DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	1	87
		GUY - HEBER SPRINGS (SAFETY IMPVTS.) (SEL. SECS.) (S)				

ARKANSAS DEPARTMENT OF TRANSPORTATION
CONSTRUCTION PLANS FOR STATE HIGHWAY

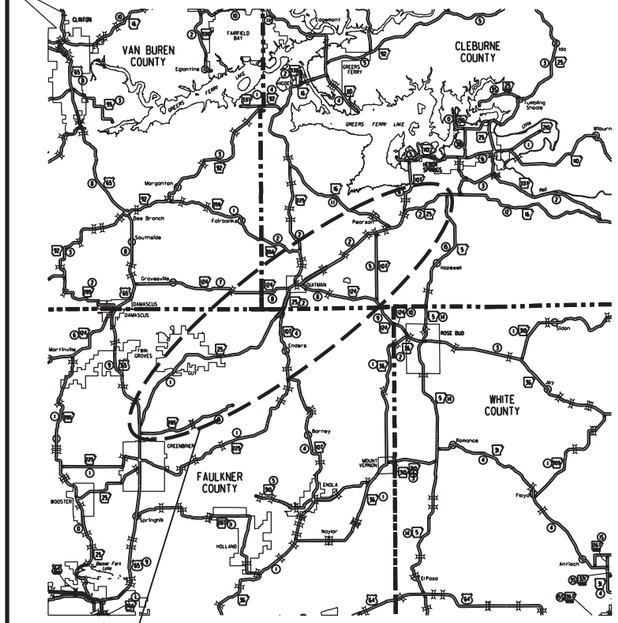
GUY - HEBER SPRINGS
(SAFETY IMPVTS.) (SEL. SECS.) (S)

CLEBURNE & FAULKNER COUNTIES

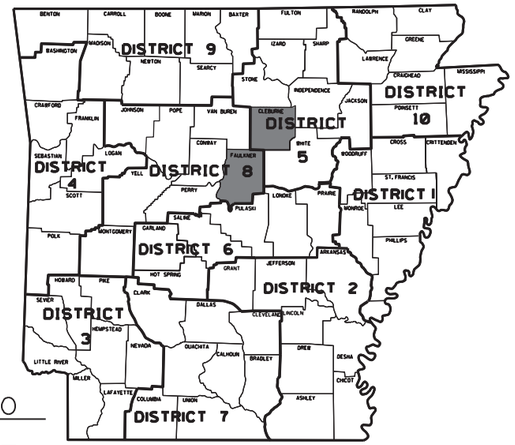
ROUTE 25 SECTIONS 1 & 2

FED. AID PROJ. HSIP-2312(1)

JOB 012227



VICINITY MAP



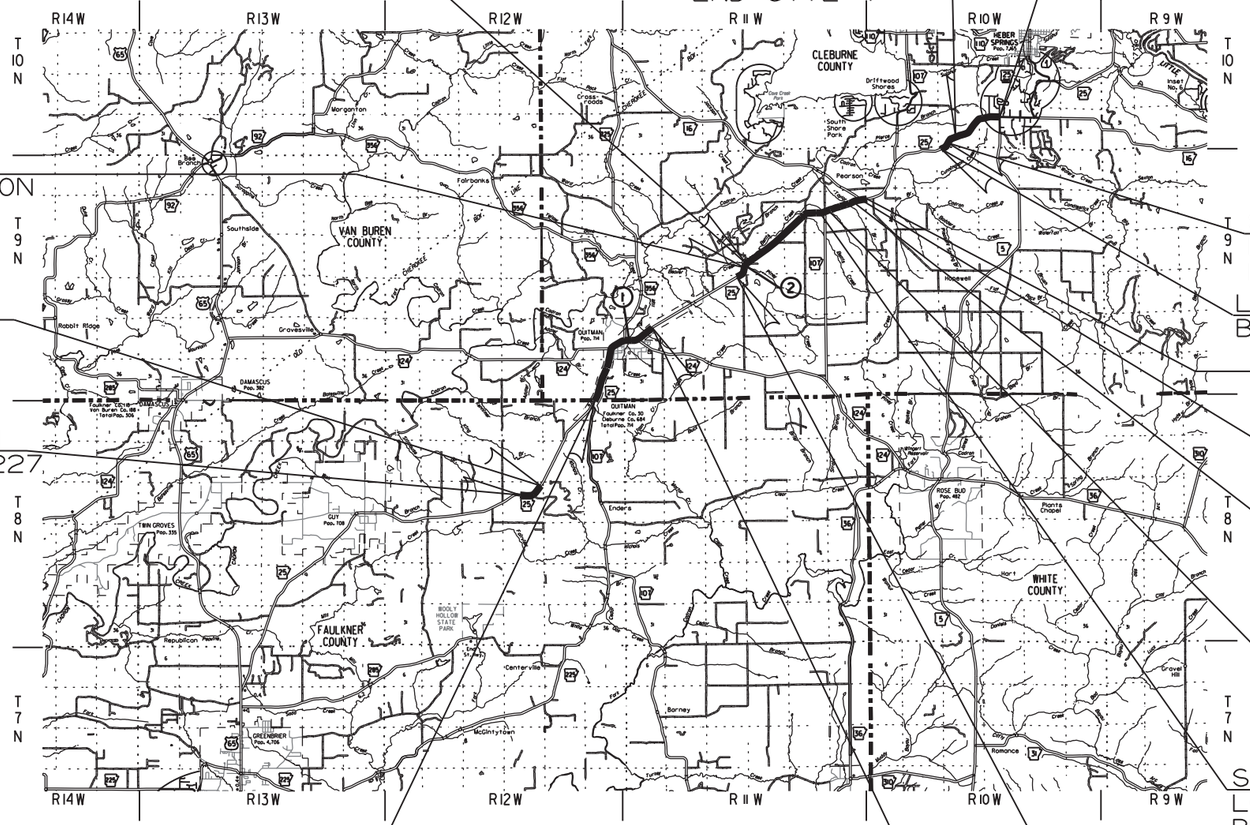
ARK. HWY. DIST. NOS. 5 & 8

LOG MILE 5.29
END JOB EXCEPTION
BEGIN UTBWC

NOT TO SCALE

STA. 422+98.09
END SITE 4

LOG MILE 13.00
END UTBWC
END JOB 012227



LOG MILE 5.26
BEGIN JOB EXCEPTION
END UTBWC

STA. 414+85.53
BEGIN SITE 4
LOG MILE 11.55

LOG MILE 11.26
BEGIN UTBWC

STA. 149+75.80
END SITE 1

STA. 373+63.00
END SITE 3

LOG MILE 8.80
END UTBWC

STA. 133+78.41
BEGIN JOB 012227
BEGIN SITE 1
LOG MILE 9.77

STA. 355+40.00
LOG MILE 8.58
BEGIN SITE 3

STA. 321+80.00
END SITE 2

STA. 311+89.72
LOG MILE 7.61
BEGIN SITE 2

LOG MILE 4.93
BEGIN UTBWC

LOG MILE 2.51
END UTBWC

LOG MILE 0.00
BEGIN UTBWC

STRUCTURES OVER 20'-0" SPAN (FOR INFORMATION ONLY)

① LOG MILE 1.83 RETAIN
QUINT. 11' X 6' X 62' R.C. BOX CULVERT
ON A 5° RT. FWD. SKEW
WITH 3:1 WINGS LT. AND RT.
SPAN = 59'-9"

BRIDGE DATA (FOR INFORMATION ONLY)

LOG MILE 5.26 BR. END
② 165'-0" CONTINUOUS COMP. W-BEAM
(50'-65'-50')
167'-2" TOTAL LENGTH
40'-0" CLEAR ROADWAY
BR. NO. 07431
LOG MILE 5.29 BR. END

STRUCTURES OVER 20'-0" SPAN

③ STA. 317+70 - IN PLACE
DBL. 10' X 4' X 39' R.C. BOX CULVERT
W/ 3:1 WINGS LT. & RT.
5° RT. FWD. SKEW
RETAIN AND EXTEND 12' LT.& 10' RT. AT 15°SKEW
TO A COMPLETED LENGTH OF 61'
D.A. = 0.60 SQ. MI., Q50 = 724 C.F.S.
SPAN = 23'-2¾"

SITE 1

	BEGIN PROJECT	MID-POINT OF PROJECT	END PROJECT
LATITUDE	N 35°19'48"	N 35°19'53"	N 35°19'58"
LONGITUDE	W 92°15'36"	W 92°15'28"	W 92°15'19"

SITE 2

	BEGIN PROJECT	MID-POINT OF PROJECT	END PROJECT
LATITUDE	N 35°21'39"	N 35°23'41"	N 35°25'42"
LONGITUDE	W 92°07'48"	W 92°07'42"	W 92°07'36"

SITE 3

	BEGIN PROJECT	MID-POINT OF PROJECT	END PROJECT
LATITUDE	N 35°25'53"	N 35°25'55"	N 35°25'56"
LONGITUDE	W 92°06'49"	W 92°06'38"	W 92°06'27"

SITE 4

	BEGIN PROJECT	MID-POINT OF PROJECT	END PROJECT
LATITUDE	N 35°26'56"	N 35°27'33"	N 35°27'10"
LONGITUDE	W 92°04'36"	W 92°04'26"	W 92°04'15"

DESIGN TRAFFIC DATA

DESIGN YEAR	2041
2021 ADT	5500
2041 ADT	8000
2041 DHV	880
DIRECTIONAL DISTRIBUTION	0.60
TRUCKS	9%
AVERAGE RUNNING SPEED (SITE 1)	45 MPH
AVERAGE RUNNING SPEED (SITES 2-4)	50 MPH

LENGTH OF PROJECT CALCULATED ALONG C.L.

GROSS LENGTH OF PROJECT	44973.09	FEET	OR	8.518	MILES
NET " " ROADWAY	44949.86	"	"	8.514	"
NET " " BRIDGES	23.23	"	"	0.004	"
NET " " PROJECT	44973.09	"	"	8.518	"

APPROVED

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 10045
KELVIN REX VINES

Vines, Rex
May 25 2022 8:16 AM
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DEPUTY DIRECTOR
AND CHIEF ENGINEER

jy43338 7/7/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	2	87
		INDEX OF SHEETS AND STANDARD DRAWINGS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Smith, Trinity D.
May 17 2022 1:51 PM
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INDEX OF SHEETS

NOTE: CROSS SECTIONS NOT NORMALLY INCLUDED IN PLANS SOLD TO PROSPECTIVE BIDDERS, BUT MAY BE HAD UPON REQUEST.

ROADWAY STANDARD DRAWINGS

DRWG.NO.	TITLE	DATE
CDP-1	CONCRETE DITCH PAVING	12-08-16
FES-1	FLARED END SECTION	10-18-96
FES-2	FLARED END SECTION	10-18-96
MB-1	MAILBOX DETAILS	11-18-04
PBC-1	PRECAST CONCRETE BOX CULVERTS	01-28-15
PCC-1	CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING	02-27-14
PCM-1	METAL PIPE CULVERT FILL HEIGHTS & BEDDING	02-27-14
PCP-1	PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)	02-27-14
PCP-2	PLASTIC PIPE CULVERT (PVC F949)	02-27-14
PCP-3	PLASTIC PIPE CULVERT (POLYPROPYLENE)	02-27-20
PM-1	PAVEMENT MARKING DETAILS	02-27-20
PU-1	DETAILS OF PIPE UNDERDRAIN	12-08-16
RCB-1	REINFORCED CONCRETE BOX CULVERT DETAILS	07-26-12
RCB-2	EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS	11-20-03
RCB-3	METHOD OF EXTENDING EXISTING R.C. BOX CULVERTS	10-12-95
SE-2	TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC	11-07-19
SI-1	DETAILS OF SPECIAL ITEMS	10-25-18
TC-1	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	11-07-19
TC-2	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	05-20-21
TC-3	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	08-12-21
TC-4	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER	11-07-19
TC-5	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER	11-07-19
TEC-1	TEMPORARY EROSION CONTROL DEVICES	11-16-17
TEC-3	TEMPORARY EROSION CONTROL DEVICES	11-03-94
WF-2	WIRE FENCE WATER GAPS	04-20-79
WF-4	WIRE FENCE TYPE C AND D	08-22-02
R-200X-0	DETAILS OF STANDARD BARREL SECTIONS FOR STRAIGHT BARRELS	02-15-63
R-215X-0	DETAILS OF STANDARD BARREL SECTIONS FOR 15° SKEW BARRELS	08-23-63
W-X003-1	DETAILS OF STANDARD WINGS FOR STRAIGHT BARRELS	05-10-66
W-X153-1	DETAILS OF STANDARD WINGS FOR 15° SKEW BARRELS	05-10-66

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DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
06-06-22		6	ARK.	012227	3	87
		GOVERNING SPECIFICATIONS & GENERAL NOTES				

GOVERNING SPECIFICATIONS

ARKANSAS STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EDITION OF 2014, AND THE FOLLOWING SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS:

NUMBER **TITLE**

ERRATA_____ ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273__ REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273__ SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTCE TO CONTRACTORS
FHWA-1273__ SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273__ SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273__ SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273__ SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273__ SUPPLEMENT - WAGE RATE DETERMINATION
100-3_____ CONTRACTOR'S LICENSE
100-4_____ DEPARTMENT NAME CHANGE
102-2_____ ISSUANCE OF PROPOSALS
105-4_____ MAINTENANCE DURING CONSTRUCTION
107-2_____ RESTRAINING CONDITIONS
108-1_____ LIQUIDATED DAMAGES
108-2_____ WORK ALLOWED PRIOR TO ISSUANCE OF WORK ORDER
110-1_____ PROTECTION OF WATER QUALITY AND WETLANDS
210-1_____ UNCLASSIFIED EXCAVATION
303-1_____ AGGREGATE BASE COURSE
306-1_____ QUALITY CONTROL AND ACCEPTANCE
400-1_____ TACK COATS
400-4_____ DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
400-5_____ PERCENT AIR VOIDS FOR ACHM MIX DESIGNS
400-6_____ LIQUID ANTI-STRIP ADDITIVE
400-7_____ TRACKLESS TACK
404-3_____ DESIGN OF ASPHALT MIXTURES
410-1_____ CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
410-2_____ DEVICES FOR MEASURING DENSITY FOR ROLLING PATTERNS
410-4_____ EVALUATION OF ACHM SUBLOT REPLACEMENT MATERIAL
501-2_____ CEMENT
505-1_____ PORTLAND CEMENT CONCRETE DRIVEWAY
600-2_____ INCIDENTAL CONSTRUCTION
603-1_____ LANE CLOSURE NOTIFICATION
604-1_____ RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
604-3_____ TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES (MASH)
605-1_____ CONCRETE DITCH PAVING
606-1_____ PIPE CULVERTS FOR SIDE DRAINS
620-1_____ MULCH COVER
800-1_____ STRUCTURES
802-4_____ CEMENT
804-2_____ REINFORCING STEEL FOR STRUCTURES
JOB 012227__ BIDDING REQUIREMENTS AND CONDITIONS
JOB 012227__ BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 012227__ BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 012227__ CARGO PREFERENCE ACT REQUIREMENTS
JOB 012227__ COLD MILLING - COUNTY PROPERTY
JOB 012227__ CULVERT CLEAN OUT
JOB 012227__ DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB 012227__ ESTABLISHING CONTRACT TIME - WORKING DAY CONTRACT
JOB 012227__ EXTENSION FOR PIPE CULVERTS
JOB 012227__ FLEXIBLE BEGINNING OF WORK
JOB 012227__ GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 012227__ LIQUIDATED DAMAGES PROCEDURE FOR BID LETTINGS
JOB 012227__ LONGITUDINAL JOINT DENSITIES FOR ACHM SURFACE COURSES
JOB 012227__ MANDATORY ELECTRONIC CONTRACT
JOB 012227__ MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB 012227__ OFF-SITE RESTRAINING CONDITIONS FOR BATS
JOB 012227__ PARTNERING REQUIREMENTS
JOB 012227__ PLASTIC PIPE
JOB 012227__ PRICE ADJUSTMENT FOR ASPHALT BINDER
JOB 012227__ PROHIBITION OF CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT
JOB 012227__ RUMBLE STRIPS
JOB 012227__ SHORING FOR CULVERTS
JOB 012227__ SOIL STABILIZATION
JOB 012227__ SPECIAL CLEARING REQUIREMENTS
JOB 012227__ STORM WATER POLLUTION PREVENTION PLAN
JOB 012227__ SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 012227__ ULTRATHIN BONDED WEARING COURSE
JOB 012227__ UTILITY ADJUSTMENTS
JOB 012227__ VALUE ENGINEERING
JOB 012227__ WARM MIX ASPHALT
JOB 012227__ WATER POLLUTION CONTROL

STATE OF ARKANSAS
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TRINITY D. SMITH

Smith, Trinity D.
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GENERAL NOTES

1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
2. ALL PIPE LINES, POWER, TELEPHONE, AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
3. ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNERS UNLESS OTHERWISE PROVIDED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U. S. MAILBOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY RECEIVE CONTINUED MAIL SERVICE. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS BID ITEMS.
5. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
6. ALL TREES THAT DO NOT DIRECTLY INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED AS DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO ENSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FENCE TO CONTROL LIVESTOCK IN AREAS WHERE PASTURES ARE SEVERED. WIRE FENCE MAY BE CONSTRUCTED INITIALLY, OR IN LIEU THEREOF, THE CONTRACTOR AT HIS OWN EXPENSE, MAY ELECT TO PROVIDE TEMPORARY FENCING SUITABLE TO CONTAIN LIVESTOCK.
8. THE SEQUENCE AS SHOWN ON THE MAINTENANCE OF TRAFFIC PLANS IS A GENERAL OUTLINE FOR THE CONSTRUCTION OF THIS PROJECT, AND IN NO WAY IS IT INTENDED TO COVER EVERY ITEM IN THE PROJECT. ITEMS NOT CRITICAL TO THE CONSTRUCTION SEQUENCE MAY BE CONSTRUCTED IN ANY STAGE AS APPROVED BY THE RESIDENT ENGINEER.
9. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.
10. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE. AFTER SAWING, THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN. ANY DAMAGE OF THE ASPHALT PAVEMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
11. THIS PROJECT IS COVERED UNDER A SECTION 404 NATIONWIDE 14 PERMIT. REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS, EDITION OF 2014, FOR PERMIT REQUIREMENTS.

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DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	4	87
		TYPICAL SECTIONS OF IMPROVEMENT				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
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TRINITY D. SMITH
May 17 2022 1:40 PM
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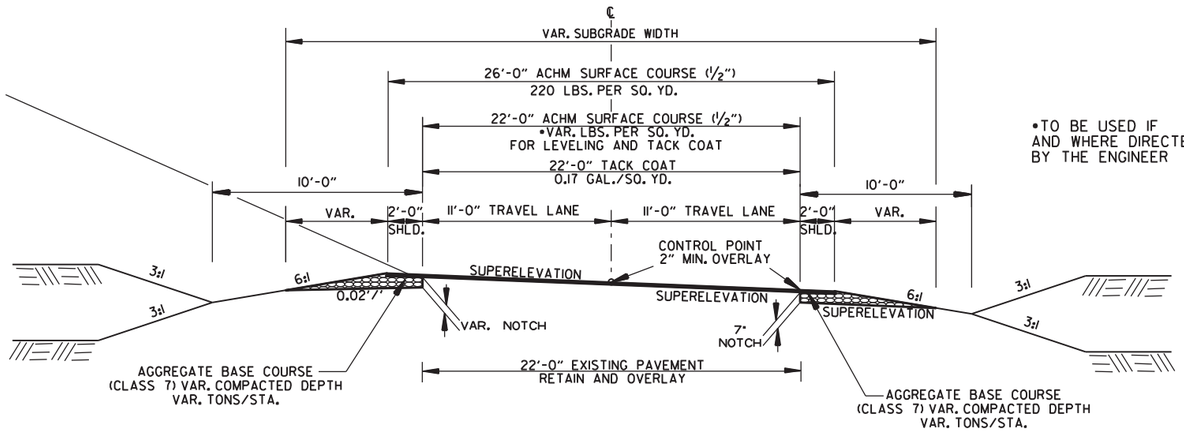
ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATION TRANSITIONS, THE ALGEBRAIC DIFFERENCE BETWEEN PAVEMENT SLOPE AND SHOULDER SLOPE SHALL NOT EXCEED 0.08'/'.



2 LANE OPEN SHOULDER SECTION SUPERELEVATION

STA. 133+78.41 - STA. 149+75.80 (SITE 1)

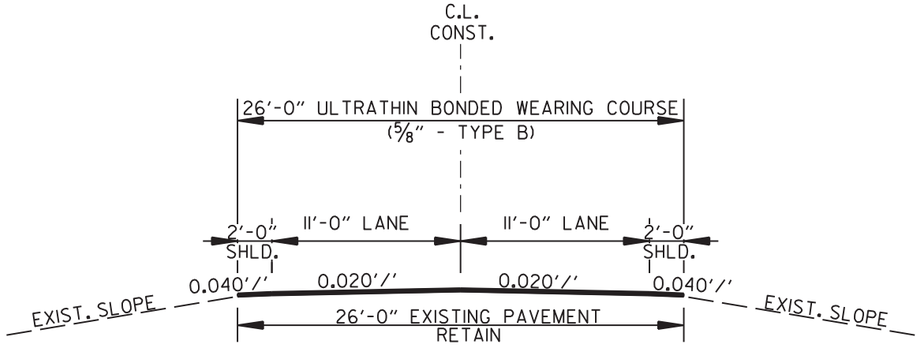
STA. 414+85.53 - STA. 422+98.09 (SITE 4)

NOTES:
REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

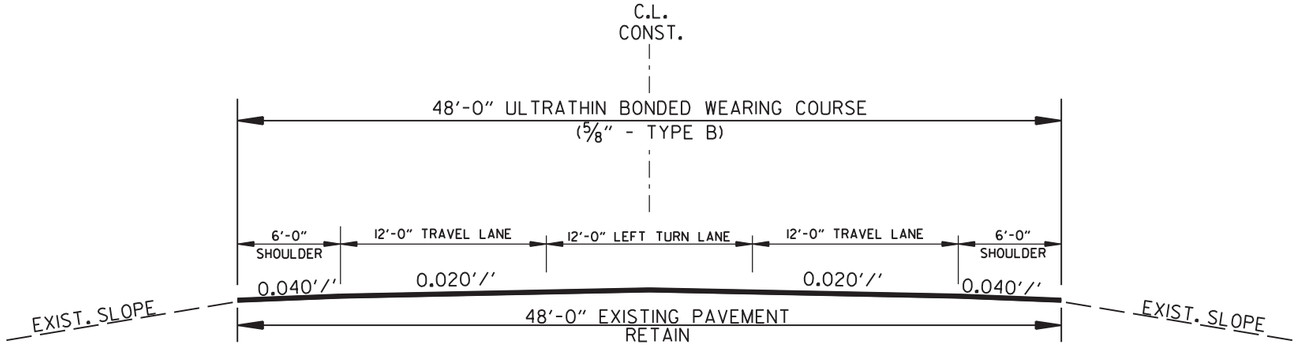
ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND/OR LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING NOTCH AND WIDENING. CALCULATIONS WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.



2 LANE OPEN SHOULDER U.T.B.W.C. OVERLAY INCLUDING SHOULDERS

LOG MILE 0.00 TO LOG MILE 2.51
LOG MILE 4.93 TO LOG MILE 5.26
LOG MILE 5.29 TO LOG MILE 7.64
LOG MILE 7.80 TO LOG MILE 8.65
LOG MILE 11.26 TO LOG MILE 13.00



3 LANE OPEN SHOULDER U.T.B.W.C. OVERLAY INCLUDING SHOULDERS

LOG MILE 7.64 TO LOG MILE 7.80
LOG MILE 8.65 TO LOG MILE 8.80

jy43338 6/30/2021
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TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	5	87
		TYPICAL SECTIONS OF IMPROVEMENT				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
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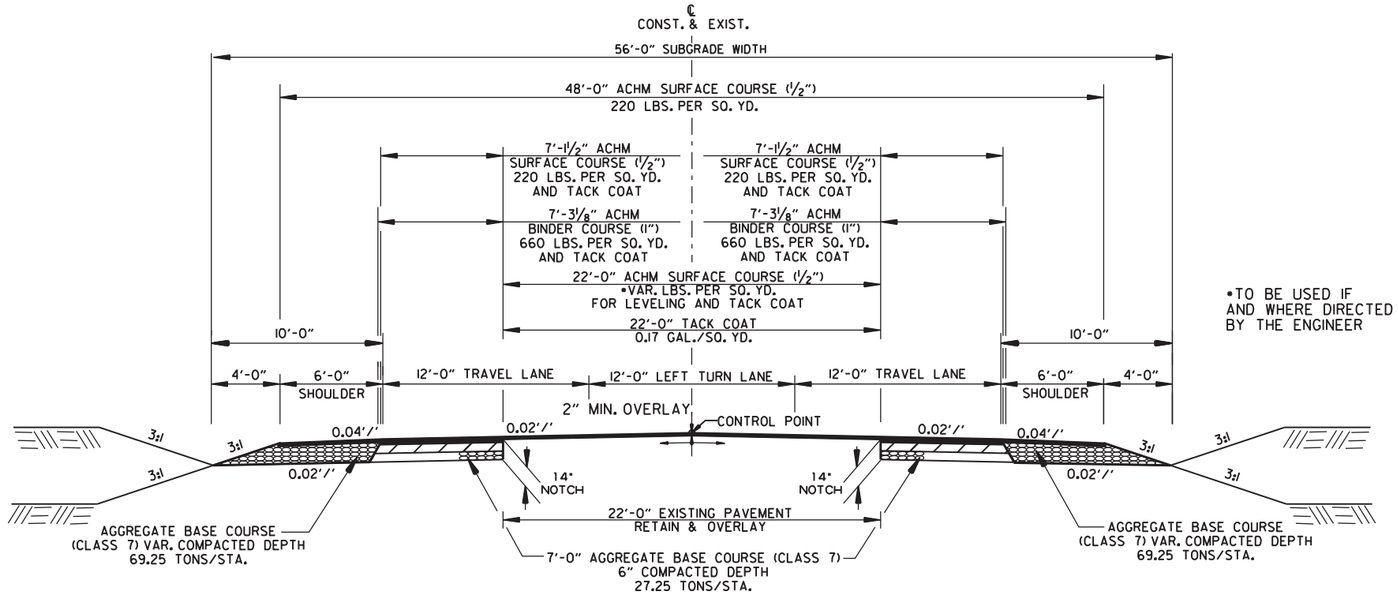

•TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

3 LANE OPEN SHOULDER SECTION

STA. 311+89.72 - STA. 321+80.00 (SITE 2)

NOTES:
REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

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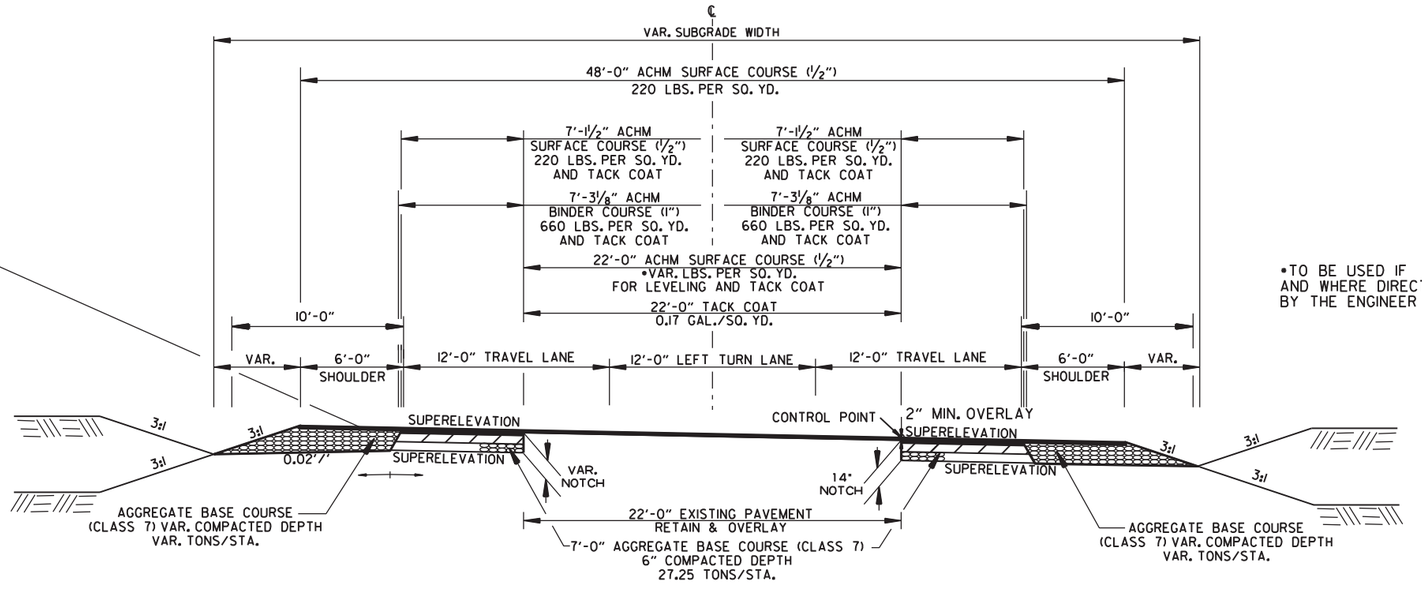
THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.

ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATION TRANSITIONS, THE ALGEBRAIC DIFFERENCE BETWEEN PAVEMENT SLOPE AND SHOULDER SLOPE SHALL NOT EXCEED 0.08'/'.



•TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

3 LANE OPEN SHOULDER SUPERELEVATION

jy43338 6/30/2021
R012227.DGN

TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	6	87
		TYPICAL SECTIONS OF IMPROVEMENT				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
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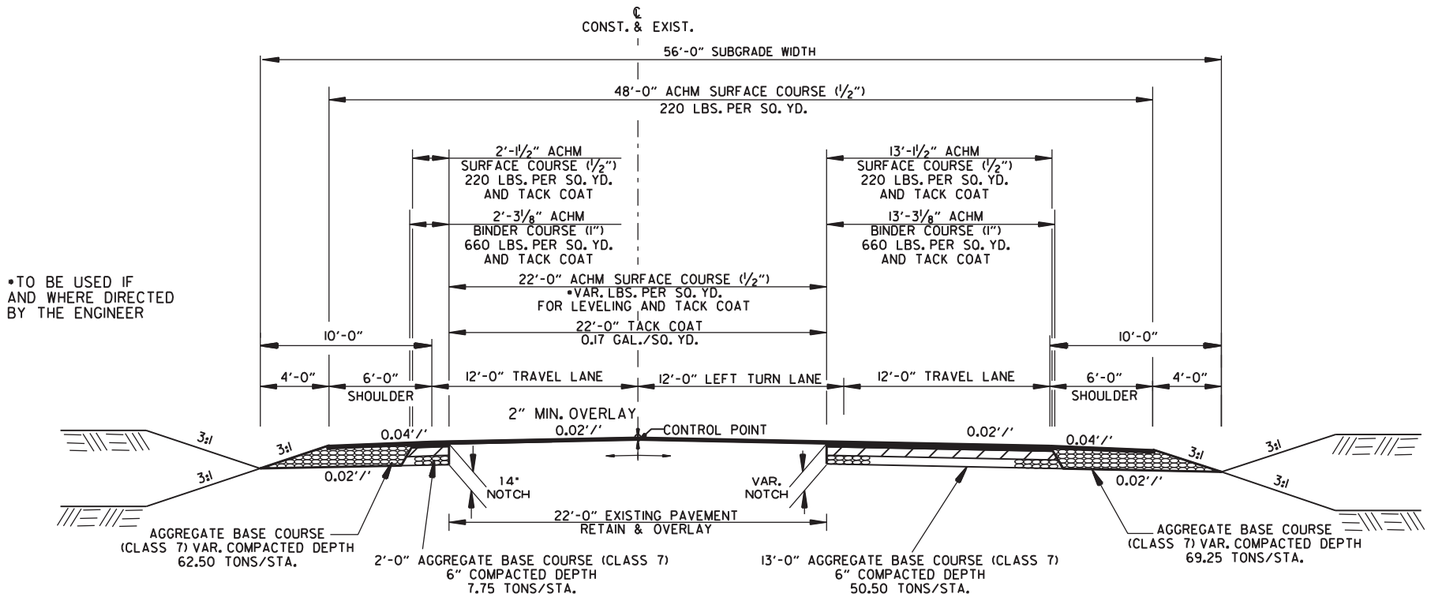

3 LANE OPEN SHOULDER SECTION

STA. 355+40.00 - STA. 373+63.00 (SITE 3)

NOTES:
REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

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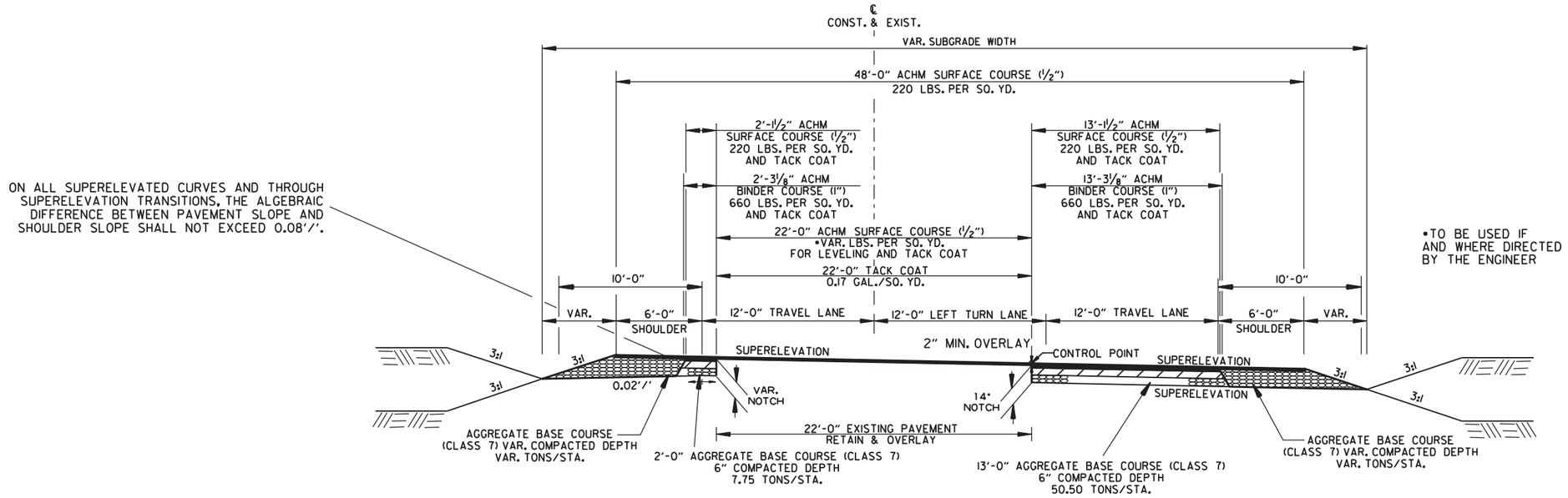

3 LANE OPEN SHOULDER SECTION SUPERELEVATION

jy43338 6/30/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	7	87
		SPECIAL DETAILS				

STATE OF ARKANSAS
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TRINITY D. SMITH
May 17 2022 1:41 PM
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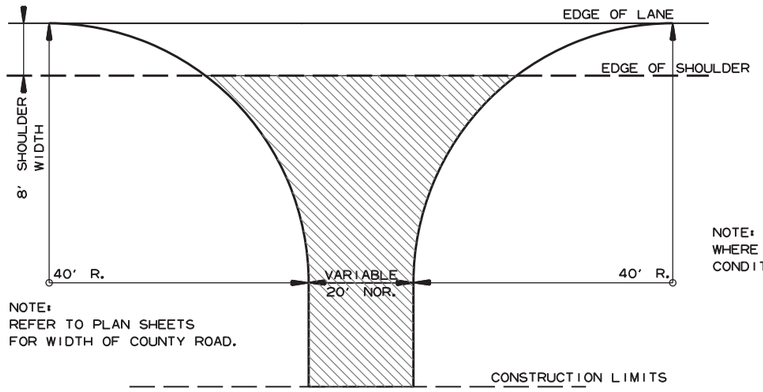
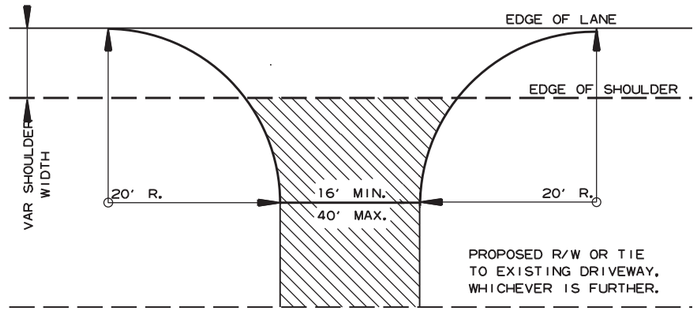


NOTE:
REFER TO PLAN SHEETS
FOR WIDTH OF COUNTY ROAD.

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

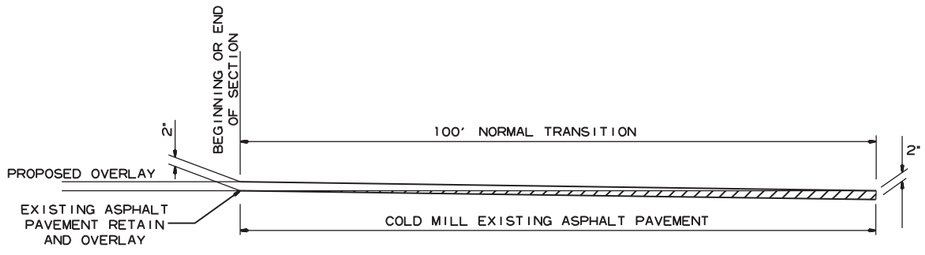
DETAIL FOR COUNTY ROAD TURNOUTS OPEN SHOULDER SECTION



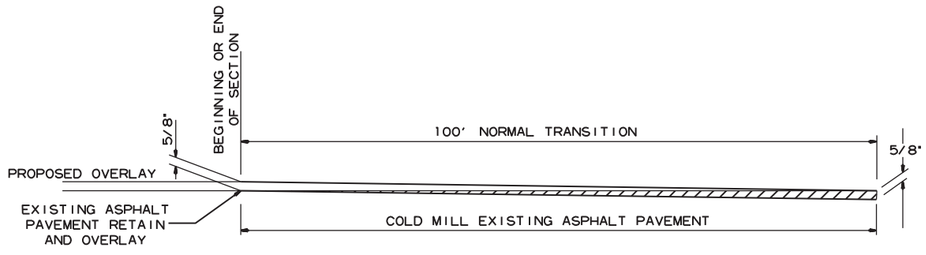
NOTE: TURNOUTS AND PRIVATE DRIVES SHALL BE MODIFIED WHERE NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.

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)



DETAIL FOR TRANSITIONS



DETAIL FOR ULTRATHIN BONDED WEARING COURSE TRANSITION

jy43338 6/25/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	8	87
		SPECIAL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

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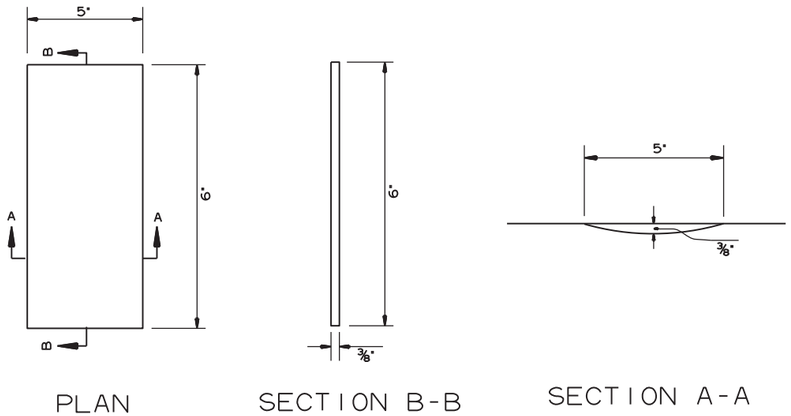
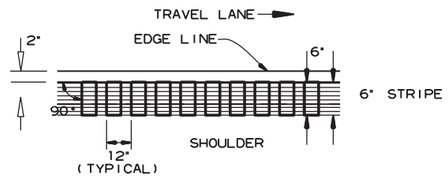
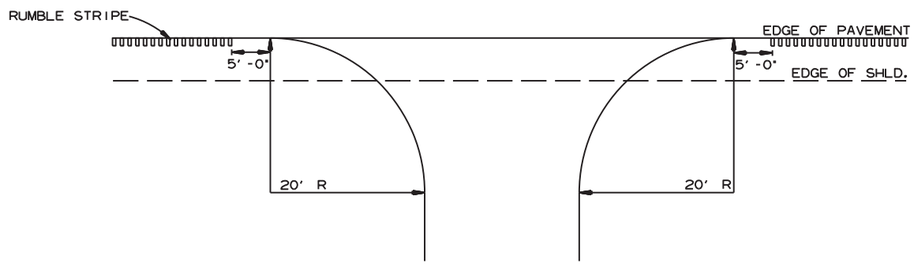


PLAN SECTION B-B SECTION A-A

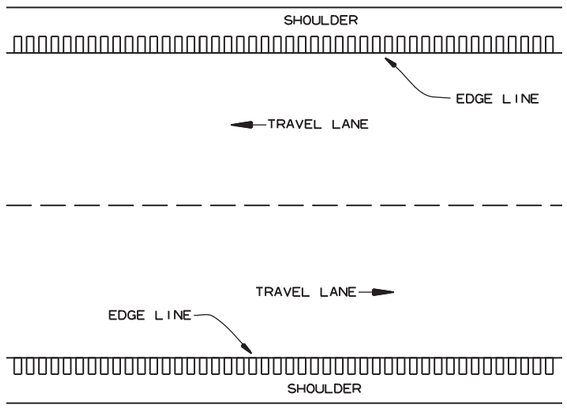
DETAILS OF RUMBLE STRIPE



LOCATION PLAN OF RUMBLE STRIPE
LEFT OR RIGHT SHOULDER



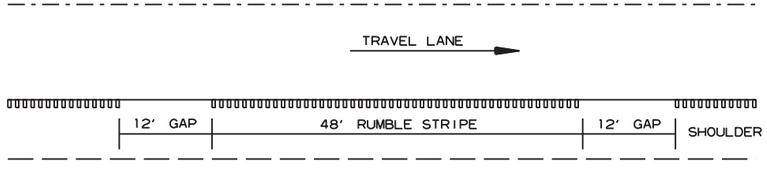
DETAIL FOR RUMBLE STRIPE GAP
AT DRIVEWAY TURNOUTS



PLAN VIEW

GENERAL NOTES

1. RUMBLE STRIPES SHALL NOT BE INSTALLED ON BRIDGE DECKS, APPROACH SLABS, INTERSECTING STREETS OR ROADWAYS, RESIDENTIAL OR COMMERCIAL DRIVEWAYS OR ACROSS TRANSVERSE JOINTS OF CONCRETE SHOULDERS.
2. RUMBLE STRIPES SHALL NOT BE INSTALLED ON A PAVED SHOULDER THAT IS USED AS A DECELERATION LANE FOR THE LENGTH DEEMED APPROPRIATE BY THE ENGINEER.
3. RUMBLE STRIPES SHALL BE MEASURED BY THE LINEAR FOOT LONGITUDINALLY ALONG THE SHOULDER. PAYMENT SHALL ONLY INCLUDE THAT PORTION OF THE SHOULDER ON WHICH RUMBLE STRIPES HAVE BEEN CONSTRUCTED. NO MEASUREMENT OR PAYMENT WILL BE MADE FOR GAPS, DRIVEWAYS, TURNOUTS, OR OTHER PUBLIC ROAD INTERSECTIONS WHERE RUMBLE STRIPES HAVE NOT BEEN CONSTRUCTED.
4. THE 3/8" DEPTH SHALL GENERALLY APPLY FOR THE ENTIRE 6" LENGTH. SOME VARIATION TO SUIT SHOULDER SLOPE BREAKS MAY BE NECESSARY.



NOTE: GAP PATTERN SHALL BE ADJUSTED BY THE ENGINEER IN THE FIELD ALLOWING FOR DRIVEWAYS TO SERVE AS THE GAP.

DETAIL FOR GAP PATTERN RUMBLE STRIPE

jy43338 6/25/2021
R012227.DGN

SPECIAL DETAILS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	9	87

TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

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STA. 133+78.41
BEGIN SITE 1
LOG MILE 9.77

PT 132+59.59
PC 135+65.91
PI 138+90.66
PC 143+27.81
PI 145+77.15
PI 153+30.65
PC 156+73.11
PT 158+29.67
PC 158+80.55
PI 159+87.21
PI 157+51.40
PT 148+25.80
PI 145+77.15
STA. 149+75.80
END SITE 1

EXISTING ROW
N 87°48'52" E
N 44°31'54" E
N 37°03'43" E
N 36°59'32" E
N 35°25'35" E
0°04'11" LT.
PROPOSED R/W
T.C.E.
+100 LIN.FT.
+130 LIN.FT.

REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-6 = ROCK DITCH CHECKS
E-11 = SILT FENCE

SITE 1 - CLEARING AND GRUBBING
TEMPORARY EROSION CONTROL DETAILS

jy43338 6/30/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	10	87

TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
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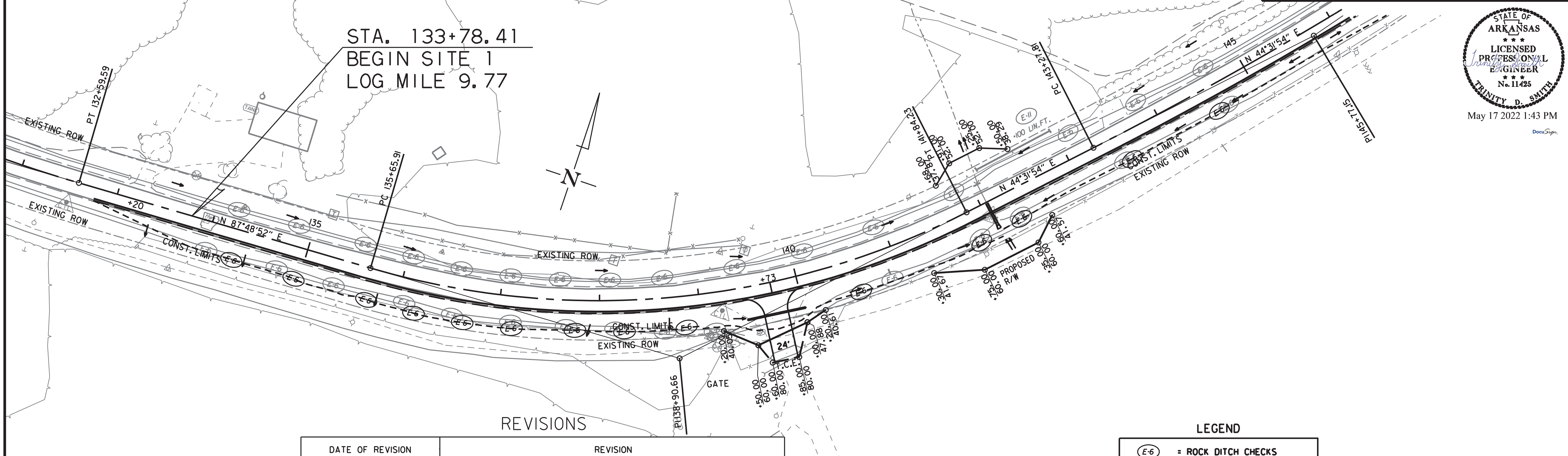
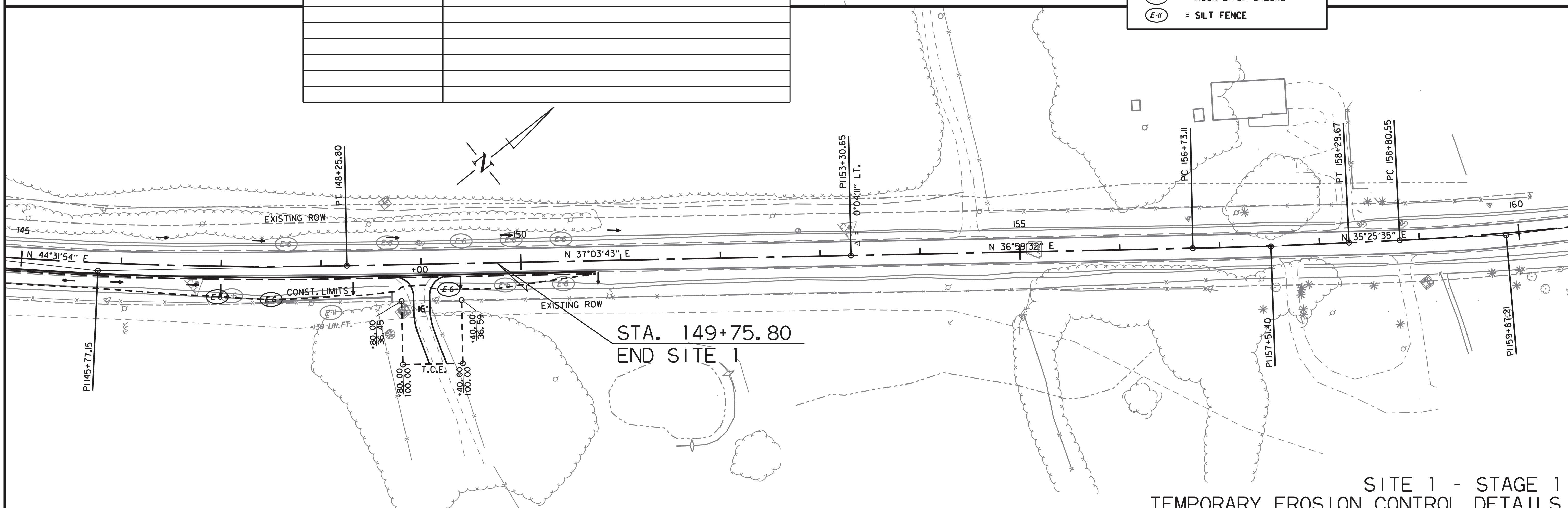


REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-6	= ROCK DITCH CHECKS
E-11	= SILT FENCE



SITE 1 - STAGE 1
TEMPORARY EROSION CONTROL DETAILS

jy43338 6/30/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	11	87

TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

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STA. 133+78.41
BEGIN SITE 1
LOG MILE 9.77

PT 132+59.59
PC 135+65.91
PI 138+90.66
PC 143+27.81
PI 145+71.15
PI 145+77.15
PI 148+25.80
PI 153+30.65
0°04'11" LT.
PC 156+73.11
PT 158+29.67
PC 158+80.55
PI 159+87.21
PI 157+51.40

EXISTING ROW
CONST. LIMITS
PROPOSED R/W
GATE
T.C.E.
+100 LIN.FT.
+30 LIN.FT.

N 87°48'52" E
N 44°31'54" E
N 37°03'43" E
N 36°59'32" E
N 35°25'35" E

REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-6 = ROCK DITCH CHECKS
E-11 = SILT FENCE

STA. 149+75.80
END SITE 1

SITE 1 - STAGE 2
TEMPORARY EROSION CONTROL DETAILS

jy43338 6/30/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	12	87
		TEMPORARY EROSION CONTROL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

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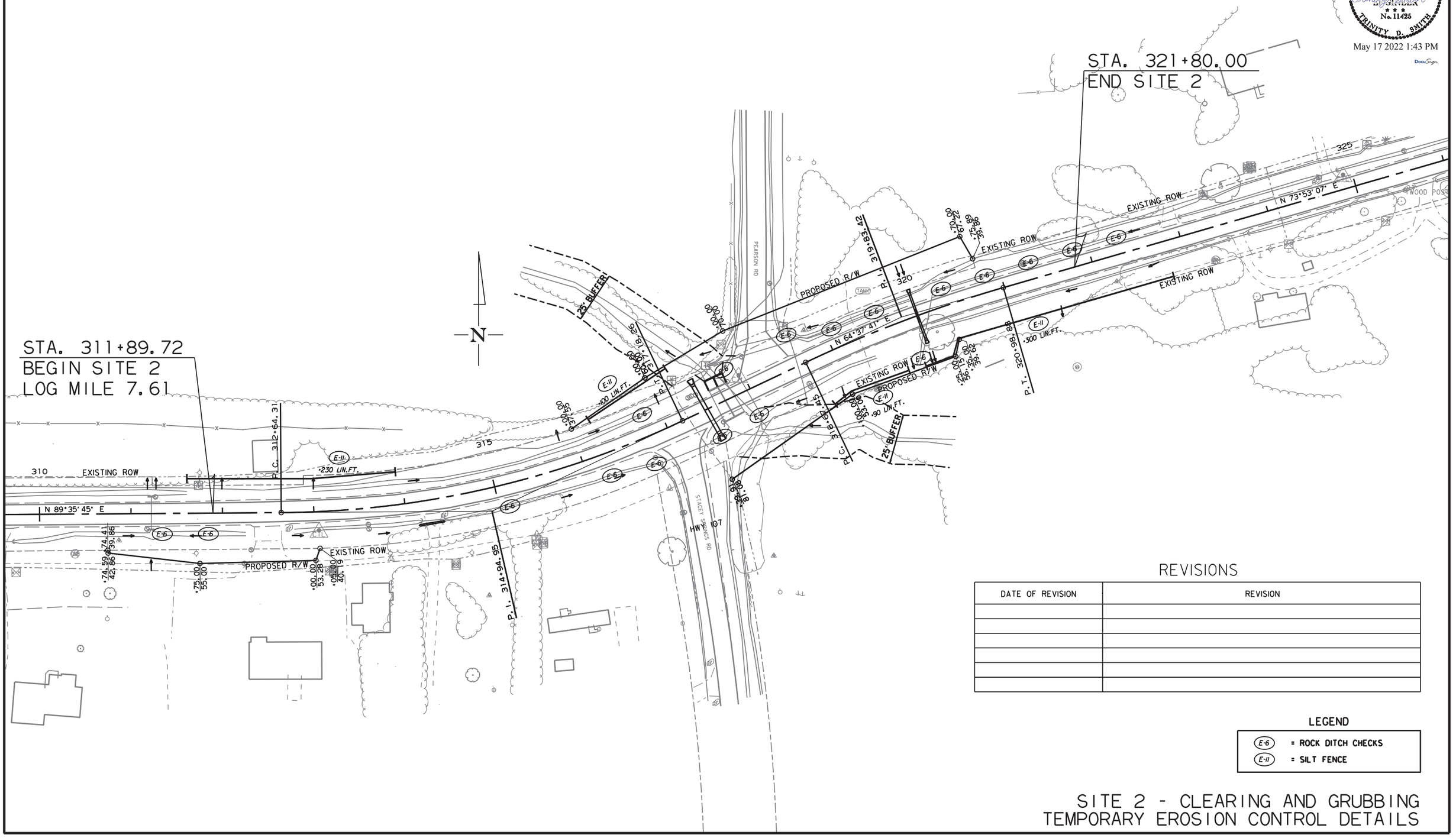
STA. 311+89.72
BEGIN SITE 2
LOG MILE 7.61

STA. 321+80.00
END SITE 2



REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-6	= ROCK DITCH CHECKS
E-11	= SILT FENCE

SITE 2 - CLEARING AND GRUBBING TEMPORARY EROSION CONTROL DETAILS

jy43338 6/30/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	13	87
		TEMPORARY EROSION CONTROL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

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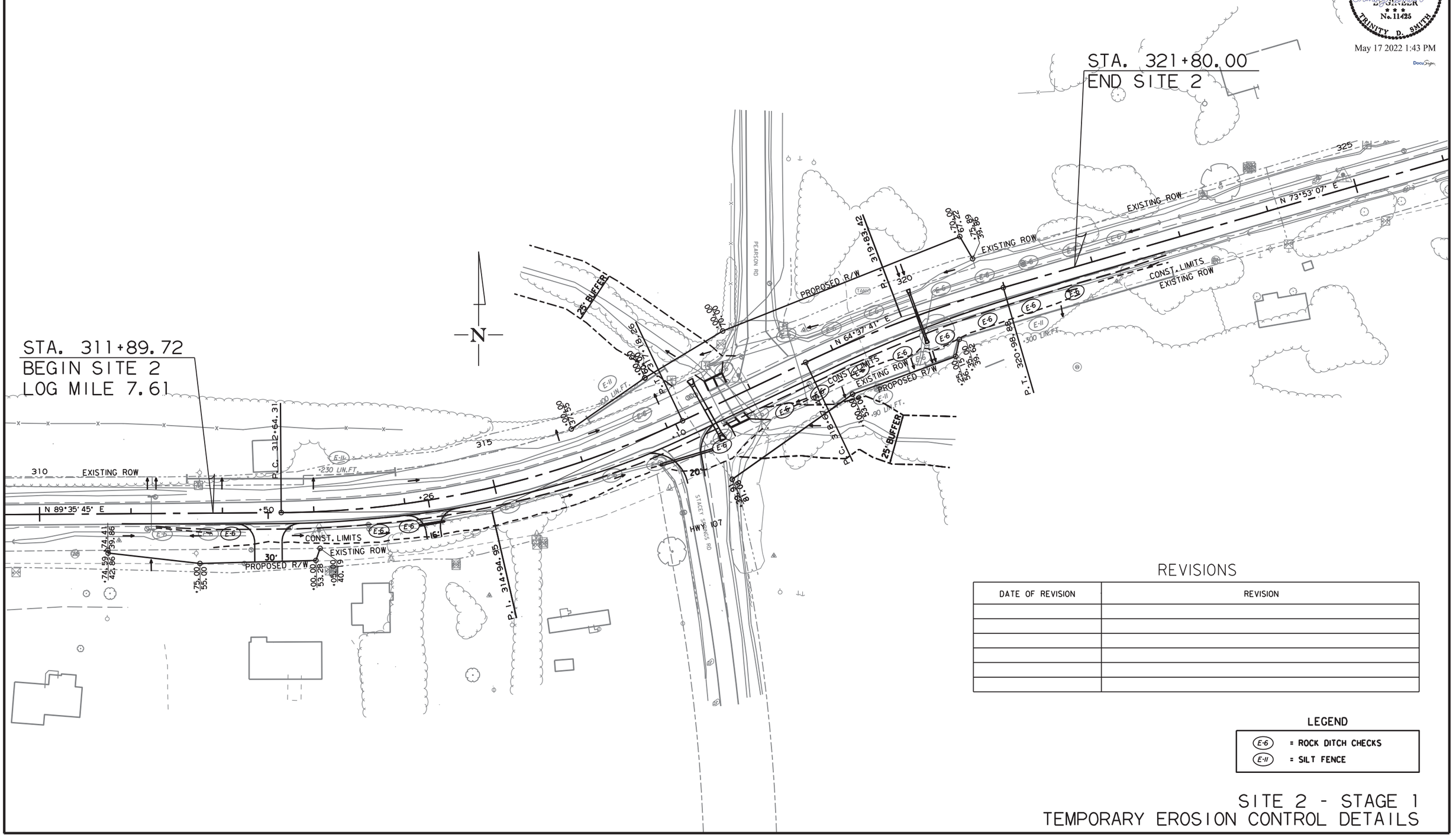
STA. 311+89.72
BEGIN SITE 2
LOG MILE 7.61

STA. 321+80.00
END SITE 2



REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-6	= ROCK DITCH CHECKS
E-11	= SILT FENCE

SITE 2 - STAGE 1
TEMPORARY EROSION CONTROL DETAILS

jy43338 6/30/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	14	87
		TEMPORARY EROSION CONTROL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

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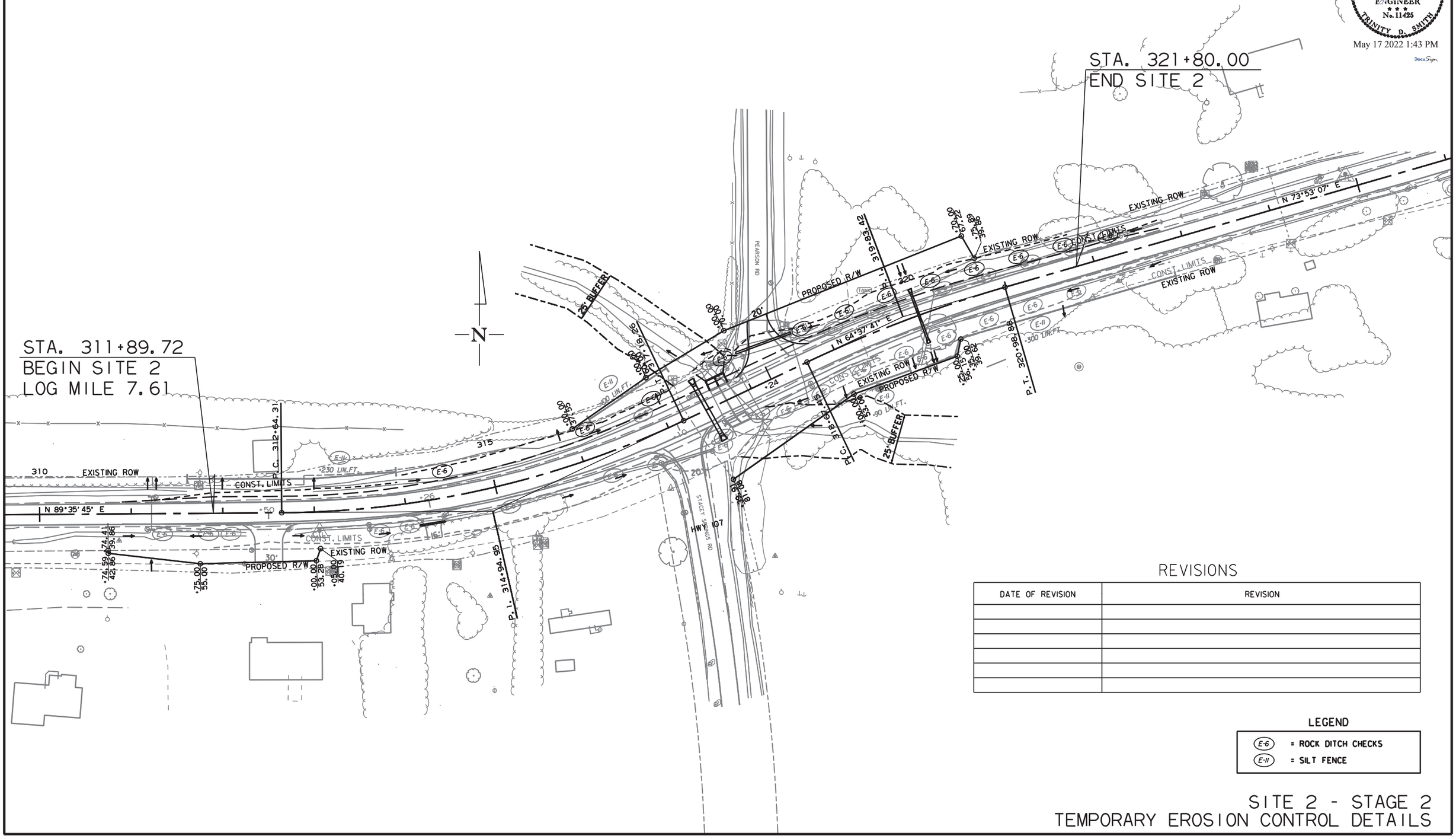

REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-6 = ROCK DITCH CHECKS
E-11 = SILT FENCE

SITE 2 - STAGE 2
TEMPORARY EROSION CONTROL DETAILS

jy43338 6/30/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	15	87

TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

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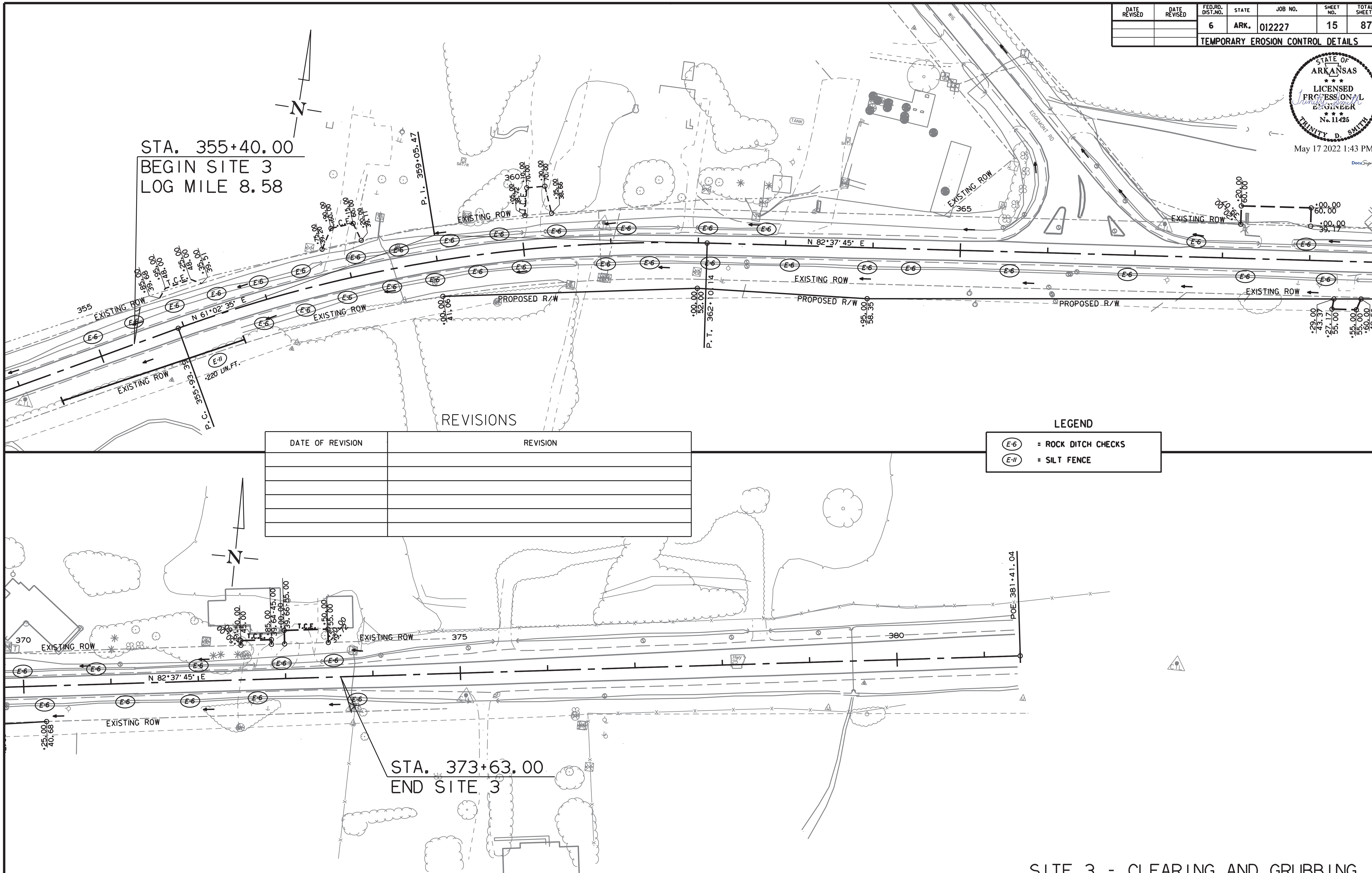

REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-6	= ROCK DITCH CHECKS
E-11	= SILT FENCE

SITE 3 - CLEARING AND GRUBBING
TEMPORARY EROSION CONTROL DETAILS

jy43338 6/30/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	16	87
		TEMPORARY EROSION CONTROL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
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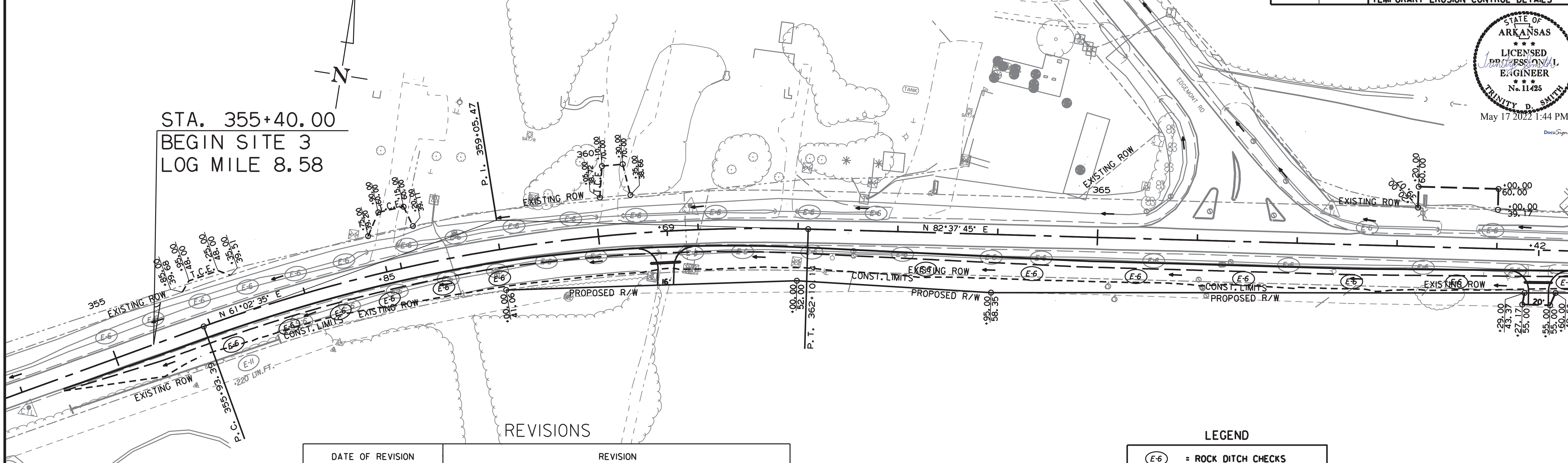
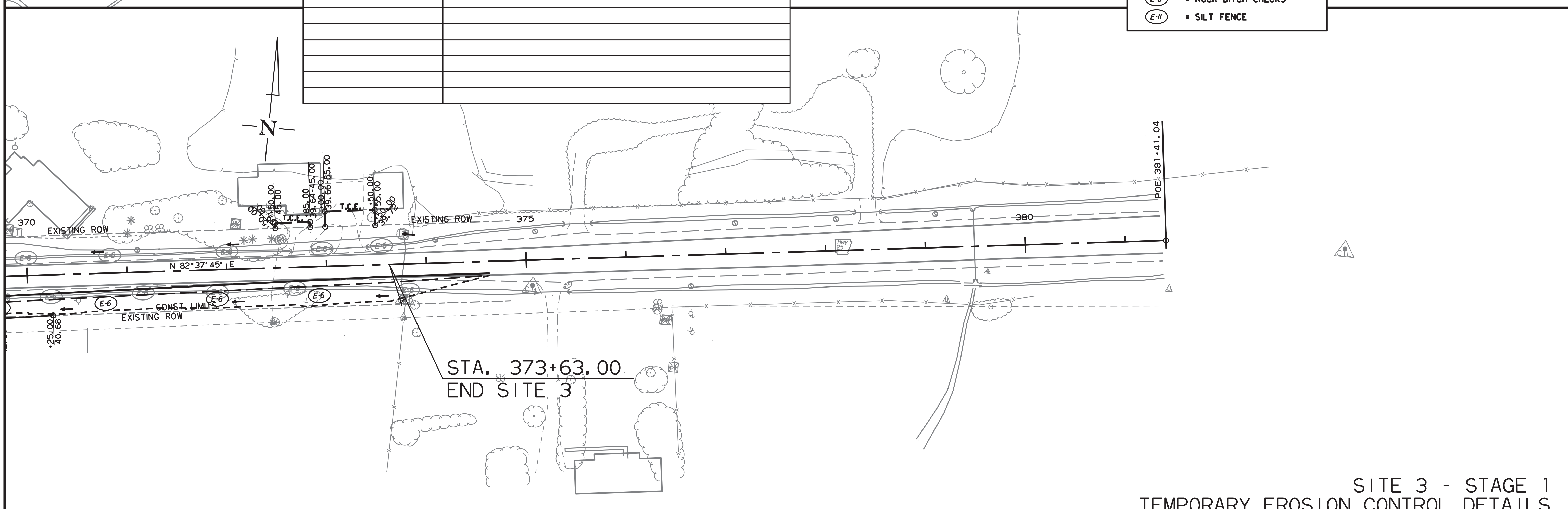


REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-6	= ROCK DITCH CHECKS
E-11	= SILT FENCE



SITE 3 - STAGE 1
TEMPORARY EROSION CONTROL DETAILS

jy43338 6/30/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	17	87
		TEMPORARY EROSION CONTROL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

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STA. 355+40.00
BEGIN SITE 3
LOG MILE 8.58

STA. 373+63.00
END SITE 3

REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-6 = ROCK DITCH CHECKS
E-11 = SILT FENCE

SITE 3 - STAGE 2
TEMPORARY EROSION CONTROL DETAILS

jy43338 6/30/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	18	87
		TEMPORARY EROSION CONTROL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

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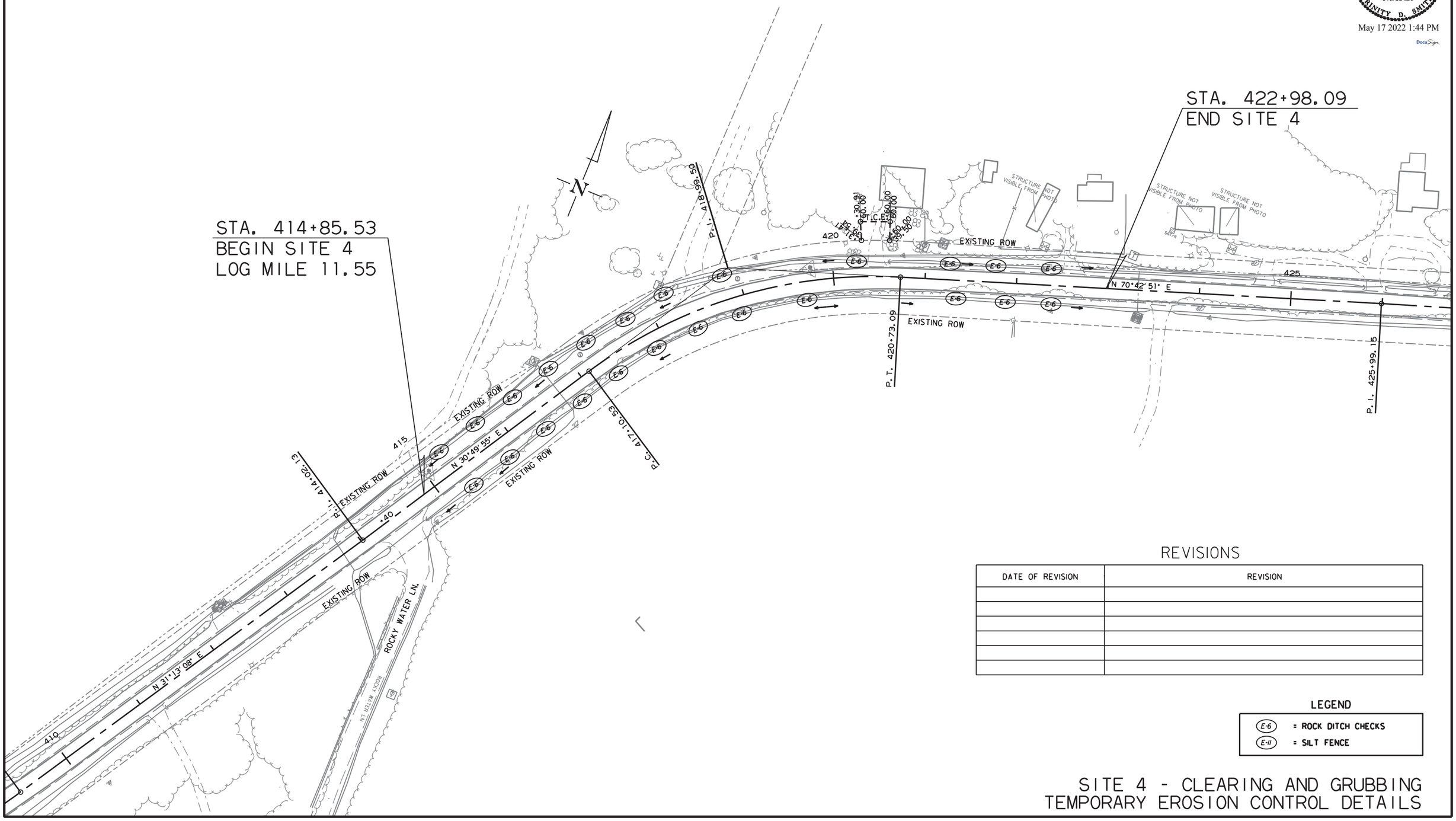

REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-6	= ROCK DITCH CHECKS
E-11	= SILT FENCE

SITE 4 - CLEARING AND GRUBBING
TEMPORARY EROSION CONTROL DETAILS

jy43338 6/30/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	19	87
		TEMPORARY EROSION CONTROL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

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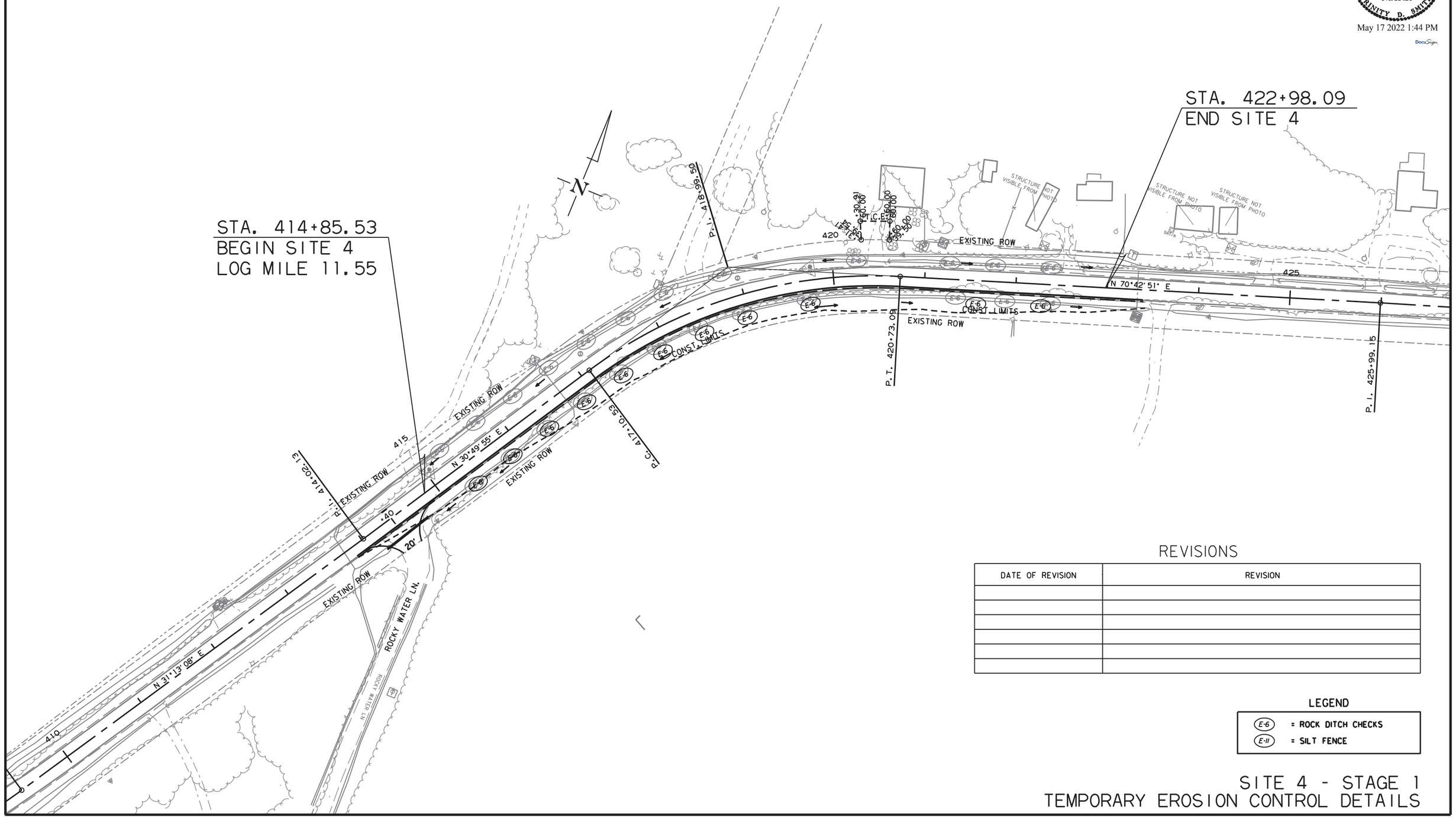
STA. 414+85.53
BEGIN SITE 4
LOG MILE 11.55

STA. 422+98.09
END SITE 4



REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-6	= ROCK DITCH CHECKS
E-11	= SILT FENCE

SITE 4 - STAGE 1
TEMPORARY EROSION CONTROL DETAILS

jy43338 6/30/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	20	87
		TEMPORARY EROSION CONTROL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

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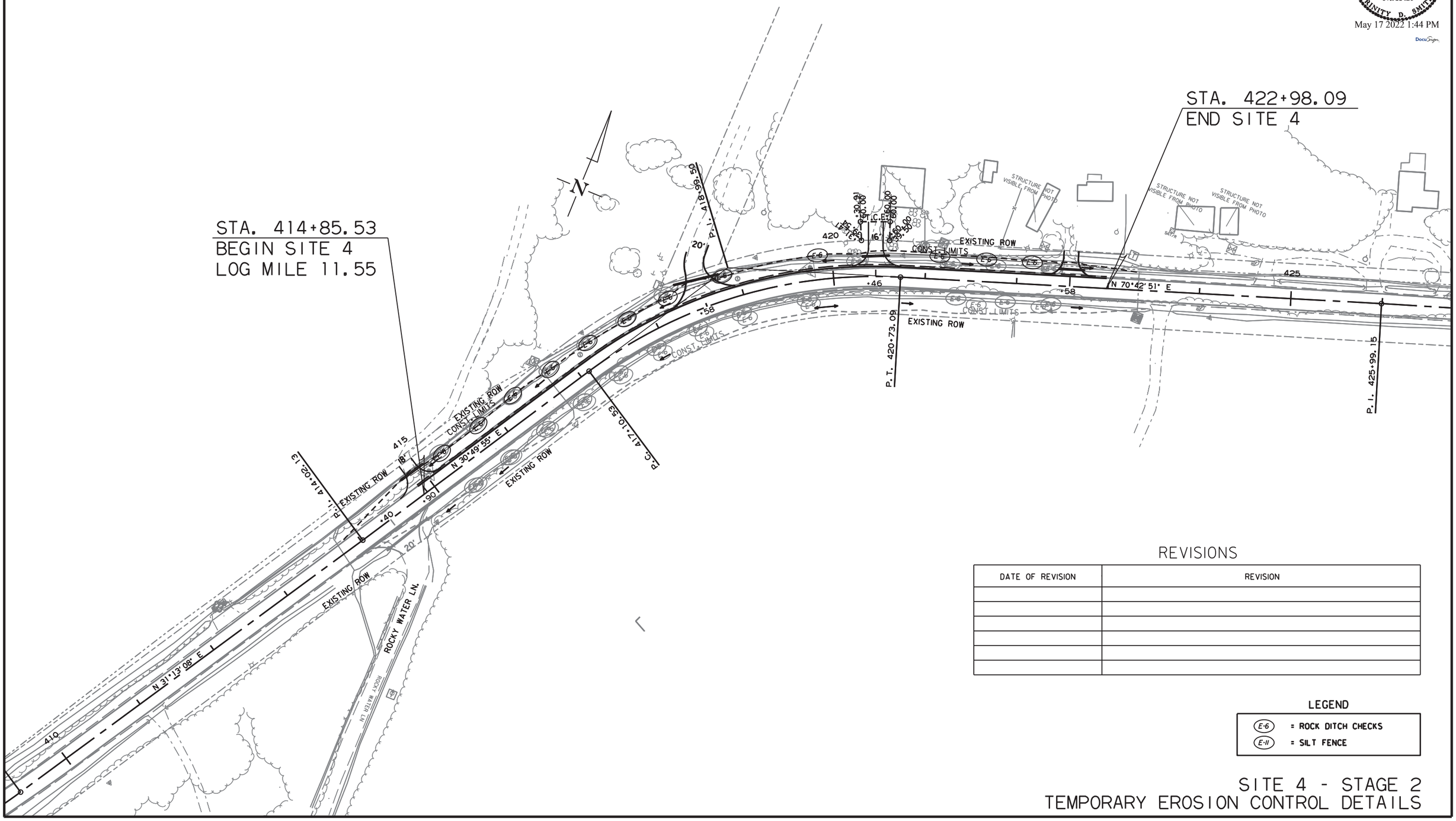

REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-6	= ROCK DITCH CHECKS
E-11	= SILT FENCE

SITE 4 - STAGE 2
TEMPORARY EROSION CONTROL DETAILS

jy43338 6/30/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	21	87
		MAINTENANCE OF TRAFFIC DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
May 17 2022 1:45 PM
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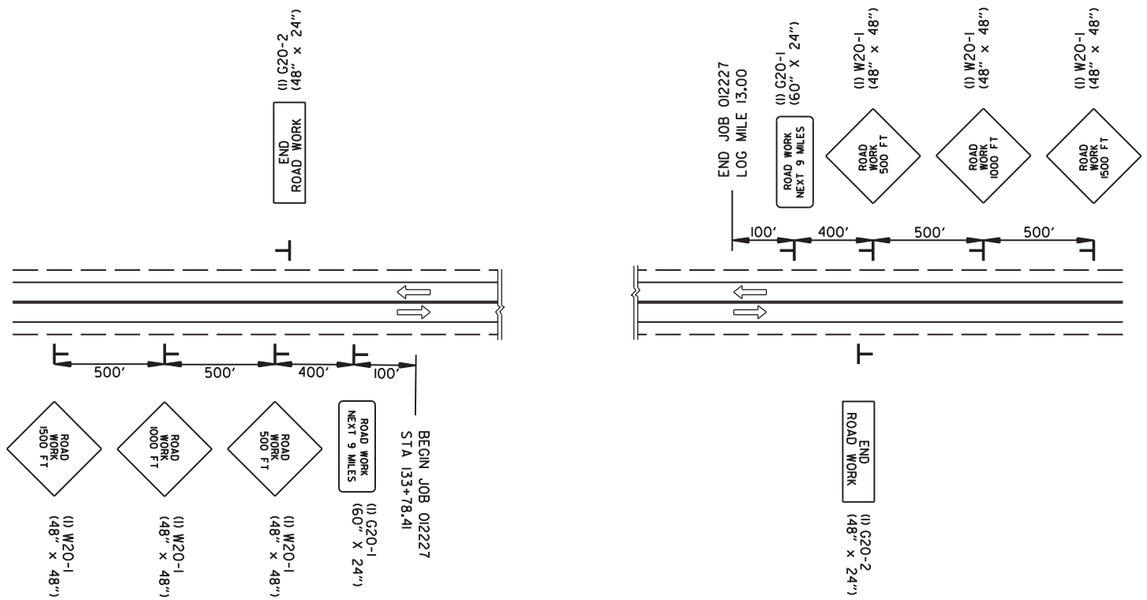
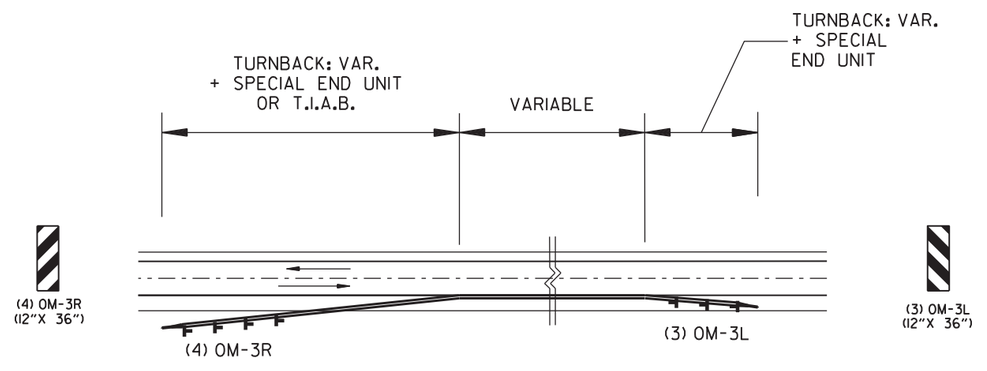


ADVANCE WARNING (ALL STAGES)

RIGHT SHOULDER CLOSED	(4) W21-5a (36" x 36")	ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER
DO NOT PASS	(36) R4-1 (24" X 30")	ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER
BUMP	(8) W8-1 (30" X 30")	ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER



REFER ALSO TO STANDARD DRAWING TC-5 FOR DETAILS OF PLACEMENT OF PCCB TURNBACKS.

NOTE: OM-3L & OM-3R SIGNS SHALL BE EQUALLY SPACED ALONG P.C.C.B. TURNBACK.

DETAIL OF OBJECT MARKERS
AT PRECAST CONCRETE BARRIER TURNBACKS

jy43338 6/29/2021
R012227.DGN

ADVANCE WARNING
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	22	87
		MAINTENANCE OF TRAFFIC DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
May 17 2022 1:45 PM
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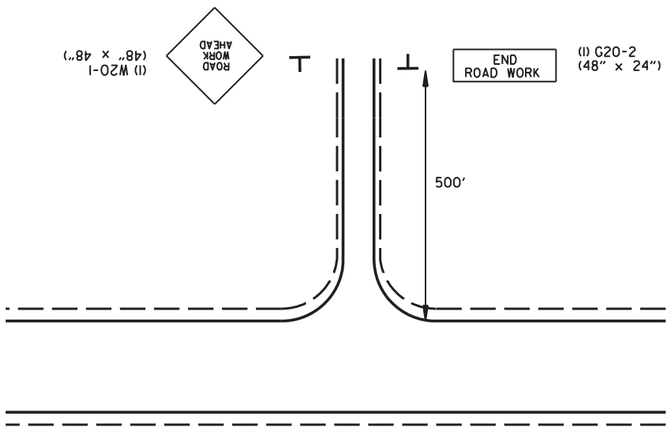
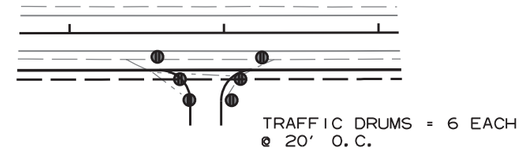
ADVANCE WARNING - SIDE ROADS (ALL STAGES)



L.M. 10.26, ROSS LANE
L.M. 10.80, HARGETT ROAD
L.M. 11.40, MT PLEASANT ROAD
L.M. 12.47, ENDERS ROAD
L.M. 12.57, DOVIE LANE
L.M. 0.62, INDIAN MEADOWS DRIVE
L.M. 1.07, FOURTH STREET
L.M. 1.28, WALNUT STREET
L.M. 1.34, DAMASCUS ROAD
L.M. 1.42, MULBERRY STREET
L.M. 1.52, ELIZABETH ANN
L.M. 1.54, FOURTH STREET
L.M. 1.61, THIRD STREET
L.M. 1.65, PAUL STREET
L.M. 1.70, COLLEGE STREET
L.M. 1.74, BEE BRANCH ROAD
L.M. 1.80, PAUL STREET
L.M. 1.89, PINE STREET
L.M. 1.95, FRANKLIN LANE
L.M. 1.96, LOCUST STREET
L.M. 2.06, KEN ROB LANE
L.M. 2.11, CHARLES STREET
L.M. 2.22, NEW STREET
L.M. 2.41, HOLLAND LANE
L.M. 2.51, HOLLAND LANE
L.M. 3.95, JEFFERSON CIRCLE
L.M. 4.24, BETTIS MOUNTAIN ROAD
L.M. 4.25, BETTIS MOUNTAIN ROAD
L.M. 5.11, ADAMS DRIVE
L.M. 5.35, BETTIS MOUNTAIN DRIVE
L.M. 6.21, JACKSON DRIVE
L.M. 7.26, SAWMILL ROAD
STA 317+10, STACEY SPRINGS ROAD
STA 318+24, PEARSON ROAD
L.M. 8.26, GRESHAM ROAD
L.M. 8.63, EDGEMONT ROAD
L.M. 8.97, PLEASANT SPRINGS ROAD
L.M. 9.28, TODD ROAD
L.M. 9.37, SARTAIN ROADL.M. 11.14, BADDERS ROAD
L.M. 11.52, ROCKY WATER LANEL.M. 12.11, PONDEROSA LANE
L.M. 12.51, BEDDIT LANE
L.M. 12.76, TOOTH FAIRY LANE
L.M. 12.97, LITTLE ROCK ROAD
L.M. 13.00, RIDGECREST ROAD

NOTE: ALL STATIONS/LOG MILES BASED OFF HWY. 25.



DRIVEWAY/TRAFFIC DRUM DETAIL

jy43338 6/29/2021
R012227.DGN

ADVANCE WARNING
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	23	87
		MAINTENANCE OF TRAFFIC DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
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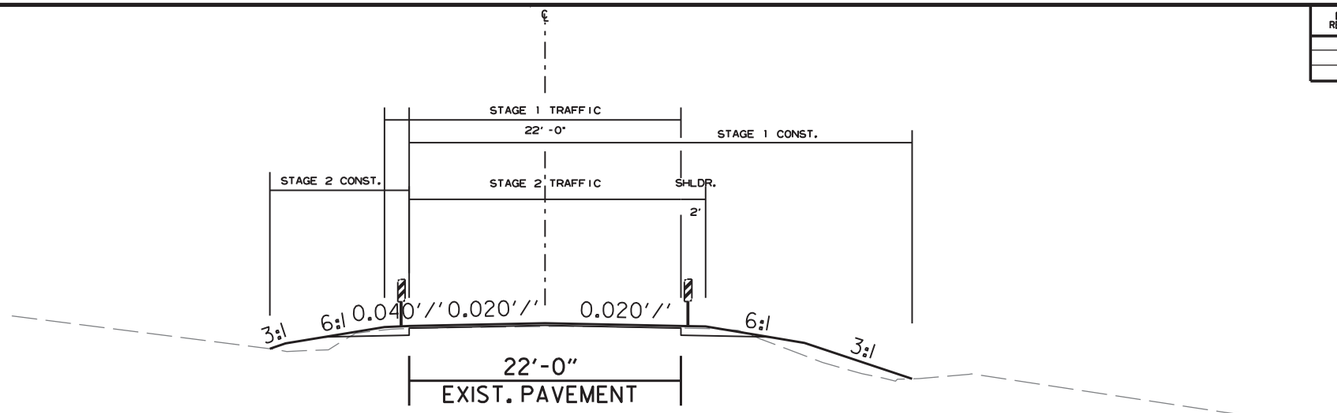
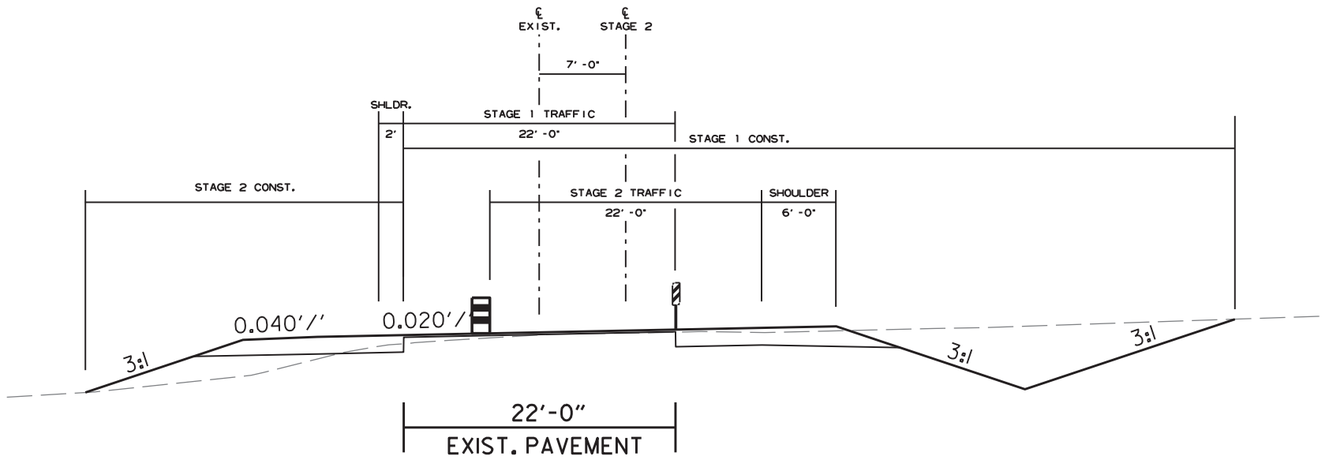
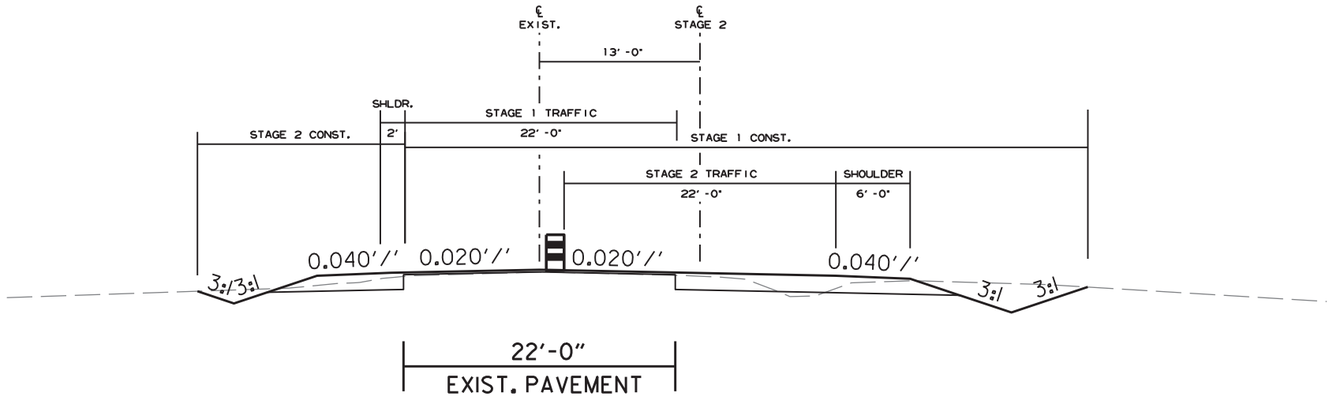


DETAIL FOR STAGE CONSTRUCTION
STA. 133+78.41 - STA. 149+75.80 (SITE 1)
STA. 414+85.53 - STA. 422+98.09 (SITE 4)



DETAIL FOR STAGE CONSTRUCTION
STA. 316+60.00 - STA. 318+80.00 (SITE 2)



DETAIL FOR STAGE CONSTRUCTION
STA. 364+80.00 - STA. 367+63.00 (SITE 3)

ALL STAGES
MAINTENANCE OF TRAFFIC DETAILS

jy43338 6/29/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	24	87
		MAINTENANCE OF TRAFFIC DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
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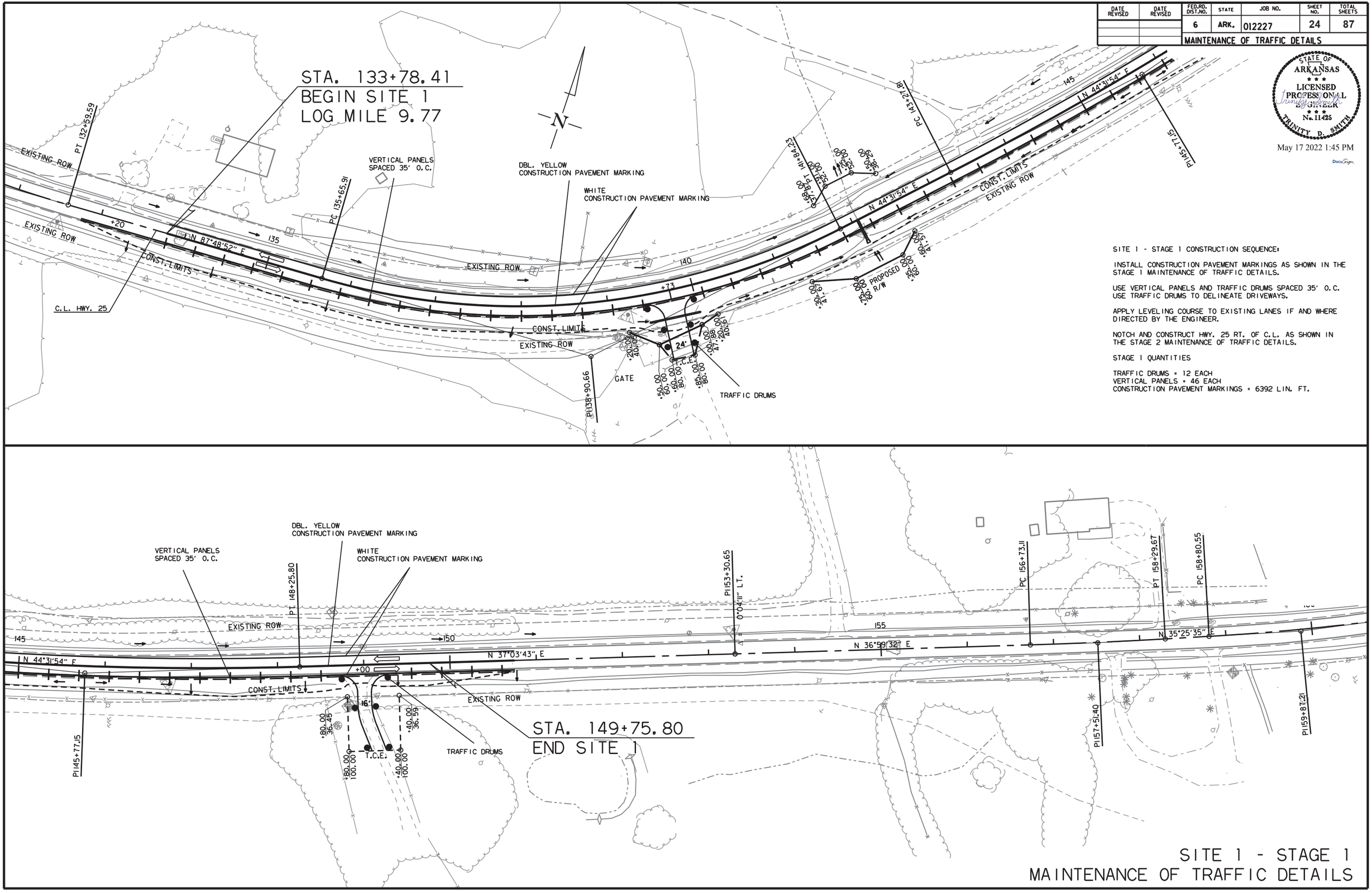

SITE 1 - STAGE 1 CONSTRUCTION SEQUENCE:

INSTALL CONSTRUCTION PAVEMENT MARKINGS AS SHOWN IN THE STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

USE VERTICAL PANELS AND TRAFFIC DRUMS SPACED 35' O.C.
USE TRAFFIC DRUMS TO DELINEATE DRIVEWAYS.

APPLY LEVELING COURSE TO EXISTING LANES IF AND WHERE DIRECTED BY THE ENGINEER.

NOTCH AND CONSTRUCT HWY. 25 RT. OF C.L. AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

STAGE 1 QUANTITIES

TRAFFIC DRUMS = 12 EACH
VERTICAL PANELS = 46 EACH
CONSTRUCTION PAVEMENT MARKINGS = 6392 LIN. FT.

SITE 1 - STAGE 1
MAINTENANCE OF TRAFFIC DETAILS

jy43338 6/29/2021
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DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	25	87

MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
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DocuSigned by:

STA. 133+78.41
BEGIN SITE 1
LOG MILE 9.77

VERTICAL PANELS SPACED 35' O.C.

DBL. YELLOW CONSTRUCTION PAVEMENT MARKING

WHITE CONSTRUCTION PAVEMENT MARKING

TRAFFIC DRUMS

SITE 1 - STAGE 2 CONSTRUCTION SEQUENCE:

INSTALL CONSTRUCTION PAVEMENT MARKINGS AS SHOWN IN THE STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

USE VERTICAL PANELS AND TRAFFIC DRUMS SPACED 35' O.C.
USE TRAFFIC DRUMS TO DELINEATE DRIVEWAYS.

NOTCH AND CONSTRUCT HWY. 25 LT. OF C.L. AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

APPLY FINAL 2" LIFT OF ACHM SURFACE COURSE AND INSTALL PERMANENT PAVEMENT MARKINGS AS SHOWN IN THE PERMANENT PAVEMENT MARKINGS DETAILS.

STAGE 2 QUANTITIES

TRAFFIC DRUMS = 6 EACH
VERTICAL PANELS = 46 EACH

STA. 149+75.80
END SITE 1

SITE 1 - STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

jy43338 6/29/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	26	87
		MAINTENANCE OF TRAFFIC DETAILS				

SITE 2 - STAGE 1 CONSTRUCTION SEQUENCE:

INSTALL CONSTRUCTION PAVEMENT MARKINGS AS SHOWN IN THE STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

USE VERTICAL PANELS AND TRAFFIC DRUMS SPACED 40' O.C. USE TRAFFIC DRUMS TO DELINEATE DRIVEWAYS.

FURNISH AND INSTALL P.C.C.B. AS SHOWN IN THE STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

INSTALL CROSS DRAINS AS SHOWN IN THE STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

NOTCH AND WIDEN HWY. 25 RT. OF C.L. AS SHOWN IN THE STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

APPLY LEVELING COURSE TO EXISTING LANES IF AND WHERE DIRECTED BY THE ENGINEER.

STAGE 1 QUANTITIES

TRAFFIC DRUMS = 18 EACH
VERTICAL PANELS = 23 EACH
CONSTRUCTION PAVEMENT MARKINGS = 4374 LIN. FT.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

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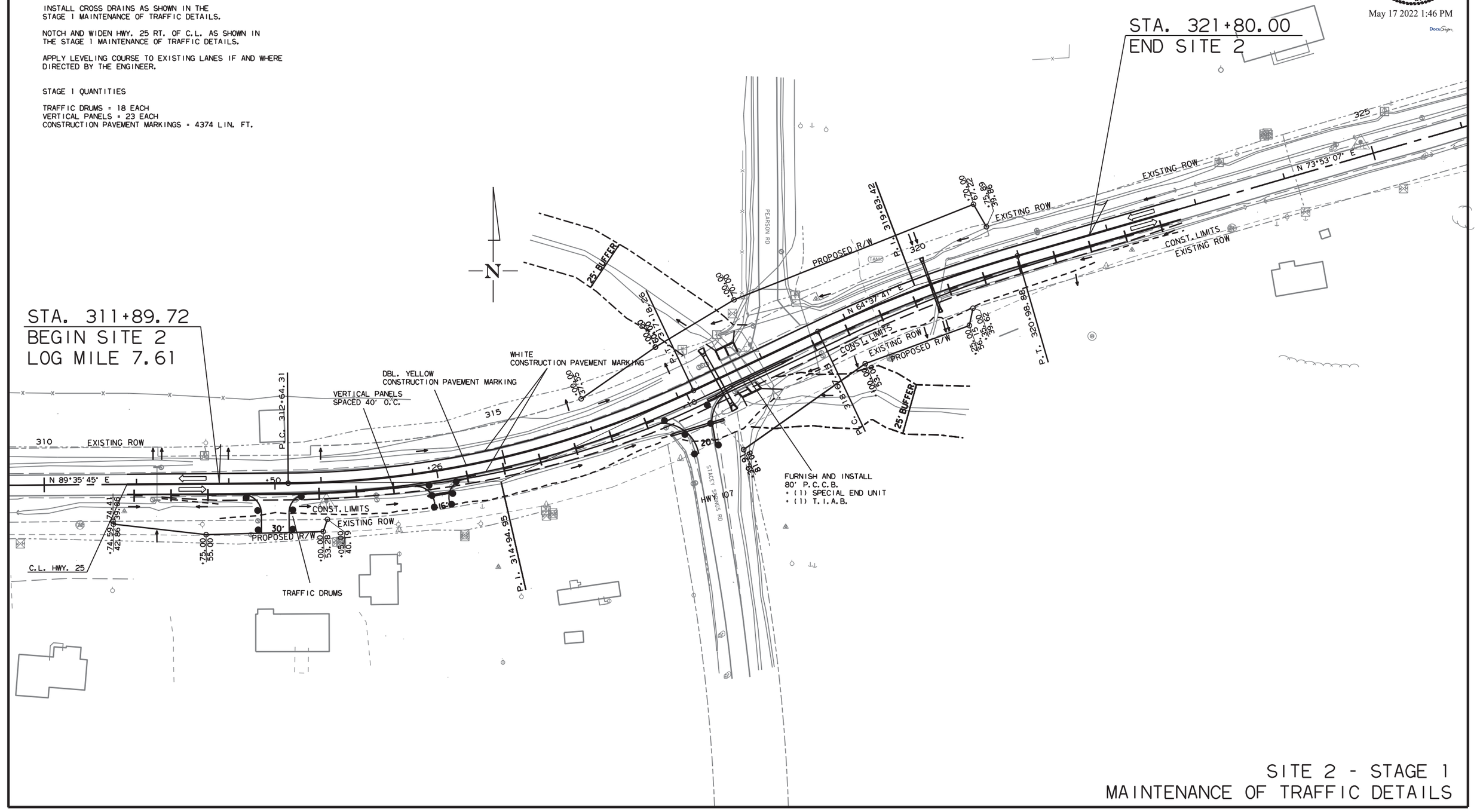
STA. 321+80.00
END SITE 2

STA. 311+89.72
BEGIN SITE 2
LOG MILE 7.61



SITE 2 - STAGE 1
MAINTENANCE OF TRAFFIC DETAILS

jy43338 6/29/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	27	87
		MAINTENANCE OF TRAFFIC DETAILS				

SITE 2 - STAGE 2 CONSTRUCTION SEQUENCE:

INSTALL CONSTRUCTION PAVEMENT MARKINGS AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

USE VERTICAL PANELS AND TRAFFIC DRUMS SPACED 40' O.C. TO DELINEATE THE WORK ZONE. USE TRAFFIC DRUMS TO DELINEATE DRIVEWAYS.

RELOCATE P.C.C.B. AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

INSTALL DRAINS AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

NOTCH AND WIDEN HWY. 25 LT. OF C.L. AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

APPLY FINAL 2" LIFT OF ACHM SURFACE COURSE AND INSTALL PERMANENT PAVEMENT MARKINGS AS SHOWN IN THE PERMANENT PAVEMENT MARKINGS DETAILS.

STAGE 2 QUANTITIES

TRAFFIC DRUMS = 16 EACH
VERTICAL PANELS = 16 EACH
CONSTRUCTION PAVEMENT MARKINGS = 4377 LIN. FT.
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS = 4374 LIN. FT.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

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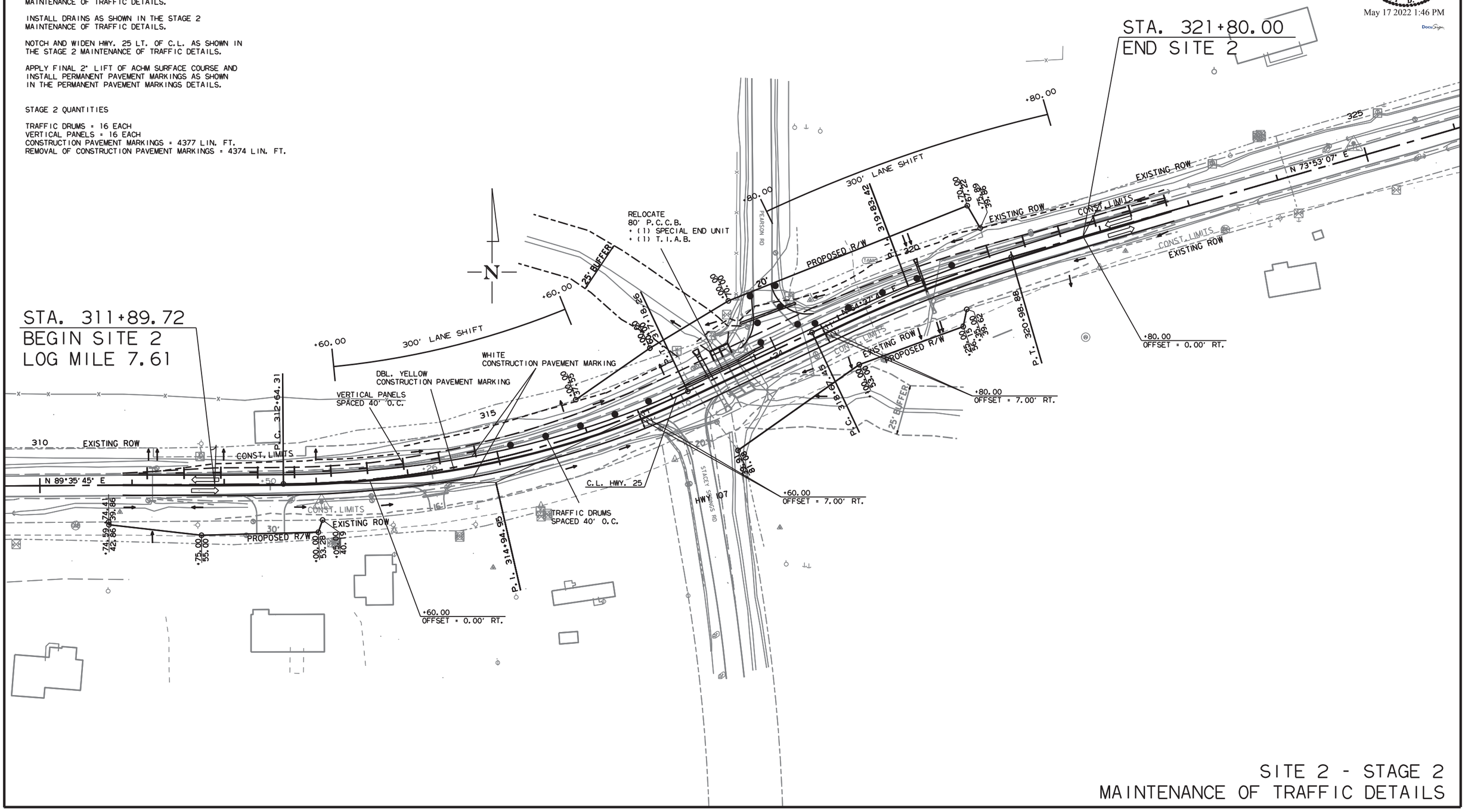
STA. 311+89.72
BEGIN SITE 2
LOG MILE 7.61

STA. 321+80.00
END SITE 2



SITE 2 - STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

jy43338 6/29/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	28	87
		MAINTENANCE OF TRAFFIC DETAILS				

SITE 3 - STAGE 1 CONSTRUCTION SEQUENCE:

INSTALL CONSTRUCTION PAVEMENT MARKINGS AS SHOWN IN THE STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

USE VERTICAL PANELS AND TRAFFIC DRUMS SPACED 40' O.C. USE TRAFFIC DRUMS TO DELINEATE DRIVEWAYS.

NOTCH AND WIDEN HWY. 25 RT. OF C.L. AS SHOWN IN THE STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

APPLY LEVELING COURSE TO EXISTING LANES IF AND WHERE DIRECTED BY THE ENGINEER.

STAGE 1 QUANTITIES

TRAFFIC DRUMS = 12 EACH
VERTICAL PANELS = 51 EACH
CONSTRUCTION PAVEMENT MARKINGS = 7710 LIN. FT.

STATE OF ARKANSAS
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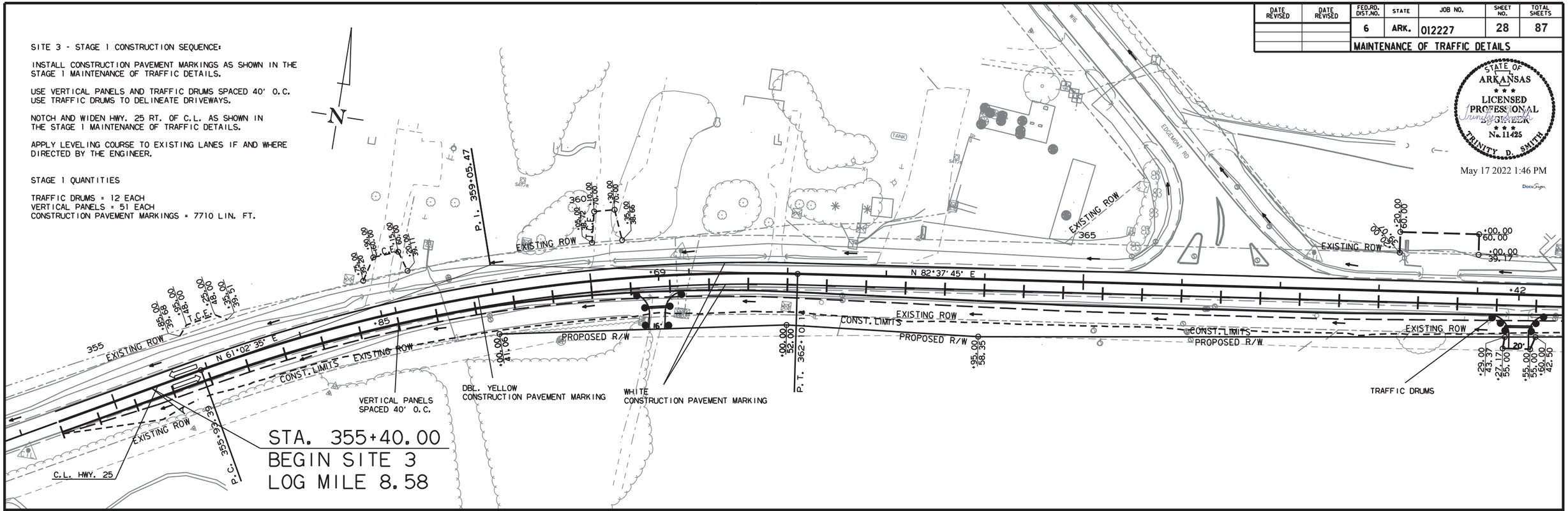

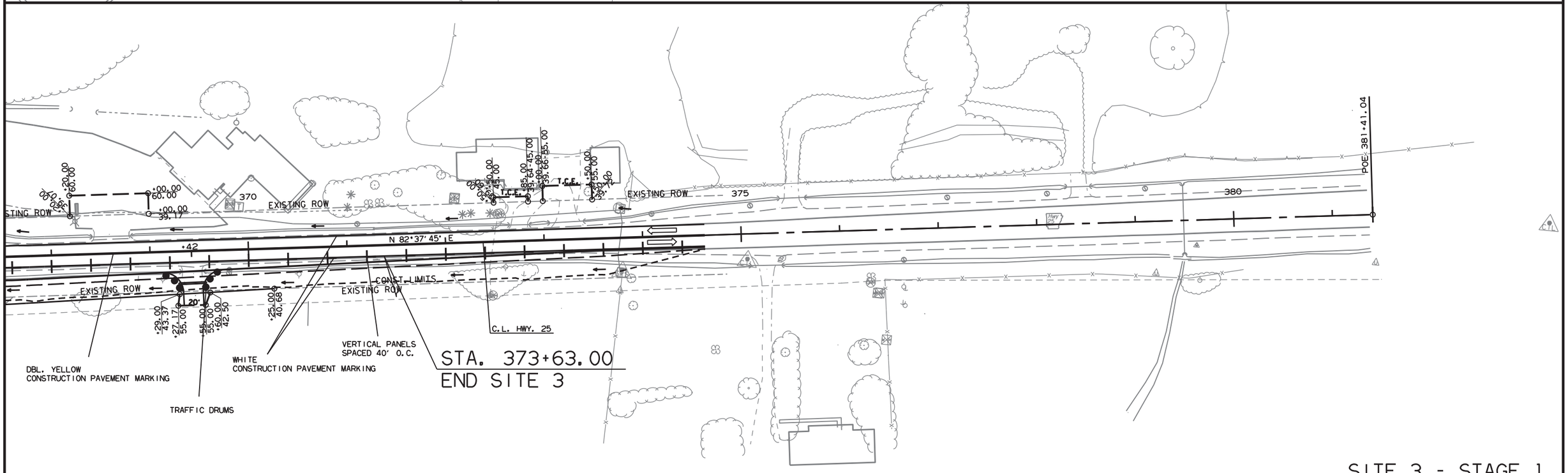

SITE 3 - STAGE 1
MAINTENANCE OF TRAFFIC DETAILS

jy43338 6/29/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	29	87

MAINTENANCE OF TRAFFIC DETAILS

SITE 3 - STAGE 2 CONSTRUCTION SEQUENCE:

INSTALL CONSTRUCTION PAVEMENT MARKINGS AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

USE VERTICAL PANELS AND TRAFFIC DRUMS SPACED 40' O.C. TO DELINEATE THE WORK ZONE. USE TRAFFIC DRUMS TO DELINEATE DRIVEWAYS.

NOTCH AND CONSTRUCT HWY. 25 LT. OF C.L. AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

APPLY FINAL 2" LIFT OF ACHM SURFACE COURSE AND INSTALL PERMANENT PAVEMENT MARKINGS AS SHOWN IN THE PERMANENT PAVEMENT MARKINGS DETAILS.

STAGE 2 QUANTITIES

TRAFFIC DRUMS = 16 EACH
VERTICAL PANELS = 16 EACH
CONSTRUCTION PAVEMENT MARKINGS = 7706 LIN. FT.
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS = 7710 LIN. FT.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
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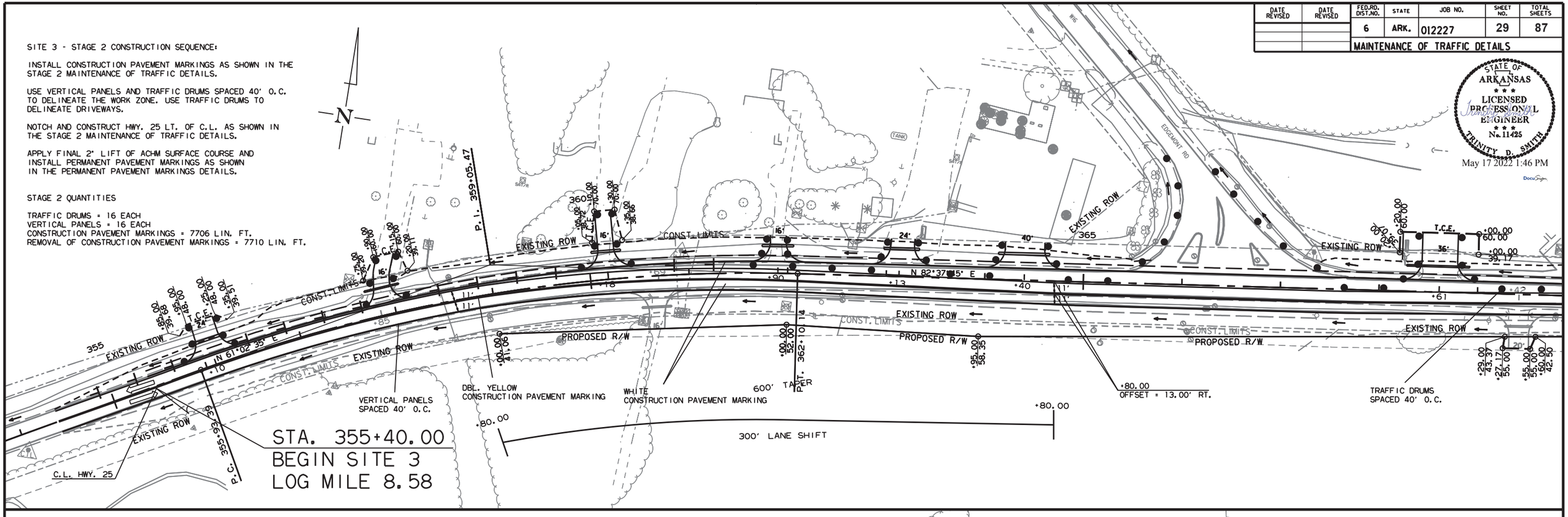

SITE 3 - STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

jy43338 6/29/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	30	87
		MAINTENANCE OF TRAFFIC DETAILS				

SITE 4 - STAGE 1 CONSTRUCTION SEQUENCE:

INSTALL CONSTRUCTION PAVEMENT MARKINGS AS SHOWN IN THE STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

USE VERTICAL PANELS AND TRAFFIC DRUMS SPACED 40' O.C.
USE TRAFFIC DRUMS TO DELINEATE DRIVEWAYS.

APPLY LEVELING COURSE TO EXISTING LANES IF AND WHERE DIRECTED BY THE ENGINEER.

NOTCH AND CONSTRUCT HWY. 25 RT. OF C.L. AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

STAGE 1 QUANTITIES

VERTICAL PANELS = 21 EACH
CONSTRUCTION PAVEMENT MARKINGS = 3252 LIN. FT.

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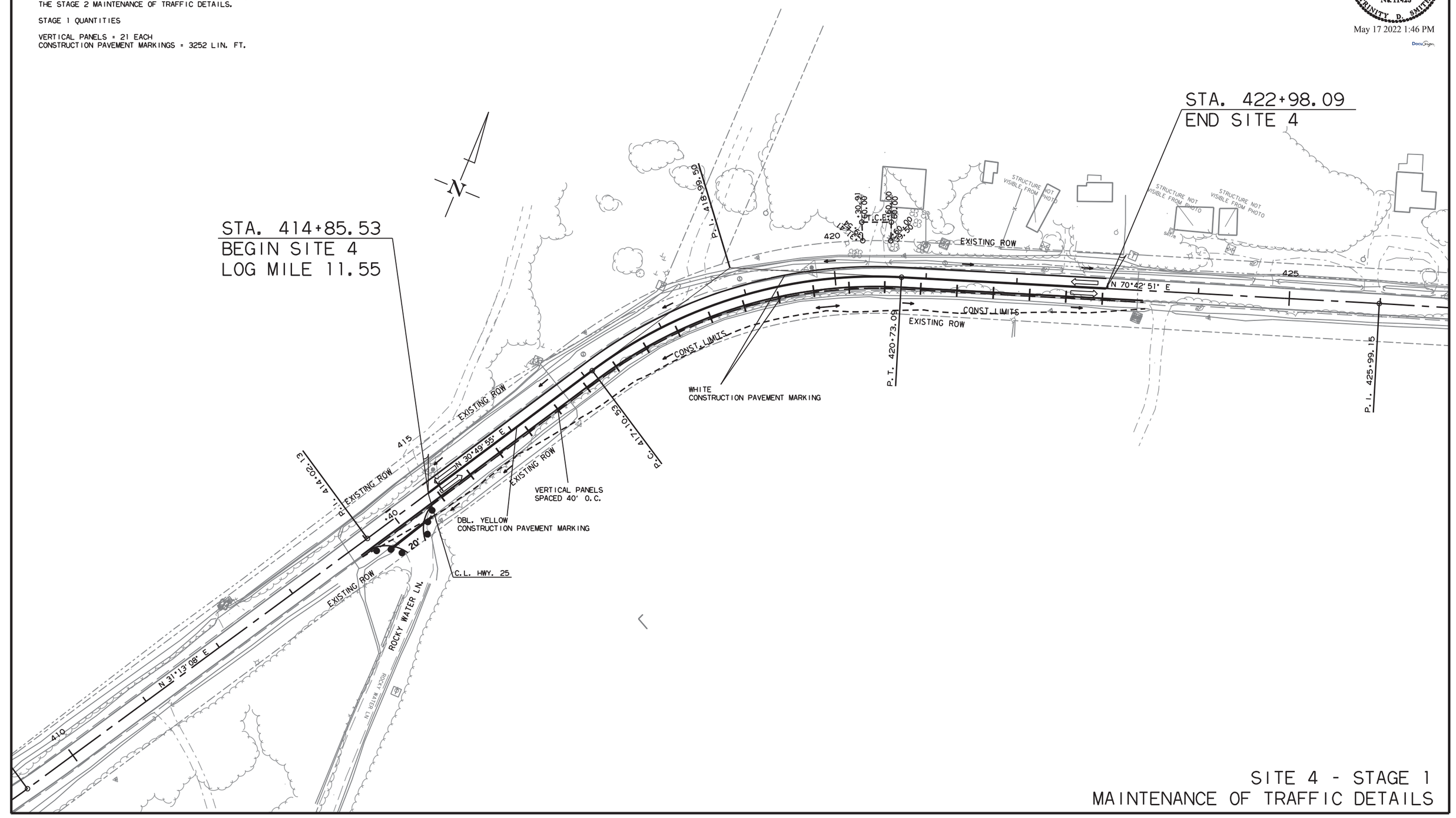

jy43338 6/29/2021
R012227.DGN

SITE 4 - STAGE 1
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	31	87
		MAINTENANCE OF TRAFFIC DETAILS				

SITE 4 - STAGE 2 CONSTRUCTION SEQUENCE:

INSTALL CONSTRUCTION PAVEMENT MARKINGS AS SHOWN IN THE STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

USE VERTICAL PANELS AND TRAFFIC DRUMS SPACED 40' O.C. USE TRAFFIC DRUMS TO DELINEATE DRIVEWAYS.

NOTCH AND CONSTRUCT HWY. 25 LT. OF C.L. AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

APPLY FINAL 2" LIFT OF ACHM SURFACE COURSE AND INSTALL PERMANENT PAVEMENT MARKINGS AS SHOWN IN THE PERMANENT PAVEMENT MARKINGS DETAILS.

STAGE 2 QUANTITIES

TRAFFIC DRUMS = 18 EACH
VERTICAL PANELS = 18 EACH

STATE OF ARKANSAS
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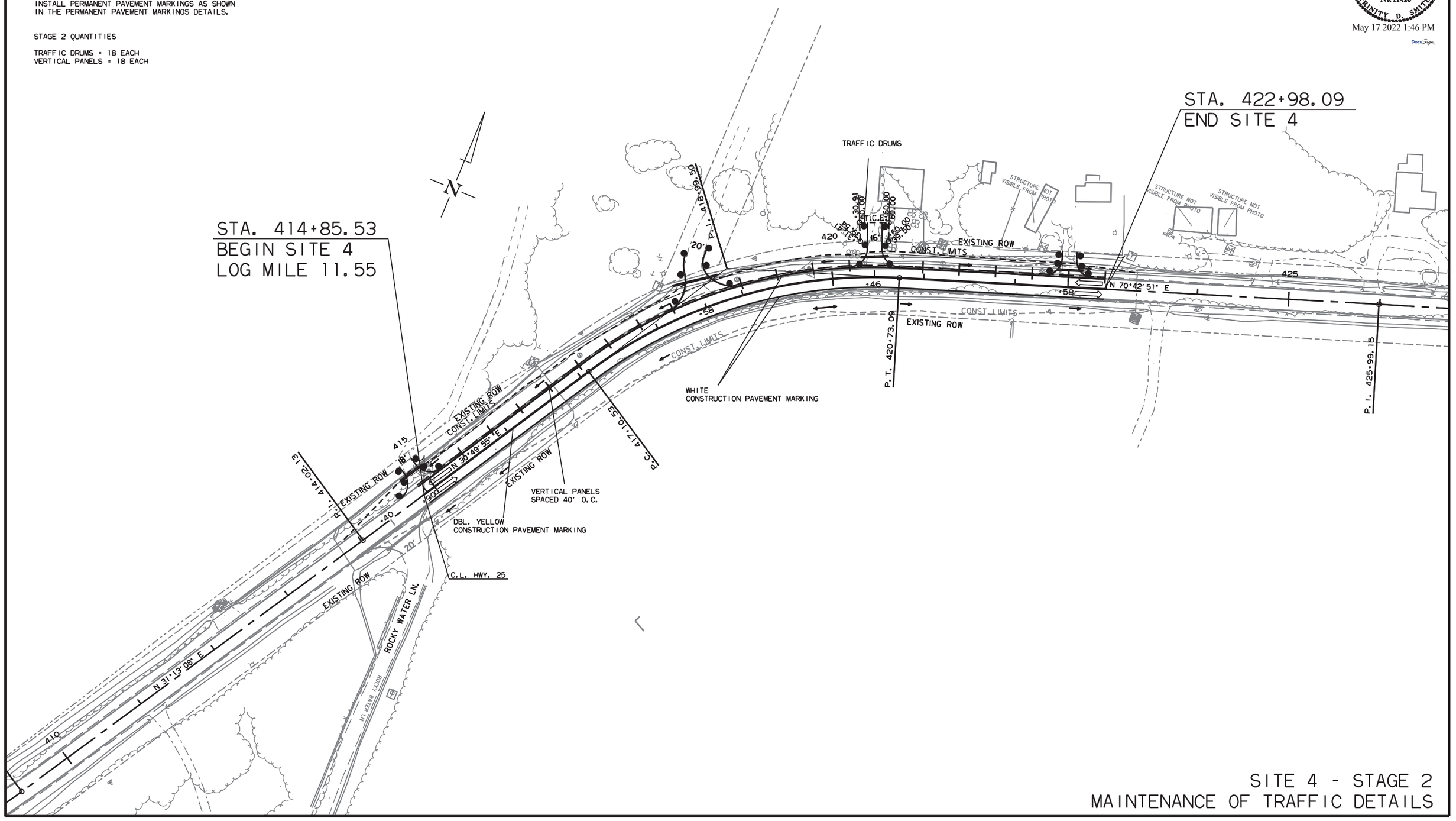

jy43338 6/29/2021
R012227.DGN

SITE 4 - STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	32	87
		PERMANENT PAVEMENT MARKING DETAILS				

STATE OF ARKANSAS
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SITE 1
PERMANENT PAVEMENT MARKINGS

RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW) 80' O.C. = 20 EACH
THERMOPLASTIC PAVEMENT MARKING WHITE (6") = 3196 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING YELLOW (6") = 3196 LIN. FT.

SITE 2
PERMANENT PAVEMENT MARKINGS
RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW) 80' O.C. = 26 EACH
THERMOPLASTIC PAVEMENT MARKING WHITE (6") = 2338 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING YELLOW (6") = 4032 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING WORDS = 1 EACH
THERMOPLASTIC PAVEMENT MARKING ARROWS = 2 EACH
REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6") = 130 LIN. FT.
REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6") = = 102 LIN. FT.

SITE 3
PERMANENT PAVEMENT MARKINGS

RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW) 80' O.C. = 42 EACH
THERMOPLASTIC PAVEMENT MARKING WHITE (6") = 3796 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING YELLOW (6") = 6570 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING WORDS = 1 EACH
THERMOPLASTIC PAVEMENT MARKING ARROWS = 2 EACH

SITE 4
PERMANENT PAVEMENT MARKINGS

RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW) 80' O.C. = 10 EACH
THERMOPLASTIC PAVEMENT MARKING WHITE (6") = 1626 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING YELLOW (6") = 1626 LIN. FT.

LOG MILE 0.00 TO LOG MILE 2.51:

RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW) 80' O.C. = 166 EACH
THERMOPLASTIC PAVEMENT MARKING WHITE (6") = 26506 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING YELLOW (6") = 26506 LIN. FT.

LOG MILE 4.93 TO LOG MILE 5.28:

RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW) 80' O.C. = 23 EACH
THERMOPLASTIC PAVEMENT MARKING WHITE (6") = 3696 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING YELLOW (6") = 3696 LIN. FT.

LOG MILE 5.31 TO LOG MILE 7.61:

RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW) 80' O.C. = 152 EACH
THERMOPLASTIC PAVEMENT MARKING WHITE (6") = 24288 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING YELLOW (6") = 24288 LIN. FT.

LOG MILE 7.8 TO LOG MILE 8.58:

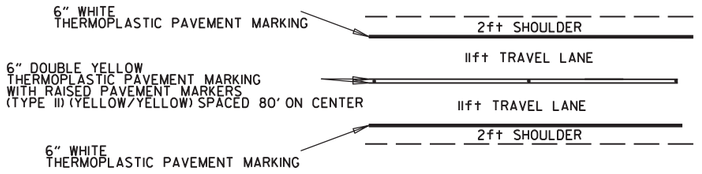
RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW) 80' O.C. = 51 EACH
THERMOPLASTIC PAVEMENT MARKING WHITE (6") = 8238 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING YELLOW (6") = 8238 LIN. FT.

LOG MILE 11.26 TO LOG MILE 11.55:

RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW) 80' O.C. = 19 EACH
THERMOPLASTIC PAVEMENT MARKING WHITE (6") = 3062 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING YELLOW (6") = 3062 LIN. FT.

LOG MILE 11.70 TO LOG MILE 13.00:

RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW) 80' O.C. = 86 EACH
THERMOPLASTIC PAVEMENT MARKING WHITE (6") = 13728 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING YELLOW (6") = 13728 LIN. FT.



2 LANE STRIPING
OPEN SHOULDER

LINE WIDTHS (6")

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PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	33	87

PERMANENT PAVEMENT MARKING DETAILS

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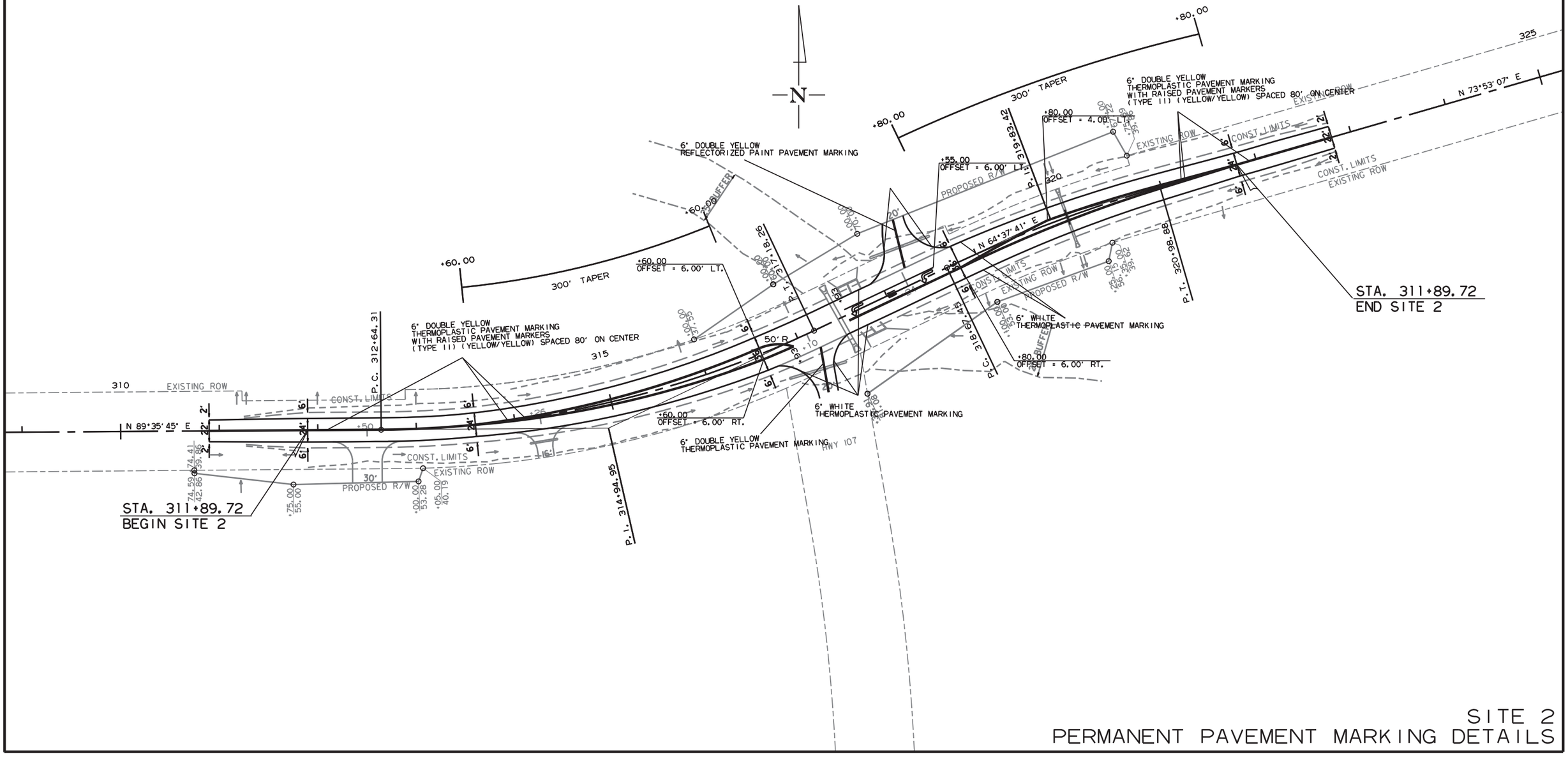

SITE 2
PERMANENT PAVEMENT MARKING DETAILS

jy43338 6/30/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	34	87

PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
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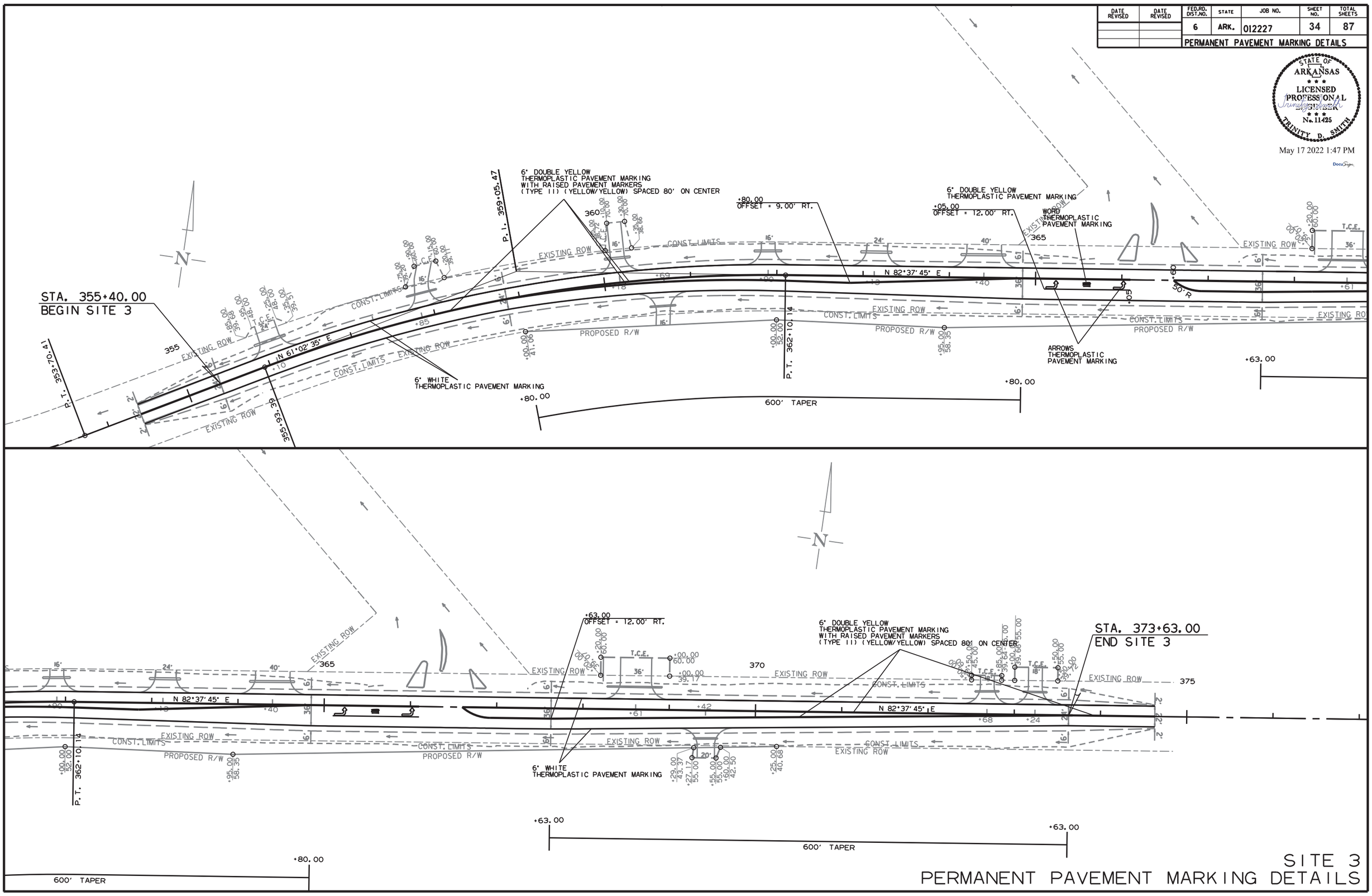

SITE 3
PERMANENT PAVEMENT MARKING DETAILS

jy43338 6/30/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	35	87
		QUANTITIES				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
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ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC DRUMS	FURNISHING & INSTALLING PRECAST CONC. BARRIER	RELOCATING PRECAST CONCRETE BARRIER	TEMPORARY IMPACT ATTENUATION BARRIER	TEMP. IMPACT ATTEN.BARR. (REPAIR)	TEMP. IMPACT ATTEN. BARR. (RELOCATION)
			LIN. FT. - EACH			NO.	SQ. FT.	EACH		LIN. FT.		EACH		
W20-1	ROAD WORK 1500 FT.	48"x48"	2	2	2	2	32.0							
W20-1	ROAD WORK 1000 FT.	48"x48"	2	2	2	2	32.0							
W20-1	ROAD WORK 500 FT.	48"x48"	2	2	2	2	32.0							
W20-1	ROAD WORK AHEAD	48"x48"	44	44	44	44	704.0							
G20-2	END ROAD WORK	48"x24"	46	46	46	46	368.0							
G20-1	ROAD WORK NEXT xx MILES	60"x24"	2	2	2	2	20.0							
OM-3L	OBJECT MARKER	12"x36"	3	3	3	3	9.0							
OM-3R	OBJECT MARKER	12"x36"	4	4	4	4	12.0							
R4-1	DO NOT PASS	24"x30"	36	36	36	36	180.0							
W21-5a	RIGHT SHOULDER CLOSED	36"x36"	4	4	4	4	36.0							
W8-1	BUMP	30"x30"	8	8	8	8	50.0							
	VERTICAL PANELS		141	96	141			141						
	TRAFFIC DRUMS		48	119	119				119					
	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		80		80					80				
	RELOCATING PRECAST CONCRETE BARRIER			80	80						80			
	TEMPORARY IMPACT ATTENUATION BARRIER		1		1							1		
	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)		1	1	2								2	
	TEMPORARY IMPACT ATTENUATION BARRIER (RELOCATION)			1	1									1
TOTALS:							**1475.0**	**141**	**119**	**80**	**80**	**1**	**2**	**1**

NOTE: THIS IS A HIGH TRAFFIC VOLUME ROAD AS DEFINED IN SECTION 604.03, STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

jy43338 6/23/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	36	87
		QUANTITIES				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

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CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 1				STAGE 2		END OF JOB	CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS	THERMOPLASTIC PAVEMENT MARKING				REFLECTORIZED PAINT PAVEMENT MARKING	
	SITE 1	SITE 2	SITE 3	SITE 4	SITE 2	SITE 3			TYPE II	6"		WORDS	ARROWS	6"	
	LIN. FT. - EACH							LIN. FT.	(YELLOW/YELLOW) EACH	WHITE LIN. FT.	YELLOW LIN. FT.	EACH	EACH	WHITE LIN. FT.	YELLOW LIN. FT.
CONSTRUCTION PAVEMENT MARKINGS	6392	4374	7710	3252	4377	7706		33811							
CONSTRUCTION PAVEMENT MARKINGS (ARROWS)															
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS															
REMOVABLE CONSTRUCTION PAVEMENT MARKINGS															
RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW)							595		595						
THERMOPLASTIC PAVEMENT MARKING WHITE (6")							94942			94942					
THERMOPLASTIC PAVEMENT MARKING YELLOW (6")							90474				90474				
THERMOPLASTIC PAVEMENT MARKING (WORDS)							2					2			
THERMOPLASTIC PAVEMENT MARKING (ARROWS)							4						4		
REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6")							130							130	
REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6")							102								102
TOTALS:								**33811**	**595**	**94942**	**90474**	**2**	**4**	**130**	**102**

NOTE: THIS IS A HIGH TRAFFIC VOLUME ROAD AS DEFINED IN SECTION 604.03, STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

NOTE: THE 6" YELLOW STRIPING QUANTITY HAS BEEN ESTIMATED BASED ON A DOUBLE YELLOW CENTERLINE STRIPE FOR THE ENTIRE PROJECT.
THE PROJECT MUST BE MARKED FOR PASSING/NO PASSING ZONES PRIOR TO THE PLACEMENT OF ANY FINAL STRIPING.
CONTACT THE MAINTENANCE DIVISION AFTER THE FINAL LIFT OF SURFACE COURSE HAS BEEN PLACED TO SCHEDULE THE ZONING OF THE PROJECT.

jy43338 6/23/2021
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DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	37	87
		QUANTITIES				

STATE OF ARKANSAS
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CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
143+57	150+81	SITE 1	3	3
313+75	315+57	SITE 2	2	2
317+40	320+09	SITE 2	3	3
321+79	321+81	SITE 2	1	1
372+11	372+59	SITE 3	1	1
414+86	422+98	SITE 4	9	9
TOTALS:			19	19

REMOVAL AND DISPOSAL OF ITEMS

STATION	STATION	LOCATION	RETAINING WALLS	CONCRETE PAVEMENT	SIGN FOUNDATIONS	LUMINAIRE	BILLBOARD	HEADWALLS	CATTLE GUARD	SIGNS	UNDERGROUND STORAGE TANK SYSTEMS
			LIN. FT.	SQ. YD.	EACH	EACH	EACH	EACH	EACH	EACH	EACH
139+73	139+73	STE 1 RT.						2	1		
311+75	311+75	STE 2 RT.				1					
312+04	312+65	STE 2 RT.		52	1					1	
319+54	319+54	STE 2 LT.									1
362+52	362+52	STE 3 RT.			1					1	
366+07	368+32	STE 3 RT.			9					3	
368+28	368+28	STE 3 LT.	10		2					2	
370+57	370+57	STE 3 RT.			1		2				
420+64	420+64	STE 4 LT.			1					1	
TOTALS:			10	52	15	1	2	2	1	8	1

REMOVAL AND DISPOSAL OF FENCE

STATION	STATION	LOCATION	FENCE	GATES
			LIN. FT.	EACH
139+73	139+73	SITE 1 RT.		2
141+30	142+60	SITE 1 RT.	150	
149+07	149+40	SITE 1 RT.	100	
TOTALS:			250	2

CONCRETE DITCH PAVING

STATION	STATION	LOCATION	LENGTH	"W"	CONC. DITCH PAVING (TYPE B)	SOLID SODDING	WATER
			LIN. FT.	FEET	SQ. YD.	SQ. YD.	M. GAL.
318+65.00	321+80.00	SITE 2 LT.	315.00	6.32	221.20	140.00	1.76
319+00.00	321+80.00	SITE 2 RT.	280.00	6.32	196.62	124.44	1.57
356+00.00	359+00.00	SITE 3 LT.	300.00	6.32	210.67	133.33	1.68
415+05.00	415+85.00	SITE 4 LT.	80.00	6.32	56.18	35.56	0.45
415+90.00	418+95.00	SITE 4 RT.	305.00	6.32	214.18	135.56	1.71
417+65.00	418+40.00	SITE 4 LT.	75.00	6.32	52.67	33.33	0.42
421+35.00	422+45.00	SITE 4 LT.	110.00	6.32	77.24	48.89	0.62
					1028.76	651.11	8.21

BASIS OF ESTIMATE:
WATER.....12.6 GAL. / SQ. YD. OF SOLID SODDING.

SOIL LOG

STATION	LATITUDE			LONGITUDE			LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
	DEG	MIN	SEC	DEG	MIN	SEC		FEET				
135+00	35	19	47.68	92	15	33.64	06 RT	0-5	21	5	A-4(0)	RD/BR
135+00	35	19	47.63	92	15	33.62	18 RT	0-5	19	2	A-4(0)	BROWN
143+00	35	19	51.07	92	15	25.35	06 LT	0-5	23	7	A-4(2)	BROWN
143+00	35	19	51.12	92	15	25.41	18 LT	0-4Z	ND	NP	A-4(0)	BROWN
313+00	35	25	38.91	92	7	45.78	06 RT	0-4Z	ND	NP	A-4(0)	RD/BR
313+00	35	25	38.83	92	7	45.74	16 RT	0-3Z	ND	NP	A-2-4(0)	RD/BR
321+00	35	25	41.38	92	7	37.14	06 LT	0-3Z	ND	NP	A-4(0)	RD/BR
321+00	35	25	41.46	92	7	37.16	16 LT	0-3Z	ND	NP	A-2-4(0)	RD/BR
360+00	35	25	52.73	92	6	51.71	06 RT	0-3Z	ND	NP	A-4(0)	BROWN
360+00	35	25	52.65	92	6	51.70	15 RT	0-3Z	ND	NP	A-2-4(0)	BROWN
371+00	35	25	54.36	92	6	38.70	06 LT	0-5	24	9	A-4(2)	RD/BR
371+00	35	25	54.46	92	6	38.71	15 RT	0-5	ND	NP	A-4(0)	BROWN
416+00	35	27	6.08	92	4	22.40	06 RT	0-5	ND	NP	A-4(0)	BROWN
416+00	35	27	6.04	92	4	22.29	18 RT	0-4Z	ND	NP	A-2-4(0)	BROWN
422+00	35	27	9.41	92	4	17.35	06 LT	0-5	ND	NP	A-4(0)	BROWN
422+00	35	27	9.51	92	4	17.39	15 LT	0-4.5Z	ND	NP	A-4(0)	BROWN

SOIL CHARACTERISTICS TABULATED ABOVE ARE REPRESENTATIVE AT THE LOCATION OF THE SAMPLE, AND FROM SURFACE INDICATIONS ARE TYPICAL FOR THE LIMITS SHOWN. THESE DATA ARE SHOWN FOR INFORMATION ONLY. THE STATE WILL NOT BE RESPONSIBLE FOR VARIATIONS IN THE SOIL CHARACTERISTICS AND/OR EXTENT OF SAME DIFFERING FROM THE ABOVE TABULATIONS.
Z- AUGER REFUSAL
NP - NON-PLASTIC
ND - NOT DETERMINABLE

REMOVAL AND DISPOSAL OF CULVERTS

STATION	DESCRIPTION	PIPE CULVERTS
		EACH
143+65	18" X 30' C.M. SIDE DRAIN	1
314+26	18" X 24' C.M. SIDE DRAIN	1
317+10	24" X 36' R.C. SIDE DRAIN	1
318+24	24" X 48' SIDE DRAIN	1
320+14	24" X 40' R.C. CROSS DRAIN	1
357+85	18" X 30' PLASTIC SIDE DRAIN	1
360+18	24" X 30' PLASTIC SIDE DRAIN	1
360+69	18" X 20' C.M. SIDE DRAIN	1
361+90	18" X 40' C.M. SIDE DRAIN	1
368+61	18" X 40' C.M. SIDE DRAIN	1
369+42	18" X 22' C.M. SIDE DRAIN	1
372+68	18" X 20' C.M. SIDE DRAIN	1
373+24	18" X 34' C.M SIDE DRAIN	1
414+40	18" X 48' C.M SIDE DRAIN	1
414+90	18" X 24' C.M. SIDE DRAIN	1
418+58	16" X 36' C.M SIDE DRAIN	1
420+46	18" X 24' C.M. SIDE DRAIN	1
422+58	18" X 22' C.M. SIDE DRAIN	1
TOTALS:		18

NOTE: QUANTITIES SHOWN ABOVE SHALL INCLUDE REMOVAL & DISPOSAL OF ALL HEADWALLS AND FLARED END SECTIONS IF APPLICABLE.

EARTHWORK

	STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	* SOIL STABILIZATION
				CU. YD.		TON
			STAGE 1 - SITE 1	320	1098	
			STAGE 2 - SITE 1	174	207	
			STAGE 1 - SITE 2	851	330	
			STAGE 2 - SITE 2	656	188	
			STAGE 1 - SITE 3	1378	51	
			STAGE 2 - SITE 3	901	95	
			STAGE 1 - SITE 4	452	44	
			STAGE 2 - SITE 4	122	202	
	ENTIRE	PROJECT	APPROACHES		1170	
			CHANNEL CHANGE	25		
*	ENTIRE	PROJECT	TO BE USED IF AND WHERE			200
			DIRECTED BY THE ENGINEER			
	TOTALS:			4879	3385	200

* QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.

NOTE: EARTHWORK QUANTITIES SHOWN ABOVE SHALL BE PAID AS PLAN QUANTITY.

ULTRATHIN BONDED WEARING COURSE (5/8" - TYPE B)

LOG MILE	LOG MILE	LOCATION	LENGTH	AVG. WID.	SQ.YD.
			FEET		
0.00	2.51	HWY 25	13252.80	26.00	38285.87
4.93	5.26	HWY 25 - JOB EXCEPTION	1742.40	26.00	5033.60
5.29	7.59	HWY 25 - SITE 2 BEGIN TRANSITION	12144.00	26.00	35082.67
7.59	7.61	HWY 25 - SITE 2 END TRANSITION	100.00	31.00	344.44
7.61	7.64	HWY 25 - SITE 2 2 LANE OPEN SHOULDER	158.40	36.00	633.60
7.64	7.70	HWY 25 - SITE 2 TAPER	300.00	42.00	1400.00
7.70	7.74	HWY 25 - SITE 2 3 LANE OPEN SHOULDER	220.00	48.00	1173.33
7.74	7.80	HWY 25 - SITE 2 TAPER	300.00	42.00	1400.00
7.80	7.82	HWY 25 - SITE 2 TRANSITION	100.00	31.00	344.44
7.82	8.56	HWY 25 - SITE 3 BEGIN TRANSITION	3907.20	26.00	11287.47
8.56	8.58	HWY 25 - SITE 3 END TRANSITION	100.00	31.00	344.44
8.58	8.65	HWY 25 - SITE 3 2 LANE OPEN SHOULDER	346.00	36.00	1384.00
8.65	8.75	HWY 25 - SITE 3 TAPER	600.00	42.00	2800.00
8.75	8.80	HWY 25 - SITE 3 3 LANE OPEN SHOULDER	278.00	48.00	1482.67
11.26	13.00	HWY 25 - SITE 4	9187.20	26.00	26540.80
TOTAL:					127537.33

*QUANTITIES ESTIMATED REFER TO SECTION 104.03 IN THE STD. SPEC.

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DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
06-06-22		6	ARK.	012227	38	87
		QUANTITIES				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
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EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL					TEMPORARY EROSION CONTROL					
			SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	TEMPORARY SEEDING	MULCH COVER	WATER	ROCK DITCH CHECKS (E-6)	SILT FENCE (E-11)	*SEDIMENT REMOVAL & DISPOSAL
			ACRE	TON	ACRE	M.GAL.	ACRE	ACRE	ACRE	M.GAL.	CU.YD.	LIN. FT.	CU. YD.
133+78	149+76	SITE 1 - CLEARING AND GRUBBING									117		
133+78	149+76	SITE 1 - STAGE 1						0.72	0.72	14.7	51		17
133+78	149+76	SITE 1 - STAGE 2	2.29	4.58	2.29	233.6	2.29	0.35	0.35	7.1	63	230	30
311+90	321+80	SITE 2 - CLEARING AND GRUBBING									54		
311+90	321+80	SITE 2 - STAGE 1						0.43	0.43	8.8	33		11
311+90	321+80	SITE 2 - STAGE 2	1.73	3.46	1.73	176.5	1.73	0.51	0.51	10.4	36	720	39
355+40	373+63	SITE 3 - CLEARING AND GRUBBING									129		
355+40	373+63	SITE 3 - STAGE 1						0.67	0.67	13.7	48		16
355+40	373+63	SITE 3 - STAGE 2	2.39	4.78	2.39	243.8	2.39	0.84	0.84	17.1	63	220	29
414+86	422+98	SITE 4 - CLEARING AND GRUBBING									72		
414+86	422+98	SITE 4 - STAGE 1						0.38	0.38	7.8	33		11
414+86	422+98	SITE 4 - STAGE 2	1.04	2.08	1.04	106.1	1.04	0.27	0.27	5.5	36		12
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.			1.86	3.72	1.86	189.7	1.86	1.04	1.04	21.28	184	293	41
TOTALS:			9.31	18.62	9.31	949.7	9.31	5.21	5.21	106.4	919	1463	206

BASIS OF ESTIMATE:
LIME .....2 TONS / ACRE OF SEEDING
WATER.....102.0 M.G. / ACRE OF SEEDING
WATER.....20.4 M.G. / ACRE OF TEMPORARY SEEDING
ROCK DITCH CHECKS.....3 CU.YD./LOCATION

NOTE: THE TEMPORARY EROSION CONTROL DEVICES SHOWN ABOVE AND ON THE PLANS SHALL BE INSTALLED IN SUCH A SEQUENCE AS TO DETER EROSION AND SEDIMENTATION ON U.S. WATERWAYS AS EXPLAINED BY THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT.

*QUANTITIES ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
132+78.41	133+78.41	SITE 1 MAIN LANES	22.00	244.44
149+75.80	150+75.80	SITE 1 MAIN LANES	22.00	244.44
310+89.72	311+89.72	SITE 2 MAIN LANES	22.00	244.44
321+80.00	322+80.00	SITE 2 MAIN LANES	22.00	244.44
355+40.00	356+40.00	SITE 3 MAIN LANES	22.00	244.44
373+63.00	374+63.00	SITE 3 MAIN LANES	22.00	244.44
413+85.53	414+85.53	SITE 4 MAIN LANES	22.00	244.44
422+98.09	423+98.09	SITE 4 MAIN LANES	22.00	244.44
TOTAL:				1955.52

NOTE: AVERAGE MILLING DEPTH 1".
STOCKPILE LOCATION: 44 SARTAIN RD, QUITMAN, AR 72131

COLD MILLING ASPHALT PAVEMENT

LOG MILE	LOG MILE	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
12.63	0.00	TRANSITION	22.00	76.39
2.49	2.51	TRANSITION	22.00	76.39
2.51	2.53	TRANSITION	22.00	76.39
4.91	4.93	TRANSITION	22.00	76.39
8.80	8.82	TRANSITION	22.00	76.39
11.24	11.26	TRANSITION	22.00	76.39
TOTAL:				458.34

NOTE: AVERAGE MILLING DEPTH 5/16".
STOCKPILE LOCATION: 44 SARTAIN RD, QUITMAN, AR 72131

RUMBLE STRIPES IN ASPHALT SHOULDERS

LOG MILE	LOG MILE	LOCATION	* RUMBLE STRIPES IN ASPHALT SHOULDERS
			LIN.FT.
0.00	0.78	HWY 25	4118
TOTAL:			4118

* QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.
TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING
	CU.YD.
ENTIRE PROJECT TO BE USED IF	
AND WHERE DIRECTED BY THE	80
ENGINEER	
TOTAL:	80

NOTE: QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.

FENCING

STATION	STATION	LOCATION	WIRE FENCE (TYPE D-1)	* 16'-0" GATES
			LIN. FT.	EACH
139+73	139+73	SITE 1 RT.		1
141+30	142+60	SITE 1 RT.	135	
149+08	149+41	SITE 1 RT.	70	
TOTALS:			205	1

* DENOTES ALTERNATE BID ITEM.

MAILBOXES

LOCATION	MAILBOXES	MAILBOX SUPPORTS (SINGLE)	MAILBOX SUPPORTS (DOUBLE)
	EACH		
ENTIRE PROJECT	7	3	2
TOTALS:	7	3	2

EROSION CONTROL MATTING

STATION	STATION	LOCATION	LENGTH	CLASS 3
			LIN. FT.	SQ. YD.
143+00.00	144+00.00	SITE 1 LT.	100.00	88.89
357+85.00	362+00.00	SITE 3 RT.	415.00	368.89
359+00.00	361+70.00	SITE 3 LT.	270.00	240.00
364+50.00	365+00.00	SITE 3 LT.	50.00	44.44
418+95.00	419+85.00	SITE 4 RT.	90.00	80.00
421+00.00	422+58.00	SITE 4 RT.	158.00	140.44
TOTAL:				962.66

NOTE: AVERAGE WIDTH = 8'-0"

CULVERT CLEAN OUT

STATION	LOCATION	EACH
142+07	SITE 1	1
311+22	SITE 2	1
317+70	SITE 2	1
413+77	SITE 4	1
TOTAL:		4

PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

STATION	LOCATION	WIDTH	LENGTH	TON
		FEET		
317+50	SITE 2	10.83	22	24
320+00	SITE 2	8.50	22	19
TOTAL:				43

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	TON	TACK COAT
		GALLON
ENTIRE PROJECT - TO BE USED IF AND WHERE	200	400
DIRECTED BY THE ENGINEER		
TOTALS:	200	400

BASIS OF ESTIMATE:
ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC...25 TON/MILE
TACK COAT FOR MAINTENANCE OF TRAFFIC.....50 GAL./MILE

BENCH MARKS

STATION	LOCATION	BENCH MARKS
		EACH
317+70	SITE 2 HDWL. OF R.C. BOX CULVERT ON RT.	1
TOTAL:		1

NOTE: SHOWN FOR INFORMATION ONLY. BENCH MARKS SHALL BE FURNISHED AND PLACED BY STATE FORCES.

ACHM PATCHING OF EXISTING ROADWAY

DESCRIPTION	TON
ENTIRE PROJECT - TO BE USED IF AND WHERE	200
DIRECTED BY THE ENGINEER	
TOTAL:	200

NOTE: QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.

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QUANTITIES

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	39	87
		QUANTITIES				

STATE OF ARKANSAS
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4" PIPE UNDERDRAIN

STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS	UNDERDRAIN OUTLET PROTECTORS
			LIN. FT.	EACH
* ENTIRE PROJECT TO BE USED IF AND			3000	12
WHERE DIRECTED BY THE ENGINEER				
TOTALS:			**3000**	**12**

* NOTE: QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.

DRIVEWAYS & TURNOUTS

STATION	SIDE	LOCATION	WIDTH	PORTLAND CEMENT CONCRETE DRIVEWAY	ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22)		AGGREGATE BASE COURSE (CLASS 7)	SIDE DRAINS				STANDARD DRAWINGS
								18"	24"	21"X15"	28"X20"	
			FEET	SQ. YD.	SQ. YD.	TON	TON	LIN. FT.				
133+20	LT	SITE 1	16		59.29	6.52	24.21			32		PCC-1, PCM-1
139+73	RT	SITE 1	24		192.80	21.21	78.73	60				PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
143+65	LT	SITE 1	20		72.11	7.93	29.44	32				PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
149+00	RT	SITE 1	16		172.80	19.01	70.56					
312+50	RT	SITE 2	30	125.54								
314+26	RT	SITE 2	16		46.43	5.11	18.96	36				PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
317+10	RT	SITE 2	20		134.07	14.75	54.75		60			PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
318+24	LT	SITE 2	20		169.36	18.63	69.16		70			PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
356+10	LT	SITE 3	24		83.28	9.16	34.01		38			PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
357+85	LT	SITE 3	16		76.65	8.43	31.30		36			PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
360+18	LT	SITE 3	16		99.41	10.94	40.59		36			PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
360+69	RT	SITE 3	16		62.71	6.90	25.61	30				PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
361+90	LT	SITE 3	16		43.92	4.83	17.93	32				PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
363+13	LT	SITE 3	24		60.22	6.62	24.59		38			PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
364+40	LT	SITE 3	40		103.85	11.42	42.41				52	PCC-1, PCM-1
368+61	LT	SITE 3	36		177.54	19.53	72.50	50				PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
369+42	RT	SITE 3	20		68.32	7.52	27.90					PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
372+68	LT	SITE 3	18		62.54	6.88	25.54	32				PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
373+24	LT	SITE 3	18		79.54	8.75	32.48	32				PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
414+40	RT	SITE 4	20		121.25	13.34	49.51	56				PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
414+90	LT	SITE 4	18		68.20	7.50	27.85	30				PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
418+58	LT	SITE 4	20		170.75	18.78	69.72	50				PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
420+46	LT	SITE 4	16		97.24	10.70	39.71	30				PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
422+58	LT	SITE 4	16		59.02	6.49	24.10			28		PCC-1, PCM-1
* ENTIRE PROJECT TEMPORARY DRIVES							240.00					
TOTALS:				**125.54**	**2281.30**	**250.95**	**1171.56**	**470**	**278**	**60**	**52**	

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.5% MIN. AGGR.....5.5% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

* QUANTITY ESTIMATED
SEE SECTION 104.03 OF THE STD. SPECS.
TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.

NOTE: FOR R.C. PIPE CULVERT INSTALLATIONS USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED.

STRUCTURES

STATION	DESCRIPTION	REINFORCED CONCRETE PIPE CULVERT (CLASS III) 24"	REINFORCED CONCRETE PIPE CULVERT (CLASS IV) 24"	REINFORCED CONCRETE PIPE CULVERT (CLASS IV) 48"	FLARED END SECTIONS FOR R.C. PIPE CULVERTS 24"	FLARED END SECTIONS FOR R.C. PIPE CULVERTS 48"	SPAN	HEIGHT	LENGTH	CLASS S CONCRETE-ROADWAY	REINF. STEEL-ROADWAY (GRADE 60)	UNCL.EXC. FOR STR.-ROADWAY	SOLID SODDING	WATER	STD. DWG. NOS.
		LIN. FT.	EACH				LIN. FT.			CU.YD.	POUND	CU.YD.	SQ.YD.	M.GAL.	
142+07	CONSTRUCT 24" x 48' R.C. PIPE CULVERT	48			2								8	0.10	FES-1, FES-2, PCC-1
317+50	CONSTRUCT 48" X 60' R.C. PIPE CULVERT			60		2							23	0.29	FES-1, FES-2, PCC-1
320+00	CONSTRUCT 24" X 50' R.C. PIPE CULVERT 30° LT. FWD. SKEW		50		2								8	0.10	FES-1, FES-2, PCC-1
SUBTOTALS:		**48**	**50**	**60**	**4**	**2**							**39**	**0.49**	
STRUCTURES OVER 20' - 0" SPAN															
317+70	EXIST. DBL. 10' X 4' X 39' R.C. BOX CULVERT ON 5° RT. FWD. SKEW - EXTEND 10' AT 15° RT. FWD. SKEW ON RT. & 12' STRAIGHT ON LT.						10	4	22	68.77	7859	32	23	0.29	RCB-1, RCB-2, RCB-3, R-200X-0, R-215X-0, W-X003-1, W-X153-1
SUBTOTALS:										**68.77**	**7859**	**32**	**23**	**0.29**	
TOTALS:		**48**	**50**	**60**	**4**	**2**				**68.77**	**7859**	**32**	**62**	**0.78**	

BASIS OF ESTIMATE:
WATER.....12.6 GAL. / SQ. YD. OF SOLID SODDING

NOTE: FOR R.C. PIPE CULVERT INSTALLATONS USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED.

NOTE: FOR C.M. PIPE CULVERT INSTALLATIONS USE TYPE 2 BEDDING UNLESS OTHERWISE SPECIFIED.

jy43338 6/23/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	40	87
		QUANTITIES				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

May 17 2022 1:48 PM

DocuSign

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT							ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")								
						(0.05 GAL. PER SQ. YD.)			(0.17 GAL. PER SQ. YD.)			TOTAL GALLONS													
				TON / STATION	TON	TOTAL WID.	SQ.YD.	GALLON	TOTAL WID.	SQ.YD.	GALLON		AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	TOTAL PG 64-22
			FEET			FEET			FEET				FEET			TON	FEET			TON	FEET			TON	TON
MAIN LANES																									
132+78.41	133+78.41	SITE 1 - TRANSITION	100.00	44.00	44.00				22.00	244.44	41.55	41.55									26.00	288.89	220.00	31.78	31.78
133+78.41	149+75.80	SITE 1 - 2 LANE OPEN SHOULDER SECTION	1567.39	44.00	702.85																26.00	4614.68	220.00	507.61	507.61
149+75.80	150+75.80	SITE 1 - TRANSITION	100.00	44.00	44.00				22.00	244.44	41.55	41.55									26.00	288.89	220.00	31.78	31.78
310+89.72	311+89.72	SITE 2 - TRANSITION	100.00	111.50	111.50	3.83	42.56	2.13	22.00	244.44	41.55	43.68	1.35	15.00	660.00	4.95	1.13	12.56	220.00	1.38	31.00	344.44	220.00	37.89	39.27
311+89.72	313+60.00	SITE 2 - 2 LANE OPEN SHOULDER SECTION	170.28	146.25	249.03	7.65	144.74	7.24				7.24	2.70	51.08	660.00	16.86	2.25	42.57	220.00	4.68	36.00	681.12	220.00	74.92	79.60
313+60.00	316+60.00	SITE 2 - 2 TO 3 LANE OPEN SHOULDER SECTION	300.00	169.75	509.25	25.65	855.00	42.75				42.75	8.70	290.00	660.00	95.70	8.25	275.00	220.00	30.25	42.00	1400.00	220.00	154.00	184.25
316+60.00	318+80.00	SITE 2 - 3 LANE OPEN SHOULDER SECTION	220.00	193.00	424.60	43.65	1067.00	53.35				53.35	14.70	359.33	660.00	118.58	14.25	348.33	220.00	38.32	48.00	1173.33	220.00	129.07	167.39
318+80.00	321+80.00	SITE 2 - 2 TO 3 LANE OPEN SHOULDER SECTION	300.00	169.75	509.25	25.65	855.00	42.75				42.75	8.70	290.00	660.00	95.70	8.25	275.00	220.00	30.25	42.00	1400.00	220.00	154.00	184.25
321+80.00	322+80.00	SITE 2 - TRANSITION	100.00	111.50	111.50	3.83	42.56	2.13	22.00	244.44	41.55	43.68	1.35	15.00	660.00	4.95	1.13	12.56	220.00	1.38	31.00	344.44	220.00	37.89	39.27
354+40.00	355+40.00	SITE3 - TRANSITION	100.00	111.50	111.50	3.83	42.56	2.13	22.00	244.44	41.55	43.68	1.35	15.00	660.00	4.95	1.13	12.56	220.00	1.38	31.00	344.44	220.00	37.89	39.27
355+40.00	358+80.00	SITE3 - 2 LANE OPEN SHOULDER SECTION	340.00	146.25	497.25	7.65	289.00	14.45				14.45	2.70	102.00	660.00	33.66	2.25	85.00	220.00	9.35	36.00	1360.00	220.00	149.60	158.95
358+80.00	364+80.00	SITE3 - 2 TO 3 LANE OPEN SHOULDER SECTION	600.00	164.75	988.50	25.65	1710.00	85.50				85.50	8.70	580.00	660.00	191.40	8.25	550.00	220.00	60.50	42.00	2800.00	220.00	308.00	368.50
364+80.00	367+63.00	SITE3 - 3 LANE OPEN SHOULDER SECTION	283.00	190.00	537.70	43.65	1372.55	68.63				68.63	14.70	462.23	660.00	152.54	14.25	448.08	220.00	49.29	48.00	1509.33	220.00	166.03	215.32
367+63.00	373+63.00	SITE3 - 2 TO 3 LANE OPEN SHOULDER SECTION	600.00	164.75	988.50	25.65	1710.00	85.50				85.50	8.70	580.00	660.00	191.40	8.25	550.00	220.00	60.50	42.00	2800.00	220.00	308.00	368.50
373+63.00	374+63.00	SITE3 - TRANSITION	100.00	111.50	111.50	3.83	42.56	2.13	22.00	244.44	41.55	43.68	1.35	15.00	660.00	4.95	1.13	12.56	220.00	1.38	31.00	344.44	220.00	37.89	39.27
413+85.53	414+85.53	SITE4 - TRANSITION	100.00	44.00	44.00				22.00	244.44	41.55	41.55									26.00	288.89	220.00	31.78	31.78
414+85.53	422+98.09	SITE4 - 2 LANE OPEN SHOULDER SECTION	812.56	44.00	357.53																26.00	2347.40	220.00	258.21	258.21
422+98.09	423+98.09	SITE4 - TRANSITION	100.00	44.00	44.00				22.00	244.44	41.55	41.55									26.00	288.89	220.00	31.78	31.78
ADDITIONAL FOR LEVELING																									
133+78.41	149+75.80	SITE 1 - LEVELING	1567.39			22.00	3904.73	195.24	22.00	3904.73	663.80	859.04					22.00	3904.73	VAR.	713.00					713.00
311+89.72	321+80.00	SITE 2 - LEVELING	990.28			22.00	2420.68	121.03	22.00	2420.68	411.52	532.55					22.00	2420.68	VAR.	216.00					216.00
355+40.00	373+63.00	SITE 3 - LEVELING	1823.00			22.00	4456.22	222.81	22.00	4456.22	757.56	980.37					22.00	4456.22	VAR.	230.00					230.00
414+85.53	422+98.09	SITE 4 - LEVELING	812.56			22.00	1986.26	99.31	22.00	1986.26	337.66	436.97					22.00	1986.26	VAR.	241.00					241.00
ADDITIONAL FOR SUPERELEVATION																									
133+78.41	136+28.41	SITE 1 - SUPERELEVATION TRANSTION	250.00	14.38	35.95																				
136+28.41	141+21.73	SITE 1 - MAXIMUM SUPERELEVATION	493.32	28.75	141.83																				
141+21.73	142+93.96	SITE 1 - SUPERELEVATION TRANSTION	172.23	17.75	30.57																				
142+93.96	147+75.80	SITE 1 - MAXIMUM SUPERELEVATION	481.84	6.75	32.52																				
147+75.80	149+75.80	SITE 1 - SUPERELEVATION TRANSTION	200.00	3.38	6.76																				
311+89.72	314+91.29	SITE 2 - SUPERELEVATION TRANSTION	301.57	25.75	77.65																				
314+91.29	317+92.86	SITE 2 - SUPERELEVATION TRANSTION	301.57	25.75	77.65																				
317+92.86	319+83.17	SITE 2 - SUPERELEVATION TRANSTION	190.31	19.13	36.41																				
319+83.17	321+73.48	SITE 2 - SUPERELEVATION TRANSTION	190.31	19.13	36.41																				
355+40.00	358+40.00	SITE 3 - SUPERELEVATION TRANSITION	300.00	24.25	72.75																				
358+40.00	361+35.14	SITE 3 - MAXIMUM SUPERELEVATION	295.14	48.50	143.14																				
361+35.14	364+35.14	SITE 3 - SUPERELEVATION TRANSITION	300.00	24.25	72.75																				
414+85.53	417+85.53	SITE 4 - SUPERELEVATION TRANSITION	300.00	17.50	52.50																				
417+85.53	419+98.09	SITE 4 - MAXIMUM SUPERELEVATION	212.56	35.00	74.40																				
419+98.09	422+98.09	SITE 4 - SUPERELEVATION TRANSITION	300.00	17.50	52.50																				
TOTALS:					**7330.25**		**20941.42**	**1047.08**		**14723.41**	**2502.94**	**3550.02**		**2774.64**		**915.64**		**15392.11**		**1688.66**		**22619.18**		**2488.12**	**4176.78**

BASIS OF ESTIMATE.
ACHM SURFACE COURSE (1/2").....94.5% MIN. AGGR.....5.5% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.5% MIN. AGGR.....4.5% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22
TACK COAT QUANTITIES WERE CALCULATED USING THE EMULSIFIED ASPHALT RATES. REFER TO SS-400-1 FOR THE RESIDUAL ASPHALT APPLICATION RATES.

jy43338 6/23/2021
R012227.DGN

SUMMARY OF QUANTITIES

	ITEM NUMBER	ITEM		QUANTITY	UNIT
	201	CLEARING		19	STATION
	201	GRUBBING		19	STATION
	202	REMOVAL AND DISPOSAL OF FENCE		250	LIN. FT.
	202	REMOVAL AND DISPOSAL OF GATES		2	EACH
	202	REMOVAL AND DISPOSAL OF RETAINING WALLS		10	LIN. FT.
	202	REMOVAL AND DISPOSAL OF CONCRETE PAVEMENT		52	SQ. YD.
	202	REMOVAL AND DISPOSAL OF SIGN FOUNDATIONS		15	EACH
	202	REMOVAL AND DISPOSAL OF PIPE CULVERTS		18	EACH
	202	REMOVAL AND DISPOSAL OF HEADWALLS		2	EACH
	202	REMOVAL AND DISPOSAL OF LUMINAIRE POLE AND FOUNDATION		1	EACH
	202	REMOVAL AND DISPOSAL OF BILLBOARDS		2	EACH
	202	REMOVAL AND DISPOSAL OF CATTLE GUARD		1	EACH
	202	REMOVAL AND DISPOSAL OF SIGNS		8	EACH
	203	REMOVAL AND DISPOSAL OF UNDERGROUND STORAGE TANK SYSTEMS (751 GAL TO 1500 GAL)		1	EACH
	SS & 210	UNCLASSIFIED EXCAVATION		4879	CU. YD.
	210	COMPACTED EMBANKMENT		3385	CU. YD.
	SP & 210	SOIL STABILIZATION		200	TON
	SS & 303	AGGREGATE BASE COURSE (CLASS 7)		8502	TON
	SS & 401	TACK COAT		3950	GAL.
	SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")		875	TON
	SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")		41	TON
	SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")		4184	TON
	SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")		244	TON
	SP	ULTRATHIN BONDED WEARING COURSE (5/8"-TYPE B)		127537	SQ. YD.
	SP & 412	COLD MILLING ASPHALT PAVEMENT		2414	SQ. YD.
	SP, SS, & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC		200	TON
	SP, SS, & 415	ACHM PATCHING OF EXISTING ROADWAY		200	TON
	SS & 505	PORTLAND CEMENT CONCRETE DRIVEWAY		125.54	SQ. YD.
	601	MOBILIZATION		1.00	LUMP SUM
	SP & 602	FURNISHING FIELD OFFICE		1	EACH
	SS & 603	MAINTENANCE OF TRAFFIC		1.00	LUMP SUM
	SS & 604	SIGNS		1475	SQ. FT.
	SS & 604	TRAFFIC DRUMS		119	EACH
	SS & 604	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		80	LIN. FT.
	SS & 604	RELOCATING PRECAST CONCRETE BARRIER		80	LIN. FT.
	604	CONSTRUCTION PAVEMENT MARKINGS		33811	LIN. FT.
	SS & 604	VERTICAL PANELS		141	EACH
	SS & 605	CONCRETE DITCH PAVING (TYPE B)		1029	SQ. YD.
	SP	CULVERT CLEAN OUT		4	EACH
	SS & 606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		48	LIN. FT.
	SS & 606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS IV)		50	LIN. FT.
	SS & 606	48" REINFORCED CONCRETE PIPE CULVERTS (CLASS IV)		60	LIN. FT.
	SP, SS, & 606	18" SIDE DRAIN		470	LIN. FT.
	SP, SS, & 606	24" SIDE DRAIN		278	LIN. FT.
	SS & 606	21" X 15" SIDE DRAIN		60	LIN. FT.
	SS & 606	28" X 20" SIDE DRAIN		52	LIN. FT.
	SS & 606	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		4	EACH
	SS & 606	48" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		2	EACH
	SS & 606	SELECTED PIPE BEDDING		80	CU. YD.
	SS & 611	UNDERDRAIN OUTLET PROTECTORS		12	EACH
	SS & 611	4" PIPE UNDERDRAINS		3000	LIN. FT.
	SS & 615	PAVEMENT REPAIR OVER CULVERTS (ASPHALT)		43	TON
	SS & 619	WIRE FENCE (TYPE D-1)		205	LIN. FT.
*	SS & 619	16' STEEL GATES	(ALTERNATE NO. 1)	1	EACH
*	SS & 619	16' ALUMINUM GATES	(ALTERNATE NO. 2)	1	EACH
	620	LIME		19	TON
	620	SEEDING		9.31	ACRE
	SS & 620	MULCH COVER		14.52	ACRE
	620	WATER		1065.1	M. GAL.
	621	TEMPORARY SEEDING		5.21	ACRE
	621	SILT FENCE		1463	LIN. FT.
	621	SEDIMENT REMOVAL AND DISPOSAL		206	CU. YD.
	621	ROCK DITCH CHECKS		919	CU. YD.
	623	SECOND SEEDING APPLICATION		9.31	ACRE
	624	SOLID SODDING		713	SQ. YD.
	626	EROSION CONTROL MATTING (CLASS 3)		963	SQ. YD.
	635	ROADWAY CONSTRUCTION CONTROL		1.00	LUMP SUM
	637	MAILBOXES		7	EACH
	637	MAILBOX SUPPORTS (SINGLE)		3	EACH
	637	MAILBOX SUPPORTS (DOUBLE)		2	EACH
	SP & 642	RUMBLE STRIPES IN ASPHALT SHOULDERS		4118	LIN. FT.
	718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6")		130	LIN. FT.
	718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6")		102	LIN. FT.
	719	THERMOPLASTIC PAVEMENT MARKING WHITE (6")		94942	LIN. FT.
	719	THERMOPLASTIC PAVEMENT MARKING YELLOW (6")		90474	LIN. FT.
	719	THERMOPLASTIC PAVEMENT MARKING (WORDS)		2	EACH
	719	THERMOPLASTIC PAVEMENT MARKING (ARROWS)		4	EACH
	721	RAISED PAVEMENT MARKERS (TYPE II)		595	EACH
	SS & 731	TEMPORARY IMPACT ATTENUATION BARRIER		1	EACH
	SS & 731	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)		2	EACH
	SS & 731	TEMPORARY IMPACT ATTENUATION BARRIER (RELOCATION)		1	EACH
		STRUCTURES OVER 20' SPAN			
	801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY		32	CU. YD.
	SS & 802	CLASS S CONCRETE-ROADWAY		68.77	CU. YD.
	SS & 804	REINFORCING STEEL-ROADWAY (GRADE 60)		7859	POUND

* DENOTES ALTERNATE BID ITEMS.

REVISIONS

DATE	REVISION	SHEET NUMBER
06/06/2022	ADDED "CULVERT CLEAN OUT" SPECIAL PROVISION, ADDED "CULVERT CLEAN OUT" TO SUMMARY OF QUANTITIES, AND ADDED THE STOCKPILE LOCATION TO THE COLD MILLING ASPHALT PAVEMENT QUANTITY BOXES.	3, 38, & 41

SUMMARY OF QUANTITIES AND REVISIONS

Jun 7 2022 1:11 PM

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11485
TIMOTHY D. SMITH

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
06-06-22		6	ARK.	012227	41	87

SUMMARY OF QUANTITIES & REVISIONS

SURVEY CONTROL COORDINATES

Project Name: s012227
Date: 6/3/2016
Coordinate System: ARKANSAS STATE PLANE - NORTH ZONE BASED ON GPS CONTROL,
PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
32	360435.0743	1221768.8758	738.236	CTL	AHTD STD. MON. STAMPED PN: 32
33	360453.1742	1222364.1018	751.623	CTL	AHTD STD. MON. STAMPED PN: 33
34	360426.1070	1222875.9537	767.347	CTL	AHTD STD. MON. STAMPED PN: 34
35	360448.4572	1223540.2366	777.844	CTL	AHTD STD. MON. STAMPED PN: 35
36	360475.2768	1224278.5796	790.427	CTL	AHTD STD. MON. STAMPED PN: 36
37	360556.1029	1224985.6981	797.231	CTL	AHTD STD. MON. STAMPED PN: 37
38	360692.5880	1225793.7738	799.121	CTL	AHTD STD. MON. STAMPED PN: 38
39	360740.7445	1226504.5061	804.759	CTL	AHTD STD. MON. STAMPED PN: 39
40	360886.4802	1227328.9077	811.288	CTL	AHTD STD. MON. STAMPED PN: 40
41	360925.8826	1228095.6695	818.415	CTL	AHTD STD. MON. STAMPED PN: 41
42	361147.7295	1229416.0118	824.972	CTL	AHTD STD. MON. STAMPED PN: 42
43	361458.6154	1230191.1098	827.329	CTL	AHTD STD. MON. STAMPED PN: 43
44	361802.1178	1230934.1399	830.295	CTL	AHTD STD. MON. STAMPED PN: 44
45	362209.1752	1231795.4969	834.479	CTL	AHTD STD. MON. STAMPED PN: 45
46	362650.1382	1232501.7768	836.188	CTL	AHTD STD. MON. STAMPED PN: 46
47	363021.3164	1233399.3372	806.080	CTL	AHTD STD. MON. STAMPED PN: 47
48	362934.7522	1234044.3733	804.277	CTL	AHTD STD. MON. STAMPED PN: 48
49	362847.0793	1234838.8300	809.949	CTL	AHTD STD. MON. STAMPED PN: 49
50	362953.0027	1235500.7546	793.678	CTL	AHTD STD. MON. STAMPED PN: 50
51	363475.2467	1236049.7271	790.975	CTL	AHTD STD. MON. STAMPED PN: 51
52	364023.5537	1236410.0239	773.729	CTL	AHTD STD. MON. STAMPED PN: 52
53	364675.9589	1236929.9478	758.210	CTL	AHTD STD. MON. STAMPED PN: 53
54	365335.9624	1237296.0978	738.968	CTL	AHTD STD. MON. STAMPED PN: 54
55	366062.5608	1237684.7057	724.948	CTL	AHTD STD. MON. STAMPED PN: 55
56	366736.2909	1238034.5870	728.999	CTL	AHTD STD. MON. STAMPED PN: 56
57	367495.9420	1238442.4397	732.413	CTL	AHTD STD. MON. STAMPED PN: 57
58	368148.4918	1238796.4439	743.826	CTL	AHTD STD. MON. STAMPED PN: 58
59	369457.9698	1239501.2078	756.124	CTL	AHTD STD. MON. STAMPED PN: 59
60	373051.1364	1242459.8057	648.603	CTL	AHTD STD. MON. STAMPED PN: 60
61	373595.1630	1243030.2272	638.112	CTL	AHTD STD. MON. STAMPED PN: 61
62	374230.1055	1243454.4984	639.899	CTL	AHTD STD. MON. STAMPED PN: 62
63	375040.7210	1243893.9947	647.680	CTL	AHTD STD. MON. STAMPED PN: 63
64	375662.0123	1244283.3700	640.469	CTL	AHTD STD. MON. STAMPED PN: 64
65	376350.9544	1244491.8266	638.772	CTL	AHTD STD. MON. STAMPED PN: 65
66	377184.3567	1244721.5405	639.733	CTL	AHTD STD. MON. STAMPED PN: 66
67	377937.6941	1244950.5318	647.985	CTL	AHTD STD. MON. STAMPED PN: 67
68	378575.7673	1245315.3866	649.428	CTL	AHTD STD. MON. STAMPED PN: 68
69	379226.1746	1245626.8927	640.156	CTL	AHTD STD. MON. STAMPED PN: 69
70	379992.2619	1245798.9555	624.658	CTL	AHTD STD. MON. STAMPED PN: 70
71	380793.7032	1246008.9331	616.914	CTL	AHTD STD. MON. STAMPED PN: 71
72	381541.9850	1246208.0328	610.521	CTL	AHTD STD. MON. STAMPED PN: 72
73	381530.8798	1245408.7034	614.092	CTL	AHTD STD. MON. STAMPED PN: 73
74	381957.0417	1246588.7123	606.673	CTL	AHTD STD. MON. STAMPED PN: 74
75	382301.2401	1247362.7791	595.808	CTL	AHTD STD. MON. STAMPED PN: 75
76	382506.6803	1247609.6170	597.845	CTL	AHTD STD. MON. STAMPED PN: 76
77	382562.6535	1248401.6429	582.863	CTL	AHTD STD. MON. STAMPED PN: 77
78	382567.1692	1249216.7036	592.108	CTL	AHTD STD. MON. STAMPED PN: 78
79	382675.9678	1249611.7768	599.739	CTL	AHTD STD. MON. STAMPED PN: 79
80	382196.7838	1250155.7755	614.065	CTL	AHTD STD. MON. STAMPED PN: 80
81	383014.9504	1250183.4049	610.726	CTL	AHTD STD. MON. STAMPED PN: 81
82	383577.3263	1250907.0682	610.025	CTL	AHTD STD. MON. STAMPED PN: 82
83	384449.2992	1252183.1155	626.848	CTL	AHTD STD. MON. STAMPED PN: 83
84	390192.3135	1262569.7779	632.908	CTL	AHTD STD. MON. STAMPED PN: 84
85	390587.2206	1263263.5270	617.685	CTL	AHTD STD. MON. STAMPED PN: 85
86	390973.2240	1263638.4541	607.667	CTL	AHTD STD. MON. STAMPED PN: 86
87	391648.9261	1263767.3062	591.653	CTL	AHTD STD. MON. STAMPED PN: 87
88	392127.7032	1264123.0378	590.577	CTL	AHTD STD. MON. STAMPED PN: 88
89	392691.0830	1265063.6117	591.074	CTL	AHTD STD. MON. STAMPED PN: 89
90	393107.5617	1265667.9790	598.091	CTL	AHTD STD. MON. STAMPED PN: 90
91	393561.1960	1266315.1359	606.060	CTL	AHTD STD. MON. STAMPED PN: 91
92	394006.1110	1266952.5478	616.383	CTL	AHTD STD. MON. STAMPED PN: 92
93	394562.4131	1267729.1666	626.629	CTL	AHTD STD. MON. STAMPED PN: 93
94	395027.9661	1268264.2157	628.872	CTL	AHTD STD. MON. STAMPED PN: 94
95	395538.9783	1268846.4620	634.137	CTL	AHTD STD. MON. STAMPED PN: 95
96	396041.8313	1269436.5306	637.599	CTL	AHTD STD. MON. STAMPED PN: 96
97	396573.8913	1270031.8155	641.675	CTL	AHTD STD. MON. STAMPED PN: 97
98	397113.6333	1270634.7458	645.101	CTL	AHTD STD. MON. STAMPED PN: 98
99	397863.0068	1271420.4024	652.634	CTL	AHTD STD. MON. STAMPED PN: 99
100	398264.2299	1271918.5168	661.897	CTL	AHTD STD. MON. STAMPED PN: 100
101	398272.9382	1272555.2156	679.587	CTL	AHTD STD. MON. STAMPED PN: 101
102	398284.1510	1273216.6431	691.246	CTL	AHTD STD. MON. STAMPED PN: 102
103	398288.9972	1273890.5464	694.037	CTL	AHTD STD. MON. STAMPED PN: 103
104	398458.6515	1274349.4553	691.489	CTL	AHTD STD. MON. STAMPED PN: 104
105	398678.1109	1275010.7651	717.061	CTL	AHTD STD. MON. STAMPED PN: 105
106	398905.1523	1275800.7547	716.660	CTL	AHTD STD. MON. STAMPED PN: 106
107	399090.5272	1276408.8720	725.615	CTL	AHTD STD. MON. STAMPED PN: 107
108	399236.3660	1277067.5986	704.797	CTL	AHTD STD. MON. STAMPED PN: 108
109	399440.1660	1277819.9539	725.830	CTL	AHTD STD. MON. STAMPED PN: 109
110	399743.5437	1278442.3089	745.567	CTL	AHTD STD. MON. STAMPED PN: 110
111	399842.4280	1279076.7860	752.913	CTL	AHTD STD. MON. STAMPED PN: 111
112	399879.9468	1279850.8304	766.008	CTL	AHTD STD. MON. STAMPED PN: 112
113	399995.6644	1280656.9370	772.029	CTL	AHTD STD. MON. STAMPED PN: 113
114	405818.0197	1289047.5787	855.570	CTL	AHTD STD. MON. STAMPED PN: 114
115	406172.7948	1289812.1973	857.760	CTL	AHTD STD. MON. STAMPED PN: 115
116	406394.2099	1290311.1010	866.308	CTL	AHTD STD. MON. STAMPED PN: 116
117	407000.0182	1290651.2035	882.164	CTL	AHTD STD. MON. STAMPED PN: 117
118	407364.0969	1290951.2655	903.451	CTL	AHTD STD. MON. STAMPED PN: 118
119	407605.6161	1291613.2212	889.946	CTL	AHTD STD. MON. STAMPED PN: 119
120	407910.3702	1292562.7565	895.395	CTL	AHTD STD. MON. STAMPED PN: 120
121	408063.2860	1293131.3688	895.234	CTL	AHTD STD. MON. STAMPED PN: 121
122	408495.2818	1293512.5442	893.108	CTL	AHTD STD. MON. STAMPED PN: 122
123	409100.9569	1294021.1386	908.874	CTL	AHTD STD. MON. STAMPED PN: 123
124	409881.4836	1294704.1656	926.329	CTL	AHTD STD. MON. STAMPED PN: 124
125	409945.1008	1295518.7939	930.013	CTL	AHTD STD. MON. STAMPED PN: 125
126	410086.3164	1296171.3283	932.124	CTL	AHTD STD. MON. STAMPED PN: 126
127	410007.7757	1296921.4985	911.665	CTL	AHTD STD. MON. STAMPED PN: 127
128	409979.1949	1297371.6076	906.143	CTL	AHTD STD. MON. STAMPED PN: 128
133	361281.6562	1215934.7330	685.978	GPS	AHTD GPS *230037
134	360750.3027	1217427.9401	695.018	GPS	AHTD GPS *230037A
135	366858.7752	1238039.0325	729.773	GPS	AHTD GPS *230008A
136	368825.9385	1239179.7180	756.226	GPS	AHTD GPS *230008
137	382898.4433	1249922.5528	604.753	GPS	AHTD GPS *120003
138	383948.4245	1251444.1626	621.682	GPS	AHTD GPS *120003A
139	392318.9979	1264554.6343	588.611	GPS	AHTD GPS *120004
140	393384.0645	1265969.7774	600.416	CTL	AHTD GPS *120004A
141	399856.6276	1279725.4291	763.792	GPS	AHTD GPS *120005
142	400137.2102	1281086.0885	775.927	GPS	AHTD GPS *120022
143	405854.2360	1286937.7112	818.828	GPS	AHTD GPS *120023
144	405858.2369	1288601.8182	838.723	GPS	AHTD GPS *120023A
145	410049.9094	1297391.2845	908.466	BM	NGS 2ND ORDER BM Y 68
146	409976.5278	1298488.8012	908.195	GPS	AHTD GPS *120009A
994	360930.4424	1228719.8940	824.713	BM	NGS 2ND ORDER BM Q 68
995	362892.9626	1232779.4194	833.310	BM	NGS 2ND ORDER BM P 207
996	363131.0827	1235726.8198	787.551	BM	NGS 2ND ORDER BM N 208 PID FG0181
997	382484.0505	1248521.3856	582.010	BM	NGS 2ND ORDER BM T 68 PID FG0187
998	398717.4113	1275288.5704	722.128	BM	NGS 2ND ORDER BM D 49 PID FG0196
999	409788.4663	1300890.8782	899.140	BM	NGS 2ND ORDER BM D 52

*Note - Rebar and Cap - Standard - 5/8" Rebar with 2" Aluminum Cap stamped
*(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT
A PROJECT CAF OF 0.999912476 HAS BEEN USED TO COMPUTE THE ABOVE GROUND COORDINATES.
THIS CAF IS INTENDED FOR USE WITHIN THE PROJECT LIMITS.
GRID DISTANCE = GROUND DISTANCE X CAF.
GRID COORDINATES ARE STORED UNDER FILE NAME s012227gi.ctl
HORIZONTAL DATUM: NAD 83 (2011)
VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE
AT A SPECIFIC POINT.

REFERENCE POINTS (1500 SERIES) ARE TO BE USED TO ESTABLISH CONTROL
IF THE PRIMARY CONTROL POINTS LISTED ABOVE HAVE BEEN DESTROYED.
REFERENCE POINTS ARE NOT TO BE USED FOR VERTICAL CONTROL

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS - 0301-NORTH ZONE
DETERMINED FROM GPS CONTROL POINTS: 230037 230037A 230008 230008A 120003 120003A 120004 120004A 120005
120022 120023 120023A
CONVERGENCE ANGLE:
SECTION 1 00-09-26.37 LEFT AT LT: N 35-19-41.07 LG: W 092-16-13.31
SECTION 2 00-07-48.32 LEFT AT LT: N 35-22-37.30 LG: W 092-13-24.81
SECTION 3 00-04-53.98 LEFT AT LT: N 35-25-27.08 LG: W 092-08-25.20
SECTION 4 00-02-15.86 LEFT AT LT: N 35-27-15.60 LG: W 092-03-53.48
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

SURVEY CONTROL DETAILS

May 17 2022 1:49 PM

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11485
TIMOTHY D. SMITH

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	42	87

SURVEY CONTROL DETAILS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	43	87
		SURVEY CONTROL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

May 17 2022 1:49 PM

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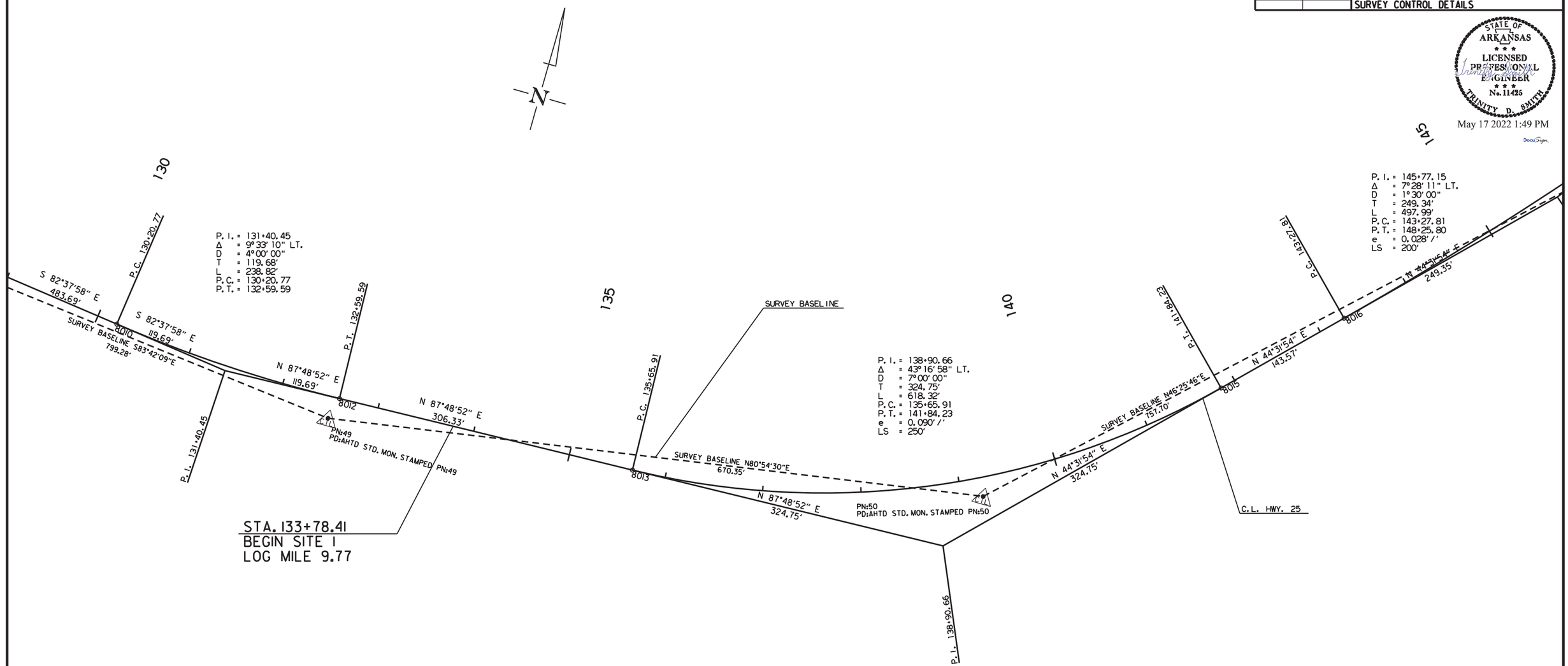

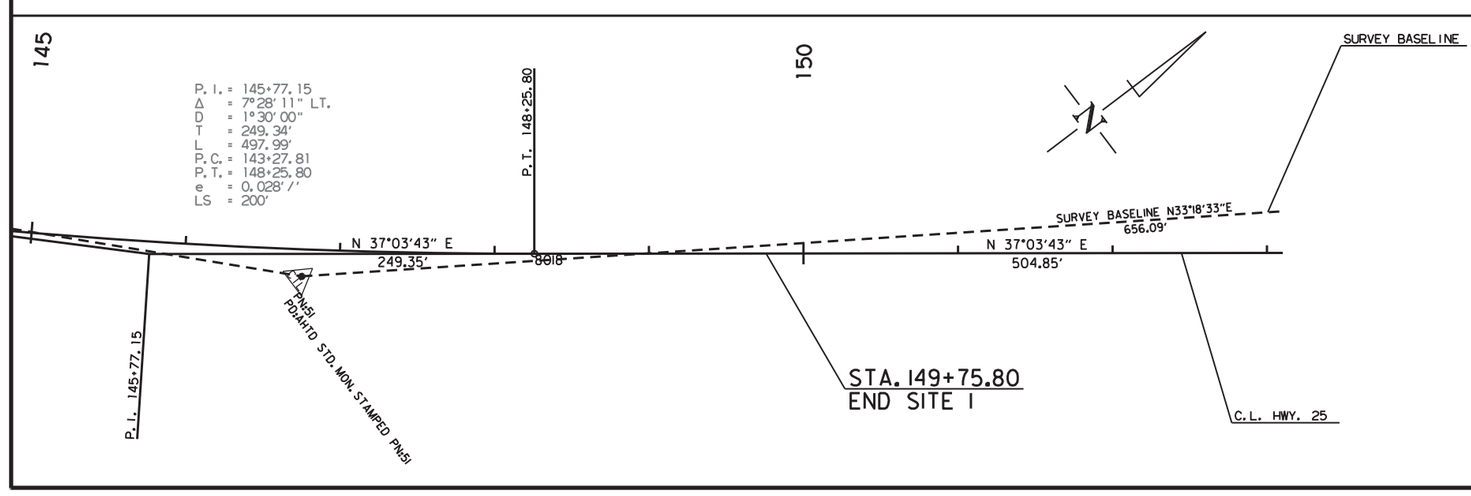

SITE 1

POINT NO.	TYPE	STATION	NORTHING	EASTING
8009	PI	125+37.07	362942.2665	1234126.5891
8010	PC	130+20.77	362880.2442	1234606.2879
8012	PT	132+59.59	362869.4616	1234844.5877
8013	PC	135+65.91	362881.1441	1235150.6903
8015	PT	141+84.23	363125.0339	1235702.9593
8016	PC	143+27.81	363227.3816	1235803.6477
8018	PT	148+25.80	363604.1086	1236128.7938
8019	PI	153+30.65	364006.9740	1236433.0579

SITE 1
SURVEY CONTROL DETAILS

jy43338 7/8/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	44	87
		SURVEY CONTROL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
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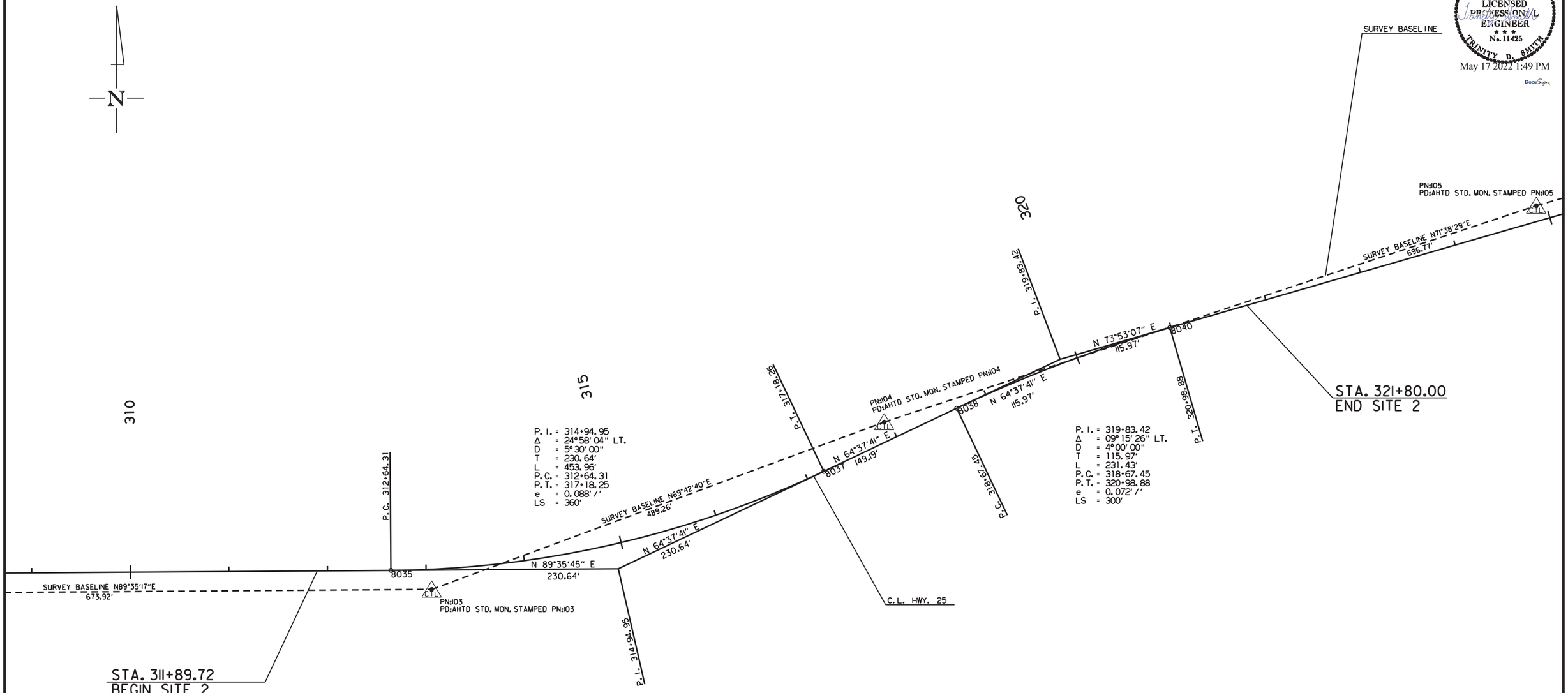

SITE 2

POINT NO.	TYPE	STATION	NORTHING	EASTING
8034	POB	300+00.00	398299.3441	1272584.8798
8035	PC	312+64.31	398308.2634	1273849.1543
8037	PT	317+18.26	398408.7175	1274288.1819
8038	PC	318+67.45	398472.6421	1274422.9777
8040	PT	320+98.88	398554.5209	1274639.1699
8041	PI	333+52.97	398902.6085	1275843.9913

jy43338 7/8/2021
R012227.DGN

SITE 2
SURVEY CONTROL DETAILS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	45	87
		SURVEY CONTROL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
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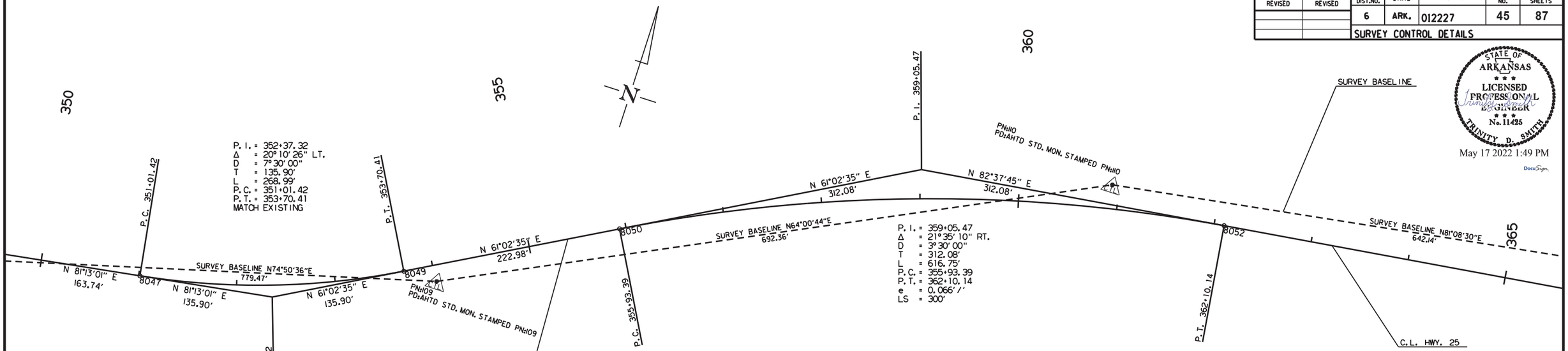
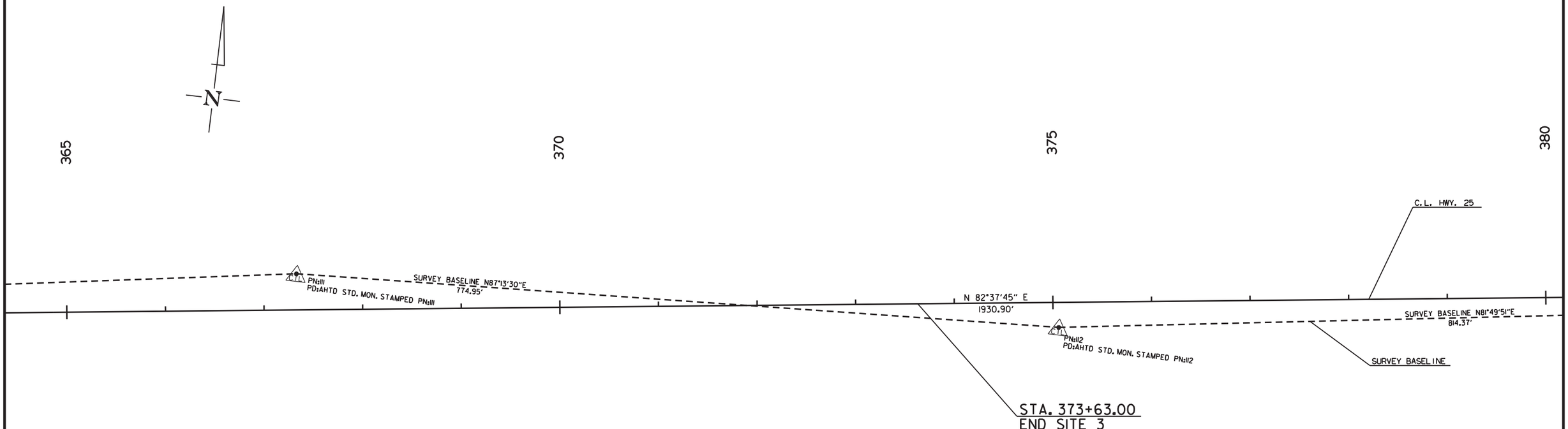


SITE 3

POINT NO.	TYPE	STATION	NORTHING	EASTING
8046	PT	349+37.68	399328.2196	1277370.0348
8047	PC	351+01.42	399353.2220	1277531.8588
8049	PT	353+70.41	399439.7698	1277785.0768
8050	PC	355+93.39	399547.7281	1277980.1838
8052	PT	362+10.14	399738.8564	1278562.7405
8053	POE	381+41.04	399986.5701	1280477.6821



SITE 3
SURVEY CONTROL DETAILS

jy43338 7/8/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	46	87
		SURVEY CONTROL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

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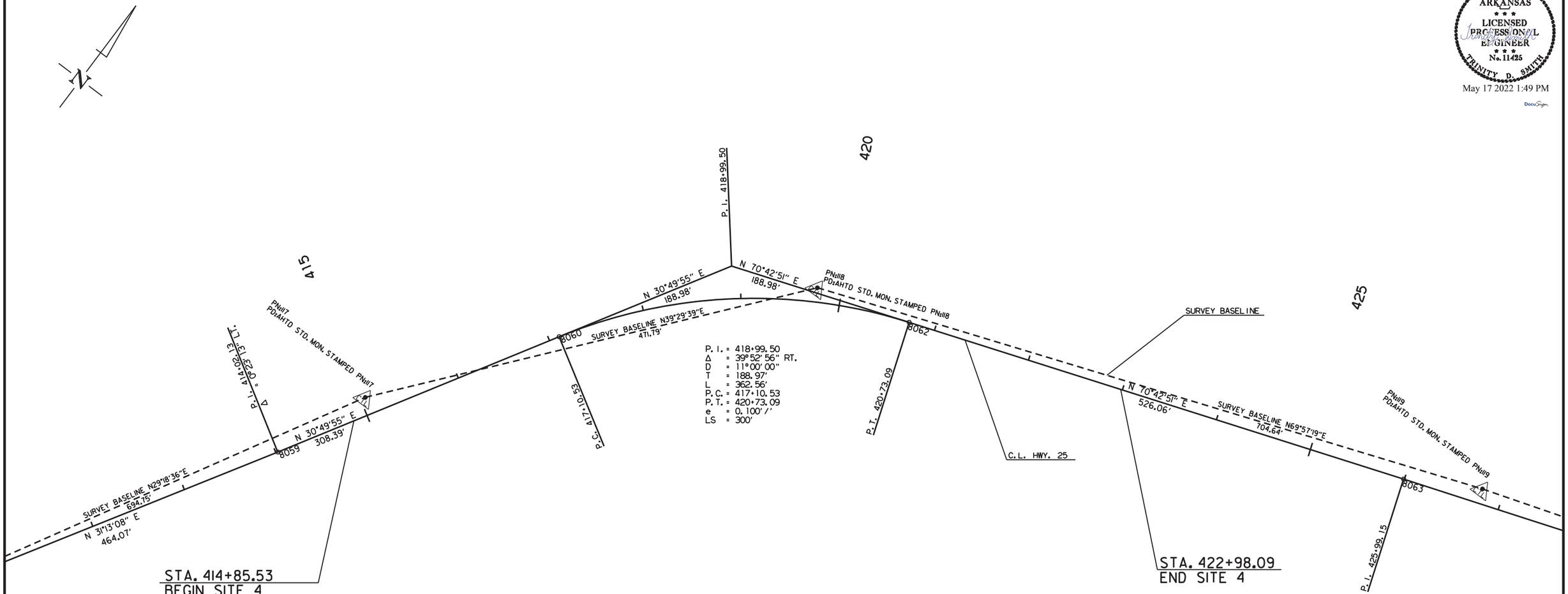

SITE 4

POINT NO.	TYPE	STATION	NORTHING	EASTING
8056	PC	405+23.03	406242.8040	1290061.0616
8058	PT	409+38.07	406505.4546	1290372.9226
8059	PI	414+02.13	406902.3211	1290613.4533
8060	PC	417+10.53	407167.1312	1290771.5121
8062	PT	420+73.09	407391.8146	1291046.7375
8063	PI	425+99.15	407565.5613	1291543.2767
8064	PC	432+69.30	407783.2689	1292177.0763
8066	PT	435+70.12	407867.7964	1292465.6660
8067	POE	439+09.39	407948.1086	1292795.2937

jy43338 7/8/2021
R012227.DGN

SITE 4
SURVEY CONTROL DETAILS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	47	87
		PLAN AND PROFILE SHEETS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
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P. I. = 131+40.45
Δ = 9°33'10" LT.
D = 4°00'00"
T = 119.68'
L = 238.82'
P. C. = 130+20.77
P. T. = 132+59.59
FOR INFORMATION ONLY

STA. 133+20 -IN PLACE
18" x 24' PIPE CULV'T.
REMOVE AND INSTALL
21" x 15" x 32' PIPE CULV'T.
LT. SIDE DRAIN
CONST. APPR. = 5 CU. YD.

P. I. = 138+90.66
Δ = 43°16'58" LT.
D = 7°00'00"
T = 324.75'
L = 618.32'
P. C. = 135+65.91
P. T. = 141+84.23
e = 0.090'/'
LS = 250'

STA. 142+07 - IN PLACE
24" X 40' R.C. PIPE CULV'T.
CROSS DRAIN W/ HEADWALLS LT. & RT.
REMOVE AND CONSTRUCT
24" X 48' R.C. PIPE CULV'T
(CLASS IV)(TYPE III BEDDING) W /FES
24" R.C. PIPE= 48 LIN.FT.
24" FES= 2 EA.
Q50= 8 CFS D.A.=17 ACRES

STA. 143+65 - IN PLACE
18" x 30' PIPE CULV'T.
REMOVE AND INSTALL
18" x 32' PIPE CULV'T.
LT. SIDE DRAIN
CONST. APPR. = 20 CU. YD.

P. I. = 145+77.15
Δ = 7°28'11" LT.
D = 1°30'00"
T = 249.34'
L = 497.99'
P. C. = 143+27.81
P. T. = 148+25.80
e = 0.028'/'
LS = 200'

STA. 139+73 -INSTALL
18" x 60' PIPE CULV'T.
RT. SIDE DRAIN
CONST. APPR. = 240 CU. YD.

WIRE FENCE

STA.	STA.	SIDE	TYPE	LIN. FT.	GATES
139+73	139+73	RT.			1
141+30	142+60	RT.	D	135	

PC 130+20.77 · PT 132+59.59 · PI 131+40.45 · PC 135+65.91 · PI 138+90.66 · PC 143+27.81 · S 82°37'58" E · N 87°48'52" E · N 44°31'54" E · EXISTING ROW · CONST. LIMITS · PROPOSED R/W · 100' TRANSITION · GATE · 24' C.T.

STA. 133+78.41
BEGIN SITE 1
LOG MILE 9.77

SITE 1

REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

STA. 133+78.41 BEGIN SUPERELEVATION
STA. 136+28.41 MAX SUPERELEVATION (0.090 '/')
STA. 141+21.73 MAX SUPERELEVATION (0.090 '/')
STA. 142+93.96 END SUPERELEVATION (0.028 '/')

STA. 142+93.96 BEGIN SUPERELEVATION (0.028 '/')
STA. 147+75.80 MAX SUPERELEVATION (0.028 '/')
STA. 149+75.80 END SUPERELEVATION

RT. DITCH GRADE -1.63% · RT. DITCH GRADE -1.22% · LT. DITCH GRADE 2.04%

139+00.00 790.37 RT. · 140+50.00 787.92 RT. · 142+07.00 786.00 RT. · 143+00.00 787.57 LT. · 144+00.00 789.61 LT.

F.L. INLET 786.00 (RT.)
F.L. OUTLET 785.92 (LT.)

840 830 820 810 800 790 780 770 760 750

130+00 131+00 132+00 133+00 134+00 135+00 136+00 137+00 138+00 139+00 140+00 141+00 142+00 143+00 144+00 145+00

JY43338 9/14/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	48	87
		PLAN AND PROFILE SHEETS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

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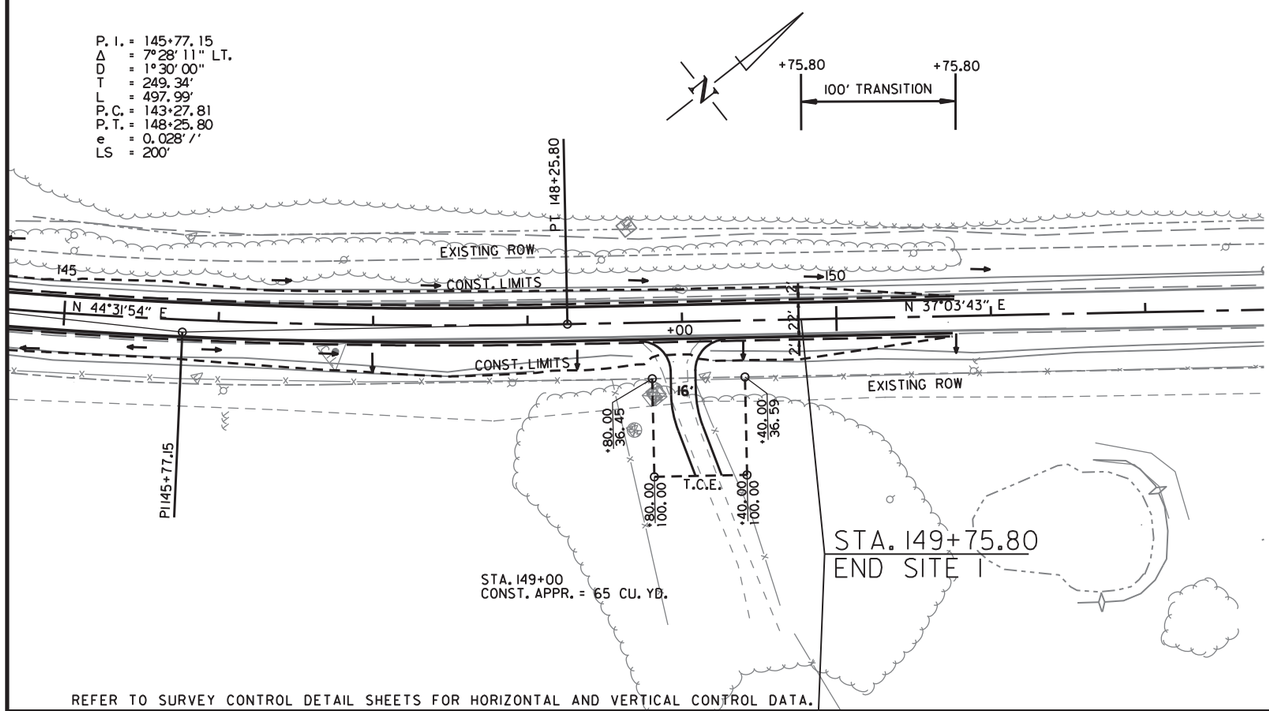
P. I. = 145+77.15
Δ = 7°28' 11" LT.
D = 1°30' 00"
T = 249.34'
L = 497.99'
P. C. = 143+27.81
P. T. = 148+25.80
e = 0.028'/'
LS = 200'



SITE 1

REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

STA. 142+93.96 BEGIN SUPERELEVATION (0.028 '/')
STA. 147+75.80 MAX SUPERELEVATION (0.028 '/')
STA. 149+75.80 END SUPERELEVATION

840 830 820 810 800 790 780 770 760 750

145+00 146+00 147+00 148+00 149+00 150+00 151+00 152+00 153+00 154+00 155+00 156+00 157+00 158+00 159+00 160+00

JY43338 9/14/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	49	87
		PLAN AND PROFILE SHEETS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
May 17 2022 1:50 PM

P. I. = 314+94.95
Δ = 24°58'04" LT.
D = 5°30'00"
T = 230.64'
L = 453.96'
P. C. = 312+64.31
P. T. = 317+18.25
e = 0.088'/'
LS = 360'

STA. 317+70 - IN PLACE
DBL. 10' X 4' X 39' R.C. BOX CULVERT
W/ 3:1 WINGS LT. & RT.
5° RT. FWD. SKEW
RETAIN AND EXTEND 12' LT.& 10' RT. AT 15°SKEW
TO A COMPLETED LENGTH OF 61'
D.A. = 0.60 SQ. MI., Q50 = 724 C.F.S.
SPAN = 23'2¾"

STA. 318+24 -IN PLACE
24" x 48' PIPE CULV'T.
LT. SIDE DRAIN
REMOVE AND INSTALL
24" x 70' PIPE CULV'T.
CONST. TURNOUT = 105 CU. YD.

STA. 318+65.00 TO STA. 321+80.00 ON LT.
CONC. DITCH PAVING (TYPE B) = 221.20 SQ. YD.

STA. 311+22 - IN PLACE
24" X 36' R.C. PIPE CULV'T.
CROSS DRAIN W/HDWL LT. & RT.
RETAIN

STA. 311+89.72
BEGIN SITE 2
LOG MILE 7.61

STA. 312+50 -CONST.
CONC. APPR. ON RT. = 20 CU. YD.

STA. 314+26 -IN PLACE
18" x 24' PIPE CULV'T.
REMOVE AND INSTALL
18" x 36' PIPE CULV'T.
RT. SIDE DRAIN
CONST. APPR. = 30 CU. YD.

STA. 317+50 - CONSTRUCT
48" X 60' R.C. CULV'T.
ON 5°RT. FWD. SKEW
CROSS DRAIN W/F.E.S. LT. & RT.
CLASS IV TYPE III BEDDING W/ FES
48" R.C. PIPE= 60 LIN.FT.
48" FES= 2 EA.

STA. 317+10 -IN PLACE
24" x 56' PIPE CULV'T.
RT. SIDE DRAIN
REMOVE AND INSTALL
24" x 60' PIPE CULV'T.
CONST. TURNOUT = 115 CU. YD.

STA. 321+80.00
END SITE 2

STA. 320+14 - IN PLACE
24" X 40' R.C. PIPE CULV'T.
30° LT. FORWARD SKEW
CROSS DRAIN W/F.E.S. LT. & RT.
REMOVE AND CONSTRUCT
24" X 50' R.C. PIPE CULV'T. @ STA. 320+00
CLASS IV TYPE III BEDDING W/ FES
24" R.C. PIPE= 50 LIN.FT.
24" FES= 2 EA.
Q50= 4 CFS D.A.= 12 ACRES

STA. 319+00.00 TO STA. 321+80.00 ON RT.
CONC. DITCH PAVING (TYPE B) = 196.62 SQ. YD.

P. I. = 319+83.42
Δ = 09°15'26" LT.
D = 4°00'00"
T = 115.97'
L = 231.43'
P. C. = 318+67.45
P. T. = 320+98.88
e = 0.072'/'
LS = 300'

SITE 2

REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

STA. 311+89.72 BEGIN SUPERELEVATION
STA. 314+91.29 MAX SUPERELEVATION (0.073 '/')
STA. 317+92.86 END SUPERELEVATION

NOTE: FOR ALL THE CONSTRUCTION OF TEMPORARY WORK RAMPS OR HAUL ROADS, THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAMBANK ELEVATION IS 688.00 FT. M.L.S. BETWEEN STA. 317+60 AND STA. 317+80. REFER TO SECTION 110.05 (C) OF THE 2014 STANDARD SPECIFICATIONS

STA. 317+92.86 BEGIN SUPERELEVATION
STA. 319+83.17 MAX SUPERELEVATION (0.045 '/')
STA. 321+73.48 END SUPERELEVATION

312+50.00 693.30 RT. — RT. D.G. -0.25%
314+00.00 690.50 LT. — LT. D.G. -1.05%
314+50.00 692.80 RT. — RT. D.G. -1.34%
315+00.00 689.45 LT. — LT. D.G. -0.79%
316+45.00 688.30 LT. — RT. D.G. -6.22%
316+70.00 689.86 RT.
317+40.00 685.50 RT. — +50 +70 — LT. D.G. 6.52%
317+85.00 685.20 LT. — RT. D.G. 4.00%
318+10.00 685.50 RT.
319+00.00 692.70 LT. — LT. D.G. 5.10%
319+00.00 691.50 RT.
320+00.00 697.80 LT. — LT. D.G. 5.66%
320+00.00 695.50 RT. — RT. D.G. 8.20%
320+50.00 699.60 RT. — LT. D.G. 4.03%
320+75.00 702.05 LT. — RT. D.G. 5.11%
321+80.00 706.28 LT. — 706.25 RT.

F.L. INLET 685.50 (RT.)
F.L. OUTLET 685.20 (LT.)

F.L. INLET 697.80 (LT.)
F.L. OUTLET 695.50 (RT.)

Q50 DESIGN HIGH WATER 690.75

740 730 720 710 700 690 680 670 660 650

310+00 311+00 312+00 313+00 314+00 315+00 316+00 317+00 318+00 319+00 320+00 321+00 322+00 323+00 324+00 325+00

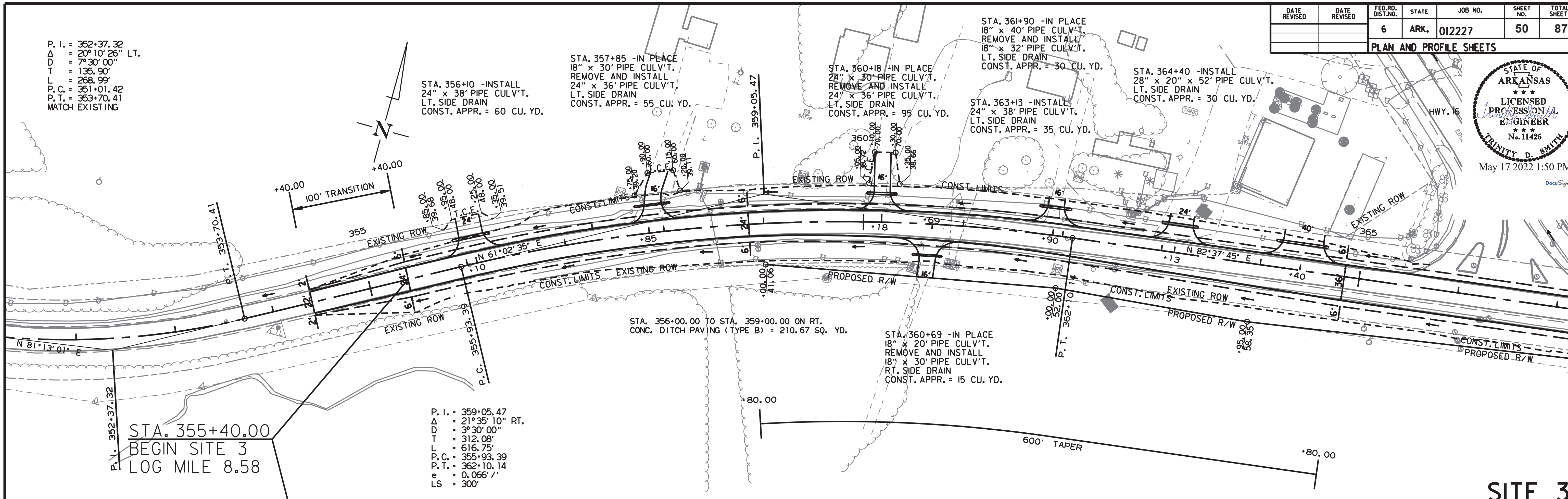
JY43338 9/14/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	50	87

PLAN AND PROFILE SHEETS

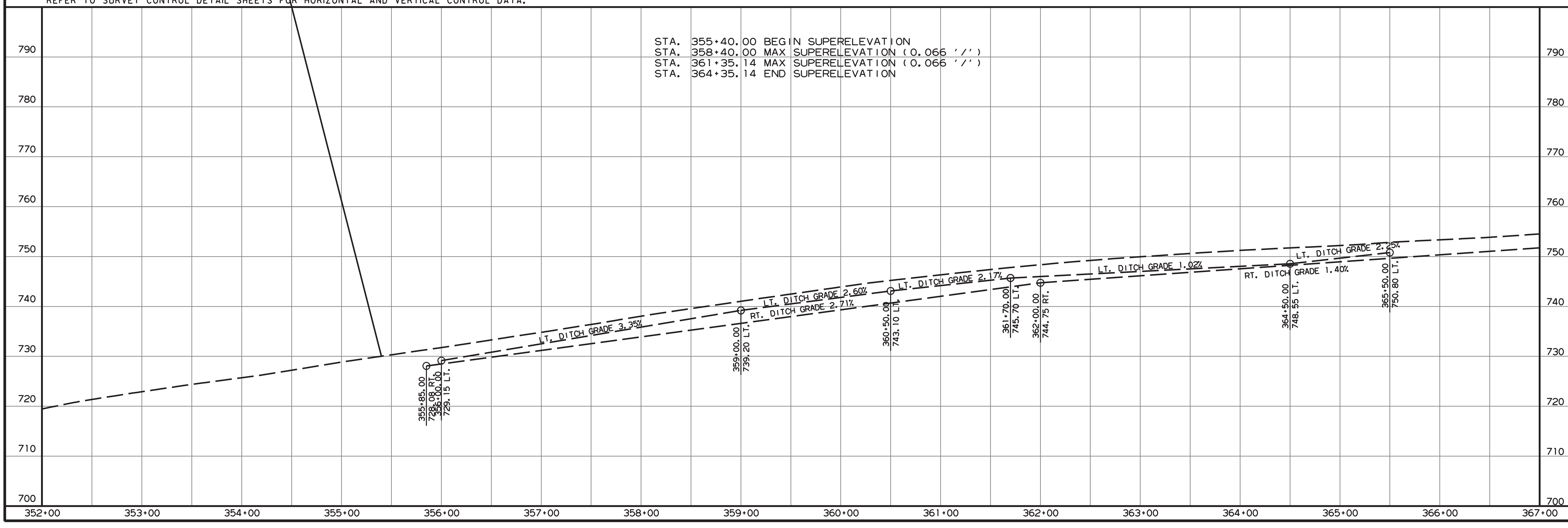
STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH

May 17 2022 1:50 PM



P. I. = 352+37.32
Δ = 20°10'26" LT.
D = 7°30'00"
T = 135.90'
L = 268.99'
P.C. = 351+01.42
P.T. = 353+70.41
MATCH EXISTING
STA. 356+10 -INSTALL
24" x 38' PIPE CULV'T.
LT. SIDE DRAIN
CONST. APPR. = 60 CU. YD.
STA. 357+85 -IN PLACE
18" x 30' PIPE CULV'T.
REMOVE AND INSTALL
24" x 36' PIPE CULV'T.
LT. SIDE DRAIN
CONST. APPR. = 55 CU. YD.
STA. 360+18 -IN PLACE
24" x 30' PIPE CULV'T.
REMOVE AND INSTALL
24" x 36' PIPE CULV'T.
LT. SIDE DRAIN
CONST. APPR. = 95 CU. YD.
STA. 361+90 -IN PLACE
18" x 40' PIPE CULV'T.
REMOVE AND INSTALL
18" x 32' PIPE CULV'T.
LT. SIDE DRAIN
CONST. APPR. = 30 CU. YD.
STA. 363+13 -INSTALL
24" x 38' PIPE CULV'T.
LT. SIDE DRAIN
CONST. APPR. = 35 CU. YD.
STA. 364+40 -INSTALL
28" x 20" x 52' PIPE CULV'T.
LT. SIDE DRAIN
CONST. APPR. = 30 CU. YD.
HWY. 16
100' TRANSITION
EXISTING ROW
CONST. LIMITS
PROPOSED R/W
N 61°02'35" E
N 82°37'45" E
N 81°13'01" E
P. I. 359+05.47
P. T. 353+70.41
P. C. 355+93.39
P. T. 362+10.14
P. I. 352+37.32
STA. 356+00.00 TO STA. 359+00.00 ON RT.
CONC. DITCH PAVING (TYPE B) = 210.67 SQ. YD.
STA. 360+69 -IN PLACE
18" x 20' PIPE CULV'T.
REMOVE AND INSTALL
18" x 30' PIPE CULV'T.
RT. SIDE DRAIN
CONST. APPR. = 15 CU. YD.
STA. 355+40.00
BEGIN SITE 3
LOG MILE 8.58
P. I. = 359+05.47
Δ = 21°35'10" RT.
D = 3°30'00"
T = 312.08'
L = 616.75'
P.C. = 355+93.39
P.T. = 362+10.14
e = 0.066'/'
LS = 300'
600' TAPER
SITE 3

REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.



STA. 355+40.00 BEGIN SUPERELEVATION
STA. 358+40.00 MAX SUPERELEVATION (0.066 '/')
STA. 361+35.14 MAX SUPERELEVATION (0.066 '/')
STA. 364+35.14 END SUPERELEVATION
LT. DITCH GRADE 3.35%
LT. DITCH GRADE 2.60%
RT. DITCH GRADE 2.71%
LT. DITCH GRADE 2.17%
LT. DITCH GRADE 1.02%
RT. DITCH GRADE 1.40%
LT. DITCH GRADE 2.25%
355+85.00 728.08 RT.
356+00.00 729.15 LT.
359+00.00 739.20 LT.
360+50.00 743.10 LT.
361+70.00 745.70 LT.
362+00.00 744.75 RT.
364+50.00 748.55 LT.
365+50.00 750.80 LT.
790
780
770
760
750
740
730
720
710
700
352+00
353+00
354+00
355+00
356+00
357+00
358+00
359+00
360+00
361+00
362+00
363+00
364+00
365+00
366+00
367+00

JY43338 9/14/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	51	87
		PLAN AND PROFILE SHEETS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY R. SMITH
May 17 2022 1:50 PM
DocuSign

STA. 368+61 -IN PLACE
18" x 40' PIPE CULV'T.
REMOVE AND INSTALL
18" x 50' PIPE CULV'T.
LT. SIDE DRAIN
CONST. APPR. = 45 CU. YD.

STA. 372+68 -IN PLACE
18" x 20' PIPE CULV'T.
REMOVE AND INSTALL
18" x 32' PIPE CULV'T.
LT. SIDE DRAIN
CONST. APPR. = 25 CU. YD.

STA. 373+24 -IN PLACE
18" x 34' PIPE CULV'T.
REMOVE AND INSTALL
18" x 32' PIPE CULV'T.
LT. SIDE DRAIN
CONST. APPR. = 15 CU. YD.

STA. 369+42 -IN PLACE
18" x 22' PIPE CULV'T.
REMOVE AND INSTALL
22" x 14" x30' PIPE CULV'T.
RT. SIDE DRAIN
CONST. APPR. = 10 CU. YD.

+63.00 100' TRANSITION +63.00

+63.00 600' TAPER +63.00

EXISTING ROW — CONST. LIMITS — EXISTING ROW

N 82°37'45" E

T.C.E.

R/W

STA. 373+63.00
END SITE 3

POE 381+41.04

SITE 3

REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

RT. DITCH GRADE 1.40%
LT. DITCH GRADE 1.19%
LT. DITCH GRADE 1.78%

367+40.00 751.98 LT.
370+20.00 755.30 LT.
373+63.00 761.42 LT. 761.00 RT.

790 780 770 760 750 740 730 720 710 700

367+00 368+00 369+00 370+00 371+00 372+00 373+00 374+00 375+00 376+00 377+00 378+00 379+00 380+00 381+00 382+00

JY43338 9/14/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	52	87
		PLAN AND PROFILE SHEETS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
May 17 2022 1:50 PM

STA. 418+58 - IN PLACE
18" x 36' PIPE CULV'T.
LT. SIDE DRAIN
REMOVE AND INSTALL
18" x 50' PIPE CULV'T.
CONST. APPR. = 60 CU. YD.

STA. 415+05.00 TO STA. 415+85.00 ON LT.
CONC. DITCH PAVING (TYPE B) = 56.18 SQ. YD.

STA. 414+90 -IN PLACE
18" x 24' PIPE CULV'T.
REMOVE AND INSTALL
18" x 30' PIPE CULV'T.
RT. SIDE DRAIN
CONST. APPR. = 25 CU. YD.

STA. 420+46 -IN PLACE
18" x 24' PIPE CULV'T.
REMOVE AND INSTALL
18" x 30' PIPE CULV'T.
LT. SIDE DRAIN
CONST. APPR. = 50 CU. YD.

STA. 417+65.00 TO STA. 418+40.00 ON LT.
CONC. DITCH PAVING (TYPE B) = 52.67 SQ. YD.

STA. 421+35.00 TO STA. 422+45.00 ON LT.
CONC. DITCH PAVING (TYPE B) = 77.24 SQ. YD.

STA. 422+58 - IN PLACE
18" x 22' PIPE CULV'T.
LT. SIDE DRAIN
REMOVE AND INSTALL
21" x 15" x 28' PIPE CULV'T.
CONST. APPR. = 20 CU. YD.

STA. 415+90.00 TO STA. 418+95.00 ON RT.
CONC. DITCH PAVING (TYPE B) = 214.18 SQ. YD.

P. I. = 418+99.50
Δ = 39°52'56" RT.
D = 11°00'00"
T = 188.97'
L = 362.56'
P.C. = 417+10.53
P.T. = 420+73.09
e = 0.100'/'
LS = 300'

STA. 414+40 -IN PLACE
18" x 48' PIPE CULV'T.
REMOVE AND INSTALL
18" x 56' PIPE CULV'T.
RT. SIDE DRAIN
CONST. TURNOUT = 30 CU. YD.

STA. 414+85.53
BEGIN SITE 4
LOG MILE 11.55

STA. 422+98.09
END SITE 4

SITE 4

REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

STA. 414+85.53 BEGIN SUPERELEVATION
STA. 417+85.53 MAX SUPERELEVATION (0.100 '/')
STA. 419+98.09 MAX SUPERELEVATION (0.100 '/')
STA. 422+98.09 END SUPERELEVATION

414+85.53 879.50 LT.
415+85.00 885.40 LT.
415+90.00 884.85 RT.
417+48.00 893.50 RT.
417+65.00 896.95 LT.
418+90.00 901.05 LT.
418+95.00 898.25 RT.
419+85.00 900.15 RT.
420+28.00 902.95 LT.
421+00.00 899.60 RT.
421+35.00 900.55 LT.
422+98.09 894.87 LT. 895.34 RT.

LT. DITCH GRADE 5.93%
RT. DITCH GRADE 5.47%
LT. DITCH GRADE 3.28%
RT. DITCH GRADE 3.23%
RT. D.G. 2.11%
LT. DITCH GRADE -0.48%
RT. D.G. -0.48%
LT. DITCH GRADE -2.24%
RT. DITCH GRADE -2.15%
LT. DITCH GRADE -3.48%

940 930 920 910 900 890 880 870 860 850

411+00 412+00 413+00 414+00 415+00 416+00 417+00 418+00 419+00 420+00 421+00 422+00 423+00 424+00 425+00 426+00

JY43338 9/14/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	53	87
		CROSS SECTIONS				

133+20

STAGE 1		STAGE 2	
CUT AREA	4 SQ. FT.	CUT AREA	1 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	3 CU. YD.	CUT VOLUME	1 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	0 CU. YD.

133+00

STAGE 1		STAGE 2	
CUT AREA	4 SQ. FT.	CUT AREA	3 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	2 CU. YD.	CUT VOLUME	1 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	0 CU. YD.

132+78.41
BEGIN 100' TRANSITION

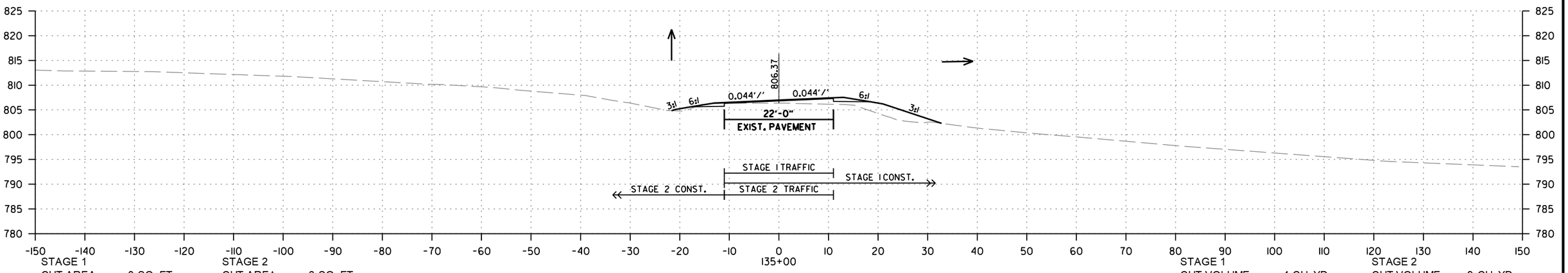
STAGE 1		STAGE 2	
CUT AREA	0 SQ. FT.	CUT AREA	0 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	0 CU. YD.	CUT VOLUME	0 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	0 CU. YD.

SITE 1
STA. 132+78 TO STA. 133+20

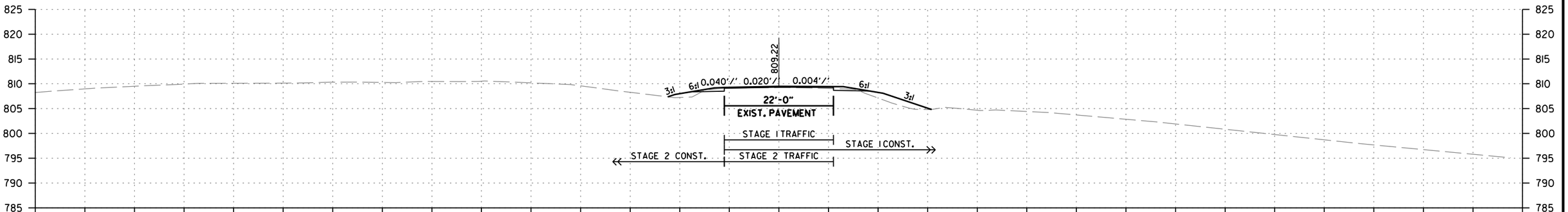
JY43338 9/7/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	54	87
		CROSS SECTIONS				



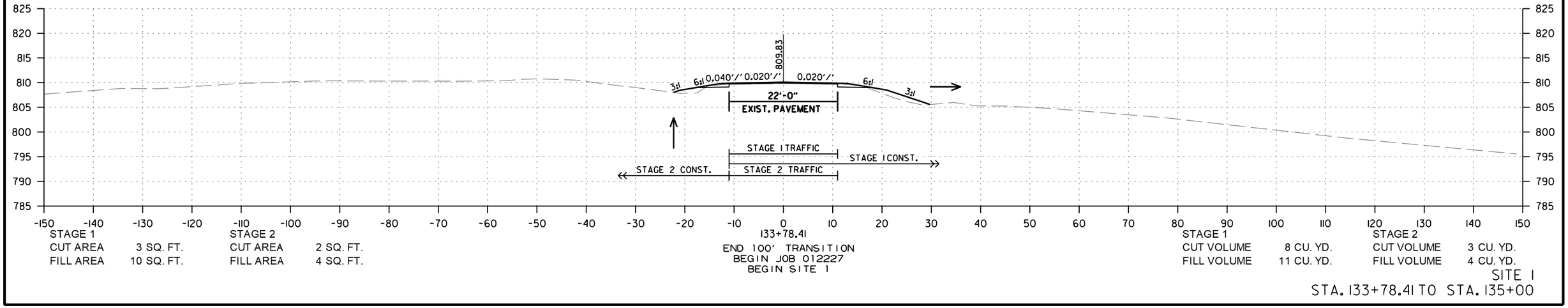
135+00

STAGE 1		STAGE 2		STAGE 1		STAGE 2	
CUT AREA	0 SQ. FT.	CUT AREA	3 SQ. FT.	CUT VOLUME	4 CU. YD.	CUT VOLUME	9 CU. YD.
FILL AREA	29 SQ. FT.	FILL AREA	2 SQ. FT.	FILL VOLUME	80 CU. YD.	FILL VOLUME	13 CU. YD.



134+00

STAGE 1		STAGE 2		STAGE 1		STAGE 2	
CUT AREA	2 SQ. FT.	CUT AREA	2 SQ. FT.	CUT VOLUME	2 CU. YD.	CUT VOLUME	2 CU. YD.
FILL AREA	14 SQ. FT.	FILL AREA	5 SQ. FT.	FILL VOLUME	10 CU. YD.	FILL VOLUME	4 CU. YD.



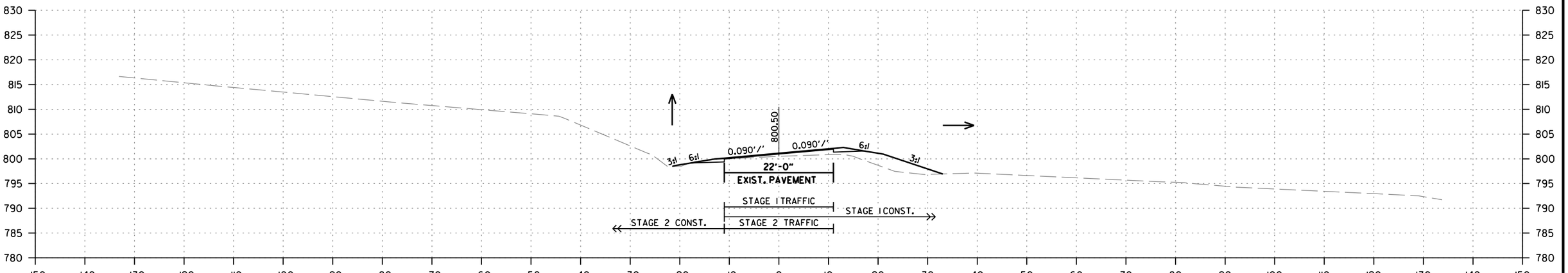
133+78.41
END 100' TRANSITION
BEGIN JOB 012227
BEGIN SITE 1

STAGE 1		STAGE 2		STAGE 1		STAGE 2	
CUT AREA	3 SQ. FT.	CUT AREA	2 SQ. FT.	CUT VOLUME	8 CU. YD.	CUT VOLUME	3 CU. YD.
FILL AREA	10 SQ. FT.	FILL AREA	4 SQ. FT.	FILL VOLUME	11 CU. YD.	FILL VOLUME	4 CU. YD.

SITE 1
STA. 133+78.41 TO STA. 135+00

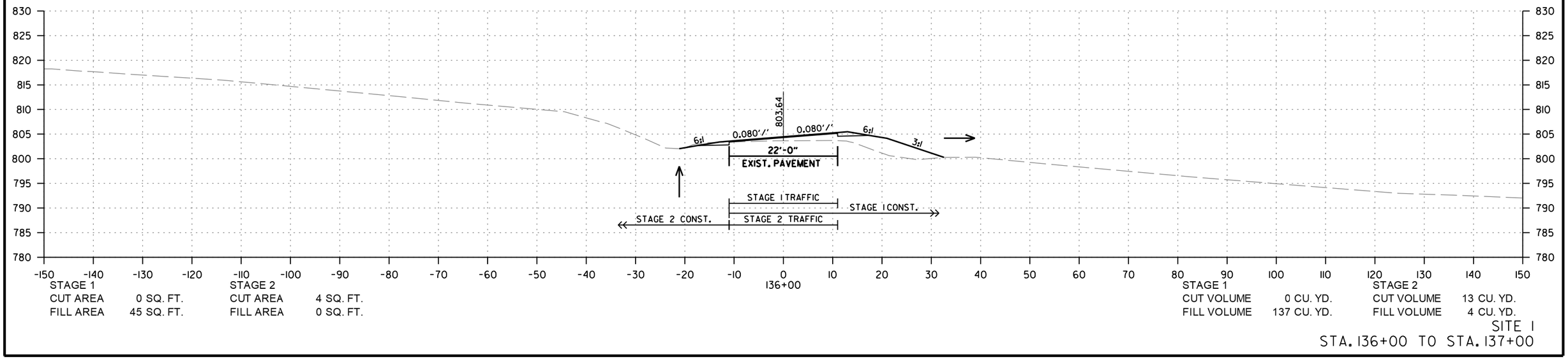
JY43338 9/7/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	55	87
		CROSS SECTIONS				



STAGE 1		STAGE 2	
CUT AREA	0 SQ. FT.	CUT AREA	3 SQ. FT.
FILL AREA	36 SQ. FT.	FILL AREA	1 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	0 CU. YD.	CUT VOLUME	13 CU. YD.
FILL VOLUME	150 CU. YD.	FILL VOLUME	2 CU. YD.



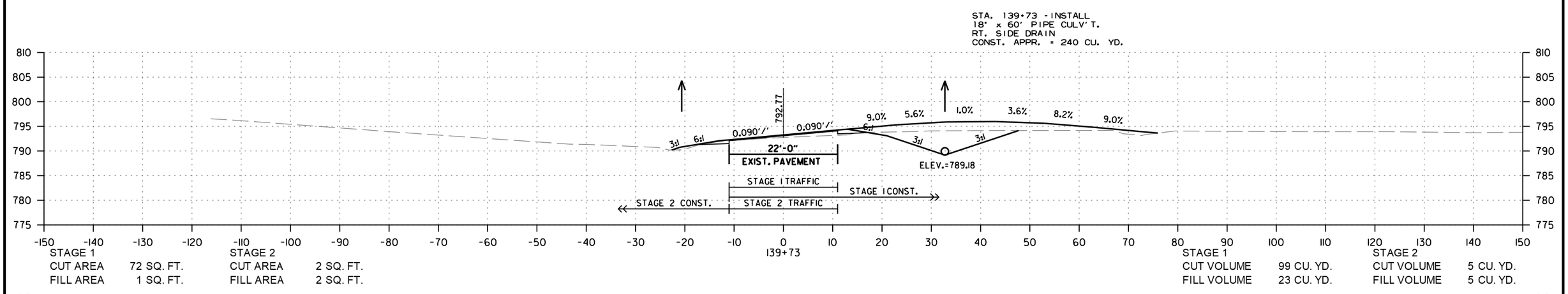
STAGE 1		STAGE 2	
CUT AREA	0 SQ. FT.	CUT AREA	4 SQ. FT.
FILL AREA	45 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	0 CU. YD.	CUT VOLUME	13 CU. YD.
FILL VOLUME	137 CU. YD.	FILL VOLUME	4 CU. YD.

SITE 1
STA. 136+00 TO STA. 137+00

JY43338 9/7/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	56	87
		CROSS SECTIONS				



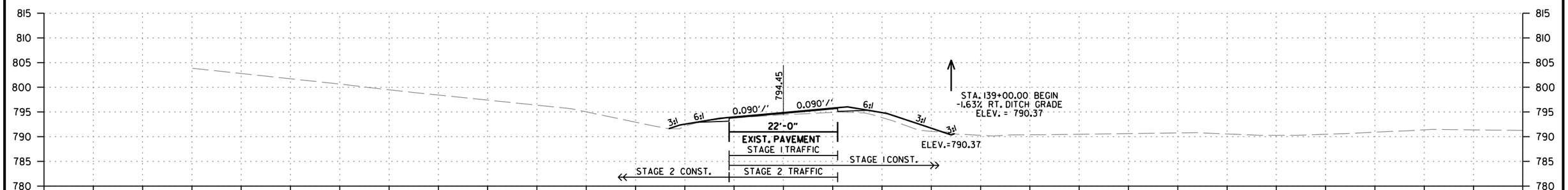
STAGE 1
CUT AREA 72 SQ. FT.
FILL AREA 1 SQ. FT.

STAGE 2
CUT AREA 2 SQ. FT.
FILL AREA 2 SQ. FT.

139+73

STAGE 1
CUT VOLUME 99 CU. YD.
FILL VOLUME 23 CU. YD.

STAGE 2
CUT VOLUME 5 CU. YD.
FILL VOLUME 5 CU. YD.



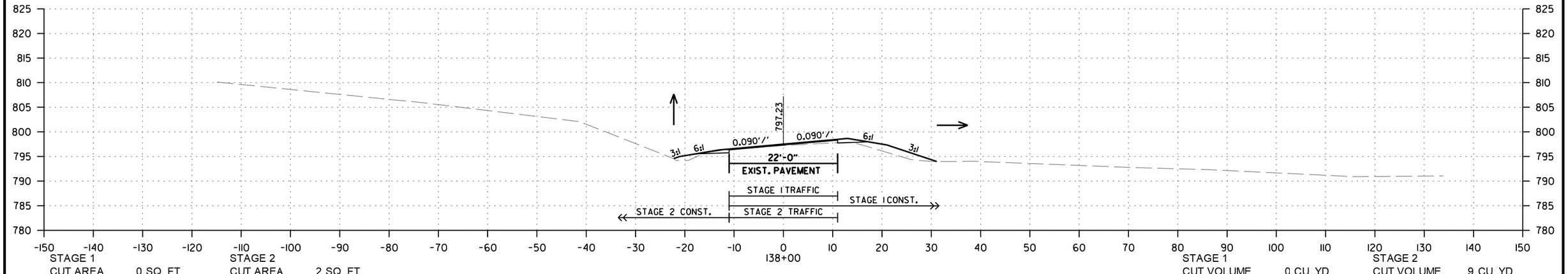
STAGE 1
CUT AREA 1 SQ. FT.
FILL AREA 16 SQ. FT.

STAGE 2
CUT AREA 2 SQ. FT.
FILL AREA 2 SQ. FT.

139+00

STAGE 1
CUT VOLUME 2 CU. YD.
FILL VOLUME 61 CU. YD.

STAGE 2
CUT VOLUME 7 CU. YD.
FILL VOLUME 11 CU. YD.



STAGE 1
CUT AREA 0 SQ. FT.
FILL AREA 17 SQ. FT.

STAGE 2
CUT AREA 2 SQ. FT.
FILL AREA 4 SQ. FT.

138+00

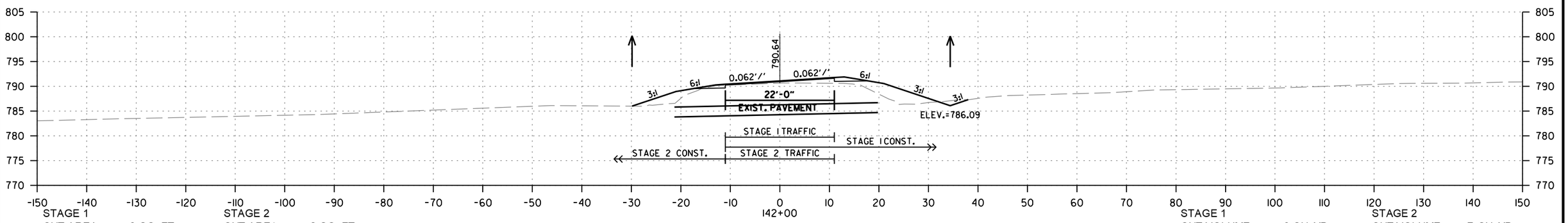
STAGE 1
CUT VOLUME 0 CU. YD.
FILL VOLUME 98 CU. YD.

STAGE 2
CUT VOLUME 9 CU. YD.
FILL VOLUME 9 CU. YD.

SITE 1
STA. 138+00 TO STA. 139+73

JY43338 9/7/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	57	87
		CROSS SECTIONS				



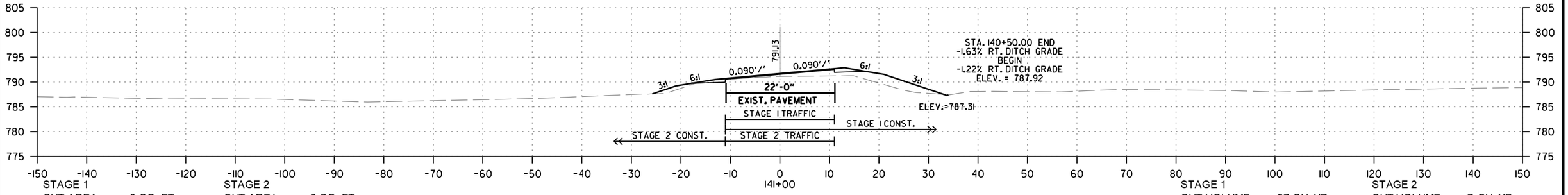
STAGE 1
CUT AREA 3 SQ. FT.
FILL AREA 34 SQ. FT.

STAGE 2
CUT AREA 2 SQ. FT.
FILL AREA 16 SQ. FT.

142+00

STAGE 1
CUT VOLUME 6 CU. YD.
FILL VOLUME 117 CU. YD.

STAGE 2
CUT VOLUME 7 CU. YD.
FILL VOLUME 39 CU. YD.



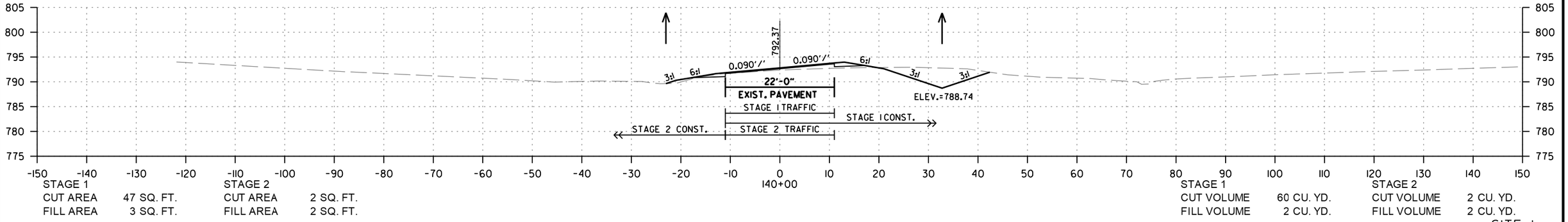
STAGE 1
CUT AREA 0 SQ. FT.
FILL AREA 29 SQ. FT.

STAGE 2
CUT AREA 2 SQ. FT.
FILL AREA 5 SQ. FT.

141+00

STAGE 1
CUT VOLUME 87 CU. YD.
FILL VOLUME 59 CU. YD.

STAGE 2
CUT VOLUME 7 CU. YD.
FILL VOLUME 13 CU. YD.



STAGE 1
CUT AREA 47 SQ. FT.
FILL AREA 3 SQ. FT.

STAGE 2
CUT AREA 2 SQ. FT.
FILL AREA 2 SQ. FT.

140+00

STAGE 1
CUT VOLUME 60 CU. YD.
FILL VOLUME 2 CU. YD.

STAGE 2
CUT VOLUME 2 CU. YD.
FILL VOLUME 2 CU. YD.

SITE 1
STA. 140+00 TO STA. 142+00

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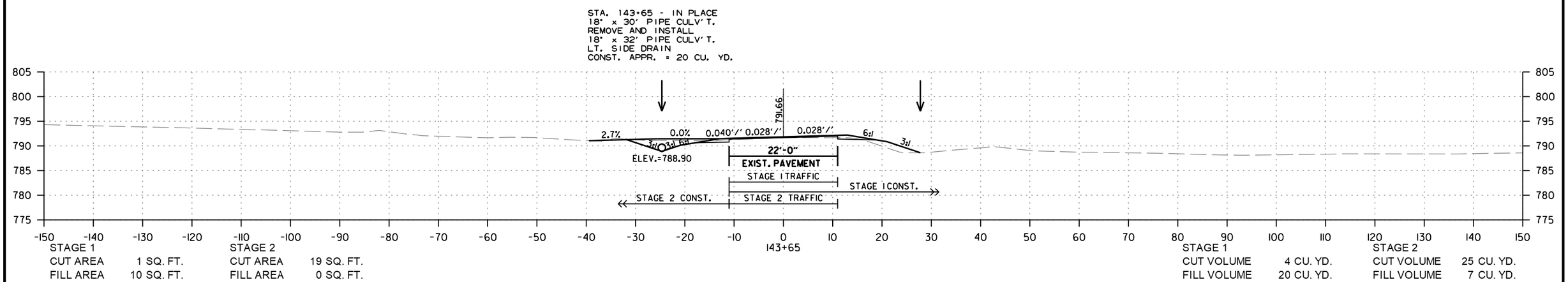
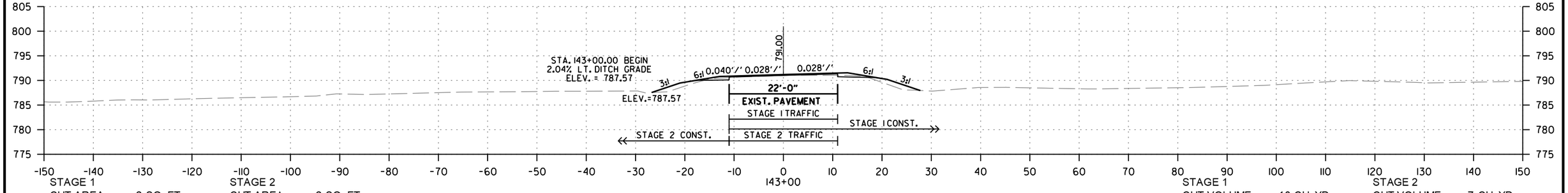
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	58	87
		CROSS SECTIONS				



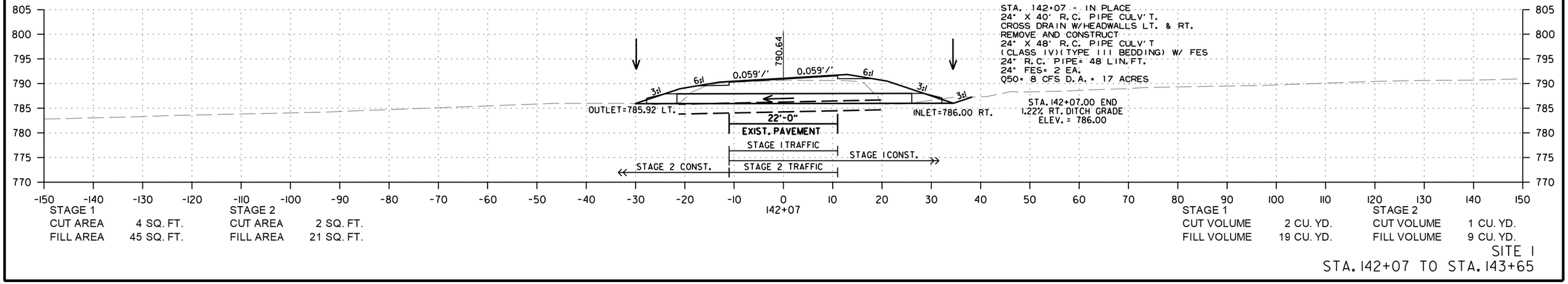
STAGE 1		STAGE 2	
CUT AREA	1 SQ. FT.	CUT AREA	19 SQ. FT.
FILL AREA	10 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	4 CU. YD.	CUT VOLUME	25 CU. YD.
FILL VOLUME	20 CU. YD.	FILL VOLUME	7 CU. YD.



STAGE 1		STAGE 2	
CUT AREA	2 SQ. FT.	CUT AREA	2 SQ. FT.
FILL AREA	7 SQ. FT.	FILL AREA	6 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	10 CU. YD.	CUT VOLUME	7 CU. YD.
FILL VOLUME	90 CU. YD.	FILL VOLUME	47 CU. YD.



STAGE 1		STAGE 2	
CUT AREA	4 SQ. FT.	CUT AREA	2 SQ. FT.
FILL AREA	45 SQ. FT.	FILL AREA	21 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	2 CU. YD.	CUT VOLUME	1 CU. YD.
FILL VOLUME	19 CU. YD.	FILL VOLUME	9 CU. YD.

SITE 1
STA. 142+07 TO STA. 143+65

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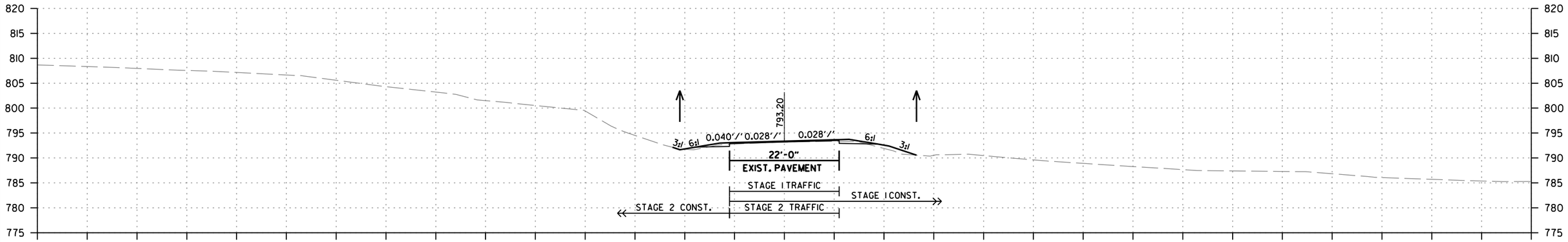
R012227.DGN

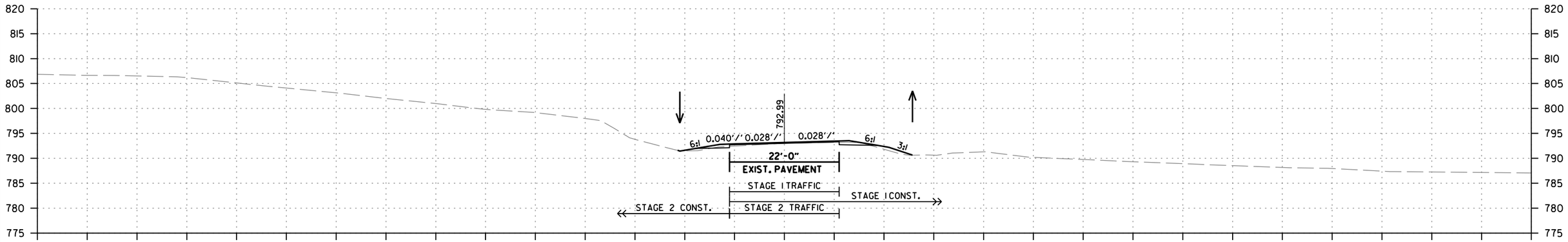
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	59	87
		CROSS SECTIONS				



146+00

STAGE 1		STAGE 2	
CUT AREA	2 SQ. FT.	CUT AREA	1 SQ. FT.
FILL AREA	5 SQ. FT.	FILL AREA	1 SQ. FT.

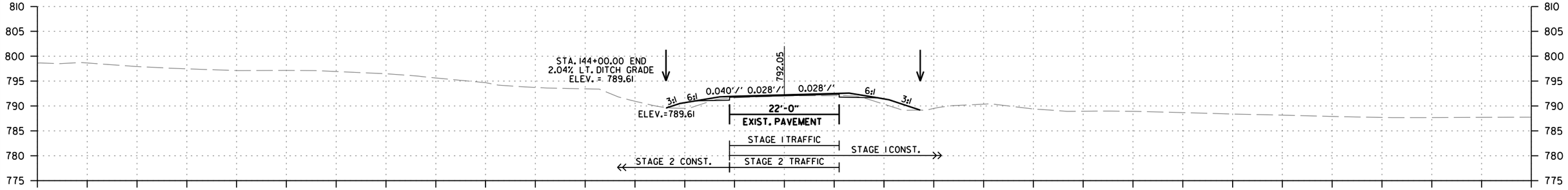
STAGE 1		STAGE 2	
CUT VOLUME	9 CU. YD.	CUT VOLUME	4 CU. YD.
FILL VOLUME	17 CU. YD.	FILL VOLUME	6 CU. YD.



145+00

STAGE 1		STAGE 2	
CUT AREA	3 SQ. FT.	CUT AREA	1 SQ. FT.
FILL AREA	4 SQ. FT.	FILL AREA	2 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	7 CU. YD.	CUT VOLUME	4 CU. YD.
FILL VOLUME	24 CU. YD.	FILL VOLUME	17 CU. YD.



144+00

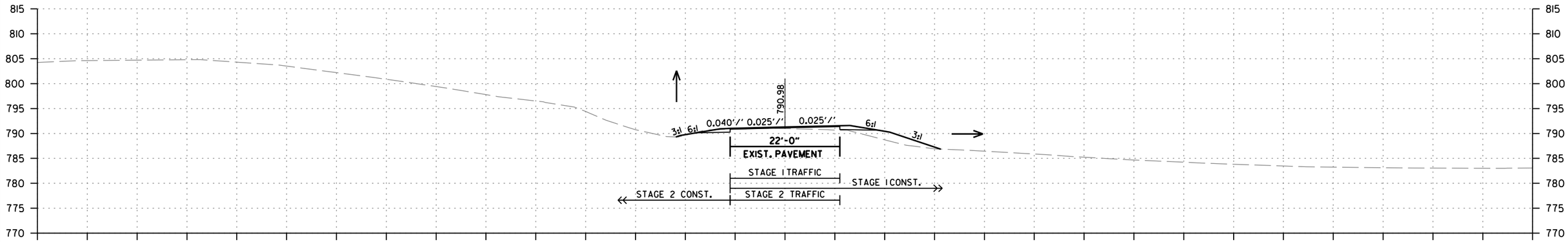
STAGE 1		STAGE 2	
CUT AREA	1 SQ. FT.	CUT AREA	1 SQ. FT.
FILL AREA	9 SQ. FT.	FILL AREA	7 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	1 CU. YD.	CUT VOLUME	13 CU. YD.
FILL VOLUME	12 CU. YD.	FILL VOLUME	5 CU. YD.

SITE 1
STA. 144+00 TO STA. 146+00

JY43338 9/7/2021
R012227.DGN

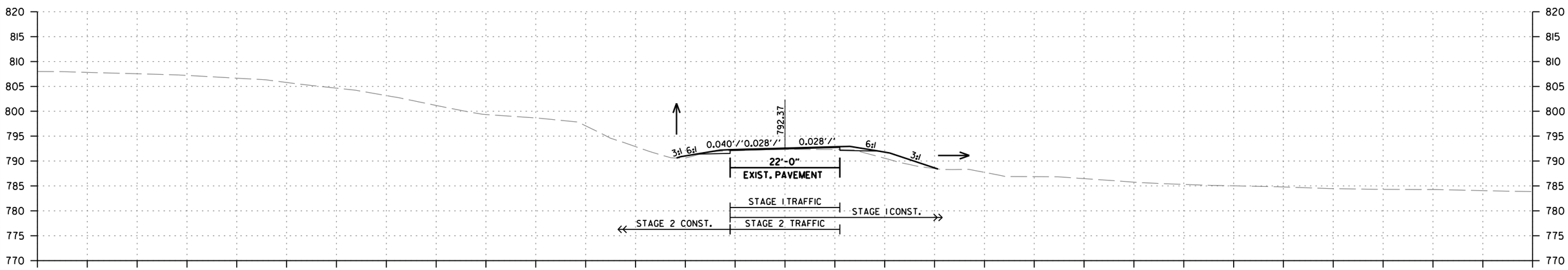
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	60	87
		CROSS SECTIONS				



148+00

STAGE 1		STAGE 2	
CUT AREA	0 SQ. FT.	CUT AREA	3 SQ. FT.
FILL AREA	21 SQ. FT.	FILL AREA	1 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	2 CU. YD.	CUT VOLUME	9 CU. YD.
FILL VOLUME	63 CU. YD.	FILL VOLUME	4 CU. YD.



147+00

STAGE 1		STAGE 2	
CUT AREA	1 SQ. FT.	CUT AREA	2 SQ. FT.
FILL AREA	13 SQ. FT.	FILL AREA	1 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	6 CU. YD.	CUT VOLUME	6 CU. YD.
FILL VOLUME	33 CU. YD.	FILL VOLUME	4 CU. YD.

SITE 1
STA. 147+00 TO STA. 148+00

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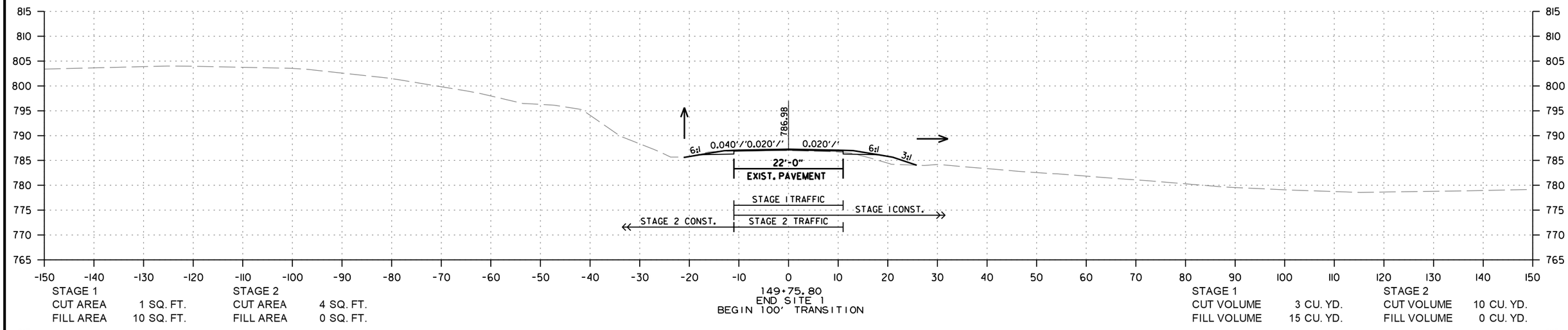
R012227.DGN

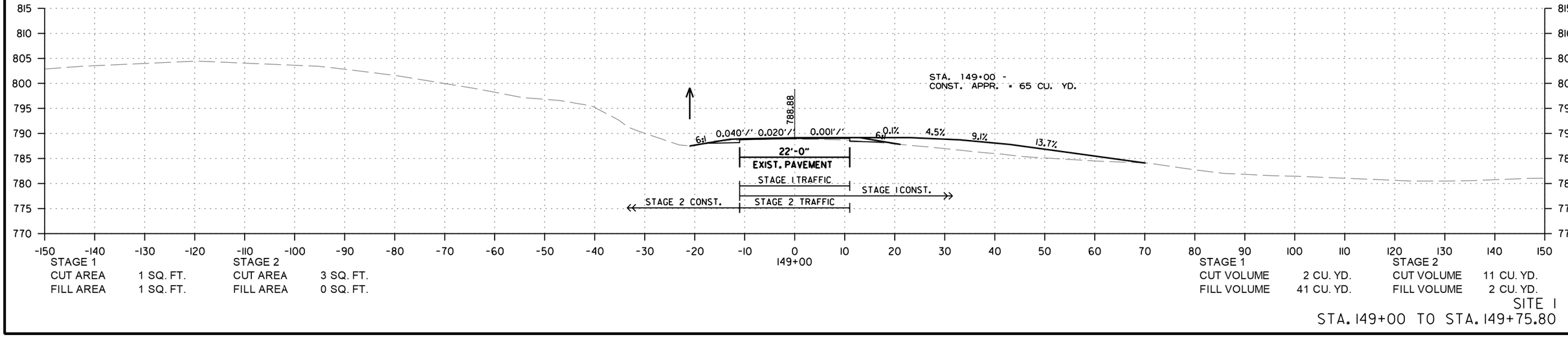
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	61	87
		CROSS SECTIONS				



149+75.80
END SITE 1
BEGIN 100' TRANSITION

STAGE 1		STAGE 2	
CUT AREA	1 SQ. FT.	CUT AREA	4 SQ. FT.
FILL AREA	10 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	3 CU. YD.	CUT VOLUME	10 CU. YD.
FILL VOLUME	15 CU. YD.	FILL VOLUME	0 CU. YD.



149+00

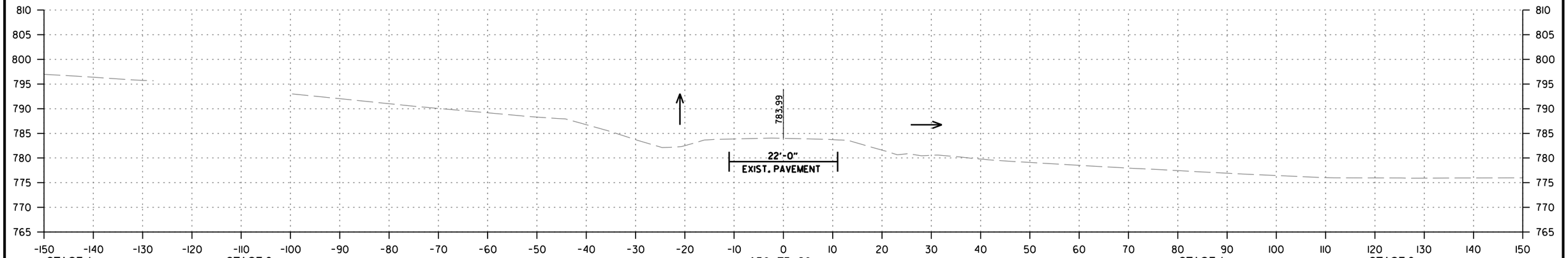
STAGE 1		STAGE 2	
CUT AREA	1 SQ. FT.	CUT AREA	3 SQ. FT.
FILL AREA	1 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	2 CU. YD.	CUT VOLUME	11 CU. YD.
FILL VOLUME	41 CU. YD.	FILL VOLUME	2 CU. YD.

SITE 1
STA. 149+00 TO STA. 149+75.80

JY43338 9/7/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	62	87
		CROSS SECTIONS				

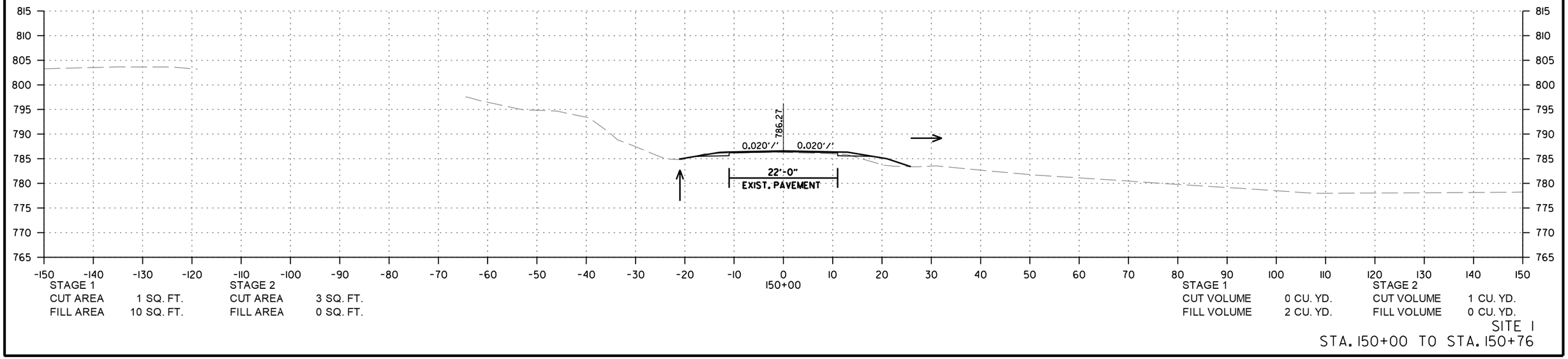


STAGE 1
CUT AREA 0 SQ. FT.
FILL AREA 0 SQ. FT.

STAGE 2
CUT AREA 0 SQ. FT.
FILL AREA 0 SQ. FT.

STAGE 1
CUT VOLUME 0 CU. YD.
FILL VOLUME 0 CU. YD.

STAGE 2
CUT VOLUME 0 CU. YD.
FILL VOLUME 0 CU. YD.



STAGE 1
CUT AREA 1 SQ. FT.
FILL AREA 10 SQ. FT.

STAGE 2
CUT AREA 3 SQ. FT.
FILL AREA 0 SQ. FT.

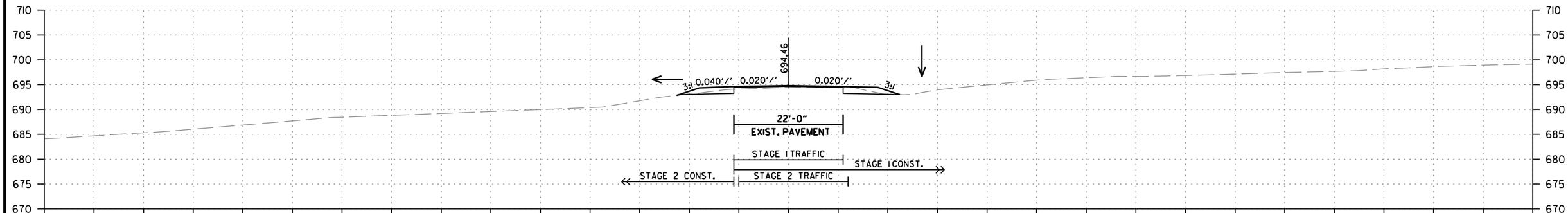
STAGE 1
CUT VOLUME 0 CU. YD.
FILL VOLUME 2 CU. YD.

STAGE 2
CUT VOLUME 1 CU. YD.
FILL VOLUME 0 CU. YD.

SITE 1
STA. 150+00 TO STA. 150+76

JY43338 9/7/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	63	87
		CROSS SECTIONS				



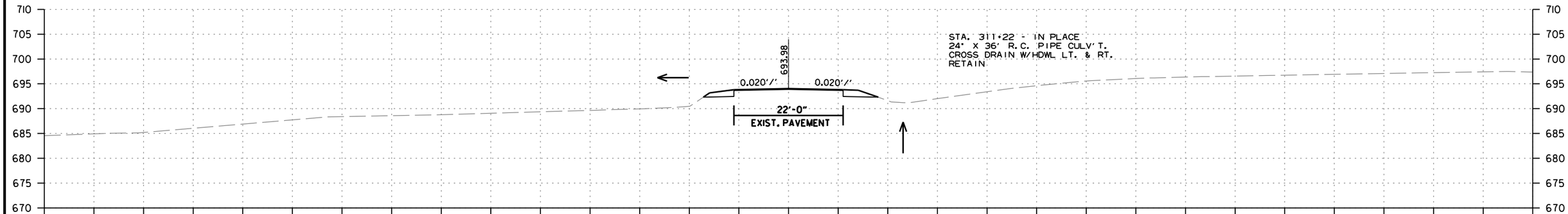
STAGE 1
CUT AREA 6 SQ. FT.
FILL AREA 0 SQ. FT.

STAGE 2
CUT AREA 4 SQ. FT.
FILL AREA 0 SQ. FT.

311+89.72
END 100' TRANSITION
BEGIN SITE 2

STAGE 1
CUT VOLUME 22 CU. YD.
FILL VOLUME 0 CU. YD.

STAGE 2
CUT VOLUME 17 CU. YD.
FILL VOLUME 0 CU. YD.



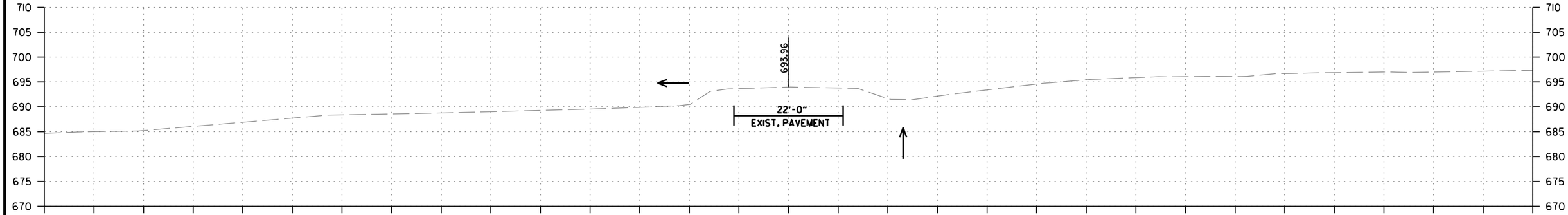
STAGE 1
CUT AREA 7 SQ. FT.
FILL AREA 0 SQ. FT.

STAGE 2
CUT AREA 6 SQ. FT.
FILL AREA 0 SQ. FT.

311+00

STAGE 1
CUT VOLUME 1 CU. YD.
FILL VOLUME 0 CU. YD.

STAGE 2
CUT VOLUME 1 CU. YD.
FILL VOLUME 0 CU. YD.



STAGE 1
CUT AREA 0 SQ. FT.
FILL AREA 0 SQ. FT.

STAGE 2
CUT AREA 0 SQ. FT.
FILL AREA 0 SQ. FT.

310+89.72
BEGIN 100' TRANSITION

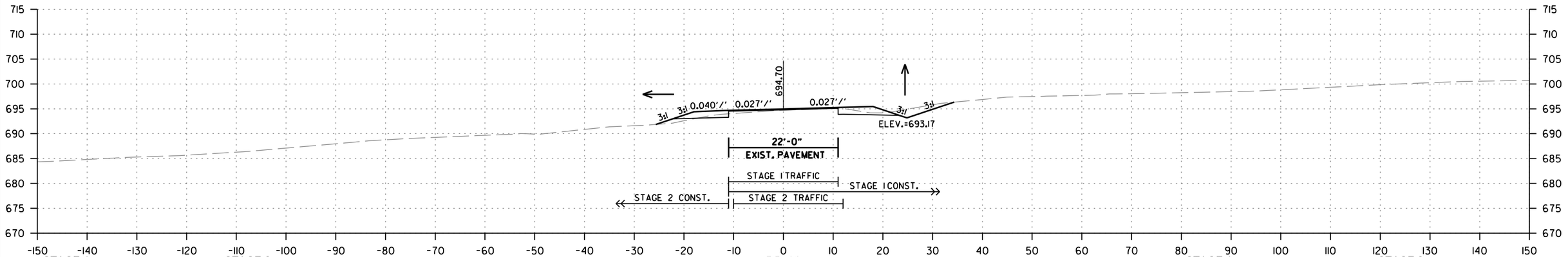
STAGE 1
CUT VOLUME 0 CU. YD.
FILL VOLUME 0 CU. YD.

STAGE 2
CUT VOLUME 0 CU. YD.
FILL VOLUME 0 CU. YD.

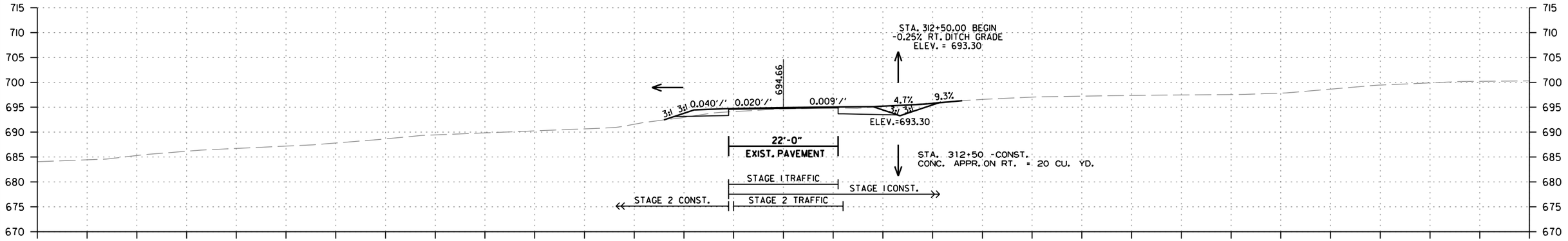
SITE 2
STA. 310+89.72 TO STA. 311+89.72

JY43338 9/7/2021
R012227.DGN

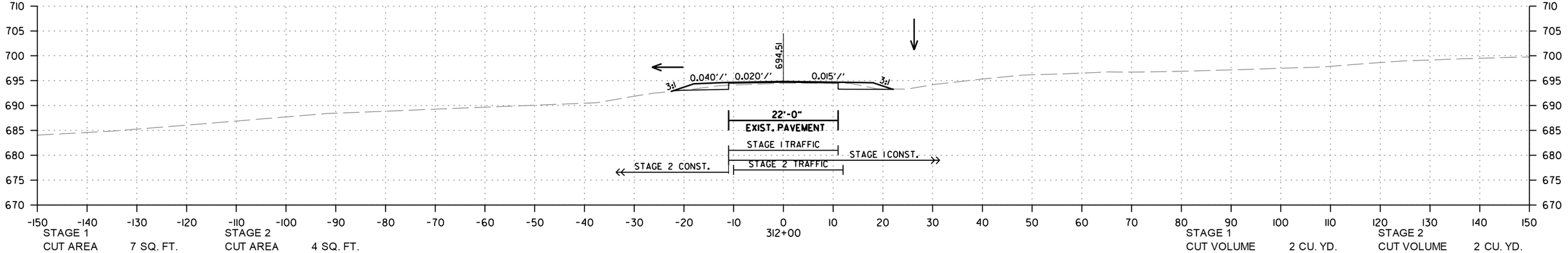
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	64	87
		CROSS SECTIONS				



STAGE 1		STAGE 2		STAGE 1		STAGE 2	
CUT AREA	20 SQ. FT.	CUT AREA	3 SQ. FT.	CUT VOLUME	44 CU. YD.	CUT VOLUME	6 CU. YD.
FILL AREA	0 SQ. FT.	FILL AREA	4 SQ. FT.	FILL VOLUME	0 CU. YD.	FILL VOLUME	5 CU. YD.



STAGE 1		STAGE 2		STAGE 1		STAGE 2	
CUT AREA	27 SQ. FT.	CUT AREA	3 SQ. FT.	CUT VOLUME	31 CU. YD.	CUT VOLUME	6 CU. YD.
FILL AREA	0 SQ. FT.	FILL AREA	1 SQ. FT.	FILL VOLUME	0 CU. YD.	FILL VOLUME	1 CU. YD.

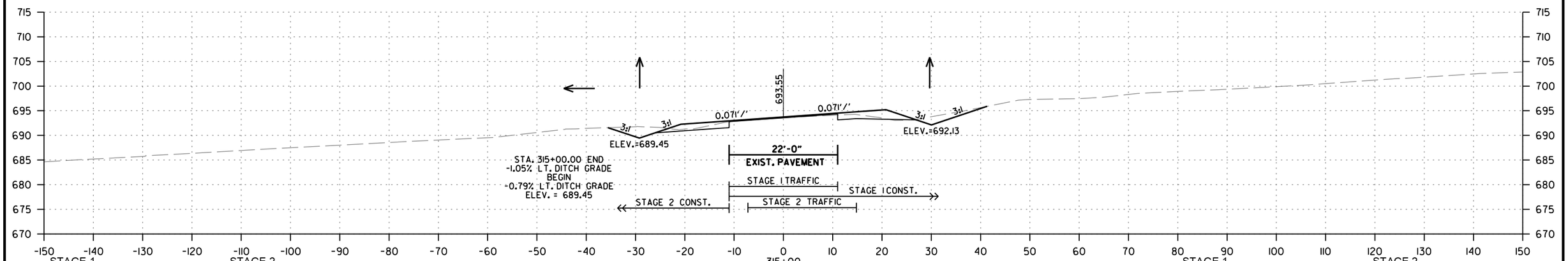


STAGE 1		STAGE 2		STAGE 1		STAGE 2	
CUT AREA	7 SQ. FT.	CUT AREA	4 SQ. FT.	CUT VOLUME	2 CU. YD.	CUT VOLUME	2 CU. YD.
FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.	FILL VOLUME	0 CU. YD.	FILL VOLUME	0 CU. YD.

SITE 2
STA. 312+00 TO STA. 313+00

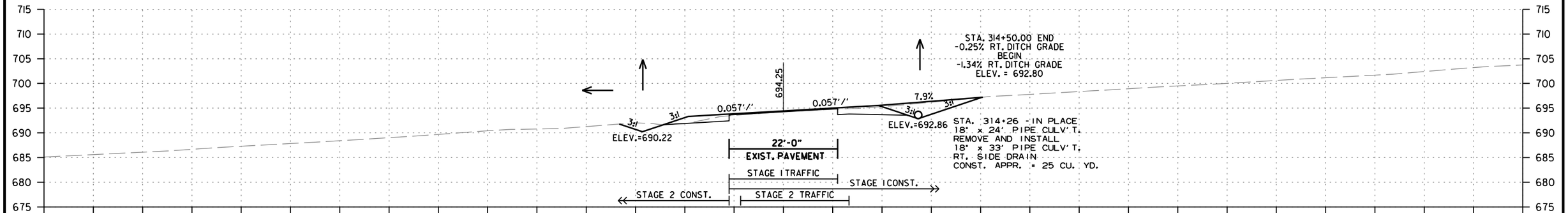
JY43338 9/7/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	65	87
		CROSS SECTIONS				



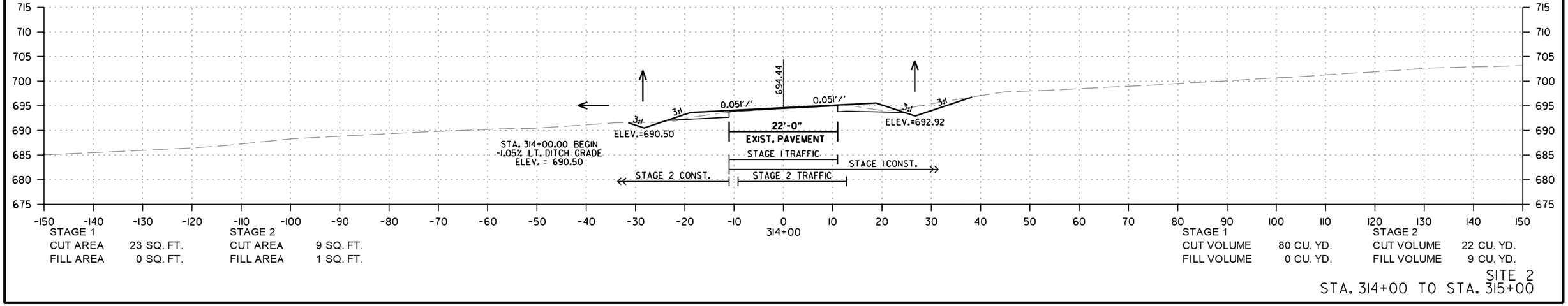
STAGE 1		STAGE 2	
CUT AREA	17 SQ. FT.	CUT AREA	22 SQ. FT.
FILL AREA	1 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	86 CU. YD.	CUT VOLUME	47 CU. YD.
FILL VOLUME	1 CU. YD.	FILL VOLUME	0 CU. YD.



STAGE 1		STAGE 2	
CUT AREA	46 SQ. FT.	CUT AREA	12 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	33 CU. YD.	CUT VOLUME	10 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	0 CU. YD.



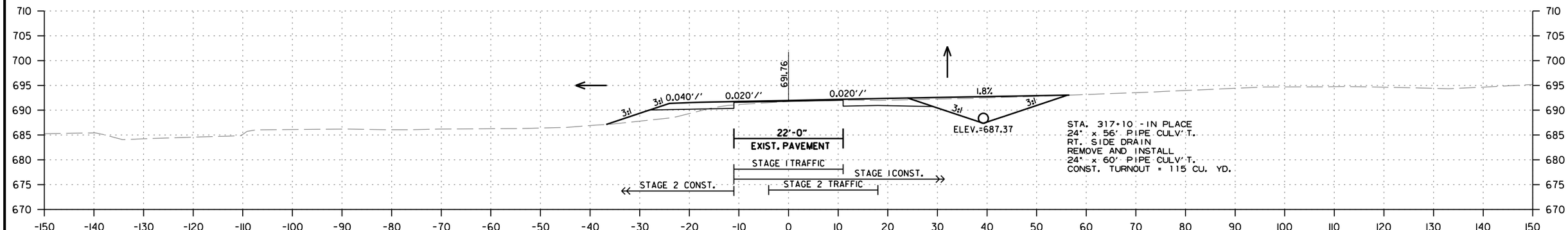
STAGE 1		STAGE 2	
CUT AREA	23 SQ. FT.	CUT AREA	9 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	1 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	80 CU. YD.	CUT VOLUME	22 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	9 CU. YD.

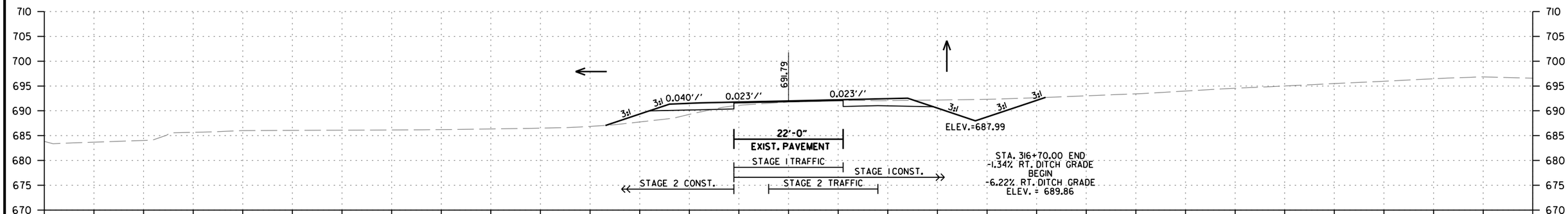
SITE 2
STA. 314+00 TO STA. 315+00

JY43338 9/7/2021
R012227.DGN

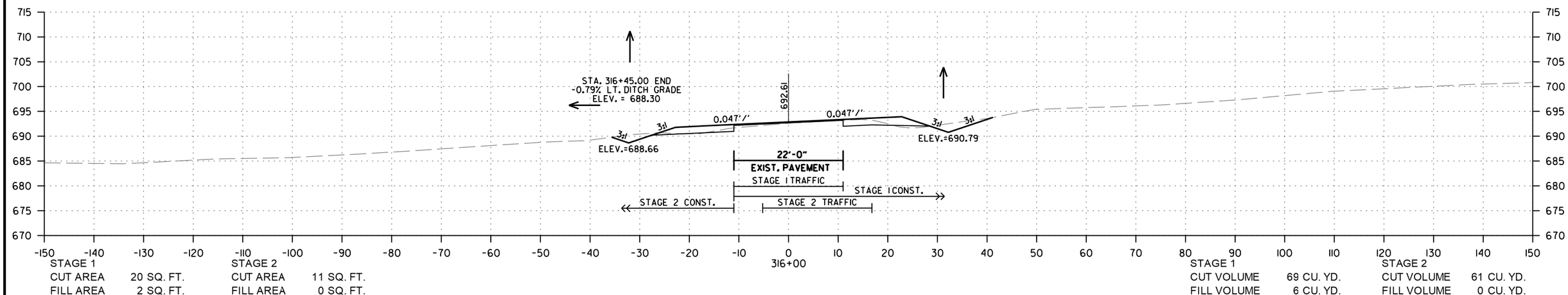
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	66	87
		CROSS SECTIONS				



STAGE 1		STAGE 2		STAGE 1		STAGE 2	
CUT AREA	97 SQ. FT.	CUT AREA	2 SQ. FT.	CUT VOLUME	32 CU. YD.	CUT VOLUME	1 CU. YD.
FILL AREA	0 SQ. FT.	FILL AREA	23 SQ. FT.	FILL VOLUME	0 CU. YD.	FILL VOLUME	9 CU. YD.



STAGE 1		STAGE 2		STAGE 1		STAGE 2	
CUT AREA	74 SQ. FT.	CUT AREA	2 SQ. FT.	CUT VOLUME	174 CU. YD.	CUT VOLUME	24 CU. YD.
FILL AREA	0 SQ. FT.	FILL AREA	24 SQ. FT.	FILL VOLUME	4 CU. YD.	FILL VOLUME	44 CU. YD.

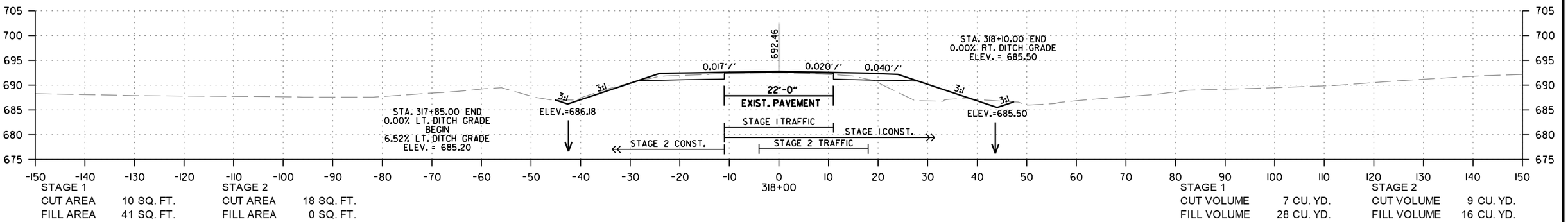


STAGE 1		STAGE 2		STAGE 1		STAGE 2	
CUT AREA	20 SQ. FT.	CUT AREA	11 SQ. FT.	CUT VOLUME	69 CU. YD.	CUT VOLUME	61 CU. YD.
FILL AREA	2 SQ. FT.	FILL AREA	0 SQ. FT.	FILL VOLUME	6 CU. YD.	FILL VOLUME	0 CU. YD.

SITE 2
STA. 316+00 TO STA. 317+10

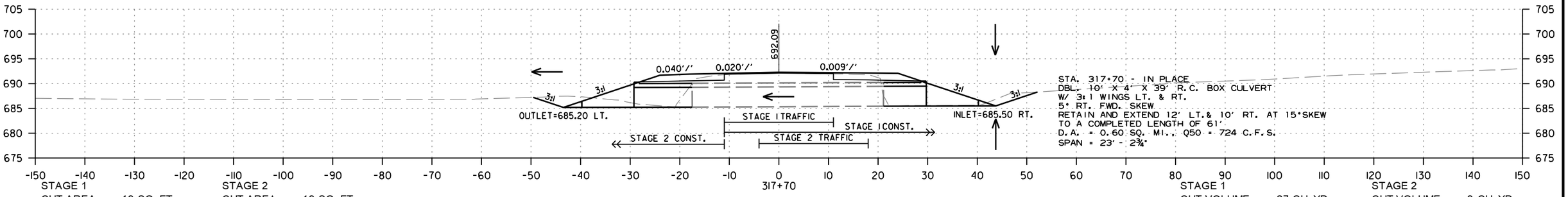
JY43338 9/7/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	67	87
		CROSS SECTIONS				



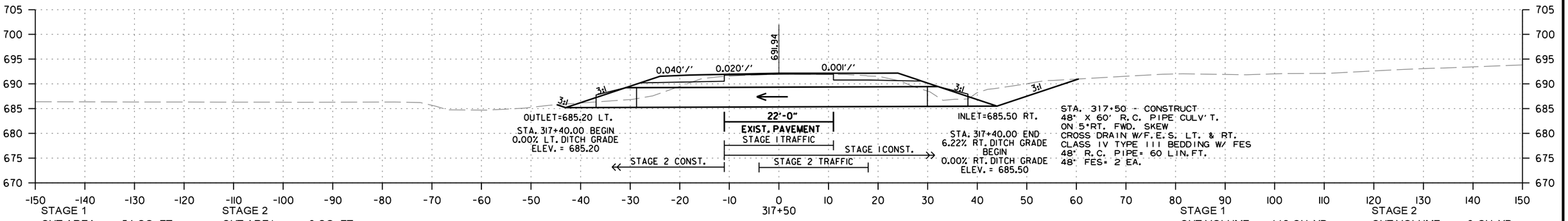
STAGE 1		STAGE 2	
CUT AREA	10 SQ. FT.	CUT AREA	18 SQ. FT.
FILL AREA	41 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	7 CU. YD.	CUT VOLUME	9 CU. YD.
FILL VOLUME	28 CU. YD.	FILL VOLUME	16 CU. YD.



STAGE 1		STAGE 2	
CUT AREA	19 SQ. FT.	CUT AREA	19 SQ. FT.
FILL AREA	74 SQ. FT.	FILL AREA	65 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	27 CU. YD.	CUT VOLUME	9 CU. YD.
FILL VOLUME	34 CU. YD.	FILL VOLUME	38 CU. YD.



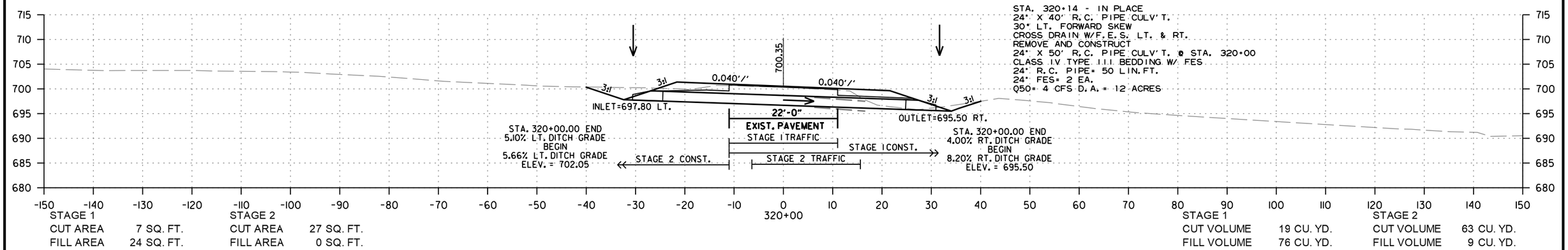
STAGE 1		STAGE 2	
CUT AREA	54 SQ. FT.	CUT AREA	6 SQ. FT.
FILL AREA	19 SQ. FT.	FILL AREA	38 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	112 CU. YD.	CUT VOLUME	6 CU. YD.
FILL VOLUME	14 CU. YD.	FILL VOLUME	45 CU. YD.

SITE 2
STA. 317+50 TO STA. 318+00

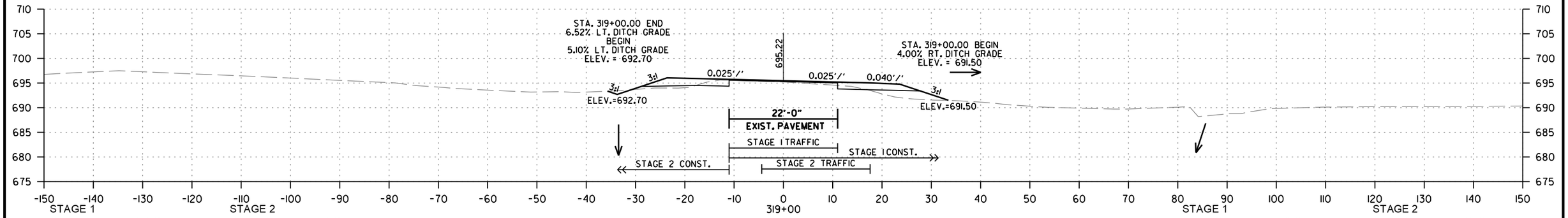
JY43338 9/7/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	68	87
		CROSS SECTIONS				



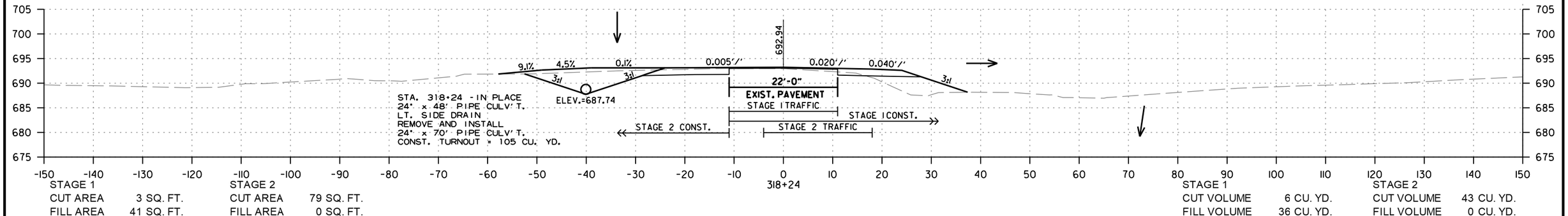
STAGE 1		STAGE 2	
CUT AREA	7 SQ. FT.	CUT AREA	27 SQ. FT.
FILL AREA	24 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	19 CU. YD.	CUT VOLUME	63 CU. YD.
FILL VOLUME	76 CU. YD.	FILL VOLUME	9 CU. YD.



STAGE 1		STAGE 2	
CUT AREA	3 SQ. FT.	CUT AREA	7 SQ. FT.
FILL AREA	17 SQ. FT.	FILL AREA	5 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	8 CU. YD.	CUT VOLUME	121 CU. YD.
FILL VOLUME	82 CU. YD.	FILL VOLUME	7 CU. YD.



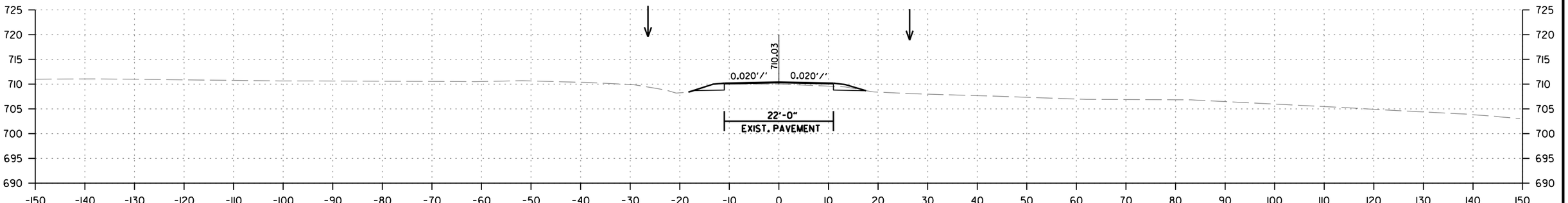
STAGE 1		STAGE 2	
CUT AREA	3 SQ. FT.	CUT AREA	79 SQ. FT.
FILL AREA	41 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	6 CU. YD.	CUT VOLUME	43 CU. YD.
FILL VOLUME	36 CU. YD.	FILL VOLUME	0 CU. YD.

SITE 2
STA. 318+24 TO STA. 320+00

JY43338 9/7/2021
R012227.DGN

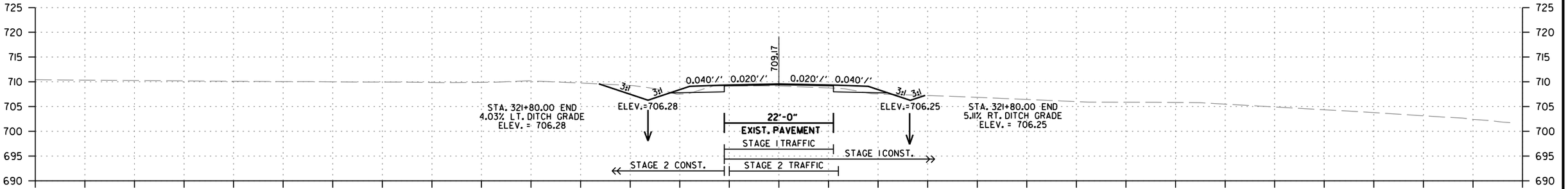
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	69	87
		CROSS SECTIONS				



322+00

STAGE 1		STAGE 2	
CUT AREA	3 SQ. FT.	CUT AREA	5 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.

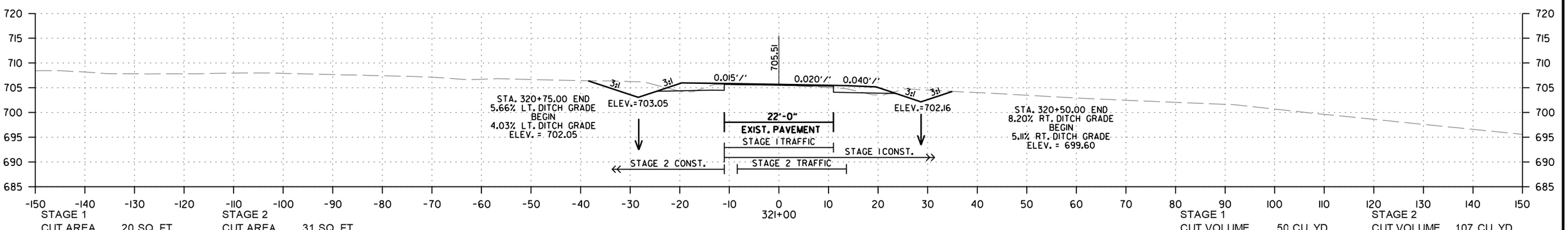
STAGE 1		STAGE 2	
CUT VOLUME	4 CU. YD.	CUT VOLUME	11 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	0 CU. YD.



321+80
END SITE 2
BEGIN 100' TRANSITION

STAGE 1		STAGE 2	
CUT AREA	7 SQ. FT.	CUT AREA	25 SQ. FT.
FILL AREA	1 SQ. FT.	FILL AREA	1 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	40 CU. YD.	CUT VOLUME	83 CU. YD.
FILL VOLUME	3 CU. YD.	FILL VOLUME	3 CU. YD.



321+00

STAGE 1		STAGE 2	
CUT AREA	20 SQ. FT.	CUT AREA	31 SQ. FT.
FILL AREA	1 SQ. FT.	FILL AREA	1 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	50 CU. YD.	CUT VOLUME	107 CU. YD.
FILL VOLUME	46 CU. YD.	FILL VOLUME	2 CU. YD.

SITE 2
STA. 321+00 TO STA. 322+00

JY43338 9/7/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	70	87
		CROSS SECTIONS				

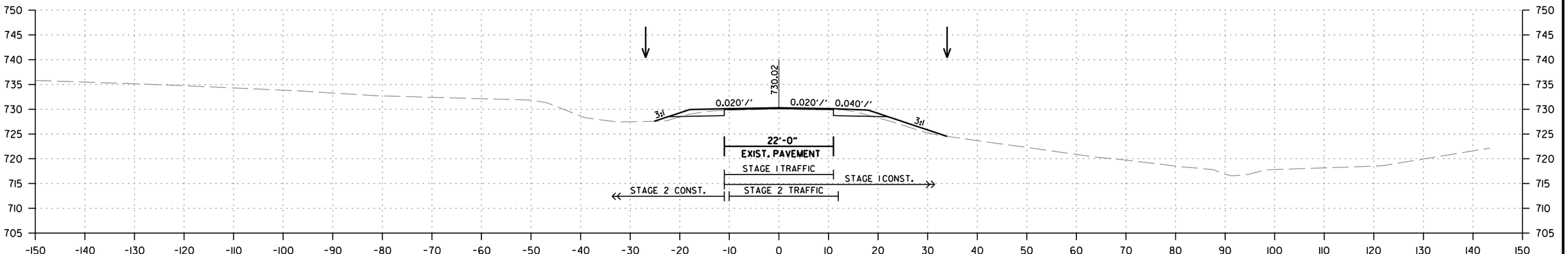
STAGE 1		STAGE 2	
CUT AREA	3 SQ. FT.	CUT AREA	5 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	4 CU. YD.	CUT VOLUME	11 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	0 CU. YD.

SITE 2
STA. 322+80 TO STA. 322+80

JY43338 9/7/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	71	87
		CROSS SECTIONS				



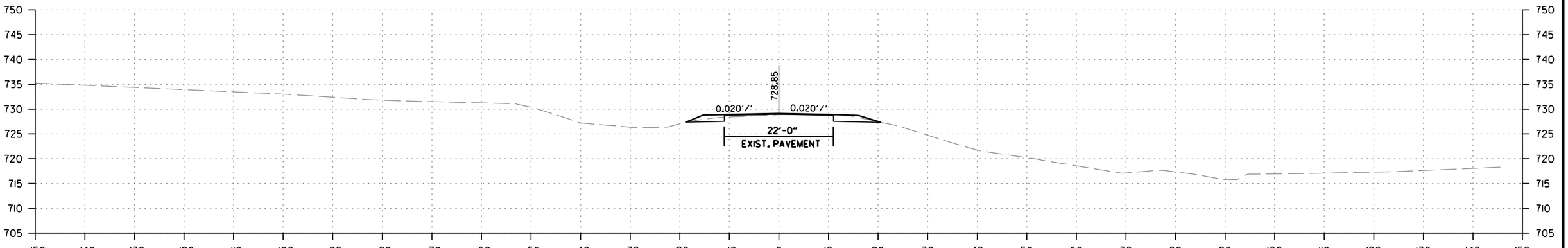
STAGE 1
CUT AREA 6 SQ. FT.
FILL AREA 8 SQ. FT.

STAGE 2
CUT AREA 6 SQ. FT.
FILL AREA 2 SQ. FT.

355+40.00
END 100' TRANSITION
BEGIN SITE 3

STAGE 1
CUT VOLUME 10 CU. YD.
FILL VOLUME 6 CU. YD.

STAGE 2
CUT VOLUME 7 CU. YD.
FILL VOLUME 1 CU. YD.



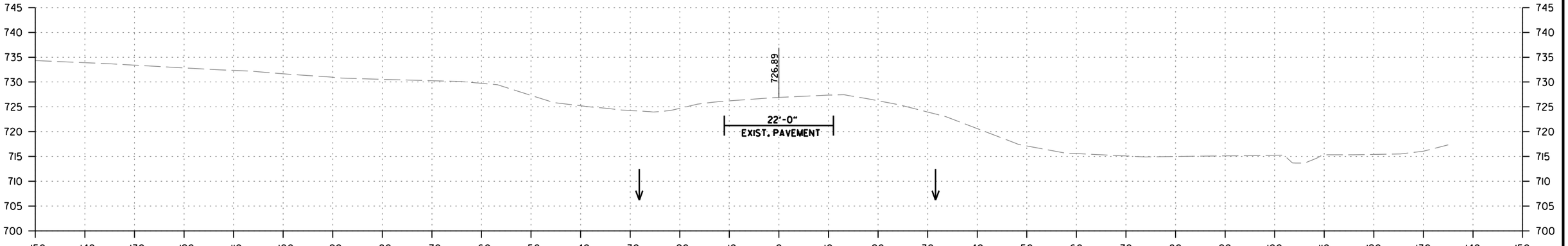
STAGE 1
CUT AREA 8 SQ. FT.
FILL AREA 0 SQ. FT.

STAGE 2
CUT AREA 4 SQ. FT.
FILL AREA 0 SQ. FT.

355+00

STAGE 1
CUT VOLUME 9 CU. YD.
FILL VOLUME 0 CU. YD.

STAGE 2
CUT VOLUME 4 CU. YD.
FILL VOLUME 0 CU. YD.



STAGE 1
CUT AREA 0 SQ. FT.
FILL AREA 0 SQ. FT.

STAGE 2
CUT AREA 0 SQ. FT.
FILL AREA 0 SQ. FT.

354+40.00
BEGIN 100' TRANSITION

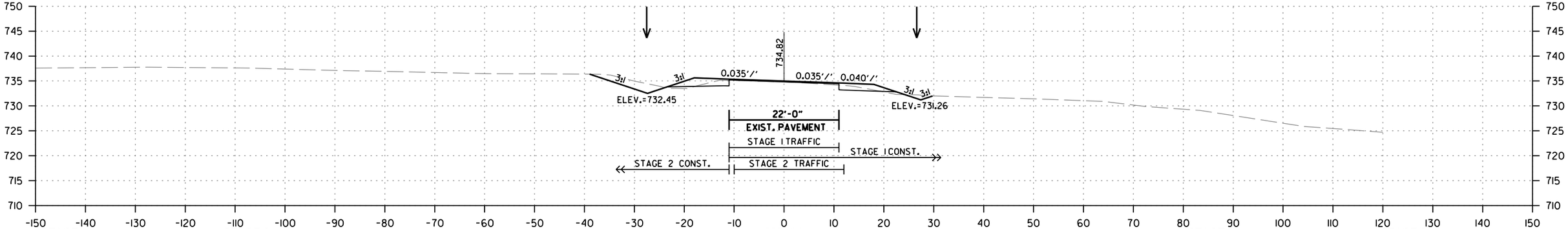
STAGE 1
CUT VOLUME 0 CU. YD.
FILL VOLUME 0 CU. YD.

STAGE 2
CUT VOLUME 0 CU. YD.
FILL VOLUME 0 CU. YD.

SITE 3
STA. 354+40 TO STA. 355+40

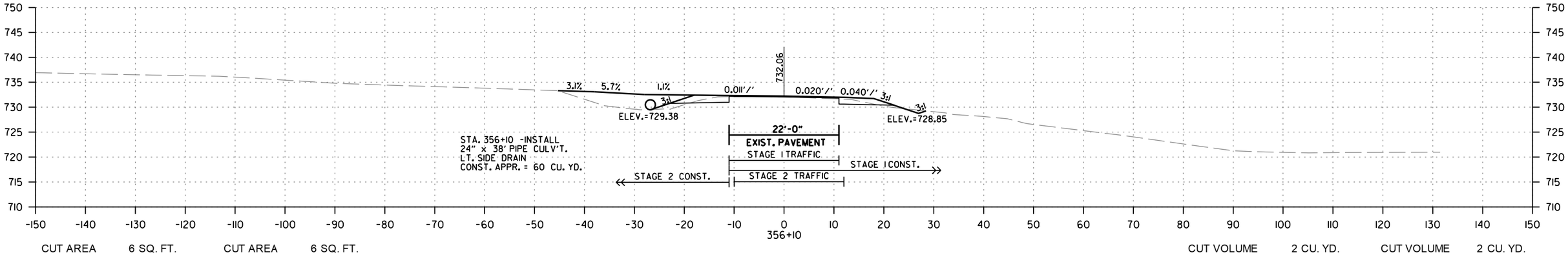
JY43338 9/7/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	72	87
		CROSS SECTIONS				



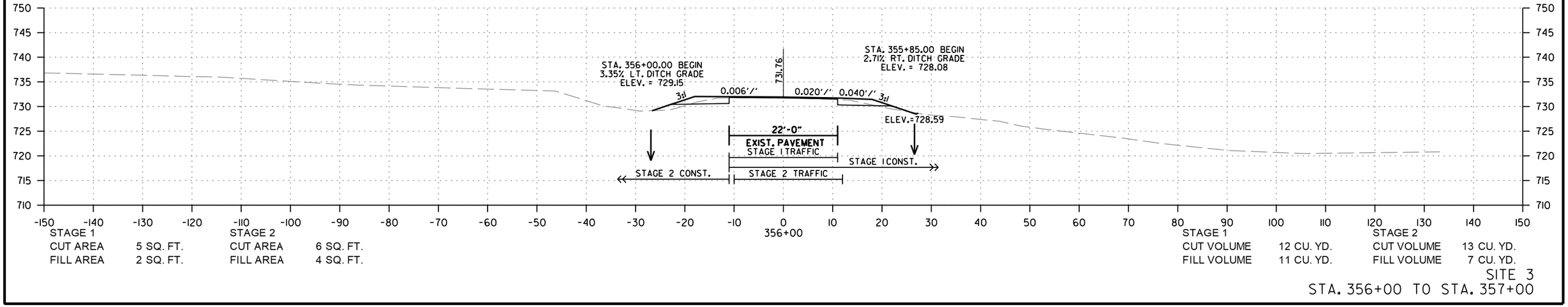
357+00

STAGE 1		STAGE 2		STAGE 1		STAGE 2	
CUT AREA	8 SQ. FT.	CUT AREA	22 SQ. FT.	CUT VOLUME	23 CU. YD.	CUT VOLUME	47 CU. YD.
FILL AREA	1 SQ. FT.	FILL AREA	2 SQ. FT.	FILL VOLUME	3 CU. YD.	FILL VOLUME	10 CU. YD.



356+10

CUT AREA	6 SQ. FT.	CUT AREA	6 SQ. FT.	CUT VOLUME	2 CU. YD.	CUT VOLUME	2 CU. YD.
FILL AREA	1 SQ. FT.	FILL AREA	4 SQ. FT.	FILL VOLUME	1 CU. YD.	FILL VOLUME	1 CU. YD.



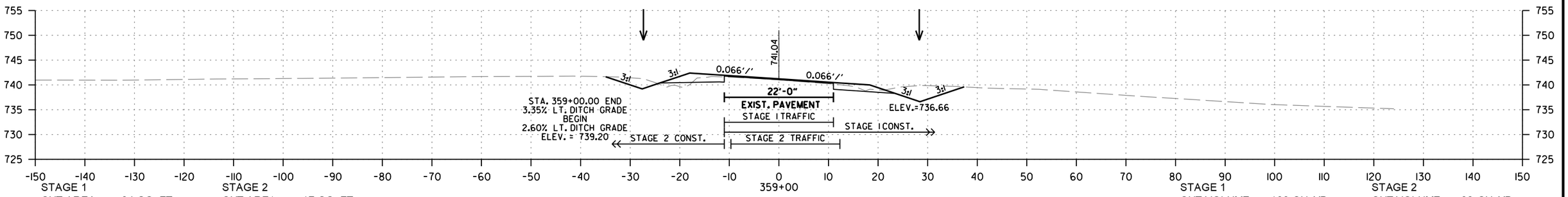
356+00

STAGE 1		STAGE 2		STAGE 1		STAGE 2	
CUT AREA	5 SQ. FT.	CUT AREA	6 SQ. FT.	CUT VOLUME	12 CU. YD.	CUT VOLUME	13 CU. YD.
FILL AREA	2 SQ. FT.	FILL AREA	4 SQ. FT.	FILL VOLUME	11 CU. YD.	FILL VOLUME	7 CU. YD.

SITE 3
STA. 356+00 TO STA. 357+00

JY43338 9/7/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	73	87
		CROSS SECTIONS				



359+00

STAGE 1		STAGE 2	
CUT AREA	34 SQ. FT.	CUT AREA	17 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	4 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	109 CU. YD.	CUT VOLUME	98 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	7 CU. YD.

358+00

STAGE 1		STAGE 2	
CUT AREA	25 SQ. FT.	CUT AREA	36 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	13 CU. YD.	CUT VOLUME	22 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	0 CU. YD.

357+85

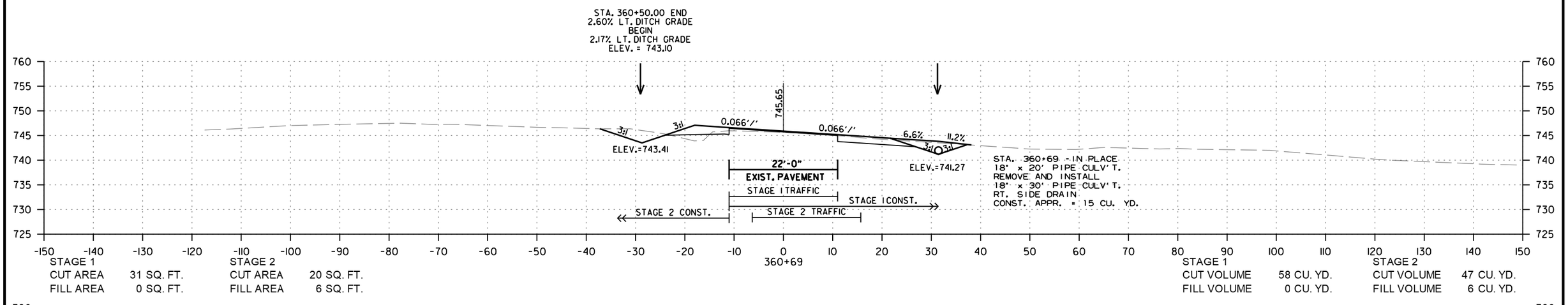
STAGE 1		STAGE 2	
CUT AREA	21 SQ. FT.	CUT AREA	43 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	46 CU. YD.	CUT VOLUME	102 CU. YD.
FILL VOLUME	2 CU. YD.	FILL VOLUME	3 CU. YD.

SITE 3
STA. 357+85 TO STA. 359+00

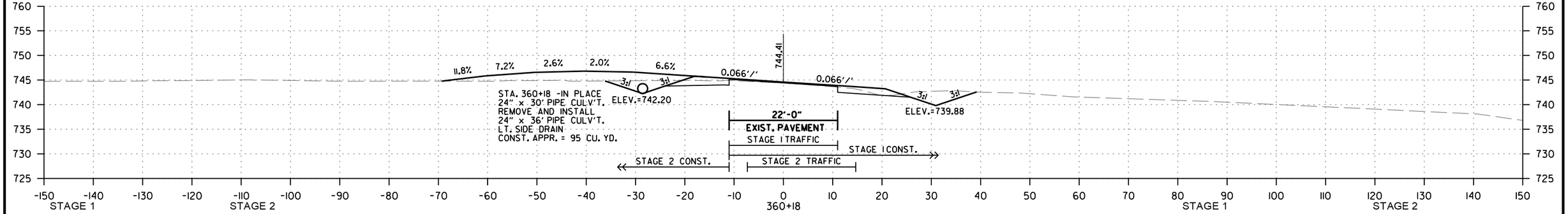
JY43338 9/7/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	74	87
		CROSS SECTIONS				



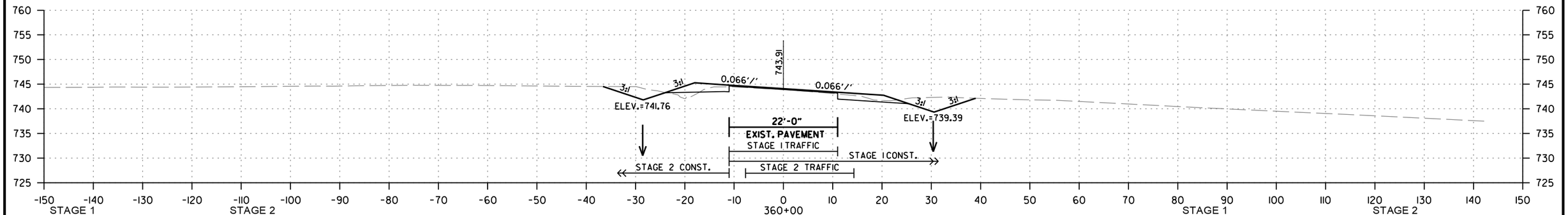
STAGE 1		STAGE 2	
CUT AREA	31 SQ. FT.	CUT AREA	20 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	6 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	58 CU. YD.	CUT VOLUME	47 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	6 CU. YD.



STAGE 1		STAGE 2	
CUT AREA	30 SQ. FT.	CUT AREA	30 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	21 CU. YD.	CUT VOLUME	17 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	1 CU. YD.



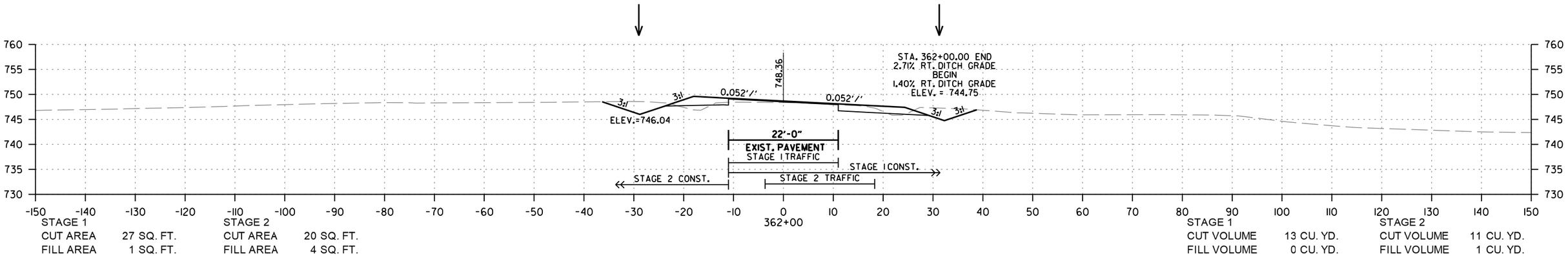
STAGE 1		STAGE 2	
CUT AREA	33 SQ. FT.	CUT AREA	21 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	4 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	124 CU. YD.	CUT VOLUME	70 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	15 CU. YD.

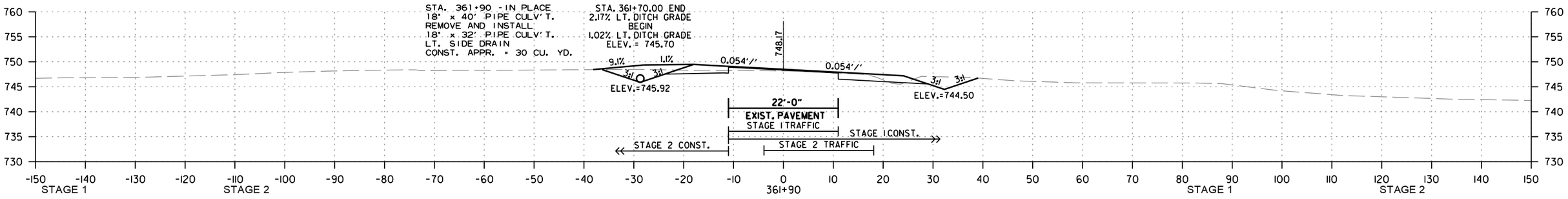
SITE 3
STA. 360+00 TO STA. 360+69

JY43338 9/7/2021
R012227.DGN

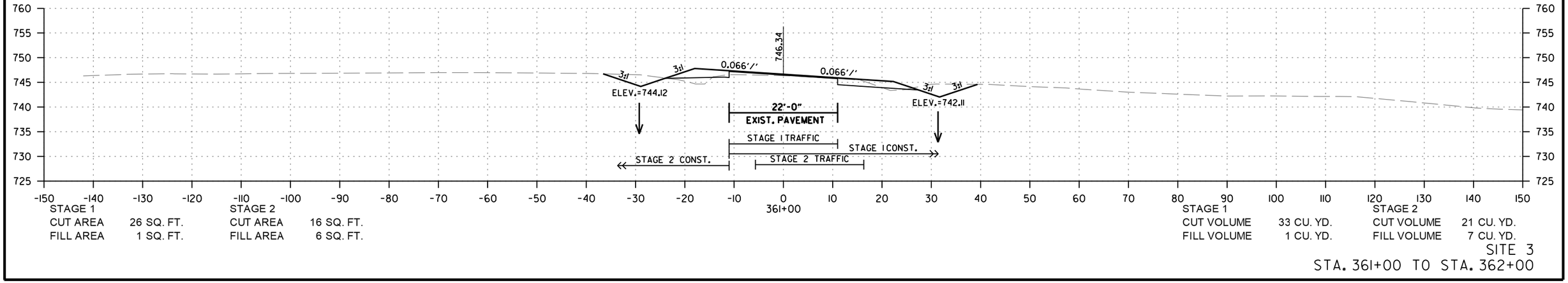
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	75	87
		CROSS SECTIONS				



STAGE 1 — CUT AREA 27 SQ. FT. — FILL AREA 1 SQ. FT.
STAGE 2 — CUT AREA 20 SQ. FT. — FILL AREA 4 SQ. FT.
STAGE 1 — CUT VOLUME 13 CU. YD. — FILL VOLUME 0 CU. YD.
STAGE 2 — CUT VOLUME 11 CU. YD. — FILL VOLUME 1 CU. YD.



STAGE 1 — CUT AREA 28 SQ. FT. — FILL AREA 1 SQ. FT.
STAGE 2 — CUT AREA 25 SQ. FT. — FILL AREA 0 SQ. FT.
STAGE 1 — CUT VOLUME 90 CU. YD. — FILL VOLUME 3 CU. YD.
STAGE 2 — CUT VOLUME 68 CU. YD. — FILL VOLUME 10 CU. YD.

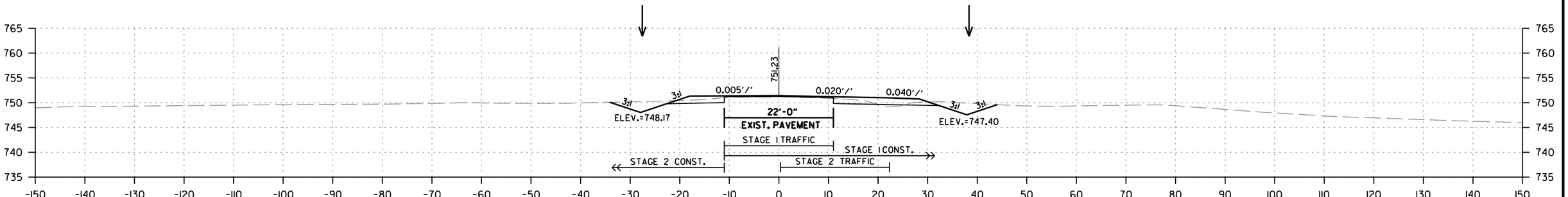


STAGE 1 — CUT AREA 26 SQ. FT. — FILL AREA 1 SQ. FT.
STAGE 2 — CUT AREA 16 SQ. FT. — FILL AREA 6 SQ. FT.
STAGE 1 — CUT VOLUME 33 CU. YD. — FILL VOLUME 1 CU. YD.
STAGE 2 — CUT VOLUME 21 CU. YD. — FILL VOLUME 7 CU. YD.

SITE 3
STA. 361+00 TO STA. 362+00

JY43338 9/7/2021
R012227.DGN

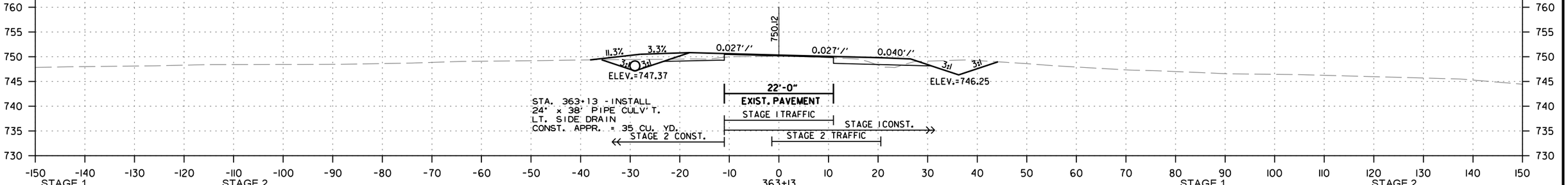
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	76	87
		CROSS SECTIONS				



364+00

STAGE 1		STAGE 2	
CUT AREA	26 SQ. FT.	CUT AREA	22 SQ. FT.
FILL AREA	1 SQ. FT.	FILL AREA	0 SQ. FT.

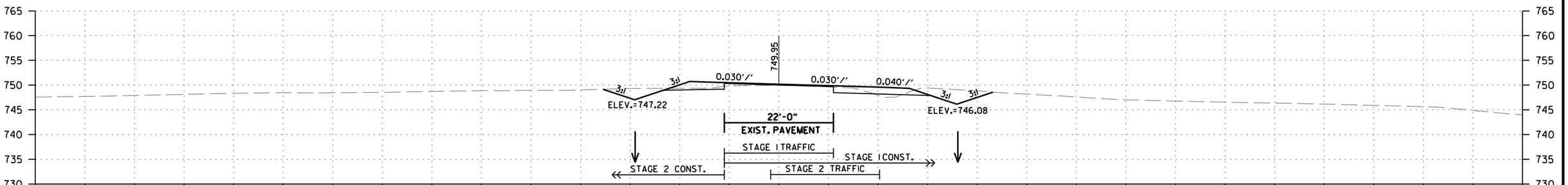
STAGE 1		STAGE 2	
CUT VOLUME	97 CU. YD.	CUT VOLUME	66 CU. YD.
FILL VOLUME	5 CU. YD.	FILL VOLUME	0 CU. YD.



363+13

STAGE 1		STAGE 2	
CUT AREA	34 SQ. FT.	CUT AREA	19 SQ. FT.
FILL AREA	2 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	16 CU. YD.	CUT VOLUME	9 CU. YD.
FILL VOLUME	1 CU. YD.	FILL VOLUME	0 CU. YD.



363+00

STAGE 1		STAGE 2	
CUT AREA	34 SQ. FT.	CUT AREA	18 SQ. FT.
FILL AREA	2 SQ. FT.	FILL AREA	0 SQ. FT.

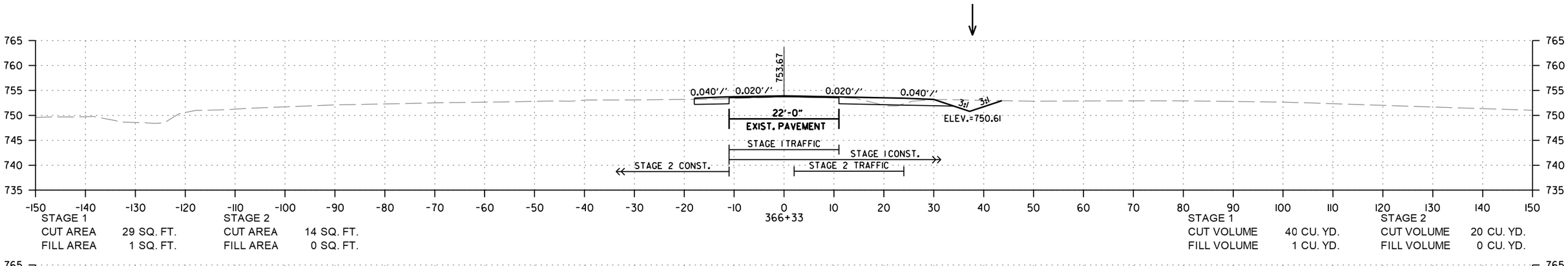
STAGE 1		STAGE 2	
CUT VOLUME	113 CU. YD.	CUT VOLUME	70 CU. YD.
FILL VOLUME	6 CU. YD.	FILL VOLUME	7 CU. YD.

SITE 3

STA. 363+00 TO STA. 364+00

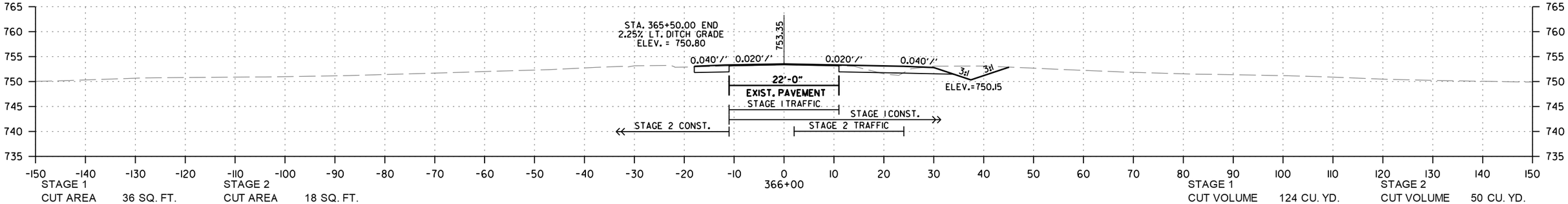
JY43338 9/7/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	77	87
		CROSS SECTIONS				



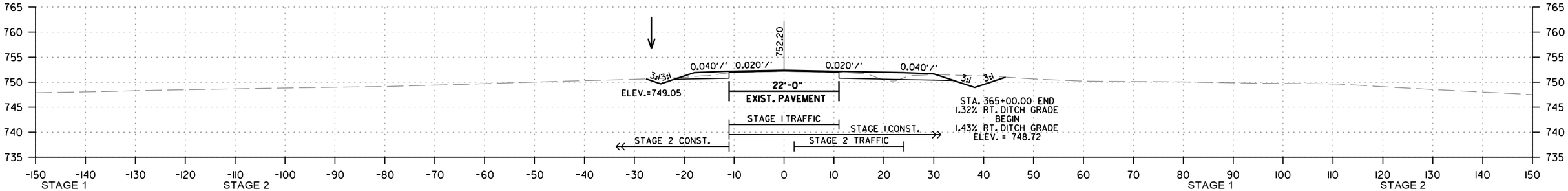
STAGE 1		STAGE 2	
CUT AREA	29 SQ. FT.	CUT AREA	14 SQ. FT.
FILL AREA	1 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	40 CU. YD.	CUT VOLUME	20 CU. YD.
FILL VOLUME	1 CU. YD.	FILL VOLUME	0 CU. YD.



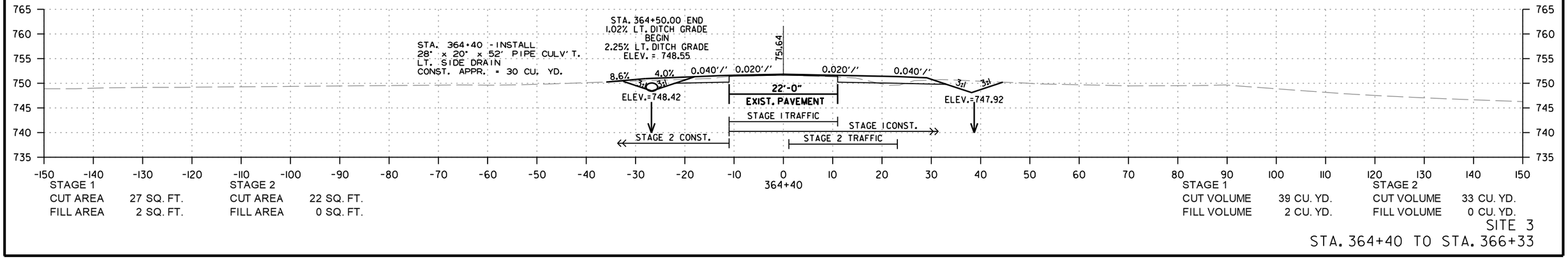
STAGE 1		STAGE 2	
CUT AREA	36 SQ. FT.	CUT AREA	18 SQ. FT.
FILL AREA	1 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	124 CU. YD.	CUT VOLUME	50 CU. YD.
FILL VOLUME	4 CU. YD.	FILL VOLUME	0 CU. YD.



STAGE 1		STAGE 2	
CUT AREA	31 SQ. FT.	CUT AREA	9 SQ. FT.
FILL AREA	1 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	64 CU. YD.	CUT VOLUME	34 CU. YD.
FILL VOLUME	3 CU. YD.	FILL VOLUME	0 CU. YD.



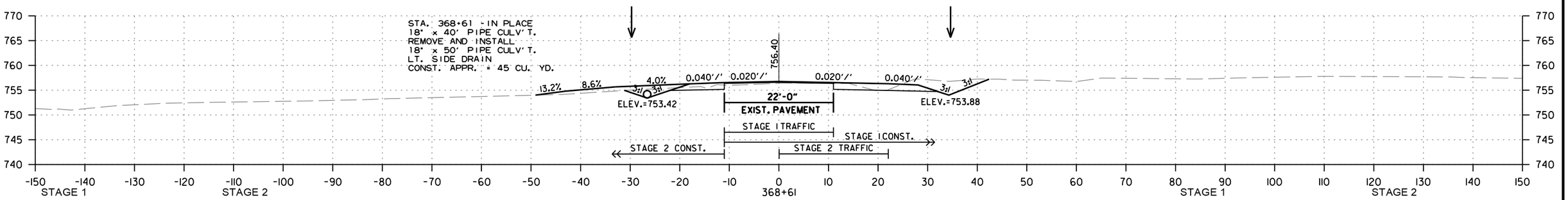
STAGE 1		STAGE 2	
CUT AREA	27 SQ. FT.	CUT AREA	22 SQ. FT.
FILL AREA	2 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	39 CU. YD.	CUT VOLUME	33 CU. YD.
FILL VOLUME	2 CU. YD.	FILL VOLUME	0 CU. YD.

SITE 3
STA. 364+40 TO STA. 366+33

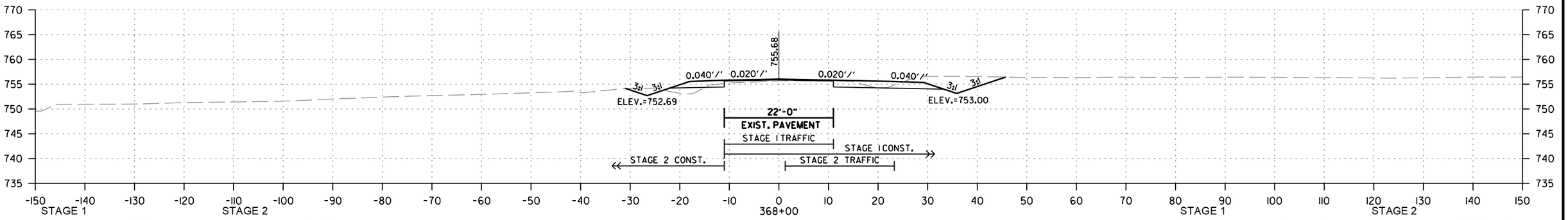
JY43338 9/7/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	78	87
		CROSS SECTIONS				



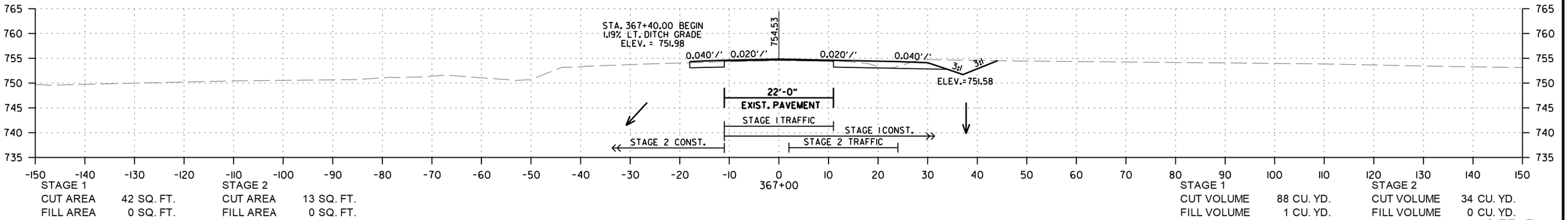
STAGE 1		STAGE 2	
CUT AREA	41 SQ. FT.	CUT AREA	16 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	7 CU. YD.	CUT VOLUME	2 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	1 CU. YD.



STAGE 1		STAGE 2	
CUT AREA	50 SQ. FT.	CUT AREA	8 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	7 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	170 CU. YD.	CUT VOLUME	39 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	13 CU. YD.



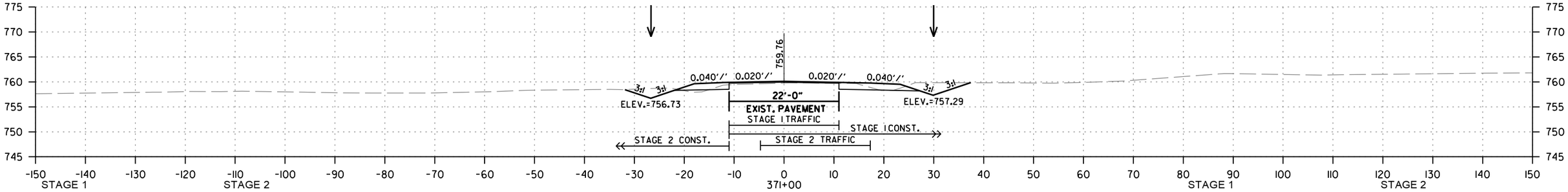
STAGE 1		STAGE 2	
CUT AREA	42 SQ. FT.	CUT AREA	13 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	88 CU. YD.	CUT VOLUME	34 CU. YD.
FILL VOLUME	1 CU. YD.	FILL VOLUME	0 CU. YD.

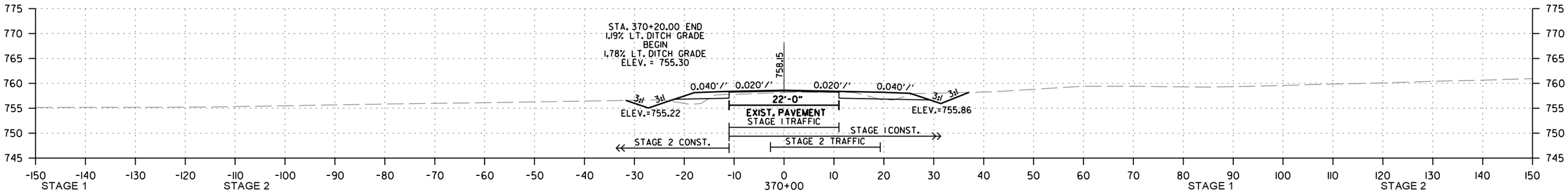
SITE 3
STA. 367+00 TO STA. 368+61

JY43338 9/7/2021
R012227.DGN

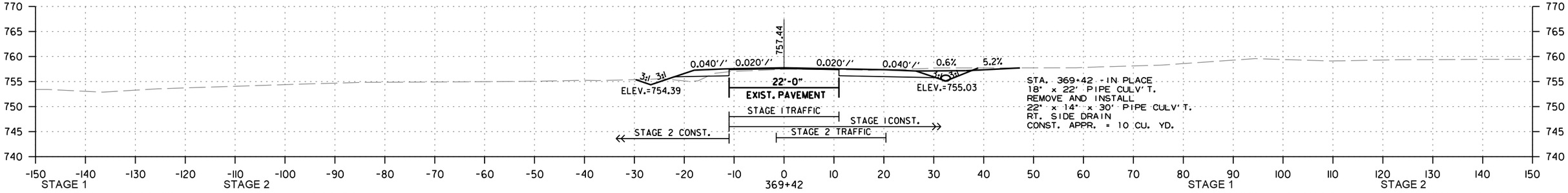
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	79	87
		CROSS SECTIONS				



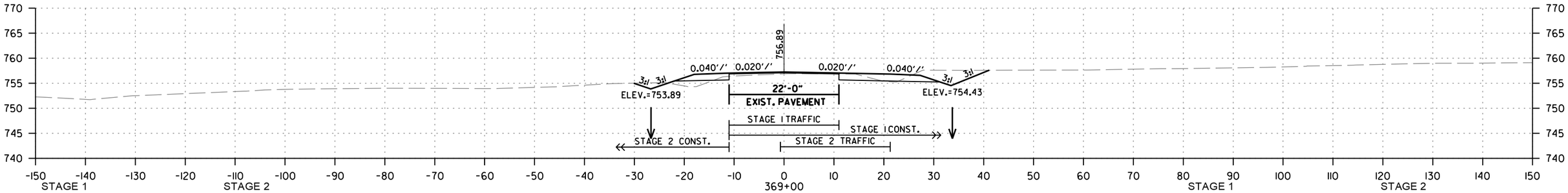
STAGE 1		STAGE 2		STAGE 1		STAGE 2	
CUT AREA	26 SQ. FT.	CUT AREA	13 SQ. FT.	CUT VOLUME	89 CU. YD.	CUT VOLUME	43 CU. YD.
FILL AREA	0 SQ. FT.	FILL AREA	2 SQ. FT.	FILL VOLUME	0 CU. YD.	FILL VOLUME	15 CU. YD.



STAGE 1		STAGE 2		STAGE 1		STAGE 2	
CUT AREA	22 SQ. FT.	CUT AREA	10 SQ. FT.	CUT VOLUME	67 CU. YD.	CUT VOLUME	17 CU. YD.
FILL AREA	0 SQ. FT.	FILL AREA	6 SQ. FT.	FILL VOLUME	0 CU. YD.	FILL VOLUME	12 CU. YD.



STAGE 1		STAGE 2		STAGE 1		STAGE 2	
CUT AREA	40 SQ. FT.	CUT AREA	6 SQ. FT.	CUT VOLUME	61 CU. YD.	CUT VOLUME	9 CU. YD.
FILL AREA	0 SQ. FT.	FILL AREA	5 SQ. FT.	FILL VOLUME	1 CU. YD.	FILL VOLUME	9 CU. YD.



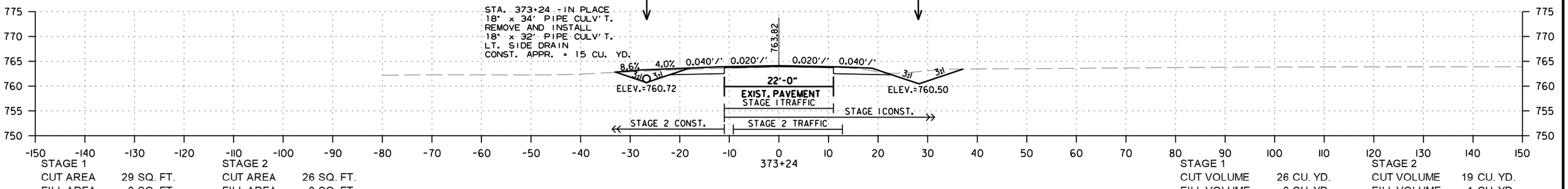
STAGE 1		STAGE 2		STAGE 1		STAGE 2	
CUT AREA	38 SQ. FT.	CUT AREA	5 SQ. FT.	CUT VOLUME	57 CU. YD.	CUT VOLUME	15 CU. YD.
FILL AREA	1 SQ. FT.	FILL AREA	7 SQ. FT.	FILL VOLUME	1 CU. YD.	FILL VOLUME	5 CU. YD.

SITE 3

STA. 369+00 TO STA. 371+00

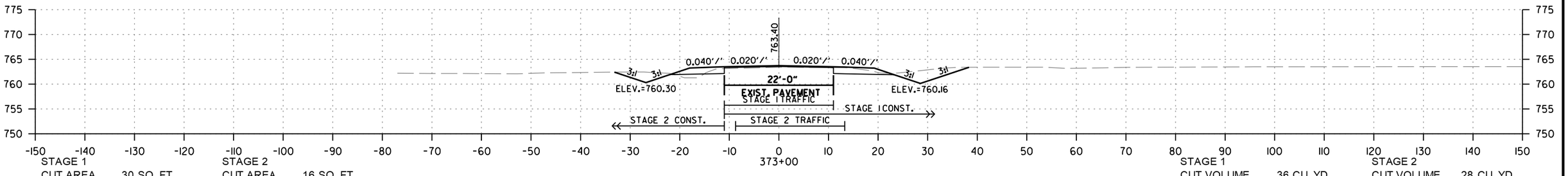
JY43338 9/7/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	80	87
		CROSS SECTIONS				



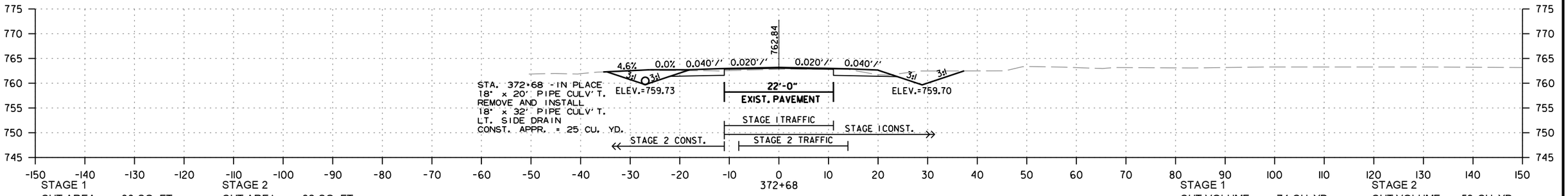
STAGE 1		STAGE 2	
CUT AREA	29 SQ. FT.	CUT AREA	26 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	26 CU. YD.	CUT VOLUME	19 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	1 CU. YD.



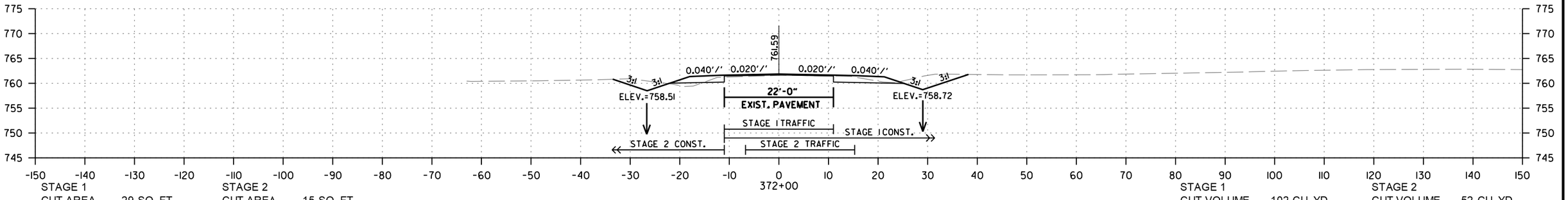
STAGE 1		STAGE 2	
CUT AREA	30 SQ. FT.	CUT AREA	16 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	3 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	36 CU. YD.	CUT VOLUME	28 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	2 CU. YD.



STAGE 1		STAGE 2	
CUT AREA	30 SQ. FT.	CUT AREA	32 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	74 CU. YD.	CUT VOLUME	59 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	4 CU. YD.



STAGE 1		STAGE 2	
CUT AREA	29 SQ. FT.	CUT AREA	15 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	3 SQ. FT.

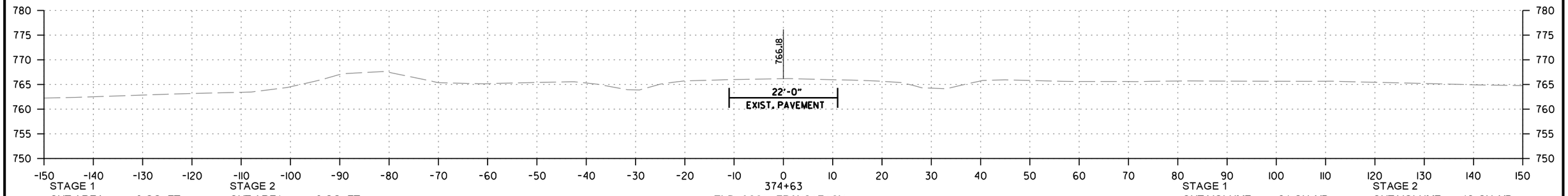
STAGE 1		STAGE 2	
CUT VOLUME	102 CU. YD.	CUT VOLUME	52 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	9 CU. YD.

SITE 3

STA. 372+00 TO STA. 373+24

JY43338 9/7/2021
R012227.DGN

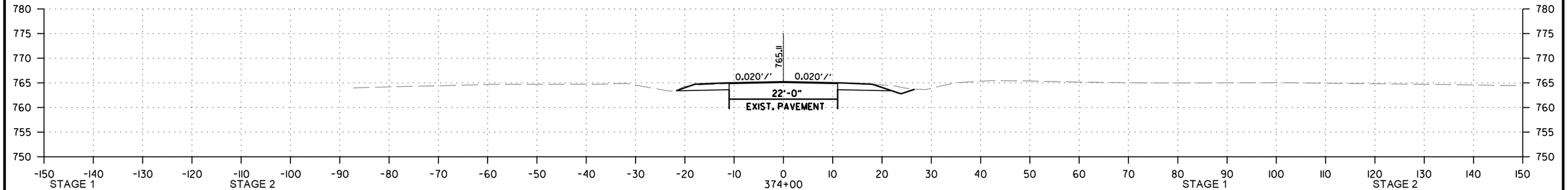
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	81	87
		CROSS SECTIONS				



STAGE 1 CUT AREA 0 SQ. FT. FILL AREA 0 SQ. FT.
STAGE 2 CUT AREA 0 SQ. FT. FILL AREA 0 SQ. FT.

374+63
END 100' TRANSITION

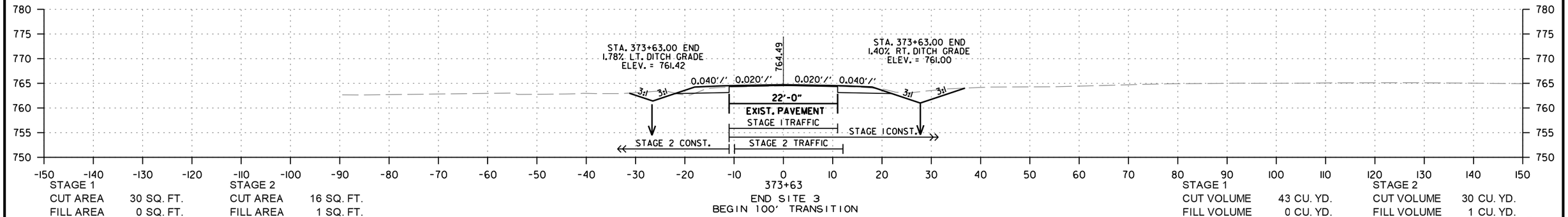
STAGE 1 CUT VOLUME 21 CU. YD. FILL VOLUME 0 CU. YD.
STAGE 2 CUT VOLUME 12 CU. YD. FILL VOLUME 0 CU. YD.



STAGE 1 CUT AREA 18 SQ. FT. FILL AREA 0 SQ. FT.
STAGE 2 CUT AREA 10 SQ. FT. FILL AREA 0 SQ. FT.

374+00

STAGE 1 CUT VOLUME 33 CU. YD. FILL VOLUME 0 CU. YD.
STAGE 2 CUT VOLUME 18 CU. YD. FILL VOLUME 1 CU. YD.



STAGE 1 CUT AREA 30 SQ. FT. FILL AREA 0 SQ. FT.
STAGE 2 CUT AREA 16 SQ. FT. FILL AREA 1 SQ. FT.

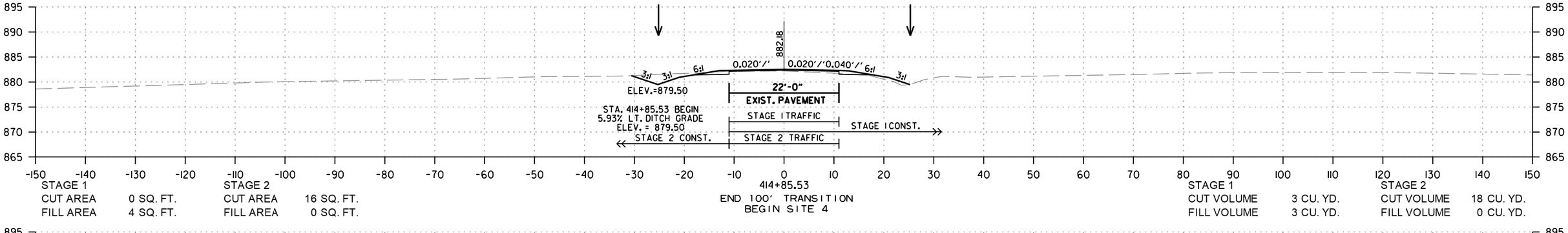
373+63
END SITE 3
BEGIN 100' TRANSITION

STAGE 1 CUT VOLUME 43 CU. YD. FILL VOLUME 0 CU. YD.
STAGE 2 CUT VOLUME 30 CU. YD. FILL VOLUME 1 CU. YD.

SITE 3
STA. 373+63 TO STA. 374+63

JY43338 9/7/2021
R012227.DGN

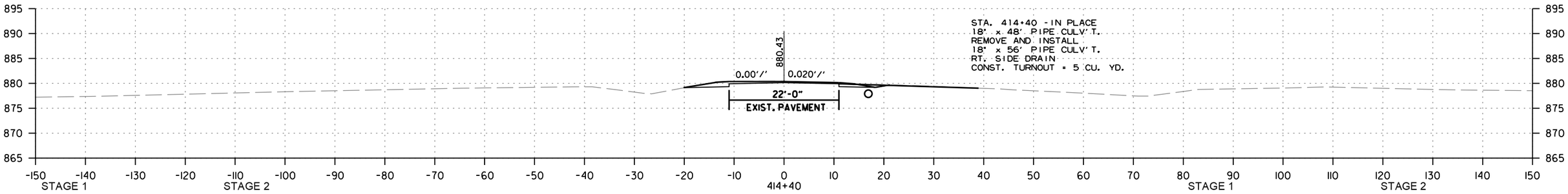
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	82	87
		CROSS SECTIONS				



414+85.53
END 100' TRANSITION
BEGIN SITE 4

STAGE 1		STAGE 2	
CUT AREA	0 SQ. FT.	CUT AREA	16 SQ. FT.
FILL AREA	4 SQ. FT.	FILL AREA	0 SQ. FT.

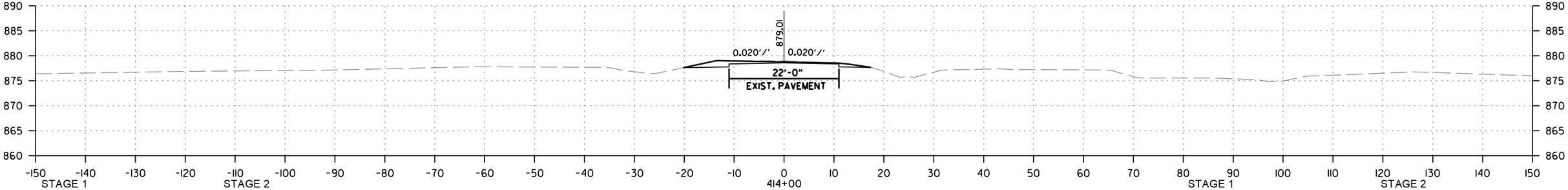
STAGE 1		STAGE 2	
CUT VOLUME	3 CU. YD.	CUT VOLUME	18 CU. YD.
FILL VOLUME	3 CU. YD.	FILL VOLUME	0 CU. YD.



414+40

STAGE 1		STAGE 2	
CUT AREA	4 SQ. FT.	CUT AREA	5 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.

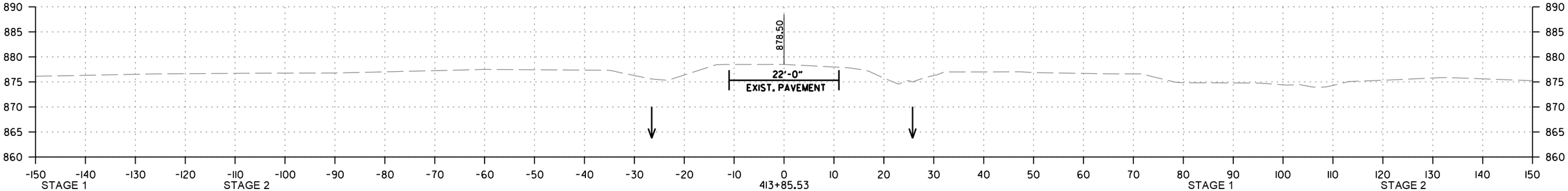
STAGE 1		STAGE 2	
CUT VOLUME	5 CU. YD.	CUT VOLUME	9 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	0 CU. YD.



414+00

STAGE 1		STAGE 2	
CUT AREA	3 SQ. FT.	CUT AREA	7 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	1 CU. YD.	CUT VOLUME	2 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	0 CU. YD.



413+85.53
BEGIN 100' TRANSITION

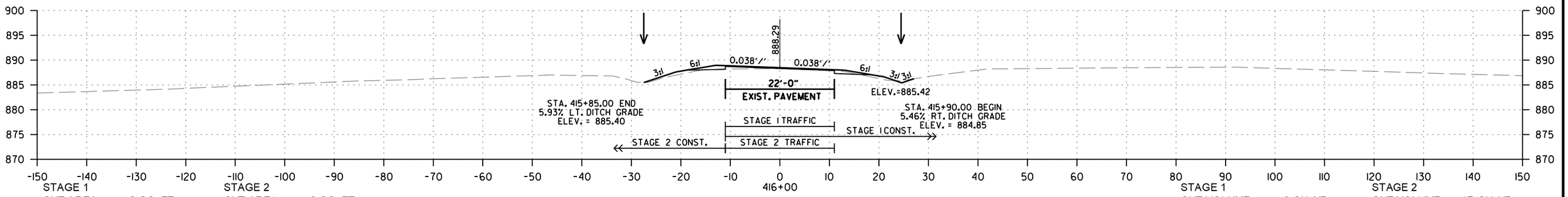
STAGE 1		STAGE 2	
CUT AREA	0 SQ. FT.	CUT AREA	0 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	0 CU. YD.	CUT VOLUME	0 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	0 CU. YD.

SITE 4
STA. 413+85.33 TO STA. 414+85.33

JY43338 9/7/2021
R012227.DGN

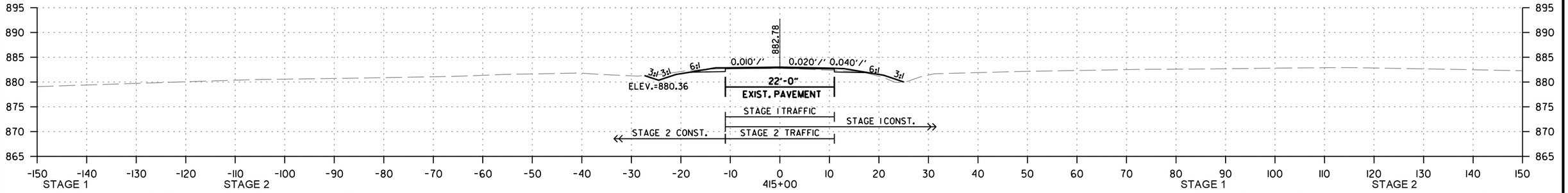
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	83	87
		CROSS SECTIONS				



416+00

STAGE 1		STAGE 2	
CUT AREA	2 SQ. FT.	CUT AREA	0 SQ. FT.
FILL AREA	3 SQ. FT.	FILL AREA	5 SQ. FT.

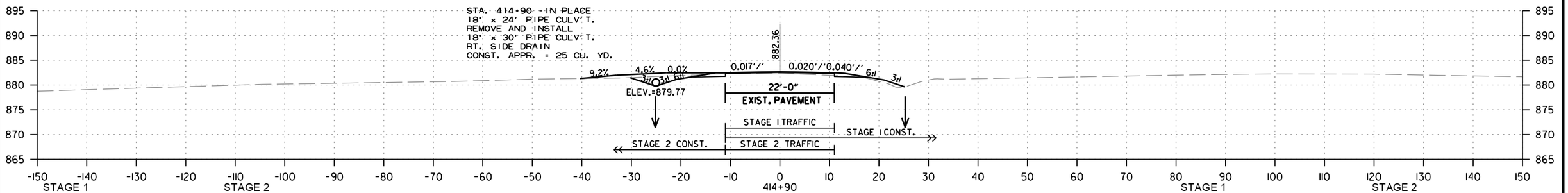
STAGE 1		STAGE 2	
CUT VOLUME	6 CU. YD.	CUT VOLUME	17 CU. YD.
FILL VOLUME	11 CU. YD.	FILL VOLUME	9 CU. YD.



415+00

STAGE 1		STAGE 2	
CUT AREA	1 SQ. FT.	CUT AREA	9 SQ. FT.
FILL AREA	3 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	0 CU. YD.	CUT VOLUME	5 CU. YD.
FILL VOLUME	1 CU. YD.	FILL VOLUME	0 CU. YD.



414+90

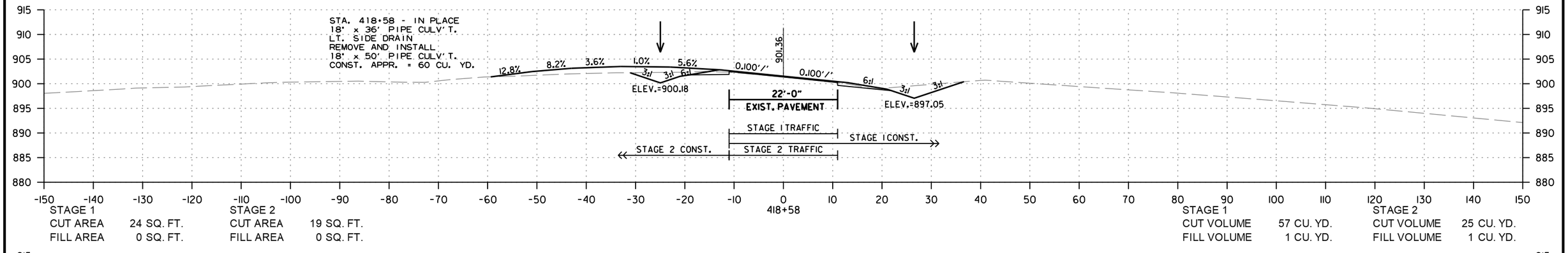
STAGE 1		STAGE 2	
CUT AREA	1 SQ. FT.	CUT AREA	16 SQ. FT.
FILL AREA	4 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	0 CU. YD.	CUT VOLUME	3 CU. YD.
FILL VOLUME	1 CU. YD.	FILL VOLUME	0 CU. YD.

SITE 4
STA. 414+90 TO STA. 416+00

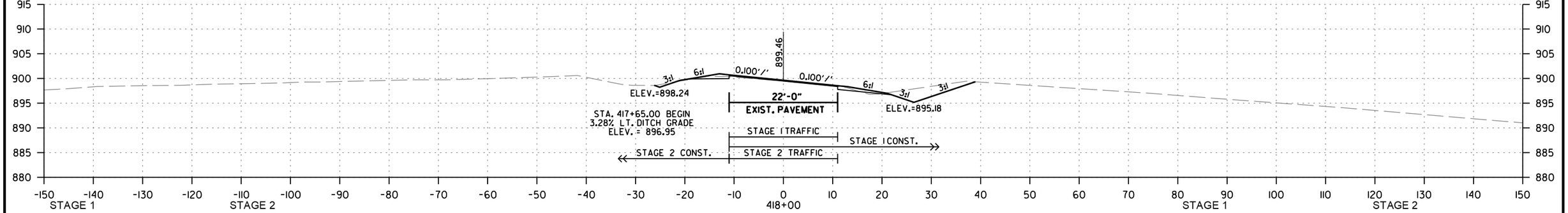
JY43338 9/7/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	84	87
		CROSS SECTIONS				



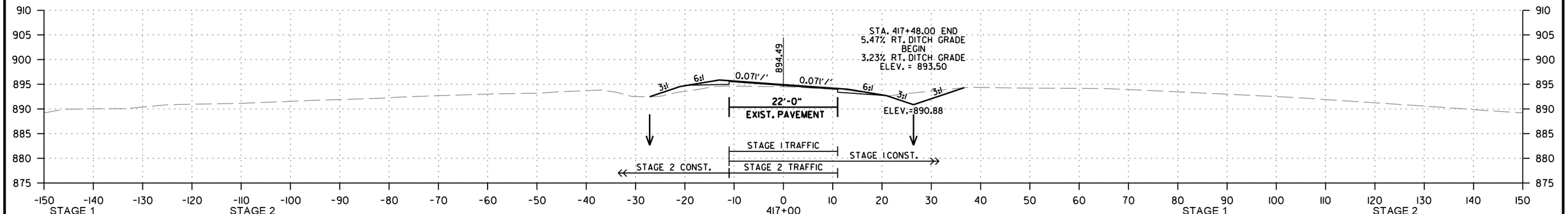
STAGE 1		STAGE 2	
CUT AREA	24 SQ. FT.	CUT AREA	19 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	57 CU. YD.	CUT VOLUME	25 CU. YD.
FILL VOLUME	1 CU. YD.	FILL VOLUME	1 CU. YD.



STAGE 1		STAGE 2	
CUT AREA	29 SQ. FT.	CUT AREA	4 SQ. FT.
FILL AREA	1 SQ. FT.	FILL AREA	1 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	93 CU. YD.	CUT VOLUME	7 CU. YD.
FILL VOLUME	4 CU. YD.	FILL VOLUME	24 CU. YD.



STAGE 1		STAGE 2	
CUT AREA	21 SQ. FT.	CUT AREA	0 SQ. FT.
FILL AREA	1 SQ. FT.	FILL AREA	12 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	43 CU. YD.	CUT VOLUME	0 CU. YD.
FILL VOLUME	7 CU. YD.	FILL VOLUME	31 CU. YD.

SITE 4
STA. 417+00 TO STA. 418+58

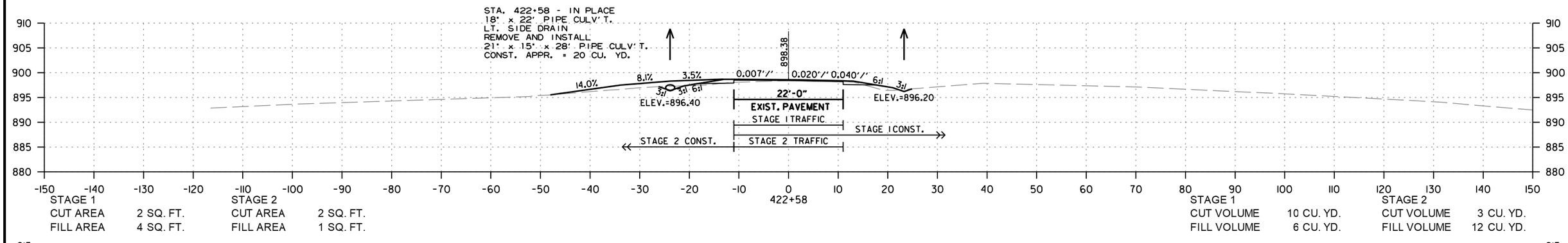
JY43338 9/7/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	85	87
		CROSS SECTIONS				

SITE 4
STA. 419+00 TO STA. 420+46

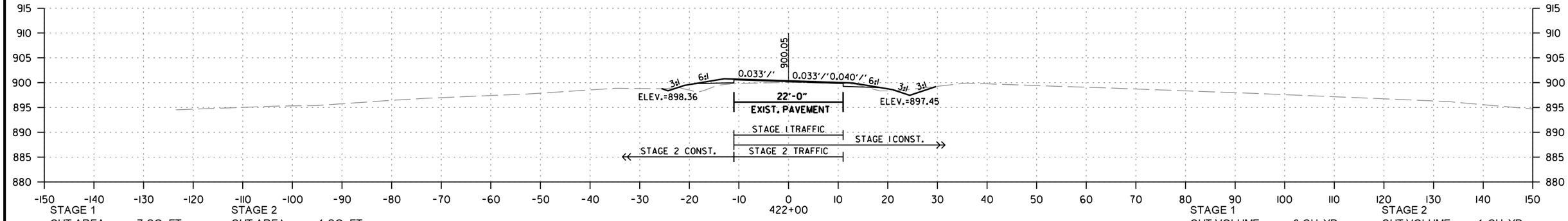
JY43338 9/7/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	86	87
		CROSS SECTIONS				



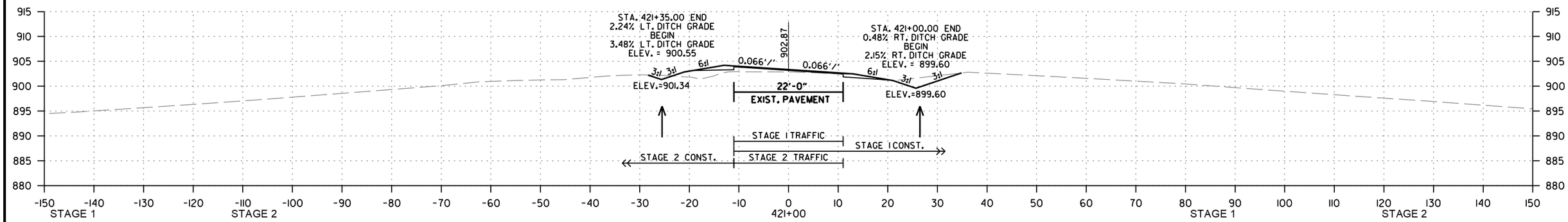
STAGE 1		STAGE 2	
CUT AREA	2 SQ. FT.	CUT AREA	2 SQ. FT.
FILL AREA	4 SQ. FT.	FILL AREA	1 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	10 CU. YD.	CUT VOLUME	3 CU. YD.
FILL VOLUME	6 CU. YD.	FILL VOLUME	12 CU. YD.



STAGE 1		STAGE 2	
CUT AREA	7 SQ. FT.	CUT AREA	1 SQ. FT.
FILL AREA	2 SQ. FT.	FILL AREA	10 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	6 CU. YD.	CUT VOLUME	1 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	5 CU. YD.



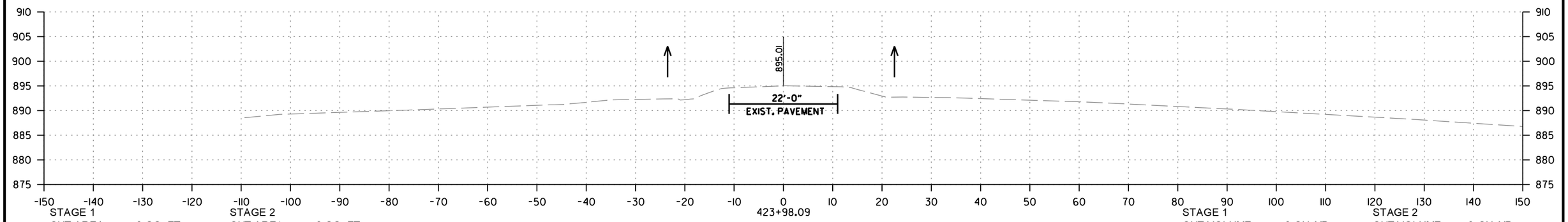
STAGE 1		STAGE 2	
CUT AREA	17 SQ. FT.	CUT AREA	2 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	12 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	48 CU. YD.	CUT VOLUME	5 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	17 CU. YD.

SITE 4
STA. 421+00 TO STA. 422+58

JY43338 9/7/2021
R012227.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	012227	87	87
		CROSS SECTIONS				



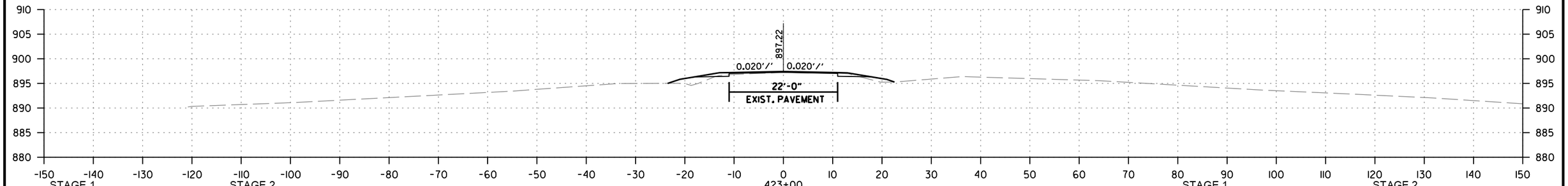
STAGE 1
CUT AREA 0 SQ. FT.
FILL AREA 0 SQ. FT.

STAGE 2
CUT AREA 0 SQ. FT.
FILL AREA 0 SQ. FT.

423+98.09
END 100' TRANSITION

STAGE 1
CUT VOLUME 0 CU. YD.
FILL VOLUME 0 CU. YD.

STAGE 2
CUT VOLUME 0 CU. YD.
FILL VOLUME 0 CU. YD.



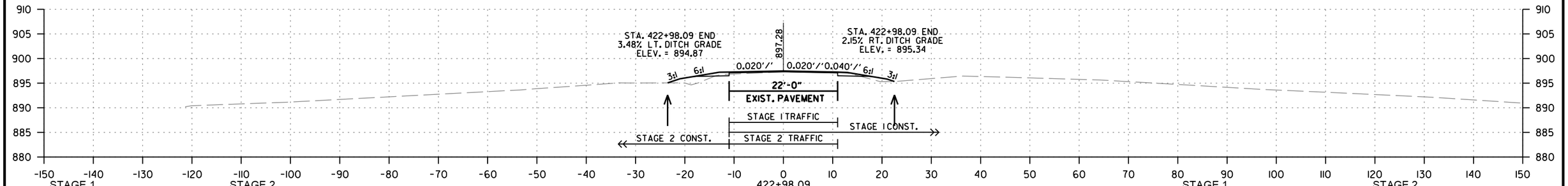
STAGE 1
CUT AREA 2 SQ. FT.
FILL AREA 3 SQ. FT.

STAGE 2
CUT AREA 1 SQ. FT.
FILL AREA 8 SQ. FT.

423+00

STAGE 1
CUT VOLUME 0 CU. YD.
FILL VOLUME 0 CU. YD.

STAGE 2
CUT VOLUME 0 CU. YD.
FILL VOLUME 1 CU. YD.



STAGE 1
CUT AREA 2 SQ. FT.
FILL AREA 3 SQ. FT.

STAGE 2
CUT AREA 1 SQ. FT.
FILL AREA 8 SQ. FT.

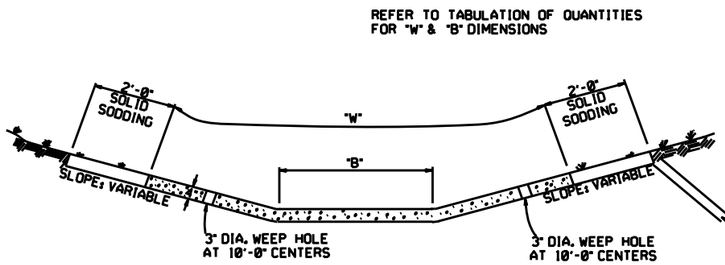
422+98.09
END SITE 4
BEGIN 100' TRANSITION

STAGE 1
CUT VOLUME 3 CU. YD.
FILL VOLUME 5 CU. YD.

STAGE 2
CUT VOLUME 2 CU. YD.
FILL VOLUME 7 CU. YD.

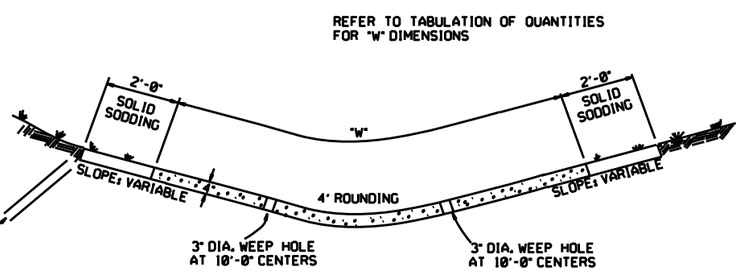
SITE 4
STA. 422+98.09 TO STA. 423+98.09

JY43338 9/7/2021
R012227.DGN



TYPE A

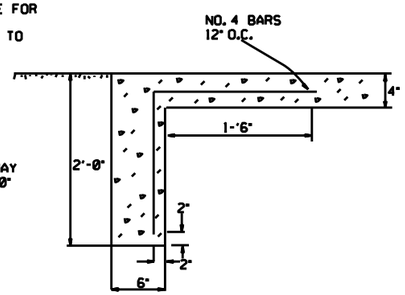
EXCAVATE TO NEAT LINES TO CONSTRUCT DITCH PAVING AND SOLID SODDING.



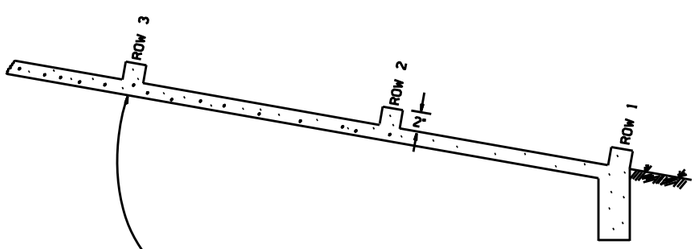
TYPE B

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

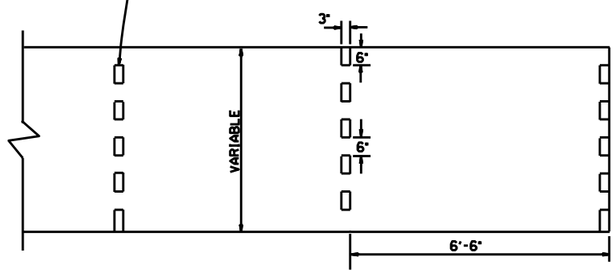


TOE WALL DETAIL FOR CONCRETE DITCH PAVING



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.

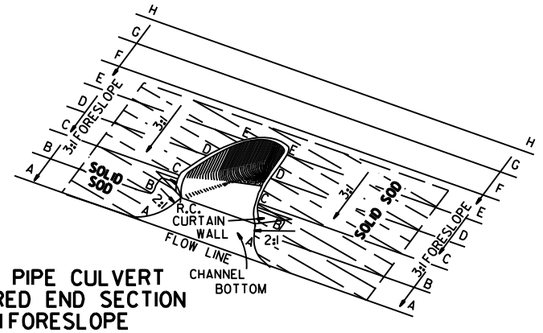
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45° INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

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

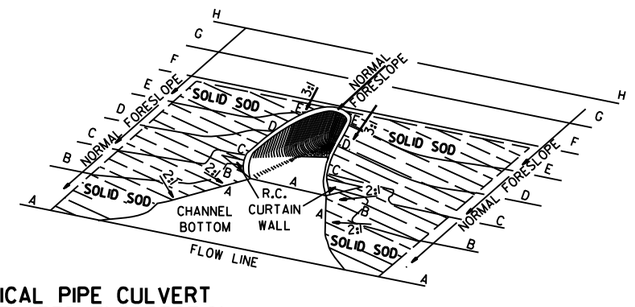
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

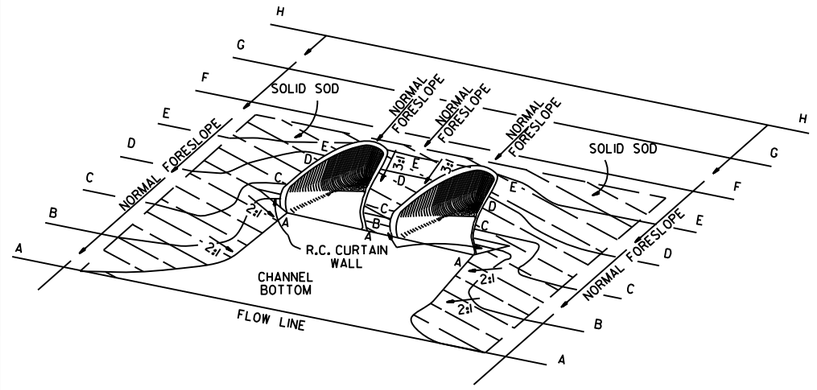
STANDARD DRAWING CDP-1



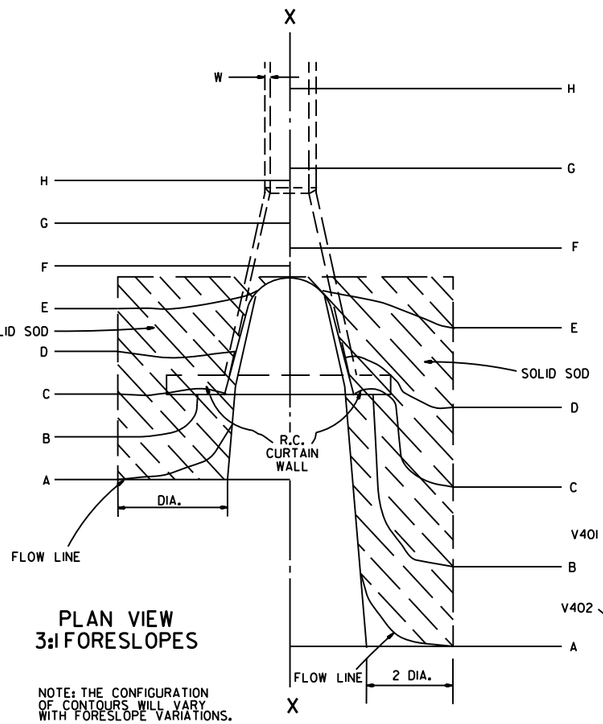
TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& 3:1 FORESLOPE



TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& FLATTENED ADJACENT SLOPES



TYPICAL MULTIPLE PIPE CULVERT
WITH FLARED END SECTIONS
& FLATTENED ADJACENT SLOPES



PLAN VIEW
3:1 FORESLOPES

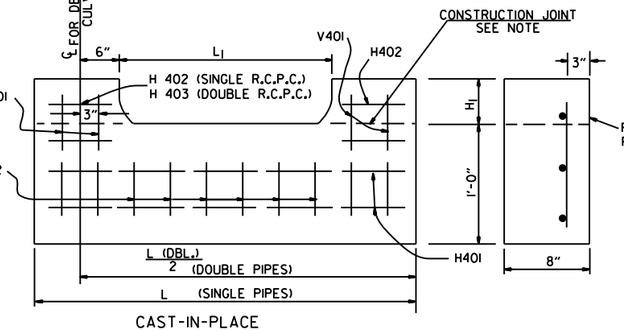
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW
FLATTENED FORESLOPES

R.C. CURTAIN WALL
DIMENSIONS & QUANTITIES

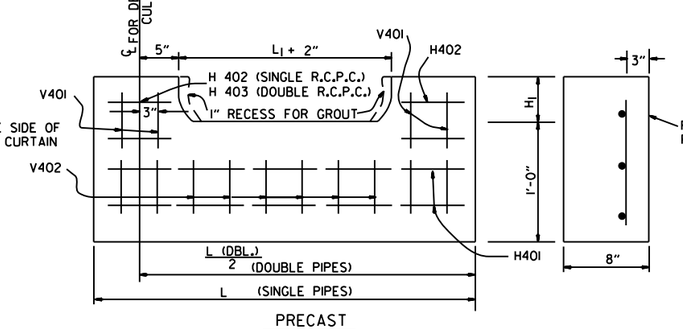
PIPE DIA.	H_1	L_1	L	L (DBL.) / 2	SINGLE R.C.P.C. CONC.	SINGLE R.C.P.C. REINF. STEEL	DOUBLE R.C.P.C. CONC.	DOUBLE R.C.P.C. REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	1'-11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	5'-7"	11'-0"	9'-0"	0.45	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.



CAST-IN-PLACE

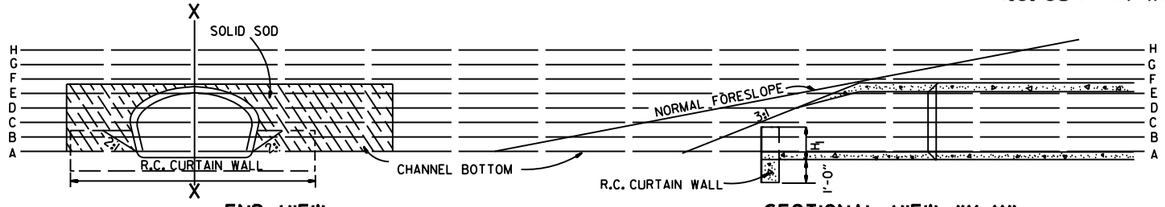
NOTE: THE PORTION OF THE R.C. CURTAIN WALL BENEATH THE FLARED END SECTION (LOWER 1'-0") SHALL BE PLACED MONOLITHICALLY. THE FLARED END SECTION SHALL THEN BE SET IN PLACE & THE REMAINING PORTIONS OF THE R.C. CURTAIN WALL PLACED.



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.

R.C. CURTAIN WALL DETAILS



END VIEW

SECTIONAL VIEW "X-X"

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.

SOLID SODDING

PIPE DIA.	SINGLE R.C.P.C. 3:1	4:1	6:1	DOUBLE R.C.P.C. 3:1	4:1	6:1
	SQ. YDS.			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.

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

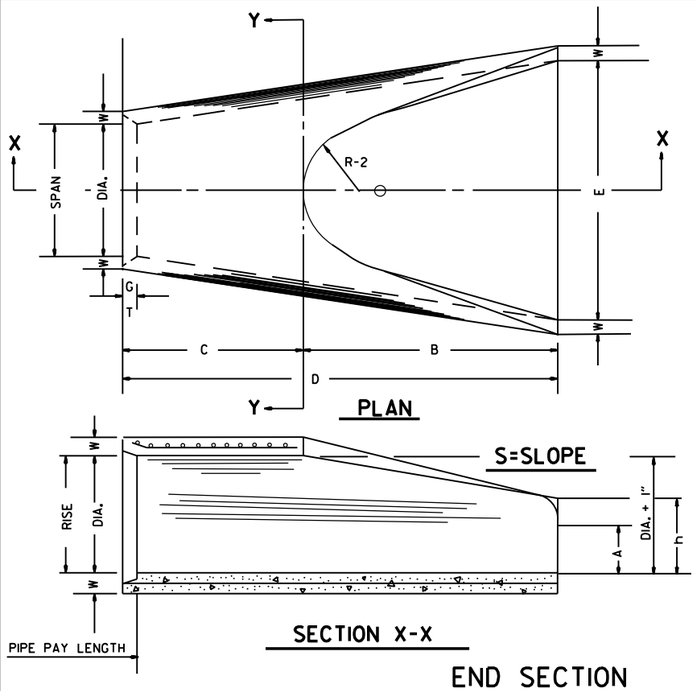
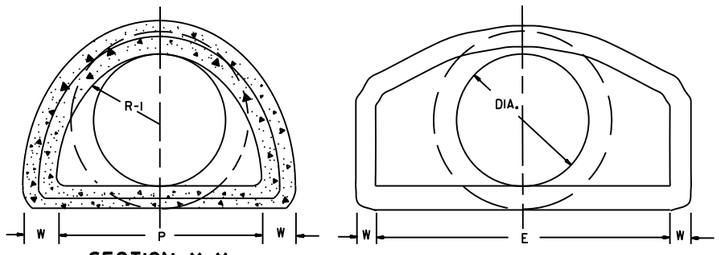


TABLE OF DIMENSIONS

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"	3:1	19"	29"	15½"	12"	2"	1000	1'-0½"
24"	3"	9½"	3'-7½"	2'-6"	6'-1½"	4'-0"	3:1	25"	33 3/16"	16 15/16"	14"	2½"	1600	1'-1½"
30"	3½"	1'-0"	4'-6"	1'-7 3/4"	6'-1 3/4"	5'-0"	3:1	31"	37"	18½"	15"	3¼"	1940	1'-4 5/8"
36"	4"	1'-3"	5'-3"	2'-10 3/4"	8'-1 3/4"	6'-0"	3:1	37"	47 13/16"	24 5/16"	20"	3½"	4100	1'-8"
42"	4½"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3:1	43"	53⅞"	27½"	22"	3½"	5380	2'-2½"
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	3:1	49"	56½"	28½"	22"	3½"	6550	2'-6"
54"	5½"	2'-4"	6'-6"	1'-10"	8'-4"	7'-6"	3:1	55"	65½"	33⅛"	24"	4"	8750	2'-10½"
60"	6"	2'-10"	6'-6"	1'-10"	8'-4"	8'-0"	3:1	61"	72½"	36 11/16"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77 13/16"	38 15/16"	24"	5"	13250	4'-6"

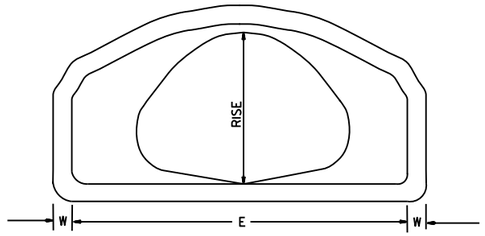


NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

ARCH PIPE

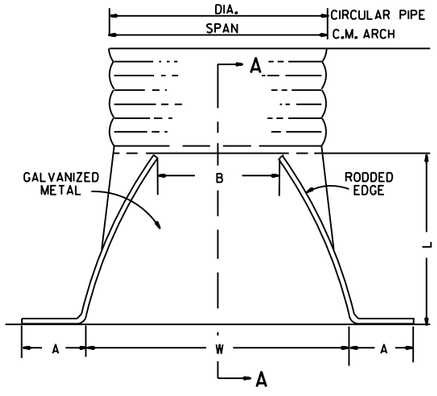
EQUIV. DIA.	• SPAN AASHTO M 206	• SPAN AHD NOMINAL	• RISE AASHTO M 206	• RISE AHD NOMINAL	W	A	B	C	D	E	P	R2	G-T	S
	INCHES													
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1½"	2½:1
18	22	22	13½	14	2½"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32⅛"	13"	2½"	2½:1
21	26	26	15½	16	2¾"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34⅛"	14"	2½"	2½:1
24	28½	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36 11/16"	15"	2½"	2½:1
30	36¼	36	22½	23	3½"	10"	3'-1"	3'-0½"	6'-1½"	6'-0"	47 11/16"	20"	3"	2½:1
36	43¾	44	26⅜	27	4"	10½"	4'-0"	2'-11½"	6'-1½"	6'-6"	54 5/16"	22"	3½"	2½:1
42	51⅛	51	31 5/16	31	4½"	11½"	4'-7"	1-10¼"	6'-5¼"	7'-2"	59½"	23"	3¾"	2½:1
48	58½	59	36	36	5"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	7'-10"	70 5/16"	24"	4¼"	2½:1
54	65	65	40	40	5½"	1'-7"	5'-3"	2'-11"	8'-2"	8'-6"	72 1/16"	24"	4¾"	2¼:1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77 1/16"	24"	5"	2¼:1

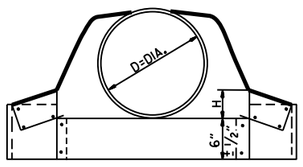
• THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PER CENT FROM THE VALUES SPECIFIED BY AASHTO M 206.



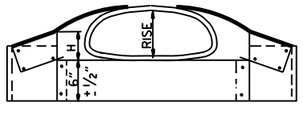
END VIEW
CONCRETE ARCH PIPE

END SECTION FOR REINFORCED CONCRETE PIPE CULVERTS





CIRCULAR PIPE



C.M. ARCH PIPE

CIRCULAR PIPE

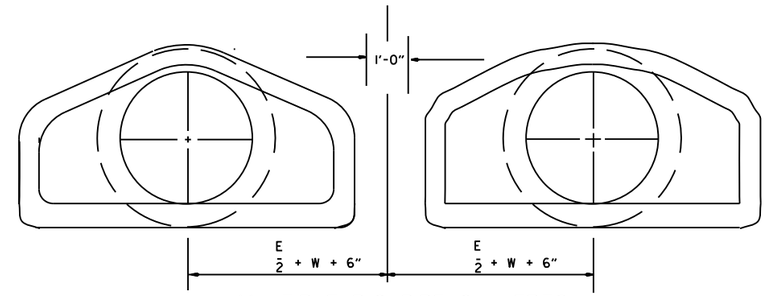
D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" ±	L 1½" ±	W 2" ±	S
		INCHES					
12	16	6	6	6	21	24	2½:1
15	16	7	8	6	26	30	2½:1
18	16	8	10	6	31	36	2½:1
21	16	9	12	6	36	42	2½:1
24	16	10	13	6	41	48	2½:1
30	14	12	16	8	51	60	2½:1
36	14	14	19	9	60	72	2½:1
42	12	16	22	11	69	84	2½:1
48	12	18	27	12	78	90	2½:1
54	12	18	30	12	84	102	2:1
60	12	18	33	12	87	114	1¾:1
66	12	18	36	12	87	120	1½:1
72	12	18	39	12	87	126	1 1/3:1

C.M. ARCH PIPE

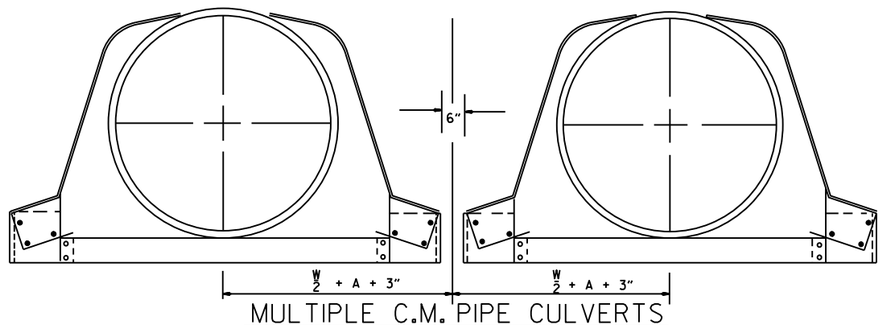
EQUIV. DIA.	SPAN	RISE	A 1" ±	B MAX.	H 1" ±	L 1½" ±	W 2" ±	S	GAUGE
	INCHES								
15"	17	13	7	9	6	19	30	2½:1	16
18"	21	15	7	10	6	23	36	2½:1	16
21"	24	18	8	12	6	28	42	2½:1	16
24"	28	20	9	14	6	32	48	2½:1	16
30"	35	24	10	16	6	39	60	2½:1	14
36"	42	29	12	18	8	46	75	2½:1	14
42"	49	33	13	21	9	53	85	2½:1	12
48"	57	38	18	26	12	63	90	2½:1	12
54"	64	43	18	30	12	70	102	2¼:1	12
60"	71	47	18	33	12	77	114	2¼:1	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



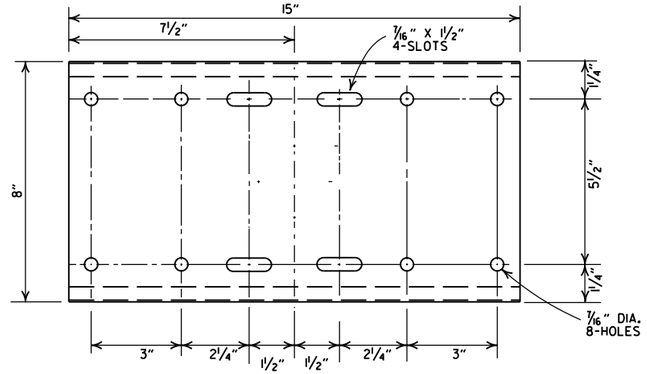
MULTIPLE C.M. PIPE CULVERTS

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

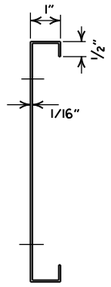
ARKANSAS STATE HIGHWAY COMMISSION

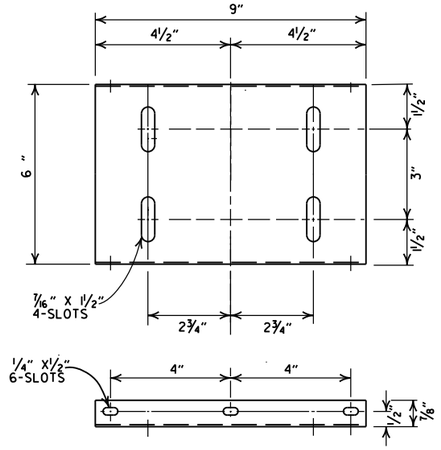
FLARED END SECTION

STANDARD DRAWING FES-2

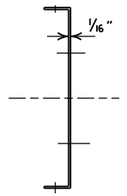


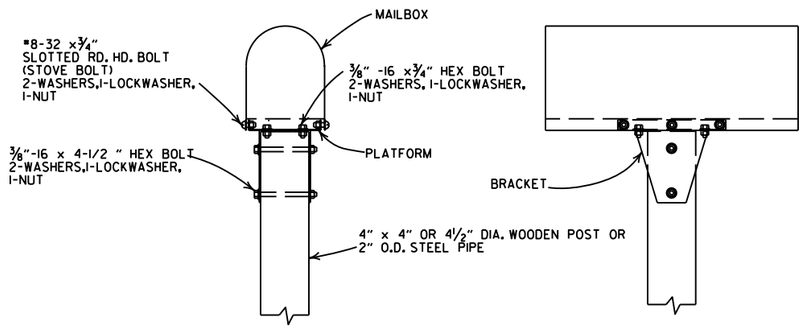
SHELF



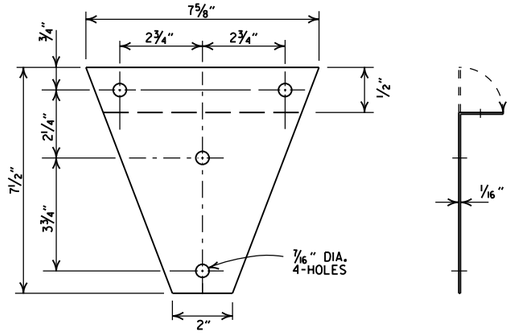


PLATFORM





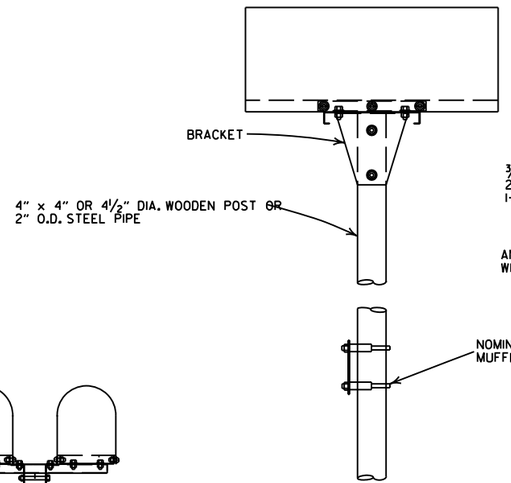
SINGLE INSTALLATION



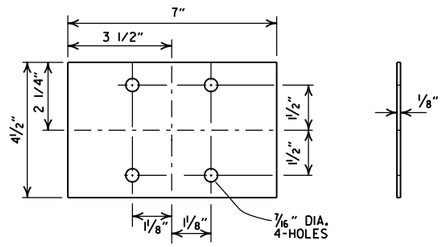
BRACKET

GENERAL NOTES

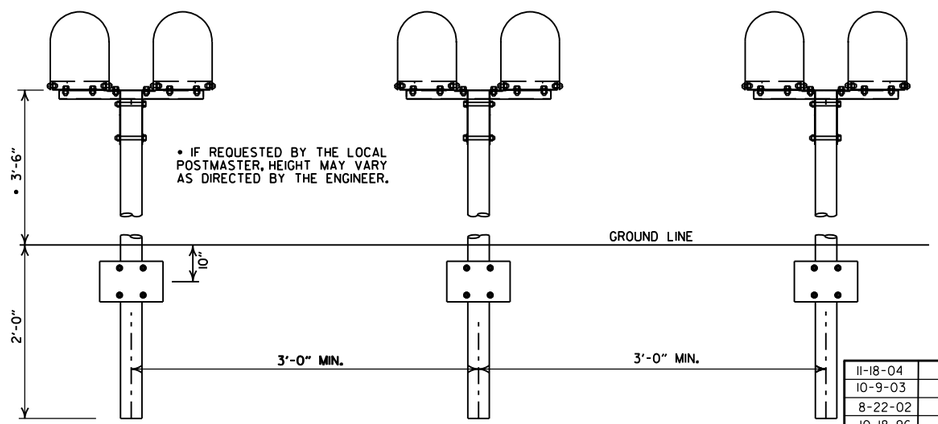
1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
3. MAILBOX SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED OR PAINTED STEEL, HOWEVER TREATED WOOD MAY BE USED WITH WOODEN POSTS. THE WOODEN SHELF, BRACKET & PLATFORM SHALL BE A MINIMUM OF ¾" THICK AND SHALL BE ASSEMBLED WITH BOLTS OF THE APPROPRIATE LENGTH WITH SIX 8 X¾" FLATHEAD WOOD SCREWS USED TO ATTACH THE MAILBOX TO THE PLATFORM.
4. THE MAILBOX SHELF AND PLATFORM THAT IS SHOWN IS FOR STANDARD SIZE MAILBOXES. THE SHELF AND PLATFORM SIZE SHALL BE MODIFIED TO FIT MAILBOXES OF A DIFFERENT SIZE.
5. METAL PIPE FOR MAILBOX SUPPORT SHALL BE 2" OUTSIDE DIAMETER STEEL WITH A WALL THICKNESS OF 0.145" AND A WEIGHT OF 2.72 LBS PER FT. OUTSIDE DIAMETER AND WEIGHT SHALL HAVE A TOLERANCE OF +/- 5% ACCORDING TO AASHTO M 181.
6. MAILBOX SUPPORT SYSTEM DIFFERING FROM THOSE SHOWN MAY BE USED, PROVIDED THEY ARE ON THE ARDOT QUALIFIED PRODUCTS LIST FOR MAILBOX SUPPORTS.



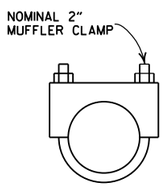
DOUBLE INSTALLATION



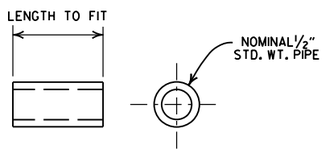
ANTI-TWIST PLATE



SPACING FOR MULTIPLE POST INSTALLATION



CLAMP



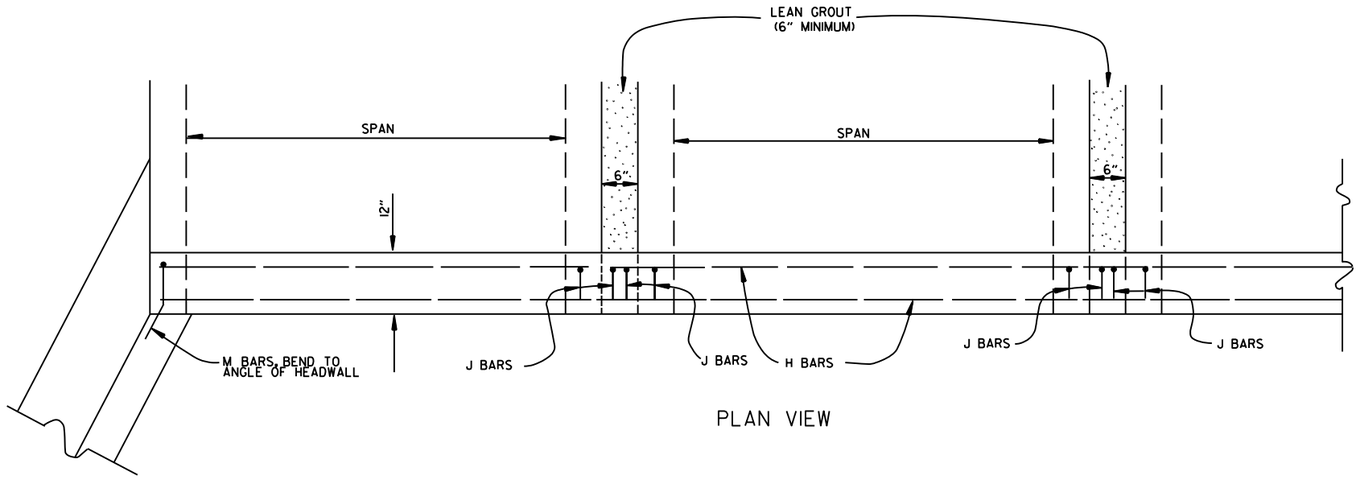
SPACER

DATE	FILMED	REVISION
11-18-04		REVISED NOTES
10-9-03		REVISED NOTE 6
8-22-02		REVISED NOTE 6
10-18-96		CORRECTED AASHTO
10-1-92		CORRECTED SPELLING
9-26-91		NEW PHONE NUMBER
8-15-91		ADDED NOTE
11-30-89		ADJUSTED HEIGHT & ADDED NOTE
2-16-89		DELETED SLOTS FROM SHELF & PLTF
11-17-88	10-1-92	ADJUSTED DIMENSIONS OF STEEL POSTS
7-15-88	20-7-15-88	ISSUED

ARKANSAS STATE HIGHWAY COMMISSION

MAILBOX DETAILS

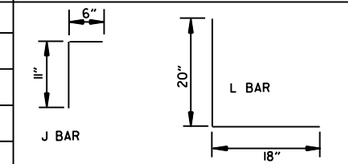
STANDARD DRAWING MB-1



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.

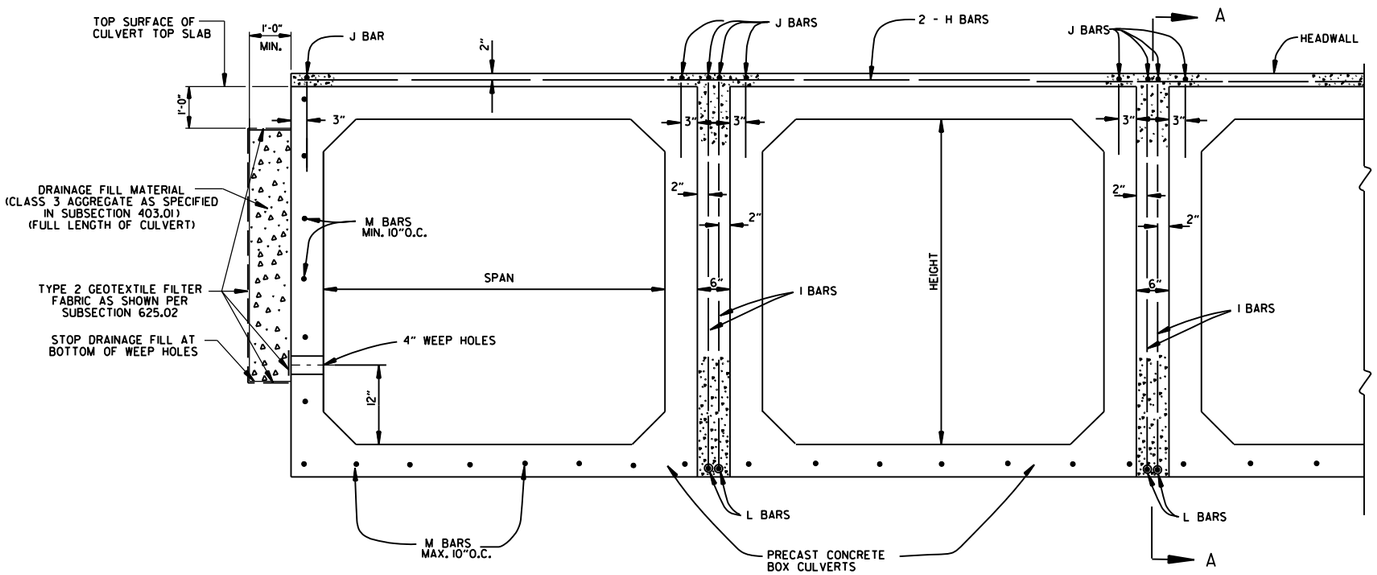
THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP EXTERNAL JOINT AND SHALL EXTEND 1 FOOT DOWN THE SIDES OF THE CULVERT.

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.

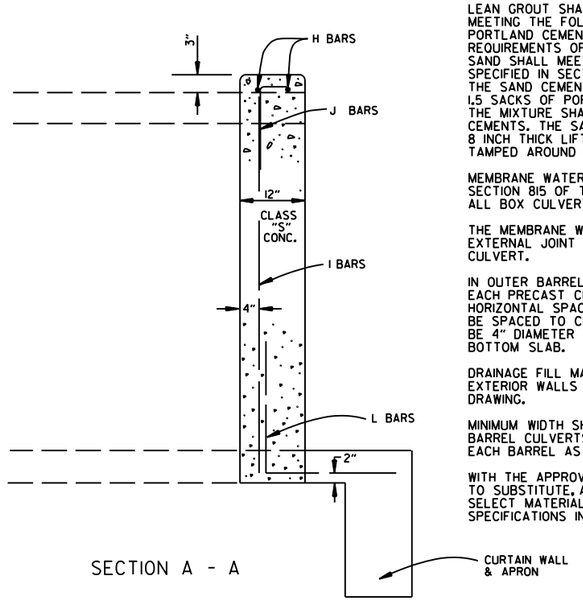
DRAINAGE FILL MATERIAL WITH GEOTEXTILE FABRIC IS REQUIRED AT THE EXTERIOR WALLS OF THE ASSEMBLED CULVERT, SEE DETAILS ON THIS DRAWING.

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.

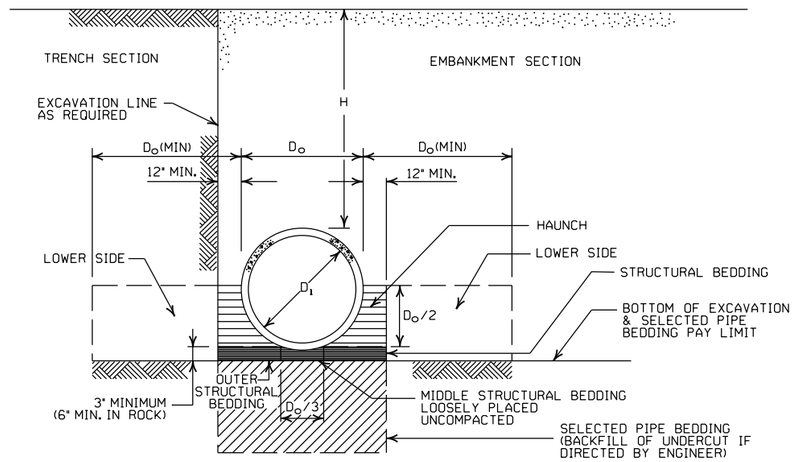
- LEGEND -

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

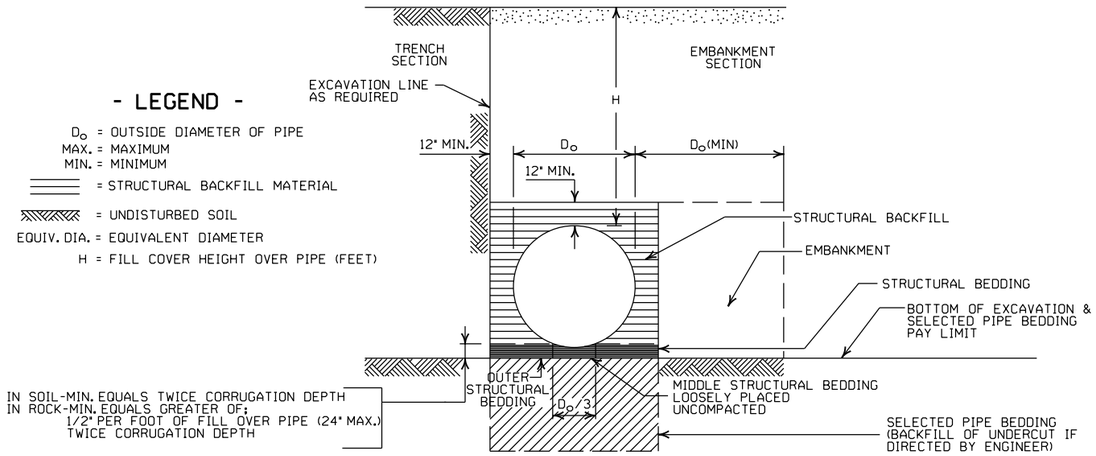
EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINUMUM CORNER RADIUS (INCHES)	STEEL				ALUMINUM			
			MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)	MAX. HEIGHT OF FILL, "H" (FT.)		MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)	MAX. HEIGHT OF FILL, "H" (FT.)	
				INSTALLATION	INSTALLATION			INSTALLATION	INSTALLATION	
				TYPE 1	TYPE 1			TYPE 1	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		INSTALLATION				
				TYPE 2	TYPE 1	TYPE 2	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"

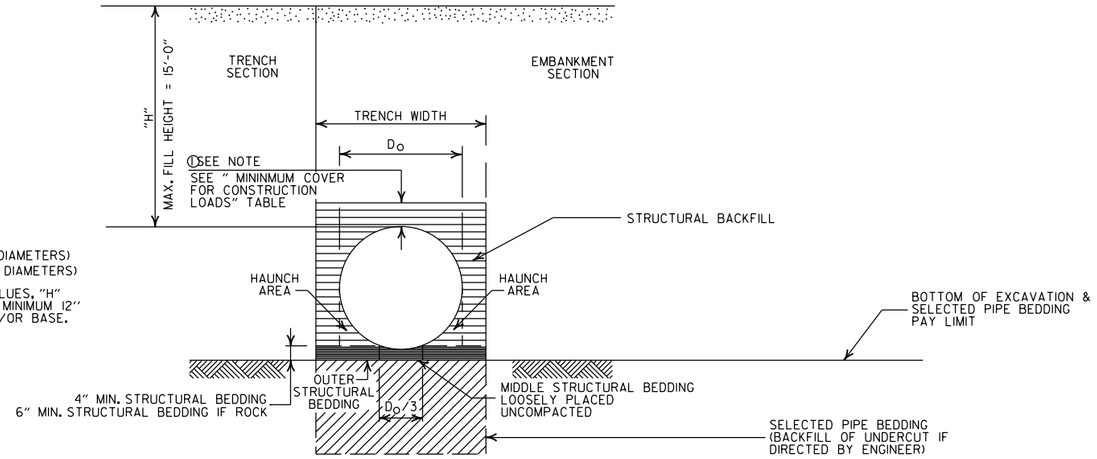
①NOTE:
18" MIN. (18" - 30" DIAMETERS)
24" MIN. (36" - 48" DIAMETERS)

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 = 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

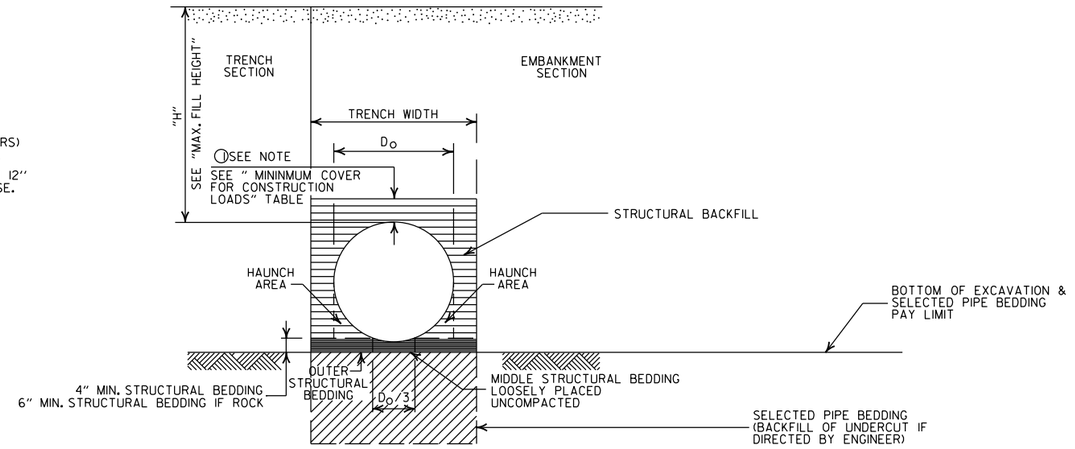
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

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"

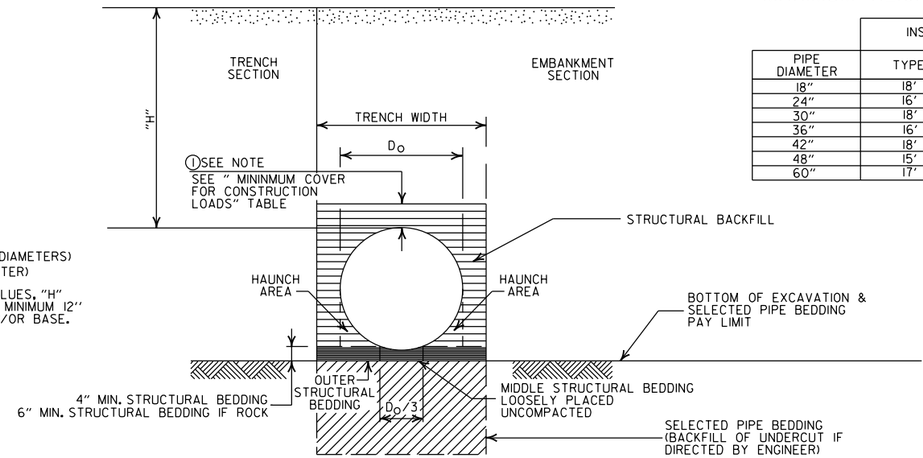
PIPE DIAMETER	TRENCH WIDTH (FEET)	
	"H" < 10'-0"	"H" >OR= 10'-0"
18"	4'-6"	4'-6"
24"	5'-0"	6'-0"
30"	5'-6"	7'-6"
36"	6'-0"	9'-0"
42"	7'-0"	10'-6"
48"	8'-0"	12'-0"
60"	10'-0"	15'-0"

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'



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.

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

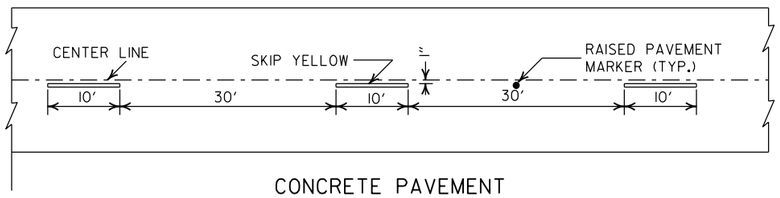
= UNDISTURBED SOIL

DATE	REVISION	DATE FILMED
02-27-20	REVISED	
11-07-19	ISSUED	

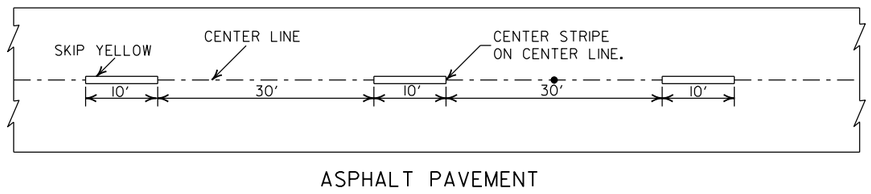
ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (POLYPROPYLENE)

STANDARD DRAWING PCP-3

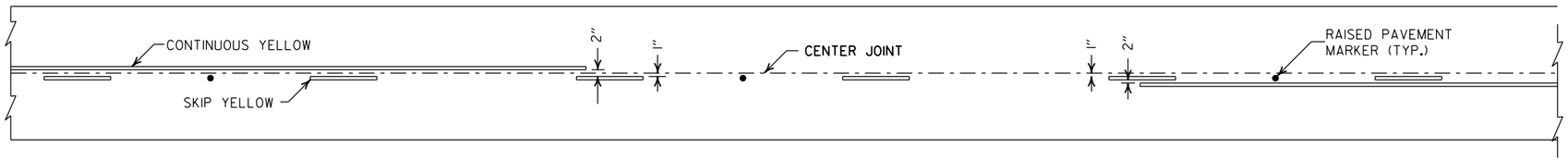


CONCRETE PAVEMENT

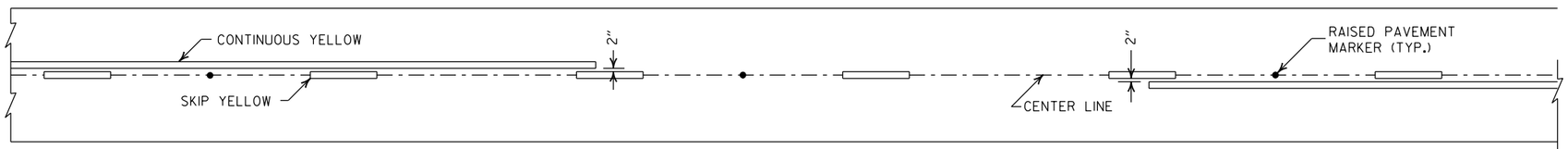


ASPHALT PAVEMENT

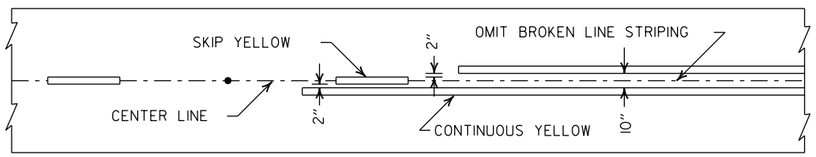
BROKEN LINE STRIPING



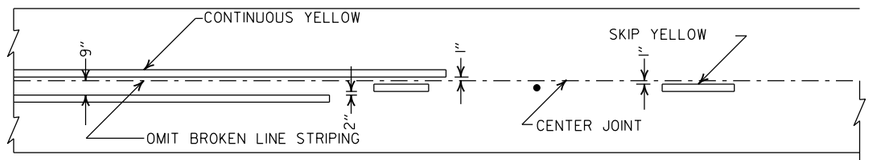
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

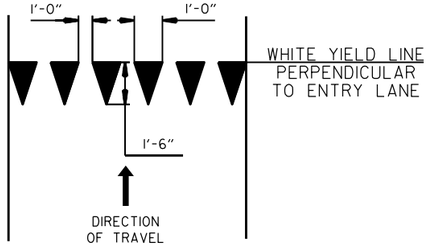


ASPHALT PAVEMENT

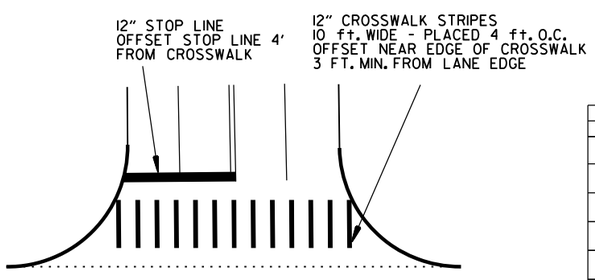


CONCRETE PAVEMENT

STRIPING AT ADJACENT NO PASSING LANES

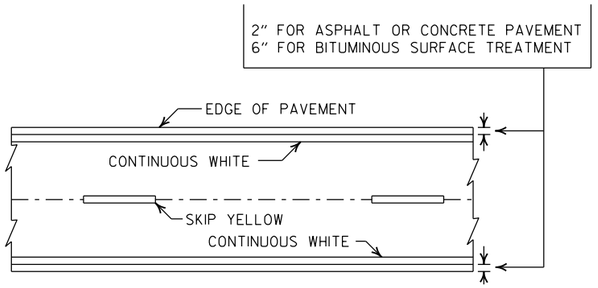


YIELD LINE DETAIL



CROSSWALK AND STOP LINE DETAILS

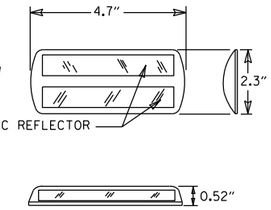
NOTES:
1. REFER TO THE STRIPING DETAILS FOR PAVEMENT MARKING LINE WIDTHS.
2. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
3. RAISED PAVEMENT MARKERS SHALL BE PLACED ON AN 80 FEET SPACING UNLESS OTHERWISE SHOWN IN THE PLANS.



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

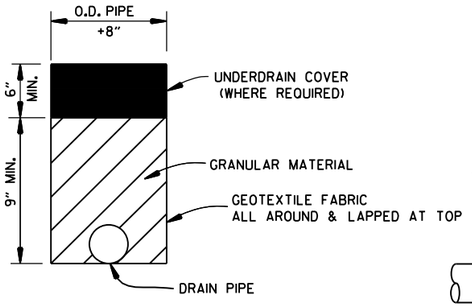
PAVEMENT MARKING DETAILS

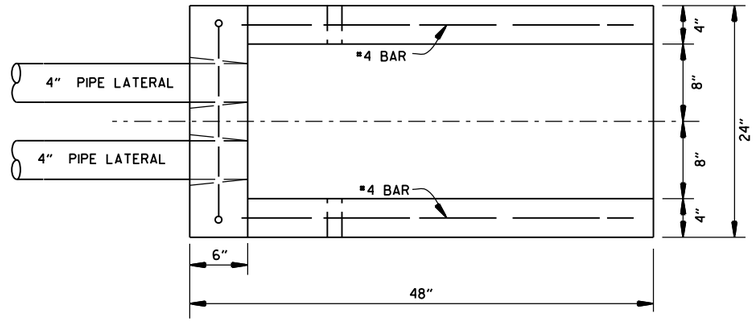
STANDARD DRAWING PM-1

NOTE:

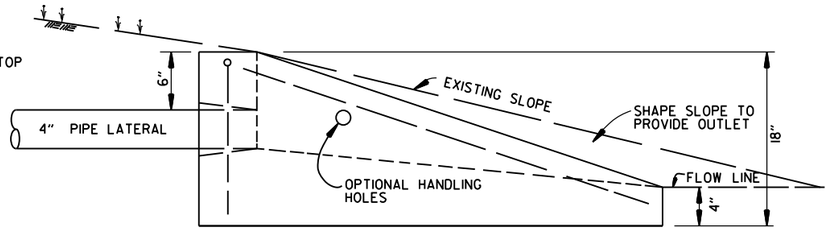
1. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.

2. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.

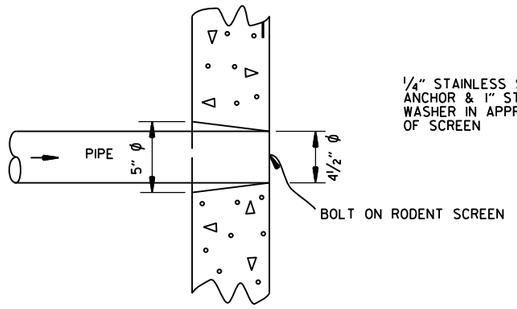




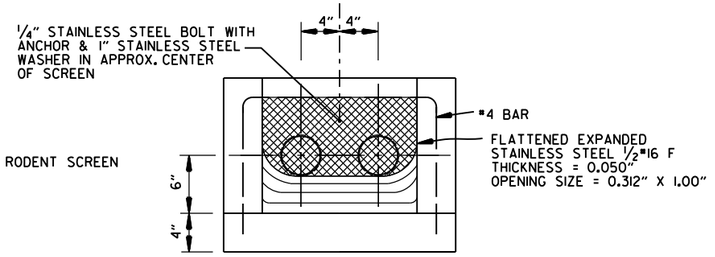
PLAN VIEW



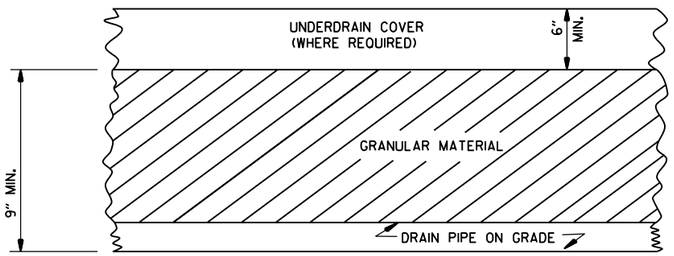
SIDE VIEW



DETAIL OF HOLE
FOR 4" PIPE



FRONT VIEW
(DETAIL OF RODENT SCREEN)



DETAILS OF PIPE UNDERDRAIN

NOTES FOR PIPE UNDERDRAINS

1. GEOTEXTILE FABRIC SHALL MEET THE REQUIREMENTS OF SECTION 625 FOR TYPE 1. 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."

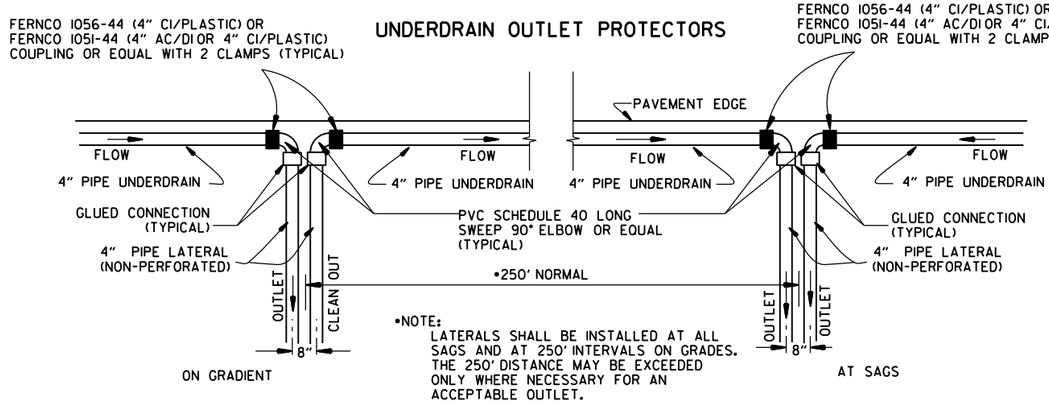
4. THE LOCATION OF ALL LATERALS SHALL BE MARKED WITH 4" X 12" PERMANENT PAVEMENT MARKING TAPE (TYPE III WHITE) AT THE OUTSIDE EDGE OF THE SHOULDER, PLACED TRANSVERSE TO TRAFFIC. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

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.

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.

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

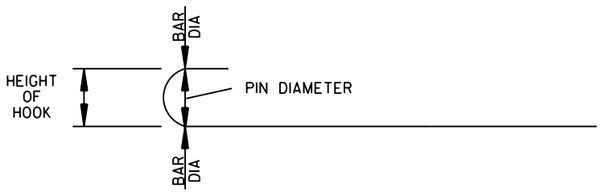
DETAILS OF PIPE UNDERDRAIN

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

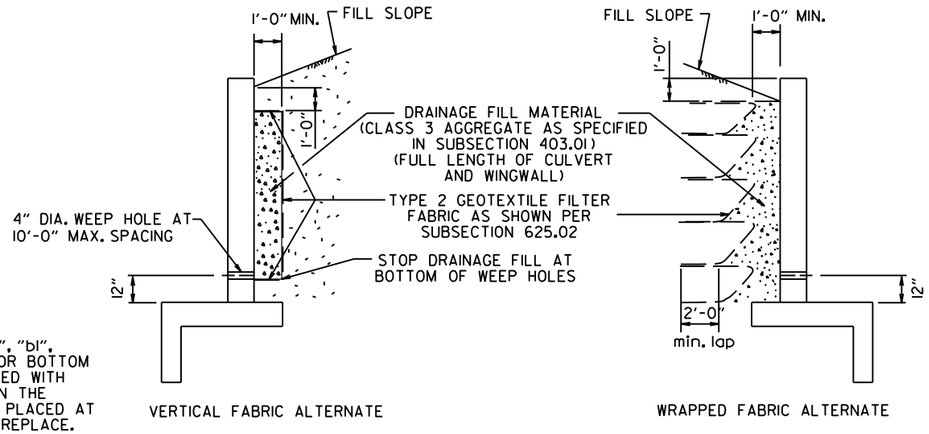
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

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.

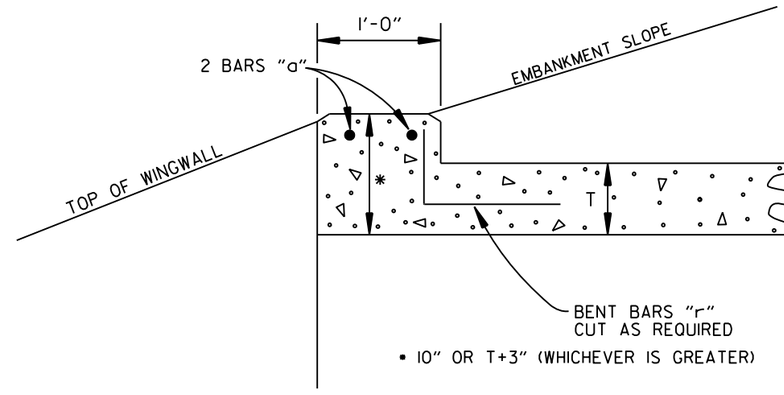
MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

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.

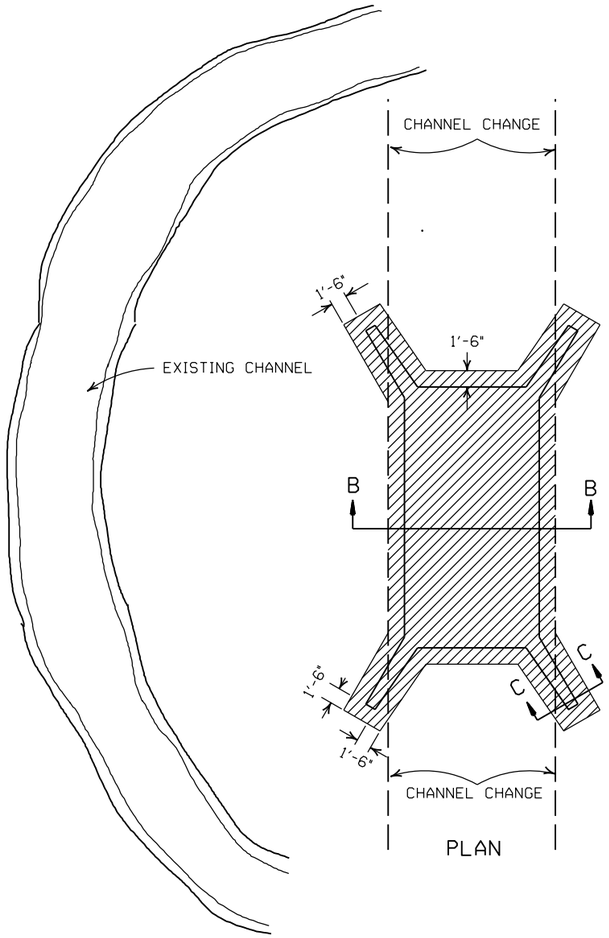
R.C. BOX CULVERT HEADWALL MODIFICATIONS

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	

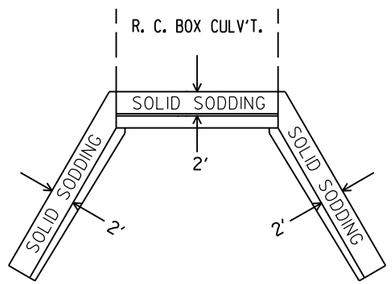
ARKANSAS STATE HIGHWAY COMMISSION

REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1



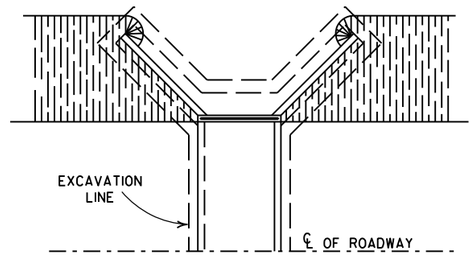
PLAN



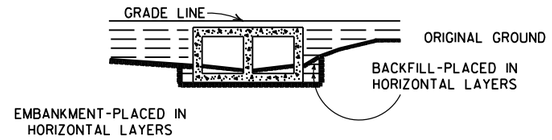
PLAN

PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

NOTE: LENGTH MEASURED ALONG THE CENTER OF 2' STRIP OF SOLID SODDING.

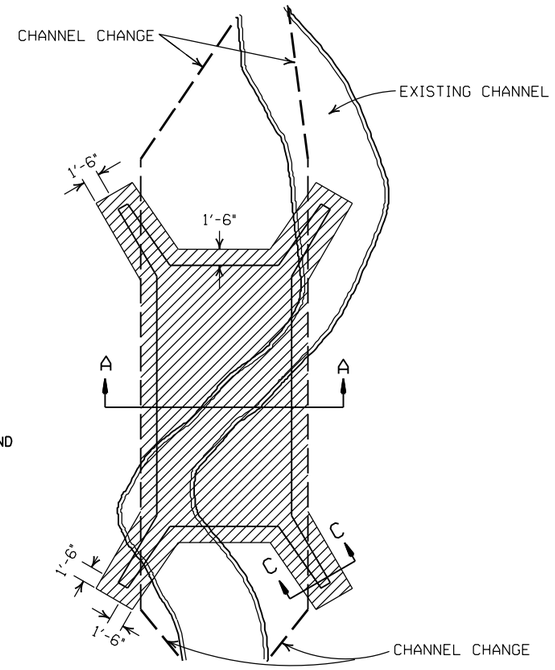


PLAN

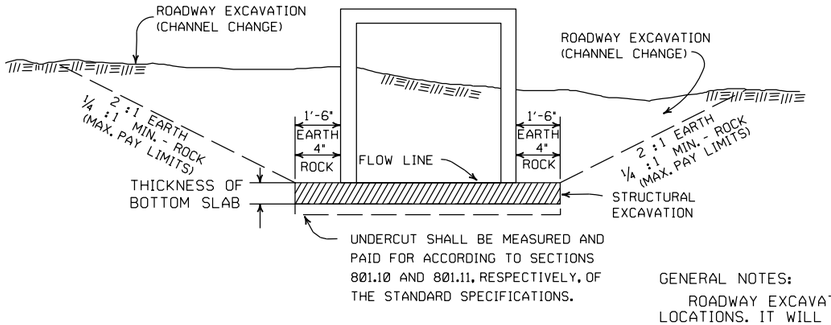


LONGITUDINAL SECTION

BACKFILL DETAILS FOR BOX CULVERT

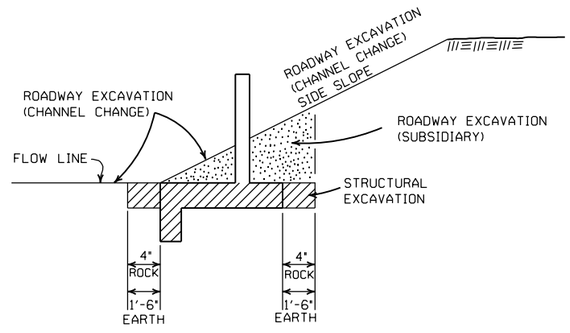


PLAN

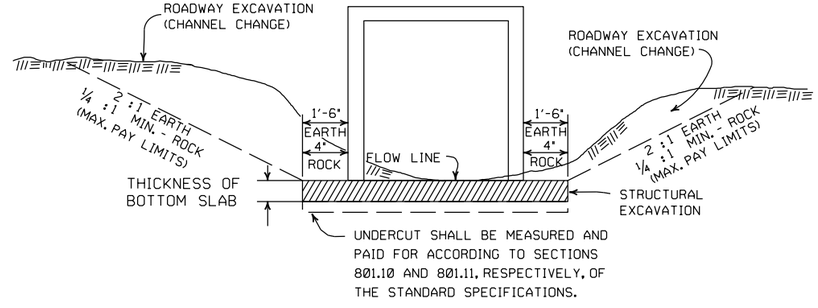


SECTION B-B

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.

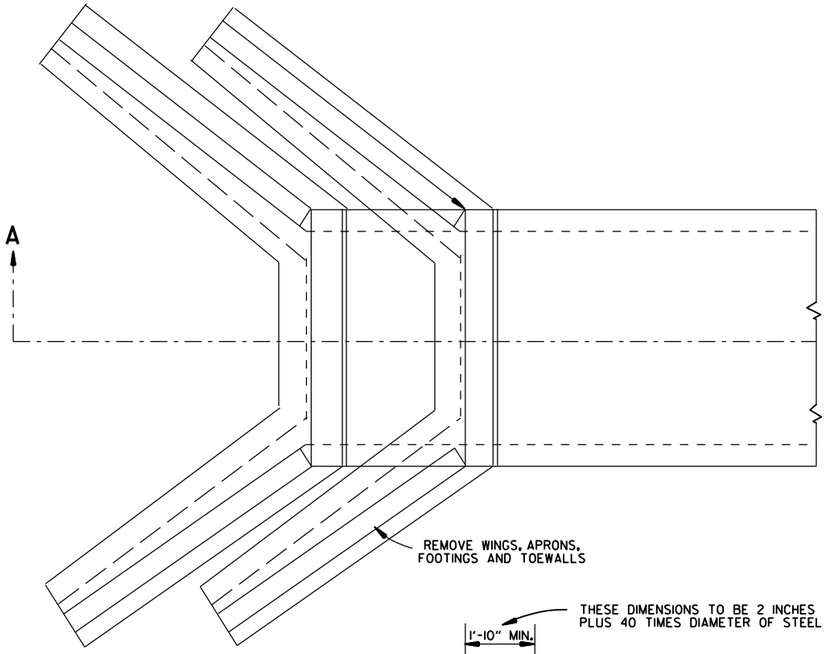
ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSIDIARY WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.

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

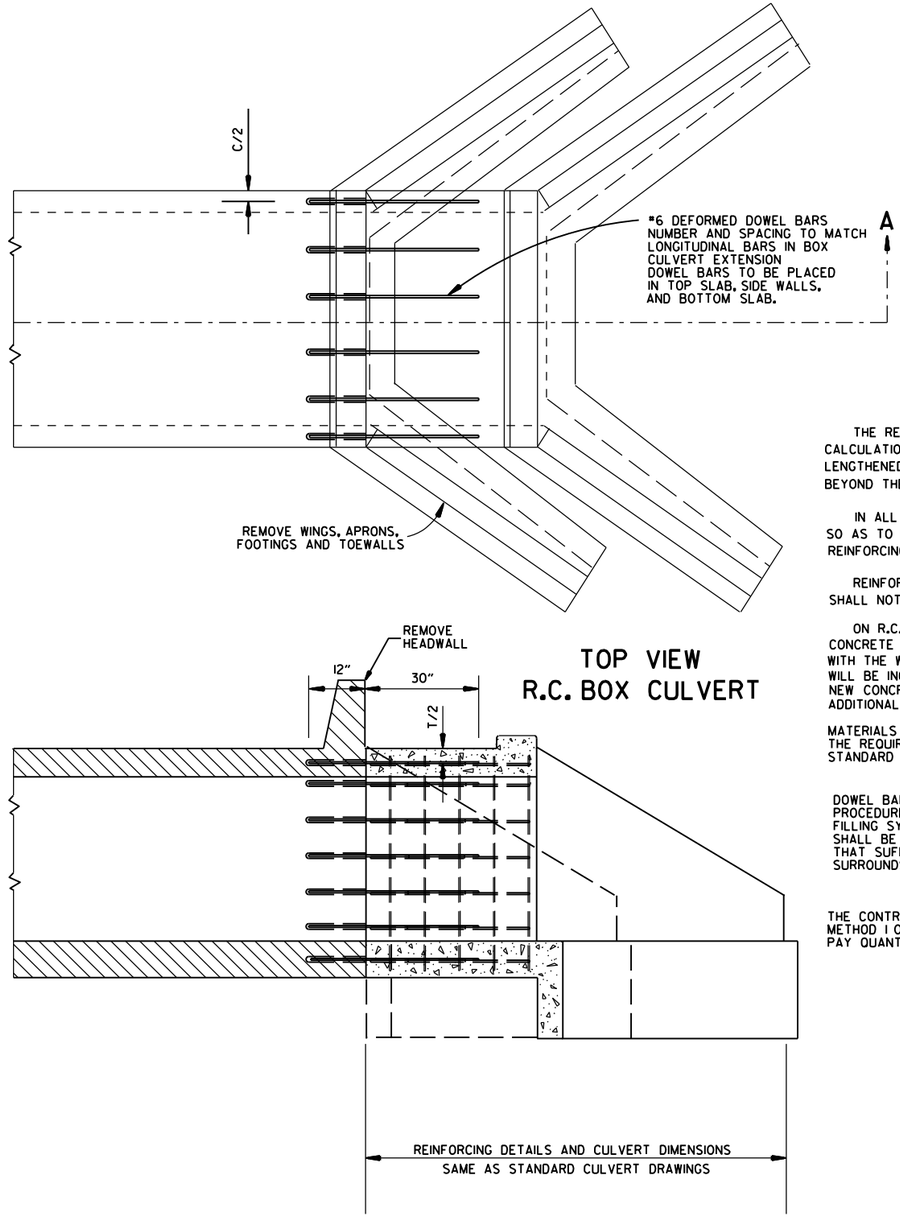
STANDARD DRAWING RCB-2



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

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		0.046	129		0.056	160		0.068	198		0.078	235		0.090	264		0.098	283										
4° 45'	0.038	104	200	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		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		0.086	239		0.096	278	300	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		0.100	288															
8° 00'	0.058	140		0.070	176		0.084	219		0.094	257	300	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	D MAX = 13° 45'																			
14° 00'	0.080	180		0.094	222																								
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'																													

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.)

GENERAL NOTES

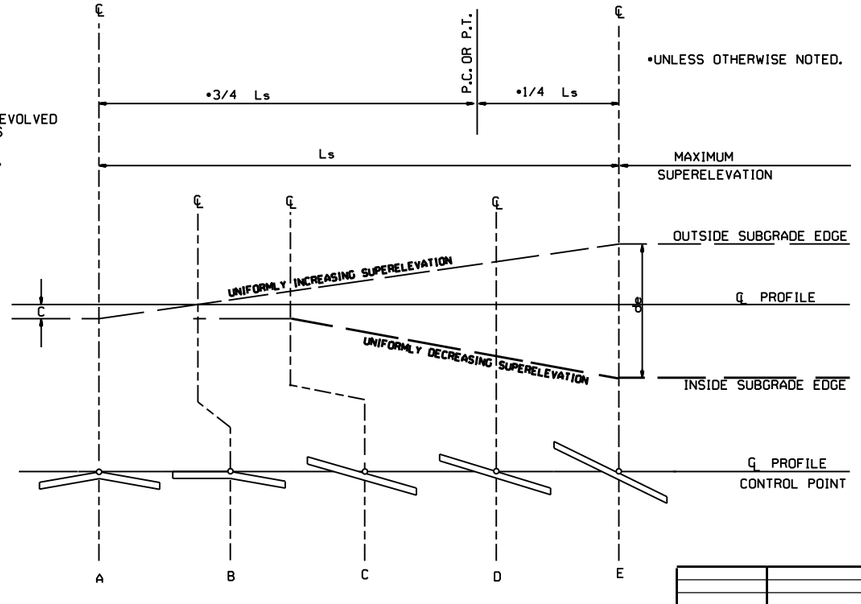
1. ON PAVEMENT WITH TWO-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE INSIDE PAVEMENT EDGE UNLESS OTHERWISE NOTED ON THE PLANS
2. SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES (+) OR (-) TO BE ADDED TO OR SUBTRACTED FROM THE POINT OF CONTROL.
3. LENGTHS FOR L MAY BE ROUNDED 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%

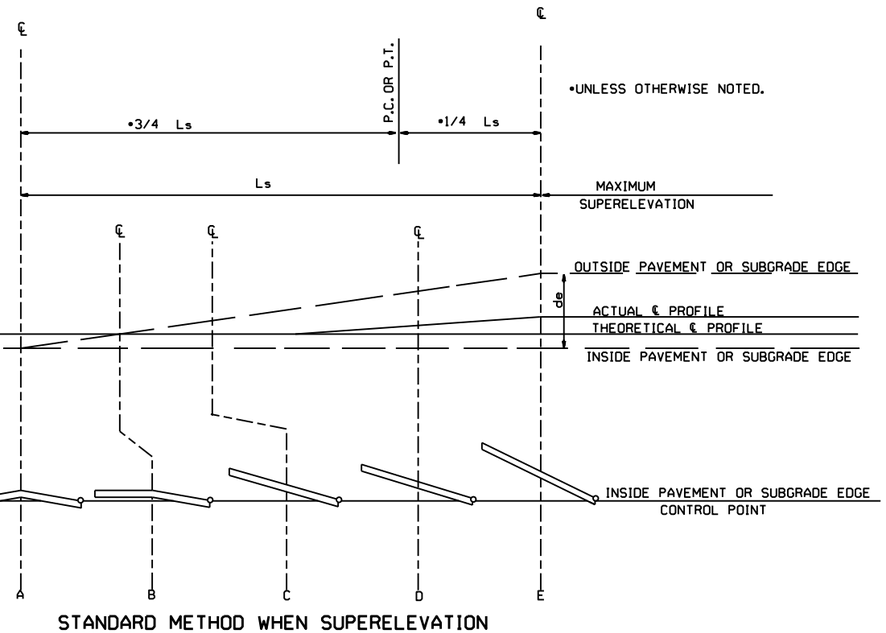
NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

RATE OF SUPERELEVATION SHALL BE COMPUTED ON STRAIGHT LINE METHOD USING APPLICABLE Ls.

SUPERELEVATION FORMULA = $\frac{Lde}{Ls}$



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND INNER SUBGRADE POINT OR INNER PAVEMENT EDGE

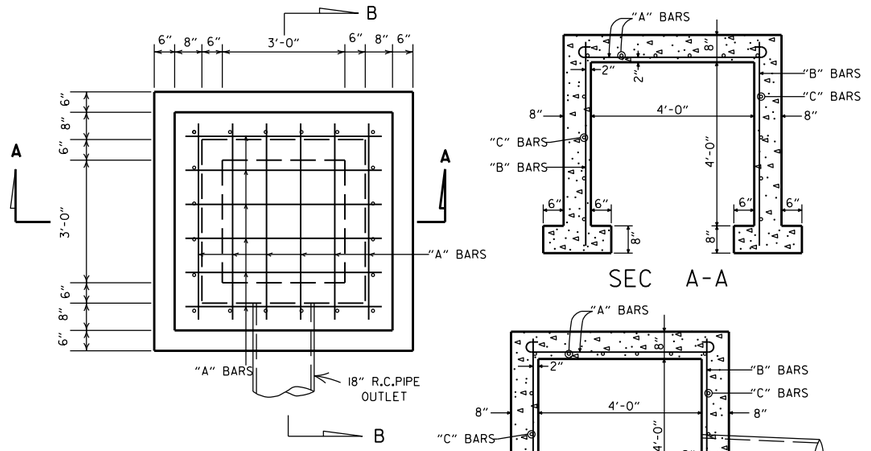
NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

DATE	REVISION	DATE FILLMED
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



SEC A-A

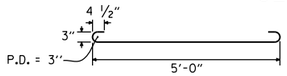
SEC B-B

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

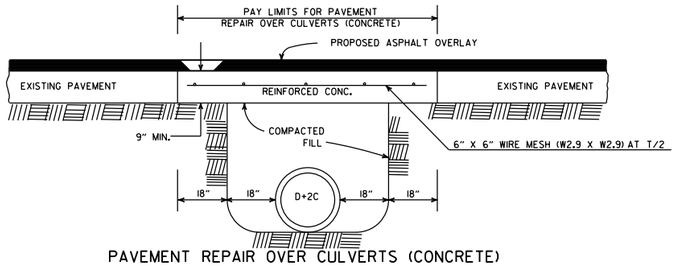
QUANTITIES

CONCRETE 3.31 CU. YDS.
REINFORCING STEEL 168 LB.

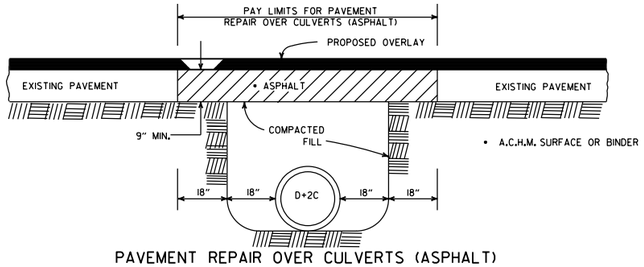
GENERAL NOTE:

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



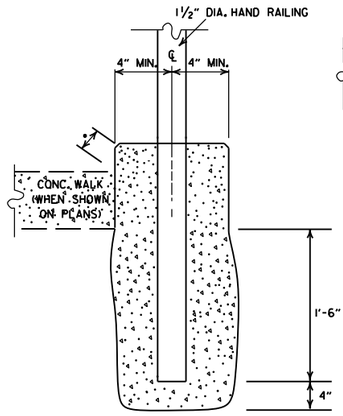
PAVEMENT REPAIR OVER CULVERTS (CONCRETE)



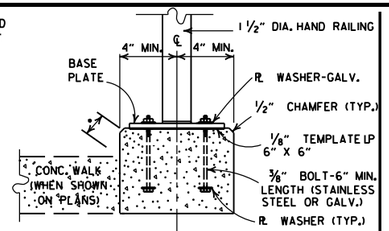
PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS

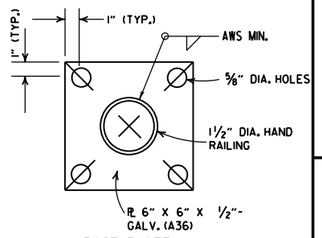
• A 2" MIN. HIGH CURB IS REQUIRED WHEN CONCRETE WALK IS ADJACENT TO THE HAND RAILING. PAYMENT FOR CURB SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR CONCRETE WALKS.



DETAIL OF HAND RAILING SET IN CONCRETE

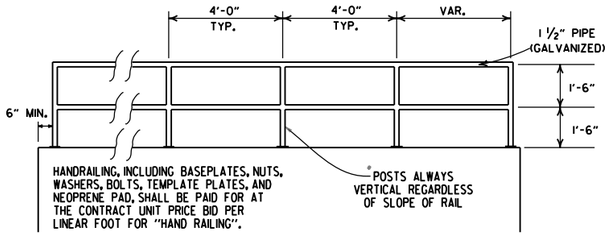


POST CONNECTION TO WALL

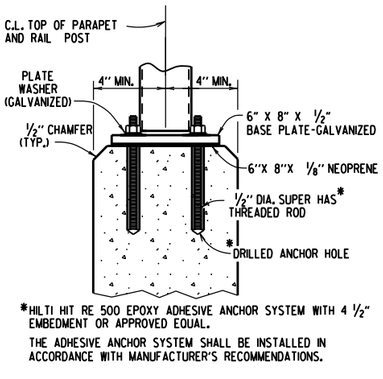


BASE PLATE

POST CONNECTION DETAILS



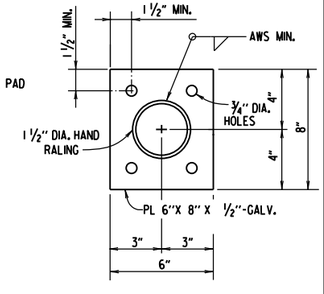
HAND RAILING SHALL CONFORM TO SECTION 633.



*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.

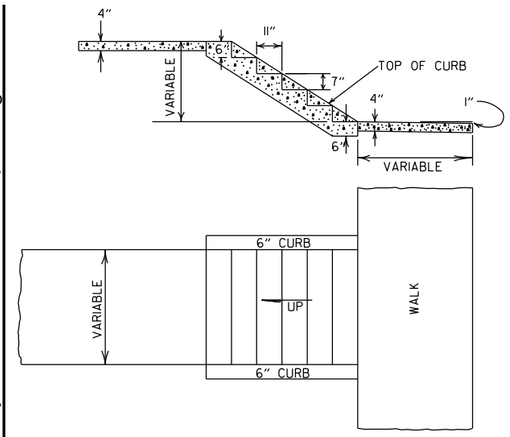
POST CONNECTION TO WALL



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

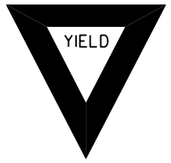
DETAILS OF SPECIAL ITEMS

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"

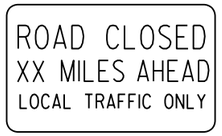
R5-1

STD. 30"X30"
EXPWY. 36"X36"
SPECIAL 48"X48"

R11-2

48"X30"

R11-3A



60"X30"

R11-4

60"X30"

W21-5a

STD. 36"X36"
FWY. 48"X48"

W1-1

STD. 36"X36"
FWY. 48"X48"

W1-2

STD. 36"X36"
FWY. 48"X48"

W1-3

STD. 48"X48"

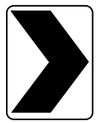
W1-4

STD. 48"X48"

W1-6

STD. 48"X24"
SPECIAL 60"X30"

W1-8



STD. 18"X24"
SPECIAL 24"X30"
EXPWY. 30"X36"
FWY. 36"X48"

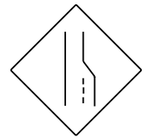
W3-1

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"

W13-1

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"

W1-4b

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.

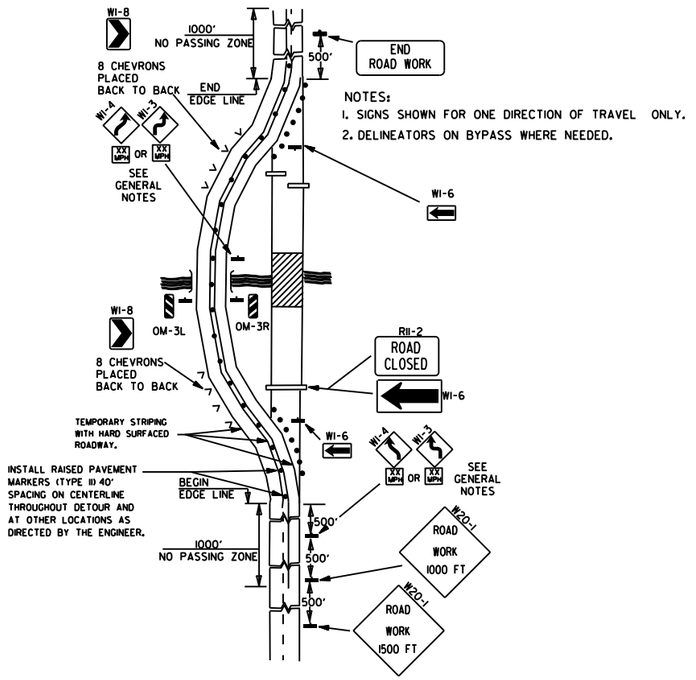
- NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED 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

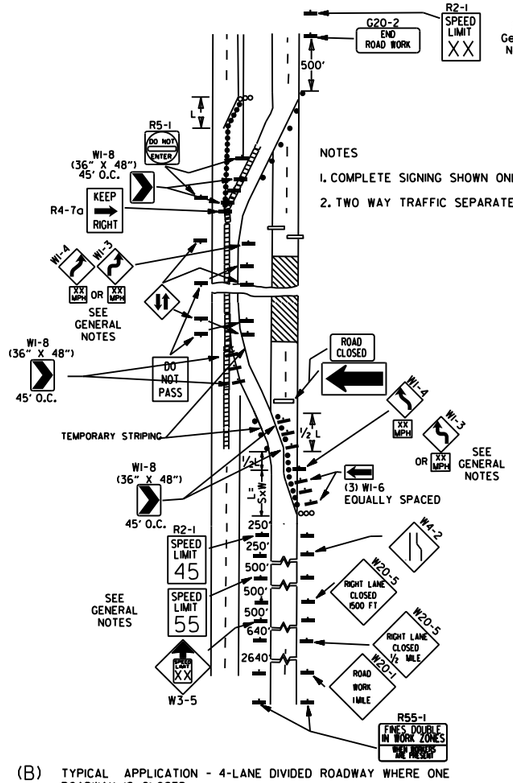
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



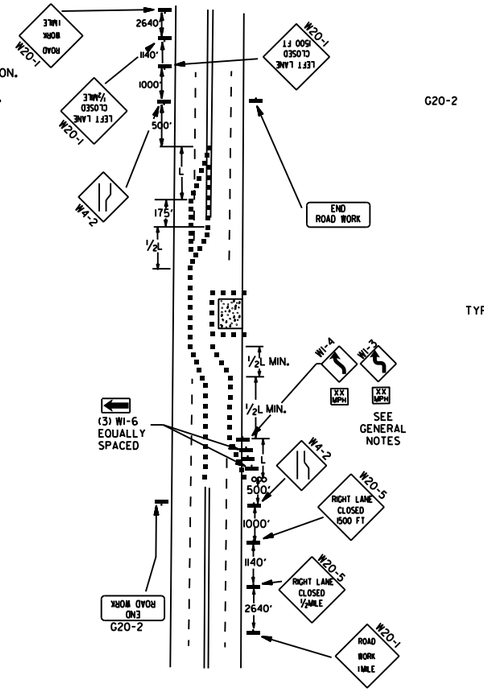
NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

(A) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON A 2-LANE HIGHWAY WHERE THE ENTIRE ROADWAY IS CLOSED AND A BYPASS DETOUR IS PROVIDED.

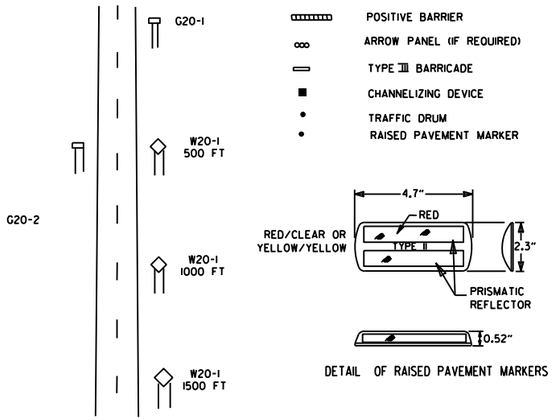


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

(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:

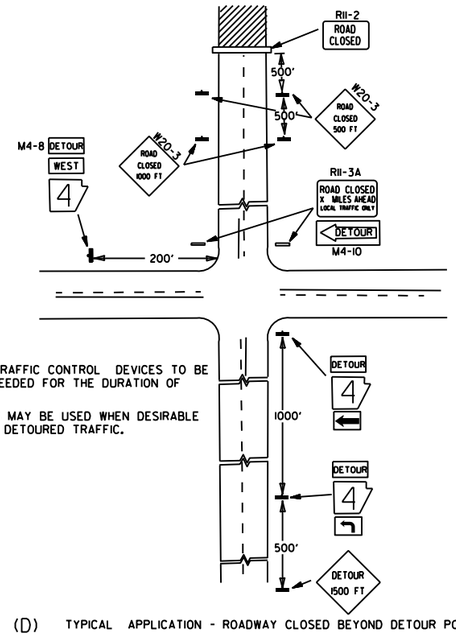
L= MINIMUM LENGTH OF TAPER.

S= NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85TH PERCENTILE SPEED.

W= WIDTH OF OFFSET.

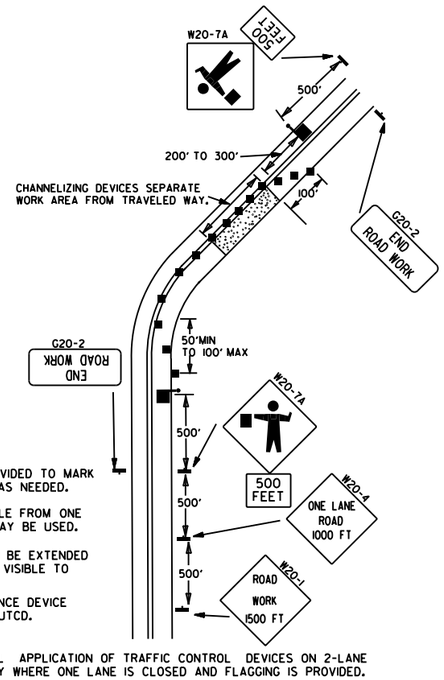
GENERAL NOTES:

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 WI-3 OR WI-4 CURVE WARNING SIGNS. USE WI-4 WHEN SPEED IS GREATER THAN 30MPH AND WI-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 R2-145MPH 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 R2-155MPH 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).



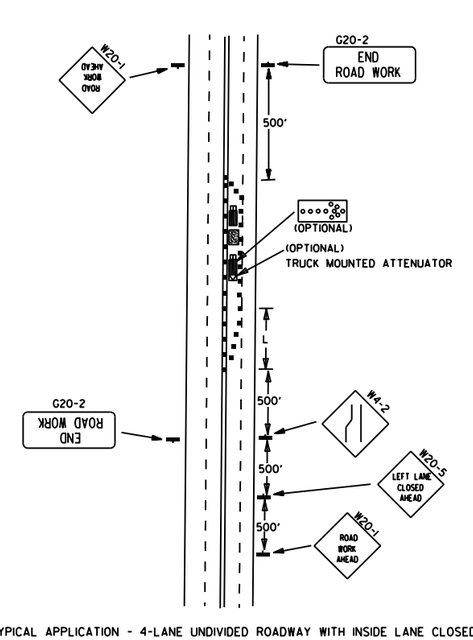
NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

(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.



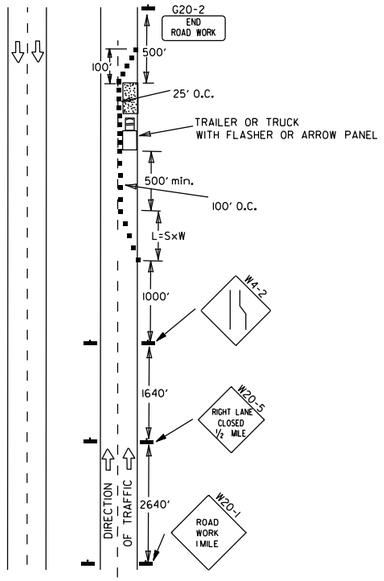
(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.

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	

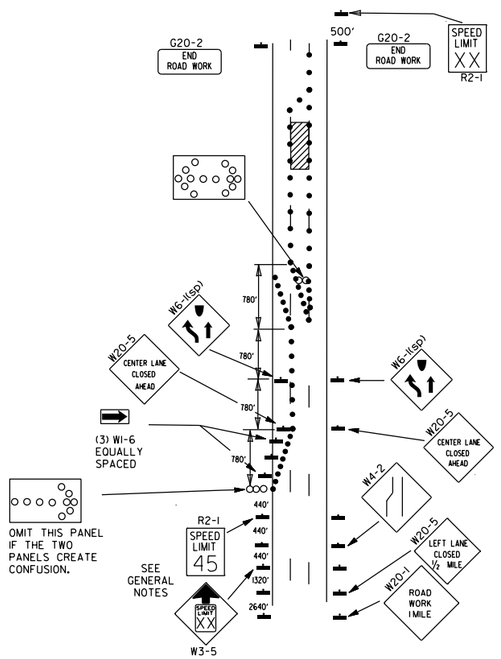
ARKANSAS STATE HIGHWAY COMMISSION

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:

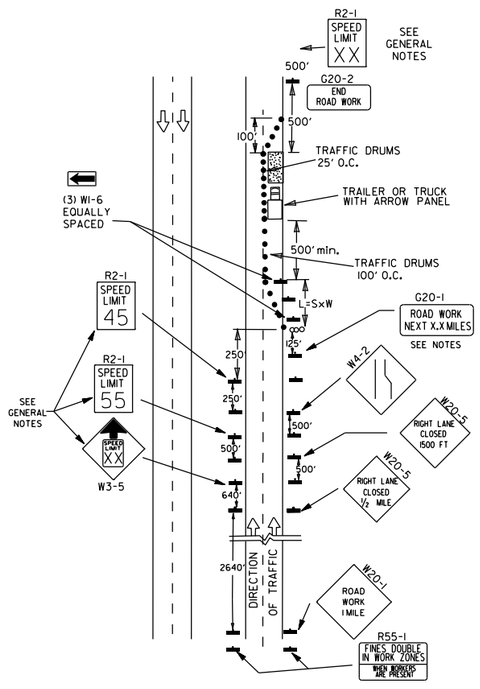
ARROW PANEL (IF REQUIRED)

■ CHANNELIZING DEVICE

● TRAFFIC DRUM

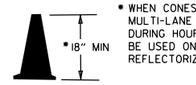
GENERAL NOTES:

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.

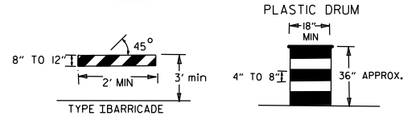
CHANNELIZING DEVICES



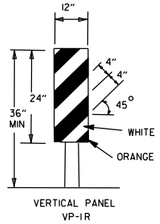
* WHEN CONES ARE USED ON FREEWAYS AND MULTI-LANE HIGHWAYS, THEY SHALL BE 28" MIN. DURING HOURS OF DARKNESS, 28" CONES SHALL BE USED ON ALL ROADWAYS, AND SHALL BE REFLECTORIZED IN ACCORDANCE WITH THE M.U.T.C.D.

CONES

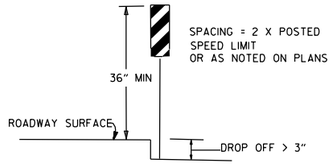
PLASTIC DRUM



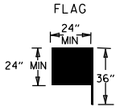
NOTE:
FOR ALL ROAD CLOSURES, THE TYPE III BARRICADES SHALL BE OF SUFFICIENT LENGTH TO EXTEND ACROSS ENTIRE ROADWAY.



VERTICAL PANEL PLACEMENT



FLAG



FLAG SHALL BE OF GOOD GRADE RED MATERIAL

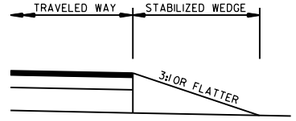
TRAFFIC CONTROL DEVICES			
NON-INTERSTATE			
VERTICAL DIFFERENTIAL	LOCATION	TRAFFIC CONTROL	
		≤ 45 MPH	> 45 MPH
≤ 1"	CENTERLINE	W8-11	W8-11
> 1" ≤ 3"	CENTERLINE	W8-11 AND CENTERLINE LANE STRIPING	W8-11 AND CENTERLINE LANE STRIPING
> 3"	CENTERLINE	STANDARD LANE CLOSURE[6]	STANDARD LANE CLOSURE[6]
≤ 3"	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:

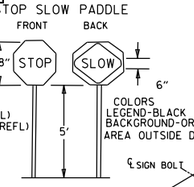
1. WHEN THE SHOULDER AREA IS USED AS PART OF THE TRAVELED LANE AND THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, THEN VERTICAL PANELS SHALL BE USED.
2. WHEN THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, A STABILIZED WEDGE SHALL 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).

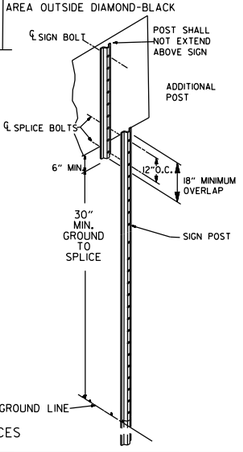


STABILIZED WEDGE

NOTE:
MATERIALS FOR THE STABILIZED WEDGE SHALL MEET THE REQUIREMENTS PROVIDED IN SECTION 603.02 OF THE STANDARD SPECIFICATIONS.

STOP SLOW PADDLE

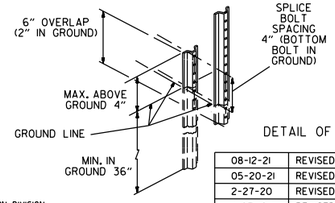




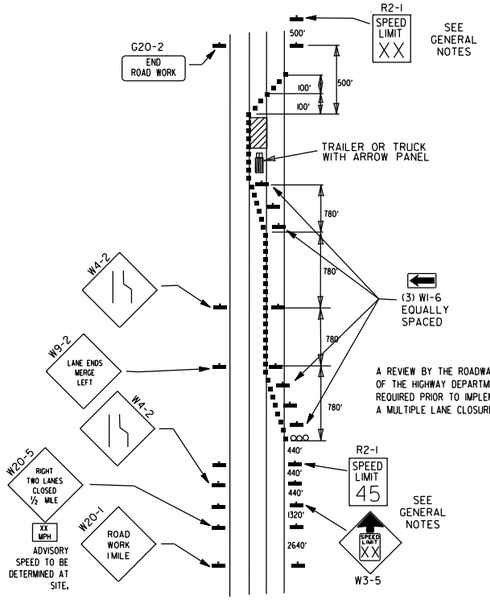
NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-21)

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



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.

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	

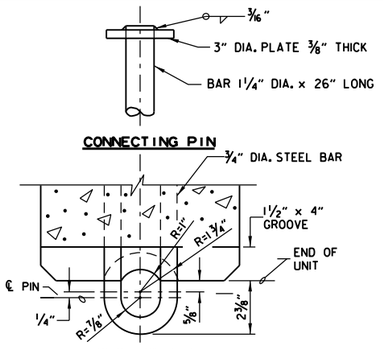
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-3

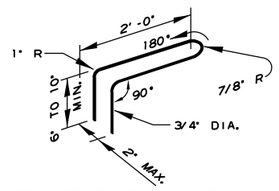
REINFORCING BAR TABLE PER BARRIER UNIT

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"

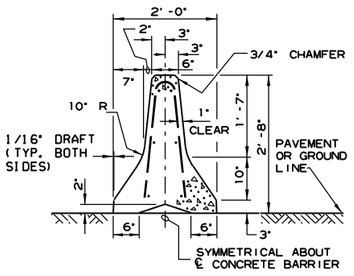


SECTION E-E

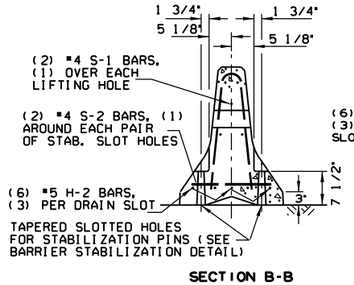
CONNECTION DETAILS



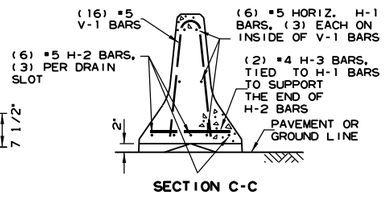
CONNECTION LOOP



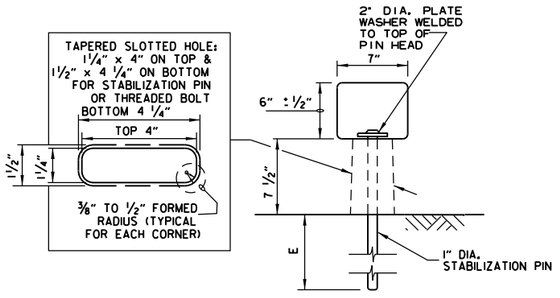
SECTION A-A



SECTION B-B



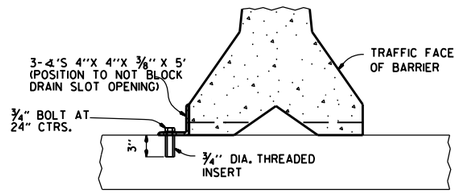
SECTION C-C



BARRIER STABILIZATION DETAIL

ROADWAY SECTION

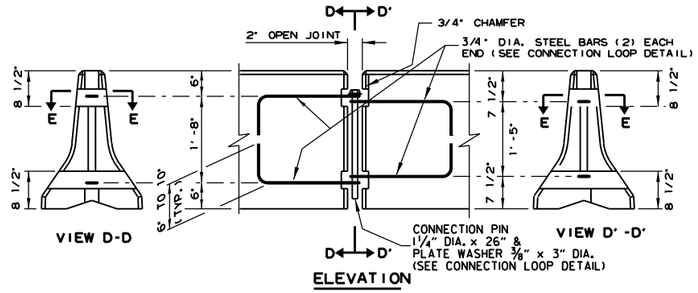
(E) 4" - CONCRETE PAVEMENT
8" - ASPHALT PAVEMENT
12" - SHOULDER AREAS



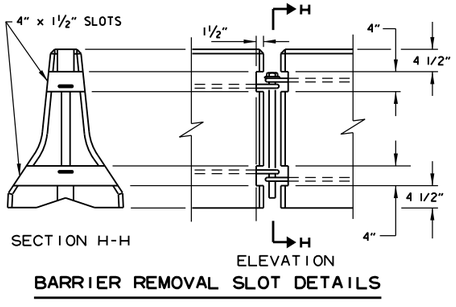
NOTE: " THREADED INSERTS SHALL BE CAST IN PLACE FOR ALL NEW BRIDGE DECKS AND DRILLED AND GROUTED FOR EXISTING BRIDGE DECKS. INSERTS SHALL HAVE A MINIMUM ULTIMATE LOAD CAPACITY OF 8000 LBS. IN TENSION. AFTER REMOVAL OF BARRIER, BOLTS, AND ANGLES, THE INSERTS SHALL BE FILLED WITH APPROVED NON-SHRINK EPOXY.

BARRIER STABILIZATION DETAIL

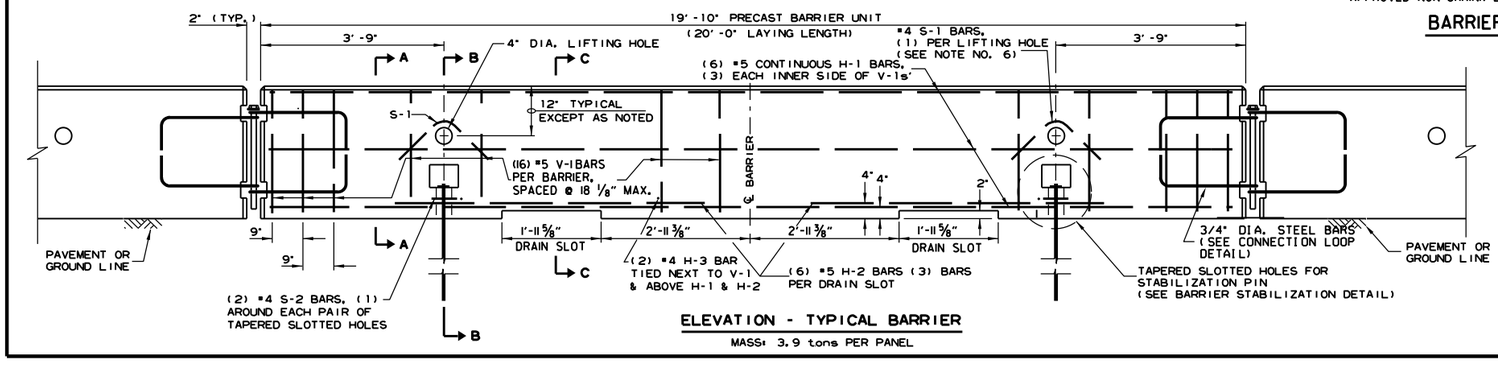
BRIDGE DECKS



ELEVATION



BARRIER REMOVAL SLOT DETAILS



ELEVATION - TYPICAL BARRIER

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.

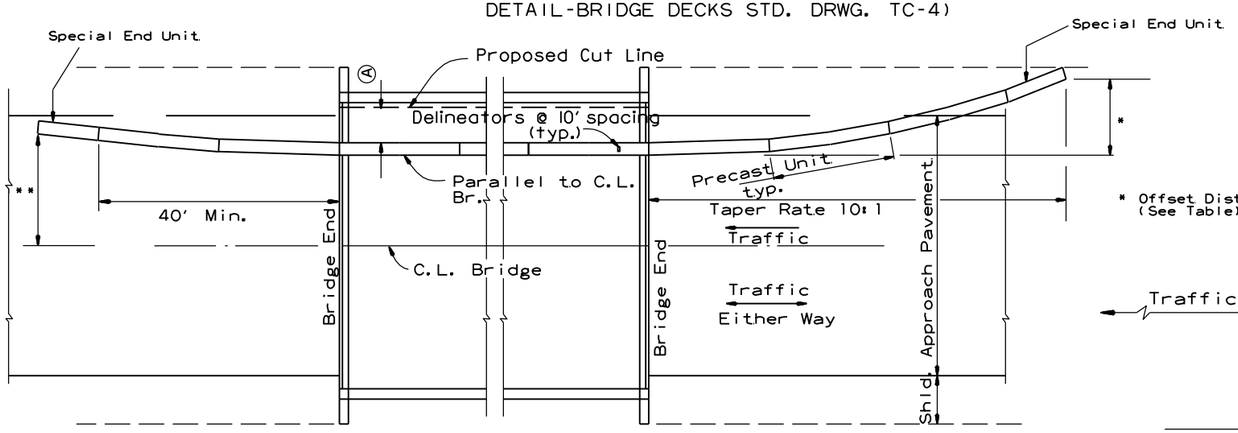
DATE	REVISION	FILMED
11-07-19	REVISED NOTE 3	
2-27-14	REVISED BARRIER STABILIZATION DETAIL	
10-15-09	ADDED REFERENCE TO WASH	
8-5-09	REV. NOTE 3 CONCERNING DRAIN SLOTS	
11-29-07	REVISED NOTE 3	
5-25-06	DELETED GENERAL NOTE 7	
11-18-04	REVISED BARRIER STABILIZATION DETAIL BRIDGE DECKS	
4-10-03	REVISED 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

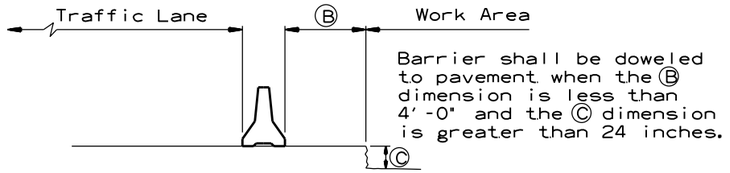
Ⓐ 4 feet or greater preferred. If less than 4 feet, Precast Units shall be connected to slab (SEE BARRIER STABILIZATION DETAIL-BRIDGE DECKS STD. DRWG. TC-4)



* Offset Distance (See Table)

BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

No Scale

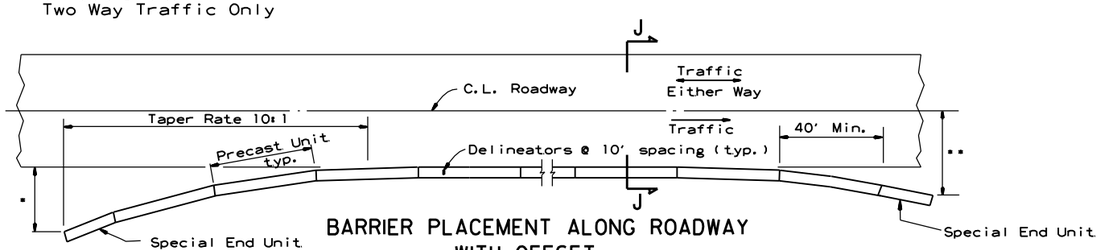


Barrier shall be doweled to pavement when the Ⓑ dimension is less than 4'-0" and the Ⓒ dimension is greater than 24 inches.

SECTION J-J

No Scale

** Offset Distance for Two Way Traffic Only



BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

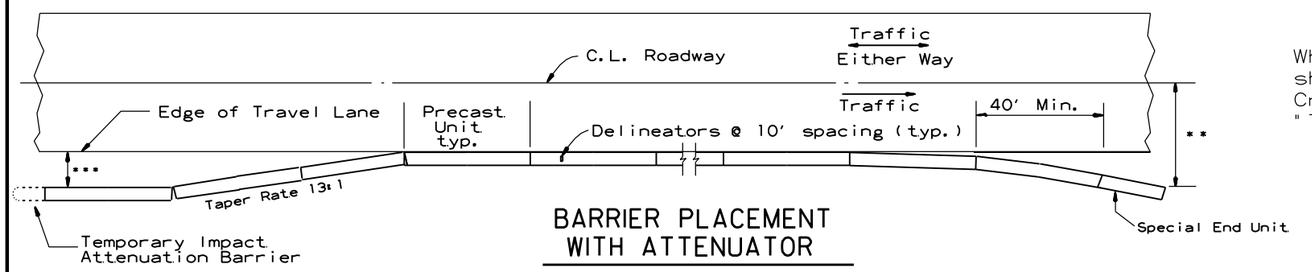
* Offset Distance (See Table)

** Offset Distance For Two Way Traffic Only

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.

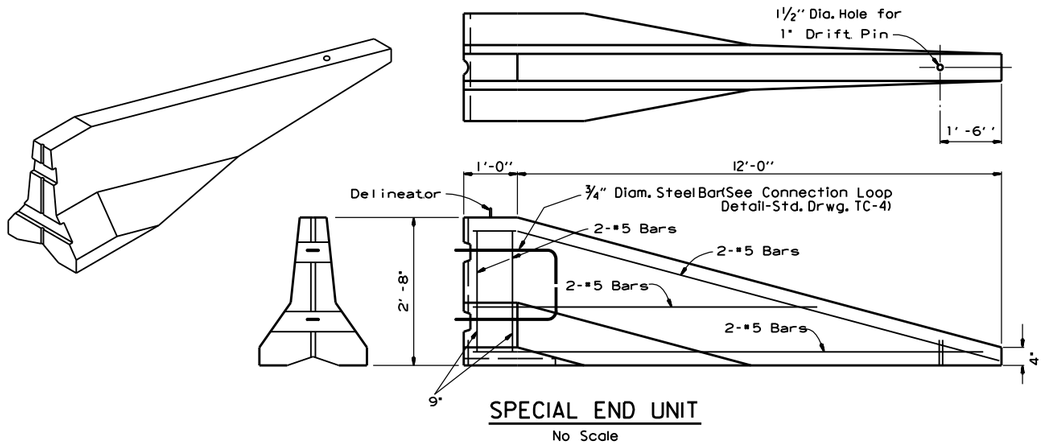


BARRIER PLACEMENT WITH ATTENUATOR

No Scale

** Offset Distance For Two Way Traffic Only

*** Min. 3'-0" From Edge of Travel Lane to Nearest Edge of Attenuator



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	

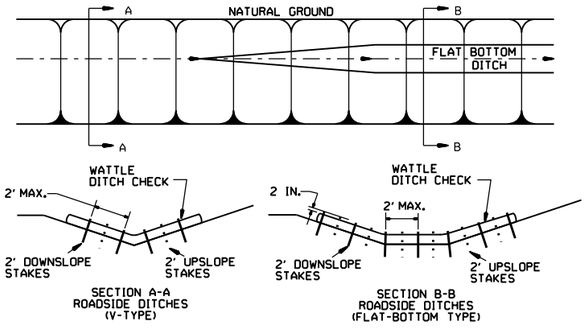
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

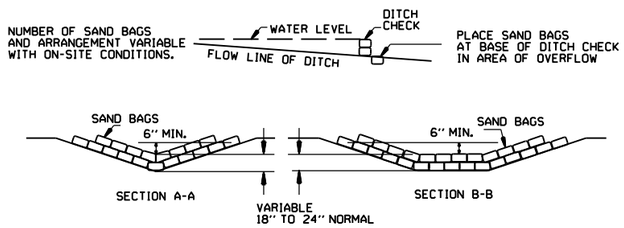
STANDARD DRAWING TC-5

GENERAL NOTES

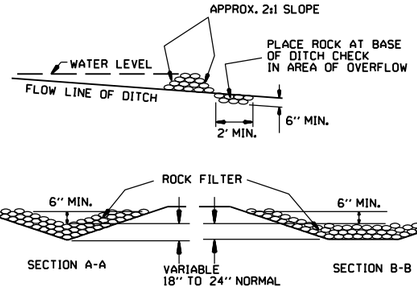
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



SAND BAG DITCH CHECK (E-5)

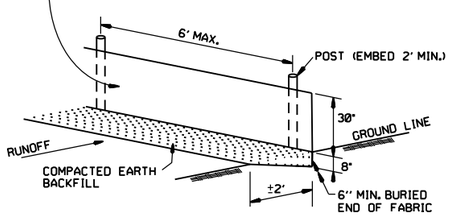


ROCK DITCH CHECK (E-6)

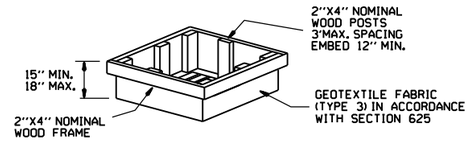
GENERAL NOTES

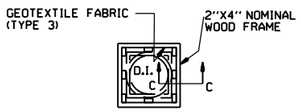
GEOTEXTILE FABRIC (TYPE 4) IN ACCORDANCE WITH SECTION 625

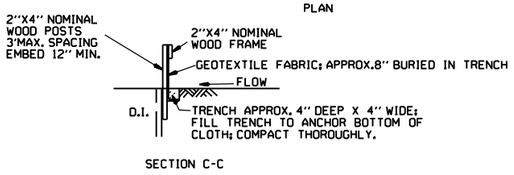
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.



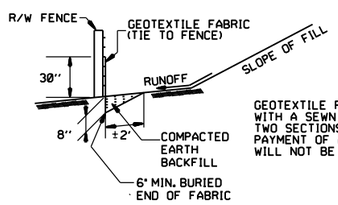
SILT FENCE (E-11)





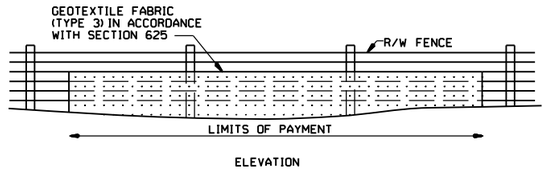


DROP INLET SILT FENCE (E-7)



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.



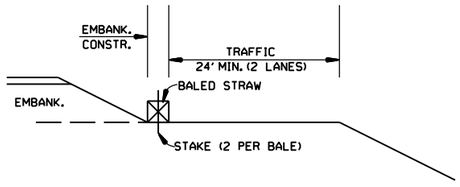
SILT FENCE ON R/W FENCE (E-4)

GENERAL NOTES

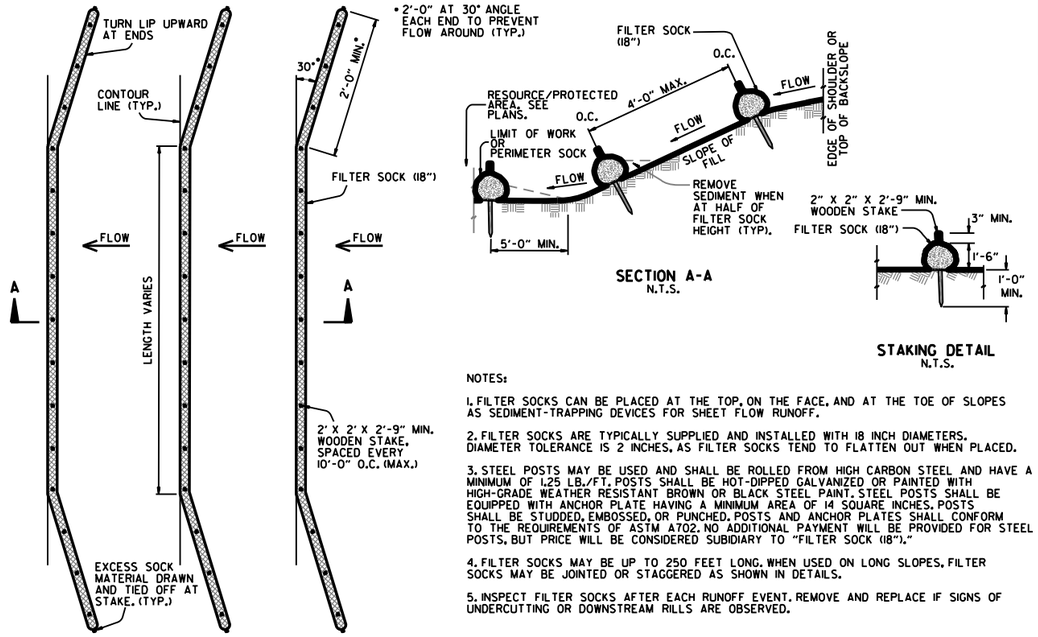
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

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.

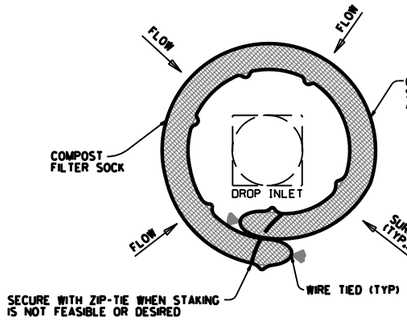
2. FILTER SOCKS ARE TYPICALLY SUPPLIED AND INSTALLED WITH 18 INCH DIAMETERS. DIAMETER TOLERANCE IS 2 INCHES, AS FILTER SOCKS TEND TO FLATTEN OUT WHEN PLACED.

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")."

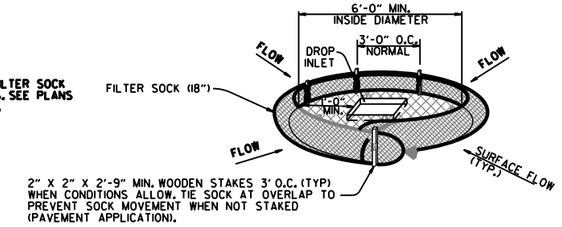
4. FILTER SOCKS MAY BE UP TO 250 FEET LONG. WHEN USED ON LONG SLOPES, FILTER SOCKS MAY BE JOINTED OR STAGGERED AS SHOWN IN DETAILS.

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)



DROP INLET PLAN VIEW
N.T.S.



DROP INLET PERSPECTIVE VIEW
N.T.S.

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

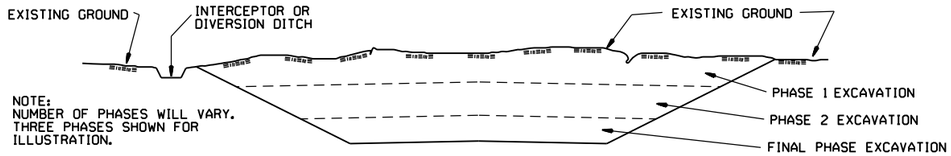
STANDARD DRAWING TEC-1

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



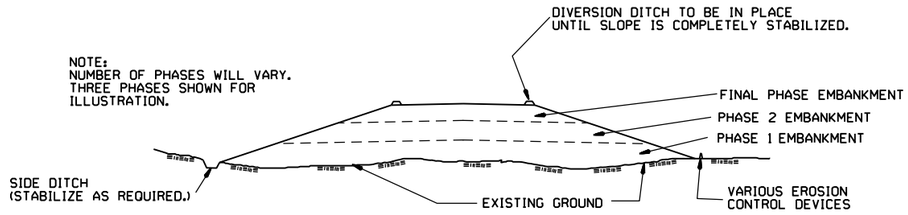
GENERAL NOTE

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

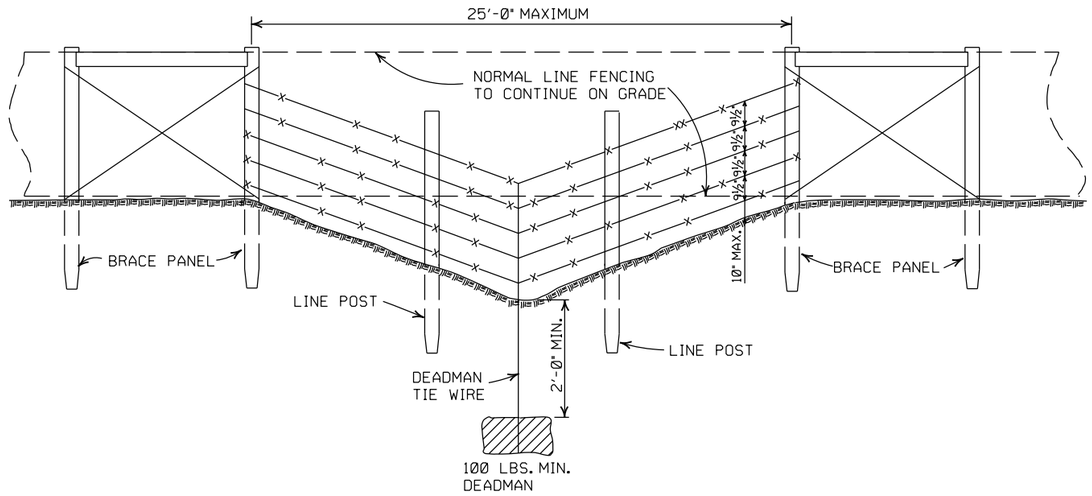
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD 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.

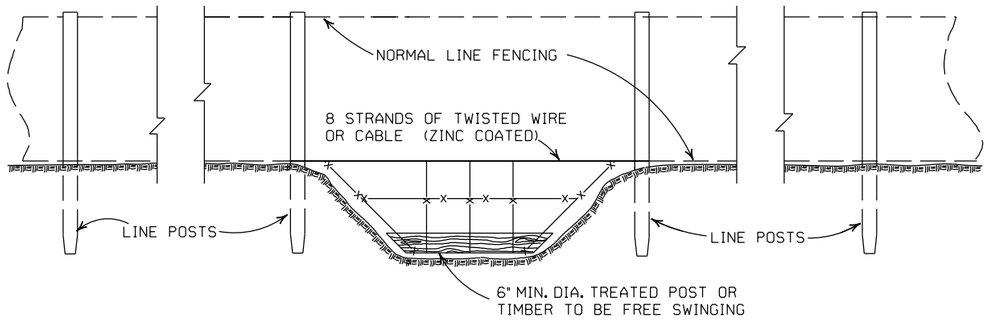
11-03-94	CORRECTED SPELLING	
6-2-94	Drawn & Issued	6-2-94
DATE	REVISION	FILMED

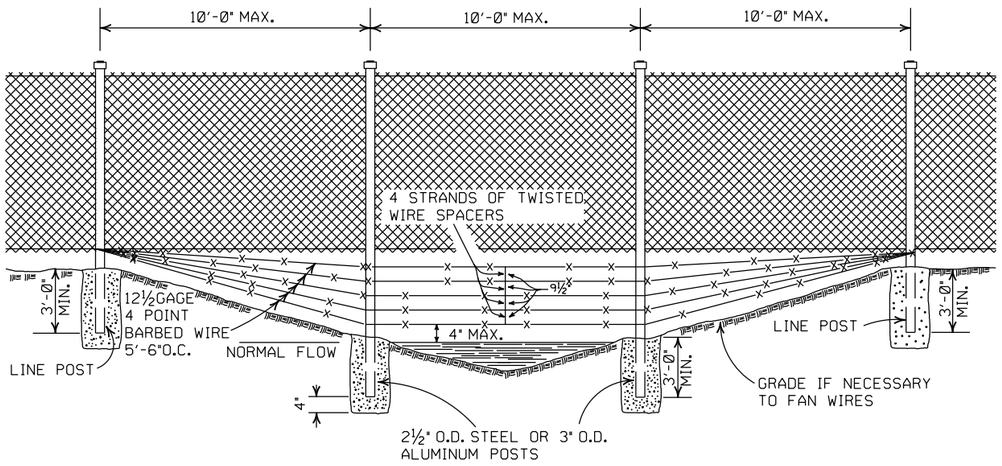
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3







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.

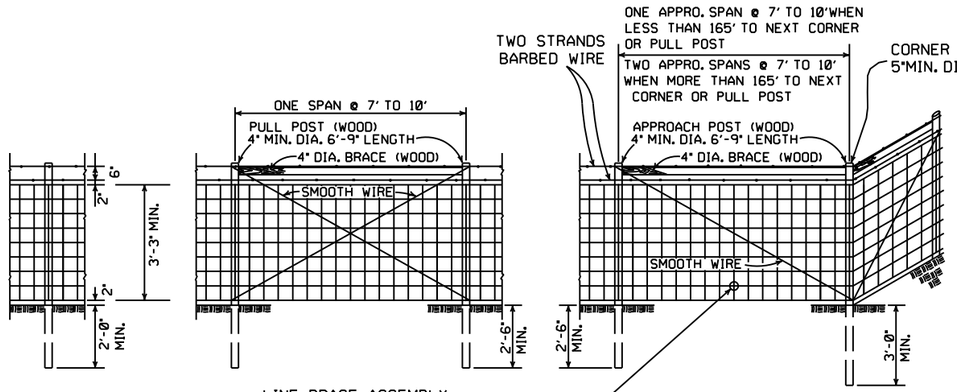
PAYMENT FOR THE TYPE INSTALLATION USED WILL NOT BE MADE DIRECTLY BUT WILL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR WIRE FENCE OR CHAIN LINK FENCE.

DATE	REVISION	FILMED
4-20-79	REVISED TOP RAIL & TENSION WIRE	696-4-20-79
10-2-72	REVISED AND REDRAWN	529-10-2-72

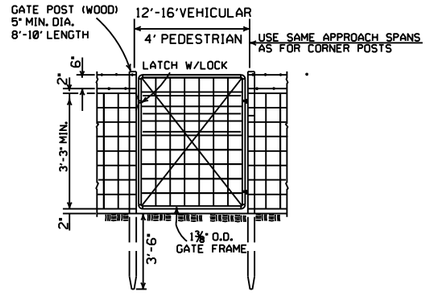
ARKANSAS STATE HIGHWAY COMMISSION

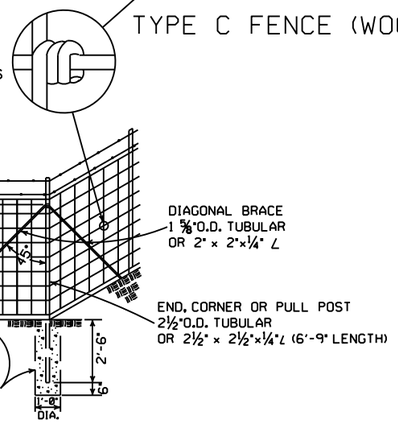
WIRE FENCE WATER GAPS

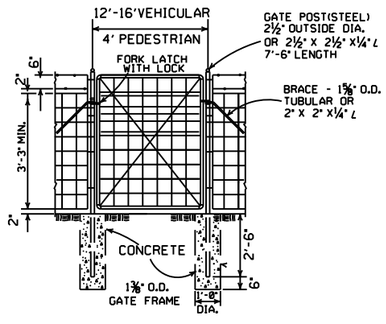
STANDARD DRAWING WF-2



TYPE C FENCE (WOOD POSTS)

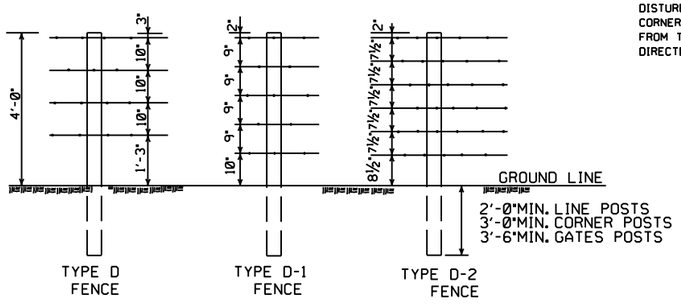




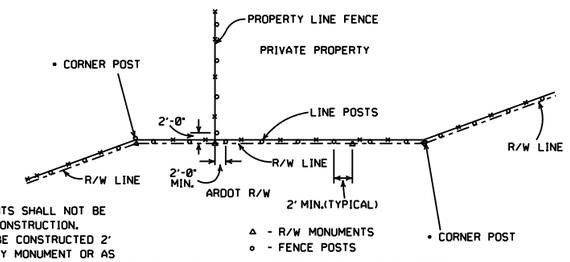


NOTE: STEEL LINE POSTS SHALL BE 6'-6" MINIMUM LENGTH.

TYPE C FENCE (STEEL POSTS)

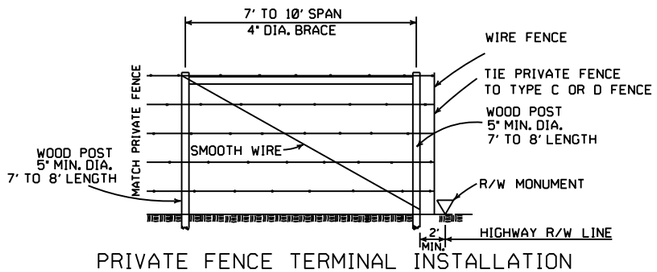


NOTE: SPACING AND SIZE (EXCEPT LENGTH) OF POSTS, APPROACH SPANS, PULL POST ASSEMBLIES, AND CORNER BRACING FOR TYPE D FENCE SHALL CONFORM TO TYPE C FENCE. USE GALVANIZED STAPLES ON WOOD POSTS AND APPROVED FASTENERS ON STEEL POSTS.



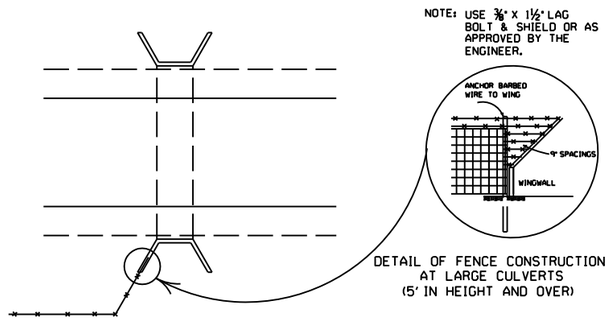
• NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

RIGHT-OF-WAY FENCE LOCATION

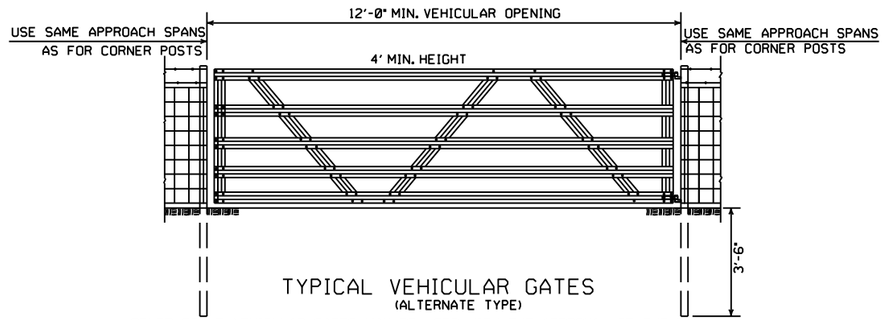


PRIVATE FENCE TERMINAL INSTALLATION

WHERE EXISTING FENCE CONSISTS OF STEEL POSTS, USE END POST ASSEMBLY AS SHOWN IN TYPE C FENCE OR OTHER END POST ASSEMBLY AS APPROVED BY THE ENGINEER.



DETAIL OF FENCE CONSTRUCTION AT LARGE CULVERTS (5' IN HEIGHT AND OVER)



TYPICAL VEHICULAR GATES

(ALTERNATE TYPE)

OTHER STYLE VEHICULAR GATES MAY BE USED WITH THE APPROVAL OF THE ENGINEER. THE METHOD OF SECURING GATE (LATCH AND/OR LOCK)SHALL MEET THE APPROVAL OF THE ENGINEER.

GENERAL NOTES:

STEEL LINE POSTS SHALL BE PAINTED OR GALVANIZED. TUBULAR END, CORNER, PULL, OR DIAGONAL BRACES MUST CONFORM TO THE DIMENSIONS AND WEIGHTS SPECIFIED ON STANDARD DRAWING WF-3 (CHAIN LINK). APPROVED ALTERNATES ARE ACCEPTABLE.
AN ACCEPTABLE TOLERANCE IN LENGTH OF TUBULAR OR WOODEN POSTS SHALL BE - 1" TO +2".
TUBULAR POSTS MUST BE PAINTED OR GALVANIZED.

THE CONTRACTOR SHALL FURNISH AT LEAST 25% OF TIMBER LINE POSTS OF 7 FOOT LENGTHS IN ORDER TO PROVIDE SUFFICIENT SET IN SOFT GROUND OR SMALL DEPRESSIONS.

DRIVEWAY GATES, EITHER SINGLE 12' TO 16' OR DOUBLE 6' TO 8' OPENING 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 OF MAINTENANCE EQUIPMENT. LOCATION OF GATES TO BE SHOWN ON 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 THE 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 SUFFICIENT, THE FENCE SHALL BE TERMINATED WITH CROSS CONNECTIONS AND END POSTS ADJACENT TO BRIDGE ABUTMENTS OR CULVERT WINGWALLS.

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 WIRES A MINIMUM OF 4 TIMES FOR EACH WIRE LOOP.

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.

STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.

DATE	REVISION	FILMED
8-22-02	REVISED GENERAL NOTES	
10-18-96	REVISED AASHTO	
11-22-95	REVISED R-O-W LOCATION DETAIL	
6-2-94	REVISED BARB WIRE AND ADDED CORNER POST NOTES	6-2-94
8-5-93	REVISED R/W INSTALLATION FENCE	8-5-93
10-1-92	ADDED STAPLE NOTE	10-1-92
8-15-91	ADDED TYPE D-2 FENCE	8-15-91
11-30-89	DELETED CLASS CONCRETE	11-30-89
7-15-88	ADDED SPLICE NOTE	700-7-15-88
10-30-87	GENERAL REVISIONS	549-10-30-87
11-1-84	MAX. POST SPACING MIN. WIRE GAUGE	507-11-1-84
1-4-83	MIN. DIA. LINE POST	648-1-4-83
3-2-81	TOLERANCE FOR POST LENGTH	722-3-2-81
12-1-72	ADDED D-1 & FENCE INSTALLATION	564-12-1-72
10-2-72	REVISED AND REDRAWN	540-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE TYPE C AND D

STANDARD DRAWING WF-4

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.				
JOB No.					

BAR LIST FOR BARREL SECTION 60'-0" IN LENGTH

"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 Wall - hooked. Alternate with "a" and "c" bars.

Depth of Cover D	Clear Span S	Clear Height H	"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	"b" X	"b" Y	"b" Z
0'-0" to 5'-0" Maximum.	2 @ 4'	2'	#5	12"	128	128	9'-5"	#5	12"	59	59	10'-6"	0'-3"	2'-2½"	3'-4"
		3'			128	128	9'-5"			59	59	10'-6"	0'-3"	2'-2½"	3'-4"
		4'			128	128	9'-5"			59	59	10'-6"	0'-3"	2'-2½"	3'-4"
		5'			128	128	9'-5"			59	59	10'-6"	0'-3"	2'-2½"	3'-4"
		6'			128	128	9'-8"			59	59	10'-9"	0'-3"	2'-3½"	3'-5"
	2 @ 5'	3'	#6	12"	128	128	11'-5"	#5	12"	59	59	12'-7"	0'-3½"	2'-7½"	4'-1"
		4'			128	128	11'-5"			59	59	12'-7"	0'-3½"	2'-7½"	4'-1"
		5'			128	128	11'-5"			59	59	12'-7"	0'-3½"	2'-7½"	4'-1"
		6'			128	128	11'-8"			59	59	12'-10"	0'-3½"	2'-8½"	4'-2"
		7'			128	128	11'-10"			59	59	13'-0"	0'-3½"	2'-9½"	4'-2½"
	2 @ 6'	3'	#6	11"	140	140	13'-5"	#5	11"	65	65	14'-7"	0'-4"	3'-0½"	4'-10"
		4'			140	140	13'-5"			65	65	14'-7"	0'-4"	3'-0½"	4'-10"
		5'			140	140	13'-5"			65	65	14'-7"	0'-4"	3'-0½"	4'-10"
		6'			140	140	13'-8"			65	65	14'-10"	0'-4"	3'-1½"	4'-11"
		7'			140	140	13'-10"			65	65	15'-0"	0'-4"	3'-2½"	4'-11½"
		8'			140	140	13'-11"			65	65	15'-1"	0'-4"	3'-2½"	5'-0"
	2 @ 7'	4'	#6	12"	128	128	15'-5"	#6	12"	59	59	16'-9"	0'-4½"	3'-5"	5'-7"
		5'			128	128	15'-5"			59	59	16'-9"	0'-4½"	3'-5"	5'-7"
		6'			128	128	15'-8"			59	59	17'-0"	0'-4½"	3'-6"	5'-8"
		7'			128	128	15'-10"			59	59	17'-2"	0'-4½"	3'-7"	5'-8½"
		8'			128	128	15'-11"			59	59	17'-3"	0'-4½"	3'-7"	5'-9"
		9'			128	128	16'-2"			59	59	17'-6"	0'-4½"	3'-8"	5'-10"
	2 @ 8'	4'	#6	11"	140	140	17'-5"	#6	11"	65	65	18'-10"	0'-5"	3'-10"	6'-4"
		5'			140	140	17'-8"			65	65	19'-1"	0'-5"	3'-11"	6'-5"
		6'			140	140	17'-8"			65	65	19'-1"	0'-5"	3'-11"	6'-5"
		7'			140	140	17'-10"			65	65	19'-3"	0'-5"	4'-0"	6'-5½"
		8'			140	140	17'-11"			65	65	19'-4"	0'-5"	4'-0"	6'-6"
		9'			140	140	18'-2"			65	65	19'-7"	0'-5"	4'-1"	6'-7"
		10'			140	140	18'-5"			65	65	19'-10"	0'-5"	4'-2"	6'-8"
	2 @ 9'	5'	#6	11"	140	140	19'-8"	#6	11"	65	65	21'-1"	0'-5½"	4'-4"	7'-2"
		6'			140	140	19'-10"			65	65	21'-3"	0'-5½"	4'-5"	7'-2½"
		7'			140	140	19'-10"			65	65	21'-3"	0'-5½"	4'-5"	7'-2½"
		8'			140	140	19'-11"			65	65	21'-4"	0'-5½"	4'-5"	7'-3"
		9'			140	140	20'-2"			65	65	21'-7"	0'-5½"	4'-6"	7'-4"
		10'			140	140	20'-5"			65	65	21'-10"	0'-5½"	4'-7"	7'-5"
		11'			140	140	20'-7"			65	65	22'-0"	0'-5½"	4'-7"	7'-6"
	2 @ 10'	5'	#7	12"	128	128	21'-8"	#6	12"	59	59	23'-2"	0'-6"	4'-9"	7'-11"
		6'			128	128	21'-10"			59	59	23'-4"	0'-6"	4'-10"	7'-11½"
		7'			128	128	21'-10"			59	59	23'-4"	0'-6"	4'-10"	7'-11½"
		8'			128	128	21'-11"			59	59	23'-5"	0'-6"	4'-10"	8'-0"
		9'			128	128	22'-2"			59	59	23'-8"	0'-6"	4'-11"	8'-1"
		10'			128	128	22'-5"			59	59	23'-11"	0'-6"	5'-0"	8'-2"
		11'			128	128	22'-7"			59	59	24'-1"	0'-6"	5'-0"	8'-3"
		12'			128	128	22'-9"			59	59	24'-3"	0'-6"	5'-0"	8'-4"
	2 @ 11'	6'	#7	12"	128	128	23'-11"	#6	12"	59	59	25'-5"	0'-6½"	5'-3"	8'-9"
		7'			128	128	23'-11"			59	59	25'-5"	0'-6½"	5'-3"	8'-9"
		8'			128	128	23'-11"			59	59	25'-5"	0'-6½"	5'-3"	8'-9"
		9'			128	128	24'-2"			59	59	25'-8"	0'-6½"	5'-4"	8'-10"
		10'			128	128	24'-5"			59	59	25'-11"	0'-6½"	5'-5"	8'-11"
		11'			128	128	24'-7"			59	59	26'-1"	0'-6½"	5'-5"	9'-0"
		12'			128	128	24'-9"			59	59	26'-3"	0'-6½"	5'-5"	9'-1"
	2 @ 12'	6'	#7	11"	140	140	25'-11"	#6	11"	65	65	27'-5"	0'-7"	5'-8"	9'-6"
		7'			140	140	25'-11"			65	65	27'-5"	0'-7"	5'-8"	9'-6"
		8'			140	140	25'-11"			65	65	27'-5"	0'-7"	5'-8"	9'-6"
		9'			140	140	26'-2"			65	65	27'-8"	0'-7"	5'-9"	9'-7"
		10'			140	140	26'-5"			65	65	27'-11"	0'-7"	5'-10"	9'-8"
		11'			140	140	26'-7"			65	65	28'-1"	0'-7"	5'-10"	9'-9"
		12			140	140	26'-9"			65	65	28'-3"	0'-7"	5'-10"	9'-10"

"b2" bars – BENT - See Diagram below. In Top of Bottom Slab bent down under Division Wall - hooked. Alternate with "a" and "c" bars.
"c" bars – STRAIGHT – In Top and Bottom Slab of Barrel. Alternate with "b" and "b2" bars.

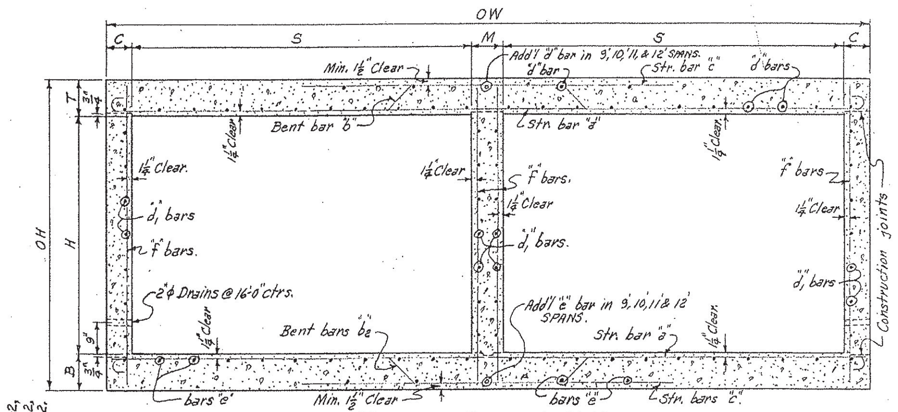
S	H	"b2" Size	"b2" Spacing	"b2" 3:1	"b2" 4:1	"b2" Length	"b2" X	"b2" Y	"b2" Z	"c" Size	"c" Spacing	"c" 3:1	"c" 4:1	"c" Length
2 @ 4'	2'	#5	12"	59	59	10'-6"	0'-2½"	2'-3½"	3'-4"	#5	12"	120	120	4'-8"
	3'			59	59	10'-6"	0'-2½"	2'-3½"	3'-4"			120	120	4'-8"
	4'			59	59	10'-6"	0'-2½"	2'-3½"	3'-4"			120	120	4'-8"
	5'			59	59	10'-6"	0'-2½"	2'-3½"	3'-4"			120	120	4'-8"
	6'			59	59	10'-9"	0'-2½"	2'-4½"	3'-5"			120	120	4'-9"
2 @ 5'	3'	#5	12"	59	59	12'-6"	0'-3"	2'-8½"	4'-1"	#6	12"	120	120	5'-8"
	4'			59	59	12'-6"	0'-3"	2'-8½"	4'-1"			120	120	5'-8"
	5'			59	59	12'-6"	0'-3"	2'-8½"	4'-1"			120	120	5'-8"
	6'			59	59	12'-9"	0'-3"	2'-9½"	4'-2"			120	120	5'-9"
	7'			59	59	12'-11"	0'-3"	2'-10½"	4'-2½"			120	120	5'-10"
2 @ 6'	3'	#5	11"	65	65	14'-7"	0'-4"	3'-0½"	4'-10"	#6	11"	132	132	6'-8"
	4'			65	65	14'-7"	0'-4"	3'-0½"	4'-10"			132	132	6'-8"
	5'			65	65	14'-7"	0'-4"	3'-0½"	4'-10"			132	132	6'-8"
	6'			65	65	14'-10"	0'-4"	3'-1½"	4'-11"			132	132	6'-9"
	7'			65	65	15'-0"	0'-4"	3'-2½"	4'-11½"			132	132	6'-10"
	8'			65	65	15'-1"	0'-4"	3'-2½"	5'-0"			132	132	6'-10"
2 @ 7'	4'	#6	12"	59	59	16'-9"	0'-4½"	3'-5"	5'-7"	#6	12"	120	120	7'-8"
	5'			59	59	16'-9"	0'-4½"	3'-5"	5'-7"			120	120	7'-8"
	6'			59	59	17'-0"	0'-4½"	3'-6"	5'-8"			120	120	7'-9"
	7'			59	59	17'-2"	0'-4½"	3'-7"	5'-8½"			120	120	7'-10"
	8'			59	59	17'-3"	0'-4½"	3'-7"	5'-9"			120	120	7'-10"
	9'			59	59	17'-6"	0'-4½"	3'-8"	5'-10"			120	120	7'-11"
2 @ 8'	4'	#6	11"	65	65	18'-10"	0'-5"	3'-10"	6'-4"	#6	11"	132	132	8'-8"
	5'			65	65	19'-1"	0'-5"	3'-11"	6'-5"			132	132	8'-9"
	6'			65	65	19'-1"	0'-5"	3'-11"	6'-5"			132	132	8'-9"
	7'			65	65	19'-3"	0'-5"	4'-0"	6'-5½"			132	132	8'-10"
	8'			65	65	19'-4"	0'-5"	4'-0"	6'-6"			132	132	8'-10"
	9'			65	65	19'-7"	0'-5"	4'-1"	6'-7"			132	132	8'-11"
	10'			65	65	19'-10"	0'-5"	4'-2"	6'-8"			132	132	9'-0"
2 @ 9'	5'	#6	11"	65	65	21'-1"	0'-5¾"	4'-3½"	7'-2"	#6	11"	132	132	9'-9"
	6'			65	65	21'-3"	0'-5¾"	4'-4½"	7'-2½"			132	132	9'-10"
	7'			65	65	21'-3"	0'-5¾"	4'-4½"	7'-2½"			132	132	9'-10"
	8'			65	65	21'-4"	0'-5¾"	4'-4½"	7'-3"			132	132	9'-10"
	9'			65	65	21'-7"	0'-5¾"	4'-5½"	7'-4"			132	132	9'-11"
	10'			65	65	21'-10"	0'-5¾"	4'-6½"	7'-5"			132	132	10'-0"
	11'			65	65	22'-0"	0'-5¾"	4'-6½"	7'-6"			132	132	10'-0"
2 @ 10'	5'	#6	12"	59	59	23'-2"	0'-6½"	4'-8"	7'-11"	#7	12"	120	120	10'-9"
	6'			59	59	23'-4"	0'-6½"	4'-9"	7'-11½"			120	120	10'-10"
	7'			59	59	23'-4"	0'-6½"	4'-9"	7'-11½"			120	120	10'-10"
	8'			59	59	23'-5"	0'-6½"	4'-9"	8'-0"			120	120	10'-10"
	9'			59	59	23'-8"	0'-6½"	4'-10"	8'-1"			120	120	10'-11"
	10'			59	59	23'-11"	0'-6½"	4'-11"	8'-2"			120	120	11'-0"
	11'			59	59	24'-1"	0'-6½"	4'-11"	8'-3"			120	120	11'-0"
	12'			59	59	24'-3"	0'-6½"	4'-11"	8'-4"			120	120	11'-0"
2 @ 11'	6'	#6	12"	59	59	25'-6"	0'-7½"	5'-1"	8'-9"	#7	12"	120	120	11'-10"
	7'			59	59	25'-6"	0'-7½"	5'-1"	8'-9"			120	120	11'-10"
	8'			59	59	25'-6"	0'-7½"	5'-1"	8'-9"			120	120	11'-10"
	9'			59	59	25'-9"	0'-7½"	5'-2"	8'-10"			120	120	11'-11"
	10'			59	59	26'-0"	0'-7½"	5'-3"	8'-11"			120	120	12'-0"
	11'			59	59	26'-2"	0'-7½"	5'-3"	9'-0"			120	120	12'-0"
	12'			59	59	26'-4"	0'-7½"	5'-3"	9'-1"			120	120	12'-0"
2 @ 12'	6'	#6	11"	65	65	27'-7"	0'-8½"	5'-5"	9'-6"	#7	11"	132	132	12'-10"
	7'			65	65	27'-7"	0'-8½"	5'-5"	9'-6"			132	132	12'-10"
	8'			65	65	27'-7"	0'-8½"	5'-5"	9'-6"			132	132	12'-10"
	9'			65	65	27'-10"	0'-8½"	5'-6"	9'-7"			132	132	12'-11"
	10'			65	65	28'-1"	0'-8½"	5'-7"	9'-8"			132	132	13'-0"
	11'			65	65	28'-3"	0'-8½"	5'-7"	9'-9"			132	132	13'-0"
	12			65	65	28'-5"	0'-8½"	5'-7"	9'-10"			132	132	13'-0"

"d" bars – STRAIGHT – Longitudinal in Top Slab of Barrel. Length: 2 @ 30'-8" for 60'-0" Length Barrel (1'-8" Lap)
"d1" bars – STRAIGHT – Longitudinal in Sidewalls and Division Walls. Length: 2 @ 30'-6" for 60'-0" Length Barrel (1'-3" Lap)
"e" bars – STRAIGHT – Longitudinal in Bottom Slab of Barrel. Length: 2 @ 31'-6" for 60'-0" Length Barrel (1'-3" Lap)
"f" bars – STRAIGHT – Vertical in Sidewalls and Division Walls.

S	H	"d" Size	"d" Spacing	"d" No. Req'd	"d1" Size	"d1" Spacing	"d1" No. Req'd	"e" Size	"e" Spacing	"e" No. Req'd	"f" Size	"f" Spacing	"f" 3:1	"f" 4:1	"f" Length
2 @ 4'	2'	#5	12"	14	#4	12"	8	#4	12"	14	#4	12"	240	240	2'-10"
	3'			14			12			14			240	240	3'-10"
	4'			14			16			14			240	240	4'-10"
	5'			14			20			14			240	240	5'-10"
	6'			14			24			14			240	240	6'-10"
2 @ 5'	3'	#5	11½"	16	#4	12"	12	#4	12"	16	#4	12"	240	240	3'-11"
	4'			16			16			16			240	240	4'-11"
	5'			16			20			16			240	240	5'-11"
	6'			16			24			16			240	240	6'-11"
	7'			16			28			16			240	240	7'-11"
2 @ 6'	3'	#5	11½"	18	#4	12"	12	#4	12"	18	#4	12"	240	240	4'-0"
	4'			18			16			18			240	240	5'-0"
	5'			18			20			18			240	240	6'-0"
	6'			18			24			18			240	240	7'-0"
	7'			18			28			18			240	240	8'-0"
	8'			18			32			18		10"	288	288	9'-0"
2 @ 7'	4'	#5	11½"	20	#4	12"	16	#4	12"	20	#4	12"	240	240	5'-1"
	5'			20			20			20			240	240	6'-1"
	6'			20			24			20			240	240	7'-1"
	7'			20			28			20			240	240	8'-1"
	8'			20			32			20		10"	288	288	9'-1"
	9'			20			36			20	#5	12"	240	240	10'-1"
2 @ 8'	4'	#5	11½"	23	#4	12"	16	#4	12"	22	#4	12"	240	240	5'-2"
	5'			23			20			22			240	240	6'-2"
	6'			23			24			22			240	240	7'-2"
	7'			23			28			22			240	240	8'-2"
	8'			23			32			22		10"	288	288	9'-2"
	9'			23			36			22	#5	12"	240	240	10'-2"
	10'			23			40			22		11"	264	264	11'-2"
2 @ 9'	5'	#5	11½"	26	#4	12"	20	#4	12"	25	#4	12"	240	240	6'-3"
	6'			26			24			25			240	240	7'-3"
	7'			26			28			25			240	240	8'-3"
	8'			26			32			25		10"	288	288	9'-3"
	9'			26			36			25	#5	12"	240	240	10'-3"
	10'			26			40			25		11"	264	264	11'-3"
	11'			26			44			25		10"	288	288	12'-3"
2 @ 10'	5'	#5	11½"	28	#4	12"	20	#4	12"	27	#4	12"	240	240	6'-4"
	6'			28			24			27			240	240	7'-4"
	7'			28			28			27			240	240	8'-4"
	8'			28			32			27		10"	288	288	9'-4"
	9'			28			36			27	#5	12"	240	240	10'-4"
	10'			28			40			27		11"	264	264	11'-4"
	11'			28			44			27		10"	288	288	12'-4"
	12'			28			48			27	#6	12"	240	240	13'-4"
2 @ 11'	6'	#5	11½"	30	#4	12"	24	#4	12"	29	#4	12"	240	240	7'-6"
	7'			30			28			29			240	240	8'-6"
	8'			30			32			29		10"	288	288	9'-6"
	9'			30			36			29	#5	12"	240	240	10'-6"
	10'			30			40			29		11"	264	264	11'-6"
	11'			30			44			29		10"	288	288	12'-6"
	12'			30			48			29	#6	12"	240	240	13'-6"
2 @ 12'	6'	#5	11½"	32	#4	12"	24	#4	12"	31	#4	12"	240	240	7'-7"
	7'			32			28			31			240	240	8'-7"
	8'			32			32			31		10"	288	288	9'-7"
	9'			32			36			31	#5	12"	240	240	10'-7"
	10'			32			40			31		11"	264	264	11'-7"
	11'			32			44			31		10"	288	288	12'-7"
	12			32			48			31	#6	12"	240	240	13'-7"

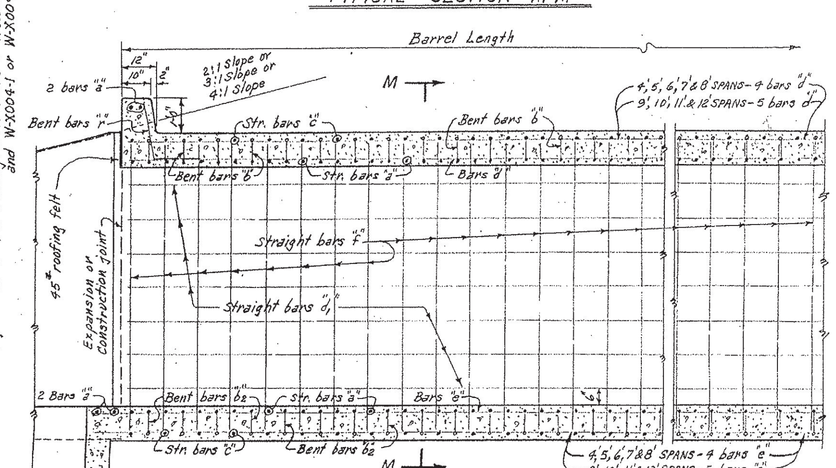
DIMENSIONS / QUANTITIES

Max. Design Depth of Cover D	Clear Spans S	Clear Height H	Sq.Ft. Opening A	Overall Width OW	Thickness of Top Slab T	Thickness of Sidewalls C	Thickness of Division Wall M	Thickness of Bottom Slab B	Overall Height OH	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.
5'-0"	2 @ 4'	2'	16	9'-8"	6½"	6"	8"	6"	3'-0½"	0.496	88.15	42.71	129.56
		3'	24	9'-8"		6"	8"		4'-0½"	0.558	93.49	46.05	129.56
		4'	32	9'-8"		6"	8"		5'-0½"	0.620	98.84	49.39	129.56
		5'	40	9'-8"		6"	8"		6'-0½"	0.682	104.18	52.73	129.56
		6'	48	9'-11"		7"	9"		7'-0½"	0.809	110.74	56.07	131.65
	2 @ 5'	3'	30	11'-8"	7"	6"	8"	6½"	4'-1½"	0.671	123.34	51.19	198.64
		4'	40	11'-8"		6"	8"		5'-1½"	0.733	128.68	54.53	198.64
		5'	50	11'-8"		6"	8"		6'-1½"	0.795	134.03	57.87	198.64
		6'	60	11'-11"		7"	9"		7'-1½"	0.922	140.89	61.21	201.64
		7'	70	12'-1"		7½"	10"		8'-1½"	1.044	147.34	64.55	203.65
	2 @ 6'	3'	36	13'-8"	7½"	6"	8"	7½"	4'-3"	0.818	148.50	56.34	233.58
		4'	48	13'-8"		6"	8"		5'-3"	0.880	153.85	59.68	233.58
		5'	60	13'-8"		6"	8"		6'-3"	0.941	159.19	63.02	233.58
		6'	72	13'-11"		7"	9"		7'-3"	1.070	166.20	66.36	236.59
		7'	84	14'-1"		7½"	10"		8'-3"	1.192	172.74	69.70	238.59
		8'	96	14'-2"		8"	10"		9'-3"	1.298	183.36	73.04	239.59
	2 @ 7'	4'	56	15'-8"	8"	6"	8"	8"	5'-4"	1.021	178.15	64.83	268.97
		5'	70	15'-8"		6"	8"		6'-4"	1.082	183.49	68.17	268.97
		6'	84	15'-11"		7"	9"		7'-4"	1.212	190.59	71.51	271.97
		7'	98	16'-1"		7½"	10"		8'-4"	1.334	197.19	74.85	273.98
		8'	112	16'-2"		8"	10"		9'-4"	1.440	207.89	78.19	274.98
		9'	126	16'-5"		9"	11"		10'-4"	1.616	225.25	81.53	277.98
	2 @ 8'	4'	64	17'-8"	8½"	6"	8"	8½"	5'-5"	1.174	210.37	71.71	304.80
		5'	80	17'-11"		7"	9"		6'-5"	1.295	217.63	75.05	307.81
		6'	96	17'-11"		7"	9"		7'-5"	1.366	222.97	78.39	307.81
		7'	112	18'-1"		7½"	10"		8'-5"	1.489	229.68	81.73	309.81
		8'	128	18'-2"		8"	10"		9'-5"	1.595	240.97	85.07	310.81
		9'	144	18'-5"		9"	11"		10'-5"	1.772	258.08	88.41	313.82
		10'	160	18'-8"		10"	12"		11'-5"	1.967	271.07	91.75	316.82
	2 @ 9'	5'	90	19'-11"	9"	7"	9"	9¼"	6'-6¼"	1.477	239.37	82.77	345.92
		6'	108	20'-1"		7½"	10"		7'-6¼"	1.594	246.08	86.11	347.43
		7'	126	20'-1"		7½"	10"		8'-6¼"	1.671	251.43	89.45	347.43
		8'	144	20'-2"		8"	10"		9'-6¼"	1.778	262.26	92.79	348.93
		9'	162	20'-5"		9"	11"		10'-6¼"	1.956	279.95	96.13	351.93
		10'	180	20'-8"		10"	12"		11'-6¼"	2.152	292.97	99.47	354.93
		11'	198	20'-10"		11"	12"		12'-6¼"	2.328	306.86	102.81	356.94
	2 @ 10'	5'	100	21'-11"	9½"	7"	9"	10"	6'-7½"	1.674	279.64	87.92	479.99
		6'	120	22'-1"		7½"	10"		7'-7½"	1.792	286.50	91.26	482.71
		7'	140	22'-1"		7½"	10"		8'-7½"	1.869	291.85	94.60	482.71
		8'	160	22'-2"		8"	10"		9'-7½"	1.976	302.77	97.94	484.08
		9'	180	22'-5"		9"	11"		10'-7½"	2.155	320.74	101.28	488.16
		10'	200	22'-8"		10"	12"		11'-7½"	2.352	333.99	104.62	492.25
		11'	220	22'-10"		11"	12"		12'-7½"	2.529	348.01	107.96	494.98
		12'	240	23'-0"		12"	12"		13'-7½"	2.718	370.23	111.30	497.70
	2 @ 11'	6'	132	24'-2"	10"	8"	10"	11"	7'-9"	2.048	309.36	96.41	530.03
		7'	154	24'-2"		8"	10"		8'-9"	2.128	314.70	99.75	530.03
		8'	176	24'-2"		8"	10"		9'-9"	2.208	325.12	103.09	530.03
		9'	198	24'-5"		9"	11"		10'-9"	2.388	343.25	106.43	534.12
		10'	220	24'-8"		10"	12"		11'-9"	2.586	356.57	109.77	538.21
		11'	242	24'-10"		11"	12"		12'-9"	2.764	370.67	113.11	540.93
		12'	264	25'-0"		12"	12"		13'-9"	2.954	393.05	116.45	543.66
	2 @ 12'	6'	144	26'-2"	10½"	8"	10"	12"	7'-10½"	2.299	353.31	101.55	576.43
		7'	168	26'-2"		8"	10"		8'-10½"	2.379	358.65	104.89	576.93
		8'	192	26'-2"		8"	10"		9'-10½"	2.459	369.12	108.23	576.93
		9'	216	26'-5"		9"	11"		10'-10½"	2.640	387.52	111.57	580.52
		10'	240	26'-8"		10"	12"		11'-10½"	2.840	401.07	114.91	584.60
		11'	264	26'-10"		11"	12"		12'-10½"	3.018	415.31	118.25	587.33
		12'	288	27'-0"		12"	12"		13'-10½"	3.208	437.88	121.59	590.05

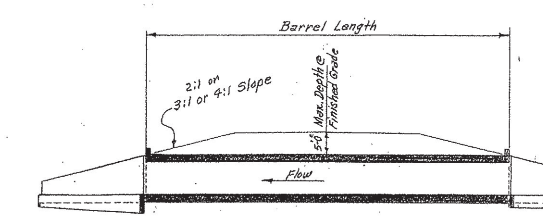


TYPICAL SECTION M-M

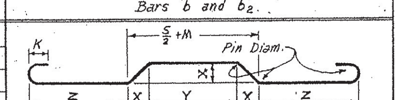
NOTE:- For details of wings and bar lists, see Drawing Nos. W-X002-1 or W-X002-2, W-X003-1 or W-X003-2, and W-X004-1 or W-X004-2.



PART LONGITUDINAL SECTION

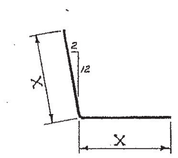


LONGITUDINAL SECTION

BAR SIZE	PIN DIAM.	K	ADD FOR 2 HOOKS	BENDING DIAGRAM FOR Bars "b" and "b2".
#5	2½"	4¼"	0'-11½"	
#6	3"	5"	1'-2"	

NOTE:- Dimensions are to centers of bars. (Bars "b" and "b2")

DOWEL BARS FOR TWO HEADWALLS

2 SPANS @	SIZE	SPACING	NO. REQ'D	LENGTH	X	Bars "r" Dowel bars in Headwalls.
4'	#4	12"±	20	2'-5"	1'-2½"	
5'	#4	12"±	24	2'-6"	1'-3"	
6'	#4	12"±	28	2'-7"	1'-3½"	
7'	#4	12"±	32	2'-8"	1'-4"	
8'	#4	12"±	36	2'-9"	1'-4½"	
9'	#4	12"±	40	2'-10"	1'-5"	
10'	#4	12"±	46	2'-11"	1'-5½"	
11'	#4	12"±	50	3'-0"	1'-6"	
12'	#4	12"±	54	3'-1"	1'-6½"	

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#/□"

NOTE:- This drawing to be used in conjunction with Standard Wing 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

ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS

4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS 3:1 OR 4:1 SLOPES
DOUBLES UNDER 5'-0" COVER

STANDARD DRAWING NO. R-200X-O.

Designed by:- W.C.H. 1-17-63.
Drawn by:- W.C.H. 2-15-63.
Quantities by:- W.C.H. 2-19-63.
Checked by:- RHS. 5-14-63
Checked by:- RHS. 5-24-63
Checked by:- RHS. 5-24-63

Fed. Road No.	State	Fed. Aid Project	Fiscal Year	Sheet No.	Total Sheets
6	ARK.				
Job No.					

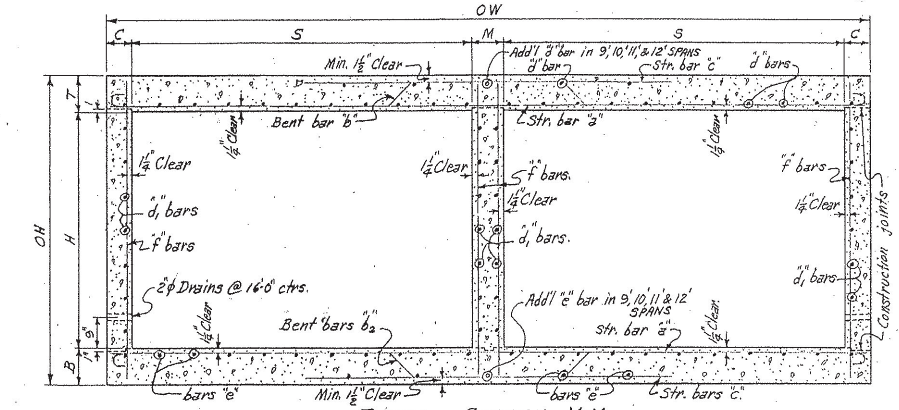
Bar List for Barrel Section 60'-0" in Length

Depth of Cover	Clear Span	Clear Height	"a" bars — Straight — In Top and Bottom Slab of Barrel.				"b" bars — Bent - See Diagram below. In Bottom of Top Slab bent up over Division Wall-hooked. Alternate with "a" and "c" bars.							"b2" bars — Bent - See Diagram below. In Top of Bottom Slab bent down under Division Wall-hooked. Alternate with "a" and "c" bars.							"c" bars — Straight — In Top and Bottom Slab of Barrel. Alt. with "b" and "b2" bars.				"d" bars — Straight — Longitudinal in Top Slab of Barrel				"d1" bars — Straight — Longitudinal in Sidewalls and Division Wall				"e" bars — Straight — Longitudinal in Bottom Slab of Barrel				"f" bars — Straight — Verticals in Sidewalls and Division Wall				"k" bars — Straight — 2 in Top of Headwalls and Aprons-Each.		
D	S	H	Size	Spacing	No. Reqd	Length	Size	Spacing	No. Reqd	Length	X	Y	Z	Size	Spacing	No. Reqd	Length	X	Y	Z	Size	Spacing	No. Reqd	Length	Size	Spacing	No. Reqd	Length	Size	Spacing	No. Reqd	Length	Size	Spacing	No. Reqd	Length	Size	Spacing	No. Reqd	Length	Size	No. Reqd	Length
0'-0" to 5'-0" Maximum	2 @ 4'	2'	#5	12"	120	9'-9"	#5	12"	59	10'-10"	0'-3"	2'-3½"	3'-5½"	#5	12"	59	10'-10"	0'-2½"	2'-4½"	3'-5½"	#5	12"	120	4'-10"	#5	12"	14	2 @ 30'-8" for 60'-0" Length Barrel (1'-8" Lap)	#4	12"	8	2 @ 30'-6" for 60'-0" Length Barrel (1'-3" Lap)	#4	12"	14	2 @ 31'-6" for 60'-0" Length Barrel (1'-3" Lap)	#4	12"	240	2'-10"	#5	8	10'-3"
		3'			120	9'-9"			59	10'-10"	"	2'-3½"	3'-5½"			59	10'-10"	"	2'-4½"	3'-5½"			120	4'-10"			14				12				14				240	3'-10"		8	"
		4'			120	9'-9"			59	10'-10"	"	2'-3½"	3'-5½"			59	10'-10"	"	2'-4½"	3'-5½"			120	4'-10"			14				16				14				240	4'-10"		8	"
		5'			120	9'-9"			59	10'-10"	"	2'-3½"	3'-5½"			59	10'-10"	"	2'-4½"	3'-5½"			120	4'-10"			14				20				14				240	5'-10"		8	"
		6'			120	10'-0"			59	11'-1"	0'-3"	2'-4½"	3'-6½"			59	11'-1"	0'-2½"	2'-5½"	3'-6½"			120	4'-11"			14				24				14				240	6'-10"		8	10'-6"
	2 @ 5'	3'	#6	12"	120	11'-10"	#5	12"	59	12'-11"	0'-3½"	2'-8"	4'-3"	#5	12"	59	12'-11"	0'-3"	2'-9"	4'-3"	#6	12"	120	5'-10"	#5	11½"	16		#4	12"	12		#4	12"	16		#4	12"	240	3'-11"	#6	8	12'-4"
		4'			120	11'-10"			59	12'-11"	"	2'-8"	4'-3"			59	12'-11"	"	2'-9"	4'-3"			120	5'-10"			16				16				16				240	4'-11"		8	"
		5'			120	11'-10"			59	12'-11"	"	2'-8"	4'-3"			59	12'-11"	"	2'-9"	4'-3"			120	5'-10"			16				20				16				240	5'-11"		8	"
		6'			120	12'-1"			59	13'-2"	"	2'-9"	4'-4"			59	13'-2"	"	2'-10"	4'-4"			120	5'-11"			16				24				16				240	6'-11"		8	12'-7"
		7'			120	12'-3"			59	13'-4"	0'-3½"	2'-10"	4'-4½"			59	13'-4"	0'-3"	2'-11"	4'-4½"			120	6'-0"			16				28				16				240	7'-11"		8	12'-9"
	2 @ 6'	3'	#6	11"	132	13'-11"	#5	11"	65	15'-0"	0'-4"	3'-2"	5'-0"	#5	11"	65	15'-0"	0'-4"	3'-2"	5'-0"	#6	11"	132	6'-11"	#5	11½"	18		#4	12"	12		#4	12"	18		#4	12"	240	4'-0"	#6	8	14'-5"
		4'			132	13'-11"			65	15'-0"	"	3'-2"	5'-0"			65	15'-0"	"	3'-2"	5'-0"			132	6'-11"			18				16				18				240	5'-0"		8	"
		5'			132	13'-11"			65	15'-0"	"	3'-2"	5'-0"			65	15'-0"	"	3'-2"	5'-0"			132	6'-11"			18				20				18				240	6'-0"		8	"
		6'			132	14'-2"			65	15'-3"	"	3'-3"	5'-1"			65	15'-3"	"	3'-3"	5'-1"			132	7'-0"			18				24				18				240	7'-0"		8	14'-8"
		7'			132	14'-4"			65	15'-5"	"	3'-4"	5'-1½"			65	15'-5"	"	3'-4"	5'-1½"			132	7'-1"			18				28				18				240	8'-0"		8	14'-10"
		8'			132	14'-5"			65	15'-6"	0'-4"	3'-4"	5'-2"			65	15'-6"	0'-4"	3'-4"	5'-2"			132	7'-1"			18				32				18			10"	288	9'-0"		8	14'-11"
	2 @ 7'	4'	#6	12"	120	15'-11"	#6	12"	59	17'-3"	0'-4½"	3'-7"	5'-9"	#6	12"	59	17'-3"	0'-4½"	3'-7"	5'-9"	#6	12"	120	7'-11"	#5	11½"	20		#4	12"	16		#4	12"	20		#4	12"	240	5'-1"	#6	8	16'-6"
		5'			120	15'-11"			59	17'-3"	"	3'-7"	5'-9"			59	17'-3"	"	3'-7"	5'-9"			120	7'-11"			20				20				20				240	6'-1"		8	"
		6'			120	16'-2"			59	17'-6"	"	3'-8"	5'-10"			59	17'-6"	"	3'-8"	5'-10"			120	8'-0"			20				24				20				240	7'-1"		8	16'-9"
		7'			120	16'-4"			59	17'-8"	"	3'-9"	5'-10½"			59	17'-8"	"	3'-9"	5'-10½"			120	8'-1"			20				28				20				240	8'-1"		8	16'-11"
		8'			120	16'-5"			59	17'-9"	"	3'-9"	5'-11"			59	17'-9"	"	3'-9"	5'-11"			120	8'-1"			20				32				20			10"	288	9'-1"		8	17'-0"
		9'			120	16'-8"			59	18'-0"	0'-4½"	3'-10"	6'-0"			59	18'-0"	0'-4½"	3'-10"	6'-0"			120	8'-2"			20				36				20		#5	12"	240	10'-1"		8	17'-3"
	2 @ 8'	4'	#6	11"	132	18'-0"	#6	11"	65	19'-5"	0'-5"	4'-0"	6'-6½"	#6	11"	65	19'-5"	0'-5"	4'-0"	6'-6½"	#6	11"	132	9'-0"	#5	11½"	23		#4	12"	16		#4	12"	22		#4	12"	240	5'-2"	#6	8	18'-7"
		5'			132	18'-3"			65	19'-8"	"	4'-1"	6'-7½"			65	19'-8"	"	4'-1"	6'-7½"			132	9'-0"			23				20				22				240	6'-2"		8	18'-10"
		6'			132	18'-3"			65	19'-8"	"	4'-1"	6'-7½"			65	19'-8"	"	4'-1"	6'-7½"			132	9'-0"			23				24				22				240	7'-2"		8	"
		7'			132	18'-5"			65	19'-10"	"	4'-2"	6'-8"			65	19'-10"	"	4'-2"	6'-8"			132	9'-2"			23				28				22				240	8'-2"		8	19'-0"
		8'			132	18'-6"			65	19'-11"	"	4'-2"	6'-8½"			65	19'-11"	"	4'-2"	6'-8½"			132	9'-2"			23				32				22			10"	288	9'-2"		8	19'-1"
		9'			132	18'-9"			65	20'-2"	"	4'-3"	6'-9½"			65	20'-2"	"	4'-3"	6'-9½"			132	9'-3"			23				36				22		#5	12"	240	10'-2"		8	19'-4"
		10'			132	19'-0"			65	20'-5"	0'-5"	4'-4"	6'-10½"			65	20'-5"	0'-5"	4'-4"	6'-10½"			132	9'-4"			23				40				22			11"	264	11'-2"		8	19'-7"
	2 @ 9'	5'	#6	11"	132	20'-4"	#6	11"	65	21'-9"	0'-5½"	4'-6"	7'-5"	#6	11"	65	21'-9"	0'-5¾"	4'-5½"	7'-5"	#6	11"	132	10'-1"	#5	11½"	26		#4	12"	20		#4	12"	25		#4	12"	240	6'-3"	#6	8	20'-11"
		6'			132	20'-6"			65	21'-11"	"	4'-7"	7'-5½"			65	21'-11"	"	4'-6½"	7'-5½"			132	10'-2"			26				24				25				240	7'-3"		8	21'-1"
		7'			132	20'-6"			65	21'-11"	"	4'-7"	7'-5½"			65	21'-11"	"	4'-6½"	7'-5½"			132	10'-2"			26				28				25				240	8'-3"		8	"
		8'			132	20'-7"			65	22'-0"	"	4'-7"	7'-6"			65	22'-0"	"	4'-6½"	7'-6"			132	10'-2"			26				32				25			10"	288	9'-3"		8	21'-2"
		9'			132	20'-10"			65	22'-3"	"	4'-8"	7'-7"			65	22'-3"	"	4'-7½"	7'-7"			132	10'-3"			26				36				25		#5	12"	240	10'-3"		8	21'-5"
		10'			132	21'-1"			65	22'-6"	"	4'-9"	7'-8"			65	22'-6"	"	4'-8½"	7'-8"			132	10'-4"			26				40				25			11"	264	11'-3"		8	21'-8"
		11'			132	21'-3"			65	22'-8"	0'-5½"	4'-9"	7'-9"			65	22'-8"	0'-5¾"	4'-8½"	7'-9"			132	10'-4"			26				44				25			10"	288	12'-3"		8	21'-10"
	2 @ 10'	5'	#7	12"	120	22'-5"	#6	12"	59	23'-11"	0'-6"	5'-0"	8'-2"	#6	12"	59	23'-11"	0'-6½"	4'-11"	8'-2"	#7	12"	120	11'-2"	#5	11½"	28		#4	12"	20		#4	12"	27		#4	12"	240	6'-4"	#7	8	22'-11"
		6'			120	22'-7"			59	24'-1"	"	5'-1"	8'-2½"			59	24'-1"	"	5'-0"	8'-2½"			120	11'-3"			28				24				27				240	7'-4"		8	23'-1"
		7'			120	22'-7"			59	24'-1"	"	5'-1"	8'-2½"			59	24'-1"	"	5'-0"	8'-2½"			120	11'-3"			28				28				27				240	8'-4"		8	"
		8'			120	22'-8"			59	24'-2"	"	5'-1"	8'-3"			59	24'-2"	"	5'-0"	8'-3"			120	11'-3"			28				32				27			10"	288	9'-4"		8	23'-2"
		9'			120	22'-11"			59	24'-5"	"	5'-2"	8'-4"			59	24'-5"	"	5'-1"	8'-4"			120	11'-4"			28				36				27		#5	12"	240	10'-4"		8	23'-6"
		10'			120	23'-2"			59	24'-8"	"	5'-3"	8'-5"			59	24'-8"	"	5'-2"	8'-5"			120	11'-5"			28				40				27			11"	264	11'-4"		8	23'-9"
		11'			120	23'-4"			59	24'-10"	"	5'-3"	8'-6"			59	24'-10"	"	5'-2"	8'-6"			120	11'-5"			28				44				27			10"	288	12'-4"		8	23'-11"
		12'			120	23'-6"			59	25'-0"	0'-6"	5'-3"	8'-7"			59	25'-0"	0'-6½"	5'-2"	8'-7"			120	11'-5"			28				48				27		#6	12"	240	13'-4"		8	24'-1"
	2 @ 11'	6'	#7	12"	120	24'-9"	#6	12"	59	26'-3"	0'-6½"	5'-5"	9'-1"	#6	12"	59	26'-4"	0'-7½"	5'-3"	9'-1"	#7	12"	120	12'-3"	#5	11½"	30		#4	12"	24		#4	12"	29		#4	12"	240	7'-6"	#7	8	25'-3"
		7'			120	24'-9"			59	26'-3"	"	5'-5"	9'-1"			59	26'-4"	"	5'-3"	9'-1"			120	12'-3"			30				28				29				240	8'-6"		8	"
		8'			120	24'-9"			59	26'-3"	"	5'-5"	9'-1"			59	26'-4"	"	5'-3"	9'-1"			120	12'-3"			30				32				29			10"	288	9'-6"		8	"
		9'			120	25'-0"			59	26'-6"	"	5'-6"	9'-2"			59	26'-7"	"	5'-4"	9'-2"			120	12'-4"			30				36				29		#5	12"	240	10'-6"		8	25'-6"
		10'			120	25'-3"			59	26'-9"	"	5'-7"	9'-3"			59	26'-10"	"	5'-5"	9'-3"			120	12'-5"			30				40				29			11"	264	11'-6"		8	25'-10"
		11'			120	25'-5"			59	26'-11"	"	5'-7"	9'-4"			59	27'-0"	"	5'-5"	9'-4"			120	12'-5"			30				44				29			10"	288	12'-6"		8	26'-0"
		12'			120	25'-7"			59	27'-1"	0'-6½"	5'-7"	9'-5"			59	27'-2"	0'-7½"	5'-5"	9'-5"			120	12'-5"			30				48				29		#6	12"	240	13'-6"		8	26'-2"
	2 @ 12'	6'	#7	11"	132	26'-10"	#6	11"	65	28'-4"	0'-7"	5'-11"	9'-10"	#6	11"	65	28'-6"	0'-8½"	5'-8"	9'-10"	#7	11"	132	13'-3"	#5	11½"	32		#4	12"	24		#4	12"	31		#4	12"	240	7'-7"	#7	8	27'-4"
		7'			132	26'-10"			65	28'-4"	"	5'-11"	9'-10"			65	28'-6"	"	5'-8"	9'-10"			132	13'-3"			32				28				31				240	8'-7"		8	"
		8'			182	26'-10"			65	28'-4"	"	5'-11"	9'-10"			65	28'-6"	"	5'-8"	9'-10"			132	13'-3"			32				32				31			10"	288	9'-7"		8	"
		9'			132	27'-1"			65	28'-7"	"	6'-0"	9'-11"			65	28'-9"	"	5'-9"	9'-11"			132	13'-4"			32				36				31		#5	12"	240	10'-7"		8	27'-7"
		10'			182	27'-4"			65	28'-10"	"	6'-1"	10'-0"			65	29'-0"	"	5'-10"	10'-0"			132	13'-6"			32				40				31			11"	264	11'-7"		8	27'-10"
		11'			132	27'-6"			65	29'-0"	"	6'-1"	10'-1"			65	29'-2"	"	5'-10"	10'-1"			132	13'-6"			32				44				31			10"	288	12'-7"		8	28'-0"
		12'			132	27'-8"			65	29'-2"	0'-7"	6'-1"	10'-2"			65	29'-4"	0'-8½"	5'-10"	10'-2"			132	13'-6"			32				48				31		#6	12	240	13'-7"		8	28'-3"

NOTE:- The "a", "b", "b2", and "c" bars are to be placed parallel with the headwalls, spacing to be parallel with barrel.

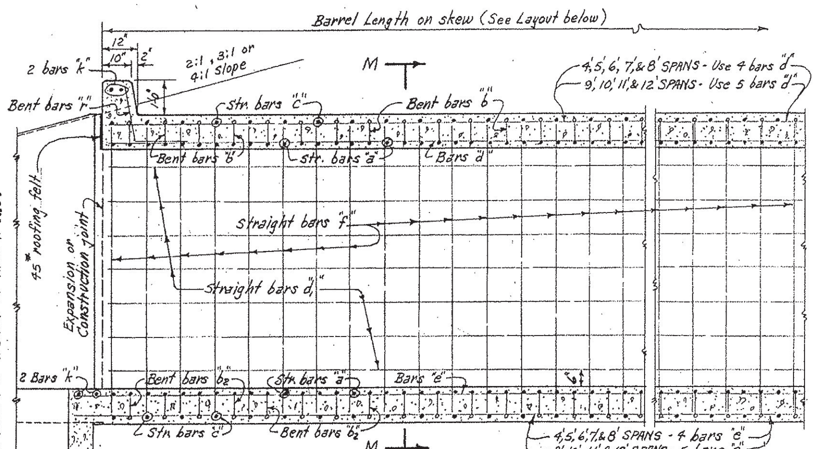
Dimensions — Quantities

Max. Design Depth of Cover	Clear Span	Clear Height	Sq. Ft. Opening	Overall Width	Thickness of Top Slab	Thickness of Sidewalls	Thickness of Division Wall	Thickness of Bottom Slab	Overall Height	Roadway Length	Length of Headwall	Class S Conc. per Lin. Ft. of Barrel	Reinforcing Steel per Lin. Ft. of Barrel	Additional per Lap	Additional Two Headwalls & Aprons
D	S	H	A	OW	T	C	M	B	OH	RL	K	Cu.Yd.	LB.	LB.	LB.
5'-0"	2 @ 4'	2'	16	9'-8"	6¼"	6"	8"	6"	3'-0⅛"	10'-0"	10'-6⅛"	0.496	89.89	42.71	136.52
		3'	24	9'-8"		6"	8"		4'-0⅛"	"	"	0.558	95.23	46.05	136.52
		4'	32	9'-8"		6"	8"		5'-0⅛"	"	"	0.620	100.58	49.39	136.52
		5'	40	9'-8"		6"	8"		6'-0⅛"	"	"	0.682	105.92	52.73	136.52
		6'	48	9'-11"		7"	9"		7'-0⅛"	10'-3⅛"	10'-9⅝"	0.809	112.48	56.07	138.60
	2 @ 5'	3'	30	11'-8"	7"	6"	8"	6½"	4'-1½"	12'-1"	12'-7½"	0.671	125.87	51.19	209.65
		4'	40	11'-8"		6"	8"		5'-1½"	"	"	0.733	131.22	54.53	209.65
		5'	50	11'-8"		6"	8"		6'-1½"	"	"	0.795	136.56	57.87	209.65
		6'	60	11'-11"		7"	9"		7'-1½"	12'-4"	12'-10⅝"	0.922	143.43	61.21	212.66
		7'	70	12'-1"		7½"	10"		8'-1½"	12'-6⅛"	13'-0⅞"	1.044	149.87	64.55	214.66
	2 @ 6'	3'	36	13'-8"	7½"	6"	8"	7½"	4'-3"	14'-1⅛"	14'-8⅞"	0.818	151.91	56.34	245.60
		4'	48	13'-8"		6"	8"		5'-3"	"	"	0.880	157.25	59.68	245.60
		5'	60	13'-8"		6"	8"		6'-3"	"	"	0.941	162.60	63.02	245.60
		6'	72	13'-11"		7"	9"		7'-3"	14'-5"	14'-11½"	1.070	169.60	66.36	248.60
		7'	84	14'-1"		7½"	10"		8'-3"	14'-7"	15'-1½"	1.192	176.15	69.70	250.61
		8'	96	14'-2"		8"	10"		9'-3"	14'-8"	15'-2⅛"	1.298	186.76	73.04	251.61
	2 @ 7'	4'	56	15'-8"	8"	6"	8"	8"	5'-4"	16'-2⅝"	16'-9"	1.021	181.91	64.83	281.99
		5'	70	15'-8"		6"	8"		6'-4"	"	"	1.082	187.25	68.17	281.99
		6'	84	15'-11"		7"	9"		7'-4"	16'-5¾"	17'-0⅛"	1.212	194.35	71.51	284.99
		7'	98	16'-1"		7½"	10"		8'-4"	16'-7¾"	17'-2⅛"	1.334	200.94	74.85	286.99
		8'	112	16'-2"		8"	10"		9'-4"	16'-8⅝"	17'-3⅛"	1.440	211.64	78.19	288.00
		9'	126	16'-5"		9"	11"		10'-4"	17'-0"	17'-6½"	1.616	229.01	81.53	291.00
	2 @ 8'	4'	64	17'-8"	8½"	6"	8"	8½"	5'-5"	18'-3½"	18'-10"	1.174	215.29	71.71	322.50
		5'	80	17'-11"		7"	9"		6'-5"	18'-6⅝"	19'-1"	1.295	222.27	75.05	325.50
		6'	96	17'-11"		7"	9"		7'-5"	"	"	1.366	227.62	78.39	325.50
		7'	112	18'-1"		7½"	10"		8'-5"	18'-8⅝"	19'-3"	1.489	239.60	81.73	327.50
		8'	128	18'-2"		8"	10"		9'-5"	18'-9¾"	19'-4⅛"	1.595	245.39	85.07	328.50
		9'	144	18'-5"		9"	11"		10'-5"	19'-0¾"	19'-7⅛"	1.772	268.00	88.41	331.51
		10'	160	18'-8"		10"	12"		11'-5"	19'-3⅞"	19'-10⅛"	1.967	275.99	91.75	334.51
	2 @ 9'	5'	90	19'-11"	9"	7"	9"	9¼"	6'-6¼"	20'-7½"	21'-2"	1.477	244.83	82.77	364.23
		6'	108	20'-1"		7½"	10"		7'-6¼"	20'-9½"	21'-4"	1.594	251.54	86.11	366.23
		7'	126	20'-1"		7½"	10"		8'-6¼"	"	"	1.671	256.89	89.45	366.23
		8'	144	20'-2"		8"	10"		9'-6¼"	20'-10⅝"	21'-5"	1.778	267.72	92.79	367.23
		9'	162	20'-5"		9"	11"		10'-6¼"	21'-1⅝"	21'-8⅛"	1.956	285.41	96.13	370.24
		10'	180	20'-8"		10"	12"		11'-6¼"	21'-4⅝"	21'-11⅛"	2.152	298.43	99.47	373.24
		11'	198	20'-10"		11"	12"		12'-6¼"	21'-6⅞"	22'-1⅛"	2.328	312.32	102.81	375.24
	2 @ 10'	5'	100	21'-11"	9½"	7"	9"	10"	6'-7½"	22'-8¼"	23'-2¾"	1.674	286.66	87.92	500.43
		6'	120	22'-1"		7½"	10"		7'-7½"	22'-10⅜"	23'-4¾"	1.792	298.52	91.26	503.15
		7'	140	22'-1"		7½"	10"		8'-7½"	"	"	1.869	298.87	94.60	503.15
		8'	160	22'-2"		8"	10"		9'-7½"	22'-11⅜"	23'-5¾"	1.976	309.79	97.94	504.52
		9'	180	22'-5"		9"	11"		10'-7½"	23'-2⅜"	23'-9"	2.155	327.76	101.28	509.97
		10'	200	22'-8"		10"	12"		11'-7½"	23'-5⅜"	24'-0"	2.352	341.02	104.62	514.06
		11'	220	22'-10"		11"	12"		12'-7½"	23'-7⅜"	24'-2"	2.529	355.04	107.96	516.78
		12'	240	23'-0"		12"	12"		13'-7½"	23'-9⅜"	24'-4¼"	2.718	377.25	111.30	519.51
	2 @ 11'	6'	132	24'-2"	10"	8"	10"	11"	7'-9"	25'-0½"	25'-6¾"	2.048	316.97	96.41	551.83
		7'	154	24'-2"		8"	10"		8'-9"	"	"	2.128	322.31	99.75	551.83
		8'	176	24'-2"		8"	10"		9'-9"	"	"	2.208	332.74	103.09	551.83
		9'	198	24'-5"		9"	11"		10'-9"	25'-3⅜"	25'-9¾"	2.388	350.87	106.43	555.92
		10'	220	24'-8"		10"	12"		11'-9"	25'-6⅜"	26'-1"	2.586	364.19	109.77	561.37
		11'	242	24'-10"		11"	12"		12'-9"	25'-8⅜"	26'-3"	2.764	378.28	113.11	564.10
		12'	264	25'-0"		12"	12"		13'-9"	25'-10⅜"	26'-5"	2.954	400.66	116.45	566.82
	2 @ 12'	6'	144	26'-2"	10½"	8"	10"	12"	7'-10½"	27'-1"	27'-7½"	2.299	362.26	101.55	599.59
		7'	168	26'-2"		8"	10"		8'-10½"	"	"	2.379	367.60	104.89	599.59
		8'	192	26'-2"		8"	10"		9'-10½"	"	"	2.459	378.07	108.23	599.59
		9'	216	26'-5"		9"	11"		10'-10½"	27'-4⅜"	27'-10¾"	2.640	396.47	111.57	603.68
		10'	240	26'-8"		10"	12"		11'-10½"	27'-7¼"	28'-1¾"	2.840	410.39	114.91	607.77
		11'	264	26'-10"		11"	12"		12'-10½"	27'-9⅜"	28'-3¾"	3.018	424.63	118.25	610.49
		12'	288	27'-0"		12"	12"		13'-10½"	27'-11⅜"	28'-6"	3.208	447.20	121.59	614.58



TYPICAL SECTION M-M

NOTE:- For details of wings and bar lists, see Drawing Nos. W-X152-1 or W-X152-2 ; W-X153-1 or W-X153-2 and W-X154-1 or W-X154-2. Also W-X15.



PART LONGITUDINAL SECTION N-N

GENERAL NOTES:-

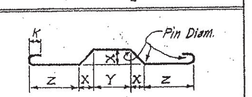
CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have ¾" chamfers.

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.

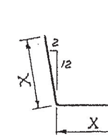
CONSTRUCTION JOINTS:- Construction joints between wingwalls, side walls, division walls and slabs shall be only where shown on plans.

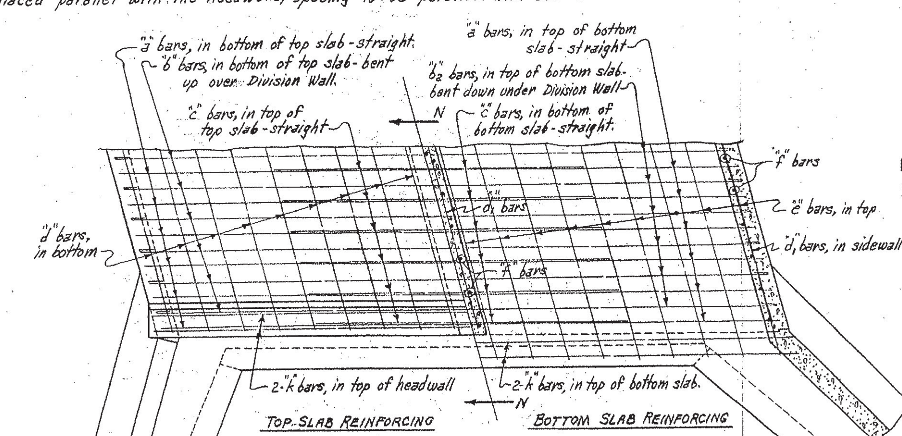
SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

Bar Size	Pin Diam.	K	Add for 2 Hooks	Bending Diagram for Bars "b" and "b2"
#5	2½"	4¼"	0'-11½"	
#6	3"	5"	1'-2"	

NOTE:- Dimensions are to centers of bars.

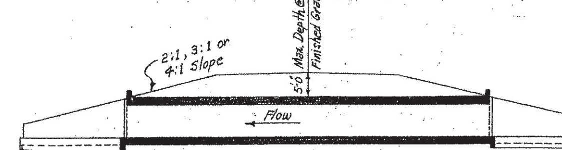
DOWEL BARS FOR TWO HEADWALLS

2 Spans @	Size	Spacing	No. Reqd	Length	X	Bars "r" Dowel bars in Headwalls
4'	#4	12"±	20	2'-5"	1'-2½"	
5'	#4	12"±	24	2'-6"	1'-3"	
6'	#4	12"±	28	2'-7"	1'-3½"	
7'	#4	12"±	32	2'-8"	1'-4"	
8'	#4	12"±	38	2'-9"	1'-4½"	
9'	#4	12"±	42	2'-10"	1'-5"	
10'	#4	12"±	46	2'-11"	1'-5½"	
11'	#4	12"±	50	3'-0"	1'-6"	
12'	#4	12"±	54	3'-1"	1'-6½"	

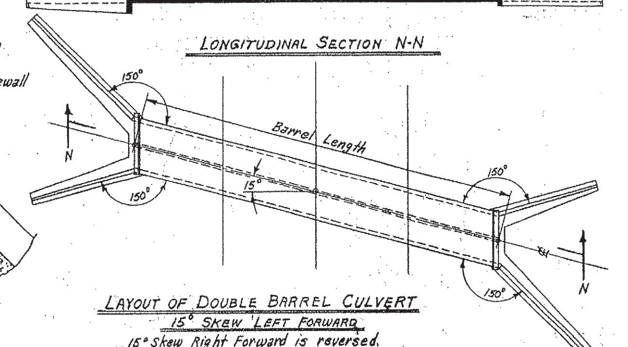


PART PLAN AT END OF CULVERT

NOTE:- The "a", "b", "b2" and "c" bars are placed parallel with the headwall. The "d" bars in top of top slab and "e" bars in bottom of bottom slab are not shown.



LONGITUDINAL SECTION N-N



LAYOUT OF DOUBLE BARREL CULVERT

15° SKEW LEFT FORWARD

15° Skew Right Forward is reversed.

DESIGN LIVE LOAD

H20-S16 LOADING A.A.S.H.O. 1961

AND

SPECIAL MILITARY LOADING

Two 24000 Lb. Axles @ 4'-0" ctrs.

UNIT STRESSES:-

Class S Concrete (n=10) 1200#/□"

Reinforcing Steel 20,000#/□"

NOTE:- This drawing to be used in conjunction with Standard Wing Drawing Nos. W-X152-1 or W-X152-2 , W-X153-1 or W-X153-2 , and W-X154-1 or W-X154-2. Also W-X15.

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS

15° SKEW

4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 2:1, 3:1 OR 4:1 SLOPES

DOUBLES — UNDER 5'-0" COVER

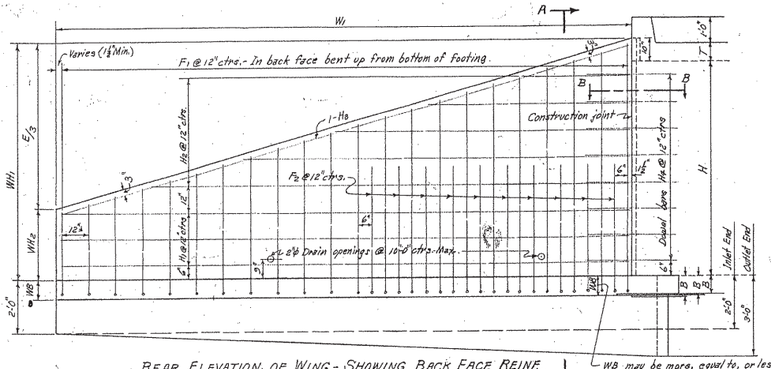
STANDARD DRAWING NO. R-215X-0

Designed by:- W. C. H. 1-17-63. Checked by:- R.H.S - 5-14-63

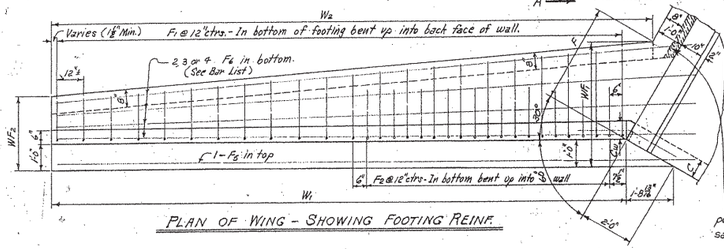
Drawn by:- W. C. H. 8-23-63. Checked by:- R.H.S - 10-7-63

Quantities by:- W. C. H. 8-26-63. Checked by:- R.G. - 12-16-63

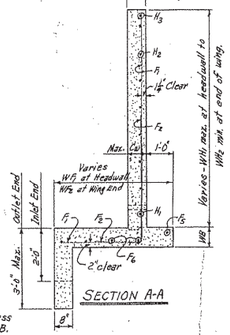
FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.				
JOB No.					



REAR ELEVATION OF WING - SHOWING BACK FACE REINF.

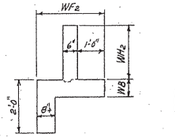


PLAN OF WING - SHOWING FOOTING REINF.



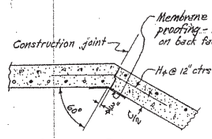
SECTION A-A

WB may be more, equal to, or less than the bottom slab thickness B.

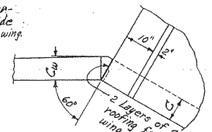


END VIEW OF WING

When B is more than W8, the shaded portion of the apron shall be made the same thickness as the barrel base B.



SECTION B-B THRU CONSTRUCTION JOINT



DETAIL AT TOP OF WING

NOTE:- Payment for membrane waterproofing and roofing felt to be included in the price bid for Class S Concrete.

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 F	PERPENDICULAR DIST. FROM HDWL. TO END OF WING E	LENGTH OF WING WALLS W1	INSIDE FOOTING DIMENSION W2	* QUANTITY PER WING CLASS S CONCRETE INLET END	* QUANTITY PER WING CLASS S CONCRETE OUTLET END
H	WB	Cw	WH1	WH2	WF1	WF2	F	E	W1	W2	CU.YD.	CU.YD.
2'	7"	6"	2'-10"	0'-8"	2'-4"	2'-0"	0'-11⅜"	6'-6"	7'-6"	7'-1½"	0.889	0.986
3'	7"	6"	3'-10"	1'-0"	2'-8"	2'-4"	1'-1⅜"	8'-6"	9'-3⅜"	9'-2⅝"	1.338	1.466
4'	7"	6"	4'-10"	1'-2"	3'-0"	2'-8"	1'-3"	10'-6"	12'-1⅝"	12'-1⅝"	1.868	2.027
5'	7"	6"	5'-10"	1'-8"	3'-4"	2'-9⅝"	2'-1⅜"	12'-6"	14'-5⅝"	14'-7½"	2.478	2.668
		7"	5'-10"	1'-8"	3'-4"	2'-11⅝"	2'-1⅜"	12'-6"	14'-5⅝"	14'-7½"	2.582	2.772
6'	8"	7"	6'-10"	2'-0"	3'-8"	2'-6"	2'-5⅛"	14'-6"	16'-9"	17'-1⅝"	3.440	3.661
		7⅝"	6'-10"	2'-0"	3'-8"	2'-6"	2'-6⅛"	14'-6"	16'-9"	17'-1⅝"	3.511	3.732
		8"	6'-10"	2'-0"	3'-8"	2'-6"	2'-6⅛"	14'-6"	16'-9"	17'-1⅝"	3.582	3.803
7'	8⅝"	7⅝"	7'-10"	2'-4"	4'-2"	2'-7½"	3'-1⅛"	16'-6"	19'-0⅝"	19'-0⅝"	4.505	4.758
		8"	7'-10"	2'-4"	4'-2"	2'-7⅝"	3'-1⅛"	16'-6"	19'-0⅝"	19'-0⅝"	4.597	4.851
8'	9"	8"	8'-10"	2'-8"	4'-8"	2'-9"	3'-8"	18'-6"	21'-4⅝"	22'-0⅛"	5.761	6.097

* Quantity per wing does not include headwall or that portion of apron or toewall for the length W3.

APRON DIMENSION W3

W3 = (OW - 2F)

CLEAR SPAN	CLEAR HEIGHT	2 x FOOTING DIMENSION	SINGLE BARREL CULVERT OW	SINGLE BARREL CULVERT W3	DOUBLE BARREL CULVERT OW	DOUBLE BARREL CULVERT W3	TRIPLE BARREL CULVERT OW	TRIPLE BARREL CULVERT W3	QUADRUPLE BARREL CULVERT OW	QUADRUPLE BARREL CULVERT W3	QUINTUPLE BARREL CULVERT OW	QUINTUPLE BARREL CULVERT W3
S	H	2F										
4'	2'	1'-11⅛"	5'-0"	3'-0⅛"	9'-8"	7'-8⅛"	14'-4"	12'-4⅛"	19'-0"	17'-0⅛"	23'-8"	21'-8⅛"
	3'	2'-8⅛"	5'-0"	2'-3⅜"	9'-8"	6'-11⅛"	14'-4"	11'-7⅛"	19'-0"	16'-3⅛"	23'-8"	20'-11⅛"
	4'	3'-6"	5'-0"	1'-6"	9'-8"	6'-2"	14'-4"	10'-10"	19'-0"	15'-6"	23'-8"	20'-2"
	5'	4'-3⅜"	5'-0"	0'-8⅝"	9'-8"	5'-4⅜"	14'-4"	10'-0⅝"	19'-0"	14'-8⅜"	23'-8"	19'-9⅝"
	6'	5'-0⅝"	5'-2"	0'-1⅝"	9'-11"	4'-10⅛"	14'-8"	9'-7⅛"	19'-5"	14'-2⅛"	24'-2"	19'-1⅛"
5'	3'	2'-8⅛"	6'-0"	3'-3⅜"	11'-8"	8'-11⅛"	17'-4"	14'-7⅛"	23'-0"	20'-3⅛"	28'-8"	25'-11⅛"
	4'	3'-6"	6'-0"	2'-6"	11'-8"	8'-2"	17'-4"	13'-10"	23'-0"	19'-6"	28'-8"	25'-2"
	5'	4'-3⅜"	6'-0"	1'-8⅝"	11'-8"	7'-4⅜"	17'-4"	13'-0⅝"	23'-0"	18'-8⅜"	28'-8"	24'-9⅝"
	6'	5'-0⅝"	6'-2"	1'-1⅝"	11'-11"	6'-10⅛"	17'-8"	12'-7⅛"	23'-5"	18'-2⅛"	29'-2"	24'-1⅛"
	7'	6'-2⅛"	6'-5"	0'-0⅝"	12'-1"	5'-10⅝"	17'-11"	11'-8⅝"	23'-9"	17'-1⅝"	29'-7"	23'-0⅝"
6'	3'	2'-8⅛"	7'-0"	4'-3⅜"	13'-8"	10'-11⅛"	20'-4"	17'-7⅛"	27'-0"	24'-3⅛"	33'-8"	30'-11⅛"
	4'	3'-6"	7'-0"	3'-6"	13'-8"	10'-2"	20'-4"	16'-10"	27'-0"	23'-6"	33'-8"	30'-2"
	5'	4'-3⅜"	7'-0"	2'-8⅝"	13'-8"	9'-4⅜"	20'-4"	16'-0⅝"	27'-0"	22'-8⅜"	33'-8"	29'-4⅝"
	6'	5'-0⅝"	7'-2"	2'-1⅝"	13'-11"	8'-10⅛"	20'-8"	15'-7⅛"	27'-5"	22'-2⅛"	34'-2"	29'-1⅛"
	7'	6'-2⅛"	7'-5"	1'-6⅝"	14'-1"	7'-10⅝"	20'-11"	14'-8⅝"	27'-9"	21'-1⅝"	34'-7"	28'-0⅝"
	8'	7'-1⅝"	7'-8"	0'-11⅝"	14'-2"	6'-10⅛"	21'-0"	13'-8⅛"	27'-10"	20'-1⅛"	34'-8"	27'-0⅛"
7'	4'	3'-6"	8'-0"	4'-6"	15'-8"	12'-2"	23'-8"	19'-10"	31'-0"	27'-6"	38'-8"	35'-2"
	5'	4'-3⅜"	8'-0"	3'-8⅝"	15'-8"	11'-4⅜"	23'-8"	19'-0⅝"	31'-0"	26'-8⅜"	38'-8"	34'-4⅝"
	6'	5'-0⅝"	8'-2"	3'-1⅝"	15'-11"	10'-6⅛"	23'-11"	18'-7⅛"	31'-5"	26'-2⅛"	39'-2"	34'-1⅛"
	7'	6'-2⅛"	8'-5"	2'-0⅝"	16'-1"	9'-6⅝"	23'-11"	17'-8⅝"	31'-9"	25'-1⅝"	39'-7"	33'-0⅝"
	8'	7'-1⅝"	8'-8"	1'-0"	16'-2"	8'-6⅛"	24'-0"	16'-8⅛"	31'-10"	24'-1⅛"	39'-8"	32'-0⅛"
8'	4'	3'-6"	9'-0"	5'-6"	19'-0"	14'-2"	26'-8"	22'-10"	35'-0"	31'-6"	43'-8"	40'-2"
	5'	4'-3⅜"	9'-0"	4'-8⅝"	17'-11"	13'-7⅜"	26'-8"	22'-0⅝"	35'-5"	31'-1⅜"	44'-2"	39'-10⅝"
	6'	5'-0⅝"	9'-2"	4'-1⅝"	17'-11"	12'-10⅝"	26'-8"	21'-7⅛"	35'-5"	30'-5⅛"	44'-2"	39'-1⅛"
	7'	6'-2⅛"	9'-5"	3'-0⅝"	18'-1"	11'-10⅝"	26'-11"	20'-8⅝"	35'-9"	29'-4⅝"	44'-7"	38'-0⅝"
	8'	7'-1⅝"	9'-8"	2'-0"	18'-2"	10'-10"	27'-0"	19'-8"	35'-10"	28'-4"	44'-8"	37'-0"
9'	5'	4'-3⅜"	10'-0"	5'-0⅜"	19'-11"	15'-7⅜"	29'-8"	25'-4⅜"	39'-5"	35'-1⅜"	49'-2"	44'-10⅜"
	6'	5'-0⅝"	10'-2"	5'-2⅜"	20'-1"	15'-0⅝"	29'-11"	24'-10⅝"	39'-9"	34'-6⅜"	49'-7"	44'-1⅝"
	7'	6'-2⅛"	10'-5"	4'-0⅝"	20'-1"	13'-10⅝"	29'-11"	23'-9⅝"	39'-9"	33'-6⅝"	49'-7"	43'-1⅝"
	8'	7'-1⅝"	10'-8"	3'-0"	20'-2"	12'-10"	30'-0"	22'-8"	39'-10"	32'-6"	49'-8"	42'-0"
10'	5'	4'-3⅜"	11'-2"	6'-0⅜"	21'-11"	17'-7⅜"	32'-8"	28'-4⅜"	43'-5"	39'-1⅜"	54'-2"	49'-10⅜"
	6'	5'-0⅝"	11'-3"	6'-2⅜"	22'-1"	17'-0⅝"	32'-11"	27'-10⅝"	43'-9"	38'-6⅜"	54'-7"	49'-1⅝"
	7'	6'-2⅛"	11'-5"	5'-0⅝"	22'-1"	15'-10⅝"	32'-11"	26'-9⅝"	43'-9"	37'-6⅝"	54'-7"	48'-1⅝"
	8'	7'-1⅝"	11'-8"	4'-0"	22'-2"	14'-10"	33'-0"	25'-8"	43'-10"	36'-6"	54'-8"	47'-0"
11'	6'	5'-0⅝"	12'-4"	7'-3⅜"	24'-2"	19'-1⅝"	36'-0"	30'-11⅝"	47'-1"	42'-3⅜"		
	7'	6'-2⅛"	12'-6"	6'-1⅝"	24'-2"	17'-11⅝"	36'-0"	29'-10⅝"	47'-10"	41'-2⅝"		
	8'	7'-1⅝"	12'-8"	5'-0"	24'-2"	16'-10"	36'-0"	28'-8"	47'-10"	40'-6"		
12'	6'	5'-0⅝"	13'-0"	7'-3⅜"	26'-2"	19'-1⅝"	39'-0"	32'-10⅜"	51'-10"	45'-7⅜"		
	7'	6'-2⅛"	13'-0"	7'-1⅝"	26'-2"	19'-11⅝"	39'-0"	32'-10⅜"	51'-10"	45'-7⅜"		
	8'	7'-1⅝"	13'-0"	6'-0"	26'-2"	18'-10"	39'-0"	31'-8"	51'-10"	44'-6"		

QUANTITIES

CLEAR SPAN	CLEAR HEIGHT	THICKNESS OF WING AT HEADWALL	THICKNESS OF WING FOOTING	REINFORCING STEEL - LBS. 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.
4'	2'	6"	7"	108.0	4.50	5.96	6.42	7.38	8.34
	3'	6"	7"	169.4	6.26	7.21	8.17	9.13	10.09
	4'	6"	7"	259.6	8.33	9.28	10.24	11.20	12.16
	5'	6"	7"	357.8	10.72	11.68	12.64	13.60	14.56
	6'	7"	8"	583.1	14.55	15.53	16.52	17.51	18.49
5'	3'	6"	7"	169.4	6.97	7.68	8.79	9.96	11.12
	4'	6"	7"	259.6	8.54	9.70	10.87	10.03	12.20
	5'	6"	7"	357.8	10.94	12.10	13.26	14.43	15.59
	6'	7"	8"	583.1	14.77	15.96	17.15	18.34	19.54
	7'	7⅞"	8⅝"	1139.6	18.94	20.15	21.37	22.59	23.80
6'	3'	6"	7"	169.4	6.68	8.06	9.42	10.80	12.18
	4'	6"	7"	259.6	8.75	10.15	11.49	12.87	14.25
	5'	6"	7"	357.8	11.15	12.53	13.89	15.27	16.65
	6'	7"	8"	583.1	14.98	16.39	17.78	19.18	20.59
	7'	7⅞"	8⅝"	1139.6	19.15	20.58	22.00	23.43	24.86
	8'	8"	9"	1925.6	24.09	25.53	26.96	28.39	29.83
7'	4'	6"	7"	259.6	8.97	10.58	12.15	13.76	15.35
	5'	6"	7"	357.8	11.36	12.97	14.58	16.15	17.75
	6'	7"	8"	583.1	15.20	16.82	18.42	20.04	21.66
	7'	7⅞"	8⅝"	1139.6	19.38	21.02	22.68	24.28	25.92
	8'	8"	9"	1925.6	24.32	25.97	27.60	29.25	30.89
8'	4'	6"	7"	259.6	9.19	11.03	12.82	14.65	16.45
	5'	7"	7"	357.8	12.03	13.89	15.70	17.55	19.36
	6'	7"	8"	583.1	15.92	17.27	19.09	20.93	22.75
	7'	7⅞"	8⅝"	1139.6	19.59	21.46	23.30	25.16	26.99
	8'	8"	9"	1925.6	24.54	26.41	28.28	30.11	31.96
9'	5'	7"	7"	357.8	12.26	14.39	16.87	18.95	20.97
	6'	7⅞"	8"	583.1	15.94	18.04	20.09	22.19	24.23
	7'	7⅞"	8⅝"	1139.6	19.81	21.91	23.96	26.06	28.10
	8'	8"	9"	1925.6	24.76	26.86	28.91	31.00	33.05
10'	5'	7"	7"	357.8	12.49	14.80	17.05	19.24	21.52
	6'	7⅞"	8"	583.1	16.17	18.50	20.77	22.99	25.28
	7'	7⅞"	8⅝"	1139.6	20.04	22.37	24.64	26.87	29.15
	8'	8"	9"	1925.6	24.98	27.31	29.58	31.81	34.10
11'	6'	8"	8"	583.1	16.69	19.27	21.76	24.23	
	7'	8"	8⅝"	1139.6	20.64	23.22	25.71	28.18	
	8'	8"	9"	1925.6	25.19	27.77	30.27	32.74	
12'	6'	8"	8"	583.1	16.92	19.75	22.95	25.18	
	7'	8"	8⅝"	1139.6	20.87	23.69	26.90	29.18	
	8'	8"	9"	1925.6	25.42	28.25	30.96	33.69	

* For reinforcing steel in Headwalls and Aprons, See Details of Standard Barrel Sections for R.C. Box Culverts for the desired Span and Height.

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 wingwall, footings and sidewalls shall be only where shown on plans.

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-X1	R-200X-X1	R-300X-X1	R-400X-X1	R-500X-X1
R-100X-X2	R-200X-X2	R-300X-X2	R-400X-X2	
	R-200X-X3	R-300X-X3		

CLASS S CONCRETE

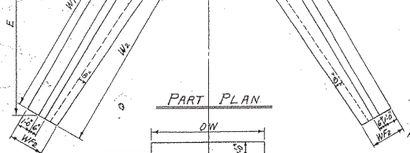
ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS

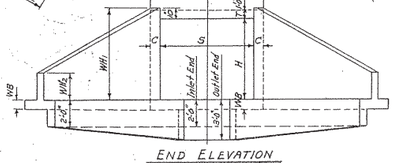
4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 3:1 SLOPES

SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES. — ALL DEPTHS OF COVER FOR H = 8'-0" OR LESS

STANDARD DRAWING NO. W-X003-1

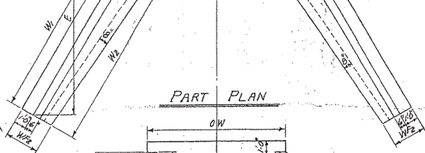


PART PLAN

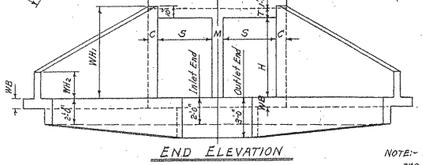


END ELEVATION

SINGLE BARREL CULVERT



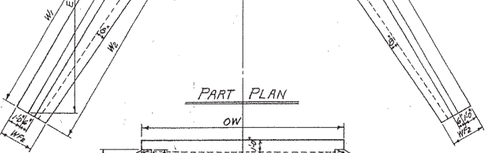
PART PLAN



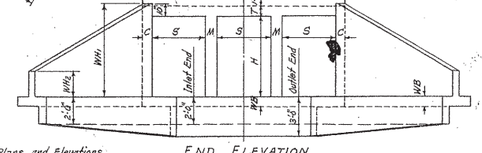
END ELEVATION

DOUBLE BARREL CULVERT

NOTE:- Plans and Elevations are not to scale.

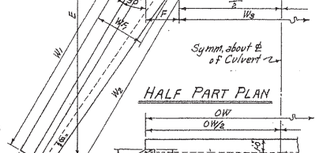


PART PLAN

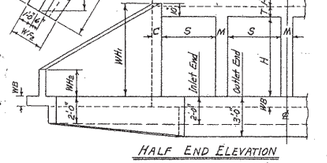


END ELEVATION

TRIPLE BARREL CULVERT

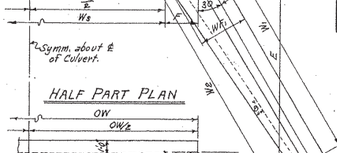


HALF PART PLAN

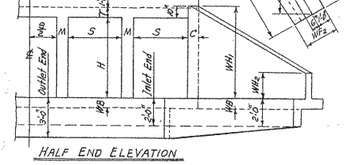


HALF END ELEVATION

QUADRUPLE BARREL CULVERT



HALF PART PLAN



HALF END ELEVATION

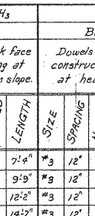
QUINTUPLE BARREL CULVERT

MEMBRANE:- A membrane waterproofing 12" wide, consisting of three mopings of waterproofing asphalt and two alternate layers of treated cotton fabric shall be applied to the back face of wing to cover the construction joints in wings.

BAR LIST FOR ONE WING - 4 REQUIRED

CLEAR HEIGHT	F1 Bent: In bottom of footing, bent up into back face of wing. One bar of each length. SIZE	SPACING	NO. REQ'D	LENGTHS VARY MIN.	LENGTHS VARY MAX.	X MIN.	X MAX.	Y MIN.	Y MAX.	F2 Bent: In bottom of footing, bent up into back face of wing. Alt. with F1 bars. SIZE	SPACING	NO. REQ'D	LENGTH	X	Y	F5 Straight: Longitudinal in top of wing footing heel. SIZE	NO. REQ'D	LENGTH	F4 Straight: Longitudinal in bottom of wing footing toe. SIZE	NO. REQ'D	LENGTH	H1 Straight: Horizontal in back face of wing. SIZE	SPACING	NO. REQ'D	LENGTH	H2 Straight: Horizontal in back face of wing. One bar of each length. SIZE	SPACING	NO. REQ'D	LENGTHS VARY MAX.	LENGTHS VARY MIN.	H3 Straight: In back face of wing at top - on slope. SIZE	NO. REQ'D	LENGTH	H4 Bent: Dowels thru construction joint at headwall. SIZE	SPACING	NO. REQ'D	LENGTH	X	QUANTITY REINFORCING STEEL PER WING LB.
H																																								
2'	#3	12"	8	1'-6"	3'-10"	0'-8"	1'-0"	0'-11"	2'-11"	—	—	—	—	—	—	#3	1	9'-8"	#3	2	8'-6"	#3	12"	1	7'-2"	#3	12"	2	2'-8"	1'-9"	—	—	—	#3	1	7'-9"	#3	12"	2	2'-8"	1'-9"	27.0
3'	#3	12"	10	2'-2"	5'-2"	0'-10"	1'-3"	1'-5"	4'-0"	—	—	—	—	—	—	#3	1	12'-0"	#3	2	11'-0"	#3	12"	1	9'-6"	#3	12"	2	7'-6"	4'-0"	#3	1	9'-9"	#3	12"	3	2'-8"	1'-9"	41.1
4'	#3	12"	13	2'-11"	6'-6"	0'-11"	1'-7"	1'-6"	5'-0"	—	—	—	—	—	—	#3	1	14'-9"	#3	3	13'-6"	#3	12"	1	11'-10"	#3	12"	3	10'-11"	4'-0"	#3	1	12'-2"	#3	12"	4	2'-8"	1'-9"	63.7
5'	#3	12"	15	3'-11"	7'-10"	1'-1"	1'-11"	1'-11"	6'-0"	#3	12"	4	3'-6"	1'-1"	2'-6"	#3	1	16'-8"	#3	3	16'-0"	#3	12"	2	14'-2"	#3	12"	3	10'-11"	4'-0"	#3	1	14'-7"	#3	12"	5	2'-8"	1'-9"	89.5
6'	#4	12"	17	3'-6"	9'-3"	1'-2"	2'-3"	2'-5"	7'-1"	#3	12"	4	4'-6"	1'-4"	3'-3"	#3	1	19'-0"	#3	3	18'-6"	#3	12"	2	16'-6"	#3	12"	4	14'-5"	4'-0"	#3	1	17'-0"	#3	12"	6	2'-8"	1'-9"	145.8
7'	#4	12"	20	3'-9"	10'-9"	1'-3"	2'-9"	2'-7"	8'-1"	#4	12"	7	5'-6"	1'-7"	4'-0"	#4	1	21'-4"	#4	4	21'-0"	#4	12"	2	18'-9"	#4	12"	5	17'-9"	4'-0"	#4	1	19'-5"	#4	12"	7	3'-6"	1'-9"	283.7
8'	#4	12"	22	4'-4"	12'-3"	1'-5"	3'-2"	3'-0"	9'-2"	#4	12"	10	6'-6"	1'-10"	4'-9"	#4	1	23'-8"	#4	4	23'-6"	#4	12"	3	21'-1"	#4	12"	5	17'-9"	4'-0"	#4	1	21'-10"	#4	12"	8	3'-6"	1'-9"	356.4

BAR BENDING DIAGRAMS



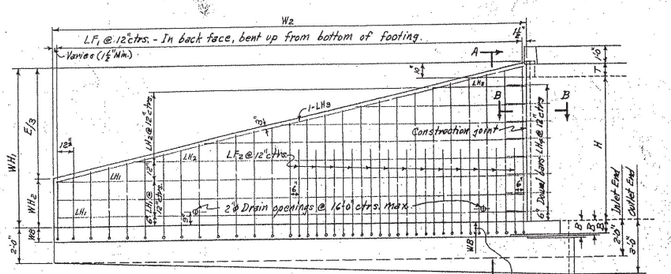
NOTE:- Dimensions are to bar centers.

REVISIONS:- Membrane added. 5-10-66 W.C.H.

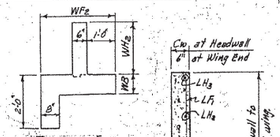
Designed By:- W.C.H. 8-20-62. Checked By:- RMS 1-9-63
Drawn By:- W.C.H. 12-4-62. Checked By:- RMS 1-31-63
Quantities By:- W.C.H. 12-14-62. Checked By:- RMS 3-29-63
Rechecked By:-

MYLAR

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.				
JOB No.					

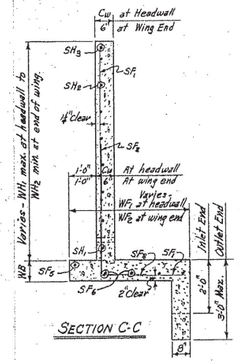


REAR ELEVATION OF LONG WING - 15° SKEW RIGHT FORWARD
SHOWING BACK FACE REINFORCING

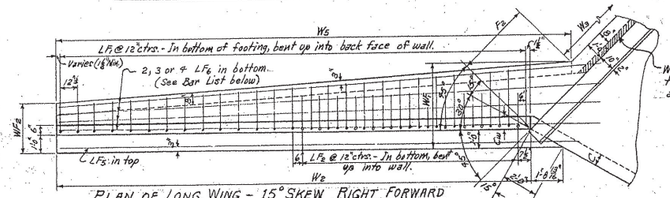


TYPICAL END VIEW OF WING

SECTION A-A



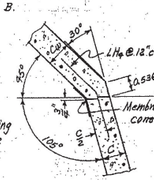
SECTION C-C



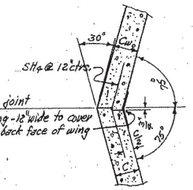
PLAN OF LONG WING - 15° SKEW RIGHT FORWARD
SHOWING FOOTING REINFORCING.

When B is more than WB, the sheded portion of the apron shall be made the same thickness as the bottom slab B.

NOTE:- Payment for membrane waterproofing and roofing felt to be included in the price bid for Class S Concrete.

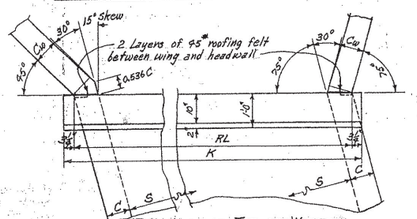


SECTION B-B

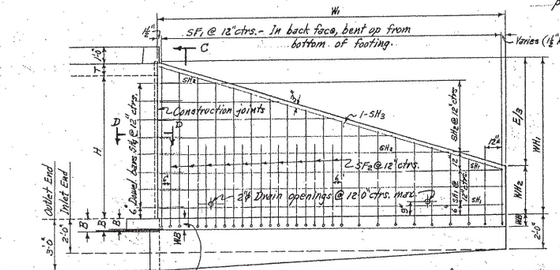


SECTION D-D

SECTIONS THRU CONSTRUCTION JOINTS



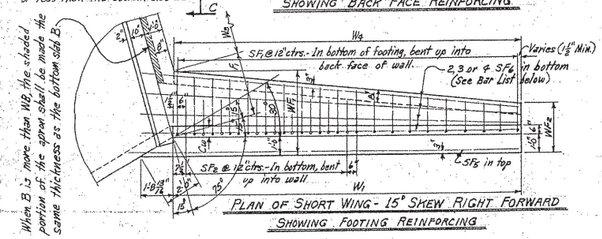
DETAILS AT TOP OF WINGS
15° SKEW RIGHT FORWARD



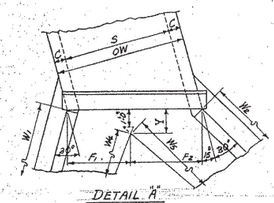
WB may be more, equal to, or less than the bottom slab B

REAR ELEVATION OF SHORT WING - 15° SKEW RIGHT FORWARD
SHOWING BACK FACE REINFORCING

When B is more than WB the sheded portion of the apron shall be made the same thickness as the bottom slab B.



PLAN OF SHORT WING - 15° SKEW RIGHT FORWARD
SHOWING FOOTING REINFORCING



DETAIL "A"

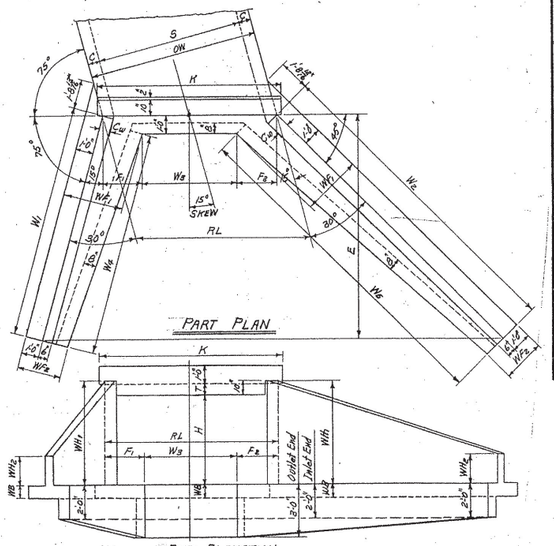
TABLE "A" - DIMENSIONS FOR DETAIL "A"

S	H	F1	F2	W4	W5	W3	Y
5'	7'	3'-0"	3'-5⅝"	16'-10⅛"	25'-0⅜"	0"	1'-0⅛"
6'	8'	3'-6"	4'-1⅜"	19'-0⅛"	28'-3⅞"	0"	1'-1"

REGULAR WING DIMENSIONS - 3:1 SLOPES

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	FOOTING EXTENSION PARALLEL WITH HEADWALL SHORT WING	FOOTING EXTENSION PARALLEL WITH HEADWALL LONG WING	PERPENDICULAR DIST. FROM HEAD TO END OF WING	LENGTHS OF WINGWALLS SHORT WING	LENGTHS OF WINGWALLS LONG WING	INSIDE FOOTING DIMENSIONS SHORT WING	INSIDE FOOTING DIMENSIONS LONG WING	* QUANTITY PER WING CLASS S CONCRETE INLET END SHORT WING	INLET END LONG WING	OUTLET END SHORT WING	OUTLET END LONG WING
H	WB	Cw	WH1	WH2	WF1	WF2	F1	F2	E	W1	W2	W4	W5	Cu.Yd.	Cu.Yd.	Cu.Yd.	Cu.Yd.
2'	7"	6"	2'-10"	0'-8"	2'-4"	2'-0"	1'-1⅜"	0'-10⅝"	6'-6"	6'-8⅜"	9'-2⅝"	6'-0⅝"	9'-1⅝"	0.789	1.094	0.876	1.212
3'	7"	6"	3'-10"	1'-0"	2'-8"	2'-1⅝"	1'-5⅝"	1'-1⅝"	8'-6"	8'-9⅞"	12'-0⅝"	8'-2⅝"	12'-3⅛"	1.186	1.650	1.300	1.808
4'	7"	6"	4'-10"	1'-4"	3'-0"	2'-3"	1'-9⅜"	1'-1'0"	10'-6"	10'-10⅝"	14'-10⅛"	10'-4⅝"	15'-5⅛"	1.656	2.305	1.797	2.502
5'	7'	6"	5'-10"	1'-8"	3'-4"	2'-4½"	2'-1⅜"	2'-3⅜"	12'-6"	12'-11⅛"	17'-8⅛"	12'-6⅝"	18'-7⅛"	2.196	3.059	2.363	3.295
		7"	5'-10"	1'-8"	3'-4"	2'-6⅝"	2'-1⅜"	2'-3⅜"	12'-6"	12'-11⅛"	17'-8⅛"	12'-6⅝"	18'-7⅛"	2.287	3.188	2.955	3.429
6'	8"	7"	6'-10"	2'-0"	3'-8"	2'-6"	2'-5⅜"	2'-9⅜"	14'-6"	15'-0⅛"	20'-6"	14'-8⅛"	21'-9"	3.052	4.242	3.296	4.517
		7½"	6'-10"	2'-0"	3'-8"	2'-6"	2'-5⅜"	2'-9⅜"	14'-6"	15'-0⅛"	20'-6"	14'-8⅛"	21'-9"	3.114	4.329	3.309	4.605
		8"	6'-10"	2'-0"	3'-8"	2'-6"	2'-5⅜"	2'-9⅜"	14'-6"	15'-0⅛"	20'-6"	14'-8⅛"	21'-9"	3.177	4.417	3.371	4.693
@ 7'	8⅝"	7½"	7'-10"	2'-8"	4'-2"	2'-7⅝"	3'-0⅞"	3'-6⅝"	16'-6"	17'-1"	23'-4"	16'-10⅜"	25'-1"	3.998	5.560	4.220	5.877
		8"	7'-10"	2'-8"	4'-2"	2'-7⅝"	3'-0⅞"	3'-5⅜"	16'-6"	17'-1"	23'-4"	16'-10⅜"	25'-1"	4.079	5.675	4.301	5.991
@ 8'	9"	8"	8'-10"	2'-8"	4'-8"	2'-9"	3'-6⅝"	4'-2⅜"	18'-6"	19'-1⅜"	26'-2"	19'-1⅛"	28'-5"	5.111	7.111	5.360	7.470

* Quantity per wing does not include headwall or that portion of apron or toewall for the length W3.
@ See Table "A" for special values of F1 & F2 and W4 & W5 for Single 5'x7' and 6'x8' Box Culverts.



PART PLAN

END ELEVATION

SINGLE BARREL CULVERT - 15° SKEW RIGHT FORWARD
Details of Culvert with 15° Skew Left Forward is reversed, see Drwg. No. W-X15

TYPICAL WING DETAILS

NOTE:- For remainder of General Plans and Elevations of Single, Double, Triple, Quadruple and Quintuple Span Culverts, see Std. Drawing No. W-X15.
For values of RL, K, and W3 for each box, see the above Std. also.

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 construction joints in wings.

QUANTITIES

CLEAR SPAN	CLEAR HEIGHT	THICKNESS OF WING AT HEADWALL	THICKNESS OF WING FOOTING	REINFORCING STEEL - LBS. 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.
4'	2'	6"	7"	117	4.79	5.78	6.77	7.77	8.76
	3'	6"	7"	176	6.65	7.64	8.63	9.63	10.62
	4'	6"	7"	267	8.85	9.84	10.84	11.83	12.82
	5'	6"	7"	379	11.40	12.38	13.38	14.37	15.36
	6'	7"	8"	626	15.95	16.96	17.98	18.51	19.53
5'	3'	6"	7"	176	6.87	8.07	9.28	10.48	11.69
	4'	6"	7"	267	9.08	10.28	11.48	12.69	13.90
	5'	6"	7"	379	11.41	12.81	14.02	15.23	16.44
	6'	7"	8"	626	15.67	16.90	18.14	19.38	20.61
	7'	7½"	8½"	1210	20.11	21.36	22.62	23.88	25.14
6'	3'	6"	7"	176	7.09	8.52	9.92	11.36	12.78
	4'	6"	7"	267	9.29	10.73	12.13	13.54	14.98
	5'	6"	7"	379	11.83	13.26	14.67	16.10	17.53
	6'	7"	8"	626	15.89	17.35	18.79	20.25	21.70
	7'	7½"	8½"	1210	20.33	21.81	23.28	24.76	26.24
	8'	8"	9"	1533	25.56	27.05	28.53	30.02	31.50
7'	4'	6"	7"	267	9.52	11.18	12.81	14.47	16.09
	5'	6"	7"	379	12.05	13.72	15.35	17.01	18.63
	6'	7"	8"	626	16.12	17.80	19.45	21.13	22.78
	7'	7½"	8½"	1210	20.56	22.24	23.94	25.64	27.33
	8'	8"	9"	1533	25.80	27.50	29.20	30.90	32.60
8'	4'	6"	7"	267	9.75	11.65	13.51	15.41	17.23
	5'	7"	7"	379	12.74	14.68	16.55	18.47	20.31
	6'	7"	8"	626	16.34	18.26	20.14	22.06	23.90
	7'	7½"	8½"	1210	20.78	22.72	24.62	26.55	28.42
	8'	8"	9"	1533	26.03	27.96	29.86	31.80	33.71
9'	5'	7"	7"	379	12.99	15.15	17.25	19.40	21.45
	6'	7½"	8"	626	16.89	18.07	21.19	23.34	25.42
	7'	7½"	8½"	1210	21.01	23.19	25.31	27.48	29.58
	8'	8"	9"	1533	26.25	28.42	30.55	32.72	34.78
10'	5'	7"	7"	379	18.23	16.62	17.95	20.24	22.59
	6'	7½"	8"	626	17.18	19.54	21.89	24.20	26.56
	7'	7½"	8½"	1210	21.44	23.66	26.01	28.32	30.68
	8'	8"	9"	1533	26.48	28.89	31.25	33.56	35.92
11'	6'	8"	8"	626	17.67	20.34	22.92	25.48	——
	7'	8"	8½"	1210	21.88	24.55	27.13	29.69	——
	8'	8"	9"	1533	26.70	29.37	31.96	34.52	——
12'	6'	8"	8"	626	17.91	20.84	23.44	26.96	——
	7'	8"	8½"	1210	22.11	25.04	27.85	30.67	——
	8'	8"	9"	1538	26.93	29.86	32.67	35.49	——

@ For reinforcing steel in Headwalls and Aprons, see Drawings listed below.

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 wingwall, footings and sidewalls shall be only where shown on plans.
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 #/□"

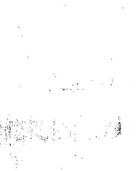
NOTE:-
This drawing to be used in conjunction with Std. Barrel Sections, Drawing Nos.

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-115X-0	R-215X-0	R-315X-0	R-415X-0	R-515X-0
R-115X-1	R-215X-1	R-315X-1	R-415X-1	R-515X-1
	R-215X-2	R-315X-2		

BAR LIST FOR ONE SHORT AND ONE LONG WING - 2 EACH REQUIRED

CLEAR HEIGHT H	WING LOCATION	SF1 & LF1 BENT: In bottom of footing, bent up into back face of wing. One bar of each length. SIZE	SPACING	NO. REQD	LENGTHS VARY MIN.	LENGTHS VARY MAX.	X MIN.	X MAX.	Y MIN.	Y MAX.	SF2 & LF2 BENT: In bottom of footing, bent up into back face of wing. Alt. with F1 bars. SIZE	SPACING	NO. REQD	LENGTH	X	Y	SF3 & LF3 STRAIGHT: Longitudinal in top of wing footing heel. SIZE	NO. REQD	LENGTH	SF4 & LF4 STRAIGHT: Longitudinal in bottom of wing footing toe. SIZE	NO. REQD	LENGTH	SH1 & LH1 STRAIGHT: Horizontal in back face of wing. SIZE	SPACING	NO. REQD	LENGTH	SH2 & LH2 STRAIGHT: Horizontal in back face of wing. One bar of each length. BAR	SPACING	NO. REQD	LENGTHS VARY MAX.	LENGTHS VARY MIN.	SH3 & LH3 STRAIGHT: In back face of wing at top - on slope. SIZE	NO. REQD	LENGTH	SH4 & LH4 BENT: Dowels thru construction joint at headwall. SIZE	SPACING	NO. REQD	LENGTH	X
2'	Short	#3	12"	7	1'-7"	3'-11"	0'-8"	1'-0"	1'-0"	3'-0"	—	—	—	—	—	—	#3	1	9'-2"	#3	2	7'-10"	#3	18"	1	6'-5"	#3	18"	1'	—	3'-6"	#3	1	6'-10"	#3	12"	2	2'-8"	1'-4"
	Long	#3	12"	10	1'-7"	3'-11"	0'-8"	1'-0"	0'-10"	3'-0"	—	—	—	—	—	—	#3	1	11'-8"	#3	2	10'-6"	#3	18"	1	8'-1"	#3	12"	1	—	4'-8"	#3	1	9'-1"	#3	12"	2	n	n
3'	Short	#3	12"	9	2'-2"	5'-3"	0'-10"	1'-4"	1'-5"	4'-0"	—	—	—	—	—	—	#3	1	11'-8"	#3	2	10'-6"	#3	18"	1	8'-1"	#3	12"	2	6'-1"	3'-6"	#3	1	9'-10"	#3	12"	3	n	n
	Long	#3	12"	13	1'-11"	5'-2"	0'-10"	1'-3"	1'-3"	4'-0"	—	—	—	—	—	—	#3	1	13'-9"	#3	3	12'-5"	#3	18"	1	10'-7"	#3	12"	3	9'-8"	3'-6"	#3	1	11'-2"	#3	12"	4	n	n
4'	Short	#3	12"	11	2'-7"	6'-7"	0'-11"	1'-8"	1'-9"	5'-0"	—	—	—	—	—	—	#3	1	13'-9"	#3	3	12'-5"	#3	18"	1	10'-7"	#3	12"	3	9'-8"	3'-6"	#3	1	11'-2"	#3	12"	4	n	n
	Long	#3	12"	15	2'-6"	6'-6"	0'-11"	1'-7"	1'-7"	5'-0"	—	—	—	—	—	—	#3	1	15'-5"	#3	3	14'-4"	#3	18"	1	12'-8"	#3	12"	3	11'-3"	4'-2"	#3	1	13'-6"	#3	12"	5	n	n
5'	Short	#3	12"	13	3'-1"	7'-11"	1'-1"	2'-0"	2'-1"	6'-0"	#3	12"	4	3'-6"	1'-1"	2'-6"	#3	1	15'-5"	#3	3	14'-4"	#3	18"	1	12'-8"	#3	12"	3	11'-3"	4'-2"	#3	1	13'-6"	#3	12"	5	n	n
	Long	#3	12"	18	3'-0"	7'-10"	1'-1"	2'-0"	2'-0"	6'-0"	#3	12"	5	3'-6"	1'-1"	2'-6"	#3	1	17'-6"	#3	3	16'-6"	#3	18"	2	14'-9"	#3	12"	4	12'-9"	3'-6"	#3	1	15'-6"	#3	12"	6	n	n
6'	Short	#4	12"	16	3'-8"	9'-4"	1'-2"	2'-4"	2'-8"	7'-1"	#3	12"	4	4'-6"	1'-4"	3'-2"	#3	1	17'-6"	#3	3	16'-6"	#3	18"	2	14'-9"	#3	12"	4	12'-9"	3'-6"	#3	1	15'-6"	#3	12"	6	n	n
	Long	#4	12"	21	3'-5"	9'-3"	1'-2"	2'-3"	2'-4"	7'-1"	#3	12"	5	4'-6"	1'-4"	3'-2"	#3	1	23'-0"	#3	3	22'-1"	#3	18"	2	20'-2"	#3	12"	4	17'-5"	4'-8"	#3	1	20'-9"	#3	12"	6	2'-8"	1'-4"
7'	Short	#4	12"	18	3'-9"	10'-10"	1'-3"	2'-10"	2'-7"	8'-1"	#4	12"	7	5'-6"	1'-7"	4'-0"	#4	1	19'-7"	#4	4	18'-9"	#4	12"	2	16'-10"	#4	12"	5	15'-10"	3'-6"	#4	1	17'-8"	#4	12"	7	3'-6"	1'-9"
	Long	#4	12"	24	3'-10"	10'-8"	1'-3"	2'-8"	2'-8"	8'-1"	#4	12"	9	5'-6"	1'-7"	4'-0"	#4	1	25'-10"	#4	4	26'-10"	#4	12"	2	23'-1"	#4	12"	5	21'-8"	4'-8"	#4	1	23'-8"	#4	12"	7	n	n
8'	Short	#4	12"	20	4'-2"	12'-5"	1'-5"	3'-4"	3'-0"	9'-2"	#4	12"	10	6'-6"	1'-10"	4'-9"	#4	1	23'-8"	#4	4	30'-3"	#4	12"	3	25'-11"	#4	12"	5	21'-8"	4'-8"	#4	1	26'-7"	#4	12"	8	3'-6"	1'-9"
	Long	#4	12"	27	4'-4"	12'-8"	1'-5"	3'-2"	3'-0"	9'-2"	#4	12"	13	6'-6"	1'-10"	4'-9"	#4	1	28'-8"	#4	4	30'-3"	#4	12"	3	25'-11"	#4	12"	5	21'-8"	4'-8"	#4	1	26'-7"	#4	12"	8	n	n

BAR BENDING DIAGRAM



QUANTITY: REINFORCING STEEL PER WING - LBS. SHORT WING	LONG WING
24.9	33.4
37.7	50.3
57.3	76.4
81.1	108.4
134.8	178.1
259.5	345.2
328.0	438.3

Note:- Bars for short wing shall be marked with prefix letter "S", while those for long wing shall be marked with letter "L".

REVISIONS:- Membrane Added. 5-10-66 W.C.H.

Designed By:- W.C.H. 5-13-63 Checked By:- [illegible] 5-17-63
Drawn By:- W.C.H. 6-20-63 Checked By:- [illegible]
Quantities By:- W.C.H. 9-23-63 Checked By:- [illegible]

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF STANDARD WINGS
FOR
REINFORCED CONCRETE BOX CULVERTS
15° SKEW

4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS
SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES
3:1 SLOPES
ALL DEPTHS OF COVER FOR H = 8'-0" OR LESS

STANDARD DRAWING NO. W-X153-1