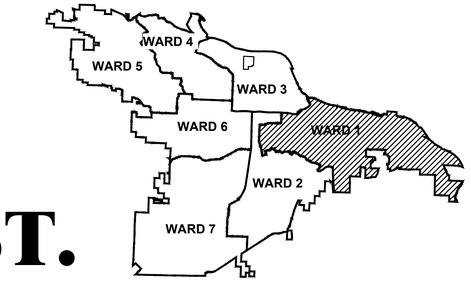
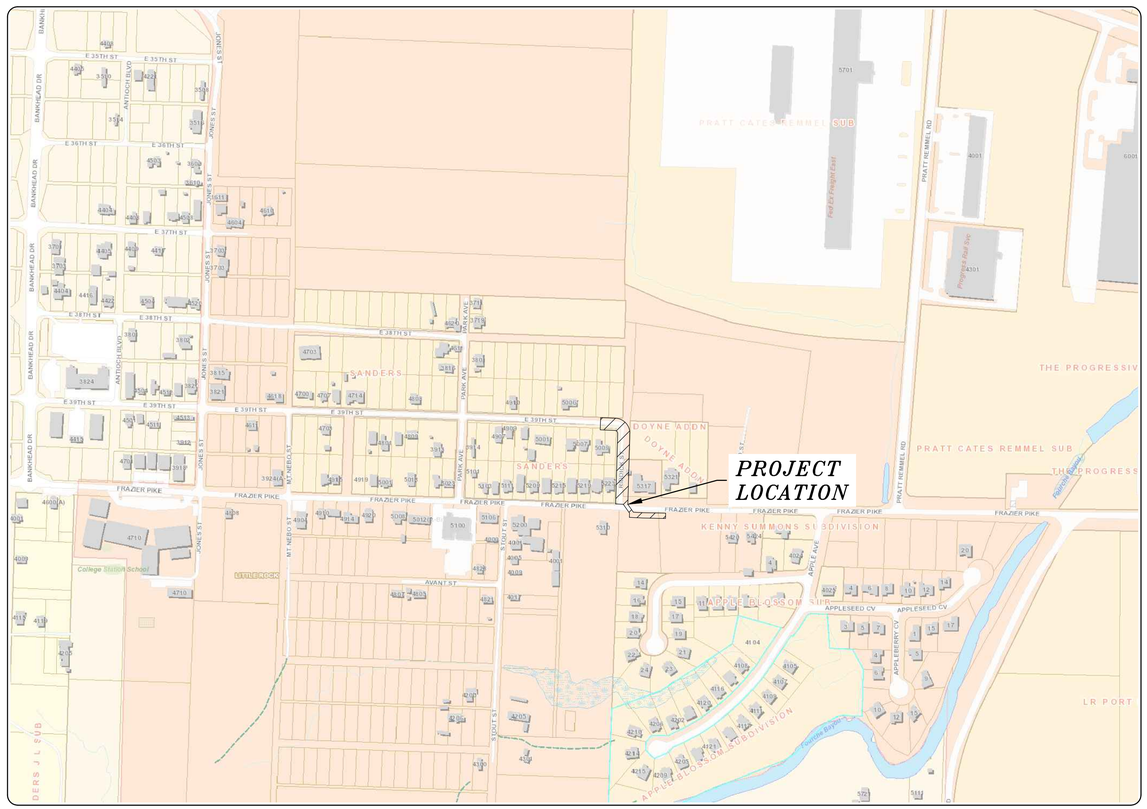
01-22-DR-01
EAST 39TH ST. DRAINAGE
FROM PARK AVE. TO RIDDICK ST.

(INTERSECTION WITH PARK AVE. TO RIDDICK ST)



PROJECT LOCATION - WARD 2



SHEET NO.	TITLE
C 100	COVER SHEET
C 200	QUANTITIES, GENERAL NOTES, LEGEND
C 201	BOX CULVERT & HEADWALL DETAILS
C 202	BOX CULVERT & HEADWALL DETAILS
C 203	BOX CULVERT & HEADWALL DETAILS
C 300	FIELD TIES/LAYOUT SHEET
C 400	EXISTING CONDITIONS SITE PLAN
C 500	SITE DETAIL
C 501	DRAINAGE PLAN AND PROFILE
C 502	DRAINAGE PLAN AND PROFILE
C 503	DRAINAGE PLAN AND PROFILE
C 504	DRAINAGE PLAN AND PROFILE
C 601	DRAINAGE DITCH CROSS-SECTIONS
C 602	DRAINAGE DITCH CROSS-SECTIONS
C 603	DRAINAGE DITCH CROSS-SECTIONS
C 604	DRAINAGE DITCH CROSS-SECTIONS
C 605	DRAINAGE DITCH CROSS-SECTIONS
C 606	GENERAL TOPO
C 701	EROSION CONTORL PLAN PHASE 1
C 702	EROSION CONTORL PLAN PHASE 2
C 703	EROSION CONTORL PLAN PHASE 3
C 800	MAINTENANCE OF TRAFFIC

811 Know what's **below.** **Call** before you dig.

2023-2025
BOND PROGRAM

DEPARTMENT OF PUBLIC WORKS
CIVIL ENGINEERING
701 WEST MARKHAM STREET
LITTLE ROCK, ARKANSAS 72201

Harbor
5800 Evergreen Drive
Little Rock, AR 72205
Ph (501) 663-8800
Fax (501) 588-0123
www.harborenv.com

REVISIONS	DATE

CITY OF LITTLE ROCK, ARKANSAS
EAST 39TH ST. DRAINAGE IMPROVEMENTS

COVER SHEET

DEPARTMENT OF PUBLIC WORKS
CIVIL ENGINEERING
701 W. MARKHAM
LITTLE ROCK, ARKANSAS 72201

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 10452
ANDREW H. RIVE

DRAWN BY	JNS
DESIGNED	JNS
CHECKED	AHR
DATE	4/11/2025
SCALE	1" = 300'
PROJECT NO.	CLR # 01-22-DR-01
SHEET NO.	C100

	CLR PROJECT # 01-22-DR-01		
	FROM PARK AVE. TO RIDDICK ST.		
	4/10/2025		
ITEM NO.	DESCRIPTION OF ITEMS	CONTRACT QUANTITY	UNIT
2.01	SITE PREPARATION	1	L.S.
3.01	UNCLASSIFIED EXCAVATION *NOT ADJUSTED FOR CONCRETE DEPTHS OF DRIVEWAYS AND DITCH LINING, JUNCTION BOXES AND HEADWALLS*	241.7	C.Y.
3.02	COMPACTED EMBANKMENT NOT ADJUSTED FOR CONCRETE DEPTHS OF DRIVEWAYS AND DITCH LINING, JUNCTION BOXES AND HEADWALLS	96.0	C.Y.
7.04	CONCRETE DRIVEWAY (4" THICK), STANDARD FINISH (CHANNEL)	5616	S.F.
7.06	CONCRETE DRIVEWAY (6" THICK), STANDARD FINISH	3225	S.F.
10.01	JUNCTION BOX (5'X5' WITH 4'X4' GRATE)	4	EA
10.01	JUNCTION BOX (5'X8' WITH 4'X4' GRATE)	1	EA
11.01	REINFORCED CONCRETE PRECAST BOX CULVERT (4'X3')	452	L.F.
11.02	REINFORCED CONCRETE BOX CULVERT (4'X3') CAST IN PLACE	38	L.F.
11.06	**REINFORCED CONCRETE HEADWALLS**		
	REINFORCED CONCRETE HEADWALL - STM 105 ***DOWNSTREAM WINGWALLS***	1.3	C.Y.
	REINFORCED CONCRETE HEADWALL - STM 105 ***DOWNSTREAM CULVERT TOEWALL***	0.3	C.Y.
	REINFORCED CONCRETE HEADWALL - STM 105 ***DOWNSTREAM WING TOEWALL***	2.1	C.Y.
	REINFORCED CONCRETE HEADWALL - STM 105 ***DOWNSTREAM CONCRETE APRON***	1.5	C.Y.
	REINFORCED CONCRETE HEADWALL - STM 3 ***WINGS***	2.8	C.Y.
	REINFORCED CONCRETE HEADWALL - STM 3 ***WING & HEADWALL TOEWALL***	3.1	C.Y.
	REINFORCED CONCRETE HEADWALL - SD 100 ***WINGS***	1.0	C.Y.
	REINFORCED CONCRETE HEADWALL - SD 100 ***WING TOEWALL***	1.9	C.Y.
	REINFORCED CONCRETE HEADWALL - SD 100 ***CULVERT TOEWALL***	0.2	C.Y.
	REINFORCED CONCRETE HEADWALL - SD 100 ***CONCRETE APRON***	1.1	C.Y.
11.06	REINFORCED CONCRETE HEADWALL - TOTAL	15.2	C.Y.
14.01	SOLID SODDING (BERMUDA)	8706	S.Y.
16.01	MAINTENANCE OF TRAFFIC	1	L.S.
17.01	PAVEMENT REPAIRS (BOX CULVERT CROSSING)	30	S.Y.
18.01	REMOVE AND REPLACE WOODEN FENCE *AS NECESSARY*	180	L.F.
18.01	REMOVE AND REPLACE CHAINLINK FENCE *AS NECESSARY*	15	L.F.
19.01	FINAL CLEAN UP	1	L.S.
24.05	ROCK DAM, (RD)	7	EA
26.10	TRENCH & EXCAVATION SAFETY	1	L.S.
SP-1	RELOCATED POWER POLES	2	EA
SP-2	RELOCATE TELEPHONE PEDESTALS	1	EA

GENERAL NOTES

1. **ANY DAMAGE TO LANDSCAPING AREAS, YARDS, FENCES OR SIGNS SHALL BE RESTORED TO CONDITION SATISFACTORY TO THE CITY OF LITTLE ROCK PUBLIC WORKS.**
2. **DISTURBED GRASS AREAS SHALL BE REPLACED BY TOPSOIL AND SEEDING OR HYDROMULCH.**
3. **ARKANSAS STATE LICENSING LAW FOR COMMERCIAL CONTRACTORS ACT 150 OF 1965 AND ACT 162 OF 1987 (AS AMENDED) REQUIRES THE INSTALLATION CONTRACTOR TO HAVE A VALID CONTRACTOR'S LICENSE.**
4. **ALL WORK SHALL CONFORM AS APPLICABLE TO THE CITY OF LITTLE ROCK PUBLIC WORKS DEPARTMENT STANDARD DETAILS FOR STREET AND DRAINAGE FACILITIES IMPROVEMENTS.**
5. **REFER TO TECHNICAL SPECIFICATIONS IN THE PROJECT MANUAL FOR SPECIFIC MATERIAL AND PRODUCT REQUIREMENTS.**

EXISTING

IRON ROD — IR
PK NAIL — PK
R.R. SPIKE — RR(Sp)
CONC. MONUMENT — CM
WATER VALVE — WV
WATER METER — WM
FIRE HYDRANT
GAS METER — GM
GAS VALVE — GV
CLEAN–OUT — CO
GUARD POST (BOLLARD) — GP
SIGN POST
BENCHMARK
STORM SEWER MANHOLE — D
SANITARY SEWER MANHOLE — S
TELEPHONE MANHOLE — T
ELECTRIC MANHOLE — E
TELEPHONE BOX — T
ELECTRIC BOX — E
CABLE BOX — C
UTILITY POLE
GUY WIRE
LIGHT POLE
POST OR POLE (TYPE AS NOTED)
MAILBOX
DECIDUOUS TREE
EVERGREEN/CONIFEROUS TREE
BUSH
PROPERTY LINE
SETBACK LINE
EASEMENT LINE
CURB
FENCE — X
OVERHEAD ELECTRIC — OE
OVERHEAD TELEPHONE — OT
OVERHEAD CABLE — OC
UNDERGROUND TELEPHONE — UGT
UNDERGROUND ELECTRIC — UGE
UNDERGROUND CABLE — UGC
WATER LINE — 8"W
SEWER LINE — 8"SS
GAS LINE — 4"G
STORM SEWER/CULVERT — 24" CMP/RCP/DIP
EDGE OF WOODS
CONTOUR LINE — 265
EXISTING DITCH

PROPOSED

PROPOSED CONTOUR — 265
PROPOSED SPOT ELEVATION — 25.00
PROPOSED SPOT CURB ELEVATION — 25.50 / 25.00
STORM SEWER – PIPE
STORM SEWER – MITERED END SECTION
STORM SEWER – GRATE INLET
STORM SEWER – JUNCTION BOX — D D
STORM SEWER – FLARED END SECTION
STORM SEWER – HEADWALL
STORM SEWER – SINGLE WING — D
STORM SEWER – DOUBLE WING — D
STORM SEWER – AREA INLET — D
GRADE BREAK LINE
HIGH POINT — HP
LOW POINT — LP
CUT LINE — C
FILL LINE — F
SANITARY SEWER PIPE — SAN
SANITARY SEWER MANHOLE — S
PROPOSED CURB
PROPOSED CONCRETE
CONSTRUCTION – ENTRANCE/EXIT — CO
CHECK DAM — CD
DIVERSION BERM — DI
DOWNDRAIN STRUCTURE – TEMPORARY — DN
ROCK DAM — RD
SEDIMENT BARRIER – SILT FENCE — SD1
SEDIMENT BARRIER – GRAVEL RING — SD2
SEDIMENT BARRIER – BLOCK & GRAVEL — SD3
SEDIMENT BARRIER – BLOCK — SD4
TEMPORARY SEDIMENT BASIN — SB1
SILT FENCE – TYPE A — SFA
SILT FENCE – TYPE B — SFB
SILT FENCE – TYPE C — SFC
STORM DRAIN OUTLET PROTECTION — ST
SURFACE ROUGHENING — SU
DISTURBED AREA STABILIZATION –TEMPORARY STABILIZATION — TS1
DISTURBED AREA STABILIZATION –TEMPORARY GRASSING — TS2
DISTURBED AREA STABILIZATION –PERMANENT GRASSING — TS3
MATTING/BLANKETS — Mb
PROPOSED BOX CULVERT
PROPOSED DITCH CONCRETE
PROPOSED SEED/SOD TOP DITCH/SHOULDER

REVISIONS	DATE
–	-

CITY OF LITTLE ROCK, ARKANSAS
EAST 39TH ST. DRAINAGE IMPROVEMENTS

GENERAL NOTES, LEGEND AND QUANTITIES

DEPARTMENT OF PUBLIC WORKS
CIVIL ENGINEERING
701 W. MARKHAM
LITTLE ROCK, ARKANSAS 72201

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 10452
ANDREW H. RIKE

DRAWN BY	JNS
DESIGNED	JNS
CHECKED	AHR
DATE	4/11/2025
SCALE	N/A
PROJECT NO.	CLR # 01-22-DR-01
SHEET NO.	C200

TABLE OF DIMENSIONS AND REINFORCING STEEL (Wings for one structure end)										
Dimensions					Variable Reinforcing				Estimated Quantities per ft of wing length (2–wings) ③	
					Bars J1		Bars J2			
Maximum Wingwall Height Hw	W	X	Y	Z	Size	Spa	Size	Spa	Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
3'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
5'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'-8"	1'-9"	1'-3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'-2"	2'-0"	1'-6"	8"	#5	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'-8"	2'-3"	1'-9"	8"	#4	6"	#4	6"	81.49	0.535
10'-0"	5'-2"	2'-6"	2'-0"	8"	#5	6"	#4	6"	97.25	0.584
11'-0"	5'-8"	2'-9"	2'-3"	8"	#6	6"	#5	6"	133.65	0.634
12'-0"	6'-2"	3'-0"	2'-6"	9"	#7	6"	#5	6"	162.29	0.721
13'-0"	6'-8"	3'-3"	2'-9"	11"	#7	6"	#5	6"	178.80	0.856
14'-0"	7'-2"	3'-6"	3'-0"	1'-0"	#8	6"	#5	6"	216.78	0.959
15'-0"	7'-8"	4'-0"	3'-0"	1'-1"	#9	6"	#6	6"	283.06	1.068
16'-0"	8'-2"	4'-6"	3'-0"	1'-3"	#9	6"	#6	6"	297.02	1.234

TABLE OF WINGWALL REINFORCING (2–wings)			
Bar	Size	No.	Spa
DL	#5	~	1'-0"
DS	#5	~	1'-0"
E	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	4	~
M	#4	4	~
P	#4	~	1'-0"
RS	#5	3	~
RL	#5	3	~
V	#4	~	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES			
Bar	Size	No.	Spa
L	#4	~	1'-6"
Q	#4	1	~
Reinf (Lb/Ft)			2.45
Conc (CY/Ft)			0.037

WING DIMENSION FORMULAS:

(All values are in feet.)

$Hw = H + T + C - 0.250'$
$A = (Hw - 0.333'(SL))$
$B = (A)$ [tangent θ + 15°)]
$Lw = (A) \div$ [cosine (θ + 15°)]

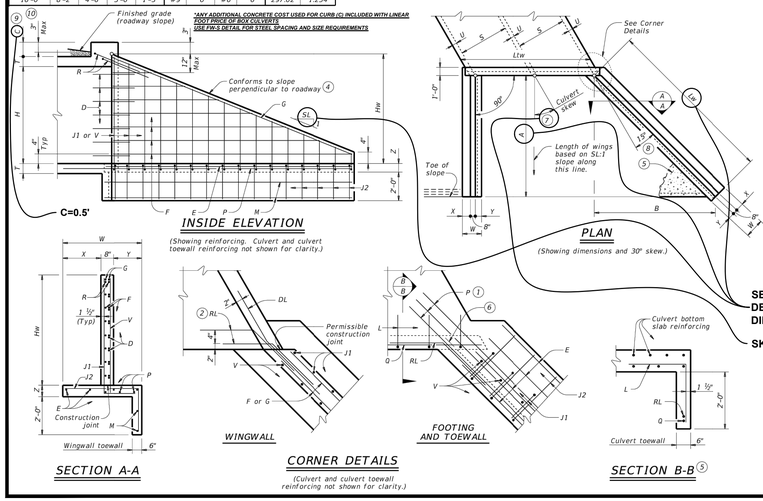
For cast–in–place culverts:
$Ltw = [(N)(S) + (N + 1)(U)] \div$ cosine θ

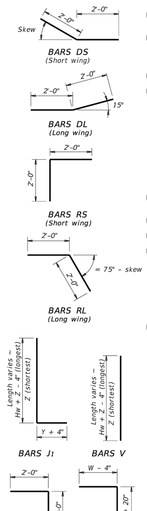
For precast culverts:
$Ltw = [(N)(2U + S) + (N - 1)(0.5)] \div$ cosine θ

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

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

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





1. Extend Bars P 3'-0" minimum into bottom slab of box culvert.
2. Adjust as necessary to maintain 1 1#2" clear cover and 4" minimum between bars.
3. Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings, multiply the tabulated values by 0.5 x (A + Lw).
4. Recommended values of side slope are: 2:1, 3:1, 4:1, and 6:1.
5. When shown elsewhere on the plans, construct 5" deep concrete riprap. Payment for riprap is as required by Item 432, "Riprap." Unless otherwise shown on the plans or directed by the Engineer, provide a 6" wide by 1'-6" deep reinforced concrete toewall along all edges of the riprap adjacent to natural ground; reinforce the toewall by extending typical riprap reinforcing into the toewall; and extend construction joints or grooved joints oriented in the direction of flow across the full distance of the riprap at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.
6. At Contractor's option, culvert toewall may be ended flush with wingwall toewall. Adjust reinforcing as needed.
7. Applicable values of skew are: 15°, 30°, and 45°.
8. Typical wingwall angle for all skews.
9. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
10. For vehicle safety, the following requirements must be met:
    - For structures without bridge rail, construct curbs no more than 3" above finished grade.
    - For structures with bridge rail, construct curbs flush with finished grade.

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

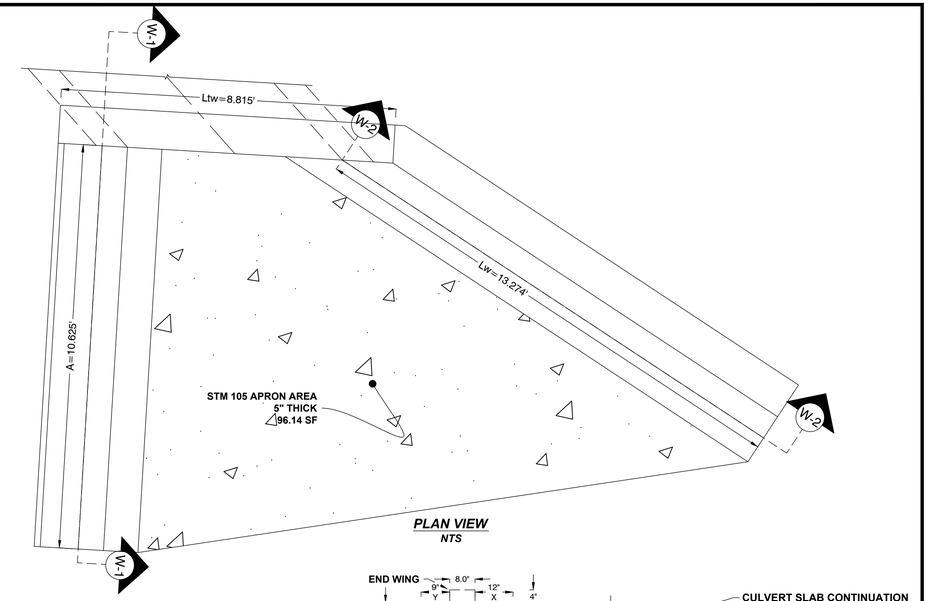
MATERIAL NOTES:
Provide Class C concrete (f'c=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
In riprap concrete, synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing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

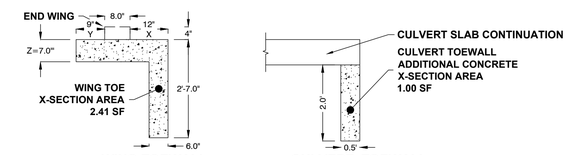
GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for additional dimensions and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

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

CONCRETE WINGWALLS WITH FLARED WINGS FOR SKEWED BOX CULVERTS

FW-S



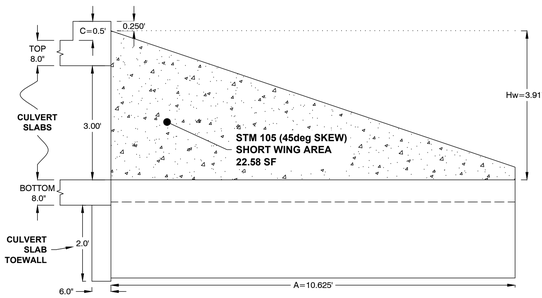


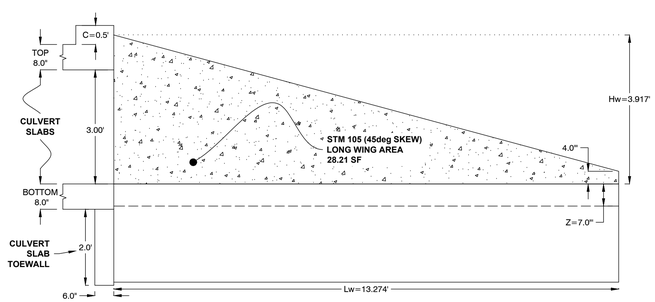
*WING TOEWALL AND CULVERT TOEWALL CROSS SECTIONS FOR CONCRETE QUANTITY ONLY.
SEE CULVERT AND HEADWALL/WINGWALL DETAILS FOR REINFORCEMENT

STM-105 DOWNSTREAM HEADWALL DETAIL

CULVERT AND HEADWALL NOTES

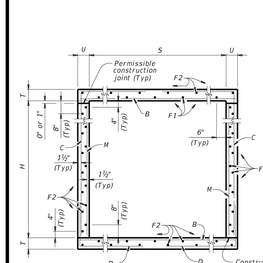
1. REFER TO SINGLE BOX CAST IN PLACE DETAIL SCC 3 & 4 FOR STM-105 BOX CULVERT DIMENSIONS AND PLACEMENT, SIZE, AND SPACING OF STEEL REINFORCEMENT.
2. REFER TO DETAIL FW-S FOR PLACEMENT, SIZE, AND SPACING OF STEEL REINFORCEMENT IN STM-105 HEADWALL AND WINGWALLS.
3. REFER TO STM-105 HEADWALL DETAIL FOR SPECIFIC HEADWALL/WINGWALL DIMENSIONS.
4. CONCRETE VOLUMES FOR WINGALL, CULVERT TOEWALL, WING TOEWALL, AND APRON ARE BASED ON DIMENSIONS PROVIDED IN STM-105 HEADWALL DETAIL.
5. ADDITIONAL CONCRETE USED FOR CURB HEIGHT "C" SHOULD BE INCLUDED WITH LINEAR FOOT PRICE OF BOX CULVERT QUANTITIES.

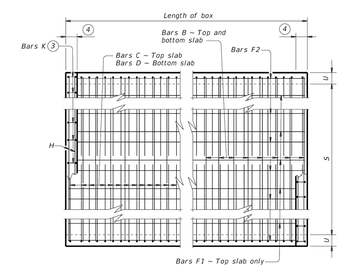




SECTION DIMENSIONS				FILL HEIGHT ⑤	BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																										QUANTITIES					
					Bars B					Bars C						Bars D						Bars M ~ #4				Bars F1 ~ #4 at 18" Spa			Bars F2 ~ #4 at 18" Spa				Bars H 4 ~ #4			Bars K	Per Foot of Barrel		Curb		Total	
S	H	T	U		No.	Size	Spa	Length	Weight	No.	Size	Spa	Length	Weight	" X "	" Y "	No.	Size	Spa	Length	Weight	" Y "	" Z "	No.	Spa	Length	Weight	No.	Length	Wt	No.	Length	Weight	Length	Wt	No.	Wt	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)
3'-0"	2'-0"	8"	7"	30'	108	#5	9"	3'-11"	441	108	#4	9"	5'-4"	385	2'-6"	2'-10"	108	#4	9"	5'-1"	367	2'-10"	2'-3"	108	9"	2'-0"	144	3	39'-9"	80	19	39'-9"	505	3'-11"	10	10	28	0.292	48.1	0.3	38	12.0	1,960
3'-0"	3'-0"	8"	7"	30'	108	#5	9"	3'-11"	441	108	#4	9"	6'-4"	457	3'-6"	2'-10"	108	#4	9"	5'-1"	367	2'-10"	2'-3"	108	9"	3'-0"	216	3	39'-9"	80	23	39'-9"	611	3'-11"	10	10	28	0.335	54.3	0.3	38	13.7	2,210
4'-0"	2'-0"	8"	7"	30'	108	#5	9"	4'-11"	554	162	#4	6"	5'-8"	613	2'-6"	3'-2"	162	#4	6"	5'-5"	586	3'-2"	2'-3"	108	9"	2'-0"	144	3	39'-9"	80	21	39'-9"	558	4'-11"	13	12	33	0.342	63.4	0.4	46	14.1	2,581
4'-0"	3'-0"	8"	7"	30'	108	#5	9"	4'-11"	554	162	#4	6"	6'-8"	721	3'-6"	3'-2"	162	#4	6"	5'-5"	586	3'-2"	2'-3"	108	9"	3'-0"	216	3	39'-9"	80	25	39'-9"	664	4'-11"	13	12	33	0.385	70.5	0.4	46	15.8	2,867
4'-0"	4'-0"	8"	7"	30'	108	#5	9"	4'-11"	554	162	#4	6"	7'-8"	830	4'-6"	3'-2"	162	#4	6"	5'-5"	586	3'-2"	2'-3"	108	9"	4'-0"	289	3	39'-9"	80	25	39'-9"	664	4'-11"	13	12	33	0.428	75.1	0.4	46	17.5	3,049

⑤ For direct traffic culverts (fill height ≤ 2 ft.), identify the required box size and select the option with the minimum fill height.



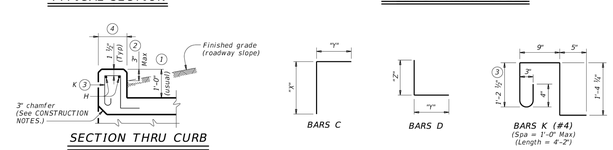


1. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails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

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

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

Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR.
Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.
If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86"
Max spacing. Required lap length for the provided D30.6 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).



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

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

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

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

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

SINGLE BOX CULVERTS CAST-IN-PLACE
0' TO 30' FILL

SCC-3 & 4

REVISIONS	DATE
–	-

CITY OF LITTLE ROCK, ARKANSAS
EAST 39TH ST. DRAINAGE IMPROVEMENTS

BOX CULVERT & HEADWALL DETAILS

DEPARTMENT OF PUBLIC WORKS
CIVIL ENGINEERING
701 W. MARKHAM
LITTLE ROCK, ARKANSAS 72201

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 10452
ANDREW H. RIKE

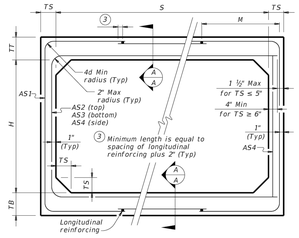
DRAWN BY	JNS
DESIGNED	JNS
CHECKED	AHR
DATE	4/11/2025
SCALE	N/A
PROJECT NO.	CLR # 01-22-DR-01
SHEET NO.	C201

BOX DATA

SECTION DIMENSIONS S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	Fill Height (ft.)	M (Min) (in.)	REINFORCING (sq. in. / ft.) ② AS1	AS2	AS3	AS4	AS5	AS7	AS8	① Lift Weight (tons)
4	2	7.5	6	5	< 2	–	0.18	0.27	0.15	0.12	0.18	0.18	0.14	4.5
4	2	5	5	5	2 < 3	38	0.18	0.19	0.17	0.12	–	–	–	3.6
4	2	5	5	5	3 – 5	38	0.13	0.13	0.13	0.12	–	–	–	3.6
4	2	5	5	5	10	38	0.12	0.12	0.12	0.12	–	–	–	3.6
4	2	5	5	5	15	38	0.14	0.16	0.16	0.12	–	–	–	3.6
4	2	5	5	5	20	38	0.18	0.20	0.21	0.12	–	–	–	3.6
4	2	5	5	5	25	38	0.23	0.25	0.25	0.12	–	–	–	3.6
4	2	5	5	5	30	38	0.28	0.30	0.30	0.12	–	–	–	3.6
4	3	7.5	6	5	< 2	–	0.18	0.31	0.18	0.12	0.18	0.18	0.14	5.0
4	3	5	5	5	2 < 3	38	0.15	0.23	0.20	0.12	–	–	–	4.1
4	3	5	5	5	3 – 5	38	0.12	0.16	0.16	0.12	–	–	–	4.1
4	3	5	5	5	10	38	0.12	0.14	0.14	0.12	–	–	–	4.1
4	3	5	5	5	15	38	0.12	0.18	0.18	0.12	–	–	–	4.1
4	3	5	5	5	20	38	0.14	0.23	0.24	0.12	–	–	–	4.1
4	3	5	5	5	25	38	0.17	0.29	0.29	0.12	–	–	–	4.1
4	3	5	5	5	30	38	0.21	0.35	0.35	0.12	–	–	–	4.1
4	4	7.5	6	5	< 2	–	0.18	0.33	0.20	0.12	0.18	0.18	0.14	5.5
4	4	5	5	5	2 < 3	38	0.12	0.26	0.23	0.12	–	–	–	4.6
4	4	5	5	5	3 – 5	38	0.12	0.18	0.18	0.12	–	–	–	4.6
4	4	5	5	5	10	38	0.12	0.15	0.15	0.12	–	–	–	4.6
4	4	5	5	5	15	38	0.12	0.19	0.20	0.12	–	–	–	4.6
4	4	5	5	5	20	38	0.12	0.25	0.25	0.12	–	–	–	4.6
4	4	5	5	5	25	38	0.14	0.31	0.31	0.12	–	–	–	4.6
4	4	5	5	5	30	38	0.17	0.37	0.37	0.12	–	–	–	4.6

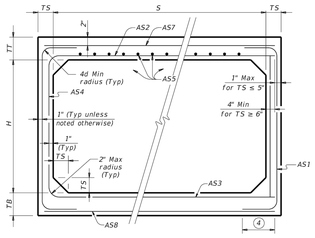
① For box length = 8'-0"

② AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



CORNER OPTION "A" CORNER OPTION "B"

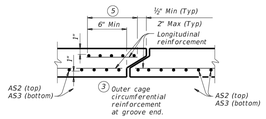
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

④ Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:

Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.

Provide Class H concrete (f'c = 5,000 psi).

GENERAL NOTES:

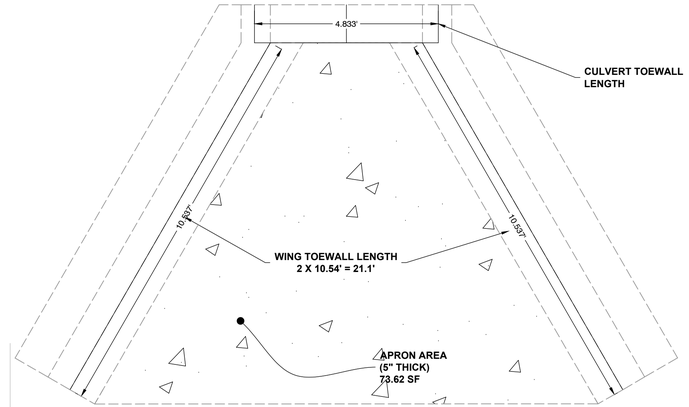
Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.

See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.

In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)."

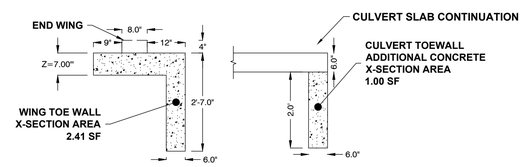
SINGLE BOX CULVERTS
PRECAST
4'-0" SPAN

SCP-4



PLAN VIEW

NTS



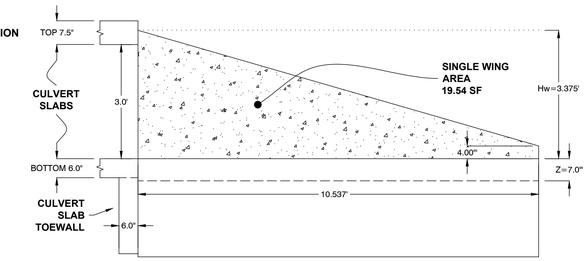
*FOR CONCRETE QUANTITY ONLY. SEE CULVERT AND HEADWALL/WINGWALL DETAILS FOR REINFORCEMENT

WING TOEWALL CROSS-SECTION

NTS

CULVERT TOEWALL CROSS-SECTION

NTS



SD-100 HEADWALL DETAIL

CULVERT AND HEADWALL NOTES

1. REFER TO SINGLE BOX PRE-CAST DETAIL SCP-4 FOR STM-100 BOX CULVERT DIMENSIONS AND PLACEMENT, SIZE, AND SPACING OF STEEL REINFORCEMENT.
2. REFER TO DETAIL FW-0 FOR PLACEMENT, SIZE, AND SPACING OF STEEL REINFORCEMENT IN SD - 100 HEADWALL AND WINGWALLS.
3. REFER TO SD - 100 HEADWALL DETAIL FOR SPECIFIC HEADWALL/WINGWALL DIMENSIONS.
4. CONCRETE VOLUMES FOR WINGWALL, CULVERT TOEWALL, WING TOEWALL, AND APRON ARE BASED ON DIMENSIONS PROVIDED IN SD - 100 HEADWALL DETAIL.

TABLE OF DIMENSIONS AND REINFORCING STEEL

(Wings for one structure end)

Dimensions: Maximum Wingwall Height Hw	W	X	Y	Z	Variable Reinforcing: Bars J1 Size	Bars J1 Spa	Bars J2 Size	Bars J2 Spa	Estimated Quantities per ft of wing length, (2–wings) ③ Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
3'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
5'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'-8"	1'-9"	1'-3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'-2"	2'-0"	1'-6"	8"	#5	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'-8"	2'-3"	1'-9"	8"	#4	6"	#4	6"	81.49	0.535
10'-0"	5'-2"	2'-6"	2'-0"	8"	#5	6"	#4	6"	97.25	0.584
11'-0"	5'-8"	2'-9"	2'-3"	8"	#6	6"	#5	6"	133.65	0.634
12'-0"	6'-2"	3'-0"	2'-6"	9"	#7	6"	#5	6"	162.29	0.721
13'-0"	6'-8"	3'-3"	2'-9"	11"	#7	6"	#5	6"	178.80	0.856
14'-0"	7'-2"	3'-6"	3'-0"	1'-0"	#8	6"	#5	6"	216.78	0.959
15'-0"	7'-8"	4'-0"	3'-0"	1'-1"	#9	6"	#6	6"	283.06	1.068
16'-0"	8'-2"	4'-6"	3'-0"	1'-3"	#9	6"	#6	6"	297.02	1.234

USE FW-0 DETAIL FOR STEEL SPACING AND SIZE REQUIREMENTS

TABLE OF WINGWALL REINFORCING

(2–wings)

Bar	Size	No.	Spa
D	#5	~	1'-0"
E	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	4	~
M	#4	4	~
P	#4	~	1'-0"
R	#5	6	~
V	#4	~	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

Bar	Size	No.	Spa
L	#4	~	1'-6"
Q	#4	1	~
Reinf (Lb/Ft)			2.45
Conc (CY/Ft)			0.037

WING DIMENSION FORMULAS:

(All values are in feet.)

Hw = H + T + C – 0.250'
A = (Hw – 0.333') (SL)
B = (A) tangent (30°)
Lw = (A) ÷ cosine (30°)

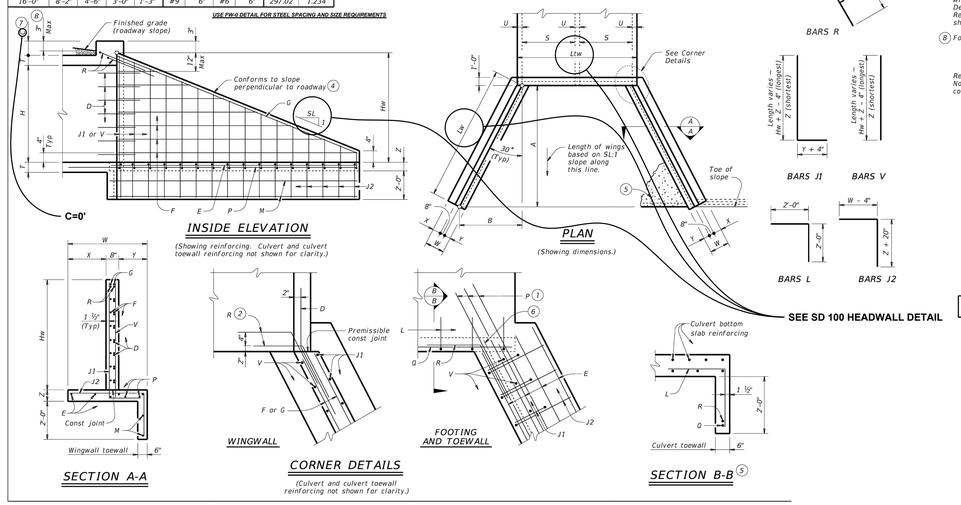
For cast-in-place culverts:
Ltw = (N) (S) + (N + 1) (U)

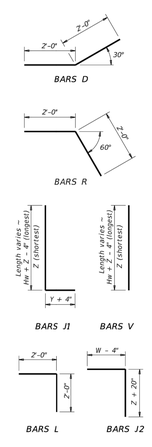
For precast culverts:
Ltw = (N) (2U + S) + (N – 1) (0.5')

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

Hw = Height of wingwall
SL:1 = Side slope ratio (horizontal:1 vertical)
Lw = Length of wingwall
Ltw = Culvert toewall length
N = Number of culvert spans

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





① Extend Bars P 3'-0" minimum into bottom slab of box culvert.

② Adjust as necessary to maintain 1 1#2" clear cover and 4" minimum between bars.

③ Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings, multiply the tabulated values by Lw.

④ Recommended values of side slope are: 2:1, 3:1, 4:1, and 6:1.

⑤ When shown elsewhere on the plans, construct 5" deep concrete riprap. Payment for riprap is as required by Item 432, "Riprap." Unless otherwise shown on the plans or directed by the Engineer, provide a 6" wide by 1'-6" deep reinforced concrete toewall along all edges of the riprap adjacent to natural ground; reinforce the toewall by extending typical riprap reinforcing into the toewall; and extend construction joints or grooved joints oriented in the direction of flow across the full distance of the riprap at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.

⑥ At Contractor's option, culvert toewall may be ended flush with wingwall toewall. Adjust reinforcing as needed.

⑦ 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.

⑧ For vehicle safety, the following requirements must be met:
- For structures without bridge rail, construct curbs no more than 3" above finished grade.
- For structures with bridge rail, construct curbs flush with finished grade.

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

MATERIAL NOTES:

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

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.

See Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.

The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.

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

CONCRETE WINGWALLS
WITH FLARED WINGS FOR
0° SKEW BOX CULVERTS

FW-0

REVISIONS	DATE
–	–

CITY OF LITTLE ROCK, ARKANSAS
EAST 39TH ST. DRAINAGE IMPROVEMENTS

BOX CULVERT & HEADWALL DETAILS

DEPARTMENT OF PUBLIC WORKS
CIVIL ENGINEERING
701 W. MARKHAM
LITTLE ROCK, ARKANSAS 72201

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 10452 ANDREW H. RIVE

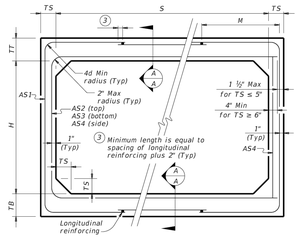
DRAWN BY	JNS
DESIGNED	JNS
CHECKED	AHR
DATE	4/11/2025
SCALE	N/A
PROJECT NO.	CLR # 01-22-DR-01
SHEET NO.	C202

BOX DATA

SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) ②							① Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
4	2	7.5	6	5	< 2	–	0.18	0.27	0.15	0.12	0.18	0.18	0.14	4.5
4	2	5	5	5	2 < 3	38	0.18	0.19	0.17	0.12	–	–	–	3.6
4	2	5	5	5	3 - 5	38	0.13	0.13	0.13	0.12	–	–	–	3.6
4	2	5	5	5	10	38	0.12	0.12	0.12	0.12	–	–	–	3.6
4	2	5	5	5	15	38	0.14	0.16	0.16	0.12	–	–	–	3.6
4	2	5	5	5	20	38	0.18	0.20	0.21	0.12	–	–	–	3.6
4	2	5	5	5	25	38	0.23	0.25	0.25	0.12	–	–	–	3.6
4	2	5	5	5	30	38	0.28	0.30	0.30	0.12	–	–	–	3.6
4	3	7.5	6	5	< 2	–	0.18	0.31	0.18	0.12	0.18	0.18	0.14	5.0
4	3	5	5	5	2 < 3	38	0.15	0.23	0.20	0.12	–	–	–	4.1
4	3	5	5	5	3 - 5	38	0.12	0.16	0.16	0.12	–	–	–	4.1
4	3	5	5	5	10	38	0.12	0.14	0.14	0.12	–	–	–	4.1
4	3	5	5	5	15	38	0.12	0.18	0.18	0.12	–	–	–	4.1
4	3	5	5	5	20	38	0.14	0.23	0.24	0.12	–	–	–	4.1
4	3	5	5	5	25	38	0.17	0.29	0.29	0.12	–	–	–	4.1
4	3	5	5	5	30	38	0.21	0.35	0.35	0.12	–	–	–	4.1
4	4	7.5	6	5	< 2	–	0.18	0.33	0.20	0.12	0.18	0.18	0.14	5.5
4	4	5	5	5	2 < 3	38	0.12	0.26	0.23	0.12	–	–	–	4.6
4	4	5	5	5	3 - 5	38	0.12	0.18	0.18	0.12	–	–	–	4.6
4	4	5	5	5	10	38	0.12	0.15	0.15	0.12	–	–	–	4.6
4	4	5	5	5	15	38	0.12	0.19	0.20	0.12	–	–	–	4.6
4	4	5	5	5	20	38	0.12	0.25	0.25	0.12	–	–	–	4.6
4	4	5	5	5	25	38	0.14	0.31	0.31	0.12	–	–	–	4.6
4	4	5	5	5	30	38	0.17	0.37	0.37	0.12	–	–	–	4.6

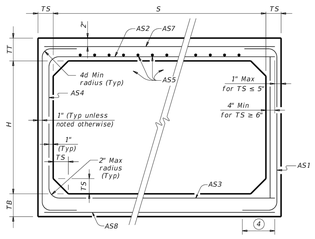
① For box length = 8'-0"

② AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



CORNER OPTION "A" CORNER OPTION "B"

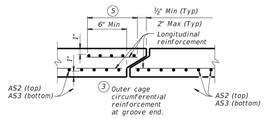
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

④ Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



SECTION A-A

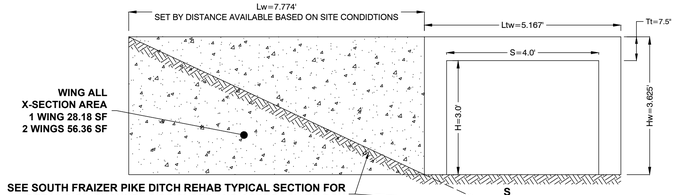
(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:
Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.
Provide Class H concrete (f'c = 5,000 psi).

GENERAL NOTES:
Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.
See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.
In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)."

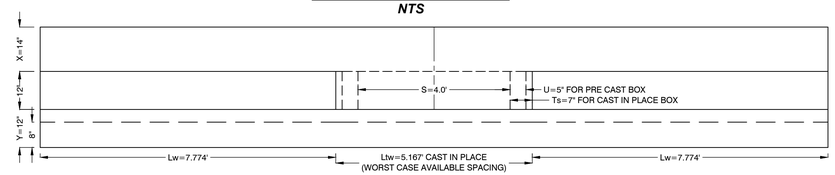
SINGLE BOX CULVERTS
PRECAST
4'-0" SPAN

SCP-4



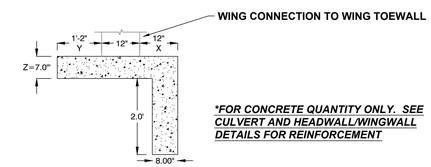
*FOR CONCRETE QUANTITY ONLY. SEE CULVERT AND HEADWALL/WINGWALL DETAILS FOR REINFORCEMENT

STM 3 WINGWALL ELEVATION
NTS



Ltw = 4.833' IF PRECAST BOX USED

STM - 3 WINGWALL ELEVATION
NTS



*FOR CONCRETE QUANTITY ONLY. SEE CULVERT AND HEADWALL/WINGWALL DETAILS FOR REINFORCEMENT

STM - 3 HEADWALL DETAIL

CULVERT AND HEADWALL NOTES

1. REFER TO SINGLE BOX PRE-CAST DETAIL SCP-4 FOR BOX CULVERT STM - 3 DIMENSIONS AND PLACEMENT, SIZE, AND SPACING OF STEEL REINFORCEMENT.
2. REFER TO DETAIL PW (CONCRETE WINGWALLS FOR PARALLEL WINGS FOR BOX CULVERT TYPE PW-1) FOR PLACEMENT, SIZE, AND SPACING OF STEEL REINFORCEMENT IN SD - 100 HEADWALL AND WINGWALLS.
3. REFER TO SD - 100 HEADWALL DETAIL FOR SPECIFIC HEADWALL/WINGWALL DIMENSIONS.
4. CONCRETE VOLUMES FOR WINGWALL, CULVERT TOEWALL, WING TOEWALL, AND APRON ARE BASED ON DIMENSIONS PROVIDED IN SD - 100 HEADWALL DETAIL.

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

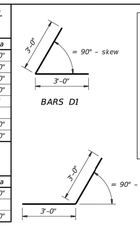
Dimensions				Variable Reinforcing				Estimated Quantities per ft of wing (2-wings) ④		Estimated Quantities per ft of Toewall (1-toewall)	
Maximum Wingwall Height Hw	W	X	Y	Z	Bars J1		Bars J2		Reinf Lb/(Ft)	Conc (CY/(Ft)	Reinf (Lb/(Ft)	Conc (CY/(Ft)
					Size	Spa	Size	Spa				
2'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	48.64	0.406	6.85	0.071
2'-9"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.31	0.424	6.85	0.071
3'-0"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.98	0.444	6.85	0.071
3'-3"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.32	0.462	6.85	0.071
3'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.98	0.480	6.85	0.071
4'-0"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	55.77	0.532	6.85	0.071
4'-6"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	59.77	0.568	6.85	0.071
5'-0"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	63.45	0.632	6.96	0.075
5'-6"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	67.46	0.668	6.96	0.075
6'-0"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	80.67	0.730	7.07	0.078
6'-6"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	85.05	0.768	7.07	0.078
7'-0"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	92.15	0.864	8.07	0.093
7'-6"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	96.54	0.902	8.07	0.093
8'-0"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	139.04	0.962	8.13	0.095
8'-6"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	144.47	1.000	8.13	0.095
9'-6"	6'-0"	2'-10"	2'-2"	9"	#5	6"	#5	6"	156.93	1.136	8.41	0.110
10'-6"	6'-5"	3'-0"	2'-5"	9"	#6	6"	#5	6"	196.27	1.234	8.57	0.117
11'-6"	7'-2"	3'-6"	2'-8"	11"	#6	6"	#6	6"	230.13	1.438	9.52	0.140
12'-6"	7'-8"	3'-9"	2'-11"	1'-0"	#7	6"	#6	6"	283.41	1.592	9.74	0.157
13'-6"	8'-2"	4'-0"	3'-2"	1'-2"	#8	6"	#6	6"	348.72	1.804	10.02	0.186
14'-6"	8'-10"	4'-5"	3'-5"	1'-4"	#9	6"	#6	6"	432.94	2.046	10.30	0.218
15'-6"	9'-6"	4'-10"	3'-8"	1'-6"	#9	6"	#7	6"	489.52	2.302	11.24	0.253
16'-0"	9'-11"	5'-0"	3'-11"	1'-7"	#9	6"	#7	6"	505.72	2.448	11.47	0.279

TABLE OF WINGWALL REINFORCING
(2-wings)

Bar	Size	No.	Spa
D1	#6	–	1'-0"
D2	#6	–	1'-0"
E1	#4	–	1'-0"
F	#4	–	1'-0"
G	#6	–	8"
M1	#4	4	–
P	#4	–	1'-0"
V	#4	–	1'-0"

TABLE OF TOEWALL REINFORCING

Bar	Size	No.	Spa
J3	#4	–	1'-0"
M2	#4	2	–
E2	#4	–	1'-0"



WING DIMENSION FORMULAS:

(All values are in feet.)

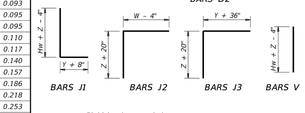
Hw = H + T + C
Lw = (Hw) (SL) ÷ cosine (θ) for Type PW-1
= (Hw - 1') (SL) ÷ cosine (θ) for Type PW-2 and Hw ≥ 4'
= (Hw - 0.5') (SL) ÷ cosine (θ) for Type PW-2 and Hw < 4'

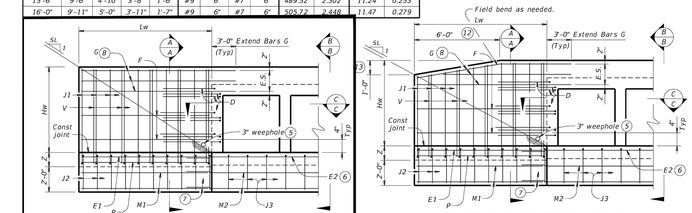
For cast-in-place culverts:
Ltw = [(N) (S) + (N + 1) (U)] ÷ cosine (θ)

For precast culverts:
Ltw = [(N) (2 U + S) + (N - 1) (0.5')] ÷ cosine (θ)
Total Wingwall Area (two wings ~ SF)
= (2)(Hw)(Lw) for Type PW-1
= (2)(Hw)(Lw) - 6 SF for Type PW-2 and Hw ≥ 4'
= (2)(Hw)(Lw) - 1.5 SF for Type PW-2 and Hw < 4'

Hw = Height of wingwall
Lw = Length of wingwall
Ltw = Culvert toewall length
N = Number of culvert spans
SL:1 = Channel slope ratio. (horizontal: 1 vertical, usual value is 2:1)
θ = Culvert skew

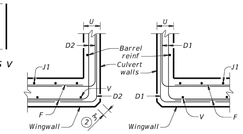
See applicable box culvert standard sheet for S, H, T, and U values.



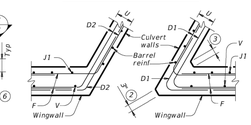


PARTIAL ELEVATION - PW-1

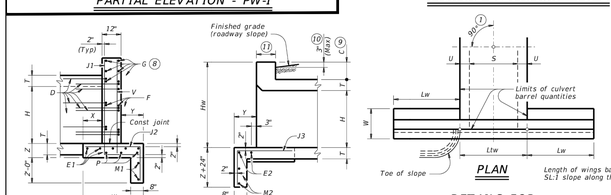
PARTIAL ELEVATION - PW-2



SECTION C-C - PW-1



SECTION C-C - PW-2

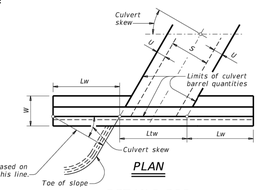


SECTION A-A
(Showing wing reinforcement.)

SECTION B-B
(Showing wing reinforcement.)

PLAN

DETAILS FOR NON-SKEWED BOX CULVERTS



PLAN

DETAILS FOR SKEWED BOX CULVERTS
(Showing 30° skew.)

① Skew = 0°

② At discharge end, chamfer may be ¾" minimum.

③ For 15° skew – 1"
For 30° skew – 2"
For 45° skew – 3"

④ Quantities shown are for two Type PW-1 wings. Adjust concrete volume for Type PW-2 wings. To determine estimated quantities for two wings, multiply the tabulated values by Lw. Quantities shown do not include weight of Bars D.

⑤ Provide weepholes for Hw = 5'-0" and greater. Fill around weepholes with coarse gravel.

⑥ Extend Bars E2 1'-6" minimum into the wingwall footing.

⑦ Lap Bars M1 1'-6" minimum with Bars M2.

⑧ Place Bars G as shown, equally spaced at 8" maximum. Provide at least two pairs of Bars G per wing.

⑨ 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details For T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.

⑩ For vehicle safety, the following requirements must be met:
- For structures without bridge rail, construct curbs no more than 3" above finished grade.
- For structures with bridge rail, construct curbs flush with finished grade.

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

⑪ 1'-0" typical. 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.

⑫ 3'-0" for Hw < 4'.

⑬ 6" for Hw < 4'.

DESIGNER NOTES:
Type PW-1 can be used for all applications and must be used if railing is to be mounted to the wingwall.
Type PW-2 can only be used for applications without a railing mounted to the wingwall.

MATERIAL NOTES:
Provide Class C concrete (f'c=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.

GENERAL NOTES:
Designed in accordance with AASHTO LRFD Bridge Design Specifications.
Depth of toewalls for wingwalls and culverts may be reduced or eliminated when founded on solid rock, when directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for wingwall type and additional dimensions and information.
Quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for the Contractor's information only.

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

CONCRETE WINGWALLS
WITH PARALLEL WINGS FOR
BOX CULVERTS
TYPES PW-1 AND PW-2

PW

REVISIONS	DATE
–	–

CITY OF LITTLE ROCK, ARKANSAS
EAST 39TH ST. DRAINAGE IMPROVEMENTS

BOX CULVERT & HEADWALL DETAILS

DEPARTMENT OF PUBLIC WORKS
CIVIL ENGINEERING
701 W. MARKHAM
LITTLE ROCK, ARKANSAS 72201

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 10452
ANDREW H. RIKE
4/11/25

DRAWN BY	JNS
DESIGNED	JNS
CHECKED	AHR
DATE	4/11/2025
SCALE	N/A
PROJECT NO.	CLR # 01-22-DR-01
SHEET NO.	C203

RIDDICK EAST BOX ALIGMENT GEOMETRY

Point #	Description	Northing	Easting
1001	0+00.00 BOA	136255.87	1247480.24
1002	0+37.83 PI	136284.16	1247455.13
1003	0+90.86 PI	136337.18	1247454.01
1004	1+35.86 PI	136382.17	1247455.00
1005	2+58.99 PI	136505.16	1247460.82
1006	3+63.91 PI	136610.01	1247464.83
1007	4+67.84 EOA	136618.55	1247361.25

RIDDICK WEST EDGE PAVEMENT OFFSET ALIGNMENT GEOMETRY

Point #	Description	Northing	Easting
1101	0+00.00 BOA	136281.20	1247426.58
1102	0+57.56 PI	136338.51	1247432.01
1103	1+26.53 PI	136407.44	1247434.26
1104	1+55.00 PI	136435.86	1247435.90
1105	2+04.54 PI	136485.39	1247437.15
1107	2+72.47 PC	136553.26	1247439.86
1108	2+88.31 Mid	136568.80	1247437.38
1109	3+04.15 PT	136582.18	1247429.10
1111	3+06.53 PC	136583.92	1247427.47
1112	3+17.48 Mid	136590.39	1247418.71
1113	3+28.43 PT	136593.31	1247408.22
1114	3+47.76 PI	136595.03	1247388.97
1115	3+76.55 EOA	136595.34	1247360.18

FRAZIER PIKE SOUTH EDGE PAVEMENT OFFSET ALIGNMENT GEOMETRY

Point #	Description	Northing	Easting
1201	0+00.00 BOA	136251.78	1247613.32
1202	0+59.64 PI	136252.96	1247553.69
1203	0+88.35 PI	136253.52	1247525.00
1204	1+20.58 PI	136255.04	1247492.80
1205	1+29.33 PI	136255.64	1247484.07
1206	1+37.41 PI	136256.12	1247476.00
1207	2+00.00 EOA	136258.77	1247413.46

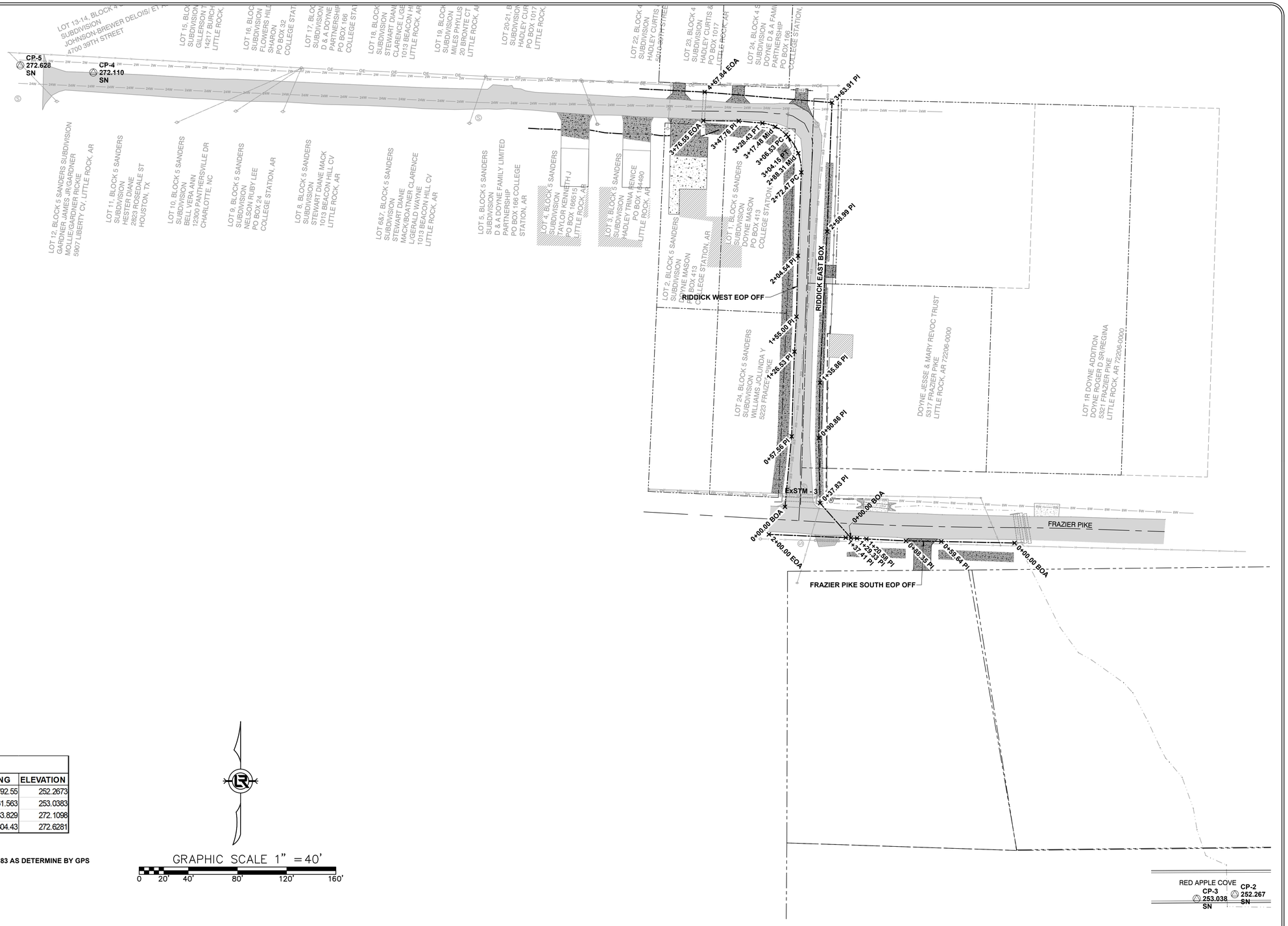
SURVEY BENCHMARKS

NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
CP-2	SN	135966.0459	1247792.55	252.2673
CP-3	SN	135962.4045	1247761.563	253.0383
CP-4	SN	136634.5268	1246863.829	272.1098
CP-5	SN	136640.363	1246804.43	272.6281

VERTICAL DATUM: NGVD 29

BASIS OF BEARING: ARKANSAS GRID NORTH NAD 83 AS DETERMINE BY GPS

CONTROL POINT



GRAPHIC SCALE 1" = 40'

0 20' 40' 80' 120' 160'

REVISIONS	DATE

CITY OF LITTLE ROCK, ARKANSAS
EAST 39TH ST. DRAINAGE IMPROVEMENTS

FIELD TIES/LAYOUT SHEET

DEPARTMENT OF PUBLIC WORKS
CIVIL ENGINEERING
701 W. MARKHAM
LITTLE ROCK, ARKANSAS 72201

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 10452 ANDREW H. RIVE

DRAWN BY	JNS
DESIGNED	JNS
CHECKED	AHR
DATE	4/11/2025
SCALE	AS NOTED
PROJECT NO.	CLR # 01-22-DR-01
SHEET NO.	C300

Existing Pipe Network

NAME	SIZE	LENGTH	SLOPE	DESCRIPTION
ExSTM - 1	24"	30.39'	-0.27%	C.P.
ExSTM - 2	18"	48.83'	-0.74%	C.P.
ExSTM - 6	24"	24.89'	0.00%	C.P.
ExSTM - 7	24"	24.41'	0.00%	C.P.
ExSTM - 8	15"	20.50'	1.12%	C.P.

Existing Pipe Network

NAME	SIZE	LENGTH	SLOPE	DESCRIPTION
ExSTM - 3	36.25" X 22.50"	30.91'	0.81%	CONC HORIZ. ELL. ARCH
ExSTM - 4	36.25" X 22.50"	21.79'	0.73%	CONC HORIZ. ELL. ARCH
ExSTM - 5	36.25" X 22.50"	23.83'	-0.00%	CONC HORIZ. ELL. ARCH

EXISTING DRIVEWAY CULVERTS

NAME	SIZE	LENGTH	SLOPE
ExSTM - 14	12"	23.69'	0.08%
ExSTM - 15	12"	23.86'	-0.63%
ExSTM - 16	12"	25.58'	1.02%

REVISIONS	DATE

CITY OF LITTLE ROCK, ARKANSAS
EAST 39TH ST. DRAINAGE IMPROVEMENTS

EXISTING CONDITIONS SITE PLAN

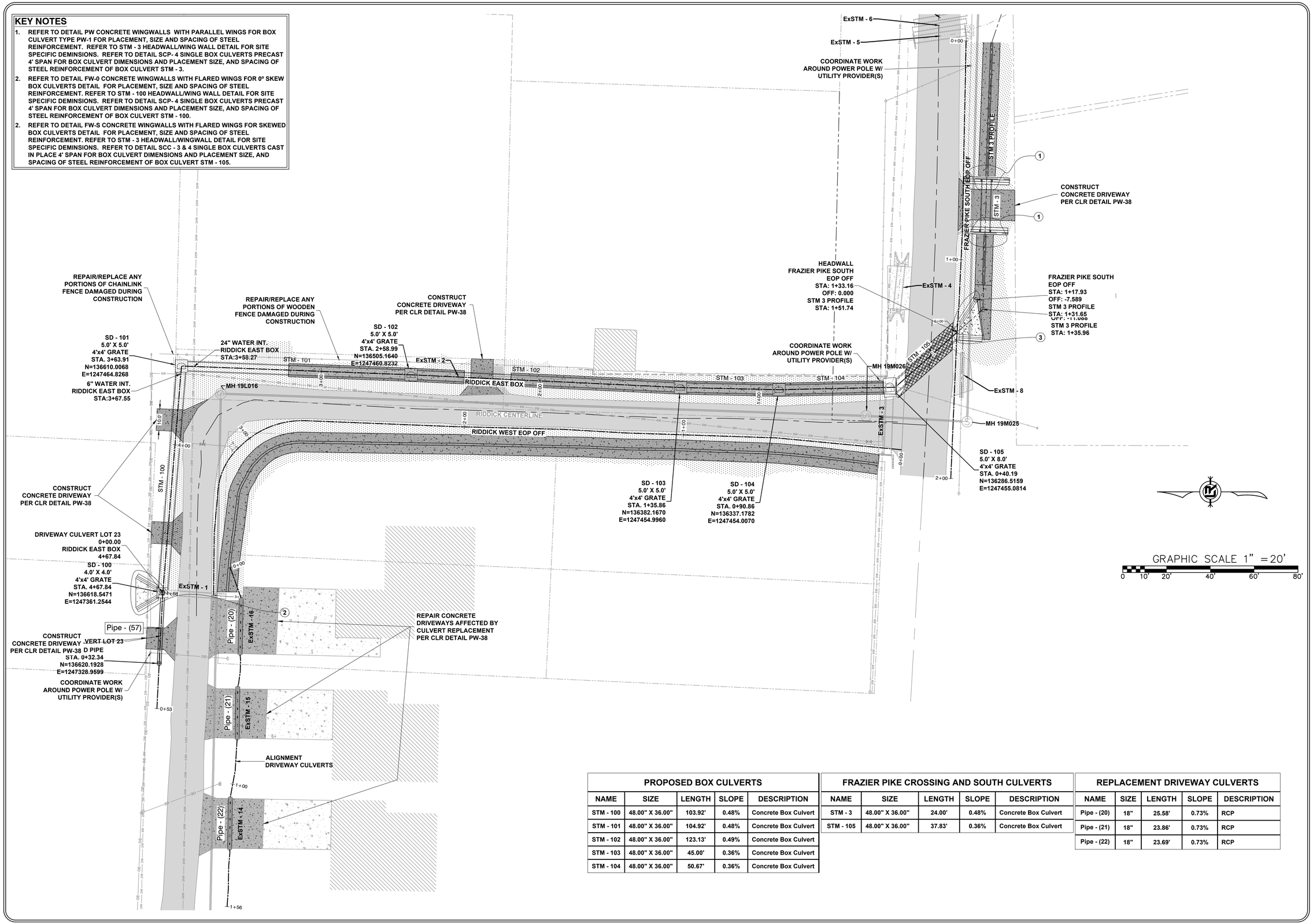
DEPARTMENT OF PUBLIC WORKS
CIVIL ENGINEERING
701 W. MARKHAM
LITTLE ROCK, ARKANSAS 72201

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 10452
ANDREW H. RIVE

DRAWN BY	JNS
DESIGNED	JNS
CHECKED	AHR
DATE	4/11/2025
SCALE	AS NOTED
PROJECT NO.	CLR # 01-22-DR-01
SHEET NO.	C400

KEY NOTES

1. REFER TO DETAIL PW CONCRETE WINGWALLS WITH PARALLEL WINGS FOR BOX CULVERT TYPE PW-1 FOR PLACEMENT, SIZE AND SPACING OF STEEL REINFORCEMENT. REFER TO STM - 3 HEADWALL/WING WALL DETAIL FOR SITE SPECIFIC DEMINSIONS. REFER TO DETAIL SCP- 4 SINGLE BOX CULVERTS PRECAST 4' SPAN FOR BOX CULVERT DIMENSIONS AND PLACEMENT SIZE, AND SPACING OF STEEL REINFORCEMENT OF BOX CULVERT STM - 3.
2. REFER TO DETAIL FW-0 CONCRETE WINGWALLS WITH FLARED WINGS FOR 0º SKEW BOX CULVERTS DETAIL FOR PLACEMENT, SIZE AND SPACING OF STEEL REINFORCEMENT. REFER TO STM - 100 HEADWALL/WING WALL DETAIL FOR SITE SPECIFIC DEMINSIONS. REFER TO DETAIL SCP- 4 SINGLE BOX CULVERTS PRECAST 4' SPAN FOR BOX CULVERT DIMENSIONS AND PLACEMENT SIZE, AND SPACING OF STEEL REINFORCEMENT OF BOX CULVERT STM - 100.
2. REFER TO DETAIL FW-S CONCRETE WINGWALLS WITH FLARED WINGS FOR SKEWED BOX CULVERTS DETAIL FOR PLACEMENT, SIZE AND SPACING OF STEEL REINFORCEMENT. REFER TO STM - 3 HEADWALL/WINGWALL DETAIL FOR SITE SPECIFIC DEMINSIONS. REFER TO DETAIL SCC - 3 & 4 SINGLE BOX CULVERTS CAST IN PLACE 4' SPAN FOR BOX CULVERT DIMENSIONS AND PLACEMENT SIZE, AND SPACING OF STEEL REINFORCEMENT OF BOX CULVERT STM - 105.



PROPOSED BOX CULVERTS				
NAME	SIZE	LENGTH	SLOPE	DESCRIPTION
STM - 100	48.00" X 36.00"	103.92'	0.48%	Concrete Box Culvert
STM - 101	48.00" X 36.00"	104.92'	0.48%	Concrete Box Culvert
STM - 102	48.00" X 36.00"	123.13'	0.49%	Concrete Box Culvert
STM - 103	48.00" X 36.00"	45.00'	0.36%	Concrete Box Culvert
STM - 104	48.00" X 36.00"	50.67'	0.36%	Concrete Box Culvert

FRAZIER PIKE CROSSING AND SOUTH CULVERTS				
NAME	SIZE	LENGTH	SLOPE	DESCRIPTION
STM - 3	48.00" X 36.00"	24.00'	0.48%	Concrete Box Culvert
STM - 105	48.00" X 36.00"	37.83'	0.36%	Concrete Box Culvert

REPLACEMENT DRIVEWAY CULVERTS				
NAME	SIZE	LENGTH	SLOPE	DESCRIPTION
Pipe - (20)	18"	25.58'	0.73%	RCP
Pipe - (21)	18"	23.86'	0.73%	RCP
Pipe - (22)	18"	23.69'	0.73%	RCP

REVISIONS	DATE

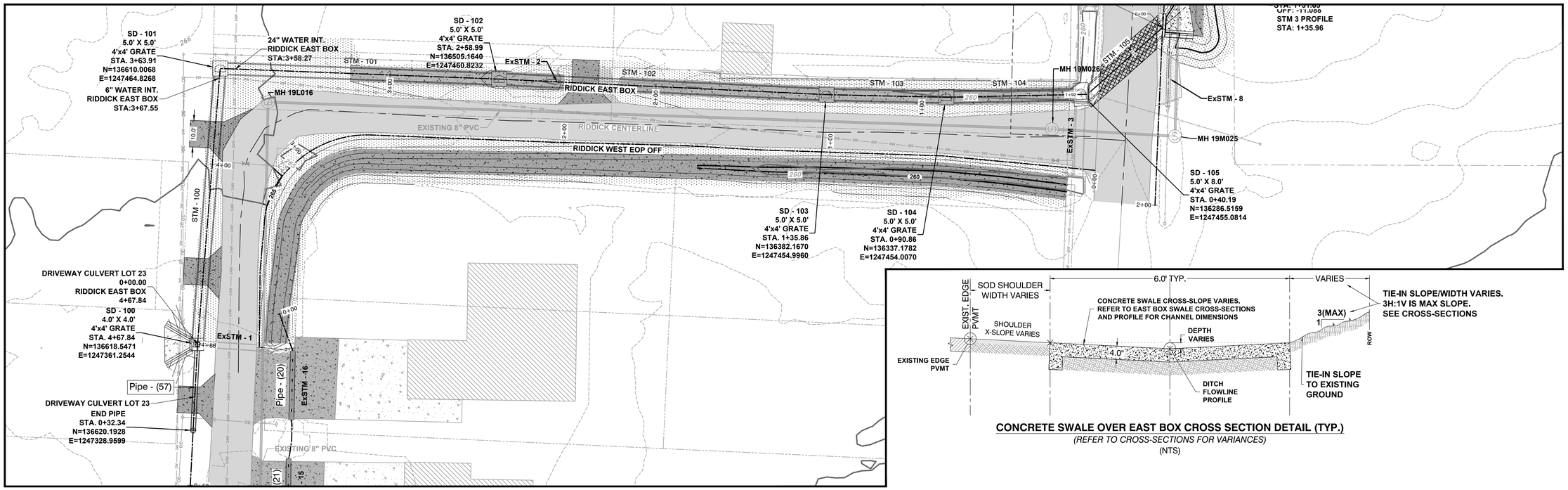
CITY OF LITTLE ROCK, ARKANSAS
EAST 39TH ST. DRAINAGE IMPROVEMENTS

SITE DETAIL

DEPARTMENT OF PUBLIC WORKS
CIVIL ENGINEERING
701 W. MARKHAM
LITTLE ROCK, ARKANSAS 72201

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 10452 ANDREW H. RIVE

DRAWN BY JNS
DESIGNED JNS
CHECKED AHR
DATE 4/11/2025
SCALE AS NOTED
PROJECT NO. CLR # 01-22-DR-01
SHEET NO. C500



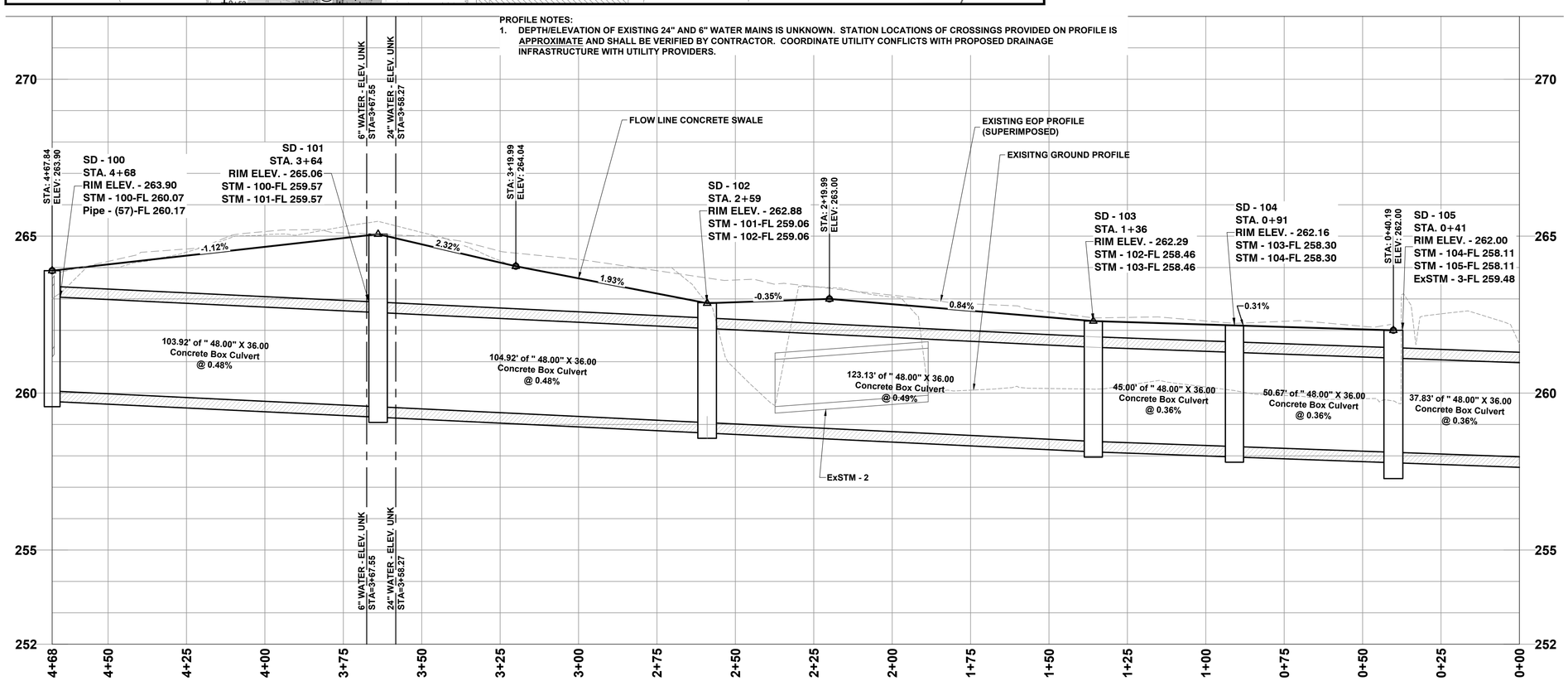
CONCRETE SWALE OVER EAST BOX CROSS SECTION DETAIL (TYP.)

(REFER TO CROSS-SECTIONS FOR VARIANCES)

(NTS)

PROFILE NOTES:

1. DEPTH/ELEVATION OF EXISTING 24" AND 6" WATER MAINS IS UNKNOWN. STATION LOCATIONS OF CROSSINGS PROVIDED ON PROFILE IS APPROXIMATE AND SHALL BE VERIFIED BY CONTRACTOR. COORDINATE UTILITY CONFLICTS WITH PROPOSED DRAINAGE INFRASTRUCTURE WITH UTILITY PROVIDERS.



RIDDICK EAST BOX

GRAPHIC SCALE 1" = 20'

0 10' 20' 40' 60' 80'

REVISIONS	DATE

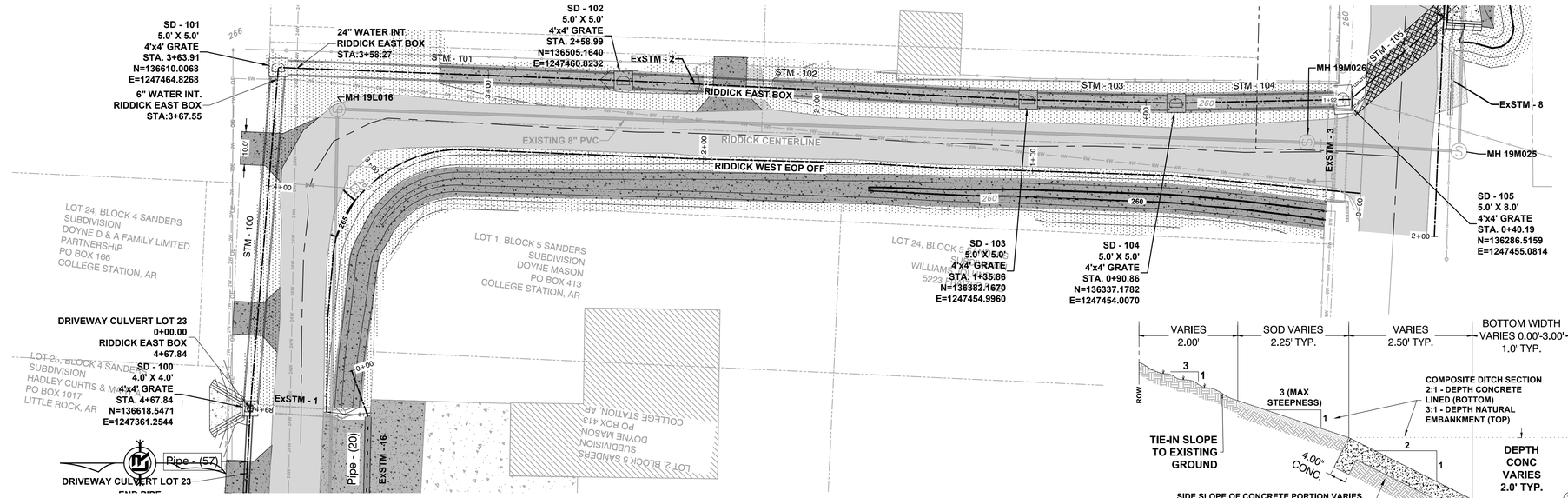
CITY OF LITTLE ROCK, ARKANSAS
EAST 39TH ST. DRAINAGE IMPROVEMENTS

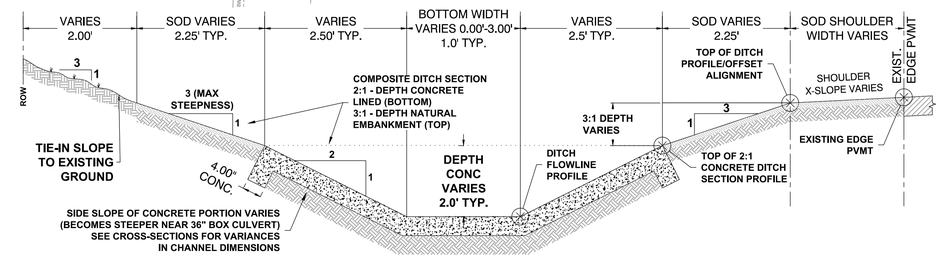
DRAINAGE PLAN & PROFILE

DEPARTMENT OF PUBLIC WORKS
CIVIL ENGINEERING
701 W. MARKHAM
LITTLE ROCK, ARKANSAS 72201

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 10452
ANDREW H. RIKE

DRAWN BY	JNS
DESIGNED	JNS
CHECKED	AHR
DATE	4/11/2025
SCALE	H: 1" = 20' V: 1" = 2'
PROJECT NO.	CLR # 01-22-DR-01
SHEET NO.	C501

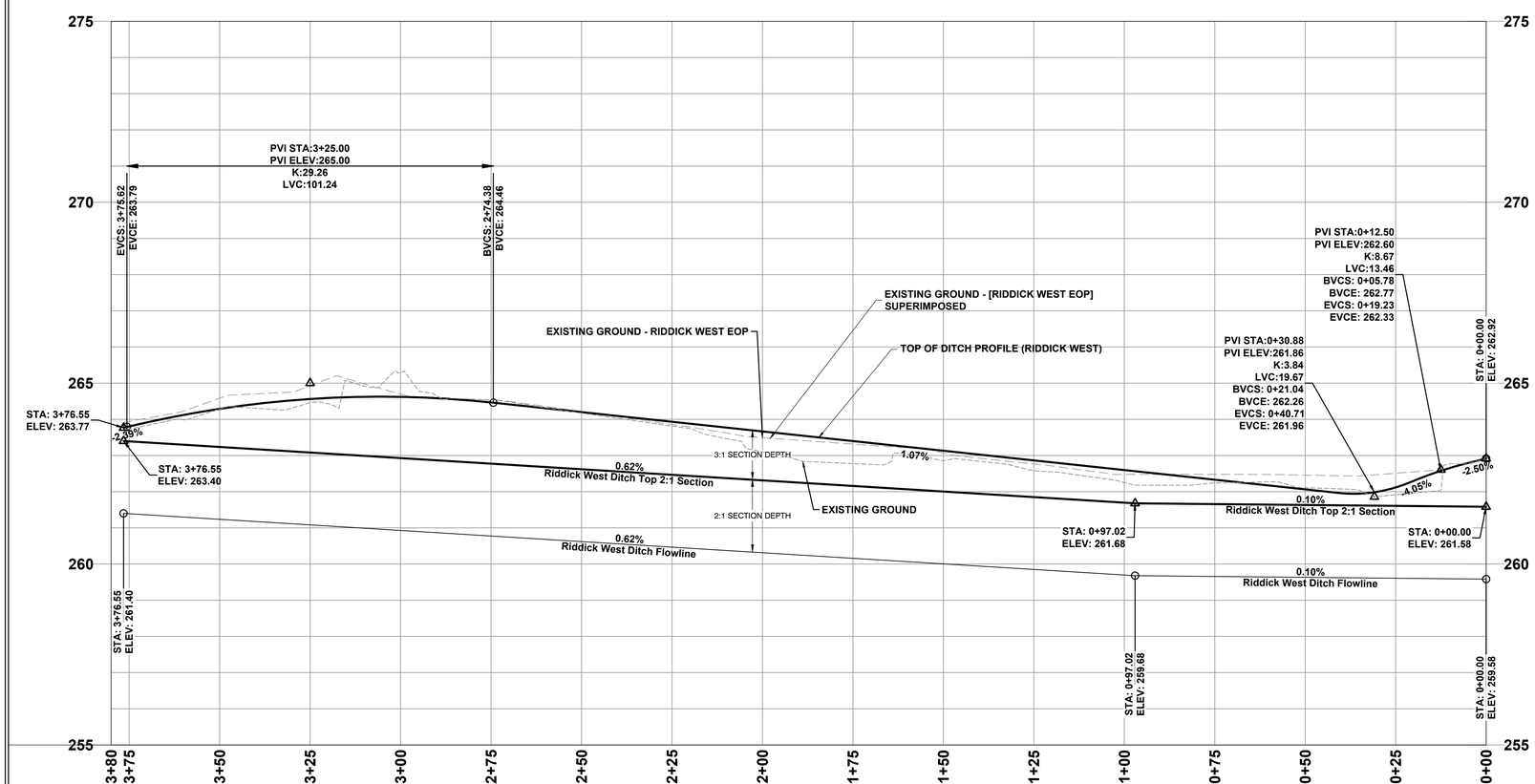




WEST DITCH REHAB CROSS SECTION DETAIL (TYP.)

(REFER TO CROSS-SECTIONS FOR VARIANCES)

(NTS)



RIDDICK WEST EOP OFF

REVISIONS	DATE

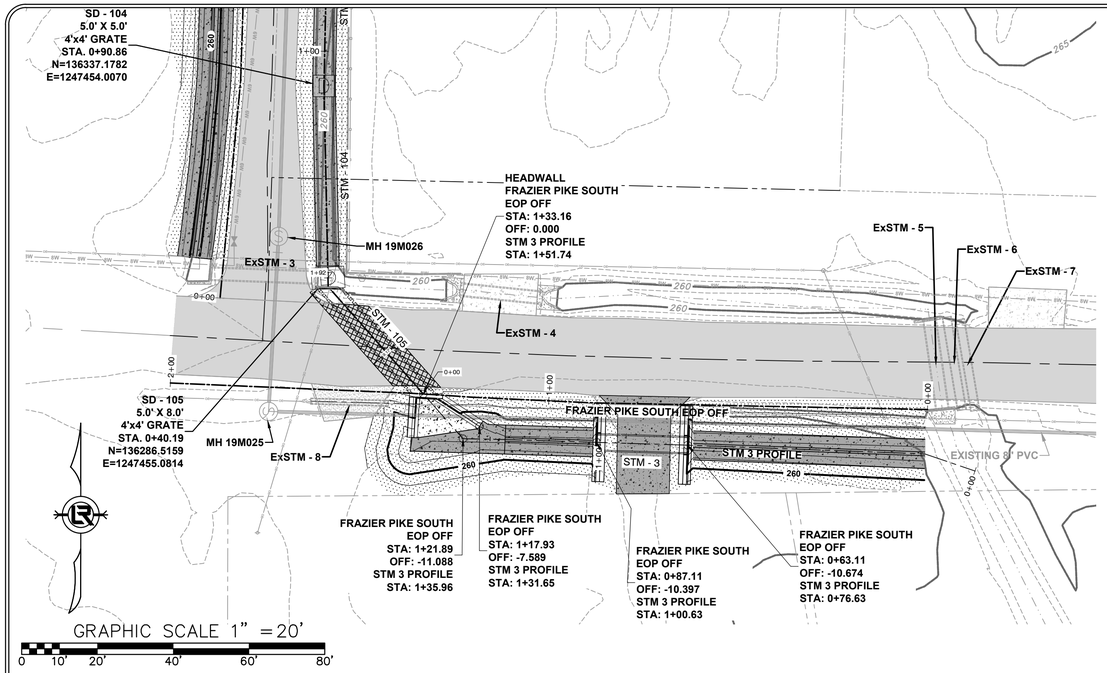
CITY OF LITTLE ROCK, ARKANSAS
EAST 39TH ST. DRAINAGE IMPROVEMENTS

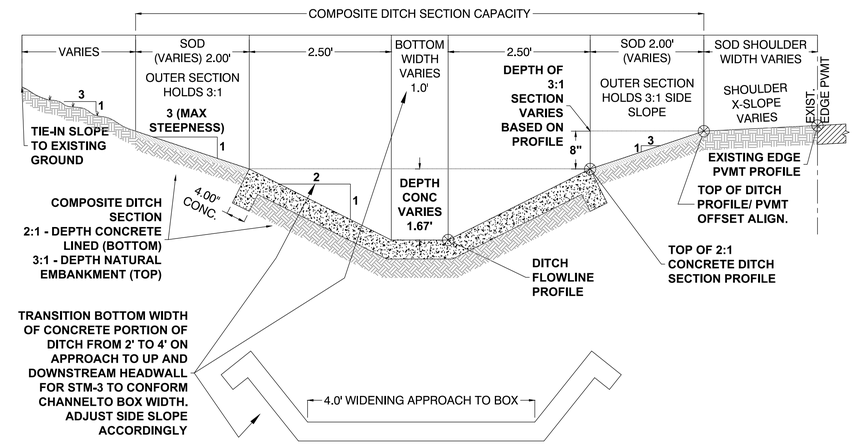
DRAINAGE PLAN & PROFILE

DEPARTMENT OF PUBLIC WORKS
CIVIL ENGINEERING
701 W. MARKHAM
LITTLE ROCK, ARKANSAS 72201

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 10452
ANDREW H. RIVE

DRAWN BY	JNS
DESIGNED	JNS
CHECKED	AHR
DATE	4/11/2025
SCALE	H: 1" = 20' V: 1" = 2'
PROJECT NO.	CLR # 01-22-DR-01
SHEET NO.	C502

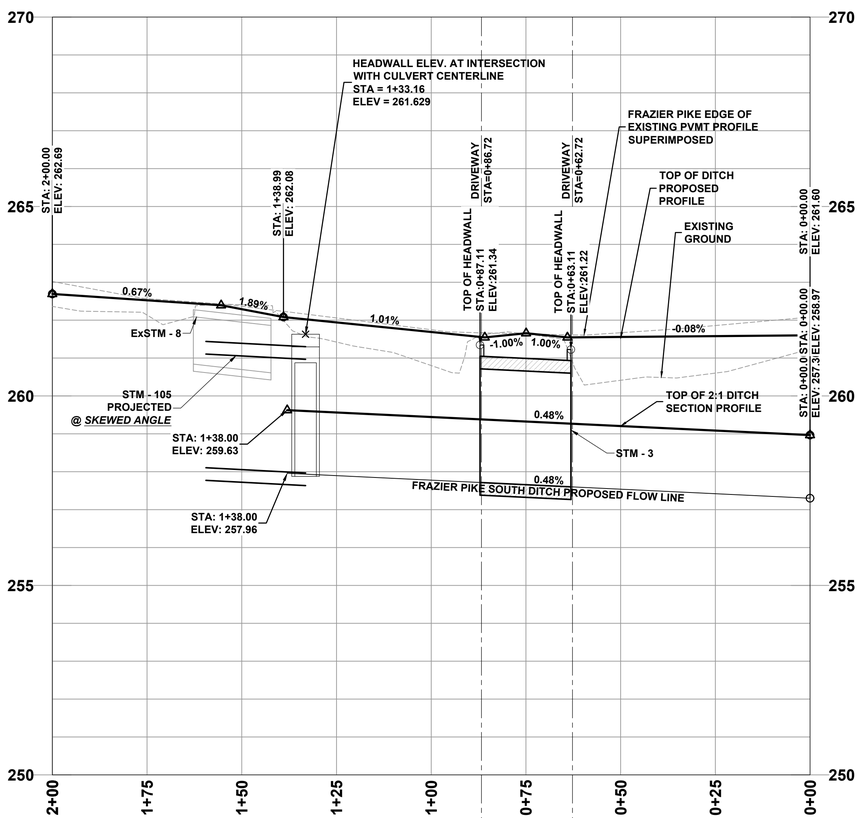




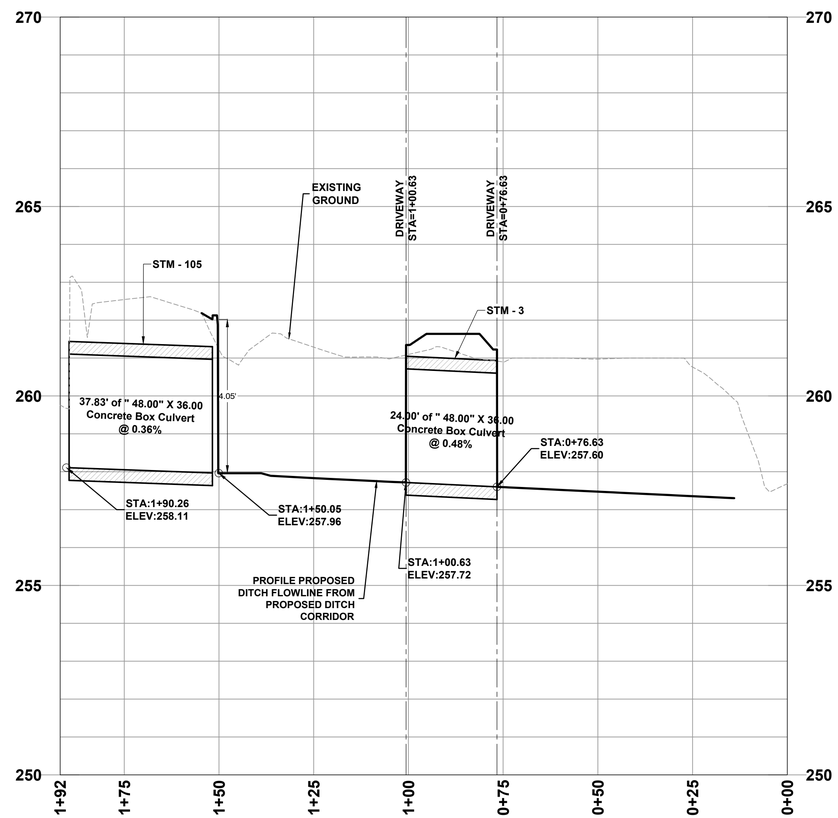
SOUTH FRAZIER PIKE REHAB CROSS SECTION DETAIL (TYP.)

(SEE CROSS-SECTIONS FOR VARIANCES)

(NTS)



FRAZIER PIKE SOUTH EOP OFF



STM 3 PROFILE

REVISIONS	DATE

CITY OF LITTLE ROCK, ARKANSAS

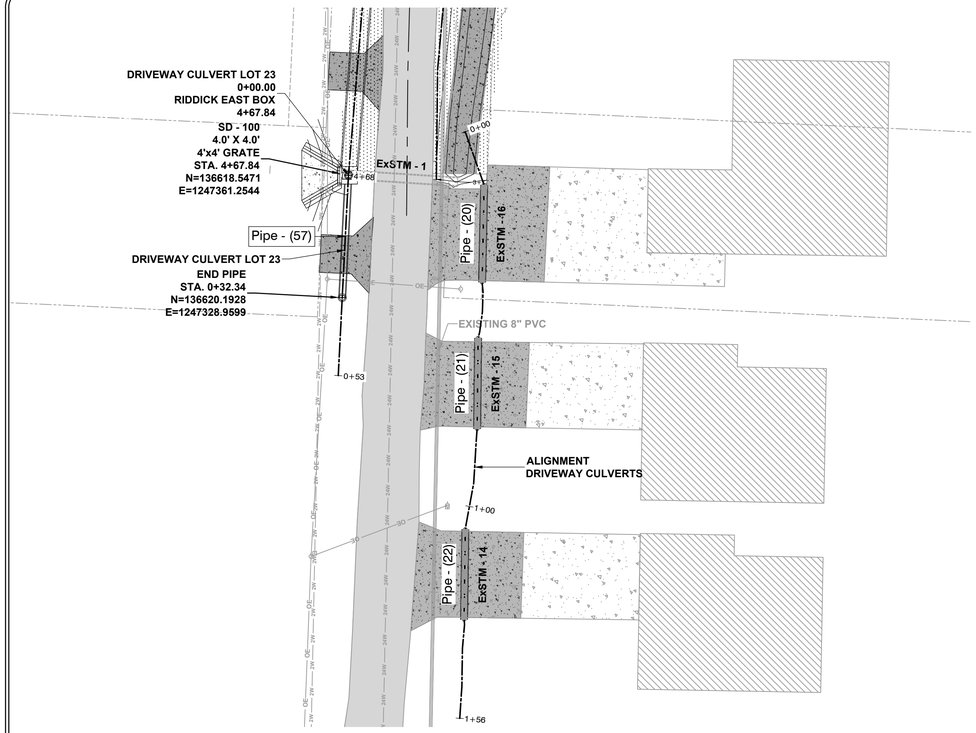
EAST 39TH ST. DRAINAGE IMPROVEMENTS

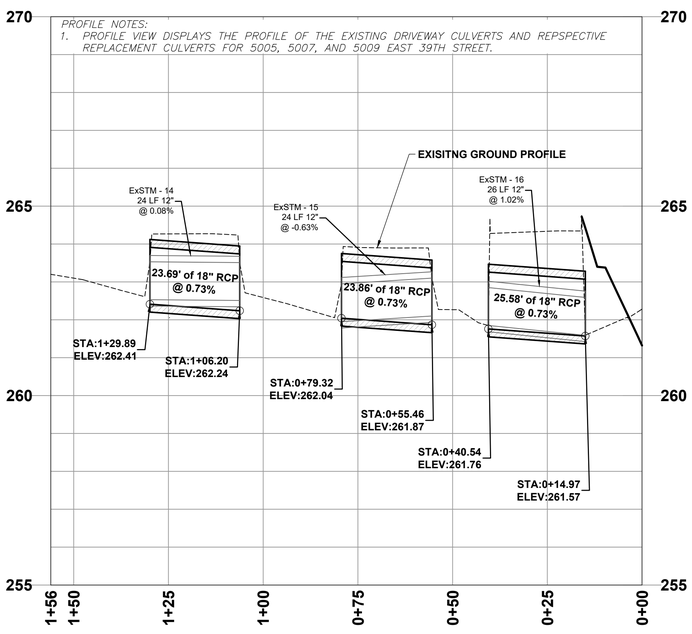
DRAINAGE PLAN & PROFILE

DEPARTMENT OF PUBLIC WORKS
CIVIL ENGINEERING
701 W. MARKHAM
LITTLE ROCK, ARKANSAS 72201

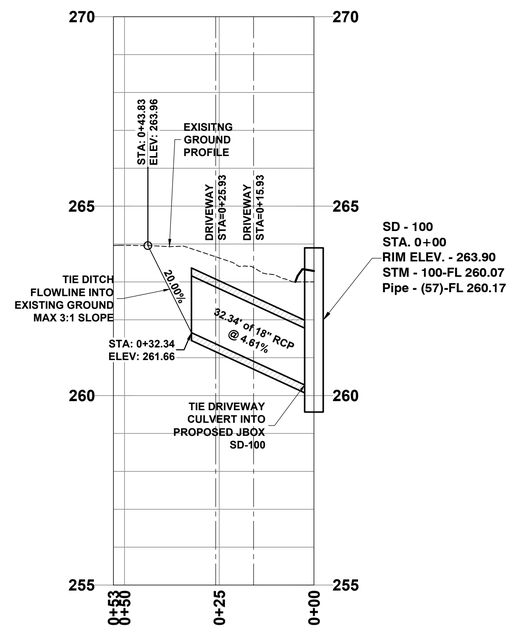
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 10452
ANDREW H. RIKE
4/11/2025

DRAWN BY	JNS
DESIGNED	JNS
CHECKED	AHR
DATE	4/11/2025
SCALE	H: 1" = 20' V: 1" = 2'
PROJECT NO.	CLR # 01-22-DR-01
SHEET NO.	C503

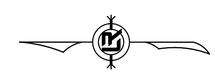


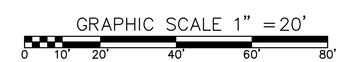


DRIVEWAY CULVERTS



DRIVEWAY CULVERT LOT 23





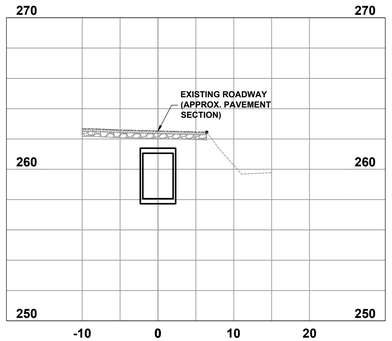
REVISIONS	DATE

CITY OF LITTLE ROCK, ARKANSAS
EAST 39TH ST. DRAINAGE IMPROVEMENTS

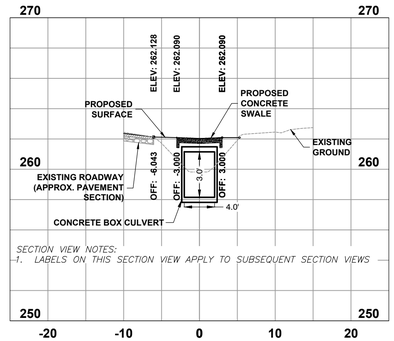
DRAINAGE PLAN & PROFILE

DEPARTMENT OF PUBLIC WORKS
CIVIL ENGINEERING
701 W. MARKHAM
LITTLE ROCK, ARKANSAS 72201

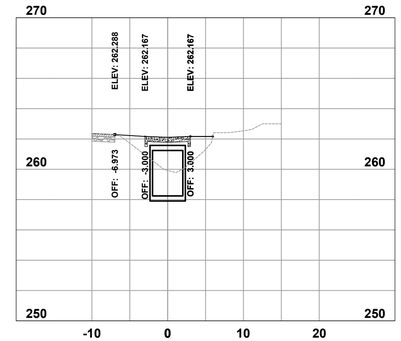
DRAWN BY	JNS
DESIGNED	JNS
CHECKED	AHR
DATE	4/11/2025
SCALE	H: 1" = 20' V: 1" = 2'
PROJECT NO.	CLR # 01-22-DR-01
SHEET NO.	C504



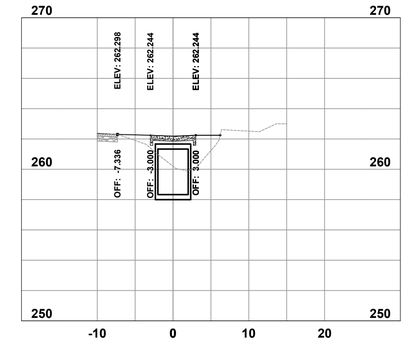
RIDDICK EAST BOX
0+25.00



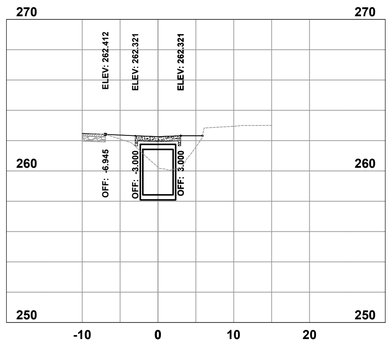
RIDDICK EAST BOX
0+50.00



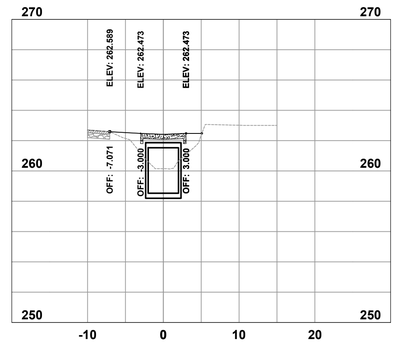
RIDDICK EAST BOX
0+75.00



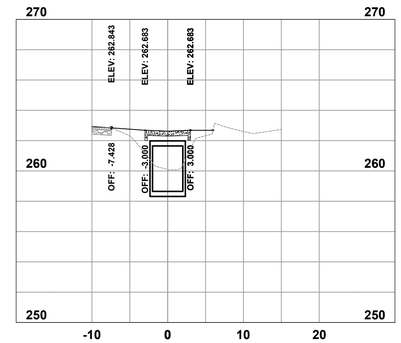
RIDDICK EAST BOX
1+00.00



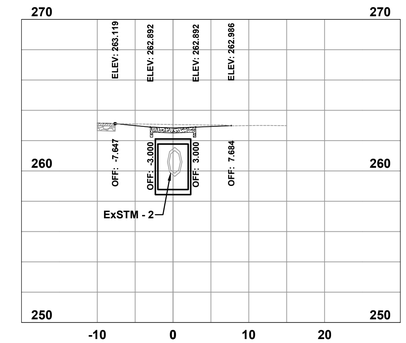
RIDDICK EAST BOX
1+25.00



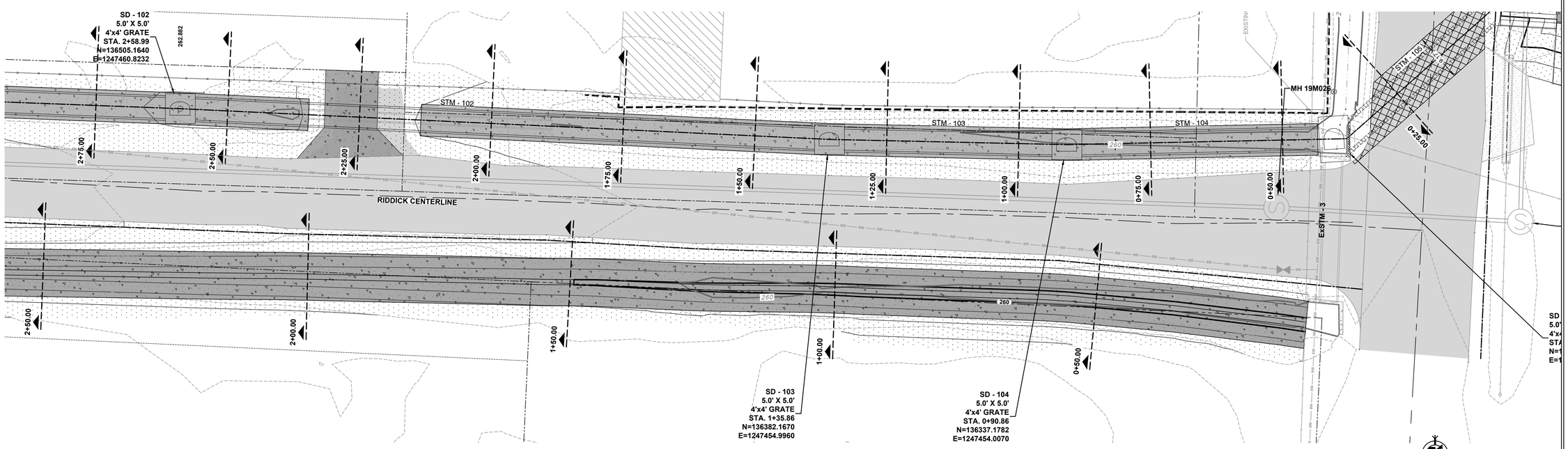
RIDDICK EAST BOX
1+50.00



RIDDICK EAST BOX
1+75.00



RIDDICK EAST BOX
2+00.00



GRAPHIC SCALE 1" = 10'
0 5' 10' 20' 30' 40'

REVISIONS	DATE

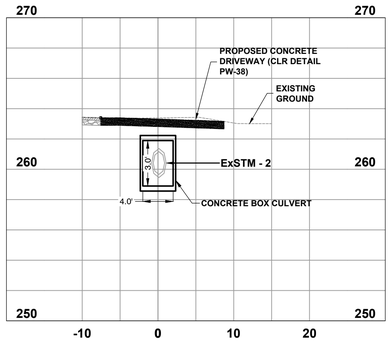
CITY OF LITTLE ROCK, ARKANSAS
EAST 39TH ST. DRAINAGE IMPROVEMENTS

CROSS SECTIONS

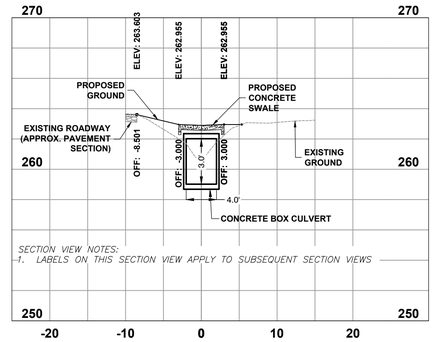
DEPARTMENT OF PUBLIC WORKS
CIVIL ENGINEERING
701 W. MARKHAM
LITTLE ROCK, ARKANSAS 72201

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 10452
ANDREW H. RIVE

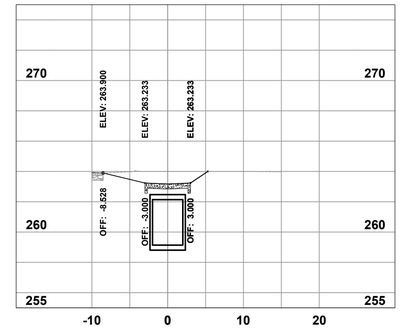
DRAWN BY	JNS
DESIGNED	JNS
CHECKED	AHR
DATE	4/11/2025
SCALE	H: 1" = 10' V: 1" = 5'
PROJECT NO.	CLR # 01-22-DR-01
SHEET NO.	C601



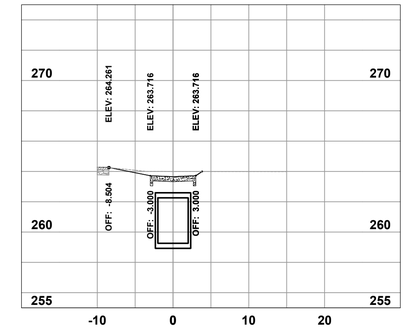
RIDDICK EAST BOX
2+25.00



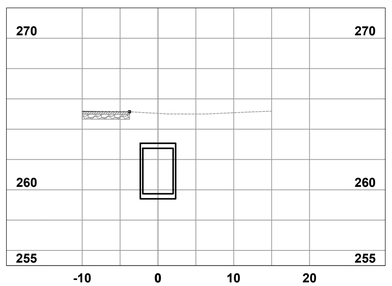
RIDDICK EAST BOX
2+50.00



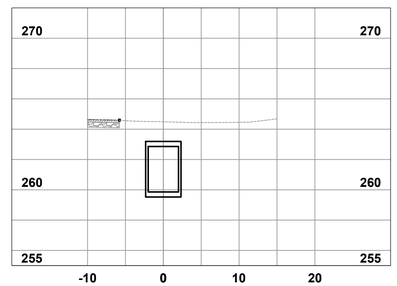
RIDDICK EAST BOX
2+75.00



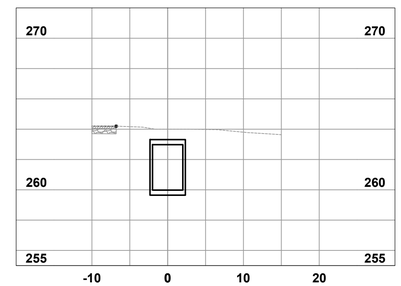
RIDDICK EAST BOX
3+00.00



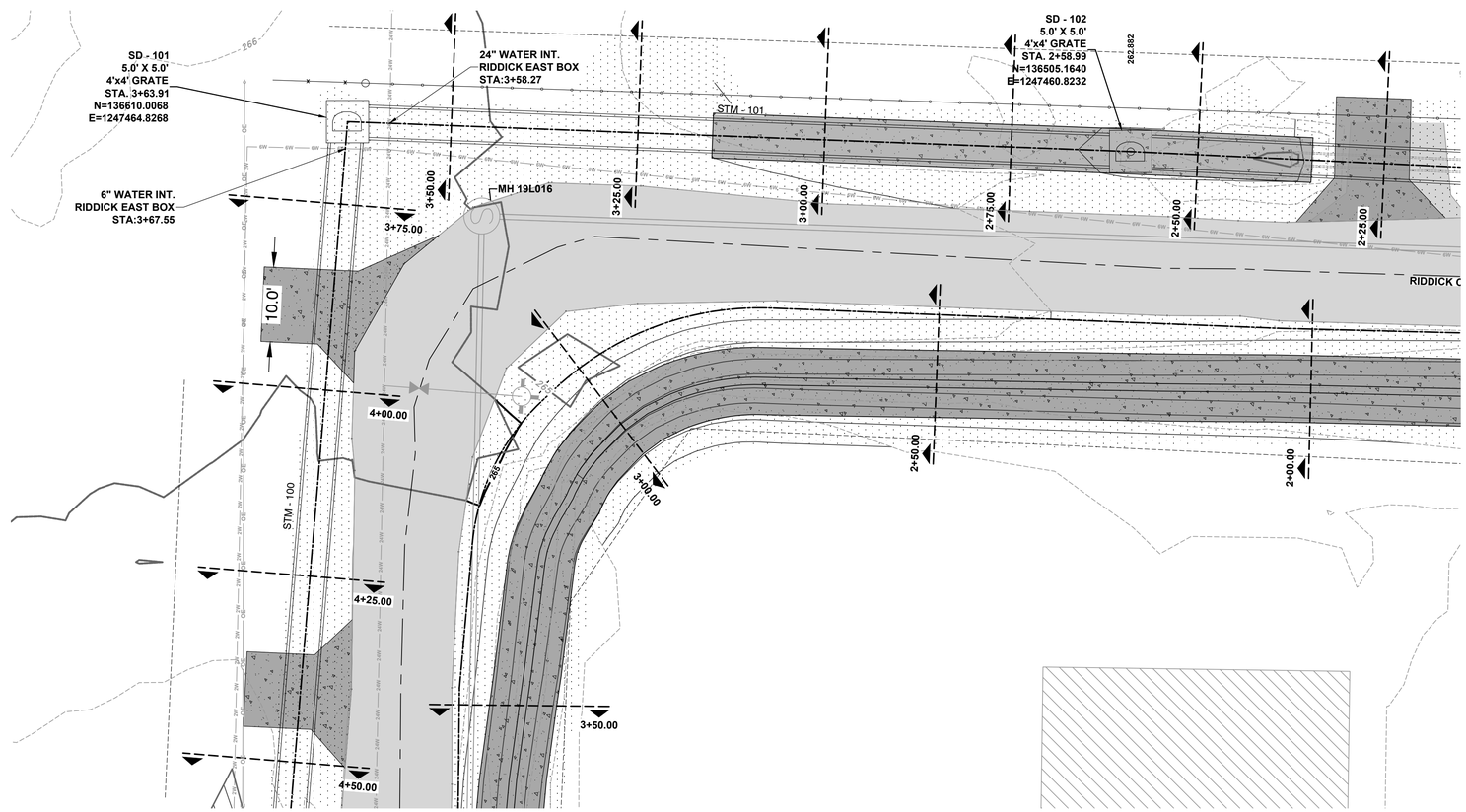
RIDDICK EAST BOX
4+00.00



RIDDICK EAST BOX
4+25.00



RIDDICK EAST BOX
4+50.00



GRAPHIC SCALE 1" = 10'
0 5' 10' 20' 30' 40'

REVISIONS	DATE

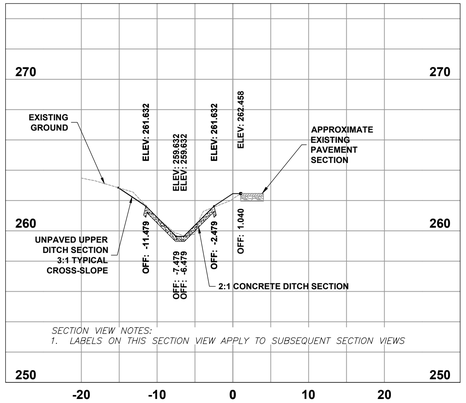
CITY OF LITTLE ROCK, ARKANSAS
EAST 39TH ST. DRAINAGE IMPROVEMENTS

CROSS SECTIONS

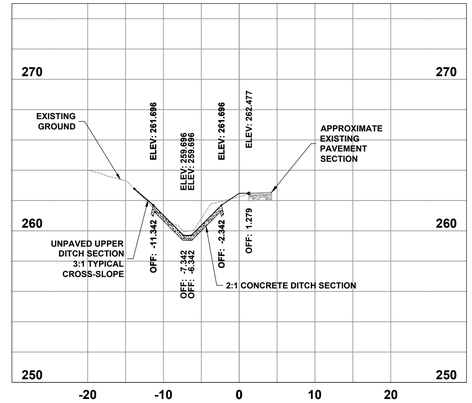
DEPARTMENT OF PUBLIC WORKS
CIVIL ENGINEERING
701 W. MARKHAM
LITTLE ROCK, ARKANSAS 72201

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 10452
ANDREW H. RYKE
4/11/2025

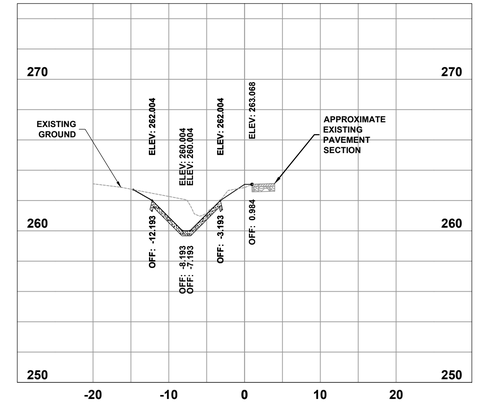
DRAWN BY	JNS
DESIGNED	JNS
CHECKED	AHR
DATE	4/11/2025
SCALE	H: 1" = 10' V: 1" = 5'
PROJECT NO.	CLR # 01-22-DR-01
SHEET NO.	C602



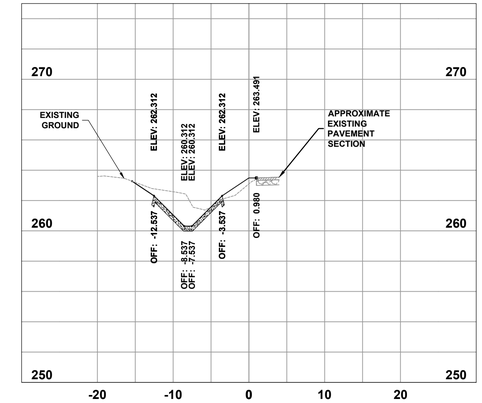
RIDDICK WEST EOP OFF
0+50.00



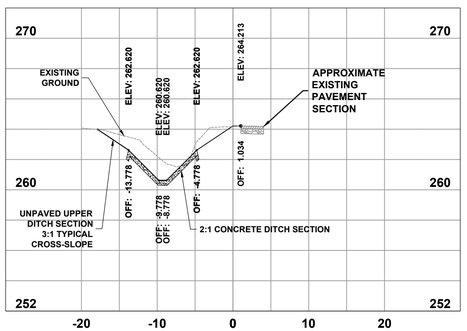
RIDDICK WEST EOP OFF
1+00.00



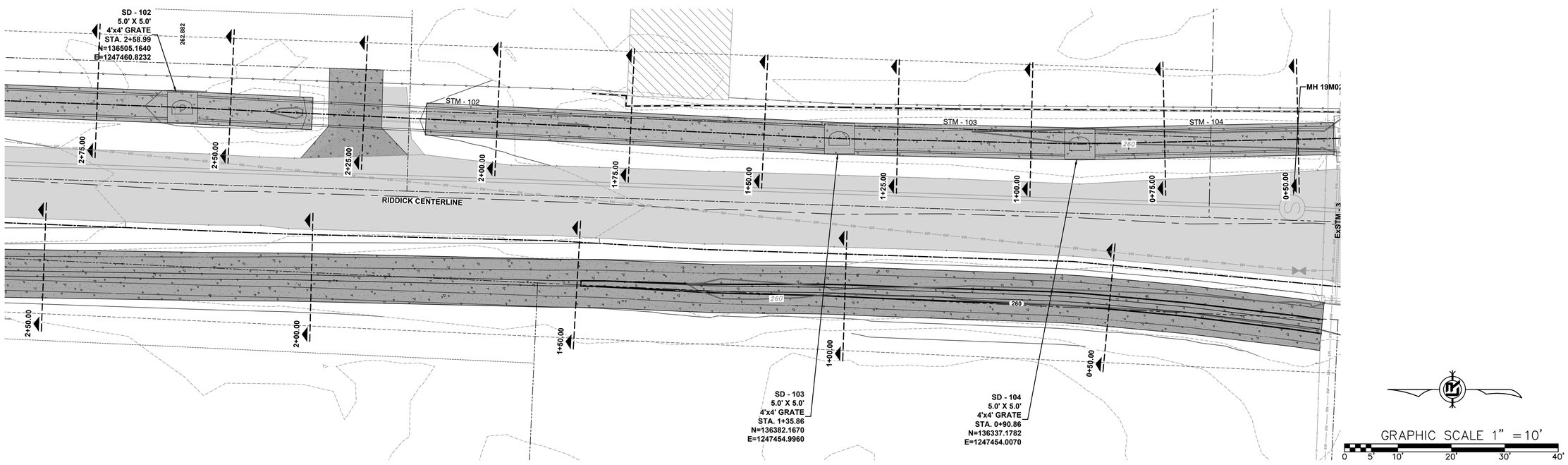
RIDDICK WEST EOP OFF
1+50.00



RIDDICK WEST EOP OFF
2+00.00



RIDDICK WEST EOP OFF
2+50.00



REVISIONS	DATE

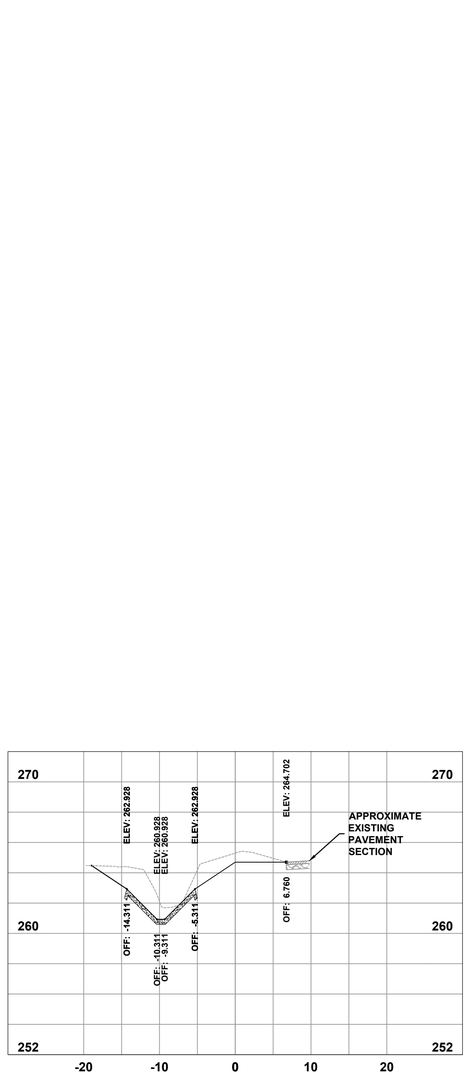
CITY OF LITTLE ROCK, ARKANSAS
EAST 39TH ST. DRAINAGE IMPROVEMENTS

CROSS SECTIONS

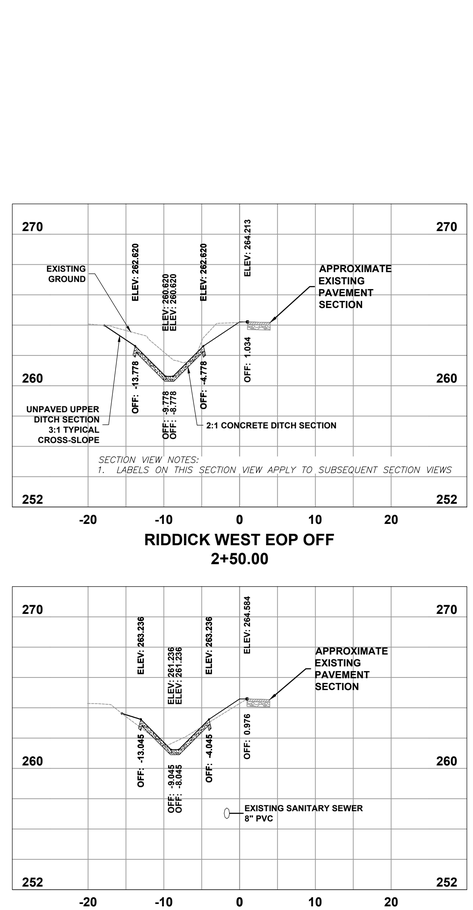
DEPARTMENT OF PUBLIC WORKS
CIVIL ENGINEERING
701 W. MARKHAM
LITTLE ROCK, ARKANSAS 72201

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 10452
ANDREW H. RIVE

DRAWN BY	JNS
DESIGNED	JNS
CHECKED	AHR
DATE	4/11/2025
SCALE	H: 1" = 10' V: 1" = 5'
PROJECT NO.	CLR # 01-22-DR-01
SHEET NO.	C603

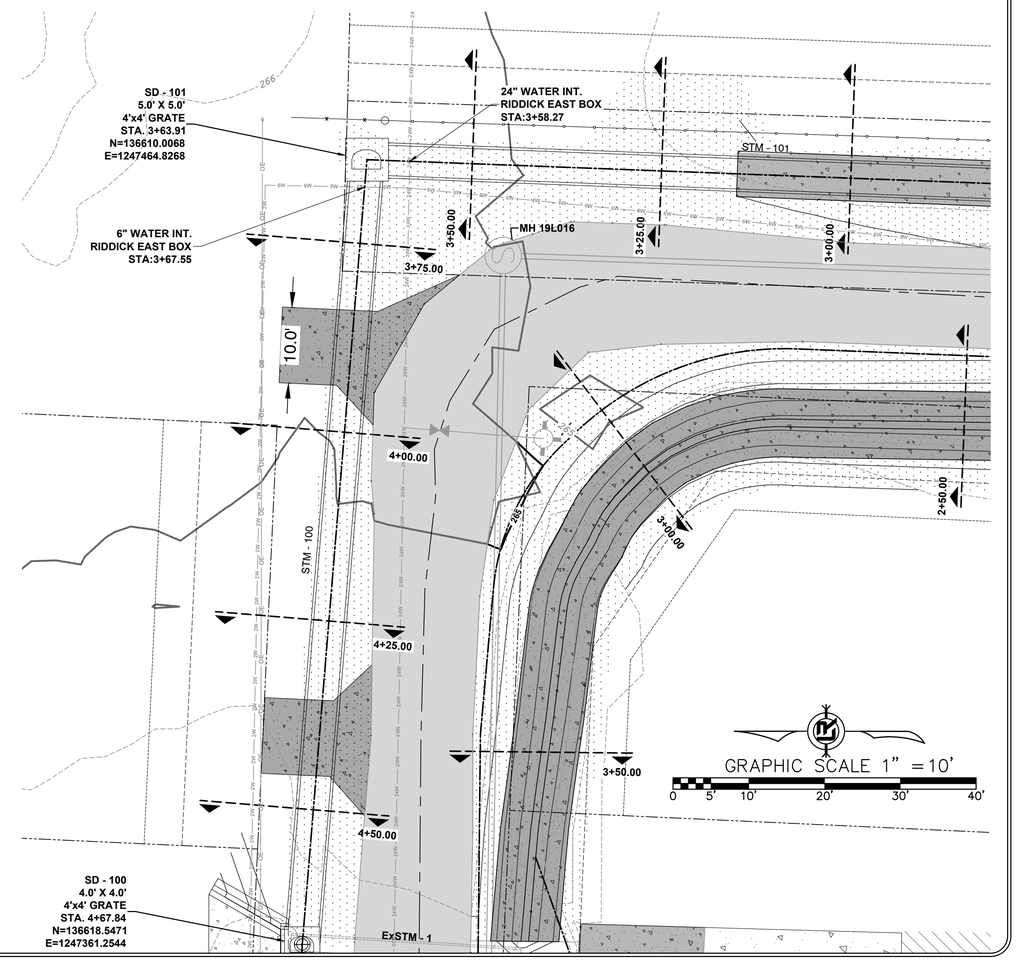


RIDDICK WEST EOP OFF
3+00.00



RIDDICK WEST EOP OFF
3+50.00

RIDDICK WEST EOP OFF
2+50.00



REVISIONS	DATE

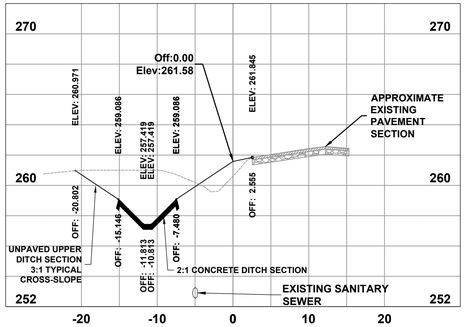
CITY OF LITTLE ROCK, ARKANSAS
EAST 39TH ST. DRAINAGE IMPROVEMENTS

CROSS SECTIONS

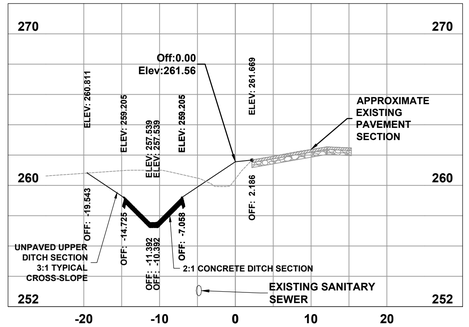
DEPARTMENT OF PUBLIC WORKS
CIVIL ENGINEERING
701 W. MARKHAM
LITTLE ROCK, ARKANSAS 72201

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 10452
ANDREW H. RIKE

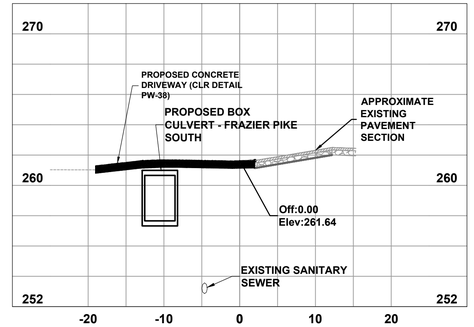
DRAWN BY	JNS
DESIGNED	JNS
CHECKED	AHR
DATE	4/11/2025
SCALE	H: 1" = 10' V: 1" = 5'
PROJECT NO.	CLR # 01-22-DR-01
SHEET NO.	C604



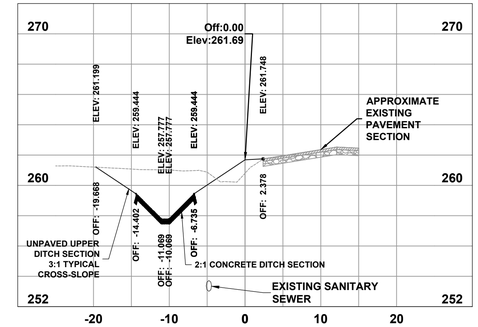
FRAZIER PIKE SOUTH EOP OFF
0+25.00



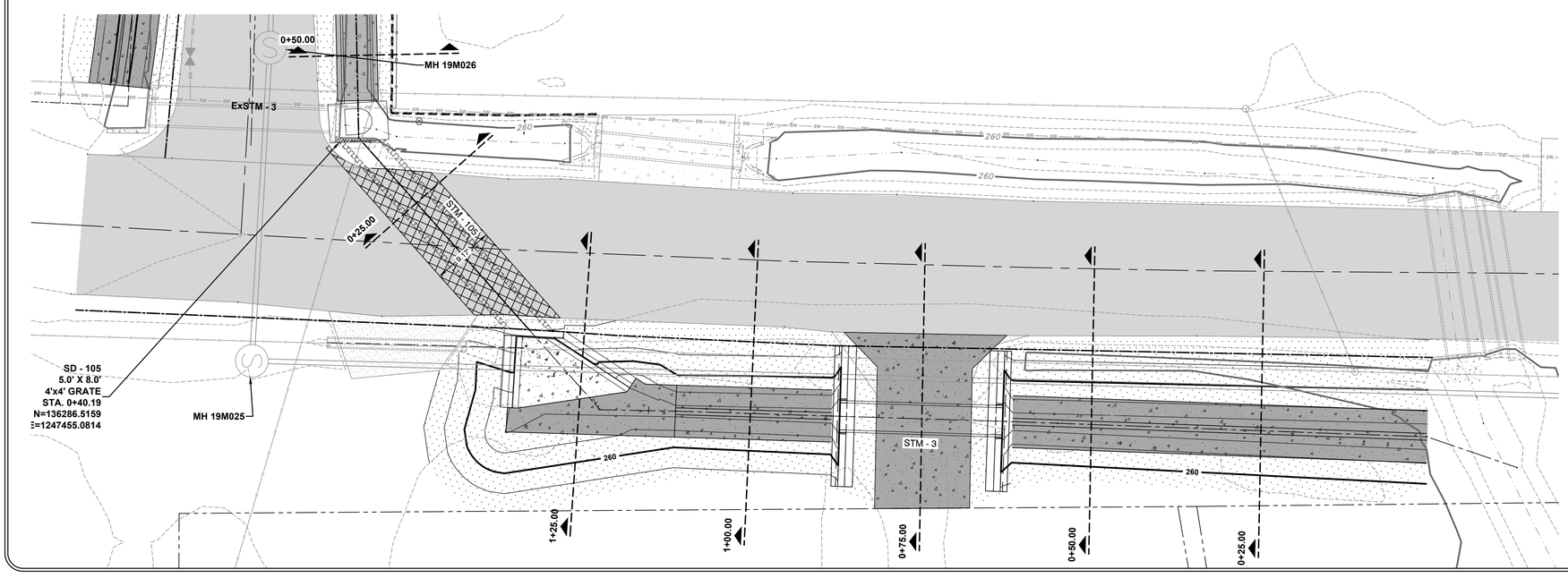
FRAZIER PIKE SOUTH EOP OFF
0+50.00

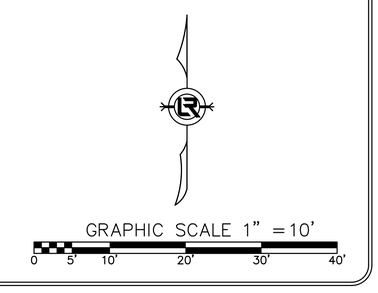


FRAZIER PIKE SOUTH EOP OFF
0+75.00



FRAZIER PIKE SOUTH EOP OFF
1+00.00





REVISIONS	DATE

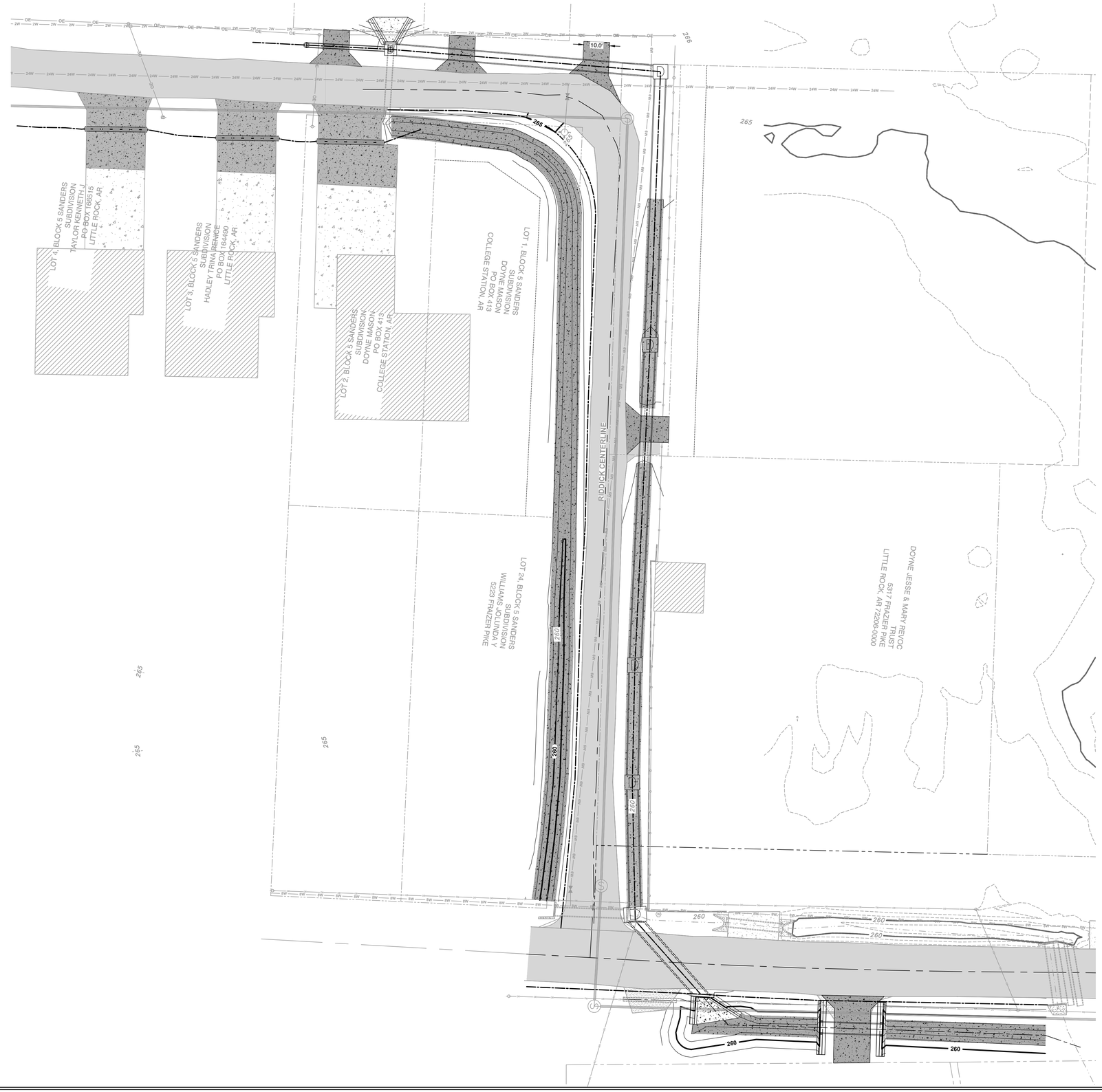
CITY OF LITTLE ROCK, ARKANSAS
EAST 39TH ST. DRAINAGE IMPROVEMENTS

CROSS SECTIONS

DEPARTMENT OF PUBLIC WORKS
CIVIL ENGINEERING
701 W. MARKHAM
LITTLE ROCK, ARKANSAS 72201

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 10452
ANDREW H. RIVE

DRAWN BY	JNS
DESIGNED	JNS
CHECKED	AHR
DATE	4/11/2025
SCALE	H: 1" = 10' V: 1" = 5'
PROJECT NO.	CLR # 01-22-DR-01
SHEET NO.	C605



GRAPHIC SCALE 1" = 20'

0 10' 20' 40' 60' 80'

REVISIONS	DATE

CITY OF LITTLE ROCK, ARKANSAS
EAST 39TH ST. DRAINAGE IMPROVEMENTS

GENERAL TOPO

DEPARTMENT OF PUBLIC WORKS
CIVIL ENGINEERING
701 W. MARKHAM
LITTLE ROCK, ARKANSAS 72201

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 10452
ANDREW H. RIVE
4/11/25

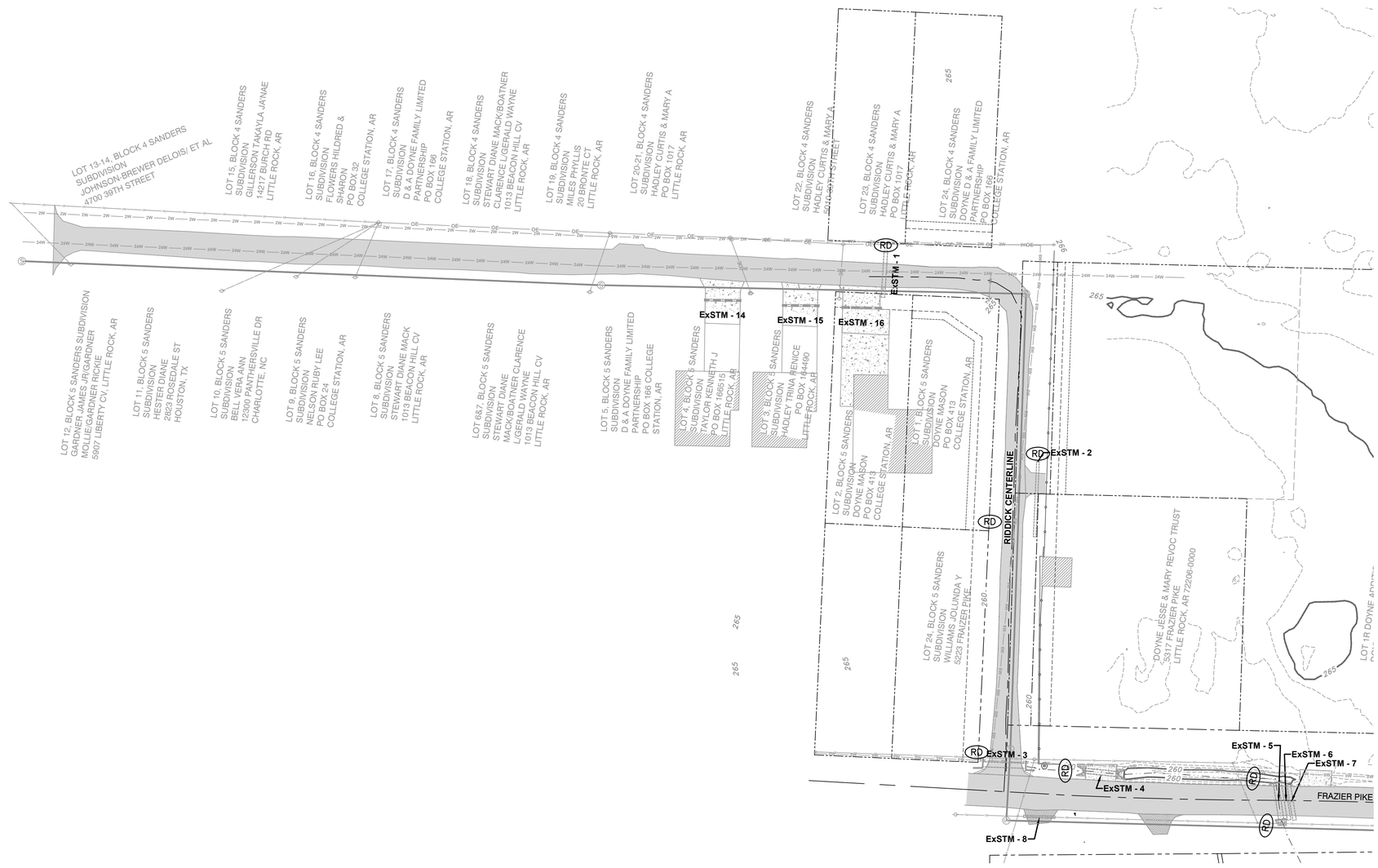
DRAWN BY	JNS
DESIGNED	JNS
CHECKED	AHR
DATE	4/11/2025
SCALE	AS NOTED
PROJECT NO.	CLR # 01-22-DR-01
SHEET NO.	C606

PHASE 1
CONSTRUCTION EROSION CONTROL
BEST MANAGEMENT PRACTICES

UPON IMPLEMENTATION AND INSTALLATION OF THE FOLLOWING AREAS: PARKING, LAY DOWN, PORTA-POTTY, DUMPSTER, ETC., IMMEDIATELY DENOTE THEM ON THE SITE MAPS AND NOTE ANY CHANGES IN LOCATION AS THEY OCCUR THROUGHOUT THE CONSTRUCTION PROCESS. IN ADDITION, NOTE ANY OFF-SITE AREA WHERE FILL IS IMPORTED FROM OR SOIL IS EXPORTED TO ON THE SITE MAP.

1. **INSTALL CONSTRUCTION ENTRANCE/EXIT PER CITY STANDARD PW-64.**
2. **INSTALL SWPPP INFORMATION SIGN.**
3. **INSTALL SILT FENCE(S) ON THE SITE. CLEAR ONLY THOSE AREAS NECESSARY TO INSTALL SILT FENCE.**
4. **INSTALL STORMWATER DETENTION BASIN AND OUTFALL STRUCTURE.**
5. **PREPARE TEMPORARY PARKING AND STORAGE AREA.**
6. **HALT ALL ACTIVITIES AND CONTACT THE CITY OF LITTLE ROCK TO PERFORM INSPECTION AND ACCEPTANCE OF BMP'S.**
7. **INSTALL AND STABILIZE HYDRAULIC CONTROL STRUCTURES (STORM DRAIN INLET PROTECTION, DIKES, SWALES, CHECK DAMS, ETC.). CLEAR ONLY THOSE AREAS NECESSARY TO INSTALL HYDRAULIC CONTROL DEVICES.**

CONSTRUCTION – ENTRANCE/EXIT	CO
CHECK DAM	CD
DIVERSION BERM	DI
DOWNDRAIN STRUCTURE – TEMPORARY	DN
ROCK DAM	RD
SEDIMENT BARRIER – SILT FENCE	SD1
SEDIMENT BARRIER – GRAVEL RING	SD2
SEDIMENT BARRIER – BLOCK & GRAVEL	SD3
SEDIMENT BARRIER – BLOCK	SD4
TEMPORARY SEDIMENT BASIN	SB1
SILT FENCE – TYPE A	SFA
SILT FENCE – TYPE B	SFB
SILT FENCE – TYPE C	SFC
STORM DRAIN INTLET PROTECTION	ST
SURFACE ROUGHENING	SU
DISTURBED AREA STABILIZATION –TEMPORARY STABILIZATION	TS1
DISTURBED AREA STABILIZATION –TEMPORARY GRASSING	TS2
DISTURBED AREA STABILIZATION –PERMANENT GRASSING	TS3
MATTING/BLANKETS	Mb



GRAPHIC SCALE 1" = 40'

0 20' 40' 80' 120' 160'

REVISIONS	DATE

CITY OF LITTLE ROCK, ARKANSAS
EAST 39TH ST. DRAINAGE IMPROVEMENTS

EROSION CONTROL PLAN PHASE 1

DEPARTMENT OF PUBLIC WORKS
CIVIL ENGINEERING
701 W. MARKHAM
LITTLE ROCK, ARKANSAS 72201

ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 10452 ANDREW H. RIKE

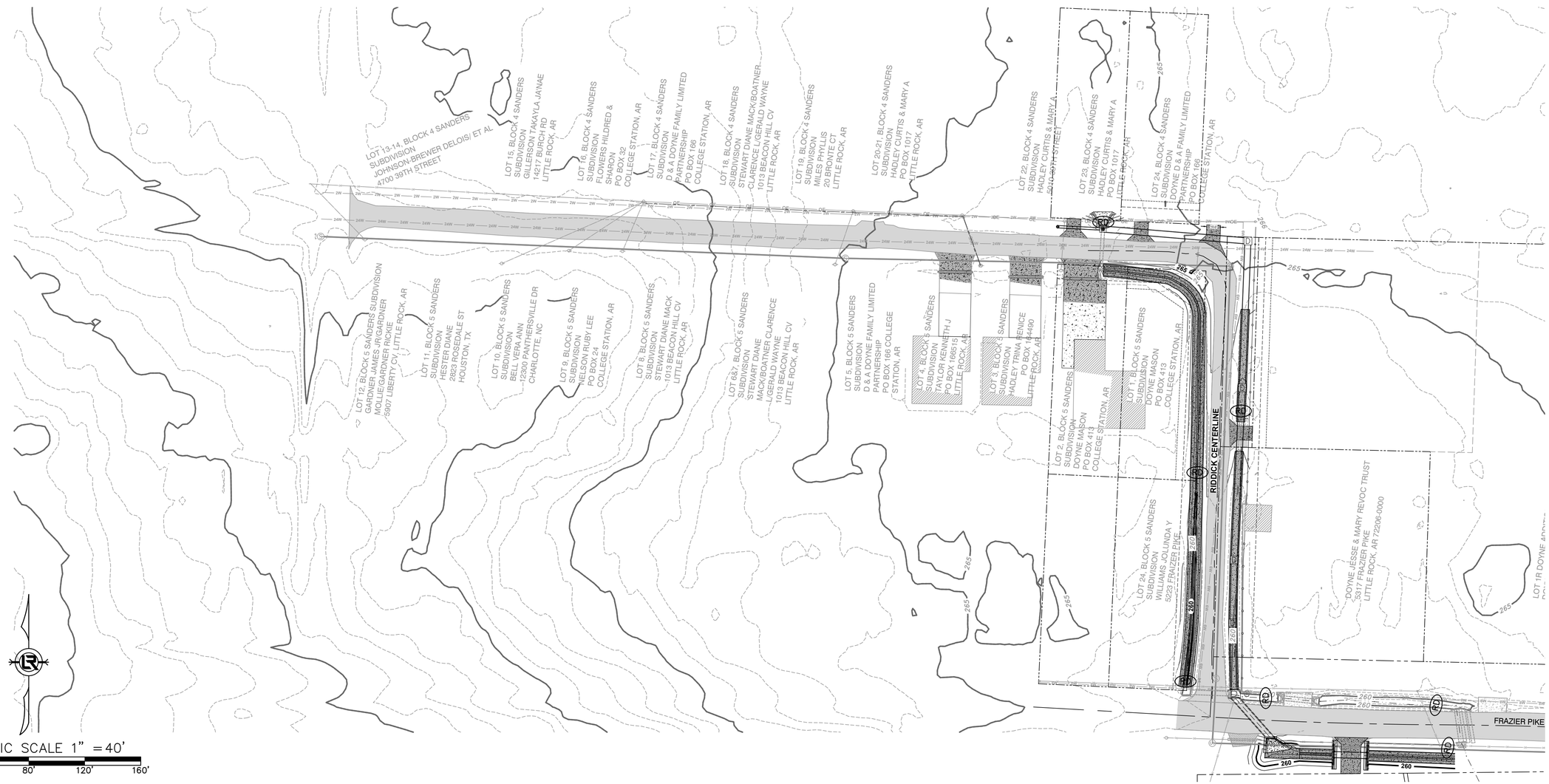
DRAWN BY	JNS
DESIGNED	JNS
CHECKED	AHR
DATE	4/11/2025
SCALE	AS NOTED
PROJECT NO.	CLR # 01-22-DR-01
SHEET NO.	C701

PHASE 2
CONSTRUCTION EROSION CONTROL
BEST MANAGEMENT PRACTICES

UPON IMPLEMENTATION AND INSTALLATION OF THE FOLLOWING AREAS: PARKING, LAY DOWN, PORTA-POTTY, CONCRETE WASHOUT, DUMPSTER, ETC., IMMEDIATELY DENOTE THEM ON THE SITE MAPS AND NOTE ANY CHANGES IN LOCATION AS THEY OCCUR THROUGHOUT THE CONSTRUCTION PROCESS. IN ADDITION, NOTE ANY OFF-SITE AREA WHERE FILL IS IMPORTED FROM OR SOIL IS EXPORTED TO ON THE SITE MAP.

1. **INSTALL CONCRETE WASHOUT. RELOCATE DUMPSTER, PORTA-POTTY AND LAY DOWN AREA.**
2. **TEMPORARY STABILIZATION SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY CEASED, BUT IN NO CASE MORE THAN FOURTEEN (14) CALENDAR DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY CEASED.**
3. **INSTALL UNDERGROUND UTILITIES.**
4. **FINISH GRADING AND PREPARE SUBGRADES FOR BUILDING SLABS, PARKING LOT, ETC.**
5. **MAINTAIN SILT FENCES AND INLET PROTECTION THROUGHOUT CONSTRUCTION.**
6. **INSTALL CONCRETE FOUNDATIONS, PARKING LOT CURBS, AND BASE MATERIAL. UTILIZE CONCRETE WASHOUT; CONCRETE IS NOT TO BE WASHED ONTO THE GROUND, STREET, OR INTO THE STORM SEWER.**
7. **INSTALL ASPHALT AND FENCE.**
8. **INSTALL LANDSCAPING VEGETATION AND MULCH.**

CONSTRUCTION – ENTRANCE/EXIT	CO
CHECK DAM	CD
DIVERSION BERM	DI
DOWNDRAIN STRUCTURE – TEMPORARY	DN
ROCK DAM	RD
SEDIMENT BARRIER – SILT FENCE	SD1
SEDIMENT BARRIER – GRAVEL RING	SD2
SEDIMENT BARRIER – BLOCK & GRAVEL	SD3
SEDIMENT BARRIER – BLOCK	SD4
TEMPORARY SEDIMENT BASIN	SB1
SILT FENCE – TYPE A	SFA
SILT FENCE – TYPE B	SFB
SILT FENCE – TYPE C	SFC
STORM DRAIN INTLET PROTECTION	ST
SURFACE ROUGHENING	SU
DISTURBED AREA STABILIZATION –TEMPORARY STABILIZATION	TS1
DISTURBED AREA STABILIZATION –TEMPORARY GRASSING	TS2
DISTURBED AREA STABILIZATION –PERMANENT GRASSING	TS3
MATTING/BLANKETS	Mb



REVISIONS	DATE

CITY OF LITTLE ROCK, ARKANSAS
EAST 39TH ST. DRAINAGE IMPROVEMENTS

EROSION CONTROL PLAN PHASE 2

DEPARTMENT OF PUBLIC WORKS
CIVIL ENGINEERING
701 W. MARKHAM
LITTLE ROCK, ARKANSAS 72201

ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 10452 ANDREW H. RIKE

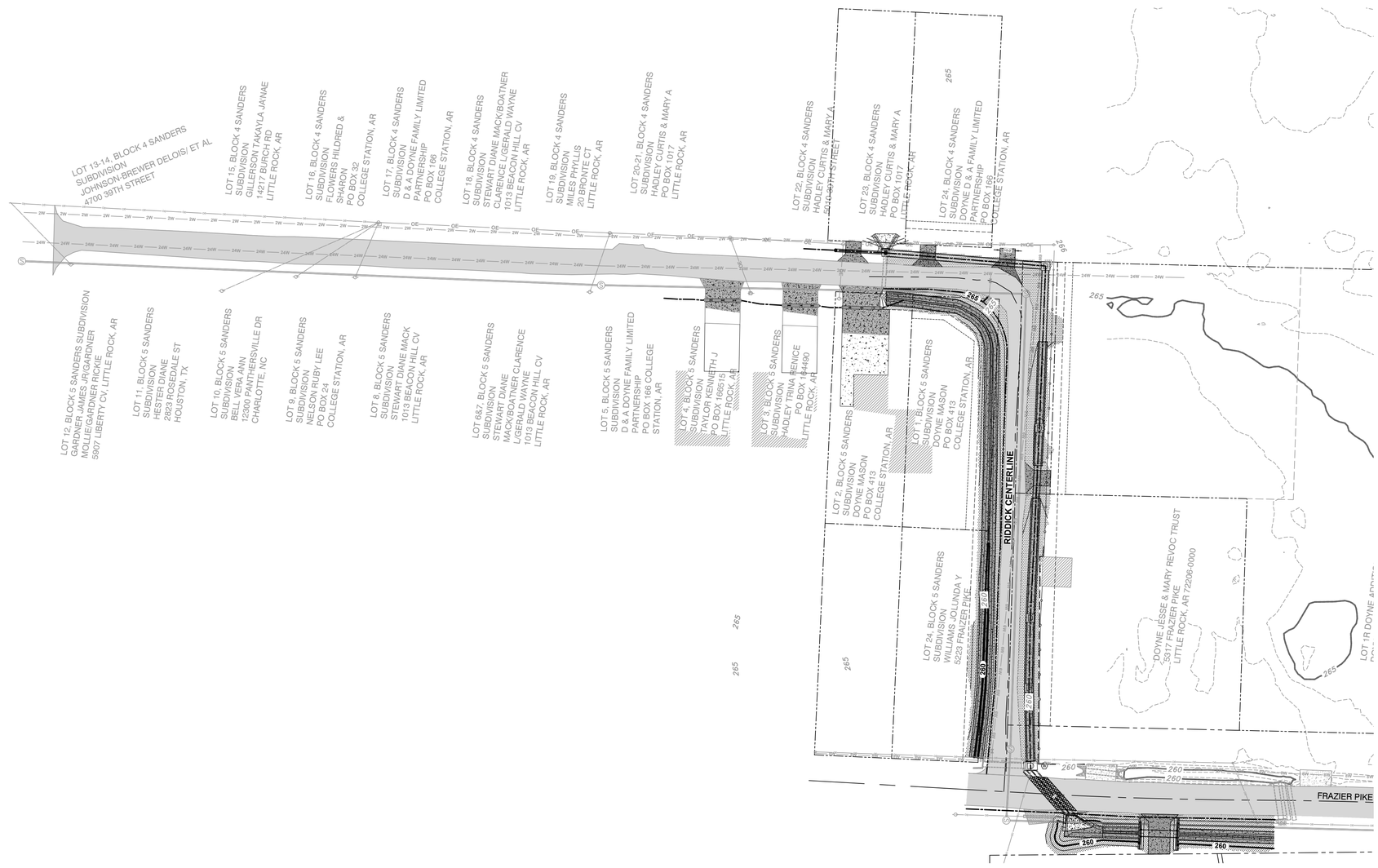
DRAWN BY	JNS
DESIGNED	JNS
CHECKED	AHR
DATE	4/11/2025
SCALE	AS NOTED
PROJECT NO.	CLR # 01-22-DR-01
SHEET NO.	C702

PHASE 3
CONSTRUCTION EROSION CONTROL
BEST MANAGEMENT PRACTICES

UPON IMPLEMENTATION AND INSTALLATION OF THE FOLLOWING AREAS: PARKING, LAY DOWN, PORTA-POTTY, CONCRETE WASHOUT, DUMPSTER, ETC., IMMEDIATELY DENOTE THEM ON THE SITE MAPS AND NOTE ANY CHANGES IN LOCATION AS THEY OCCUR THROUGHOUT THE CONSTRUCTION PROCESS. IN ADDITION, NOTE ANY OFF-SITE AREA WHERE FILL IS IMPORTED FROM OR SOIL IS EXPORTED TO ON THE SITE MAP.

1. **STABILIZE ALL DISTURBED AREAS PER THE LANDSCAPING PLANS.**
2. **CONTINUE TO PERFORM WEEKLY MAINTENANCE INSPECTIONS.**
3. **REMOVE AND STABILIZE ALL TEMPORARY CONTROL MEASURES UNTIL PERMANENT STABILIZATION ACROSS THE SITE IS ACHIEVED.**

CONSTRUCTION – ENTRANCE/EXIT	CO
CHECK DAM	CD
DIVERSION BERM	DI
DOWNDRAIN STRUCTURE – TEMPORARY	DN
ROCK DAM	RD
SEDIMENT BARRIER – SILT FENCE	SD1
SEDIMENT BARRIER – GRAVEL RING	SD2
SEDIMENT BARRIER – BLOCK & GRAVEL	SD3
SEDIMENT BARRIER – BLOCK	SD4
TEMPORARY SEDIMENT BASIN	SB1
SILT FENCE – TYPE A	SFA
SILT FENCE – TYPE B	SFB
SILT FENCE – TYPE C	SFC
STORM DRAIN INTLET PROTECTION	ST
SURFACE ROUGHENING	SU
DISTURBED AREA STABILIZATION –TEMPORARY STABILIZATION	TS1
DISTURBED AREA STABILIZATION –TEMPORARY GRASSING	TS2
DISTURBED AREA STABILIZATION –PERMANENT GRASSING	TS3
MATTING/BLANKETS	Mb



GRAPHIC SCALE 1" = 40'

0 20' 40' 80' 120' 160'

REVISIONS	DATE

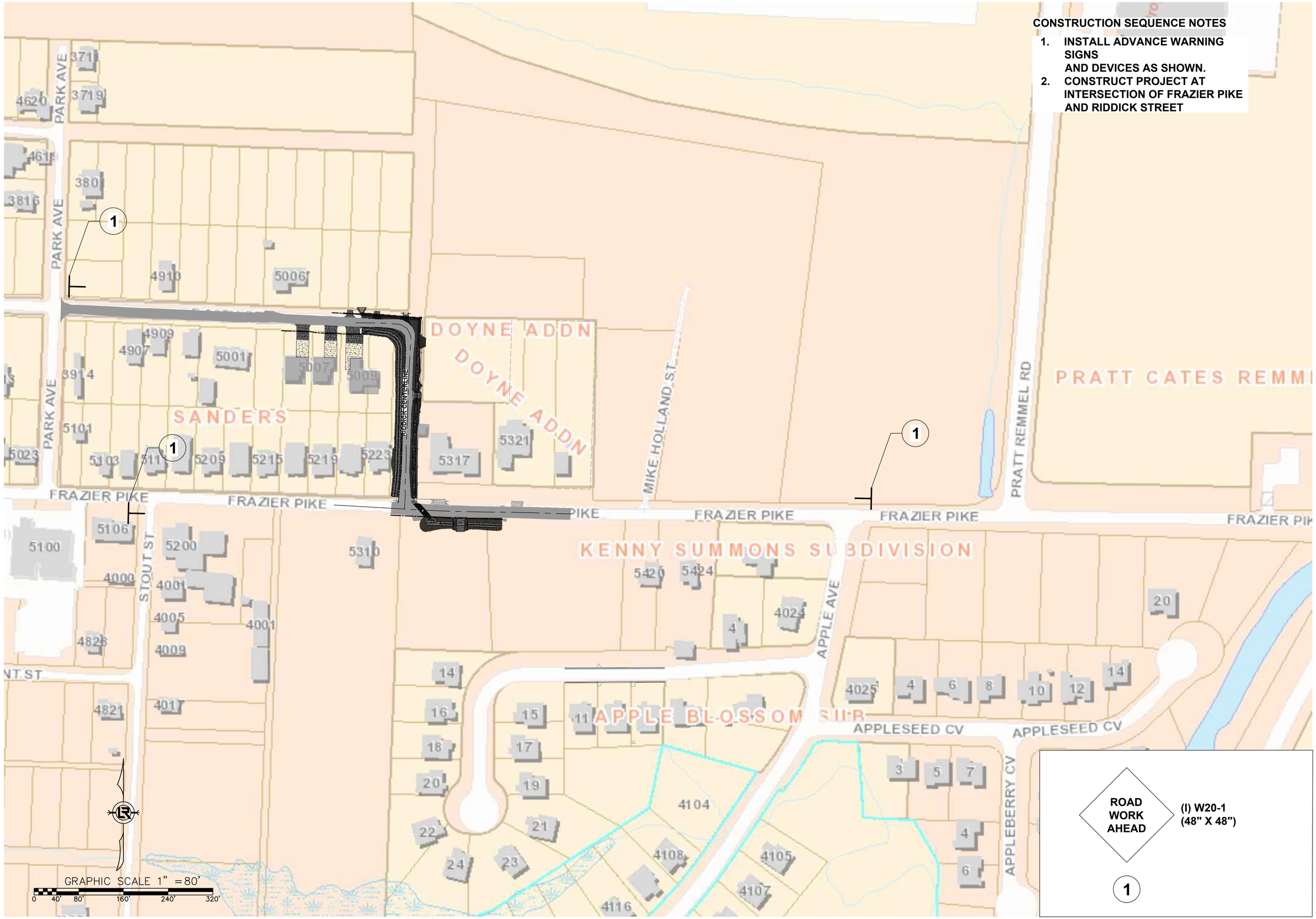
CITY OF LITTLE ROCK, ARKANSAS
EAST 39TH ST. DRAINAGE IMPROVEMENTS

EROSION CONTROL PLAN PHASE 3

DEPARTMENT OF PUBLIC WORKS
CIVIL ENGINEERING
701 W. MARKHAM
LITTLE ROCK, ARKANSAS 72201

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 10452 ANDREW H. RIKE

DRAWN BY	JNS
DESIGNED	JNS
CHECKED	AHR
DATE	4/11/2025
SCALE	AS NOTED
PROJECT NO.	CLR # 01-22-DR-01
SHEET NO.	C703



CONSTRUCTION SEQUENCE NOTES

1. INSTALL ADVANCE WARNING SIGNS AND DEVICES AS SHOWN.
2. CONSTRUCT PROJECT AT INTERSECTION OF FRAZIER PIKE AND RIDDICK STREET

ROAD WORK AHEAD

(I) W20-1 (48" X 48")

1

REVISIONS	DATE

CITY OF LITTLE ROCK, ARKANSAS
EAST 39TH ST. DRAINAGE IMPROVEMENTS

MAINTENANCE OF TRAFFIC

DEPARTMENT OF PUBLIC WORKS
CIVIL ENGINEERING
701 W. MARKHAM
LITTLE ROCK, ARKANSAS 72201

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 10452
ANDREW H. RIVE

DRAWN BY	JNS
DESIGNED	JNS
CHECKED	AHR
DATE	4/11/2025
SCALE	1" = 80'
PROJECT NO.	CLR # 01-22-DR-01
SHEET NO.	C800