DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
2/26/24		6	ARK.	110706	1	45
		BOAT GUNWALE SLASH STR. & APPRS. (S)				

ARKANSAS DEPARTMENT OF TRANSPORTATON
CONSTRUCTION PLANS FOR STATE HIGHWAY

BOAT GUNWALE SLASH
STR. & APPRS. (S)

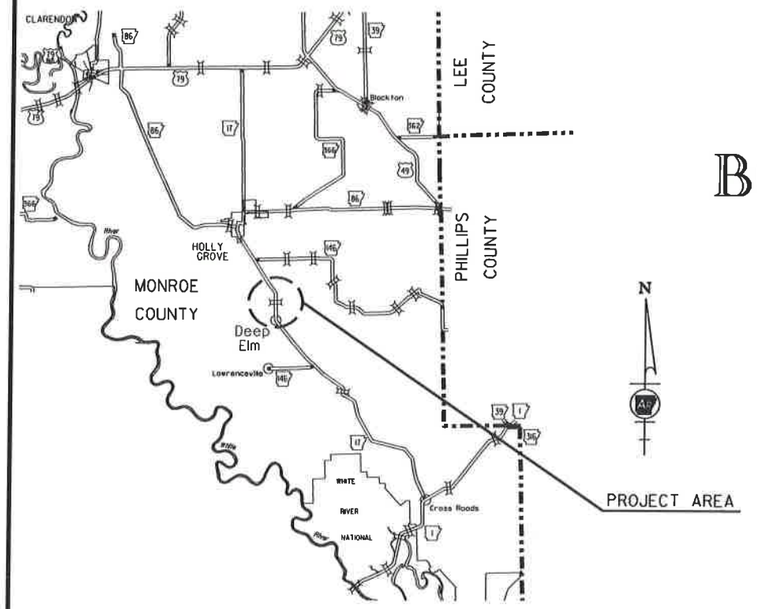
MONROE COUNTY

ROUTE 17 SECTION 1

JOB 110706

FED. AID PROJ. BFP-NHPP-0048(39)

NOT TO SCALE



VICINITY MAP

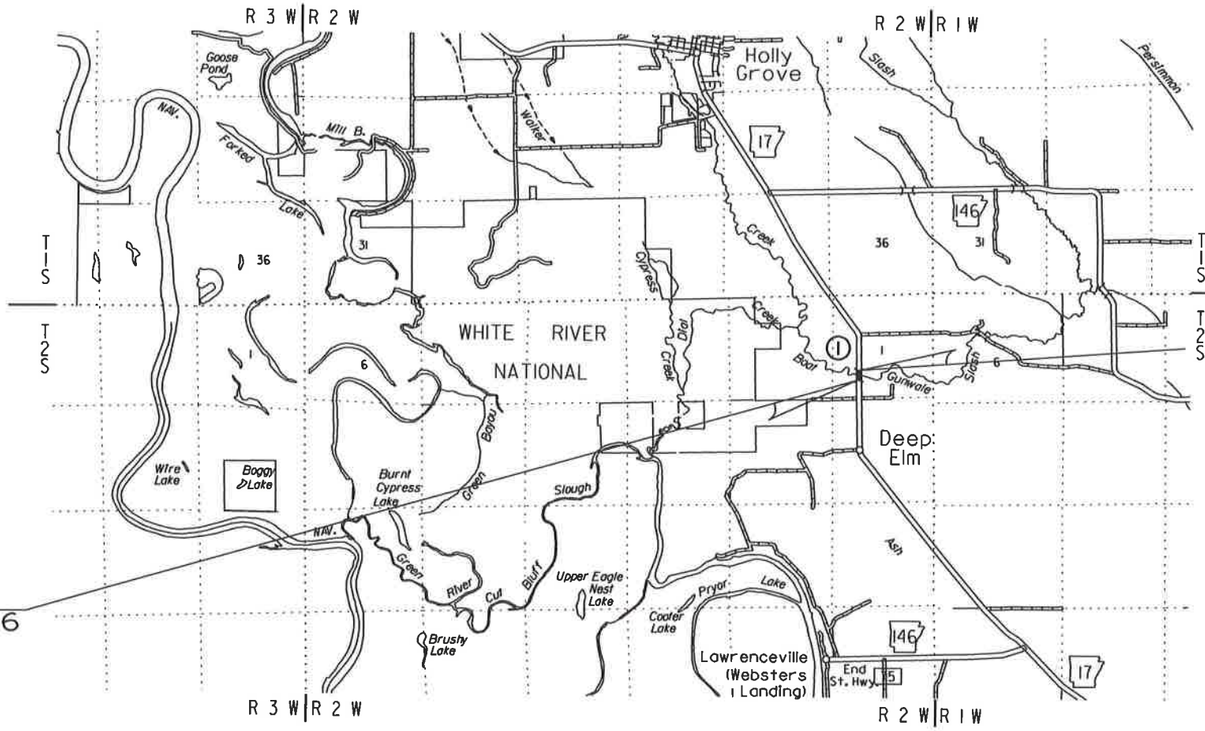
ARK. HWY. DIST. NO. 1

DESIGN TRAFFIC DATA

DESIGN YEAR	2044
2024 ADT	450
2044 ADT	530
2044 DHV	58
DIRECTIONAL DISTRIBUTION	0.60
TRUCKS	13%
DESIGN SPEED	55 MPH

BRIDGE DATA

(1) STA. 106+91.50 BRIDGE END
BRIDGE NO. 07603
119'-0" PRECAST CONCRETE BEAM UNIT
(39.5'-40'-39.5')
30'-0" CLEAR ROADWAY
119'-0" TOTAL LENGTH
STA. 108+10.50 BRIDGE END
Q25 = 1620 CFS
& D.A. = 35.7 SQ. MI.



APPROVED

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 14276
JARED D. WILEY

CHIEF ENGINEER - PRECONSTRUCTION

MAR 27 2024

	BEGIN PROJECT	MID-POINT OF PROJECT	END PROJECT
LATITUDE	N 34°32'52"	N 34°32'57"	N 34°33'02"
LONGITUDE	W 91°10'28"	W 91°10'27"	W 91°10'27"

LENGTH OF PROJECT CALCULATED ALONG C.L.

GROSS LENGTH OF PROJECT			960.00	FEET OR	0.182	MILES
NET	:	ROADWAY	841.00	:	0.159	MILES
NET	:	BRIDGES	119.00	:	0.023	MILES
NET	:	PROJECT	960.00	:	0.182	MILES

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DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	2	45
		INDEX OF SHEETS AND STANDARD DRAWINGS				

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

Smith, Trinity D.
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INDEX OF SHEETS

BRIDGE STANDARD DRAWINGS

DRWG.NO.	TITLE	DATE
55000	STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS	02-27-14
55010	STANDARD DETAILS FOR TYPE D BRIDGE NAME PLATE	04-14-23
55021	STANDARD DETAILS FOR CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS	03-24-16
55040E	STANDARD DETAILS FOR TYPE E APPROACH SLAB	02-27-14
55070	STANDARD DETAILS FOR BRIDGE TRAFFIC RAIL TYPE SSTR36	09-27-22

ROADWAY STANDARD DRAWINGS

DRWG.NO.	TITLE	DATE
DR-2	DETAILS OF DRIVEWAYS & STREET TURNOUTS	05-19-22
GR-6	GUARDRAIL DETAILS	05-19-22
GR-7	GUARDRAIL DETAILS	11-07-19
GR-8	GUARDRAIL DETAILS	11-07-19
GR-9	GUARDRAIL DETAILS	11-07-19
GR-10	GUARDRAIL DETAILS	11-07-19
GR-11	GUARDRAIL DETAILS	11-07-19
GR-12	GUARDRAIL DETAILS	05-14-20
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
SE-2	TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC	11-07-19
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
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INDEX OF SHEETS AND STANDARD DRAWINGS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
2/26/24		6	ARK.	110706	3	45
7/24/24						
9/4/24		GOVERNING SPECS. AND GENERAL NOTES				

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

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 - NOTICE 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
102-3_____ PREQUALIFICATION OF BIDDERS
103-2_____ CONTACT INFORMATION FOR MOTORIST DAMAGE CLAIMS
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
307-2_____ CEMENT TREATED BASE COURSE
308-2_____ CEMENT STABILIZED CRUSHED STONE BASE COURSE
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
409-2_____ ASPHALT LABORATORY FACILITY
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
416-1_____ RECYCLED ASPHALT PAVEMENT
501-3_____ PORTLAND CEMENT CONCRETE PAVEMENT
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)
606-1_____ PIPE CULVERTS FOR SIDE DRAINS
617-1_____ GUARDRAIL TERMINAL (TYPE 2)
617-2_____ GUARDRAIL DELINEATORS
620-1_____ MULCH COVER
800-1_____ STRUCTURES
802-3_____ CONCRETE FOR STRUCTURES
802-5_____ CONCRETE FOR STRUCTURES
804-2_____ REINFORCING STEEL FOR STRUCTURES
JOB 110706__ BIDDING REQUIREMENTS AND CONDITIONS
JOB 110706__ BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 110706__ BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 110706__ BUY AMERICA - CONSTRUCTION MATERIALS
JOB 110706__ CARGO PREFERENCE ACT REQUIREMENTS
JOB 110706__ CLASS C FLY ASH IN PORTLAND CEMENT CONCRETE PAVEMENT AND CLASS S(AE) CONCRETE
JOB 110706__ COLD MILLING – COUNTY PROPERTY
JOB 110706__ CONCRETE BRIDGE DECK CURING AND SURFACE TREATMENT RESTRICTIONS
JOB 110706__ CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 110706__ DESIGN AND QUALITY CONTROL ASPHALT MIXTURES
JOB 110706__ DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB 110706__ FLEXIBLE BEGINNING OF WORK – CALENDAR DAY CONTRACT
JOB 110706__ GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 110706__ LIQUIDATED DAMAGES PROCEDURE FOR BID LETTINGS
JOB 110706__ MANDATORY ELECTRONIC CONTRACT
JOB 110706__ MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB 110706__ NESTING SITES OF MIGRATORY BIRDS
JOB 110706__ PARTNERING REQUIREMENTS
JOB 110706__ PERCENT AIR VOIDS AND NDESIGN FOR ACHM SURFACE MIX DESIGNS
JOB 110706__ PLASTIC PIPE
JOB 110706__ PRESTRESSED CONCRETE MEMBERS
JOB 110706__ PRICE ADJUSTMENT FOR ASPHALT BINDER
JOB 110706__ PRICE ADJUSTMENT FOR FUEL
JOB 110706__ PROHIBITION OF CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT
JOB 110706__ SECTION 404 NATIONWIDE 23 PERMIT REQUIREMENTS
JOB 110706__ SHORING
JOB 110706__ SHORING FOR CULVERTS
JOB 110706__ SOIL STABILIZATION
JOB 110706__ STORM WATER POLLUTION PREVENTION PLAN
JOB 110706__ SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 110706__ UTILITY ADJUSTMENTS
JOB 110706__ VALUE ENGINEERING
JOB 110706__ WARM MIX ASPHALT

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.

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DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	4	45
		TYPICAL SECTIONS OF IMPROVEMENT				

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

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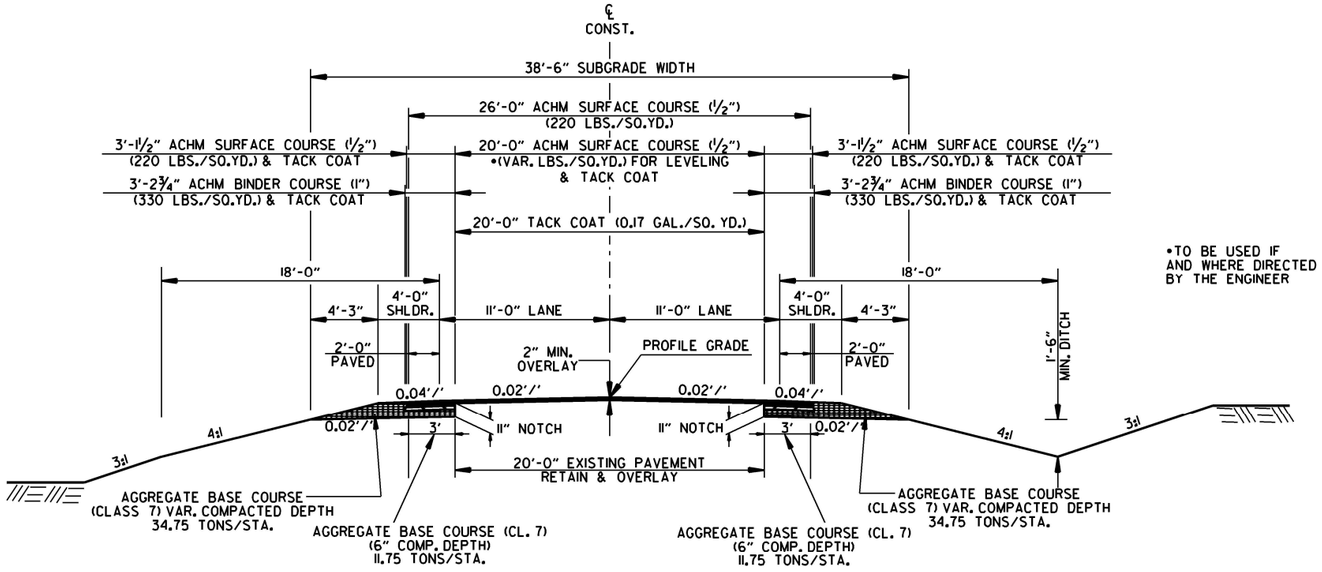
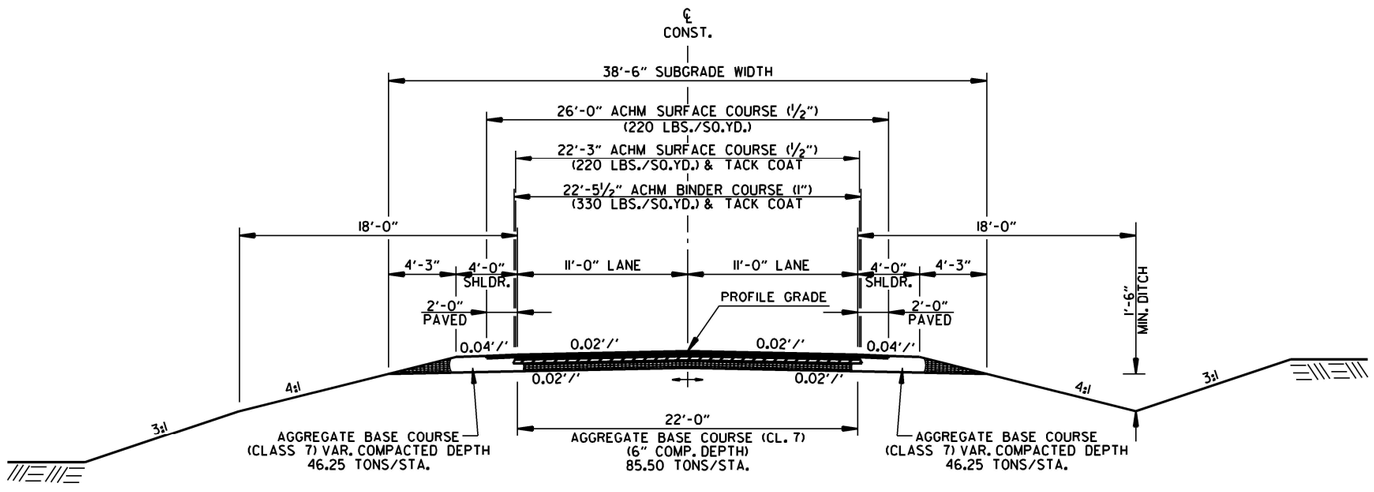


NOTCH, WIDEN, AND OVERLAY SECTION

STA. 102+75.00 TO STA. 106+69.33
STA. 108+32.67 TO STA. 112+35.00



FULL DEPTH SECTION

STA. 106+69.33 TO STA. 106+91.50
STA. 108+10.50 TO STA. 108+32.67

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.

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

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

WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, THE FIRST LIFT OF ACHM SURFACE COURSE (1/2") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.

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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.	110706	5	45
		TYPICAL SECTIONS OF IMPROVEMENT				

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

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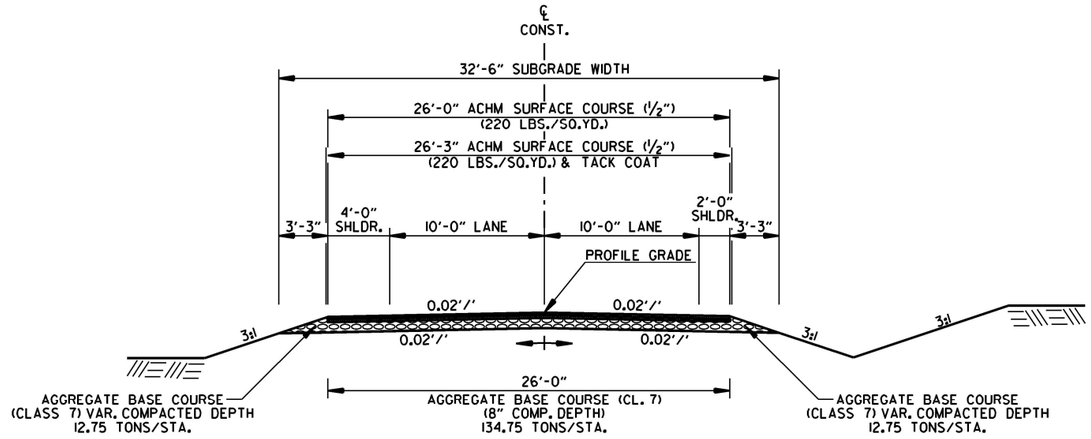
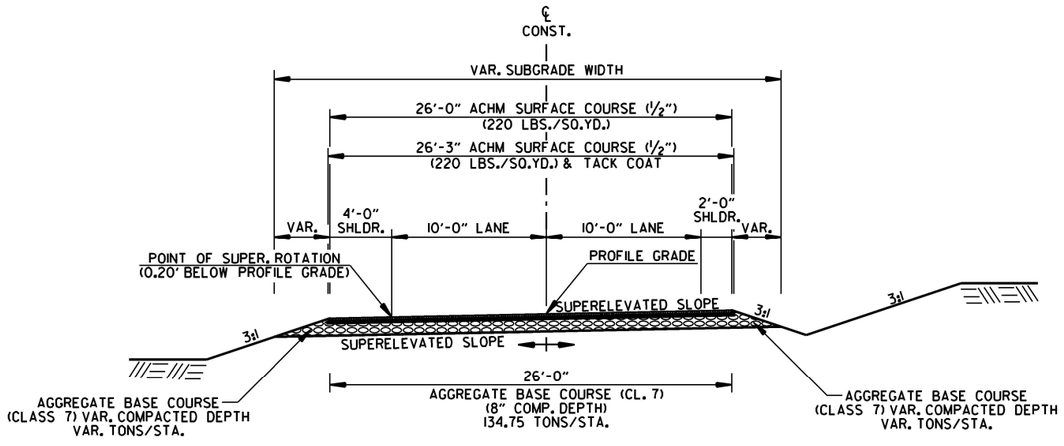


DETOUR - FULL DEPTH SECTION
STA. 202+75.00 TO STA. 204+63.16
STA. 210+45.51 TO STA. 212+46.74



DETOUR - FULL DEPTH
SUPERELEVATION SECTION
STA. 204+63.16 TO STA. 210+45.51

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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R110706.DGN

TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	6	45
		SPECIAL DETAILS				

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

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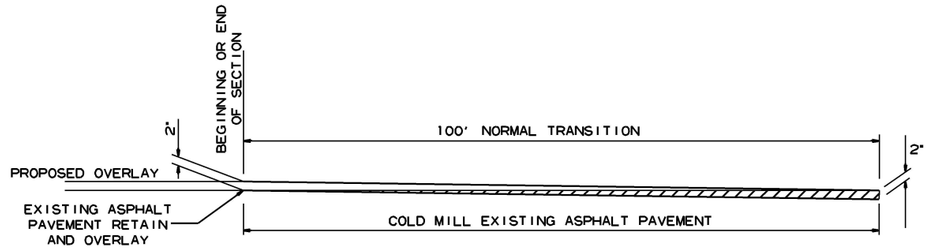
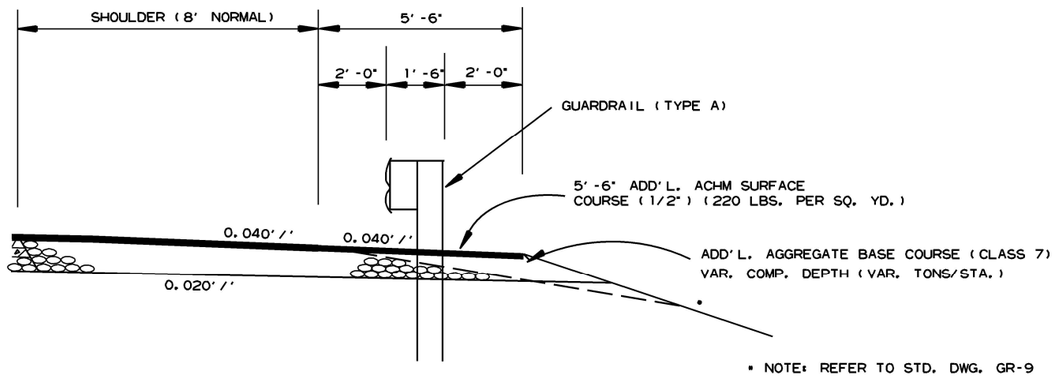
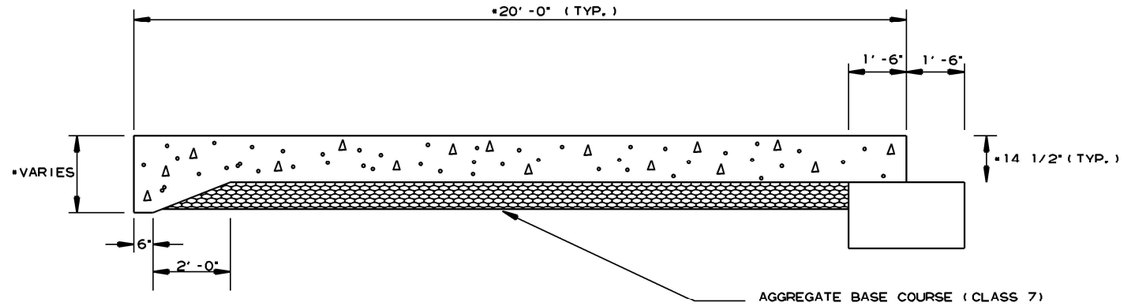


DETAIL FOR TRANSITIONS



* NOTE: REFER TO STD. DWG. GR-9 AND CROSS SECTIONS FOR SLOPE REQUIREMENTS BEHIND GUARDRAIL.

WIDENING FOR GUARDRAIL



* SEE APPROACH SLAB DETAILS IN BRIDGE DRAWINGS

SECTION OF APPROACH SLAB

RD38049 7/22/2022
ROADWAY SPECIAL DETAILS.DGN

SPECIAL DETAILS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	7	45
		SPECIAL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
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TRINITY D. SMITH

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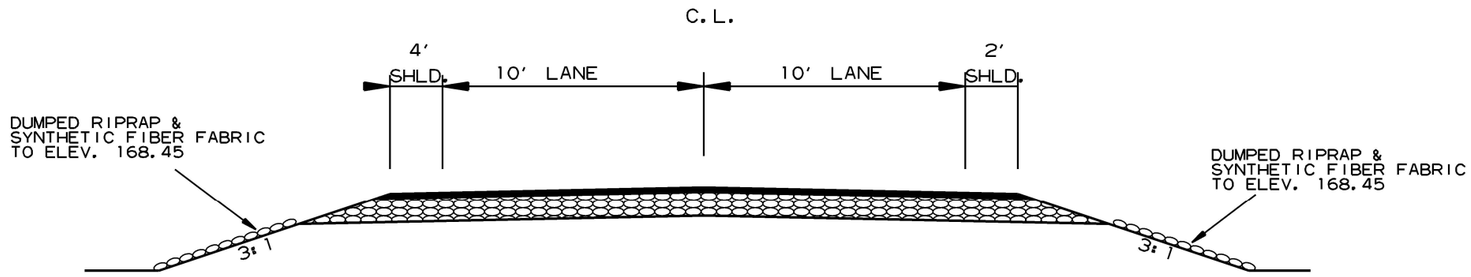
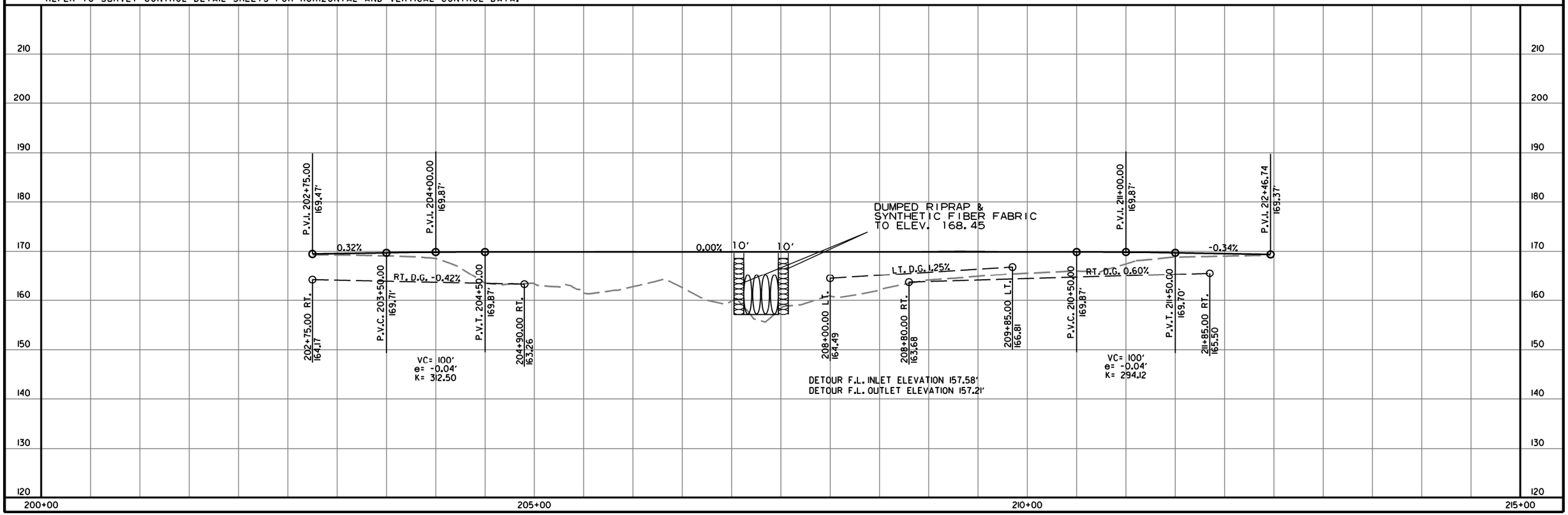


TYPICAL SECTIONS OF IMPROVEMENT - HWY. 17 DETOUR
STA. 207+30

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



BM43071 5/26/2021
R110706.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	8	45

TEMPORARY EROSION CONTROL DETAILS

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

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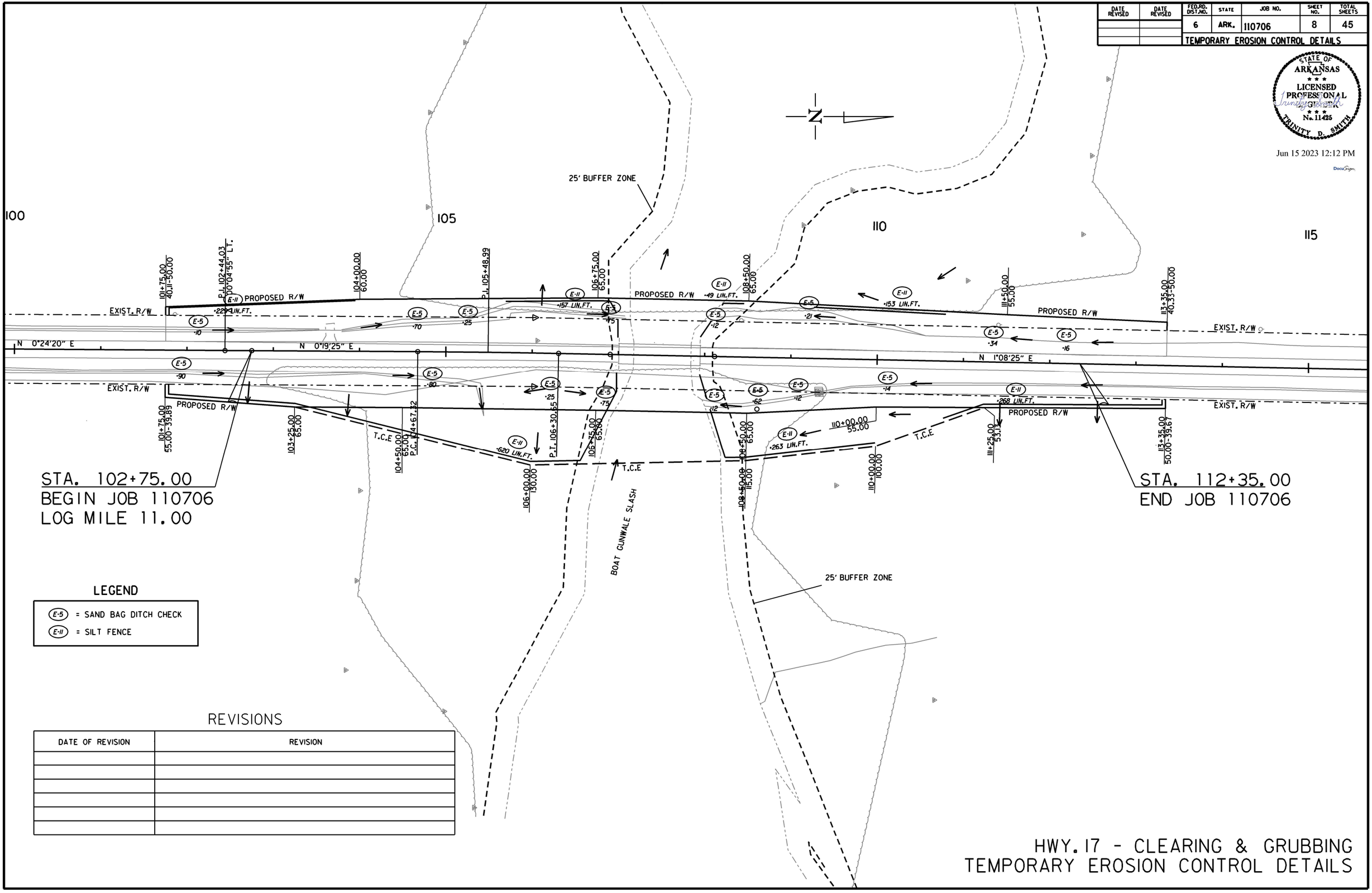

LEGEND

E-5	= SAND BAG DITCH CHECK
E-11	= SILT FENCE

REVISIONS

DATE OF REVISION	REVISION

HWY. 17 - CLEARING & GRUBBING
TEMPORARY EROSION CONTROL DETAILS

BM43071 1/19/2023
R110706.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	9	45

TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
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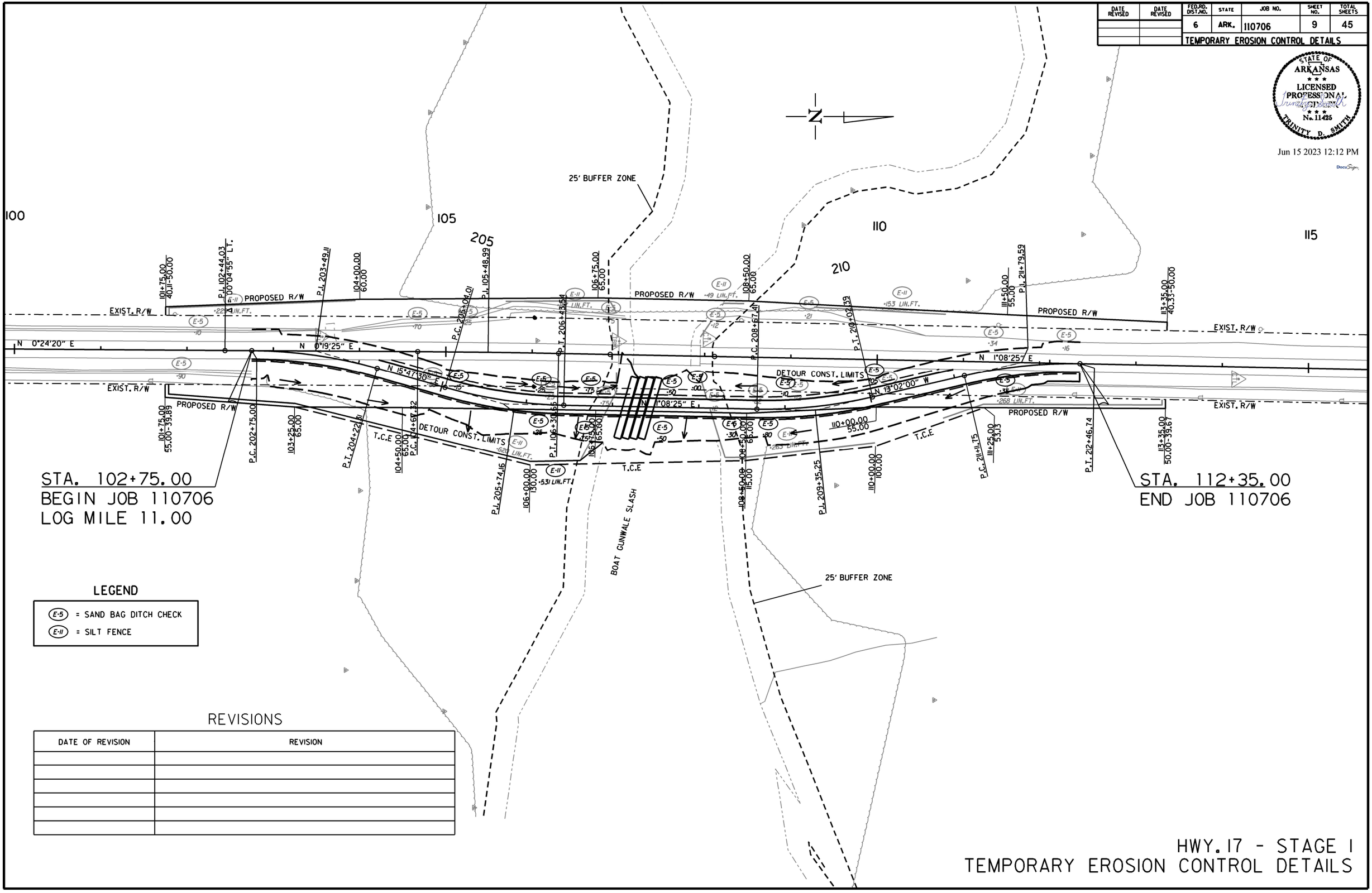

LEGEND

- (E-5) = SAND BAG DITCH CHECK
- (E-11) = SILT FENCE

REVISIONS

DATE OF REVISION	REVISION

BM43071 1/19/2023
R110706.DGN

HWY. 17 - STAGE I
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	10	45

TEMPORARY EROSION CONTROL DETAILS

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

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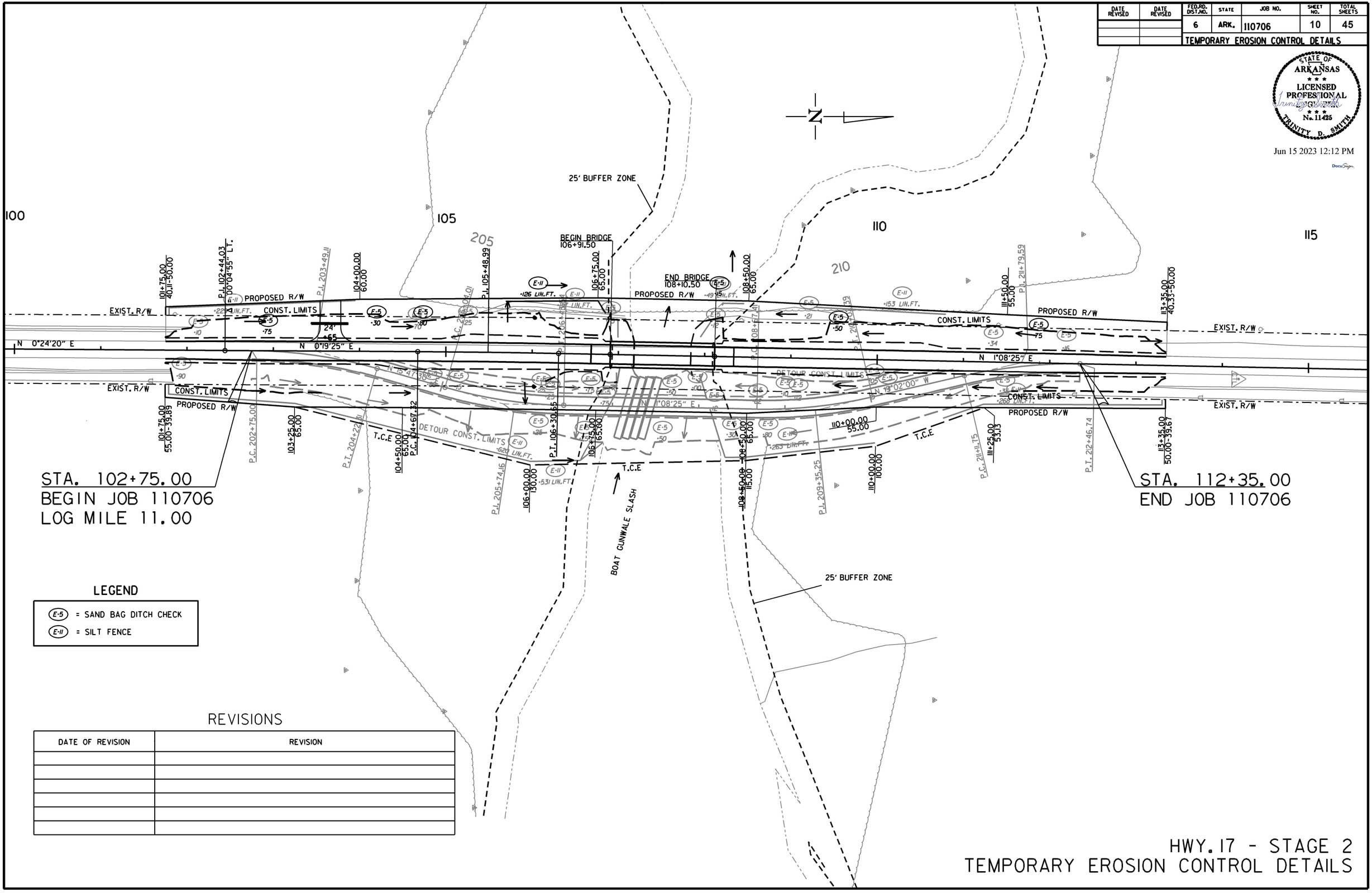

LEGEND

E-5	= SAND BAG DITCH CHECK
E-11	= SILT FENCE

REVISIONS

DATE OF REVISION	REVISION

HWY. 17 - STAGE 2
TEMPORARY EROSION CONTROL DETAILS

BM43071 1/19/2023
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DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	11	45

TEMPORARY EROSION CONTROL DETAILS

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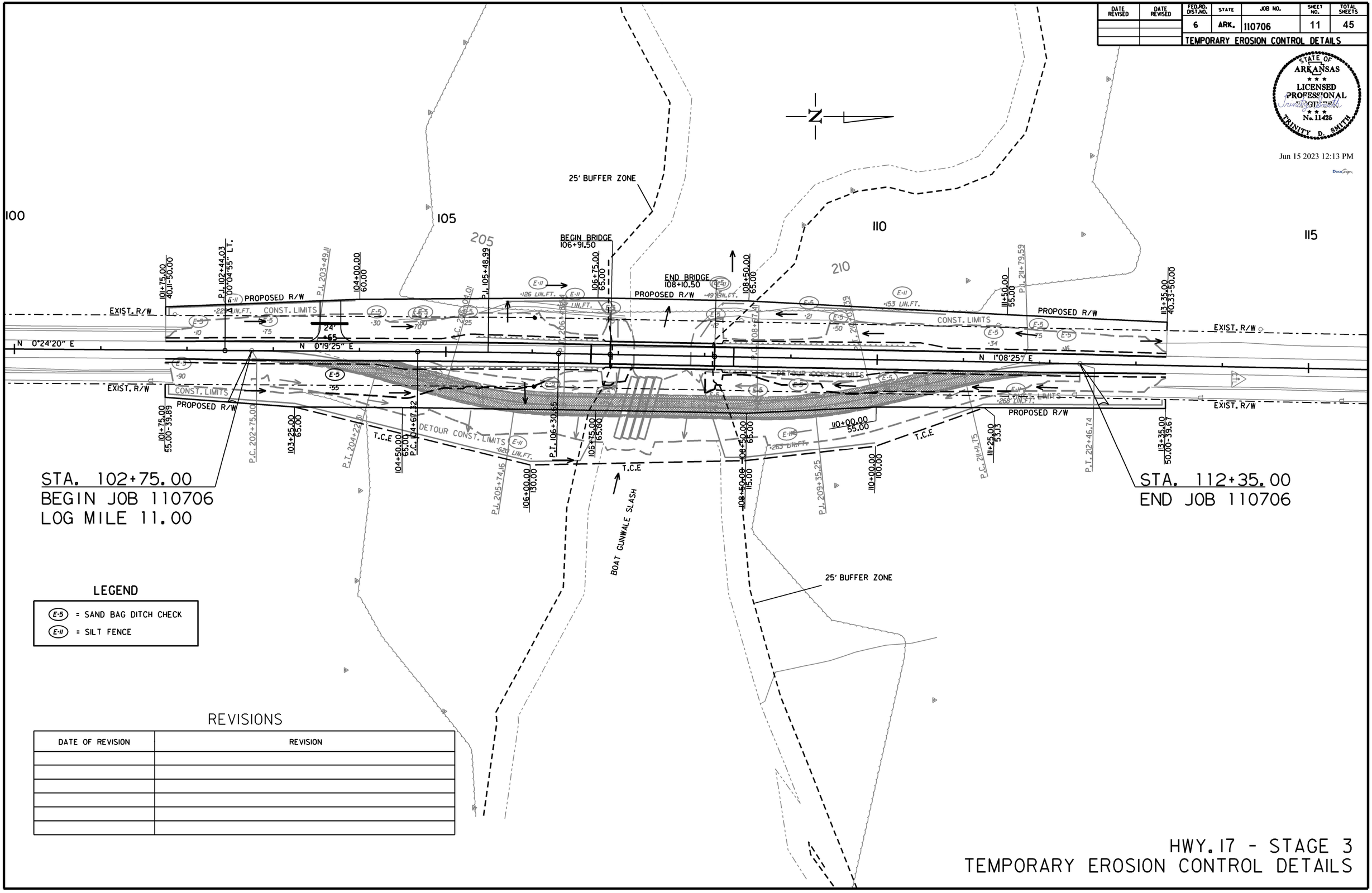

STA. 102+75.00
BEGIN JOB 110706
LOG MILE 11.00

STA. 112+35.00
END JOB 110706

LEGEND

- (E-5) = SAND BAG DITCH CHECK
- (E-11) = SILT FENCE

REVISIONS

DATE OF REVISION	REVISION

HWY. 17 - STAGE 3
TEMPORARY EROSION CONTROL DETAILS

BM43071 1/19/2023
R110706.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	12	45
		MAINTENANCE OF TRAFFIC DETAILS				

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

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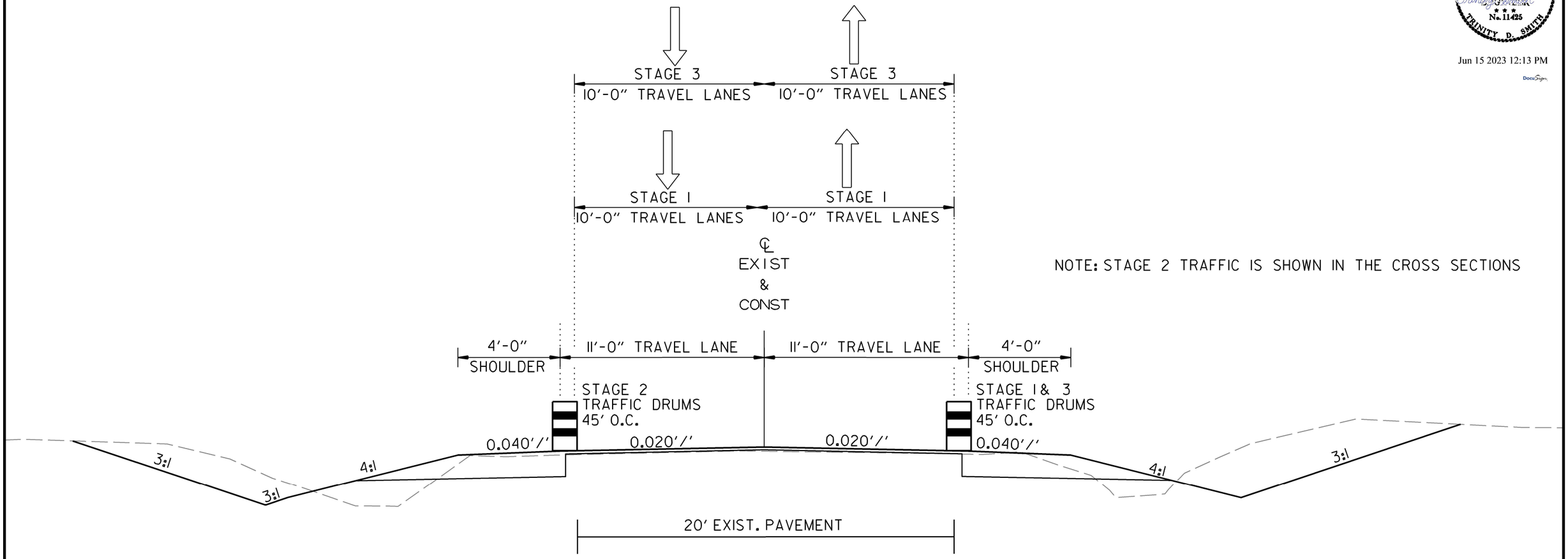

NOTE: STAGE 2 TRAFFIC IS SHOWN IN THE CROSS SECTIONS

STAGE CONSTRUCTION

BM43071 1/19/2023
R110706.DGN

CONSTRUCTION STAGING
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	13	45
		MAINTENANCE OF TRAFFIC DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
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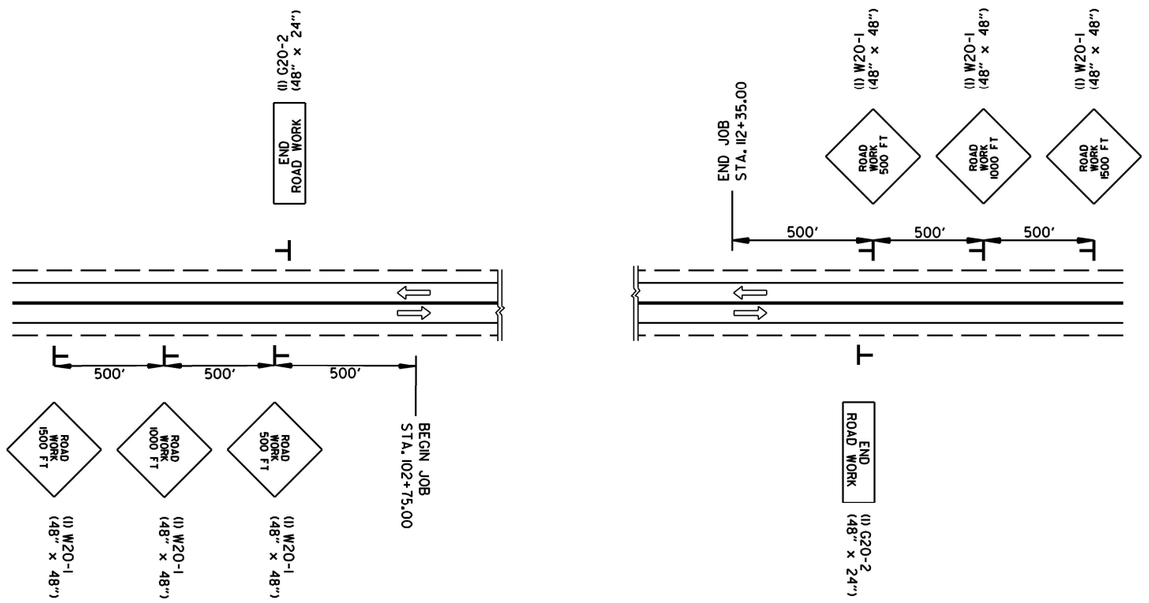

ADVANCE WARNING (ALL STAGES)

RIGHT SHOULDER CLOSED	(2) W21-5a (36" x 36")	ALL STAGES IF AND WHERE DIRECTED BY THE ENGINEER
DO NOT PASS	(2) R4-1 (24" X 30")	ALL STAGES SPACES AT 1/4 MILE INTERVALS
BUMP	(2) W8-1 (30" X 30")	IF AND WHERE DIRECTED BY THE ENGINEER

BM43071 1/19/2023
R110706.DGN

ADVANCE WARNING
ALL STAGES
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	14	45
		MAINTENANCE OF TRAFFIC DETAILS				

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

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STAGE 1 CONSTRUCTION SEQUENCE:

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE BEGINNING AND END OF JOB AS SHOWN ON THE ADVANCE WARNING DETAIL.

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

CONSTRUCT DETOUR AS SHOWN IN THE STAGE 1 MAINTENANCE OF TRAFFIC DETAILS. INSTALL QUAD. 96" X 73. TEMP. CULVERT AT DETOUR STA. 207+30.

USE TRAFFIC DRUMS SPACED 45' O.C.

STAGE 2 CONSTRUCTION SEQUENCE:

MAINTAIN ADVANCE WARNING SIGNS AT BOTH ENDS OF DETOUR AND END ROAD WORK SIGNS AT THE BEGINNING AND END OF JOB AS SHOWN ON THE ADVANCE WARNING DETAIL.

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

SHIFT TRAFFIC TO NEW DETOUR AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

CONSTRUCT PROPOSED ROADWAY AND BRIDGE.
REMOVE AND INSTALL PIPE CULVERT @ STA. 103+65 LT. SIDE.

USE TRAFFIC DRUMS SPACED 20' O.C.

STAGE 3 CONSTRUCTION SEQUENCE:

MAINTAIN ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE BEGINNING AND END OF JOB AS SHOWN ON THE ADVANCE WARNING DETAIL.

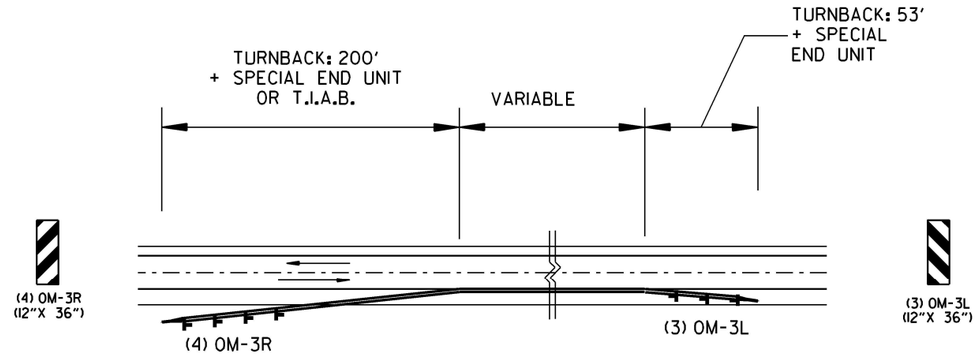
APPLY CONSTRUCTION PAVEMENT MARKINGS AS SHOWN IN THE STAGE 3 MAINTENANCE OF TRAFFIC DETAILS.

SHIFT TRAFFIC TO ROADWAY AS SHOWN IN THE STAGE 3 MAINTENANCE OF TRAFFIC DETAILS.

OBLITERATE DETOUR.
CONSTRUCT RIGHT SIDE SLOPES AND DITCHES.

USE TRAFFIC DRUMS SPACED 45' O.C.

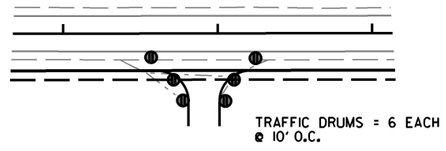
APPLY FINAL 2" LIFT ACHM SURFACE COURSE AND PLACE PERMANENT PAVEMENT MARKINGS AS SHOWN IN THE PERMANENT PAVEMENT MARKING DETAILS.



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 PCCB TURNBACK.

DETAIL OF OBJECT MARKERS
AT PRECAST CONCRETE BARRIER TURNBACKS



DRIVEWAY/TRAFFIC DRUM DETAIL

BM43071 1/26/2023
R110706.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	15	45
		MAINTENANCE OF TRAFFIC DETAILS				

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

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WHITE SOLID CONSTRUCTION PAVEMENT MARKINGS

DBL. YELLOW SOLID CONSTRUCTION PAVEMENT MARKINGS R.P.M. (TYPE III) AT 80' O.C.

II TRAFFIC DRUMS SPACED 45' O.C.

II TRAFFIC DRUMS SPACED 45' O.C.

100 105 205 110 210 115

101+75.00 40.11-50.00

P.I. 102+44.03 Δ = 00°04'55" LT.

P.I. 203+49.11

104+00.00 60.00

P.I. 105+48.99

106+75.00 65.00

108+50.00 65.00

P.I. 211+79.59

111+50.00 55.00

113+35.00 40.33-50.00

EXIST. R/W

PROPOSED R/W

N 0°24'20" E

N 0°19'25" E

P.C. 205+04.01

P.T. 206+43.54

P.C. 208+67.41

P.I. 210+08.39

N 1°08'25" E

DETOUR CONST. LIMITS

N 5°47'30" E

N 13°02'00" W

N 1°08'25" E

101+75.00 55.00-39.89

P.C. 202+75.00

103+25.00 65.00

P.T. 204+22.39

T.C.E

104+50.00 65.00

P.C. 104+67.32

DETOUR CONST. LIMITS

P.T. 106+30.65

106+75.00 65.00

T.C.E

110+00.00 55.00

T.C.E

P.C. 211+11.75

111+25.00 53.13

P.I. 212+46.74

113+35.00 50.00-39.67

P.I. 205+74.16

106+00.00 130.00

108+50.00 115.00

P.I. 209+35.25

110+00.00 100.00

STA. 102+75.00
BEGIN JOB 110706
LOG MILE 11.00

STA. 112+35.00
END JOB 110706

ROAD CLOSED

(1) R11-2 (48" X 30")

8' BARR. TYP. III RT.
8' BARR. TYP. III RT.

ROAD CLOSED

(1) R11-2 (48" X 30")

8' BARR. TYP. III LT.
8' BARR. TYP. III LT.

STAGE I
MAINTENANCE OF TRAFFIC DETAILS

BM43071 1/19/2023
R110706.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	16	45
		MAINTENANCE OF TRAFFIC DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
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ROAD CLOSED
(1) RII-2 (48" X 30")
(1) WI-6 (48" X 24")
8' BARR. TYP. III LT.
8' BARR. TYP. III LT.

ROAD CLOSED
(1) RII-2 (48" X 30")
(1) WI-6 (48" X 24")
8' BARR. TYP. III RT.
8' BARR. TYP. III RT.

REMOVABLE CONSTRUCTION PAVEMENT MARKINGS

TRAFFIC DRUMS 6 EACH LOCATION

FURNISH AND INSTALL 140' P.C.C.B. AND (2) T.I.A.B.

100 105 110 115 205 210

P.I. 102+44.03
Δ = 00°04'55" LT.

101+75.00 40.11-50.00
P.I. 203+49.11
104+00.00 60.00
P.I. 105+48.99
106+75.00 65.00
108+50.00 65.00
111+50.00 55.00
P.I. 211+79.59
113+35.00 40.33-50.00

EXIST. R/W
PROPOSED R/W
CONST. LIMITS
N 0°24'20" E
N 0°19'25" E
N 1°08'28" E
24'
65'

101+75.00 55.00-39.89
P.C. 202+75.00
103+25.00 65.00
P.I. 204+22.31
104+50.00 65.00
P.C. 204+67.32
DETOUR CONST. LIMITS
T.C.E
P.I. 206+30.65
106+75.00 65.00
P.I. 207+74.46
106+00.00 150.00
P.I. 208+67.41
108+50.00 65.00
P.I. 209+35.25
110+00.00 100.00
110+00.00 55.00
P.C. 211+11.75
111+25.00 53.13
P.I. 212+46.74
113+35.00 50.00-39.67

STA. 102+75.00
BEGIN JOB 110706
LOG MILE 11.00

5 TRAFFIC DRUMS SPACED 20' O.C.

(16) WI-8 (18" X 24")

WHITE SOLID CONSTRUCTION PAVEMENT MARKINGS

DBL. YELLOW SOLID CONSTRUCTION PAVEMENT MARKINGS R.P.M. (TYPE III) AT 80' O.C.

8 TRAFFIC DRUMS SPACED 20' O.C.

STA. 112+35.00
END JOB 110706

STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

BM43071 1/19/2023
R110706.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	17	45
		MAINTENANCE OF TRAFFIC DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
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OBLITERATE ROADWAY

WHITE SOLID CONSTRUCTION PAVEMENT MARKINGS

DBL. YELLOW SOLID CONSTRUCTION PAVEMENT MARKINGS R.P.M. (TYPE III) AT 80' O.C.

11 TRAFFIC DRUMS SPACED 45' O.C.

11 TRAFFIC DRUMS SPACED 45' O.C.

100 105 110 115

205 210

PROPOSED R/W
EXIST. R/W
CONST. LIMITS
N 0°24'20" E
N 0°19'25" E
N 1°08'25" E
24'
65'
T.C.E

101+75.00 40.11-50.00
P.I. 102+44.03 Δ = 00°04'55" LT.
P.I. 203+49.11
104+00.00 60.00
P.C. 205+04.01
P.I. 105+48.99
106+75.00 65.00
P.I. 206+43.54
108+50.00 65.00
P.I. 208+17.91
P.I. 210+01.39
111+50.00 55.00
P.I. 211+79.59
113+35.00 40.33-50.00

101+75.00 55.00-39.89
P.C. 202+75.00
103+25.00 65.00
P.I. 204+24.23
104+50.00 65.00
P.C. 104+67.32
P.I. 106+30.65
106+75.00 65.00
P.I. 205+74.16
106+00.00 130.00
108+50.00 115.00
P.I. 209+35.25
110+00.00 100.00
P.C. 211+11.75
111+25.00 53.13
P.I. 212+46.74
113+35.00 50.00-39.67

STA. 102+75.00
BEGIN JOB 110706
LOG MILE 11.00

STA. 112+35.00
END JOB 110706

ROAD CLOSED
(1) R11-2 (48" X 30")
8' BARR. TYP. III RT.
8' BARR. TYP. III RT.

ROAD CLOSED
(1) R11-2 (48" X 30")
8' BARR. TYP. III LT.
8' BARR. TYP. III LT.

STAGE 3
MAINTENANCE OF TRAFFIC DETAILS

BM43071 1/19/2023
R110706.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	18	45
		PERMANENT PAVEMENT MARKING DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
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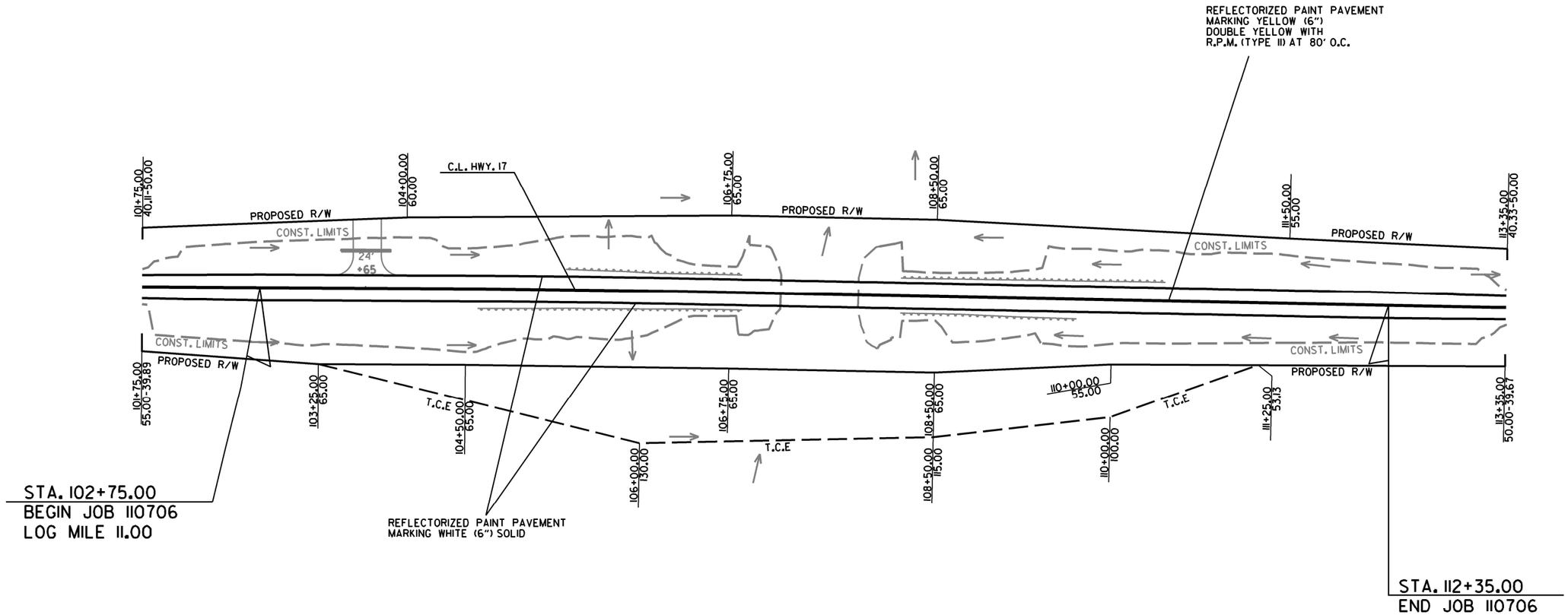
PERMANENT PAVEMENT MARKINGS

REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6") = 2320 LIN. FT.
REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6") = 2320 LIN. FT.
RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW) (80' O.C.) = 14 EACH



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.

BM43071 1/19/2023
R110706.DGN

PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	19	45
		QUANTITIES				

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

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ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	STAGE 3	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC DRUMS	BARRICADES (TYPE III)		FURNISHING & INSTALLING PRECAST CONC. BARRIER	TEMPORARY IMPACT ATTENUATION BARRIER	TEMP. IMPACT ATTEN.BARR. (REPAIR)
											RIGHT	LEFT			
			LIN. FT. - EACH				NO.	SQ. FT.	EACH		LIN. FT.			EACH	
W20-1	ROAD WORK 1500 FT.	48"x48"	2	2	2	2	2	32.0							
W20-1	ROAD WORK 1000 FT.	48"x48"	2	2	2	2	2	32.0							
W20-1	ROAD WORK 500 FT.	48"x48"	2	2	2	2	2	32.0							
G20-2	END ROAD WORK	48"x24"	2	2	2	2	2	16.0							
R11-2	ROAD CLOSED	48"x30"	2	2	2	2	2	20.0							
OM-3L	OBJECT MARKER	12"x36"		3		3	3	9.0							
OM-3R	OBJECT MARKER	12"x36"		4		4	4	12.0							
W1-6	LARGE ARROW	48"x24"		2		2	2	16.0							
W1-8	CHEVRONS	18"x24"		16		16	16	48.0							
R4-1	DO NOT PASS	24"x30"	2	2	2	2	2	10.0							
W21-5a	RIGHT SHOULDER CLOSED	36"x36"	2	2	2	2	2	18.0							
W8-1	BUMP	30"x30"	2	2	2	2	2	12.5							
	VERTICAL PANELS		22	13	22	22			22						
	TRAFFIC DRUMS		22	19	22	22				22					
	TYPE III BARRICADE-RT. (8')		2	2	2	2					16				
	TYPE III BARRICADE-LT. (8')		2	2	2	2						16			
	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER			140		140							140		
	TEMPORARY IMPACT ATTENUATION BARRIER			2		2								2	
	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)			2		2									2
TOTALS:								**257.5**	**22**	**22**	**16**	**16**	**140**	**2**	**2**

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

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 1	STAGE 2	STAGE 3	END OF JOB	CONSTRUCTION PAVEMENT MARKINGS	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS	REFLECTORIZED PAINT PAVEMENT MARKING	
							TYPE II	6"	
							(YELLOW/YELLOW)	WHITE	YELLOW
	LIN. FT. - EACH				LIN. FT.	LIN. FT.	EACH	LIN. FT.	
CONSTRUCTION PAVEMENT MARKINGS	4640	3076	4640		12356				
REMOVABLE CONSTRUCTION PAVEMENT MARKINGS		812				812			
RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW)	14	13	14	14			55		
REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6")				2320				2320	
REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6")				2320					2320
TOTALS:					**12356**	**812**	**55**	**2320**	**2320**

NOTE: THIS IS A LOW 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.

GUARDRAIL

STATION	STATION	LOCATION	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)
			LIN. FT.	EACH	
105+37.75	106+81.50	LT. SIDE	75	1	1
104+62.75	106+81.50	RT. SIDE	150	1	1
108+20.50	110+39.25	LT. SIDE	150	1	1
108+20.50	109+64.25	RT. SIDE	75	1	1
TOTALS:			**450**	**4**	**4**

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QUANTITIES

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
2/26/24		6	ARK.	110706	20	45
		QUANTITIES				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
03-27-2024

EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL					TEMPORARY EROSION CONTROL						
			SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	TEMPORARY SEEDING	MULCH COVER	WATER	SAND BAG DITCH CHECKS (E-5)	ROCK DITCH CHECKS (E-6)	SILT FENCE (E-11)	*SEDIMENT REMOVAL & DISPOSAL
			ACRE	TON	ACRE	M.GAL.	ACRE	ACRE	ACRE	M.GAL.	BAG	CU.YD.	LIN. FT.	CU. YD.
ENTIRE	PROJECT	CLEARING AND GRUBBING						3.46	3.46	70.6	352		1739	96
ENTIRE	PROJECT	STAGE 1						2.14	2.14	43.7	286		531	46
ENTIRE	PROJECT	STAGE 2	0.51	1.02	0.51	52.0	0.51	1.32	1.32	26.9	132		126	17
ENTIRE	PROJECT	STAGE 3	1.40	2.80	1.40	142.8	1.40	2.14	2.14	43.7	22			2
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.			0.48	0.96	0.48	49.0	0.48	2.27	2.27	46.3	198	27	599	40
TOTALS:			**2.39**	**4.78**	**2.39**	**243.8**	**2.39**	**11.33**	**11.33**	**231.2**	**990**	**27**	**2995**	**201**

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
SAND BAG DITCH CHECKS.....22 BAGS / LOCATION
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.

APPROACH GUTTERS AND SLABS

STATION	STATION	LOCATION	APPROACH GUTTER (TYPE SPECIAL)	APPROACH SLABS (TYPE SPECIAL)	REINFORCING STEEL-RDWY. (GR. 60)	AGGREGATE BASE CRS. (CLASS 7)
			CU.YD.	CU.YD.	POUND	TON
106+69.33	106+91.50	HWY. 17 LT.	3.29		471	
106+69.33	106+91.50	HWY. 17 APPROACH SLAB		17.20	1258	14.55
106+69.33	106+91.50	HWY. 17 RT.	3.29		471	
108+10.50	108+32.67	HWY. 17 LT.	3.29		471	
108+10.50	108+32.67	HWY. 17 APPROACH SLAB		17.20	1258	14.55
108+10.50	108+32.67	HWY. 17 RT.	3.29		471	
TOTALS:			**13.16**	**34.40**	**4400**	**29.10**

NOTE: USE T =13" FOR 4' SHOULDER.

STRUCTURES

STATION	DESCRIPTION	TEMPORARY CULVERTS 96" LIN. FT.	STD. DWG. NOS.
207+30	DETOUR - QUAD. 96" X 73' TEMP. CULVERT	292	PCC-1, PCM-1
TOTAL:		**292**	

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

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

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING CU.YD.
ENTIRE PROJECT TO BE USED IF	
AND WHERE DIRECTED BY THE	10
ENGINEER	
TOTAL:	**10**

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

DRIVEWAYS & TURNOUTS

STATION	SIDE	LOCATION	WIDTH	ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22)		AGGREGATE BASE COURSE (CLASS 7)	SIDE DRAINS 18"	STANDARD DRAWINGS
			FEET	SQ. YD.	TON	TON	LIN. FT.	
103+65	LT	HWY. 17	24	104.56	11.50	42.70	42	DR-2, PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
* ENTIRE PROJECT TEMPORARY DRIVES						50.00		
TOTALS:				**104.56**	**11.50**	**92.70**	**42**	

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.2% MIN. AGGR.....5.8% ASPHALT BINDER

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

REMOVAL AND DISPOSAL OF CULVERTS

STATION	DESCRIPTION	PIPE CULVERTS EACH
103+65	18" X 26' C.M SIDE DRAIN ON LT.	1
TOTAL:		**1**

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

CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING STATION	GRUBBING STATION
101+00	111+00	HWY. 17 LT. & RT.	11	11
TOTALS:			**11**	**11**

BM43071 1/26/2023
ZBORDER.CEL

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
2/26/24		6	ARK.	110706	21	45
		QUANTITIES				

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
101+75.00	102+75.00	HWY. 17 - MAIN LANES	20.00	222.22
112+35.00	113+35.00	HWY. 17 - MAIN LANES	20.00	222.22
TOTAL:				444.44

NOTE: COORDINATE COLD MILLING STOCKPILE LOCATIONS WITH DISTRICT ENGINEER.
STOCKPILE LOCATIONS SHALL BE NO FURTHER THAN FIVE MILES FROM THE JOB SITE.

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	TON	TACK COAT
		GALLON
ENTIRE PROJECT - TO BE USED IF AND WHERE	5	10
DIRECTED BY THE ENGINEER		
TOTALS:	5	10

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

ACHM PATCHING OF EXISTING ROADWAY

DESCRIPTION	TON
ENTIRE PROJECT - TO BE USED IF AND WHERE	5
DIRECTED BY THE ENGINEER	
TOTAL:	5

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

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
03-27-2024

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT
			CU. YD.	
ENTIRE	PROJECT	STAGE 1-MAIN LANES	532	7909
ENTIRE	PROJECT	STAGE 2-MAIN LANES	536	367
ENTIRE	PROJECT	STAGE 3-MAIN LANES	9117	576
ENTIRE	PROJECT	BRIDGE EXCAVATION	520	
ENTIRE	PROJECT	APPROACHES		70
TOTALS:			10705	8922

NOTE: EARTHWORK QUANTITIES SHALL BE PAID AS PLAN QUANTITY.

SOIL LOG

STATION	LATITUDE			LONGITUDE			LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
	DEG	MIN	SEC	DEG	MIN	SEC		FEET				
103+00	34	32	52.50	91	10	27.60	06 RT.	0-5	38	20	A-6(18)	BROWN
103+00	34	32	52.50	91	10	27.50	15 RT.	0-5	27	11	A-6(7)	BROWN
112+00	34	33	1.20	91	10	27.50	06 LT.	0-5	38	18	A-6(18)	BROWN
112+00	34	33	1.20	91	10	27.60	18 LT.	0-5	30	10	A-4(8)	BROWN
112+00	34	33	1.20	91	10	27.60	18 LT.	0-5	25	8	A-4(3)	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.

SOIL STABILIZATION

STATION	STATION	LOCATION / DESCRIPTION	SOIL STABILIZATION
			TON
ENTIRE	PROJECT	TO BE USED IF AND WHERE	100
		DIRECTED BY THE ENGINEER	
TOTAL:			100

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

BENCH MARKS

STATION	LOCATION	BENCH MARKS
		EACH
106+91.50	BRIDGE NO. M0465 - LT.	1
TOTAL:		1

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

4" PIPE UNDERDRAIN

STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS	UNDERDRAIN OUTLET PROTECTORS
			LIN. FT.	EACH
* ENTIRE PROJECT TO BE USED IF AND			500	2
WHERE DIRECTED BY THE ENGINEER				
TOTALS:			500	2

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

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT							ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")								
				TON / STATION	TON	(0.05 GAL. PER SQ. YD.)			(0.17 GAL. PER SQ. YD.)			TOTAL GALLONS	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			TOTAL WID. FEET	SQ.YD.	GALLON	TOTAL WID. FEET	SQ.YD.	GALLON		FEET			TON	FEET			TON	FEET			TON	TON
MAIN LANES																									
101+75.00	102+75.00	HWY. 17 - MAIN LANES - TRANSITION	100.00	58.25	58.25	6.36	70.67	3.53	20.00	222.22	37.78	41.31	3.23	35.89	330.00	5.92	3.13	34.78	220.00	3.83	23.00	255.56	220.00	28.11	31.94
102+75.00	106+69.33	HWY. 17 - MAIN LANES - NOTCH	394.33	93.00	366.73	12.71	556.88	27.84				27.84	6.46	283.04	330.00	46.70	6.25	273.84	220.00	30.12	26.00	1139.18	220.00	125.31	155.43
106+69.33	106+91.50	HWY. 17 - MAIN LANES - SHOULDER	22.17	92.50	20.51																4.00	9.85	220.00	1.08	1.08
108+10.50	108+32.67	HWY. 17 - MAIN LANES - SHOULDER	22.17	92.50	20.51																4.00	9.85	220.00	1.08	1.08
108+32.67	112+35.00	HWY. 17 - MAIN LANES - NOTCH	402.33	93.00	374.17	12.71	568.18	28.41				28.41	6.46	288.78	330.00	47.65	6.25	279.40	220.00	30.73	26.00	1162.29	220.00	127.85	158.58
112+35.00	113+35.00	HWY. 17 - MAIN LANES - TRANSITION	100.00	58.25	58.25	6.36	70.67	3.53	20.00	222.22	37.78	41.31	3.23	35.89	330.00	5.92	3.13	34.78	220.00	3.83	23.00	255.56	220.00	28.11	31.94
202+75.00	204+35.33	HWY. 17 - DETOUR - TRANSITION	160.33	VAR.	89.77	VAR.	157.00	7.85				7.85					VAR.	157.00	220.00	17.27	VAR.	157.00	220.00	17.27	34.54
204+35.33	204+63.16	HWY. 17 - DETOUR - FULL DEPTH	27.83	160.75	44.74	26.00	80.40	4.02				4.02					26.00	80.40	220.00	8.84	26.00	80.40	220.00	8.84	17.68
204+63.16	210+45.51	HWY. 17 - DETOUR - SUPERELEVATION	582.35	VAR.	784.72	26.00	1682.34	84.12				84.12					26.00	1682.34	220.00	185.06	26.00	1682.34	220.00	185.06	370.12
210+45.51	210+84.93	HWY. 17 - DETOUR - FULL DEPTH	39.42	160.75	63.37	26.00	113.88	5.69				5.69					26.00	113.88	220.00	12.53	26.00	113.88	220.00	12.53	25.06
210+84.93	212+46.74	HWY. 17 - DETOUR - TRANSITION	161.81	VAR.	97.80	VAR.	160.50	8.03				8.03					VAR.	160.50	220.00	17.66	VAR.	160.50	220.00	17.66	35.32
ADDITIONAL FOR LEVELING																									
102+75.00	103+65.00	HWY. 17 - MAIN LANES	90.00						20.00	200.00	34.00	34.00									20.00	200.00	VAR.	5.94	5.94
103+65.00	106+69.33	HWY. 17 - MAIN LANES	304.33						40.00	1352.58	229.94	229.94									20.00	676.29	VAR.	275.22	275.22
108+32.67	112+00.00	HWY. 17 - MAIN LANES	367.33						40.00	1632.58	277.54	277.54									20.00	816.29	VAR.	196.02	196.02
112+00.00	112+35.00	HWY. 17 - MAIN LANES	35.00						20.00	77.78	13.22	13.22									20.00	77.78	VAR.	75.04	75.04
ADDITIONAL FOR SUPERELEVATION																									
204+63.16	205+73.77	SUPERELEVATION TRANSITION	110.61	5.63	6.23																				
205+73.77	209+34.90	MAXIMUM SUPERELEVATION	361.13	11.25	40.63																				
209+34.90	210+45.51	SUPERELEVATION TRANSITION	110.61	5.63	6.23																				
TOTALS:					2031.91		3460.52	173.02		3707.38	630.26	803.28		643.60		106.19		2816.92		309.87		6796.77		1105.12	1414.99

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.2% MIN. AGGR.....5.8% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.7% MIN. AGGR.....4.3% ASPHALT BINDER
TACK COAT QUANTITIES WERE CALCULATED USING THE EMULSIFIED ASPHALT RATES. REFER TO SS-400-1 FOR THE RESIDUAL ASPHALT APPLICATION RATES.

BM43071 1/26/2023
R110706.DGN

QUANTITIES

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	22	45
		07603 - QUANTITIES - 65977				

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 110706

BRIDGE NO.	NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	801	SP, SS, & 802	SP, SS, & 802	SP, SS, & 802	SP & 803	SS & 804	SS & 804	SS & 805	SS & 805	SS & 805	812	SS & 816	SS & 816
			ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. _)	UNCLASSIFIED EXCAVATION FOR STRUCTURES - BRIDGE	CLASS S CONCRETE - BRIDGE	CLASS S(AE) CONCRETE - BRIDGE	PRESTRESSED CONCRETE BEAMS (NON-VOIDED 15" x 47 3/4")	CLASS 2 PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL - BRIDGE (GRADE 60)	EPOXY COATED REINFORCING STEEL (GRADE 60)	(1) STEEL SHELL PILING (18" DIA.)	(1) STEEL SHELL PILING (24" DIA.)	PILE ENCASEMENT	BRIDGE NAME PLATE (TYPE D)	DUMPED RIPRAP	FILTER BLANKET
			UNIT	LUMP SUM	CU. YD.	CU. YD.	CU. YD.	LIN. FT.	SQ. YD.	LB.	LB.	LIN. FT.	LIN. FT.	LIN. FT.	EACH	CU. YD.	SQ. YD.
07603	HIGHWAY 17 OVER BOAT GUNWALE SLASH	BENT 1			23	15.32				2,020	420	240				49	83
		BENT 2				15.43				2,100	580		270	55			
		BENT 3				15.43				2,100	580		270	55			
		BENT 4			23	15.32				2,020	420	240					
		119'-0" PRECAST PRESTRESSED BEAM UNIT					102.90	936.0	494.0		23,180				1	59	101
		SITE NO. 1 (EXIST. BRIDGE NO. M0465)		1													
TOTALS FOR BRIDGE NO. 07603					46	61.5	102.90	936.0	494.0	8,240	25,180	480	540	110	1	108	184

THOMAS GERARD
DESIGN SECTION SUPERVISOR

(1) Steel Shell Piles shall conform to ASTM A252, Grade 3, Fy=45ksi.

STATE OF ARKANSAS
Charles R. Ellis
May 3 2023 3:10 PM
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS
BRIDGE ENGINEER

SCHEDULE OF BRIDGE QUANTITIES
BOAT GUNWALE SLASH STR. & APPRS. (S)
MONROE COUNTY

ROUTE 17 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CGP DATE: 01/17/2023 FILENAME: b110706_q1.dgn
CHECKED BY: JJ DATE: 01/18/2023 SCALE: NO SCALE
DESIGNED BY: - DATE: -
BRIDGE NO. 07603 DRAWING NO. 65977

PRINT DATE: 5/3/2023

SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM	QUANTITY	UNIT
201	CLEARING	11	STATION
201	GRUBBING	11	STATION
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	1	EACH
SP, SS, & 210	UNCLASSIFIED EXCAVATION	10705	CU. YD.
SP & 210	COMPACTED EMBANKMENT	8922	CU. YD.
SP & 210	SOIL STABILIZATION	100	TON
SP, SS, & 303	AGGREGATE BASE COURSE (CLASS 7)	2154	TON
SS & 401	TACK COAT	813	GAL.
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	101	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")	5	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	1344	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")	83	TON
SP & 412	COLD MILLING ASPHALT PAVEMENT	444	SQ. YD.
SP, SS, & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC	5	TON
SP, SS, & 415	ACHM PATCHING OF EXISTING ROADWAY	5	TON
SP, SS, & 504	APPROACH SLABS	34.40	CU. YD.
SP, SS, & 504	APPROACH GUTTERS	13.16	CU. YD.
601	MOBILIZATION	1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE	1	EACH
SS & 603	MAINTENANCE OF TRAFFIC	1.00	LUMP SUM
603	96" TEMPORARY CULVERT	292	LIN. FT.
SS & 604	SIGNS	258	SQ. FT.
SS & 604	BARRICADES	32	LIN. FT.
SS & 604	TRAFFIC DRUMS	22	EACH
SS & 604	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER	140	LIN. FT.
604	CONSTRUCTION PAVEMENT MARKINGS	12356	LIN. FT.
604	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	812	LIN. FT.
SS & 604	VERTICAL PANELS	22	EACH
SP, SS, & 606	18" SIDE DRAIN	42	LIN. FT.
SS & 606	SELECTED PIPE BEDDING	10	CU. YD.
SS & 611	4" PIPE UNDERDRAINS	500	LIN. FT.
SS & 611	UNDERDRAIN OUTLET PROTECTORS	2	EACH
SS & 617	GUARDRAIL (TYPE A)	450	LIN. FT.
SS & 617	GUARDRAIL TERMINAL (TYPE 2)	4	EACH
SS & 617	THRIE BEAM GUARDRAIL TERMINAL	4	EACH
620	LIME	5	TON
620	SEEDING	2.39	ACRE
SS & 620	MULCH COVER	13.72	ACRE
620	WATER	475.0	M. GAL.
621	TEMPORARY SEEDING	11.33	ACRE
621	SILT FENCE	2995	LIN. FT.
621	SAND BAG DITCH CHECKS	990	BAG
621	SEDIMENT REMOVAL AND DISPOSAL	201	CU. YD.
621	ROCK DITCH CHECKS	27	CU. YD.
623	SECOND SEEDING APPLICATION	2.39	ACRE
635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6")	2320	LIN. FT.
718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6")	2320	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)	55	EACH
SS & 731	TEMPORARY IMPACT ATTENUATION BARRIER	2	EACH
SS & 731	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)	2	EACH
SS & 804	REINFORCING STEEL-ROADWAY (GRADE 60)	4400	POUND
	STRUCTURES OVER 20' SPAN		
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)	1.00	LUMP SUM
636	BRIDGE CONSTRUCTION CONTROL	1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	46	CU. YD.
SP, SS, & 802	CLASS S CONCRETE-BRIDGE	62	CU. YD.
SP, SS, & 802	CLASS S(AE) CONCRETE-BRIDGE	103	CU. YD.
SP, SS, & 802	PRESTRESS CONCRETE BEAMS (NON-VOIDED 15"X 47 3/4")	936	LIN. FT.
SP & 803	CLASS 2 PROTECTIVE SURFACE TREATMENT	494	SQ. YD.
SS & 804	REINFORCING STEEL-BRIDGE (GRADE 60)	8240	POUND
SS & 804	EPOXY COATED REINFORCING STEEL (GRADE 60)	25180	POUND
SS & 805	STEEL SHELL PILING (18" DIAMETER)	480	LIN. FT.
SS & 805	STEEL SHELL PILING (24" DIAMETER)	540	LIN. FT.
SS & 805	PILE ENCASEMENT	110	LIN. FT.
812	BRIDGE NAME PLATE (TYPE D)	1	EACH
SS & 816	FILTER BLANKET	184	SQ. YD.
SS & 816	DUMPED RIPRAP	108	CU. YD.

REVISIONS

DATE	REVISION	SHEET NUMBER
2/26/2024	REVISED DISTRICT MAP ON TITLE SHEET TO MOVE LOGAN COUNTY TO DISTRICT 8. ADDED SUPPLEMENTAL SPECIFICATIONS "CONTACT INFORMATION FOR MOTORIST DAMAGE CLAIMS", "ASPHALT LABORATORY FACILITY", "RECYCLED ASPHALT PAVEMENT", AND "GUARDRAIL DELINEATORS". ADDED SPECIAL PROVISION "PERCENT AIR VOIDS AND NDESIGN FOR ACHM SURFACE MIX DESIGNS". REMOVED SPECIAL PROVISION "TOTAL SOLAR ECLIPSE". REVISED QUANTITIES "COMPACTED EMBANKMENT", "MINERAL AGGREGATE IN ACHM BINDER COURSE (1")", "ASPHALT BINDER (PG-22) IN ACHM BINDER COURSE (1")", "MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")", AND "ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")". REVISED SPECIAL PROVISIONS "PRICE ADJUSTMENT FOR ASPHALT BINDER" AND "PRICE ADJUSTMENT FOR FUEL". REVISED F.A.P NUMBER.	1,3,20,21,23
7/24/2024	ADDED SUPPLEMENTAL SPECIFICATION "PREQUALIFICATION OF BIDDERS". REMOVED SPECIAL PROVISIONS "ESTABLISHING CONTRACT TIME - WORKING DAY CONTRACT" & "FLEXIBLE BEGINNING OF WORK". ADDED SPECIAL PROVISION "FLEXIBLE BEGINNING OF WORK - CALENDER DAY CONTRACT". REVISED TIME TAB IN PRECONSTRUCTION.	3, 23
9/4/2024	REMOVED SUPPLEMENTAL SPECIFICATIONS "CEMENT", "CEMENT", "CEMENT", AND "CEMENT". ADDED SUPPLEMENTAL SPECIFICATIONS "CEMENT TREATED BASE COURSE", "CEMENT STABILIZED CRUSHED STONE BASE COURSE", "PORTLAND CEMENT CONCRETE PAVEMENT", AND "CONCRETE FOR STRUCTURES." REVISED SPECIAL PROVISION "UTILITY ADJUSTMENTS".	3, 23

SUMMARY OF QUANTITIES & REVISIONS

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

09-05-2024

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
2/26/24		6	ARK.	110706	23	45
7/24/24						
9/4/24						

SUMMARY OF QUANTITIES & REVISIONS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	24	45
		SURVEY CONTROL DETAILS				

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

Jun 15 2023 12:14 PM

DocuSign

SURVEY CONTROL COORDINATES

Project Name: s110706
Date: 7/17/2020
Coordinate System: ARKANSAS STATE PLANE - NORTH ZONE BASED ON GPS CONTROL, STATIC POINTS 1 & 2 PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	1995759.2226	1561026.1768	168.743	GPS	ARDOT STD. MON. STAMPED PN: 1
2	1997308.7053	1561034.0770	169.455	GPS	ARDOT STD. MON. STAMPED PN: 2
3	1998063.1769	1561007.7966	168.441	CTL	ARDOT STD. MON. STAMPED PN: 3
4	1998512.3215	1561010.1659	168.943	CTL	ARDOT STD. MON. STAMPED PN: 4
5	1999124.9808	1561057.1267	168.186	CTL	ARDOT STD. MON. STAMPED PN: 5
6	1999686.0962	1561069.8126	168.902	CTL	ARDOT STD. MON. STAMPED PN: 6
900	1998407.1807	1561013.0190	170.350	TBM	CHSLD SQUARE IN SW COR BR

*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).
ALL DISTANCES ARE GROUND.
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT.
A PROJECT CAF OF 0.999954700214 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 s110706gi.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: STATIC POINTS 1 & 2
CONVERGENCE ANGLE: 00°27'43.51" RIGHT AT PN: 4 LT: N34°32'58.00" LG: W91°10'27.81"
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

HWY. 17

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	PI	102+44.03	1997950.2888	1561023.6689
8001	PC	104+67.32	1998173.5768	1561024.9300
8003	PT	106+30.65	1998336.8954	1561027.0165
8004	POE	118+37.03	1999543.0320	1561051.0237

HWY. 17 DETOUR

POINT NO.	TYPE	STATION	NORTHING	EASTING
8100	PC	202+75.00	1997981.2601	1561023.8438
8102	PT	204+22.31	1998126.6780	1561044.4301
8103	PC	205+04.01	1998205.2853	1561066.6614
8105	PT	206+43.54	1998342.9262	1561087.1484
8106	PC	208+67.41	1998566.7454	1561091.6034
8108	PT	210+02.39	1998700.6637	1561077.6543
8109	PC	211+11.75	1998807.2043	1561052.9922
8111	PT	212+46.74	1998941.1226	1561039.0432

BM4.3071 1/19/2023
R110706.DGN

HWY. 17
SURVEY CONTROL DETAILS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	25	45
		SURVEY CONTROL DETAILS				

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

Jun 15 2023 12:14 PM

DocuSign

DETOUR STA. 202+75.00 =
HWY. 17 STA. 102+75.00
BEGIN DETOUR

STA. 102+75.00
BEGIN JOB 110706
LOG MILE 11.00

HWY. 17 DETOUR
P.I. = 203+49.11
Δ = 15°28'05" RT.
D = 10°30'00"
T = 74.11'
L = 147.31'
P.C. = 202+75.00
P.T. = 204+22.31
NO SUPER

HWY. 17 DETOUR
P.I. = 205+74.16
Δ = 14°39'05" LT.
D = 10°30'00"
T = 70.15'
L = 139.53'
P.C. = 205+04.01
P.T. = 206+43.54
e = 0.100'/'
Ls = 300'

HWY. 17
P.I. = 105+48.99
Δ = 0°49'00" RT.
D = 0°30'00"
T = 81.67'
L = 163.33'
P.C. = 104+67.32
P.T. = 106+30.65
NO SUPER

HWY. 17 DETOUR
P.I. = 209+35.25
Δ = 14°10'25" LT.
D = 10°30'00"
T = 67.84'
L = 134.98'
P.C. = 208+67.41
P.T. = 210+02.39
e = 0.100'/'
Ls = 300'

DETOUR STA. 212+46.74 =
HWY. 17 STA. 112+35.00
END DETOUR

STA. 112+35.00
END JOB 110706

HWY. 17 DETOUR
P.I. = 211+79.59
Δ = 14°10'25" RT.
D = 10°30'00"
T = 67.84'
L = 134.99'
P.C. = 211+11.75
P.T. = 212+46.74
NO SUPER

BM43071 1/19/2023
R110706.DGN

HWY. 17
SURVEY CONTROL DETAILS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	26	45
		SURVEY CONTROL DETAILS				

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

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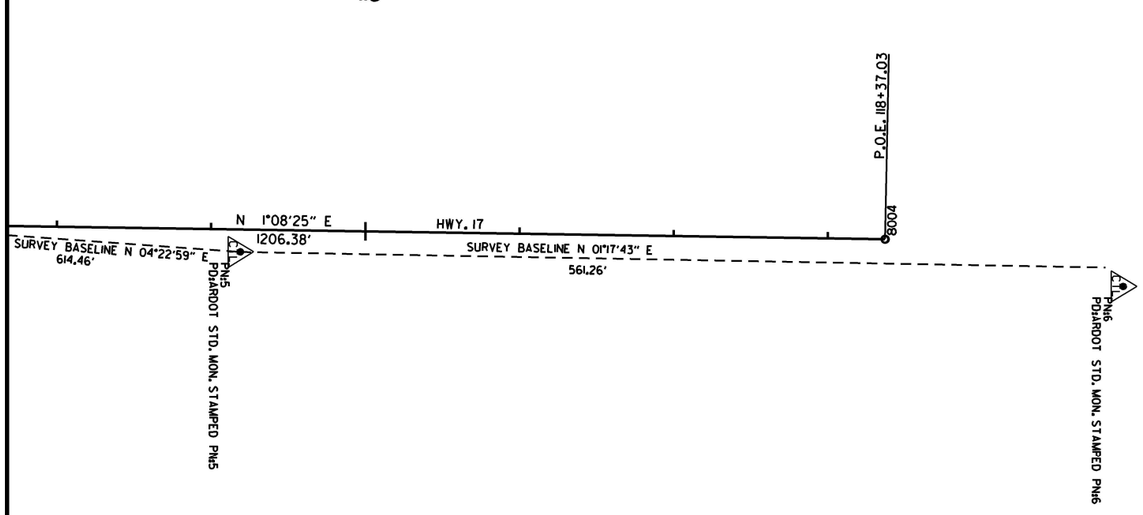
115



BM43071 1/19/2023
R110706.DGN

HWY. 17
SURVEY CONTROL DETAILS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	27	45
		PLAN AND PROFILE SHEETS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
Jun 15 2023 12:15 PM

GUARDRAIL

STA.	STA.	SIDE	GUARDRAIL (TYPE A) LIN. FT.	GUARDRAIL TERMINAL (TYPE 2) EACH	THRIE BEAM GUARDRAIL TERMINAL EACH
104+62.75	106+81.50	RT.	150	1	1
105+37.75	106+81.50	LT.	75	1	1
108+20.50	109+64.25	RT.	75	1	1
108+20.50	110+39.25	LT.	150	1	1

STA. 103+65 IN PLACE
18" X 26' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 42' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 70 CU. YDS.

STA. 107+00.00 - STA. 107+95.14 IN PLACE
95.0' X 25.0' R.C. CHANNEL BEAM
BR. NO. M0465
REMOVE AS EXISTING BRIDGE STRUCTURE
(SITE NO. 1)= 1.00 LUMP SUM

STA. 106+91.50 BRIDGE END
BRIDGE NO. 07603
119'-0" PRECAST CONCRETE BEAM UNIT
(39.5'-40'-39.5')
30'-0" CLEAR ROADWAY
119'-0" TOTAL LENGTH
STA. 108+10.50 BRIDGE END
Q25 = 1620 CFS
& D.A. = 35.7 SQ. MI.

100' TRANS. +75.00 +75.00

100' TRANS. +35.00 +35.00

100 105 110

BEGIN BRIDGE 106+91.50
END BRIDGE 108+10.50

SPECIAL FLOODPLAIN BOUNDARY - ENTIRE SHEET

101+75.00 40.11-50.00
P.I. 102+44.03 Δ = 00°04'55" LT.
104+00.00 60.00
P.I. 105+48.99
106+75.00 65.00
108+50.00 65.00
111+50.00 55.00
113+35.00 40.33-50.00

PROPOSED R/W
EXIST. R/W
CONST. LIMITS
24'
4:1
4' 20' 4"
4' 11" 4"
N 0°24'20" E
N 0°19'25" E
N 1°08'25" E
HWY. 17

101+75.00 55.00-39.89
103+25.00 65.00
104+50.00 65.00
P.C. 104+67.32
P.T. 106+30.65 65.00
106+75.00 65.00
108+50.00 65.00
110+00.00 55.00
111+25.00 55.33
113+35.00 50.00-39.67

T.C.E
BOAT GUNWALE SLASH

HWY. 17
P.I. = 105+48.99
Δ = 0°49'00" RT.
D = 0°30'00"
T = 81.67'
L = 163.33'
P.C. = 104+67.32
P.T. = 106+30.65
NO SUPER

106+00.00 130.00
108+50.00 115.00
110+00.00 100.00

SPECIAL FLOODPLAIN BOUNDARY - ENTIRE SHEET

HWY. 17

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

STA. 102+75.00
BEGIN JOB 110706
LOG MILE 11.00

NOTE: FOR ALL THE CONSTRUCTION OF TEMPORARY RAMPS OR HAUL ROADS, THIS STREAM IS CLASSIFIED AS A PERENNIAL STREAM. THE STREAM BANK ELEVATION IS 160 FT. MSL. BETWEEN STATIONS 207+18 AND 207+84. REFER TO SECTION 110.05 (c) OF THE 2014 STANDARD SPECIFICATIONS.

STA. 112+35.00
END JOB 110706

P.V.I. 102+75.00 169.47'
P.V.I. 107+25.00 170.90'
P.V.I. 112+35.00 169.37'
BR. END STA. 106+91.50 170.69'
BR. END STA. 108+10.50 170.62'
P.V.C. 106+00.00 170.50'
P.V.T. 108+50.00 170.53'
Q25 DESIGN H.W. ELEVATION 163.40'
VC= 250'
e= -0.19'
K= 403.23

0.32%
-0.30%
LT. D.G. -0.54%
RT. D.G. -0.46%
RT. D.G. 0.38%
LT. D.G. 0.77%
LT. D.G. 0.50%

102+75.00 RT. 164.06
102+75.00 LT. 165.59
104+50.00 LT. 164.48
105+00.00 RT. 163.02
109+40.00 RT. 164.41
109+40.00 LT. 163.00
110+20.00 LT. 163.40
112+35.00 LT. 165.05
112+35.00 RT. 165.49

210 200 190 180 170 160 150 140 130 120

100+00 105+00 110+00 115+00

BM43071 5/26/2021
R110706.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	28	45
		PLAN AND PROFILE SHEETS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
Jun 15 2023 12:15 PM

STA. 207+30 INSTALL
QUAD. 96" X 73' TEMP. PIPE CULVERT
ON 15° LT. FWD. SKEW
96" TEMPORARY PIPE CULVERT = 292 LIN. FT.

HWY. 17 DETOUR
P.I. = 205+74.16
Δ = 14°39'05" LT.
D = 10°30'00"
T = 70.15'
L = 139.53'
P.C. = 205+04.01
P.T. = 206+43.54
e = 0.100'/'
Ls = 300'

HWY. 17 DETOUR
P.I. = 209+35.25
Δ = 14°10'25" LT.
D = 10°30'00"
T = 67.84'
L = 134.98'
P.C. = 208+67.41
P.T. = 210+02.39
e = 0.100'/'
Ls = 300'

100 105 110 205 210

SPECIAL FLOODPLAIN BOUNDARY

101+75.00 40.11-50.00 | P.I. 102+44.03 Δ = 00°04'55" LT. | P.I. 203+49.11 | 104+00.00 60.00 | P.I. 105+48.99 | 106+75.00 65.00 | 108+50.00 65.00 | 111+50.00 55.00 | P.I. 211+79.59 | 113+35.00 40.33-50.00

PROPOSED R/W — EXIST. R/W — P.C. 205+04.01 — P.T. 206+43.54 — P.C. 208+67.41 — P.T. 210+02.39 — HWY. 17

N 0°24'20" E — N 0°19'25" E — N 1°08'25" E

S 15°47'30" E — 240.00' — N 13°02'00" W — 240.00'

DETOUR CONST. LIMITS — T.C.E — BOAT GUNWALE SLASH

HWY. 17 DETOUR N 1°08'25" E

101+75.00 55.00-39.89 | P.C. 202+75.00 | 103+25.00 65.00 | P.T. 204+22.31 | 104+50.00 65.00 | P.C. 104+67.12 | P.I. 205+74.16 | 106+00.00 130.00 | P.T. 106+30.65 | 106+75.00 65.00 | 108+50.00 115.00 | 108+50.00 65.00 | P.I. 209+35.25 | 110+00.00 100.00 | 110+00.00 55.00 | P.C. 211+11.75 | 111+25.00 53.15 | P.T. 212+46.74 | 113+35.00 50.00-39.67

HWY. 17 DETOUR
P.I. = 203+49.11
Δ = 15°28'05" RT.
D = 10°30'00"
T = 74.11'
L = 147.31'
P.C. = 202+75.00
P.T. = 204+22.31
NO SUPER

HWY. 17 DETOUR
P.I. = 211+79.59
Δ = 14°10'25" RT.
D = 10°30'00"
T = 67.84'
L = 134.99'
P.C. = 211+11.75
P.T. = 212+46.74
NO SUPER

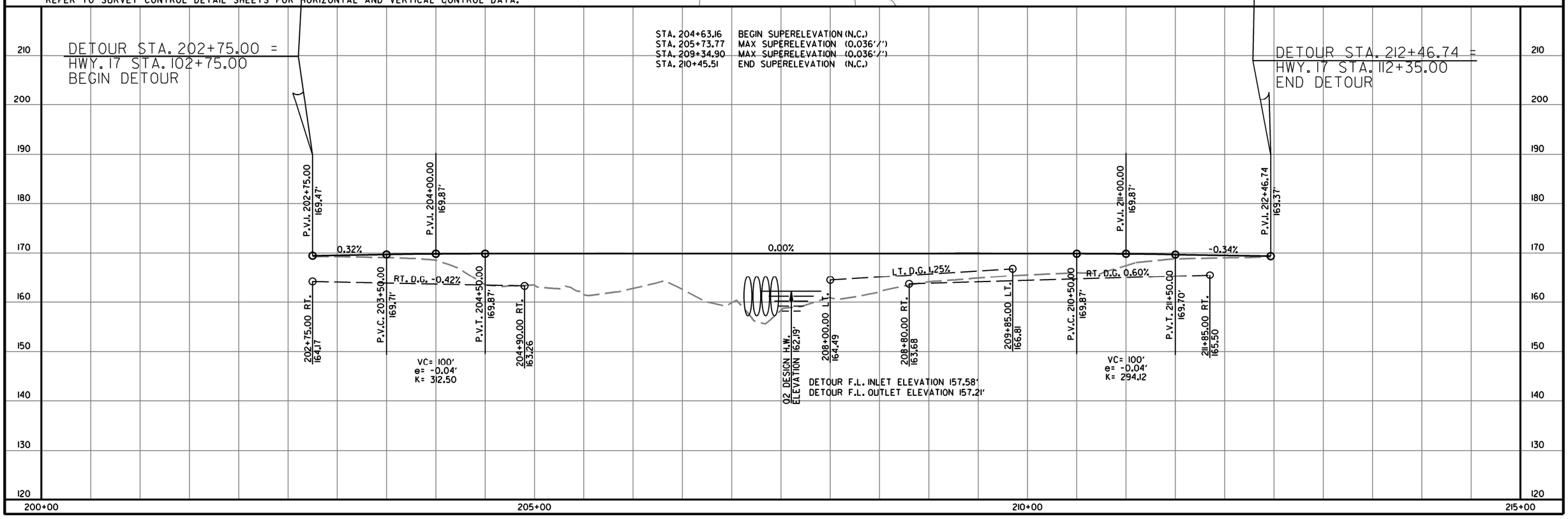
REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

HWY. 17 DETOUR

DETOUR STA. 202+75.00 = HWY. 17 STA. 102+75.00
BEGIN DETOUR

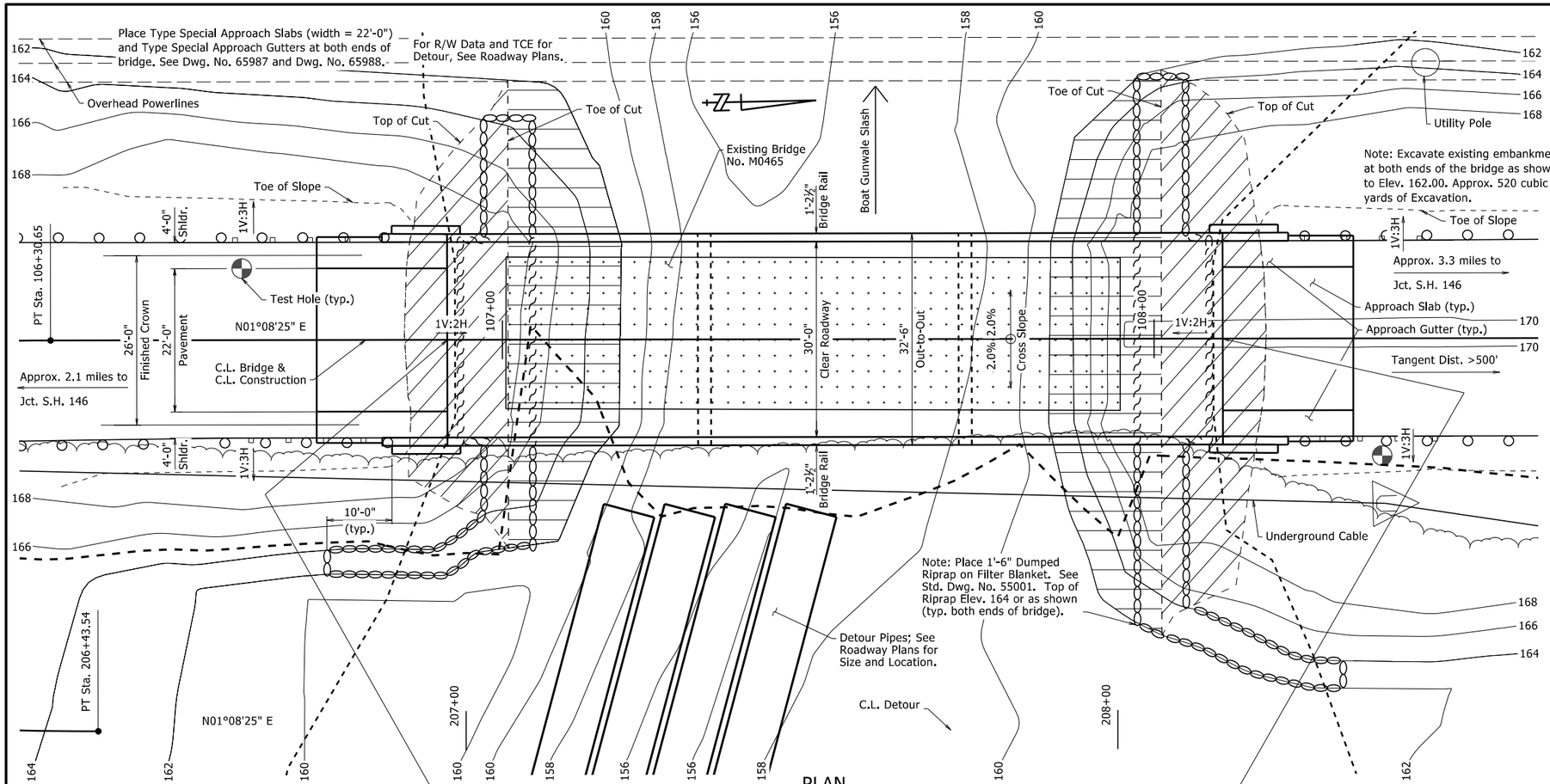
DETOUR STA. 212+46.74 = HWY. 17 STA. 112+35.00
END DETOUR

STA. 204+63.16 BEGIN SUPERELEVATION (N.C.)
STA. 205+73.77 MAX SUPERELEVATION (0.036'/')
STA. 209+34.90 MAX SUPERELEVATION (0.036'/')
STA. 210+45.51 END SUPERELEVATION (N.C.)



BM43071 5/26/2021
R110706.DGN

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	29	45
		07603 - LAYOUT - 65978				



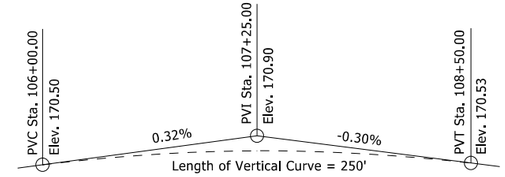
PLAN

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	①NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	FEET	FEET
Design	25	1620	162.8	163.2
Base	100	1950	163.2	163.5
Extreme	500	2330	163.5	164.0
Overtopping	>500	-	-	-

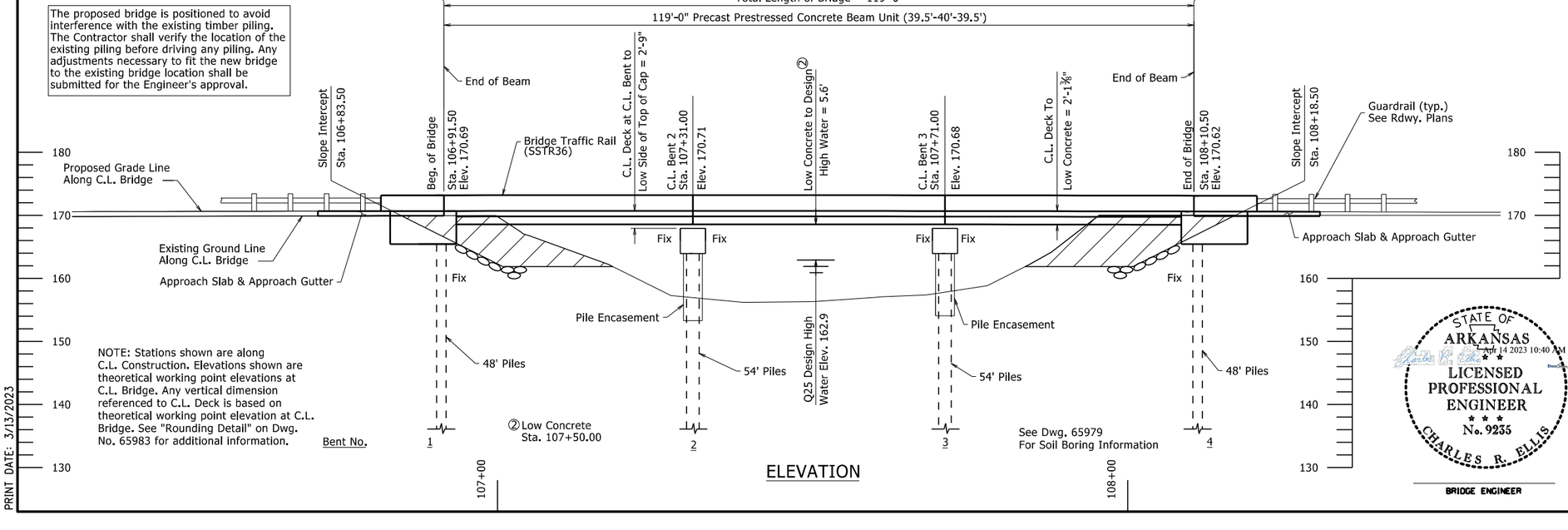
① Unconstricted water surface elevation without structure or roadway approaches.

Q100 backwater elevation for existing structure = 163.2 ft
Proposed Low Bridge Chord elevation = 168.5
Drainage Area = 35.7 square miles
Historical H.W. Elev. = 171.7



VERTICAL ALIGNMENT DATA

The proposed bridge is positioned to avoid interference with the existing timber piling. The Contractor shall verify the location of the existing piling before driving any piling. Any adjustments necessary to fit the new bridge to the existing bridge location shall be submitted for the Engineer's approval.



ELEVATION

PRINT DATE: 3/13/2023

STATE OF ARKANSAS
Jun 14 2023 10:40 AM
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 2
LAYOUT OF BRIDGE
HIGHWAY 17 OVER BOAT GUNWALE SLASH
BOAT GUNWALE SLASH STR. & APPRS. (S)
MONROE COUNTY

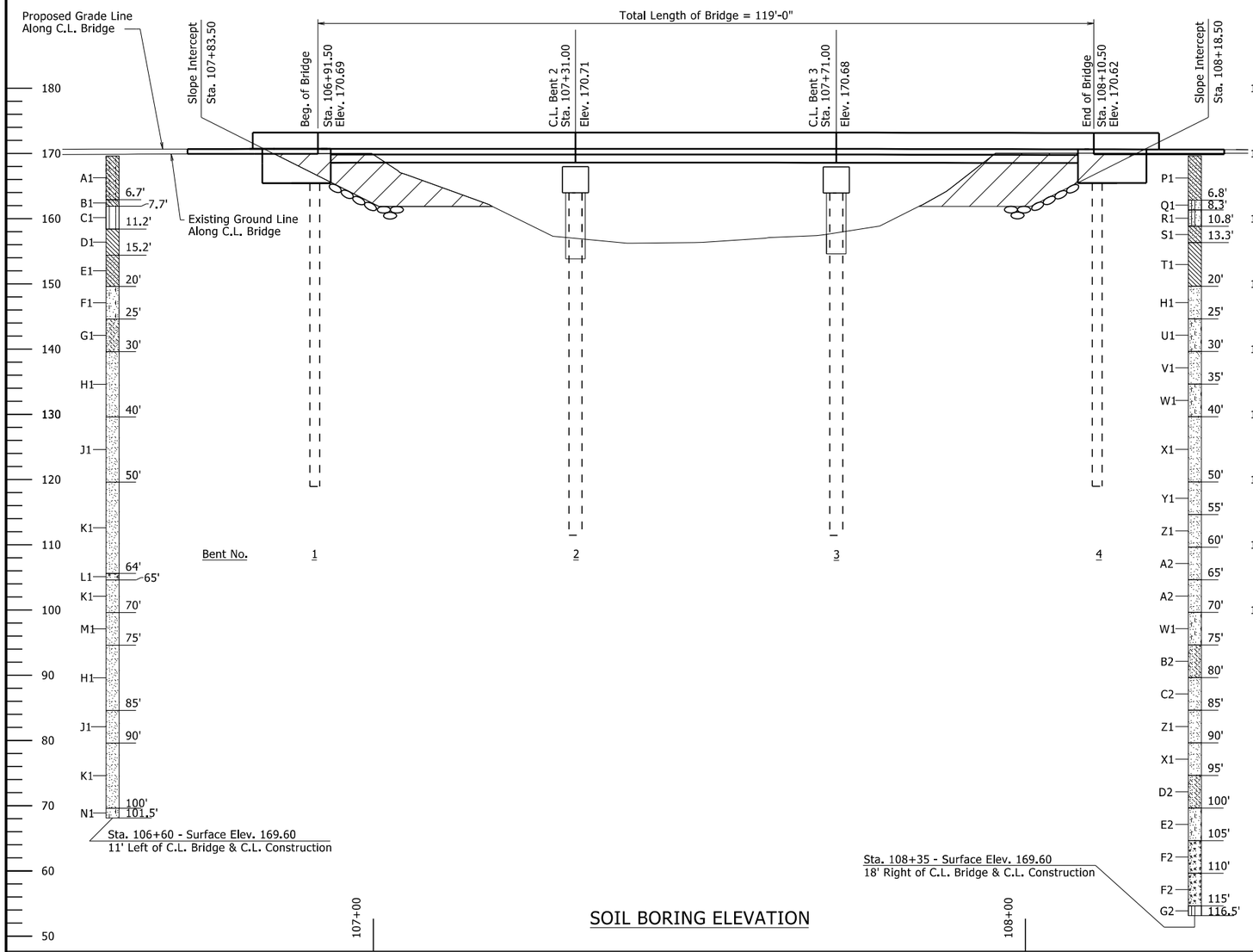
ROUTE 17 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RD DATE: 07/26/2021 FILENAME: b110706_L1.dgn
CHECKED BY: MCB DATE: 08/24/2021 SCALE: 1" = 10'-0"
DESIGNED BY: JWP DATE: 05/24/2021

BRIDGE NO. 07603 DRAWING NO. 65978

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	30	45
		07603 - LAYOUT - 65979				



SOIL BORING ELEVATION

BORING LEGEND

A1-Moist, Soft, Brown Silty Clay with Sand
B1-Moist, Brown Silty Clay with Sand (Manganese Nodules)
C1-Wet, Gray Silt with Some Organic Matter (Wood)
D1-Wet, Medium Stiff, Gray Lean Clay
E1-Moist, Gray Lean Clay with Sand
F1-Wet, Medium Dense, Gray Poorly Graded Sand with Silt
G1-Wet, Medium Dense, Gray Sand with Clay
H1-Wet, Medium Dense, Gray Poorly Graded Sand
J1-Wet, Medium Dense, Gray Poorly Graded Sand with Some Gravel
K1-Wet, Medium Dense, Gray Poorly Graded Sand with Trace Gravel
L1-Sand with Gravel
M1-Wet, Medium Dense, Gray Poorly Graded Sand with Trace Gravel and Trace Organic Matter (Wood)
N1-Wet, Dense, Gray Poorly Graded Sand with Silt
P1-Moist, Medium Stiff, Brown Sandy Clay
Q1-Moist, Very Loose, Brown Sandy Silt
R1-Moist, Gray Silt with Sand
S1-Moist, Stiff, Brown Sandy Clay
T1-Moist, Gray Sandy Lean Clay (Manganese Nodules)
U1-Wet, Loose, Gray Sand with Silt
V1-Wet, Loose, Gray Sand with Some Organic Matter (Wood)
W1-Wet, Medium Dense, Gray Sand with Silt
X1-Wet, Medium Dense, Gray Sand with Trace Gravel
Y1-Wet, Dense, Gray Sand with Trace Gravel
Z1-Wet, Medium Dense, Gray Sand
A2-Wet, Medium Dense, Gray Sand with Some Gravel
B2-Wet, Medium Dense, Gray Clayey Sand with Trace Gravel
C2-Wet, Dense, Gray Sand and Trace Gravel
D2-Wet, Medium Dense, Gray Clayey Sand
E2-Wet, Medium Dense, Gray Sand with Silt and Some Gravel
F2-Wet, Dense, Brown Sand with Gravel
G2-Moist, Medium Dense, Gray Silt

"N" VALUES

Sta. 106+60 - 11' Left of C.L. Bridge & C.L. Construction

3.0 - 4.0, N=3	55.5 - 56.5, N=25
4.7 - 5.7, N=3	60.5 - 61.5, N=16
11.7 - 12.7, N=5	65.5 - 66.5, N=24
20.5 - 21.5, N=25	70.5 - 71.5, N=21
25.5 - 26.5, N=16	75.5 - 76.5, N=18
30.5 - 31.5, N=16	80.5 - 81.5, N=26
35.5 - 36.5, N=25	85.5 - 86.5, N=27
40.5 - 41.5, N=22	90.5 - 91.5, N=25
45.5 - 46.5, N=25	95.5 - 96.5, N=29
50.5 - 51.5, N=24	100.5 - 101.5, N=38

Sta. 108+35 - 18' Right of C.L. Bridge & C.L. Construction

3.0 - 4.0, N=5	60.5 - 61.5, N=21
4.8 - 5.8, N=5	65.5 - 66.5, N=11
7.3 - 8.3, N=4	70.5 - 71.5, N=19
11.3 - 12.3, N=10	75.5 - 76.5, N=18
20.5 - 21.5, N=14	80.5 - 81.5, N=35
25.5 - 26.5, N=9	85.5 - 86.5, N=15
30.5 - 31.5, N=7	90.5 - 91.5, N=19
35.5 - 36.5, N=12	95.5 - 96.5, N=25
40.5 - 41.5, N=14	100.5 -101.5, N=29
45.5 - 46.5, N=23	105.5 - 106.5, N=32
50.5 - 51.5, N=45	110.5 - 111.5, N=48
55.5 - 56.5, N=21	115.5 - 116.5, N=30

PRINT DATE: 3/13/2023

GENERAL NOTES

BENCHMARK: Vertical Control Data are shown on the Survey Control Data Sheets.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 edition) with applicable Supplemental Specifications and Special Provisions. Section and Subsection refer to the Standard Construction Specifications unless otherwise noted in the Plans.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Eighth Edition (2017).

LIVE LOADING: HL-93

SEISMIC ZONE: 2 SD1: 0.27 SITE CLASS: D

SEISMIC OPERATIONAL CLASSIFICATION: Other

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (Superstructure)	f'c = 4,000 psi
Class S Concrete (Substructure)	f'c = 3,500 psi
Class S Concrete (Prestressed Beams)	f'c = 5,000 psi
Reinforcing Steel (AASHTO M 31 or M 322, Type A)	fy = 60,000 psi
Prestressing Strands (AASHTO M203. Gr. 270)	fpu = 270,000 psi
Structural Steel (ASTM A709, Gr. 36)	Fy = 36,000 psi
Structural Steel (ASTM A709, Gr. 50 or Gr. 50W)	Fy = 50,000 psi

BORING LOGS: Boring logs may be obtained from the Construction Contract Development Section of the Program Management Division.

STEEL SHELL PILING: Piling in Bents 1 and 4 shall be 18" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 147 tons per pile. Piling in Bents 2 and 3 shall be 24" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 279 tons per pile. All piling shall be driven with an approved air, steam, or diesel hammer to a minimum tip elevation of 112.50 or lower at Bents 1 and 4 and to a minimum tip elevation of 119.00 or lower at Bents 2 and 3. Piling in end bents shall be driven after embankment to bottom of cap is in place. Lengths of piling shown are assumed for estimating quantities only. Actual lengths are to be determined in the field. No additional payment will be made for cut-off or build-up. Test piles are not required but may be driven for the Contractor's information in accordance with Subsection 805.08(g). No piles will be paid for as test piles.

DRIVING SYSTEM: The driving system approval and the ultimate bearing capacity determination for piling shall be based on the requirements of Subsection 805.09(b), "Method B Wave Equation Analysis (WEAP)". It is estimated that the minimum rated hammer energy required to obtain the ultimate bearing capacity for all piles will be 42,000 foot pounds per blow.

PILE ENCASEMENT: Pile encasement for Bents 2 and 3 shall extend from bottom of cap to 3' below natural or finished ground. See Std. Dwg No. 55021 for additional information.

BRIDGE DECK: The concrete bridge deck shall be given a tine finish as specified for the final finishing in Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish.

PROTECTIVE SURFACE TREATMENT: Class 2 Protective Surface Treatment shall be applied to the roadway surface and to the roadway face and top of the concrete bridge rails in accordance with Section 803.

DETAIL DRAWINGS:	DRAWING NO.
End Bents	65980 - 65981
Intermediate Bents	65982
119'-0" Precast Prestressed Concrete Beam Unit	65983-65986
Concrete Filled Steel Shell Piling	55021
Bridge Traffic Rail Type SSTR36	55070
Type Special Approach Slabs	65987
Type Special Approach Gutters	65988

EXISTING BRIDGE: Existing Bridge No. M0465 (Log Mile 11.08) is 25.0' wide (23.7' clear roadway) and 95.0' long and consists of 5 - 19'-0" precast concrete spans supported by timber piles. The existing bridge is located along centerline of the proposed new bridge. Plans of the existing structure, if available, may be obtained upon request to the Construction Contract Development Section of the Program Management Division.

REMOVAL AND SALVAGE: After the Detour is open to traffic, the Contractor shall remove existing Bridge No. M0465 in accordance with Section 205. Existing remnant timber piling from a previous structure shall also be removed to a depth of 2' below subgrade or final ground surface. This work will not be paid for directly but shall be considered subsidiary to the item "Removal of Existing Bridge Structure (Site No.)". All material from the existing bridge shall become the property of the Contractor except the following which shall remain the property of the State:

Guardrail Beams and Posts

MAINTENANCE OF TRAFFIC: See Roadway Plans.

STATE OF ARKANSAS
Apr 14 2023 10:40 AM
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 2
LAYOUT OF BRIDGE
HIGHWAY 17 OVER BOAT GUNWALE SLASH
BOAT GUNWALE SLASH STR. & APPRS. (S)
MONROE COUNTY

ROUTE 17 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

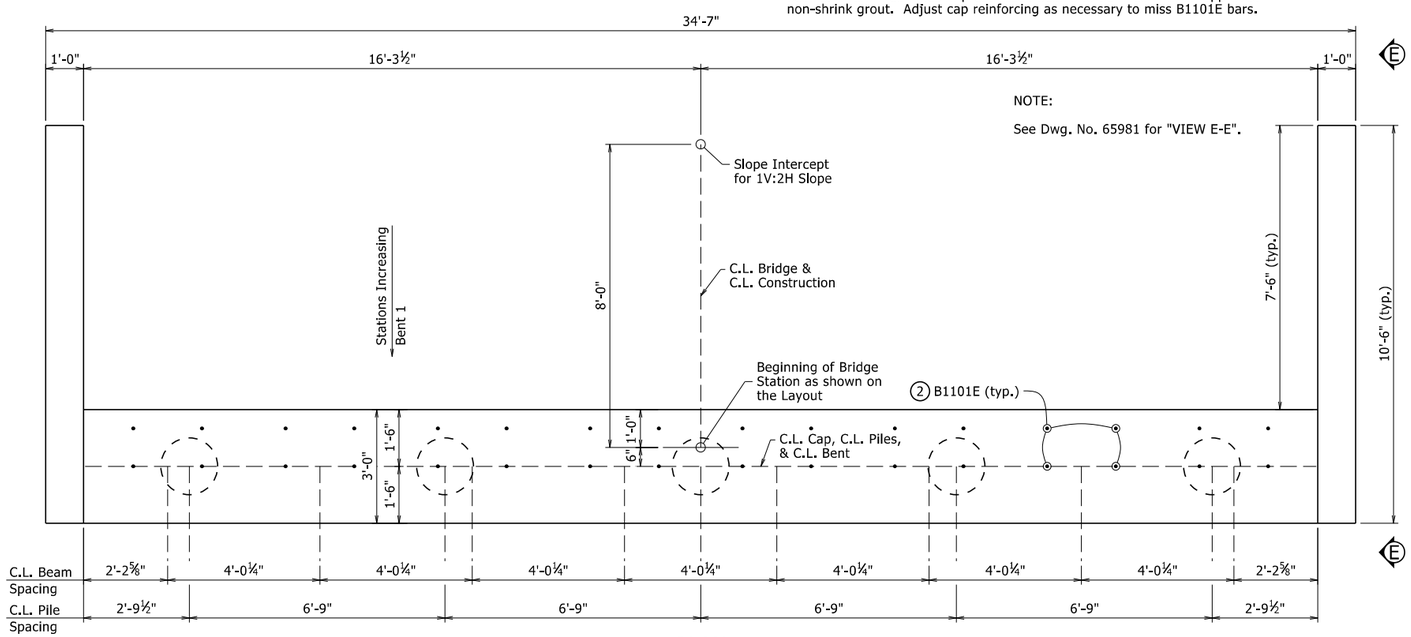
DRAWN BY: RD DATE: 07/26/2021 FILENAME: b110706_L1.dgn
CHECKED BY: MCB DATE: 08/24/2021 SCALE: 1" = 10'-0"
DESIGNED BY: JWP DATE: 05/24/2021

BRIDGE NO. 07603 DRAWING NO. 65979

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	31	45
		07603 - END BENTS - 65980				

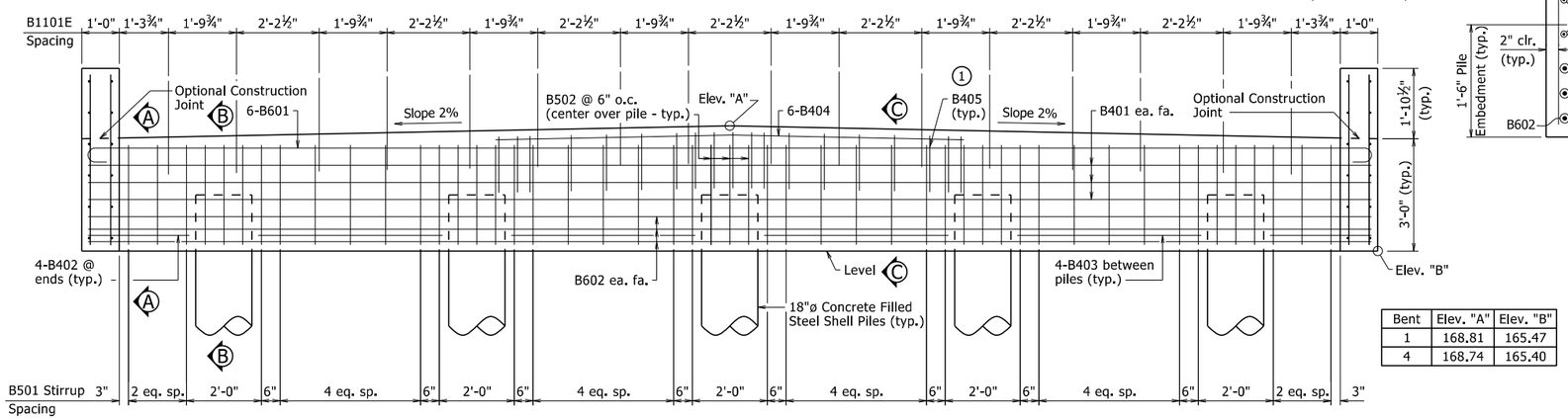
(1) Riser stirrup bars to be spaced and lapped 1'-0" min. with cap stirrup bars as shown.

(2) Dowel bars B1101E shall be drilled and grouted into the cap with an approved epoxy. Embedment shown is approximate. Actual embedment and hole size shall be in accordance with the epoxy manufacturer's recommendations. Dowel bars B1101E to project thru bearing pads 18" into preformed holes in prestressed beams. Preformed holes in prestressed beams to be filled with an approved non-shrink grout. Adjust cap reinforcing as necessary to miss B1101E bars.



PLAN

½" = 1'-0"

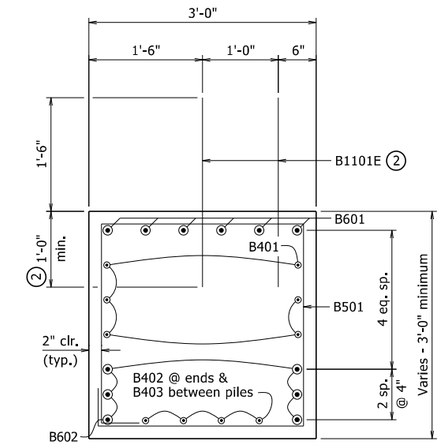


ELEVATION

LOOKING BACK

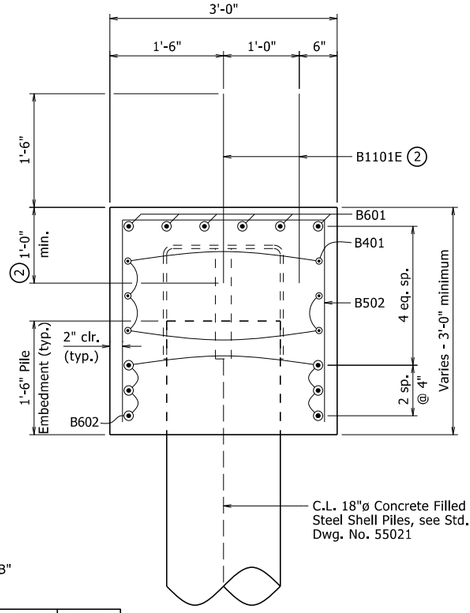
½" = 1'-0"

Bent	Elev. "A"	Elev. "B"
1	168.81	165.47
4	168.74	165.40



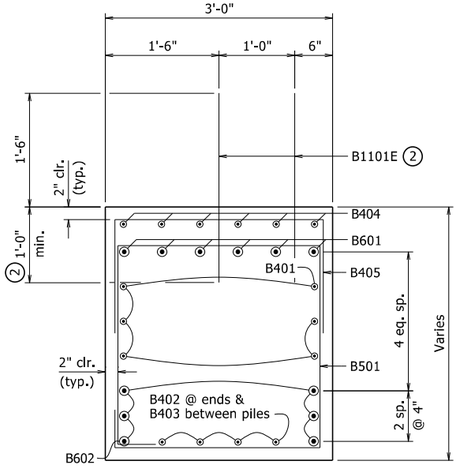
SECTION A-A

1" = 1'-0"



SECTION B-B

1" = 1'-0"



SECTION C-C

1" = 1'-0"

STATE OF ARKANSAS
Apr 14 2023 10:40 AM
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF END BENTS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

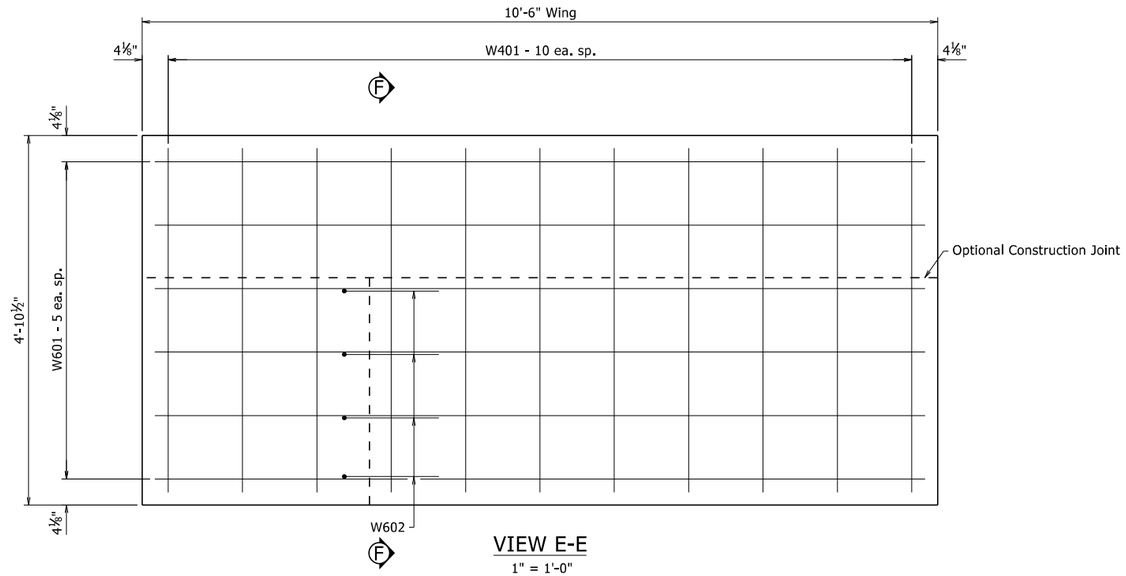
LITTLE ROCK, ARK.

DRAWN BY: CGP DATE: 12/21/2022 FILENAME: b110706_b1.dgn
CHECKED BY: JJ DATE: 12/29/2022 SCALE: AS NOTED
DESIGNED BY: JJ DATE: 12/2022

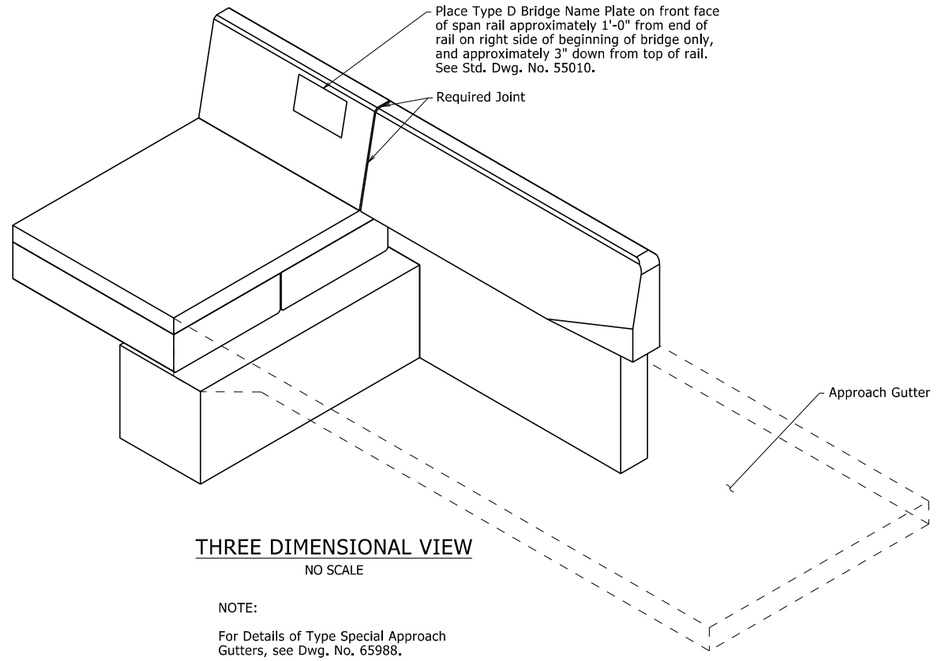
BRIDGE NO. 07603 DRAWING NO. 65980

PRINT DATE: 4/14/2023

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	32	45
		07603 - END BENTS - 65981				



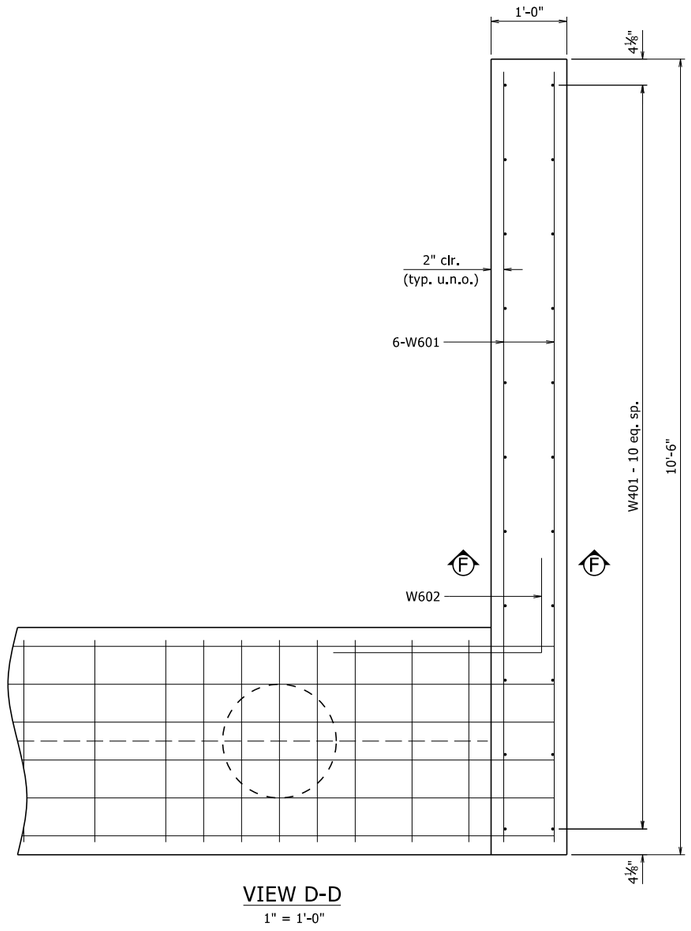
VIEW E-E
1" = 1'-0"



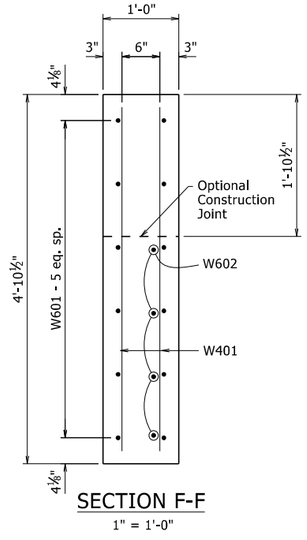
THREE DIMENSIONAL VIEW
NO SCALE

NOTE:

For Details of Type Special Approach Gutters, see Dwg. No. 65988.



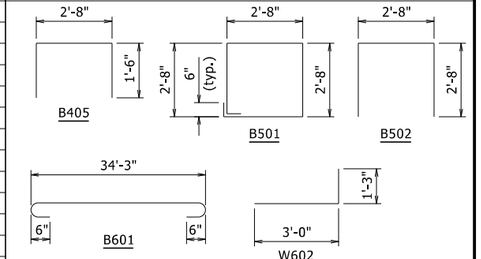
VIEW D-D
1" = 1'-0"



SECTION F-F
1" = 1'-0"

BAR LIST - PER BENT

MARK	NO. REQ'D	LENGTH	P.D.	BENDING DIAGRAMS
B401	6	34'-3"	Str.	
B402	8	2'-8"	Str.	
B403	16	4'-11"	Str.	
B404	6	12'-6"	Str.	
B405	19	5'-6"	2"	
B501	34	11'-2"	2½"	
B502	15	7'-10"	2½"	
B601	6	35'-7"	4½"	
B602	6	34'-3"	Str.	
B1101E	32	2'-6"	Str.	
W401	44	4'-6"	Str.	
W601	24	10'-2"	Str.	
W602	8	4'-1"	4½"	



Dimensions are out to out of bars.
Bars with an "E" suffix are to be epoxy coated.

STATE OF ARKANSAS
Apr 14 2023 10:40 AM
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF END BENTS

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

DRAWN BY: CGP DATE: 12/21/2022 FILENAME: b110706_b1.dgn
CHECKED BY: JJ DATE: 12/29/2022 SCALE: AS NOTED
DESIGNED BY: JJ DATE: 12/2022

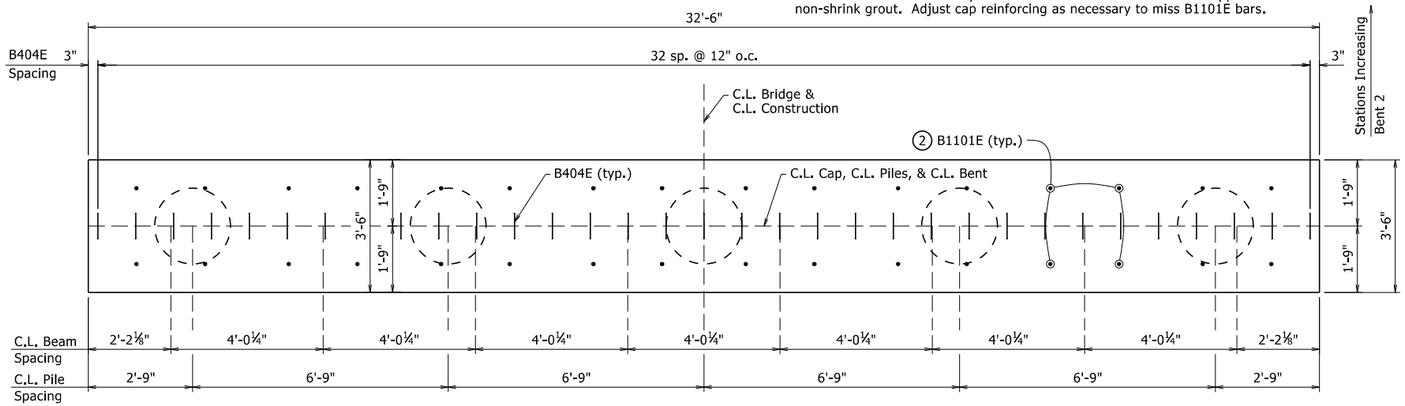
BRIDGE NO. 07603 DRAWING NO. 65981

PRINT DATE: 4/14/2023

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	33	45
		07603 - INTERMEDIATE BENTS - 65982				

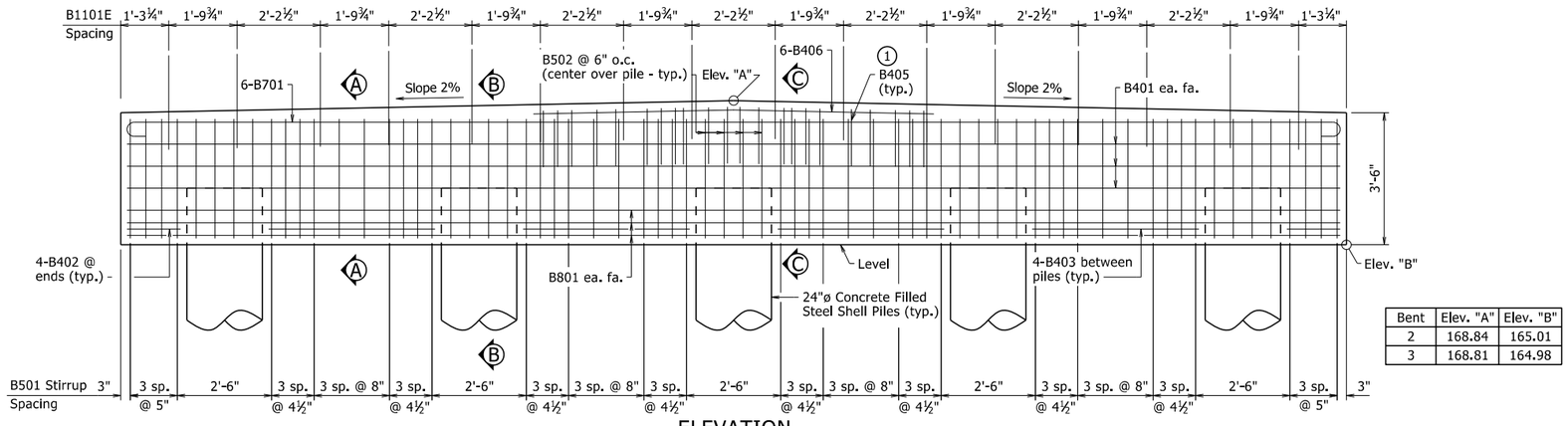
(1) Riser stirrup bars to be spaced and lapped with cap stirrup bars as shown.

(2) Dowel bars B1101E shall be drilled and grouted into the cap with an approved epoxy. Embedment shown is approximate. Actual embedment and hole size shall be in accordance with the epoxy manufacturer's recommendations. Dowel bars B1101E to project thru bearing pads 18" into preformed holes in prestressed beams. Preformed holes in prestressed beams to be filled with an approved non-shrink grout. Adjust cap reinforcing as necessary to miss B1101E bars.



PLAN

½" = 1'-0"



Bent	Elev. "A"	Elev. "B"
2	168.84	165.01
3	168.81	164.98

ELEVATION

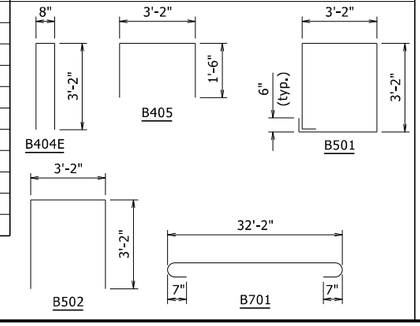
LOOKING AHEAD

½" = 1'-0"

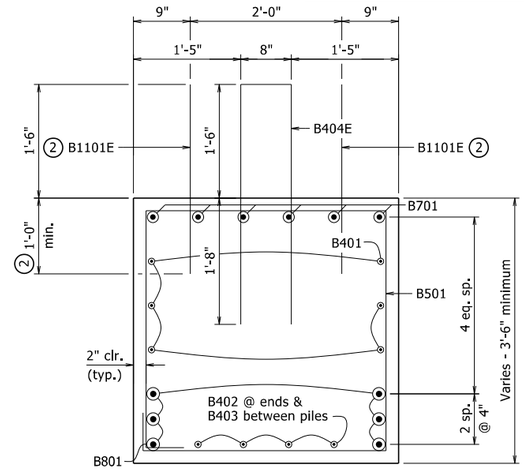
BAR LIST - PER BENT

MARK	NO. REQ'D	LENGTH	P.D.
B401	6	32'-2"	Str.
B402	8	1'-5"	Str.
B403	16	4'-5"	Str.
B404E	33	6'-10"	2"
B405	22	6'-0"	2"
B406	6	10'-8"	Str.
B501	48	13'-2"	2½"
B502	20	9'-3"	2½"
B701	6	33'-10"	5¼"
B801	6	32'-2"	Str.
B1101E	32	2'-6"	Str.

BENDING DIAGRAMS

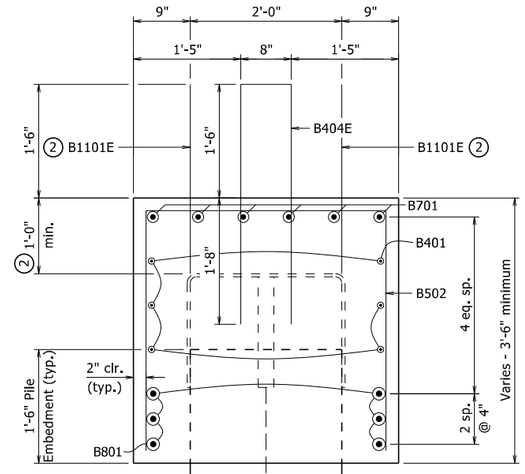


Dimensions are out to out of bars.
Bars with an "E" suffix are to be epoxy coated.



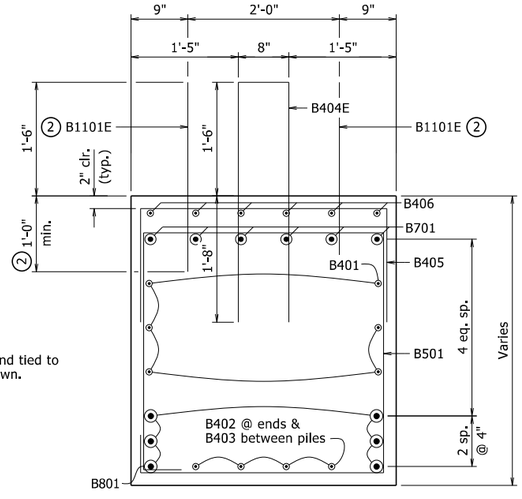
SECTION A-A

1" = 1'-0"



SECTION B-B

1" = 1'-0"



NOTE:

B405 bars to be spaced and tied to B501 or B502 bars as shown.

SECTION C-C

1" = 1'-0"

STATE OF ARKANSAS
Jun 14 2023 10:40 AM
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS
BRIDGE ENGINEER

DETAILS OF INTERMEDIATE BENTS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CGP DATE: 12/29/2022 FILENAME: b110706_b2.dgn
CHECKED BY: JJ DATE: 01/06/2023 SCALE: AS NOTED
DESIGNED BY: JJ DATE: 12/2022

BRIDGE NO. 07603 DRAWING NO. 65982

PRINT DATE: 4/14/2023

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	34	45
		07603 - SPAN DETAILS - 65983				

NOTE:

Bar positions and clearances from the forms shall be maintained by means of stays, ties, hangers, or other approved devices sufficient in size and number to prevent displacement during construction, per Subsection 804.06.

Slab Reinforcing

Longitudinal: S502E in top (place as shown)
2-S601E in top (place as shown), see "REINFORCING PLAN & DECK POURING SEQUENCE", Dwg. No. 65986.

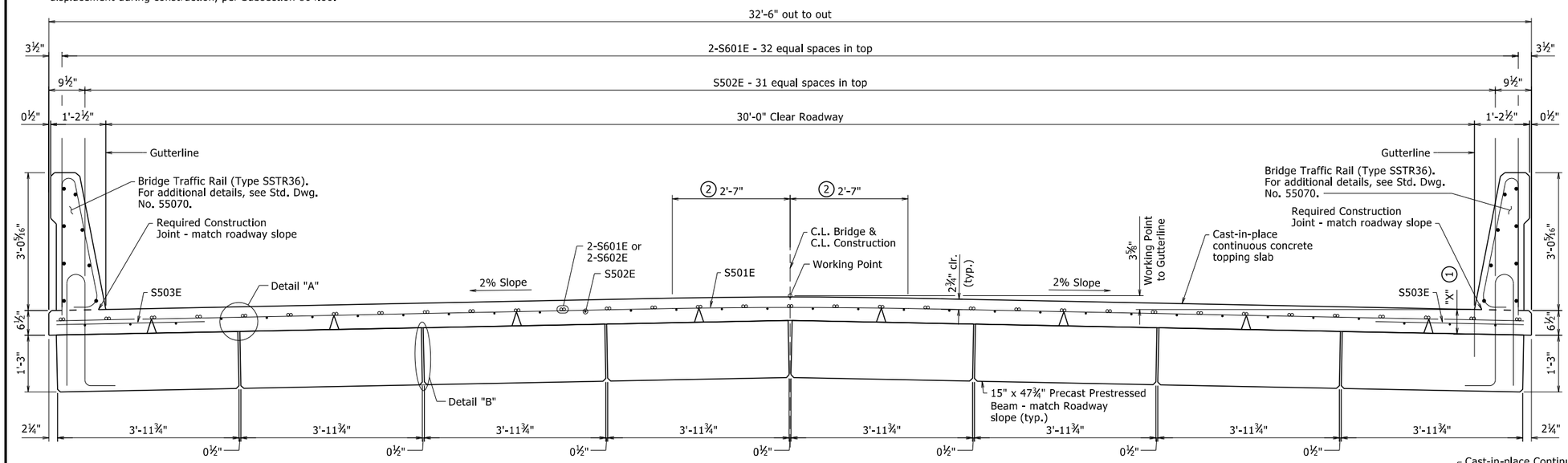
Transverse: S501E @ 12" o.c. in top
S503E @ 12" in top of overhangs (bundled with #5 bars) both sides

NOTE:

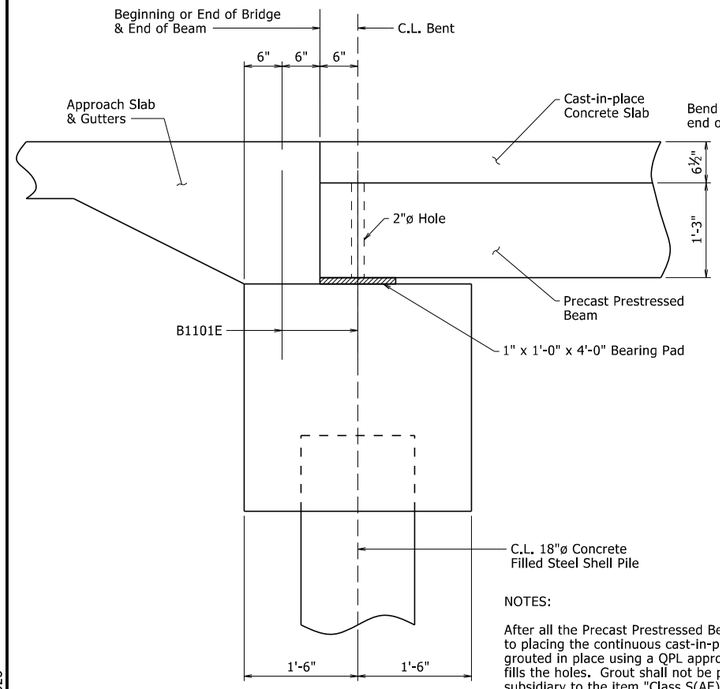
Class 2 Protective Surface Treatment shall be applied to the roadway face and top of the concrete bridge rail and to the roadway surface.

(1) "X" is 6½" at C.L. Bearing based on theoretical beam camber, dead load deflections of cast-in-place concrete slab, and a constant grade. The Contractor shall adjust these values for the vertical curve along the bridge unit.

(2) See "ROUNDING DETAIL".

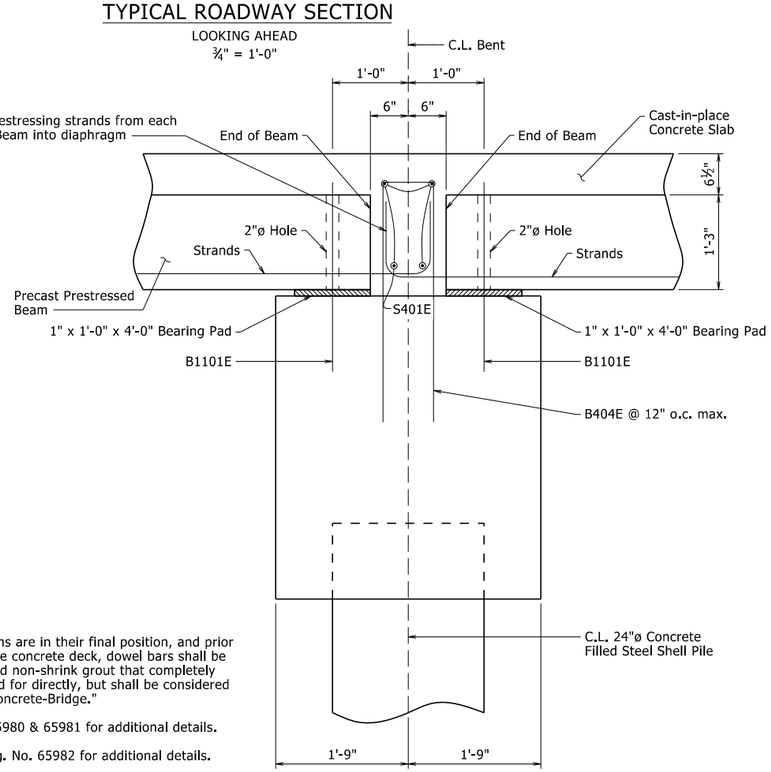


TYPICAL ROADWAY SECTION



END BENT SECTION

1" = 1'-0"



INTERMEDIATE BENT SECTION

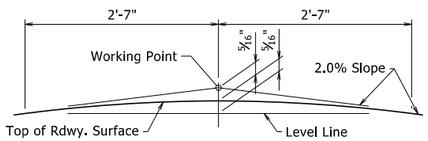
1" = 1'-0"

NOTES:

After all the Precast Prestressed Beams are in their final position, and prior to placing the continuous cast-in-place concrete deck, dowel bars shall be grouted in place using a QPL approved non-shrink grout that completely fills the holes. Grout shall not be paid for directly, but shall be considered subsidiary to the item "Class S(AE) Concrete-Bridge."

See End Bent details on Dwg. Nos. 65980 & 65981 for additional details.

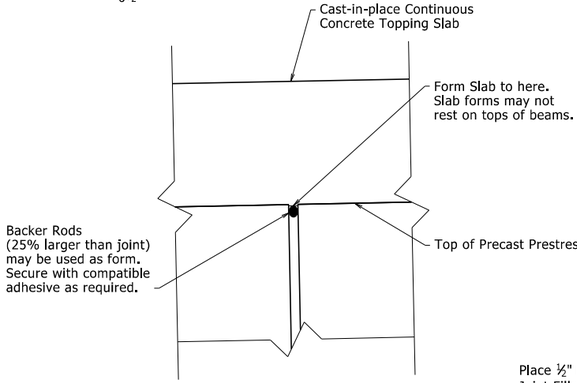
See Intermediate Bent details on Dwg. No. 65982 for additional details.



NOTE: Working Point matches Theoretical Roadway Grade.

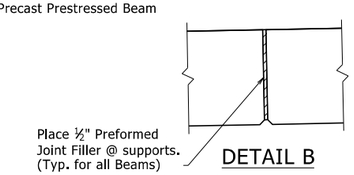
ROUNDING DETAIL

NO SCALE



DETAIL A

NO SCALE



DETAIL B

NO SCALE

NOTE:

Backer Rods and Preformed Joint filler shall not be paid for directly, but shall be considered subsidiary to the item "Prestressed Concrete Beams (Non-Voided 15" x 47¾")."

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Apr 14 2023 10:40 AM
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 4
DETAILS OF PRECAST PRESTRESSED BEAM UNIT

ROUTE SEC.

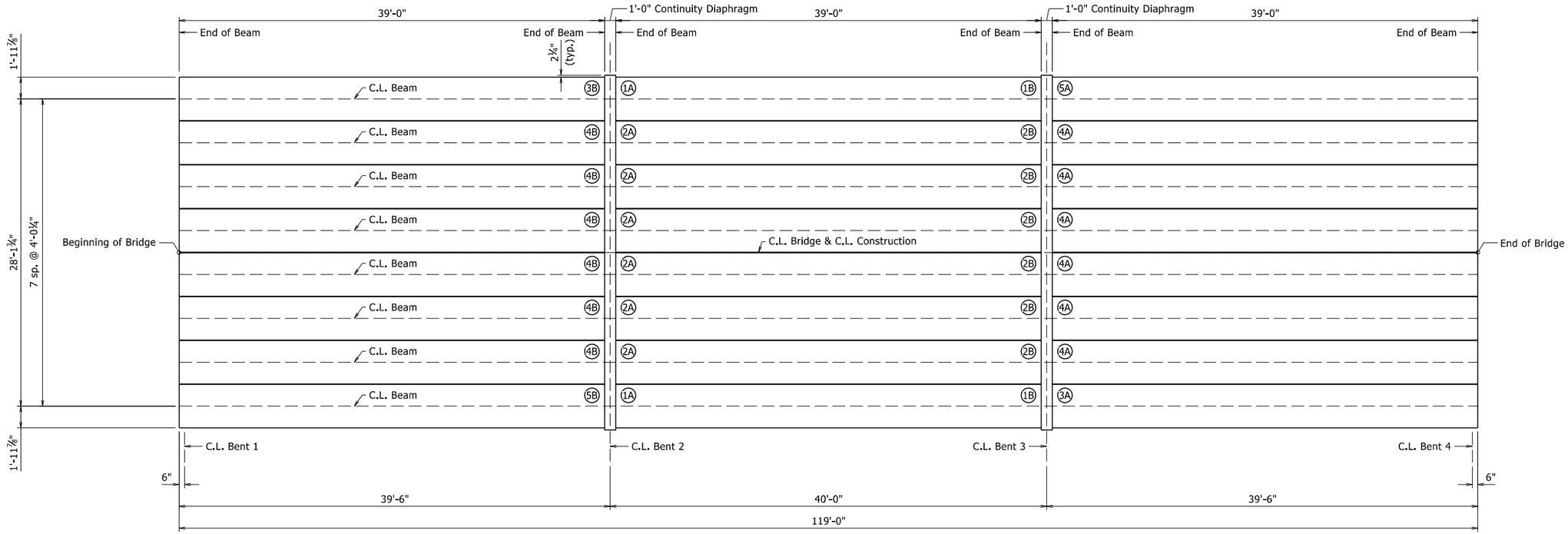
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CGP DATE: 11/01/2022 FILENAME: b110706_s1.dgn
CHECKED BY: JJ DATE: 12/08/2022 SCALE: AS NOTED
DESIGNED BY: JJ DATE: 10/2022

BRIDGE NO. 07603 DRAWING NO. 65983

PRINT DATE: 4/14/2023

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	35	45
		07603 - SPAN DETAILS - 65984				



FRAMING PLAN

GENERAL NOTES

PRESTRESSED BEAMS:

Pretensioning steel shall be 0.6" diameter Low Relaxation strands with a minimum ultimate strength of 270 ksi and shall conform to AASHTO M 203.

Prestressing strands and steel reinforcing bars in the beam will not be paid for directly, but will be subsidiary to the item "Prestressed Concrete Beam (Non-Voided 15" x 47¾")".

All beams shall be non-voided 15" x 47¾" rectangular beams as shown on the details. Chamfer all exposed corners to ¾".

All work and materials shall be as specified in Subsection 802.22.

Concrete shall be Class "S" and shall have a minimum 28 day compressive strength f'c = 5,000 psi. The initial tensile force applied to each 0.6" diameter strand shall be 44,000 pounds except as noted. Transfer of this tensioning load to the beam shall not be done until the compressive strength of the concrete is 4,000 psi.

Dimensions shown are to the center of strands.

The Contractor shall submit the method and sequence for release of strands to the Engineer for approval prior to casting of the beams.

Beam length shown on the design plans are net lengths measured horizontally along beam centerlines. The beam fabricator shall make the necessary allowances for grade and shortening, creep and shrinkage.

Exposed steel at beginning and end of bridge shall be protected against corrosion after cutting strands by a coating of two layers of zinc-rich paint.

After detensioning, saw cut, grind, or bend up strands as designated by the plans. Heat-cutting or bending methods shall not be used within 6" of the beams.

Extreme care shall be exercised in handling and moving Precast Prestressed Concrete Beams. Beams must be maintained in an upright position at all times and must be picked up from points near the girder ends. Disregard of this requirement may lead to the collapse of the beam. The Contractor's proposed lifting details shall be submitted on shop drawings to the Engineer for approval. The use of holes for lifting purposes will not be permitted.

The points of support and direction of reactions with respect to the member shall be approximately the same during transport and storage as when member is in its final position.

The Contractor may submit alternate strand patterns with design calculations for review and approval in accordance with Subsection 802.22 except that only 0.6" diameter strands shall be allowed.

Distances from the forms and spacing of the Prestressed Steel shall be maintained by stays, ties, hangers, spacers or other approved supports which shall be on the Shop Drawings.

Drawings show general features of design only. Shop drawings shall be submitted to the Engineer and approval shall be secured before fabrication can begin.

SUPERSTRUCTURE NOTES:

CONCRETE:

All concrete, except for prestressed beams, shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi. Concrete shall be poured in the dry and all exposed corners shall be chamfered ¾" unless otherwise noted.

The concrete deck (roadway surface) shall be given a tine finish in accordance with Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the beam. When permitted, the use of a longitudinal strike-off will require that a vertical camber adjustment be made in the strike-off to account for the future dead load deflection due to any railings.

REINFORCING STEEL:

All reinforcing steel shall be Grade 60 conforming to AASHTO M 31 or M 322, Type A, with mill test reports and shall be epoxy coated. The reinforcing steel is to be accurately located in the forms and firmly held in place by steel wire supports, sufficient in number and size to prevent displacement during the course of construction. The wire supports will not be paid for directly, but will be considered subsidiary to the item "Epoxy Coated Reinforcing Steel (Grade 60)".

STATE OF ARKANSAS
Apr 14 2023 10:40 AM
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 4
DETAILS OF PRECAST PRESTRESSED BEAM UNIT

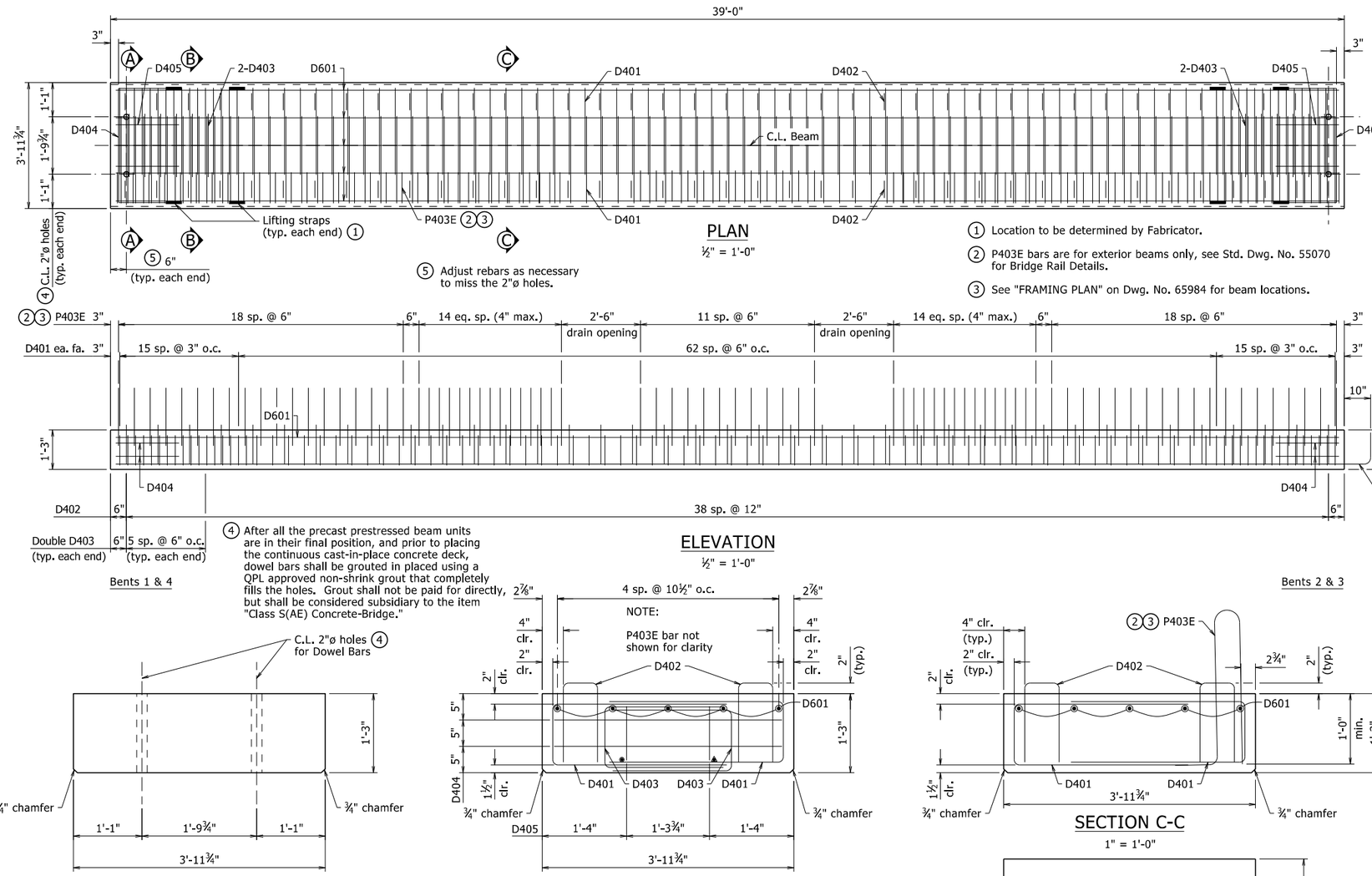
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CGP DATE: 11/01/2022 FILENAME: b110706_s1.dgn
CHECKED BY: JJ DATE: 12/08/2022 SCALE: 3/16" = 1'-0"
DESIGNED BY: JJ DATE: 10/2022

BRIDGE NO. 07603 DRAWING NO. 65984

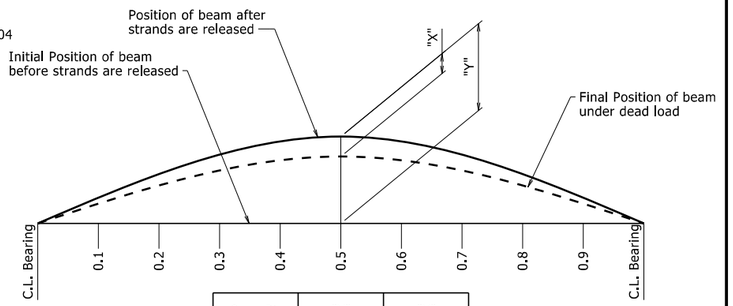
PRINT DATE: 4/14/2023

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	36	45
		07603 - SPAN DETAILS - 65985				



PLAN
½" = 1'-0"

ELEVATION
½" = 1'-0"



Span Pt.	"X"	"Y"
C.L. Bearing	0.000	0.000
0.1	0.074	0.459
0.2	0.151	0.604
0.3	0.210	0.767
0.4	0.250	0.856
0.5	0.263	0.883

Table is symmetrical about the C.L. Unit

"X" is Dead Load Deflection of Slab + Composite Dead Load

"Y" is expected Camber of Beam at 90 days after release (Prestress + Dead Load of Beam).

CAMBER & DEFLECTIONS (INCHES)

NOTE:

"X" & "Y" are based on the required minimum strength and may vary from the dimensions shown. "X" & "Y" shall be measured along bottom of beams unless otherwise approved by the Engineer. See Slab Tolerance on Dwg. No. 65986 for limitations of the beams final position under dead load. The Contractor is responsible for any adjustment necessary to meet slab thickness tolerance and to achieve an acceptable finished grade. No payment shall be made for any additional concrete in the slab when camber is less than shown.

SPECIAL CAMBER NOTES

The camber and dead load deflection values shown on the plans are estimated based on the required minimum concrete strength for the precast prestressed concrete beam units. The contractor shall provide the Engineer with the following information:

A. Actual 28-day concrete strength of prestressed concrete beams.

B. Estimated age of prestressed concrete beams at time of erection which shall not be less than 90 days from release.

C. Profile of each beam under its own weight.

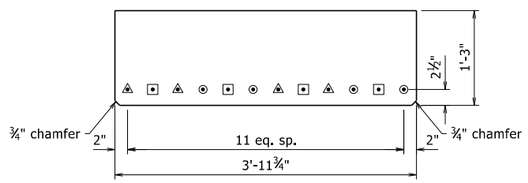
D. Number of days since release of strands of each beam.

Following receipt of the above data, the Engineer will provide an updated camber and deflection diagram to the Contractor, if necessary.

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

SECTION B-B
1" = 1'-0"

SECTION C-C
1" = 1'-0"

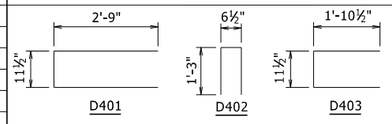


TYPICAL BEAM SECTION STRAND PATTERN
12 - 0.6"ø 270 ksi Low-Relaxation Strands
LOOKING AHEAD
1" = 1'-0"

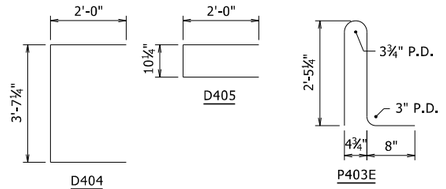
BAR LIST - ALL BEAMS

MARK	NO. REQ'D	LENGTH	P.D.
D401	4512	6'-3½"	2"
D402	1872	2'-10½"	2"
D403	576	4'-6½"	2"
D404	96	7'-5½"	2"
D405	96	4'-8½"	2"
D601	120	38'-8"	Str.
P403E	488	5'-6"	1

BENDING DIAGRAMS



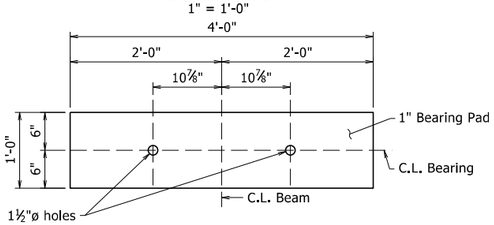
1 See Bending Diagram



Dimensions are out to out of bars.
Bars with an "E" suffix are to be epoxy coated.

NOTE:
△ Denotes strands to project from beam ends (XA)
○ Denotes strands to project from beam ends (XB)
□ Debond these strands for 3'-0" at beam ends
See Dwg. No. 65984 for locations of (XA) & (XB).

NOTE:
Unreinforced bearing pads shall meet the requirements of Section 808 and the hardness shall be 70 durometer. Unreinforced bearing pads shall not be paid for directly but shall be considered subsidiary to the item "Class S (AE) Concrete-Bridge".



UNREINFORCED BEARING PAD DETAIL
1" = 1'-0"

STATE OF ARKANSAS
Apr 14 2023 10:41 AM
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 3 OF 4
DETAILS OF PRECAST PRESTRESSED BEAM UNIT

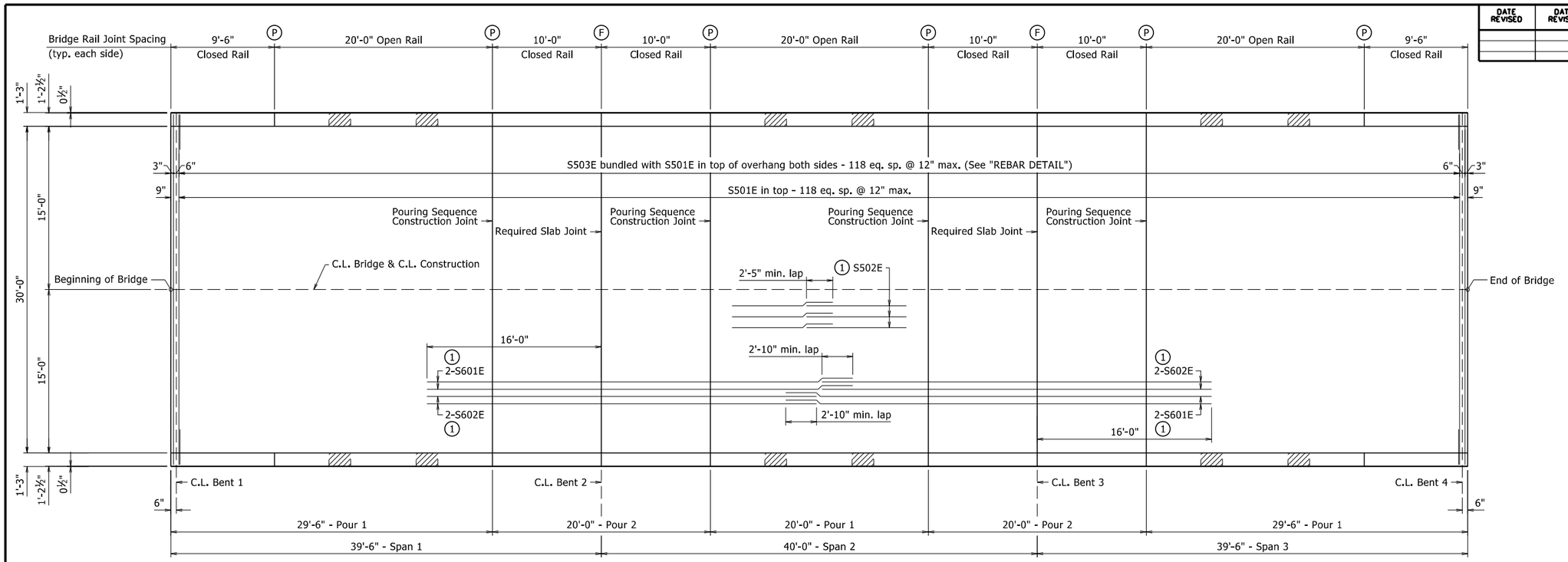
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CGP DATE: 11/01/2022 FILENAME: b110706_s1.dgn
CHECKED BY: JJ DATE: 12/08/2022 SCALE: AS NOTED
DESIGNED BY: JJ DATE: 10/2022

BRIDGE NO. 07603 DRAWING NO. 65985

PRINT DATE: 4/14/2023

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	37	45
		07603 - SPAN DETAILS - 65986				



REINFORCING PLAN & DECK POURING SEQUENCE

3/16" = 1'-0"

(1) Placed as shown in "TYPICAL ROADWAY SECTION", Dwg. No. 65983. Lap splice locations of adjacent bars shall be staggered to prevent bars from being spliced at the same location.

(F) C.L. Full Depth Rail Joint (formed width ¼" to 1" max.) Stop 6" from top of deck/slab.

(P) C.L. Partial Depth Rail Joint (formed width ¼" to 1" max.) Stop 1'-4" from top of deck/slab.

TABLE OF VARIABLES

Closed Rail Panels			Open Rail Panels					
Panel Length	A	R4XXE	Panel Length	B	C	D	E	R4XXE
9'-6"	18	R404E	20'-0"	14	5'-0"	11	6'-0"	R406E
10'-0"	19	R405E						

NOTES:

See "REINFORCING PLAN & DECK POURING SEQUENCE" for rail panel lengths.

See "BAR LIST" for rebar quantities.

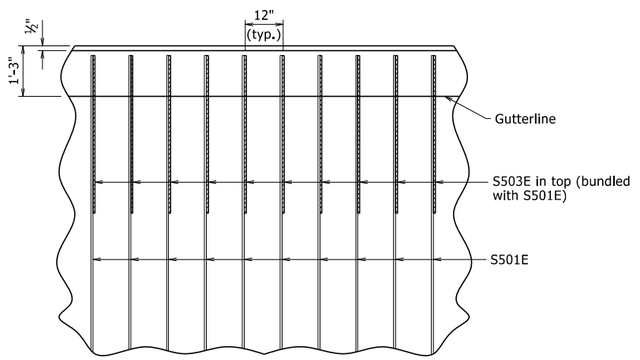
See "TABLE OF VARIABLES" for all rebar information.

See Std. Dwg. No. 55070 for details of rail reinforcing, and location of bars with an "R" prefix.

BAR LIST

MARK	NO. REQ'D	LENGTH	P.D.
P403E	See Dwg. No. 65985		
R400E	48	5'-3"	2½"
R401E	556	6'-4"	2½"
R402E	96	5'-6"	Str.
R404E	32	9'-2"	Str.
R405E	64	9'-8"	Str.
R406E	48	19'-8"	Str.
S401E	8	32'-2"	Str.
S501E	121	32'-2"	Str.
S502E	96	40'-5"	Str.
S503E	238	3'-3"	Str.
S601E	66	39'-1"	Str.
S602E	66	35'-9"	Str.

Bars with an "E" suffix are to be epoxy coated.



REBAR DETAIL

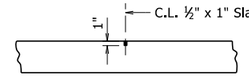
NO SCALE

NOTES:

The topping slab shall not be poured less than 90 days following the release of the prestressing strands. Pours with the same number may be placed simultaneously or separately. All Pours 1 must be placed before Pours 2 can be placed. A minimum of 48 hours shall elapse between the end of a pour and the start of the next pour. A minimum of 72 hours shall elapse between the end of a pour and the start of an adjacent pour. Concrete Diaphragms at bents 2 & 3 shall be poured monolithically with the deck. A minimum of 72 hours shall elapse between the completion of the bridge deck pour and the start of the railing pour. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence shown.

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

Required slab joints and pouring sequence construction joints shall align with bridge rail joints.



Use Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer Rod filler will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab Joints shall extend to the outside edge of the deck slab and shall align with open joints at the front face of the bridge rail. Slab joints shall be installed before the bridge railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damage to the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations. The joint sealer shall extend across the deck from gutterline to gutterline.

TRANSVERSE SLAB JOINT DETAIL

STATE OF ARKANSAS
Apr 14 2023 10:41 AM
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BRIDGE ENGINEER

SHEET 4 OF 4
DETAILS OF PRECAST PRESTRESSED BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

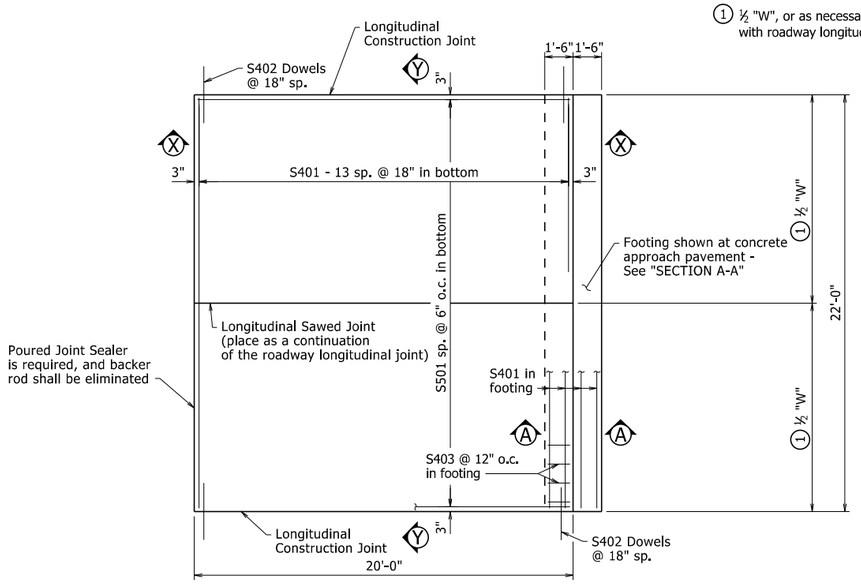
LITTLE ROCK, ARK.

DRAWN BY: CGP DATE: 11/01/2022 FILENAME: b110706_s1.dgn
CHECKED BY: JJ DATE: 12/08/2022 SCALE: AS NOTED
DESIGNED BY: JJ DATE: 10/2022

BRIDGE NO. 07603 DRAWING NO. 65986

PRINT DATE: 4/14/2023

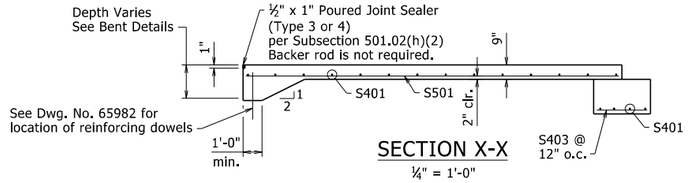
DATE REVISED	DATE REVISED	FED. ROAD DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	38	45
		07603 - TYPE SPECIAL APPROACH SLAB - 65987				



(1) ½ "W", or as necessary to align with roadway longitudinal joint

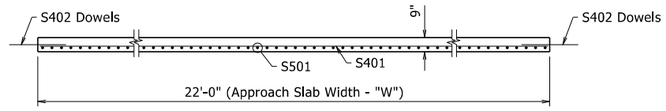
PLAN OF APPROACH SLAB

¼" = 1'-0"



SECTION X-X

¼" = 1'-0"



SECTION Y-Y

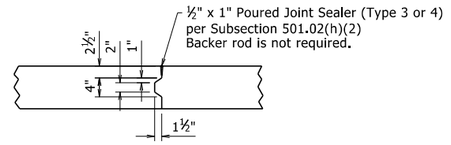
NO SCALE

GENERAL NOTES

All concrete shall be Class S (AE) with a minimum 28 day compressive strength f'c = 4,000 psi and shall be poured in the dry.

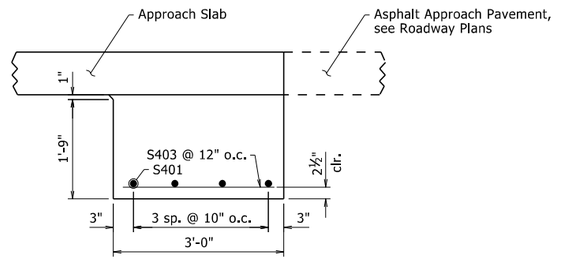
All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

Approach Slabs will be measured and paid for in accordance with Section 504.



DETAILS OF LONGITUDINAL CONSTRUCTION JOINT

¾" = 1'-0"



SECTION A-A

AT ASPHALT APPROACH PAVEMENT
NO SCALE

BAR LIST FOR ONE APPROACH SLAB

	Mark	No. Req'd.	Length
22'-0" Slab Width	S401	18	21'-8"
	S402	28	3'-0"
	S403	22	2'-8"
	S501	44	19'-8"

TABLE OF QUANTITIES FOR ONE APPROACH SLAB

(FOR INFORMATION ONLY)

Slab Width	Reinforcing Steel	Concrete
	(lbs.)	(cu. yds.)
22'-0"	1258	17.20

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DETAILS FOR TYPE SPECIAL APPROACH SLAB

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CGP DATE: 02/13/2023 FILENAME: b110706_as.dgn
CHECKED BY: JJ DATE: 02/14/2023 SCALE: AS SHOWN
DESIGNED BY: JJ DATE: 02/2023

BRIDGE NO. 07603 DRAWING NO. 65987

PRINT DATE: 4/14/2023

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	39	45
		07603 - TYPE SPECIAL APPROACH GUTTER - 65988				

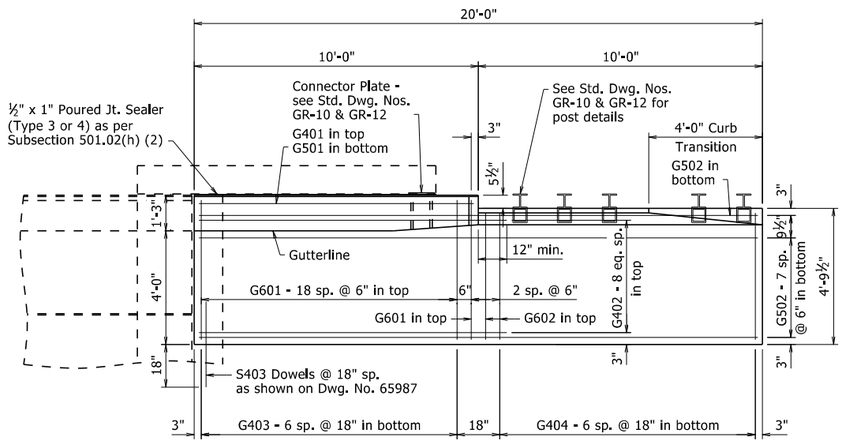
GENERAL NOTES

Concrete shall be Class S(AE) (f'c = 4,000 psi).

Reinforcing Steel shall conform to AASHTO M 31 or M 322, Type A with Mill Test Reports Gr. 60 (fy = 60,000 psi).

Approach Gutters will be measured and paid for in accordance with Section 504 of the Standard Specifications.

Surface finish for Approach Gutters to match that used on the bridge deck.

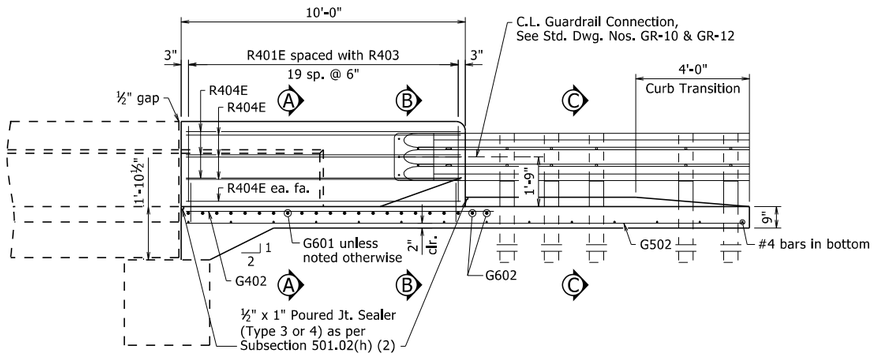


PLAN OF APPROACH GUTTERS

⅜" = 1'-0"

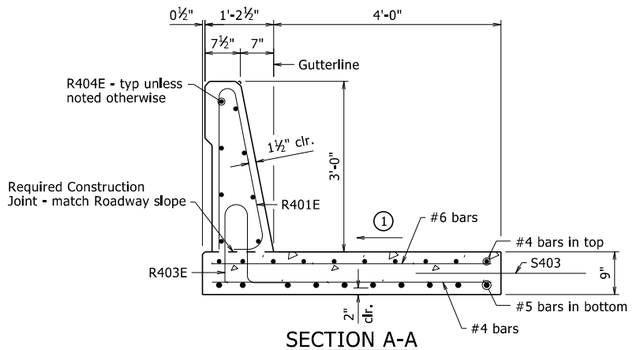
NOTE:

See Std. Dwg. No. 55070 for rail details.



LONGITUDINAL SECTION THRU GUTTER

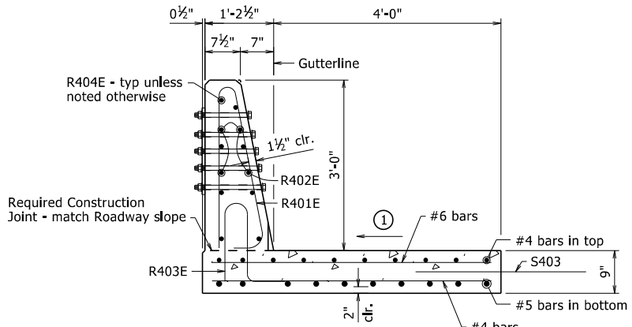
⅜" = 1'-0"



SECTION A-A

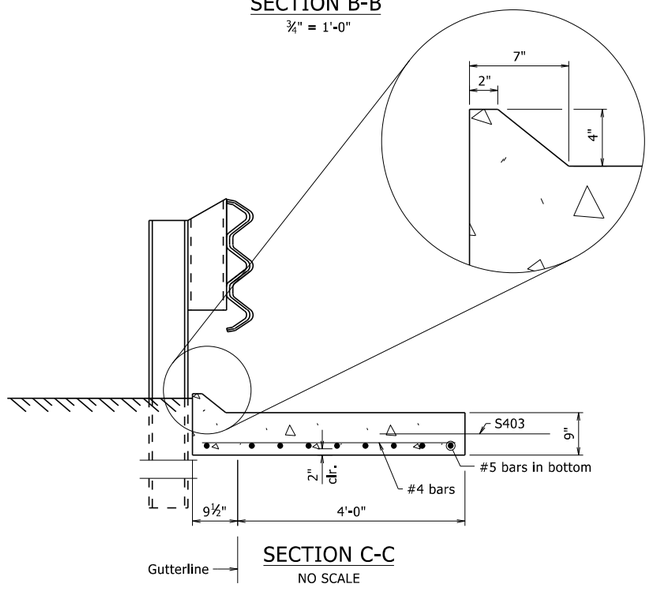
¾" = 1'-0"

1 Match Roadway slope as required at a given approach gutter location.



SECTION B-B

¾" = 1'-0"



SECTION C-C

NO SCALE

BAR LIST FOR ONE TYPE SPECIAL APPROACH GUTTER

MARK	NO. REQ'D	LENGTH	P.D.
G401	1	9'-8"	Str.
G402	9	10'-10"	Str.
G403	7	4'-11"	Str.
G404	7	4'-5"	Str.
G501	1	9'-8"	Str.
G502	9	19'-8"	Str.
G601	20	4'-11"	Str.
G602	2	4'-5"	Str.
R401E	20	6'-4"	(2)
R402E	4	5'-6"	Str.
R403E	20	3'-6"	(2)
R404E	8	9'-8"	Str.

Bars with an "E" suffix are to be epoxy coated.

(2) See Bending Diagram on Std. Dwg. No. 55070

QUANTITIES FOR ONE TYPE SPECIAL APPROACH GUTTER

Length (ft.)	Reinforcing Steel (lbs.)	Concrete (cubic yards)
20'-0"	471	3.29

STATE OF ARKANSAS
Charles R. Ellis
Apr 14 2023 10:41 AM
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS
BRIDGE ENGINEER

DETAILS FOR TYPE SPECIAL APPROACH GUTTER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

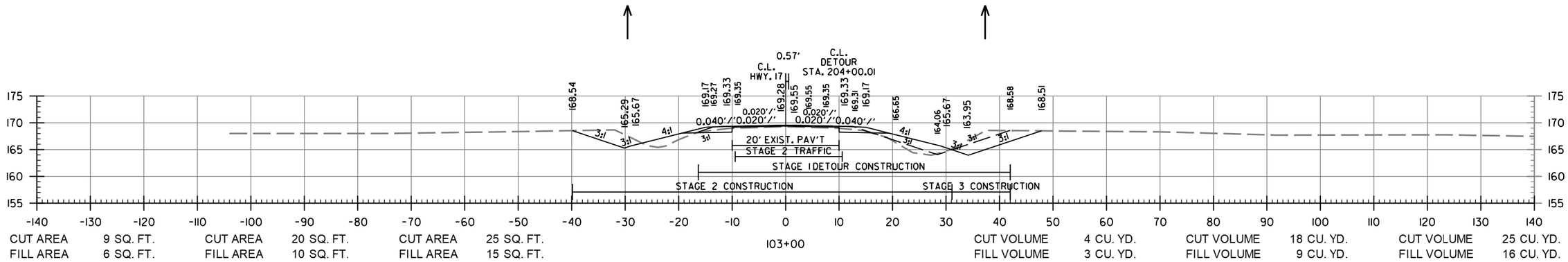
LITTLE ROCK, ARK.

DRAWN BY: CGP DATE: 01/05/2023 FILENAME: b110706_ag.dgn
CHECKED BY: JJ DATE: 01/12/2023 SCALE: AS NOTED
DESIGNED BY: JJ DATE: 01/2023

BRIDGE NO. 07603 DRAWING NO. 65988

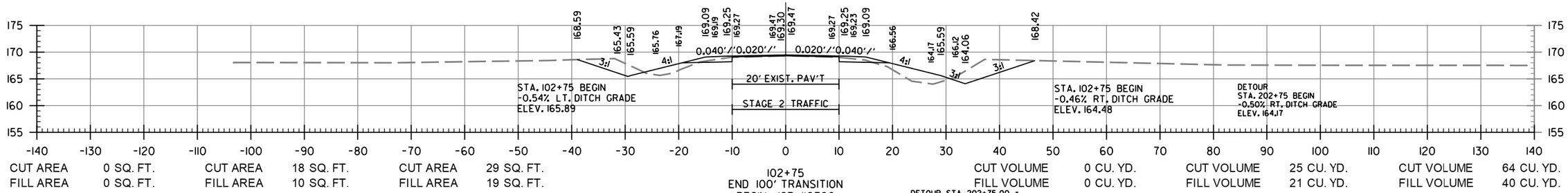
PRINT DATE: 4/14/2023

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	40	45
		CROSS SECTIONS				



CUT AREA 9 SQ. FT. FILL AREA 6 SQ. FT. | CUT AREA 20 SQ. FT. FILL AREA 10 SQ. FT. | CUT AREA 25 SQ. FT. FILL AREA 15 SQ. FT.

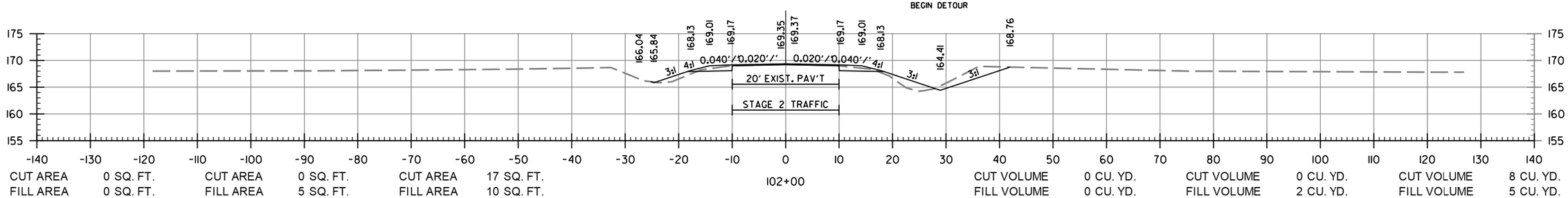
CUT VOLUME 4 CU. YD. FILL VOLUME 3 CU. YD. | CUT VOLUME 18 CU. YD. FILL VOLUME 9 CU. YD. | CUT VOLUME 25 CU. YD. FILL VOLUME 16 CU. YD.



CUT AREA 0 SQ. FT. FILL AREA 0 SQ. FT. | CUT AREA 18 SQ. FT. FILL AREA 10 SQ. FT. | CUT AREA 29 SQ. FT. FILL AREA 19 SQ. FT.

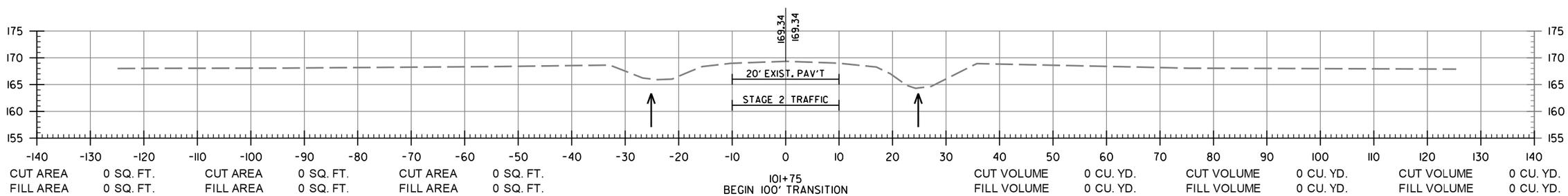
CUT VOLUME 0 CU. YD. FILL VOLUME 0 CU. YD. | CUT VOLUME 25 CU. YD. FILL VOLUME 21 CU. YD. | CUT VOLUME 64 CU. YD. FILL VOLUME 40 CU. YD.

DETOUR STA. 202+75.00 = HWY. 17 STA. 102+75.00
BEGIN DETOUR



CUT AREA 0 SQ. FT. FILL AREA 0 SQ. FT. | CUT AREA 0 SQ. FT. FILL AREA 5 SQ. FT. | CUT AREA 17 SQ. FT. FILL AREA 10 SQ. FT.

CUT VOLUME 0 CU. YD. FILL VOLUME 0 CU. YD. | CUT VOLUME 0 CU. YD. FILL VOLUME 2 CU. YD. | CUT VOLUME 8 CU. YD. FILL VOLUME 5 CU. YD.



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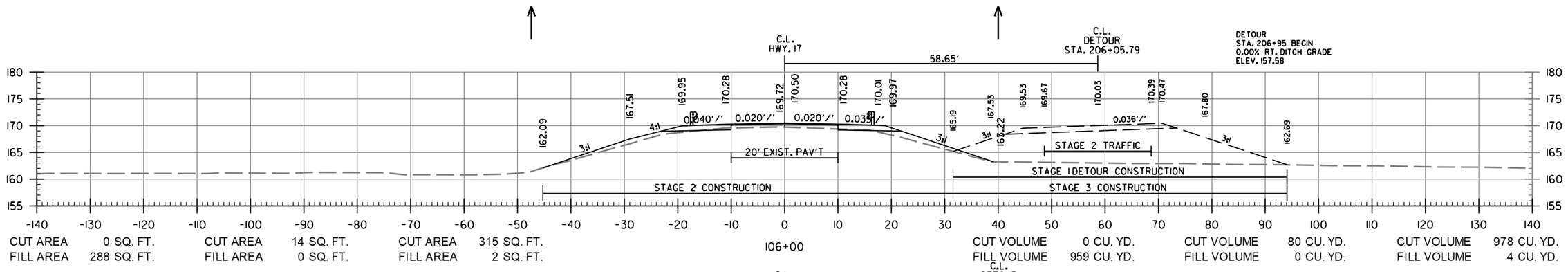
CUT VOLUME 0 CU. YD. FILL VOLUME 0 CU. YD. | CUT VOLUME 0 CU. YD. FILL VOLUME 0 CU. YD. | CUT VOLUME 0 CU. YD. FILL VOLUME 0 CU. YD.

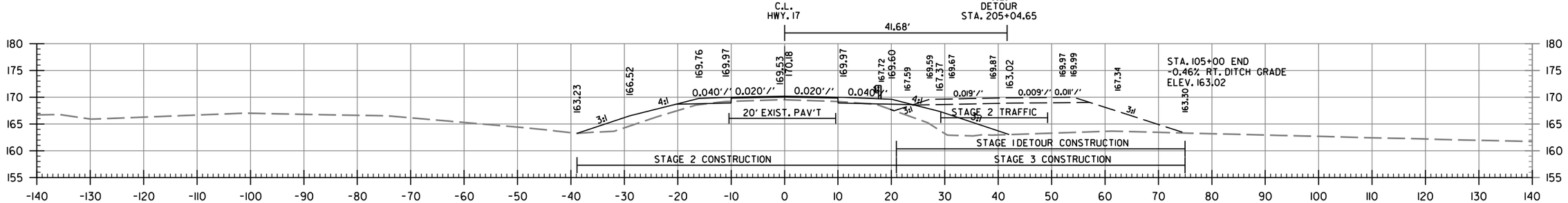
CROSS SECTION STA. 101+75 TO STA. 103+00

BM43071 7/1/2021
R110706.DGN

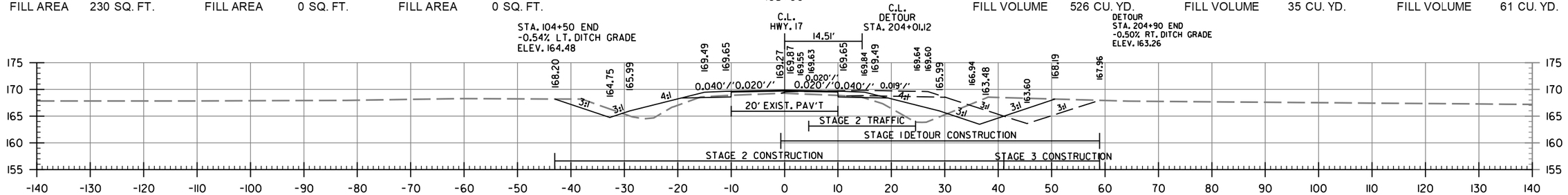
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	41	45
		CROSS SECTIONS				



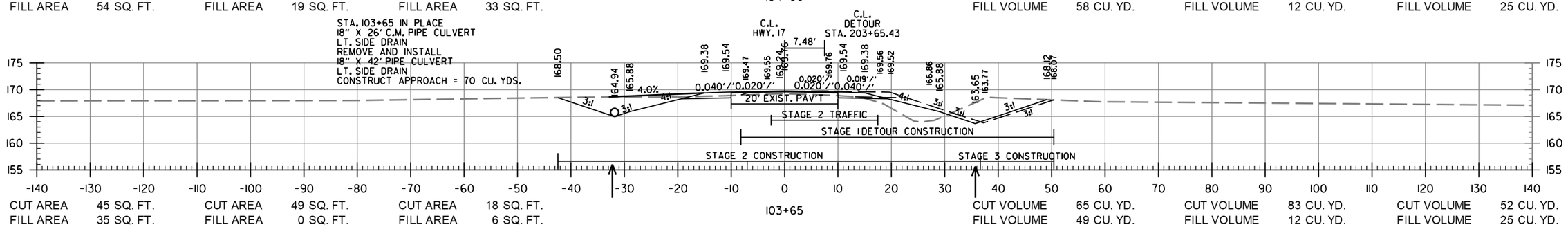
CUT AREA	0 SQ. FT.	CUT AREA	14 SQ. FT.	CUT AREA	315 SQ. FT.		CUT VOLUME	0 CU. YD.	CUT VOLUME	80 CU. YD.	CUT VOLUME	978 CU. YD.
FILL AREA	288 SQ. FT.	FILL AREA	0 SQ. FT.	FILL AREA	2 SQ. FT.	106+00	FILL VOLUME	959 CU. YD.	FILL VOLUME	0 CU. YD.	FILL VOLUME	4 CU. YD.



CUT AREA	0 SQ. FT.	CUT AREA	29 SQ. FT.	CUT AREA	213 SQ. FT.		CUT VOLUME	119 CU. YD.	CUT VOLUME	81 CU. YD.	CUT VOLUME	500 CU. YD.
FILL AREA	230 SQ. FT.	FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.	105+00	FILL VOLUME	526 CU. YD.	FILL VOLUME	35 CU. YD.	FILL VOLUME	61 CU. YD.



CUT AREA	64 SQ. FT.	CUT AREA	15 SQ. FT.	CUT AREA	57 SQ. FT.		CUT VOLUME	71 CU. YD.	CUT VOLUME	41 CU. YD.	CUT VOLUME	49 CU. YD.
FILL AREA	54 SQ. FT.	FILL AREA	19 SQ. FT.	FILL AREA	33 SQ. FT.	104+00	FILL VOLUME	58 CU. YD.	FILL VOLUME	12 CU. YD.	FILL VOLUME	25 CU. YD.

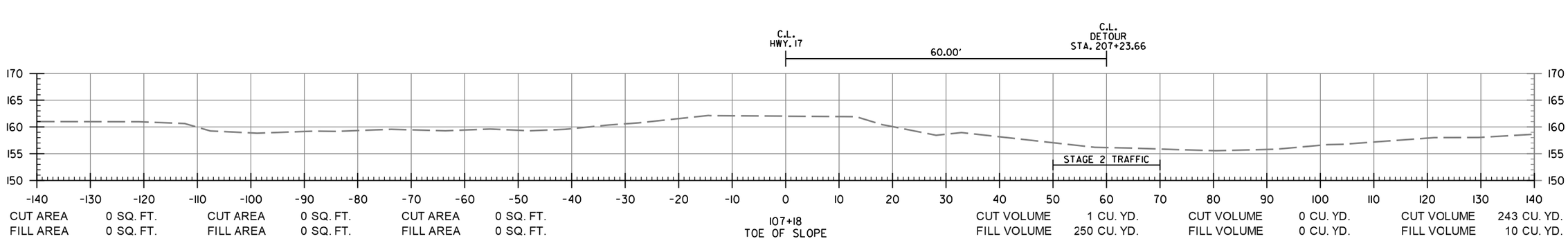


CUT AREA	45 SQ. FT.	CUT AREA	49 SQ. FT.	CUT AREA	18 SQ. FT.		CUT VOLUME	65 CU. YD.	CUT VOLUME	83 CU. YD.	CUT VOLUME	52 CU. YD.
FILL AREA	35 SQ. FT.	FILL AREA	0 SQ. FT.	FILL AREA	6 SQ. FT.	103+65	FILL VOLUME	49 CU. YD.	FILL VOLUME	12 CU. YD.	FILL VOLUME	25 CU. YD.

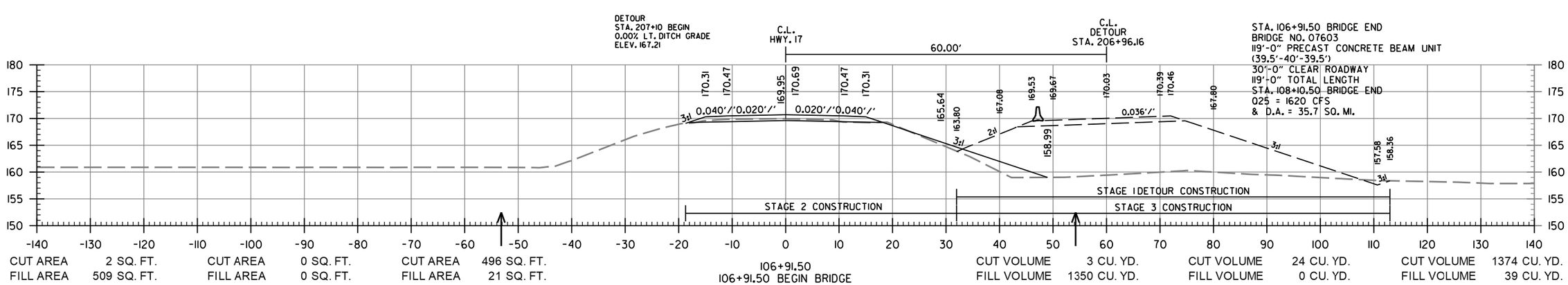
CROSS SECTION STA. 103+65 TO STA. 106+00

BM43071 7/1/2021
R110706.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	42	45
		CROSS SECTIONS				



CUT AREA	0 SQ. FT.	CUT AREA	0 SQ. FT.	CUT AREA	0 SQ. FT.		
FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.		
CUT VOLUME	1 CU. YD.	CUT VOLUME	0 CU. YD.	CUT VOLUME	243 CU. YD.		
FILL VOLUME	250 CU. YD.	FILL VOLUME	0 CU. YD.	FILL VOLUME	10 CU. YD.		

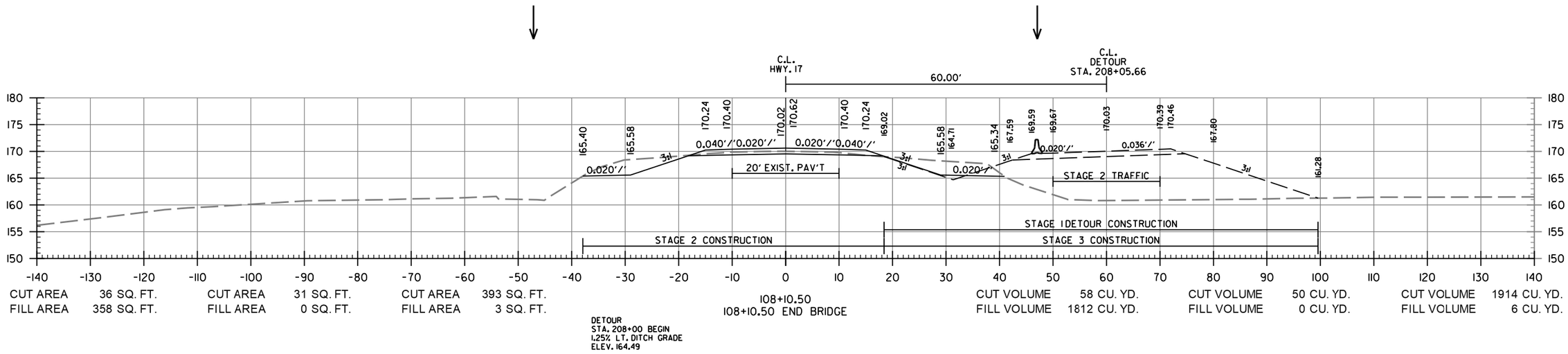


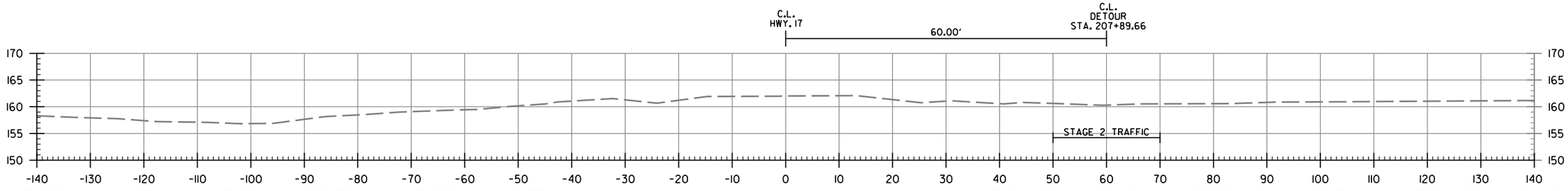
CUT AREA	2 SQ. FT.	CUT AREA	0 SQ. FT.	CUT AREA	496 SQ. FT.		
FILL AREA	509 SQ. FT.	FILL AREA	0 SQ. FT.	FILL AREA	21 SQ. FT.		
CUT VOLUME	3 CU. YD.	CUT VOLUME	24 CU. YD.	CUT VOLUME	1374 CU. YD.		
FILL VOLUME	1350 CU. YD.	FILL VOLUME	0 CU. YD.	FILL VOLUME	39 CU. YD.		

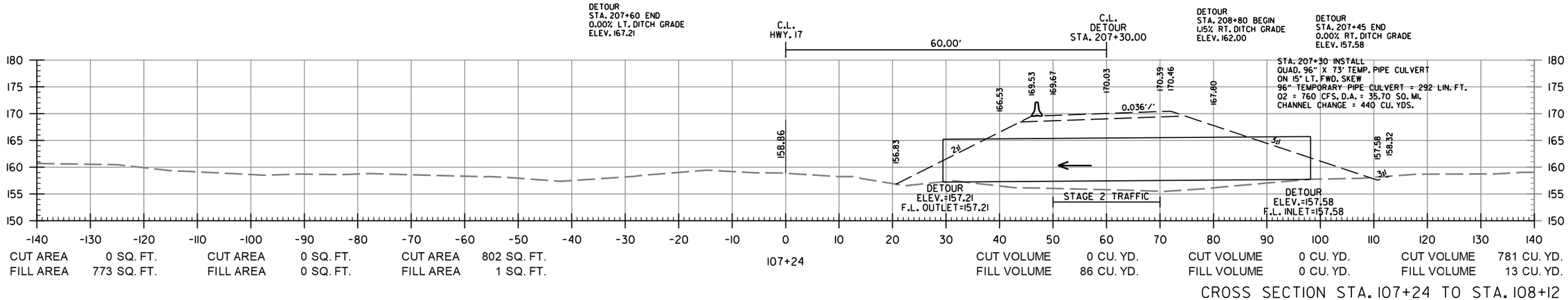
CROSS SECTION STA. 106+91 TO STA. 107+18

BM43071 7/1/2021
R110706.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	43	45
		CROSS SECTIONS				



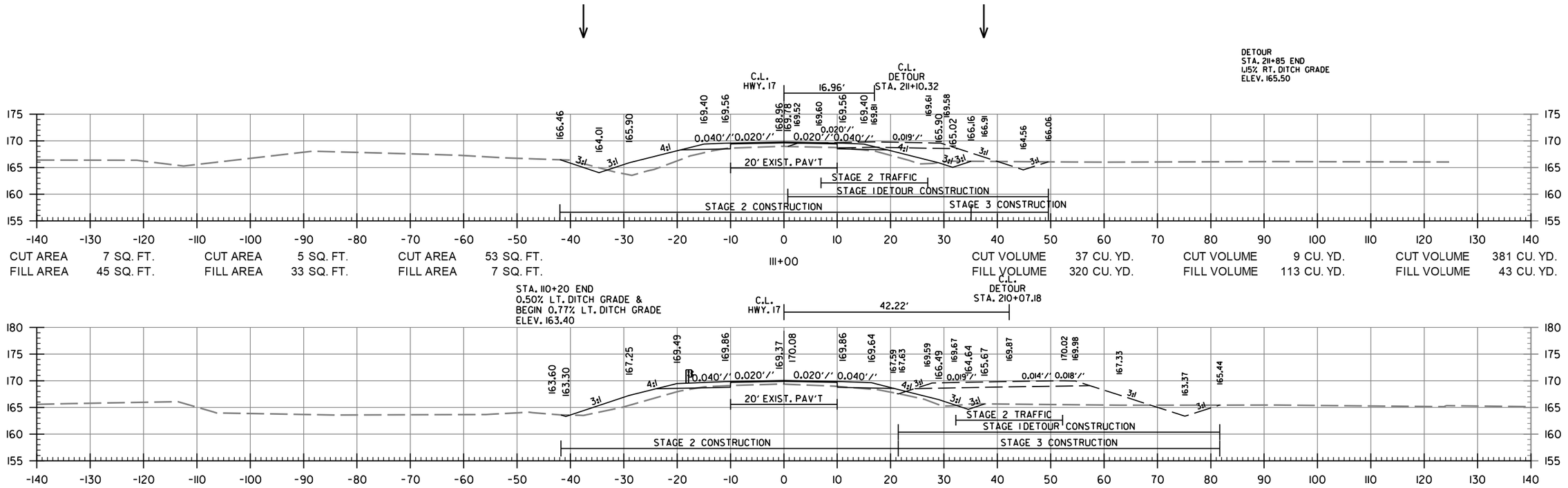




CROSS SECTION STA. 107+24 TO STA. 108+12

BM43071 5/1/2023
R110706.DGN

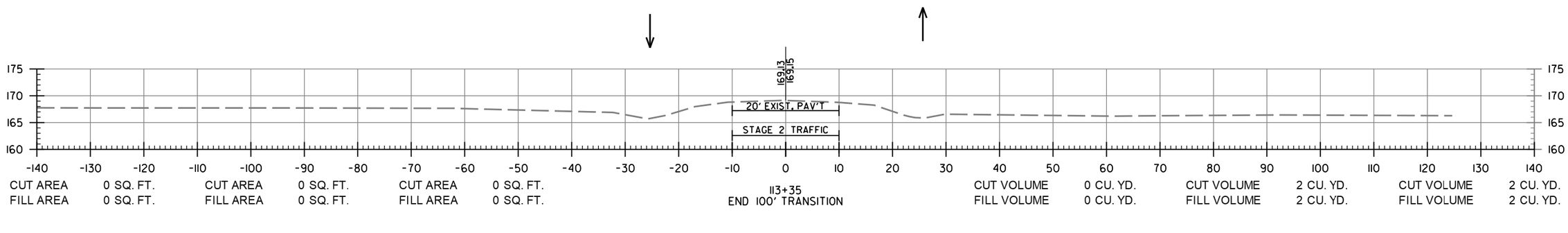
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	44	45
		CROSS SECTIONS				



CROSS SECTION STA. 109+00 TO STA. 111+00

BM43071 7/1/2021
R110706.DGN

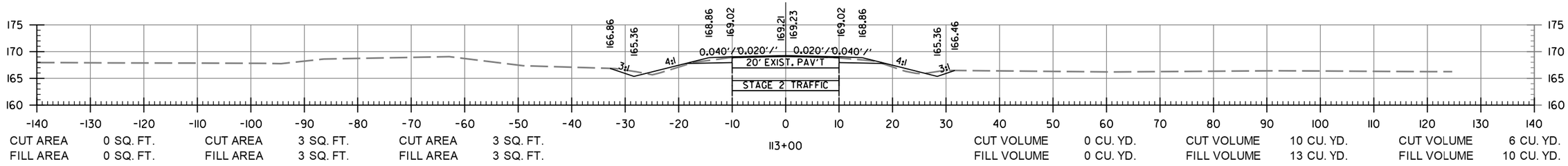
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	110706	45	45
		CROSS SECTIONS				



CUT AREA 0 SQ. FT. CUT AREA 0 SQ. FT. CUT AREA 0 SQ. FT.
FILL AREA 0 SQ. FT. FILL AREA 0 SQ. FT. FILL AREA 0 SQ. FT.

113+35
END 100' TRANSITION

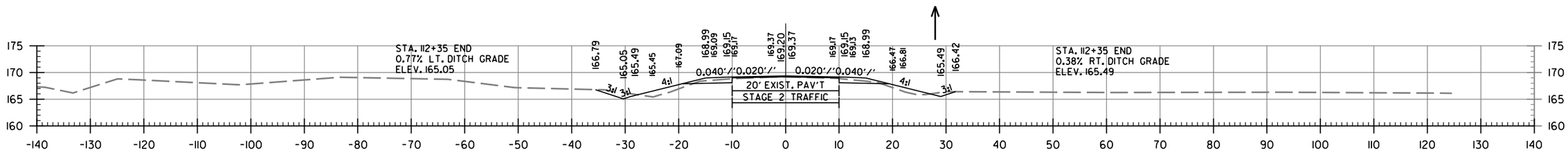
CUT VOLUME 0 CU. YD. CUT VOLUME 2 CU. YD. CUT VOLUME 2 CU. YD.
FILL VOLUME 0 CU. YD. FILL VOLUME 2 CU. YD. FILL VOLUME 2 CU. YD.



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

113+00

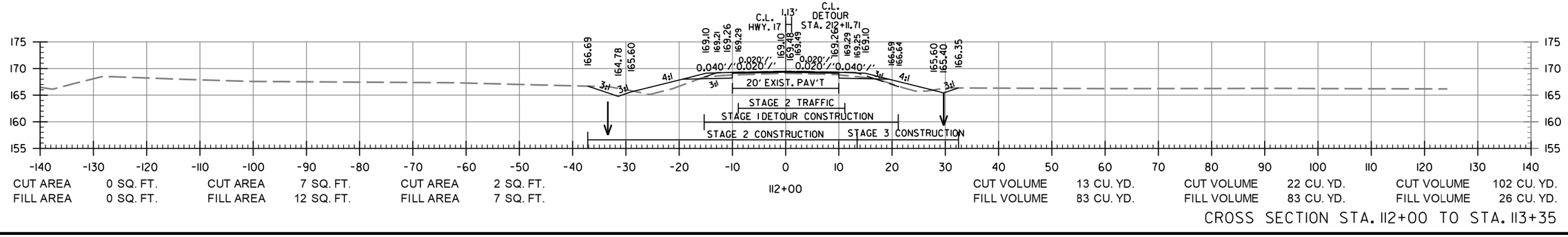
CUT VOLUME 0 CU. YD. CUT VOLUME 10 CU. YD. CUT VOLUME 6 CU. YD.
FILL VOLUME 0 CU. YD. FILL VOLUME 13 CU. YD. FILL VOLUME 10 CU. YD.



CUT AREA 0 SQ. FT. CUT AREA 5 SQ. FT. CUT AREA 2 SQ. FT.
FILL AREA 0 SQ. FT. FILL AREA 8 SQ. FT. FILL AREA 5 SQ. FT.

112+35
END JOB 110706
BEGIN 100' TRANSITION

CUT VOLUME 0 CU. YD. CUT VOLUME 8 CU. YD. CUT VOLUME 3 CU. YD.
FILL VOLUME 0 CU. YD. FILL VOLUME 13 CU. YD. FILL VOLUME 8 CU. YD.



CUT AREA 0 SQ. FT. CUT AREA 7 SQ. FT. CUT AREA 2 SQ. FT.
FILL AREA 0 SQ. FT. FILL AREA 12 SQ. FT. FILL AREA 7 SQ. FT.

112+00

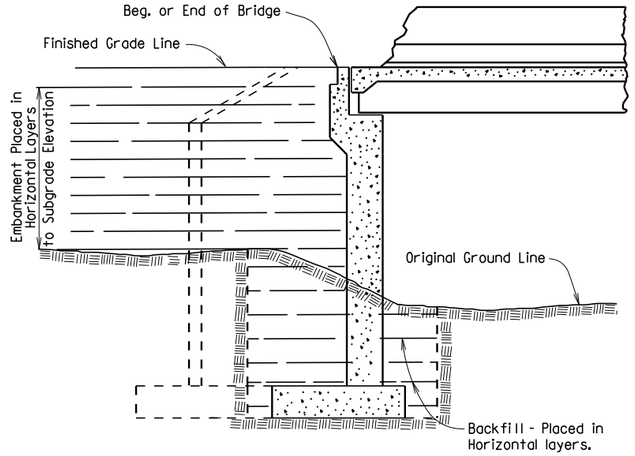
CUT VOLUME 13 CU. YD. CUT VOLUME 22 CU. YD. CUT VOLUME 102 CU. YD.
FILL VOLUME 83 CU. YD. FILL VOLUME 83 CU. YD. FILL VOLUME 26 CU. YD.

CROSS SECTION STA. 112+00 TO STA. 113+35

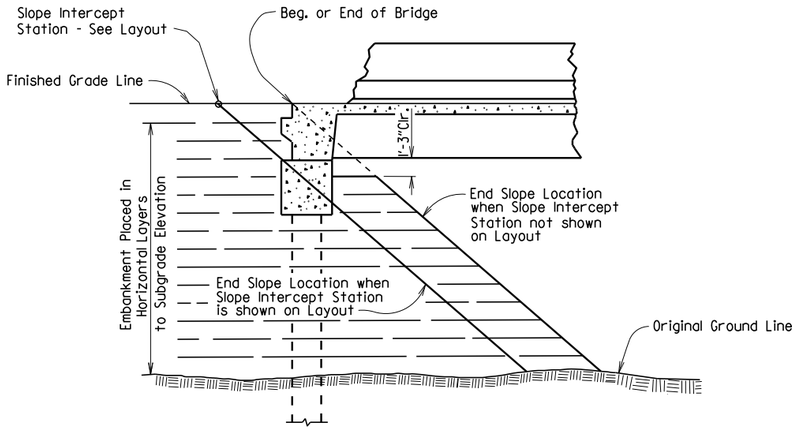
BM43071 7/1/2021
R110706.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				

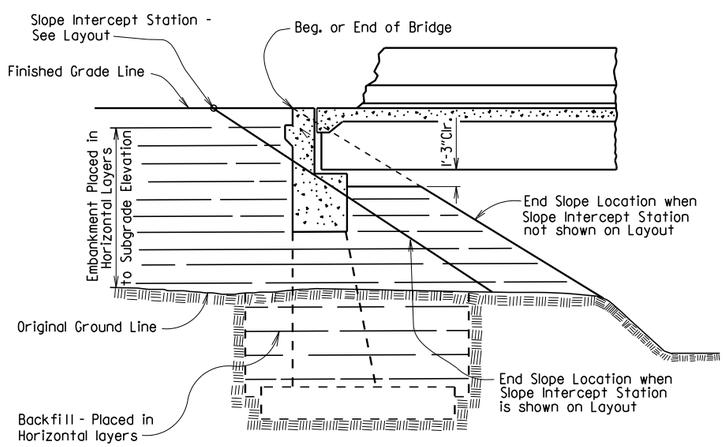
1 EMBANKMENT & BACKFILL 55000



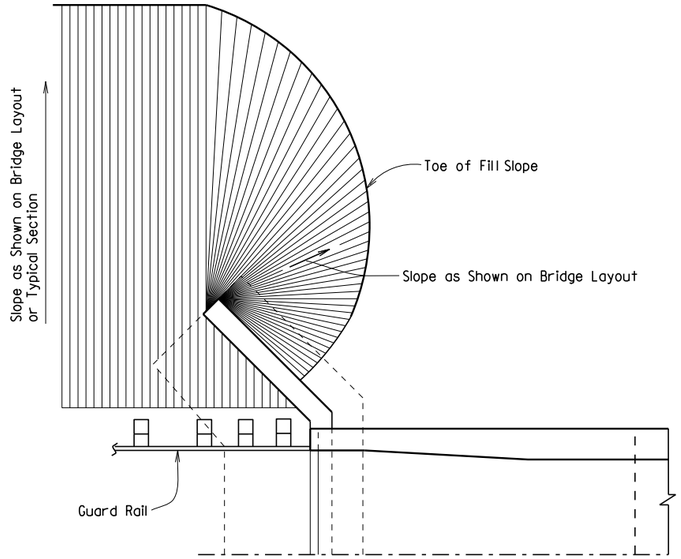
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



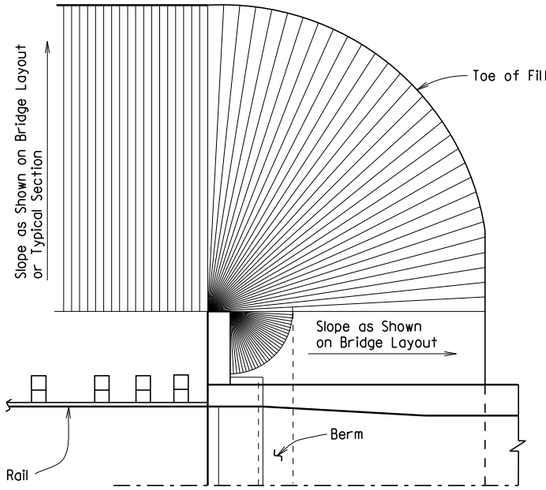
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



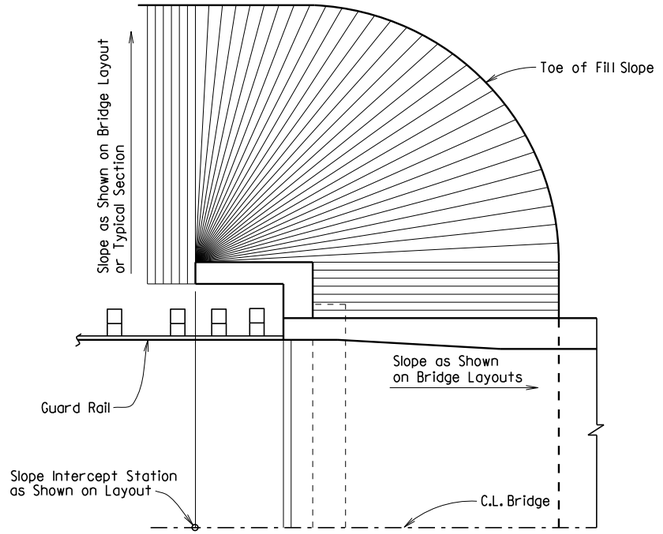
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



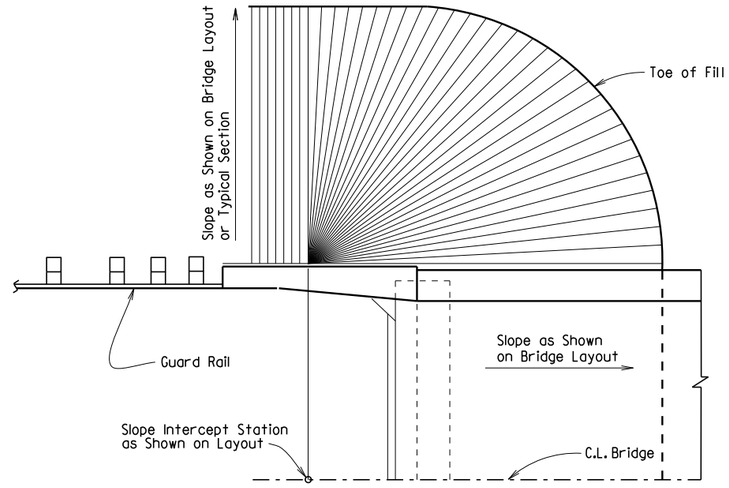
VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH STUB WING



SPILL-THROUGH END BENTS WITH TURNBACK WING



SPILL-THROUGH END BENTS WITH TRANSITION WING

METHOD OF DETERMINING FILL SLOPE LOCATION AT BRIDGE ENDS

GENERAL NOTES

The Bridge End Embankment shall be defined as a section of embankment, not less than 20 feet long adjacent to the bridge end, together with the side slopes and slopes under the bridge end including around the end of wingwalls. Embankment adjacent to structures shall be constructed in 6 inch horizontal layers (loose measure) and compacted by the use of mechanical equipment to the satisfaction of the Engineer. Refer to Subsections 210.09, 210.10 and 801.08 for construction requirements.

STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55000.dgn

CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE

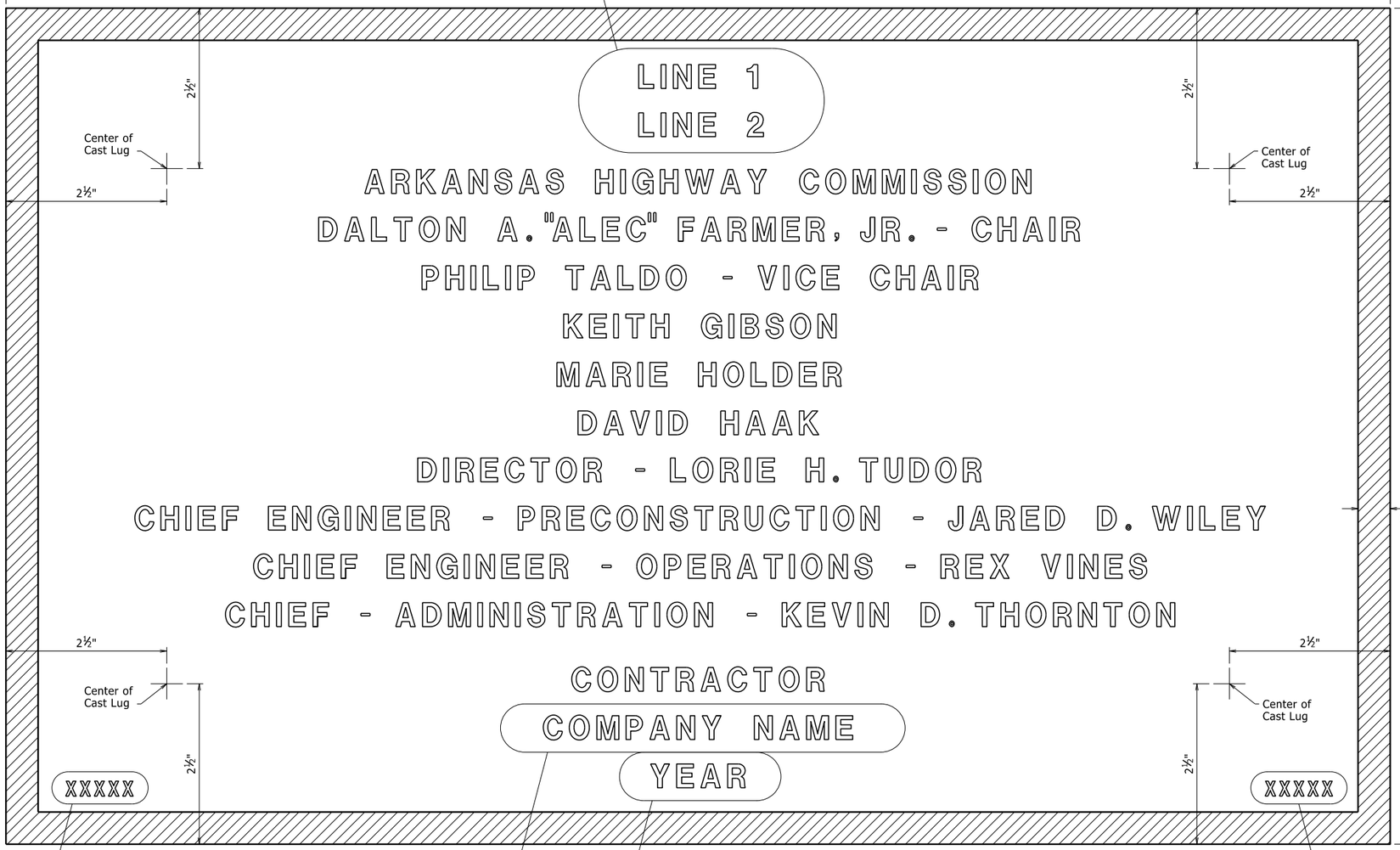
DESIGNED BY: STD. DATE: -

DRAWING NO. 55000

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
4-14-23		6	ARK.			
		TYPE D NAME PLATE - 55010				

The name of the bridge as shown on the plans shall be placed on Lines 1 & 2 using ⅛" raised letters and numerals ⅜" high.

	Example 1	Example 2	Example 3	Example 4
Line 1	RED RIVER	SOUTHERN RAILROAD	SALINE RIVER	HIGHWAY 5
Line 2	RELIEF	OVERPASS	RELIEF	



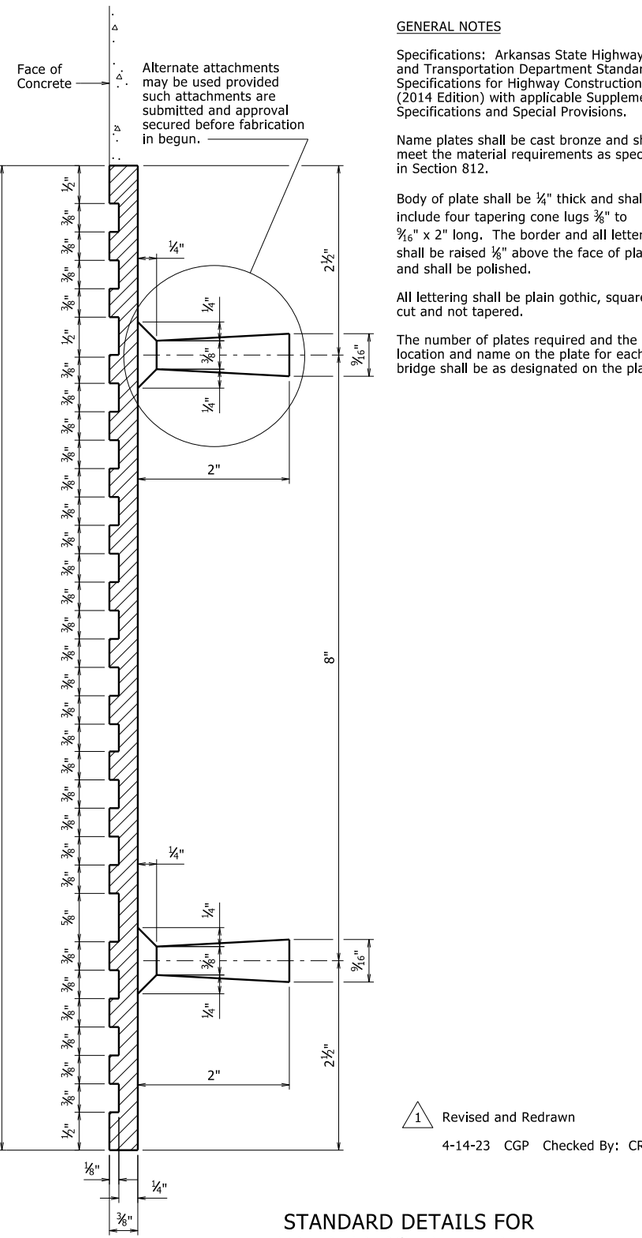
Place the design live loading here using ⅛" raised letters and numerals ¼" high. Examples: HS20, HL-93

Place the Year in which Contract was awarded here using ⅛" raised numerals ⅜" high. Example: 2001

Place the name of the company awarded the construction contract here using ⅛" raised letters and numerals ⅜" high. Example: ABCD CONSTRUCTION, INC.

Place the Bridge number here using ⅛" raised letters and numerals ¼" high. Examples: A1234, 05432

TYPICAL BRIDGE NAME PLATE



GENERAL NOTES

Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, (2014 Edition) with applicable Supplemental Specifications and Special Provisions.

Name plates shall be cast bronze and shall meet the material requirements as specified in Section 812.

Body of plate shall be ¼" thick and shall include four tapering cone lugs ⅜" to 9/16" x 2" long. The border and all lettering shall be raised ⅛" above the face of plate and shall be polished.

All lettering shall be plain gothic, square cut and not tapered.

The number of plates required and the location and name on the plate for each bridge shall be as designated on the plans.

1 Revised and Redrawn
4-14-23 CGP Checked By: CRE

STANDARD DETAILS FOR
TYPE D BRIDGE NAME PLATE

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

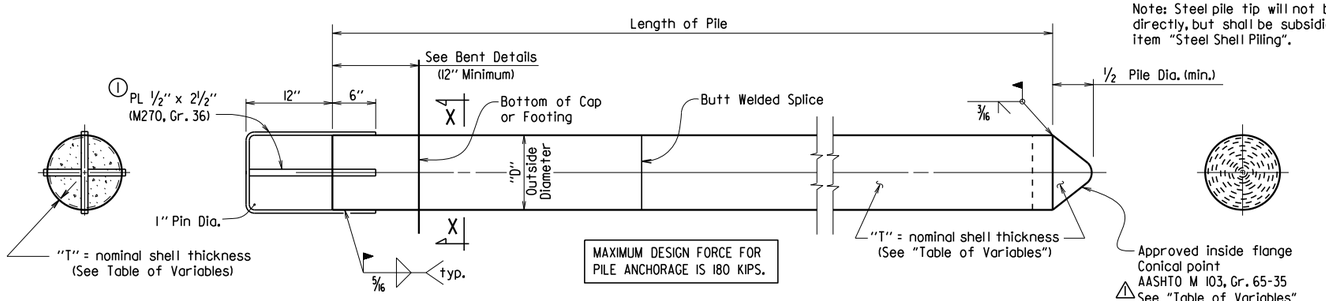
DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55010.dgn
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE:

DRAWING NO. 55010

PRINT DATE: 4/20/2023

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
3/24/16				6	ARK.			
				JOB NO.				

(1) STEEL SHELL PILES 55021

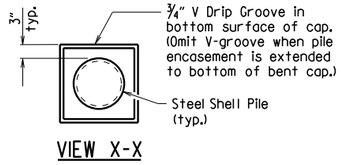


Note: Steel pile tip will not be paid for directly, but shall be subsidiary to the item "Steel Shell Piling".

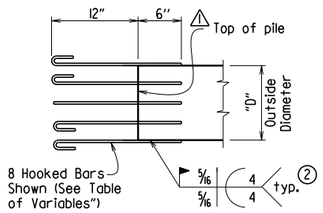
CONCRETE FILLED STEEL SHELL PILE

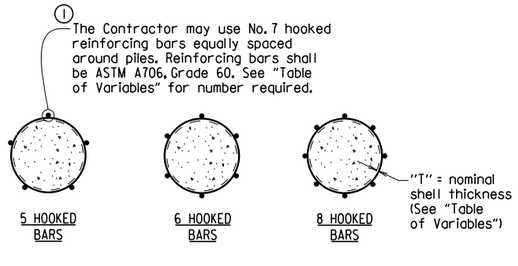
(1) Pile anchorage shall be placed to minimize interference with anchor bolts and reinforcing in cap or footing.

(2) Welding shall comply with ANSI/AWS D1.4 Structural Welding Code-Reinforcing Steel and applicable portions of ANSI/AWS D1.5 Bridge Welding Code.



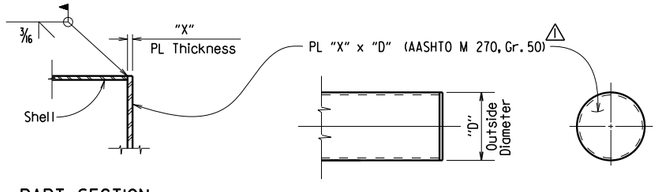
VIEW X-X





ALTERNATE PILE ANCHORAGE DETAIL

Note: Hooked bars shall be oriented to provide the required concrete clearances shown in the plans.

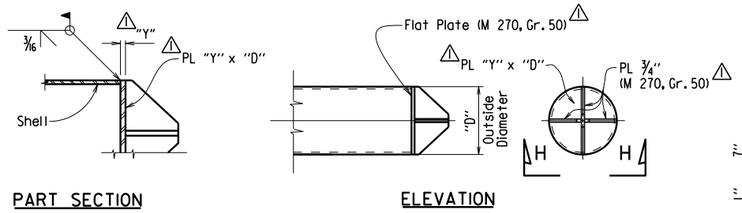


PART SECTION

ELEVATION

ALTERNATE FLAT TIP DETAIL

Note: The alternate flat tip detail shall not be used on steel shell piling to be driven through embankments constructed with internal geosynthetic reinforcement.

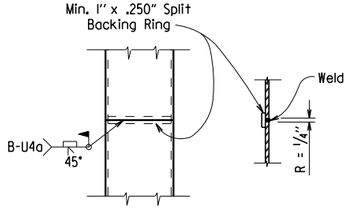


PART SECTION

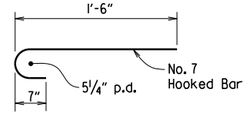
ELEVATION

VIEW H-H

ALTERNATE VANED TIP DETAIL



TYPICAL SPLICE DETAILS



HOOKED BAR DETAIL

TABLE OF VARIABLES

OUTSIDE DIAMETER "D"	NOMINAL SHELL THICKNESS "T"	(1) PLATE THICKNESS "X"	(1) PLATE THICKNESS "Y"	NO. OF HOOKED BARS FOR ALTERNATE PILE ANCHORAGE	(1) MINIMUM CONICAL TIP DESIGN LOAD (KIPS)
14"	0.50"	2¼"	1½"	5	859
16"	0.50"	2¼"	1½"	5	986
18"	0.50"	2½"	1½"	6	1,114
20"	0.50"	2½"	1¾"	6	1,241
24"	0.50"	2¾"	1¾"	8	1,495

(1) Revised and added various details by KWY, Ck'd. by BEF, 3/24/16.

GENERAL NOTES FOR CONCRETE FILLED STEEL SHEEL PILES:

Steel shells shall conform ASTM A252, Grade 3 (Fy = 45,000 psi.)

Concrete used for filling of steel shell shall be Class S with a minimum 28-day compressive strength, f'c = 3,500 psi. and shall be poured in the dry.

Steel shell piling that extends above the ground and is not protected by pile encasement shall be painted in accordance with Subsection 805.02.

See Bridge Layout for size and estimated length of steel shell piles and for driving information.

Concrete, structural steel, reinforcing steel (including welding), and painting shall not be paid for directly, but shall be considered subsidiary to the item "Steel Shell Piling".

GENERAL NOTES FOR PILE ENCASEMENTS:

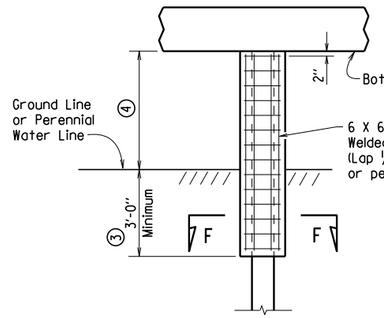
(1) See Bridge Layout for additional notes, any pile encasement restrictions and required location of pile encasements.

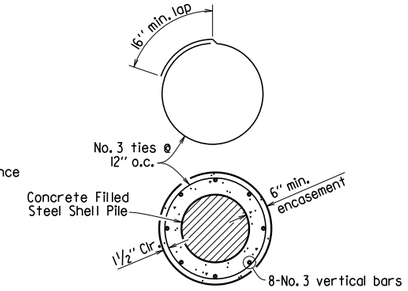
Concrete shall be Class S with a minimum 28-day compressive strength, f'c = 3,500 psi. If concrete cannot be placed in the dry, Seal Concrete may be used from top to bottom of encasement.

Reinforcing steel shall be Grade 60 conforming to AASHTO M 31 or M 322, Type A.

Welded wire fabric shall conform to AASHTO M 55 or M 221.

Concrete, welded wire fabric or reinforcing steel, and galvanized pipe shall not be paid for directly, but shall be considered subsidiary to the item "Pile Encasement".





SECTION F-F (REINF. ALTERNATE)

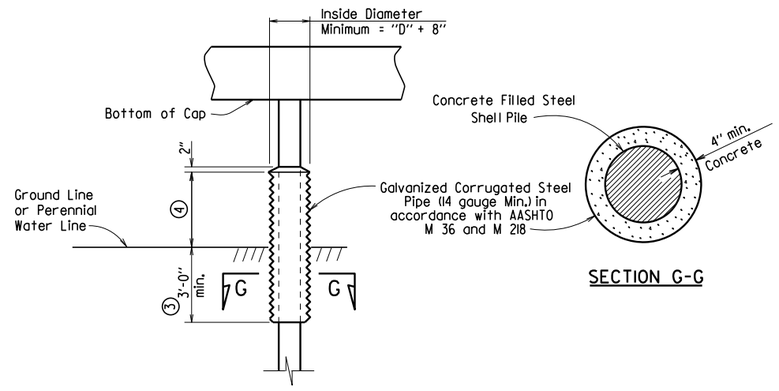
PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES

(5) (Shown with Encasement to Bottom of Cap)

(3) Unless otherwise noted on Bridge Layout.

(4) See Bridge Layout for height of pile encasement (3'-0" Minimum).

(5) Pile encasement, when not extended to bottom of cap, shall have 2" concrete taper for water runoff as shown in the detail for partial height encasement.



SECTION G-G

ALTERNATE PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES

(Shown with Partial Height Encasement)

This document was originally issued and sealed by Charles R. Ellis, PE No. 9235, on March 24, 2016. This copy is not a signed and sealed document.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS

BRIDGE ENGINEER

STANDARD DETAILS FOR CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS

ARKANSAS STATE HIGHWAY COMMISSION

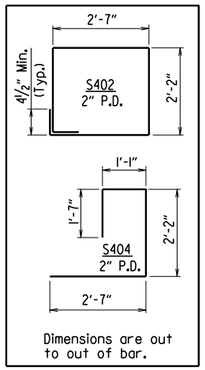
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55021.dgn
CHECKED BY: B.E.F. DATE: 2/27/2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: —

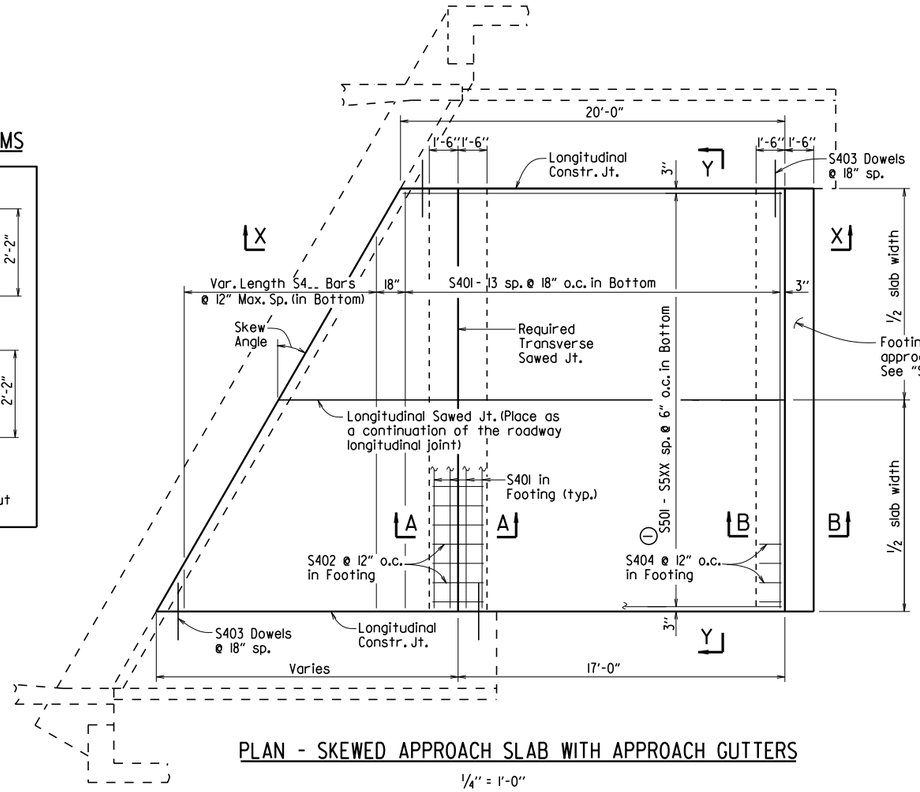
DRAWING NO. 55021

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				
				①	TYPE E APPROACH SLAB			55040E

BENDING DIAGRAMS



Dimensions are out to out of bar.



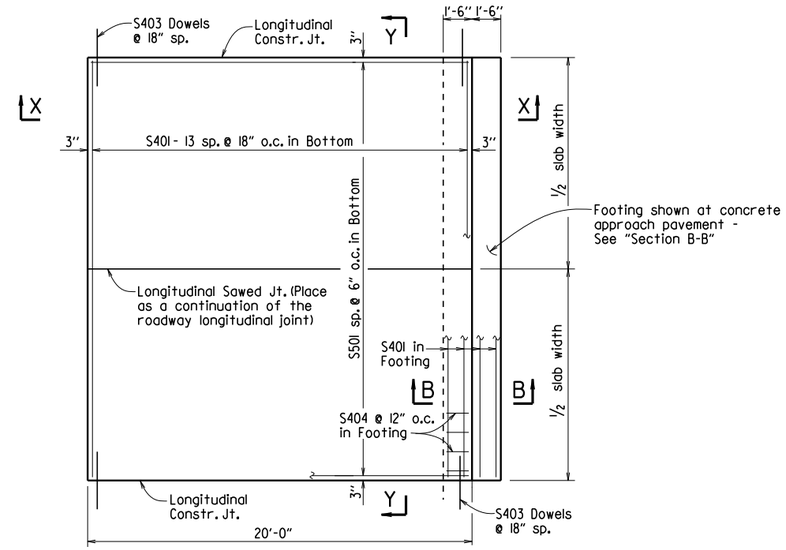
① S5XX = S540 for 20'-0" Width
= S544 for 22'-0" Width
= S548 for 24'-0" Width
= S572 for 36'-0" Width

PLAN - SKEWED APPROACH SLAB WITH APPROACH GUTTERS

¼" = 1'-0"

Notes:
The surface finish for Approach Slabs shall match that used on the bridge deck.

All longitudinal lines within the limits of horizontal curves shall be on curves concentric to C.L. Bridge. Adjustment to longitudinal bar lengths may be required. Transverse reinforcing shall be placed on radial lines to C.L. Bridge.



PLAN - SQUARE APPROACH SLAB

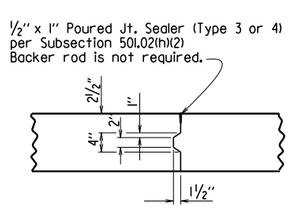
¼" = 1'-0"

BAR LIST

(Square & Skewed Approach Slabs)

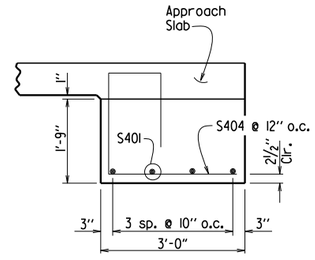
		Square		Skewed	
	Mark	No. Req'd.	Length	No. Req'd.	Length
20'-0" Slab Width	S401	18	19'-8"	22	19'-8"
	S402	—	—	20	9'-10"
	S403	28	3'-0"	*	3'-0"
	S404	20	7'-2"	20	7'-2"
	S4__	—	—	1 Ea.	19.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	40	19'-8"	—	—
	S501 - S540	—	—	1 Ea.	19.6' + 0.25'(tan skew angle) to 19.6' + 19.75'(tan skew angle)
22'-0" Slab Width	S401	18	21'-8"	22	21'-8"
	S402	—	—	22	9'-10"
	S403	28	3'-0"	*	3'-0"
	S404	22	7'-2"	22	7'-2"
	S4__	—	—	1 Ea.	21.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	44	19'-8"	—	—
	S501 - S544	—	—	1 Ea.	19.6' + 0.25'(tan skew angle) to 19.6' + 21.75'(tan skew angle)
24'-0" Slab Width	S401	18	23'-8"	22	23'-8"
	S402	—	—	24	9'-10"
	S403	28	3'-0"	*	3'-0"
	S404	24	7'-2"	24	7'-2"
	S4__	—	—	1 Ea.	23.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	48	19'-8"	—	—
	S501 - S548	—	—	1 Ea.	19.6' + 0.25'(tan skew angle) to 19.6' + 23.75'(tan skew angle)
36'-0" Slab Width	S401	18	35'-8"	22	35'-8"
	S402	—	—	36	9'-10"
	S403	28	3'-0"	*	3'-0"
	S404	36	7'-2"	36	7'-2"
	S4__	—	—	1 Ea.	35.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	72	19'-8"	—	—
	S501 - S572	—	—	1 Ea.	19.6' + 0.25'(tan skew angle) to 19.6' + 35.75'(tan skew angle)

*Varies with skew angle



DETAILS OF LONGITUDINAL CONSTRUCTION JOINT

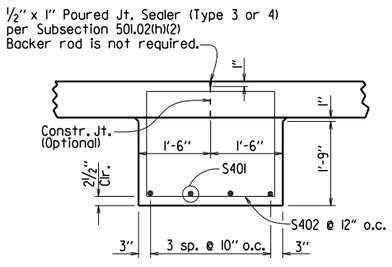
1" = 1'-0"



SECTION B-B

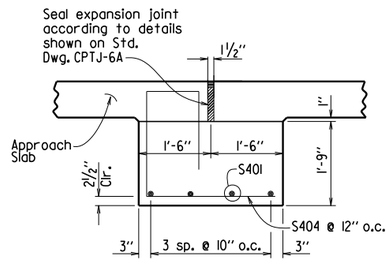
AT ASPHALT APPROACH PAVEMENT

N.T.S.



SECTION A-A

N.T.S.



SECTION B-B

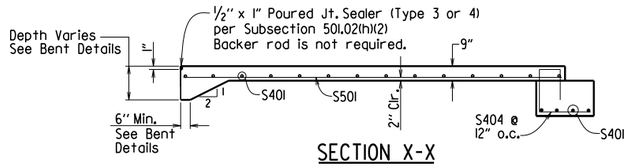
AT CONCRETE APPROACH PAVEMENT

N.T.S.

TABLE OF QUANTITIES FOR ONE SQUARE APPROACH SLAB

(FOR INFORMATION ONLY)

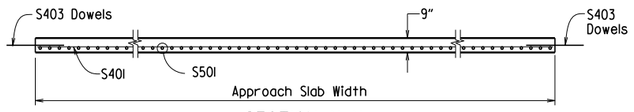
Slab Width	Reinforcing Steel	Concrete
	(Lbs.)	(Cu. Yds.)
20'-0"	1210	15.60
22'-0"	1325	17.20
24'-0"	1440	18.70
36'-0"	2135	28.10



SECTION X-X

SQUARE APPROACH SLAB SHOWN

¼" = 1'-0"



SECTION Y-Y

N.T.S.

GENERAL NOTES

This drawing is for use with Reinforced Concrete Slab Spans in Seismic Performance Zones 2, 3 & 4 and for the maximum skew angles shown below:

20'-0" Slab Width: Maximum Skew Angle = 45°
22'-0" Slab Width: Maximum Skew Angle = 45°
24'-0" Slab Width: Maximum Skew Angle = 40°
36'-0" Slab Width: Maximum Skew Angle = 30°

All concrete shall be Class S (AE) with a minimum 28 day compressive strength f'c = 4,000 psi and shall be poured in the dry.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

Approach Slabs will be measured and paid for in accordance with Section 504.

STANDARD DETAILS FOR TYPE E APPROACH SLAB

ARKANSAS STATE HIGHWAY COMMISSION

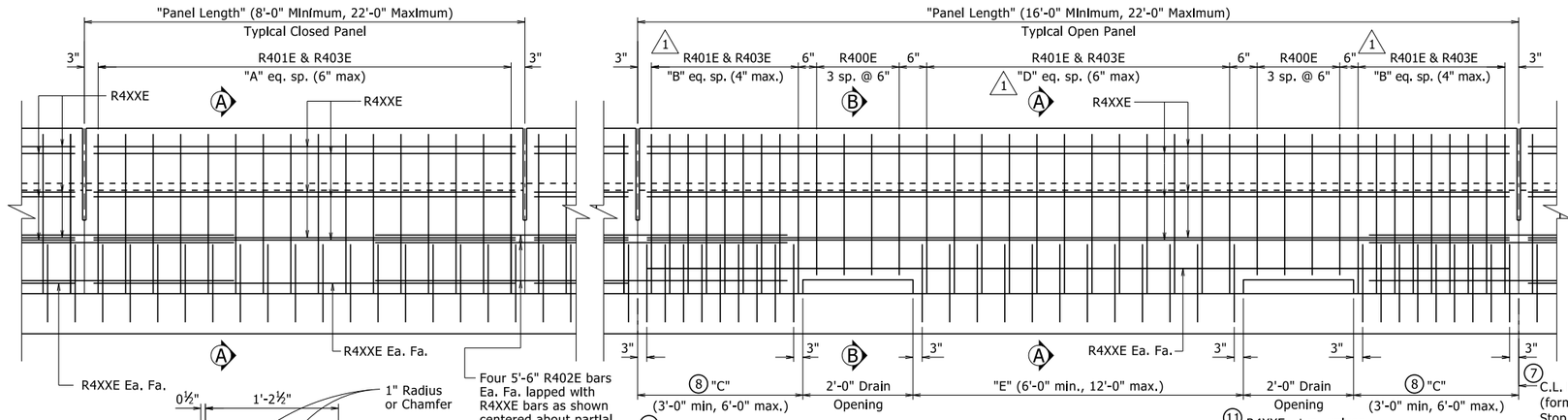
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55040e.dgn
CHECKED BY: K.W.Y. DATE: 2/27/2014 SCALE: AS SHOWN
DESIGNED BY: STD. DATE:

DRAWING NO. 55040E

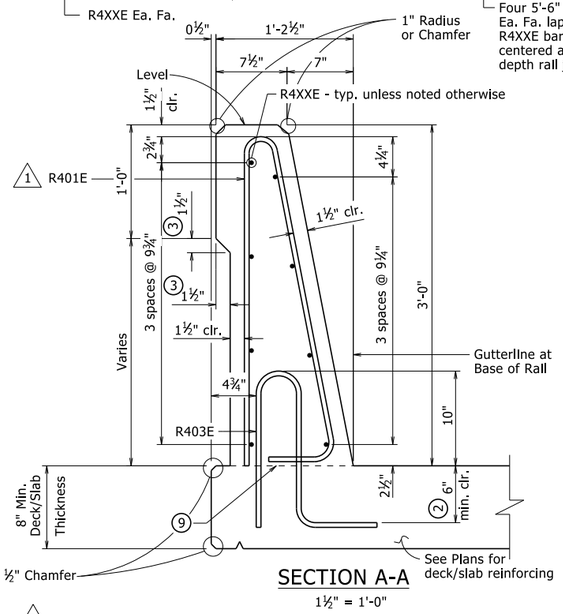
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
09/27/2022				6	ARK.			
				JOB NO.				

TYPE SSTR36 - 55070



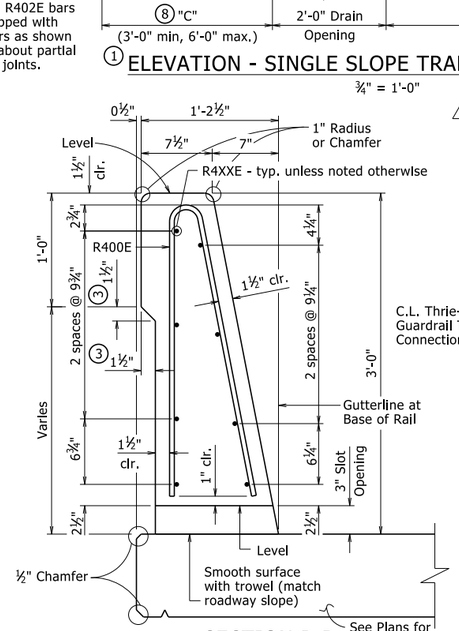
① ELEVATION - SINGLE SLOPE TRAFFIC RAIL

¾" = 1'-0"



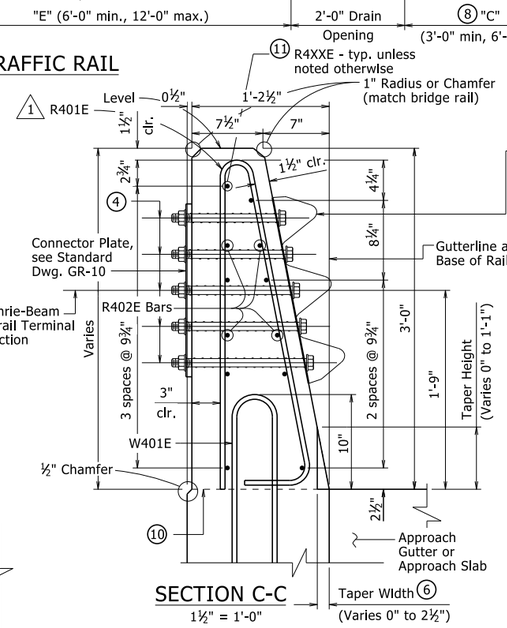
SECTION A-A

1½" = 1'-0"



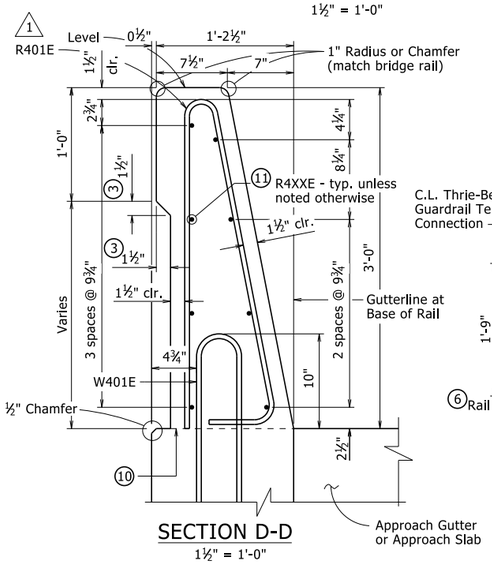
SECTION B-B

1½" = 1'-0"



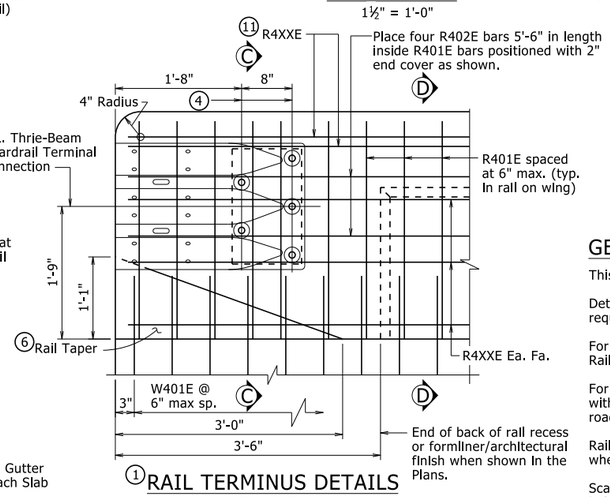
SECTION C-C

1½" = 1'-0"



SECTION D-D

1½" = 1'-0"



① RAIL TERMINUS DETAILS

1" = 1'-0"

⑦ C.L. Full-Depth Rail Joint (formed width ¼" to 1" max). Stop 6" from top of deck/slab or sidewalk. Place at all intermediate bents locations where rail is continuous.

⑦ C.L. Partial-Depth Rail Joint (formed width ¼" to 1" max). Stop 16" from top of deck/slab or sidewalk. Place at all remaining locations other than at intermediate bents.

① All measurements shown are along gutterline at base of rail.

② Minimum embedment into deck/slab.

③ Eliminate recess when formliner with architectural finish is used. See Plans for additional information.

④ C.L. 1" ø formed holes for ⅞" ø bolts. See Standard Drawings GR-10 and GR-12 for additional information.

⑤ Only applicable for bridges with rail cast directly on bridge deck/slab surface. Increase height as necessary for sidewalks, see Plans for additional information.

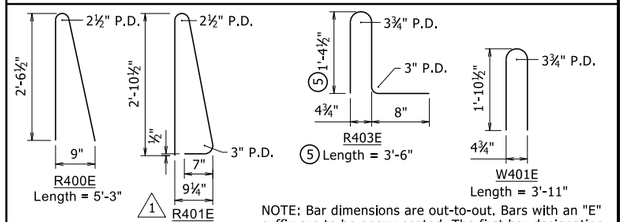
⑥ Field bend front leg of R401E bar as required to maintain minimum 1½" front face clearance within limits of taper.

⑦ When optional slip forming is used: to control cracking, all rail joints must be V-grooved around the perimeter of the rail prior to concrete set and sawing. Depth of V-groove shall be ½". Sawing of the joints shall be done as soon as practical to a width of ¼", and must be controlled so it will follow the V-Groove.

⑧ End posts shall be the same length within a panel.

Bolt Special End Shoe to face of rail as shown. Tapered washers are not required between the head of the bolts and the sloped face of the rail. Tighten the five terminal connection bolts in a well distributed pattern to prevent damage or distortion of the thrie-beam connection. Cut bolts off after installation so as to extend no more than ¾" beyond nut. Paint ends of cut-off bolts with zinc-rich paint. This work and material will not be paid for directly but shall be considered subsidiary to associated contract items.

BENDING DIAGRAM



NOTE: Bar dimensions are out-to-out. Bars with an "E" suffix are to be epoxy coated. The first bar designation number indicates the reinforcing bar size.

⑨ Required Construction Joint. Level where water flows away from rail, match roadway slope where water flows toward rail.

⑩ Top of Abutment Wing & Required Construction Joint (match bridge deck/slab construction joint slope). See Plans for Wing reinforcing.

⑪ These bars will not be included in the "Table of Variables". See Plans for details.

TABLE OF VARIABLES

Closed Rail Panels			Open Rail Panels					
Panel Length	A	R4XXE	Panel Length	B	C	D	E	R4XXE

See Plans for table with values.

GENERAL NOTES

This rail has been successfully evaluated by full-scale crash test to meet MASH TL-4 criteria.

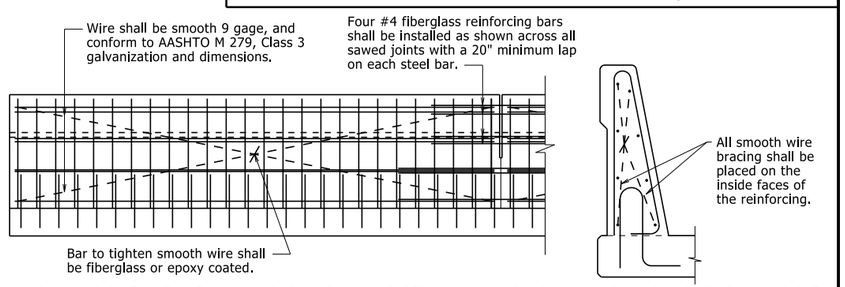
Details shown are general for bridges without sidewalks. See Plans for additional details and requirements specific to bridges with sidewalks.

For Table of Variables, Rail Bar List, locations of Full and Partial Depth Rail Joints, and Wing & Rail Bar Lists, see Plans.

For location of drain openings, see Plans. Drain openings shown are not applicable for bridges with sidewalks. Drain openings will not be allowed over Railroad Right of Way, travelled roadways, and protected waterways.

Rail Terminus details, including Rail Taper, are not applicable for bridges with sidewalks or when bridge railing is continuous with roadway railing.

Scales shown are for 22"x34" drawings. When using 11"x17" drawings, reduce scale by one half.



The extruded rail shall conform to the horizontal and vertical lines shown on the plans or as directed by the Engineer and shall present a smooth, uniform appearance and texture. Unless otherwise noted, exposed surfaces may be given a light brush finish or a Class 3, Textured Coating Finish in place of Class 2, Rubbed Finish.

All panels shall be braced as required to prevent racking.

Slip forming will not be allowed on bridges where formliner with architectural treatment is used unless approval from the Engineer is obtained.

DETAILS OF OPTIONAL SLIP FORMING OF BRIDGE TRAFFIC RAIL

No Scale

△1 Modified bending diagram and spacing for R401E bar.

By: CGP, Checked by: CMW 09/27/2022

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS

BRIDGE ENGINEER

THESE DETAILS ARE APPLICABLE UNLESS OTHERWISE SHOWN IN THE PLAN DETAILS, SPECIAL PROVISIONS, OR SUPPLEMENTAL SPECIFICATIONS.

STANDARD DETAILS FOR BRIDGE TRAFFIC RAIL TYPE SSTR36

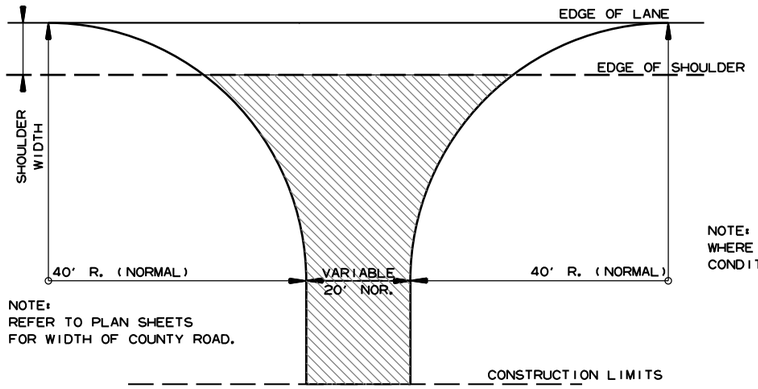
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 11/5/2020
CHECKED BY: LJB DATE: 11/5/2020
DESIGNED BY: STD. DATE: -----
FILENAME: b55070.dgn
SCALE: As Noted

DRAWING NO. 55070

PRINT DATE: 10/6/2022

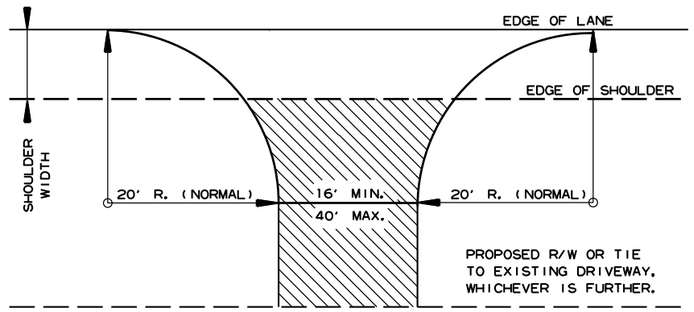


NOTE:
REFER TO PLAN SHEETS
FOR WIDTH OF COUNTY ROAD.

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

ACHM SURFACE COURSE (1/2")
(220 LBS. PER SQ. YD.) AND
AGGREGATE BASE COURSE (CLASS 7)
7" COMP. DEPTH, UNLESS OTHERWISE
SPECIFIED IN PLANS.

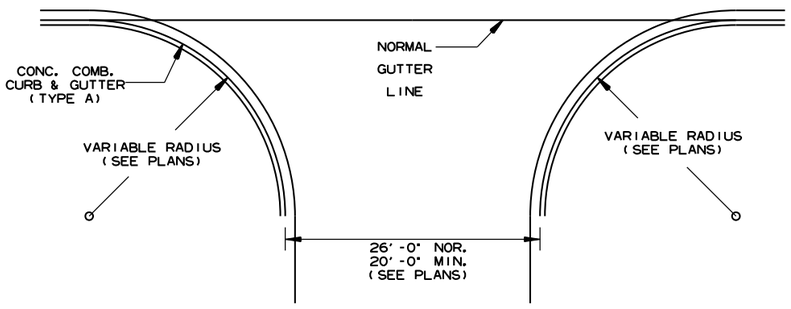
DETAIL FOR COUNTY ROAD TURNOUTS OPEN SHOULDER SECTION



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

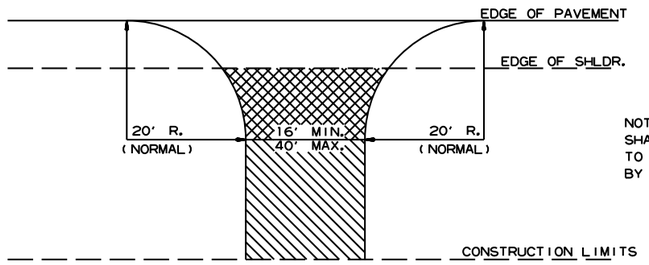
ACHM SURFACE COURSE (1/2")
(220 LBS. PER SQ. YD.) AND
AGGREGATE BASE COURSE (CLASS 7)
7" COMP. DEPTH IF ASPHALT OR
GRAVEL DRIVE EXISTING; OR 6"
CONCRETE IF CONCRETE DRIVE
EXISTING.

DETAIL FOR DRIVEWAY TURNOUTS OPEN SHOULDER SECTION (ARTERIALS)



NOTE:
PAVEMENT STRUCTURE FOR STATE HIGHWAYS, CITY STREETS,
& COUNTY ROADS TO BE SAME AS MAIN LANES.

DETAIL OF TURNOUTS, ASPHALT STREETS, COUNTY ROADS & STATE HIGHWAYS CURB & GUTTER SECTION



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

ASPHALT CONCRETE HOT MIX SURFACE
COURSE (220 LBS. PER SQ. YD.)
AGGREGATE BASE COURSE (CLASS 7)
7" COMP. DEPTH IF ASPHALT DRIVE EXIST OR
6" CONCRETE IF CONCRETE DRIVE EXIST.

AGGREGATE BASE COURSE (CLASS 7)
9" COMP. DEPTH OR CONFORM
TO EXISTING DRIVEWAY

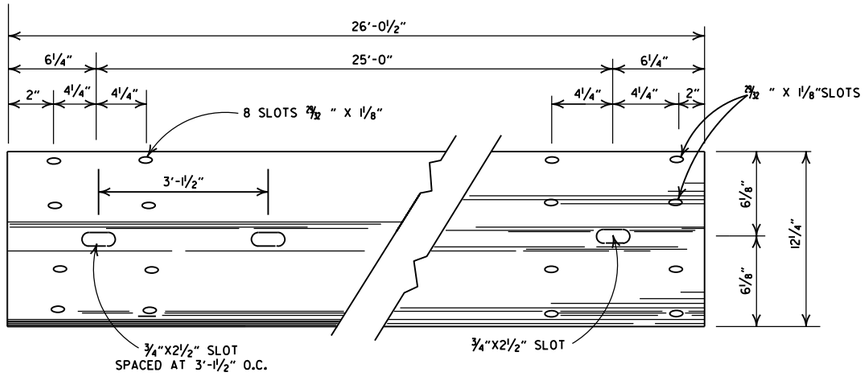
DETAIL FOR DRIVEWAY TURNOUTS (COLLECTORS)

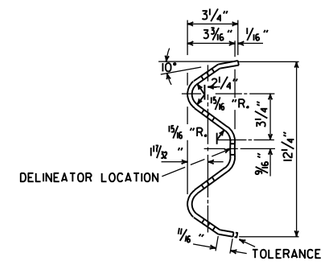
DATE REV	DATE FILMED	DESCRIPTION
5-19-22		ISSUED

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DRIVEWAYS & STREET TURNOUTS

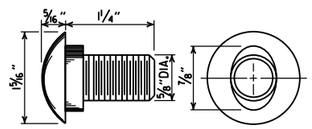
STANDARD DRAWING DR-2



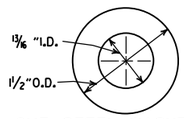


DETAILS OF W-BEAM GUARDRAIL

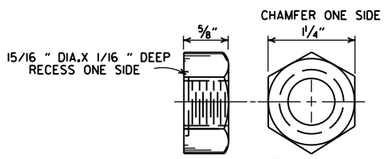
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



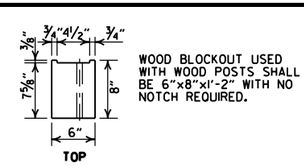
SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



CUT STEEL WASHER

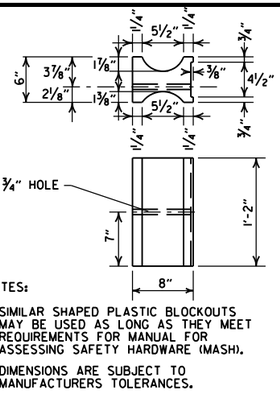


NUT



WOOD BLOCKOUT USED WITH WOOD POSTS SHALL BE 6"x8"x1'-2" WITH NO NOTCH REQUIRED.

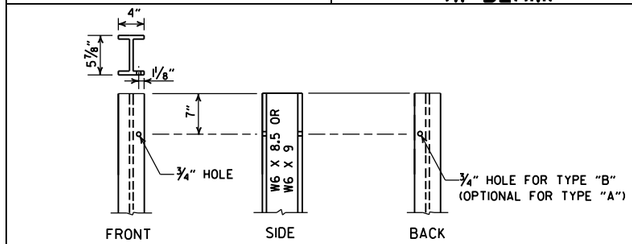
WOOD BLOCKOUT (W-BEAM)



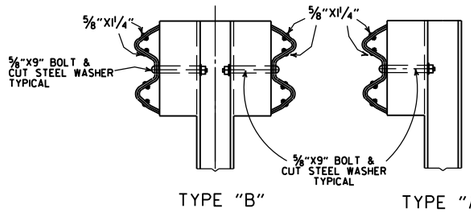
NOTES:

1. SIMILAR SHAPED PLASTIC BLOCKOUTS MAY BE USED AS LONG AS THEY MEET REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
2. DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCES.

PLASTIC BLOCKOUT (W-BEAM)



STEEL POST



DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

-GENERAL NOTES-

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN ¾" BEYOND IT.

WHERE W-BEAM GUARDRAIL CONTINUES, THE INTERMEDIATE SECTIONS SHALL HAVE A POST SPACING OF 6'-3" UNLESS OTHERWISE NOTED.

W-BEAM GUARDRAIL REPRESENTING INTERMEDIATE SECTIONS WILL BE MEASURED ALONG THE ROADWAY FACE FROM CENTERLINE OF POST TO CENTERLINE OF POST.

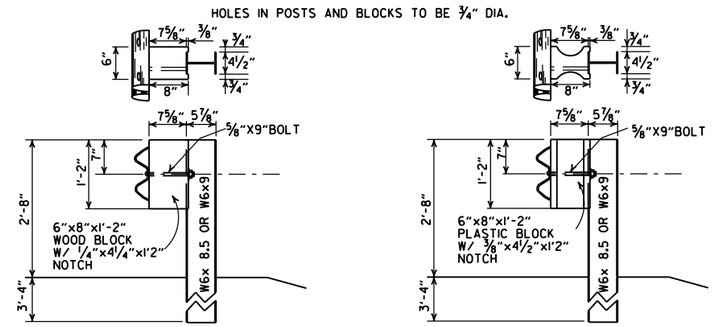
USE W-BEAM GUARDRAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB. FOR EXTENSIONS OR MODIFICATION OF EXISTING GUARDRAIL, W-BEAM GUARDRAIL COMPONENTS OF THE SAME TYPE AS THOSE EXISTING SHALL BE USED.

ANY BACKFILLING UNDER OR AROUND POST SHALL BE DAMP SAND THOROUGHLY TAMPED IN PLACE.

WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7 f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

CONTRACTOR SHALL HAVE THE OPTION OF USING WOOD BLOCKOUTS FOR W-BEAM GUARDRAIL OR PLASTIC BLOCKOUTS, AS LONG AS BLOCKOUT USED MEETS REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) FOR W-BEAM GUARDRAIL.

DELINEATORS SHALL BE MOUNTED AT 37.5' SPACING ON THE FRONT FACE OF THE GUARDRAIL. SPACING MAY BE REDUCED IN CURVES, AS DIRECTED BY THE ENGINEER. COLOR SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. PAYMENT FOR DELINEATORS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID PER LIN. FT. FOR GUARDRAIL.



WOOD BLOCKOUT CONNECTIONS

PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

POSTS AND BLOCKS TO BE ROUGH SAWN 6"X8" WITH A TOLERANCE OF + OR - ¼".

WOOD BLOCKOUT CONNECTIONS

PLASTIC BLOCKOUT CONNECTIONS

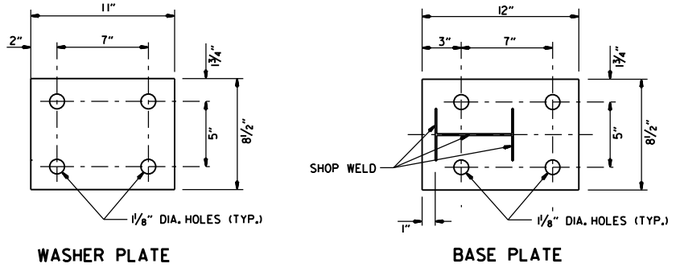
DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

DATE	REVISION	FILMED
05-19-22	REVISED GENERAL NOTES, ADDED DELINEATOR LOCATION.	
11-07-19	RENUMBERED AND RENAMED	
11-16-17	REVISED GENERAL NOTES AND RAISED GUARDRAIL HEIGHT 3"	
07-14-10	RAISED HEIGHT OF GUARDRAIL 1"	
10-15-09	ADDED REFERENCE TO MASH	
04-10-03	REVISED GENERAL NOTES	
08-22-02	REVISED DIMENSION ON WOOD & PLASTIC BLOCKOUT CONNECTIONS & STEEL POST	
11-16-01	REVISED WOOD BLOCKOUT & DETAILS OF WOOD LINE POST CONNECTIONS	
03-30-00	REMOVED GUARDRAIL AT BRIDGE ENDS	
01-12-00	ADDED PLASTIC BLOCKOUT	
08-12-98	REV. BLOCKOUTS TO WOOD, DELETED CONC. POST & REV. GENERAL NOTE, DELETED DET. OF GUARDRAIL REPLACE. BEHIND CURB & DET. OF POST PLACE. IN SOLID ROCK, & ADDED DETAILS OF STEEL LINE POST CONN. REMOVED BACK-UP PLATE, REVISED HOLES IN STEEL POLES	
04-03-97	REMOVED "LAP IN DIRECTION OF TRAFFIC" NOTE & PLACED ARROWS ON WASHERS	
10-18-96	REVISED WOOD POST NOTE	
06-02-94	ADDED ALT. STEEL POST SIZE	
08-05-93	REVISED STEEL POST SIZE	8-5-93
10-01-92	REDRAWN & REVISED	10-1-92
08-15-91	REVISED WASHER NOTE	8-15-91
08-02-90	REV. GEN. NOTE & DEPTH OF ANC. POST IN ROCK	8-2-90
07-15-88	REVISED SECTION 3 & GENERAL NOTES	
03-04-88	REV. ANCHOR POST, ELEV. NOTES & POST IN ROCK	780-3-4-88
10-30-87	REVISED WOOD LINE POST DETAIL	546-10-30-87
10-09-87	REDRAWN & REVISED	802-10-9-87

ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

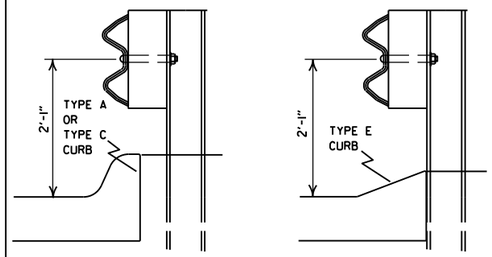
STANDARD DRAWING GR-6



WASHER PLATE

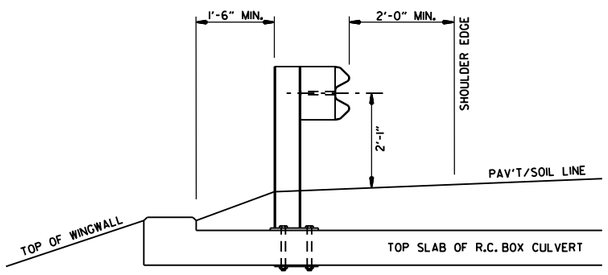
BASE PLATE

Note: Bolts, nuts, washers and plates shall be galvanized in accordance with Section 807 of the Standard Specifications.

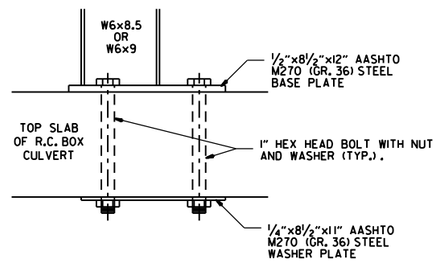


DETAIL OF GUARDRAIL PLACEMENT BEHIND CURB (W-BEAM)

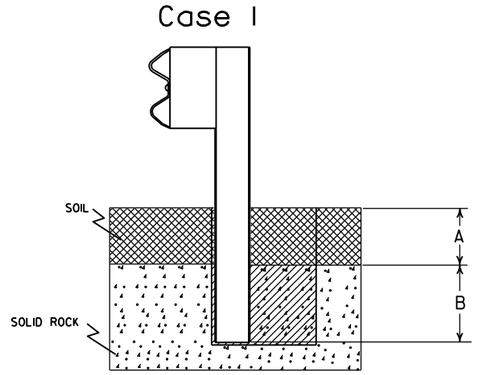
FOR DESIGN SPEEDS OF 50 MPH OR LESS ALL CURB FACES, AS SHOWN ON STD. DRWG. CG-1, MAY BE USED. FOR DESIGN SPEEDS OF 55 MPH OR MORE TYPE "E" CURB FACE SHALL BE USED.



SECTION A-A

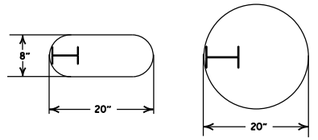


DETAIL OF CONNECTION



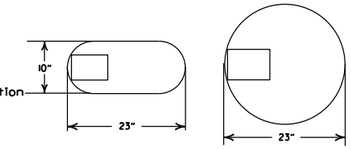
Plan View Steel Posts

Either hole configuration acceptable



Plan View Wood Posts

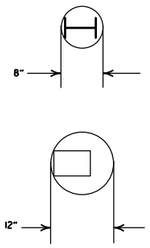
Either hole configuration acceptable



Notes: For overlying soil depths (A) ranging from 0 to 18", the depth of required drilling (B) is equal to 24".

Zone A:
Backfill according to Section 617.03(a).

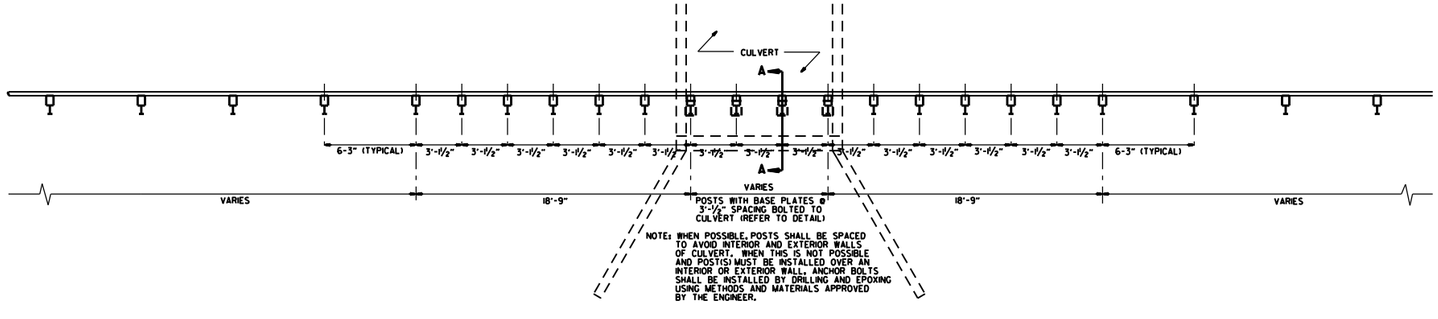
Zone B:
Backfill hole in 6" lifts with material meeting the requirements of Section 802.02(c) - Alternate gradation. Compact to 95% maximum dry density per ASTM D-698.



Notes: For overlying soil depths (A) ranging from 18" to 44", the depth of required drilling (B) is equal to either 12" or 44" minus the depth of soil whichever is less.

Zone A & B:
Backfill according to Section 617.03(a).

DETAIL OF POST PLACEMENT IN SOLID ROCK (W-BEAM)



PLAN LAYOUT OF TYPE A GUARDRAIL AT LOW-FILL CULVERTS

NOTE: THIS DETAIL IS TO BE USED ONLY WHEN THE COVER OVER THE CULVERT DOES NOT PERMIT FULL EMBEDMENT OF GUARDRAIL POSTS AS SHOWN ON STD. DWG. GR-6.

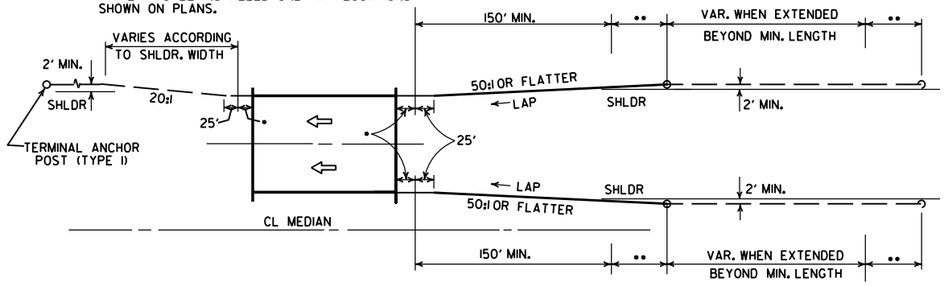
DATE	REVISION	FILMED
11-07-19	RENUMBERED, RENAMED, REVISED REFERENCE	
11-16-17	REVISED GUARDRAIL HEIGHT	
07-14-10	RAISED HEIGHT OF GUARDRAIL 1"	
04-12-07	REVISED DETAIL OF GUARDRAIL PLACEMENT BEHIND CURB	
11-10-05	ADDED GUARDRAIL PLACEMENT BEHIND CURB; REVISED DETAIL OF CONNECTION	
11-18-04	REVISED POST PLACEMENT IN ROCK & CULVERT CONNECTION DETAILS. ADDED DETAIL FOR GUARDRAIL PLACEMENT AT LOW-FILL CULVERTS	
03-30-00	REMOVED CONCRETE INSERT ANCHOR	
08-12-98	CHANGED STEEL SPACER BLOCK TO WOOD BLOCKOUT, ADDED DET. OF GUARDRAIL CONNECTION TO R.C. BOX CULV'T., DELETED DET. OF STEEL LINE POST CONN. & ADDED DET. OF GUARDRAIL PLACE. BEHIND CURB & DET. OF POSTPLACE. IN SOLID ROCK	
04-03-96	PLACED ARROWS AT CUT STEEL WASHERS	4-3-96
10-18-96	REV. ASTM REF. TO AASHTO	
11-22-95	ADDED OPTIONAL HOLES	
06-02-94	REVISED ALTERNATE POST SIZE	
08-05-93	REVISED STEEL POST SIZE	
10-01-92	REDRAWN & REVISED	10-1-92
08-02-90	DEL. WASHER ON ANCHOR ASSEMBLY	8-2-90
07-15-88	CONFORMED TO 1988 SPECS	
03-04-88	REVISED ANCHOR NOTE	
10-30-87	REVISED ANCHOR ASSEMBLY	712-10-30-87
10-30-87	REVISED PLACEMENT BEHIND CURB	547-10-30-87
10-09-87	REDRAWN & REVISED	803-10-9-87

ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

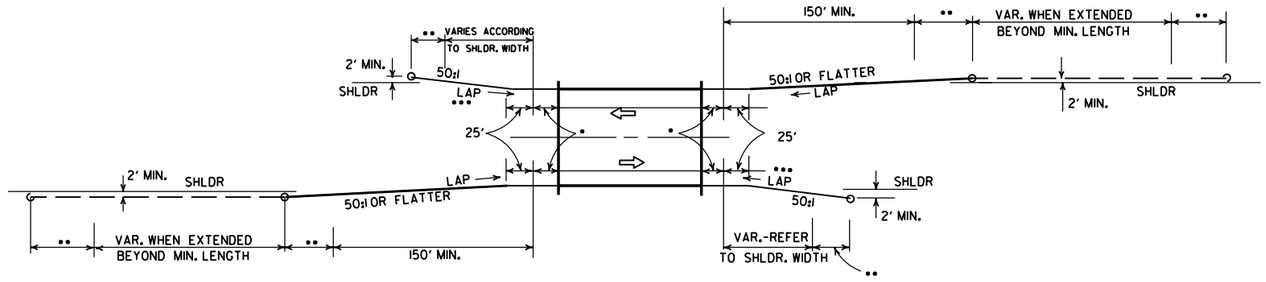
STANDARD DRAWING GR-7

NOTE: GUARDRAIL WITH GUARDRAIL TERMINAL (TYPE 1) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



ONE-WAY TRAFFIC

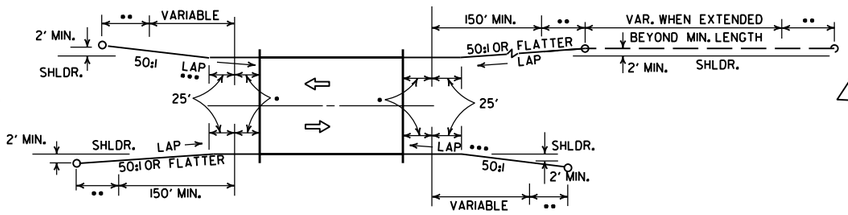
••• LAP OF GUARDRAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200'. CHANGE TO LAP IN DIRECTION OF TRAVEL.



TWO-WAY TRAFFIC

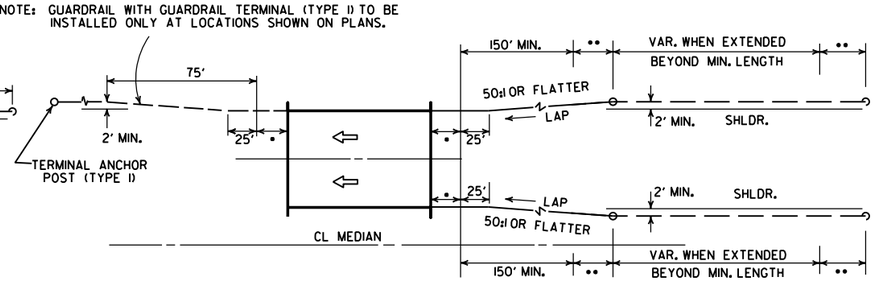
METHODS OF INSTALLATION OF GUARDRAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARDRAIL TERMINAL (TYPE 2)

••• LAP OF GUARDRAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200'. CHANGE TO LAP IN DIRECTION OF TRAVEL.



TWO-WAY TRAFFIC

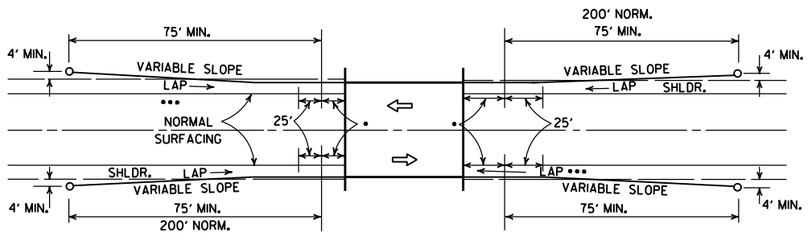
NOTE: GUARDRAIL WITH GUARDRAIL TERMINAL (TYPE 1) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



ONE-WAY TRAFFIC

METHOD OF INSTALLATION OF GUARDRAIL AT FULL SHOULDER WIDTH BRIDGES USING GUARDRAIL TERMINAL (TYPE 2)

••• LAP OF GUARDRAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200'. CHANGE TO LAP IN DIRECTION OF TRAVEL.



METHOD OF INSTALLATION OF GUARDRAIL USING GUARDRAIL TERMINAL (TYPE 1) (FULL SHOULDER WIDTH OR LESS BRIDGES)

LEGEND

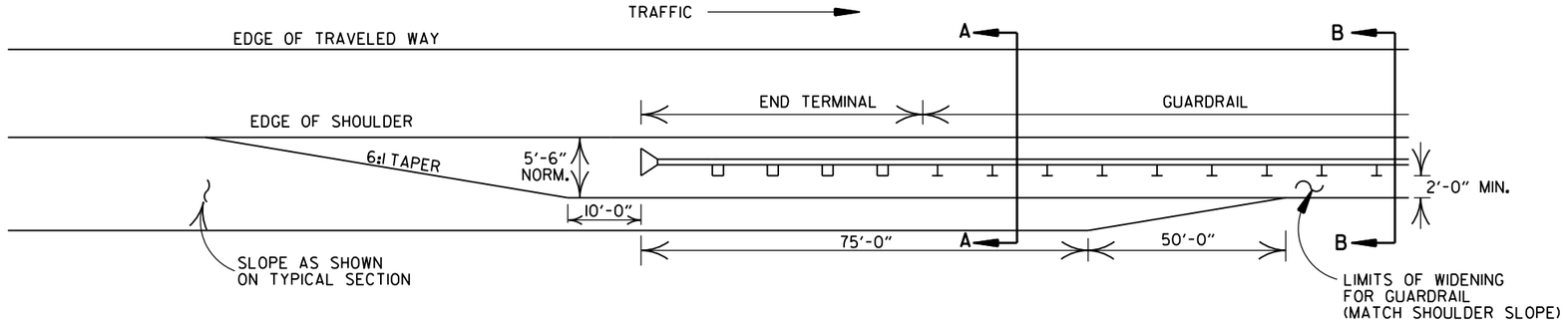
- • THRIE BEAM GUARDRAIL TERMINAL
- •• GUARDRAIL TERMINAL (TYPE 2)

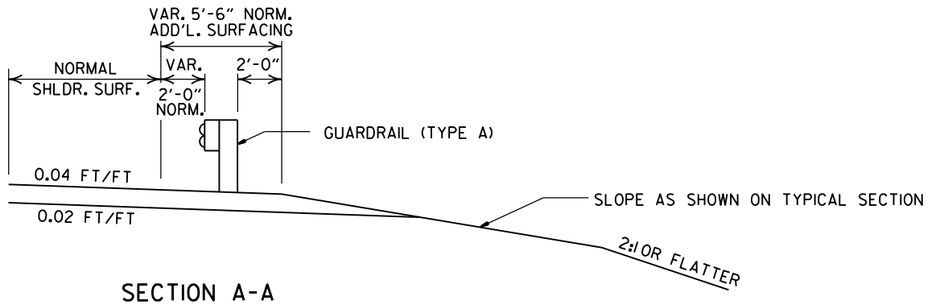
DATE	REVISION	DATE FILM
11-07-19	RENUMBERED AND RENAMED	
4-17-08	REVISED LAYOUTS	
11-10-05	REMOVED GUARDRAIL NOTES AND DETAILS	
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARDRAIL USING GUARDRAIL TERM. (TY. 1)	
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00
6-26-97	REVISED LAYOUT	
10-1-92	REDRAWN & REVISED	10-1-92
	ADDED NOTE	
10-9-87	REDRAWN & REVISED	

ARKANSAS STATE HIGHWAY COMMISSION

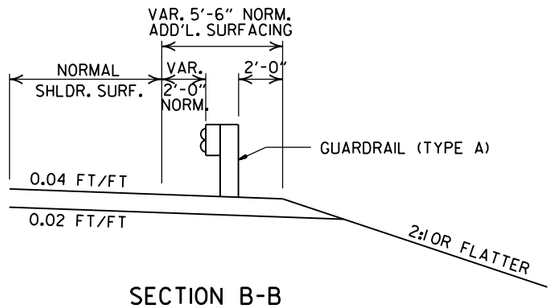
GUARDRAIL DETAILS

STANDARD DRAWING GR-8



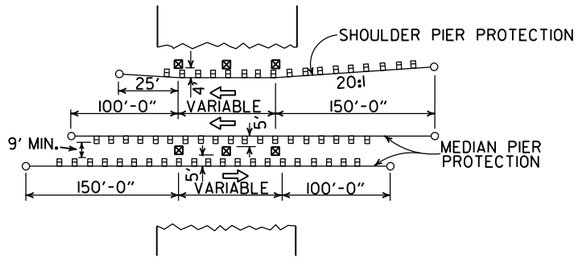


SECTION A-A



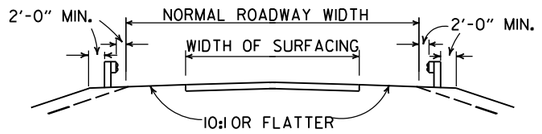
SECTION B-B

DETAILS OF WIDENING FOR GUARDRAIL

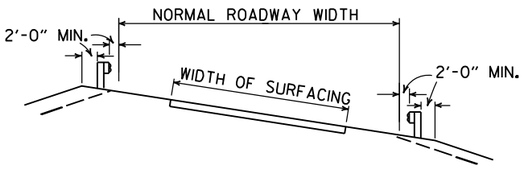


METHOD OF INSTALLATION OF GUARDRAIL AT FIXED OBSTACLE

NOTE: NORMAL SECTION TO BE WIDENED APPROX. 5'-6" EACH SIDE TO SUPPORT GUARDRAIL.



SECTION ON TANGENT



SECTION ON CURVE

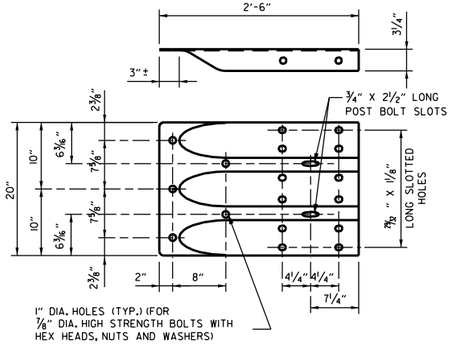
DETAILS SHOWING POSITION OF GUARDRAIL ON HIGHWAY

DATE	REVISION	DATE FILM
11-07-19	RENUMBERED AND RENAMED	
4-17-08	MINOR REVISION	
11-10-05	DRAWN	

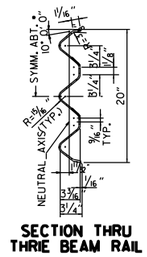
ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

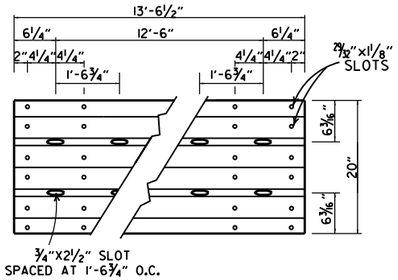
STANDARD DRAWING GR-9



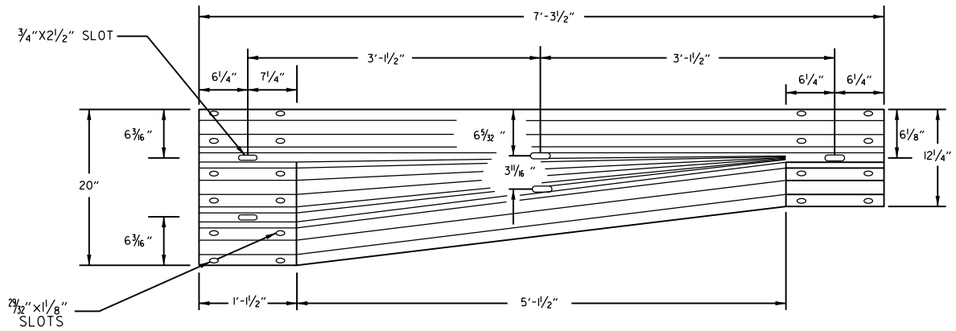
SPECIAL END SHOE



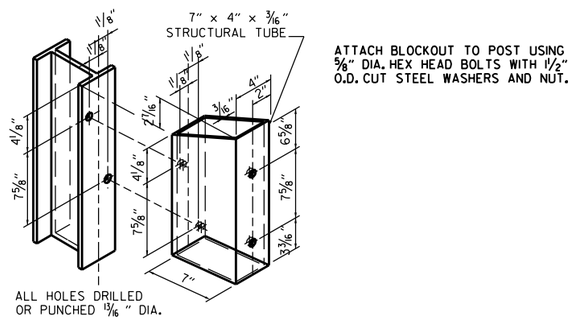
SECTION THRU THRIE BEAM RAIL



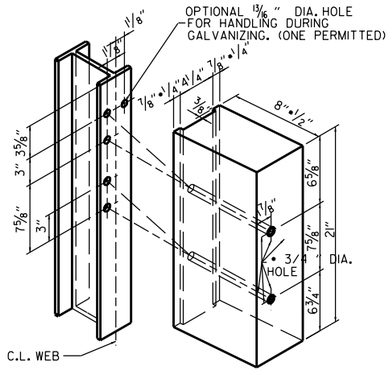
THRIE BEAM RAIL



TRANSITION SECTION



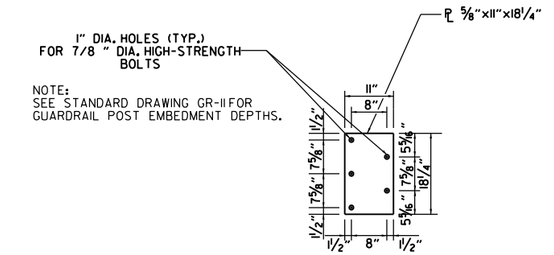
STRUCTURAL STEEL TUBING BLOCKOUT DETAIL



ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED

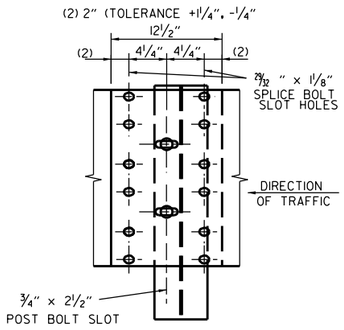
HOLE PUNCHING DETAIL FOR STEEL POST & WOOD OR PLASTIC BLOCKOUTS

NOTE: BLOCKS SHALL BE THE SAME TYPE THROUGHOUT THE PROJECT LIMITS.



CONNECTOR PLATE

CONNECTOR PLATE SHALL BE AASHTO M270, GR. 36 AND SHALL BE GALVANIZED AFTER FABRICATION. GALVANIZING SHALL CONFORM TO SUBSECTION 807.19 OF THE STANDARD SPECIFICATIONS. CONNECTOR PLATE TO BE BOLTED TO SPECIAL END SHOE USING ⅞" DIA. HIGH STRENGTH BOLTS, WITH THE HEADS PLACED ON THE TRAFFIC FACE. WASHERS SHALL BE USED UNDER THE HEAD AND NUT. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AND SHALL CONFORM TO SUBSECTION 807.06.



THRIE BEAM RAIL SPLICE AT POST

GENERAL NOTES:

THE THRIE BEAM RAIL, SPECIAL END SHOE, AND THE TRANSITION SECTION SHALL BE MADE OF STEEL AND SHALL BE 12 GAGE. ZINC COATING SHALL BE TYPE 1.

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN 3"4" BEYOND IT.

ALL LAP SPLICES, INCLUDING SPECIAL END SHOES, SHALL BE MADE IN THE DIRECTION SHOWN ON STANDARD DRAWINGS GR-8 & GR-13.

REFER TO STD. DRWG. GR-11 FOR POST DETAILS.

USE THRIE BEAM GUARDRAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB.

THRIE BEAM POSTS SHALL BE SAME MATERIAL AS W-BEAM POSTS FOR ENTIRE JOB.

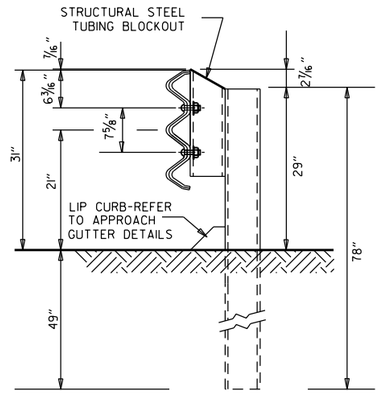
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7 f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

DATE	REVISION	FILMED
11-07-19	RENAMED AND REVISED REFERENCES	
11-16-17	REVISED TRANSITION SECTION, GUARD RAIL HEIGHT, AND GENERAL NOTES; MOVED THRIE BEAM GUARD RAIL CONNECTIONS AT BRIDGES ENDS TO STD. DRWG. GR-12	
07-14-10	RAISED HEIGHT OF W-BEAM 1"	
11-29-07	ADDED PLASTIC BLOCKOUTS	
11-10-05	ADDED NOTE FOR ATTACHING STEEL BLOCKOUT	
11-18-04	REVISED GENERAL NOTES	
10-9-03	REVISED GENERAL NOTES	
04-10-03	REVISED GENERAL NOTES	
08-22-02	REVISED NOTE (2)	
06-29-00	MOVED DIMENSION LINES	
05-18-00	ADDED NOTE	
03-30-00	DRAWN & ISSUED	

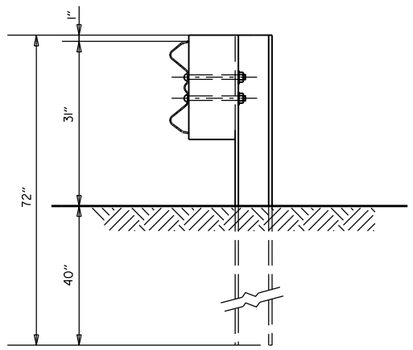
ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

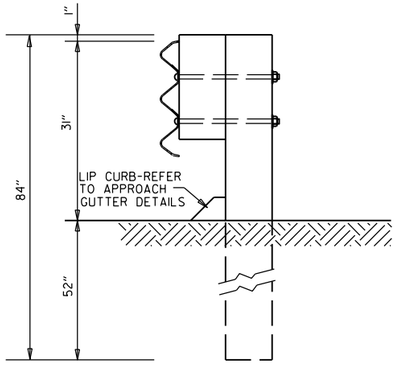
STANDARD DRAWING GR-10



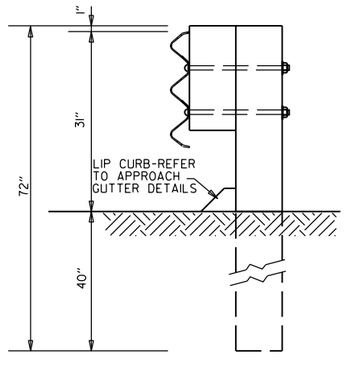
THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7



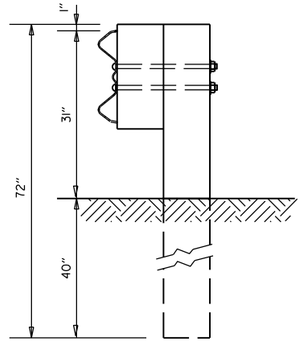
W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8



THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUTS & WOOD POSTS
POSTS 1-6



THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUT & WOOD POST
POST 7



W-BEAM TO THRIE BEAM
TRANSITION RAIL WITH WOOD OR
PLASTIC BLOCKOUT & WOOD POST
POST 8

GENERAL NOTES:

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

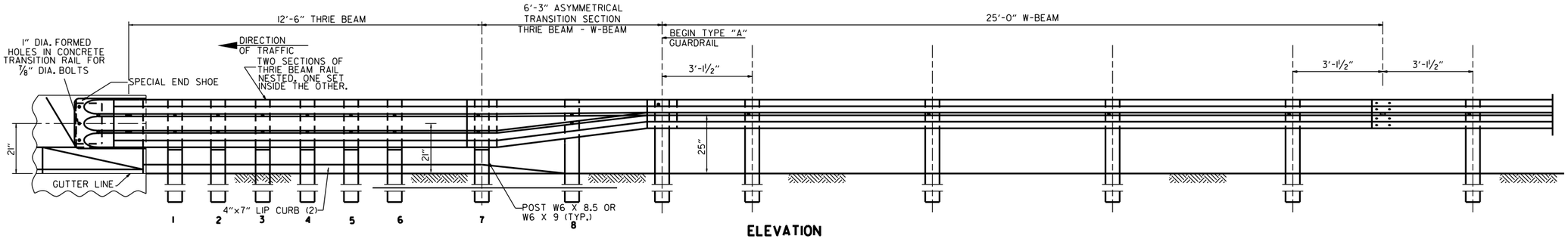
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1STRUCTURAL OR BETTER 9.7f (1400 f) OR NO.1 1350 f SOUTHERN PINE.

DATE	REVISION	FILMED
11-07-19	RENAMED	
11-16-17	REVISED GUARDRAIL HEIGHT, CHANGED STD. DWG. NUMBER FROM GR-10A TO GR-11	
07-14-10	REVISED POST 8 DIMENSIONS	
11-29-07	ADDED PLASTIC BLOCKOUTS	
08-22-02	REVISED LIP CURB NOTE	
03-30-00	DRAWN & ISSUED	

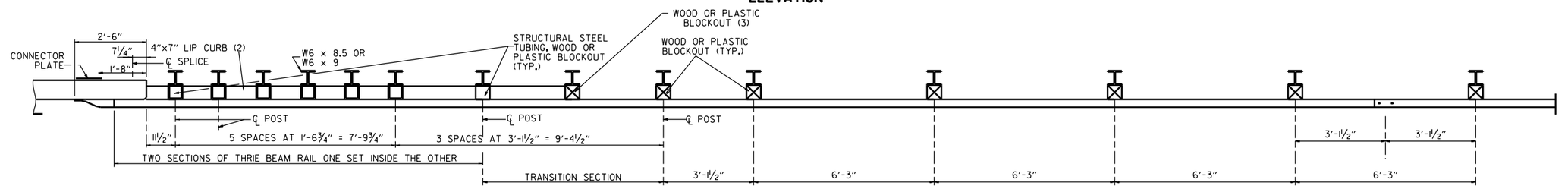
ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

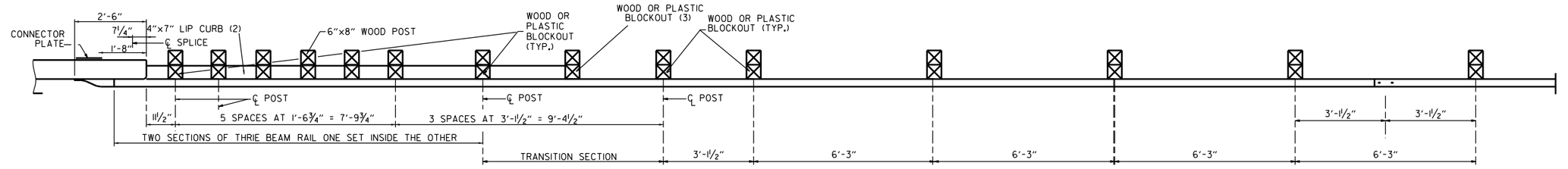
STANDARD DRAWING GR-11



ELEVATION



PLAN



PLAN

(1) VERIFY BOLT SPACING FROM RAIL TRANSITION PRODUCER.
(2) REFER TO APPROACH GUTTER DETAILS.
(3) LENGTH OF BLOCKOUT ON POST 8 TO BE MODIFIED TO FIT RAIL WIDTH.

THRIE BEAM GUARDRAIL CONNECTION AT BRIDGE ENDS

GENERAL NOTES:

THE THRIE BEAM RAIL, SPECIAL END SHOE, AND THE TRANSITION SECTION SHALL BE MADE OF STEEL AND SHALL BE 12 GAGE. ZINC COATING SHALL BE TYPE I.

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN 3/4" BEYOND IT.

ALL LAP SPLICES, INCLUDING SPECIAL END SHOES, SHALL BE MADE IN THE DIRECTION SHOWN ON STANDARD DRAWINGS GR-8 & GR-13.

REFER TO STD. DRWG. GR-11 FOR POST DETAILS.

USE THRIE BEAM GUARDRAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB.

THRIE BEAM POSTS SHALL BE SAME MATERIAL AS W-BEAM POSTS FOR ENTIRE JOB.

POSTS SHALL NOT BE PLACED AT SPLICE LOCATIONS ALONG W-BEAM RAILS.

WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

DATE	REVISION	FILMED
05-14-20	REVISED NOTES	
11-07-19	RENAMED & REVISED REFERENCES	
11-16-17	RE-DRAWN FROM STD. DWG. GR-10 & ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

STANDARD DRAWING GR-12

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.

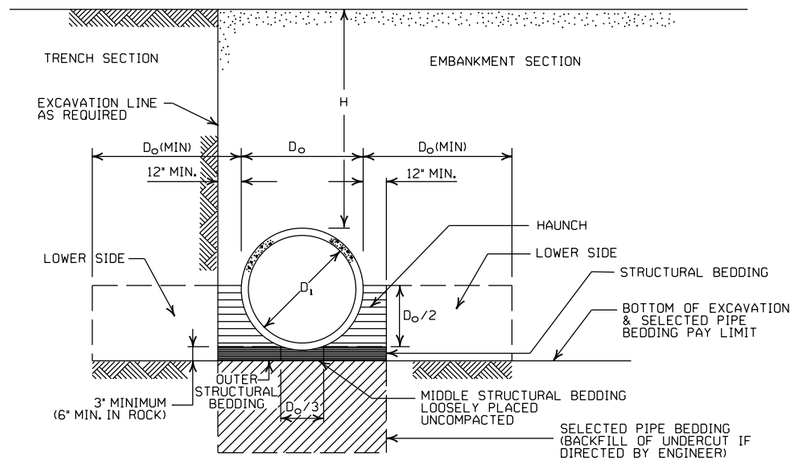
- LEGEND -

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

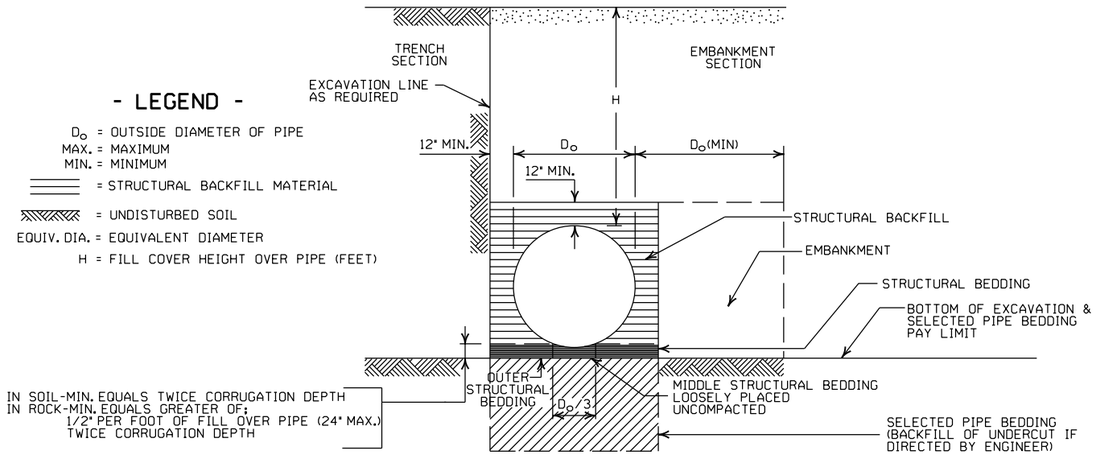
EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINUMUM CORNER RADIUS (INCHES)	STEEL				ALUMINUM			
			MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)	MAX. HEIGHT OF FILL, "H" (FT.)		MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)	MAX. HEIGHT OF FILL, "H" (FT.)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

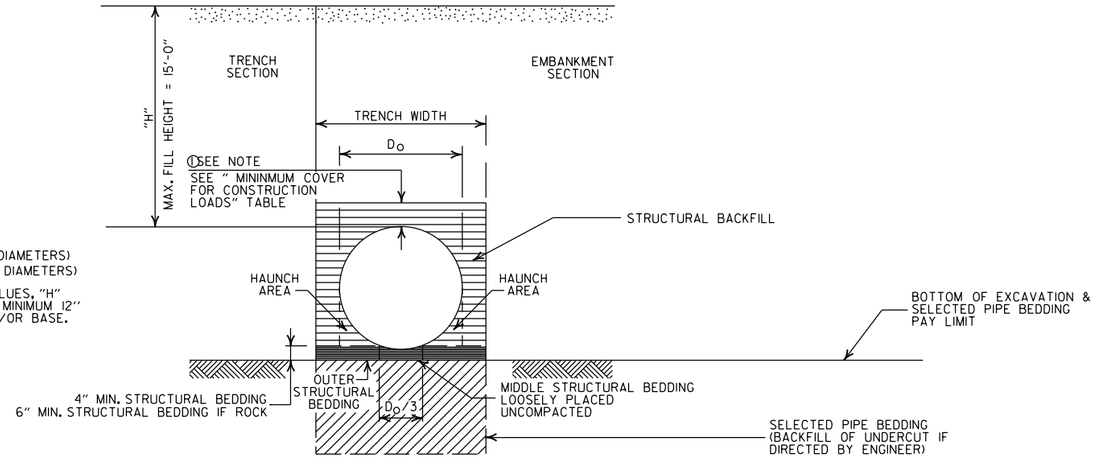
①NOTE:
18" MIN. (18" - 30" DIAMETERS)
24" MIN. (36" - 48" DIAMETERS)

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

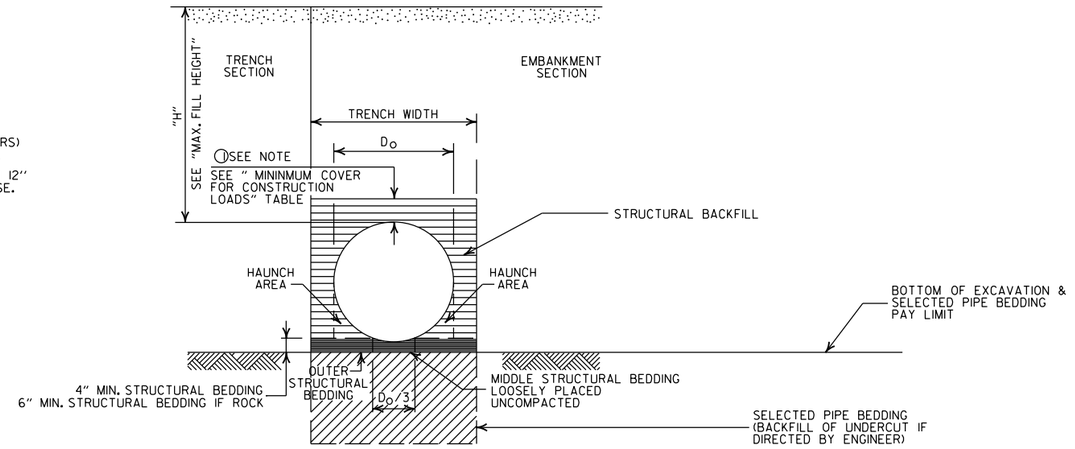
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

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"

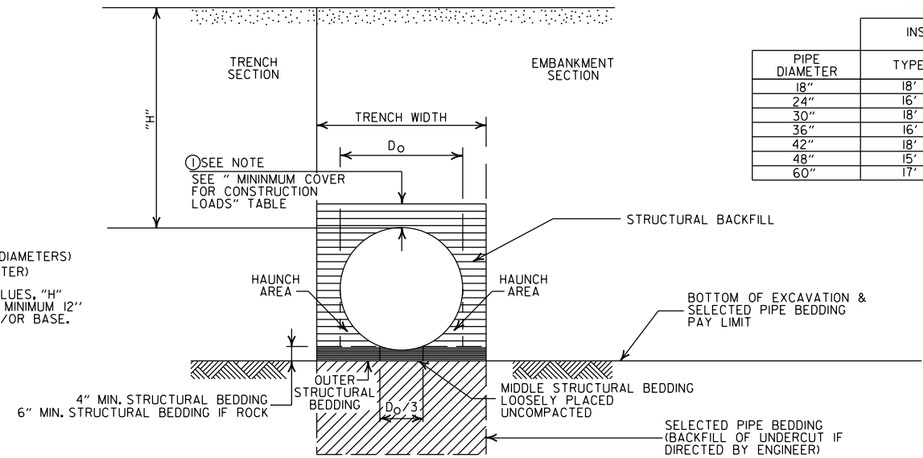
PIPE DIAMETER	TRENCH WIDTH (FEET)	
	"H" < 10'-0"	"H" >OR= 10'-0"
18"	4'-6"	4'-6"
24"	5'-0"	6'-0"
30"	5'-6"	7'-6"
36"	6'-0"	9'-0"
42"	7'-0"	10'-6"
48"	8'-0"	12'-0"
60"	10'-0"	15'-0"

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

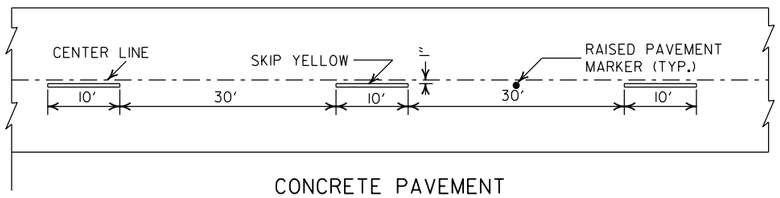
= UNDISTURBED SOIL

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

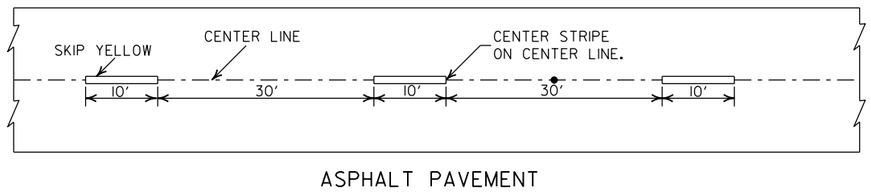
ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (POLYPROPYLENE)

STANDARD DRAWING PCP-3

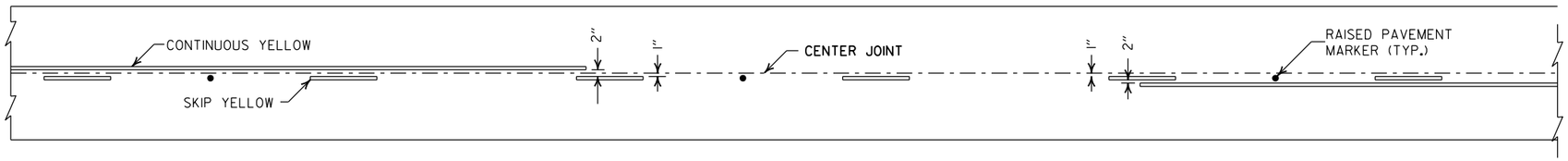


CONCRETE PAVEMENT

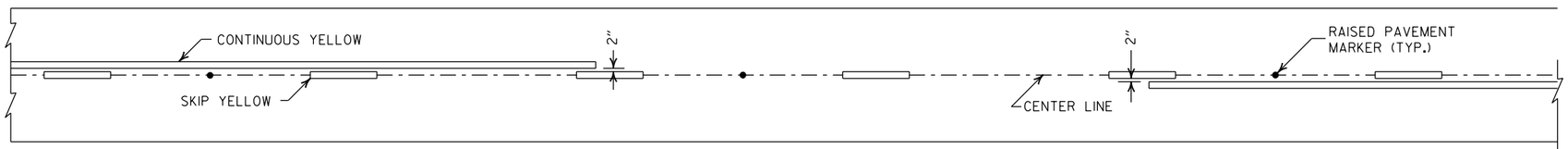


ASPHALT PAVEMENT

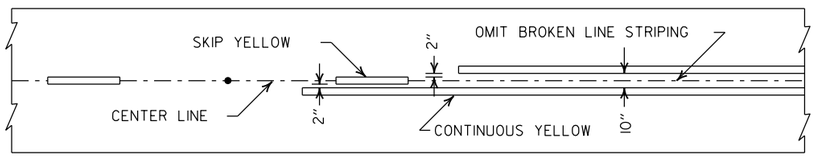
BROKEN LINE STRIPING



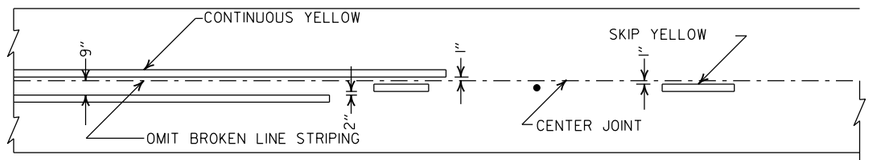
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

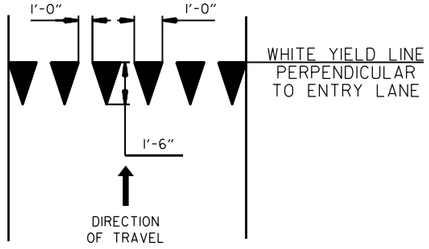


ASPHALT PAVEMENT

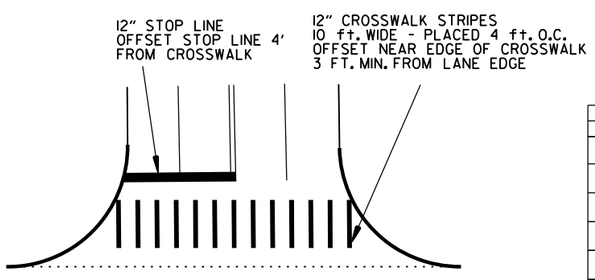


CONCRETE PAVEMENT

STRIPING AT ADJACENT NO PASSING LANES

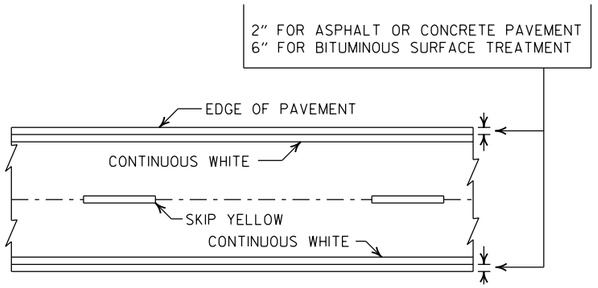


YIELD LINE DETAIL



CROSSWALK AND STOP LINE DETAILS

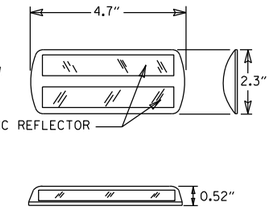
NOTES:
1. REFER TO THE STRIPING DETAILS FOR PAVEMENT MARKING LINE WIDTHS.
2. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
3. RAISED PAVEMENT MARKERS SHALL BE PLACED ON AN 80 FEET SPACING UNLESS OTHERWISE SHOWN IN THE PLANS.



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

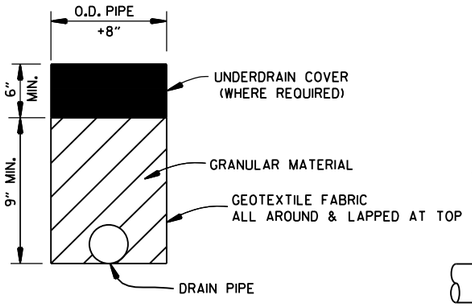
PAVEMENT MARKING DETAILS

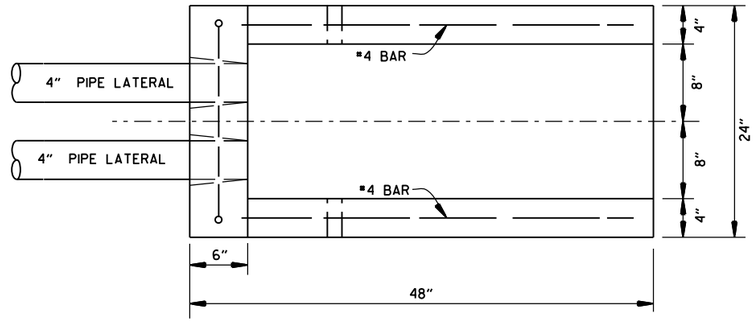
STANDARD DRAWING PM-1

NOTE:

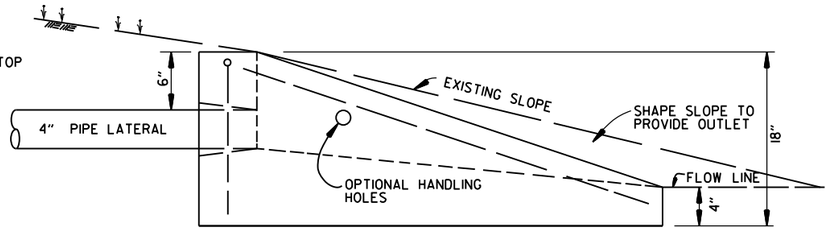
1. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.

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

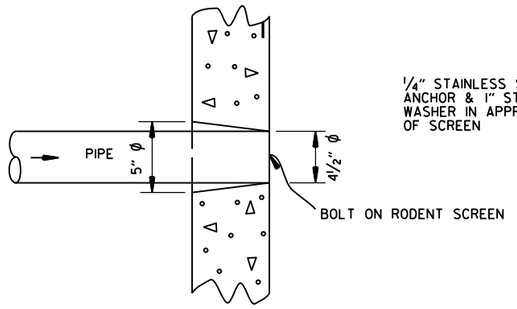




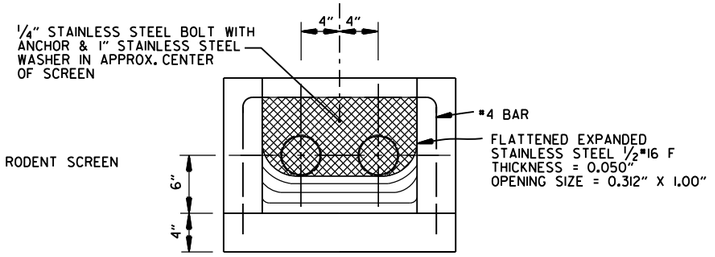
PLAN VIEW



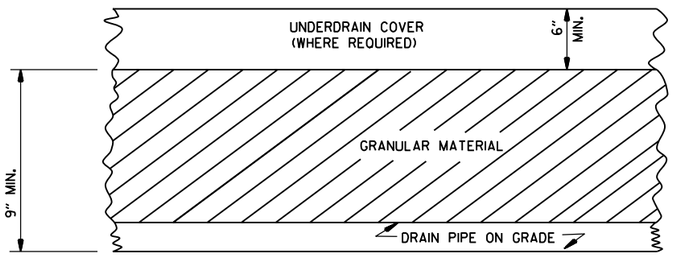
SIDE VIEW



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."

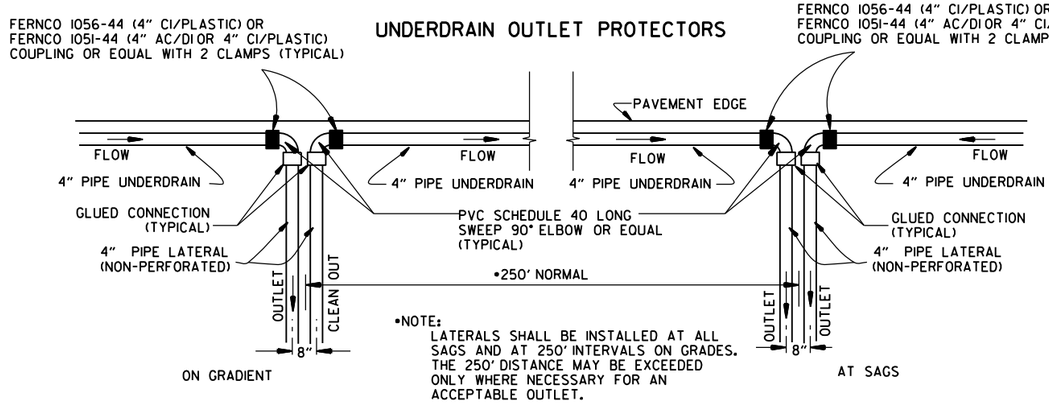
4. THE LOCATION OF ALL LATERALS SHALL BE MARKED WITH 4" X 12" PERMANENT PAVEMENT MARKING TAPE (TYPE III WHITE) AT THE OUTSIDE EDGE OF THE SHOULDER, PLACED TRANSVERSE TO TRAFFIC. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

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

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

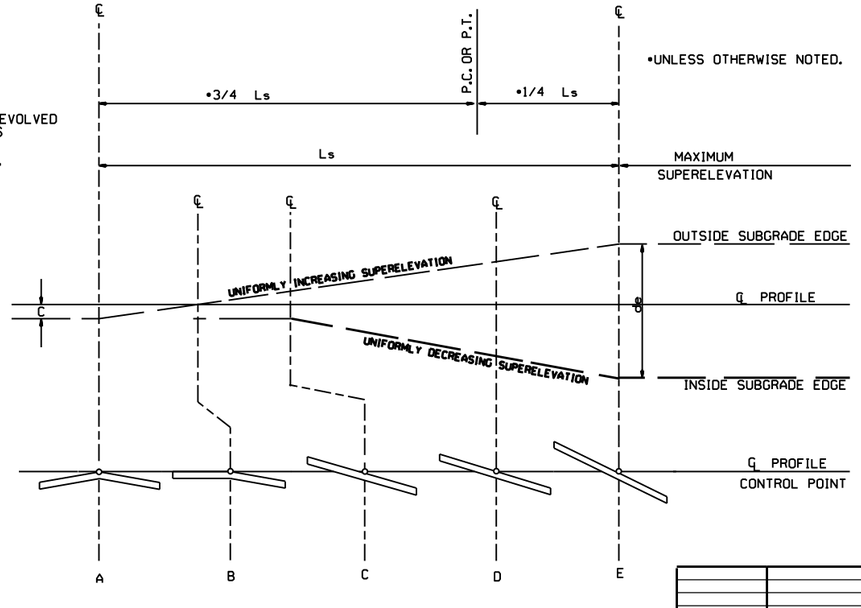
1. ON PAVEMENT WITH TWO-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE INSIDE PAVEMENT EDGE UNLESS OTHERWISE NOTED ON THE PLANS
2. SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES (+) OR (-) TO BE ADDED TO OR SUBTRACTED FROM THE POINT OF CONTROL.
3. LENGTHS FOR L MAY BE ROUNDED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

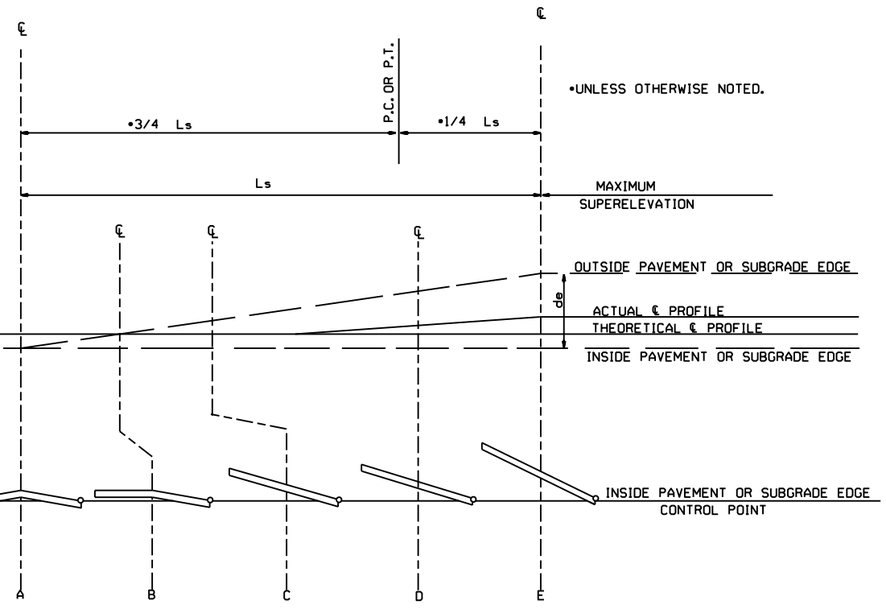
NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

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

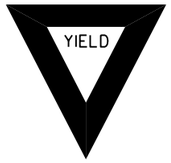
TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

STANDARD DRAWING SE-2

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"

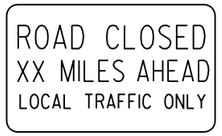
R5-1

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"

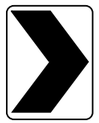
W1-4

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"

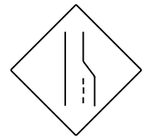
W3-1

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.

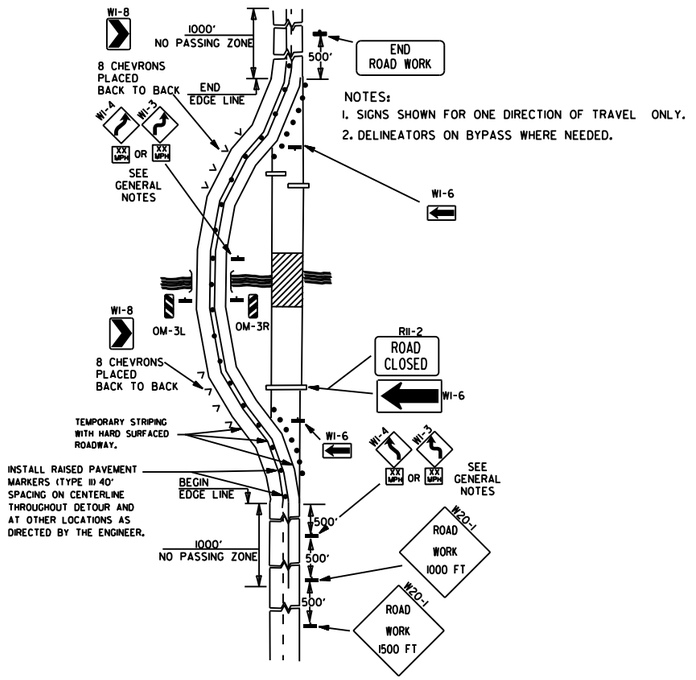
- NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED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

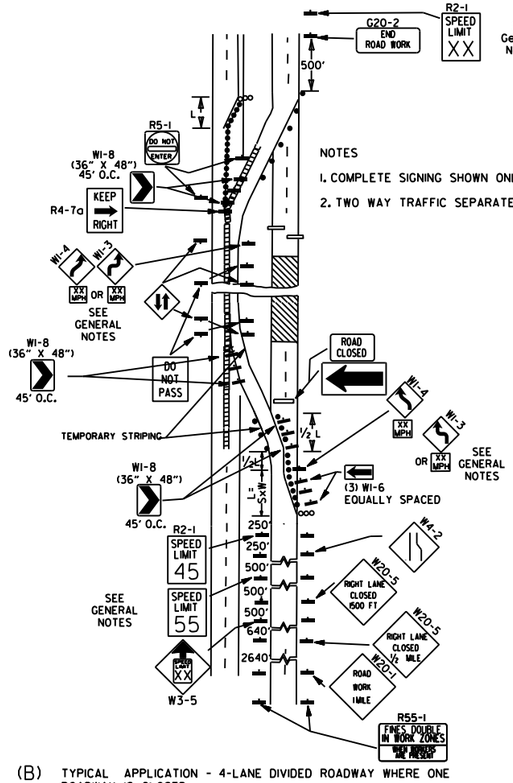
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



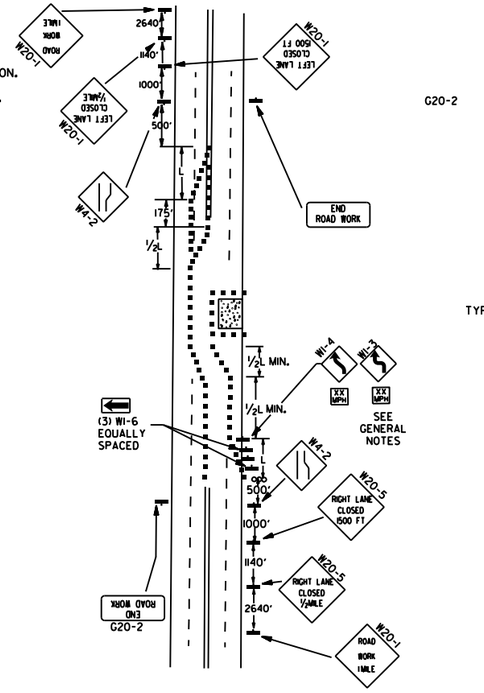
NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

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

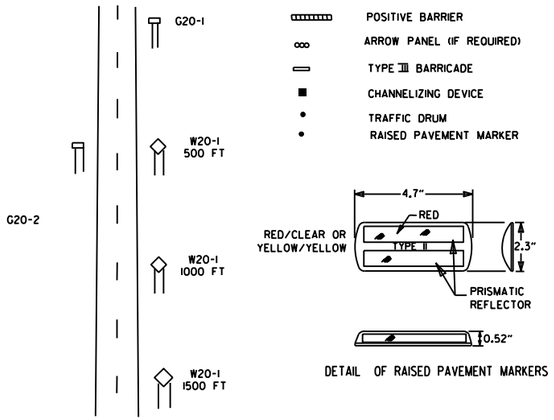


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

(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:

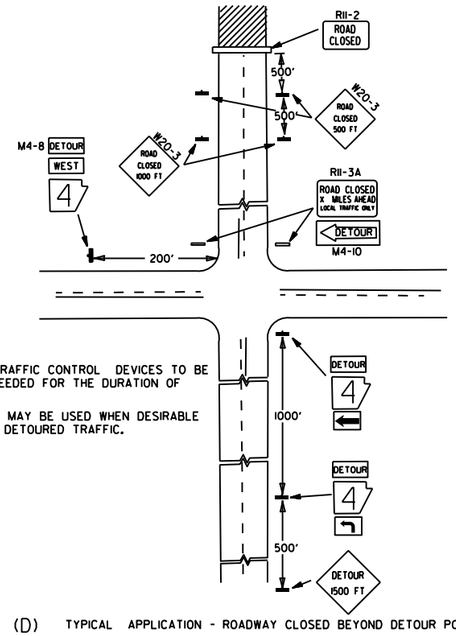
L= MINIMUM LENGTH OF TAPER.

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

W= WIDTH OF OFFSET.

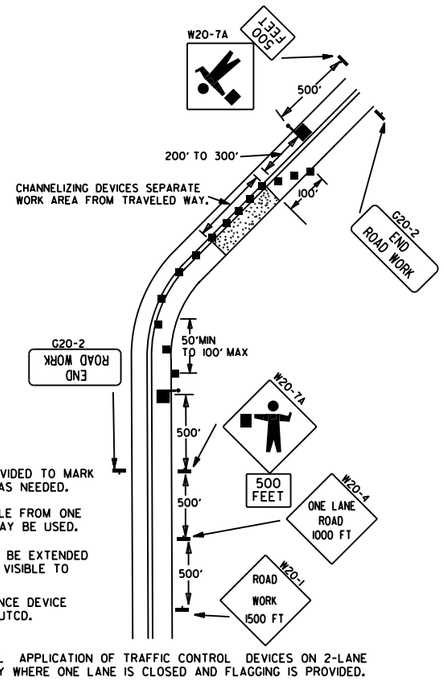
GENERAL NOTES:

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).



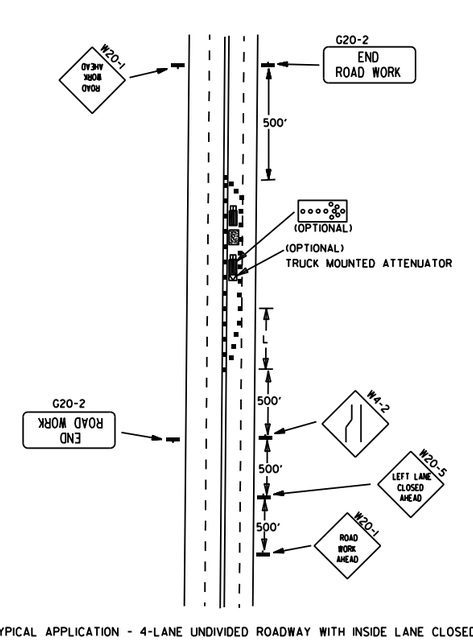
NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

(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.



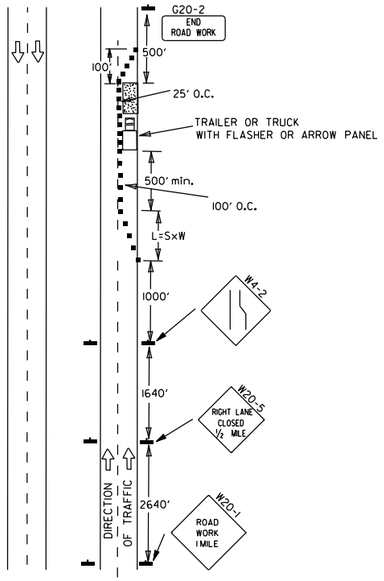
(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.

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	

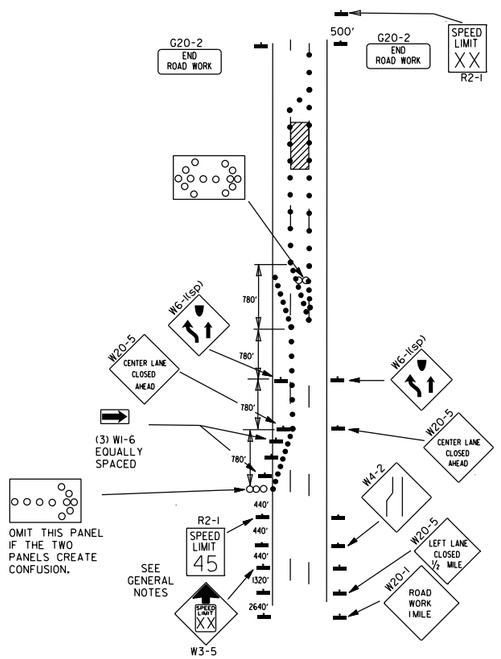
ARKANSAS STATE HIGHWAY COMMISSION

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:

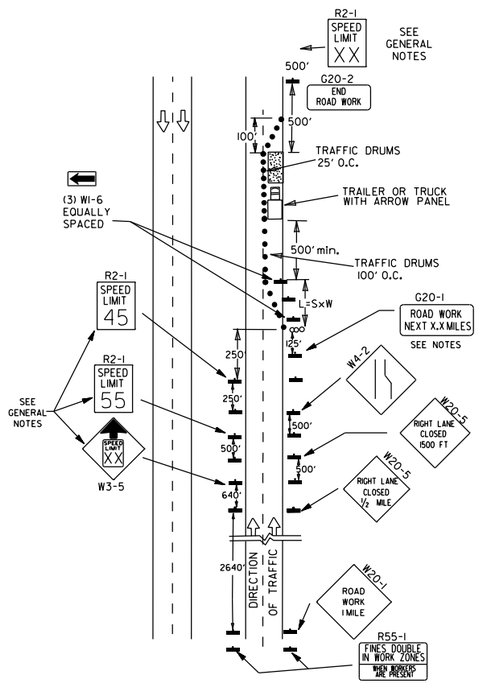
ARROW PANEL (IF REQUIRED)

■ CHANNELIZING DEVICE

● TRAFFIC DRUM

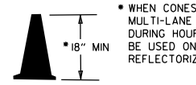
GENERAL NOTES:

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.

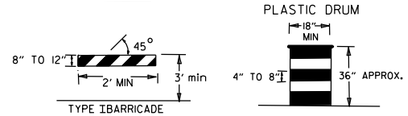
CHANNELIZING DEVICES



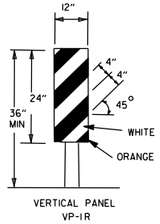
* WHEN CONES ARE USED ON FREEWAYS AND MULTI-LANE HIGHWAYS, THEY SHALL BE 28" MIN. DURING HOURS OF DARKNESS, 28" CONES SHALL BE USED ON ALL ROADWAYS, AND SHALL BE REFLECTORIZED IN ACCORDANCE WITH THE M.U.T.C.D.

CONES

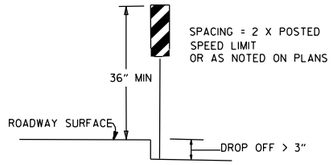
PLASTIC DRUM



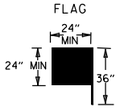
NOTE:
FOR ALL ROAD CLOSURES, THE TYPE III BARRICADES SHALL BE OF SUFFICIENT LENGTH TO EXTEND ACROSS ENTIRE ROADWAY.



VERTICAL PANEL PLACEMENT



FLAG



FLAG SHALL BE OF GOOD GRADE RED MATERIAL

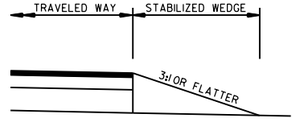
TRAFFIC CONTROL DEVICES			
NON-INTERSTATE			
VERTICAL DIFFERENTIAL	LOCATION	TRAFFIC CONTROL	
		≤ 45 MPH	> 45 MPH
≤ 1"	CENTERLINE	W8-11	W8-11
> 1" ≤ 3"	CENTERLINE	W8-11 AND CENTERLINE LANE STRIPING	W8-11 AND CENTERLINE LANE STRIPING
> 3"	CENTERLINE	STANDARD LANE CLOSURE[6]	STANDARD LANE CLOSURE[6]
≤ 3"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

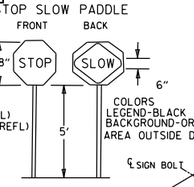
1. WHEN THE SHOULDER AREA IS USED AS PART OF THE TRAVELED LANE AND THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, THEN VERTICAL PANELS SHALL BE USED.
2. WHEN THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, A STABILIZED WEDGE SHALL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

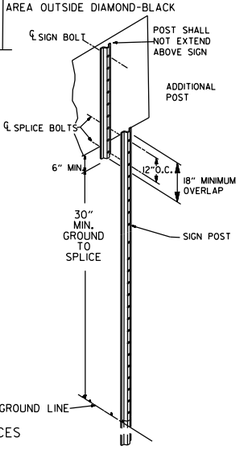


STABILIZED WEDGE

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

STOP SLOW PADDLE

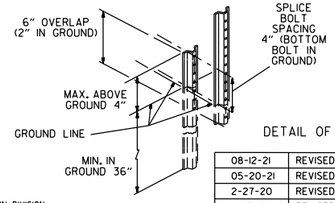




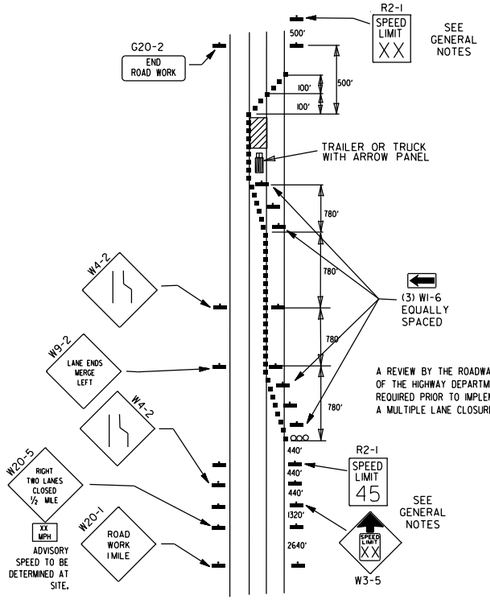
NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-21)

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	

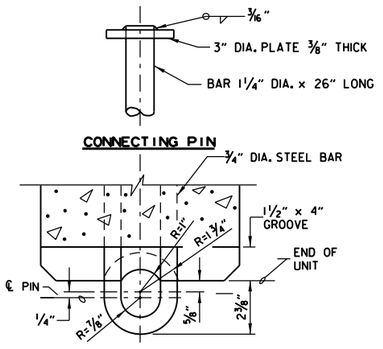
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-3

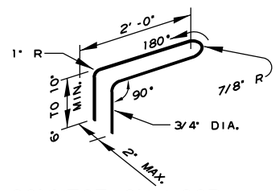
REINFORCING BAR TABLE PER BARRIER UNIT

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"

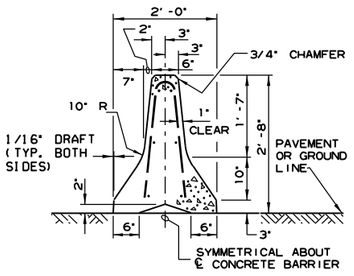


SECTION E-E

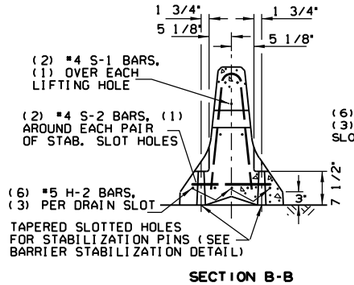
CONNECTION DETAILS



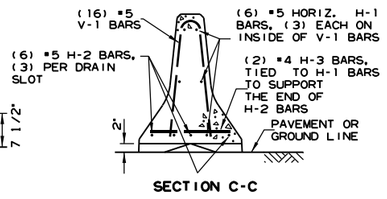
CONNECTION LOOP



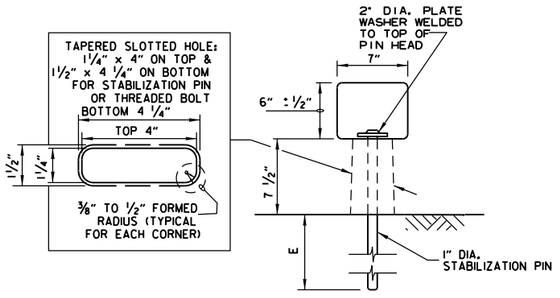
SECTION A-A



SECTION B-B



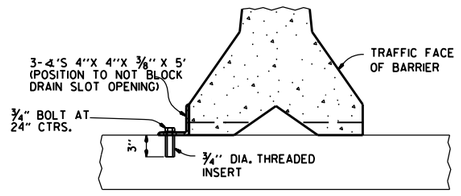
SECTION C-C



BARRIER STABILIZATION DETAIL

ROADWAY SECTION

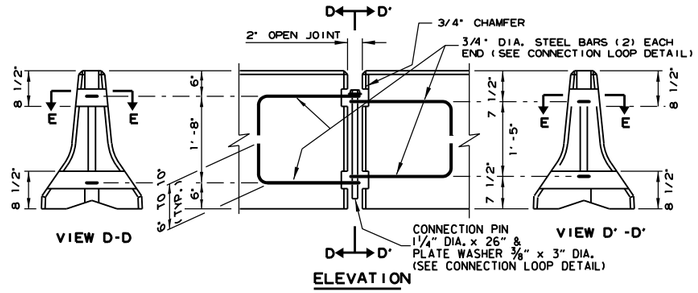
(E) 4" - CONCRETE PAVEMENT
8" - ASPHALT PAVEMENT
12" - SHOULDER AREAS



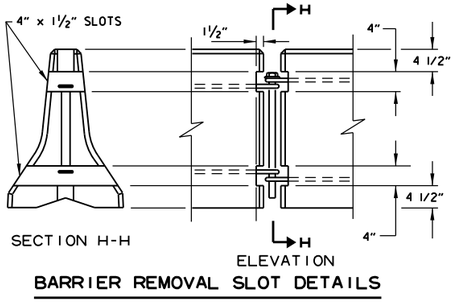
NOTE: " THREADED INSERTS SHALL BE CAST IN PLACE FOR ALL NEW BRIDGE DECKS AND DRILLED AND GROUTED FOR EXISTING BRIDGE DECKS. INSERTS SHALL HAVE A MINIMUM ULTIMATE LOAD CAPACITY OF 8000 LBS. IN TENSION. AFTER REMOVAL OF BARRIER, BOLTS, AND ANGLES, THE INSERTS SHALL BE FILLED WITH APPROVED NON-SHRINK EPOXY.

BARRIER STABILIZATION DETAIL

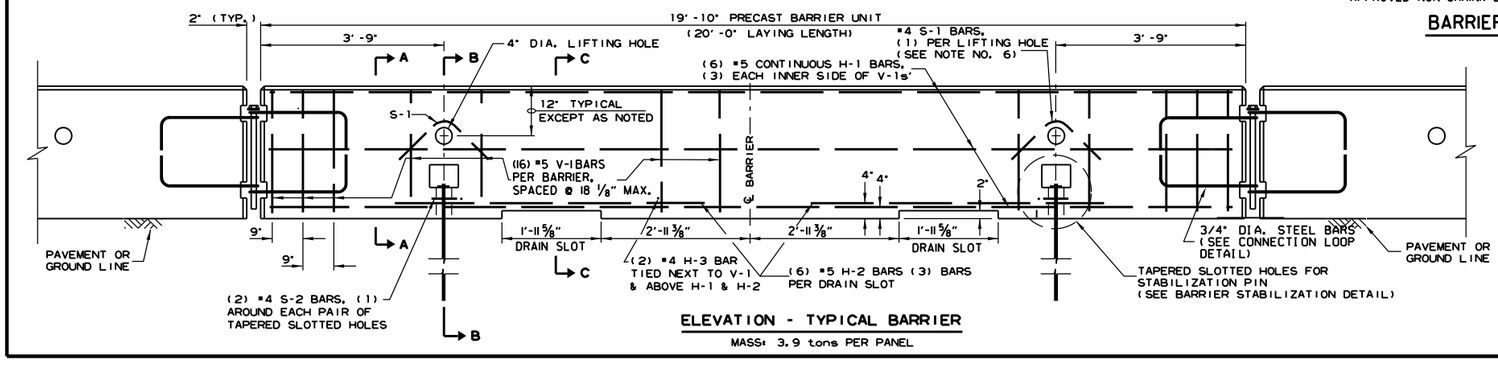
BRIDGE DECKS



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.

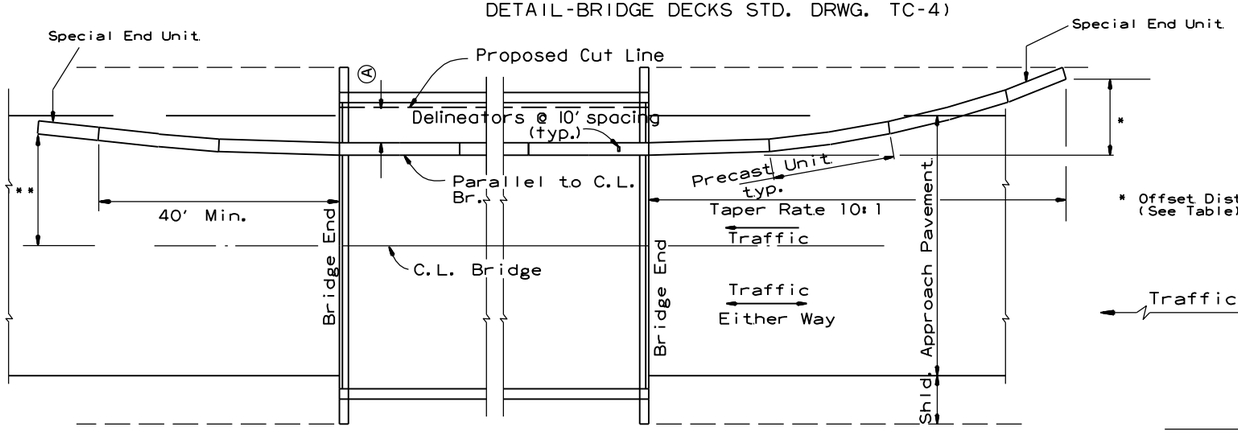
DATE	REVISION	FILMED
11-07-19	REVISED NOTE 3	
2-27-14	REVISED BARRIER STABILIZATION DETAIL	
10-15-09	ADDED REFERENCE TO WASH	
8-5-09	REV. NOTE 3 CONCERNING DRAIN SLOTS	
11-29-07	REVISED NOTE 3	
5-25-06	DELETED GENERAL NOTE 7	
11-18-04	REVISED BARRIER STABILIZATION DETAIL BRIDGE DECKS	
4-10-03	REVISED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

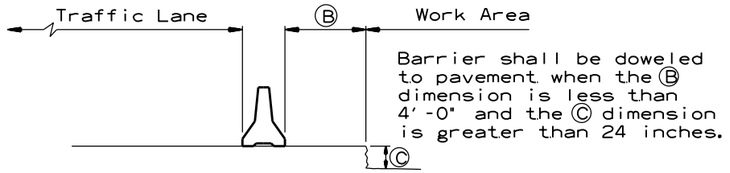
Ⓐ 4 feet or greater preferred. If less than 4 feet, Precast Units shall be connected to slab (SEE BARRIER STABILIZATION DETAIL-BRIDGE DECKS STD. DRWG. TC-4)



* Offset Distance (See Table)

BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

No Scale

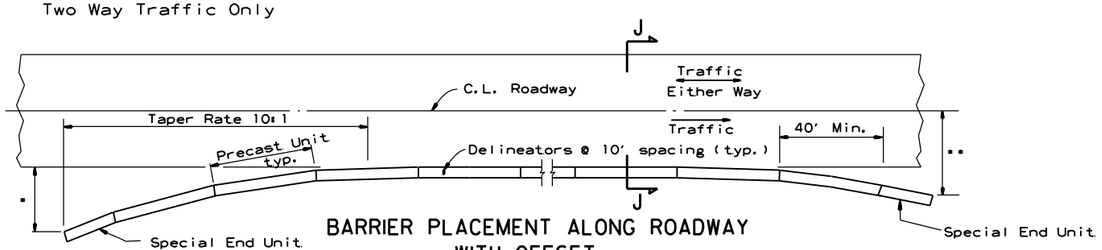


Barrier shall be doweled to pavement when the Ⓑ dimension is less than 4'-0" and the Ⓒ dimension is greater than 24 inches.

SECTION J-J

No Scale

** Offset Distance for Two Way Traffic Only



BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

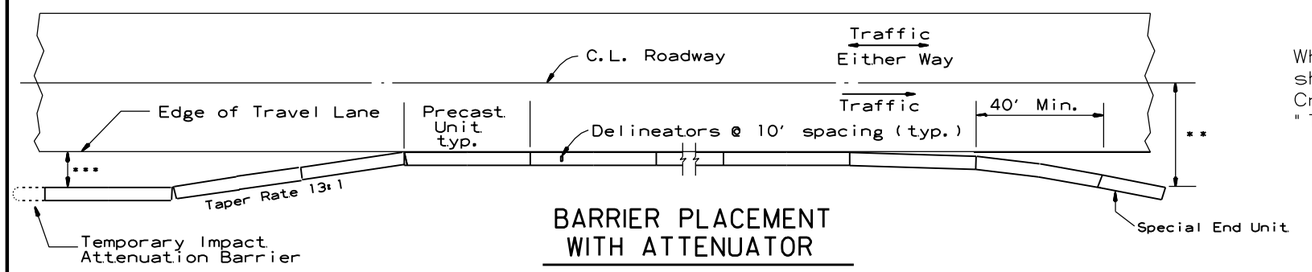
* Offset Distance (See Table)

** 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.

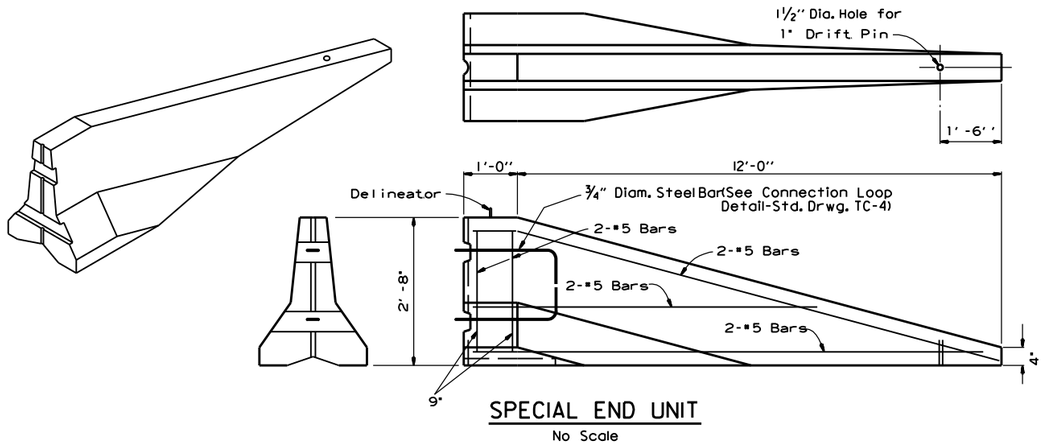


BARRIER PLACEMENT WITH ATTENUATOR

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	

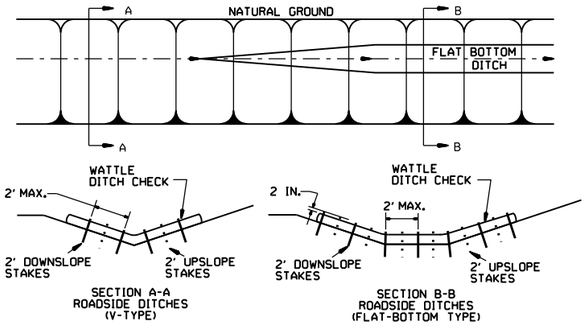
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

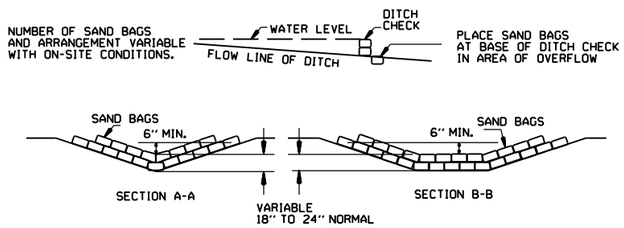
STANDARD DRAWING TC-5

GENERAL NOTES

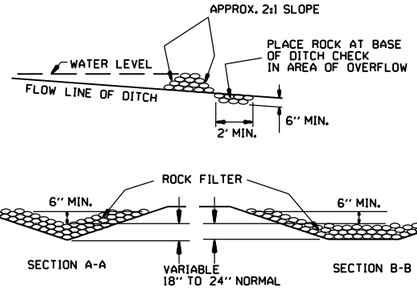
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



SAND BAG DITCH CHECK (E-5)

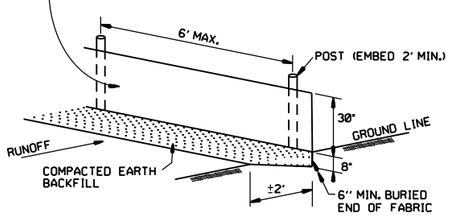


ROCK DITCH CHECK (E-6)

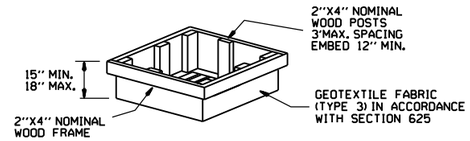
GENERAL NOTES

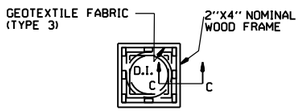
GEOTEXTILE FABRIC (TYPE 4) IN ACCORDANCE WITH SECTION 625

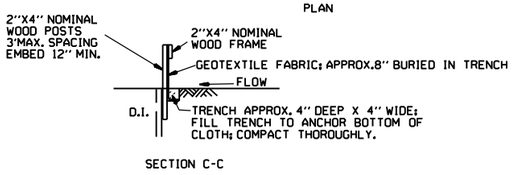
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.



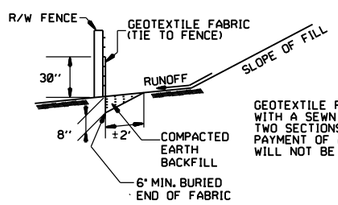
SILT FENCE (E-11)





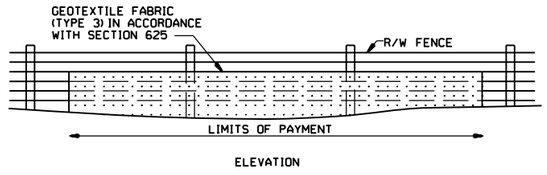


DROP INLET SILT FENCE (E-7)



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.



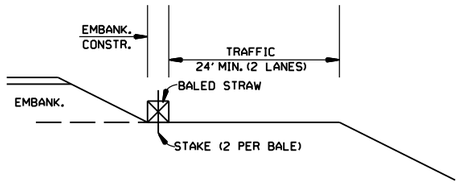
SILT FENCE ON R/W FENCE (E-4)

GENERAL NOTES

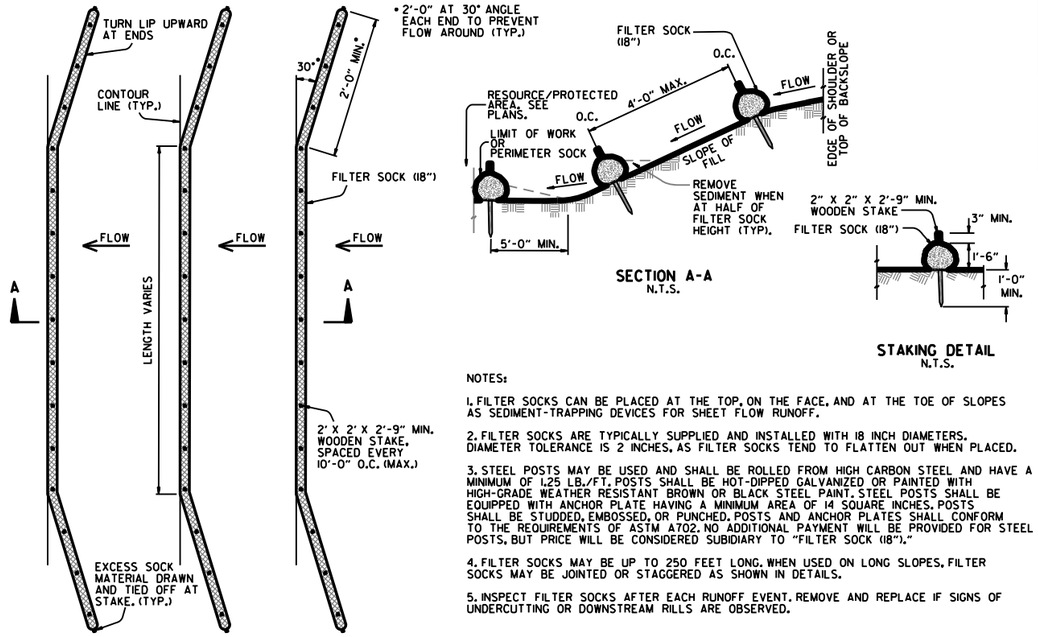
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

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.

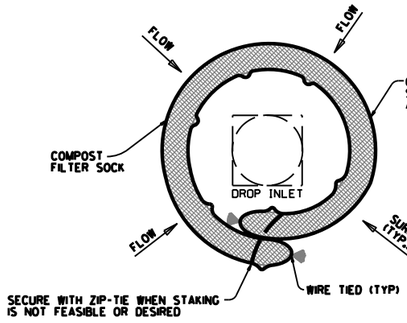
2. FILTER SOCKS ARE TYPICALLY SUPPLIED AND INSTALLED WITH 18 INCH DIAMETERS. DIAMETER TOLERANCE IS 2 INCHES, AS FILTER SOCKS TEND TO FLATTEN OUT WHEN PLACED.

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")."

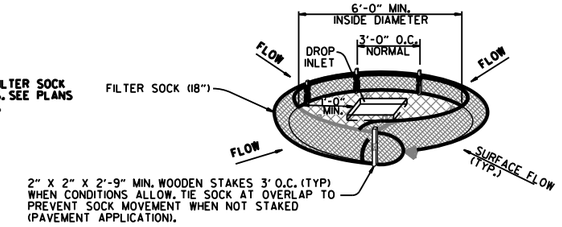
4. FILTER SOCKS MAY BE UP TO 250 FEET LONG. WHEN USED ON LONG SLOPES, FILTER SOCKS MAY BE JOINTED OR STAGGERED AS SHOWN IN DETAILS.

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

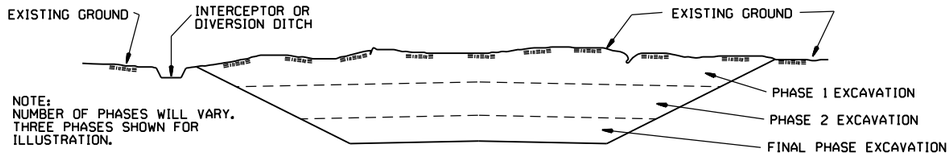
STANDARD DRAWING TEC-1

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



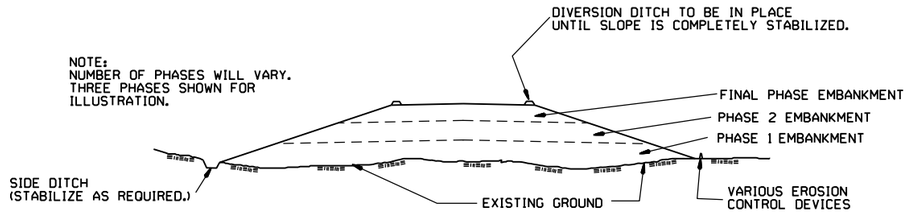
GENERAL NOTE

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