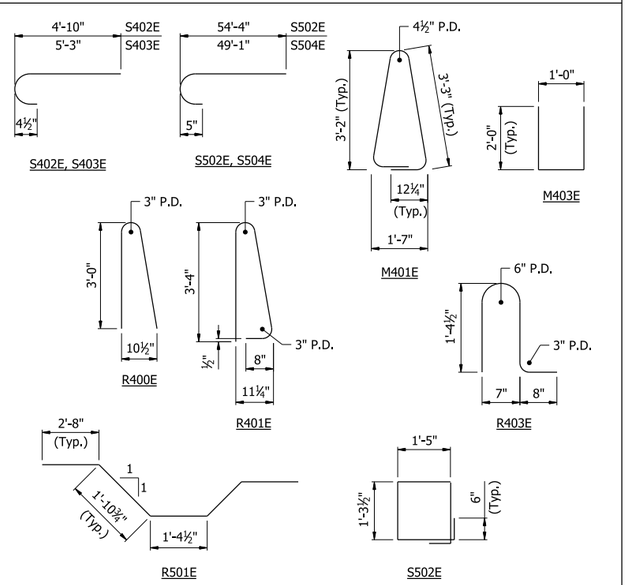
1 Slab extension added below Rail and Median Barriers at Finger Joint locations. 8/9/2024

Notes:
For details of Finger Joint, see Dwg. Nos. 67696 & 67697.

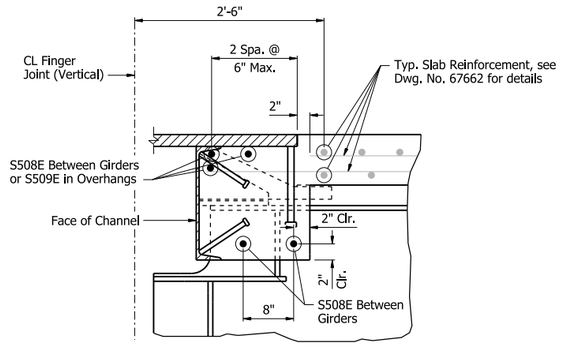
BAR LIST

Mark	Number Required	Length	Pin Dia.
S401E	1236	44'-11"	Str.
S402E	943	5'-4"	3"
S403E	89	5'-9"	3"
S501E	825	54'-10"	Str.
S502E	1031	54'-11"	3¾"
S503E	825	49'-4"	Str.
S504E	1031	49'-8"	3¾"
S505E	1080	54'-7"	Str.
S506E	408	41'-4"	Str.
S507E	204	29'-0"	Str.
S508E	80	7'-10"	Str.
S509E	12	2'-0"	Str.
1 S510E	32	5'-0"	Str.
R400E	256	6'-3"	3"
R401E	2052	7'-6"	3"
R402E	160	5'-6"	Str.
R403E	~~2032~~	3'-8"	3"
R411E	80	12'-8"	Str.
R412E	40	13'-8"	Str.
R413E	160	15'-8"	Str.
R415E	360	17'-0"	Str.
	1 2052		
R501E	24	10'-6"	3¾"
R502E	12	5'-11"	2½"
R503E	44	3'-3"	Str.
M401E	1046	9'-0"	2"
M402E	80	5'-6"	Str.
M403E	1036	4'-10"	3"
M411E	40	12'-8"	Str.
M412E	20	13'-8"	Str.
M413E	80	15'-8"	Str.
M415E	180	17'-0"	Str.
X601E	96	9'-0"	Str.
X602E	96	6'-2"	Str.
X603E	192	5'-0"	Str.

Bending Diagrams
(Dimensions are out to out of bars)



All bars designated with an "E" suffix are to be epoxy coated.



AT BENTS WITH FINGER JOINTS

SECTION A-A

PRINT DATE: 8/15/2024

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 22535
RACHEL L. WESSON
8/9/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 9 OF 9
DETAILS OF 520'-0" CONTINUOUS
PLATE GIRDER UNIT 3
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

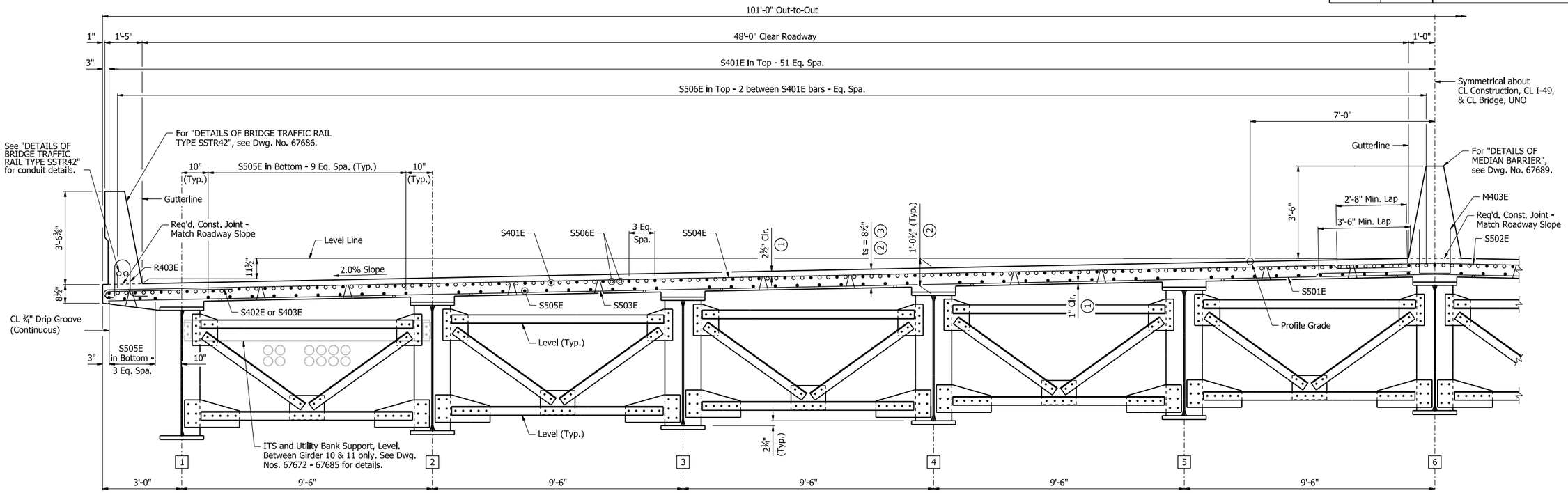
ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 11/21/23
CHECKED BY: RCR DATE: 11/21/23
DESIGNED BY: RCR DATE: 7/21/22
FILENAME: b040901216_s39.dgn
SCALE: 1" = 1'-0"

BRIDGE NO. 07685 DRAWING NO. 67663

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	604	809
		07685 - UNIT 4 - 67664				



TYPICAL ROADWAY SECTION

(Looking Upstation)
½" = 1'-0"

Notes:
For details of Bridge Finishes and Protective Surface Treatment, see Dwg No. 67372.

For "HALF REINFORCING PLAN AND POURING SEQUENCE", see Dwg. No. 67670.

For "COMMON DETAILS OF SECTIONS NEAR JOINTS", see Dwg. No. 67691.

For K-Frame details, see Dwg. Nos. 67667 & 67668.

SLAB REINFORCING:
Longitudinal: S401E in Top placed as shown
S506E in Top placed as shown over Intermediate Bents
S505E in Bottom placed as shown

Transverse: Alternate S502E and S504E in Top @ 6" Max.
Alternate S501E and S503E in Bottom @ 7½" Max.
S402E or S403E in Top @ 12" Max., Bundled with S502E or S504E

(1) Tolerance: Minus = ¼"; Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE".

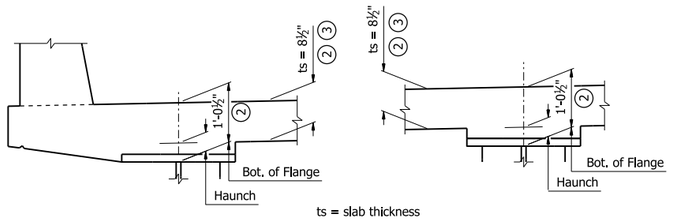
Bar positions or clearances from the forms shall be maintained by means of stays, ties, hangers, or other approved devices per Subsection 804.06. Placement of slab bolsters or high-chairs with full-length lower runners directly on removable deck forms will not be allowed.

(2) Haunch dimensions may vary within the following limits to maintain the grade and slab thickness tolerance:

Top Flange	Haunch Adjustment Tolerance	
	Plus	Minus
¾" x 14"	1⅜"	2⅛"
¾" x 16"	1½"	2"
1½" x 20"	2¼"	1 1/4 "

No increase in concrete and structural steel quantities will be made to maintain tolerances. Tolerances shown are applicable for both removable deck forming and permanent steel deck forms. Payment for concrete shall be based on removable deck forming.

(3) Tolerance: Minus = ¼"; Plus = ½". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.



EXTERIOR GIRDER INTERIOR GIRDER

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

¾" = 1'-0"

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4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 8
DETAILS OF 360'-0" CONTINUOUS PLATE GIRDER UNIT 4
49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

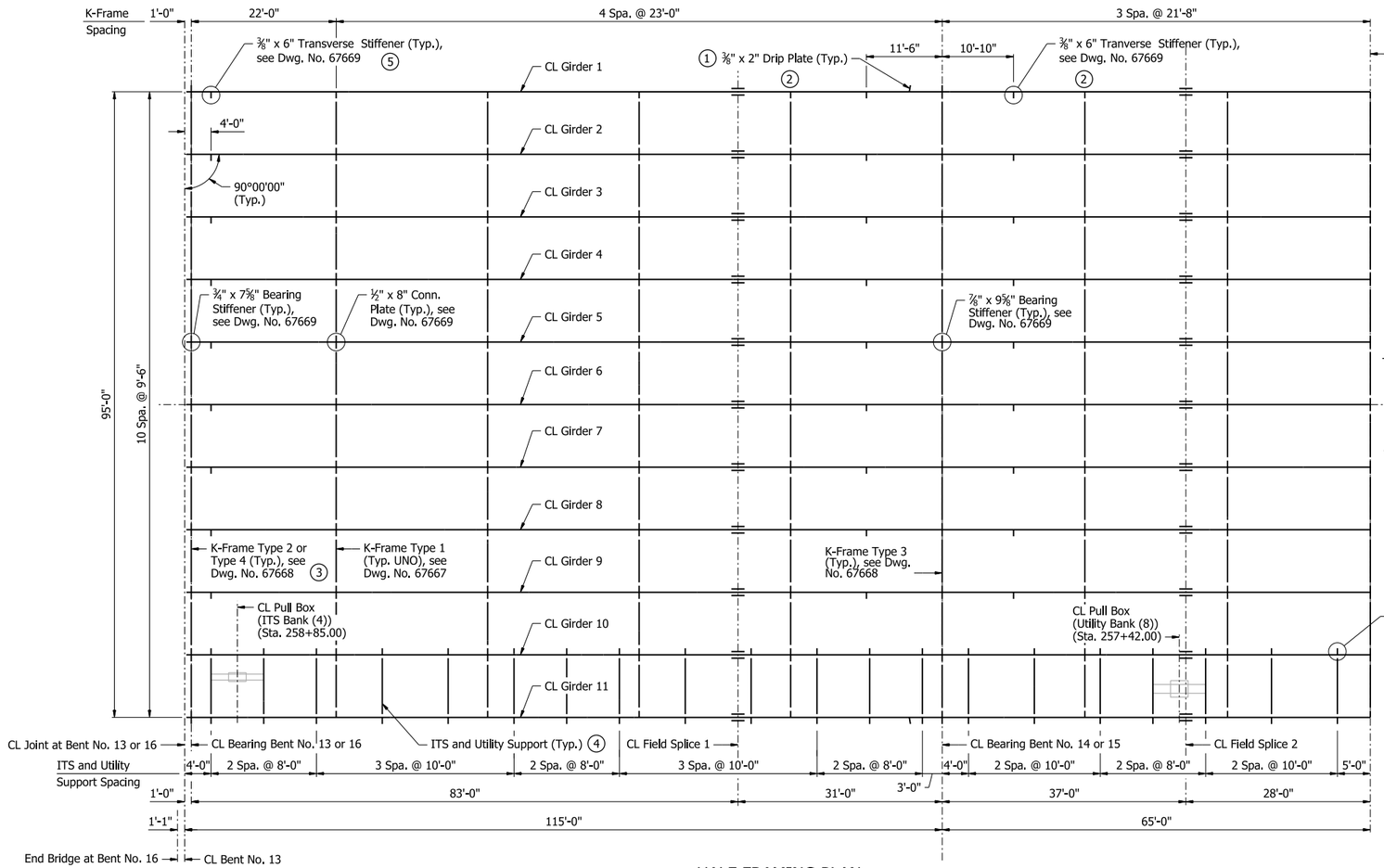
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 11/21/23 FILENAME: b040901216_s41.dgn
CHECKED BY: RCR DATE: 11/21/23 SCALE: AS NOTED
DESIGNED BY: RCR DATE: 7/21/23

BRIDGE NO. 07685 DRAWING NO. 67664

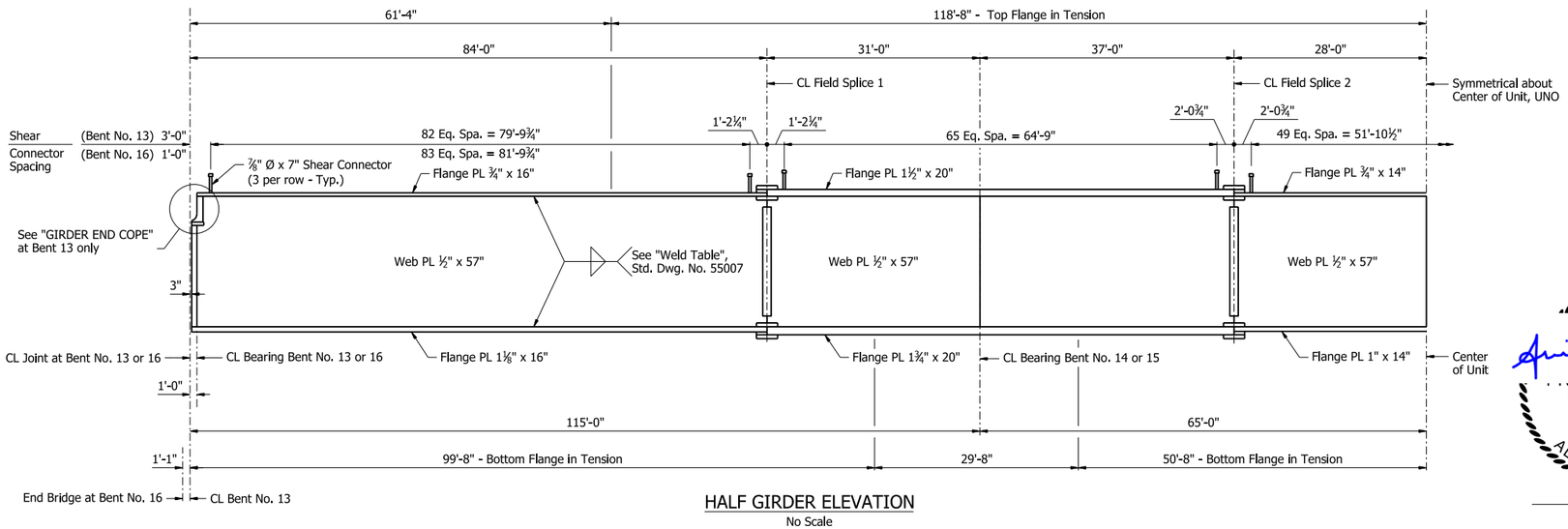
PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	605	809
		07685 - UNIT 4 - 67665				



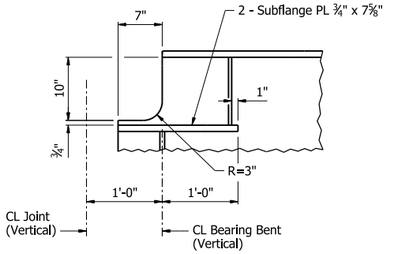
HALF FRAMING PLAN

3/32" = 1'-0"



HALF GIRDER ELEVATION

No Scale



GIRDER END COPE

1" = 1'-0"

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)."

For "DETAILS OF FIELD SPLICES", see Dwg. No. 67666.

For Dead Load Deflections, see Dwg. No. 67669.

For ITS and Utility bank details, see Dwg. Nos. 67672 - 67685.

(1) Location of drip plate is not symmetrical about Center of Unit. It shall be placed on the up-hill side of each bent. Stop weld 1" from edge of flange. See Std. Dwg. No. 55007 for additional details.

(2) Connection Plates acting as transverse stiffeners. (Typical all girders.)

(3) K-Frame Type 2 - Bent No. 13;
K-Frame Type 4 - Bent No. 16

(4) ITS and Utility Supports will not be placed at K-Frame locations.

(5) At Bent No. 13 only.

(6) 10'-0" at Bent No. 15. 4'-0" at all other Bents.

(7) 4'-0" at Bent No. 15. 10'-0" at all other Bents.

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ALTERNATE NO. 2
SHEET 2 OF 8
DETAILS OF 360'-0" CONTINUOUS PLATE GIRDER UNIT 4
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 9/21/23
CHECKED BY: RLW DATE: 10/2/23
DESIGNED BY: RLW DATE: 4/10/23
FILENAME: b040901216_s42.dgn
SCALE: AS NOTED

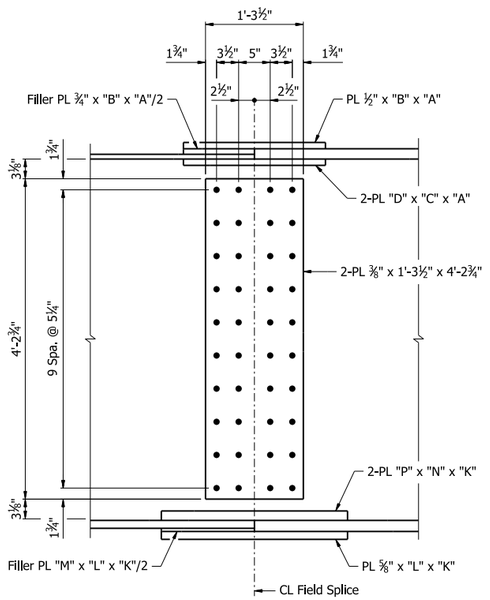
BRIDGE NO. 07685 DRAWING NO. 67665

PRINT DATE: 4/11/2024

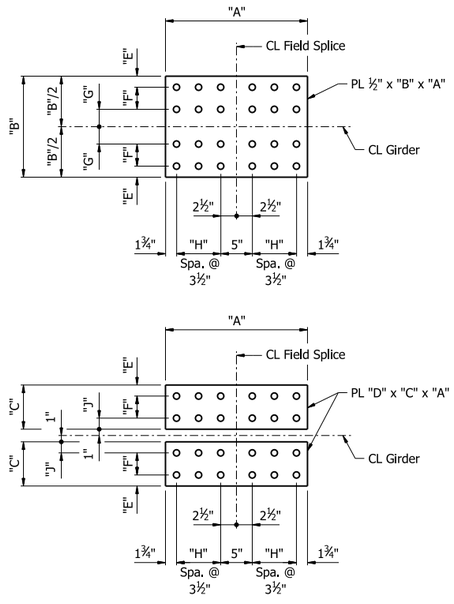
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	606	809
		07685 - UNIT 4 - 67666				

TABLE OF VARIABLES

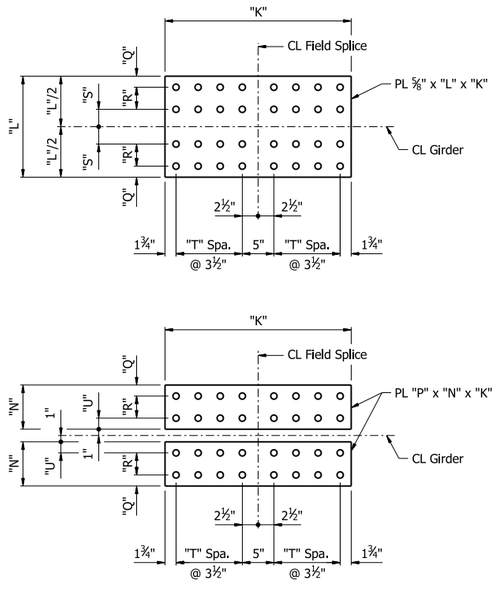
Field Splice	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"	"L"	"M"	"N"	"P"	"Q"	"R"	"S"	"T"	"U"
1	1'-10½"	1'-4"	7"	½"	1¾"	3½"	2¾"	2	1¾"	2'-5½"	1'-4"	⅝"	7"	¾"	1¾"	3½"	2⅜"	3	1¾"
2	3'-7½"	1'-2"	6"	⅝"	4"	0"	3"	5	2"	4'-9½"	1'-2"	¾"	6"	⅝"	4"	0"	3"	7	2"



WEB SPLICE



TOP FLANGE SPLICE



BOTTOM FLANGE SPLICE

DETAILS OF FIELD SPLICES

Notes:
For location of field splices, see Dwg. No. 67665.

All field splice bolts shall be ASTM F3125, Gr. A325, 1"Ø H.S. bolts.

All holes for splice bolts shall be 1⅛"Ø.

All structural steel shall be ASTM A709, Grade 50W, unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)."

Bolted field splices may either be eliminated or shop weld splices may be substituted with the approval of the Engineer. Payment will be made on the basis of plan quantities.

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ALTERNATE NO. 2
SHEET 3 OF 8
DETAILS OF 360'-0" CONTINUOUS
PLATE GIRDER UNIT 4
49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

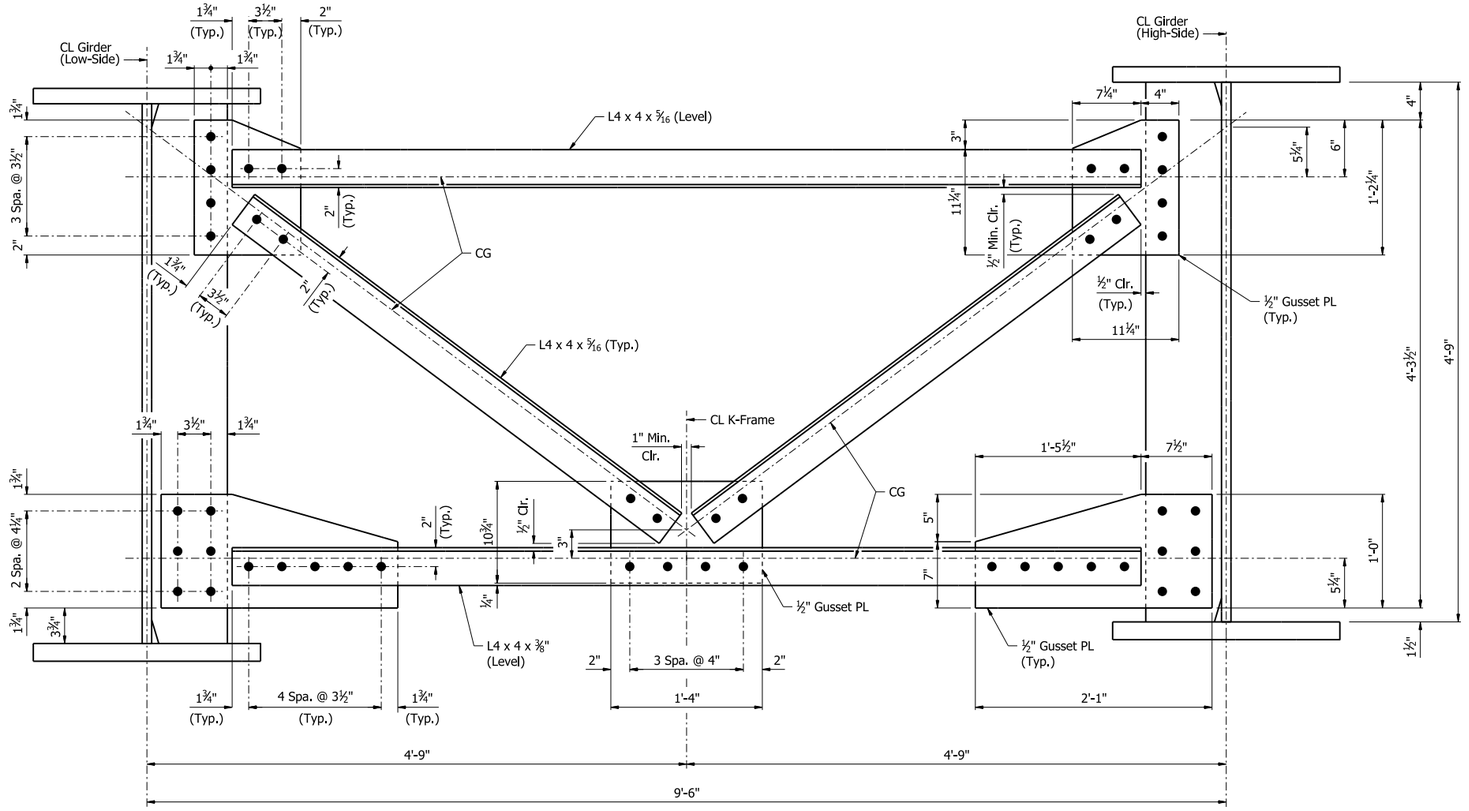
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 8/21/23
CHECKED BY: CCD DATE: 10/5/23
DESIGNED BY: RLW DATE: 4/10/23
FILENAME: b040901216_s43.dgn
SCALE: No Scale

BRIDGE NO. 07685 DRAWING NO. 67666

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	607	809
		07685 - UNIT 4 - 67667				



DETAIL OF TYPE 1 K-FRAME

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)."

For location of K-Frames, see Dwg. No. 67665.

Cross frames shall be shop bolted using pins to align the holes prior to bolting. Disassembling of cross frames is not allowed.

All bolts shall be ASTM F3125, Gr. A325, 1"Ø H.S. bolts.

All holes shall be drilled for K-Frames connection and shall be 1⅛"Ø.

For Connection Plate details, see Dwg. No. 67669.

Conduits and ITS and Utility Supports not shown, see Dwg. Nos. 67672 - 67685 for details.

K-Frames are symmetric about CL, UNO.

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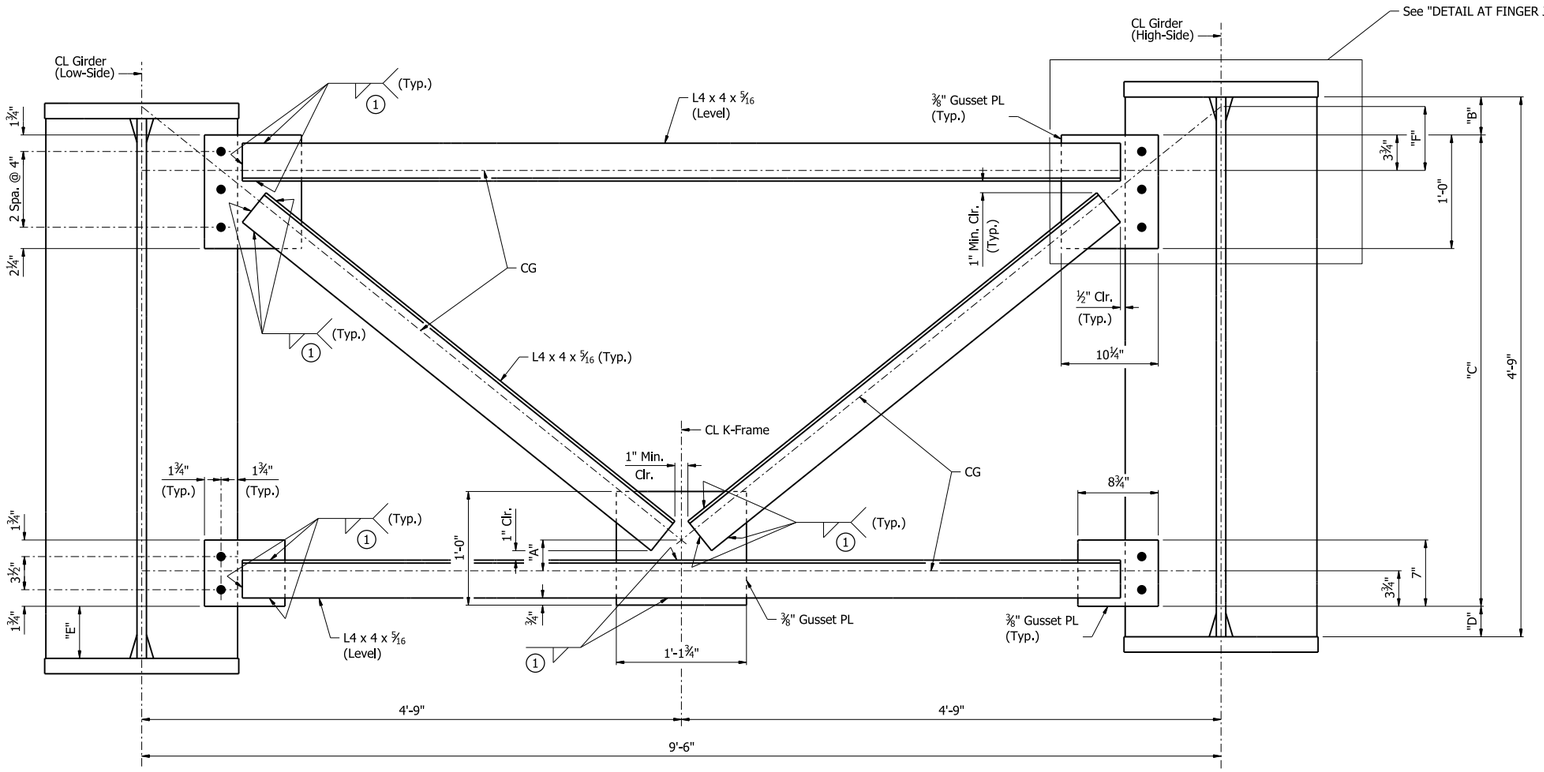
ALTERNATE NO. 2
SHEET 4 OF 8
DETAILS OF 360'-0" CONTINUOUS
PLATE GIRDER UNIT 4
49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 9/21/23
CHECKED BY: RLW DATE: 10/3/23
DESIGNED BY: RLW DATE: 4/10/23
FILENAME: b040901216_s44.dgn
SCALE: 1½" = 1'-0"

BRIDGE NO. 07685 DRAWING NO. 67667

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	608	809
		07685 - UNIT 4 - 67668				



DETAIL OF TYPE 2, 3 & 4 K-FRAMES

TABLE OF VARIABLES

K-Frame Type	"A"	"B"	"C"	"D"	"E"	"F"
2	4"	1'-3¼"	3'-1¾"	4"	6¼"	1½"
3	3¼"	4"	4'-1¾"	3¼"	5½"	6¼"
4	3¼"	4"	4'-1"	4"	6¼"	4½"

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)."

For location of K-Frames, see Dwg. Nos. 67665.

All bolts shall be ASTM F3125, Gr. A325, 1"Ø H.S. bolts.

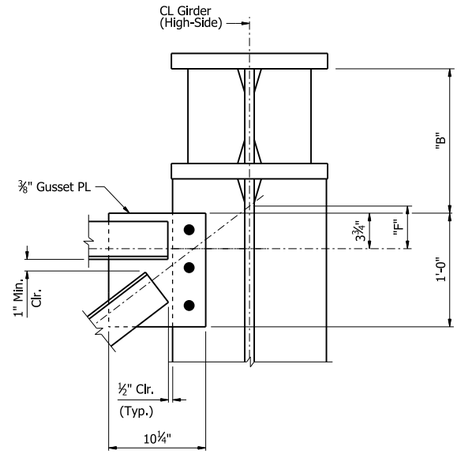
All holes shall be drilled for K-Frames connection and shall be 1⅛"Ø.

For Bearing Stiffeners details, see Dwg. No. 67669

Conduits and ITS and Utility Supports are not shown, see Dwg. Nos. 67672 - 67685 for details.

K-Frames are symmetric about CL, UNO.

(1) See "WELD TABLE", Std. Dwg. No. 55007.



DETAIL AT FINGER JOINT
(Type 2 only)

PRINT DATE: 4/11/2024

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No. 22390
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BRIDGE ENGINEER

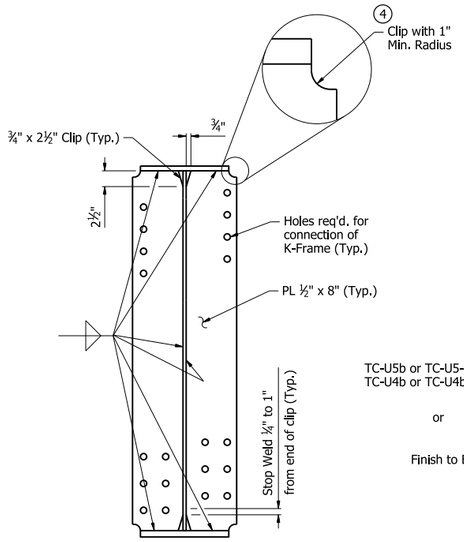
ALTERNATE NO. 2
SHEET 5 OF 8
DETAILS OF 360'-0" CONTINUOUS
PLATE GIRDER UNIT 4
49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

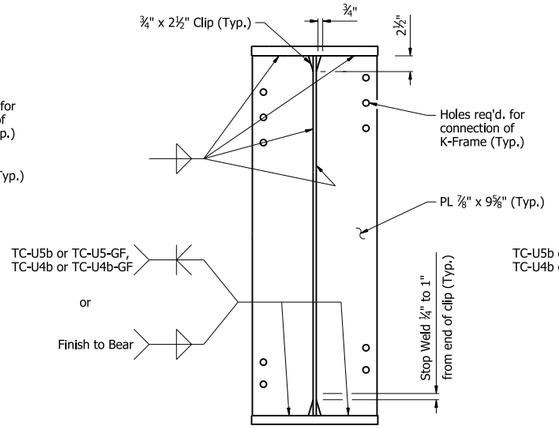
DRAWN BY: CTK DATE: 9/21/23
CHECKED BY: RLW DATE: 10/3/23
DESIGNED BY: RLW DATE: 4/10/23
FILENAME: b040901216_s45.dgn
SCALE: 1½" = 1'-0"

BRIDGE NO. 07685 DRAWING NO. 67668

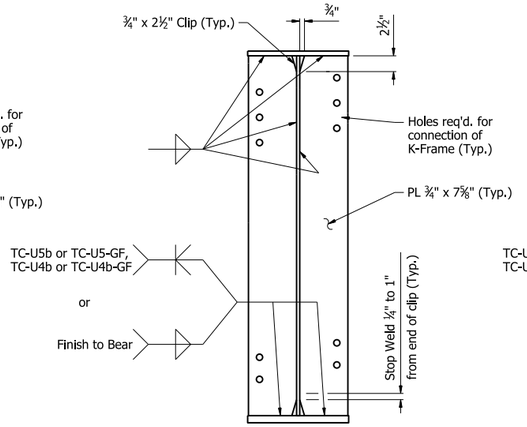
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	609	809
		07685 - UNIT 4 - 67669				



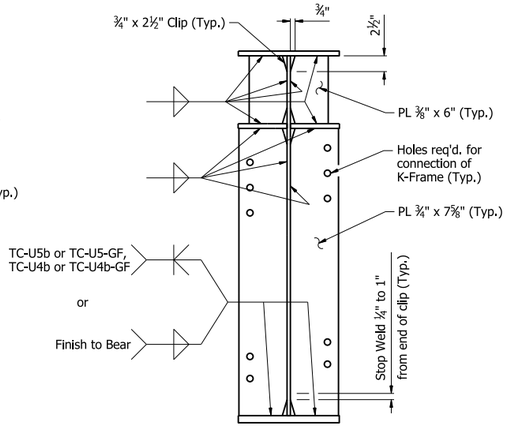
CONNECTION PLATES
(Located at K-Frame Type 1)



BEARING STIFFENERS
AT BENT NOS. 14 & 15
(Located at K-Frame Type 3)



BEARING STIFFENERS
AT BENT NO. 16
(Located at K-Frame Type 4)



BEARING STIFFENERS
AT BENT NO. 13
(Located at K-Frame Type 2)

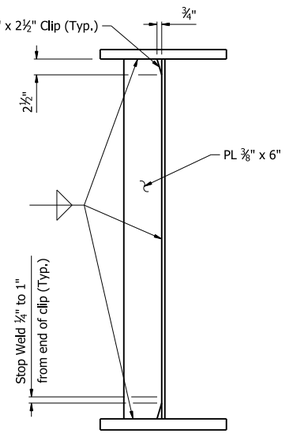
④ If permanent steel bridge deck forms are used, the Fabricator shall clip the plates as necessary to accommodate the deck form support.

Notes:
All Structural Steel shall be ASTM A709, Grade 50W unless otherwise noted, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)."

For location of stiffeners and connection plates, see Dwg. No. 67665.

For details of K-Frames , see Dwg. Nos. 67667 & 67668.

See "WELD TABLE" for minimum weld sizes on Std. Dwg. No. 55007.



TRANSVERSE STIFFENER

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

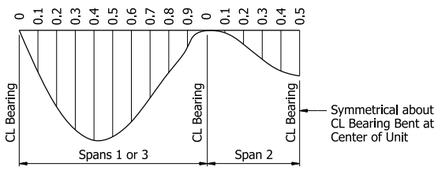
Span	Point of Deflection	Structural Steel											Structural Steel + Slab											Structural Steel + Slab + Rail										
		Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6	Girder 7	Girder 8	Girder 9	Girder 10	Girder 11	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6	Girder 7	Girder 8	Girder 9	Girder 10	Girder 11	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6	Girder 7	Girder 8	Girder 9	Girder 10	Girder 11
Span 1 or 3	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.144	0.147	0.148	0.148	0.148	0.148	0.149	0.151	0.156	0.165	0.171	0.820	0.863	0.886	0.896	0.898	0.898	0.899	0.898	0.895	0.882	0.847	0.961	0.923	0.916	0.921	0.939	0.964	0.941	0.928	0.934	0.960	1.010
	0.2	0.266	0.271	0.273	0.274	0.274	0.274	0.275	0.279	0.289	0.305	0.316	1.515	1.595	1.637	1.655	1.659	1.660	1.661	1.660	1.653	1.629	1.565	1.770	1.708	1.693	1.702	1.735	1.777	1.739	1.715	1.727	1.775	1.863
	0.3	0.348	0.354	0.357	0.358	0.358	0.358	0.359	0.365	0.378	0.398	0.412	1.980	2.082	2.138	2.161	2.167	2.168	2.168	2.168	2.158	2.126	2.044	2.308	2.232	2.212	2.223	2.266	2.318	2.271	2.240	2.256	2.319	2.430
	0.4	0.387	0.393	0.397	0.398	0.398	0.398	0.399	0.406	0.419	0.441	0.457	2.197	2.309	2.371	2.397	2.404	2.405	2.405	2.404	2.394	2.357	2.267	2.558	2.477	2.454	2.466	2.515	2.570	2.521	2.486	2.503	2.573	2.695
	0.5	0.374	0.380	0.383	0.384	0.384	0.384	0.386	0.392	0.405	0.426	0.441	2.119	2.227	2.286	2.311	2.318	2.319	2.320	2.318	2.308	2.273	2.186	2.469	2.389	2.367	2.378	2.426	2.481	2.431	2.398	2.414	2.482	2.602
	0.6	0.322	0.327	0.330	0.331	0.331	0.331	0.332	0.338	0.349	0.367	0.379	1.822	1.914	1.964	1.985	1.992	1.993	1.993	1.992	1.983	1.953	1.879	2.125	2.053	2.034	2.044	2.085	2.134	2.090	2.061	2.075	2.134	2.240
	0.7	0.238	0.242	0.244	0.244	0.244	0.244	0.246	0.250	0.258	0.271	0.280	1.344	1.411	1.447	1.463	1.468	1.469	1.470	1.468	1.461	1.441	1.386	1.570	1.513	1.499	1.507	1.538	1.578	1.542	1.519	1.530	1.573	1.656
	0.8	0.145	0.147	0.148	0.148	0.148	0.148	0.149	0.152	0.157	0.165	0.170	0.816	0.856	0.877	0.886	0.890	0.891	0.891	0.890	0.885	0.874	0.841	0.954	0.917	0.909	0.914	0.932	0.959	0.935	0.921	0.928	0.953	1.007
	0.9	0.060	0.061	0.061	0.061	0.061	0.062	0.062	0.063	0.065	0.068	0.071	0.342	0.358	0.366	0.370	0.372	0.373	0.373	0.372	0.370	0.365	0.352	0.399	0.383	0.380	0.382	0.390	0.402	0.391	0.386	0.388	0.398	0.422
Span 2	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.008	0.009	0.009	0.009	0.009	0.008	0.008	0.008	0.007	0.008	0.007	0.002	0.011	0.012	0.010	0.008	0.008	0.008	0.009	0.010	0.010	0.002	0.031	0.010	0.006	0.006	0.012	0.025	0.011	0.004	0.005	0.012	0.032
	0.2	0.049	0.051	0.052	0.052	0.052	0.051	0.051	0.050	0.051	0.054	0.054	0.192	0.219	0.226	0.225	0.222	0.220	0.221	0.223	0.225	0.222	0.197	0.277	0.233	0.222	0.223	0.240	0.267	0.238	0.222	0.224	0.245	0.293
	0.3	0.100	0.104	0.106	0.106	0.106	0.105	0.104	0.104	0.106	0.112	0.113	0.452	0.500	0.517	0.518	0.513	0.511	0.512	0.515	0.517	0.508	0.464	0.599	0.537	0.518	0.521	0.548	0.587	0.546	0.519	0.525	0.562	0.636
	0.4	0.143	0.148	0.150	0.151	0.150	0.149	0.148	0.148	0.152	0.160	0.163	0.679	0.744	0.769	0.771	0.766	0.763	0.764	0.769	0.771	0.756	0.698	0.874	0.799	0.775	0.779	0.815	0.861	0.813	0.779	0.787	0.836	0.928
	0.5	0.160	0.166	0.168	0.169	0.168	0.167	0.166	0.166	0.171	0.180	0.183	0.772	0.844	0.872	0.875	0.870	0.866	0.868	0.873	0.875	0.858	0.795	0.986	0.908	0.881	0.886	0.924	0.972	0.922	0.886	0.895	0.949	1.048

Symmetrical about CL Bearing Bent at Center of Unit

Notes:
Camber for dead load deflection +/- ¼" tolerance. Deflections shown are along CL Girder from a chord from CL Bearing to CL Bearing. Negative sign (-) indicates point above chord. Vertical curve corrections are not included. Superelevation transition corrections not included.

The additional weight for the permanent steel deck forms are included in the slab dead load deflections.

The additional weight of the ITS and utility support brackets are included with the steel dead load deflections. The weight of the conduits are included in the steel + slab + rail deack load deflections.



DEAD LOAD DEFLECTION DIAGRAM

PRINT DATE: 4/11/2024

STATE OF ARKANSAS
ALLIE WAGNER
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No. 22390
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 6 OF 8
DETAILS OF 360'-0" CONTINUOUS
PLATE GIRDER UNIT 4
49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

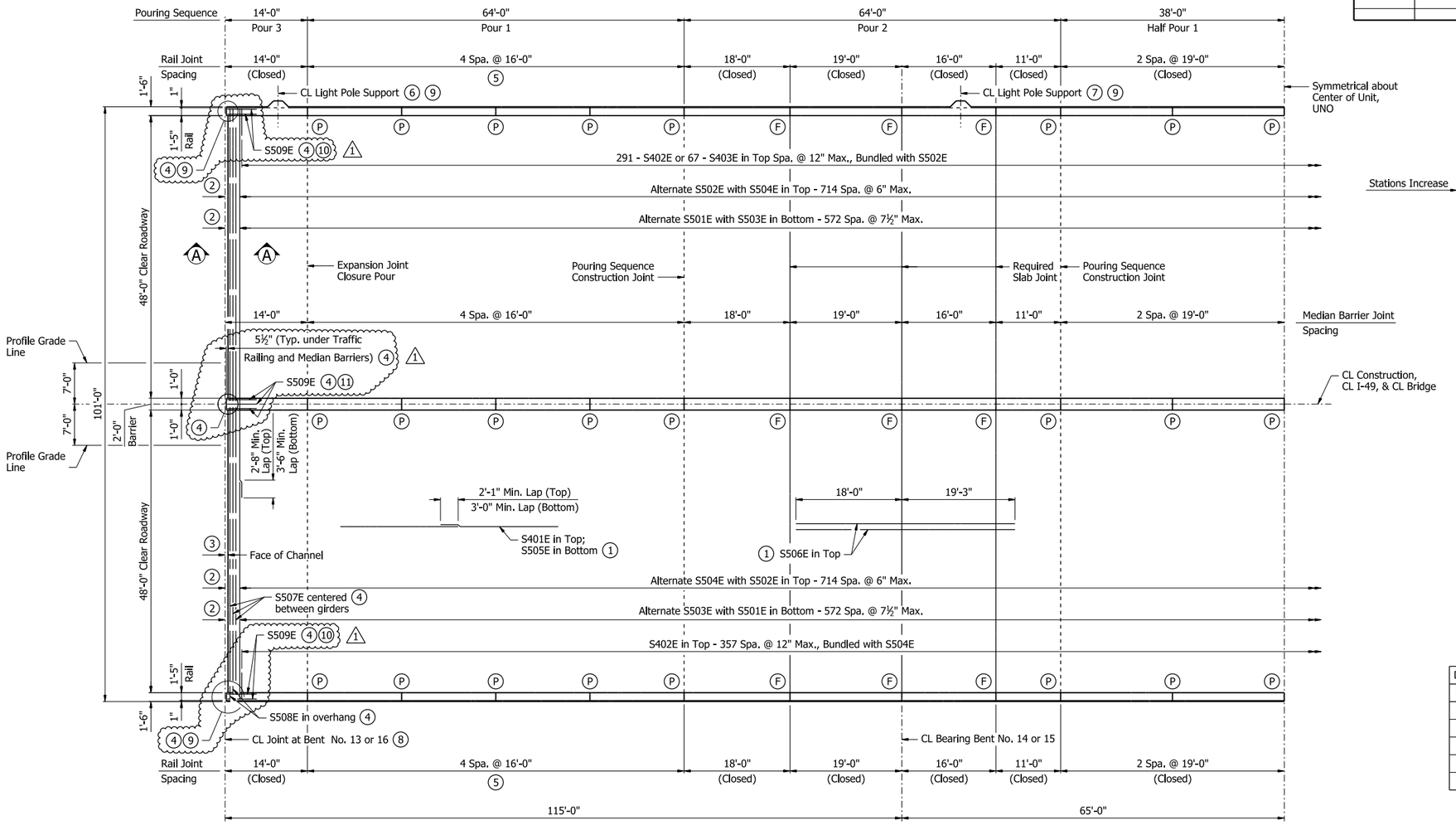
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 8/22/23
CHECKED BY: CCD DATE: 10/6/23
DESIGNED BY: RLW DATE: 4/10/23
FILENAME: b040901216_s46.dgn
SCALE: 1" = 1'-0"

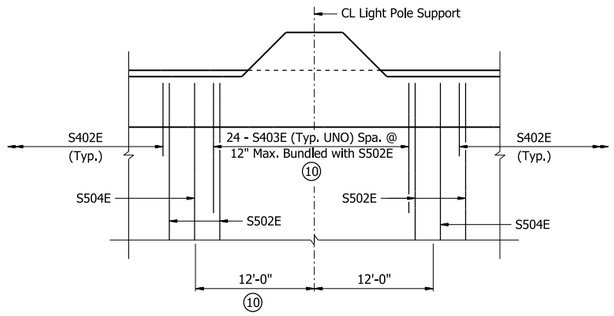
BRIDGE NO. 07685 DRAWING NO. 67669

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
8/9/2024		6	ARK.	040901	610	809
		07685 - UNIT 4 - 67670				

1 Slab extension added below Rail and Median Barriers at Finger Joint locations. 8/9/2024



DECK DRAIN LOCATIONS	
Left Gutter	Right Gutter
255+59.00	255+59.00
256+16.00	256+16.00
256+81.50	256+81.50
257+44.50	257+44.50
258+10.00	258+10.00



9 SLAB REINFORCING DETAIL AT LIGHT POLE SUPPORT

(No Scale)

Notes:
Replace S402E Bars within 12'-0" of CL Light Pole Support with S403E bars.

10 For Light Pole Sta. 255+42.00, replace S402E bars from CL Light Pole Support to the end of the slab. 19 - S403E bars at this location.

HALF REINFORCING PLAN AND POURING SEQUENCE

3/32" = 1'-0"

Slab Pouring Sequence Notes:
Pours with the same number may be placed simultaneously or separately. All Pour(s) 1 must be placed before Pour(s) 2 can be placed. A minimum of 48 hours shall elapse between the end of a pour and the start of the next pour. A minimum of 72 hours shall elapse between adjacent pours.

Concrete in bridge superstructure shall be placed, consolidated, and screeded off for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent.

At Finger Joints, after all incremental pours on both Units adjacent to the Finger Joint are complete, closure pour 3 on each side of Finger Joint shall be poured simultaneously. For details of Finger Joint, see Dwg. Nos. 67696 & 67697. For pours adjacent to Strip Seal Joints, see Dwg. No. 67693 to coordinate pours with joint installation. A minimum of 48 hours shall elapse between the last incremental pour and the closure pours.

A minimum of 72 hours shall elapse between completion of the slab and the pouring of the bridge railing. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence(s) shown.

(F) CL Full-Depth Rail Joint

(P) CL Partial-Depth Rail Joint

Notes:
Required slab joints and pouring sequence joints shall align with rail joints at the gutterline.

For "TRANSVERSE SLAB JOINT DETAIL", see Dwg. No. 55007.

For "DETAILS OF BRIDGE TRAFFIC RAIL TYPE SSTR42", see Dwg. No. 67686.

For "DETAILS OF MEDIAN BARRIER", see Dwg. No. 67689.

For "SECTION A-A", see Dwg. No. 67671.

For "PLAN OF REINFORCING AT DECK DRAINS", see Dwg. No. 67707.

1 Place as shown in "TYPICAL ROADWAY SECTION", see Dwg. No. 67664.

2 6" at End Bent No. 16;
2'-6" at Bent No. 13

3 1" @ 60° F at End Bent No. 16;
7½" @ 60° F at Bent No. 13

4 At Bent No. 13 only.

5 Rail panels are closed, Sta. 255+47.00 to Sta. 256+11.00.
Rail panels are open, Sta. 258+15.00 to 258+79.00.

6 Sta. 255+42.00 (Span 1 of Unit).

7 Sta. 256+58.00 (Span 2 of Unit);
Sta. 257+86.50 (Span 3 of Unit).

8 For Joint types, see Dwg. Nos 67599 - 67603.

1 9 In the slab extension, cut R403E 8" leg to maintain concrete cover.

1 10 2-S509E in Top, 3-S509E in Bottom.

1 11 3-S509E @ Eq. Spa., Top and Bottom.

STATE OF ARKANSAS
RACHEL L. WESSON
LICENSED PROFESSIONAL ENGINEER
No. 22535
8/9/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 7 OF 8
DETAILS OF 360'-0" CONTINUOUS PLATE GIRDER UNIT 4
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 11/20/23
CHECKED BY: RCR DATE: 11/21/23
DESIGNED BY: RCR DATE: 7/21/22
FILENAME: b040901216_s47.dgn
SCALE: AS NOTED

BRIDGE NO. 07685 DRAWING NO. 67670

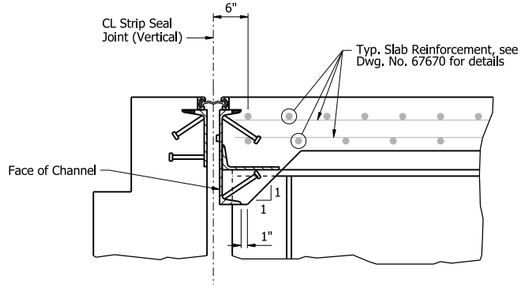
PRINT DATE: 8/1/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
8/9/2024		6	ARK.	040901	611	809
		07685 - UNIT 4 - 67671				

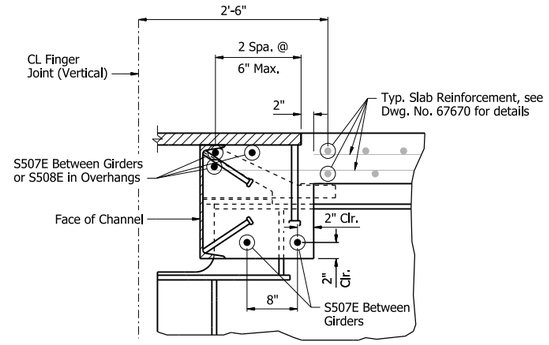
1 Slab extension added below Rail and Median Barriers at Finger Joint locations. 8/9/2024

Notes:
For details of Strip Seal Joint, see Dwg. No. 67693.

For details of Finger Joint, see Dwg. Nos. 67696 & 67697.



AT BENTS WITH STRIP SEAL JOINTS



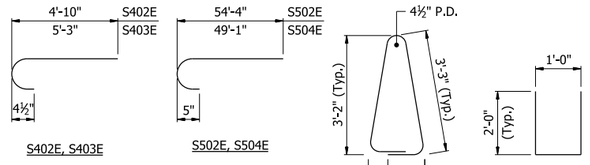
AT BENTS WITH FINGER JOINTS

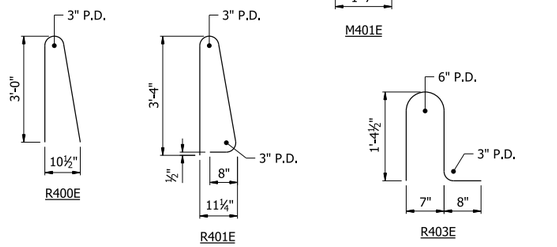
SECTION A-A

BAR LIST

Mark	Number Required	Length	Pin Dia.
S401E	927	41'-8"	Str.
S402E	649	5'-4"	3"
S403E	67	5'-9"	3"
S501E	573	54'-10"	Str.
S502E	715	54'-11"	3¾"
S503E	573	49'-4"	Str.
S504E	715	49'-8"	3¾"
S505E	756	53'-11"	Str.
S506E	408	37'-3"	Str.
S507E	80	7'-10"	Str.
S508E	12	2'-0"	Str.
1 S509E	16	5'-0"	Str.
R400E	64	6'-3"	3"
R401E	1424	7'-6"	3"
R402E	120	5'-6"	Str.
R403E	~~1414~~	3'-8"	3"
R412E	40	13'-8"	Str.
R413E	200	15'-8"	Str.
R416E	40	17'-8"	Str.
R419E	120	18'-8"	Str.
R420E	40	10'-8"	Str.
	1 1424		
R501E	18	10'-6"	3¾"
R502E	9	5'-11"	2½"
R503E	33	3'-3"	Str.
M401E	720	9'-0"	2"
M402E	56	5'-6"	Str.
M403E	715	4'-10"	3"
M412E	20	13'-8"	Str.
M413E	100	15'-8"	Str.
M416E	20	17'-8"	Str.
M419E	60	18'-8"	Str.
M420E	20	10'-8"	Str.
X601E	120	9'-0"	Str.
X602E	120	6'-2"	Str.
X603E	240	5'-0"	Str.

Bending Diagrams (Dimensions are out to out of bars)





All bars designated with an "E" suffix are to be epoxy coated.

PRINT DATE: 8/15/2024

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 22535
RACHEL L. WESSON
8/9/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 8 OF 8
DETAILS OF 360'-0" CONTINUOUS
PLATE GIRDER UNIT 4
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

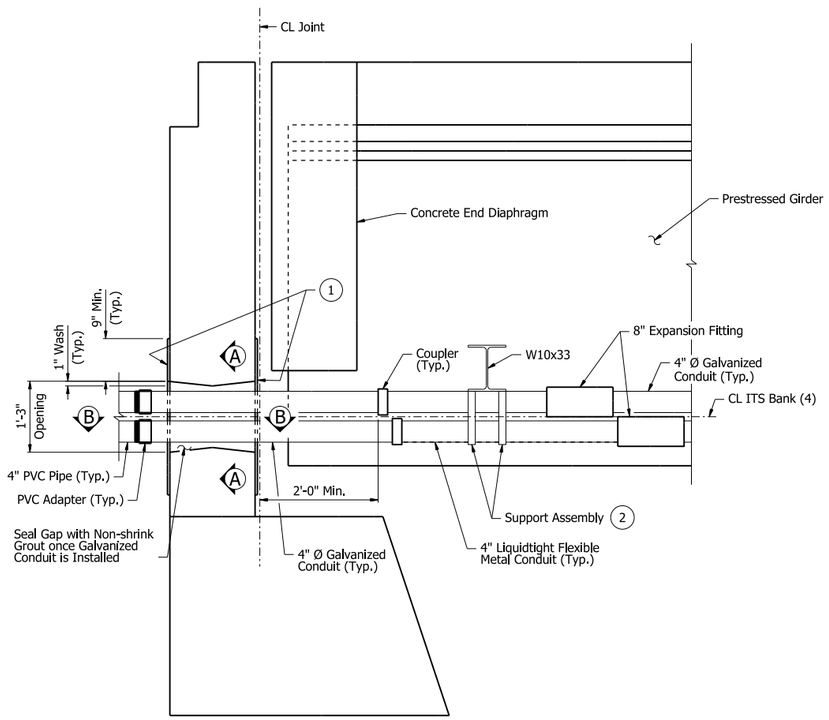
ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

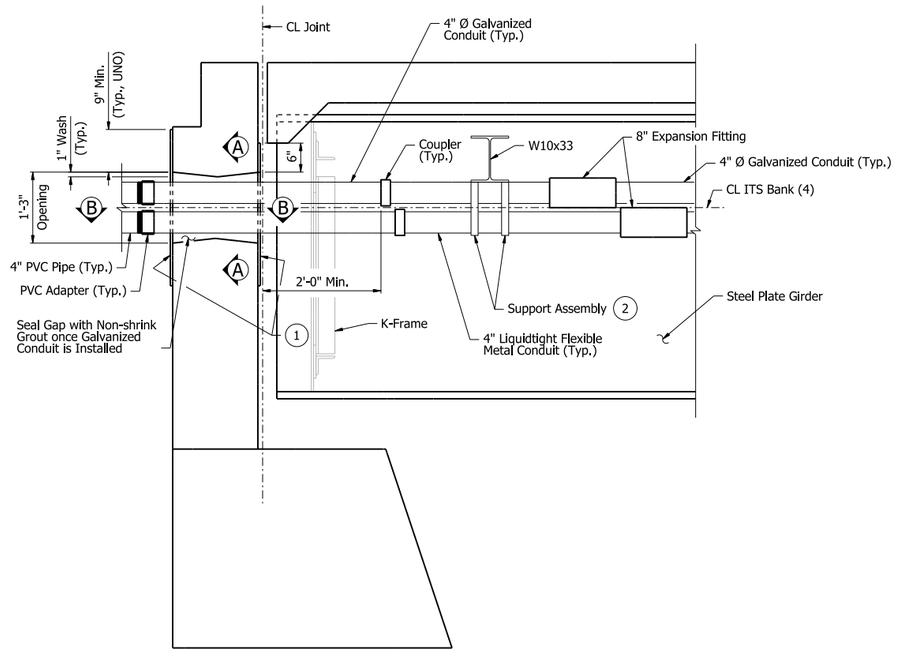
DRAWN BY: CTK DATE: 11/21/23
CHECKED BY: RCR DATE: 11/21/23
DESIGNED BY: RCR DATE: 7/21/22
FILENAME: b040901216_s48.dgn
SCALE: 1" = 1'-0"

BRIDGE NO. 07685 DRAWING NO. 67671

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	612	809
		07684 & 07685 - ITS AND UTILITY BANK - 67672				



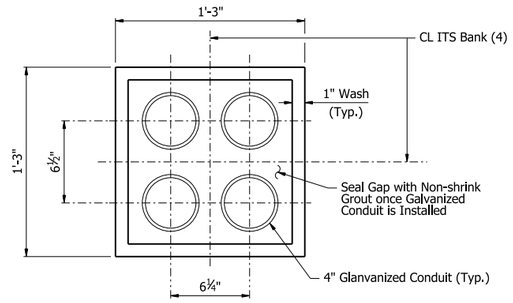
ALTERNATE NO. 1



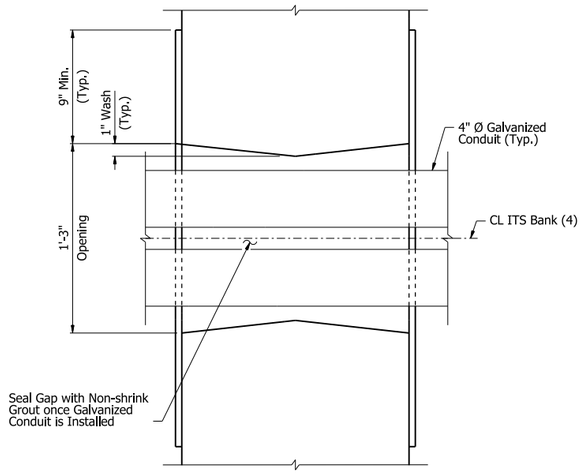
ALTERNATE NO. 2

ITS BANK (4) TRANSITION AT END BENT DETAIL

Bridge 07684 & 07685 End Bent No. 1 Shown.
Bridge 07684 End Bent No. 33 & Bridge 07685 End Bent No. 16 opposite hand.
¾" = 1'-0"



SECTION A-A
2" = 1'-0"



SECTION B-B
2" = 1'-0"

Notes:
Place conduit expansion fittings at 150' Max. Spacing between bridge expansion joints. Expansion fittings should be located near ITS & Utility Supports. For fittings at expansion joints, see Dwg. No. 67684.

For General Notes, see Dwg. No. 67372.

All Conduits shall be Galvanized Steel in accordance with Subsection 709.02. Pull boxes are paid for in the ITS and Illumination Plans. ITS and utility bank support assembly, cap mount utility support bracket assembly, and column mount utility support bracket assembly shall be subsidiary to conduit pay item. See ITS and Illumination Plans for quantity and pay item.

All structural steel for W10x33 ITS and utility supports, pull box supports, connection angles, and cast-in anchors shall be ASTM A709, Grade 50 steel, UNO, and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)".

All ITS and utility support components shall be hot-dip galvanized after fabrication in accordance with Subsection 807.19. Any galvanized coating that is damaged during transportation or construction, including field drilling, shall be repaired according to Subsection 807.88.

All bolts shall be ASTM F3125, Gr. A325, 1" Ø H.S. bolts, UNO.

All bolts connecting galvanized steel components shall be Type 1, hot-dip galvanized bolts with complimentary washers and heavy hex nut, UNO in accordance with Subsection 807.06.

All holes for bolted connections shall be drilled and shall be 1⅛" Ø, UNO.

Contractor is required to tag each conduit with a number so that they can be matched from end to end.

ITS Bank (4) consists of (4) - 4" conduits. Utility Bank (8) consists of (8) - 4" conduits. Weight of cable inside each conduit shall not exceed 2 lb/ft.

Conduits shall be bonded at each pull box location using grounding-type bushings. Conduits shall be bonded continuously across all expansion fittings, couplers, and liquidtight flexible metal conduit using bonding straps.

The bridge-mounted ITS and Utility Conduit Systems shall each be continuously bonded throughout the entire run. Conduit systems shall be bonded to a conduit grounding system on each end of the bridge. See ITS & Illumination plans and specifications for details of the conduit grounding system.

See end bent sheets for location of blockout in the bent backwall.

For details of PVC conduit beyond bent backwall, see ITS plans.

(1) Membrane Waterproofing, Type C, or approved equal shall ecompass the backwall blockout as shown. See section 815.02. Waterproofing shall be paid for as "Membrane Waterproofing (Type C)".

(2) Allow for longitudinal movement. See Dwg. No. 67685.

CONSTRUCTION SEQUENCING NOTES:
1. Pour bent backwall with blockout as shown. See end bent sheets for location of blockout.
2. Install conduits through the blockout in the backwall.
3. Grout the opening around the galvanized conduit from the back of the backwall.
4. Apply membrane waterproofing as shown in the details.

STATE OF
ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1 & ALTERNATE NO. 2
SHEET 1 OF 14
ITS AND UTILITY BANK DETAILS
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

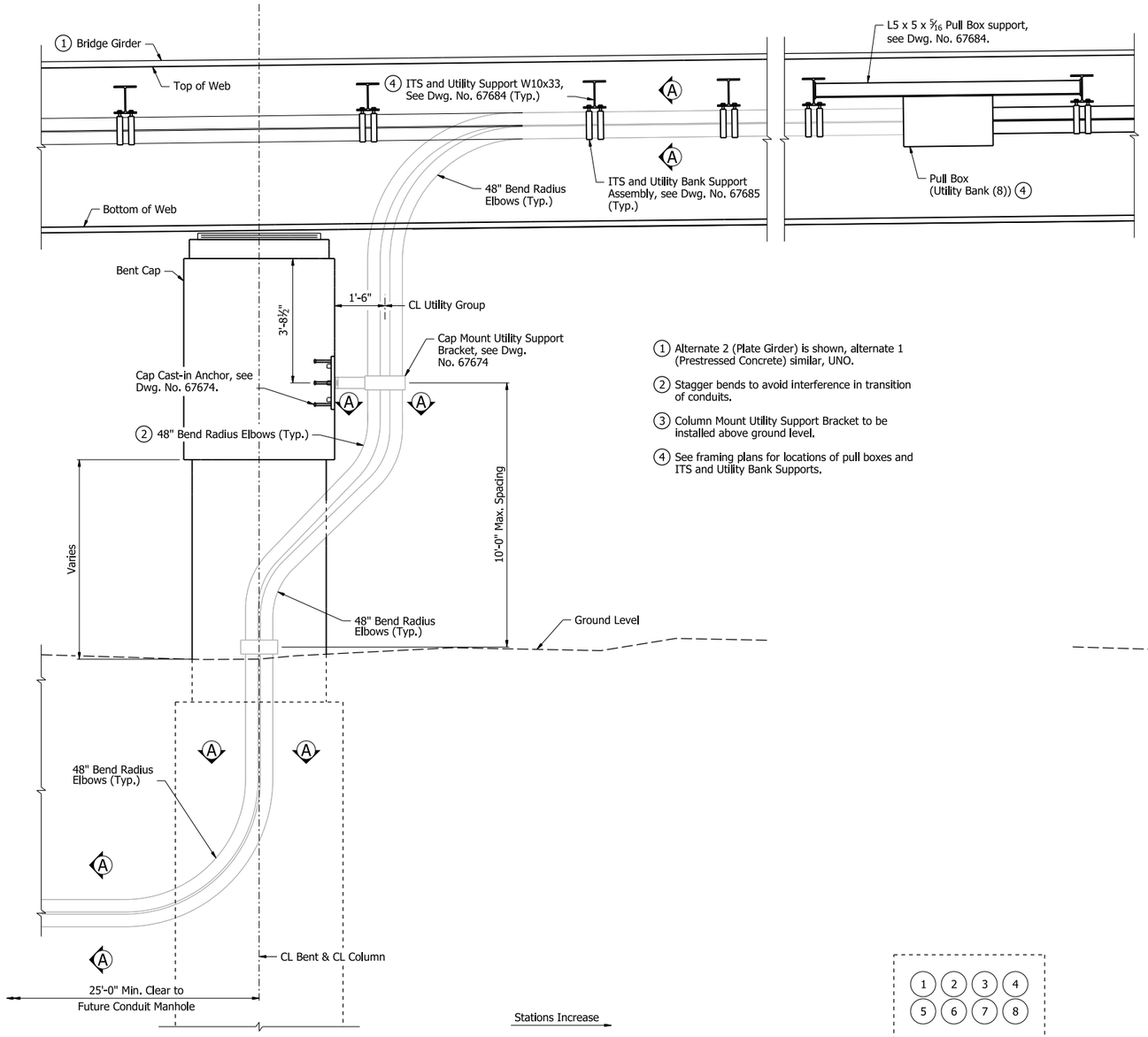
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 11/21/23
CHECKED BY: AMW DATE: 11/21/23
DESIGNED BY: AMW DATE: 11/1/23
FILENAME: b040901_ut1.dgn
SCALE: AS NOTED

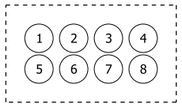
BRIDGE NO. 07684 & 07685 DRAWING NO. 67672

PRINT DATE: 4/12/2024

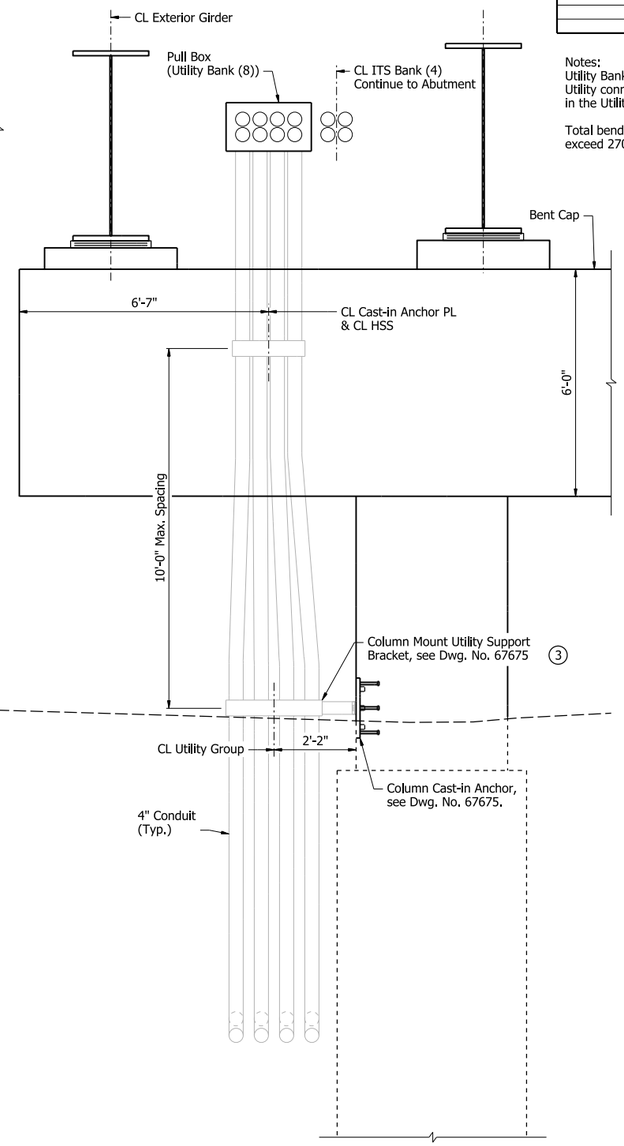
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	613	809
		07684 & 07685 - ITS AND UTILITY BANK - 67673				



1. Alternate 2 (Plate Girder) is shown, alternate 1 (Prestressed Concrete) similar, UNO.
2. Stagger bends to avoid interference in transition of conduits.
3. Column Mount Utility Support Bracket to be installed above ground level.
4. See framing plans for locations of pull boxes and ITS and Utility Bank Supports.



SECTION A-A



Notes:
Utility Bank (8) will stop at the last pull box on the superstructure for this project. Utility connections to the substructure are also provided for the project. Conduit in the Utility Bank past the last pull box will be future work.

Total bend from last pull box on the superstructure to the future Manhole not to exceed 270 degrees.

VERTICAL SUPPORT DETAILS

Bridge 07684 Bent No. 2 shown, Bridge 07685 Bent No. 2 similar
Bridge 07684 Bent No. 32 & Bridge 07685 Bent No. 15 Opposite Hand.

CONDUIT ASSIGNMENT

Notes:
Subcontractor to use conduit fitting as needed in order to match the port assignment.

DETAIL SHOWN LOOKING DOWNSTATION

STATE OF
ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1 & ALTERNATE NO. 2
SHEET 2 OF 14
ITS AND UTILITY BANK DETAILS
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 11/9/23
CHECKED BY: AMW DATE: 11/21/23
DESIGNED BY: AMW DATE: 11/1/23
FILENAME: b040901_ut2.dgn
SCALE: ½" = 1'-0"

BRIDGE NO. 07684 & 07685 DRAWING NO. 67673

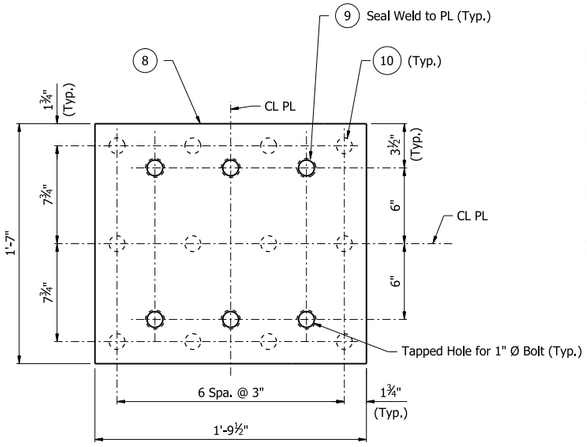
PRINT DATE: 4/9/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	614	809
		07684 & 07685 - UTILITY BANK - 67674				

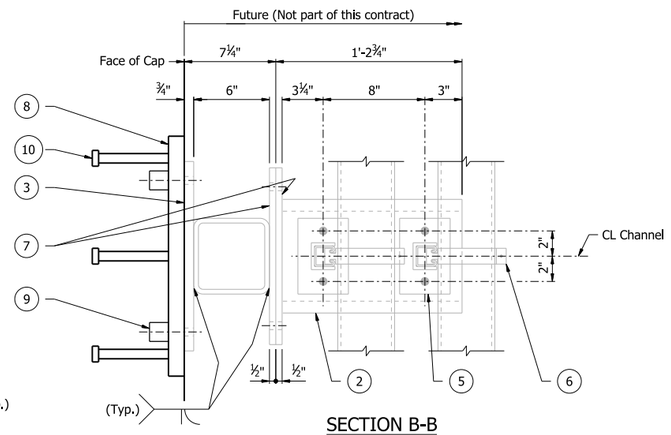
CAP MOUNT UTILITY SUPPORT BRACKET

Future (Not part of this contract)

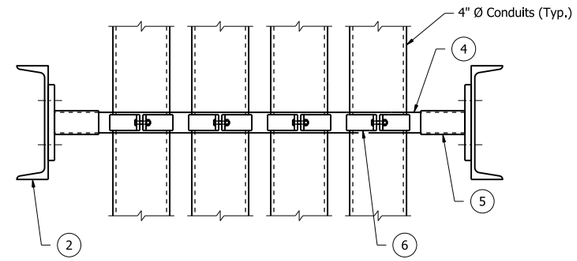
Item	Quantity (Per Assembly)	Description
1	1	HSS 6 x 6 x ⅜" x 3'-8"
2	2	C9 x 15 x 1'-2¼"
3	1	PL ¾" x 18" x 1'-3½"
4	2	Unistrut P1000THG x 2'-8½"
5	4	Unistrut P2942HG
6	8	Unistrut P1121HG
7	4	PL ½" x 7" x 1'-2"
8	1	Cast-in Anchor PL 1¼" x 19" x 1'-9½"
9	6	1½" Ø Pipe Cap
10	12	¾" Ø x 6" Anchor Stud Shear Connectors



ITEM 8
2" = 1'-0"



SECTION B-B
2" = 1'-0"



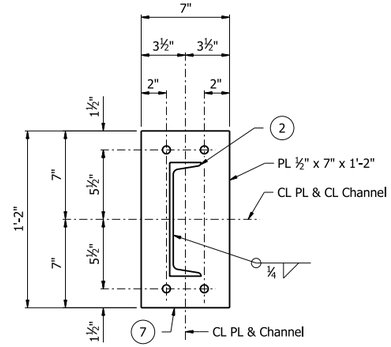
SECTION A-A
Future (Not part of this contract)
2" = 1'-0"

Notes:
All Bolts to be ⅝" Ø UNO. All holes to be $^{11}/_{16}$" Ø UNO.

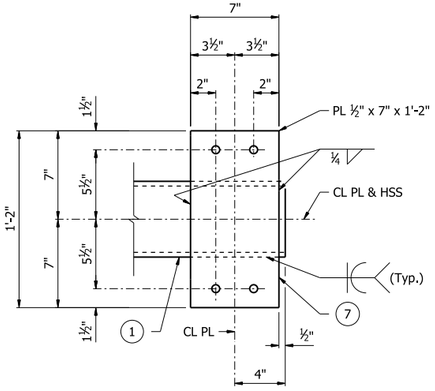
All bolts connecting to the cast-in anchor plate shall be Type 1 bolts with lock washers and shall have sufficient length to achieve full thread engagement with cast-in anchor plate. All hardware shall be hot-dip galvanized in accordance with Subsection 807.06.

Channel steel shall be ASTM A36, all plate steel shall be ASTM A709, Grade 50 and all HSS steel shall be ASTM A500 Grade C.

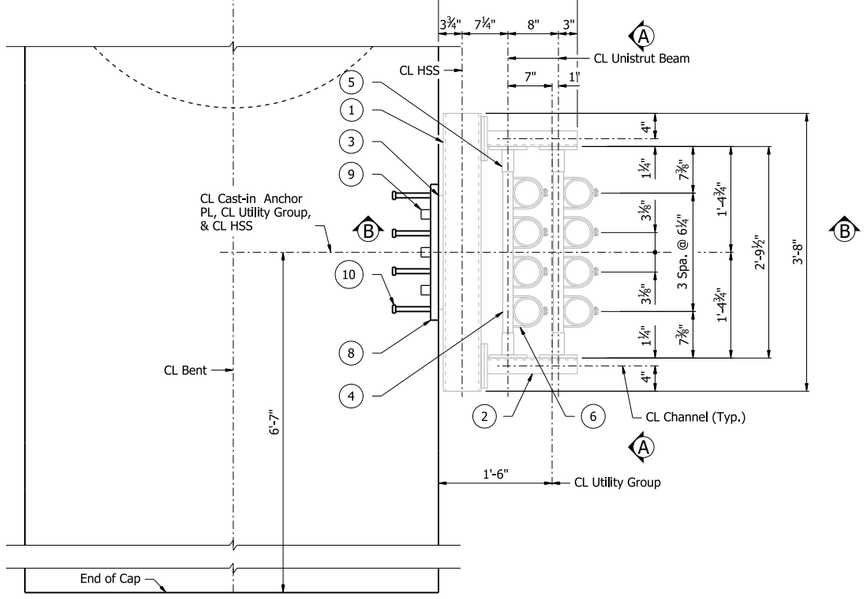
For additional notes, see Dwg. No. 67672.



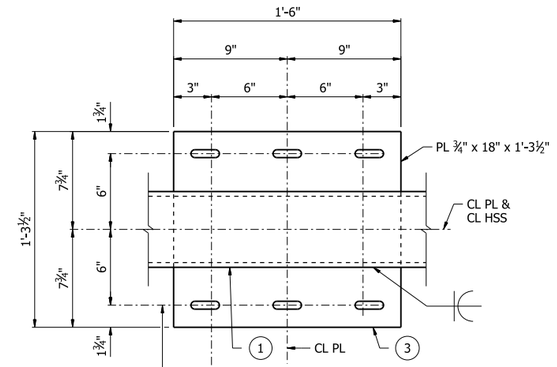
ITEM 7 CONN. TO ITEM 2
Future (Not part of this contract)
2" = 1'-0"



ITEM 7 CONN. TO ITEM 1
Future (Not part of this contract)
2" = 1'-0"



CAP MOUNT UTILITY SUPPORT BRACKET DETAIL
1" = 1'-0"



ITEM 3
Future (Not part of this contract)
2" = 1'-0"

STATE OF
ALLIE WAGNER
PROFESSIONAL ENGINEER
★★★
No. 22390
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1 & ALTERNATE NO. 2
SHEET 3 OF 14
UTILITY BANK DETAILS
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 11/10/23
CHECKED BY: AMW DATE: 11/21/23
DESIGNED BY: AMW DATE: 11/1/23
FILENAME: b040901_ut3.dgn
SCALE: AS NOTED

BRIDGE NO. 07684 & 07685 DRAWING NO. 67674

PRINT DATE: 4/5/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	615	809
		07684 & 07685 - UTILITY BANK - 67675				

COLUMN MOUNT UTILITY SUPPORT BRACKET

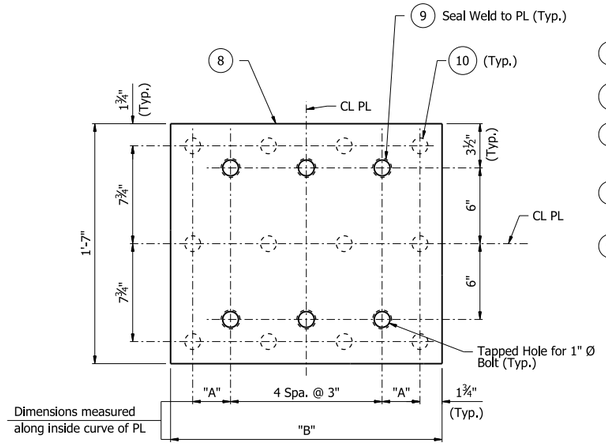
Future (Not part of this contract)

Item	Quantity (Per Assembly)	Description
1	1	HSS 6 x 6 x ⅜" x 2'-6½"
2	2	C9 x 15 x 2'-6¼"
3	1	Bent PL ¾" x 18" x 1'-3½"
4	4	Unistrut P1000THG x 1'-7"
5	8	Unistrut P2942HG
6	8	Unistrut P1121HG
7	4	PL ½" x 7" x 1'-2"
8	1	Cast-in Anchor PL 1¼" x 19" x "B" (13)
9	6	1½" Ø Pipe Cap
10	12	¾" Ø x 6" Anchor Stud Shear Connectors

(11) 2'-6" Bridge 16 Bent No. 2
2'-0" Bridge 1 Bent Nos. 2 & 32, Bridge 16 Bent No. 15

(12) 12° Bridge 16 Bent No. 2
15° Bridge 1 Bent Nos. 2 & 32, Bridge 16 Bent No. 15

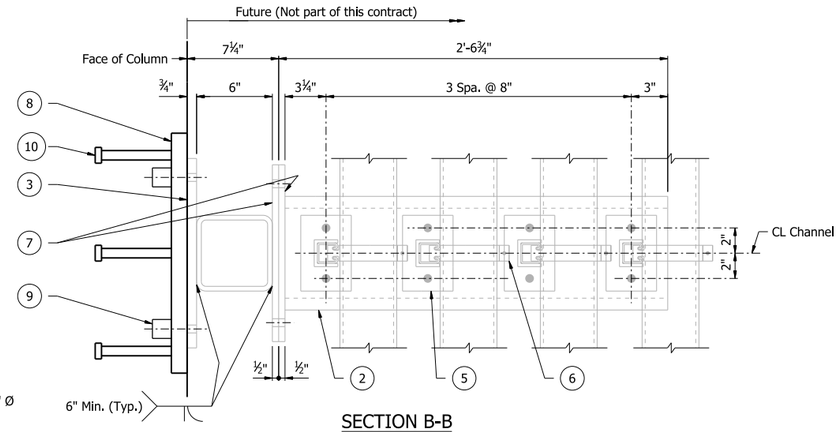
(13) Length measured along inside curve of PL
Inside radius = 2'-4¾" Bridge 16 Bent No. 2
Inside radius = 1'-10¾" Bridge 1 Bent Nos. 2 & 32, Bridge 16 Bent No. 15



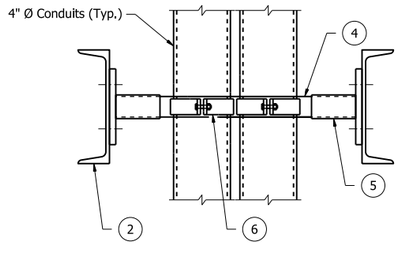
ITEM 8
2" = 1'-0"

TABLE OF VARIABLES

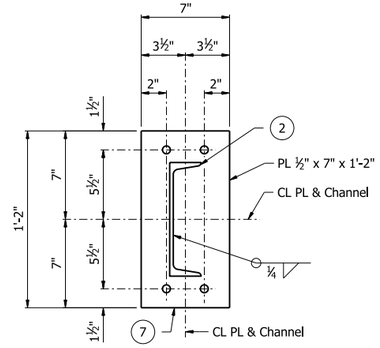
Location	"A"	"B"
Bridge 1 Bent Nos. 2 & 32	3"	1'-9½"
Bridge 16 Bent Nos. 2 & 15	6"	2'-3½"



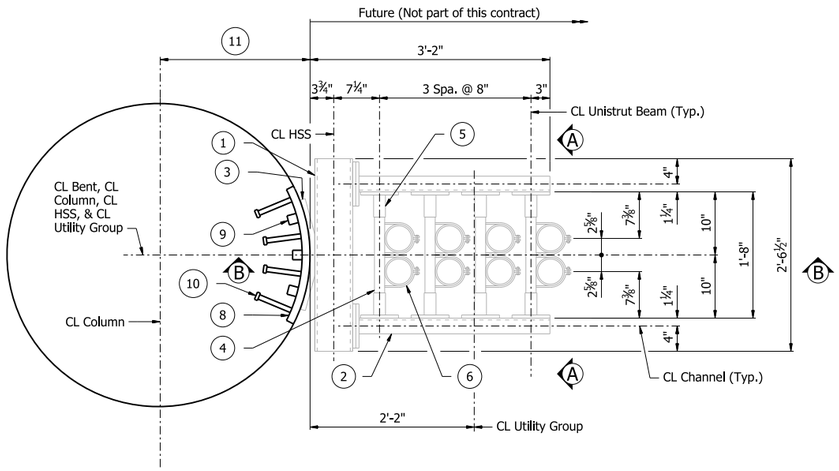
SECTION B-B
2" = 1'-0"



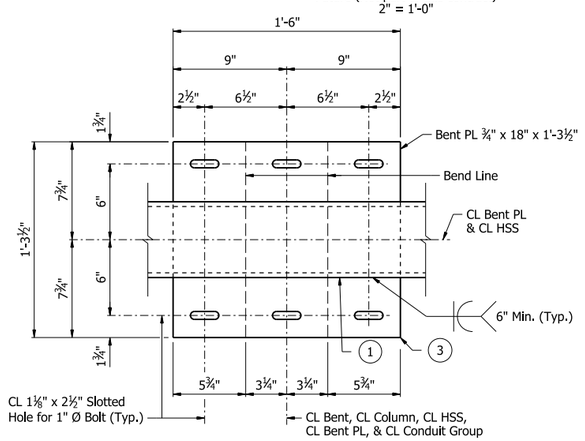
SECTION A-A
Future (Not part of this contract)
2" = 1'-0"



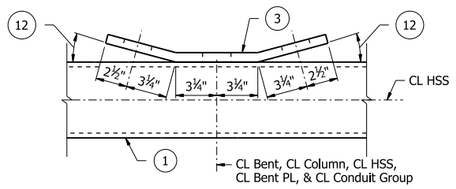
ITEM 7 CONN. TO ITEM 2
Future (Not part of this contract)
2" = 1'-0"



COLUMN MOUNT UTILITY SUPPORT BRACKET DETAIL
1" = 1'-0"

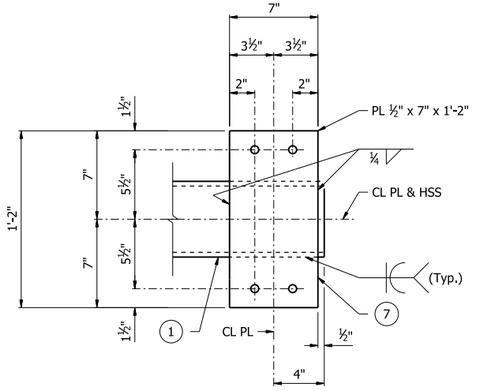


ELEVATION



PLAN

ITEM 3
Future (Not part of this contract)
2" = 1'-0"



ITEM 7 CONN. TO ITEM 1
Future (Not part of this contract)
2" = 1'-0"

Notes:
All Bolts to be ⅝" Ø UNO. All holes to be $\frac{1}{16}$" Ø UNO.

All bolts connecting to the cast-in anchor plate shall be Type 1 bolts with lock washers and shall have sufficient length to achieve full thread engagement with cast-in anchor plate. All hardware shall be hot-dip galvanized in accordance with Subsection 807.06.

Channel steel shall be ASTM A36, all plate steel shall be ASTM A709, Grade 50 and all HSS steel shall be ASTM A500 Grade C.

For additional notes, see Dwg. No. 67672.

STATE OF
ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1 & ALTERNATE NO. 2
SHEET 4 OF 14
UTILITY BANK DETAILS
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 11/10/23
CHECKED BY: AMW DATE: 11/21/23
DESIGNED BY: AMW DATE: 11/1/23
FILENAME: b040901_ut4.dgn
SCALE: AS NOTED

BRIDGE NO. 07684 & 07685 DRAWING NO. 67675

PRINT DATE: 4/5/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	616	809
		07684 - ITS AND UTILITY BANK - 67676				

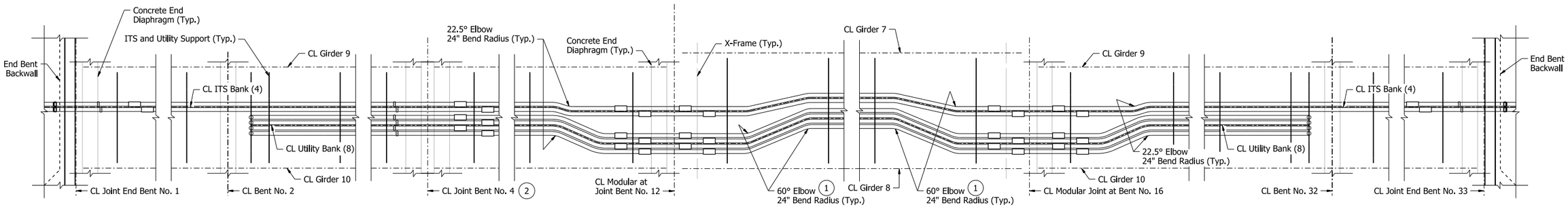
Notes:
For ITS & Utility Support, diaphragm, crossframe, and pull box locations, see Unit framing plans.

For "SECTION A-A", "SECTION B-B", "SECTION C-C", & "SECTION D-D", see Dwg. No. 67677.

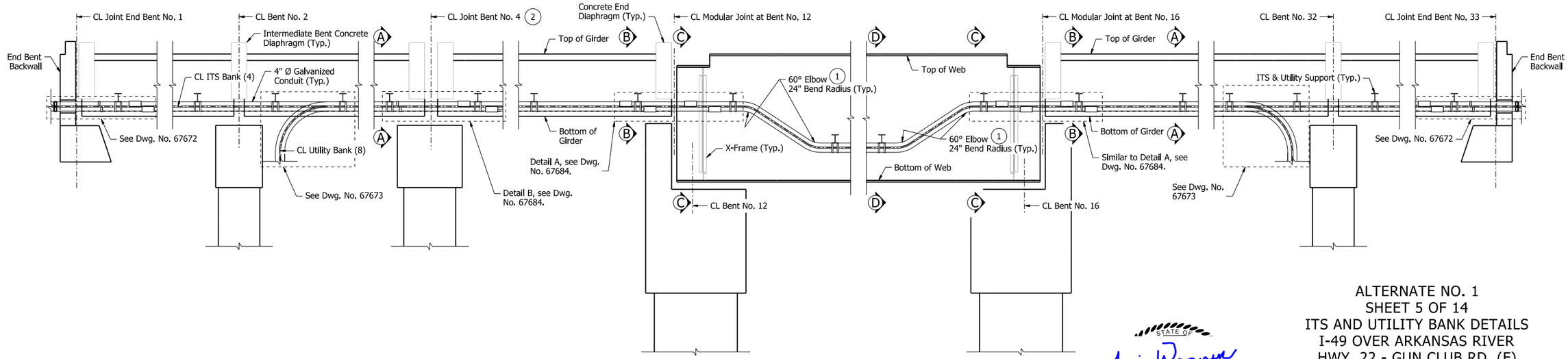
For additional notes, see Dwg. No. 67672.

(1) Rotate elbows to accommodate vertical and horizontal shift of conduit.

(2) Bent Nos. 8, 20, 24, 27, & 30 similar.



PLAN - ITS AND UTILITY PATHING



ELEVATION - ITS AND UTILITY PATHING

STATE OF
ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 5 OF 14
ITS AND UTILITY BANK DETAILS
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 2/20/24 FILENAME: b040901_ut5.dgn
CHECKED BY: AMW DATE: 11/21/23 SCALE: NO SCALE
DESIGNED BY: AMW DATE: 11/1/23
BRIDGE NO. 07684 DRAWING NO. 67676

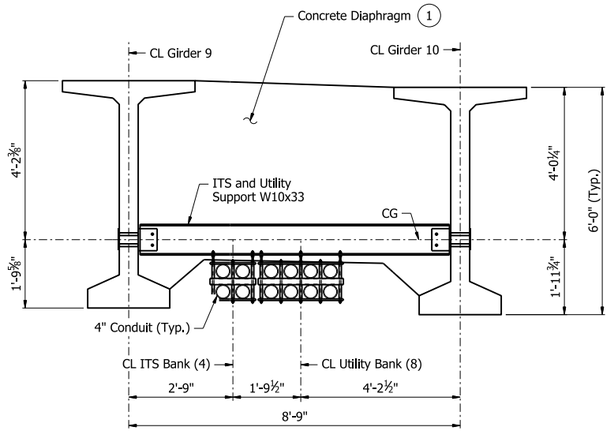
PRINT DATE: 4/5/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	617	809
		07684 & 07685 - ITS AND UTILITY BANK - 67677				

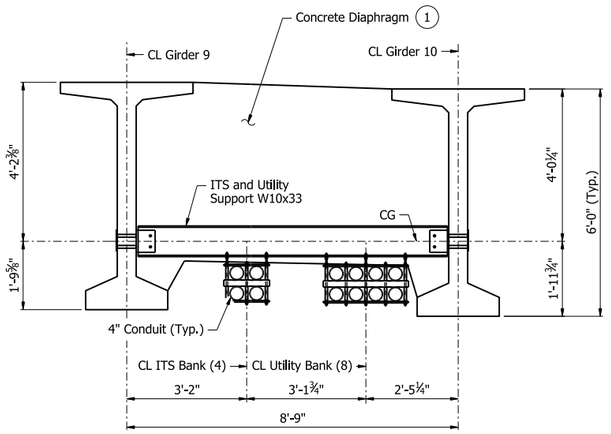
Notes:
For location of "SECTION A-A", "SECTION B-B", "SECTION C-C", & "SECTION D-D", see Dwg. No. 67676.

For additional notes, see Dwg. No. 67672.

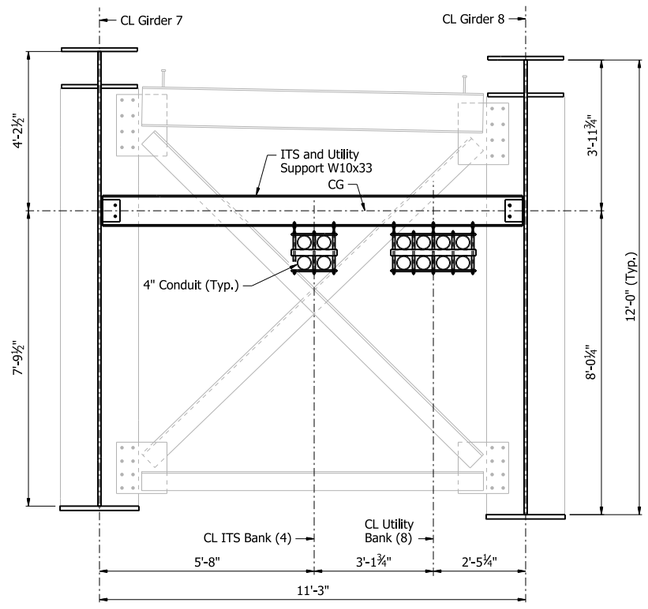
(1) At mid-span diaphragms, galvanized steel diaphragms may be used in place of concrete diaphragms.



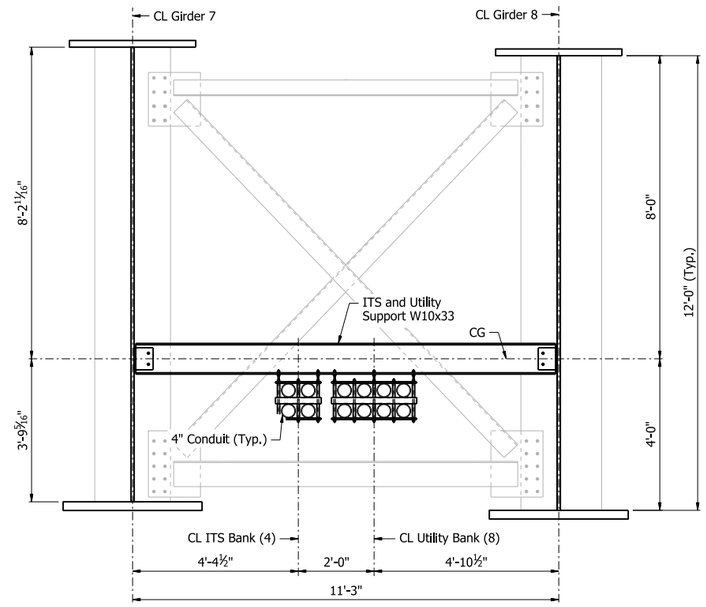
SECTION A-A



SECTION B-B



SECTION C-C
(Crossframe at modular joint screened for clarity)



SECTION D-D
(Typical Crossframe screened for clarity)

STATE OF
ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1 & ALTERNATE NO. 2
SHEET 6 OF 14
ITS AND UTILITY BANK DETAILS
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: AMW DATE: 2/29/24
CHECKED BY: CZ DATE: 11/7/23
DESIGNED BY: AMW DATE: 11/1/23
FILENAME: b040901_ut6.dgn
SCALE: ½" = 1'-0"

BRIDGE NO. 07684 & 07685 DRAWING NO. 67677

PRINT DATE: 4/5/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	618	809
		07685 - ITS AND UTILITY BANK - 67678				

Notes:
For ITS & Utility Support, diaphragm, crossframe, and pull box locations, see Unit framing plans.

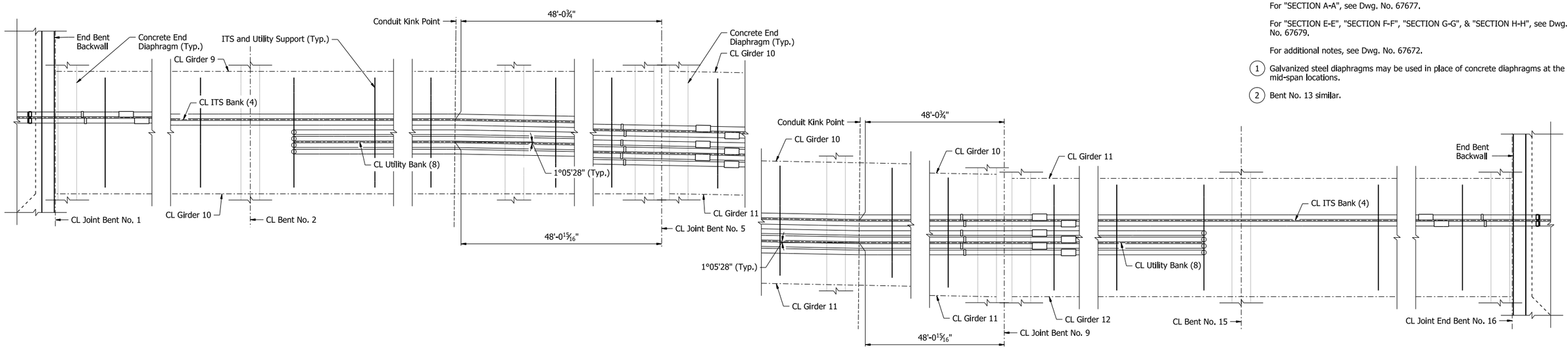
For "SECTION A-A", see Dwg. No. 67677.

For "SECTION E-E", "SECTION F-F", "SECTION G-G", & "SECTION H-H", see Dwg. No. 67679.

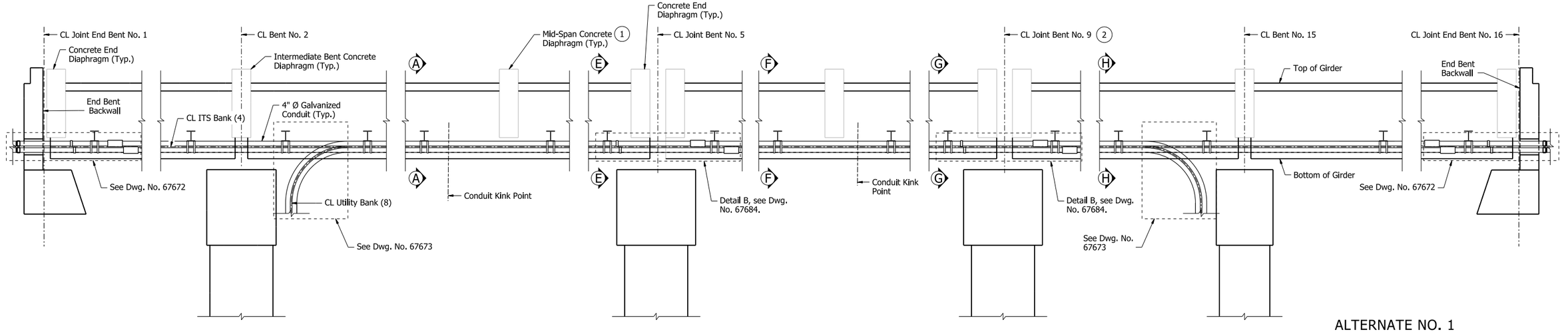
For additional notes, see Dwg. No. 67672.

(1) Galvanized steel diaphragms may be used in place of concrete diaphragms at the mid-span locations.

(2) Bent No. 13 similar.



PLAN - ITS AND UTILITY PATHING



ELEVATION - ITS AND UTILITY PATHING

PRINT DATE: 4/5/2024

STATE OF ARKANSAS
Allie Wagner
PROFESSIONAL ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 7 OF 14
ITS AND UTILITY BANK DETAILS
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 11/10/23
CHECKED BY: AMW DATE: 11/21/23
DESIGNED BY: AMW DATE: 11/1/23
FILENAME: b040901_ut7.dgn
SCALE: ¼" = 1'-0"

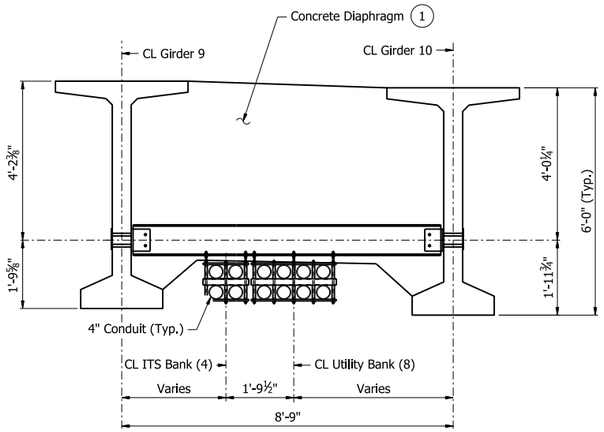
BRIDGE NO. 07685 DRAWING NO. 67678

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	619	809
		07685 - ITS AND UTILITY BANK - 67679				

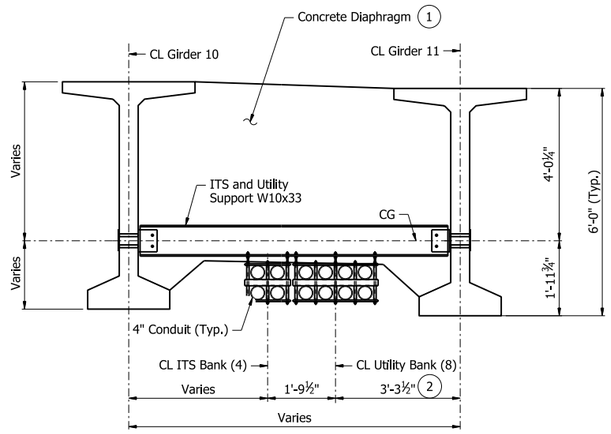
Notes:
For location of "SECTION E-E", "SECTION F-F", "SECTION G-G", & "SECTION H-H", see Dwg. No. 67678.

For additional notes, see Dwg. No. 67672.

(1) At mid-span diaphragms, galvanized steel diaphragms may be used in place of concrete diaphragms.

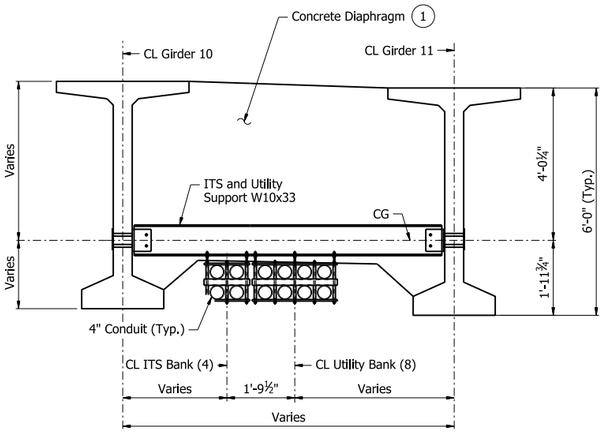


SECTION E-E
Kink Point to end of Unit 1

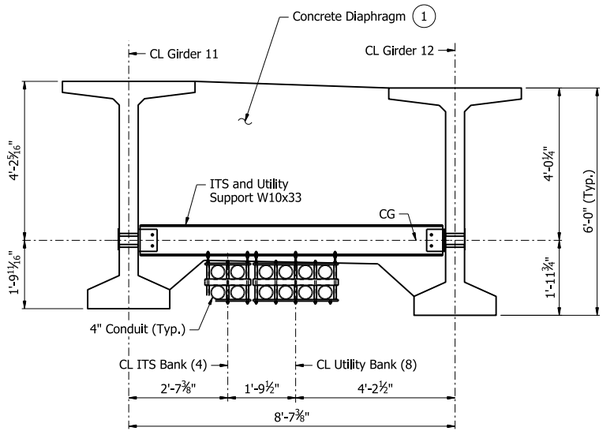


SECTION F-F
Start of Unit 2 to Kink Point

(2) Measured normal to Girder 11.



SECTION G-G
Kink Point to end of Unit 2



SECTION H-H

STATE OF
ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 8 OF 14
ITS AND UTILITY BANK DETAILS
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 2/29/24
CHECKED BY: AMW DATE: 11/21/23
DESIGNED BY: AMW DATE: 11/1/23
FILENAME: b040901_ut8.dgn
SCALE: ½" = 1'-0"

BRIDGE NO. 07685 DRAWING NO. 67679

PRINT DATE: 4/5/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	620	809
		07684 - ITS AND UTILITY BANK - 67680				

Notes:
For ITS & Utility Support, diaphragm, crossframe, and pull box locations, see Unit framing plans.

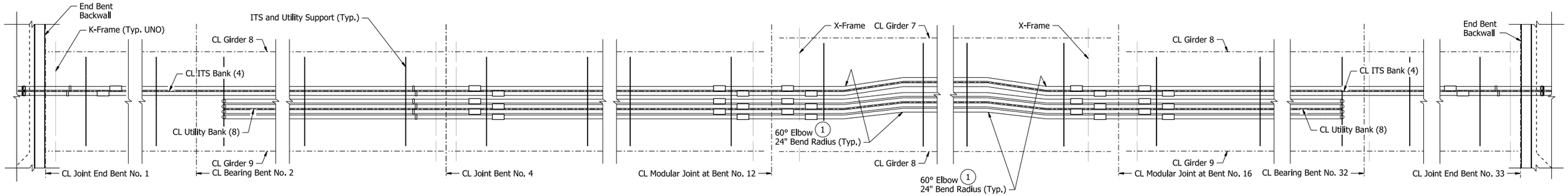
For "SECTION D-D" see Dwg. No. 67677.

For "SECTION J-J", "SECTION K-K", "SECTION L-L", and "SECTION M-M", see Dwg. No. 67681.

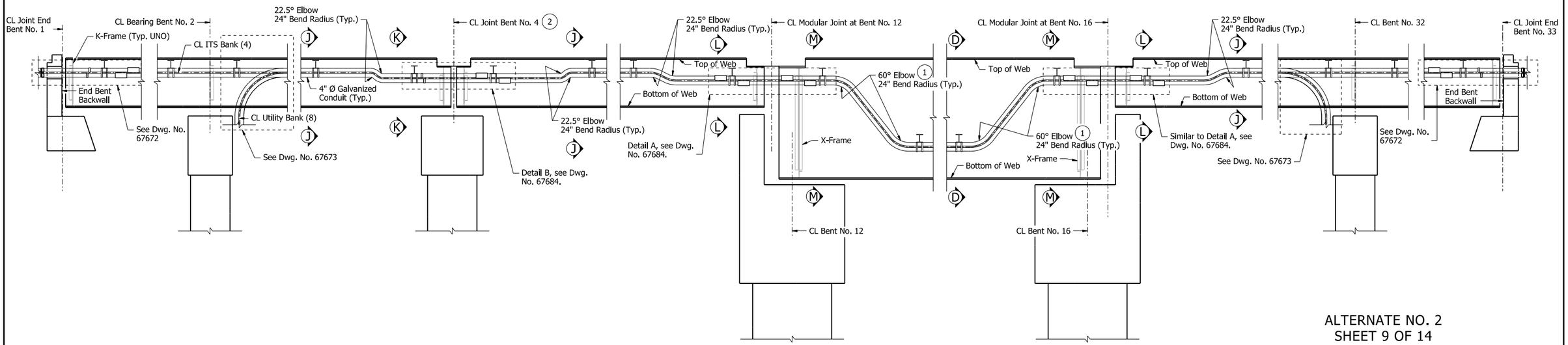
For additional notes, see Dwg. No. 67672.

(1) Rotate elbows to accommodate vertical and horizontal shift of conduit.

(2) Bent Nos. 8, 20, 24, 27, & 30 similar.



PLAN - ITS AND UTILITY PATHING



ELEVATION - ITS AND UTILITY PATHING

STATE OF
ENGINEER
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 9 OF 14
ITS AND UTILITY BANK DETAILS
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 2/21/24
CHECKED BY: AMW DATE: 11/21/23
DESIGNED BY: AMW DATE: 11/1/23
FILENAME: b040901_ut9.dgn
SCALE: NO SCALE

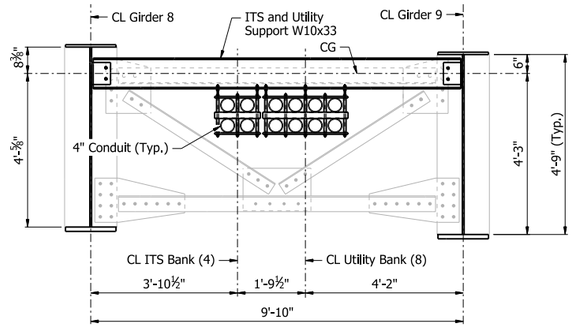
BRIDGE NO. 07684 DRAWING NO. 67680

PRINT DATE: 4/5/2024

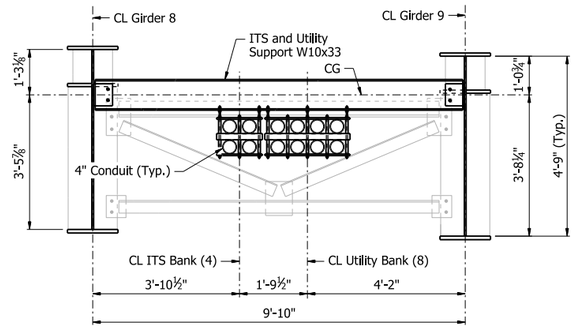
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	621	809
		07684 & 07685 - ITS AND UTILITY BANK - 67681				

Notes:
For location of 'SECTION J-J", "SECTION K-K", "SECTION L-L", and "SECTION M-M", see Dwg. No. 67680.

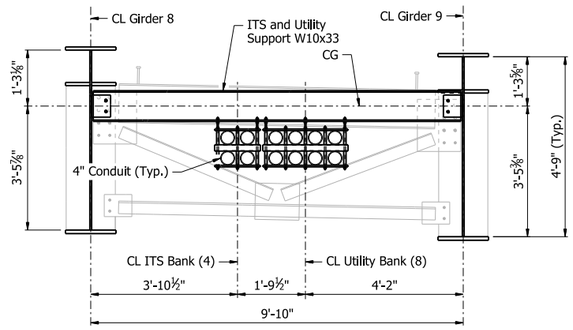
For additional notes, see Dwg. No. 67672.



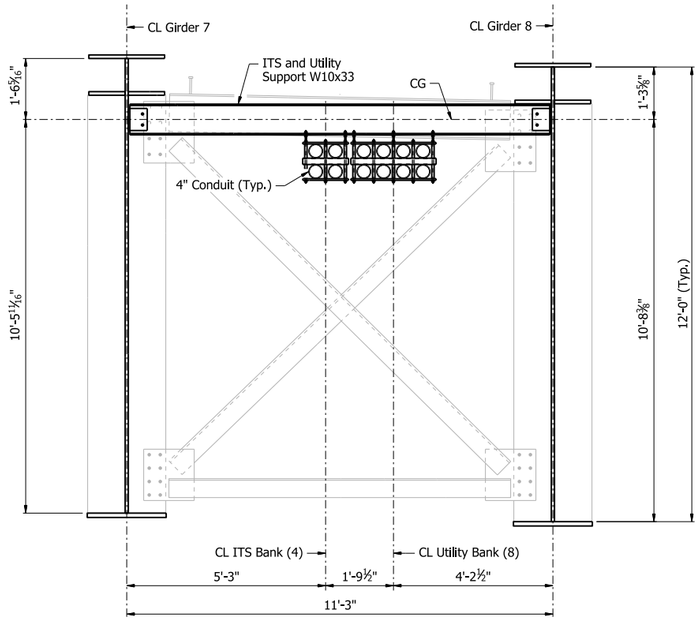
SECTION J-J
(Typical Crossframe screened for clarity)



SECTION K-K
(Crossframe at finger joint screened for clarity)



SECTION L-L
(Crossframe at modular joint screened for clarity)



SECTION M-M
(Crossframe at modular joint screened for clarity)

STATE OF
ARKANSAS
ALLIE WAGNER
PROFESSIONAL ENGINEER
★★★
No. 22390
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 10 OF 14
ITS AND UTILITY BANK DETAILS
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 2/29/24
CHECKED BY: AMW DATE: 11/21/23
DESIGNED BY: AMW DATE: 11/1/23
FILENAME: b040901_ut10.dgn
SCALE: ½" = 1'-0"

BRIDGE NO. 07684 & 07685 DRAWING NO. 67681

PRINT DATE: 4/5/2024

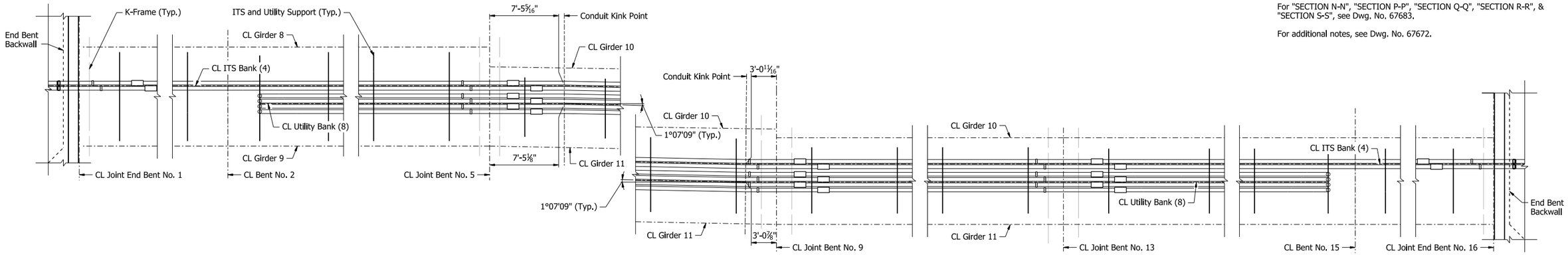
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	622	809
		07685 - ITS AND UTILITY BANK - 67682				

Notes:
For ITS & Utility Support, diaphragm, crossframe, and pull box locations, see Unit framing plans.

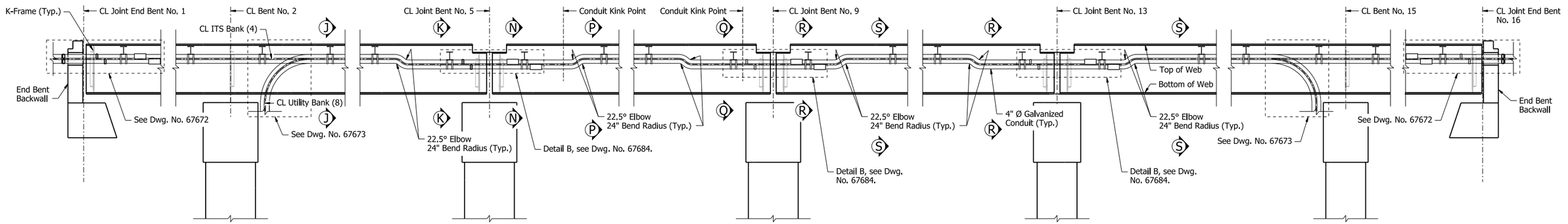
For "SECTION J-J" & "SECTION K-K", see Dwg. No. 67681.

For "SECTION N-N", "SECTION P-P", "SECTION Q-Q", "SECTION R-R", & "SECTION S-S", see Dwg. No. 67683.

For additional notes, see Dwg. No. 67672.



PLAN - ITS AND UTILITY PATHING



ELEVATION - ITS AND UTILITY PATHING

STATE OF
ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 11 OF 14
ITS AND UTILITY BANK DETAILS
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 2/28/24
CHECKED BY: AMW DATE: 11/21/23
DESIGNED BY: AMW DATE: 11/1/23
FILENAME: b040901_ut11.dgn
SCALE: NO SCALE

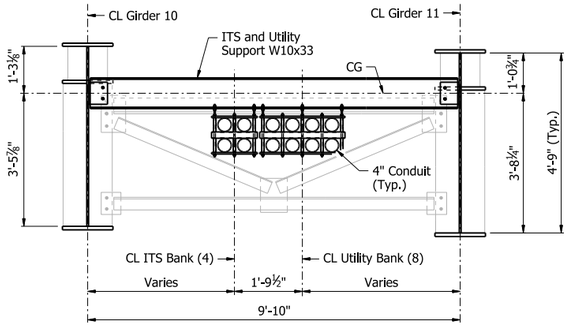
BRIDGE NO. 07685 DRAWING NO. 67682

PRINT DATE: 4/5/2024

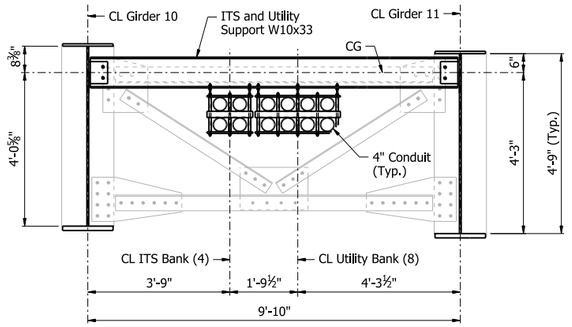
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	623	809
		07685 - ITS AND UTILITY BANK - 67683				

Notes:
For location of "SECTION N-N", "SECTION P-P", "SECTION Q-Q", "SECTION R-R", & "SECTION S-S", see Dwg. No. 67682.

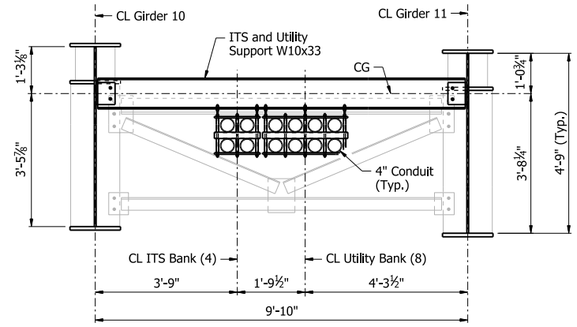
For additional notes, see Dwg. No. 67672.



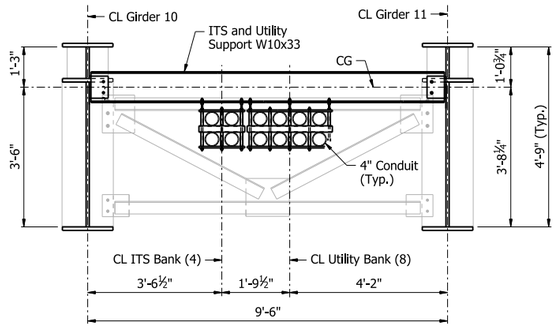
SECTION N-N
(Crossframe at finger joint screened for clarity)



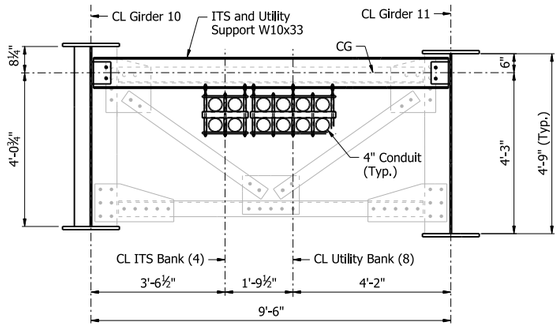
SECTION P-P
(Typical Crossframe screened for clarity)



SECTION Q-Q
(Crossframe at finger joint screened for clarity)



SECTION R-R
(Crossframe at finger joint screened for clarity)



SECTION S-S
(Typical Crossframe screened for clarity)

PRINT DATE: 4/5/2024

STATE OF
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4/18/24
BRIDGE ENGINEER

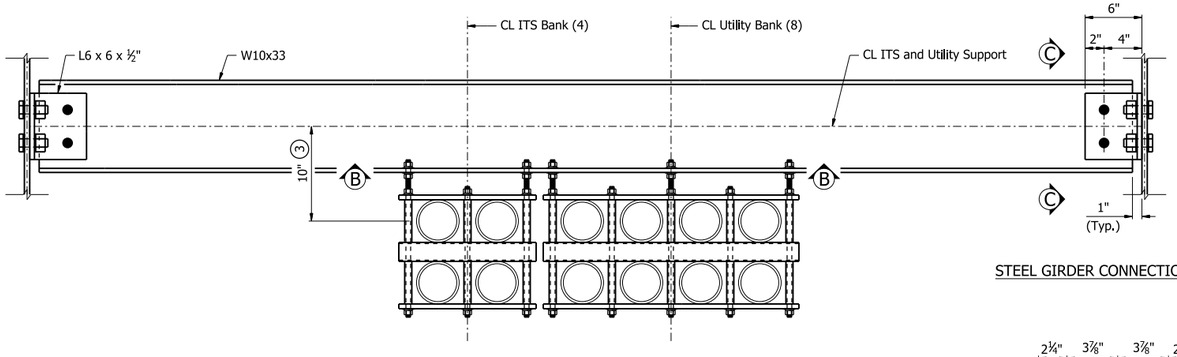
ALTERNATE NO. 2
SHEET 12 OF 14
ITS AND UTILITY BANK DETAILS
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

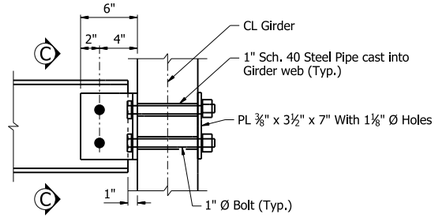
DRAWN BY: CTK DATE: 2/29/24
CHECKED BY: AMW DATE: 11/21/23
DESIGNED BY: AMW DATE: 11/1/23
FILENAME: b040901_ut12.dgn
SCALE: ½" = 1'-0"

BRIDGE NO. 07685 DRAWING NO. 67683

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	624	809
		07684 & 07685 - ITS AND UTILITY BANK - 67684				

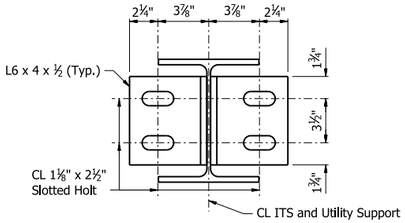


TYPICAL ITS AND UTILITY SUPPORT DETAILS
1½" = 1'-0"

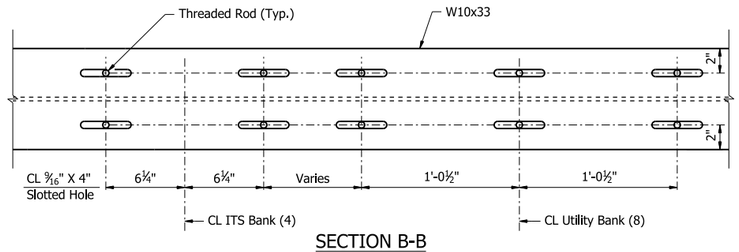


STEEL GIRDER CONNECTION DETAIL

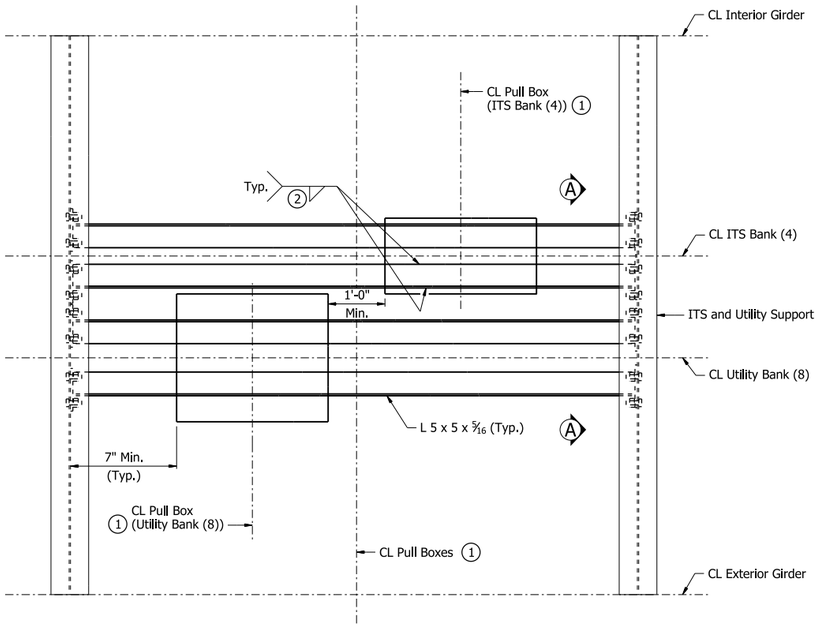
CONCRETE GIRDER CONNECTION DETAIL



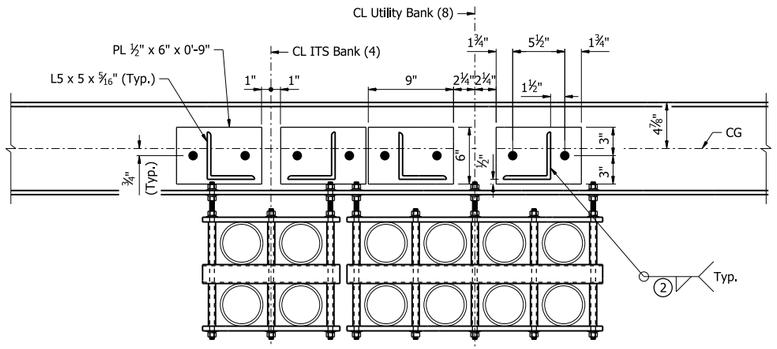
SECTION C-C
2" = 1'-0"



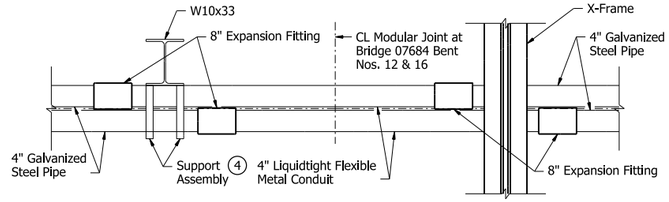
SECTION B-B
2" = 1'-0" Scale



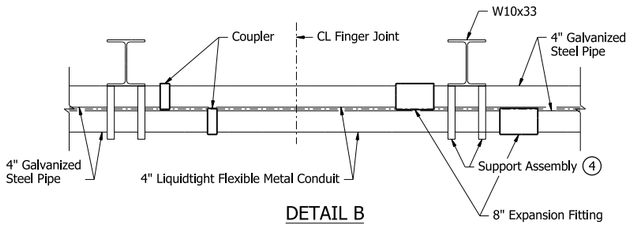
PLAN ITS AND UTILITY SUPPORT WITH PULL BOXES
¾" = 1'-0"



SECTION A-A
1½" = 1'-0"



DETAIL A



DETAIL B

Notes:
For additional notes, see Dwg. No. 67672.

For ITS and Utility Bank Support Assembly, see Dwg. No. 67685.

Bolts connecting L6 x 6 x ½ to 50W bridge girder webs shall be Type 3 bolts with complimentary washers and heavy hex nut.

Steel pipes shall be ASTM A53 Grade B.

1. For locations of Pull Boxes see Framing Plan sheets.
2. See "WELD TABLE", Std. Dwg. No. 55007.
3. 10" typical. Adjust as needed, see Dwg. No. 67685.
4. Allow for longitudinal movement. See Dwg. No. 67685.

STATE OF
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No. 22390
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4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1 & ALTERNATE NO. 2
SHEET 13 OF 14
ITS AND UTILITY BANK DETAILS
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 11/10/23
CHECKED BY: AMW DATE: 11/21/23
DESIGNED BY: MJ DATE: 2/6/23
FILENAME: b040901_ut13.dgn
SCALE: AS NOTED

BRIDGE NO. 07684 & 07685 DRAWING NO. 67684

PRINT DATE: 4/9/2024

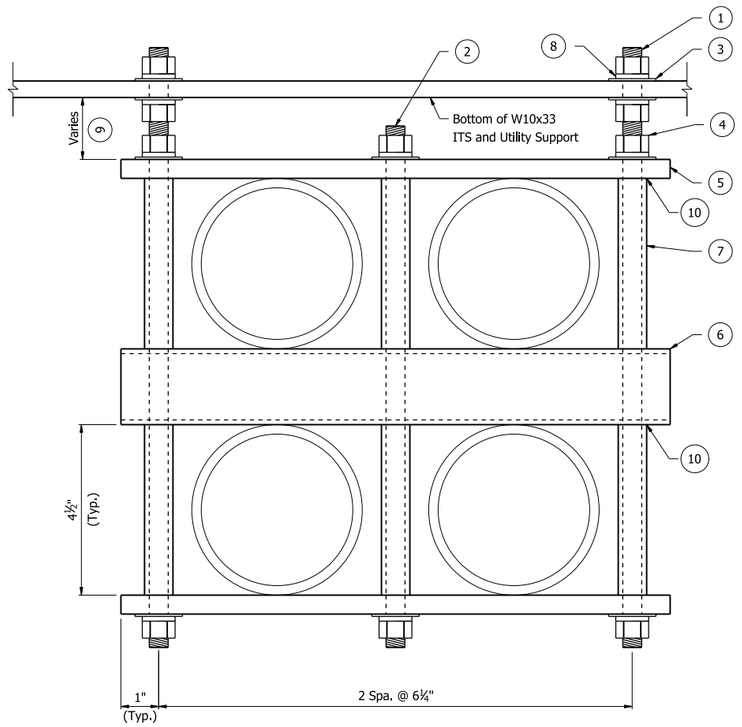
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	625	809
		07684 & 07685 - ITS AND UTILITY BANK - 67685				

ITS BANK (4) SUPPORT ASSEMBLY

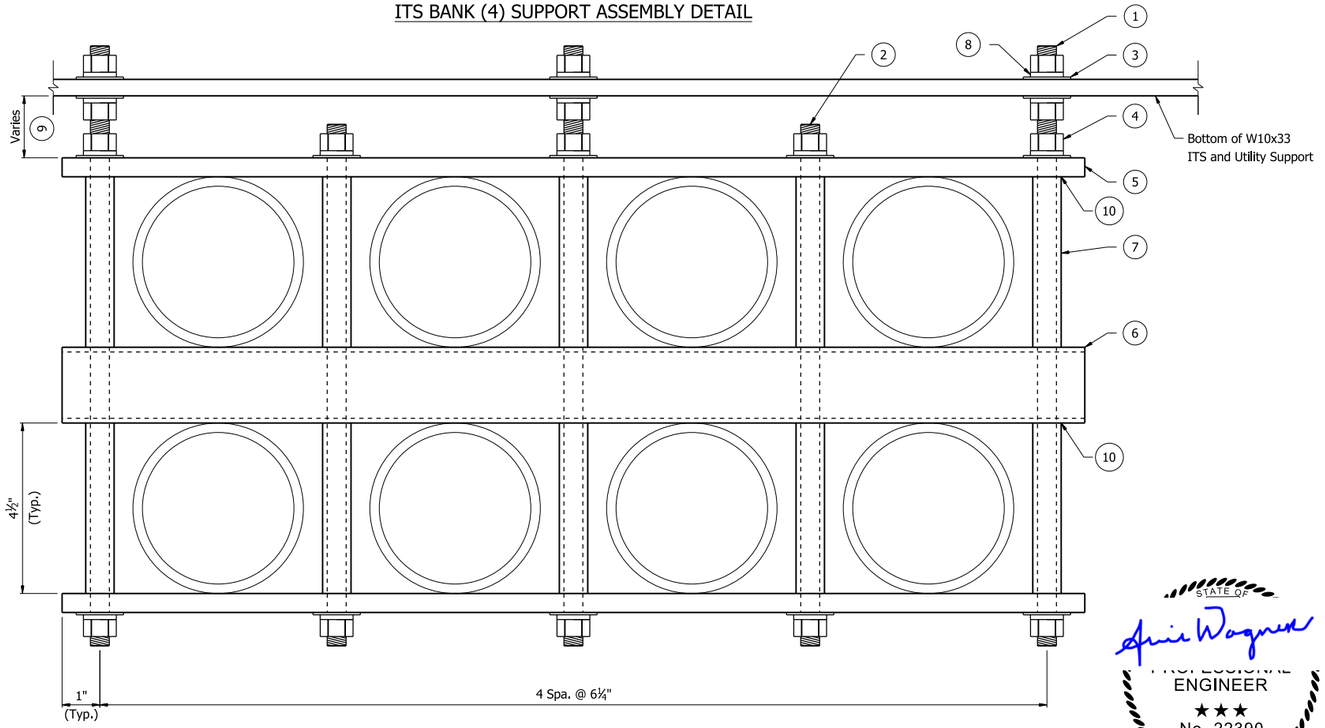
Item	Quantity	Description
1	2	½" All Thread Rod x 1'-5½"
2	1	½" All Thread Rod x 1'-2¼"
3	10	½" Flat Washer
4	10	½" Heavy Hex Nut
5	2	PL ⅜" x 2" x 1'-2½"
6	1	HSS 2 x 2 x ⅛ x 1'-2½"
7	6	½" Pipe Spacer x 4½"
8	10	¾" Lock Washer

UTILITY BANK (8) SUPPORT ASSEMBLY

Item	Quantity	Description
1	3	½" All Thread Rod x 1'-5½"
2	2	½" All Thread Rod x 1'-2¼"
3	16	½" Flat Washer
4	16	½" Heavy Hex Nut
5	2	PL ⅜" x 2" x 2'-3"
6	1	HSS 2 x 2 x ⅛ x 2'-3"
7	10	½" Pipe Spacer x 4½"
8	16	¾" Lock Washer



ITS BANK (4) SUPPORT ASSEMBLY DETAIL



UTILITY BANK (8) SUPPORT ASSEMBLY DETAIL

Notes:
Conduit support supplied by fabricator.

Threaded rod shall be ASTM A307, Grade A with complimentary nuts and washers.

Pipe spacers shall be A53 STD Pipe.

HSS shall be ASTM A501 and galvanized per ASTM A53/A53M.

For additional notes, see Dwg. No. 67672.

(10) If longitudinal movement is needed at the support, add a washer at the top of each pipe spacer and grease the underside of each conduit. This is typical for locations adjacent to expansion joints that support flexible conduit connections.

(9) Typically 2½" but can be adjusted as needed.

STATE OF
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4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1 & ALTERNATE NO. 2
SHEET 14 OF 14
ITS AND UTILITY BANK DETAILS
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 11/8/23
CHECKED BY: AMW DATE: 11/21/23
DESIGNED BY: AMW DATE: 11/1/23
FILENAME: b040901_ut14.dgn
SCALE: 6" = 1'-0"

BRIDGE NO. 07684 & 07685 DRAWING NO. 67685

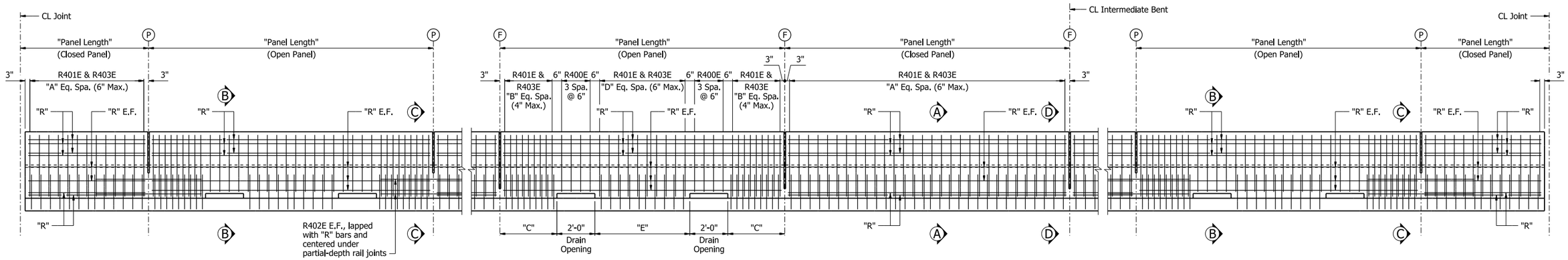
PRINT DATE: 4/5/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	626	809
		07684 & 07685 - PARAPET RAIL - 67686				

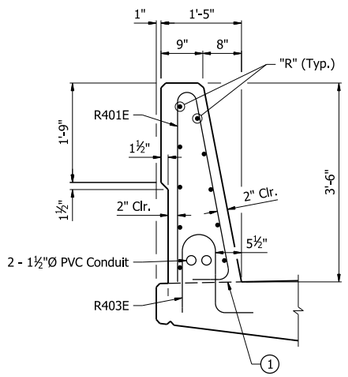
(1) Required Construction Joint. Level where water flows away from rail, match roadway slope where water flows toward rail.

(P) CL Partial-Depth Rail Joint (formed width ¼" to 1" max.) Stop 16" from top of slab. Place at all remaining locations other than at intermediate bents.

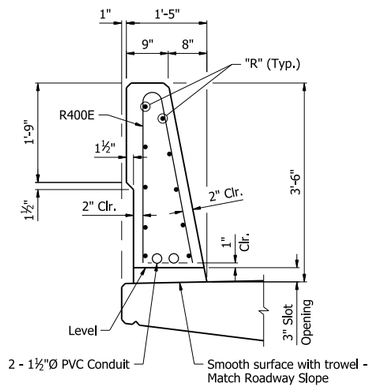
(F) CL Full-Depth Rail Joint (formed width ¼" to 1" max.) Stop 6" from top of slab. Place at all intermediate bent locations where rail is continuous.



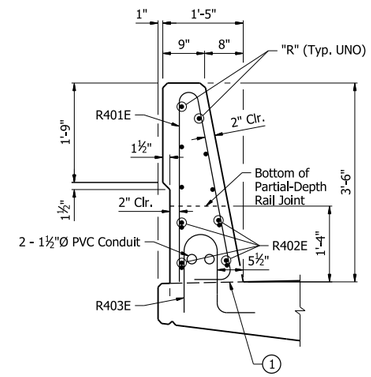
ELEVATION - SINGLE SLOPE TRAFFIC RAIL



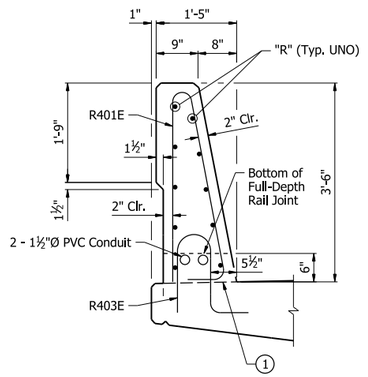
SECTION A-A



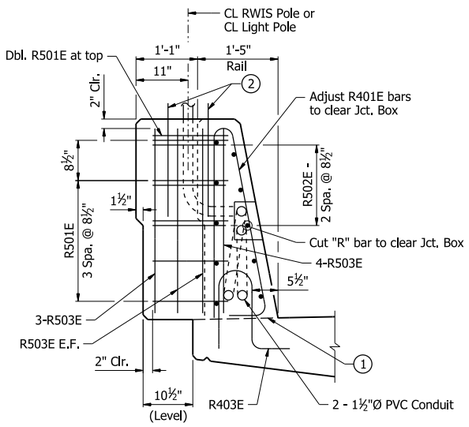
SECTION B-B



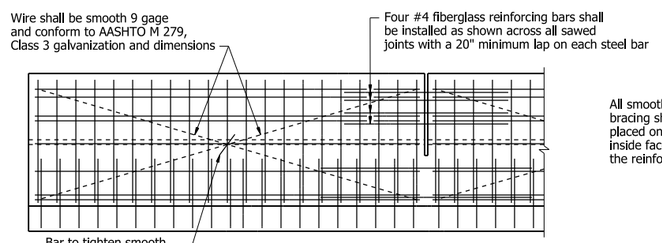
SECTION C-C



SECTION D-D

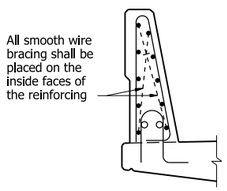


SECTION E-E



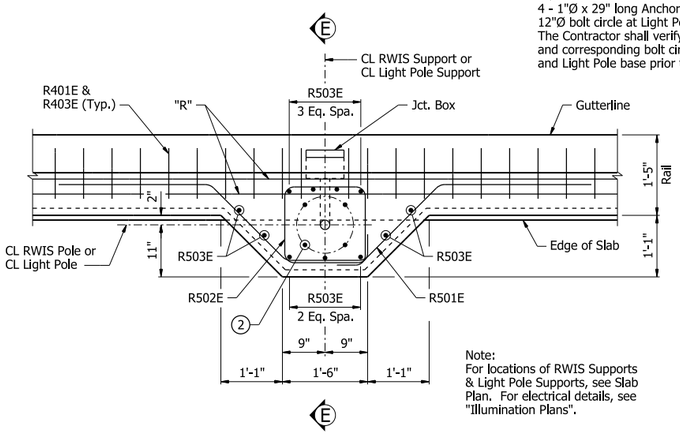
All panels shall be braced as shown to prevent racking.

When optional slip forming is used: to control cracking, all rail joints must be V-grooved around the perimeter of the rail prior to concrete set and sawing. Depth of V-groove shall be ½". Sawing of the joints shall be done as soon as practical to a width of ¼", and must be controlled so it will follow the V-Groove.



The extruded rail shall conform to the horizontal and vertical lines shown on the plans or as directed by the Engineer and shall present a smooth, uniform appearance and texture. Exposed surfaces may be given a light brush finish or a Class 3, Textured Coating Finish in place of the Class 2, Rubbed Finish.

DETAILS OF OPTIONAL SLIP FORMING OF BRIDGE TRAFFIC RAIL



Note: For locations of RWIS Supports & Light Pole Supports, see Slab Plan. For electrical details, see "Illumination Plans".

PLAN - RWIS OR LIGHT POLE SUPPORT

(2) 4 - ¾"Ø x 17" long Anchor Bolts with 3" 90° hooks on 8"Ø bolt circle at RWIS Support;
4 - 1"Ø x 29" long Anchor Bolts with 4" 90° hooks on 12"Ø bolt circle at Light Pole Support
The Contractor shall verify the required anchor bolt size and corresponding bolt circle with the selected RWIS and Light Pole base prior to installing anchor bolts.

Notes:
For additional details, see Standard Dwg. No. 55071 for "BRIDGE TRAFFIC RAIL TYPE SSTR42".

For "RAIL VARIABLES", see Dwg. No. 67687.

For locations of panels, drainage openings, and rail bar list, see Slab Plan.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 15778
NATALIE MCCOMBS

Natalie McCombs
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1 & ALTERNATE NO. 2
SHEET 1 OF 3
DETAILS OF BRIDGE TRAFFIC RAIL TYPE SSTR42
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY:	CEM	DATE:	9/28/23	FILENAME:	b040901_p1.dgn
CHECKED BY:	CPS	DATE:	11/21/23	SCALE:	NO SCALE
DESIGNED BY:	CPS	DATE:	8/31/23		

BRIDGE NO. 07684 & 07685 DRAWING NO. 67686

PRINT DATE: 4/12/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	627	809
		07684 & 07685 - RAIL VARIABLES - 67687				

Note:
For location of panels, drainage openings, and rail bar list, see Slab Plans.

RAIL VARIABLES - ALTERNATE NO. 1

Bridge No.	Closed Rail Panels			Open Rail Panels					
	Panel Length	"A"	"R"	Panel Length	"B"	"C"	"D"	"E"	"R"
07684	8'-6"	16	R409E	16'-0"	8	3'-0"	11	6'-0"	R413E
	10'-2"	20	R410E	17'-4"	9	3'-4"	13	6'-8"	R415E
	16'-0"	31	R413E	18'-0"	9	3'-6"	13	7'-0"	R416E
	17'-0"	33	R414E	22'-0"	12	4'-6"	17	9'-0"	R417E
	17'-4"	34	R415E	18'-6"	10	3'-7½"	14	7'-3"	R423E
	18'-0"	35	R416E	20'-0"	11	4'-0"	15	8'-0"	R428E
	22'-0"	43	R417E						
	8'-0"	15	R418E						
	14'-0"	27	R422E						
	18'-6"	36	R423E						
	20'-0"	39	R428E						

Bridge No.	Closed Rail Panels			Open Rail Panels					
	Panel Length	"A"	"R"	Panel Length	"B"	"C"	"D"	"E"	"R"
07685	22'-0"	43	R417E	16'-0"	8	3'-0"	11	6'-0"	R413E
	8'-0"	15	R418E	17'-0"	9	3'-3"	12	6'-6"	R414E
	10'-0"	19	R419E	22'-0"	12	4'-6"	17	9'-0"	R417E
	10'-6"	20	R420E	18'-6"	10	3'-7½"	14	7'-3"	R423E
	13'-6"	26	R421E	19'-3"	10	3'-9¾"	15	7'-7½"	R425E
	14'-0"	27	R422E	19'-6"	11	3'-10½"	15	7'-9"	R427E
	18'-9"	37	R424E	20'-0"	11	4'-0"	15	8'-0"	R428E
	19'-3"	38	R425E	20'-6"	11	4'-1½"	16	8'-3"	R429E
	13'-0"	25	R426E	16'-9"	9	3'-2¼"	12	6'-4½"	R430E
	19'-6"	38	R427E						
	20'-6"	40	R429E						

RAIL VARIABLES - ALTERNATE NO. 2

Bridge No.	Closed Rail Panels			Open Rail Panels					
	Panel Length	"A"	"R"	Panel Length	"B"	"C"	"D"	"E"	"R"
07684	8'-6"	16	R409E	16'-0"	8	3'-0"	11	6'-0"	R413E
	10'-2"	20	R410E	17'-4"	9	3'-4"	13	6'-8"	R415E
	13'-0"	25	R411E	18'-0"	9	3'-6"	13	7'-0"	R416E
	14'-0"	27	R412E						
	16'-0"	31	R413E						
	17'-0"	33	R414E						
	17'-4"	34	R415E						
	18'-0"	35	R416E						
	22'-0"	43	R417E						

Bridge No.	Closed Rail Panels			Open Rail Panels					
	Panel Length	"A"	"R"	Panel Length	"B"	"C"	"D"	"E"	"R"
07685	13'-0"	25	R411E	16'-0"	8	3'-0"	11	6'-0"	R413E
	14'-0"	27	R412E	17'-4"	9	3'-4"	13	6'-8"	R415E
	16'-0"	31	R413E	18'-0"	9	3'-6"	13	7'-0"	R416E
	17'-4"	34	R415E						
	18'-0"	35	R416E						
	22'-0"	43	R417E						
	8'-0"	15	R418E						
	19'-0"	37	R419E						
	11'-0"	21	R420E						

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
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NATALIE MCCOMBS
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1 & ALTERNATE NO. 2
SHEET 2 OF 3
DETAILS OF BRIDGE TRAFFIC RAIL TYPE SSTR42
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

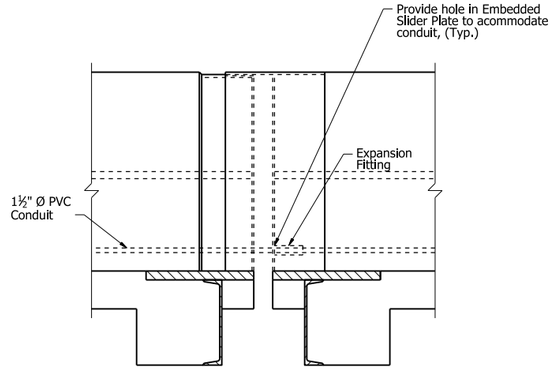
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CEM DATE: 12/13/23
CHECKED BY: CPS DATE: 12/14/23
DESIGNED BY: RCR DATE: 12/7/23
FILENAME: b040901_p2.dgn
SCALE: NO SCALE

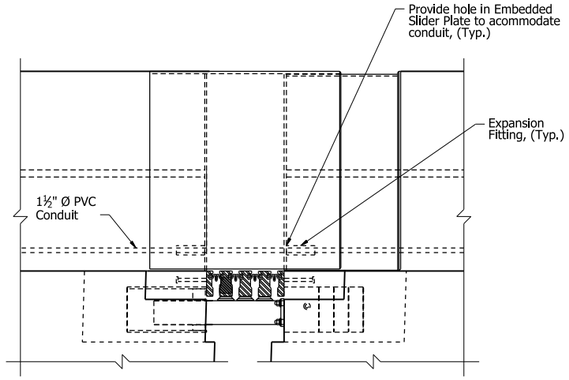
BRIDGE NO. 07684 & 07685 DRAWING NO. 67687

PRINT DATE: 4/11/2024

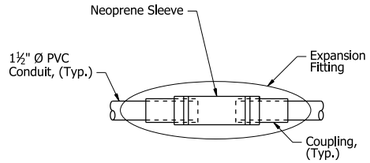
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	628	809
		07684 & 07685 - EXPANSION FITTING - 67688				



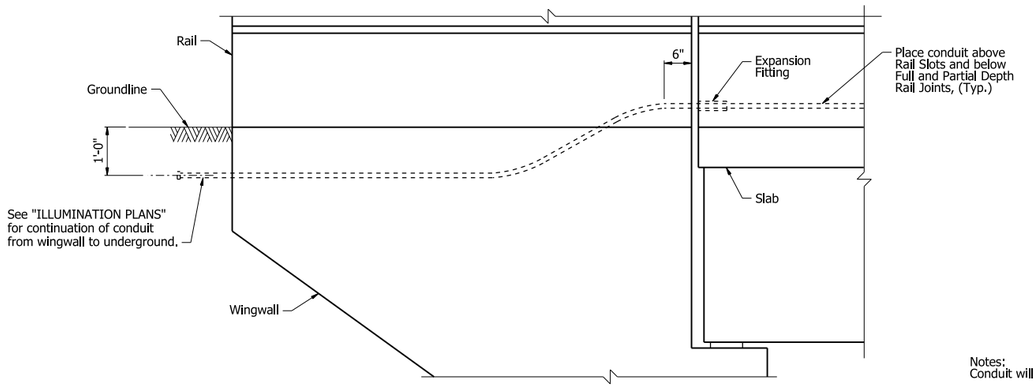
CONDUIT EXPANSION FITTING AT FINGER JOINTS
Scale: ¾" = 1'-0"



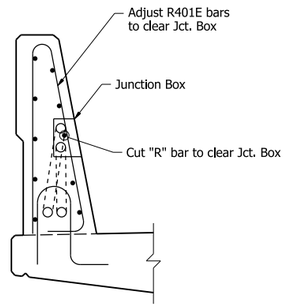
CONDUIT EXPANSION FITTING AT MODULAR JOINTS
Scale: ¾" = 1'-0"



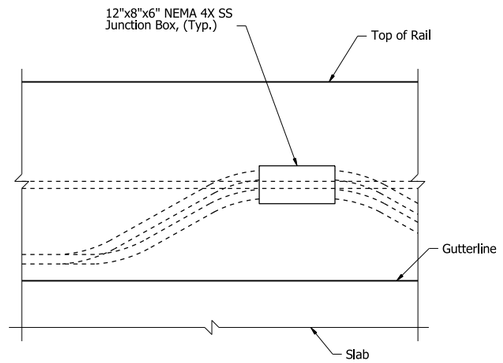
EXPANSION FITTING DETAIL
Scale: ¾" = 1'-0"



CONDUIT DETAIL AT END BENTS
Scale: ¾" = 1'-0"



SECTION AT JUNCTION BOX
Scale: ¾" = 1'-0"



ELEVATION AT JUNCTION BOX
Scale: ¾" = 1'-0"

Notes:
Conduit will run the full length of the rail as shown in Dwg. No. 67686.

Conduit shall conform with the Materials and Construction of Standard Specification, Section 710, "NON-METALLIC CONDUIT".

Conduit expansion joints will be required at every Bridge Expansion Joint Location and shall accommodate the movement shown on the Expansion Joint Details. The Contractor can substitute alternate fittings provided the Bridge movement is accomodated and coordinated with the other elements.

Junction Boxes are required at a maximum of 500 foot spacing. Junction boxes shall be placed in the rail as shown and shift reinforcing steel in the field where necessary to clear junction boxes. Junction Boxes shall be coordinated with the Highway Lighting, Navigational Lighting, and ITS Plans where those plans require additional boxes over and above those required by the maximum spacing.

Junction Boxes shall include a hinged or removable lid with gaskets, latches, and a padlock hasp. Lid shall include a lift tab.

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LICENSED PROFESSIONAL ENGINEER
No. 15778
NATALIE MCCOMBS
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1 & ALTERNATE NO. 2
SHEET 3 OF 3
DETAILS OF BRIDGE TRAFFIC RAIL TYPE SSTR42
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: NAM DATE: 12/2/23
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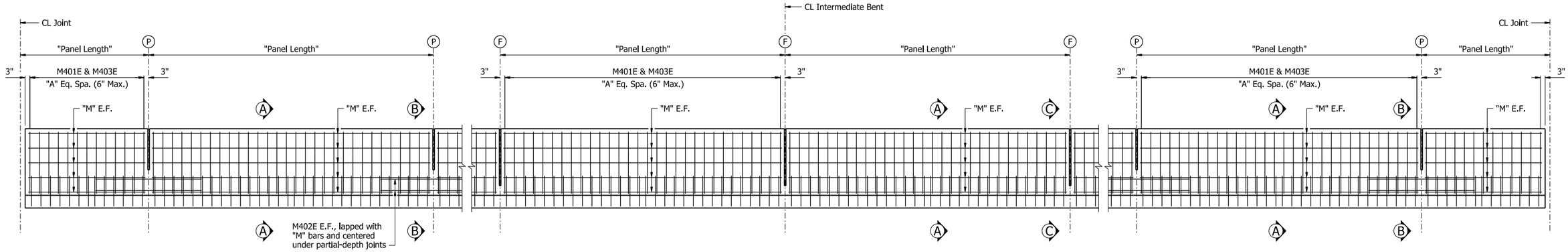
BRIDGE NO. 07684 & 07685 DRAWING NO. 67688

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	629	809
		07684 & 07685 - MEDIAN BARRIER - 67689				

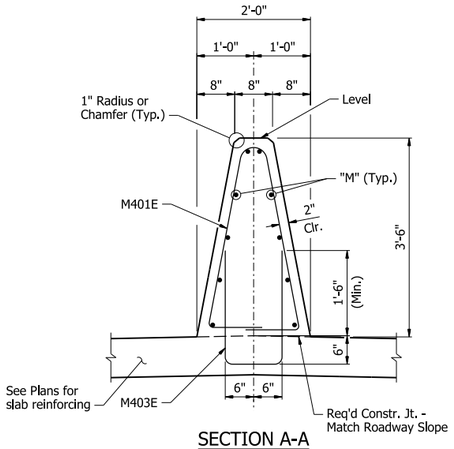
(P) CL Partial-Depth Rail Joint (formed width ¼" to 1" max.) Stop 16" from top of slab. Place at all remaining locations other than at intermediate bents.

(F) CL Full-Depth Rail Joint (formed width ¼" to 1" max.) Stop 6" from top of slab. Place at all intermediate bent locations where rail is continuous.

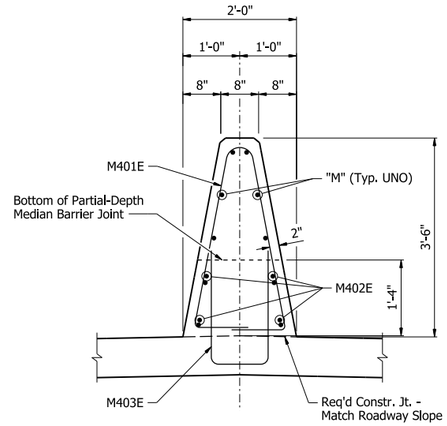


ELEVATION - MEDIAN BARRIER

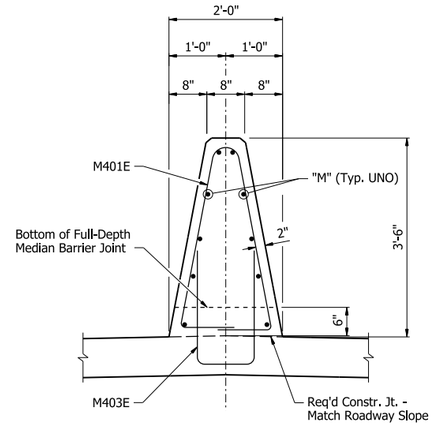
Note:
For locations of panels and rail bar list, see Slab Plan.



SECTION A-A



SECTION B-B



SECTION C-C

MEDIAN BARRIER VARIABLES - ALTERNATE NO. 1

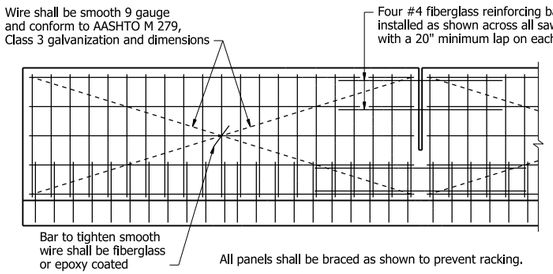
Bridge No.	Panel Length	"A"	"M"
07684	8'-6"	16	M409E
	10'-2"	20	M410E
	16'-0"	31	M413E
	17'-0"	33	M414E
	17'-4"	34	M415E
	18'-0"	35	M416E
	22'-0"	43	M417E
	8'-0"	15	M418E
	14'-0"	27	M422E
	18'-6"	36	M423E
	20'-0"	39	M428E

Bridge No.	Panel Length	"A"	"M"
07685	16'-0"	31	M413E
	17'-0"	33	M414E
	22'-0"	43	M417E
	8'-0"	15	M418E
	10'-0"	19	M419E
	10'-6"	20	M420E
	13'-6"	26	M421E
	14'-0"	27	M422E
	18'-6"	36	M423E
	18'-9"	37	M424E
	19'-3"	38	M425E
	13'-0"	25	M426E
	19'-6"	38	M427E
	20'-0"	39	M428E
	20'-6"	40	M429E
	16'-9"	33	M430E

MEDIAN BARRIER VARIABLES - ALTERNATE NO. 2

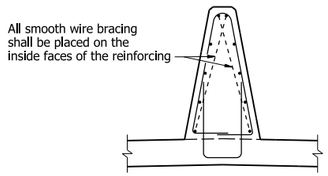
Bridge No.	Panel Length	"A"	"M"
07684	8'-6"	16	M409E
	10'-2"	20	M410E
	13'-0"	25	M411E
	14'-0"	27	M412E
	16'-0"	31	M413E
	17'-0"	33	M414E
	17'-4"	34	M415E
	18'-0"	35	M416E
	22'-0"	43	M417E

Bridge No.	Panel Length	"A"	"M"
07685	13'-0"	25	M411E
	14'-0"	27	M412E
	16'-0"	31	M413E
	17'-4"	34	M415E
	18'-0"	35	M416E
	22'-0"	43	M417E
	8'-0"	15	M418E
	19'-0"	37	M419E
	11'-0"	21	M420E



All panels shall be braced as shown to prevent racking.

When optional slip forming is used: to control cracking, all barrier joints must be V-grooved around the perimeter of the barrier prior to concrete set and sawing. Depth of V-groove shall be 1/2". Sawing of the joints shall be done as soon as practical to a width of 1/4", and must be controlled so it will follow the V-Groove.



The extruded Median Barrier shall conform to the horizontal and vertical lines shown on the plans or as directed by the Engineer and shall present a smooth, uniform appearance and texture. Exposed surfaces may be given a light brush finish or a Class 3, Textured Coating Finish in place of the Class 2, Rubbed Finish.

DETAILS OF OPTIONAL SLIP FORMING OF CONCRETE MEDIAN BARRIER

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LICENSED PROFESSIONAL ENGINEER
No. 15778
NATALIE MCCOMBS
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1 & ALTERNATE NO. 2
SHEET 1 OF 1
DETAILS OF MEDIAN BARRIER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: SIY DATE: 9/25/23
CHECKED BY: CPS DATE: 11/28/23
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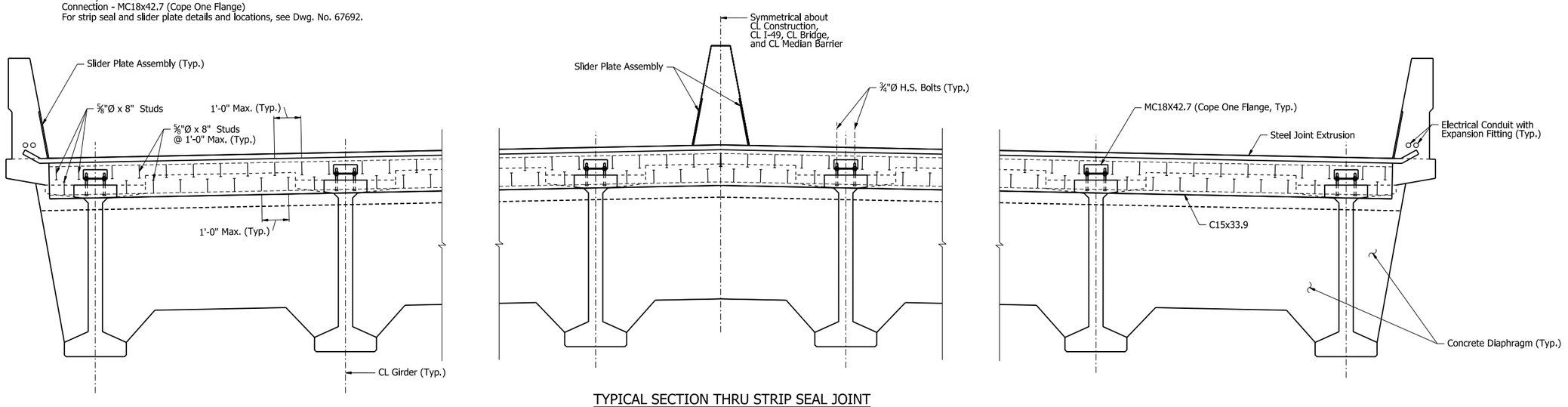
BRIDGE NO. 07684 & 07685 DRAWING NO. 67689

PRINT DATE: 4/9/2024

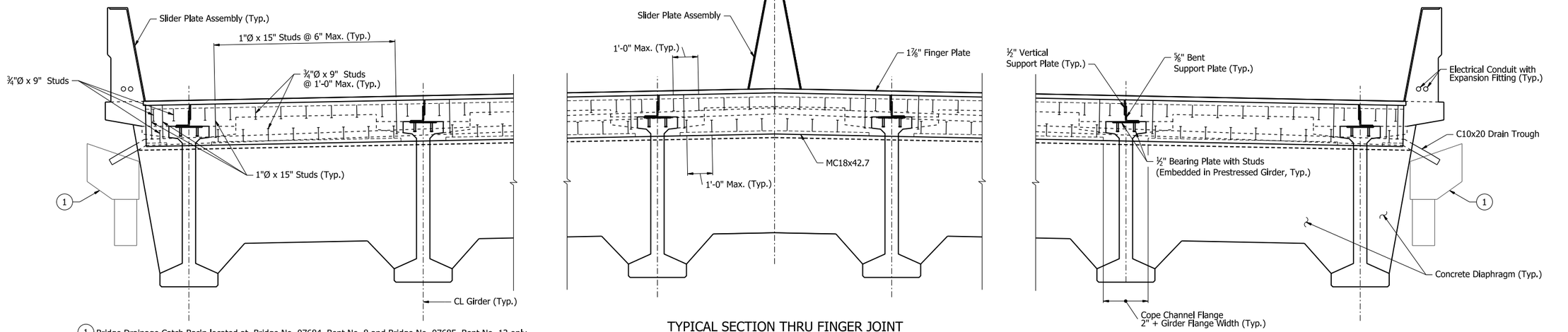
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	630	809
		07684 & 07685 - COMMON SPAN - 67690				

STRIP SEAL EXPANSION DEVICE:
Roadway Channel - C15x33.9
Connection - MC18x42.7 (Cope One Flange)
For strip seal and slider plate details and locations, see Dwg. No. 67692.



TYPICAL SECTION THRU STRIP SEAL JOINT
(Bridge No. 07684 Shown, Bridge No. 07685 Similar)

FINGER JOINT EXPANSION DEVICE:
Roadway Channel - MC18x42.7
Connection - ⅜" Bent Support Plate, ½" Vertical Support Plate,
and ½" Bearing Plate (Embedded in Prestressed Girder)
For finger joint and slider plate details and locations, see Dwg. Nos. 67694 and 67695.



(1) Bridge Drainage Catch Basin located at Bridge No. 07684, Bent No. 8 and Bridge No. 07685, Bent No. 13 only. See Dwg. Nos. 67707 and 67710, respectively.

TYPICAL SECTION THRU FINGER JOINT
(Bridge No. 07684 Shown, Bridge No. 07685 Similar)

Notes:
For Modular Joint details and sections at Bridge No. 07684 Bent Nos. 12 and 16, see Dwg. Nos. 67698 and 67699.

Reinforcing and utilities not shown for clarity, see superstructure unit details.

Work details on this sheet with other bridge drawings for roadway geometrics, girder framing/spacing/details, joint details, electrical details, etc.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 19996
BRENT T. JONES
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 1 OF 1
COMMON DETAILS OF SECTIONS NEAR JOINTS
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: BTJ DATE: 12/2/23
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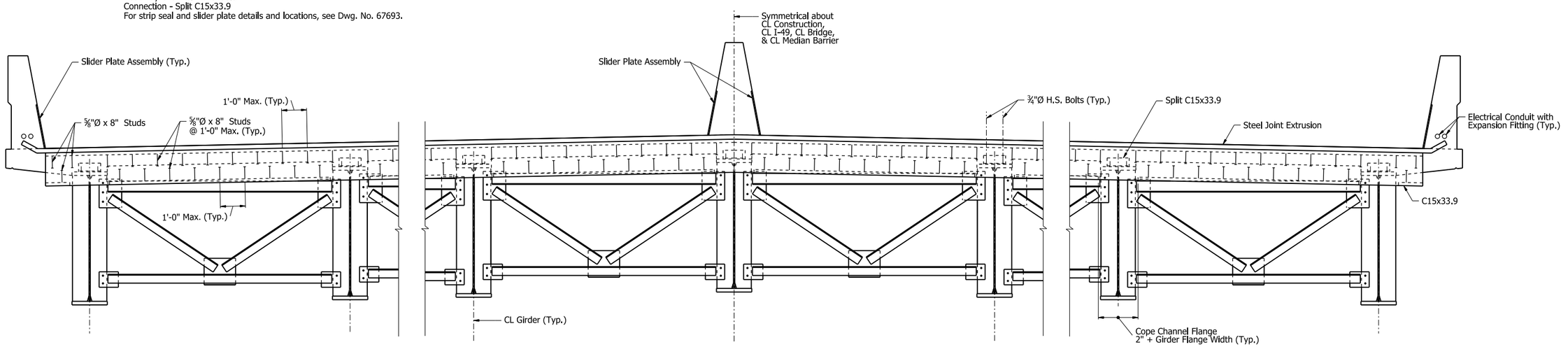
FILENAME: b040901_sx1.dgn
SCALE: ½" = 1'-0"

BRIDGE NO. 07684 & 07685 DRAWING NO. 67690

PRINT DATE: 4/12/2024

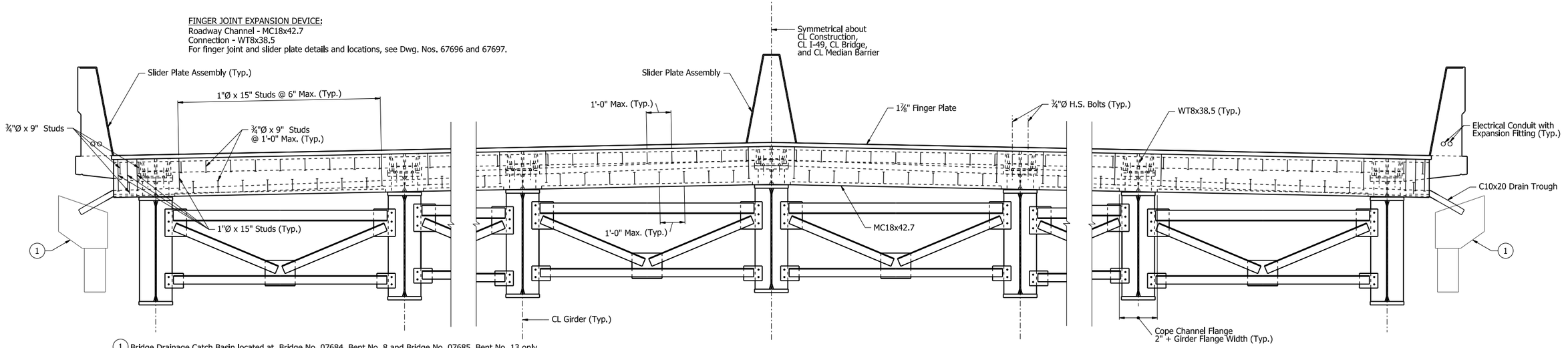
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	631	809
		07684 & 07685 - COMMON SPAN - 67691				

STRIP SEAL EXPANSION DEVICE:
Roadway Channel - C15x33.9
Connection - Split C15x33.9
For strip seal and slider plate details and locations, see Dwg. No. 67693.



TYPICAL SECTION THRU STRIP SEAL JOINT
(Bridge No. 07684 Shown, Bridge No. 07685 Similar)

FINGER JOINT EXPANSION DEVICE:
Roadway Channel - MC18x42.7
Connection - WT8x38.5
For finger joint and slider plate details and locations, see Dwg. Nos. 67696 and 67697.



(1) Bridge Drainage Catch Basin located at Bridge No. 07684, Bent No. 8 and Bridge No. 07685, Bent No. 13 only. See Dwg. Nos. 67707 and 67710, respectively.

TYPICAL SECTION THRU FINGER JOINT
(Bridge No. 07684 Shown, Bridge No. 07685 Similar)

Notes:
For Modular Joint details and sections at Bridge No. 07684 Bent Nos. 12 and 16, see Dwg. Nos. 67700 and 67701.

Reinforcing and utilities not shown for clarity, see superstructure unit details.

Work details on this sheet with other bridge drawings for roadway geometrics, girder framing/spacing/details, joint details, electrical details, etc.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 19996
BRENT T. JONES
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 1
COMMON DETAILS OF SECTIONS NEAR JOINTS
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: BTJ DATE: 12/2/23
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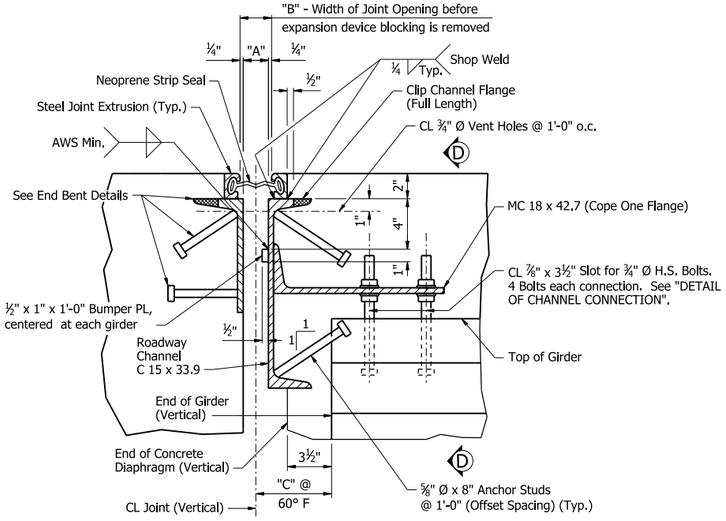
DESIGNED BY: BTJ DATE: 12/1/23
FILENAME: b040901_sx2.dgn
SCALE: ½" = 1'-0"

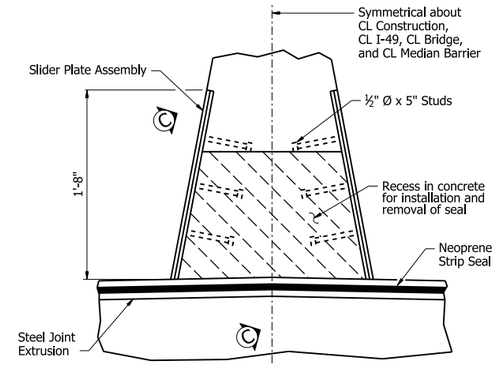
BRIDGE NO. 07684 & 07685 DRAWING NO. 67691

PRINT DATE: 4/12/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	632	809
		07684 & 07685 - STRIP SEAL JOINT - 67692				

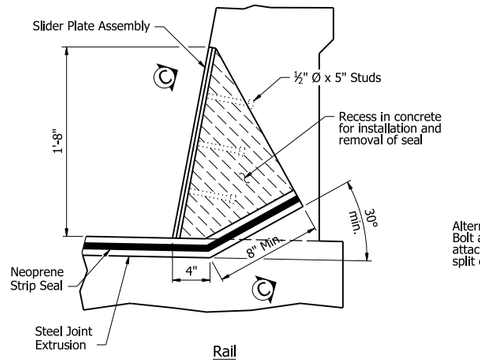


SECTION THRU JOINT AT END BENT
2" = 1'-0"



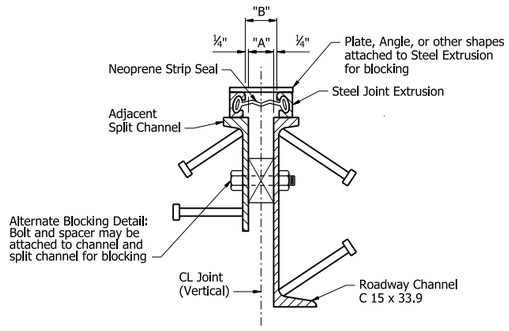
Median Barrier

SECTION A-A
1½" = 1'-0"



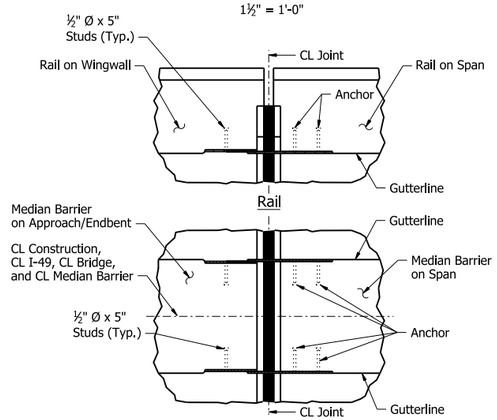
Rail

SECTION A-A
1½" = 1'-0"



Each expansion joint device shall be blocked in the Shop by the Fabricator to the dimension "A" for 60° F and the blocking details shall be shown on the shop drawings. Blocking shall be placed within 2 feet of each end of the device and with a maximum spacing of 8 feet.

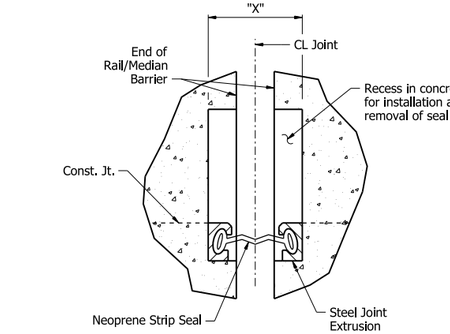
DETAIL OF BLOCKING EXPANSION JOINT DEVICE
2" = 1'-0"



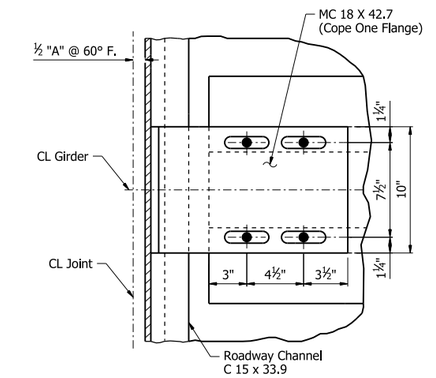
SECTION B-B
¾" = 1'-0"

The method of attachment of the slider plate assembly shall allow for removal to provide for future replacement of the neoprene seal. Anchors shall not be paid for directly, but shall be considered subsidiary to the item "Armored Joint with Neoprene Strip Seal".

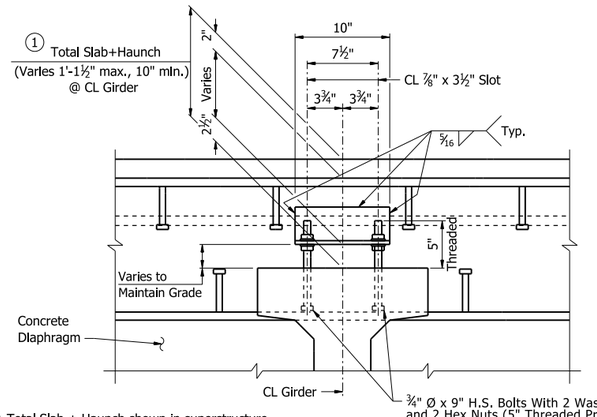
Method of installation and fabrication shall be determined by the Manufacturer.



SECTION C-C
3" = 1'-0"



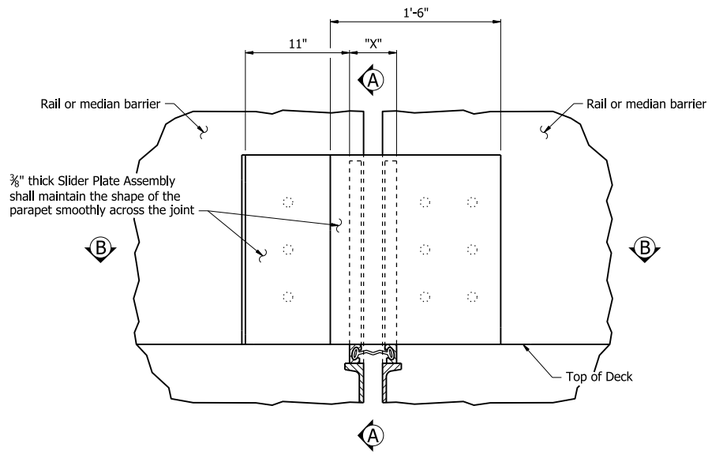
DETAIL OF CHANNEL CONNECTION
2" = 1'-0"



1 Total Slab + Haunch shown in superstructure "Table of Section Depths".
See the following sheets:
Bridge No. 07684: 67429.
Bridge No. 07685: 67513 and 67540.

SECTION D-D
1½" = 1'-0"

Note:
Bolts, washers and hex nuts shall be considered subsidiary to the item "Prestressed Concrete Girders"



Dimension "X" equals the width of the opening in the rail/median to allow for removal or repair of the joint.

DETAIL OF RAIL/BARRIER SLIDER PLATES
1½" = 1'-0"

TABLE OF STRIP SEAL JOINT DATA

Bridge No.	Bent No.	Movement Rating (Inch)	"A" - Width perpendicular to joint at 96 hour average temperature of:			"B" - Width perpendicular to joint at 96 hour average temperature of:			"C" - Perpendicular to joint at 96 hour average temperature of 60°
			40° F	60° F	80° F	40° F	60° F	80° F	
07684	1	4"	2¼"	2"	1¾"	2¾"	2½"	2¼"	6"
	33	4"	2⅜"	2"	1⅝"	2⅞"	2½"	2⅛"	6"
07685	1	4"	2⅜"	2"	1⅝"	2⅞"	2½"	2⅛"	6"
	16	4"	2¼"	2"	1¾"	2¾"	2½"	2¼"	6"

The temperature used to set the joint opening shall be the approximate average air temperature during the 96 hour period immediately before the bolts are tightened. The Engineer shall establish the temperature. Interpolation of the table may be necessary. Installation is limited to 40° F min. and 80° F max. The temperature limitations by the lubricant-adhesive manufacturer shall be observed.

EXPANSION DEVICE INSTALLATION AT END BENTS:

The Contractor may elect to install the expansion device using one of the following two alternatives:

1) The concrete span pour adjacent to joint shall be placed before the end bent backwall is placed. After the end bent backwall forms are in place and the beams or girders erected, the blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the backwall concrete, the blocking shall be removed, and the opening adjusted for temperature and grade.

2) The backwall shall be poured to the optional construction joint after beams or girders are erected. The blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the remainder of the backwall concrete, the blocking shall be removed and the opening adjusted for temperature and grade.

GENERAL NOTES FOR NEOPRENE STRIP SEAL JOINTS:

The steel extrusion and neoprene strip seal material and installation shall be in accordance with Section 809.

The expansion device shall provide for the movement rating(s) shown in the "TABLE OF STRIP SEAL JOINT DATA" in the plan details. The expansion joint shall be capable of sealing the deck surface and rail/median area to prevent moisture and other contaminants from descending through the joint.

Details of proposed slider plate assembly shall be submitted to the Engineer for approval prior to the fabrication of any structural steel at the expansion device.

All structural steel shall conform to ASTM A709, Grade 50W and all exposed surfaces shall be cleaned in accordance with Subsection 807.84(e). The slider plates and structural steel completely embedded in concrete shall conform to ASTM A709, Grade 36, 50 or 50W steel. Unless otherwise noted in the plans, all exposed surfaces of the slider plates shall be cleaned and painted in accordance with Section 638. Painting shall not be paid for directly and structural steel completely embedded in concrete need not be painted. Payment shall be per Section 809 under "Armed Joint With Neoprene Strip Seal" and shall include all structural steel.

Field weld armored joint within median barrier limits prior to casting.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 19996
BRENT T. JONES
Brent T. Jones
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 1 OF 1
DETAILS OF ARMORED JOINT WITH NEOPRENE STRIP SEAL
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION

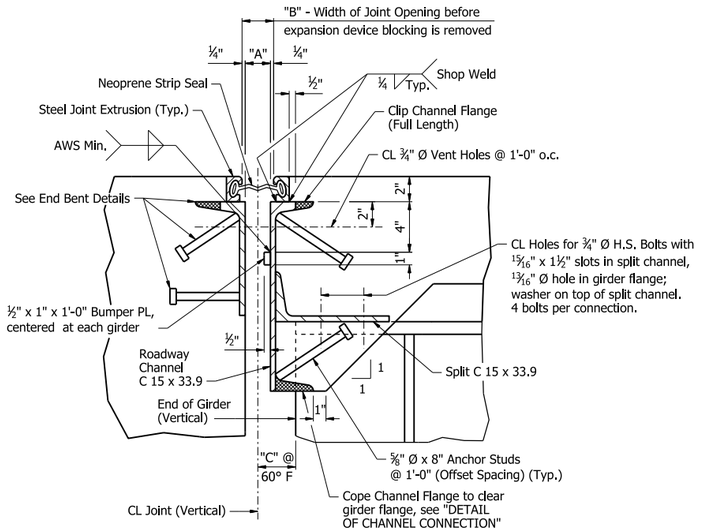
LITTLE ROCK, ARK.

DRAWN BY: PAR DATE: 11/14/23
CHECKED BY: BTJ DATE: 11/18/23
DESIGNED BY: JRD DATE: 9/15/23
FILENAME: b040901_sj1.dgn
SCALE: AS NOTED

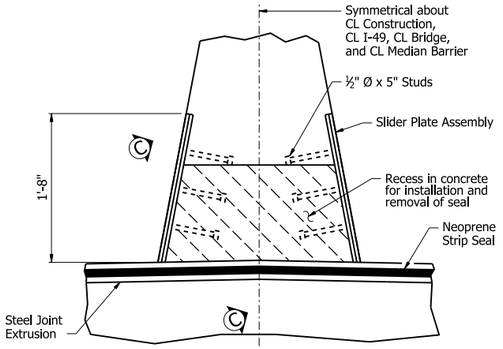
BRIDGE NO. 07684 & 07685 DRAWING NO. 67692

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	633	809
		07684 & 07685 - STRIP SEAL JOINT - 67693				

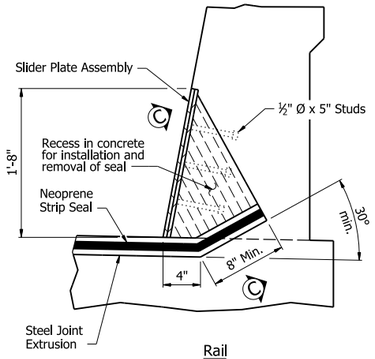


SECTION THRU JOINT AT END BENT
2" = 1'-0"



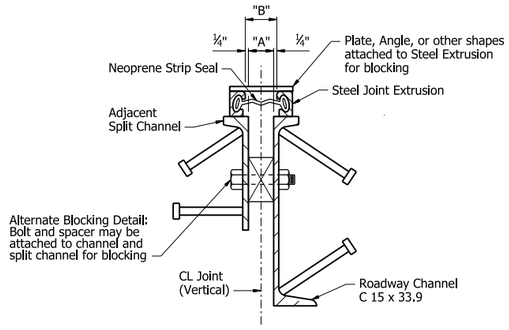
Median Barrier

SECTION A-A
1½" = 1'-0"



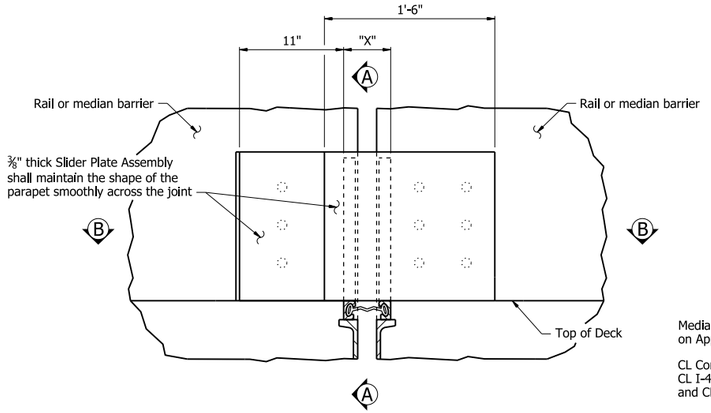
Rail

SECTION A-A
1½" = 1'-0"



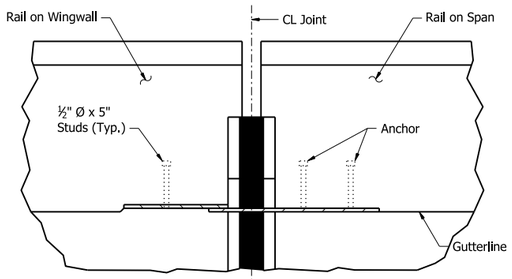
Each expansion joint device shall be blocked in the Shop by the Fabricator to the dimension "A" for 60° F and the blocking details shall be shown on the shop drawings. Blocking shall be placed within 2 feet of each end of the device and with a maximum spacing of 8 feet.

DETAIL OF BLOCKING EXPANSION JOINT DEVICE
2" = 1'-0"

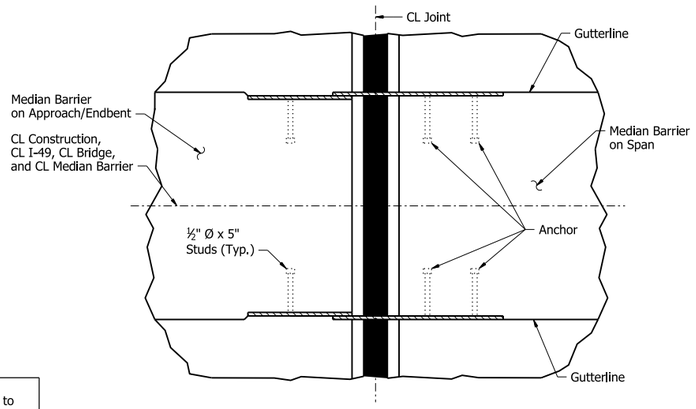


Dimension "X" equals the width of the opening in the rail/median to allow for removal or repair of the joint.

DETAIL OF RAIL/BARRIER SLIDER PLATES
1½" = 1'-0"



Rail

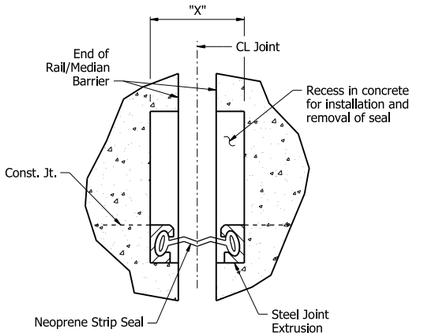


Median Barrier

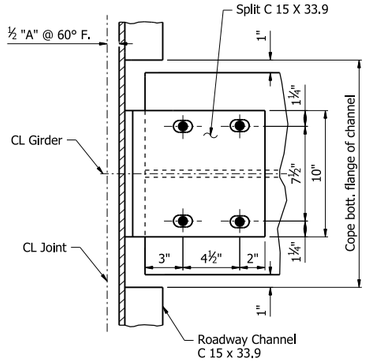
SECTION B-B
1½" = 1'-0"

The method of attachment of the slider plate assembly shall allow for removal to provide for future replacement of the neoprene seal. Anchors shall not be paid for directly, but shall be considered subsidiary to the item "Armored Joint with Neoprene Strip Seal".

Method of installation and fabrication shall be determined by the Manufacturer.



SECTION C-C
3" = 1'-0"



DETAIL OF CHANNEL CONNECTION
2" = 1'-0"

EXPANSION DEVICE INSTALLATION AT END BENTS:

The Contractor may elect to install the expansion device using one of the following two alternatives:

1) The concrete span pour adjacent to joint shall be placed before the end bent backwall is placed. After the end bent backwall forms are in place and the beams or girders erected, the blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the backwall concrete, the blocking shall be removed, and the opening adjusted for temperature and grade.

2) The backwall shall be poured to the optional construction joint after beams or girders are erected. The blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the remainder of the backwall concrete, the blocking shall be removed and the opening adjusted for temperature and grade.

GENERAL NOTES FOR NEOPRENE STRIP SEAL JOINTS:

The steel extrusion and neoprene strip seal material and installation shall be in accordance with Section 809.

The expansion device shall provide for the movement rating(s) shown in the "TABLE OF STRIP SEAL JOINT DATA" in the plan details. The expansion joint shall be capable of sealing the deck surface and rail/median area to prevent moisture and other contaminants from descending through the joint.

Details of proposed slider plate assembly shall be submitted to the Engineer for approval prior to the fabrication of any structural steel at the expansion device.

All structural steel shall conform to ASTM A709, Grade 50W and all exposed surfaces shall be cleaned in accordance with Subsection 807.84(e). The slider plates and structural steel completely embedded in concrete shall conform to ASTM A709, Grade 36, 50 or 50W steel. Unless otherwise noted in the plans, all exposed surfaces of the slider plates shall be cleaned and painted in accordance with Section 638. Painting shall not be paid for directly and structural steel completely embedded in concrete need not be painted. Payment shall be per Section 809 under "Armed Joint With Neoprene Strip Seal" and shall include all structural steel.

Field weld armored joint within median barrier limits prior to casting.

TABLE OF STRIP SEAL JOINT DATA

Bridge No.	Bent No.	Movement Rating (Inch)	"A" - Width perpendicular to joint at 24 hour average temperature of:			"B" - Width perpendicular to joint at 24 hour average temperature of:			"C" - Perpendicular to joint at 24 hour average temperature of 60°
			40° F	60° F	80° F	40° F	60° F	80° F	
07684	1	4"	2 5/16"	2"	1 11/16"	2 13/16"	2½"	2 3/16"	3"
	33	4"	2⅜"	2"	1⅝"	2⅞"	2½"	2⅛"	3"
07685	1	4"	2 7/16"	2"	1⅝"	2 15/16"	2½"	2 7/16"	3"
	16	4"	2 5/16"	2"	1 11/16"	2 13/16"	2½"	2 3/16"	3"

The temperature used to set the joint opening shall be the approximate average air temperature during the 24 hour period immediately before the bolts are tightened. The Engineer shall establish the temperature. Interpolation of the table may be necessary. Installation is limited to 40° F min. and 80° F max. The temperature limitations by the lubricant-adhesive manufacturer shall be observed.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 19996
BRENT T. JONES
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 1
DETAILS OF ARMORED JOINT WITH NEOPRENE STRIP SEAL
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

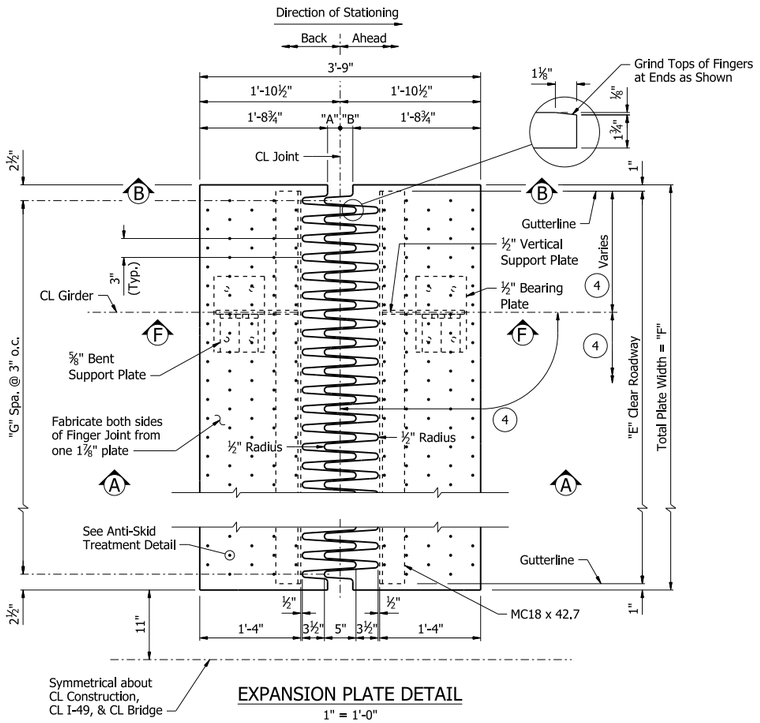
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: PAR DATE: 11/14/23
CHECKED BY: BTJ DATE: 11/18/23
DESIGNED BY: JRD DATE: 9/15/23
FILENAME: b040901_sj2.dgn
SCALE: AS NOTED

BRIDGE NO. 07684 & 07685 DRAWING NO. 67693

PRINT DATE: 4/11/2024

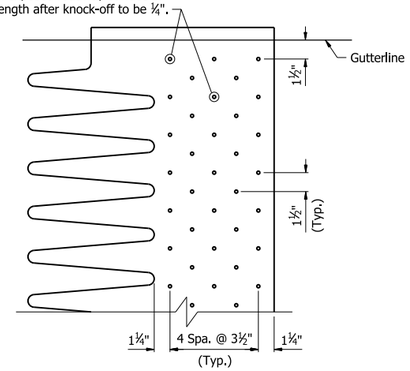
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	634	809
		07684 & 07685 - FINGER JOINT - 67694				



EXPANSION PLATE DETAIL

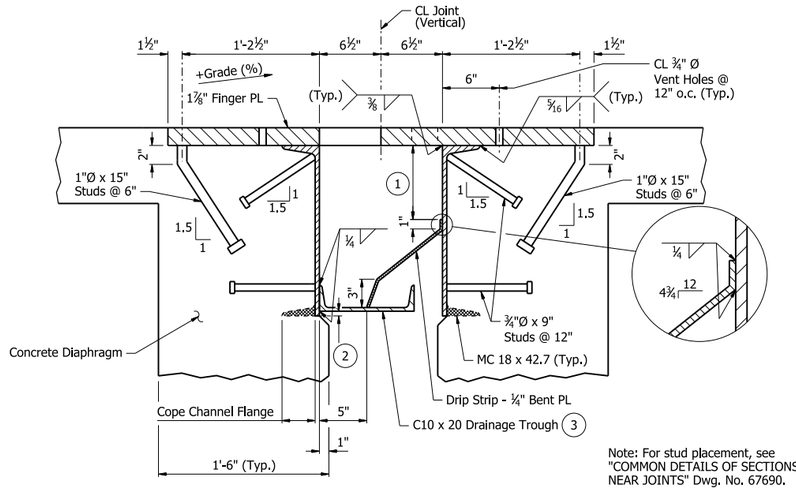
1" = 1'-0"

Fluxed knock-off no thread type studs shall be used to provide a non-skid surface, Nelson Stud NBL ¼" dia. x 1 MS ¼" K0, or equivalent, placed as shown on exposed roadway surface of all finger plates. Length after knock-off to be ¼".



ANTI-SKID TREATMENT DETAIL

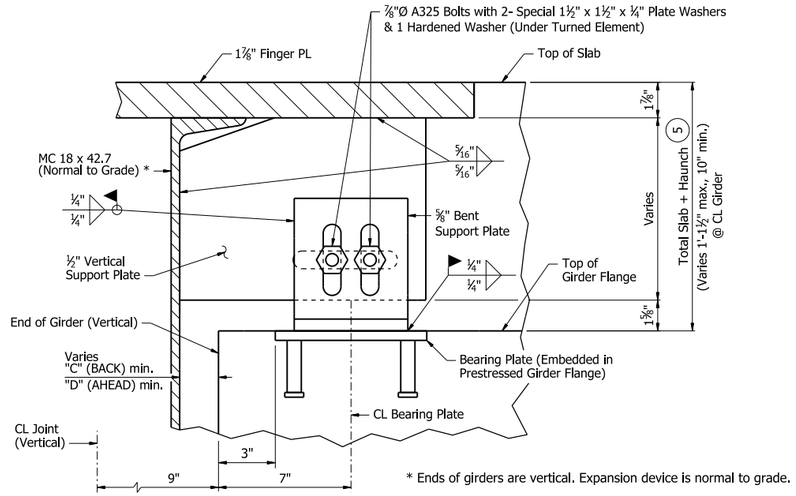
NO SCALE



SECTION A-A

1½" = 1'-0"

Note: For stud placement, see "COMMON DETAILS OF SECTIONS NEAR JOINTS" Dwg. No. 67690.



* Ends of girders are vertical. Expansion device is normal to grade.

SECTION F-F

3" = 1'-0"

1. Varies - 2" @ CL Bridge to 10½" @ end of roadway channel.
2. Varies - 9" @ CL Bridge to ½" @ end of roadway channel.
3. Install drainage trough on the downhill side.
4. See framing plan for girder spacing and angles.
5. Total Slab + Haunch Depth shown in superstructure "Table of Section Depths". See the following sheets:
   Bridge No. 07684: 67429 and 67437.
   Bridge No. 07685: 67513, 67521, 67532, and 67540.

TABLE OF FINGER JOINT DATA

Bridge No.	Bent No.	"A" Width (in) Perpendicular to Joint at 96 Hour Average Temperature of:			"B" Width (in) Perpendicular to Joint at 96 Hour Average Temperature of:			"C" Back at 60° F	"D" Ahead at 60° F	"E" Clear Roadway Width	"F" Total Plate Width	"G" Finger Spa.	Back Unit Length	Ahead Unit Length	Longit. Grade
		40° F	60° F	80° F	40° F	60° F	80° F								
07684	4	2⅛"	1¾"	1⅜"	2¼"	1¾"	1¼"	2 5/16"	1 5/16"	40'-0"	40'-2"	159	390'-0"	520'-0"	2.440%
	8	2⅛"	1¾"	1⅜"	2¼"	1¾"	1¼"	2 7/16"	1 7/16"	40'-0"	40'-2"	159	520'-0"	520'-0"	3.000%
	20	2¼"	1¾"	1¼"	2⅛"	1¾"	1⅜"	1¾"	2¼"	40'-0"	40'-2"	159	520'-0"	520'-0"	-1.570%
	24	2 5/16"	1¾"	1 5/16"	2 5/16"	1¾"	1 7/16"	1¾"	2¼"	40'-0"	40'-2"	159	520'-0"	390'-0"	-1.570%
	27	2 5/16"	1¾"	1 7/16"	2 5/16"	1¾"	1 7/16"	1¾"	2¼"	40'-0"	40'-2"	159	390'-0"	390'-0"	-1.570%
	30	2 5/16"	1¾"	1 7/16"	2 5/16"	1¾"	1 7/16"	1¾"	2¼"	40'-0"	40'-2"	159	390'-0"	390'-0"	-1.570%
07685	5	2¼"	1¾"	1¼"	2 5/16"	1¾"	1 7/16"	2 5/16"	1 5/16"	40'-0"	40'-2"	159	520'-0"	420'-0"	2.419%
	9	2⅛"	1¾"	1⅜"	2⅛"	1¾"	1⅜"	2⅛"	1⅞"	48'-0"	48'-2"	191	420'-0"	520'-0"	0.742%
	13	2¼"	1¾"	1¼"	2"	1¾"	1½"	1 13/16"	2 3/16"	48'-0"	48'-2"	191	520'-0"	360'-0"	-1.335%

Notes:
All structural steel, except the rail/barrier slider plates, shall be ASTM A709, Gr. 50W. Rail/barrier slider plates shall be ASTM A709, Gr. 36 and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)". The surfaces of the rail/barrier slider plates which will not be in contact with the concrete shall be cleaned and painted in accordance with Section 638, or as directed by the Engineer. Only one coat is required and shall be applied in the fabricator's shop. Painting shall not be paid for directly, but will be considered subsidiary to "Structural Steel in Plate Girder Spans (M270-Gr50W)". Embedded Bearing Plates and associated studs shall be considered subsidiary to item "Prestressed Concrete Girders" (BT-72).

All studs shall be granular flux filled, solid fluxed, or equal, and automatically end welded to the Plates or channels in accordance with recommendations of the manufacturer.

The temperature used to set the joint opening shall be the approximate average air temperature during the 96 hour period immediately before the bolts are tightened. The Engineer shall establish the temperature, interpolation of the table may be necessary. Installation is limited to 40° F min. and 80° F max.

The finger joint shall be set and adjusted for grade before closure pours are made.

Top of expansion joints shall conform to the profile grade of the roadway surfaces.

All dimensions are at 60° F, UNO.

Concrete shall be hand packed under the joint armor.

Maximum Joint total movement = 4½".

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 19996
BRENT T. JONES
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 1 OF 2
DETAILS OF FINGER JOINTS
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

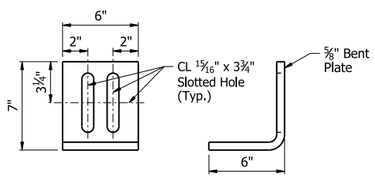
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: PAR DATE: 11/14/23
CHECKED BY: BTJ DATE: 11/19/23
DESIGNED BY: JRD DATE: 10/26/23
FILENAME: b040901_fj1.dgn
SCALE: AS NOTED

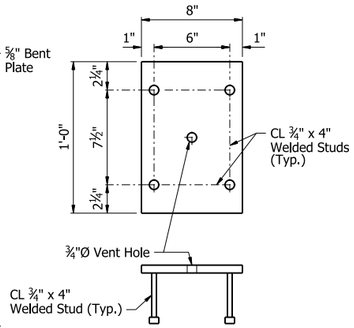
BRIDGE NO. 07684 & 07685 DRAWING NO. 67694

PRINT DATE: 4/11/2024

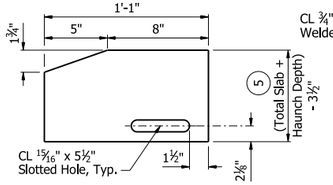
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	635	809
		07684 & 07685 - FINGER JOINT - 67695				



BENT SUPPORT PLATE
2" = 1'-0"

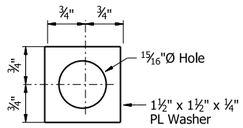


BEARING PLATE
2" = 1'-0"

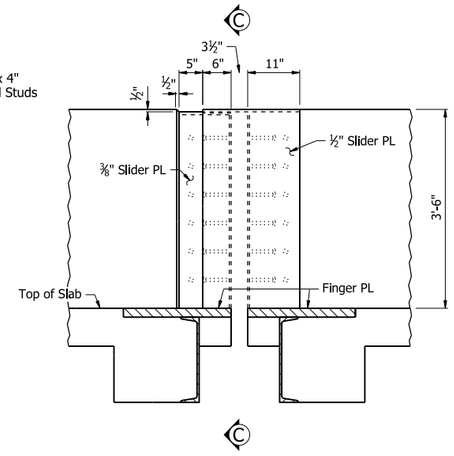


VERTICAL SUPPORT PLATE
2" = 1'-0"

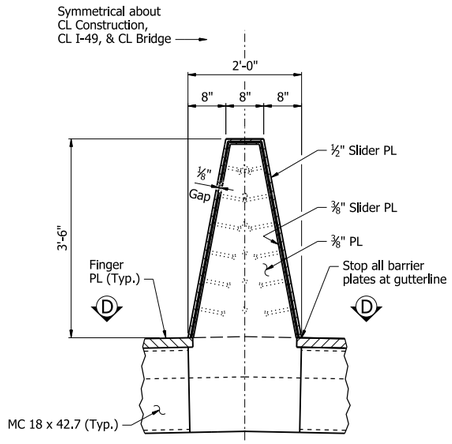
(5) (Total Slab + Haunch Depth) shown in superstructure "Table of Section Depths". See the following sheets:
Bridge No. 07684: 67429 and 67437.
Bridge No. 07685: 67513, 67521, 67532, and 67540.



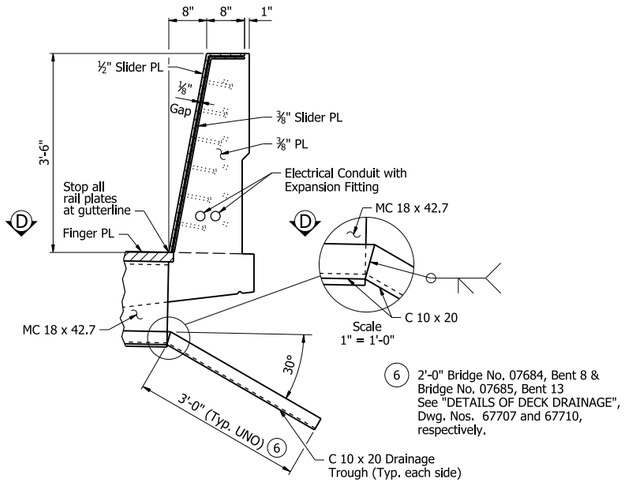
SPECIAL WASHER DETAIL
NO SCALE



SECTION B-B
¾" = 1'-0"



MEDIAN BARRIER
SECTION C-C
¾" = 1'-0"

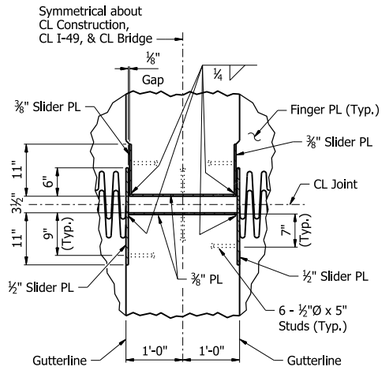


6 2'-0" Bridge No. 07684, Bent 8 & Bridge No. 07685, Bent 13 See "DETAILS OF DECK DRAINAGE", Dwg. Nos. 67707 and 67710, respectively.

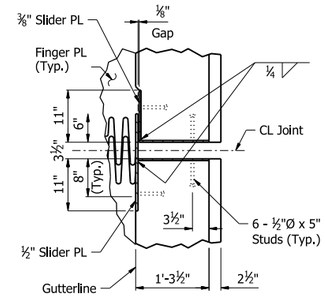
RAIL
SECTION C-C
Symmetrical About CL I-49
¾" = 1'-0"

RAIL (Bridge 07685, Bent 5 Only)
SECTION D-D
Rail Geometry Shown Only, Symm About CL I-49.
See Section D-D "Rail (Typical)" for Plate and Stud Dimensions and Details.
¾" = 1'-0"

RAIL (Bridge 07685, Bent 9 Only)
SECTION D-D
Rail Geometry Shown Only, Symm About CL I-49.
See D-D "Rail (Typical)" for Plate and Stud Dimensions and Details.
¾" = 1'-0"



MEDIAN BARRIER
SECTION D-D
¾" = 1'-0"



RAIL (TYPICAL)
SECTION D-D
Typical for all constant width slabs.
¾" = 1'-0"

PRINT DATE: 4/11/2024

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 19996
BRENT T. JONES
4/18/24
BRIDGE ENGINEER

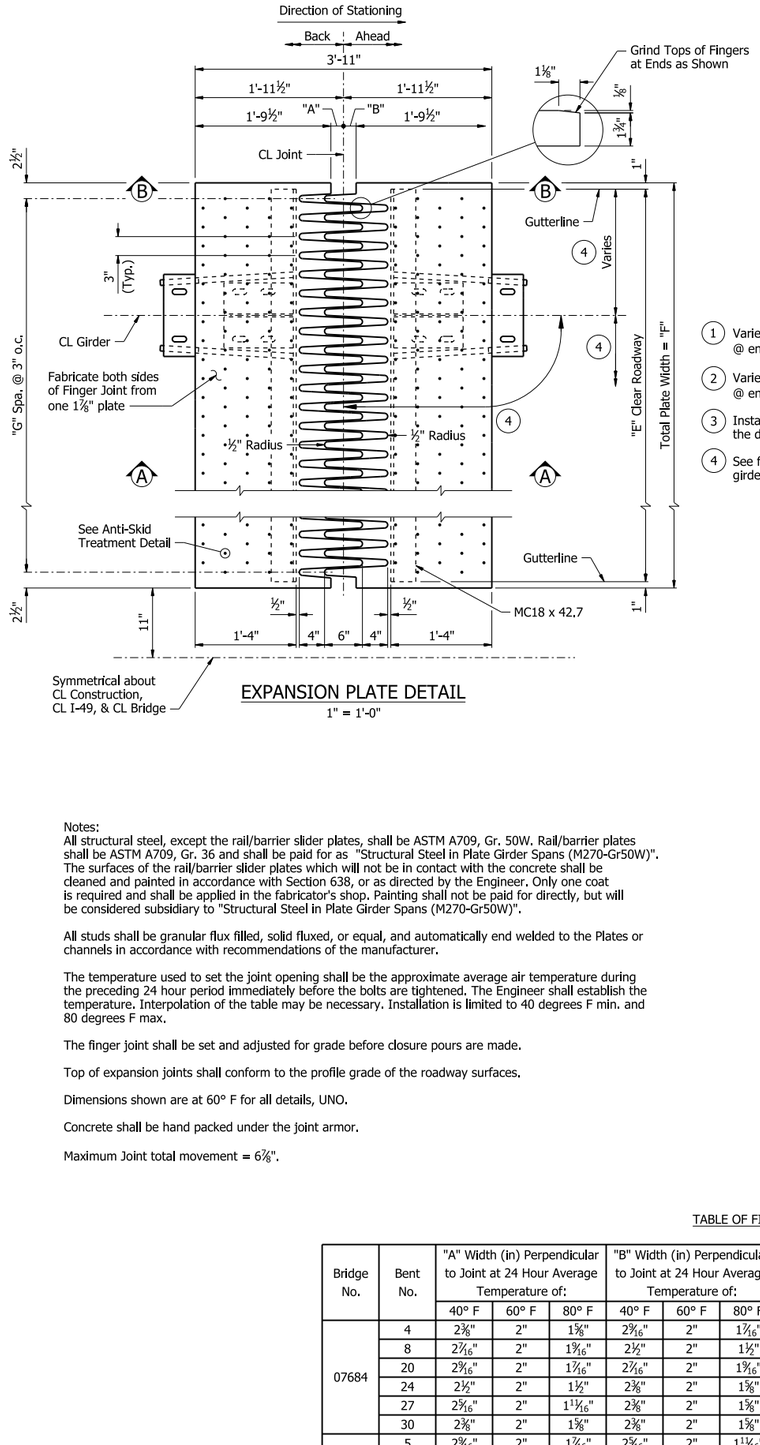
ALTERNATE NO. 1
SHEET 2 OF 2
DETAILS OF FINGER JOINTS
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: PAR DATE: 11/14/23
CHECKED BY: BTJ DATE: 11/19/23
DESIGNED BY: JRD DATE: 10/26/23
FILENAME: b040901_fj2.dgn
SCALE: AS NOTED

BRIDGE NO. 07684 & 07685 DRAWING NO. 67695

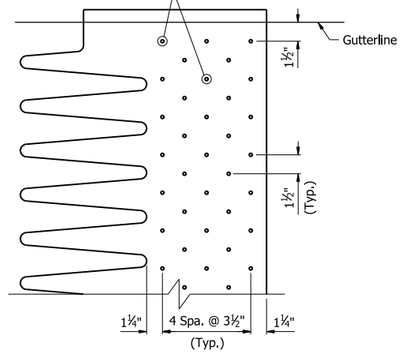
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	636	809
		07684 & 07685 - FINGER JOINT - 67696				



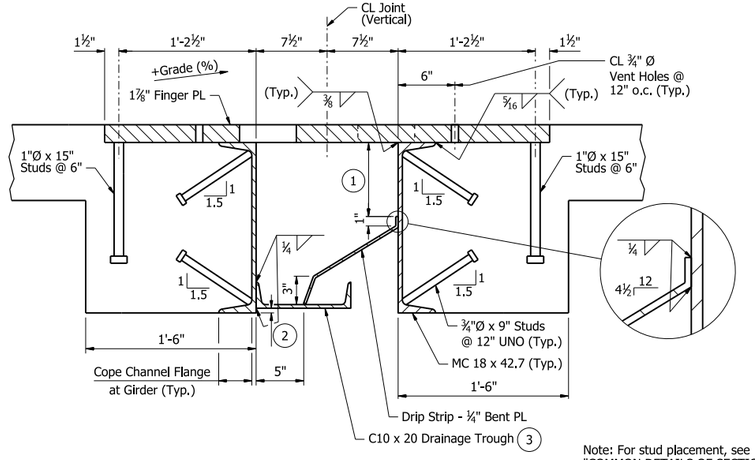
EXPANSION PLATE DETAIL
1" = 1'-0"

1. Varies - 2" @ CL Bridge to 9⅞" @ end of roadway channel.
2. Varies - 8⅜" @ CL Bridge to ½" @ end of roadway channel.
3. Install drainage trough on the downhill side.
4. See framing plan for girder spacing and angles.

Fluxed knock-off no thread type studs shall be used to provide a non-skid surface, Nelson Stud NBL ¼" dia. x 1 MS ¼" K0, or equivalent, placed as shown on exposed roadway surface of all finger plates. Length after knock-off to be ¼".



ANTI-SKID TREATMENT DETAIL
NO SCALE



SECTION A-A
1½" = 1'-0"

Note: For stud placement, see "COMMON DETAILS OF SECTIONS NEAR JOINTS" Dwg. No. 67691.

Notes:
All structural steel, except the rail/barrier slider plates, shall be ASTM A709, Gr. 50W. Rail/barrier plates shall be ASTM A709, Gr. 36 and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)". The surfaces of the rail/barrier slider plates which will not be in contact with the concrete shall be cleaned and painted in accordance with Section 638, or as directed by the Engineer. Only one coat is required and shall be applied in the fabricator's shop. Painting shall not be paid for directly, but will be considered subsidiary to "Structural Steel in Plate Girder Spans (M270-Gr50W)".

All studs shall be granular flux filled, solid fluxed, or equal, and automatically end welded to the Plates or channels in accordance with recommendations of the manufacturer.

The temperature used to set the joint opening shall be the approximate average air temperature during the preceding 24 hour period immediately before the bolts are tightened. The Engineer shall establish the temperature. Interpolation of the table may be necessary. Installation is limited to 40 degrees F min. and 80 degrees F max.

The finger joint shall be set and adjusted for grade before closure pours are made.

Top of expansion joints shall conform to the profile grade of the roadway surfaces.

Dimensions shown are at 60° F for all details, UNO.

Concrete shall be hand packed under the joint armor.

Maximum Joint total movement = 6⅞".

* Bearing stiffeners and ends of girders are vertical. Expansion device is normal to grade.

SECTION F-F AT GIRDER
3" = 1'-0"

Note:
Detail device ⅛" high and provide ¼" shims for WT 8 x 38.5 using 1-⅛" and 2-1/16" Plates.

PLAN OF CONNECTION TO GIRDER
2" = 1'-0"

TABLE OF FINGER JOINT DATA

Bridge No.	Bent No.	"A" Width (in) Perpendicular to Joint at 24 Hour Average Temperature of:			"B" Width (in) Perpendicular to Joint at 24 Hour Average Temperature of:			"C" Back at 60° F	"D" Ahead at 60° F	"E" Clear Roadway Width	"F" Total Plate Width	"G" Finger Spa.	Back Unit Length	Ahead Unit Length	Longit. Grade
		40° F	60° F	80° F	40° F	60° F	80° F								
07684	4	2⅜"	2"	1⅝"	2⅝"	2"	1⅞"	2⅝"	1⅜"	40'-0"	40'-2"	159	390'-0"	520'-0"	2.440%
	8	2⅞"	2"	1⅜"	2½"	2"	1½"	2⅞"	1⅛"	40'-0"	40'-2"	159	520'-0"	520'-0"	3.000%
	20	2⅝"	2"	1⅞"	2⅞"	2"	1⅜"	1¾"	2¼"	40'-0"	40'-2"	159	520'-0"	520'-0"	-1.570%
	24	2½"	2"	1½"	2⅜"	2"	1⅝"	1¾"	2¼"	40'-0"	40'-2"	159	520'-0"	390'-0"	-1.570%
	27	2⅝"	2"	1 11/16"	2⅜"	2"	1⅝"	1¾"	2¼"	40'-0"	40'-2"	159	390'-0"	390'-0"	-1.570%
	30	2⅜"	2"	1⅝"	2⅜"	2"	1⅜"	1¾"	2¼"	40'-0"	40'-2"	159	390'-0"	390'-0"	-1.570%
07685	5	2 9/16"	2"	1⅞"	2 5/16"	2"	1 11/16"	2 5/16"	1 9/16"	40'-0"	40'-2"	159	520'-0"	420'-0"	2.419%
	9	2⅞"	2"	1⅜"	2⅜"	2"	1⅝"	2⅛"	1⅞"	48'-0"	48'-2"	191	420'-0"	520'-0"	0.742%
	13	2½"	2"	1½"	2 5/16"	2"	1 11/16"	1 13/16"	2 3/16"	48'-0"	48'-2"	191	520'-0"	360'-0"	-1.335%

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 19996
BRENT T. JONES
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 2
DETAILS OF FINGER JOINTS
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

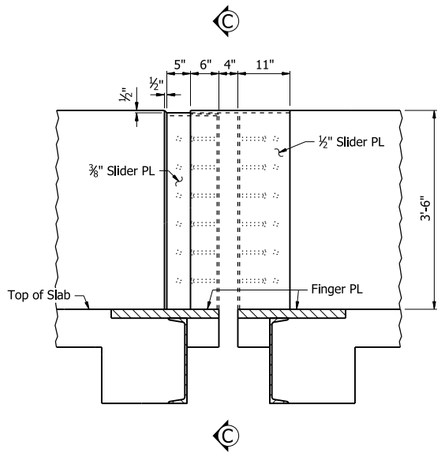
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY:	PAR	DATE:	11/14/23	FILENAME:	b040901_fj3.dgn
CHECKED BY:	BTJ	DATE:	11/18/23	SCALE:	AS NOTED
DESIGNED BY:	JRD	DATE:	9/15/23		

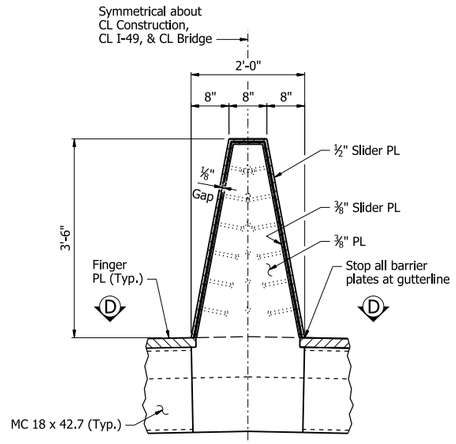
BRIDGE NO. 07684 & 07685 DRAWING NO. 67696

PRINT DATE: 4/11/2024

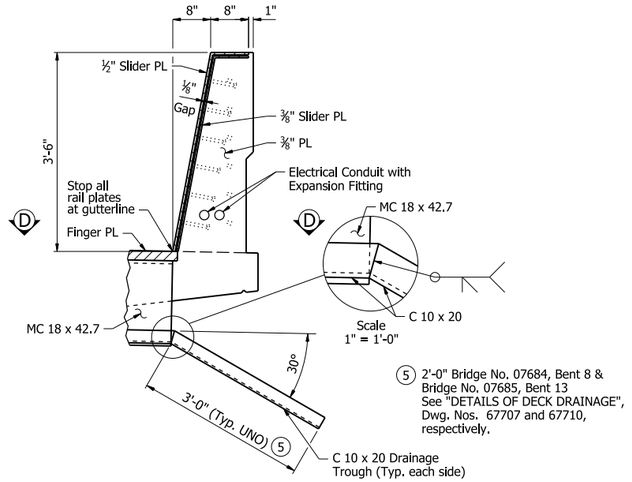
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	637	809
		07684 & 07685 - FINGER JOINT - 67697				



SECTION B-B

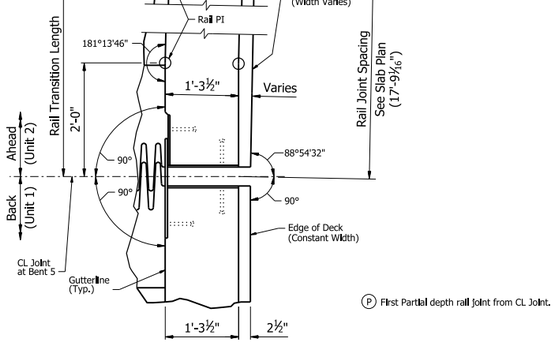


MEDIAN BARRIER
SECTION C-C



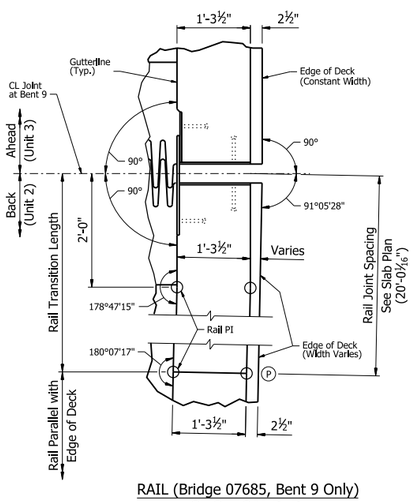
(5) 2'-0" Bridge No. 07684, Bent 8 & Bridge No. 07685, Bent 13 See "DETAILS OF DECK DRAINAGE", Dwg. Nos. 67707 and 67710, respectively.

RAIL
SECTION C-C
Symmetrical About CL I-49

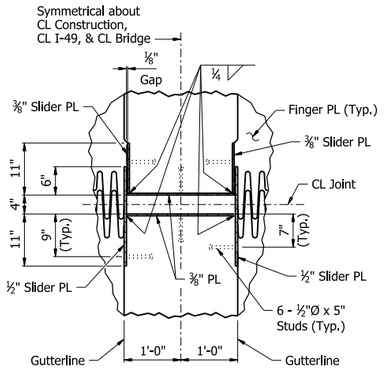


Ⓟ First Partial depth rail joint from CL Joint.

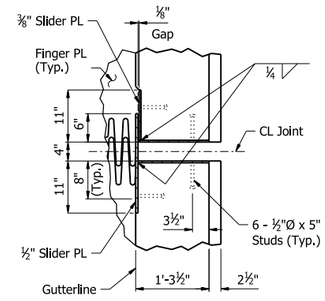
RAIL (Bridge 07685, Bent 5 Only)
SECTION D-D
Rail Geometry Shown Only, Symm About CL I-49.
See Section D-D "Rail (Typical)" for Plate and Stud Dimensions and Details.



RAIL (Bridge 07685, Bent 9 Only)
SECTION D-D
Rail Geometry Shown Only, Symm About CL I-49.
See D-D "Rail (Typical)" for Plate and Stud Dimensions and Details.



MEDIAN BARRIER
SECTION D-D



RAIL (TYPICAL)
SECTION D-D
Typical for all constant width slabs.

PRINT DATE: 4/11/2024

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 19996
BRENT T. JONES
4/18/24
BRIDGE ENGINEER

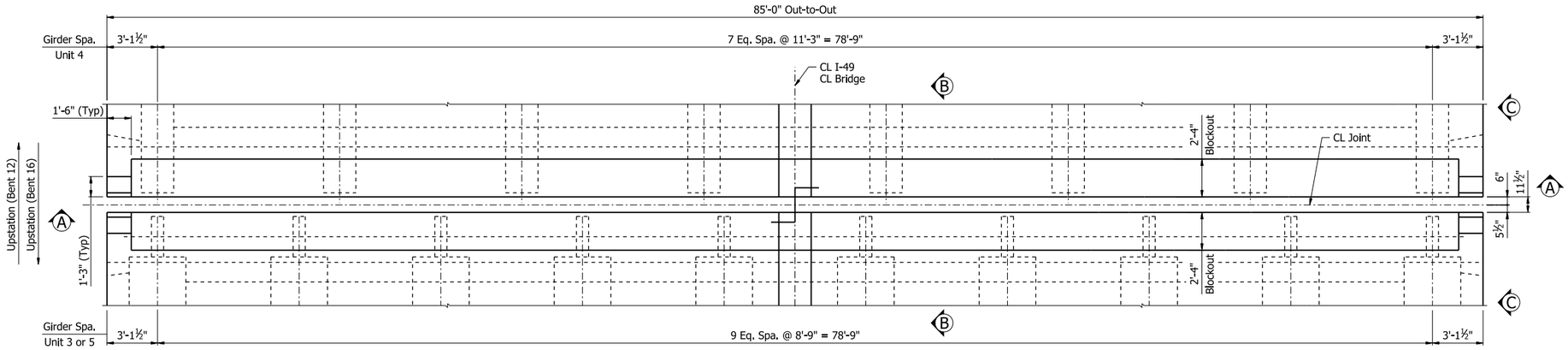
ALTERNATE NO. 2
SHEET 2 OF 2
DETAILS OF FINGER JOINTS
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

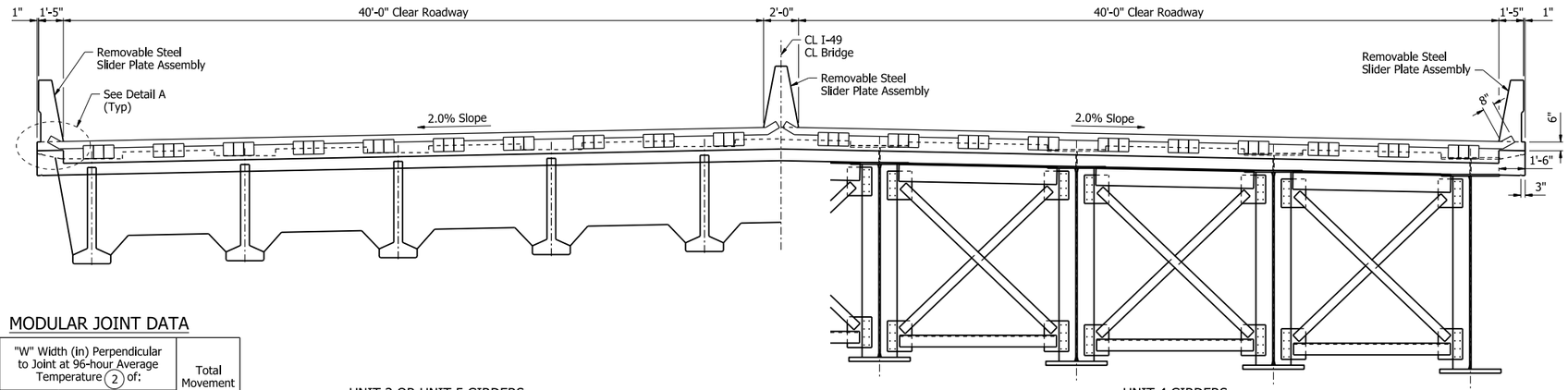
DRAWN BY: PAR DATE: 11/14/23
CHECKED BY: BTJ DATE: 11/18/23
DESIGNED BY: JRD DATE: 9/15/23
FILENAME: b040901_fj4.dgn
SCALE: ¾" = 1'-0"

BRIDGE NO. 07684 & 07685 DRAWING NO. 67697

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	638	809
		07684 - MODULAR JOINT - 67698				



PLAN AT MODULAR EXPANSION JOINT AT BENT 12 AND 16
Scale: ¼" = 1'-0"



UNIT 3 OR UNIT 5 GIRDERS

UNIT 4 GIRDERS

MODULAR JOINT DATA

Bent No.	"W" Width (in) Perpendicular to Joint at 96-hour Average Temperature (2) of:			Total Movement
	40°F	60°F	80°F	
12	1'-5⅞"	1'-4¾"	1'-2¾"	10¾"
16	1'-6"	1'-4⅜"	1'-2⅝"	11⅛"

Notes:
The modular joint system shall be designed by the manufacturer and conform to the requirements of SP Job No. 040901 "MODULAR EXPANSION JOINT SYSTEM".

Concrete for the blockout shall be Class S(AE) and is included in the unit slab concrete quantity.

The details shown are inteded to be schematic. The actual components of the expansion joint system may vary from those shown. However, the total required range of expansion remains unchanged regardless of manufacturer chosen.

Structural steel for modular joints shall be galvanized in accordance to AASHTO M111.

The modular expansion joint system shall accommodate 11⅛" total longitudinal movement.

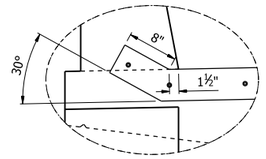
Top of modular joint shall conform to the profile grade of the roadway surfaces. Dimensions shown are at 60°F for all details.

Modular expansion joints shall be assembled in their final relative position with the ends in place for shop inspection and acceptance.

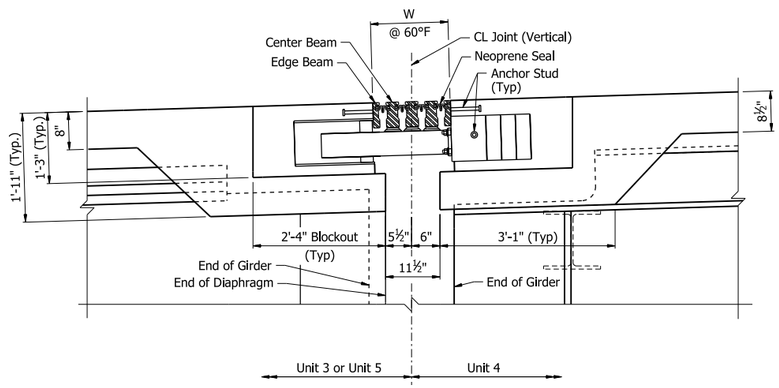
For Steel Slider Plate details, see Dwg. No. 67699.

(1) S503E/S504E - 3 eq. spa. 2'-8" minimum lap. Reinforcement in the Blockout is included in the unit slab reinforcement bar list.

(2) The temperature used to set the joint opening shall be the approximate average air temperature during the 96 hour period immediately before the bolts are tightened. The Engineer and bearing manufacturer engineer shall establish the temperature. Installation is limited to 40°F min. and 80°F max. interpolation of the table may be necessary. The temperature limitations of the lubricant-adhesive manufacturer shall be observed.

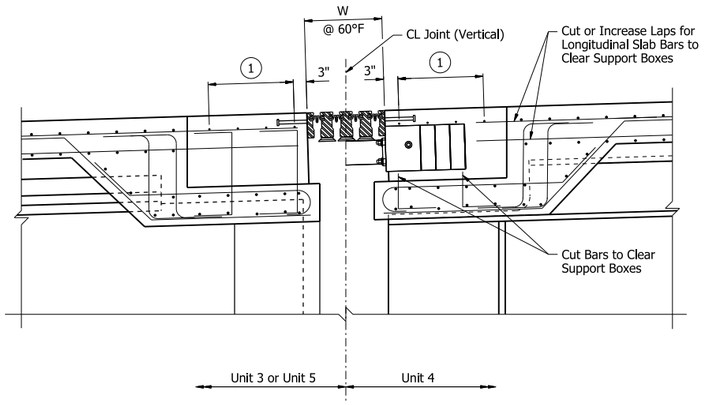


DETAIL A
Scale: 1" = 1'-0"



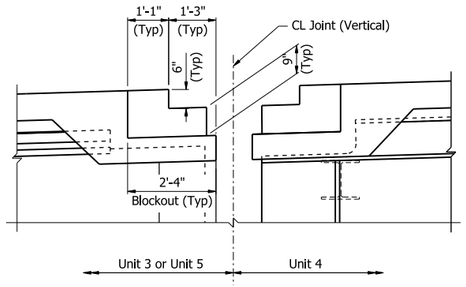
SECTION B-B
Scale: ¾" = 1'-0"

SECTION A-A
Scale: ¼" = 1'-0"



NO SUPPORT BOX AT SUPPORT BOX

SECTION B-B
Showing Reinforcement
Scale: ¾" = 1'-0"



VIEW C-C
Scale: ½" = 1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 19996
BRENT T. JONES
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 1 OF 2
DETAILS OF MODULAR JOINTS
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

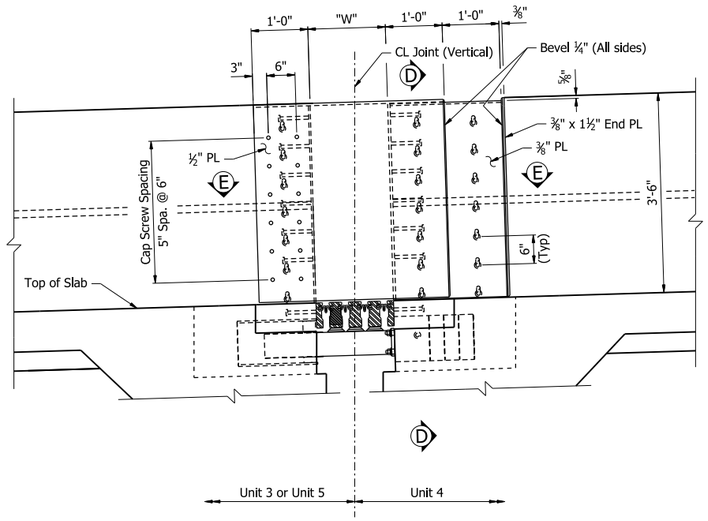
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: HX DATE: 11/17/23
CHECKED BY: BTJ DATE: 11/17/23
DESIGNED BY: JRD DATE: 10/12/23
FILENAME: b040901_mj1.dgn
SCALE: AS NOTED

BRIDGE NO. 07684 DRAWING NO. 67698

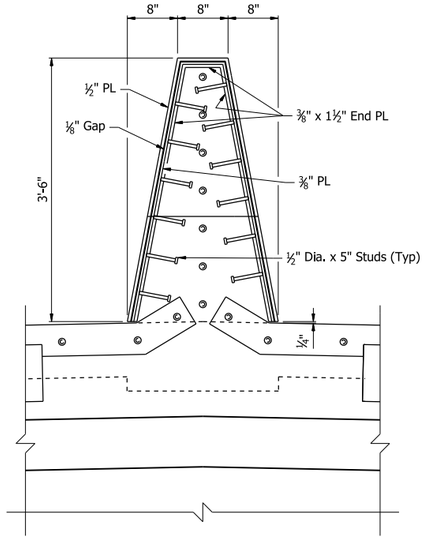
PRINT DATE: 4/9/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	639	809
		07684 - MODULAR JOINT - 67699				



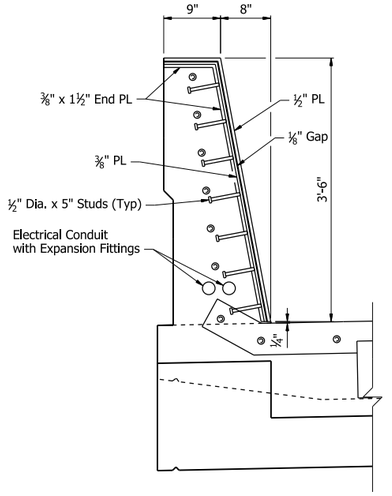
BENT 12 & 16 SLIDER PLATE DETAIL

(Rail Shown, Median Barrier Similar)



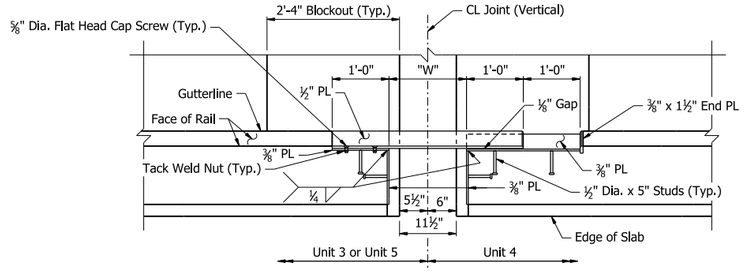
SECTION D-D THROUGH MEDIAN BARRIER

(Girders not shown for Clarity.)



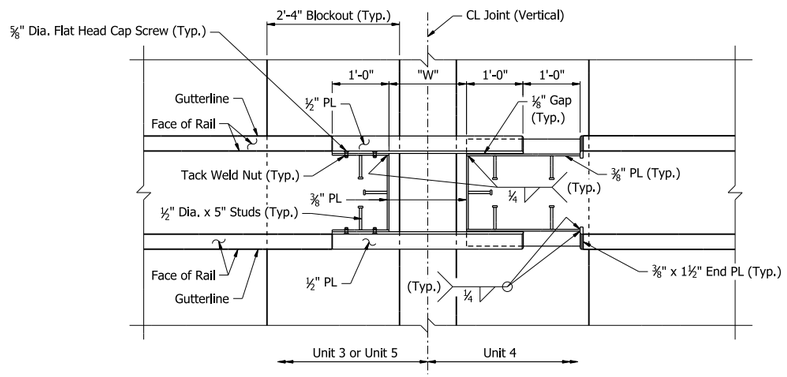
SECTION D-D THROUGH PARAPET RAIL

(Symm. about CL I-49. Girders not shown for Clarity.)



SECTION E-E THROUGH RAIL

(Modular joint not shown for clarity.)



SECTION E-E THROUGH MEDIAN BARRIER

(Modular joint not shown for clarity.)

Notes:
The rail/barrier slider plates and structural steel completely embedded in concrete shall conform to ASTM A709, Grade 36, 50 or 50W steel and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)". Unless otherwise noted in the plans, all exposed surfaces of the slider plates shall be cleaned and painted in accordance with Section 638, or as directed by the Engineer. Only one coat is required and shall be applied in the fabricator's shop. Painting shall not be paid for directly, but will be considered subsidiary to "Structural Steel in Plate Girder Spans (M270-Gr50W)".

Details of the proposed slider plate assembly shall be submitted to and approved by the Engineer prior to fabrication of the structural steel at the expansion device.

The method of attachment of the slider plate assembly shall allow for removal to provide for future replacement of the neoprene seals.

All studs shall be granular flux filled, solid fluxed, or equal, and automatically end welded to the Plates in accordance with recommendations of the manufacturer.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 19996
BRENT T. JONES
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 2 OF 2
DETAILS OF MODULAR JOINTS
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY:	HX	DATE:	11/17/23	FILENAME:	b040901_mj2.dgn
CHECKED BY:	BTJ	DATE:	11/17/23	SCALE:	AS NOTED
DESIGNED BY:	JRD	DATE:	10/12/23		

BRIDGE NO. 07684 DRAWING NO. 67699

PRINT DATE: 4/13/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
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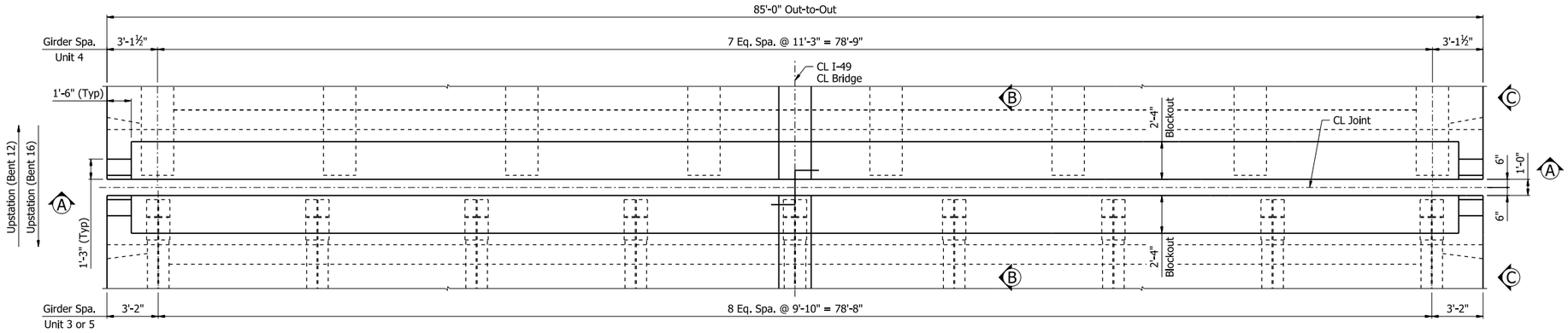
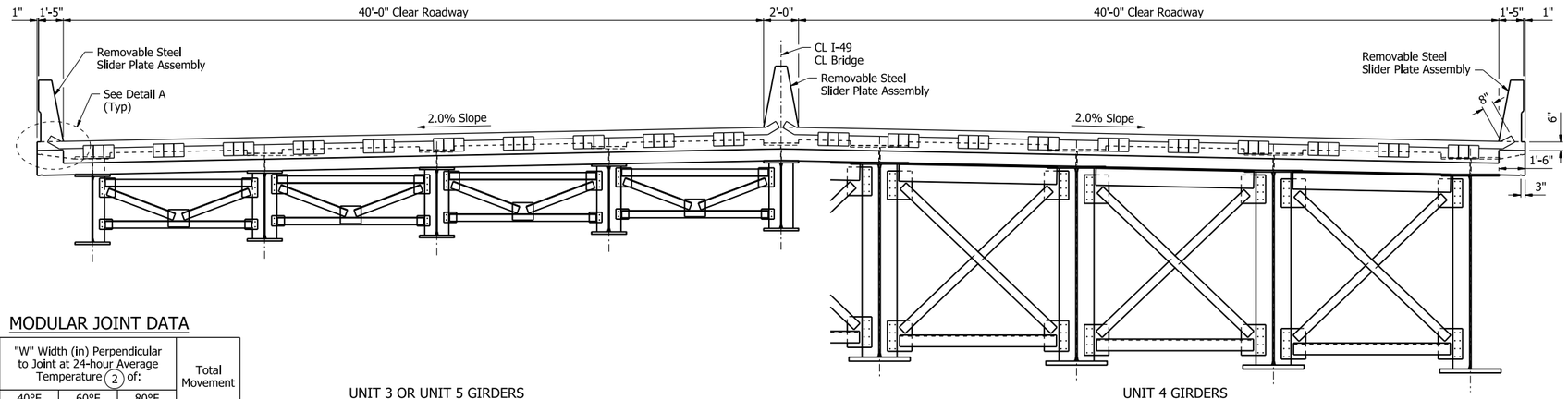
		07684 - MODULAR JOINT - 67700				



PLAN AT MODULAR EXPANSION JOINT AT BENT 12 AND 16
Scale: ¼" = 1'-0"



UNIT 3 OR UNIT 5 GIRDERS

UNIT 4 GIRDERS

MODULAR JOINT DATA

Bent No.	"W" Width (in) Perpendicular to Joint at 24-hour Average Temperature (2) of:			Total Movement
	40°F	60°F	80°F	
12	1'-6"	1'-4⅜"	1'-2⅝"	11⅞"
16	1'-6"	1'-4⅜"	1'-2⅝"	1'-0⅜"

Notes:
The modular joint system shall be designed by the manufacturer and conform to the requirements of SP Job No. 040901 "MODULAR EXPANSION JOINT SYSTEM".

Concrete for the blockout shall be Class S(AE) and is included in the unit slab concrete quantity.

The details shown are inteded to be schematic. The actual components of the expansion joint system may vary from those shown. However, the total required range of expansion remains unchanged regardless of manufacturer chosen.

Structural steel for modular joints shall be galvanized in accordance to AASHTO M111.

The modular expansion joint system shall accommodate 12⅜" total longitudinal movement.

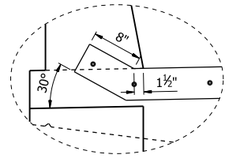
Top of modular joint shall conform to the profile grade of the roadway surfaces. Dimensions shown are at 60°F for all details.

Modular expansion joints shall be assembled in their final relative position with the ends in place for shop inspection and acceptance.

For Steel Slider Plate details, see Dwg. No. 67701.

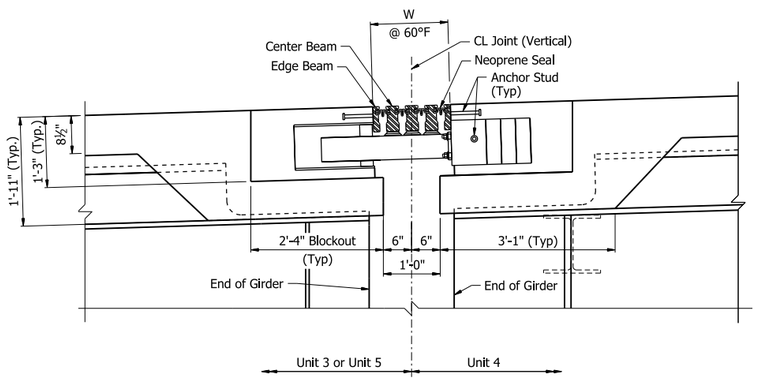
(1) S501E/S503E - 3 eq. spa. 2'-8" minimum lap. Reinforcement in the Blockout is included in the unit slab reinforcement bar list.

(2) The temperature used to set the joint opening shall be the approximate average air temperature during the 24 hour period immediately before the bolts are tightened. The Engineer and bearing manufacturer engineer shall establish the temperature. Installation is limited to 40°F min. and 80°F max. interpolation of the table may be necessary. The temperature limitations of the lubricant-adhesive manufacturer shall be observed.

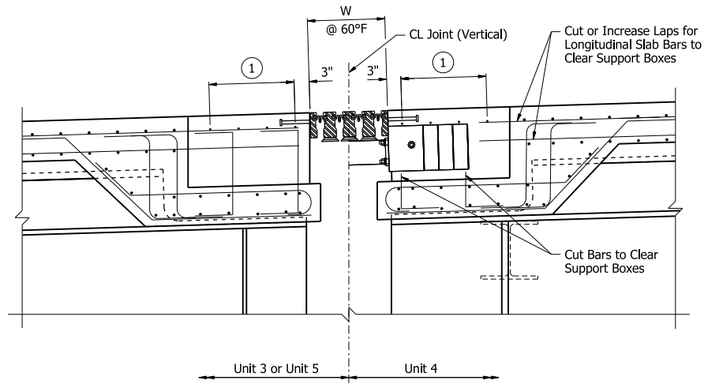


DETAIL A
Scale: 1" = 1'-0"

SECTION A-A
Scale: ¼" = 1'-0"

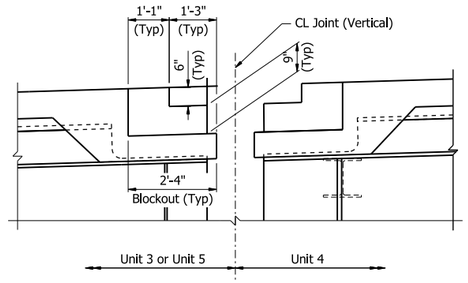


SECTION B-B
Scale: ¾" = 1'-0"



NO SUPPORT BOX AT SUPPORT BOX

SECTION B-B
Showing Reinforcement
Scale: ¾" = 1'-0"



VIEW C-C
Scale: ½" = 1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 19996
BRENT T. JONES
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 2
DETAILS OF MODULAR JOINTS
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

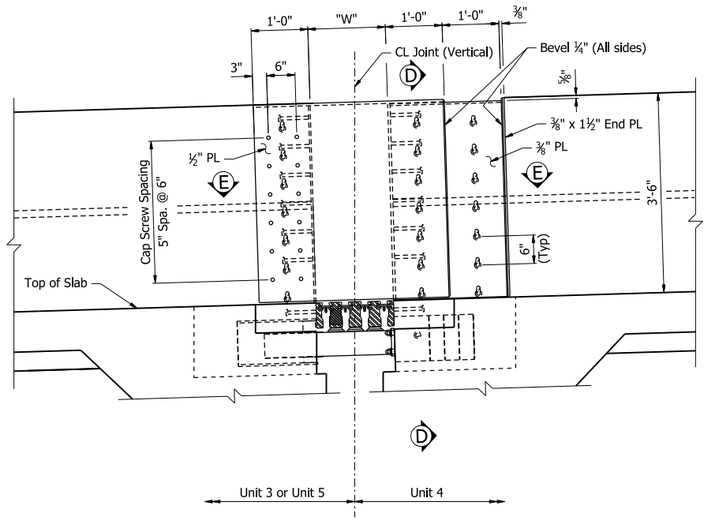
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: HX DATE: 11/17/23
CHECKED BY: BTJ DATE: 11/17/23
DESIGNED BY: JRD DATE: 10/12/23
FILENAME: b040901_mj3.dgn
SCALE: AS NOTED

BRIDGE NO. 07684 DRAWING NO. 67700

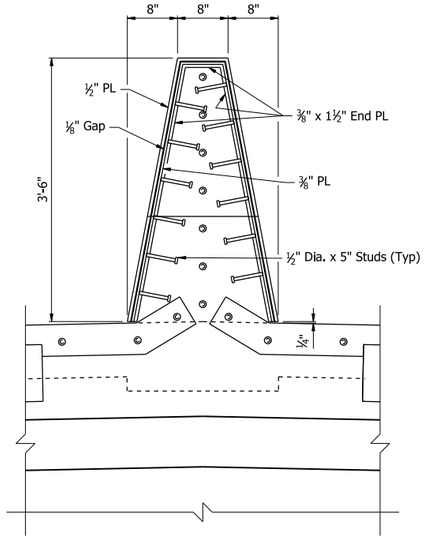
PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	641	809
		07684 - MODULAR JOINT - 67701				



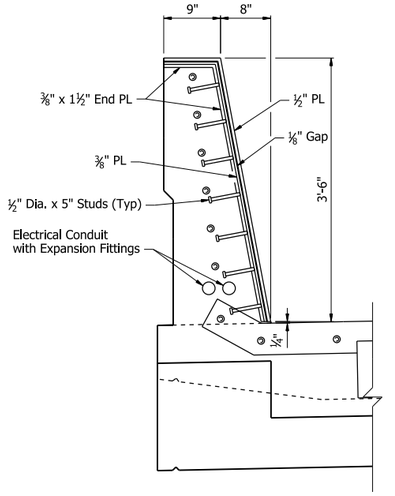
BENT 12 & 16 SLIDER PLATE DETAIL

(Rail Shown, Median Barrier Similar)



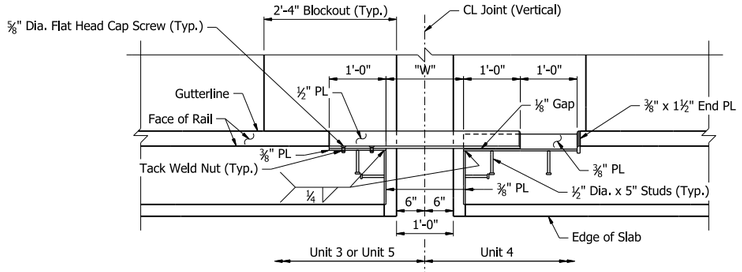
SECTION D-D THROUGH MEDIAN BARRIER

(Girders not shown for Clarity.)



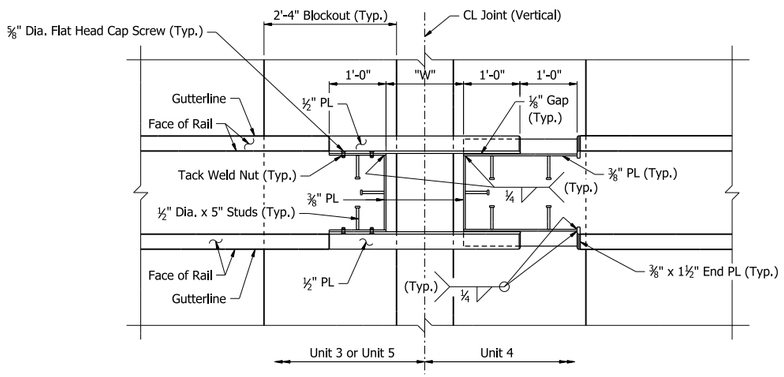
SECTION D-D THROUGH PARAPET RAIL

(Symm. about CL I-49. Girders not shown for Clarity.)



SECTION E-E THROUGH RAIL

(Modular joint not shown for clarity.)



SECTION E-E THROUGH MEDIAN BARRIER

(Modular joint not shown for clarity.)

Notes:
The rail/barrier slider plates and structural steel completely embedded in concrete shall conform to ASTM A709, Grade 36, 50 or 50W steel and shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)". Unless otherwise noted in the plans, all exposed surfaces of the slider plates shall be cleaned and painted in accordance with Section 638, or as directed by the Engineer. Only one coat is required and shall be applied in the fabricator's shop. Painting shall not be paid for directly, but will be considered subsidiary to "Structural Steel in Plate Girder Spans (M270-Gr50W)".

Details of the proposed slider plate assembly shall be submitted to and approved by the Engineer prior to fabrication of the structural steel at the expansion device.

The method of attachment of the slider plate assembly shall allow for removal to provide for future replacement of the neoprene seals.

All studs shall be granular flux filled, solid fluxed, or equal, and automatically end welded to the Plates in accordance with recommendations of the manufacturer.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 19996
BRENT T. JONES
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 2 OF 2
DETAILS OF MODULAR JOINTS
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

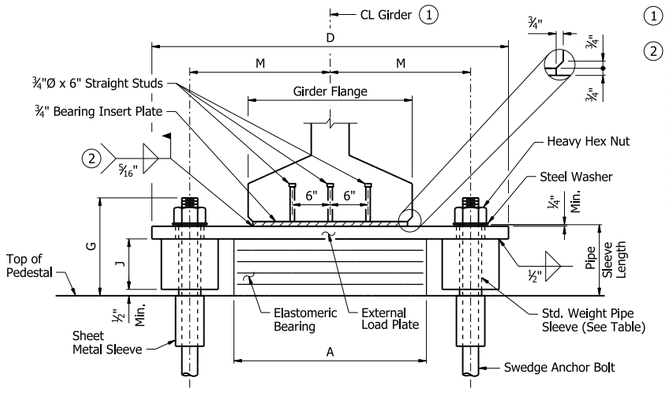
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: HX DATE: 11/17/23
CHECKED BY: BTJ DATE: 11/17/23
DESIGNED BY: JRD DATE: 10/12/23
FILENAME: b040901_mj4.dgn
SCALE: AS NOTED

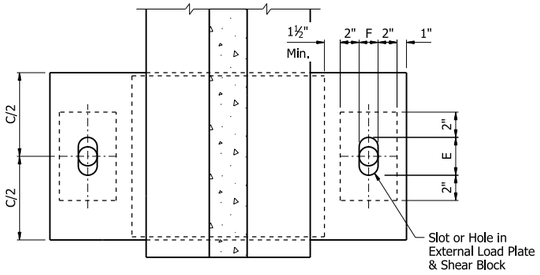
BRIDGE NO. 07684 DRAWING NO. 67701

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	642	809
		07684 & 07685 - ELASTO. BRGS. - 67702				



FRONT VIEW

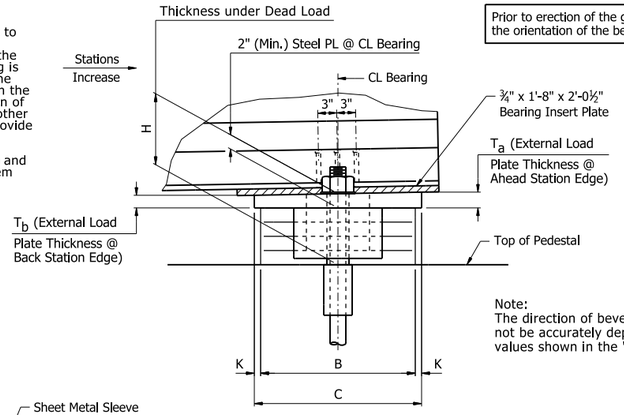


PLAN VIEW

(1) Centerline Elastomeric Pad shall be aligned with centerline Construction, U.N.O.

(2) Unless otherwise approved by the Engineer, welding of the external load plate at bearings to the girder will be allowed only when: 1) the approximate average air temperature during the 24 hour period immediately preceding welding is between 40°F and 80°F; and 2) the slots in the external load plate are positioned to center on the anchor bolts; and 3) no horizontal deformation of the elastomeric pad is evident. If welding at other temperatures is required, the Engineer will provide adjustment data.

Bearing insert plate (A709, Gr. 50W, painted) and studs shall be considered subsidiary to the item "Prestressed Concrete Girders (Type BT-72)".

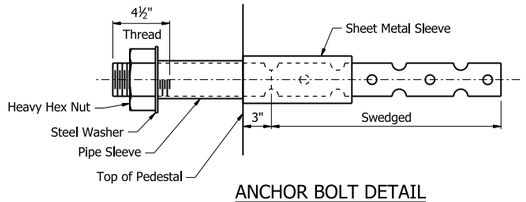


SIDE VIEW

Prior to erection of the girders, the Contractor shall verify the orientation of the bearings with respect to Ta and Tb.

T_a = Edge thickness of bevel external load plate AHEAD Station
T_b = Edge thickness of bevel external load plate BACK Station
t_e = Thickness of elastomer cover on top and bottom of pad
t_i = Thickness of elastomer between steel laminae
N = Number of elastomer layers of thickness ti

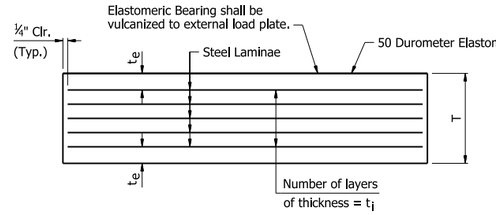
Note:
The direction of bevel of the external load plate may not be accurately depicted with respect to "Ta" & "Tb" values shown in the "Table of Fabricator Variables".



ANCHOR BOLT DETAIL

Anchor Bolts may be cast in place or drilled and grouted into place. If Anchor Bolts are to be cast in place, the Galvanized Sheet Metal Sleeves will not be required.

If Anchor Bolts are to be drilled and grouted in place, the Galvanized Sheet Metal Sleeves shall be cast in place as shown. Sleeves shall be dry packed with styrofoam, urethane foam, or approved equal prior to pouring of concrete. After pouring of the cap and prior to erection of Structural Steel, the dry pack shall be removed and holes for the anchor bolts shall be accurately drilled into the concrete. Bolts placed in drilled holes shall be accurately set and fixed using a QPL approved epoxy or non-shrink grout that completely fills the holes. Galvanized Sheet Metal Sleeves shall meet the requirements of ASTM 653, CS Type B or approved equivalent, be of minimum 16 gauge thickness, and be galvanized according to ASTM B695, Class 50. Sheet Metal Sleeves will not be paid for directly, but will be considered subsidiary to the item "Structural Steel in Plate Girder Spans (M270-Gr50W)."



ELASTOMERIC BEARING

GENERAL NOTES
Elastomeric Bearings shall conform to Section 808 and shall be paid for at the unit price bid for "Elastomeric Bearings".

External load plates and shear blocks shall conform to ASTM A709, Grade 50W. Pipe sleeves shall be ASTM A500, Grade B, and shall be galvanized to conform to AASHTO M 232, Class C or ASTM B695, Class 50.

External load plates and shear blocks shall be completely fabricated (including bevel, bolt holes, and all shop welding) and shall be cleaned before vulcanizing to the elastomeric bearing. The surface in contact with the elastomeric bearing shall be cleaned in accordance with Subsection 808.03. Other surfaces shall be blast cleaned in accordance with Subsection 807.84(b) for painted steel and 807.84(e) for unpainted Grade 50W steel.

Anchor Bolts, Washers and Nuts shall conform to Subsection 807.07. The anchor bolt grade of steel shall be as specified in the "Table of Fabricator Variables". Indentations shall be circular with rounded bottoms and staggered as shown in the details.

Pipe Sleeves, Anchor Bolts, Washers and Nuts shall be paid for at the unit price bid for "Structural Steel in Plate Girder Spans (M270-Gr50W)". External load plates and shear blocks will not be measured or paid for separately, but will be considered subsidiary to the unit price bid for "Elastomeric Bearings".

Bearings shall be seated in accordance with Subsection 808.08. This work and materials are considered subsidiary to the item "Elastomeric Bearing" and will not be paid for directly.

Bearings shall be painted as specified in Subsection 807.75. The color of paint shall be Brown equal or close Federal St. 595B, Color Chip No. 30070 and as approved by the Engineer. The finish system shall be applied in the shop. Areas to be field welded shall be masked and painted in the field per the manufacturer's recommendations.

Any damage to the paint system occuring during transport or installation shall be corrected according to the manufacturer's recommendations at no cost the Department.

Care shall be taken to ensure that the external load plate is in full and complete contact with the bearing insert plate before welding begins.

For Bridge No. 07684 Unit 4 Bearings (Bent Nos. 12-16), see "DETAILS OF HLMR BEARINGS".

TABLE OF FABRICATOR VARIABLES

Maximum Design Load = Service I Limit State

BRIDGE NO(S).	LOCATION		BEARING TYPE	NO. OF BEARINGS EACH BENT	MAXIMUM DESIGN LOAD (KIPS)	ELASTOMERIC PAD						EXTERNAL LOAD PLATE									ANCHOR BOLT				
	BENT NO(S).	GIRDER NO.				G	H	A	B	N	t_i	t_e	NO. & THICKNESS OF STEEL LAMINAE	T	C	D	E	F	J	K	M	T_a	T_b	ANCHOR BOLT (Ø x L)	GRADE	PIPE SLEEVE SIZE (Ø x L)	SHEET METAL SLEEVE SIZE (Ø x L)	WASHER SIZE (O.D.)
07684	1	All	Exp	10	270.1	9¾"	6¼"	26"	10"	6"	½"	¼"	7 @ 12ga.	4¼"	12"	45½"	7½"	3⅛"	2"	1"	18 3/16"	2⅛"	1⅞"	2¼" x 33"	55	2½" x 6½"	4" x 25"	4"
	4	All	Exp	10	270.1	9¾"	6¼"	26"	10"	6"	½"	¼"	7 @ 12ga.	4¼"	12"	45½"	7½"	3⅛"	2"	1"	18 3/16"	2 1/16"	1 15/16"	2¼" x 33"	55	2½" x 6½"	4" x 25"	4"
		All	Exp	10	257.2	11"	7 7/16"	26"	10½"	8"	½"	¼"	9 @ 12ga.	5 7/16"	12"	45½"	7½"	3⅛"	3⅛"	¾"	18 3/16"	2¼"	1¾"	2¼" x 34"	55	2½" x 7¾"	4" x 25"	4"
	8	All	Exp	10	257.2	11"	7 7/16"	26"	10½"	8"	½"	¼"	9 @ 12ga.	5 7/16"	12"	45½"	7½"	3⅛"	3⅛"	¾"	18 3/16"	2⅛"	1⅞"	2¼" x 34"	55	2½" x 7¾"	4" x 25"	4"
		All	Exp	10	257.2	11"	7 7/16"	26"	10½"	8"	½"	¼"	9 @ 12ga.	5 7/16"	12"	45½"	7½"	3⅜"	3⅛"	¾"	18 3/16"	2¼"	1¾"	2¼" x 34"	55	2½" x 7¾"	4" x 25"	4"
	12	All	Exp	10	257.2	11"	7 7/16"	26"	10½"	8"	½"	¼"	9 @ 12ga.	5 7/16"	12"	45½"	7½"	3⅜"	3⅛"	¾"	18 3/16"	2⅛"	1⅞"	2¼" x 34"	55	2½" x 7¾"	4" x 25"	4"
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		All	Exp	10	257.2	11"	7 7/16"	26"	10½"	8"	½"	¼"	9 @ 12ga.	5 7/16"	12"	45½"	7½"	3⅜"	3⅛"	¾"	18 3/16"	2"	2"	2¼" x 34"	55	2½" x 7¾"	4" x 25"	4"
	20	All	Exp	10	257.2	11"	7 7/16"	26"	10½"	8"	½"	¼"	9 @ 12ga.	5 7/16"	12"	45½"	7½"	3⅜"	3⅛"	¾"	18 3/16"	1⅞"	2⅛"	2¼" x 34"	55	2½" x 7¾"	4" x 25"	4"
		All	Exp	10	257.2	11"	7 7/16"	26"	10½"	8"	½"	¼"	9 @ 12ga.	5 7/16"	12"	45½"	7½"	3⅜"	3⅛"	¾"	18 3/16"	2"	2"	2¼" x 34"	55	2½" x 7¾"	4" x 25"	4"
	24	All	Exp	10	257.2	11"	7 7/16"	26"	10½"	8"	½"	¼"	9 @ 12ga.	5 7/16"	12"	45½"	7½"	3⅜"	3⅛"	¾"	18 3/16"	1⅞"	2⅛"	2¼" x 34"	55	2½" x 7¾"	4" x 25"	4"
		All	Exp	10	270.1	9¾"	6¼"	26"	10"	6"	½"	¼"	7 @ 12ga.	4¼"	12"	45½"	7½"	3⅜"	2"	1"	18 3/16"	2"	2"	2¼" x 33"	55	2½" x 6½"	4" x 25"	4"
	27	All	Exp	10	270.1	9¾"	6¼"	26"	10"	6"	½"	¼"	7 @ 12ga.	4¼"	12"	45½"	7½"	3⅜"	2"	1"	18 3/16"	1⅞"	2⅛"	2¼" x 33"	55	2½" x 6½"	4" x 25"	4"
		All	Exp	10	270.1	9¾"	6¼"	26"	10"	6"	½"	¼"	7 @ 12ga.	4¼"	12"	45½"	7½"	3⅜"	2"	1"	18 3/16"	2"	2"	2¼" x 33"	55	2½" x 6½"	4" x 25"	4"
	30	All	Exp	10	270.1	9¾"	6¼"	26"	10"	6"	½"	¼"	7 @ 12ga.	4¼"	12"	45½"	7½"	3⅜"	2"	1"	18 3/16"	1⅞"	2⅛"	2¼" x 33"	55	2½" x 6½"	4" x 25"	4"
		All	Exp	10	270.1	9¾"	6¼"	26"	10"	6"	½"	¼"	7 @ 12ga.	4¼"	12"	45½"	7½"	3⅜"	2"	1"	18 3/16"	2"	2"	2¼" x 33"	55	2½" x 6½"	4" x 25"	4"
	33	All	Exp	10	270.1	9¾"	6¼"	26"	10"	6"	½"	¼"	7 @ 12ga.	4¼"	12"	45½"	7½"	3⅜"	2"	1"	18 3/16"	1⅞"	2⅛"	2¼" x 33"	55	2½" x 6½"	4" x 25"	4"

BRIDGE NO(S).	LOCATION		BEARING TYPE	NO. OF BEARINGS EACH BENT	MAXIMUM DESIGN LOAD (KIPS)	ELASTOMERIC PAD						EXTERNAL LOAD PLATE									ANCHOR BOLT				
	BENT NO(S).	GIRDER NO.				G	H	A	B	N	t_i	t_e	NO. & THICKNESS OF STEEL LAMINAE	T	C	D	E	F	J	K	M	T_a	T_b	ANCHOR BOLT (Ø x L)	GRADE	PIPE SLEEVE SIZE (Ø x L)	SHEET METAL SLEEVE SIZE (Ø x L)	WASHER SIZE (O.D.)
07685	1	All	Exp	10	257.2	11"	7 7/16"	26"	10½"	8"	½"	¼"	9 @ 12ga.	5 7/16"	12"	45½"	7½"	3⅜"	3⅛"	¾"	18 3/16"	2 3/16"	1 13/16"	2¼" x 34"	55	2½" x 7¾"	4" x 25"	4"
	5	All	Exp	10	257.2	11"	7 7/16"	26"	10½"	8"	½"	¼"	9 @ 12ga.	5 7/16"	12"	45½"	7½"	3⅜"	3⅛"	¾"	18 3/16"	2⅛"	1⅞"	2¼" x 34"	55	2½" x 7¾"	4" x 25"	4"
		All	Exp	11	233.6	9½"	5⅝"	26"	8½"	5"	½"	¼"	6 @ 12ga.	3⅝"	12"	45½"	7½"	3⅜"	2"	1¾"	18 3/16"	2 3/16"	1 13/16"	2¼" x 33"	55	2½" x 5⅞"	4" x 25"	4"
	9	All	Exp	11	218.6	10⅝"	6 13/16"	27"	9"	7"	½"	¼"	8 @ 12ga.	4 13/16"	12"	47½"	7¼"	3¾"	1"	1½"	18⅞"	2"	2"	2½" x 36"	55	3" x 7⅞"	4" x 25"	4½"
		All	Exp	12	257.4	11¼"	7 7/16"	26"	10½"	8"	½"	¼"	9 @ 12ga.	5 7/16"	12"	46½"	7¾"	3¾"	3"	¾"	18⅜"	2 1/16"	1 15/16"	2½" x 37"	55	3" x 7¾"	4" x 25"	4½"
	13	All	Exp	12	257.4	11¼"	7 7/16"	26"	10½"	8"	½"	¼"	9 @ 12ga.	5 7/16"	12"	46½"	7¾"	3¾"	3"	¾"	18⅜"	1⅞"	2⅛"	2½" x 37"	55	3" x 7¾"	4" x 25"	4½"
		All	Exp	12	238.3	9⅞"	5⅝"	26"	8½"	5"	½"	¼"	6 @ 12ga.	3⅝"	12"	45½"	7¾"	3⅛"	2"	1¾"	18 3/16"	1 15/16"	2 1/16"	2¼" x 33"	55	2½" x 5⅞"	4" x 25"	4"
	16	All	Exp	12	238.3	9⅞"	5⅝"	26"	8½"	5"	½"	¼"	6 @ 12ga.	3⅝"	12"	45½"	7¾"	3⅛"	2"	1¾"	18 3/16"	1 13/16"	2 1/16"	2¼" x 33"	55	2½" x 5⅞"	4" x 25"	4"

PRINT DATE: 4/11/2024

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15778
NATALIE MCCOMBS
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 1 OF 2
DETAILS OF ELASTOMERIC BEARINGS
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

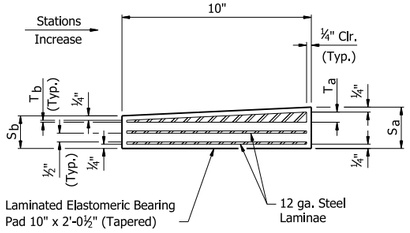
ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 11/30/23
CHECKED BY: DJG DATE: 11/30/23
DESIGNED BY: JVS DATE: 11/1/23
FILENAME: b040901_eb1.dgn
SCALE: No Scale

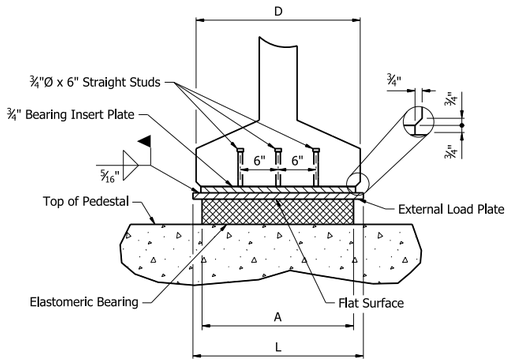
BRIDGE NO. 07684 & 07685 DRAWING NO. 67702

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	643	809
		07684 & 07685 - ELASTO. BRGS. - 67703				

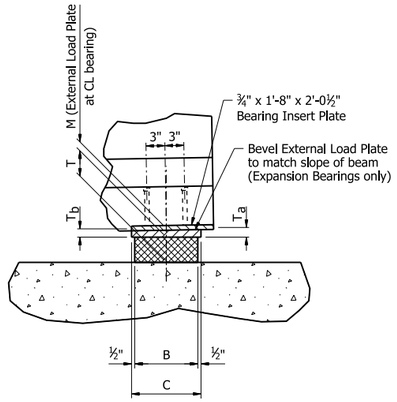


SECTION THRU FIXED ELASTOMERIC BEARING

T_a = Edge thickness of bevel top Laminae Plate AHEAD Station
T_b = Edge thickness of bevel top Laminae Plate BACK Station
S_a = Total Edge Thickness of Bearing Pad AHEAD Station
S_b = Total Edge Thickness of Bearing Pad BACK Station

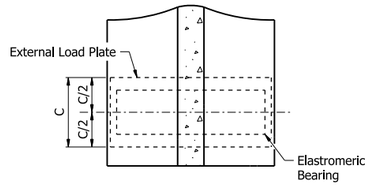


END VIEW
(Expansion Bearing Only)



SIDE VIEW
(Expansion Bearing Only)

Prior to erection of the girders, the Contractor shall verify the orientation of the bearings with respect to T_a, T_b, S_a and S_b.



PARTIAL PLAN VIEW
(Expansion Bearing Only)

GENERAL NOTES
Elastomeric Bearings shall conform to Section 808 and shall be paid for at the unit price bid for "Elastomeric Bearings".

External load plates shall conform to ASTM A709, Grade 50W.

External load plates shall be completely fabricated (including bevel) and shall be cleaned before vulcanizing to the elastomeric bearing. The surface in contact with the elastomeric bearing shall be cleaned in accordance with Subsection 808.03. Other surfaces shall be blast cleaned in accordance with Subsection 807.84(b) for painted steel and 807.84(e) for unpainted Grade 50W steel.

External load plates will not be measured or paid for separately, but will be considered subsidiary to the unit price bid for "Elastomeric Bearings".

Bearings shall be seated in accordance with Subsection 808.08. This work and materials are considered subsidiary to the item "Elastomeric Bearing" and will not be paid for directly.

Bearings shall be painted as specified in Subsection 807.75. The color of paint shall be Brown equal or close to Federal St. 595B, Color Chip No. 30070 and as approved by the Engineer. The finish system shall be applied in the shop. Areas to be field welded shall be masked and painted in the field per the manufacturer's recommendations.

Any damage to the paint system occuring during transport or installation shall be corrected according to the manufacturer's recommendations at no cost to the Department.

Care shall be taken to ensure that the external load plate is in full and complete contact with the bearing insert plate before welding begins.

Bearing Insert Plate (A709, Gr. 50W) and studs shall be considered subsidiary to the item "Prestressed Concrete Girders (Type BT-72)".

FIXED BEARINGS

BRIDGE NO(S).	BENT NO.	NO. OF BRGS	BRG LINE	S_a	S_b	T_a	T_b	NO. OF STEEL LAMINAE
07684	2	10	Back	1 13/16"	1 13/16"	12 ga.	12 ga.	3
	2	10	Ahead	2 1/16"	1 13/16"	5/16"	12 ga.	3
	6	10	Back	2"	1 13/16"	3/16"	12 ga.	3
	6	10	Ahead	2 3/16"	1 13/16"	½"	12 ga.	3
	7	10	Back	2"	1 13/16"	5/16"	12 ga.	3
	7	10	Ahead	2 3/16"	1 13/16"	½"	12 ga.	3
	10	10	Back	2"	1 13/16"	3/16"	12 ga.	3
	10	10	Ahead	2 3/16"	1 13/16"	½"	12 ga.	3
	11	10	Back	2"	1 13/16"	5/16"	12 ga.	3
	11	10	Ahead	2 3/16"	1 13/16"	½"	12 ga.	3
	17	10	Back	1 13/16"	2 1/16"	12 ga.	3/8"	3
	17	10	Ahead	1 13/16"	1 13/16"	12 ga.	12 ga.	3
	18	10	Back	1 13/16"	2 1/16"	12 ga.	3/8"	3
	18	10	Ahead	1 13/16"	1 13/16"	12 ga.	12 ga.	3
	21	10	Back	1 13/16"	2 1/16"	12 ga.	3/8"	3
	21	10	Ahead	1 13/16"	1 13/16"	12 ga.	12 ga.	3
	22	10	Back	1 13/16"	2 1/16"	12 ga.	3/8"	3
	22	10	Ahead	1 13/16"	1 13/16"	12 ga.	12 ga.	3
	25	10	Back	1 13/16"	2 1/16"	12 ga.	5/16"	3
	25	10	Ahead	1 13/16"	1 13/16"	12 ga.	12 ga.	3
	26	10	Back	1 13/16"	2 1/16"	12 ga.	5/16"	3
	26	10	Ahead	1 13/16"	1 13/16"	12 ga.	12 ga.	3
	28	10	Back	1 13/16"	2 1/16"	12 ga.	5/16"	3
	28	10	Ahead	1 13/16"	1 13/16"	12 ga.	12 ga.	3
	29	10	Back	1 13/16"	2 1/16"	12 ga.	5/16"	3
	29	10	Ahead	1 13/16"	1 13/16"	12 ga.	12 ga.	3
	31	10	Back	1 13/16"	2 1/16"	12 ga.	5/16"	3
	31	10	Ahead	1 13/16"	1 13/16"	12 ga.	12 ga.	3
	32	10	Back	1 13/16"	2 1/16"	12 ga.	5/16"	3
	32	10	Ahead	1 13/16"	1 13/16"	12 ga.	12 ga.	3

EXPANSION BEARINGS

BRIDGE NO(S).	BENT NO.	BRG LINE	A	B	C	D	L	M	N	t_i	t_e	T_a	T_b	NO. & THICKNESS OF STEEL LAMINAE	T	NO. REQUIRED
07684	3	Back	24½"	10"	11"	26"	27"	1½"	4	½"	¼"	1½"	1½"	5 @ 12ga.	3"	10
	3	Ahead	24½"	10"	11"	26"	27"	1½"	4	½"	¼"	1 11/16"	1 5/16"	5 @ 12ga.	3"	10
	5	Back	24½"	10"	11"	26"	27"	1½"	4	½"	¼"	1⅝"	1⅜"	5 @ 12ga.	3"	10
	5	Ahead	24½"	10"	11"	26"	27"	1½"	4	½"	¼"	1 11/16"	1 5/16"	5 @ 12ga.	3"	10
	9	Back	24½"	10"	11"	26"	27"	1½"	4	½"	¼"	1⅝"	1⅜"	5 @ 12ga.	3"	10
	9	Ahead	24½"	10"	11"	26"	27"	1½"	4	½"	¼"	1 11/16"	1 5/16"	5 @ 12ga.	3"	10
	19	Back	24½"	10"	11"	26"	27"	1½"	4	½"	¼"	1⅜"	1⅝"	5 @ 12ga.	3"	10
	19	Ahead	24½"	10"	11"	26"	27"	1½"	4	½"	¼"	1½"	1½"	5 @ 12ga.	3"	10
	23	Back	24½"	10"	11"	26"	27"	1½"	4	½"	¼"	1⅜"	1⅜"	5 @ 12ga.	3"	10
	23	Ahead	24½"	10"	11"	26"	27"	1½"	4	½"	¼"	1½"	1½"	5 @ 12ga.	3"	10

FIXED BEARINGS

BRIDGE NO(S).	BENT NO.	NO. OF BRGS	BRG LINE	S_a	S_b	T_a	T_b	NO. OF STEEL LAMINAE
07685	2	10	Back	2"	1 13/16"	5/16"	12 ga.	3
	2	10	Ahead	2 3/16"	1 13/16"	½"	12 ga.	3
	3	10	Back	2 1/16"	1 13/16"	5/16"	12 ga.	3
	3	10	Ahead	2 3/16"	1 13/16"	½"	12 ga.	3
	6	11	Back	1 15/16"	1 13/16"	¼"	12 ga.	3
	6	11	Ahead	2 1/16"	1 13/16"	3/8"	12 ga.	3
	7	11	Back	1 13/16"	1 13/16"	12 ga.	12 ga.	3
	7	11	Ahead	2"	1 13/16"	¼"	12 ga.	3
	10	12	Back	1 13/16"	1 13/16"	12 ga.	12 ga.	3
	10	12	Ahead	1 13/16"	1 13/16"	12 ga.	12 ga.	3
	11	12	Back	1 13/16"	1 13/16"	12 ga.	12 ga.	3
	11	12	Ahead	1 13/16"	1 13/16"	12 ga.	12 ga.	3
	14	12	Back	1 13/16"	2"	12 ga.	5/16"	3
	14	12	Ahead	1 13/16"	1 13/16"	12 ga.	12 ga.	3
	15	12	Back	1 13/16"	2⅛"	12 ga.	3/8"	3
	15	12	Ahead	1 13/16"	2"	12 ga.	5/16"	3

For variables not shown in tables, see "DETAILS OF ELASTOMERIC BEARINGS", Dwg. No. 67702.

EXPANSION BEARINGS

BRIDGE NO(S).	BENT NO.	BRG LINE	A	B	C	D	L	M	N	t_i	t_e	T_a	T_b	NO. & THICKNESS OF STEEL LAMINAE	T	NO. REQUIRED
07685	4	Back	24½"	10"	11"	26"	27"	1½"	4	½"	¼"	1⅝"	1⅜"	5 @ 12ga.	3"	10
	4	Ahead	24½"	10"	11"	26"	27"	1½"	4	½"	¼"	1 11/16"	1 5/16"	5 @ 12ga.	3"	10
	8	Back	24½"	10"	11"	26"	27"	1½"	4	½"	¼"	1½"	1½"	5 @ 12ga.	3"	11
	8	Ahead	24½"	10"	11"	26"	27"	1½"	4	½"	¼"	1 9/16"	1 7/16"	5 @ 12ga.	3"	11
	12	Back	24½"	10"	11"	26"	27"	1½"	4	½"	¼"	1 7/16"	1 9/16"	5 @ 12ga.	3"	12
	12	Ahead	24½"	10"	11"	26"	27"	1½"	4	½"	¼"	1½"	1½"	5 @ 12ga.	3"	12

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15778
NATALIE MCCOMBS
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1
SHEET 2 OF 2
DETAILS OF ELASTOMERIC BEARINGS
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

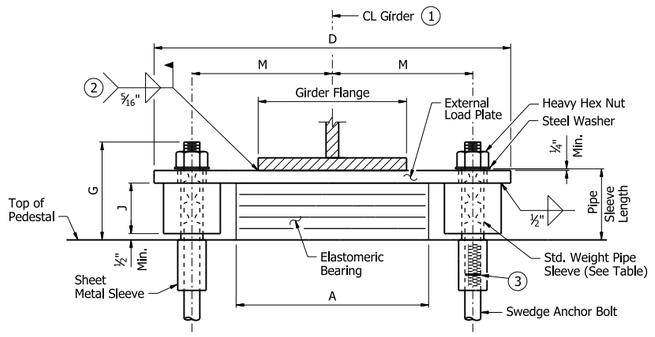
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: PAR DATE: 11/30/23
CHECKED BY: DJG DATE: 11/30/23
DESIGNED BY: JVS DATE: 11/1/23
FILENAME: b040901_eb2.dgn
SCALE: No Scale

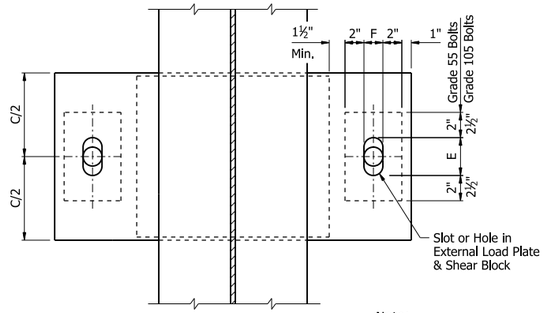
BRIDGE NO. 07684 & 07685 DRAWING NO. 67703

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	644	809
		07684 & 07685 - ELASTO. BRGS. - 67704				

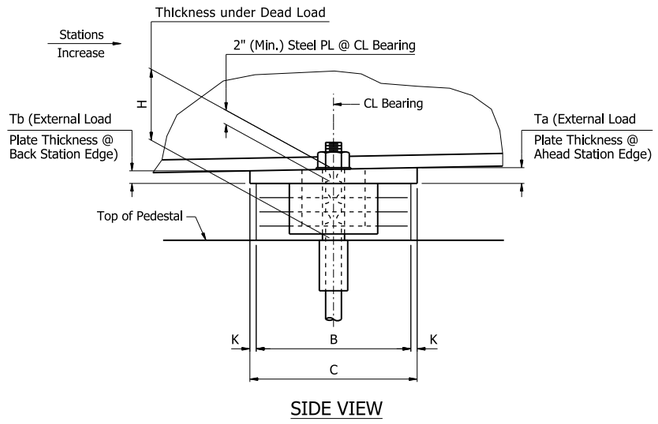


FRONT VIEW

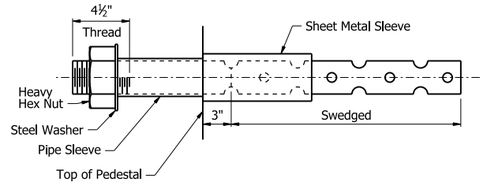


PLAN VIEW

Note:
The direction of bevel of the external load plate may not be accurately depicted with respect to "Ta" & "Tb" values shown in the "Table of Fabricator Variables".



SIDE VIEW



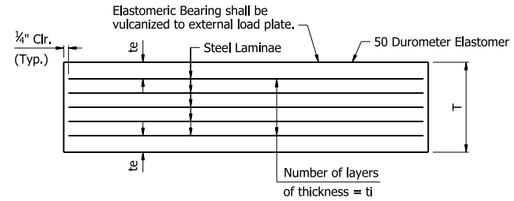
(Grade 55 Anchor Bolts)
ANCHOR BOLT DETAIL

(Grade 105 Bolts with Mechanical Coupler)
ANCHOR BOLT DETAIL

Anchor Bolts may be cast in place or drilled and grouted into place. If Anchor Bolts are to be cast in place, the Galvanized Sheet Metal Sleeves will not be required.

If Anchor Bolts are to be drilled and grouted in place, the Galvanized Sheet Metal Sleeves shall be cast in place as shown. Sleeves shall be dry packed with styrofoam, urethane foam, or approved equal prior to pouring of concrete. After pouring of the cap and prior to erection of Structural Steel, the dry pack shall be removed and holes for the anchor bolts shall be accurately drilled into the concrete. Bolts placed in drilled holes shall be accurately set and fixed using a QPL approved epoxy or non-shrink grout that completely fills the holes. Galvanized Sheet Metal Sleeves shall meet the requirements of ASTM 653, CS Type B or approved equivalent, be of minimum 16 gauge thickness, and be galvanized according to ASTM B695, Class 50. Sheet Metal Sleeves will not be paid for directly, but will be considered subsidiary to the item "Structural Steel in Plate Girder Spans (M270-Gr50W)."

Prior to erection of the girders, the Contractor shall verify the orientation of the bearings with respect to Ta and Tb.



te = Thickness of elastomer cover on top and bottom of pad
ti = Thickness of elastomer between steel laminae
N = Number of elastomer layers of thickness ti

ELASTOMERIC BEARING

GENERAL NOTES
Elastomeric Bearings Shall conform to Section 808 and shall be paid for at the unit price bid for "Elastomeric Bearings".

External load plates and shear blocks shall conform to ASTM A709, Grade 50W. Pipe sleeves shall be ASTM A500, Grade B, and shall be galvanized to conform to AASHTO M 232, Class C or ASTM B695, Class 50.

External load plates and shear blocks shall be completely fabricated (including bevel, bolt holes, and all shop welding) and shall be cleaned before vulcanizing to the elastomeric bearing. The surface in contact with the elastomeric bearing shall be cleaned in accordance with Subsection 808.03. Other surfaces shall be blast cleaned in accordance with Subsection 807.84(b) for painted steel and 807.84(e) for unpainted Grade 50W steel.

Anchor Bolts, Washers and Nuts shall conform to Subsection 807.07. The anchor bolt grade of steel shall be as specified in the "Table of Fabricator Variables". Indentations shall be circular with rounded bottoms and staggered as shown in the details.

Pipe Sleeves, Anchor Bolts, Washers and Nuts shall be paid for at the unit price bid for "Structural Steel in Steel Girder Spans (M270-Gr50W)". External load plates and shear blocks will not be measured or paid for separately, but will be considered subsidiary to the unit price bid for "Elastomeric Bearings".

Bearings shall be seated in accordance with Subsection 808.08. This work and materials are considered subsidiary to the item "Elastomeric Bearing" and will not be paid for directly.

(1) Centerline Elastomeric Pad shall be aligned with Centerline Construction, U.N.O.

(2) Unless otherwise approved by the Engineer, welding of the external load plate at bearings to the girder will be allowed only when: 1) the approximate average air temperature during the 24 hour period immediately preceding welding is between 40°F and 80°F; and 2) the slots in the external load plate are positioned to center on the anchor bolts; and 3) no horizontal deformation of the elastomeric pad is evident. If welding at other temperatures is required, the Engineer will provide adjustment data.

Bearings shall be painted as specified in Subsection 807.75. The color of paint shall be Brown equal or close Federal St. 595B, Color Chip No. 30070 and as approved by the Engineer. The finish system shall be applied in the shop. Areas to be field welded shall be masked and painted in the field per the manufacturer's recommendations.

Any damage to the paint system occuring during transport or installation shall be corrected according to the manufacturer's recommendations at no cost the Department.

Care shall be taken to ensure that the external load plate is in full and complete contact with the girder flange before welding begins.

(3) For Grade 105 Bolts, Provide mechanical coupler in accordance with AASHTO M 292, Grade 2H. Contractor to adjust size of sheet metal sleeve to accommodate coupler, Typ.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15778
NATALIE MCCOMBS
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 1 OF 2
DETAILS OF ELASTOMERIC BEARINGS
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 9/22/23
CHECKED BY: DJG DATE: 11/30/23
DESIGNED BY: JVS DATE: 11/14/23
FILENAME: b040901_eb3.dgn
SCALE: No Scale

BRIDGE NO. 07684 & 07685 DRAWING NO. 67704

PRINT DATE: 4/11/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	645	809
		07684 & 07685 - ELASTO. BRGS. - 67705				

Maximum Design Load = Service I Limit State

TABLE OF FABRICATOR VARIABLES

BRIDGE NO(S).	LOCATION		BEARING TYPE	NO. OF BEARINGS EACH BENT	MAXIMUM DESIGN LOAD (KIPS)	ELASTOMERIC PAD							EXTERNAL LOAD PLATE									ANCHOR BOLT				
	BENT NO(S).	GIRDER NO.				G	H	A	B	N	t_i	t_e	NO. & THICKNESS OF STEEL LAMINAE	T	C	D	E	F	J	K	M	T_a	T_b	ANCHOR BOLT (Ø x L)	ANCHOR BOLT GRADE	PIPE SLEEVE SIZE (Ø x L)	SHEET METAL SLEEVE SIZE (Ø x L)	WASHER SIZE (O.D.)
07684	1	All	Exp	9	187.5	10"	6¼"	20"	12"	6	½"	¼"	7 @ 12 ga.	4¼"	14"	40½"	7¼"	3¾"	1¼"	1"	15⅜"	2.04"	1.97"	2½" x 35"	55	3" x 6½"	4" x 25"	4½"
	2	All	Fix	9	472	7⅝"	3 13/16"	28"	12"	2	½"	¼"	3 @ 12 ga.	1 13/16"	14"	48½"	3¾"	3¾"	1¼"	1"	19⅜"	2.08"	1.92"	2½" x 33"	105	3" x 4⅛"	4" x 25"**	4½"
	3	All	Exp	9	472	8¼"	4 7/16"	28"	12"	3	½"	¼"	4 @ 12 ga.	2 7/16"	14"	48½"	5¼"	3¾"	1½"	1"	19⅜"	2.13"	1.87"	2½" x 34"	55	3" x 4⅜"	4" x 25"	4½"
	4	All	Exp	9	187.5	10"	6¼"	20"	12"	6	½"	¼"	7 @ 12 ga.	4¼"	14"	40½"	7¼"	3¾"	1¼"	1"	15⅜"	2.17"	1.83"	2½" x 35"	55	3" x 6½"	4" x 25"	4½"
		All	Exp	9	182.5	11¼"	7 7/16"	20"	12"	8	½"	¼"	9 @ 12 ga.	5 5/16"	14"	40½"	8¼"	3¾"	1¼"	1"	15⅝"	2.17"	1.83"	2½" x 37"	55	3" x 7¾"	4" x 25"	4½"
	5	All	Exp	9	495.7	8¾"	5"	28"	12"	4	½"	¼"	5 @ 12 ga.	3"	14"	48½"	6¼"	3¾"	1½"	1"	19⅜"	2.21"	1.79"	2½" x 34"	55	3" x 5¼"	4" x 25"	4½"
	6	All	Fix	9	399.8	8¾"	5"	20"	12"	4	½"	¼"	5 @ 12 ga.	3"	14"	40½"	3¾"	3¾"	2¼"	1"	15⅜"	2.21"	1.79"	2½" x 34"	105	3" x 5¼"	4" x 25"**	4½"
	7	All	Fix	9	495.7	8¼"	4 7/16"	28"	12"	3	½"	¼"	4 @ 12 ga.	2 7/16"	14"	48½"	3¾"	3¾"	1½"	1"	19⅜"	2.21"	1.79"	2½" x 34"	105	3" x 4¾"	4" x 25"**	4½"
	8	All	Exp	9	182.5	11¼"	7 7/16"	20"	12"	8	½"	½"	9 @ 12 ga.	5 5/16"	14"	40½"	8¼"	3¾"	1¼"	1"	15⅜"	2.21"	1.79"	2½" x 37"	55	3" x 7¾"	4" x 25"	4½"
		All	Exp	9	182.5	11¼"	7 7/16"	20"	12"	8	½"	¼"	9 @ 12 ga.	5 5/16"	14"	40½"	8¼"	3¾"	1¼"	1"	15⅜"	2.21"	1.79"	2½" x 37"	55	3" x 7¾"	4" x 25"	4½"
	9	All	Exp	9	495.7	8¾"	5"	28"	12"	4	½"	¼"	5 @ 12 ga.	3"	14"	48½"	6¼"	3¾"	1½"	1"	19⅜"	2.21"	1.79"	2½" x 34"	55	3" x 5¼"	4" x 25"	4½"
	10	All	Fix	9	399.8	8¾"	5"	20"	12"	4	½"	¼"	5 @ 12 ga.	3"	14"	40½"	3¾"	3¾"	2¼"	1"	15⅜"	2.21"	1.79"	2½" x 34"	105	3" x 5¼"	4" x 25"**	4½"
	11	All	Fix	9	495.7	8¼"	4 7/16"	28"	12"	3	½"	¼"	4 @ 12 ga.	2 7/16"	14"	48½"	3¾"	3¾"	1½"	1"	19⅜"	2.21"	1.79"	2½" x 34"	105	3" x 4¾"	4" x 25"**	4½"
	12	All	Exp	9	182.5	11¼"	7 7/16"	20"	12"	8	½"	¼"	9 @ 12 ga.	5 5/16"	14"	40½"	8¼"	3¾"	1¼"	1"	15⅜"	2.21"	1.79"	2½" x 37"	55	3" x 7¾"	4" x 25"	4½"
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	13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		All	Exp	9	182.5	11¼"	7 7/16"	20"	12"	8	½"	¼"	9 @ 12 ga.	5 5/16"	14"	40½"	8¼"	3¾"	1¼"	1"	15⅜"	1.89"	2.11"	2½" x 37"	55	3" x 7¾"	4" x 25"	4½"
	17	All	Fix	9	495.7	8¼"	4 7/16"	28"	12"	3	½"	¼"	4 @ 12 ga.	2 7/16"	14"	48½"	3¾"	3¾"	1½"	1"	19⅜"	1.89"	2.11"	2½" x 34"	105	3" x 4¾"	4" x 25"**	4½"
	18	All	Fix	9	399.8	8¾"	5"	20"	12"	4	½"	¼"	5 @ 12 ga.	3"	14"	40½"	3¾"	3¾"	2¼"	1"	15⅜"	1.89"	2.11"	2½" x 34"	105	3" x 5¼"	4" x 25"**	4½"
	19	All	Exp	9	495.7	8¾"	5"	28"	12"	4	½"	¼"	5 @ 12 ga.	3"	14"	48½"	6¼"	3¾"	1½"	1"	19⅜"	1.89"	2.11"	2½" x 34"	55	3" x 5¼"	4" x 25"	4½"
	20	All	Exp	9	182.5	11¼"	7 7/16"	20"	12"	8	½"	¼"	9 @ 12 ga.	5 5/16"	14"	40½"	8¼"	3¾"	1¼"	1"	15⅜"	1.89"	2.11"	2½" x 37"	55	3" x 7¾"	4" x 25"	4½"
		All	Exp	9	182.5	11¼"	7 7/16"	20"	12"	8	½"	¼"	9 @ 12 ga.	5 5/16"	14"	40½"	8¼"	3¾"	1¼"	1"	15⅜"	1.89"	2.11"	2½" x 37"	55	3" x 7¾"	4" x 25"	4½"
	21	All	Fix	9	495.7	8¼"	4 7/16"	28"	12"	3	½"	¼"	4 @ 12 ga.	2 7/16"	14"	48½"	3¾"	3¾"	1½"	1"	19⅜"	1.89"	2.11"	2½" x 34"	105	3" x 4¾"	4" x 25"**	4½"
	22	All	Fix	9	399.8	8¾"	5"	20"	12"	4	½"	¼"	5 @ 12 ga.	3"	14"	40½"	3¾"	3¾"	2¼"	1"	15⅜"	1.89"	2.11"	2½" x 34"	105	3" x 5¼"	4" x 25"**	4½"
	23	All	Exp	9	495.7	8¾"	5"	28"	12"	4	½"	¼"	5 @ 12 ga.	3"	14"	48½"	6¼"	3¾"	1½"	1"	19⅜"	1.89"	2.11"	2½" x 34"	55	3" x 5¼"	4" x 25"	4½"
	24	All	Exp	9	182.5	11¼"	7 7/16"	20"	12"	8	½"	½"	9 @ 12 ga.	5 5/16"	14"	40½"	8¼"	3¾"	1¼"	1"	15⅜"	1.89"	2.11"	2½" x 37"	55	3" x 7¾"	4" x 25"	4½"
		All	Exp	9	187.5	10"	6¼"	20"	12"	6	½"	¼"	7 @ 12 ga.	4¼"	14"	40½"	7¼"	3¾"	1¼"	1"	15⅜"	1.89"	2.11"	2½" x 35"	55	3" x 6½"	4" x 25"	4½"
	25	All	Fix	9	472	7⅝"	3 13/16"	28"	12"	2	½"	¼"	3 @ 12 ga.	1 13/16"	14"	48½"	3¾"	3¾"	1¼"	1"	19⅜"	1.89"	2.11"	2½" x 33"	55	3" x 4⅛"	4" x 25"	4½"
	26	All	Fix	9	472	7⅝"	3 13/16"	28"	12"	2	½"	¼"	3 @ 12 ga.	1 13/16"	14"	48½"	3¾"	3¾"	1¼"	1"	19⅜"	1.89"	2.11"	2½" x 33"	55	3" x 4⅛"	4" x 25"	4½"
	27	All	Exp	9	187.5	10"	6¼"	20"	12"	6	½"	¼"	7 @ 12 ga.	4¼"	14"	40½"	7¼"	3¾"	1¼"	1"	15⅜"	1.89"	2.11"	2½" x 35"	55	3" x 6½"	4" x 25"	4½"
		All	Exp	9	187.5	10"	6¼"	20"	12"	6	½"	¼"	7 @ 12 ga.	4¼"	14"	40½"	7¼"	3¾"	1¼"	1"	15⅜"	1.89"	2.11"	2½" x 35"	55	3" x 6½"	4" x 25"	4½"
	28	All	Fix	9	472	7⅝"	3 13/16"	28"	12"	2	½"	¼"	3 @ 12 ga.	1 13/16"	14"	48½"	3¾"	3¾"	1¼"	1"	19⅜"	1.89"	2.11"	2½" x 33"	55	3" x 4⅛"	4" x 25"	4½"
	29	All	Fix	9	472	7⅝"	3 13/16"	28"	12"	2	½"	¼"	3 @ 12 ga.	1 13/16"	14"	48½"	3¾"	3¾"	1¼"	1"	19⅜"	1.89"	2.11"	2½" x 33"	55	3" x 4⅛"	4" x 25"	4½"
	30	All	Exp	9	187.5	10"	6¼"	20"	12"	6	½"	¼"	7 @ 12 ga.	4¼"	14"	40½"	7¼"	3¾"	1¼"	1"	15⅜"	1.89"	2.11"	2½" x 35"	55	3" x 6½"	4" x 25"	4½"
		All	Exp	9	187.5	10"	6¼"	20"	12"	6	½"	¼"	7 @ 12 ga.	4¼"	14"	40½"	7¼"	3¾"	1¼"	1"	15⅜"	1.89"	2.11"	2½" x 35"	55	3" x 6½"	4" x 25"	4½"
	31	All	Fix	9	472	7⅝"	3 13/16"	28"	12"	2	½"	¼"	3 @ 12 ga.	1 13/16"	14"	48½"	3¾"	3¾"	1¼"	1"	19⅜"	1.89"	2.11"	2½" x 33"	55	3" x 4⅛"	4" x 25"	4½"
	32	All	Fix	9	472	7⅝"	3 13/16"	28"	12"	2	½"	¼"	3 @ 12 ga.	1 13/16"	14"	48½"	3¾"	3¾"	1¼"	1"	19⅜"	1.89"	2.11"	2½" x 33"	55	3" x 4⅛"	4" x 25"	4½"
	33	All	Exp	9	187.5	10"	6¼"	20"	12"	6	½"	¼"	7 @ 12 ga.	4¼"	14"	40½"	7¼"	3¾"	1¼"	1"	15⅜"	1.89"	2.11"	2½" x 35"	55	3" x 6½"	4" x 25"	4½"

For Unit 4 Bearings (Bent Nos. 12-16), see "DETAILS OF HLMR BEARINGS".

** If anchor bolts are drilled and grouted in place, the Contractor shall adjust the size of the sheet metal sleeves for Grade 105 bolts to accommodate the mechanical coupler.

Maximum Design Load = Service I Limit State

TABLE OF FABRICATOR VARIABLES

BRIDGE NO(S).	LOCATION		BEARING TYPE	NO. OF BEARINGS EACH BENT	MAXIMUM DESIGN LOAD (KIPS)	ELASTOMERIC PAD							EXTERNAL LOAD PLATE									ANCHOR BOLT				
	BENT NO(S).	GIRDER NO.				G	H	A	B	N	t_i	t_e	NO. & THICKNESS OF STEEL LAMINAE	T	C	D	E	F	J	K	M	T_a	T_b	ANCHOR BOLT (Ø x L)	ANCHOR BOLT GRADE	PIPE SLEEVE SIZE (Ø x L)	SHEET METAL SLEEVE SIZE (Ø x L)	WASHER SIZE (O.D.)
07685	1	All	Exp	9	182.5	11¼"	7 7/16"	20	12	8	½"	¼"	9 @ 12 ga.	5 5/16"	14	40½"	8¼"	3¾"	1¼"	1	15⅜"	2.18"	1.82"	2½" x 37"	55	3" x 7¾"	4" x 25"	4½"
	2	All	Fix	9	495.7	8¼"	4 7/16"	28	12	3	½"	¼"	4 @ 12 ga.	2 7/16"	14	48½"	3¾"	3¾"	1½"	1	19⅜"	2.21"	1.79"	2½" x 34"	105	3" x 4¾"	4" x 25"**	4½"
	3	All	Fix	9	399.8	8¾"	5"	20	12	4	½"	¼"	5 @ 12 ga.	3"	14	40½"	3¾"	3¾"	2¼"	1	15⅜"	2.21"	1.79"	2½" x 34"	105	3" x 5¼"	4" x 25"**	4½"
	4	All	Exp	9	495.7	8¾"	5"	28	12	4	½"	¼"	5 @ 12 ga.	3"	14	48½"	6¼"	3¾"	1½"	1	19⅜"	2.21"	1.79"	2½" x 34"	55	3" x 5¼"	4" x 25"	4½"
	5	All	Exp	9	182.5	11¼"	7 7/16"	20	12	8	½"	¼"	9 @ 12 ga.	5 5/16"	14	40½"	8¼"	3¾"	1¼"	1	15⅜"	2.17"	1.83"	2½" x 37"	55	3" x 7¾"	4" x 25"	4½"
		All	Exp	9	161.9	10"	6¼"	16	12	6	½"	¼"	7 @ 12 ga.	4¼"	14	38½"	7"	3¾"	1¼"	1	14⅜"	2.17"	1.83"	2½" x 35"	55	3" x 6½"	4" x 25"	4½"
	6	All	Fix	11	416.8	8¼"	4 7/16"	22	12	3	½"	¼"	4 @ 12 ga.	2 7/16"	14	42½"	3¾"	3¾"	1¾"	1	16⅜"	2.14"	1.86"	2½" x 34"	55	3" x 4¾"	4" x 25"	4½"
	7	All	Fix	11	416.8	8¼"	4 7/16"	22	12	3	½"	¼"	4 @ 12 ga.	2 7/16"	14	42½"	3¾"	3¾"	1¾"	1	16⅜"	2.11"	1.89"	2½" x 34"	55	3" x 4¾"	4" x 25"	4½"
	8	All	Exp	11	366	8¾"	5"	20	12	4	½"	¼"	5 @ 12 ga.	3"	14	40½"	5¾"	3¾"	1¼"	1	15⅜"	2.08"	1.92"	2½" x 34"	55	3" x 5¼"	4" x 25"	4½"
	9	All	Exp	11	161.9	10"	6¼"	16	12	6	½"	¼"	7 @ 12 ga.	4¼"	14	38½"	7"	3¾"	1¼"	1	14⅜"	2.05"	1.95"	2½" x 35"	55	3" x 6½"	4" x 25"	4½"
		All	Exp	11	177.4	11¼"	7 7/16"	20	12	8	½"	¼"	9 @ 12 ga.	5 5/16"	14	40½"	8¼"	3¾"	1¼"	1	15⅜"	2.05"	1.95"	2½" x 37"	55	3" x 7¾"	4" x 25"	4½"
	10	All	Fix	11	471	8¾"	5"	22	12	4	½"	¼"	5 @ 12 ga.	3"	14	42½"	3¾"	3¾"	2½"	1	16⅜"	2.02"	1.98"	2½" x 34"	55	3" x 5¼"	4" x 25"	4½"
	11	All	Fix	11	471	8¾"	5"	22	12	4	½"	¼"	5 @ 12 ga.	3"	14	42½"	3¾"	3¾"	2½"	1	16⅜"	1.98"	2.02"	2½" x 34"	55	3" x 5¼"	4" x 25"	4½"
	12	All	Exp	11	471	8¾"	5"	25	12	4	½"	¼"	5 @ 12 ga.	3"	14	45½"	6"	3¾"	1½"	1	17⅞"	1.94"	2.06"	2½" x 34"	55	3" x 5¼"	4" x 25"	4½"
	13	All	Exp	11	177.4	11¼"	7 7/16"	20	12	8	½"	½"	9 @ 12 ga.	5 5/16"	14	40½"	8¼"	3¾"	1¼"	1	15⅜"	1.91"	2.09"	2½" x 37"	55	3" x 7¾"	4" x 25"	4½"
		All	Exp	11	164.7	9⅜"	5⅝"	20	12	5	½"	¼"	6 @ 12 ga.	3⅝"	14	40½"	6¾"	3¾"	1¼"	1	15⅜"	1.91"	2.09"	2½" x 35"	55	3" x 5⅞"	4" x 25"	4½"
	14	All	Fix	11	431.6	7⅝"	3 13/16"	24	12	2	½"	¼"	3 @ 12 ga.	1 13/16"	14	44½"	3¾"	3¾"	1¼"	1	17⅜"	1.87"	2.13"	2½" x 33"	55	3" x 4⅛"	4" x 25"	4½"
	15	All	Fix	11	431.6	7⅝"	3 13/16"	24	12	2	½"	¼"	3 @ 12 ga.	1 13/16"	14	44½"	3¾"	3¾"	1¼"	1	17⅜"	1.84"	2.16"	2½" x 33"	55	3" x 4⅛"	4" x 25"	4½"
	16	All	Exp	11	164.7	9⅜"	5⅝"	20	12	5	½"	¼"	6 @ 12 ga.	3⅝"	14	40½"	6¾"	3¾"	1¼"	1	15⅜"	1.81"	2.19"	2½" x 35"	55	3" x 5⅞"	4" x 25"	4½"

PRINT DATE: 4/11/2024

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15778
NATALIE MCCOMBS
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 2
SHEET 2 OF 2
DETAILS OF ELASTOMERIC BEARINGS
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CTK DATE: 11/21/23
CHECKED BY: DJG DATE: 11/30/23
DESIGNED BY: JVS DATE: 11/14/23
FILENAME: b040901_eb4.dgn
SCALE: No Scale

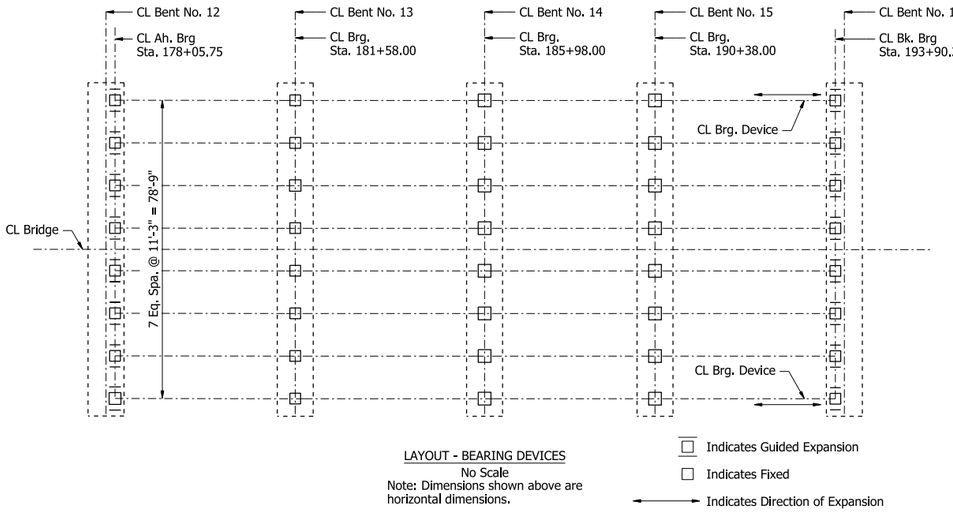
BRIDGE NO. 07684 & 07685 DRAWING NO. 67705

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	646	809
		07684 - HLMR BEARINGS - 67706				

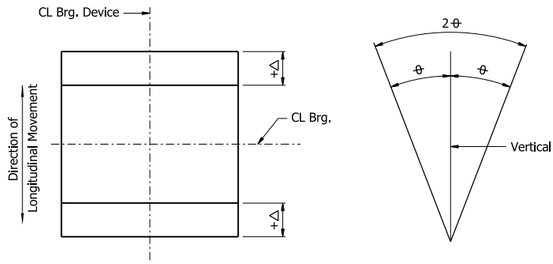
BEARING DATA TABLE

Locations		Bent Nos. 12 & 16			Bent Nos. 13, 14, & 15		
Fix/Exp.		Expansion Guided Longitudinally			Fixed		
Quantity Required		16			24		
Bearing Assembly Depth** (in)		9"			11"		
Masonry PL Dimensions** (in)	C	1 Spa. @ 12.5			3 Spa. @ 8.625		
	D	12.5"			25.875		
	E	18			31.5		
	F	11.25			15.25		
	G	28			36		
	T	1.5			1.5		
Anchor Diameter (in)		1.25			1.5		
Anchor Embedment (in)		15 ***			15 ***		
Design Load (kip)	Service Limit State	Vertical	max.	550	Service Limit State	Vertical	max.	1740
			perm.	380			perm.	1370
			min.	280			min.	1090
		Transverse		10		Transverse		25
		Longitudinal		Friction		Longitudinal		60
	Strength Limit State	Vertical		770	Strength Limit State	Vertical		2390
		Transverse		25		Transverse		65
		Longitudinal		Friction		Longitudinal		50
	Extreme Event Limit State	Transverse		115	Extreme Event Limit State	Transverse		390
		Longitudinal		Friction		Longitudinal		500
Translation (inch)	Service Limit State	Transverse		±0.250	Service Limit State	Transverse		±0.250
		Longitudinal (Δ)		±5.5		Longitudinal		---
	Strength Limit State	Transverse		±0.250	Strength Limit State	Transverse		±0.250
		Longitudinal (Δ)		±6.5		Longitudinal		---
Rotation (rad.)	Service Limit State	Transverse		---	Service Limit State	Transverse		---
		Longitudinal		±0.022		Longitudinal		±0.008
	Strength Limit State	Transverse		---	Strength Limit State	Transverse		---
		Longitudinal		±0.036		Longitudinal		±0.017

* Tabulated Values do not include AASHTO allowances for fabrication tolerances and uncertainties.
** Assumed for plan details. Contractor shall adjust bearing seat elevation reinforcing spacing, and concrete pedestal height for the supplied bearing assembly.
*** Embedment past top of bent cap

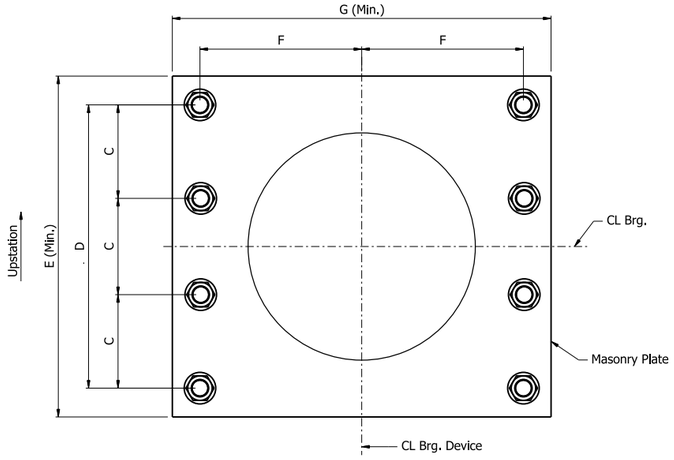


LAYOUT - BEARING DEVICES
No Scale
Note: Dimensions shown above are horizontal dimensions.

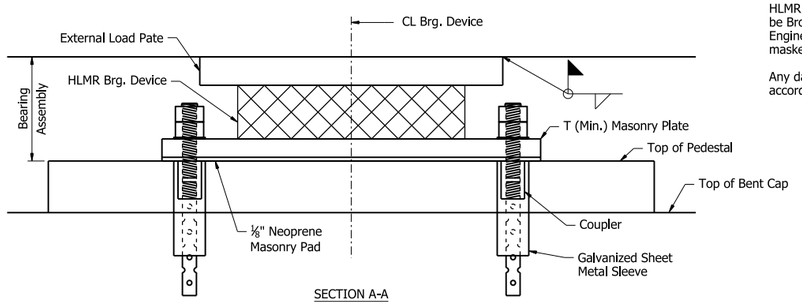


MOVEMENT DETAIL
Δ=Movement shown in BEARING DATA TABLE
2Δ=Total movement

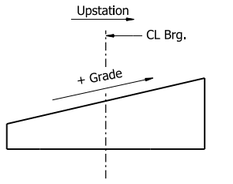
ROTATION DETAIL
θ=Rotation shown in BEARING DATA TABLE
2θ=Total rotational movement



PLAN
½" = 1'-0"



SECTION A-A
½"=1'-0"
(Stopper bars not shown)



BEVELED EXTERNAL LOAD PLATE DETAIL
No Scale

Location	Grade
Bent No. 12	2.98%
Bent No. 13	1.64%
Bent No. 14	-0.04%
Bent No. 15	-1.57%
Bent No. 16	-1.57%

Notes:
Longitudinal translation is measured parallel to CL Girder. Transverse translation is measured perpendicular to CL Girder.

Bearings shall be in the neutral position at 60°F after all dead load (including structural steel, slab, and barriers) has been placed. Neutral position is defined as centerline masonry plate in-line with the centerline of the external load plate. The neutral position shall be adjusted for temperatures other than 60°F.

Design horizontal load is the maximum of 25% of vertical load or value shown in "BEARING DATA TABLE".

For HLMR bearing requirements, see Special Provisions "HLMR Bearing Assembly".

The HLMR bearing, external load plate, masonry plate, anchor bolts, nuts, washers, couplers, and neoprene masonry pad shall be included in the item "HLMR Bearing Assembly".

The bearings shall be manufactured HLMR bearings with the vertical, lateral, translational, and rotational capacity as shown in the "BEARING DATA TABLE".

The Contractor shall submit calculations sealed by a Professional Engineer in the state of Arkansas for the review for conformance with Design Load and Material Criteria in the contract plans. All design shall be in accordance with AASHTO LRFD Bridge Design Specifications, Ninth Edition (2020).

Steel for HLMR bearings shall be AASHTO M270 Grade 50. External load plates over 4" thick shall conform to ASTM A572 Grade 50 steel.

The bearing device, external load plate and masonry plate shall be assembled in the shop. This assembly shall be field welded to the bottom flange.

Anchor bolts, washers and nuts shall conform to Subsection 807.07 of the Standard Specifications. The anchor bolts shall conform to AASHTO M314, Grade 105. Provide anchor bolt coupler in accordance with AASHTO M 292, Grade 2H. Contractor to adjust the size of the sheet metal sleeve. Swedged anchor bolt indentations shall be circular with rounded bottoms and staggered as shown in the section. Anchor bolts and couplers shall be galvanized. See Grade 105 Coupler detail on sheet 67704.

Location, size, length and quantity of anchor bolts may be adjusted to better fit Bearing Manufacturer's details. All anchor bolt calculations shall be included with the proposed HLMR bearing device submittal.

Bearings shall not be disassembled without written approval of the Engineer.

Heights and dimensions of bearing device shown are based on typical manufacturer requirements. If actual height varies, adjustments shall be made to the thickness of the Pedestal as needed by the Contractor at no additional cost to the Department.

The Contractor in coordination with the Bearing Manufacturer shall be responsible for sizing the external load plates, weld, masonry plates and anchor bolts for the bearings. If actual masonry plate dimensions vary, adjustments shall be made to the provisions for future jacking by the Contractor at no additional cost to the Department. All design shall be in accordance with AASHTO LRFD Bridge Design Specifications, Ninth Edition (2020).

The direction of the bevel of the external load plate may not be accurately depicted in the "BEVELED EXTERNAL LOAD PLATE DETAILS".

Unless otherwise approved by the Engineer, welding of the external load plate at expansion bearings to the girder will be allowed only: 1) the approximate average air temperature during the 24 hour period immediately preceeding welding is between 40 Deg. F and 80 Deg. F; and 2) the external load plate is positioned as detailed to the CL bearing. If welding at the other temperatures is required, the Engineer will provide adjustment data.

HLMR bearings shall be painted as specified in the Subsection 807.75. The color of paint shall be Brown equal or close to the Federal Std. 595B, Color Chip No. 30070 and as approved by the Engineer. The finish system shall be applied in the shop. Areas to be field welded shall be masked and painted in the field per the manufacturer's recommendations.

Any damage to the paint system occurring during transport or installation shall be corrected according to the manufacturer's recommendation at no cost to the Department.

Anchor Bolt Notes:
It is the responsibility of the Contractor to coordinate the location of the anchor bolts with the Bearing Manufacturer to avoid bent cap reinforcing steel.

Anchor bolts may be cast in place or drilled and grouted into place. If anchor bolts are to be cast in place, the galvanized sheet metal sleeves will not be required.

If anchor bolts are to be drilled and grouted in place, the galvanized sheet metal sleeves shall be cast in place as shown. Sleeves shall be dry packed with styrofoam, urethane foam or approved equal prior to pouring of concrete. After pouring of the cap and prior to erection of structural steel, the dry pack shall be removed and holes for the anchor bolts shall be accurately drilled into the masonry. Bolts placed in drilled holes shall be accurately set and fixed using a QPL approved epoxy or non-shrink grout that completely fills the holes. Galvanized sheet metal sleeves will not be paid for directly, but will be considered subsidiary to the item "HLMR Bearing Assembly".

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15778
NATALIE MCCOMBS
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1 & ALTERNATE NO. 2
SHEET 1 OF 1
DETAILS OF HLMR BEARING
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

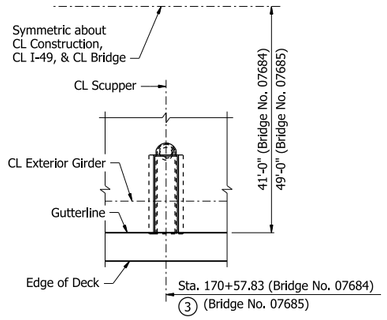
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: AQM DATE: 9/11/23
CHECKED BY: DJG DATE: 10/31/23
DESIGNED BY: JVS DATE: 11/7/23
FILENAME: b040901_hb1.dgn
SCALE: AS NOTED

BRIDGE NO. 07684 DRAWING NO. 67706

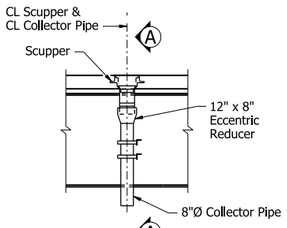
PRINT DATE: 4/9/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	647	809
		07684 & 07685 - DECK DRAINAGE - 67707				

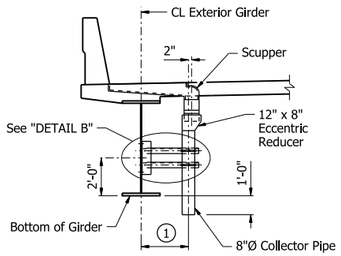


PLAN
¼" = 1'-0"

3 Sta. 252+38.67 for Alternate No. 1 (Prestressed Concrete Girder Spans)
Sta. 252+47.17 for Alternate No. 2 (Steel Plate Girder Plans)

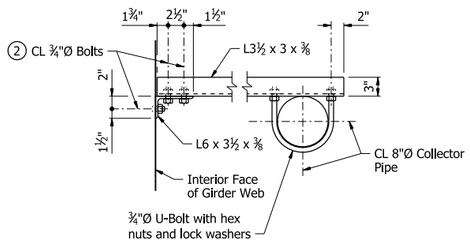


ELEVATION
(Exterior Girder not shown for clarity)
¼" = 1'-0"

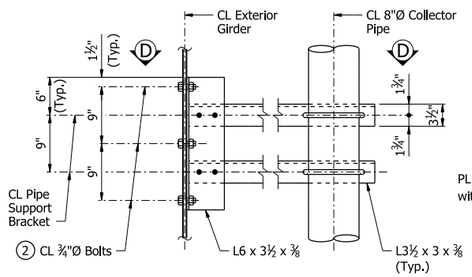


SECTION A-A
¼" = 1'-0"

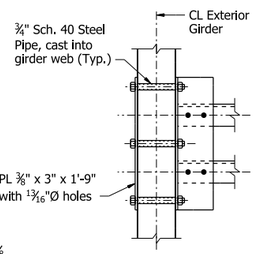
DETAILS OF SCUPPERS WITHOUT PIPE RUNS AT BRIDGE NOS. 07684 & 07685



SECTION D-D
1" = 1'-0"

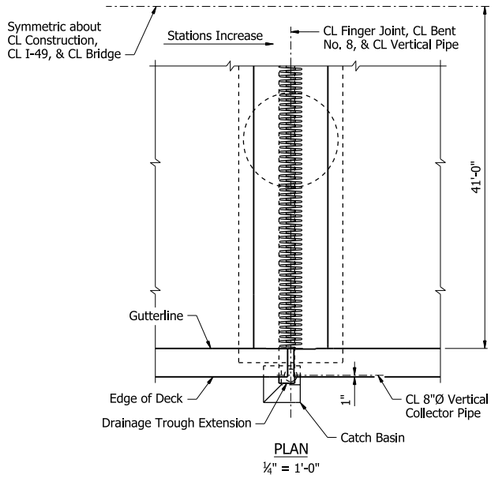


STEEL PLATE GIRDER CONNECTION DETAIL
1" = 1'-0"

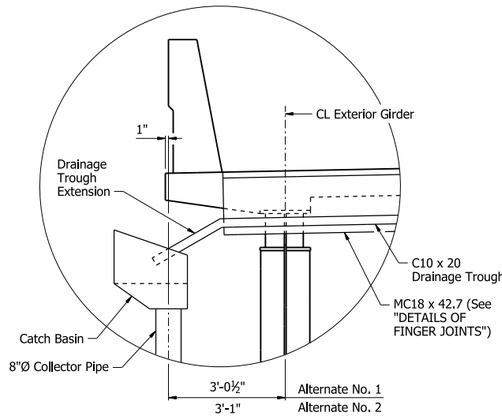


CONCRETE GIRDER CONNECTION DETAIL
(Same as Steel Plate Girder Connection, UNO)
1" = 1'-0"

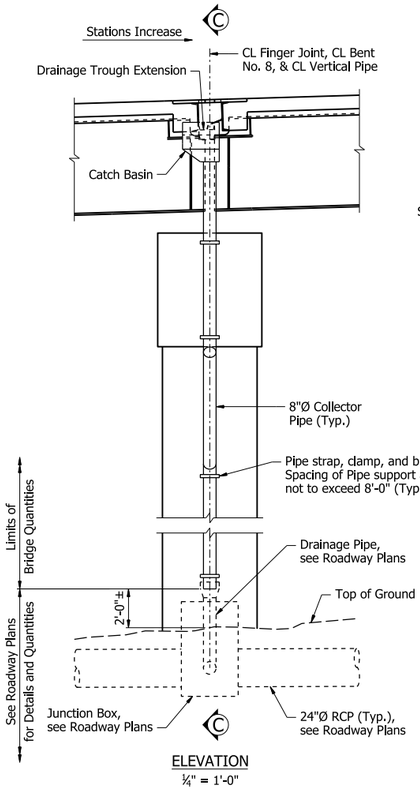
DETAIL B



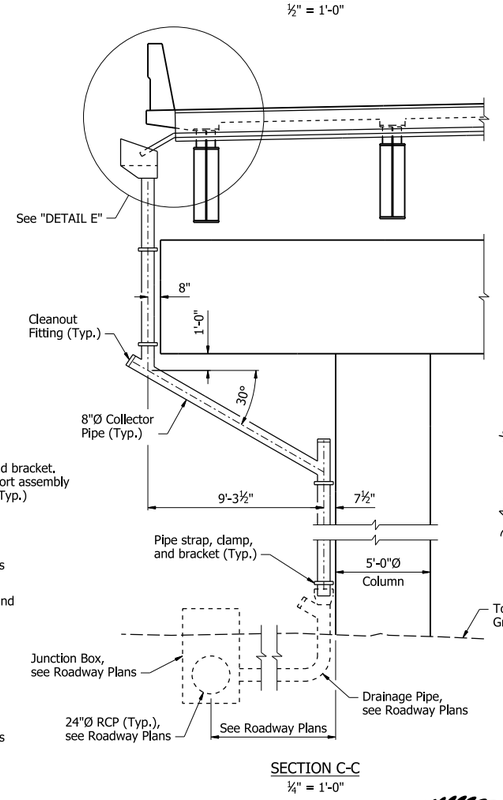
PLAN
¼" = 1'-0"



DETAIL E
½" = 1'-0"



ELEVATION
¼" = 1'-0"



SECTION C-C
¼" = 1'-0"

DETAILS AT BRIDGE NO. 07684 (BENT NO. 8)

Notes:
All Deck Drainage details are shown for Alternate No. 2. Alternate No. 1 is similar.

Material for catch basin, clevis hanger, 3" square PL washers, lateral support assemblies, & pipe support assemblies on substructure shall be ASTM A709, Grade 50 Steel. Standard Weight Pipe and fittings shall be in conformance with ASTM A53 or ASTM A501 Grade A. Pipe and fittings conforming to ASTM A500 Grade B and galvanized in accordance with ASTM A123 may also be provided. Threaded rod shall be ASTM A307, Grade A with complimentary nuts and washers. All drainage components shall be paid for as "Structural Steel in Plate Girder Spans (M270-Gr50W)".

Steel used for catch basin shall be ¼" thick.

All drainage components shall be hot-dip galvanized in accordance with Subsection 807.19. Any galvanized coating that is damaged during transportation or construction, including field drilling, shall be repaired according to Subsection 807.88.

All bolts connecting galvanized steel components shall be Type 1, hot-dip glavanized bolts with complimentary washers and heavy hex nut, UNO in accordance with Subsection 807.06.

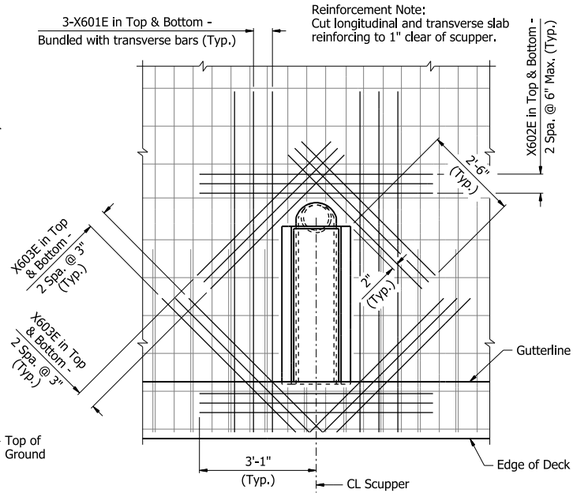
For pipe hanger, pipe clamp, pipe bracket, and pipe strap details, see Dwg. No. 67711.

For details of finger joint and drainage trough of Alternate No. 1, see Dwg. Nos. 67694 and 67695. For details of finger joint and drainage trough of Alternate No. 2, see Dwg. Nos. 67696 and 67697.

For "CATCH BASIN DETAILS", see Dwg. No. 67710.

1 2'-6½" for Alternate No. 1 (Prestressed Concrete Girder Spans)
2'-6" for Alternate No. 2 (Steel Plate Girder Spans)

2 All holes for lateral supports shall be preformed during fabrication for prestressed concrete beam spans and predrilled during fabrication of steel plate girder spans.



PLAN OF REINFORCING AT DECK DRAINS
½" = 1'-0"

STATE OF
PROFESSIONAL ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1 & ALTERNATE NO. 2
SHEET 1 OF 5
DETAILS OF DECK DRAINAGE
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

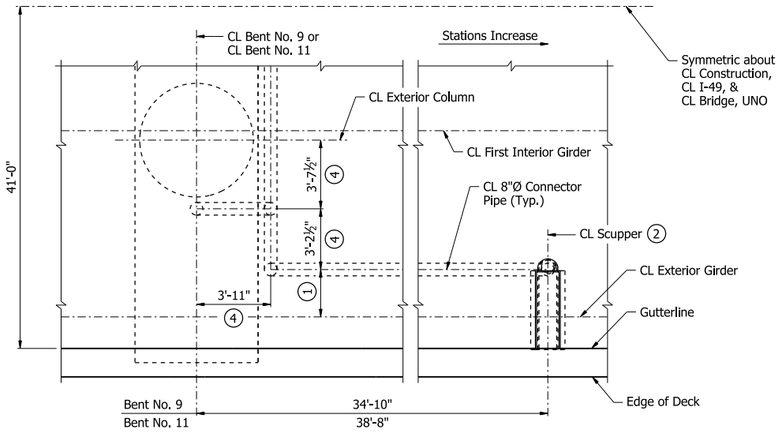
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: AMW DATE: 11/14/23
CHECKED BY: BTJ DATE: 11/28/23
DESIGNED BY: AMW DATE: 11/14/23
FILENAME: b040901_dd1.dgn
SCALE: AS NOTED

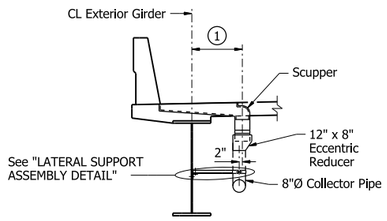
BRIDGE NO. 07684 & 07685 DRAWING NO. 67707

PRINT DATE: 4/9/2024

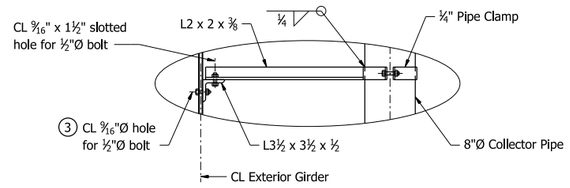
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	648	809
		07684 & 07685 - DECK DRAINAGE - 67708				



PLAN
¼" = 1'-0"



SECTION F-F
¼" = 1'-0"



LATERAL SUPPORT ASSEMBLY DETAIL
2" = 1'-0"

Notes:
For additional notes, see Dwg. No. 67707.

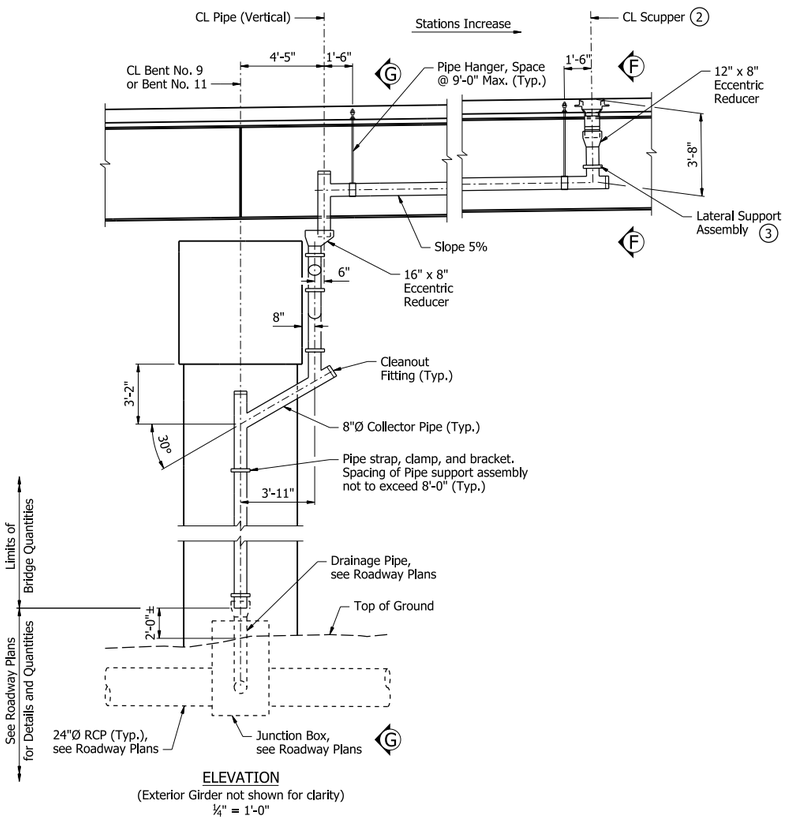
(1) 2'-8½" for Alternate No. 1 (Prestressed Concrete Girder Spans)
2'-8" for Alternate No. 2 (Steel Plate Girder Spans)

(2) Sta. 174+47.83 adjacent to Bent No. 9
Sta. 177+11.67 adjacent to Bent No. 11

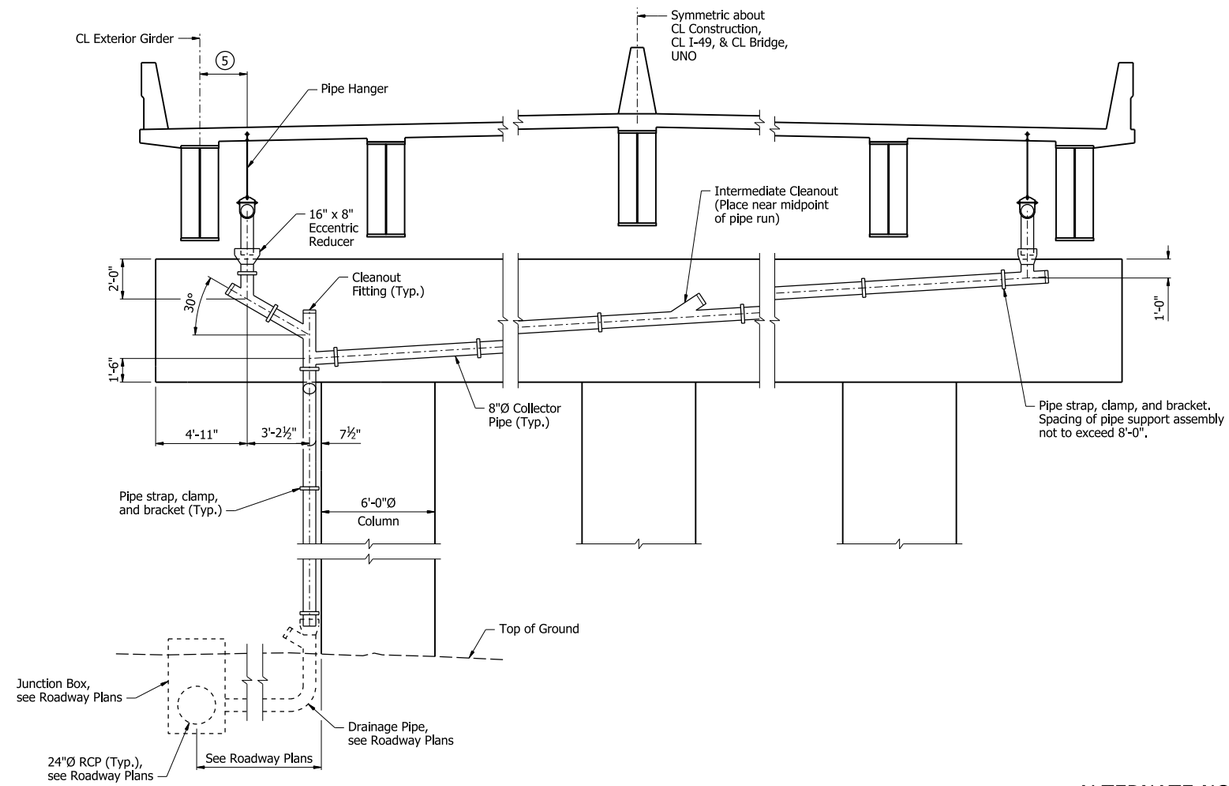
(3) All holes for lateral supports shall be preformed during fabrication for prestressed concrete beam spans or predrilled during fabrication of steel plate girder spans.

(4) East side only.

(5) 2'-6½" for Alternate No. 1 (Prestressed Concrete Girder Spans)
2'-6" for Alternate No. 2 (Steel Plate Girder Spans)



ELEVATION
(Exterior Girder not shown for clarity)
¼" = 1'-0"



SECTION G-G
¼" = 1'-0"

DETAILS AT BRIDGE NO. 07684 (BENT NOS. 9 & 11)

STATE OF
ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1 & ALTERNATE NO. 2
SHEET 2 OF 5
DETAILS OF DECK DRAINAGE
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

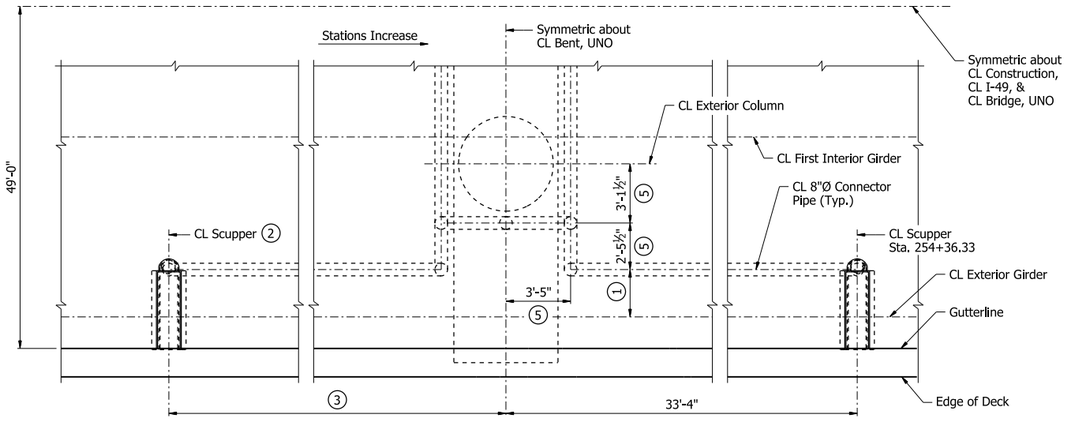
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: AMW DATE: 11/14/23
CHECKED BY: BTJ DATE: 11/28/23
DESIGNED BY: AMW DATE: 11/14/23
FILENAME: b040901_dd2.dgn
SCALE: AS NOTED

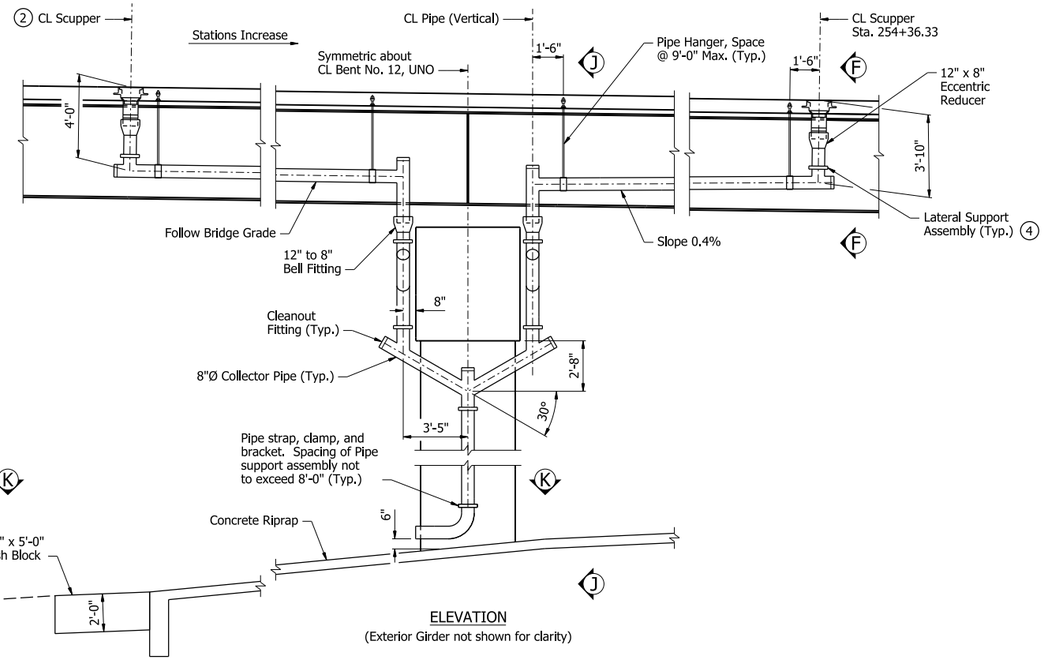
BRIDGE NO. 07684 & 07685 DRAWING NO. 67708

PRINT DATE: 4/9/2024

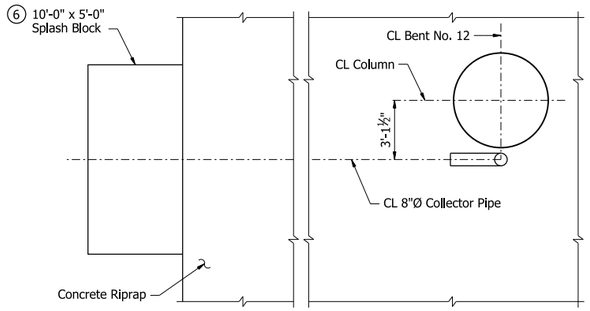
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	649	809
		07684 & 07685 - DECK DRAINAGE - 67709				



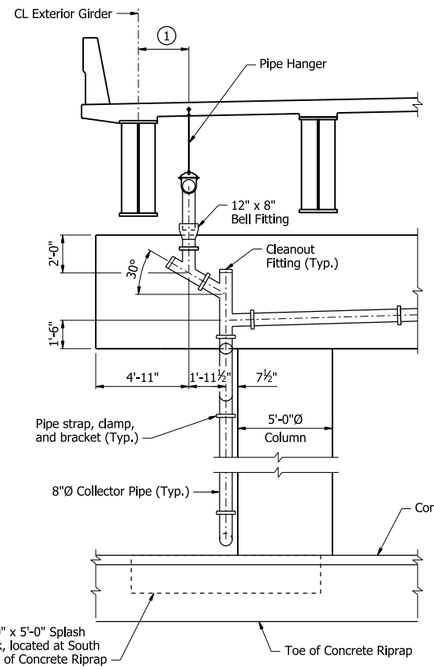
PLAN



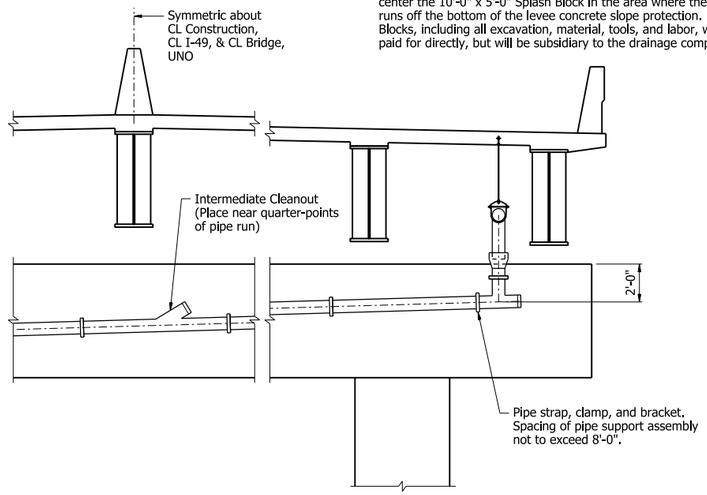
ELEVATION
(Exterior Girder not shown for clarity)



SECTION K-K



SECTION J-J



Notes:
For "SECTION F-F", see Dwg. No. 67708.

For additional notes, see Dwg. No. 67707.

(1) 2'-6½" for Alternate No. 1 (Prestressed Concrete Girder Spans)
2'-6" for Alternate No. 2 (Steel Plate Girder Spans)

(2) Sta. 253+79.00 Alternate No. 1
Sta. 253+77.17 Alternate No. 2

(3) 24'-0" for Alternate No. 1
25'-10" for Alternate No. 2

(4) All holes for lateral supports shall be preformed during fabrication for the prestressed concrete beam spans or predrilled during fabrication of the steel plate girder spans.

(5) East side only.

(6) 10'-0" x 5'-0" Splash Blocks shall be 2'-0" thick and material shall be in accordance with Special Provision "ABUTMENT STONE". The Contractor shall locate splash block by test. The test will be to dump a bucket of water at the Bent 12 bridge drainage outlet location and center the 10'-0" x 5'-0" Splash Block in the area where the water runs off the bottom of the levee concrete slope protection. Splash Blocks, including all excavation, material, tools, and labor, will not be paid for directly, but will be subsidiary to the drainage components.

DETAILS AT BRIDGE NO. 07685 (BENT NO. 12)

STATE OF
ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1 & ALTERNATE NO. 2
SHEET 3 OF 5
DETAILS OF DECK DRAINAGE
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

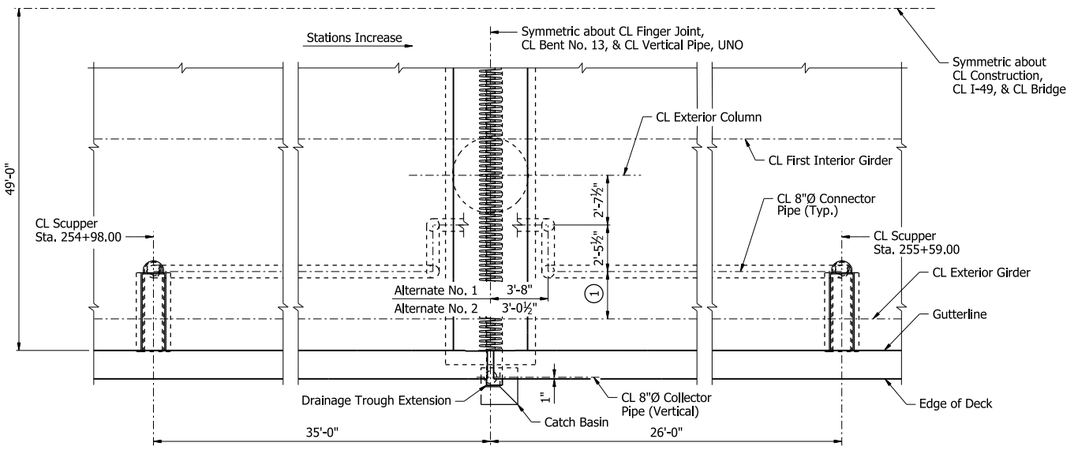
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: AMW DATE: 11/14/23
CHECKED BY: BTJ DATE: 11/28/23
DESIGNED BY: AMW DATE: 11/14/23
FILENAME: b040901_dd3.dgn
SCALE: ¼" = 1'-0"

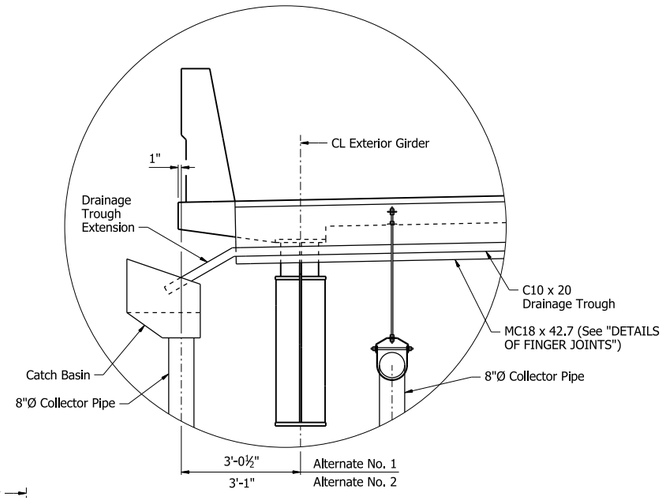
BRIDGE NO. 07684 & 07685 DRAWING NO. 67709

PRINT DATE: 4/9/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	650	809
		07684 & 07685 - DECK DRAINAGE - 67710				



PLAN
¼" = 1'-0"



DETAIL N
½" = 1'-0"

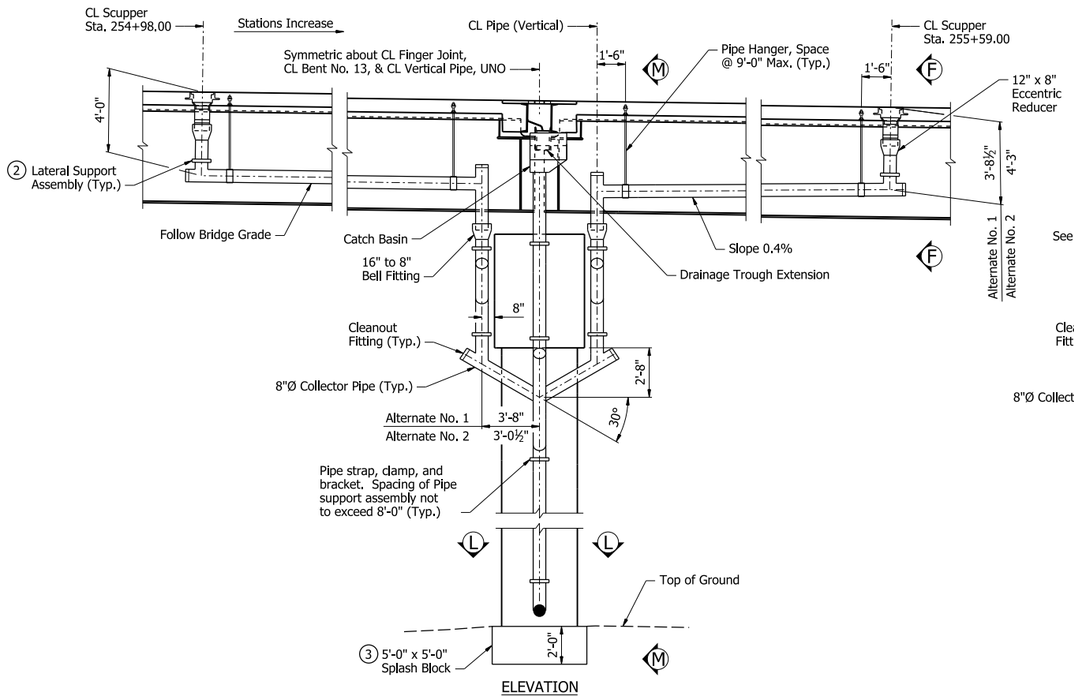
Notes:
For "SECTION F-F", see Dwg. No. 67708.

For additional notes, see Dwg. No. 67707.

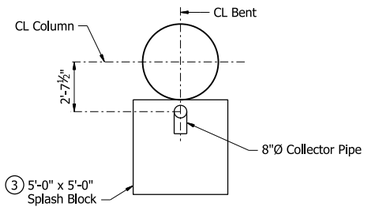
(1) 2'-6½" for Alternate No. 1 (Prestressed Concrete Girder Spans)
2'-6" for Alternate No. 2 (Steel Plate Girder Spans)

(2) All holes for lateral supports shall be preformed during fabrication for prestressed concrete beam spans or predrilled during fabrication of steel plate girder spans.

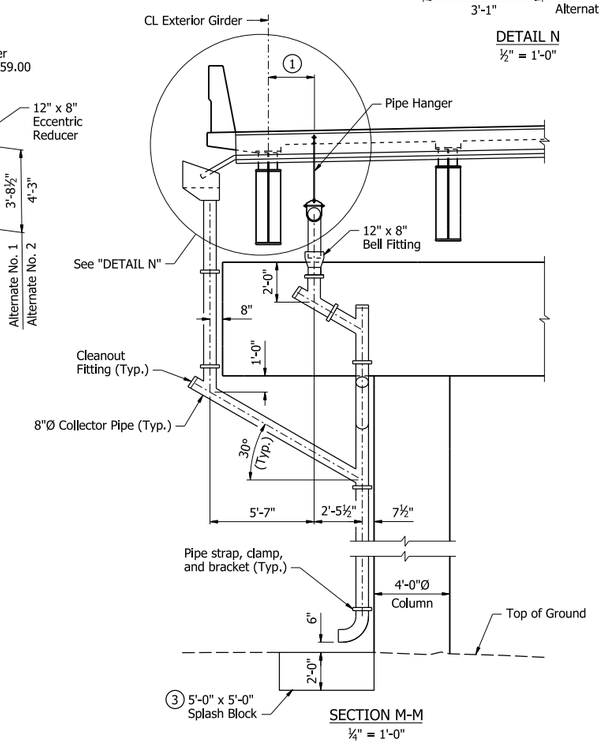
(3) 5'-0" x 5'-0" Splash Blocks shall be 2'-0" thick and material shall be in accordance with Special Provision "ABUTMENT STONE". Splash Blocks, including all excavation, material, tools, and labor, will not be paid for directly, but will be subsidiary to the drainage components.



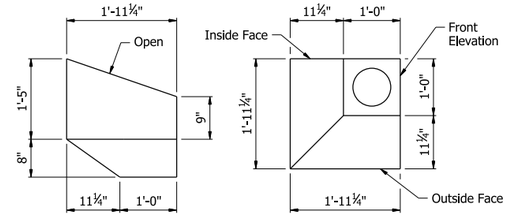
ELEVATION
(Exterior Girder not shown for clarity)
(East side shown. West side similar.)
¼" = 1'-0"



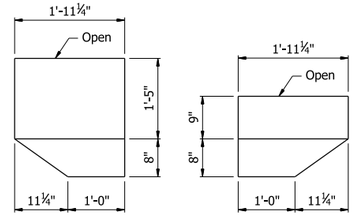
SECTION L-L
¼" = 1'-0"



SECTION M-M
¼" = 1'-0"



FRONT ELEVATION PLAN



OUTSIDE FACE INSIDE FACE

CATCH BASIN DETAILS
¾" = 1'-0"
(Details shown for Bridge No. 07684, Bent No. 8;
Details for Bridge No. 07685, Bent No. 13 similar)

DETAILS AT BRIDGE NO. 07685 (BENT NO. 13)

PRINT DATE: 4/5/2024

STATE OF
ARKANSAS
PROFESSIONAL ENGINEER
★★★
No. 22390
ALLIE WAGNER

4/18/24
BRIDGE ENGINEER

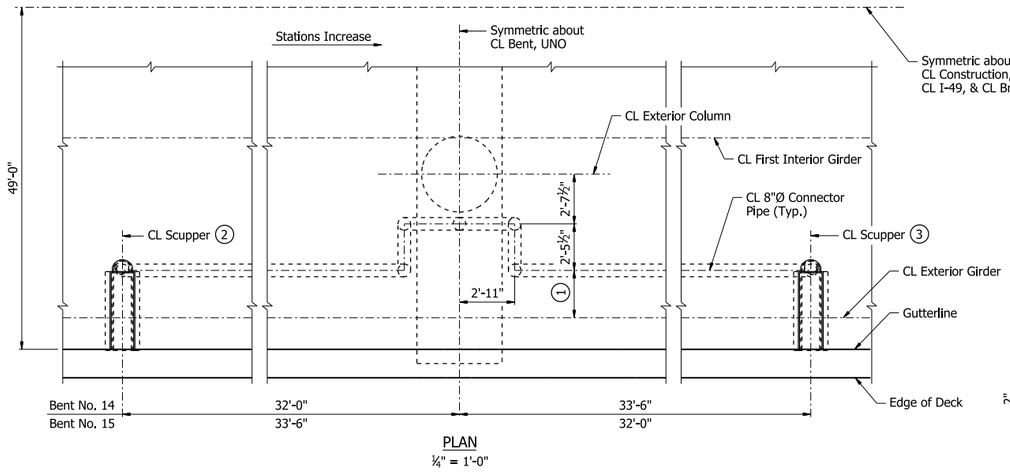
ALTERNATE NO. 1 & ALTERNATE NO. 2
SHEET 4 OF 5
DETAILS OF DECK DRAINAGE
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: AMW DATE: 11/14/23
CHECKED BY: BTJ DATE: 11/28/23
DESIGNED BY: AMW DATE: 11/14/23
FILENAME: b040901_dd4.dgn
SCALE: AS NOTED

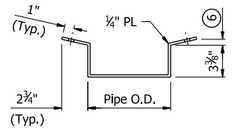
BRIDGE NO. 07684 & 07685 DRAWING NO. 67710

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	651	809
		07684 & 07685 - DECK DRAINAGE - 67711				

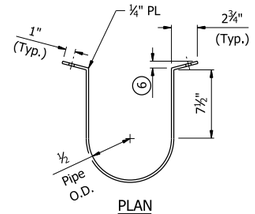


PLAN
¼" = 1'-0"

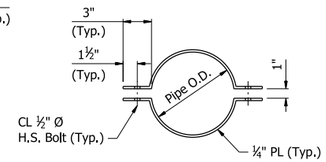
(6) ¾" at 4'-0"Ø Column
½" at 5'-0"Ø & 6'-0"Ø Columns
0" at Cap



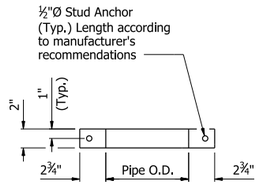
PLAN



PLAN

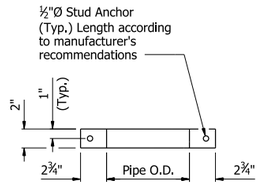


PLAN



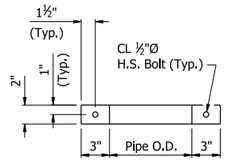
ELEVATION

PIPE BRACKET DETAIL
1½" = 1'-0"



ELEVATION

PIPE STRAP DETAIL
1½" = 1'-0"



ELEVATION

PIPE CLAMP DETAIL
1½" = 1'-0"

Notes:
For "SECTION F-F", see Dwg. No. 67708.

For "SECTION L-L", see Dwg. No. 67710.

For additional notes, see Dwg. No. 67707.

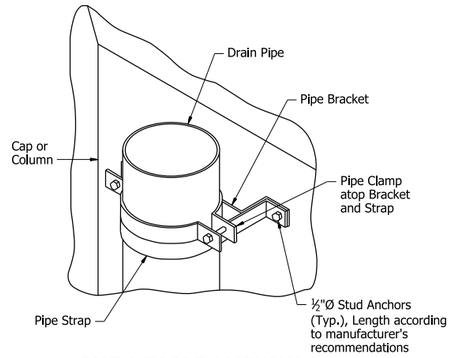
(1) 2'-6½" for Alternate No. 1 (Prestressed Concrete Girder Spans)
2'-6" for Alternate No. 2 (Steel Plate Girder Spans)

(2) Sta. 256+16.00 adjacent to Bent No. 14
Sta. 257+44.50 adjacent to Bent No. 15

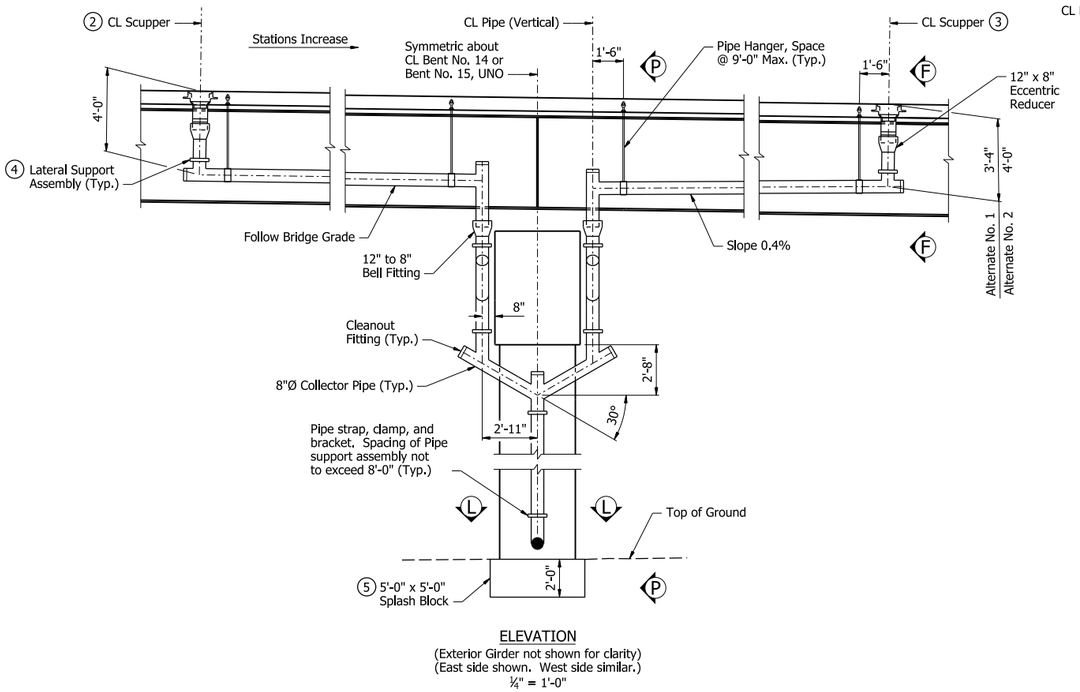
(3) Sta. 256+81.50 adjacent to Bent No. 14
Sta. 258+10.00 adjacent to Bent No. 15

(4) All holes for lateral supports shall be preformed during fabrication for the prestressed concrete beam spans or predrilled during fabrication of the steel plate girder spans.

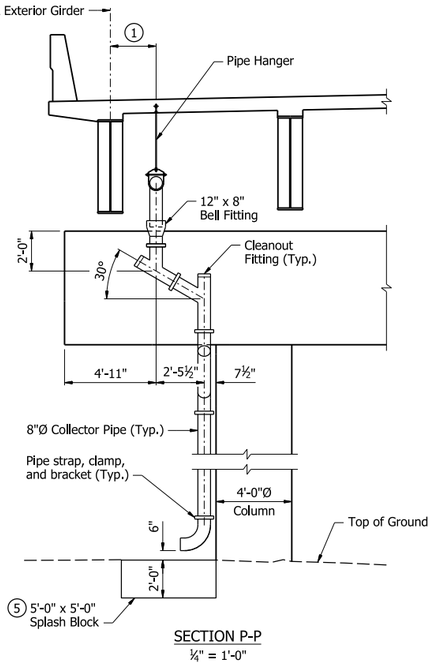
(5) 5'-0" x 5'-0" Splash Blocks shall be 2'-0" thick and material shall be in accordance with Special Provision "ABUTMENT STONE". Splash Blocks, including all excavation, material, tools, and labor, will not be paid for directly, but will be subsidiary to the drainage components.



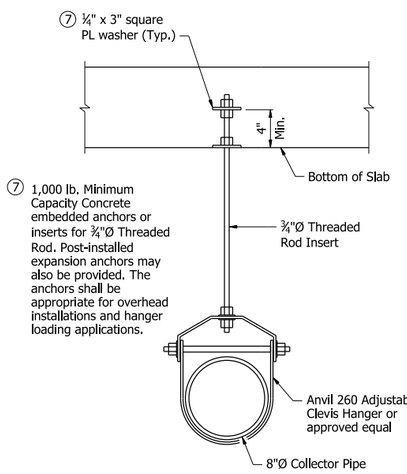
PIPE SUPPORT ASSEMBLY
NO SCALE



ELEVATION
(Exterior Girder not shown for clarity)
(East side shown. West side similar.)
¼" = 1'-0"



SECTION P-P
¼" = 1'-0"



PIPE HANGER DETAILS
1½" = 1'-0"

DETAILS AT BRIDGE NO. 07685 (BENT NOS. 14 & 15)

STATE OF
ENGINEER
★★★
No. 22390
ALLIE WAGNER
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1 & ALTERNATE NO. 2
SHEET 5 OF 5
DETAILS OF DECK DRAINAGE
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

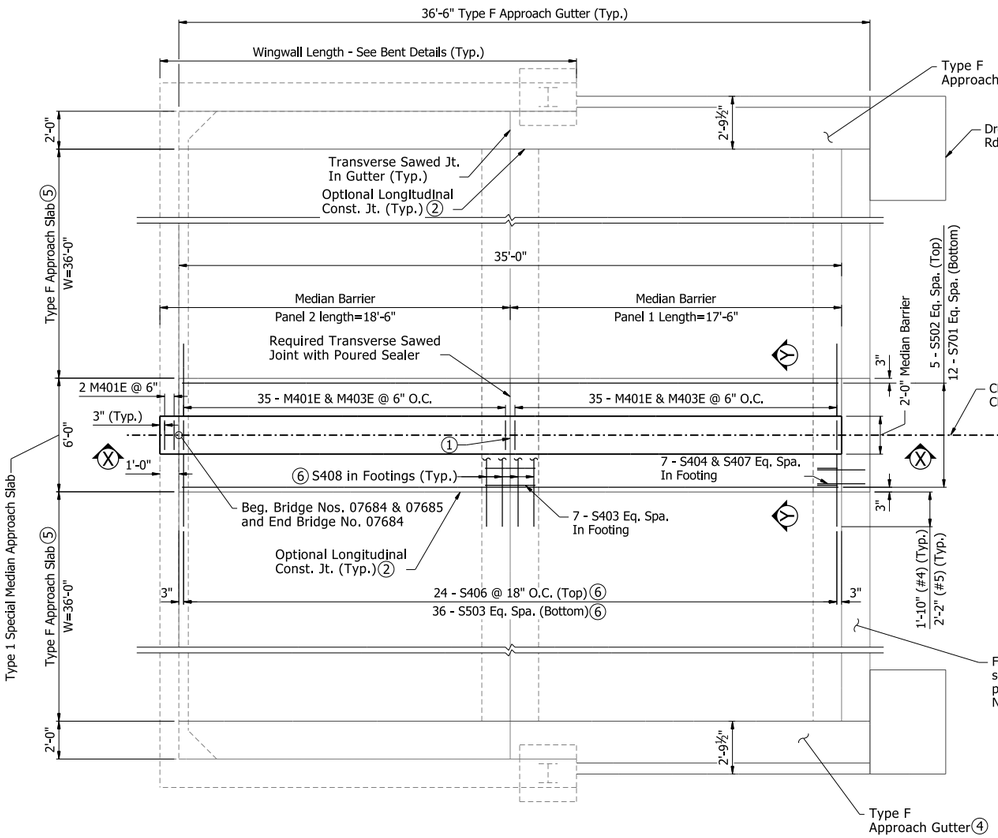
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: AMW DATE: 11/14/23
CHECKED BY: BTJ DATE: 11/28/23
DESIGNED BY: AMW DATE: 11/14/23
FILENAME: b040901_dd5.dgn
SCALE: AS NOTED

BRIDGE NO. 07684 & 07685 DRAWING NO. 67711

PRINT DATE: 4/5/2024

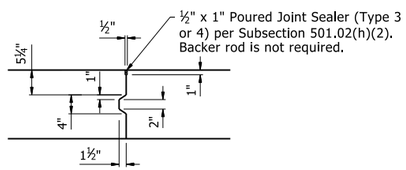
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	652	809
		07684 & 07685 - APPROACHES - 67712				



PLAN - WITH TYPE 1 SPECIAL MEDIAN APPROACH SLAB**

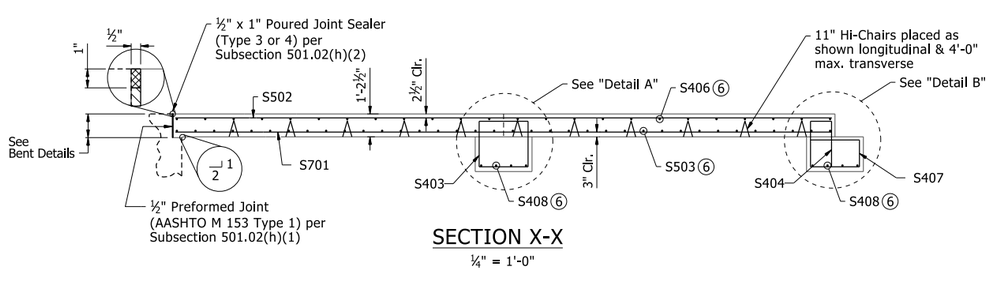
¼" = 1'-0"

** Applies to Bridge No. 07684, Bents 1 & 33 and Bridge No. 07685, Bent 1.



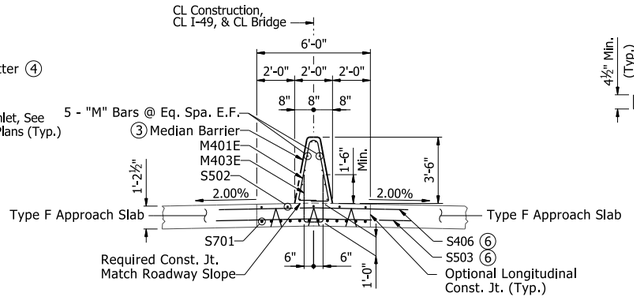
LONGITUDINAL CONSTRUCTION JOINT

½" = 1'-0"



SECTION X-X

¼" = 1'-0"



SECTION Y-Y

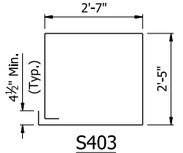
¼" = 1'-0"

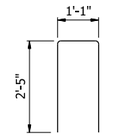
MEDIAN BARRIER VARIABLES

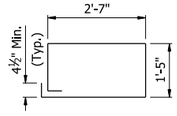
Panel Names	Panel Length	"M"	Length
1	17'-6"	M404E	17'-2"
2	18'-6"	M405E	18'-2"

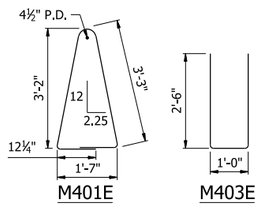
MINIMUM BAR LAP LENGTH

#4	1'-8"
#5	2'-0"
#7	2'-10"









BENDING DIAGRAMS

No Scale
Dimensions are out to out of bar
2" Pin Diameter (Typ.), UNO.

BAR LIST
TYPE 1 SPECIAL MEDIAN APPROACH SLAB ⑦

Mark	No. Req'd.	Length
M401E	72	9'-0"
M403E	70	5'-10"
M404E	10	17'-2"
M405E	10	18'-2"
S403	7	10'-4"
S404	7	5'-9"
S406	24	9'-8"
S407	7	8'-4"
S408	8	9'-8"
S502	5	34'-8"
S503	36	10'-4"
S701	12	34'-8"

All bar lengths are in feet.
Dimensions are out to out of bars.
All bars designated with an "E" suffix are to epoxy coated.

GENERAL NOTES

All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi and shall be poured in the dry.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

The surface finish for Approach Slabs shall match that used on the bridge deck.

Approach Slabs will be measured and paid for in accordance with Section 504.

① CL full-depth median barrier joint (formed width ¼" to 1" max). Stop 6" from top of slab. See Dwg. No. 67689.

② When construction joint is eliminated, place 1" Sawed Joint with ½" x 1" Poured Joint Sealer (Type 3 or 4) per Subsection 501.02(h)(2). Backer rod is not required. Dowels between Type F Approach Slabs and Approach Gutters are required. Dowels between Type F Approach Slabs and Special Type 1 Median Approach Slab are not required.

③ See Dwg. No. 67689 for additional median barrier details not shown.

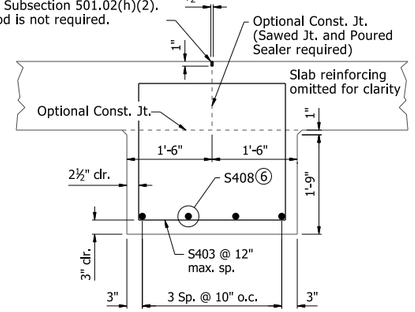
④ Modify Type F Approach Gutter length to accommodate drop inlet. Adjust length of reinforcing as necessary. See Std. Dwg. No. 55030F for details not shown.

⑤ See Std. Dwg. No. 55040F1 for all details and reinforcement.

⑥ Splice with Type F Approach Slab Reinforcement.

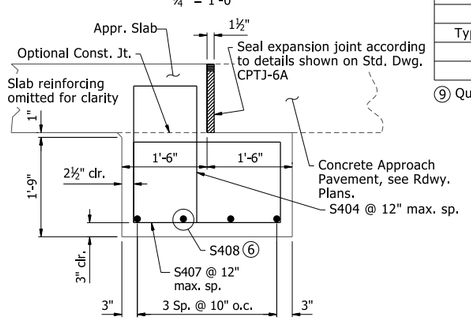
⑦ Bar list for Type 1 Special Median Approach Slab only. See details on this sheet and Std. Dwg. Nos. 55040F1 and 55030F for Type F Approach Slabs and Type F Approach Gutters reinforcement, respectively.

⑧ Median barrier concrete and reinforcing steel quantities are included in special median approach slab quantities.



DETAIL A

¾" = 1'-0"



DETAIL B

¾" = 1'-0"

Concrete Approach Shown. For Asphalt Approach, adjust footing location by 1'-6", omit expansion joint, and replace bars S403-Int. & S404 with S403.

Table of Approach Slab and Gutter Quantities ⑨

Item	Location	Bridge No. 07684				Bridge No. 07685	
		Bent No. 1		Bent No. 33		Bent No. 1	
		Concrete (Cu. Yd.)	Reinforcing Steel (lbs.)	Concrete (Cu. Yd.)	Reinforcing Steel (lbs.)	Concrete (Cu. Yd.)	Reinforcing Steel (lbs.)
Type F Approach Gutter	SB I-49	3.8	200	4.1	212	3.8	202
Type F Approach Slab	SB I-49	71.1	8,557	71.1	8,557	71.1	8,557
Type 1 Special Median Approach Slab ⑧	Median I-49	18.1	2,685	18.1	2,685	18.1	2,685
Type F Approach Slab	NB I-49	71.1	8,557	71.1	8,557	71.1	8,557
Type F Approach Gutter	NB I-49	3.8	200	4.1	212	3.8	202

⑨ Quantities shown are for information only and are included in Roadway Quantities.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 19996
BRENT T. JONES
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1 & ALTERNATE NO. 2
SHEET 1 OF 2
DETAILS OF BRIDGE APPROACHES
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6

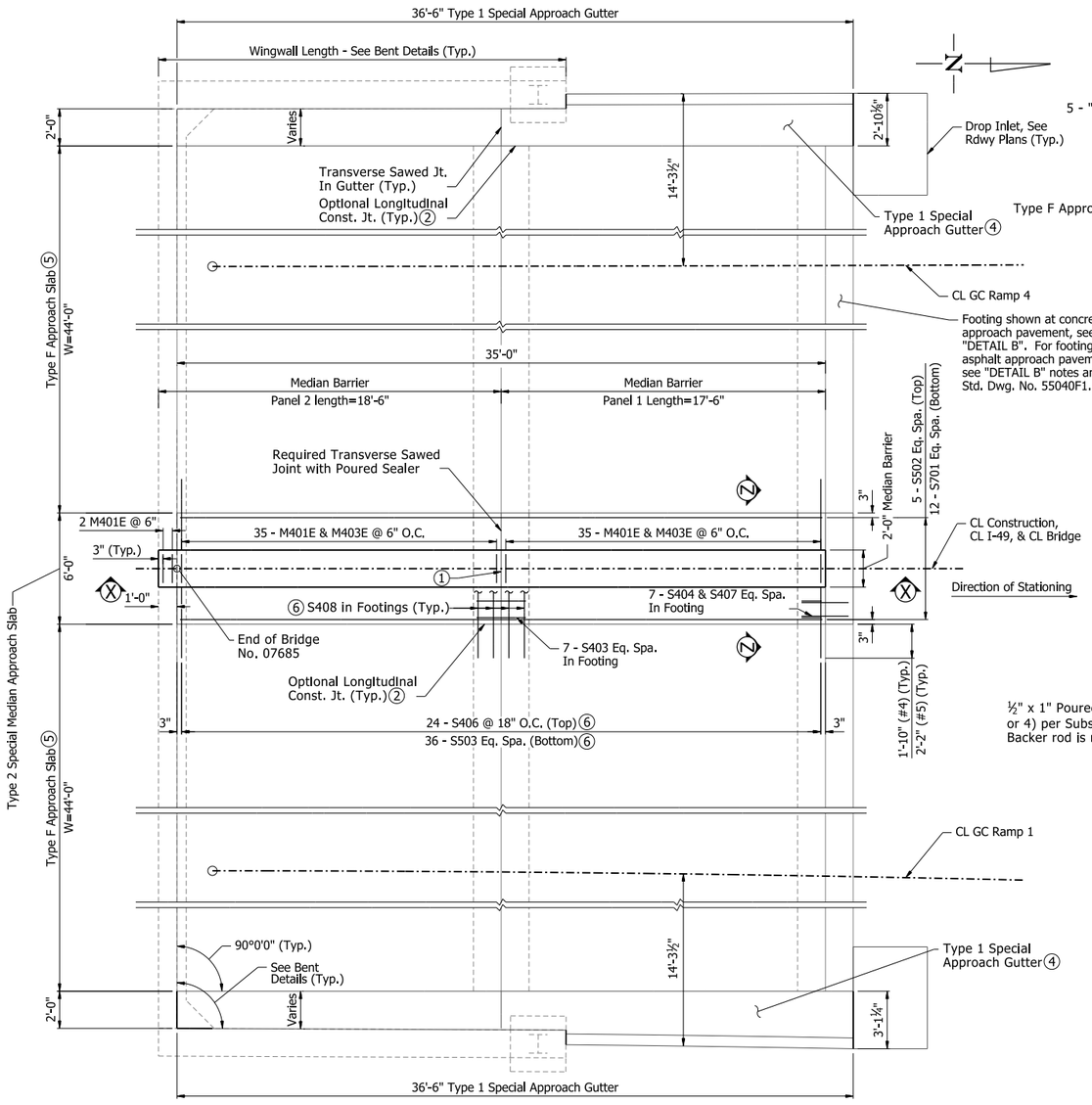
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JVS DATE: 11/16/2023
CHECKED BY: HX DATE: 11/20/2023
DESIGNED BY: HX DATE: 11/09/2023
FILENAME: b040901_ap1.dgn
SCALE: AS NOTED

BRIDGE NO. 07684 & 07685 DRAWING NO. 67712

PRINT DATE: 4/10/2024

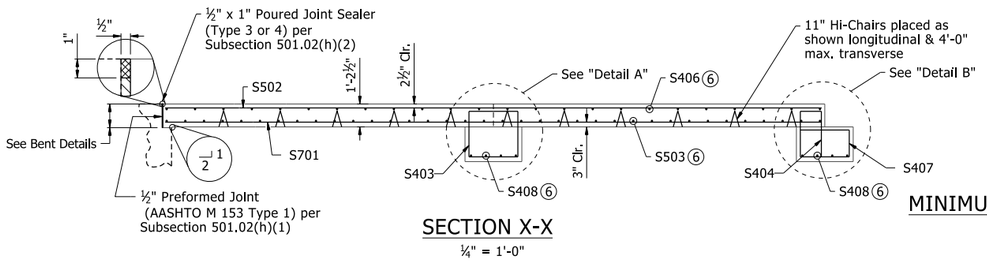
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	653	809
		07685 - APPROACHES - 67713				



PLAN - WITH TYPE 2 SPECIAL MEDIAN APPROACH SLAB AND TYPE 1 SPECIAL GUTTERS**

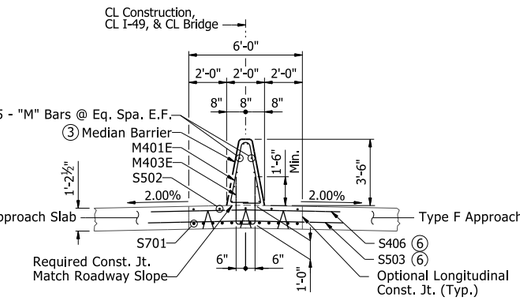
¼" = 1'-0"

** Applies to Bridge No. 07685, Bent 16 only.



SECTION X-X

¼" = 1'-0"



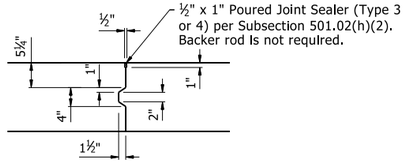
SECTION Z-Z

¼" = 1'-0"

(Looking UpStation)

MEDIAN BARRIER VARIABLES

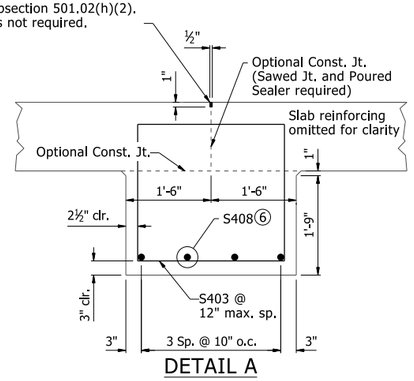
Panel Names	Panel Length	"M"	Length
1	17'-6"	M404E	17'-2"
2	18'-6"	M405E	18'-2"



LONGITUDINAL CONSTRUCTION JOINT

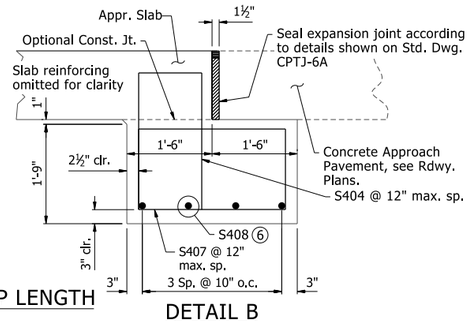
½" = 1'-0"

½" x 1" Poured Joint Sealer (Type 3 or 4) per Subsection 501.02(h)(2). Backer rod is not required.



DETAIL A

¾" = 1'-0"



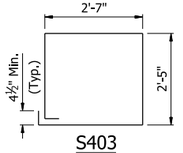
DETAIL B

¾" = 1'-0"

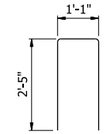
Concrete Approach Shown. For Asphalt Approach, adjust footing location by 1'-6", omit expansion joint, and replace bars S403-Int. & S404 with S403.

MINIMUM BAR LAP LENGTH

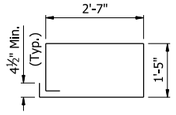
#4	1'-8"
#5	2'-0"
#7	2'-10"



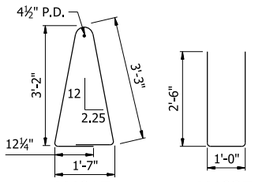
S403



S404



S407



M401E M403E

BAR LIST
TYPE 2 SPECIAL MEDIAN APPROACH SLAB⑦

Mark	No. Req'd.	Length
M401E	72	9'-0"
M403E	70	5'-10"
M404E	10	17'-2"
M405E	10	18'-2"
S403	7	10'-4"
S404	7	5'-9"
S406	24	9'-8"
S407	7	8'-4"
S408	8	9'-8"
S502	5	34'-8"
S503	36	10'-4"
S701	12	34'-8"

All bar lengths are in feet.
All bars designated with an "E" suffix are to epoxy coated.

GENERAL NOTES

All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi and shall be poured in the dry.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

The surface finish for Approach Slabs shall match that used on the bridge deck.

Approach Slabs will be measured and paid for in accordance with Section 504.

BENDING DIAGRAMS

No Scale
Dimensions are out to out of bar
2" Pin Diameter (Typ.), UNO.

① CL full-depth median barrier joint (formed width ⅛" to 1" max). Stop 6" from top of slab. See Dwg. No. 67689.

② When construction joint is eliminated, place 1" Sawed Joint with ½" x 1" Poured Joint Sealer (Type 3 or 4) per Subsection 501.02(h)(2). Backer rod is not required. Dowels between Type F Approach Slabs and Approach Gutters are required. Dowels between Type F Approach Slabs and Type 2 Special Median Approach Slab are not required.

③ See Dwg. No. 67689 for additional median barrier details not shown.

④ Modify Type F Approach Gutter length to accommodate drop inlet and width to accommodate Gun Club Ramps as shown. Adjust length of reinforcing as necessary. See Std. Dwg. No. 55030F for details not shown.

⑤ See Std. Dwg. No. 55040F1 for all details and reinforcement.

⑥ Splice with Type F Approach Slab Reinforcement.

⑦ Bar list for Type 2 Special Median Approach Slab only. See details on this sheet and Std. Dwg. Nos. 55040F1 and 55030F for Type F Approach Slabs and Type 1 Special Approach Gutters reinforcement, respectively.

⑧ Median barrier concrete and reinforcing steel quantities are included in special median approach quantities.

⑨ Cross Slopes varies. See Bridge Layout, Dwg. No. 67475 or 67602, for NB and SB I-49 superelevation transition data. Refer to bridge 16 plan & profile sheet for superelevation transition information.

Table of Approach Slab and Gutter Quantities ⑩			
Item	Location	Bridge No. 07685 Bent No. 16	
		Concrete (Cu. Yd.)	Reinforcing Steel (lbs.)
Type 1 Special Approach Gutter	SB I-49	3.9	202
Type F Approach Slab	SB I-49	83.6	10,429
Type 2 Special Median Approach Slab⑧	Median I-49	18.1	2,685
Type F Approach Slab	NB I-49	83.6	10,429
Type 1 Special Approach Gutter	NB I-49	4.0	202

⑩ Quantities shown are for information only and are included in Roadway Quantities.

ALTERNATE NO. 1 & ALTERNATE NO. 2
SHEET 2 OF 2
DETAILS OF BRIDGE APPROACHES
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

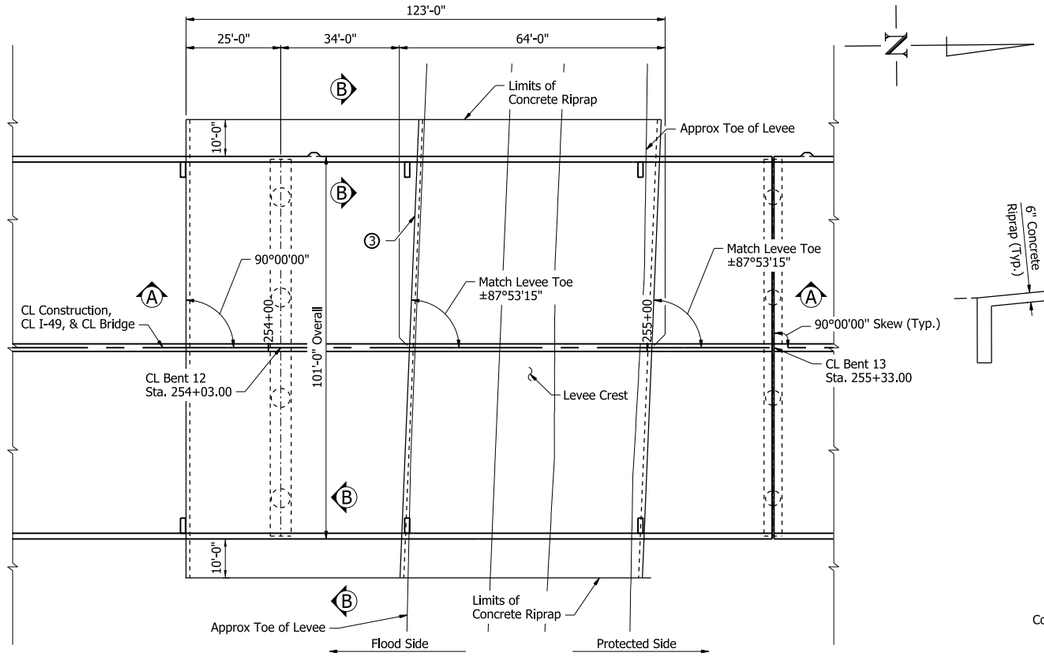
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 19996
BRENT T. JONES
4/18/24
BRIDGE ENGINEER

DRAWN BY:	JVS	DATE:	11/16/2023	FILENAME:	b040901_ap2.dgn
CHECKED BY:	HX	DATE:	11/20/2023	SCALE:	AS NOTED
DESIGNED BY:	HX	DATE:	11/09/2023		

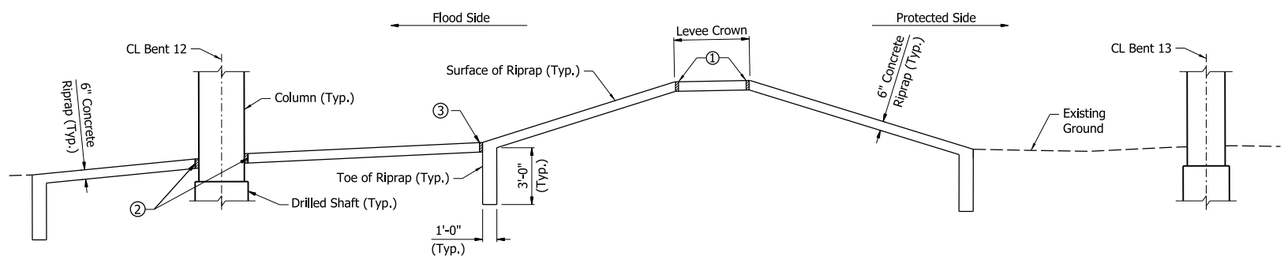
BRIDGE NO. 07685 DRAWING NO. 67713

PRINT DATE: 4/10/2024

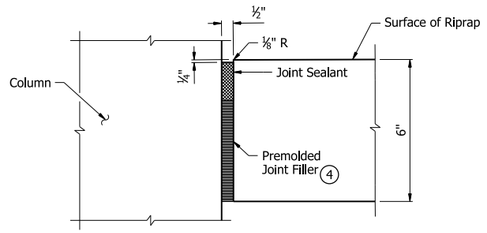
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	654	809
		07685 - CONCRETE RIPRAP- 67714				



PLAN (CRAWFORD COUNTY FEDERAL LEVEE)
1" = 20'-0"



SECTION A-A (CRAWFORD COUNTY FEDERAL LEVEE)
(NTS)



COLUMN EXPANSION JOINT
(NTS)

Notes:
For General Notes, see Dwg. No. 67372.

All concrete shall be Class A with a minimum compressive strength, f'c = 2,100 psi.

Keyed construction joints required at all construction joints.

Contractor shall install construction joints in an approximate 10 ft by 10 ft square pattern, or as approved by the engineer.

Hydrophilic Waterstops, Construction/Expansion Joints, Smooth Dowels, Expansion Tubes, and all Reinforcing shall not be paid for directly, but will be considered subsidiary to "Concrete Riprap".

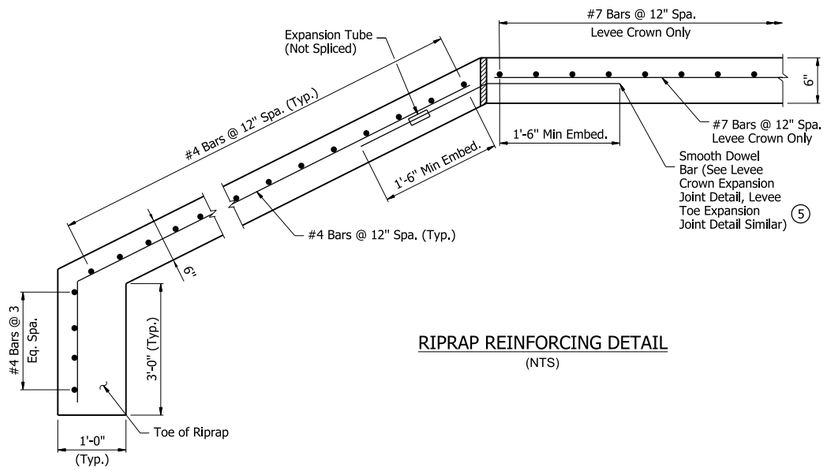
(1) Levee Crown Expansion Joint shall include smooth dowel bars bent to match the transition from crown to slope. See Levee Crown Expansion Joint detail.

(2) Column expansion joints shall be placed around full perimeter of columns. See column expansion joint detail.

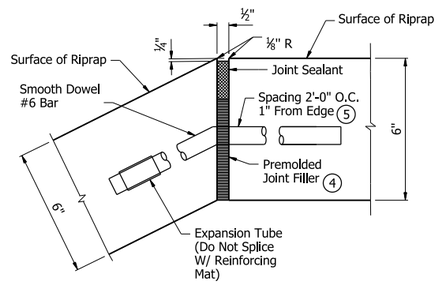
(3) Levee Toe Expansion Joint shall include smooth dowel bars bent to match the transition at Toe. See Levee Toe Expansion Joint detail.

(4) Continuous Hydrophilic Waterstop (Hydrotite CJ-0725-3K or approved equal).

(5) Smooth Dowel Bar may be spliced with Reinforcing Mat.

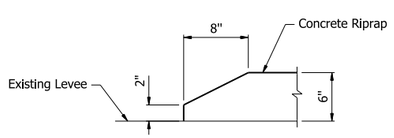


RIPRAP REINFORCING DETAIL
(NTS)

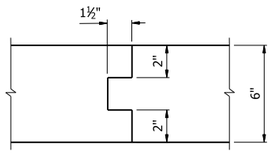


LEVEE CROWN EXPANSION JOINT
(NTS)

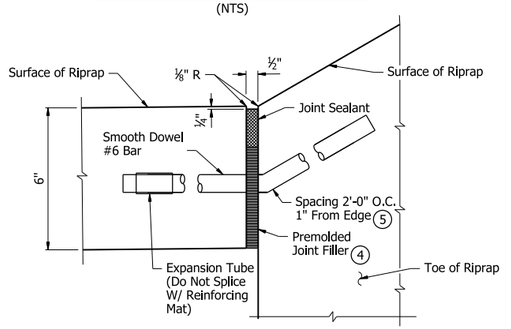
Reinforcing Quantity for Contractor's (information only)	
Levee Crown:	240 lbs/cy
Typical Riprap:	80 lbs/cy



SECTION B-B
(NTS)



KEYED CONST JOINT DETAIL
(NTS)



LEVEE TOE EXPANSION JOINT
(NTS)

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 19996
BRENT T. JONES
4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1 & ALTERNATE NO. 2
SHEET 1 OF 1
DETAILS OF LEVEE CONCRETE RIPRAP
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

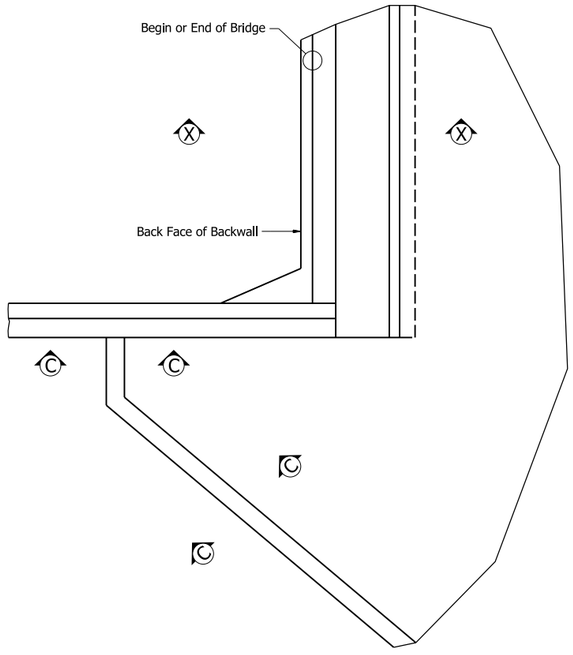
ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: EMC DATE: 9/22/23
CHECKED BY: PEG DATE: 10/5/23
DESIGNED BY: BTJ DATE: 6/2/23
FILENAME: b040901_cr1.dgn
SCALE: AS NOTED

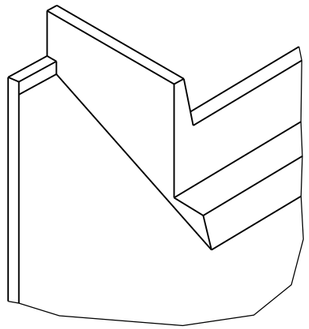
BRIDGE NO. 07685 DRAWING NO. 67714

PRINT DATE: 4/10/2024

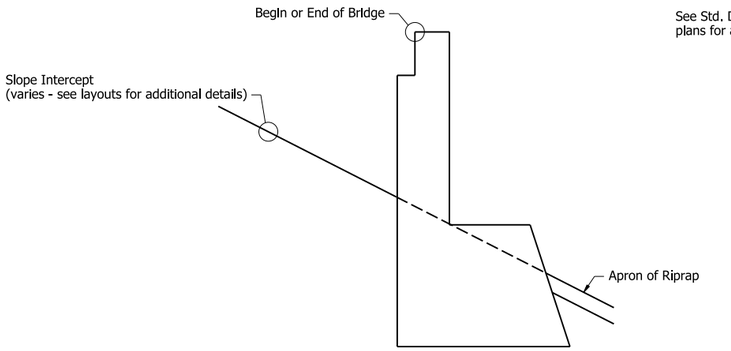
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	655	809
		07685 - SUPP. CONC. RIPRAP - 67715				



PLAN



THREE DIMENSIONAL VIEW OF CONCRETE RIPRAP



SECTION X-X

Notes:
For Section C-C, see Std. Dwg. No. 55002.

See Std. Dwg. No. 55002, layouts, and end bent plans for additional information.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 19996
BRENT T. JONES

4/18/24
BRIDGE ENGINEER

ALTERNATE NO. 1 & ALTERNATE NO. 2
SHEET 1 OF 1
SUPPLEMENTAL DETAILS OF CONCRETE RIPRAP
I-49 OVER FLAT ROCK CREEK, LEVEE, & GUN CLUB RD.
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD COUNTY

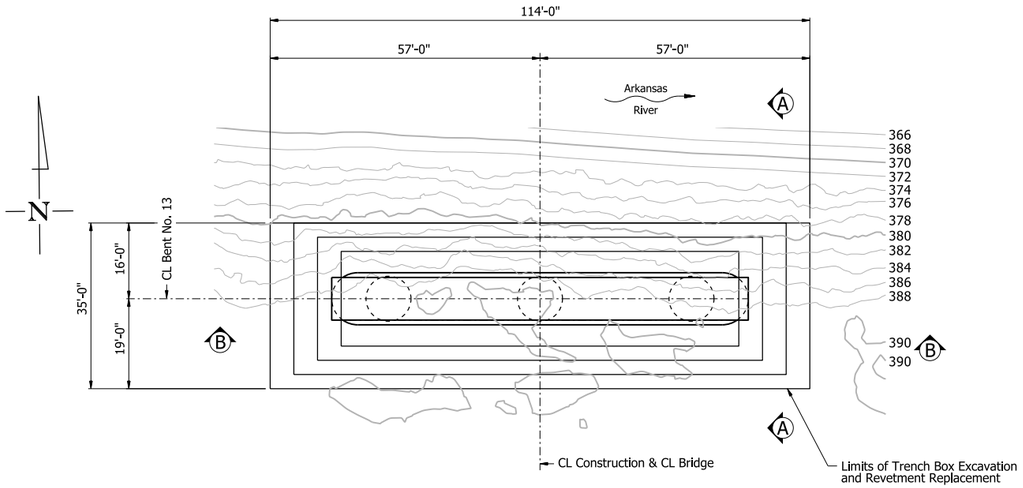
ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: PAR DATE: 11/15/23 FILENAME: b040901_cr2.dgn
CHECKED BY: CPS DATE: 11/27/23 SCALE: NO SCALE
DESIGNED BY: CPS DATE: 11/1/23

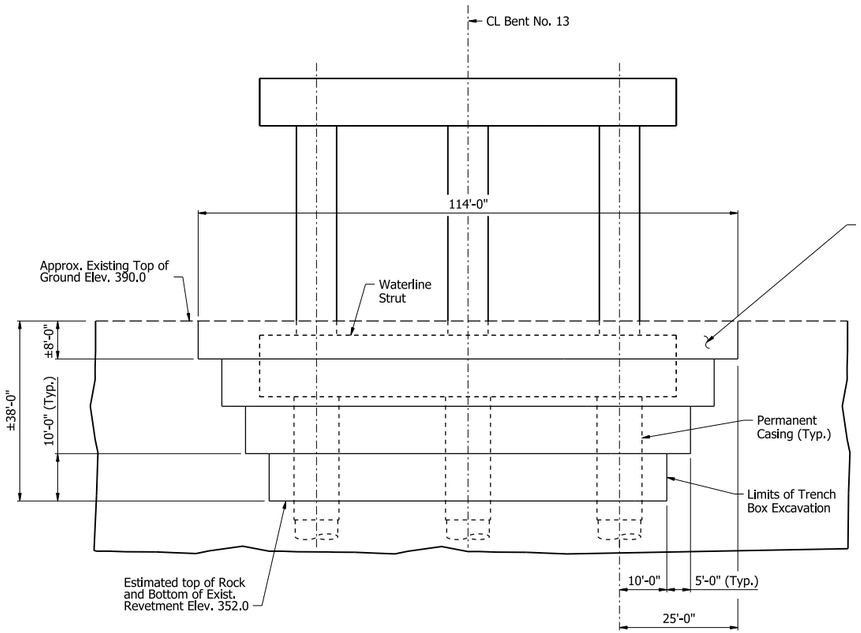
BRIDGE NO. 07685 DRAWING NO. 67715

PRINT DATE: 4/5/2024



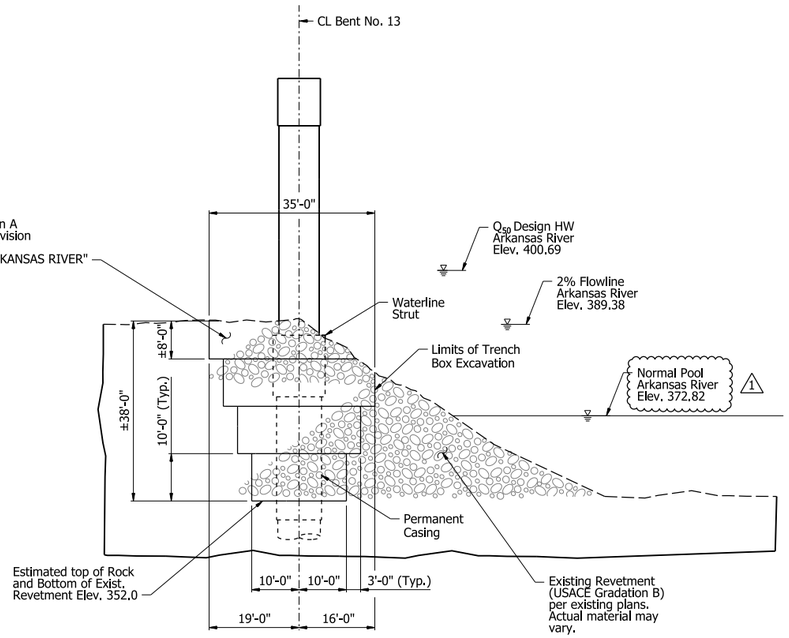
REVETMENT PLAN

($\frac{1}{32}$" = 1'-0")



SECTION B-B

($\frac{1}{32}$" = 1'-0")



SECTION A-A

($\frac{1}{32}$" = 1'-0")

1 Revised Arkansas River Elevations. 9/16/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9/16/2024		6	ARK.	040901	656	809
		07684 - REVETMENT - 67716				

Notes:
Excavation of the existing revetment shall be paid for at the contract unit price for "UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE".

Shoring for the excavation shall be in accordance with the Special Provision "SHORING" and shall be paid for at the contract lump sum price bid for "Shoring (Site No. 1)".

Revetment shall be in accordance with Special Provision "REVETMENT STONE (GRADATION A) - ARKANSAS RIVER" and shall be paid for at the contract unit price for "REVETMENT STONE (GRADATION A) - ARKANSAS RIVER".

For General Notes, see Dwg. Nos. 67372 & 67373.

Limits of trench box excavation and revetment replacement shall not exceed the limits shown in the plans without written appproval from the Engineer.

Trench box or other temporary shoring method approved by the Engineer shall be used to support the excavation for construction of Bent 13 below grade. An open cut or unbraced excavation will not be permitted.

The Contractor shall not drive, load or store equipment on the existing revetment outside the area shown on this sheet. In the event this is violated, the Contractor shall replace the top 5 feet of existing riprap with the "REVETMENT STONE (GRADATION A) - ARKANSAS RIVER" (see Special Provision).

For additional information on the Emergency Action Plan and other requirements, see "ARMY CORPS RESTRAINING CONDITIONS" and "ARMY CORPS - ARKANSAS RIVER, FLOODWAY AND LEVEE REQUIREMENTS" Special Provisions.

SUGGESTED SEQUENCE OF CONSTRUCTION:

Remove Existing Revetment within trench box limits in steps as shown to the top of existing rock. Install casing, drilled shafts and waterline strut as defined below.

1) Set first trench box section on the ground. Excavate inside the trench box in stages while working the trench box down controlling sloughing and overexcavation beyond the trench box sides as much as practical.
2) Set next trench box down inside. Excavate and work the trench box down as excavation continues. Repeat as necessary to top of rock.
3) Seat permanent casing into rock as shown in Plans. Provide temporary support as needed.
4) Install drilled shaft per Special Provision "DRILLED SHAFT FOUNDATIONS".
5) Backfill excavation with stone per Special Provision "REVETMENT STONE (GRADATION A) - ARKANSAS RIVER".
6) Stone shall be placed with a maximum free fall height of 12'-0", to prevent stone-size segregation, and comply with the "EXTENTS OF PLACEMENT" section of the Special Provision.
7) Withdraw lower trench box sections as stone is placed up to the bottom of strut.
8) Construct waterline strut and backfill excavation with stone to grade as upper trench box section is removed.

STATE OF ARKANSAS
Natalie M. Combs
LICENSED PROFESSIONAL ENGINEER
No. 15778
NATALIE MCCOMBS
9/16/24
BRIDGE ENGINEER

ALTERNATE NO. 1 & ALTERNATE NO. 2
SHEET 1 OF 1
REVETMENT AT BENT NO. 13
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

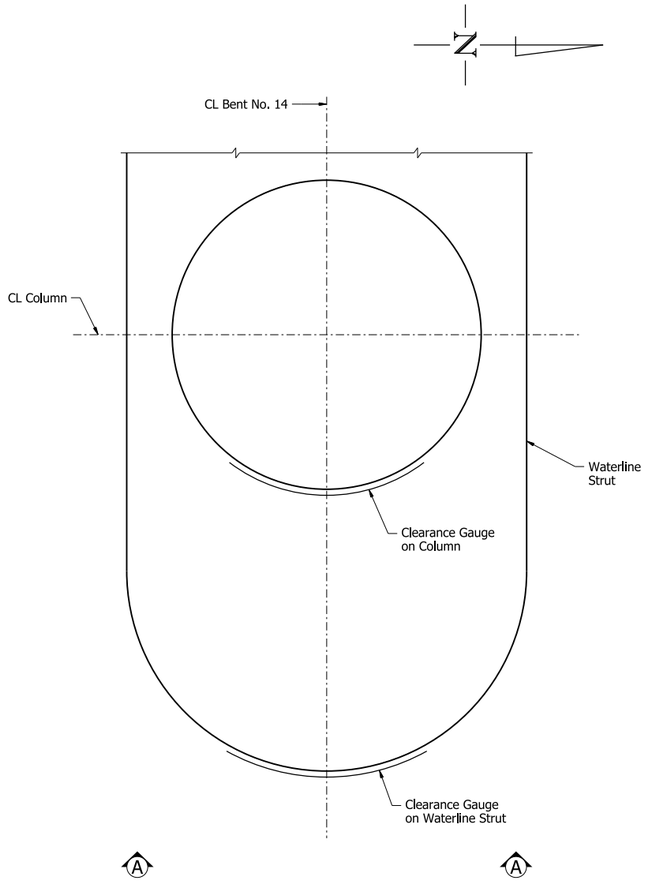
DRAWN BY: CTK DATE: 10/20/23
CHECKED BY: CPS DATE: 11/22/23
DESIGNED BY: NAM DATE: 11/27/23
FILENAME: b040901_rv1.dgn
SCALE: AS NOTED

BRIDGE NO. 07684 DRAWING NO. 67716

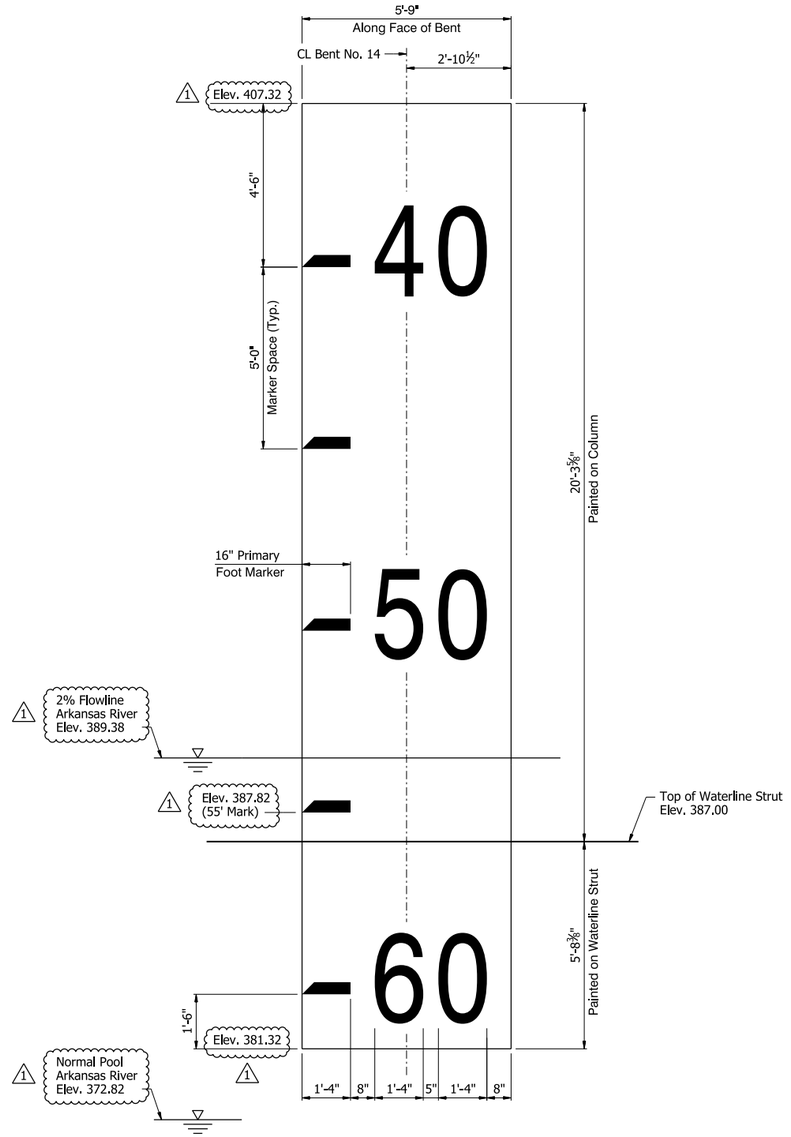
PRINT DATE: 9/16/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9/16/2024		6	ARK.	040901	657	809
		07684 - CLEARANCE GAUGE - 67717				

1 Revised Arkansas River Elevations. 9/16/2024



PARTIAL PLAN
(Downstream shown, upstream similar)



VIEW A-A

Notes:
Clearance marks and elevations shown are based on theoretical design clearance to low steel. Elevations shall be verified based on as-built survey elevation of low steel.

Gauge shall be painted on the upstream and downstream nose of Bent No. 14. Work to complete this item is included in "CLEARANCE GAUGES".

See SP Job No. 040901 "CLEARANCE GAUGES" for paint requirements. Texture coating and reflective paint shall not be applied within limits of clearance gauge.

Numeral type shall conform with that published in Federal Highway Administration Standard Highway Signs f20041 including 2012 Supplement. Series E numerals, 30" in height, shall be used. Stroke width of numerals and primary foot markers shall be 4".

Primary foot markers shall be spaced at 5'-0" intervals.

1 Elevations shown are based on the NAVD88 datum.

Datum difference: NAVD88 - 0.32' = NGVD29

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
★★★
No. 15778
NATALIE MCCOMBS
9/16/24
BRIDGE ENGINEER

ALTERNATE NO. 1 & ALTERNATE NO. 2
SHEET 1 OF 1
DETAILS OF NAVIGATION CLEARANCE GAUGE
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

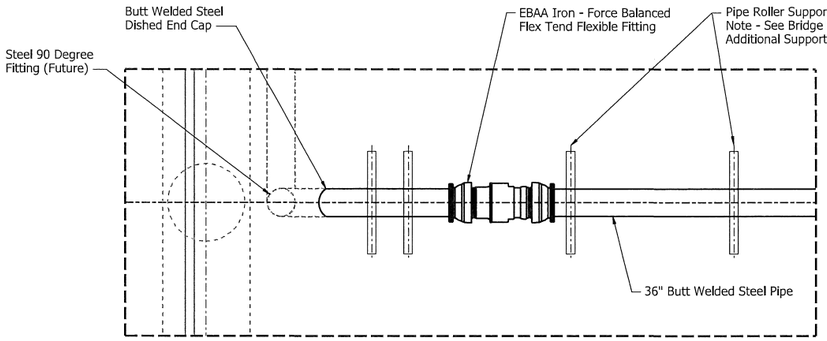
DRAWN BY: NAM DATE: 11/17/23
CHECKED BY: CPS DATE: 11/27/23
DESIGNED BY: NAM DATE: 11/27/23
FILENAME: b040901_cg1.dgn
SCALE: NO SCALE

BRIDGE NO. 07684 DRAWING NO. 67717

PRINT DATE: 9/16/2024

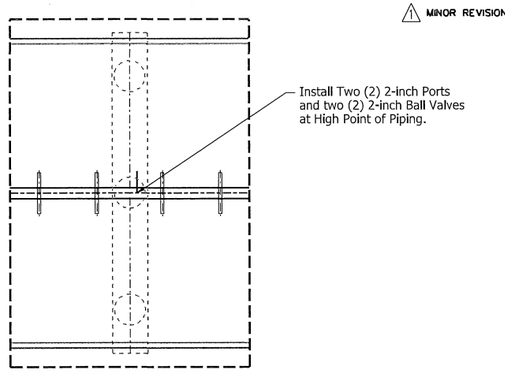
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9/16/2024		6	ARK.	040901	658	809
		WATER LINE PLANS				

1 MINOR REVISIONS



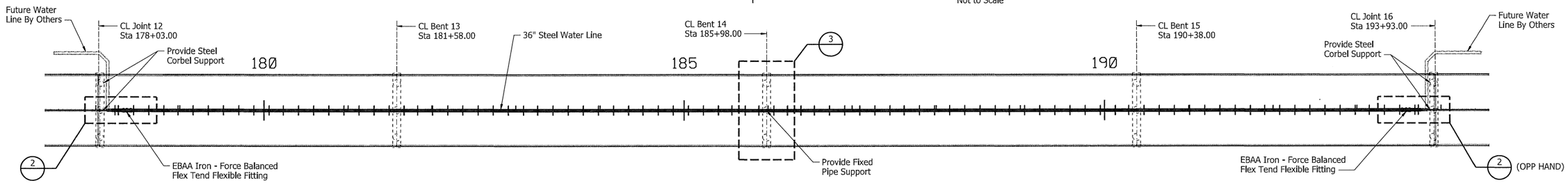
DETAIL 2 - FLEX-TEND LOCATION

Not to Scale

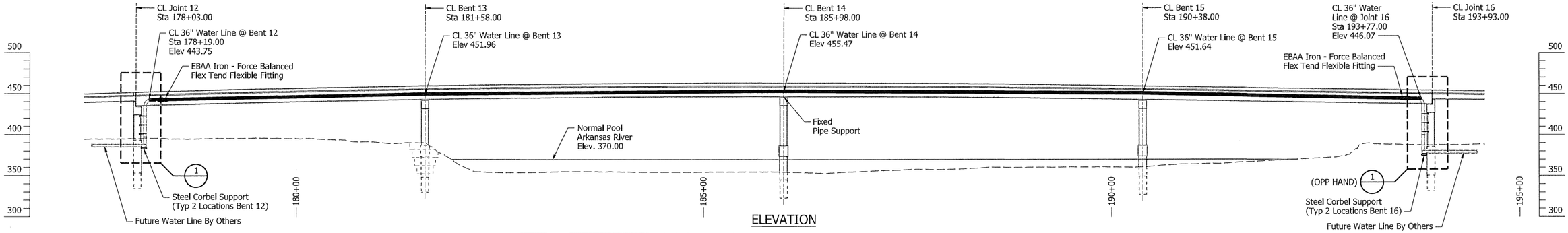


DETAIL 3 - BALL VALVE LOCATION

Not to Scale



PLAN



ELEVATION

Roller Support Location Schedule	
Roller No.	Station
CL Joint @ Bent 12	178+03 (20')
1	178+23 (4')
2	178+27 (18')
3	178+45 (18')
4	178+63 (18')
5	178+81 (17')
6	178+98 (18')
7	179+16 (18')
8	179+34 (18')
9	179+52 (18')
10	179+70 (18')
11	179+88 (18')
12	180+06 (17')
13	180+23 (18')
14	180+41 (18')
15	180+59 (18')
16	180+77 (18')
17	180+95 (18')
18	181+13 (18')
19	181+31 (18')
20	181+49 (9')
CL Bent 13	181+58 (9')
21	181+67 (16')
22	181+83 (18')

Roller Support Location Schedule	
Roller No.	Station
23	182+01 (18')
24	182+19 (18')
25	182+37 (18')
26	182+55 (18')
27	182+73 (18')
28	182+91 (18')
29	183+09 (17')
30	183+26 (18')
31	183+44 (18')
32	183+62 (18')
33	183+80 (18')
34	183+98 (18')
35	184+16 (18')
36	184+34 (17')
37	184+51 (18')
38	184+69 (18')
39	184+87 (18')
40	185+05 (18')
41	185+23 (18')
42	185+41 (16')
43	185+57 (16')
44	185+73 (16')
45	185+89 (9')
Sym @ CL Bent 14	185+98 (9')

Roller Support Location Schedule	
Roller No.	Station
46	186+07 (16')
47	186+23 (16')
48	186+39 (16')
49	185+55 (18')
50	186+73 (18')
51	186+91 (18')
52	187+09 (18')
53	187+27 (18')
54	187+45 (17')
55	187+62 (18')
56	187+80 (18')
57	187+98 (18')
58	188+16 (18')
59	188+34 (18')
60	188+52 (18')
61	188+70 (17')
62	188+87 (18')
63	189+05 (18')
64	189+23 (18')
65	189+41 (18')
66	189+59 (18')
67	189+77 (18')
68	189+95 (18')
69	190+13 (16')

Roller Support Location Schedule	
Roller No.	Station
70	190+29 (9')
CL Bent 15	190+38 (9')
71	190+47 (18')
72	190+65 (18')
73	190+83 (18')
74	191+01 (18')
75	191+19 (18')
76	191+37 (18')
77	191+55 (18')
78	191+73 (17')
79	191+90 (18')
80	192+08 (18')
81	192+26 (18')
82	192+44 (18')
83	192+62 (18')
84	192+80 (18')
85	192+98 (17')
86	193+15 (18')
87	193+33 (18')
88	193+51 (18')
89	193+69 (4')
90	193+73 (20')
CL Joint @ Bent 16	193+93

CERTIFICATE OF AUTHORIZATION
BURNS & McDONNELL ENGINEERING COMPANY, INC.
No. 17
ARKANSAS-ENGINEER

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 17595
JEFFREY WARREN HEDRICK
9/16/24
CIVIL ENGINEER

36" STEEL WATER LINE
PLAN AND PROFILE
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 1 SEC. 6 1

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: TWM DATE: 02/2024
CHECKED BY: KBH DATE: 03/2024
DESIGNED BY: BDM DATE: 02/2024

FILENAME: 040748-BR-BMCD-01.dgn
SCALE: AS NOTED

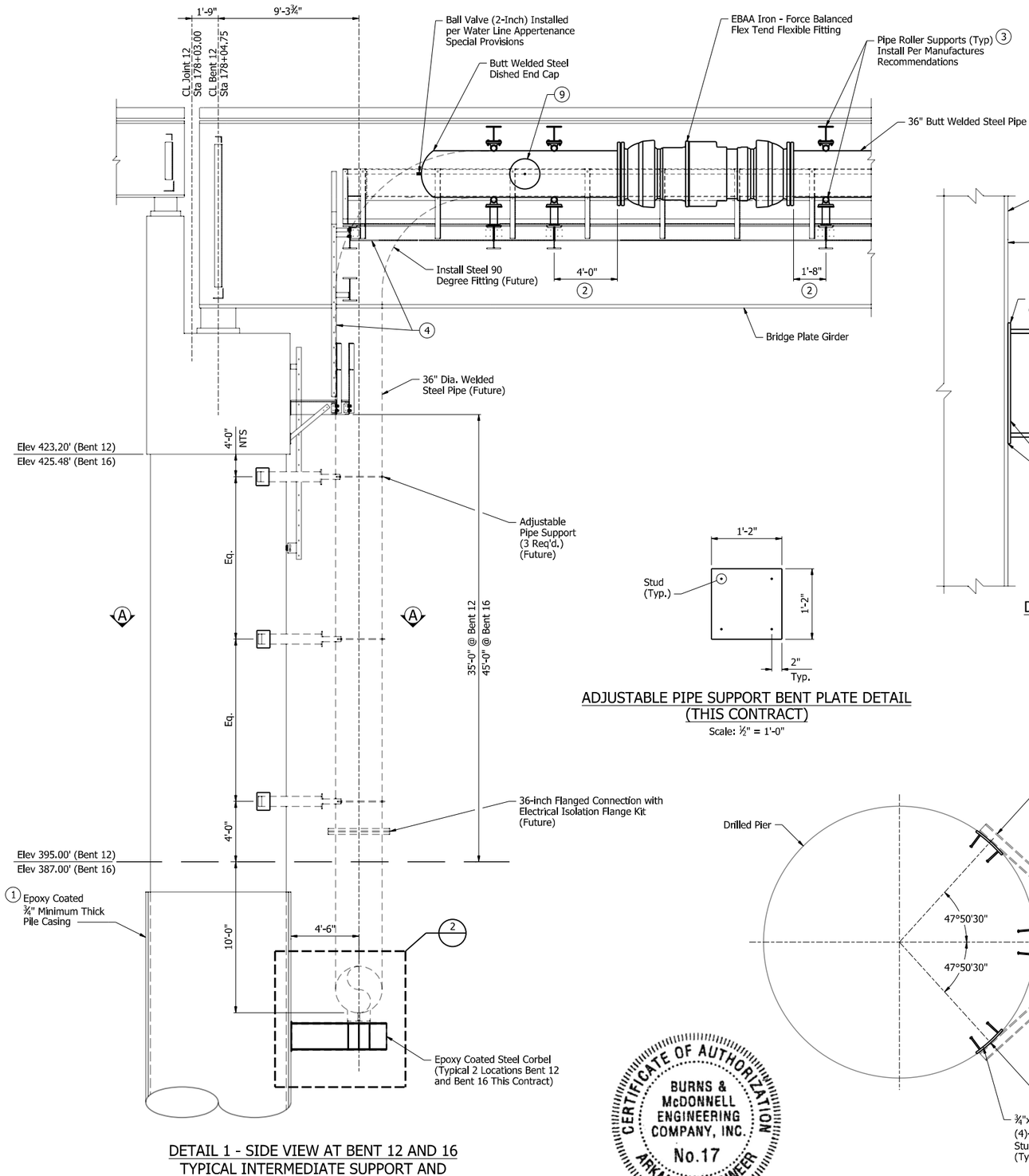
BRIDGE NO. 07684

DRAWING NO.

PRINT DATE:

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9/16/2024		6	ARK.	040901	659	809
		WATER LINE PLANS				

⚠ MINOR REVISIONS

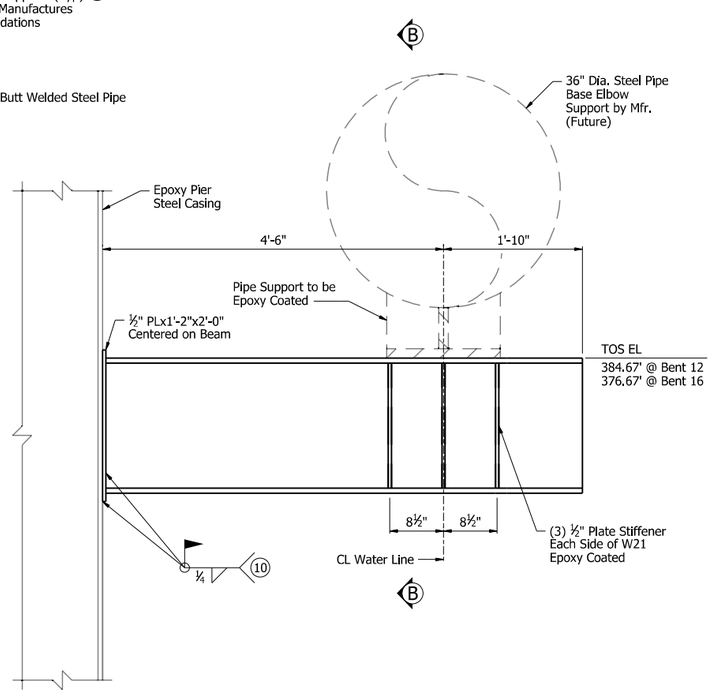


DETAIL 1 - SIDE VIEW AT BENT 12 AND 16
TYPICAL INTERMEDIATE SUPPORT AND
STEEL CORBEL DETAILS

Bent 12 Shown, Bent 16 Opposite Hand
Scale: ⅛" = 1'-0"

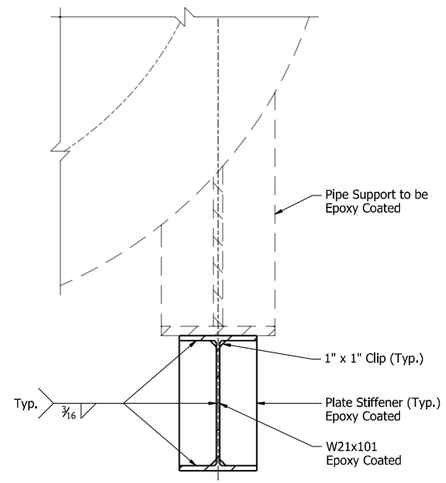
ADJUSTABLE PIPE SUPPORT BENT PLATE DETAIL
(THIS CONTRACT)

Scale: ½" = 1'-0"



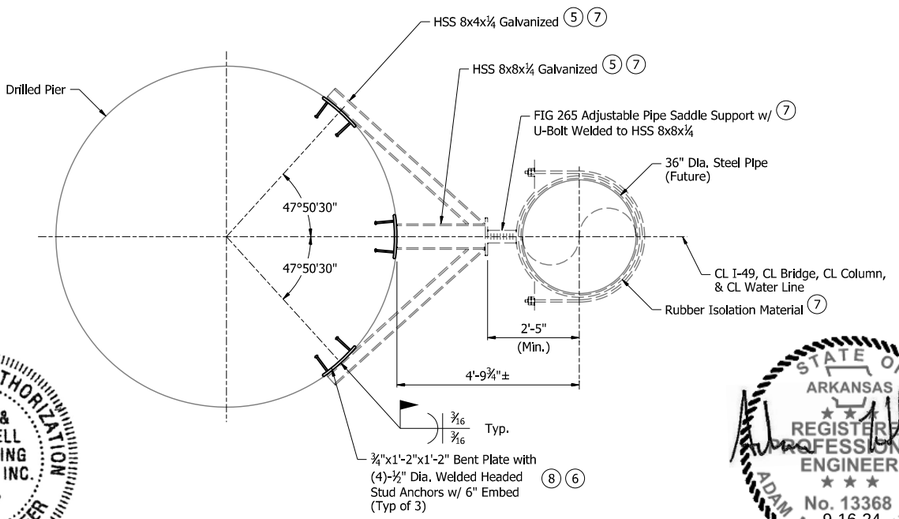
DETAIL 2 - STEEL CORBEL DETAIL - TYPICAL
WEST PIER SUPPORT - SIMILAR
(THIS CONTRACT)

Scale: ½" = 1'-0"



SECTION B-B - CORBEL SECTION - TYPICAL

Scale: ½" = 1'-0"



SECTION A-A
(FUTURE) INTERMEDIATE SUPPORT SECTION

Scale: ¼" = 1'-0"

CERTIFICATE OF AUTHORIZATION
BURNS & McDONNELL ENGINEERING COMPANY, INC.
No.17
ARKANSAS-ENGINEER

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13368
ADAM MICHAEL HOLMES
9-16-24

STRUCTURAL ENGINEER

Notes:
See Dwg. No. 67465 for additional notes.

HSS sections shall be ASTM ASTM A618, Grade 50.

All steel indicated to be galvanized, shall be galvanized per AASHTO M111.

(1) Pile casing to be electrically isolated from rebar cage and all metalic structures. Confirmation of electrical isolation will be required during installation.

(2) 1'-8" Min Clearance to be maintained from face of pipe flange to edge of roller support.

(3) See Dwg. Nos. 67451-67454 for locations of Water Line Supports. See Dwg. No. 67469 for walkway and ladder details.

(4) See Dwg. Nos. 67465-67471 for walkway and ladder details.

(5) Center HSS on embed plate before welding.

(6) Install embed plates as indicated in this contract.

(7) Pipe intermediate supports shall be installed by others.

(8) Elements indicated to be epoxy coated shall be coated in conformance to Bridge Pile Casing and Corbel Coating System Specification in the Supplemental Provisions to the Standard Specification Roll embed plate prior to installing welded studs, Roll plate to match radius of Column.

For Water Line pipe materials and component requirements, refer to special provisions: Steel Water Line and Water Line Appurtenances.

(9) 24" Diameter Manway approximately centered between roller supports. The manway shall to be at the 3 o'clock position. The 24 inch blind flange will be a class E blind flange. Blind flange will include a 2 inch ball valve on it.

Water Line must maintain 1 inch of clearance from all cross support members.

(10) Remove epoxy coating around weld areas prior to welding. Repair epoxy coating as required per Bridge Pile Casing and Corbel Coating System Specifications in the Supplemental Provisions to the Standard Specifications.

36" STEEL WATER LINE
BENT 12 AND 16
PIPE SUPPORT DETAILS
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 ⚠ SEC. 6 ⚠

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

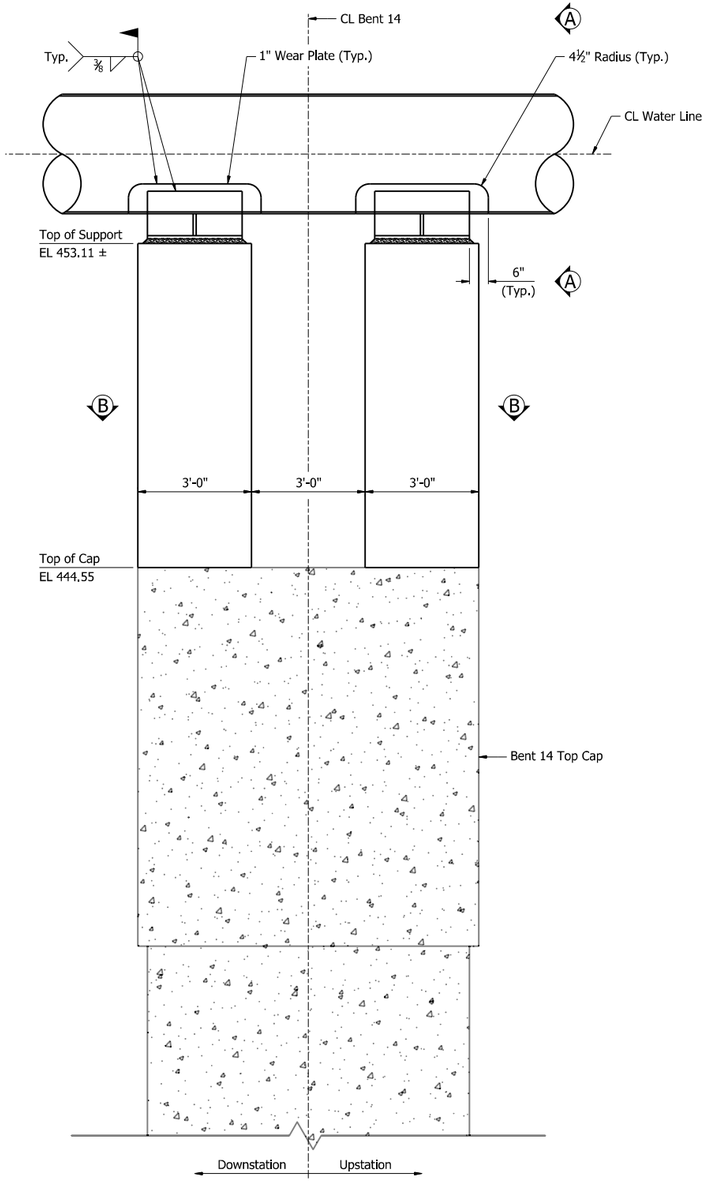
DRAWN BY: TWM	DATE: 02/2024	FILENAME: 040748-BR-BMCD-02.dgn	
CHECKED BY: KBH	DATE: 03/2024	SCALE: AS NOTED	
DESIGNED BY: JT	DATE: 02/2024		

BRIDGE NO. 07684 DRAWING NO.

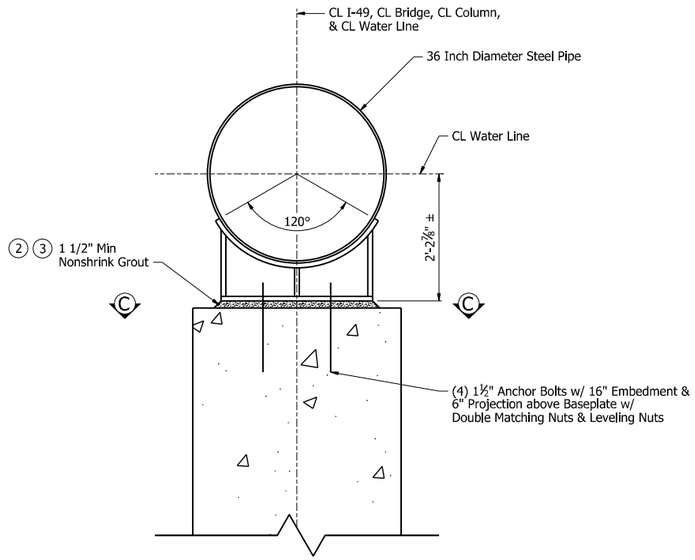
PRINT DATE:

⚠ MINOR REVISIONS

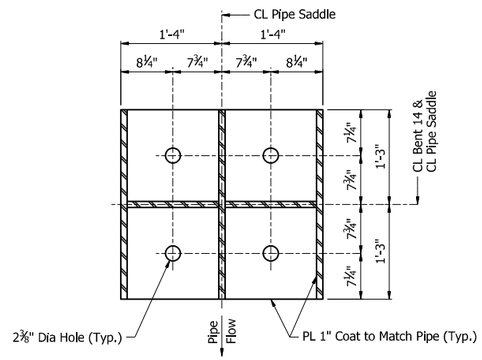
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	660	809
9/16/2024		WATER LINE PLANS				



SECTION VIEW AT BENT 14
FIXED PIPE SUPPORT DETAILS
Scale: ¼" = 1'-0"



SECTION A-A - FIXED PIPE SUPPORT SECTION
Scale: ⅜" = 1'-0"



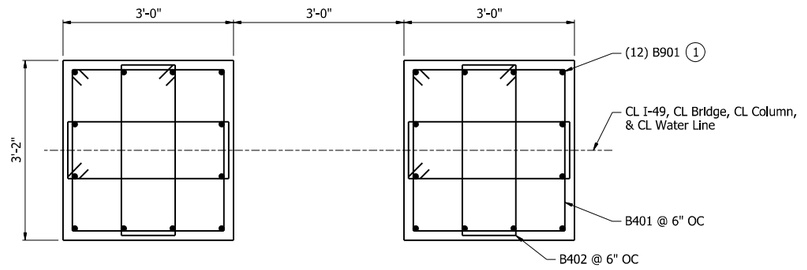
SECTION C-C - FIXED PIPE SUPPORT SECTION
Scale: ½" = 1'-0"

Notes:
All plate steel shall be ASTM A709, Grade 50.

Anchor bolts, washers, and nuts shall conform to Subsection 807.07 of the Standard Specifications.

Fixed pipe support shall be coated to match pipe. Refer to the Supplemental Provisions to the Standard Specifications.

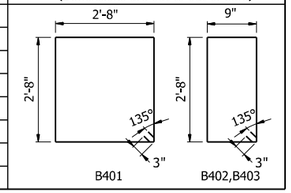
1. Embed bar into Bent 14 Top Cap 6'-6" minimum.
2. Nonshrink grout under fixed support shall be Cement-Based Grout, and shall be listed in Qualified Products List.
3. Nonshrink grout specified in detail is a minimum. Final grout thickness shall be adjusted based on final water line centerline elevation.



SECTION B-B - FIXED PIPE SUPPORT CONCRETE PIER SECTION
Scale: ⅜" = 1'-0"

BAR LIST - FIXED PIPE SUPPORT AT BENT 14

Mark	Number Required	Length	Pin Dia.	Bending Diagrams (Dimensions are out to out of bars)
B401	36	11'-2"	2"	
B402	36	7'-4"	2"	
B901	24	15'-6"	sTR.	



B901 may be field trimmed as required (up to 6") to make adjustments to the top of fixed pipe support concrete elevations.

CERTIFICATE OF AUTHORIZATION
BURNS & McDONNELL ENGINEERING COMPANY, INC.
No.17
ARKANSAS-ENGINEER

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13368
9-16-24
ADAM MICHAEL HOLMES
STRUCTURAL ENGINEER

36" STEEL WATER LINE
BENT 14 FIXED PIPE
SUPPORT DETAILS
I-49 OVER ARKANSAS RIVER
HWY. 22 - GUN CLUB RD. (F)
CRAWFORD & SEBASTIAN COUNTIES

ROUTE 549 ⚠ SEC. 6 ⚠

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: TWM DATE: 02/2024
CHECKED BY: KBH DATE: 03/2024
DESIGNED BY: JT DATE: 02/2024
FILENAME: 040748-BR-BMCD-03.dgn
SCALE: AS NOTED

BRIDGE NO. 07684
DRAWING NO.

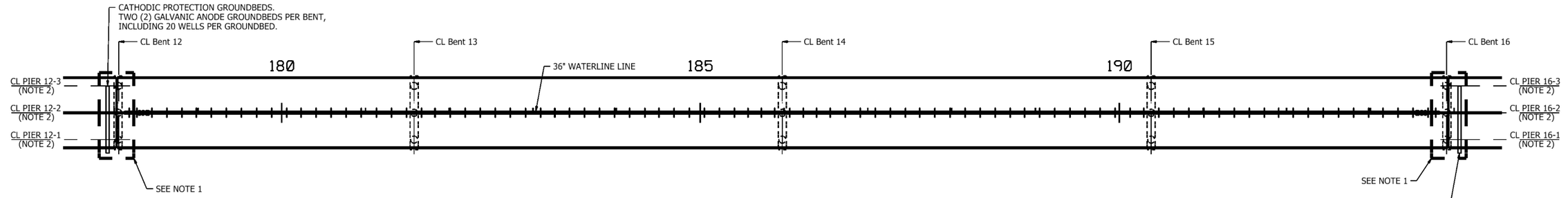
PRINT DATE:

DATE REVISED	DATE REVISED	FED. ROAD DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
03/16/2024		6	ARK.	040901	661	809
		WATERLINE PLANS				

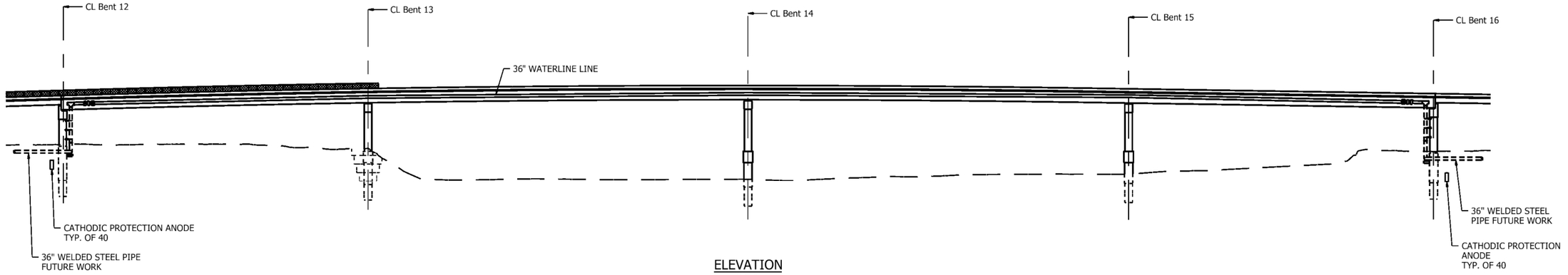
⚠1 MINOR REVISIONS

NOTES:

1. FOR ENLARGED PLAN VIEW, SEE DWG. NO. CP2
2. PIER IDENTIFICATION ONLY FOR CATHODIC PROTECTION DESIGN.



PLAN
N.T.S.



ELEVATION
N.T.S.

PRINT DATE: 9/16/2024

NATIONAL ASSOCIATION OF CORROSION ENGINEERS
CADE C. JOHNSON
No. 22520
Exp. 08-23-2027
CATHODIC PROTECTION SPECIALIST

09/16/2024

BRIDGE ENGINEER

SHEET 1 OF 9
CATHODIC PROTECTION SITE PLAN

HWY. 22 - I-40
SEBASTIAN & CRAWFORD COUNTIES
⚠1 ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MCR DATE: 9/16/2024
CHECKED BY: FFO DATE: 9/16/2024
DESIGNED BY: CCJ DATE: 9/16/2024
FILENAME: 040748-CP-BMCD-01
SCALE:

BRIDGE NO. 07684 DRAWING NO. CP1

DATE REVISED	DATE REVISED
03/16/2024	

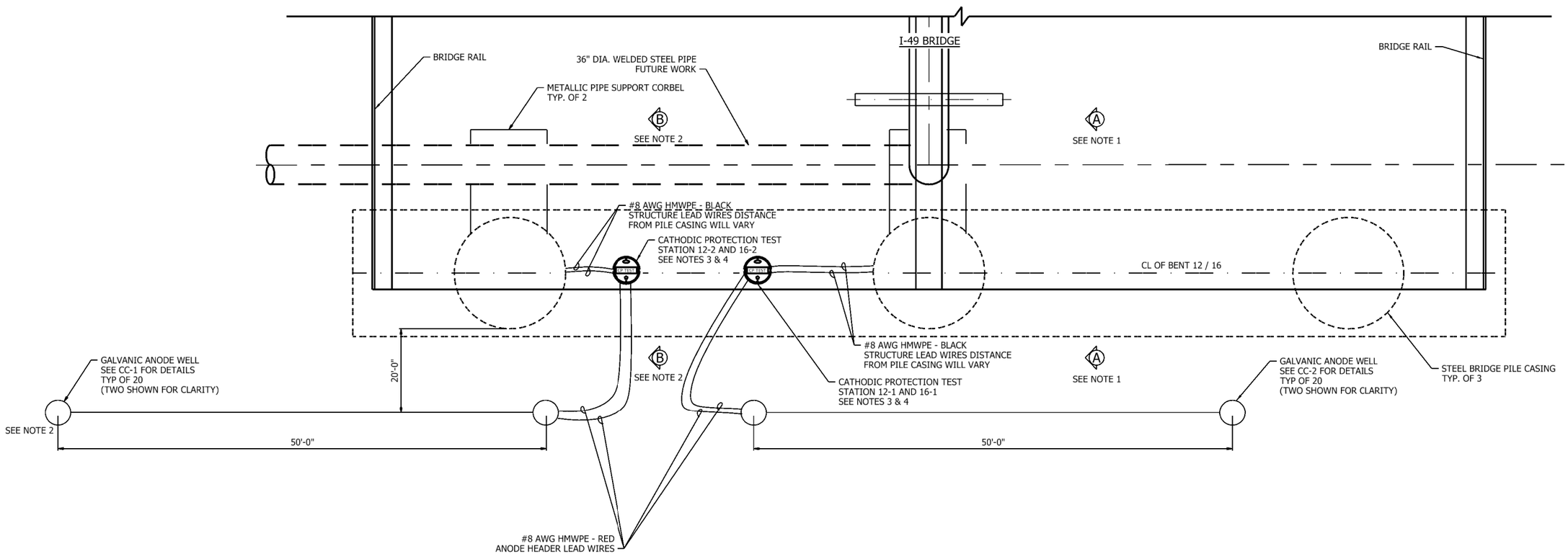
⚠1 MINOR REVISIONS

FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
6	ARK.	040901	662	809

WATERLINE PLANS

NOTES:

1. FOR SECTIONS A-A, SEE DWG. NO. CP3
2. FOR SECTIONS B-B, SEE DWG. NO. CP3
3. TEST STATIONS TO BE IDENTIFIED ACCORDING TO THE BENT AND PILE CASING TO WHICH THEY ARE CONNECTED. FOR INSTANCE, FOR BENT 12. THE TEST STATION ATTACHED TO THE CENTRAL PILE CASING WOULD BE IDENTIFIED AS 12-2
4. TEST STATION LOCATION TO BE FIELD VERIFIED
5. WATERLINE ORIENTATION IS TO THE SOUTH AND CATHODIC PROTECTION TO THE NORTH ON BENT 16.



BENT 12 & 16 CATHODIC PROTECTION PLACEMENT ENLARGED PLAN VIEW
Scale: NTS

NATIONAL ASSOCIATION OF CORROSION ENGINEERS
CERTIFIED
CORROSION PROTECTION SPECIALIST
CLAUDE C. JOHNSON
No. 22520
Exp. 08-23-2027

09/16/2024

BRIDGE ENGINEER

SHEET 2 OF 9
CATHODIC PROTECTION ENLARGED PLAN VIEW

HWY. 22 - I-40
SEBASTIAN & CRAWFORD COUNTIES
⚠1 ROUTE 549 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MCR DATE: 9/16/2024 FILENAME: 040748-CP-BMCD-01
CHECKED BY: FFO DATE: 9/16/2024 SCALE:
DESIGNED BY: CCJ DATE: 9/16/2024
BRIDGE NO. 07684 DRAWING NO. CP2

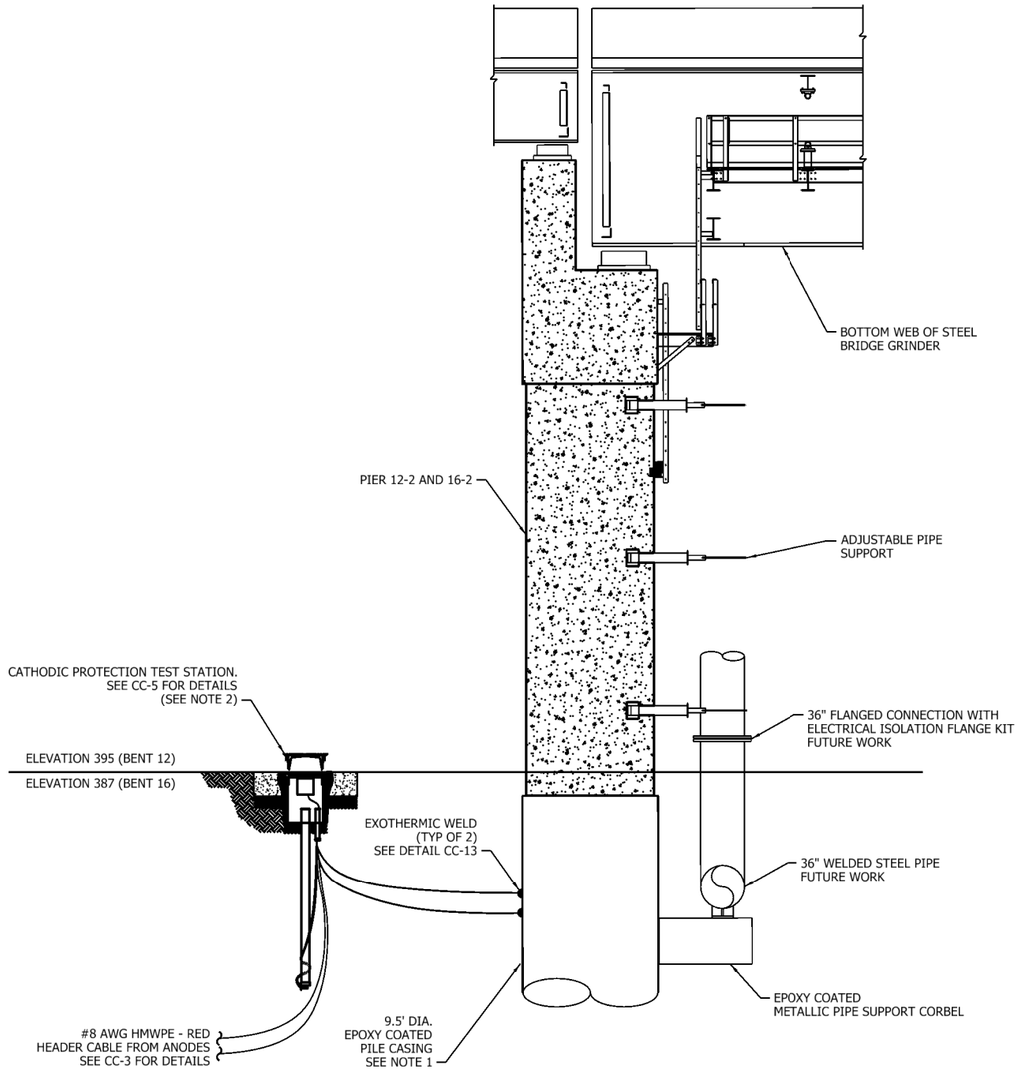
PRINT DATE: 9/16/2024

DATE REVISED	DATE REVISED	FED. ROAD DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
03/16/2024		6	ARK.	040901	663	809
		WATERLINE PLANS				

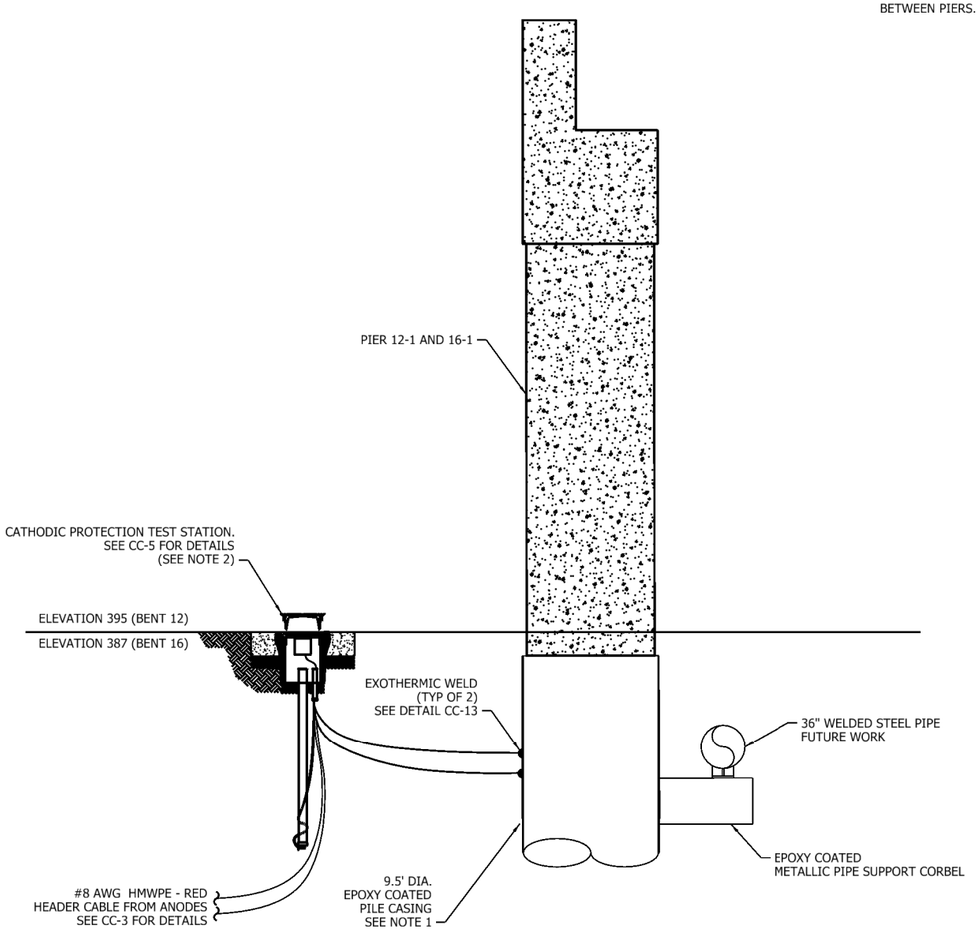
⚠ MINOR REVISIONS

NOTES:

1. PILE CASING TO BE ELECTRICALLY ISOLATED FROM REBAR CAGE AND ALL METALLIC STRUCTURES. CONFIRMATION OF ELECTRICAL ISOLATION WILL BE REQUIRED DURING INSTALLATION.
2. FINAL LOCATION TO BE FIELD VERIFED. LOCATION SHOWN HERE ARE FOR WIRE ROUTING AND GENERAL CONFIGURATION ONLY. TEST STATIONS TO BE PLACED BETWEEN PIERS.



SECTION A-A
PIER 12-2 AND 16-2 CATHODIC PROTECTION SECTION VIEWS
Scale: NTS



SECTION B-B
PIER 12-1 AND 16-1 CATHODIC PROTECTION SECTION VIEWS
Scale: NTS

NATIONAL ASSOCIATION OF CORROSION ENGINEERS
CADE C. JOHNSON
NO. 22520
EXP. 08-23-2027
CATHODIC PROTECTION SPECIALIST

09/16/2024

BRIDGE ENGINEER

SHEET 3 OF 9
CATHODIC PROTECTION SECTION VIEW

HWY. 22 - I-40
SEBASTIAN & CRAWFORD COUNTIES
1 ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MCR DATE: 9/16/2024
CHECKED BY: FFO DATE: 9/16/2024
DESIGNED BY: CCJ DATE: 9/16/2024
FILENAME: 040748-CP-BMCD-01
SCALE:

BRIDGE NO. 07684 DRAWING NO. CP3

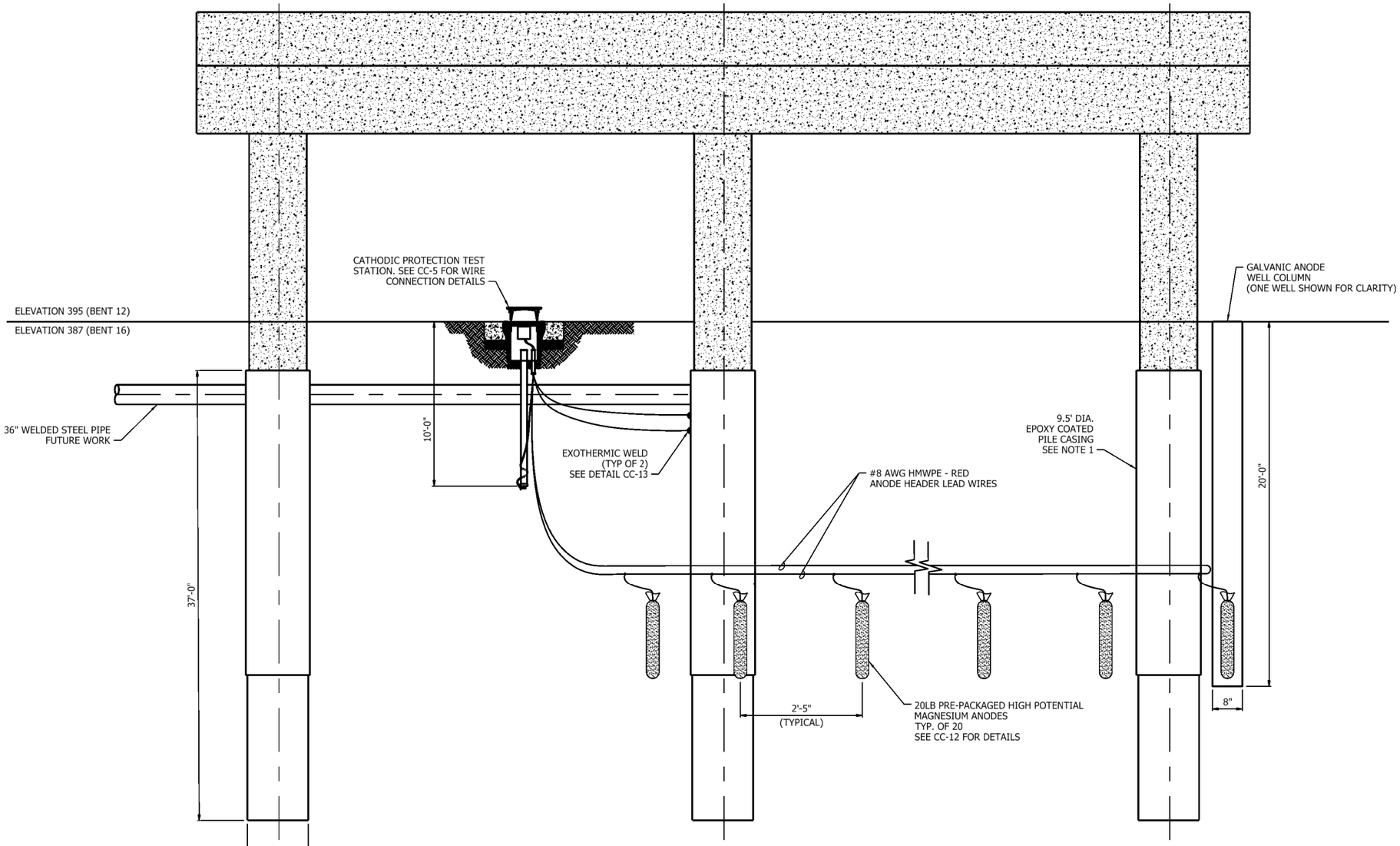
PRINT DATE: 9/16/2024

⚠ MINOR REVISIONS

DATE REVISED	DATE REVISED	FED. ROAD DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
09/16/2024		6	ARK.	040901	664	809
		WATERLINE PLANS				

NOTES:

1. PILE CASING TO BE ELECTRICALLY ISOLATED FROM REBAR CAGE AND ALL METALLIC STRUCTURES. CONFIRMATION OF ELECTRICAL ISOLATION WILL BE REQUIRED DURING INSTALLATION.



DETAIL CC-1 - PIER 12-2 AND PIER 16-2
ANODE PLACEMENT
Scale: NTS

NATIONAL ASSOCIATION OF CORROSION ENGINEERS
CADE C. JOHNSON
No. 22520
Exp. 08-23-2027
CATHODIC PROTECTION SPECIALIST

09/16/2024

BRIDGE ENGINEER

SHEET 4 OF 9
CATHODIC PROTECTION DETAIL 1

HWY. 22 - I-40
SEBASTIAN & CRAWFORD COUNTIES
⚠ ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MCR DATE: 9/16/2024
CHECKED BY: FFO DATE: 9/16/2024
DESIGNED BY: CCJ DATE: 9/16/2024
FILENAME: 040748-CP-BMCD-01
SCALE:
BRIDGE NO. 07684
DRAWING NO. CP4

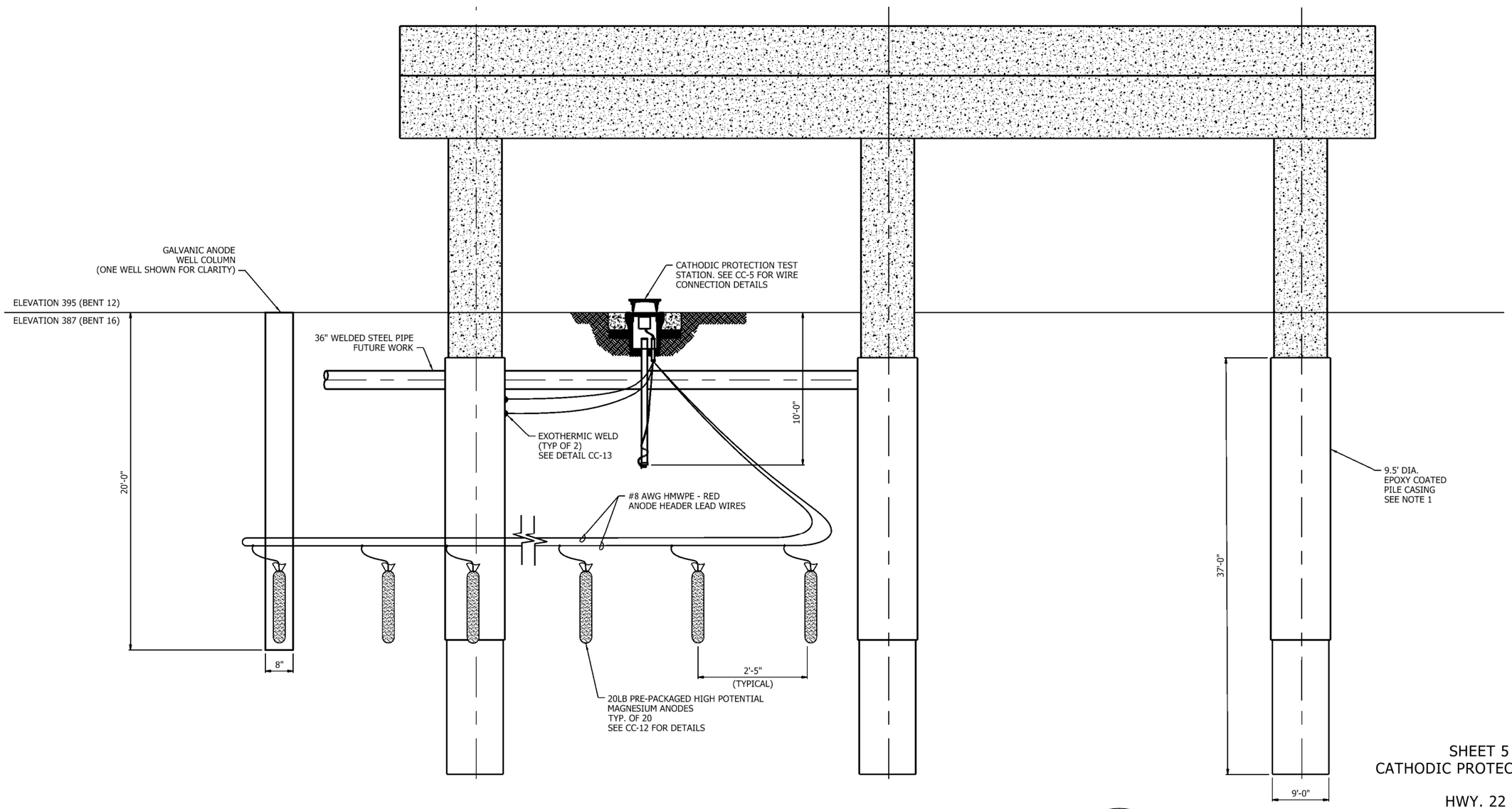
PRINT DATE: 9/16/2024

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
09/16/2024		6	ARK.	040901	665	809
		WATERLINE PLANS				

⚠1 MINOR REVISIONS

NOTES:

1. PILE CASING TO BE ELECTRICALLY ISOLATED FROM REBAR CAGE AND ALL METALLIC STRUCTURES. CONFIRMATION OF ELECTRICAL ISOLATION WILL BE REQUIRED DURING INSTALLATION.



DETAIL CC-2 - PIER 12-1 AND 16-1
ANODE PLACEMENT
Scale: NTS

NATIONAL ASSOCIATION OF CORROSION ENGINEERS
CADE C. JOHNSON
No. 22520
Exp. 08-23-2027
CATHODIC PROTECTION SPECIALIST

09/16/2024

BRIDGE ENGINEER

SHEET 5 OF 9
CATHODIC PROTECTION DETAIL 2

HWY. 22 - I-40
SEBASTIAN & CRAWFORD COUNTIES
⚠1 ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MCR DATE: 9/16/2024
CHECKED BY: FFO DATE: 9/16/2024
DESIGNED BY: CCJ DATE: 9/16/2024
FILENAME: 040748-CP-BMCD-01
SCALE:

BRIDGE NO. 07684
DRAWING NO. CP5

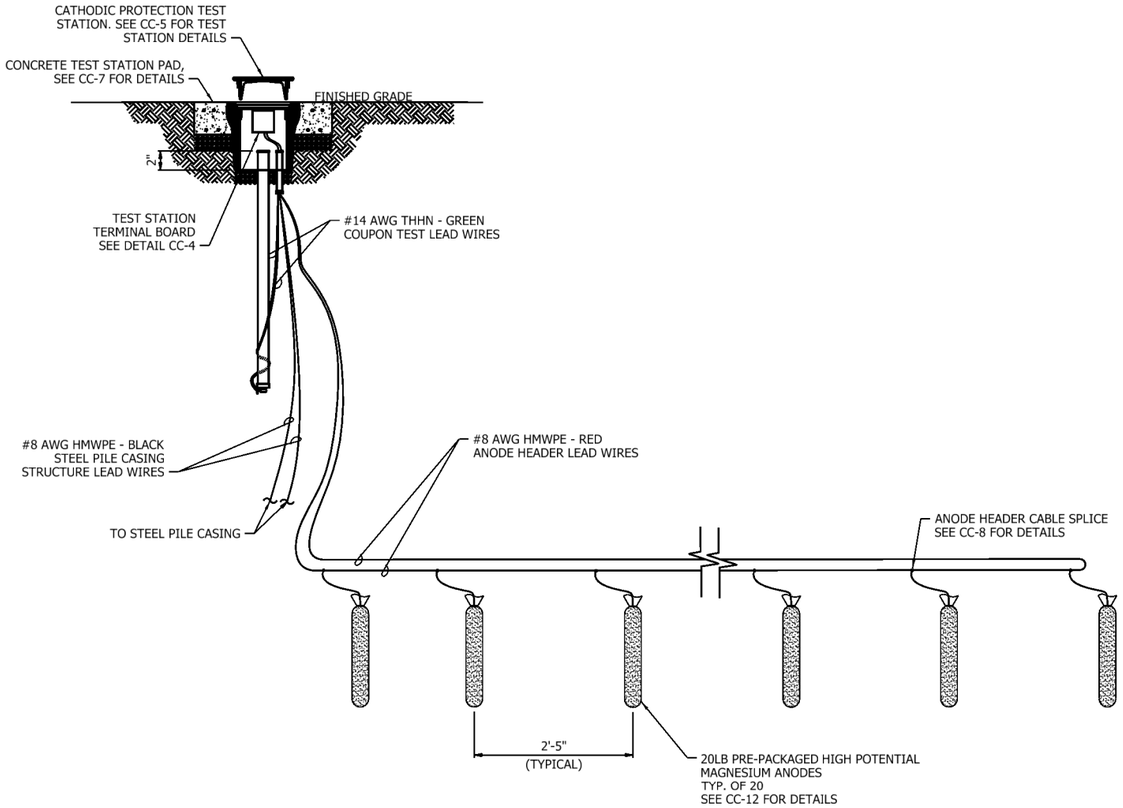
PRINT DATE: 9/16/2024

DATE REVISED	DATE REVISED	FED. ROAD DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
09/16/2024		6	ARK.	040901	666	809
		WATERLINE PLANS				

⚠ MINOR REVISIONS

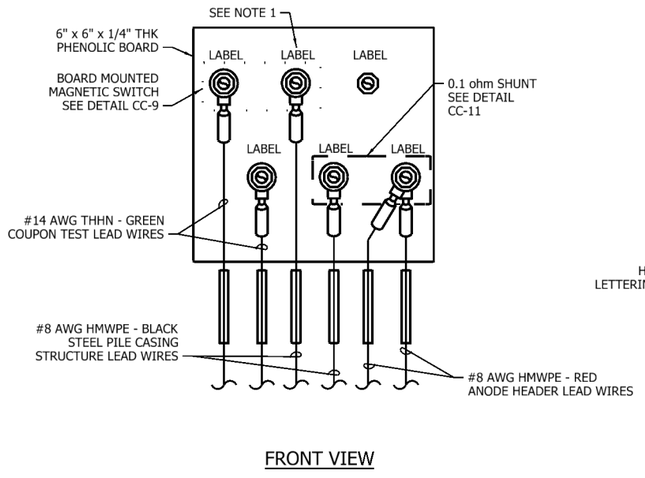
NOTES:

1. LABEL ALL LEAD WIRES WITH ETCHED LAMACOID INCLUDING 3M PERMANENT ADHESIVE. LABEL WILL IDENTIFY EACH CONNECTION TYPE IN ACCORDANCE WITH THE PROJECT SPECIFICATION. LAMACOIDS ARE TO BE BLUE WITH WHITE LETTERING.

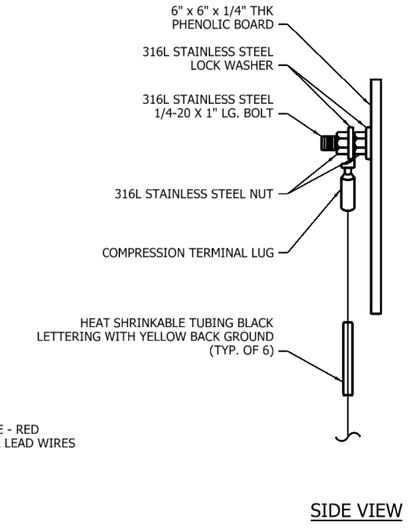


DETAIL CC-3 - CATHODIC PROTECTION TEST STATION WIRE CONNECTION DETAIL

Scale: NTS



FRONT VIEW



SIDE VIEW

DETAIL CC-4 - CATHODIC PROTECTION TEST STATION TERMINAL BOARD DETAIL

Scale: NTS

PRINT DATE: 9/16/2024

NATIONAL ASSOCIATION OF CORROSION ENGINEERS
CADE C. JOHNSON
No. 22520
Exp. 08-23-2027
CATHODIC PROTECTION SPECIALIST

09/16/2024

BRIDGE ENGINEER

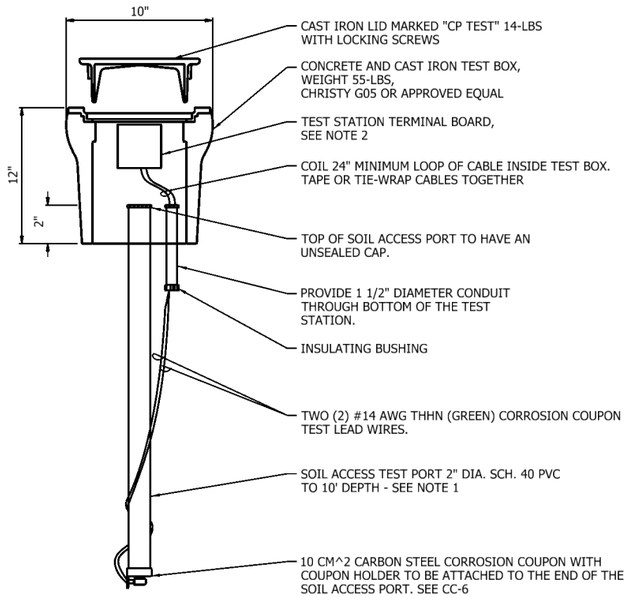
SHEET 6 OF 9
CATHODIC PROTECTION DETAIL 3

HWY. 22 - I-40
SEBASTIAN & CRAWFORD COUNTIES
⚠ ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MCR DATE: 9/16/2024
CHECKED BY: FFO DATE: 9/16/2024
DESIGNED BY: CCJ DATE: 9/16/2024
FILENAME: 040748-CP-BMCD-01
SCALE:

BRIDGE NO. 07684 DRAWING NO. CP6

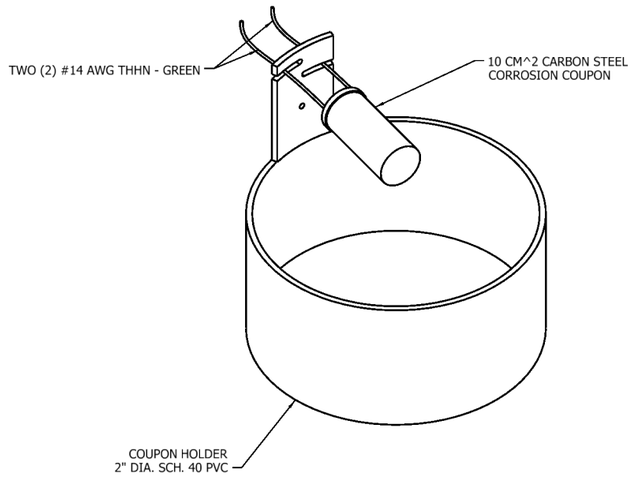


NOTES:

1. SOIL ACCESS PORT TO BE FILLED WITH APPROXIMATELY 12" OF CLEAN NATIVE SOIL. ROCKS, CONCRETE, AND OTHER DEBRIS SHALL NOT BE PLACED IN THE TEST PORT.
2. ALL TEST STATIONS TO BE OUTFITTED WITH A MAGNET AND FLEXIBLE LANYARD, SEE DETAIL CC-10. LANYARD TO BE KNOTTED TO STRUCTURE LEAD WIRES TO REMAIN IN THE TEST STATION.

DETAIL CC-5 - TEST BOX

Scale: NTS

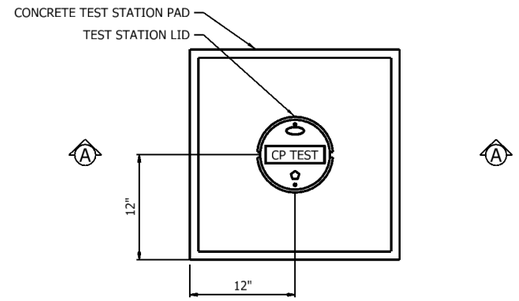


DETAIL CC-6 - CORROSION COUPON AND HOLDER

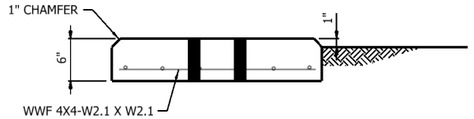
Scale: NTS

MINOR REVISIONS

DATE REVISED	DATE REVISED	FED. ROAD DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
09/16/2024		6	ARK.	040901	667	809
		WATERLINE PLANS				



PLAN VIEW



SECTION A-A

DETAIL CC-7 - CONCRETE TEST STATION PAD

Scale: NTS

PRINT DATE: 9/16/2024

NATIONAL ASSOCIATION OF CORROSION ENGINEERS
CADE C. JOHNSON
No. 22520
Exp. 08-23-2027
CATHODIC PROTECTION SPECIALIST

09/16/2024

BRIDGE ENGINEER

SHEET 7 OF 9
CATHODIC PROTECTION DETAIL 4

HWY. 22 - I-40
SEBASTIAN & CRAWFORD COUNTIES

1 ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MCR DATE: 9/16/2024
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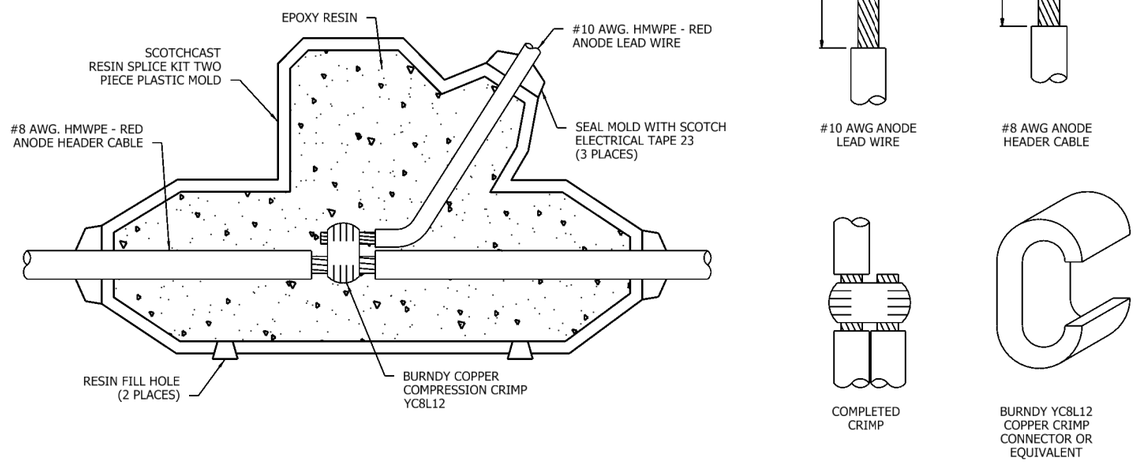
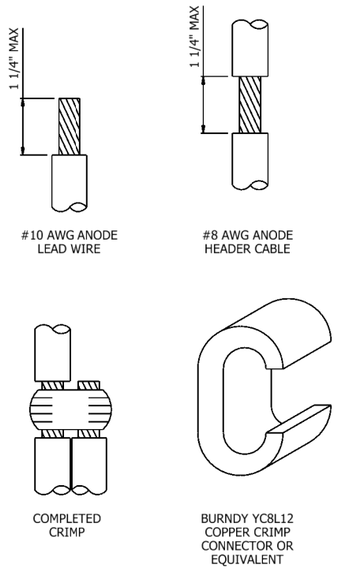
DESIGNED BY: CCJ DATE: 9/16/2024
FILENAME: 040748-CP-BMCD-01
SCALE:

BRIDGE NO. 07684 DRAWING NO. CP7

DATE REVISED	DATE REVISED	FED. ROAD DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
09/16/2024		6	ARK.	040901	668	809
		WATERLINE PLANS				

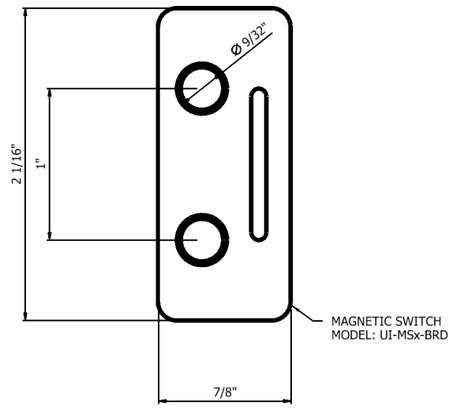
⚠1 MINOR REVISIONS





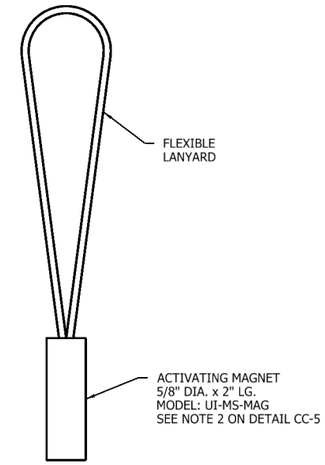
DETAIL CC-8 - ANODE HEADER CABLE SPLICE

Scale: NTS



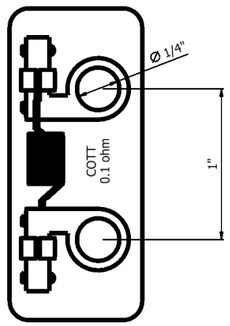
DETAIL CC-9 - BOARD MOUNTED MAGNETIC SWITCH

Scale: NTS



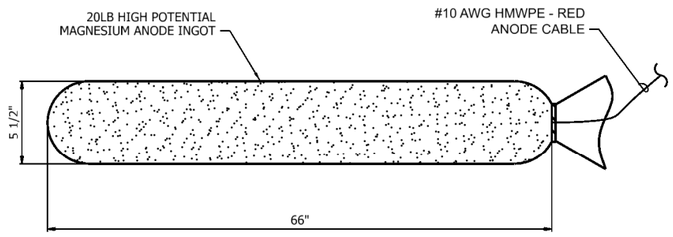
DETAIL CC-10 - MAGNET & LANYARD

Scale: NTS



DETAIL CC-11 - 0.1 OHM SHUNT

Scale: NTS



DETAIL CC-12 - 20LB PRE-PACKAGED HIGH POTENTIAL MAGNESIUM ANODE

Scale: NTS

PRINT DATE: 9/16/2024

NATIONAL ASSOCIATION OF CORROSION ENGINEERS
CERTIFIED
CAUDE C. JOHNSON
No. 22520
Exp. 08-23-2027
CATHODIC PROTECTION SPECIALIST

09/16/2024

BRIDGE ENGINEER

SHEET 8 OF 9
CATHODIC PROTECTION DETAIL 5

HWY. 22 - I-40
SEBASTIAN & CRAWFORD COUNTIES

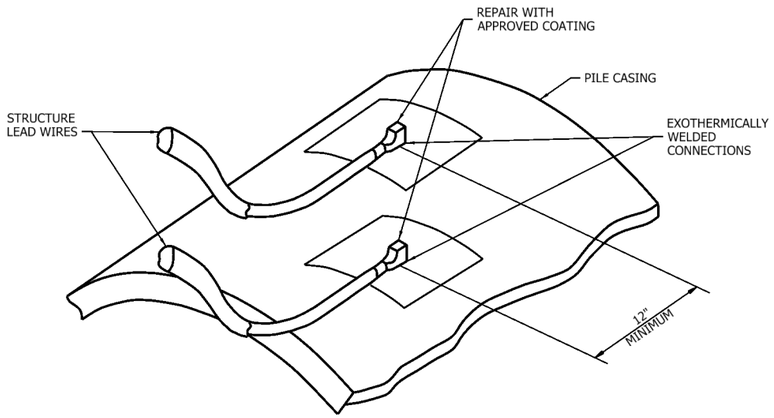
⚠1 ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

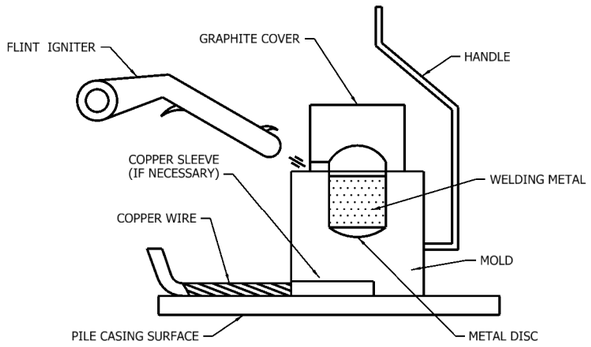
DRAWN BY: MCR DATE: 9/16/2024 FILENAME: 040748-CP-BMCD-01
CHECKED BY: FFO DATE: 9/16/2024 SCALE:
DESIGNED BY: CCJ DATE: 9/16/2024
BRIDGE NO. 07684 DRAWING NO. CP8

MINOR REVISIONS	DATE REVISED	DATE REVISED	FED. ROAD DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
1	09/16/2024		6	ARK.	040901	669	809
			WATERLINE PLANS				

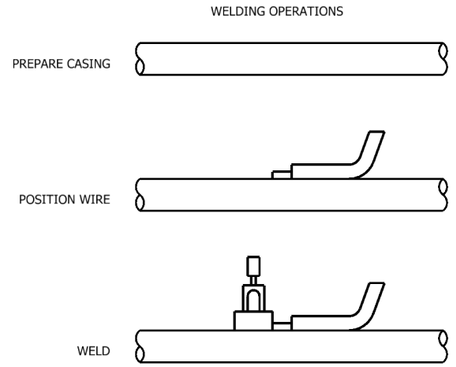
EXOTHERMICALLY WELDED CONNECTIONS



WELDING MOLD SET UP



WELDING OPERATIONS



WELDING PROCEDURE

1. PERFORM ALL WELDING OPERATIONS IN ACCORDANCE WITH COMPANY STANDARDS.
2. REMOVE A 2" SQUARE SECTION OF COATING PER WIRE TO BE WELDED. USING MECHANICAL MEANS (HAND OR ROTARY WIRE BRUSH), CLEAN OFF ANY REMAINING COATING PRODUCT AND BRING THE PIPE SURFACE TO A BRIGHT METAL. CLEAN THE SITE OF DUST, WATER, AND CONTAMINANTS.
3. LEAVE ENOUGH SLACK ON THE WIRE TO REDUCE STRAIN ON WELD.
4. STRIP INSULATION FROM WIRE, SLIP ON COPPER SLEEVE (#10 WIRE AND SMALLER) AND CRIMP. PLACE WIRE FIRMLY ON THE PREPARED METAL SURFACE.
5. PREPARE WELDER BY INSERTING A STEEL DISC, CONCAVE SIDE UP, INTO THE MOLD. ENSURE THE STEEL DISC IS SEATED PROPERLY AND CENTERED AT THE BOTTOM OF THE MOLD. USING A TUBE OF PROPERLY SIZED WELDING MATERIAL, POUR LOOSE WELDING MATERIAL POWDER INTO THE MOLD.
6. TAP OR SQUEEZE THE BASE OF THE TUBE TO LOOSEN THE STARTING POWDER AT THE BOTTOM OF THE TUBE. POUR 1/3 OF THE STARTING MATERIAL INTO THE MOLD, CLOSE THE MOLD LID, AND POUR THE REMAINING 2/3 INTO THE SLOT ON THE COVER OF THE MOLD.
7. PLACE THE WELD MOLD OVER THE WIRE AND PREPARED LOCATION. AIMING THE FLINT IGNITER FROM THE SIDE, IGNITE THE STARTING MATERIAL ON THE MOLD COVER. ALLOW FOR APPROXIMATELY 30 SECONDS OF TIME FOR THE WELD TO BE COMPLETED.
8. REMOVE THE MOLD AND ALLOW THE WELD AND MOLD TO COOL. USING A SOFT BRISTLE BRUSH, CLEAN THE MOLD.
9. AFTER WELD HAS COOLED, HIT IT FIRMLY WITH A HAMMER TO CONFIRM ADHERENCE TO THE SUBSTRATE AND CLEAN THE AREA. THE WELD AND PILE CASING SHOULD BE CLEANED BY MECHANICAL MEANS (HAND OR ROTARY BRUSH) TO BRIGHT METAL, AND BE FREE OF WATER, DUST, SLAG, OR OTHER CONTAMINANTS.
10. PROTECT WELD WITH, ROYSTON HANDY CAP XL, OR APPROVED EQUAL.

DETAIL CC-13 - EXOTHERMIC WELDING

Scale: NTS

NATIONAL ASSOCIATION OF CORROSION ENGINEERS
CADE C. JOHNSON
No. 22520
Exp. 08-23-2027
CATHODIC PROTECTION SPECIALIST

09/16/2024

BRIDGE ENGINEER

SHEET 9 OF 9
EXOTHERMIC WELDING DETAILS

HWY. 22 - I-40
SEBASTIAN & CRAWFORD COUNTIES
ROUTE 549 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MCR DATE: 9/16/2024
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FILENAME: 040748-CP-BMCD-01
SCALE:

BRIDGE NO. 07684 DRAWING NO. CP9

PRINT DATE: 9/16/2024

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	670	809
		CROSS SECTION SHEETS				

CROSS SECTION INDEX OF SHEETS

SHEET NO.	ALIGNMENT
671 - 718	I-49
719 - 727	HWY 22 RAMP 2
728 - 738	HWY 22 RAMP 3
739 - 744	GC RAMP 1
745 - 749	GC RAMP 2
750 - 752	GC RAMP 3
753 - 762	GC RAMP 4
763 - 767	NW SERVICE RD.
768 - 773	SE SERVICE RD.
774 - 801	GUN CLUB DR.
802 - 809	HWY. 59

4/15/2024 7:30:31 PM
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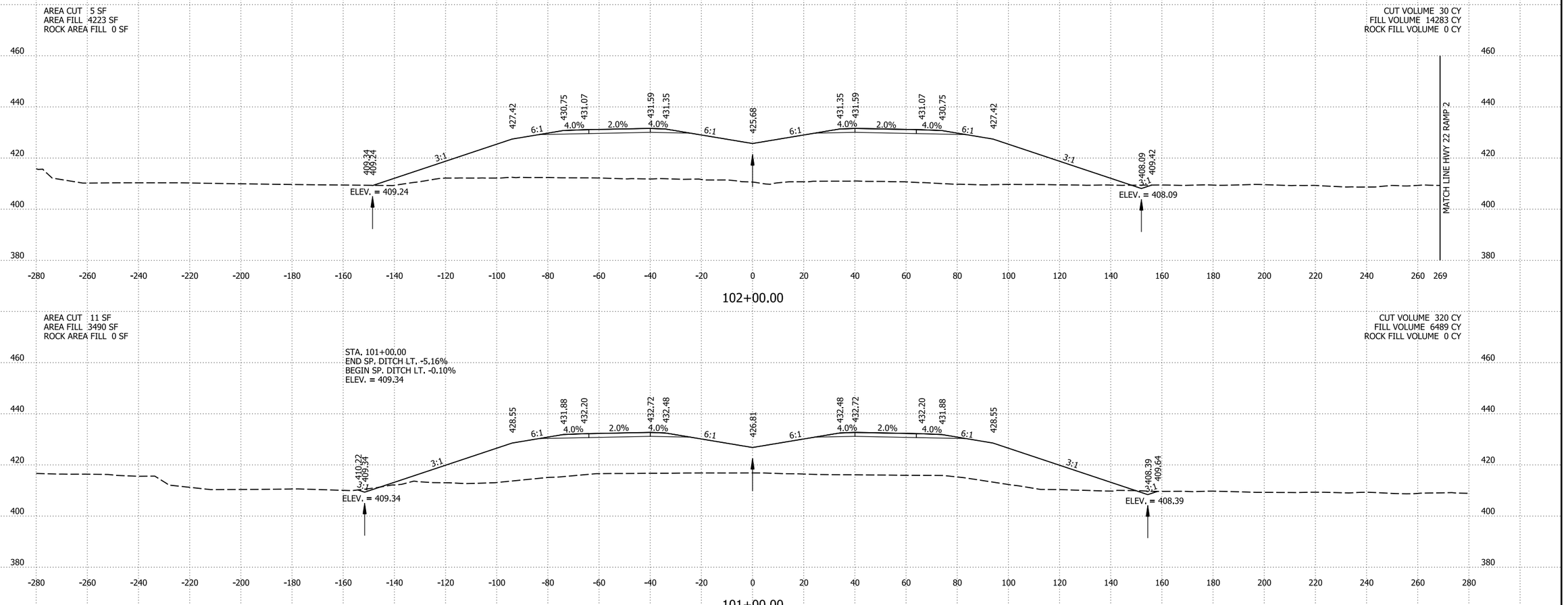
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	671	809
		CROSS SECTIONS				



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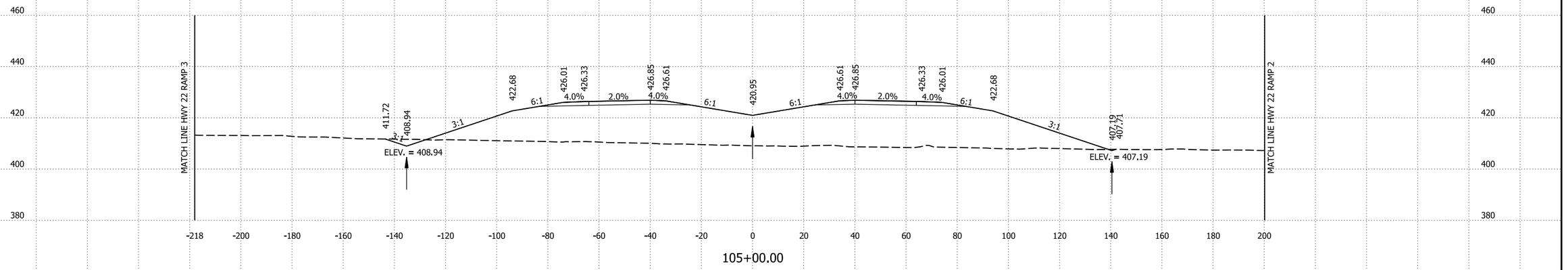
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	672	809
		CROSS SECTIONS				

AREA CUT 22 SF
AREA FILL 3319 SF
ROCK AREA FILL 0 SF

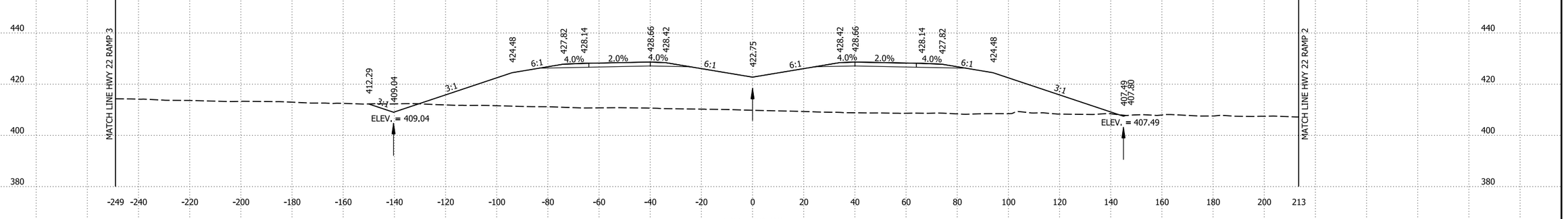
CUT VOLUME 103 CY
FILL VOLUME 12978 CY
ROCK FILL VOLUME 0 CY



105+00.00

AREA CUT 33 SF
AREA FILL 3689 SF
ROCK AREA FILL 0 SF

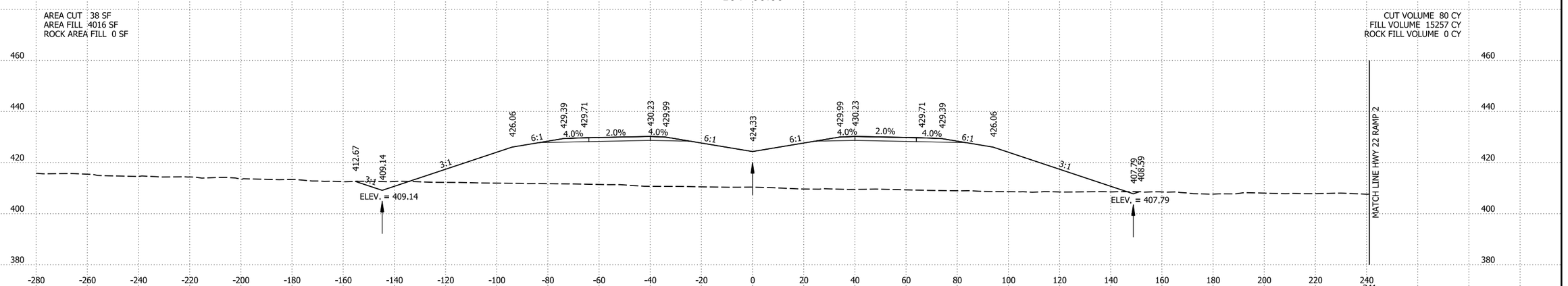
CUT VOLUME 132 CY
FILL VOLUME 14269 CY
ROCK FILL VOLUME 0 CY



104+00.00

AREA CUT 38 SF
AREA FILL 4016 SF
ROCK AREA FILL 0 SF

CUT VOLUME 80 CY
FILL VOLUME 15257 CY
ROCK FILL VOLUME 0 CY



103+00.00

I-49 STA. 103+00 TO STA. 105+00

4/15/2024 7:30:33 PM
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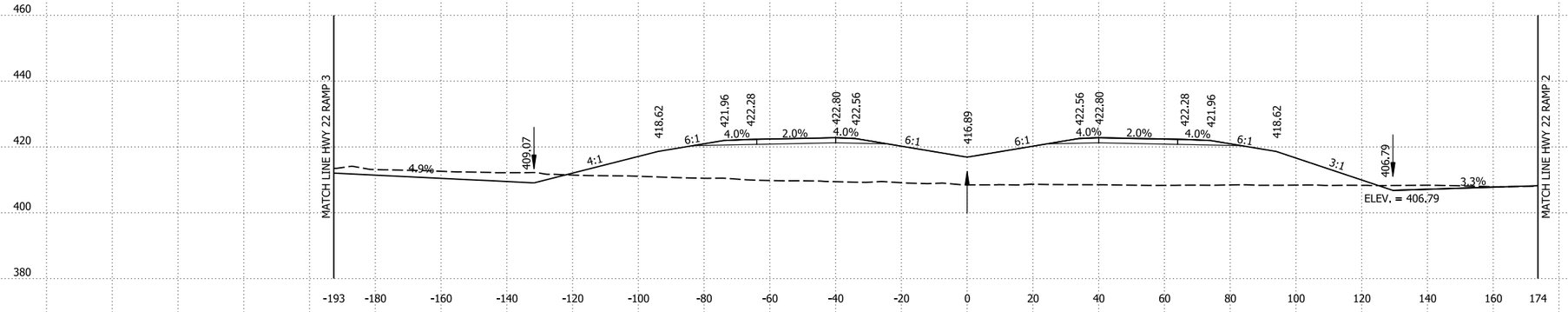
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	673	809
		CROSS SECTIONS				

AREA CUT 180 SF
AREA FILL 2366 SF
ROCK AREA FILL 0 SF

CUT VOLUME 214 CY
FILL VOLUME 3662 CY
ROCK FILL VOLUME 0 CY



107+00.00

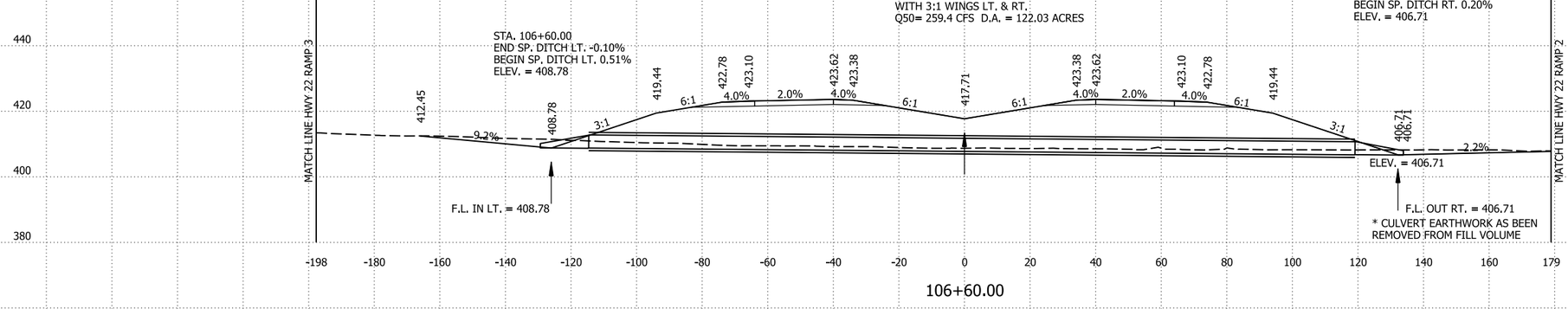
AREA CUT 109 SF
AREA FILL 2578 SF
ROCK AREA FILL 0 SF

CUT VOLUME 162 CY
FILL VOLUME 5327 CY
ROCK FILL VOLUME 0 CY

STA. 106+60.00
CONSTRUCT DOUBLE
8' x 4' x 234' R.C. BOX CULVERT
WITH 3:1 WINGS LT. & RT.
Q50= 259.4 CFS D.A. = 122.03 ACRES

STA. 106+60.00
END SP. DITCH LT. -0.10%
BEGIN SP. DITCH LT. 0.51%
ELEV. = 408.78

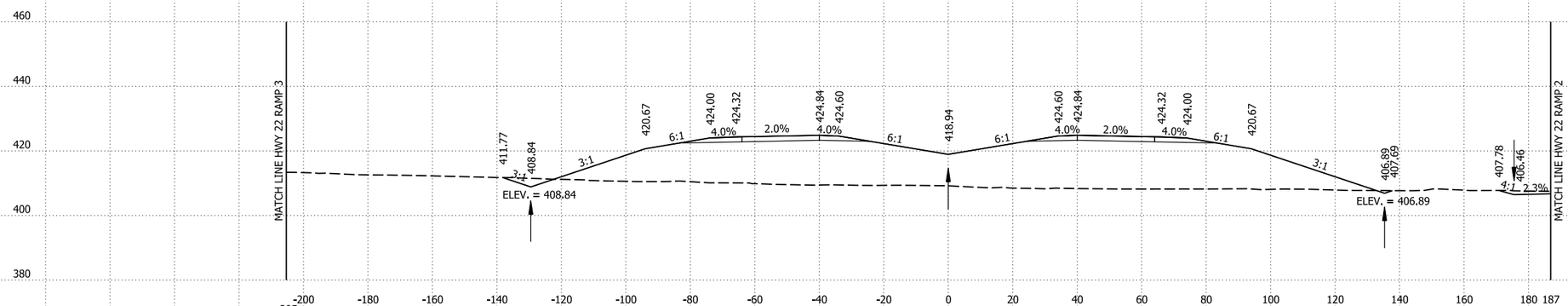
STA. 106+60.00
END SP. DITCH RT. -0.30%
BEGIN SP. DITCH RT. 0.20%
ELEV. = 406.71



106+60.00

AREA CUT 37 SF
AREA FILL 2871 SF
ROCK AREA FILL 0 SF

CUT VOLUME 110 CY
FILL VOLUME 11463 CY
ROCK FILL VOLUME 0 CY



106+00.00

I-49 STA. 106+00 TO STA. 107+00

4/15/2024 7:30:34 PM
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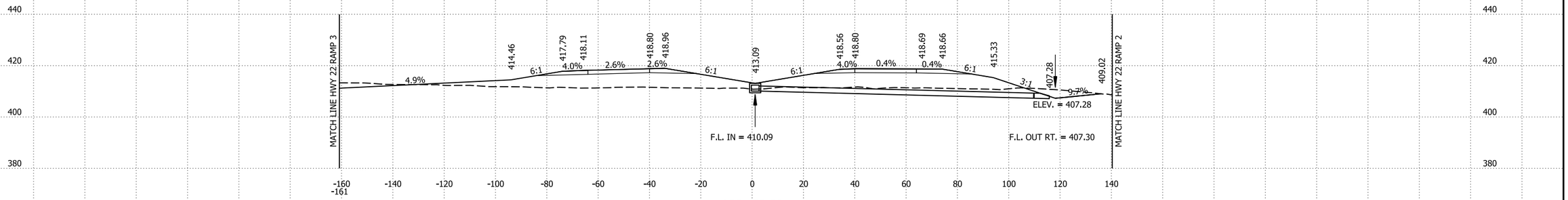
		6	ARK.	040901	674	809
		CROSS SECTIONS				

STA. 109+50.00
BEGIN SP. DITCH MED. 0.13%
ELEV. = 413.09

STA. 109+50.00 CONSTRUCT
TYPE RM DROP INLET IN MEDIAN
4'-0" x 3'-0" x H=3'-0"
WITH 24" x 108' R.C. PIPE OUTLET RT.
(CLASS III) (TYPE 3 BEDDING) WITH FES.

AREA CUT 82 SF
AREA FILL 1017 SF
ROCK AREA FILL 0 SF

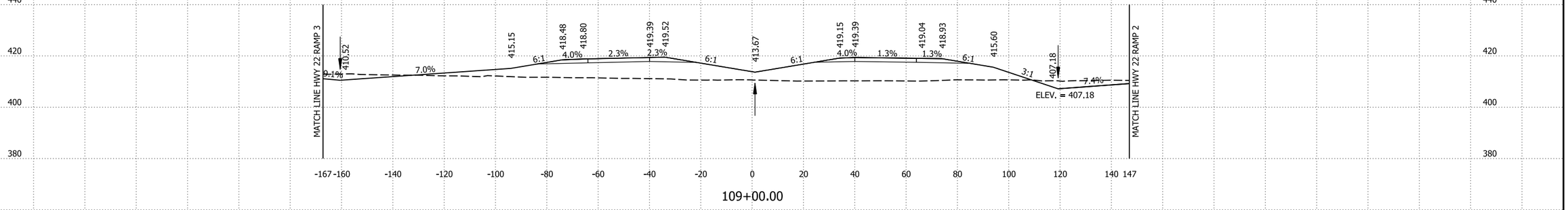
CUT VOLUME 190 CY
FILL VOLUME 2098 CY
ROCK FILL VOLUME 0 CY



109+50.00

AREA CUT 124 SF
AREA FILL 1249 SF
ROCK AREA FILL 0 SF

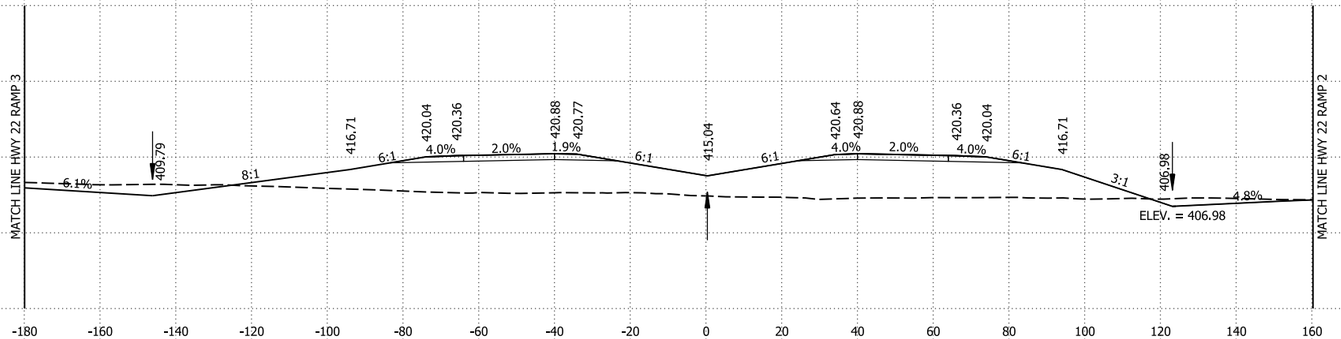
CUT VOLUME 503 CY
FILL VOLUME 5548 CY
ROCK FILL VOLUME 0 CY



109+00.00

AREA CUT 148 SF
AREA FILL 1747 SF
ROCK AREA FILL 0 SF

CUT VOLUME 607 CY
FILL VOLUME 7617 CY
ROCK FILL VOLUME 0 CY



108+00.00

I-49 STA. 108+00 TO STA. 109+50

4/15/2024 7:30:34 PM
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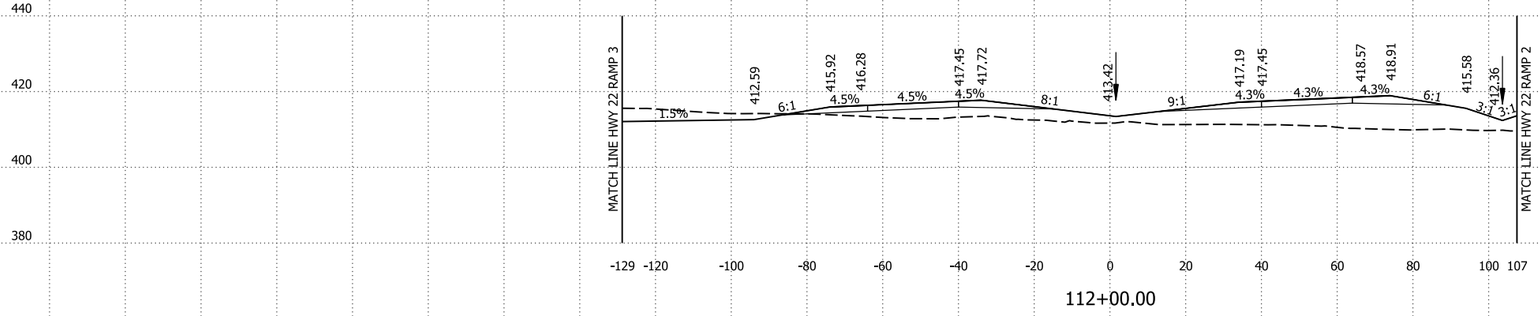
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	675	809
		CROSS SECTIONS				

AREA CUT 96 SF
AREA FILL 693 SF
ROCK AREA FILL 0 SF

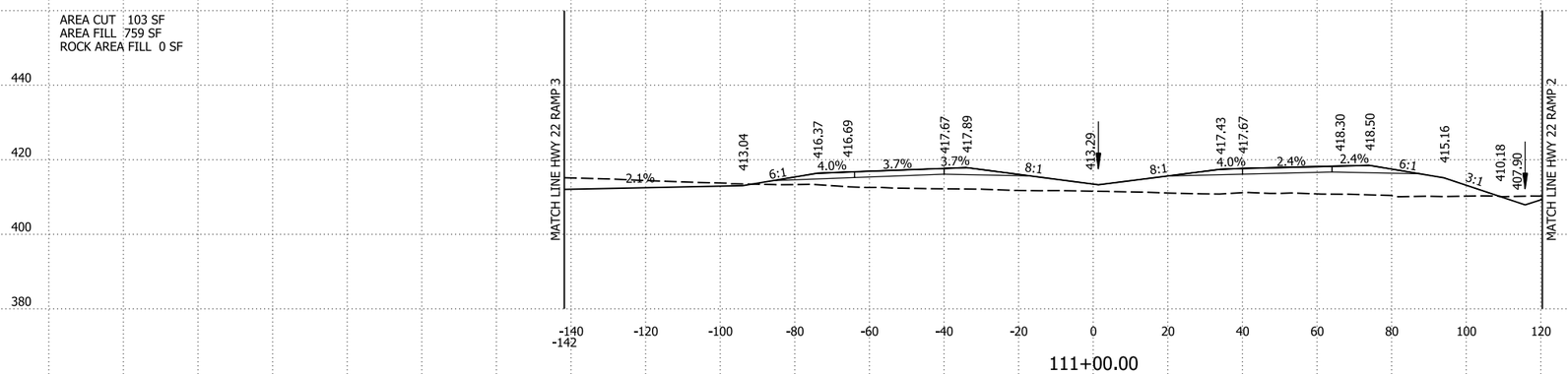
CUT VOLUME 368 CY
FILL VOLUME 2689 CY
ROCK FILL VOLUME 0 CY



112+00.00

AREA CUT 103 SF
AREA FILL 759 SF
ROCK AREA FILL 0 SF

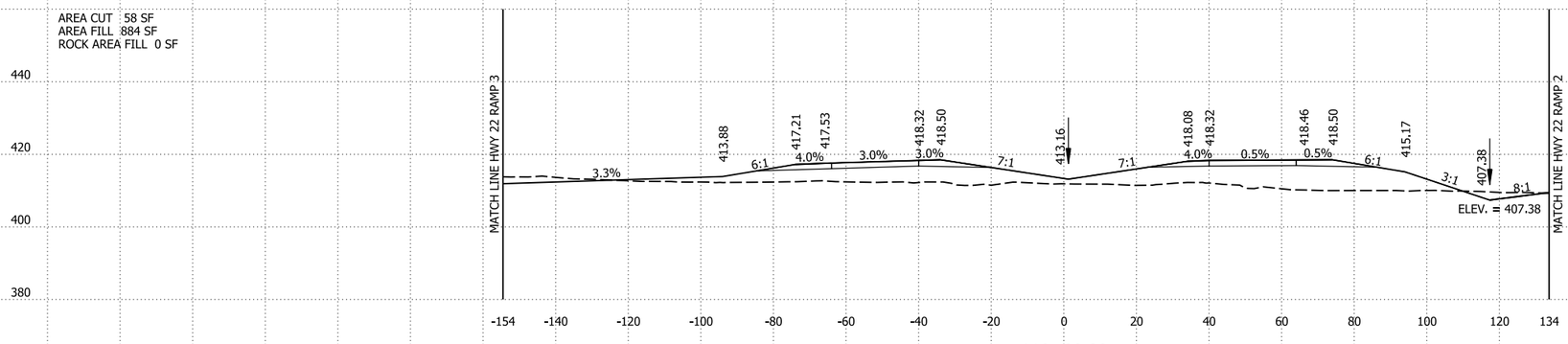
CUT VOLUME 298 CY
FILL VOLUME 3043 CY
ROCK FILL VOLUME 0 CY



111+00.00

AREA CUT 58 SF
AREA FILL 884 SF
ROCK AREA FILL 0 SF

CUT VOLUME 130 CY
FILL VOLUME 1760 CY
ROCK FILL VOLUME 0 CY



110+00.00

I-49 STA. 110+00 TO STA. 112+00

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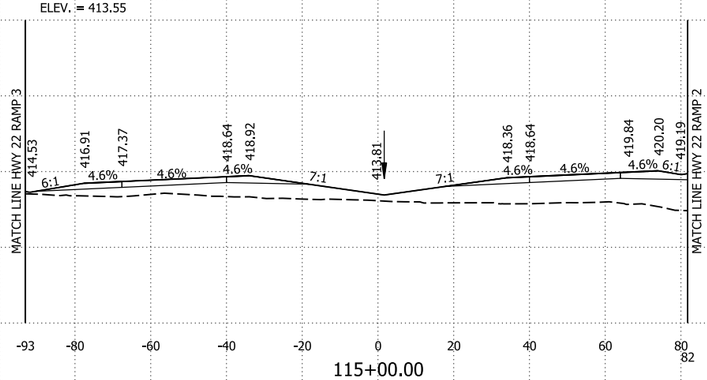
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	676	809
		CROSS SECTIONS				

AREA CUT 0 SF
AREA FILL 679 SF
ROCK AREA FILL 0 SF

CUT VOLUME 17 CY
FILL VOLUME 2424 CY
ROCK FILL VOLUME 0 CY

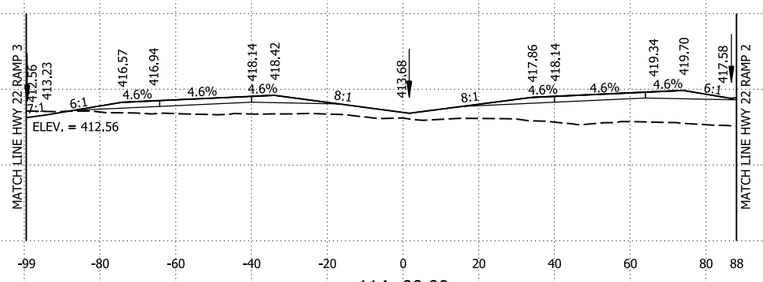
STA. 115+90.00
END SP. DITCH LT. 0.51%
ELEV. = 413.55



115+00.00

AREA CUT 9 SF
AREA FILL 630 SF
ROCK AREA FILL 0 SF

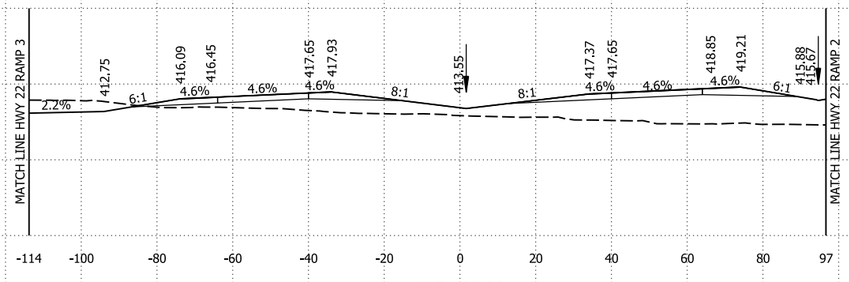
CUT VOLUME 156 CY
FILL VOLUME 2554 CY
ROCK FILL VOLUME 0 CY



114+00.00

AREA CUT 75 SF
AREA FILL 749 SF
ROCK AREA FILL 0 SF

CUT VOLUME 317 CY
FILL VOLUME 2670 CY
ROCK FILL VOLUME 0 CY



113+00.00

I-49 STA. 113+00 TO STA. 115+00

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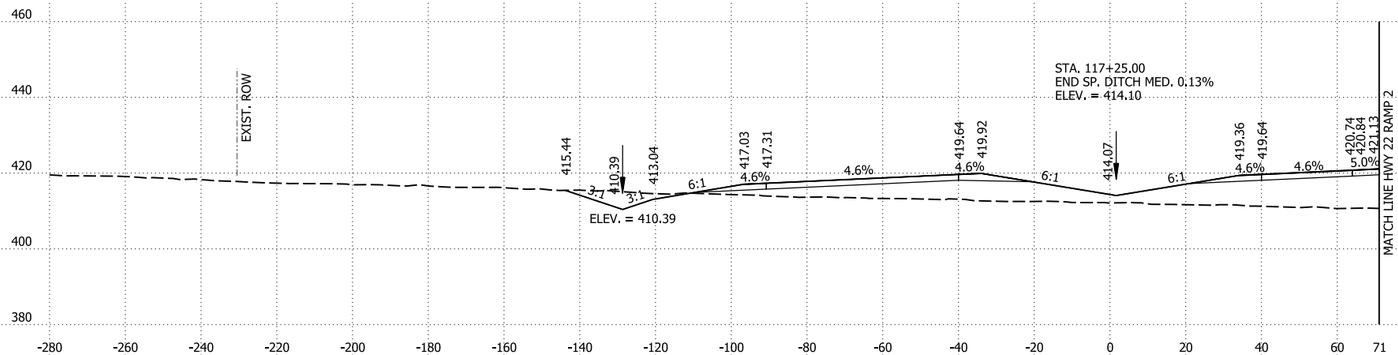
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	677	809
		CROSS SECTIONS				

AREA CUT 68 SF
AREA FILL 814 SF
ROCK AREA FILL 0 SF

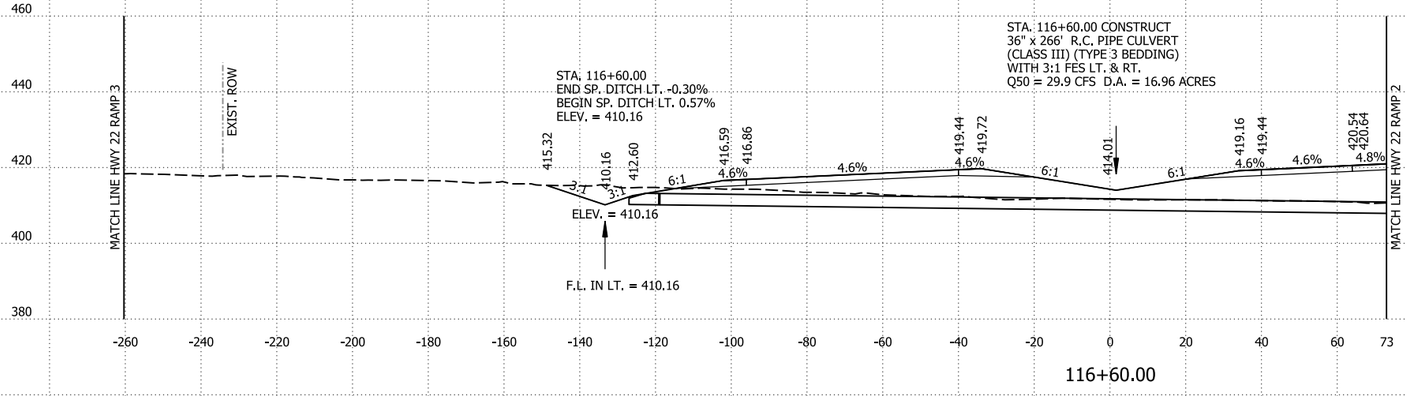
CUT VOLUME 108 CY
FILL VOLUME 1234 CY
ROCK FILL VOLUME 0 CY



117+00.00

AREA CUT 78 SF
AREA FILL 852 SF
ROCK AREA FILL 0 SF

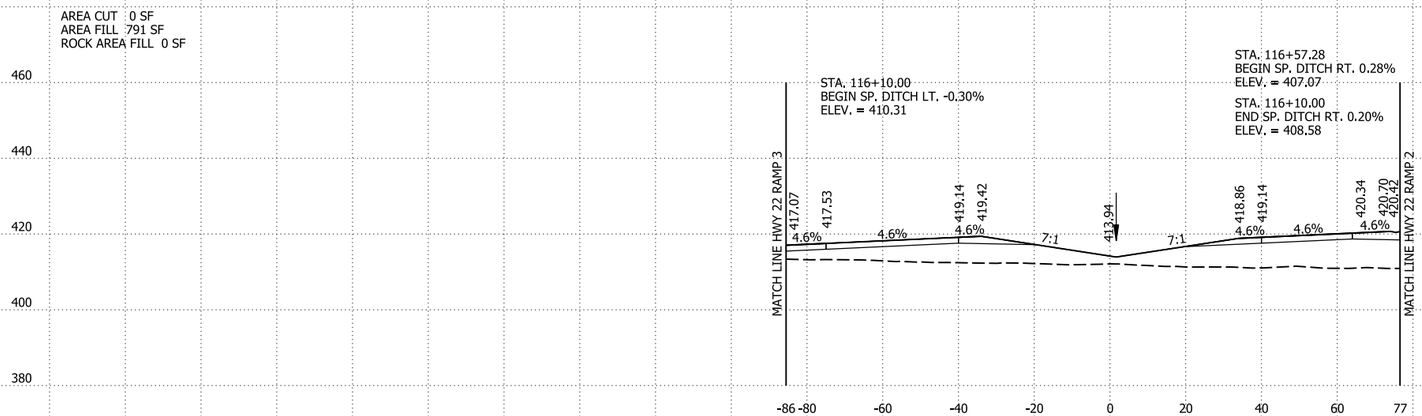
CUT VOLUME 86 CY
FILL VOLUME 1826 CY
ROCK FILL VOLUME 0 CY



116+60.00

AREA CUT 0 SF
AREA FILL 791 SF
ROCK AREA FILL 0 SF

CUT VOLUME 0 CY
FILL VOLUME 2722 CY
ROCK FILL VOLUME 0 CY



116+00.00

I-49 STA. 116+00 TO STA. 117+00

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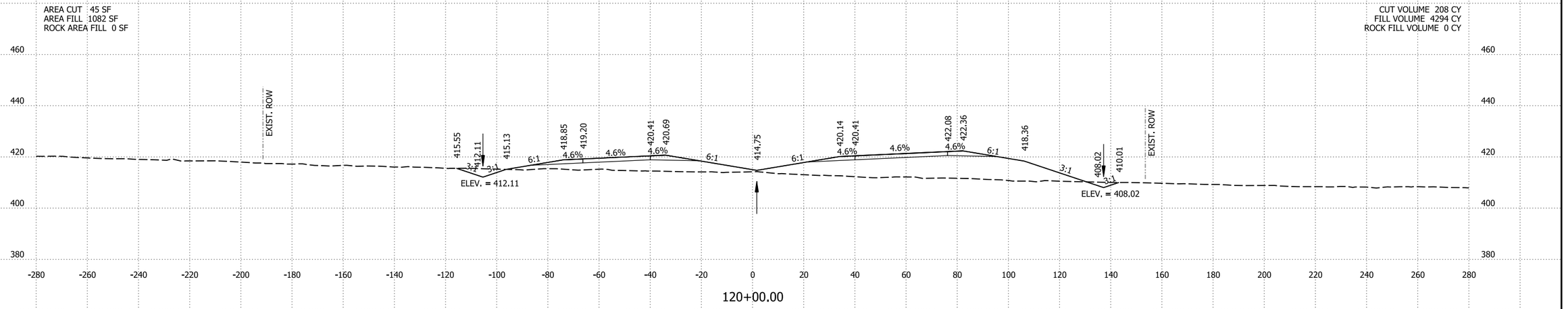
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	678	809
		CROSS SECTIONS				

AREA CUT 45 SF
AREA FILL 1082 SF
ROCK AREA FILL 0 SF

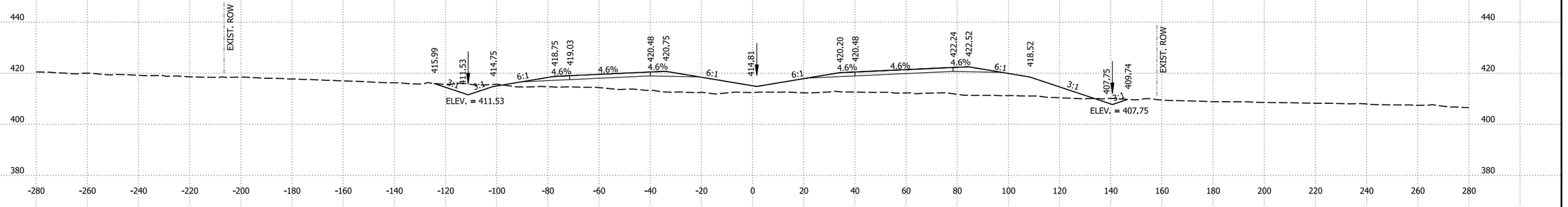
CUT VOLUME 208 CY
FILL VOLUME 4294 CY
ROCK FILL VOLUME 0 CY



120+00.00

AREA CUT 67 SF
AREA FILL 1237 SF
ROCK AREA FILL 0 SF

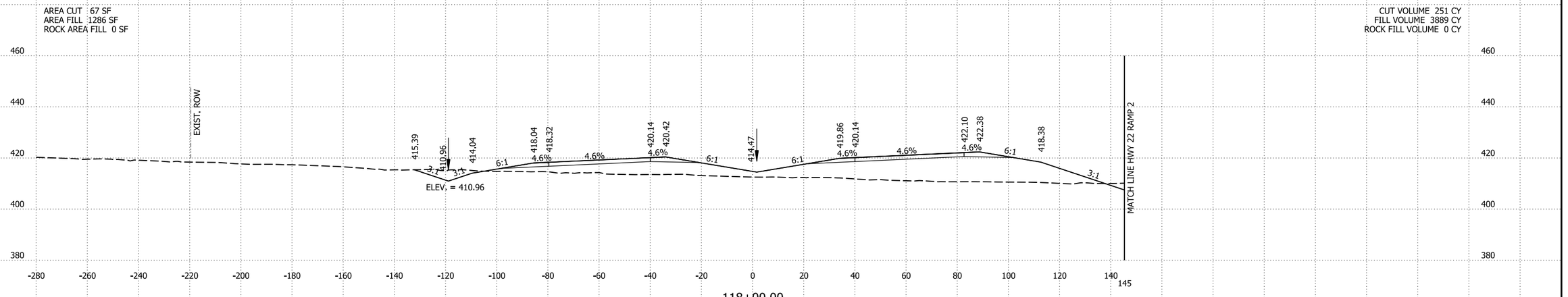
CUT VOLUME 249 CY
FILL VOLUME 4672 CY
ROCK FILL VOLUME 0 CY



119+00.00

AREA CUT 67 SF
AREA FILL 1286 SF
ROCK AREA FILL 0 SF

CUT VOLUME 251 CY
FILL VOLUME 3889 CY
ROCK FILL VOLUME 0 CY



118+00.00

I-49 STA. 118+00 TO STA. 120+00

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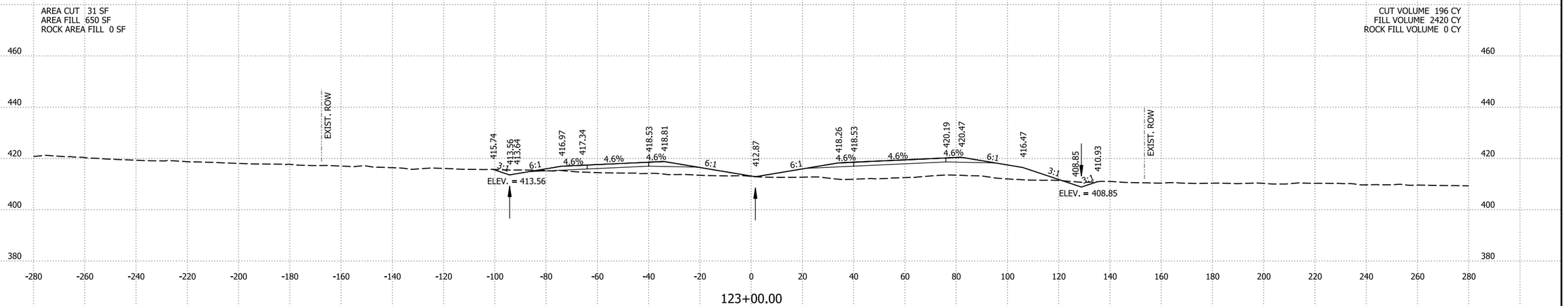
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	679	809
		CROSS SECTIONS				

AREA CUT 31 SF
AREA FILL 650 SF
ROCK AREA FILL 0 SF

CUT VOLUME 196 CY
FILL VOLUME 2420 CY
ROCK FILL VOLUME 0 CY

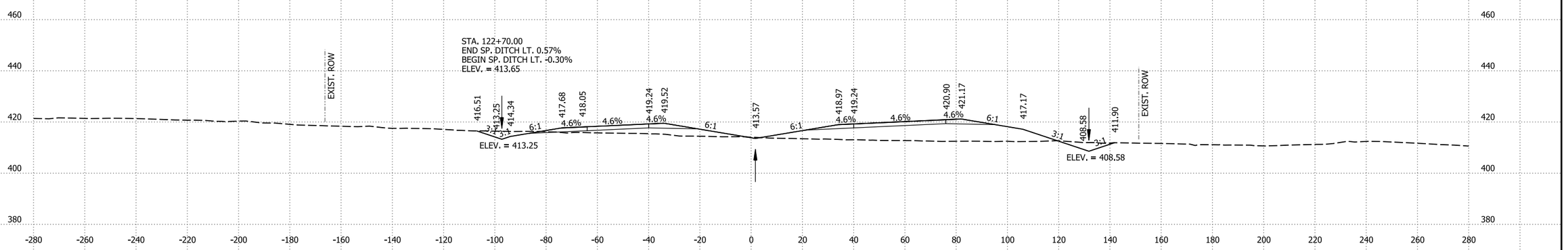


123+00.00

AREA CUT 75 SF
AREA FILL 657 SF
ROCK AREA FILL 0 SF

CUT VOLUME 254 CY
FILL VOLUME 2822 CY
ROCK FILL VOLUME 0 CY

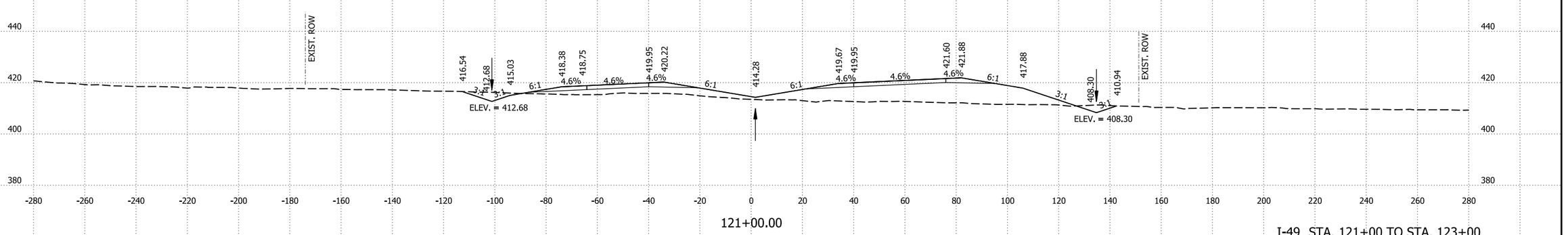
STA. 122+70.00
END SP. DITCH LT. 0.57%
BEGIN SP. DITCH LT. -0.30%
ELEV. = 413.65



122+00.00

AREA CUT 62 SF
AREA FILL 867 SF
ROCK AREA FILL 0 SF

CUT VOLUME 199 CY
FILL VOLUME 3609 CY
ROCK FILL VOLUME 0 CY



121+00.00

I-49 STA. 121+00 TO STA. 123+00

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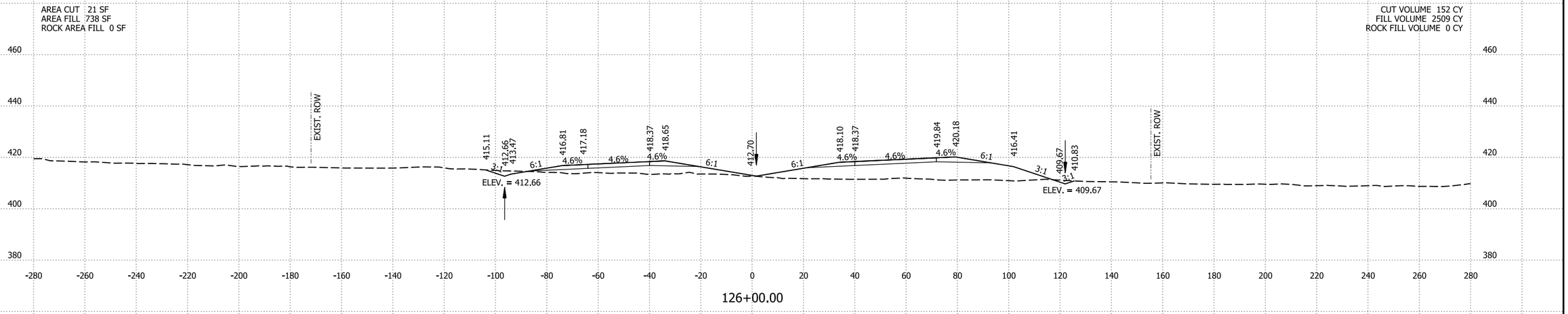
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	680	809
		CROSS SECTIONS				

AREA CUT 21 SF
AREA FILL 738 SF
ROCK AREA FILL 0 SF

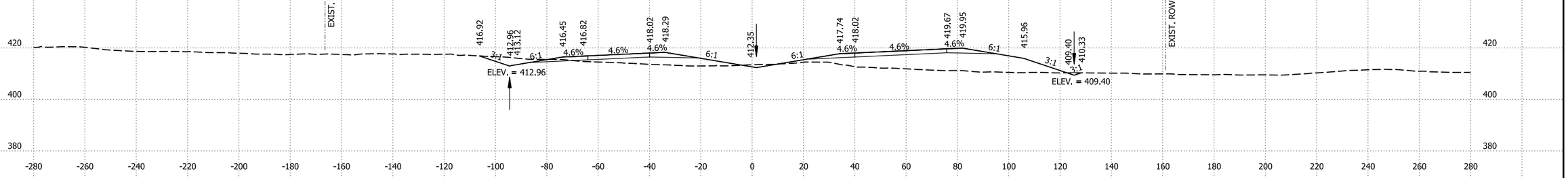
CUT VOLUME 152 CY
FILL VOLUME 2509 CY
ROCK FILL VOLUME 0 CY



126+00.00

AREA CUT 61 SF
AREA FILL 617 SF
ROCK AREA FILL 0 SF

CUT VOLUME 204 CY
FILL VOLUME 2243 CY
ROCK FILL VOLUME 0 CY

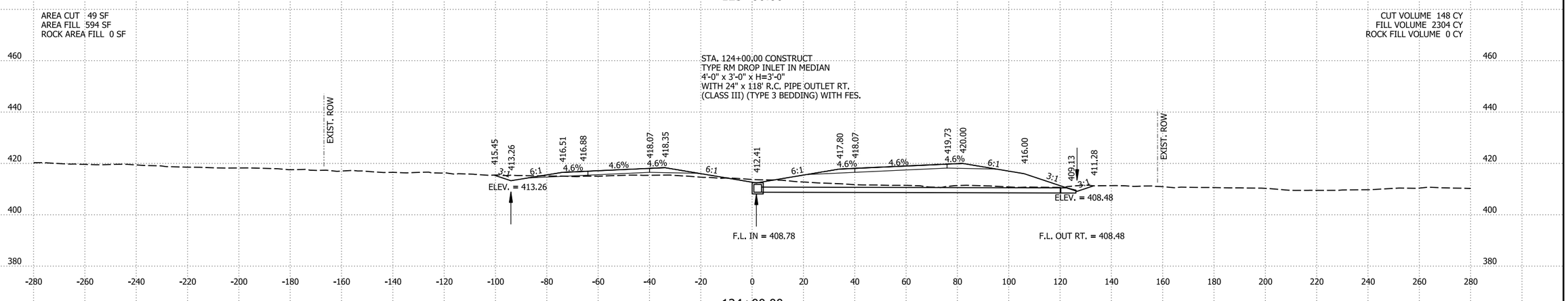


125+00.00

AREA CUT 49 SF
AREA FILL 594 SF
ROCK AREA FILL 0 SF

CUT VOLUME 148 CY
FILL VOLUME 2304 CY
ROCK FILL VOLUME 0 CY

STA. 124+00.00 CONSTRUCT
TYPE RM DROP INLET IN MEDIAN
4'-0" x 3'-0" x H=3'-0"
WITH 24" x 118' R.C. PIPE OUTLET RT.
(CLASS III) (TYPE 3 BEDDING) WITH FES.



124+00.00

I-49 STA. 124+00 TO STA. 126+00

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		6	ARK.	040901	681	809
		CROSS SECTIONS				

AREA CUT 8 SF
AREA FILL 1089 SF
ROCK AREA FILL 0 SF

CUT VOLUME 35 CY
FILL VOLUME 3713 CY
ROCK FILL VOLUME 0 CY

STA. 129+00.00
BEGIN SP. DITCH MED. 5.13%
ELEV. = 414.26

STA. 129+15.00
END SP. DITCH RT. 0.12%
ELEV. = 410.54

EXIST. ROW

413.40 411.76 415.03 418.36 418.73 419.93 420.20 414.26 419.65 419.93 421.12 421.49 418.16 410.50

3:1 3:1 6:1 4.6% 4.6% 4.6% 6:1 6:1 4.6% 4.6% 4.6% 6:1 3:1

ELEV. = 411.76

ELEV. = 410.50

460 440 420 400 380

-280 -260 -240 -220 -200 -180 -160 -140 -120 -100 -80 -60 -40 -20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280

129+00.00

AREA CUT 11 SF
AREA FILL 916 SF
ROCK AREA FILL 0 SF

CUT VOLUME 58 CY
FILL VOLUME 3167 CY
ROCK FILL VOLUME 0 CY

EXIST. ROW

414.23 412.06 414.51 417.84 418.21 419.41 419.68 413.74 419.13 419.41 420.60 420.97 417.64 410.23 410.64

3:1 3:1 6:1 4.6% 4.6% 4.6% 6:1 6:1 4.6% 4.6% 4.6% 6:1 3:1

ELEV. = 412.06

ELEV. = 410.23

460 440 420 400 380

-280 -260 -240 -220 -200 -180 -160 -140 -120 -100 -80 -60 -40 -20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280

128+00.00

AREA CUT 20 SF
AREA FILL 794 SF
ROCK AREA FILL 0 SF

CUT VOLUME 77 CY
FILL VOLUME 2837 CY
ROCK FILL VOLUME 0 CY

EXIST. ROW

414.63 412.36 413.99 417.33 417.69 418.89 419.17 413.22 418.61 418.89 420.17 420.57 417.03 409.95 410.61

3:1 3:1 6:1 4.6% 4.6% 4.6% 6:1 6:1 4.6% 4.6% 4.6% 6:1 3:1

ELEV. = 412.36

ELEV. = 409.95

460 440 420 400 380

-280 -260 -240 -220 -200 -180 -160 -140 -120 -100 -80 -60 -40 -20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280

127+00.00

I-49 STA. 127+00 TO STA. 129+00

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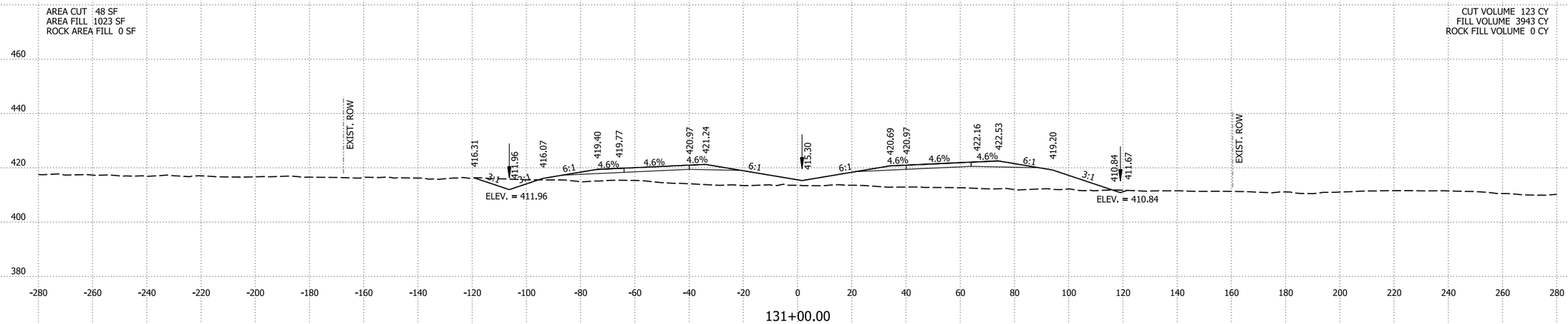
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	682	809
		CROSS SECTIONS				

AREA CUT 48 SF
AREA FILL 1023 SF
ROCK AREA FILL 0 SF

CUT VOLUME 123 CY
FILL VOLUME 3943 CY
ROCK FILL VOLUME 0 CY

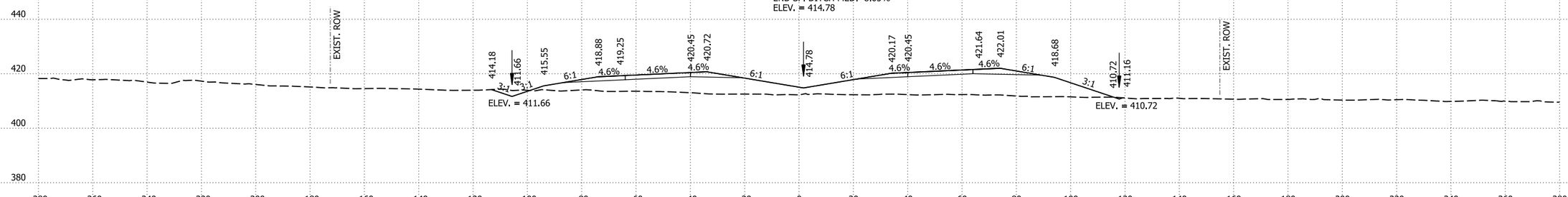


131+00.00

AREA CUT 18 SF
AREA FILL 1106 SF
ROCK AREA FILL 0 SF

CUT VOLUME 24 CY
FILL VOLUME 1499 CY
ROCK FILL VOLUME 0 CY

STA. 130+00.00
END SP. DITCH MED. -8.05%
ELEV. = 414.78



130+00.00

AREA CUT 18 SF
AREA FILL 1207 SF
ROCK AREA FILL 0 SF

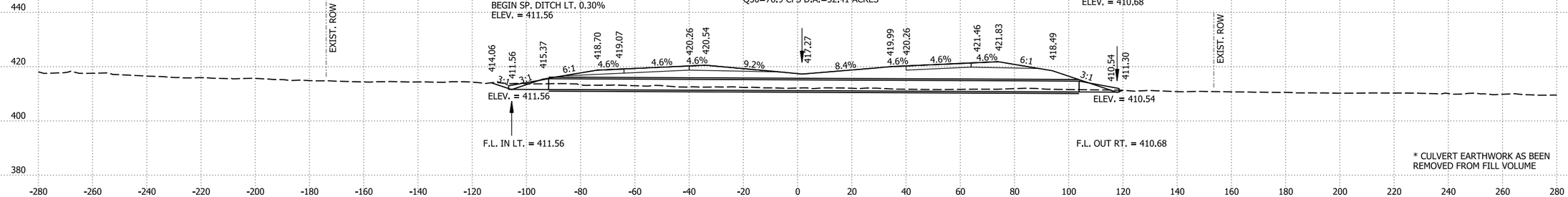
CUT VOLUME 31 CY
FILL VOLUME 2597 CY
ROCK FILL VOLUME 0 CY

STA. 129+65.00
END SP. DITCH MED. 5.13%
BEGIN SP. DITCH MED. -8.05%
ELEV. = 417.60

STA. 129+65.00 CONSTRUCT
4' x 4' x 196' R.C. PIPE CULVERT
WITH 3:1 WINGS LT. & RT.
Q50=78.9 CFS D.A.=52.41 ACRES

STA. 129+65.00
END SP. DITCH LT. -0.30%
BEGIN SP. DITCH LT. 0.30%
ELEV. = 411.56

STA. 129+65.00
BEGIN SP. DITCH RT. 0.12%
ELEV. = 410.68



* CULVERT EARTHWORK AS BEEN REMOVED FROM FILL VOLUME

129+65.00

I-49 STA. 129+65 TO STA. 131+00

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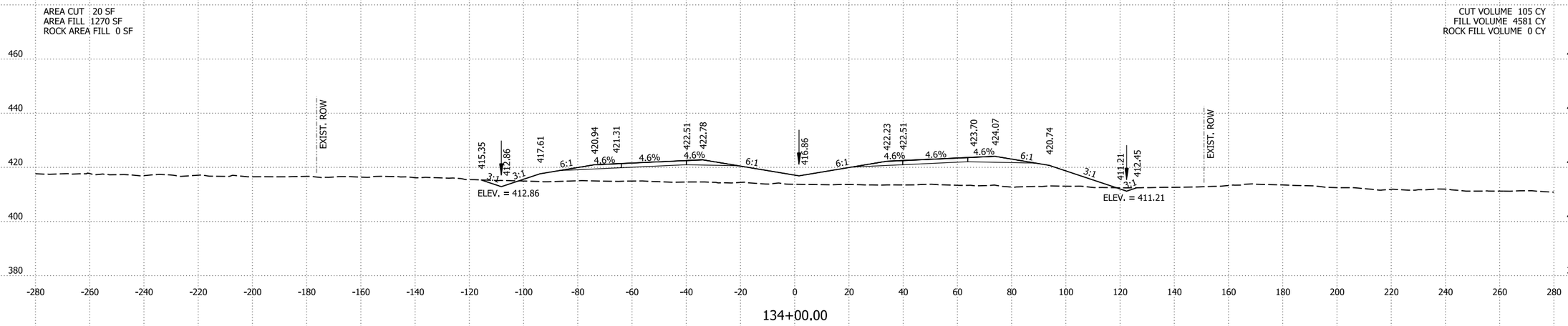
		6	ARK.	040901	683	809
		CROSS SECTIONS				

AREA CUT 20 SF
AREA FILL 1270 SF
ROCK AREA FILL 0 SF

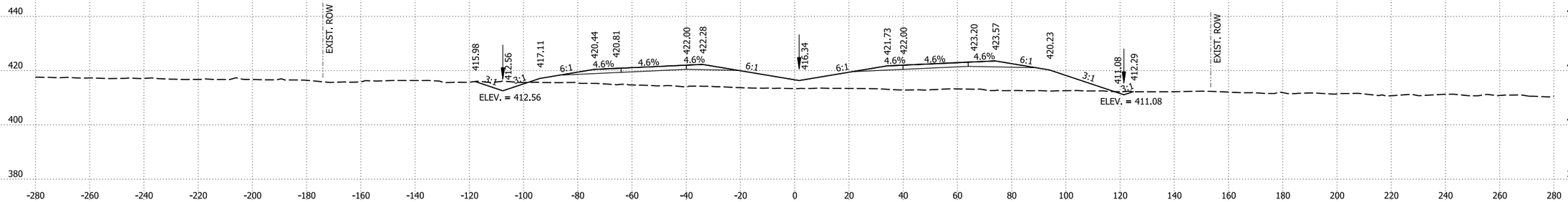
CUT VOLUME 105 CY
FILL VOLUME 4581 CY
ROCK FILL VOLUME 0 CY



134+00.00

AREA CUT 36 SF
AREA FILL 1204 SF
ROCK AREA FILL 0 SF

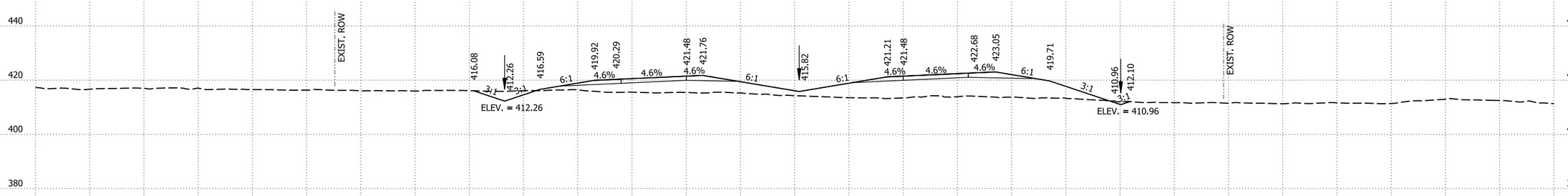
CUT VOLUME 152 CY
FILL VOLUME 3946 CY
ROCK FILL VOLUME 0 CY



133+00.00

AREA CUT 46 SF
AREA FILL 927 SF
ROCK AREA FILL 0 SF

CUT VOLUME 174 CY
FILL VOLUME 3611 CY
ROCK FILL VOLUME 0 CY



132+00.00

I-49 STA. 132+00 TO STA. 134+00

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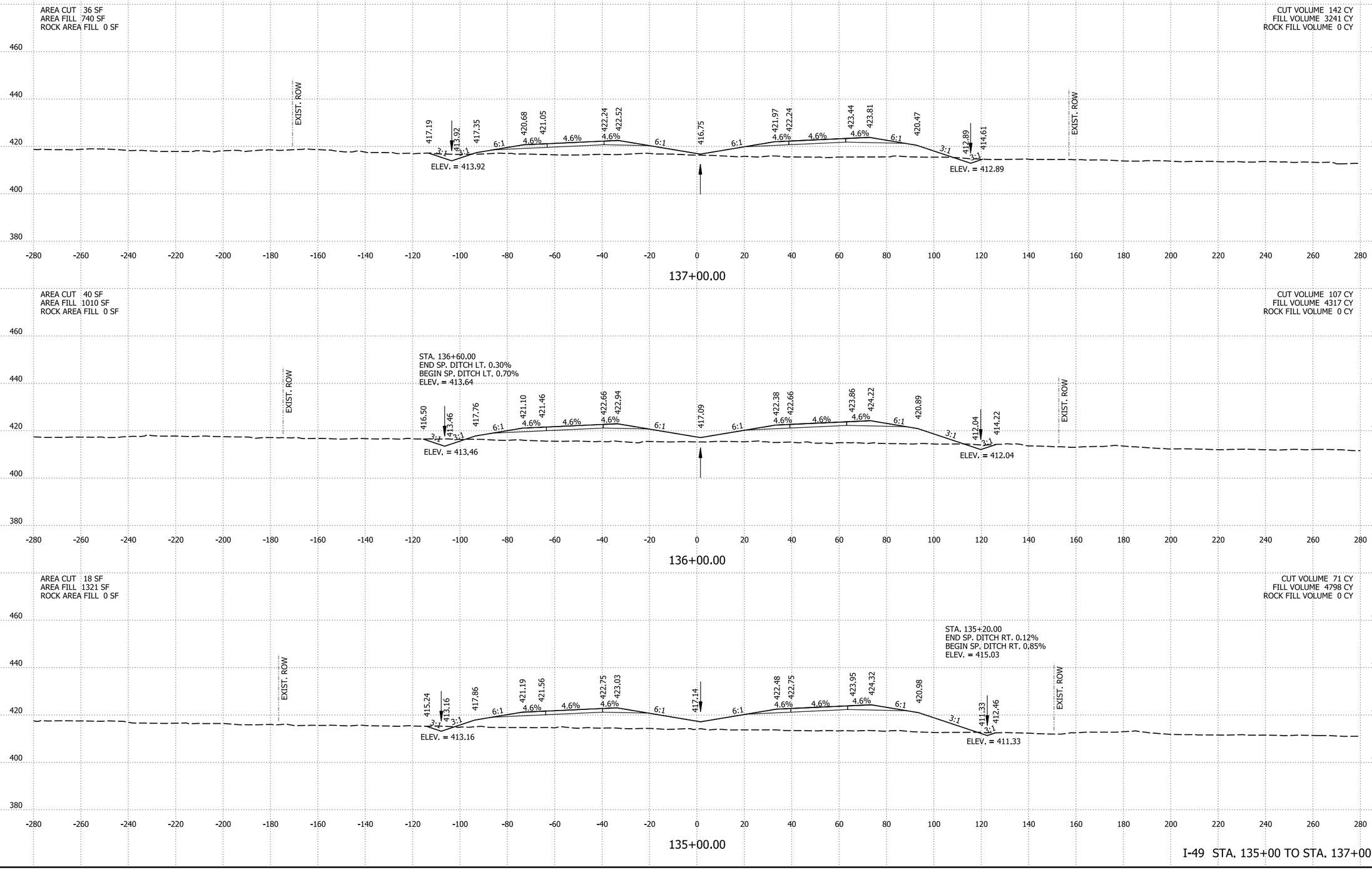
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	684	809
		CROSS SECTIONS				



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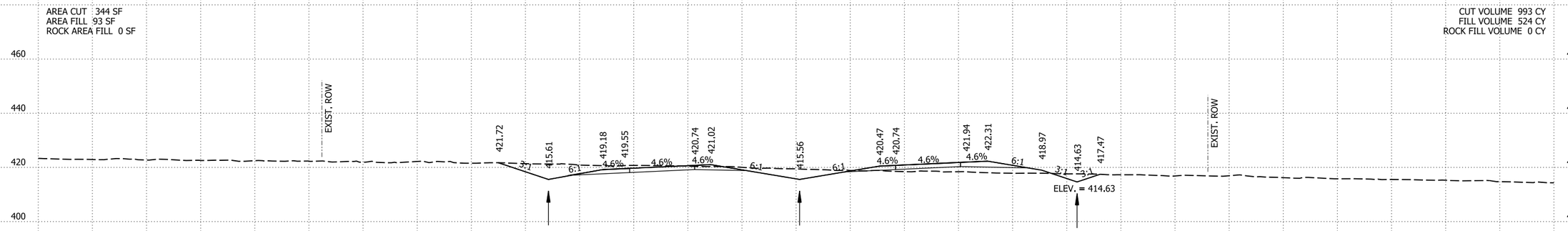
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	685	809
		CROSS SECTIONS				

AREA CUT 344 SF
AREA FILL 93 SF
ROCK AREA FILL 0 SF

CUT VOLUME 993 CY
FILL VOLUME 524 CY
ROCK FILL VOLUME 0 CY



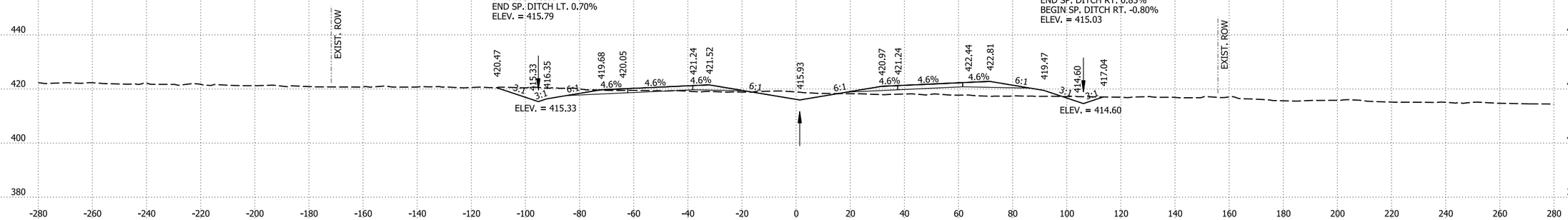
140+00.00

AREA CUT 192 SF
AREA FILL 190 SF
ROCK AREA FILL 0 SF

CUT VOLUME 494 CY
FILL VOLUME 1091 CY
ROCK FILL VOLUME 0 CY

STA. 139+65.00
END SP. DITCH LT. 0.70%
ELEV. = 415.79

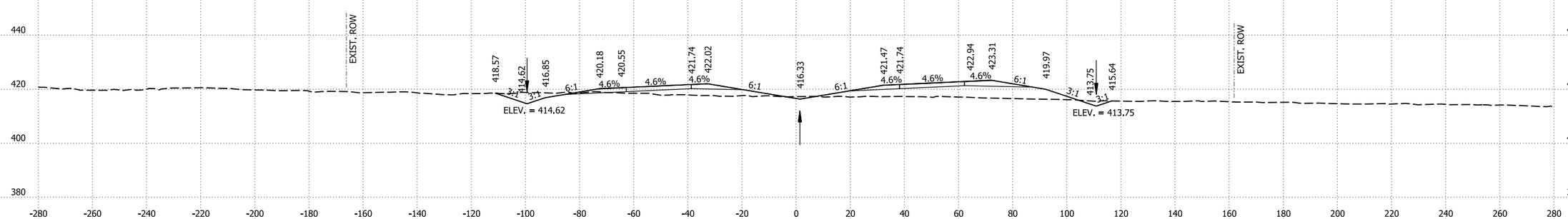
STA. 139+50.00
END SP. DITCH RT. 0.85%
BEGIN SP. DITCH RT. -0.80%
ELEV. = 415.03



139+00.00

AREA CUT 75 SF
AREA FILL 399 SF
ROCK AREA FILL 0 SF

CUT VOLUME 206 CY
FILL VOLUME 2109 CY
ROCK FILL VOLUME 0 CY



138+00.00

I-49 STA. 138+00 TO STA. 140+00

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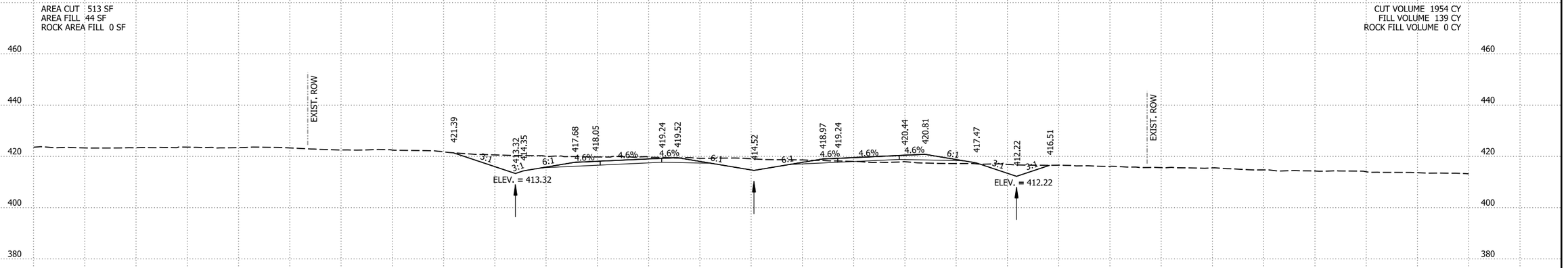
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	686	809
		CROSS SECTIONS				

AREA CUT 513 SF
AREA FILL 44 SF
ROCK AREA FILL 0 SF

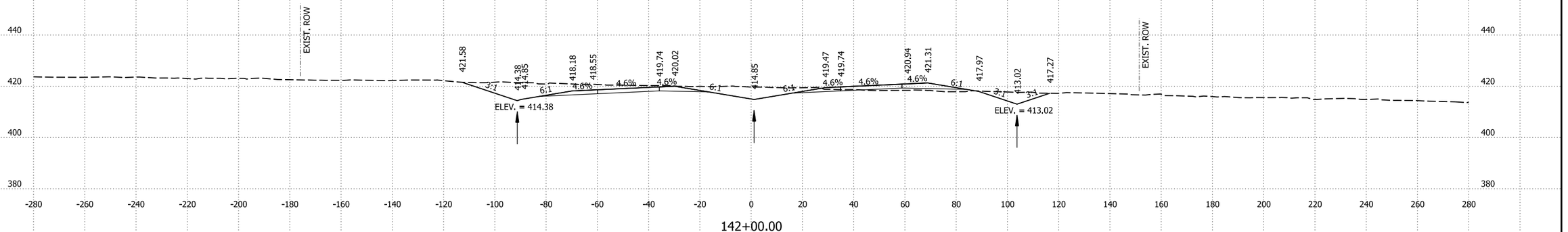
CUT VOLUME 1954 CY
FILL VOLUME 139 CY
ROCK FILL VOLUME 0 CY



143+00.00

AREA CUT 542 SF
AREA FILL 31 SF
ROCK AREA FILL 0 SF

CUT VOLUME 1859 CY
FILL VOLUME 139 CY
ROCK FILL VOLUME 0 CY

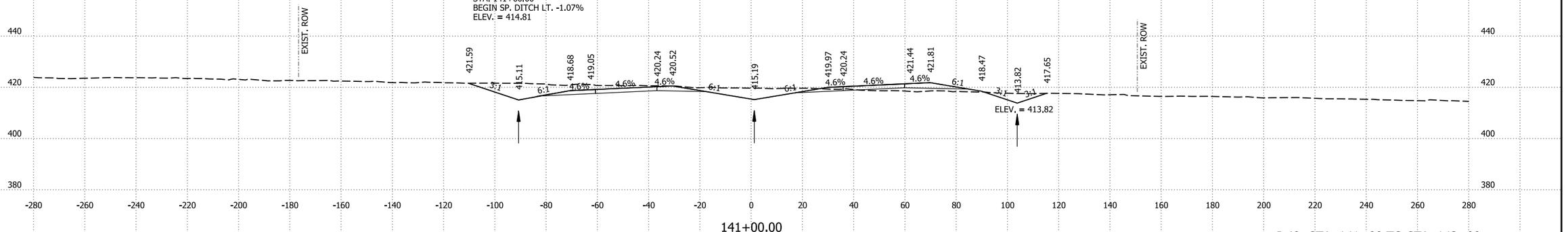


142+00.00

AREA CUT 462 SF
AREA FILL 44 SF
ROCK AREA FILL 0 SF

CUT VOLUME 1493 CY
FILL VOLUME 254 CY
ROCK FILL VOLUME 0 CY

STA. 141+60.00
BEGIN SP. DITCH LT. -1.07%
ELEV. = 414.81



141+00.00

I-49 STA. 141+00 TO STA. 143+00

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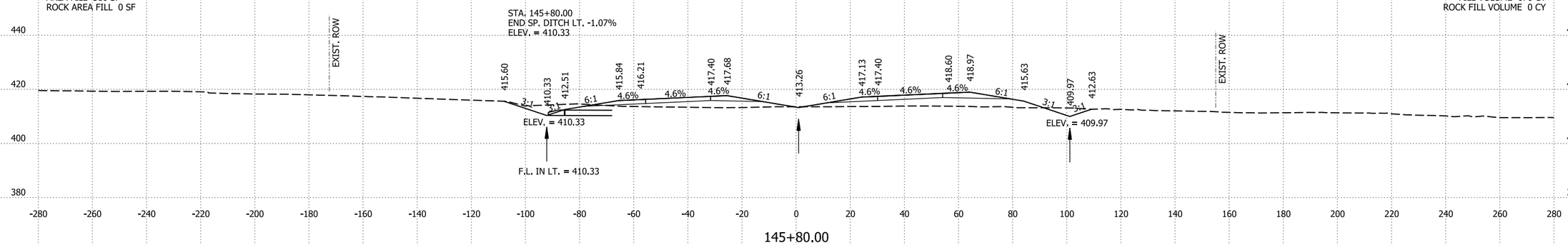
		6	ARK.	040901	687	809
		CROSS SECTIONS				

AREA CUT 84 SF
AREA FILL 316 SF
ROCK AREA FILL 0 SF

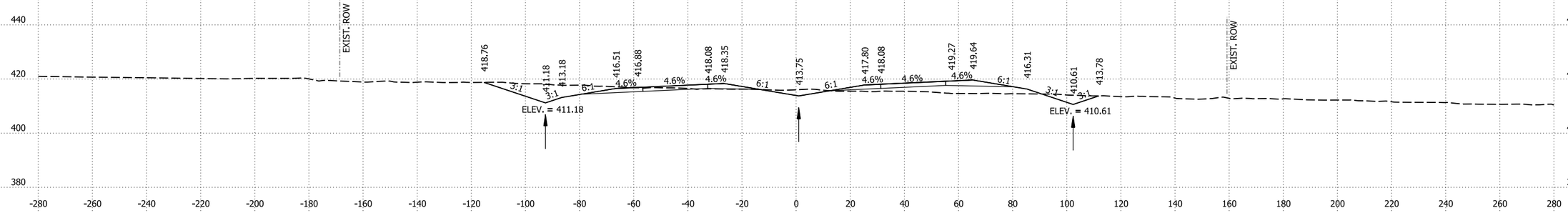
CUT VOLUME 533 CY
FILL VOLUME 676 CY
ROCK FILL VOLUME 0 CY



145+80.00

AREA CUT 276 SF
AREA FILL 140 SF
ROCK AREA FILL 0 SF

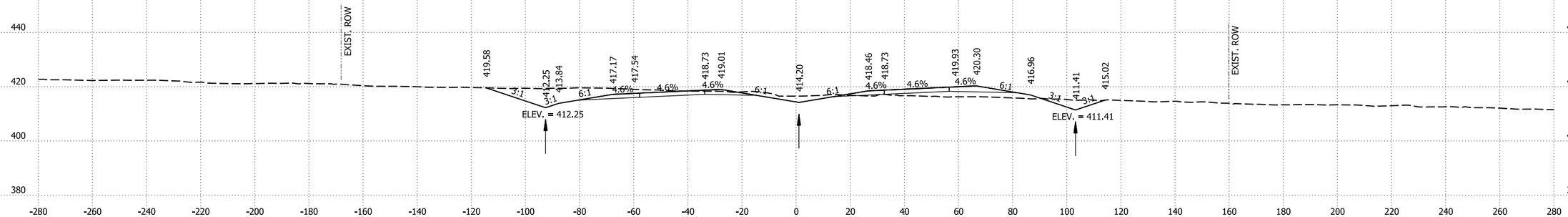
CUT VOLUME 1233 CY
FILL VOLUME 424 CY
ROCK FILL VOLUME 0 CY



145+00.00

AREA CUT 390 SF
AREA FILL 89 SF
ROCK AREA FILL 0 SF

CUT VOLUME 1672 CY
FILL VOLUME 246 CY
ROCK FILL VOLUME 0 CY



144+00.00

I-49 STA. 144+00 TO STA. 145+80

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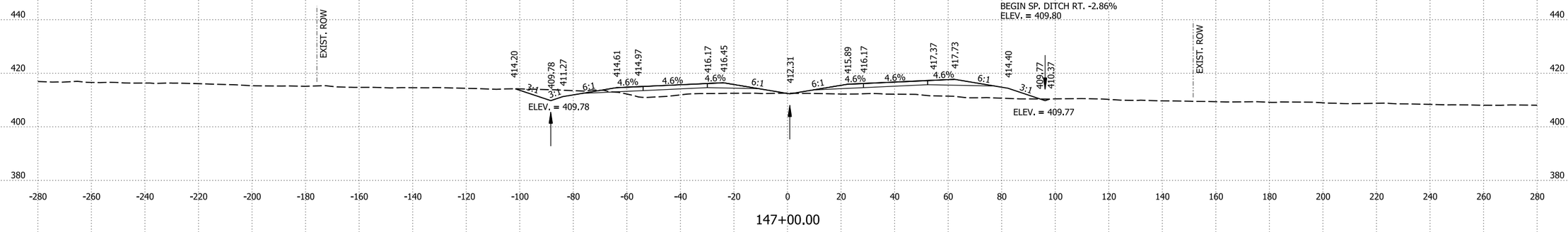
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	688	809
		CROSS SECTIONS				

AREA CUT 64 SF
AREA FILL 380 SF
ROCK AREA FILL 0 SF

CUT VOLUME 167 CY
FILL VOLUME 1210 CY
ROCK FILL VOLUME 0 CY

STA. 147+25.00
END SP. DITCH RT. 0.12%
BEGIN SP. DITCH RT. -2.86%
ELEV. = 409.80



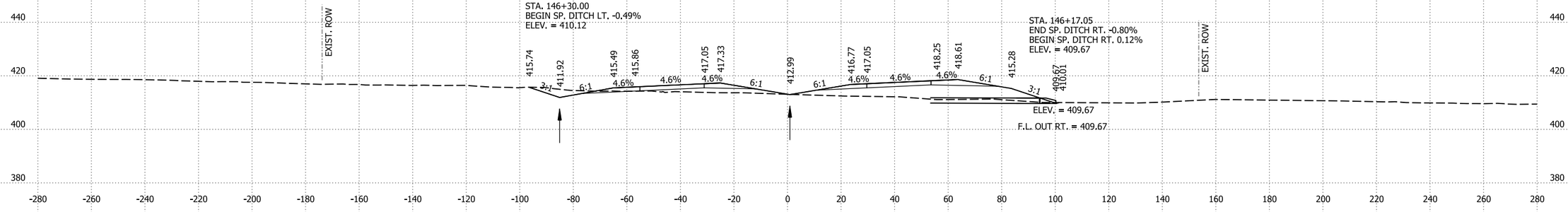
147+00.00

AREA CUT 45 SF
AREA FILL 408 SF
ROCK AREA FILL 0 SF

CUT VOLUME 30 CY
FILL VOLUME 273 CY
ROCK FILL VOLUME 0 CY

STA. 146+30.00
BEGIN SP. DITCH LT. -0.49%
ELEV. = 410.12

STA. 146+17.05
END SP. DITCH RT. -0.80%
BEGIN SP. DITCH RT. 0.12%
ELEV. = 409.67

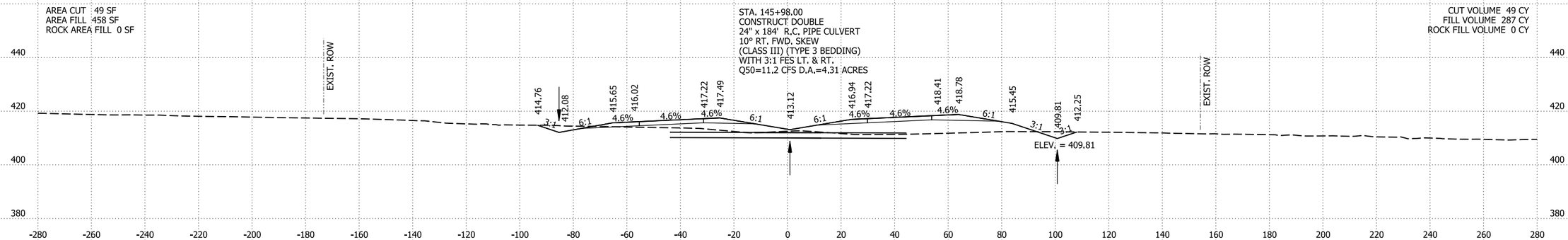


146+17.05

AREA CUT 49 SF
AREA FILL 458 SF
ROCK AREA FILL 0 SF

CUT VOLUME 49 CY
FILL VOLUME 287 CY
ROCK FILL VOLUME 0 CY

STA. 145+98.00
CONSTRUCT DOUBLE
24" x 184' R.C. PIPE CULVERT
10° RT. FWD. SKEW
(CLASS III) (TYPE 3 BEDDING)
WITH 3:1 FES LT. & RT.
Q50=11.2 CFS D.A.=4.31 ACRES



146+00.00

I-49 STA. 146+00 TO STA. 147+00

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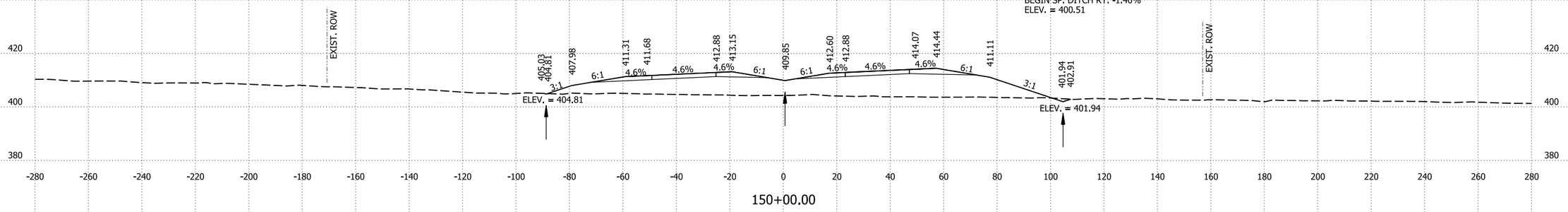
		6	ARK.	040901	689	809
		CROSS SECTIONS				

AREA CUT 4 SF
AREA FILL 1145 SF
ROCK AREA FILL 0 SF

CUT VOLUME 10 CY
FILL VOLUME 3939 CY
ROCK FILL VOLUME 0 CY

STA. 150+50.00
END SP. DITCH RT. -2.86%
BEGIN SP. DITCH RT. -1.40%
ELEV. = 400.51

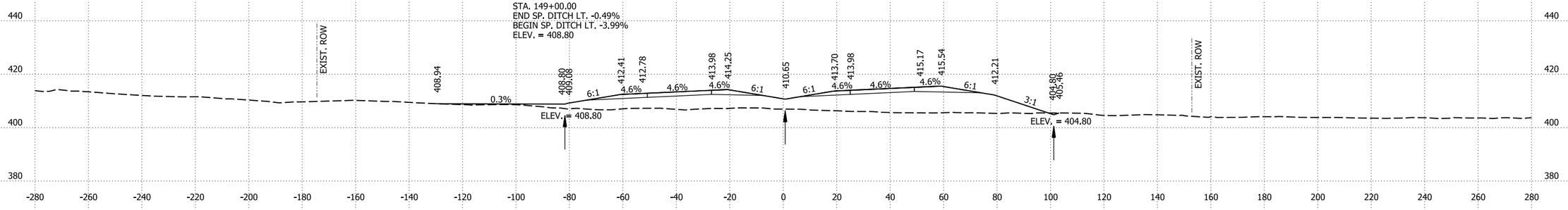


150+00.00

AREA CUT 1 SF
AREA FILL 982 SF
ROCK AREA FILL 0 SF

CUT VOLUME 31 CY
FILL VOLUME 3037 CY
ROCK FILL VOLUME 0 CY

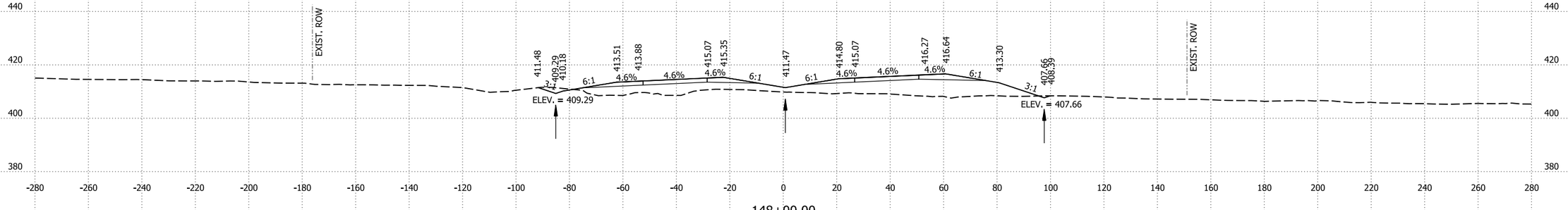
STA. 149+00.00
END SP. DITCH LT. -0.49%
BEGIN SP. DITCH LT. -3.99%
ELEV. = 408.80



149+00.00

AREA CUT 15 SF
AREA FILL 658 SF
ROCK AREA FILL 0 SF

CUT VOLUME 147 CY
FILL VOLUME 1922 CY
ROCK FILL VOLUME 0 CY



148+00.00

I-49 STA. 148+00 TO STA. 150+00

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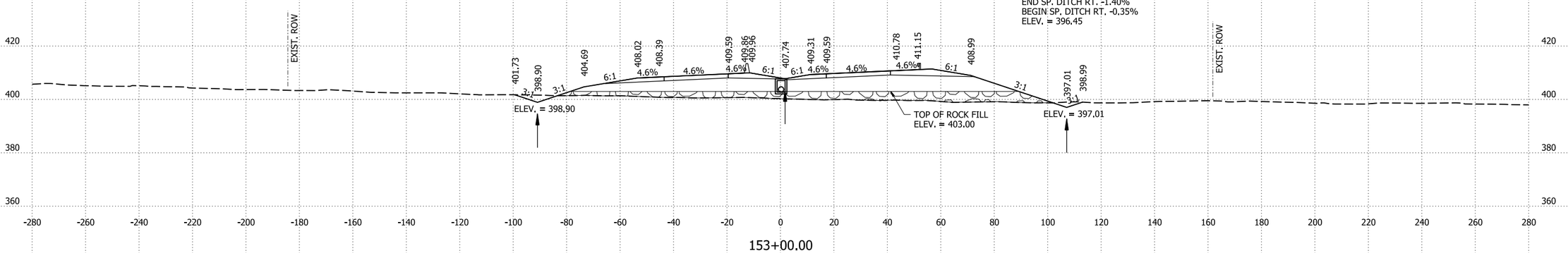
		6	ARK.	040901	690	809
		CROSS SECTIONS				

AREA CUT 33 SF
AREA FILL 745 SF
ROCK AREA FILL 505 SF

STA. 153+00.00 CONSTRUCT
DROP INLET IN MEDIAN H=5'-0"
WITH 24" x 96' PIPE OUTLET
TO DROP INLET IN MEDIAN @ STA. 154+00.00
TYPE RM DROP INLET = 4' x 3'
24" R.C. PIPE (CLASS III)
(TYPE 3 BEDDING) = 96 LIN. FT.
24" SLPCCSP PIPE
(TYPE 2 BEDDING) = 96 LIN. FT.

CUT VOLUME 111 CY
FILL VOLUME 3104 CY
ROCK FILL VOLUME 1625 CY

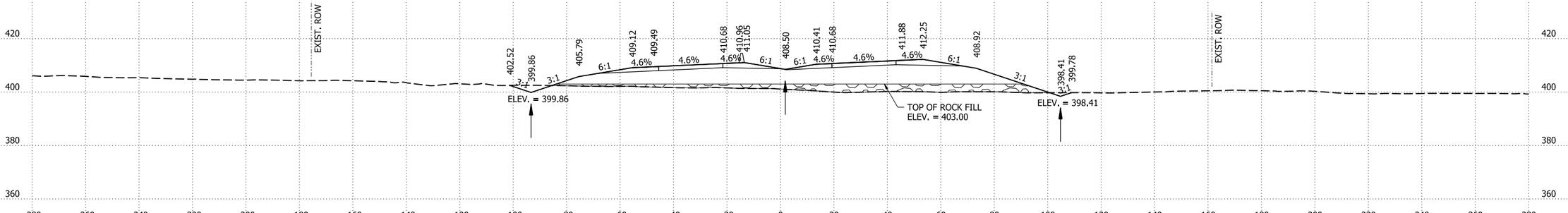
STA. 153+40.00
END SP. DITCH RT. -1.40%
BEGIN SP. DITCH RT. -0.35%
ELEV. = 396.45



153+00.00

AREA CUT 27 SF
AREA FILL 931 SF
ROCK AREA FILL 373 SF

CUT VOLUME 111 CY
FILL VOLUME 3822 CY
ROCK FILL VOLUME 890 CY

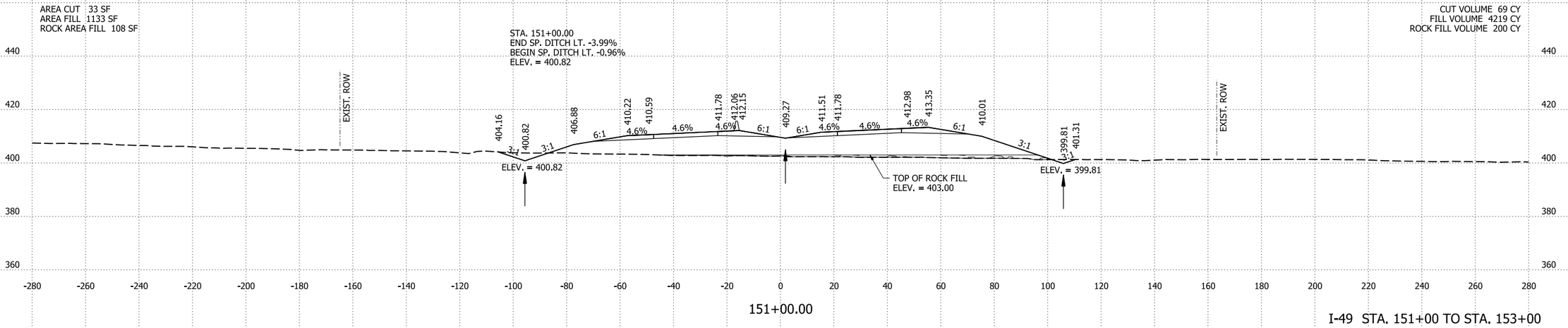


152+00.00

AREA CUT 33 SF
AREA FILL 1133 SF
ROCK AREA FILL 108 SF

STA. 151+00.00
END SP. DITCH LT. -3.99%
BEGIN SP. DITCH LT. -0.96%
ELEV. = 400.82

CUT VOLUME 69 CY
FILL VOLUME 4219 CY
ROCK FILL VOLUME 200 CY



151+00.00

I-49 STA. 151+00 TO STA. 153+00

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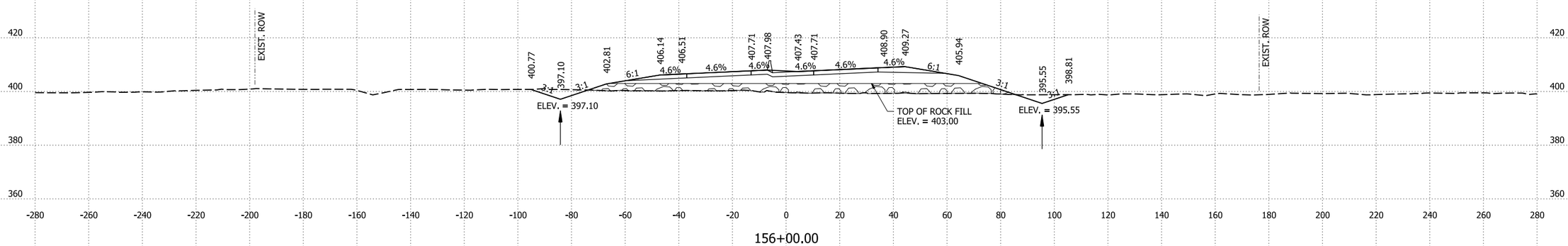
		6	ARK.	040901	691	809
		CROSS SECTIONS				

AREA CUT 72 SF
AREA FILL 389 SF
ROCK AREA FILL 484 SF

CUT VOLUME 256 CY
FILL VOLUME 1504 CY
ROCK FILL VOLUME 1791 CY

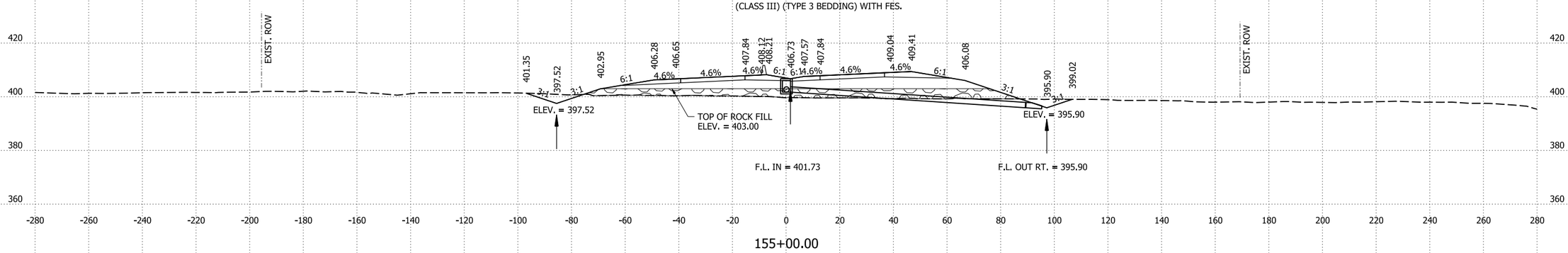


156+00.00

AREA CUT 67 SF
AREA FILL 423 SF
ROCK AREA FILL 483 SF

CUT VOLUME 212 CY
FILL VOLUME 1809 CY
ROCK FILL VOLUME 1983 CY

STA. 155+00.00 CONSTRUCT
TYPE RM DROP INLET IN MEDIAN
4'-0" x 3'-0" x H=5'-0"
WITH 24" x 88' R.C. PIPE OUTLET RT.
(CLASS III) (TYPE 3 BEDDING) WITH FES.



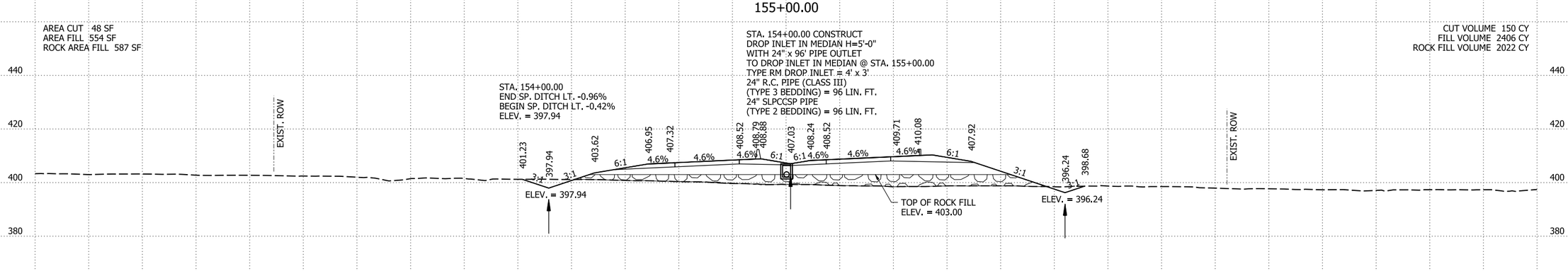
155+00.00

AREA CUT 48 SF
AREA FILL 554 SF
ROCK AREA FILL 587 SF

CUT VOLUME 150 CY
FILL VOLUME 2406 CY
ROCK FILL VOLUME 2022 CY

STA. 154+00.00 CONSTRUCT
DROP INLET IN MEDIAN H=5'-0"
WITH 24" x 96' PIPE OUTLET
TO DROP INLET IN MEDIAN @ STA. 155+00.00
TYPE RM DROP INLET = 4' x 3'
24" R.C. PIPE (CLASS III)
(TYPE 3 BEDDING) = 96 LIN. FT.
24" SLPCCSP PIPE
(TYPE 2 BEDDING) = 96 LIN. FT.

STA. 154+00.00
END SP. DITCH LT. -0.96%
BEGIN SP. DITCH LT. -0.42%
ELEV. = 397.94



154+00.00

I-49 STA. 154+00 TO STA. 156+00

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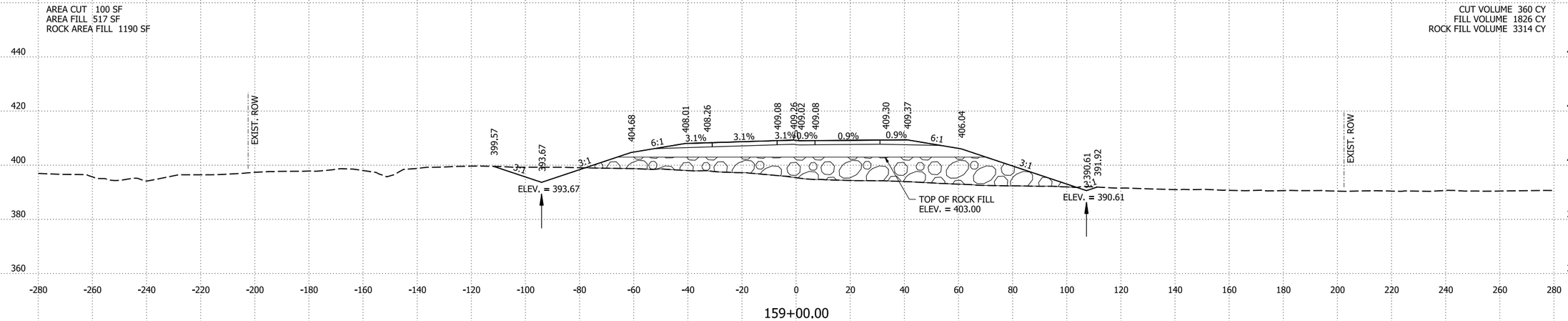
		6	ARK.	040901	692	809
		CROSS SECTIONS				

AREA CUT 100 SF
AREA FILL 517 SF
ROCK AREA FILL 1190 SF

CUT VOLUME 360 CY
FILL VOLUME 1826 CY
ROCK FILL VOLUME 3314 CY



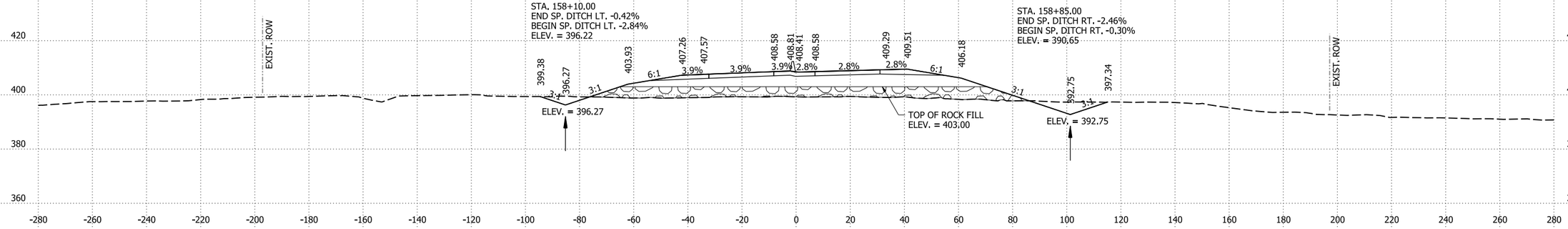
159+00.00

AREA CUT 95 SF
AREA FILL 469 SF
ROCK AREA FILL 600 SF

CUT VOLUME 317 CY
FILL VOLUME 1659 CY
ROCK FILL VOLUME 2109 CY

STA. 158+10.00
END SP. DITCH LT. -0.42%
BEGIN SP. DITCH LT. -2.84%
ELEV. = 396.22

STA. 158+85.00
END SP. DITCH RT. -2.46%
BEGIN SP. DITCH RT. -0.30%
ELEV. = 390.65

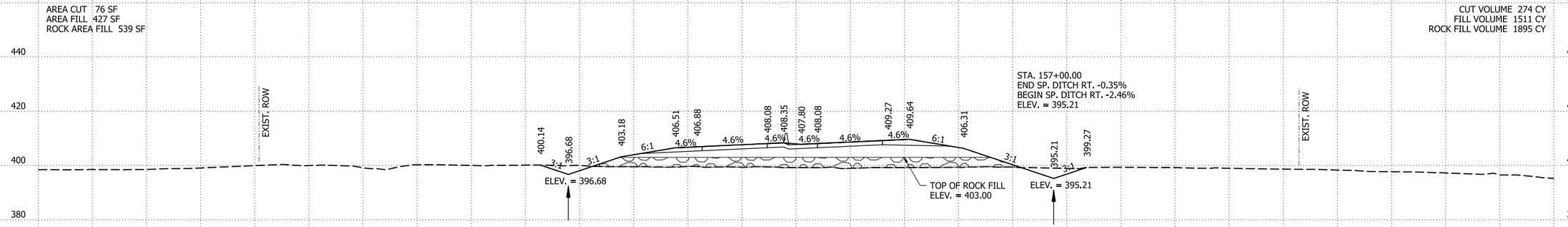


158+00.00

AREA CUT 76 SF
AREA FILL 427 SF
ROCK AREA FILL 539 SF

CUT VOLUME 274 CY
FILL VOLUME 1511 CY
ROCK FILL VOLUME 1895 CY

STA. 157+00.00
END SP. DITCH RT. -0.35%
BEGIN SP. DITCH RT. -2.46%
ELEV. = 395.21



157+00.00

I-49 STA. 157+00 TO STA. 159+00

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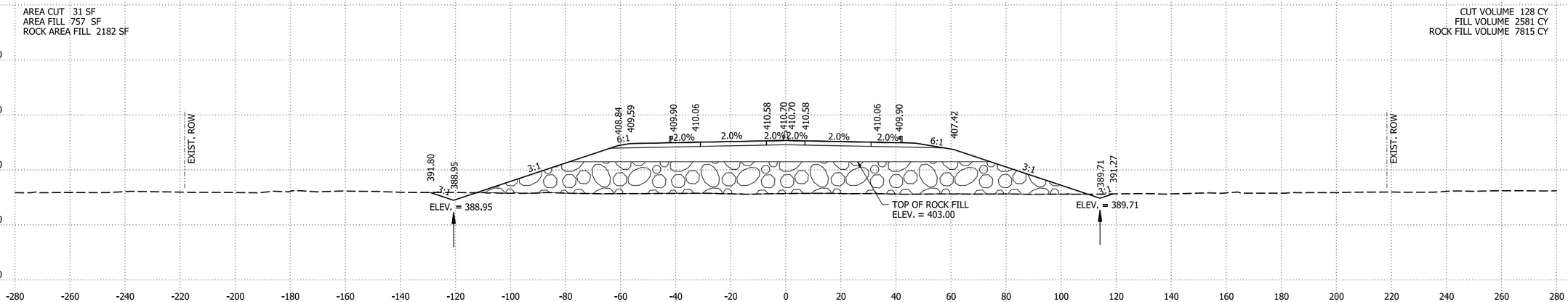
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	693	809
		CROSS SECTIONS				

AREA CUT 31 SF
AREA FILL 757 SF
ROCK AREA FILL 2182 SF

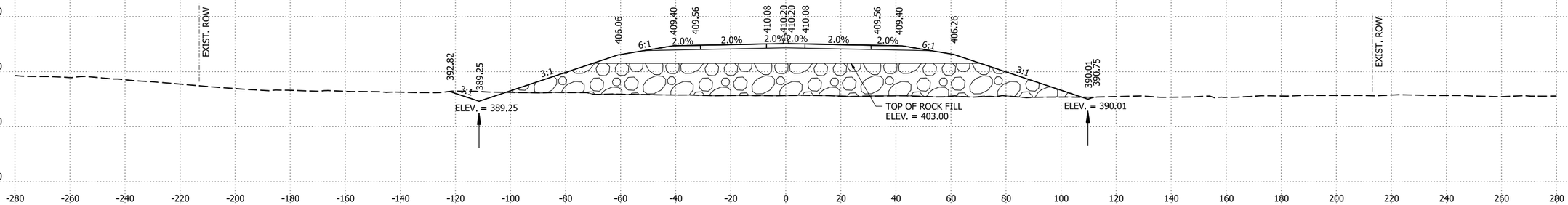
CUT VOLUME 128 CY
FILL VOLUME 2581 CY
ROCK FILL VOLUME 7815 CY



162+00.00

AREA CUT 38 SF
AREA FILL 637 SF
ROCK AREA FILL 2038 SF

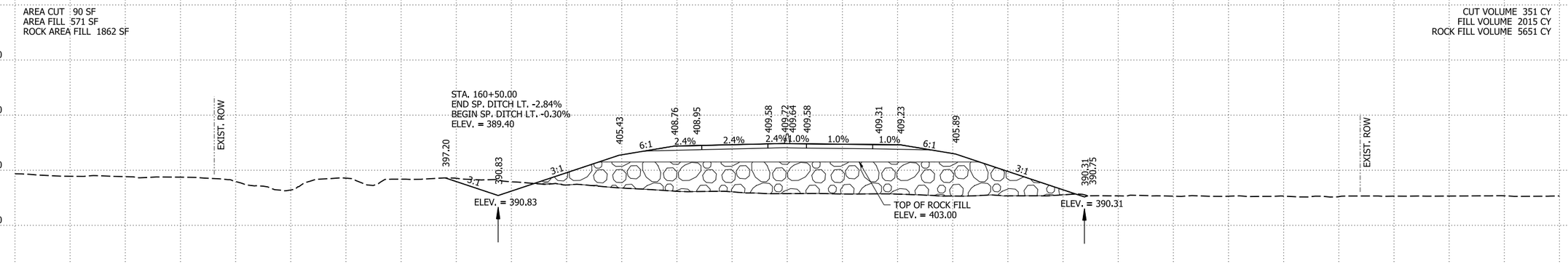
CUT VOLUME 237 CY
FILL VOLUME 2237 CY
ROCK FILL VOLUME 7221 CY



161+00.00

AREA CUT 90 SF
AREA FILL 571 SF
ROCK AREA FILL 1862 SF

CUT VOLUME 351 CY
FILL VOLUME 2015 CY
ROCK FILL VOLUME 5651 CY



160+00.00

I-49 STA. 160+00 TO STA. 162+00

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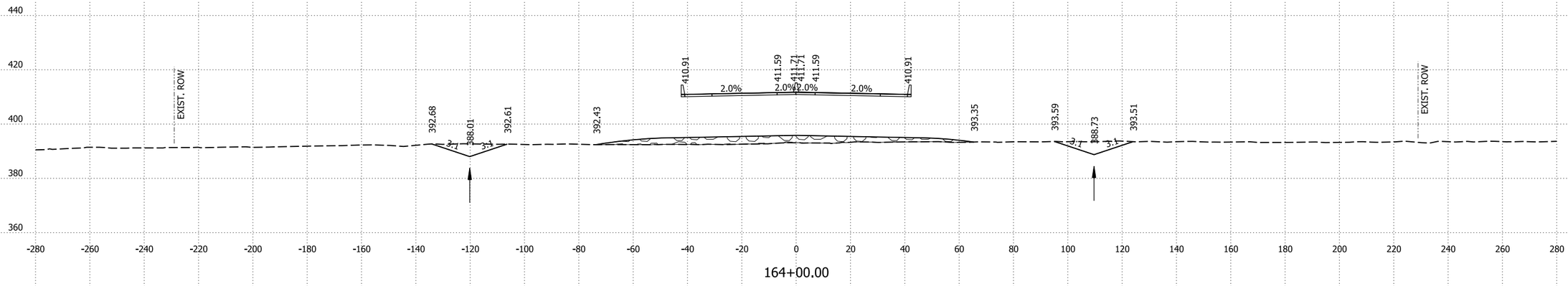
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	694	809
		CROSS SECTIONS				

AREA CUT 134 SF
AREA FILL 0 SF
ROCK AREA FILL 287 SF

CUT VOLUME 113 CY
FILL VOLUME 95 CY
ROCK FILL VOLUME 999 CY



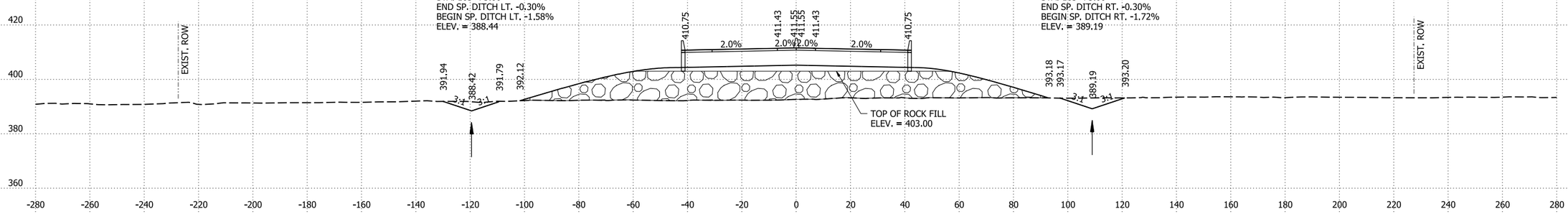
164+00.00

AREA CUT 82 SF
AREA FILL 182 SF
ROCK AREA FILL 1628 SF

CUT VOLUME 186 CY
FILL VOLUME 1329 CY
ROCK FILL VOLUME 4930 CY

STA. 163+73.00
END SP. DITCH LT. -0.30%
BEGIN SP. DITCH LT. -1.58%
ELEV. = 388.44

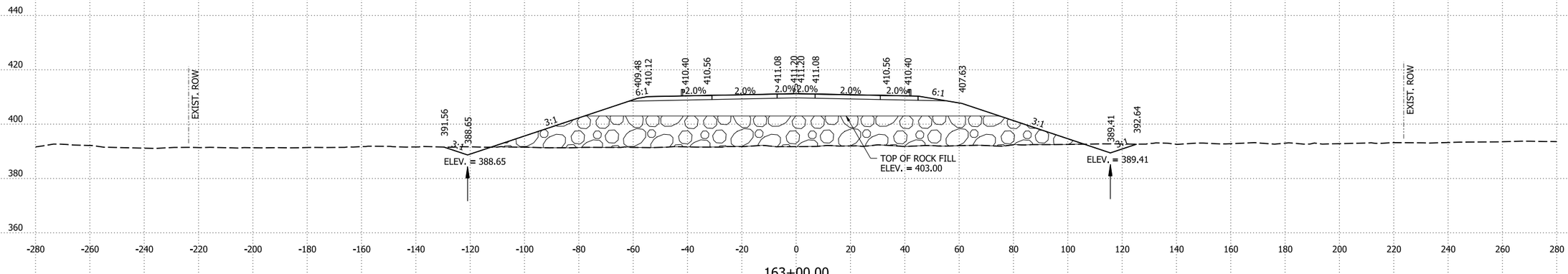
STA. 163+73.00
END SP. DITCH RT. -0.30%
BEGIN SP. DITCH RT. -1.72%
ELEV. = 389.19



163+71.92
BEGIN BRIDGE 07684

AREA CUT 58 SF
AREA FILL 817 SF
ROCK AREA FILL 2078 SF

CUT VOLUME 165 CY
FILL VOLUME 2915 CY
ROCK FILL VOLUME 7890 CY



163+00.00

I-49 STA. 163+00 TO STA. 164+00

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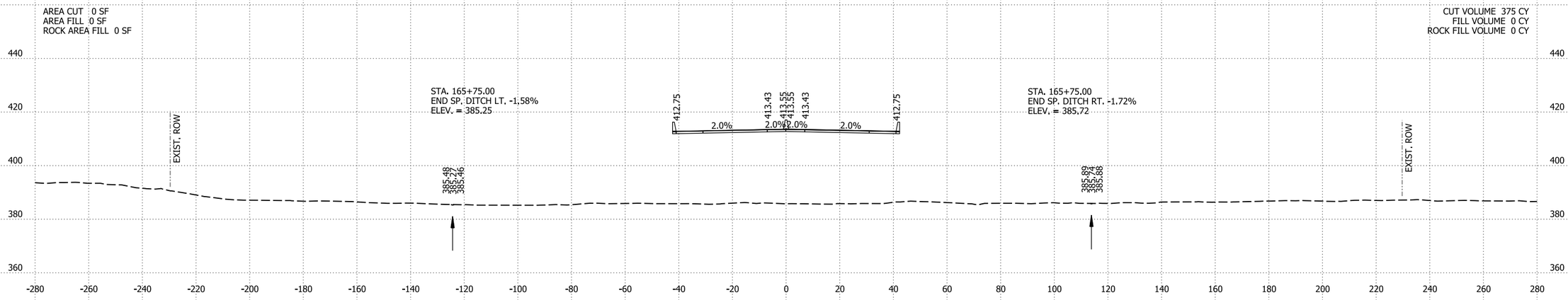
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	695	809
		CROSS SECTIONS				

AREA CUT 0 SF
AREA FILL 0 SF
ROCK AREA FILL 0 SF

CUT VOLUME 375 CY
FILL VOLUME 0 CY
ROCK FILL VOLUME 0 CY

STA. 165+75.00
END SP. DITCH LT. -1.58%
ELEV. = 385.25

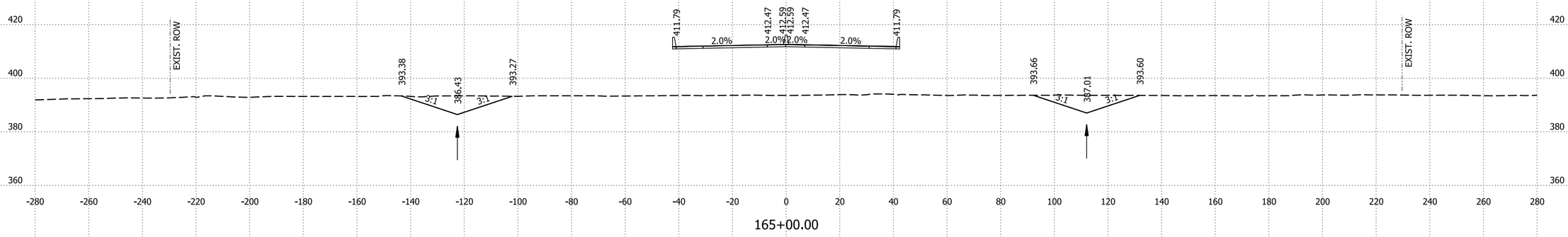
STA. 165+75.00
END SP. DITCH RT. -1.72%
ELEV. = 385.72



165+73.72

AREA CUT 274 SF
AREA FILL 0 SF
ROCK AREA FILL 0 SF

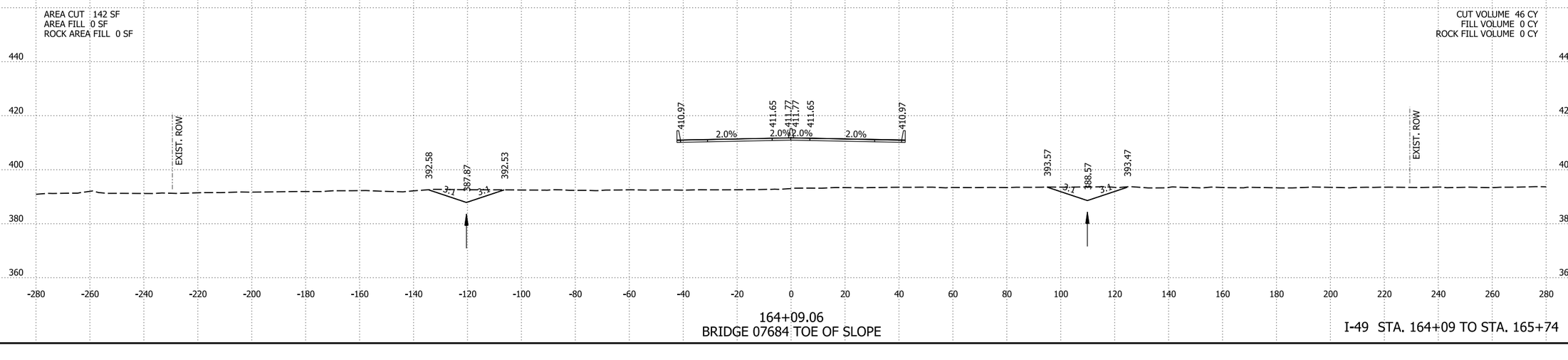
CUT VOLUME 701 CY
FILL VOLUME 0 CY
ROCK FILL VOLUME 0 CY



165+00.00

AREA CUT 142 SF
AREA FILL 0 SF
ROCK AREA FILL 0 SF

CUT VOLUME 46 CY
FILL VOLUME 0 CY
ROCK FILL VOLUME 0 CY



164+09.06
BRIDGE 07684 TOE OF SLOPE

I-49 STA. 164+09 TO STA. 165+74

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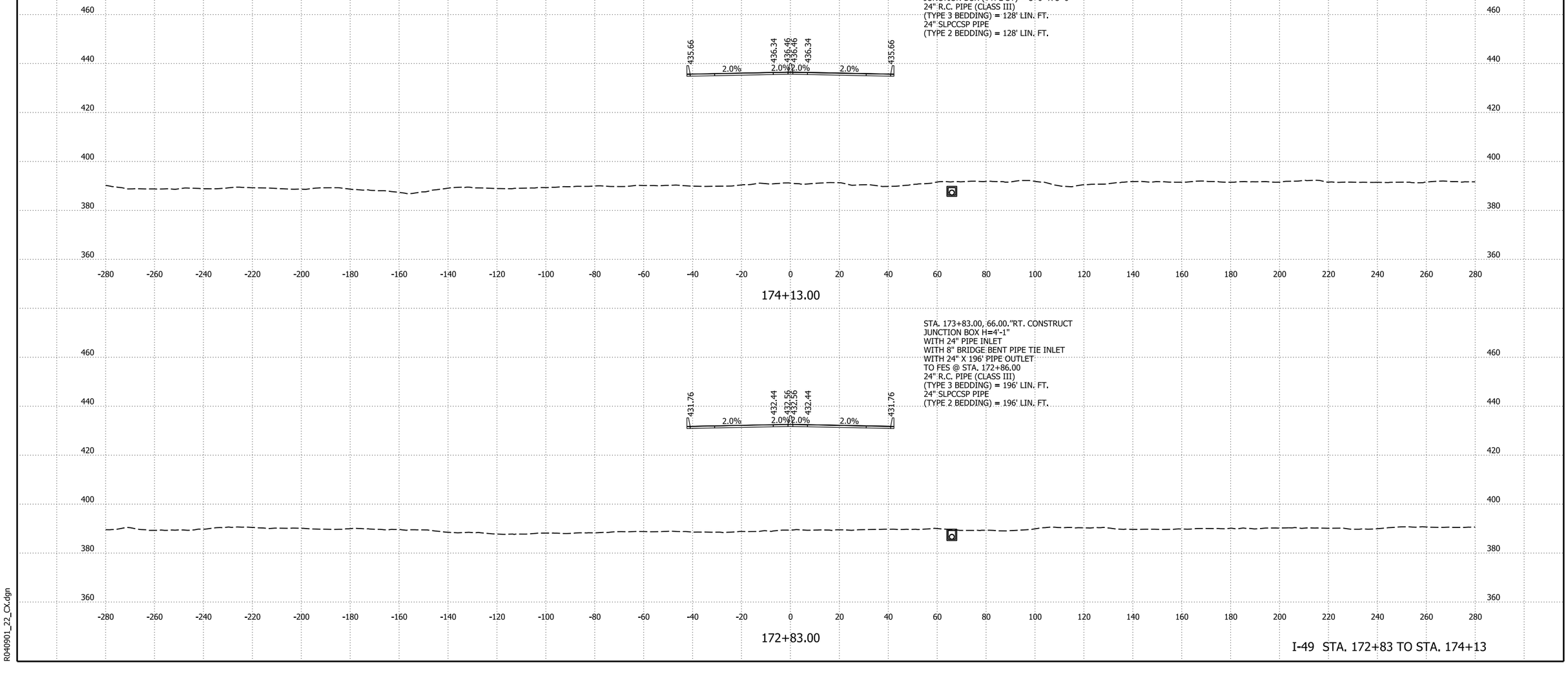
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	696	809
		CROSS SECTIONS				



STA. 174+13.00, 66.00,"RT. CONSTRUCT
JUNCTION BOX H=4'-0"
WITH 24" PIPE INLET
WITH 8" BRIDGE BENT PIPE TIE INLET
WITH 24" X 128' PIPE OUTLET
TO JUNCTION BOX @ STA. 172+83.00
JUNCTION BOX (TYPE ST) = 3'-0" X 3'-0"
24" R.C. PIPE (CLASS III)
(TYPE 3 BEDDING) = 128' LIN. FT.
24" SLPCCSP PIPE
(TYPE 2 BEDDING) = 128' LIN. FT.

174+13.00

STA. 173+83.00, 66.00,"RT. CONSTRUCT
JUNCTION BOX H=4'-1"
WITH 24" PIPE INLET
WITH 8" BRIDGE BENT PIPE TIE INLET
WITH 24" X 196' PIPE OUTLET
TO FES @ STA. 172+86.00
24" R.C. PIPE (CLASS III)
(TYPE 3 BEDDING) = 196' LIN. FT.
24" SLPCCSP PIPE
(TYPE 2 BEDDING) = 196' LIN. FT.

172+83.00

I-49 STA. 172+83 TO STA. 174+13

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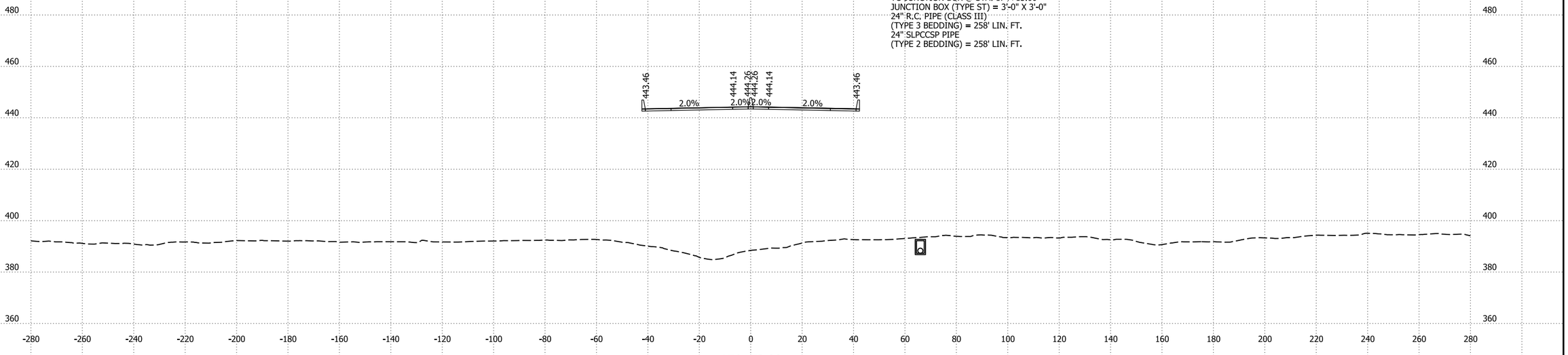
		6	ARK.	040901	697	809
		CROSS SECTIONS				

STA. 176+73.00, 66.00"RT. CONSTRUCT
JUNCTION BOX H=5'-6"
WITH 24" PIPE INLET
WITH 8" BRIDGE BENT PIPE TIE INLET
WITH 24" X 258' PIPE OUTLET
TO JUNCTION BOX @ STA. 174+13.00
JUNCTION BOX (TYPE ST) = 3'-0" X 3'-0"
24" R.C. PIPE (CLASS III)
(TYPE 3 BEDDING) = 258' LIN. FT.
24" SLPCCSP PIPE
(TYPE 2 BEDDING) = 258' LIN. FT.



176+73.00

I-49 STA. 176+73 TO STA. 176+73

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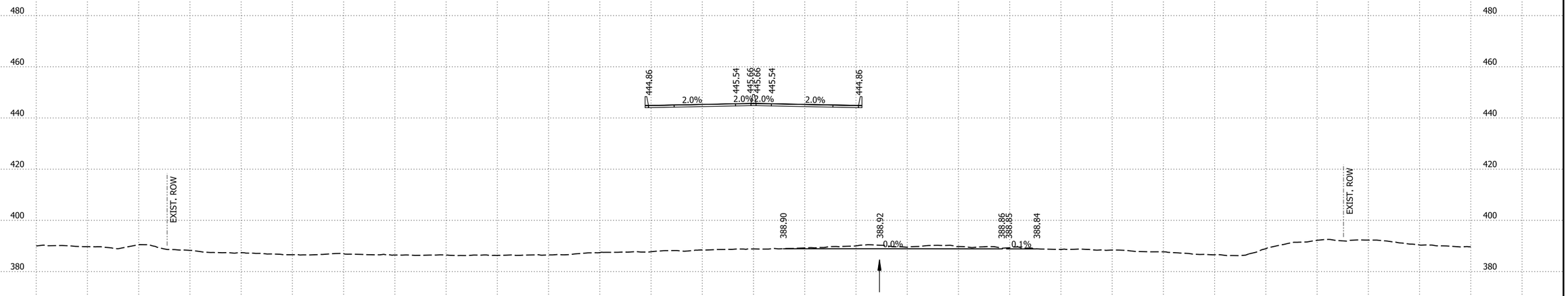
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	698	809
		CROSS SECTIONS				

AREA CUT 79 SF
AREA FILL 0 SF
ROCK AREA FILL 0 SF

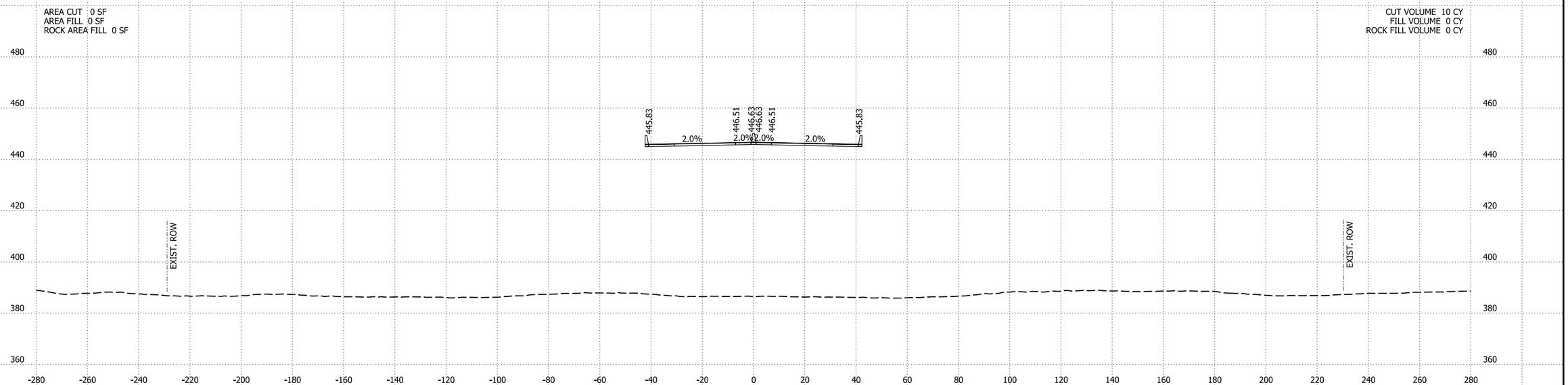
CUT VOLUME 91 CY
FILL VOLUME 0 CY
ROCK FILL VOLUME 0 CY



197+00.00

AREA CUT 0 SF
AREA FILL 0 SF
ROCK AREA FILL 0 SF

CUT VOLUME 10 CY
FILL VOLUME 0 CY
ROCK FILL VOLUME 0 CY



196+38.11

I-49 STA. 196+38 TO STA. 197+00

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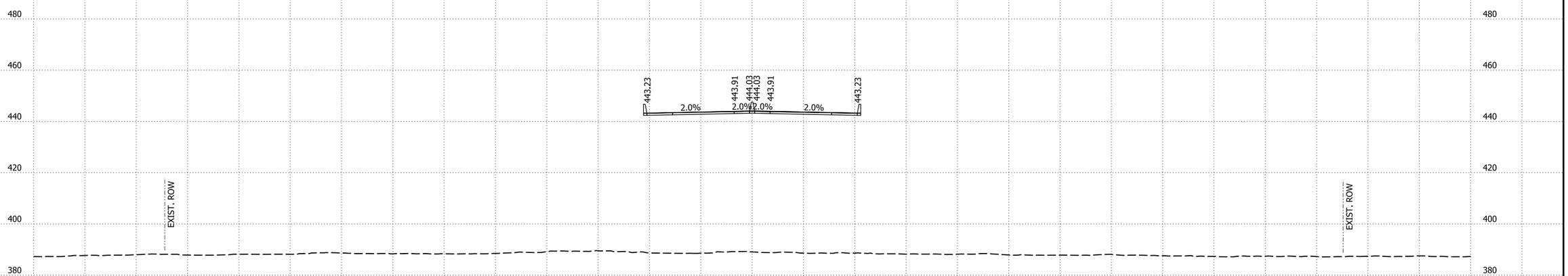
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	699	809
		CROSS SECTIONS				

AREA CUT 0 SF
AREA FILL 0 SF
ROCK AREA FILL 0 SF

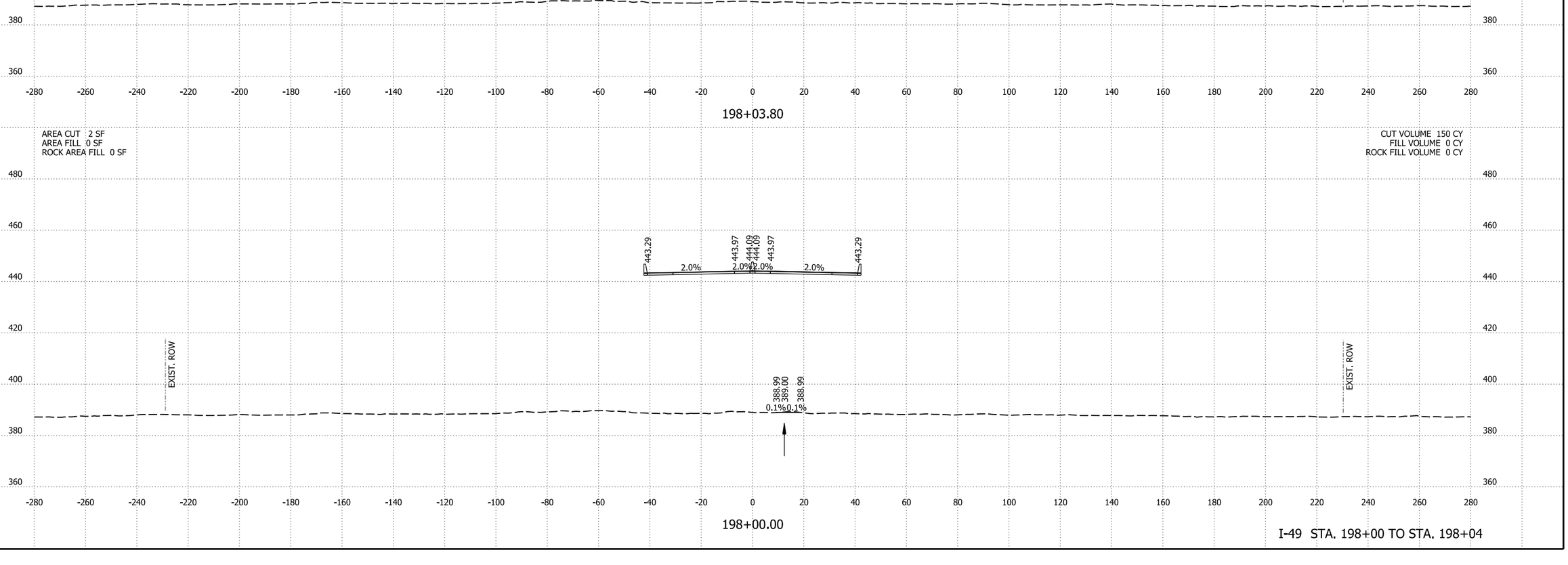
CUT VOLUME 0 CY
FILL VOLUME 0 CY
ROCK FILL VOLUME 0 CY



198+03.80

AREA CUT 2 SF
AREA FILL 0 SF
ROCK AREA FILL 0 SF

CUT VOLUME 150 CY
FILL VOLUME 0 CY
ROCK FILL VOLUME 0 CY



198+00.00

I-49 STA. 198+00 TO STA. 198+04

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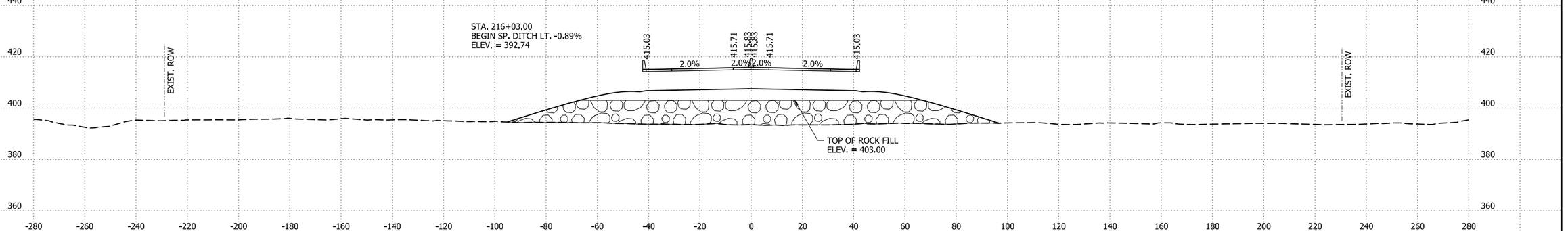
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	700	809
		CROSS SECTIONS				

AREA CUT 0 SF
AREA FILL 469 SF
ROCK AREA FILL 1507 SF

CUT VOLUME 0 CY
FILL VOLUME 228 CY
ROCK FILL VOLUME 733 CY

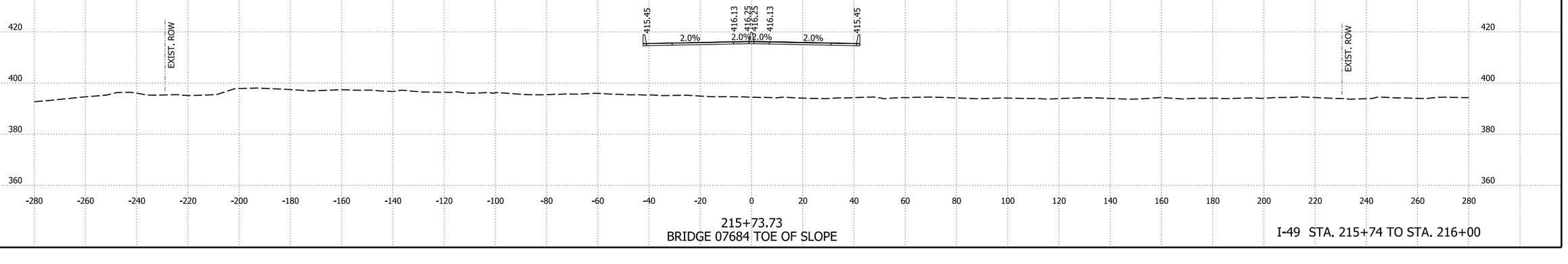
STA. 216+03.00
BEGIN SP. DITCH LT. -0.89%
ELEV. = 392.74



216+00.00

AREA CUT 0 SF
AREA FILL 0 SF
ROCK AREA FILL 0 SF

CUT VOLUME 0 CY
FILL VOLUME 0 CY
ROCK FILL VOLUME 0 CY



215+73.73
BRIDGE 07684 TOE OF SLOPE

I-49 STA. 215+74 TO STA. 216+00

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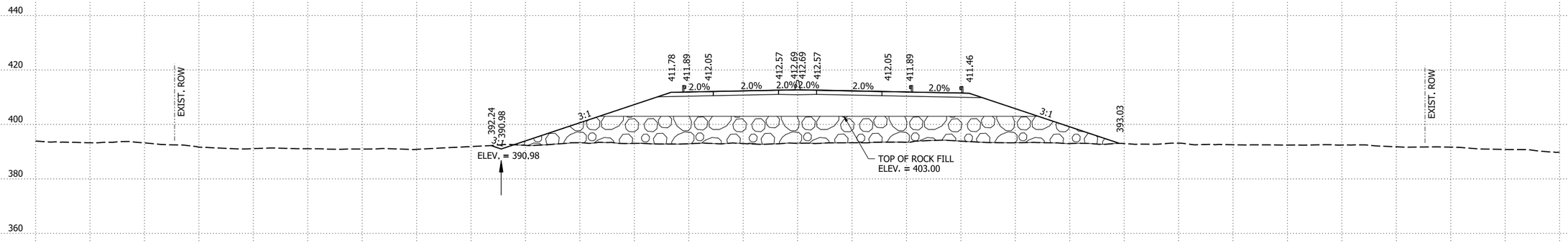
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	701	809
		CROSS SECTIONS				

AREA CUT 7 SF
AREA FILL 1047 SF
ROCK AREA FILL 1877 SF

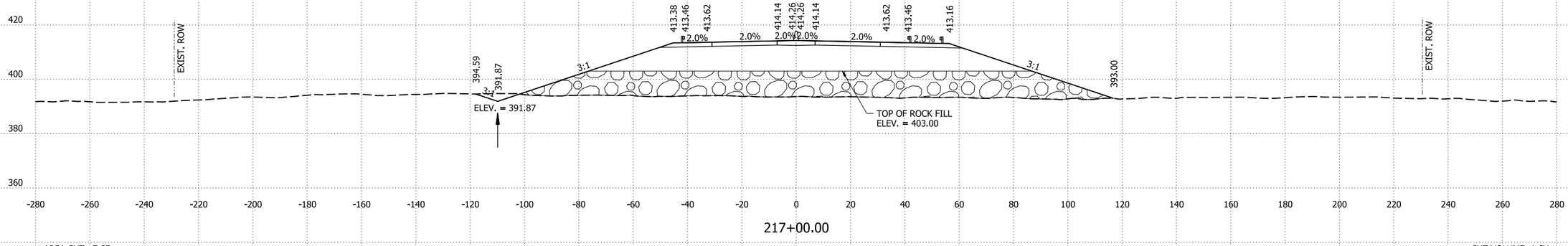
CUT VOLUME 57 CY
FILL VOLUME 4244 CY
ROCK FILL VOLUME 6840 CY



218+00.00

AREA CUT 24 SF
AREA FILL 1245 SF
ROCK AREA FILL 1817 SF

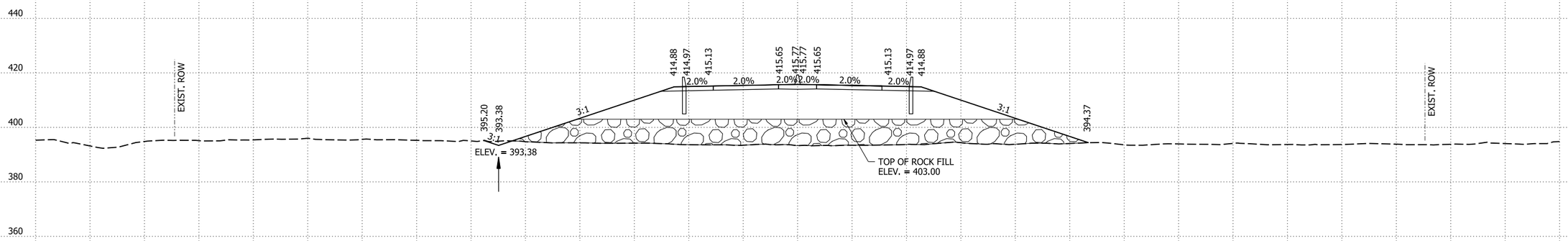
CUT VOLUME 56 CY
FILL VOLUME 4686 CY
ROCK FILL VOLUME 6279 CY



217+00.00

AREA CUT 7 SF
AREA FILL 1393 SF
ROCK AREA FILL 1718 SF

CUT VOLUME 1 CY
FILL VOLUME 141 CY
ROCK FILL VOLUME 244 CY



216+04.08
END BRIDGE 07684

I-49 STA. 216+04 TO STA. 218+00

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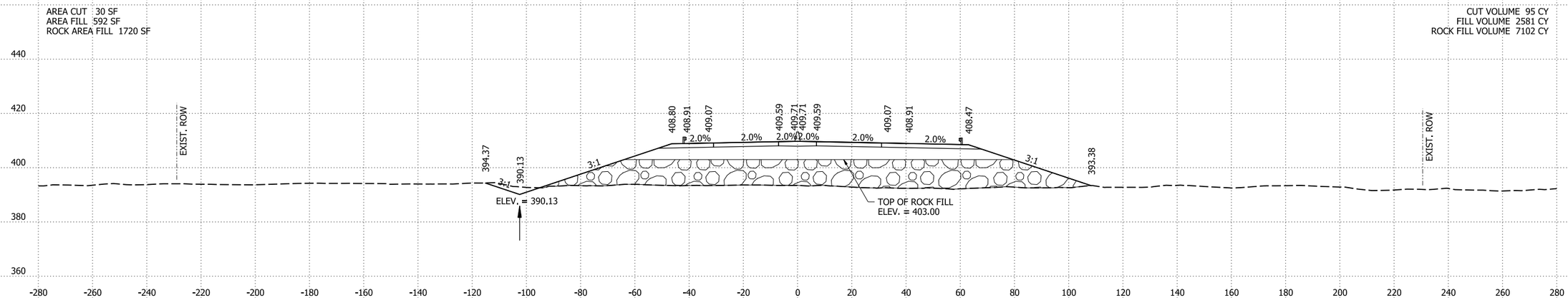
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	702	809
		CROSS SECTIONS				

AREA CUT 30 SF
AREA FILL 592 SF
ROCK AREA FILL 1720 SF

CUT VOLUME 95 CY
FILL VOLUME 2581 CY
ROCK FILL VOLUME 7102 CY

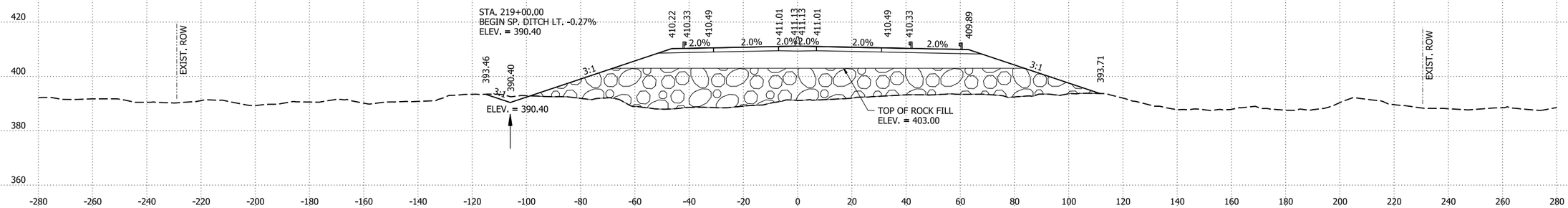


220+00.00

AREA CUT 21 SF
AREA FILL 802 SF
ROCK AREA FILL 2115 SF

CUT VOLUME 20 CY
FILL VOLUME 1596 CY
ROCK FILL VOLUME 4189 CY

STA. 219+00.00
BEGIN SP. DITCH LT. -0.27%
ELEV. = 390.40



219+00.00

AREA CUT 0 SF
AREA FILL 922 SF
ROCK AREA FILL 2410 SF

CUT VOLUME 6 CY
FILL VOLUME 1823 CY
ROCK FILL VOLUME 3969 CY

STA. 218+50.00 CONSTRUCT
24" x 236' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH 3:1 FES LT. & RT.
Q50 = 13.2 CFS D.A. = 7.46 ACRES

STA. 218+50.00
END SP. DITCH LT. -0.89%
ELEV. = 390.53

218+50.00

I-49 STA. 218+50 TO STA. 220+00

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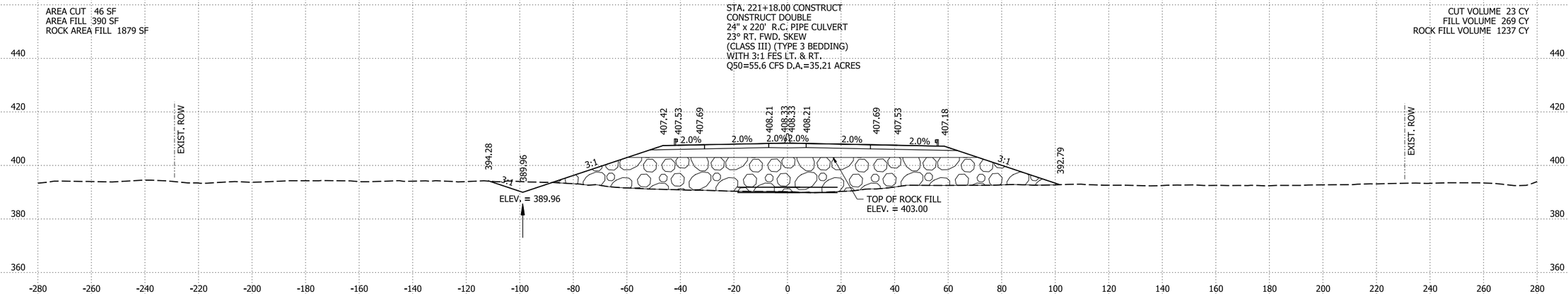
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	703	809
		CROSS SECTIONS				

AREA CUT 46 SF
AREA FILL 390 SF
ROCK AREA FILL 1879 SF

STA. 221+18.00 CONSTRUCT
CONSTRUCT DOUBLE
24" x 220' R.C. PIPE CULVERT
23° RT. FWD. SKEW
(CLASS III) (TYPE 3 BEDDING)
WITH 3:1 FES LT. & RT.
Q50=55.6 CFS D.A.=35.21 ACRES

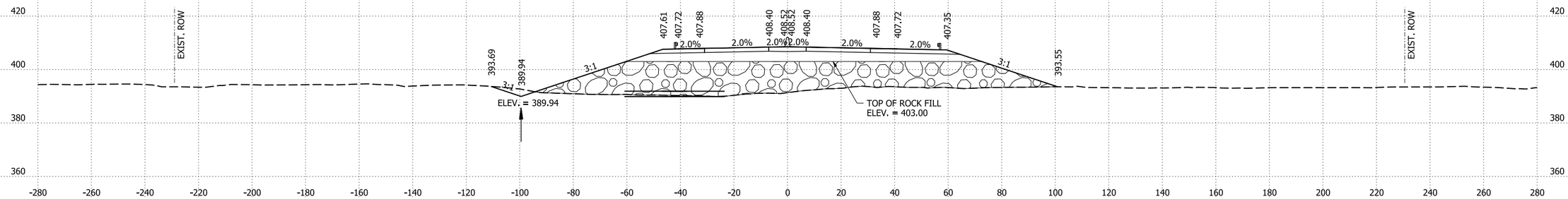
CUT VOLUME 23 CY
FILL VOLUME 269 CY
ROCK FILL VOLUME 1237 CY



221+18.00

AREA CUT 23 SF
AREA FILL 417 SF
ROCK AREA FILL 1831 SF

CUT VOLUME 9 CY
FILL VOLUME 340 CY
ROCK FILL VOLUME 1410 CY

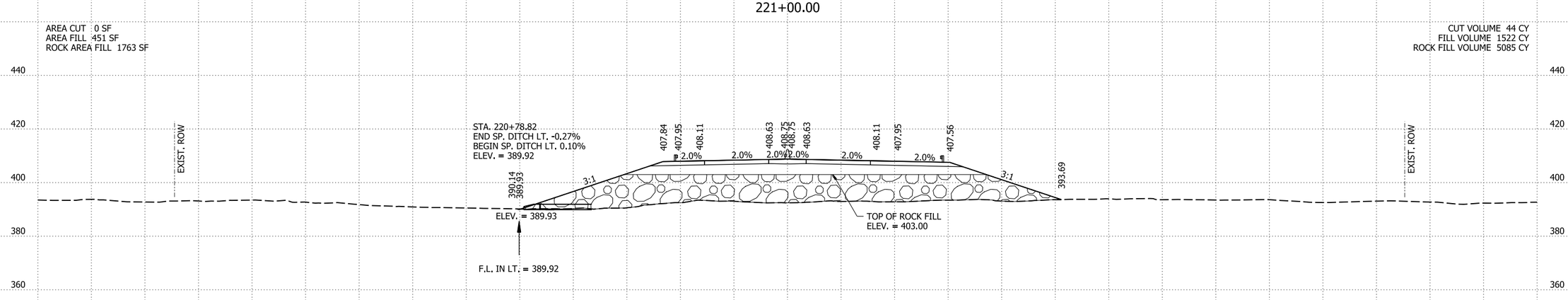


221+00.00

AREA CUT 0 SF
AREA FILL 451 SF
ROCK AREA FILL 1763 SF

CUT VOLUME 44 CY
FILL VOLUME 1522 CY
ROCK FILL VOLUME 5085 CY

STA. 220+78.82
END SP. DITCH LT. -0.27%
BEGIN SP. DITCH LT. 0.10%
ELEV. = 389.92



220+78.82

I-49 STA. 220+79 TO STA. 221+18

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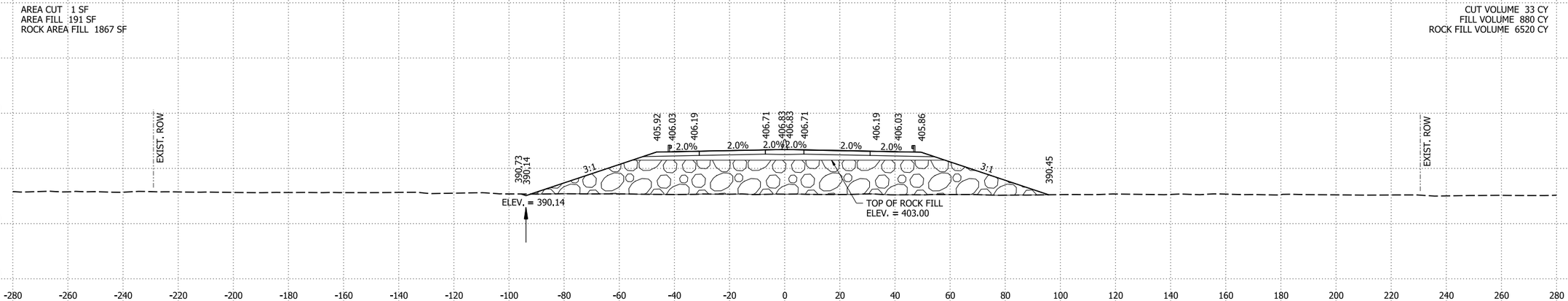
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	704	809
		CROSS SECTIONS				

AREA CUT 1 SF
AREA FILL 191 SF
ROCK AREA FILL 1867 SF

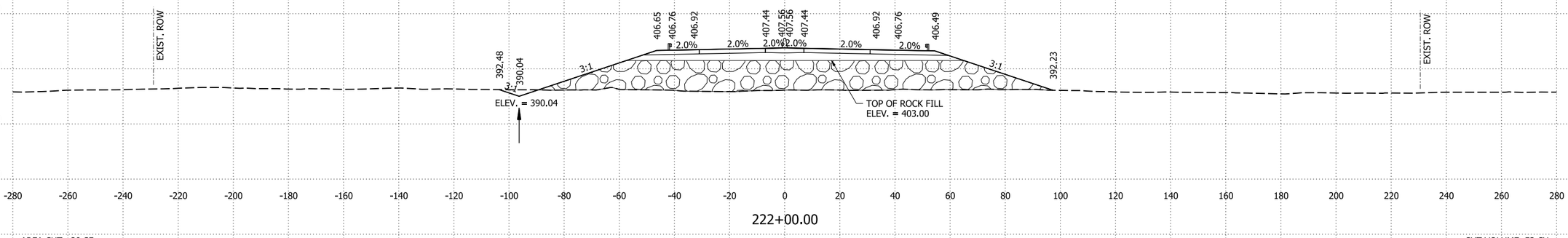
CUT VOLUME 33 CY
FILL VOLUME 880 CY
ROCK FILL VOLUME 6520 CY



223+00.00

AREA CUT 17 SF
AREA FILL 284 SF
ROCK AREA FILL 1653 SF

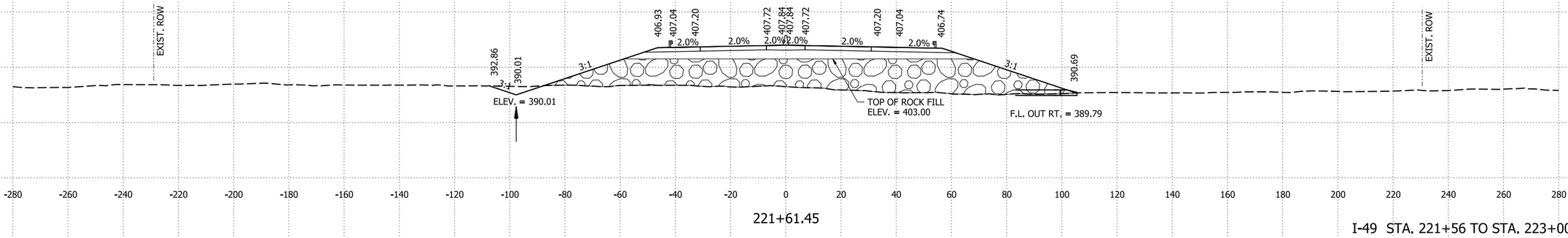
CUT VOLUME 37 CY
FILL VOLUME 507 CY
ROCK FILL VOLUME 2774 CY



222+00.00

AREA CUT 29 SF
AREA FILL 338 SF
ROCK AREA FILL 1750 SF

CUT VOLUME 53 CY
FILL VOLUME 512 CY
ROCK FILL VOLUME 2552 CY



221+61.45

I-49 STA. 221+56 TO STA. 223+00

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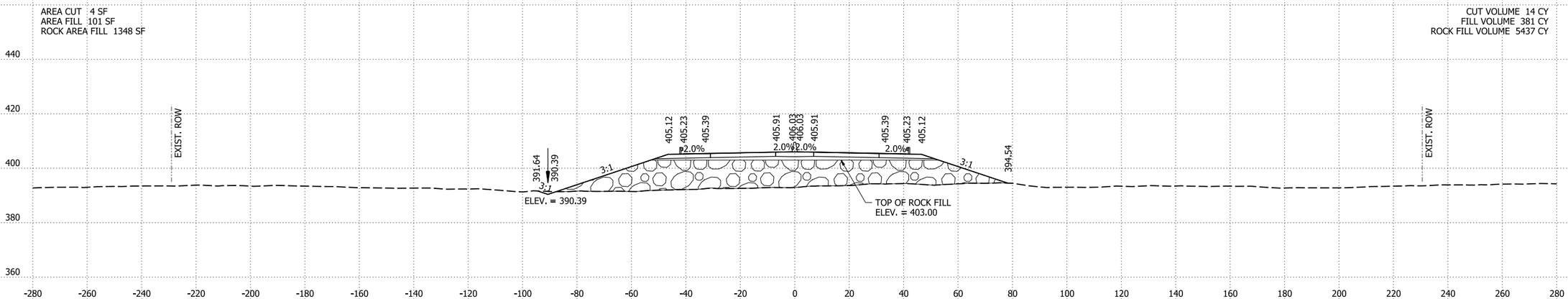
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	705	809
		CROSS SECTIONS				

AREA CUT 4 SF
AREA FILL 101 SF
ROCK AREA FILL 1348 SF

CUT VOLUME 14 CY
FILL VOLUME 381 CY
ROCK FILL VOLUME 5437 CY



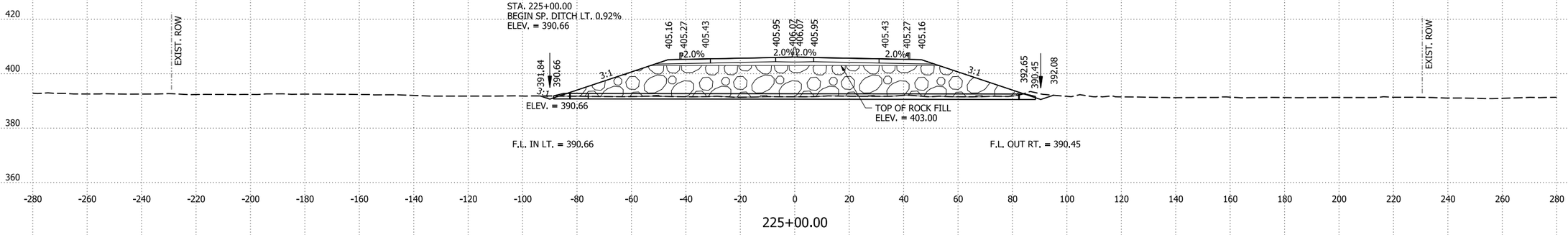
226+00.00

AREA CUT 4 SF
AREA FILL 105 SF
ROCK AREA FILL 1588 SF

CUT VOLUME 20 CY
FILL VOLUME 441 CY
ROCK FILL VOLUME 6011 CY

STA. 225+00.00 CONSTRUCT
24" x 166' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH 3:1 FES LT. & RT.
Q50=12.2 CFS D.A.=7.15 ACRES

STA. 225+00.00
BEGIN SP. DITCH LT. 0.92%
ELEV. = 390.66



F.L. IN LT. = 390.66

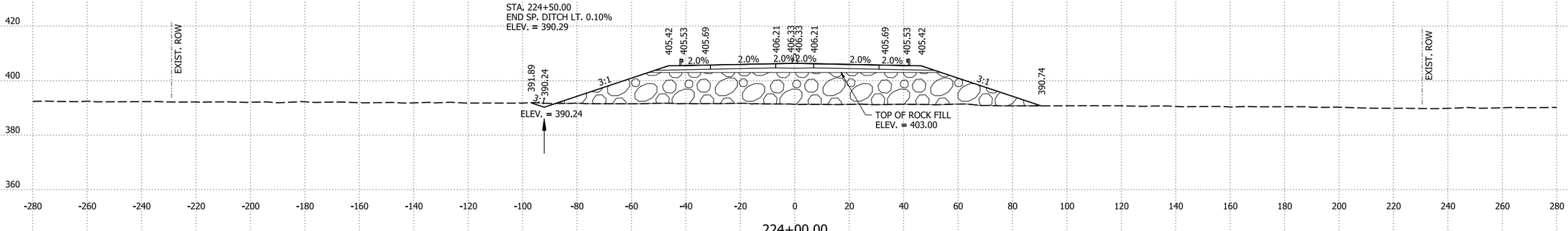
F.L. OUT RT. = 390.45

225+00.00

AREA CUT 7 SF
AREA FILL 133 SF
ROCK AREA FILL 1658 SF

CUT VOLUME 14 CY
FILL VOLUME 600 CY
ROCK FILL VOLUME 6529 CY

STA. 224+50.00
END SP. DITCH LT. 0.10%
ELEV. = 390.29



224+00.00

I-49 STA. 224+00 TO STA. 226+00

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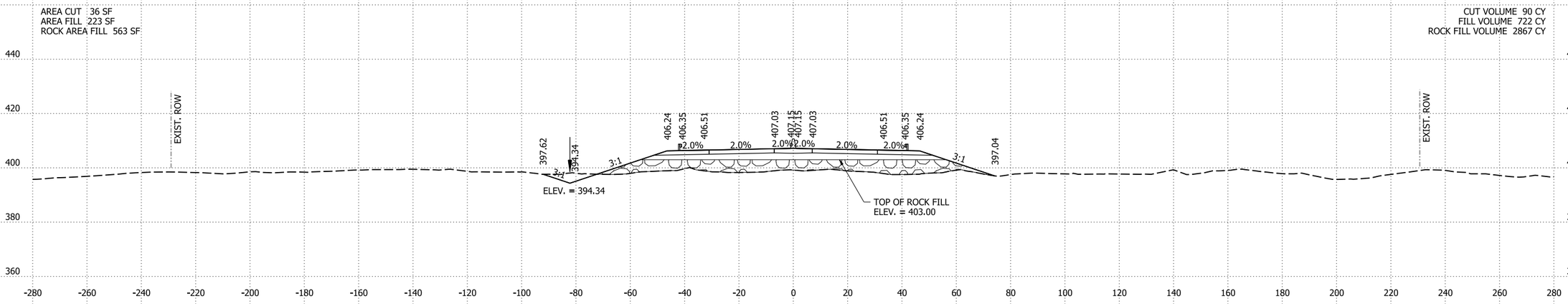
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	706	809
		CROSS SECTIONS				

AREA CUT 36 SF
AREA FILL 223 SF
ROCK AREA FILL 563 SF

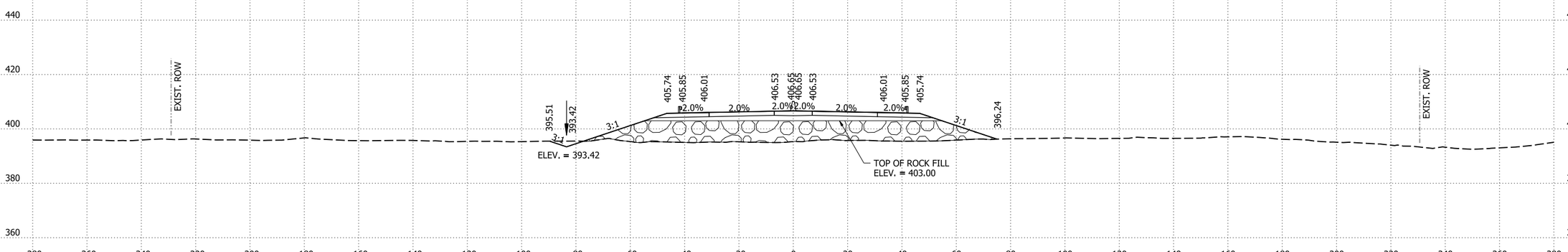
CUT VOLUME 90 CY
FILL VOLUME 722 CY
ROCK FILL VOLUME 2867 CY



229+00.00

AREA CUT 13 SF
AREA FILL 167 SF
ROCK AREA FILL 985 SF

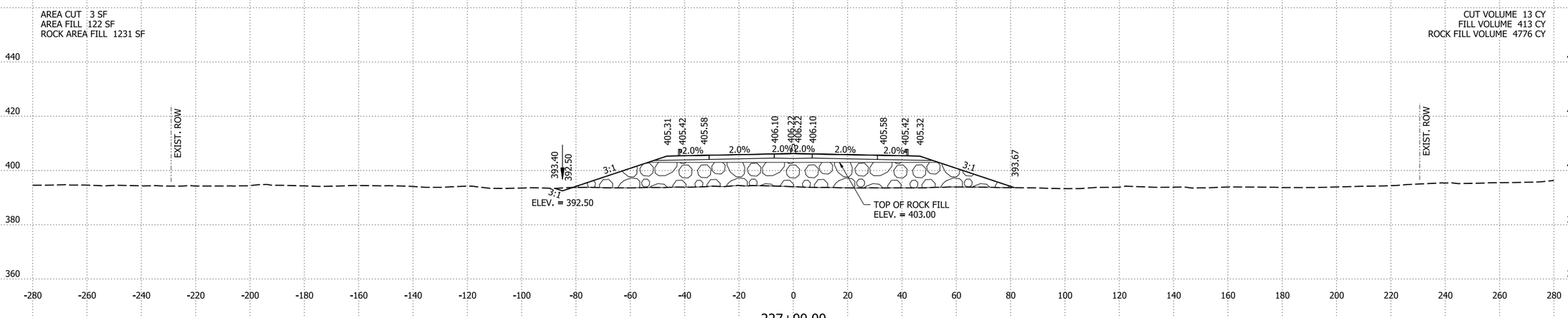
CUT VOLUME 31 CY
FILL VOLUME 535 CY
ROCK FILL VOLUME 4104 CY



228+00.00

AREA CUT 3 SF
AREA FILL 122 SF
ROCK AREA FILL 1231 SF

CUT VOLUME 13 CY
FILL VOLUME 413 CY
ROCK FILL VOLUME 4776 CY



227+00.00

I-49 STA. 227+00 TO STA. 229+00

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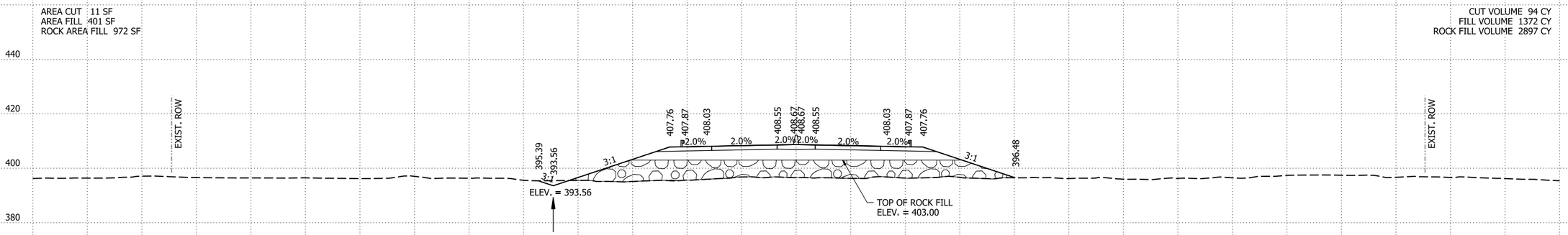
9-16-2024		6	ARK.	040901	707	809
		CROSS SECTIONS				

AREA CUT 11 SF
AREA FILL 401 SF
ROCK AREA FILL 972 SF

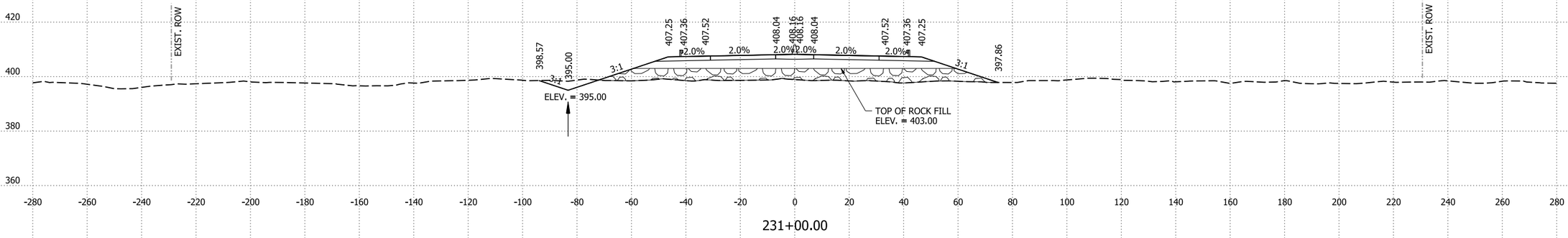
CUT VOLUME 94 CY
FILL VOLUME 1372 CY
ROCK FILL VOLUME 2897 CY



232+00.00

AREA CUT 40 SF
AREA FILL 340 SF
ROCK AREA FILL 593 SF

CUT VOLUME 125 CY
FILL VOLUME 1150 CY
ROCK FILL VOLUME 2155 CY

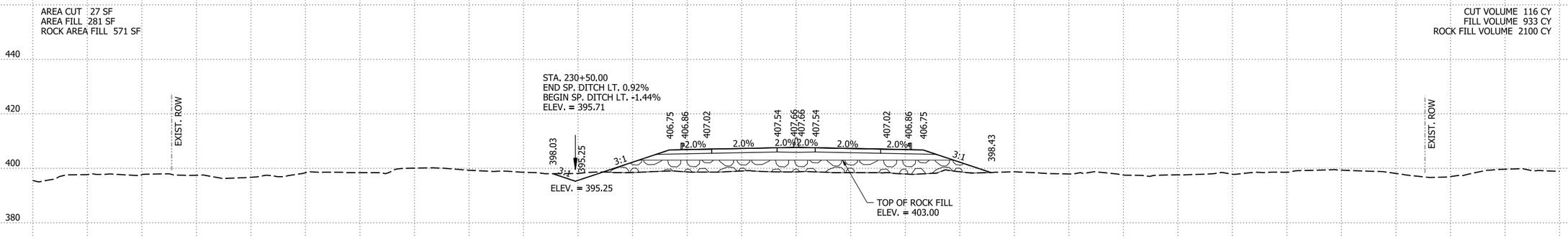


231+00.00

AREA CUT 27 SF
AREA FILL 281 SF
ROCK AREA FILL 571 SF

CUT VOLUME 116 CY
FILL VOLUME 933 CY
ROCK FILL VOLUME 2100 CY

STA. 230+50.00
END SP. DITCH LT. 0.92%
BEGIN SP. DITCH LT. -1.44%
ELEV. = 395.71



230+00.00

I-49 STA. 230+00 TO STA. 232+00

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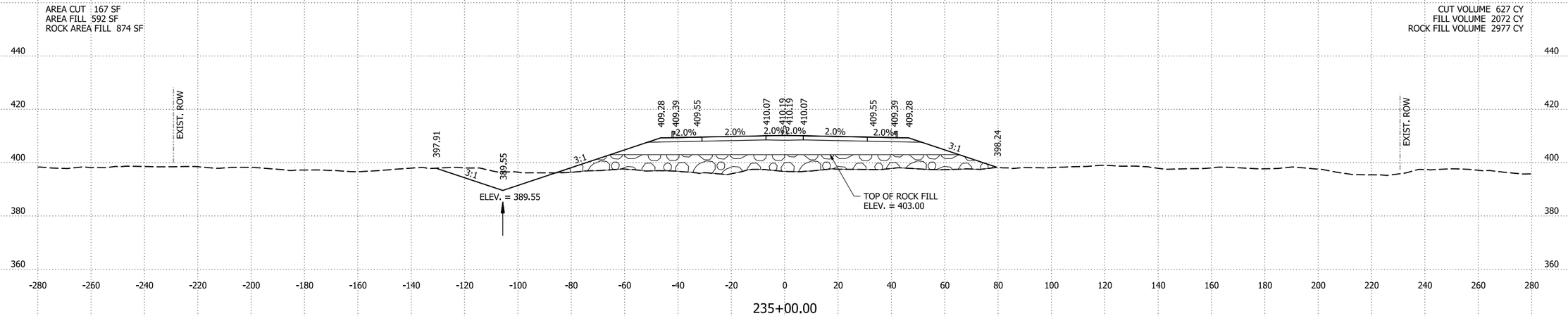
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	708	809
		CROSS SECTIONS				



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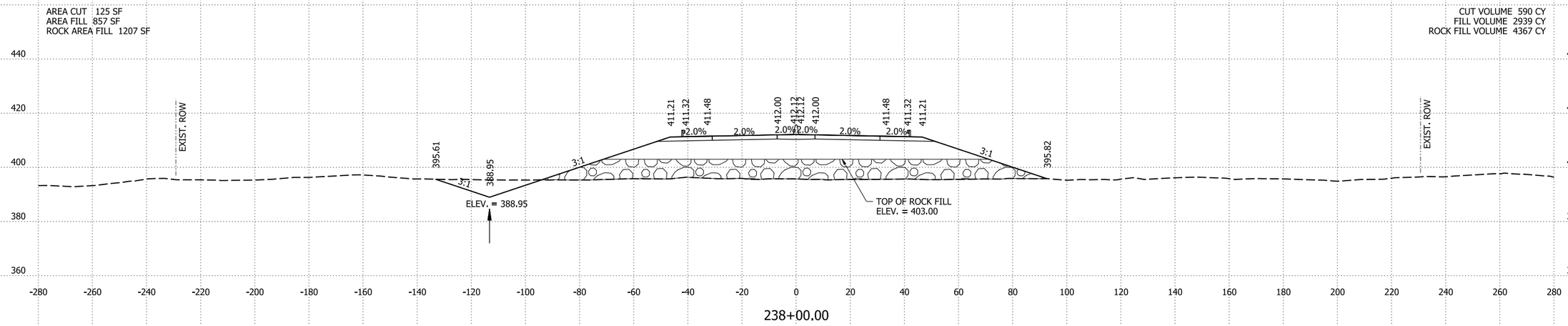
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	709	809
		CROSS SECTIONS				

AREA CUT 125 SF
AREA FILL 857 SF
ROCK AREA FILL 1207 SF

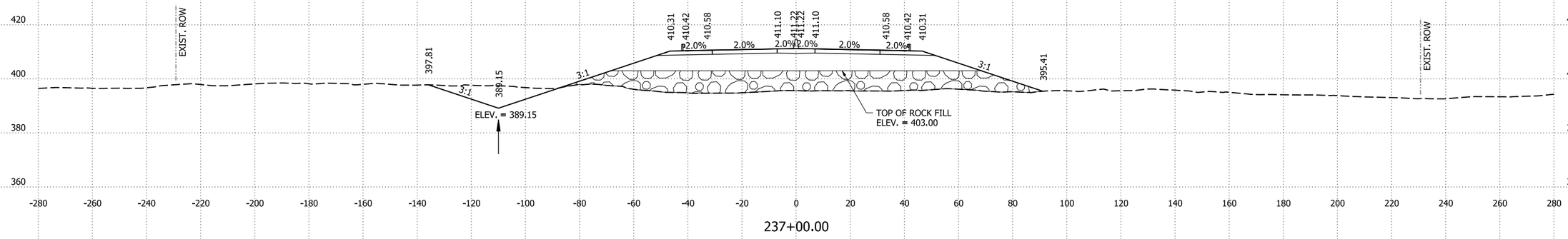
CUT VOLUME 590 CY
FILL VOLUME 2939 CY
ROCK FILL VOLUME 4367 CY



238+00.00

AREA CUT 194 SF
AREA FILL 730 SF
ROCK AREA FILL 1151 SF

CUT VOLUME 840 CY
FILL VOLUME 2572 CY
ROCK FILL VOLUME 3954 CY

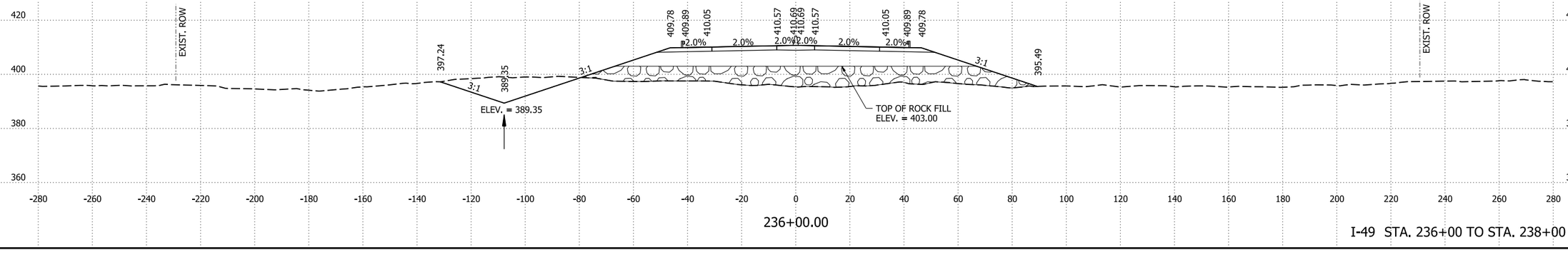


237+00.00

AREA CUT 259 SF
AREA FILL 659 SF
ROCK AREA FILL 983 SF

659.02

CUT VOLUME 790 CY
FILL VOLUME 2317 CY
ROCK FILL VOLUME 3440 CY



236+00.00

I-49 STA. 236+00 TO STA. 238+00

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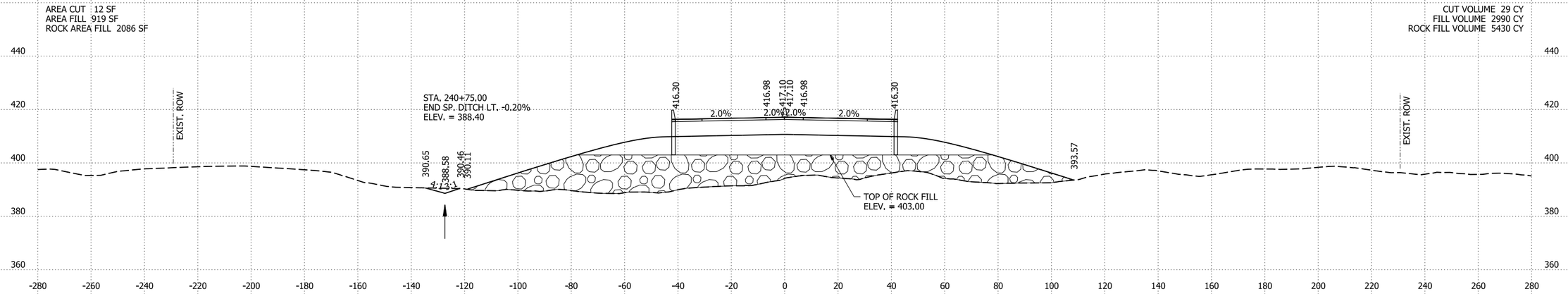
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	710	809
		CROSS SECTIONS				

AREA CUT 12 SF
AREA FILL 919 SF
ROCK AREA FILL 2086 SF

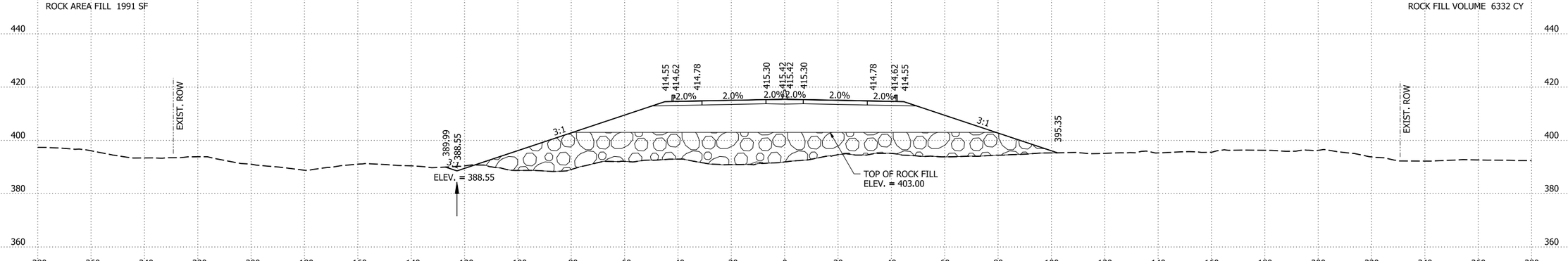
CUT VOLUME 29 CY
FILL VOLUME 2990 CY
ROCK FILL VOLUME 5430 CY



240+71.92
BEGIN BRIDGE 07685

AREA CUT 9 SF
AREA FILL 1326 SF
ROCK AREA FILL 1991 SF

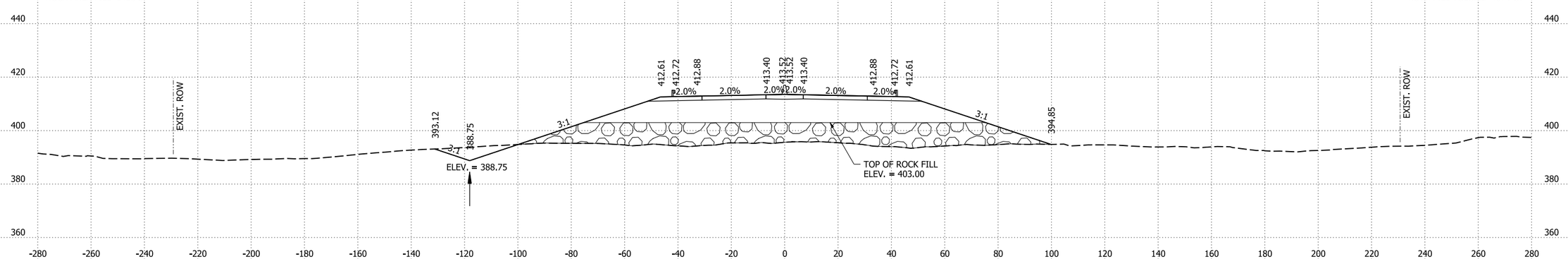
CUT VOLUME 162 CY
FILL VOLUME 4422 CY
ROCK FILL VOLUME 6332 CY



240+00.00

AREA CUT 78 SF
AREA FILL 1062 SF
ROCK AREA FILL 1428 SF

CUT VOLUME 376 CY
FILL VOLUME 3554 CY
ROCK FILL VOLUME 4879 CY



239+00.00

I-49 STA. 239+00 TO STA. 240+72

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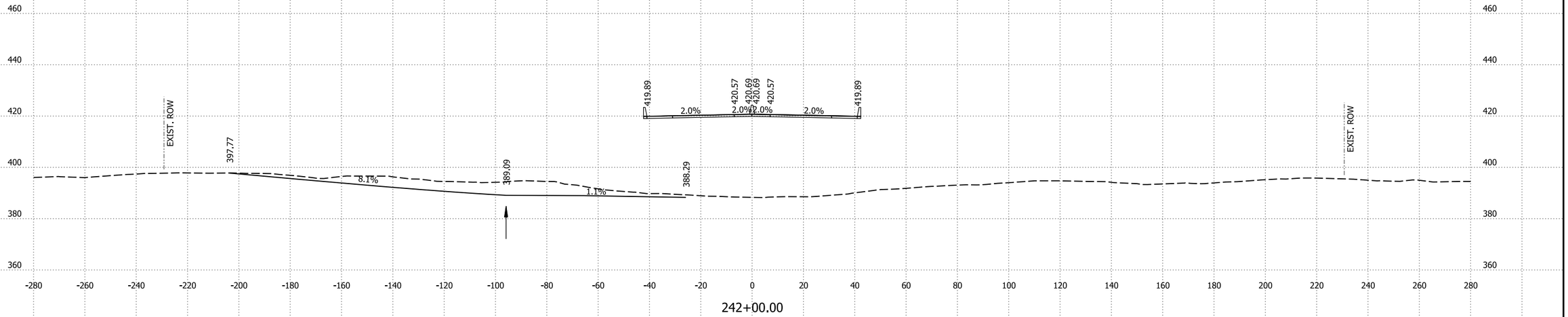
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	711	809
		CROSS SECTIONS				

AREA CUT 530 SF
AREA FILL 0 SF
ROCK AREA FILL 0 SF

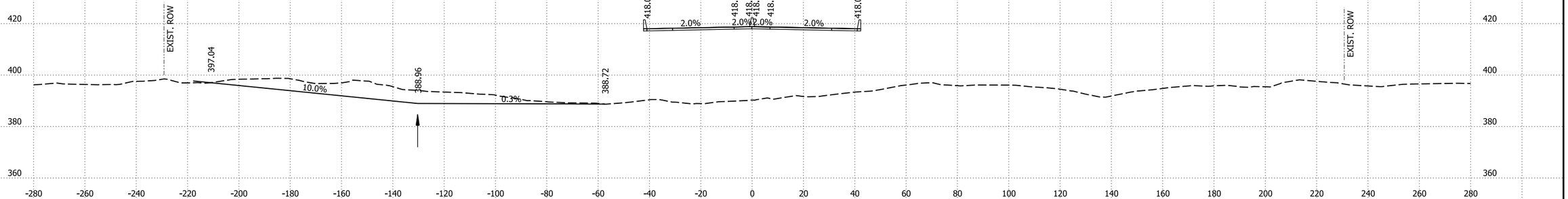
CUT VOLUME 1240 CY
FILL VOLUME 0 CY
ROCK FILL VOLUME 0 CY



242+00.00

AREA CUT 519 SF
AREA FILL 0 SF
ROCK AREA FILL 0 SF

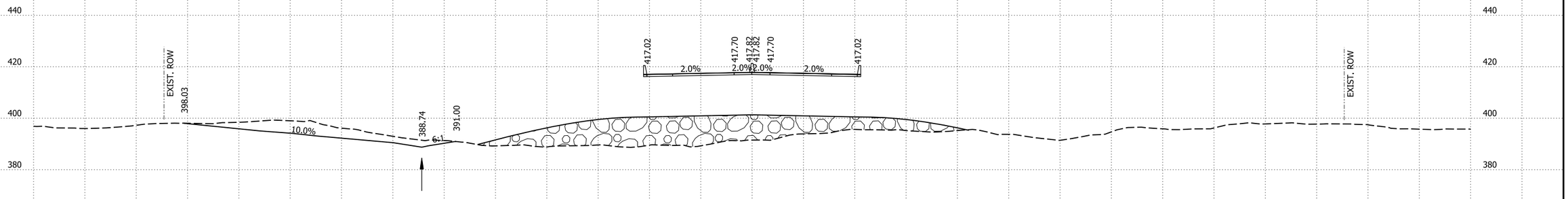
CUT VOLUME 558 CY
FILL VOLUME 0 CY
ROCK FILL VOLUME 932 CY



241+36.21
BRIDGE 07685 TOE OF SLOPE

AREA CUT 313 SF
AREA FILL 0 SF
ROCK AREA FILL 1390 SF

CUT VOLUME 169 CY
FILL VOLUME 478 CY
ROCK FILL VOLUME 1807 CY



241+00.00

I-49 STA. 241+00 TO STA. 242+00

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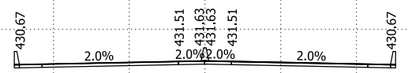
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	712	809
		CROSS SECTIONS				

AREA CUT 0 SF
AREA FILL 0 SF
ROCK AREA FILL 0 SF

CUT VOLUME 0 CY
FILL VOLUME 0 CY
ROCK FILL VOLUME 0 CY

STA. 257+62.19
BEGIN SP. DITCH LT. 0.20%
ELEV. = 394.89



STA. 257+52.31
BEGIN SP. DITCH RT. -0.10%
ELEV. = 394.57

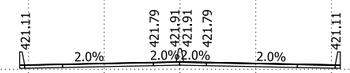
460
440
420
400
380
360

-280 -260 -240 -220 -200 -180 -160 -140 -120 -100 -80 -60 -40 -20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280

258+22.69
BRIDGE 07685 TOE OF SLOPE

AREA CUT 0 SF
AREA FILL 0 SF
ROCK AREA FILL 0 SF

CUT VOLUME 401 CY
FILL VOLUME 0 CY
ROCK FILL VOLUME 0 CY



EXIST. ROW

EXIST. ROW

242+40.80

I-49 STA. 242+41 TO STA. 258+23

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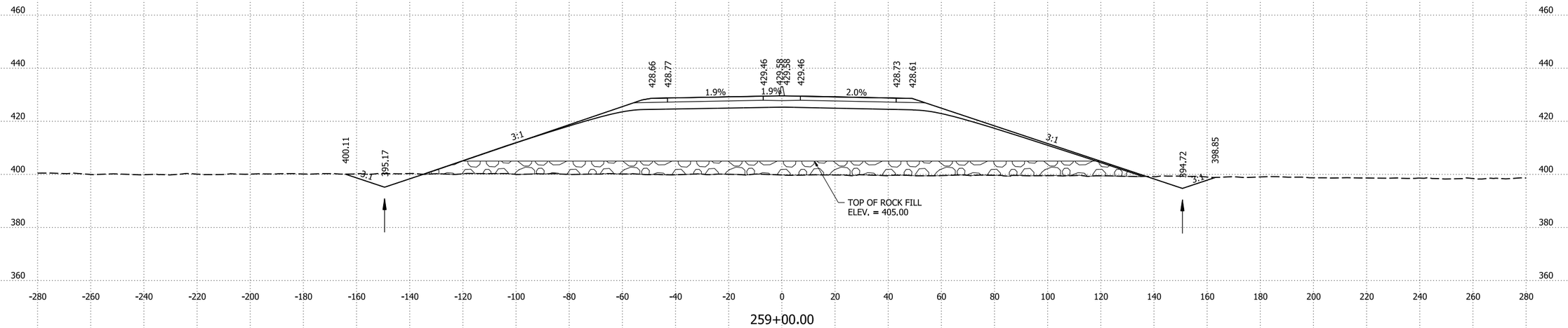
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	713	809
		CROSS SECTIONS				

AREA CUT 137 SF
AREA FILL 3901 SF
ROCK AREA FILL 1319 SF

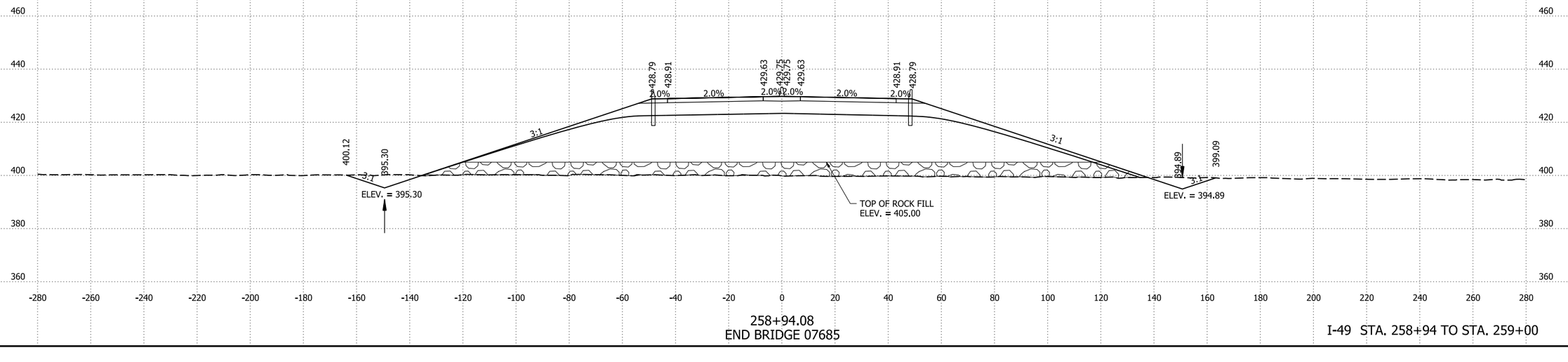
CUT VOLUME 29 CY
FILL VOLUME 857 CY
ROCK FILL VOLUME 290 CY



259+00.00

AREA CUT 127 SF
AREA FILL 3916 SF
ROCK AREA FILL 1324 SF

CUT VOLUME 168 CY
FILL VOLUME 5177 CY
ROCK FILL VOLUME 1750 CY



258+94.08
END BRIDGE 07685

I-49 STA. 258+94 TO STA. 259+00

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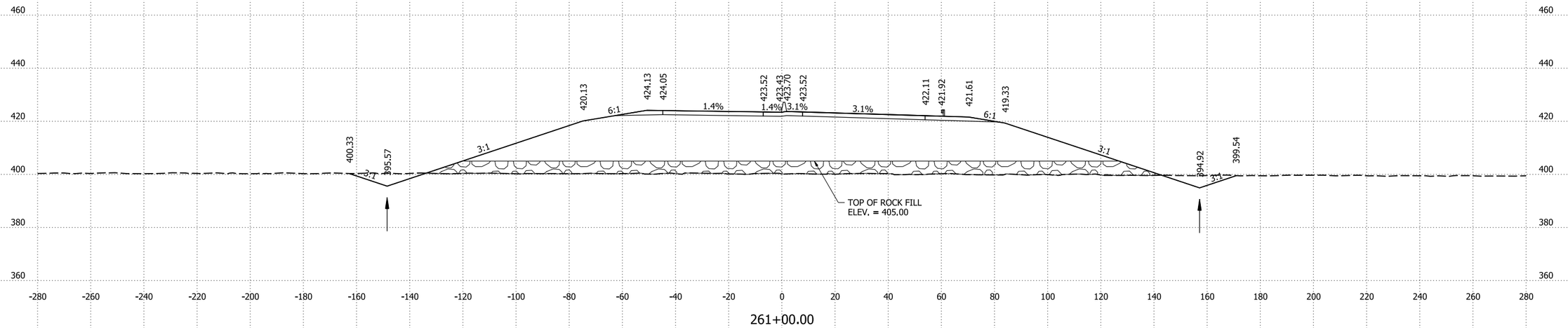
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	714	809
		CROSS SECTIONS				

AREA CUT 136 SF
AREA FILL 3263 SF
ROCK AREA FILL 1271 SF

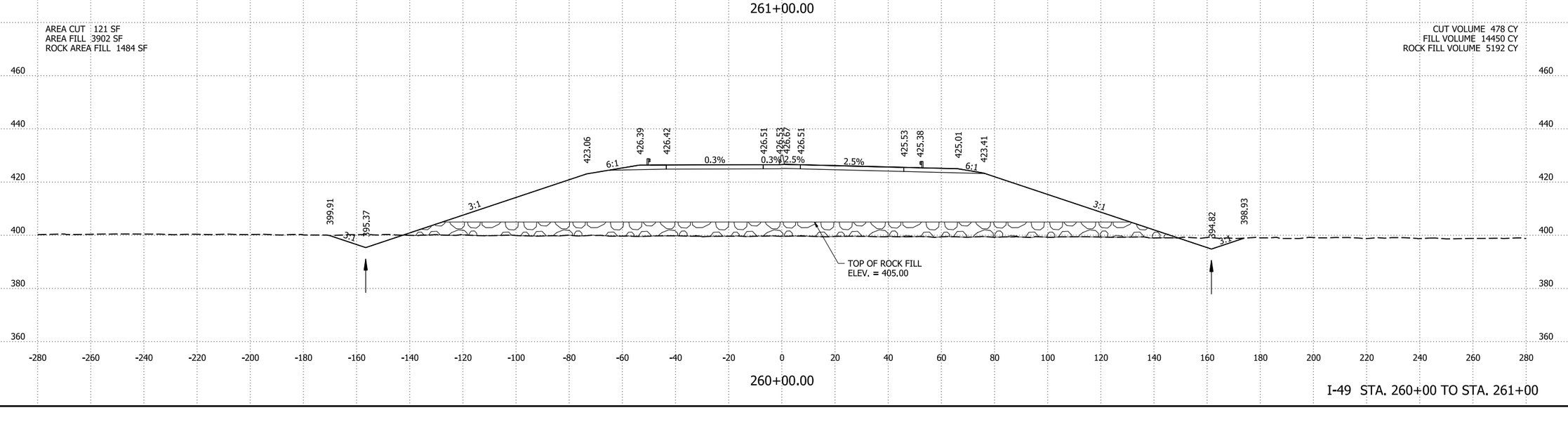
CUT VOLUME 475 CY
FILL VOLUME 13269 CY
ROCK FILL VOLUME 5102 CY



261+00.00

AREA CUT 121 SF
AREA FILL 3902 SF
ROCK AREA FILL 1484 SF

CUT VOLUME 478 CY
FILL VOLUME 14450 CY
ROCK FILL VOLUME 5192 CY



260+00.00

I-49 STA. 260+00 TO STA. 261+00

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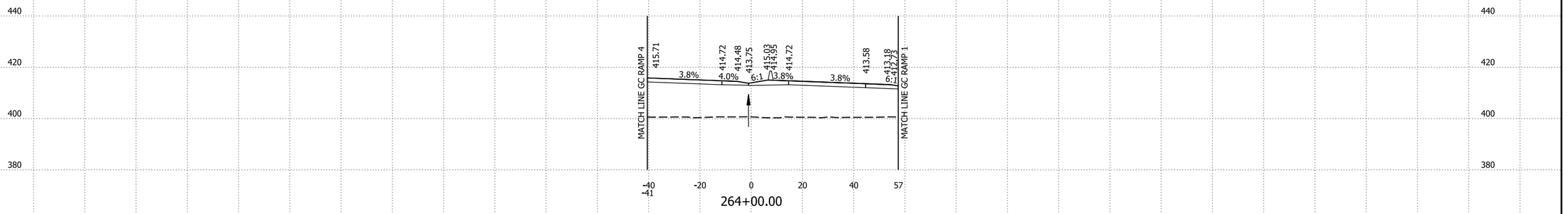
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	715	809
		CROSS SECTIONS				

AREA CUT 0 SF
AREA FILL 1218 SF
ROCK AREA FILL 0 SF

CUT VOLUME 97 CY
FILL VOLUME 4900 CY
ROCK FILL VOLUME 1415 CY

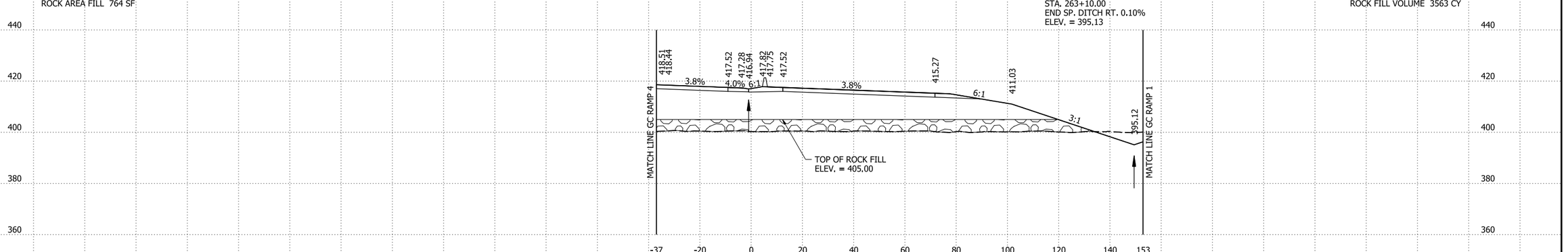


264+00.00

AREA CUT 52 SF
AREA FILL 1428 SF
ROCK AREA FILL 764 SF

CUT VOLUME 373 CY
FILL VOLUME 7606 CY
ROCK FILL VOLUME 3563 CY

STA. 263+10.00
END SP. DITCH RT. 0.10%
ELEV. = 395.13



263+00.00

AREA CUT 149 SF
AREA FILL 2679 SF
ROCK AREA FILL 1160 SF

CUT VOLUME 527 CY
FILL VOLUME 11004 CY
ROCK FILL VOLUME 4500 CY

STA. 262+85.00
END SP. DITCH LT. 0.20%
ELEV. = 395.94

262+00.00

I-49 STA. 262+00 TO STA. 264+00

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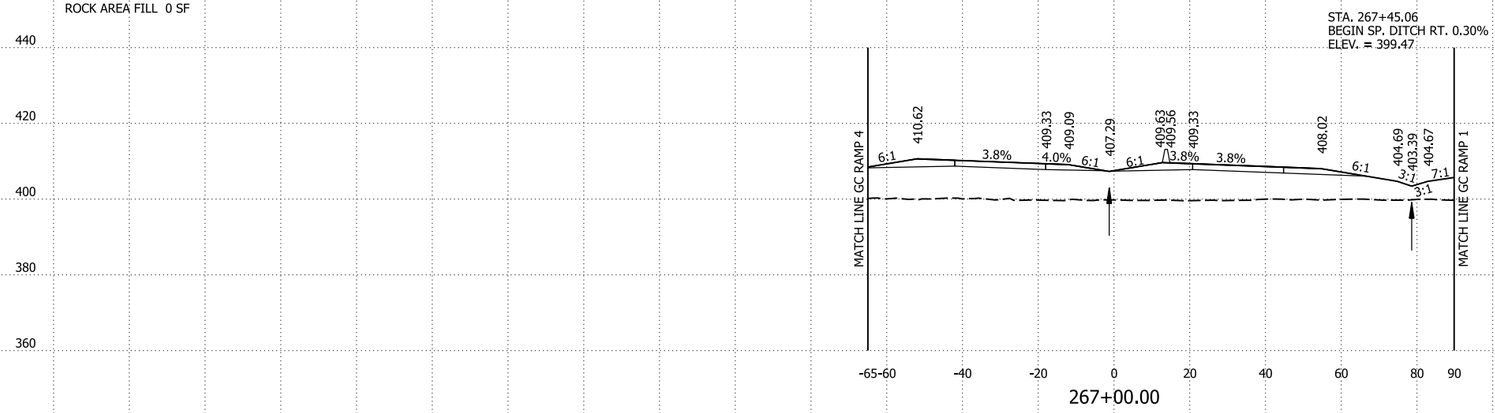
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	716	809
		CROSS SECTIONS				

AREA CUT 0 SF
AREA FILL 1140 SF
ROCK AREA FILL 0 SF

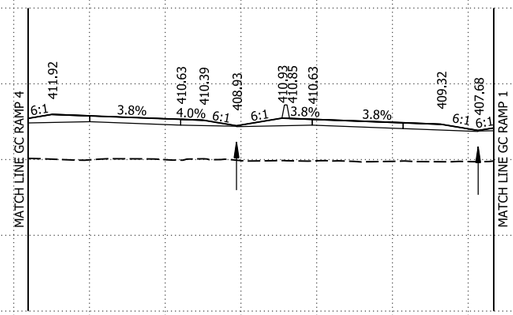
CUT VOLUME 0 CY
FILL VOLUME 4181 CY
ROCK FILL VOLUME 0 CY



267+00.00

AREA CUT 0 SF
AREA FILL 1118 SF
ROCK AREA FILL 0 SF

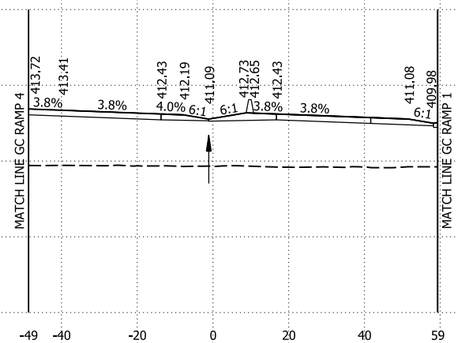
CUT VOLUME 0 CY
FILL VOLUME 4498 CY
ROCK FILL VOLUME 0 CY



266+00.00

AREA CUT 0 SF
AREA FILL 1311 SF
ROCK AREA FILL 0 SF

CUT VOLUME 0 CY
FILL VOLUME 4683 CY
ROCK FILL VOLUME 0 CY



265+00.00

I-49 STA. 265+00 TO STA. 267+00

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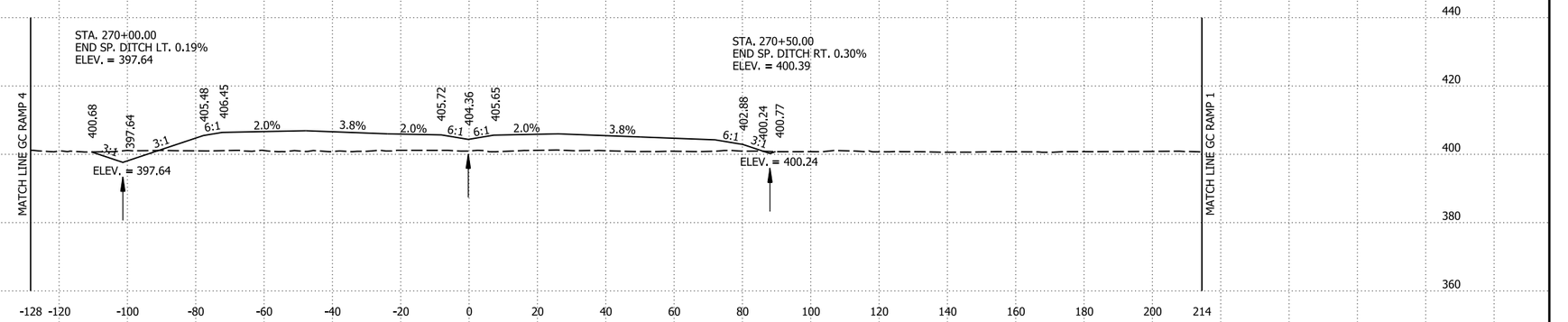
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	717	809
		CROSS SECTIONS				

AREA CUT 66 SF
AREA FILL 771 SF
ROCK AREA FILL 0 SF

CUT VOLUME 122 CY
FILL VOLUME 3159 CY
ROCK FILL VOLUME 0 CY

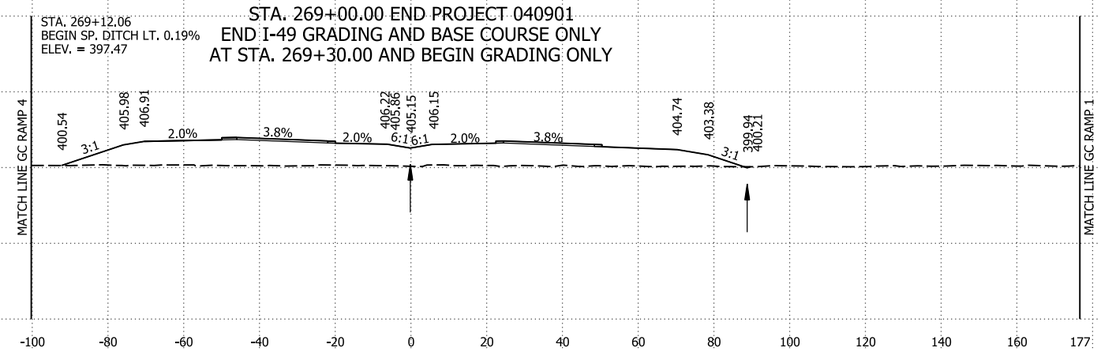


270+00.00
END I-49 GRADING ONLY
BEGIN INTERIM GRADING

AREA CUT 0 SF
AREA FILL 935 SF
ROCK AREA FILL 0 SF

CUT VOLUME 11 CY
FILL VOLUME 3546 CY
ROCK FILL VOLUME 0 CY

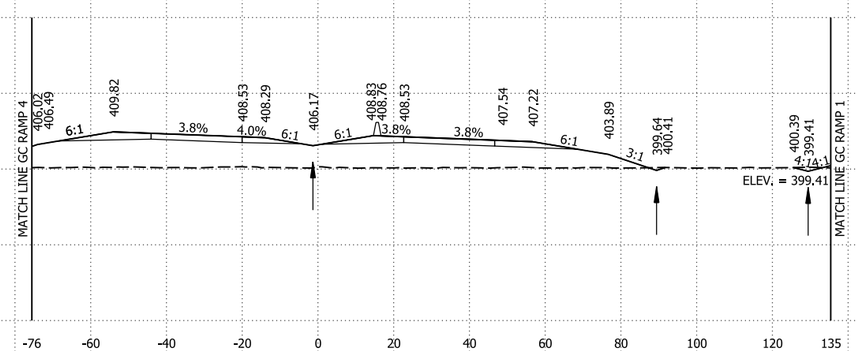
STA. 269+00.00 END PROJECT 040901
END I-49 GRADING AND BASE COURSE ONLY
AT STA. 269+30.00 AND BEGIN GRADING ONLY



269+00.00
END I-49 FULL DEPTH PAVEMENT
BEGIN GRADING AND BASE COURSE ONLY

AREA CUT 6 SF
AREA FILL 980 SF
ROCK AREA FILL 0 SF

CUT VOLUME 11 CY
FILL VOLUME 3926 CY
ROCK FILL VOLUME 0 CY



268+00.00

I-49 STA. 268+00 TO STA. 270+00

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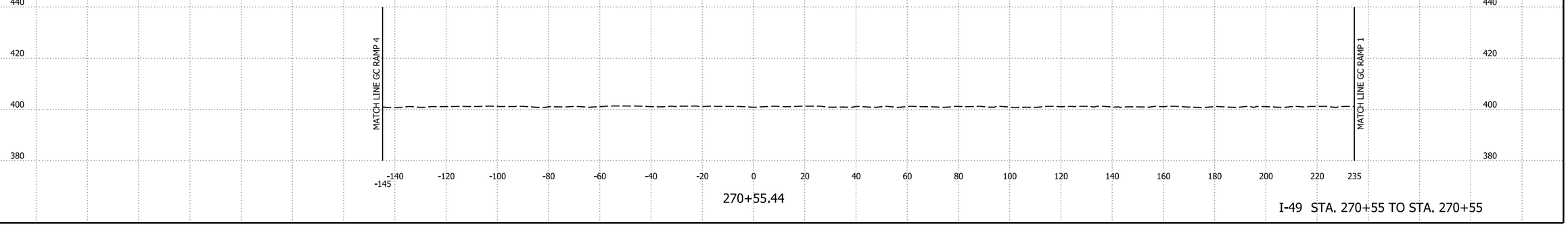
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	718	809
		CROSS SECTIONS				

AREA CUT 0 SF
AREA FILL 0 SF
ROCK AREA FILL 0 SF

CUT VOLUME 68 CY
FILL VOLUME 792 CY
ROCK FILL VOLUME 0 CY



270+55.44

I-49 STA. 270+55 TO STA. 270+55

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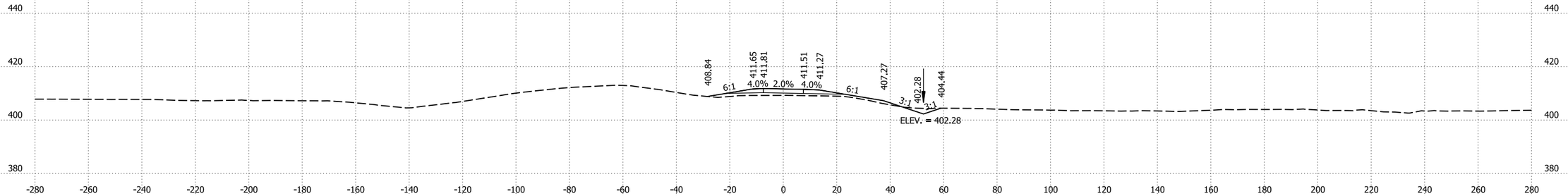
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	719	809
		CROSS SECTIONS				

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 14 SF
STG. 2 AREA FILL 62 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 26 CY
STG. 2 FILL VOLUME 159 CY

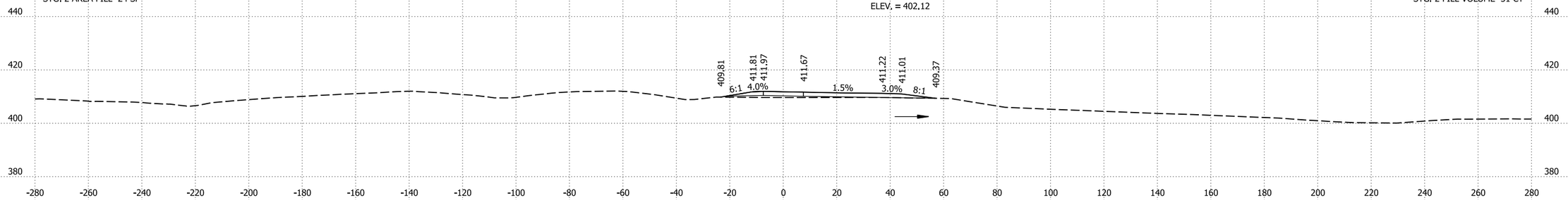


12+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 24 SF

STA. 11+55.00
END SP. DITCH RT. -4.26%
BEGIN SP. DITCH RT. 0.35%
ELEV. = 402.12

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 383 CY
STG. 2 FILL VOLUME 31 CY

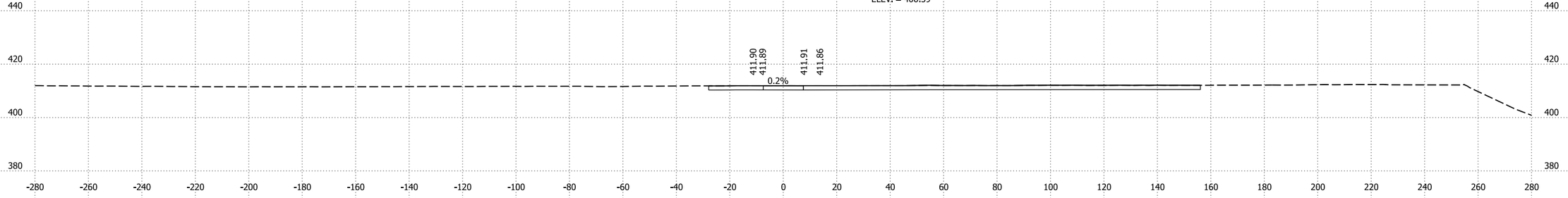


11+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 294 SF
STG. 2 AREA FILL 0 SF

STA. 10+50.00
BEGIN SP. DITCH RT. -4.26%
ELEV. = 406.59

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



10+29.60

HWY 22 RAMP 2 STA. 10+30 TO STA. 12+00

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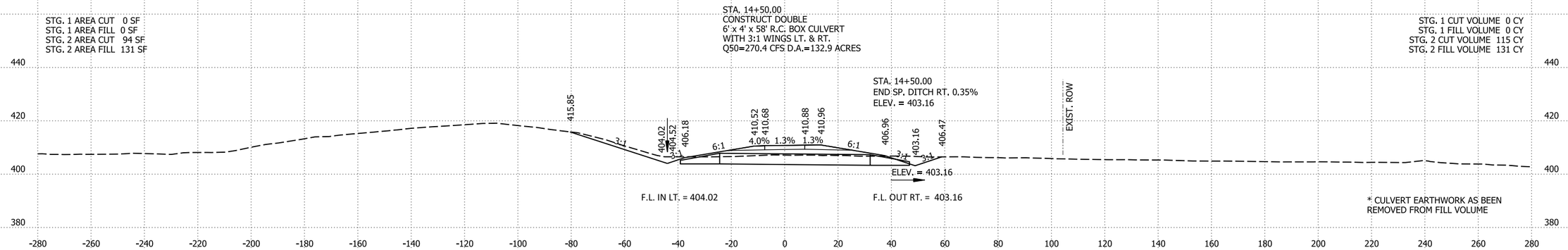
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	720	809
		CROSS SECTIONS				

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 94 SF
STG. 2 AREA FILL 131 SF

STA. 14+50.00
CONSTRUCT DOUBLE
6' x 4' x 58' R.C. BOX CULVERT
WITH 3:1 WINGS LT. & RT.
Q50=270.4 CFS D.A.=132.9 ACRES

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 115 CY
STG. 2 FILL VOLUME 131 CY

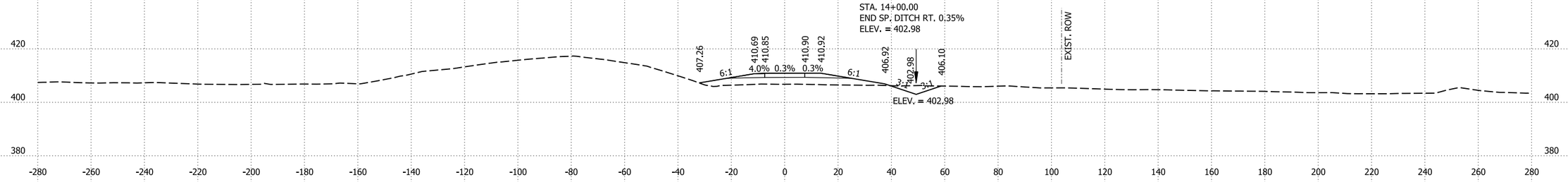


* CULVERT EARTHWORK AS BEEN REMOVED FROM FILL VOLUME

14+50.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 31 SF
STG. 2 AREA FILL 159 SF

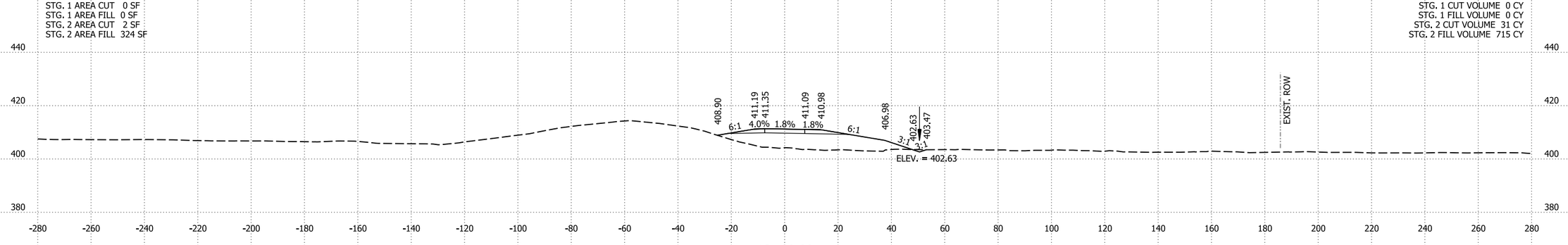
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 62 CY
STG. 2 FILL VOLUME 895 CY



14+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 2 SF
STG. 2 AREA FILL 324 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 31 CY
STG. 2 FILL VOLUME 715 CY



13+00.00

HWY 22 RAMP 2 STA. 13+00 TO STA. 14+50

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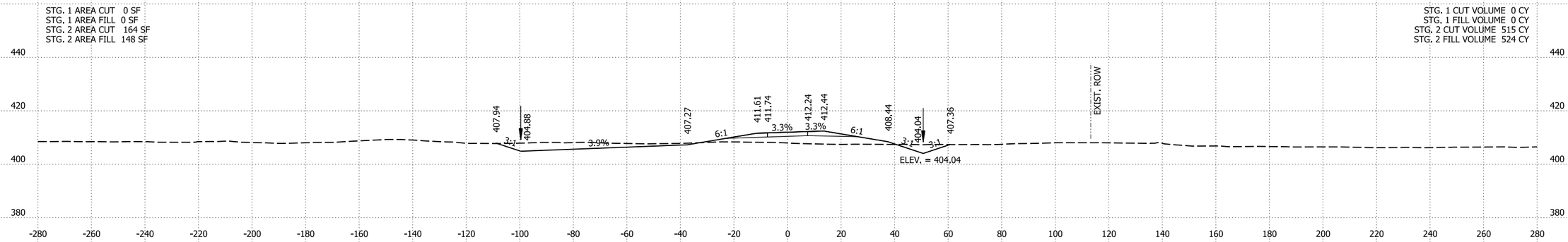
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	721	809
		CROSS SECTIONS				

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 164 SF
STG. 2 AREA FILL 148 SF

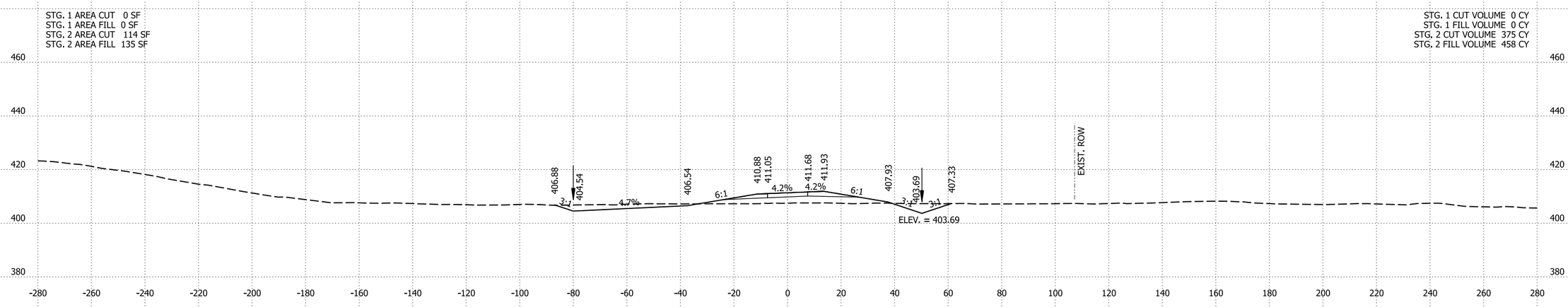
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 515 CY
STG. 2 FILL VOLUME 524 CY



17+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 114 SF
STG. 2 AREA FILL 135 SF

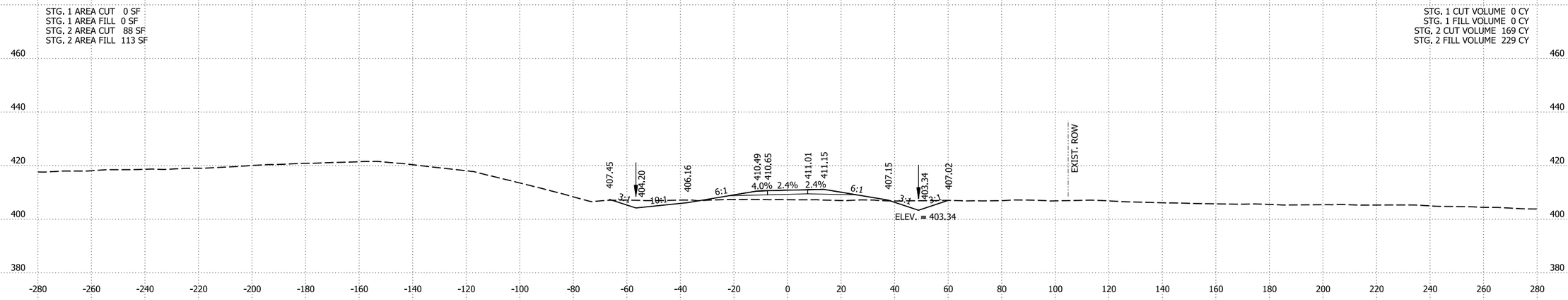
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 375 CY
STG. 2 FILL VOLUME 458 CY



16+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 88 SF
STG. 2 AREA FILL 113 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 169 CY
STG. 2 FILL VOLUME 229 CY



15+00.00

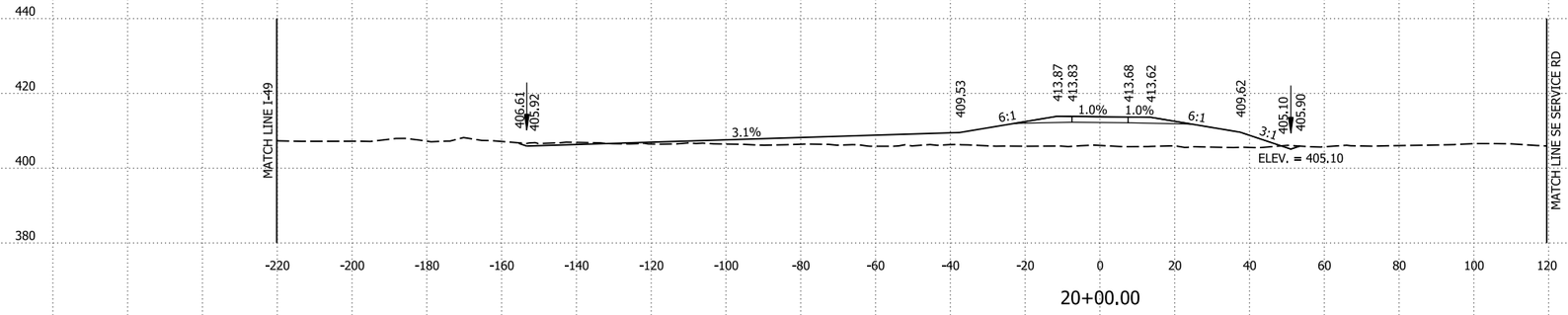
HWY 22 RAMP 2 STA. 15+00 TO STA. 17+00

4/15/2024 7:31:24 PM
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	722	809
		CROSS SECTIONS				

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 15 SF
STG. 2 AREA FILL 618 SF

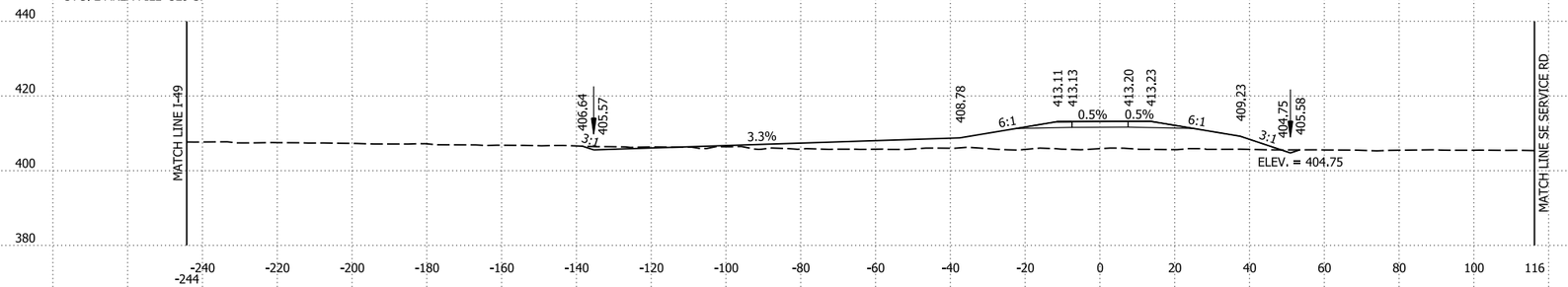
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 51 CY
STG. 2 FILL VOLUME 2124 CY



20+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 13 SF
STG. 2 AREA FILL 529 SF

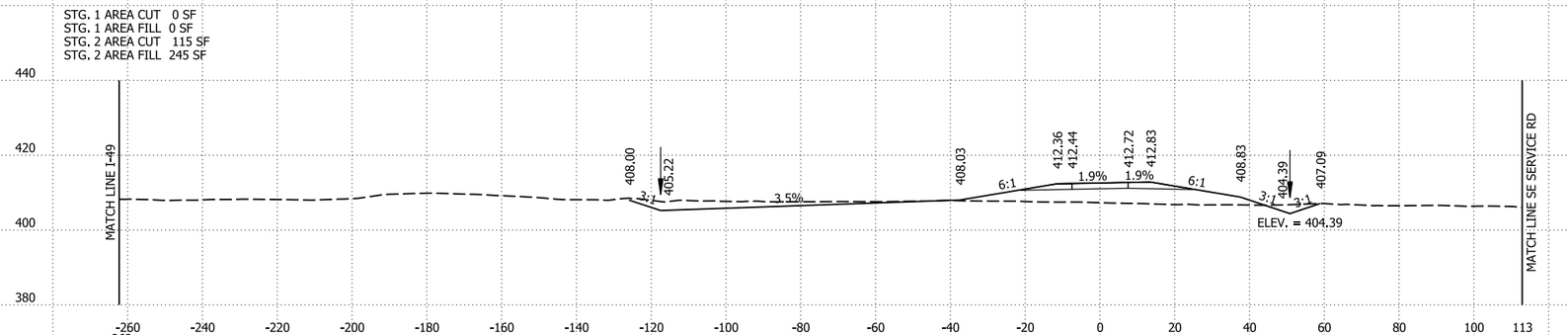
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 236 CY
STG. 2 FILL VOLUME 1432 CY



19+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 115 SF
STG. 2 AREA FILL 245 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 516 CY
STG. 2 FILL VOLUME 727 CY



18+00.00

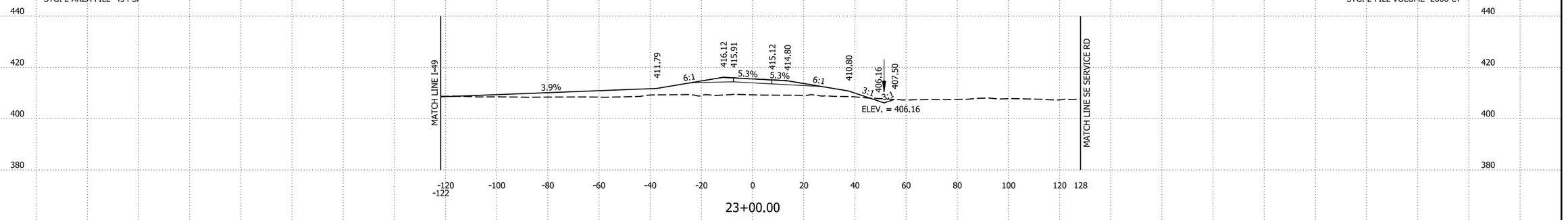
HWY 22 RAMP 2 STA. 18+00 TO STA. 20+00

4/15/2024 7:31:25 PM
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	723	809
		CROSS SECTIONS				

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 8 SF
STG. 2 AREA FILL 454 SF

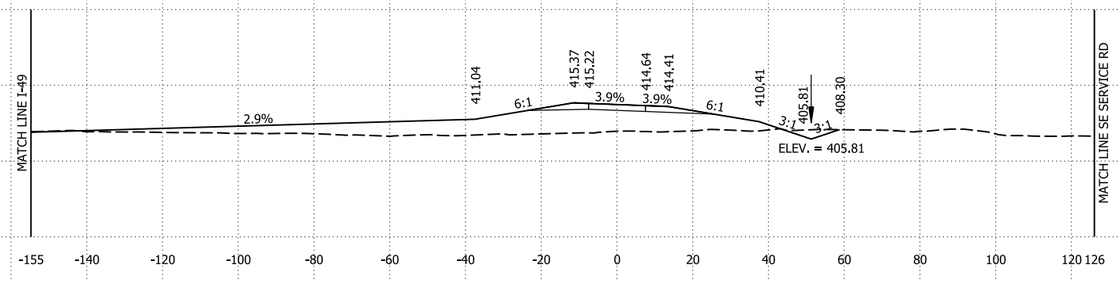
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 52 CY
STG. 2 FILL VOLUME 2006 CY



23+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 19 SF
STG. 2 AREA FILL 630 SF

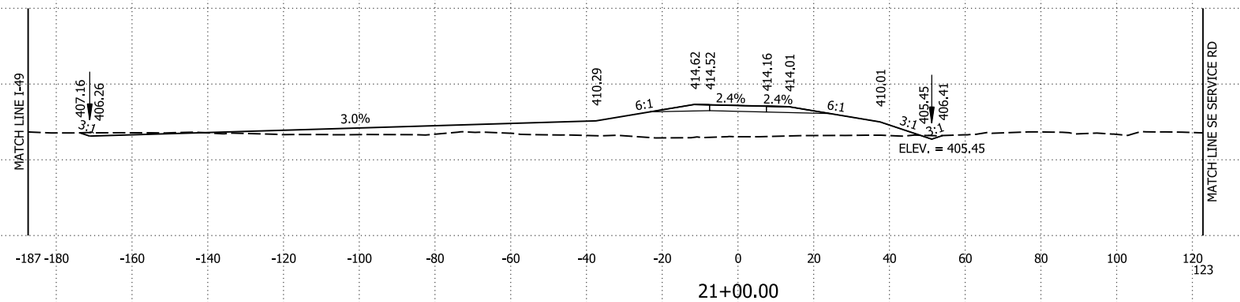
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 68 CY
STG. 2 FILL VOLUME 2404 CY



22+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 17 SF
STG. 2 AREA FILL 669 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 59 CY
STG. 2 FILL VOLUME 2383 CY



21+00.00

HWY 22 RAMP 2 STA. 21+00 TO STA. 23+00

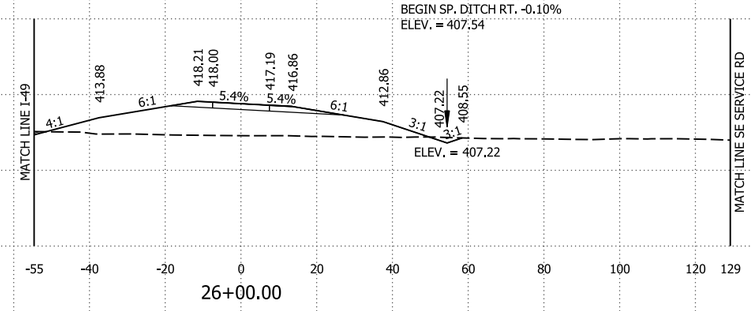
4/15/2024 7:31:25 PM
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	724	809
		CROSS SECTIONS				

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 8 SF
STG. 2 AREA FILL 523 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 17 CY
STG. 2 FILL VOLUME 2048 CY

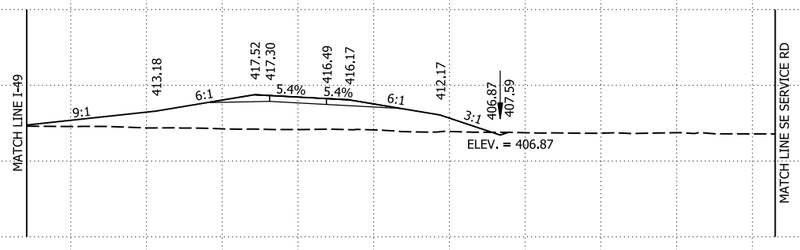
STA. 26+90.00
END SP. DITCH RT. 0.35%
BEGIN SP. DITCH RT. -0.10%
ELEV. = 407.54



26+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 2 SF
STG. 2 AREA FILL 583 SF

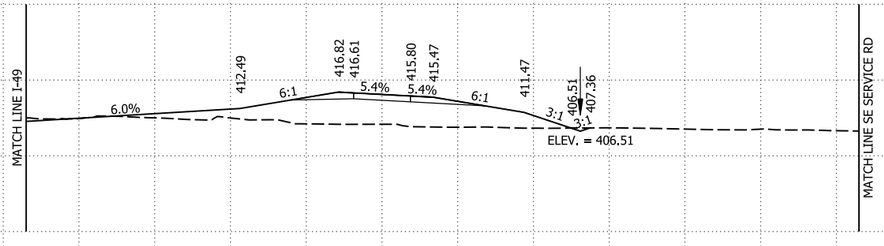
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 16 CY
STG. 2 FILL VOLUME 2024 CY



25+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 7 SF
STG. 2 AREA FILL 510 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 29 CY
STG. 2 FILL VOLUME 1784 CY



24+00.00

HWY 22 RAMP 2 STA. 24+00 TO STA. 26+00

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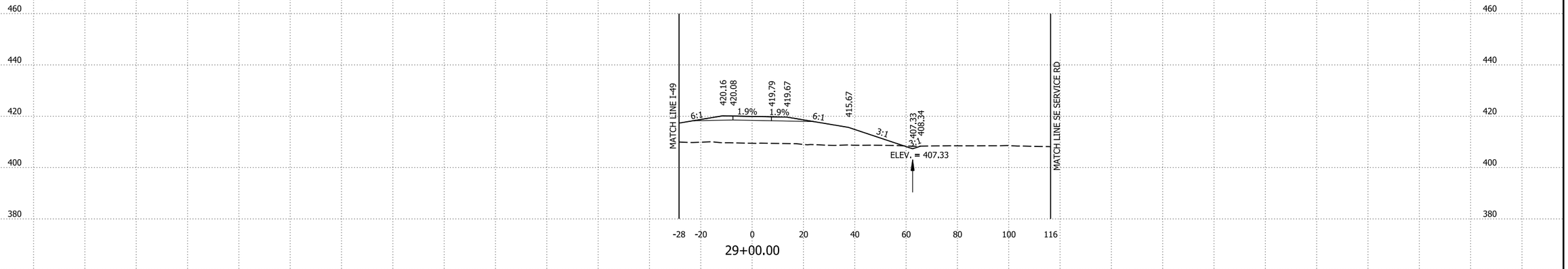
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	725	809
		CROSS SECTIONS				

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 3 SF
STG. 2 AREA FILL 637 SF

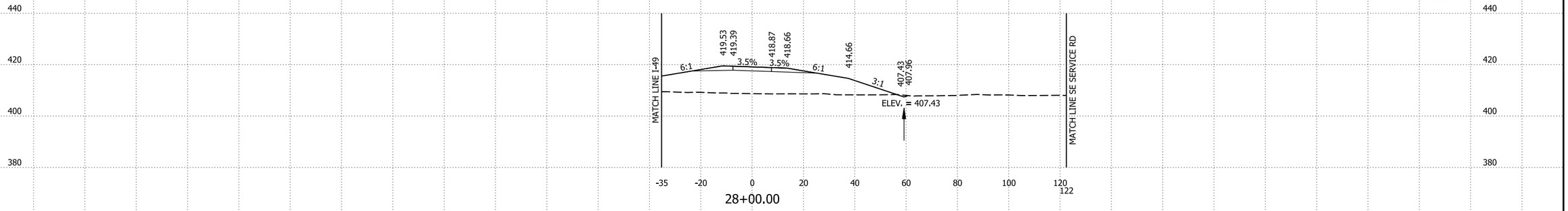
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 9 CY
STG. 2 FILL VOLUME 2392 CY



29+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 1 SF
STG. 2 AREA FILL 654 SF

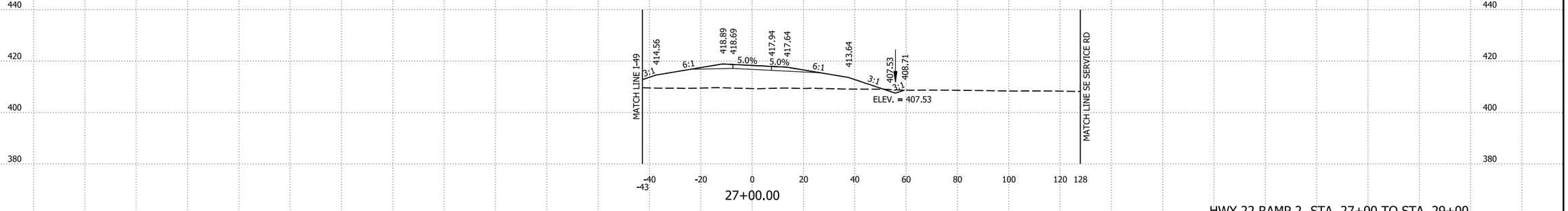
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 12 CY
STG. 2 FILL VOLUME 2235 CY



28+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 5 SF
STG. 2 AREA FILL 553 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 24 CY
STG. 2 FILL VOLUME 1992 CY



27+00.00

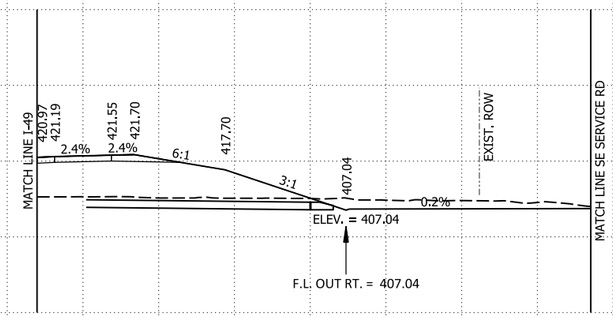
HWY 22 RAMP 2 STA. 27+00 TO STA. 29+00

4/15/2024 7:31:25 PM
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	726	809
		CROSS SECTIONS				

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 142 SF
STG. 2 AREA FILL 536 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 232 CY
STG. 2 FILL VOLUME 1700 CY

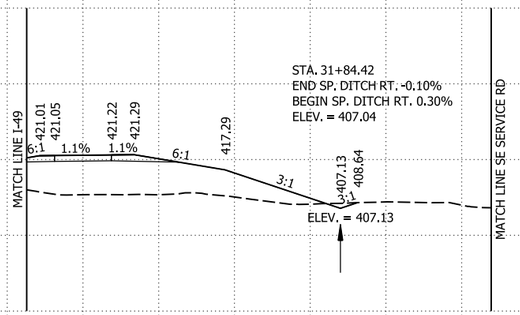


31+85.20

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 5 SF
STG. 2 AREA FILL 542 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 22 CY
STG. 2 FILL VOLUME 2114 CY

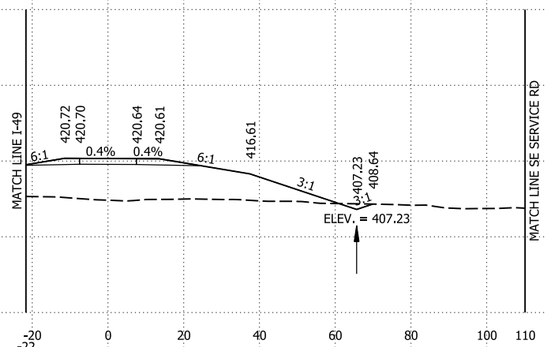
STA. 31+84.42
END SP. DITCH RT. -0.10%
BEGIN SP. DITCH RT. 0.30%
ELEV. = 407.04



31+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 7 SF
STG. 2 AREA FILL 600 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 18 CY
STG. 2 FILL VOLUME 2291 CY



30+00.00

HWY 22 RAMP 2 STA. 30+00 TO STA. 31+85

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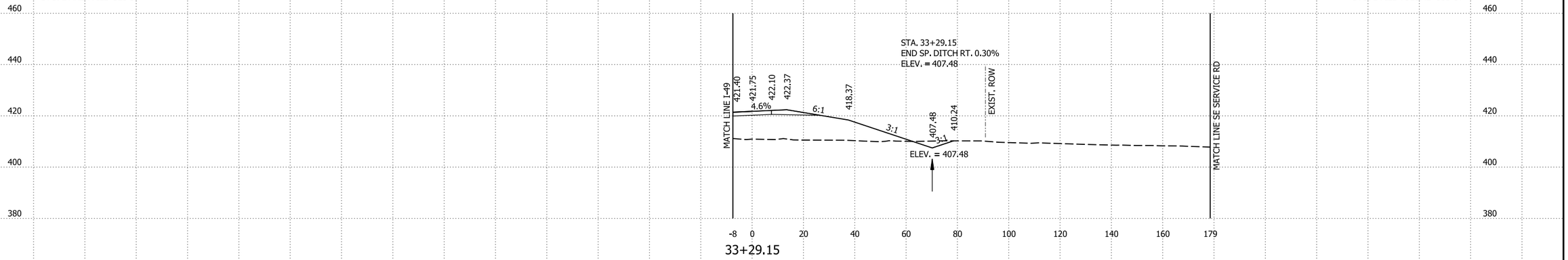
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	727	809
		CROSS SECTIONS				

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 21 SF
STG. 2 AREA FILL 523 SF

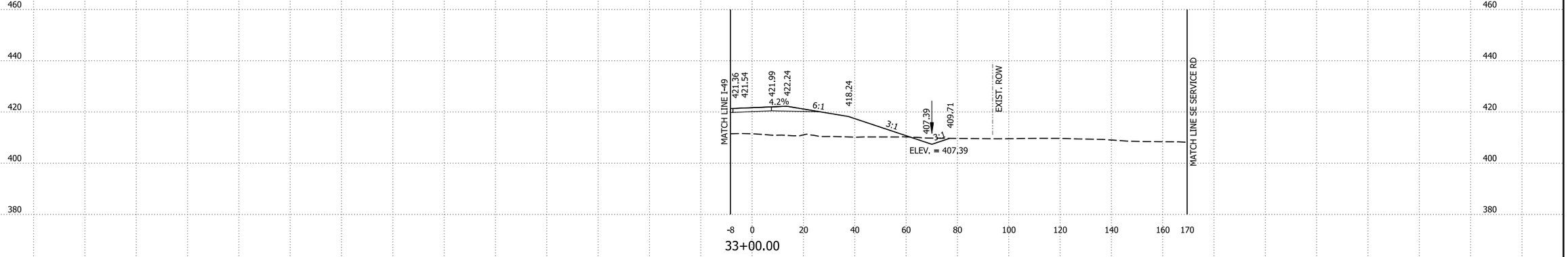
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 21 CY
STG. 2 FILL VOLUME 558 CY



33+29.15

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 18 SF
STG. 2 AREA FILL 510 SF

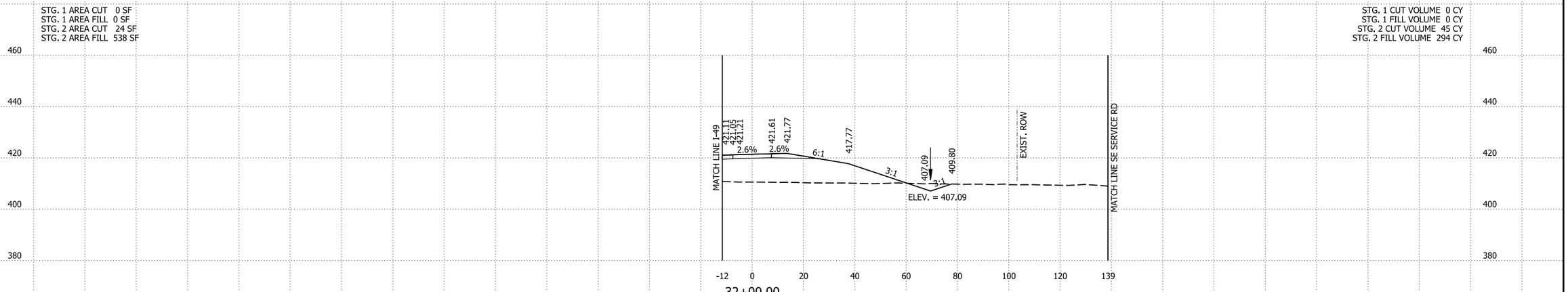
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 79 CY
STG. 2 FILL VOLUME 1940 CY



33+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 24 SF
STG. 2 AREA FILL 538 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 45 CY
STG. 2 FILL VOLUME 294 CY



32+00.00

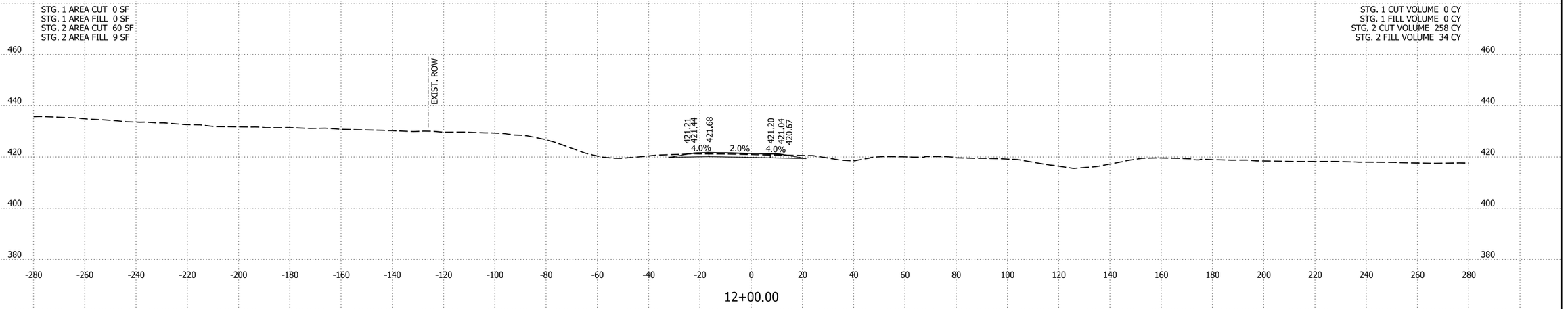
HWY 22 RAMP 2 STA. 32+00 TO STA. 33+29

4/15/2024 7:31:26 PM
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	728	809
		CROSS SECTIONS				

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 60 SF
STG. 2 AREA FILL 9 SF

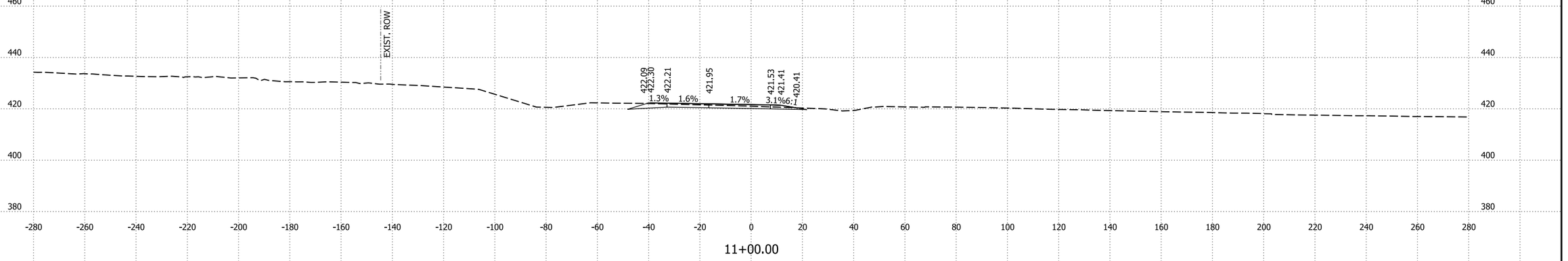
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 258 CY
STG. 2 FILL VOLUME 34 CY



12+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 79 SF
STG. 2 AREA FILL 10 SF

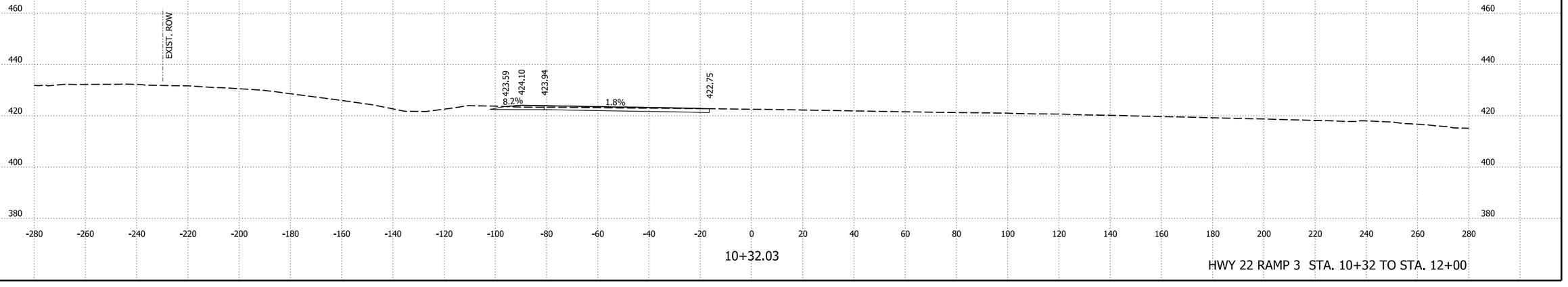
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 228 CY
STG. 2 FILL VOLUME 17 CY



11+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 102 SF
STG. 2 AREA FILL 4 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



10+32.03

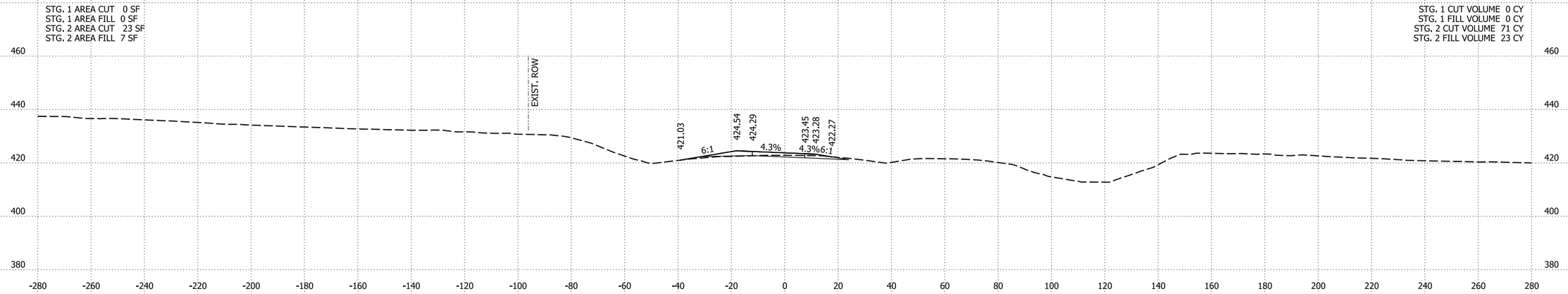
HWY 22 RAMP 3 STA. 10+32 TO STA. 12+00

4/15/2024 7:31:26 PM
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	729	809
		CROSS SECTIONS				

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 23 SF
STG. 2 AREA FILL 7 SF

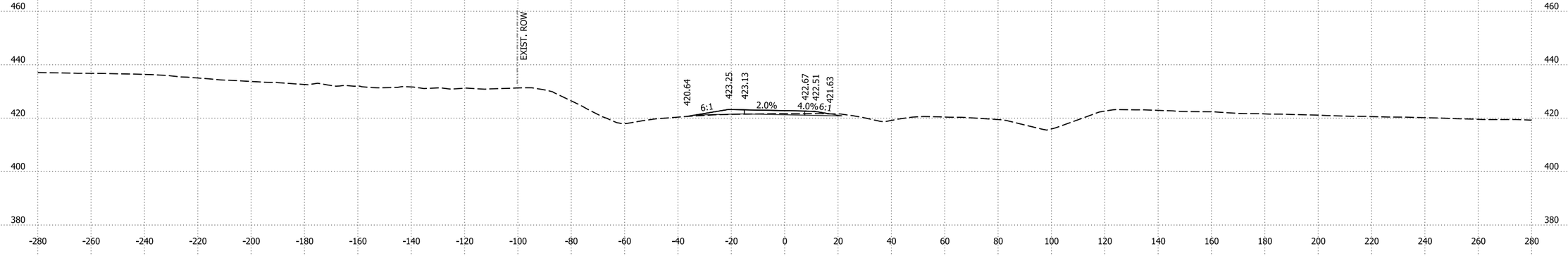
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 71 CY
STG. 2 FILL VOLUME 23 CY



15+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 16 SF
STG. 2 AREA FILL 5 SF

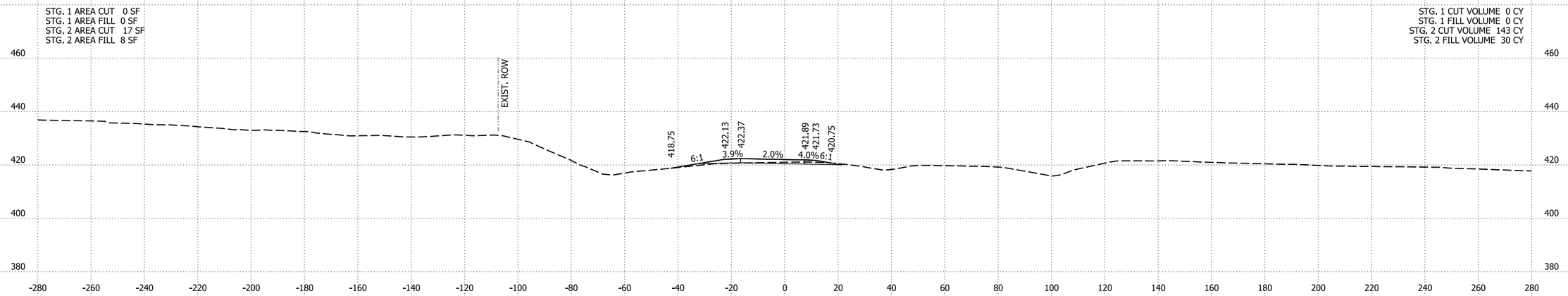
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 61 CY
STG. 2 FILL VOLUME 24 CY



14+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 17 SF
STG. 2 AREA FILL 8 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 143 CY
STG. 2 FILL VOLUME 30 CY



13+00.00

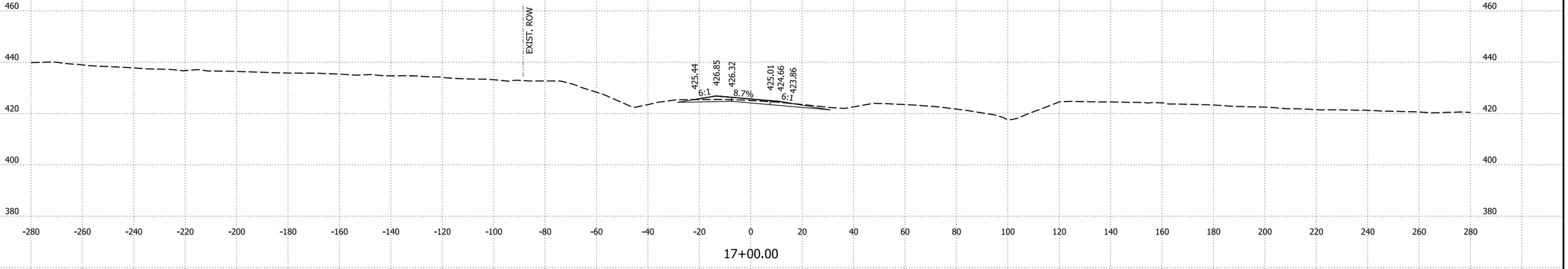
HWY 22 RAMP 3 STA. 13+00 TO STA. 15+00

4/15/2024 7:31:26 PM
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	730	809
		CROSS SECTIONS				

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 58 SF
STG. 2 AREA FILL 10 SF

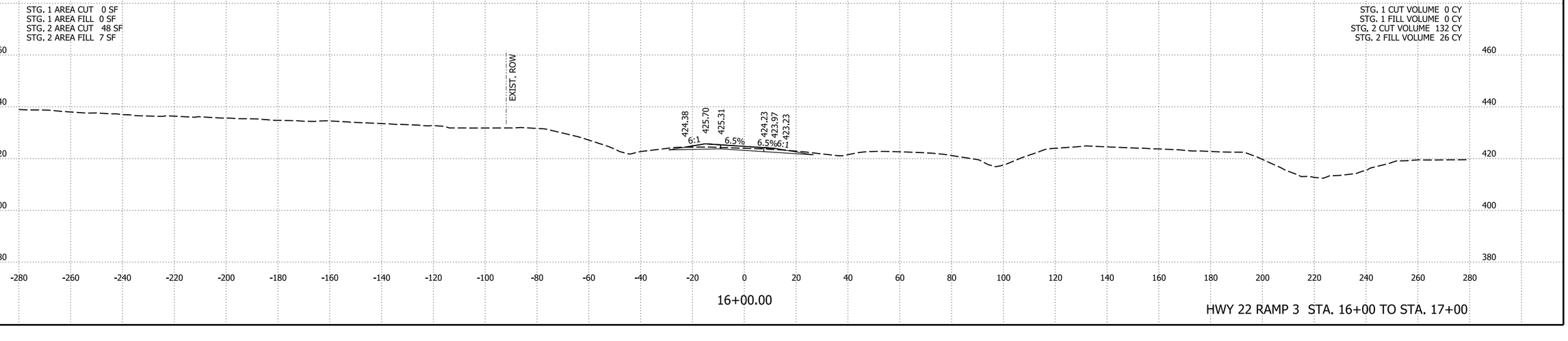
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 197 CY
STG. 2 FILL VOLUME 32 CY



17+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 48 SF
STG. 2 AREA FILL 7 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 132 CY
STG. 2 FILL VOLUME 26 CY



16+00.00

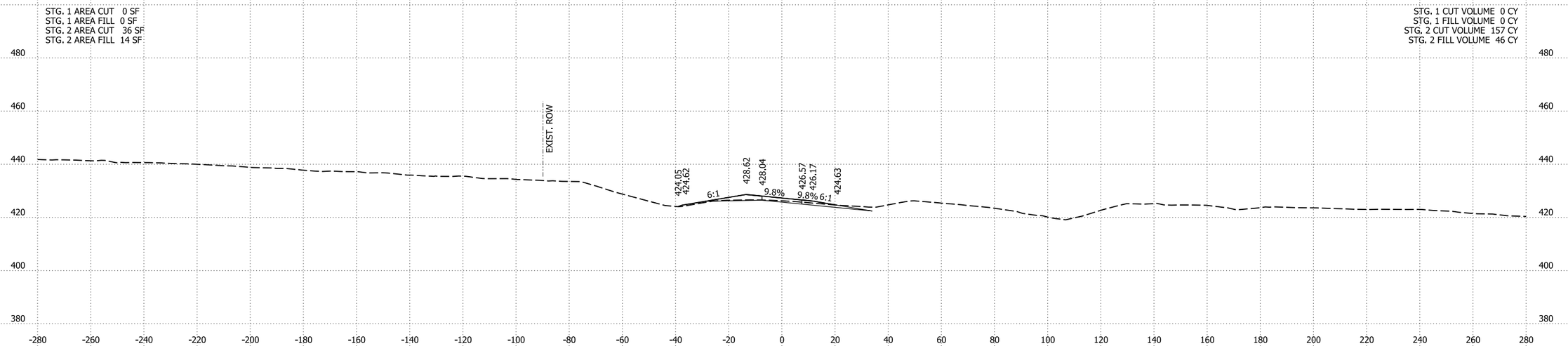
HWY 22 RAMP 3 STA. 16+00 TO STA. 17+00

4/15/2024 7:31:26 PM
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	731	809
		CROSS SECTIONS				

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 36 SF
STG. 2 AREA FILL 14 SF

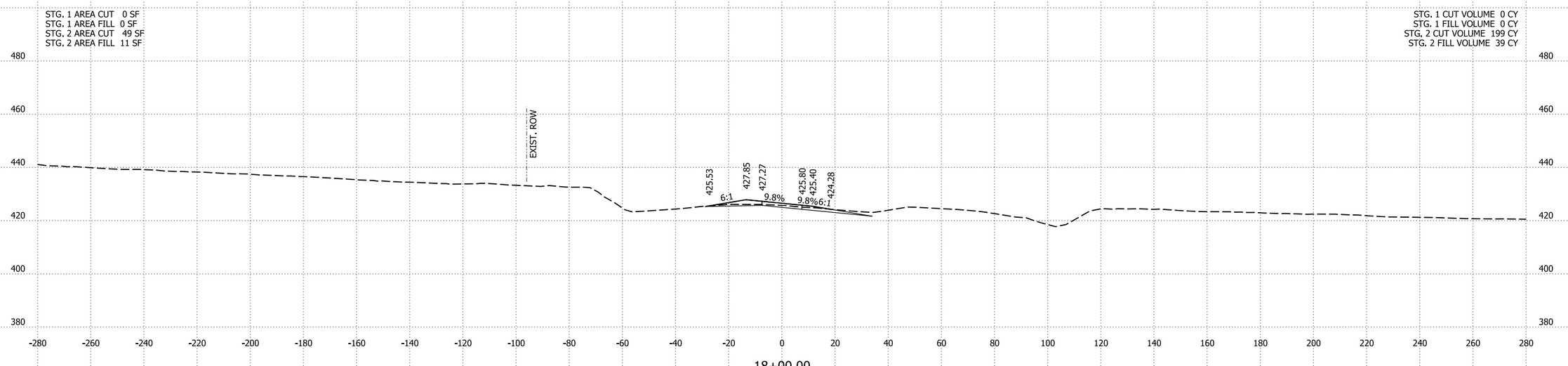
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 157 CY
STG. 2 FILL VOLUME 46 CY



19+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 49 SF
STG. 2 AREA FILL 11 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 199 CY
STG. 2 FILL VOLUME 39 CY



18+00.00

HWY 22 RAMP 3 STA. 18+00 TO STA. 19+00

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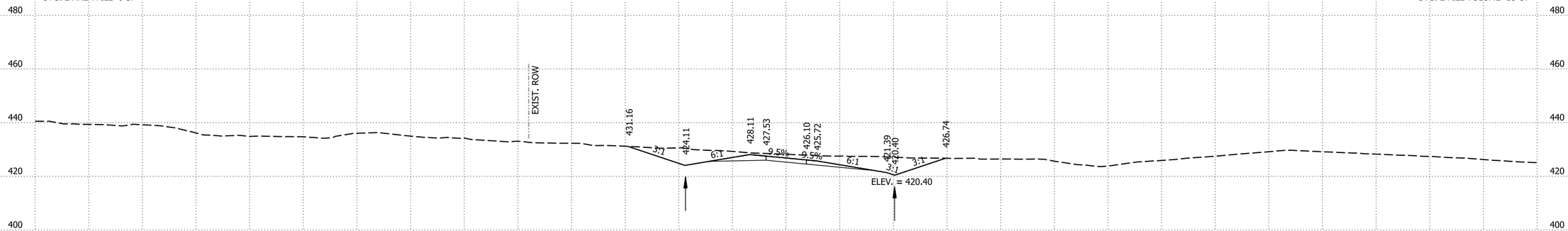
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	732	809
		CROSS SECTIONS				

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 440 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 873 CY
STG. 2 FILL VOLUME 18 CY

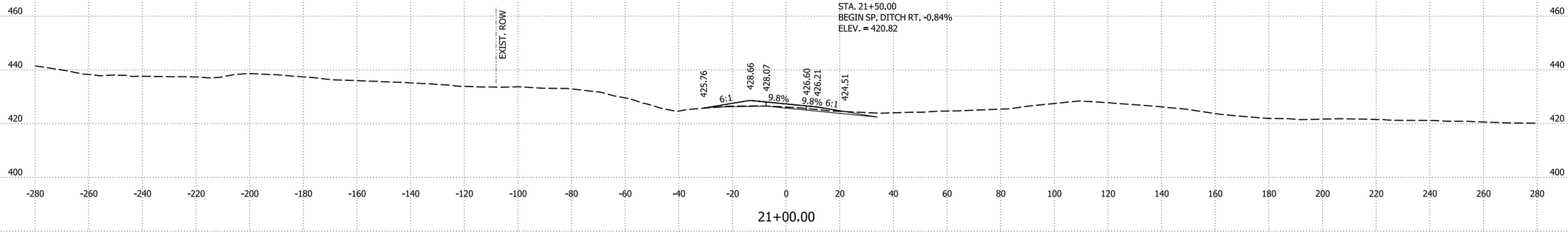


22+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 32 SF
STG. 2 AREA FILL 9 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 120 CY
STG. 2 FILL VOLUME 40 CY

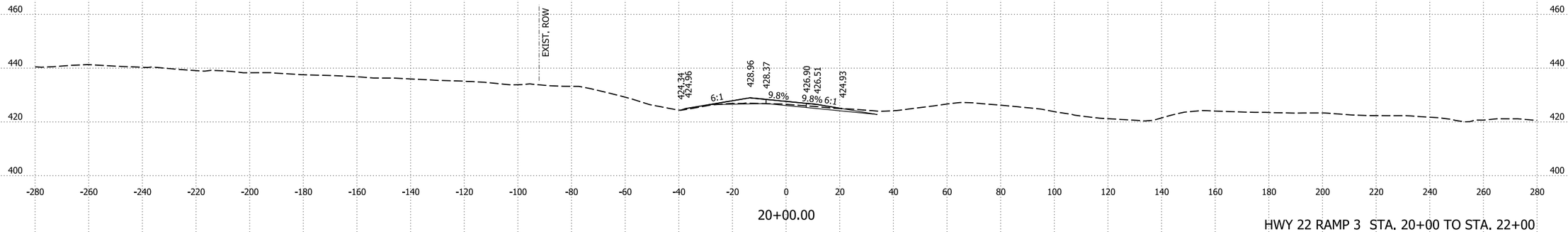
STA. 21+50.00
BEGIN SP. DITCH RT. -0.84%
ELEV. = 420.82



21+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 33 SF
STG. 2 AREA FILL 12 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 128 CY
STG. 2 FILL VOLUME 49 CY



20+00.00

HWY 22 RAMP 3 STA. 20+00 TO STA. 22+00

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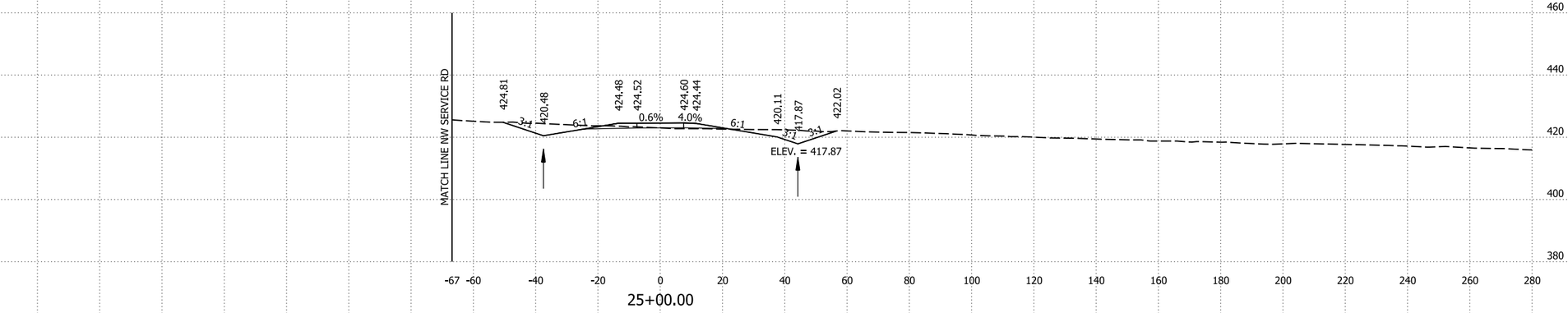
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	733	809
		CROSS SECTIONS				

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 138 SF
STG. 2 AREA FILL 5 SF

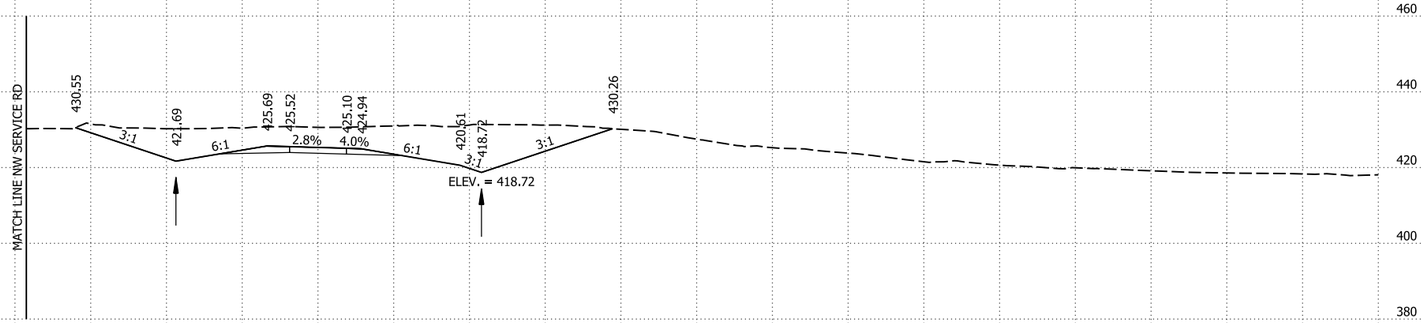
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 2077 CY
STG. 2 FILL VOLUME 9 CY



25+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 984 SF
STG. 2 AREA FILL 0 SF

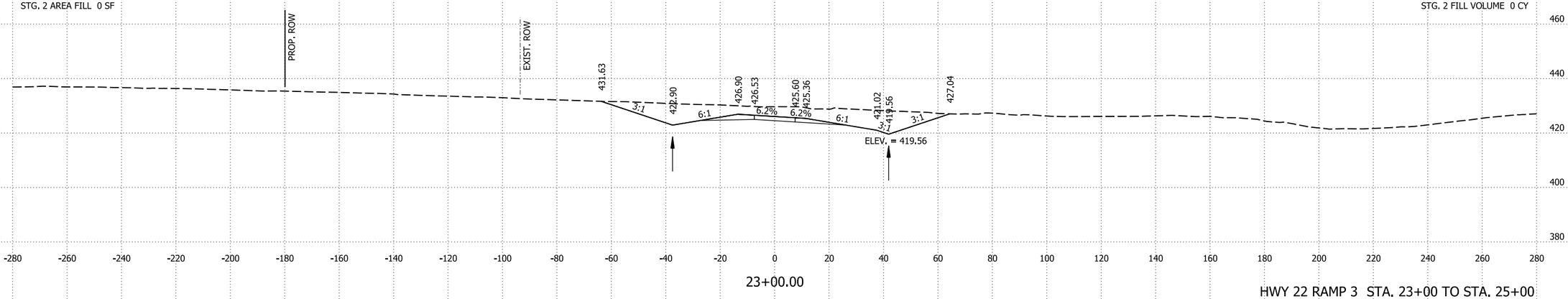
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 3064 CY
STG. 2 FILL VOLUME 0 CY



24+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 670 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 2056 CY
STG. 2 FILL VOLUME 0 CY



23+00.00

HWY 22 RAMP 3 STA. 23+00 TO STA. 25+00

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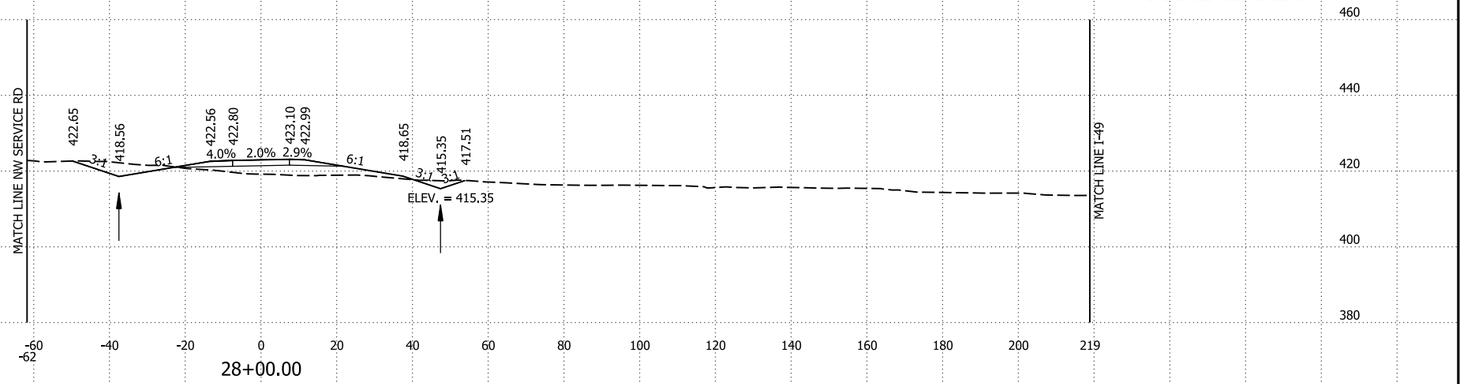
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	734	809
		CROSS SECTIONS				

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 65 SF
STG. 2 AREA FILL 104 SF

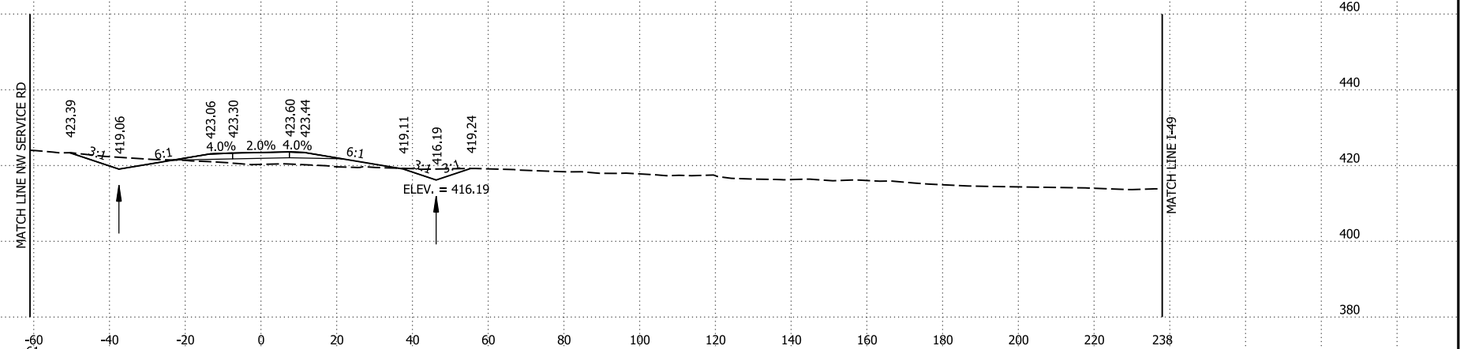
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 245 CY
STG. 2 FILL VOLUME 325 CY



28+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 67 SF
STG. 2 AREA FILL 72 SF

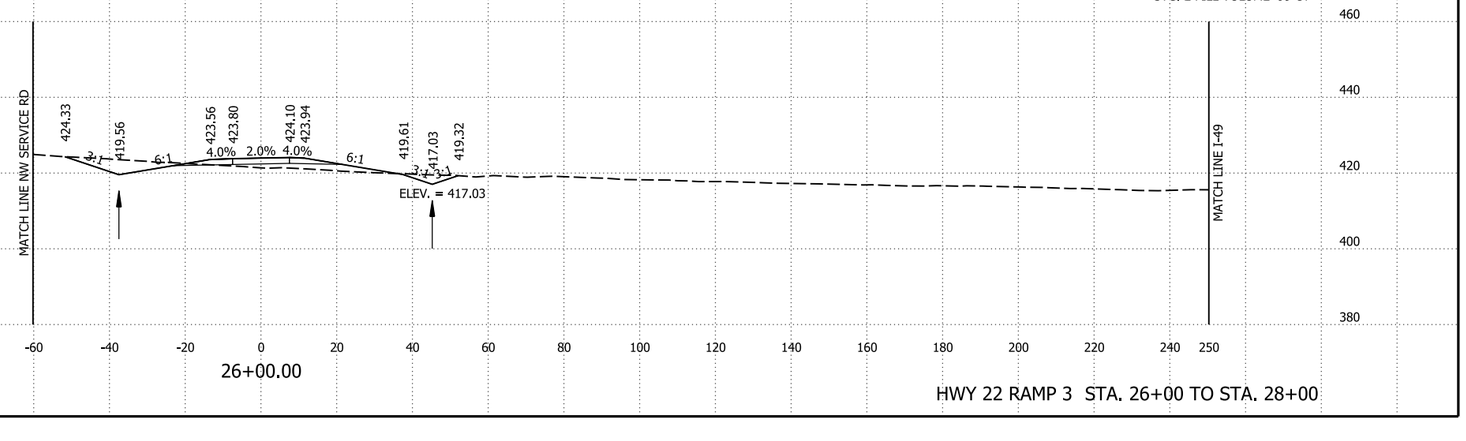
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 283 CY
STG. 2 FILL VOLUME 224 CY



27+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 86 SF
STG. 2 AREA FILL 49 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 413 CY
STG. 2 FILL VOLUME 99 CY



26+00.00

HWY 22 RAMP 3 STA. 26+00 TO STA. 28+00

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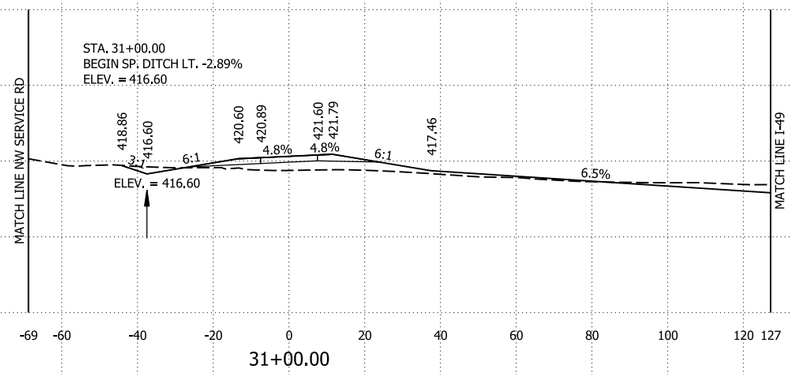
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	735	809
		CROSS SECTIONS				

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 64 SF
STG. 2 AREA FILL 129 SF

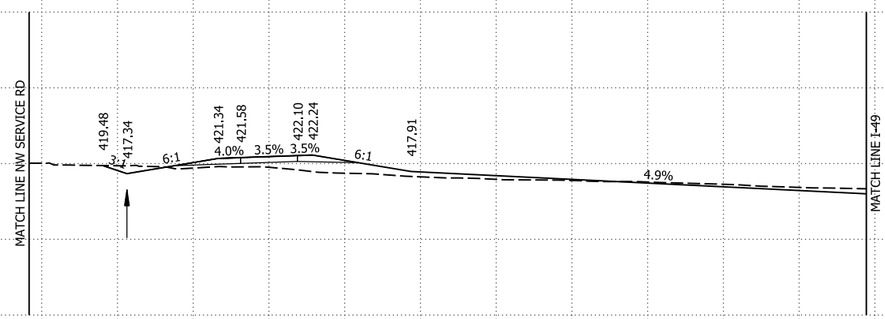
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 232 CY
STG. 2 FILL VOLUME 512 CY



31+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 62 SF
STG. 2 AREA FILL 148 SF

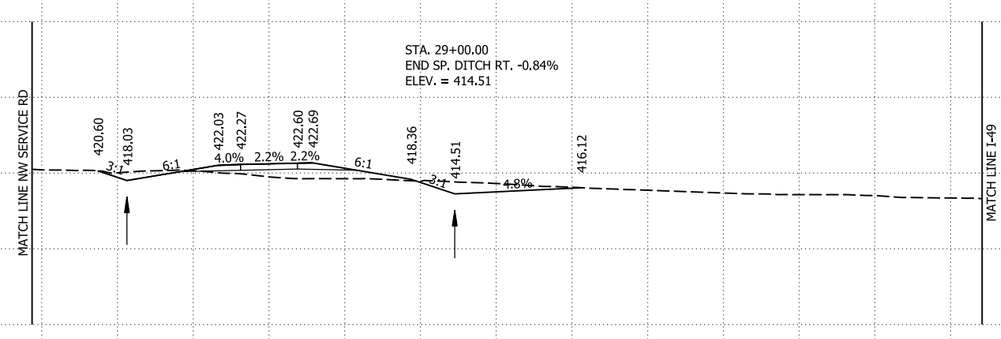
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 295 CY
STG. 2 FILL VOLUME 438 CY



30+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 98 SF
STG. 2 AREA FILL 88 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 301 CY
STG. 2 FILL VOLUME 356 CY



29+00.00

HWY 22 RAMP 3 STA. 29+00 TO STA. 31+00

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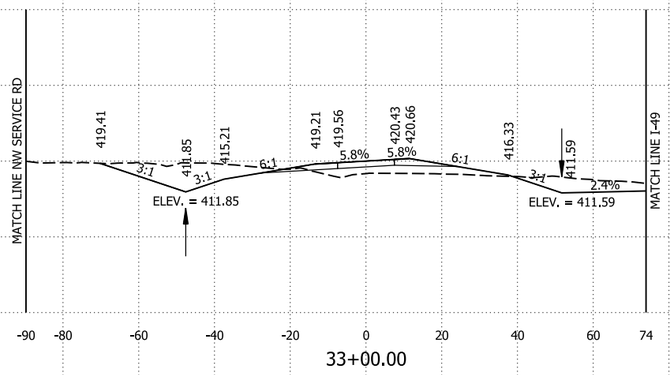
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	736	809
		CROSS SECTIONS				

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 274 SF
STG. 2 AREA FILL 89 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 506 CY
STG. 2 FILL VOLUME 181 CY



33+00.00

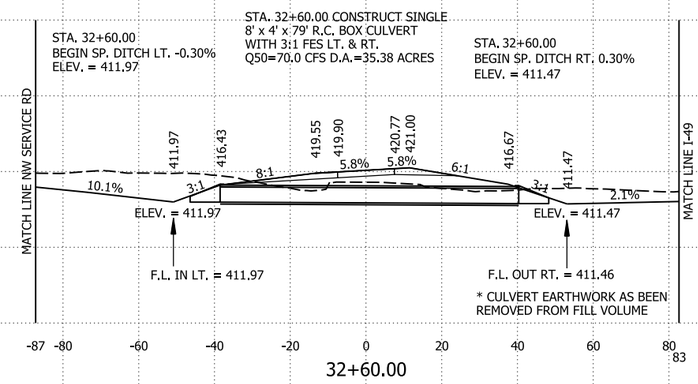
STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 410 SF
STG. 2 AREA FILL 155 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 619 CY
STG. 2 FILL VOLUME 188 CY

STA. 32+60.00
BEGIN SP. DITCH LT. -0.30%
ELEV. = 411.97

STA. 32+60.00 CONSTRUCT SINGLE
8' x 4' x 79' R.C. BOX CULVERT
WITH 3:1 FES LT. & RT.
Q50=70.0 CFS D.A.=35.38 ACRES

STA. 32+60.00
BEGIN SP. DITCH RT. 0.30%
ELEV. = 411.47



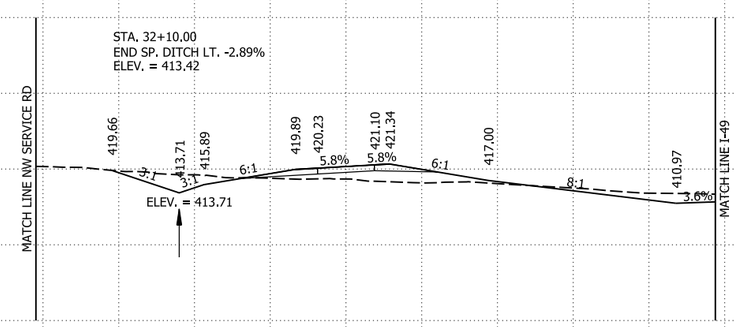
32+60.00

* CULVERT EARTHWORK AS BEEN REMOVED FROM FILL VOLUME

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 147 SF
STG. 2 AREA FILL 114 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 391 CY
STG. 2 FILL VOLUME 449 CY

STA. 32+10.00
END SP. DITCH LT. -2.89%
ELEV. = 413.42



32+00.00

HWY 22 RAMP 3 STA. 32+00 TO STA. 33+00

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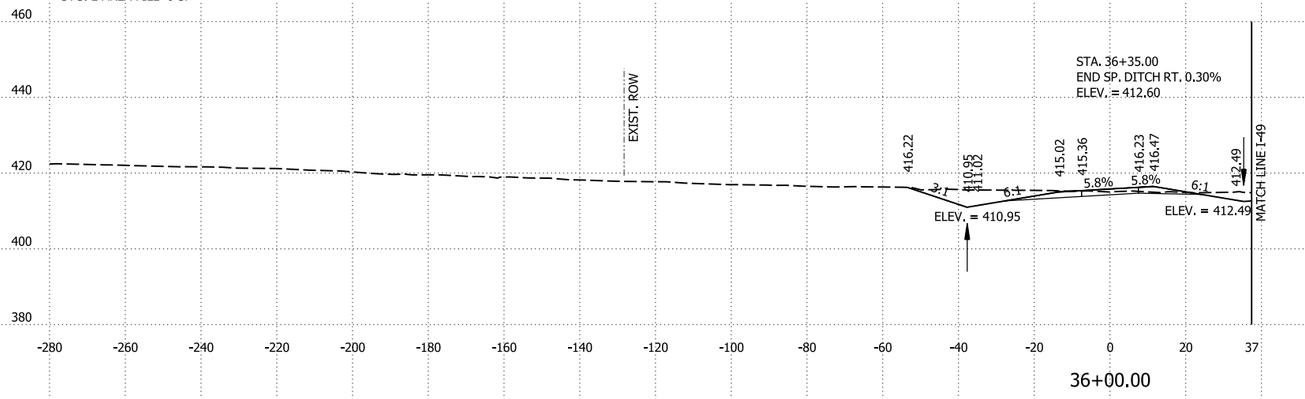
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	737	809
		CROSS SECTIONS				

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 156 SF
STG. 2 AREA FILL 0 SF

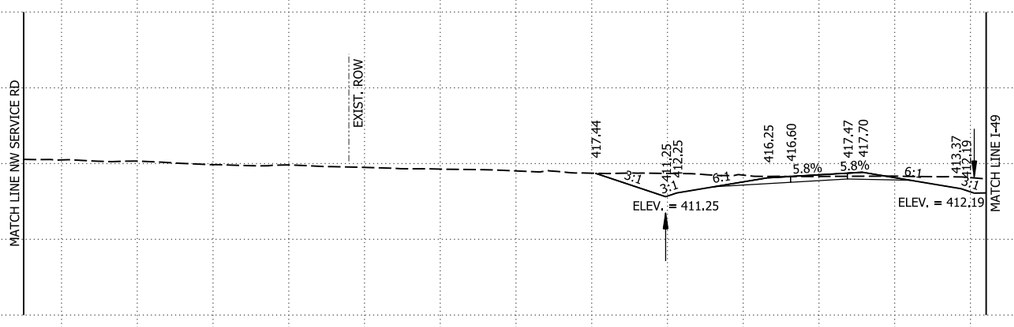
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 742 CY
STG. 2 FILL VOLUME 0 CY



36+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 245 SF
STG. 2 AREA FILL 0 SF

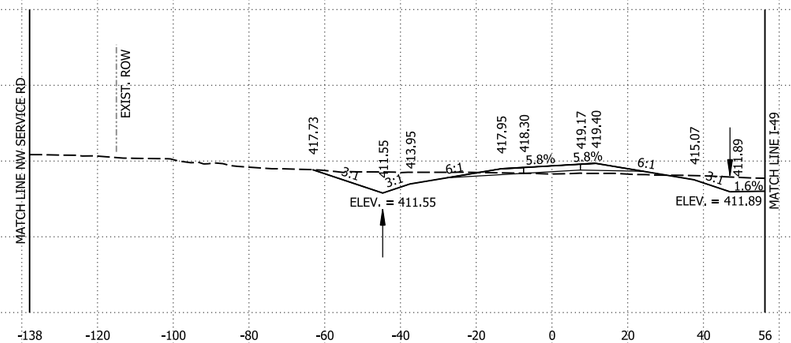
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 785 CY
STG. 2 FILL VOLUME 44 CY



35+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 179 SF
STG. 2 AREA FILL 24 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 839 CY
STG. 2 FILL VOLUME 208 CY



34+00.00

HWY 22 RAMP 3 STA. 34+00 TO STA. 36+00

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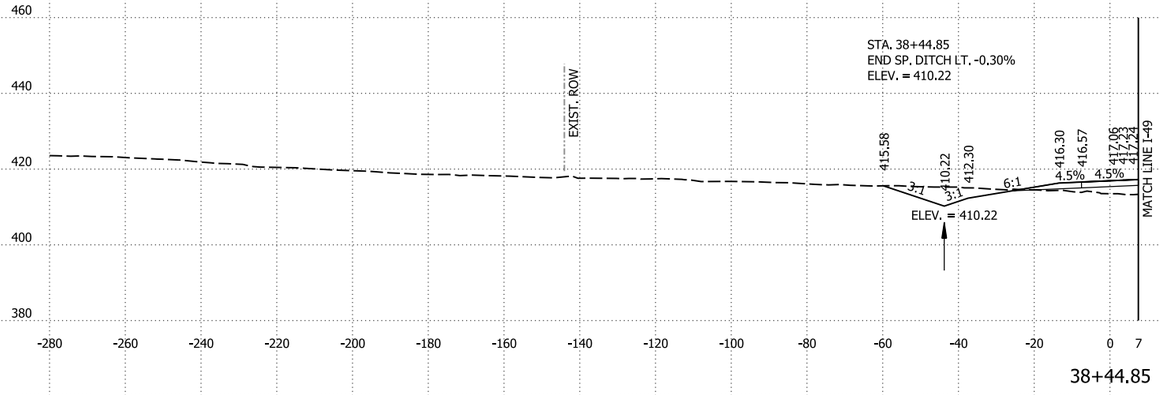
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	738	809
		CROSS SECTIONS				

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 84 SF
STG. 2 AREA FILL 33 SF

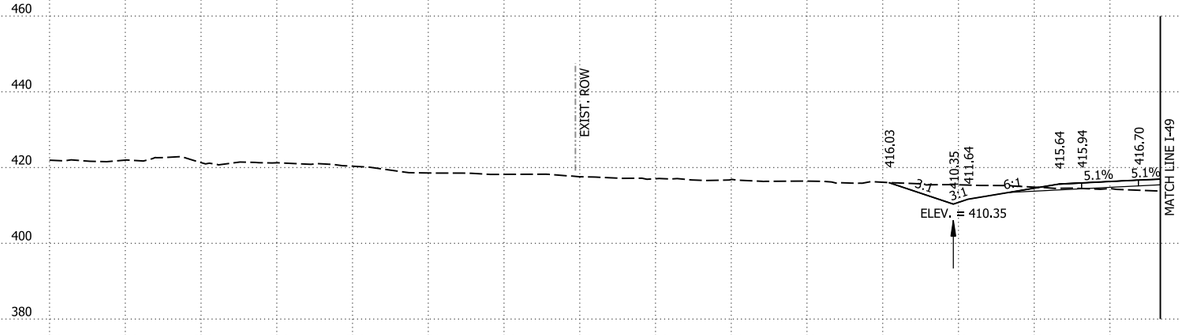
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 157 CY
STG. 2 FILL VOLUME 40 CY



38+44.85

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 105 SF
STG. 2 AREA FILL 16 SF

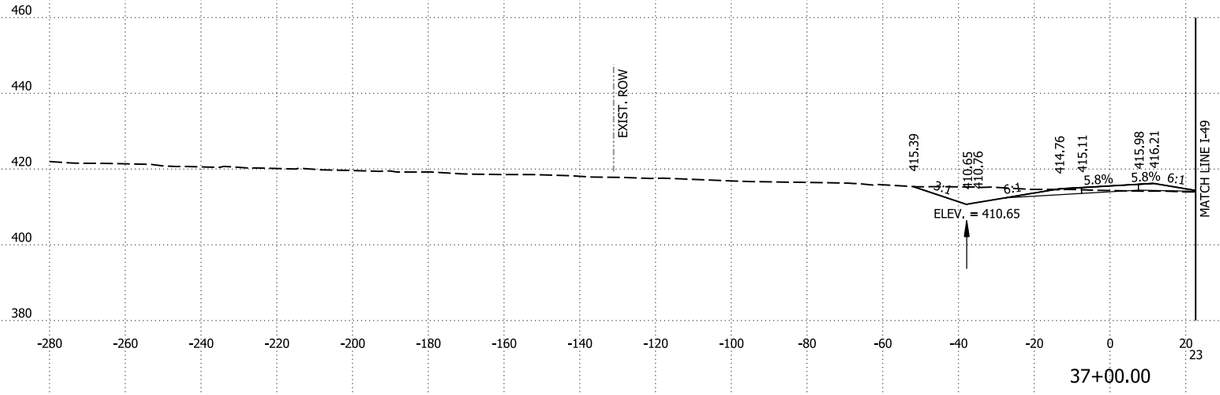
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 397 CY
STG. 2 FILL VOLUME 35 CY



38+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 109 SF
STG. 2 AREA FILL 3 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 491 CY
STG. 2 FILL VOLUME 6 CY



37+00.00

HWY 22 RAMP 3 STA. 37+00 TO STA. 38+45

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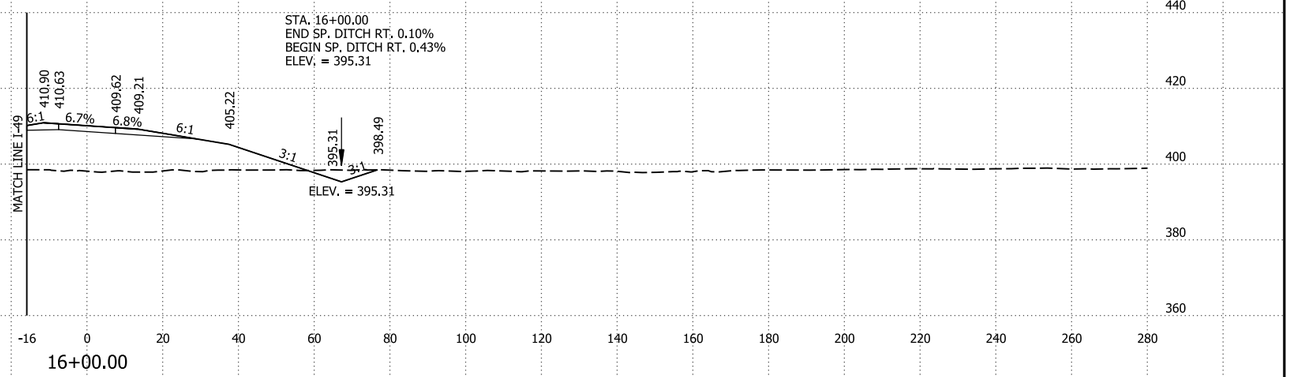
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	739	809
		CROSS SECTIONS				

STG. 1 AREA CUT 29 SF
STG. 1 AREA FILL 579 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

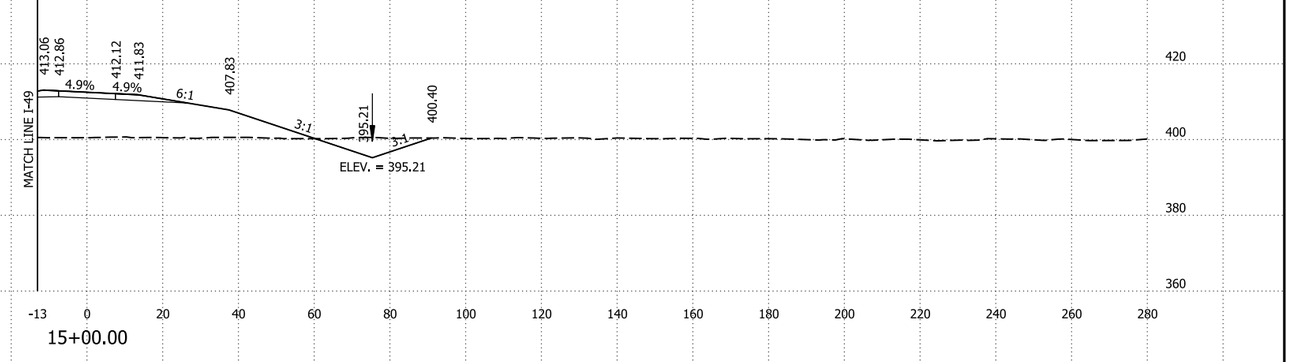
STG. 1 CUT VOLUME 203 CY
STG. 1 FILL VOLUME 2131 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



16+00.00

STG. 1 AREA CUT 81 SF
STG. 1 AREA FILL 572 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

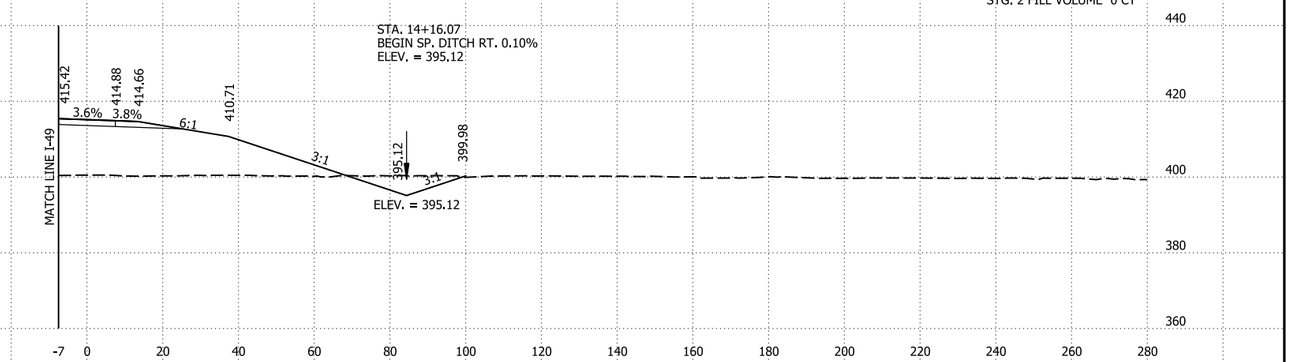
STG. 1 CUT VOLUME 252 CY
STG. 1 FILL VOLUME 2014 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



15+00.00

STG. 1 AREA CUT 81 SF
STG. 1 AREA FILL 724 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



14+16.07

GC RAMP 1 STA. 14+16 TO STA. 16+00

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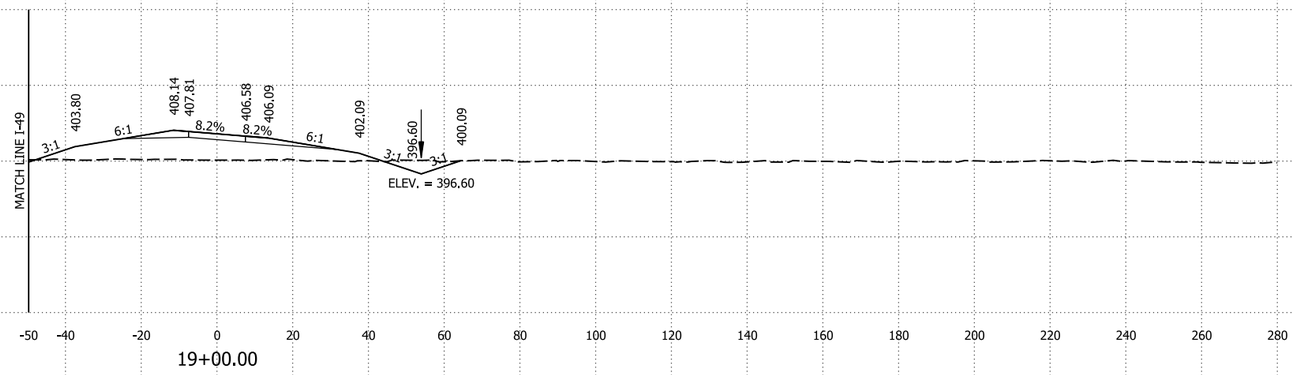
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	740	809
		CROSS SECTIONS				

STG. 1 AREA CUT 37 SF
STG. 1 AREA FILL 368 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

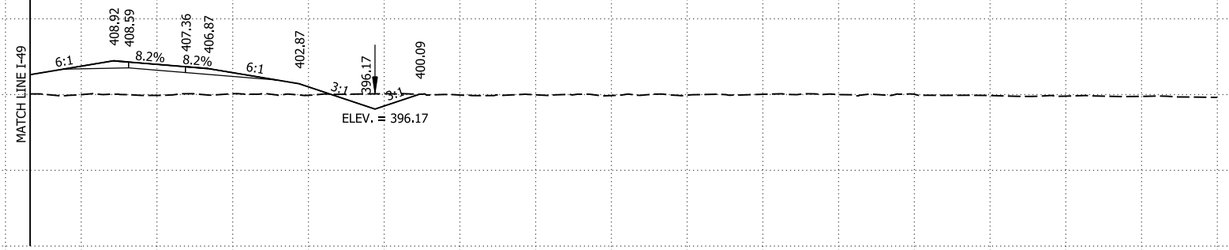
STG. 1 CUT VOLUME 156 CY
STG. 1 FILL VOLUME 1451 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



19+00.00

STG. 1 AREA CUT 47 SF
STG. 1 AREA FILL 416 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 181 CY
STG. 1 FILL VOLUME 1536 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

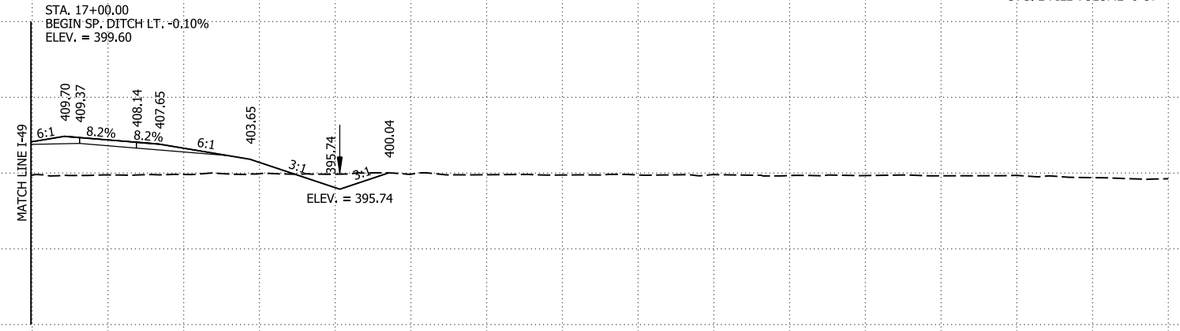


18+00.00

STG. 1 AREA CUT 50 SF
STG. 1 AREA FILL 414 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 147 CY
STG. 1 FILL VOLUME 1838 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

STA. 17+00.00
BEGIN SP. DITCH LT. -0.10%
ELEV. = 399.60



17+00.00

GC RAMP 1 STA. 17+00 TO STA. 19+00

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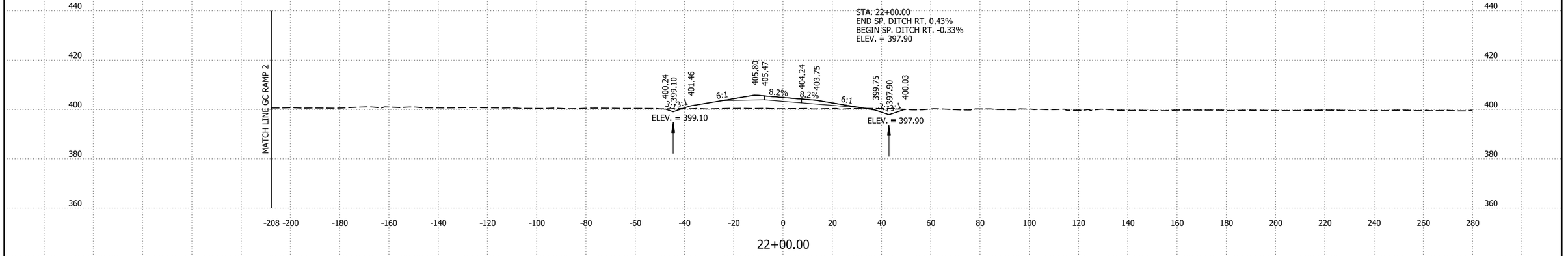
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	741	809
		CROSS SECTIONS				

STG. 1 AREA CUT 22 SF
STG. 1 AREA FILL 167 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 87 CY
STG. 1 FILL VOLUME 721 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

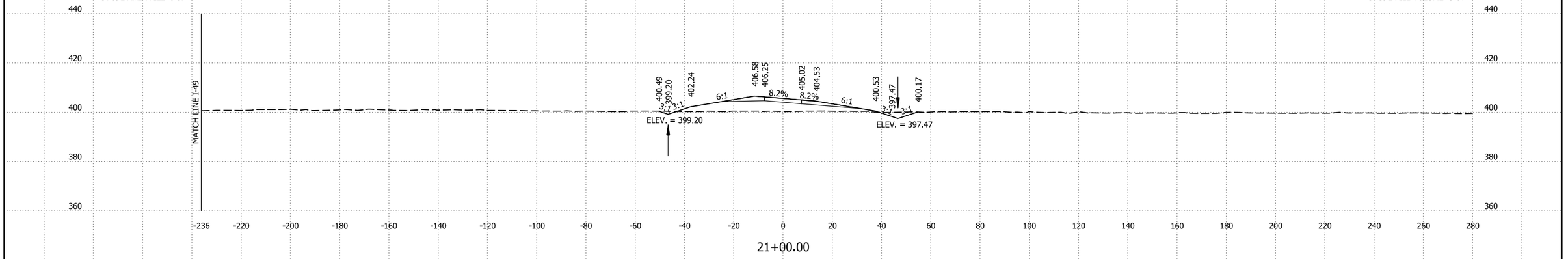
STA. 22+00.00
END SP. DITCH RT. 0.43%
BEGIN SP. DITCH RT. -0.33%
ELEV. = 397.90



22+00.00

STG. 1 AREA CUT 25 SF
STG. 1 AREA FILL 222 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

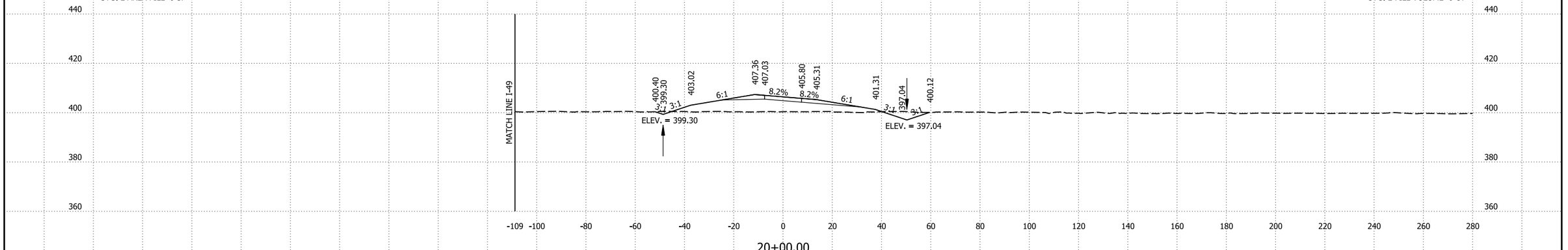
STG. 1 CUT VOLUME 115 CY
STG. 1 FILL VOLUME 950 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



21+00.00

STG. 1 AREA CUT 37 SF
STG. 1 AREA FILL 291 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 137 CY
STG. 1 FILL VOLUME 1220 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



20+00.00

GC RAMP 1 STA. 20+00 TO STA. 22+00

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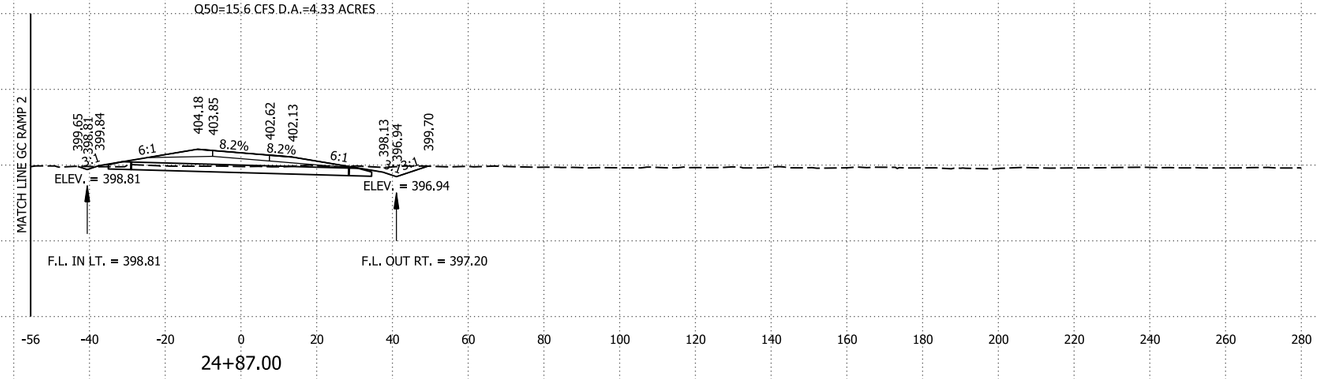
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	742	809
		CROSS SECTIONS				

STG. 1 AREA CUT 28 SF
STG. 1 AREA FILL 98 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STA. 24+87.00
END SP. DITCH LT. -0.10%
BEGIN SP. DITCH LT. 0.30%
ELEV. = 399.81

STA. 24+87.00 CONSTRUCT
24" x 58' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH 3:1 FES RT.
Q50=15.6 CFS D.A.=4.33 ACRES

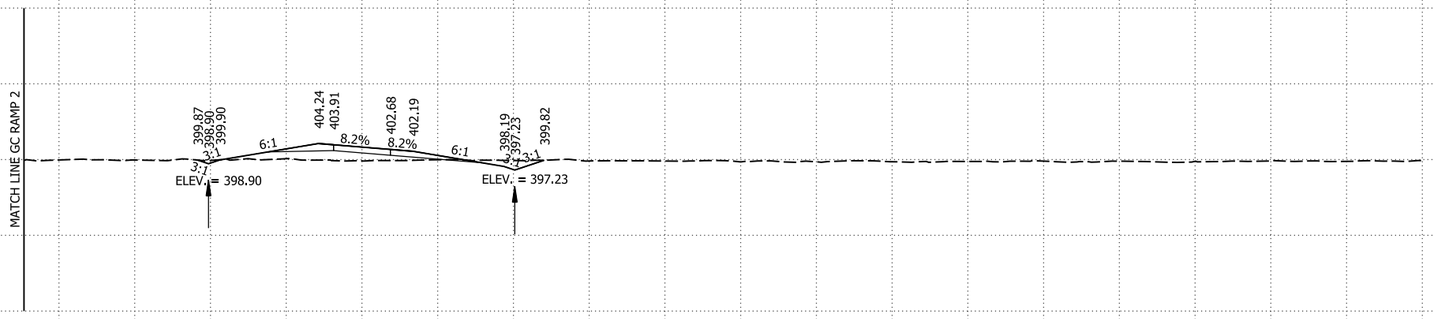
STG. 1 CUT VOLUME 89 CY
STG. 1 FILL VOLUME 305 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



24+87.00

STG. 1 AREA CUT 28 SF
STG. 1 AREA FILL 91 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

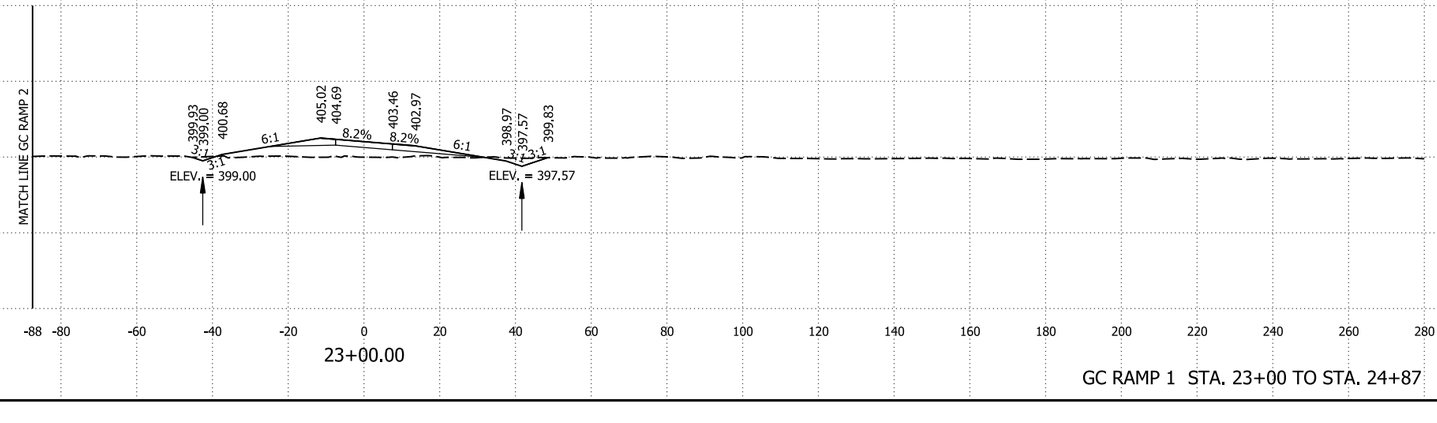
STG. 1 CUT VOLUME 88 CY
STG. 1 FILL VOLUME 411 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



24+00.00

STG. 1 AREA CUT 20 SF
STG. 1 AREA FILL 131 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 77 CY
STG. 1 FILL VOLUME 552 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



23+00.00

GC RAMP 1 STA. 23+00 TO STA. 24+87

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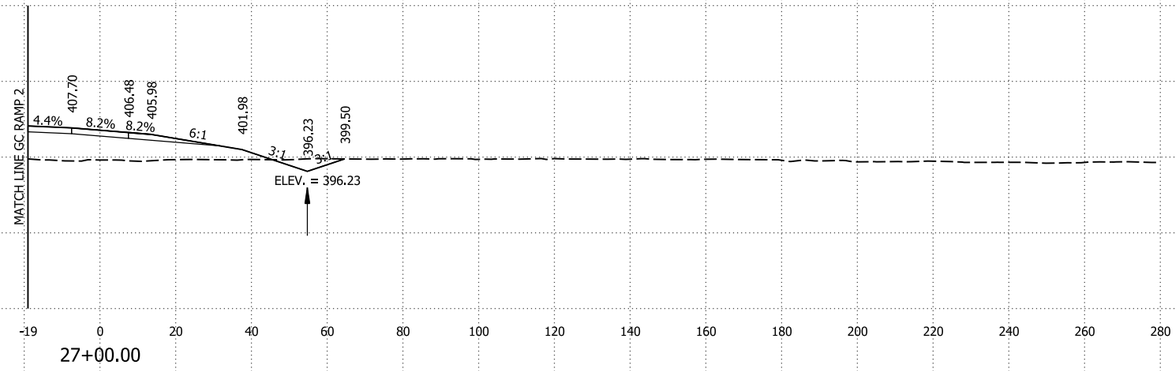
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	743	809
		CROSS SECTIONS				

STG. 1 AREA CUT 31 SF
STG. 1 AREA FILL 323 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

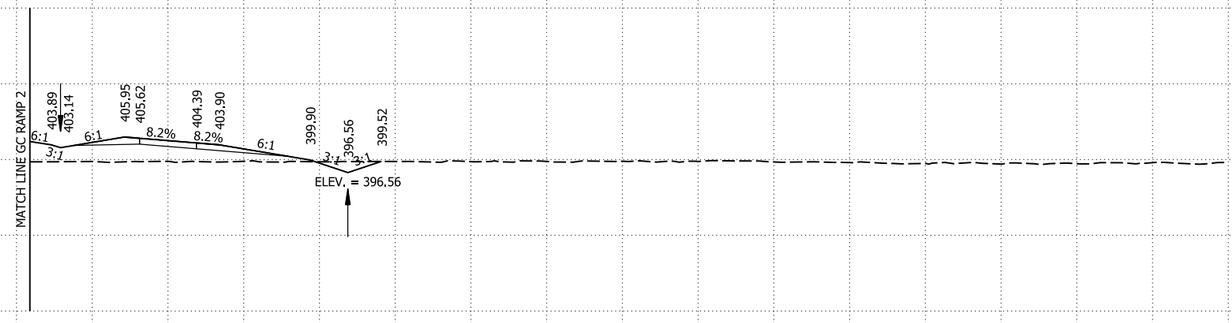
STG. 1 CUT VOLUME 104 CY
STG. 1 FILL VOLUME 1068 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



27+00.00

STG. 1 AREA CUT 25 SF
STG. 1 AREA FILL 254 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 98 CY
STG. 1 FILL VOLUME 672 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

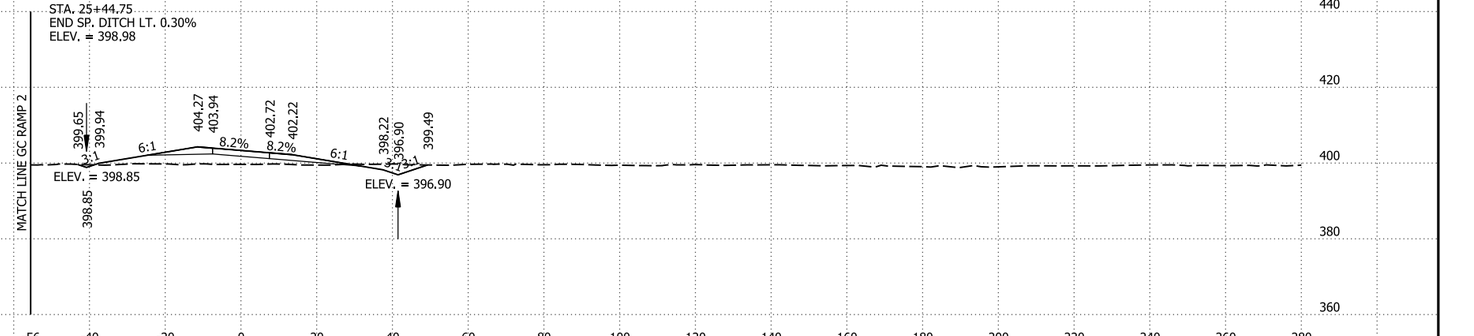


26+00.00

STG. 1 AREA CUT 28 SF
STG. 1 AREA FILL 109 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 13 CY
STG. 1 FILL VOLUME 50 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

STA. 25+44.75
END SP. DITCH LT. 0.30%
ELEV. = 398.98



25+00.00

GC RAMP 1 STA. 25+00 TO STA. 27+00

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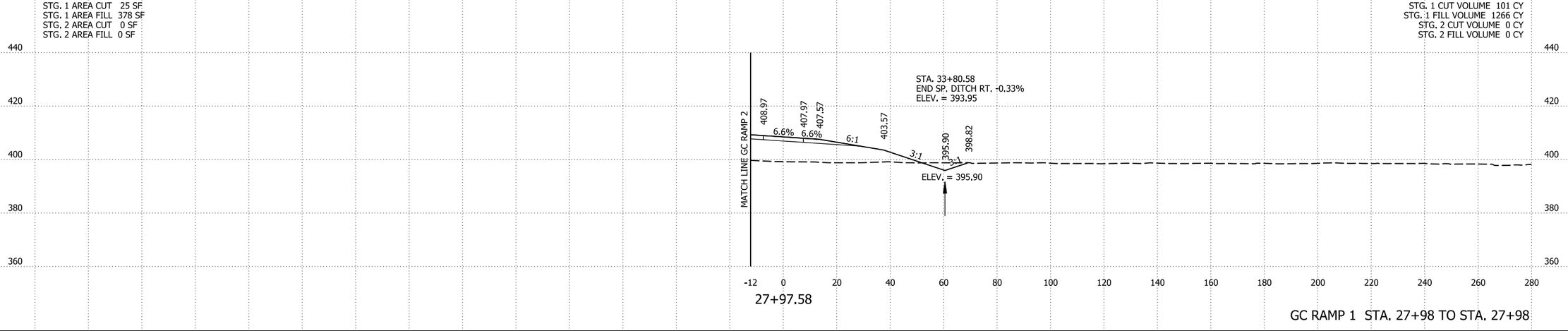
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	744	809
		CROSS SECTIONS				

STG. 1 AREA CUT 25 SF
STG. 1 AREA FILL 378 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 101 CY
STG. 1 FILL VOLUME 1266 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



GC RAMP 1 STA. 27+98 TO STA. 27+98

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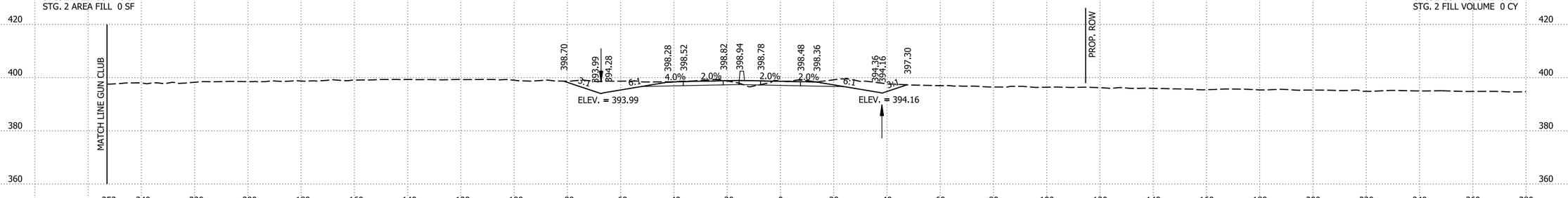
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	745	809
		CROSS SECTIONS				

STG. 1 AREA CUT 265 SF
STG. 1 AREA FILL 2 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

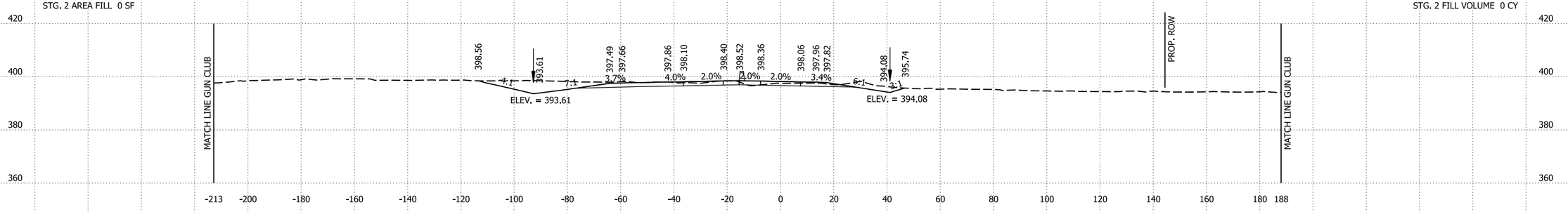
STG. 1 CUT VOLUME 1005 CY
STG. 1 FILL VOLUME 6 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



12+00.00

STG. 1 AREA CUT 278 SF
STG. 1 AREA FILL 1 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

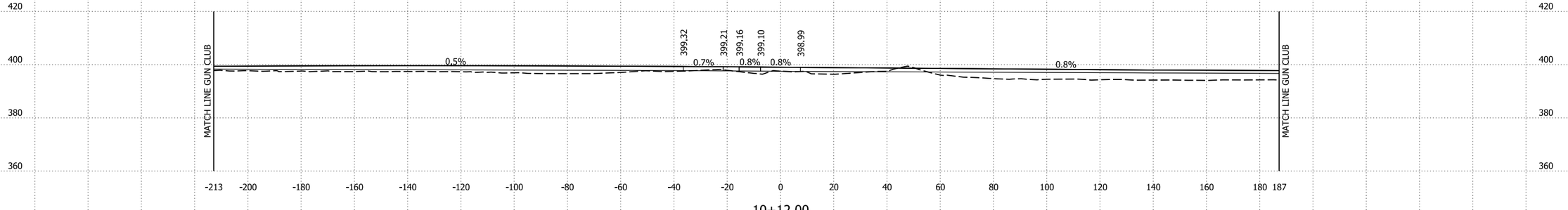
STG. 1 CUT VOLUME 491 CY
STG. 1 FILL VOLUME 784 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



11+00.00

STG. 1 AREA CUT 24 SF
STG. 1 AREA FILL 480 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



10+12.00

GC RAMP 2 STA. 10+12 TO STA. 12+00

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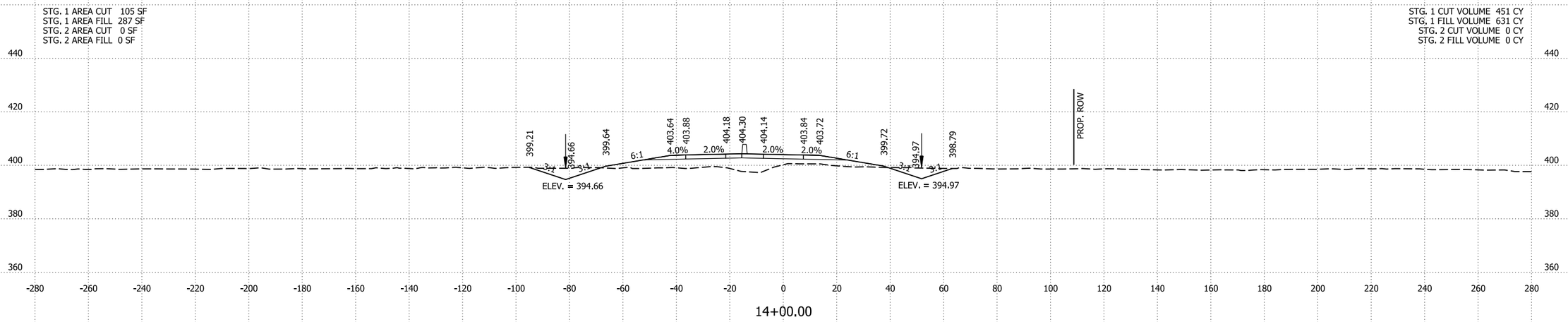
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	746	809
		CROSS SECTIONS				

STG. 1 AREA CUT 105 SF
STG. 1 AREA FILL 287 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

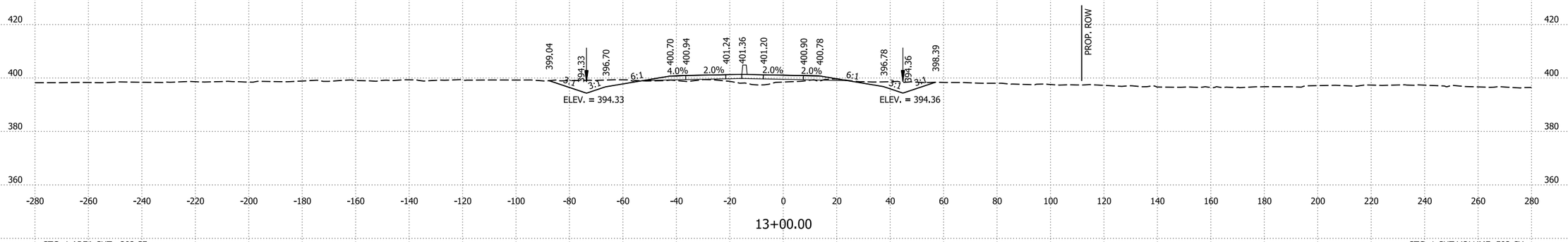
STG. 1 CUT VOLUME 451 CY
STG. 1 FILL VOLUME 631 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



14+00.00

STG. 1 AREA CUT 138 SF
STG. 1 AREA FILL 54 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 265 CY
STG. 1 FILL VOLUME 53 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

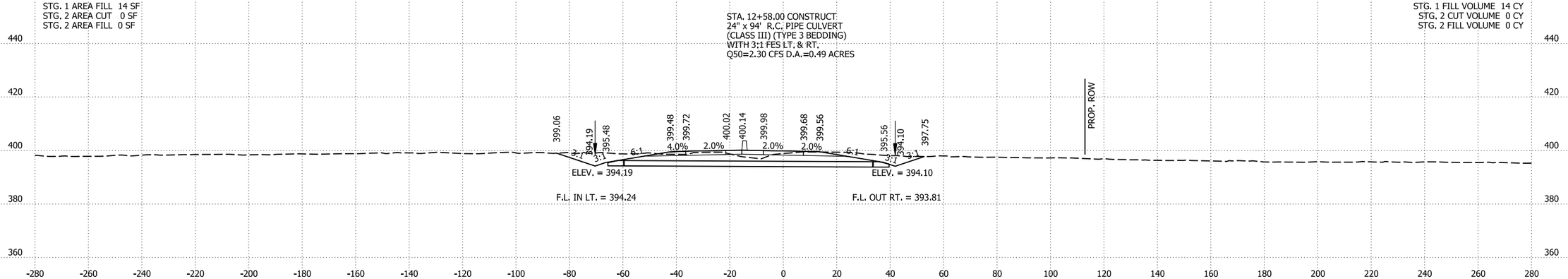


13+00.00

STG. 1 AREA CUT 202 SF
STG. 1 AREA FILL 14 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STA. 12+58.00 CONSTRUCT
24" x 94' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH 3:1 FES LT. & RT.
Q50=2.30 CFS D.A.=0.49 ACRES

STG. 1 CUT VOLUME 502 CY
STG. 1 FILL VOLUME 14 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



12+58.00

GC RAMP 2 STA. 12+58 TO STA. 14+00

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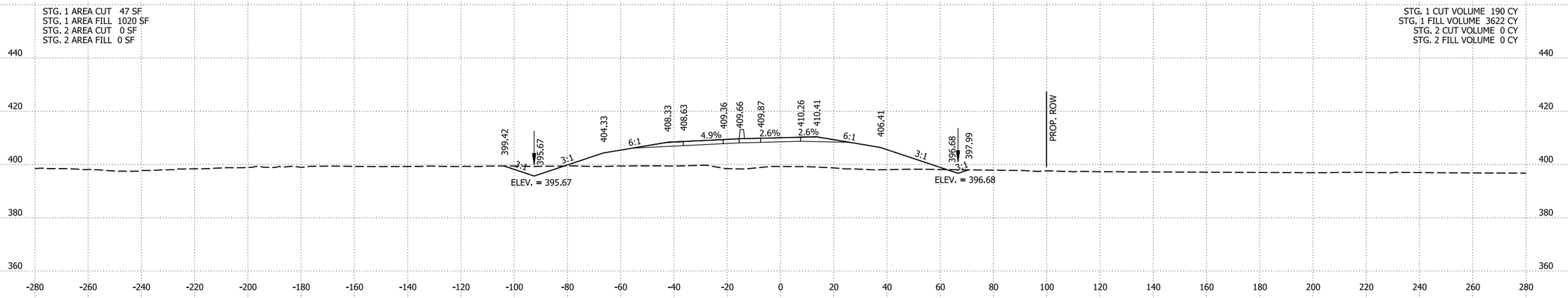
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	747	809
		CROSS SECTIONS				

STG. 1 AREA CUT 47 SF
STG. 1 AREA FILL 1020 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

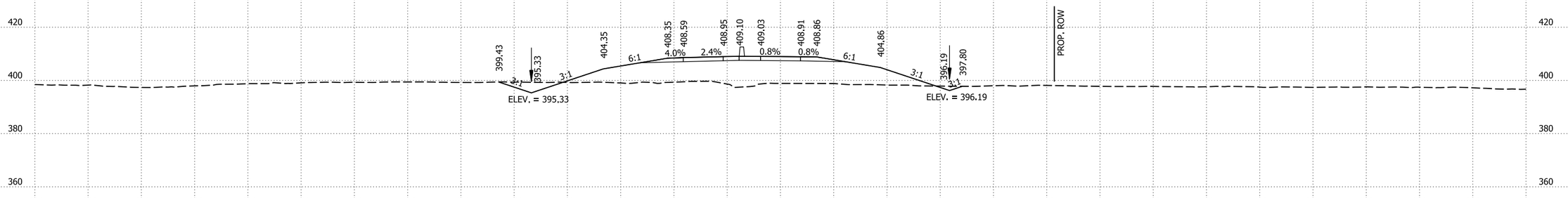
STG. 1 CUT VOLUME 190 CY
STG. 1 FILL VOLUME 3622 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



17+00.00

STG. 1 AREA CUT 56 SF
STG. 1 AREA FILL 936 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

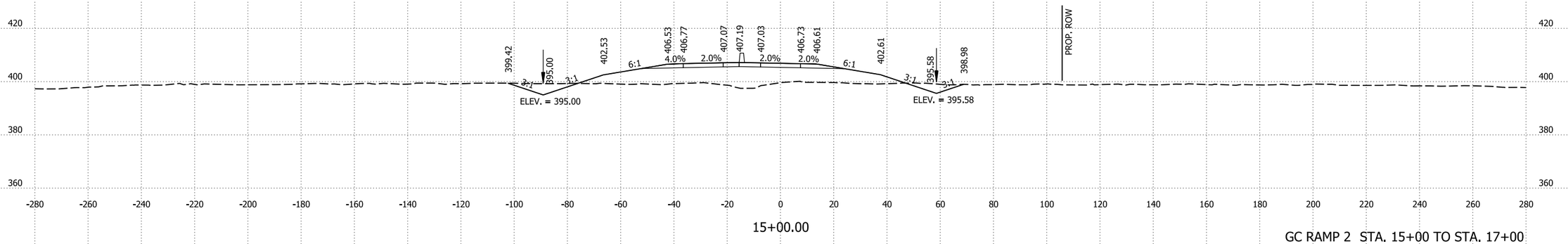
STG. 1 CUT VOLUME 276 CY
STG. 1 FILL VOLUME 2895 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



16+00.00

STG. 1 AREA CUT 93 SF
STG. 1 AREA FILL 627 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 367 CY
STG. 1 FILL VOLUME 1693 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



15+00.00

GC RAMP 2 STA. 15+00 TO STA. 17+00

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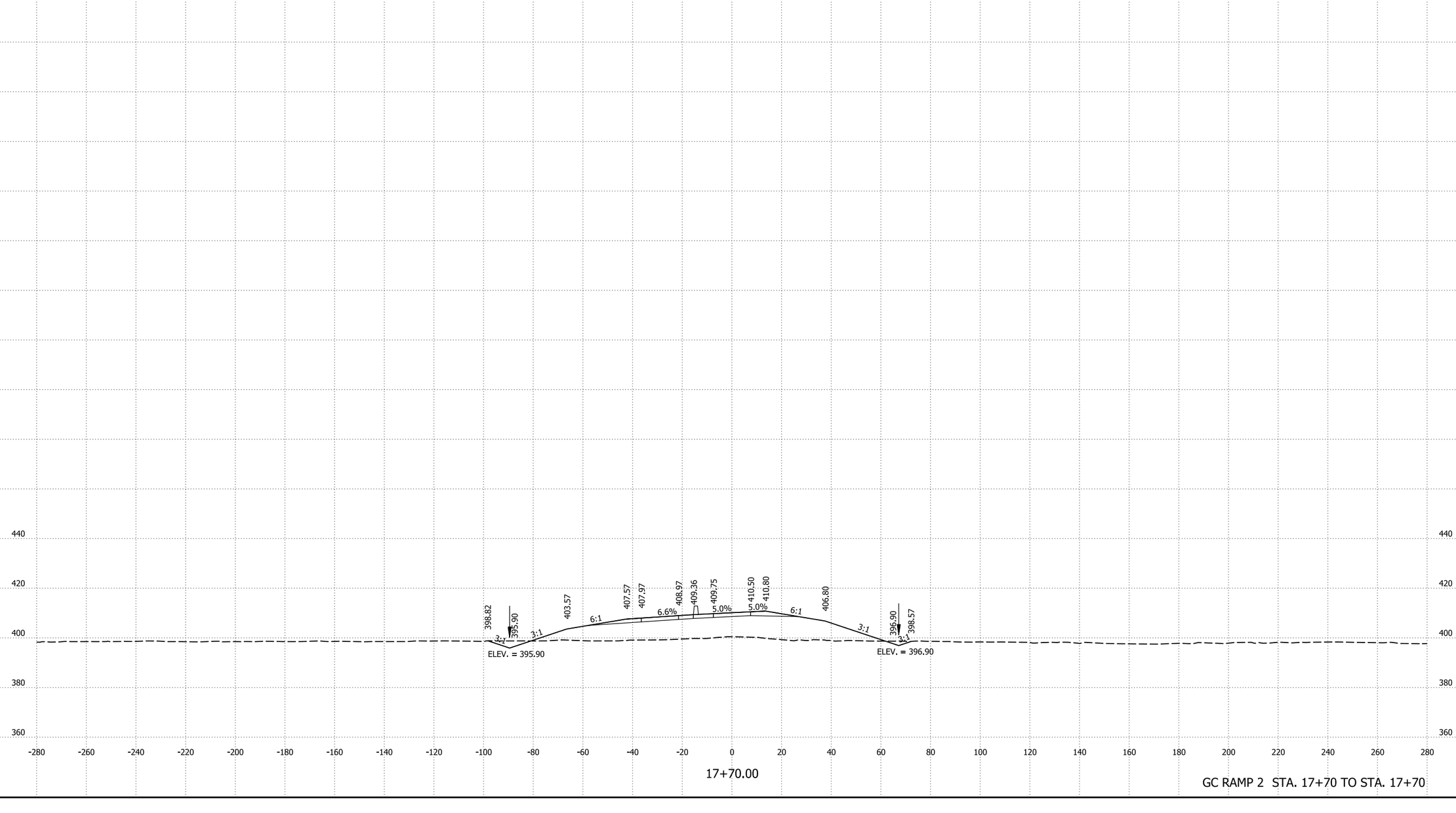
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
10-2-2024		6	ARK.	040901	747A	809
		CROSS SECTIONS				



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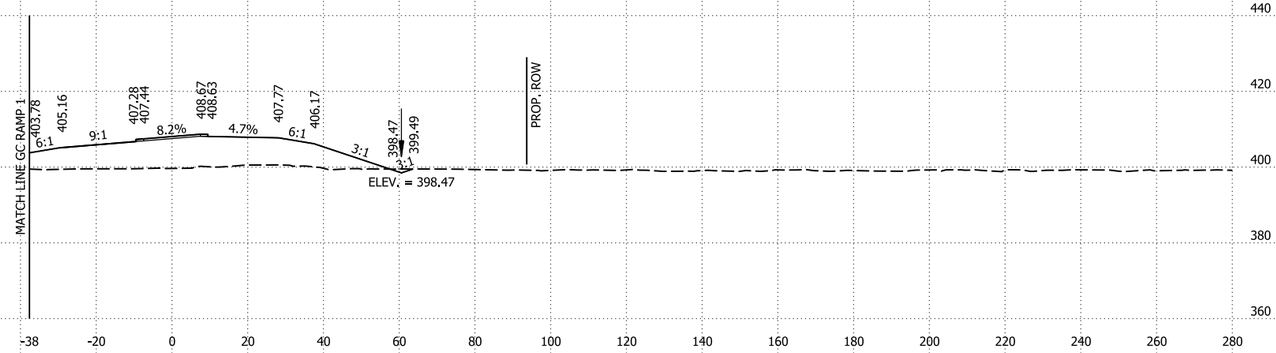
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	748	809
		CROSS SECTIONS				

END GC RAMP 2 GRANDING AND BASE COURSE ONLY AT STA. 20+30.00 AND BEGIN GRADING ONLY

STG. 1 AREA CUT 3 SF
STG. 1 AREA FILL 585 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 20 CY
STG. 1 FILL VOLUME 2123 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

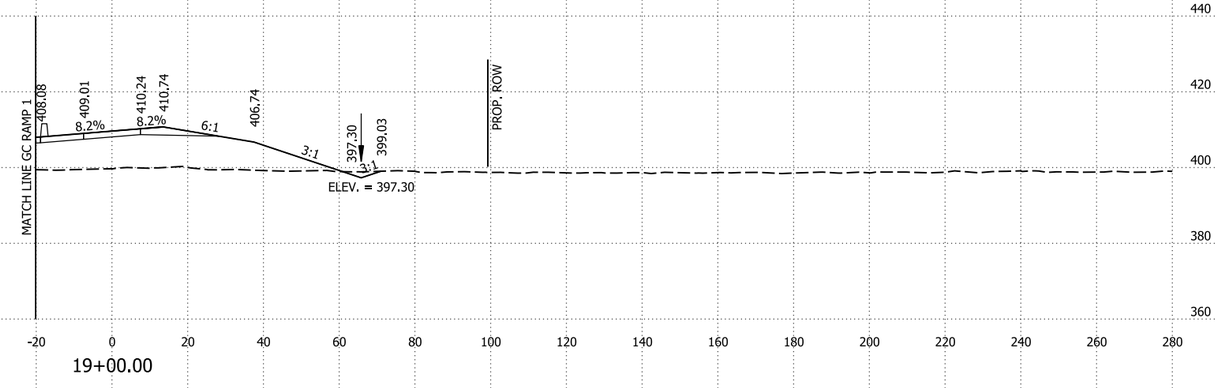


20+00.00

END GC RAMP 2 FULL DEPTH PAVEMENT BEGIN GRADING AND BASE COURSE ONLY

STG. 1 AREA CUT 8 SF
STG. 1 AREA FILL 561 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

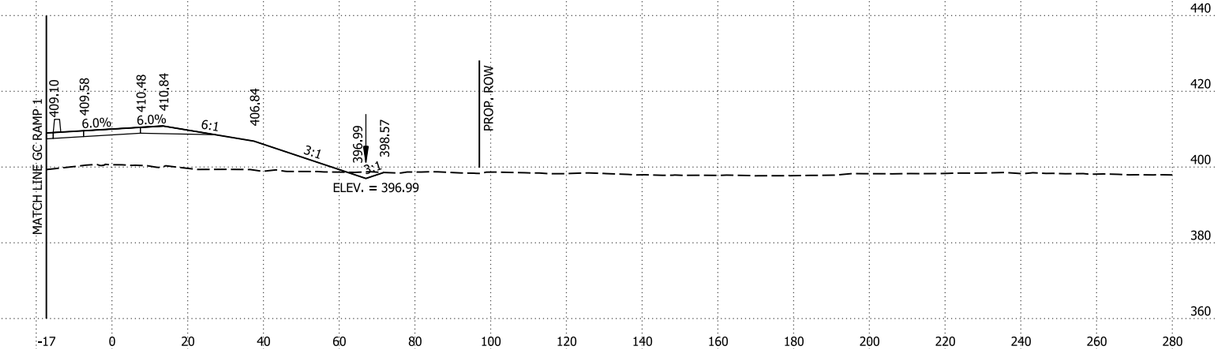
STG. 1 CUT VOLUME 30 CY
STG. 1 FILL VOLUME 2063 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



19+00.00

STG. 1 AREA CUT 8 SF
STG. 1 AREA FILL 553 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 102 CY
STG. 1 FILL VOLUME 2912 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



18+00.00

GC RAMP 2 STA. 18+00 TO STA. 20+00

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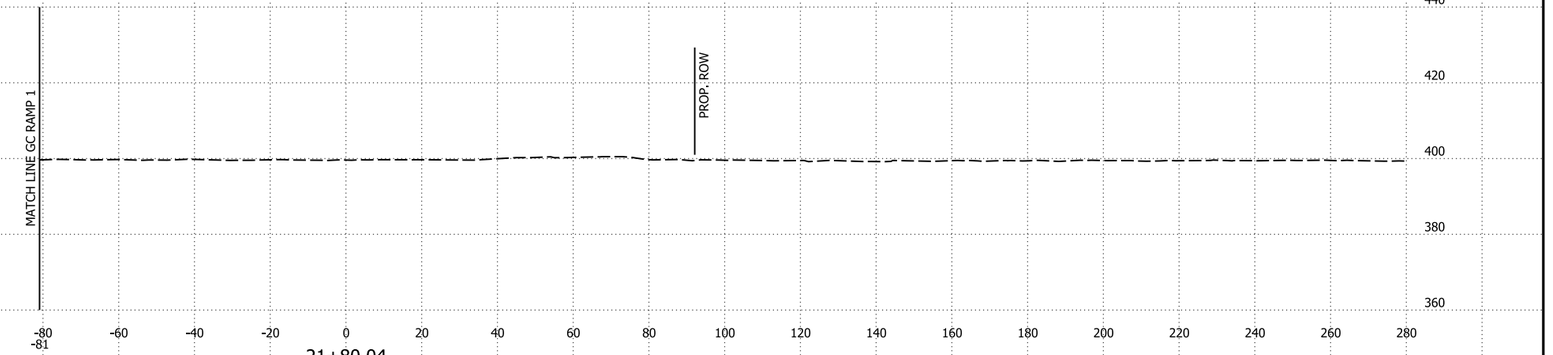
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	749	809
		CROSS SECTIONS				

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

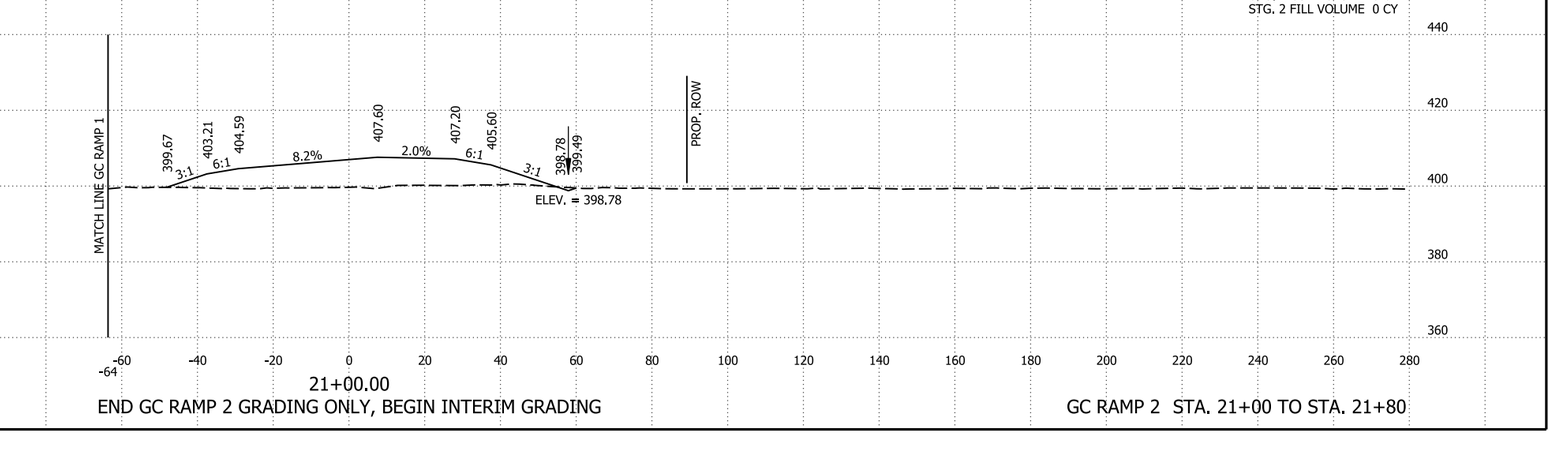
STG. 1 CUT VOLUME 3 CY
STG. 1 FILL VOLUME 815 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



21+80.04
END GC RAMP 2 INTERIM GRADING

STG. 1 AREA CUT 2 SF
STG. 1 AREA FILL 550 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 10 CY
STG. 1 FILL VOLUME 2103 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



21+00.00
END GC RAMP 2 GRADING ONLY, BEGIN INTERIM GRADING

GC RAMP 2 STA. 21+00 TO STA. 21+80

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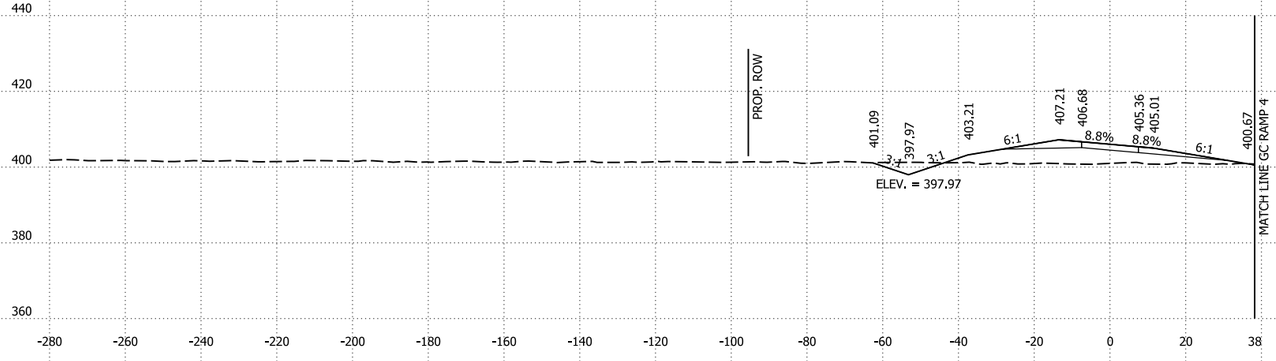
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	750	809
		CROSS SECTIONS				

STG. 1 AREA CUT 32 SF
STG. 1 AREA FILL 217 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

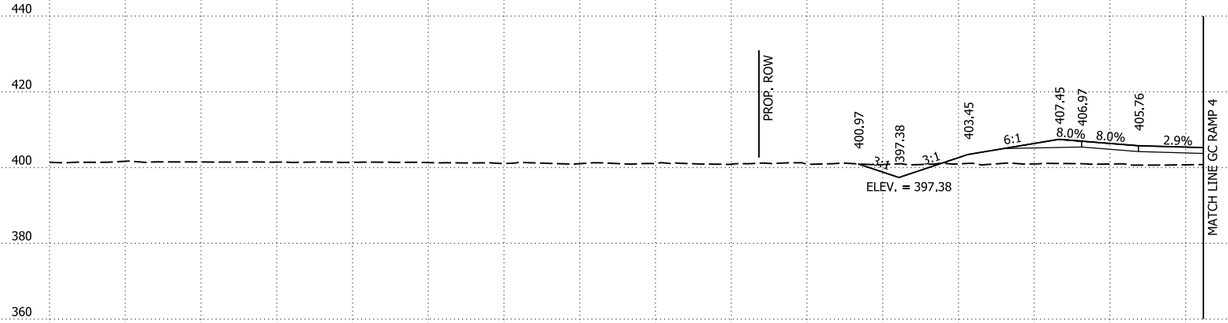
STG. 1 CUT VOLUME 126 CY
STG. 1 FILL VOLUME 848 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



22+00.00

STG. 1 AREA CUT 36 SF
STG. 1 AREA FILL 241 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

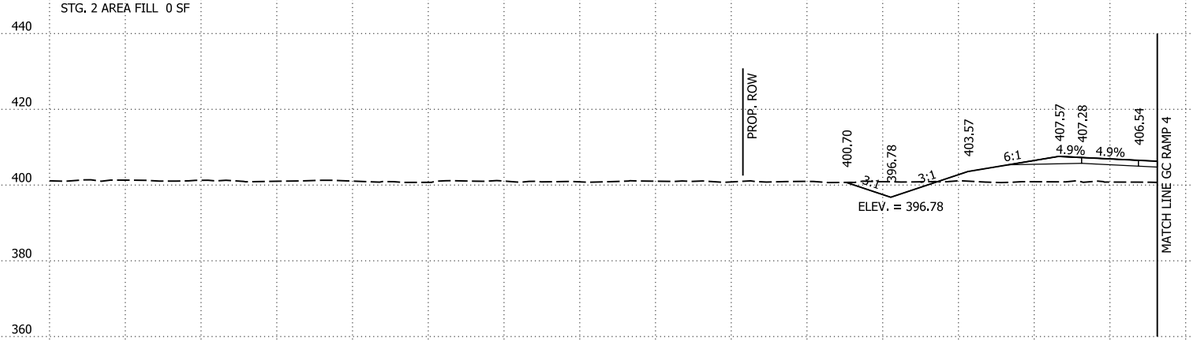
STG. 1 CUT VOLUME 160 CY
STG. 1 FILL VOLUME 869 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



21+00.00

STG. 1 AREA CUT 50 SF
STG. 1 AREA FILL 228 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



20+00.00

GC RAMP 3 STA. 20+00 TO STA. 22+00

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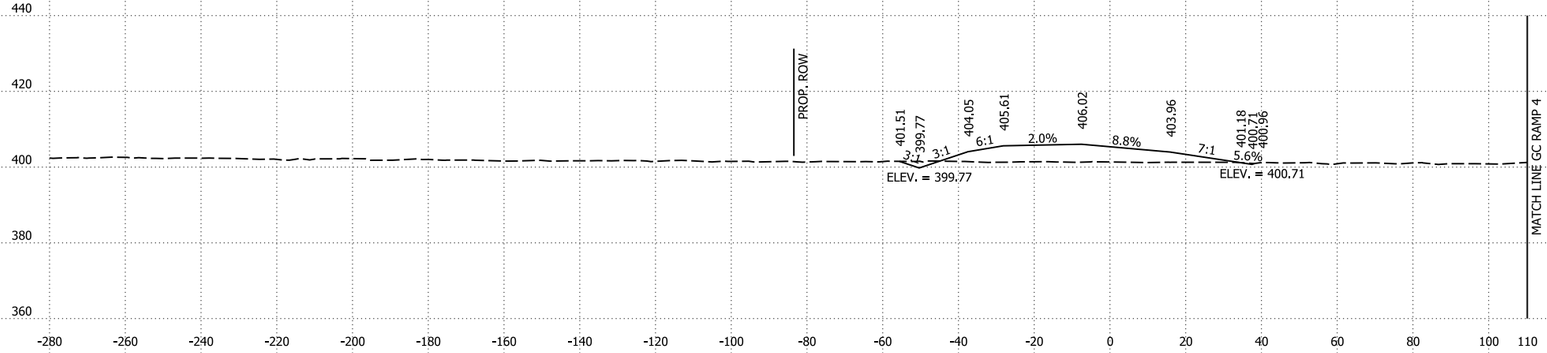
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	751	809
		CROSS SECTIONS				

STG. 1 AREA CUT 10 SF
STG. 1 AREA FILL 246 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 60 CY
STG. 1 FILL VOLUME 818 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

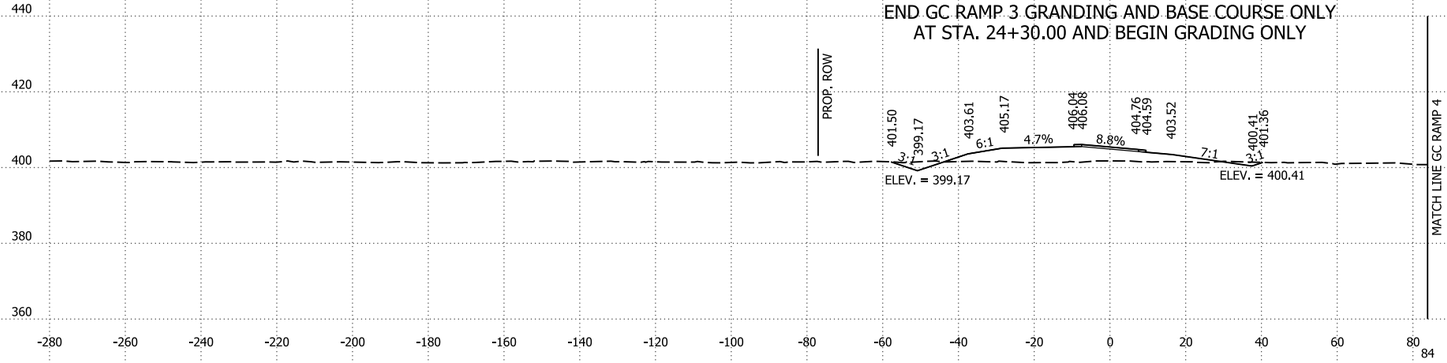


25+00.00
END GC RAMP 3 GRANDING ONLY
BEGIN INERIM GRADING

STG. 1 AREA CUT 22 SF
STG. 1 AREA FILL 196 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 80 CY
STG. 1 FILL VOLUME 737 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

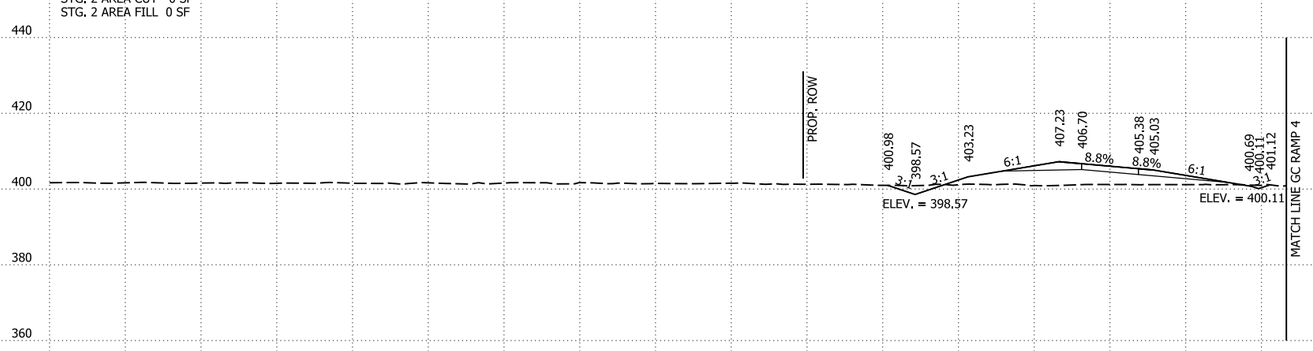
END GC RAMP 3 GRANDING AND BASE COURSE ONLY
AT STA. 24+30.00 AND BEGIN GRADING ONLY



24+00.00
END GC RAMP 3 FULL DEPTH PAVEMENT
BEGIN GRADING AND BASE COURSE ONLY

STG. 1 AREA CUT 21 SF
STG. 1 AREA FILL 202 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 97 CY
STG. 1 FILL VOLUME 775 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



23+00.00

GC RAMP 3 STA. 23+00 TO STA. 25+00

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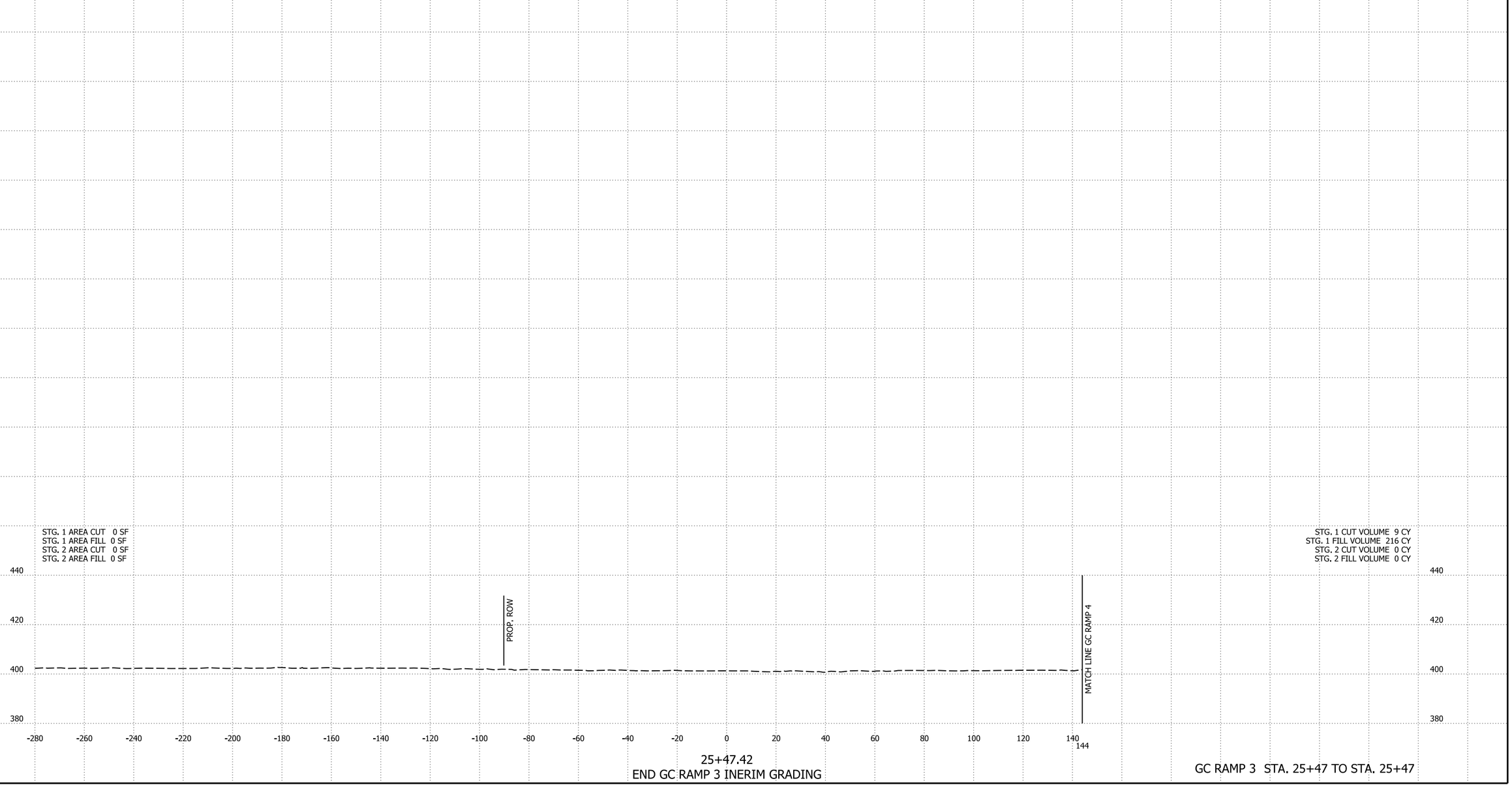
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	752	809
		CROSS SECTIONS				



25+47.42
END GC RAMP 3 INERIM GRADING

GC RAMP 3 STA. 25+47 TO STA. 25+47

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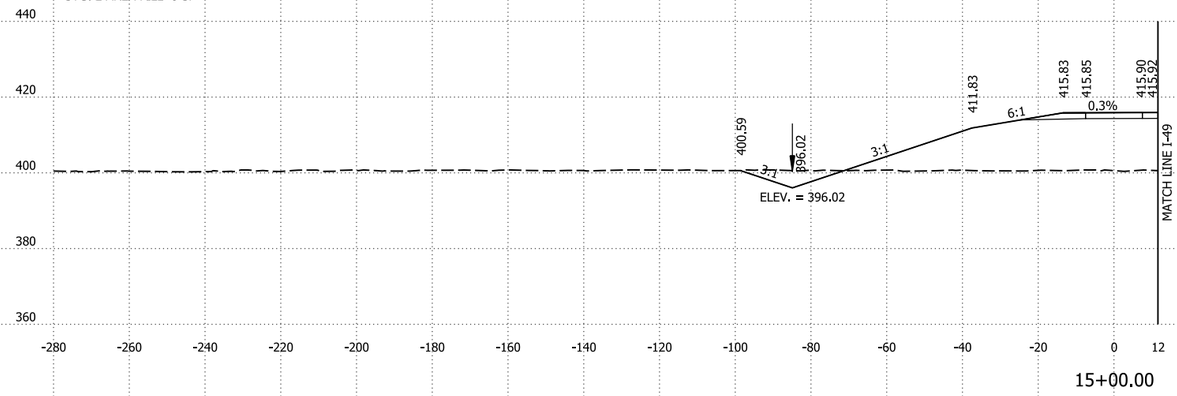
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	753	809
		CROSS SECTIONS				

STG. 1 AREA CUT 64 SF
STG. 1 AREA FILL 843 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

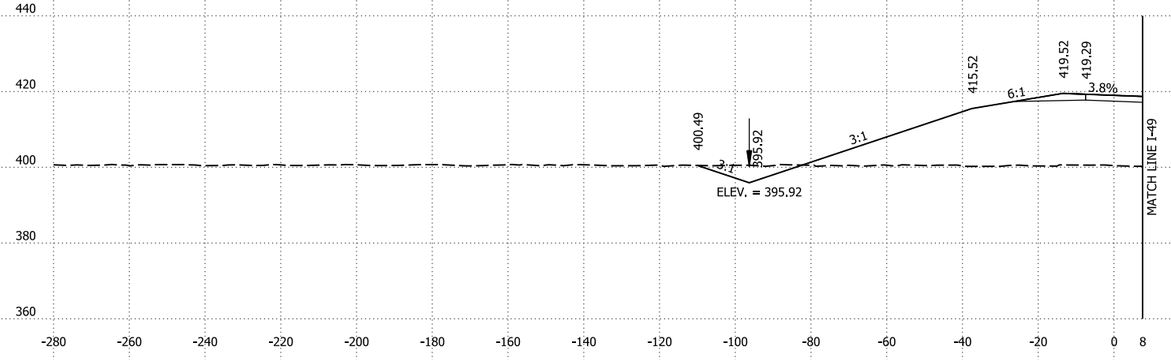
STG. 1 CUT VOLUME 236 CY
STG. 1 FILL VOLUME 3593 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



15+00.00

STG. 1 AREA CUT 63 SF
STG. 1 AREA FILL 1098 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 4 CY
STG. 1 FILL VOLUME 72 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

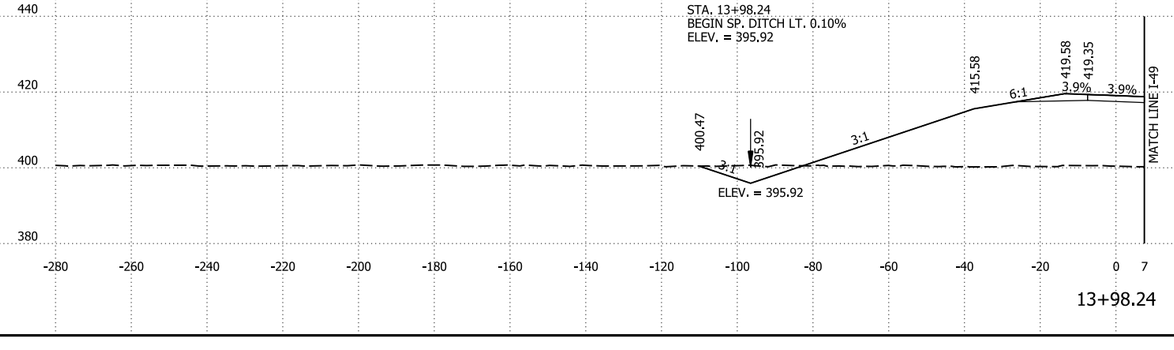


14+00.00

STG. 1 AREA CUT 64 SF
STG. 1 AREA FILL 1103 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STA. 13+98.24
BEGIN SP. DITCH LT. 0.10%
ELEV. = 395.92

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



13+98.24

GC RAMP 4 STA. 13+98 TO STA. 15+00

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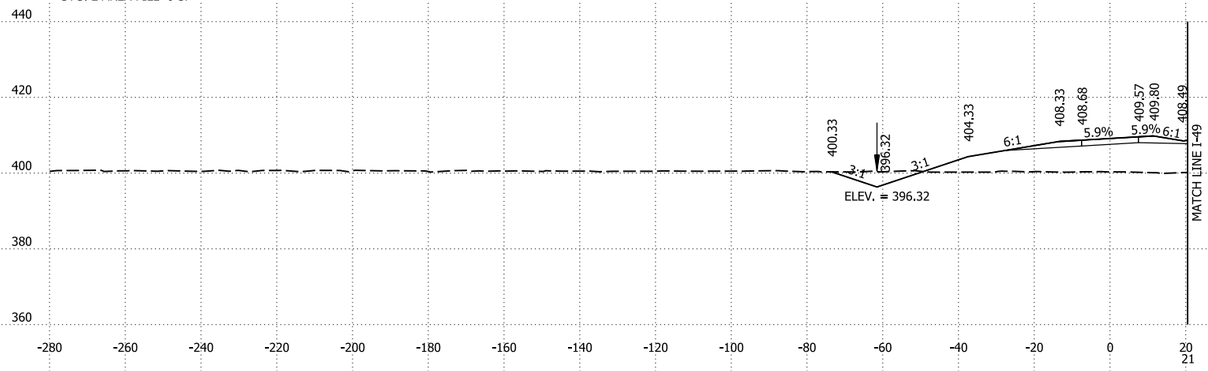
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	754	809
		CROSS SECTIONS				

STG. 1 AREA CUT 50 SF
STG. 1 AREA FILL 408 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

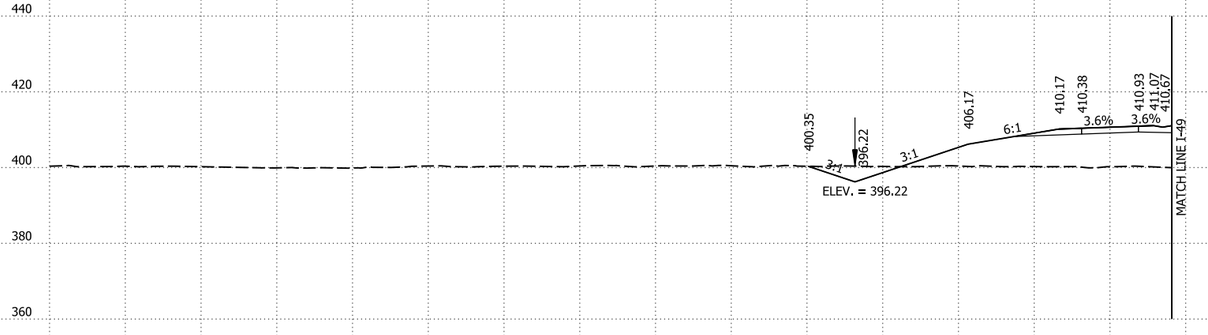
STG. 1 CUT VOLUME 187 CY
STG. 1 FILL VOLUME 1675 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



18+00.00

STG. 1 AREA CUT 51 SF
STG. 1 AREA FILL 496 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

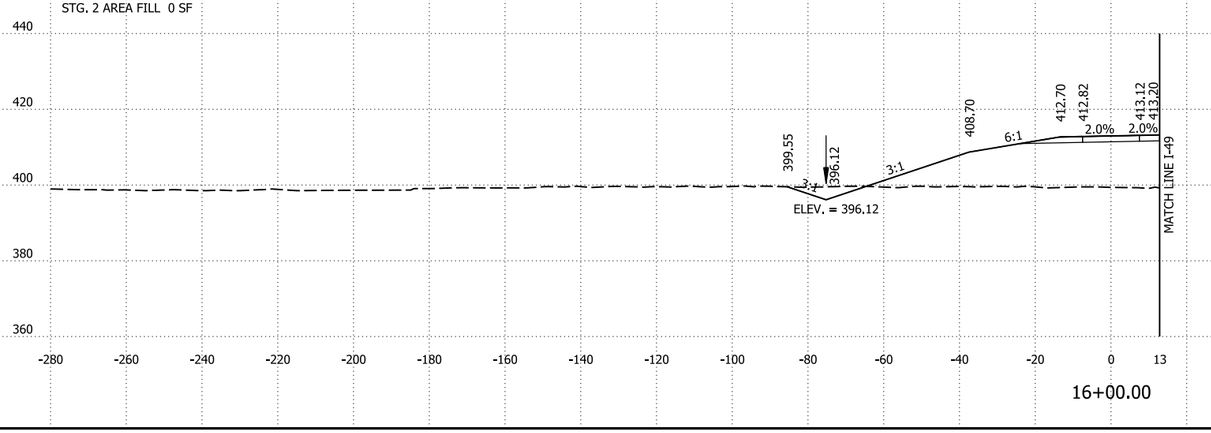
STG. 1 CUT VOLUME 160 CY
STG. 1 FILL VOLUME 2220 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



17+00.00

STG. 1 AREA CUT 36 SF
STG. 1 AREA FILL 703 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 185 CY
STG. 1 FILL VOLUME 2862 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



16+00.00

GC RAMP 4 STA. 16+00 TO STA. 18+00

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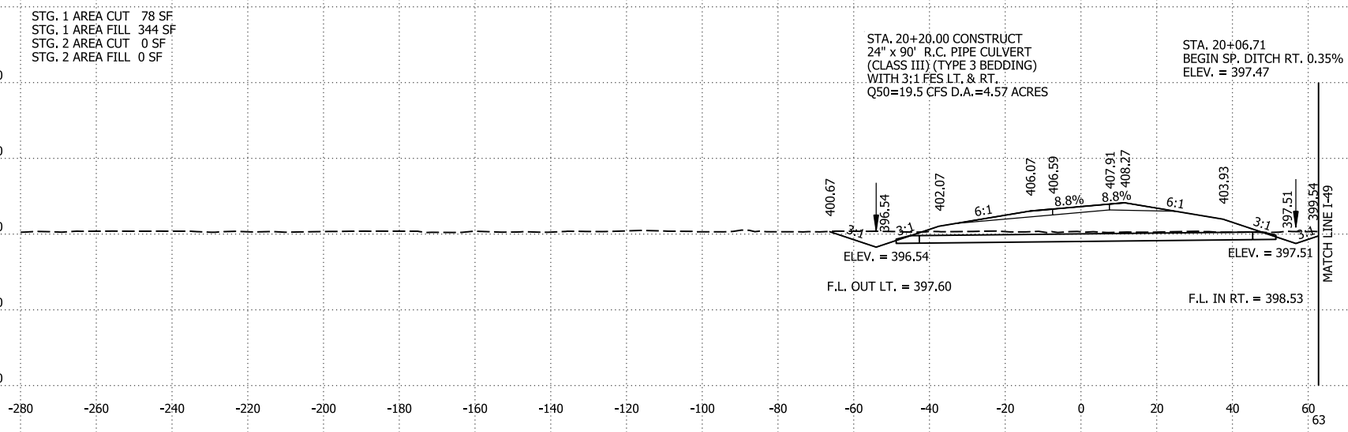
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	755	809
		CROSS SECTIONS				

STG. 1 AREA CUT 78 SF
STG. 1 AREA FILL 344 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STA. 20+20.00 CONSTRUCT
24" x 90' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH 3:1 FES LT. & RT.
Q50=19.5 CFS D.A.=4.57 ACRES

STA. 20+06.71
BEGIN SP. DITCH RT. 0.35%
ELEV. = 397.47

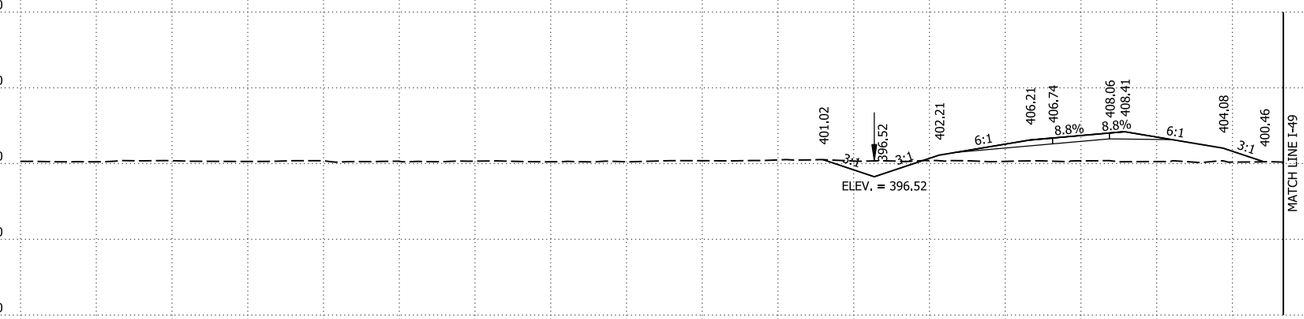
STG. 1 CUT VOLUME 48 CY
STG. 1 FILL VOLUME 260 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



20+20.00

STG. 1 AREA CUT 53 SF
STG. 1 AREA FILL 357 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

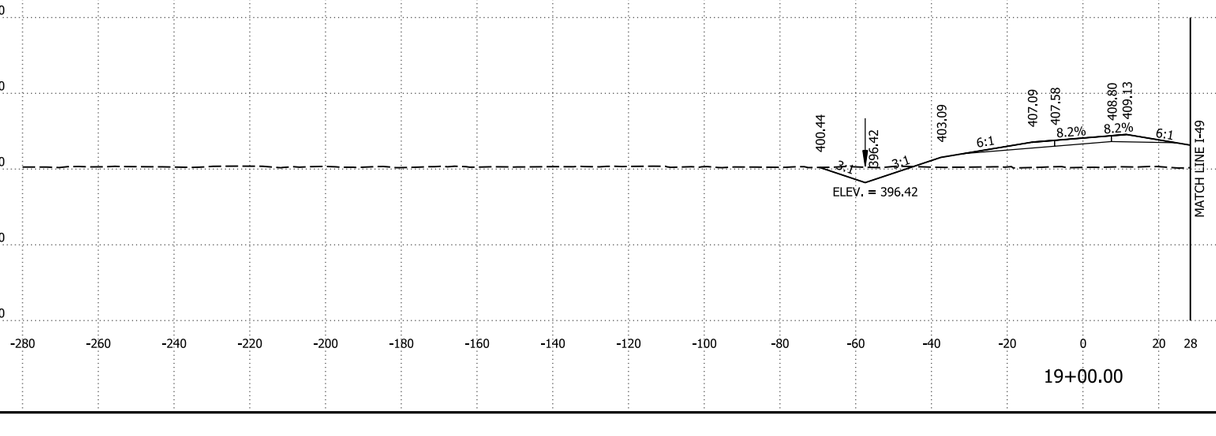
STG. 1 CUT VOLUME 192 CY
STG. 1 FILL VOLUME 1339 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



20+00.00

STG. 1 AREA CUT 51 SF
STG. 1 AREA FILL 366 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 188 CY
STG. 1 FILL VOLUME 1434 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



19+00.00

GC RAMP 4 STA. 19+00 TO STA. 20+20

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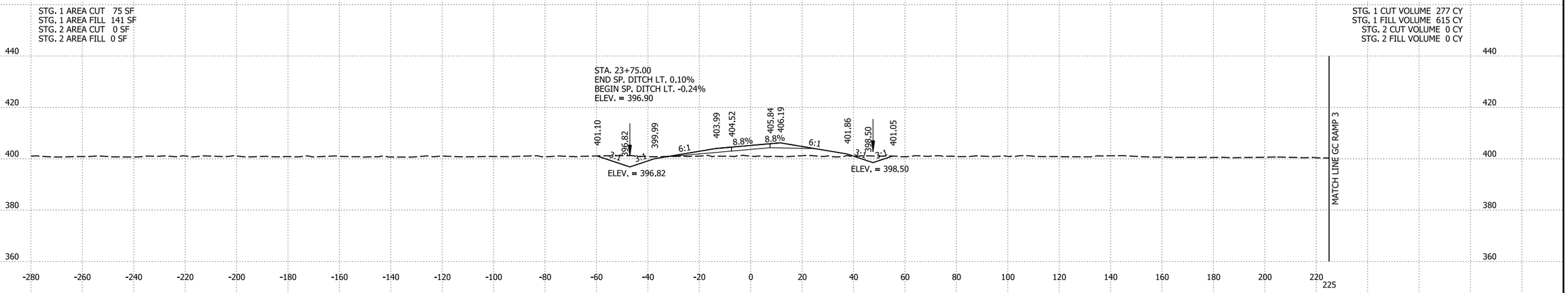
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	756	809
		CROSS SECTIONS				

STG. 1 AREA CUT 75 SF
STG. 1 AREA FILL 141 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 277 CY
STG. 1 FILL VOLUME 615 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

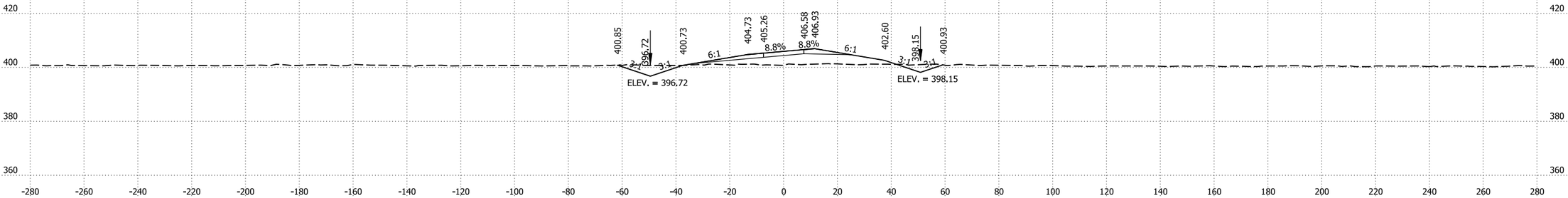
STA. 23+75.00
END SP. DITCH LT. 0.10%
BEGIN SP. DITCH LT. -0.24%
ELEV. = 396.90



23+00.00

STG. 1 AREA CUT 75 SF
STG. 1 AREA FILL 191 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

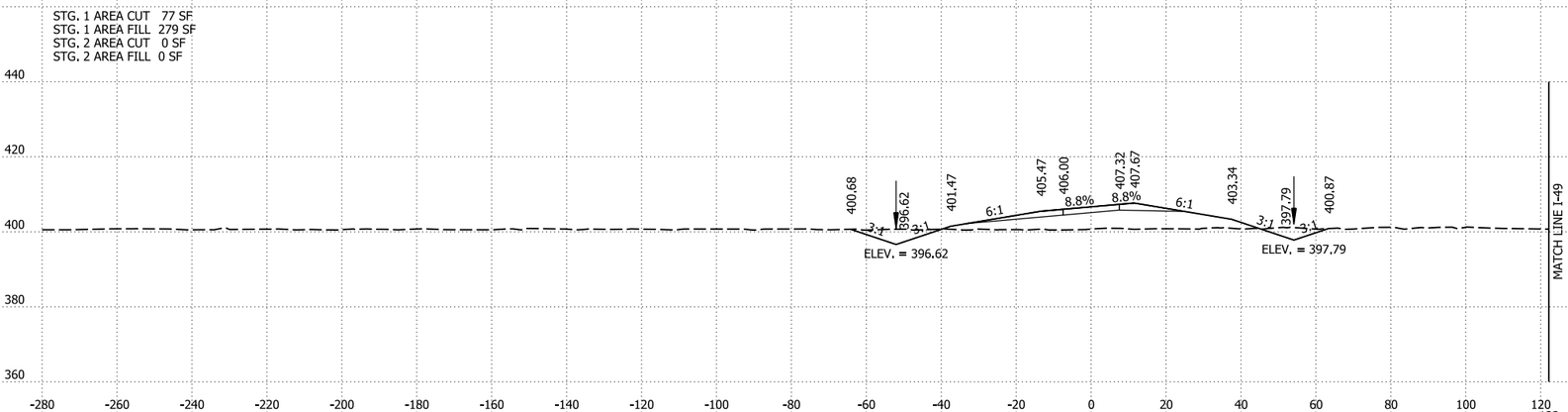
STG. 1 CUT VOLUME 282 CY
STG. 1 FILL VOLUME 870 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



22+00.00

STG. 1 AREA CUT 77 SF
STG. 1 AREA FILL 279 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 230 CY
STG. 1 FILL VOLUME 923 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



21+00.00

GC RAMP 4 STA. 21+00 TO STA. 23+00

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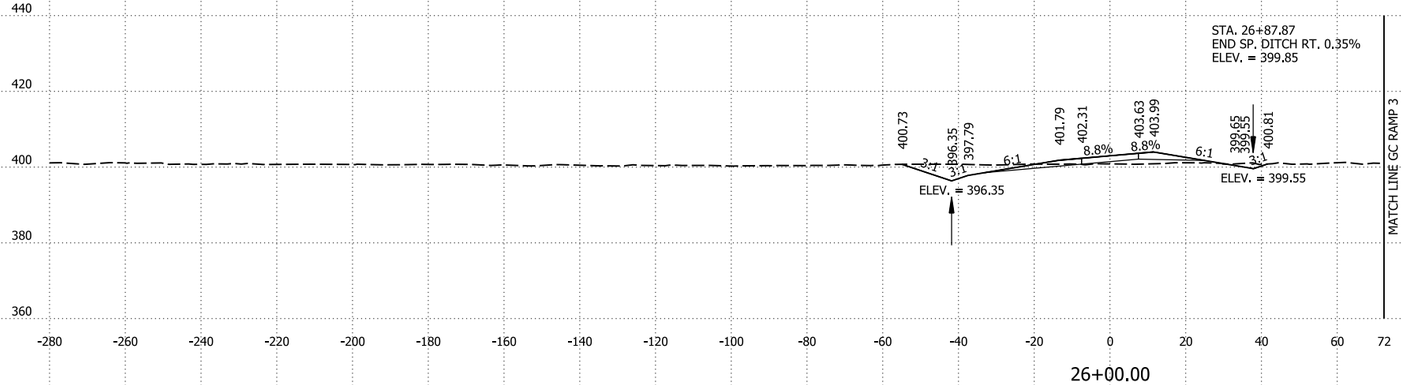
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	757	809
		CROSS SECTIONS				

STG. 1 AREA CUT 90 SF
STG. 1 AREA FILL 27 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

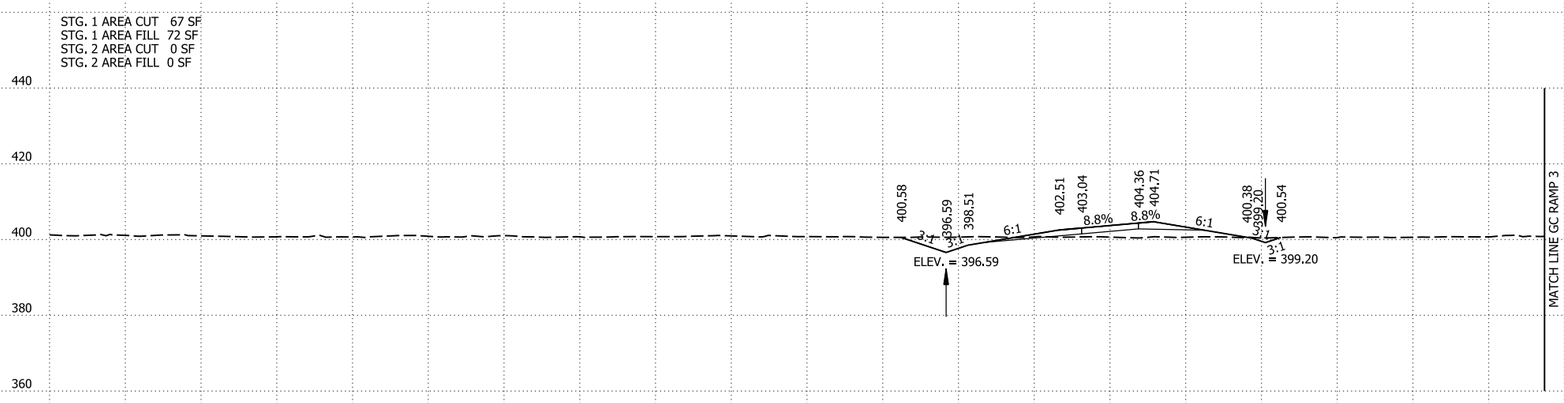
STG. 1 CUT VOLUME 291 CY
STG. 1 FILL VOLUME 184 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



26+00.00

STG. 1 AREA CUT 67 SF
STG. 1 AREA FILL 72 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

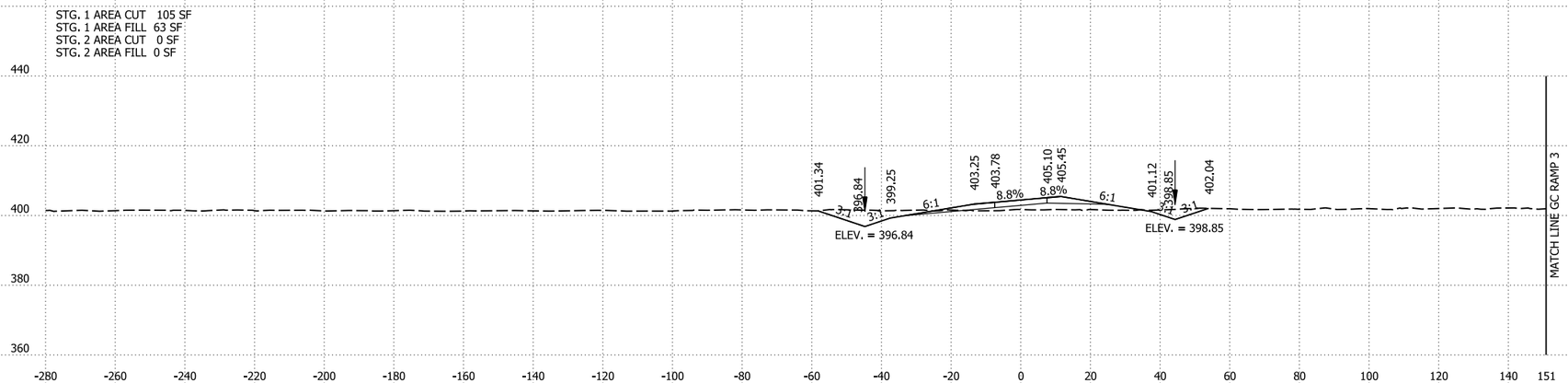
STG. 1 CUT VOLUME 319 CY
STG. 1 FILL VOLUME 250 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



25+00.00

STG. 1 AREA CUT 105 SF
STG. 1 AREA FILL 63 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 333 CY
STG. 1 FILL VOLUME 378 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



24+00.00

GC RAMP 4 STA. 24+00 TO STA. 26+00

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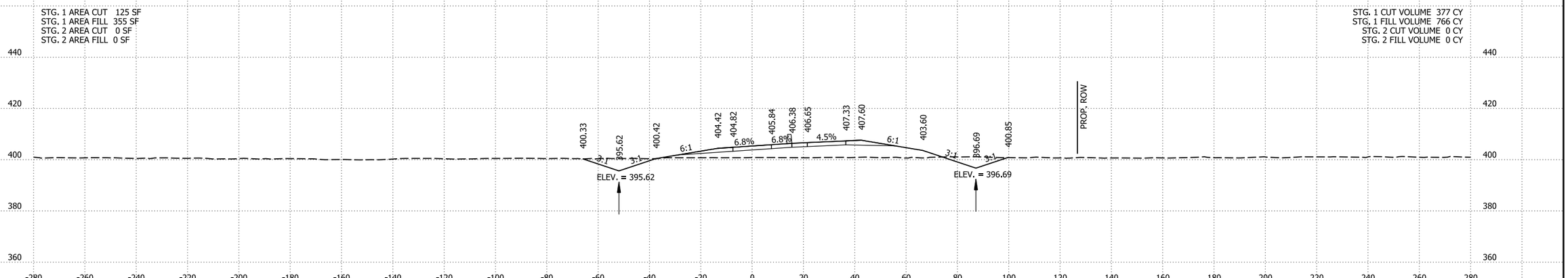
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	758	809
		CROSS SECTIONS				

STG. 1 AREA CUT 125 SF
STG. 1 AREA FILL 355 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

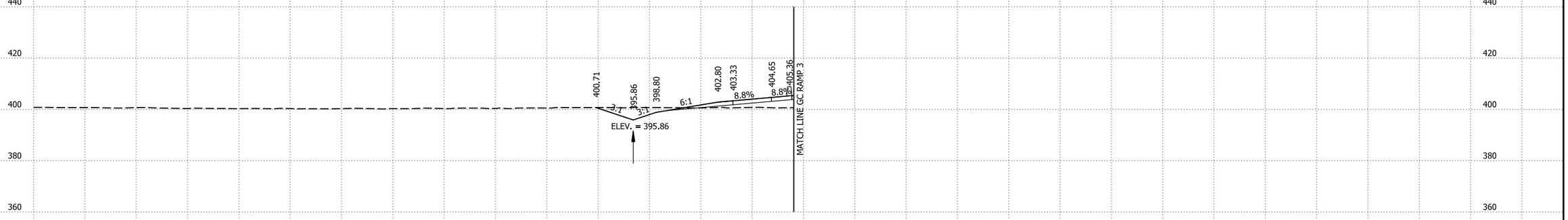
STG. 1 CUT VOLUME 377 CY
STG. 1 FILL VOLUME 766 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



29+00.00

STG. 1 AREA CUT 78 SF
STG. 1 AREA FILL 59 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

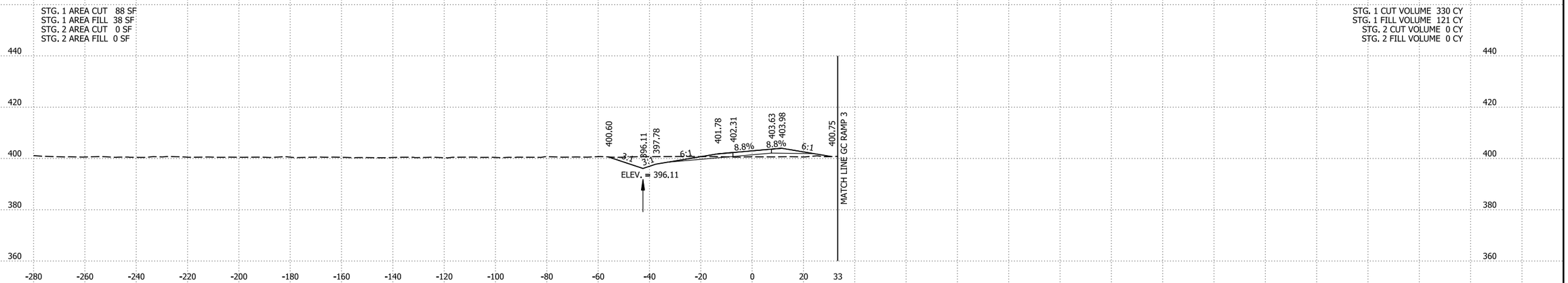
STG. 1 CUT VOLUME 308 CY
STG. 1 FILL VOLUME 179 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



28+00.00

STG. 1 AREA CUT 88 SF
STG. 1 AREA FILL 38 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 330 CY
STG. 1 FILL VOLUME 121 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



27+00.00

GC RAMP 4 STA. 27+00 TO STA. 29+00

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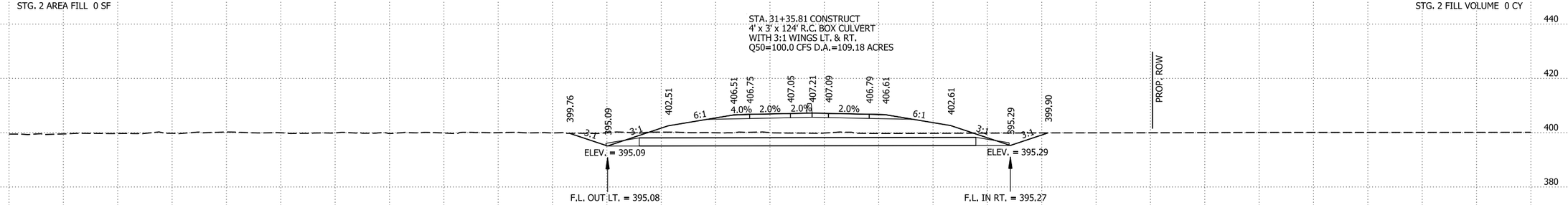
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	759	809
		CROSS SECTIONS				

STG. 1 AREA CUT 132 SF
STG. 1 AREA FILL 535 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 182 CY
STG. 1 FILL VOLUME 618 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

STA. 31+35.81 CONSTRUCT
4' x 3' x 124' R.C. BOX CULVERT
WITH 3:1 WINGS LT. & RT.
Q50=100.0 CFS D.A.=109.18 ACRES



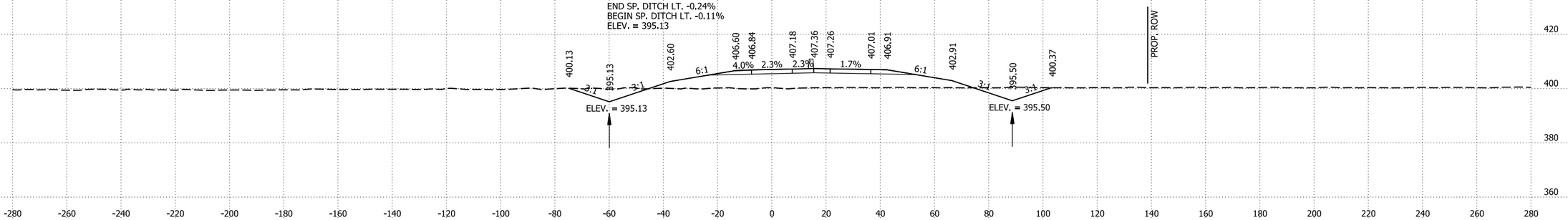
* CULVERT EARTHWORK AS BEEN REMOVED FROM FILL VOLUME

31+35.81

STG. 1 AREA CUT 143 SF
STG. 1 AREA FILL 521 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 508 CY
STG. 1 FILL VOLUME 1870 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

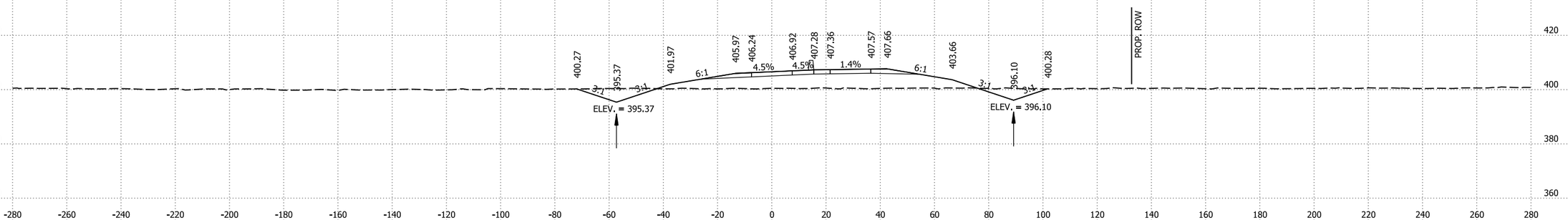
STA. 31+00.00
END SP. DITCH LT. -0.24%
BEGIN SP. DITCH LT. -0.11%
ELEV. = 395.13



31+00.00

STG. 1 AREA CUT 131 SF
STG. 1 AREA FILL 489 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 476 CY
STG. 1 FILL VOLUME 1563 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



30+00.00

GC RAMP 4 STA. 30+00 TO STA. 31+36

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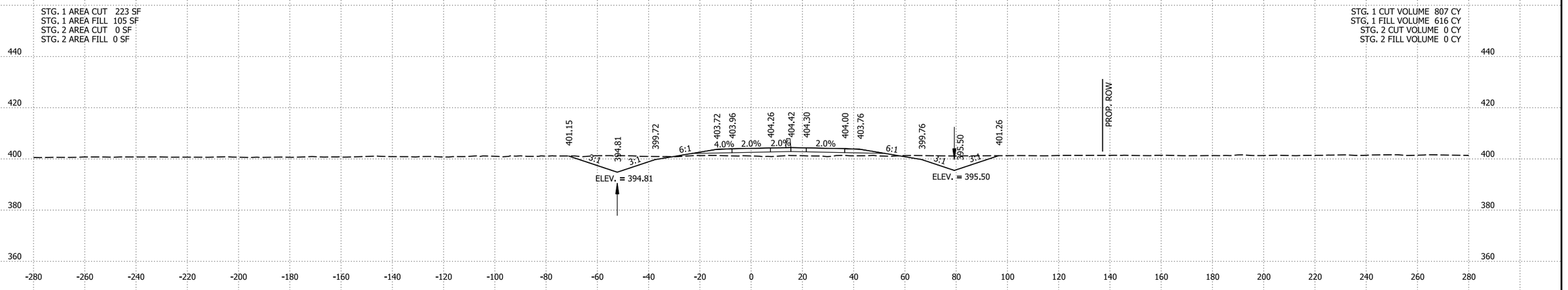
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	760	809
		CROSS SECTIONS				

STG. 1 AREA CUT 223 SF
STG. 1 AREA FILL 105 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

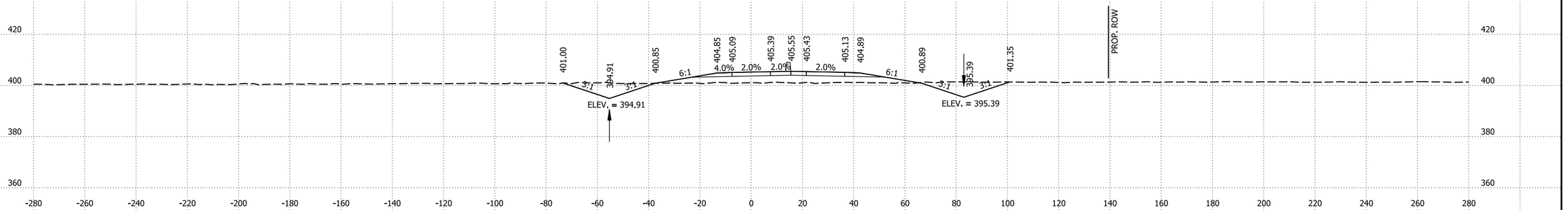
STG. 1 CUT VOLUME 807 CY
STG. 1 FILL VOLUME 616 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



34+00.00

STG. 1 AREA CUT 213 SF
STG. 1 AREA FILL 227 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

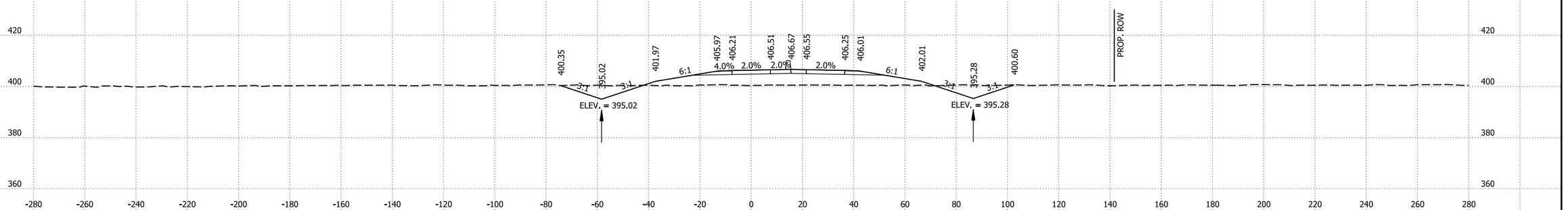
STG. 1 CUT VOLUME 706 CY
STG. 1 FILL VOLUME 1175 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



33+00.00

STG. 1 AREA CUT 169 SF
STG. 1 AREA FILL 407 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 358 CY
STG. 1 FILL VOLUME 1119 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



32+00.00

GC RAMP 4 STA. 32+00 TO STA. 34+00

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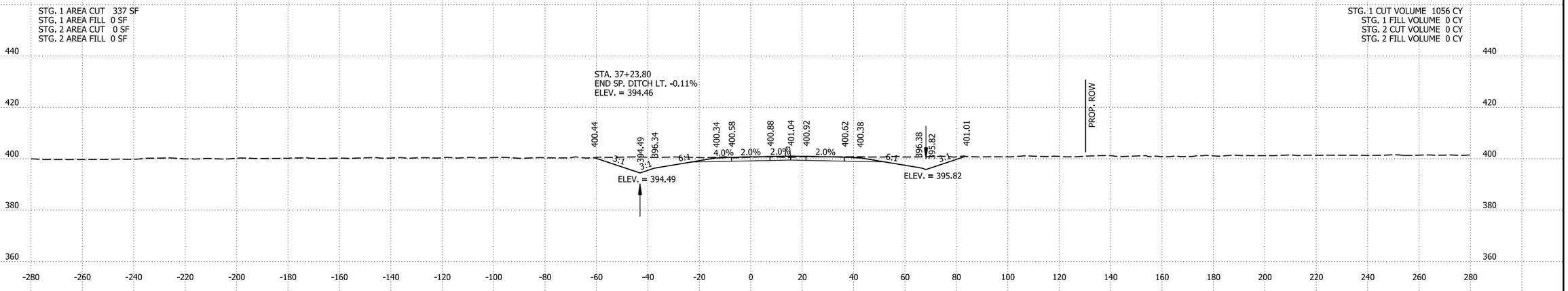
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	761	809
		CROSS SECTIONS				

STG. 1 AREA CUT 337 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 1056 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

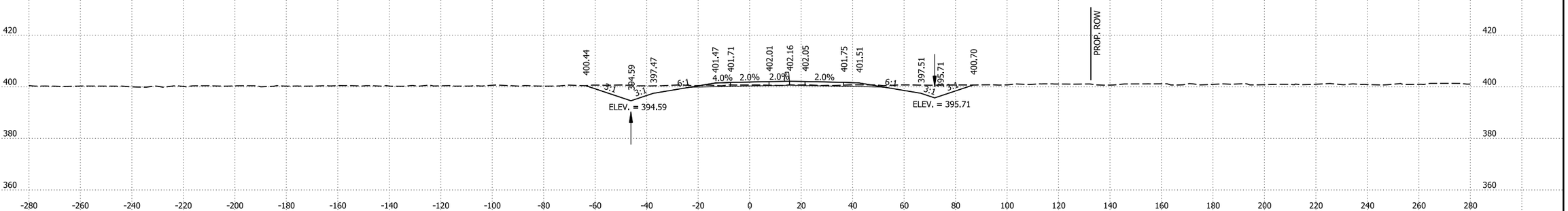
STA. 37+23.80
END SP. DITCH LT. -0.11%
ELEV. = 394.46



37+00.00

STG. 1 AREA CUT 233 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

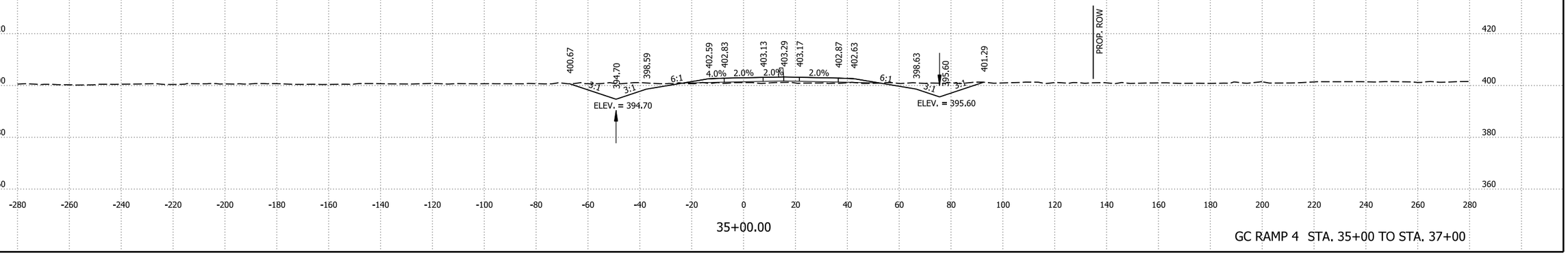
STG. 1 CUT VOLUME 833 CY
STG. 1 FILL VOLUME 57 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



36+00.00

STG. 1 AREA CUT 216 SF
STG. 1 AREA FILL 31 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 814 CY
STG. 1 FILL VOLUME 252 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



35+00.00

GC RAMP 4 STA. 35+00 TO STA. 37+00

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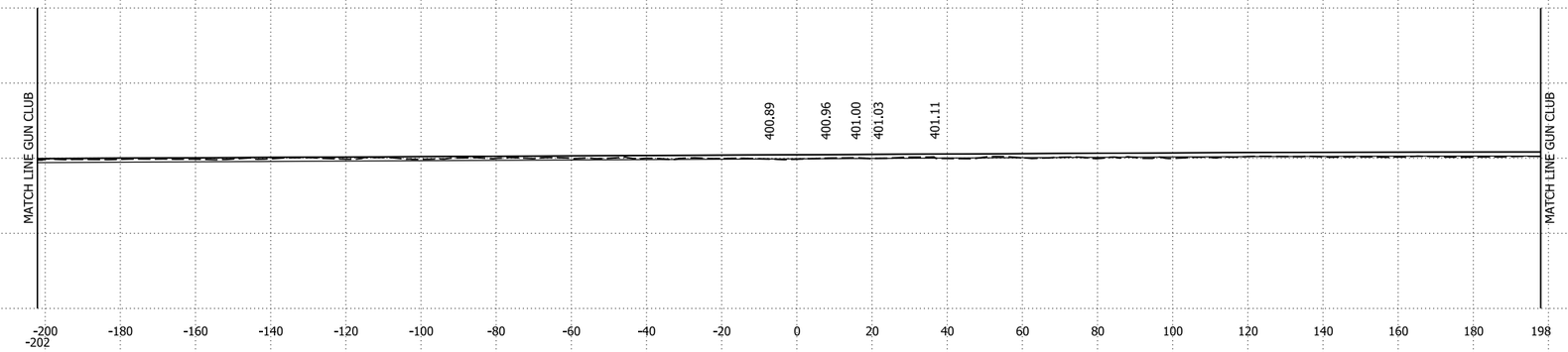
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	762	809
		CROSS SECTIONS				

STG. 1 AREA CUT 122 SF
STG. 1 AREA FILL 22 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

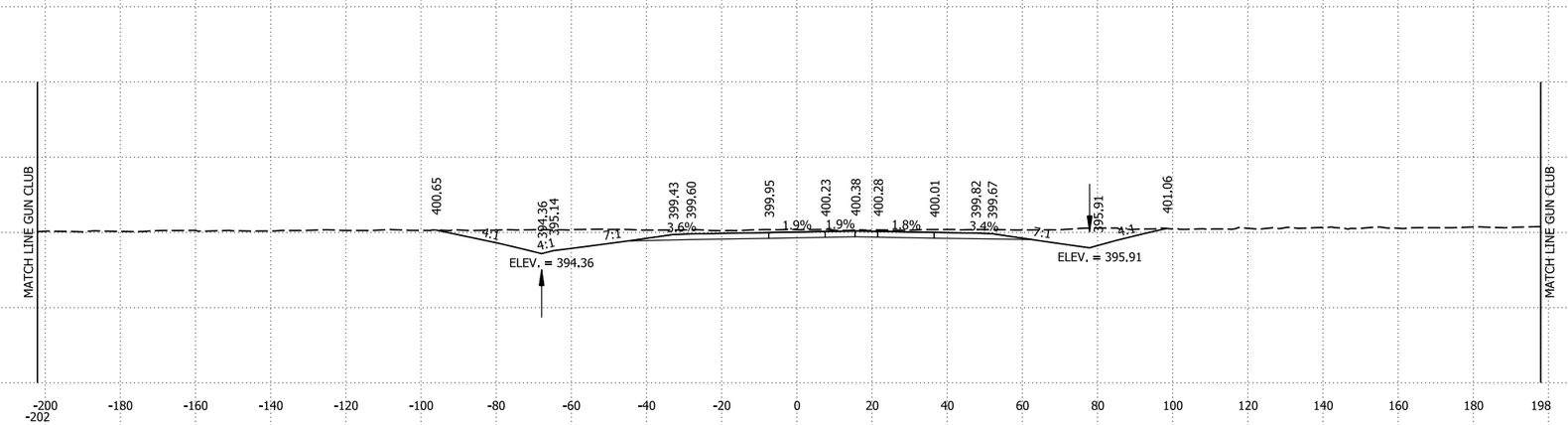
STG. 1 CUT VOLUME 912 CY
STG. 1 FILL VOLUME 31 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



38+73.80

STG. 1 AREA CUT 545 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 1633 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



38+00.00

GC RAMP 4 STA. 38+00 TO STA. 38+74

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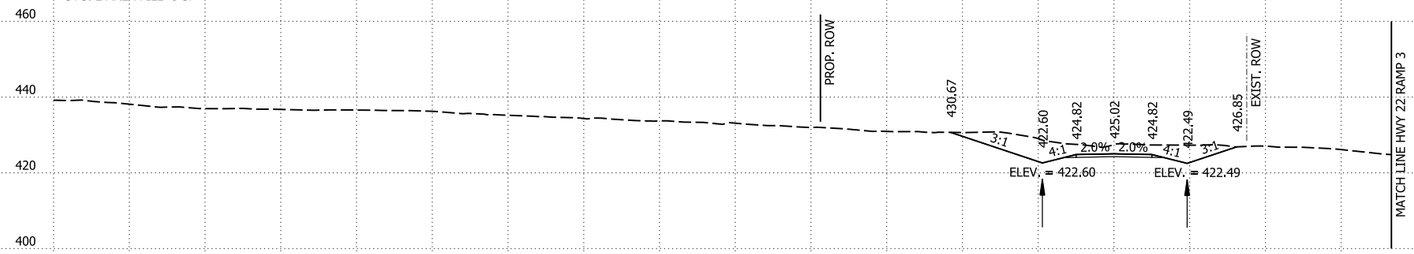
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	763	809
		CROSS SECTIONS				

STG. 1 AREA CUT 260 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 754 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



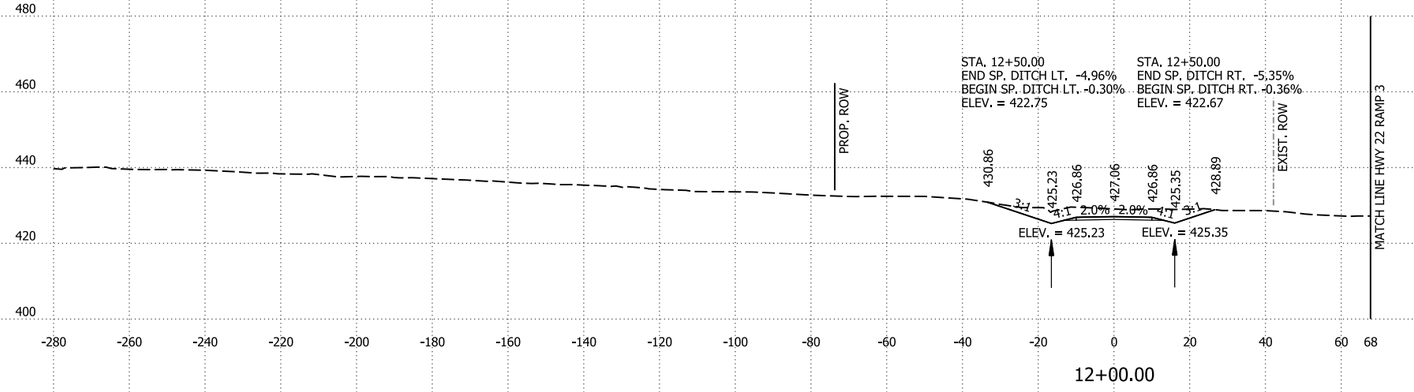
13+00.00

STG. 1 AREA CUT 147 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 307 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

STA. 12+50.00
END SP. DITCH LT. -4.96%
BEGIN SP. DITCH LT. -0.30%
ELEV. = 422.75

STA. 12+50.00
END SP. DITCH RT. -5.35%
BEGIN SP. DITCH RT. -0.36%
ELEV. = 422.67



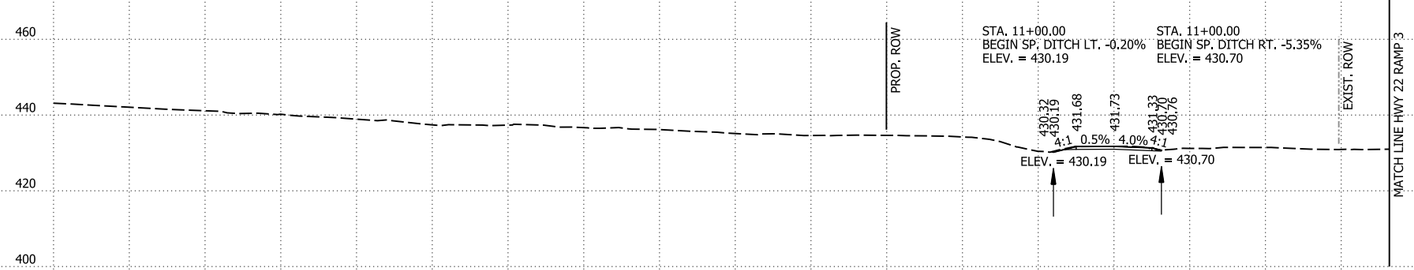
12+00.00

STG. 1 AREA CUT 19 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

STA. 11+00.00
BEGIN SP. DITCH LT. -0.20%
ELEV. = 430.19

STA. 11+00.00
BEGIN SP. DITCH RT. -5.35%
ELEV. = 430.70



11+00.00

NW SERVICE RD STA. 11+00 TO STA. 13+00

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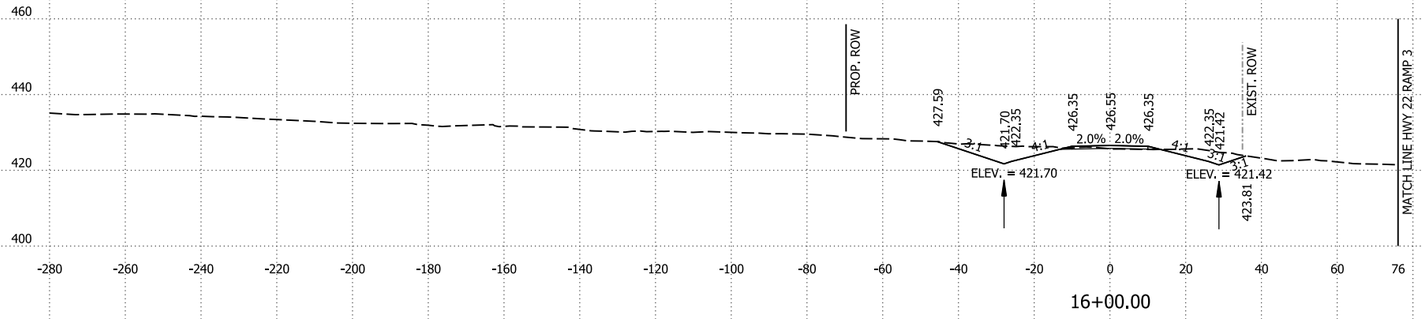
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	764	809
		CROSS SECTIONS				

STG. 1 AREA CUT 124 SF
STG. 1 AREA FILL 1 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

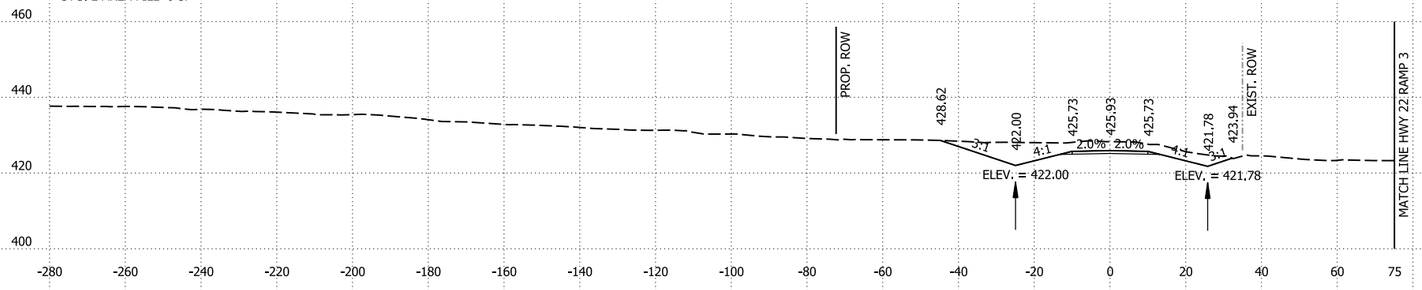
STG. 1 CUT VOLUME 667 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



16+00.00

STG. 1 AREA CUT 236 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

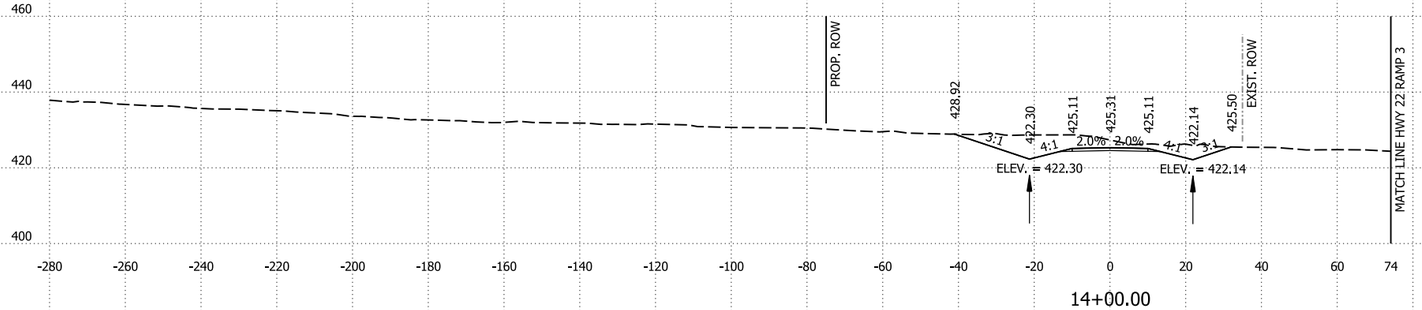
STG. 1 CUT VOLUME 861 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



15+00.00

STG. 1 AREA CUT 229 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 906 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



14+00.00

NW SERVICE RD STA. 14+00 TO STA. 16+00

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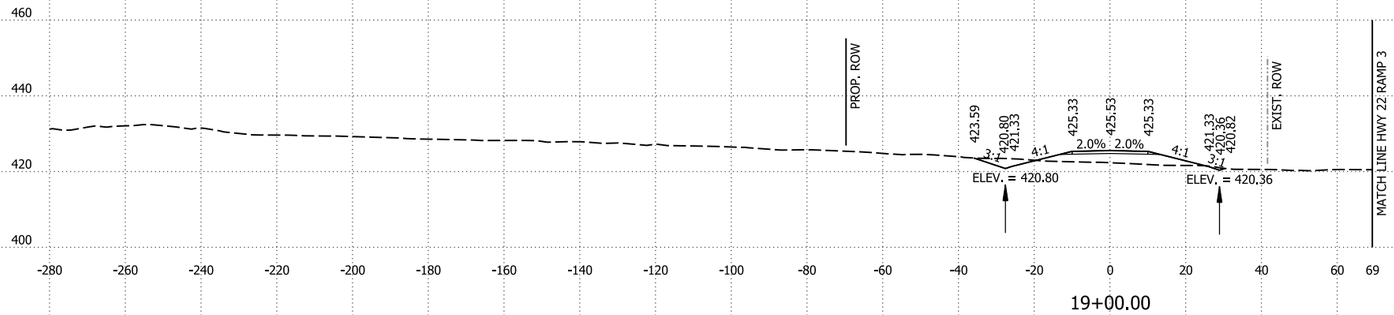
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	765	809
		CROSS SECTIONS				

STG. 1 AREA CUT 23 SF
STG. 1 AREA FILL 86 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

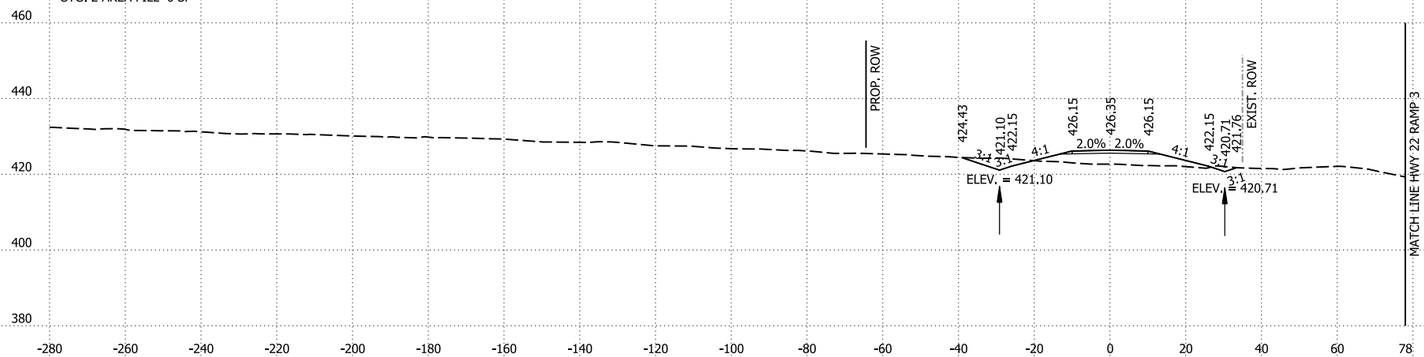
STG. 1 CUT VOLUME 106 CY
STG. 1 FILL VOLUME 352 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



19+00.00

STG. 1 AREA CUT 34 SF
STG. 1 AREA FILL 104 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

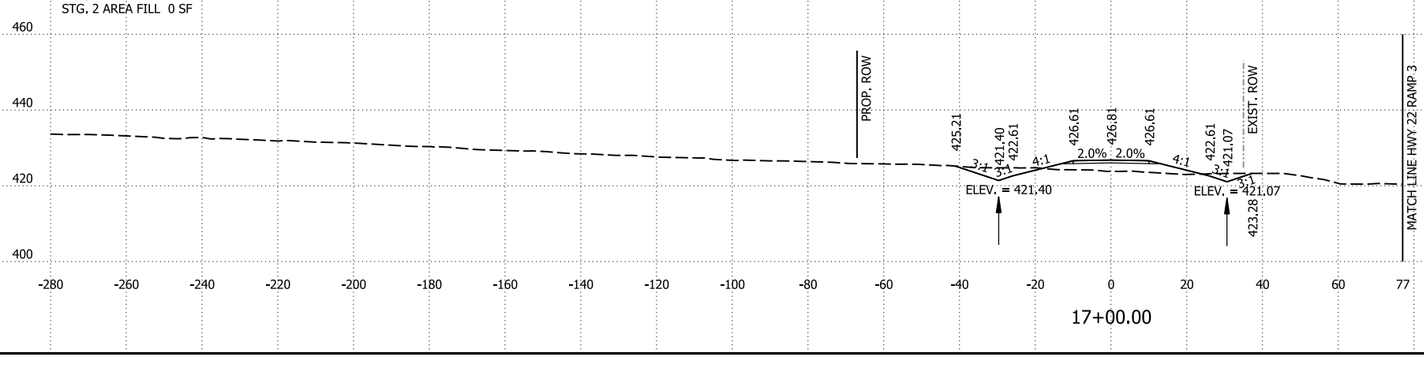
STG. 1 CUT VOLUME 158 CY
STG. 1 FILL VOLUME 326 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



18+00.00

STG. 1 AREA CUT 51 SF
STG. 1 AREA FILL 72 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 324 CY
STG. 1 FILL VOLUME 133 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



17+00.00

NW SERVICE RD STA. 17+00 TO STA. 19+00

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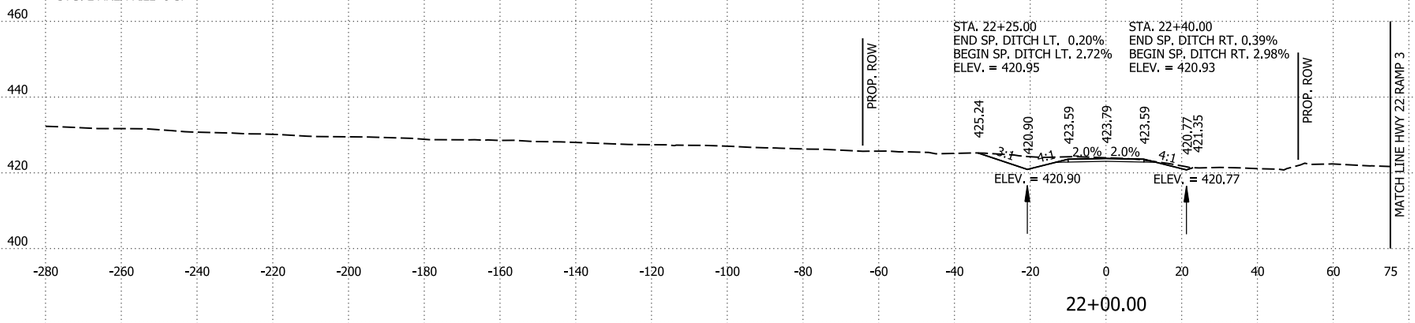
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	766	809
		CROSS SECTIONS				

STG. 1 AREA CUT 71 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

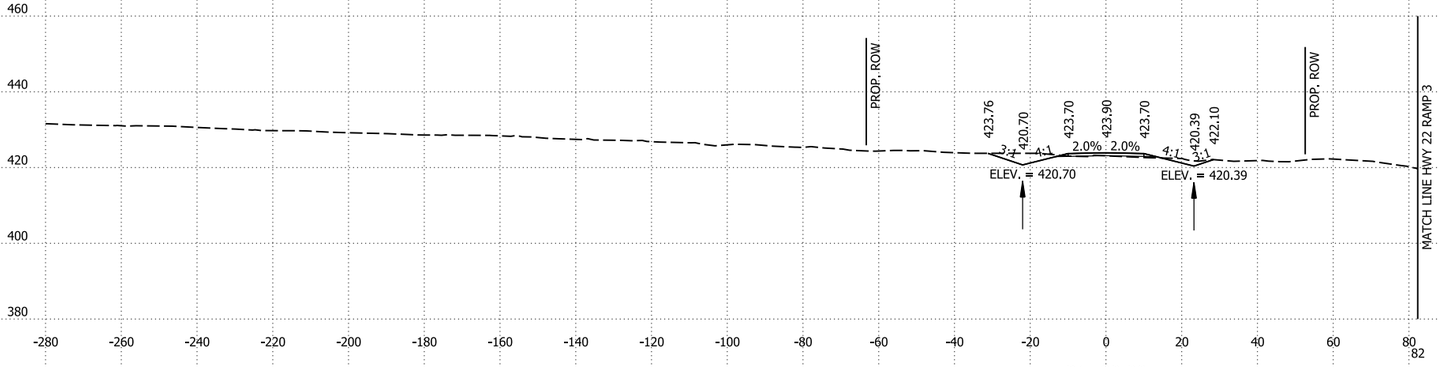
STG. 1 CUT VOLUME 209 CY
STG. 1 FILL VOLUME 6 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



22+00.00

STG. 1 AREA CUT 42 SF
STG. 1 AREA FILL 3 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 117 CY
STG. 1 FILL VOLUME 169 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



21+00.00

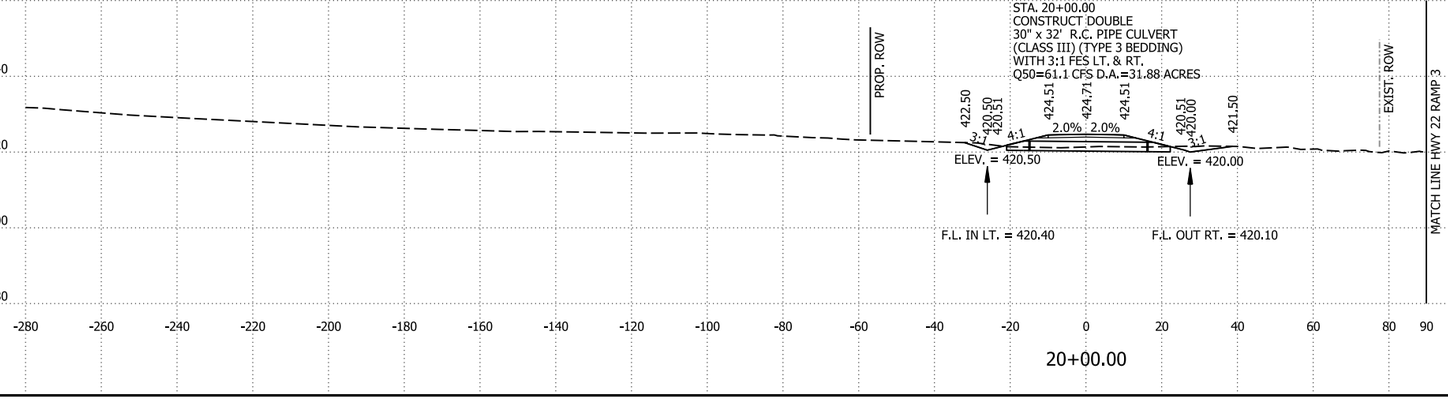
STG. 1 AREA CUT 21 SF
STG. 1 AREA FILL 88 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 82 CY
STG. 1 FILL VOLUME 322 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

STA. 20+00.00
END SP. DITCH LT. -0.30%
BEGIN SP. DITCH LT. 0.20%
ELEV. = 420.50

STA. 20+00.00
END SP. DITCH RT. -0.36%
BEGIN SP. DITCH RT. 0.39%
ELEV. = 420.00

STA. 20+00.00
CONSTRUCT DOUBLE
30" x 32' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH 3:1 FES LT. & RT.
Q50=61.1 CFS D.A.=31.88 ACRES



20+00.00

NW SERVICE RD STA. 20+00 TO STA. 22+00

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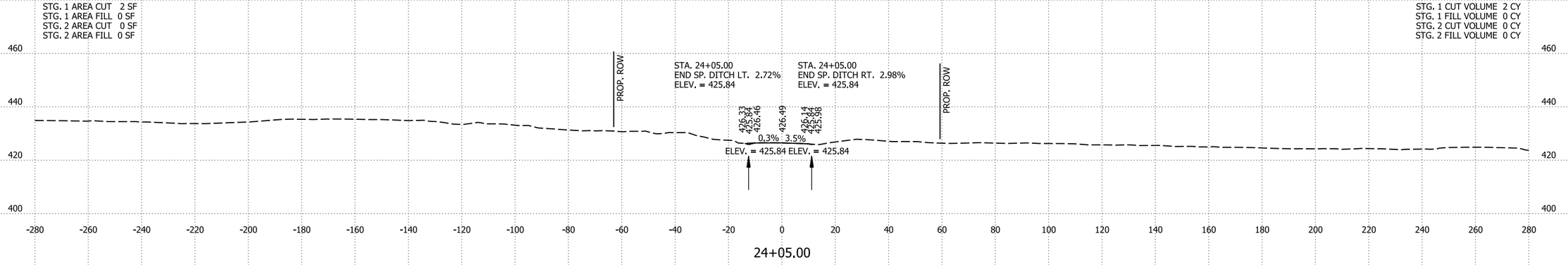
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	767	809
		CROSS SECTIONS				

STG. 1 AREA CUT 2 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

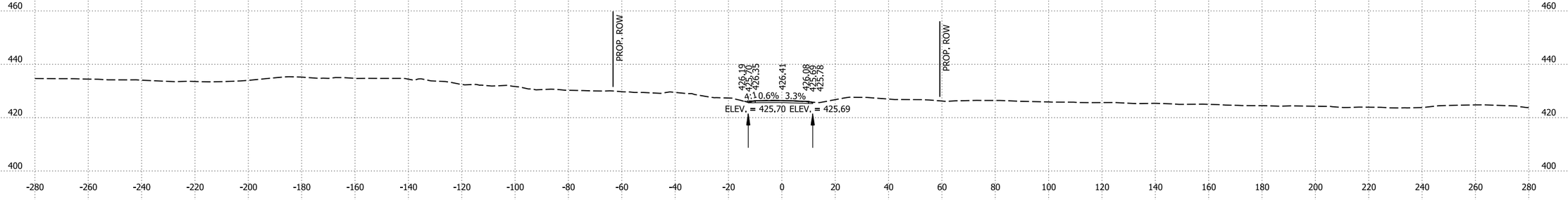
STG. 1 CUT VOLUME 2 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



24+05.00

STG. 1 AREA CUT 17 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

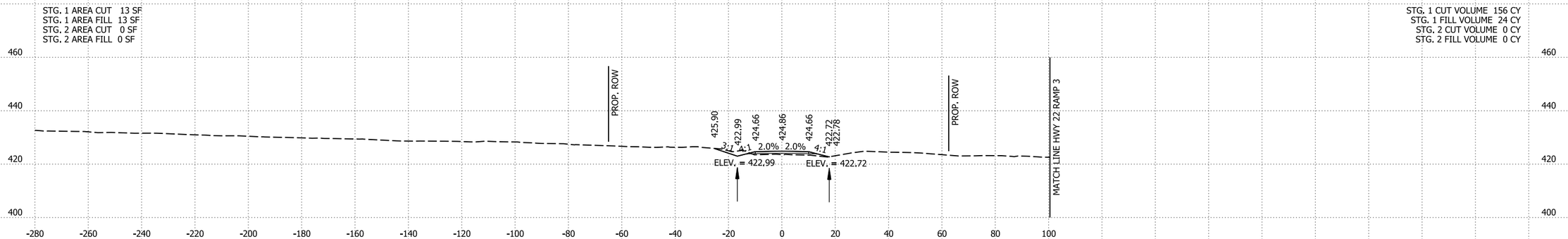
STG. 1 CUT VOLUME 56 CY
STG. 1 FILL VOLUME 24 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



24+00.00

STG. 1 AREA CUT 13 SF
STG. 1 AREA FILL 13 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 156 CY
STG. 1 FILL VOLUME 24 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



23+00.00

NW SERVICE RD STA. 23+00 TO STA. 24+05

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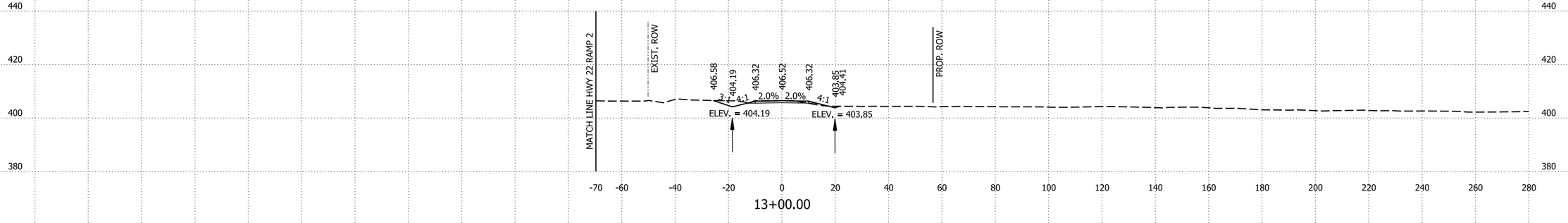
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	768	809
		CROSS SECTIONS				

STG. 1 AREA CUT 32 SF
STG. 1 AREA FILL 2 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

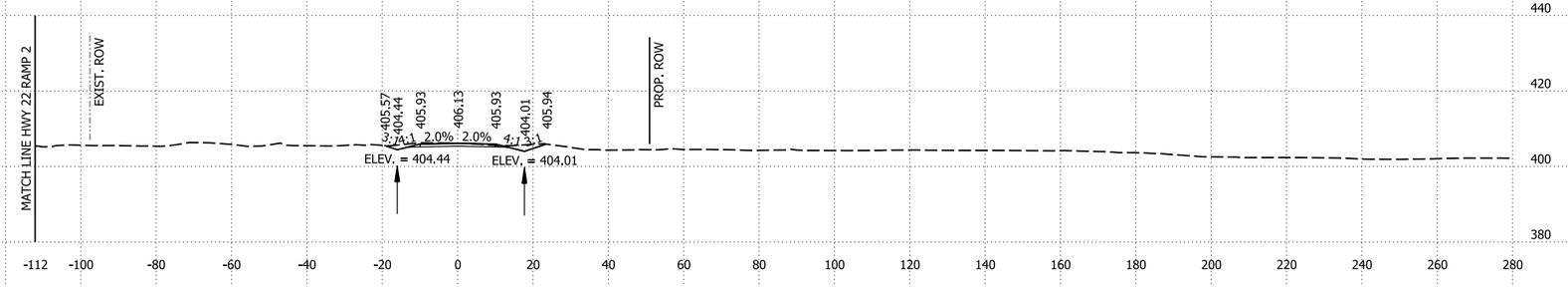
STG. 1 CUT VOLUME 124 CY
STG. 1 FILL VOLUME 4 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



13+00.00

STG. 1 AREA CUT 35 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 117 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



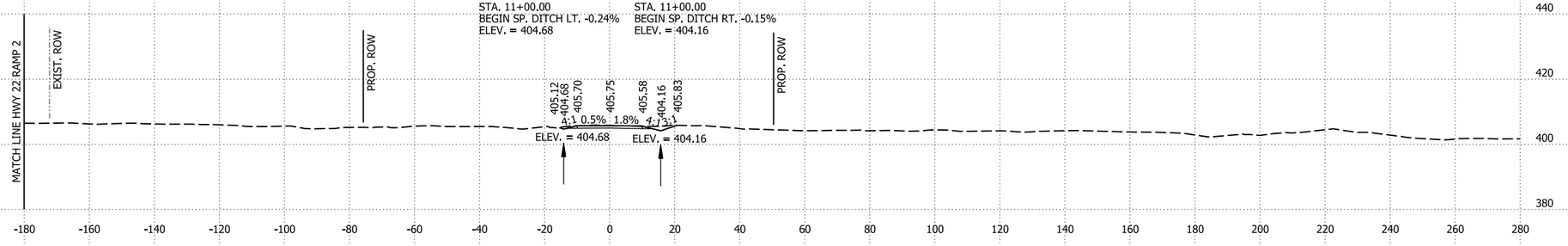
12+00.00

STG. 1 AREA CUT 28 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

STA. 11+00.00
BEGIN SP. DITCH LT. -0.24%
ELEV. = 404.68

STA. 11+00.00
BEGIN SP. DITCH RT. -0.15%
ELEV. = 404.16



11+00.00

SE SERVICE RD STA. 11+00 TO STA. 13+00

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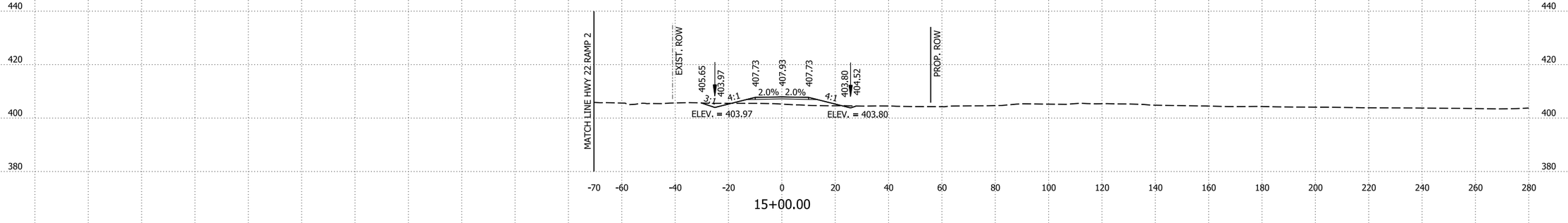
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	769	809
		CROSS SECTIONS				

STG. 1 AREA CUT 11 SF
STG. 1 AREA FILL 65 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 14 CY
STG. 1 FILL VOLUME 90 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



15+00.00

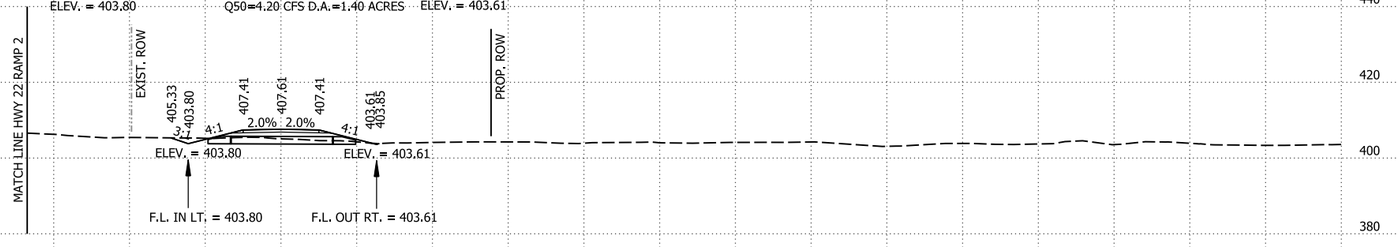
STG. 1 AREA CUT 8 SF
STG. 1 AREA FILL 57 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 27 CY
STG. 1 FILL VOLUME 96 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

STA. 14+60.00
END SP. DITCH LT. -0.24%
BEGIN SP. DITCH LT. 0.42%
ELEV. = 403.80

STA. 14+60.00 CONSTRUCT
24" x 28' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH 3:1 FES LT. & RT.
Q50=4.20 CFS D.A.=1.40 ACRES

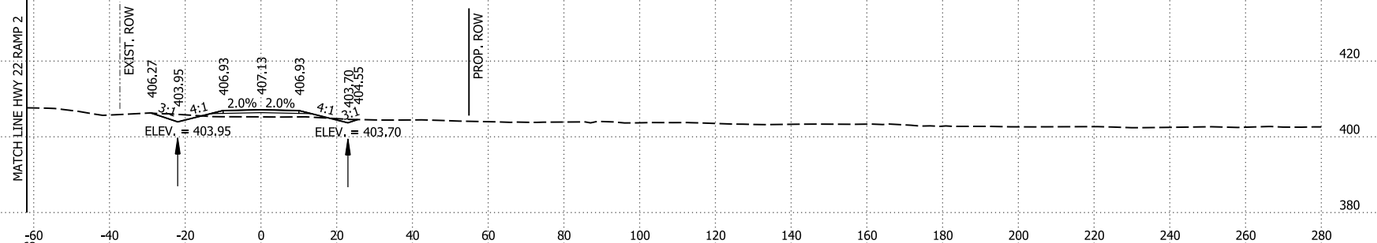
STA. 14+60.00
END SP. DITCH RT. -0.15%
BEGIN SP. DITCH RT. 0.49%
ELEV. = 403.61



14+60.00

STG. 1 AREA CUT 16 SF
STG. 1 AREA FILL 29 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 90 CY
STG. 1 FILL VOLUME 57 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



14+00.00

SE SERVICE RD STA. 14+00 TO STA. 15+00

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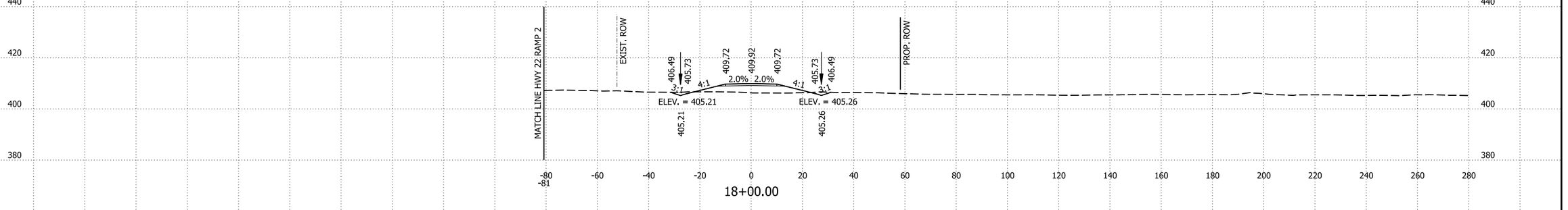
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	770	809
		CROSS SECTIONS				

STG. 1 AREA CUT 11 SF
STG. 1 AREA FILL 94 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

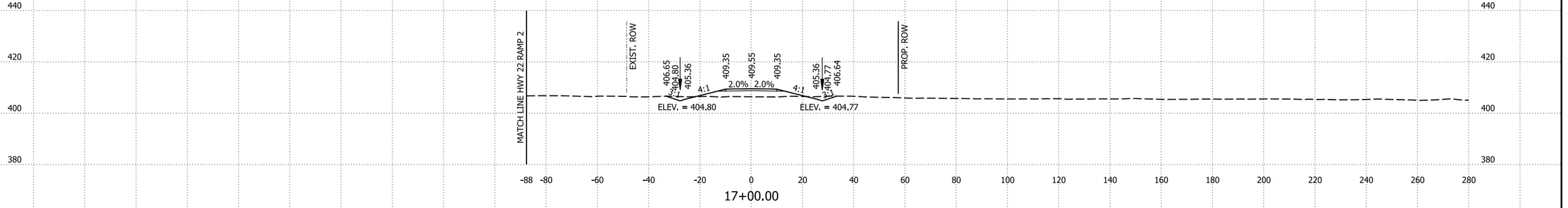
STG. 1 CUT VOLUME 56 CY
STG. 1 FILL VOLUME 317 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



18+00.00

STG. 1 AREA CUT 19 SF
STG. 1 AREA FILL 77 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

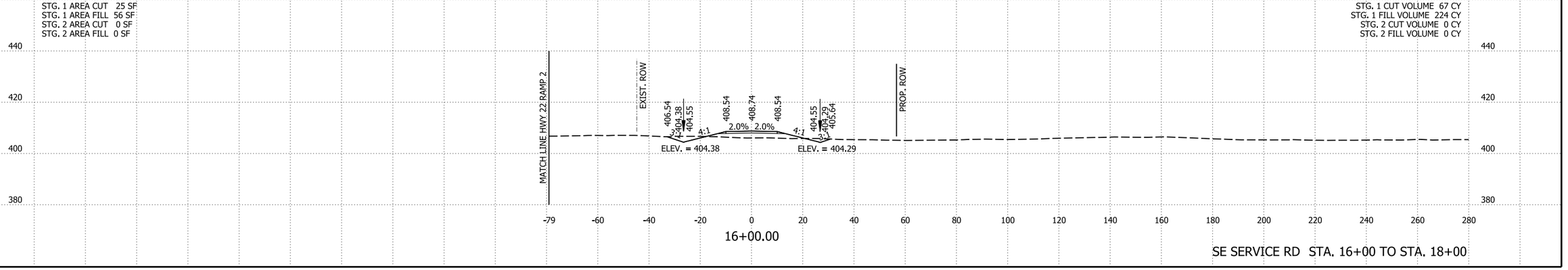
STG. 1 CUT VOLUME 82 CY
STG. 1 FILL VOLUME 246 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



17+00.00

STG. 1 AREA CUT 25 SF
STG. 1 AREA FILL 56 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 67 CY
STG. 1 FILL VOLUME 224 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



16+00.00

SE SERVICE RD STA. 16+00 TO STA. 18+00

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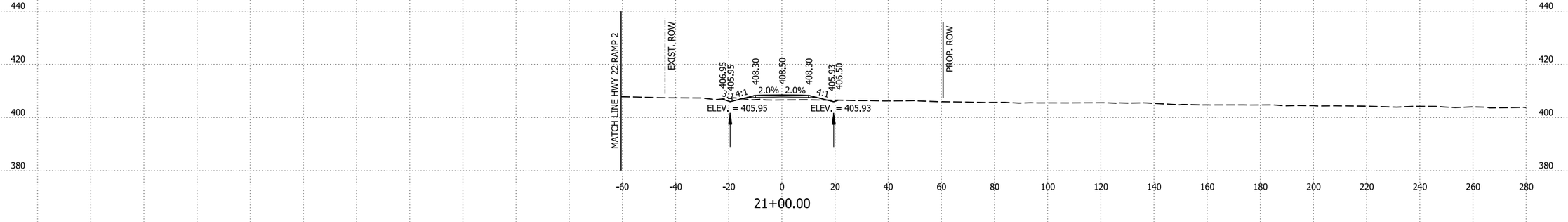
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	771	809
		CROSS SECTIONS				

STG. 1 AREA CUT 6 SF
STG. 1 AREA FILL 28 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 27 CY
STG. 1 FILL VOLUME 98 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



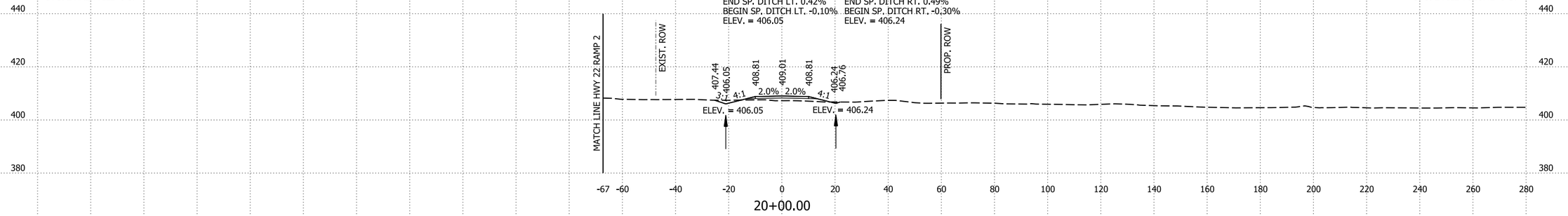
21+00.00

STG. 1 AREA CUT 8 SF
STG. 1 AREA FILL 25 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 43 CY
STG. 1 FILL VOLUME 146 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

STA. 20+00.00
END SP. DITCH LT. 0.42%
BEGIN SP. DITCH LT. -0.10%
ELEV. = 406.05

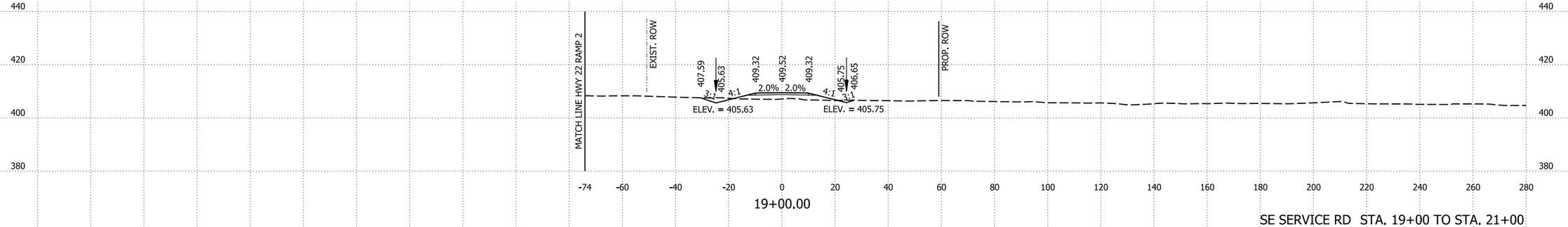
STA. 20+00.00
END SP. DITCH RT. 0.49%
BEGIN SP. DITCH RT. -0.30%
ELEV. = 406.24



20+00.00

STG. 1 AREA CUT 15 SF
STG. 1 AREA FILL 54 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 49 CY
STG. 1 FILL VOLUME 274 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



19+00.00

SE SERVICE RD STA. 19+00 TO STA. 21+00

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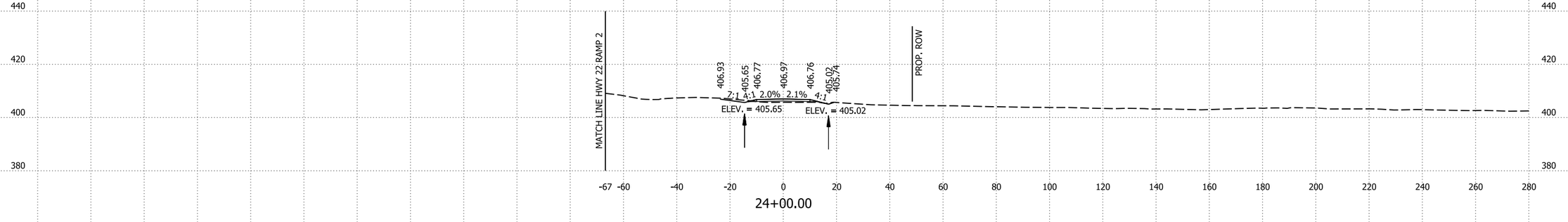
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	772	809
		CROSS SECTIONS				

STG. 1 AREA CUT 8 SF
STG. 1 AREA FILL 8 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

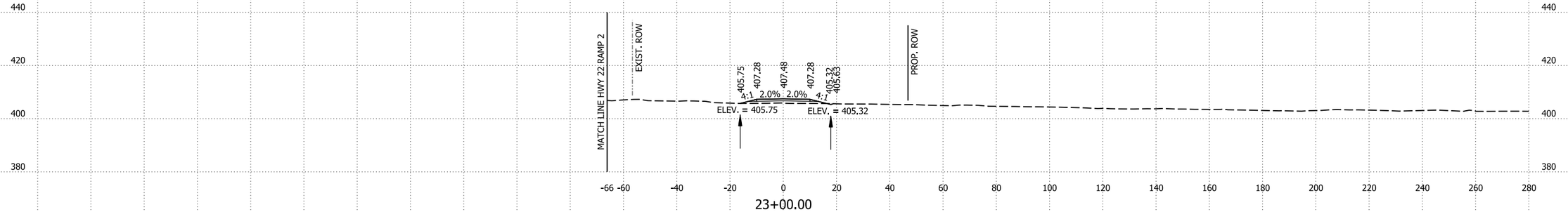
STG. 1 CUT VOLUME 16 CY
STG. 1 FILL VOLUME 59 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



24+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 24 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

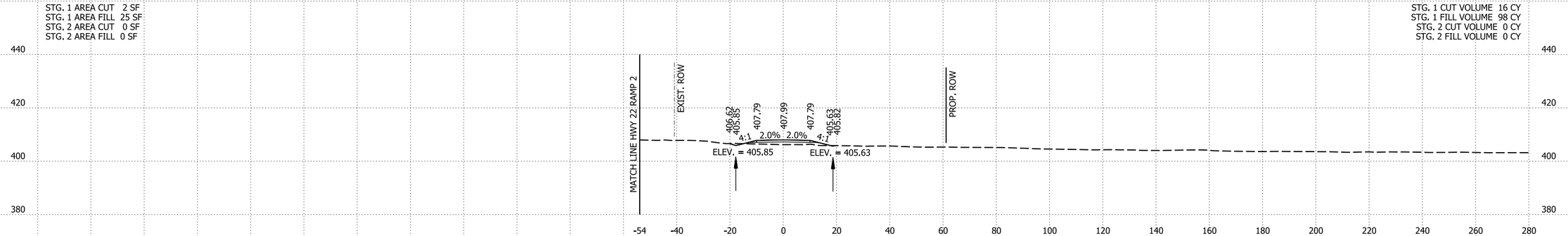
STG. 1 CUT VOLUME 5 CY
STG. 1 FILL VOLUME 91 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



23+00.00

STG. 1 AREA CUT 2 SF
STG. 1 AREA FILL 25 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 16 CY
STG. 1 FILL VOLUME 98 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



22+00.00

SE SERVICE RD STA. 22+00 TO STA. 24+00

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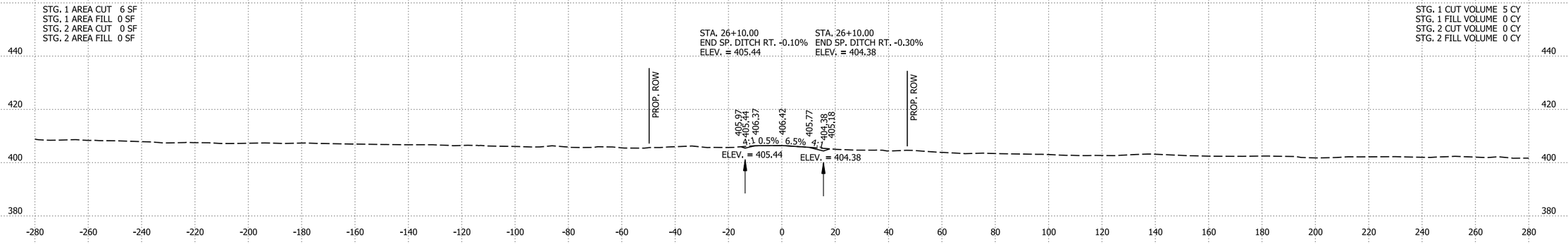
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040901	773	809
		CROSS SECTIONS				

STG. 1 AREA CUT 6 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 5 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

STA. 26+10.00
END SP. DITCH RT. -0.10%
ELEV. = 405.44

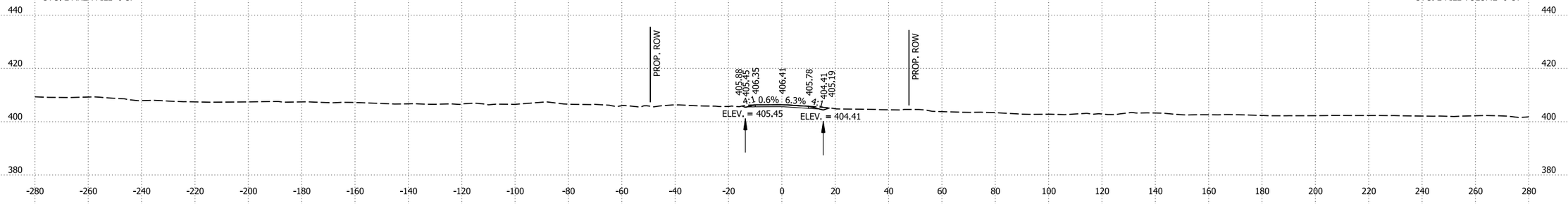
STA. 26+10.00
END SP. DITCH RT. -0.30%
ELEV. = 404.38



26+10.00

STG. 1 AREA CUT 23 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

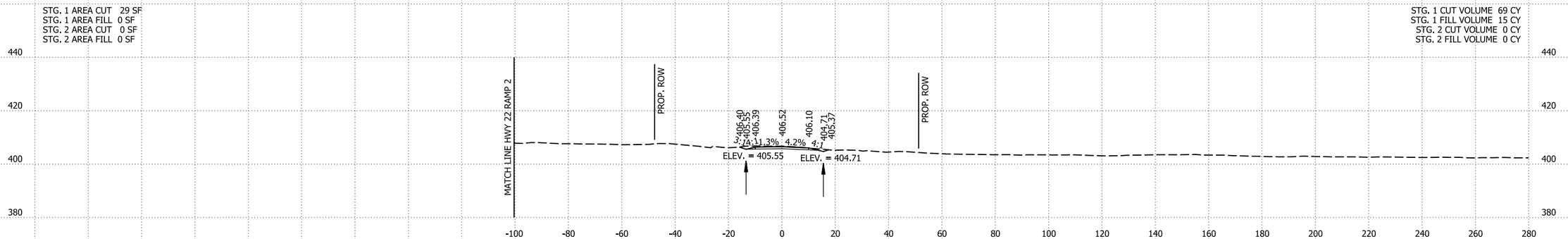
STG. 1 CUT VOLUME 96 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



26+00.00

STG. 1 AREA CUT 29 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 69 CY
STG. 1 FILL VOLUME 15 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



25+00.00

SE SERVICE RD STA. 25+00 TO STA. 26+10

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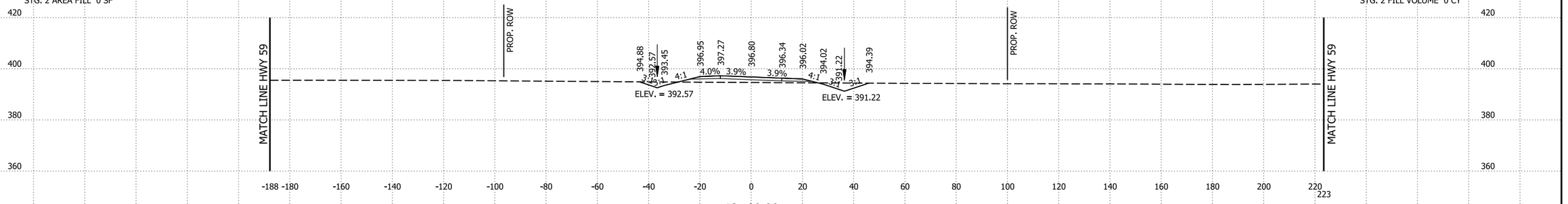
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	774	809
		CROSS SECTIONS				

STG. 1 AREA CUT 48 SF
STG. 1 AREA FILL 52 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 135 CY
STG. 1 FILL VOLUME 676 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



12+00.00

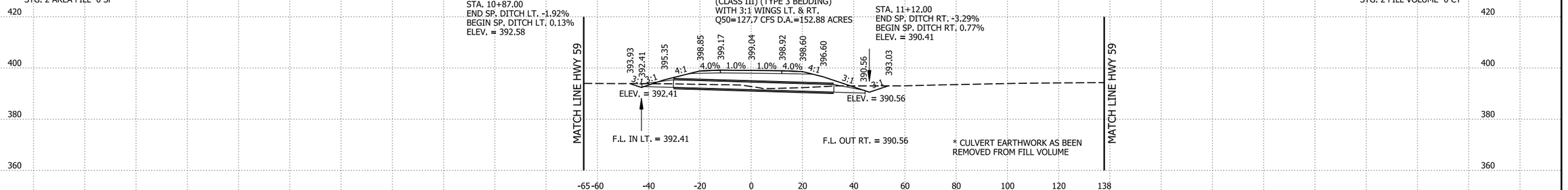
STG. 1 AREA CUT 25 SF
STG. 1 AREA FILL 313 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STA. 10+87.00
END SP. DITCH LT. -1.92%
BEGIN SP. DITCH LT. 0,13%
ELEV. = 392.58

STA. 11+00.00
CONSTRUCT DOUBLE
6' x 3' x 72' R.C. BOX CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH 3:1 WINGS LT. & RT.
Q50=127.7 CFS D.A.=152.88 ACRES

STA. 11+12.00
END SP. DITCH RT. -3.29%
BEGIN SP. DITCH RT. 0.77%
ELEV. = 390.41

STG. 1 CUT VOLUME 35 CY
STG. 1 FILL VOLUME 416 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



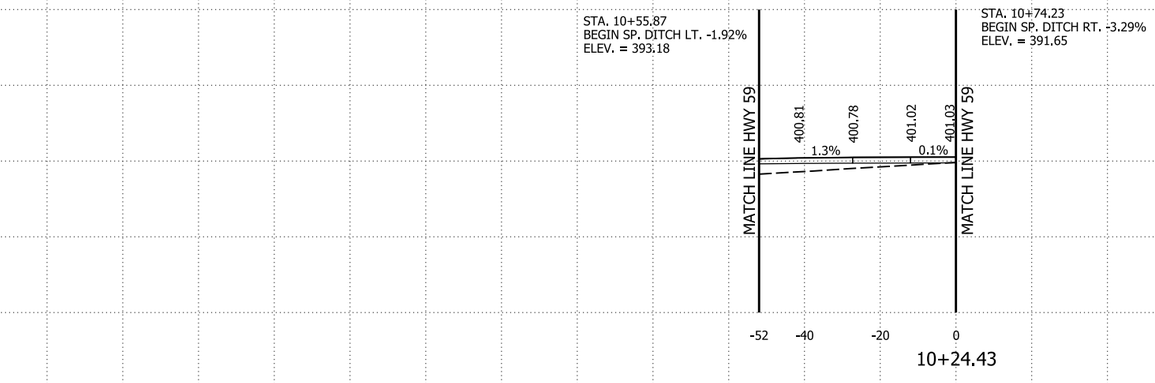
11+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 69 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STA. 10+55.87
BEGIN SP. DITCH LT. -1.92%
ELEV. = 393.18

STA. 10+74.23
BEGIN SP. DITCH RT. -3.29%
ELEV. = 391.65

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



10+24.43

GUN CLUB STA. 10+24 TO STA. 12+00

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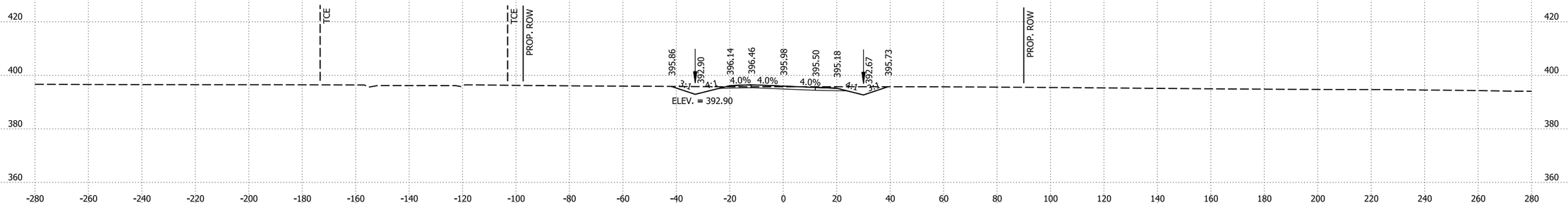
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	775	809
		CROSS SECTIONS				

STG. 1 AREA CUT 99 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 453 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

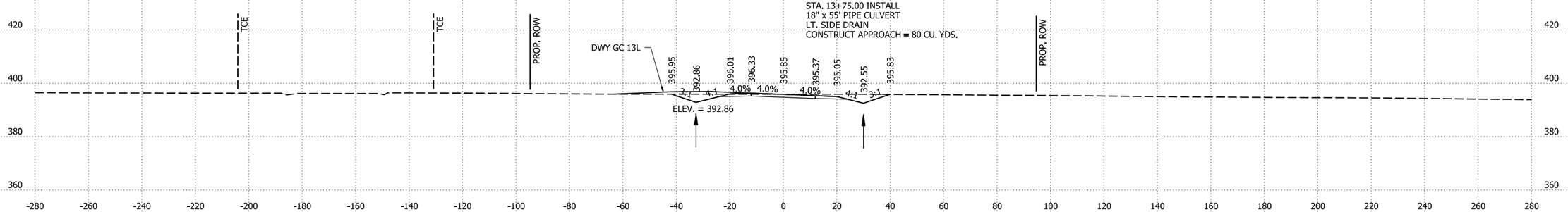


14+00.00

STG. 1 AREA CUT 122 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 370 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

STA. 13+75.00 INSTALL
18" x 55' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 80 CU. YDS.

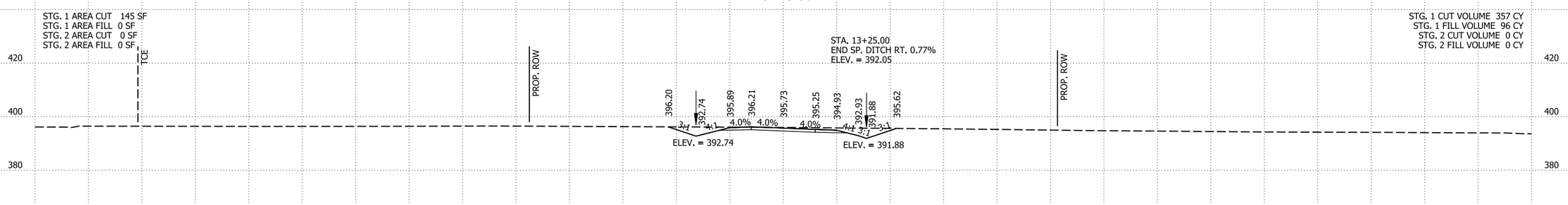


13+75.00

STG. 1 AREA CUT 145 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 357 CY
STG. 1 FILL VOLUME 96 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

STA. 13+25.00
END SP. DITCH RT. 0.77%
ELEV. = 392.05



13+00.00

GUN CLUB STA. 13+00 TO STA. 14+00

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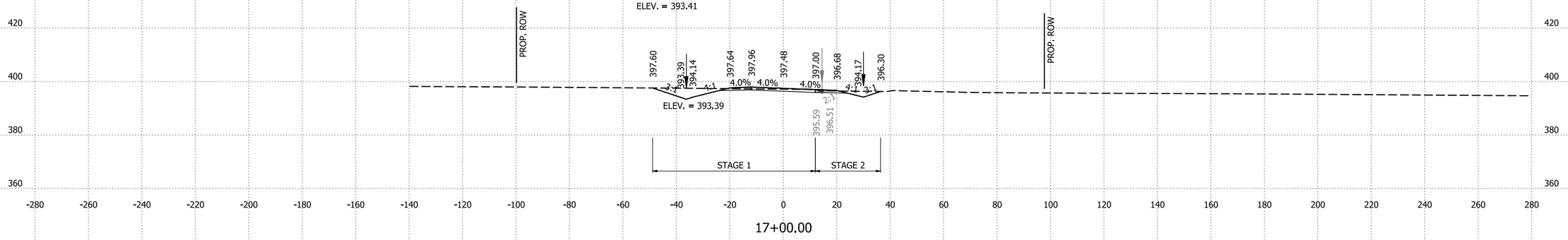
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	776	809
		CROSS SECTIONS				

STG. 1 AREA CUT 83 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 23 SF
STG. 2 AREA FILL 0 SF

STA. 17+15.00
END SP. DITCH LT. 0.13%
ELEV. = 393.41

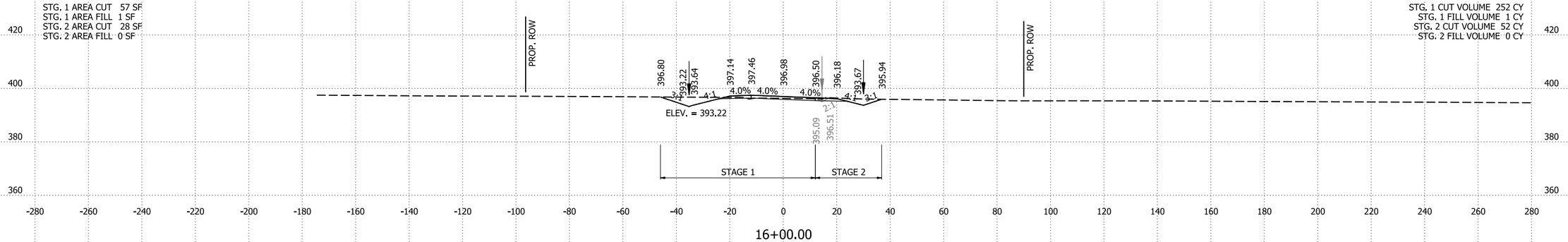
STG. 1 CUT VOLUME 259 CY
STG. 1 FILL VOLUME 1 CY
STG. 2 CUT VOLUME 94 CY
STG. 2 FILL VOLUME 0 CY



17+00.00

STG. 1 AREA CUT 57 SF
STG. 1 AREA FILL 1 SF
STG. 2 AREA CUT 28 SF
STG. 2 AREA FILL 0 SF

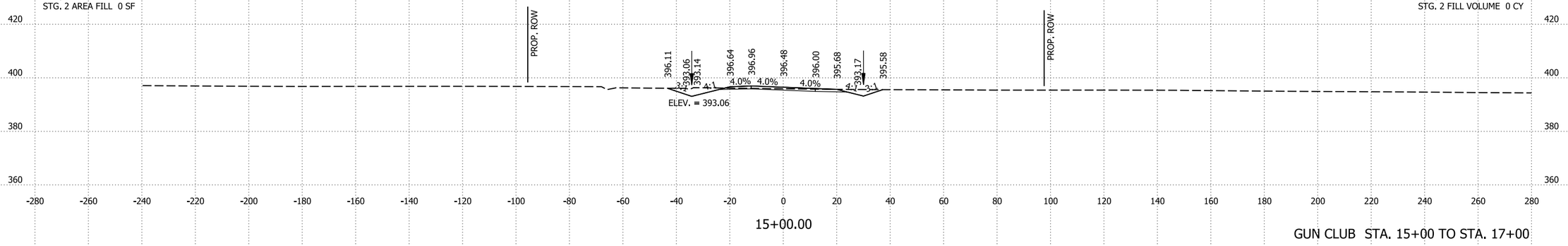
STG. 1 CUT VOLUME 252 CY
STG. 1 FILL VOLUME 1 CY
STG. 2 CUT VOLUME 52 CY
STG. 2 FILL VOLUME 0 CY



16+00.00

STG. 1 AREA CUT 79 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 331 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



15+00.00

GUN CLUB STA. 15+00 TO STA. 17+00

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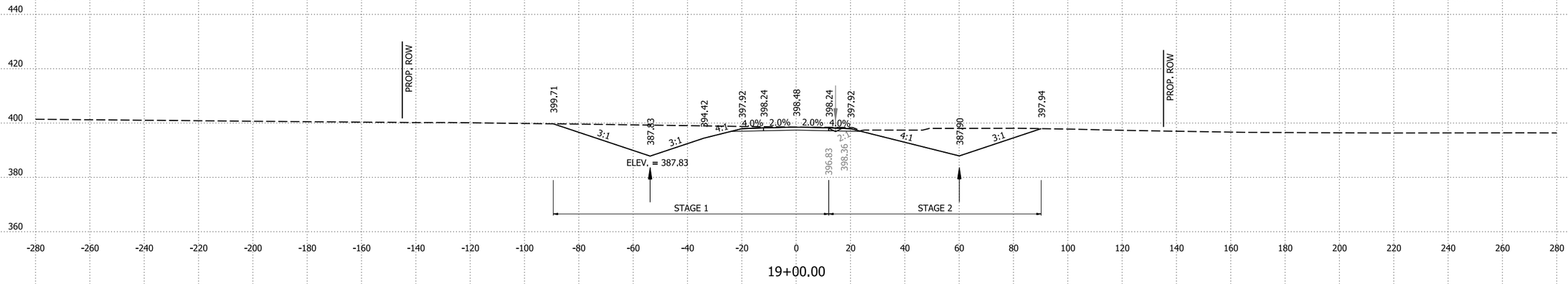
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	777	809
		CROSS SECTIONS				

STG. 1 AREA CUT 450 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 351 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 1057 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 694 CY
STG. 2 FILL VOLUME 0 CY



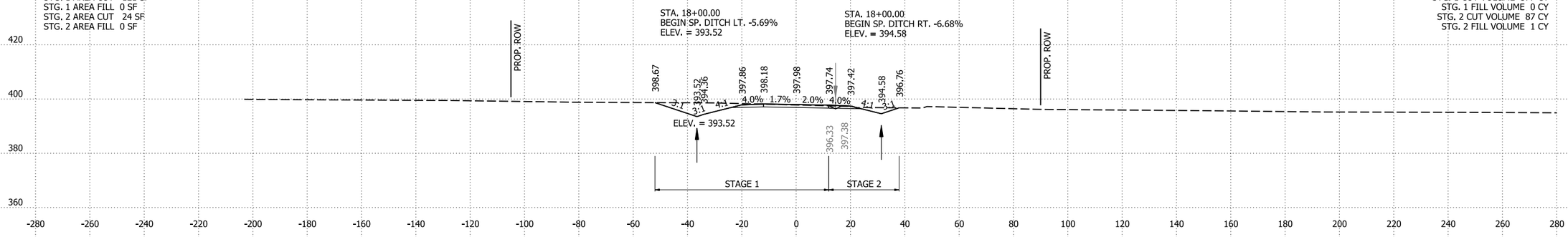
19+00.00

STG. 1 AREA CUT 121 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 24 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 377 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 87 CY
STG. 2 FILL VOLUME 1 CY

STA. 18+00.00
BEGIN SP. DITCH LT. -5.69%
ELEV. = 393.52

STA. 18+00.00
BEGIN SP. DITCH RT. -6.68%
ELEV. = 394.58

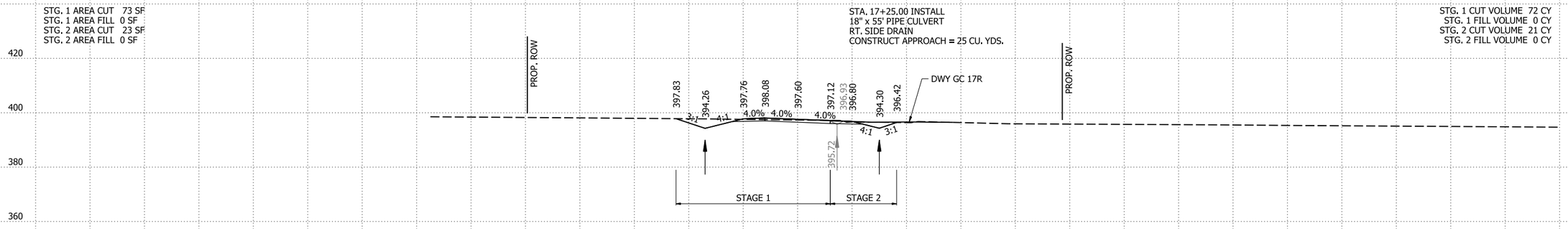


18+00.00

STG. 1 AREA CUT 73 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 23 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 72 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 21 CY
STG. 2 FILL VOLUME 0 CY

STA. 17+25.00 INSTALL
18" x 55' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 25 CU. YDS.



17+25.00

GUN CLUB STA. 17+25 TO STA. 19+00

5/15/2024 5:59:51 PM
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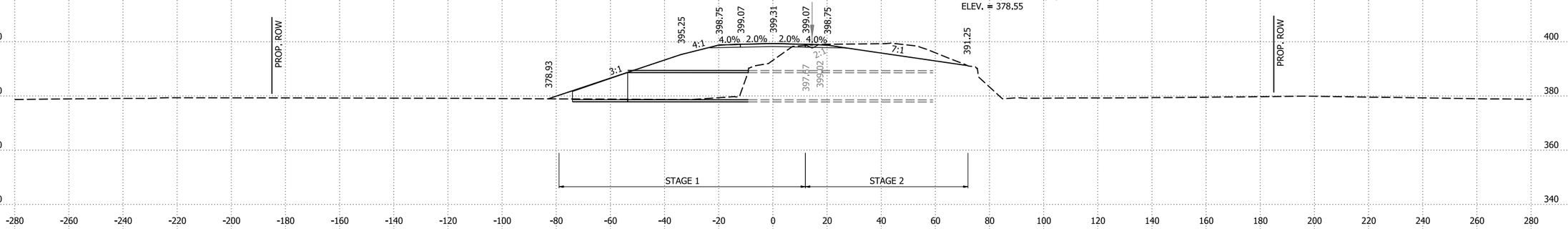
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	778	809
		CROSS SECTIONS				

STG. 1 AREA CUT 6 SF
STG. 1 AREA FILL 921 SF
STG. 2 AREA CUT 146 SF
STG. 2 AREA FILL 0 SF

STA. 20+95.00
END SP. DITCH LT. 0.00%
BEGIN SP. DITCH LT. 6.81%
ELEV. = 379.87

STA. 20+95.00
END SP. DITCH RT. 0.00%
BEGIN SP. DITCH RT. 6.35%
ELEV. = 378.55

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 64 CY
STG. 2 CUT VOLUME 10 CY
STG. 2 FILL VOLUME 0 CY

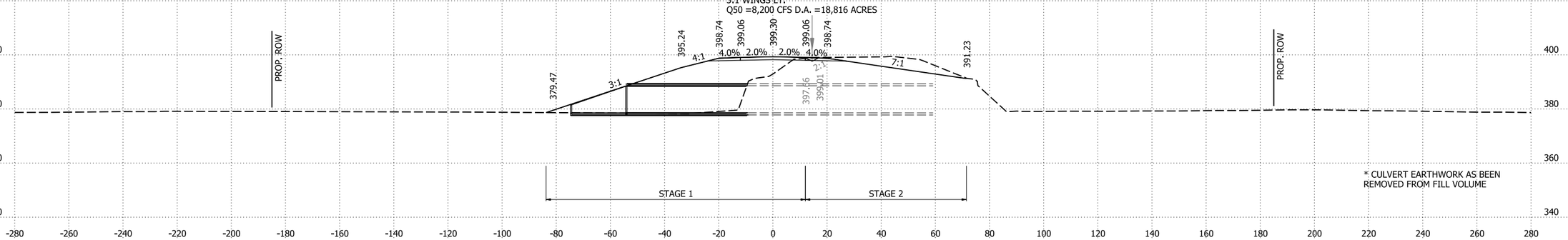


20+67.32

STG. 1 AREA CUT 6 SF
STG. 1 AREA FILL 937 SF
STG. 2 AREA CUT 147 SF
STG. 2 AREA FILL 0 SF

STA. 20+65.46 IN PLACE
TRIPLE 8' x 10' x 92' R.C. BOX CULVERT
WITH 3:1 WINGS LT. & RT.
REMOVE LT. WING.
RETAIN & EXTEND 43' LT.
3:1 WINGS LT.
Q50 =8,200 CFS D.A. =18,816 ACRES

STG. 1 CUT VOLUME 1231 CY
STG. 1 FILL VOLUME 757 CY
STG. 2 CUT VOLUME 1243 CY
STG. 2 FILL VOLUME 6 CY



* CULVERT EARTHWORK AS BEEN REMOVED FROM FILL VOLUME

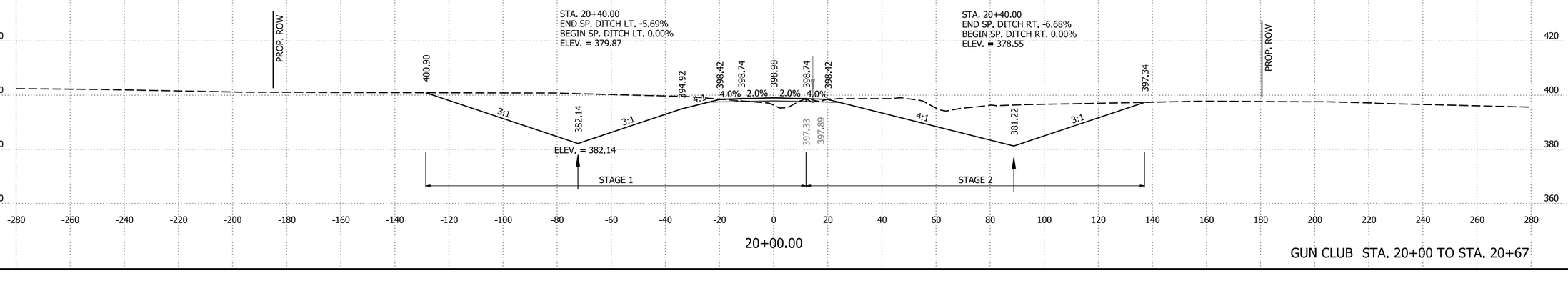
20+65.46

STG. 1 AREA CUT 1009 SF
STG. 1 AREA FILL 22 SF
STG. 2 AREA CUT 878 SF
STG. 2 AREA FILL 5 SF

STA. 20+40.00
END SP. DITCH LT. -5.69%
BEGIN SP. DITCH LT. 0.00%
ELEV. = 379.87

STA. 20+40.00
END SP. DITCH RT. -6.68%
BEGIN SP. DITCH RT. 0.00%
ELEV. = 378.55

STG. 1 CUT VOLUME 2702 CY
STG. 1 FILL VOLUME 41 CY
STG. 2 CUT VOLUME 2276 CY
STG. 2 FILL VOLUME 9 CY



20+00.00

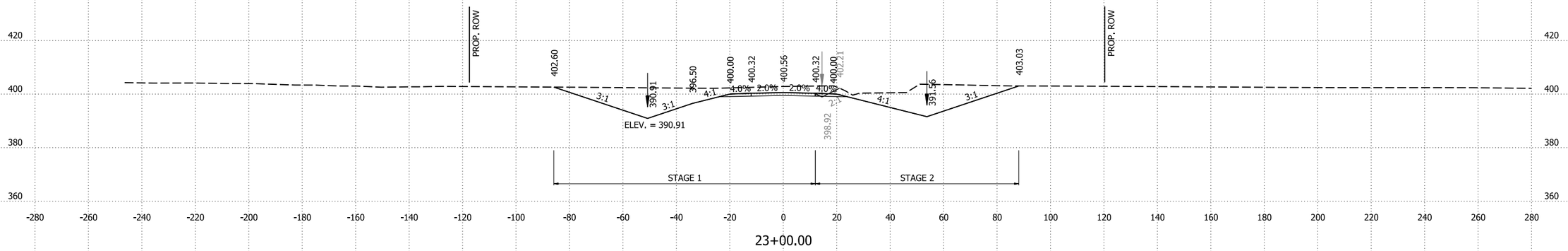
GUN CLUB STA. 20+00 TO STA. 20+67

5/16/2024 7:35:44 PM
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	779	809
		CROSS SECTIONS				

STG. 1 AREA CUT 535 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 394 SF
STG. 2 AREA FILL 0 SF

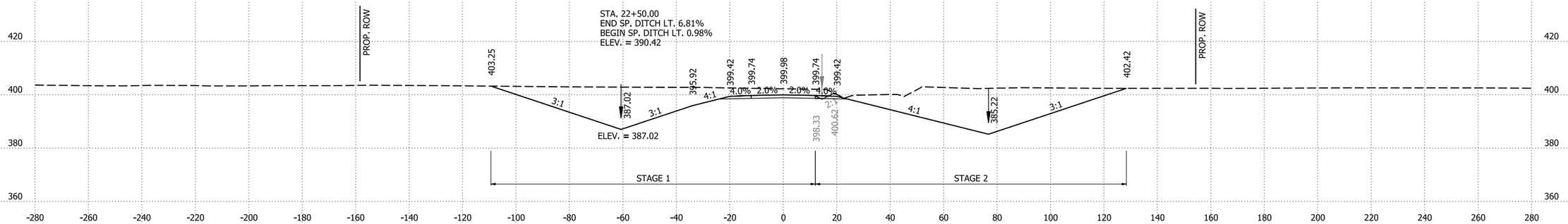
STG. 1 CUT VOLUME 2643 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 2511 CY
STG. 2 FILL VOLUME 1 CY



23+00.00

STG. 1 AREA CUT 892 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 962 SF
STG. 2 AREA FILL 0 SF

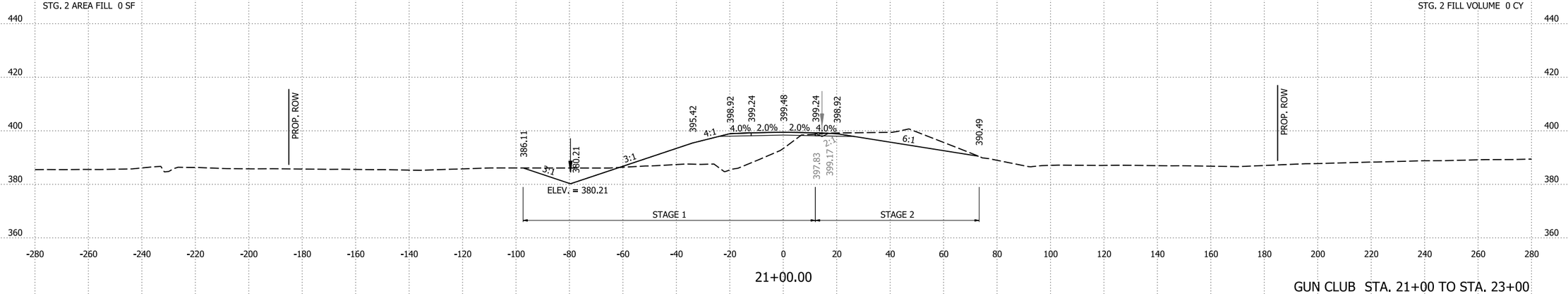
STG. 1 CUT VOLUME 1854 CY
STG. 1 FILL VOLUME 835 CY
STG. 2 CUT VOLUME 2081 CY
STG. 2 FILL VOLUME 1 CY



22+00.00

STG. 1 AREA CUT 109 SF
STG. 1 AREA FILL 451 SF
STG. 2 AREA CUT 162 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 69 CY
STG. 1 FILL VOLUME 830 CY
STG. 2 CUT VOLUME 186 CY
STG. 2 FILL VOLUME 0 CY



21+00.00

GUN CLUB STA. 21+00 TO STA. 23+00

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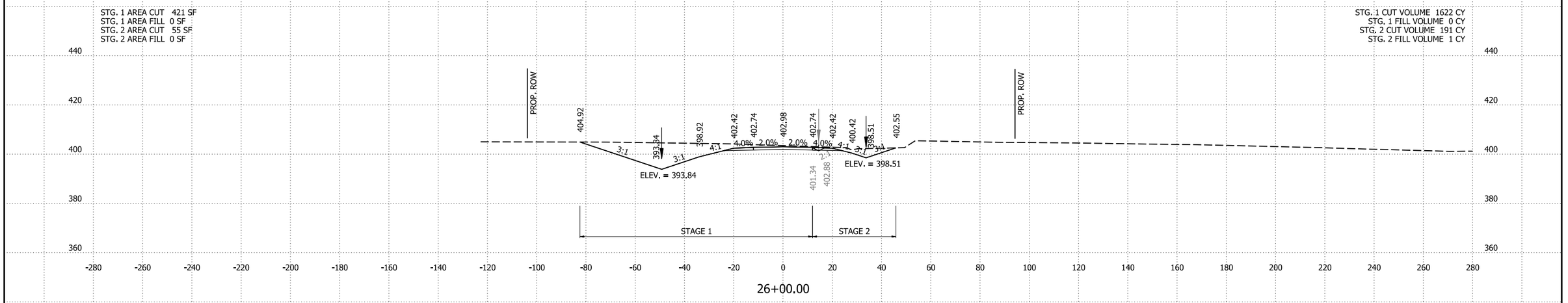
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	780	809
		CROSS SECTIONS				

STG. 1 AREA CUT 421 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 55 SF
STG. 2 AREA FILL 0 SF

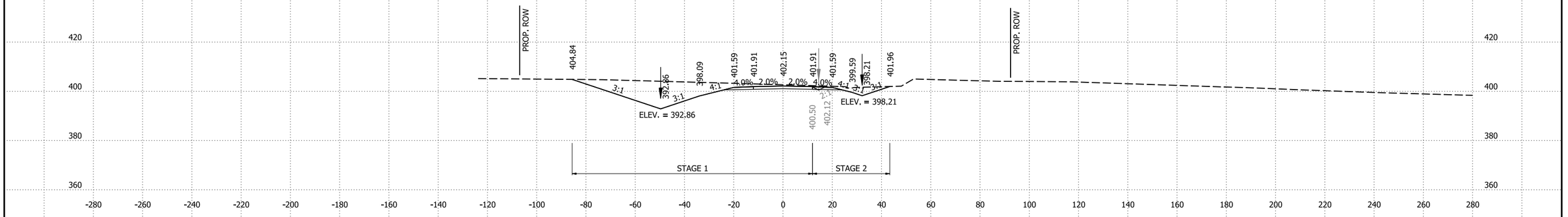
STG. 1 CUT VOLUME 1622 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 191 CY
STG. 2 FILL VOLUME 1 CY



26+00.00

STG. 1 AREA CUT 455 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 48 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 1733 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 172 CY
STG. 2 FILL VOLUME 1 CY



25+00.00

STG. 1 AREA CUT 481 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 45 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 1881 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 813 CY
STG. 2 FILL VOLUME 1 CY

STA. 24+00.00
END SP. DITCH RT. 6.35%
BEGIN SP. DITCH RT. 0.30%
ELEV. = 397.91

24+00.00

GUN CLUB STA. 24+00 TO STA. 26+00

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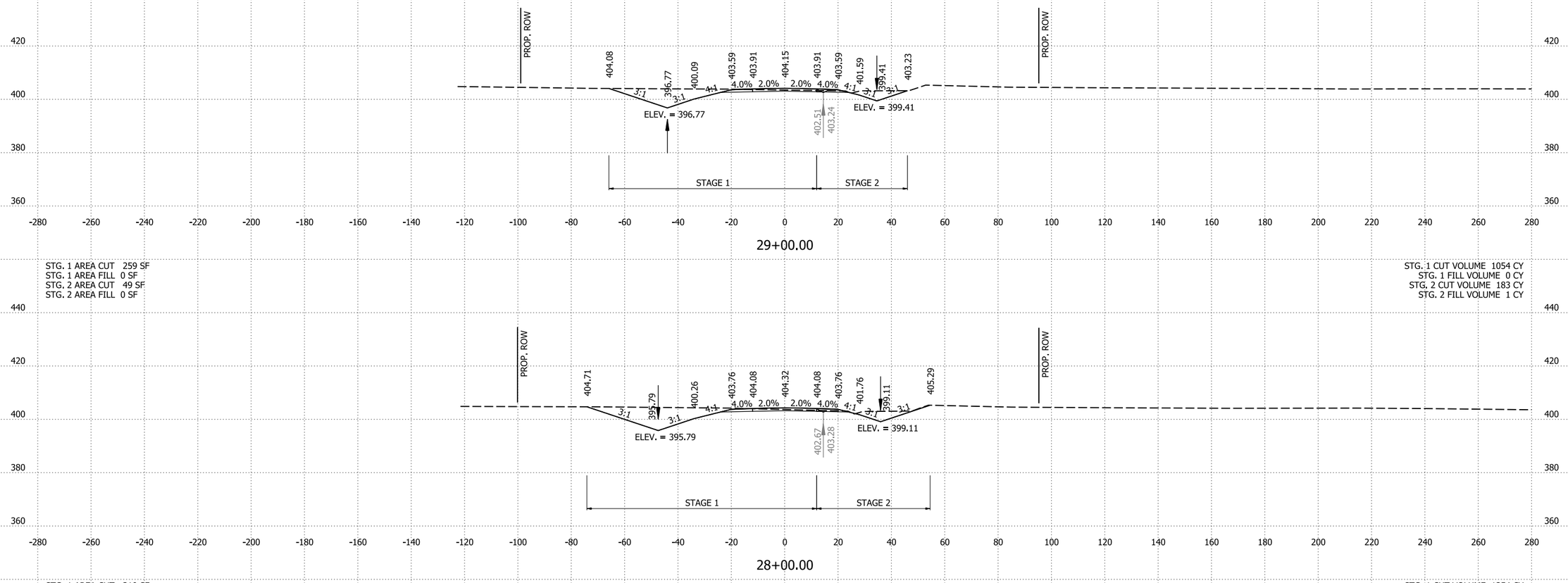
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	781	809
		CROSS SECTIONS				

STG. 1 AREA CUT 185 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 47 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 822 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 178 CY
STG. 2 FILL VOLUME 1 CY



29+00.00

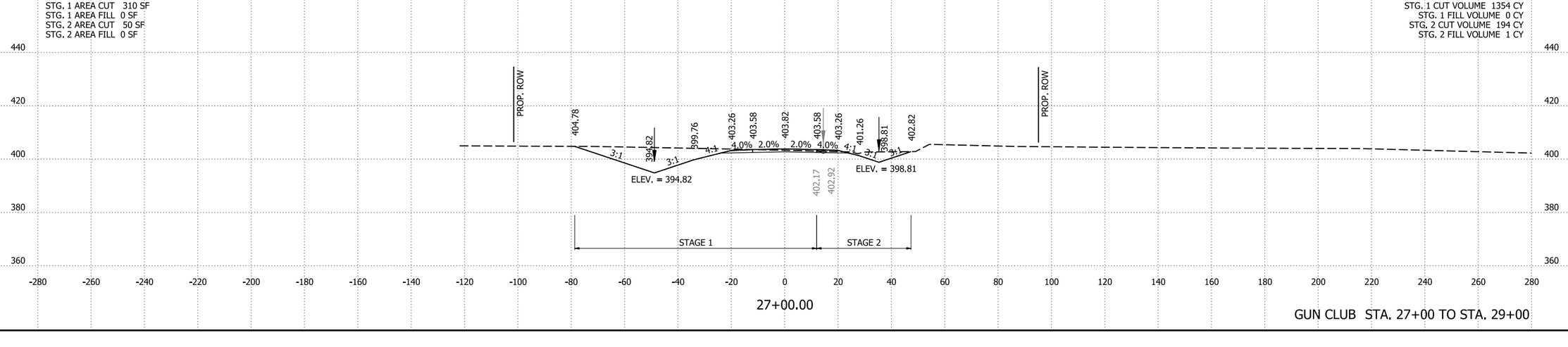
STG. 1 AREA CUT 259 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 49 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 1054 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 183 CY
STG. 2 FILL VOLUME 1 CY

28+00.00

STG. 1 AREA CUT 310 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 50 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 1354 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 194 CY
STG. 2 FILL VOLUME 1 CY



27+00.00

GUN CLUB STA. 27+00 TO STA. 29+00

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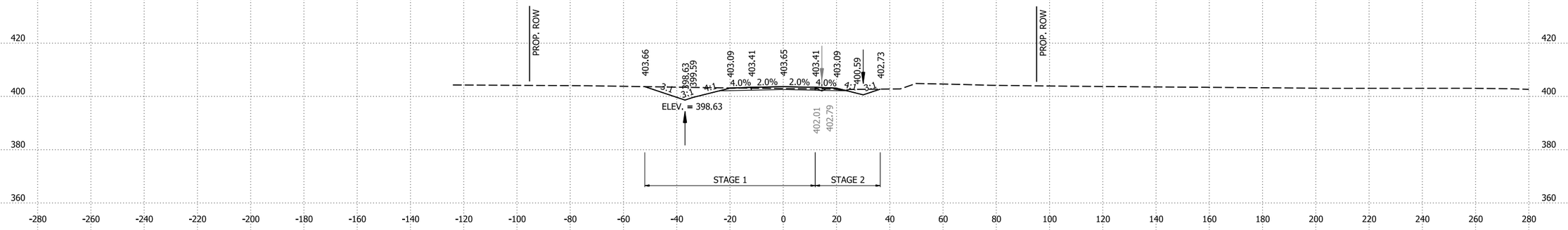
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	782	809
		CROSS SECTIONS				

STG. 1 AREA CUT 99 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 19 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 456 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 104 CY
STG. 2 FILL VOLUME 1 CY



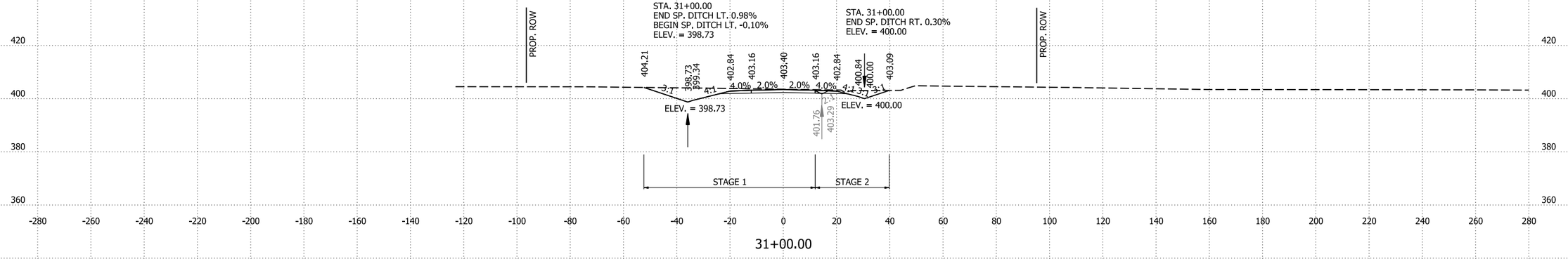
32+00.00

STG. 1 AREA CUT 147 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 37 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 606 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 150 CY
STG. 2 FILL VOLUME 1 CY

STA. 31+00.00
END SP. DITCH LT. 0.98%
BEGIN SP. DITCH LT. -0.10%
ELEV. = 398.73

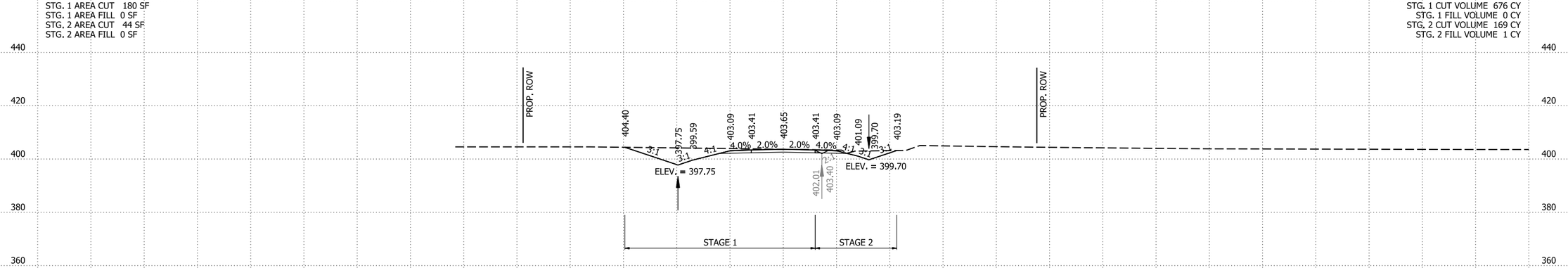
STA. 31+00.00
END SP. DITCH RT. 0.30%
ELEV. = 400.00



31+00.00

STG. 1 AREA CUT 180 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 44 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 676 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 169 CY
STG. 2 FILL VOLUME 1 CY



30+00.00

GUN CLUB STA. 30+00 TO STA. 32+00

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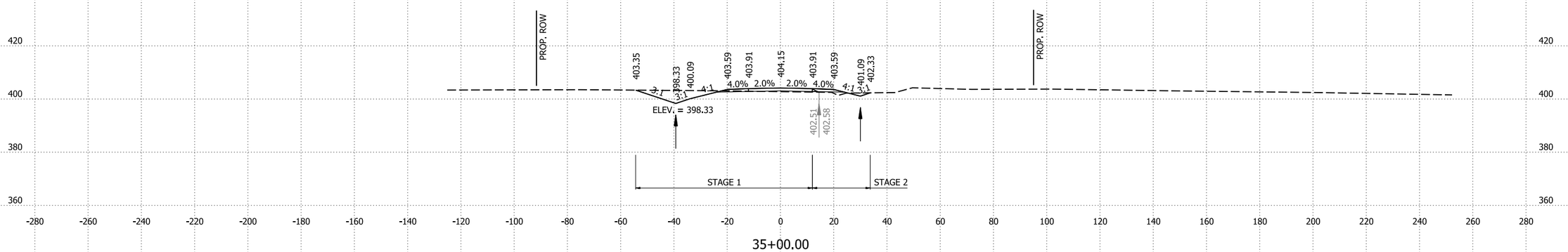
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	783	809
		CROSS SECTIONS				

STG. 1 AREA CUT 80 SF
STG. 1 AREA FILL 5 SF
STG. 2 AREA CUT 6 SF
STG. 2 AREA FILL 5 SF

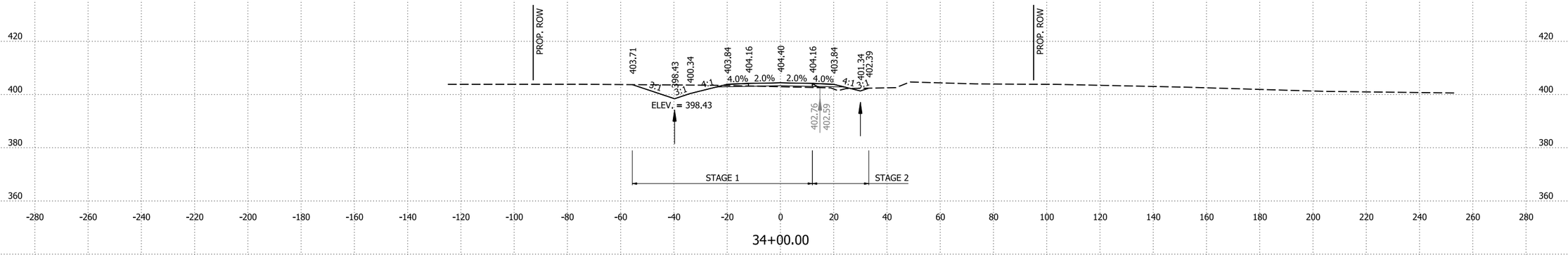
STG. 1 CUT VOLUME 314 CY
STG. 1 FILL VOLUME 23 CY
STG. 2 CUT VOLUME 19 CY
STG. 2 FILL VOLUME 24 CY



35+00.00

STG. 1 AREA CUT 89 SF
STG. 1 AREA FILL 8 SF
STG. 2 AREA CUT 4 SF
STG. 2 AREA FILL 8 SF

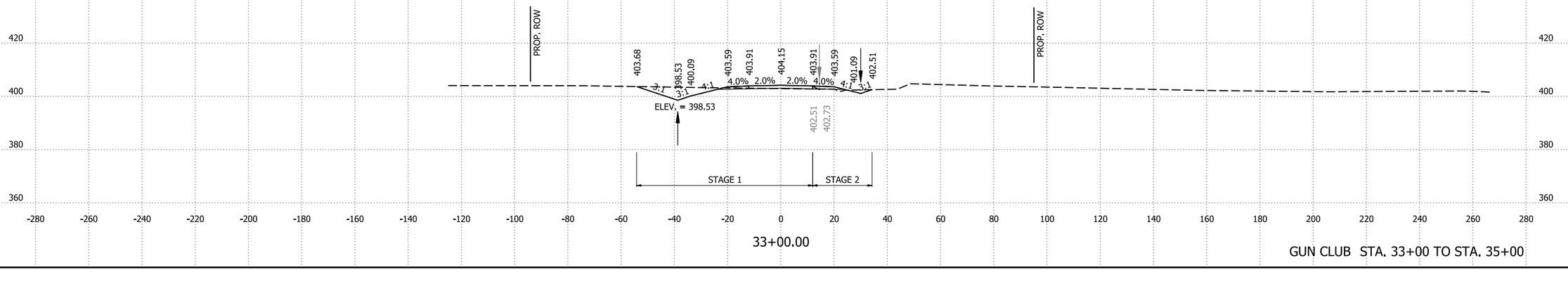
STG. 1 CUT VOLUME 318 CY
STG. 1 FILL VOLUME 18 CY
STG. 2 CUT VOLUME 20 CY
STG. 2 FILL VOLUME 19 CY



34+00.00

STG. 1 AREA CUT 82 SF
STG. 1 AREA FILL 2 SF
STG. 2 AREA CUT 7 SF
STG. 2 AREA FILL 1 SF

STG. 1 CUT VOLUME 336 CY
STG. 1 FILL VOLUME 3 CY
STG. 2 CUT VOLUME 48 CY
STG. 2 FILL VOLUME 2 CY



33+00.00

GUN CLUB STA. 33+00 TO STA. 35+00

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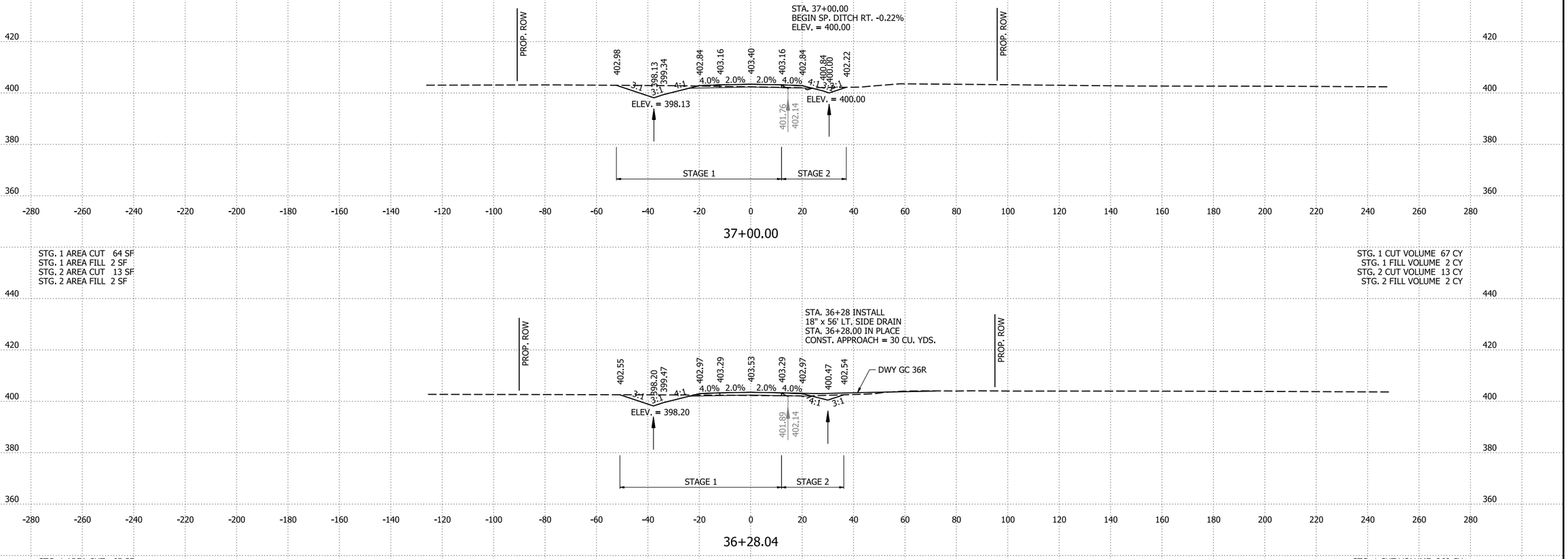
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	784	809
		CROSS SECTIONS				

STG. 1 AREA CUT 86 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 16 SF
STG. 2 AREA FILL 1 SF

STG. 1 CUT VOLUME 200 CY
STG. 1 FILL VOLUME 3 CY
STG. 2 CUT VOLUME 39 CY
STG. 2 FILL VOLUME 4 CY



37+00.00

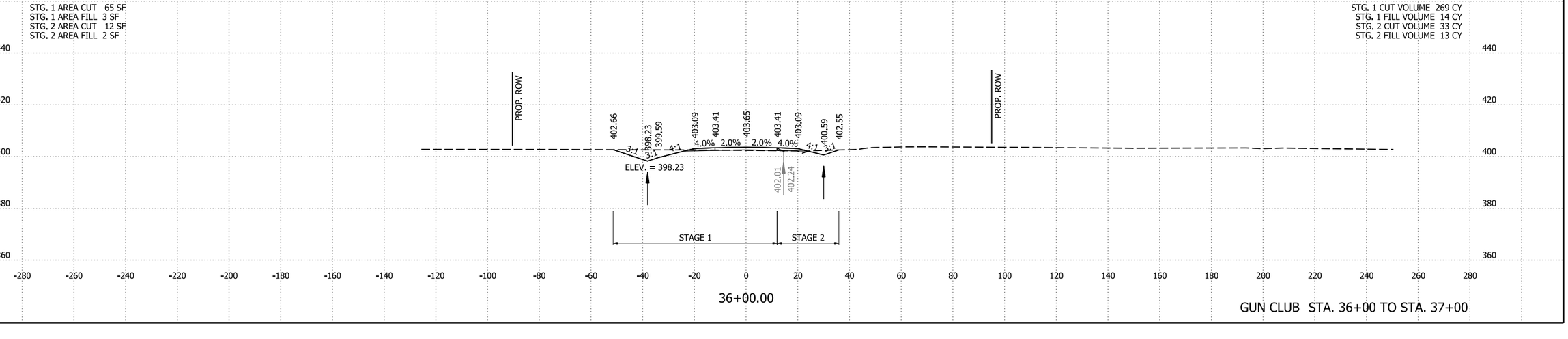
STG. 1 AREA CUT 64 SF
STG. 1 AREA FILL 2 SF
STG. 2 AREA CUT 13 SF
STG. 2 AREA FILL 2 SF

STG. 1 CUT VOLUME 67 CY
STG. 1 FILL VOLUME 2 CY
STG. 2 CUT VOLUME 13 CY
STG. 2 FILL VOLUME 2 CY

36+28.04

STG. 1 AREA CUT 65 SF
STG. 1 AREA FILL 3 SF
STG. 2 AREA CUT 12 SF
STG. 2 AREA FILL 2 SF

STG. 1 CUT VOLUME 269 CY
STG. 1 FILL VOLUME 14 CY
STG. 2 CUT VOLUME 33 CY
STG. 2 FILL VOLUME 13 CY



36+00.00

GUN CLUB STA. 36+00 TO STA. 37+00

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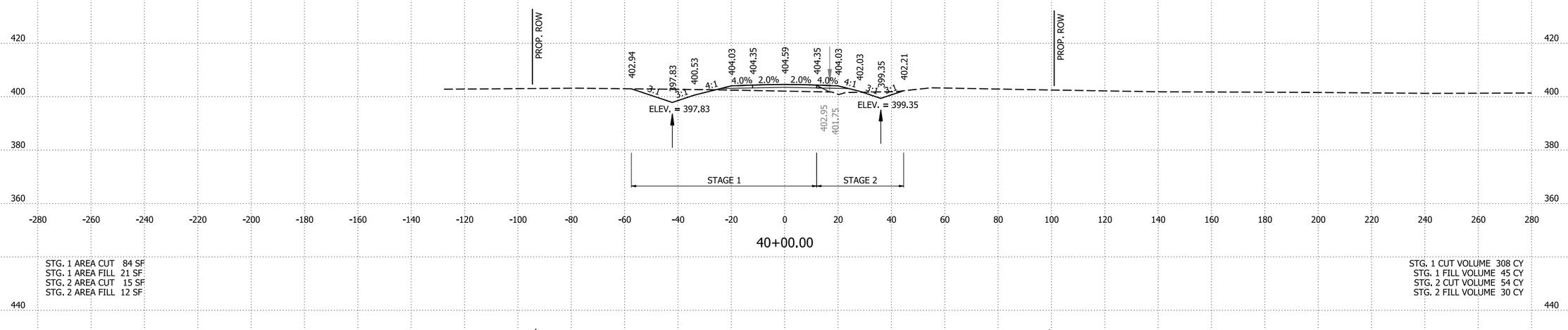
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	785	809
		CROSS SECTIONS				

STG. 1 AREA CUT 75 SF
STG. 1 AREA FILL 46 SF
STG. 2 AREA CUT 19 SF
STG. 2 AREA FILL 19 SF

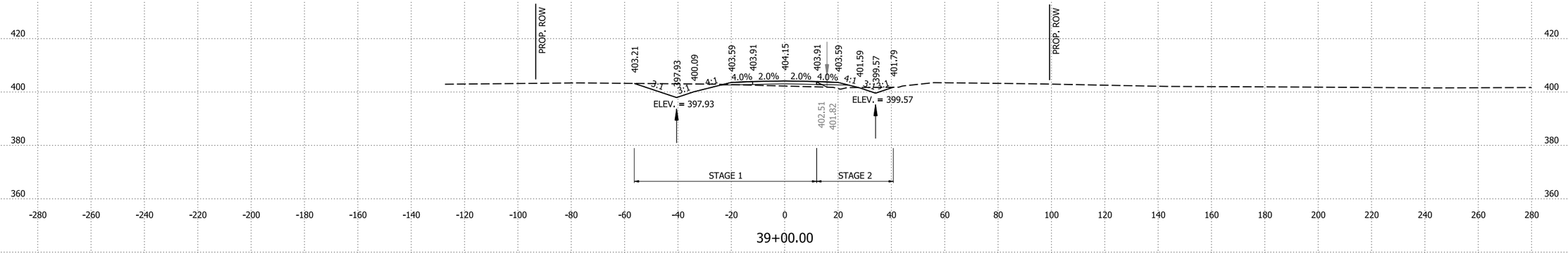
STG. 1 CUT VOLUME 294 CY
STG. 1 FILL VOLUME 123 CY
STG. 2 CUT VOLUME 63 CY
STG. 2 FILL VOLUME 57 CY



40+00.00

STG. 1 AREA CUT 84 SF
STG. 1 AREA FILL 21 SF
STG. 2 AREA CUT 15 SF
STG. 2 AREA FILL 12 SF

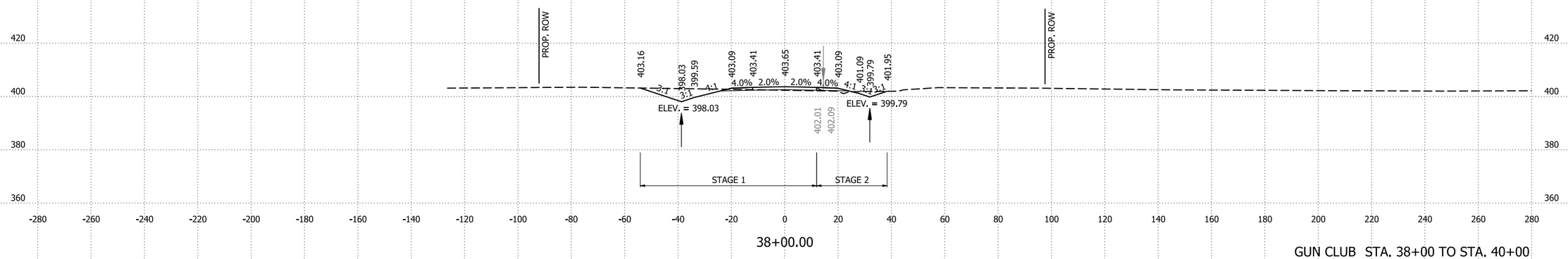
STG. 1 CUT VOLUME 308 CY
STG. 1 FILL VOLUME 45 CY
STG. 2 CUT VOLUME 54 CY
STG. 2 FILL VOLUME 30 CY



39+00.00

STG. 1 AREA CUT 83 SF
STG. 1 AREA FILL 4 SF
STG. 2 AREA CUT 14 SF
STG. 2 AREA FILL 4 SF

STG. 1 CUT VOLUME 312 CY
STG. 1 FILL VOLUME 7 CY
STG. 2 CUT VOLUME 56 CY
STG. 2 FILL VOLUME 9 CY



38+00.00

GUN CLUB STA. 38+00 TO STA. 40+00

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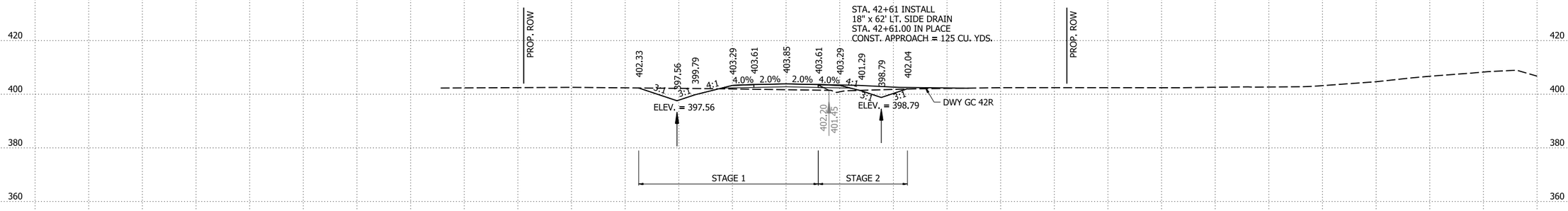
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	786	809
		CROSS SECTIONS				

STG. 1 AREA CUT 67 SF
STG. 1 AREA FILL 32 SF
STG. 2 AREA CUT 26 SF
STG. 2 AREA FILL 13 SF

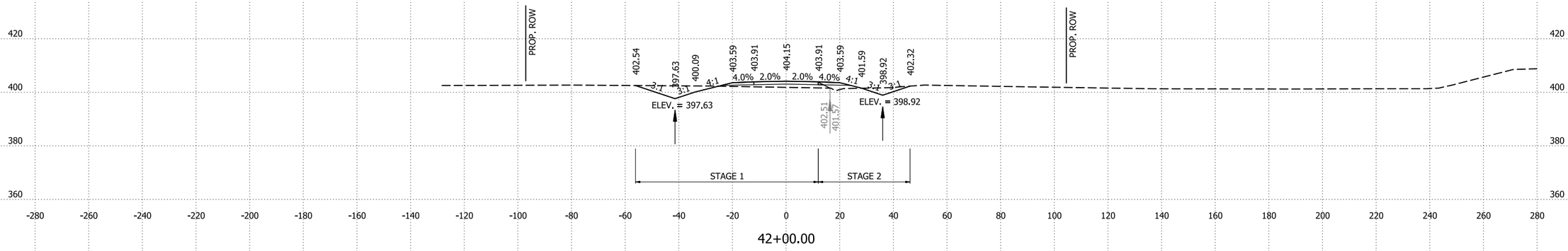
STG. 1 CUT VOLUME 158 CY
STG. 1 FILL VOLUME 78 CY
STG. 2 CUT VOLUME 58 CY
STG. 2 FILL VOLUME 32 CY



42+61.40

STG. 1 AREA CUT 72 SF
STG. 1 AREA FILL 37 SF
STG. 2 AREA CUT 25 SF
STG. 2 AREA FILL 15 SF

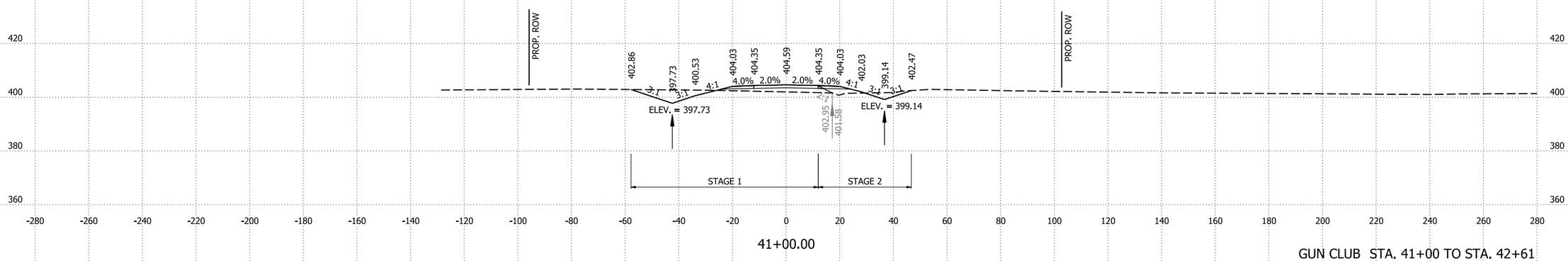
STG. 1 CUT VOLUME 276 CY
STG. 1 FILL VOLUME 157 CY
STG. 2 CUT VOLUME 87 CY
STG. 2 FILL VOLUME 65 CY



42+00.00

STG. 1 AREA CUT 77 SF
STG. 1 AREA FILL 48 SF
STG. 2 AREA CUT 22 SF
STG. 2 AREA FILL 20 SF

STG. 1 CUT VOLUME 281 CY
STG. 1 FILL VOLUME 173 CY
STG. 2 CUT VOLUME 76 CY
STG. 2 FILL VOLUME 72 CY



41+00.00

GUN CLUB STA. 41+00 TO STA. 42+61

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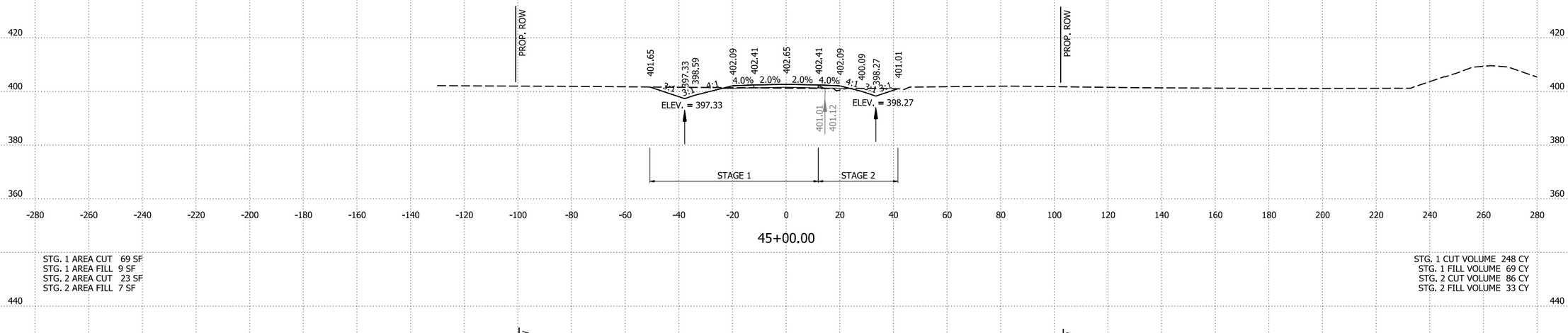
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	787	809
		CROSS SECTIONS				

STG. 1 AREA CUT 59 SF
STG. 1 AREA FILL 5 SF
STG. 2 AREA CUT 25 SF
STG. 2 AREA FILL 3 SF

STG. 1 CUT VOLUME 237 CY
STG. 1 FILL VOLUME 28 CY
STG. 2 CUT VOLUME 89 CY
STG. 2 FILL VOLUME 18 CY



45+00.00

STG. 1 AREA CUT 69 SF
STG. 1 AREA FILL 9 SF
STG. 2 AREA CUT 23 SF
STG. 2 AREA FILL 7 SF

STG. 1 CUT VOLUME 248 CY
STG. 1 FILL VOLUME 69 CY
STG. 2 CUT VOLUME 86 CY
STG. 2 FILL VOLUME 33 CY

44+00.00

STG. 1 AREA CUT 65 SF
STG. 1 AREA FILL 28 SF
STG. 2 AREA CUT 24 SF
STG. 2 AREA FILL 11 SF

STG. 1 CUT VOLUME 94 CY
STG. 1 FILL VOLUME 43 CY
STG. 2 CUT VOLUME 35 CY
STG. 2 FILL VOLUME 17 CY

43+00.00

GUN CLUB STA. 43+00 TO STA. 45+00

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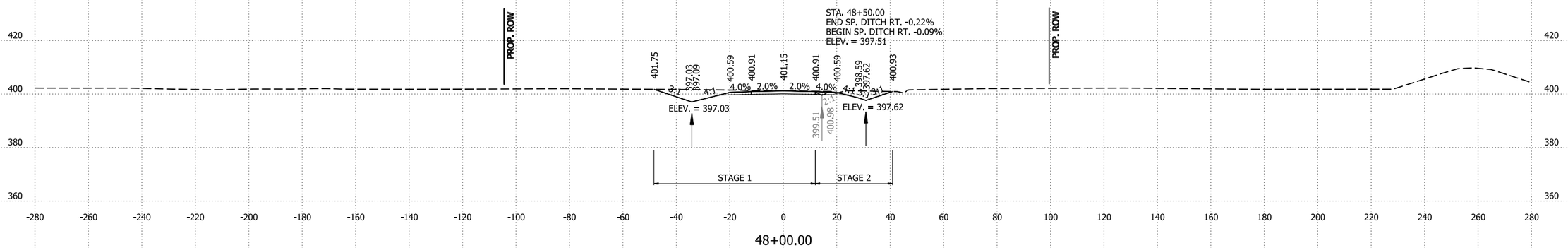
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	788	809
		CROSS SECTIONS				

STG. 1 AREA CUT 123 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 44 SF
STG. 2 AREA FILL 0 SF

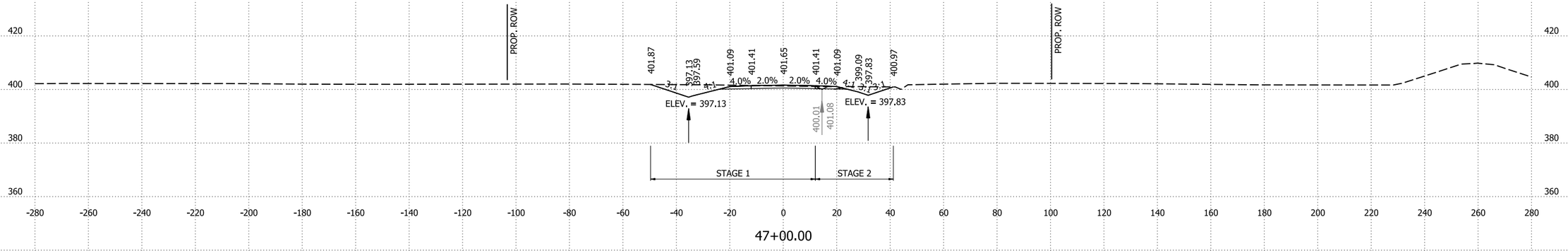
STG. 1 CUT VOLUME 430 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 148 CY
STG. 2 FILL VOLUME 1 CY



48+00.00

STG. 1 AREA CUT 109 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 36 SF
STG. 2 AREA FILL 0 SF

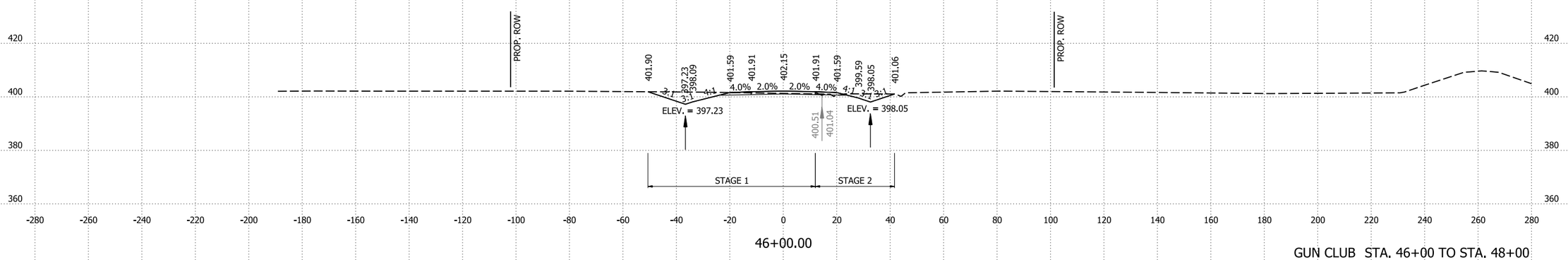
STG. 1 CUT VOLUME 361 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 124 CY
STG. 2 FILL VOLUME 2 CY



47+00.00

STG. 1 AREA CUT 86 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 31 SF
STG. 2 AREA FILL 1 SF

STG. 1 CUT VOLUME 269 CY
STG. 1 FILL VOLUME 10 CY
STG. 2 CUT VOLUME 104 CY
STG. 2 FILL VOLUME 7 CY



46+00.00

GUN CLUB STA. 46+00 TO STA. 48+00

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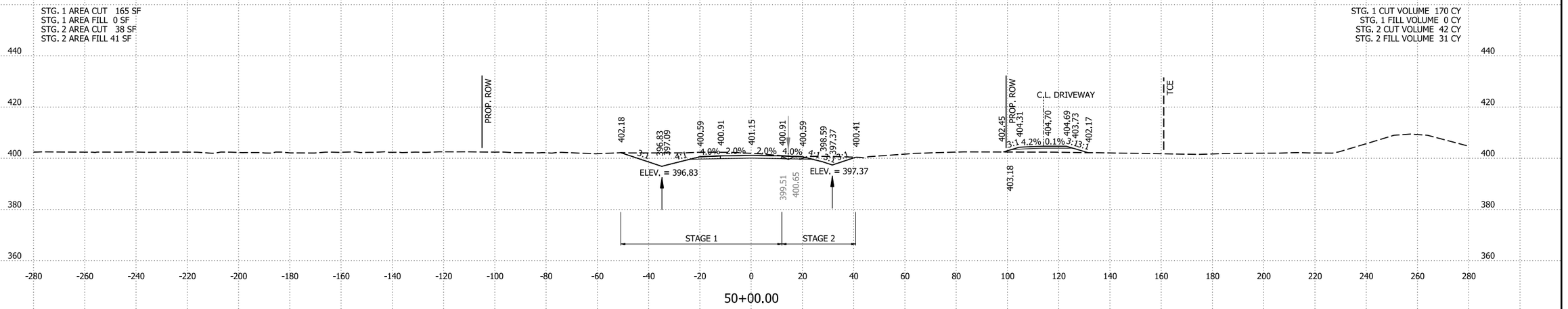
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	789	809
		CROSS SECTIONS				

STG. 1 AREA CUT 165 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 38 SF
STG. 2 AREA FILL 41 SF

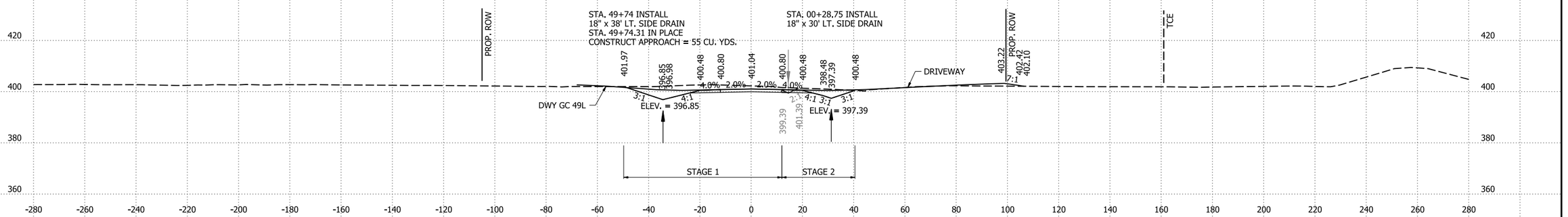
STG. 1 CUT VOLUME 170 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 42 CY
STG. 2 FILL VOLUME 31 CY



50+00.00

STG. 1 AREA CUT 185 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 48 SF
STG. 2 AREA FILL 23 SF

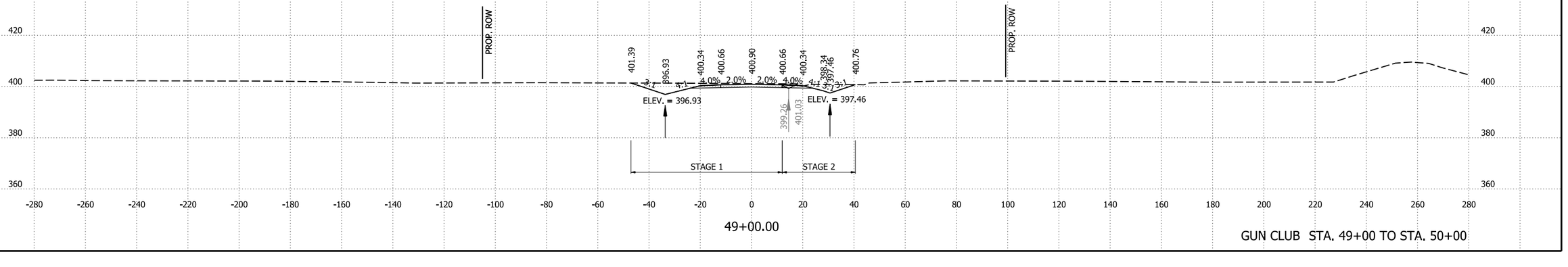
STG. 1 CUT VOLUME 422 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 124 CY
STG. 2 FILL VOLUME 32 CY



49+73.77

STG. 1 AREA CUT 124 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 43 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 457 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 161 CY
STG. 2 FILL VOLUME 1 CY



49+00.00

GUN CLUB STA. 49+00 TO STA. 50+00

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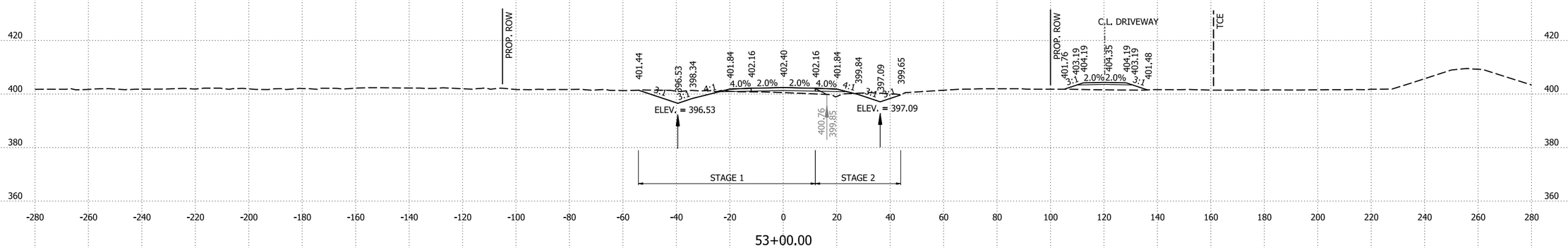
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	790	809
		CROSS SECTIONS				

STG. 1 AREA CUT 73 SF
STG. 1 AREA FILL 21 SF
STG. 2 AREA CUT 30 SF
STG. 2 AREA FILL 61 SF

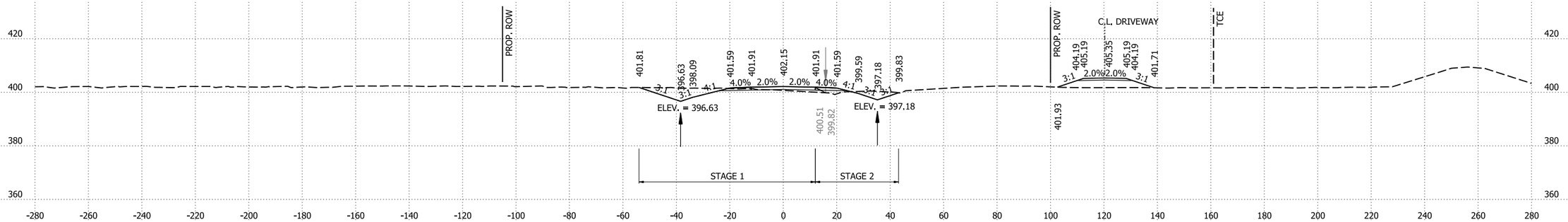
STG. 1 CUT VOLUME 298 CY
STG. 1 FILL VOLUME 58 CY
STG. 2 CUT VOLUME 109 CY
STG. 2 FILL VOLUME 272 CY



53+00.00

STG. 1 AREA CUT 88 SF
STG. 1 AREA FILL 10 SF
STG. 2 AREA CUT 29 SF
STG. 2 AREA FILL 86 SF

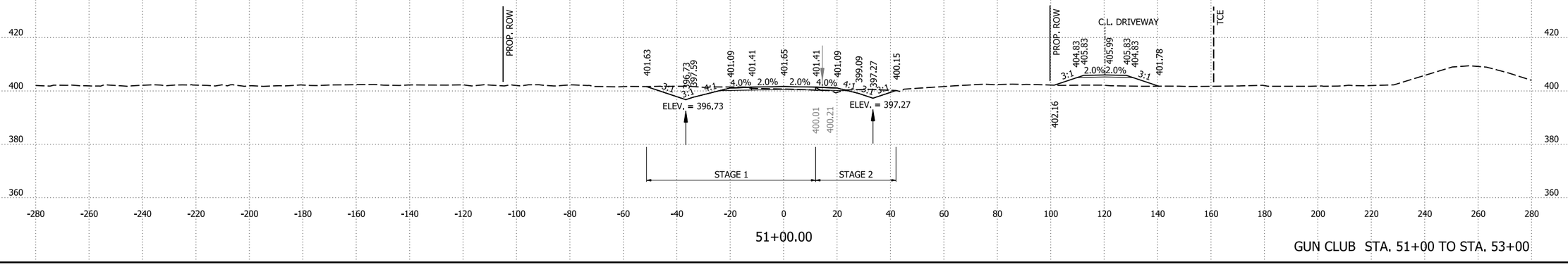
STG. 1 CUT VOLUME 340 CY
STG. 1 FILL VOLUME 19 CY
STG. 2 CUT VOLUME 111 CY
STG. 2 FILL VOLUME 336 CY



52+00.00

STG. 1 AREA CUT 96 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 31 SF
STG. 2 AREA FILL 96 SF

STG. 1 CUT VOLUME 483 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 127 CY
STG. 2 FILL VOLUME 253 CY



51+00.00

GUN CLUB STA. 51+00 TO STA. 53+00

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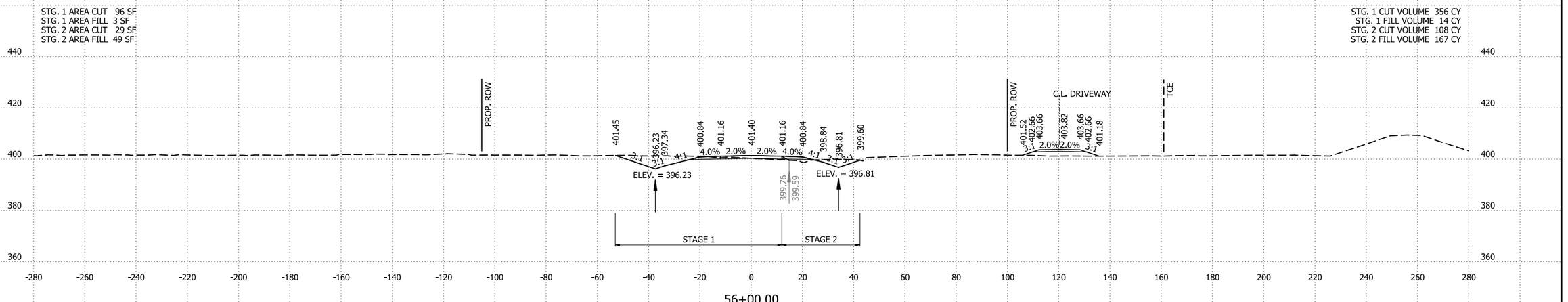
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	791	809
		CROSS SECTIONS				

STG. 1 AREA CUT 96 SF
STG. 1 AREA FILL 3 SF
STG. 2 AREA CUT 29 SF
STG. 2 AREA FILL 49 SF

STG. 1 CUT VOLUME 356 CY
STG. 1 FILL VOLUME 14 CY
STG. 2 CUT VOLUME 108 CY
STG. 2 FILL VOLUME 167 CY

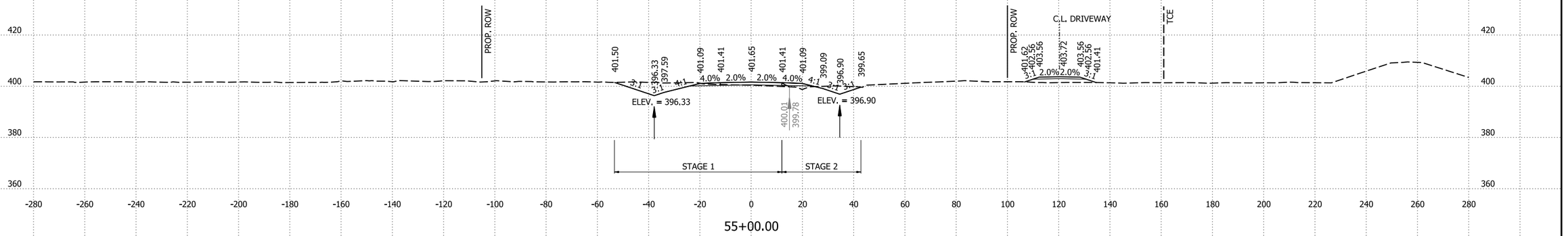


56+00.00

STG. 1 AREA CUT 95 SF
STG. 1 AREA FILL 5 SF
STG. 2 AREA CUT 29 SF
STG. 2 AREA FILL 41 SF

STG. 1 CUT VOLUME 334 CY
STG. 1 FILL VOLUME 36 CY
STG. 2 CUT VOLUME 111 CY
STG. 2 FILL VOLUME 146 CY

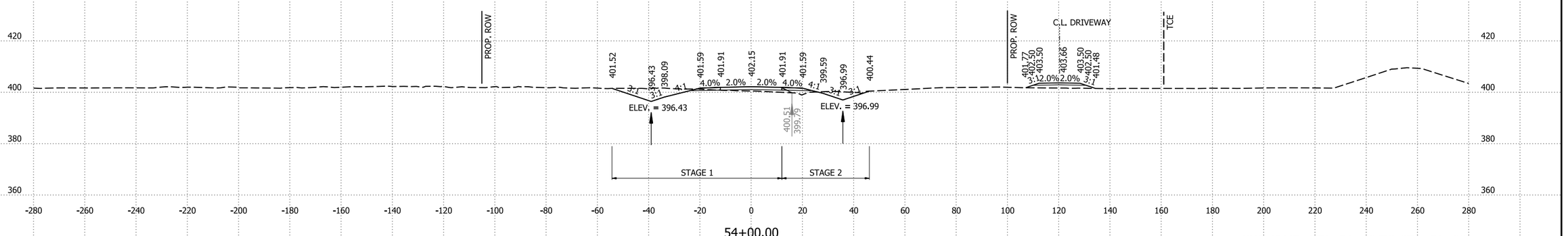
STA. 07+00.00 INSTALL
24" x 30' LT. SIDE DRAIN



55+00.00

STG. 1 AREA CUT 85 SF
STG. 1 AREA FILL 15 SF
STG. 2 AREA CUT 31 SF
STG. 2 AREA FILL 38 SF

STG. 1 CUT VOLUME 293 CY
STG. 1 FILL VOLUME 67 CY
STG. 2 CUT VOLUME 113 CY
STG. 2 FILL VOLUME 183 CY



54+00.00

GUN CLUB STA. 54+00 TO STA. 56+00

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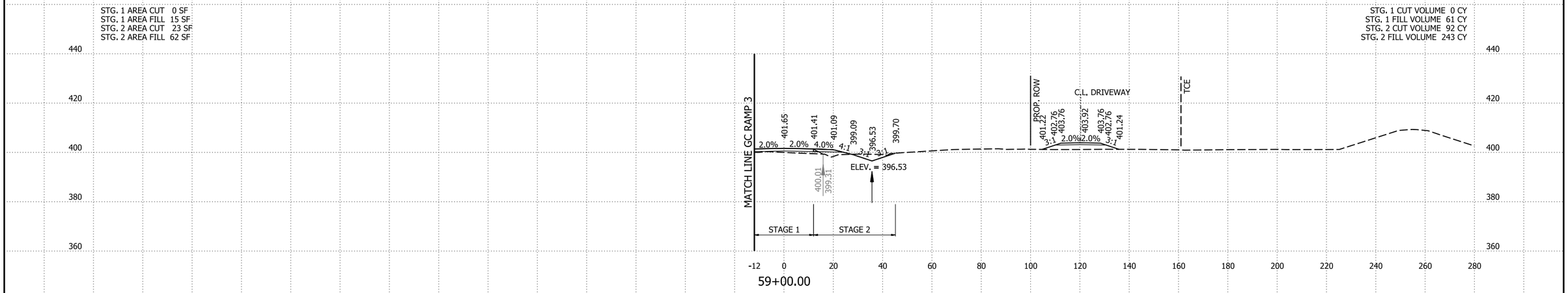
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	792	809
		CROSS SECTIONS				

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 15 SF
STG. 2 AREA CUT 23 SF
STG. 2 AREA FILL 62 SF

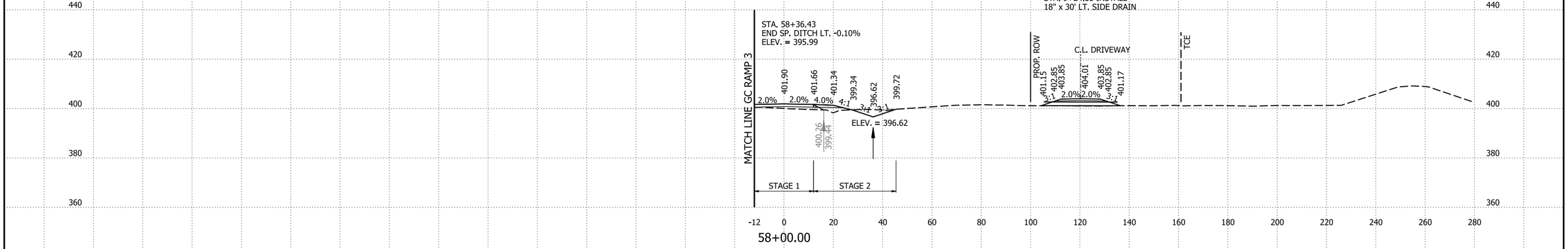
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 61 CY
STG. 2 CUT VOLUME 92 CY
STG. 2 FILL VOLUME 243 CY



STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 18 SF
STG. 2 AREA CUT 26 SF
STG. 2 AREA FILL 69 SF

STG. 1 CUT VOLUME 145 CY
STG. 1 FILL VOLUME 43 CY
STG. 2 CUT VOLUME 101 CY
STG. 2 FILL VOLUME 237 CY

STA. 9+24.55 INSTALL
18" x 30' LT. SIDE DRAIN



STG. 1 AREA CUT 78 SF
STG. 1 AREA FILL 5 SF
STG. 2 AREA CUT 28 SF
STG. 2 AREA FILL 59 SF

STG. 1 CUT VOLUME 325 CY
STG. 1 FILL VOLUME 15 CY
STG. 2 CUT VOLUME 104 CY
STG. 2 FILL VOLUME 200 CY

GUN CLUB STA. 57+00 TO STA. 59+00

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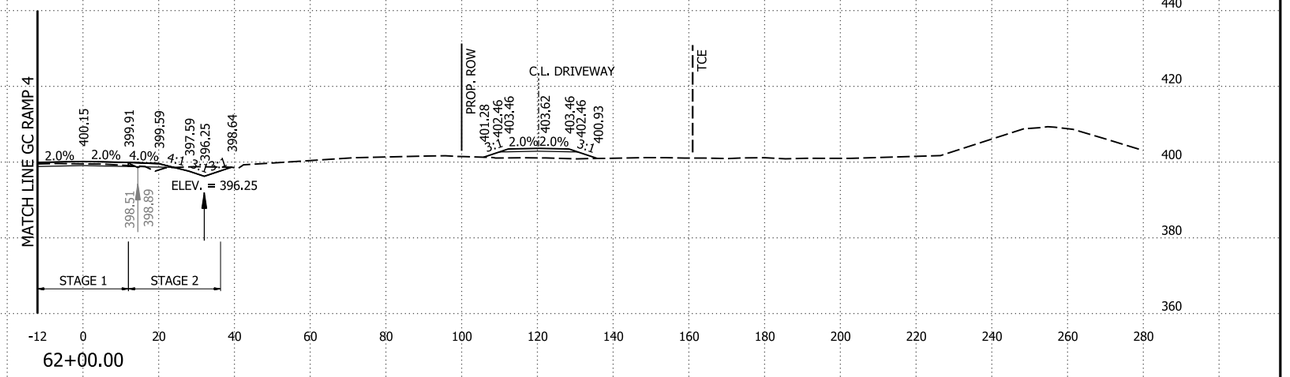
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	793	809
		CROSS SECTIONS				

STG. 1 AREA CUT 13 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 20 SF
STG. 2 AREA FILL 47 SF

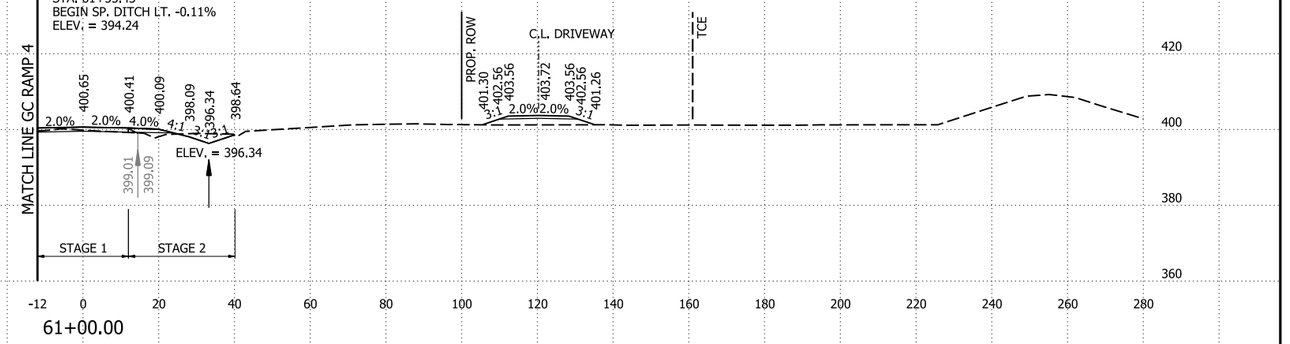
STG. 1 CUT VOLUME 37 CY
STG. 1 FILL VOLUME 1 CY
STG. 2 CUT VOLUME 78 CY
STG. 2 FILL VOLUME 174 CY



62+00.00

STG. 1 AREA CUT 7 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 21 SF
STG. 2 AREA FILL 47 SF

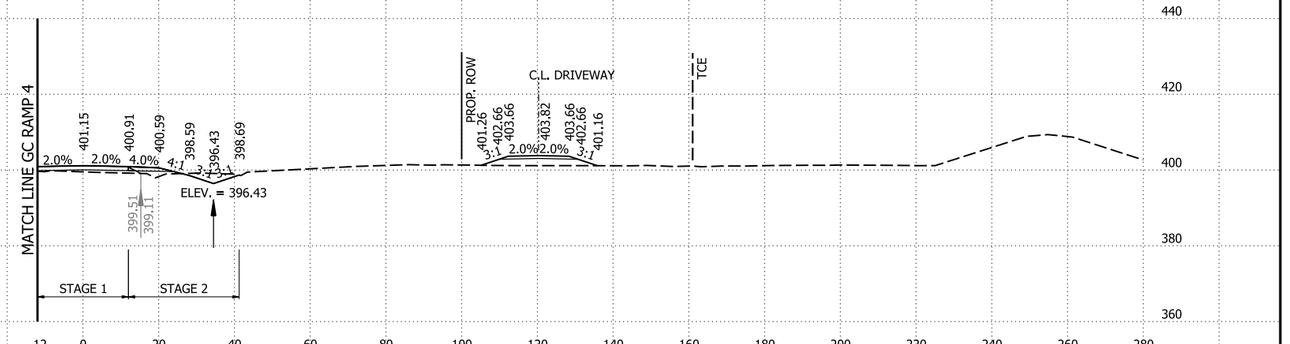
STG. 1 CUT VOLUME 13 CY
STG. 1 FILL VOLUME 23 CY
STG. 2 CUT VOLUME 81 CY
STG. 2 FILL VOLUME 189 CY



61+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 12 SF
STG. 2 AREA CUT 22 SF
STG. 2 AREA FILL 55 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 50 CY
STG. 2 CUT VOLUME 84 CY
STG. 2 FILL VOLUME 217 CY



60+00.00

GUN CLUB STA. 60+00 TO STA. 62+00

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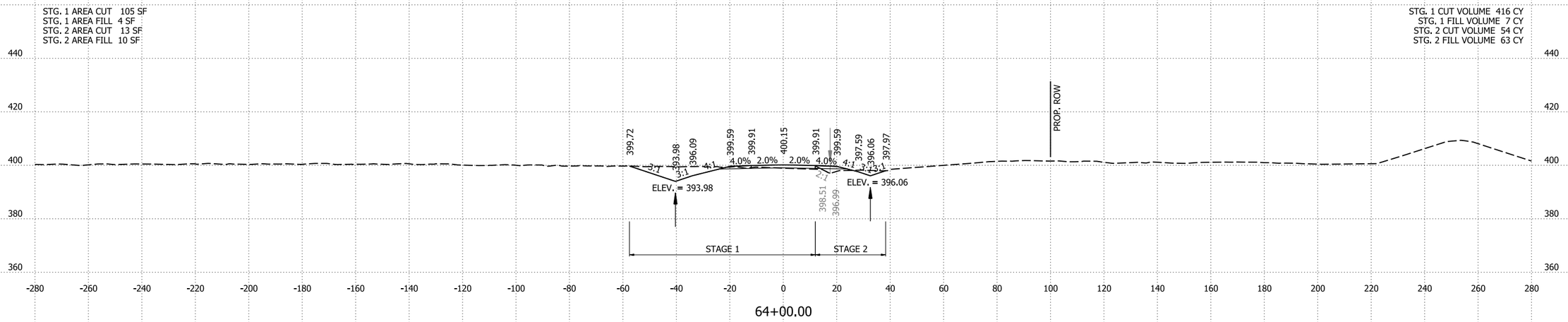
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	794	809
		CROSS SECTIONS				

STG. 1 AREA CUT 105 SF
STG. 1 AREA FILL 4 SF
STG. 2 AREA CUT 13 SF
STG. 2 AREA FILL 10 SF

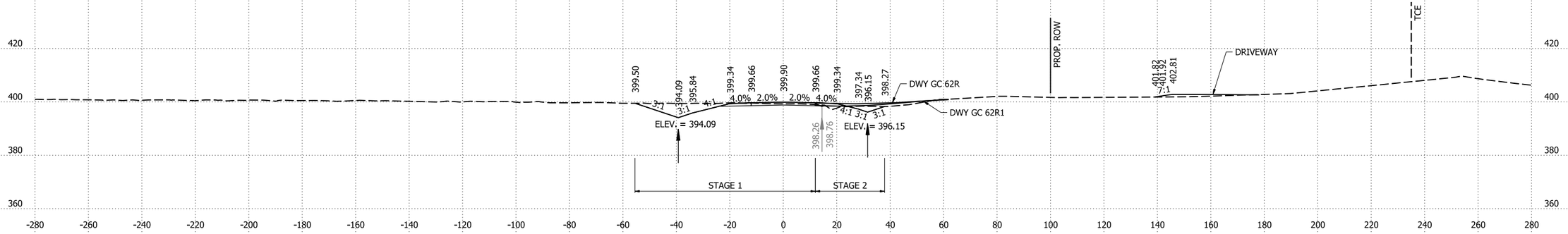
STG. 1 CUT VOLUME 416 CY
STG. 1 FILL VOLUME 7 CY
STG. 2 CUT VOLUME 54 CY
STG. 2 FILL VOLUME 63 CY



64+00.00

STG. 1 AREA CUT 120 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 16 SF
STG. 2 AREA FILL 24 SF

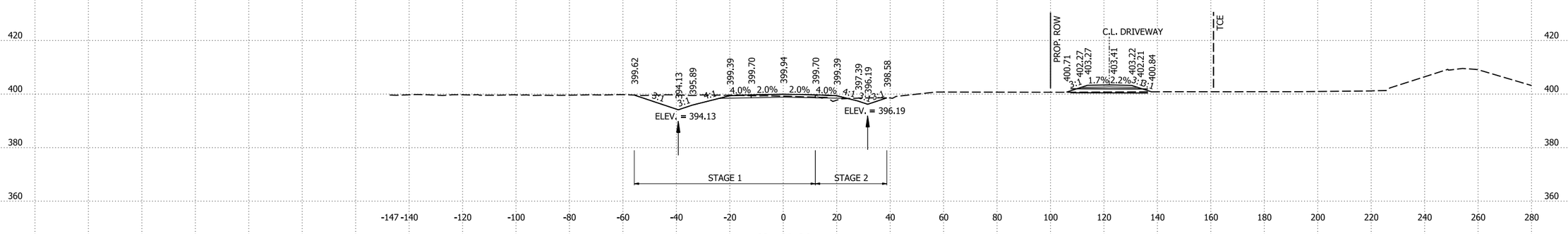
STG. 1 CUT VOLUME 246 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 25 CY
STG. 2 FILL VOLUME 54 CY



63+00.00

STG. 1 AREA CUT 118 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 17 SF
STG. 2 AREA FILL 51 SF

STG. 1 CUT VOLUME 146 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 42 CY
STG. 2 FILL VOLUME 109 CY



62+60.30

GUN CLUB STA. 62+60 TO STA. 64+00

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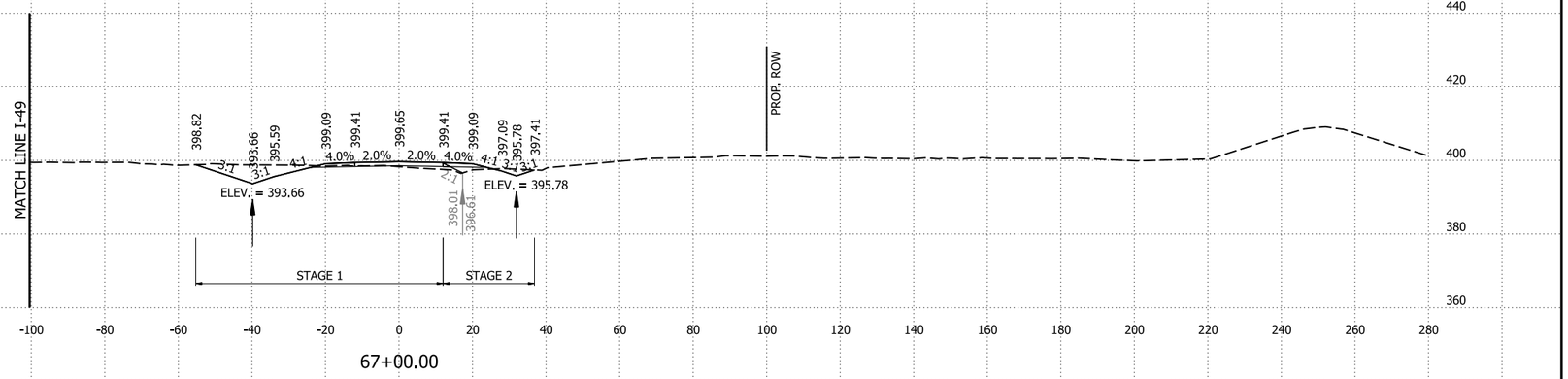
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	795	809
		CROSS SECTIONS				

STG. 1 AREA CUT 89 SF
STG. 1 AREA FILL 10 SF
STG. 2 AREA CUT 11 SF
STG. 2 AREA FILL 9 SF

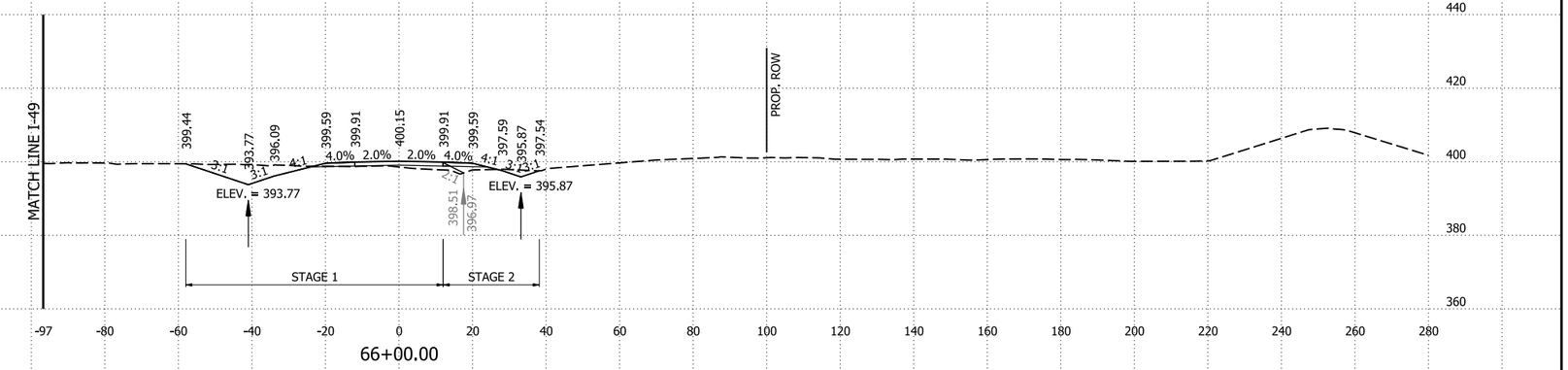
STG. 1 CUT VOLUME 336 CY
STG. 1 FILL VOLUME 51 CY
STG. 2 CUT VOLUME 41 CY
STG. 2 FILL VOLUME 37 CY



67+00.00

STG. 1 AREA CUT 92 SF
STG. 1 AREA FILL 17 SF
STG. 2 AREA CUT 11 SF
STG. 2 AREA FILL 11 SF

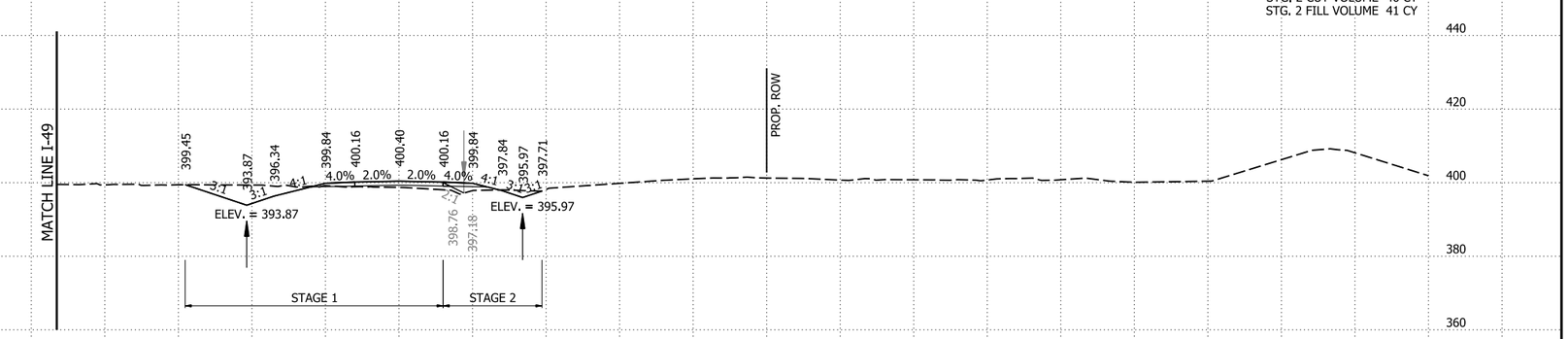
STG. 1 CUT VOLUME 341 CY
STG. 1 FILL VOLUME 69 CY
STG. 2 CUT VOLUME 43 CY
STG. 2 FILL VOLUME 43 CY



66+00.00

STG. 1 AREA CUT 92 SF
STG. 1 AREA FILL 20 SF
STG. 2 AREA CUT 12 SF
STG. 2 AREA FILL 12 SF

STG. 1 CUT VOLUME 364 CY
STG. 1 FILL VOLUME 44 CY
STG. 2 CUT VOLUME 46 CY
STG. 2 FILL VOLUME 41 CY



65+00.00

GUN CLUB STA. 65+00 TO STA. 67+00

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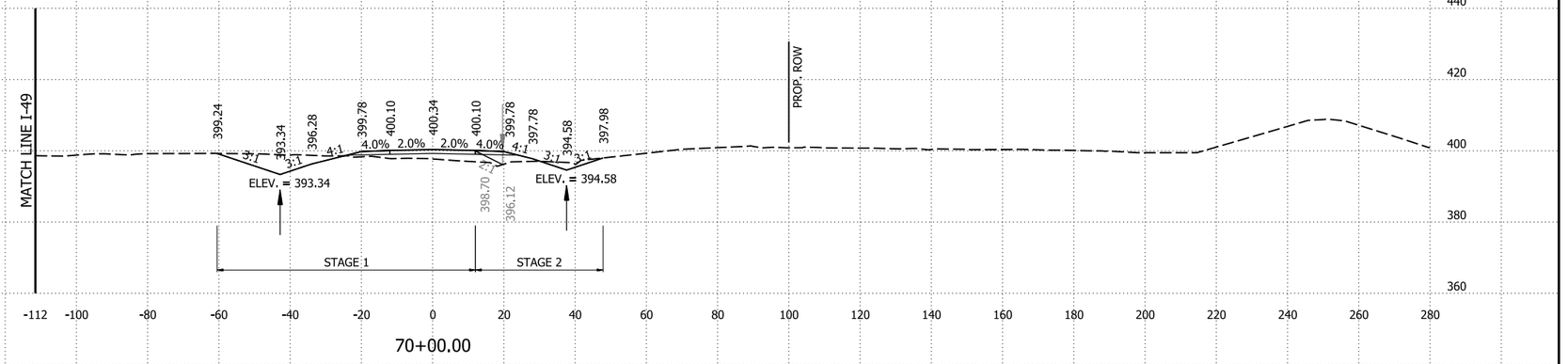
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	796	809
		CROSS SECTIONS				

STG. 1 AREA CUT 96 SF
STG. 1 AREA FILL 57 SF
STG. 2 AREA CUT 19 SF
STG. 2 AREA FILL 23 SF

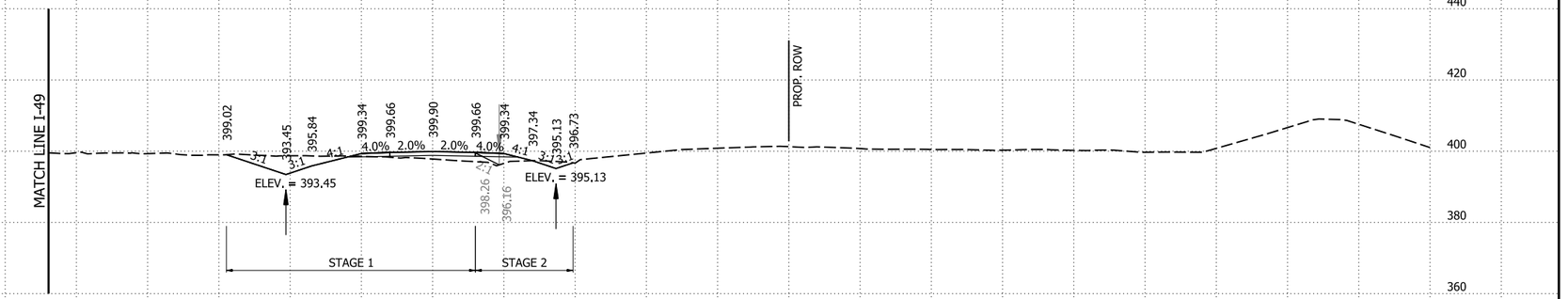
STG. 1 CUT VOLUME 344 CY
STG. 1 FILL VOLUME 162 CY
STG. 2 CUT VOLUME 59 CY
STG. 2 FILL VOLUME 72 CY



70+00.00

STG. 1 AREA CUT 90 SF
STG. 1 AREA FILL 30 SF
STG. 2 AREA CUT 13 SF
STG. 2 AREA FILL 16 SF

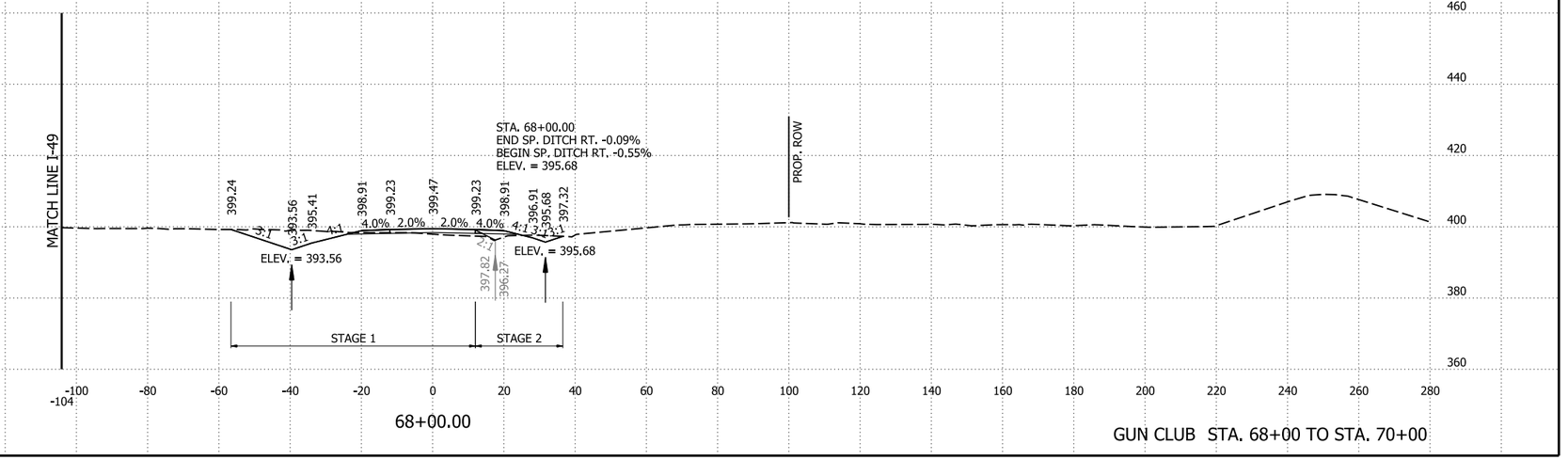
STG. 1 CUT VOLUME 348 CY
STG. 1 FILL VOLUME 78 CY
STG. 2 CUT VOLUME 44 CY
STG. 2 FILL VOLUME 46 CY



69+00.00

STG. 1 AREA CUT 98 SF
STG. 1 AREA FILL 12 SF
STG. 2 AREA CUT 11 SF
STG. 2 AREA FILL 9 SF

STG. 1 CUT VOLUME 346 CY
STG. 1 FILL VOLUME 41 CY
STG. 2 CUT VOLUME 41 CY
STG. 2 FILL VOLUME 33 CY



68+00.00

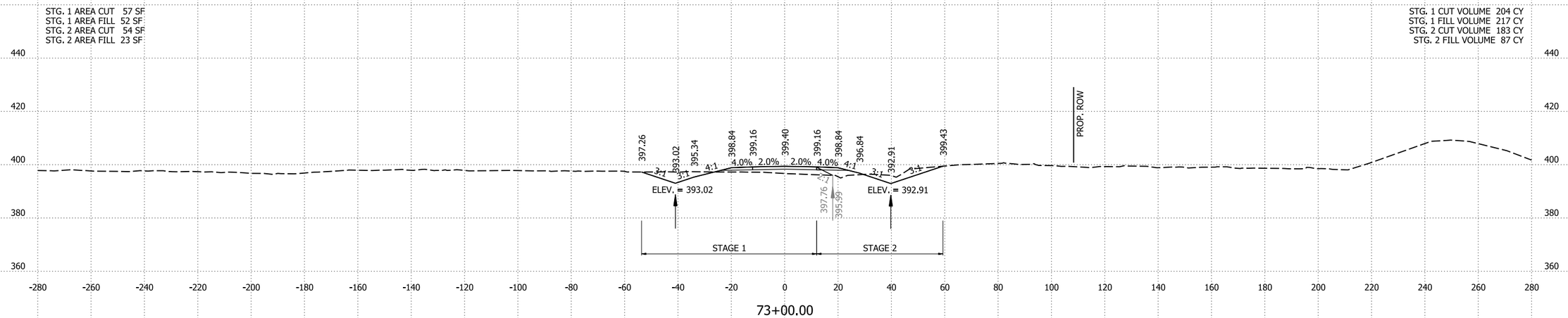
GUN CLUB STA. 68+00 TO STA. 70+00

5/15/2024 5:59:55 PM
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	797	809
		CROSS SECTIONS				

STG. 1 AREA CUT 57 SF
STG. 1 AREA FILL 52 SF
STG. 2 AREA CUT 54 SF
STG. 2 AREA FILL 23 SF

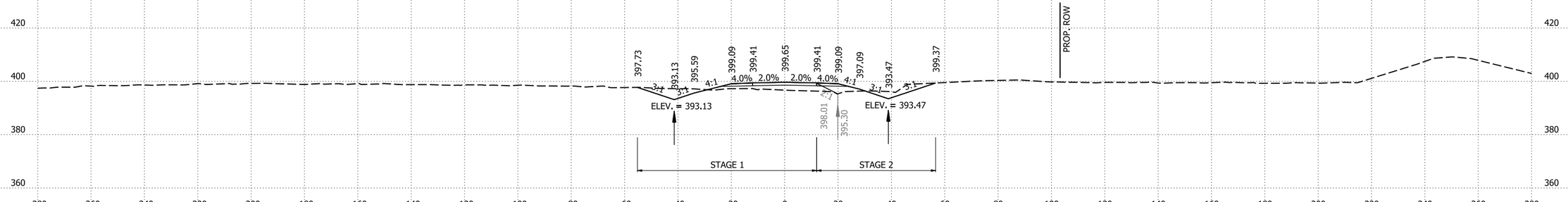
STG. 1 CUT VOLUME 204 CY
STG. 1 FILL VOLUME 217 CY
STG. 2 CUT VOLUME 183 CY
STG. 2 FILL VOLUME 87 CY



73+00.00

STG. 1 AREA CUT 53 SF
STG. 1 AREA FILL 65 SF
STG. 2 AREA CUT 45 SF
STG. 2 AREA FILL 24 SF

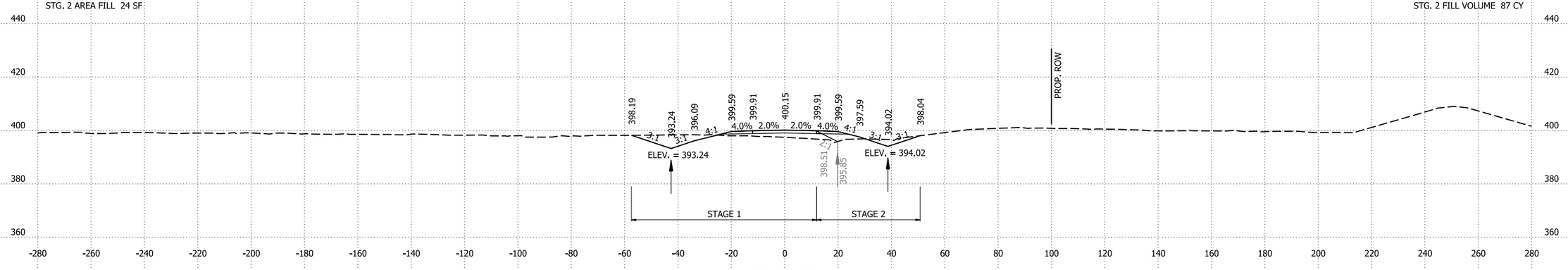
STG. 1 CUT VOLUME 246 CY
STG. 1 FILL VOLUME 226 CY
STG. 2 CUT VOLUME 131 CY
STG. 2 FILL VOLUME 89 CY



72+00.00

STG. 1 AREA CUT 80 SF
STG. 1 AREA FILL 57 SF
STG. 2 AREA CUT 26 SF
STG. 2 AREA FILL 24 SF

STG. 1 CUT VOLUME 326 CY
STG. 1 FILL VOLUME 211 CY
STG. 2 CUT VOLUME 83 CY
STG. 2 FILL VOLUME 87 CY



71+00.00

GUN CLUB STA. 71+00 TO STA. 73+00

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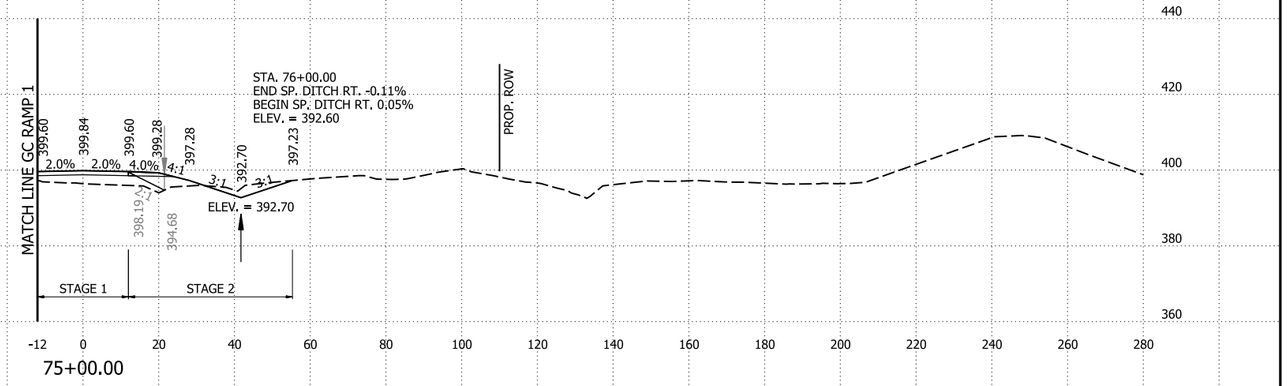
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	798	809
		CROSS SECTIONS				

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 69 SF
STG. 2 AREA CUT 30 SF
STG. 2 AREA FILL 33 SF

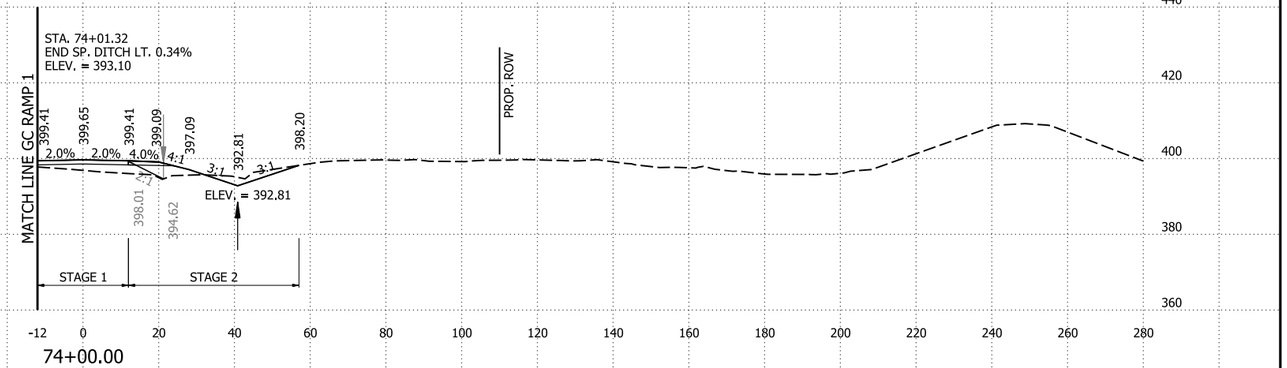
STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 219 CY
STG. 2 CUT VOLUME 103 CY
STG. 2 FILL VOLUME 120 CY



75+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 49 SF
STG. 2 AREA CUT 31 SF
STG. 2 AREA FILL 32 SF

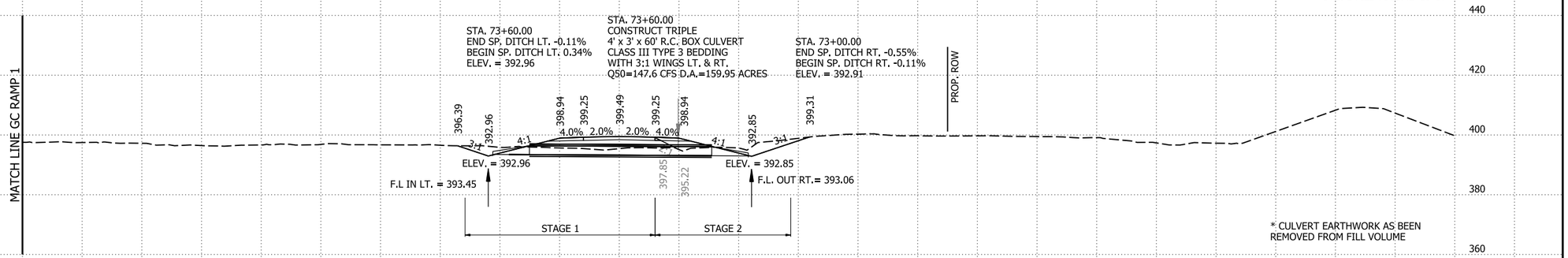
STG. 1 CUT VOLUME 22 CY
STG. 1 FILL VOLUME 123 CY
STG. 2 CUT VOLUME 53 CY
STG. 2 FILL VOLUME 46 CY



74+00.00

STG. 1 AREA CUT 30 SF
STG. 1 AREA FILL 117 SF
STG. 2 AREA CUT 40 SF
STG. 2 AREA FILL 30 SF

STG. 1 CUT VOLUME 97 CY
STG. 1 FILL VOLUME 55 CY
STG. 2 CUT VOLUME 104 CY
STG. 2 FILL VOLUME 59 CY



73+60.00

* CULVERT EARTHWORK AS BEEN REMOVED FROM FILL VOLUME

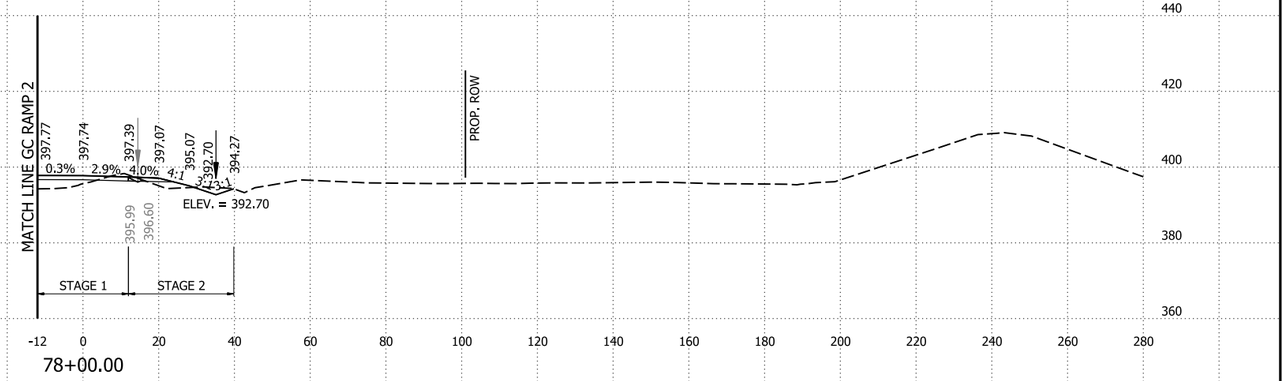
GUN CLUB STA. 73+60 TO STA. 75+00

5/16/2024 2:48:39 PM
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	799	809
		CROSS SECTIONS				

STG. 1 AREA CUT 13 SF
STG. 1 AREA FILL 27 SF
STG. 2 AREA CUT 12 SF
STG. 2 AREA FILL 13 SF

STG. 1 CUT VOLUME 30 CY
STG. 1 FILL VOLUME 108 CY
STG. 2 CUT VOLUME 44 CY
STG. 2 FILL VOLUME 70 CY

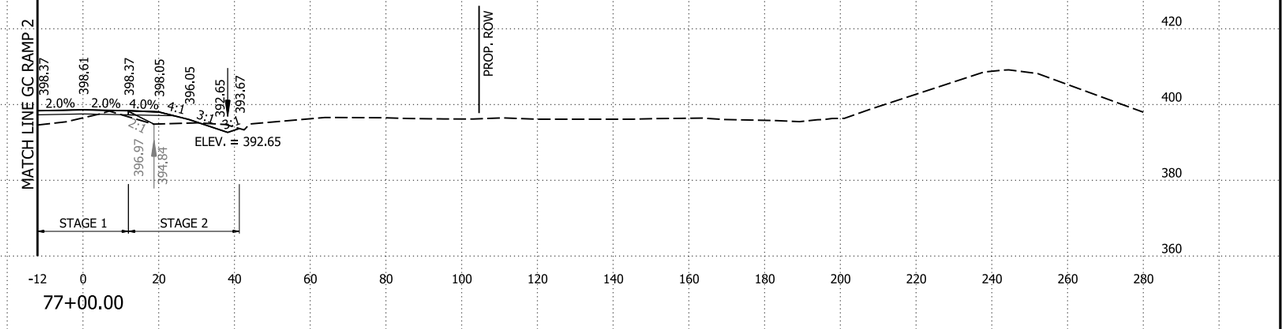


78+00.00

STG. 1 AREA CUT 3 SF
STG. 1 AREA FILL 31 SF
STG. 2 AREA CUT 12 SF
STG. 2 AREA FILL 25 SF

STA. 77+45.32
BEGIN SP. DITCH LT. -0.10%
ELEV. = 393.63

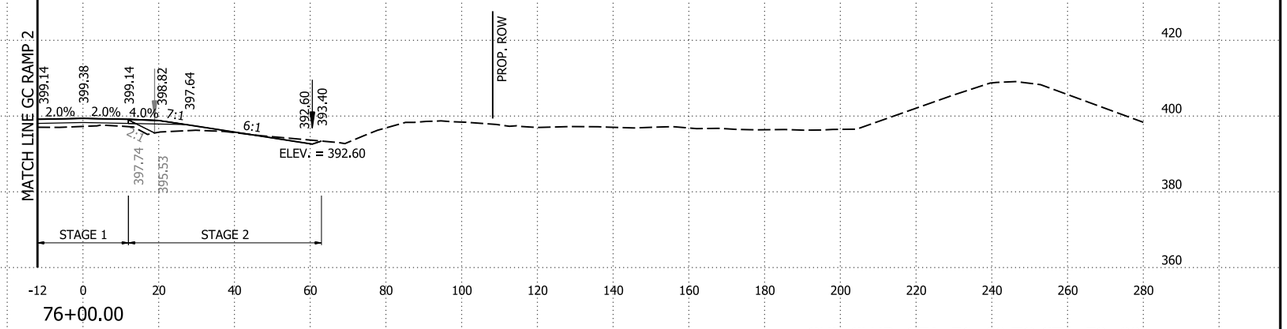
STG. 1 CUT VOLUME 5 CY
STG. 1 FILL VOLUME 112 CY
STG. 2 CUT VOLUME 41 CY
STG. 2 FILL VOLUME 104 CY



77+00.00

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 29 SF
STG. 2 AREA CUT 10 SF
STG. 2 AREA FILL 31 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 183 CY
STG. 2 CUT VOLUME 78 CY
STG. 2 FILL VOLUME 119 CY



76+00.00

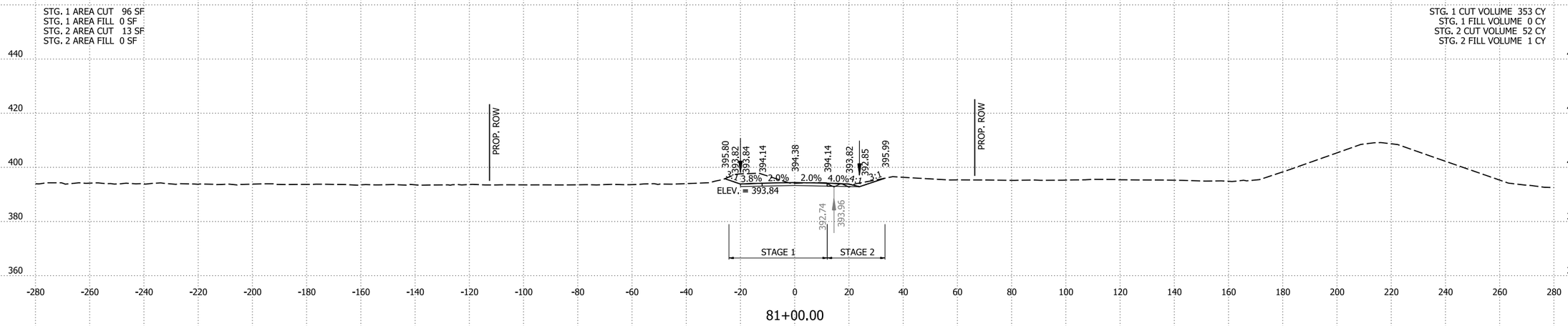
GUN CLUB STA. 76+00 TO STA. 78+00

5/15/2024 5:59:56 PM
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	800	809
		CROSS SECTIONS				

STG. 1 AREA CUT 96 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 13 SF
STG. 2 AREA FILL 0 SF

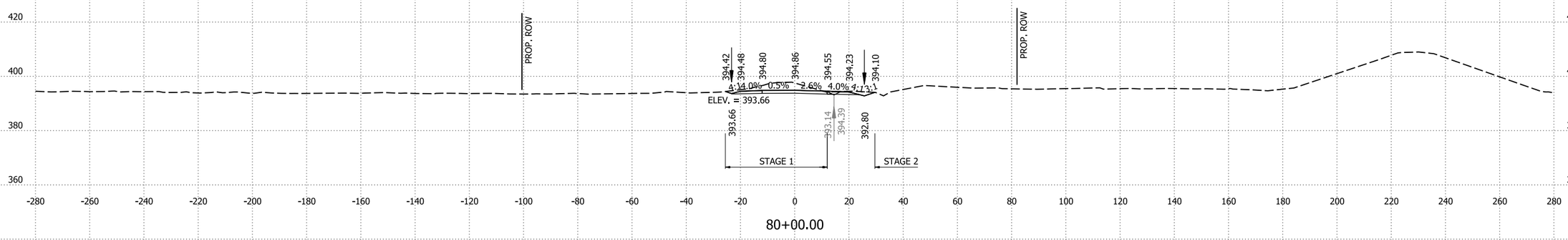
STG. 1 CUT VOLUME 353 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 52 CY
STG. 2 FILL VOLUME 1 CY



81+00.00

STG. 1 AREA CUT 94 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 15 SF
STG. 2 AREA FILL 0 SF

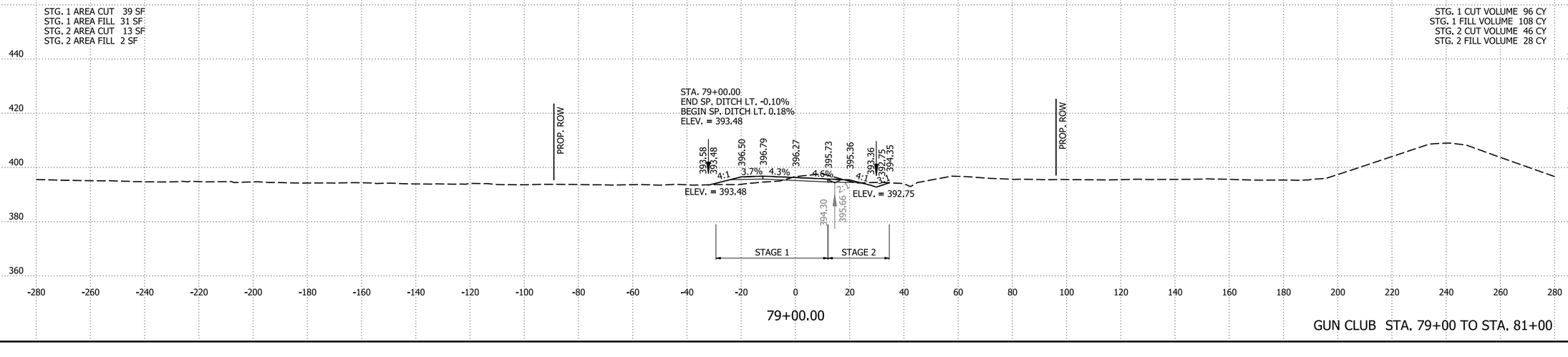
STG. 1 CUT VOLUME 246 CY
STG. 1 FILL VOLUME 57 CY
STG. 2 CUT VOLUME 52 CY
STG. 2 FILL VOLUME 4 CY



80+00.00

STG. 1 AREA CUT 39 SF
STG. 1 AREA FILL 31 SF
STG. 2 AREA CUT 13 SF
STG. 2 AREA FILL 2 SF

STG. 1 CUT VOLUME 96 CY
STG. 1 FILL VOLUME 108 CY
STG. 2 CUT VOLUME 46 CY
STG. 2 FILL VOLUME 28 CY

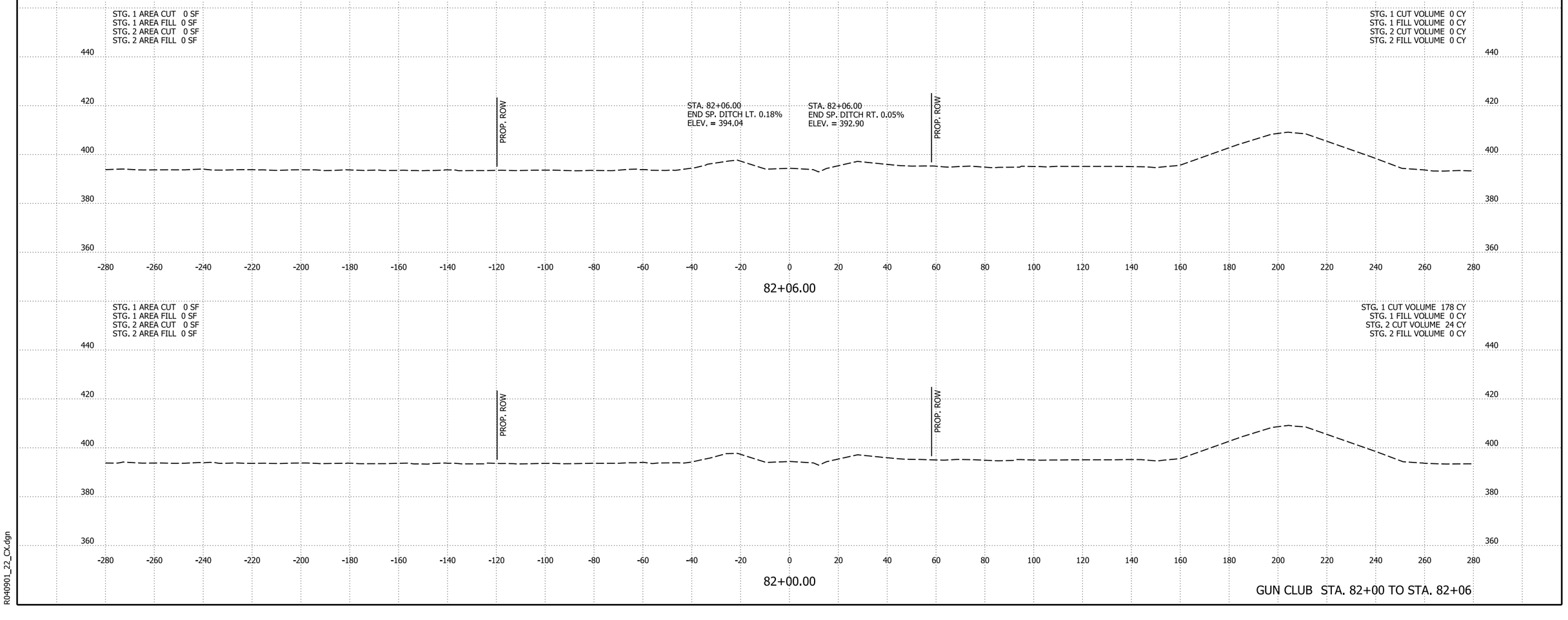


79+00.00

GUN CLUB STA. 79+00 TO STA. 81+00

5/15/2024 5:59:56 PM
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	801	809
		CROSS SECTIONS				

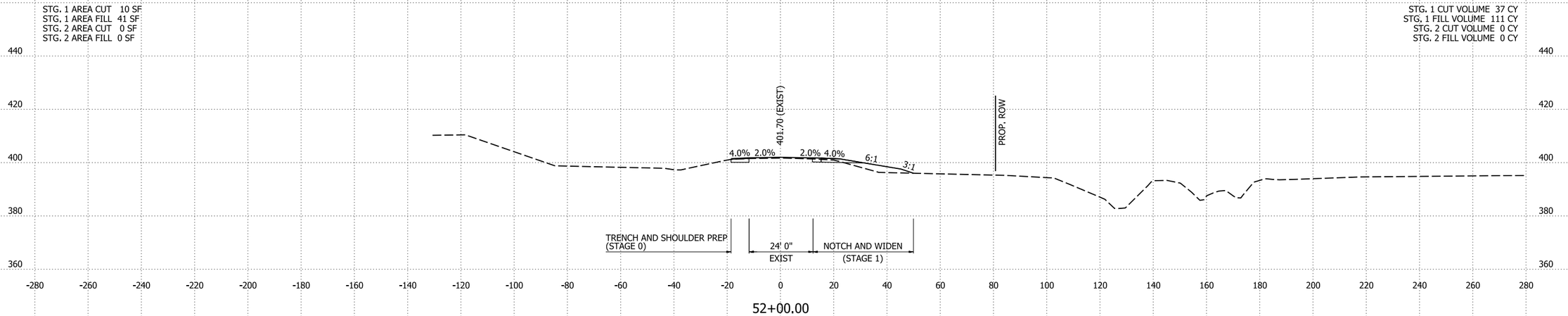


5/15/2024 5:59:56 PM
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	802	809
		CROSS SECTIONS				

STG. 1 AREA CUT 10 SF
STG. 1 AREA FILL 41 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

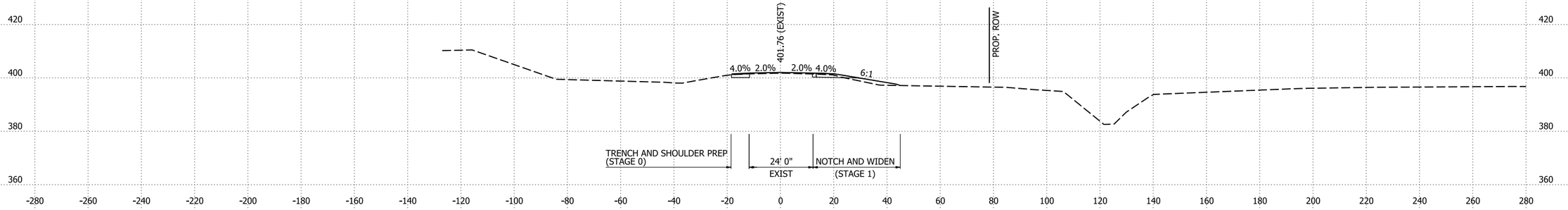
STG. 1 CUT VOLUME 37 CY
STG. 1 FILL VOLUME 111 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



52+00.00

STG. 1 AREA CUT 10 SF
STG. 1 AREA FILL 19 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

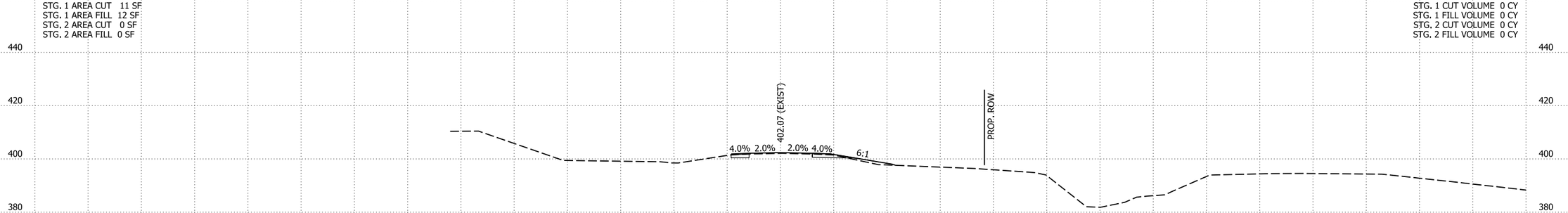
STG. 1 CUT VOLUME 32 CY
STG. 1 FILL VOLUME 45 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



51+00.00

STG. 1 AREA CUT 11 SF
STG. 1 AREA FILL 12 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 0 CY
STG. 1 FILL VOLUME 0 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



50+20.37

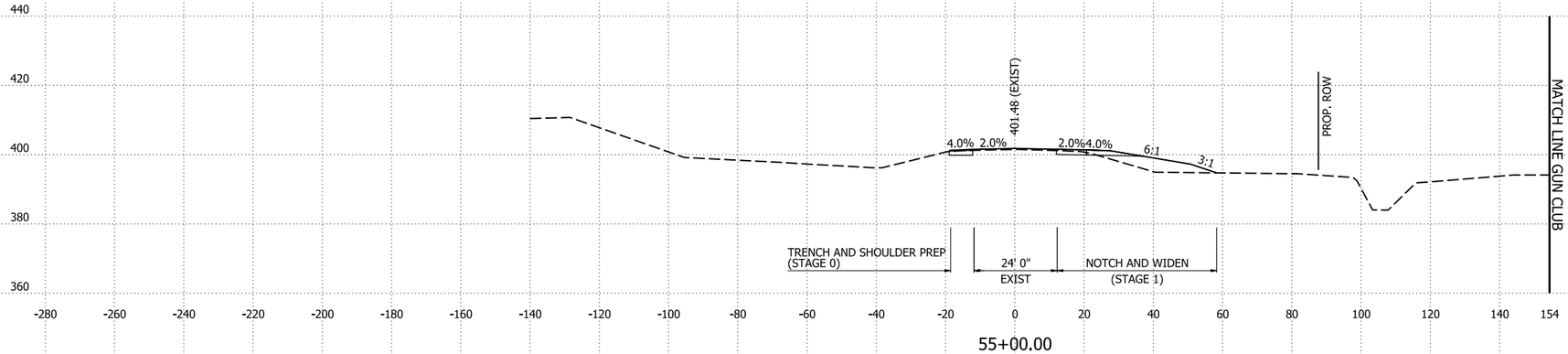
HWY 59 STA. 50+20 TO STA. 52+00

5/16/2024 5:58:30 PM
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	803	809
		CROSS SECTIONS				

STG. 1 AREA CUT 10 SF
STG. 1 AREA FILL 79 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

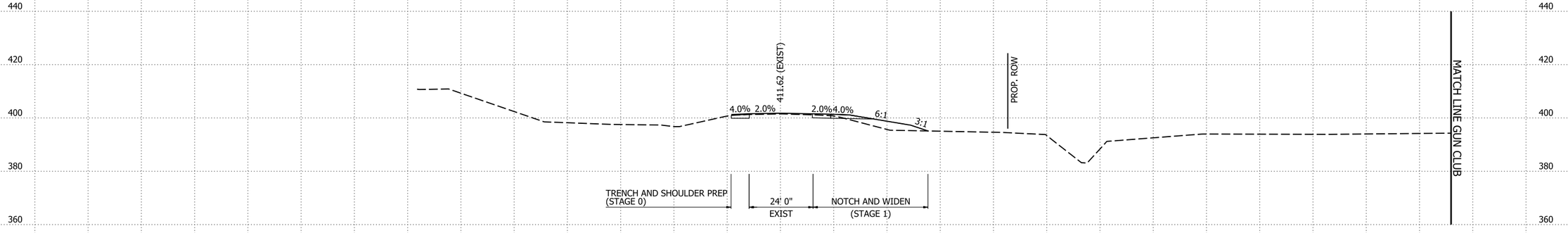
STG. 1 CUT VOLUME 38 CY
STG. 1 FILL VOLUME 256 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



55+00.00

STG. 1 AREA CUT 10 SF
STG. 1 AREA FILL 59 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

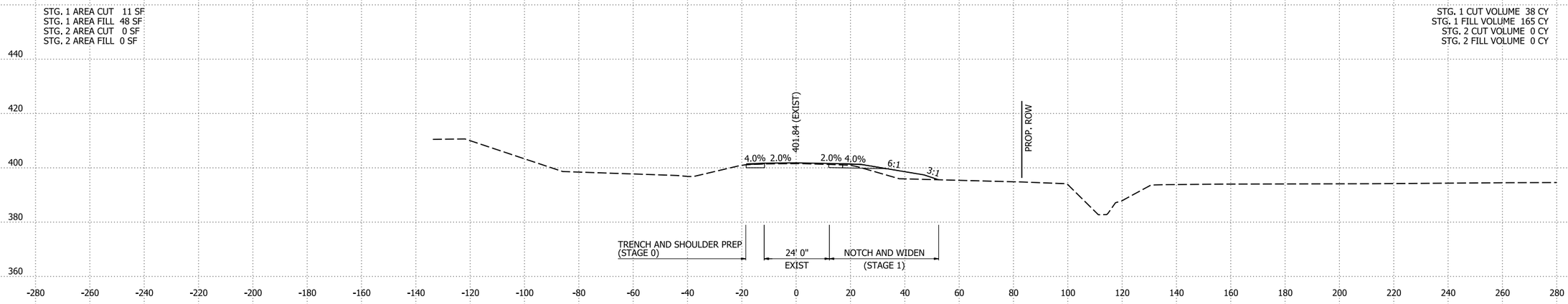
STG. 1 CUT VOLUME 39 CY
STG. 1 FILL VOLUME 198 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



54+00.00

STG. 1 AREA CUT 11 SF
STG. 1 AREA FILL 48 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 38 CY
STG. 1 FILL VOLUME 165 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



53+00.00

HWY 59 STA. 53+00 TO STA. 55+00

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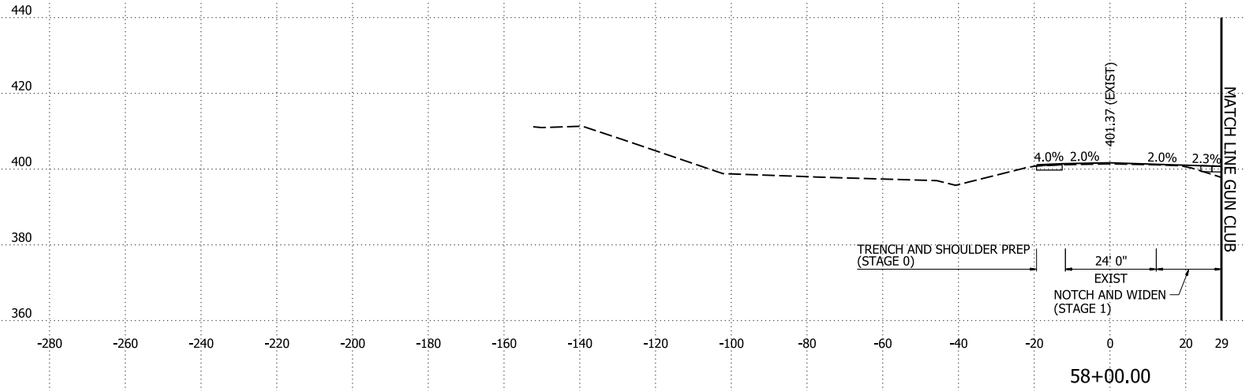
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	804	809
		CROSS SECTIONS				

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 3 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

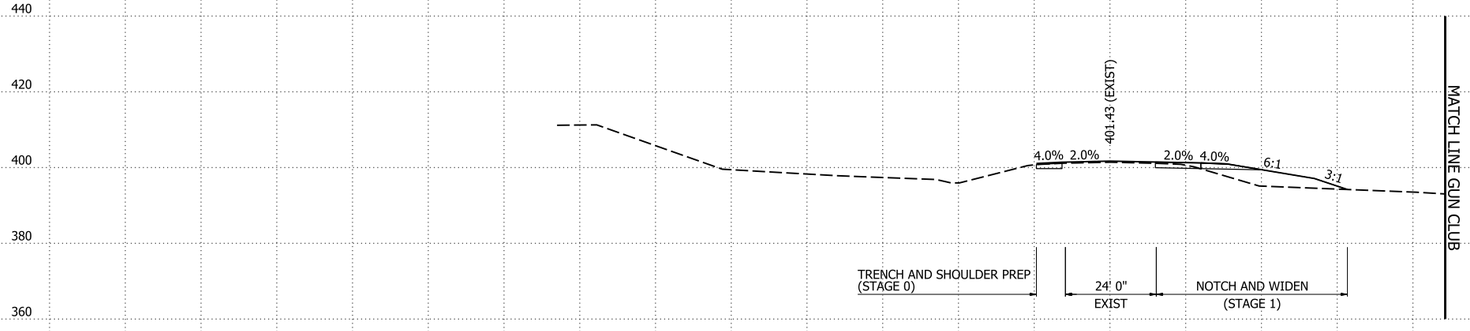
STG. 1 CUT VOLUME 19 CY
STG. 1 FILL VOLUME 183 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



58+00.00

STG. 1 AREA CUT 10 SF
STG. 1 AREA FILL 95 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

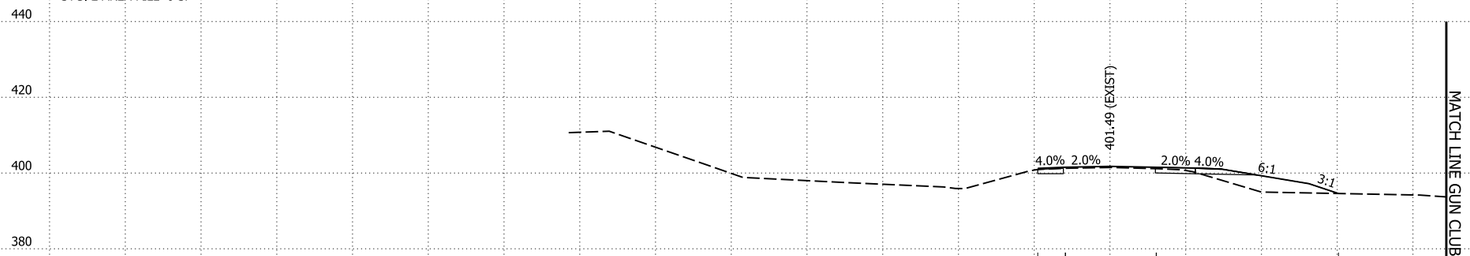
STG. 1 CUT VOLUME 38 CY
STG. 1 FILL VOLUME 340 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



57+00.00

STG. 1 AREA CUT 10 SF
STG. 1 AREA FILL 88 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 38 CY
STG. 1 FILL VOLUME 310 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



56+00.00

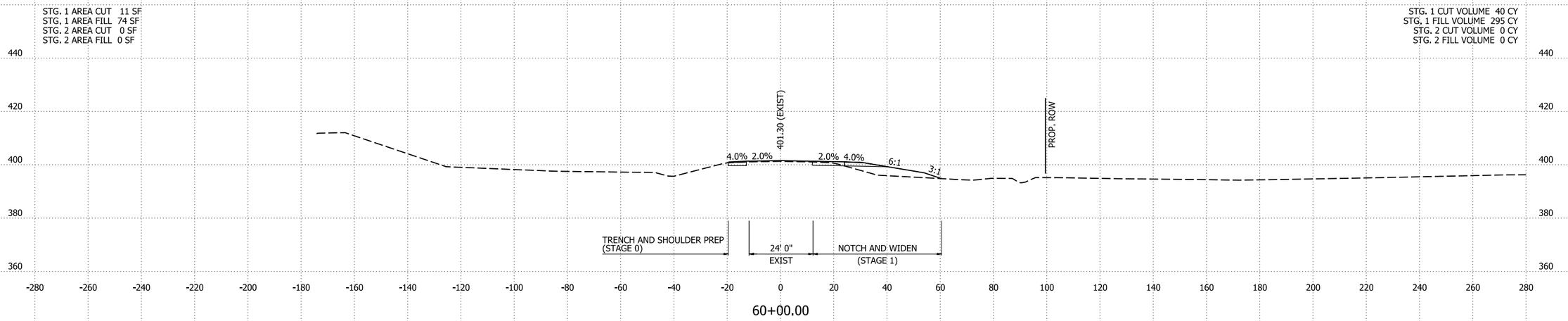
HWY 59 STA. 56+00 TO STA. 58+00

5/16/2024 5:58:30 PM
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	805	809
		CROSS SECTIONS				

STG. 1 AREA CUT 11 SF
STG. 1 AREA FILL 74 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

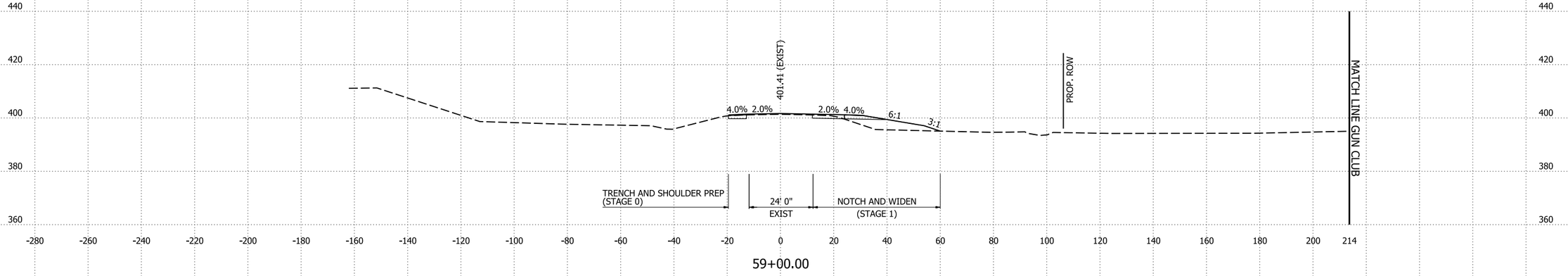
STG. 1 CUT VOLUME 40 CY
STG. 1 FILL VOLUME 295 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



60+00.00

STG. 1 AREA CUT 11 SF
STG. 1 AREA FILL 85 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 28 CY
STG. 1 FILL VOLUME 302 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

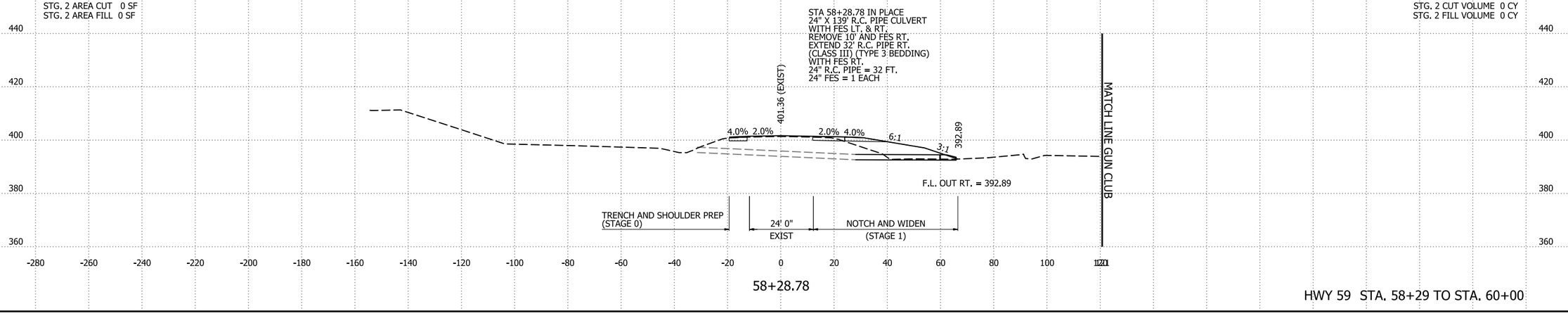


59+00.00

STG. 1 AREA CUT 11 SF
STG. 1 AREA FILL 144 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 6 CY
STG. 1 FILL VOLUME 78 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY

STA 58+28.78 IN PLACE
24" X 139' R.C. PIPE CULVERT
WITH FES LT. & RT.
REMOVE 10' AND FES RT.
EXTEND 32' R.C. PIPE RT.
(CLASS III) (TYPE 3 BEDDING)
WITH FES RT.
24" R.C. PIPE = 32 FT.
24" FES = 1 EACH



58+28.78

HWY 59 STA. 58+29 TO STA. 60+00

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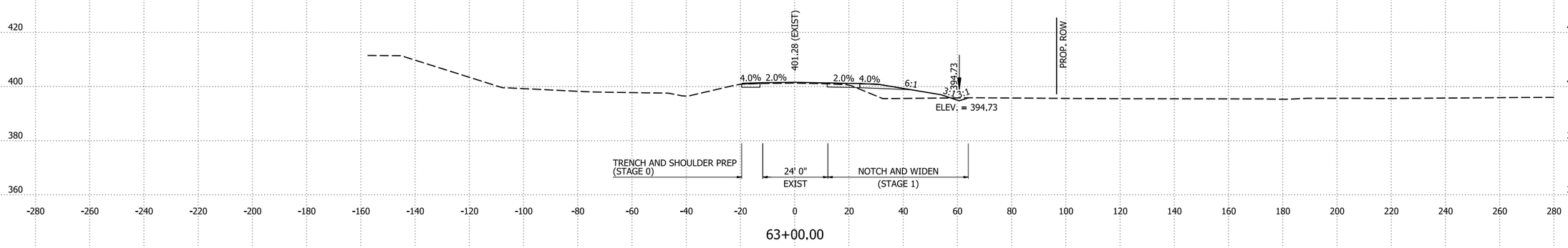
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	806	809
		CROSS SECTIONS				

STG. 1 AREA CUT 13 SF
STG. 1 AREA FILL 81 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

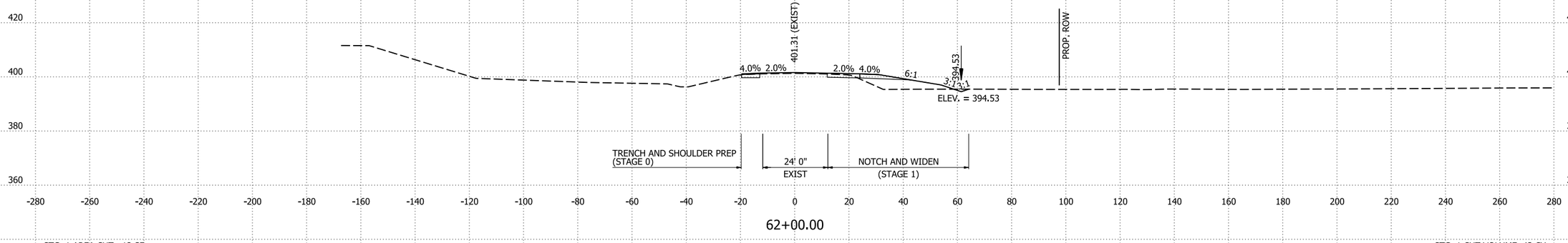
STG. 1 CUT VOLUME 49 CY
STG. 1 FILL VOLUME 313 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



63+00.00

STG. 1 AREA CUT 13 SF
STG. 1 AREA FILL 88 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

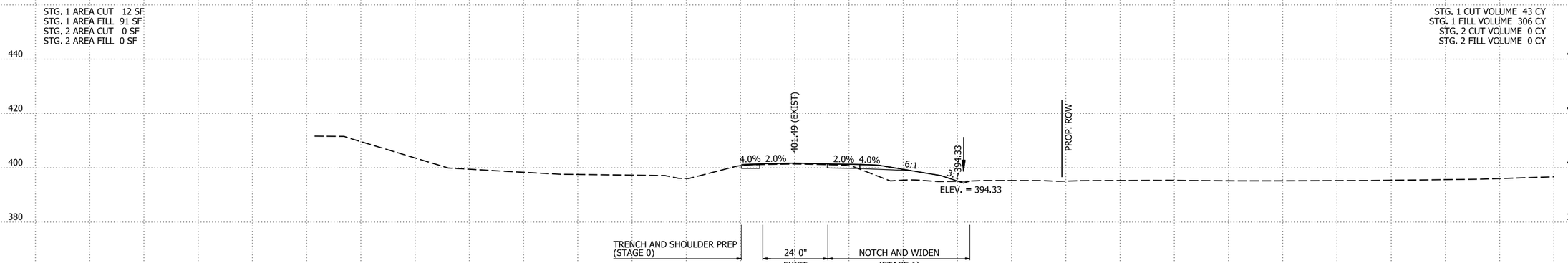
STG. 1 CUT VOLUME 48 CY
STG. 1 FILL VOLUME 330 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



62+00.00

STG. 1 AREA CUT 12 SF
STG. 1 AREA FILL 91 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 43 CY
STG. 1 FILL VOLUME 306 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



61+00.00

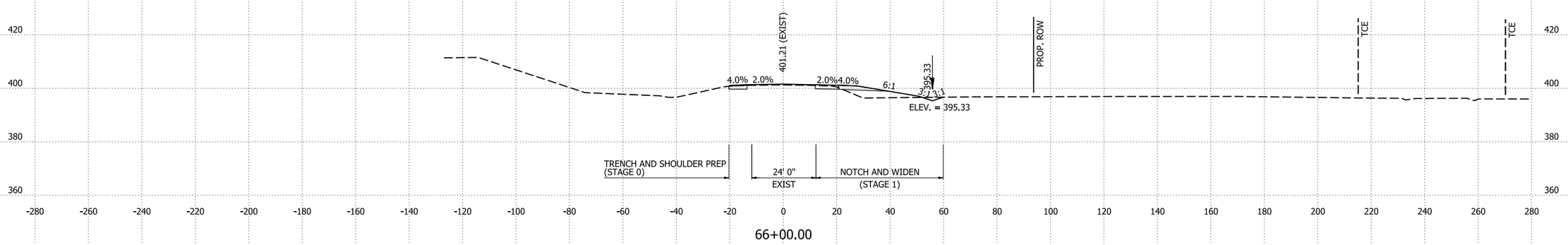
HWY 59 STA. 61+00 TO STA. 63+00

5/16/2024 5:58:31 PM
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	807	809
		CROSS SECTIONS				

STG. 1 AREA CUT 15 SF
STG. 1 AREA FILL 53 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

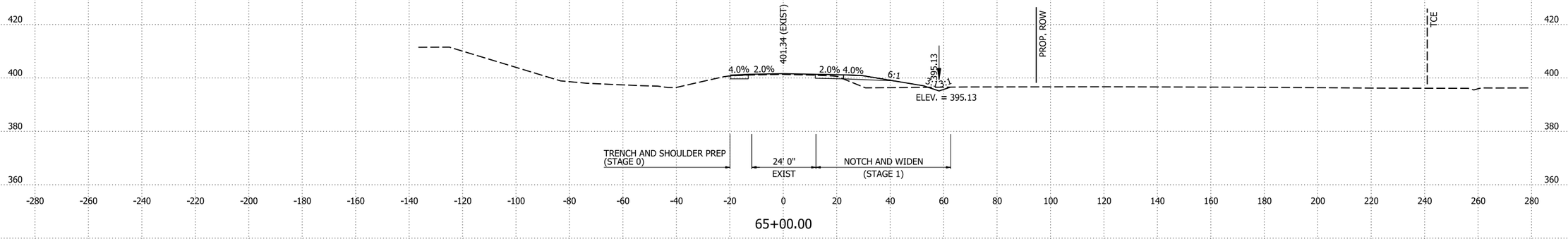
STG. 1 CUT VOLUME 57 CY
STG. 1 FILL VOLUME 210 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



66+00.00

STG. 1 AREA CUT 16 SF
STG. 1 AREA FILL 60 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

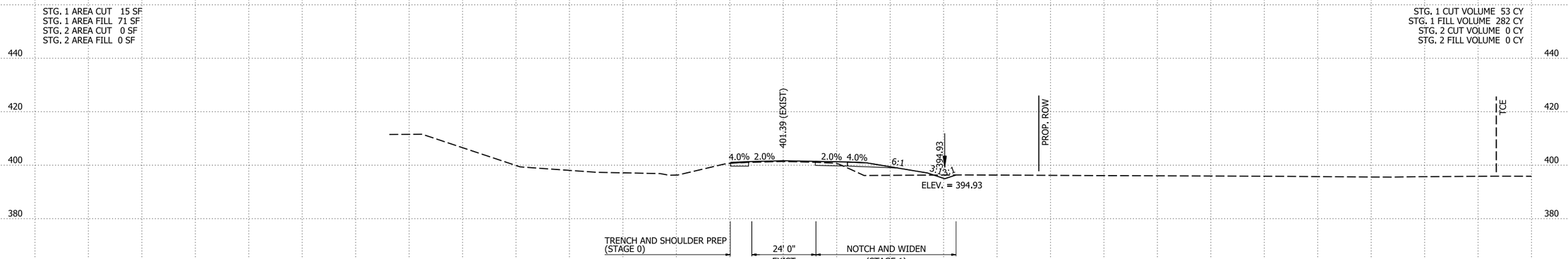
STG. 1 CUT VOLUME 57 CY
STG. 1 FILL VOLUME 244 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



65+00.00

STG. 1 AREA CUT 15 SF
STG. 1 AREA FILL 71 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 53 CY
STG. 1 FILL VOLUME 282 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



64+00.00

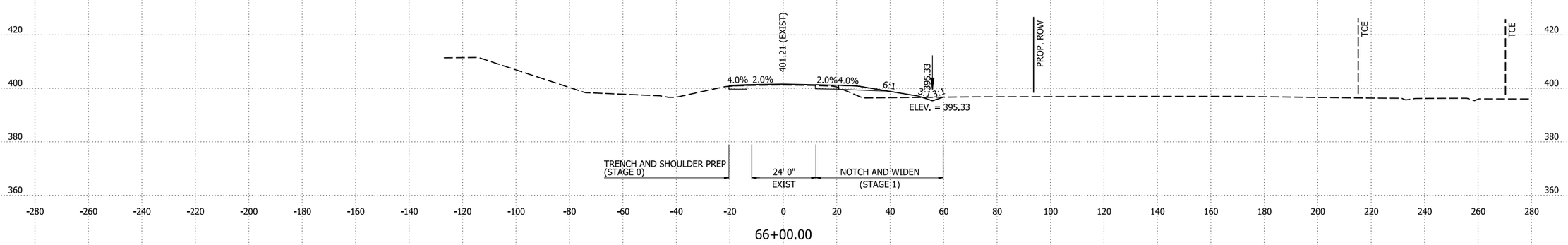
HWY 59 STA. 64+00 TO STA. 66+00

5/16/2024 5:58:31 PM
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	808	809
		CROSS SECTIONS				

STG. 1 AREA CUT 15 SF
STG. 1 AREA FILL 53 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

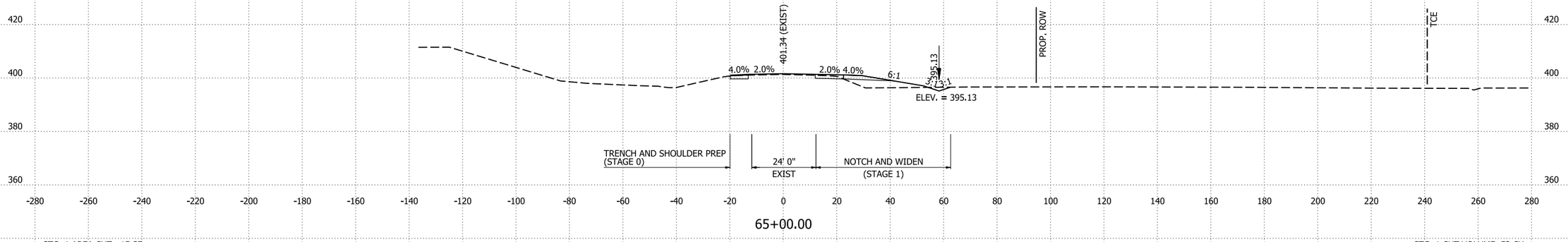
STG. 1 CUT VOLUME 57 CY
STG. 1 FILL VOLUME 210 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



66+00.00

STG. 1 AREA CUT 16 SF
STG. 1 AREA FILL 60 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

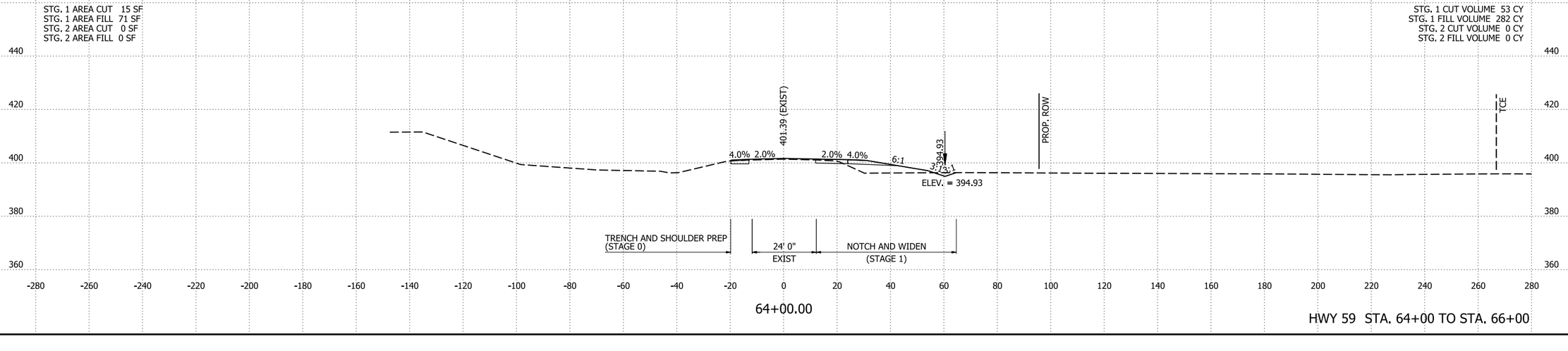
STG. 1 CUT VOLUME 57 CY
STG. 1 FILL VOLUME 244 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



65+00.00

STG. 1 AREA CUT 15 SF
STG. 1 AREA FILL 71 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 53 CY
STG. 1 FILL VOLUME 282 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



64+00.00

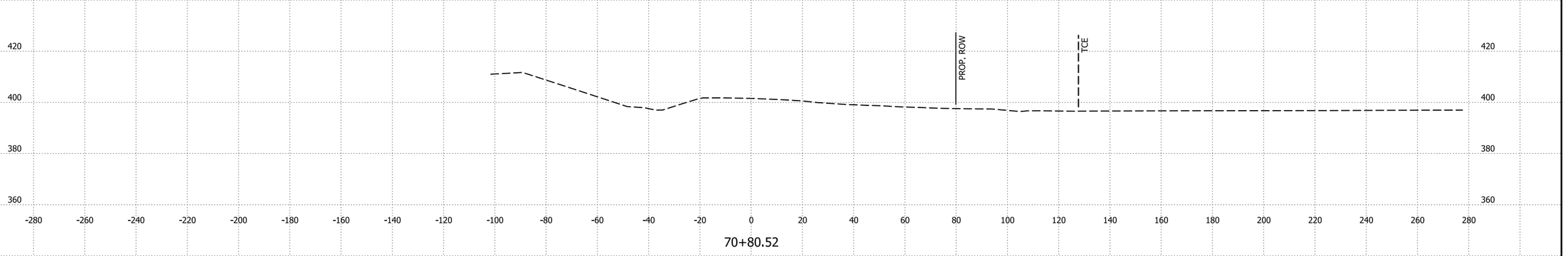
HWY 59 STA. 64+00 TO STA. 66+00

5/16/2024 5:58:31 PM
R040901_22_CX.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
9-16-2024		6	ARK.	040901	809	809
		CROSS SECTIONS				

STG. 1 AREA CUT 0 SF
STG. 1 AREA FILL 0 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

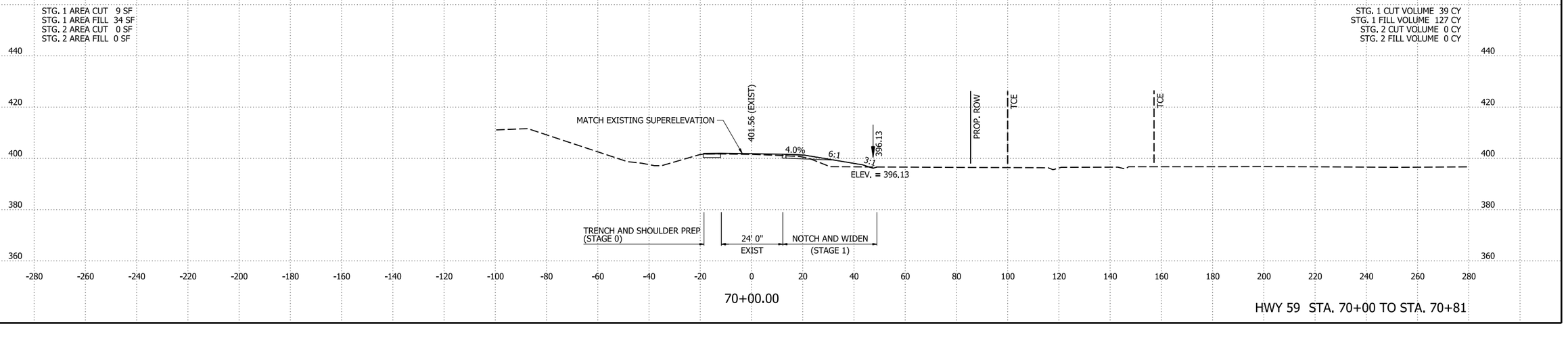
STG. 1 CUT VOLUME 14 CY
STG. 1 FILL VOLUME 50 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



70+80.52

STG. 1 AREA CUT 9 SF
STG. 1 AREA FILL 34 SF
STG. 2 AREA CUT 0 SF
STG. 2 AREA FILL 0 SF

STG. 1 CUT VOLUME 39 CY
STG. 1 FILL VOLUME 127 CY
STG. 2 CUT VOLUME 0 CY
STG. 2 FILL VOLUME 0 CY



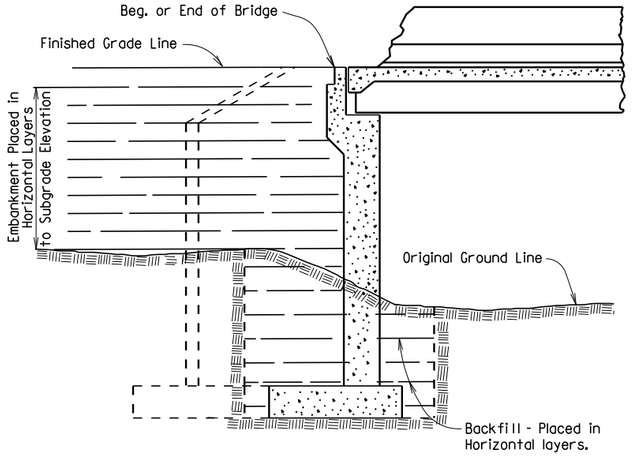
70+00.00

HWY 59 STA. 70+00 TO STA. 70+81

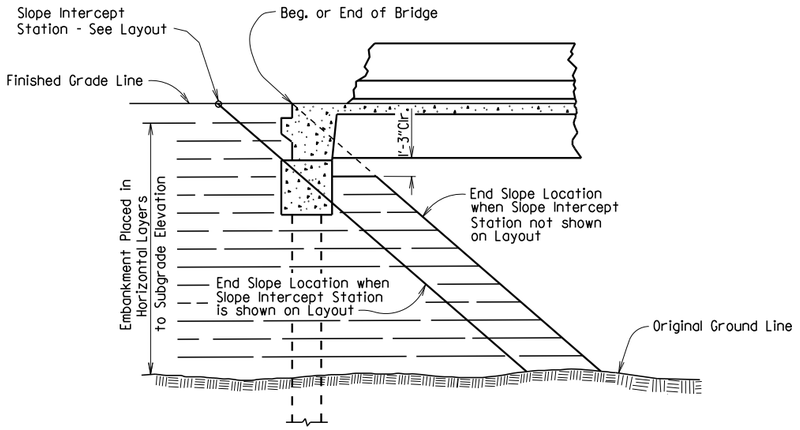
5/16/2024 5:58:31 PM
R040901_22_CX.dgn

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				

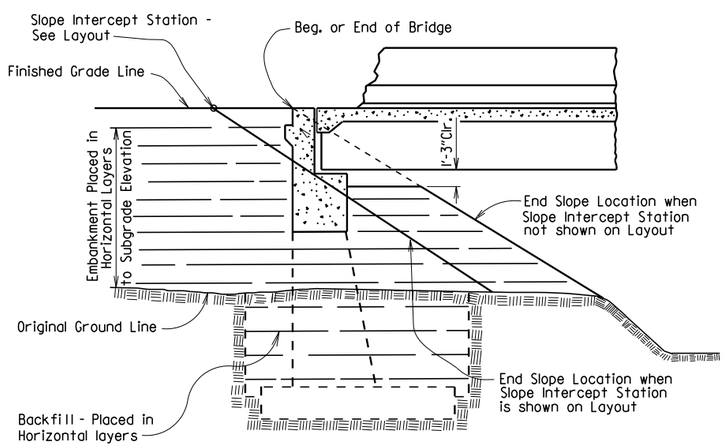
1 EMBANKMENT & BACKFILL 55000



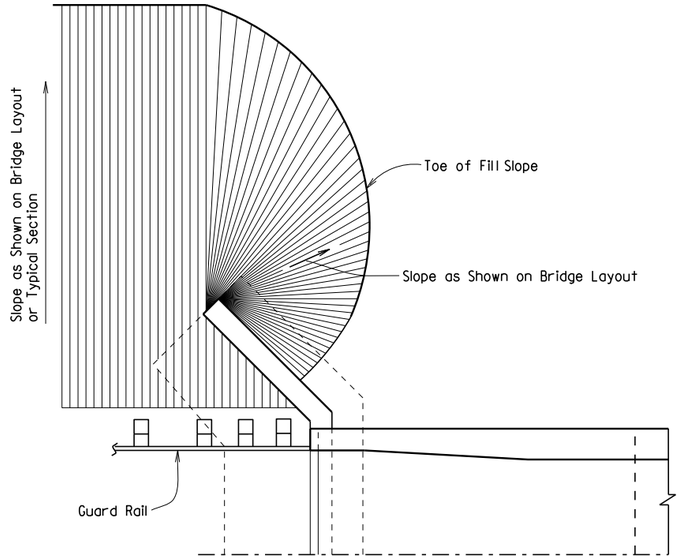
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



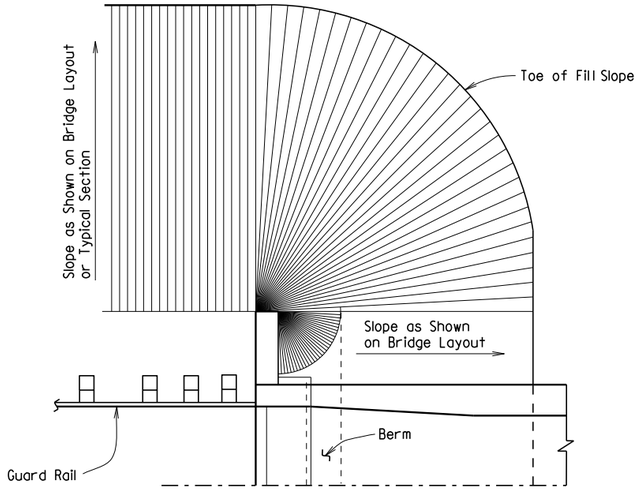
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



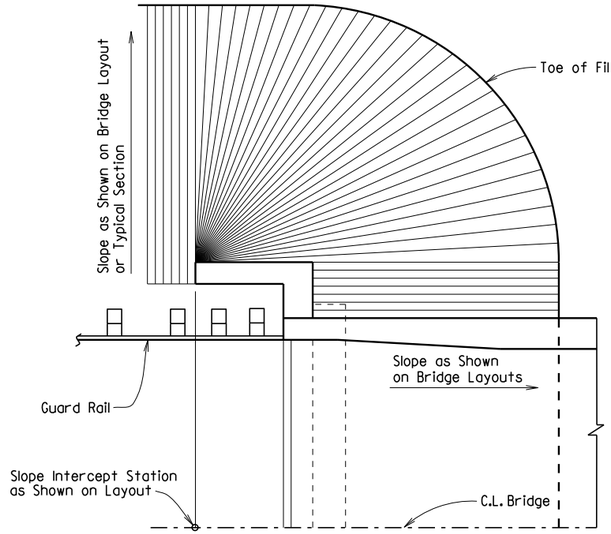
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



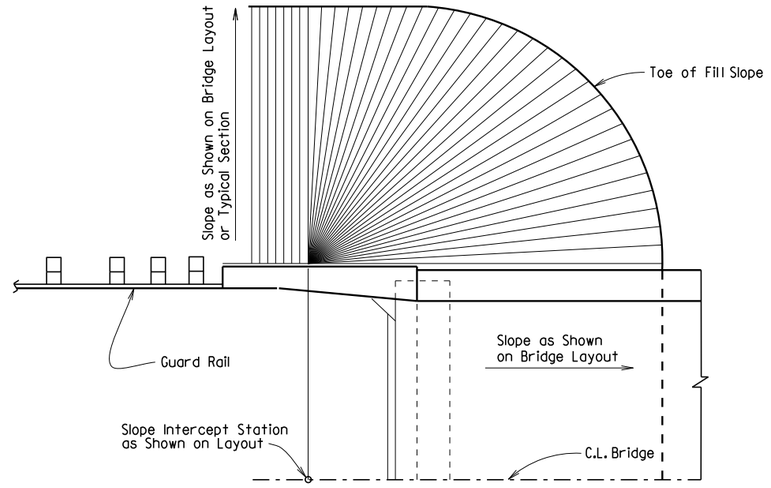
VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH STUB WING



SPILL-THROUGH END BENTS WITH TURNBACK WING



SPILL-THROUGH END BENTS WITH TRANSITION WING

METHOD OF DETERMINING FILL SLOPE LOCATION AT BRIDGE ENDS

GENERAL NOTES

The Bridge End Embankment shall be defined as a section of embankment, not less than 20 feet long adjacent to the bridge end, together with the side slopes and slopes under the bridge end including around the end of wingwalls. Embankment adjacent to structures shall be constructed in 6 inch horizontal layers (loose measure) and compacted by the use of mechanical equipment to the satisfaction of the Engineer. Refer to Subsections 210.09, 210.10 and 801.08 for construction requirements.

STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55000.dgn

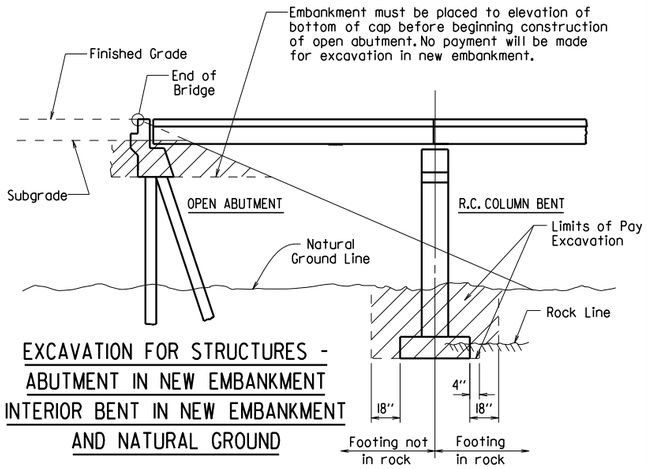
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE

DESIGNED BY: STD. DATE: -

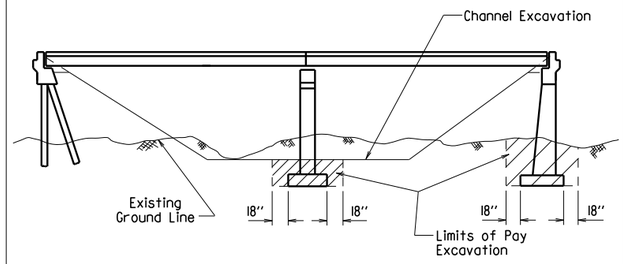
DRAWING NO. 55000

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				

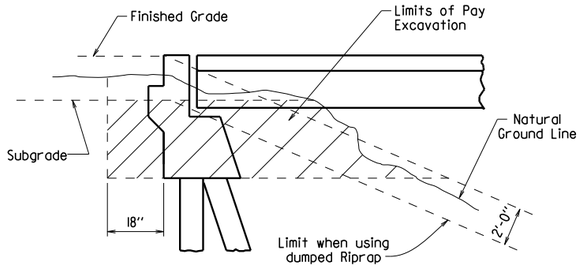
1 RIPRAP & EXCAV. 55001



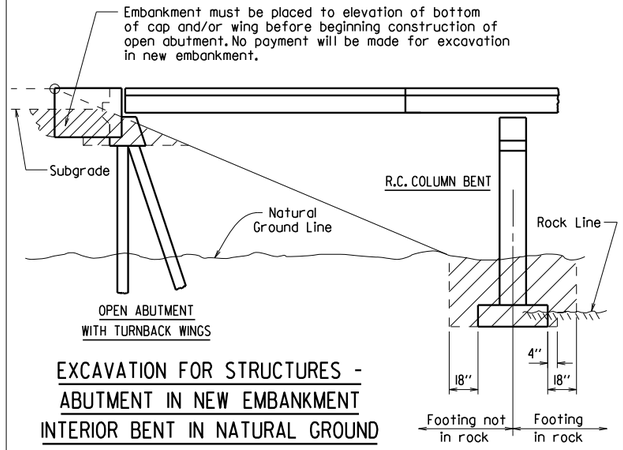
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



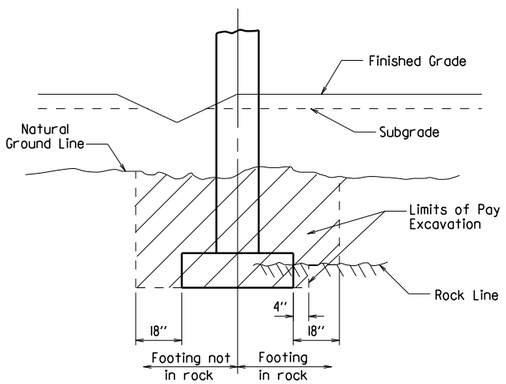
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



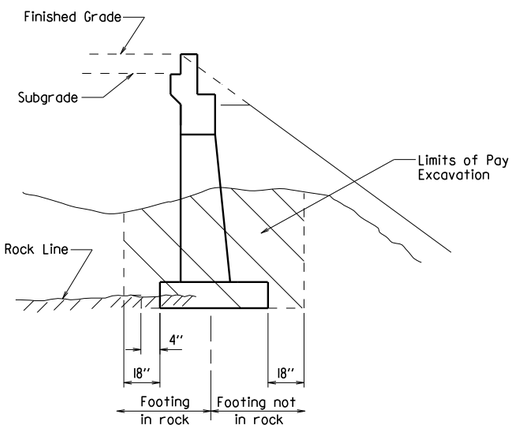
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



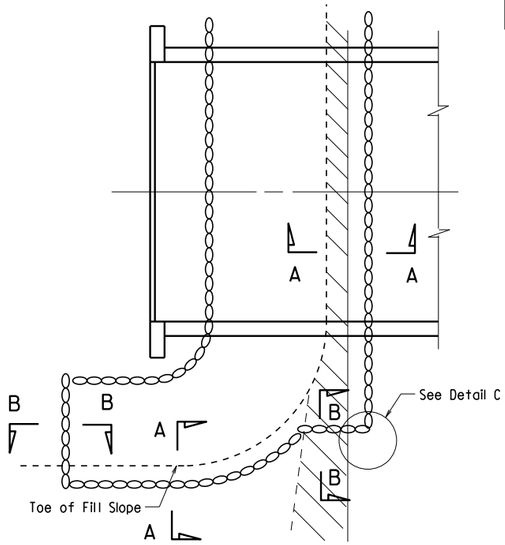
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



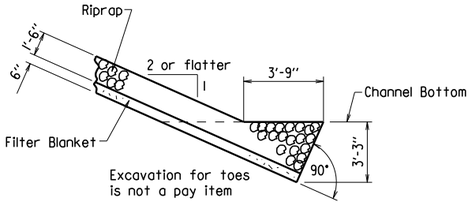
EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT

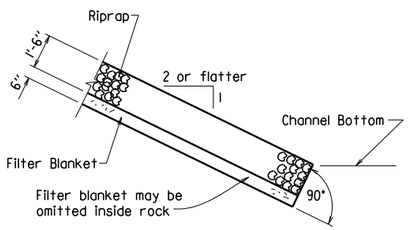


PLAN OF DUMPED RIPRAP



SECTION A-A

(Toe Excavation in Soil)



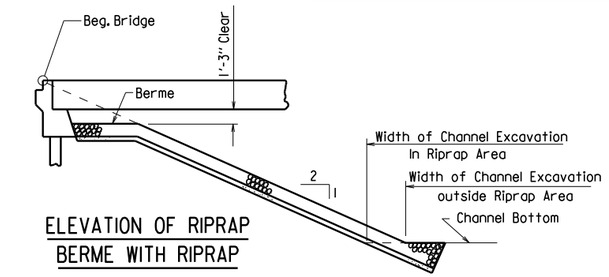
SECTION A-A

(Toe Excavation in Rock)

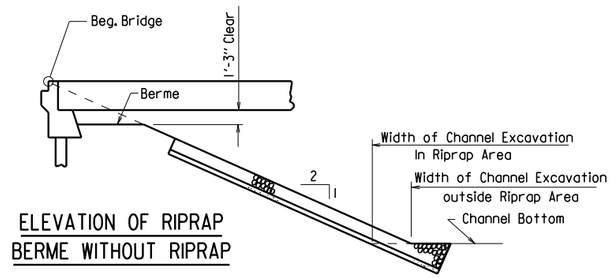
Note : Use this type of toe when rock is encountered which is in a stable condition.

Note : In lieu of an aggregate filter blanket, a synthetic fiber geotextile fabric complying with the requirements of Subsection 816.02(e) may be used.

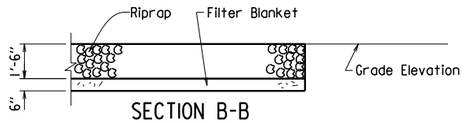
Note : Details for computing excavation for structures are included for information as to how plan quantities were calculated and for use when adjusting quantities when changing footing elevation.



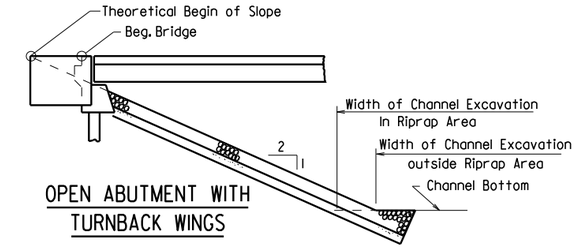
ELEVATION OF RIPRAP BERME WITH RIPRAP



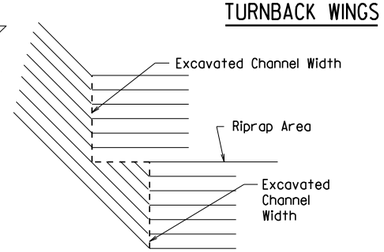
ELEVATION OF RIPRAP BERME WITHOUT RIPRAP



SECTION B-B



OPEN ABUTMENT WITH TURNBACK WINGS



DETAIL C

STANDARD DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND COMPUTING EXCAVATION FOR STRUCTURES

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55001.dgn

CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE

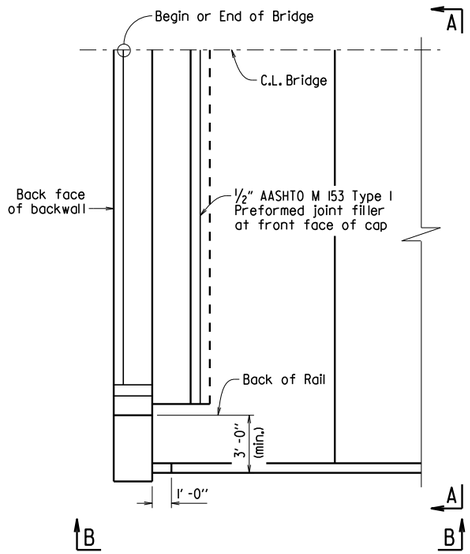
DESIGNED BY: STD. DATE:

DRAWING NO. 55001

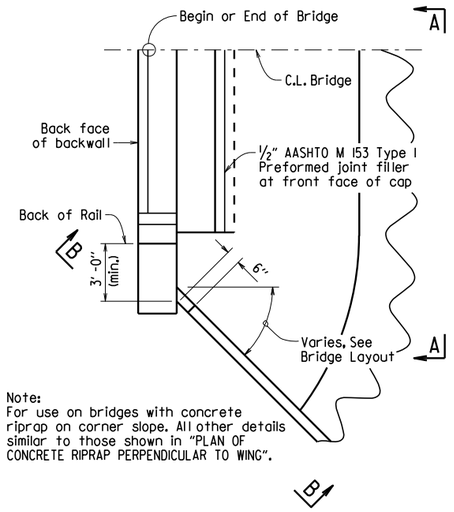
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				

① CONCRETE RIPRAP 55002

Note:
Sloped surfaces of concrete riprap to be marked off into blocks (construction joints optional) with an approved grooving tool, spacing the grooved lines about 5' apart.



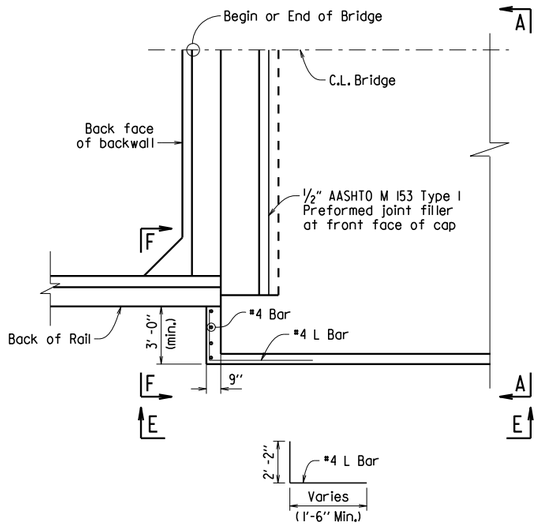
PLAN OF CONCRETE RIPRAP PERPENDICULAR TO WING
¼" = 1'-0"



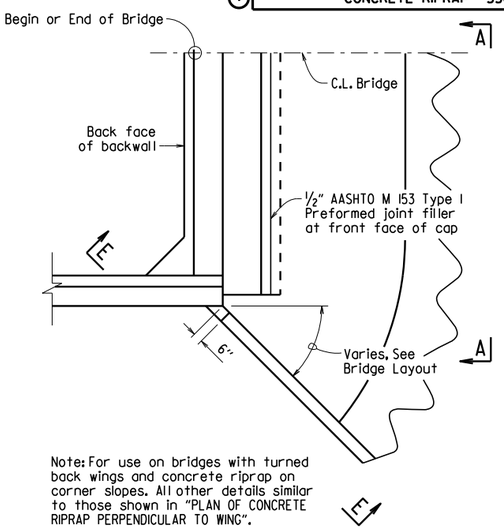
Note:
For use on bridges with concrete riprap on corner slope. All other details similar to those shown in "PLAN OF CONCRETE RIPRAP PERPENDICULAR TO WING".

PLAN OF CONCRETE RIPRAP AT ANGLE TO WING
¼" = 1'-0"

Note:
For use on bridges with turned back wings. All other details similar to those shown in "PLAN OF CONCRETE RIPRAP PERPENDICULAR TO WING".



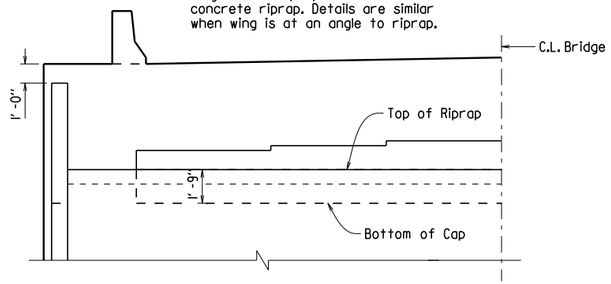
PLAN OF CONCRETE RIPRAP PERPENDICULAR TO TURNED BACK WING
¼" = 1'-0"



Note: For use on bridges with turned back wings and concrete riprap on corner slopes. All other details similar to those shown in "PLAN OF CONCRETE RIPRAP PERPENDICULAR TO WING".

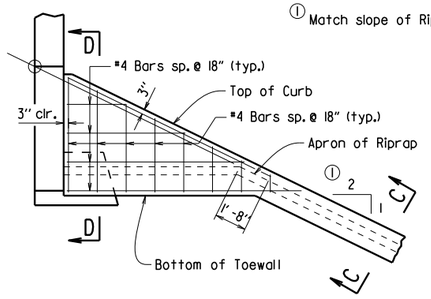
PLAN OF CONCRETE RIPRAP AT ANGLE FROM TURNED BACK WING
¼" = 1'-0"

Note:
Wing is shown perpendicular to concrete riprap. Details are similar when wing is at an angle to riprap.

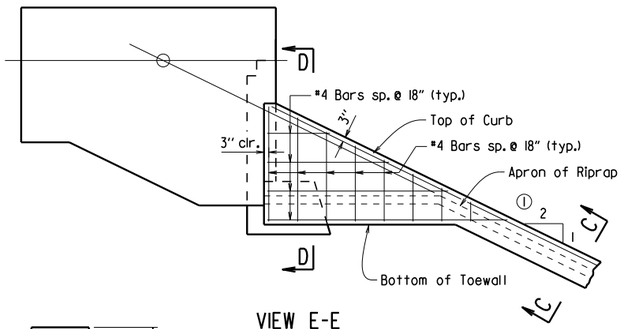


VIEW A-A
¼" = 1'-0"

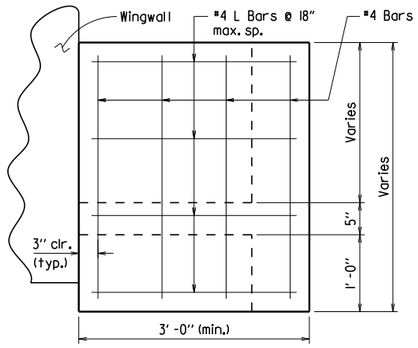
① Match slope of Riprap Apron.



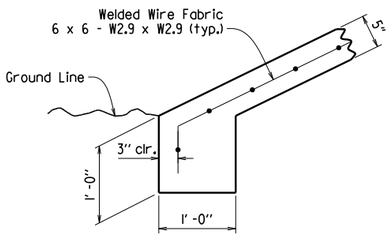
VIEW B-B
¼" = 1'-0"



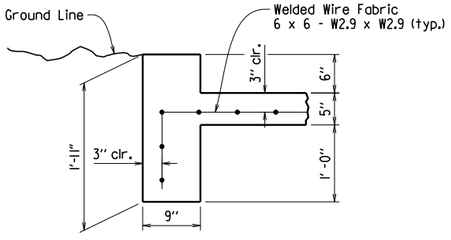
VIEW E-E
¼" = 1'-0"



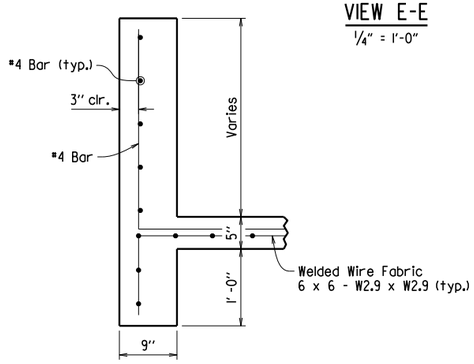
VIEW F-F
1" = 1'-0"



TOE OF CONCRETE RIPRAP
1" = 1'-0"



SECTION C-C
1" = 1'-0"



SECTION D-D
1" = 1'-0"

GENERAL NOTES

All concrete shall be Class A with a minimum compressive strength, f'c = 2,100 psi.

Welded wire fabric shall conform to AASHTO M55 or M221.

STANDARD DETAILS FOR CONCRETE RIPRAP

ARKANSAS STATE HIGHWAY COMMISSION

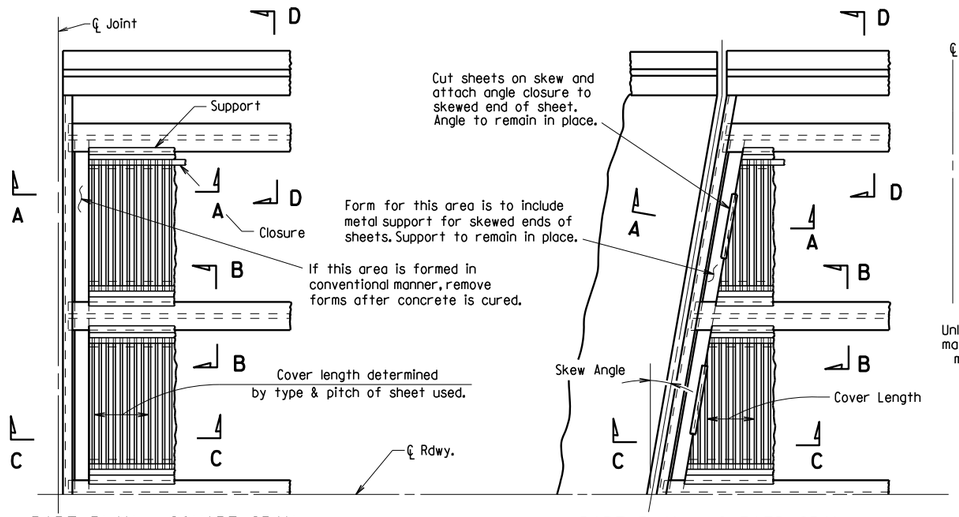
LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 2/27/2014
CHECKED BY: BEF DATE: 2/27/2014
DESIGNED BY: Std. DATE: ---
FILENAME: b55002.dgn
SCALE: AS SHOWN

DRAWING NO. 55002

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
3/24/16				6	ARK.			
				JOB NO.				

① BRIDGE DECK FORMS 55005

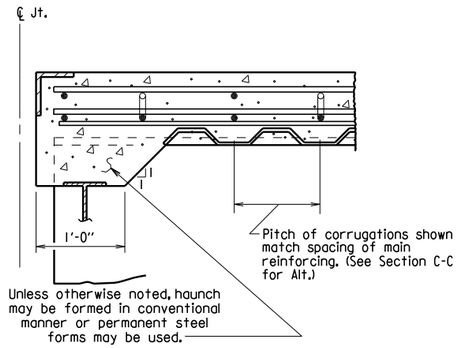


PART PLAN - SQUARE SPAN

3/8" = 1'-0"

PART PLAN - SKEWED SPAN

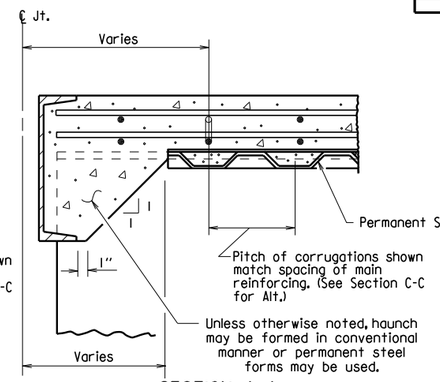
3/8" = 1'-0"



SECTION A-A

N.T.S.

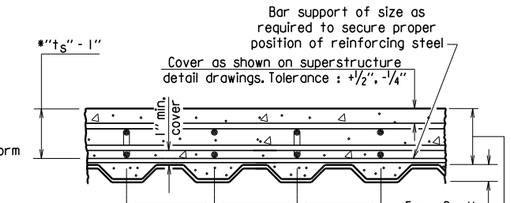
(Angle at end of span)



SECTION A-A

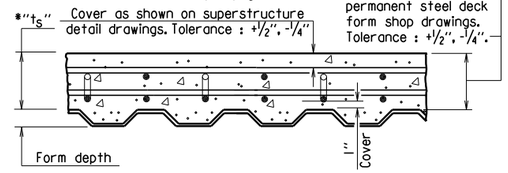
N.T.S.

(Channel at end of span)



SECTION C-C

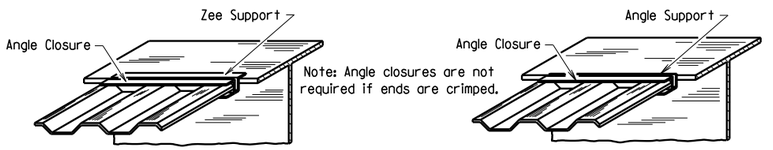
1" = 1'-0"



SECTION C-C - ALTERNATE

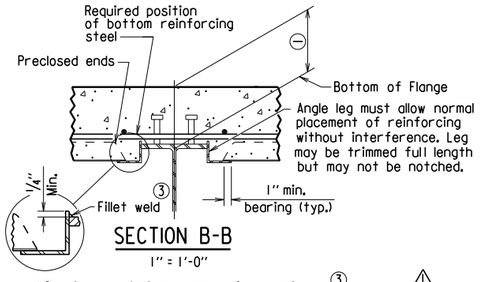
1" = 1'-0"

(Applicable when corrugations do not match spacing of main reinforcement)



SKETCH OF PERMISSIBLE SUPPORTS

N.T.S.

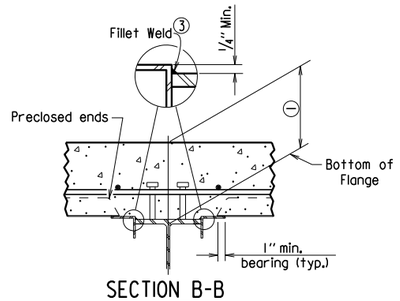


SECTION B-B

1" = 1'-0"

(Showing permissible support for tension flange where shear connectors are used, and for all compression flanges)

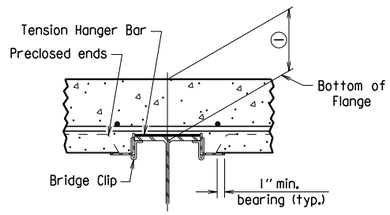
③ ⚠ Minimum weld: 1/8" x 1" @ 18". More weld may be required; maximum length per weld = 1 1/2" (typ.)



SECTION B-B

1" = 1'-0"

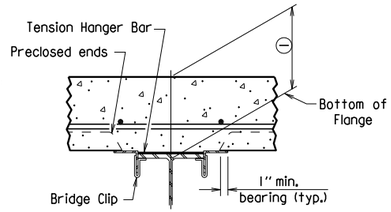
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



SECTION B-B

1" = 1'-0"

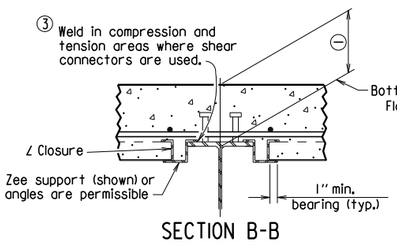
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

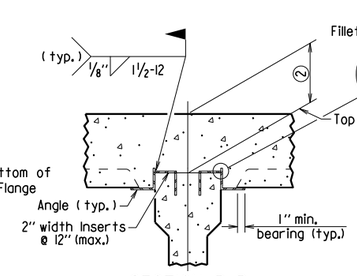
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

(Showing ∠ Closure)

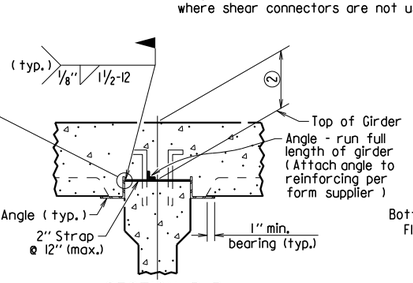


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by Insert cast in girder)

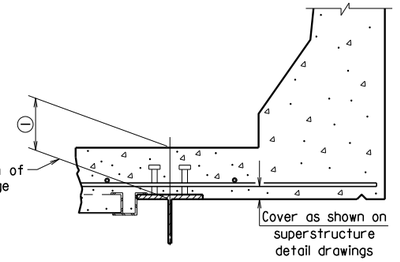


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by Strap)



SECTION D-D

1" = 1'-0"

Note: Only Bottom Reinforcing is shown.

① Distance from top of slab to bottom of top flange as measured at centerline girder and as shown on superstructure detail drawings. This dimension may vary within the following limits to maintain the grade and slab thickness tolerances : Minimum - occurs when either the top flange or the support angle leg contacts the bottom reinforcing steel; Maximum = t_S + 1 3/4" + flange thickness. See Section C-C for slab thickness tolerance between adjacent girder flanges.

② Distance from top of slab to top of girder as measured at centerline girder and as shown on superstructure detail drawings. This dimension may vary within the following limits to maintain the grade and slab thickness tolerances : Minimum - occurs when either the top of girder or the support angle leg contacts the bottom reinforcing steel; Maximum - value shown on the superstructure detail drawings when removable forms are used. See Section C-C for slab thickness tolerance between adjacent girder flanges.

⚠ Revised weld dimension by KWY, Ck'd. by BEF, 3/24/16.

*t_S = slab thickness as shown on superstructure detail drawings.

GENERAL NOTES

Permanent steel deck forms may be used at the Contractor's option and shall be at no additional cost to the Department. Such use may result in changes to the dead load deflection of the girder. Any cost for adjustments due to a change in the dead load deflection will be borne by the Contractor. Payment for deck concrete and structural steel will not be increased due to use of permanent steel deck forms.

Permanent steel deck forms shall conform to Subsection 802.14(b). Detailed plans, including detailed calculations and manufacturer's technical brochure, shall be submitted to and approved by the Engineer before work of forming the bridge deck is started.

Welding of form supports to the tension flange of steel girders will be permitted only in areas where shear connectors are used. When welding is not allowed, the method of fastening Z or ∠ supports to the flange must be approved by the Engineer.

Form sheets shall be fastened to supporting members and to each other with galvanized metal screws sufficient in size and number to provide a secure attachment. Alternate methods of attachment must be approved by the Engineer.

When the pitch of form corrugations match the reinforcing spacing, transversely align form sheets across the bridge to maintain the correct orientation of continuous reinforcing bars in the corrugations.

Bar support rods, when used, shall be sized and spaced to adequately support the bottom reinforcing mat at the required position.

High chairs shall be sized to support the top mat of reinforcing at the proper position. High chairs shall be placed at locations shown on the detail drawings.

Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition), with applicable Supplemental Specifications and Special Provisions.

STANDARD DETAILS FOR PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55005.dgn

CHECKED BY: BEF DATE: 2-27-2014 SCALE: NONE

DESIGNED BY: STD. DATE: —

DRAWING NO. 55005

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				
						GENERAL NOTES		55006

GENERAL NOTES

These GENERAL NOTES are applicable unless otherwise shown in the Plan Details, Special Provisions, or Supplemental Specifications.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition) with applicable Supplemental Specifications and Special Provisions. Section and Subsection refer to the Standard Specifications.

DESIGN SPECIFICATIONS: See Bridge Layout(s).

SUPERSTRUCTURE NOTES:

MATERIALS AND STRENGTHS:

Class S(AE) Concrete	f'c =	4,000 psi
Reinforcing Steel (Gr. 60, AASHTO M 31 or M 322, Type A)	fy =	60,000 psi
Structural Steel (AASHTO M 270, Gr. 36)	Fy =	36,000 psi
Structural Steel (AASHTO M 270, Gr. 50)	Fy =	50,000 psi
Structural Steel (AASHTO M 270, Gr. 50W)	Fy =	50,000 psi
Structural Steel (AASHTO M 270, Gr. HPS70W)	Fy =	70,000 psi

See Plan Details for Grade(s) of Structural Steel required.

CONCRETE:

All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi. Concrete shall be poured in the dry and all exposed corners shall be chamfered ¾" unless otherwise noted.

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Class S(AE) Concrete. See Standard Drawing No. 55005 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used.

Use of a longitudinal screed is not permitted on any span of a bridge deck with horizontal curvature.

The concrete deck (roadway surface) shall be given a tine finish in accordance with Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Sidewalks shall receive a broomed finish as specified for final finishing in Subsection 802.19 for Class 6 Broomed Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the beam or girder. When permitted, the use of a longitudinal strike-off will require that a vertical camber adjustment be made in the strike-off to account for the future dead load deflection due to any railings, median barrier, and sidewalks.

REINFORCING STEEL:

All reinforcing steel shall be Grade 60 conforming to AASHTO M 31 or M 322, Type A, with mill test reports and shall be epoxy coated. The reinforcing steel is to be accurately located in the forms and firmly held in place by steel wire supports, sufficient in number and size to prevent displacement during the course of construction. The wire supports will not be paid for directly, but will be considered subsidiary to the item "Epoxy Coated Reinforcing Steel (Grade 60)".

STRUCTURAL STEEL (COMMON TO W-BEAMS AND PLATE GIRDERS):

Structural steel shall be AASHTO M 270 with grade and payment as specified in the plans. Grade 50W steel shall not be painted and all exposed surfaces shall be cleaned in accordance with Subsection 807.84(e). Grade 36 and Grade 50 steel shall be painted unless otherwise noted and all exposed surfaces shall be cleaned in accordance with Subsection 807.84. Structural steel completely embedded in concrete may be AASHTO M 270, Gr. 36, Gr. 50 or Gr. 50W unless otherwise noted.

Drawings show general features of design only. Shop drawings shall be made in accordance with the specifications, submitted and approval secured before fabrication is begun.

Requests for substitution of structural steel shapes shown with shapes of greater size must be submitted by the Contractor to the Engineer for approval. Steels of equal or greater strengths will be accepted only when shown on the approved shop drawings. Payment will be based on the basis of shapes and materials shown in the plans, and no additional compensation will be made for any adjustments due to substitutions.

All welding that is to be done during fabrication of structural steel, including temporary welds, shall be detailed on the shop drawings and submitted for approval. If additional welds are required, whether permanent or temporary, a formal request with detailed drawings shall be submitted to the Engineer for approval; however, additional welds used for attaching falsework support devices or screed rail supports to the structural steel that do not exceed the limitations of Subsection 802.13 will not require approval prior to construction. All welding shall conform to Subsection 807.26.

Unless otherwise noted, field connections shall be bolted with ¾" ø high-strength bolts using 13/16 " ø open holes. Holes for ¾" ø high-strength bolts may be 15/16 " ø if a washer is supplied for use under both the nut and head of the bolt. The use of oversized holes will not be allowed on main members unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam or girder webs and on the bottom of the beam or girder flanges.

All stud shear connectors shall be granular flux filled, solid fluxed, or equal and shall be automatically end welded in accordance with recommendations of the Manufacturer.

When painting is required, all structural steel except galvanized steel and steel completely encased in concrete shall be painted in accordance with Subsection 807.75. The color of paint shall be as specified in the plans.

STRUCTURAL STEEL (W-BEAMS):

All beams and field splice plates, and all diaphragms and connection plates attached to horizontally curved beams are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in Subsection 807.05. This work and material will not be paid for directly, but shall be considered subsidiary to the item "Structural Steel in Beam Spans (M 270, Gr. ___)".

All beams in continuous units and simple spans with field splices shall be blocked in their true position in the shop in groups as specified in Subsection 807.54(b)(2) with the webs horizontal. The camber, length of sections, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram.

All beams in simple spans without field splices shall be blocked in their true position with webs horizontal. The camber, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records.

Flange field splice plates shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses.

All beam dimensions are based on a temperature of 60 degrees F. A tolerance of ¼" +/- is allowed for camber.

Bent plate diaphragms for horizontally curved beams shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses. Bent plate diaphragms for straight beams may be cut and fabricated in accordance with Subsection 807.35 or as required for horizontally curved beams.

Unless otherwise noted, diaphragms shall be installed as beams are erected. All bolts in diaphragms and field splices shall be installed and tightened in accordance with Subsection 807.71 prior to pouring the concrete deck.

STRUCTURAL STEEL (PLATE GIRDERS):

All references to cross-frames shall include "X" or "K" types.

All girder web and flange plates, all field splice plates, and all diaphragms, cross-frames and connection plates attached to horizontally curved girders are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in Subsection 807.05. This work and material will not be paid for directly, but shall be considered subsidiary to the item "Structural Steel in Plate Girder Spans (M 270, Gr. ___)".

All girders in continuous units and simple spans with field splices shall be assembled in the shop as specified in Subsection 807.54(b)(2) and blocked in their true position with webs horizontal. The camber, length of sections, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram.

All girders in simple spans without field splices shall be blocked in their true position with webs horizontal. The camber, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records.

Web and flange plates for main members and flange splice plates for main members shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses.

Girder webs may be made by shop splicing with minimum lengths of 25 feet for sections. Flange plates longer than 50 feet may be made by shop splicing with minimum lengths of 25 feet for sections. No additional payment will be made for shop welded splices.

All girder dimensions are based on a temperature of 60 degrees F. A tolerance of ¼" +/- is allowed for camber.

Groove welds in web and flange plates shall be Quality Control (Q.C.) tested by nondestructive testing, as required in Subsection 807.23(b). Fillet welds at flange to web plate connections shall be Q.C. tested by the magnetic particle method. All Q.C. testing shall be considered subsidiary to the item "Structural Steel in Plate Girder Spans (M 270, Gr. ___)".

Bent plate diaphragms for horizontally curved girders shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses. Bent plate diaphragms for straight girders may be cut and fabricated in accordance with Subsection 807.35 or as required for horizontally curved girders.

Unless otherwise noted, cross-frames and diaphragms shall be installed as girders are erected. All bolts in cross-frames, diaphragms, and field splices shall be installed and tightened in accordance with Subsection 807.71 prior to pouring the concrete deck.

SUBSTRUCTURE NOTES:

CONCRETE:

Unless otherwise noted, concrete in caps, columns and footings (except seal footings) shall be Class "S" with a minimum 28 day compressive strength f'c = 3,500 psi and shall be poured in the dry. Seal Concrete for footings shall have a minimum 28 day compressive strength f'c = 2,100 psi.

Concrete in drilled shafts shall be Class "S" as modified by Job SP "Drilled Shaft Foundations".

All exposed corners shall be chamfered ¾" unless otherwise noted.

REINFORCING STEEL:

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

Top reinforcing bars in cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

STRUCTURAL STEEL:

Structural steel in end bents shall be AASHTO M 270 with grade and payment as specified in the plans.

FOR ADDITIONAL INFORMATION AND NOTES, SEE LAYOUT(S) AND PLAN DETAILS.

STANDARD GENERAL NOTES
FOR STEEL BRIDGE STRUCTURES

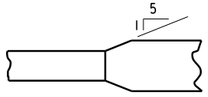
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 9-2-2015 FILENAME: b55006.dgn
CHECKED BY: B.E.F. DATE: 9-2-2015 SCALE: NO SCALE
DESIGNED BY: STD. DATE:

DRAWING NO. 55006

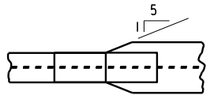
PRINT DATE: 11/7/2019

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				
				①	STEEL BRIDGE STRUCTURES 55007			

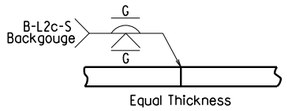


Plan-Unequal Width (Flg.)

FLANGE SPLICE

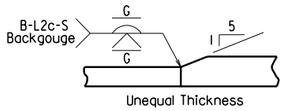


FLANGE SPLICE AT UNEQUAL BOTTOM FLANGE WIDTHS



Equal Thickness

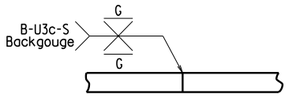
WEB & FLANGE SPLICE



Unequal Thickness

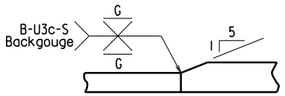
FLANGE SPLICE

(Use when Base Metal Thickness is Equal to or Less than 2")



Equal Thickness

WEB & FLANGE SPLICE

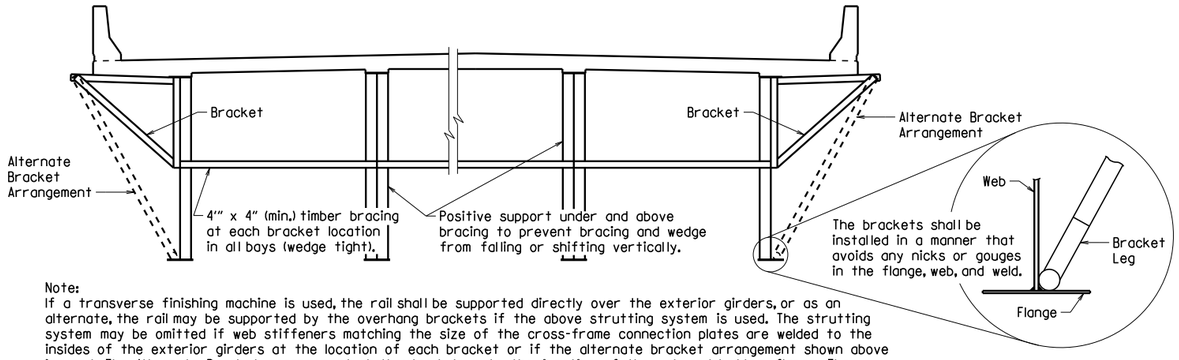


Unequal Thickness

FLANGE SPLICE

(Use when Base Metal Thickness is Greater than 2")

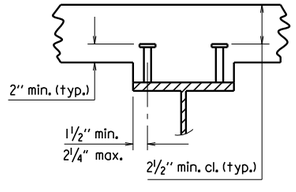
DETAILS OF WELDED SPLICES FOR PLATE GIRDERS



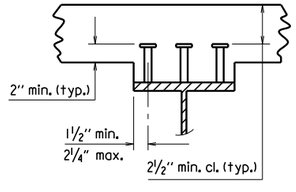
Note:
If a transverse finishing machine is used, the rail shall be supported directly over the exterior girders, or as an alternate, the rail may be supported by the overhang brackets if the above strutting system is used. The strutting system may be omitted if web stiffeners matching the size of the cross-frame connection plates are welded to the insides of the exterior girders at the location of each bracket or if the alternate bracket arrangement shown above is used. The Alternate Bracket arrangement shall extend down to the junction of the web and bottom flange. The stiffener shall conform to the details for cross frame connection plates shown on the plans. No direct payment will be made for brackets, timber bracing, supports, or welded stiffeners. Payment shall be subsidiary to "Structural Steel in Plate Girder Spans (___)".

SCREED RAIL SUPPORT FOR PLATE GIRDERS

(USE WHEN WEB DEPTHS ARE 48" OR GREATER)



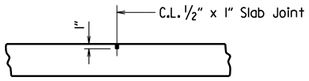
2 STUDS PER ROW



3 STUDS PER ROW

Stud Shear Connectors shall be automatically end welded to the beam or girder flange in accordance with the recommendations of the Manufacturer. See plan details for number and size.

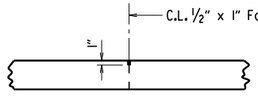
SHEAR CONNECTOR DETAIL



Use Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer Rod filler will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab Joints shall extend to the outside edge of the deck slab and shall align with open joints at the front face of the parapet. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damage to the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations. The joint sealer shall extend across the deck from gutterline to gutterline.

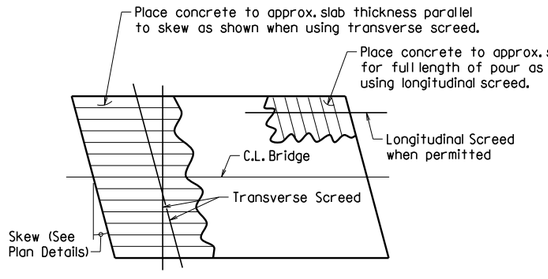
ADDITIONAL NOTES IF SIDEWALKS OR RAISED MEDIANS ARE REQUIRED:
Slab Joints shall be installed before the sidewalk or raised median is poured. After installation of the joint in the sidewalk or raised median and prior to pouring the parapet rail, the joint sealer shall be placed extending across the deck slab from gutterline to gutterline and acrosss the top of the sidwalk or raised median to the edge of the slab. No joint sealer shall be placed on the deck slab under the sidewalk or raised median.

TRANSVERSE SLAB JOINT DETAIL



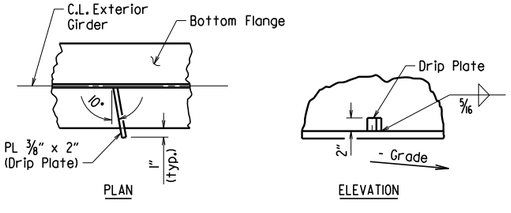
Use ½" x 1" Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer Rod filler will not be required. Joint sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. This joint shall be formed. Seal color shall be gray or other color similar to concrete.

LONGITUDINAL CONSTRUCTION JOINT



Note: At the Contractor's option, the transverse screed may be placed parallel to the skew or perpendicular to C. L. Bridge.

CONCRETE PLACEMENT PROCEDURE FOR BRIDGES WITH SKEW



PLAN

ELEVATION

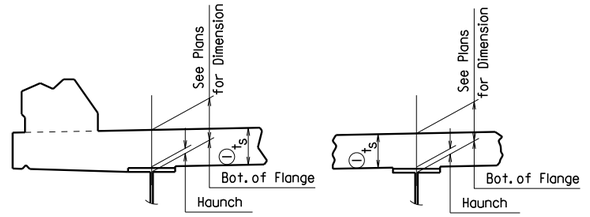
Drip Plate to be welded to the outer side of the bottom flange of the exterior girders.

Locate drip plate 5'-0" from C.L. Bearing on high side of each Bent, unless otherwise noted in the plans.

BOTTOM FLANGE DRIP PLATE

(USE WHEN WEB DEPTHS ARE 54" OR GREATER AND UNIT OR SPAN IS NOT IN LEVEL GRADE)

t_s = slab thickness. See "Typical Roadway Section" in the plans.



EXTERIOR BEAM OR GIRDER

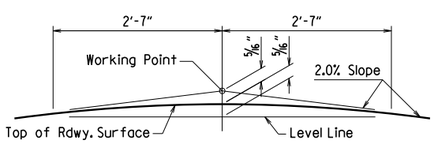
INTERIOR BEAM OR GIRDER

① Tolerance when removable deck forming is used is + ½", - ¼". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

NOTES:
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance: Minimum occurs when top flange contacts bottom reinforcing steel; Maximum = top flange thickness plus 1¾" unless otherwise noted in the plans. No increase in concrete and structural steel quantities will be made to maintain tolerances.

Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 55005 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE



NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL

BRIDGES IN NORMAL CROWN

WELD TABLE

Material Thickness of Thicker Part Joined (Inches)	Minimum Size of Fillet Weld (Inches)	Single Pass Weld Must Be Used
To ¾" Inclusive	¼"	
Over ¾"	⅝"	

NOTE: When a fillet weld size, as shown on the plans, is larger than the minimum, the first pass shall be that specified for minimum size of fillet weld.

SECTION AND SUBSECTION REFER TO THE ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2014 EDITION).

THESE DETAILS ARE APPLICABLE UNLESS OTHERWISE SHOWN IN THE PLAN DETAILS, SPECIAL PROVISIONS, OR SUPPLEMENTAL SPECIFICATIONS.

STANDARD DETAILS FOR STEEL BRIDGE STRUCTURES

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 2/11/2016 FILENAME: b55007.dgn

CHECKED BY: AMS DATE: 2/11/2016 SCALE: No Scale

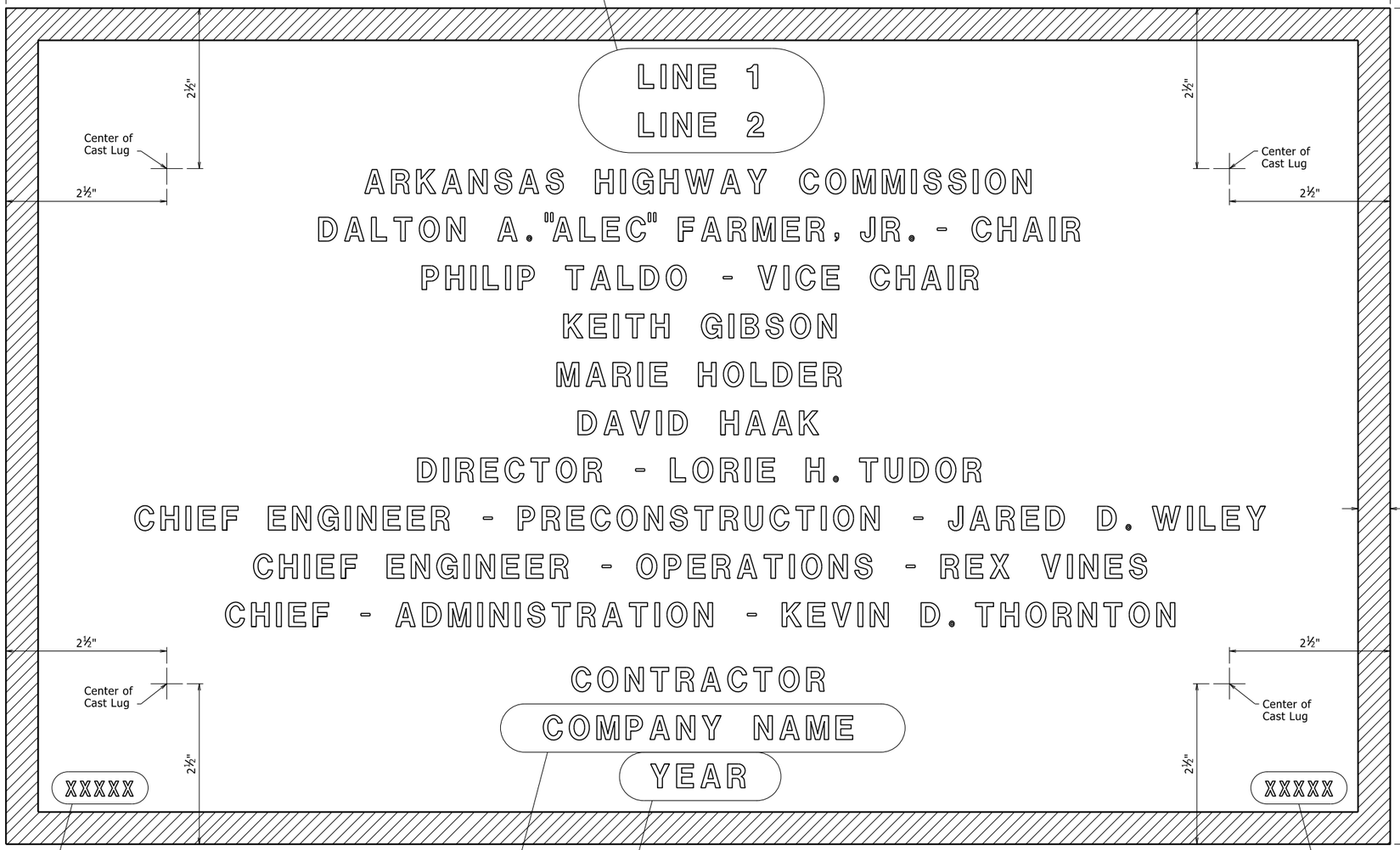
DESIGNED BY: STD. DATE: —

DRAWING NO. 55007

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
4-14-23		6	ARK.			
		TYPE D NAME PLATE - 55010				

The name of the bridge as shown on the plans shall be placed on Lines 1 & 2 using ⅛" raised letters and numerals ⅜" high.

	Example 1	Example 2	Example 3	Example 4
Line 1	RED RIVER	SOUTHERN RAILROAD	SALINE RIVER	HIGHWAY 5
Line 2	RELIEF	OVERPASS	RELIEF	



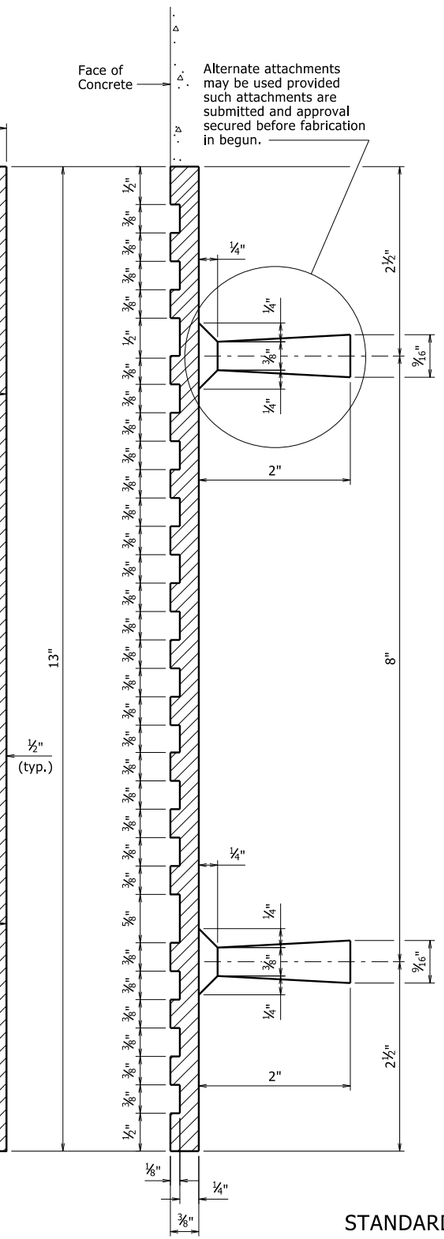
Place the design live loading here using ⅛" raised letters and numerals ¼" high. Examples: HS20, HL-93

Place the Year in which Contract was awarded here using ⅛" raised numerals ⅜" high. Example: 2001

Place the name of the company awarded the construction contract here using ⅛" raised letters and numerals ⅜" high. Example: ABCD CONSTRUCTION, INC.

Place the Bridge number here using ⅛" raised letters and numerals ¼" high. Examples: A1234, 05432

TYPICAL BRIDGE NAME PLATE



GENERAL NOTES

Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, (2014 Edition) with applicable Supplemental Specifications and Special Provisions.

Name plates shall be cast bronze and shall meet the material requirements as specified in Section 812.

Body of plate shall be ¼" thick and shall include four tapering cone lugs ⅜" to 9/16" x 2" long. The border and all lettering shall be raised ⅛" above the face of plate and shall be polished.

All lettering shall be plain gothic, square cut and not tapered.

The number of plates required and the location and name on the plate for each bridge shall be as designated on the plans.

1 Revised and Redrawn
4-14-23 CGP Checked By: CRE

STANDARD DETAILS FOR
TYPE D BRIDGE NAME PLATE

ROUTE SEC.

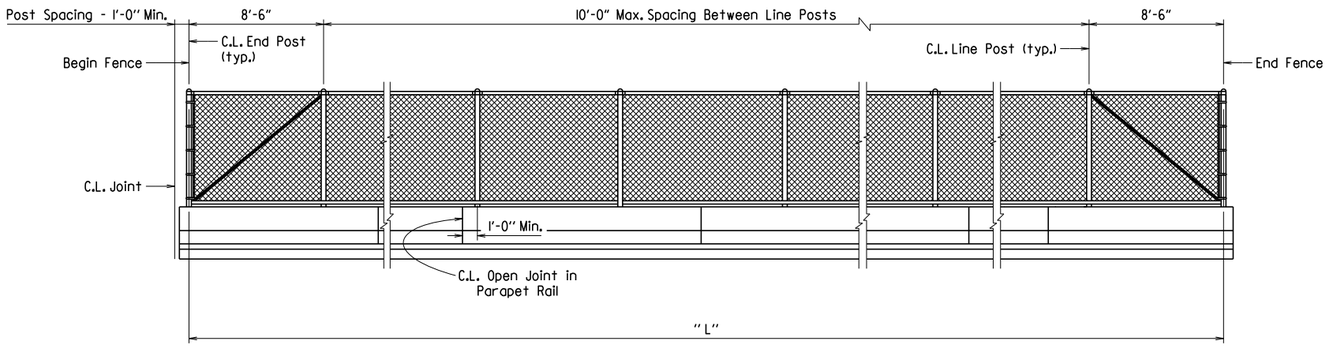
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55010.dgn
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE:

DRAWING NO. 55010

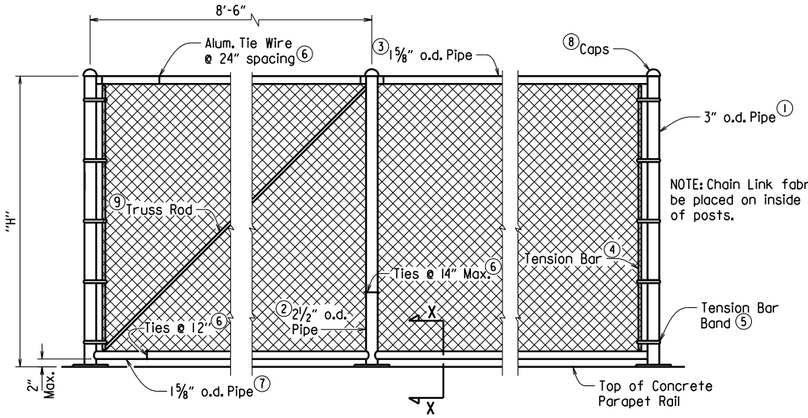
PRINT DATE: 4/20/2023

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				
				①		CHAIN LINK FENCE	55018	



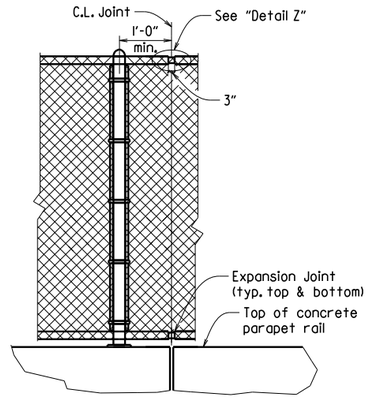
NOTE: The fence location, height "H", total length "L" and parapet panel spacing shall be as specified in plans.

LONGITUDINAL VIEW OF CHAIN LINK FENCE



NOTE: Chain Link fabric to be placed on inside face of posts.

DETAILS OF CHAIN LINK FENCE



DETAIL AT EXPANSION JOINTS

① END POST: 3" O.D.
② LINE POST: 2½" O.D.
③ TOP RAIL: 1⅝" O.D.
④ TENSION BAR: 3/16" x ¾" Bar
⑤ TENSION BAR BAND: ¾"x .074 w/⅝"ø x 1¼" Bolt (1 Band Top and Bottom w/15" Max. spaces)
⑥ TIE WIRE: 9 Ga. Aluminum
⑦ BOTTOM RAIL: 1⅝" O.D.
⑧ CAPS: All Posts shall be Capped and Shall Conform to ASTM F626-84
⑨ TRUSS ROD: Min. of ⅝" Round with Tighteners and Fittings

FABRIC: 9 Ga. 2" Mesh w/Knocklug or Twisting Selvage

GENERAL NOTES FOR CHAIN LINK FENCE:

Fence layout shall conform to the vertical and horizontal bridge alignments. Fence posts shall be set plumb (true vertical position). Parapet rail concrete shall be at least 7 days old before stretching and securing fabric to posts.

Base plates shall not be placed upon areas that are improperly finished, deformed, or irregular.

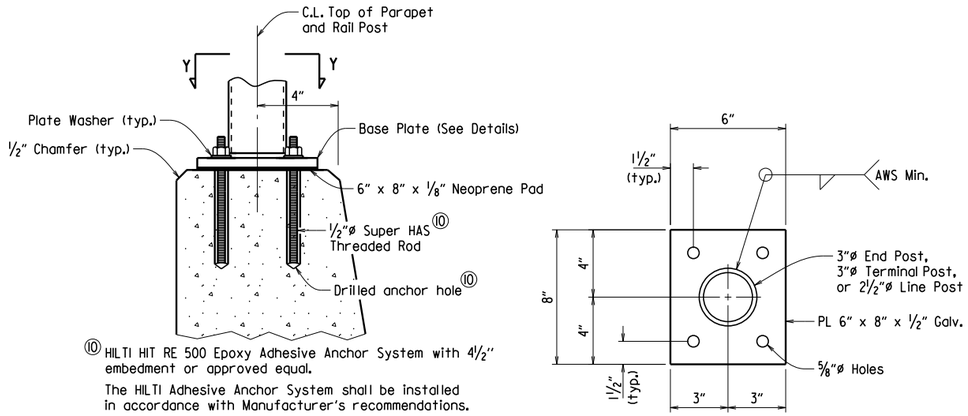
Chain Link Fence attached to Bridge, including neoprene pad and template plates, shall be paid for as "__' Steel Chain Link Fence". For additional details of Chain Link Fence, See Standard Drawing WF-3.

Cast-in-place anchor bolts, nuts, washers, and set screws shall be galvanized high-strength steel or stainless steel. Mixing of galvanized fasteners and stainless steel will not be permitted.

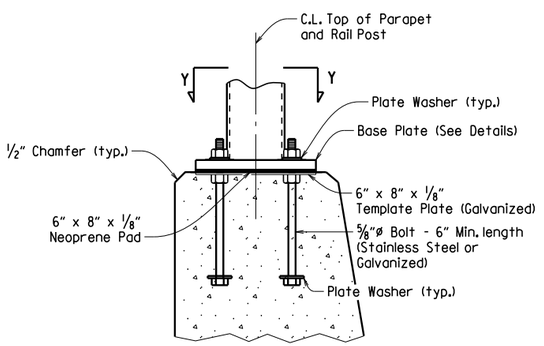
High-Strength Steel:
Cast-in-place anchor bolts shall conform to ASTM A325, Type 1.
Nuts shall conform to ASTM A563, Grade DH or AASHTO M 292, Grade 2H.
Washers shall conform to ASTM F436.
Plate Washers shall conform to AASHTO M 270, Grade 36.
Splice Set Screws shall conform to AASHTO M 270, Grade 36.
Anchor bolts, nuts, washers, plate washers, and set screws shall be galvanized in accordance with AASHTO M 232, Class C or ASTM B695, Class 50.

Stainless Steel:
Cast-in-place anchor bolts shall conform to ASTM A193 or A320-Grade B8 with a minimum yield strength of 80,000 psi.
Nuts shall conform to AASHTO M 292, Grade 8 or ASTM A563.
Washers shall conform to ASTM A240, Type 302.
Plate Washers shall conform to ASTM A240, Type 302.
Splice Set Screws shall conform to ASTM A193 or A320-Grade B8.

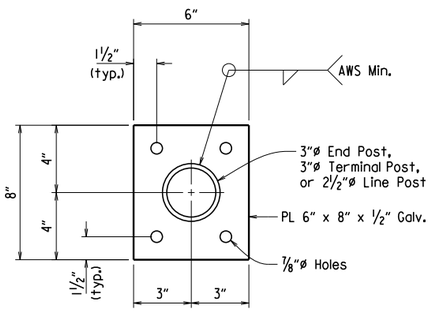
Threads on bolts, screws, and nuts shall conform to American Standard Course Series, Class 2 Fit, ASA Specification B1.1. Plate washers shall have dimensions meeting the requirements of ANSI/ASME B18.22.1, Type A plain washer (Wide Series). Neoprene pads shall conform to the requirements of Subsection 807.15(b).



DETAILS OF ALTERNATE POST ANCHOR SYSTEM
(EPOXY ADHESIVE ANCHORS)

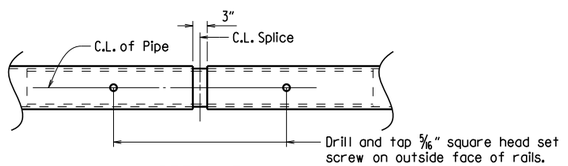


VIEW X-X



VIEW Y-Y

DETAILS OF POST ANCHOR SYSTEM
(CAST-IN-PLACE BOLTS)



DETAIL Z

SECTION AND SUBSECTION REFER TO THE ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2014 EDITION).

THESE DETAILS ARE APPLICABLE UNLESS OTHERWISE SHOWN IN THE PLAN DETAILS, SPECIAL PROVISIONS, OR SUPPLEMENTAL SPECIFICATIONS.

STANDARD DETAILS FOR CHAIN LINK FENCE

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: E.O.R. DATE: 2-11-2016 FILENAME: b55018.dgn
CHECKED BY: A.M.S. DATE: 2-11-2016 SCALE: No Scale
DESIGNED BY: STD. DATE: ——

DRAWING NO. 55018

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
3/24/16				6	ARK.			
				JOB NO.				
				①		STEEL H-PILES		55020

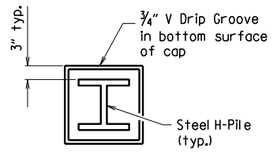
GENERAL NOTES FOR STEEL H-PILES:

Steel H-Piles shall conform to AASHTO M 270, Grade 36 or greater.

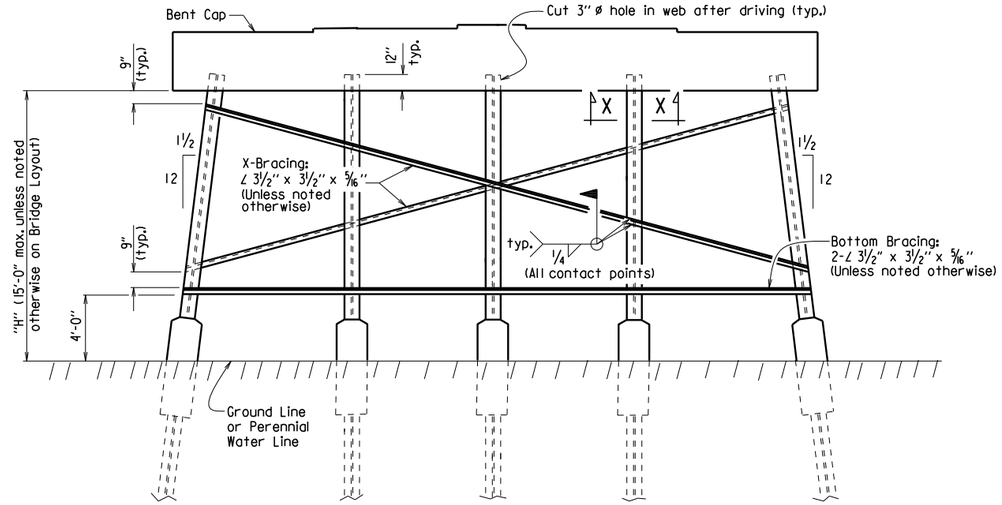
See Bridge Layout and Bent Details for pile size, estimated length, spacing, pile anchorage (if required) and for driving information.

Steel H-Piles that extend above the ground and are not protected by pile encasement shall be painted in accordance with Subsection 805.02.

Brackets, lugs, cap plates, pile tips, driving points, pile painting, splicing and welding shall not be paid for directly, but shall be considered subsidiary to the item "Steel Piling".



VIEW X-X



Notes:
All bracing shall be cut and welded in the field. Each brace shall be furnished in one piece. Payment shall be made under Item 807.

Unless noted otherwise, omit X-Bracing when "H" is less than 8 feet.

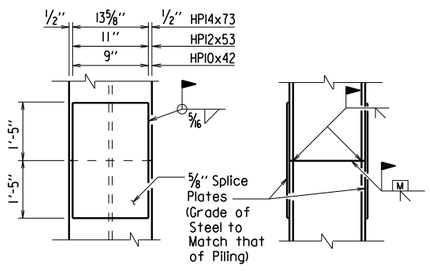
Omit X-Bracing and Bottom Bracing when "H" is 5 feet or less.

When required on the Bridge Layout sheet, pile encasements shall be constructed. See Notes and Details for H-Pile Encasements.

Omit all bracing (and V-groove in cap) when pile encasement is extended to bottom of bent cap.

TYPICAL DETAILS OF H-PILE TRESTLE INTERMEDIATE BENT

(Shown with Partial Height Encasement)



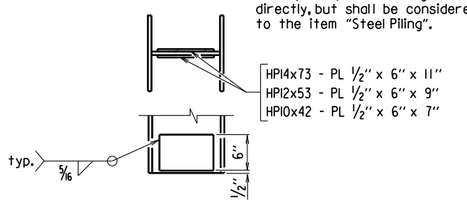
The Contractor may for his own convenience and at his own expense provide as many as three splices per pile. Minimum spacing between splices shall be 5 feet.

TYPICAL SPLICE DETAILS

⚠ H-pile splicers manufactured by Associated Pile and Fitting Corporation, LB Foster Piling, Skyline Steel or equivalent may be used in lieu of the "Typical Splice Details" shown. H-pile splicers shall match the same grade of steel specified for the piling and shall be welded to the pile with a 5/16" fillet weld around the entire perimeter of the splice. Flanges shall be welded with a complete penetration groove weld complying with AASHTO/AWS Joint Designation B-U4a or B-U4b. All welding shall conform to Subsection 807.26 of the AHTD Standard Specifcations for Highway Construction (2014 Edition).

Notes:
Steel pile tip reinforcing not required when approved H-Pile driving points are used.

Steel pile tip reinforcing shall not be paid for directly, but shall be considered subsidiary to the item "Steel Piling".



REINFORCING DETAIL FOR STEEL H-PILE TIP

GENERAL NOTES FOR H-PILE ENCASEMENTS:

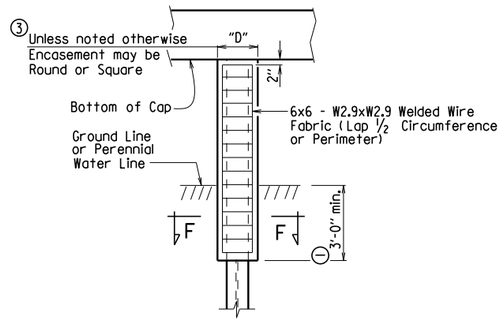
⚠ See Bridge Layout for additional notes, any pile encasement restrictions and required location of pile encasements.

All concrete shall be Class S with a minimum 28-day compressive strength, f'c = 3,500 psi. If concrete cannot be placed in the dry, Seal Concrete may be used from top to bottom of encasement.

Reinforcing steel shall be Grade 60 conforming to AASHTO M 31 or M 322, Type A.

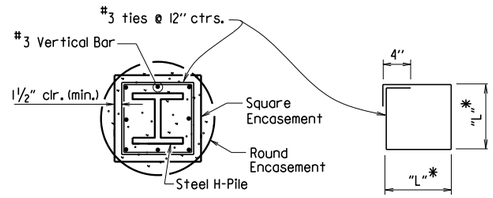
Welded Wire Fabric shall conform to AASHTO M 55 or M 221. Galvanized Corrugated Steel Pipe shall conform to AASHTO M 36 and M 218.

Concrete, welded wire fabric or reinforcing steel and galvanized pipe shall not be paid for directly, but shall be considered subsidiary to the item "Pile Encasement".



PILE ENCASEMENT DETAIL FOR STEEL H-PILES

④ (Shown with Encasement to Bottom of Cap)

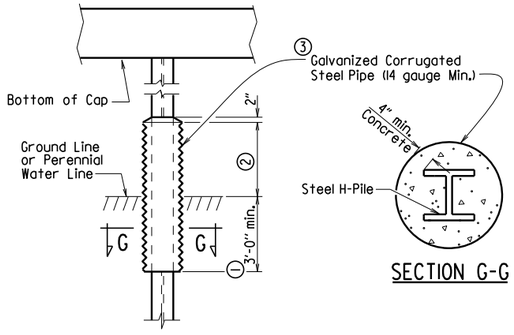


SECTION F-F

*Measured out-to-out of bar.

TABLE OF VARIABLES FOR PILE ENCASEMENT

Pile Size	"D" Square Encsmt.	"D" Round Encsmt.	"L"*
HPI0x42	1'-7"	2'-0"	1'-4"
HPI2x53	1'-8"	2'-2"	1'-5"
HPI4x73	1'-11"	2'-6"	1'-8"



SECTION G-G

① Unless otherwise noted on Bridge Layout.

② 3'-0" minimum or as shown on Bridge Layout.

③ Encasement dimensions shall be sized to maintain a minimum concrete cover of 4" from the H-Pile. Reinforcement shall be sized to provide a minimum concrete cover of 1½" and a minimum clearance of 1¼" from the pile.

④ Alternate pile encasement, when not extended to bottom of cap, shall have 2" concrete taper for water runoff as shown in the Partial Height Encasement detail.

ALTERNATE PILE ENCASEMENT DETAIL FOR STEEL H-PILES

(Shown with Partial Height Encasement)

⚠ Added alternate method of splicing H-piles and revised pile encasement note.
3/24/2016 AMS

This document was originally issued and sealed by Charles R. Ellis, PE No. 9235, on March 24, 2016. This copy is not a signed and sealed document.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS

BRIDGE ENGINEER

STANDARD DETAILS FOR STEEL H-PILES AND PILE ENCASEMENTS

ARKANSAS STATE HIGHWAY COMMISSION

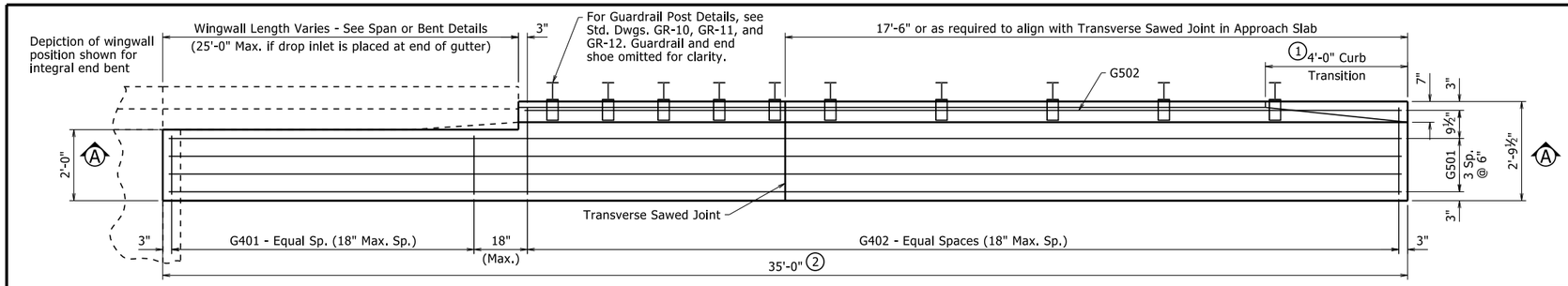
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55020.dgn
CHECKED BY: B.E.F. DATE: 2/27/2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: —

DRAWING NO. 55020

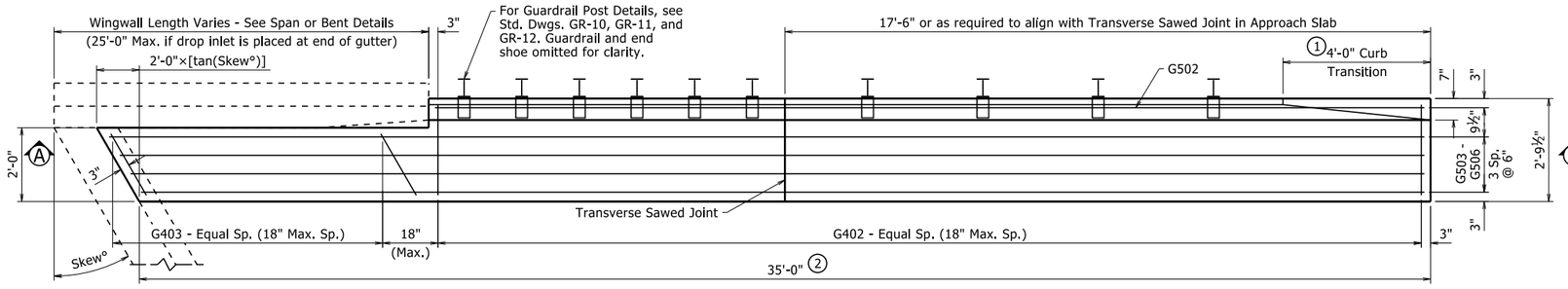
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				

① Type F Approach Gutters - 55030F

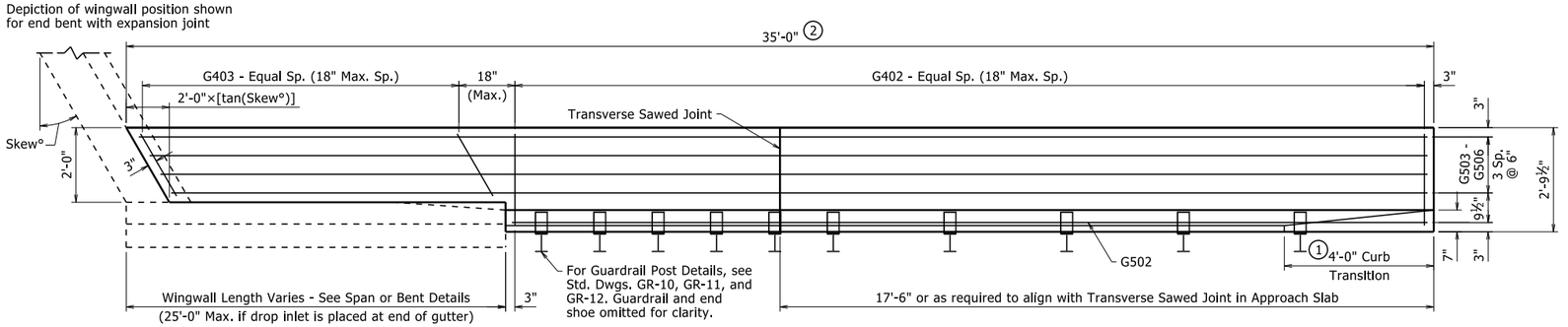


HALF PLAN OF APPROACH GUTTERS FOR SQUARE END BENT

½" = 1'-0"



Depiction of wingwall position shown for end bent with expansion joint



PLAN OF SKEWED APPROACH GUTTERS FOR SKEWED END BENT

½" = 1'-0"

QUANTITIES FOR ONE APPROACH GUTTER

(For Information Only)

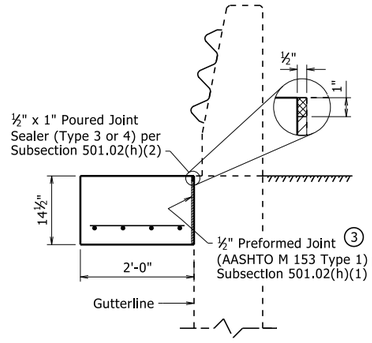
Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
210	4.20

Quantities are based on one gutter for a square, integral end bent and a wingwall length of 10'-0"

BAR LIST FOR ONE APPROACH GUTTER

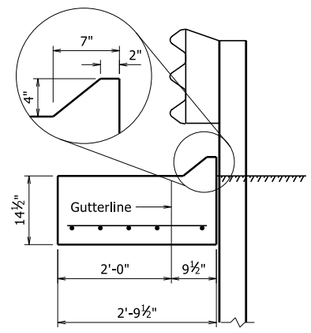
	Mark	No. Req'd.	Length
Square End Bent	G401	④	1'-8"
	G402	④	2'-5½"
	G501	4	34'-8"
	G502	1	④
Skewed End Bent	G402	④	2'-5½"
	G403	④	④
	G502	1	④
	G503 - G506	1 ea.	④

④ Varies with Skew and/or Wingwall Length



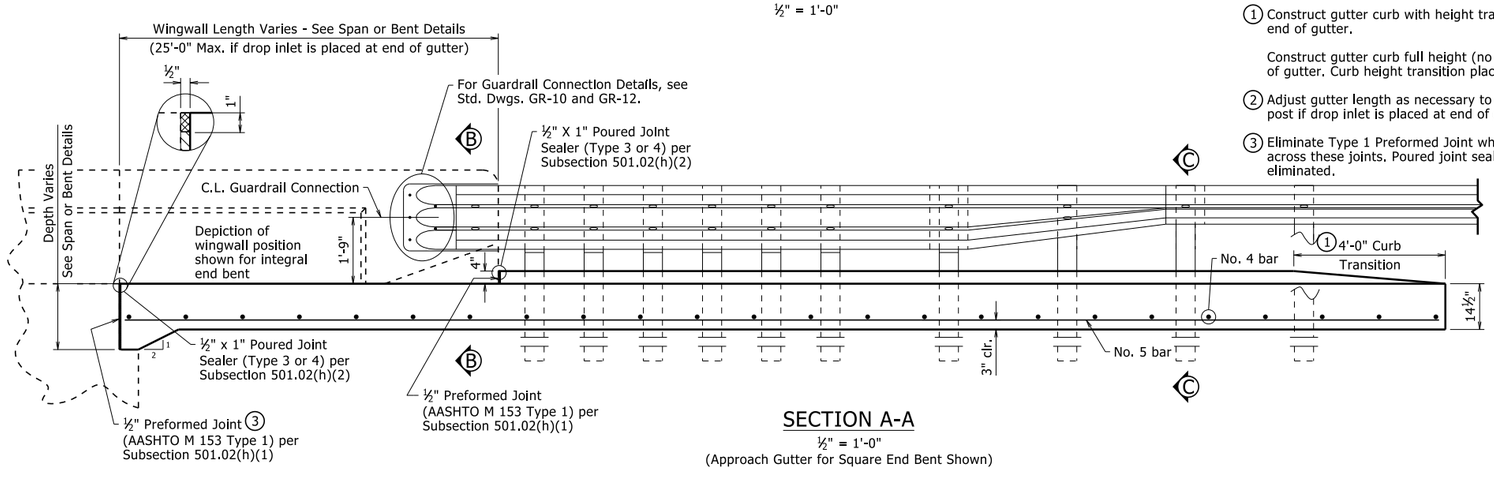
SECTION B-B

¾" = 1'-0"



SECTION C-C

¾" = 1'-0"



SECTION A-A

½" = 1'-0"

(Approach Gutter for Square End Bent Shown)

① Construct gutter curb with height transition as shown if drop inlet is not placed at end of gutter.

Construct gutter curb full height (no height transition) if drop inlet is placed at end of gutter. Curb height transition placed on drop inlet.

② Adjust gutter length as necessary to avoid outlet pipe interference with guardrail post if drop inlet is placed at end of gutter.

③ Eliminate Type 1 Preformed Joint when bridge details show reinforcing dowels across these joints. Poured joint sealer is required, however, backer rod shall be eliminated.

GENERAL NOTES

All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi and shall be poured in the dry.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

Approach Gutters will be measured and paid for in accordance with Section 504.

All longitudinal lines within the limits of horizontal curves shall be on curves concentric to C.L. Bridge. Adjustment to longitudinal bar lengths may be required. Transverse reinforcing shall be placed on radial lines to C.L. Bridge.

Scales shown are for 22"x34" drawings. When using 11"x17" drawings, reduce scale by one half.

STANDARD DETAILS FOR TYPE F APPROACH GUTTERS

ARKANSAS STATE HIGHWAY COMMISSION

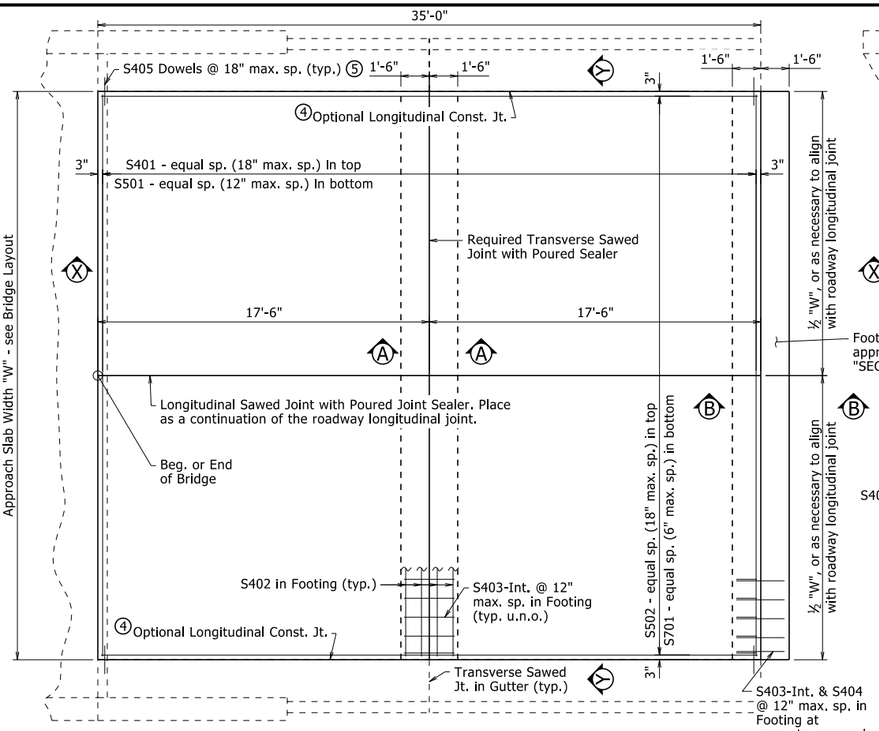
LITTLE ROCK, ARK.

DRAWN BY: NAC DATE: 4-8-2021 FILENAME: b55030f.dgn
CHECKED BY: LJB DATE: 4-8-2021 SCALE: AS NOTED
DESIGNED BY: STD DATE: -

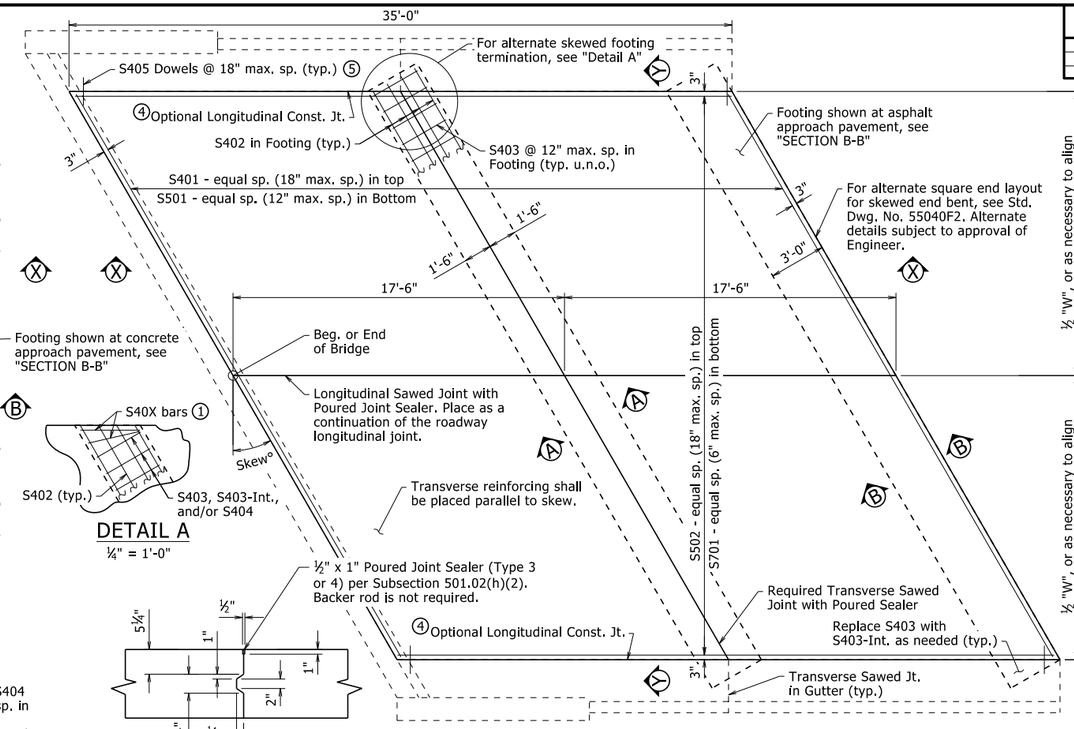
DRAWING NO. 55030F

PRINT DATE: 9/8/2023

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.			
		Type F Approach Slab - 55040F1				

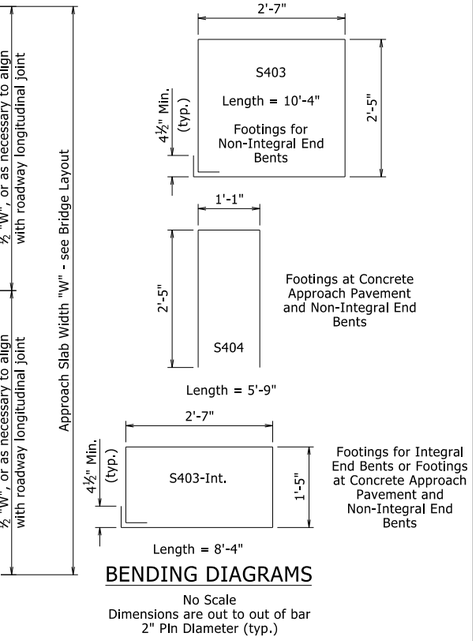


PLAN - APPROACH SLAB AT SQUARE END BENT



LONGITUDINAL CONSTRUCTION JOINT

½" = 1'-0"

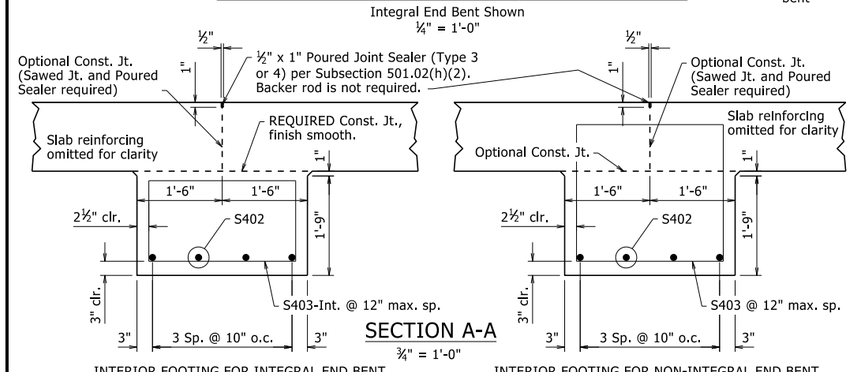


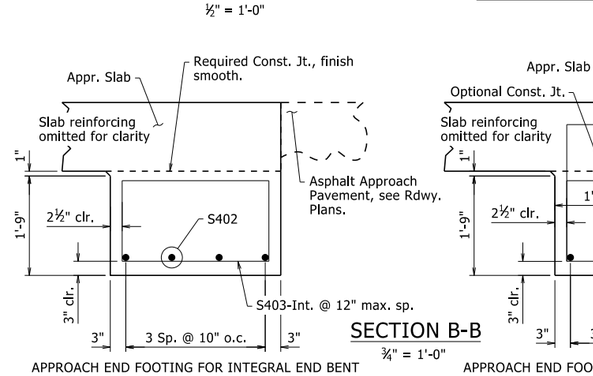
BENDING DIAGRAMS

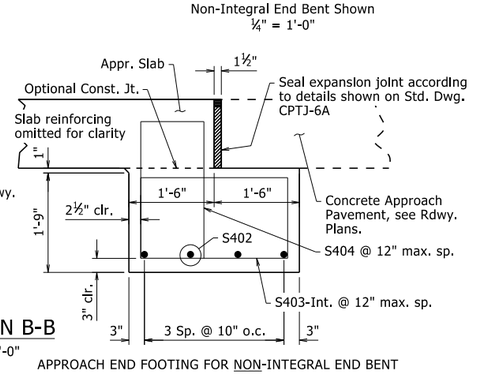
No Scale
Dimensions are out to out of bar
2" PIn Diameter (typ.)

PLAN - APPROACH SLAB AT SKEWED END BENT

Non-Integral End Bent Shown
¼" = 1'-0"







BAR LIST - PER APPROACH SLAB

	Square End Bent		Skewed End Bent	
Mark	No. Req'd.	Length	No. Req'd.	Length
S401	24	"W" - 0.33'	24	("W" - 0.33') / cos (Skew°)
S402	8	"W" - 0.33'	8	"W"/cos(Skew°) + 3.0'×tan(Skew°) - 0.33'
S403	①	②	①	②
S403-Int.	①	②	①	②
S404	①	②	①	②
S405	48	1'-6"	48	1'-6"
S501	36	"W" - 0.33'	36	("W" - 0.33') / cos (Skew°)
S502	①	34'-8"	①	34'-8"
S701	①	34'-8"	①	34'-8"

All bar lengths are in feet.

① Varies with Approach Slab Type, Width and/or Skew.
② See "BENDING DIAGRAMS"

GENERAL NOTES

All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi and shall be poured in the dry.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

The surface finish for Approach Slabs shall match that used on the bridge deck.

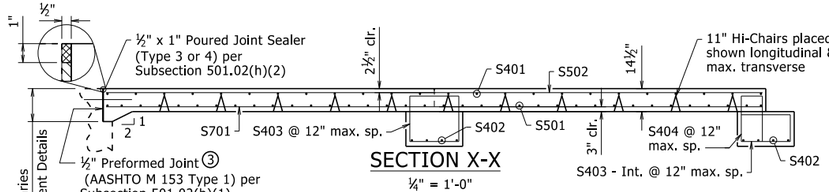
All longitudinal lines within the limits of horizontal curves shall be on curves concentric to C.L. Bridge. Adjustment to longitudinal bar lengths may be required. Transverse reinforcing shall be placed on radial lines to C.L. Bridge.

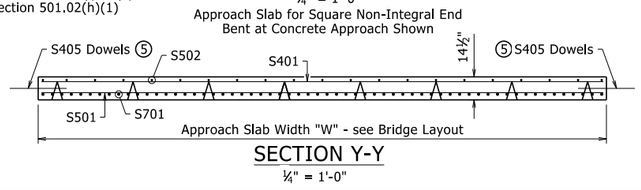
See Plans for actual Approach Slab Width, "W", end bent or span details, and approach pavement. Units of "W" are in Feet.

Approach Slabs will be measured and paid for in accordance with Section 504.

Scales shown are for full size 22"x34" drawings. When using 11"x17" drawings, reduce scale by one half.

For Table of Quantities, see "SCHEDULE OF BRIDGE QUANTITIES".





③ Eliminate Type 1 Preformed Joint when bridge details show reinforcing dowels across these joints. Poured joint sealer is required, however, backer rod shall be eliminated.

④ When construction joint is eliminated, place 1" Sawed Joint with ½" x 1" Poured Joint Sealer (Type 3 or 4) per Subsection 501.02(h)(2). Backer rod is not required.

⑤ Eliminate dowels when approach slab is adjacent to curb and gutter, or as directed by the Engineer.

MINIMUM BAR LAP LENGTH

#4	1'-8"
#5	2'-0"
#7	2'-10"

The document was originally issued and sealed by Charles R. Ellis, PE No. 9235, on September 7, 2023. This copy is not a signed and sealed document.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS

BRIDGE ENGINEER

STANDARD DETAILS FOR TYPE F APPROACH SLAB

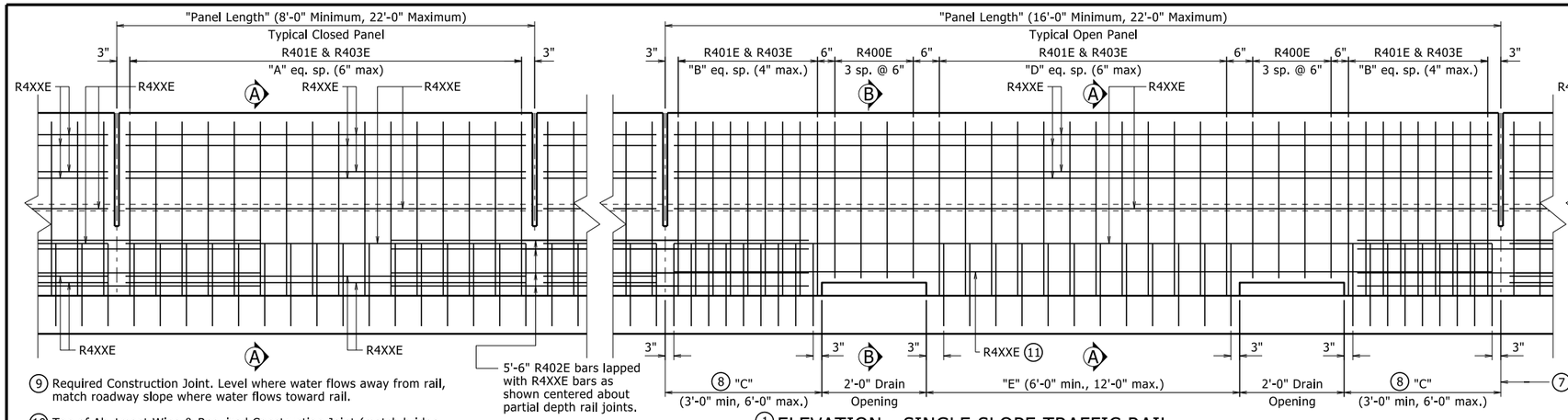
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

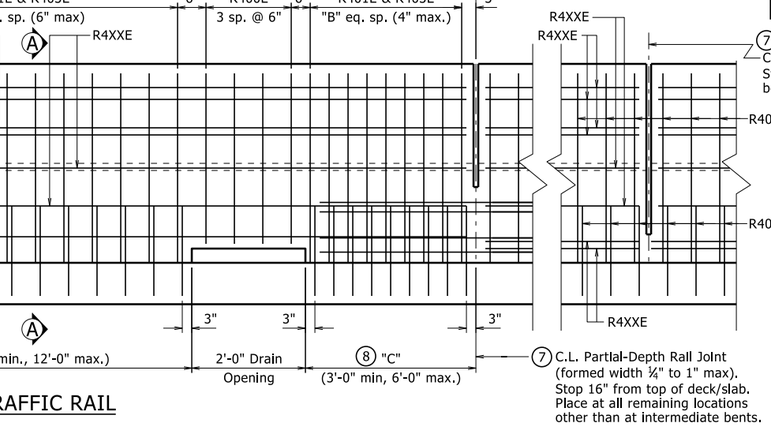
DRAWN BY: CGP DATE: 05/12/2023 FILENAME: b55040f.dgn
CHECKED BY: JYP DATE: 05/15/2023 SCALE: AS NOTED
DESIGNED BY: STD. DATE: -

DRAWING NO. 55040F1

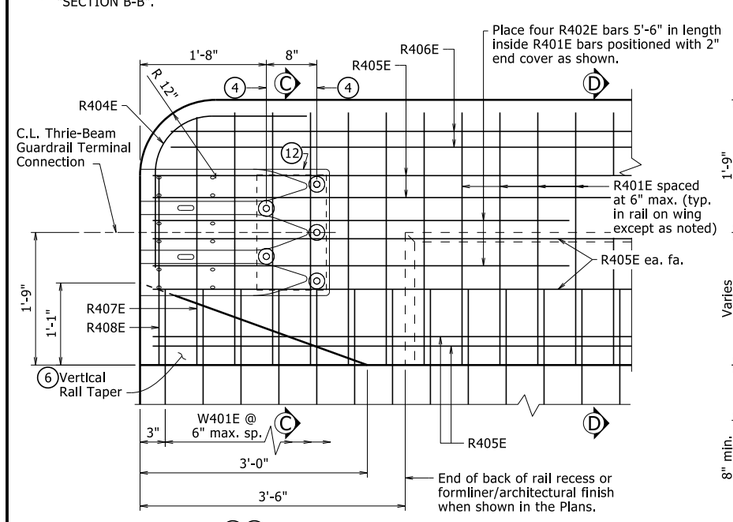
DATE REVISED	DATE REVISED	FED. ROAD DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.			
		TYPE SSTR42 - 55071				



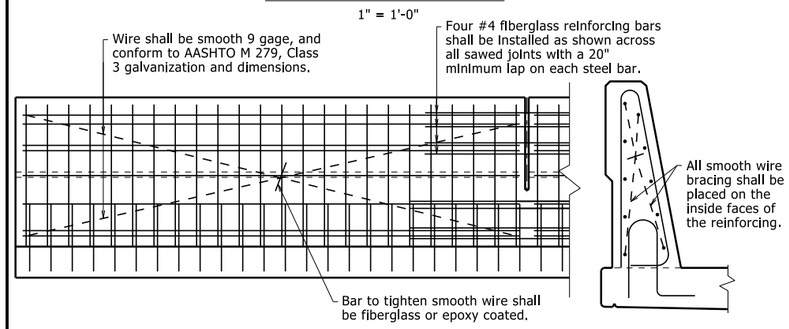
1 ELEVATION - SINGLE SLOPE TRAFFIC RAIL



1. All measurements shown are along gutterline at base of rail.
2. Minimum embedment into deck/slab.
3. Eliminate recess when formliner with architectural finish is used. See Plans for additional information.
4. C.L. 1" ø formed holes for ⅞" ø bolts. See Standard Drawings GR-10 and GR-12 for additional information.
5. These bars will not be included in the "TABLE OF VARIABLES", see plans for additional information.
6. Field bend front leg of R401E bar as required to maintain minimum 1½" front face clearance within limits of taper.
7. When optional slip forming is used: to control cracking, all rail joints must be V-grooved around the perimeter of the rail prior to concrete set and sawing. Depth of V-groove shall be ½". Sawing of the joints shall be done as soon as practical to a width of ¼", and must be controlled so it will follow the V-Groove.
8. End posts shall be the same length within a panel.
9. Required Construction Joint. Level where water flows away from rail, match roadway slope where water flows toward rail.
10. Top of Abutment Wing & Required Construction Joint (match bridge deck/slab construction joint slope). See Plans for Wing reinforcing.
11. These bars shall be raised up over drain opening as shown in "SECTION B-B".



1 5 RAIL TERMINUS DETAIL
1" = 1'-0"



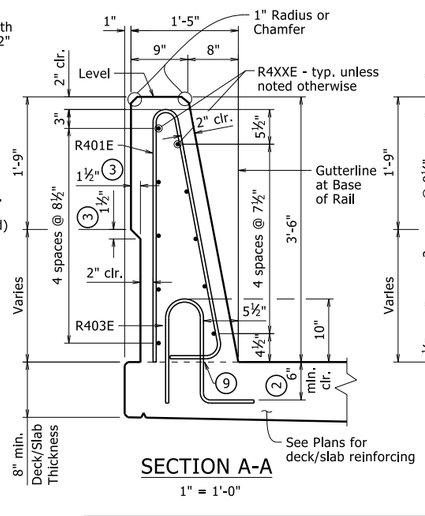
The extruded rail shall conform to the horizontal and vertical lines shown on the plans or as directed by the Engineer and shall present a smooth, uniform appearance and texture. Unless otherwise noted, exposed surfaces may be given a light brush finish or a Class 3, Textured Coating Finish in place of Class 2, Rubbed Finish.

All panels shall be braced as required to prevent racking.

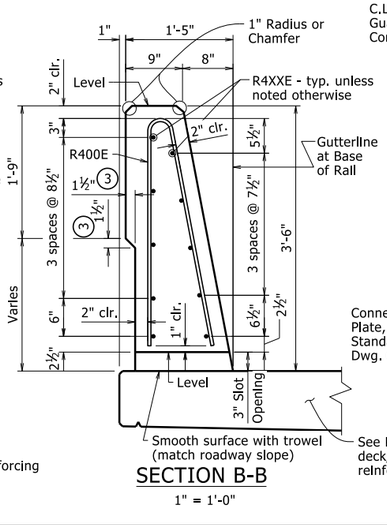
Slip forming will not be allowed on bridges where formliner with architectural treatment is used unless approval from the Engineer is obtained.

DETAILS OF OPTIONAL SLIP FORMING OF BRIDGE TRAFFIC RAIL

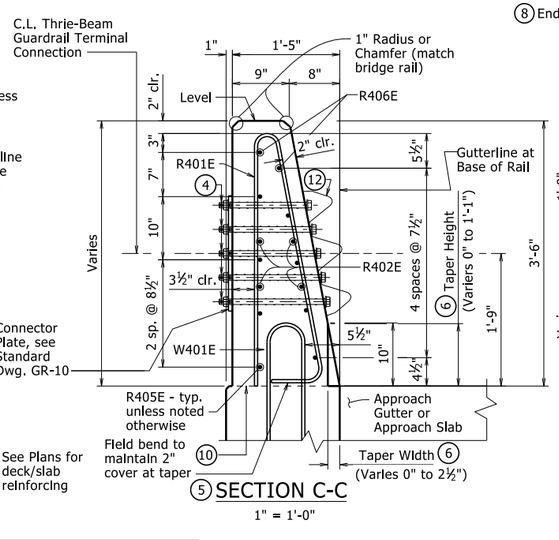
No Scale



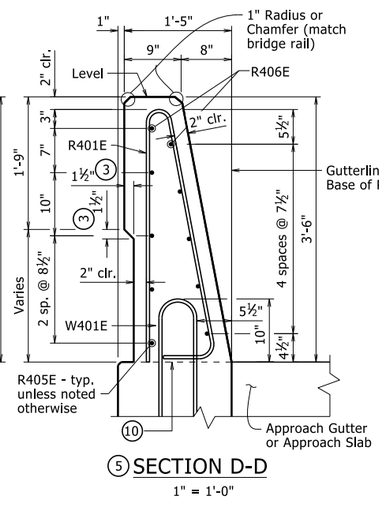
SECTION A-A
1" = 1'-0"



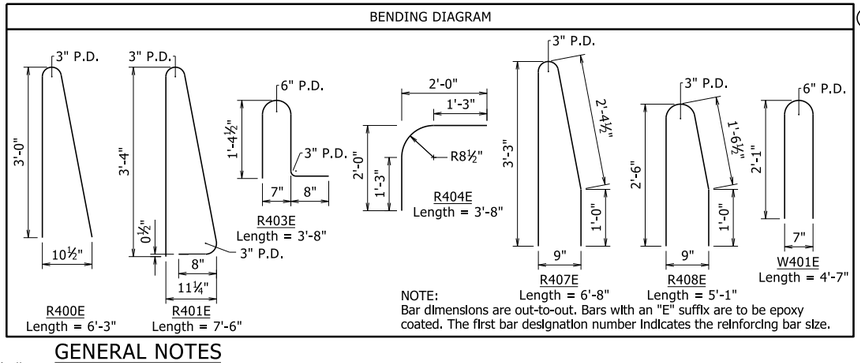
SECTION B-B
1" = 1'-0"



5 SECTION C-C
1" = 1'-0"



5 SECTION D-D
1" = 1'-0"



GENERAL NOTES

This rail has been evaluated and accepted to be of equal strength to railings with similar geometry, which have been evaluated by full-scale crash test to meet MASH TL-4 criteria.

For Table of Variables, Rail Bar List, locations of Full and Partial Depth Rail Joints, and Wing & Rail Bar Lists, see Plans.

For location of drain openings, see Plans. Drain openings will not be allowed over Railroad Right of Way, travelled roadways, and protected waterways.

Rail Terminus details, including Rail Taper, are not applicable when bridge railing is continuous with roadway railing.

Scales shown are for full size 22"x34" drawings. When using 11"x17" drawings, reduce scale by one half.

12 Bolt Special End Shoe to face of rail as shown. Tapered washers are not required between the head of the bolts and the sloped face of the rail. Tighten the five terminal connection bolts in a well distributed pattern to prevent damage or distortion of the thrie-beam connection. Cut bolts off after installation so as to extend no more than ⅜" beyond nut. Paint ends of cut-off bolts with zinc-rich paint. This work and material will not be paid for directly but shall be considered subsidiary to associated contract items.

TABLE OF VARIABLES

Closed Rail Panels			Open Rail Panels					
Panel Length	A	R4XXE	Panel Length	B	C	D	E	R4XXE

See Plans for table with values.

This document was originally issued and sealed by Charles R. Ellis, PE No. 9235, on July 06, 2022. This copy is not a signed and sealed document.

THESE DETAILS ARE APPLICABLE UNLESS OTHERWISE SHOWN IN THE PLAN DETAILS, SPECIAL PROVISIONS, OR SUPPLEMENTAL SPECIFICATIONS.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS
BRIDGE ENGINEER

STANDARD DETAILS FOR BRIDGE TRAFFIC RAIL TYPE SSTR42

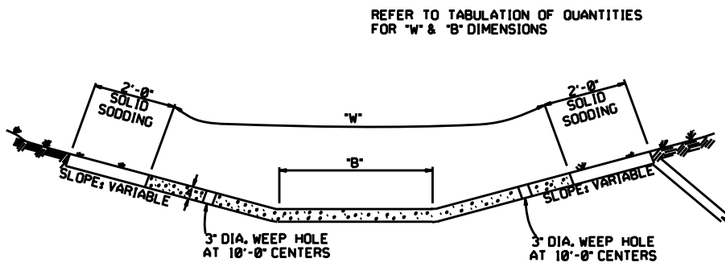
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CGP DATE: 06/30/2022 FILENAME: b55071.dgn
CHECKED BY: CMW DATE: 07/01/2022 SCALE: AS NOTED
DESIGNED BY: STD. DATE: -

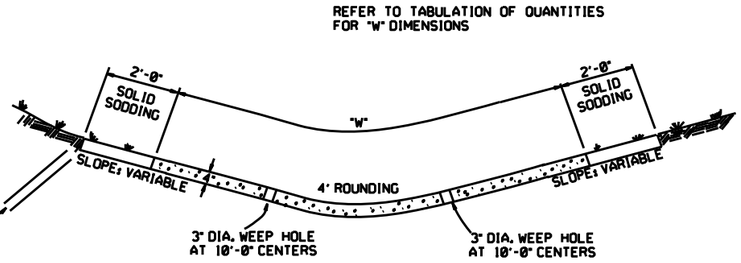
DRAWING NO. 55071

PRINT DATE: 10/7/2022



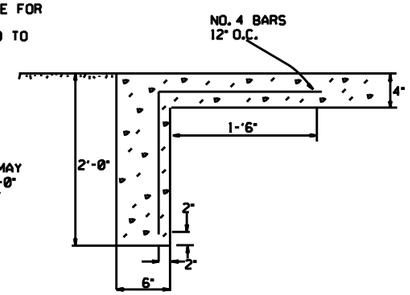
TYPE A

EXCAVATE TO NEAT LINES TO CONSTRUCT DITCH PAVING AND SOLID SODDING.



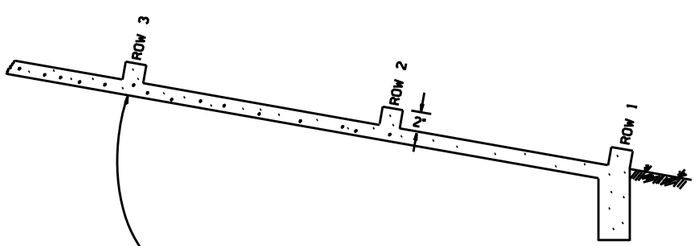
TYPE B

THE STEEL AND ADDITIONAL CONCRETE FOR THE WALLS SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR "CONCRETE DITCH PAVING."



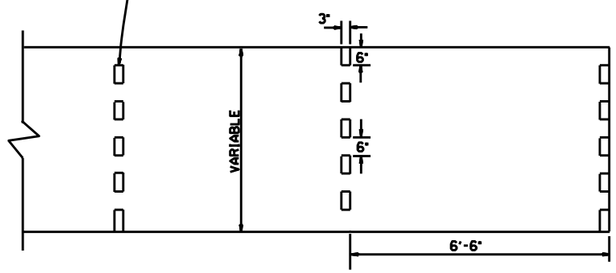
TOE WALL DEPTH MAY BE ALTERED TO 1'-0" WHEN DIRECTED BY THE ENGINEER IN ROCK EXCAVATION

TOE WALL DETAIL FOR CONCRETE DITCH PAVING



NUMBER OF ELEMENTS PER ROW VARIES WITH WIDTH OF PAVING SPECIFIED

ENERGY DISSIPATORS TO BE USED FOR THE ENTIRE LENGTH OF DITCH WHEN SLOPE OF DITCH PAVING EXCEEDS 7%. THE DISSIPATORS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR CONCRETE DITCH PAVING.



ENERGY DISSIPATORS
(NO SCALE)

GENERAL NOTES:

THE FULL WIDTH OF EACH SECTION SHALL BE POURED MONOLITHICALLY.

TOE WALLS TO BE CONSTRUCTED FULL WIDTH AT EACH END OF DITCH PAVING, AND POURED MONOLITHICALLY.

SOLID SOD ALONG DITCH PAVING TO BE PLACED WITHIN 14 DAYS OF DITCH PAVING CONSTRUCTION.

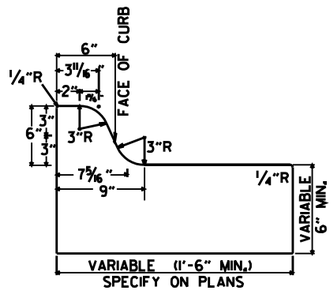
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45° INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

DATE	REVISION	DATE FILM'D
12-8-16	CORRECTED ENERGY DISSIPATOR DRAWING AND NOTE	
11-17-10	ADDED GENERAL NOTE	
6-2-94	ADDED GENERAL NOTE ABOUT SOLID SODDING	
11-30-8	ELIMINATED MIN. ROWS OF ELEMENTS	111-30-89
7-15-88	REVISED DISSIPATOR NOTE	653-7-15-88
4-3-87	REVISED ENERGY DISSIPATOR	671-4-3-87
1-9-87	MODIFIED NOTE ON ENERGY DISS.	532-1-9-87
11-3-86	ADDED NOTE TO ENERGY DISS.	599-12-1-86
11-1-84	ENERGY DISSIPATOR DETAILS ADDED	508-11-1-84
11-1-84	EXCAVATION DETAILS ADDED TYPED A & B	
10-2-72	REVISED AND REDRAWN	508-10-2-72

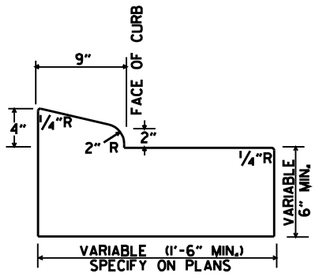
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

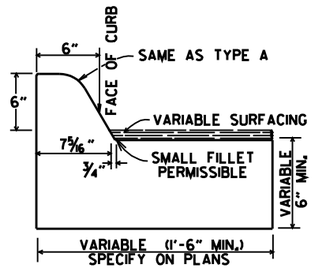
STANDARD DRAWING CDP-1



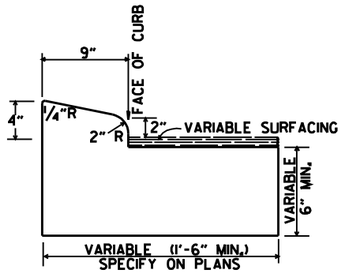
TYPE A



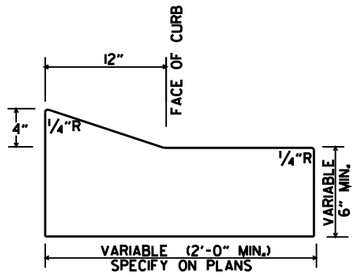
TYPE B-1



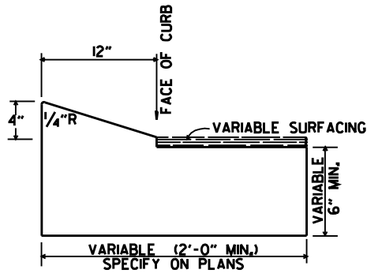
TYPE C



TYPE B-2

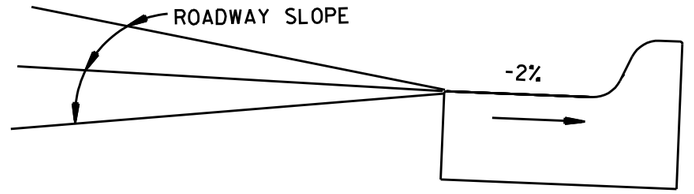


TYPE E-1



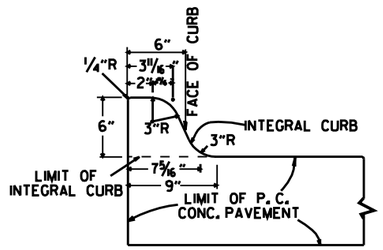
TYPE E-2

CONCRETE COMBINATION CURB AND GUTTER

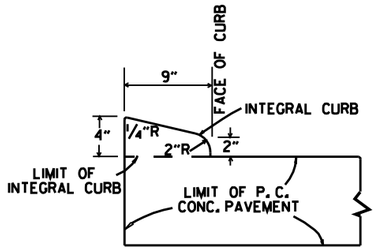


DETAIL OF GUTTER SLOPE

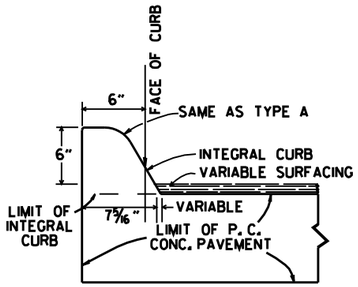
GUTTER SHALL BE CONSTRUCTED ON 2% SLOPE AWAY FROM ROADWAY, REGARDLESS OF ROADWAY SLOPE.



TYPE A

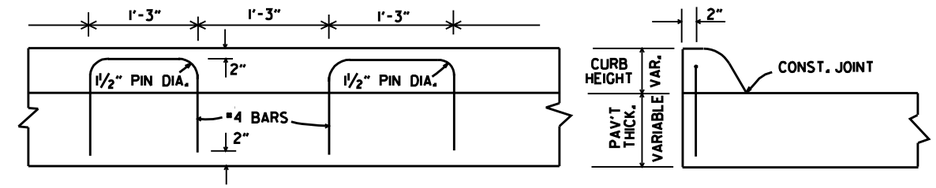


TYPE B

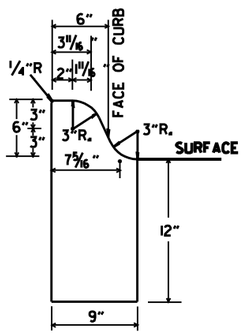


TYPE C

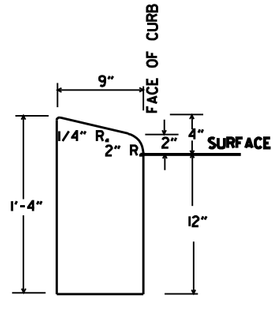
INTEGRAL CURB



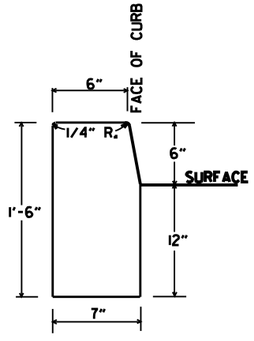
ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB



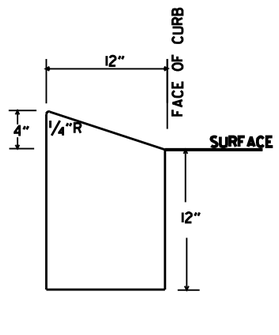
TYPE A



TYPE B

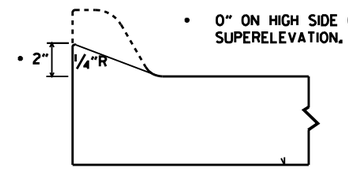


TYPE D



TYPE E

CONCRETE CURB



NOTE: USE MODIFIED CURB AS SPECIFIED ON STD. DR-1. COMPENSATION FOR MODIFIED CURB WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE TYPE OF CURB OR CURB AND GUTTER SPECIFIED.

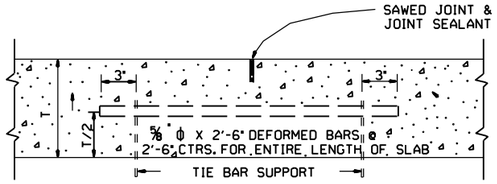
DETAILS OF MODIFIED CURB

DATE	REVISION	DATE FILMED
11-29-07	REVISED GUTTER SLOPE & MODIFIED CURB DETAILS	
11-10-05	ADDED DETAILS OF TYPE E CURBS	
11-16-01	REVISED CONCRETE CURB TYPE B	
11-18-98	REVISED MODIFIED CURB	
6-2-94	ADDED NOTE TO SPECIAL MODIFIED CURB	
8-5-93	CORRECTED GUTTER SLOPE	8-5-93
10-1-92	ADDED DETAILS OF GUTTER SLOPE	10-1-92
5-24-90	ADDED DETAILS OF MODIFIED CURB	5-24-90
11-30-89	VARIBLE DEPTH TYPE A & B I	11-30-89
7-15-88	REVISED MODIFIED CURB	630-7-15-88
11-1-73	REVISED MODIFIED CURB	500-11-1-73
10-2-72	REVISED AND REDRAWN	52-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

CURBING DETAILS

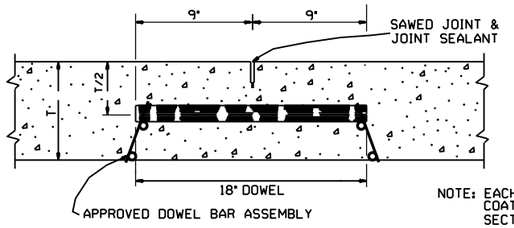
STANDARD DRAWING CG-1



LONGITUDINAL JOINT

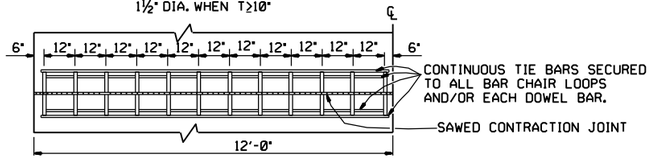
NOTE: THE TIE BAR SUPPORT SHOWN ABOVE MAY BE ELIMINATED IF OTHER APPROVED METHODS FOR PLACING AND SUPPORTING THE TIE BARS ARE PROVIDED.

TIE BARS SHALL BE 15" FROM TRANSVERSE JOINTS.



NOTE: EACH DOWEL TO BE COATED ACCORDING TO SECTION 502 OF THE STANDARD SPECIFICATIONS.

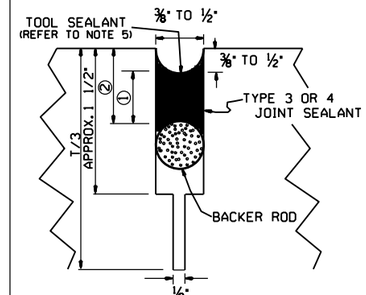
ROUND STEEL BAR DOWEL
1¼" DIA. WHEN T<10"
1½" DIA. WHEN T≥10"



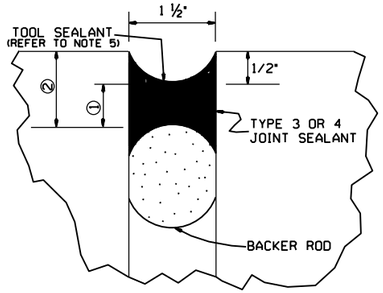
ONE-HALF 24' PAVEMENT
12 DOWELS
PLAN

NOTE: FOR 20' PAVEMENT USE 20 DOWELS @ 12" CTRS. WITH 6" SPACING FROM C.L. AND EDGE OF SLAB TO FIRST BAR. FOR 15' PAVEMENT USE 15 DOWELS @ 12" CTRS. WITH 6" SPACING FROM C.L. AND EDGE OF SLAB TO FIRST BAR. FOR 26' PAVEMENT USE 26 DOWELS @ 12" CTRS. WITH 6" SPACING FROM C.L. AND EDGE OF SLAB TO FIRST BAR. FOR PAVEMENT WIDTHS OTHER THAN THOSE SHOWN ABOVE, USE DOWELS AT 12" CTRS. WITH 6" MAX. SPACING FROM C.L. TO FIRST BAR. DISTANCE FROM EDGE OF SLAB TO FIRST BAR SHALL BE ADJUSTED TO MAINTAIN 12" DOWEL BAR SPACING

CONTRACTION JOINT DETAILS



DETAIL OF SAWED CONTRACTION JOINT



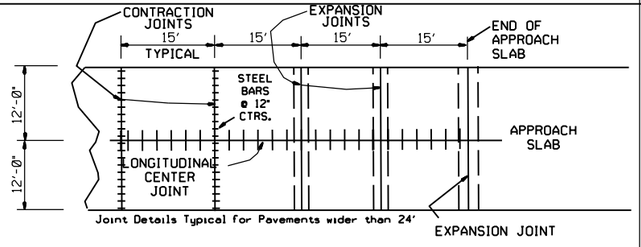
DETAIL OF EXPANSION JOINT

JOINT CONFIGURATION FOR TYPE 3 OR 4 JOINT SEALANT

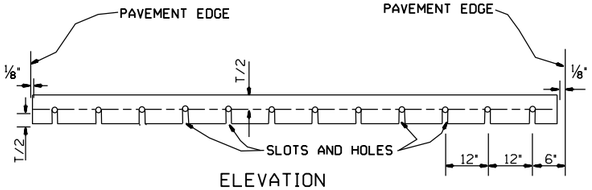
JOINT WIDTH	SEALANT THICKNESS ①	BACKER ROD DIAMETER	BACKER ROD PLACEMENT DEPTH ②
INCHES			
¼	¼	⅜	½
⅜	¼	½	½
½	¼	⅝	½
⅝	⅜	¾	⅝
¾	⅜	⅞	⅝
1 ½	¾	2	1 ¼

JOINT CONFIGURATION FOR TYPE 5 JOINT SEALANT

JOINT WIDTH	SEALANT THICKNESS ①	BACKER ROD DIAMETER	BACKER ROD PLACEMENT DEPTH ②
INCHES			
¼	½	⅜	¾
⅜	¾	½	1

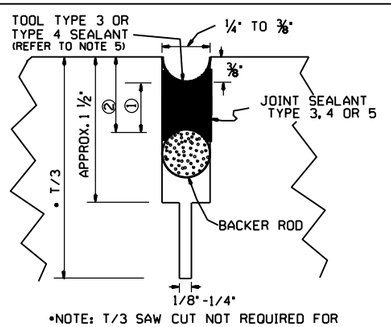


PLAN SHOWING EXPANSION JOINTS AT BRIDGE APPROACH SLABS



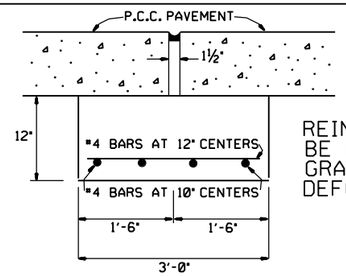
ELEVATION

NOTE: ALL DOWEL BARS SHALL CONFORM TO THE DETAILS FOR CONTRACTION JOINTS.



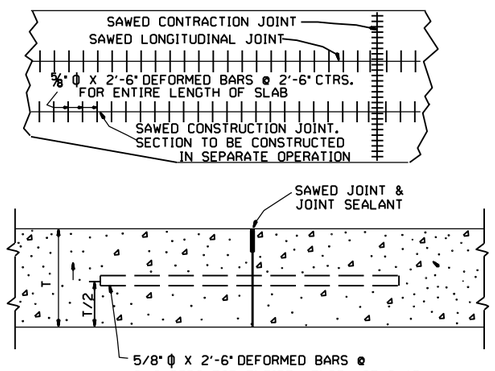
•NOTE: T/3 SAW CUT NOT REQUIRED FOR LONGITUDINAL CONSTRUCTION JOINT.

DETAIL OF SAWED LONGITUDINAL JOINT AND LONGITUDINAL CONSTRUCTION JOINT



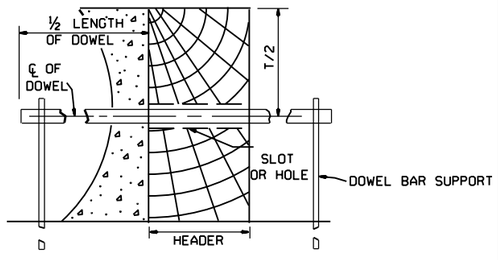
REINFORCING SHALL BE GRADE 40 OR GRADE 60 DEFORMED BARS.

DETAIL OF JOINT SUPPORT FOR EXPANSION JOINTS



NOTE: TIE BARS SHALL BE 15" FROM TRANSVERSE JOINTS.

LONGITUDINAL CONSTRUCTION JOINT



SECTION

TRANSVERSE CONSTRUCTION JOINT

GENERAL NOTES

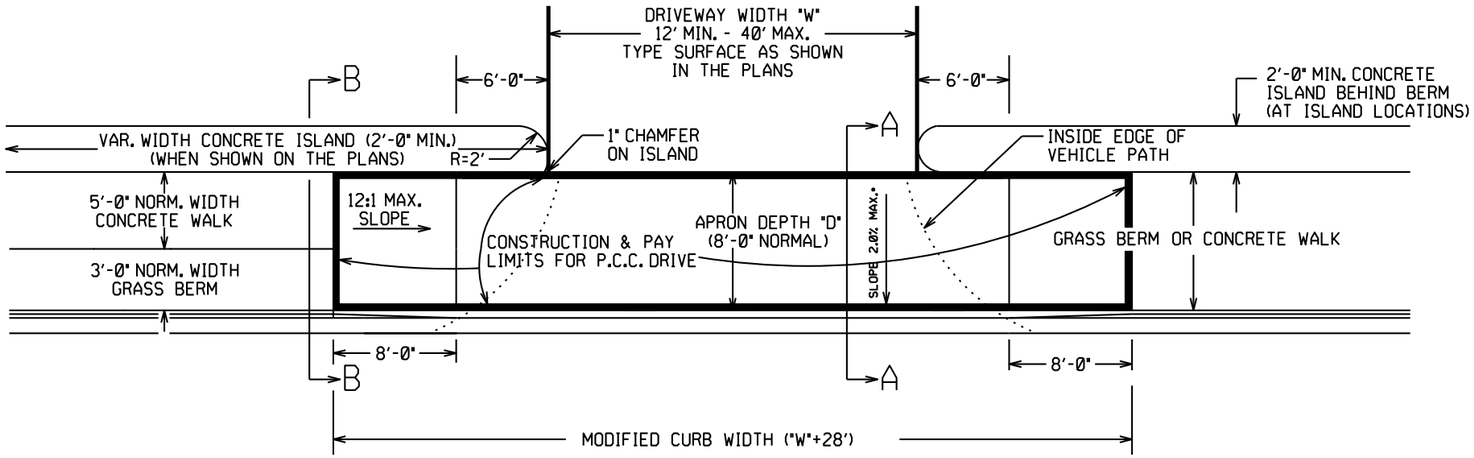
1. "T" DENOTES THICKNESS OF SLAB.
2. DOWEL BARS SHALL BE PLACED IN ACCORDANCE WITH THE DIMENSIONS SHOWN. A TOLERANCE OF PLUS OR MINUS ONE INCH WILL BE ALLOWED FOR THE VERTICAL AND LATERAL PLACEMENT AND A TOLERANCE OF PLUS OR MINUS ¼" WILL BE ALLOWED FOR THE TILT AND SKEW. DOWEL BARS SHALL BE FIELD COATED FOR A MINIMUM DISTANCE OF 2" GREATER THAN HALF THE LENGTH OF THE BAR WITH AN APPROVED GREASE AS A BOND BREAKER JUST PRIOR TO PLACEMENT OF CONCRETE.
3. THE EXPANSION JOINT SUPPORT MAY BE CONSTRUCTED WITH CLASS "A", "S" OR PAVING CONCRETE. PAYMENT FOR THE JOINT SUPPORT SHALL BE FOR THE CONTRACT UNIT PRICE BID FOR THE CLASS OF CONCRETE SPECIFIED IN THE PLANS. PAYMENT FOR ALL OTHER WORK AND MATERIALS REQUIRED FOR THE CONSTRUCTION OF THE JOINT SUPPORT SHALL BE INCLUDED IN THE PRICE BID FOR THE ABOVE ITEMS.
4. CONTRACTION JOINTS SHALL BE CONSTRUCTED ON 15' CENTERS.
5. TOOLING NOT REQUIRED FOR SELF-LEVELING SILICONE.
6. UNLESS OTHERWISE SPECIFIED IN THE PLANS, CONCRETE SHOULDERS SHALL BE CONSTRUCTED ACCORDING TO THE DETAILS SHOWN HEREON. CONTRACTION JOINTS SHALL MATCH CONTRACTION JOINTS IN THE LANES.
7. TIE WIRES IN DOWEL BAR ASSEMBLIES SHALL NOT BE CUT PRIOR TO PLACEMENT OF PAVING CONCRETE.

DATE	REVISION	DATE FILMED
11-07-19	REV. EXP. JOINT REF ON APP. SLAB	
5-25-06	ADDED GENERAL NOTE 7	
10-9-03	REMOVED TIE BAR COATING & REVISED GENERAL NOTES	
11-16-01	ADDED TOOL SEALANT AND NOTE 5; REVISED NOTE 3	
4-26-96	REVISED CONTRACTION JOINT NOTE	
11- 3-94	ADDED NOTE RE: REINF. BARS	
4- 1-93	REVISED DOWEL BARS & GEN. NOTES	4- 1-93
10- 1-92	REVISED DOWEL SPACING	10- 1-92
8- 15-91	ADDED SPAC FOR CONTR JTS & DEL KEYWAY	
05-24-90	REVISED TIE BAR, DOWEL & JOINT SIZE	
01-25-90	ADDED EXPANSION JOINT	01-25-90
11-30-89	CHANGED T/4+1 TO T/3+1	11-30-89
03-23-89	ALTERED SAWED JOINT & ADDED NOTE	512-03-23-89
07-15-88	REVISED AND REDRAWN	632-07-15-88

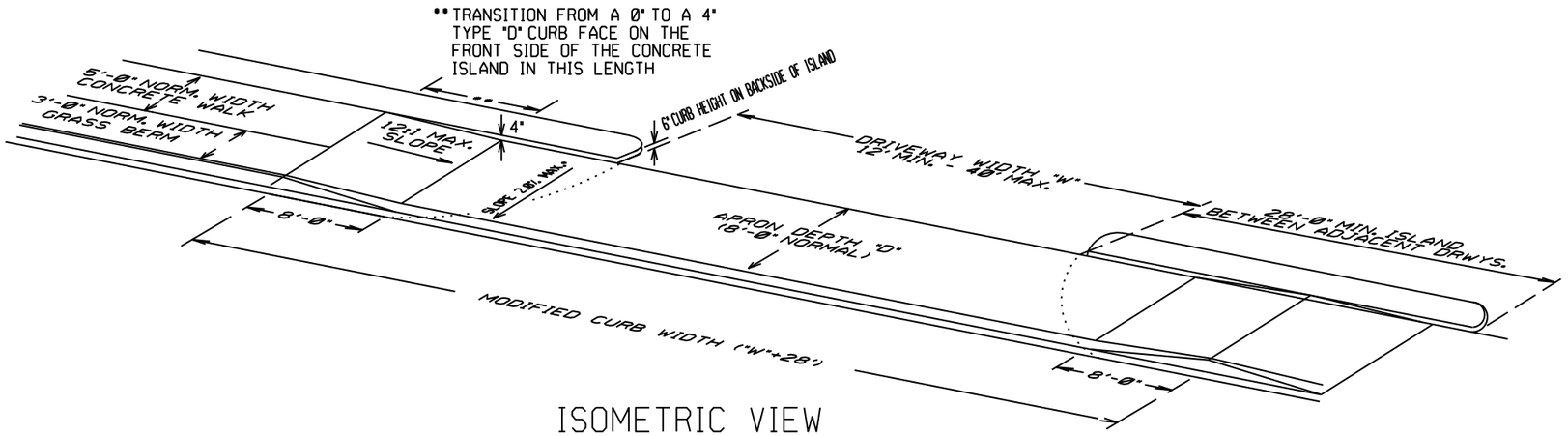
ARKANSAS STATE HIGHWAY COMMISSION

TRANSVERSE & LONGITUDINAL JOINTS FOR CONCRETE PAVEMENT (NON-REINFORCED)

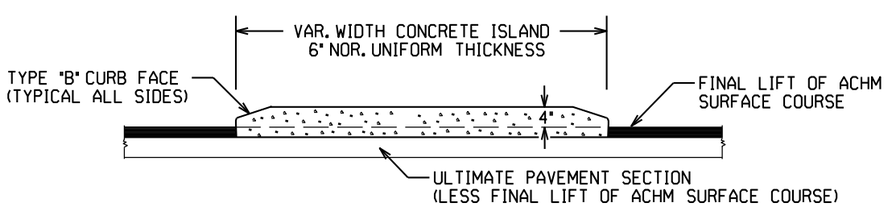
STANDARD DRAWING CPTJ - 6A



PLAN VIEW



ISOMETRIC VIEW

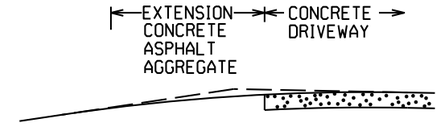


CURBED ISLANDS FOR CHANNELIZATION

CONCRETE ISLAND NOTES:

1. REFER TO PLANS FOR TYPE OF CURB FACE TO BE USED. NO DIRECT PAYMENT WILL BE MADE FOR THE CURB FACES SHOWN ON THE ISLAND DETAILS. PAYMENT FOR THE CURB FACE WILL BE INCLUDED IN THE UNIT PRICE BID FOR THE ITEM "CONCRETE ISLAND".

2. TRANSVERSE EXPANSION JOINTS, NOT LESS THAN 1/2" WIDE, SHALL BE PLACED AT MINIMUM INTERVAL OF 45'. TRANSVERSE JOINT SHALL BE CONSTRUCTED USING A JOINT FILLER COMPLYING WITH AASHTO M213.



EXTENSION TYPICAL SECTIONS

1: CONCRETE - 6" P.C. CONCRETE DRIVEWAY

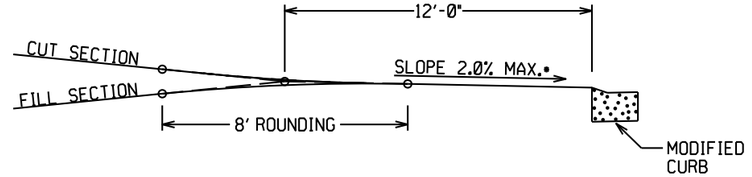
2: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
4" ACHM BINDER COURSE (1") OR
4" ACHM BASE COURSE (1-1/2")

3: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
7" AGGREGATE BASE COURSE

4: AGGREGATE - 6" AGGREGATE BASE COURSE

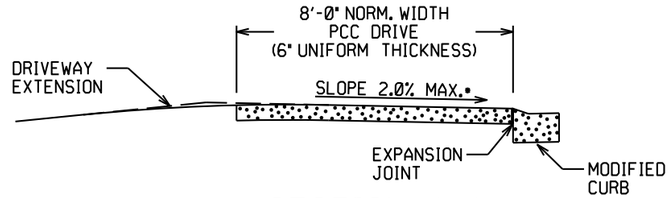
THE TYPE OF EXTENSION SHALL BE AS SHOWN IN THE PLANS. THE CONTRACTOR MAY, WITH THE APPROVAL OF THE ENGINEER, SUBSTITUTE A LOWER NUMBERED TYPE OF EXTENSION IN LIEU OF THE TYPE SPECIFIED IN THE PLANS, BUT AT NO ADDITIONAL COST TO THE DEPARTMENT.

DRIVEWAY EXTENSION DETAILS

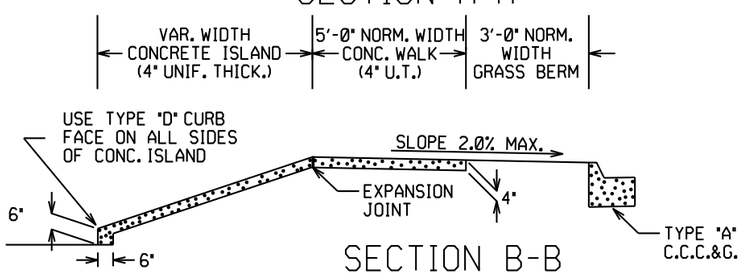


DRIVEWAY VERTICAL ALIGNMENT DETAILS

• NOTE: DRIVEWAYS MAY NOT BE SLOPED AWAY FROM THE ROADWAY UNLESS APPROVED BY THE ENGINEER.



SECTION A-A



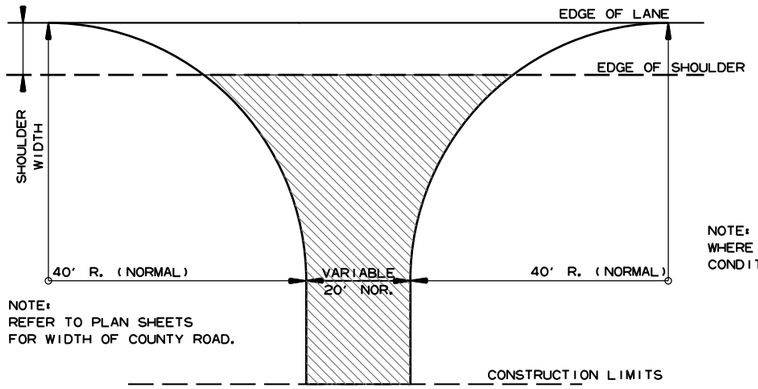
SECTION B-B
CURBED ISLAND BEHIND WALK

DATE REV	DATE FILMED	DESCRIPTION
5-19-22		REVISED ISLAND NOTES
11-07-19		REVISED WALK DETAILS
2-27-14		REVISED PLAN & ISOMETRIC VIEW
11-29-07		ADDED CHANNELIZATION ISLAND WITH TYPE C CURB FACE & REVISED DRIVEWAY SLOPE NOTE & VERTICAL ALIGNMENT DETAIL
11-10-05		REV. APRON SLOPE & DEPTH OF AGG. BASE.
8-22-02		ADDED ISLAND DETAILS & NOTES
3-30-00		REV. MOD. CURB WIDTH & TRANS. NOTE
11-19-98		REVISED NOTES
11-18-98		REDRAWN AND REISSUED

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DRIVEWAYS & ISLANDS

STANDARD DRAWING DR-1

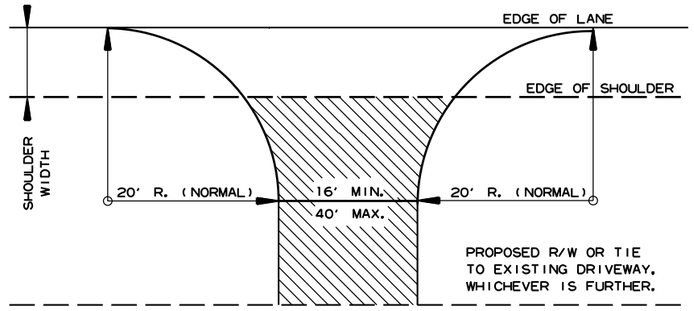


NOTE:
REFER TO PLAN SHEETS
FOR WIDTH OF COUNTY ROAD.

NOTE: TURNOUTS SHALL BE MODIFIED WHERE NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.

ACHM SURFACE COURSE (1/2")
(220 LBS. PER SQ. YD.) AND
AGGREGATE BASE COURSE (CLASS 7)
7" COMP. DEPTH, UNLESS OTHERWISE
SPECIFIED IN PLANS.

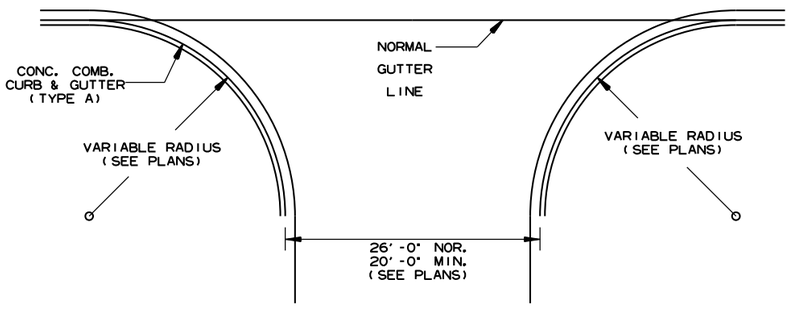
DETAIL FOR COUNTY ROAD TURNOUTS OPEN SHOULDER SECTION



NOTE: TURNOUTS AND PRIVATE DRIVES SHALL BE MODIFIED WHERE NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.

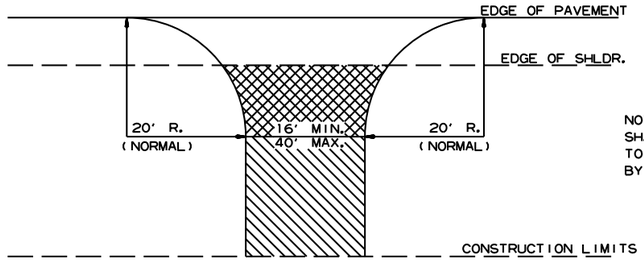
ACHM SURFACE COURSE (1/2")
(220 LBS. PER SQ. YD.) AND
AGGREGATE BASE COURSE (CLASS 7)
7" COMP. DEPTH IF ASPHALT OR
GRAVEL DRIVE EXISTING; OR 6"
CONCRETE IF CONCRETE DRIVE
EXISTING.

DETAIL FOR DRIVEWAY TURNOUTS OPEN SHOULDER SECTION (ARTERIALS)



NOTE:
PAVEMENT STRUCTURE FOR STATE HIGHWAYS, CITY STREETS,
& COUNTY ROADS TO BE SAME AS MAIN LANES.

DETAIL OF TURNOUTS, ASPHALT STREETS, COUNTY ROADS & STATE HIGHWAYS CURB & GUTTER SECTION



NOTE: TURNOUTS AND PRIVATE DRIVES SHALL BE MODIFIED WHERE NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.

ASPHALT CONCRETE HOT MIX SURFACE
COURSE (220 LBS. PER SQ. YD.)
AGGREGATE BASE COURSE (CLASS 7)
7" COMP. DEPTH IF ASPHALT DRIVE EXIST OR
6" CONCRETE IF CONCRETE DRIVE EXIST.

AGGREGATE BASE COURSE (CLASS 7)
9" COMP. DEPTH OR CONFORM
TO EXISTING DRIVEWAY

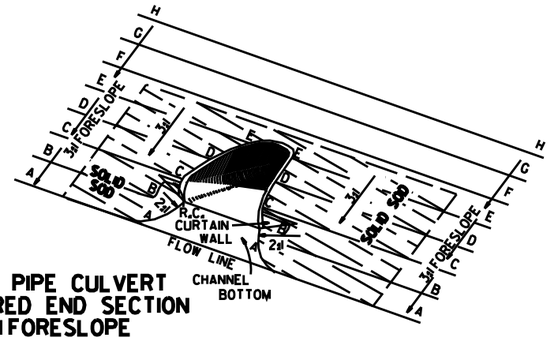
DETAIL FOR DRIVEWAY TURNOUTS (COLLECTORS)

DATE REV	DATE FILMED	DESCRIPTION
5-19-22		ISSUED

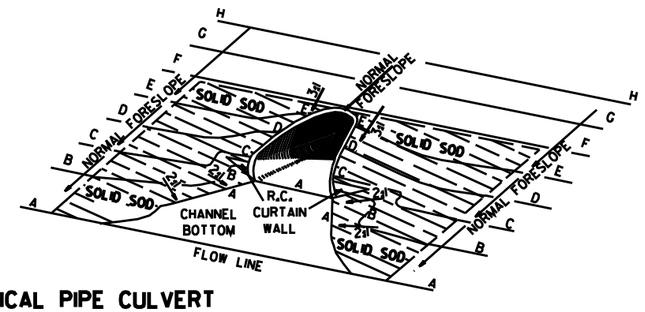
ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DRIVEWAYS & STREET TURNOUTS

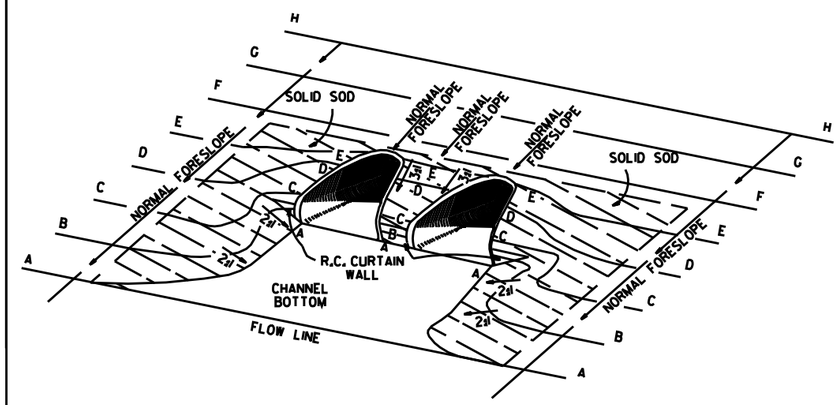
STANDARD DRAWING DR-2



TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& 3:1 FORESLOPE



TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& FLATTENED ADJACENT SLOPES



TYPICAL MULTIPLE PIPE CULVERT
WITH FLARED END SECTIONS
& FLATTENED ADJACENT SLOPES

R.C. CURTAIN WALL
DIMENSIONS & QUANTITIES

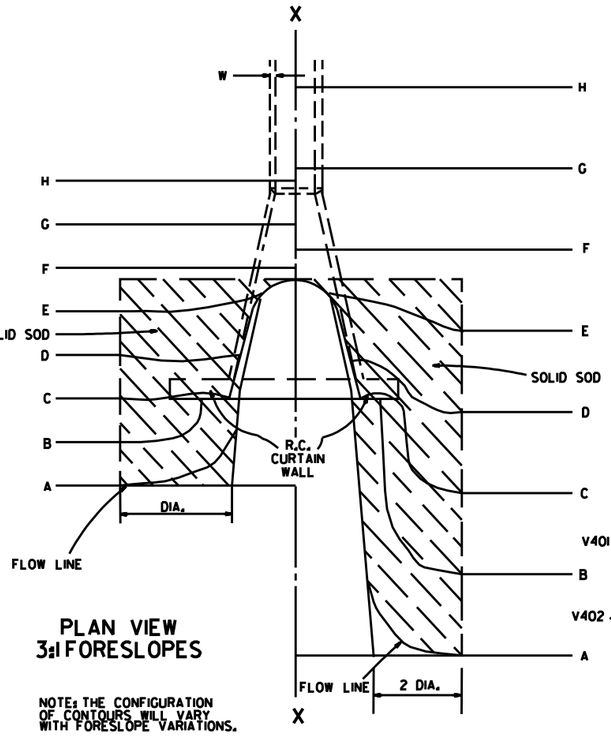
PIPE DIA.	H_1	L_1	L	L (DBL.)/2	SINGLE R.C.P.C. CONC. CU. YDS.	SINGLE R.C.P.C. REINF. STEEL LBS.	DOUBLE R.C.P.C. CONC. CU. YDS.	DOUBLE R.C.P.C. REINF. STEEL LBS.
18"	11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	5'-7"	11'-0"	9'-0"	0.45	39.0	0.67	59.0
36"	1'-7"	6'-8"	13'-0"	10'-6"	0.58	52.6	0.83	73.9
42"	2'-1½"	7'-3"	15'-6"	12'-0"	0.82	77.1	1.10	100.7
48"	2'-5"	7'-10"	17'-0"	13'-0"	0.98	94.9	1.27	120.4
54"	2'-9½"	8'-5"	18'-6"	14'-0"	1.16	115.8	1.47	143.7
60"	3'-4"	9'-0"	20'-6"	15'-6"	1.47	149.7	1.84	180.3
72"	4'-5"	10'-2"	25'-6"	18'-6"	2.31	232.6	2.73	271.0

NOTE: QUANTITIES SHOWN ARE FOR ONE (1) CURTAIN WALL.

REINFORCING STEEL SCHEDULE

PIPE DIA.	SINGLE R.C. PIPE CULVERT H401 L	H401 NO.	H402 L	H402 NO.	V401 L	V401 NO.	V402 L	V402 NO.	DOUBLE R.C. PIPE CULVERT H401 L	H401 NO.	H402 L	H402 NO.	H403 L	H403 NO.	V401 L	V401 NO.	V402 L	V402 NO.
18"	7'-8"	2	1'-11½"	4	1'-7½"	8	8"	8	12'-2"	2	1'-11½"	4	8"	2	1'-7½"	10	8"	14
24"	9'-2"	2	2'-2"	4	1'-8½"	10	8"	9	14'-8"	2	2'-2"	4	8"	2	1'-8½"	12	8"	18
30"	10'-8"	2	2'-4½"	4	1'-11½"	10	8"	12	17'-8"	2	2'-4½"	4	8"	2	1'-11½"	14	8"	22
36"	12'-8"	2	2'-10"	6	2'-3"	12	8"	14	20'-8"	2	2'-10"	6	8"	3	2'-3"	14	8"	28
42"	15'-2"	2	3'-9½"	8	2'-9½"	16	8"	15	23'-8"	2	3'-9½"	8	8"	4	2'-9½"	18	8"	30
48"	16'-8"	2	4'-3"	10	3'-1"	18	8"	16	25'-8"	2	4'-3"	10	8"	5	3'-1"	20	8"	32
54"	18'-2"	2	4'-8½"	12	3'-5½"	20	8"	17	27'-8"	2	4'-9"	12	8"	6	3'-5½"	22	8"	34
60"	20'-2"	2	5'-5"	14	4'-0"	24	8"	18	30'-8"	2	5'-5"	14	8"	7	4'-0"	26	8"	36
72"	25'-2"	2	7'-4"	18	5'-1"	30	8"	20	36'-8"	2	7'-4"	18	8"	9	5'-1"	33	8"	40

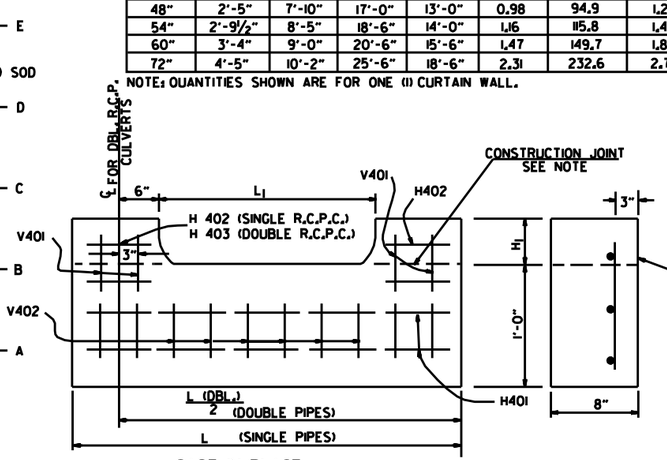
ALL REINFORCING STEEL #4 BARS @ 6" O.C.



PLAN VIEW
3:1 FORESLOPES

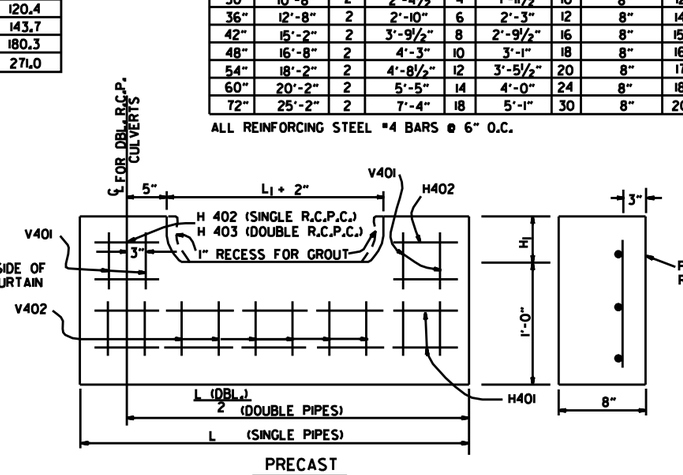
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW
FLATTENED FORESLOPES



CAST-IN-PLACE

NOTE: THE PORTION OF THE R.C. CURTAIN WALL BENEATH THE FLARED END SECTION (LOWER 1'-0") SHALL BE PLACED MONOLITHICALLY. THE FLARED END SECTION SHALL THEN BE SET IN PLACE & THE REMAINING PORTIONS OF THE R.C. CURTAIN WALL PLACED.



PRECAST

NOTE: THE PRECAST CURTAIN WALL WILL BE SET AND BACKFILLED WITH COMPACTED MATERIAL. THE FLARED END SECTION SHALL THEN BE SET IN PLACE AND THE 1" RECESS FILLED WITH GROUT. WHERE "L" EXCEEDS 11' THE CURTAIN WALL MAY BE CAST IN TWO (2) OR MORE SECTIONS. THE METHOD OF JOINING THE SECTIONS FOR INSTALLATION SHALL BE APPROVED BY THE ENGINEER.

SOLID SODDING

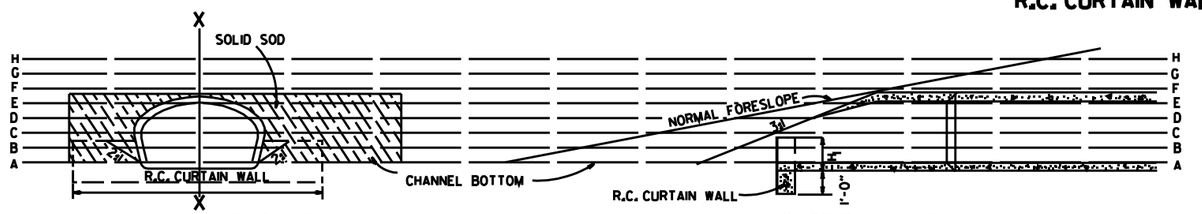
PIPE DIA.	SINGLE R.C.P.C. 3:1 SQ. YDS.	SINGLE R.C.P.C. 4:1 SQ. YDS.	SINGLE R.C.P.C. 6:1 SQ. YDS.	DOUBLE R.C.P.C. 3:1 SQ. YDS.	DOUBLE R.C.P.C. 4:1 SQ. YDS.	DOUBLE R.C.P.C. 6:1 SQ. YDS.
18"	5	7	12	6	8	13
24"	8	12	19	9	13	20
30"	13	18	29	14	19	30
36"	17	26	41	18	28	43
42"	23	35	55	25	37	57
48"	29	46	68	31	48	70
54"	35	57	85	37	59	87
60"	45	62	104	48	65	107
72"	64	92	156	67	95	159

NOTE: QUANTITIES SHOWN ABOVE ARE FOR ONE (1) END OF F.E.S.

GENERAL NOTES

1. A CAST-IN-PLACE OR PRECAST CURTAIN WALL MAY BE USED. PAYMENT FOR THE CURTAIN WALL SHALL BE CONSIDERED TO BE INCLUDED IN THE UNIT PRICE BID EACH FOR FLARED END SECTIONS OF THE SEVERAL SIZES, WHICH PRICE SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS INCLUDING REINFORCING STEEL AND CONCRETE; FOR FORMS, MIXING AND PLACING; FOR EXCAVATION AND BACKFILL, AND FOR ALL LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED ¾".
3. CONCRETE FOR CURTAIN WALL SHALL MEET THE REQUIREMENTS FOR CLASS A OR S CONCRETE AS PROVIDED IN SECTION 802 OF THE STANDARD SPECIFICATIONS OR FOR PAVING CONCRETE AS PROVIDED IN SECTION 501 OF THE STANDARD SPECIFICATIONS.
4. WELDED WIRE MESH 3 x 3 W10 x W10 MAY BE USED IN LIEU OF REINFORCING BARS.

R.C. CURTAIN WALL DETAILS



END VIEW

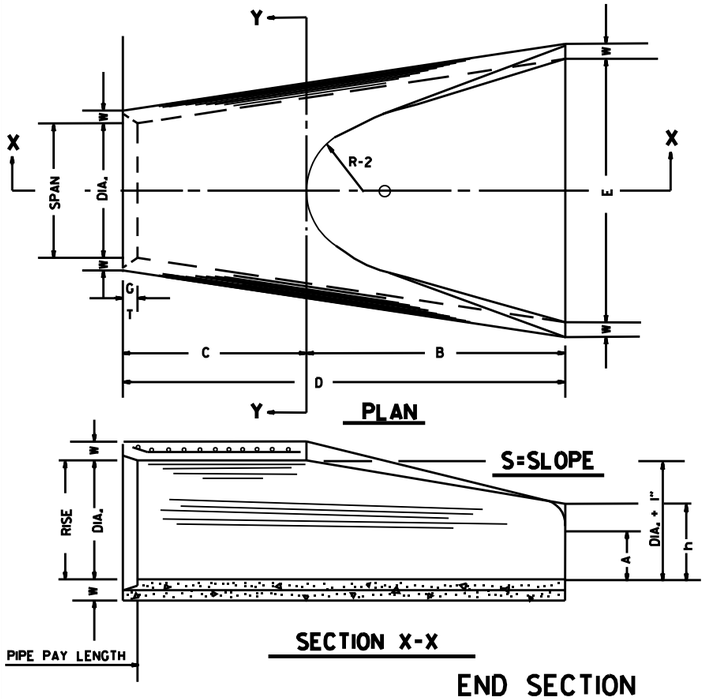
SECTIONAL VIEW "X-X"

DATE	REVISION	FILMED
10-18-96	ADDED NOTE TO SOLID SODDING	
10-12-95	CORRECTED SPELLING	
11- 3-94	ADDED GENERAL NOTE NO. 4	
8-15-91	REV. CURTAIN WALL QUANT. STEEL SCH. & SOLID SOD QUANT.	
3-2-81	ALLOW PRECAST IN 2 OR MORE PIECES CHAMFER EDGES	
5-15-80	ADDED PRECAST WALL & GENERAL NOTES	
10-2-72	REVISED AND REDRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

FLARED END SECTION

STANDARD DRAWING FES-1



END SECTION FOR REINFORCED CONCRETE PIPE CULVERTS

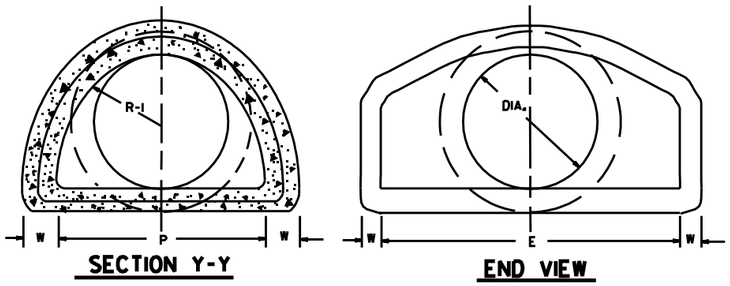
TABLE OF DIMENSIONS

DIA.	WALL	A	B	C	D	E	S	DIA. + 1"	P	R-1	R-2	G-T	WT.	h
18"	2½"	9"	2'-3"	3'-10"	6'-1"	3'-0"	3st	19"	29"	15½"	12"	2"	1000	1'-0½"
24"	3"	9½"	3'-7½"	2'-6"	6'-1½"	4'-0"	3st	25"	33 3/16"	16 1/16"	14"	2½"	1600	1'-1½"
30"	3½"	1'-0"	4'-6"	1'-7¾"	6'-1¾"	5'-0"	3st	31"	37"	18½"	15"	3¼"	1940	1'-4 5/16"
36"	4"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	6'-0"	3st	37"	47 1/16"	24 5/16"	20"	3½"	4100	1'-8"
42"	4½"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3st	43"	53 1/16"	27½"	22"	3½"	5380	2'-2½"
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	3st	49"	56½"	28½"	22"	3½"	6550	2'-6"
54"	5½"	2'-4"	6'-6"	1'-10"	8'-4"	7'-6"	3st	55"	65½"	33 1/16"	24"	4"	8750	2'-10½"
60"	6"	2'-10"	6'-6"	1'-10"	8'-4"	8'-0"	3st	61"	72½"	36 11/16"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3st	73"	77 1/16"	38 5/16"	24"	5"	13250	4'-6"

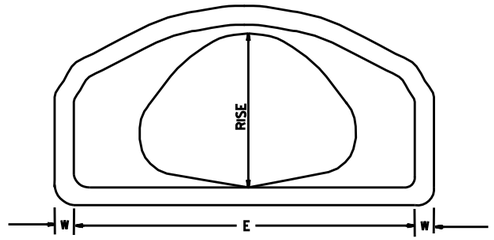
ARCH PIPE

EQUIV. DIA.	• SPAN AASHTO M 206	• SPAN AHD NOMINAL	• RISE AASHTO M 206	• RISE AHD NOMINAL	W	A	B	C	D	E	P	R2	G-T	S
	INCHES													
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1½"	2½st
18	22	22	13½	14	2½"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32 1/8"	13"	2½"	2½st
21	26	26	15½	16	2¾"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34 1/8"	14"	2½"	2½st
24	28½	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36 5/16"	15"	2½"	2½st
30	36¼	36	22½	23	3½"	10"	3'-1"	3'-0½"	6'-1½"	6'-0"	47 1/16"	20"	3"	2½st
36	43¾	44	26⅝	27	4"	10½"	4'-0"	2'-1½"	6'-1½"	6'-6"	54 5/16"	22"	3½"	2½st
42	51⅛	51	31⅝	31	4½"	11½"	4'-7"	1-10¼"	6'-5¼"	7'-2"	59½"	23"	3¾"	2½st
48	58½	59	36	36	5"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	7'-10"	70 3/16"	24"	4¼"	2½st
54	65	65	40	40	5½"	1'-7"	5'-3"	2'-11"	8'-2"	8'-6"	72 1/16"	24"	4¾"	2¼st
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77 1/16"	24"	5"	2¼st

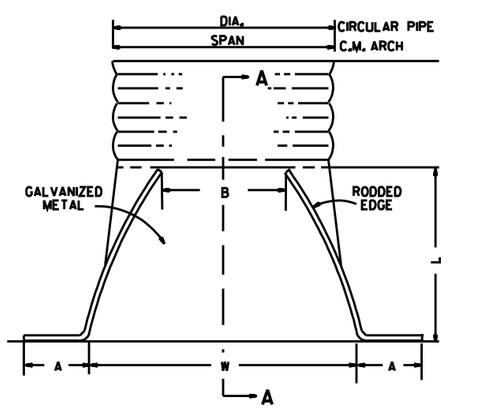
• THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PER CENT FROM THE VALUES SPECIFIED BY AASHTO M 206.

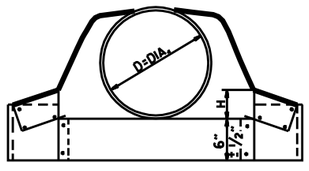


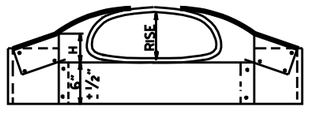
NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION



END VIEW
CONCRETE ARCH PIPE







CIRCULAR PIPE

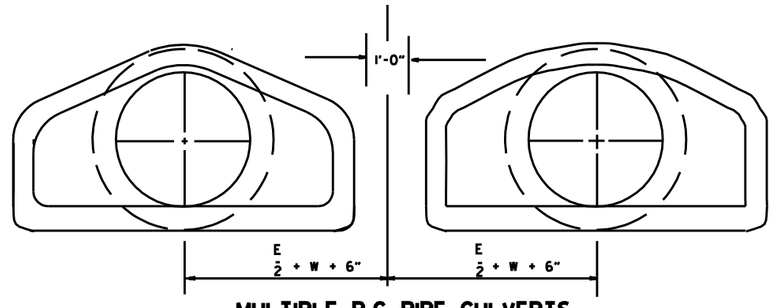
D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" ±	L 1½" ±	W 2" ±	S
		INCHES					
12	16	6	6	6	21	24	2½st
15	16	7	8	6	26	30	2½st
18	16	8	10	6	31	36	2½st
21	16	9	12	6	36	42	2½st
24	16	10	13	6	41	48	2½st
30	14	12	16	8	51	60	2½st
36	14	14	19	9	60	72	2½st
42	12	16	22	11	69	84	2½st
48	12	18	27	12	78	90	2½st
54	12	18	30	12	84	102	2st
60	12	18	33	12	87	114	1½st
66	12	18	36	12	87	120	1½st
72	12	18	39	12	87	126	1 1/3st

C.M. ARCH PIPE

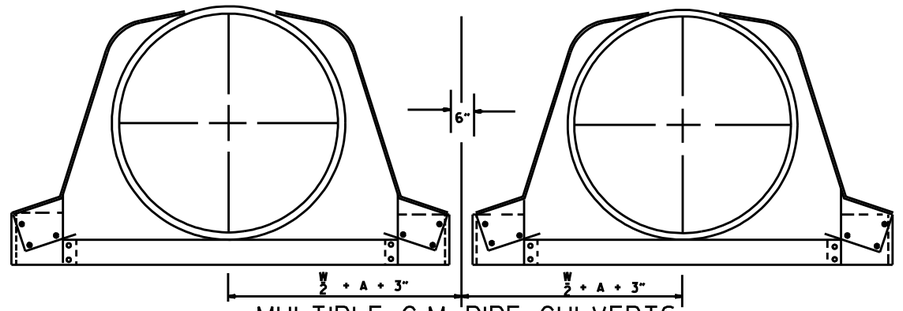
EQUIV. DIA.	SPAN	RISE	A 1" ±	B MAX.	H 1" ±	L 1½" ±	W 2" ±	S	GAUGE
	INCHES								
15"	17	13	7	9	6	19	30	2½st	16
18"	21	15	7	10	6	23	36	2½st	16
21"	24	18	8	12	6	28	42	2½st	16
24"	28	20	9	14	6	32	48	2½st	16
30"	35	24	10	16	6	39	60	2½st	14
36"	42	29	12	18	8	46	75	2½st	14
42"	49	33	13	21	9	53	85	2½st	12
48"	57	38	18	26	12	63	90	2½st	12
54"	64	43	18	30	12	70	102	2½st	12
60"	71	47	18	33	12	77	114	2½st	12

NOTE: ALTERNATE CONNECTIONS TO THE PIPE CULVERTS, IN ACCORDANCE WITH MANUFACTURER'S STANDARD PRACTICES, MAY BE MADE SUBJECT TO THE APPROVAL OF THE ENGINEER.

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS



MULTIPLE R.C. PIPE CULVERTS



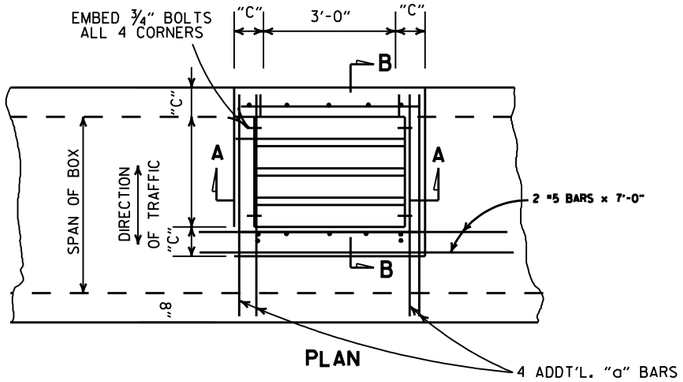
MULTIPLE C.M. PIPE CULVERTS

DATE	REVISION	FILMED
10-18-96	REVISED ASTM REF. TO AASHTO	
5-15-80	REVISED DISTANCE BETWEEN MULTIPLE R.C.P. F.E.S.	664-5-15-80
7-14-78	C.M. ARCH SIZES TO CONFORM WITH AASHTO SIZES	752-7-14-78
8-22-75	ADDED MULTIPLE PIPE CULVERTS	517-8-22-75
12-5-74	REMOVED NOTE RE REINF. FOR R.C. F.E.S.	500-12-5-74
5-24-73	CMP END SECTION, SHOW PIPE PAY LENGTH	627-5-24-73
10-2-72	REVISED AND REDRAWN	760-10-2-72

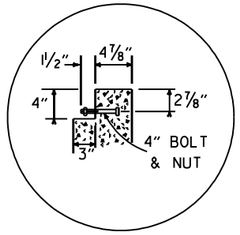
ARKANSAS STATE HIGHWAY COMMISSION

FLARED END SECTION

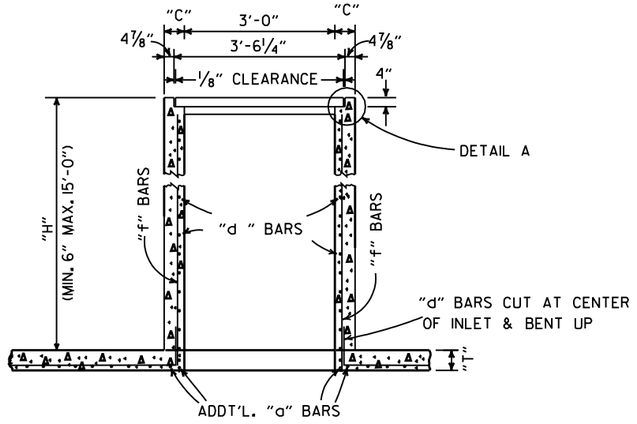
STANDARD DRAWING FES-2



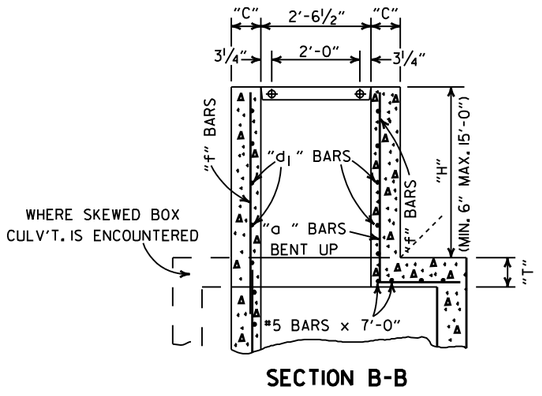
PLAN



DETAIL A



SECTION A-A

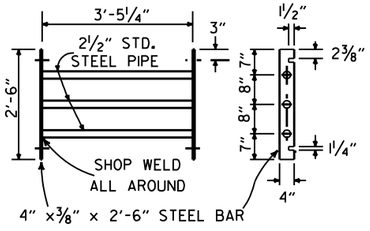


SECTION B-B

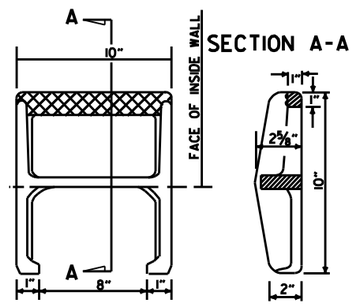
NOTE: ADDT'L.REINF. STEEL TO BE INCLUDED IN UNIT PRICE BID PER TYPE "TM" D.I.

DIMENSIONS & REINF. BARS FOR D.I. TO BE THE SAME AS THOSE SHOWN ON APPLICABLE STD. BARREL DRAWING FOR R.C. BOX CULVERTS.

DROP INLET TYPE "TM"
FOR REINFORCED CONC. BOX CULVERTS



GRATE DETAIL



APPROX. WEIGHT = 11 LBS. (CAST IRON)

PLAN

NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

DETAIL OF STEP FOR DROP INLET

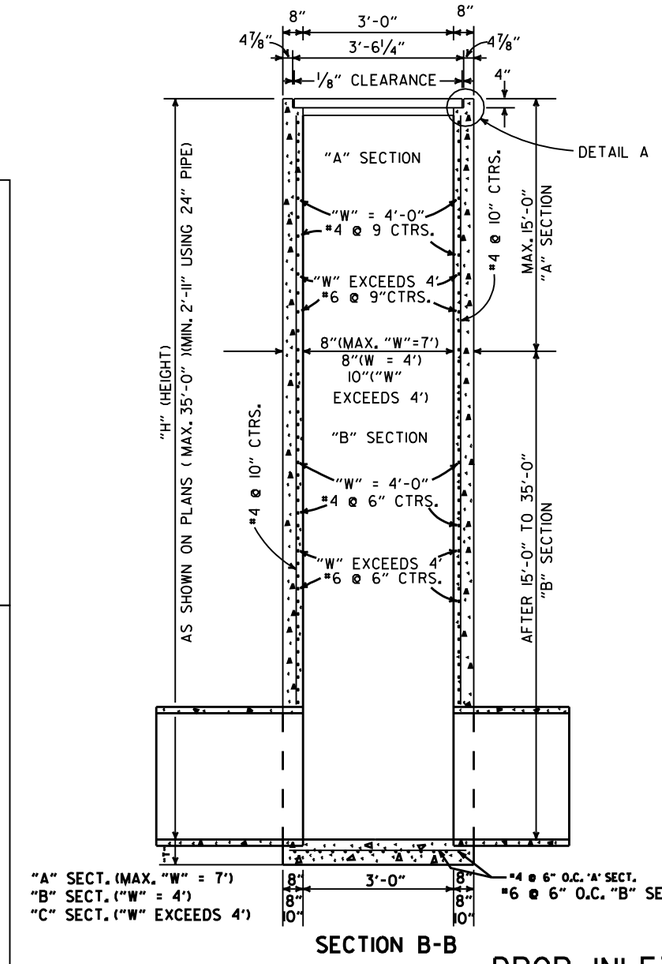
GENERAL NOTES:

1. STEEL PIPE FOR GRATES AND BOLTS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 807. BOLTS SHALL CONFORM TO ONE OF THE FOLLOWING: ASTM A193, GRADE B8 CLASS 1 OR 2, ASTM A307 OR AASHTO M 164.
2. STEEL PIPE FOR GRATES SHALL BE "STANDARD WEIGHT" PIPE CONFORMING TO ASTM A53 NATIONAL STANDARD PIPE.
3. BOLTS, NUTS, WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M 232 OR AASHTO M 298, CLASS 40 OR 50.
4. ALL EXPOSED CORNERS TO HAVE ¾" CHAMFER.
5. ALL #4 AND #5 REINFORCING BARS TO HAVE 1½" COVER. LARGER SIZES TO HAVE 2" COVER.
6. THE COMPLETE PIPE GRATE SHALL BE PAINTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

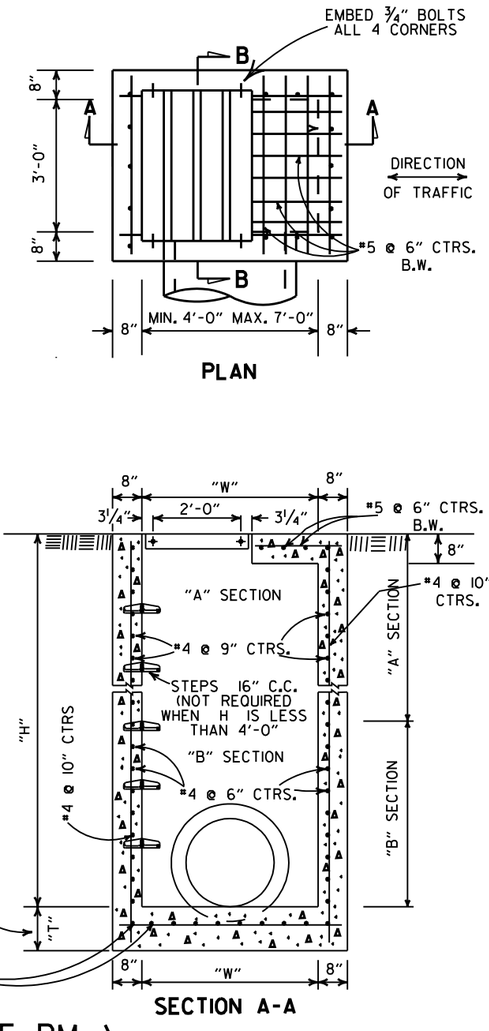
TABLE OF "W" DIMENSIONS

I.D. PIPE	SKEW OF CROSS DRAIN		
	STRAIGHT	30°	45°
	"W"	"W"	"W"
24"	4'-0"	4'-0"	4'-0"
30"	4'-0"	4'-0"	4'-5"
36"	4'-0"	4'-3"	5'-3"
42"	4'-3"	4'-11"	6'-1"
48"	4'-10"	5'-7"	6'-11"

NOTE: DIMENSIONS SHOWN ABOVE ARE FOR PIPES INTERSECTING DROP INLET ON ONE SIDE ONLY. FOR SKEWED PIPES INTERSECTING BOTH SIDES OF DROP INLET, "W" WILL NEED TO BE INCREASED OR AXIS OF INTERSECTING PIPES WILL NEED TO BE SHIFTED.



SECTION B-B



SECTION A-A

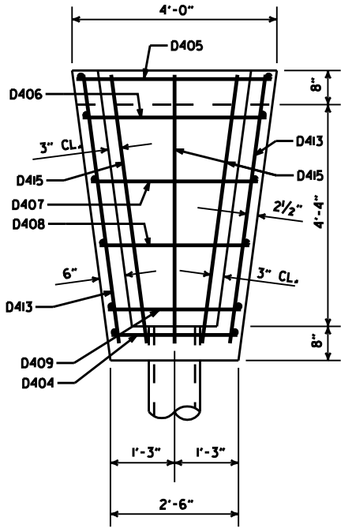
DROP INLET(TYPE RM)

REVISED		DATE FILMED
8-22-02	ADDED & REVISED DIMENSION TO SECTION A-A	
1-12-00	CORRECTED DIMENSION ON SECTION B-B	
11-06-97	ADDED DIMENSION TO SECTION A-A	
10-18-96	REVISED ASTM REF. TO AASHTO AND ADDED NOTE TO TABLE OF "W" DIMENSIONS	
10-1-92	ADDED DIRECTION OF TRAFFIC	10-1-92
8-15-91	ADDED NOTE ABOUT PAINTING OF GRATE	8-15-91
11-30-89	ALTERED DETAIL A	11-30-89
7-15-88	REVISED STEP DETAIL, TM & RM D.I. & GRATE DETAIL	719-7-15-88
10-2-72	REVISED AND REDRAWN	542-10-2-72

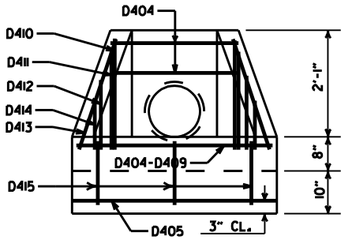
ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLETS

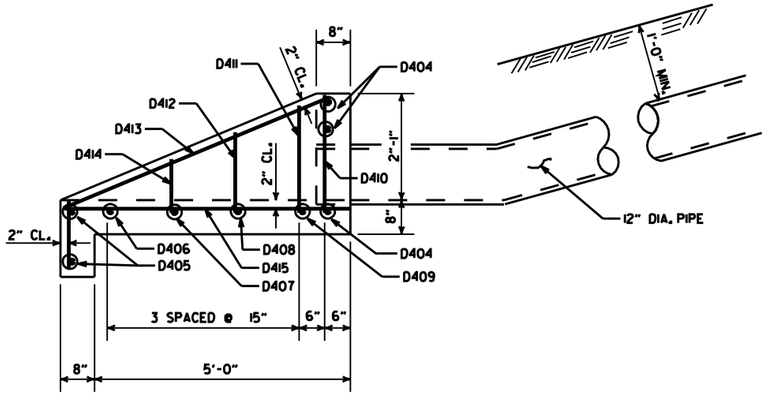
STANDARD DRAWING FPC-9D



PLAN



FRONT ELEVATION

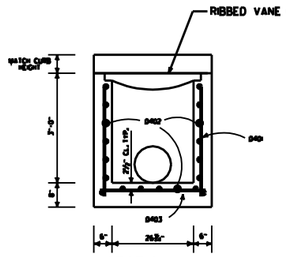


SIDE ELEVATION
CONCRETE SPILLWAY

BAR LIST (CONCRETE SPILLWAY)

MARK	NO. REQ'D.	LENGTH	BENDING DIAGRAM
D404	3	2'-2"	5'-4", 1'-2", 2" P.D., D415
D405	2	3'-8"	
D406	1	3'-5"	
D407	1	3'-1"	
D408	1	2'-9"	
D409	1	2'-5"	
D410	2	2'-5"	
D411	2	2'-2"	
D412	2	1'-9"	
D413	2	5'-6"	
D414	2	1'-2"	
D415	3	6'-5"	

DETAILS OF CONCRETE SPILLWAY (TYPE A)

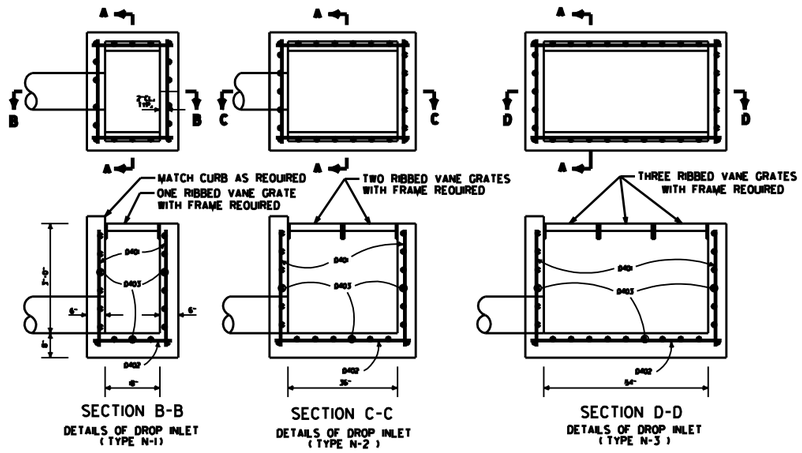


SECTION A-A

BAR LIST (DROP INLET)

MARK	TYPE N-1		TYPE N-2		TYPE N-3	
	NO. REQ'D.	LENGTH	NO. REQ'D.	LENGTH	NO. REQ'D.	LENGTH
D401	20	3'-0"	26	3'-0"	32	3'-0"
D402	19	2'-2"	19	3'-8"	19	5'-2"
D403	17	2'-11"	20	2'-11"	23	2'-11"

ALL BARS #4 @ 6" SPACING



SECTION B-B
DETAILS OF DROP INLET
(TYPE N-1)

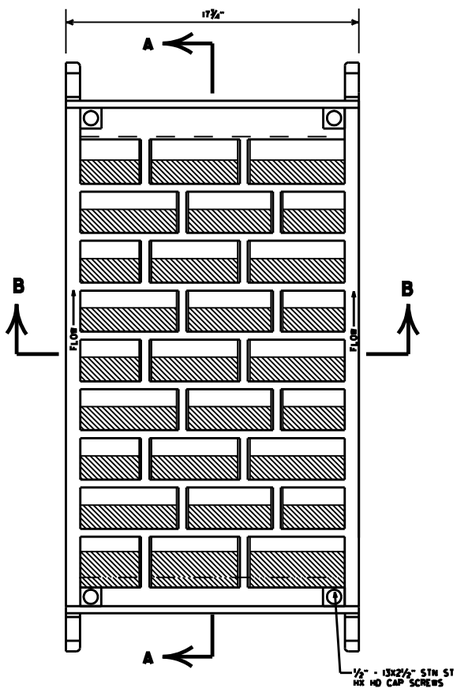
SECTION C-C
DETAILS OF DROP INLET
(TYPE N-2)

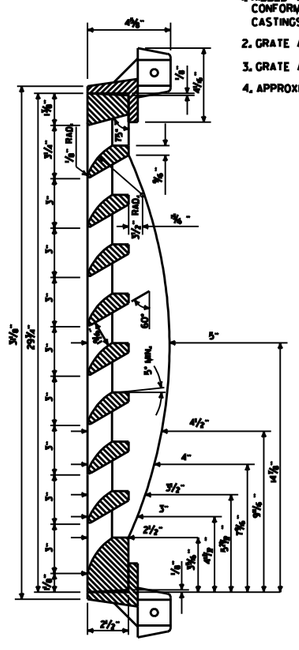
SECTION D-D
DETAILS OF DROP INLET
(TYPE N-3)

DETAILS OF DROP INLET

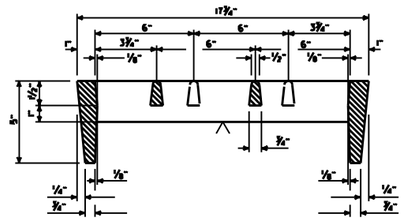
GENERAL NOTES (GRATE & FRAME)

1. RIBBED VANE GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105 CLASS 35B & AASHTO M 306.
2. GRATE AND FRAME SHALL NOT BE PAINTED.
3. GRATE AND FRAME SHALL BE INSTALLED IN DROP INLET IN ASSEMBLED POSITION.
4. APPROXIMATE WEIGHT OF GRATE SHALL BE 170 LBS.

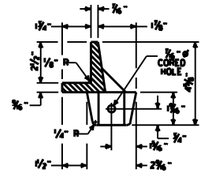




SECTION A-A



SECTION B-B



SECTION THRU FRAME

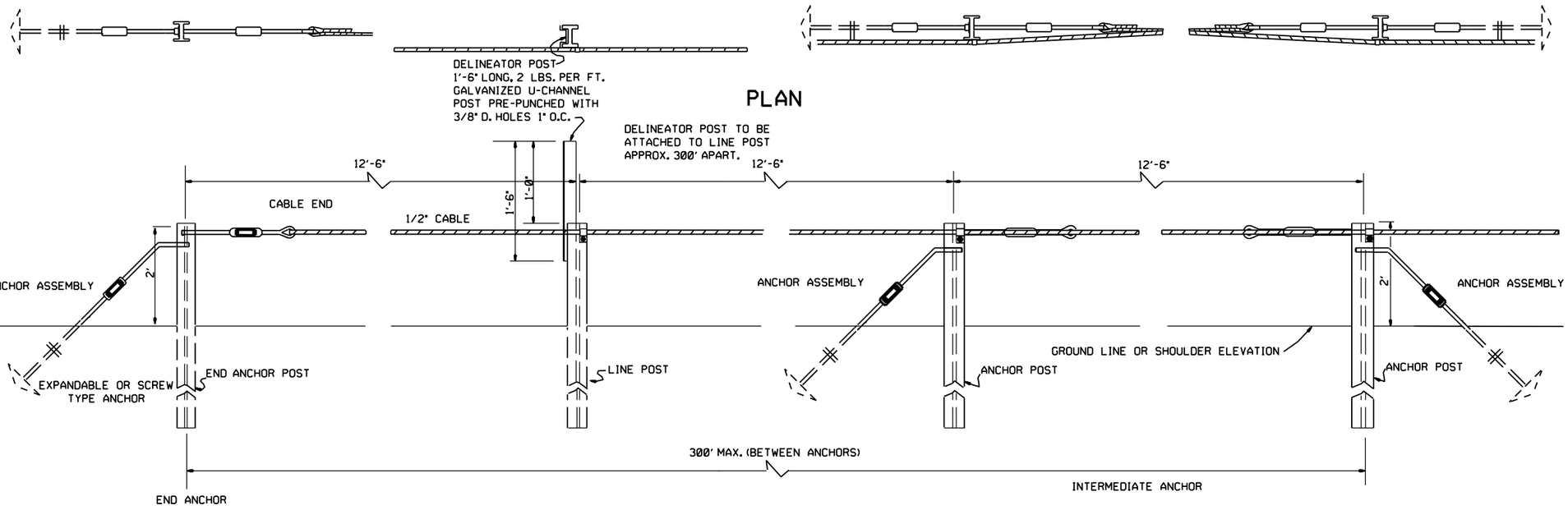
DETAILS OF RIBBED VANE GRATE AND FRAME

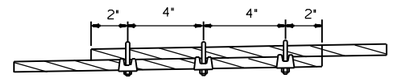
DATE REVISED	DATE FILMED	DESCRIPTION
7-02-98		REVISED SECT. A-A DETAIL OF DROP INLET & ADDED AASHTO REF. TO NOTE 1, REVISED GRATE
10-18-96		REVISED ASTM REF. TO AASHTO
8-15-91		ISSUED

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLETS AND SPILLWAY OUTLET

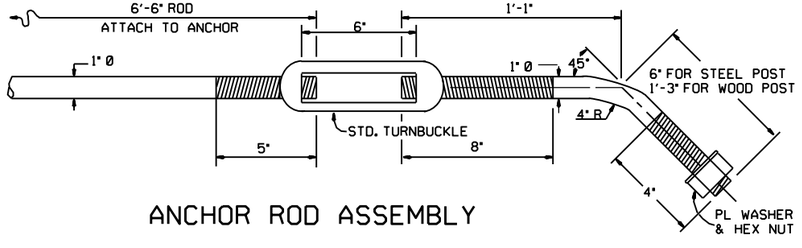
STANDARD DRAWING FPC-9N



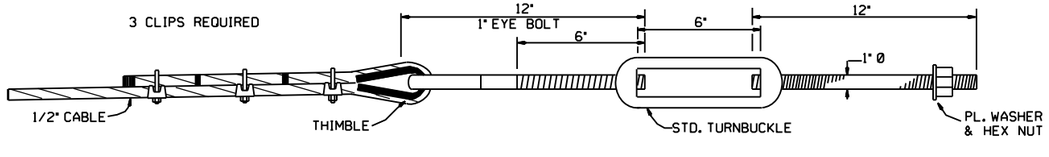


ONLY ONE SPLICE PERMITTED BETWEEN ANCHORS, LOCATED BETWEEN LINE POSTS ONLY. SPLICES WILL NOT BE PERMITTED IN SPANS ADJACENT TO THE ANCHOR AND CABLE END ASSEMBLIES. GUARD CABLE GREATER THAN 300 FEET IN LENGTH REQUIRES AN INTERMEDIATE ANCHOR AS SHOWN.

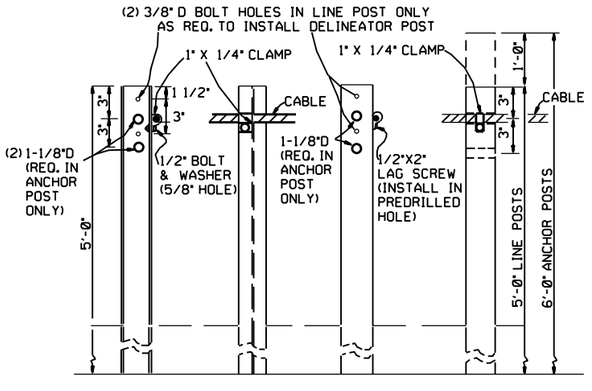
SPLICE DETAIL



ANCHOR ROD ASSEMBLY



CABLE END



STEEL POST

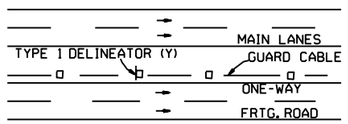
S 3 X 5.7 OR
WELDED BEAM CONSTRUCTION (ASTM A769)

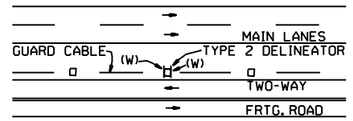
WOOD POST

3 1/2"X3 1/2" SQUARE (4X4 NOMINAL) OR 4" ROUND SOUTHERN PINE INSPECTION BUREAU, TIMBER, NO. 1 1350 f SOUTHERN PINE OR WEST COAST LUMBER INSPECTION BUREAU, POSTS AND TIMBERS DENSE NO. 1 STRUCTURAL OR BETTER 9.7 f (1400f).

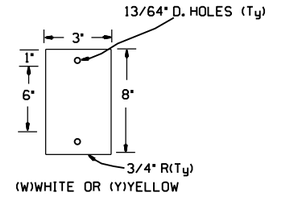
POST DETAILS

NOTE: POST MAY BE WOOD OR STEEL. IN GENERAL, ONLY ONE MATERIAL WILL BE ALLOWED WITHIN A SINGLE PROJECT. HOWEVER, WITH APPROVAL OF THE ENGINEER, POSTS MAY BE MIXED ON A JOB PROVIDED DEFINITE LIMITS ARE ESTABLISHED AND ALL POSTS ARE OF THE SAME TYPE WITHIN THOSE LIMITS. ONLY ONE TYPE POST MAY BE USED WITHIN A SINGLE ASSEMBLY.

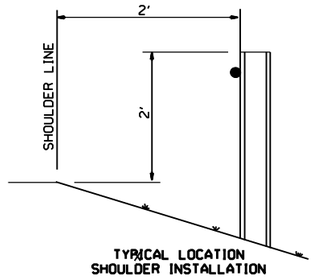




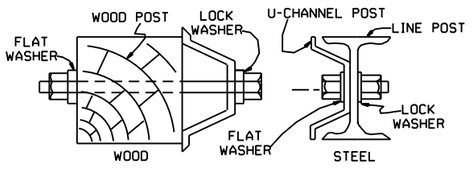
DELINEATOR PLACEMENT



NOTE: DELINEATORS ARE TO BE MOUNTED TO POST USING PIN AND COLLAR (FASTENERS) WHICH ARE 6061 ALUMINUM ALLOY. PIN LENGTH SHOULD NOT EXTEND FURTHER THAN 1/8" PAST THE COLLAR.
TYPE 2 DELINEATOR CONSIST OF 2 REFLECTORS MOUNTED BACK-TO-BACK ON A SINGLE POST.



TYPE 1 & 2 DELINEATORS



NOTE: USE 5/16 D. HEX. HEAD BOLT AND NUT (A307) WITH 1 FLAT WASHER AND 1 LOCK WASHER. BOLT, NUT AND WASHERS TO BE GALV. (AASHTO M 232) BOLT SHALL NOT EXTEND MORE THAN ONE(1) BOLT DIA. PAST NUT.

DELINEATOR POST DETAIL

NOTE: IN LIEU OF THE U-CHANNEL DELINEATOR POST THE CONTRACTOR SHALL HAVE THE OPTION OF EXTENDING THE GUARD CABLE LINE POST 1'-0" TALLER WHERE DELINEATOR POSTS ARE REQUIRED.
FOR WOOD POSTS, DELINEATORS MAY BE MOUNTED ON THE ANCHOR POSTS AT SPECIFIED INTERVALS.

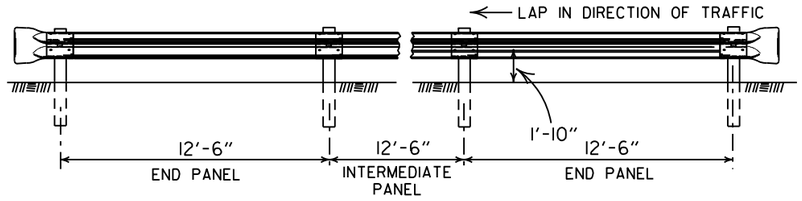
DATE	REVISION	FILMED
10-18-96	REV. ASTM REF. TO AASHTO & CHANGED WOOD POST NOTE	
11-30-89	RELABED & LENGTHENED ANCHOR POST	11-30-89
3-23-89	LABELED POSTS	514-3-23-89
1-9-87	ISSUED	535-1-9-87

ARKANSAS STATE HIGHWAY COMMISSION

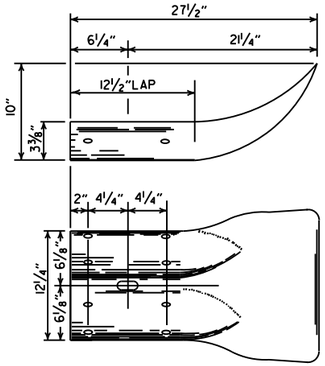
GUARD CABLE

STANDARD DRAWING GC-1

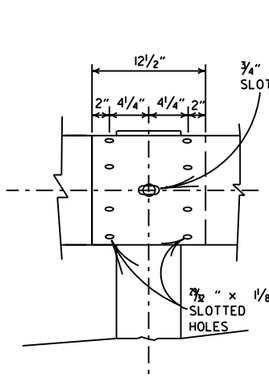
PLAN



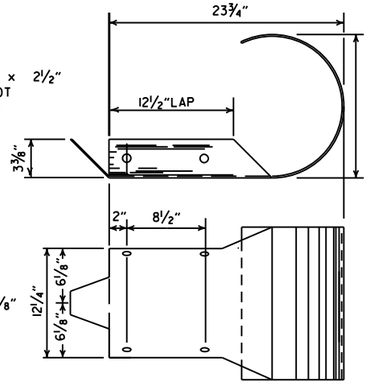
ELEVATION



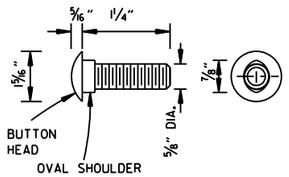
TERMINAL SECTION



RAIL SPLICE

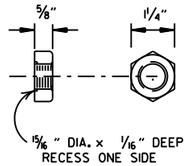


TERMINAL SECTION

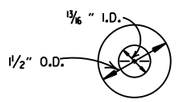


SPLICE BOLT

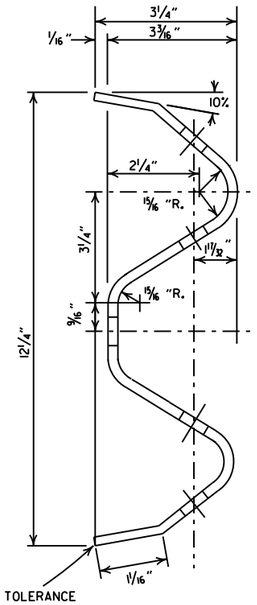
NOTE: POST BOLT SAME EXCEPT LENGTH.



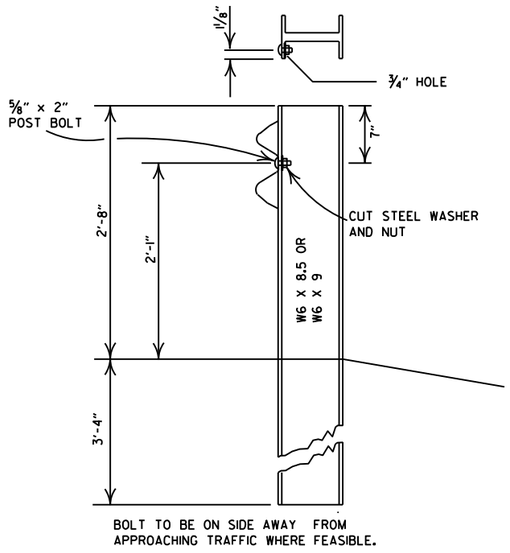
NUT



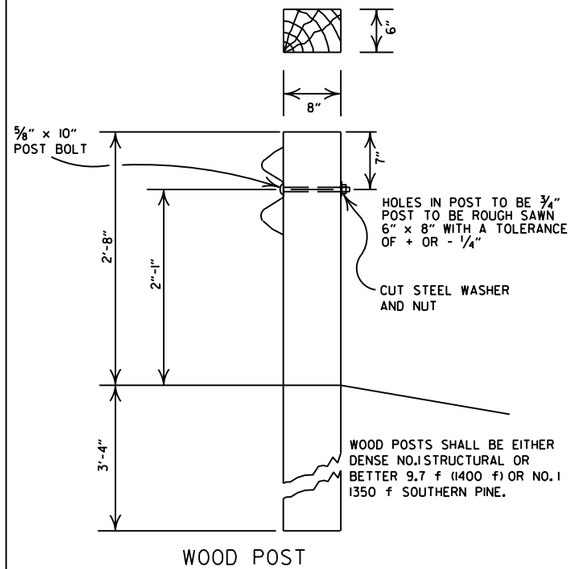
CUT STEEL WASHER



SECTION THRU RAIL



STEEL POST



WOOD POST

DETAILS OF POST CONNECTIONS

DATE	REVISION	FILMED
11-07-19	RENUMBERED AND RENAMED	
11-16-17	REVISED GUARDRAIL HEIGHT	
07-14-10	RAISED HEIGHT OF GUARDRAIL 1"	
08-22-02	REVISED DIMENSION ON STEEL POST	
11-16-01	REVISED STEEL AND WOOD POST	
08-12-98	REMOVED CONCRETE POST	
10-18-96	CHANGED WOOD POST NOTE	10-18-96
06-02-94	ADDED ALTERNATE STEEL POST SIZE	
08-05-93	REVISED STEEL POSTS SIZE	8-5-93
08-15-91	DELETE STEEL PLATE WASHER & ADDED TYPE C TO TITLE	8-15-91
10-30-87	REMOVED DET. PLCMNT. ON HWY.	555-11-20-87
01-04-83	GRADE FOR WOOD POSTS	679-1-4-83
10-01-77	HARDENED WASHER	922-10-1-72
10-02-72	REVISED & REDRAWN	521-10-2-72

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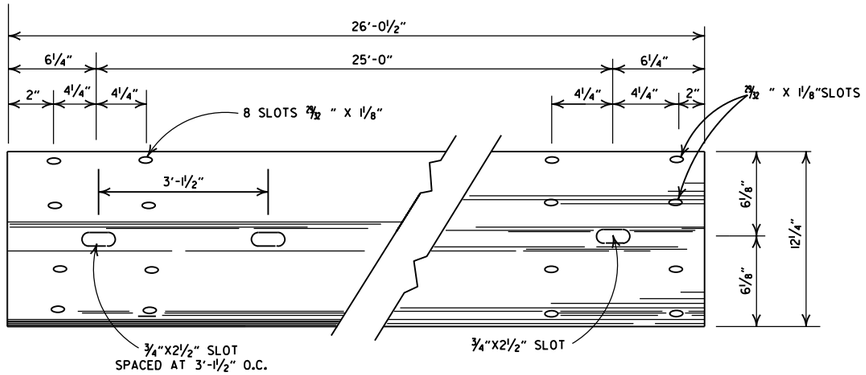
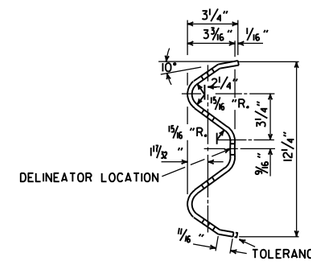
GUARDRAIL DETAILS (TYPE C) STREET / ROAD BARRICADE OR TEMPORARY INSTALLATION

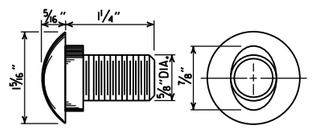
STANDARD DRAWING GR-5



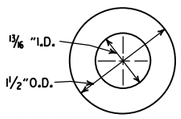


DETAILS OF W-BEAM GUARDRAIL

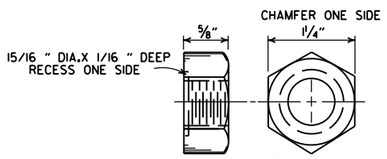
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



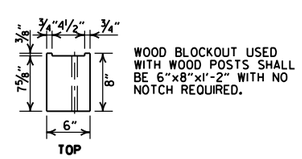
SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



CUT STEEL WASHER

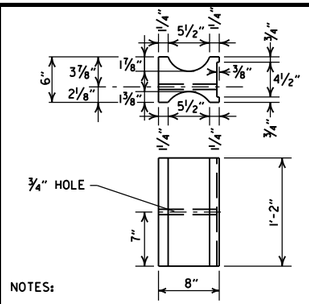


NUT



WOOD BLOCKOUT USED WITH WOOD POSTS SHALL BE 6"x8"x1'-2" WITH NO NOTCH REQUIRED.

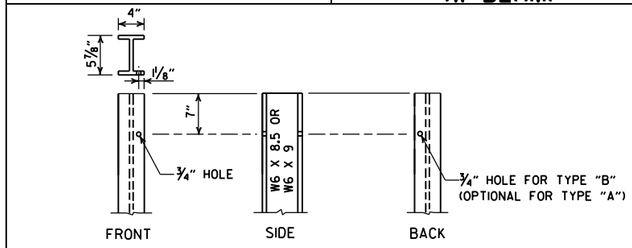
WOOD BLOCKOUT (W-BEAM)



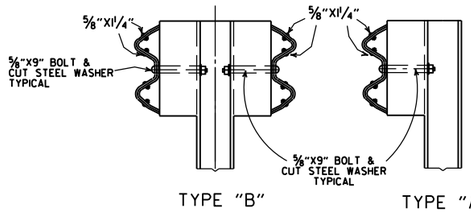
NOTES:

1. SIMILAR SHAPED PLASTIC BLOCKOUTS MAY BE USED AS LONG AS THEY MEET REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
2. DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCES.

PLASTIC BLOCKOUT (W-BEAM)



STEEL POST



DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

-GENERAL NOTES-

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN ¾" BEYOND IT.

WHERE W-BEAM GUARDRAIL CONTINUES, THE INTERMEDIATE SECTIONS SHALL HAVE A POST SPACING OF 6'-3" UNLESS OTHERWISE NOTED.

W-BEAM GUARDRAIL REPRESENTING INTERMEDIATE SECTIONS WILL BE MEASURED ALONG THE ROADWAY FACE FROM CENTERLINE OF POST TO CENTERLINE OF POST.

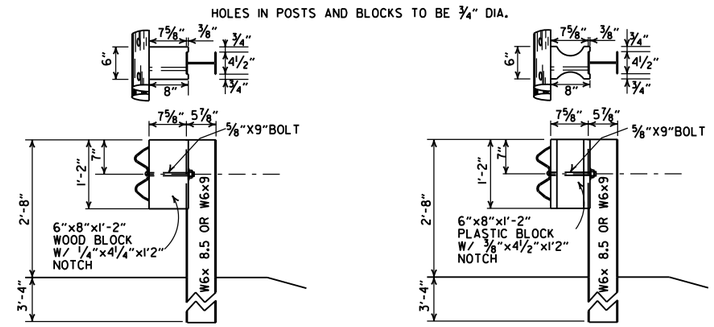
USE W-BEAM GUARDRAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB. FOR EXTENSIONS OR MODIFICATION OF EXISTING GUARDRAIL, W-BEAM GUARDRAIL COMPONENTS OF THE SAME TYPE AS THOSE EXISTING SHALL BE USED.

ANY BACKFILLING UNDER OR AROUND POST SHALL BE DAMP SAND THOROUGHLY TAMPED IN PLACE.

WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7 f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

CONTRACTOR SHALL HAVE THE OPTION OF USING WOOD BLOCKOUTS FOR W-BEAM GUARDRAIL OR PLASTIC BLOCKOUTS, AS LONG AS BLOCKOUT USED MEETS REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) FOR W-BEAM GUARDRAIL.

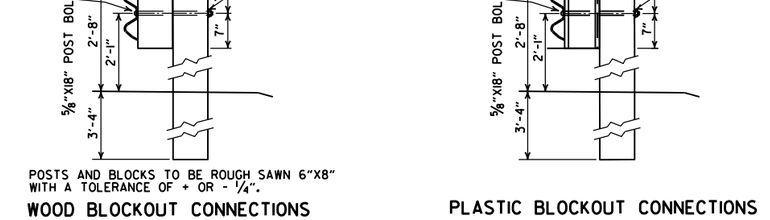
DELINEATORS SHALL BE MOUNTED AT 37.5' SPACING ON THE FRONT FACE OF THE GUARDRAIL. SPACING MAY BE REDUCED IN CURVES, AS DIRECTED BY THE ENGINEER. COLOR SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. PAYMENT FOR DELINEATORS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID PER LIN. FT. FOR GUARDRAIL.



WOOD BLOCKOUT CONNECTIONS

PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)



POSTS AND BLOCKS TO BE ROUGH SAWN 6"X8" WITH A TOLERANCE OF + OR - ¼".

WOOD BLOCKOUT CONNECTIONS

PLASTIC BLOCKOUT CONNECTIONS

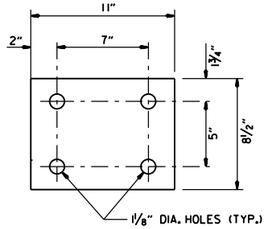
DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

DATE	REVISION	FILMED
05-19-22	REVISED GENERAL NOTES, ADDED DELINEATOR LOCATION.	
11-07-19	RENUMBERED AND RENAMED	
11-16-17	REVISED GENERAL NOTES AND RAISED GUARDRAIL HEIGHT 3"	
07-14-10	RAISED HEIGHT OF GUARDRAIL 1"	
10-15-09	ADDED REFERENCE TO MASH	
04-10-03	REVISED GENERAL NOTES	
08-22-02	REVISED DIMENSION ON WOOD & PLASTIC BLOCKOUT CONNECTIONS & STEEL POST	
11-16-01	REVISED WOOD BLOCKOUT & DETAILS OF WOOD LINE POST CONNECTIONS	
03-30-00	REMOVED GUARDRAIL AT BRIDGE ENDS	
01-12-00	ADDED PLASTIC BLOCKOUT	
08-12-98	REV. BLOCKOUTS TO WOOD, DELETED CONC. POST & REV. GENERAL NOTE, DELETED DET. OF GUARDRAIL REPLACE. BEHIND CURB & DET. OF POST PLACE. IN SOLID ROCK, & ADDED DETAILS OF STEEL LINE POST CONN. REMOVED BACK-UP PLATE, REVISED HOLES IN STEEL POLES	
04-03-97	REMOVED "LAP IN DIRECTION OF TRAFFIC" NOTE & PLACED ARROWS ON WASHERS	
10-18-96	REVISED WOOD POST NOTE	
06-02-94	ADDED ALT. STEEL POST SIZE	
08-05-93	REVISED STEEL POST SIZE	8-5-93
10-01-92	REDRAWN & REVISED	10-1-92
08-15-91	REVISED WASHER NOTE	8-15-91
08-02-90	REV. GEN. NOTE & DEPTH OF ANC. POST IN ROCK	8-2-90
07-15-88	REVISED SECTION 3 & GENERAL NOTES	
03-04-88	REV. ANCHOR POST, ELEV. NOTES & POST IN ROCK	780-3-4-88
10-30-87	REVISED WOOD LINE POST DETAIL	546-10-30-87
10-09-87	REDRAWN & REVISED	802-10-9-87

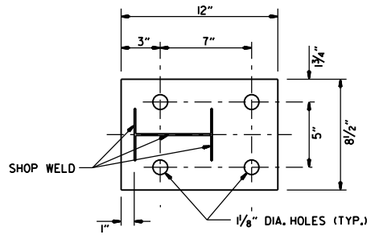
ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

STANDARD DRAWING GR-6

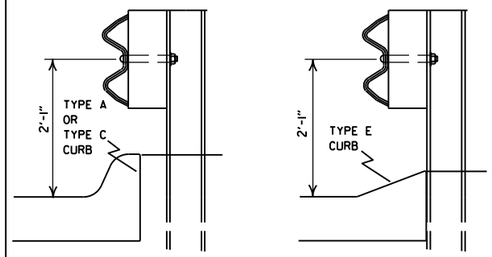


WASHER PLATE



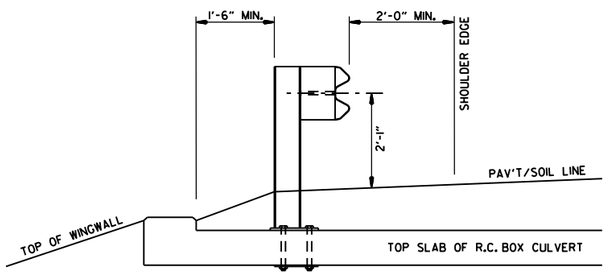
BASE PLATE

Note: Bolts, nuts, washers and plates shall be galvanized in accordance with Section 807 of the Standard Specifications.

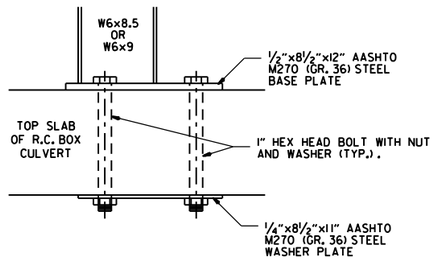


DETAIL OF GUARDRAIL PLACEMENT BEHIND CURB (W-BEAM)

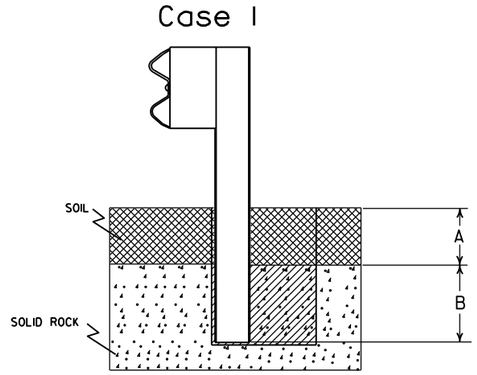
FOR DESIGN SPEEDS OF 50 MPH OR LESS ALL CURB FACES, AS SHOWN ON STD. DRWG. CG-1, MAY BE USED. FOR DESIGN SPEEDS OF 55 MPH OR MORE TYPE "E" CURB FACE SHALL BE USED.

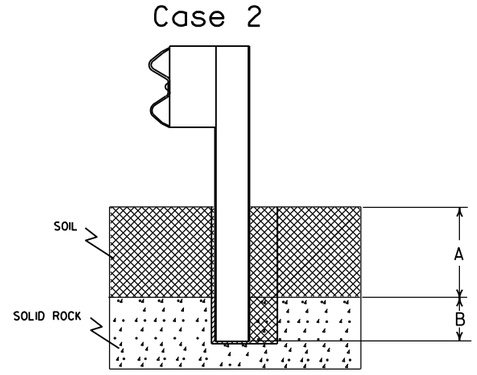


SECTION A-A



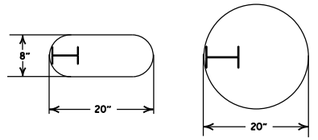
DETAIL OF CONNECTION

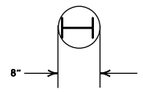




Plan View Steel Posts

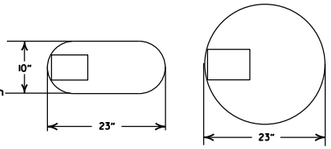
Either hole configuration acceptable

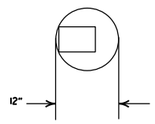




Plan View Wood Posts

Either hole configuration acceptable





Notes: For overlying soil depths (A) ranging from 0 to 18", the depth of required drilling (B) is equal to 24".

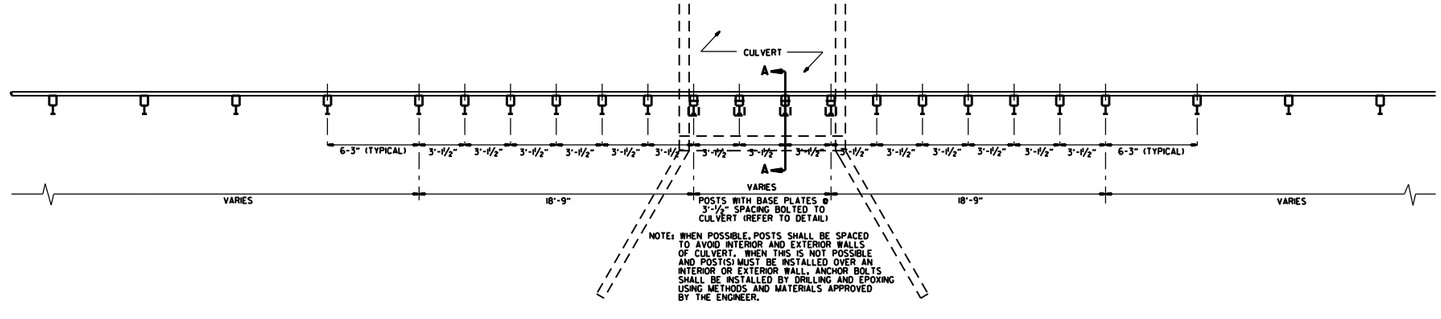
Zone A:
Backfill according to Section 617.03(a).

Zone B:
Backfill hole in 6" lifts with material meeting the requirements of Section 802.02(c) - Alternate gradation. Compact to 95% maximum dry density per ASTM D-698.

Notes: For overlying soil depths (A) ranging from 18" to 44", the depth of required drilling (B) is equal to either 12" or 44" minus the depth of soil whichever is less.

Zone A & B:
Backfill according to Section 617.03(a).

DETAIL OF POST PLACEMENT IN SOLID ROCK (W-BEAM)



PLAN LAYOUT OF TYPE A GUARDRAIL AT LOW-FILL CULVERTS

NOTE: THIS DETAIL IS TO BE USED ONLY WHEN THE COVER OVER THE CULVERT DOES NOT PERMIT FULL EMBEDMENT OF GUARDRAIL POSTS AS SHOWN ON STD. DWG. GR-6.

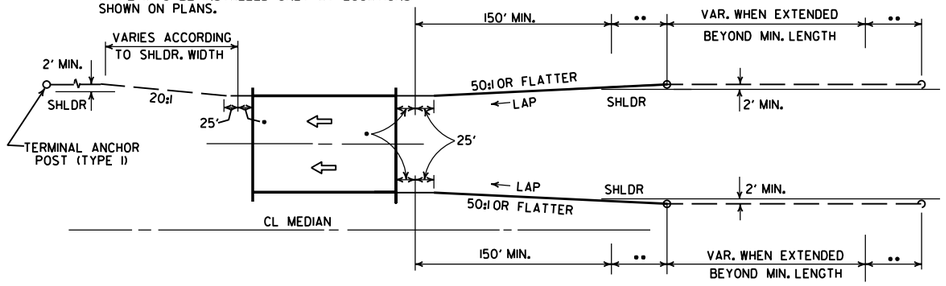
DATE	REVISION	FILMED
11-07-19	RENUMBERED, RENAMED, REVISED REFERENCE	
11-16-17	REVISED GUARDRAIL HEIGHT	
07-14-10	RAISED HEIGHT OF GUARDRAIL 1"	
04-12-07	REVISED DETAIL OF GUARDRAIL PLACEMENT BEHIND CURB	
11-10-05	ADDED GUARDRAIL PLACEMENT BEHIND CURB; REVISED DETAIL OF CONNECTION	
11-18-04	REVISED POST PLACEMENT IN ROCK & CULVERT CONNECTION DETAILS. ADDED DETAIL FOR GUARDRAIL PLACEMENT AT LOW-FILL CULVERTS	
03-30-00	REMOVED CONCRETE INSERT ANCHOR	
08-12-98	CHANGED STEEL SPACER BLOCK TO WOOD BLOCKOUT, ADDED DET. OF GUARDRAIL CONNECTION TO R.C. BOX CULV'T., DELETED DET. OF STEEL LINE POST CONN. & ADDED DET. OF GUARDRAIL PLACE. BEHIND CURB & DET. OF POSTPLACE. IN SOLID ROCK	
04-03-96	PLACED ARROWS AT CUT STEEL WASHERS	4-3-96
10-18-96	REV. ASTM REF. TO AASHTO	
11-22-95	ADDED OPTIONAL HOLES	
06-02-94	REVISED ALTERNATE POST SIZE	
08-05-93	REVISED STEEL POST SIZE	
10-01-92	REDRAWN & REVISED	10-1-92
08-02-90	DEL. WASHER ON ANCHOR ASSEMBLY	8-2-90
07-15-88	CONFORMED TO 1988 SPECS	
03-04-88	REVISED ANCHOR NOTE	
10-30-87	REVISED ANCHOR ASSEMBLY	712-10-30-87
10-30-87	REVISED PLACEMENT BEHIND CURB	547-10-30-87
10-09-87	REDRAWN & REVISED	803-10-9-87

ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

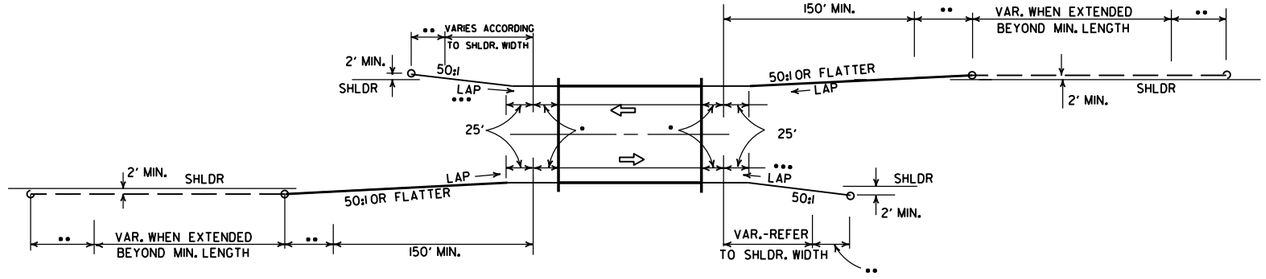
STANDARD DRAWING GR-7

NOTE: GUARDRAIL WITH GUARDRAIL TERMINAL (TYPE 1) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



ONE-WAY TRAFFIC

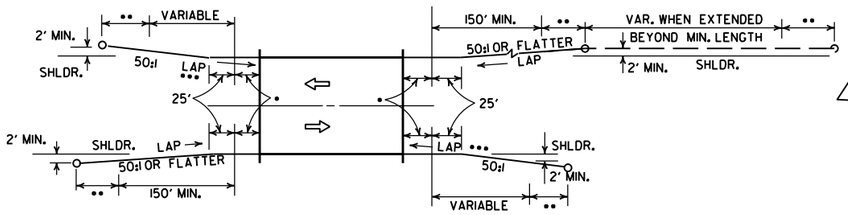
••• LAP OF GUARDRAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200'. CHANGE TO LAP IN DIRECTION OF TRAVEL.



TWO-WAY TRAFFIC

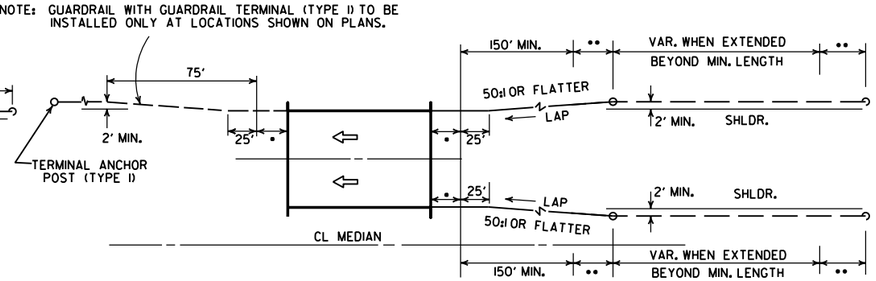
METHODS OF INSTALLATION OF GUARDRAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARDRAIL TERMINAL (TYPE 2)

••• LAP OF GUARDRAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200'. CHANGE TO LAP IN DIRECTION OF TRAVEL.



TWO-WAY TRAFFIC

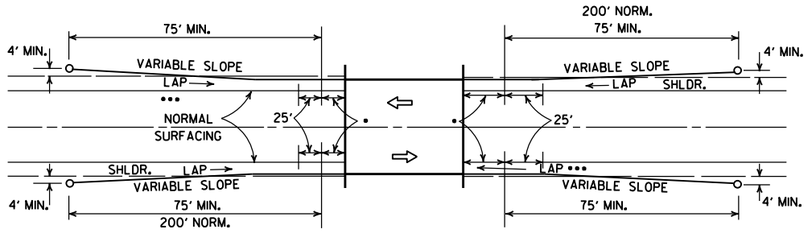
NOTE: GUARDRAIL WITH GUARDRAIL TERMINAL (TYPE 1) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



ONE-WAY TRAFFIC

METHOD OF INSTALLATION OF GUARDRAIL AT FULL SHOULDER WIDTH BRIDGES USING GUARDRAIL TERMINAL (TYPE 2)

••• LAP OF GUARDRAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200'. CHANGE TO LAP IN DIRECTION OF TRAVEL.



METHOD OF INSTALLATION OF GUARDRAIL USING GUARDRAIL TERMINAL (TYPE 1) (FULL SHOULDER WIDTH OR LESS BRIDGES)

LEGEND

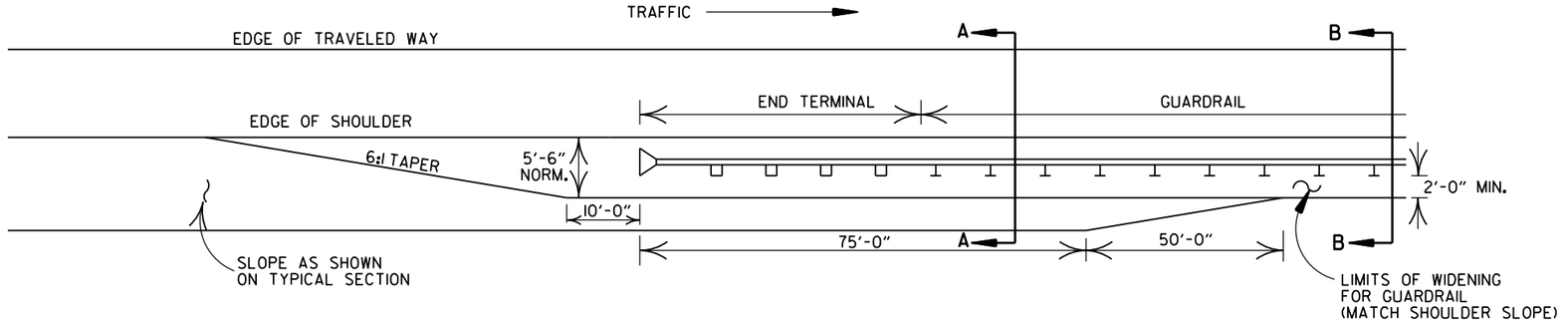
- • THRIE BEAM GUARDRAIL TERMINAL
- •• GUARDRAIL TERMINAL (TYPE 2)

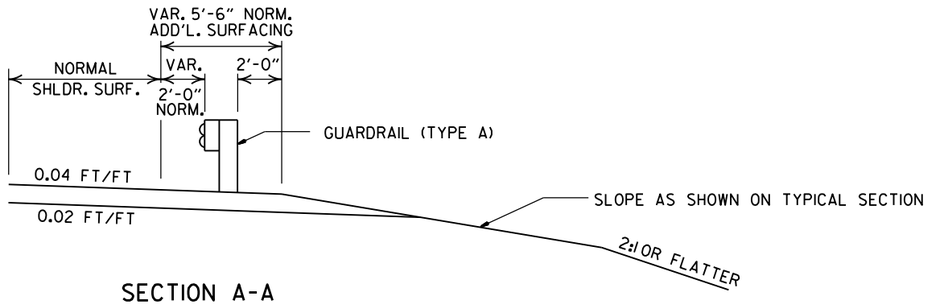
DATE	REVISION	DATE FILM
11-07-19	RENUMBERED AND RENAMED	
4-17-08	REVISED LAYOUTS	
11-10-05	REMOVED GUARDRAIL NOTES AND DETAILS	
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARDRAIL USING GUARDRAIL TERM. (TY. 1)	
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00
6-26-97	REVISED LAYOUT	
10-1-92	REDRAWN & REVISED	10-1-92
	ADDED NOTE	
10-9-87	REDRAWN & REVISED	

ARKANSAS STATE HIGHWAY COMMISSION

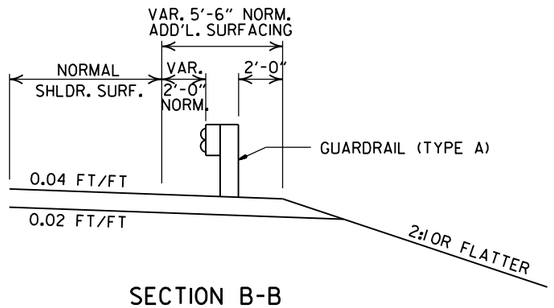
GUARDRAIL DETAILS

STANDARD DRAWING GR-8



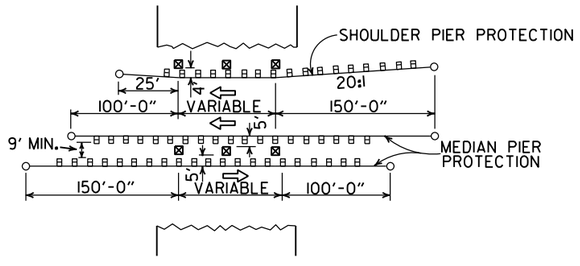


SECTION A-A



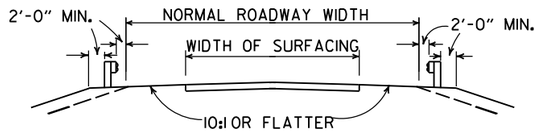
SECTION B-B

DETAILS OF WIDENING FOR GUARDRAIL

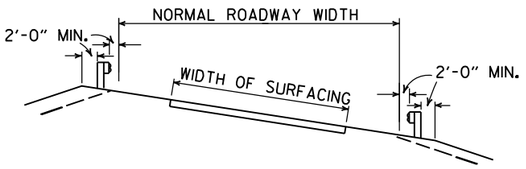


METHOD OF INSTALLATION OF GUARDRAIL AT FIXED OBSTACLE

NOTE: NORMAL SECTION TO BE WIDENED APPROX. 5'-6" EACH SIDE TO SUPPORT GUARDRAIL.



SECTION ON TANGENT



SECTION ON CURVE

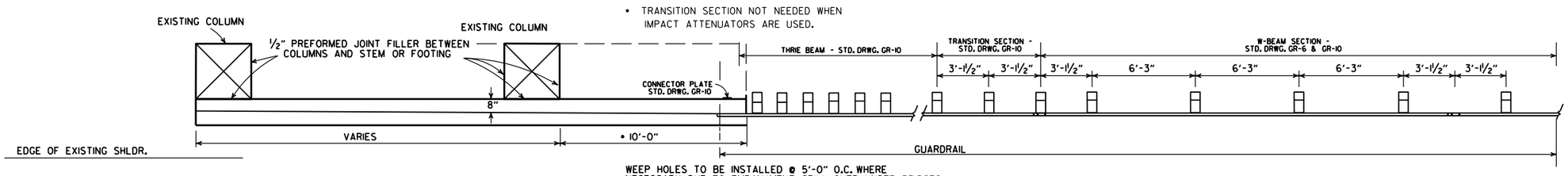
DETAILS SHOWING POSITION OF GUARDRAIL ON HIGHWAY

DATE	REVISION	DATE FILM
11-07-19	RENUMBERED AND RENAMED	
4-17-08	MINOR REVISION	
11-10-05	DRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

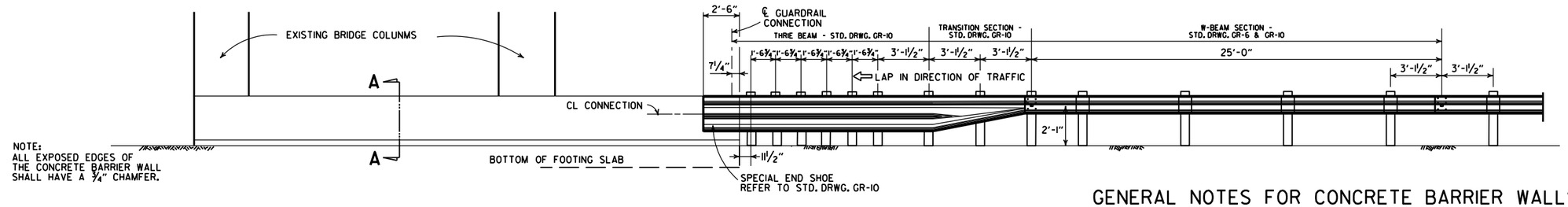
GUARDRAIL DETAILS

STANDARD DRAWING GR-9



AT LEAST ONE 1/2" JOINT SHALL BE CONSTRUCTED IN THE CONCRETE BARRIER WALL. JOINTS SHALL BE EQUALLY SPACED AT A MAXIMUM OF 25'-0" O.C. FILL JOINT WITH PREFORMED JOINT FILLER.

PLAN OF CONCRETE BARRIER WALL



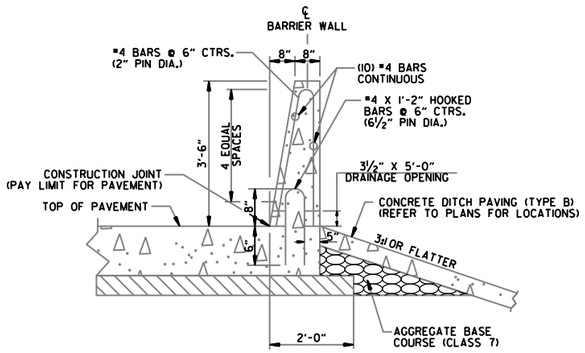
NOTE:
ALL EXPOSED EDGES OF THE CONCRETE BARRIER WALL SHALL HAVE A 3/4" CHAMFER.

ELEVATION OF CONCRETE BARRIER WALL

GENERAL NOTES FOR CONCRETE BARRIER WALLS

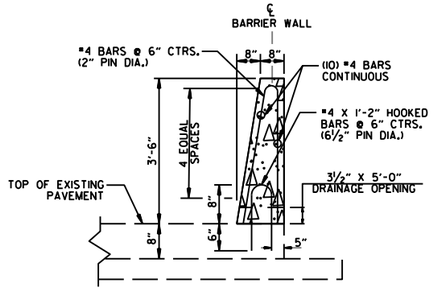
1. ALL BARRIER WALLS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 631 OF THE STANDARD SPECIFICATIONS, 2014 EDITION.
2. CONTRACTION JOINTS REQUIRED @ 15'-0" MAXIMUM SPACING FOR BARRIER TYPES MEDIAN A, SIDE A. A 30'-0" MAXIMUM SPACING IS REQUIRED FOR TYPES MEDIAN C, SIDE C, D & E.
3. ALL CONTRACTION JOINTS TO BE FORMED IN FRESH CONCRETE ON TOP AND IN SIDES OF BARRIER WALL.
4. DOWEL BARS FOR BARRIER TYPES MEDIAN A, SIDE A WILL NOT BE REQUIRED IF BARRIER AND MINIMUM 4' WIDE BASE ARE CAST AS A COMPLETE UNIT.
5. CONTRACTION JOINTS ARE NOT PERMITTED AT THE DOWEL BAR LOCATIONS.
6. ALL EXPOSED EDGES OF CONCRETE BARRIER WALL SHALL HAVE A 3/4" CHAMFER.
7. THE DESIGN OF BARRIER WALL TYPES SIDE C, D & E IS BASED ON A MINIMUM FOUNDATION BEARING CAPACITY OF ONE TON PER SQUARE FOOT. UNSTABLE FOUNDATION MATERIAL SHALL BE REMOVED AND REPLACED TO PROVIDE A FIRM FOUNDATION AS DIRECTED BY THE ENGINEER.
8. SPACING BETWEEN EXPANSION JOINTS SHALL NOT EXCEED 400 FT FOR BARRIER TYPES MEDIAN A AND SIDE A OR 120 FT FOR BARRIER TYPES SIDE C, D & E. EXPANSION JOINTS SHALL BE FORMED USING 1" PREFORMED JOINT FILLER. CONTINUOUS REINFORCEMENT SHALL BE CUT 2" CLEAR OF EXPANSION JOINTS.
9. CONSTRUCT DRAINAGE OPENINGS AT EVERY 50' O.C. AND AT SAGS IF SHOWN ON THE PLANS. DOWEL BARS SHALL NOT BE PLACED WITHIN 3" OF DRAINAGE OPENINGS.
10. MAINTAIN 3" CLEARANCE ON ALL FOOTING REINFORCEMENT AND 2" CLEARANCE ON ALL OTHER REINFORCEMENT.
11. REFER TO BARRIER MOUNTED LUMINARE SPECIAL DETAILS FOR INFORMATION REGARDING CONDUIT IN CONCRETE BARRIER WALLS. REFER TO ILLUMINATION LAYOUT FOR LOCATIONS OF CONDUIT RUNS.
12. BARRIER REINFORCING BARS ANCHORED INTO EXISTING CONCRETE PAVEMENT SHALL BE INSTALLED AND SECURED ACCORDING TO 804.06 USING AN APPROVED ANCHORING SYSTEM FROM OPL.

NOTE:
THE COST FOR THE MODIFICATION OF THE BARRIERS AND DROP INLETS ARE TO BE SUBSIDIARY TO CONCRETE BARRIER WALLS AND CURBS.



SECTION A-A CONCRETE BARRIER WALL (SIDE TYPE A)

NOTE: SIDE TYPE A IS FOR USE WITH PROPOSED PAVEMENT.



SECTION A-A CONCRETE BARRIER WALL (SIDE TYPE A-1)

NOTE: SIDE TYPE A-1 IS FOR USE WITH EXISTING PAVEMENT.

DATE	REVISION	FILMED
11-07-19	ADDED GENERAL NOTES.	
11-16-17	REVISED CONCRETE BARRIER WALL, RAISED GUARDRAIL HEIGHT 3" AND REVISED POST SPACING, CHANGED STD. DWG. NUMBER FROM GR-11 TO GR-13	
07-14-10	RAISED HEIGHT OF W-BEAM 1"	
08-22-02	REV. SECTION A-A OF DETAILS OF CONCRETE BARRIER WALL	
06-29-00	MOVED DIMENSION LINE	
05-18-00	ADDED NOTE	
03-30-00	REVISED TO INCLUDE THRIE BEAM	
06-02-94	ADDED TRANSITION SECTION NOTE	
10-01-92	REDRAWN & REVISED	10-1-92
08-15-91	REVISED DRAWING PLAN CONC. BARR.	8-15-91
02-16-89	ADDED SKEWED DETAILS	594-2-16-89
07-14-88	CHANGED TITLE	
10-09-87	REDRAWN & REVISED	

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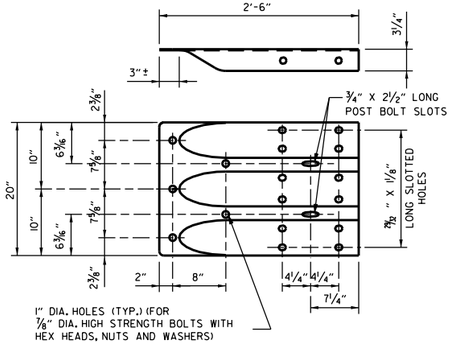
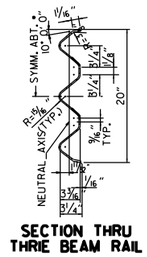
CONCRETE BARRIER WALL (PIER PROTECTION TYPE A)

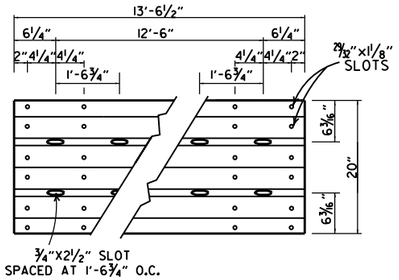
STANDARD DRAWING GR-13



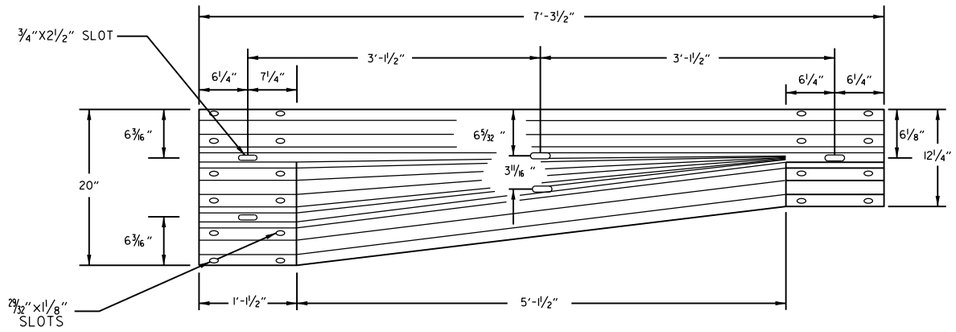
SPECIAL END SHOE



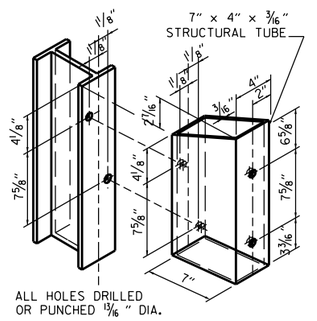
SECTION THRU THRIE BEAM RAIL



THRIE BEAM RAIL

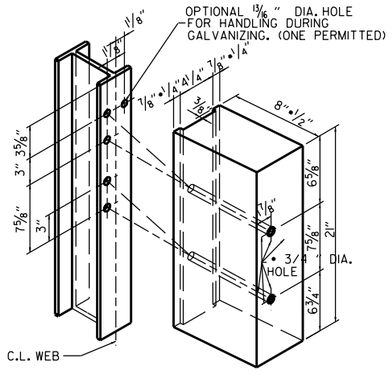


TRANSITION SECTION



ATTACH BLOCKOUT TO POST USING ⅝" DIA. HEX HEAD BOLTS WITH 1½" O.D. CUT STEEL WASHERS AND NUT.

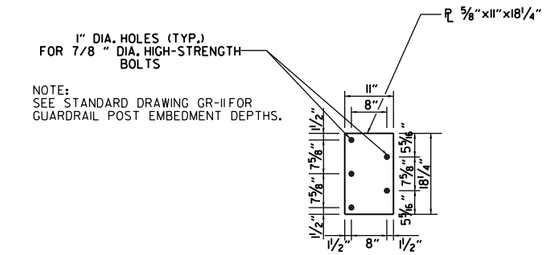
STRUCTURAL STEEL TUBING BLOCKOUT DETAIL



ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED

HOLE PUNCHING DETAIL FOR STEEL POST & WOOD OR PLASTIC BLOCKOUTS

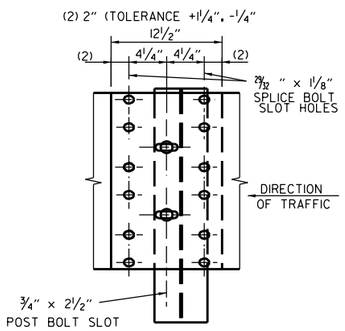
NOTE: BLOCKS SHALL BE THE SAME TYPE THROUGHOUT THE PROJECT LIMITS.



NOTE:
SEE STANDARD DRAWING GR-11 FOR GUARDRAIL POST EMBEDMENT DEPTHS.

CONNECTOR PLATE

CONNECTOR PLATE SHALL BE AASHTO M270, GR. 36 AND SHALL BE GALVANIZED AFTER FABRICATION. GALVANIZING SHALL CONFORM TO SUBSECTION 807.19 OF THE STANDARD SPECIFICATIONS. CONNECTOR PLATE TO BE BOLTED TO SPECIAL END SHOE USING ⅞" DIA. HIGH STRENGTH BOLTS, WITH THE HEADS PLACED ON THE TRAFFIC FACE. WASHERS SHALL BE USED UNDER THE HEAD AND NUT. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AND SHALL CONFORM TO SUBSECTION 807.06.



THRIE BEAM RAIL SPLICE AT POST

GENERAL NOTES:

THE THRIE BEAM RAIL, SPECIAL END SHOE, AND THE TRANSITION SECTION SHALL BE MADE OF STEEL AND SHALL BE 12 GAGE. ZINC COATING SHALL BE TYPE 1.

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN 3"4" BEYOND IT.

ALL LAP SPLICES, INCLUDING SPECIAL END SHOES, SHALL BE MADE IN THE DIRECTION SHOWN ON STANDARD DRAWINGS GR-8 & GR-13.

REFER TO STD. DRWG. GR-11 FOR POST DETAILS.

USE THRIE BEAM GUARDRAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB.

THRIE BEAM POSTS SHALL BE SAME MATERIAL AS W-BEAM POSTS FOR ENTIRE JOB.

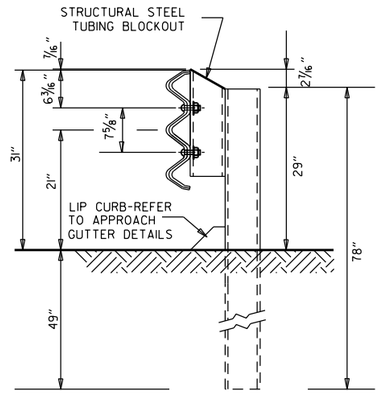
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7 f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

DATE	REVISION	FILMED
11-07-19	RENAMED AND REVISED REFERENCES	
11-16-17	REVISED TRANSITION SECTION, GUARD RAIL HEIGHT, AND GENERAL NOTES; MOVED THRIE BEAM GUARD RAIL CONNECTIONS AT BRIDGES ENDS TO STD. DRWG. GR-12	
07-14-10	RAISED HEIGHT OF W-BEAM 1"	
11-29-07	ADDED PLASTIC BLOCKOUTS	
11-10-05	ADDED NOTE FOR ATTACHING STEEL BLOCKOUT	
11-18-04	REVISED GENERAL NOTES	
10-9-03	REVISED GENERAL NOTES	
04-10-03	REVISED GENERAL NOTES	
08-22-02	REVISED NOTE (2)	
06-29-00	MOVED DIMENSION LINES	
05-18-00	ADDED NOTE	
03-30-00	DRAWN & ISSUED	

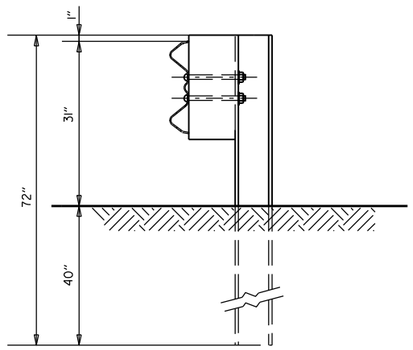
ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

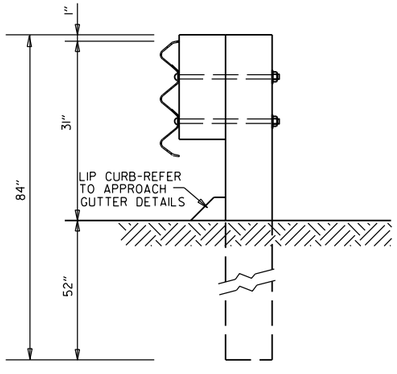
STANDARD DRAWING GR-10



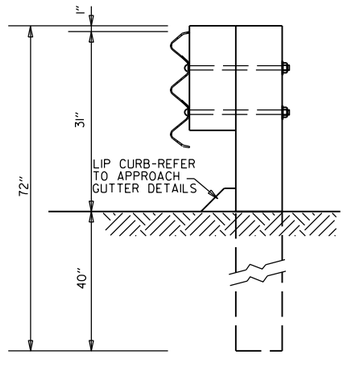
THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7



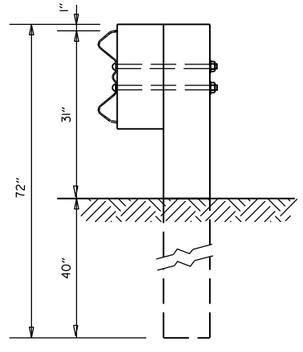
W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8



THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUTS & WOOD POSTS
POSTS 1-6



THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUT & WOOD POST
POST 7



W-BEAM TO THRIE BEAM
TRANSITION RAIL WITH WOOD OR
PLASTIC BLOCKOUT & WOOD POST
POST 8

GENERAL NOTES:

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

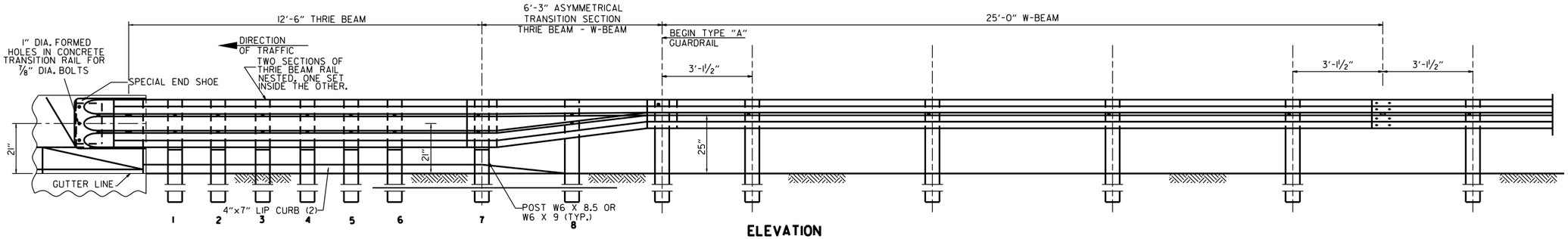
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

DATE	REVISION	FILMED
11-07-19	RENAMED	
11-16-17	REVISED GUARDRAIL HEIGHT, CHANGED STD. DWG. NUMBER FROM GR-10A TO GR-11	
07-14-10	REVISED POST 8 DIMENSIONS	
11-29-07	ADDED PLASTIC BLOCKOUTS	
08-22-02	REVISED LIP CURB NOTE	
03-30-00	DRAWN & ISSUED	

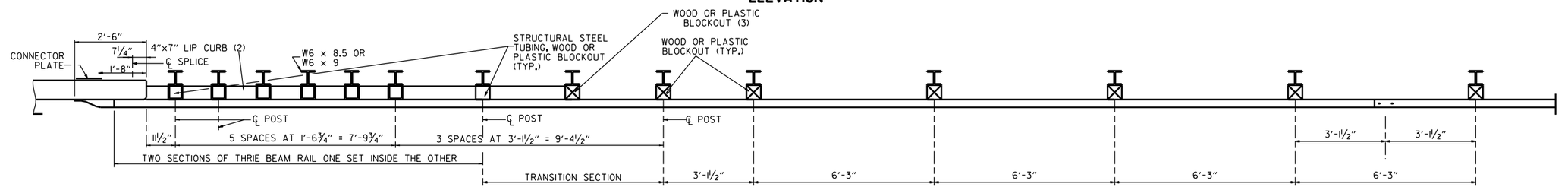
ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

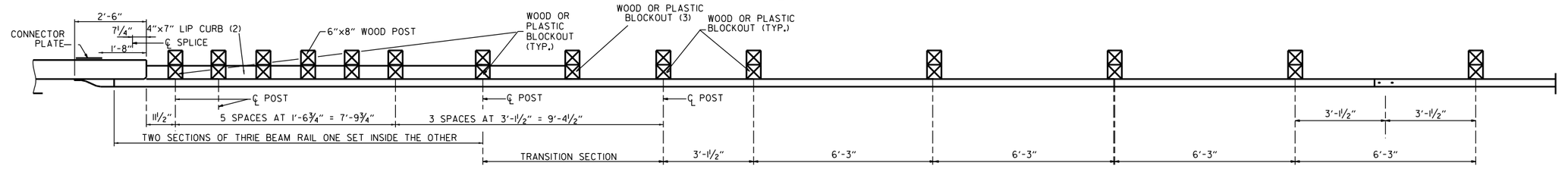
STANDARD DRAWING GR-11



ELEVATION



PLAN



PLAN

(1) VERIFY BOLT SPACING FROM RAIL TRANSITION PRODUCER.
(2) REFER TO APPROACH GUTTER DETAILS.
(3) LENGTH OF BLOCKOUT ON POST 8 TO BE MODIFIED TO FIT RAIL WIDTH.

THRIE BEAM GUARDRAIL CONNECTION AT BRIDGE ENDS

GENERAL NOTES:

THE THRIE BEAM RAIL, SPECIAL END SHOE, AND THE TRANSITION SECTION SHALL BE MADE OF STEEL AND SHALL BE 12 GAGE. ZINC COATING SHALL BE TYPE I.

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN 3/4" BEYOND IT.

ALL LAP SPLICES, INCLUDING SPECIAL END SHOES, SHALL BE MADE IN THE DIRECTION SHOWN ON STANDARD DRAWINGS GR-8 & GR-13.

REFER TO STD. DRWG. GR-11 FOR POST DETAILS.

USE THRIE BEAM GUARDRAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB.

THRIE BEAM POSTS SHALL BE SAME MATERIAL AS W-BEAM POSTS FOR ENTIRE JOB.

POSTS SHALL NOT BE PLACED AT SPLICE LOCATIONS ALONG W-BEAM RAILS.

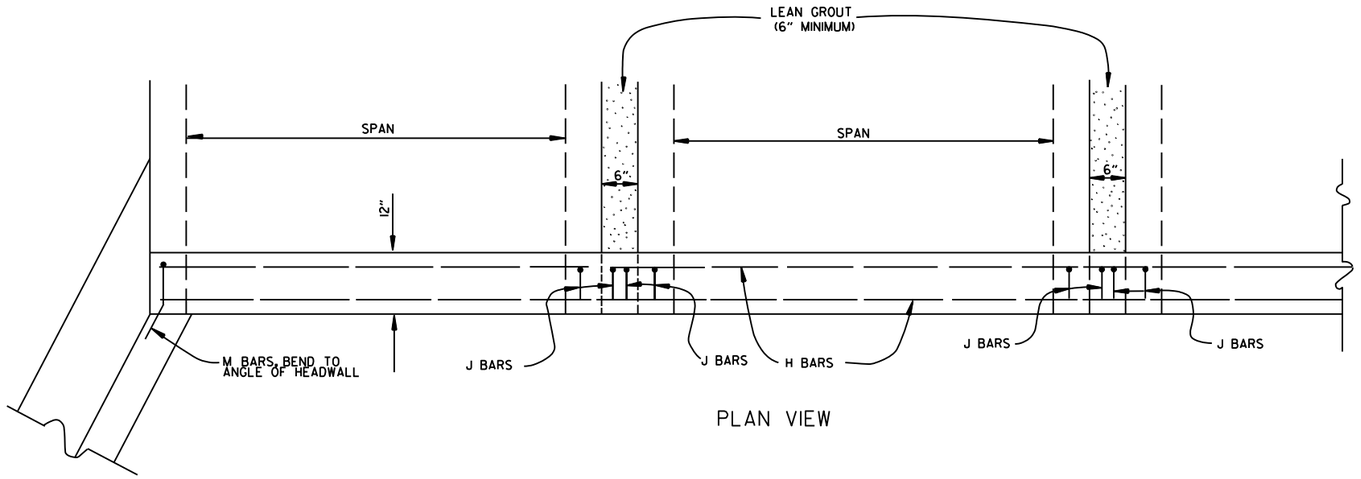
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

DATE	REVISION	FILMED
05-14-20	REVISED NOTES	
11-07-19	RENAMED & REVISED REFERENCES	
11-16-17	RE-DRAWN FROM STD. DWG. GR-10 & ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

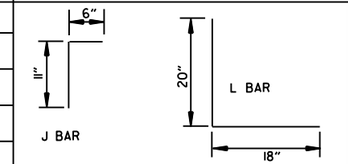
STANDARD DRAWING GR-12



PLAN VIEW

BAR LIST

BAR	NO.	SIZE	LENGTH	BAR BENDING DIAGRAM
H	2	#4	•	
I	•	#4	•	
J	•	#4	1'-5"	
L	•	#4	3'-2"	
M	•	#4	1'-8"	



• NOTE: LENGTH AND NUMBER OF BARS VARIES WITH SIZE OF CULVERT

GENERAL NOTES

WINGS, CURTAIN WALLS AND APRONS SHALL BE TIED TO THE PRECAST CULVERT SECTION BY CASTING BARS IN CULVERT END SECTIONS AS SHOWN OR BY DOWELING AND GROUTING. J BARS AND M BARS SHALL BE EMBEDDED A MINIMUM OF 10" IN PRECAST BOX.

WINGS, FOOTINGS, APRONS AND CURTAIN WALLS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPLICABLE WING DRAWING. STEEL AND CONCRETE QUANTITIES WILL BE ADJUSTED TO FIT THE IN-PLACE WIDTH & HEIGHT OF THE PRECAST CONCRETE BOX CULVERTS.

ALL EXPOSED CORNERS TO HAVE ¾" CHAMFERS.

WINGWALLS AND FOOTINGS MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER.

ALL CONCRETE, REINFORCING STEEL, LEAN GROUT, MEMBRANE WATERPROOFING, DRAINAGE FILL MATERIAL, GEOTEXTILE FILTER FABRIC, LABOR, MATERIALS AND EQUIPMENT REQUIRED FOR INSTALLING PRECAST BOX CULVERTS WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR THE ITEMS AS SPECIFIED IN SECTION 607 OF THE STANDARD SPECIFICATIONS.

LEAN GROUT SHALL CONSIST OF A SAND CEMENT MIXTURE MEETING THE FOLLOWING REQUIREMENTS:
PORTLAND CEMENT SHALL BE TYPE I AND SHALL MEET THE REQUIREMENTS OF AASHTO M 85.
SAND SHALL MEET THE REQUIREMENTS OF FINE AGGREGATE AS SPECIFIED IN SECTION 802.02 OF THE STANDARD SPECIFICATIONS.
THE SAND CEMENT MIXTURE SHALL CONSIST OF NOT LESS THAN 1.5 SACKS OF PORTLAND CEMENT PER TON OF MATERIAL MIXTURE.
THE MIXTURE SHALL CONTAIN SUFFICIENT WATER TO HYDRATE THE CEMENTS. THE SAND CEMENT MIXTURE SHALL BE PLACED IN MAXIMUM 8 INCH THICK LIFTS, LOOSE MEASURE, AND THOROUGHLY RODDED AND TAMPED AROUND BOX TO THOROUGHLY FILL ALL VOIDS.

MEMBRANE WATERPROOFING CONFORMING TO THE REQUIREMENTS OF SECTION 815 OF THE STANDARD SPECIFICATIONS SHALL BE APPLIED TO ALL BOX CULVERT JOINTS.

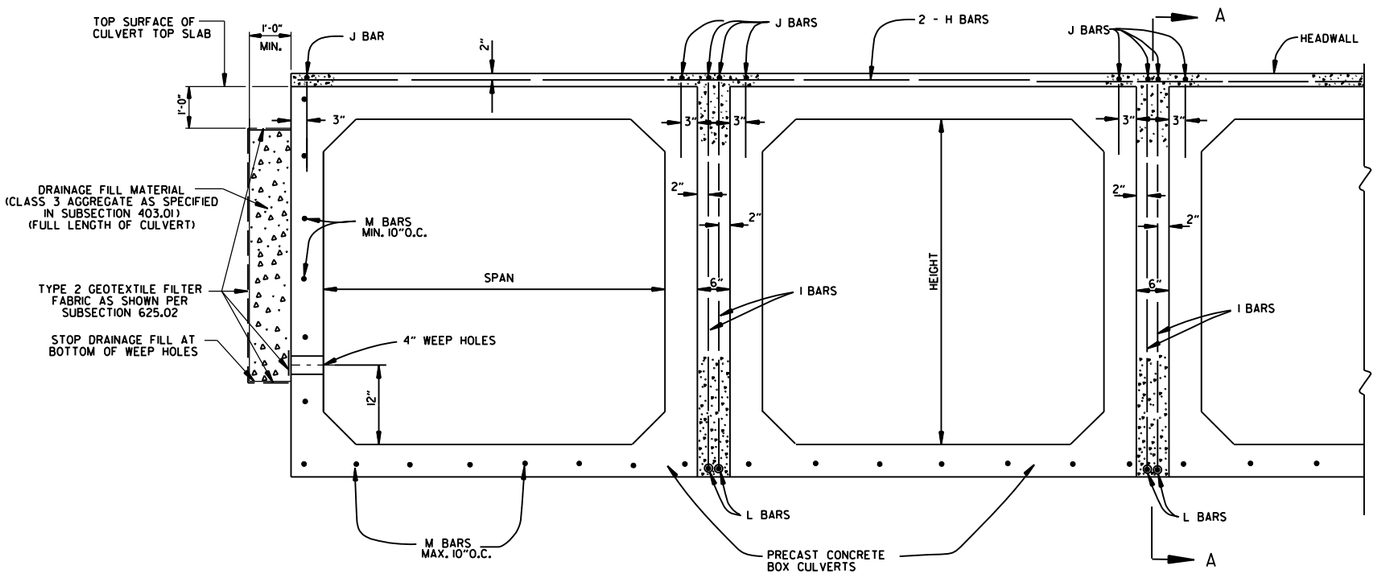
THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP EXTERNAL JOINT AND SHALL EXTEND 1 FOOT DOWN THE SIDES OF THE CULVERT.

IN OUTER BARRELS, ONE WEEP HOLE IS REQUIRED IN EXTERIOR WALLS OF EACH PRECAST CULVERT SECTION. WEEP HOLES SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" IN THE ASSEMBLED CULVERT AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE BOTTOM SLAB.

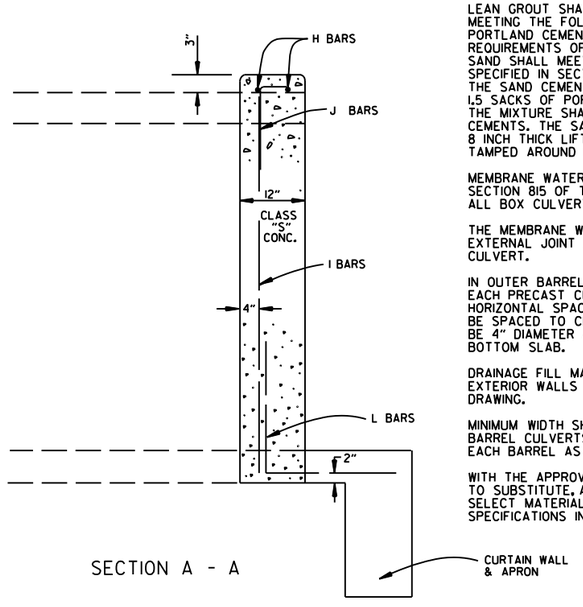
DRAINAGE FILL MATERIAL WITH GEOTEXTILE FABRIC IS REQUIRED AT THE EXTERIOR WALLS OF THE ASSEMBLED CULVERT, SEE DETAILS ON THIS DRAWING.

MINIMUM WIDTH SHALL BE 12" (6" ON EACH SIDE OF JOINT). ON MULTIPLE BARREL CULVERTS, MEMBRANE WATERPROOFING SHALL BE APPLIED TO EACH BARREL AS DESCRIBED ABOVE.

WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, FLOWABLE SELECT MATERIAL CONFORMING TO SECTION 206 OF THE STANDARD SPECIFICATIONS IN LIEU OF LEAN GROUT.



END VIEW



SECTION A - A

DATE	REVISION	DATE FILMED
1-28-15	REVISED GEOTEXTILE FABRIC PLACEMENT	
12-15-11	ADDED NOTE & DTLS FOR WEEP HOLE AND DRAINAGE FILL	
10-15-09	ADDED GENERAL NOTE	
11-10-05	REVISED SPACING OF "M" BARS	
4-10-03	REVISED GENERAL NOTES	
10-18-96	CORRECTED AASHTO REF.	
10-1-92	ADDED NOTE FOR MEMBRANE WATERPROOFING	
8-15-91	ADDED NOTE FOR LEAN GROUT	
11- 8-90	REVISED FOR 1991 SPECS	
11-30-89	ISSUED; JABE	

ARKANSAS STATE HIGHWAY COMMISSION

PRECAST CONCRETE BOX CULVERTS

STANDARD DRAWING PBC-1

REINFORCED CONCRETE ARCH PIPE DIMENSIONS

EQUIV. DIA.	SPAN		RISE	
	AASHTO M 206	ARDOT NOMINAL	AASHTO M 206	ARDOT NOMINAL
INCHES	INCHES			
15	18	18	11	11
18	22	22	13½	14
21	26	26	15½	16
24	28½	29	18	18
30	36¼	36	22½	23
36	43⅜	44	26⅝	27
42	51⅛	51	31⅜	31
48	58½	59	36	36
54	65	65	40	40
60	73	73	45	45
72	88	88	54	54
84	102	102	62	62
90	115	115	72	72
96	122	122	77½	77
108	138	138	87⅛	87
120	154	154	96⅞	97
132	168¾	169	106½	107

THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PERCENT FROM THE VALUES SPECIFIED BY AASHTO M206.

REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE DIMENSIONS

EQUIV. DIA.	AASHTO M 207	
	SPAN	RISE
INCHES	INCHES	
18	23	14
24	30	19
27	34	22
30	38	24
33	42	27
36	45	29
39	49	32
42	53	34
48	60	38
54	68	43
60	76	48
66	83	53
72	91	58
78	98	63
84	106	68

THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PERCENT FROM THE VALUES SPECIFIED BY AASHTO M207.

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. PLACE AND COMPACT THE HAUNCH AREA UP TO THE MIDDLE OF THE PIPE.
5. COMPLETE BACKFILL ACCORDING TO SUBSECTION 606.03.(f)(1).

NOTE: HAUNCH AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF CONCRETE PIPE.

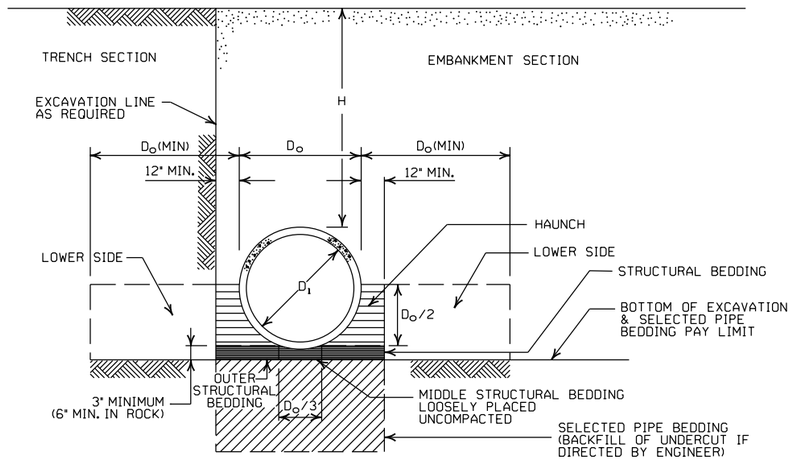
- LEGEND -

D_1 = NORMAL INSIDE DIAMETER OF PIPE
D_O = OUTSIDE DIAMETER OF PIPE
H = FILL COVER HEIGHT OVER PIPE (FEET)
MIN. = MINIMUM
▨ = UNDISTURBED SOIL

INSTALLATION TYPE	MATERIAL REQUIREMENTS FOR HAUNCH AND STRUCTURAL BEDDING
TYPE 1	AGGREGATE BASE COURSE (CLASS 5 OR CLASS 7)
TYPE 2	SELECTED MATERIALS (CLASS SM-1, SM-2, OR SM-4) OR TYPE 1 INSTALLATION MATERIAL*
TYPE 3**	AASHTO CLASSIFICATION A-1 THRU A-6 SOIL OR TYPE 1 OR 2 INSTALLATION MATERIAL

* SM-3 WILL NOT BE ALLOWED.

** MATERIALS SHALL NOT INCLUDE ORGANIC MATERIALS OR STONES LARGER THAN 3 INCHES.



EMBANKMENT AND TRENCH INSTALLATIONS

1. MATERIAL IN THE HAUNCH AND OUTER STRUCTURAL BEDDING SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.
2. FOR TRENCHES WITH WALLS OF NATURAL SOIL, THE DENSITY OF THE SOIL IN THE LOWER SIDE ZONE SHALL BE AS FIRM AS THE 95% DENSITY REQUIRED FOR THE HAUNCH. IF THE EXISTING SOIL DOES NOT MEET THIS CRITERIA, IT SHALL BE REMOVED AND RECOMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OF MATERIAL USED.
3. FOR EMBANKMENTS, THE MATERIAL IN THE LOWER SIDE ZONE SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

GENERAL NOTES

1. CONCRETE PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION), WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS. UNLESS OTHERWISE NOTED IN THE PLANS, SECTION AND SUBSECTION REFER TO THE STANDARD CONSTRUCTION SPECIFICATIONS.
2. CONCRETE PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. ALL PIPE SHALL CONFORM TO SECTION 606. CIRCULAR R.C. PIPE CULVERTS SHALL CONFORM TO AASHTO M170, R.C. ARCH PIPE CULVERTS SHALL CONFORM TO AASHTO M206 AND HORIZONTAL ELLIPTICAL PIPE CULVERTS SHALL CONFORM TO AASHTO M207.
4. ALL PIPE SHALL BE PROTECTED DURING CONSTRUCTION BY A COVER SUFFICIENT TO PREVENT DAMAGE FROM PASSAGE OF EQUIPMENT.
5. THE MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 24 INCHES. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PRACTICABLE FOR WORKING CONDITIONS.
6. MULTIPLE PIPE CULVERTS SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 24 INCHES BETWEEN STRINGS OF PIPE. REFER TO STD. DWG. FES-2 FOR MINIMUM CLEARANCE WHERE FLARED END SECTIONS ARE USED.
7. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
8. NOT MORE THAN ONE LIFTING HOLE MAY BE PROVIDED IN CONCRETE PIPE TO FACILITATE HANDLING. HOLE MAY BE CAST IN PLACE, CUT INTO THE FRESH CONCRETE AFTER FORMS ARE REMOVED, OR DRILLED. THE HOLE SHALL NOT BE MORE THAN TWO INCHES IN DIAMETER OR TWO INCHES SQUARE. CUTTING OR DISPLACEMENT OF REINFORCEMENT WILL NOT BE PERMITTED. SPALLED AREAS AROUND THE HOLE SHALL BE REPAIRED IN A WORKMANLIKE MANNER. LIFTING HOLE SHALL BE FILLED WITH MORTAR, CONCRETE, OR OTHER METHOD AS APPROVED BY THE ENGINEER.
9. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
10. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS THE HAUNCH), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."

MINIMUM HEIGHT OF FILL "H" OVER CIRCULAR R.C. PIPE CULVERTS

	CLASS OF PIPE			
	CLASS III		CLASS IV	CLASS V
INSTALLATION TYPE	TYPE 1 OR 2	TYPE 3	ALL	ALL
PIPE ID (IN.)	FEET			
12-15	2	2.5	2	1
18-24	2.5	3	2	1
27-33	3	4	2	1
36-42	3.5	5	2	1
48	4.5	5.5	2	1
54-60	5	7	2	1
66-78	6	8	2	1
84-108	7.5	8	2	1

NOTE: FOR MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM OF 12" OF PAVEMENT AND/OR BASE.

MAXIMUM HEIGHT OF FILL "H" OVER CIRCULAR R.C. PIPE CULVERTS

INSTALLATION TYPE	CLASS OF PIPE		
	CLASS III	CLASS IV	CLASS V
	FEET		
TYPE 1	21	32	50
TYPE 2	16	25	39
TYPE 3	12	20	30

NOTE: IF FILL HEIGHT EXCEEDS 50 FEET, A SPECIAL DESIGN CONCRETE PIPE WILL BE REQUIRED USING TYPE 1 INSTALLATION.

MINIMUM HEIGHT OF FILL "H" OVER R.C. ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS

INSTALLATION TYPE	CLASS OF PIPE	
	CLASS III	CLASS IV
	FEET	
TYPE 2 OR TYPE 3	2.5	1.5

NOTE: TYPE 1 INSTALLATION WILL NOT BE ALLOWED FOR ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS.

NOTE: FOR MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM OF 12" OF PAVEMENT AND/OR BASE.

MAXIMUM HEIGHT OF FILL "H" OVER R.C. ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS

INSTALLATION TYPE	CLASS OF PIPE	
	CLASS III	CLASS IV
	FEET	
TYPE 2	13	21
TYPE 3	10	16

NOTE: TYPE 1 INSTALLATION WILL NOT BE ALLOWED FOR ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS.

DATE	REVISION	DATE FILMED
2-27-14	REVISED GENERAL NOTE 1.	
12-15-11	REVISED FOR LRFD DESIGN SPECIFICATIONS	
5-18-00	REVISED TYPE 3 BEDDING & ADDED NOTE	
3-30-00	REVISED INSTALLATIONS	
11-06-97	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1

CORRUGATED STEEL PIPE (ROUND)

PIPE DIAMETER (INCHES)	① MINUMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET)				
		METAL THICKNESS (INCHES)				
		0.064	0.079	0.109	0.138	0.168
2⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM						
12	1	84	91			
15	1	67	73			
18	1	56	61			
24	1	42	46	59		
30	2	34	36	47		
36	2		30	39	41	
42	2		43	67	70	73
48	2		37	58	61	64
② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, BOLTED, OR HELICAL LOCK-SEAM						
36	1	48	60	88	111	118
42	1	41	51	72	90	102
48	1	36	45	64	77	85
54	2	32	40	59	71	79
60	2	29	36	53	64	71
66	2	26	33	47	58	64
72	2	24	30	44	53	59
78	2		28	41	49	54
84	2		26	38	45	51
90	2		24	35	43	45
96	2		22	33	40	44
102	2			31	38	42
108	2			30	35	39
114	2			28	34	37
120	2			27	32	35

CORRUGATED ALUMINUM PIPE (ROUND)

PIPE DIAMETER (INCHES)	① MINUMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET)				
		METAL THICKNESS IN INCHES				
		0.060	0.075	0.105	0.135	0.164
		2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM				
12	1	45	45			
18	2	30	30	52		
24	2	22	22	39	41	
30	2		18	31	32	34
36	2.5		15	26	27	28
42	2			43	43	44
48	2			40	41	43
54	2			35	37	38
60	2				33	34
66	2					31
72	2					29

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. COMPLETE STRUCTURAL BACKFILL OPERATION BY WORKING FROM SIDE TO SIDE OF THE PIPE. THE SIDE TO SIDE STRUCTURAL BACKFILL DIFFERENTIAL SHALL NOT EXCEED 24 INCHES OR 1/3 THE SIZE OF THE PIPE, WHICHEVER IS LESS.

NOTE: STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF METAL PIPE.

INSTALLATION TYPE	MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 1	AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7)
TYPE 2	SELECTED MATERIALS (CLASS SM-1, SM-2, OR SM-4) OR TYPE 1 INSTALLATION MATERIAL ③

③ SM-3 WILL NOT BE ALLOWED.

EQUIVALENT METAL THICKNESSES AND GAUGES

METAL THICKNESS IN INCHES			GAUGE NUMBER
STEEL			
ZINC COATED	UNCOATED	ALUMINUM	
0.064	0.0598	0.060	16
0.079	0.0747	0.075	14
0.109	0.1046	0.105	12
0.138	0.1345	0.135	10
0.168	0.1644	0.164	8

CORRUGATED METAL PIPE ARCHES

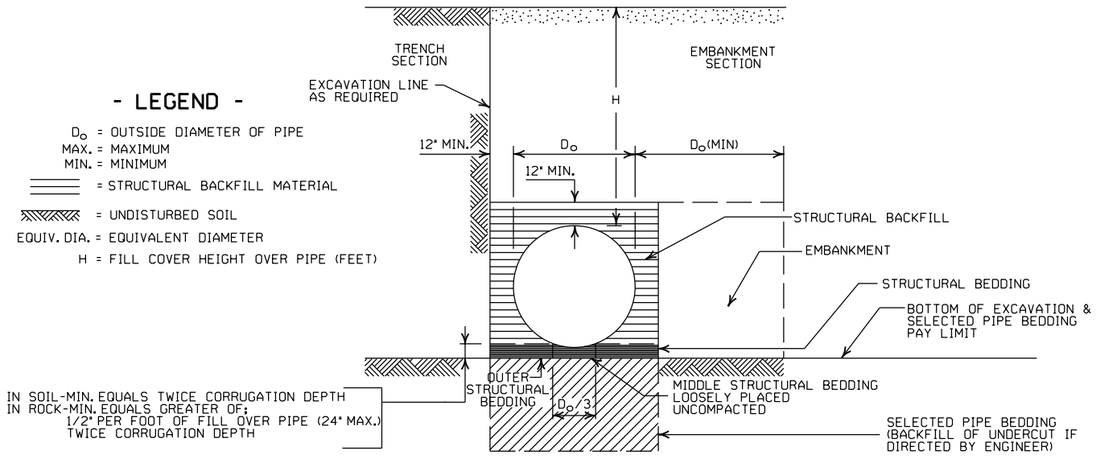
EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINUMUM CORNER RADIUS (INCHES)	STEEL			ALUMINUM		
			MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)	MAX. HEIGHT OF FILL, "H" (FT.)	MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)	MAX. HEIGHT OF FILL, "H" (FT.)
				INSTALLATION TYPE 1	INSTALLATION TYPE 1		INSTALLATION TYPE 1	INSTALLATION TYPE 1
			2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM			2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM		
15	17x13	3	0.064	2	15	0.060	2	15
18	21x15	3	0.064	2	15	0.060	2	15
21	24x18	3	0.064	2.25	15	0.060	2.25	15
24	28x20	3	0.064	2.5	15	0.075	2.5	15
30	35x24	3	0.079	3	12	0.075	3	12
36	42x29	3½	0.079	3	12	0.105	3	12
42	49x33	4	0.079	3	12	0.105	3	12
48	57x38	5	0.109	3	13	0.135	3	13
54	64x43	6	0.109	3	14	0.135	3	14
60	71x47	7	0.138	3	15	0.164	3	15
66	77x52	8	0.168	3	15			
72	83x57	9	0.168	3	15			
			② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM					
				INSTALLATION TYPE 2	INSTALLATION TYPE 1		INSTALLATION TYPE 2	INSTALLATION TYPE 1
36	40x31	5	0.079	3	2		12	15
42	46x36	6	0.079	3	2		13	15
48	53x41	7	0.079	3	2		13	15
54	60x46	8	0.079	3	2		13	15
60	66x51	9	0.079	3	2		13	15
66	73x55	12	0.079	3	2		15	15
72	81x59	14	0.079	3	2		15	15
78	87x63	14	0.079	3	2		15	15
84	95x67	16	0.109	3	2		15	15
90	103x71	16	0.109	3	2		15	15
96	112x75	18	0.109	3	2		15	15
102	117x79	18	0.109	3	2		15	15
108	128x83	18	0.138	3	2		15	15

① FOR MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.

② WHERE THE STANDARD 2 2/3"x ½" CORRUGATION AND GAUGE IS SPECIFIED FOR A GIVEN DIAMETER, A PIPE OF THE SAME DIAMETER WITH A 3" x 1" OR 5" x 1" CORRUGATION MAY BE SUBSTITUTED, PROVIDING IT IS GAUGED FOR A FILL HEIGHT CONDITION EQUAL TO OR GREATER THAN THE MAXIMUM FILL HEIGHT CONDITION FOR THE SPECIFIED GAUGE AND CORRUGATION.

- LEGEND -

D_o = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM
= STRUCTURAL BACKFILL MATERIAL
= UNDISTURBED SOIL
EQUIV. DIA. = EQUIVALENT DIAMETER
H = FILL COVER HEIGHT OVER PIPE (FEET)



EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.
2. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE (ROUND).
3. INSTALALTION TYPE 1 SHALL BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 2⅔" X ½" CORRUGATION.
4. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 3" X 1" OR 5" X 1" CORRUGATION.

GENERAL NOTES

1. METAL PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION), WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS. UNLESS OTHERWISE NOTED IN THE PLANS, SECTION AND SUBSECTION REFER TO THE STANDARD CONSTRUCTION SPECIFICATIONS.
2. METAL PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. METAL PIPE CULVERT MATERIALS AND INSTALLATIONS SHALL CONFORM TO SECTION 606 AND JOB SPECIAL PROVISION "METAL PIPE".
4. ALL PIPE SHALL BE PROTECTED DURING CONSTRUCTION BY A COVER SUFFICIENT TO PREVENT DAMAGE FROM PASSAGE OF EQUIPMENT.
5. THE MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 24 INCHES. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PRACTICABLE FOR WORKING CONDITIONS.
6. MULTIPLE PIPE CULVERTS SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 24 INCHES BETWEEN STRINGS OF PIPE. REFER TO STD. DWG. FES-2 FOR MINIMUM CLEARANCE WHERE FLARED END SECTIONS ARE USED.
7. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
8. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
9. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."

DATE	REVISION	DATE FILMED
2-27-14	REVISED GENERAL NOTE 1.	
12-15-11	REVISED FOR LRFD DESIGN SPECS	
3-30-00	REVISED INSTALLATIONS	
11-06-97	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

INSTALLATION TYPE	•• MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 2	•SELECTED MATERIALS (CLASS SM-1, SM-2 OR SM-4)

• AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7) MAY BE USED IN LIEU OF SELECTED MATERIAL.

SM3 WILL NOT BE ALLOWED.

•• STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.

STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF HDPE PIPE.

MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	1'-6"
24"	2'-0"
30"	2'-6"
36"	3'-0"
42"	3'-6"
48"	4'-0"

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

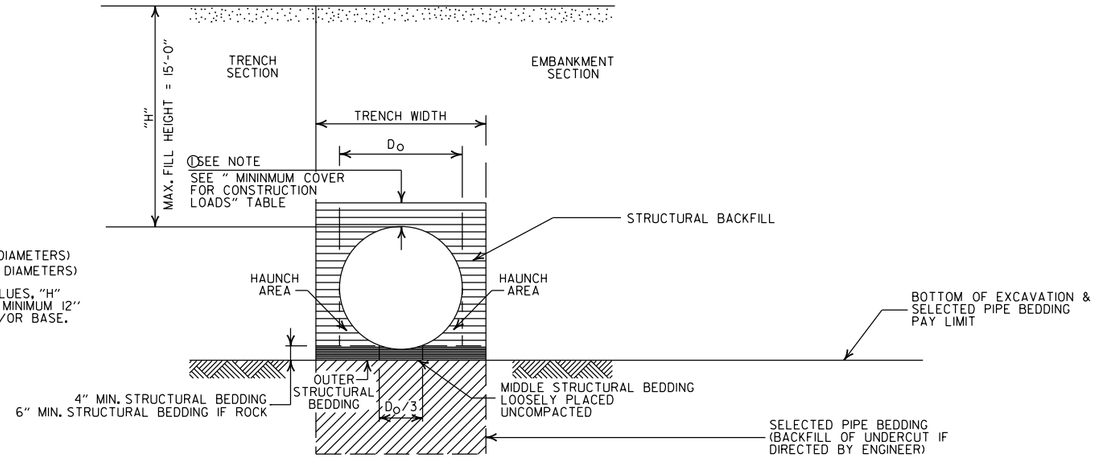
PIPE DIAMETER	TRENCH WIDTH (FEET)	
	"H" < 10'-0"	"H" >OR= 10'-0"
18"	4'-6"	4'-6"
24"	5'-0"	6'-0"
30"	5'-6"	7'-6"
36"	6'-0"	9'-0"
42"	7'-0"	10'-6"
48"	8'-0"	12'-0"

①NOTE:
18" MIN. (18" - 30" DIAMETERS)
24" MIN. (36" - 48" DIAMETERS)
MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.

MINIMUM COVER FOR CONSTRUCTION LOADS

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS			
	18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-175.0 (KIPS)
36" OR LESS	2'-0"	2'-6"	3'-0"	3'-0"
42" OR GREATER	3'-0"	3'-0"	3'-6"	4'-0"

②MINIMUM COVER SHALL BE MEASURED FROM TOP OF PIPE TO TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8". THE LAYERS SHALL BE BROUGHT UP EVENLY AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.
5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALIGNMENT.

GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. HIGH DENSITY POLYETHYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR HDPE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

H = FILL HEIGHT (FT.)
D_O = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

DATE	REVISION	DATE FILMED
2-27-14	REVISED GENERAL NOTE 1.	
12-15-11	REVISED GENERAL NOTES & MINIMUM COVER NOTE	
11-17-10	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)

STANDARD DRAWING PCP-1

INSTALLATION TYPE	•• MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 2	•SELECTED MATERIALS (CLASS SM-1, SM-2, OR SM-4)

• AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7) MAY BE USED IN LIEU OF SELECTED MATERIAL.

SM3 WILL NOT BE ALLOWED.

•• STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.

STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF PVC PIPE.

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

PIPE DIAMETER	TRENCH WIDTH (FEET)	
	"H" < 10'-0"	"H" >OR= 10'-0"
18"	4'-6"	4'-6"
24"	5'-0"	6'-0"
30"	5'-6"	7'-6"
36"	6'-0"	9'-0"

MULTIPLE INSTALLATION OF PVC PIPES

PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	1'-6"
24"	2'-0"
30"	2'-6"
36"	3'-0"

MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL

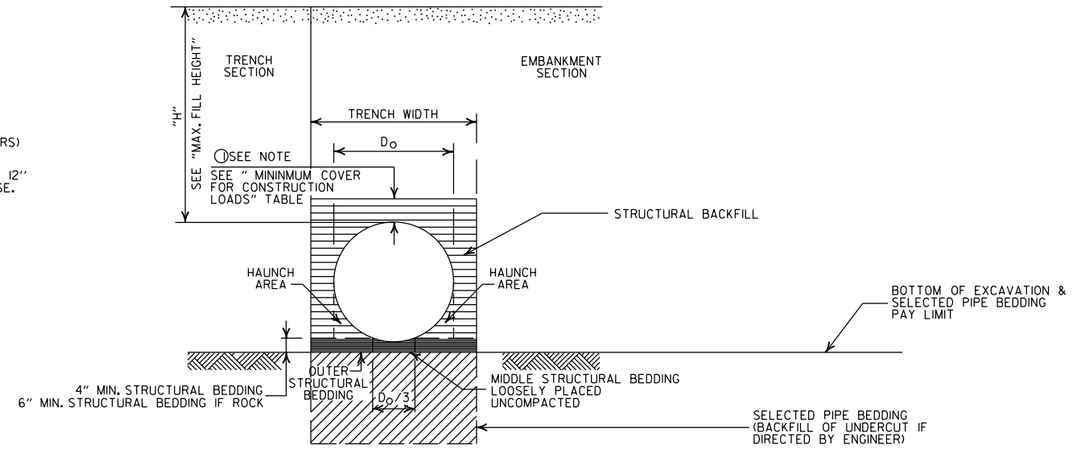
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

① NOTE:
12" MIN. (18" - 36" DIAMETERS)
MINIMUM COVER VALUE, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.

MINIMUM COVER FOR CONSTRUCTION LOADS

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS			
	18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-175.0 (KIPS)
18" THRU 36"	2'-0"	2'-6"	3'-0"	3'-0"

②MINIMUM COVER SHALL BE MEASURED FROM TOP OF PIPE TO TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8". THE LAYERS SHALL BE BROUGHT UP EVENLY AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.
5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALIGNMENT.

GENERAL NOTES

1. PIPE SHALL CONFORM TO ASTM F949, CELL CLASS 12454. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. PVC PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR PVC PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

H = FILL HEIGHT (FT.)
D_O = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

DATE	REVISION	DATE FILMED
2-27-14	REVISED GENERAL NOTE 1.	
12-15-11	REV GENERAL NOTES & MINIMUM COVER NOTE; DELETED SM3 MATERIAL	
11-17-10	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (PVC F949)

STANDARD DRAWING PCP-2

INSTALLATION TYPE	**MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 1	AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7)
TYPE 2	*SELECTED MATERIALS (CLASS SM-1, SM-2 OR SM-4) OR TYPE 1 INSTALLATION MATERIAL

*SM3 WILL NOT BE ALLOWED.

** STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.

STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF POLYPROPYLENE PIPE.

MULTIPLE INSTALLATION OF POLYPROPYLENE PIPES

PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	1'-6"
24"	2'-0"
30"	2'-6"
36"	3'-0"
42"	3'-6"
48"	4'-0"
60"	5'-0"

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

PIPE DIAMETER	TRENCH WIDTH (FEET)	
	"H" < 10'-0"	"H" >OR= 10'-0"
18"	4'-6"	4'-6"
24"	5'-0"	6'-0"
30"	5'-6"	7'-6"
36"	6'-0"	9'-0"
42"	7'-0"	10'-6"
48"	8'-0"	12'-0"
60"	10'-0"	15'-0"

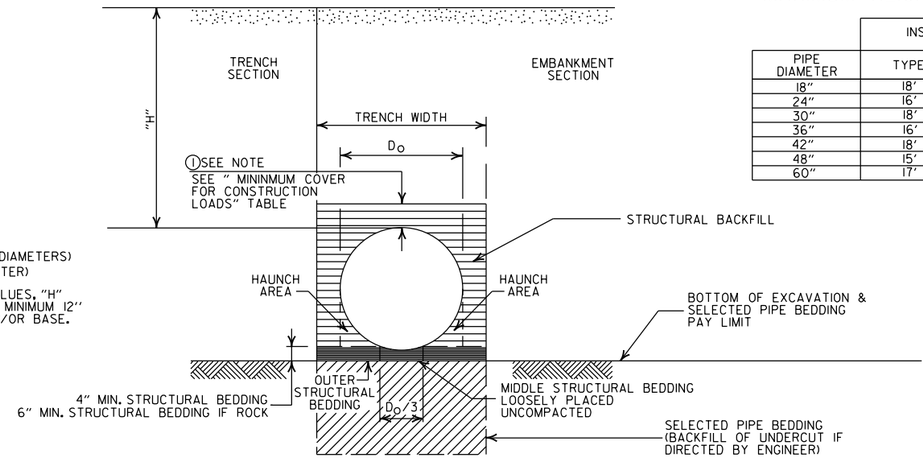
MINIMUM COVER FOR CONSTRUCTION LOADS

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS			
	18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-150.0 (KIPS)
36" OR LESS	2'-0"	2'-6"	3'-0"	3'-0"
42" OR GREATER	3'-0"	3'-0"	3'-6"	4'-0"

②MINIMUM COVER SHALL BE MEASURED FROM TOP OF PIPE TO TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.

①NOTE:
12" MIN. (18" - 42" DIAMETERS)
24" MIN. (60" DIAMETER)

MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.



MAXIMUM HEIGHT OF FILL "H"

PIPE DIAMETER	INSTALLATION TYPE	
	TYPE 1	TYPE 2
18"	18'	14'
24"	16'	12'
30"	18'	14'
36"	16'	12'
42"	18'	13'
48"	15'	11'
60"	17'	12'

EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8". THE LAYERS SHALL BE BROUGHT UP EVENLY AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.
5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALIGNMENT.

GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M330, TYPE S, INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SIXTH EDITION (2012) WITH 2013 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. POLYPROPYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR POLYPROPYLENE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN SECTION 26.4.2.4 AND 30.4.2 OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS 3RD EDITION (2010) WITH 2012 INTERIMS. JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

H = FILL HEIGHT (FT.)
D_O = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

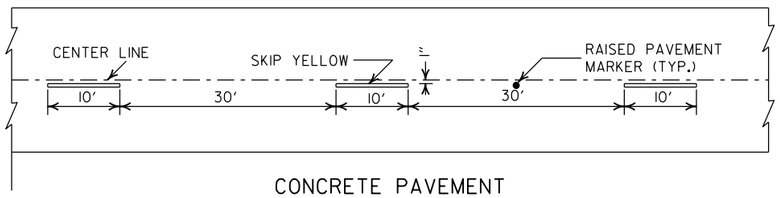
DATE	REVISION	DATE FILMED
02-27-20	REVISED	
11-07-19	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

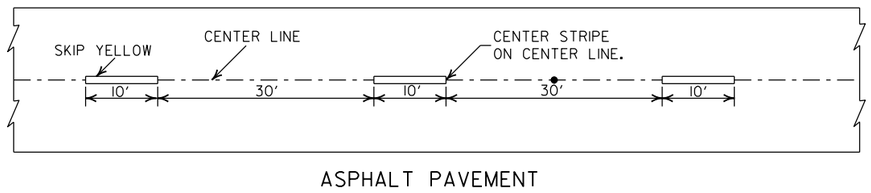
PLASTIC PIPE CULVERT (POLYPROPYLENE)

STANDARD DRAWING PCP-3

NOTES:
1. REFER TO THE STRIPING DETAILS FOR PAVEMENT MARKING LINE WIDTHS.
2. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
3. RAISED PAVEMENT MARKERS SHALL BE PLACED ON AN 80 FEET SPACING UNLESS OTHERWISE SHOWN IN THE PLANS.

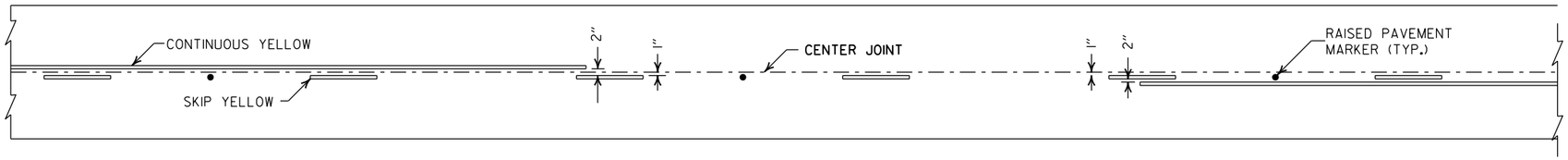


CONCRETE PAVEMENT

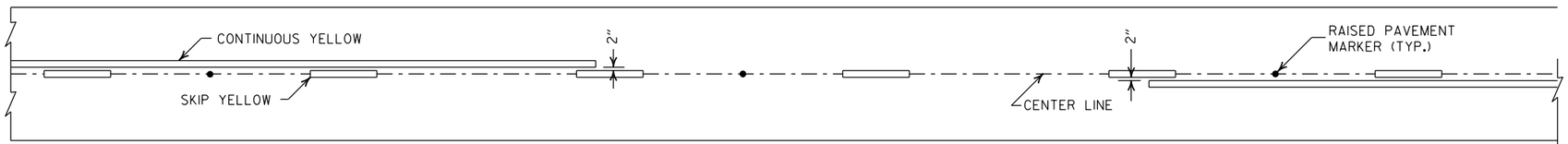


ASPHALT PAVEMENT

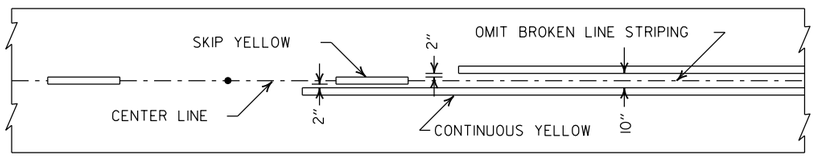
BROKEN LINE STRIPING



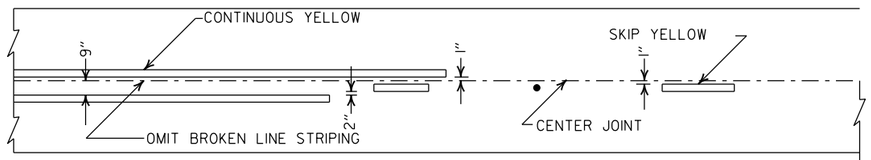
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

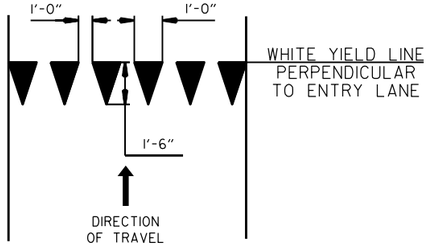


ASPHALT PAVEMENT

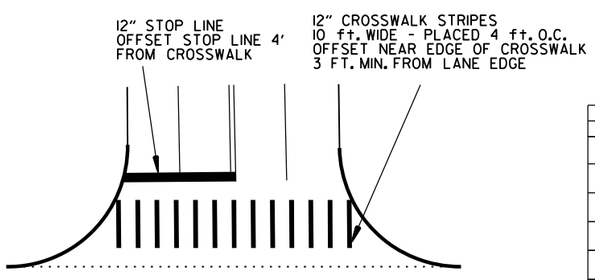


CONCRETE PAVEMENT

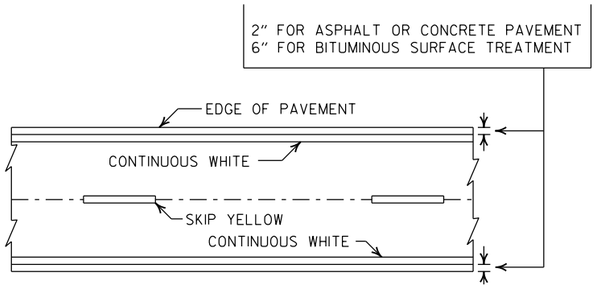
STRIPING AT ADJACENT NO PASSING LANES



YIELD LINE DETAIL



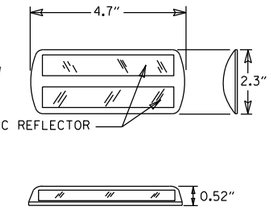
CROSSWALK AND STOP LINE DETAILS



PAVEMENT EDGE LINE MARKING

NOTE:
THE RED LENS OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.

TYPE II
RED/CLEAR OR YELLOW/YELLOW



NOTE:
DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE ARDOT QUALIFIED PRODUCTS LIST.

DETAIL OF STANDARD RAISED PAVEMENT MARKERS

DATE	REVISION	FILMED
2-27-20	REVISED STOP LINE DETAILS	
6-1-17	ADDED YIELD LINE DETAIL	
5-12-16	REVISED LINE WIDTHS, SPACING, & NOTES	
9-12-13	REVISED DETAIL OF STANDARD RAISED PAVEMENT MARKERS	
11-17-10	REVISED GENERAL NOTES & REMOVED PLOWABLE PVMT MRKRS	
11-18-04	REVISED NOTE 2 & GENERAL NOTES	
8-22-02	ADDED CROSSWALK & STOPBAR DTLS.	
7-02-98	ADDED DETAILS OF STD. RAISED PAV'T. MARKERS	
4-26-96	REV. NOTES 3&4; ADDED R.P.M.	
9-30-80	DRAWN	1-9-30-80

ARKANSAS STATE HIGHWAY COMMISSION

PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

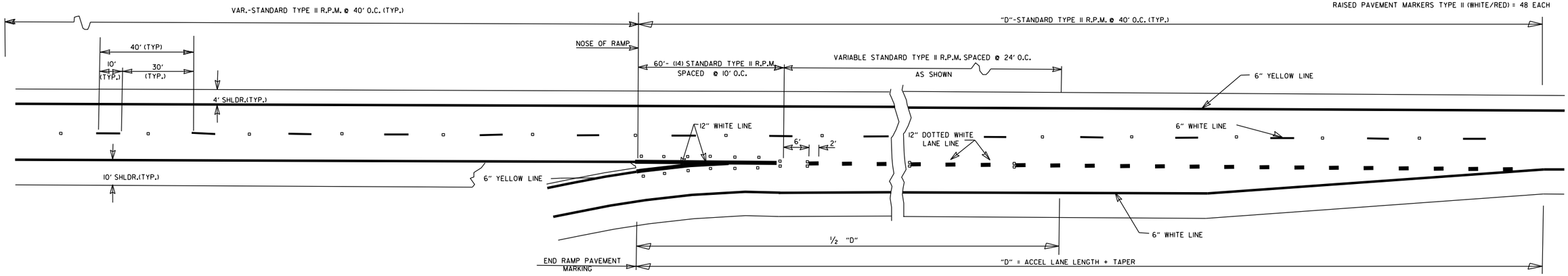
PAVEMENT MARKING QUANTITIES
(BASED ON 700' ACCEL. LANE + 300' TAPER)

ENTRANCE RAMP

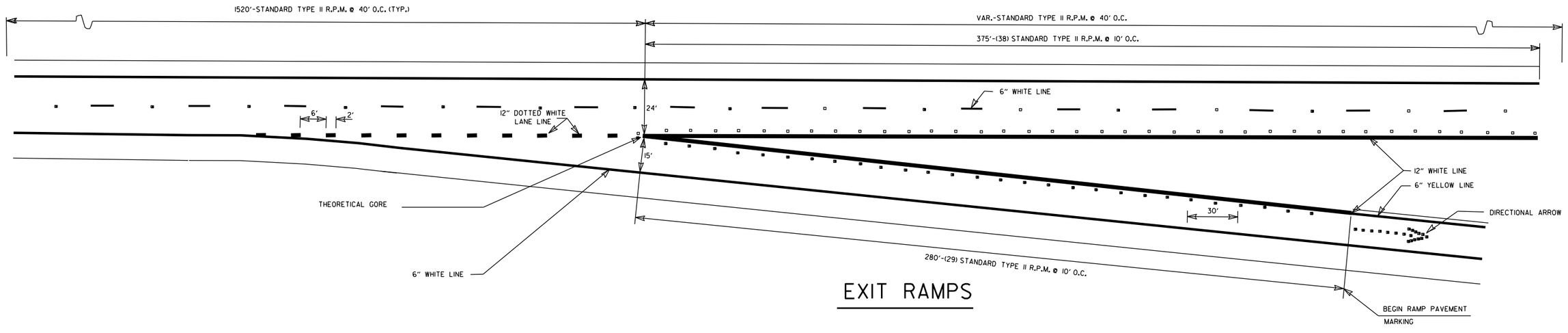
12" WHITE = 370 LIN. FT.
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED) = 38 EACH

EXIT RAMP

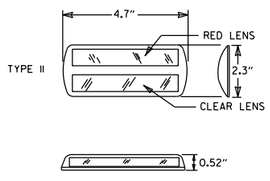
6" WHITE = 280 LIN. FT.
12" WHITE = 815 LIN. FT.
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED) = 38 EACH
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED) = 48 EACH



ENTRANCE RAMPS

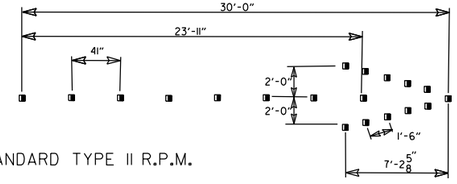


EXIT RAMPS



DETAIL OF
STANDARD
RAISED PAVEMENT MARKERS

NOTE:
THE RED LENS OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.



(19) STANDARD TYPE II R.P.M.

DIRECTIONAL ARROWS

GENERAL NOTES:

THIS DRAWING SHOULD BE CONSIDERED AS TYPICAL ONLY AND THE FINAL LOCATION OF THE STRIPING AND PAVEMENT MARKERS SHALL BE DETERMINED BY THE ENGINEER.

THIS DRAWING SHOULD BE USED IN CONJUNCTION WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST REVISION.

NOTE:
DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE ARDOT QUALIFIED PRODUCTS LIST.

DATE	REVISION	FILMED
05-14-20	REMOVED CROSSHATCH MARKINGS ON EXIT RAMPS	
11-07-19	REVISED DOTTED PAV'T MARKINGS; ADDED CROSSHATCH MARKINGS ON EXIT RAMPS	
12-8-16	REVISED RAISED PAV'T MARKERS FOR 80' SPACING; REVISED WIDTH OF STRIPING	
9-12-13	REVISED DETAIL OF STANDARD RAISED PAVEMENT MARKERS	
7-26-12	REVISED RPM NOTATION	
12-15-11	REVISED RPMs ACCORDING TO LATEST POLICY	
11-17-10	REMOVED PLOWABLE PAVEMENT MARKERS	
6-3-10	REVISED PER 2009 MUTCD	
11-18-04	REVISED NOTES	
8-22-02	ADDED & REVISED NOTES; REV. ENTRANCE & EXIT RAMPS	
5-18-00	REMOVED HASHMARKS	
7-02-98	CHANGED TYPES TO ROMAN NUMERALS	
4-26-96	ADDED DIMENSIONS & QUANTITIES; REVISED LANE WIDTH ON EXIT RAMP	
2-2-95	PLACED IN USE	2-2-95

ARKANSAS STATE HIGHWAY COMMISSION

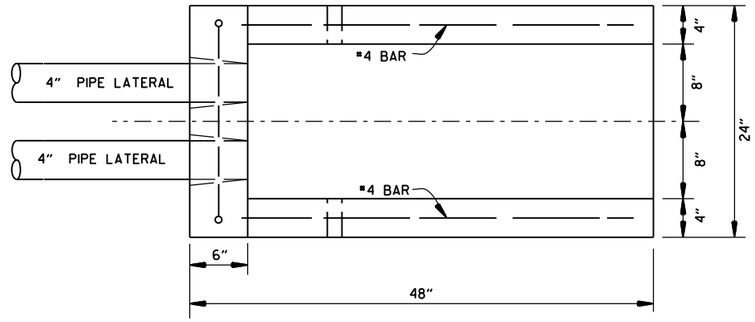
PAVEMENT MARKING DETAILS ON ACCESS CONTROLLED ROADWAYS

STANDARD DRAWING PM-2

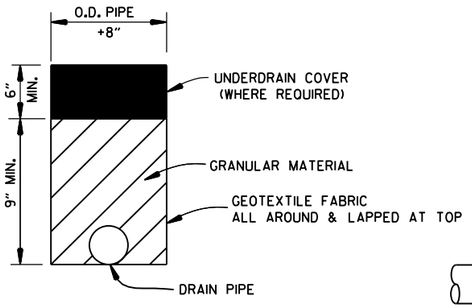
NOTE:

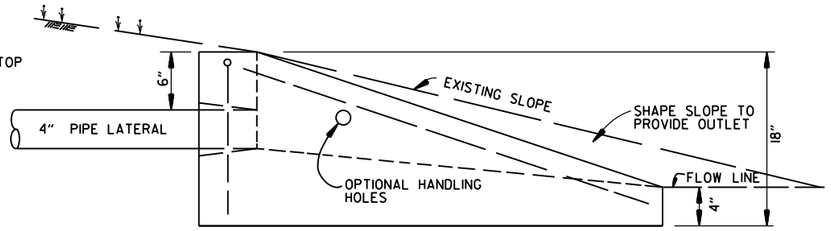
1. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.

2. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.

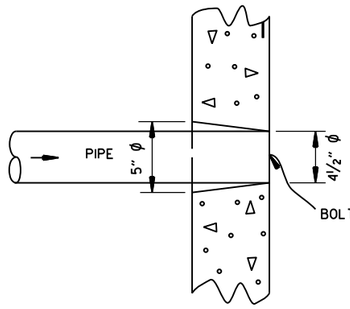


PLAN VIEW

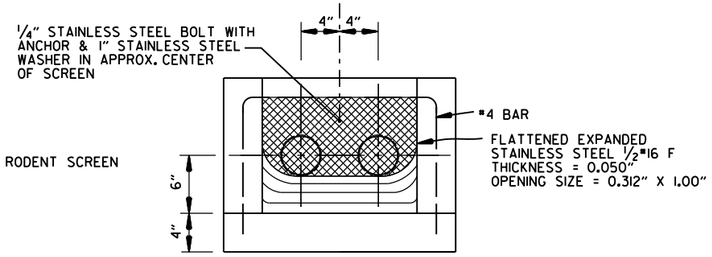




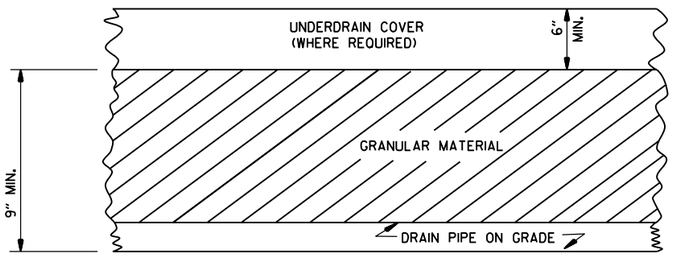
SIDE VIEW



DETAIL OF HOLE FOR 4" PIPE

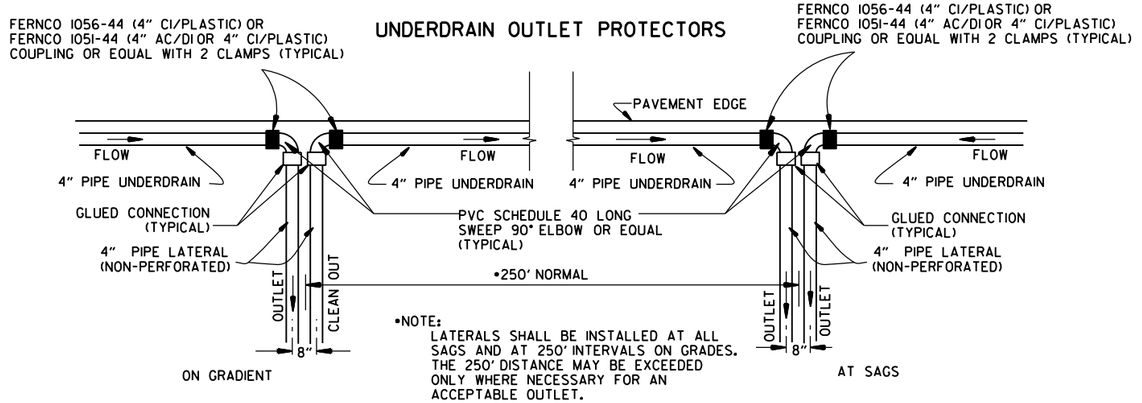


FRONT VIEW
(DETAIL OF RODENT SCREEN)



DETAILS OF PIPE UNDERDRAIN

UNDERDRAIN OUTLET PROTECTORS



DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

NOTE: PVC PIPE FOR LATERALS SHALL MEET THE REQUIREMENTS OF ASTM D 1785 (LATEST REVISION) FOR SCHEDULE 40 PIPE.

NOTES FOR PIPE UNDERDRAINS

1. GEOTEXTILE FABRIC SHALL MEET THE REQUIREMENTS OF SECTION 625 FOR TYPE I. PAYMENT FOR GEOTEXTILE FABRIC AND GRANULAR FILTER MATERIAL SHALL BE INCLUDED IN THE PRICE BID PER LIN. FT. FOR "4" PIPE UNDERDRAINS" IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

2. 4" NON-PERFORATED SCHEDULE 40 PVC PIPE LATERALS WITH OUTLET PROTECTORS SHALL BE INSTALLED AS SHOWN HEREON. LATERALS WILL BE MEASURED AND PAID FOR AS "4" PIPE UNDERDRAINS." UNDERDRAIN OUTLET PROTECTORS WILL BE MEASURED AND PAID FOR BY THE UNIT IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

3. EXISTING 4" PIPE UNDERDRAINS MAY BE CONNECTED TO PROPOSED DROP INLETS OR EXTENDED WHERE DIRECTED BY THE ENGINEER. PAYMENT FOR CONNECTING TO DROP INLETS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR "4" PIPE UNDERDRAINS."

4. THE LOCATION OF ALL LATERALS SHALL BE MARKED WITH 4" X 12" PERMANENT PAVEMENT MARKING TAPE (TYPE III WHITE) AT THE OUTSIDE EDGE OF THE SHOULDER, PLACED TRANSVERSE TO TRAFFIC. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

5. PAYMENT FOR THE RODENT SCREEN SHALL BE INCLUDED IN THE PRICE BID PER EACH FOR "UNDERDRAIN OUTLET PROTECTORS."

6. ANY EXISTING UNDERDRAINS THAT INTERFERE WITH INSTALLATION OF THE NEW UNDERDRAIN SYSTEM SHALL BE REMOVED AND DISPOSED OF AS DIRECTED BY THE ENGINEER. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS. EXISTING UNDERDRAIN OUTLET PROTECTORS SHALL BE REMOVED UNDER THE ITEM "REMOVAL AND DISPOSAL OF UNDERDRAIN OUTLET PROTECTORS."

7. AT LOCATIONS WHERE A SINGLE LATERAL IS USED THE CONTRACTOR SHALL HAVE THE FOLLOWING OPTIONS: 1. INSTALL OUTLET PROTECTOR AS SHOWN ON STANDARD DRAWING PU-1 AND GROUT THE UNUSED HOLE OR 2. INSTALL AN OUTLET PROTECTOR WITH A SINGLE HOLE.

DATE	REVISION	DATE FILMED
12-8-16	ADDED NOTES FOR PIPE UNDERDRAINS, REVISED RODENT SCREEN DETAIL AND NOTES, REMOVED NOTE 1 FOR GRANULAR MATERIAL, ADDED NOTE FOR GEOTEXTILE FABRIC	
4-10-03	REVISED NOTE 3	
1-12-00	REVISED DETAIL OF UNDERDRAIN LATERALS	
11-18-98	REVISED NOTE	
10-18-96	REVISED MIN. DEPTH & GEOTEXTILE FABRIC	
4-26-96	ADDED LATERAL NOTE; 5½" TO 5"	
11-22-95	REVISED LATERALS	
7-20-95	REVISED LATERALS & ADDED NOTE	
11- 3-94	REVISED FOR DUAL LATERALS	11- 3-94
10- 1-92	SUBSTITUTED GEOTEXTILE	10- 1-92
8-15-91	ADDED POLYEDTHYLENE PIPE	8-15-91
11- 8-90	DELETED ALTERNATE NOTE	11- 8-90
1-25-90	ADDED 4" SNAP ADAPTER	1-25-90
11-30-89	DEL. (SUBGRADE); ADDED (WHERE REQUIRED)	11-30-89
7-15-88	ISSUED P.L.M.	647-7-15-88

ARKANSAS STATE HIGHWAY COMMISSION

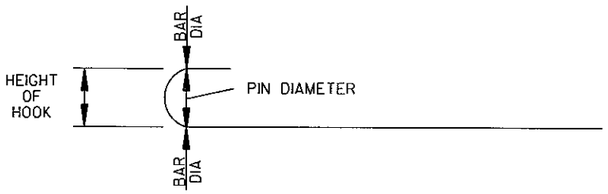
DETAILS OF PIPE UNDERDRAIN

STANDARD DRAWING PU-1

STEEL FABRICATION: REINFORCING STEEL FABRICATION SHALL CONFORM TO THE DIMENSIONS LISTED IN THE TABLE BELOW:

BAR SIZE	PIN DIAMETER	HOOK EXTENSION "K"
3	2¼"	4"
4	3 "	4½"
5	3¾"	5"
6	4½"	6"
7	5¼"	7"
8	6"	8"

IF THE OVERALL HEIGHT OF THE HOOK (SEE DIAGRAM BELOW) FOR A "b", "b1", "b2" or "b3" BENT BAR IS GREATER THAN THE CORRESPONDING TOP OR BOTTOM SLAB THICKNESS, LESS 2¾ INCHES, EACH BENT BAR SHALL BE REPLACED WITH ONE HOOKED BAR AND ONE STRAIGHT BAR, USING LENGTHS AS SHOWN IN THE TABLE BELOW. THE TWO BARS SHALL BE THE SAME DIAMETER AS, AND PLACED AT THE SAME SPACING AS, THE "b", "b1", "b2" OR "b3" BENT BARS THEY REPLACE.



NOTE: DIMENSIONS OF BARS ARE MEASURED OUT TO OUT OF BARS.

OVERALL HEIGHT OF HOOKED BAR DIAGRAM

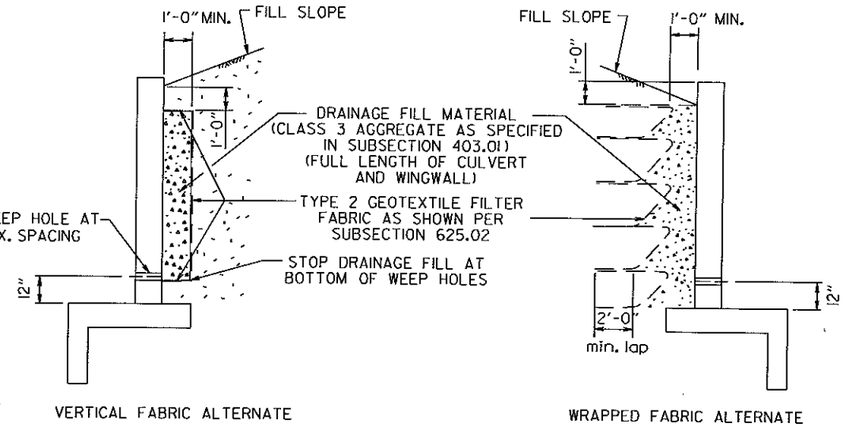
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

FOR SKEWED CULVERTS, THE REPLACEMENT STRAIGHT BAR MAY HAVE TO BE CUT IN FIELD TO FIT.

REPLACEMENT BAR LENGTHS TABLE

BAR SIZE: "b", "b1", "b2" OR "b3"	LENGTH OF HOOKED BAR	LENGTH OF STRAIGHT BAR
#4	L + 1' - 0"	SEE "c" BAR LENGTH
#5	L + 1' - 2"	SEE "c" BAR LENGTH
#6	L + 1' - 4"	SEE "c" BAR LENGTH
#7	L + 1' - 8"	SEE "c" BAR LENGTH
#8	L + 1' - 10"	SEE "c" BAR LENGTH
#9	L + 2' - 6"	SEE "c" BAR LENGTH

L = "OW" - 3 INCHES



WINGWALL & CULVERT DRAINAGE DETAIL

REINFORCED CONCRETE BOX CULVERT GENERAL NOTES

CONCRETE SHALL BE CLASS S WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI.

REINFORCING STEEL SHALL BE AASHTO M 31 OR M 53, GRADE 60.

CONSTRUCTION AND MATERIALS FOR WINGWALL & CULVERT DRAINAGE, INCLUDING WEEP HOLES AND GRANULAR MATERIAL, SHALL BE SUBSIDIARY TO THE BID ITEM, "CLASS S CONCRETE".

MEMBRANE WATERPROOFING SHALL CONFORM TO THE REQUIREMENTS OF SECTION 815 OF THE STANDARD SPECIFICATIONS.

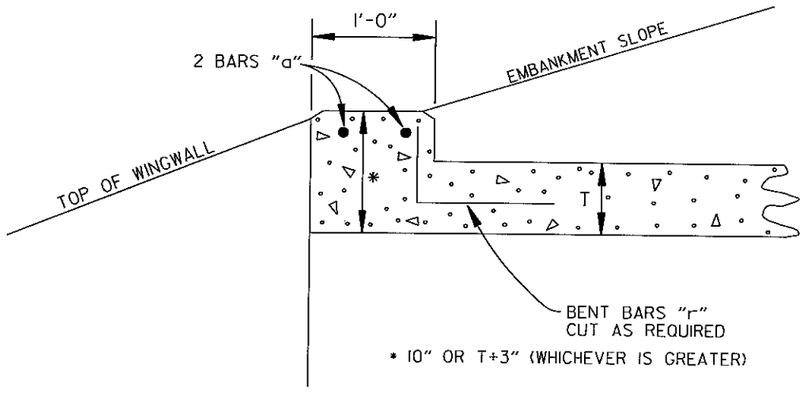
MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

REINFORCING STEEL TOLERANCES: THE TOLERANCES FOR REINFORCING STEEL SHALL MEET THOSE LISTED IN "MANUAL OF STANDARD PRACTICE" PUBLISHED BY CONCRETE REINFORCING STEEL INSTITUTE (CRSI) EXCEPT THAT THE TOLERANCE FOR TRUSS BARS SUCH AS FIGURE 3 ON PAGE 7-4 OF THE CRSI MANUAL SHALL BE MINUS ZERO TO PLUS ½ INCH.

WEEP HOLES IN BOX CULVERT WALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE BOTTOM SLAB.

WEEP HOLES IN WINGWALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THERE SHALL BE A MINIMUM OF TWO (2) WEEP HOLES IN EACH WINGWALL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE WINGWALL FOOTING.

THE REQUIREMENTS SHOWN ON THIS DRAWING SHALL SUPERCEDE THE CORRESPONDING REQUIREMENTS ON ALL REINFORCED CONCRETE BOX CULVERT STANDARD DRAWINGS.



NOTE: FOR ALL SKEWED R.C. BOX CULVERTS THE LENGTH "K" OF THE MODIFIED HEADWALL SHALL BE EQUAL TO THE ROADWAY LENGTH "RL". THE ENDS OF THE HEADWALL SHALL BE CONSTRUCTED PARALLEL TO THE SKEW ANGLE OF THE BOX CULVERT.

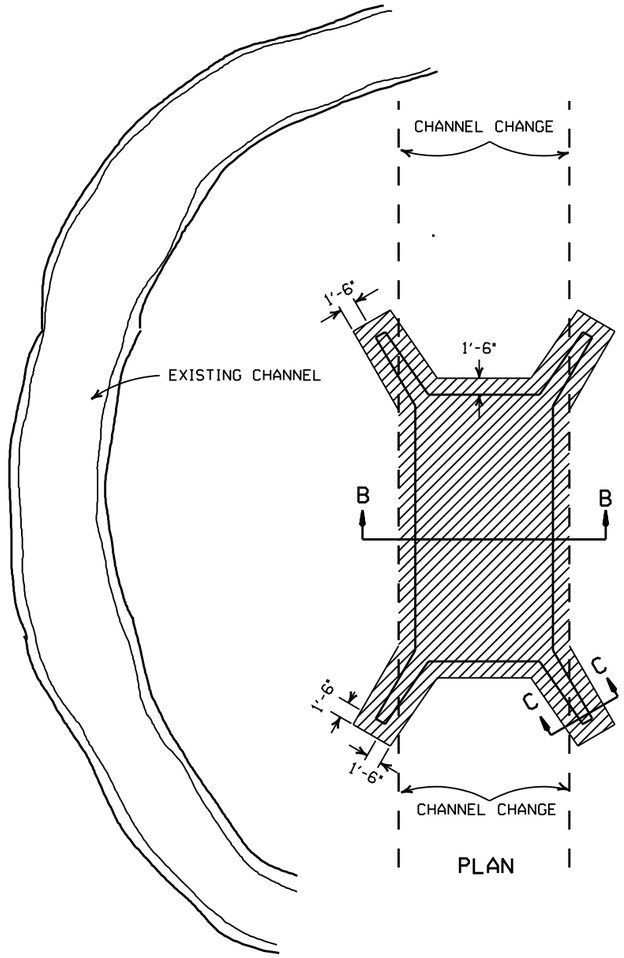
R.C. BOX CULVERT HEADWALL MODIFICATIONS

DATE	REVISION	DATE FILMED
7/26/12	REV. DRAINAGE FILL MATERIAL & DETAIL	
12/15/11	REQUIRE WEEP HOLES IN BOX CULVERT WALLS	
5-25-06	REV. GEN. NOTES AND DETAILS FOR WEEP HOLES; BAR DIAGRAM	
11-16-01	ADDED WINGWALL DRAINAGE DETAIL/EDITED GEN. NOTES	
10-18-96	REV. ASTM REF. TO AASHTO & ADDED BAR DIAGRAM	
10-12-95	MOVED SOLID SODDING DETAIL TO RCB-2	
6-2-94	ADDED SOLID SODDING PLAN DETAIL	
8-5-93	REVISED PIN DIAMETER TO SPECS.	
8-15-91	DRAWN AND ISSUED	

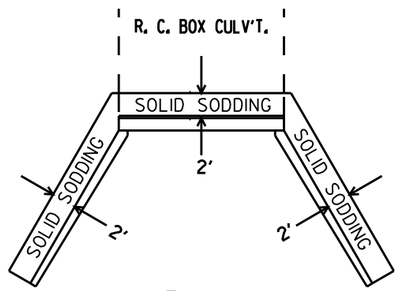
ARKANSAS STATE HIGHWAY COMMISSION

REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1



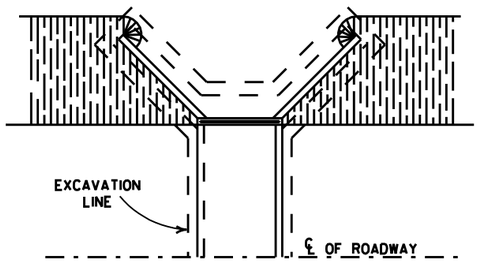
PLAN



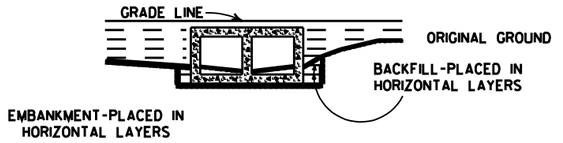
PLAN

PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

NOTE: LENGTH MEASURED ALONG THE CENTER OF 2' STRIP OF SOLID SODDING.

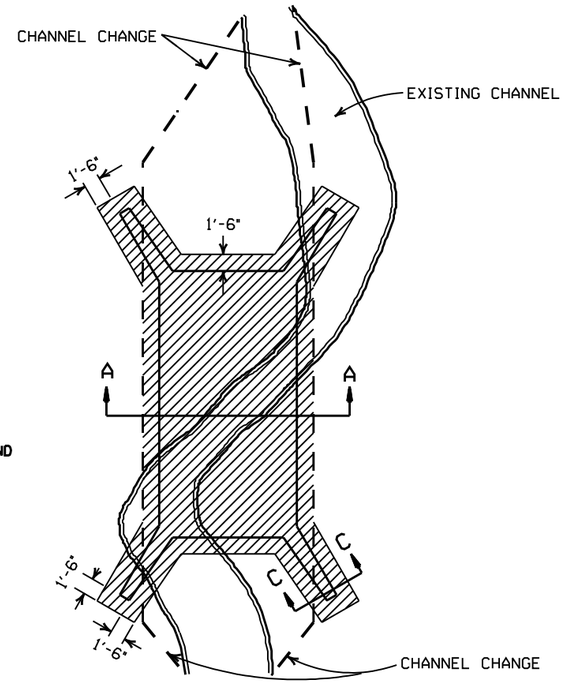


PLAN

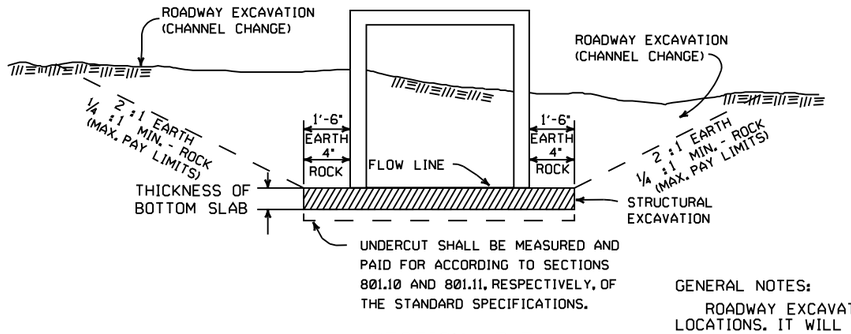


LONGITUDINAL SECTION

BACKFILL DETAILS FOR BOX CULVERT

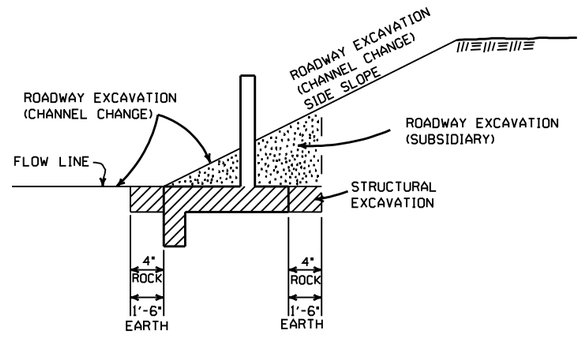


PLAN

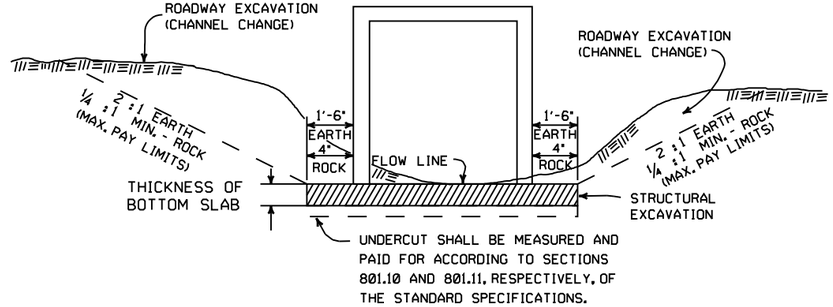


SECTION B-B

DETAILS FOR NEW CHANNELS



SECTION C-C



SECTION A-A

DETAILS THROUGH EXISTING CHANNELS

GENERAL NOTES:

ROADWAY EXCAVATION (CHANNEL CHANGE) WILL BE PAID FOR AT R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS ACTUALLY CUT AND WILL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS ABOVE THE FLOW LINE. ROADWAY EXCAVATION (CHANNEL CHANGE) SHALL BE MEASURED BY CROSS SECTIONS AND VOLUMES COMPUTED BY AVERAGE END AREA METHOD. ALL CHANNEL CHANGES SHALL BE BROUGHT TO GRADE PRIOR TO MAKING ANY EXCAVATION FOR STRUCTURES.

EXCAVATION FOR STRUCTURES WILL BE PAID FOR AT ALL R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS SHOWN AND SHALL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS BELOW THE CHANNEL FLOW LINE.

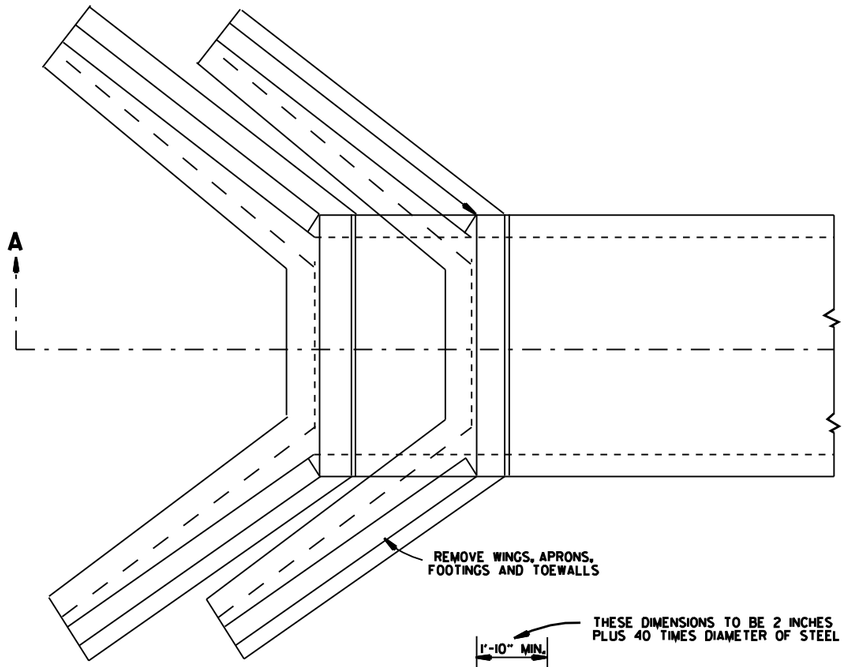
ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSIDIARY WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.

DATE	REVISION	FILMED
11-20-03	REVISED SECTION A-A NOTE	
8-22-02	REVISED SECTION B-B NOTE	
10-12-95	COMBINED 1891B AND 1888A	
1-4-83	REVISED GENERAL NOTES	674-1-4-83
	AND ADDED MAXIMUM PAY	
	LIMIT NOTES.	
2-2-76	EXCAV. PAY LIMITS	917-2-2-76
10-2-72	REVISED AND REDRAWN	564-10-16-72

ARKANSAS STATE HIGHWAY COMMISSION

EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS

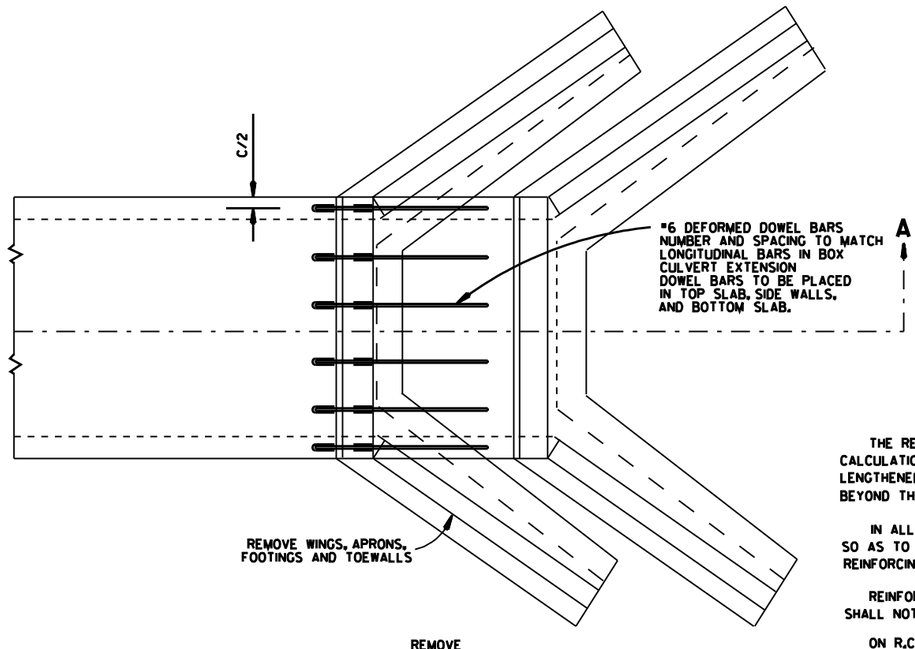
STANDARD DRAWING RCB-2



TOP VIEW
R.C. BOX CULVERT

SECTION A-A

METHOD 1



TOP VIEW
R.C. BOX CULVERT

SECTION A-A

METHOD 2

GENERAL NOTES

	USE FOR METHOD
THE RESIDENT ENGINEER WILL MAKE INDIVIDUAL CALCULATIONS OF QUANTITIES FOR EACH STRUCTURE LENGTHENED, MAKING NO ALLOWANCE FOR OVERBREAKAGE BEYOND THE LINES INDICATED.	1
IN ALL INSTANCES CONCRETE SHALL BE REMOVED SO AS TO PERMIT FULL 40 DIAMETER SPLICE OF REINFORCING STEEL.	1
REINFORCING STEEL REMOVED FROM EXISTING STRUCTURE SHALL NOT BE REUSED IN CONSTRUCTING EXTENSION.	1&2
ON R.C. BOX CULVERTS THAT HAVE AN EXISTING CONCRETE APRON, THE CONCRETE APRON SHALL BE REMOVED WITH THE WINGS. THE COST OF REMOVING ALL OLD CONCRETE WILL BE INCLUDED IN THE PRICE BID PER CUBIC YARD FOR NEW CONCRETE OF THE CLASS SPECIFIED AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.	1&2
MATERIALS FOR SECURING DOWEL BARS SHALL MEET THE REQUIREMENTS OF SECTION 507.02 OF THE STANDARD SPECIFICATIONS.	2
DOWEL BARS SHALL BE INSTALLED AS FOLLOWS: THE DRILLING PROCEDURE SHALL BE APPROVED BY THE ENGINEER. THE FILLING SYSTEM SHALL BE APPROVED BY THE ENGINEER, AND SHALL BE AN INJECTION-TYPE SYSTEM WHICH WILL INSURE THAT SUFFICIENT MATERIAL IS INJECTED SO IT COMPLETELY SURROUNDS THE BARS AND FILLS THE HOLES.	2
THE CONTRACTOR SHALL HAVE THE OPTION OF USING EITHER METHOD 1 OR METHOD 2, REGARDLESS OF WHICH METHOD IS USED, PAY QUANTITIES WILL BE CALCULATED BASED ON METHOD 1.	1&2

NOTE:
NO PART OF THIS STANDARD IS TO BE USED FOR ANY DETAILS RELATIVE TO NEW CONSTRUCTION.

SEE STANDARD DRAWING LISTED IN TABULATION OF STRUCTURES FOR ALL NEW CONSTRUCTION DETAILS.

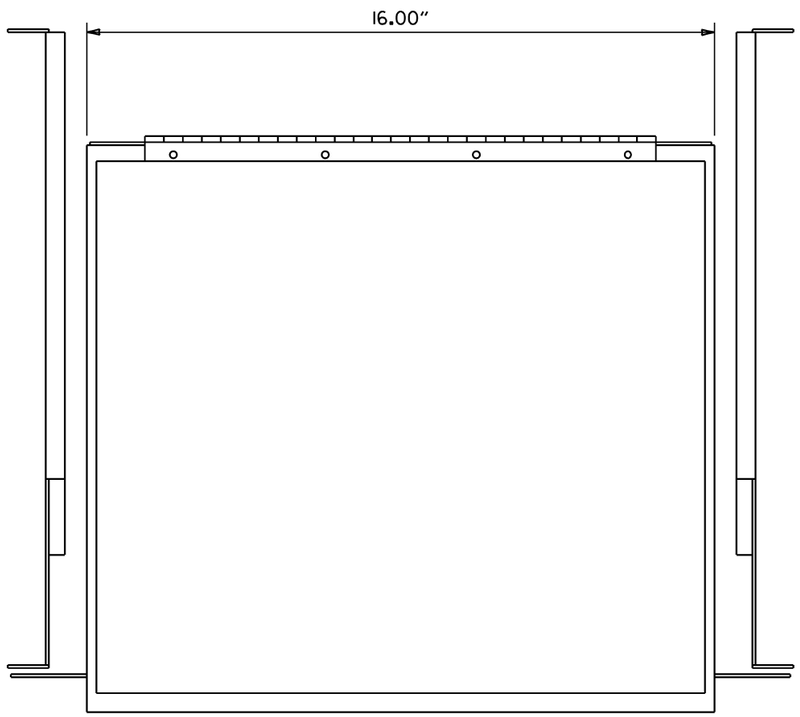
DATE	REVISION	DATE FILM
10-12-95	CHANGED DRAWING # FROM 144-A	
4-1-93	ADDED GENERAL NOTE	
10-1-92	ADDED ALT. METHOD OF EXTENSION	
11-30-89	REDRAWN	
1-4-83	ELIMINATED CONCRETE CLASS	
12-20-56	RETRACED	

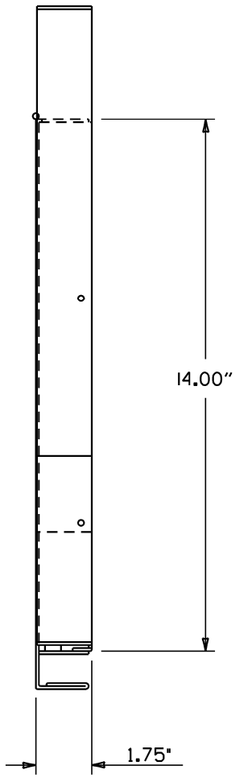
ARKANSAS STATE HIGHWAY COMMISSION

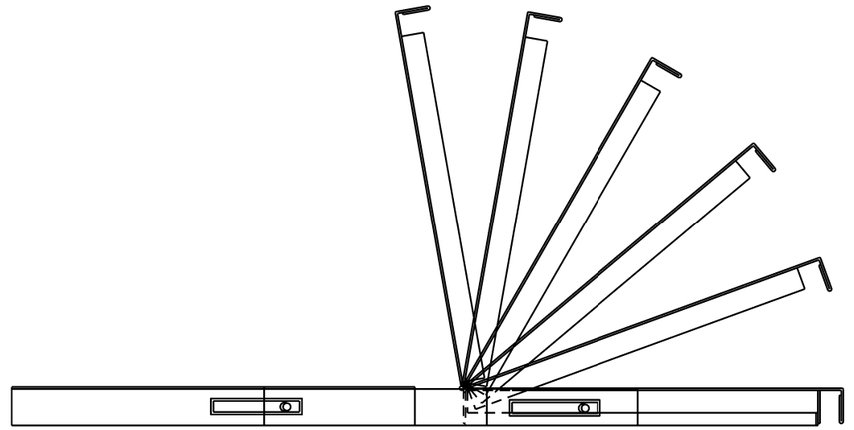
METHOD OF EXTENDING EXISTING R.C. BOX CULVERTS

STANDARD DRAWING RCB-3

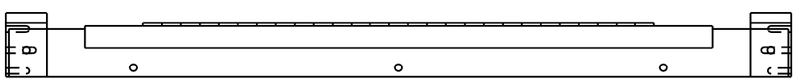
DRAWER PLAN VIEW



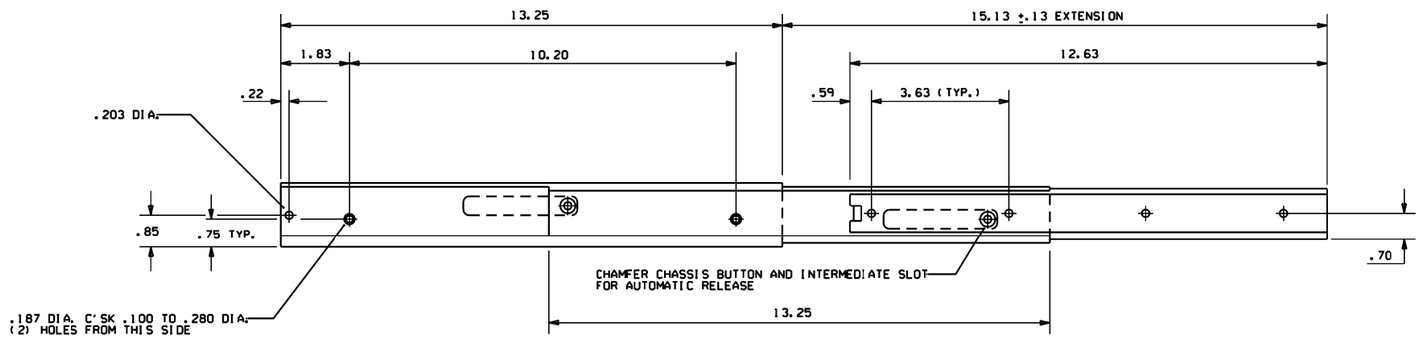




NOTES:
1. RIGHT HAND SLIDE SHOWN, LEFT SLIDE OPPOSITE.
2. GENERAL DEVICES (CC3002-99-0102) OR EQUAL AND CONTAINS (1) RIGHT HAND SLIDE ASSEMBLY, (1) LEFT HAND SLIDE ASSEMBLY.
3. ALL HARDWARE NECESSARY TO FASTEN SLIDE ASSEMBLY TO UNDERSIDE OF CONTROLLER SHELF SHALL BE INCLUDED.



FRONT VIEW



RIGHT SIDE ASSEMBLY

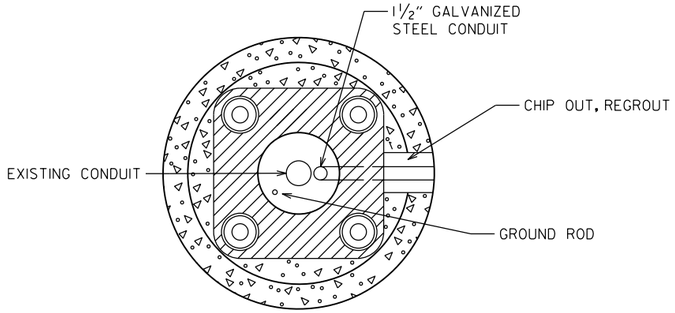
DATE	REVISION	DATE FILM
9-12-13	ISSUED AS STANDARD DRAWING	
6-15-05	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

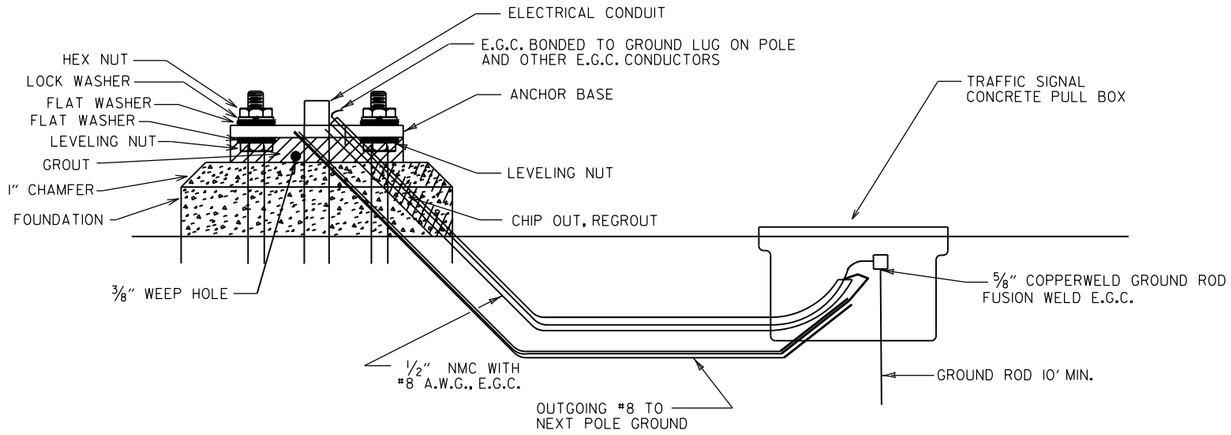
CONTROLLER CABINET UTILITY DRAWER

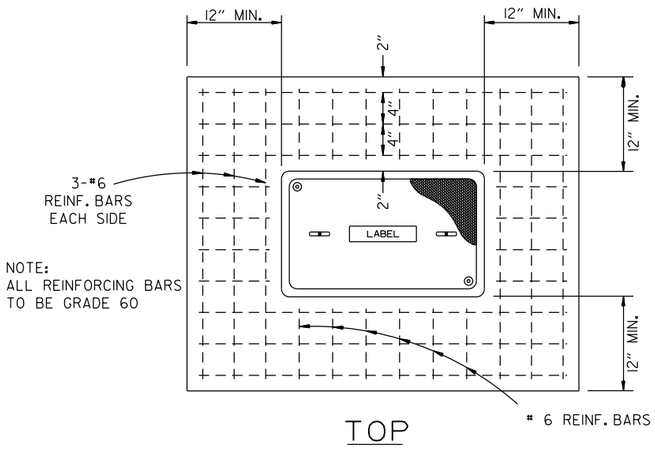
STANDARD DRAWING SD-5

CONDUIT ENTRY TO EXISTING POLE BASE

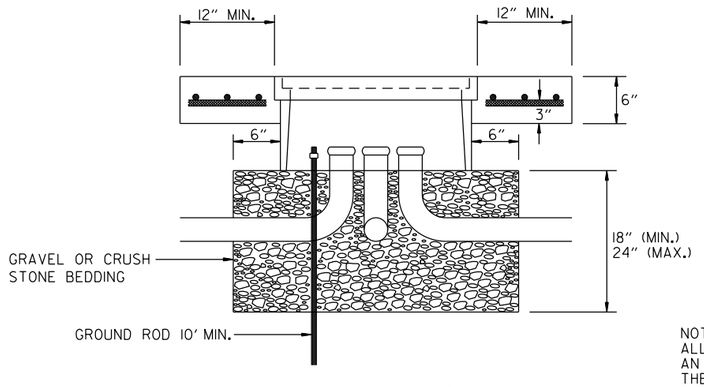


ANCHOR BASE



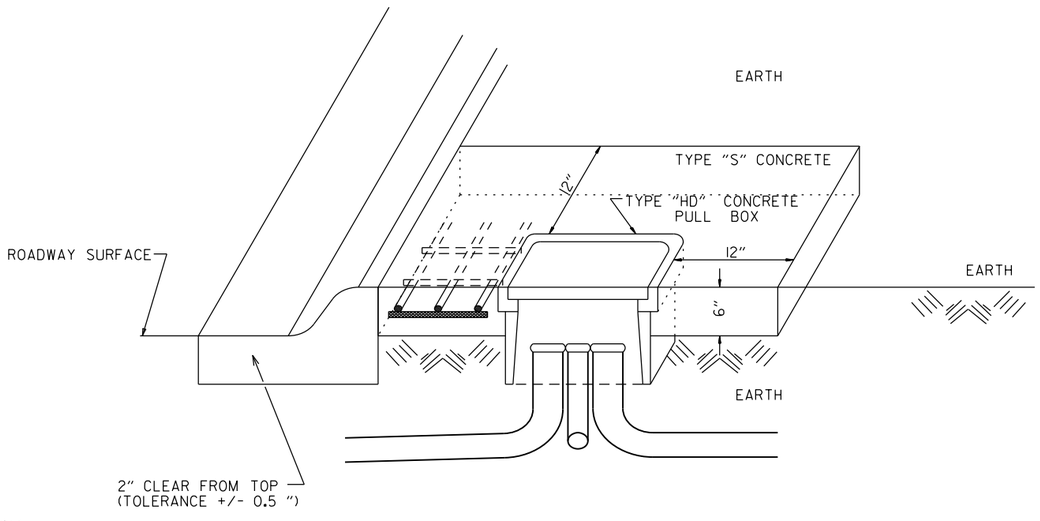


TOP



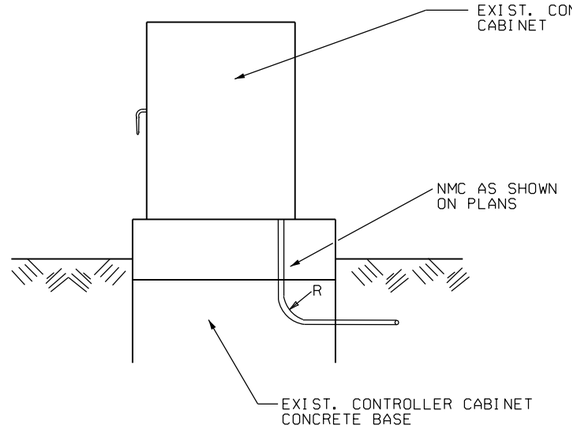
ELEVATION

TYPE "HD" CONCRETE PULL BOX DETAIL



NOTE:
ALL TYPE I HD, TYPE 2 HD, AND TYPE 3 HD CONCRETE PULL BOXES ARE INSTALLED WITH AN APRON OF CONCRETE 12" WIDE AND 6" IN DEPTH. ALL PAYMENT SHALL BE INCLUDED IN THE PRICE OF THE TYPE HD CONCRETE PULL BOX. THE CONCRETE PULL BOX SHALL BE INSTALLED FLUSH TO SURROUNDING GRADE UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER. THE CONCRETE SHALL BE CLASS "S". THREE #6 REINFORCING BARS IN THE APRON ON ALL SIDES OF THE CONCRETE PULL BOX IS REQUIRED IN CONCRETE.

CONDUIT ENTRY TO EXISTING CONTROLLER CABINET



NOTE: ENTRY TO CABINET SHALL BE THROUGH A CUT IN THE BASE SUFFICIENT TO PROVIDE ADEQUATE CONDUIT RADIUS FOR ITEM.

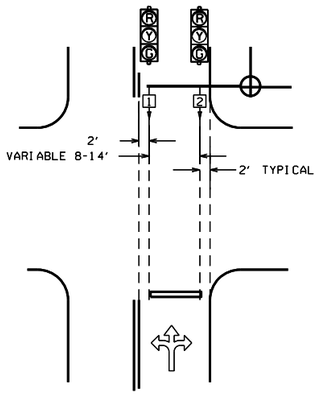
DATE	REVISION	FILMED
02-13-24	REVISED NOTES AND TYPE "HD" CONCRETE PULL BOX DETAILS	
11-16-17	REVISED NOTES	
09-02-15	REVISED PULL BOX DEPTH	
09-12-13	ISSUED AS STANDARD DRAWING	
05-21-09	REVISED GROUNDING	
07-31-08	ADDED & REVISED CONDUIT ENTRY	
06-23-04	REVISED CLEARANCE AT CURB ENTRY	
01-04-02	ADDED REINFORCING TO BOX APRON	
07-02-01	REVISED	
12-27-99	REVISED NOTES	
11-18-98	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

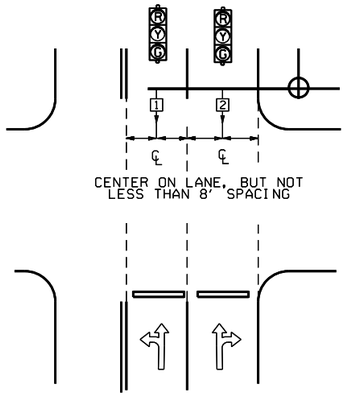
HEAVY DUTY PULL BOX

STANDARD DRAWING SD-6

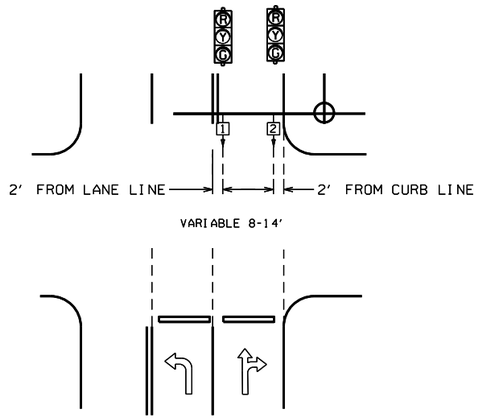
(A)



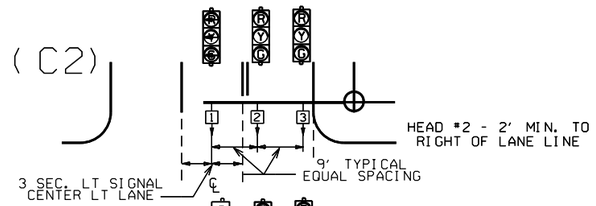
(B)



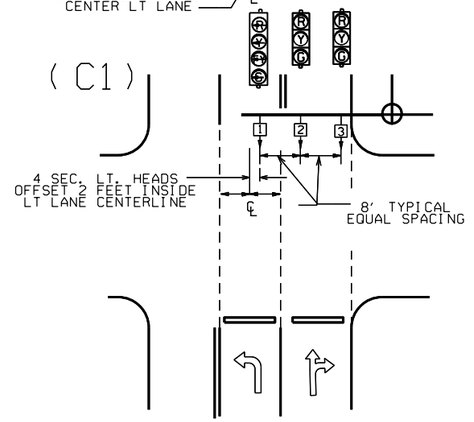
(C)



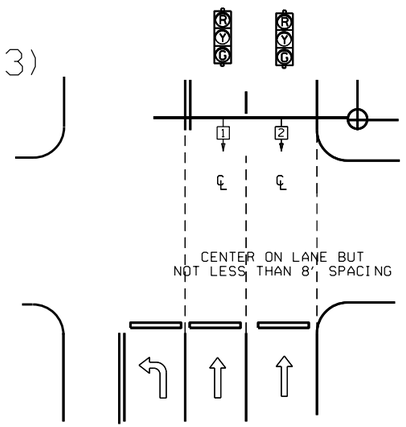
(C2)



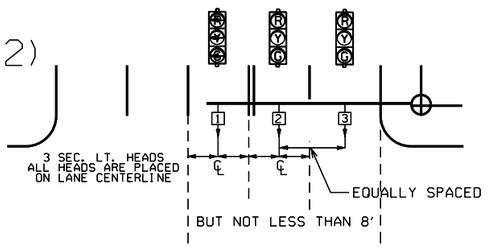
(C1)



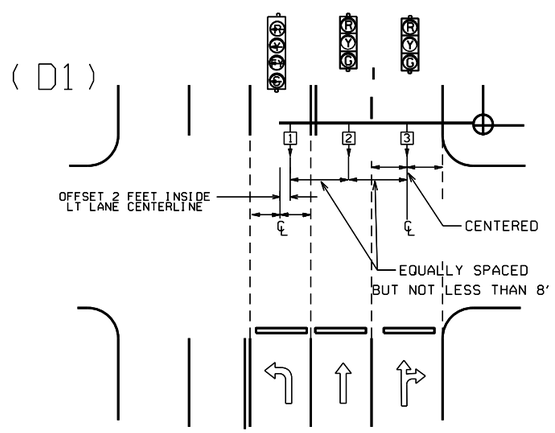
(C3)



(D2)

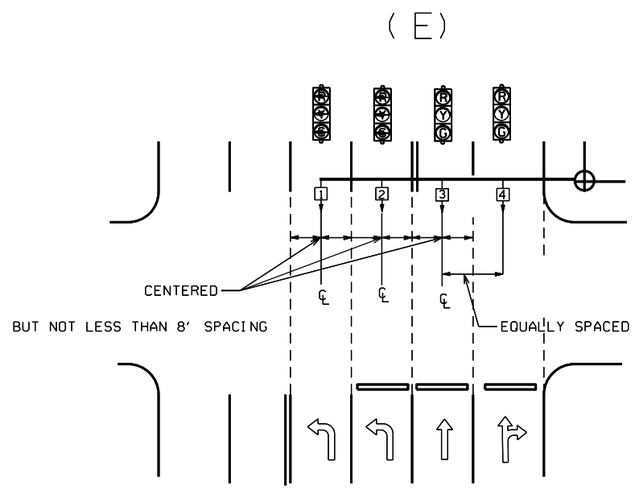


(D1)



NOTE: WHERE LEFT TURN HEAD (HEAD 1 ON D1 AND D2) IS NOT CALLED FOR ON PLANS, MAST ARM LENGTH MAY STILL BE ALLOWED FOR FUTURE INSTALLATION. HEADS FOR THROUGH MOVEMENTS SHALL STILL BE ALIGNED WITH THROUGH LANES AS SHOWN ON DETAILS.

(E)



℄ = CENTER OF LANE FROM APPROACH SIDE

GENERAL NOTES:

1. FOUR SECTION "PROTECTED/PERMISSIVE" LEFT TURN HEADS SHOULD BE PLACED A MINIMUM OF TWO (2') FEET TO THE RIGHT OF THE CENTERLINE OF THE APPROACHING LEFT TURN LANE.

2. THREE SECTION "PROTECTED" LEFT TURN HEADS SHOULD BE PLACED ON THE CENTERLINE OF THE APPROACHING LEFT TURN LANE.

3. WHEN IT IS NECESSARY TO PLACE POLES OTHER THAN AS SHOWN ON PLAN SHEET(S) RESULTING IN MAST ARM EXTENDING MORE THAN TWO FEET PAST (TO THE LEFT OF) THE CENTERLINE OF THE APPROACHING LEFT TURN LANE, MAST ARM SHALL BE CUT TO APPROPRIATE LENGTH AS DETERMINED BY THE ENGINEER, AND A NEW END CAP PROVIDED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THIS PRIOR TO INSTALLING THE MAST ARM IF ADDITIONAL COMPENSATION IS REQUIRED.

4. SIGNAL HEAD SPACING SHALL, IN NO CASE, BE LESS THAN EIGHT (8') FEET BETWEEN HEADS ON CENTER, MEASURED HORIZONTALLY PERPENDICULAR TO THE APPROACH.

5. ALL SIGNAL HEADS SHOWN ON THIS DETAIL SHEET SHALL BE LOCATED ACCORDING TO THE DIMENSIONS SHOWN IN RELATION TO THE APPROACH SIDE OF THE INTERSECTION.

6. MAXIMUM MOUNTING HEIGHT OF SIGNAL FACES LOCATED BETWEEN 40 FEET AND 53 FEET FROM STOP BAR SHALL BE IN ACCORDANCE WITH FIGURE 4D-5 OF 2009 MUTCD.

12-8-16	REVISED NOTE 6	
9-12-13	ISSUED AS STANDARD DRAWING	
3-11-10	2009 MUTCD	
12-9-99	ISSUED	
DATE	REVISION	DATE FILM

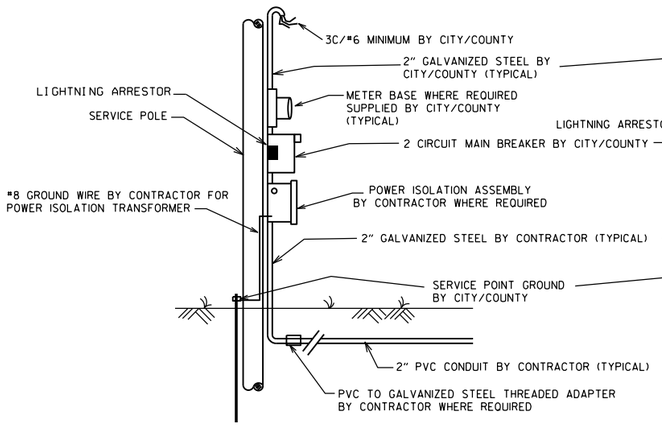
ARKANSAS STATE HIGHWAY COMMISSION

SIGNAL HEAD PLACEMENT

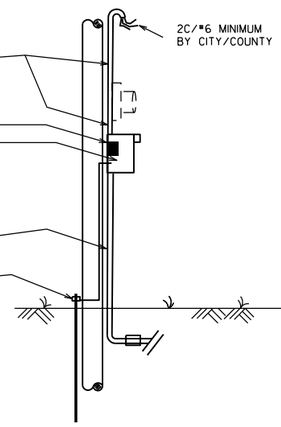
STANDARD DRAWING SD-8

MAIN BREAKER NOT NEAR CONTROLLER CABINET SECONDARY REQUIRED

WITH POWER ISOLATION ASSEMBLY



WITHOUT POWER ISOLATION ASSEMBLY



NOTES TO CONTRACTOR AND AGENCY RESPONSIBLE FOR MAINTENANCE OF THE INTERSECTION (CITY/COUNTY):

ELECTRICAL SERVICE TYPICALLY FALLS INTO TWO CATEGORIES:
MAIN BREAKER NEAR CONTROLLER CABINET; AND MAIN BREAKER NOT NEAR CONTROLLER CABINET. THE CONTRACTOR'S AND THE CITY'S/COUNTY'S RESPONSIBILITY VARIES ACCORDINGLY AS INDICATED ON THESE DETAILS.

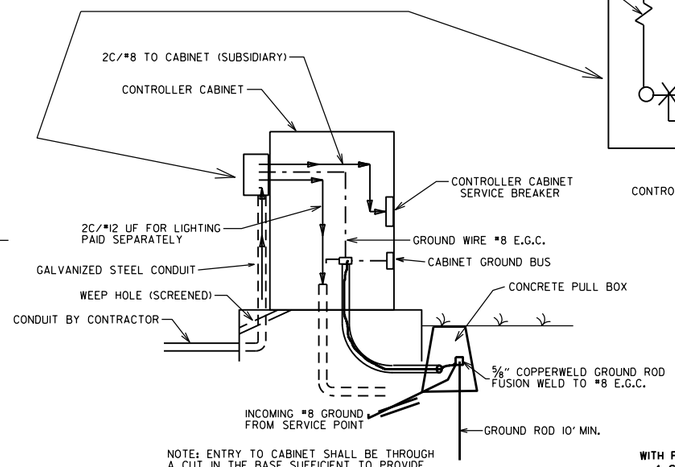
ALL SITUATIONS:
ELECTRICAL SERVICE SHALL BE PROVIDED BY THE CITY/COUNTY TO A SERVICE POLE WITH EXTERNAL RAINTIGHT BREAKER (MAIN BREAKER) AT A MUTUALLY ACCEPTABLE POINT WITHIN THE RIGHT-OF-WAY. SERVICE POINT INCLUDES GALVANIZED STEEL CONDUIT TO A POINT 18" BELOW GROUND LINE, TWO CIRCUIT MAIN BREAKER, LIGHTNING ARRESTOR, POWER ISOLATION ASSEMBLY WHERE REQUIRED, METER LOOP IF REQUIRED BY LOCAL UTILITY COMPANY, ELECTRICAL CONDUCTORS AND WEATHERHEAD. WHERE STREET LIGHTING IS INCLUDED AS PART OF SIGNAL INSTALLATION STREET LIGHTING CIRCUIT (2C/#12 A.W.G. UF RATED, TYPICAL) SHALL BE KEPT SEPARATE FROM THE CIRCUIT SERVING TRAFFIC SIGNAL. SERVICE WIRE AND WIRING FROM THE CONTROLLER TO MAIN BREAKER IS PROVIDED BY THE CONTRACTOR AS A PART OF THIS CONTRACT. WIRE AND WIRING FROM MAIN BREAKER, AND CONNECTION TO THE UTILITY IS THE RESPONSIBILITY OF THE CITY/COUNTY.

MAIN BREAKER NOT NEAR CONTROLLER CABINET:
THE MAIN BREAKER ASSEMBLY, GALVANIZED STEEL CONDUIT. WEATHERHEAD AND WIRE ABOVE MAIN BREAKER AND CONNECTION TO THE UTILITY SHALL BE PROVIDED BY CITY/COUNTY. CONTRACTOR SHALL PROVIDE AS PART OF CONTRACT SECONDARY BREAKER, CONDUIT, WIRE AND WIRING TO THE MAIN BREAKER.

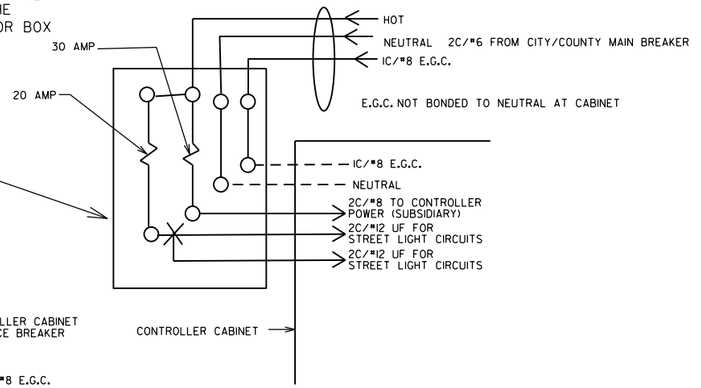
MAIN BREAKER NEAR CONTROLLER CABINET:
ALL COMPONENTS OF THE SERVICE POINT WITH THE EXCEPTION OF THE WIRE AND WIRING ABOVE THE MAIN BREAKER IS FURNISHED AND INSTALLED BY THE CONTRACTOR. WIRING FROM MAIN BREAKER INCLUDING CONNECTION TO THE UTILITY, IS THE RESPONSIBILITY OF THE CITY/COUNTY. IF METER LOOP IS REQUIRED, METER BASE AND HARDWARE IS PROVIDED BY THE CITY/COUNTY AND INSTALLED BY THE CONTRACTOR.

GROUND ROD - A 10' X 5/8" GROUND ROD SHALL BE INSTALLED IN THE CONCRETE PULL BOX FOR EACH POLE AND THE CONTROLLER. PAYMENT FOR THE GROUND ROD AND 1/2" NMC SHALL BE INCLUDED IN ITEM 701. THE CONCRETE PULL BOX AND CONDUCTOR BOX SHALL BE PAID FOR SEPARATELY.

SECONDARY BREAKER BY CONTRACTOR (SUBSIDIARY)



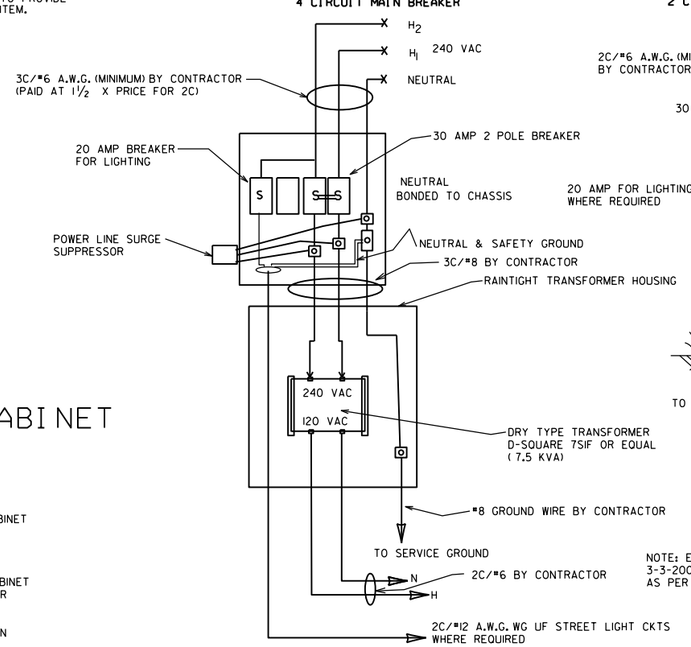
NOTE: ENTRY TO CABINET SHALL BE THROUGH A CUT IN THE BASE SUFFICIENT TO PROVIDE ADEQUATE CONDUIT RADIUS FOR ITEM.



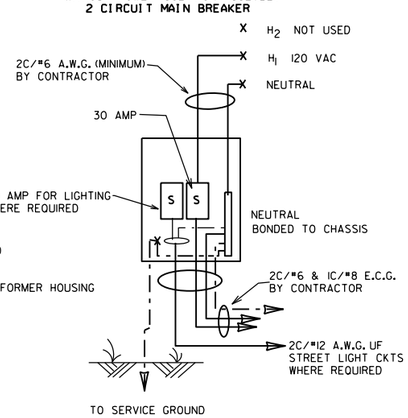
MAIN BREAKER WIRING (TYPICAL)

SERVICE GROUND IS TYPICALLY TIED TO NEUTRAL AT THE MAIN BREAKER. AS SUCH, CONTROLLER GROUND IS NOT TIED TO NEUTRAL AT SECONDARY BREAKER OR IN CONTROLLER CABINET.

WITH POWER ISOLATION ASSEMBLY
4 CIRCUIT MAIN BREAKER

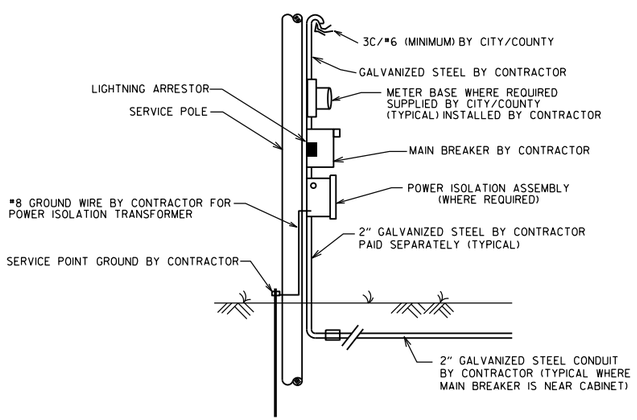


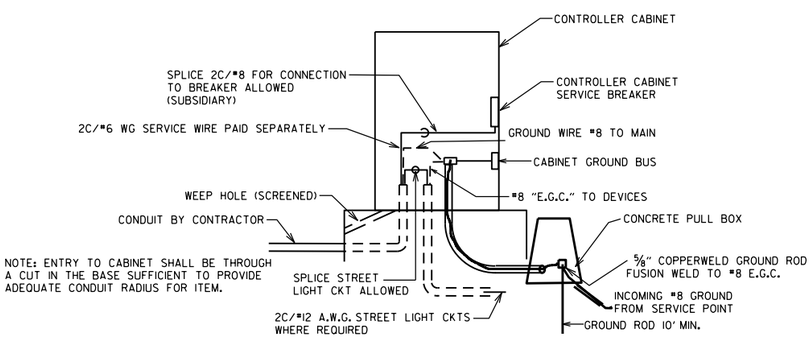
WITHOUT POWER ISOLATION ASSEMBLY
2 CIRCUIT MAIN BREAKER



NOTE: ELECTRICAL GROUND CONDUCTOR (E.C.G.) ADDED 3-3-2003, CONSISTING OF A IC/#8 A.W.G. CU GREEN WIRE AS PER NATIONAL ELECT. CODES.

MAIN BREAKER NEAR CONTROLLER CABINET SECONDARY NOT REQUIRED





NOTE: ENTRY TO CABINET SHALL BE THROUGH A CUT IN THE BASE SUFFICIENT TO PROVIDE ADEQUATE CONDUIT RADIUS FOR ITEM.

DATE	REVISION	FILMED
11-07-19	REVISED	
11-16-17	REVISED NOTES	
09-12-13	ISSUED AS STANDARD DRAWING	
04-18-13	ADDED LIGHTNING ARRESTOR	
05-21-09	REVISED GROUNDING	
07-31-08	REVISED GROUNDING	
03-03-03	ADDED EGC NOTE	
09-26-01	REVISED	
12-27-99	REVISED	
07-28-99	REVISED	
02-05-99	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

SERVICE POINT

STANDARD DRAWING SD-9

NOTES:
PEDESTRIAN AND TRAFFIC SIGNAL HEAD SIGNS:
EACH ITEM "TRAFFIC SIGNAL HEAD (4 SEC., 1-WAY)" SHALL INCLUDE A SIGN (RIO-12a) AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12" TO THE RIGHT OF THE SIGNAL HEAD UNLESS REMOVED WITHIN THE SIGNAL PLAN NOTES.

EACH ITEM "TRAFFIC SIGNAL HEAD (3 SEC., 1-WAY)" TO BE USED AS A LEFT TURN INDICATION ONLY SHALL INCLUDE A SIGN (RIO-10) AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12" TO THE RIGHT OF THE SIGNAL HEAD.

EACH PEDESTRIAN PUSHBUTTON SHALL HAVE ONE RIO-3E SIGN ATTACHED TO THE POLE ABOVE THE BUTTON. ALL SIGNS SHALL BE MANUFACTURED IN ACCORDANCE WITH SECTION 723 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

ALL SIGN BLANKS SHALL BE CONSTRUCTED OF ALUMINUM ALLOY (ASTM DESIGNATION B-209, ALLOY 5052-H38) WITH THICKNESS OF 0.100 INCH.

GENERAL NOTES:
1. MAST ARM POLES SHALL BE MOUNTED A MINIMUM OF FOUR (4') FEET BEHIND CURB OR SHOULDER.

2. OCTAGONAL POLES AND ARMS MEETING THE REQUIREMENTS OF THE PLANS SPECIFICATIONS CAN BE INSTALLED IN LIEU OF ROUND. ALL POLES AND ARMS IN A JOB MUST BE THE SAME SHAPE.

3. MINIMUM STRUCTURAL REQUIREMENTS:
DESIGN SPECIFICATIONS: AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 4TH EDITION (2001) WITH 2003 AND 2006 INTERIMS.

USE FATIGUE CATEGORY I FOR ALL STRUCTURES ON ROUTES WHERE THE SPEED LIMIT IS 65 MPH AND GREATER AT THE STRUCTURE LOCATION AND ON ROUTES WHERE THE SPEED LIMIT IS GREATER THAN 45 MPH WITH AN MAST ARM OF 60' OR LONGER.

USE FATIGUE CATEGORY II FOR ALL STRUCTURES ON ROUTES WHERE THE SPEED LIMIT IS LESS THAN 65 MPH AND GREATER THAN 45 MPH WITH MAST ARMS LESS THAN 60' AND ON ROUTES WHERE THE SPEED LIMITS OF 45 MPH AND LESS WITH AN MAST ARM OF 60' OR LONGER.

USE FATIGUE CATEGORY III FOR ALL STRUCTURES WHERE THE SPEED LIMIT IS 45 MPH AND LESS AND MAST ARMS LESS THAN 60'.

CONSTRUCTION SPECIFICATIONS:
STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION) WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

BASE WIND SPEED: 90 MPH.

STEEL MEMBERS CONSIDERED MAIN LOAD CARRYING MEMBERS WITH A THICKNESS GREATER THAN ½" SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST SPECIFIED IN SUBSECTION 807.05 OF THE STANDARD SPECIFICATIONS.

DEAD LOAD: AS A MINIMUM, DESIGN SHALL BE BASED ON THE FIXED ATTACHMENTS SHOWN BELOW OR AS MODIFIED IN THE PLANS.

ALL SIGNAL HEADS TO BE ONE WAY, TWELVE (12") INCH AND HAVE FIVE (5") INCH BACK PLATES:

SIGNAL HEADS AT THE END OF MAST ARM - ONE 4 SEC., 85 LB., 14.5 SQ. FT., ONE SIGN MOUNTED 3 FEET FROM SIGNAL HEAD (2'-0" X 2'-6"; 20 LB.) REMAINING SIGNAL HEADS SPACED AT 8 FT. (3 SEC., 56 LB., 8.3 SQ. FT.):
DESIGN TO ACCOMMODATE:
2 SIGNAL HEADS FOR MAST ARMS 10 FT. TO 16 FT.
3 SIGNAL HEADS FOR MAST ARMS 18 FT. TO 24 FT.
4 SIGNAL HEADS FOR MAST ARMS OVER 26 FT.

STREET NAME SIGN - 72" X 18", 36 LB., MOUNTED SUCH THAT OUTSIDE EDGE IS NOT GREATER THAT 12 FT. FROM POLE. DEPENDING UPON POSITION OF SIGNAL HEAD ADJACENT TO POLE, SIGN MAY OVERLAP POLE SHAFT.
ROADWAY LUMINAIRES (WHERE REQUIRED ON PLAN SHEET) - VARIABLE ARM LENGTH (MAX. WT. 75 LB., 3.3 SQ. FT.)
PEDESTRIAN SIGNALS - TWO 1 SEC., 12 INCH MOUNTED 8 FT. FROM BASE OF POLE. POST MOUNTED 3 SEC. SIGNAL HEAD AT 10 FT. ON SIDE OF POLE.

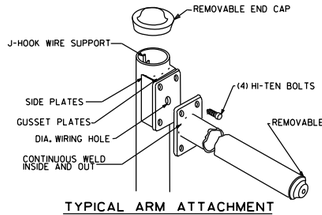
4. POLE/MAST ARM CAP - POLE AND MAST ARM CAPS SHALL BE PROVIDED, FABRICATED OF EITHER STEEL OR CAST ALUMINUM.

5. HAND HOLE - HAND HOLES SHALL BE 4 IN. X 6 IN. FOR STANDARD, AND 3 IN. X 5 IN. FOR PED POLES. MINIMUM PLACED APPROXIMATELY 12 INCHES FROM BASE, AND SHALL BE FIXED WITH A BOLT DOWN COVER. A VACCUM FORMED ABS COVER IS AN ACCEPTABLE ALTERNATE TO STEEL. POLES GREATER THAN 21FT. IN HEIGHT (FOR ROADWAY LUMINAIRE ATTACHMENT) SHALL INCLUDED A HAND HOLE WITHIN 12 INCHES OF MAST ARM(S) ATTACHMENT(S).

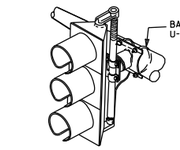
6. POLE/MAST ARM TAPER SLOPE - AVERAGE TAPER OF SIGNAL MAST ARMS AND POLE SHAFT SHALL BE 0.125 TO 0.15 INCHES PER FOOT.

MAST ARM CENTERLINE ANGLE AT ATTACHMENT POINT WITH POLE SHALL MAINTAIN NOT LESS THAN 0.5 DEGREES OR MORE THAN 4 DEGREES POSITIVE SLOPE WITH A LINE PERPENDICULAR TO THE POLE CENTERLINE. THE MAST ARM SHALL MAINTAIN A POSITIVE SLOPE AFTER IT IS PLACED UNDER LOAD.

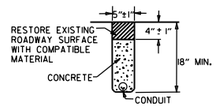
7. NUT COVERS - EACH POLE SHALL INCLUDE A BOLT DOWN NUT COVER FOR EACH ANCHOR BOLT.



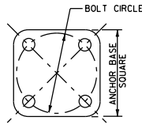
TYPICAL ARM ATTACHMENT



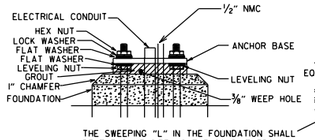
NOTE: THE SIGNAL SHALL BE CONNECTED TO THE MAST ARM BY BRACKETING AS DIRECTED BY THE ENGINEER.

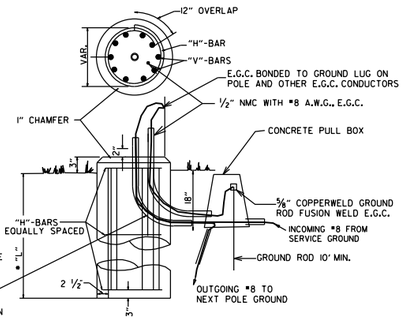


TRENCHING DETAIL
(FOR SAW CUT TRENCH IN ROADWAY)



ANCHOR BASE





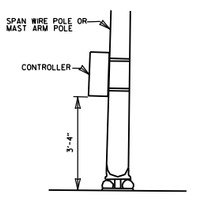
THE SWEEPING "L" IN THE FOUNDATION SHALL BE THE SAME SIZE AS THE CONDUIT FROM THE FOUNDATION TO THE PULL BOX AS SHOWN ON THE PLANS.

THE GROUND ROD SHALL BE FUSION WELDED TO A 1C/#8 A.W.G. SOLID COPPER GROUND WIRE. ATTACHMENT TO THE PRIMARY GROUND MAY BE BY AN APPROVED CLAMP. THE GROUND ROD IS TO BE LOCATED IN THE CONCRETE PULL BOX.

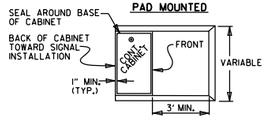
TYPICAL FOUNDATION DETAILS

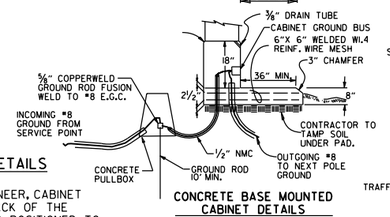
POLE FOUNDATION MINIMUM DIMENSIONS AND STEEL REINFORCING. ALL REINFORCING STEEL SHALL BE GRADE 40 MIN.

ARM LENGTH	FOUNDATION DIAMETER	DEPTH "L"*	STEEL		
			VERTICAL	HORIZONTAL	O.C.
PED	30"	7'-0"	12-#7 (6'-6")	10-#4	8.44"
2' TO 12'	30"	10'-6"	12-#7 (10'-0")	15-#4	8.42"
OVER 12' TO 20'	30"	11'-6"	12-#7 (11'-0")	16-#4	8.66"
OVER 20' TO 35'	36"	12'-6"	13-#8 (12'-0")	17-#4	8.88"
OVER 35' TO 50'	36"	13'-6"	13-#8 (13'-0")	19-#4	8.56"
OVER 50' TO 72'	42"	14'-6"	18-#8 (14'-0")	20-#4	8.74"
TWINS TO 20'	30"	16'-0"	12-#6 (15'-6")	22-#4	8.76"
TWINS OVER 20' TO 44'	36"	16'-0"	13-#8 (15'-6")	22-#4	8.76"
TWINS OVER 44' TO 50'	42"	16'-0"	18-#8 (15'-6")	22-#4	8.76"
TWINS OVER 50' TO 72'	42"	16'-6"	18-#8 (16'-0")	23-#4	8.64"



SPAN WIRE SUPPORT POLE AND MAST ARM POLE MOUNTED





CONCRETE BASE MOUNTED CABINET DETAILS

CONTROLLER CABINET MOUNTING DETAILS

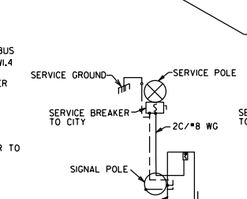
NOTE:
UNLESS OTHERWISE DIRECTED BY THE ENGINEER, CABINET ORIENTATION SHALL BE SUCH THAT THE BACK OF THE CABINET IS PARALLEL TO THE STREET AND POSITIONED TO ALLOW VISIBILITY OF THE SIGNAL DISPLAY WHILE OBSERVING THE CONTROLLER FRONT PANEL.

8. GROUND ROD - A 10' X ⅝" GROUND ROD SHALL BE INSTALLED IN THE CONCRETE PULL BOX FOR EACH POLE AND THE CONTROLLER. PAYMENT FOR THE GROUND ROD AND ½" NMC SHALL BE INCLUDED IN ITEM 714 FOR SIGNAL POLES AND ITEM 701FOR THE CONTROLLER. THE CONCRETE PULL BOX AND CONDUCTOR BOX SHALL BE PAID SEPERATELY.

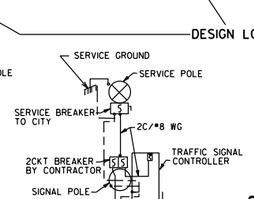
9. POLE BASE/FOUNDATION - ANCHOR BOLTS SHALL INCLUDE AS A MINIMUM, ONE LEVELING NUT, TWO FLAT WASHERS, ONE LOCK WASHER, AND ONE HEX NUT. PERIMETER OF ANCHOR BASE SHALL BE GROUTED WITH A ¼" WEEP HOLE. ALL CONCRETE SHALL BE CLASS "S" OR GREATER.

10. CONCRETE - ALL CONCRETE FOR CONTROLLER CABINET AND POLE FOUNDATIONS SHALL BE CLASS "S" OR GREATER.

11. PEDESTRIAN PHASES - PEDESTRIAN MOVEMENTS SHALL BE PUSH BUTTON ACTUATED AND CONCURRENTLY TIMED, UNLESS OTHERWISE INDICATED ON THE PLAN SHEET(S). FURNISHING AND INSTALLING PEDESTRIAN PUSH SWITCH SHALL BE CONSIDERED SUBSIDIARY TO THE ITEM 707 PEDESTRIAN SIGNAL HEAD.

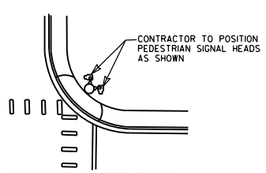


NO LUMINAIRE



WITH LUMINAIRE

SERVICE DISCONNECT
NOTE: ELECTRICAL GROUND CONDUCTOR IS BONDED TO ALL METAL ENCLOSURES



PEDESTRIAN SIGNAL HEADS

* WHEN THE GROUND ELEVATION AT THE POLE IS LOWER THAN THE ROADWAY ELEVATION, THE LENGTH OF FOUNDATION ABOVE THE GROUND MAY BE INCREASED TO PROVIDE THE REQUIRED SIGNAL HEAD CLEARANCE ABOVE THE ROADWAY. WHEN THE REQUIRED LENGTH OF FOUNDATION ABOVE THE GROUND IS 18" OR LESS, NO INCREASE IN DEPTH "L" WILL BE REQUIRED. WHEN THE REQUIRED LENGTH OF FOUNDATION ABOVE THE GROUND IS 5'-6" OR LESS, INCREASE DEPTH "L" BY 1'-0". FOR LENGTHS GREATER THAN 5'-6", DEPTH "L" SHALL BE ADJUSTED AS DIRECTED BY THE ENGINEER. LONGITUDINAL REINFORCING, AS SHOWN IN THE TABLE, SHALL BE PROVIDED FOR THE LENGTH OF THE EXTENDED SHAFT AND #4 TIES SHALL BE PROVIDED AT A SPACING NOT TO EXCEED 9" ON CENTERS. PAYMENT WILL BE IN ACCORDANCE WITH SECTION 714 TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION OF THE STANDARD SPECIFICATIONS.

** IN LIEU OF DESIGNING THE STRUCTURE TO RESIST PERIODIC GALLOPING, A VIBRATORY MITIGATION DEVICE MAY BE PROVIDED BY THE POLE MANIFACTURER. THE VIBRATORY MITIGATION DEVICE SHALL BE AN ANTI-GALLOPING PANEL CONSISTING OF A 60" X 16" X 0.125" SIGN BLANK MOUNTED NEAR THE END OF THE MAST ARM NOT TO EXCEED ONE QUARTER OF THE LENGTH OF THE MAST ARM FROM THE END OF THE MAST ARM WITH THE LONG AXIS OF THE PANEL COLLINEAR WITH THE LONG AXIS OF THE MAST ARM. THE PANEL SHOULD BE MOUNTED AT SUCH THE HEIGHT AS TO PROVIDE AT LEAST 6" CLEAR FROM THE TOP OF ANY SIGNAL ASSEMBLY OF SIGN PANEL LOCATED ON THE MAST ARM WITHIN THE LENGTH OF THE ANTI-GALLOPING PANEL.

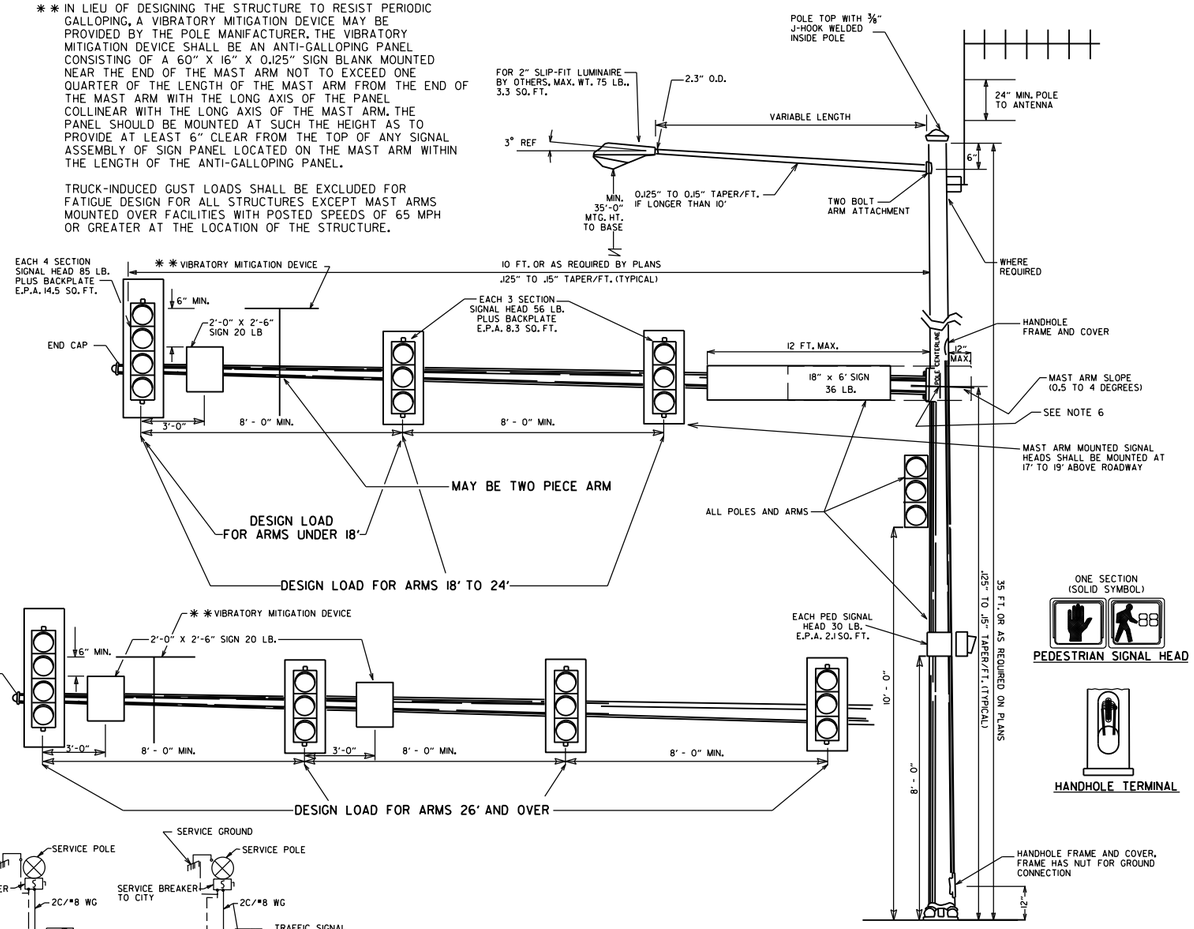
TRUCK-INDUCED GUST LOADS SHALL BE EXCLUDED FOR FATIGUE DESIGN FOR ALL STRUCTURES EXCEPT MAST ARMS MOUNTED OVER FACILITIES WITH POSTED SPEEDS OF 65 MPH OR GREATER AT THE LOCATION OF THE STRUCTURE.

SIGNAL OPERATION NOTES:

FLASHING OPERATION - PRIOR TO NORMAL OPERATION, SIGNAL SHALL BE FLASHED FOR A PERIOD OF 3 TO 5 WORK DAYS OR AS DIRECTED BY THE ENGINEER. SIGNAL SHALL BE PLACED IN OPERATION ONLY ON A REGULAR WORK DAY, EXCEPT FRIDAY.

THE CONTRACTOR MAY BE REQUIRED TO ALTER THE FLASHING DISPLAY DURING THE TEMPORARY FLASH PERIOD. AT THE TIME THE INTERSECTION IS PLACED IN PERMANENT OPERATION, THE FLASH SEQUENCE SHALL THEN BE RETURNED TO THAT INDICATED ON THE PLAN SHEETS. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED FOR THESE ALTERATIONS IN FLASH SEQUENCE.

SPECIAL NOTE: 90 MPH WIND ZONE DESIGN, SEE NOTE 3. MINIMUM STRUCTURAL REQUIREMENTS.

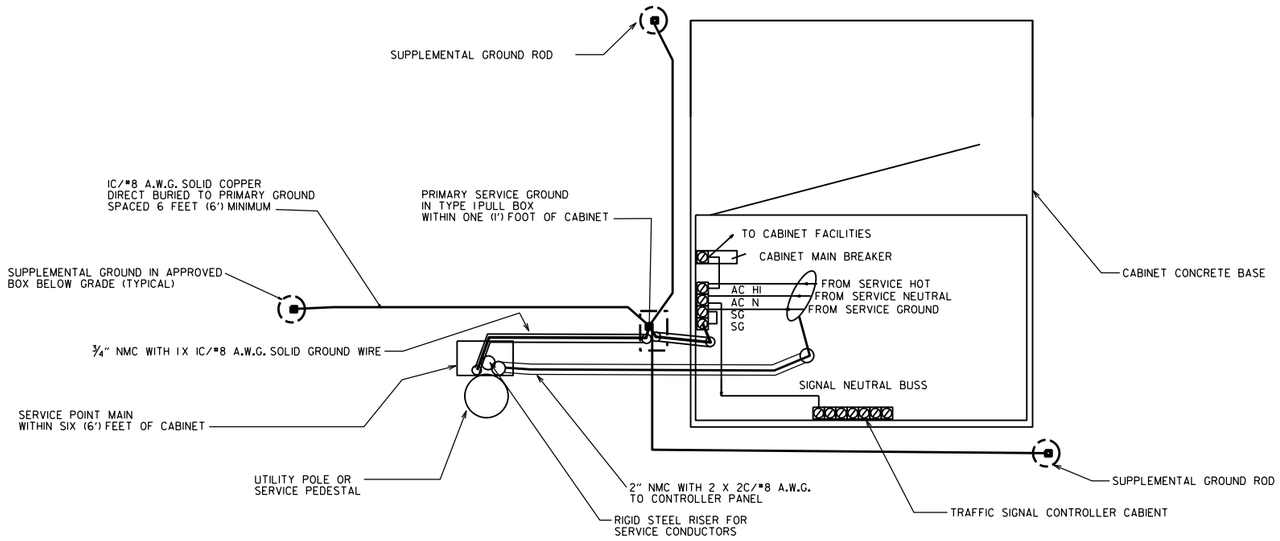


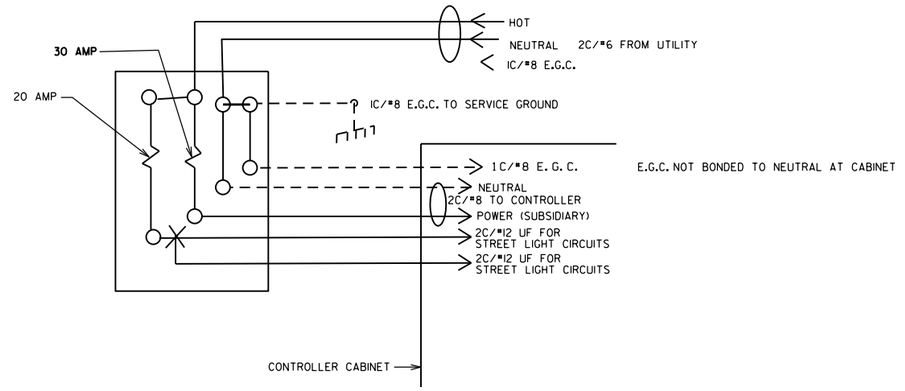
DATE	REVISION	FILMED
02-13-24	REVISED SPECIAL SIGN TO RIO-12a SIGN	
11-16-17	REVISED NOTES, ADDED PEDESTRIAN SIGNAL HEAD DETAIL, ADDED HANDHOLE TERMINAL DETAIL, ADDED TRENCHING DETAIL	
02-27-14	REVISED NOTES.	
09-12-13	ISSUED AS STANDARD DRAWING	
12-08-16	REVISED NOTES	
02-27-14	REVISED NOTES	
09-12-13	ISSUED AS STANDARD DRAWING	
07-21-11	REVISED VMD, SIGNAL HEADS	
05-21-09	REVISED GROUNDING	
07-31-08	REVISED GROUNDING	
04-25-08	ADDED VIBRATORY MITIGATION DEVICE & NOTES	
04-18-08	REVISED AASHTO NOTES	
04-17-08	REVISED TO 2001 AASHTO STANDARDS	
10-12-04	REVISED CABINET ORIENTATION	
06-23-04	REVISED	
05-11-04	REV. NOTE 3/AASHTO REQUIREMENTS	
06-11-01	REV. NOTES & POLE MAST ARM SLOPE	
04-11-01	REVISED POLE TAPERS	
04-25-00	REV. NOTES & SIGNAL HEAD PLACEMENT	
11-22-99	REVISED FOUNDATION DETAILS	
11-17-98	REVISED DETAILS AND NOTES	
11-21-95	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

STEEL POLE WITH MAST ARM

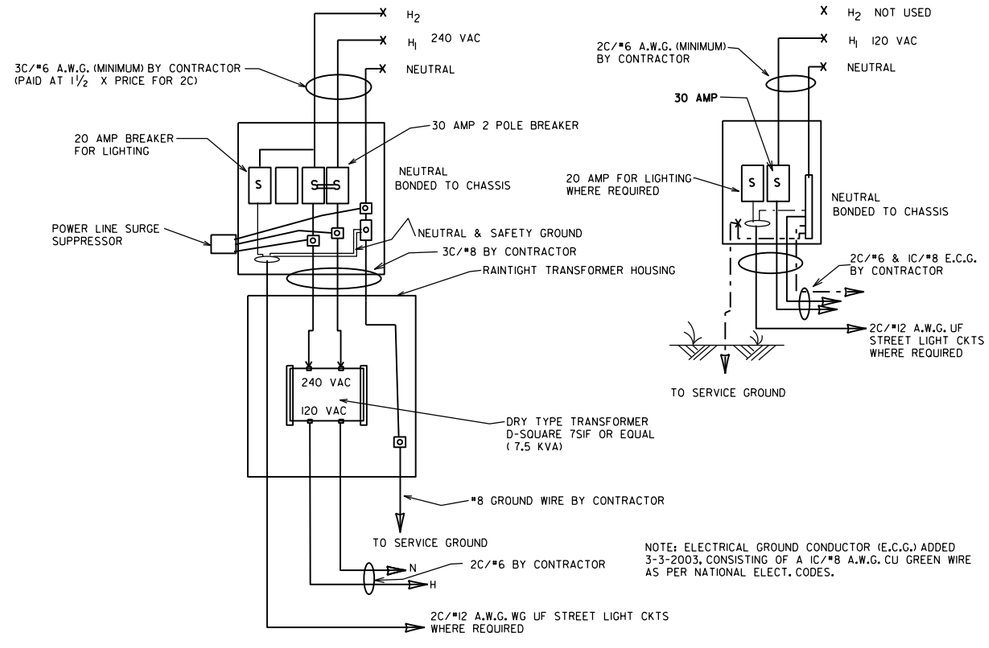
STANDARD DRAWING SD-11





MAIN BREAKER WIRING (TYPICAL)

SERVICE GROUND IS TYPICALLY TIED TO NEUTRAL AT THE MAIN BREAKER. AS SUCH, CONTROLLER GROUND IS NOT TIED TO NEUTRAL AT SECONDARY BREAKER OR IN CONTROLLER CABINET.



NOTE: ELECTRICAL GROUND CONDUCTOR (E.C.G.) ADDED 3-3-2003, CONSISTING OF A IC/#8 A.W.G. CU GREEN WIRE AS PER NATIONAL ELECT. CODES.

NOTES:

LOCATION OF SERVICE:
TO MEET THE REQUIREMENTS FOR SAFETY AND MAXIMIZE LIGHTNING PROTECTION. THE "SERVICE POINT MAIN" FROM THE UTILITY PRIMARY SERVICE POINT MUST BE WITHIN SIX (6') FEET OF THE TRAFFIC SIGNAL CONTROLLER CABINET. ELECTRICAL SERVICE SHALL BE PROVIDED BY THE CITY/COUNTY TO A SERVICE POLE OR PEDESTAL WITH EXTERNAL RAINTIGHT BREAKER (MAIN BREAKER) AT A MUTUALLY ACCEPTABLE POINT WITHIN THE RIGHT-OF-WAY. SERVICE POINT INCLUDES GALVANIZED STEEL CONDUIT TO A POLE 18" BELOW GROUND LINE, TWO CIRCUIT MAIN BREAKER, POWER ISOLATION ASSEMBLY WHERE REQUIRED, METER LOOP IF REQUIRED BY LOCAL UTILITY COMPANY, ELECTRICAL CONDUCTORS AND WEATHERHEAD. WHERE STREET LIGHTING IS INCLUDED AS PART OF SIGNAL INSTALLATION, STREET LIGHTING CIRCUIT (2C/#12 A.W.G. UF RATED, TYPICAL) SHALL BE KEPT SEPARATE FROM THE CIRCUIT SERVING TRAFFIC SIGNAL. SERVICE WIRE AND WIRING FROM THE CONTROLLER TO MAIN BREAKER IS PROVIDED BY THE CONTRACTOR AS A PART OF THIS CONTRACT. WIRE AND WIRING FROM MAIN RESPONSIBILITY OF THE CITY/COUNTY.

METER LOOP:
ALL COMPONENTS OF THE SERVICE POINT WITH THE EXCEPTION OF THE WIRE AND WIRING ABOVE THE MAIN BREAKER IS FURNISHED AND INSTALLED BY THE CONTRACTOR. WIRING FROM MAIN BREAKER INCLUDING CONNECTION TO THE UTILITY, IS THE RESPONSIBILITY OF THE CITY/COUNTY. IF METER LOOP IS REQUIRED, METER BASE AND HARDWARE IS PROVIDED BY THE CITY/COUNTY AND ISTALLED BY THE CONTRACTOR.

SUPPLEMENT GROUND RODS:
SUPPLEMENT GROUND RODS ARE FUSION WELDED TO IC/#8 A.W.G. SOLID COPPER GROUND WIRE. ATTACHMENT TO PRIMARY GROUND MAY BE AN APPROVED CLAMP. GROUND RODS ARE LOCATED IN A BOX APPROVED BY THE ENGINEER MEETING THE SAME LOADING REQUIREMENTS AS SECTION 711 CONCRETE PULL BOX OF THE STANDARD SPECIFICATIONS, WITH THE EXCEPTION TO DIMENSIONS. THE CONCRETE PULL BOX MAY BE EITHER ROUND OR SQUARE APPROXIMATELY SIX (6") INCHES MINIMUM INSIDE DIMENSIONS AND SIX (6") INCHES DEPTH. (STRONGWELL PC0608BA06 WITH PC0608CA00 LID OR EQUAL).

DATE	REVISION	FILMED
11-07-19	REVISED NOTES	
11-16-17	REVISED NOTES	
09-12-13	ISSUED AS STANDARD DRAWING	
01-17-08	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

SERVICE POINT INSTALLATION WITH SUPPLEMENT GROUNDING ARRAY

STANDARD DRAWING SD-12

SUPERELEVATION TABLE FOR ONE - WAY TRAFFIC

DEGREE OF CURVE	30 MPH			35 MPH			40 MPH			45 MPH			50 MPH			55 MPH			60 MPH			65 MPH			70 MPH			75 MPH		
	e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)	
		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE
0° 15'	NC			NC			NC			NC			NC			NC			NC			NC			NC			NC		
0° 30'	NC			NC			NC			NC			NC			RC	115		RC	115		RC	115		RC	115		0.022	121	
0° 45'	NC			NC			NC			RC	115		RC	115		0.024	127		0.026	132		0.030	144		0.032	150				
1° 00'	NC			NC			NC			0.022	121		0.026	132		0.030	144		0.034	156		0.038	167		0.042	179	350			
1° 15'	NC			NC			RC	101		0.022	114		0.028	138		0.032	150		0.038	167		0.042	179		0.046	190		0.052	208	
1° 30'	NC			RC	94		0.022	106		0.028	130		0.032	150		0.038	167		0.044	185		0.050	202	350	0.056	218		0.062	236	
1° 45'	RC	86		RC	94		0.026	116		0.030	136		0.036	161		0.044	185		0.050	202	350	0.056	218		0.064	242		0.070	259	
2° 00'	RC	86		0.024	103		0.028	121		0.034	146		0.042	179		0.048	196		0.056	218		0.064	242		0.070	259		0.080	288	400
2° 15'	RC	86		0.026	108		0.032	131		0.038	157		0.046	190		0.054	214		0.062	236		0.070	259		0.078	282	400	0.088	311	
2° 30'	0.022	90		0.028	113		0.034	136		0.042	168		0.050	202		0.058	224	350	0.068	253		0.076	276		0.086	305		0.096	334	450
2° 45'	0.024	95		0.030	118		0.038	146		0.046	179		0.054	214		0.064	242		0.072	265		0.082	294		0.092	323		0.100	346	
3° 00'	0.026	100		0.034	126		0.040	151		0.050	190	300	0.058	224		0.068	253		0.078	282		0.088	311		0.098	340	450	D MAX = 2° 45'		
3° 15'	0.028	103		0.036	131		0.044	161		0.052	194		0.062	236		0.072	265		0.082	294		0.092	323		0.100	346				
3° 30'	0.030	108		0.038	136		0.046	167	250	0.056	205		0.066	247		0.076	276		0.086	305		0.096	334		D MAX = 3° 30'					
3° 45'	0.032	112		0.040	140		0.050	176		0.058	211		0.070	259		0.080	288		0.090	317		0.098	340							
4° 00'	0.034	116		0.042	145	250	0.052	181		0.062	222		0.072	265		0.084	300		0.094	329	400	0.100	346							
4° 15'	0.036	120		0.044	150		0.054	186		0.064	227		0.076	276		0.086	305		0.096	334		D MAX = 4° 15'								
4° 30'	0.036	120		0.046	155		0.056	192		0.068	238		0.078	282		0.090	317	400	0.098	340										
4° 45'	0.038	125		0.048	160		0.060	202		0.070	244		0.082	294		0.092	323		0.100	346										
5° 00'	0.040	130		0.050	164		0.062	206		0.072	248		0.084	300		0.094	329		D MAX = 5° 15'										
5° 30'	0.044	138		0.054	173		0.066	217		0.078	265		0.088	311		0.098	340												
6° 00'	0.046	143	250	0.058	182		0.070	227		0.082	276		0.092	323		0.100	346												
6° 30'	0.050	151		0.062	192		0.074	238		0.086	287		0.096	334	350	D MAX = 6° 30'													
7° 00'	0.052	156		0.064	197		0.078	247		0.090	298		0.098	340															
7° 30'	0.054	160		0.068	206		0.080	252		0.092	302	350	0.100	346															
8° 00'	0.058	168		0.070	211		0.084	263		0.094	308		D MAX = 8° 25'																
8° 30'	0.060	173		0.072	215		0.086	268	300	0.096	313																		
9° 00'	0.062	178		0.076	224		0.088	272		0.098	319																		
9° 30'	0.064	181		0.078	229		0.092	282		0.100	324																		
10° 00'	0.066	186		0.080	234		0.094	288		D MAX = 10° 30'																			
11° 00'	0.070	194		0.084	244		0.096	293																					
12° 00'	0.074	203		0.088	253	300	0.098	298																					
13° 00'	0.076	208		0.090	258		0.100	302	350																				
14° 00'	0.080	216		0.094	266		D MAX = 13° 45'																						
15° 00'	0.082	221		0.096	271																								
16° 00'	0.086	229		0.098	276																								
17° 00'	0.088	233		0.100	281																								
18° 00'	0.090	238		D MAX = 19° 30'																									
19° 00'	0.092	242																											
20° 00'	0.094	246																											
21° 00'	0.096	251	300																										
22° 00'	0.096	251																											
23° 00'	0.098	254																											
24° 00'	0.098	254																											
25° 00'	0.100	259																											
D MAX = 28° 30'																													

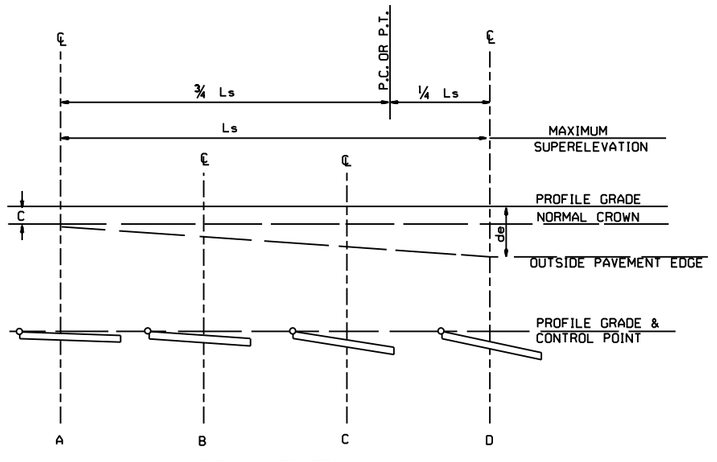
GENERAL NOTES

1. ON PAVEMENT WITH ONE-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE PROFILE GRADE POINT.
2. SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES (+) OR (-) TO BE ADDED OR SUBTRACTED FROM THE POINT OF CONTROL.
3. LENGTHS FOR Ls MAY BE ROUNDED IN MULTIPLES OF 25 FT. OR 50 FT. TO PERMIT SIMPLER CALCULATIONS.
4. MINIMUM Ls VALUES MAY BE USED FOR RAMPS; DESIRABLE VALUES SHALL APPLY TO MAIN LANES.
5. DIVIDED PAVEMENTS WIDER THAN 4 LANES SHALL HAVE ADDITIONAL TRANSITION LENGTHS AS FOLOWS:

6 LANE DIVIDED---------+20%
8 LANE DIVIDED---------+50%

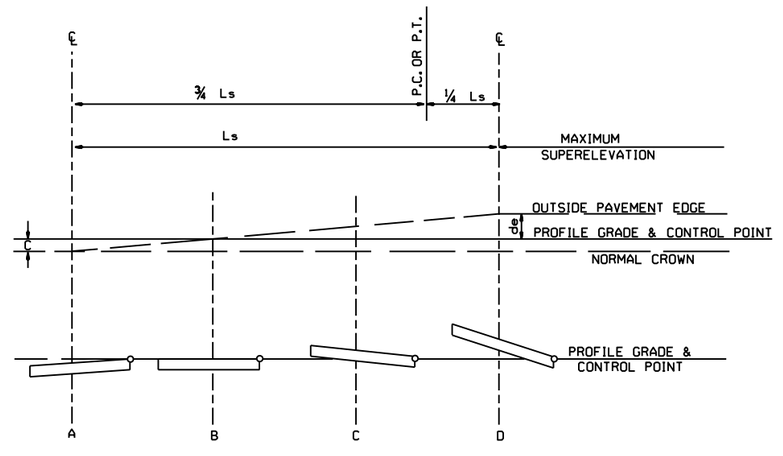
ABBREVIATIONS

NC - NORMAL CROWN
RC - REVERSE CROWN, SUPERELEVATION AT NORMAL CROWN SLOPE
S - SUPERELEVATION
L - DISTANCE FROM BEGINNING OF SUPERELEVATION TRANSITION TO ANY POINT (FT.)
d - WIDTH OF PAVEMENT
e - MAXIMUM RATE OF SUPERELEVATION (FT. PER FT.)
Ls - LENGTH OF SUPERELEVATION TRANSITION (FT.)
C - NORMAL CROWN (FT.)



ONE-WAY TRAFFIC
INSIDE LANE

SUPERELEVATION FORMULA = $S = -\frac{L(de-C)}{Ls} - C$



ONE-WAY TRAFFIC
OUTSIDE LANE

SUPERELEVATION FORMULA = $S = +\frac{L(de+C)}{Ls} - C$

DATE	REVISION	DATE FILLMED
11-07-19	REVISED SUPERELEVATION TABLE	
01-09-87	ISSUED	578-1-15-87

ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR ONE-WAY TRAFFIC

STANDARD DRAWING SE-1

SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	30 MPH			35 MPH			40 MPH			45 MPH			50 MPH			55 MPH			60 MPH			65 MPH			70 MPH			75 MPH		
	e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)	
		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE
0° 15'	NC			NC			NC			NC			NC			NC			NC			NC			NC			NC		
0° 30'	NC			NC			NC			NC			NC			NC			RC	96		RC	96		RC	96		0.022	101	
0° 45'	NC			NC			NC			NC			RC	96		RC	96		0.024	106		0.026	110		0.030	120		0.032	125	
1° 00'	NC			NC			NC			RC	90		0.022	101		0.026	110		0.030	120		0.034	130		0.038	139	300	0.042	149	300
1° 15'	NC			NC			RC	84		0.022	95		0.028	115		0.032	125		0.038	139		0.042	149		0.046	158		0.052	173	
1° 30'	NC			RC	78		0.022	88		0.028	108		0.032	125		0.038	139		0.044	154		0.050	168	300	0.056	182		0.062	197	
1° 45'	RC	72		RC	78		0.026	97		0.030	113		0.036	134		0.044	154		0.050	168	300	0.056	182		0.064	202		0.070	216	
2° 00'	RC	72		0.024	86		0.028	101		0.034	122		0.042	149		0.048	163		0.056	182		0.064	202		0.070	216		0.080	240	
2° 15'	RC	72		0.026	90		0.032	109		0.038	131		0.046	158		0.054	178	300	0.062	197		0.070	216		0.078	235	350	0.088	259	350
2° 30'	0.022	75		0.028	94		0.034	113		0.042	140		0.050	168		0.058	187		0.068	211		0.076	230		0.086	254		0.096	278	
2° 45'	0.024	79		0.030	98		0.038	122		0.046	149	200	0.054	178		0.064	202		0.072	221		0.082	245		0.092	269		0.100	288	400
3° 00'	0.026	83		0.034	105		0.040	126		0.050	158		0.058	187	250	0.068	211		0.078	235		0.088	259		0.098	283	400	D MAX = 2° 45'		
3° 15'	0.028	86		0.036	109		0.044	134		0.052	162		0.062	197		0.072	221		0.082	245		0.092	269		0.100	288				
3° 30'	0.030	90		0.038	113		0.046	139	200	0.056	171		0.066	206		0.076	230		0.086	254		0.096	278	350	D MAX = 3° 30'					
3° 45'	0.032	93		0.040	117		0.050	147		0.058	176		0.070	216		0.080	240		0.090	264		0.098	283							
4° 00'	0.034	97		0.042	121	200	0.052	151		0.062	185		0.072	221		0.084	250		0.094	274	350	0.100	288							
4° 15'	0.036	100		0.044	125		0.054	155		0.064	189		0.076	230		0.086	254	350	0.096	278		D MAX = 4° 15'								
4° 30'	0.036	100	200	0.046	129		0.056	160		0.068	198		0.078	235		0.090	264		0.098	283										
4° 45'	0.038	104		0.048	133		0.060	168		0.070	203		0.082	245		0.092	269		0.100	288										
5° 00'	0.040	108		0.050	137		0.062	172		0.072	207		0.084	250		0.094	274		D MAX = 5° 15'										
5° 30'	0.044	115		0.054	144		0.066	181		0.078	221	250	0.088	259	300	0.098	283												
6° 00'	0.046	119		0.058	152		0.070	189		0.082	230		0.092	269		0.100	288												
6° 30'	0.050	126		0.062	160		0.074	198	250	0.086	239		0.096	278		D MAX = 6° 30'														
7° 00'	0.052	130		0.064	164		0.078	206		0.090	248		0.098	283																
7° 30'	0.054	133		0.068	172		0.080	210		0.092	252	300	0.100	288																
8° 00'	0.058	140		0.070	176		0.084	219		0.094	257		D MAX = 8° 25'																	
8° 30'	0.060	144		0.072	179		0.086	223	250	0.096	261																			
9° 00'	0.062	148		0.076	187		0.088	227		0.098	266																			
9° 30'	0.064	151		0.078	191		0.092	235		0.100	270																			
10° 00'	0.066	155		0.080	195		0.094	240		D MAX = 10° 30'																				
11° 00'	0.070	162		0.084	203		0.096	244																						
12° 00'	0.074	169		0.088	211	250	0.098	248																						
13° 00'	0.076	173		0.090	215		0.100	252	300																					
14° 00'	0.080	180		0.094	222		D MAX = 13° 45'																							
15° 00'	0.082	184		0.096	226																									
16° 00'	0.086	191		0.098	230																									
17° 00'	0.088	194		0.100	234																									
18° 00'	0.090	198	250	D MAX = 19° 30'																										
19° 00'	0.092	202																												
20° 00'	0.094	205																												
21° 00'	0.096	209																												
22° 00'	0.096	209																												
23° 00'	0.098	212																												
24° 00'	0.098	212																												
25° 00'	0.100	216																												

D MAX = 28° 30'

GENERAL NOTES

1. ON PAVEMENT WITH TWO-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE INSIDE PAVEMENT EDGE UNLESS OTHERWISE NOTED ON THE PLANS
2. SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES (+) OR (-) TO BE ADDED TO OR SUBTRACTED FROM THE POINT OF CONTROL.
3. LENGTHS FOR L MAY BE ROUNDED IN MULTIPLES OF 25 FT. OR 50 FT. TO PERMIT SIMPLER CALCULATIONS.
4. PAVEMENTS WIDER THAN 2 LANES SHALL HAVE ADDITIONAL TRANSITION LENGTHS AS FOLLOWS:

3 LANE UNDIVIDED - - - - - +20%
4 LANE UNDIVIDED - - - - - +50%
5 LANE UNDIVIDED - - - - - +80%
6 LANE UNDIVIDED - - - - - +100%

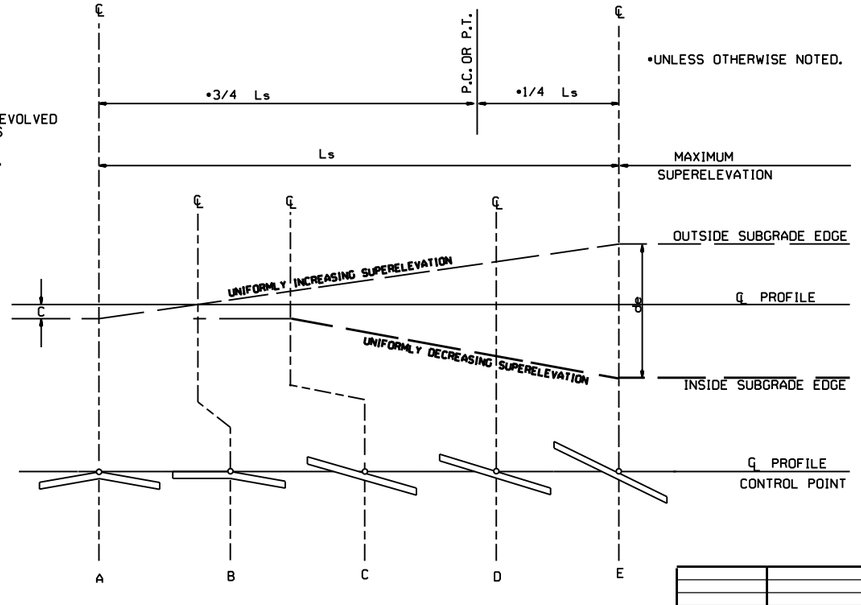
NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

RATE OF SUPERELEVATION SHALL BE COMPUTED ON STRAIGHT LINE METHOD USING APPLICABLE Ls.

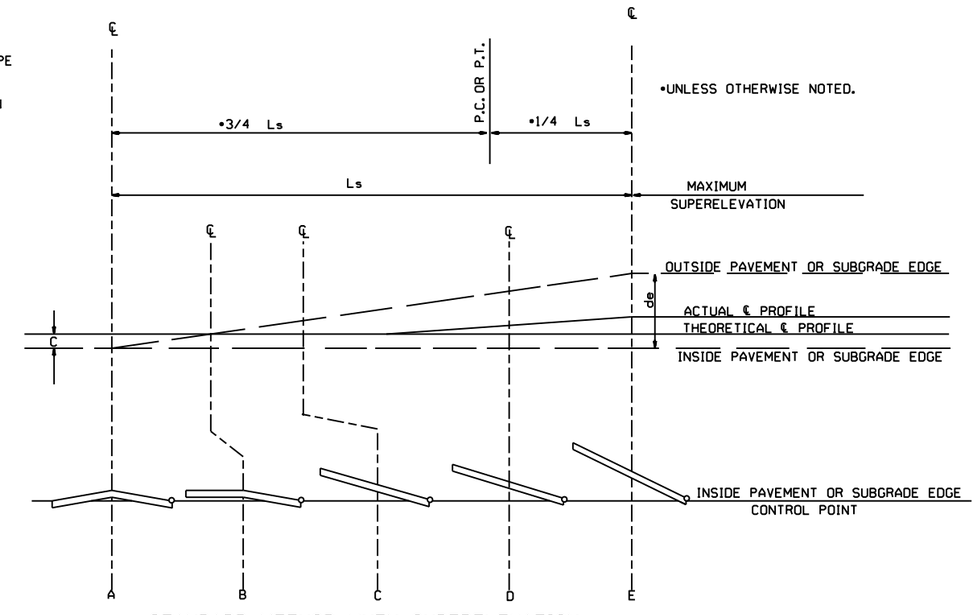
SUPERELEVATION FORMULA = $\frac{Lde}{Ls}$

ABBREVIATIONS

NC - NORMAL CROWN
RC - REVERSE CROWN, SUPERELEVATION AT NORMAL CROWN SLOPE
e - RATE OF SUPERELEVATION (FT. PER FT.)
Ls - LENGTH OF SUPERELEVATION TRANSITION (FT.)
L - DISTANCE FROM BEGINNING OF SUPERELEVATION TRANSITION TO ANY POINT (FT.)
d - WIDTH OF PAVEMENT (FT.) OR WIDTH OF SUBGRADE (FT.)
C - NORMAL CROWN (FT.)



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND INNER SUBGRADE POINT OR INNER PAVEMENT EDGE

NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

DATE	REVISION	DATE FILMED
11-07-19	REVISED SUPERELEVATION TABLE	
10-18-96	ADDED FORMULA	
01-09-87	ISSUED	534-1-9-87

ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

STANDARD DRAWING SE-2

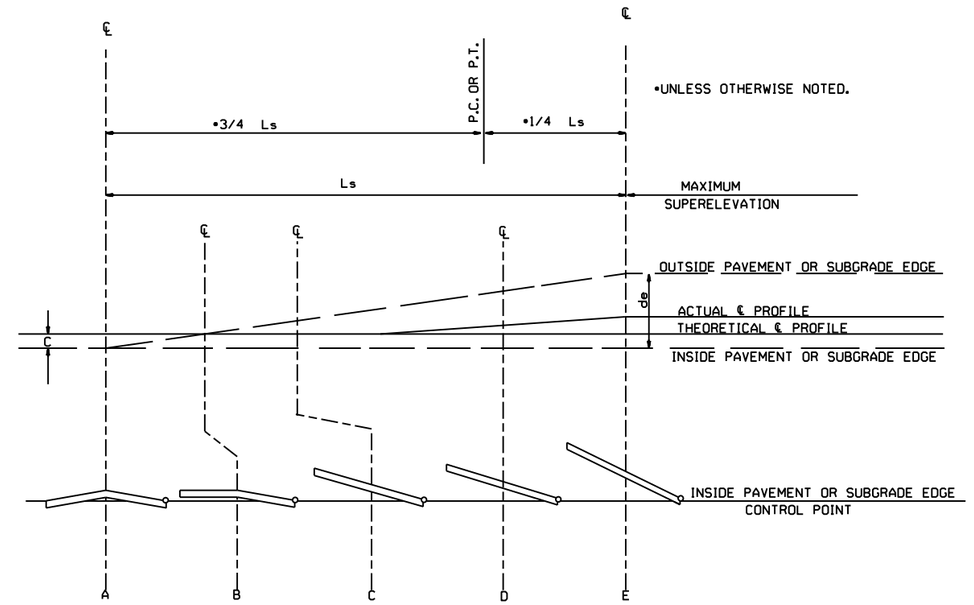
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC (4% MAXIMUM)

DEGREE OF CURVE	30 MPH e	30 MPH Ls (FT) MINIMUM	30 MPH Ls (FT) DESIRABLE	DEGREE OF CURVE	35 MPH e	35 MPH Ls (FT) MINIMUM	35 MPH Ls (FT) DESIRABLE	DEGREE OF CURVE	40 MPH e	40 MPH Ls (FT) MINIMUM	40 MPH Ls (FT) DESIRABLE	DEGREE OF CURVE	45 MPH e	45 MPH Ls (FT) MINIMUM	45 MPH Ls (FT) DESIRABLE
0° 15'	NC			0° 15'	NC			0° 15'	NC			0° 15'	NC		
0° 30'				0° 30'				0° 30'				0° 30'			
0° 45'				0° 45'				0° 45'				0° 45'			
1° 00'				1° 00'				1° 00'				1° 00'	RC	90	125
1° 15'				1° 15'				1° 15'				1° 15'			
1° 30'				1° 30'				1° 30'	RC	84	100	1° 30'	0.022	95	
1° 45'				1° 45'				1° 45'				1° 45'	0.024	99	
2° 00'				2° 00'	RC	78	100	2° 00'	0.022	88		2° 00'	0.026	104	
2° 15'				2° 15'				2° 15'	0.024	92		2° 15'			
2° 30'	RC	72		2° 30'	0.022	82		2° 30'	0.026	97		2° 30'	0.028	108	
2° 45'				2° 45'				2° 45'				2° 45'	0.030	113	
3° 00'				3° 00'	0.024	86		3° 00'				3° 00'			
3° 15'	0.022	75		3° 15'				3° 15'	0.028	101	125	3° 15'	0.032	117	
3° 30'				3° 30'				3° 30'				3° 30'			
3° 45'				3° 45'	0.026	90		3° 45'				3° 45'			
4° 00'	0.024	79	100	4° 00'				4° 00'	0.030	105		4° 00'	0.034	122	150
4° 15'				4° 15'				4° 15'				4° 15'			
4° 30'				4° 30'	0.028	94	125	4° 30'	0.032	109		4° 30'	0.036	126	
4° 45'				4° 45'				4° 45'				4° 45'			
5° 00'	0.026	83		5° 00'	0.030	98		5° 00'	0.034	113		5° 00'	0.038	131	
5° 30'				5° 30'				5° 30'				5° 30'			
6° 00'				6° 00'	0.032	101		6° 00'	0.036	118		6° 00'	0.040	135	
6° 30'	0.028	86		6° 30'				6° 30'			150				
7° 00'				7° 00'				7° 00'	0.038	122					
7° 30'	0.030	90		7° 30'	0.034	105		7° 30'							
8° 00'				8° 00'				8° 00'	0.040	126					
8° 30'	0.032	93		8° 30'	0.036	109									
9° 00'				9° 00'			150								
9° 30'				9° 30'											
10° 00'	0.034	97		10° 00'	0.038	113									
10° 30'				10° 30'											
11° 00'			125	11° 00'											
11° 30'				11° 30'	0.040	117									
12° 00'															
12° 30'	0.036	100													
13° 00'															
13° 30'															
14° 00'															
14° 30'	0.038	104													
15° 00'															
15° 30'															
16° 00'															
16° 30'	0.040	108	150												

D MAX = 22° 45' | D MAX = 15° 15' | D MAX = 10° 30' | D MAX = 8° 00'

ABBREVIATIONS

NC - NORMAL CROWN
RC - REVERSE CROWN, SUPERELEVATION AT NORMAL CROWN SLOPE
e - RATE OF SUPERELEVATION (FT. PER FT.)
Ls - LENGTH OF SUPERELEVATION TRANSITION (FT.)
L - DISTANCE FROM BEGINNING OF SUPERELEVATION TRANSITION TO ANY POINT (FT.)
d - WIDTH OF PAVEMENT (FT.) OR WIDTH OF SUBGRADE (FT.)
C - NORMAL CROWN (FT.)



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND INNER SUBGRADE POINT OR INNER PAVEMENT EDGE

NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

SUPERELEVATION FORMULA = $\frac{Lde}{Ls}$

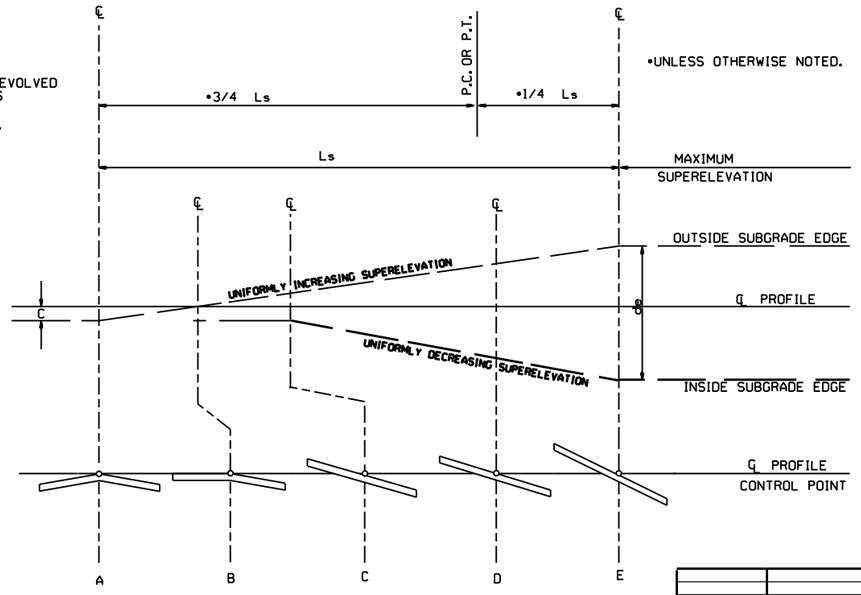
GENERAL NOTES

1. ON PAVEMENT WITH TWO-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE INSIDE PAVEMENT EDGE UNLESS OTHERWISE NOTED ON THE PLANS
2. SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES (+) OR (-) TO BE ADDED TO OR SUBTRACTED FROM THE POINT OF CONTROL.
3. LENGTHS FOR L MAY BE ROUNDED IN MULTIPLES OF 25 FT. OR 50 FT. TO PERMIT SIMPLER CALCULATIONS.
4. PAVEMENTS WIDER THAN 2 LANES SHALL HAVE ADDITIONAL TRANSITION LENGTHS AS FOLLOWS:

3 LANE UNDIVIDED - - - - - +20%
4 LANE UNDIVIDED - - - - - +50%
5 LANE UNDIVIDED - - - - - +80%
6 LANE UNDIVIDED - - - - - +100%

NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

RATE OF SUPERELEVATION SHALL BE COMPUTED ON STRAIGHT LINE METHOD USING APPLICABLE Ls.



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

11-07-19	ISSUED	
DATE	REVISION	DATE FILMED

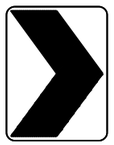
ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC (4% MAXIMUM)

STANDARD DRAWING SE-3

R1-1
30"X30"

W1-3
30"X30"
(LT. OR RT.)



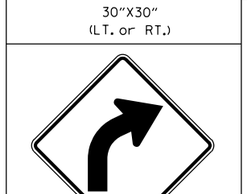
W1-8
18"X24"

W2-5
30"X30"

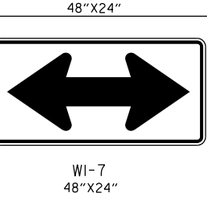
W3-1
36"X36"

W5-1
36"X36"

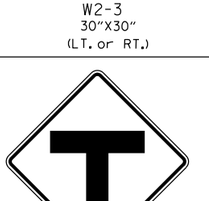
M6-3
21"X15"



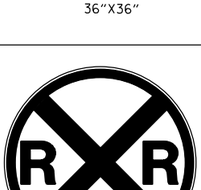
R1-2
36"X36"X36"



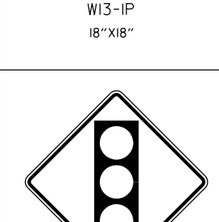
W1-4
30"X30"
(LT. or RT.)



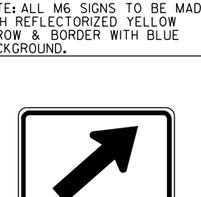
W2-1
30"X30"



S1-1
36"X36"

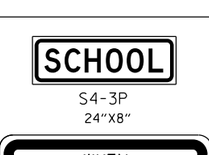


W3-2
36"X36"

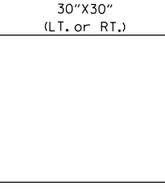


County
Route Marker
M1-6
24"X24"

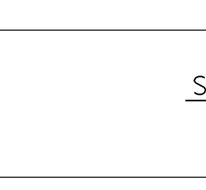
NOTE: REFLECTORIZED YELLOW LEGEND (COUNTY NAME, ROUTE LETTER & NUMBER) & BORDER ON A BLUE BACKGROUND.



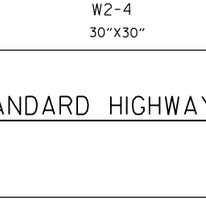
M6-4
21"X15"



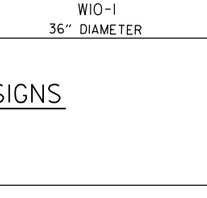
R2-1
24"X30"



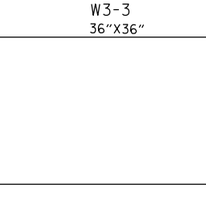
W1-5
30"X30"
(LT. or RT.)



W2-2
30"X30"

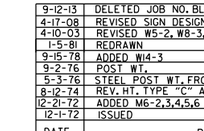


W5-2
36"X36"



W8-3
36"X36"

R1-3P
18"X6"



M6-5
21"X15"

W1-1
30"X30"
(LT. or RT.)

W1-6
48"X24"

W1-7
48"X24"

W2-3
30"X30"
(LT. or RT.)

W5-3
36"X36"

W13-1P
18"X18"

M6-1
21"X15"

NOTE: ALL M6 SIGNS TO BE MADE WITH REFLECTORIZED YELLOW ARROW & BORDER WITH BLUE BACKGROUND.

M6-6
21"X15"

W1-2
30"X30"
(LT. or RT.)

W2-4
30"X30"

W10-1
36" DIAMETER

W3-3
36"X36"

M6-2
21"X15"

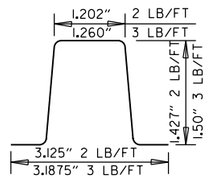
S4-3P
24"X8"

S4-2P
24"X10"

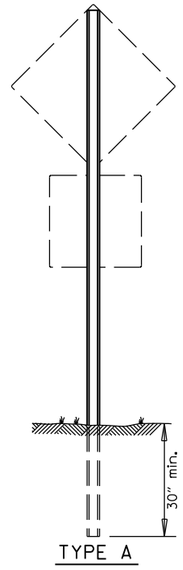
OM-3
12"X36"
(LT. or RT.)

MINIMUM DIMENSIONS SHOWN

SUPPORT SECTION



(U-CHANNEL)
STANDARD SUPPORT
ASSEMBLIES



TYPE A

NOTE: LENGTH OF SIGN POSTS SHALL BE DETERMINED SO AS TO PROVIDE FOR MINIMUM VERTICAL CLEARANCES AS CALLED FOR IN THE SPECIFICATIONS PLUS A MINIMUM VERTICAL PENETRATION OF 30" IN THE SOIL.

TYPE B

TYPE C

MINIMUM WEIGHT

TYPE A & B = 3 LBS./FT.
TYPE C = 2 LBS./FT.

STANDARD HIGHWAY SIGNS

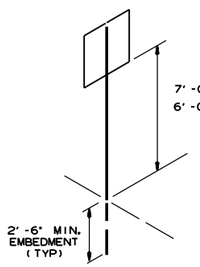
DATE	REVISION	DATE FILMED
9-12-13	DELETED JOB NO. BLOCK; REVISED RI-3 TO RI-3P	
4-17-08	REVISED SIGN DESIGNATION - W3-1 & W3-2	
4-10-03	REVISED W5-2, W8-3, OM-3; ADDED WI-8	
1-5-81	REDRAWN	960-1-15-81
9-15-78	ADDED W14-3	877-9-15-78
9-2-76	POST WT.	623-9-3-76
5-3-76	STEEL POST WT. FROM 2#-3#; ADDED S4-2 & S4-3	504-5-3-76
8-12-74	REV. HT. TYPE "C" ASSEMBLY	500-8-21-74
12-21-72	ADDED M6-2,3,4,5,6	500-12-21-72
12-1-72	ISSUED	562-12-1-72

SUPPORT ASSEMBLIES

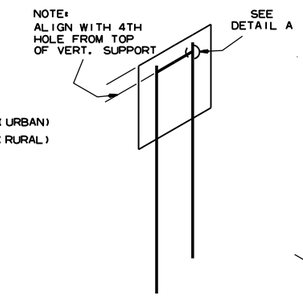
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD HIGHWAY SIGNS AND SUPPORT ASSEMBLIES

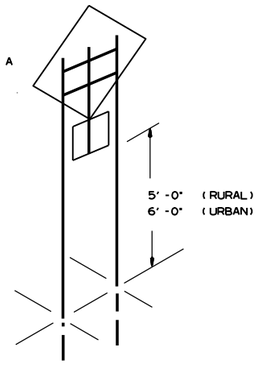
STANDARD DRAWING SHS-1



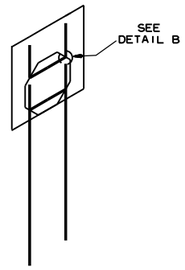
U-1



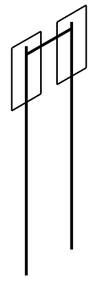
U-2



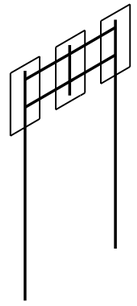
U-2 (A)



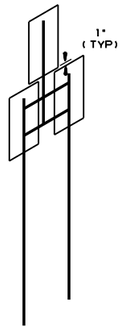
U-2 (B)



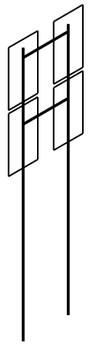
U-2 (1)



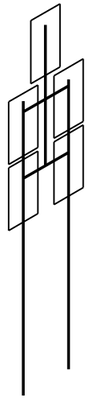
U-2 (2)



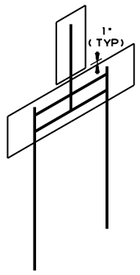
U-2 (3)



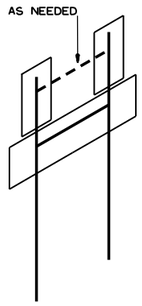
U-2 (4)



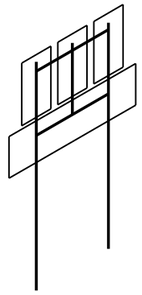
U-2 (5)



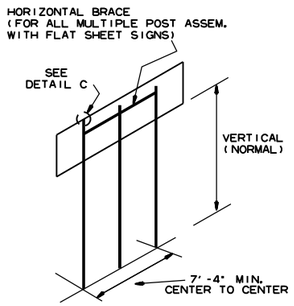
U-2 (6)



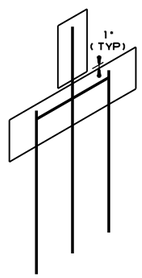
U-2 (7)



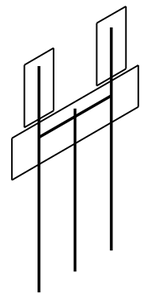
U-2 (8)



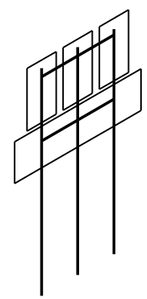
U-3



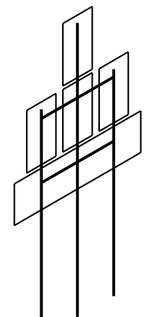
U-3 (1)



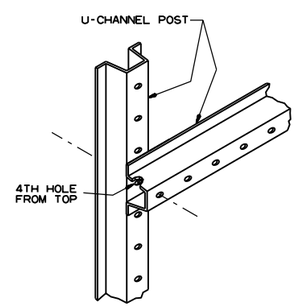
U-3 (2)



U-3 (3)

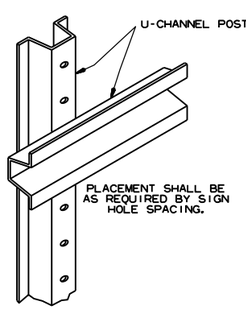


U-3 (4)



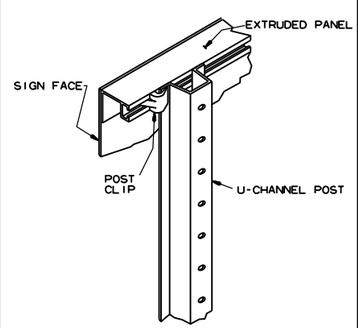
DETAIL A

SHOWING HORIZONTAL BRACE



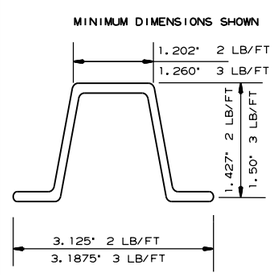
DETAIL B

SHOWING BACK-TO-BACK INSTALLATION



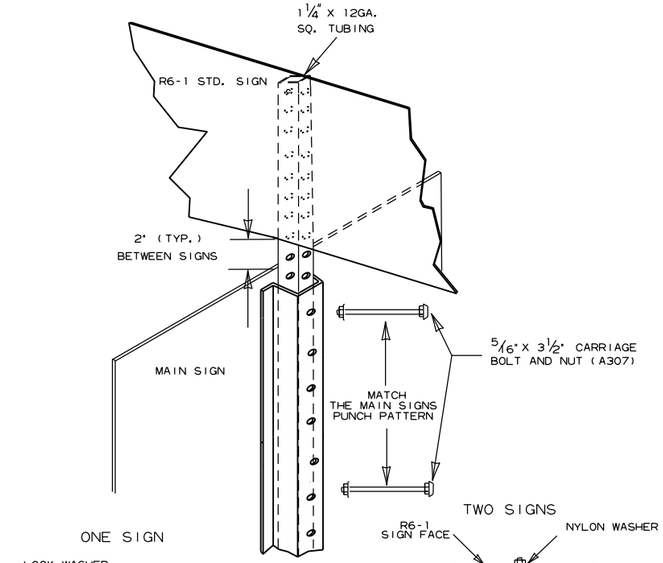
DETAIL C

SHOWING GUIDE SIGN MOUNTING WITH EXTRUDED PANELS



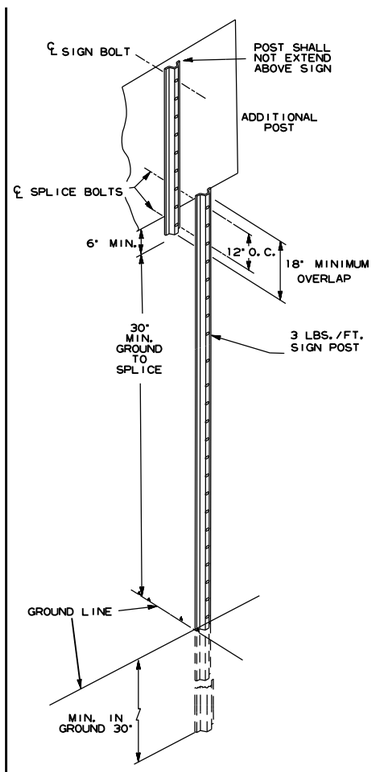
DETAIL C

U-CHANNEL POST



DETAIL E

R6-1 EXTENSION FOR U-CHANNEL POST



DETAIL F

DETAIL OF SPLICES

NOTES:

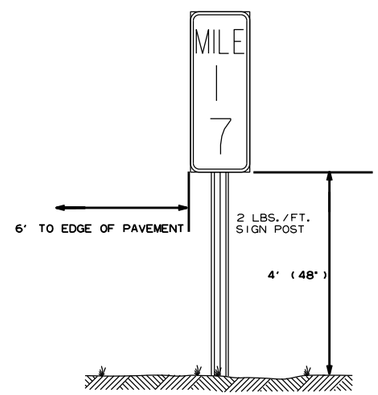
SIGNS AT LEAST 8' IN LENGTH MAY BE INSTALLED ON THREE 3 LB. POST. IN NO CASE SHALL THERE BE MORE THAN TWO 3 LB. POSTS WITHIN A 7' PATH.

SPLICES NECESSARY TO ATTAIN PROPER MOUNTING HEIGHT SHALL BE AS SHOWN IN DETAIL (F).

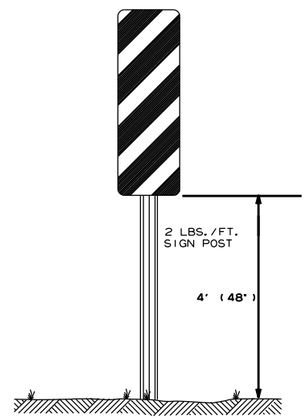
NORMAL INSTALLATIONS WILL REQUIRE 5/16" DIA. CARRIAGE BOLTS TO MOUNT SIGNS TO POST AND TO ASSEMBLE THE VARIOUS POST SUPPORTS.

ALL SIGN POSTS SHALL BE PLUMB.

THE POST FOR "TYPE U" SUPPORTS SHALL BE HOT DIP GALVANIZED.



TYPICAL MILE MARKER INSTALLATION



TYPICAL OM-3 INSTALLATION AT EDGE OF OBSTRUCTION

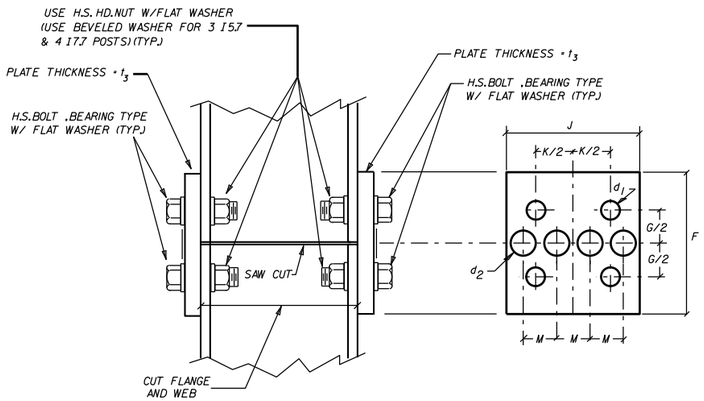
DATE	REVISION	FILMED
7-25-19	REVISED CARRIAGE BOLT WITH MATERIAL REQUIREMENT	
2-27-14	REVISED NOTES.	
9-12-13	REVISED U-2(3), U-2(6), U-3(1), DETAIL D; ADDED DETAILS E & F; ADDED TYPICAL MARKERS	
10-9-03	REMOVED ROUND POST & REVISED SPACING	
10-12-95	MOVED UPPER SPLICE	
6-8-95	REVISED SPLICE DETAIL	6-8-95
2-2-95	REDRAWN	2-2-95

ARKANSAS STATE HIGHWAY COMMISSION

U-CHANNEL POST ASSEMBLIES

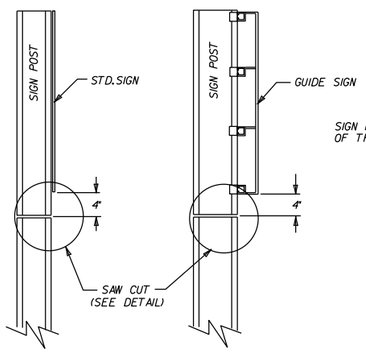
STANDARD DRAWING SHS-2

POST SIZE	BASE CONNECTION DATA											FUSE PLATE DATA									
	BOLT SIZE	BOLT TORQUE (INCH/LBS)	A	B	C	D	E	t_1	t_2	W	R	F	G		J	K	M	d_1	d_2	t_3	BOLT SIZE	WT.OF EACH FUSE PLATE LBS.
W 6X9												4¼"	2"		4"	2¼"	1"	9/16"	¾"	¼"	½" x 1½"	1.01
W 6X12	5/8" x 2¾"	450"-680"	5"	2"	1¼"	2¾"	1⅛"	¾"	½"	¼"	11/32"											
W 6X15												5"	2½"		6"	3½"	1½"	11/16"	1¼"	⅜"	⅝" x 2¼"	2.51
W 8X18												5"	2½"		5¼"	2¾"	1¼"	13/16"	1¼"	⅜"	¾" x 2¼"	2.26
W 8X21												5½"	2½"		5¼"	2¾"	1¼"	13/16"	1"	½"	¾" x 2¼"	3.35
W 10X22	¾" x 3½"	750"-1050"	6"	2¼"	1⅜"	3½"	1¼"	1"	¾"	5/16"	13/32"	6"	3"		5¾"	2¾"	1⅜"	13/16"	1⅛"	½"	¾" x 2¼"	4.03
W 10X26																						
W 12X26												6"	3"		6½"	3½"	1⅝"	13/16"	1⅝"	½"	¾" x 2¼"	4.47



NOTE: USE H.S.HEX HEAD BOLTS,HEX HEAD NUTS AND BEVEL OR FLAT WASHERS (WHERE REQ.) UNDER NUTS. ALL HOLES SHALL BE DRILLED.ALL PLATE CUTS SHALL PREFERABLY BE SAW CUTS,HOWEVER FLAME CUTTING WILL BE PERMITTED PROVIDED ALL EDGES ARE GROUND. METAL PROJECTING BEYOND THE PLANE OF THE PLATE FACE WILL NOT BE PERMITTED. STEEL FUSE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM-A36,ASTM-A441,ASTM-572 GRADE 50,OR ASTM-A588 MAY BE SUBSTITUTED FOR A36 AT THE OPTION OF THE FABRICATOR. STEEL USED SHALL HAVE AN UNLIMITED TENSILE STRENGTH NOT TO EXCEED 80 KSI.

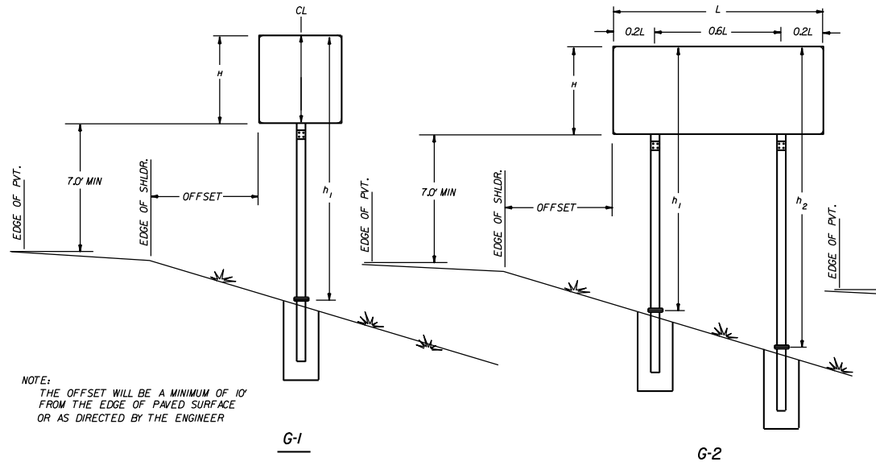
NOTE: BOLT HOLES,USED IN THE MOUNTING OF STANDARD SIGNS SHALL BE LOCATED IN THE FLANGE ADJACENT TO THE NEAR EDGE OF PAVEMENT FOR SINGLE POST ASSEMBLIES AND IN THE OUTSIDE FLANGES FOR MULTIPLE POST ASSEMBLIES.



NOTE: POST SHALL BE SAW CUT AFTER GALVANIZING AND THE CUT SURFACE TREATED. AFTER PLATE IS INSTALLED AND ALL BOLTS FULLY TIGHTENED. REPAIR OF CUT SURFACES AFTER GALVANIZING SHALL BE IN ACCORDANCE WITH ASTM A123.

STANDARD SIGNS GUIDE SIGNS

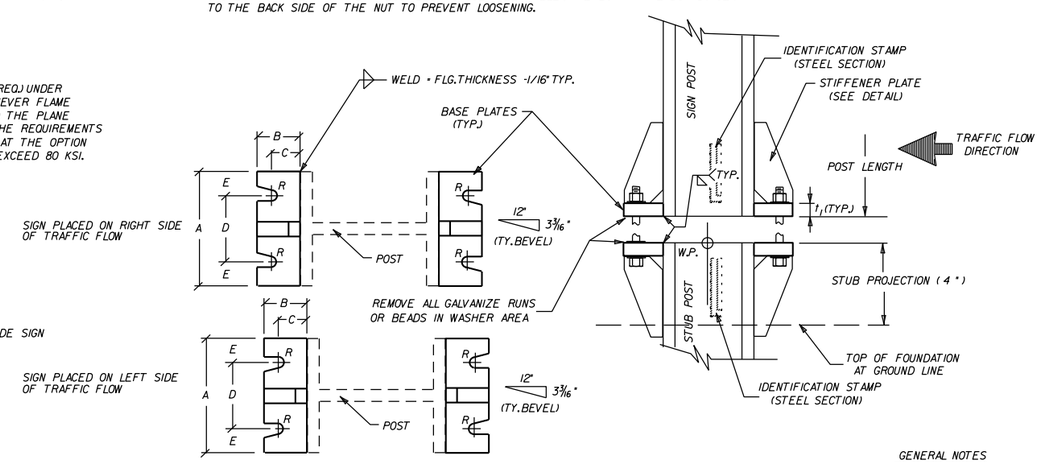
FUSE PLATE DETAILS



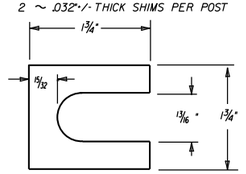
NOTE:
THE OFFSET WILL BE A MINIMUM OF 10' FROM THE EDGE OF PAVED SURFACE OR AS DIRECTED BY THE ENGINEER

G-1 G-2 G-3

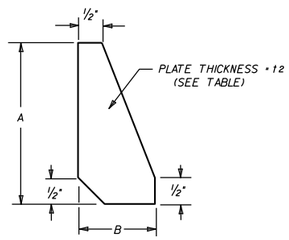
NOTE: SECTIONS SHOWN ARE FOR INSTALLATION ON THE RIGHT SHOULDER AND IN THE GORE. BOLT HOLES IN BASE PLATE ARE SLOTTED AND BEVELED AS SHOWN. USE H.S.BOLTS WITH HEX HD.,HEX NUT AND THREE FLAT WASHERS FOR EACH BOLT.SEE TABLE FOR BOLT DIA. AND TORQUE.
NOTE: ASSEMBLE SIGN POST TO STUB POST USING THE BOLTS SPEC.IN THE TABLE AND AS SHOWN IN THE ELEVATION DETAILS. THERE SHALL BE THREE FLAT WASHERS ON EACH BOLT LOCATED AS SHOWN IN THE ELEVATIONS. USE A SHIM TO PLUMB THE SIGN POST. THEN TIGHTEN THE BOLTS USING A 12" TO 15" WRENCH UNTIL THE WASHERS AND SHIMS ARE SEATED AND THE BOLT THREADS ARE CLEAR ,THEN LOOSEN EACH BOLT IN TURN AND RETIGHTEN IN A SYSTEMATIC ORDER TO THE PRESCRIBED TORQUE (SEE TABLE). THE BURR THREADS ADJACENT TO THE BACK SIDE OF THE NUT TO PREVENT LOOSENING.



FURNISH 2 ~ .012"+/- THICK AND 2 ~ .032"+/- THICK SHIMS PER POST



SHIM DETAIL



STIFFENER PLATE DETAIL

GENERAL NOTES

TIGHTEN THE HIGH STRENGTH BOLTS IN THE BASE CONNECTION ONLY TO THE TORQUE SHOWN. DO NOT OVERTIGHTEN.

BASE PLATES AND STIFFENER PLATES SHALL BE OF THE SAME MATERIAL AS THE PRIMARY SUPPORT POSTS WHICH THEY ARE WELDED.

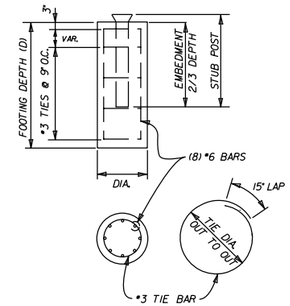
REFER TO THE PLANS FOR FOOTING DIMENSIONS.

EACH STUB POST AND SIGN POST SHALL HAVE A PERMANENT IDENTIFYING STAMP WHICH SPECIFIES THE STEEL SECTION USED. IF THE CONTRACTOR ELECTS TO SHIP THE STUB POST SEPARATE FROM THE SIGN POST A MATCH MARK SYSTEM WILL BE REQUIRED.

STEEL SCHEDULE

FOOTING DIAMETER	#3 TIE BARS		
	DIAMETER	BAR LENGTH	POUNDS
INCHES	INCHES	FEET	
18	12	4.39	1.65
24	18	5.96	2.24
30	24	7.53	2.83
36	30	9.1	3.42

FOOTING DEPTH	#6 STRAIGHT BARS		
	BAR LENGTH	NUMBER REQ'D.	POUNDS
FEET	FEET		
2.50	2.00	8	24.03
3.00	2.50	8	30.04
3.50	3.00	8	36.05
4.00	3.50	8	42.06
4.50	4.00	8	48.06
5.00	4.50	8	54.07
5.50	5.00	8	60.08
6.00	5.50	8	66.09
6.50	6.00	8	72.10
7.00	6.50	8	78.10
7.50	7.00	8	84.11
8.00	7.50	8	90.12



FOOTING QUANTITIES

FOOTING DEPTH	NUMBER TIE BARS REQ'D	18" DIAMETER		24" DIAMETER		30" DIAMETER		36" DIAMETER	
		CLASS S CONCRETE	REINF STEEL	CLASS S CONCRETE	REINF STEEL	CLASS S CONCRETE	REINF STEEL	CLASS S CONCRETE	REINF STEEL
FEET		CU. YD.	(GRADE 60)	CU. YD.	(GRADE 60)	CU. YD.	(GRADE 60)	CU. YD.	(GRADE 60)
2.50	4	0.16	31						
3.00	4	0.20	37						
3.50	5	0.23	44						
4.00	6	0.26	52	0.47	56				
4.50	6	0.29	58	0.52	62				
5.00	7	0.33	66	0.58	70	0.91	74		
5.50	8			0.64	78	1.00	83		
6.00	8			0.70	84	1.09	89	1.57	93
6.50	9					1.18	98	1.70	103
7.00	10					1.27	106	1.83	112
7.50	10							1.96	118
8.00	11							2.09	128

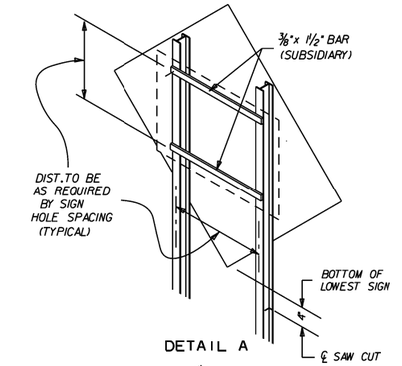
SIGN POST AND STUB POST

DATE	REVISION	FILMED
5-19-22	REVISED FUSE PLATE DETIALS' NOTE.	
9-12-13	ISSUED	

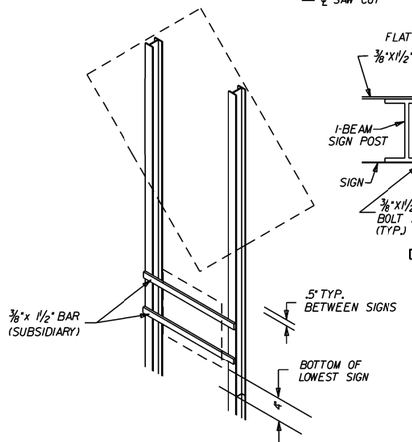
ARKANSAS STATE HIGHWAY COMMISSION

DETAIL OF BREAKAWAY SIGN SUPPORTS FOR GUIDE SIGNS

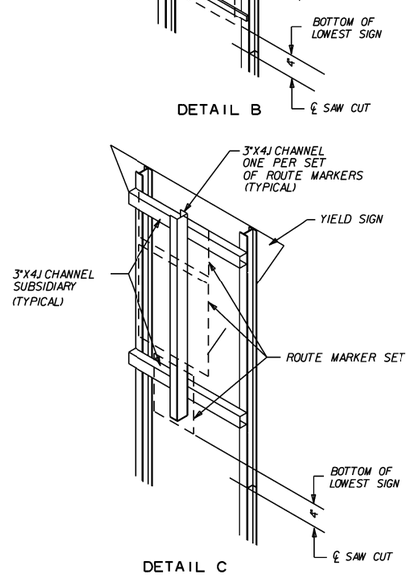
STANDARD DRAWING SHS-3



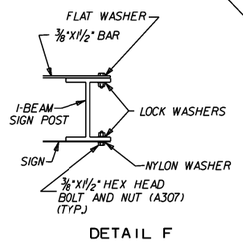
DETAIL A



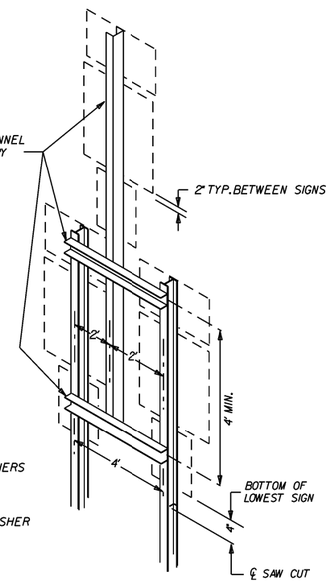
DETAIL B



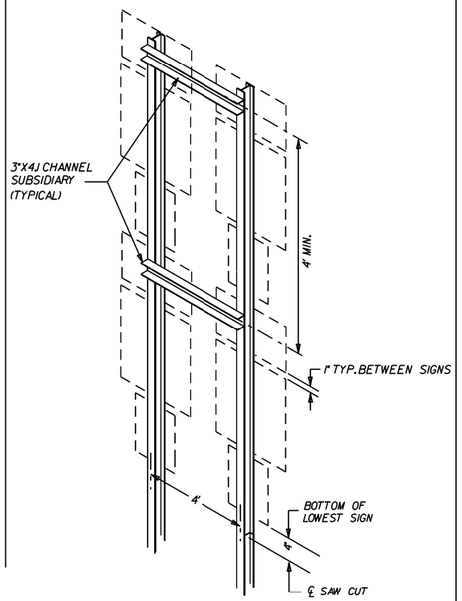
DETAIL C



DETAIL F



DETAIL D



DETAIL E

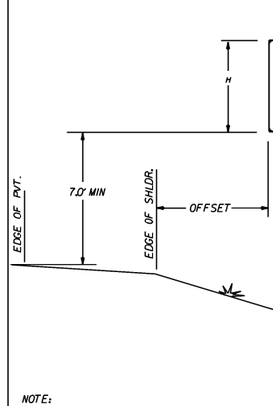
NOTE

ALL ADDITIONAL MOUNTING HARDWARE, BOLTS, NUTS, CHANNELS AND BAR STRAPS REQUIRED TO MOUNT SECONDARY SIGNS WILL BE CONSIDERED TO BE SUPPLEMENTAL TO THE MAIN SIGN SUPPORT SPECIFIED. PAYMENT WILL BE CONSIDERED SUBSIDIARY TO THE MAIN SUPPORT.

THE GALVANIZED STEEL CHANNEL AND BAR SUPPORTS MAY BE ASTM A-36.

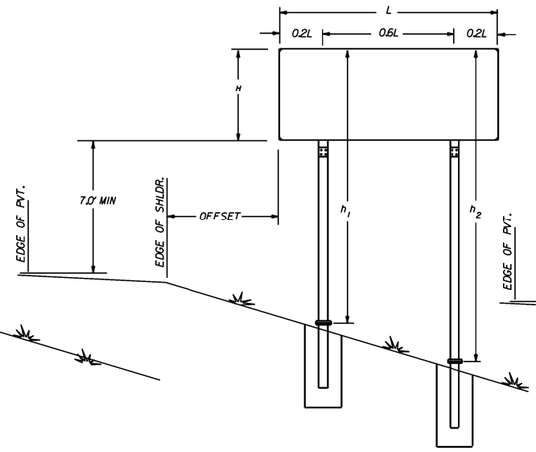
REFER TO THE P.C. RUTLEDGE FORMULA ON PAGE 58 OF THE AASHTO PUBLICATION "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS.

ALL BOLT HOLES SHALL BE 1/8" DIA. UNLESS OTHERWISE SHOWN.

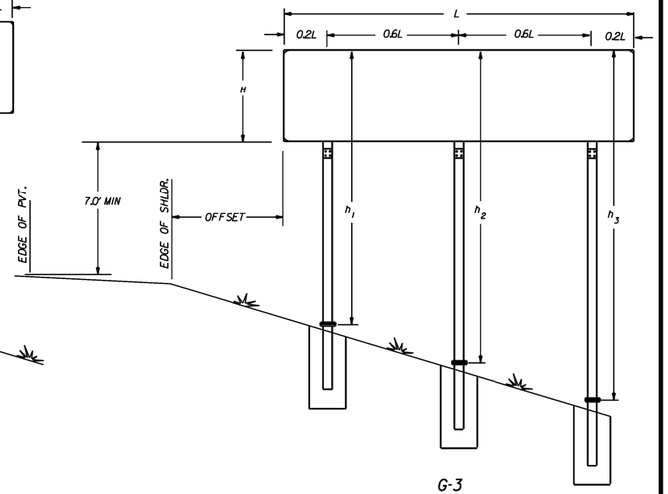


G-1

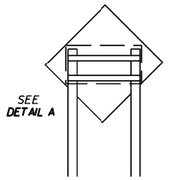
NOTE:
THE OFFSET WILL BE A MINIMUM OF 10' FROM THE EDGE OF PAVED SURFACE OR AS DIRECTED BY THE ENGINEER.



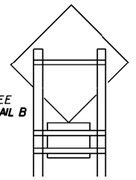
G-2



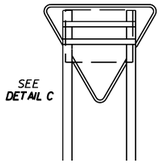
G-3



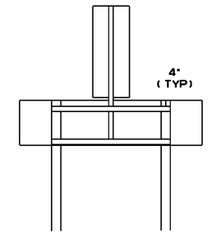
G2-1



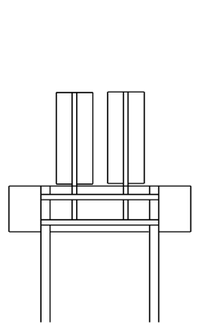
G2-2



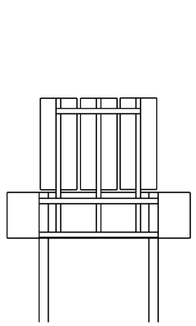
G2-3



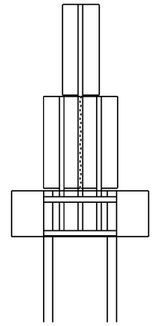
G2-4



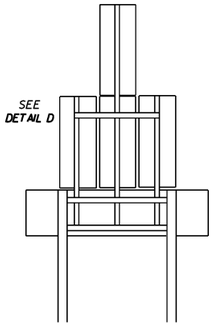
G2-5



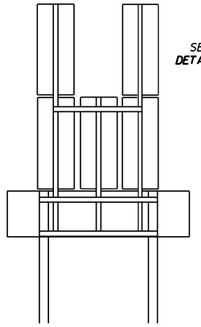
G2-6



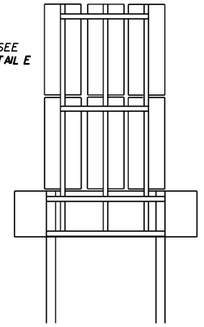
G2-7



G2-8



G2-9

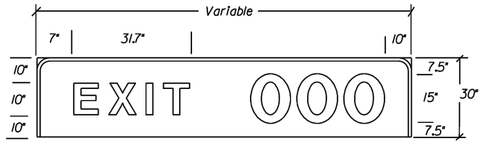


G2-10

			ARKANSAS STATE HIGHWAY COMMISSION
			DETAIL OF BREAKAWAY SIGN SUPPORTS FOR STANDARD SIGNS
9-12-13	ISSUED		STANDARD DRAWING SHS-4
DATE	REVISION	FILMED	

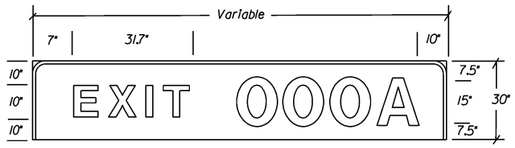
TYPICAL DETAIL

TYPE A



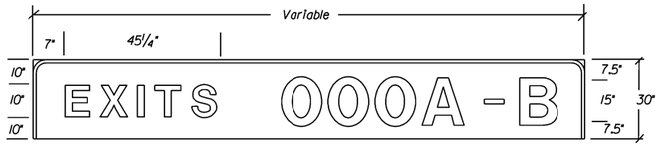
EXIT WITH 1 DIGIT 84"X30"=17.50 SF
EXIT WITH 2 DIGITS 96"X30"=20.0 SF
EXIT WITH 3 DIGITS 114"X30"=23.57 SF

TYPE B



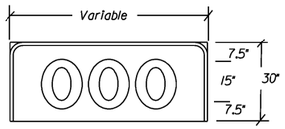
EXIT WITH 1 DIGIT PLUS "A"OR"B" 96"X30"=20.0 SF
EXIT WITH 2 DIGITS PLUS "A"OR"B" 114"X30"=23.57 SF
EXIT WITH 3 DIGITS PLUS "A"OR"B" 126"X30"=26.25 SF

TYPE C



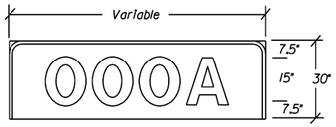
EXITS WITH 1 DIGIT PLUS "A"&"B" 132"X30"=27.50 SF
EXITS WITH 2 DIGITS PLUS "A"&"B" 150"X30"=31.25 SF
EXITS WITH 3 DIGITS PLUS "A"&"B" 168"X30"=35.00 SF

TYPE D



1 DIGIT 24"X30"=5.0 SF
2 DIGITS 42"X30"=8.75 SF
3 DIGITS 60"X30"=12.50 SF

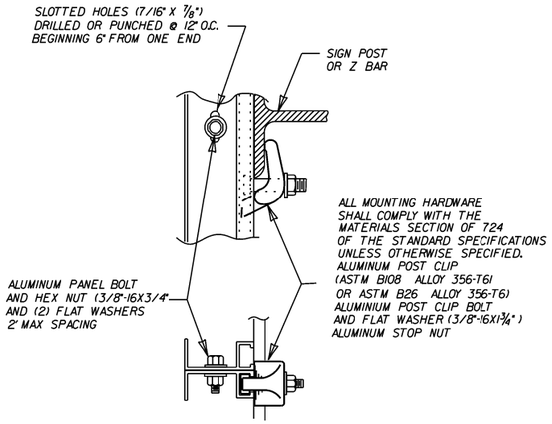
TYPE E

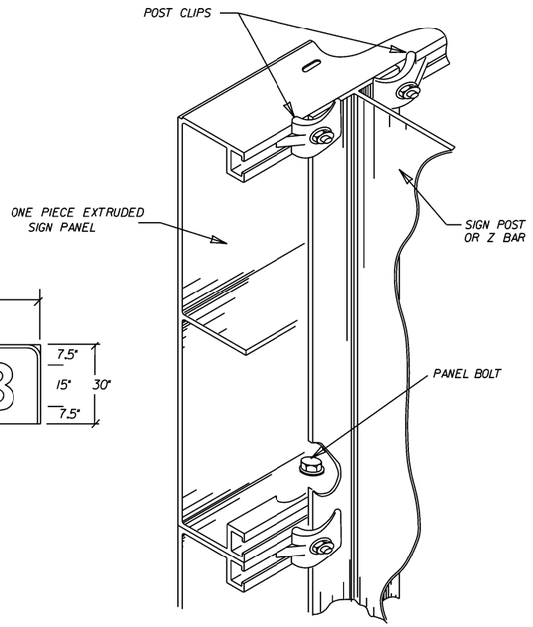


1 DIGIT PLUS "A"OR"B" 42"X30"=8.75 SF
2 DIGITS PLUS "A"OR"B" 60"X30"=12.50 SF
3 DIGITS PLUS "A"OR"B" 78"X30"=16.25 SF

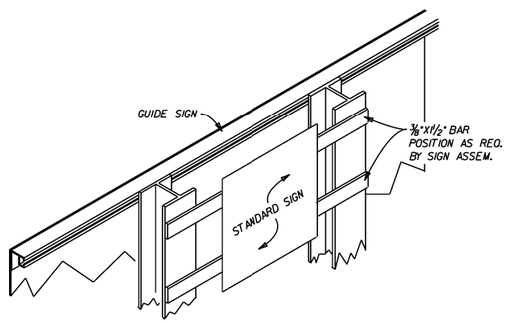
EXIT PANEL DETAILS

NOTE: EXIT NUMBER PANELS SHALL HAVE WHITE LEGENDS AND BORDERS. THE BACK GROUND COLOR WILL BE AS USE SPECIFIES. SHEETING TYPE WILL BE THE SAME AS THE GUIDE SIGN WHICH THE EXIT PANEL IS ATTACHED OR AS SPECIFIED IN THE PLANS. PAYMENT FOR ALL POST CLIPS, BOLTS, AND ANGLES SHALL BE SUBSIDIARY TO THE ITEM "EXIT NUMBER PANEL".

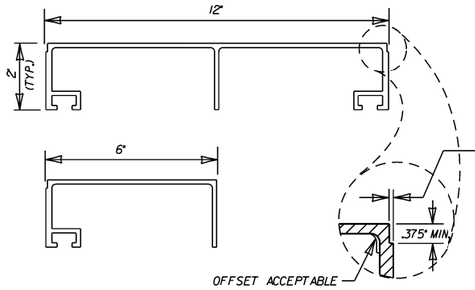




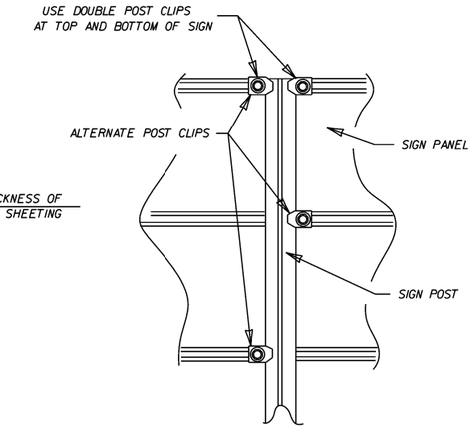
MOUNTING HARDWARE



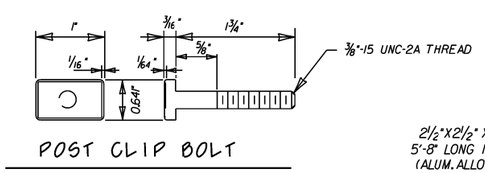
SECONDARY SIGN INSTALLATION ON BACKSIDE OF GUIDE SIGN



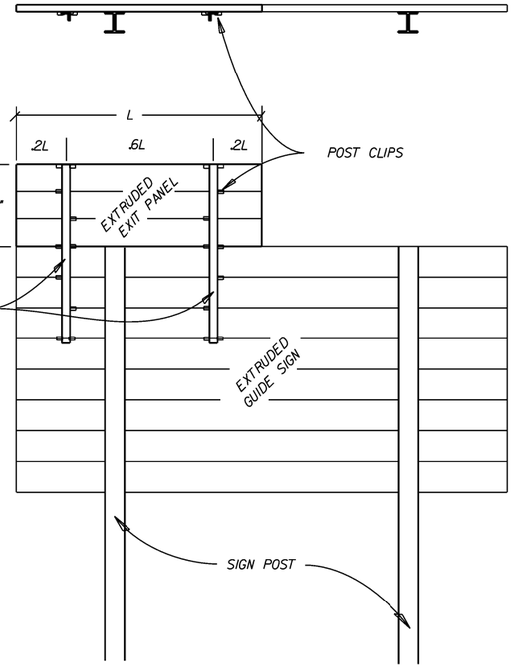
ONE PIECE EXTRUDED SIGN PANELS



POST CLIP PLACEMENT



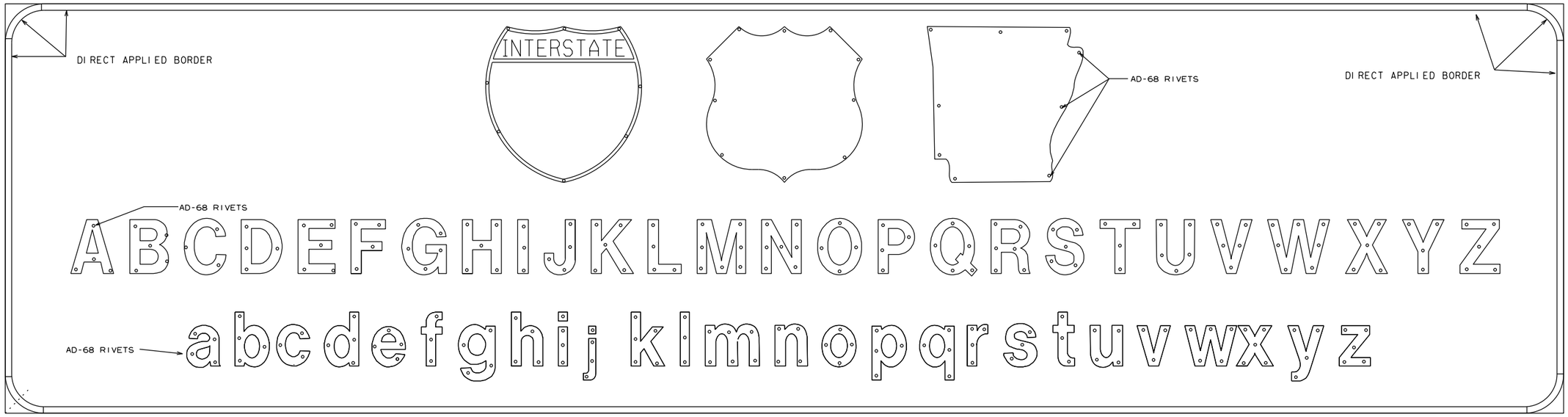
POST CLIP BOLT

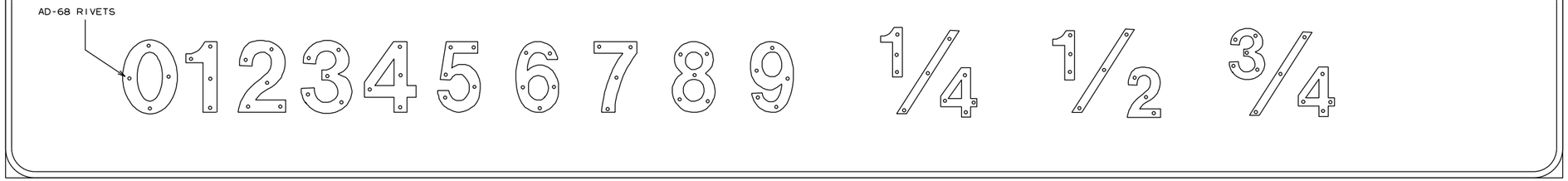


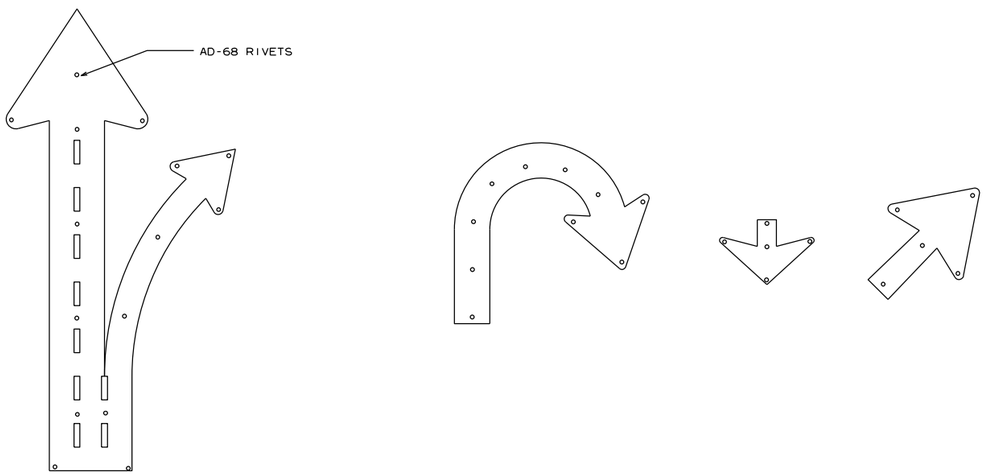
			ARKANSAS STATE HIGHWAY COMMISSION
			DETAILS OF GUIDE SIGN PANELS
9-12-13 DATE	ISSUED REVISION	FILMED	STANDARD DRAWING SHS-5

THE CONTRACTOR SHALL DRILL AND POP-RIVET LEGEND, SHIELDS, ARROWS, OR OTHER COPY AS SHOWN.

MOUNTING DETAILS FOR DEMOUNTABLE LEGEND ON GUIDE SIGNS







NOTES:

LEGEND ON GUIDE SIGNS ON THE MAIN LANES SHALL BE DEMOUNTABLE LEGEND.
LEGEND ON GUIDE SIGNS ON CROSS ROADS AND RAMPS SHALL BE DIRECT APPLIED.
THE DEMOUNTABLE AND DIRECT APPLIED LEGENDS SHALL BE TYPE IX SHEETING.

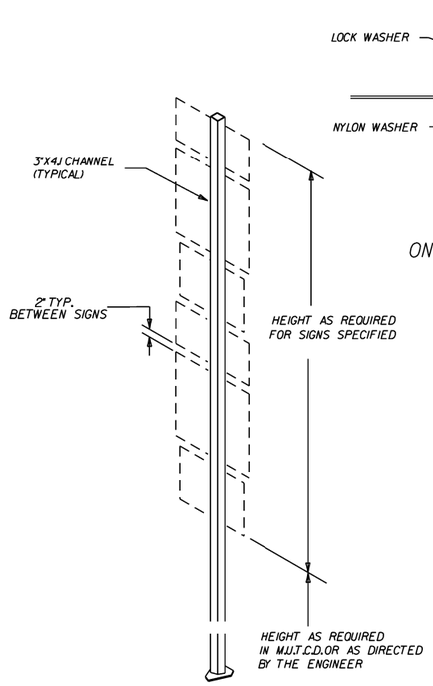
THE BACKGROUND ON ALL GUIDE SIGNS AND STANDARD SIGNS SHALL BE CONSTRUCTED USING TYPE III SHEETING.

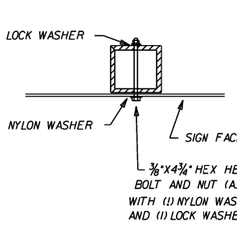
TYPE IX SHEETING FOR BORDER, LEGEND, SHIELDS, ARROWS, OR OTHER COPY SHALL BE ORIENTED VERTICALLY AS PER MANUFACTURERS' DATUM MARKS, ORIENTATION MARKS, OR OTHER RECOMMENDATIONS.

SIGN LEGEND, SHIELDS, ARROWS OR OTHER COPY SHALL BE APPLIED WITH RIVETS ONLY.

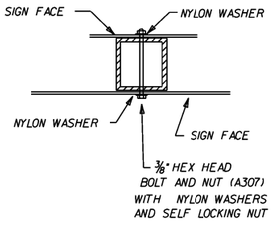
NO OTHER METHOD OF APPLYING CHARACTERS IS ALLOWED.

			ARKANSAS STATE HIGHWAY COMMISSION
			MOUNTING DETAILS FOR DEMOUNTABLE LEGEND ON GUIDE SIGNS
9-12-13	ISSUED		STANDARD DRAWING SHS-6
DATE	REVISION	FILMED	





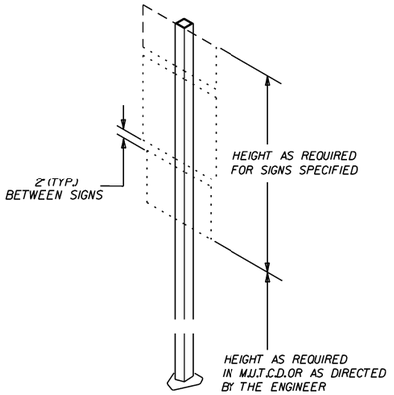
ONE SIGN



TWO SIGNS

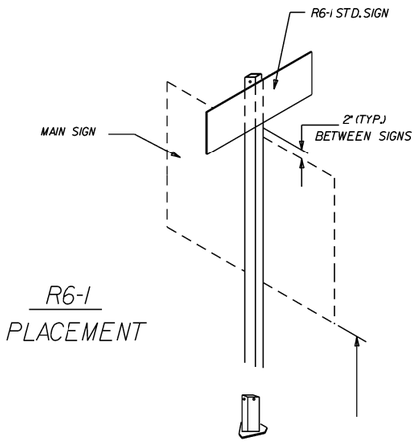
CHANNEL SHALL BE FULL LENGTH OF RECTANGULAR AND SQUARE SIGNS AND SHALL EXTEND 1 1/2" BEYOND BOLT HOLES ON DIAMOND OR IRREGULAR SHAPED SIGNS.

MOUNTING HARDWARE

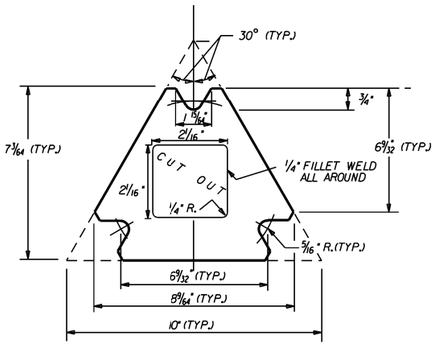


TYPE-1

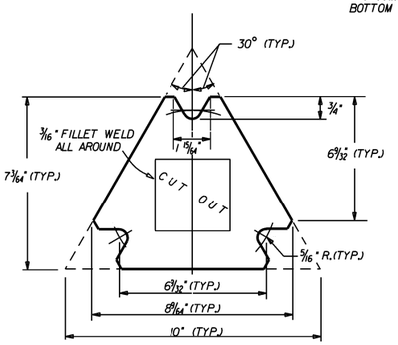
BASIS OF ESTIMATE
APPROX. 100 lbs STEEL



R6-1 PLACEMENT



TOP PLATE



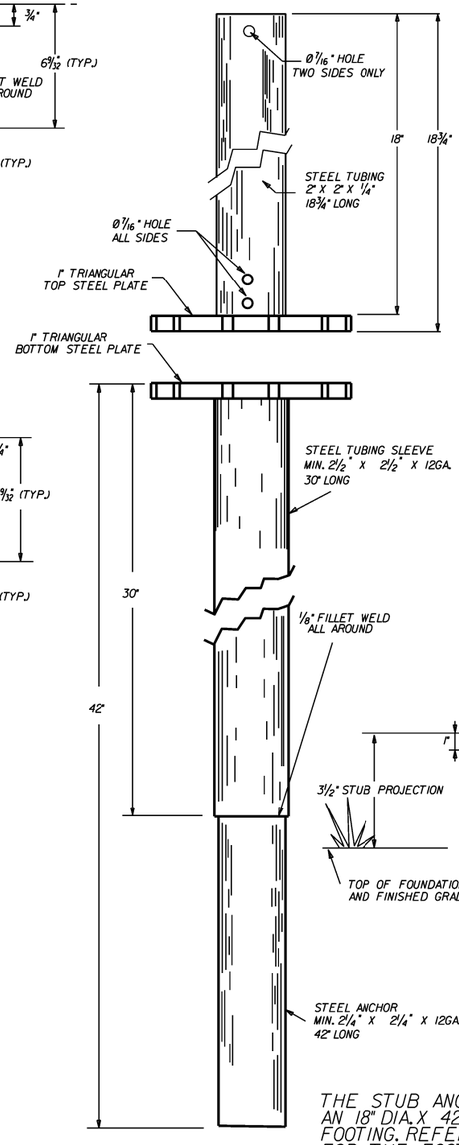
BOTTOM PLATE

GENERAL NOTES:

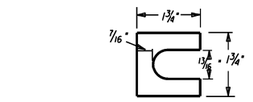
THE TOP PLATE OF TRIANGULAR SLIP BASES SHALL HAVE THE SAME EXTERIOR DIMENSIONS AS THE BOTTOM PLATE.

INSIDE DIAMETER OF THE SIGN POST SHALL BE CUT THROUGH THE CENTER OF THE TOP PLATE WITH THE HOLE EDGE BEVELED AS SHOWN. THE BEVEL END SHALL BE TANGENT TO THE BOLT HOLE. ANY MISALIGNMENT SHALL BE REMOVED BY GRINDING. FACE OF BEVEL SHALL BE FINISHED TO A MINIMUM SMOOTHNESS OF 1-500.

OTHER MASH COMPLIANT BREAKAWAY SIGN SUPPORTS THAT HAVE THE SAME TOP PLATE DIMENSIONS AND SUPPORT 2" X 2" X 2" SQUARE TUBE SIGN POSTS MAY BE SUBSTITUTED AS APPROVED BY THE ENGINEER.

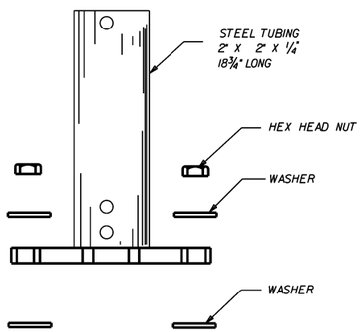


THE STUB ANCHOR SHALL BE SET IN AN 18" DIA. X 42" DEEP CONCRETE FOOTING. REFER TO STD. DRWG. SHS-3 FOR THE FOOTING DETAILS.

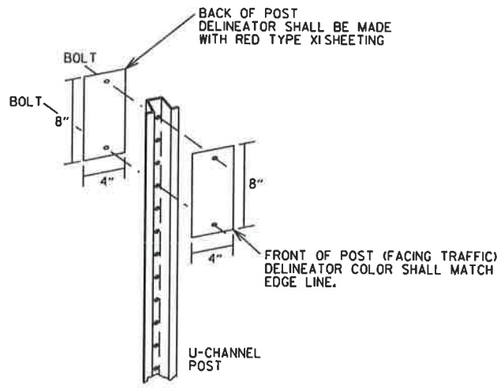


FURNISH (2) .012" THICK AND (2) .032" THICK SHIMS PER POST

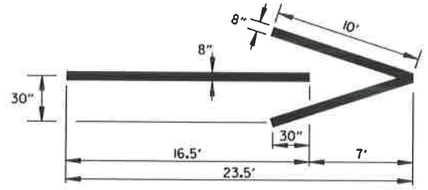
SHIM DETAIL



			ARKANSAS STATE HIGHWAY COMMISSION
			DETAIL OF OMNI-DIRECTIONAL BREAKAWAY SIGN SUPPORTS
9-12-13	ISSUED		STANDARD DRAWING SHS-7
DATE	REVISION	FILMED	



TYPE 2 DELINEATOR DETAILS



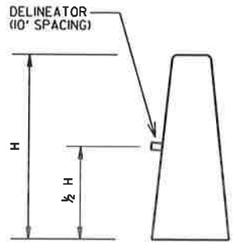
THERMOPLASTIC WRONG-WAY
PAVEMENT ARROWS

NOTE: THERMOPLASTIC WRONG-WAY PAVEMENT ARROWS TO BE PAID FOR AS THERMOPLASTIC PAVEMENT MARKING (ARROWS).

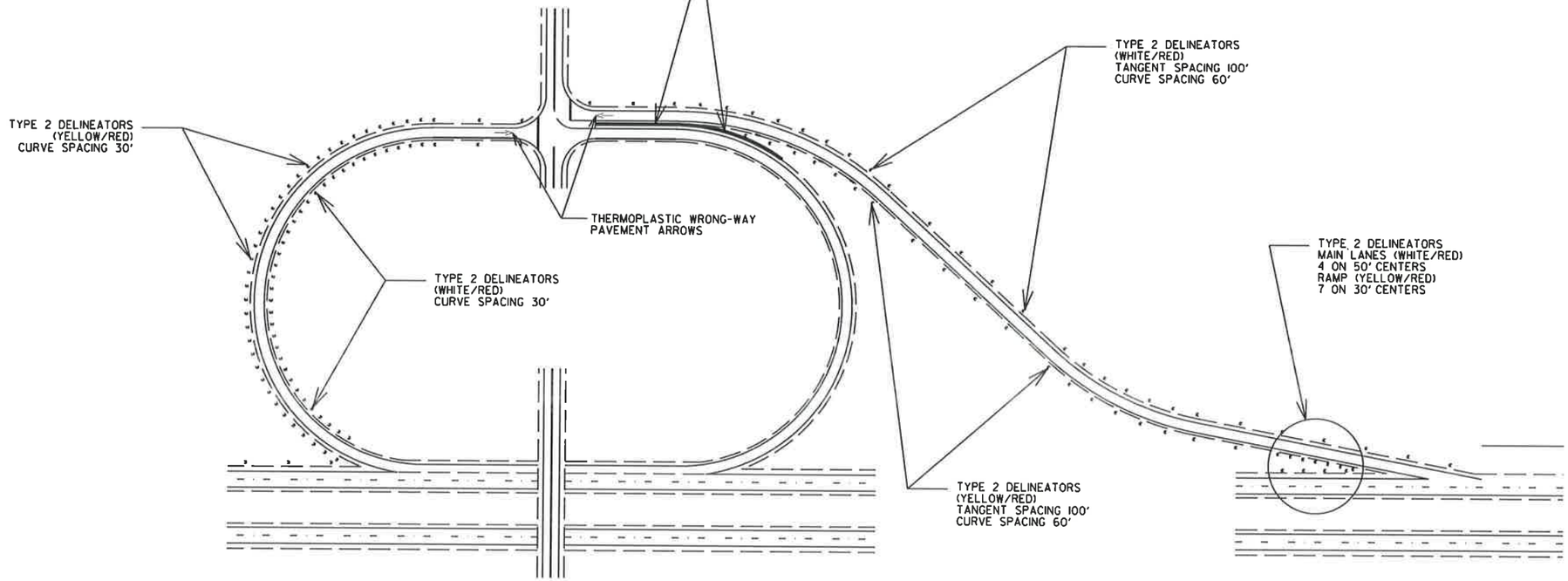
LEGEND

DELINEATOR

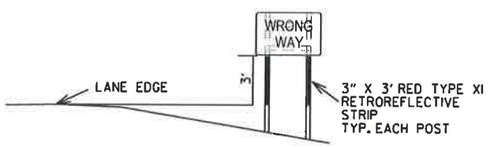
NOTE: WHEN UNIFORM SPACING IS INTERRUPTED BY ROADSIDE OBSTACLES, DELINEATORS ADJACENT TO THE ROADSIDE OBSTACLES MAY BE RELOCATED IN EITHER DIRECTION FOR A DISTANCE NOT EXCEEDING ONE QUARTER OF THE UNIFORM SPACING OR MAY BE ELIMINATED AS DIRECTED BY THE ENGINEER.



PERMANENT BARRIER WALL
DELINEATOR DETAIL

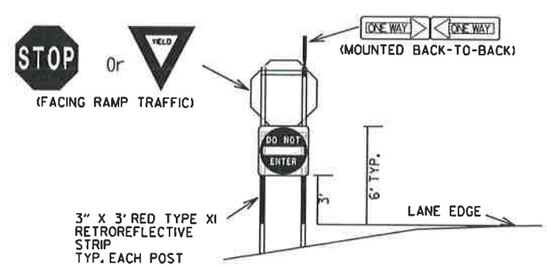


TYPICAL EXIT RAMP DELINEATOR PLACEMENT



WRONG-WAY SIGN ASSEMBLY DETAILS

NOTES
1. WRONG-WAY SIGNS MAY BE MOUNTED ON THE BACK SIDE OF EXISTING SIGN SUPPORTS WHERE POSSIBLE.
2. WRONG-WAY SIGNS ARE NORMALLY GATED, BUT MAY BE OFFSET WHEN BARRIER WALLS ARE PRESENT ON THE INSIDE SHOULDER. IN SUCH CASES, THE SIGN ON THE INSIDE SHOULDER SIDE MAY BE LOCATED PAST THE END OF THE BARRIER WALL. IN RARE CASES WHERE THE BARRIER WALL EXTENDS TO OR NEAR THE MAIN LANES, BOTH SIGNS MAY BE LOCATED ON THE OUTSIDE SHOULDER SIDE OF THE RAMP, WITH APPROXIMATELY 300' SPACING BETWEEN THE SIGNS.



RAMP INTERSECTION SIGN ASSEMBLY DETAILS

THE DELINEATORS SHALL BE PLACED AT A 4' HEIGHT MEASURED FROM THE PAVEMENT EDGE TO THE BOTTOM OF THE DELINEATOR. DELINEATOR POSTS SHALL BE PLACED 2 TO 8 FT. OUTSIDE THE OUTER EDGE OF THE SHOULDER, OR IF APPROPRIATE, IN LINE WITH THE ROADSIDE BARRIER THAT IS 8 FT. OR LESS OUTSIDE THE OUTER EDGE OF THE SHOULDER.

DELINEATOR SPACING IN CURVES SHALL BE REDUCED TO 30' WHEN THE RAMP ADVISORY SPEED IS 30 MPH OR LESS.

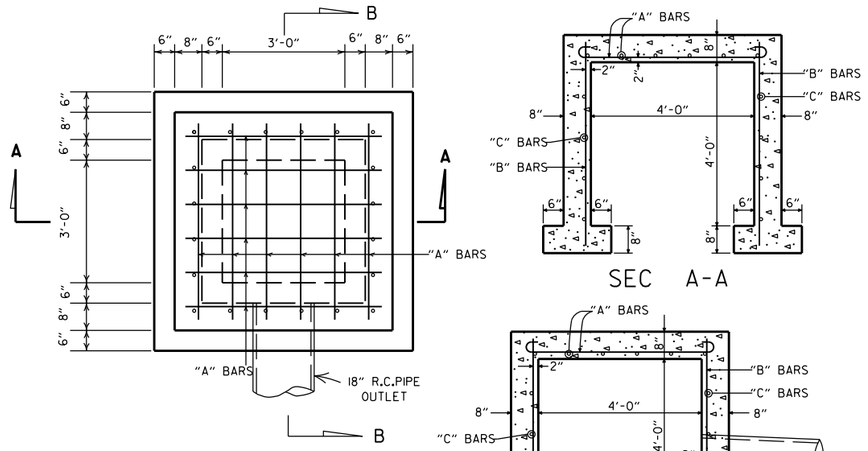
IF MULTIPLE LANES EXIST AT THE RAMP TERMINAL, THE THERMOPLASTIC WRONG-WAY ARROW SHALL BE PLACED AS CLOSE TO THE RAMP TERMINAL TURNOUT AS POSSIBLE.

DATE	REVISION	FILMED
11-16-17	ADDED NOTES	
06-01-17	RE-DRAWN	
09-12-13	ISSUED AS STANDARD DRAWING	

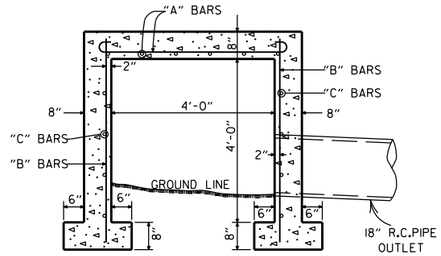
ARKANSAS STATE HIGHWAY COMMISSION

TYPICAL EXIT RAMP SIGN AND DELINEATOR DETAILS

STANDARD DRAWING SHS-8



SEC A-A



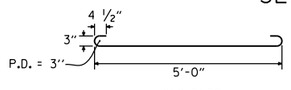
SEC B-B

NOTE: MAX FILL HEIGHT ABOVE TOP OF BOX = 13'-0".

STEEL SCHEDULE

BARS	NUMBER	LENGTH	SPACING
"A"	12	6'-0"	10"
"B"	20	5'-0"	10 ½"
"C"	16	5'-0"	12"

ALL STEEL TO BE #4 BARS



"A" BARS

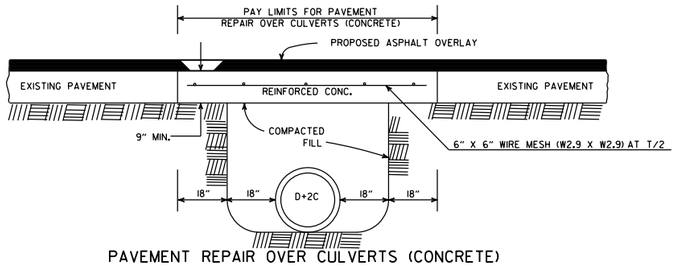
QUANTITIES

CONCRETE 3.31 CU. YDS.
REINFORCING STEEL 168 LB.

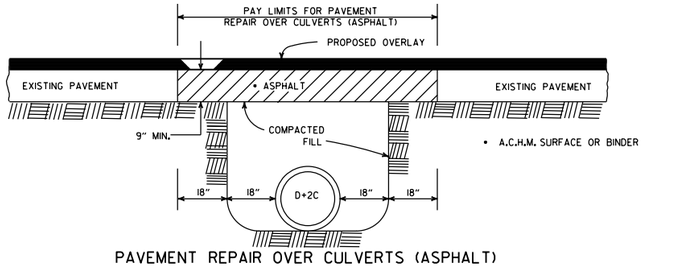
GENERAL NOTE:

THE PAY ITEMS FOR REINFORCED CONCRETE SPRING BOXES SHALL BE FOR THE QUANTITIES OF CONCRETE OF THE CLASS SPECIFIED, REINFORCING STEEL, EXCAVATION FOR STRUCTURES AND 18" R.C. PIPE CULVERT.

REINFORCED CONCRETE SPRING BOX



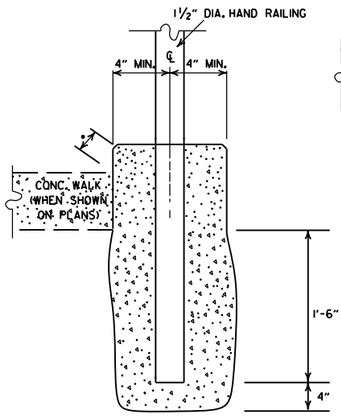
PAVEMENT REPAIR OVER CULVERTS (CONCRETE)



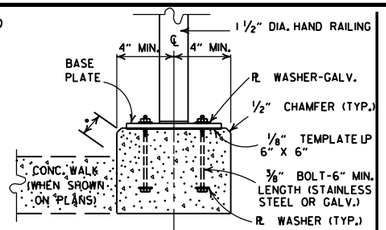
PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS

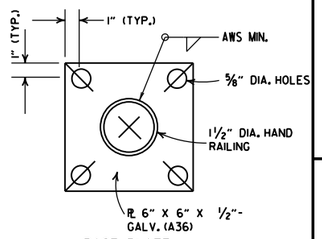
• A 2" MIN. HIGH CURB IS REQUIRED WHEN CONCRETE WALK IS ADJACENT TO THE HAND RAILING. PAYMENT FOR CURB SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR CONCRETE WALKS.



DETAIL OF HAND RAILING SET IN CONCRETE

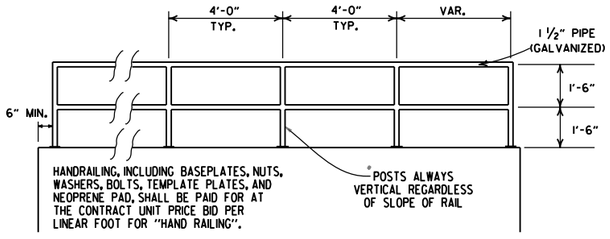


POST CONNECTION TO WALL

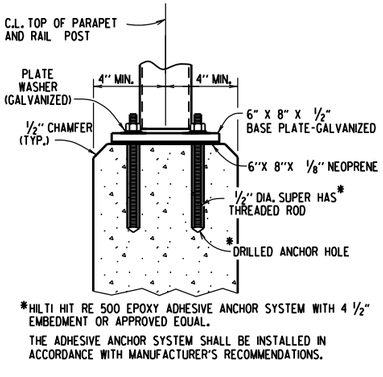


BASE PLATE

POST CONNECTION DETAILS



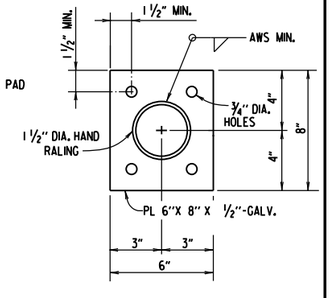
HAND RAILING SHALL CONFORM TO SECTION 633.



*HILTI HIT RE 500 EPOXY ADHESIVE ANCHOR SYSTEM WITH 4 ½" EMBEDMENT OR APPROVED EQUAL.

THE ADHESIVE ANCHOR SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

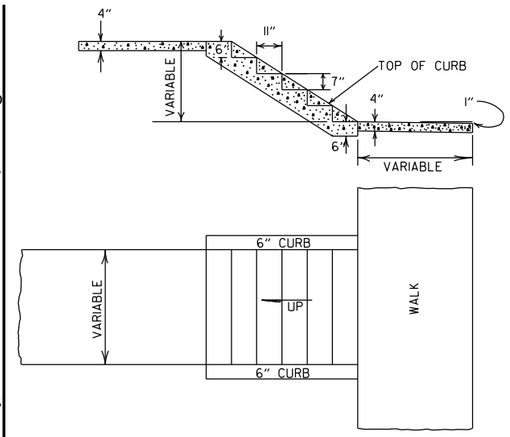
POST CONNECTION TO WALL



BASE PLATE

DETAILS OF ALTERNATE POST ANCHOR SYSTEM (EPOXY ADHESIVE ANCHORS)

HAND RAILING DETAILS



GENERAL NOTES

1. RISE AND TREAD DIMENSIONS OF STEPS MAY BE VARIED AS DIRECTED BY THE ENGINEER, HOWEVER, TREAD WIDTHS SHALL BE 11" MIN. ALL STEPS IN A FLIGHT SHALL HAVE CONSISTENT TREAD & RISER DIMENSIONS.
2. 1" TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE WALKS AT 45' INTERVALS.

DETAILS OF CONCRETE STEPS & WALKS

DATE	REVISION	DATE FILMED
10-25-18	REVISED DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS	
9-12-13	REVISED REINFORCED CONCRETE SPRING BOX	
7-26-12	REMOVED RETAINING WALL DETAILS & REVISED HAND RAILING DETAILS	
4-17-08	REV. JOINT & FOOTING STEP DETAILS	
11-29-07	REVISED RETAINING WALL DRAINAGE	
5-25-06	REVISED PVMT REPAIR OVER CULVERTS (CONC); REVISED REINFORCED CONC SPRING BOX	
10-9-03	REVISED PIPE RAILING DETAILS TO HAND RAILING DETAILS	
4-10-03	REVISED RETAINING WALL DRAWING	
8-22-02	ADDED HAND RAILING DETAIL	
11-16-01	REVISED PVMT REPAIR OVER CULVERTS (CONC); CORRECTED SPELLING IN GENERAL NOTES	
11-18-98	ADDED GENERAL NOTES TO CONCRETE STEPS & WALKS	
7-02-98	ENLARGED PIPE	
4-03-97	ADDED NOTE TO STEEL BAR SCHED.	
10-18-96	CORRECTED SPELLING	
4-26-94	ADD WEEP HOLE;REV. JOINT SPACING IN RET. WALL	
6-2-94	CHANGED CONST. TO CONTRACTION JOINT	
10-1-92	CHANGED MESH FABRIC TO WIRE MESH	10-1-92
8-15-91	DELETED HDWL MODIFICATION DETAIL	8-15-91
11-8-90	DELETED COLD MIX FROM CULV'T. REPAIR	11-8-90
11-30-89	REV. RETAINING WALL STEEL SCHEDULE	11-30-89
11-17-88	V. BARS BEHIND ARROW	665-11-17-88
7-15-88	REV. PAVEMENT REPAIR ADDED HDWL. MODS, DEL. PIPE UNDERDRAINS	649-7-15-88
11-1-84	REV. TRENCH FOR PIPE UNDERDRAIN	510-11-1-84
1-4-83	ELIMINATED CONC. CLASS & ADDED CHAMFER NOTE	682-1-4-83
3-2-81	SPELLING OF "UNDERDRAIN"	721-3-2-81
4-20-79	REV. UNDERDRAIN DET& PAVEMENT REPAIR	674-4-20-79
2-2-76	12"MIN. GRAN. MAT'L. OVER PIPE	919-2-2-76
4-10-75	REM. SPECS. FOR GRAN. MAT'L.	568-4-10-75-853
5-22-74	GRANULAR MAT'L. TO BE SB-3	567-5-22-74-740
10-2-72	REVISED AND REDRAWN	564-10-16-72

ARKANSAS STATE HIGHWAY COMMISSION

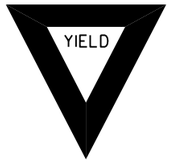
DETAILS OF SPECIAL ITEMS

STANDARD DRAWING SI - 1

R1-1

STANDARD 30"X30"
EXPRESSWAY 36"X36"
SPECIAL 48"X48"

R1-2



STD. 36"X36"X36"
EXPWY. 48"X48"X48"
FWY. 60"X60"X60"

R2-1

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

W3-5

STD. 36"X36"
EXPWY. 48"X48"
FWY. 48"X48"

W3-5a

STD. 36"X36"
EXPWY. 48"X48"
FWY. 48"X48"

R4-1

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R4-2

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

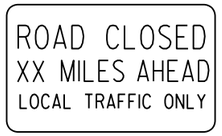
R5-1

STD. 30"X30"
EXPWY. 36"X36"
SPECIAL 48"X48"

RII-2

48"X30"

RII-3A



60"X30"

RII-4

60"X30"

W21-5a

STD. 36"X36"
FWY. 48"X48"

WI-1

STD. 36"X36"
FWY. 48"X48"

WI-2

STD. 36"X36"
FWY. 48"X48"

WI-3

STD. 48"X48"

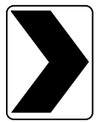
WI-4

STD. 48"X48"

WI-6

STD. 48"X24"
SPECIAL 60"X30"

WI-8



STD. 18"X24"
SPECIAL 24"X30"
EXPWY. 30"X36"
FWY. 36"X48"

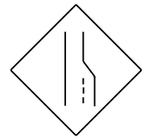
W3-1

STD. 36"X36"
SPECIAL 48"X48"

W3-2

STD. 36"X36"
SPECIAL 48"X48"

W4-2



STD. 36"X36"
FWY. 48"X48"

W5-1

STD. 36"X36"
SPECIAL 48"X48"

W6-3

EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7

EXPWY. 36"X36"
FWY. 48"X48"

W9-2

STD. 36"X36"
FWY. 48"X48"

WI3-1

STD. 24"X24"

W20-1

STD. 48"X48"

W20-2

STD. 48"X48"

W20-3

STD. 48"X48"

W20-4

STD. 48"X48"

W20-5

STD. 48"X48"

W20-7a

STD. 36"X36"
FWY. 48"X48"

W21-2

STD. 30"X30"
SPECIAL 36"X36"

W21-5

STD. 30"X30"
SPECIAL 36"X36"

W24-1

STD. 36"X36"

WI-4b

STD. 48"X48"

R56-1

STD. 18"X18"

W8-11

STD. 36"X36"
FWY. 48"X48"

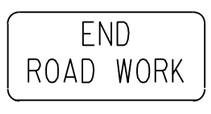
W8-9

STD. 36"X36"
FWY. 48"X48"

G20-1

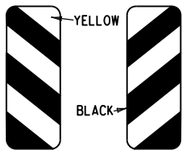
60"X24"

G20-2



48"X24"

OM-3L OM-3R



12"X36"

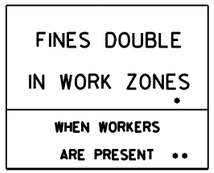
M4-9

STD. 30"X24"
SPECIAL 48"X36"
SPECIAL 60"X48"

M4-10

48"X18"

R55-1



36"X60"

• USE 6" C LETTERS
•• USE 4" D LETTERS

ADVANCE DISTANCES
(XXXX)

500 FT	½ MILE
1000 FT	¾ MILE
1500 FT	1 MILE AHEAD

GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION.
2. TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER.
3. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE KEPT IN PROPER POSITION, AND BE CLEAN AND LEGIBLE AT ALL TIMES. SIGNS THAT DO NOT APPLY TO EXISTING CONDITIONS SHALL BE REMOVED. SIGNS THAT ARE DAMAGED, DEFACED, OR THAT ACCUMULATE DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED.
- 4. SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 SQ. FT. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III BARRICADE.
- 5. SIGN POSTS DIRECT BURIED IN SOIL SHALL BE 2 LB. MINIMUM CHANNEL POST OR 4"x4" WOOD POSTS. CHANNEL POSTS SHALL BE PAINTED GREEN. WOOD POSTS SHALL BE PAINTED WHITE. ALL POSTS SHALL BE NEATLY CONSTRUCTED, AND SHALL BE REPLUMBED, CLEANED, OR REPAIRED AS NEEDED FOR THE DURATION OF THE JOB. THERE SHALL NOT BE MORE THAN 2 POSTS IN A 7' PATH FOR WOOD OR CHANNEL POSTS. ANY CHANNEL POST SPLICE SHALL BE IN ACCORDANCE WITH STANDARD DRAWING TC-3.
6. POST MOUNTED SIGNS IN RURAL AREAS SHALL BE CONSTRUCTED WITH THE NEAR EDGE OF THE SIGN FROM 6 TO 12 FEET FROM THE PAVEMENT EDGE. SIGNS IN URBAN AREAS AND BARRICADE MOUNTED SIGNS SHALL BE MOUNTED A MINIMUM OF 2 FEET FROM THE PAVEMENT EDGE.
7. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN URBAN AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN RURAL AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE, EXCEPT A MINIMUM OF 6' SHALL BE USED WHEN MOUNTING AN ADVISORY SIGN BELOW A WARNING SIGN. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE 5'. RETROREFLECTIVE DEVICES SHALL BE USED. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE CONDITIONS. THEY SHALL BE NO LESS THAN ONE (1) FOOT ABOVE THE TRAVELED WAY. LONG-TERM STATIONARY SIGNS SHALL BE DIRECT BURIED IN SOIL, UNLESS CONDITIONS NECESSITATE THE USE OF PORTABLE SIGNS, OR AS APPROVED BY THE ENGINEER. CONCRETE PADS, CONCRETE OR ROCK BALLAST, OR OTHER SOLID MATERIALS SHALL NOT BE UTILIZED WITH PORTABLE SIGN SUPPORTS.
8. FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
9. MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT. HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER DIRECTION OF MOVEMENT.
10. R55-1 SIGNS SHALL BE PLACED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN.

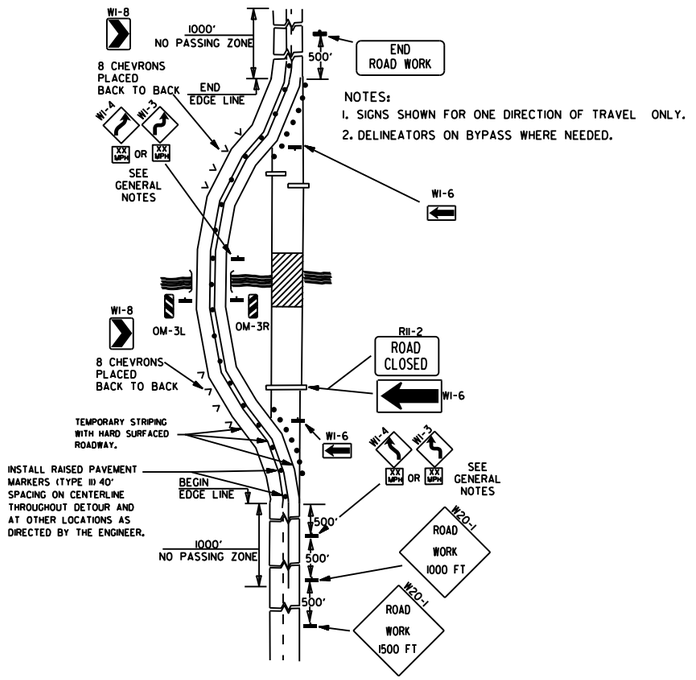
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED FOR ALL PROJECTS.

DATE	REVISION	FILMED
11-07-19	REVISED FOR MASH	
4-13-17	DELETED RSP-1 & ADDED W21-5a	
9-2-15	REVISED REDUCED SPEED LIMIT AHEAD SIGNS REVISED ROAD WORK NEXT XX MILES	
12-15-11	REVISED W24-1	
11-17-10	DELETED W8-9a & ADDED W8-9	
10-15-09	ADDED REFERENCE TO MASH & ADDED SIGN W24-1	
4-17-08	REVISED SIGN DESIGNATIONS	
11-18-04	REVISED NOTES	
10-9-03	REVISED NOTE 1	
11-16-01	REVISED NOTE 7	
9-28-00	REVISED NOTE	
11-18-98	ADDED NOTE	
6-26-97	REVISED NOTE 5	
4-03-97	REVISED NOTE 5	
10-18-96	ADDED CONTROLLED ACCESS HWY. SIGN & TO NOTE 7	
10-12-95	ADDED R55-1	
6-8-95	REVISED TO CORRECT SIGN ILLUSTRATIONS	6-8-95
2-2-95	REVISED PER PART VI, MUTCD SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

ARKANSAS STATE HIGHWAY COMMISSION

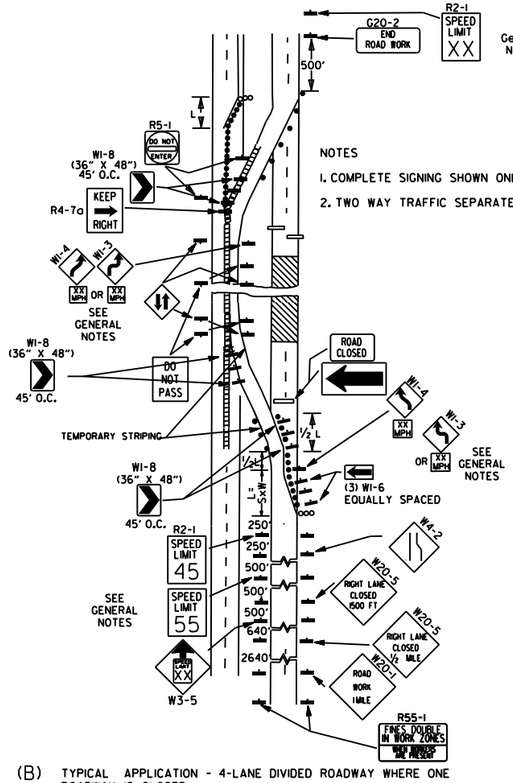
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



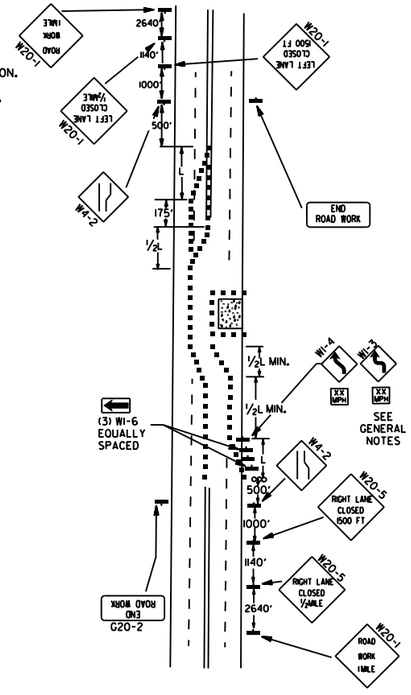
NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

(A) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON A 2-LANE HIGHWAY WHERE THE ENTIRE ROADWAY IS CLOSED AND A BYPASS DETOUR IS PROVIDED.

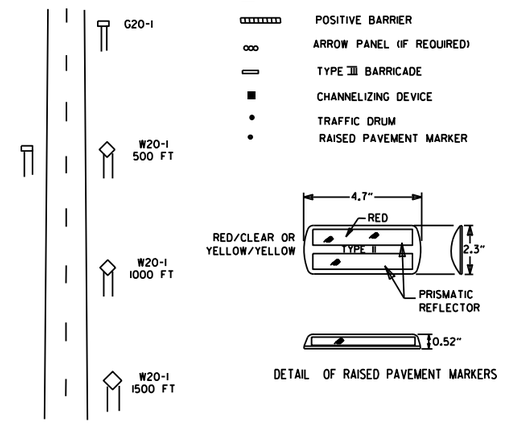


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

(B) TYPICAL APPLICATION - 4-LANE DIVIDED ROADWAY WHERE ONE ROADWAY IS CLOSED.



(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



DETAIL OF RAISED PAVEMENT MARKERS

TYPICAL ADVANCE WARNING SIGN PLACEMENT

TAPER FORMULAE:

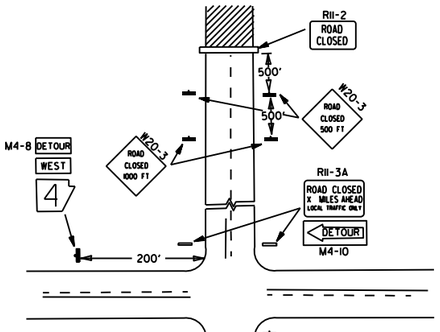
L=SXW FOR SPEEDS OF 45MPH OR MORE.

$L = \frac{WS^2}{60}$ FOR SPEEDS OF 40MPH OR LESS.

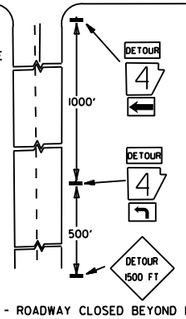
WHERE:
L= MINIMUM LENGTH OF TAPER.
S= NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85TH PERCENTILE SPEED.
W= WIDTH OF OFFSET.

GENERAL NOTES:

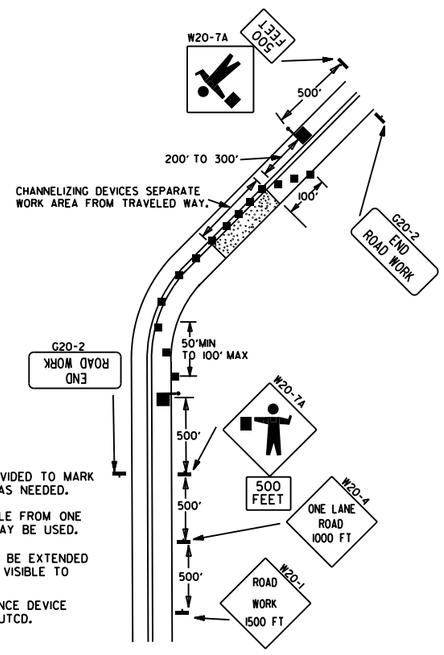
1. THE MAINTENANCE DIVISION SHALL CONDUCT A BALL BANK STUDY TO DETERMINE THE ADVISORY SPEED LIMIT PRIOR TO OPENING TO TRAFFIC. THE ADVISORY SPEED WILL BE POSTED ON W1-3 OR W1-4 CURVE WARNING SIGNS. USE W1-4 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1 45MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(45) SHALL BE OMITTED. ADDITIONAL R2-1 55MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT, OR AS DIRECTED BY THE ENGINEER.
5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
7. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER. WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE. PAYMENT FOR TRAFFIC DRUMS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR VARIOUS TRAILER MOUNTED DEVICES.
8. DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE ARDOT QUALIFIED PRODUCTS LIST.
9. ALL TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL MEET THE REQUIREMENTS OF THE MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).



NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

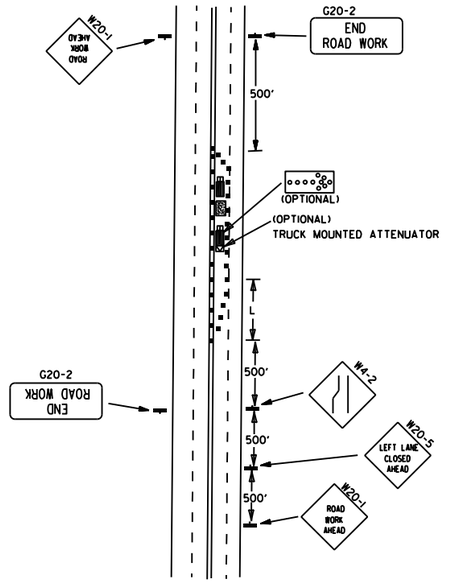


(D) TYPICAL APPLICATION - ROADWAY CLOSED BEYOND DETOUR POINT.



NOTES:
1. FLOOD LIGHTS SHOULD BE PROVIDED TO MARK FLAGGER STATIONS AT NIGHT AS NEEDED.
2. IF ENTIRE WORK AREA IS VISIBLE FROM ONE STATION, A SINGLE FLAGGER MAY BE USED.
3. CHANNELIZING DEVICES ARE TO BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
4. AUTOMATED FLAGGER ASSISTANCE DEVICE (AFAD) OPTIONAL. REFER TO MUTCD.

(E) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON 2-LANE HIGHWAY WHERE ONE LANE IS CLOSED AND FLAGGING IS PROVIDED.



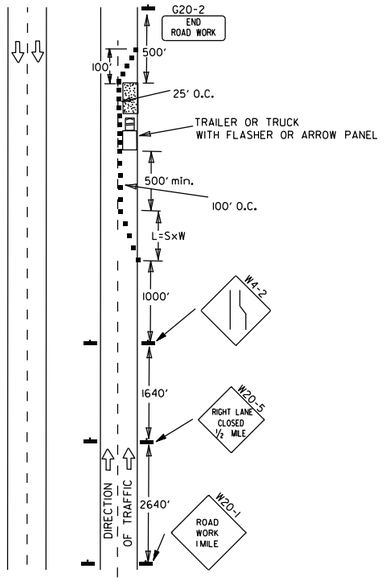
(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.

DATE	REVISION	FILMED
05-20-21	REVISED NOTE 7	
11-07-19	REVISED NOTE 1, ADDED NOTE 9	
9-2-15	REVISED NOTE 2, ADDED NOTE 8, REVISED DRAWING (A) & REPLACED R2-5A WITH W3-5	
9-12-13	REVISED DETAIL OF RAISED PAVEMENT MARKERS	
3-11-10	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (a) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON W1-4A	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

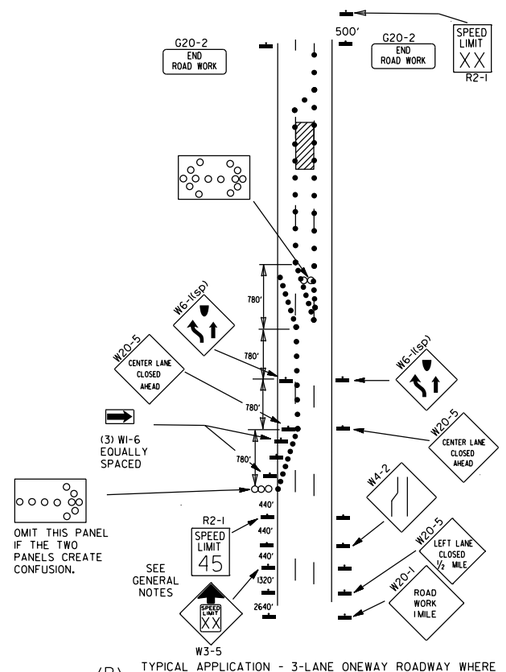
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-2



(A) TYPICAL APPLICATION - DAYTIME MAINTENANCE OPERATIONS OF SHORT DURATION ON A 4-LANE DIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



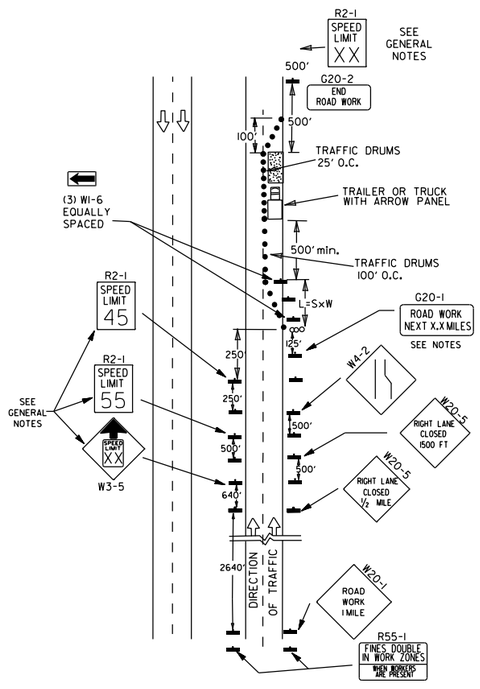
(B) TYPICAL APPLICATION - 3-LANE ONEWAY ROADWAY WHERE CENTER LANE IS CLOSED.

KEY:

- ARROW PANEL (IF REQUIRED)
- ■ CHANNELIZING DEVICE
- ● TRAFFIC DRUM

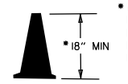
GENERAL NOTES:

1. A SPEED LIMIT REDUCTION MAY BE IMPLEMENTED ONLY WHEN DESIGNATED IN THE PLAN OR WHEN RECOMMENDED BY THE ROADWAY DESIGN DIVISION.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1 45MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(45) SHALL BE OMITTED. ADDITIONAL R2-1 55MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS, AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT OR AS DIRECTED BY THE ENGINEER.
5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
7. THE G20-1 SIGN WILL BE REQUIRED ON JOBS OF OVER TWO MILES IN LENGTH. WHEN THE LANE CLOSURE IS NOT AT THE BEGINNING OF THE PROJECT, THE G20-1 SIGN SHALL BE ERECTED 125' IN ADVANCE OF THE JOB LIMIT. ADDITIONAL W20-1 (1 MILE) SIGNS ARE NOT REQUIRED IN ADVANCE OF LANE CLOSURES THAT BEGIN INSIDE THE PROJECT LIMITS.
8. FLAGGERS SHALL USE STOP/SLOW PADDLES FOR CONTROLLING TRAFFIC THROUGH WORK ZONES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
9. ALL PLASTIC DRUMS AND CONES SHALL MEET THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
10. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER. WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE. PAYMENT FOR TRAFFIC DRUMS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR VARIOUS TRAILER MOUNTED DEVICES.
11. ALL TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL MEET THE REQUIREMENTS OF THE MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).



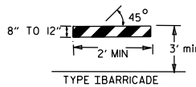
(C) TYPICAL APPLICATION - CONSTRUCTION OPERATIONS OF INTERMEDIATE TO LONG TERM DURATION ON A 4-LANE DIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.

CHANNELIZING DEVICES



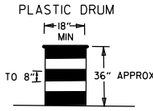
* WHEN CONES ARE USED ON FREEWAYS AND MULTI-LANE HIGHWAYS, THEY SHALL BE 28" MIN. DURING HOURS OF DARKNESS, 28" CONES SHALL BE USED ON ALL ROADWAYS, AND SHALL BE REFLECTORIZED IN ACCORDANCE WITH THE M.U.T.C.D.

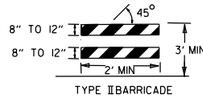
CONES



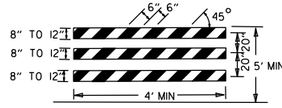
TYPE I BARRICADE

PLASTIC DRUM



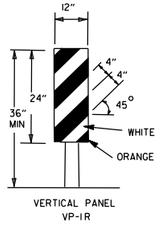


TYPE II BARRICADE



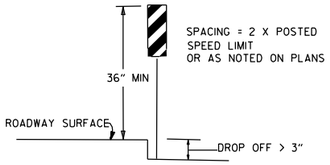
TYPE III BARRICADE

NOTE:
FOR ALL ROAD CLOSURES, THE TYPE III BARRICADES SHALL BE OF SUFFICIENT LENGTH TO EXTEND ACROSS ENTIRE ROADWAY.

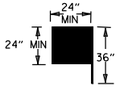


VERTICAL PANEL VP-1R

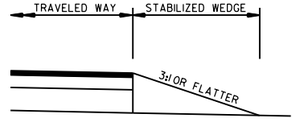
VERTICAL PANEL PLACEMENT



FLAG



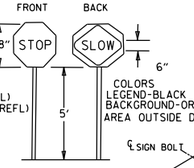
FLAG SHALL BE OF GOOD GRADE RED MATERIAL

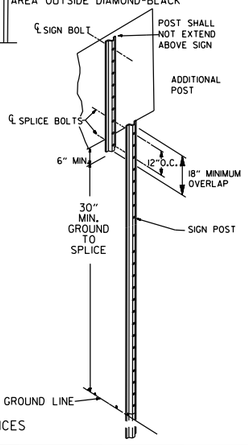


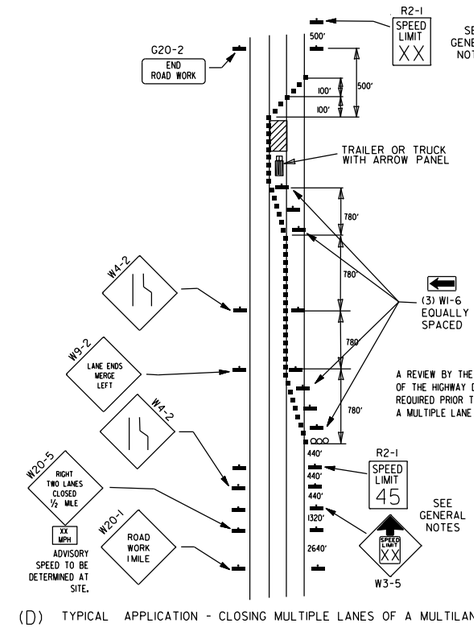
STABILIZED WEDGE

NOTE:
MATERIALS FOR THE STABILIZED WEDGE SHALL MEET THE REQUIREMENTS PROVIDED IN SECTION 603.02 OF THE STANDARD SPECIFICATIONS.

STOP SLOW PADDLE







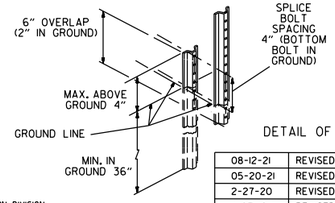
A REVIEW BY THE ROADWAY DESIGN DIVISION OF THE HIGHWAY DEPARTMENT WILL BE REQUIRED PRIOR TO IMPLEMENTING A MULTIPLE LANE CLOSURE.

(D) TYPICAL APPLICATION - CLOSING MULTIPLE LANES OF A MULTILANE HIGHWAY.

NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-21)

NORMAL INSTALLATIONS WILL REQUIRE 1/4" DIA. BOLTS TO MOUNT SIGNS TO POST AND 5/16" DIA. BOLTS TO ASSEMBLE THE VARIOUS POST SUPPORTS. EACH OF THESE BOLTS SHALL BE CARRIAGE BOLTS.

SIGN POSTS SHALL BE PAINTED GREEN; SIGNS SHALL NOT BE PAINTED, AND ALL SIGN POSTS SHALL BE PLUMB.



DETAIL OF SPLICES

TRAFFIC CONTROL DEVICES

NON-INTERSTATE

VERTICAL DIFFERENTIAL	LOCATION	TRAFFIC CONTROL	
		≤ 45 MPH	> 45 MPH
≤ 1"	CENTERLINE	W8-11	W8-11
> 1" ≤ 3"	CENTERLINE	W8-11 AND CENTERLINE LANE STRIPING	W8-11 AND CENTERLINE LANE STRIPING
> 3"	CENTERLINE	STANDARD LANE CLOSURE[6]	STANDARD LANE CLOSURE[6]
≤ 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9 AND TRAFFIC DRUMS[1]	W8-9 AND TRAFFIC DRUMS[1]
> 3" ≤ 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS[1]	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS[1]
> 6" ≤ 18"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS[1]	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS[2]
> 18" ≤ 24"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS[1]	A STABILIZED WEDGE, W8-17, EDGE LINE STRIPING AND TRAFFIC DRUMS[3]
> 24"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	PRECAST CONCRETE BARRIER[4] & EDGE LINES	PRECAST CONCRETE BARRIER[4] & EDGE LINES

INTERSTATE

VERTICAL DIFFERENTIAL	LOCATION	TRAFFIC CONTROL
≤ 3"	CENTERLINE	W8-11 AND LANE STRIPING
≤ 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9, EDGE LINE STRIPING, AND TRAFFIC DRUMS[2]
> 3" ≤ 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS[2]
> 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	PRECAST CONCRETE BARRIER & EDGE LINES

INTERSTATE AND NON-INTERSTATE

FORESLOPE	HEIGHT	TRAFFIC CONTROL
1:1	> 2 FT	PRECAST CONCRETE BARRIER
2:1	≤ 5 FT	TRAFFIC DRUMS
2:1	> 5 FT	PRECAST CONCRETE BARRIER
Flatter than 2:1	N/A	TRAFFIC DRUMS

GENERAL NOTES:

1. WHEN THE SHOULDER AREA IS USED AS PART OF THE TRAVELED LANE AND THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, THEN VERTICAL PANELS SHALL BE USED.
2. WHEN THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, A STABILIZED WEDGE SHALL BE USED.
3. PRECAST CONCRETE BARRIER WALL CAN BE USED IN LIEU OF A STABILIZED WEDGE, W8-17 SIGN, EDGE LINE STRIPING, AND TRAFFIC DRUMS, IF AND WHERE DIRECTED BY THE ENGINEER.
4. A STABILIZED WEDGE, W8-17 SIGN, EDGE LINE STRIPING, AND TRAFFIC DRUMS CAN BE USED IN LIEU OF PRECAST CONCRETE BARRIER WALL, IF AND WHERE DIRECTED BY THE ENGINEER.
5. W21-5, W21-5a, AND/OR W21-5b SIGNS SHALL BE USED WHERE THE ROADWAY IS UNOBSTRUCTED IF AND WHERE DIRECTED BY THE ENGINEER.
6. TIME LIMITATIONS MUST CONFORM TO SECTION 603 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).

DATE	REVISION	FILMED
08-12-21	REVISED TRAFFIC CONTROL DEVICES AND NOTES	
05-20-21	REVISED NOTE 10	
2-27-20	REVISED TRAFFIC CONTROL DEVICES DETAILS	
11-07-19	REVISED NOTE 9, ADDED NOTE 11	
7-25-19	REVISED TRAFFIC CONTROL DEVICES DETAILS	
9-2-15	REVISED NOTE 2 & REPLACED R2-5A WITH W3-5	
10-15-09	ADDED REFERENCE TO MASH	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED NOTE	
10-1-98	ADDED NOTE	
4-03-97	ADDED (SP) TO W6-1& REVISED TRAFFIC CONTROL DEVICES NOTE	
10-18-96	ADDED R55-1	
10-12-95	MOVED UPPER SPLICE	
6-8-95	REVISED SPLICE DETAIL, TEXT	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

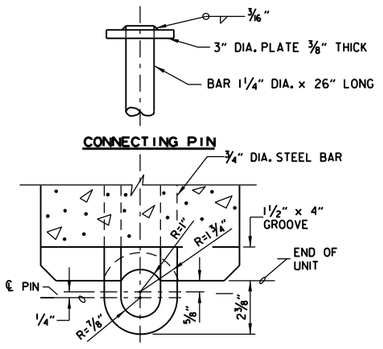
ARKANSAS STATE HIGHWAY COMMISSION

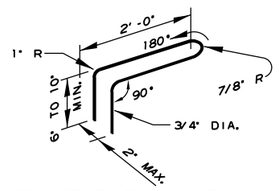
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

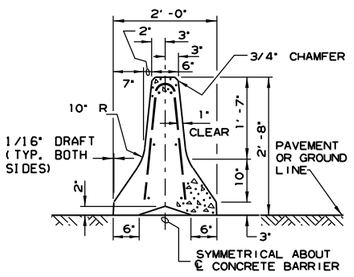
STANDARD DRAWING TC-3

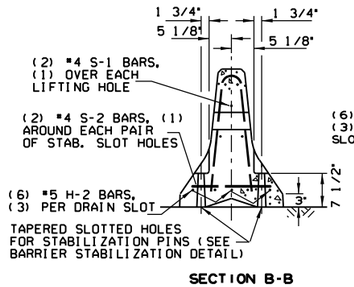
REINFORCING BAR TABLE PER BARRIER UNIT

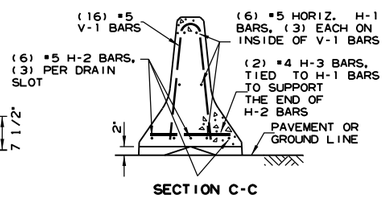
MARK	LOCATION	BAR SIZE	(NO. BARS)	SKETCH
H-1	HORIZONTAL IN BARRIER TIED INSIDE V-1 BARS	#5	(6)	19'-3"
H-2	CENTERED ABOVE DRAIN SLOTS LONG. & TRANSVERSELY	#5	(6)	6'-6"
H-3	TIED ABOVE H-1 BARS TO SUPPORT H-2, TIED TO V-1	#4	(2)	1'-6"
S-1	OVER LIFT HOLES	#4	(2)	2'-5", LIFTING HOLE, 90°, 3 3/8" R
S-2	HORIZ. AROUND SLOTS BETWEEN V-1'S @ DRAIN SLOTS	#4	(2)	1 1/2" R, SLOTS, 7", 1'-6", 1" MIN. CLEAR TO BAR; 5'-1" BAR W/(4) 1 1/2" R BENDS & MIN. 1'-0" OVERLAP
V-1	VERTICAL IN BARRIER(3) EACH END & (2) AT EACH DRAIN SLOTS	#5	(16)	TOTAL LENGTH 4'-9"; 2 3/16" R; 12°; 1 1/2"; 9"; 2'-1 3/8"; 4 3/8"

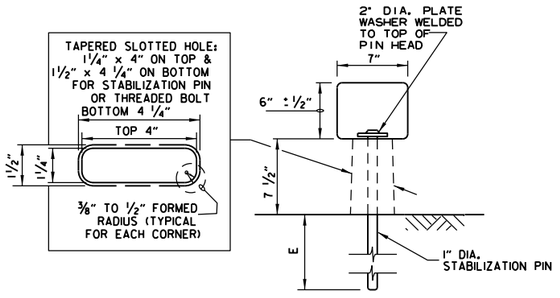




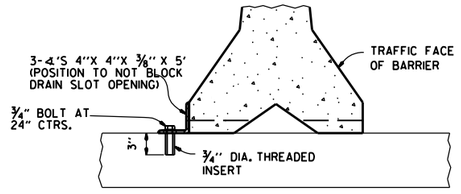






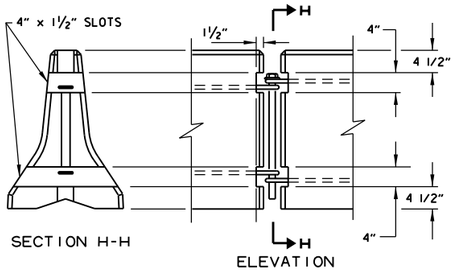


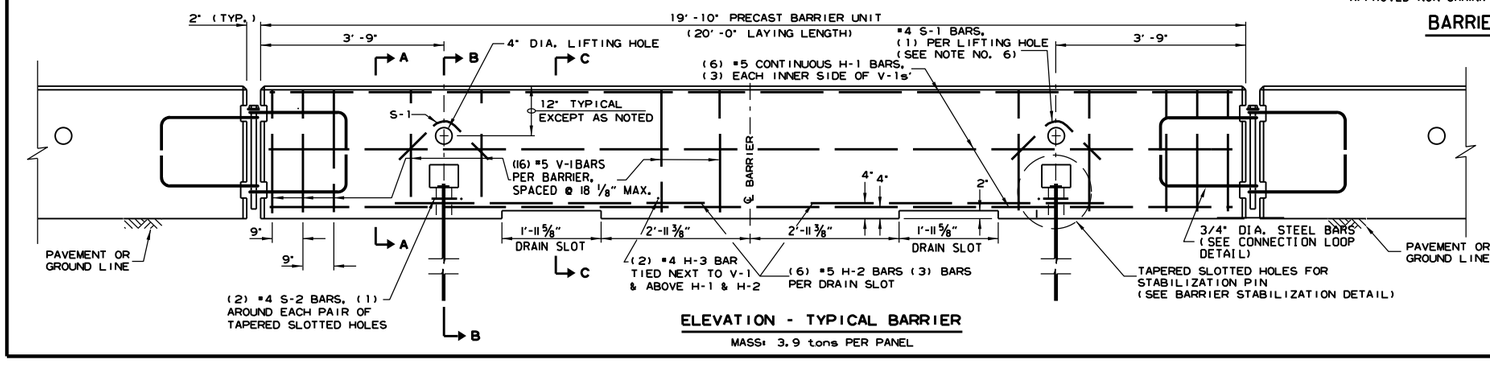
Ⓔ 4" - CONCRETE PAVEMENT
8" - ASPHALT PAVEMENT
12" - SHOULDER AREAS



NOTE: " THREADED INSERTS SHALL BE CAST IN PLACE FOR ALL NEW BRIDGE DECKS AND DRILLED AND GROUTED FOR EXISTING BRIDGE DECKS. INSERTS SHALL HAVE A MINIMUM ULTIMATE LOAD CAPACITY OF 8000 LBS. IN TENSION. AFTER REMOVAL OF BARRIER, BOLTS, AND ANGLES, THE INSERTS SHALL BE FILLED WITH APPROVED NON-SHRINK EPOXY.

BARRIER STABILIZATION DETAIL
BRIDGE DECKS





MASS: 3.9 tons PER PANEL

GENERAL NOTES

1. THE CONTRACTOR SHALL FURNISH THE PRECAST CONCRETE BARRIER UNITS AND SHALL BE RESPONSIBLE FOR THE MANUFACTURE, SHIPMENT, STORAGE, PLACEMENT AND REMOVAL. AT THE COMPLETION OF THE PROJECT, THE PRECAST UNITS WILL REMAIN THE PROPERTY OF THE CONTRACTOR.

2. MATERIALS SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS:
   CONCRETE: 2500 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
   REINFORCING STEEL: AASHTO M 31 OR M 53, GRADE 60
   STRUCTURAL STEEL: AASHTO-M270 GRADE 36 SHALL BE USED FOR THE CONNECTION PIN, CONNECTION LOOPS, AND STABILIZATION PINS. A ONE PIECE PIN WITH A 3" ROUNDED TOP MAY BE USED IN PLACE OF THE DETAILED CONNECTION PIN.
   DELINEATORS: DELINEATORS SHALL BE MOUNTED AT 10' SPACING ON TOP OF PRECAST BARRIER.

   IN APPLICATIONS WHERE BARRIER WALL IS WITHIN 6 FEET OF A TRAFFIC LANE, ADDITIONAL DELINEATORS SHALL BE PLACED ON THE BARRIER AT 10' SPACING APPROXIMATELY ONE (1) FOOT FROM THE TOP OF THE BARRIER. DELINEATORS SHALL BE ON THE ARDOT QUALIFIED PRODUCTS LIST FOR CONSTRUCTION CONCRETE BARRIER MARKERS.
   DELINEATOR COLOR SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
   PAYMENT FOR DELINEATORS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID PER LIN. FT. FOR "FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER". THE CONTRACTOR SHALL CERTIFY TO THE ENGINEER THAT THE MATERIAL AND THE DESIGN USED IN THE PRECAST BARRIER UNITS MEETS THE REQUIREMENTS AS SHOWN ON THIS STANDARD DRAWING.

3. OTHER PRECAST CONCRETE BARRIERS THAT HAVE BEEN CRASH TESTED AND APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION TO MEET THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) WILL BE ACCEPTED IN LIEU OF THE BARRIER SHOWN. DRAIN SLOTS SHALL BE PROVIDED AS NEEDED OR AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL FURNISH A CERTIFICATION OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) COMPLIANCE FOR ANY OTHER TYPES OF PRECAST BARRIER TO BE USED. THE CERTIFICATION SHALL STATE THAT THE PRECAST CONCRETE BARRIER MEETS THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH). MIXING OF SHAPES WILL NOT BE ALLOWED IN A CONTINUOUS LINE OF UNITS.

4. DOWEL HOLES IN PAVEMENT OR BRIDGE SLABS THAT ARE TO REMAIN IN PLACE SHALL BE FILLED. HOLES IN CONCRETE PAVEMENT AND BRIDGE SLABS SHALL BE FILLED WITH AN APPROVED NON-SHRINK EPOXY GROUT. HOLES IN ASPHALT PAVEMENT SHALL BE FILLED WITH AN APPROVED ASPHALT JOINT FILLER. PAYMENT FOR DRILLING AND FILLING HOLES TO BE INCLUDED IN THE PRICE FOR VARIOUS BARRIER ITEMS.

5. ATTACH UNITS TO ROADWAY SURFACE WITH STABILIZATION PINS AND TO DECK SLABS USING BOLTS WHEN REQUIRED.

6. A 4" WHITE PVC SLEEVE MAY BE USED TO FORM THE LIFTING HOLE AND IF USED THE SLEEVE IS TO BE LEFT IN PLACE.

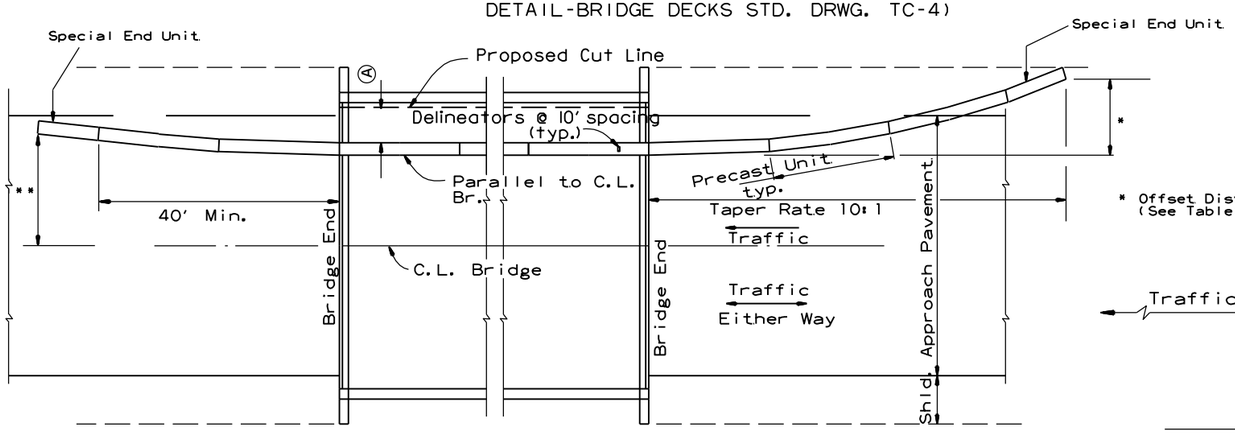
DATE	REVISION	FILMED
11-07-19	REVISED NOTE 3	
2-27-14	REVISED BARRIER STABILIZATION DETAIL	
10-15-09	ADDED REFERENCE TO WASH	
8-5-09	REV. NOTE 3 CONCERNING DRAIN SLOTS	
11-29-07	REVISED NOTE 3	
5-25-06	DELETED GENERAL NOTE 7	
11-18-04	REVISED BARRIER STABILIZATION DETAIL BRIDGE DECKS	
4-10-03	REVISED GENERAL NOTE 2	
8-22-02	ISSUED NEW DRAWING	

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

STANDARD DRAWING TC-4

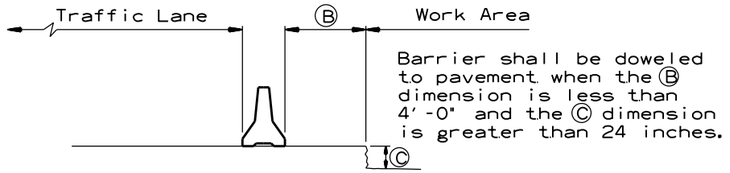
Ⓐ 4 feet or greater preferred. If less than 4 feet, Precast Units shall be connected to slab (SEE BARRIER STABILIZATION DETAIL-BRIDGE DECKS STD. DRWG. TC-4)



BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

No Scale

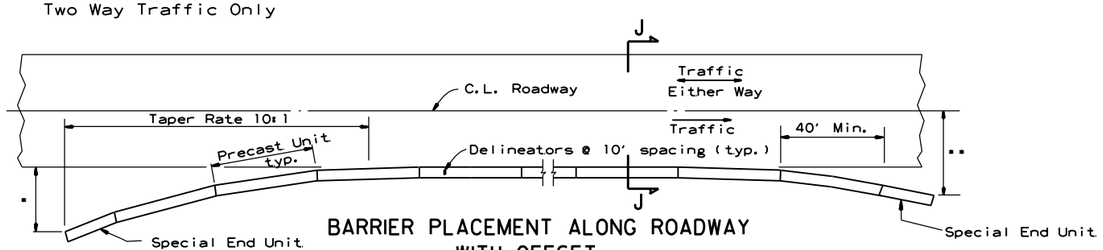
** Offset Distance for Two Way Traffic Only



Barrier shall be doweled to pavement when the Ⓑ dimension is less than 4'-0" and the Ⓒ dimension is greater than 24 inches.

SECTION J-J

No Scale



BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

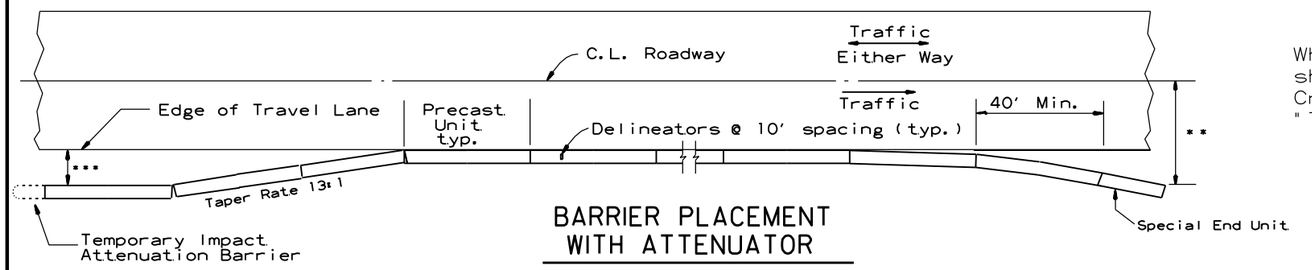
** Offset Distance For Two Way Traffic Only

* Offset Distance (See Table)

Offset Distance Table

Speed (MPH)	Offset Distance (FT.)
≤ 45	12
> 45	18

If offset distance is not attainable, then see "Barrier Placement With Attenuator" Detail shown below.

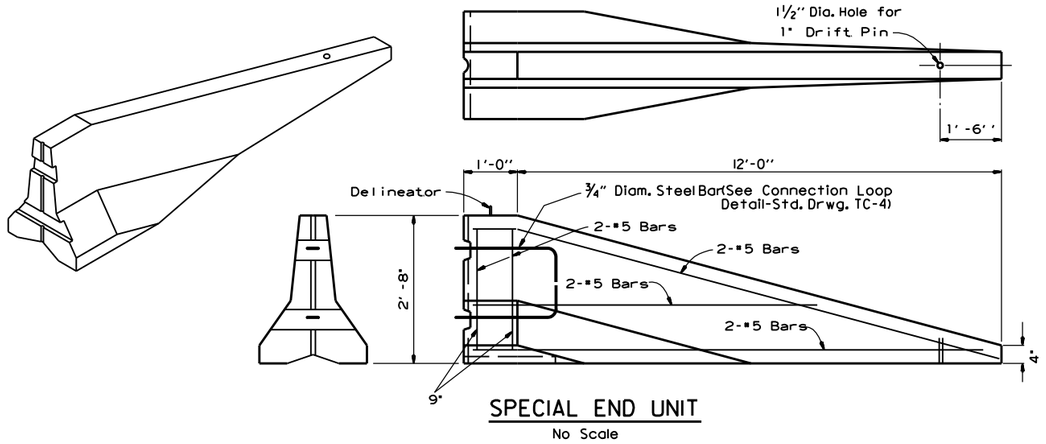


BARRIER PLACEMENT WITH ATTENUATOR

No Scale

*** Min. 3'-0" From Edge of Travel Lane to Nearest Edge of Attenuator

** Offset Distance For Two Way Traffic Only



SPECIAL END UNIT

No Scale

General Notes

When shown on the Plans, the ends of the Temporary Precast Concrete Barrier shall be protected with a Manual For Assessing Safety Hardware (MASH) approved Crash Cushion. Payment for Crash Cushions shall be made under the item of "Temporary Impact Attenuation Barrier."

DATE	REVISION	FILMED
11-07-19	REVISED NOTE	
10-15-09	ADDED REFERENCE TO MASH	
5-25-06	REVISED BARRIER PLACEMENT	
8-22-02	ISSUED NEW DRAWING	

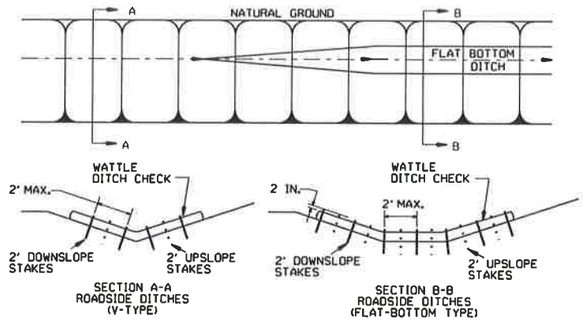
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

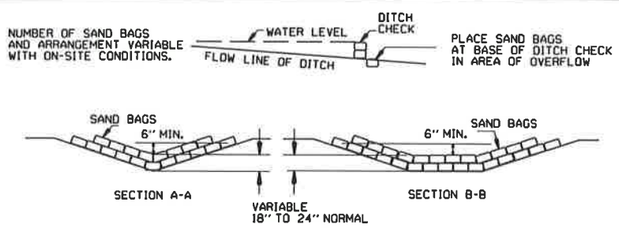
STANDARD DRAWING TC-5

GENERAL NOTES

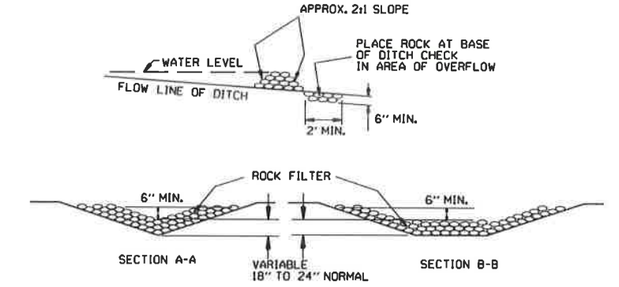
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



SAND BAG DITCH CHECK (E-5)

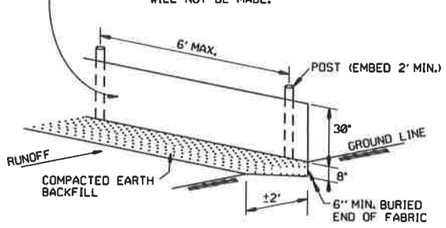


ROCK DITCH CHECK (E-6)

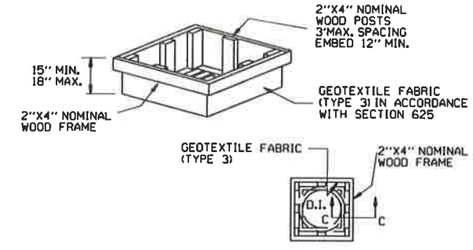
GENERAL NOTES

GEOTEXTILE FABRIC (TYPE 4) IN ACCORDANCE WITH SECTION 625

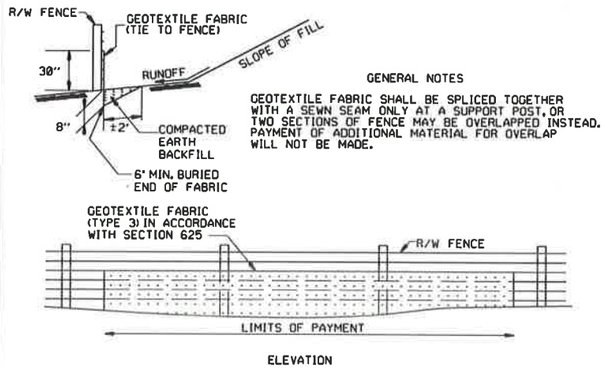
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.



SILT FENCE (E-11)



DROP INLET SILT FENCE (E-7)



GENERAL NOTES

GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

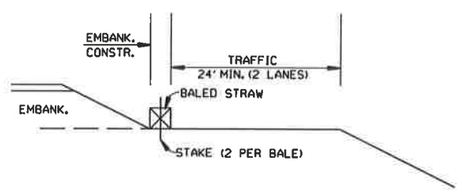
SILT FENCE ON R/W FENCE (E-4)

GENERAL NOTES

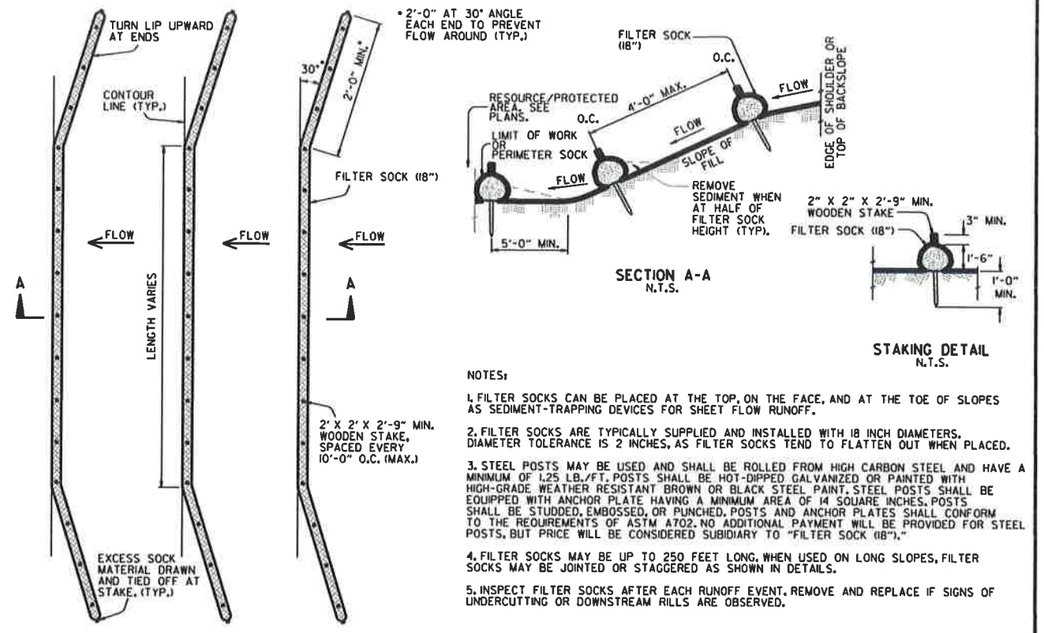
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

2. NO GAPS SHALL BE LEFT BETWEEN BALES.

3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.



BALED STRAW FILTER BARRIER (E-2)



NOTES:

1. FILTER SOCKS CAN BE PLACED AT THE TOP, ON THE FACE, AND AT THE TOE OF SLOPES AS SEDIMENT-TRAPPING DEVICES FOR SHEET FLOW RUNOFF.

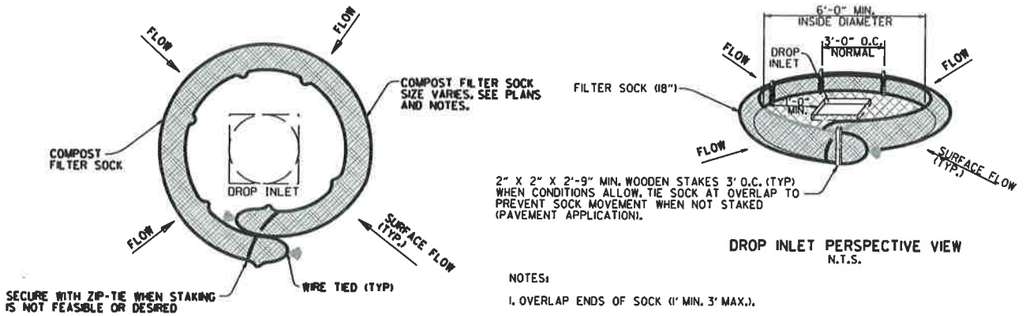
2. FILTER SOCKS ARE TYPICALLY SUPPLIED AND INSTALLED WITH 18 INCH DIAMETERS. DIAMETER TOLERANCE IS 2 INCHES, AS FILTER SOCKS TEND TO FLATTEN OUT WHEN PLACED.

3. STEEL POSTS MAY BE USED AND SHALL BE ROLLED FROM HIGH CARBON STEEL AND HAVE A MINIMUM OF 1.25 LB./FT. POSTS SHALL BE HOT-DIPPED GALVANIZED OR PAINTED WITH HIGH-GRADE WEATHER RESISTANT BROWN OR BLACK STEEL PAINT. STEEL POSTS SHALL BE EQUIPPED WITH ANCHOR PLATE HAVING A MINIMUM AREA OF 14 SQUARE INCHES. POSTS SHALL BE STUDDED, EMBOSSED, OR PUNCHED. POSTS AND ANCHOR PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A702. NO ADDITIONAL PAYMENT WILL BE PROVIDED FOR STEEL POSTS, BUT PRICE WILL BE CONSIDERED SUBIDIARY TO "FILTER SOCK (18")."

4. FILTER SOCKS MAY BE UP TO 250 FEET LONG. WHEN USED ON LONG SLOPES, FILTER SOCKS MAY BE JOINTED OR STAGGERED AS SHOWN IN DETAILS.

5. INSPECT FILTER SOCKS AFTER EACH RUNOFF EVENT. REMOVE AND REPLACE IF SIGNS OF UNDERCUTTING OR DOWNSTREAM RILLS ARE OBSERVED.

FILTER SOCK ALONG SLOPE (E-3)



NOTES:

1. OVERLAP ENDS OF SOCK (1' MIN. 3' MAX.).

2. USE 18" DIA. SOCK IN NON-TRAFFIC AREAS OR AREAS WHERE SAFETY IS NOT A CONCERN.

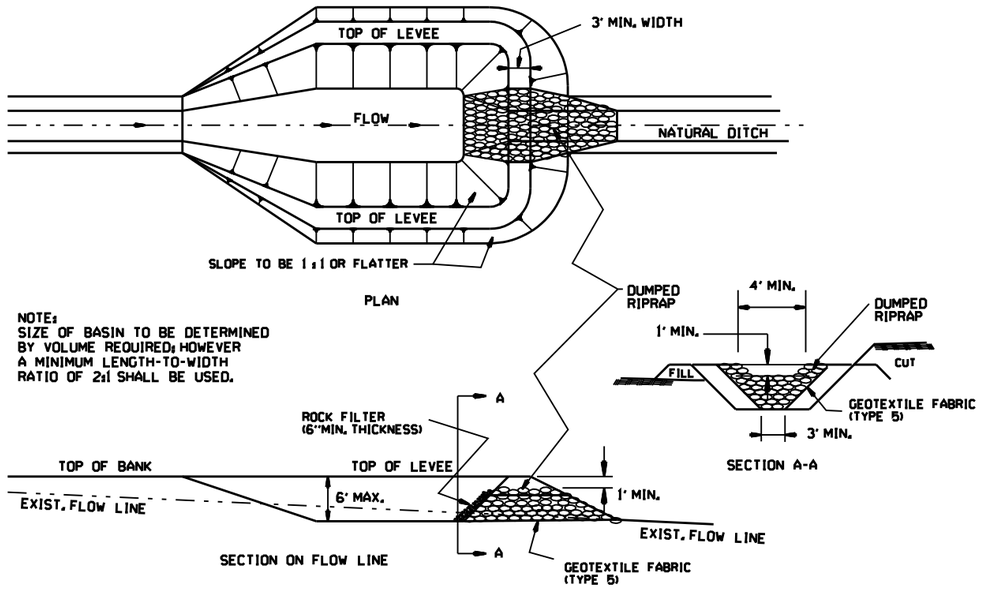
COMPOST FILTER SOCK DROP INLET PROTECTION (E-13)

DATE	REVISION	FILMED
11-16-17	ADDED FILTER SOCK E-3 AND E-13	
12-15-11	DELETED BALED STRAW DITCH CHECK & ADDED WATTLE DITCH CHECK	
11-18-98	ADDED NOTES	
07-02-98	ADDED BALED STRAW FILTER BARRIER (E-2)	
07-20-95	REVISED SILT FENCE E-4 AND E-11	7-20-95
07-15-94	REV. E-4 & E-11 MIN. 13" BURIED END OF FABRIC	
06-02-94	REVISED E-1,4,7 & 11; DELETED E-2 & 3	6-2-94
04-01-93	REDRAWN	
10-01-92	REDRAWN	
08-02-76	ISSUED R.D.M.	298-7-28-76

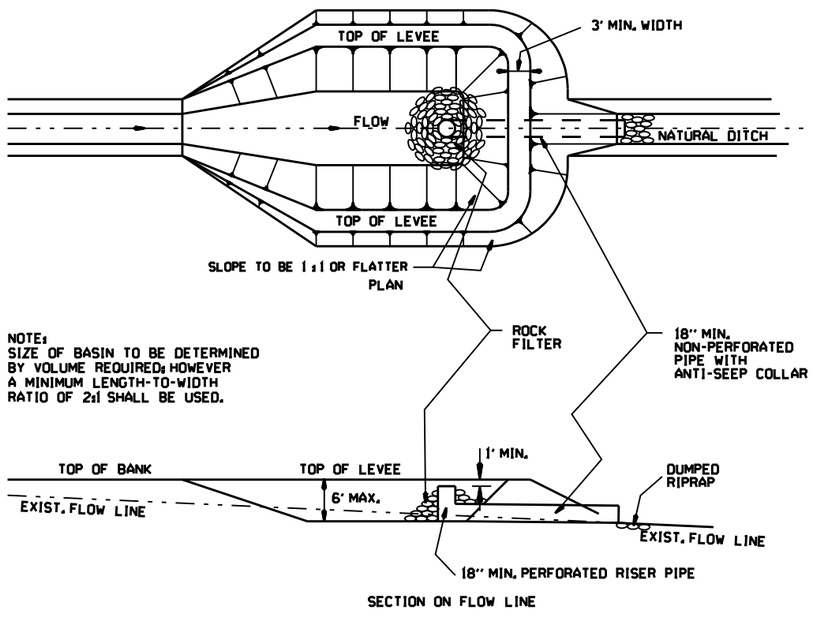
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

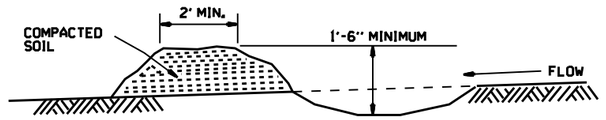
STANDARD DRAWING TEC-1



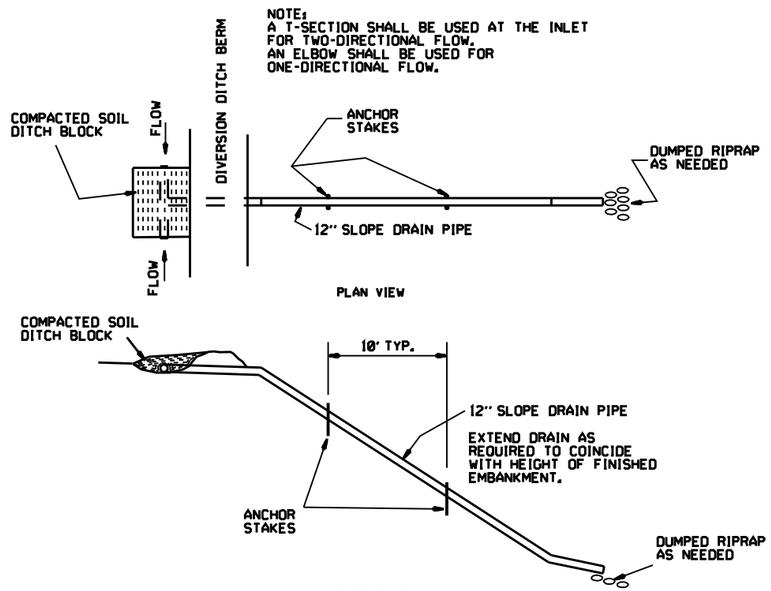
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



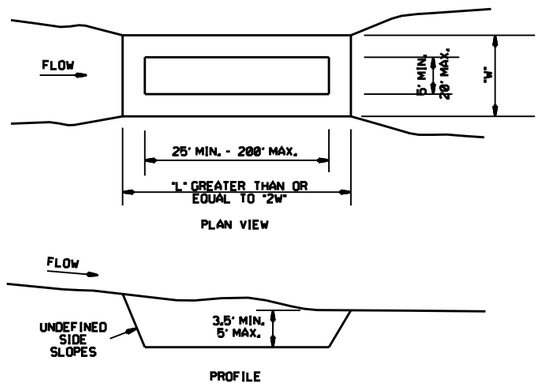
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

DATE	REVISION	FILMED
6-2-94	Revised E-8 & E-12; Added E-14 & Deleted E-13	
4-1-93	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

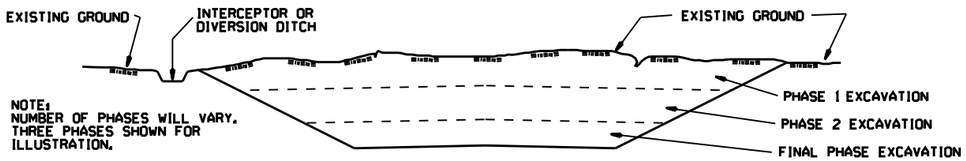
STANDARD DRAWING TEC-2

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

1. PLACE PERIMETER CONTROLS (I.E. SILT FENCES , DIVERSION DITCHES, SEDIMENT BASINS, ETC.)
2. PERFORM CLEARING AND GRUBBING OPERATION.

EXCAVATION



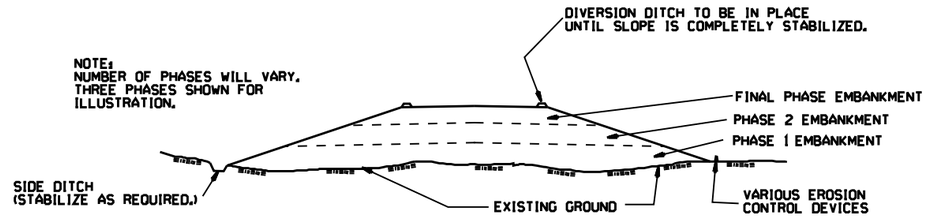
GENERAL NOTE

ALL CUT SLOPES SHALL BE DRESSED, PREPARED, SEEDED, AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE EXCAVATED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 25 FEET, MEASURED VERTICALLY.

CONSTRUCTION SEQUENCE

1. EXCAVATE AND STABILIZE INTERCEPTOR AND/OR DIVERSION DITCHES.
2. PERFORM PHASE 1 EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING.
3. PERFORM PHASE 2 EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING.
4. PERFORM FINAL PHASE OF EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING. STABILIZE DITCHES. CONSTRUCT DITCH CHECKS, DIVERSION DITCHES, SEDIMENT BASINS, OR OTHER EROSION CONTROL DEVICES AS REQUIRED.

EMBANKMENT



GENERAL NOTE

ALL EMBANKMENT SLOPES SHALL BE DRESSED, PREPARED, SEEDED, AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE CONSTRUCTED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 25 FEET, MEASURED VERTICALLY.

CONSTRUCTION SEQUENCE

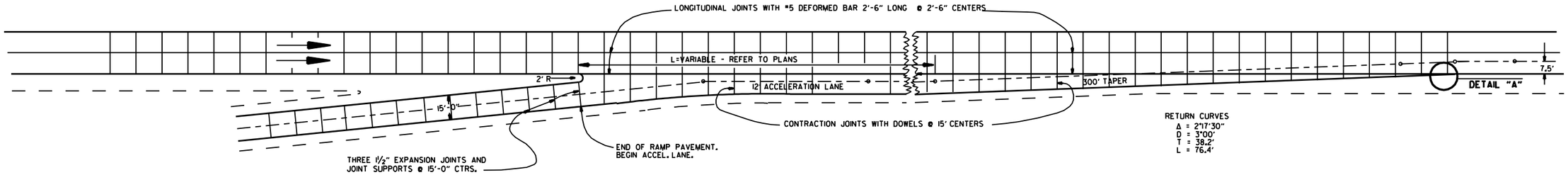
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD OF GREATER THAN 21 DAYS.
3. PLACE PHASE 2 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD OF GREATER THAN 21 DAYS.
4. PLACE FINAL PHASE OF EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PLACE DIVERSION DITCHES AND SLOPE DRAINS AND MAINTAIN UNTIL ENTIRE SLOPE IS STABILIZED.

DATE	REVISION	FILMED
11-03-94	CORRECTED SPELLING	
6-2-94	Drawn & Issued	6-2-94

ARKANSAS STATE HIGHWAY COMMISSION

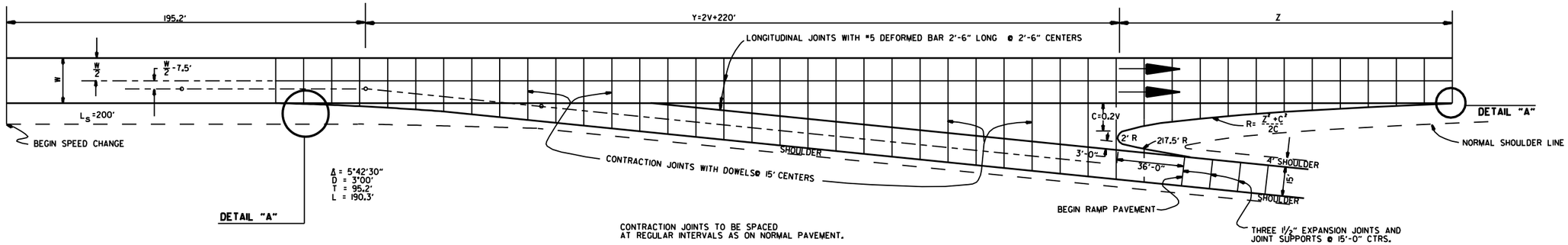
TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3



ENTRANCE RAMP

NOTE: JOINT SPACING ON THE MAIN LANES SHALL BE ADJUSTED AS NECESSARY TO CONFORM TO THESE JOINT LAYOUTS. THE MAIN LANE JOINT SPACING MAY BE REDUCED TO A 12' MINIMUM.

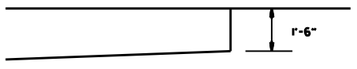


CONTRACTION JOINTS TO BE SPACED AT REGULAR INTERVALS AS ON NORMAL PAVEMENT.

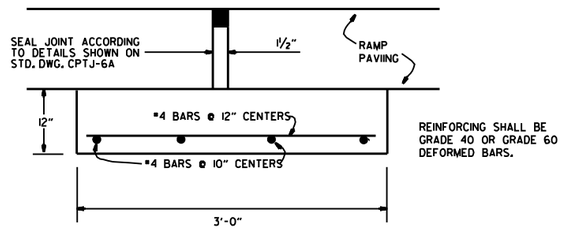
EXIT RAMP

EXIT RAMP

DESIGN SPEED V	Y	NOSE OFFSET C	LENGTH NOSE TAPER Z	RETURN RADIUS R	ADDITIONAL SURFACING SQ. YDS.
40	300.0	8.0	96.0	580.0	602.43
50	320.0	10.0	120.0	725.0	687.25
60	340.0	12.0	168.0	1182.0	790.55
70	360.0	14.0	210.0	1582.0	902.27



DETAIL "A"



DETAIL OF EXPANSION JOINT & JOINT SUPPORT

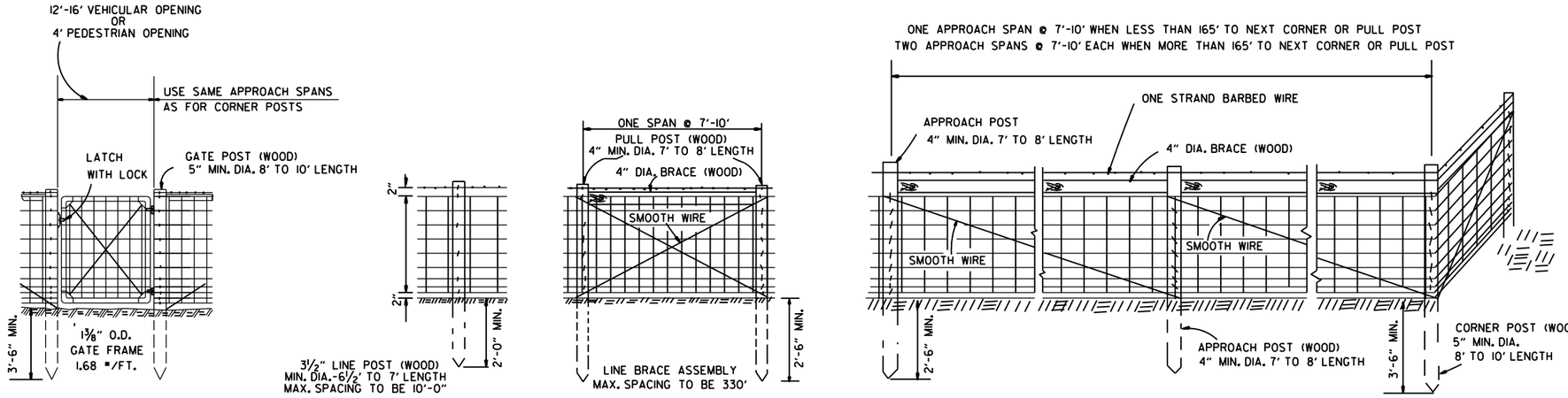
NOTE: THE EXPANSION JOINTS SHALL BE MEASURED AND PAID FOR AS P.C.C. PAVEMENT (RAMP THICKNESS). WHEN RAMP PAVING IS ASPHALT, EXPANSION JOINT IS NOT REQUIRED.
THE JOINT SUPPORT MAY BE CONSTRUCTED WITH CLASS "A", "S", OR PAVING CONCRETE. PAYMENT FOR THE JOINT SUPPORT SHALL BE FOR THE CONTRACT UNIT PRICE BID FOR THE CLASS OF CONCRETE USED. ALL OTHER WORK AND MATERIALS REQUIRED FOR THE CONSTRUCTION OF THE JOINT SUPPORT SHALL BE INCLUDED IN THE PRICE BID FOR THE ABOVE ITEMS.

DATE	REVISION	DATE FILM'D
8-22-02	DELETED NOTE	
11-16-01	CORRECTED SPELLING ON ENTRANCE RAMP NOTE	
5-13-99	ADDED, EDITED AND DELETED NOTES	
11-03-94	ADDED NOTE RE: REINF. BARS	
10-1-92	ADDED DETAIL A & OTHER MINOR CHANGES	10-1-92
1-25-90	REVISED EXPANSION JOINT	1-25-90
7-15-88	CONFORM'D TO 1988 SPECIFICATIONS	65C-7-15-88
3-2-81	ISSUED	511-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

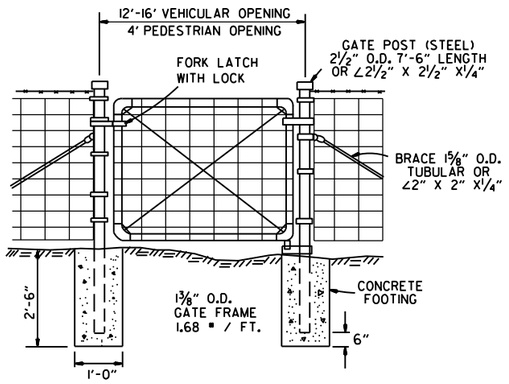
DETAILS OF STANDARD TURNOUT FOR ENTRANCE & EXIT RAMPS (NON-REINFORCED)

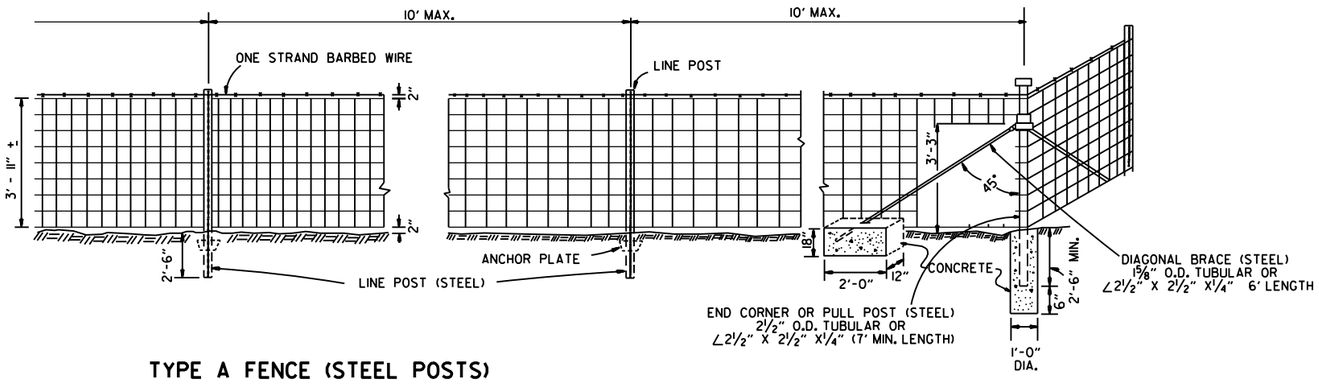
STANDARD DRAWING TR-1A



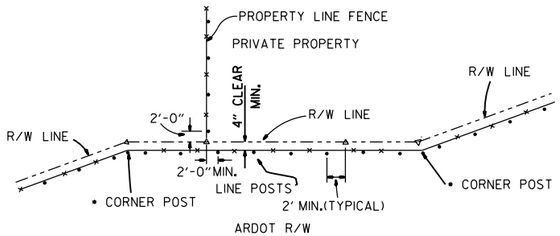
NOTE: STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.

TYPE A FENCE (WOOD POSTS)





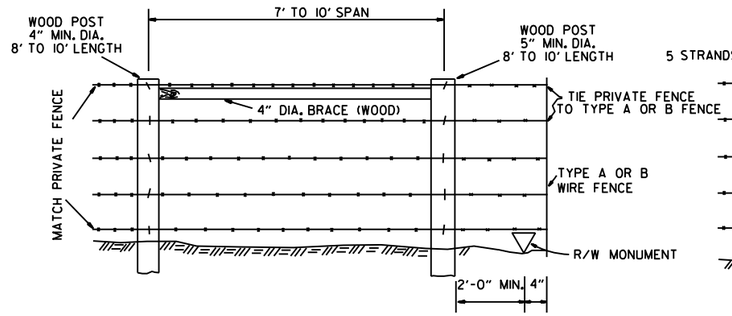
TYPE A FENCE (STEEL POSTS)



•NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

△ - R/W MONUMENTS
• - FENCE POSTS

RIGHT-OF-WAY FENCE LOCATION

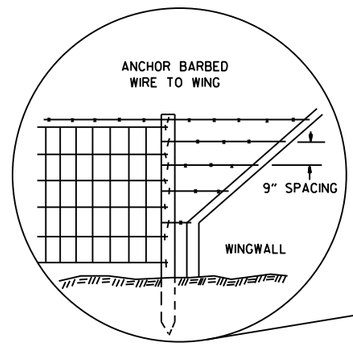


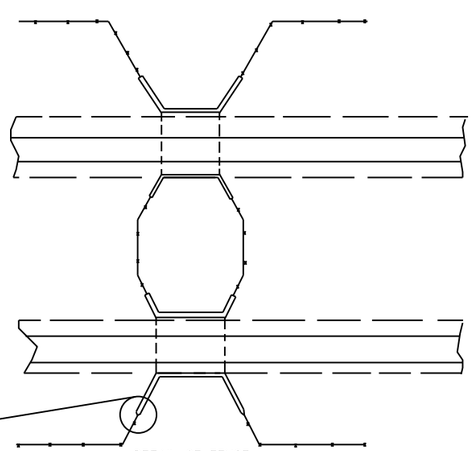
WHERE EXISTING PRIVATE FENCE CONSISTS OF STEEL POSTS, USE END POST ASSEMBLY AS SHOWN WITH TYPE A FENCE OR OTHER END POST ASSEMBLY AS APPROVED BY THE ENGINEER.

PRIVATE FENCE TERMINAL INSTALLATION

SPACING AND SIZE OF POSTS FOR TYPE B FENCE SHALL BE THE SAME AS TYPE A FENCE.

TYPE B FENCE





DETAIL OF FENCE CONSTRUCTION AT LARGE CULVERTS (5' IN HEIGHT AND OVER)

GENERAL NOTES:

STEEL LINE POSTS SHALL BE GALVANIZED, 7 FT. IN LENGTH.

TUBULAR END, CORNER, PULL, OR DIAGONAL BRACES MUST CONFORM TO THE DIMENSIONS AND WEIGHTS SPECIFIED ON STANDARD DRAWING WF-3 (CHAIN LINK).

THE CONTRACTOR SHALL FURNISH AT LEAST 25% OF WOOD LINE POSTS OF 7' LENGTHS IN ORDER TO PROVIDE SUFFICIENT SET IN SOFT GROUND OR SMALL DEPRESSIONS.

GATE HINGES AND LATCHES WITH LOCKS TO BE OF A TYPE APPROVED BY THE ENGINEER. DRIVEWAY GATES, EITHER SINGLE 12' OR 16' OR DOUBLE 6' TO 8' OPENINGS OF THE SAME TYPE AS THE PEDESTRIAN GATE, SHALL BE INSTALLED ON THE RIGHT SIDE OF EACH THROUGH LANE ROAD AT LARGE CULVERTS OR BRIDGE CROSS FENCE FOR USE BY MAINTENANCE EQUIPMENT. LOCATION OF GATES TO BE SHOWN ON THE PLANS OR AS DESIGNATED BY THE ENGINEER.

AT STREAM CROSSINGS THE FENCE SHALL NOT BE CONSTRUCTED ACROSS LARGE STREAMS. WHERE CLEARANCE IS SUFFICIENT FROM THE TOP OF BANK TO THE BRIDGE STRUCTURE, A CROSS CONNECTION SHALL BE CONSTRUCTED BETWEEN THE FENCE ON EACH SIDE OF THE ROAD. WHERE THE CLEARANCE IS NOT SUFFIEICNT, THE FENCE SHALL BE TERMINATED WITH CROSS CONNECTIONS AND END POSTS ADJACENT TO THE BRIDGE ABUTMENTS OR CULVERT WINGWALLS.

SPLICE FOR WOVEN WIRE BETWEEN PULL POST SHALL BE BY THE "WESTERN UNION METHOD" AS DESCRIBED AS FOLLOWS: THE VERTICAL WIRES FOR EACH END OF THE FENCE FABRIC SHALL BE PLACED SIDE BY SIDE AND THE PROJECTING HORIZONTAL WIRES SHALL BE WRAPPED A MINIMUM OF 4 TIMES AROUND THE HORIZONTAL WIRES OF THE FIRST WEB.

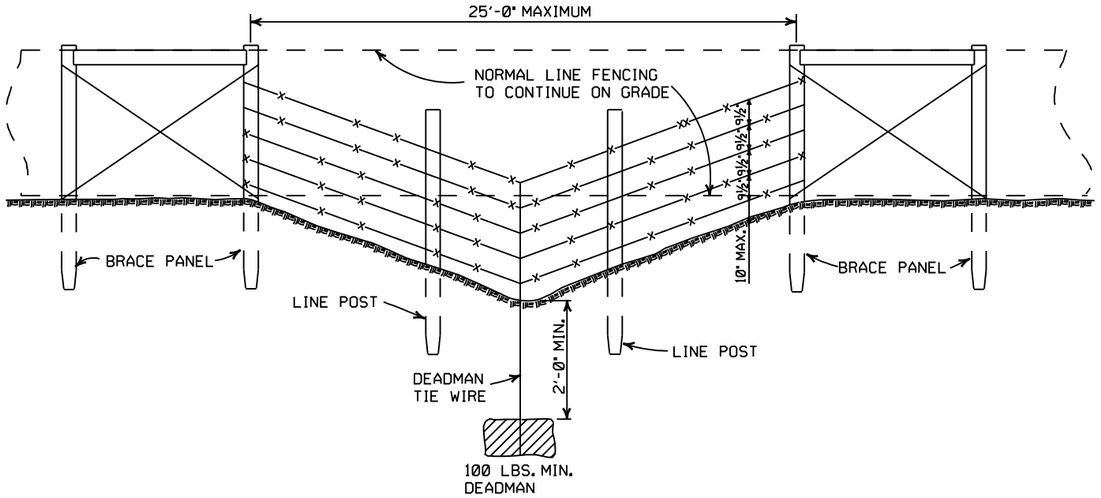
SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE "EYE METHOD": AS DESCRIBED AS FOLLOWS: THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND THE PROJECTING WIRE A MINIMUM OF 4 TIMES FOR EACH WIRE LOOP.

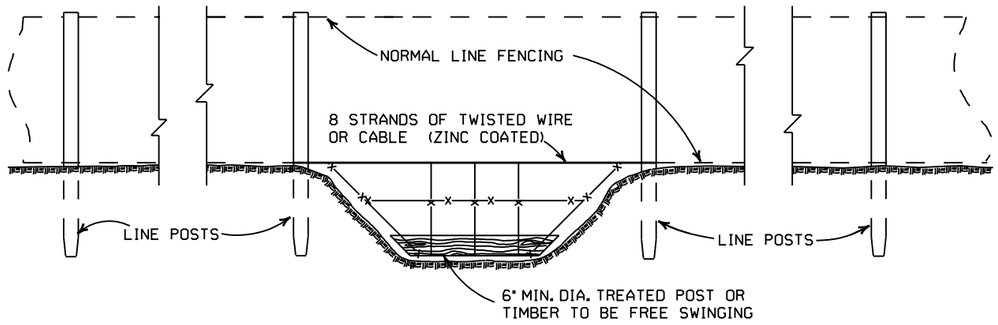
DATE	REVISION	DATE FILMED
8-22-02	REVISED GENERAL NOTES	
10-18-96	REVISED ASTM REF. TO AASHTO	
11-22-95	REVISED R-O-W LOCATION DETAIL	
6-2-94	ADDED CORNER POST NOTE	6-2-94
8-5-93	REVISED R-O-W LOCATION DETAIL	8-5-93
10-1-92	ADDED STAPLE NOTE	
8-2-90	REV'D PULL POST LENGTH	
11-30-89	DELETED CLASS CONC.	
7-15-88	ADDED SPLICE NOTES	
7-15-88	ADDED HEIGHT DIMENSION	
4-3-87	REVISED VARIOUS NOTES	
	AND GENERAL NOTES	
11-1-84	MAX. POST SPACING	
1-4-83	MIN. DIA. LINE POST	
10-2-72	REVISED & REDRAWN	

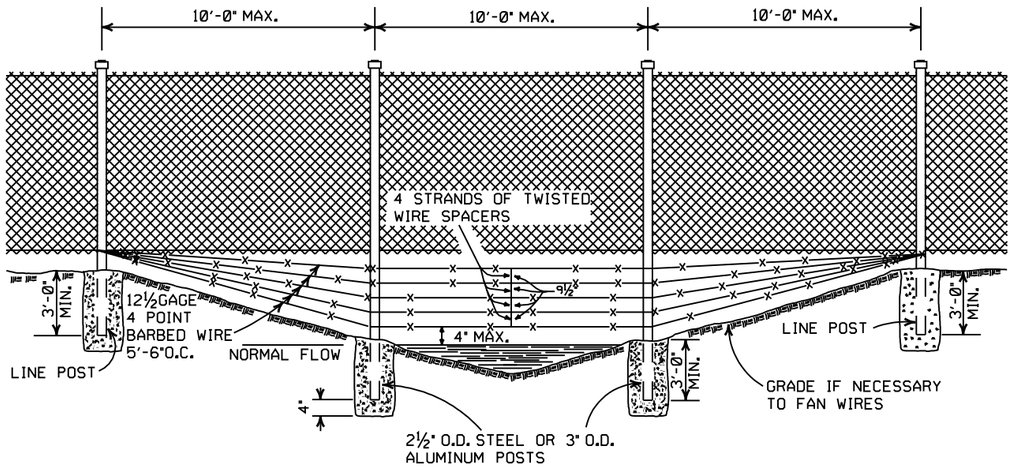
ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE
TYPE A AND B

STANDARD DRAWING WF-1







GENERAL NOTES:

THESE INSTALLATIONS TO BE USED WHERE NORMAL FENCING INSTALLATION WOULD CAUSE THE COLLECTING OF DRIFT IN THE CHANNEL OR THE DEPRESSION WILL NOT PERMIT NORMAL INSTALLATION. INSTALLATIONS WILL BE MADE ONLY WHERE DIRECTED BY THE ENGINEER.

WHEN A FENCE LINE APPROACHES A DITCH, GULLY OR DEPRESSION, THE LAST POST ON LEVEL GROUND SHALL BE PLACED CLOSE ENOUGH TO THE EDGE OF THE DROP OFF THAT THE FENCE MAY BE STRUNG TO THE POST IN THE DEPRESSION WITHOUT TOUCHING THE GROUND.

IN TERRAIN OF SUCH EXTREME IRREGULARITY THAT MINOR GRADING WILL NOT BE FEASIBLE, THE NORMAL FENCE SHALL CONTINUE ON GRADE AND THE GULLIES OR DEPRESSIONS TREATED BY AUXILIARY FENCES AS SHOWN.

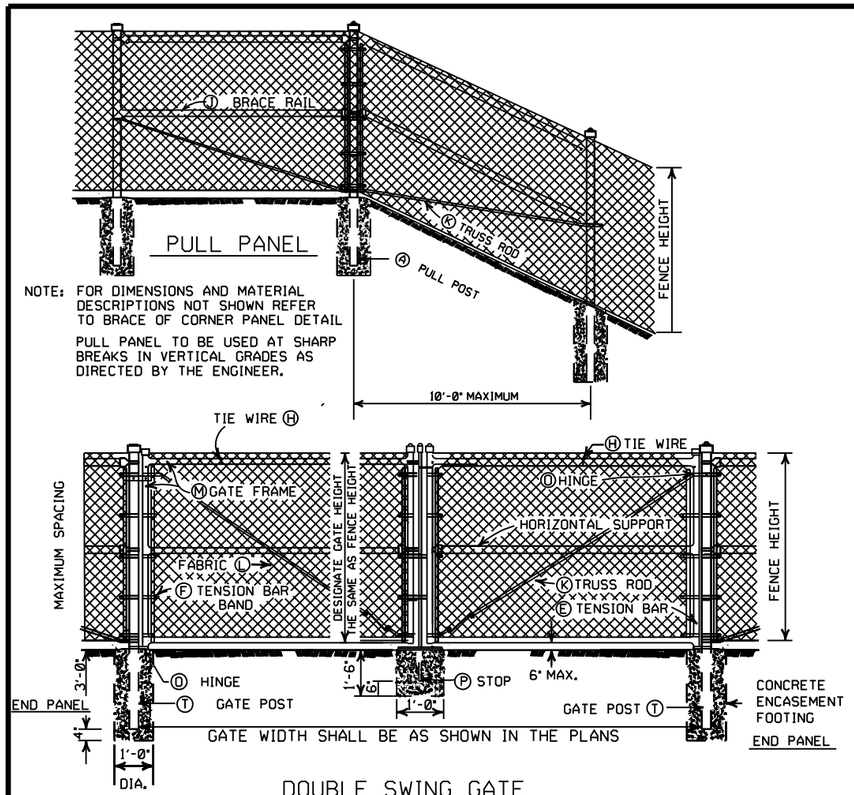
PAYMENT FOR THE TYPE INSTALLATION USED WILL NOT BE MADE DIRECTLY BUT WILL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR WIRE FENCE OR CHAIN LINK FENCE.

4-20-79	REVISED TOP RAIL & TENSION WIRE	696-4-20-79
10-2-72	REVISED AND REDRAWN	529-10-2-72
DATE	REVISION	FILMED

ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE WATER GAPS

STANDARD DRAWING WF-2

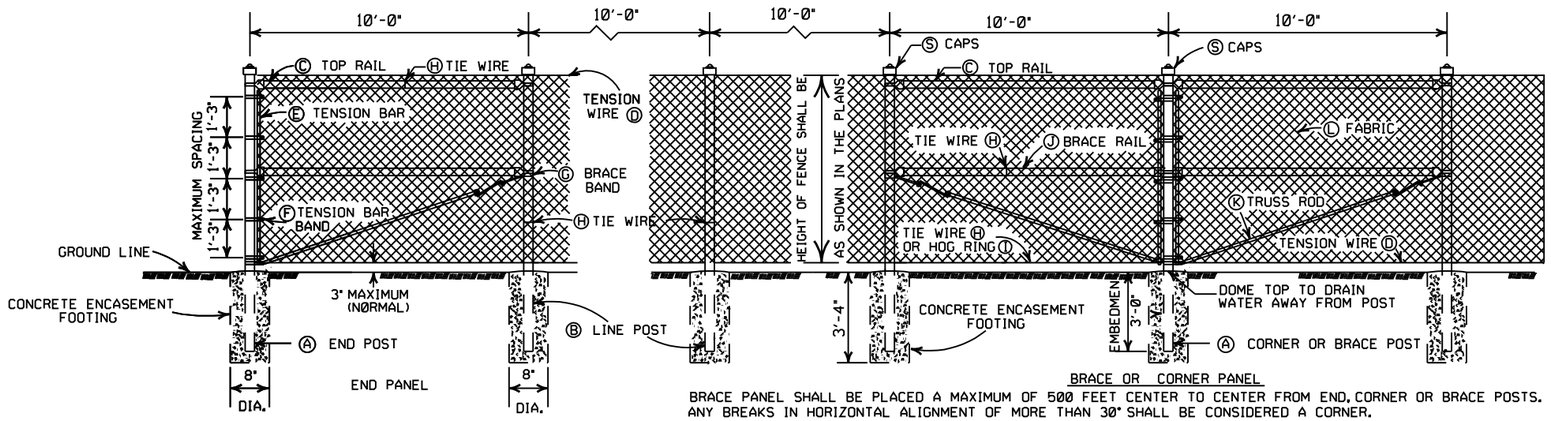


NOTE: FOR DIMENSIONS AND MATERIAL DESCRIPTIONS NOT SHOWN REFER TO BRACE OF CORNER PANEL DETAIL

PULL PANEL TO BE USED AT SHARP BREAKS IN VERTICAL GRADES AS DIRECTED BY THE ENGINEER.

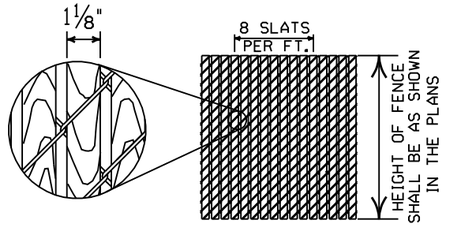
DOUBLE SWING GATE

POST SPACING DETAIL



BRACE OR CORNER PANEL

BRACE PANEL SHALL BE PLACED A MAXIMUM OF 500 FEET CENTER TO CENTER FROM END, CORNER OR BRACE POSTS. ANY BREAKS IN HORIZONTAL ALIGNMENT OF MORE THAN 30° SHALL BE CONSIDERED A CORNER.



1⅛" X ¼" REDWOOD SLATS (LENGTH TO MATCH HEIGHT OF FENCE)

DETAIL OF REDWOOD SLAT INSTALLATION

(WHERE APPLICABLE)

GENERAL NOTES:

(C) CHAIN LINK FENCE BEING PLACED ON PRIVATE PROPERTY SHALL INCLUDE A TOP RAIL. ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER LIN. FT. OF CHAIN LINK FENCE.

(D) TENSION WIRE: SHALL BE SECURED TO ALL TERMINAL, PULL, BRACE OR CORNER POSTS WITH TENSION BAR BANDS.

(J) BRACE RAIL: BRACE RAILS SHALL BE PROVIDED AT ALL TERMINAL, PULL, BRACE OR CORNER POSTS HALFWAY BETWEEN THE TOP RAIL AND GROUND LEVEL WHEN TOPRAIL IS SPECIFIED AND TWELVE INCHES (12") DOWN FROM TOP OF FABRIC WHEN TOP TENSION WIRE IS SPECIFIED. BRACE RAIL SHALL EXTEND FROM SUCH POST TO THE FIRST ADJACENT LINE POST.

(L) FABRIC: SHALL CONFORM TO THE SPECIFICATIONS.

(M) GATE FRAMES: SHALL BE CONSTRUCTED OF TUBULAR MEMBERS ASSEMBLED BY USE OF HEAVY PRESSED STEEL, MALLEABLE FITTINGS OR BY WELDING. ALL GATES SHALL HAVE ONE HORIZONTAL SUPPORT EXTENDING THE WIDTH OF THE GATE AT THE MIDPOINTS OF VERTICAL FRAME MEMBERS. THE COMPLETE FRAME SHALL BE RIGID AND HAVE AMPLE STRENGTH TO BE FREE FROM SAG AND TWIST.

(O) HINGES: SHALL BE OF HEAVY PATTERN, OF ADEQUATE STRENGTH FOR GATE, AND WITH LARGE BEARING SURFACES FOR CLAMPING IN POSITION. THE HINGE SHALL BE OF THE PROPER TYPE TO ALLOW FOR THE DESIGNATED DEGREE OF SWING. THE HINGE SHALL NOT TWIST OR TURN UNDER THE ACTION OF THE GATE. THE GATES SHALL BE CAPABLE OF BEING OPENED AND CLOSED EASILY BY ONE PERSON.

(P) LATCHES AND STOPS: SHALL BE PROVIDED FOR ALL GATES. GATES SHALL HAVE A DROP BAR LATCH. LATCHES SHALL BE ARRANGED FOR LOCKING. THE STOP FOR DROP BAR LATCHES SHALL BE SET IN CONCRETE AND ENGAGE THE PLUNGER OF THE BAR LATCH.

(S) CAPS: ALL POSTS, EXCEPT ROLL FORMED POSTS AND "T" POSTS SHALL BE CAPPED OVER THE EXTERIOR OF THE POST, AND SHALL CONFORM TO ASTM F626.

CONCRETE REQUIRED FOR THE EMBEDMENT OF ALL POSTS SHALL NOT BE PAID FOR DIRECTLY BUT SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR CHAIN LINK FENCE.

POSTS SHALL BE SPACED EQUIDISTANT ON A MAXIMUM OF 10' CENTERS.

EXCAVATION FOR POSTS: IN OTHER THAN ROCK SHALL BE OF THE DIMENSIONS INDICATED. IF ROCK IS ENCOUNTERED BEFORE REACHING THE REQUIRED DEPTH, THE EXCAVATION SHALL BE CONTINUED TO THE DEPTH INDICATED OR 1'-6" INTO THE ROCK, WHICHEVER IS LESS, AND SHALL BE A MINIMUM OF 8 INCHES IN DIAMETER.

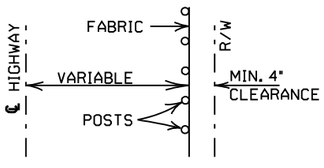
HEIGHT OF FENCE FABRIC	(A) END, PULL CORNER OR BRACE POST	(B) LINE POSTS SIZE	(B) LINE POSTS TIE SPACING	(C) TOP RAIL SIZE	(C) TOP RAIL TIE SPACING	(C) TOP RAIL MIN. LENGTH	(D) TENSION WIRE SIZE	(D) TENSION WIRE TIE SPACING	(E) TENSION BAR SIZE	(E) TENSION BAR LENGTH	(F) TENSION BAR BAND SIZE	(F) TENSION BAR BAND BOLT SIZE	(F) TENSION BAR BAND SPACING	(G) BRACE BAND SIZE	(G) BRACE BAND BOLT SIZE
6' AND LESS	2½" O.D.	2" O.D.	1 TIE EVERY 1'-2" OF FABRIC HEIGHT	1⅝" O.D.	1 TIE EVERY 2'-0"	10'-0"	7 GAUGE COIL SPRING WIRE	1 TIE EVERY 1'-0"	MIN. OF ⅜" X ¾"	MIN. OF 2" LESS THAN FABRIC HEIGHT	MIN. OF ¾" X 0.074	⅝" X 1¼"	1 BAND AT TOP AND BOTTOM 15" MAX. INTERVAL BETWEEN BANDS	MIN. OF ¾" X 0.105	⅝" X 1¼"
OVER 6' TO 12' INCL.	3 " O.D.	2½" O.D.													

HEIGHT OF FENCE FABRIC	(H) TIE WIRE	(I) HOG RING	(J) BRACE RAIL SIZE	(J) BRACE RAIL TIE SPACING	(K) TRUSS ROD	(L) FABRIC SIZE	(L) FABRIC MESH	(L) FABRIC SELVAGE	(M) GATE FRAME SIZE	(M) GATE FRAME TIE SPACING	(N) HORIZONTAL SUPPORT SIZE	(N) HORIZONTAL SUPPORT TIE SPACING	(O) HINGE TYPE 180° SWING	(T) GATE POST GATE WIDTH 12' AND LESS	(T) GATE POST GATE WIDTH OVER 12' TO 24' INCL.
6' AND LESS	MIN. OF 12 GA. STEEL OR 9 GA. ALUM.	SAME GAUGE AS FABRIC	1⅝" O.D.	1 TIE EVERY 2'-0"	MIN. OF ⅝" ROUND WITH TIGHTNERS AND FITTINGS	9 GA.	2"	KNUCK-ING AND/OR TWIST-ING	2" O.D.	1 TIE EVERY 1'-0"	2" O.D.	1 TIE EVERY 1'-0"	OFFSET	3" O.D.	4" O.D.
OVER 6' TO 12' INCL.														4" O.D.	

NOTE: POST SIZES SHOWN ARE FOR STEEL. WHERE ALUMINUM IS PROVIDED, LINE POSTS SHALL HAVE AN OUT SIDE DIAMETER OF 2½" FOR FENCE HEIGHT OF 6' AND LESS, AN OUTSIDE DIAMETER OF 3" FOR FENCE HEIGHT OF 6' TO 12'. END, PULL, CORNER OR BRACE POSTS SHALL HAVE AN OUTSIDE DIAMETER OF 3" FOR FENCE HEIGHT OF 6' AND LESS; AN OUTSIDE DIAMETER OF 3½" FOR FENCE HEIGHTS OF 6' TO 12'. GATE POSTS WHERE GATE WIDTH IS 12' AND LESS SHALL HAVE AN OUTSIDE DIAMETER OF 3½" FOR FENCE HEIGHT OF 6' AND LESS. ALUMINUM TENSION WIRE SHALL BE 0.192" IN DIAMETER. MINIMUM THICKNESS OF MATERIAL FROM WHICH EXPANSION SLEEVES SHALL BE MADE WILL BE 0.078". POSTS AND RAILS MAY HAVE ANY CROSS-SECTIONAL SHAPE THAT WILL MEET THE SPECIFICATIONS.

OTHER DETAILS APPLY TO BOTH STEEL AND ALUMINUM FENCE.

ALL MISCELLANEOUS FITTINGS AND HARDWARE SHALL MEET THE REQUIREMENTS AND PRODUCTION TOLERANCES AS SET FORTH IN THE SPECIFICATIONS. 9 GAUGE ALUMINUM WIRE SHALL BE ACCEPTABLE FOR TIEING FABRIC TO TUBULAR AND ROLL FORMED MEMBERS OF STEEL FENCE.



INSTALLATION MAY BE MODIFIED AS SHOWN IN THE PLANS

TYPICAL INSTALLATION DIAGRAM

POSTS AND RAILS

SIZE O.D.	GRADE 1 AND ALUMINUM ALLOY O.D. INCHES	WALL THICKNESS	LBS. PER LINEAR FT. STEEL	LBS. PER LINEAR FT. ALUMINUM	GRADE 2 O.D. INCHES	WALL THICKNESS	LBS. PER LINEAR FT.
1⅝	1.660	0.140	2.27	0.786	1.660	0.111	1.84
2	1.900	0.145	2.72	0.940	1.900	0.120	2.28
2½	2.375	0.154	3.65	1.264	2.375	0.130	3.11
3	2.875	0.203	5.79	2.004	2.875	0.160	4.64
3½	3.500	0.216	7.58	2.621	3.500	0.160	5.71
4	4.000	0.226	9.11	3.151	4.000	0.160	6.56

TOLERANCES ON DIMENSIONS AND WEIGHTS ACCORDING TO AASHTO M 181

DATE	REVISION	FILMED
11-17-10	REVISED TRUSS ROD	
12-10-09	REVISED POSTS & RAILS TABLE	
5-21-09	ADDED TABLE & GEN. NOTE (C)	
8-22-02	REVISED NOTES, REMOVED TABLE, & REMOVED FENCE ALTERNATE	
4-3-97	REVISED BRACE RAIL NOTE	
10-18-96	REVISED AASHTO & ASTM REF.	
11-3-94	REVISED NOTE (L)	
10-1-92	DELETED ALTERNATE POST	10-1-92
8-15-91	DELETED ROLL FORMED POST DETAIL & ADDED NOTE	8-15-91
11-30-89	DELETED CLASS CONCRETE	11-30-89
11-17-88	REVISED O.D. SIZES	668-11-17-88
10-30-87	GENERAL REVISIONS	548-10-30-87
4-20-79	REVISED TOP RAIL & TENSION WIRE	695-4-20-79
10-2-72	REVISED AND REDRAWN	530-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

CHAIN LINK FENCE

STANDARD DRAWING WF-3

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.				
JOB No.					

BAR LIST FOR VARIOUS SECTIONS OF BARREL

"a" bars – STRAIGHT – In Top and Bottom Slab of Barrel. 2 Add'l in Apron and Headwall - Each.
"b" bars – BENT - See Diagram below. – In Bottom of Top Slab bent up over Division Walls - hooked. Alternate with "a" and "c" bars.

Section & Bar Group	Lengths of Section	D (Depth of Cover)	S (Clear Span)	H (Clear Height)	"a" Size	"a" Spacing	"a" No. Req'd 3:1	"a" No. Req'd 4:1	"a" Length	"b" Size	"b" Spacing	"b" No. Req'd 3:1	"b" No. Req'd 4:1	"b" Length	X	Y	Z
SECTION "A" & BAR GROUP "A"	4:1 = 32'-0"; 3:1 = 22'-0"	0' TO 10'-0"	3 @ 8'	5'	#5	12"	48	68	26'-5"	#6	12"	22	32	28'-1"	0'-5"	3'-11"	6'-5"
				6'			48	68	26'-5"			22	32	28'-1"	0'-5"	3'-11"	6'-5"
				7'			48	68	26'-8"			22	32	28'-4"	0'-5"	4'-0"	6'-5½"
				8'			48	68	26'-9"			22	32	28'-5"	0'-5"	4'-0"	6'-6"
				9'			48	68	27'-1"			22	32	28'-9"	0'-5"	4'-1"	6'-7"
				10'			48	68	27'-5"			22	32	29'-1"	0'-5"	4'-2"	6'-8"
			3 @ 10'	6'	#6	11"	52	74	32'-8"	#6	11"	24	35	34'-6"	0'-6½"	4'-9"	7'-11½"
				7'			52	74	32'-8"			24	35	34'-6"	0'-6½"	4'-9"	7'-11½"
				8'			52	74	32'-9"			24	35	34'-7"	0'-6½"	4'-9"	8'-0"
				9'			52	74	33'-1"			24	35	34'-11"	0'-6½"	4'-10"	8'-1"
				10'			52	74	33'-5"			24	35	35'-3"	0'-6½"	4'-11"	8'-2"
				11'			52	74	33'-7"			24	35	35'-5"	0'-6½"	4'-11"	8'-3"
				12'			52	74	33'-9"			24	35	35'-7"	0'-6½"	4'-11"	8'-4"
			3 @ 12'	6'	#6	11"	52	74	38'-9"	#7	11"	24	35	40'-11"	0'-7¾"	5'-6½"	9'-6"
				7'			52	74	38'-9"			24	35	40'-11"	0'-7¾"	5'-6½"	9'-6"
				8'			52	74	38'-9"			24	35	40'-11"	0'-7¾"	5'-6½"	9'-6"
				9'			52	74	39'-1"			24	35	41'-3"	0'-7¾"	5'-7½"	9'-7"
				10'			52	74	39'-5"			24	35	41'-7"	0'-7¾"	5'-8½"	9'-8"
				11'			52	74	39'-7"			24	35	41'-9"	0'-7¾"	5'-8½"	9'-9"
				12'			52	74	39'-9"			24	35	41'-11"	0'-7¾"	5'-8½"	9'-10"
SECTION "B" & BAR GROUP "B"	4:1 = 16'-0"; 3:1 = 11'-0"	10'-0" TO 15'-0"	3 @ 8'	5'	#5	11"	24	36	26'-5"	#6	11"	12	17	28'-3"	0'-6"	3'-9"	6'-5"
				6'			24	36	26'-5"			12	17	28'-3"	0'-6"	3'-9"	6'-5"
				7'			24	36	26'-8"			12	17	28'-6"	0'-6"	3'-10"	6'-5½"
				8'			24	36	26'-9"			12	17	28'-7"	0'-6"	3'-10"	6'-6"
				9'			24	36	27'-1"			12	17	28'-11"	0'-6"	3'-11"	6'-7"
				10'			24	36	27'-5"			12	17	29'-3"	0'-6"	4'-0"	6'-8"
			3 @ 10'	6'	#6	13"	20	30	32'-8"	#7	13"	10	14	34'-10"	0'-7½"	4'-7"	7'-11½"
				7'			20	30	32'-8"			10	14	34'-10"	0'-7½"	4'-7"	7'-11½"
				8'			20	30	32'-9"			10	14	34'-11"	0'-7½"	4'-7"	8'-0"
				9'			20	30	33'-1"			10	14	35'-3"	0'-7½"	4'-8"	8'-1"
				10'			20	30	33'-5"			10	14	35'-7"	0'-7½"	4'-9"	8'-2"
				11'			20	30	33'-7"			10	14	35'-9"	0'-7½"	4'-9"	8'-3"
				12'			20	30	33'-9"			10	14	35'-11"	0'-7½"	4'-9"	8'-4"
			3 @ 12'	6'	#7	12"	22	32	38'-9"	#7	12"	11	16	41'-2"	0'-9¼"	5'-3½"	9'-6"
				7'			22	32	38'-9"			11	16	41'-2"	0'-9¼"	5'-3½"	9'-6"
				8'			22	32	38'-9"			11	16	41'-2"	0'-9¼"	5'-3½"	9'-6"
				9'			22	32	39'-1"			11	16	41'-6"	0'-9¼"	5'-4½"	9'-7"
				10'			22	32	39'-5"			11	16	41'-10"	0'-9¼"	5'-5½"	9'-8"
				11'			22	32	39'-7"			11	16	42'-0"	0'-9¼"	5'-5½"	9'-9"
				12'			22	32	39'-9"			11	16	42'-2"	0'-9¼"	5'-5½"	9'-10"
SECTION "C" & BAR GROUP "C"	4:1 = 16'-0"; 3:1 = 11'-0"	15'-0" TO 20'-0"	3 @ 8'	5'	#6	11"	24	34	26'-5"	#6	11"	12	18	28'-4"	0'-7"	3'-7"	6'-5"
				6'			24	34	26'-5"			12	18	28'-4"	0'-7"	3'-7"	6'-5"
				7'			24	34	26'-8"			12	18	28'-7"	0'-7"	3'-8"	6'-5½"
				8'			24	34	26'-9"			12	18	28'-8"	0'-7"	3'-8"	6'-6"
				9'			24	34	27'-1"			12	18	29'-0"	0'-7"	3'-9"	6'-7"
				10'			24	34	27'-5"			12	18	29'-4"	0'-7"	3'-10"	6'-8"
			3 @ 10'	6'	#7	12"	22	32	32'-9"	#7	12"	11	16	35'-1"	0'-8¾"	4'-4½"	8'-0"
				7'			22	32	32'-9"			11	16	35'-1"	0'-8¾"	4'-4½"	8'-0"
				8'			22	32	32'-10"			11	16	35'-2"	0'-8¾"	4'-4½"	8'-0½"
				9'			22	32	33'-2"			11	16	35'-6"	0'-8¾"	4'-5½"	8'-1½"
				10'			22	32	33'-5"			11	16	35'-10"	0'-8¾"	4'-6½"	8'-2¼"
				11'			22	32	33'-7"			11	16	35'-11"	0'-8¾"	4'-6½"	8'-3"
				12'			22	32	33'-9"			11	16	36'-1"	0'-8¾"	4'-6½"	8'-4"
			3 @ 12'	6'	#7	12"	22	32	38'-9"	#8	12"	11	16	41'-6"	0'-10¾"	5'-0½"	9'-6"
				7'			22	32	38'-9"			11	16	41'-6"	0'-10¾"	5'-0½"	9'-6"
				8'			22	32	38'-10"			11	16	41'-8"	0'-10¾"	5'-0½"	9'-6¾"
				9'			22	32	39'-2"			11	16	41'-11"	0'-10¾"	5'-1½"	9'-7½"
				10'			22	32	39'-5"			11	16	42'-3"	0'-10¾"	5'-2½"	9'-8¼"
				11'			22	32	39'-7"			11	16	42'-5"	0'-10¾"	5'-2½"	9'-9¼"
				12'			22	32	39'-9"			11	16	42'-7"	0'-10¾"	5'-2½"	9'-10¼"
SECTION "D" & BAR GROUP "D"	Varies with Length of Barrel	20'-0" TO 25'-0"	3 @ 8'	5'	#6	12"	Varies with length of Barrel.	Varies with length of Barrel.	26'-5"	#7	12"	Varies with length of Barrel.	Varies with length of Barrel.	28'-7"	0'-7¾"	3'-5½"	6'-5"
				6'					26'-6"					28'-9"	0'-7¾"	3'-5½"	6'-5¾"
				7'					26'-10"					29'-0"	0'-7¾"	3'-6½"	6'-6½"
				8'					26'-11"					29'-2"	0'-7¾"	3'-6½"	6'-7¼"
				9'					27'-3"					29'-5"	0'-7¾"	3'-7½"	6'-8"
				10'					27'-7"					29'-9"	0'-7¾"	3'-8½"	6'-9"
			3 @ 10'	6'	#7	11"			32'-9"	#7	11"			35'-3"	0'-10"	4'-2"	8'-0"
				7'					32'-10"					35'-4"	0'-10"	4'-2"	8'-0½"
				8'					32'-11"					35'-6"	0'-10"	4'-2"	8'-1½"
				9'					33'-3"					35'-10"	0'-10"	4'-3"	8'-2½"
				10'					33'-7"					36'-2"	0'-10"	4'-4"	8'-3½"
				11'					33'-9"					36'-3"	0'-10"	4'-4"	8'-4"
				12'					33'-10"					36'-5"	0'-10"	4'-4"	8'-4½"
			3 @ 12'	6'	#7	11"			38'-9"	#8	11"			41'-9"	1'-0¼"	4'-9½"	9'-6"
				7'					38'-10"					41'-10"	1'-0¼"	4'-9½"	9'-6¾"
				8'					39'-0"					42'-0"	1'-0¼"	4'-9½"	9'-7½"
				9'					39'-4"					42'-4"	1'-0¼"	4'-10½"	9'-8½"
				10'					39'-7"					42'-7"	1'-0¼"	4'-11½"	9'-9½"
				11'					39'-9"					42'-9"	1'-0¼"	4'-11½"	9'-10½"
				12'					39'-11"					42'-11"	1'-0¼"	4'-11½"	9'-11½"

"b2" bars – BENT - See Diagram below. – In Top of Bottom Slab bent down under Division Walls - hooked. Alternate with "a" and "c" bars.
"c" bars – STRAIGHT – In Top and Bottom Slab of Barrel. Alternate with "b" and "b2" bars.

Section	S	H	"b2" Size	"b2" Spacing	"b2" No. 3:1	"b2" No. 4:1	"b2" Length	X	Y	Z	"c" Size	"c" Spacing	"c" No. 3:1	"c" No. 4:1	"c" Length
A	3 @ 8'	5'	#6	12"	22	32	28'-2"	0'-5½"	3'-10"	6'-5"	#6	12"	44	64	17'-6"
		6'			22	32	28'-2"	0'-5½"	3'-10"	6'-5"			44	64	17'-6"
		7'			22	32	28'-5"	0'-5½"	3'-11"	6'-5½"			44	64	17'-8"
		8'			22	32	28'-6"	0'-5½"	3'-11"	6'-6"			44	64	17'-8"
		9'			22	32	28'-10"	0'-5½"	4'-0"	6'-7"			44	64	17'-10"
		10'			22	32	29'-2"	0'-5½"	4'-1"	6'-8"			44	64	18'-0"
	3 @ 10'	6'	#6	11"	24	35	34'-7"	0'-7"	4'-8"	7'-11½"	#7	11"	48	70	21'-8"
		7'			24	35	34'-7"	0'-7"	4'-8"	7'-11½"			48	70	21'-8"
		8'			24	35	34'-8"	0'-7"	4'-8"	8'-0"			48	70	21'-8"
		9'			24	35	35'-0"	0'-7"	4'-9"	8'-1"			48	70	21'-10"
		10'			24	35	35'-4"	0'-7"	4'-10"	8'-2"			48	70	22'-0"
		11'			24	35	35'-6"	0'-7"	4'-10"	8'-3"			48	70	22'-0"
		12'			24	35	35'-8"	0'-7"	4'-10"	8'-4"			48	70	22'-0"
	3 @ 12'	6'	#7	11"	24	35	41'-0"	0'-8¼"	5'-5½"	9'-6"	#7	11"	48	70	25'-8"
		7'			24	35	41'-0"	0'-8¼"	5'-5½"	9'-6"			48	70	25'-8"
		8'			24	35	41'-0"	0'-8¼"	5'-5½"	9'-6"			48	70	25'-8"
		9'			24	35	41'-4"	0'-8¼"	5'-6½"	9'-7"			48	70	25'-10"
		10'			24	35	41'-8"	0'-8¼"	5'-7½"	9'-8"			48	70	26'-0"
		11'			24	35	41'-10"	0'-8¼"	5'-7½"	9'-9"			48	70	26'-0"
		12'			24	35	42'-0"	0'-8¼"	5'-7½"	9'-10"			48	70	26'-0"
B	3 @ 8'	5'	#6	11"	12	17	28'-4"	0'-6½"	3'-8"	6'-5"	#6	11"	24	36	17'-6"
		6'			12	17	28'-4"	0'-6½"	3'-8"	6'-5"			24	36	17'-6"
		7'			12	17	28'-7"	0'-6½"	3'-9"	6'-5½"			24	36	17'-8"
		8'			12	17	28'-8"	0'-6½"	3'-9"	6'-6"			24	36	17'-8"
		9'			12	17	29'-0"	0'-6½"	3'-10"	6'-7"			24	36	17'-10"
		10'			12	17	29'-4"	0'-6½"	3'-11"	6'-8"			24	36	18'-0"
	3 @ 10'	6'	#7	13"	10	14	34'-11"	0'-8"	4'-6"	7'-11½"	#8	13"	20	30	21'-8"
		7'			10	14	34'-11"	0'-8"	4'-6"	7'-11½"			20	30	21'-8"
		8'			10	14	35'-0"	0'-8"	4'-6"	8'-0"			20	30	21'-8"
		9'			10	14	35'-4"	0'-8"	4'-7"	8'-1"			20	30	21'-10"
		10'			10	14	35'-8"	0'-8"	4'-8"	8'-2"			20	30	22'-0"
		11'			10	14	35'-10"	0'-8"	4'-8"	8'-3"			20	30	22'-0"
		12'			10	14	36'-0"	0'-8"	4'-8"	8'-4"			20	30	22'-0"
	3 @ 12'	6'	#7	12"	11	16	41'-3"	0'-9¾"	5'-2½"	9'-6"	#9	12"	22	32	25'-8"
		7'			11	16	41'-3"	0'-9¾"	5'-2½"	9'-6"			22	32	25'-8"
		8'			11	16	41'-3"	0'-9¾"	5'-2½"	9'-6"			22	32	25'-8"
		9'			11	16	41'-7"	0'-9¾"	5'-3½"	9'-7"			22	32	25'-10"
		10'			11	16	41'-11"	0'-9¾"	5'-4½"	9'-8"			22	32	26'-0"
		11'			11	16	42'-1"	0'-9¾"	5'-4½"	9'-9"			22	32	26'-0"
		12'			11	16	42'-3"	0'-9¾"	5'-4½"	9'-10"			22	32	26'-0"
C	3 @ 8'	5'	#6	11"	12	18	28'-5"	0'-7½"	3'-6"	6'-5"	#7	11"	24	34	17'-6"
		6'			12	18	28'-5"	0'-7½"	3'-6"	6'-5"			24	34	17'-6"
		7'			12	18	28'-8"	0'-7½"	3'-7"	6'-5½"			24	34	17'-8"
		8'			12	18	28'-9"	0'-7½"	3'-7"	6'-6"			24	34	17'-8"
		9'			12	18	29'-1"	0'-7½"	3'-8"	6'-7"			24	34	17'-10"
		10'			12	18	29'-5"	0'-7½"	3'-9"	6'-8"			24	34	18'-0"
	3 @ 10'	6'	#7	12"	11	16	35'-2"	0'-9¼"	4'-3½"	8'-0"	#8	12"	22	32	21'-8"
		7'			11	16	35'-2"	0'-9¼"	4'-3½"	8'-0"			22	32	21'-8"
		8'			11	16	35'-3"	0'-9¼"	4'-3½"	8'-0½"			22	32	21'-8"
		9'			11	16	35'-7"	0'-9¼"	4'-4½"	8'-1½"			22	32	21'-10"
		10'			11	16	35'-11"	0'-9¼"	4'-5½"	8'-2¼"			22	32	22'-0"
		11'			11	16	36'-0"	0'-9¼"	4'-5½"	8'-3"			22	32	22'-0"
		12'			11	16	36'-2"	0'-9¼"	4'-5½"	8'-4"			22	32	22'-0"
	3 @ 12'	6'	#8	12"	11	16	41'-7"	0'-11¼"	4'-11½"	9'-6"	#9	12"	22	32	25'-8"
		7'			11	16	41'-7"	0'-11¼"	4'-11½"	9'-6"			22	32	25'-8"
		8'			11	16	41'-9"	0'-11¼"	4'-11½"	9'-6¾"			22	32	25'-8"
		9'			11	16	42'-0"	0'-11¼"	5'-0½"	9'-7½"			22	32	25'-10"
		10'			11	16	42'-4"	0'-11¼"	5'-1½"	9'-8¼"			22	32	26'-0"
		11'			11	16	42'-6"	0'-11¼"	5'-1½"	9'-9¼"			22	32	26'-0"
		12'			11	16	42'-8"	0'-11¼"	5'-1½"	9'-10¼"			22	32	26'-0"
D	3 @ 8'	5'	#7	12"	Varies with length of Barrel.	Varies with length of Barrel.	28'-8"	0'-8¼"	3'-4½"	6'-5"	#7	12"	Varies with length of Barrel.	Varies with length of Barrel.	17'-6"
		6'					28'-10"	0'-8¼"	3'-4½"	6'-5¾"					17'-6"
		7'					29'-1"	0'-8¼"	3'-5½"	6'-6½"					17'-8"
		8'					29'-3"	0'-8¼"	3'-5½"	6'-7¼"					17'-8"
		9'					29'-6"	0'-8¼"	3'-6½"	6'-8"					17'-10"
		10'					29'-10"	0'-8¼"	3'-7½"	6'-9"					18'-0"
	3 @ 10'	6'	#8	11"			35'-4"	0'-10½"	4'-1"	8'-0"	#8	11"			21'-8"
		7'					35'-5"	0'-10½"	4'-1"	8'-0½"					21'-8"
		8'					35'-7"	0'-10½"	4'-1"	8'-1½"					21'-8"
		9'					35'-11"	0'-10½"	4'-2"	8'-2½"					21'-10"
		10'					36'-3"	0'-10½"	4'-3"	8'-3½"					22'-0"
		11'					36'-4"	0'-10½"	4'-3"	8'-4"					22'-0"
		12'					36'-6"	0'-10½"	4'-3"	8'-4½"					22'-0"
	3 @ 12'	6'	#9	11"			41'-10"	1'-0¾"	4'-8½"	9'-6"	#9	11"			25'-8"
		7'					41'-11"	1'-0¾"	4'-8½"	9'-6¾"					25'-8"
		8'					42'-1"	1'-0¾"	4'-8½"	9'-7½"					25'-8"
		9'					42'-5"	1'-0¾"	4'-9½"	9'-8½"					25'-10"
		10'					42'-8"	1'-0¾"	4'-10½"	9'-9½"					26'-0"
		11'					42'-10"	1'-0¾"	4'-10½"	9'-10½"					26'-0"
		12'					43'-0"	1'-0¾"	4'-10½"	9'-11½"					26'-0"

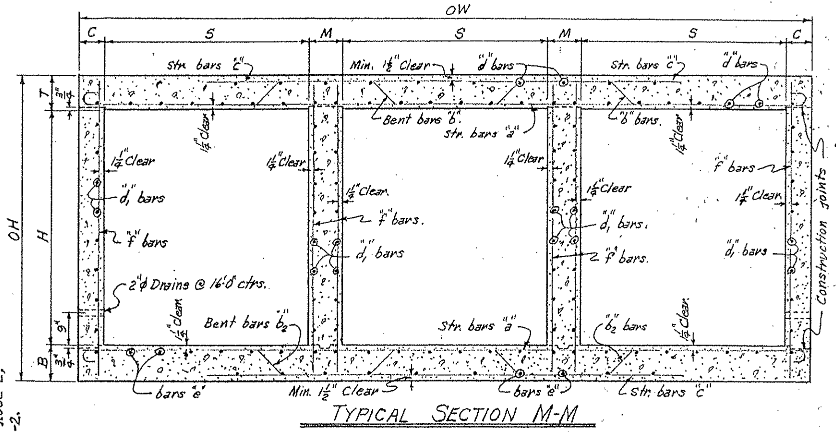
"d" bars – STRAIGHT – Longitudinal in Top Slab of Barrel.
"d1" bars – STRAIGHT – Longitudinal in Sidewalls and Division Walls.
"e" bars – STRAIGHT – Longitudinal in Bottom Slab of Barrel.
"f" bars – STRAIGHT – Vertical in Sidewalls and Division Walls.

Section	S	H	"d" Size	"d" Spacing	"d" No. Req'd	"d" Length	"d1" Size	"d1" Spacing	"d1" No. Req'd	"d1" Length	"e" Size	"e" Spacing	"e" No. Req'd	"e" Length	"f" Size	"f" Spacing	"f" No. Req'd 3:1	"f" No. Req'd 4:1	"f" Length
A	3 @ 8'	5'	#4	12"	37	33'-3" for 32'-0" Section	#4	12"	30	33'-3" for 32'-0" Section	#4	12"	37	34'-3" for 32'-0" Section	#4	12"	132	192	6'-2"
		6'			37				36				37				132	192	7'-2"
		7'			37				42				37			10"	162	234	8'-2"
		8'			37				48				37			11"	144	210	9'-2"
		9'			37				54				37		#5	10"	162	234	10'-2"
		10'			37				60				37		#6	12"	132	192	11'-2"
	3 @ 10'	6'	#4	12"	43		#4	12"	36		#4	12"	43		#4	12"	132	192	7'-5"
		7'			43				42				43			10"	162	234	8'-5"
		8'			43				48				43		#5	12"	132	192	9'-5"
		9'			43				54				43			10"	162	234	10'-5"
		10'			43				60				43			12"	132	192	11'-5"
		11'			43				66				43		#6	11"	144	210	12'-5"
		12'			43				72				43			10"	162	234	13'-5"
	3 @ 12'	6'	#4	12"	49		#4	12"	36		#4	12"	49		#4	12"	132	192	7'-8"
		7'			49				42				49				132	192	8'-8"
		8'			49				48				49		#5	12"	132	192	9'-8"
		9'			49				54				49			10"	162	234	10'-8"
		10'			49				60				49			12"	132	192	11'-8"
		11'			49				66				49		#6	11"	144	210	12'-8"
		12'			49				72				49			9"	180	258	13'-8"
B	3 @ 8'	5'	#4	12"	37	34'-3" for 33'-0" Length Section	#4	12"	30	34'-3" for 33'-0" Length Section	#4	12"	37	34'-3" for 33'-0" Length Section	#4	12"	66	96	6'-4"
		6'			37				36				37				66	96	7'-4"
		7'			37				42				37		#5	12"	66	96	8'-4"
		8'			37				48				37			9"	90	126	9'-4"
		9'			37				54				37		#6	11"	72	102	10'-4"
		10'			37				60				37			10"	84	120	11'-4"
	3 @ 10'	6'	#4	12"	43		#4	12"	36		#4	12"	43		#4	12"	66	96	7'-8"
		7'			43				42				43		#5	12"	66	96	8'-8"
		8'			43				48				43			9"	90	132	9'-8"
		9'			43				54				43			12"	66	96	10'-8"
		10'			43				60				43		#6	10"	84	120	11'-8"
		11'			43				66				43			9"	90	132	12'-8"
		12'			43				72				43			8"	96	144	13'-8"
	3 @ 12'	6'	#4	12"	49		#4	12"	36		#4	12"	49		#4	12"	66	96	7'-11"
		7'			49				42				49			9"	90	132	8'-11"
		8'			49				48				49			12"	66	96	9'-11"
		9'			49				54				49		#6	11"	72	102	10'-11"
		10'			49				60				49			9"	90	132	11'-11"
		11'			49				66				49		#7	11"	72	108	12'-11"
		12'			49				72				49			10"	78	114	13'-11"
C	3 @ 8'	5'	#4	12"	37		#4	12"	30		#4	12"	37		#4	12"	66	96	6'-6"
		6'			37				36				37				66	96	7'-6"
		7'			37				42				37		#5	11"	72	102	8'-6"
		8'			37				48				37		#6	11"	72	102	9'-6"
		9'			37				54				37			10"	78	114	10'-6"
		10'			37				60				37		#7	10"	78	114	11'-6"
	3 @ 10'	6'	#4	12"	43		#4	12"	36		#4	12"	43		#4	12"	66	96	7'-10"
		7'			43				42				43		#5	12"	66	96	8'-10"
		8'			43				48				43		#6	12"	66	96	9'-10"
		9'			43				54				43			10"	78	114	10'-10"
		10'			43				60				43			12"	66	96	11'-10"
		11'			43				66				43		#7	10"	78	114	12'-10"
		12'			43				72				43			9"	90	126	13'-10"
	3 @ 12'	6'	#4	12"	49		#4	12"	36		#4	12"	49		#4	12"	66	96	8'-2"
		7'			49				42				49		#5	11"	72	102	9'-2"
		8'			49				48				49		#6	12"	66	96	10'-2"
		9'			49				54				49			10"	78	114	11'-2"
		10'			49				60				49			11"	72	102	12'-2"
		11'			49				66				49		#7	10"	84	114	13'-2"
		12'			49				72				49			8"	96	144	14'-2"
D	3 @ 8'	5'	#4	12"	37	Varies with length of Barrel.	#4	12"	30	Varies with length of Barrel.	#4	12"	37	Varies with length of Barrel.	#4	12"	Varies with length of Barrel.	Varies with length of Barrel.	6'-8"
		6'			37				36				37			10"			7'-8"
		7'			37				42				37		#5	10"			8'-8"
		8'			37				48				37			11"			9'-8"
		9'			37				54				37		#6	9"			10'-8"
		10'			37				60				37			8"			11'-8"
	3 @ 10'	6'	#4	12"	43		#4	12"	36		#4	12"	43		#4	12"			8'-1"
		7'			43				42				43		#5	11"			9'-1"
		8'			43				48				43		#6	12"			10'-1"
		9'			43				54				43			10"			11'-1"
		10'			43				60				43			11"			12'-1"
		11'			43				66				43		#7	9"			13'-1"
		12'			43				72				43			8"			14'-1"
	3 @ 12'	6'	#4	11"	52		#4	12"	36		#4	11"	52		#4	12"			8'-5"
		7'			52				42				52		#5	11"			9'-5"
		8'			52				48				52		#6	12"			10'-5"
		9'			52				54				52			10"			11'-5"
		10'			52				60				52			11"			12'-5"
		11'			52				66				52		#7	9"			13'-5"
		12'			52				72				52			8"			14'-5"

NOTE:- Bars for each Section to be marked with the Section letter, thus for Section B, the bars should be marked Ba, Bb, Bb2, Bc, Bd, Bd1, Be and Bf.

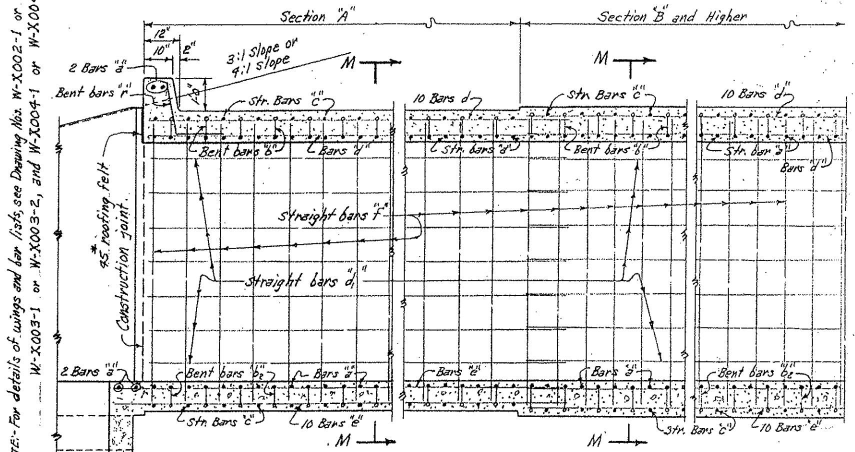
DIMENSIONS / QUANTITIES

D (Max. Design Depth of Cover)	S (Clear Spans)	H (Clear Height)	A (Sq. Ft. Opening)	OW (Overall Width)	T (Thickness of Top Slab)	C (Thickness of Sidewalls)	M (Thickness of Division Walls)	B (Thickness of Bottom Slab)	OH (Overall Height)	Class S Conc. per Lin. Ft. of Barrel (CU.YD.)	Reinforcing Steel per Lin. Ft. of Barrel (LB.)	Additional per Lap (LB.)	Additional Two Headwalls & Aprons (LB.)
SECTION "A" - 10'-0"	3 @ 8'	5'	120	26'-8"	8½"	7"	9"	9"	6'-5½"	1.934	286.35	86.84	372.06
		6'	144	26'-8"		7"	9"		7'-5½"	2.033	294.37	91.85	372.06
		7'	168	26'-11"		7½"	10"		8'-5½"	2.210	310.70	96.86	374.14
		8'	192	27'-0"		8"	10"		9'-5½"	2.347	338.44	101.87	379.84
		9'	216	27'-4"		9"	11"		10'-5½"	2.587	358.41	106.88	377.62
		10'	240	27'-8"		10"	12"		11'-5½"	2.852	388.90	111.89	380.40
	3 @ 10'	6'	180	32'-11"	10"	7½"	10"	10½"	7'-8½"	2.731	428.10	101.87	582.24
		7'	210	32'-11"		7½"	10"		8'-8½"	2.839	442.86	106.88	582.24
		8'	240	33'-0"		8"	10"		9'-8½"	2.977	465.86	111.89	583.24
		9'	270	33'-4"		9"	11"		10'-8½"	3.220	492.09	116.90	587.24
		10'	300	33'-8"		10"	12"		11'-8½"	3.488	522.69	121.91	591.25
		11'	330	33'-10"		11"	12"		12'-8½"	3.702	547.98	126.92	593.25
		12'	360	34'-0"		12"	12"		13'-8½"	3.929	576.10	131.93	595.25
	3 @ 12'	6'	216	39'-0"	11½"	8"	10"	12"	7'-11½"	3.495	544.35	111.89	704.76
		7'	252	39'-0"		8"	10"		8'-11½"	3.606	552.37	116.90	704.76
		8'	288	39'-0"		8"	10"		9'-11½"	3.718	582.13	121.91	704.76
		9'	324	39'-4"		9"	11"		10'-11½"	3.964	609.07	126.92	708.77
		10'	360	39'-8"		10"	12"		11'-11½"	4.235	641.44	131.93	712.77
		11'	396	39'-10"		11"	12"		12'-11½"	4.451	666.13	136.94	714.78
		12'	432	40'-0"		12"	12"		13'-11½"	4.679	711.11	141.95	716.78
SECTION "B" - 15'-0"	3 @ 8'	5'	120	26'-8"	9½"	7"	9"	10"	6'-7½"	2.099	305.08	86.84	
		6'	144	26'-8"		7"	9"		7'-7½"	2.198	313.05	91.85	
		7'	168	26'-11"		7½"	10"		8'-7½"	2.376	341.75	96.86	
		8'	192	27'-0"		8"	10"		9'-7½"	2.514	371.95	101.87	
		9'	216	27'-4"		9"	11"		10'-7½"	2.756	402.07	106.88	
		10'	240	27'-8"		10"	12"		11'-7½"	3.023	429.44	111.89	
	3 @ 10'	6'	180	32'-11"	11¼"	7½"	10"	11¾"	7'-11"	2.985	441.21	101.87	
		7'	210	32'-11"		7½"	10"		8'-11"	3.093	468.72	106.88	
		8'	240	33'-0"		8"	10"		9'-11"	3.231	499.70	111.89	
		9'	270	33'-4"		9"	11"		10'-11"	3.477	522.18	116.90	
		10'	300	33'-8"		10"	12"		11'-11"	3.748	559.23	121.91	
		11'	330	33'-10"		11"	12"		12'-11"	3.963	590.37	126.92	
		12'	360	34'-0"		12"	12"		13'-11"	4.191	628.01	131.93	
	3 @ 12'	6'	216	39'-0"	13"	8"	10"	13½"	8'-2½"	3.856	622.65	111.89	
		7'	252	39'-0"		8"	10"		9'-2½"	3.968	642.57	116.90	
		8'	288	39'-0"		8"	10"		10'-2½"	4.079	688.30	121.91	
		9'	324	39'-4"		9"	11"		11'-2½"	4.328	719.12	126.92	
		10'	360	39'-8"		10"	12"		12'-2½"	4.602	757.69	131.93	
		11'	396	39'-10"		11"	12"		13'-2½"	4.820	792.68	136.94	
		12'	432	40'-0"		12"	12"		14'-2½"	5.049	830.04	141.95	
SECTION "C" - 20'-0"	3 @ 8'	5'	120	26'-8"	10½"	7"	9"	11"	6'-9½"	2.263	353.13	86.84	
		6'	144	26'-8½"		7¼"	9"		7'-9½"	2.374	361.14	91.85	
		7'	168	26'-11½"		7¾"	10"		8'-9½"	2.556	395.50	96.86	
		8'	192	27'-0½"		8¼"	10"		9'-9½"	2.696	435.42	101.87	
		9'	216	27'-4½"		9¼"	11"		10'-9½"	2.942	462.51	106.88	
		10'	240	27'-8½"		10¼"	12"		11'-9½"	3.212	525.14	111.89	
	3 @ 10'	6'	180	33'-0"	12½"	8"	10"	13"	8'-1½"	3.264	506.07	101.87	
		7'	210	33'-0"		8"	10"		9'-1½"	3.375	533.96	106.88	
		8'	240	33'-1"		8½"	10"		10'-1½"	3.517	571.98	111.89	
		9'	270	33'-5"		9½"	11"		11'-1½"	3.769	608.15	116.90	
		10'	300	33'-8½"		10¼"	12"		12'-1½"	4.026	643.40	121.91	
		11'	330	33'-10"		11"	12"		13'-1½"	4.225	692.17	126.92	
		12'	360	34'-0"		12"	12"		14'-1½"	4.457	734.88	131.93	
	3 @ 12'	6'	216	39'-0"	14½"	8"	10"	15"	8'-5½"	4.218	677.02	111.89	
		7'	252	39'-0"		8"	10"		9'-5½"	4.329	710.88	116.90	
		8'	288	39'-1½"		8¾"	10"		10'-5½"	4.488	745.16	121.91	
		9'	324	39'-5"		9½"	11"		11'-5½"	4.728	782.14	126.92	
		10'	360	39'-8½"		10¼"	12"		12'-5½"	4.989	832.09	131.93	
		11'	396	39'-10½"		11¼"	12"		13'-5½"	5.209	868.67	136.94	
		12'	432	40'-0½"		12¼"	12"		14'-5½"	5.442	941.08	141.95	
SECTION "D" - 25'-0"	3 @ 8'	5'	120	26'-8"	11½"	7"	9"	12"	6'-11½"	2.428	364.11	86.84	
		6'	144	26'-9½"		7¾"	9"		7'-11½"	2.564	379.20	91.85	
		7'	168	27'-1"		8½"	10"		8'-11½"	2.764	414.12	96.86	
		8'	192	27'-2½"		9¼"	10"		9'-11½"	2.924	449.02	101.87	
		9'	216	27'-6"		10"	11"		10'-11½"	3.161	488.86	106.88	
		10'	240	27'-10"		11"	12"		11'-11½"	3.439	525.45	111.89	
	3 @ 10'	6'	180	33'-0"	13¾"	8"	10"	14¼"	8'-4"	3.519	543.55	101.87	
		7'	210	33'-1"		8½"	10"		9'-4"	3.658	577.92	106.88	
		8'	240	33'-2¾"		9¾"	10"		10'-4"	3.820	611.90	111.89	
		9'	270	33'-6½"		10½"	11"		11'-4"	4.079	647.87	116.90	
		10'	300	33'-10"		11½"	12"		12'-4"	4.363	698.60	121.91	
		11'	330	34'-0"		12"	12"		13'-4"	4.568	756.00	126.92	
		12'	360	34'-1½"		12¾"	12"		14'-4"	4.782	806.26	131.93	
	3 @ 12'	6'	216	39'-0"	16"	8"	10"	16½"	8'-8½"	4.579	733.92	116.90	
		7'	252	39'-1½"		8¾"	10"		9'-8½"	4.735	769.34	121.91	
		8'	288	39'-3"		9½"	10"		10'-8½"	4.900	804.65	126.92	
		9'	324	39'-7"		10½"	11"		11'-8½"	5.165	842.91	131.93	
		10'	360	39'-10½"		11¼"	12"		12'-8½"	5.435	893.38	136.94	
		11'	396	40'-0½"		12¼"	12"		13'-8½"	5.663	952.37	141.95	
		12'	432	40'-2½"		13¼"	12"		14'-8½"	5.904	1003.92	146.96	

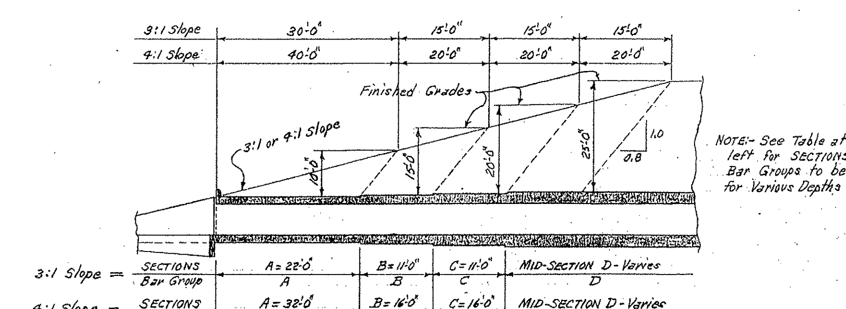


TYPICAL SECTION M-M

NOTE:- For details of wings and bar lists, see Drawing Nos. W-X002-1 or W-X002-2, W-X003-1 or W-X003-2, and W-X004-1 or W-X004-2.



PART LONGITUDINAL SECTION



NOTE:- See Table at lower left for SECTIONS and Bar Groups to be used for Various Depths of Cover.

TYPICAL LONGITUDINAL SECTION-SHOWING SECTIONS AND BAR GROUPS FOR VARIOUS DEPTHS OF COVER

NOTE:- Lengths of Sections, with Bar Groups to be shown on Cross Section Sheets.

SECTIONS & BAR GROUPS TO BE USED FOR VARIOUS DEPTHS OF COVER.

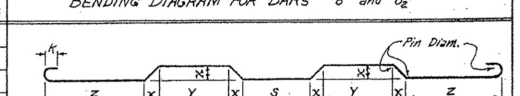
Depths of Cover	Sections & Bar Groups for End Sections A	B	C		Mid-Section and Bar Group
5.0' to 9.5'	✓				A
10.0' to 14.5'	✓				B
15.0' to 19.5'	✓	✓			C
20.0' to 25.0'	✓	✓	✓		D

NOTE:- This drawing to be used in conjunction with Standard Drawing Nos. W-X003-1 or W-X003-2, and W-X004-1 or W-X004-2. Also Drawing Nos. W-X002-1 or W-X002-2.

CLASS S CONCRETE

Bar Size	Pin Diam.	K	Add for 2 Hooks
#6	3"	5"	1'-1½"
#7	3½"	5¾"	1'-3¾"
#8	4"	6½"	1'-6"

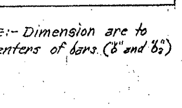
BENDING DIAGRAM FOR BARS "b" and "b2"



NOTE:- Dimension are to centers of bars. ("b" and "b2")

Dowel Bars for Two Headwalls — S	Size	Spacing	No. Req'd	Length	X
8'	#4	12"±	54	2'-10"	1'-5"
10'	#4	12"±	66	3'-0"	1'-6"
12'	#4	12"±	78	3'-4"	1'-8"

Bars "r" – Dowel bars in Headwalls.



GENERAL NOTES:-

CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have ¾" chamfers.

REINFORCING STEEL:- Reinforcing to be deformed bars of intermediate or hard grade.

BAR LAP:- In computing the quantities of steel from the tables add one lap for each additional 33'-0" length of barrel over 32'-0". Lap longitudinal bars 30 diameters.

CONSTRUCTION JOINTS:- Construction joints between wingwalls, sidewalls, division walls and slabs shall be only where shown on plans.

SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

DESIGN LIVE LOAD

H20-S16 LOADING A.A.S.H.O. 1961
AND
SPECIAL MILITARY LOADING
Two 24,000 Lb. Axles @ 4'-0" ctrs.

UNIT STRESSES:-
Class S Concrete (n=10) 1200#/□"
Reinforcing Steel 20,000#/□"

LENGTH OF SECTIONS FOR SKEWED CULVERTS

Skew Angle	Sec. of Skew Angle	3:1 Slopes Sections A	3:1 Slopes Sections B, or C	4:1 Slopes Sections A	4:1 Slopes Sections B, or C
0°	1.0	22.0'	11.0'	32.0'	16.0'
15°	1.0353	22.776'	11.388'	33.129'	16.564'
30°	1.1547	*	12.702'	*	18.475'
45°	1.4142	*	15.556'	*	22.627'

* Variable, see Drawings for Skewed Culverts.

REVISIONS:-
Wing Drwg. Nos.- W.C.H. 1-14-63.
Bar size, spacing, no., & quant. for 10' Spans, Sect. "C" & "D", W.C.H. 1-13-65.

Designed by:- W.C.H. 8-7-62 Checked by:- RHS 8-10-62
Drawn by:- W.C.H. 8-15-62 Checked by:- RHS 8-20-62
Quantities by:- W.C.H. 8-17-62 Checked by:- RHS 8-20-62

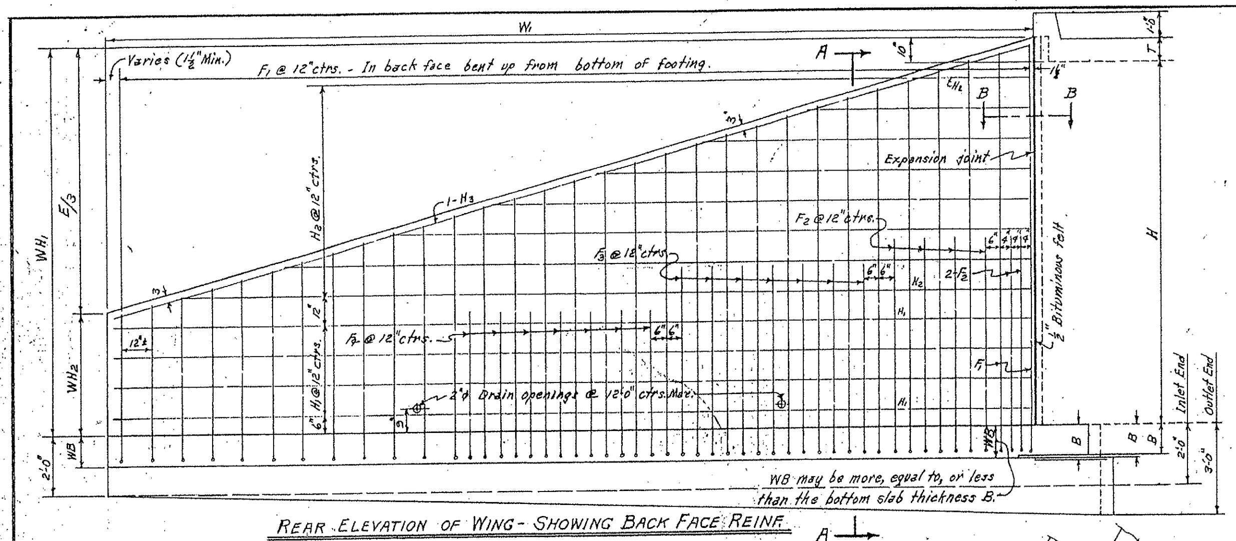
ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS

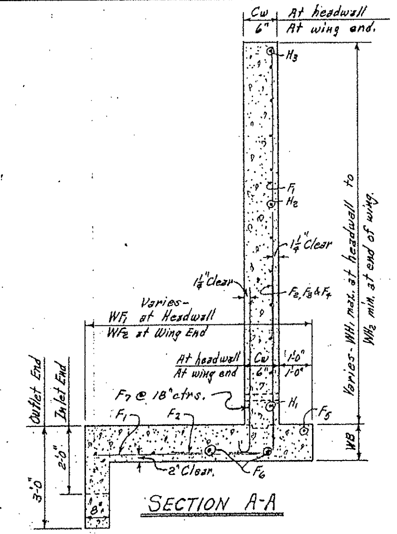
8', 10' & 12' SPANS — TRIPLES
3:1 OR 4:1 SLOPES — OVER 5'-0" COVER

STANDARD DRAWING No. R-300X-X2

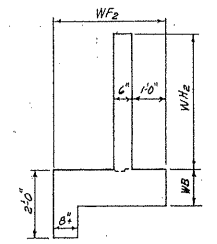
FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.				
JOB No.					



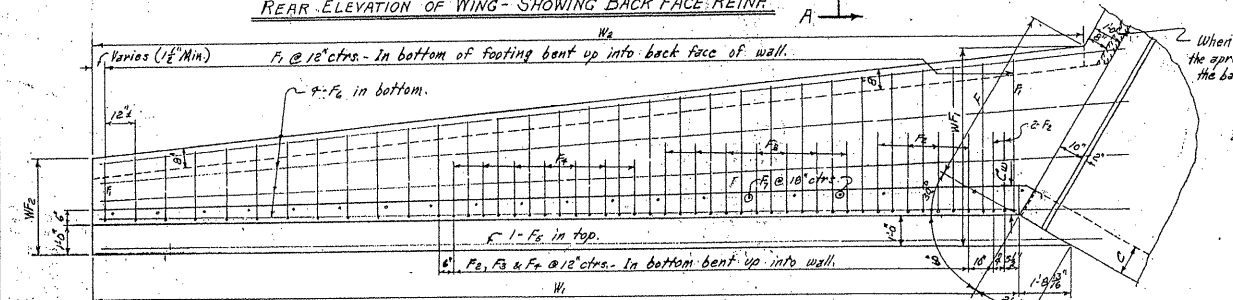
REAR ELEVATION OF WING - SHOWING BACK FACE REINF.



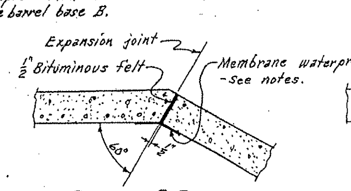
SECTION A-A



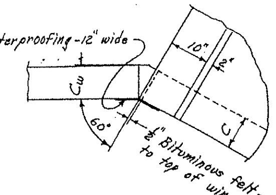
END VIEW OF WING



PLAN OF WING - SHOWING FOOTING REINF.



SECTION B-B THRU EXPANSION JOINT



DETAIL AT TOP OF WING

WING DIMENSIONS

CLEAR HEIGHT OF BOX	THICKNESS OF WING FOOTING	THICKNESS OF WING AT HEADWALL = C	WINGWALL HEIGHTS: AT HEADWALL	WINGWALL HEIGHTS: AT END OF WING	WIDTHS OF WING FOOTINGS: AT HEADWALL	WIDTHS OF WING FOOTINGS: AT END OF WING	PERPENDICULAR FOOTING DIMENSION	PERPENDICULAR DIST. FROM HDWL. TO END OF WING	LENGTH OF WINGWALLS	INSIDE FOOTING DIMENSION	* QUANTITY PER WING CLASS S CONCRETE: INLET END	OUTLET END
H	WB	Cw	WH1	WH2	WF1	WF2	F	E	W1	W2	CU.YD.	CU.YD.
9'	10"	9"	9'-10"	3'-0"	5'-2"	2'-10½"	4'-3"	20'-6"	23'-8"	24'-11"	7.492	7.810
10'	11"	10"	10'-10"	3'-4"	5'-8"	3'-0"	4'-10"	22'-6"	25'-11⅜"	27'-6⅝"	9.564	9.905
11'	12"	11"	11'-10"	3'-8"	6'-2"	3'-1½"	5'-5"	24'-6"	28'-3½"	30'-1½"	11.977	12.361
12'	13"	12"	12'-10"	4'-0"	6'-8"	3'-3"	6'-0"	26'-6"	30'-7½"	32'-8½"	14.791	15.206

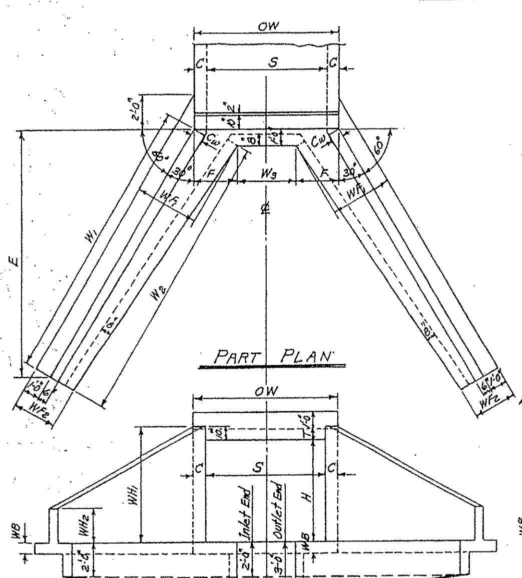
* Quantity per wing does not include headwall or that portion of apron or toewall for the length W3.

CLEAR SPAN	CLEAR HEIGHT	2 × FOOTING DIMENSION	SINGLE BARREL CULVERT OW	W3	DOUBLE BARREL CULVERT OW	W3	TRIPLE BARREL CULVERT OW	W3	QUADRUPLE BARREL CULVERT OW	W3	QUINTUPLE BARREL CULVERT OW	W3
			W3 = (OW-2F)									
S	H	2F	OW	W3	OW	W3	OW	W3	OW	W3	OW	W3
7'	9'	8'-6"	8'-6"	0'-0"	16'-5"	7'-11"	24'-4"	15'-10"	32'-3"	23'-9"	40'-2"	31'-8"
8'	9'	8'-6"	9'-6"	1'-0"	18'-5"	9'-11"	27'-4"	18'-10"	36'-3"	27'-9"	45'-2"	36'-8"
	10'	9'-8"	9'-8"	0'-0"	18'-8"	9'-0"	27'-8"	18'-0"	36'-8"	27'-0"	45'-8"	36'-0"
9'	9'	8'-6"	10'-6"	2'-0"	20'-5"	11'-11"	30'-4"	21'-10"	40'-3"	31'-9"	50'-2"	41'-8"
	10'	9'-8"	10'-8"	1'-0"	20'-8"	11'-0"	30'-8"	21'-0"	40'-8"	31'-0"	50'-8"	41'-0"
	11'	10'-10"	10'-10"	0'-0"	20'-10"	10'-0"	30'-10"	20'-0"	40'-10"	30'-0"	50'-10"	40'-0"
10'	9'	8'-6"	11'-6"	3'-0"	22'-5"	13'-11"	33'-4"	24'-10"	44'-3"	35'-9"	55'-2"	46'-8"
	10'	9'-8"	11'-8"	2'-0"	22'-8"	13'-0"	33'-8"	24'-0"	44'-8"	35'-0"	55'-8"	46'-0"
	11'	10'-10"	11'-10"	1'-0"	22'-10"	12'-0"	33'-10"	23'-0"	44'-10"	34'-0"	55'-10"	45'-0"
	12'	12'-0"	12'-0"	0'-0"	23'-0"	11'-0"	34'-0"	22'-0"	45'-0"	33'-0"	56'-0"	44'-0"
11'	9'	8'-6"	12'-6"	4'-0"	24'-5"	15'-11"	36'-4"	27'-10"	48'-3"	39'-9"		
	10'	9'-8"	12'-8"	3'-0"	24'-8"	15'-0"	36'-8"	27'-0"	48'-8"	39'-0"		
	11'	10'-10"	12'-10"	2'-0"	24'-10"	14'-0"	36'-10"	26'-0"	48'-10"	38'-0"		
	12'	12'-0"	13'-0"	1'-0"	25'-0"	13'-0"	37'-0"	25'-0"	49'-0"	37'-0"		
12'	9'	8'-6"	13'-6"	5'-0"	26'-5"	17'-11"	39'-4"	30'-10"	52'-3"	43'-9"		
	10'	9'-8"	13'-8"	4'-0"	26'-8"	17'-0"	39'-8"	30'-0"	52'-8"	43'-0"		
	11'	10'-10"	13'-10"	3'-0"	26'-10"	16'-0"	39'-10"	29'-0"	52'-10"	42'-0"		
	12'	12'-0"	14'-0"	2'-0"	27'-0"	15'-0"	40'-0"	28'-0"	53'-0"	41'-0"		

QUANTITIES

CLEAR SPAN	CLEAR HEIGHT	THICKNESS OF WING AT HEADWALL	THICKNESS OF WING FOOTING	REINFORCING STEEL ⊗ - FOR 4 WINGS	CLASS S CONCRETE - 4 WINGS (HEADWALLS, WINGWALLS, FOOTINGS, TOEWALLS AND APRONS): SINGLE BARREL CULVERT	DOUBLE BARREL CULVERT	TRIPLE BARREL CULVERT	QUADRUPLE BARREL CULVERT	QUINTUPLE BARREL CULVERT
S	H	Cw	WB	LB.	CU.YD.	CU.YD.	CU.YD.	CU.YD.	CU.YD.
7'	9'	9"	10"	2133.2	31.16	32.84	34.51	36.19	37.87
8'	9'	9"	10"	2133.2	31.39	33.28	35.16	37.05	38.94
	10'	10"	11"	2651.5	39.56	41.48	43.40	45.33	47.25
9'	9'	9"	10"	2133.2	31.61	33.73	35.81	37.91	40.01
	10'	10"	11"	2651.6	39.78	41.93	44.05	46.20	48.33
	11'	11"	12"	3243.1	49.39	51.55	53.70	55.87	58.02
10'	9'	9"	10"	2133.2	31.83	34.17	36.47	38.73	41.12
	10'	10"	11"	2651.5	40.01	42.37	44.70	47.05	49.41
	11'	11"	12"	3243.1	49.62	52.00	54.36	56.73	59.11
	12'	12"	13"	4049.2	60.79	63.19	65.57	67.97	70.37
11'	9'	9"	10"	2133.2	32.04	34.64	37.15	39.68	
	10'	10"	11"	2651.5	40.22	42.83	45.37	47.99	
	11'	11"	12"	3243.1	49.84	52.45	55.02	57.61	
	12'	12"	13"	4049.2	61.01	63.64	66.24	68.85	
12'	9'	9"	10"	2133.2	32.27	35.11	37.84	40.59	
	10'	10"	11"	2651.5	40.44	43.30	46.06	48.82	
	11'	11"	12"	3243.1	50.06	52.92	55.68	58.48	
	12'	12"	13"	4049.2	61.24	64.10	66.90	69.73	

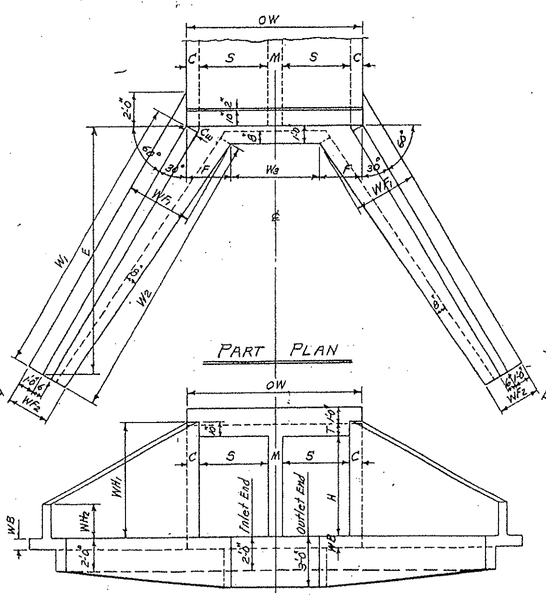
⊗ For reinforcing steel in Headwalls and Aprons, See Details of Standard Barrel Sections for R.C. Box Culverts for the desired Span and Height.



PART PLAN

END ELEVATION

SINGLE BARREL CULVERT

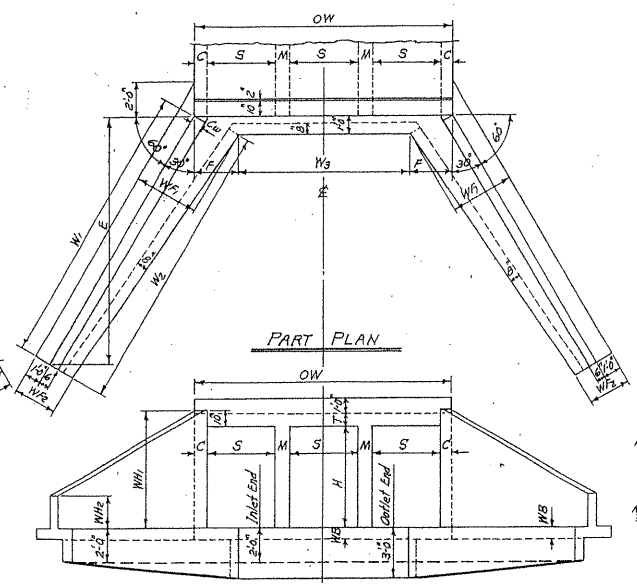


PART PLAN

END ELEVATION

DOUBLE BARREL CULVERT

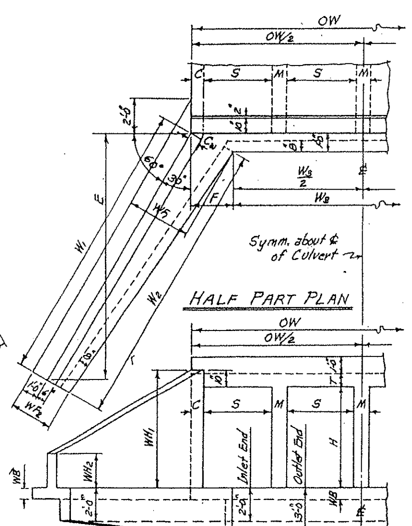
NOTE:- Plans and Elevations are not to scale.



PART PLAN

END ELEVATION

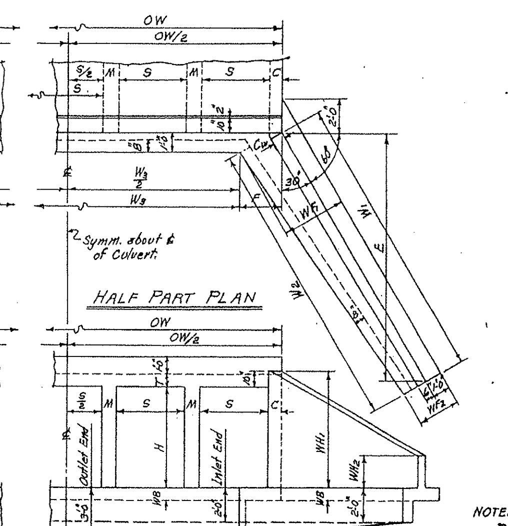
TRIPLE BARREL CULVERT



HALF PART PLAN

HALF END ELEVATION

QUADRUPLE BARREL CULVERT



HALF PART PLAN

HALF END ELEVATION

QUINTUPLE BARREL CULVERT

GENERAL NOTES:-

CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have ¾" chamfers.

REINFORCING STEEL:- Reinforcing steel to be deformed bars of intermediate or hard grade.

CONSTRUCTION JOINTS:- Construction joints between wingwalls, footings and sidewalls shall be only where shown on plans.

MEMBRANE:- A membrane waterproofing 12" wide, consisting of three moppings of waterproofing asphalt and two alternate layers of treated cotton fabric shall be applied to the back face of wing to cover the expansion joints.

Payment for the membrane waterproofing and bituminous felt shall be included in unit price bid for Class S Concrete.

SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

UNIT STRESSES:-

Class S Concrete (n=10) 1200#/□"

Reinforcing Steel 20,000#/□"

NOTE:- This drawing to be used in conjunction with Standard Barrel Sections, Drawing Nos. as listed below.

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-100X-0	R-200X-0	R-300X-0	R-400X-0	R-500X-0
R-100X-X2	R-200X-X2	R-300X-X2	R-400X-X2	
	R-200X-X3	R-300X-X3		

BAR LIST FOR ONE WING - 4 REQUIRED

F1 - BENT - In bottom of footing, bent up into back face of wing. One bar of each length.

CLEAR HEIGHT H	SIZE	SPACING	NO. REQ'D	LENGTHS VARY MIN.	LENGTHS VARY MAX.	X MIN.	X MAX.	Y MIN.	Y MAX.
9'	#5	12"	24	5'-0"	13'-10"	1'-6"	3'-8"	3'-7"	10'-3"
10'	#5	12"	27	5'-4"	15'-5"	1'-7"	4'-2"	3'-10"	11'-4"
11'	#5	12"	29	6'-0"	16'-11"	1'-9"	4'-7"	4'-4"	12'-5"
12'	#5	12"	31	6'-8"	18'-5"	1'-11"	5'-0"	4'-10"	13'-6"

F2, F3, F4 - BENT

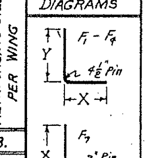
H	F2 SIZE	F2 SPACING⊙	F2 NO. REQ'D	F2 LENGTH	F2 X	F2 Y	F3 SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTH	F3 X	F3 Y	F4 SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTH	F4 X	F4 Y
	In bottom of footing, bent up into back face of wing. Alt. with F1 bars.						In bottom of footing, bent up into back face of wing. Alt. with F1 bars.						In bottom of footing, bent up into back face of wing. Alt. with F1 bars.					
9'	#5	12"	3	7'-6"	2'-1"	5'-6"	#4	12"	7	6'-6"	1'-10"	4'-9"	—	—	—	—	—	—
10'	#6	12"	2	8'-6"	2'-4"	6'-3"	#5	12"	4	7'-6"	2'-1"	5'-6"	#4	12"	7	6'-6"	1'-10"	4'-9"
11'	#6	12"	6	8'-6"	2'-4"	6'-3"	#5	12"	4	7'-6"	2'-1"	5'-6"	#4	12"	7	6'-6"	1'-10"	4'-9"
12'	#7	12"	6	9'-6"	2'-7"	7'-0"	#6	12"	7	8'-6"	2'-4"	6'-3"	#4	12"	7	6'-6"	1'-10"	4'-9"

F5, F6, H1, H2, H3 - STRAIGHT; F7 - BENT

H	F5 SIZE	F5 NO. REQ'D	F5 LENGTH	F6 SIZE	F6 NO. REQ'D	F6 LENGTH	H1 SIZE	H1 SPACING	H1 NO. REQ'D	H1 LENGTH	H2 SIZE	H2 SPACING	H2 NO. REQ'D	H2 LENGTHS VARY MAX.	H2 LENGTHS VARY MIN.	H3 SIZE	H3 NO. REQ'D	H3 LENGTH	F7 SIZE	F7 SPACING	F7 NO. REQ'D	F7 LENGTH	F7 X	QUANTITY REINFORCING STEEL PER WING LB.
	Longitudinal in top of wing footing heel.			Longitudinal in bottom of wing footing toe.			Horizontal in back face of wing.				Horizontal in back face of wing. One bar of each length					In back face of wing at top - on slope			Footing dowels extending up into front face of wing.					
9'	#4	1	26'-0"	#4	4	26'-3"	#4	12"	3	23'-5"	#4	12"	6	21'-2"	4'-0"	#4	1	24'-1"	#4	18"	16	4'-0"	3'-6"	533.3
10'	#4	1	28'-4"	#4	4	29'-0"	#4	12"	3	25'-8"	#4	12"	7	24'-7"	4'-0"	#4	1	26'-6"	#4	18"	18	4'-3"	3'-9"	662.9
11'	#4	1	30'-8"	#4	4	31'-6"	#4	12"	4	28'-0"	#4	12"	7	24'-7"	4'-0"	#4	1	28'-11"	#4	18"	19	4'-9"	4'-3"	810.8
12'	#4	1	33'-0"	#4	4	34'-0"	#4	12"	4	30'-4"	#4	12"	8	28'-0"	4'-0"	#4	1	31'-4"	#4	18"	21	5'-0"	4'-6"	1012.3

⊙ Except as shown at headwall.

BAR BENDING DIAGRAMS



NOTE:- Dimensions are to bar centers.

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS

7', 8', 9', 10', 11' & 12' SPANS — 3:1 SLOPES

SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES. — ALL DEPTHS OF COVER FOR H = 9'-0" & OVER

STANDARD DRAWING NO. W-X003-2

Designed By:- W.C.H. 7-25-62 Checked By:-
Drawn By:- W.C.H. 12-31-62 Checked By:- RHS 1-3-63
Quantities By:- W.C.H. 1-11-63 Checked By:- RHS 1-31-63 Rechecked By: