DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
08-31-21				6	ARK.			
01-07-22				JOB NO.		050417	1	73
				(2) BARBERS LAKE STR. & APPRS. (S)				

ARKANSAS DEPARTMENT OF TRANSPORTATION
CONSTRUCTION PLANS FOR STATE HIGHWAY

BARBERS LAKE
STR. & APPRS. (S)

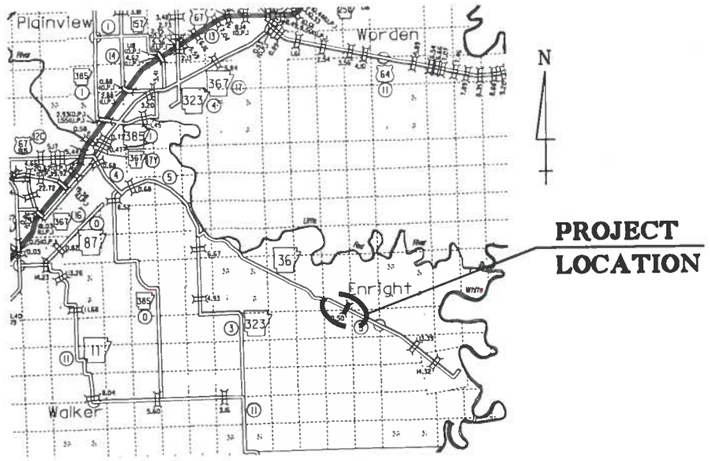
WHITE COUNTY

HWY. 36 SECTION 5

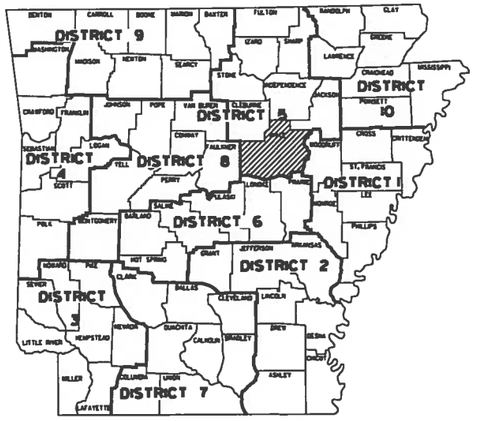
JOB 050417

FED. AID PROJ. ACNHPP-0073(82)

NOT TO SCALE



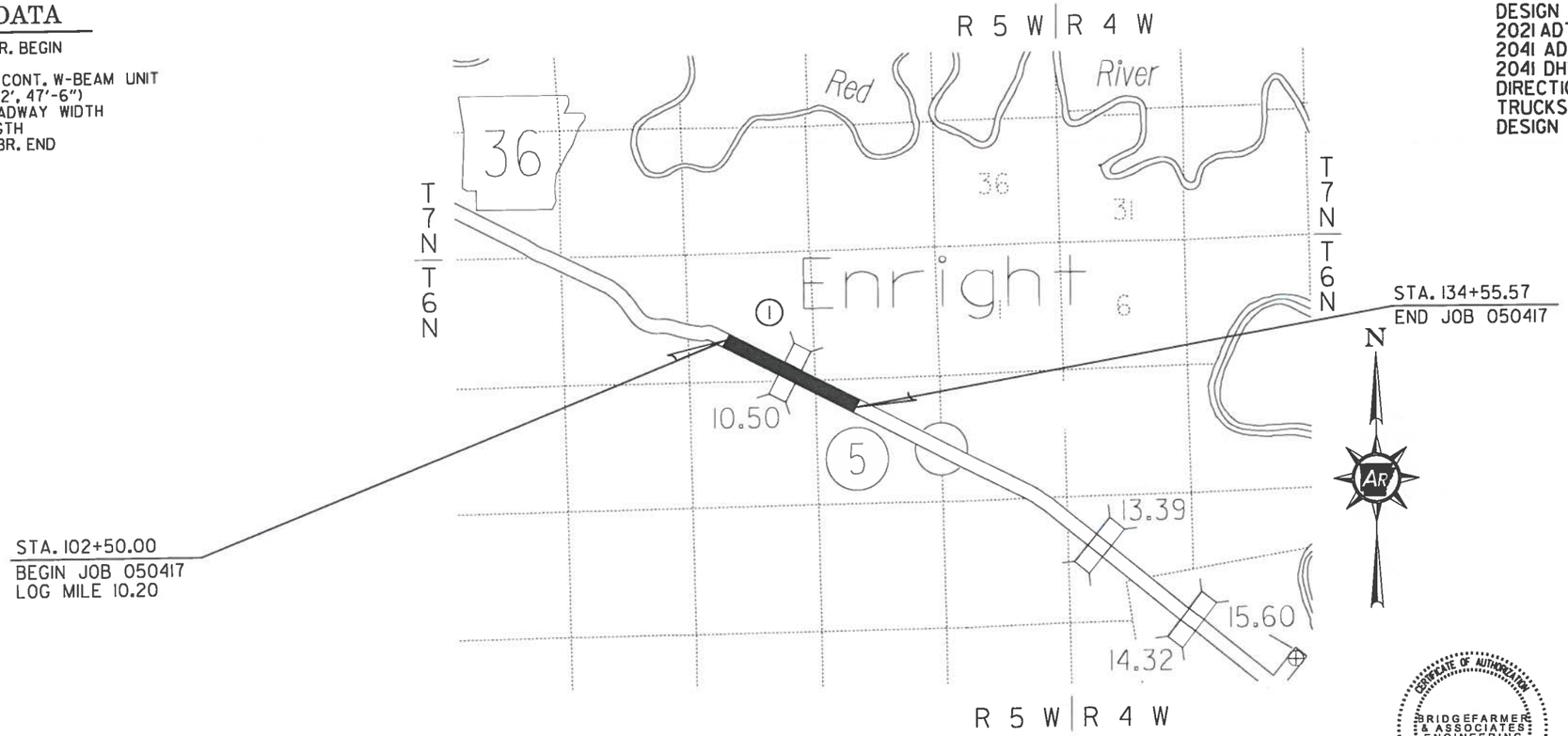
VICINITY MAP



ARK. HWY. DIST. NO. 5

BRIDGE DATA

(1) STA. 117+76.00 BR. BEGIN
BR. NO. 07518
251'-0" INTEGRAL CONT. W-BEAM UNIT
(47'-6", 52', 52', 52', 47'-6")
30'-0" CLEAR ROADWAY WIDTH
252'-0" BR. LENGTH
STA. 120+28.00 BR. END



· DESIGN TRAFFIC DATA ·

DESIGN YEAR	2041
2021 ADT	500
2041 ADT	650
2041 DHV	72
DIRECTIONAL DISTRIBUTION	0.60
TRUCKS	5%
DESIGN SPEED	60 MPH

	BEGIN JOB	MID-POINT OF JOB	END JOB
LATITUDE	35°09'59" N	35°09'51" N	35°09'43" N
LONGITUDE	91°31'41" W	91°31'24" W	91°31'08" W

PROJECT LENGTH COMPUTED ALONG C.L. CONSTRUCTION

GROSS LENGTH OF PROJECT	3205.57	FEET OR 0.607 MILES
NET LENGTH OF ROADWAY	2953.57	FEET OR 0.559 MILES
NET LENGTH OF BRIDGES	252.00	FEET OR 0.048 MILES
NET LENGTH OF PROJECT	3205.57	FEET OR 0.607 MILES

CERTIFICATE OF AUTHORIZATION
BRIDGEFARMER & ASSOCIATES ENGINEERING
No. 945
ARKANSAS ENGINEER

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
2022-01-07

P.E. JOB 050417

11:01:51 AM 1/7/2022 Tomas.Chu

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
08-31-21				6	ARK.			
02-09-22				JOB NO.		050417	2	73
				②	INDEX OF SHEETS & STANDARD DRAWINGS			

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
STAHMAR
2022-02-09

INDEX OF SHEETS

SHEET NO.	TITLE	BRIDGE NO.	DRWG. NO.
1	TITLE SHEET		
2	INDEX OF SHEETS AND STANDARD DRAWINGS		
3	GOVERNING SPECIFICATIONS AND GENERAL NOTES		
4	TYPICAL SECTIONS OF IMPROVEMENT		
5 - 6	SPECIAL DETAILS		
7 - 15	TEMPORARY EROSION CONTROL DETAILS		
16 - 22	MAINTENANCE OF TRAFFIC DETAILS		
23 - 25	PERMANENT PAVEMENT MARKING DETAILS		
26 - 29	QUANTITIES		
30	SCHEDULE OF BRIDGE QUANTITIES	07518	63857
31	SUMMARY OF QUANTITIES AND REVISIONS		
32 - 35	SURVEY CONTROL DETAILS		
36 - 38	PLAN AND PROFILE SHEETS		
39	LAYOUT OF BRIDGE HIGHWAY 36 OVER BARBERS LAKE (SHEET 1 OF 2)	07518	63858
40	LAYOUT OF BRIDGE HIGHWAY 36 OVER BARBERS LAKE (SHEET 2 OF 2)	07518	63859
41	DETAILS OF END BENTS HIGHWAY 36 OVER BARBERS LAKE	07518	63860
42	DETAILS OF INTERMEDIATE BENTS HIGHWAY 36 OVER BARBERS LAKE	07518	63861
43	DETAILS OF ELASTOMERIC BEARINGS HIGHWAY 36 OVER BARBERS LAKE	07518	63862
44	DETAILS OF 25'-0" INTEGRAL W-BEAM UNIT HIGHWAY 36 OVER BARBERS LAKE (SHEET 1 OF 6)	07518	63863
45	DETAILS OF 25'-0" INTEGRAL W-BEAM UNIT HIGHWAY 36 OVER BARBERS LAKE (SHEET 2 OF 6)	07518	63864
46	DETAILS OF 25'-0" INTEGRAL W-BEAM UNIT HIGHWAY 36 OVER BARBERS LAKE (SHEET 3 OF 6)	07518	63865
47	DETAILS OF 25'-0" INTEGRAL W-BEAM UNIT HIGHWAY 36 OVER BARBERS LAKE (SHEET 4 OF 6)	07518	63866
48	DETAILS OF 25'-0" INTEGRAL W-BEAM UNIT HIGHWAY 36 OVER BARBERS LAKE (SHEET 5 OF 6)	07518	63867
49	DETAILS OF 25'-0" INTEGRAL W-BEAM UNIT HIGHWAY 36 OVER BARBERS LAKE (SHEET 6 OF 6)	07518	63868
50	DETAILS OF TYPE SPECIAL APPROACH GUTTERS	07518	63869
51	DETAILS OF TYPE SPECIAL APPROACH SLAB	07518	63870
52 - 73	CROSS SECTIONS		

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

BRIDGE STANDARD DRAWINGS

DRWG.NO.	TITLE	DATE
55000	STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS	02-27-14
55001	STANDARD DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND COMPUTING EXCAVATION FOR STRUCTURES	02-27-14
55005	STANDARD DETAILS FOR PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS	03-24-16
55006	STANDARD GENERAL NOTES FOR STEEL BRIDGE STRUCTURES	09-02-15
55007	STANDARD DETAILS FOR STEEL BRIDGE STRUCTURES	02-11-16
55010	STANDARD DETAILS FOR TYPE D BRIDGE NAME PLATE	05-11-21
55021	STANDARD DETAILS FOR CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS	03-24-16
55070	STANDARD DETAILS FOR BRIDGE TRAFFIC RAIL TYPE SSTR36	11-05-20

ROADWAY STANDARD DRAWINGS

DRWG.NO.	TITLE	DATE
CDP-1	CONCRETE DITCH PAVING	12-08-16
FES-1	FLARED END SECTION	10-18-96
FES-2	FLARED END SECTION	10-18-96
GR-6	GUARDRAIL DETAILS	11-07-19
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
SI-1	DETAILS OF SPECIAL ITEMS	10-25-18
TC-1	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	11-07-19
TC-2	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	05-20-21
TC-3	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	08-12-21
TEC-1	TEMPORARY EROSION CONTROL DEVICES	11-16-17
TEC-2	TEMPORARY EROSION CONTROL DEVICES	06-02-94
TEC-3	TEMPORARY EROSION CONTROL DEVICES	11-03-94

INDEX OF SHEETS AND STANDARD DRAWINGS

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
08-31-21				6	ARK.			
01-07-22				JOB NO.		050417	3	73
				(2) GOVERNING SPECS. AND GENERAL NOTES				

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
SHANNON A. HILL
2022-01-07

GOVERNING SPECIFICATIONS

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

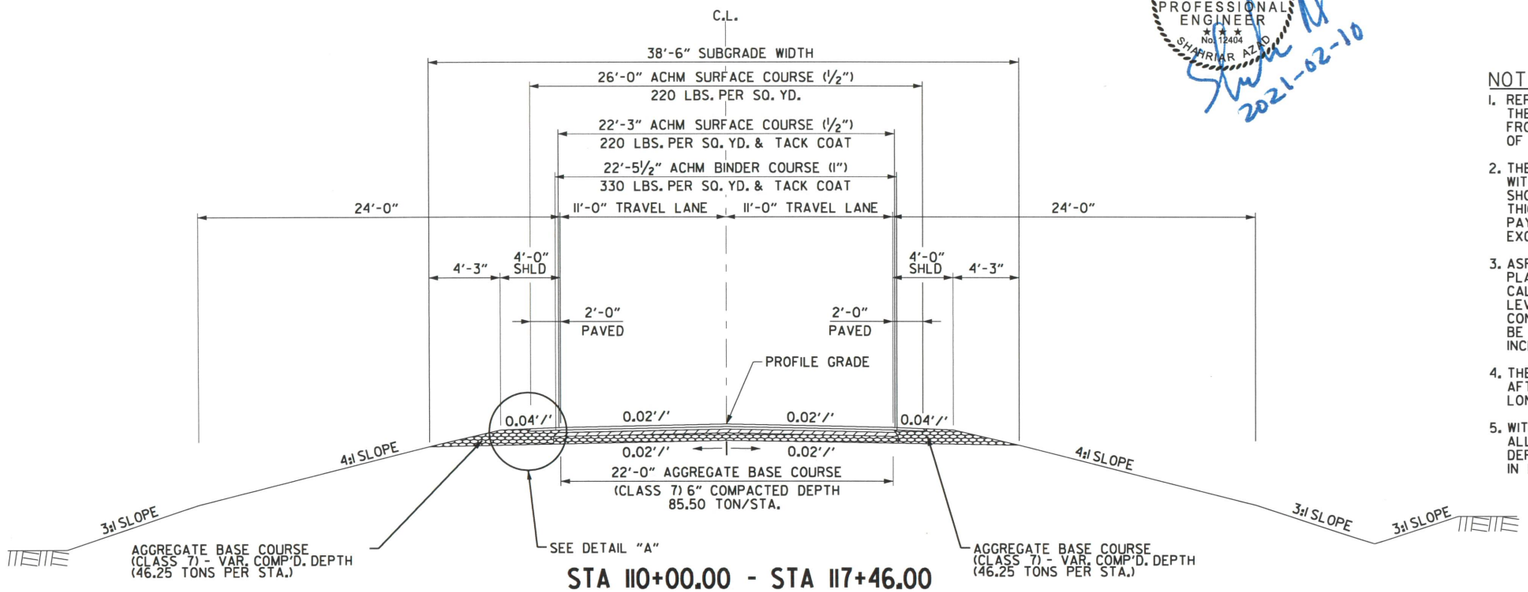
NUMBER	TITLE
ERRATA	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 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
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
307-1	CEMENT
308-1	CEMENT
400-1	TACK COATS
400-4	DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
400-5	PERCENT AIR VOIDS FOR ACHM MIX DESIGNS
400-6	LIQUID ANTI-STRIP ADDITIVE
400-7	TRACKLESS TACK
404-3	DESIGN OF ASPHALT MIXTURES
410-1	CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
410-2	DEVICES FOR MEASURING DENSITY FOR ROLLING PATTERNS
410-4	EVALUATION OF ACHM SUBLOT REPLACEMENT MATERIAL
501-2	CEMENT
600-2	INCIDENTAL CONSTRUCTION
603-1	LANE CLOSURE NOTIFICATION
604-1	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
604-3	TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES (MASH)
605-1	CONCRETE DITCH PAVING
606-1	PIPE CULVERTS FOR SIDE DRAINS
617-1	GUARDRAIL TERMINAL (TYPE 2)
620-1	MULCH COVER
800-1	STRUCTURES
802-3	CONCRETE FOR STRUCTURES
802-4	CEMENT
804-2	REINFORCING STEEL FOR STRUCTURES
807-2	STEEL STRUCTURES
808-1	INSTALLATION OF ELASTOMERIC BEARINGS
808-2	ELASTOMERIC BEARINGS
JOB 050417	BIDDING REQUIREMENTS AND CONDITIONS
JOB 050417	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 050417	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 050417	CARGO PREFERENCE ACT REQUIREMENTS
JOB 050417	CLASS C FLY ASH IN PORTLAND CEMENT CONCRETE PAVEMENT AND CLASS S(AE) CONCRETE
JOB 050417	COLD MILLING - COUNTY PROPERTY
JOB 050417	CONCRETE BRIDGE DECK CURING AND SURFACE TREATMENT RESTRICTIONS
JOB 050417	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 050417	DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES
JOB 050417	DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB 050417	ESTABLISHING CONTRACT TIME - WORKING DAY CONTRACT
JOB 050417	FLEXIBLE BEGINNING OF WORK
JOB 050417	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 050417	LIQUIDATED DAMAGES PROCEDURE FOR BID LETTINGS
JOB 050417	MANDATORY ELECTRONIC CONTRACT
JOB 050417	MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB 050417	NESTING SITES OF MIGRATORY BIRDS
JOB 050417	PARTNERING REQUIREMENTS
JOB 050417	PLASTIC PIPE
JOB 050417	PRICE ADJUSTMENT FOR ASPHALT BINDER
JOB 050417	PROHIBITION OF CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT
JOB 050417	SECTION 404 NATIONWIDE 14 PERMIT REQUIREMENTS
JOB 050417	SHORING FOR CULVERTS
JOB 050417	SOIL STABILIZATION
JOB 050417	STORM WATER POLLUTION PREVENTION PLAN
JOB 050417	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 050417	UTILITY ADJUSTMENTS
JOB 050417	VALUE ENGINEERING
JOB 050417	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. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
5. 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 INSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
6. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENT MATERIALS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.
7. THE EXISTING PAVEMENT TO BE REMOVED 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 PAVEMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
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.

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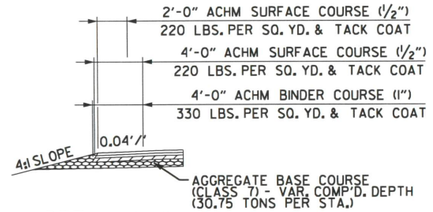
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
SHARMAR AZAD
2021-02-10



STA 110+00.00 - STA 117+46.00
STA 120+58.00 - STA 127+00.00

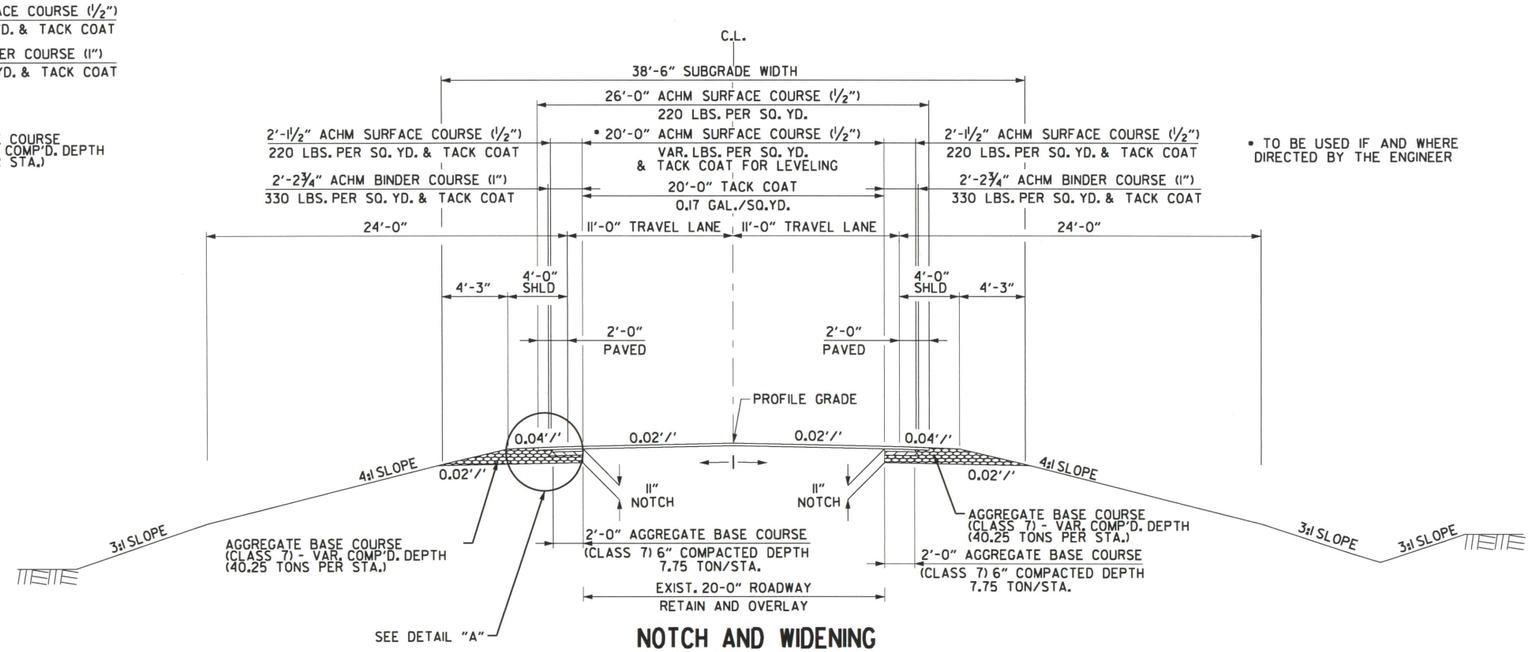
NOTES:

1. 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.
2. 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 DOESN'T MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.
3. ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND/OR LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTION OF NOTCH AND WIDENING. CALCULATION WILL NOT BE PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED INCLUDED IN THE VARIOUS PAY ITEMS.
4. THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.
5. WITH 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 (½") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.



DETAIL "A"

CONSTRUCT FULL DEPTH SHOULDER ON LT.
STA. 107+00.00 - 116+40.00
STA. 121+60.00 - 128+40.00



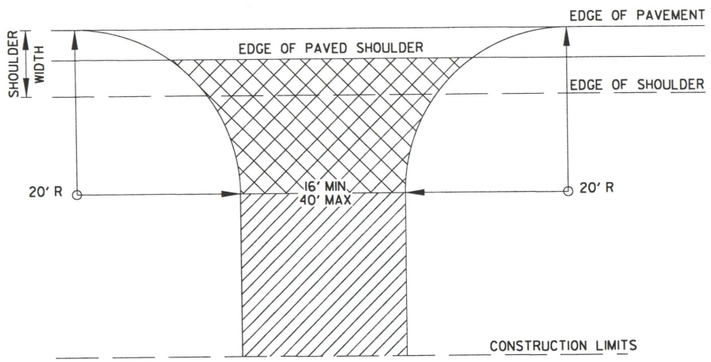
• TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

NOTCH AND WIDENING
STA 101+50.00 - STA 110+00.00
STA 127+00.00 - STA 135+55.57

TYPICAL SECTIONS OF IMPROVEMENT

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	5	73
				(2) SPECIAL DETAILS				

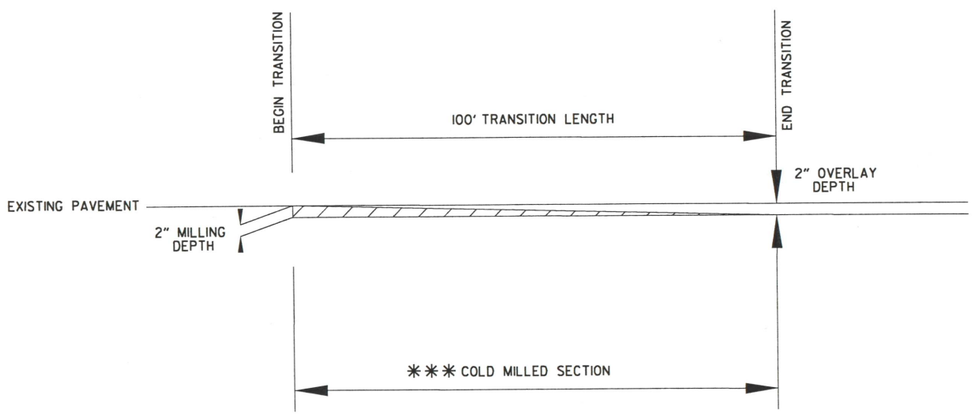


ACHM SURFACE COURSE (1/2")
(220 LBS./SQ.YD.) & AGGREGATE BASE COURSE (CLASS 7) (7" COMPACTED DEPTH)

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

TURNOUTS SHALL BE MODIFIED AS NECESSARY TO MEET LOCAL CONDITION AS DIRECTED BY THE ENGINEER.

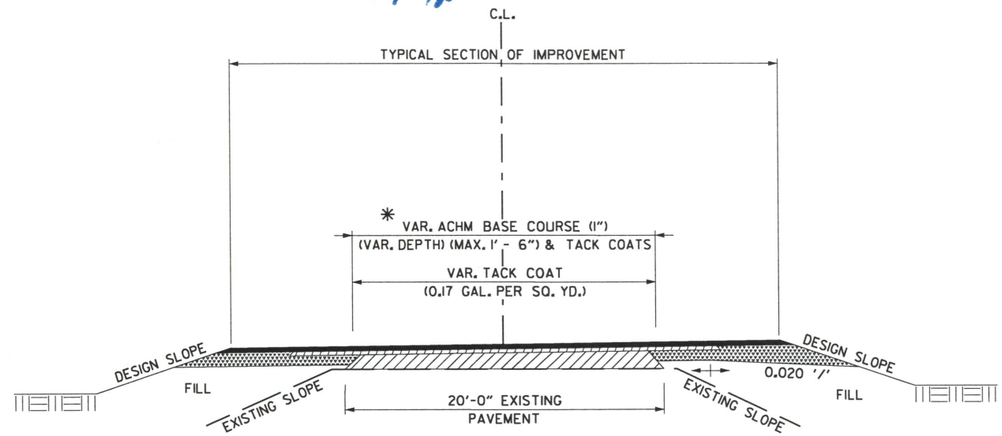
DETAIL FOR DRIVEWAY TURNOUTS



DETAIL SHOWING TAPER TO EXISTING PAVEMENT

*** TO BE USED AS DIRECTED BY THE ENGINEER

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
SHAHRIAR AZAD
2021-02-10



METHOD OF RAISING GRADE

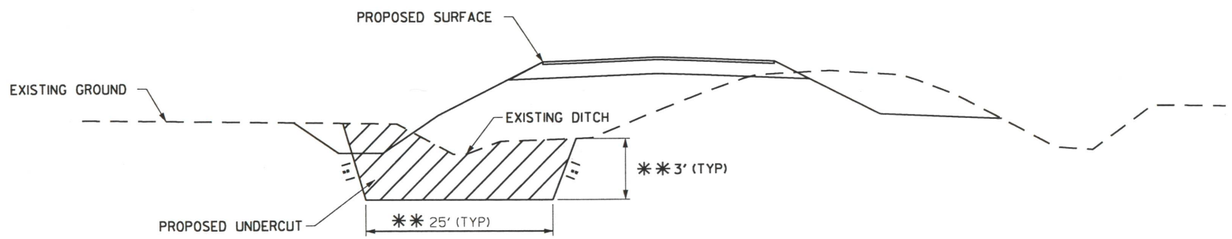
* 6" AGGREGATE BASE COURSE (CLASS 7) TO BE REPLACED WITH ACHM BASE COURSE (1")

NOTES:

(1) THIS DETAIL TO BE USED ONLY WHERE DIRECTED BY THE ENGINEER.

(2) QUANTITIES FOR METHOD OF GRADE RAISE USING ASPHALT WERE CALCULATED ON THIS PROJECT AT LOCATIONS WHERE THE DISTANCE BETWEEN THE EXISTING ASPHALT ROADWAY AND THE PROPOSED SUBGRADE WAS ONE FOOT OR LESS.

(3) IN LOCATIONS WHERE THE DISTANCE BETWEEN THE PROPOSED SUBGRADE AND THE EXISTING ASPHALT ROADWAY IS MORE THAN ONE FOOT, SCARIFICATION OF THE EXISTING ASPHALT ROADWAY WILL BE REQUIRED AS STATED IN SECTION 210, SUBSECTION 210.09, OF THE STANDARD SPECIFICATIONS.



DETAIL SHOWING PROPOSED UNDERCUT AND COMPACTED EMBANKMENT

STA 109+00.00 TO STA 117+00.00 LT

** SEE CROSS SECTIONS FOR ACTUAL DIMENSIONS

SPECIAL DETAILS

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2/10/2021
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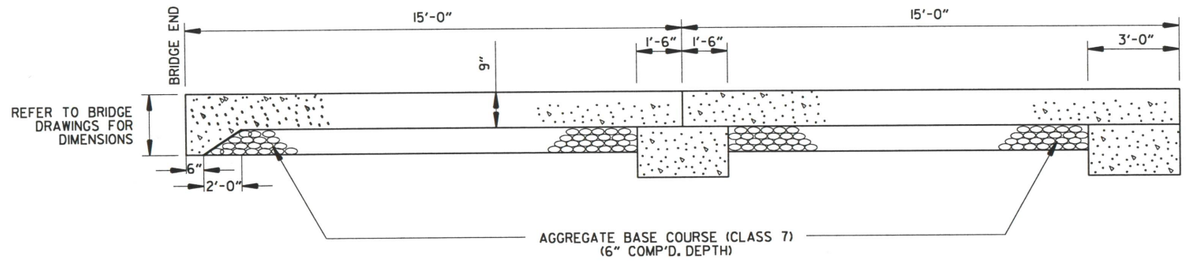
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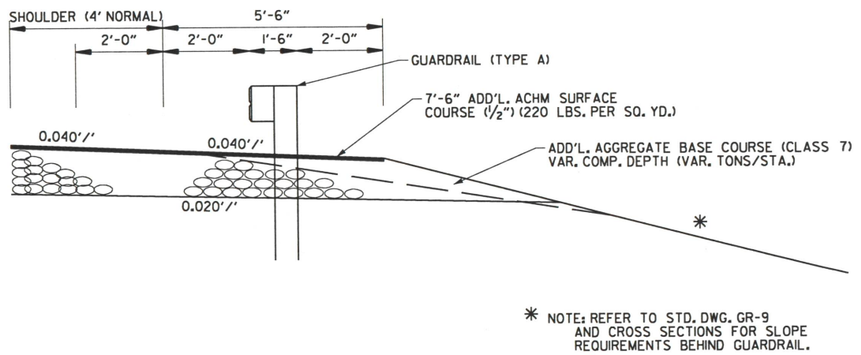
FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		050417	6	73

(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
SHAHRIAR AZAD
2021-02-10



LONGITUDINAL SECTION OF APPROACH SLAB



WIDENING FOR GUARDRAIL

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REVISIONS

DATE OF REVISION	REVISION

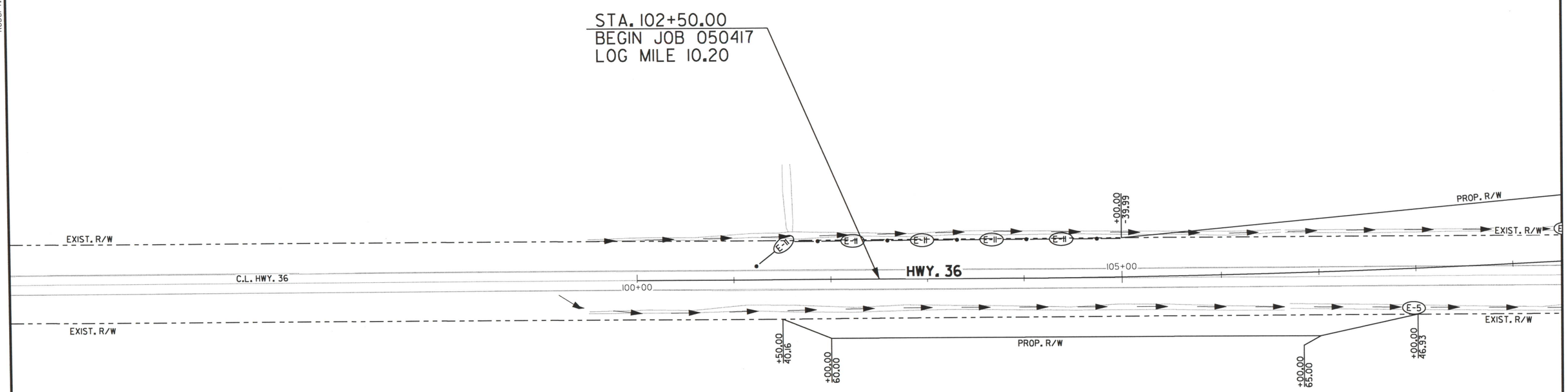
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12401
SHAHRIAR AZAD
2021-02-10

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		050417	7	73

(2) TEMPORARY EROSION CONTROL DETAILS

50 0 50 100
SCALE: 1" = 100'



LEGEND

E-5	SAND BAG DITCH CHECKS
E-11	SILT FENCE
E-14	SEDIMENT BASIN

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED. MAINTAIN ALL EROSION CONTROL DEVICES UNTIL THE END OF THE JOB, UNLESS OTHERWISE SPECIFIED.

CLEARING AND GRUBBING STAGE
TEMPORARY EROSION CONTROL DETAILS

5:15:33 PM
2/10/2021
Robert.Darrington
S:\1416\DNGN\Plans\04_Erosion Control\r050417_Erosion_Control_Stage 0.01.dgn

REVISIONS

DATE OF REVISION	REVISION

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		050417	8	73

(2) TEMPORARY EROSION CONTROL DETAILS

50 0 50 100
SCALE: 1" = 100'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
SHAHRIAR AZAD
2021-02-10

BARBERS LAKE

PROP. R/W

EXIST. R/W

HWY. 36

25' BUFFER

T.C.E.

+00.00 -87.39
+80.00 -118.00
+30.00 -118.00
+00.00 -101.57
+00.00 -110.00
+30.00 -95.00
+60.00 -154.00
+20.00 -158.00
+00.00 -70.00
+50.00 -68.86
+00.00 -104.00
+25.00 -104.00
+50.00 -72.63

110+00
115+00
120+00

E-5 SAND BAG DITCH CHECKS
E-11 SILT FENCE
E-14 SEDIMENT BASIN

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED. MAINTAIN ALL EROSION CONTROL DEVICES UNTIL THE END OF THE JOB, UNLESS OTHERWISE SPECIFIED.

CLEARING AND GRUBBING STAGE
TEMPORARY EROSION CONTROL DETAILS

5:15:34 PM 2/10/2021 Robert.Darrington
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REVISIONS

DATE OF REVISION	REVISION

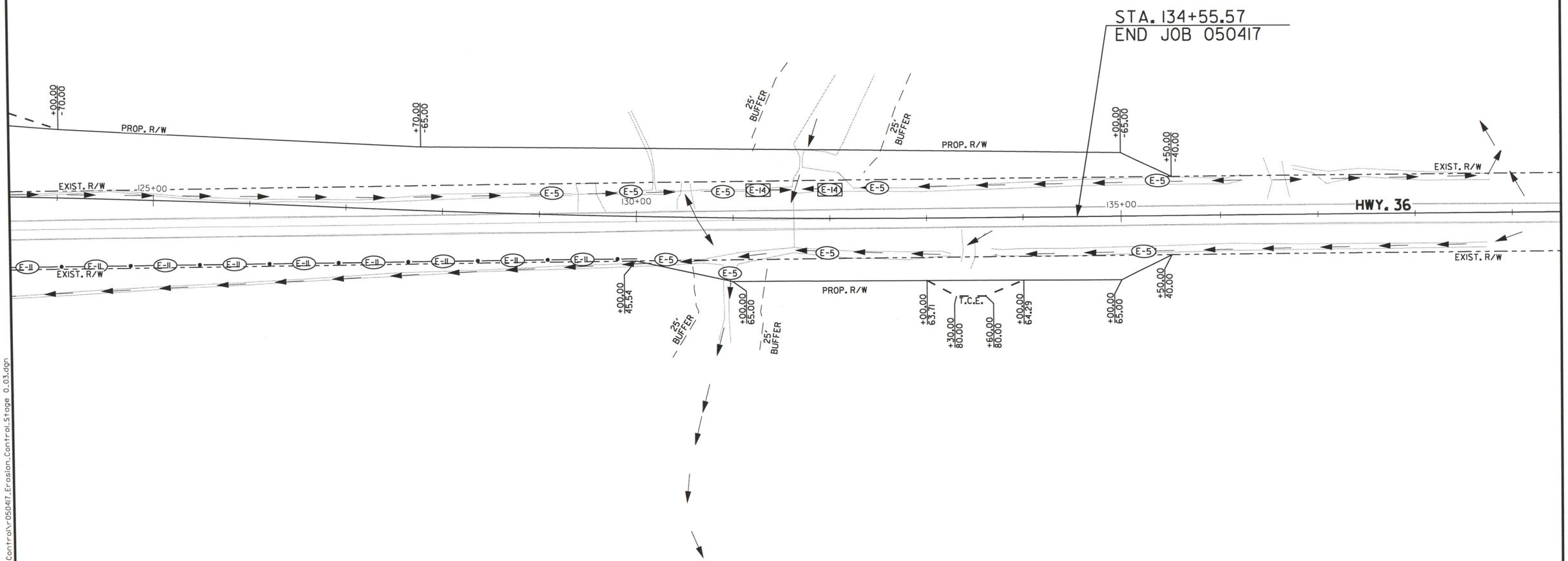
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
SHAHRIAR AZAD
2021-02-10

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		050417	9	73

(2) TEMPORARY EROSION CONTROL DETAILS

50 0 50 100
SCALE: 1" = 100'



LEGEND

E-5	SAND BAG DITCH CHECKS
E-11	SILT FENCE
E-14	SEDIMENT BASIN

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED. MAINTAIN ALL EROSION CONTROL DEVICES UNTIL THE END OF THE JOB, UNLESS OTHERWISE SPECIFIED.

CLEARING AND GRUBBING STAGE
TEMPORARY EROSION CONTROL DETAILS

Robert.Darrington 2/10/2021 5:15:34 PM
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REVISIONS

DATE OF REVISION	REVISION

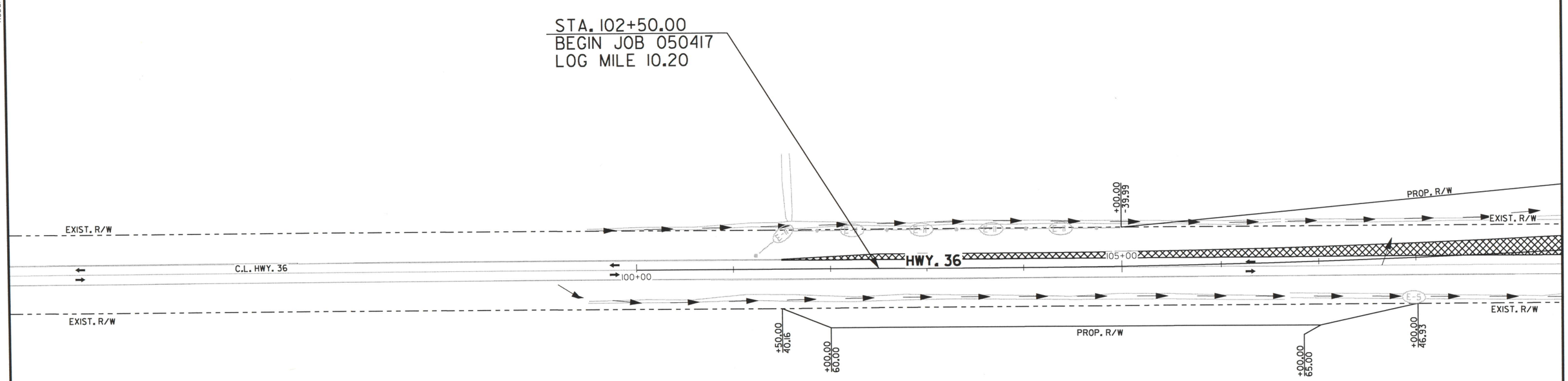
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
SHAHRIAR AZAD
2021-02-10

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		050417	10	73

(2) TEMPORARY EROSION CONTROL DETAILS

50 0 50 100
SCALE: 1" = 100'



LEGEND

E-5	SAND BAG DITCH CHECKS
E-11	SILT FENCE
E-14	SEDIMENT BASIN

STAGE I
TEMPORARY EROSION CONTROL DETAILS

Robert.Darrington 2/10/2021 5:15:38 PM
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2/10/2021
Robert.Darrington

REVISIONS

DATE OF REVISION	REVISION

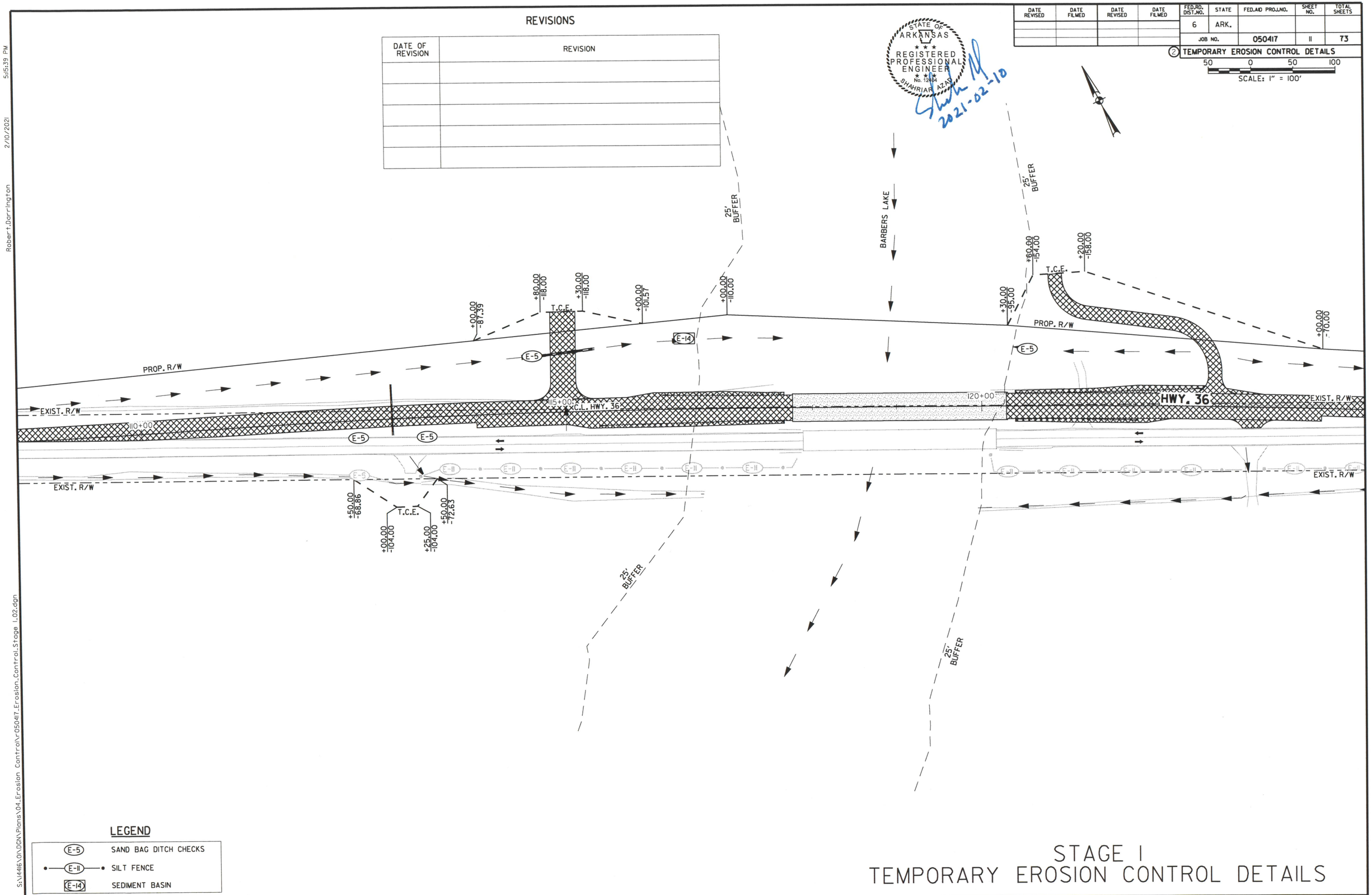
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FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		050417	II	73

(2) TEMPORARY EROSION CONTROL DETAILS

50 0 50 100
SCALE: 1" = 100'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
SHAHRIAR AZAD
2021-02-10



LEGEND

(E-5)	SAND BAG DITCH CHECKS
(E-11)	SILT FENCE
(E-14)	SEDIMENT BASIN

STAGE I
TEMPORARY EROSION CONTROL DETAILS

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REVISIONS

DATE OF REVISION	REVISION

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
SHAHRIAR ABAD

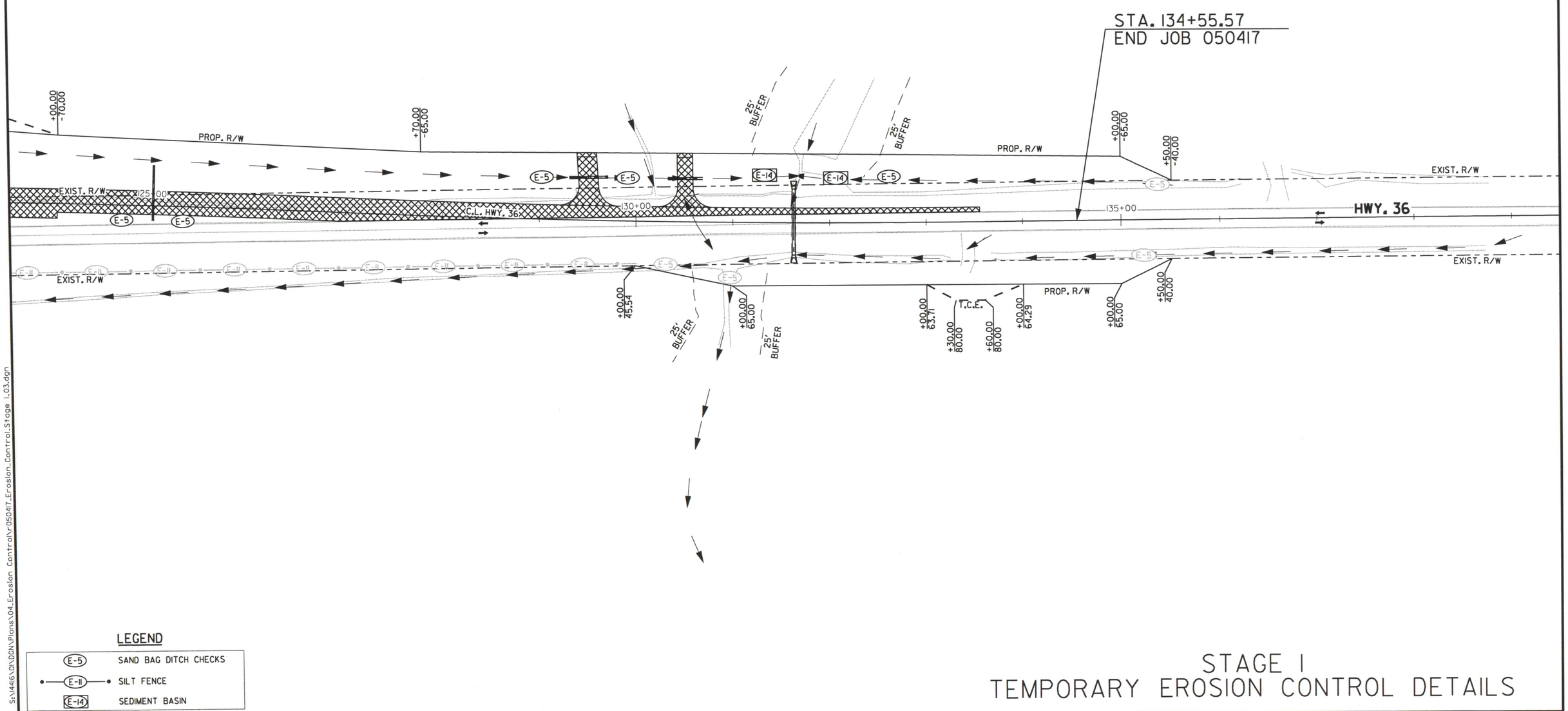
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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	12	73

(2) TEMPORARY EROSION CONTROL DETAILS

50 0 50 100
SCALE: 1" = 100'

2/10/2021 5:15:39 PM
Robert.Darrington



LEGEND

E-5	SAND BAG DITCH CHECKS
E-11	SILT FENCE
E-14	SEDIMENT BASIN

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STAGE 1
TEMPORARY EROSION CONTROL DETAILS

REVISIONS

DATE OF REVISION	REVISION

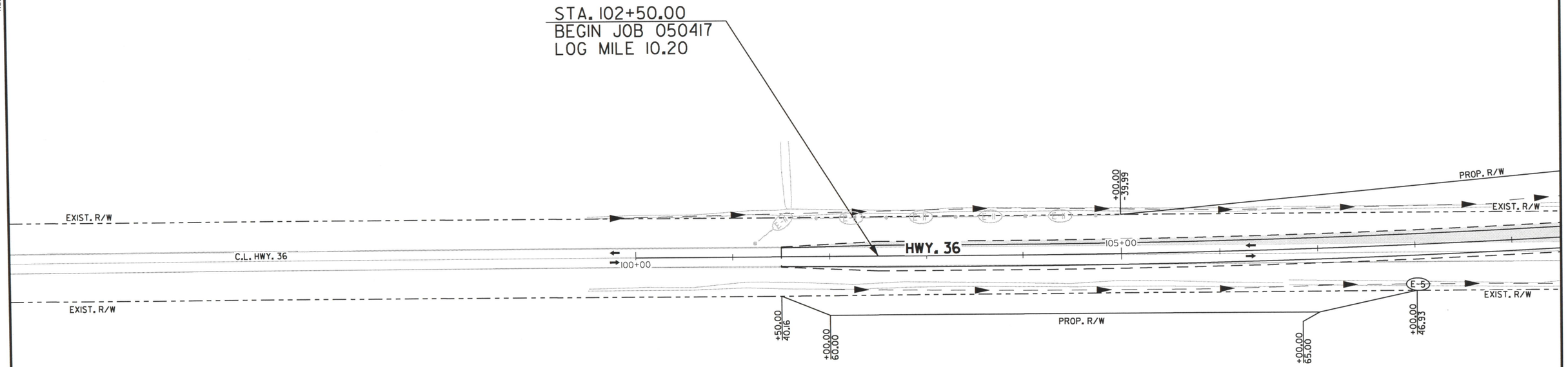
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
SHAHRIAR NEAD
2021-02-10

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		050417	13	73

(2) TEMPORARY EROSION CONTROL DETAILS

50 0 50 100
SCALE: 1" = 100'



LEGEND

E-5	SAND BAG DITCH CHECKS
E-11	SILT FENCE
E-14	SEDIMENT BASIN

STAGE 2
TEMPORARY EROSION CONTROL DETAILS

5:54:41 PM 2/10/2021 Robert.Darrington

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		050417	14	73

(2) TEMPORARY EROSION CONTROL DETAILS

50 0 50 100

SCALE: 1" = 100'

REVISIONS

DATE OF REVISION	REVISION

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
SHAHRIAR AZAD

2021-02-10

5:15:42 PM
2/10/2021
Robert.Darrington

BARBERS LAKE

25' BUFFER

+00.00 -110.00

+80.00 -118.00

+30.00 -118.00

+00.00 -101.57

+00.00 -87.39

T.C.E.

PROP. R/W

EXIST. R/W

110+00

115+00 — C.L. HWY. 36 —

120+00

HWY. 36

+30.00 -95.00

+60.00 -154.00

+20.00 -158.00

+00.00 -70.00

+50.00 -68.86

+00.00 -104.00

+25.00 -104.00

+50.00 -72.63

25' BUFFER

25' BUFFER

LEGEND

E-5	SAND BAG DITCH CHECKS
E-11	SILT FENCE
E-14	SEDIMENT BASIN

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STAGE 2
TEMPORARY EROSION CONTROL DETAILS

REVISIONS

DATE OF REVISION	REVISION

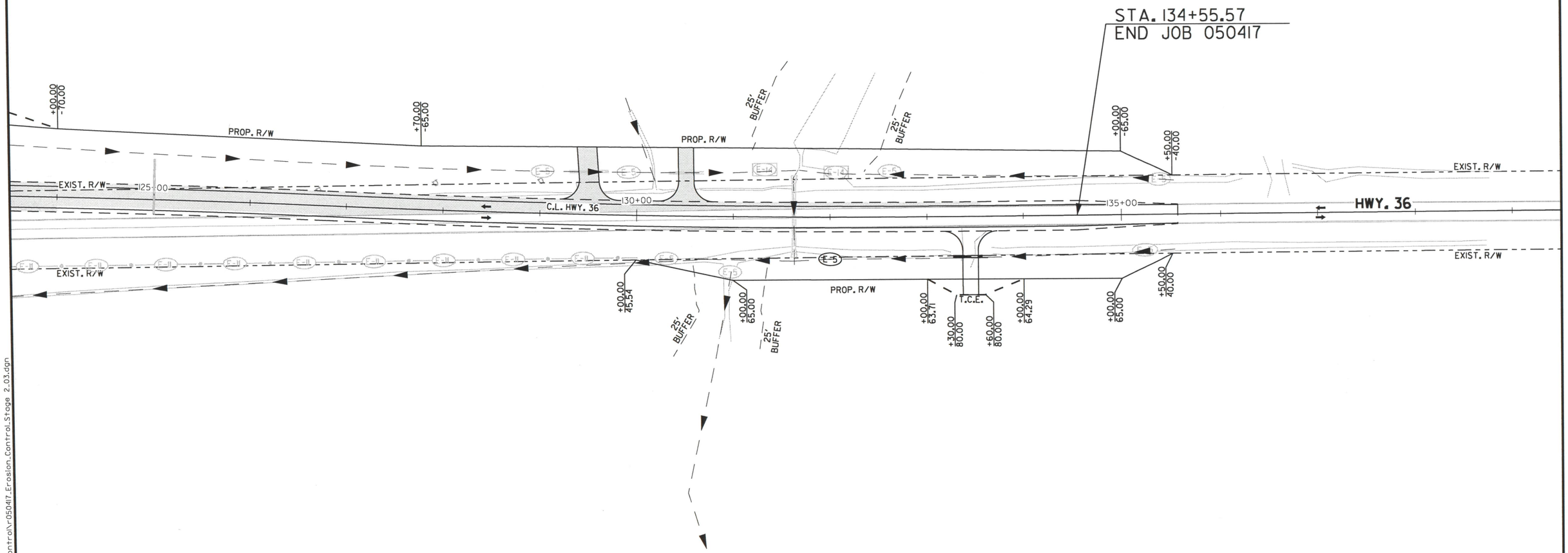
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
SHAHRIAR AZAD
2021-02-10

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		050417	15	73

(2) TEMPORARY EROSION CONTROL DETAILS

50 0 50 100
SCALE: 1" = 100'



LEGEND

E-5	SAND BAG DITCH CHECKS
E-11	SILT FENCE
E-14	SEDIMENT BASIN

STAGE 2
TEMPORARY EROSION CONTROL DETAILS

Robert.Darrington 2/10/2021 5:15:42 PM

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CONSTRUCTION SEQUENCE:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY. CONSTRUCT BRIDGE. UTILIZE TRAFFIC DRUMS AND VERTICAL PANELS AT 50' O.C. SPACING AT LANE EDGE ON LT. PERFORM LEVEL OPERATIONS. NOTCH AND WIDEN EXISTING PAVEMENT AND CONSTRUCT FULL DEPTH SECTIONS OF PROPOSED ROADWAY.

STAGE 2: SHIFT TRAFFIC TO PROPOSED PAVEMENT. UTILIZE TRAFFIC DRUMS AND VERTICAL PANELS AT 50' O.C. SPACING AT LANE EDGE ON RT. AND CONSTRUCTION PAVEMENT MARKINGS. CONSTRUCT REMAINING PROPOSED PAVEMENT AS SHOWN. PLACE FINAL LIFT OF PAVEMENT AND TRANSITIONS. INSTALL PERMANENT PAVEMENT MARKINGS.

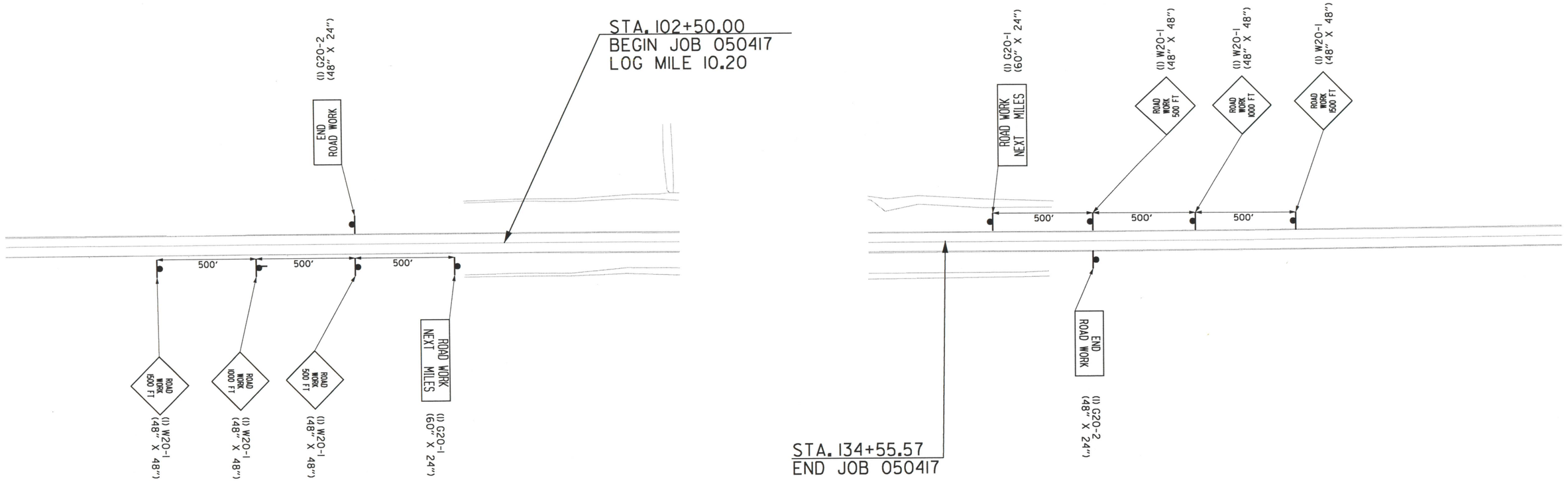
STAGE 3: OBLITERATE EXISTING ROADWAY. CONSTRUCT SHOULDERS ON RT. PLACE FINAL SURFACE AND INSTALL PERMANENT PAVEMENT MARKINGS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
SHAHRIAR AZAD
2021-02-10

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		050417	16	73

(2) MAINTENANCE OF TRAFFIC DETAILS



RIGHT SHOULDER CLOSED — (2) W21-5a (36" X 36")

DO NOT PASS — (2) R4-1 (24" X 30")

PASS WITH CARE — (2) R4-2 (24" X 30")

TO BE USED, IF AND WHERE DIRECTED BY THE ENGINEER

ADVANCED WARNING SIGNS MAINTENANCE OF TRAFFIC DETAILS

5:15:43 PM
2/10/2021
Robert.Darrington

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CONSTRUCTION SEQUENCE:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY. CONSTRUCT BRIDGE. UTILIZE TRAFFIC DRUMS AND VERTICAL PANELS AT 50' O.C. SPACING AT LANE EDGE ON LT. PERFORM LEVEL OPERATIONS. NOTCH AND WIDEN EXISTING PAVEMENT AND CONSTRUCT FULL DEPTH SECTIONS OF PROPOSED ROADWAY.

STAGE 2: SHIFT TRAFFIC TO PROPOSED PAVEMENT. UTILIZE TRAFFIC DRUMS AND VERTICAL PANELS AT 50' O.C. SPACING AT LANE EDGE ON RT. AND CONSTRUCTION PAVEMENT MARKINGS. CONSTRUCT REMAINING PROPOSED PAVEMENT AS SHOWN. PLACE FINAL LIFT OF PAVEMENT AND TRANSITIONS. INSTALL PERMANENT PAVEMENT MARKINGS.

STAGE 3: OBLITERATE EXISTING ROADWAY. CONSTRUCT SHOULDERS ON RT. PLACE FINAL SURFACE AND INSTALL PERMANENT PAVEMENT MARKINGS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
SHAHRIAR AZAD
2021-02-10

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		050417	17	73

(2) MAINTENANCE OF TRAFFIC DETAILS

50 0 50 100
SCALE: 1" = 100'

STA. 102+50.00
BEGIN JOB 050417
LOG MILE 10.20

TRAFFIC DRUMS @ 50' O.C. (TYP.)
VERTICAL PANEL @ 50' O.C. (TYP.)
TRAFFIC DRUMS @ 30' O.C. (TYP.)
CONSTRUCT DRIVEWAY 24" PIPE CULVERT
INSTALL TEMP. 18" X 60' PIPE Q2=1.47 CFS. D.A.=0.37 ACRES
P.O.B. 100+00.00
P.C. 103+50.00
+00.00 -39.99
P.R.C. 110+60.18
P.I. 113+96.91
+00.00 -87.39
+80.00 -118.00
T.C.E.
PROP. R/W
EXIST. R/W
S60°58'06"E
S64°31'09"E
100+00
105+00
110+00
115+00
+50.00 40.16
+00.00 60.00
+00.00 65.00
P.I. 107+05.20
+00.00 46.93
+50.00 -68.86
+00.00 -104.00
+25.00 -104.00
+50.00 -72.63
ROAD CLOSED
R11-2 48"x30"
16' BARR TYP. III LT.
TRAFFIC DRUMS @ 50' O.C. (TYP.)

LEGEND

- CONSTRUCT PERMANENT PAVEMENT
- PERMANENT PAVEMENT
- BRIDGE
- TYPE III BARRICADE
- TRAFFIC FLOW
- CHANNELIZATION DEVICE
- CONSTRUCTION SIGN
- CHANNELIZATION DEVICE (VERTICAL PANEL)

STAGE 1
MAINTENANCE OF TRAFFIC DETAILS

5:15:47 PM
2/10/2021
Robert.Darrington
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CONSTRUCTION SEQUENCE:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY. CONSTRUCT BRIDGE. UTILIZE TRAFFIC DRUMS AND VERTICAL PANELS AT 50' O.C. SPACING AT LANE EDGE ON LT. PERFORM LEVEL OPERATIONS. NOTCH AND WIDEN EXISTING PAVEMENT AND CONSTRUCT FULL DEPTH SECTIONS OF PROPOSED ROADWAY.

STAGE 2: SHIFT TRAFFIC TO PROPOSED PAVEMENT. UTILIZE TRAFFIC DRUMS AND VERTICAL PANELS AT 50' O.C. SPACING AT LANE EDGE ON RT. AND CONSTRUCTION PAVEMENT MARKINGS. CONSTRUCT REMAINING PROPOSED PAVEMENT AS SHOWN. PLACE FINAL LIFT OF PAVEMENT AND TRANSITIONS. INSTALL PERMANENT PAVEMENT MARKINGS.

STAGE 3: OBLITERATE EXISTING ROADWAY. CONSTRUCT SHOULDERS ON RT. PLACE FINAL SURFACE AND INSTALL PERMANENT PAVEMENT MARKINGS.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		050417	18	73

(2) MAINTENANCE OF TRAFFIC DETAILS

50 0 50 100

SCALE: 1" = 100'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12401
SHAHRIAR AZAD
2021-02-10

ROAD CLOSED

R11-2 48"x30"

16' BARR TYP. III RT.

TRAFFIC DRUMS @ 30' O.C. (TYP.)

TRAFFIC DRUMS @ 50' O.C. (TYP.)

VERTICAL PANEL @ 50' O.C. (TYP.)

INSTALL TEMP. 18" X 57' PIPE
Q2=1.25 CFS. D.A.=0.31 ACRES

CONSTRUCT DRIVEWAY
24" PIPE CULVERT

+80.00 -118.00 T.C.E.
+30.00 -118.00
+00.00 -101.57
25' BUFFER
+00.00 -110.00
PROP. R/W
BARBERS LAKE
+30.00 -95.00
+60.00 -154.00
T.C.E.
+20.00 -158.00
PROP. R/W
P.I. 123+60.72
+00.00 -70.00
+10.00 -65.00
PROP. R/W
EXIST. R/W
115+00
S61°09'10"E
120+00
S57°57'36"E
125+00
130+00
EXIST. R/W
P.T. 117+33.45
P.C. 120+41.34
P.R.C. 126+79.94
EXIST. R/W
+00.00 45.54
P.I. 130+17.85
25' BUFFER
25' BUFFER

LEGEND

- CONSTRUCT PERMANENT PAVEMENT
- PERMANENT PAVEMENT
- BRIDGE
- TYPE III BARRICADE
- TRAFFIC FLOW
- CHANNELIZATION DEVICE
- CONSTRUCTION SIGN
- CHANNELIZATION DEVICE (VERTICAL PANEL)

STAGE 1
MAINTENANCE OF TRAFFIC DETAILS

5:15:48 PM 2/10/2021 Robert.Darrington
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CONSTRUCTION SEQUENCE:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY. CONSTRUCT BRIDGE. UTILIZE TRAFFIC DRUMS AND VERTICAL PANELS AT 50' O.C. SPACING AT LANE EDGE ON LT. PERFORM LEVEL OPERATIONS. NOTCH AND WIDEN EXISTING PAVEMENT AND CONSTRUCT FULL DEPTH SECTIONS OF PROPOSED ROADWAY.

STAGE 2: SHIFT TRAFFIC TO PROPOSED PAVEMENT. UTILIZE TRAFFIC DRUMS AND VERTICAL PANELS AT 50' O.C. SPACING AT LANE EDGE ON RT. AND CONSTRUCTION PAVEMENT MARKINGS. CONSTRUCT REMAINING PROPOSED PAVEMENT AS SHOWN. PLACE FINAL LIFT OF PAVEMENT AND TRANSITIONS. INSTALL PERMANENT PAVEMENT MARKINGS.

STAGE 3: OBLITERATE EXISTING ROADWAY. CONSTRUCT SHOULDERS ON RT. PLACE FINAL SURFACE AND INSTALL PERMANENT PAVEMENT MARKINGS.

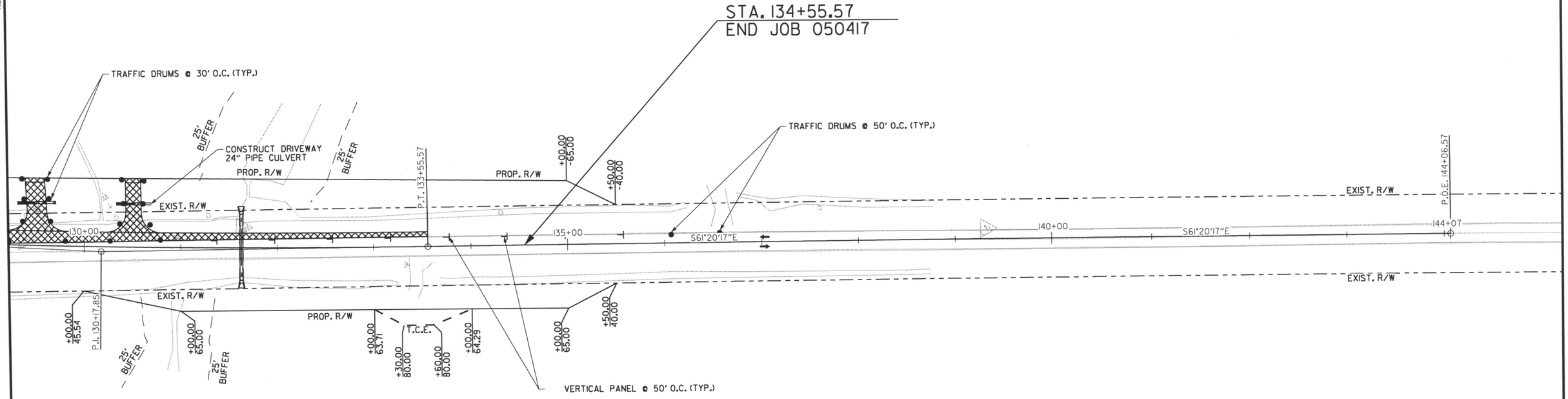
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
SHAHRIAR AHAD
2021-02-10

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		050417	19	73

(2) MAINTENANCE OF TRAFFIC DETAILS

50 0 50 100
SCALE: 1" = 100'



LEGEND

- CONSTRUCT PERMANENT PAVEMENT
- PERMANENT PAVEMENT
- BRIDGE
- TYPE III BARRICADE
- TRAFFIC FLOW
- CHANNELIZATION DEVICE
- CONSTRUCTION SIGN
- CHANNELIZATION DEVICE (VERTICAL PANEL)

STAGE I
MAINTENANCE OF TRAFFIC DETAILS

5:15:49 PM
2/10/2021
Robert.Darrington
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CONSTRUCTION SEQUENCE:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY. CONSTRUCT BRIDGE. UTILIZE TRAFFIC DRUMS AND VERTICAL PANELS AT 50' O.C. SPACING AT LANE EDGE ON LT. PERFORM LEVEL OPERATIONS. NOTCH AND WIDEN EXISTING PAVEMENT AND CONSTRUCT FULL DEPTH SECTIONS OF PROPOSED ROADWAY.

STAGE 2: SHIFT TRAFFIC TO PROPOSED PAVEMENT. UTILIZE TRAFFIC DRUMS AND VERTICAL PANELS AT 50' O.C. SPACING AT LANE EDGE ON RT. AND CONSTRUCTION PAVEMENT MARKINGS. CONSTRUCT REMAINING PROPOSED PAVEMENT AS SHOWN. PLACE FINAL LIFT OF PAVEMENT AND TRANSITIONS. INSTALL PERMANENT PAVEMENT MARKINGS.

STAGE 3: OBLITERATE EXISTING ROADWAY. CONSTRUCT SHOULDERS ON RT. PLACE FINAL SURFACE AND INSTALL PERMANENT PAVEMENT MARKINGS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
SHAHRIAR NEAD
2021-02-10

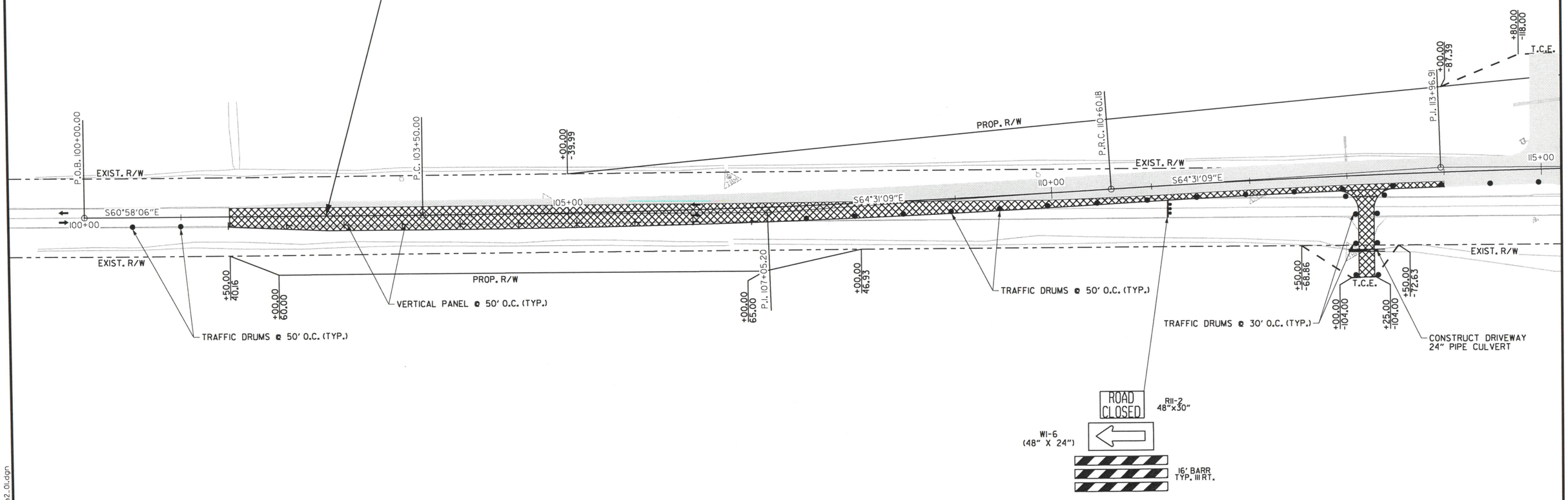
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		050417	20	73

(2) MAINTENANCE OF TRAFFIC DETAILS

50 0 50 100
SCALE: 1" = 100'

STA. 102+50.00
BEGIN JOB 050417
LOG MILE 10.20



LEGEND

- CONSTRUCT PERMANENT PAVEMENT
- PERMANENT PAVEMENT
- BRIDGE
- TYPE III BARRICADE
- TRAFFIC FLOW
- CHANNELIZATION DEVICE
- CONSTRUCTION SIGN
- CHANNELIZATION DEVICE (VERTICAL PANEL)

STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

5:15:50 PM 2/10/2021 Robert.Darrington

S:\14116\ON\DGN\Plans\05_MOT\r-050417_Mot_Stage2_01.dgn

CONSTRUCTION SEQUENCE:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY. CONSTRUCT BRIDGE. UTILIZE TRAFFIC DRUMS AND VERTICAL PANELS AT 50' O.C. SPACING AT LANE EDGE ON LT. PERFORM LEVEL OPERATIONS. NOTCH AND WIDEN EXISTING PAVEMENT AND CONSTRUCT FULL DEPTH SECTIONS OF PROPOSED ROADWAY.

STAGE 2: SHIFT TRAFFIC TO PROPOSED PAVEMENT. UTILIZE TRAFFIC DRUMS AND VERTICAL PANELS AT 50' O.C. SPACING AT LANE EDGE ON RT. AND CONSTRUCTION PAVEMENT MARKINGS. CONSTRUCT REMAINING PROPOSED PAVEMENT AS SHOWN. PLACE FINAL LIFT OF PAVEMENT AND TRANSITIONS. INSTALL PERMANENT PAVEMENT MARKINGS.

STAGE 3: OBLITERATE EXISTING ROADWAY. CONSTRUCT SHOULDERS ON RT. PLACE FINAL SURFACE AND INSTALL PERMANENT PAVEMENT MARKINGS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
SHAHRIAR AZIZ
2021-02-10

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		050417	21	73

(2) MAINTENANCE OF TRAFFIC DETAILS

50 0 50 100
SCALE: 1" = 100'

+80.00 -118.00
+30.00 -118.00
+00.00 -101.57
T.C.E.
PROP. R/W
25' BUFFER
+00.00 -110.00
BARBERS LAKE
+30.00 -95.00
+60.00 -154.00
T.C.E.
+20.00 -158.00
25' BUFFER
P.I. 123+60.72
+00.00 -70.00
+70.00 -65.00
PROP. R/W
EXIST. R/W
115+00
S61°09'10"E
120+00
S57°57'36"E
125+00
130+00
EXIST. R/W
P.T. 117+33.45
P.C. 120+41.34
P.R.C. 126+79.94
+00.00 45.54
P.I. 130+17.85
EXIST. R/W
TRAFFIC DRUMS @ 30' O.C. (TYP.)
TRAFFIC DRUMS @ 50' O.C. (TYP.)
25' BUFFER
25' BUFFER

ROAD CLOSED
R11-2 48"x30"
W1-6 (48" X 24")
16' BARR TYP. III LT.

LEGEND

- CONSTRUCT PERMANENT PAVEMENT
- PERMANENT PAVEMENT
- BRIDGE
- TYPE III BARRICADE
- TRAFFIC FLOW
- CHANNELIZATION DEVICE
- CONSTRUCTION SIGN
- CHANNELIZATION DEVICE (VERTICAL PANEL)

STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

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Robert.Darrington
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CONSTRUCTION SEQUENCE:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY. CONSTRUCT BRIDGE. UTILIZE TRAFFIC DRUMS AND VERTICAL PANELS AT 50' O.C. SPACING AT LANE EDGE ON LT. PERFORM LEVEL OPERATIONS. NOTCH AND WIDEN EXISTING PAVEMENT AND CONSTRUCT FULL DEPTH SECTIONS OF PROPOSED ROADWAY.

STAGE 2: SHIFT TRAFFIC TO PROPOSED PAVEMENT. UTILIZE TRAFFIC DRUMS AND VERTICAL PANELS AT 50' O.C. SPACING AT LANE EDGE ON RT. AND CONSTRUCTION PAVEMENT MARKINGS. CONSTRUCT REMAINING PROPOSED PAVEMENT AS SHOWN. PLACE FINAL LIFT OF PAVEMENT AND TRANSITIONS. INSTALL PERMANENT PAVEMENT MARKINGS.

STAGE 3: OBLITERATE EXISTING ROADWAY. CONSTRUCT SHOULDERS ON RT. PLACE FINAL SURFACE AND INSTALL PERMANENT PAVEMENT MARKINGS.

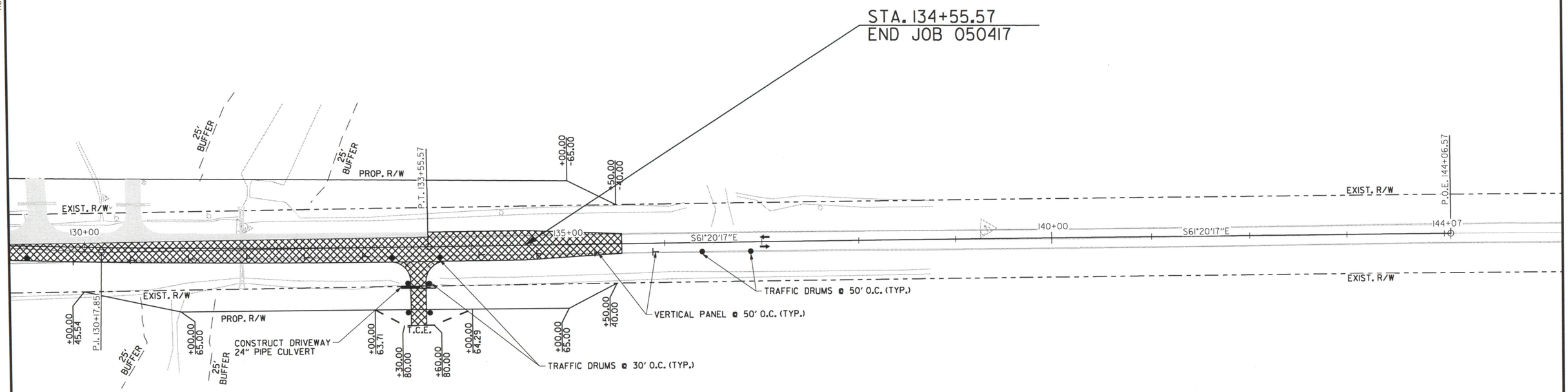
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
SHAHRIAR AZAD
2021-02-10

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		050417	22	73

(2) MAINTENANCE OF TRAFFIC DETAILS

50 0 50 100
SCALE: 1" = 100'



LEGEND

- CONSTRUCT PERMANENT PAVEMENT
- PERMANENT PAVEMENT
- BRIDGE
- TYPE III BARRICADE
- TRAFFIC FLOW
- CHANNELIZATION DEVICE
- CONSTRUCTION SIGN
- CHANNELIZATION DEVICE (VERTICAL PANEL)

STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	23	73

(2) PERMANENT PAVEMENT MARKING DETAILS

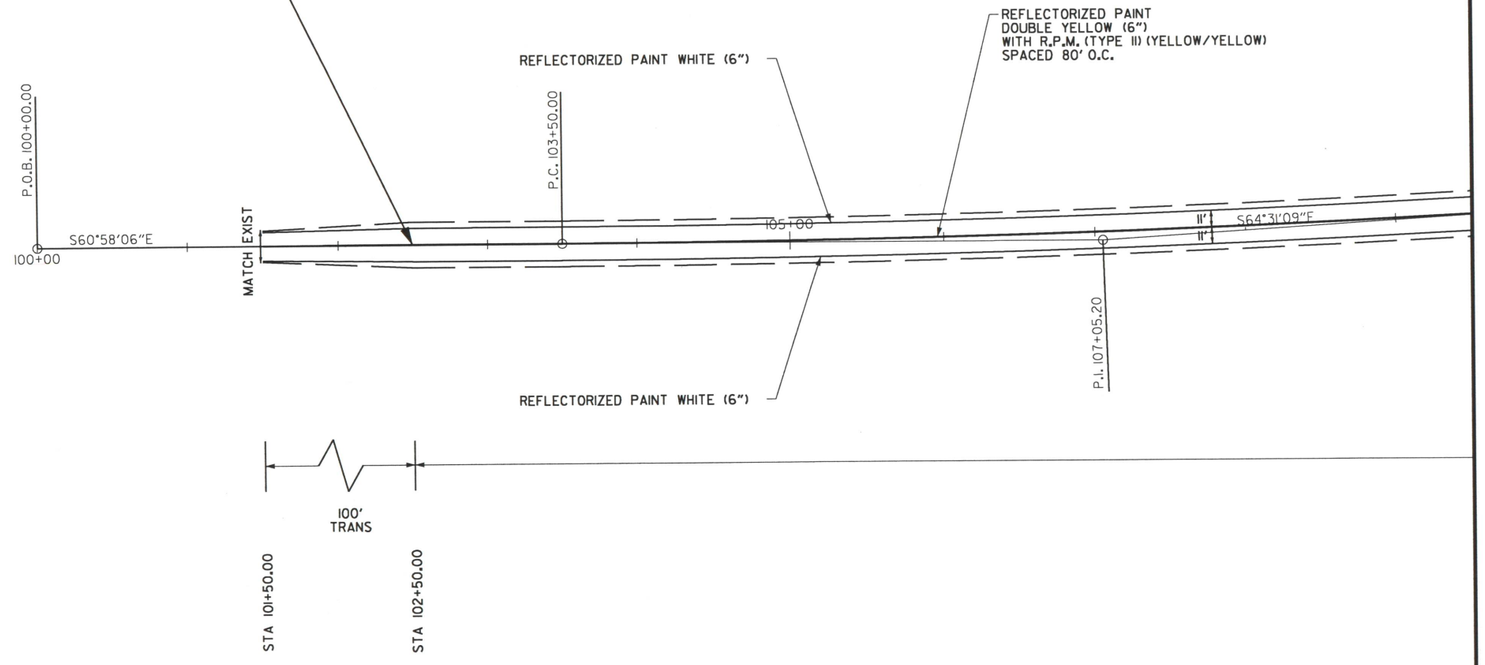
50 0 50 100

SCALE: 1" = 100'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12484
SHAHRIAR AZAD
2021-02-10

STA. 102+50.00
BEGIN JOB 050417
LOG MILE 10.20

C.L. HWY. 36
P.I. = 107+05.20
DELTA = 3°33'03" LT
Δ = 0°30'00"
T = 355.20'
L = 710.18'
P.C. = 103+50.00
P.R.C. = 110+60.18
NO SUPER



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.

PERMANENT PAVEMENT MARKING DETAILS:

REFLECTORIZED PAINT PAVEMENT MARKINGS:
RT. AND LT. EDGE LINES = 6812 LIN. FT. 6" WHITE
• DBL. CENTERLINE = 6812 LN. FT. 6" YELLOW

RAISED PAVEMENT MARKERS 80' O.C.
TYPE II (YEL/YEL) ON DBL YELLOW LINES = 43 EACH

PERMANENT PAVEMENT MARKING DETAILS

Robert.Darrington 2/10/2021 5:15:53 PM

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		050417	24	73

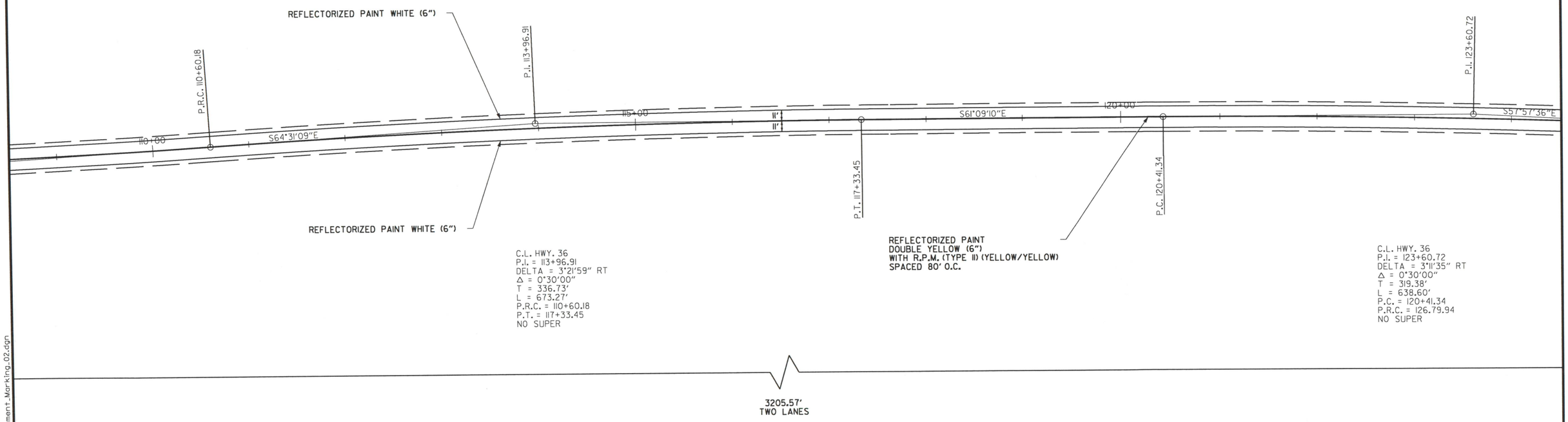
(2) PERMANENT PAVEMENT MARKING DETAILS

50 0 50 100

SCALE: 1" = 100'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
SHANNAR ALLAD
2021-02-10

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C.L. HWY. 36
P.I. = 113+96.91
DELTA = 3°21'59" RT
Δ = 0°30'00"
T = 336.73'
L = 673.27'
P.R.C. = 110+60.18
P.T. = 117+33.45
NO SUPER

C.L. HWY. 36
P.I. = 123+60.72
DELTA = 3°11'35" RT
Δ = 0°30'00"
T = 319.38'
L = 638.60'
P.C. = 120+41.34
P.R.C. = 126.79.94
NO SUPER

3205.57'
TWO LANES

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.

PERMANENT PAVEMENT MARKING DETAILS:

REFLECTORIZED PAINT PAVEMENT MARKINGS:
RT. AND LT. EDGE LINES = 6812 LIN. FT. 6" WHITE
• DBL. CENTERLINE = 6812 LN. FT. 6" YELLOW

RAISED PAVEMENT MARKERS 80' O.C.
TYPE II (YEL/YEL) ON DBL YELLOW LINES = 43 EACH

PERMANENT PAVEMENT MARKING DETAILS

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Robert.Darrington

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		050417	25	73

(2) PERMANENT PAVEMENT MARKING DETAILS

50 0 50 100
SCALE: 1" = 100'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
SHAHRIAR AFAD
2021-02-10

C.L. HWY. 36
P.I. = 123+60.72
DELTA = 3°11'35" RT
Δ = 0°30'00"
T = 319.38'
L = 638.60'
P.C. = 120+41.34
P.R.C. = 126.79.94
NO SUPER

C.L. HWY. 36
P.I. = 130+17.85
DELTA = 3°22'41" LT
Δ = 0°30'00"
T = 337.92'
L = 675.64'
P.R.C. = 126+79.94
P.T. = 133+55.57
NO SUPER

REFLECTORIZED PAINT WHITE (6")

REFLECTORIZED PAINT
DOUBLE YELLOW (6")
WITH R.P.M. (TYPE II) (YELLOW/YELLOW)
SPACED 80' O.C.

STA. 134+55.57
END JOB 050417

P.I. 123+60.72
S57°57'36"E
125+00
130+00
135+00
P.T. 133+55.57
MATCH EXIST
S61°20'17"E
P.R.C. 126+79.94
P.I. 130+17.85
REFLECTORIZED PAINT WHITE (6")
100' TRANS
STA 134+55.57
STA 135+55.57

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.

PERMANENT PAVEMENT MARKING DETAILS:

REFLECTORIZED PAINT PAVEMENT MARKINGS:
RT. AND LT. EDGE LINES = 6812 LIN. FT. 6" WHITE
• DBL. CENTERLINE = 6812 LN. FT. 6" YELLOW

RAISED PAVEMENT MARKERS 80' O.C.
TYPE II (YEL/YEL) ON DBL YELLOW LINES = 43 EACH

PERMANENT PAVEMENT MARKING DETAILS

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2/10/2021
Robert.Darrington



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PRO.JNO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		050417	26	73

(2) QUANTITIES

ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE I	STAGE 2	END OF JOB	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC DRUMS	BARRICADES (TYPE III)	
											RIGHT	LEFT
			LIN. FT. - EACH				NO.	SQ. FT.	EACH		LIN. FT.	
W20-1	ROAD WORK 1500 FT.	48"x48"	2	2		2	2	32.0				
W20-1	ROAD WORK 1000 FT.	48"x48"	2	2		2	2	32.0				
W20-1	ROAD WORK 500 FT.	48"x48"	2	2		2	2	32.0				
G20-2	END ROAD WORK	48"x24"	2	2		2	2	16.0				
G20-1	ROAD WORK NEXT xx MILES	60"x24"	2	2		2	2	20.0				
R11-2	ROAD CLOSED	48"x30"	2	2		2	2	20.0				
W1-6	LARGE ARROW	48"x24"		2		2	2	16.0				
R4-1	DO NOT PASS	24"x30"	2	2		2	2	10.0				
R4-2	PASS WITH CARE	24"x30"	2	2		2	2	10.0				
W21-5a	RIGHT SHOULDER CLOSED	36"x36"	2	2		2	2	18.0				
	VERTICAL PANELS		35	20		35			35			
	TRAFFIC DRUMS		70	64		70				70		
	TYPE III BARRICADE-RT. (16')		1	1		1					16	
	TYPE III BARRICADE-LT. (16')		1	1		1						16
TOTALS:								206.0	35	70	16	16

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 I	STAGE 2	END OF JOB	REMOVAL OF PERMANENT PAVEMENT MARKINGS	CONSTRUCTION PAVEMENT MARKINGS	REMOVAL OF 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.	
REMOVAL OF PERMANENT PAVEMENT MARKINGS		5084		5084					
CONSTRUCTION PAVEMENT MARKINGS		13624			13624				
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS			13624			13624			
RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW)			43				43		
REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6")			6812					6812	
REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6")			6812						6812
TOTALS:				5084	13624	13624	43	6812	6812

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.

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QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
02-09-22				6	ARK.			
				JOB NO.		050417	27	73
				(2) QUANTITIES				

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9404
SHANNAN MEAD
2022-02-09

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 BASIN (E-14)	OBLITERATION OF SEDIMENT BASIN	*SEDIMENT REMOVAL & DISPOSAL
			ACRE	TON	ACRE	M.GAL.	ACRE	ACRE	ACRE	M.GAL.	BAG	CU.YD.	LIN. FT.	CU.YD.	CU.YD.	CU. YD.
ENTIRE	PROJECT	CLEARING AND GRUBBING						0.73	0.73	14.9	286		1835	51		132
ENTIRE	PROJECT	STAGE 1	3.62	7.24	3.62	369.2	3.62				198			51	51	60
ENTIRE	PROJECT	STAGE 2	2.80	5.60	2.80	285.6	2.80				44				51	2
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.			1.61	3.22	1.61	164.2	1.61	0.19	0.19	3.9	132	9	459	17	17	43
TOTALS:			8.03	16.06	8.03	819.0	8.03	0.92	0.92	18.8	660	9	2294	119	119	237

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.

GUARDRAIL

STATION	STATION	LOCATION	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)
			LIN. FT.	EACH	
116+22.85	117+66.60	LT. SIDE	75	1	1
115+47.85	117+66.60	RT. SIDE	150	1	1
120+37.40	122+56.15	LT. SIDE	150	1	1
120+37.40	121+81.15	RT. SIDE	75	1	1
TOTALS:			450	4	4

CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
101+50	105+00	RT. OF HWY. 36	4	4
105+00	130+00	LT. & RT. OF HWY. 36	25	25
130+00	135+50	RT. OF HWY. 36	6	6
TOTALS:			35	35

REMOVAL AND DISPOSAL OF CULVERTS

STATION	DESCRIPTION	PIPE CULVERTS
		EACH
113+18	24" X 32' R.C. SIDE DRAIN	1
115+00	24" X 44' C.M. SIDE DRAIN	1
129+49	24" X 30' PLASTIC SIDE DRAIN	1
130+51	24" X 24' PLASTIC SIDE DRAIN	1
131+63	24" X 52' R.C. CROSS DRAIN	1
TOTAL:		5

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

REMOVAL AND DISPOSAL OF GUARDRAIL

STATION	STATION	LOCATION	GUARDRAIL
			LIN. FT.
117+59	117+86	LT. OF HWY. 36	27
117+59	117+86	RT. OF HWY. 36	27
120+19	120+47	LT. OF HWY. 36	28
120+19	120+46	RT. OF HWY. 36	28
TOTAL:			110

NOTE: THE QUANTITY SHOWN ABOVE FOR THE REMOVAL AND DISPOSAL OF GUARDRAIL SHALL INCLUDE THE REMOVAL AND DISPOSAL OF ALL GUARDRAIL TERMINALS AND TERMINAL ANCHOR POSTS.

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	• SOIL STABILIZATION
			CU. YD.		TON
ENTIRE	PROJECT	STAGE 1-MAIN LANES	3927	2351	
ENTIRE	PROJECT	STAGE 2-MAIN LANES	3713	1247	
ENTIRE	PROJECT	APPROACHES	40	2145	
ENTIRE	PROJECT	TEMPORARY APPROACHES			
109+00	114+00	UNDERCUT	4147	4147	
• ENTIRE	PROJECT	TO BE USED IF AND WHERE			75
		DIRECTED BY THE ENGINEER			
TOTALS:			11827	31050	75

•QUANTITY 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
117+46.00	117+76.00	HWY. 36 LT. SIDE	4.10		330	
117+46.00	117+76.00	HWY. 36 RT. SIDE	4.10		330	
120+28.00	120+58.00	HWY. 36 LT. SIDE	4.10		330	
120+28.00	120+58.00	HWY. 36 RT. SIDE	4.10		330	
117+46.00	117+76.00	HWY. 36		27.10	1940	22.49
120+28.00	120+58.00	HWY. 36		27.10	1940	22.49
TOTALS:			16.40	54.20	5200	44.98

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

SOIL LOG

STATION	LATITUDE			LONGITUDE			LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
	DEG	MIN	SEC	DEG	MIN	SEC		FEET				
117+60	35	9	51.72	91	31	25.85	25' RT	2.5-3.5	29	13	A-6	BROWN
117+60	35	9	51.72	91	31	25.85	25' RT	9.0-10.0	31	12	A-6	BROWN
120+40	35	9	50.47	91	31	23.04	25' RT	2.5-3.5	25	12	A-6	TAN
120+40	35	9	50.47	91	31	23.04	25' RT	14.0-15.0	34	16	A-6	BROWN AND TAN
118+60	35	9	51.42	91	31	24.73	CL	0.5-1.5	46	21	A-7-6	GRAY
118+60	35	9	51.42	91	31	24.73	CL	9.0-10.0	ND	ND	A-2-6	GRAY
119+45	35	9	50.90	91	31	23.67	CL	9.0-10.0	NP	NP	A-2-4	GRAY
119+45	35	9	50.90	91	31	23.67	CL	29.0-30.0	NP	NP	A-2-4	GRAY

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

QUANTITIES

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
01-07-22				6	ARK.			
				JOB NO.		050417	28	73

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12494
SHAHRIAR AZIMI
2022-01-07

STRUCTURES

STATION	DESCRIPTION	REINFORCED CONCRETE PIPE CULVERT	PIPE CULVERT ALTERNATES	FLARED END SECTION ALTERNATES FOR PIPE CULVERT ALTERNATES	TEMPORARY CULVERTS	SOLID SODDING	WATER	STD. DWG. NOS.
		ALT. I(CLASS IV)	ALT. 2, 3, 4, 5, AND 6	36"	18"			
		36"	36"	EACH	LIN. FT.	SQ.YD.	M.GAL.	
		LIN. FT.						
131+64	36" x 67' PIPE CULVERT	67	67	2		34	0.43	FES-1, FES-2, PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
113+00	TEMP. 18" x 60' PIPE CULVERT				60			PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
125+00	TEMP. 18" x 57' PIPE CULVERT				57			PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
TOTALS:		67	67	2	117	34	0.43	

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

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	30
ENGINEER	
TOTAL:	30

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

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
101+50.00	102+50.00	MAIN LANES	20.00	222.22
134+55.57	135+55.57	MAIN LANES	20.00	222.22
TOTAL:				444.44

NOTE: AVERAGE MILLING DEPTH 1".
STOCKPILE LOCATION: WHITE COUNTY LOT ON HWY. 367 EAST OF HWY. 67 NEAR EXIT 44.

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	TON	TACK COAT
		GALLON
ENTIRE PROJECT - TO BE USED IF AND WHERE	16	32
DIRECTED BY THE ENGINEER		
TOTALS:	16	32

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

4" PIPE UNDERDRAIN

STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS	UNDERDRAIN OUTLET PROTECTORS
			LIN. FT.	EACH
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER			200	4
TOTALS:			200	4

*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 24"	STANDARD DRAWINGS
			FEET	SQ. YD.	TON	TON	LIN. FT.	
113+18	RT.	HWY. 36	16	37.01	4.07	79.51	44	PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
115+00	LT.	HWY. 36	30	61.90	6.81	170.53	80	PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
122+74	LT.	HWY. 36	16	37.01	4.07	250.31		
123+18	RT.	HWY. 36	16	37.01	4.07	52.45		
129+49	LT.	HWY. 36	20	44.12	4.85	57.68	46	PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
130+51	LT.	HWY. 36	16	37.01	4.07	47.78	48	PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
133+45	RT.	HWY. 36	16	37.01	4.07	57.11	44	PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
*ENTIRE PROJECT TEMPORARY DRIVES						35.00		
TOTALS:				291.07	32.01	750.37	262	

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

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

CONCRETE DITCH PAVING

STATION	STATION	LOCATION	LENGTH	"W"	"B"	CONC. DITCH PAVING (TYPE A)	SOLID SODDING	WATER
			LIN. FT.	FEET	FEET	SQ. YD.	SQ. YD.	M. GAL.
120+17.25	121+00.00	LT. OF HWY. 36	82.75	10.00	6.00	91.94	36.78	0.46
TOTALS:						91.94	36.78	0.46

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

BENCH MARKS

STATION	LOCATION	BENCH MARKS
		EACH
117+76	BRIDGE END	1
TOTAL:		1

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

FLOWABLE SELECT MATERIAL

STATION	LOCATION	CU. YD.
113+00	HWY. 36 - ABONDON TEMP. PIPE	6
125+00	HWY. 36 - ABONDON TEMP. PIPE	6
TOTAL:		12

PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

STATION	LOCATION	WIDTH	LENGTH	TON
		FEET		
131+64	HWY. 36	9.67	20	15
TOTAL:				15

AVG. DEPTH = 13"

QUANTITIES

9:23:07 AM 1/7/2022 Tomas.Chu
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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	29	73
				(2) QUANTITIES				

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No 12404
SHAHRIAR AZAD
2021-02-10

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT							ACHM BASE COURSE (1 1/2")				ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")							
						(0.05 GAL. PER SQ. YD.)			(0.17 GAL. PER SQ. YD.)																			
			FEET	TON / STATION	TON	TOTAL WID. FEET	SQ.YD.	GALLON	TOTAL WID. FEET	SQ.YD.	GALLON	TOTAL GALLONS	AVG. WID. FEET	SQ.YD.	POUND / SQ.YD.	PG 64-22 TON	AVG. WID. FEET	SQ.YD.	POUND / SQ.YD.	PG 64-22 TON	AVG. WID. FEET	SQ.YD.	POUND / SQ.YD.	PG 64-22 TON	AVG. WID. FEET	SQ.YD.	POUND / SQ.YD.	PG 64-22 TON	TOTAL PG 64-22 TON
MAIN LANES																												
101+50.00	102+50.00	TRANSITION	100.00	91.00	91.00	3.75	41.67	2.08	20.00	222.22	37.78	39.86					1.98	22.00	330.00	3.63	1.77	19.67	220.00	2.16	23.00	255.56	220.00	28.11	30.27
102+50.00	107+00.00	MAIN LANES - NOTCH AND WIDEN	450.00	103.50	465.75	9.69	484.50	24.23				24.23					4.95	247.50	330.00	40.84	4.74	237.00	220.00	26.07	26.00	1300.00	220.00	143.00	169.07
107+00.00	110+00.00	MAIN LANES - NOTCH AND WIDEN - FULL DEPTH SHOULDER	300.00	122.25	366.75	31.91	1063.67	53.18				53.18					16.06	535.33	330.00	88.33	15.85	528.33	220.00	58.12	30.00	1000.00	220.00	110.00	168.12
110+00.00	116+40.00	MAIN LANES - FULL DEPTH - NORMAL CROWN - FULL DEPTH SHOULDER	640.00	154.50	988.80	48.71	3463.82	173.19				173.19					24.46	1739.38	330.00	287.00	24.25	1724.44	220.00	189.69	30.00	2133.33	220.00	234.67	424.36
116+40.00	117+46.00	MAIN LANES - FULL DEPTH - NORMAL CROWN	106.00	178.00	188.68	44.71	526.58	26.33				26.33					22.46	264.53	330.00	43.65	22.25	262.06	220.00	28.83	26.00	306.22	220.00	33.68	62.51
120+58.00	121+60.00	MAIN LANES - FULL DEPTH - NORMAL CROWN	102.00	178.00	181.56	44.71	506.71	25.34				25.34					22.46	254.55	330.00	42.00	22.25	252.17	220.00	27.74	26.00	294.67	220.00	32.41	60.15
121+60.00	127+95.00	MAIN LANES - FULL DEPTH - NORMAL CROWN - FULL DEPTH SHOULDER	635.00	162.75	1033.46	52.71	3718.98	185.95				185.95					26.46	1866.90	330.00	308.04	26.25	1852.08	220.00	203.73	26.00	1834.44	220.00	201.79	405.52
127+95.00	128+40.00	MAIN LANES - NOTCH AND WIDEN - FULL DEPTH SHOULDER	45.00	148.00	66.60	37.21	186.05	9.30				9.30					18.71	93.55	330.00	15.44	18.50	92.50	220.00	10.18	23.00	115.00	220.00	12.65	22.83
128+40.00	134+55.57	MAIN LANES - NOTCH AND WIDEN	615.57	112.75	694.06	13.01	889.84	44.49				44.49					6.61	452.10	330.00	74.60	6.40	437.74	220.00	48.15	23.00	1573.12	220.00	173.04	221.19
134+55.57	135+55.57	TRANSITION	100.00	91.00	91.00	2.50	27.78	1.39	20.00	222.22	37.78	39.17					1.24	13.78	330.00	2.27	1.26	14.00	220.00	1.54	23.00	255.56	220.00	28.11	29.65
ADDITIONAL FOR GUARDRAIL WIDENING																												
114+97.73	115+35.76	RT. OF HWY. 36 TRANSITION	38.03	42.00	15.97																				3.54	14.96	220.00	1.65	1.65
115+35.76	117+66.00	RT. OF HWY. 36	230.24	55.50	127.78																				6.31	161.42	220.00	17.76	17.76
115+66.29	116+11.29	LT. OF HWY. 36 TRANSITION	45.00	41.50	18.68																				3.45	17.25	220.00	1.90	1.90
116+11.29	117+66.00	LT. OF HWY. 36	154.71	53.50	82.77																				5.95	102.28	220.00	11.25	11.25
120+38.00	121+93.17	RT. OF HWY. 36	155.17	53.00	82.24																				5.86	101.03	220.00	11.11	11.11
121+93.17	122+33.17	RT. OF HWY. 36 TRANSITION	40.00	41.00	16.40																				3.41	15.16	220.00	1.67	1.67
120+38.00	122+67.43	LT. OF HWY. 36	229.43	66.50	152.57																				8.50	216.68	220.00	23.83	23.83
122+67.43	123+46.00	LT. OF HWY. 36 TRANSITION	78.57	53.50	42.03																				5.59	48.80	220.00	5.37	5.37
ADDITIONAL FOR GRADE RAISE																												
102+50.00	108+00.00	MAIN LANES - NOTCH AND WIDEN	550.00						VAR.	759.44	129.10	129.10					VAR.	759.44	VAR.	181.77									
108+00.00	110+00.00	MAIN LANES - NOTCH AND WIDEN	200.00						VAR.	191.67	32.58	32.58	VAR.	191.67	VAR.	154.27													
127+95.00	134+55.57	MAIN LANES - NOTCH AND WIDEN	660.57						VAR.	1210.38	205.76	205.76					VAR.	1210.38	VAR.	295.91									
TOTALS:					4706.10		10909.60	545.48		2605.93	443.00	988.48		191.67		154.27		7459.44		1383.48		5419.99		596.21		9745.48		1072.00	1668.21

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.5% MIN. AGGR.....5.5% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.6% MIN. AGGR.....4.4% ASPHALT BINDER
ACHM BASE COURSE (1 1/2").....95.7% MIN. AGGR.....4.3% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22
TACK COAT QUANTITIES WERE CALCULATED USING THE EMULSIFIED ASPHALT RATES. REFER TO SS-400-1FOR THE RESIDUAL ASPHALT APPLICATION RATES.

QUANTITIES

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STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 18381
JESSE D. HARRELL
9-21-2021

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
08-31-21				6	ARK.			
				JOB NO.		050417	30	73
				07518		BRIDGE QUANTITIES		63857

SCHEDULE OF BRIDGE QUANTITIES - JOB 050417

BRIDGE NO.	NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	SP, SS & 802	SP, SS, & 802	SP & 803	SS & 804	SS & 804	SS & 805	SS & 805	SS & 805	SS & 805	SP, SS, & 807	SS & 808	812	816	816
			ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO.)	CLASS S CONCRETE - BRIDGE	CLASS S(AE) CONCRETE - BRIDGE	CLASS 2 PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL - BRIDGE (GR. 60)	EPOXY COATED REINFORCING STEEL (GR. 60)	STEEL SHELL PILING (18" DIAMETER)	STEEL SHELL PILING (24" DIAMETER)	PILE ENCASEMENT	PREBORING	STRUCTURAL STEEL IN BEAM SPANS (A709, GR 50W)	ELASTOMERIC BEARINGS	BRIDGE NAME PLATE (TYPE D)	FILTER BLANKET	DUMPED RIPRAP
			UNIT	LUMP SUM	CU. YD.	CU. YD.	SQ. YD.	LB.	LB.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LB.	CU. IN.	EA.	SQ. YD.	CU. YD.
07518	HIGHWAY 36 BRIDGE OVER BARBERS LAKE	END BENT 1			12.46			1,199		264			40	218			469	235
		BENT 2			14.42			1,443			284	76		1,196	1,638.0			
		BENT 3			14.42			1,443			292	84		1,196	1,638.0			
		BENT 4			14.42			1,443			292	80		1,196	1,638.0			
		BENT 5			14.42			1,443			284	68		1,196	1,638.0			
		END BENT 6			12.46			1,199		216			40	218			266	133
		251'-0" INT. CONT. W-BEAM UNIT				286.70	1,128.0		76,510					136,980		1		
		EXIST. BR. NO. 02562 (SITE NO. 1)		1														
TOTAL FOR JOB NO. 050417					82.60	286.70	1,128.0	8,170	76,510	480	1,152	308	80	142,200	6,552.0	1	735	368

SCHEDULE OF BRIDGE QUANTITIES
HIGHWAY 36 OVER BARBERS LAKE

BARBERS LAKE STR. & APPRS. (S)
WHITE COUNTY

ROUTE 36 SECTION 5
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JH DATE: 6/25/20
CHECKED BY: STS DATE: 6/26/20
DESIGNED BY: JH DATE: 6/25/20
FILENAME: b050417-ql.dgn
SCALE: NONE

BRIDGE NO. 07518 DRAWING NO. 63857

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SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM		QUANTITY	UNIT
201	CLEARING		35	STATION
201	GRUBBING		35	STATION
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS		5	EACH
202	REMOVAL AND DISPOSAL OF GUARDRAIL		110	LIN. FT.
SS & 206	FLOWABLE SELECT MATERIAL		12	CU. YD.
SS & 210	UNCLASSIFIED EXCAVATION		11827	CU. YD.
210	COMPACTED EMBANKMENT		31050	CU. YD.
SP & 210	SOIL STABILIZATION		75	TON
SS & 303	AGGREGATE BASE COURSE (CLASS 7)		5501	TON
SS & 401	TACK COAT		1020	GAL.
SP, SS, & 405	MINERAL AGGREGATE IN ACHM BASE COURSE (1 1/2")		147	TON
SP, SS, & 405	ASPHALT BINDER (PG 64-22) IN ACHM BASE COURSE (1 1/2")		7	TON
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")		1323	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")		61	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")		1606	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")		94	TON
SP & 412	COLD MILLING ASPHALT PAVEMENT		444	SQ. YD.
SP, SS, & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC		16	TON
SS & 504	APPROACH SLABS		54.20	CU. YD.
SS & 504	APPROACH GUTTERS		16.40	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	18" TEMPORARY CULVERT		117	LIN. FT.
SS & 604	SIGNS		206	SQ. FT.
SS & 604	BARRICADES		32	LIN. FT.
SS & 604	TRAFFIC DRUMS		70	EACH
604	CONSTRUCTION PAVEMENT MARKINGS		13624	LIN. FT.
604	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS		13624	LIN. FT.
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS		5084	LIN. FT.
SS & 604	VERTICAL PANELS		35	EACH
SS & 605	CONCRETE DITCH PAVING (TYPE A)		92	SQ. YD.
* SS & 606	36" REINFORCED CONCRETE PIPE CULVERTS (CLASS IV)	(ALTERNATE NO. 1)	67	LIN. FT.
* SS & 606	36" ASPHALT COATED CORRUGATED STEEL PIPE CULVERTS (14 GAUGE)	(ALTERNATE NO. 2)	67	LIN. FT.
* SS & 606	36" ALUMINUM COATED CORRUGATED STEEL PIPE CULVERTS (14 GAUGE)	(ALTERNATE NO. 3)	67	LIN. FT.
* SS & 606	36" POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE CULVERT (14 GAUGE)	(ALTERNATE NO. 4)	67	LIN. FT.
* SP, SS, & 606	36" HIGH DENSITY POLYETHYLENE PIPE	(ALTERNATE NO. 5)	67	LIN. FT.
* SP, SS, & 606	36" PVC PIPE	(ALTERNATE NO. 6)	67	LIN. FT.
SP, SS, & 606	24" SIDE DRAIN		262	LIN. FT.
* SS & 606	36" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	(ALTERNATE NO. 1)	2	EACH
* SS & 606	36" FLARED END SECTIONS FOR CORRUGATED STEEL PIPE CULVERTS	(ALTERNATE NO. 2)	2	EACH
SS & 606	SELECTED PIPE BEDDING		30	CU. YD.
SS & 611	4" PIPE UNDERDRAINS		200	LIN. FT.
SS & 611	UNDERDRAIN OUTLET PROTECTORS		4	EACH
SS & 615	PAVEMENT REPAIR OVER CULVERTS (ASPHALT)		15	TON
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		16	TON
620	SEEDING		8.03	ACRE
SS & 620	MULCH COVER		8.95	ACRE
620	WATER		838.7	M. GAL.
621	TEMPORARY SEEDING		0.92	ACRE
621	SILT FENCE		2294	LIN. FT.
621	SAND BAG DITCH CHECKS		660	BAG
621	SEDIMENT BASIN		119	CU. YD.
621	OBLITERATION OF SEDIMENT BASIN		119	CU. YD.
621	SEDIMENT REMOVAL AND DISPOSAL		237	CU. YD.
621	ROCK DITCH CHECKS		9	CU. YD.
623	SECOND SEEDING APPLICATION		8.03	ACRE
624	SOLID SODDING		71	SQ. YD.
635	ROADWAY CONSTRUCTION CONTROL		1.00	LUMP SUM
718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6")		6812	LIN. FT.
718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6")		6812	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)		43	EACH
SS & 804	REINFORCING STEEL-ROADWAY (GRADE 60)		5200	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
SP, SS, & 802	CLASS S CONCRETE-BRIDGE		82.60	CU. YD.
SP, SS, & 802	CLASS S(AE) CONCRETE-BRIDGE		286.70	CU. YD.
SP & 803	CLASS 2 PROTECTIVE SURFACE TREATMENT		1128.0	SQ. YD.
SS & 804	REINFORCING STEEL-BRIDGE (GRADE 60)		8170	POUND
SS & 804	EPOXY COATED REINFORCING STEEL (GRADE 60)		76510	POUND
SS & 805	STEEL SHELL PILING (18" DIAMETER)		480	LIN. FT.
SS & 805	STEEL SHELL PILING (24" DIAMETER)		1152	LIN. FT.
SS & 805	PREBORING		80	LIN. FT.
SS & 805	PILE ENCASEMENT		308	LIN. FT.
SP, SS, & 807	STRUCTURAL STEEL IN BEAM SPANS (A709, GR. 50W)		142200	POUND
SS & 808	ELASTOMERIC BEARINGS		6552.0	CU. IN.
812	BRIDGE NAME PLATE (TYPE D)		1	EACH
SS & 816	FILTER BLANKET		735	SQ. YD.
SS & 816	DUMPED RIPRAP		368	CU. YD.

*DENOTES ALTERNATE BID ITEMS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12345
MATTHEW D. MAYNARD
2022-02-09

REVISIONS

DATE	REVISION	SHEET NUMBER
8/31/2021	REVISED FEDERAL AID PROJECT NUMBER. REVISED STANDARD DRAWINGS TC-2 AND TC-3. ADDED SPECIAL PROVISION "CONCRETE BRIDGE DECK CURING AND SURFACE TREATMENT RESTRICTIONS." ADDED "SP &" TO ITEM "CLASS S CONCRETE-BRIDGE" AND ITEM "CLASS 2 PROTECTIVE SURFACE TREATMENT."	1, 2, 3, 30, 31
1/7/2022	REVISED FEDERAL AID PROJECT NUMBER. REVISED GOVERNING SPECIFICATIONS. REVISED ITEM NUMBERS.	1, 3, 28, 31
2/9/2022	REVISED STANDARD DRAWING 550I0. REVISED CLEARING AND GRUBBING QUANTITIES	2, 27, 31

SUMMARY OF QUANTITIES AND REVISIONS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
08-31-21			
01-07-22			
02-09-22			

SUMMARY OF QUANTITIES AND REVISIONS

FED.ROI. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.		31	73

JOB NO. 050417

Robert.Darrington 2/10/2021 5:16:01 PM

SURVEY CONTROL COORDINATES

Project Name: s050417
Date: 8/9/2019
Coordinate System: ARKANSAS STATE PLANE - NORTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	303446.0356	1453589.5221	192.623	CTL	STD ARDOT CAP STAMPED PN: 1
2	303097.5706	1454226.5591	192.307	CTL	STD ARDOT CAP STAMPED PN: 2
3	302670.9198	1455006.4582	202.272	CTL	STD ARDOT CAP STAMPED PN: 3
4	302264.1078	1455743.6664	194.401	CTL	STD ARDOT CAP STAMPED PN: 4
5	301785.8973	1456614.8573	194.262	CTL	STD ARDOT CAP STAMPED PN: 5
6	301349.5771	1457414.1211	195.187	CTL	STD ARDOT CAP STAMPED PN: 6
7	300985.1503	1458033.2224	195.465	CTL	STD ARDOT CAP STAMPED PN: 7
8	304606.6412	1451393.8341	194.687	CTL	STD ARDOT CAP STAMPED PN: 8
9	304334.6507	1451995.4216	192.499	CTL	STD ARDOT CAP STAMPED PN: 9
10	303876.9173	1452814.0553	192.973	CTL	STD ARDOT CAP STAMPED PN: 10
900	303374.8496	1453764.9486	189.387	TBM	ARDOT CAP 24" REBAR
901	302998.5422	1454284.0076	188.182	TBM	SQUARE CUT ON N END CUS
902	302815.7461	1454738.2868	204.183	TBM	SQUARE CUT ON NE CRNR BR
903	302707.3849	1454936.3612	204.186	TBM	SQUARE CUT ON SE CRNR BR
904	302164.6388	1455946.2970	190.150	TBM	SQUARE CUT ON E END CU
998	327166.8891	1411599.8445	229.120	BM	NGS DISK STMPD M8 1931
999	327291.5588	1411453.8314	223.530	TBM	ARDOT CAP 24" REBAR

*Note - Rebar and Cap - Standard - 5/8" Rebar with 2" Aluminum Cap stamped
*(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT
A PROJECT CAF OF 0.999957642 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 s050417gi.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: VT AND HZ BASED ON STATIC GPS CONSTRAINING ELEVATION AT NGS BM M-8
CONVERGENCE ANGLE: 00-00-06 LEFT AT PN: 3 AT LT: 35-09-50 LG: 091-31-22
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

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STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12401
SHAHRIAR AZAD
2021-02-10

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		050417	32	73

(2) SURVEY CONTROL DETAILS

C.L. HWY. 36

POINT NO.	TYPE	STATION	NORTHING	EASTING
8001	P.O.B.	100+00.00	303666.5692	1453164.7177
8002	P.C.	103+50.00	303496.7165	1453470.7407
8004	P.R.C.	110+60.18	303171.5268	1454101.9665
8006	P.T.	117+33.45	302864.1984	1454700.8892
8007	P.C.	120+41.34	302715.6502	1454970.5715
8009	P.R.C.	126+79.94	302392.1192	1455521.0558
8011	P.T.	133+55.57	302050.7724	1456104.0077
8012	P.O.E.	144+06.57	301546.6721	1457026.2188

SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

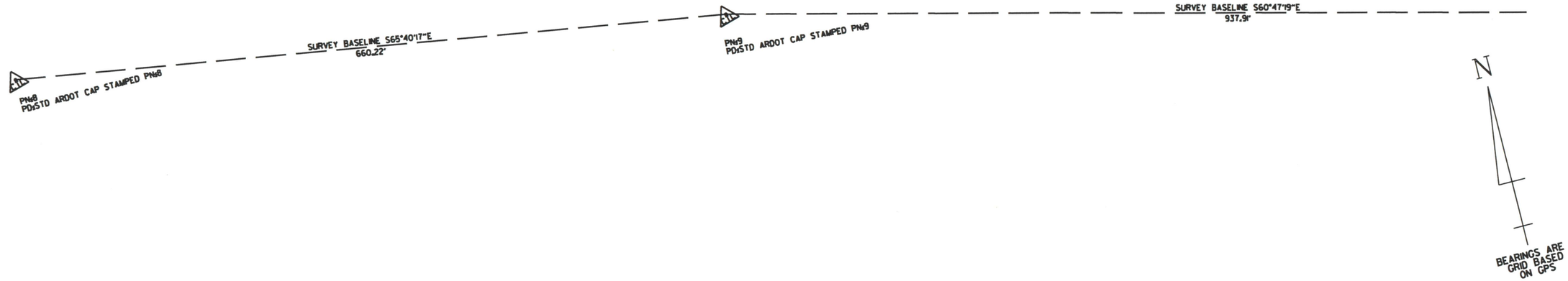
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6	ARK.			
JOB NO.		050417	33	73

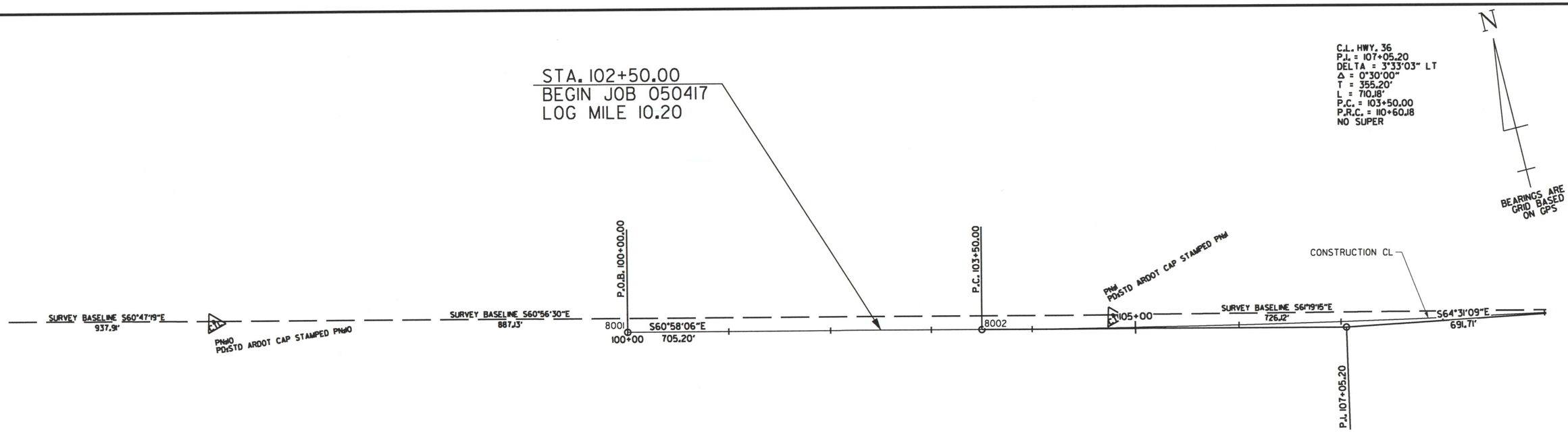
(2) SURVEY CONTROL DETAILS

50 0 50 100

SCALE: 1" = 100'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
SHAHRIAR AZAD
2021-02-10





SURVEY CONTROL DETAILS

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

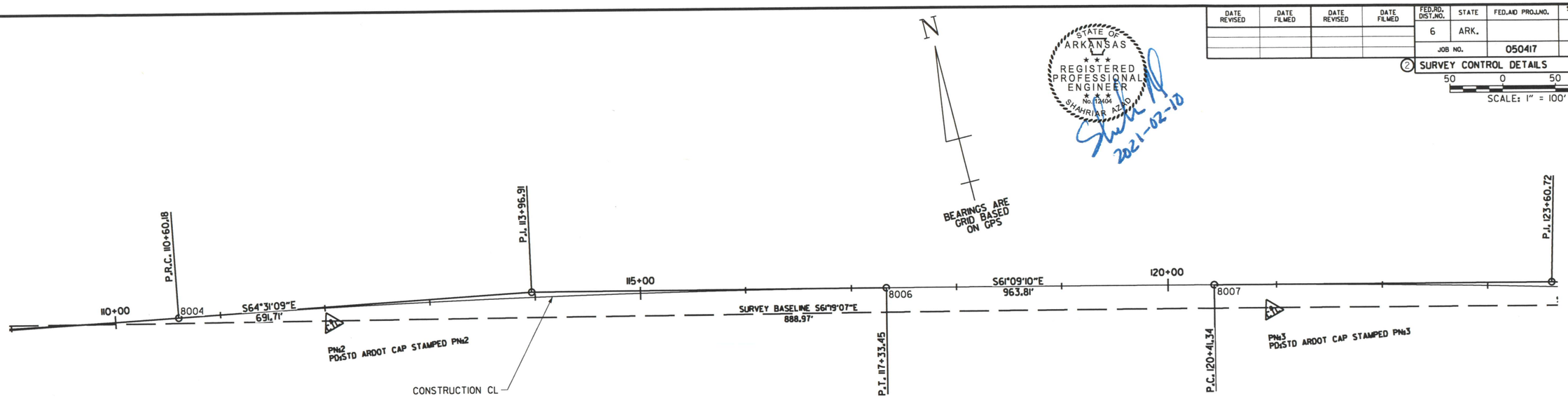
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6	ARK.			
JOB NO.		050417	34	73

(2) SURVEY CONTROL DETAILS

50 0 50 100

SCALE: 1" = 100'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
SHAHRIAR AZAD
2021-02-10



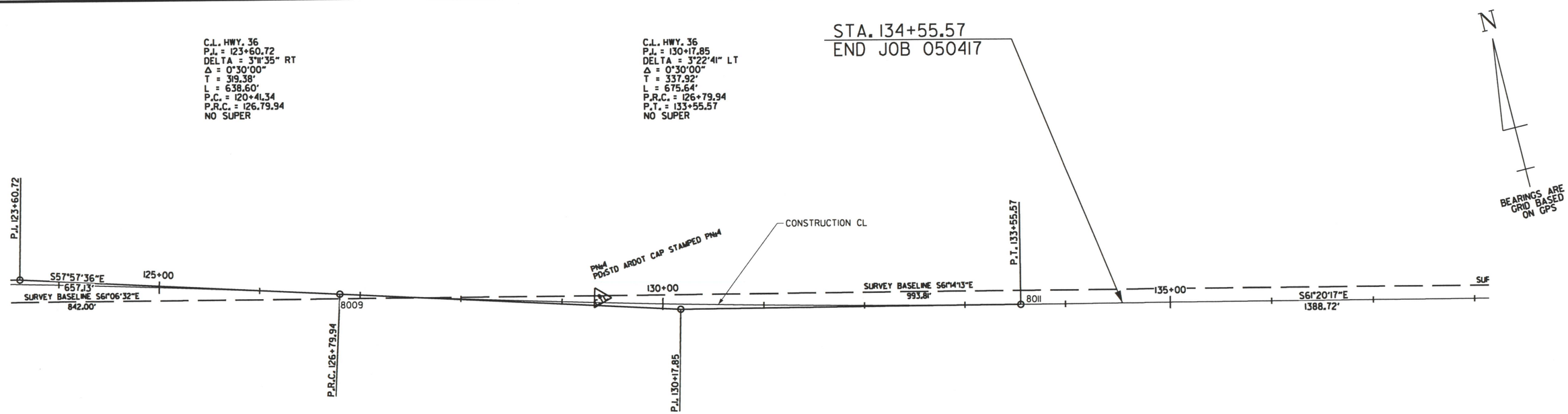
C.L. HWY. 36
P.I. = 113+96.91
DELTA = 3°21'59" RT
Δ = 0°30'00"
T = 336.73'
L = 673.27'
P.R.C. = 110+60.18
P.T. = 117+33.45
NO SUPER

C.L. HWY. 36
P.I. = 123+60.72
DELTA = 3°11'35" RT
Δ = 0°30'00"
T = 319.38'
L = 638.60'
P.C. = 120+41.34
P.R.C. = 126.79.94
NO SUPER

C.L. HWY. 36
P.I. = 123+60.72
DELTA = 3°11'35" RT
Δ = 0°30'00"
T = 319.38'
L = 638.60'
P.C. = 120+41.34
P.R.C. = 126.79.94
NO SUPER

C.L. HWY. 36
P.I. = 130+17.85
DELTA = 3°22'41" LT
Δ = 0°30'00"
T = 337.92'
L = 675.64'
P.R.C. = 126+79.94
P.T. = 133+55.57
NO SUPER

STA. 134+55.57
END JOB 050417



SURVEY CONTROL DETAILS

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2/10/2021
Robert.Darrington

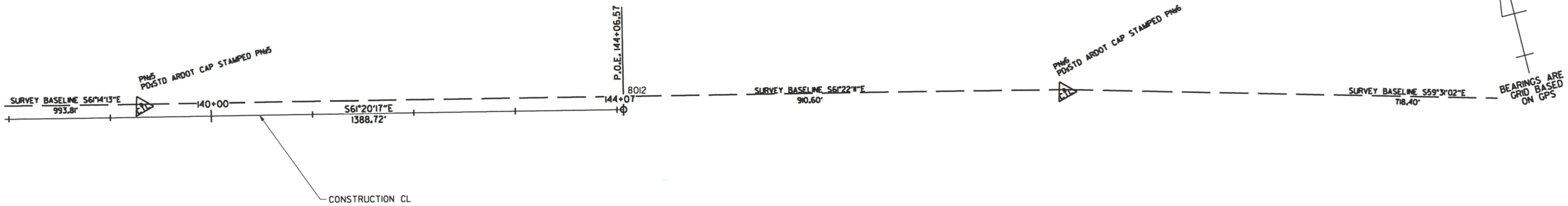
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		050417	35	73

(2) SURVEY CONTROL DETAILS

50 0 50 100
SCALE: 1" = 100'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
SHAHRIAR AZAD
2021-02-10





SURVEY CONTROL DETAILS

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	36	73

(2) PLAN & PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
SHAHRIAR AZAD
2021-02-10

SCALE: 1" = 100'

DENOTES OBLIT. OF EXIST. RDWY.

C.L. HWY. 36
P.I. = 107+05.20
DELTA = 3°33'03" LT
Δ = 0°30'00"
T = 355.20'
L = 710.18'
P.C. = 103+50.00
P.R.C. = 110+60.18
NO SUPER

STA. 102+50.00
BEGIN JOB 050417
LOG MILE 10.20

P.O.B. 100+00.00
P.C. 103+50.00
+00.00 -39.99
P.I. 107+05.20
+00.00 46.93
+00.00 65.00
+50.00 40.16
+00.00 60.00
+50.00
+50.00
100' TRANSITION
EXIST. R/W
C.L. HWY. 36
EXIST. R/W
100+00
S60°58'06"E
HWY. 36
105+00
S64°31'09"E
PROP. R/W
CONST. LIMIT
CONST. LIMIT
EXIST. R/W
CONST. LIMIT
PROP. R/W
EXIST. R/W
2'
20'
2'
4'
22'
4'
4'
22'
4'

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

NOTE: ENTIRE PROJECT LOCATED IN SPECIAL FLOOD HAZARD AREA

STA. 101+50.00
MATCH EXIST. PAVEMENT
BEGIN TRANSITION

STA. 102+50.00
END TRANSITION
BEGIN JOB 050417
ELEV. 193.94'

100' TRANSITION

-0.10%

PROFILE GRADE

V.P.C. 106+47.98
ELEV. 193.54

L.V.C. = 900.00'
G1 -0.10%
G2 2.09%
e = 2.46'
K = 411

6' FLAT BOTTOM
-0.50% RT.D.G.

6' FLAT BOTTOM
-0.33% RT.D.G.

6' FLAT BOTTOM
-0.35% RT.D.G.

EXISTING GROUND

P.V.I. 101+50.00
ELEV. 194.04

+00.00 RT.D.G. 189.73
+00.00 RT.D.G. 189.23
+00.00 RT.D.G. 188.58
+00.00 RT.D.G. 187.89

220
210
200
190
180
170
160
150

100+00 101+00 102+00 103+00 104+00 105+00 106+00 107+00 108+00 109+00

HIGHWAY 36

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		050417	37	73

② PLAN & PROFILE SHEETS

50 0 50 100
SCALE: 1" = 100'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 17404
SHAHRIAR AZAD
2021-02-10

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INSTALLATION OF GUARDRAIL			GUARDRAIL (TY. A) LIN. FT.	GUARDRAIL TERMINAL (TY. 2)	THRIE BEAM GUARDRAIL TERMINAL
STA.	STA.	LOCATION			
115+47.85	117+66.60	RT. OF EB HWY 36	150	1 EACH	1 EACH
116+22.85	117+66.60	LT. OF EB HWY 36	75	1 EACH	1 EACH
120+37.40	121+81.15	RT. OF EB HWY 36	75	1 EACH	1 EACH
120+37.40	122+56.15	LT. OF EB HWY 36	150	1 EACH	1 EACH

STA. 115+00.00 - IN PLACE
24" X 44' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 80' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH RT. =
610 CU. YDS. EMBK.
10 CU. YDS. EXC.

STA. 117+76.00 BRIDGE BEGIN
251'-0" INTEGRAL CONT. W-BEAM UNIT
(47'-6", 52', 52', 52', 47'-6")
252'-0" TOTAL LENGTH
30'-0" CLEAR ROADWAY WIDTH
BRIDGE NO. 07518
STA. 120+28.00 BRIDGE END

STA. 122+73.62
CONSTRUCT APPROACH LT. =
460 CU. YDS. EMBK.

DENOTES OBLIT. OF EXIST. RDWY.

DENOTES BRIDGE REMOVAL

STA. 113+17.78 - IN PLACE
24" X 32' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
24" X 44' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH RT. =
65 CU. YDS. EMBK.
5 CU. YDS. EXC.

C.L. HWY. 36
P.I. = 113+96.91
DELTA = 3°21'59" RT
Δ = 0°30'00"
T = 336.73'
L = 673.27'
P.R.C. = 110+60.18
P.T. = 117+33.45
NO SUPER

STA. 117+88.45 - STA. 120+16.34 IN PLACE
BR. NO. 02562
228' X 24' CLEAR RDWY. BRIDGE
12 PRECAST CHANNEL BEAM SPAN BRIDGE W/CONCRETE
TRESTLE BENTS ON PRECAST CONCRETE PILES.
REMOVAL OF EXISTING BRIDGE STRUCTURE
(SITE No. 1) = 1.00 LUMP SUM

STA. 123+17.81 - IN PLACE
24" X 42' C.M. PIPE CULVERT
RT. SIDE DRAIN
TO REMAIN
CONSTRUCT APPROACH RT. =
30 CU. YDS. EMBK.
5 CU. YDS. EXC.

C.L. HWY. 36
P.I. = 123+60.72
DELTA = 3°11'35" RT
Δ = 0°30'00"
T = 319.38'
L = 638.60'
P.C. = 120+41.34
P.R.C. = 126.79.94
NO SUPER

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

NOTE: ENTIRE PROJECT LOCATED IN SPECIAL FLOOD HAZARD AREA

BARBERS LAKE SLOUGH:
THIS STREAM IS CLASSIFIED AS PERENNIAL.
THE TOP OF THE CHANNEL ELEVATION IS 190 FT. MSL.
REFER TO SECTION 110.06(c) TEMPORARY FILL
OF THE 2014 STANDARD SPECIFICATIONS.

L.V.C. = 900.00'
G1 -0.10%
G2 2.09%
e = 2.46'
K = 411

L.V.C. = 660.00'
G1 2.09%
G2 -2.19%
e = -3.53'
K = 154

L.V.C. = 650.00'
G1 -2.19%
G2 0.04%
e = 1.81'
K = 292

PROFILE GRADE
EXISTING GROUND
251'-0" INTEGRAL CONT. W-BEAM UNIT

6' FLAT BOTTOM -0.11% LT.D.G.
6' FLAT BOTTOM -0.35% LT.D.G.
6' FLAT BOTTOM -0.34% LT.D.G.
6' FLAT BOTTOM -0.64% LT.D.G.
6' FLAT BOTTOM -0.48% LT.D.G.
6' FLAT BOTTOM 3.52% LT.D.G.
6' FLAT BOTTOM 0.20% LT.D.G.
6' FLAT BOTTOM -0.66% LT.D.G.

HIGHWAY 36

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	38	73

(2) PLAN & PROFILE SHEETS

50 0 50 100
SCALE: 1" = 100'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12404
SHAHRIAR PIRAVI
2021-02-10

DENOTES OBLIT. OF EXIST. RDWY.

C.L. HWY. 36
P.I. = 123+60.72
DELTA = 3°11'35" RT
Δ = 0°30'00"
T = 319.38'
L = 638.60'
P.C. = 120+41.34
P.R.C. = 126.79.94
NO SUPER

STA. 129+49.24 - IN PLACE
24" X 30' PLASTIC PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 46' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH LT. =
130 CU. YDS. EMBK.
10 CU. YDS. EXC.

STA. 130+50.65 - IN PLACE
24" X 24' PLASTIC PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 48' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH LT. =
170 CU. YDS. EMBK.
5 CU. YDS. EXC.

C.L. HWY. 36
P.I. = 130+17.85
DELTA = 3°22'41" LT
Δ = 0°30'00"
T = 337.92'
L = 675.64'
P.R.C. = 126+79.94
P.T. = 133+55.57
NO SUPER

STA. 131+63.79 IN PLACE
24"x52' R.C. PIPE CULVERT
REMOVE AND INSTALL
36"X67' PIPE CULVERT
WITH FES LT. & RT.
(CLASS IV)(TYPE 3 BEDDING)
Q25 = 68 CFS D.A. = 224 ACRES

STA. 134+55.57
END JOB 050417

HWY. 36

STA. 133+45.13
INSTALL
24" X 44' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH RT. =
105 CU. YDS. EMBK.
5 CU. YDS. EXC.

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

NOTE: ENTIRE PROJECT LOCATED IN SPECIAL FLOOD HAZARD AREA

L.V.C. = 650.00'
G1 = 2.19%
G2 = 0.04%
e = 1.81'
K = 292

P.V.I. 125+58.85
ELEV. 195.44

V.P.T. 128+83.85
ELEV. 195.58

0.04%

PROFILE GRADE

EXISTING GROUND

6' FLAT BOTTOM
-0.28% LT.D.G.

6' FLAT BOTTOM -0.08% LT.D.G.
-0.21% LT.D.G.

6' FLAT BOTTOM 6' FLAT BOTTOM
0.70% LT.D.G.
0.17% RT.D.G.

6' FLAT BOTTOM 0.59% LT.D.G.
0.47% RT.D.G.

+00.00 LT.D.G. 189.96

+00.00 LT.D.G. 188.28

+00.00 LT.D.G. 188.07
F.L. INLET
LT. ELEV.=188.02
F.L. OUTLET
RT. ELEV.=187.56

+00.00 LT.D.G. 188.28
+00.00 RT.D.G. 187.65

+00.00 RT.D.G. 187.82

+00.00 RT.D.G. 188.75
+00.00 LT.D.G. 190.04

P.V.I. 135+55.57
ELEV. 195.85

STA. 134+55.57
END JOB 050417
BEGIN TRANSITION
ELEV. 195.81'

100' TRANSITION

STA. 135+55.57
END TRANSITION
MATCH EXIST. PAVEMENT

HIGHWAY 36

220 210 200 190 180 170 160 150

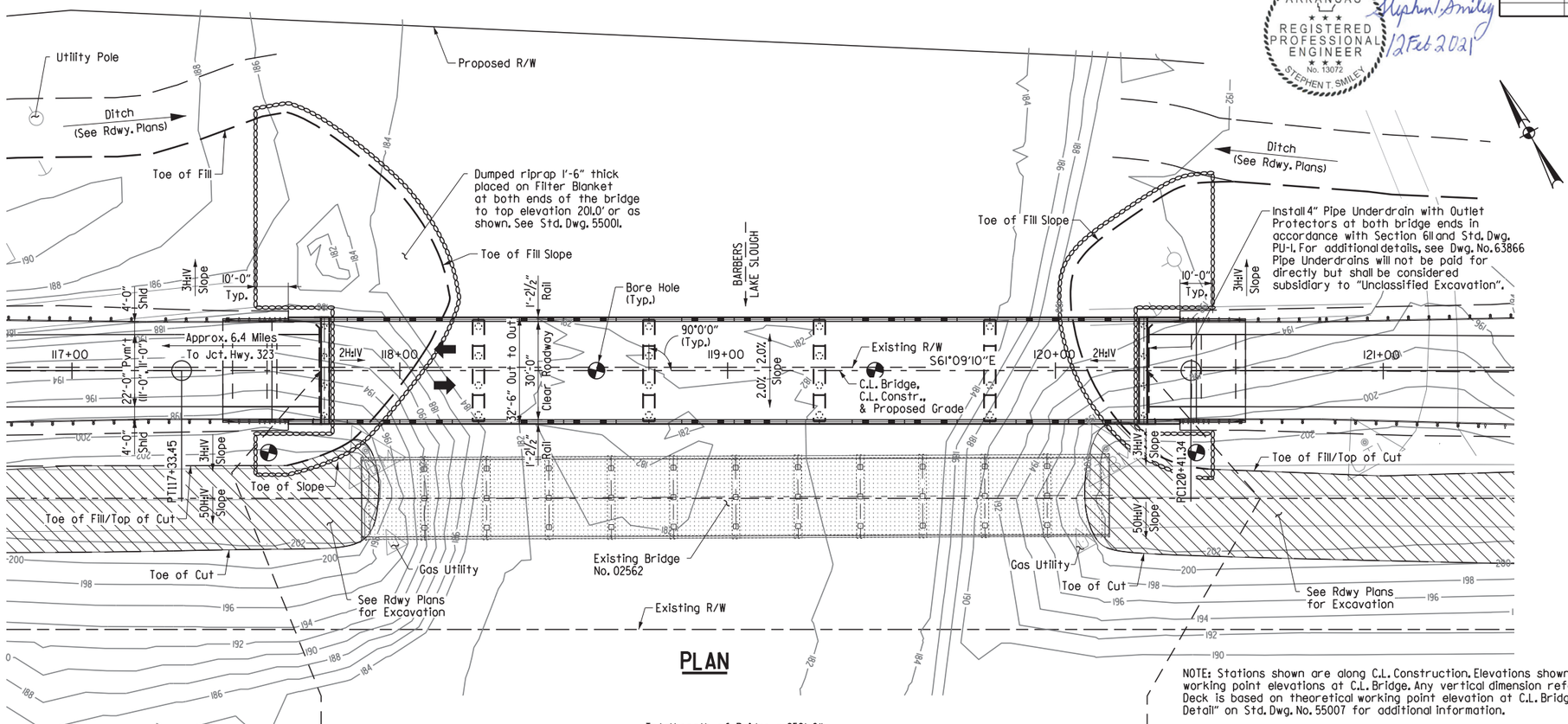
124+00 125+00 126+00 127+00 128+00 129+00 130+00 131+00 132+00 133+00 134+00 135+00 136+00 137+00 138+00 139+00

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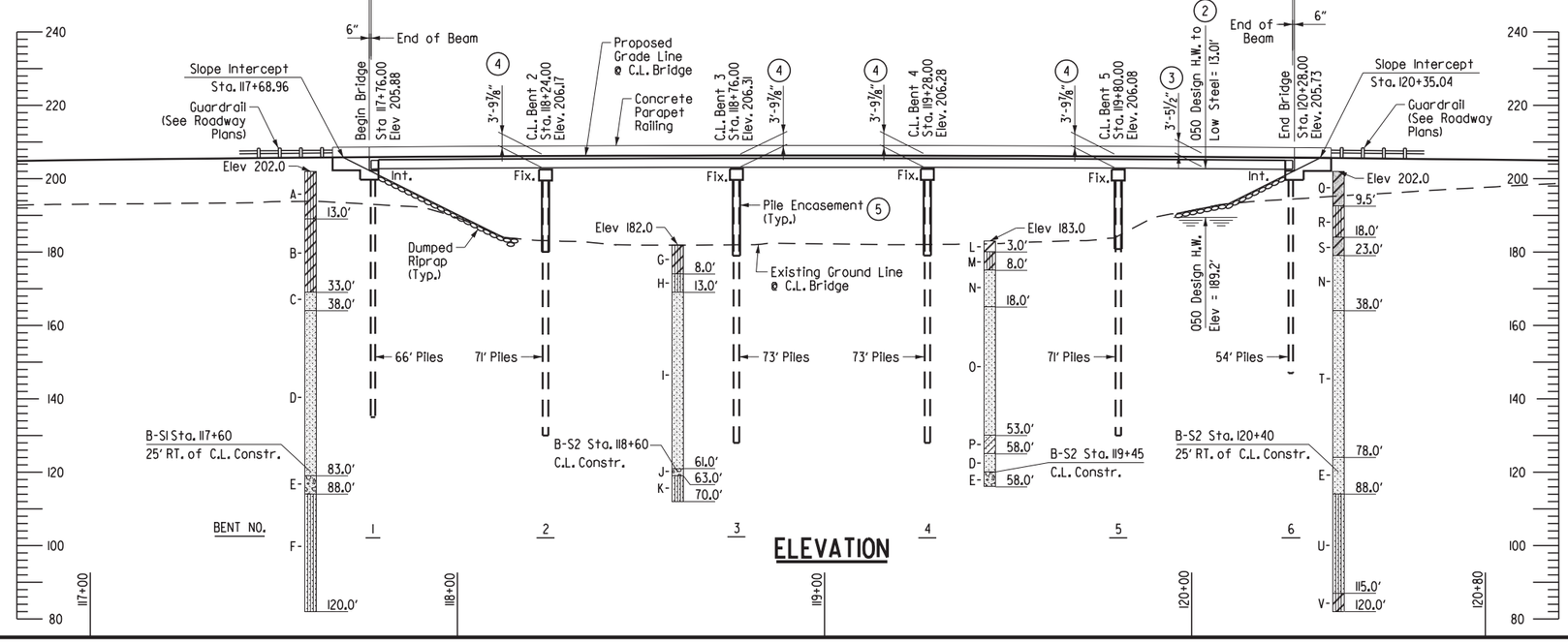
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	39	73
				(1) 07518		BRIDGE LAYOUT		63858

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13072
STEPHEN T. SMILEY
Stephen T. Smiley
12 Feb 2021



PLAN

NOTE: Stations shown are along C.L. Construction. Elevations shown are theoretical working point elevations at C.L. Bridge. Any vertical dimension referenced to C.L. Deck is based on theoretical working point elevation at C.L. Bridge. See "Rounding Detail" on Std. Dwg. No. 55007 for additional information.



ELEVATION

HYDRAULIC DATA TABLE

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	NATURAL WATER SURFACE ELEVATION (1)	WATER SURFACE ELEVATION WITH BACKWATER
	YEARS	CFS	FEET	FEET
DESIGN	Q50	3,162	189.3	189.2
BASE	Q100	3,594	189.9	189.8
EXTREME	Q500	4,626	191.0	191.0
OVERTOPPING	>Q500	N/A	N/A	N/A

Drainage Area = 6.820 sq. miles
Ordinary H.W. Elev. = 187.0 feet
Q100 Backwater elevation for existing structure = 189.8 feet

(1) Unconstricted water surface elevation without structure or roadway aproaches.

(2) Proposed Low Bridge Chord Elev. = 202.25 feet
Low Steel occurs at Station 120+27.00.

(3) C.L. Deck to Low Steel

(4) C.L. Deck at C.L. Bent to Low Side Top of Cap

(5) Extend pile encasement to bottom of cap at Bents 2 thru 5, see Std. Dwg. No. 55021

NOTES:
For Boring Legend and Project General Notes, see Dwg. No. 63859

For R/W Data, see Roadway Plans.

Use Type Special Approach Slabs & Gutters at each end of bridge, See Dwg. No. 63869 & 63870

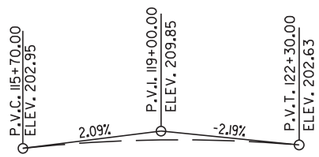
HORIZONTAL CURVE DATA

At Beginning of Bridge

P.I. Sta. = 113+96.91
Delta = 3°21'59" RT
D.O.C. = 0° 30' 00"
Tangent = 336.73'
Length = 673.27'
P.R.C. Sta. = 110+60.18
P.T. Sta. = 117+33.45

At End of Bridge

P.I. Sta. = 123+60.72
Delta = 3°11'35" RT
D.O.C. = 0° 30' 00"
Tangent = 319.38'
Length = 638.60'
P.C. Sta. = 120+41.34
P.R.C. Sta. = 126+79.94



L.V.C. = 660.00'

VERTICAL CURVE DATA

(Along Profile Grade)

SHEET 1 OF 2
LAYOUT OF BRIDGE
HIGHWAY 36 OVER BARBERS LAKE

BARBERS LAKE STR. & APPRS. (S)
WHITE COUNTY

ROUTE 36 SECTION 5
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY:	JH	DATE:	2/02/2020	FILENAME:	b050417i_ll.dgn
CHECKED BY:	STS	DATE:	2/12/2020	SCALE:	AS SHOWN
DESIGNED BY:	JH	DATE:	11/5/2019		

BRIDGE NO. 07518 DRAWING NO. 63858

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STS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	40	73
				1 07518		BRIDGE LAYOUT		63859

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13072
STEPHEN T. SMILEY
Stephen T. Smiley
12 Feb 2021

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 SDI = 0.293 SITE CLASS = D
SEISMIC OPERATIONAL CLASSIFICATION: Essential

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (superstructure)	f'c = 4,000 psi
Class S Concrete (substructure)	f'c = 3,500 psi
Reinforcing Steel (Grade 60, AASHTO M 31 or M 322, Type A)	fy = 60,000 psi
Structural Steel (ASTM A709, Gr. 50)	Fy = 50,000 psi
Structural Steel (ASTM A709, Gr. 50W)	Fy = 50,000 psi
Structural Steel (ASTM A709, Gr. 36)	Fy = 36,000 psi

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

STEEL SHELL PILING:
Piling in Bents 1 and 6 shall be 18" diameter concrete filled steel shell piles and shall be driven to minimum ultimate bearing capacity of 276 tons per pile at Bent 1 and 233 tons at Bent 6. Piling in Bents 2 thru 5 shall be 24" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 333 tons per pile at Bents 2 & 5 and 363 tons per pile at Bents 3 & 4. All piling shall be driven with an approved air, steam, or diesel hammer to a minimum tip elevation of 139.0 or lower at Bent 1; 147.0 or lower at Bent 6; and 134.0 or lower at Bents 2 and 5; and 130.0 or lower at Bents 3 & 4. 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).

Water jetting or other methods as approved by the Engineer may be required to achieve minimum penetration. This work shall not be paid for directly, but shall be considered incidental to the item "Steel Shell Piling (__" Dia.)".

PREBORING: Preboring is required for all piling at Bents 1 and 6. Prebored holes shall have a diameter 6" greater than the diameter of the pile for a depth of 10' below the bottom of the cap. The void space around the pile after completion of driving shall be backfilled with sand or pea gravel. The Contractor shall be responsible for keeping prebored holes free of debris prior to driving piles and backfilling which may require the use of temporary casings or other approved methods. Any related cost for backfilling and temporary casing will not be paid for directly, but shall be considered subsidiary to the item "Preboring".

DRIVING SYSTEM: The driving system approval and 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 estmated that a minimum rated hammer energy required to obtain the ultimate bearing capacity will be 59,500 ft.lbs. per blow for all piles at Bent 1; 83,000 ft.-lbs. per blow for all piles at Bents 2 thru 5; and 51,000 ft.-lbs. per blow for all piles at Bent 6

PILE ENCASEMENT: Pile encasements for Bents 2 thru 5 shall extend from bottom of cap to 3' below natural or finished ground. See Std. Dwg. 55021.

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

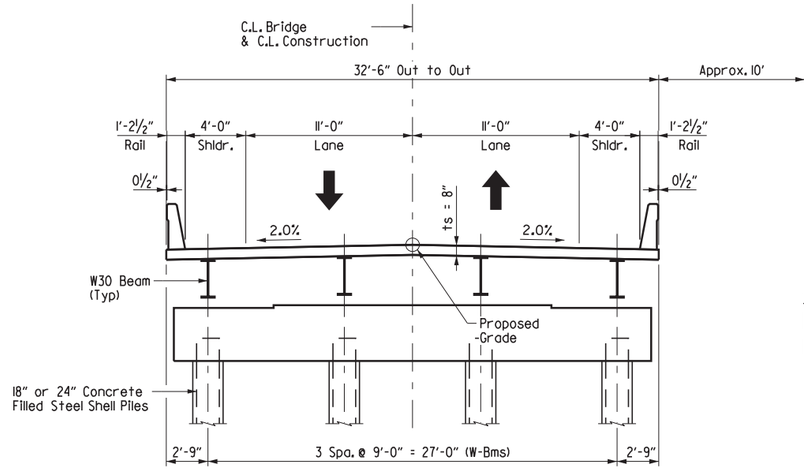
PROTECTIVE SURFACE TREATMENT: Class 2 Protective Surface Treatment shall be applied to the roadway surface and to the roadway face and top of the concrete parapet rails in accordance with Section 803.

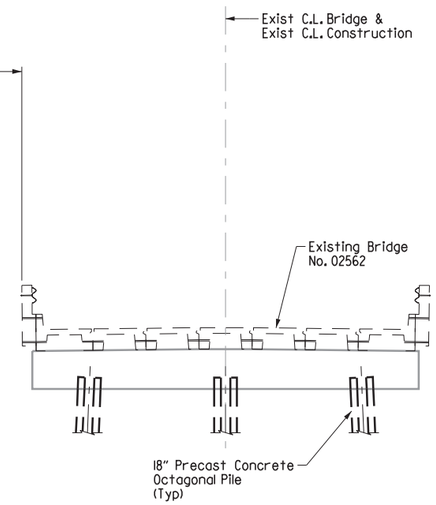
DETAIL DRAWINGS:	DRAWING NO(S).
End Bents	63860
Intermediate Bents	63861
Elastomeric Bearings	63862
25'-0" Integral Continuous W-Beam Unit	63863-63868
General Notes For Steel Bridge Structures	55006
Details For Steel Bridge Structures	55007
Concrete Filled Steel Shell Piling	55021
Details For Bridge Traffic Rail Type SSTR36	55070
Type Special Approach Gutters	63869
Type Special Approach Slab	63870

EXISTING BRIDGE: Existing Bridge No. 02562 (Log Mile 10.50) is 25.7' wide (22.0' clear roadway) and 228.25' long and consists of 12 precast channel beam spans supported by concrete trestle bents on precast concrete piles. The existing bridge is located approximately 40' downstream from the proposed new bridge. Plans of the existing structure, if available, may be obtained upon request to the Construction Contract Procurement Section of the Program Management Division.

REMOVAL AND SALVAGE: After the new bridge is open to traffic, the Contractor shall remove existing Bridge No. 02562 in accordance with Section 205. All material from the existing bridge shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Plans.





TYPICAL SECTION
(Looking Ahead)

STEEL SHELL PILING MIN. REQUIREMENTS

Bent No.	Dia. (in.)	Ultimate Bearing Capacity (Ton)	Shallowest Tip Elev. (ft.)	Hammer Energy (lb.-ft.)
1	18	* 276	139	59,500
2 & 5	24	333	134	83,000
3 & 4	24	363	130	83,000
6	18	233	148	51,000

*Bent 1 Includes downdrag load.

BORING LEGEND

A - Soft to firm silty clay, sandy (fill)
B - Soft to stiff silty clay
C - Dense fine sand, slightly silty
D - Dense fine to medium sand, slightly silty
E - Dense to very dense fine to coarse sand w/ a little fine to coarse gravel
F - Dense to very dense silty fine sand, slightly clayey
G - Very soft silty clay w/ numerous organic inclusions
H - Loose silty fine sand w/ silty clay pockets
I - Medium dense to dense fine to medium sand, slightly silty w/ clay pockets and trace fine to coarse gravel
J - Dense sandy fine to coarse gravel
K - Dense to very dense silty fine to medium sand, slightly clayey
L - Very soft clay
M - Stiff silty clay w/ organic inclusions and silty fine sand partings, seams, and layers
N - Loose to medium dense fine sand, slightly silty
O - Medium dense to very dense fine to medium sand w/ occasional clay pockets
P - Dense clayey fine to coarse sand w/ a little fine gravel
Q - Soft to stiff fine sandy clay (fill)
R - Firm to stiff silty clay, slightly sandy
S - Stiff fine sandy clay
T - Loose to very dense fine to medium sand, slightly silty
U - Dense to very dense silty fine sand
V - Very stiff to hard silty clay

SUMMARY OF SPT N-VALUES (BRIDGE BORINGS)

Sta. 117+60 - 25 Rt. (Boring S1)

0.5-1.5,	N = 9
2.5-3.5,	N = 9
4.5-5.5,	N = 7
6.5-7.5,	N = 5
9-10,	N = 6
14-15,	N = 7
19-20,	N = 10
24-25,	N = 10
29-30,	N = 6
34-35,	N = 32
39-40,	N = 30
44-45,	N = 40
49-50,	N = 42
54-55,	N = 40
59-60,	N = 32
64-65,	N = 37
69-70,	N = 47
74-75,	N = 60
79-80,	N = 36
84-85,	N = 50/7"
89-90,	N = 57
94-95,	N = 52
99-100,	N = 50/2"
109-110,	N = 50/6"
119-120	N = 50/8"

Sta. 118+60 - CL. (Boring S3)

0.5-1.5,	N = O/WOH
4-5,	N = O/WOH
9-10,	N = 5
14-15,	N = 12
19-20,	N = 27
24-25,	N = 18
29-30,	N = 17
34-35,	N = 12
39-40,	N = 25
44-45,	N = 19
49-50,	N = 40
54-55,	N = 51
59-60,	N = 52
64-65,	N = 50/5"
69-70	N = 50/10"

Sta. 119+45 - CL. (Boring S4)

0.5-1.5,	N = Tube
4-5,	N = Tube
9-10,	N = 9
14-15,	N = 17
24-25,	N = 19
29-30,	N = 23
34-35,	N = 18
39-40,	N = 49
44-45,	N = 52
49-50,	N = 65
54-55,	N = 43
59-60,	N = 47
64-65	N = 50/8"

Sta. 120+40 - 25 Rt. (Boring S2)

0.5-1.5,	N = 5
2.5-3.5,	N = 7
4.5-5.5,	N = 23
6.5-7.5,	N = 16
9-10,	N = 7
14-15,	N = 19
19-20,	N = 18
24-25,	N = 13
29-30,	N = 27
34-35,	N = 23
39-40,	N = 22
49-50,	N = 30
54-55,	N = 75
59-60,	N = 51
64-65,	N = 38
69-70,	N = 50/6"
74-75,	N = 50/1"
79-80,	N = 50/3"
84-85,	N = 31
89-90,	N = 50/2"
94-95,	N = 50/2"
99-100,	N = 50/2"
109-110,	N = 50/3"
119-120	N = 50/6"

SHEET 2 OF 2
LAYOUT OF BRIDGE
HIGHWAY 36 OVER BARBERS LAKE

BARBERS LAKE STR. & APPRS. (S)
WHITE COUNTY

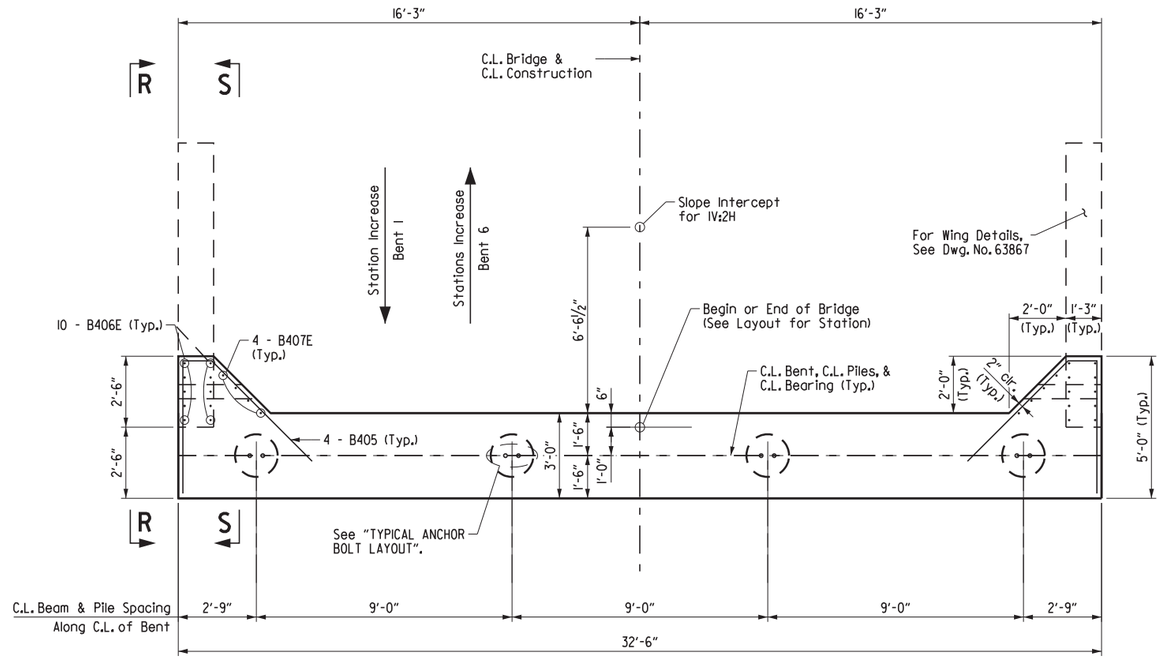
ROUTE 36 SECTION 5
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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CHECKED BY: STS DATE: 2/12/2020
DESIGNED BY: JH DATE: 11/5/2019
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BRIDGE NO. 07518 DRAWING NO. 63859

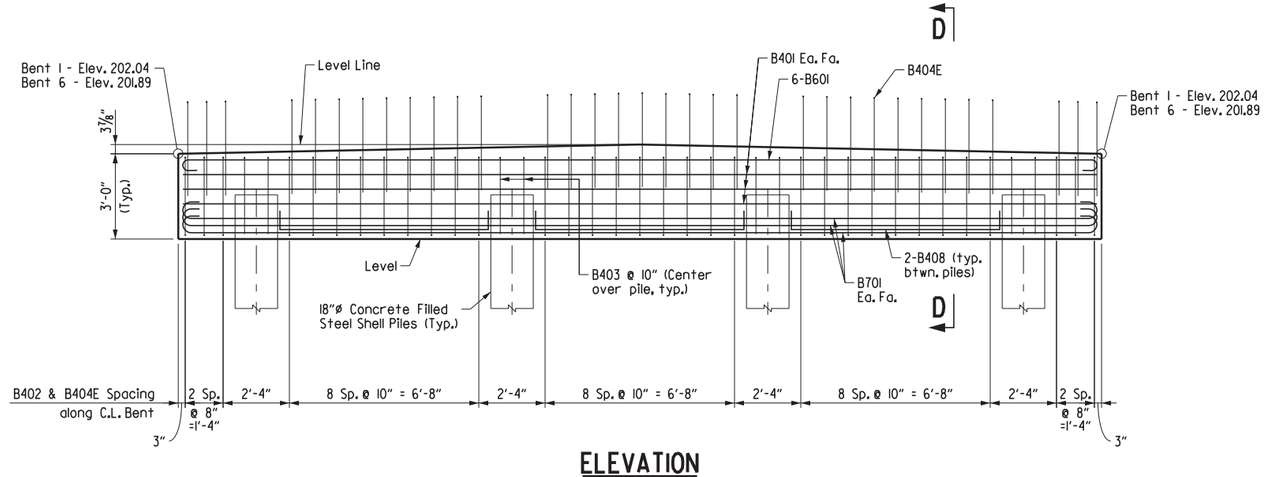
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				6	ARK.			
				JOB NO.		050417	41	73
				(1) 07518		END BENTS		63860



PLAN

SCALE: ⅜" = 1'-0"



ELEVATION

End Bent 1- Looking Back
End Bent 6 - Looking Ahead
SCALE: ⅜" = 1'-0"

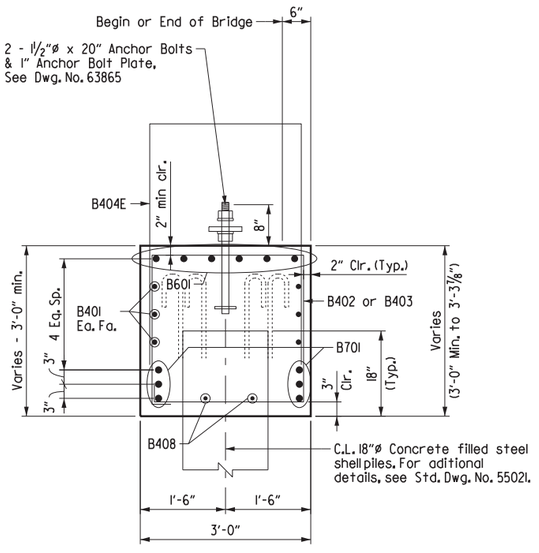
Notes:
All bars designated with an "E" suffix are to be epoxy coated.

B404E bars shall have a 1'-6" embedment into the cap. B406E & B407E bars shall have a 2'-10" embedment into the cap.

Granular Backfill and Pipe Underdrain required behind Cap. See Dwg. No. 63866 - 63867

For applicable notes, see "STANDARD GENERAL NOTES FOR STEEL BRIDGE STRUCTURES", Std. Dwg. No. 55006 and Project General notes on Dwg. No. 63859

For View R-R and View S-S, see Dwg. No. 63867



Alternate pile anchorage shall be used at end bents.
For details of pile anchorage, see Std. Dwg. No. 55021.

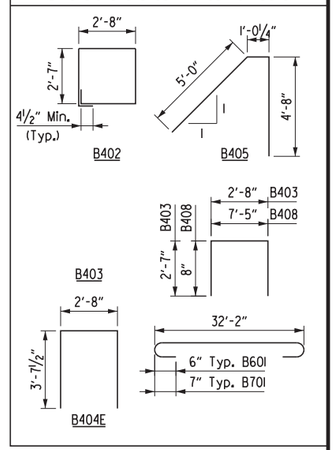
SECTION D-D

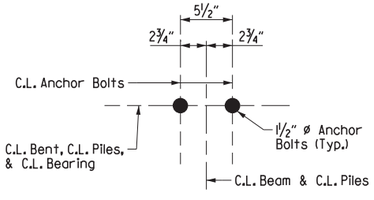
SCALE: ¾" = 1'-0"

BAR LIST - PER BENT

MARK	NO. REQ'D.	LENGTH	P.D.
B401	6	32'-2"	Str.
B402	33	10'-10"	2"
B403	8	7'-8"	2"
B404E	33	9'-9"	2"
B405	8	10'-7"	2"
B406E	20	6'-2"	Str.
B407E	8	4'-11"	Str.
B408	6	8'-8"	2"
B601	6	33'-6"	4 ½"
B701	6	32'-2"	5 ¼"

Bending Diagrams
(Dimensions are out to out of bars)





TYPICAL ANCHOR BOLT LAYOUT

No Scale

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13072
STEPHEN T. SMILEY

Stephen T. Smiley
12 Feb 2021

DETAILS OF END BENTS
HIGHWAY 36 OVER BARBERS LAKE
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

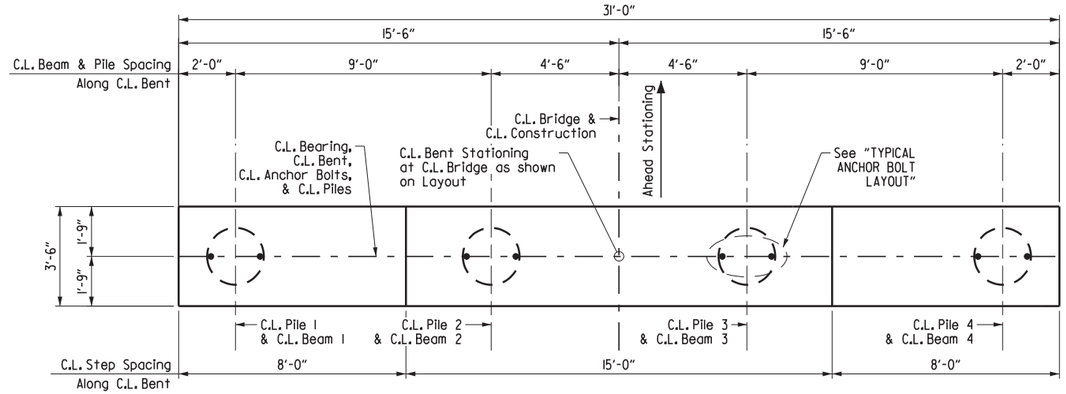
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BRIDGE NO. 07518 DRAWING NO. 63860

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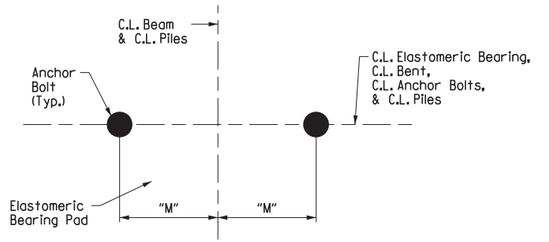
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				6	ARK.			
				JOB NO.		050417	42	73
				1 07518		INT. BENTS		63861



PLAN

SCALE: 3/8" = 1'-0"



TYPICAL ANCHOR BOLT LAYOUT

No Scale

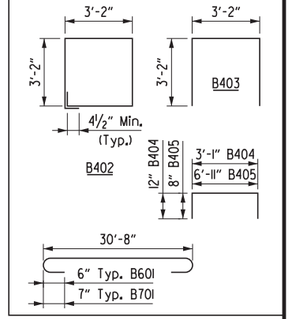
For details and dimension "M" of Elastomeric Bearing, see Dwg. No. 63862

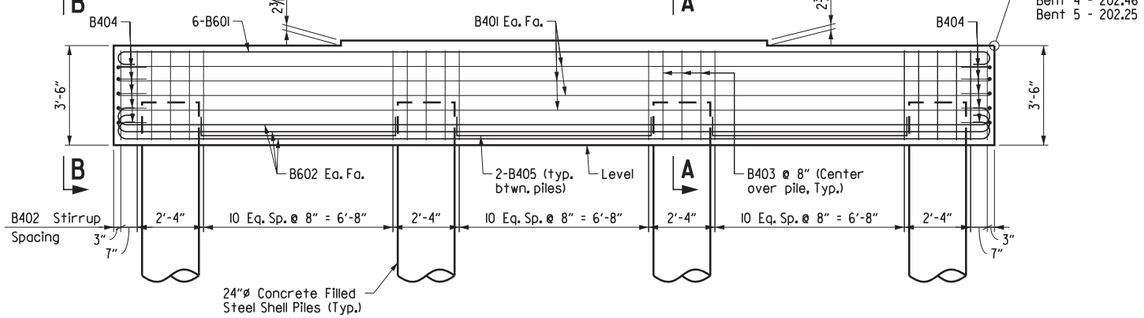
For applicable notes, see "STANDARD GENERAL NOTES FOR STEEL BRIDGE STRUCTURES", Std. Dwg. No. 55006 and Project General notes on Dwg. No. 63859

BAR LIST - PER BENT

MARK	NO. REQ'D.	LENGTH	P.D.
B401	8	30'-8"	Str.
B402	37	13'-0"	2"
B403	12	9'-4"	2"
B404	10	4'-11"	2"
B405	6	8'-2"	2"
B601	6	32'-0"	4 1/2"
B701	8	32'-4"	5 1/4"

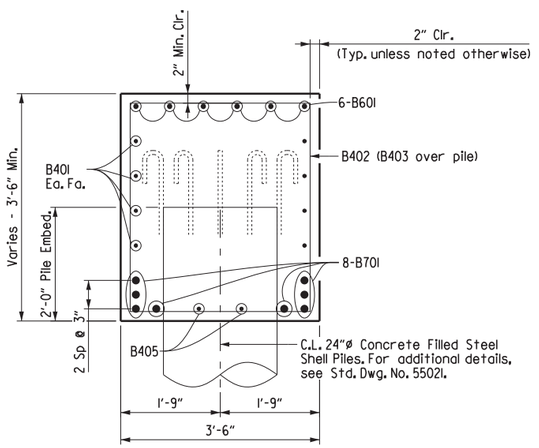
Bending Diagrams
(Dimensions are out to out of bars)





ELEVATION

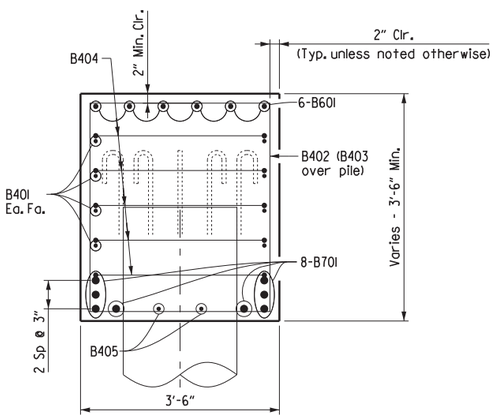
Looking Ahead
SCALE: 3/8" = 1'-0"



For details of pile anchorage, see Std. Dwg. No. 55021.

SECTION A-A

SCALE: 3/4" = 1'-0"



VIEW B-B

SCALE: 3/4" = 1'-0"

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13072
STEPHEN T. SMILEY

Stephen T. Smiley 12 Feb 2021

DETAILS OF INTERMEDIATE BENTS HIGHWAY 36 OVER BARBERS LAKE

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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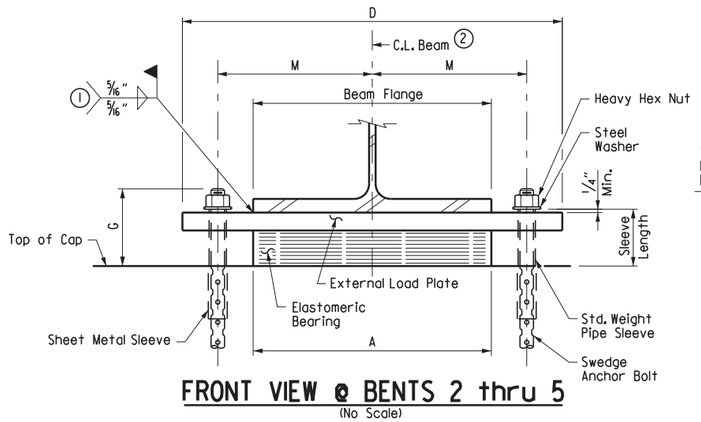
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				6	ARK.			
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				(1) 07518		ELASTOMERIC BEARINGS		63862

TABLE OF FABRICATOR VARIABLES

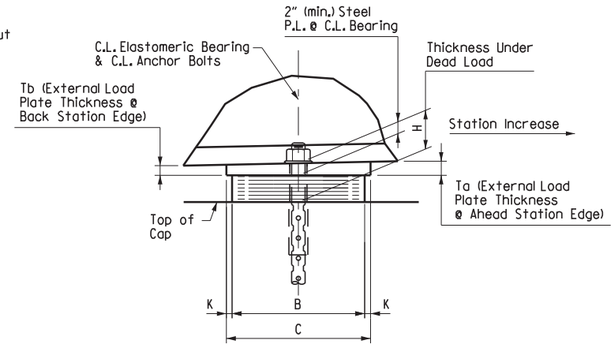
* Maximum Load = LRFD Service Limit I State

LOCATION							ELASTOMER PAD							EXTERNAL LOAD PLATE									ANCHOR BOLT				
BENT NO.	BEAM NO(S).	BEARING TYPE	NO. of BEARINGS EACH BENT	*MAXIMUM DESIGN LOAD (KIPS)	G (in.)	H (in.)	A (in.)	B (in.)	N (ea)	ti (in.)	te (in.)	NO. & THICKNESS OF STEEL LAMINAE	T (in.)	C (in.)	D (in.)	E (in.)	F (in.)	J (in.)	K (in.)	M (in.)	Ta (in.)	Tb (in.)	ANCHOR BOLT (in.)	ANCHOR BOLT GRADE	PIPE SLEEVE SIZE	SHEET METAL SLEEVE SIZE	STEEL (3) WASHER O.D. (in.)
2	ALL	Fixed	4	181	7 7/8	4 3/8	14	12	3	1/2	1/4	4 @ 12 Ga.	2 7/16	13	27 3/8	3 5/8	3 5/8	-	1/2	10 3/8	2.03	1.97	2 1/4" x 32"	55	2 1/2" x 4 5/8"	4" x 7"	5 1/8
3	ALL	Fixed	4	174	7 7/8	4 3/8	14	12	3	1/2	1/4	4 @ 12 Ga.	2 7/16	13	27 3/8	3 5/8	3 5/8	-	1/2	10 3/8	2.01	1.99	2 1/4" x 32"	55	2 1/2" x 4 5/8"	4" x 7"	5 1/8
4	ALL	Fixed	4	174	7 7/8	4 3/8	14	12	3	1/2	1/4	4 @ 12 Ga.	2 7/16	13	27 3/8	3 5/8	3 5/8	-	1/2	10 3/8	1.99	2.01	2 1/4" x 32"	55	2 1/2" x 4 5/8"	4" x 7"	5 1/8
5	ALL	Fixed	4	181	7 7/8	4 3/8	14	12	3	1/2	1/4	4 @ 12 Ga.	2 7/16	13	27 3/8	3 5/8	3 5/8	-	1/2	10 3/8	1.96	2.04	2 1/4" x 32"	55	2 1/2" x 4 5/8"	4" x 7"	5 1/8



FRONT VIEW @ BENTS 2 thru 5
(No Scale)

Note:
The direction of bevel of the external load plate may not be accurately depicted with respect to the "T(a)" and "T(b)" values shown in the "Table of Fabricator Variables."



SIDE VIEW @ BENTS 2 thru 5
(No Scale)

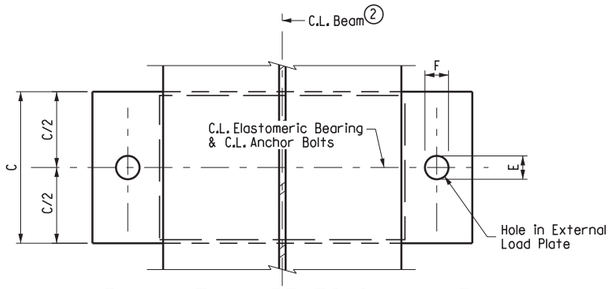
Prior to erection of the beams, The Contractor shall verify the orientation of the bearing with respect to Ta and Tb.

(1) Unless otherwise approved by the Engineer, welding of the external load plate at expansion bearings to the Beam will be allowed only when 1) the approximate average air temperature during the 24 hour period immediately preceeding welding is between 40°F and 80°F; and 2) the slots in the external load plate are positioned to center on the anchor bolts; and 3) no horizontal deformation of the elastomeric pad is evident. If welding at other temperatures is required, the Engineer will provide adjustment data.

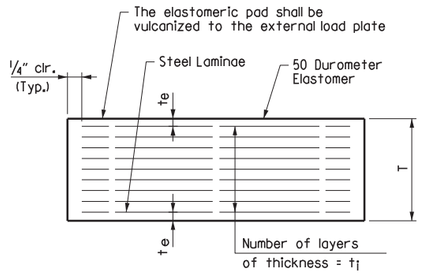
Care shall be taken to ensure that the external load plate is in full and complete contact with the beam or girder flange before welding begins.

(2) C.L. of Elastomeric Pad shall be aligned with the C.L. of Beam.

(3) For fabrication of the Steel Washers when the tabulated O.D. exceeds ASTM F436, the I.D. of the washers shall conform to ASTM F436 and the thickness of 3/8" Gr. 50 shall be used.

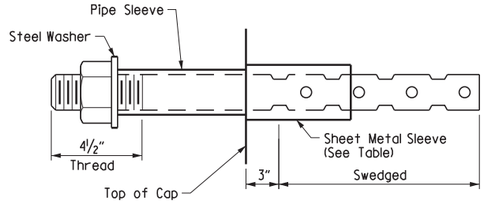


PLAN VIEW @ BENTS 2 thru 5
(No Scale)



t_i = thickness of elastomer between steel laminae.
t_e = thickness of elastomer cover on top and bottom of pad.
N = number of elastomer layers of thickness t_i.

ELASTOMERIC BEARING
(No Scale)



ANCHOR BOLT DETAIL
(No Scale)

Anchor bolts may be cast in place or drilled and grouted into place. If Anchor Bolts are to be cast in place, the Galvanized Sheet Metal Sleeves will not be required.

If Anchor bolts are to be drilled and grouted in place, the Galvanized Sheet Metal Sleeves shall be cast in place as shown. Sleeves shall be dry packed with Styrofoam, urethane foam or approved equal prior to pouring of concrete. After pouring of the cap and prior to erection of Structural Steel, the dry pack shall be removed and holes for the anchor bolts shall be accurately drilled into the concrete. Bolts placed in drilled holes shall be accurately set fixed using a QPL approved epoxy or non-shrink grout that completely fills the holes. Galvanized sheet metal sleeves shall meet the requirements of ASTM 653, CS Type B or approved equivalent, be of 16 gage thickness, and be galvanized according to ASTM B695, Class 50. Galvanized Sheet Metal Sleeves will not be paid for directly but will be considered subsidiary to the item "Structural Steel in Beam Spans, (ASTM A709, Gr. 50W)".

GENERAL NOTES

Elastomeric Bearings shall conform to Section 808 and shall be paid for at the unit price bid for "Elastomeric Bearings".

External load plates shall conform to ASTM A709, Grade 50W. Pipe sleeves shall be ASTM A500, Grade B, and shall be galvanized to conform to AASHTO M 232, Class C or ASTM B695, Class 50.

External load plates shall be completely fabricated (including bevel and bolt holes) and shall be cleaned before vulcanizing to the elastomeric bearing. The surface in contact with the elastomeric bearing shall be cleaned in accordance with Subsection 808.03. Other surfaces shall be blast cleaned in accordance with Subsection 807.84(b) for painted steel and 807.84(e) for unpainted Grade 50W steel.

Anchor Bolts, Washers and Nuts shall conform to Subsection 807.07. The anchor bolt grade of steel shall be a specified in the "Table of Fabricator Variables". Indentations shall be circular with rounded bottoms and staggered as shown in the details.

Pipe Sleeves, Anchor Bolts, Washers and Nuts shall be paid for at the unit price bid for "Structural Steel in Beam Spans (ASTM A709, Gr. 50W)". External load plates will not be measured and paid for seperately, but will be considered incidental to the unit price bid for "Elastomeric Bearings".

Bearings shall be seated in accordance with Subsection 808.08. This work and materials are considered subsidiary to the item "Elastomeric Bearings" and will not be paid for directly.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
JESSE D. HARRELL
2-10-2021

DETAILS OF ELASTOMERIC BEARINGS
HIGHWAY 36 OVER BARBERS LAKE
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JH DATE: 6/18/20
CHECKED BY: STS DATE: 6/23/20
DESIGNED BY: JH DATE: 6/15/20
FILENAME: b050417_el.dgn
SCALE: AS SHOWN

BRIDGE NO. 07518 DRAWING NO. 63862

4:15:29 PM 2/10/2021 jHarrell
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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	44	73
				(1) 07518		251' INT. CONT. W-BEAM UNIT		63863

SLAB REINFORCING:

Transverse:
S500E @ 12" Centers (Top & Bottom)
S603E @ 12" Centers (Top Overhang)
S501E @ 12" Centers (Bent up over beams)

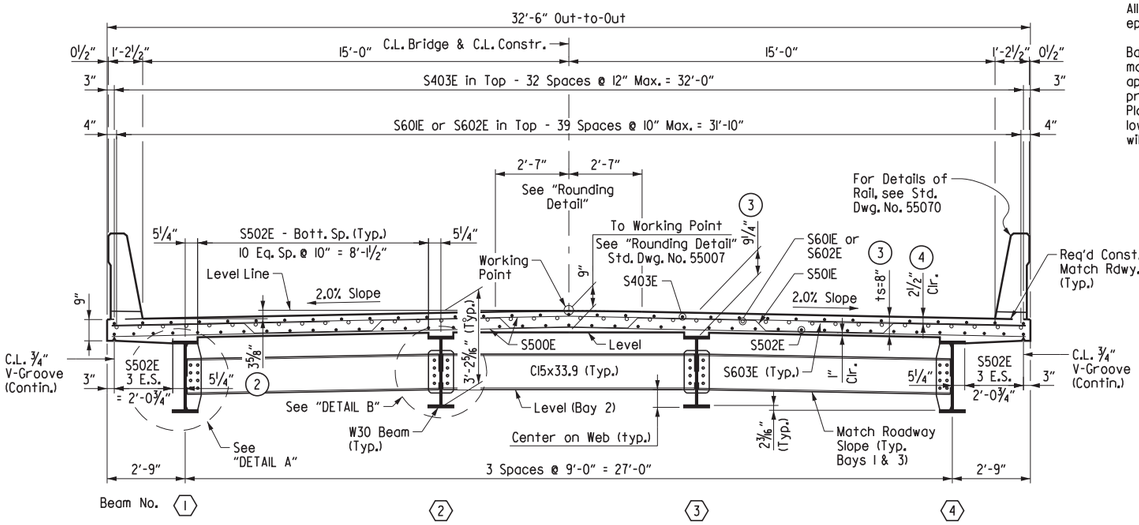
Longitudinal:
S403E @ 12" Centers (Top Temperature)
S601E & S602E @ 10" Centers (Placed in Top as shown over Supports)
S502E @ place as shown (Bottom)

(1) See "PLATE CLIP DETAIL"

(2) Working Point to gutterline.

(3) See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE", Std. Dwg. No. 55007. For both removable and permanent steel deck forms the haunch dimension may vary within the following limits: Minimum occurs when top flange contacts bottom reinforcing steel; Maximum = top flange thickness plus 1 7/8". See "SHEAR CONNECTOR DETAIL" on Std. Dwg. No. 55007 for shear connector requirements.

(4) Tolerance: Minus = 1/4", Plus equal to amount of slab thickening used to meet thickness tolerance. See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE", Std. Dwg. No. 55007.



TYPICAL ROADWAY SECTION

(Looking Ahead)
Scale: 3/8" = 1'-0"

NOTES:

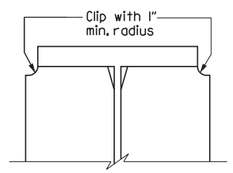
For applicable notes, see "STANDARD GENERAL NOTES FOR STEEL BRIDGE STRUCTURES", Std. Dwg. No. 55006 and Project General notes on Dwg. No. 63859

One Epoxy Coated #5 bar in the top and one Epoxy Coated #5 bar in the bottom may be substituted for each bar S501E. Payment will be based on the weight of bar S501E.

Class 2 Protective Surface Treatment shall be applied to the Roadway Surface and the face and top of parapet rail.

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

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. Placement of slab bolsters or hi-chairs with full length lower runners directly on removable deck forms will not be allowed. See subsection 804.06. (Typ.)



If permanent steel bridge deck forms are used, the fabricator shall clip the plate as necessary to accommodate the deck form support.

PLATE CLIP DETAIL

Not to Scale

BAR LIST

	Mark	No. Req'd.	Length	Pin Dia.
Deck	D501E	62	5'-0"	Str.
	S401E	66	7'-8"	2"
	S402E	14	32'-2"	Str.
	S403E	231	38'-3"	Str.
	S500E	504	32'-2"	Str.
	S501E	247	32'-8"	3"
	S502E	210	53'-0"	Str.
	S601E	80	11'-0"	4 ½"
	S602E	160	32'-0"	Str.
	S603E	502	15'-2"	6"
Rail (Type SSTR36)	R400E	160	5'-3"	2 ½"
	R401E	928	5'-11"	2 ½"
	R402E	144	5'-6"	Str.
	R403E	984	3'-6"	3 ¾"
	R404E	64	7'-8"	Str.
	R405E	128	9'-8"	Str.
	R406E	160	15'-8"	Str.
	R407E	32	3'-0"	Str.
Wing	W401E	80	3'-11"	3 ¾"
	W402E	60	7'-1"	2"
	W501E	32	7'-7"	3 ¾"
	W601E	12	7'-1"	4 ½"
	W701E	40	9'-8"	Str.

Bending Diagrams
(Dimensions are out to out of bars)

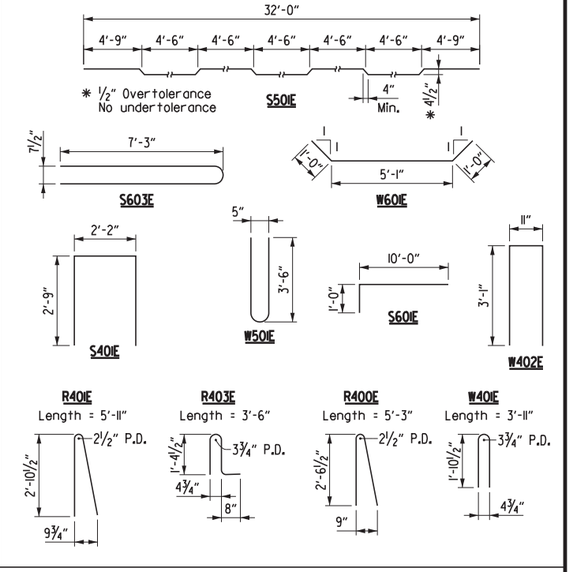
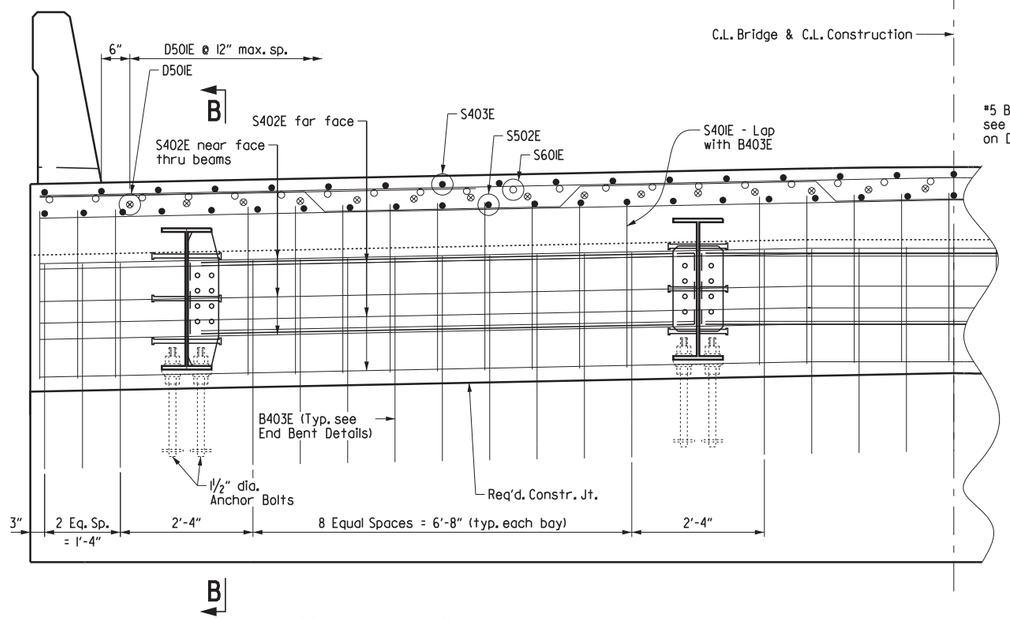


TABLE OF VARIABLES

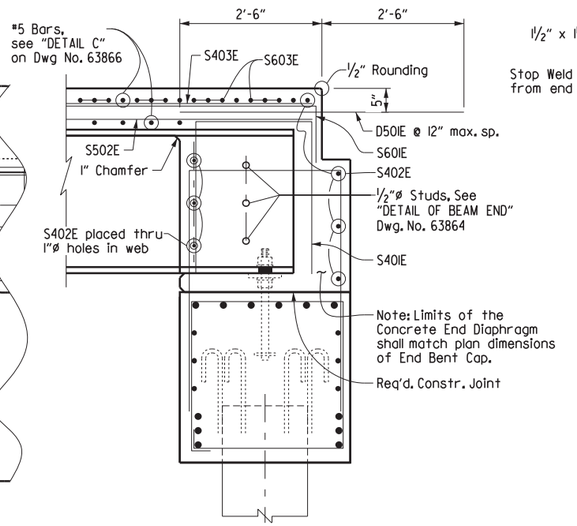
For Details of Rail, see Std. Dwg. No. 55070

Closed Rail Panels				Open Rail Panels							
Count	Panel Length	"A"	"R4XXE"	Count	Panel Length	"B"	"C"	"D"	"E"	"F"	"R4XXE"
8	8'-0"	15	R404E	20	16'-0"	5	8	3	11	6	R406E
16	10'-0"	19	R405E								



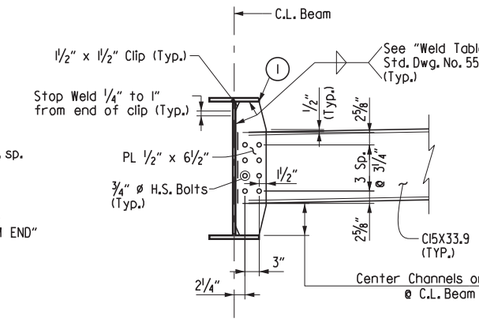
ROADWAY SECTION AT END BENT

(Looking Ahead)
Scale: 3/4" = 1'-0"



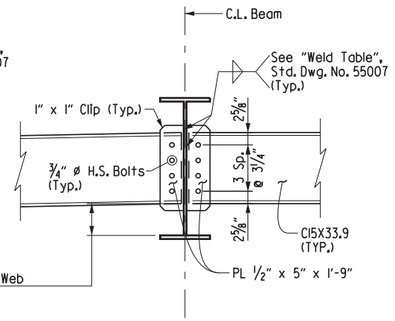
SECTION B-B

Scale: 3/4" = 1'-0"



DETAIL A

Scale: 3/4" = 1'-0"



DETAIL B

Scale: 3/4" = 1'-0"

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13072
STEPHEN T. SMILEY

Stephen T. Smiley 10 Feb 2021

SHEET 1 OF 6
DETAILS OF 251'-0"
INTEGRAL CONTINUOUS W-BEAM UNIT
HIGHWAY 36 OVER BARBERS LAKE
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY:	JH	DATE:	6/20/20	FILENAME:	b050417_sil.dgn
CHECKED BY:	STS	DATE:	6/25/20	SCALE:	AS SHOWN
DESIGNED BY:	JH	DATE:	5/01/20		

BRIDGE NO. 07518 DRAWING NO. 63863

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	45	73
				(1) 07518		251' INT. CONT. W-BEAM UNIT		63864

All structural steel shall be ASTM A709, Grade 50W unless otherwise noted and shall be paid for as "Structural Steel in Beam Spans (ASTM A709, Gr. 50W)" See Std. Dwg. Nos. 55006 and 55007 for additional notes and details.

For "SHEAR CONNECTOR DETAILS" and "WELD TABLE", see Std. Dwg. No. 55007.

All field splice bolts shall be 7/8"ø hi-strength bolts.
All holes for splices bolts shall be 15/16 ø.

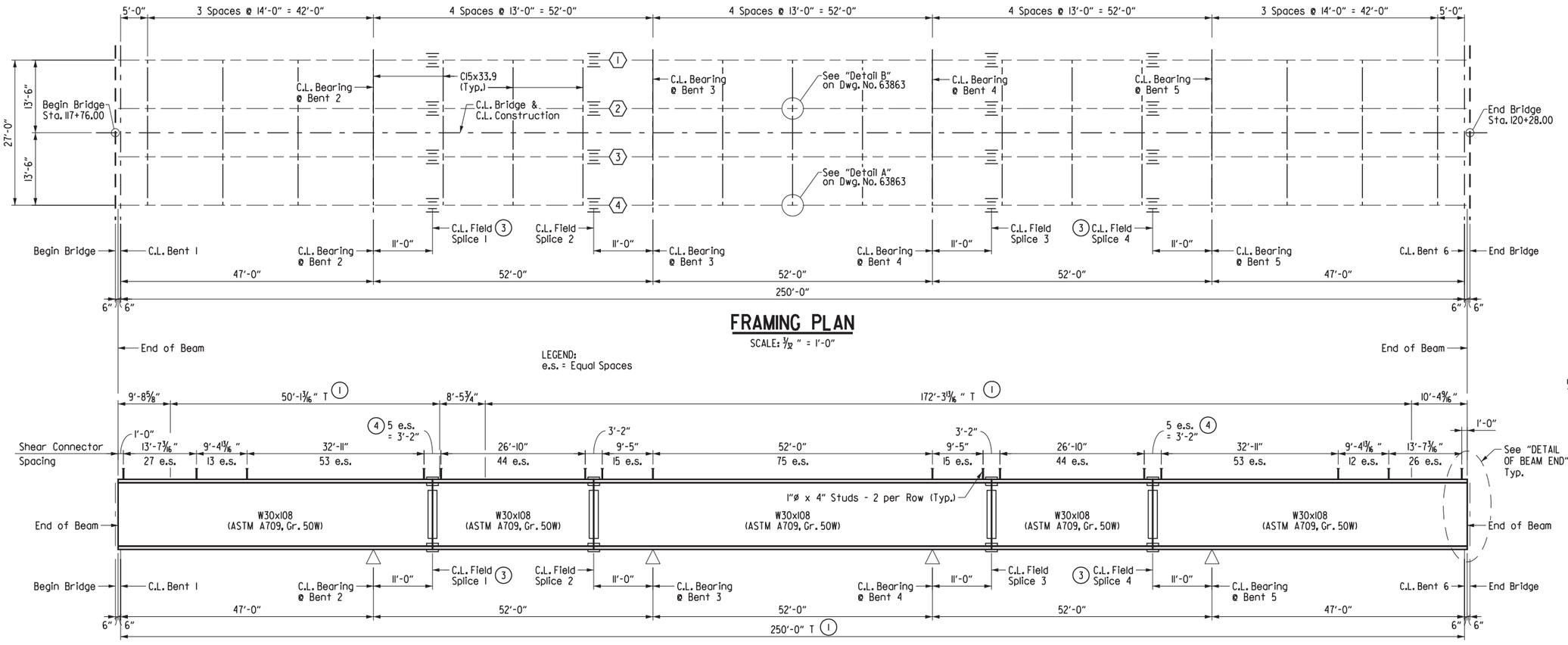
(X) Beam Number

(1) T denotes portions of the flange that may always or may sometimes be in tension.

(2) Prior to pouring concrete diaphragm, remove mill scale from surfaces to be in contact with concrete with a wire brush at beam ends.

(3) Bolted field splices shown may be eliminated or shop welded splices may be substituted with the approval of the Engineer. Payment will be made on the basis of the plan quantities.

(4) If the optional bolted field splice is used, eliminate the shear connectors at this location.

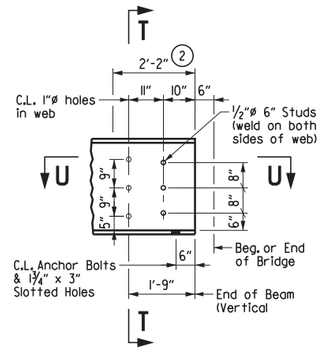


FRAMING PLAN

SCALE: 1/32 " = 1'-0"

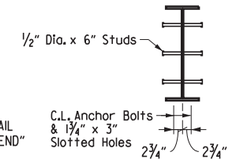
TYPICAL BEAM ELEVATION

NO SCALE



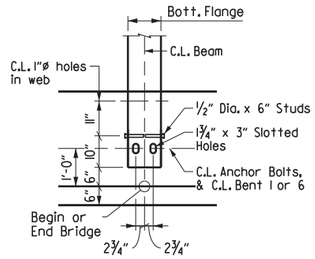
DETAIL OF BEAM END (2)

SCALE: 1/2" = 1'-0"



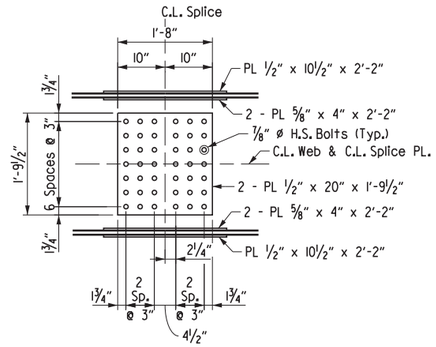
VIEW T-T

SCALE: 1/2" = 1'-0"



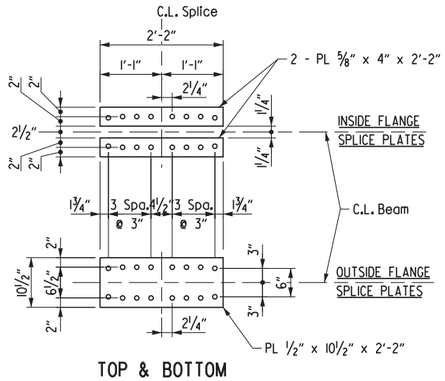
SECTION U-U

SCALE: 1/2" = 1'-0"



WEB SPLICE DETAIL

SCALE: 3/4" = 1'-0"



TOP & BOTTOM

FLANGE SPLICE DETAIL

SCALE: 3/4" = 1'-0"

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13072
STEPHEN T. SMILEY

Stephen T. Smiley 10 Feb 2021

SHEET 2 OF 6
DETAILS OF 251'-0"
INTEGRAL CONTINUOUS W-BEAM UNIT
HIGHWAY 36 OVER BARBERS LAKE
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY:	JH	DATE:	6/20/20	FILENAME:	b050417_sl2.dgn
CHECKED BY:	STS	DATE:	6/25/20	SCALE:	AS SHOWN
DESIGNED BY:	JH	DATE:	5/01/20		

BRIDGE NO. 07518 DRAWING NO. 63864

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TABLE OF DEAD LOAD DEFLECTIONS

	Point	Vertical Dead Load Deflection (in.)					
		Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Rail	
		Ext. Beam	Int. Beam	Ext. Beam	Int. Beam	Ext. Beam	Int. Beam
	1.0	0	0	0	0	0	0
Span 1	1.1	0.018	0.019	0.136	0.158	0.138	0.16
Span 1	1.2	0.031	0.034	0.243	0.282	0.247	0.286
Span 1	1.3	0.041	0.044	0.322	0.372	0.33	0.379
Span 1	1.4	0.047	0.051	0.372	0.43	0.384	0.441
Span 1	1.5	0.047	0.05	0.37	0.427	0.382	0.439
Span 1	1.6	0.041	0.044	0.326	0.376	0.337	0.386
Span 1	1.7	0.03	0.032	0.24	0.276	0.248	0.284
Span 1	1.8	0.021	0.023	0.171	0.197	0.177	0.202
Span 1	1.9	0.011	0.012	0.091	0.105	0.094	0.108
	2.0	0	0	0	0	0	0
Span 2	2.1	0	0	-0.004	-0.003	-0.001	0
Span 2	2.2	0.007	0.008	0.038	0.049	0.048	0.059
Span 2	2.3	0.015	0.016	0.092	0.115	0.109	0.131
Span 2	2.4	0.02	0.022	0.129	0.159	0.15	0.179
Span 2	2.5	0.025	0.028	0.167	0.205	0.191	0.228
Span 2	2.6	0.024	0.026	0.158	0.194	0.181	0.215
Span 2	2.7	0.018	0.02	0.122	0.15	0.139	0.167
Span 2	2.8	0.012	0.013	0.078	0.096	0.089	0.107
Span 2	2.9	0.006	0.007	0.04	0.05	0.046	0.056
	3	0	0	0	0	0	0
Span 3	3.1	0.004	0.004	0.031	0.035	0.032	0.036
Span 3	3.2	0.013	0.014	0.101	0.117	0.108	0.124
Span 3	3.3	0.023	0.024	0.176	0.204	0.189	0.216
Span 3	3.4	0.029	0.031	0.221	0.256	0.238	0.272
Span 3	3.5	0.034	0.036	0.258	0.3	0.278	0.319
Span 3	3.6	0.031	0.034	0.241	0.28	0.26	0.298
Span 3	3.7	0.025	0.026	0.19	0.22	0.204	0.234
Span 3	3.8	0.016	0.017	0.125	0.145	0.134	0.154
Span 3	3.9	0.008	0.009	0.066	0.076	0.071	0.08
	4	0	0	0	0	0	0
Span 4	4.1	0.002	0.002	0.008	0.011	0.01	0.013
Span 4	4.2	0.009	0.01	0.055	0.069	0.064	0.078
Span 4	4.3	0.017	0.018	0.109	0.134	0.125	0.149
Span 4	4.4	0.021	0.023	0.138	0.17	0.158	0.189
Span 4	4.5	0.025	0.028	0.163	0.202	0.187	0.225
Span 4	4.6	0.023	0.025	0.146	0.181	0.169	0.203
Span 4	4.7	0.017	0.019	0.103	0.129	0.121	0.146
Span 4	4.8	0.01	0.011	0.056	0.071	0.068	0.083
Span 4	4.9	0.005	0.005	0.026	0.034	0.032	0.04
	5	0	0	0	0	0	0
Span 5	5.1	0.005	0.005	0.045	0.051	0.045	0.051
Span 5	5.2	0.015	0.016	0.128	0.146	0.131	0.148
Span 5	5.3	0.03	0.032	0.249	0.286	0.257	0.294
Span 5	5.4	0.037	0.04	0.306	0.352	0.316	0.361
Span 5	5.5	0.043	0.046	0.353	0.407	0.364	0.417
Span 5	5.6	0.048	0.051	0.386	0.446	0.398	0.457
Span 5	5.7	0.043	0.046	0.347	0.401	0.357	0.41
Span 5	5.8	0.033	0.035	0.265	0.306	0.272	0.312
Span 5	5.9	0.018	0.019	0.142	0.165	0.144	0.167
	6.0	0	0	0	0	0	0

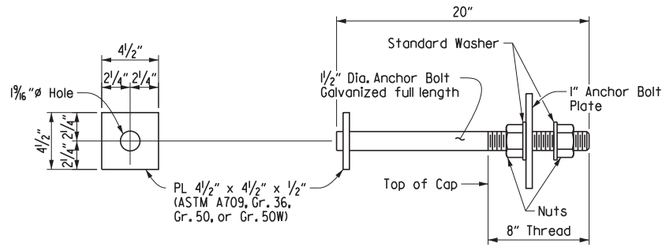
NOTES:
See Std. Dwg. No. 55006 for General Notes.

Anchor bolts shall comply with AASHTO M 314, Grade 55, with Supplementary Requirement S1, and galvanized according to Subsection 807.07. Nuts and Washers for bolts shall be as specified in Subsection 807.07.

Use lower nut and washer to adjust to grade. Snug tight top nut and washer after grade is adjusted.

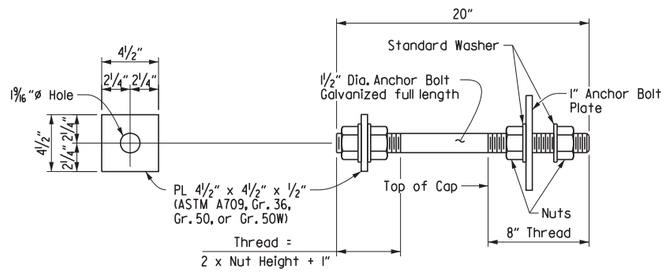
Bolts, nuts, and washers shall be paid for at the unit price bid for "Structural Steel in Beam Spans (ASTM A709, Gr. 50W)".

Plates shall be ASTM A709 Gr. 36, Gr. 50 or Gr. 50W and shall be galvanized in accordance with Subsection 807.07.



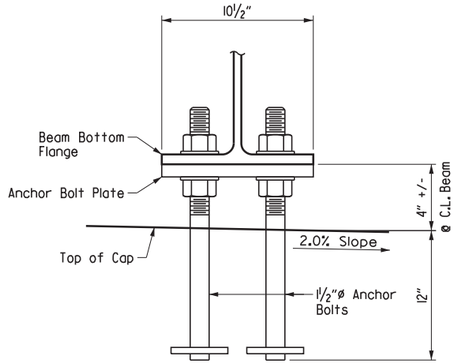
ANCHOR BOLT DETAIL

(Ship complete assembly)
NO SCALE



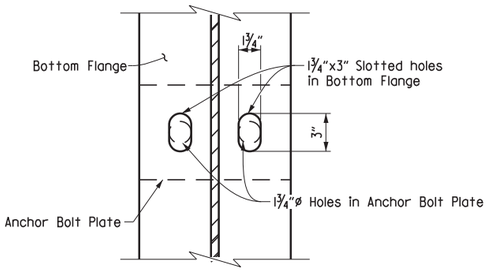
ALTERNATE ANCHOR BOLT DETAIL

(Ship complete assembly)
NO SCALE



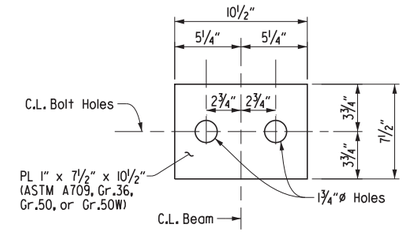
ANCHOR BOLT ELEVATION DETAIL

NO SCALE



BOTTOM FLANGE DETAIL

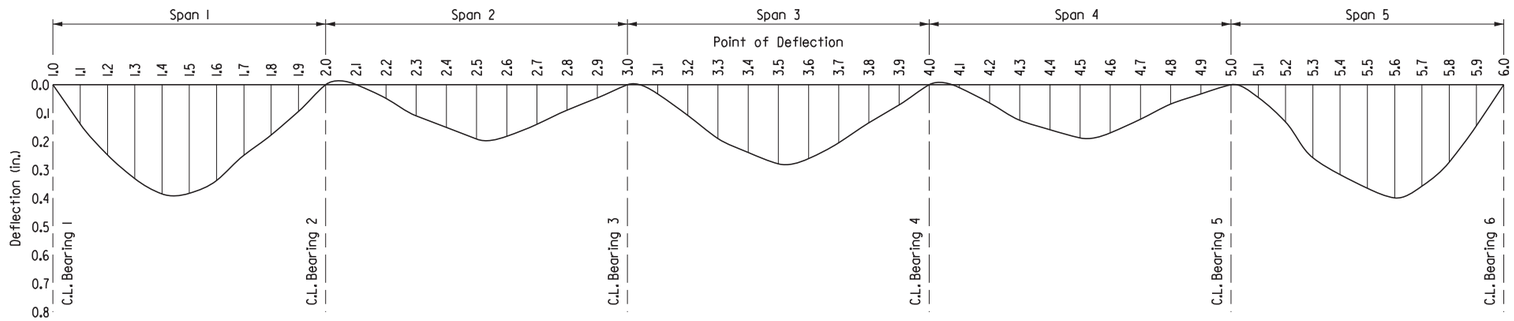
NO SCALE



Note: See "SECTION U-U" on Dwg. No. 63864 for additional information.

ANCHOR BOLT PLATE DETAIL

(Also for use as template during cap pour)
NO SCALE



DEAD LOAD DEFLECTION DIAGRAM

NO SCALE
(One shown, others similar, see table.)

NOTES:
Camber for Dead Load Deflection plus Vertical Curve +/-¼" tolerance.
Deflections shown are along C.L. Beam from a chord from C.L. Bearing to C.L. Bearing. Negative sign (-) indicates upward deflection.
Vertical curve corrections not included.
Dead Load Deflections based on use of removable forms.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13072
STEPHEN T. SMILEY

Stephen T. Smiley
10 Feb 2021

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	46	73
				1 07518		251' INT. CONT. W-BEAM UNIT		63865

SHEET 3 OF 6
DETAILS OF 251'-0"
INTEGRAL CONTINUOUS W-BEAM UNIT
HIGHWAY 36 OVER BARBERS LAKE
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JH DATE: 6/20/20
CHECKED BY: STS DATE: 6/25/20
DESIGNED BY: JH DATE: 5/01/20
FILENAME: b050417_sl3.dgn
SCALE: AS SHOWN

BRIDGE NO. 07518 DRAWING NO. 63865

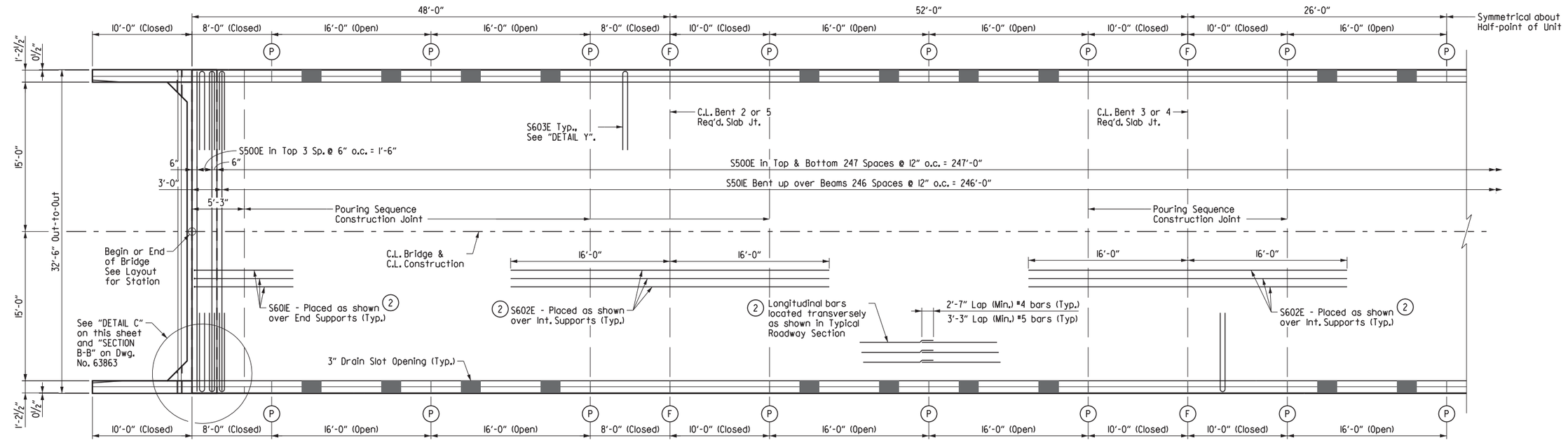
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4:15:33 PM
2/10/2021
jHarrell

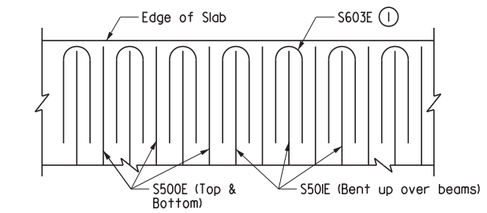
(P) Partial depth rail joint at this location. (Stop 1'-4" above top of slab)
(F) Full depth rail joint at this location. (Stop 6" above top of slab)

(1) Spaced equally between every other top transverse bar as shown.
(2) For placement, refer to "TYPICAL ROADWAY SECTION", see Dwg. No. 63863

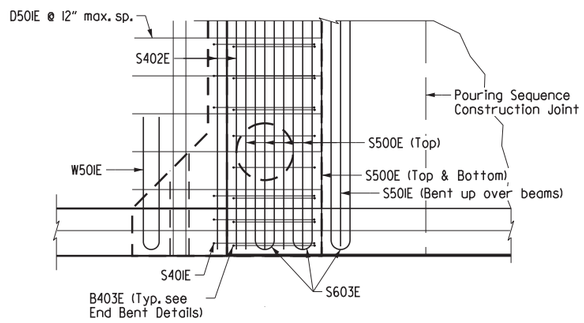
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				JOB NO.		050417	47	73
				(1) 07518		251' INT. CONT. W-BEAM UNIT		63866



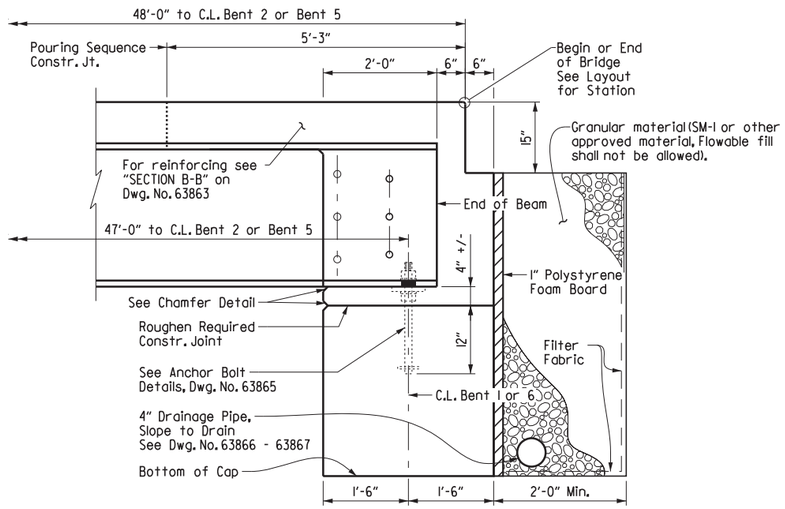
HALF REINFORCING PLAN
SCALE: 3/16" = 1'-0"



DETAIL Y
No Scale



DETAIL C
SCALE: 3/4" = 1'-0"



SECTION AT END BENT
SCALE: 3/4" = 1'-0"

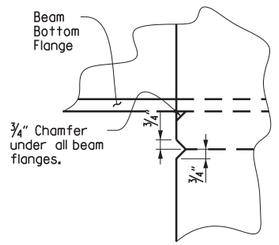
NOTES:
For Bar List, see Dwg. No. 63863

Limits of the Concrete End Diaphragm shall match plan dimensions of End Bent Cap.

Rail and Wings are included in span quantities.

For additional details of pipe underdrain see Std. Dwg. PU-1 and Section 611. Pipe underdrains will not be measured or paid for separately, but will be considered subsidiary to the unit price bid for "Unclassified Excavation".

1" Polystyrene Foam Board, Filter Fabric, and Granular Material shall not be paid for directly, but shall be considered subsidiary to the various bid items.



CHAMFER DETAIL
No Scale

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13072
STEPHEN T. SMILEY
Stephen T. Smiley 10 Feb 2021

SHEET 4 OF 6
DETAILS OF 251'-0"
INTEGRAL CONTINUOUS W-BEAM UNIT
HIGHWAY 36 OVER BARBERS LAKE
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

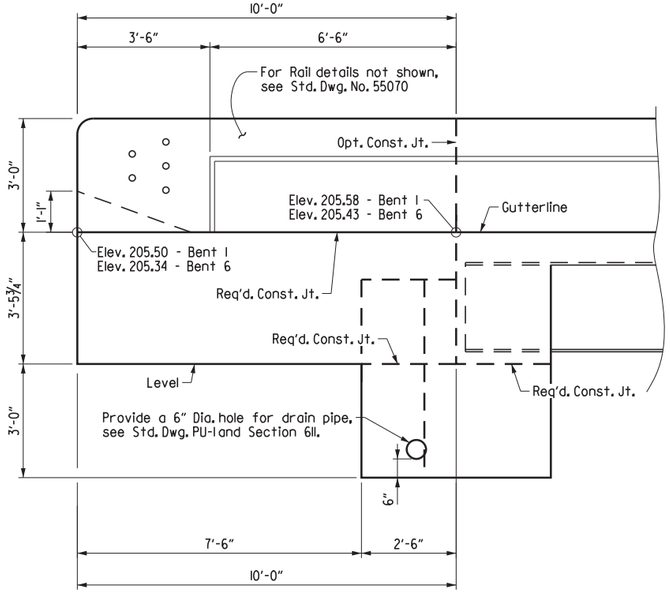
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DESIGNED BY:	JH	DATE:	5/01/20		

BRIDGE NO. 07518 DRAWING NO. 63866

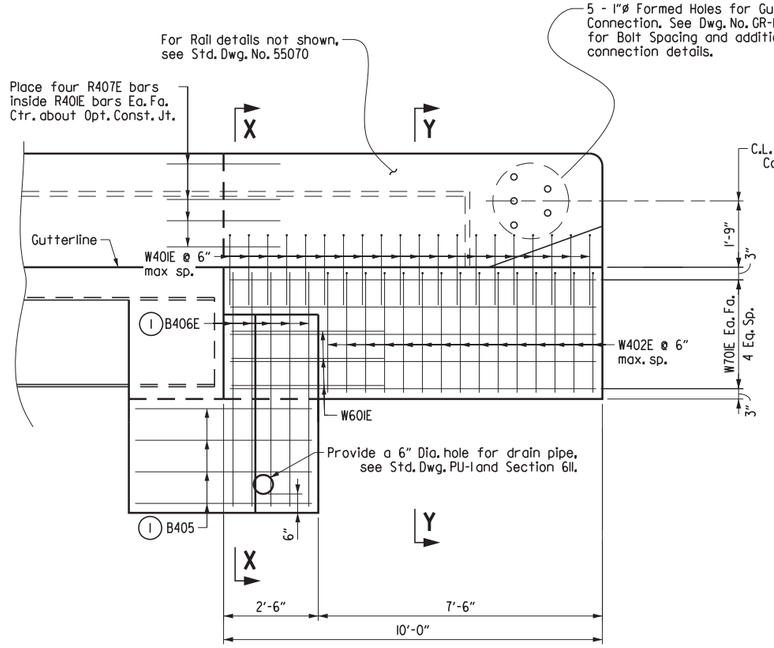
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2/10/2021
jHarrell

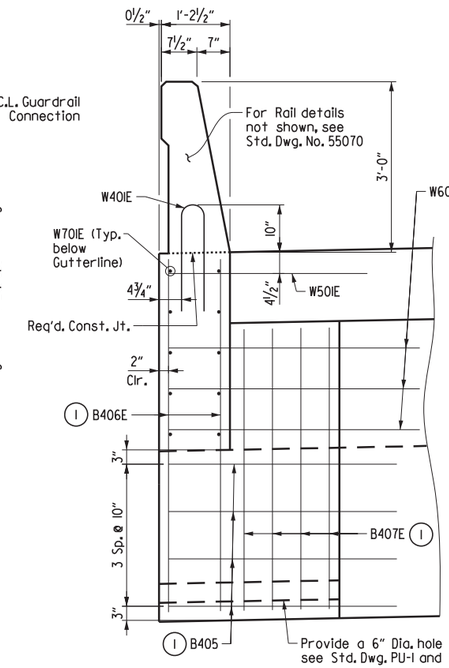
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				JOB NO.		050417	48	73
				(1) 07518		251' INT. CONT. W-BEAM UNIT		63867



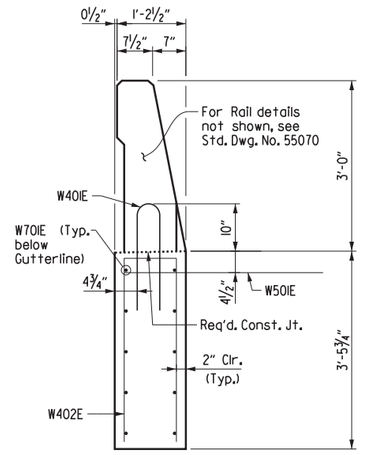
VIEW R-R
SCALE: ½" = 1'-0"



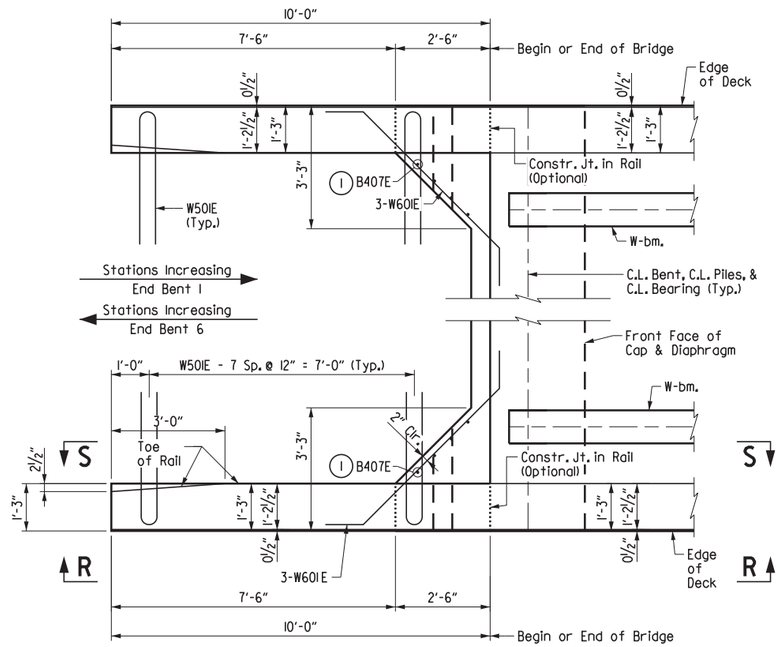
VIEW S-S
SCALE: ½" = 1'-0"



SECTION X-X
SCALE: ¾" = 1'-0"



SECTION Y-Y
SCALE: ¾" = 1'-0"



PLAN OF RAIL & WING
SCALE: ½" = 1'-0"

(1) Refer to End Bent Details.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13072
STEPHEN T. SMILEY
Stephen T. Smiley
10 Feb 2021

SHEET 5 OF 6
DETAILS OF 251'-0"
INTEGRAL CONTINUOUS W-BEAM UNIT
HIGHWAY 36 OVER BARBERS LAKE

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY:	JH	DATE:	6/20/20	FILENAME:	b050417_sl5.dgn
CHECKED BY:	STS	DATE:	6/25/20	SCALE:	AS SHOWN
DESIGNED BY:	JH	DATE:	5/01/20		

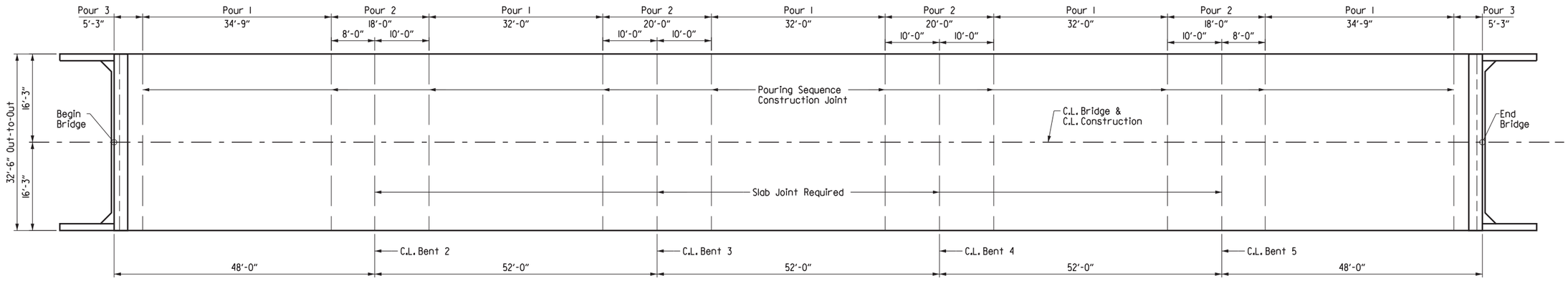
BRIDGE NO. 07518 DRAWING NO. 63867

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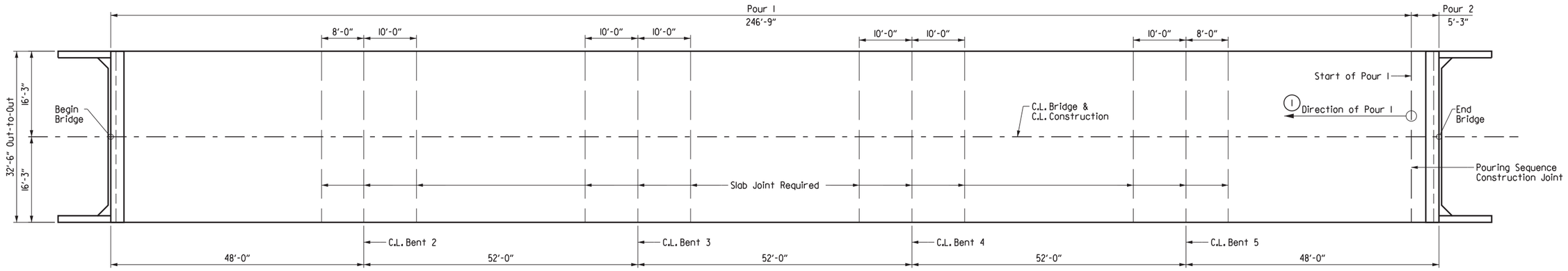
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	49	73
				(1) 07518		251' INT. CONT. W-BEAM UNIT		63868

POURING SEQUENCE NOTE:
Pours with the same number may be placed simultaneously or separately.
All Pours (1) must be placed before Pours (2) can be placed.
Pours (2) must be placed before Pours (3) can be placed. 48 hours shall elapse between the end of a pour and the start of the next pour.
72 hours shall elapse between the end of a pour and the start of an adjacent pour.
72 hours shall elapse between completion of the deck and the pouring of the railing.
Any railing pours made before the entire slab unit has been placed must be approved by the Bridge Engineer.
The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence(s) shown.

For "CONCRETE PLACEMENT PROCEDURE FOR BRIDGE WITH SKEW" detail, "TRANSVERSE SLAB JOINT DETAIL", and "ROUNDING DETAIL", see Std. Dwg. No. 55007.



POURING SEQUENCE

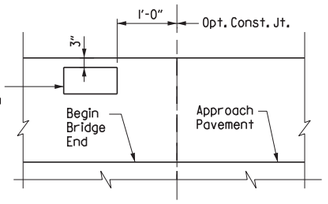


ALTERNATE POURING SEQUENCE

(Contractor must obtain approval from the Engineer)

(1) Direction of pour shall be from near Bent 6 progressing to Bent 1. If stay-in-place forms are used and installed in a manner that requires pouring of the slab in the opposite direction, this Alternate Pouring Sequence shall be modified accordingly to where Closure Pour (2) is at Bent 1 and Pour (1) progresses from near Bent 1 to Bent 6. During the strike-off process, the concrete must not take its initial set in the span that is being screeded AND the two spans of the same pour immediately preceding it. Any remaining previously screeded span(s) may attain initial set. This may require the use of a set retarding agent.

Place Type D Bridge Name Plate on right parapet rail approx. 1'-0" from constr. joint. Right is defined with direction of increasing stations. See Std. Dwg. No. 55010 (Beg. of bridge only)



NAME PLATE DETAIL

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13072
STEPHEN T. SMILEY
Stephen T. Smiley 10 Feb 2021

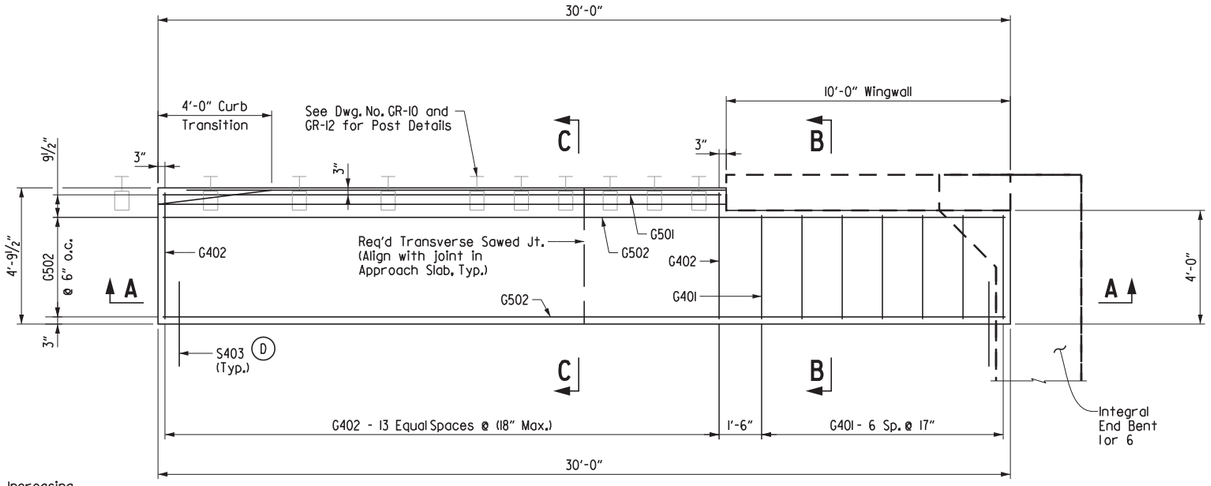
SHEET 6 OF 6
DETAILS OF 251'-0"
INTEGRAL CONTINUOUS W-BEAM UNIT
HIGHWAY 36 OVER BARBERS LAKE
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JH DATE: 6/20/20
CHECKED BY: STS DATE: 6/25/20
DESIGNED BY: JH DATE: 5/01/20
FILENAME: b050417_sl6.dgn
SCALE: NO SCALE

BRIDGE NO. 07518 DRAWING NO. 63868

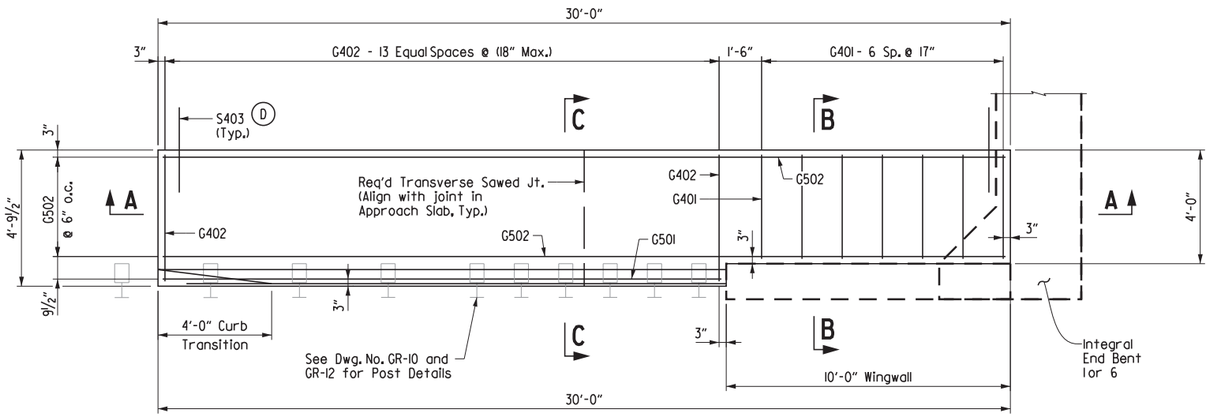
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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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				JOB NO.		050417	50	73
				1 07518		APPR. GUTTER		63869



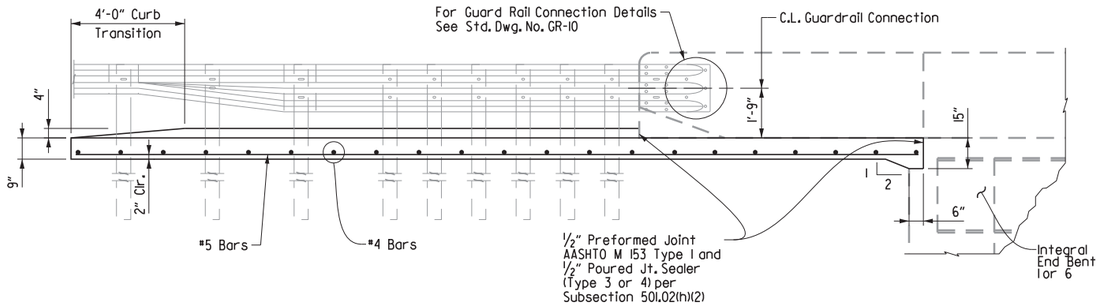
Stations Increasing
End Bent 1

Stations Increasing
End Bent 6



PLAN OF APPROACH GUTTERS - TYPE SPECIAL

SCALE: 3/8" = 1'-0"



SECTION A-A

SCALE: 3/8" = 1'-0"

(D) Prior to pouring concrete for approach slab, place dowels into approach slab using 18" embedment.

As an alternate to using cast-in-place dowels during approach slab construction, dowels may be drilled and grouted 18" into the previously cured approach slab. Work for drilling and grouting will not be paid for separately but will be considered subsidiary to "APPROACH GUTTERS".

BAR LIST FOR ONE TYPE SPECIAL APPROACH GUTTER

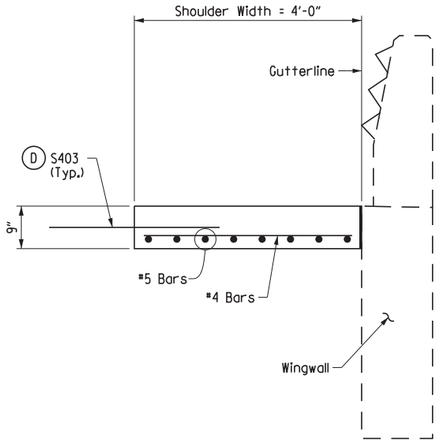
(Use one on each side of each end of bridge.)

Mark	No. Req'd.	Length	Pin Dia.
G401	7	3'-8"	Str.
G402	14	4'-6"	Str.
G501	1	19'-8"	Str.
G502	8	29'-8"	Str.

TABLE OF QUANTITIES FOR TYPE SPECIAL APPROACH GUTTER

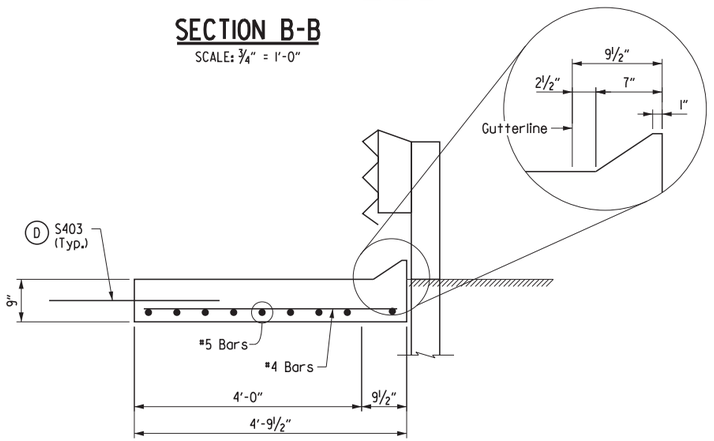
(FOR INFORMATION ONLY)

"W" Width (ft.)	Reinforcing Steel (Lbs)	Concrete (Cu. Yds.)
4'-0"	330	4.10



SECTION B-B

SCALE: 3/4" = 1'-0"



SECTION C-C

SCALE: 3/4" = 1'-0"

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
JESSE D. HARRELL
2-10-2021

DETAILS OF TYPE SPECIAL APPROACH GUTTERS HIGHWAY 36 OVER BARBERS LAKE

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

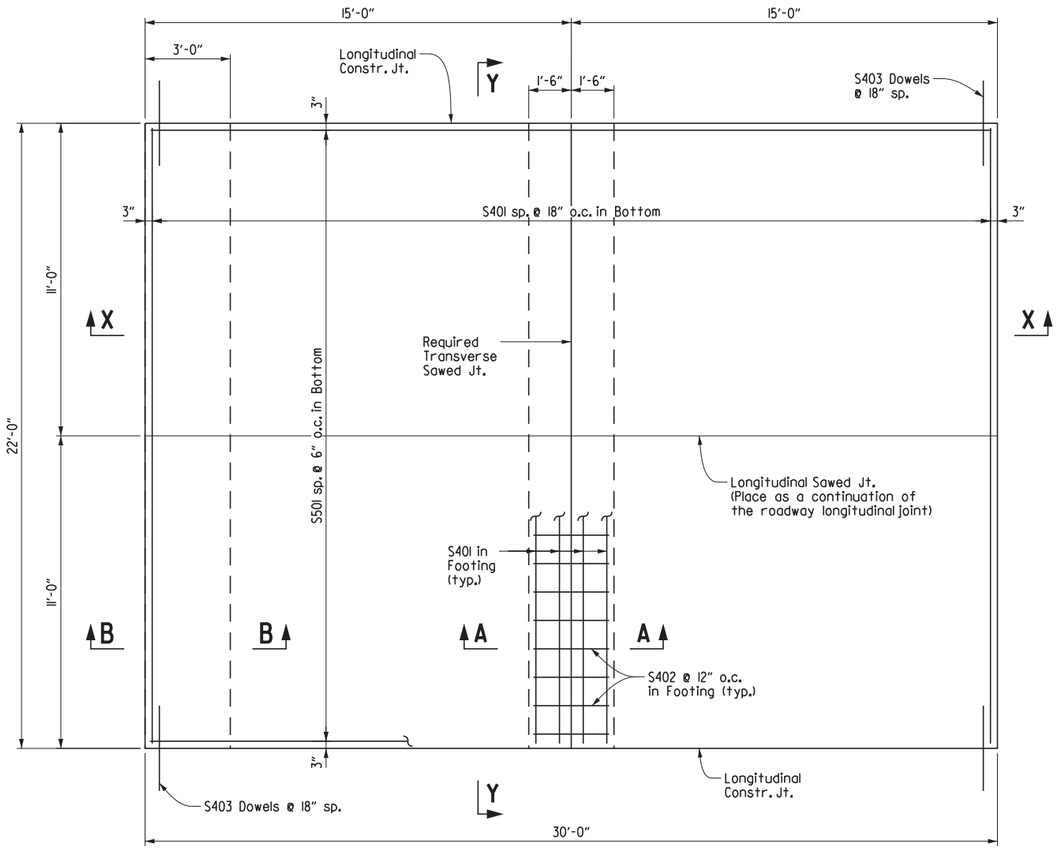
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DESIGNED BY:	JH	DATE:	5/01/20		

BRIDGE NO. 07518 DRAWING NO. 63869

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				6	ARK.			
				JOB NO.		050417	51	73
				1 07518		APPR. SLAB		63870

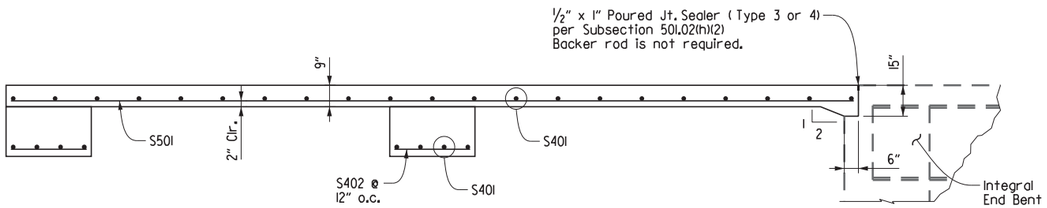


PLAN

No Scale

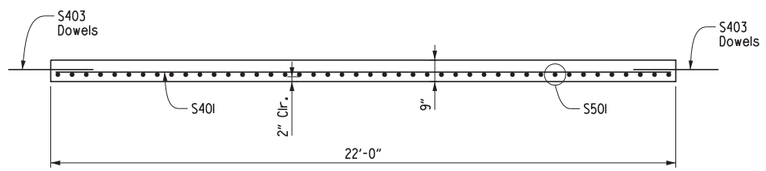
Stations Increasing
End Bent 1

Stations Increasing
End Bent 6



SECTION X-X

No Scale



SECTION Y-Y

No Scale

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

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.

BAR LIST FOR ONE TYPE SPECIAL APPROACH SLAB

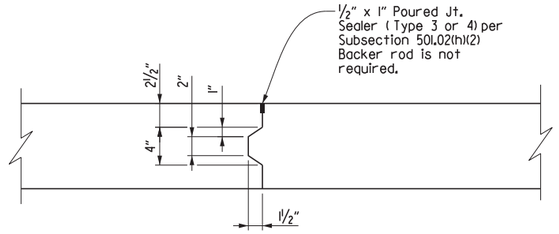
(Use one on each side of each end of bridge.)

Mark	No. Req'd.	Length	Pin Dia.
S401	29	21'-8"	Str.
S402	44	2'-8"	Str.
S403	40	3'-0"	Str.
S501	44	29'-8"	Str.

TABLE OF QUANTITIES FOR TYPE SPECIAL APPROACH SLAB

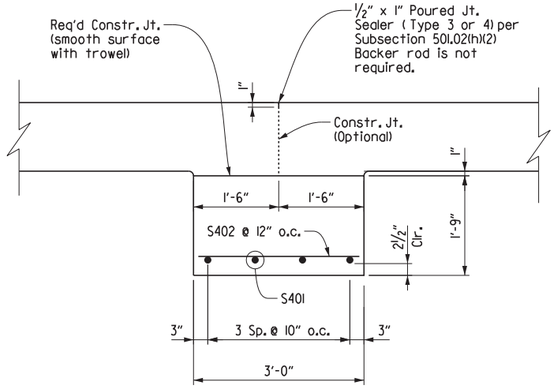
(FOR INFORMATION ONLY)

Slab Width	Reinforcing Steel (Lbs)	Concrete (Cu. Yds.)
22'-0"	1940	27.10



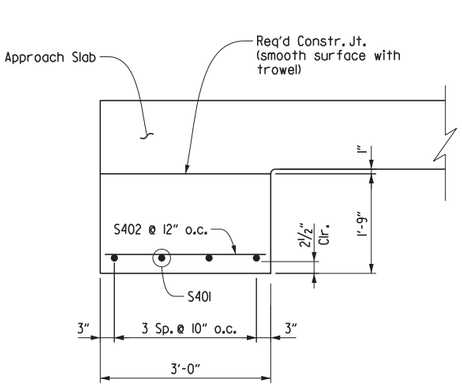
DETAILS OF LONGITUDINAL CONSTRUCTION JOINT

No Scale



SECTION A-A

No Scale



SECTION B-B

No Scale

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
JESSE D. HARRELL
2-10-2021

DETAILS OF TYPE SPECIAL APPROACH SLAB
HIGHWAY 36 OVER BARBERS LAKE
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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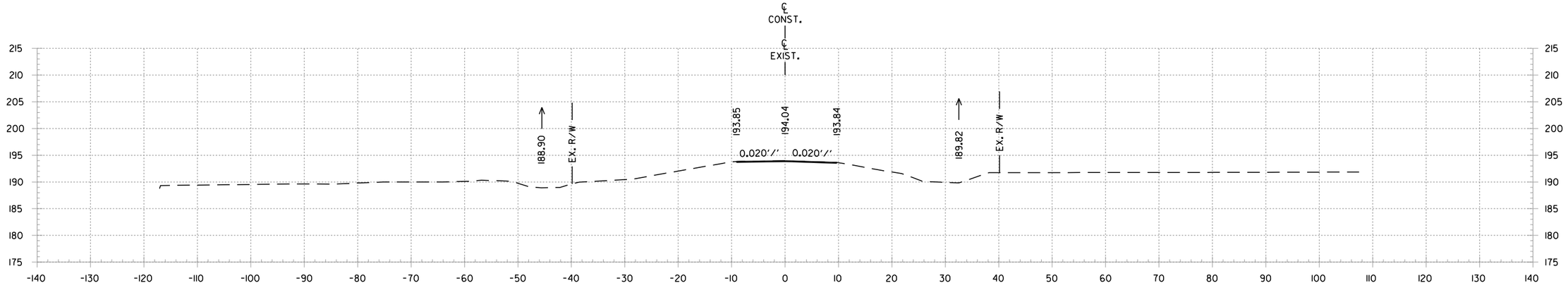
BRIDGE NO. 07518 DRAWING NO. 63870

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	52	73

(2) HWY. 36 CROSS SECTIONS

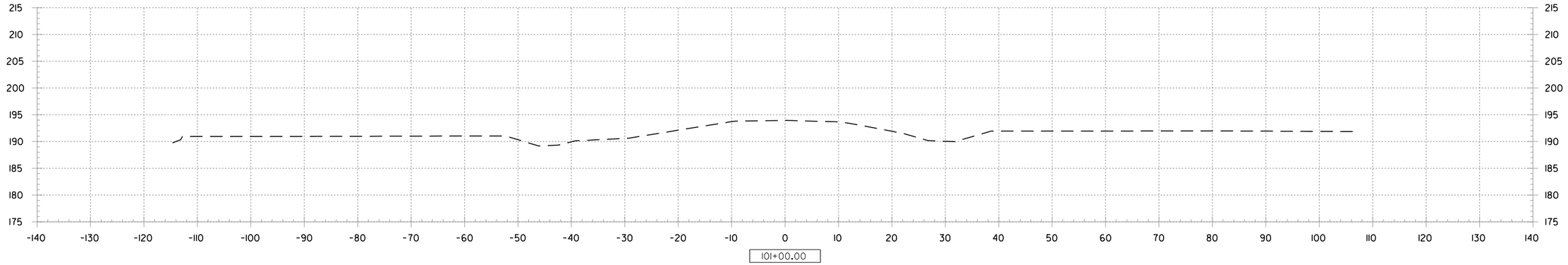


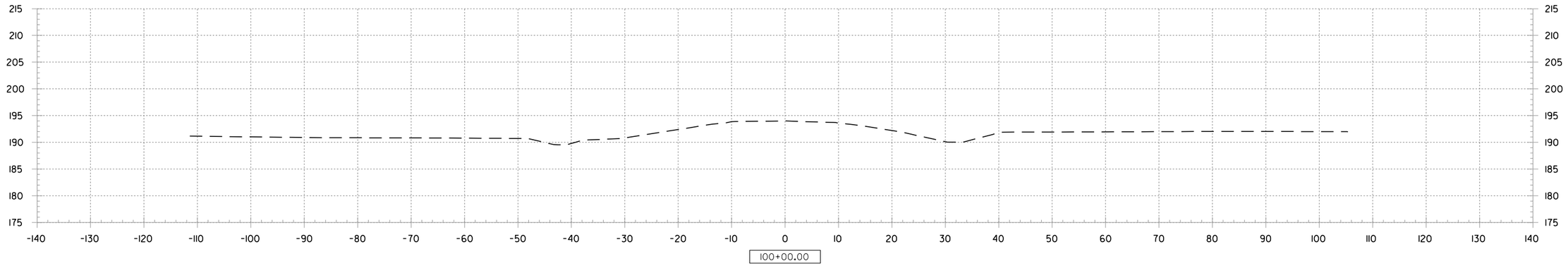
STAGE 1
CUT AREA SQ. FT.
FILL AREA SQ. FT.

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

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

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



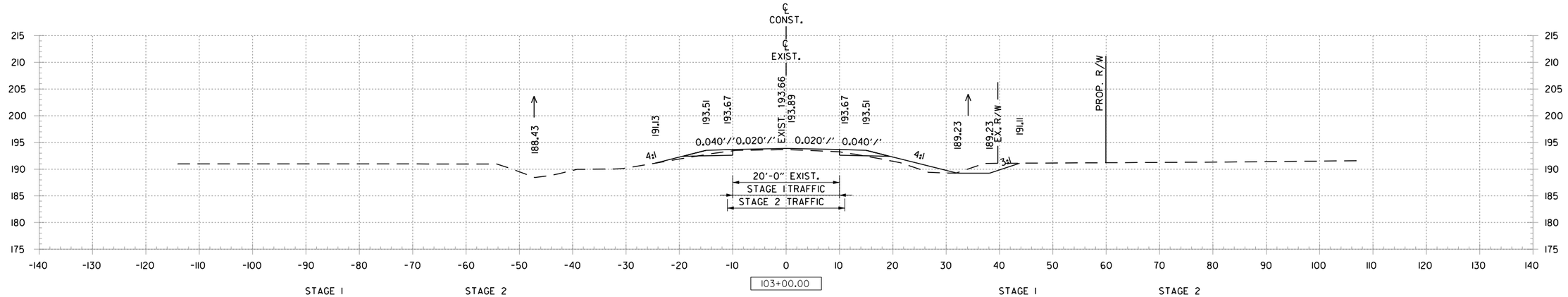


HWY. 36
STA. 100+00 TO STA. 101+50

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	53	73

(2) HWY. 36 CROSS SECTIONS



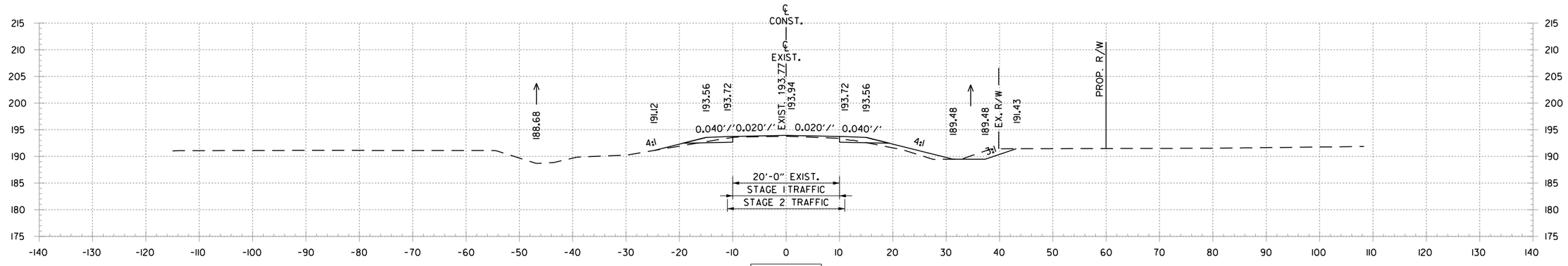
103+00.00

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

STAGE 2
CUT AREA 13 SQ. FT.
FILL AREA 12 SQ. FT.

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

STAGE 2
CUT VOLUME 22 CU. YD.
FILL VOLUME 20 CU. YD.



102+50.00

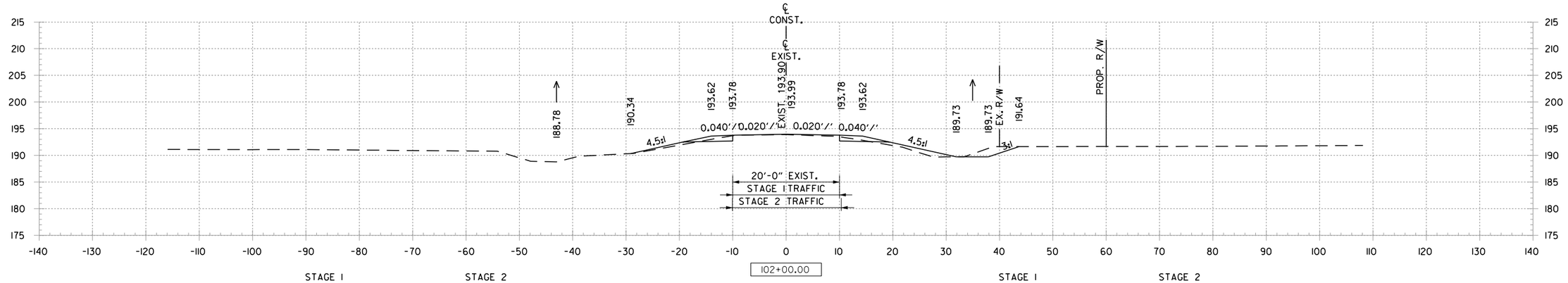
END 100' TRANSITION &
BEGIN JOB 050417

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

STAGE 2
CUT AREA 11 SQ. FT.
FILL AREA 10 SQ. FT.

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

STAGE 2
CUT VOLUME 20 CU. YD.
FILL VOLUME 17 CU. YD.



102+00.00

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

STAGE 2
CUT AREA 11 SQ. FT.
FILL AREA 9 SQ. FT.

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

STAGE 2
CUT VOLUME 10 CU. YD.
FILL VOLUME 8 CU. YD.

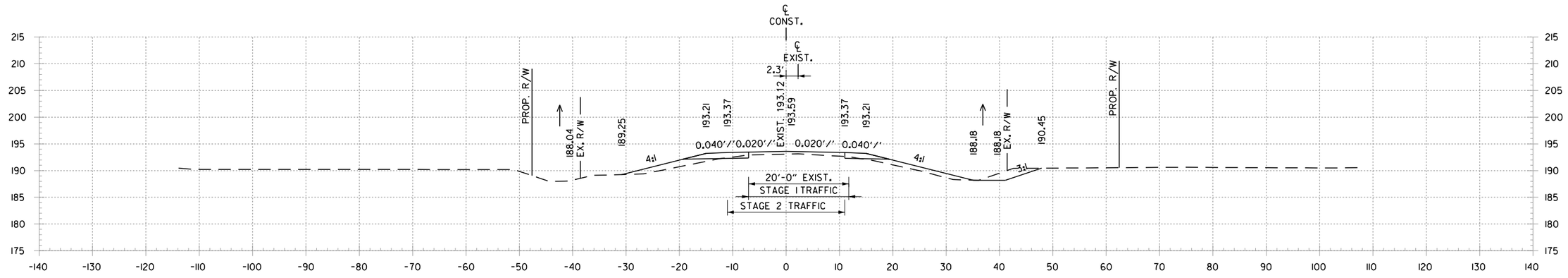
HWY. 36
STA. 102+00 TO STA. 103+00

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	54	73

(2) HWY. 36 CROSS SECTIONS



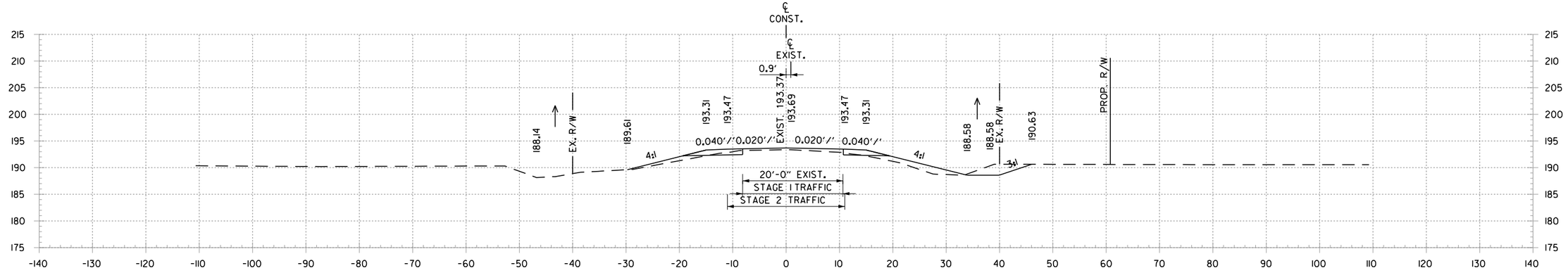
106+00.00

STAGE 1
CUT AREA 1 SQ. FT.
FILL AREA 14 SQ. FT.

STAGE 2
CUT AREA 12 SQ. FT.
FILL AREA 13 SQ. FT.

STAGE 1
CUT VOLUME 8 CU. YD.
FILL VOLUME 39 CU. YD.

STAGE 2
CUT VOLUME 50 CU. YD.
FILL VOLUME 52 CU. YD.



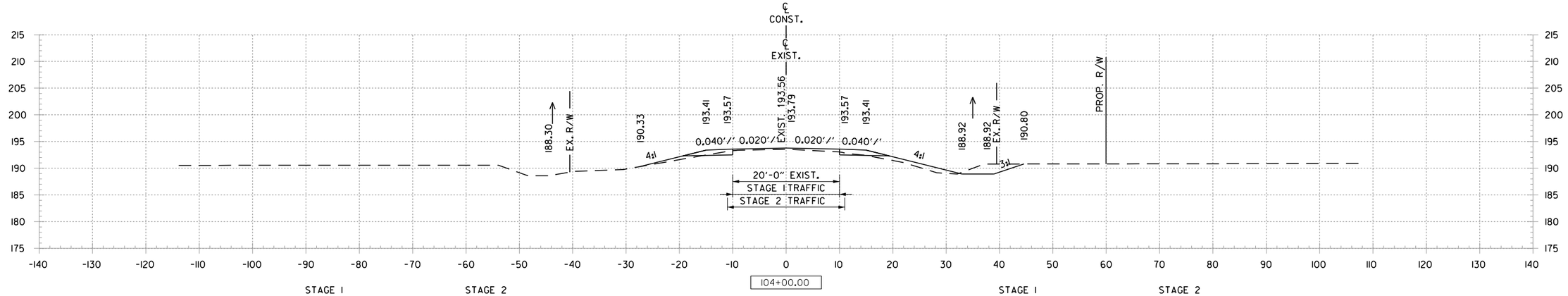
105+00.00

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

STAGE 2
CUT AREA 15 SQ. FT.
FILL AREA 15 SQ. FT.

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

STAGE 2
CUT VOLUME 54 CU. YD.
FILL VOLUME 47 CU. YD.



104+00.00

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

STAGE 2
CUT AREA 14 SQ. FT.
FILL AREA 10 SQ. FT.

STAGE 1
CUT VOLUME 9 CU. YD.
FILL VOLUME 10 CU. YD.

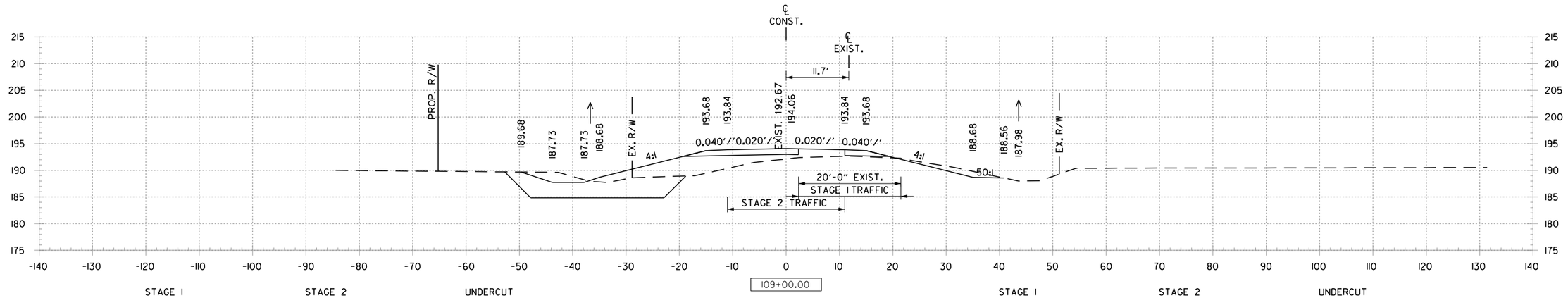
STAGE 2
CUT VOLUME 52 CU. YD.
FILL VOLUME 41 CU. YD.

HWY. 36
STA. 104+00 TO STA. 106+00

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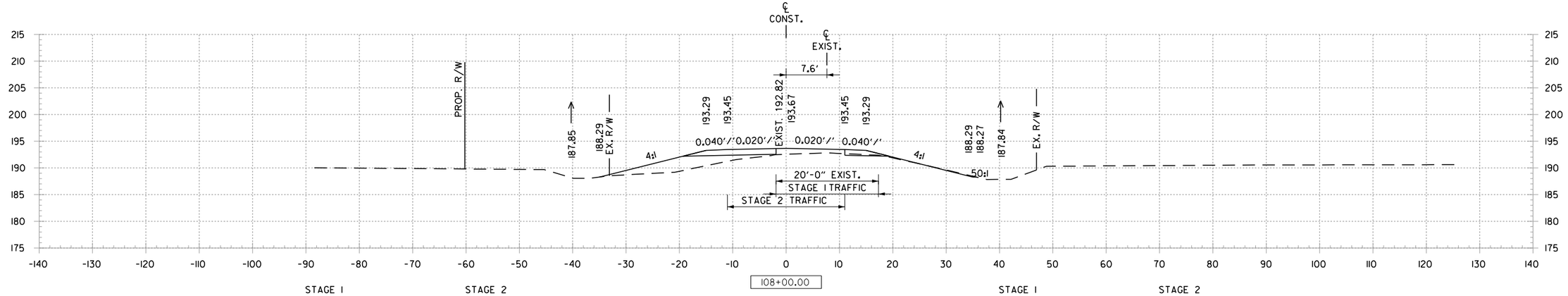
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	55	73

(2) HWY. 36 CROSS SECTIONS



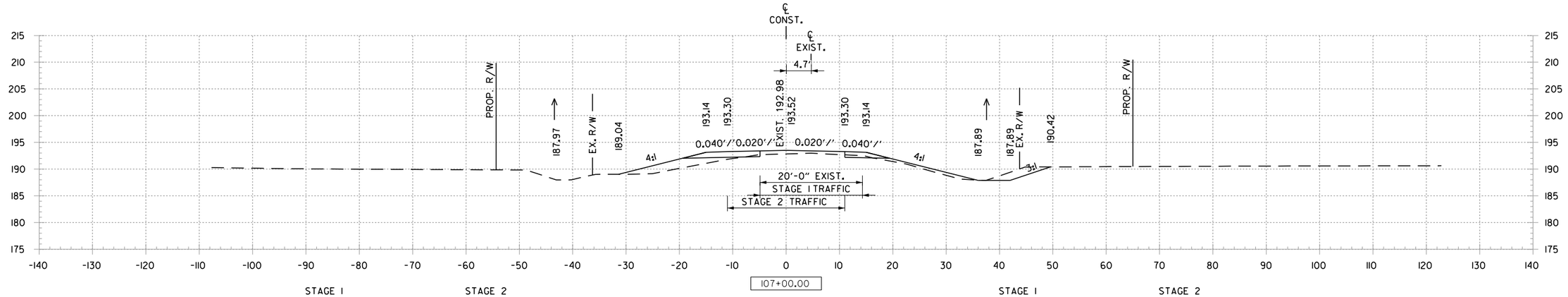
109+00.00

STAGE 1		STAGE 2		UNDERCUT		STAGE 1		STAGE 2		UNDERCUT	
CUT AREA	14 SQ. FT.	CUT AREA	13 SQ. FT.	CUT AREA	116 SQ. FT.	CUT VOLUME	25 CU. YD.	CUT VOLUME	28 CU. YD.	CUT AREA	CU. YD.
FILL AREA	79 SQ. FT.	FILL AREA	4 SQ. FT.	FILL AREA	116 SQ. FT.	FILL VOLUME	225 CU. YD.	FILL VOLUME	10 CU. YD.	FILL AREA	CU. YD.



108+00.00

STAGE 1		STAGE 2		STAGE 1		STAGE 2	
CUT AREA	SQ. FT.	CUT AREA	2 SQ. FT.	CUT VOLUME	1 CU. YD.	CUT VOLUME	29 CU. YD.
FILL AREA	43 SQ. FT.	FILL AREA	1 SQ. FT.	FILL VOLUME	124 CU. YD.	FILL VOLUME	16 CU. YD.



107+00.00

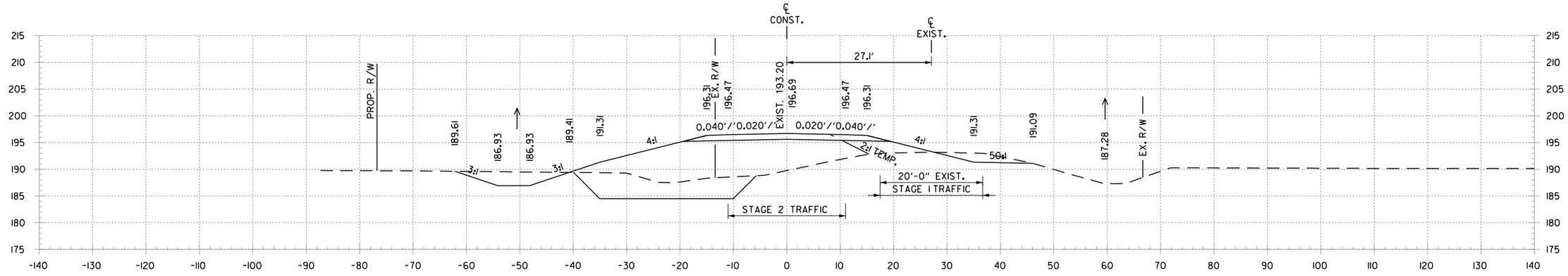
STAGE 1		STAGE 2		STAGE 1		STAGE 2	
CUT AREA	1 SQ. FT.	CUT AREA	13 SQ. FT.	CUT VOLUME	4 CU. YD.	CUT VOLUME	47 CU. YD.
FILL AREA	24 SQ. FT.	FILL AREA	8 SQ. FT.	FILL VOLUME	70 CU. YD.	FILL VOLUME	39 CU. YD.

HWY. 36
STA. 107+00 TO STA. 109+00

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	56	73

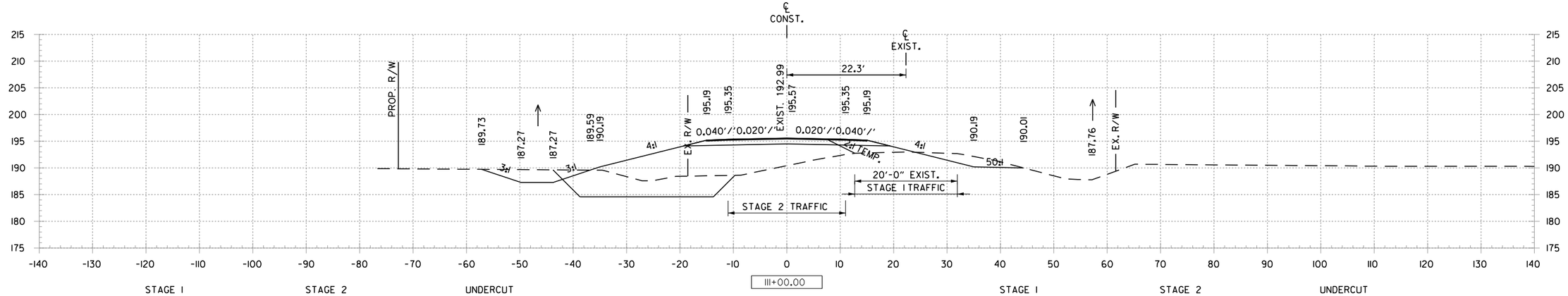
(2) HWY. 36 CROSS SECTIONS



112+00.00

STAGE 1		STAGE 2		UNDERCUT	
CUT AREA	35 SQ. FT.	CUT AREA	18 SQ. FT.	CUT AREA	117 SQ. FT.
FILL AREA	270 SQ. FT.	FILL AREA	24 SQ. FT.	FILL AREA	117 SQ. FT.

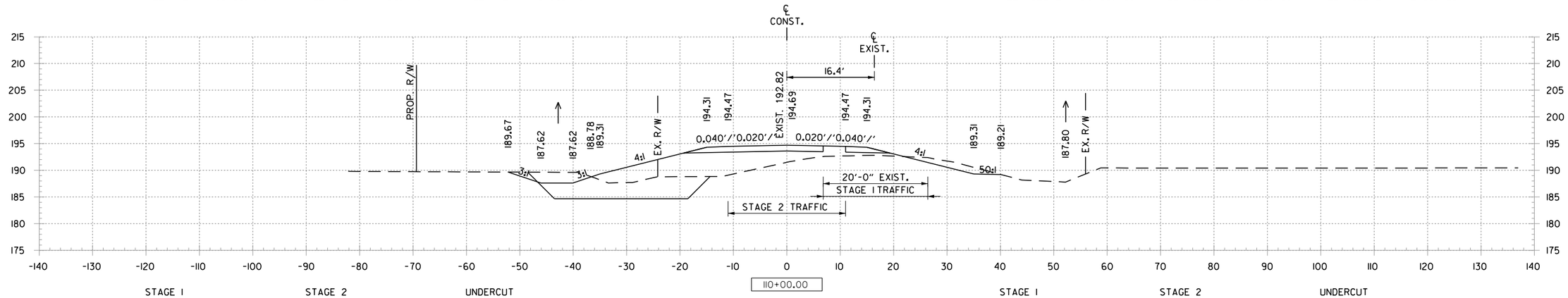
STAGE 1		STAGE 2		UNDERCUT	
CUT VOLUME	124 CU. YD.	CUT VOLUME	74 CU. YD.	CUT VOLUME	438 CU. YD.
FILL VOLUME	862 CU. YD.	FILL VOLUME	71 CU. YD.	FILL VOLUME	438 CU. YD.



111+00.00

STAGE 1		STAGE 2		UNDERCUT	
CUT AREA	31 SQ. FT.	CUT AREA	22 SQ. FT.	CUT AREA	119 SQ. FT.
FILL AREA	195 SQ. FT.	FILL AREA	14 SQ. FT.	FILL AREA	119 SQ. FT.

STAGE 1		STAGE 2		UNDERCUT	
CUT VOLUME	99 CU. YD.	CUT VOLUME	69 CU. YD.	CUT VOLUME	442 CU. YD.
FILL VOLUME	610 CU. YD.	FILL VOLUME	36 CU. YD.	FILL VOLUME	442 CU. YD.



110+00.00

STAGE 1		STAGE 2		UNDERCUT	
CUT AREA	22 SQ. FT.	CUT AREA	15 SQ. FT.	CUT AREA	119 SQ. FT.
FILL AREA	134 SQ. FT.	FILL AREA	6 SQ. FT.	FILL AREA	119 SQ. FT.

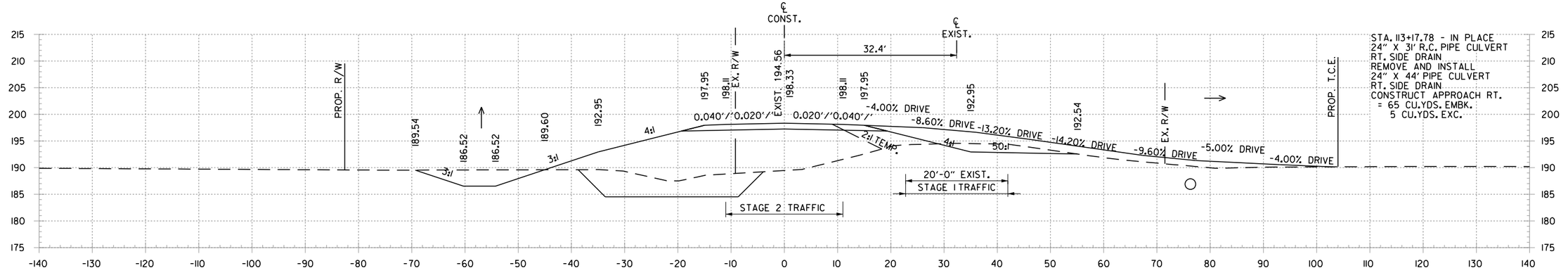
STAGE 1		STAGE 2		UNDERCUT	
CUT VOLUME	66 CU. YD.	CUT VOLUME	52 CU. YD.	CUT AREA	436 CU. YD.
FILL VOLUME	393 CU. YD.	FILL VOLUME	19 CU. YD.	FILL AREA	436 CU. YD.

HWY. 36
STA. 110+00 TO STA. 112+00

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				6	ARK.			
				JOB NO.		050417	57	73

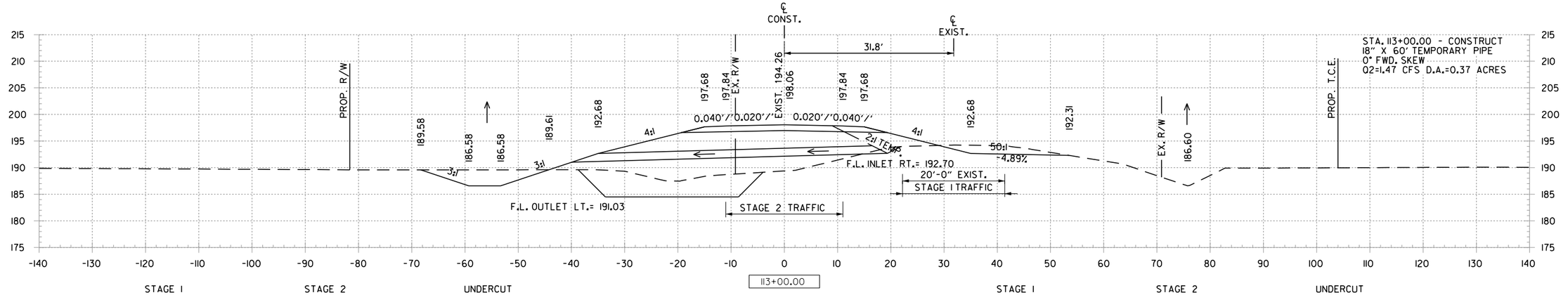
(2) HWY. 36 CROSS SECTIONS



113+17.78

STAGE 1		STAGE 2		UNDERCUT	
CUT AREA	46 SQ. FT.	CUT AREA	26 SQ. FT.	CUT AREA	122 SQ. FT.
FILL AREA	371 SQ. FT.	FILL AREA	29 SQ. FT.	FILL AREA	122 SQ. FT.

STAGE 1		STAGE 2		UNDERCUT	
CUT VOLUME	30 CU. YD.	CUT VOLUME	18 CU. YD.	CUT VOLUME	80 CU. YD.
FILL VOLUME	239 CU. YD.	FILL VOLUME	19 CU. YD.	FILL VOLUME	80 CU. YD.



113+00.00

STAGE 1		STAGE 2		UNDERCUT	
CUT AREA	45 SQ. FT.	CUT AREA	29 SQ. FT.	CUT AREA	121 SQ. FT.
FILL AREA	355 SQ. FT.	FILL AREA	28 SQ. FT.	FILL AREA	121 SQ. FT.

STAGE 1		STAGE 2		UNDERCUT	
CUT VOLUME	150 CU. YD.	CUT VOLUME	86 CU. YD.	CUT VOLUME	441 CU. YD.
FILL VOLUME	1156 CU. YD.	FILL VOLUME	97 CU. YD.	FILL VOLUME	441 CU. YD.

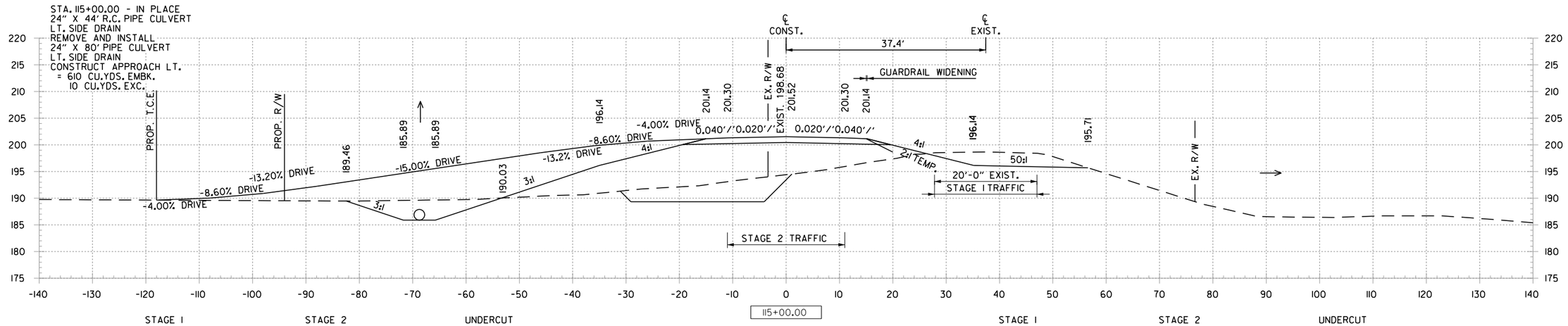
HWY. 36
STA. 113+00 TO STA. 113+18

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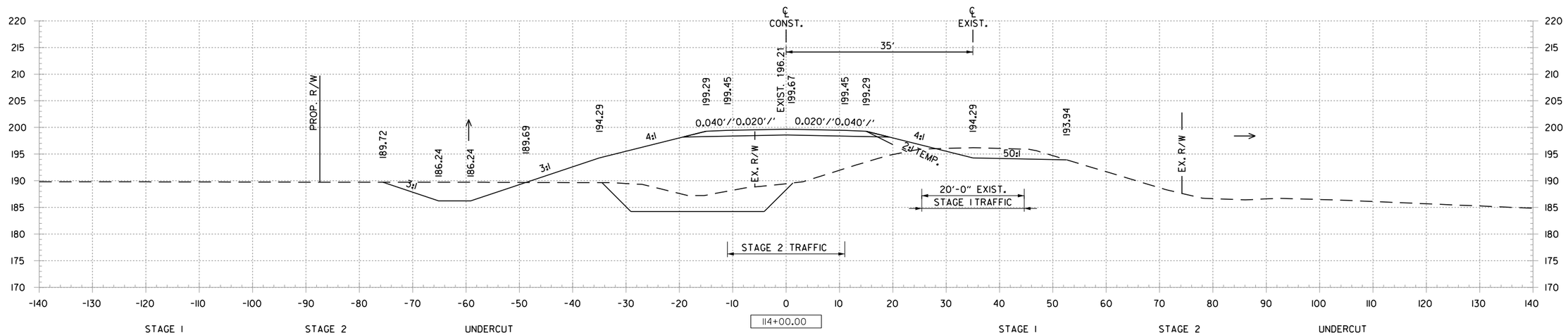
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				6	ARK.			
				JOB NO.		050417	58	73

(2) HWY. 36 CROSS SECTIONS



STAGE 1		STAGE 2		UNDERCUT	
CUT AREA	65 SQ. FT.	CUT AREA	55 SQ. FT.	CUT AREA	95 SQ. FT.
FILL AREA	372 SQ. FT.	FILL AREA	8 SQ. FT.	FILL AREA	95 SQ. FT.

STAGE 1		STAGE 2		UNDERCUT	
CUT VOLUME	226 CU. YD.	CUT VOLUME	164 CU. YD.	CUT VOLUME	410 CU. YD.
FILL VOLUME	1560 CU. YD.	FILL VOLUME	35 CU. YD.	FILL VOLUME	410 CU. YD.



STAGE 1		STAGE 2		UNDERCUT	
CUT AREA	57 SQ. FT.	CUT AREA	33 SQ. FT.	CUT AREA	127 SQ. FT.
FILL AREA	470 SQ. FT.	FILL AREA	11 SQ. FT.	FILL AREA	127 SQ. FT.

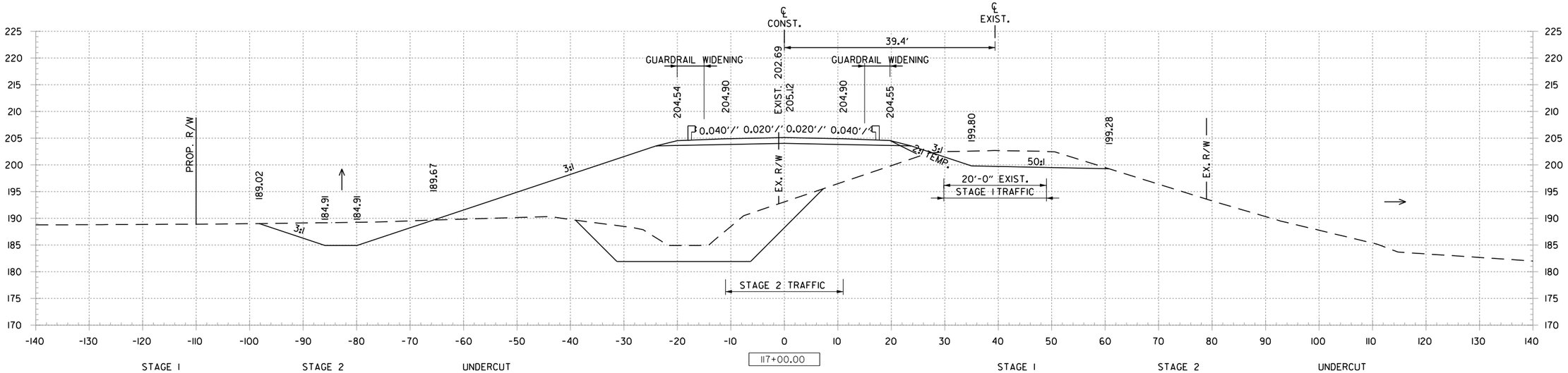
STAGE 1		STAGE 2		UNDERCUT	
CUT VOLUME	157 CU. YD.	CUT VOLUME	91 CU. YD.	CUT VOLUME	380 CU. YD.
FILL VOLUME	1280 CU. YD.	FILL VOLUME	60 CU. YD.	FILL VOLUME	380 CU. YD.

HWY. 36
STA. 114+00 TO STA. 115+00

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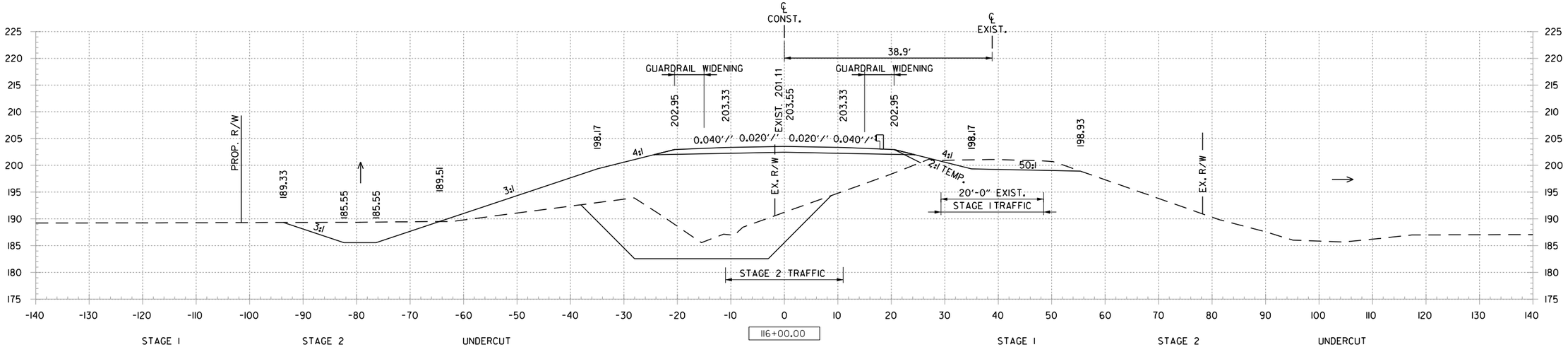
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	59	73

(2) HWY. 36 CROSS SECTIONS



STAGE 1		STAGE 2		UNDERCUT	
CUT AREA	83 SQ. FT.	CUT AREA	72 SQ. FT.	CUT AREA	212 SQ. FT.
FILL AREA	837 SQ. FT.	FILL AREA	4 SQ. FT.	FILL AREA	212 SQ. FT.

STAGE 1		STAGE 2		UNDERCUT	
CUT VOLUME	278 CU. YD.	CUT VOLUME	202 CU. YD.	CUT VOLUME	869 CU. YD.
FILL VOLUME	2797 CU. YD.	FILL VOLUME	14 CU. YD.	FILL VOLUME	869 CU. YD.



STAGE 1		STAGE 2		UNDERCUT	
CUT AREA	68 SQ. FT.	CUT AREA	37 SQ. FT.	CUT AREA	257 SQ. FT.
FILL AREA	673 SQ. FT.	FILL AREA	3 SQ. FT.	FILL AREA	257 SQ. FT.

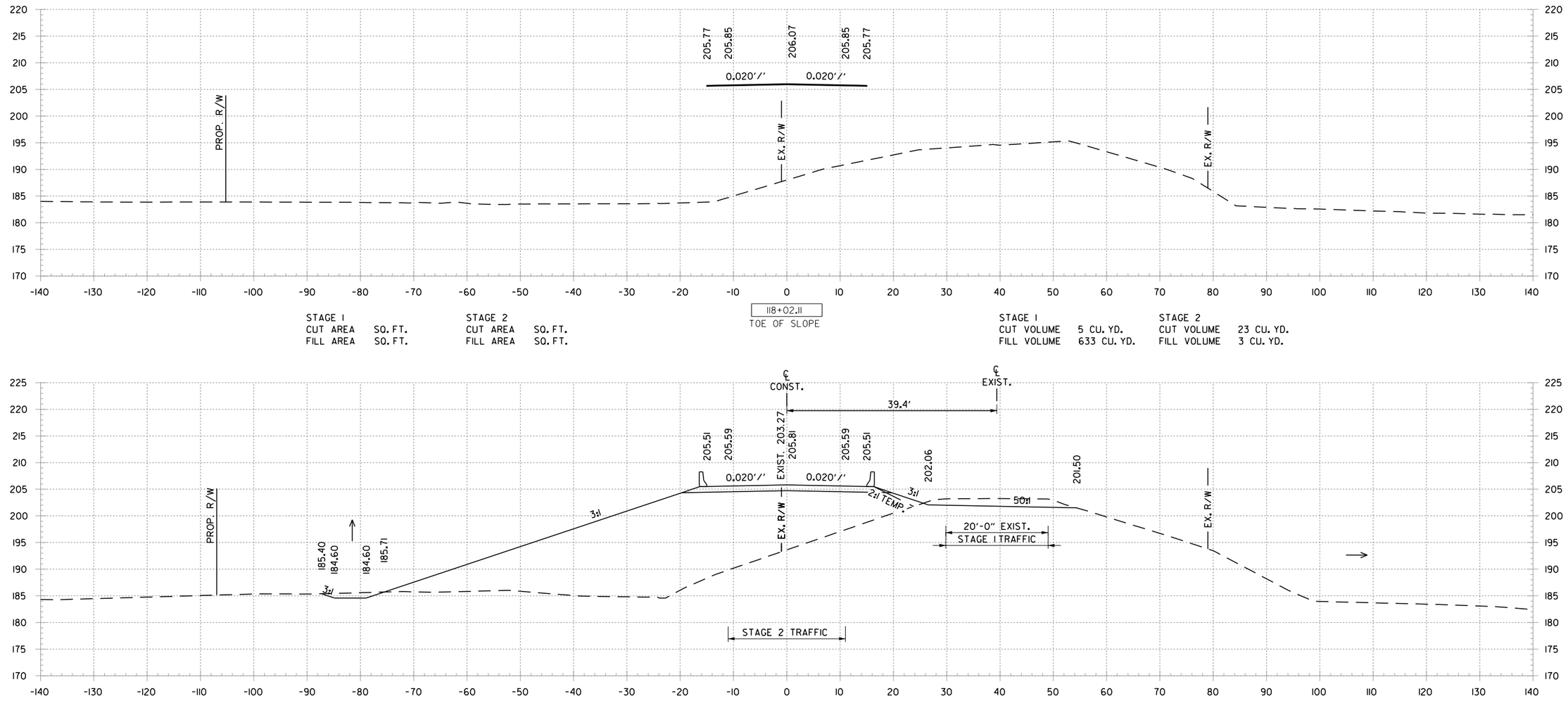
STAGE 1		STAGE 2		UNDERCUT	
CUT VOLUME	245 CU. YD.	CUT VOLUME	171 CU. YD.	CUT VOLUME	651 CU. YD.
FILL VOLUME	1937 CU. YD.	FILL VOLUME	22 CU. YD.	FILL VOLUME	651 CU. YD.

HWY. 36
STA. 116+00 TO STA. 117+00

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(2) HWY. 36 CROSS SECTIONS



HWY. 36
STA. 117+66 TO STA. 118+00

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				6	ARK.			
				JOB NO.		050417	61	73

(2) HWY. 36 CROSS SECTIONS

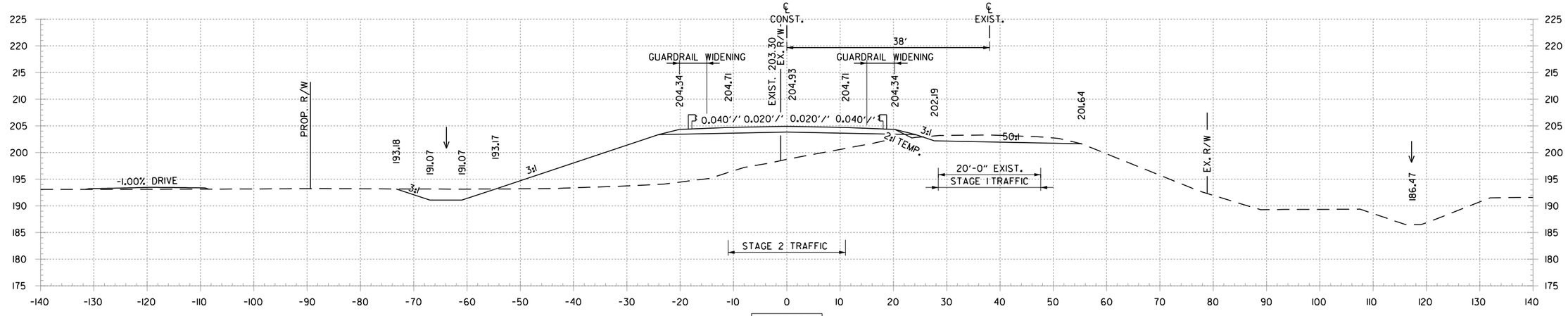
HWY. 36
STA. 119+83 TO STA. 119+83

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				JOB NO.		050417	62	73

(2) HWY. 36 CROSS SECTIONS

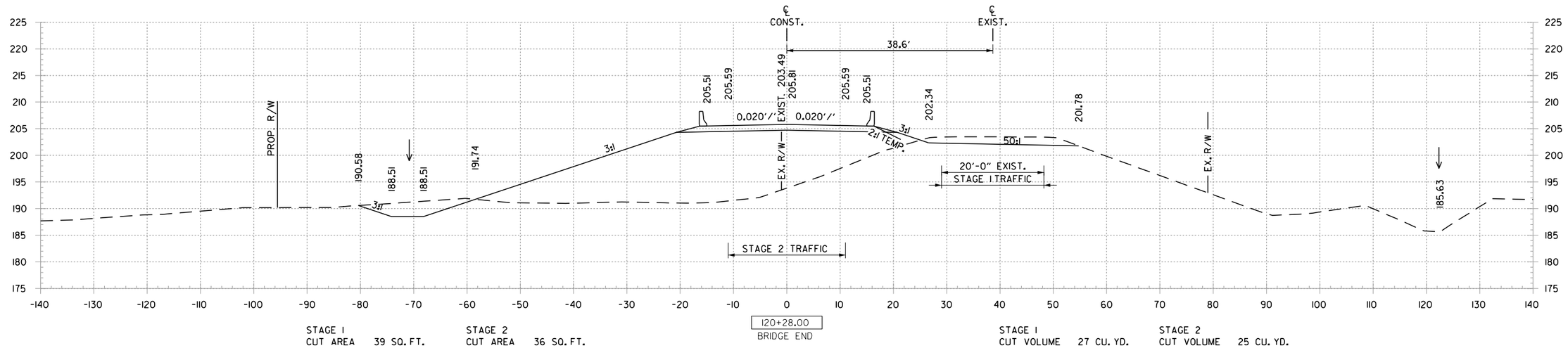


STAGE 1
CUT AREA 26 SQ. FT.
FILL AREA 391 SQ. FT.

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

STAGE 1
CUT VOLUME 97 CU. YD.
FILL VOLUME 1584 CU. YD.

STAGE 2
CUT VOLUME 100 CU. YD.
FILL VOLUME 9 CU. YD.



STAGE 1
CUT AREA 39 SQ. FT.
FILL AREA 665 SQ. FT.

STAGE 2
CUT AREA 36 SQ. FT.
FILL AREA 5 SQ. FT.

STAGE 1
CUT VOLUME 27 CU. YD.
FILL VOLUME 463 CU. YD.

STAGE 2
CUT VOLUME 25 CU. YD.
FILL VOLUME 4 CU. YD.

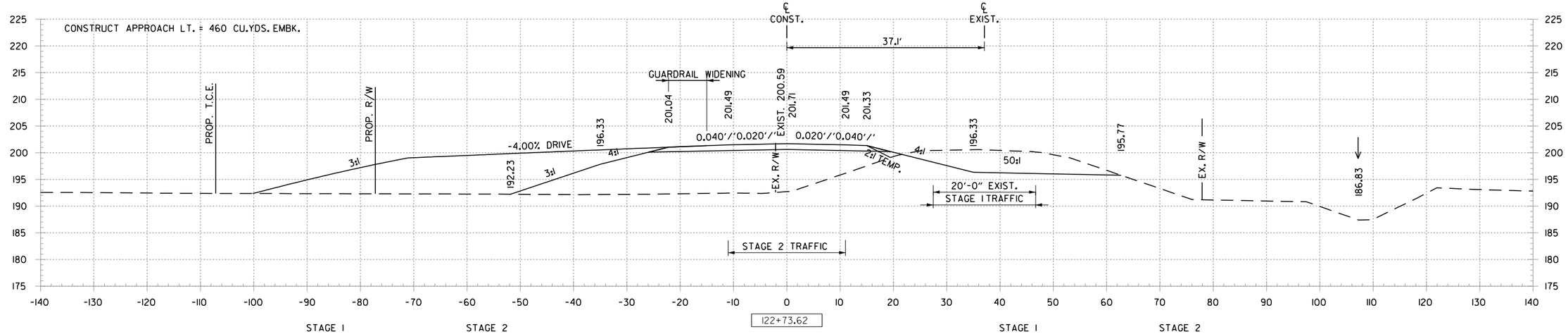
HWY. 36
STA. 120+20 TO STA. 121+00

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				6	ARK.			
				JOB NO.		050417	63	73

(2) HWY. 36 CROSS SECTIONS

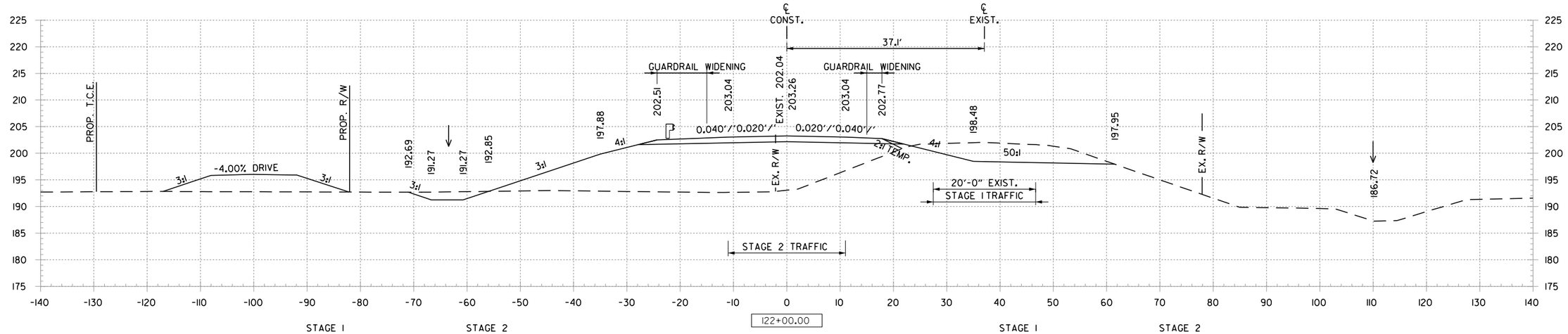


STAGE 1
CUT AREA SQ. FT.
FILL AREA 406 SQ. FT.

STAGE 2
CUT AREA 118 SQ. FT.
FILL AREA 2 SQ. FT.

STAGE 1
CUT VOLUME 21 CU. YD.
FILL VOLUME 1232 CU. YD.

STAGE 2
CUT VOLUME 290 CU. YD.
FILL VOLUME 5 CU. YD.



STAGE 1
CUT AREA 16 SQ. FT.
FILL AREA 496 SQ. FT.

STAGE 2
CUT AREA 95 SQ. FT.
FILL AREA 2 SQ. FT.

STAGE 1
CUT VOLUME 76 CU. YD.
FILL VOLUME 1644 CU. YD.

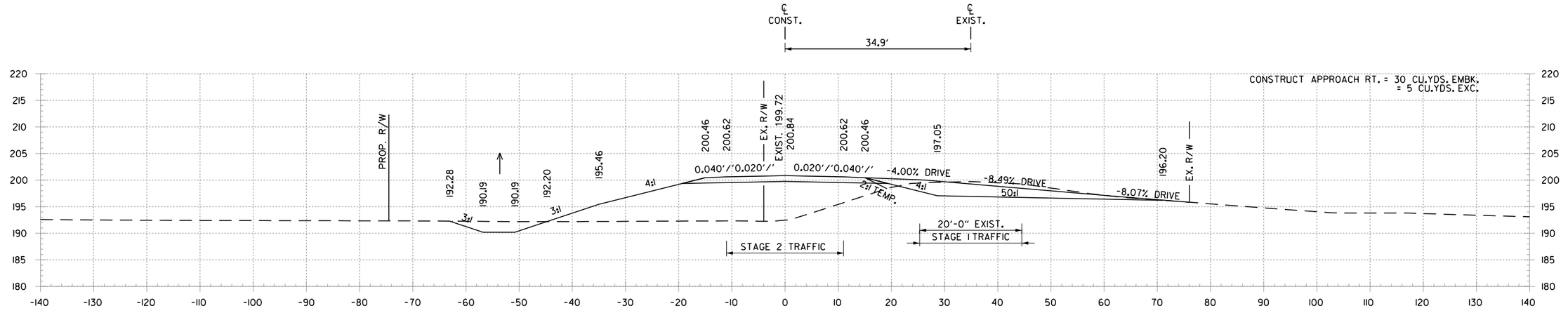
STAGE 2
CUT VOLUME 231 CU. YD.
FILL VOLUME 5 CU. YD.

HWY. 36
STA. 122+00 TO STA. 122+74

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	64	73

(2) HWY. 36 CROSS SECTIONS

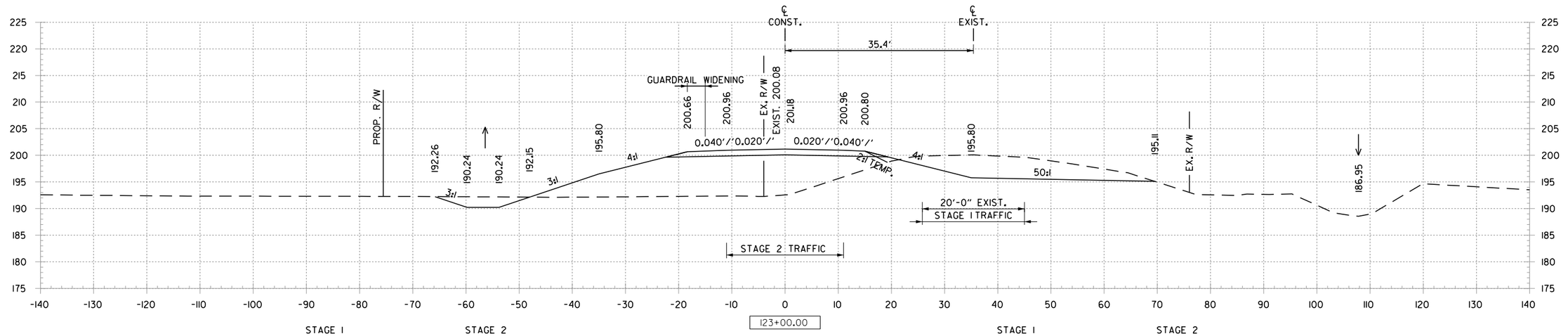


STAGE 1
CUT AREA 25 SQ. FT.
FILL AREA 317 SQ. FT.

STAGE 2
CUT AREA 81 SQ. FT.
FILL AREA 2 SQ. FT.

STAGE 1
CUT VOLUME 16 CU. YD.
FILL VOLUME 222 CU. YD.

STAGE 2
CUT VOLUME 70 CU. YD.
FILL VOLUME 1 CU. YD.



STAGE 1
CUT AREA 23 SQ. FT.
FILL AREA 355 SQ. FT.

STAGE 2
CUT AREA 132 SQ. FT.
FILL AREA 2 SQ. FT.

STAGE 1
CUT VOLUME 11 CU. YD.
FILL VOLUME 372 CU. YD.

STAGE 2
CUT VOLUME 122 CU. YD.
FILL VOLUME 2 CU. YD.

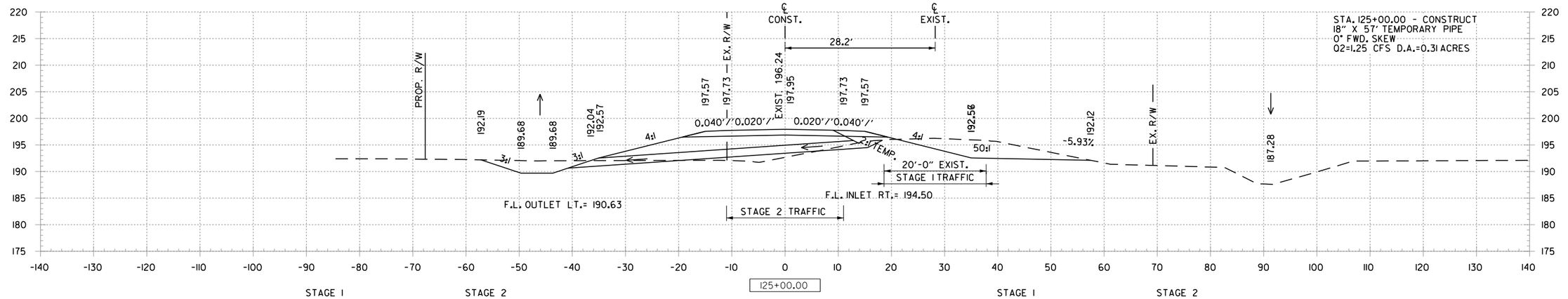
HWY. 36
STA. 123+00 TO STA. 123+18

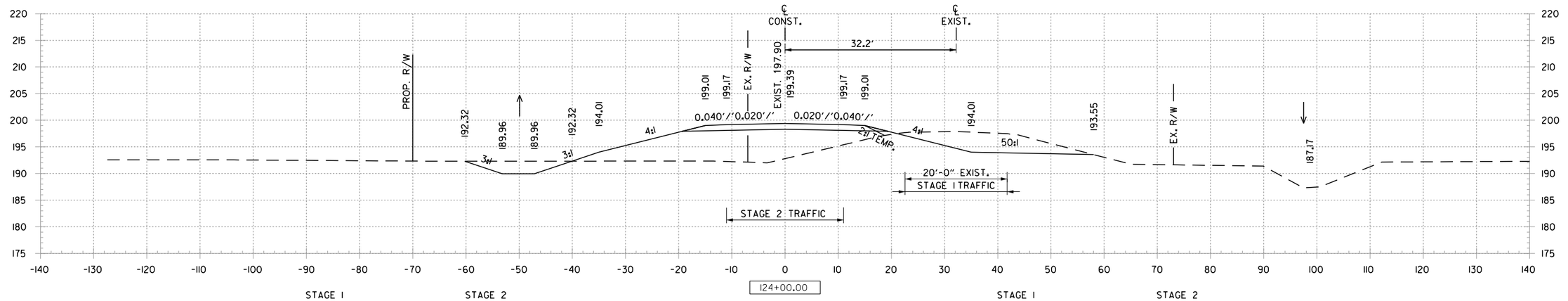
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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	65	73

(2) HWY. 36 CROSS SECTIONS





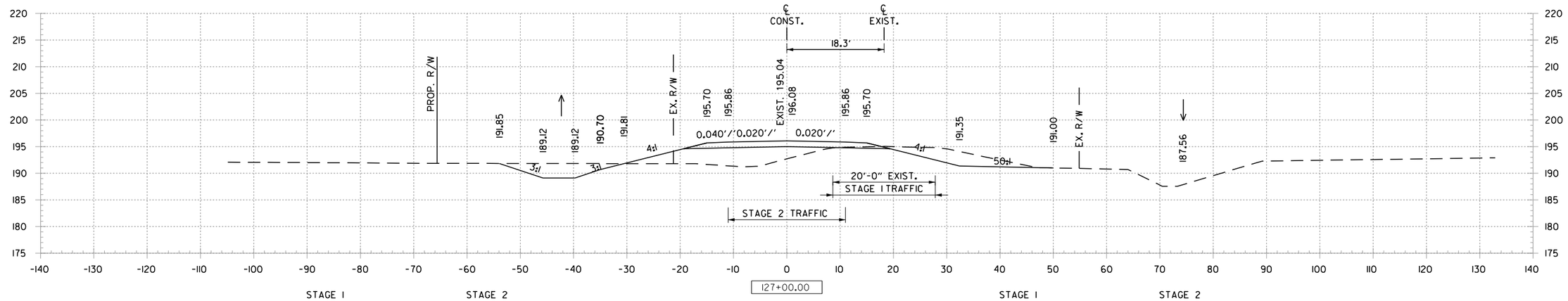
HWY. 36
STA. 124+00 TO STA. 125+00

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	66	73

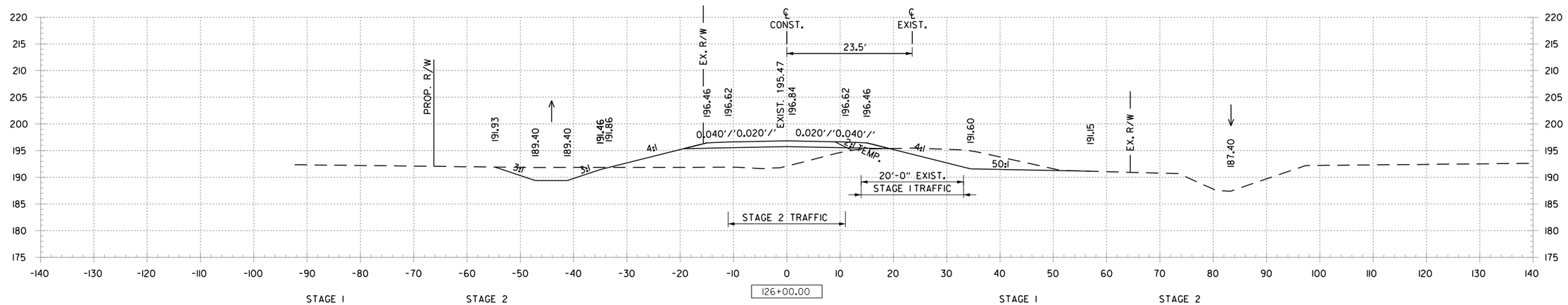
(2) HWY. 36 CROSS SECTIONS



127+00.00

STAGE 1		STAGE 2	
CUT AREA	39 SQ. FT.	CUT AREA	43 SQ. FT.
FILL AREA	87 SQ. FT.	FILL AREA	2 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	133 CU. YD.	CUT VOLUME	186 CU. YD.
FILL VOLUME	384 CU. YD.	FILL VOLUME	6 CU. YD.



126+00.00

STAGE 1		STAGE 2	
CUT AREA	33 SQ. FT.	CUT AREA	57 SQ. FT.
FILL AREA	121 SQ. FT.	FILL AREA	1 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	119 CU. YD.	CUT VOLUME	248 CU. YD.
FILL VOLUME	526 CU. YD.	FILL VOLUME	14 CU. YD.

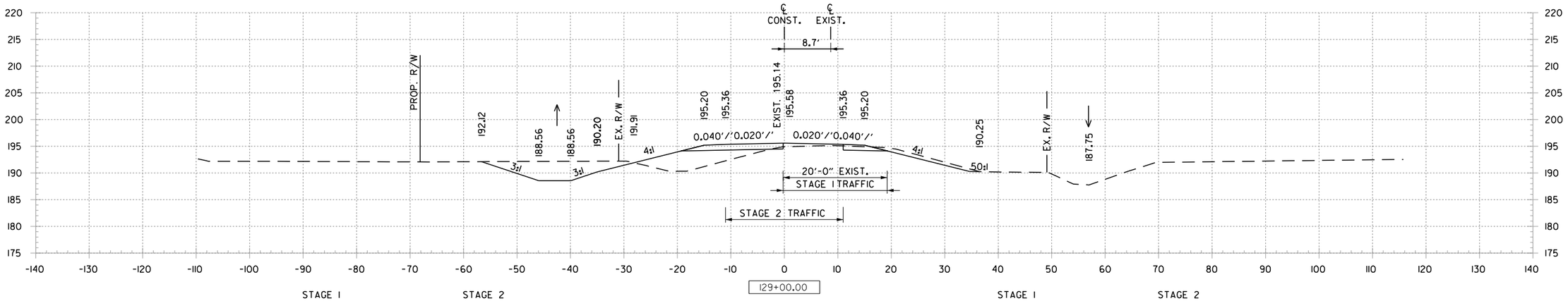
HWY. 36
STA. 126+00 TO STA. 127+00

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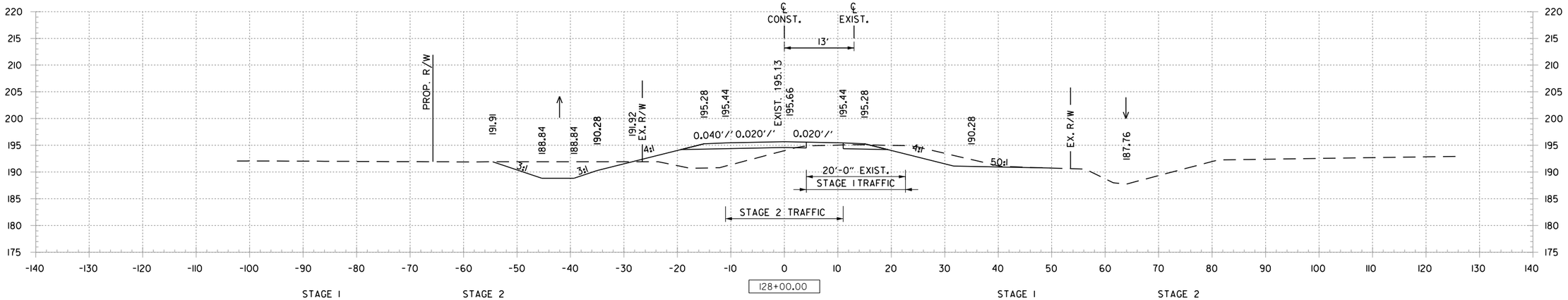
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	67	73

(2) HWY. 36 CROSS SECTIONS



129+00.00

STAGE 1		STAGE 2		STAGE 1		STAGE 2	
CUT AREA	63 SQ. FT.	CUT AREA	16 SQ. FT.	CUT VOLUME	205 CU. YD.	CUT VOLUME	99 CU. YD.
FILL AREA	52 SQ. FT.	FILL AREA	SQ. FT.	FILL VOLUME	213 CU. YD.	FILL VOLUME	CU. YD.



128+00.00

STAGE 1		STAGE 2		STAGE 1		STAGE 2	
CUT AREA	49 SQ. FT.	CUT AREA	38 SQ. FT.	CUT VOLUME	161 CU. YD.	CUT VOLUME	150 CU. YD.
FILL AREA	63 SQ. FT.	FILL AREA	SQ. FT.	FILL VOLUME	277 CU. YD.	FILL VOLUME	4 CU. YD.

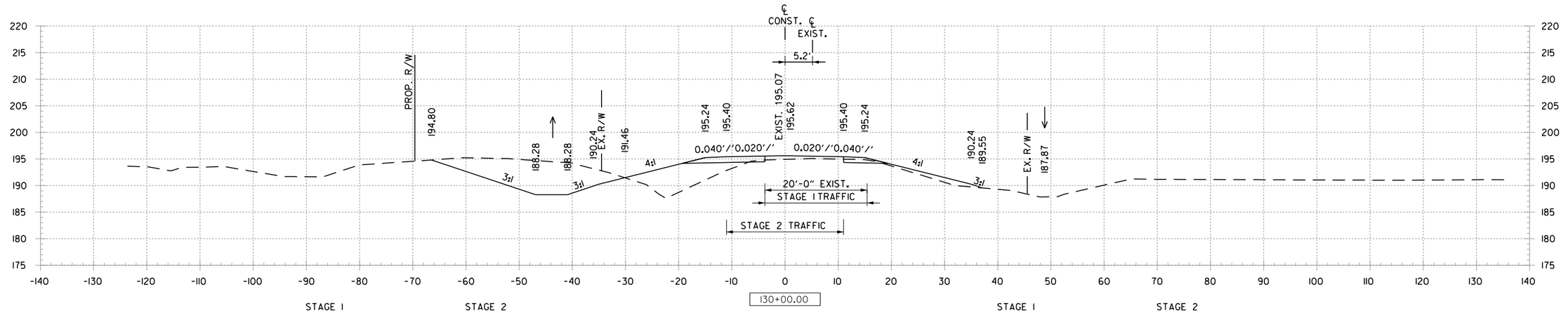
HWY. 36
STA. 128+00 TO STA. 129+00

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	68	73

(2) HWY. 36 CROSS SECTIONS

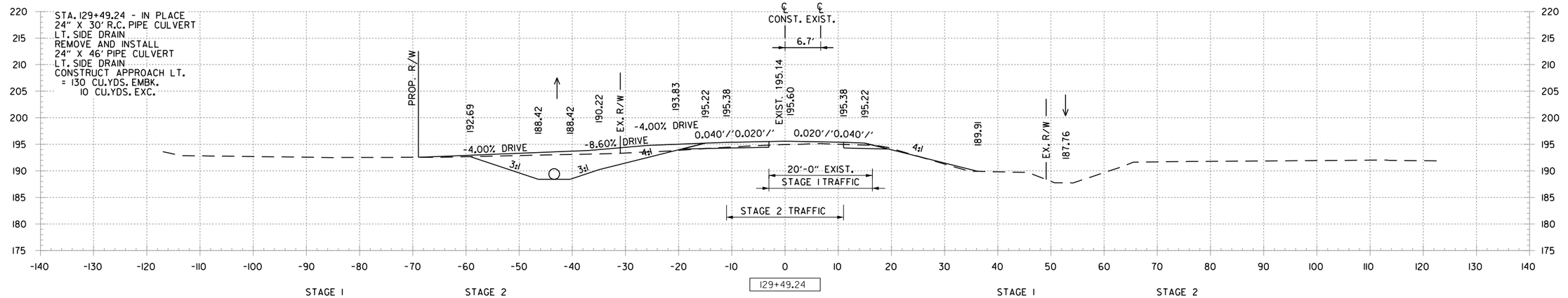


130+00.00

STAGE 1		STAGE 2	
CUT AREA	139 SQ. FT.	CUT AREA	4 SQ. FT.
FILL AREA	67 SQ. FT.	FILL AREA	11 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	226 CU. YD.	CUT VOLUME	9 CU. YD.
FILL VOLUME	63 CU. YD.	FILL VOLUME	12 CU. YD.

STA. 129+49.24 - IN PLACE
24" X 30' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 46' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH LT.
= 130 CU.YDS. EMBK.
10 CU.YDS. EXC.



129+49.24

STAGE 1		STAGE 2	
CUT AREA	101 SQ. FT.	CUT AREA	6 SQ. FT.
FILL AREA	1 SQ. FT.	FILL AREA	2 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	149 CU. YD.	CUT VOLUME	20 CU. YD.
FILL VOLUME	48 CU. YD.	FILL VOLUME	2 CU. YD.

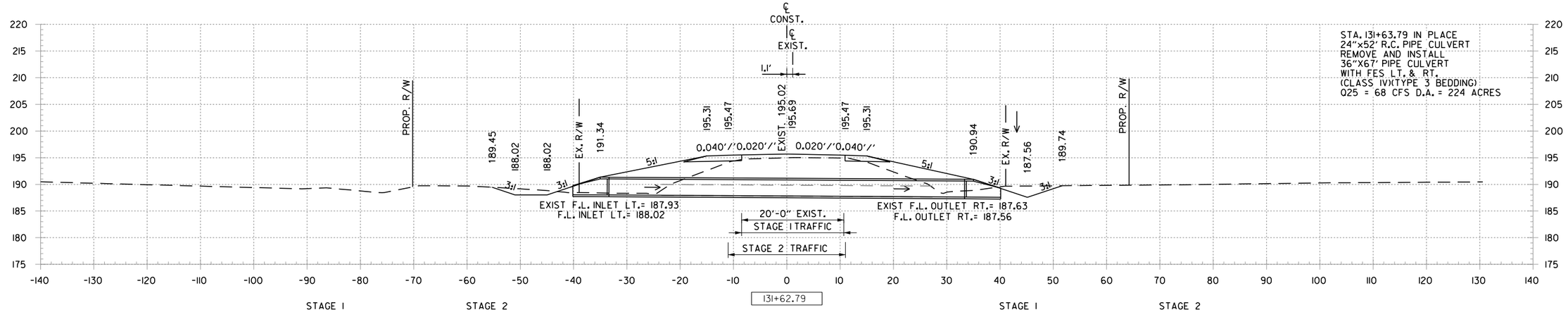
HWY. 36
STA. 129+49 TO STA. 130+00

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	69	73

(2) HWY. 36 CROSS SECTIONS

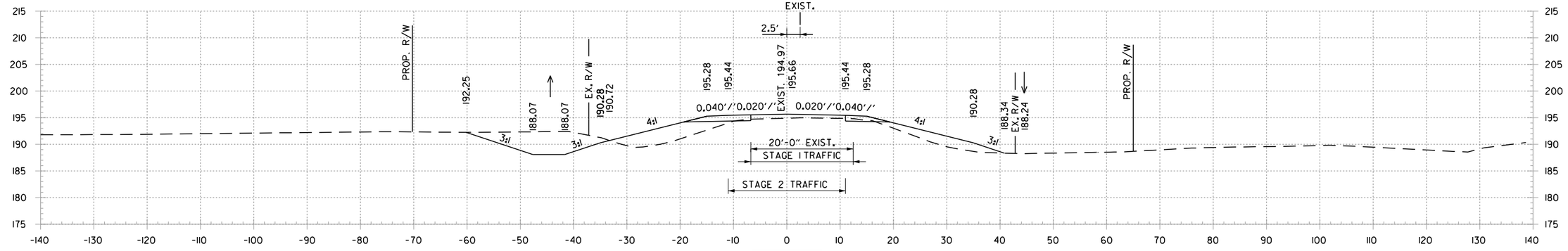


STAGE 1
CUT AREA 9 SQ. FT.
FILL AREA 92 SQ. FT.

STAGE 2
CUT AREA 14 SQ. FT.
FILL AREA 51 SQ. FT.

STAGE 1
CUT VOLUME 95 CU. YD.
FILL VOLUME 162 CU. YD.

STAGE 2
CUT VOLUME 19 CU. YD.
FILL VOLUME 97 CU. YD.

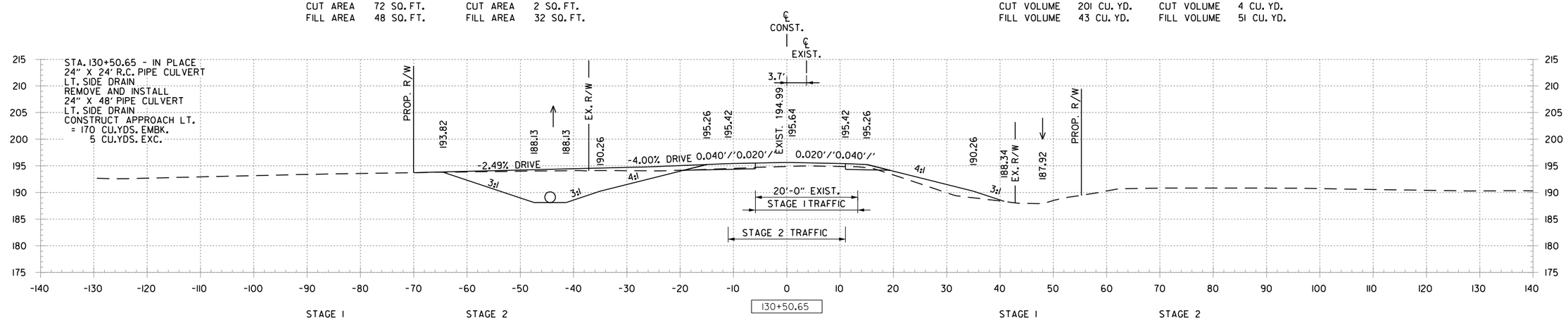


STAGE 1
CUT AREA 72 SQ. FT.
FILL AREA 48 SQ. FT.

STAGE 2
CUT AREA 2 SQ. FT.
FILL AREA 32 SQ. FT.

STAGE 1
CUT VOLUME 201 CU. YD.
FILL VOLUME 43 CU. YD.

STAGE 2
CUT VOLUME 4 CU. YD.
FILL VOLUME 51 CU. YD.



STAGE 1
CUT AREA 148 SQ. FT.
FILL AREA SQ. FT.

STAGE 2
CUT AREA 3 SQ. FT.
FILL AREA 24 SQ. FT.

STAGE 1
CUT VOLUME 269 CU. YD.
FILL VOLUME 63 CU. YD.

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

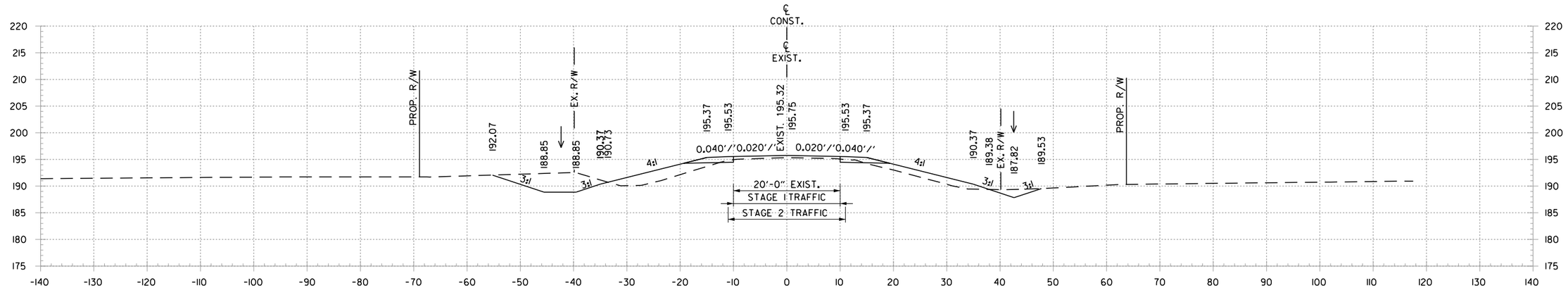
HWY. 36
STA. 130+51 TO STA. 131+63

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	70	73

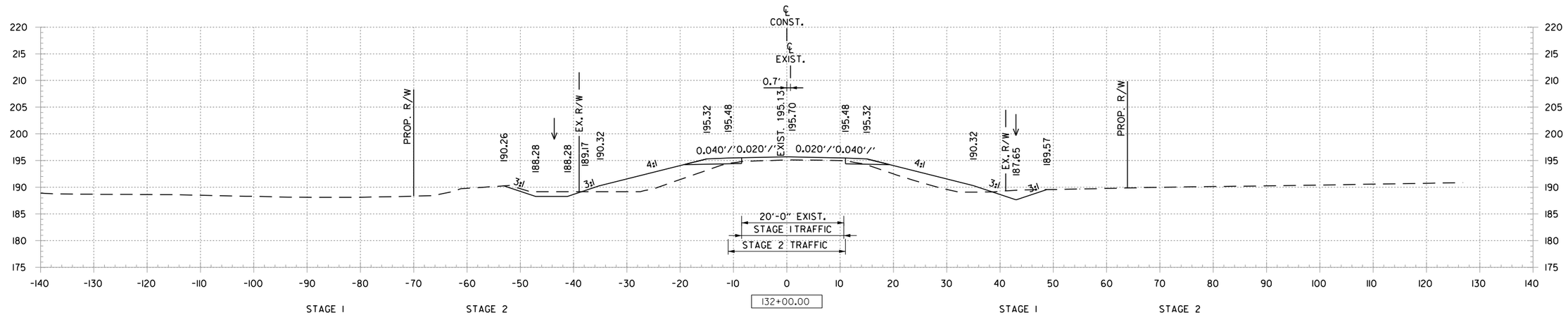
(2) HWY. 36 CROSS SECTIONS



133+00.00

STAGE 1		STAGE 2	
CUT AREA	50 SQ. FT.	CUT AREA	9 SQ. FT.
FILL AREA	31 SQ. FT.	FILL AREA	23 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	111 CU. YD.	CUT VOLUME	36 CU. YD.
FILL VOLUME	153 CU. YD.	FILL VOLUME	105 CU. YD.



132+00.00

STAGE 1		STAGE 2	
CUT AREA	10 SQ. FT.	CUT AREA	10 SQ. FT.
FILL AREA	51 SQ. FT.	FILL AREA	34 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	13 CU. YD.	CUT VOLUME	17 CU. YD.
FILL VOLUME	99 CU. YD.	FILL VOLUME	59 CU. YD.

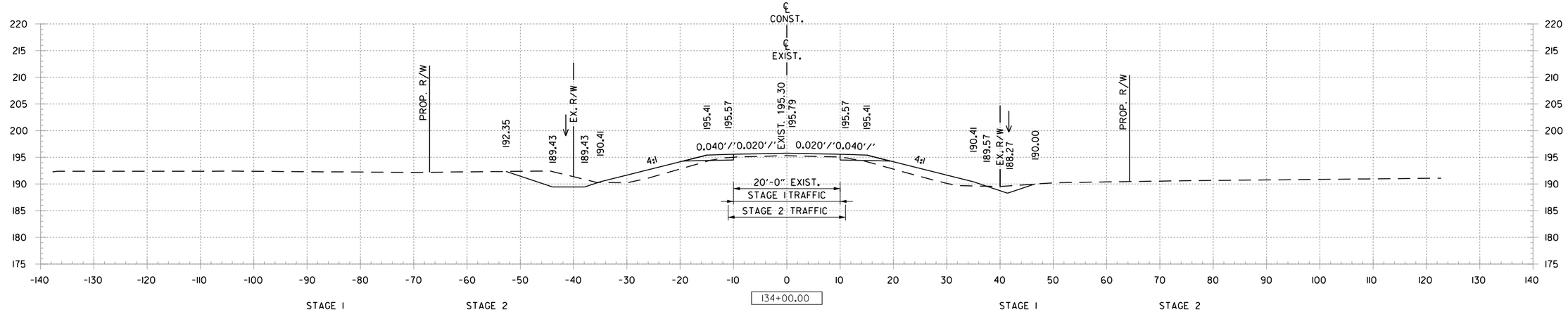
HWY. 36
STA. 132+00 TO STA. 133+00

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	71	73

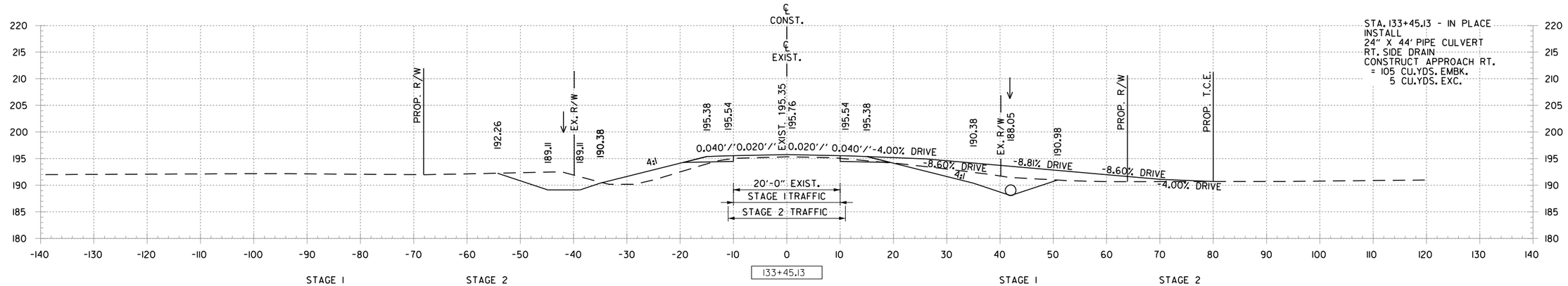
(2) HWY. 36 CROSS SECTIONS



134+00.00

STAGE 1		STAGE 2	
CUT AREA	29 SQ. FT.	CUT AREA	7 SQ. FT.
FILL AREA	23 SQ. FT.	FILL AREA	27 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	71 CU. YD.	CUT VOLUME	60 CU. YD.
FILL VOLUME	51 CU. YD.	FILL VOLUME	27 CU. YD.



133+45.13

STAGE 1		STAGE 2	
CUT AREA	41 SQ. FT.	CUT AREA	52 SQ. FT.
FILL AREA	27 SQ. FT.	FILL AREA	SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	76 CU. YD.	CUT VOLUME	52 CU. YD.
FILL VOLUME	49 CU. YD.	FILL VOLUME	19 CU. YD.

STA. 133+45.13 - IN PLACE
INSTALL
24" X 44' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH RT.
= 105 CU.YDS. EMBK.
5 CU.YDS. EXC.

HWY. 36
STA. 133+45 TO STA. 134+00

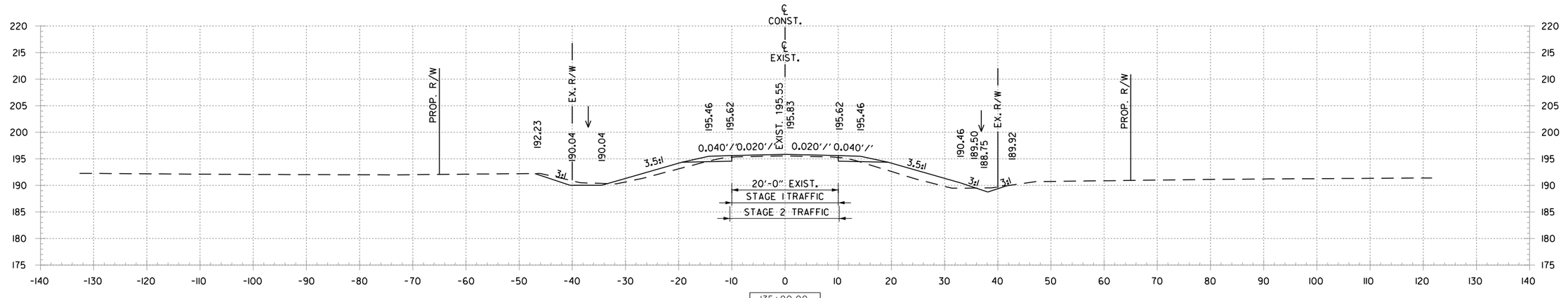
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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	72	73

(2) HWY. 36 CROSS SECTIONS



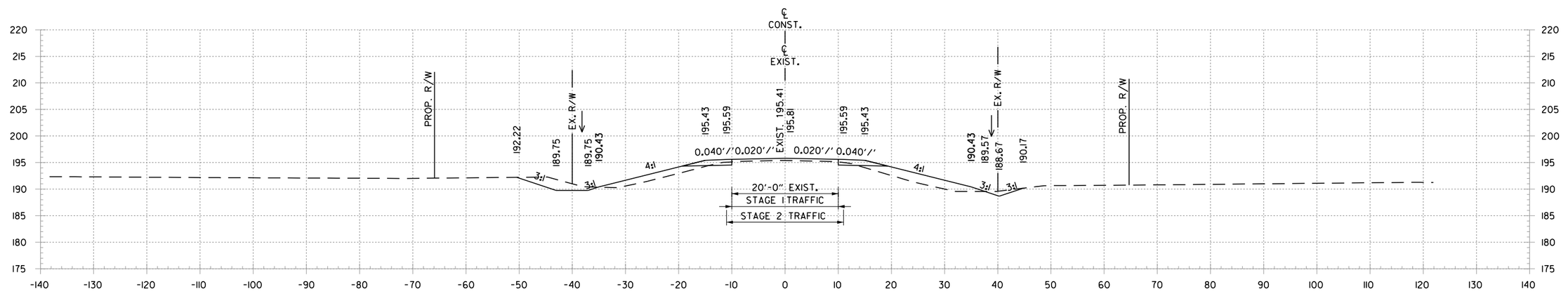
135+00.00

STAGE 1
CUT AREA 9 SQ. FT.
FILL AREA 14 SQ. FT.

STAGE 2
CUT AREA 4 SQ. FT.
FILL AREA 27 SQ. FT.

STAGE 1
CUT VOLUME 23 CU. YD.
FILL VOLUME 27 CU. YD.

STAGE 2
CUT VOLUME 7 CU. YD.
FILL VOLUME 47 CU. YD.



134+55.57
END JOB 050417 &
BEGIN 100' TRANSITION

STAGE 1
CUT AREA 19 SQ. FT.
FILL AREA 19 SQ. FT.

STAGE 2
CUT AREA 5 SQ. FT.
FILL AREA 31 SQ. FT.

STAGE 1
CUT VOLUME 50 CU. YD.
FILL VOLUME 43 CU. YD.

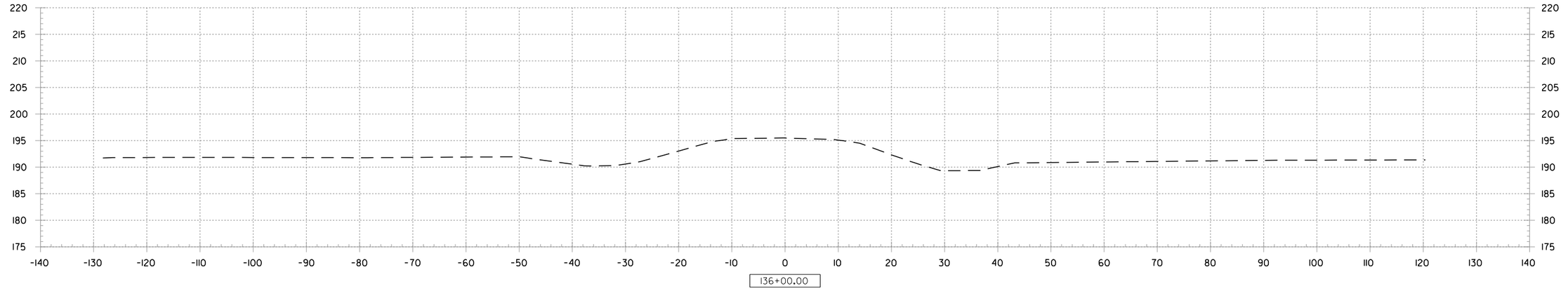
STAGE 2
CUT VOLUME 12 CU. YD.
FILL VOLUME 59 CU. YD.

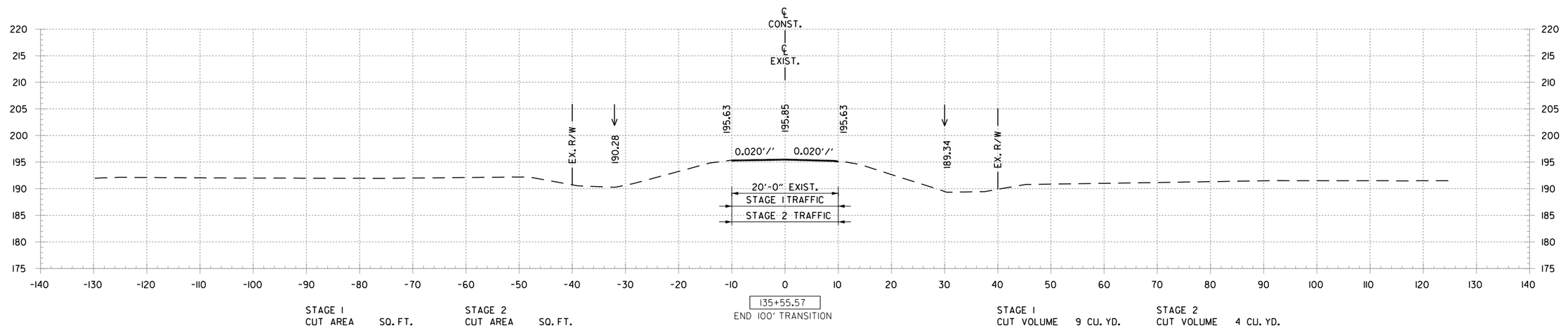
HWY. 36
STA. 134+56 TO STA. 135+00

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050417	73	73

(2) HWY. 36 CROSS SECTIONS





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

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

STAGE 1
CUT VOLUME 9 CU. YD.
FILL VOLUME 14 CU. YD.

STAGE 2
CUT VOLUME 4 CU. YD.
FILL VOLUME 27 CU. YD.

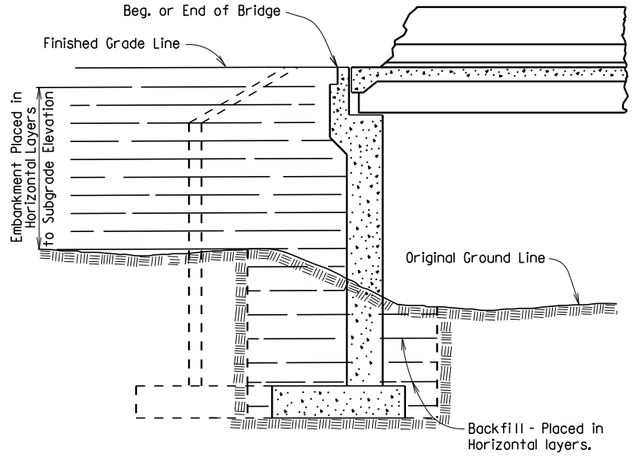
HWY. 36
STA. 135+56 TO STA. 136+00

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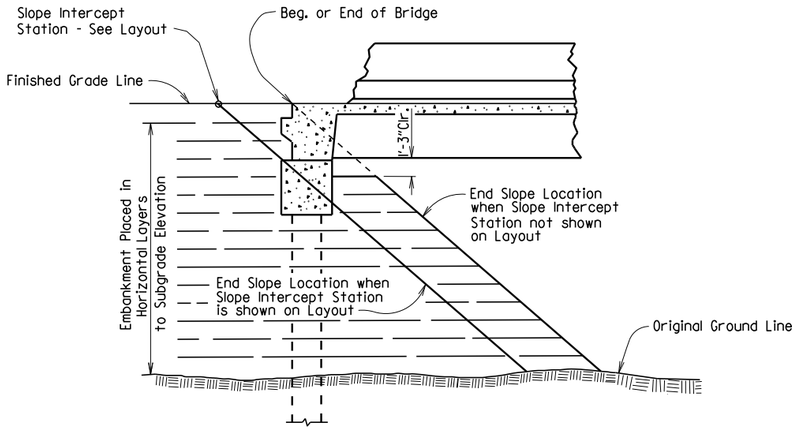
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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				

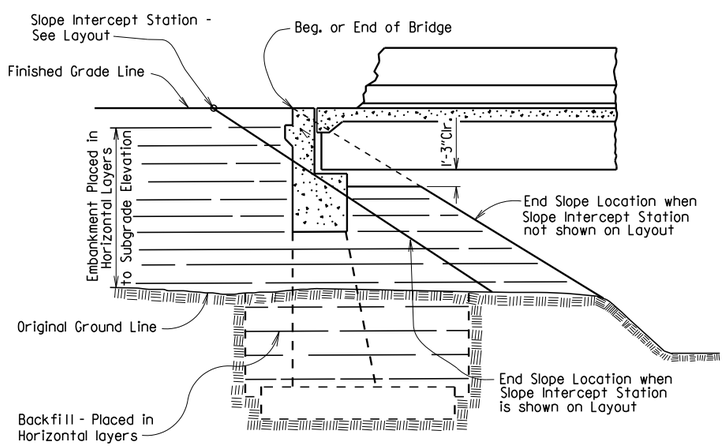
1 EMBANKMENT & BACKFILL 55000



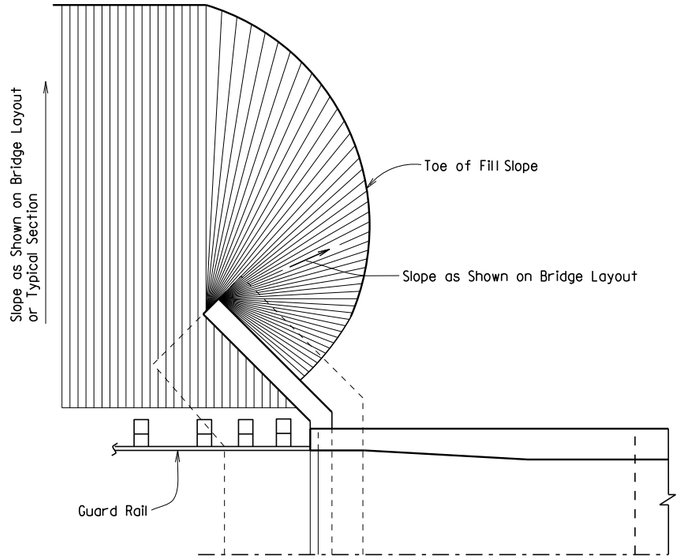
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



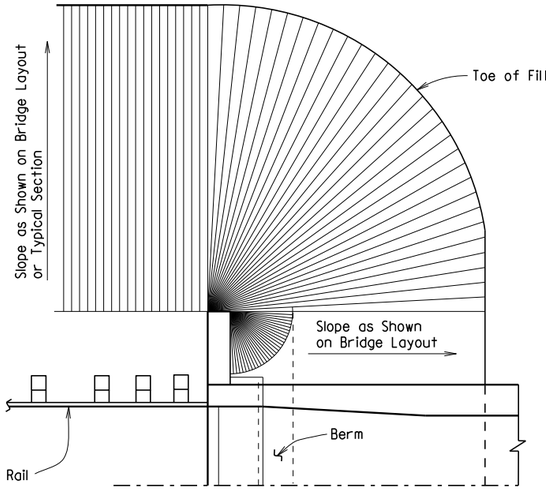
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



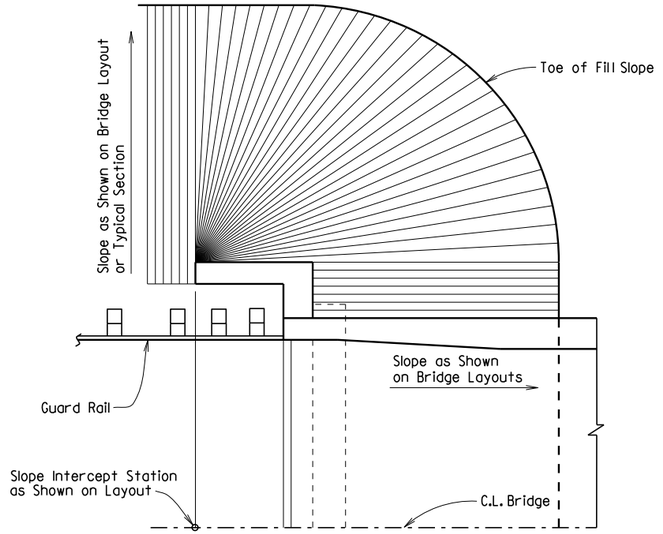
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



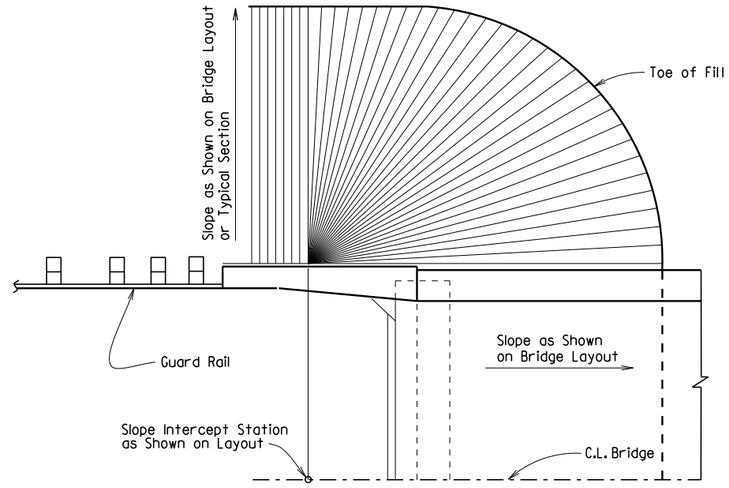
VERTICAL WALL ABUTMENTS



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

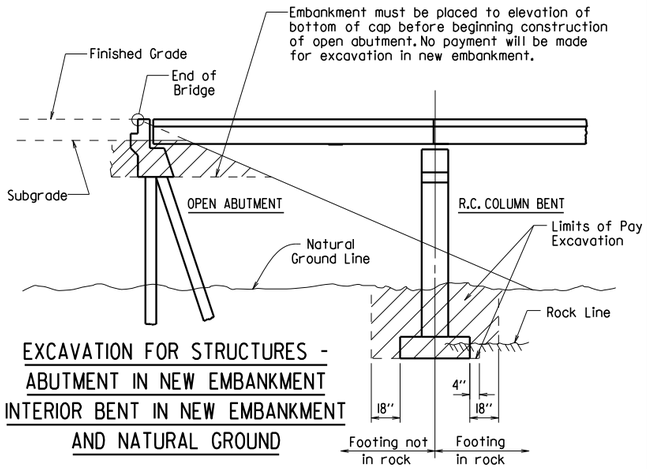
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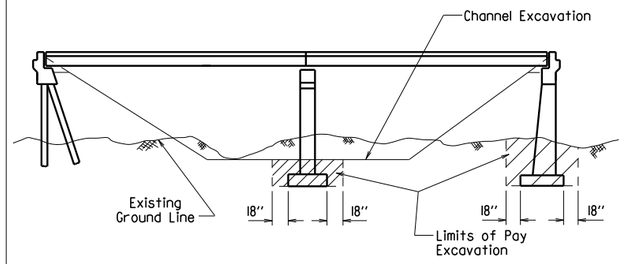
DRAWING NO. 55000

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

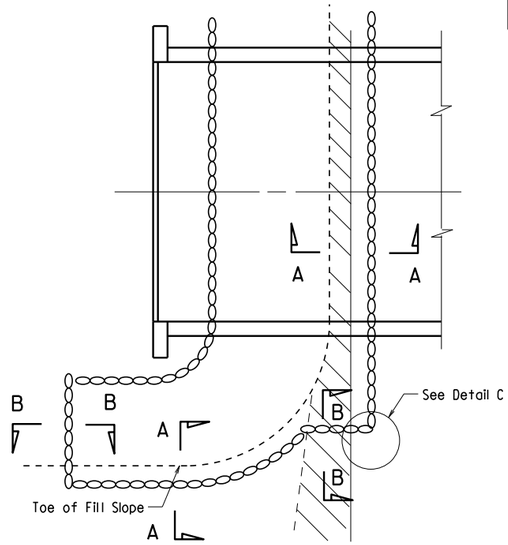
1 RIPRAP & EXCAV. 55001



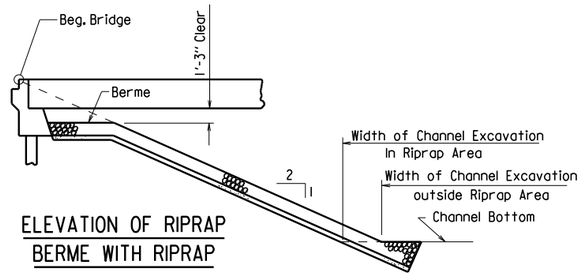
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



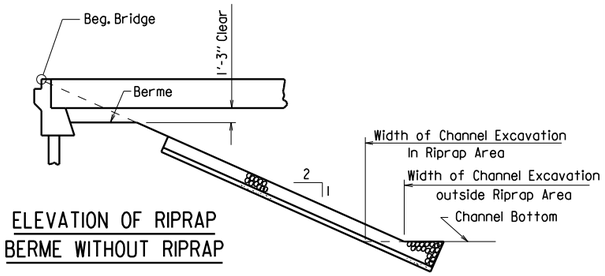
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



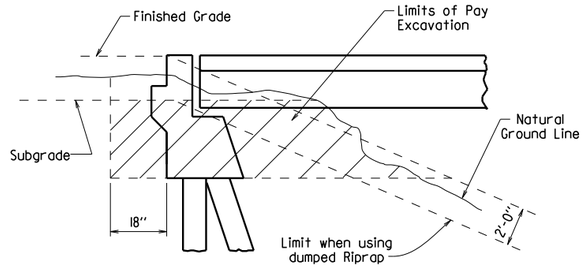
PLAN OF DUMPED RIPRAP



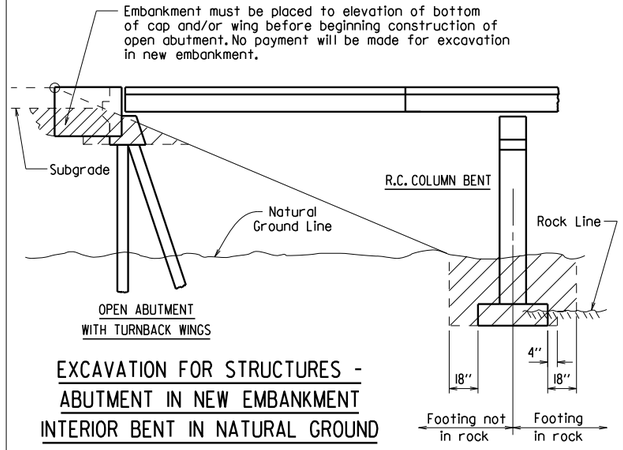
ELEVATION OF RIPRAP BERME WITH RIPRAP



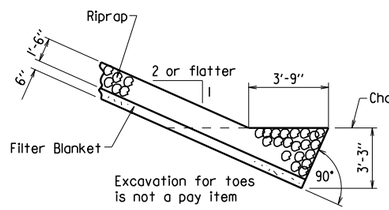
ELEVATION OF RIPRAP BERME WITHOUT RIPRAP



EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND

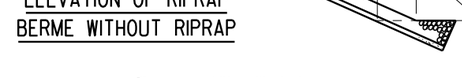


EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND

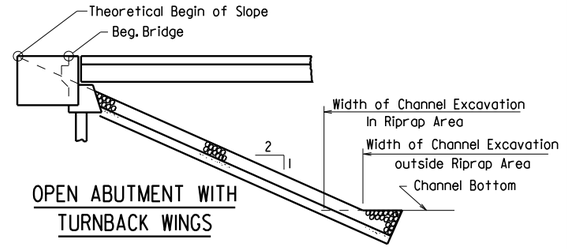


SECTION A-A

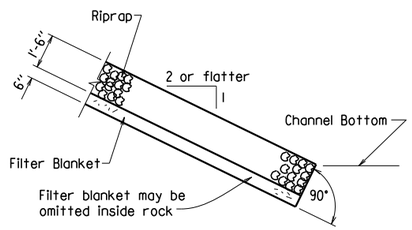
(Toe Excavation in Soil)



SECTION B-B



OPEN ABUTMENT WITH TURNBACK WINGS



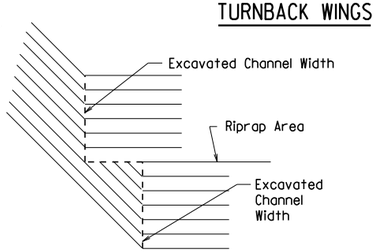
SECTION A-A

(Toe Excavation in Rock)

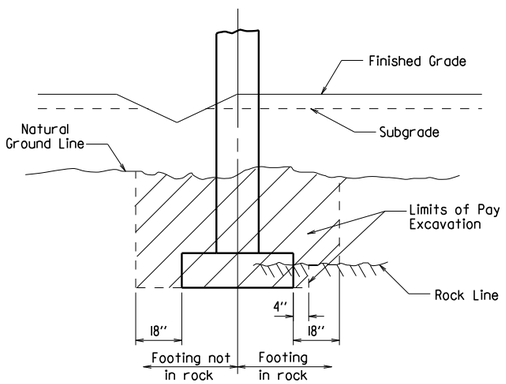
Note : Use this type of toe when rock is encountered which is in a stable condition.

Note : In lieu of an aggregate filter blanket, a synthetic fiber geotextile fabric complying with the requirements of Subsection 816.02(e) may be used.

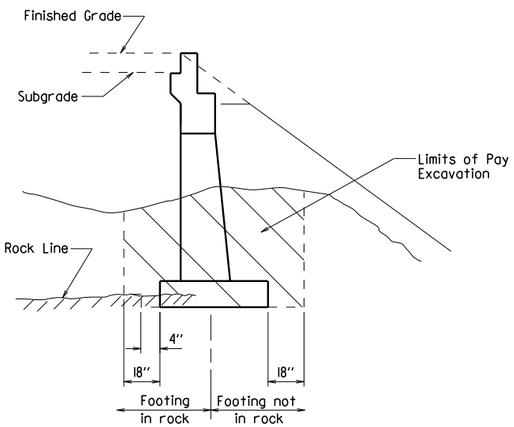
Note : Details for computing excavation for structures are included for information as to how plan quantities were calculated and for use when adjusting quantities when changing footing elevation.



DETAIL C



EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT

STANDARD DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND COMPUTING EXCAVATION FOR STRUCTURES

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

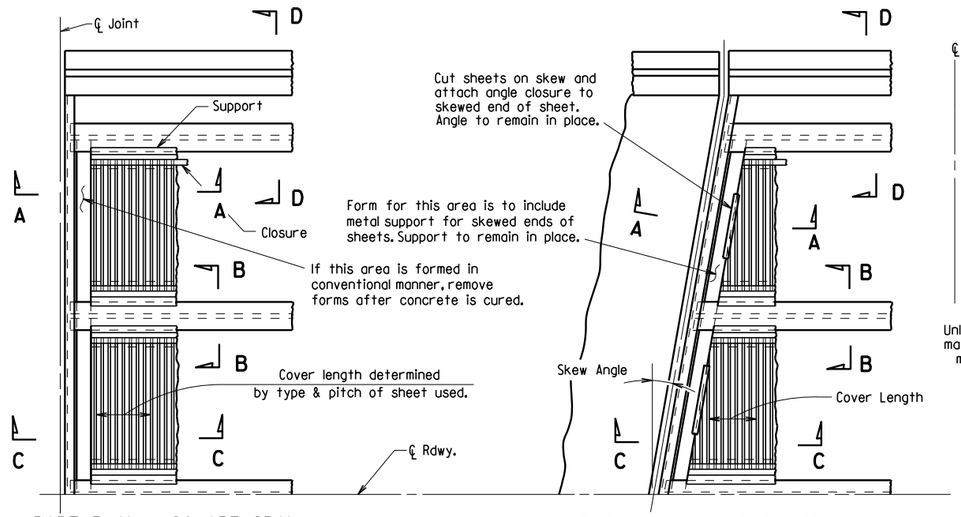
DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b5500l.dgn

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

DESIGNED BY: STD. DATE:

DRAWING NO. 55001

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
3/24/16				6	ARK.			
				JOB NO.				
				①	BRIDGE DECK FORMS		55005	

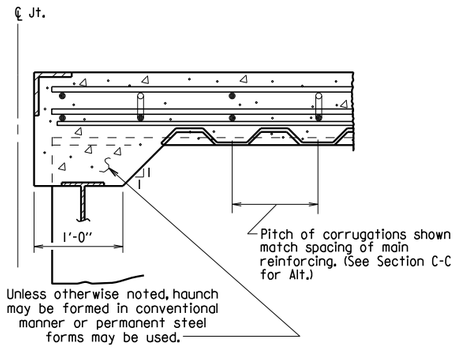


PART PLAN - SQUARE SPAN

3/8" = 1'-0"

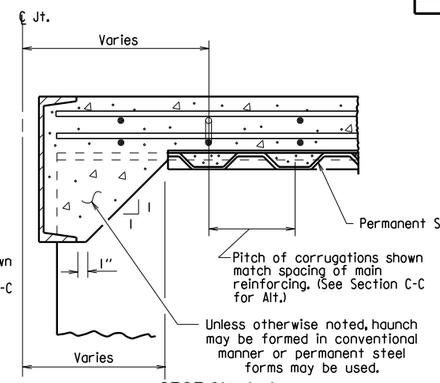
PART PLAN - SKEWED SPAN

3/8" = 1'-0"



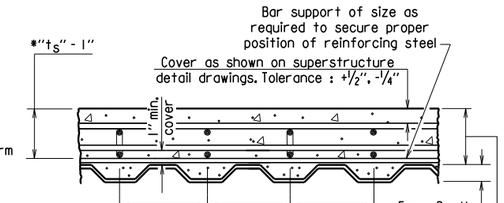
SECTION A-A

N.T.S.
(Angle at end of span)



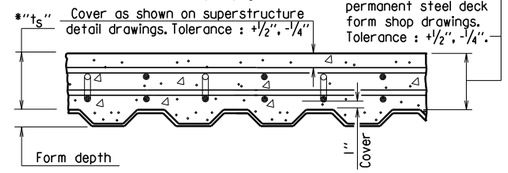
SECTION A-A

N.T.S.
(Channel at end of span)



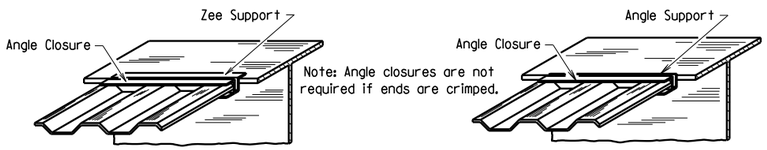
SECTION C-C

1" = 1'-0"



SECTION C-C - ALTERNATE

1" = 1'-0"
(Applicable when corrugations do not match spacing of main reinforcement)



SKETCH OF PERMISSIBLE SUPPORTS

N.T.S.

*t_s = slab thickness as shown on superstructure detail drawings.

GENERAL NOTES

Permanent steel deck forms may be used at the Contractor's option and shall be at no additional cost to the Department. Such use may result in changes to the dead load deflection of the girder. Any cost for adjustments due to a change in the dead load deflection will be borne by the Contractor. Payment for deck concrete and structural steel will not be increased due to use of permanent steel deck forms.

Permanent steel deck forms shall conform to Subsection 802.14(b). Detailed plans, including detailed calculations and manufacturer's technical brochure, shall be submitted to and approved by the Engineer before work of forming the bridge deck is started.

Welding of form supports to the tension flange of steel girders will be permitted only in areas where shear connectors are used. When welding is not allowed, the method of fastening Z or ∠ supports to the flange must be approved by the Engineer.

Form sheets shall be fastened to supporting members and to each other with galvanized metal screws sufficient in size and number to provide a secure attachment. Alternate methods of attachment must be approved by the Engineer.

When the pitch of form corrugations match the reinforcing spacing, transversely align form sheets across the bridge to maintain the correct orientation of continuous reinforcing bars in the corrugations.

Bar support rods, when used, shall be sized and spaced to adequately support the bottom reinforcing mat at the required position.

High chairs shall be sized to support the top mat of reinforcing at the proper position. High chairs shall be placed at locations shown on the detail drawings.

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

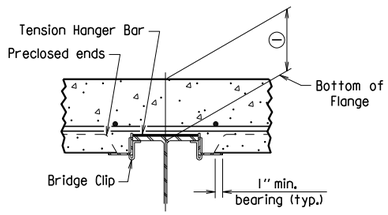
SECTION B-B

1" = 1'-0"
(Showing permissible support for tension flange where shear connectors are used, and for all compression flanges)

③ ⚠ Minimum weld: 1/8" x 1" @ 18". More weld may be required; maximum length per weld = 1 1/2" (typ.)

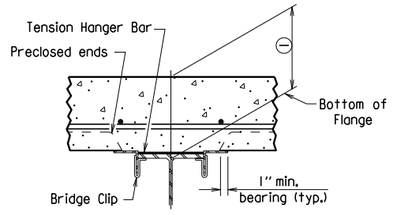
SECTION B-B

1" = 1'-0"
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



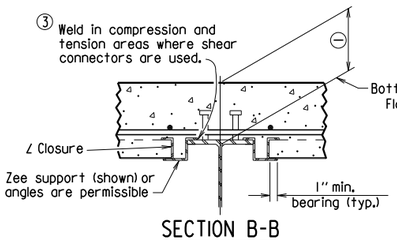
SECTION B-B

1" = 1'-0"
(Showing permissible support for tension flange where shear connectors are not used)



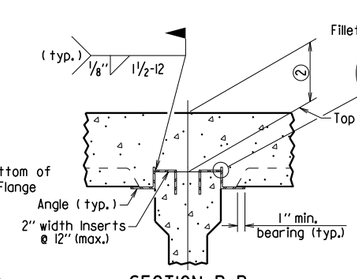
SECTION B-B

1" = 1'-0"
(Showing permissible support for tension flange where shear connectors are not used)



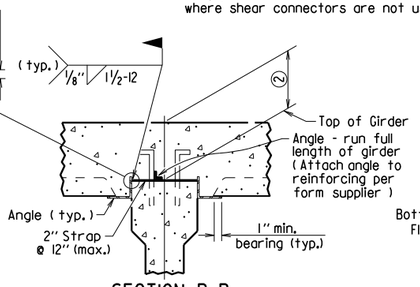
SECTION B-B

1" = 1'-0"
(Showing ∠ Closure)



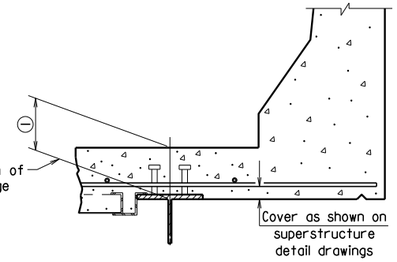
SECTION B-B (FOR CONCRETE GIRDERS)

1" = 1'-0"
(Showing support by Insert cast in girder)



SECTION B-B (FOR CONCRETE GIRDERS)

1" = 1'-0"
(Showing support by Strap)



SECTION D-D

1" = 1'-0"
Note: Only Bottom Reinforcing is shown.

① Distance from top of slab to bottom of top flange as measured at centerline girder and as shown on superstructure detail drawings. This dimension may vary within the following limits to maintain the grade and slab thickness tolerances : Minimum - occurs when either the top flange or the support angle leg contacts the bottom reinforcing steel; Maximum = t_S + 1 3/4" + flange thickness. See Section C-C for slab thickness tolerance between adjacent girder flanges.

② Distance from top of slab to top of girder as measured at centerline girder and as shown on superstructure detail drawings. This dimension may vary within the following limits to maintain the grade and slab thickness tolerances : Minimum - occurs when either the top of girder or the support angle leg contacts the bottom reinforcing steel; Maximum - value shown on the superstructure detail drawings when removable forms are used. See Section C-C for slab thickness tolerance between adjacent girder flanges.

⚠ Revised weld dimension by KWY, Ck'd. by BEF, 3/24/16.

STANDARD DETAILS FOR PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY:	KDH	DATE:	2-27-2014	FILENAME:	b55005.dgn
CHECKED BY:	BEF	DATE:	2-27-2014	SCALE:	NONE
DESIGNED BY:	STD.	DATE:	—		

DRAWING NO. 55005

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				
				①		GENERAL NOTES		55006

GENERAL NOTES

These GENERAL NOTES are applicable unless otherwise shown in the Plan Details, Special Provisions, or Supplemental Specifications.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition) with applicable Supplemental Specifications and Special Provisions. Section and Subsection refer to the Standard Specifications.

DESIGN SPECIFICATIONS: See Bridge Layout(s).

SUPERSTRUCTURE NOTES:

MATERIALS AND STRENGTHS:

Class S(AE) Concrete	f'c =	4,000 psi
Reinforcing Steel (Gr. 60, AASHTO M 31 or M 322, Type A)	fy =	60,000 psi
Structural Steel (AASHTO M 270, Gr. 36)	Fy =	36,000 psi
Structural Steel (AASHTO M 270, Gr. 50)	Fy =	50,000 psi
Structural Steel (AASHTO M 270, Gr. 50W)	Fy =	50,000 psi
Structural Steel (AASHTO M 270, Gr. HPS70W)	Fy =	70,000 psi

See Plan Details for Grade(s) of Structural Steel required.

CONCRETE:

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

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Class S(AE) Concrete. See Standard Drawing No. 55005 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used.

Use of a longitudinal screed is not permitted on any span of a bridge deck with horizontal curvature.

The concrete deck (roadway surface) shall be given a tine finish in accordance with Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Sidewalks shall receive a broomed finish as specified for final finishing in Subsection 802.19 for Class 6 Broomed Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the beam or girder. When permitted, the use of a longitudinal strike-off will require that a vertical camber adjustment be made in the strike-off to account for the future dead load deflection due to any railings, median barrier, and sidewalks.

REINFORCING STEEL:

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

STRUCTURAL STEEL (COMMON TO W-BEAMS AND PLATE GIRDERS):

Structural steel shall be AASHTO M 270 with grade and payment as specified in the plans. Grade 50W steel shall not be painted and all exposed surfaces shall be cleaned in accordance with Subsection 807.84(e). Grade 36 and Grade 50 steel shall be painted unless otherwise noted and all exposed surfaces shall be cleaned in accordance with Subsection 807.84. Structural steel completely embedded in concrete may be AASHTO M 270, Gr. 36, Gr. 50 or Gr. 50W unless otherwise noted.

Drawings show general features of design only. Shop drawings shall be made in accordance with the specifications, submitted and approval secured before fabrication is begun.

Requests for substitution of structural steel shapes shown with shapes of greater size must be submitted by the Contractor to the Engineer for approval. Steels of equal or greater strengths will be accepted only when shown on the approved shop drawings. Payment will be based on the basis of shapes and materials shown in the plans, and no additional compensation will be made for any adjustments due to substitutions.

All welding that is to be done during fabrication of structural steel, including temporary welds, shall be detailed on the shop drawings and submitted for approval. If additional welds are required, whether permanent or temporary, a formal request with detailed drawings shall be submitted to the Engineer for approval; however, additional welds used for attaching falsework support devices or screed rail supports to the structural steel that do not exceed the limitations of Subsection 802.13 will not require approval prior to construction. All welding shall conform to Subsection 807.26.

Unless otherwise noted, field connections shall be bolted with ¾" ø high-strength bolts using 13/16 " ø open holes. Holes for ¾" ø high-strength bolts may be 15/16 " ø if a washer is supplied for use under both the nut and head of the bolt. The use of oversized holes will not be allowed on main members unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam or girder webs and on the bottom of the beam or girder flanges.

All stud shear connectors shall be granular flux filled, solid fluxed, or equal and shall be automatically end welded in accordance with recommendations of the Manufacturer.

When painting is required, all structural steel except galvanized steel and steel completely encased in concrete shall be painted in accordance with Subsection 807.75. The color of paint shall be as specified in the plans.

STRUCTURAL STEEL (W-BEAMS):

All beams and field splice plates, and all diaphragms and connection plates attached to horizontally curved beams are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in Subsection 807.05. This work and material will not be paid for directly, but shall be considered subsidiary to the item "Structural Steel in Beam Spans (M 270, Gr. ___)".

All beams in continuous units and simple spans with field splices shall be blocked in their true position in the shop in groups as specified in Subsection 807.54(b)(2) with the webs horizontal. The camber, length of sections, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram.

All beams in simple spans without field splices shall be blocked in their true position with webs horizontal. The camber, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records.

Flange field splice plates shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses.

All beam dimensions are based on a temperature of 60 degrees F. A tolerance of ¼" +/- is allowed for camber.

Bent plate diaphragms for horizontally curved beams shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses. Bent plate diaphragms for straight beams may be cut and fabricated in accordance with Subsection 807.35 or as required for horizontally curved beams.

Unless otherwise noted, diaphragms shall be installed as beams are erected. All bolts in diaphragms and field splices shall be installed and tightened in accordance with Subsection 807.71 prior to pouring the concrete deck.

STRUCTURAL STEEL (PLATE GIRDERS):

All references to cross-frames shall include "X" or "K" types.

All girder web and flange plates, all field splice plates, and all diaphragms, cross-frames and connection plates attached to horizontally curved girders are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in Subsection 807.05. This work and material will not be paid for directly, but shall be considered subsidiary to the item "Structural Steel in Plate Girder Spans (M 270, Gr. ___)".

All girders in continuous units and simple spans with field splices shall be assembled in the shop as specified in Subsection 807.54(b)(2) and blocked in their true position with webs horizontal. The camber, length of sections, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram.

All girders in simple spans without field splices shall be blocked in their true position with webs horizontal. The camber, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records.

Web and flange plates for main members and flange splice plates for main members shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses.

Girder webs may be made by shop splicing with minimum lengths of 25 feet for sections. Flange plates longer than 50 feet may be made by shop splicing with minimum lengths of 25 feet for sections. No additional payment will be made for shop welded splices.

All girder dimensions are based on a temperature of 60 degrees F. A tolerance of ¼" +/- is allowed for camber.

Groove welds in web and flange plates shall be Quality Control (Q.C.) tested by nondestructive testing, as required in Subsection 807.23(b). Fillet welds at flange to web plate connections shall be Q.C. tested by the magnetic particle method. All Q.C. testing shall be considered subsidiary to the item "Structural Steel in Plate Girder Spans (M 270, Gr. ___)".

Bent plate diaphragms for horizontally curved girders shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses. Bent plate diaphragms for straight girders may be cut and fabricated in accordance with Subsection 807.35 or as required for horizontally curved girders.

Unless otherwise noted, cross-frames and diaphragms shall be installed as girders are erected. All bolts in cross-frames, diaphragms, and field splices shall be installed and tightened in accordance with Subsection 807.71 prior to pouring the concrete deck.

SUBSTRUCTURE NOTES:

CONCRETE:

Unless otherwise noted, concrete in caps, columns and footings (except seal footings) shall be Class "S" with a minimum 28 day compressive strength f'c = 3,500 psi and shall be poured in the dry. Seal Concrete for footings shall have a minimum 28 day compressive strength f'c = 2,100 psi.

Concrete in drilled shafts shall be Class "S" as modified by Job SP "Drilled Shaft Foundations".

All exposed corners shall be chamfered ¾" unless otherwise noted.

REINFORCING STEEL:

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

Top reinforcing bars in cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

STRUCTURAL STEEL:

Structural steel in end bents shall be AASHTO M 270 with grade and payment as specified in the plans.

FOR ADDITIONAL INFORMATION AND NOTES, SEE LAYOUT(S) AND PLAN DETAILS.

FOR ADDITIONAL INFORMATION AND NOTES, SEE LAYOUT(S) AND PLAN DETAILS.

STANDARD GENERAL NOTES
FOR STEEL BRIDGE STRUCTURES

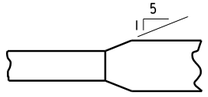
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 9-2-2015 FILENAME: b55006.dgn
CHECKED BY: B.E.F. DATE: 9-2-2015 SCALE: NO SCALE
DESIGNED BY: STD. DATE:

DRAWING NO. 55006

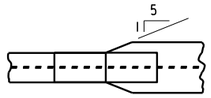
PRINT DATE: 11/7/2019

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				
				①	STEEL BRIDGE STRUCTURES 55007			

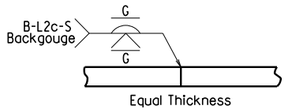


Plan-Unequal Width (Flg.)

FLANGE SPLICE

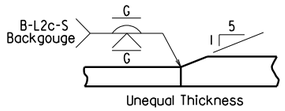


FLANGE SPLICE AT UNEQUAL BOTTOM FLANGE WIDTHS



Equal Thickness

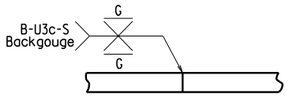
WEB & FLANGE SPLICE



Unequal Thickness

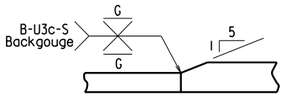
FLANGE SPLICE

(Use when Base Metal Thickness is Equal to or Less than 2")



Equal Thickness

WEB & FLANGE SPLICE

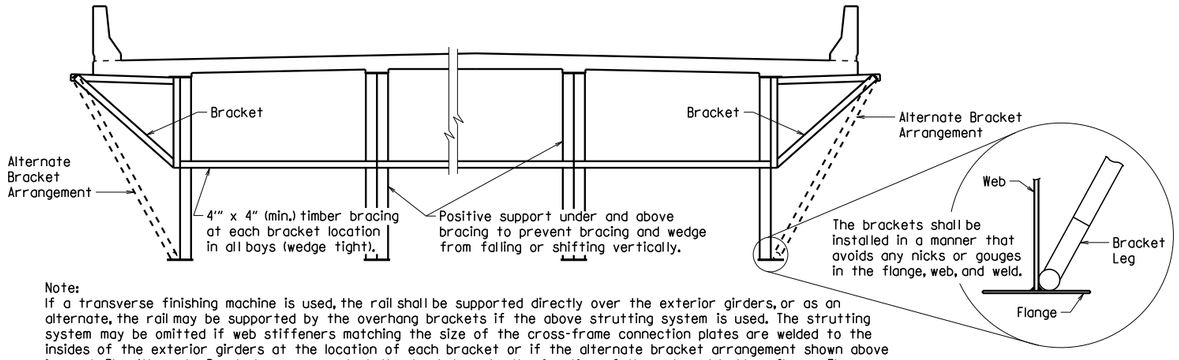


Unequal Thickness

FLANGE SPLICE

(Use when Base Metal Thickness is Greater than 2")

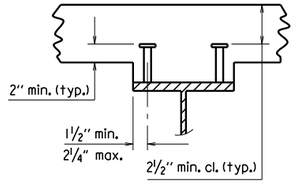
DETAILS OF WELDED SPLICES FOR PLATE GIRDERS



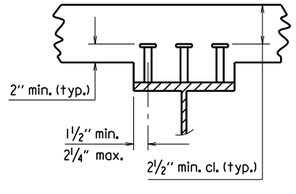
Note:
If a transverse finishing machine is used, the rail shall be supported directly over the exterior girders, or as an alternate, the rail may be supported by the overhang brackets if the above strutting system is used. The strutting system may be omitted if web stiffeners matching the size of the cross-frame connection plates are welded to the insides of the exterior girders at the location of each bracket or if the alternate bracket arrangement shown above is used. The Alternate Bracket arrangement shall extend down to the junction of the web and bottom flange. The stiffener shall conform to the details for cross frame connection plates shown on the plans. No direct payment will be made for brackets, timber bracing, supports, or welded stiffeners. Payment shall be subsidiary to "Structural Steel in Plate Girder Spans (___)".

SCREED RAIL SUPPORT FOR PLATE GIRDERS

(USE WHEN WEB DEPTHS ARE 48" OR GREATER)



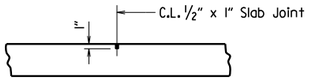
2 STUDS PER ROW



3 STUDS PER ROW

Stud Shear Connectors shall be automatically end welded to the beam or girder flange in accordance with the recommendations of the Manufacturer. See plan details for number and size.

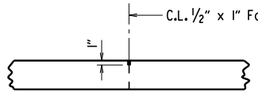
SHEAR CONNECTOR DETAIL



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

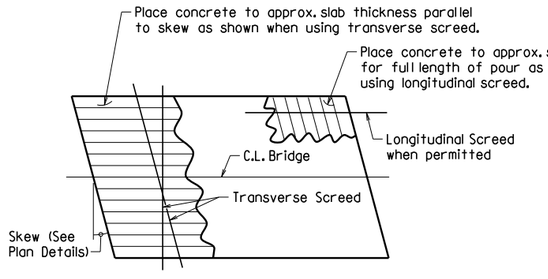
ADDITIONAL NOTES IF SIDEWALKS OR RAISED MEDIANS ARE REQUIRED:
Slab Joints shall be installed before the sidewalk or raised median is poured. After installation of the joint in the sidewalk or raised median and prior to pouring the parapet rail, the joint sealer shall be placed extending across the deck slab from gutterline to gutterline and acrosss the top of the sidwalk or raised median to the edge of the slab. No joint sealer shall be placed on the deck slab under the sidewalk or raised median.

TRANSVERSE SLAB JOINT DETAIL



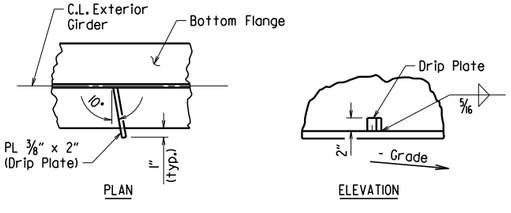
Use ½" x 1" Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer Rod filler will not be required. Joint sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. This joint shall be formed. Seal color shall be gray or other color similar to concrete.

LONGITUDINAL CONSTRUCTION JOINT



Note: At the Contractor's option, the transverse screed may be placed parallel to the skew or perpendicular to C. L. Bridge.

CONCRETE PLACEMENT PROCEDURE FOR BRIDGES WITH SKEW



PLAN

ELEVATION

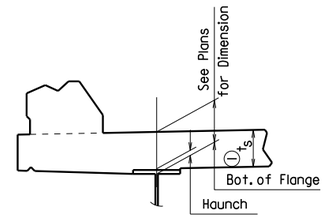
Drip Plate to be welded to the outer side of the bottom flange of the exterior girders.

Locate drip plate 5'-0" from C.L. Bearing on high side of each Bent, unless otherwise noted in the plans.

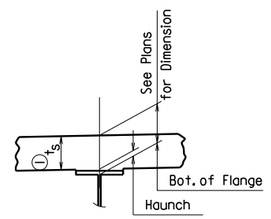
BOTTOM FLANGE DRIP PLATE

(USE WHEN WEB DEPTHS ARE 54" OR GREATER AND UNIT OR SPAN IS NOT IN LEVEL GRADE)

t_s = slab thickness. See "Typical Roadway Section" in the plans.



EXTERIOR BEAM OR GIRDER



INTERIOR BEAM OR GIRDER

① Tolerance when removable deck forming is used is + ½", - ¼". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

NOTES:
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance: Minimum occurs when top flange contacts bottom reinforcing steel; Maximum = top flange thickness plus 1¾" unless otherwise noted in the plans. No increase in concrete and structural steel quantities will be made to maintain tolerances.

Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 55005 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL

BRIDGES IN NORMAL CROWN

WELD TABLE

Material Thickness of Thicker Part Joined (Inches)	Minimum Size of Fillet Weld (Inches)	Single Pass Weld Must Be Used
To ¾" Inclusive	¼"	
Over ¾"	⅝"	

NOTE: When a fillet weld size, as shown on the plans, is larger than the minimum, the first pass shall be that specified for minimum size of fillet weld.

SECTION AND SUBSECTION REFER TO THE ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2014 EDITION).

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

STANDARD DETAILS FOR STEEL BRIDGE STRUCTURES

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 2/11/2016 FILENAME: b55007.dgn

CHECKED BY: AMS DATE: 2/11/2016 SCALE: No Scale

DESIGNED BY: STD. DATE: —

DRAWING NO. 55007

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
12-1-14		1-15-19		6	ARK.			
1-14-15		3-24-2020		JOB NO.				
1-17-17		5-11-2021						

1 TYPE D NAME PLATE - 55010

The name of the bridge as shown on the plans shall be placed on Lines 1-3 using ⅛" raised letters and numerals ⅜" high.

	Example 1	Example 2	Example 3	Example 4
Line 1	Red River	Southern	Saline	
Line 2	Relief	Railroad	River	Highway 5
Line 3		Overpass	Relief	

21½"

LINE 1
LINE 2
LINE 3

ARKANSAS HIGHWAY COMMISSION
ROBERT S. MOORE, JR. - CHAIR
DALTON A. "ALEC" FARMER, JR. - VICE CHAIR
PHILIP TALDO
KEITH GIBSON
MARIE HOLDER
DIRECTOR - LORIE H. TUDOR
DEPUTY DIRECTOR/CHIEF OPERATING OFFICER - RANDY ORT
DEPUTY DIRECTOR/CHIEF ENGINEER - REX VINES

CONTRACTOR
COMPANY NAME
YEAR

XXXXX

2½" Center of Cast Lug 2½" 2½"

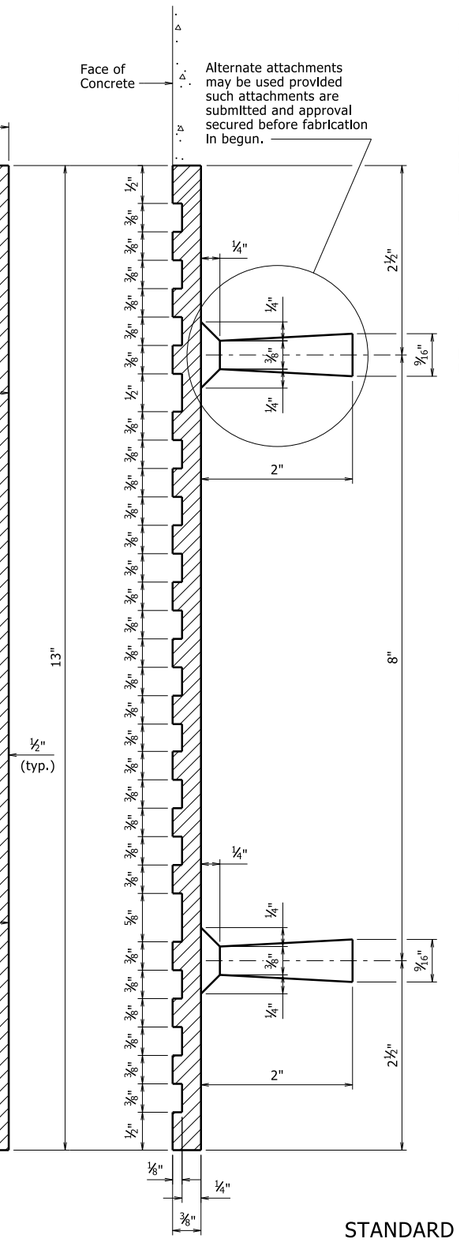
Place the design live loading here using ⅛" raised letters and numerals ¼" high. Examples: HS20 HL-93

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.

6 Revised Deputy Director/ Chief Engineer
5-11-2021 CGP Checked By: CRE

5 Revised Director, Deputy Director/Chief Operating Officer, Chair, Vice Chair and added New Commissioner
3-24-2020 CGP Checked By: CRE

4 Revised Chair and Vice Chair Added New Commissioner
1-15-19 CGP Checked By: CRE

3 Added New Commissioner
1-17-17 KDH Checked By: CRE

2 Revised Chair and Vice Chair Added New Commissioner
1-14-15 KDH Checked By: CRE

1 Revised Deputy Director/ Chief Engineer Added Deputy Director/ Chief Operating Officer
12-1-14 KDH Checked By: CRE

STANDARD DETAILS FOR
TYPE D BRIDGE NAME PLATE

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

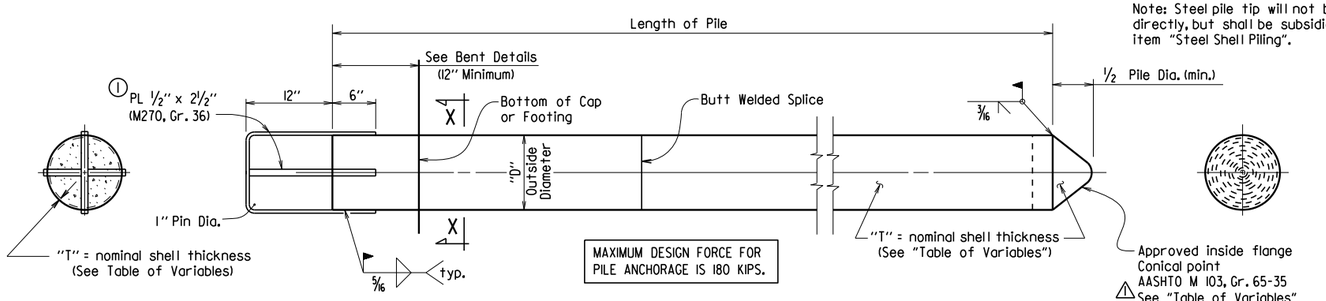
DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55010.dgn
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE:

DRAWING NO. 55010

PRINT DATE: 5/11/2021

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

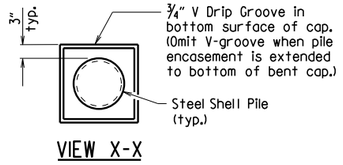


Note: Steel pile tip will not be paid for directly, but shall be subsidiary to the item "Steel Shell Piling".

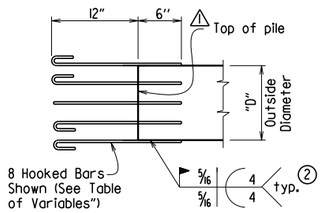
CONCRETE FILLED STEEL SHELL PILE

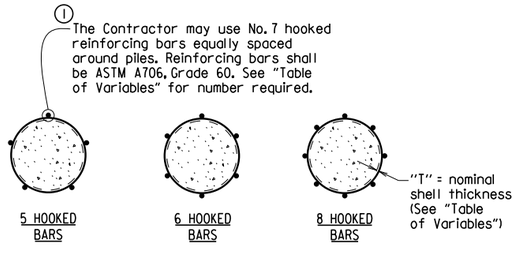
(1) Pile anchorage shall be placed to minimize interference with anchor bolts and reinforcing in cap or footing.

(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.



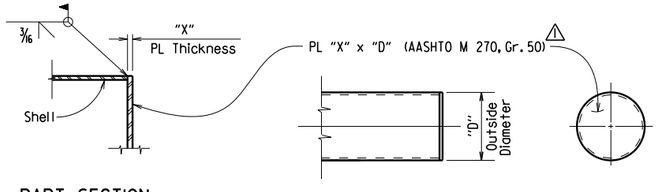
VIEW X-X





ALTERNATE PILE ANCHORAGE DETAIL

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

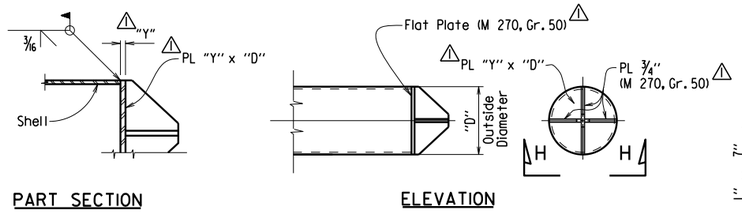


PART SECTION

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.

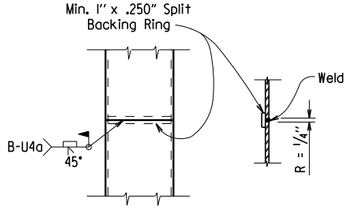


PART SECTION

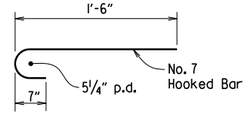
ELEVATION

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:

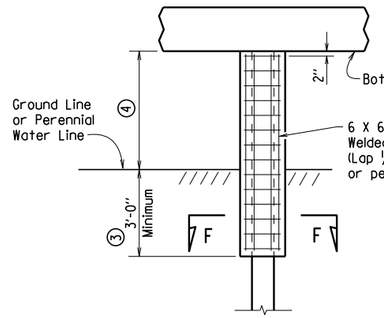
(1) See Bridge Layout for additional notes, any pile encasement restrictions and required location of pile encasements.

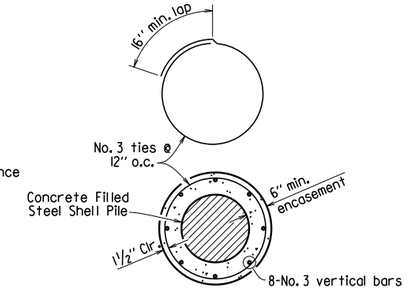
Concrete shall be Class S with a minimum 28-day compressive strength, f'c = 3,500 psi. If concrete cannot be placed in the dry, Seal Concrete may be used from top to bottom of encasement.

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)

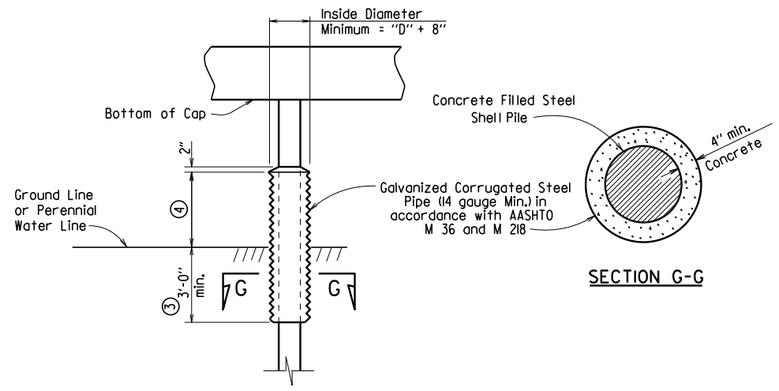
PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES

(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

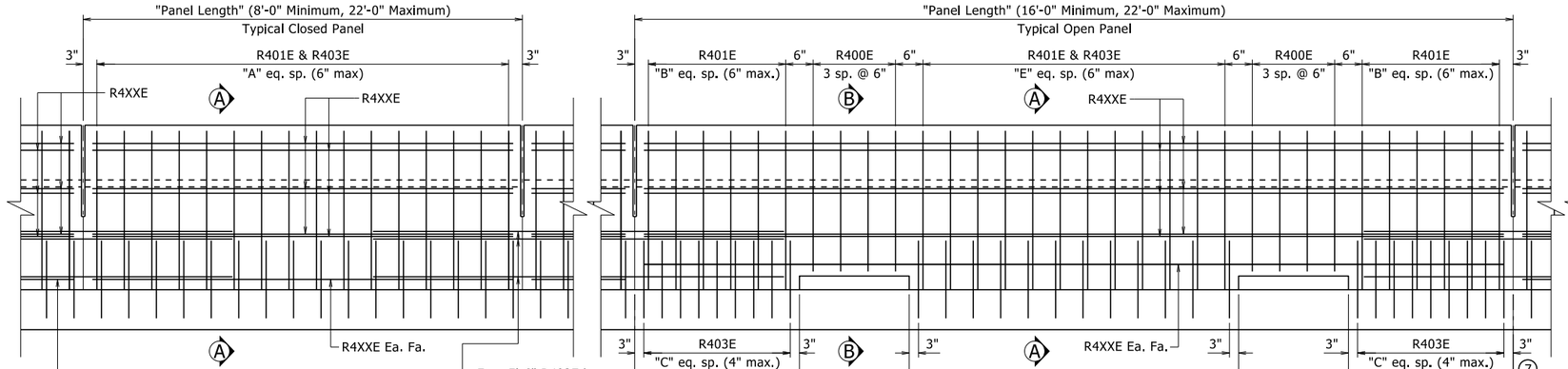
LITTLE ROCK, ARK.

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

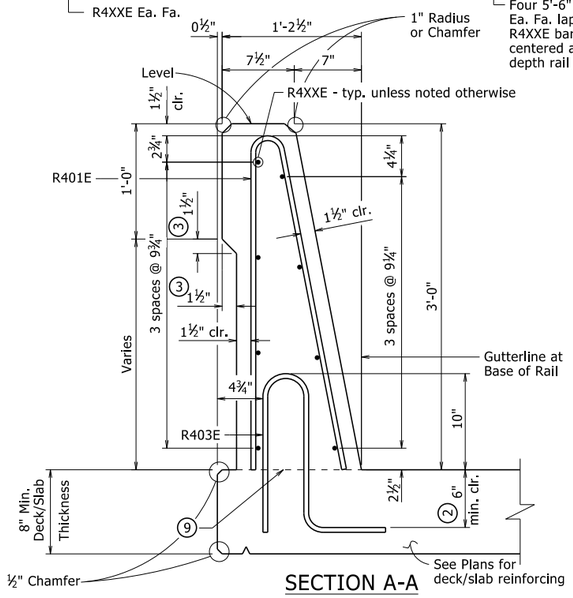
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				

(1) TYPE SSTR36 - 55070



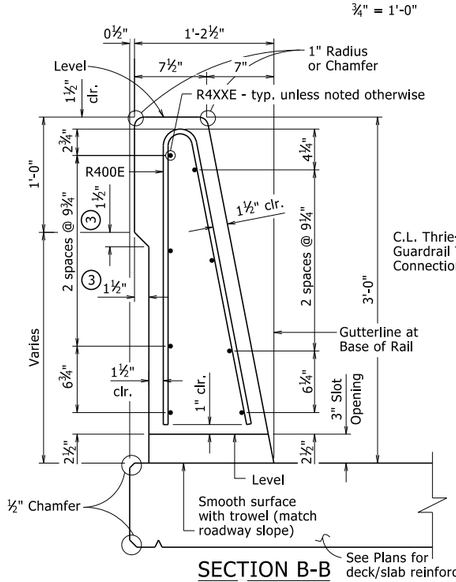
(1) ELEVATION - SINGLE SLOPE TRAFFIC RAIL

¾" = 1'-0"



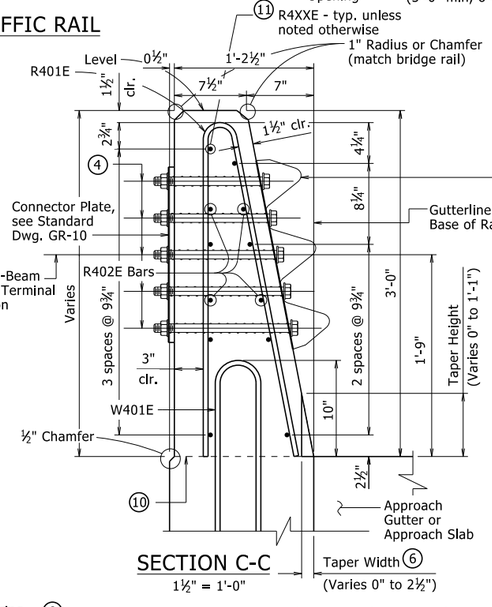
SECTION A-A

1½" = 1'-0"



SECTION B-B

1½" = 1'-0"



SECTION C-C

1½" = 1'-0"

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.

(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.

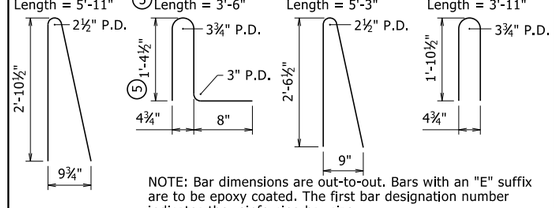
(5) Only applicable for bridges with rail cast directly on bridge deck/slab surface. Increase height as necessary for sidewalks, see Plans for additional information.

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

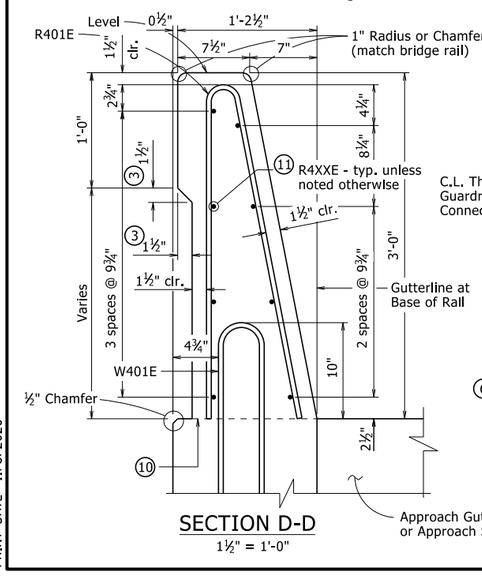
(7) When optional slip forming is used: to control cracking, all rail joints must be V-grooved around the perimeter of the rail prior to concrete set and sawing. Depth of V-groove shall be ½". Sawing of the joints shall be done as soon as practical to a width of ¼", and must be controlled so it will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

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

BENDING DIAGRAM

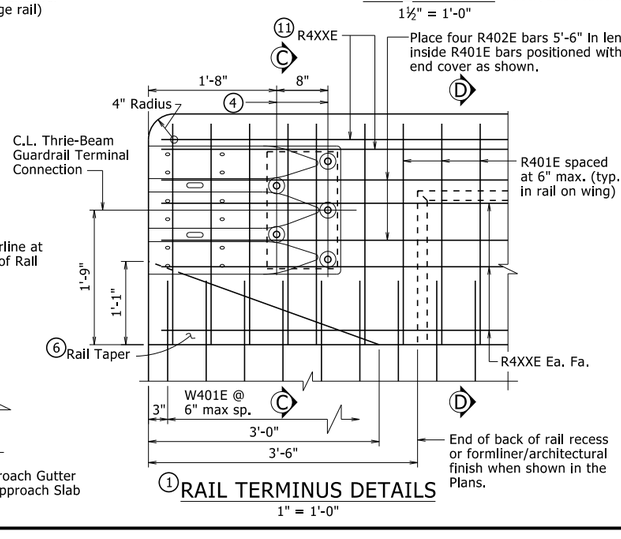


NOTE: Bar dimensions are out-to-out. Bars with an "E" suffix are to be epoxy coated. The first bar designation number indicates the reinforcing bar size.



SECTION D-D

1½" = 1'-0"



(1) RAIL TERMINUS DETAILS

1" = 1'-0"

(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	F	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.

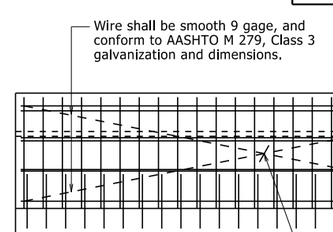
Details shown are general for bridges without sidewalks. See Plans for additional details and requirements specific to bridges with sidewalks.

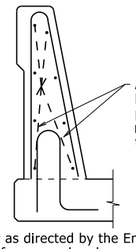
For Table of Variables, Rail Bar List, locations of Full and Partial Depth Rail Joints, and Wing & Rail Bar Lists, see Plans.

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 full size 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

This document was originally issued and sealed by Charles R. Ellis, PE No. 9235, on November 5, 2020. This copy is not a signed and sealed document.

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

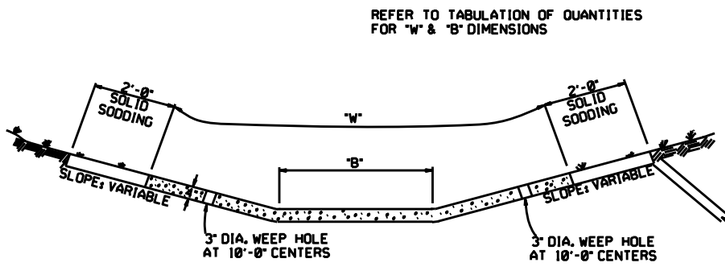
LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 11/5/2020
CHECKED BY: LJB DATE: 11/5/2020
DESIGNED BY: STD. DATE: -----

FILENAME: b55070.dgn
SCALE: As Noted

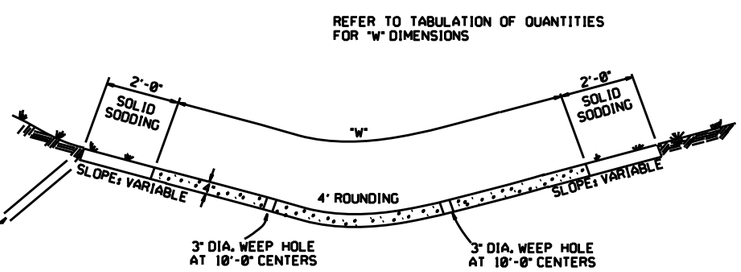
DRAWING NO. 55070

PRINT DATE: 11/5/2020



TYPE A

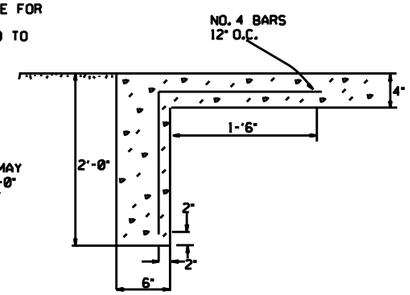
EXCAVATE TO NEAT LINES TO CONSTRUCT DITCH PAVING AND SOLID SODDING.



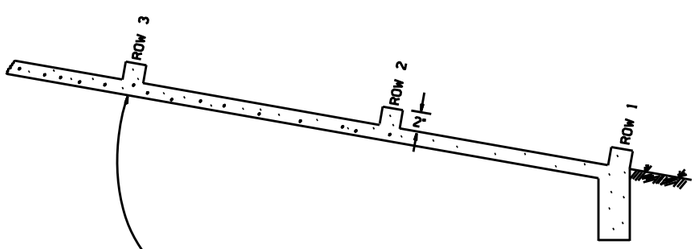
TYPE B

THE STEEL AND ADDITIONAL CONCRETE FOR THE WALLS SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR "CONCRETE DITCH PAVING."

TOE WALL DEPTH MAY BE ALTERED TO 1'-0" WHEN DIRECTED BY THE ENGINEER IN ROCK EXCAVATION

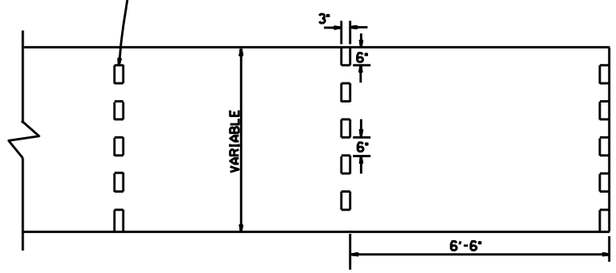


TOE WALL DETAIL FOR CONCRETE DITCH PAVING



NUMBER OF ELEMENTS PER ROW VARIES WITH WIDTH OF PAVING SPECIFIED

ENERGY DISSIPATORS TO BE USED FOR THE ENTIRE LENGTH OF DITCH WHEN SLOPE OF DITCH PAVING EXCEEDS 7%. THE DISSIPATORS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR CONCRETE DITCH PAVING.



ENERGY DISSIPATORS
(NO SCALE)

GENERAL NOTES:

THE FULL WIDTH OF EACH SECTION SHALL BE POURED MONOLITHICALLY.

TOE WALLS TO BE CONSTRUCTED FULL WIDTH AT EACH END OF DITCH PAVING, AND POURED MONOLITHICALLY.

SOLID SOD ALONG DITCH PAVING TO BE PLACED WITHIN 14 DAYS OF DITCH PAVING CONSTRUCTION.

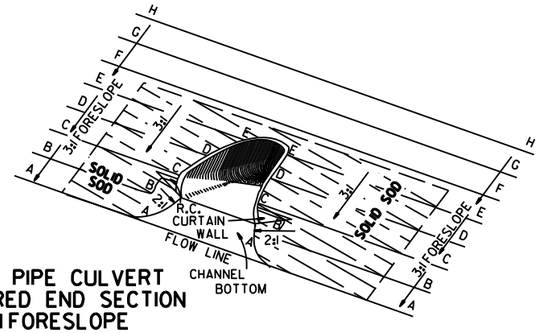
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45° INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

DATE	REVISION	DATE FILM'D
12-8-16	CORRECTED ENERGY DISSIPATOR DRAWING AND NOTE	
11-17-10	ADDED GENERAL NOTE	
6-2-94	ADDED GENERAL NOTE ABOUT SOLID SODDING	
11-30-8	ELIMINATED MIN. ROWS OF ELEMENTS	111-30-89
7-15-88	REVISED DISSIPATOR NOTE	653-7-15-88
4-3-87	REVISED ENERGY DISSIPATOR	671-4-3-87
1-9-87	MODIFIED NOTE ON ENERGY DISS.	532-1-9-87
11-3-86	ADDED NOTE TO ENERGY DISS.	599-12-1-86
11-1-84	ENERGY DISSIPATOR DETAILS ADDED	508-11-1-84
11-1-84	EXCAVATION DETAILS ADDED TYPED A & B	
10-2-72	REVISED AND REDRAWN	508-10-2-72

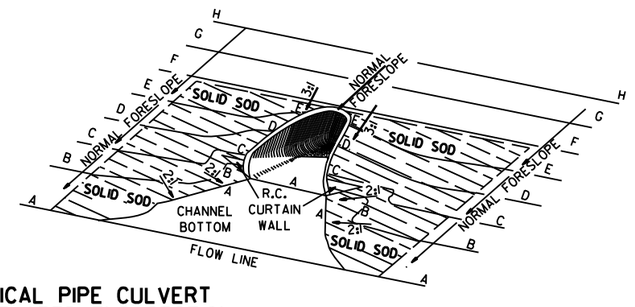
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

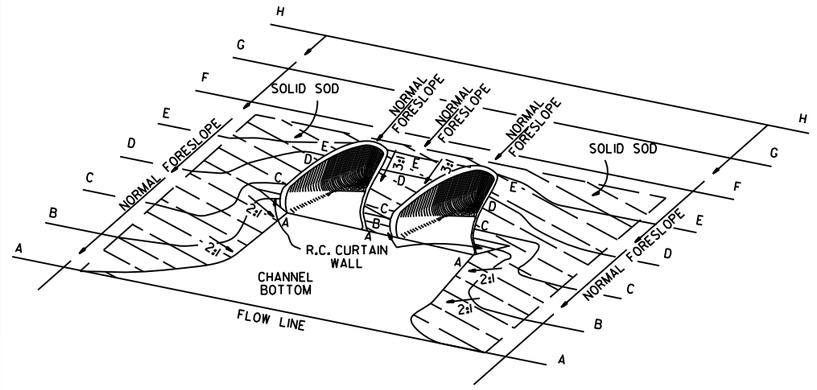
STANDARD DRAWING CDP-1



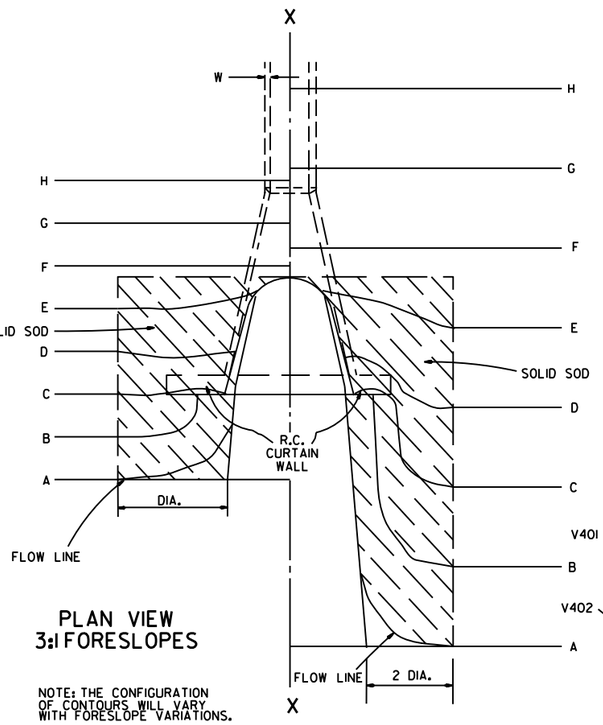
TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& 3:1 FORESLOPE



TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& FLATTENED ADJACENT SLOPES



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



PLAN VIEW
3:1 FORESLOPES

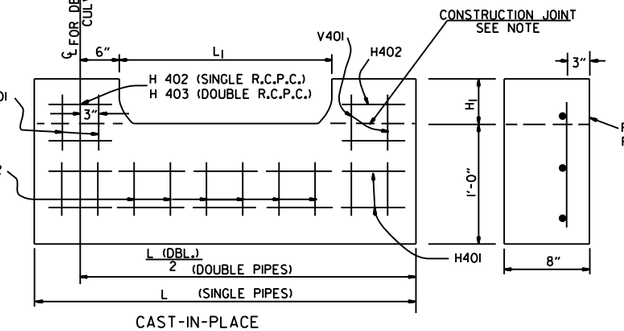
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW
FLATTENED FORESLOPES

R.C. CURTAIN WALL
DIMENSIONS & QUANTITIES

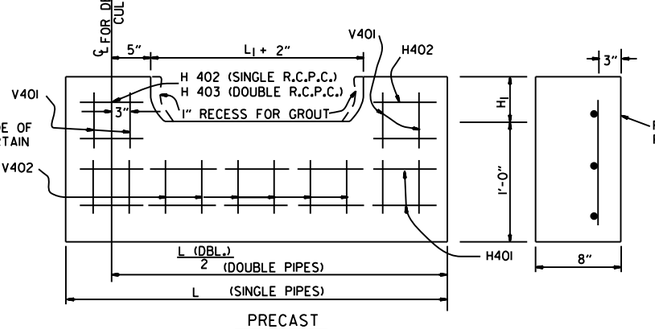
PIPE DIA.	H_1	L_1	L	L (DBL.)/2	SINGLE R.C.P.C. CONC. CU. YDS.	SINGLE R.C.P.C. REINF. STEEL LBS.	DOUBLE R.C.P.C. CONC. CU. YDS.	DOUBLE R.C.P.C. REINF. STEEL LBS.
18"	1'-11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	5'-7"	11'-0"	9'-0"	0.45	39.0	0.67	59.0
36"	1'-7"	6'-8"	13'-0"	10'-6"	0.58	52.6	0.83	73.9
42"	2'-1½"	7'-3"	15'-6"	12'-0"	0.82	77.1	1.10	100.7
48"	2'-5"	7'-10"	17'-0"	13'-0"	0.98	94.9	1.27	120.4
54"	2'-9½"	8'-5"	18'-6"	14'-0"	1.16	115.8	1.47	143.7
60"	3'-4"	9'-0"	20'-6"	15'-6"	1.47	149.7	1.84	180.3
72"	4'-5"	10'-2"	25'-6"	18'-6"	2.31	232.6	2.73	271.0

NOTE: QUANTITIES SHOWN ARE FOR ONE (1) CURTAIN WALL.



CAST-IN-PLACE

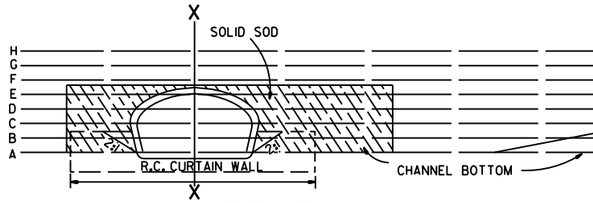
NOTE: THE PORTION OF THE R.C. CURTAIN WALL BENEATH THE FLARED END SECTION (LOWER 1'-0") SHALL BE PLACED MONOLITHICALLY. THE FLARED END SECTION SHALL THEN BE SET IN PLACE & THE REMAINING PORTIONS OF THE R.C. CURTAIN WALL PLACED.



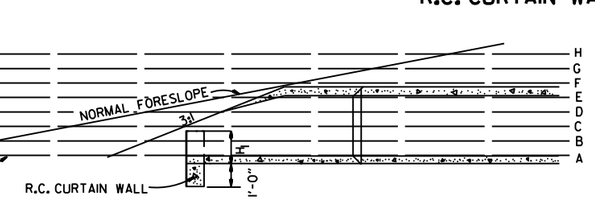
PRECAST

NOTE: THE PRECAST CURTAIN WALL WILL BE SET AND BACKFILLED WITH COMPACTED MATERIAL. THE FLARED END SECTION SHALL THEN BE SET IN PLACE AND THE 1" RECESS FILLED WITH GROUT. WHERE "L" EXCEEDS 11' THE CURTAIN WALL MAY BE CAST IN TWO (2) OR MORE SECTIONS. THE METHOD OF JOINING THE SECTIONS FOR INSTALLATION SHALL BE APPROVED BY THE ENGINEER.

R.C. CURTAIN WALL DETAILS



END VIEW



SECTIONAL VIEW "X-X"

REINFORCING STEEL SCHEDULE

PIPE DIA.	SINGLE R.C. PIPE CULVERT H401 L	NO.	H402 L	NO.	V401 L	NO.	V402 L	NO.	DOUBLE R.C. PIPE CULVERT H401 L	NO.	H402 L	NO.	H403 L	NO.	V401 L	NO.	V402 L	NO.
18"	7'-8"	2	1'-11½"	4	1'-7½"	8	8"	8	12'-2"	2	1'-11½"	4	8"	2	1'-7½"	10	8"	14
24"	9'-2"	2	2'-2"	4	1'-8½"	10	8"	9	14'-8"	2	2'-2"	4	8"	2	1'-8½"	12	8"	18
30"	10'-8"	2	2'-4½"	4	1'-11½"	10	8"	12	17'-8"	2	2'-4½"	4	8"	2	1'-11½"	14	8"	22
36"	12'-8"	2	2'-10"	6	2'-3"	12	8"	14	20'-8"	2	2'-10"	6	8"	3	2'-3"	14	8"	28
42"	15'-2"	2	3'-9½"	8	2'-9½"	16	8"	15	23'-8"	2	3'-9½"	8	8"	4	2'-9½"	18	8"	30
48"	16'-8"	2	4'-3"	10	3'-1"	18	8"	16	25'-8"	2	4'-3"	10	8"	5	3'-1"	20	8"	32
54"	18'-2"	2	4'-8½"	12	3'-5½"	20	8"	17	27'-8"	2	4'-9"	12	8"	6	3'-5½"	22	8"	34
60"	20'-2"	2	5'-5"	14	4'-0"	24	8"	18	30'-8"	2	5'-5"	14	8"	7	4'-0"	26	8"	36
72"	25'-2"	2	7'-4"	18	5'-1"	30	8"	20	36'-8"	2	7'-4"	18	8"	9	5'-1"	33	8"	40

ALL REINFORCING STEEL #4 BARS @ 6" O.C.

SOLID SODDING

PIPE DIA.	SINGLE R.C.P.C. 3:1	4:1	6:1	DOUBLE R.C.P.C. 3:1	4:1	6:1
	SQ. YDS.			SQ. YDS.		
18"	5	7	12	6	8	13
24"	8	12	19	9	13	20
30"	13	18	29	14	19	30
36"	17	26	41	18	28	43
42"	23	35	55	25	37	57
48"	29	46	68	31	48	70
54"	35	57	85	37	59	87
60"	45	62	104	48	65	107
72"	64	92	156	67	95	159

NOTE: QUANTITIES SHOWN ABOVE ARE FOR ONE (1) END OF F.E.S.

GENERAL NOTES

1. A CAST-IN-PLACE OR PRECAST CURTAIN WALL MAY BE USED. PAYMENT FOR THE CURTAIN WALL SHALL BE CONSIDERED TO BE INCLUDED IN THE UNIT PRICE BID EACH FOR FLARED END SECTIONS OF THE SEVERAL SIZES, WHICH PRICE SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS INCLUDING REINFORCING STEEL AND CONCRETE: FOR FORMS, MIXING AND PLACING; FOR EXCAVATION AND BACKFILL, AND FOR ALL LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED ¾".
3. CONCRETE FOR CURTAIN WALL SHALL MEET THE REQUIREMENTS FOR CLASS A OR S CONCRETE AS PROVIDED IN SECTION 802 OF THE STANDARD SPECIFICATIONS OR FOR PAVING CONCRETE AS PROVIDED IN SECTION 501 OF THE STANDARD SPECIFICATIONS.
4. WELDED WIRE MESH 3 x 3 W10 x W10 MAY BE USED IN LIEU OF REINFORCING BARS.

DATE	REVISION	FILMED
10-18-96	ADDED NOTE TO SOLID SODDING	
10-12-95	CORRECTED SPELLING	
11- 3-94	ADDED GENERAL NOTE NO. 4	
8-15-91	REV. CURTAIN WALL QUANT. STEEL SCH. & SOLID SOD QUANT.	
3-2-81	ALLOW PRECAST IN 2 OR MORE PIECES CHAMFER EDGES	
5-15-80	ADDED PRECAST WALL & GENERAL NOTES	
10-2-72	REVISED AND REDRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

FLARED END SECTION

STANDARD DRAWING FES-1

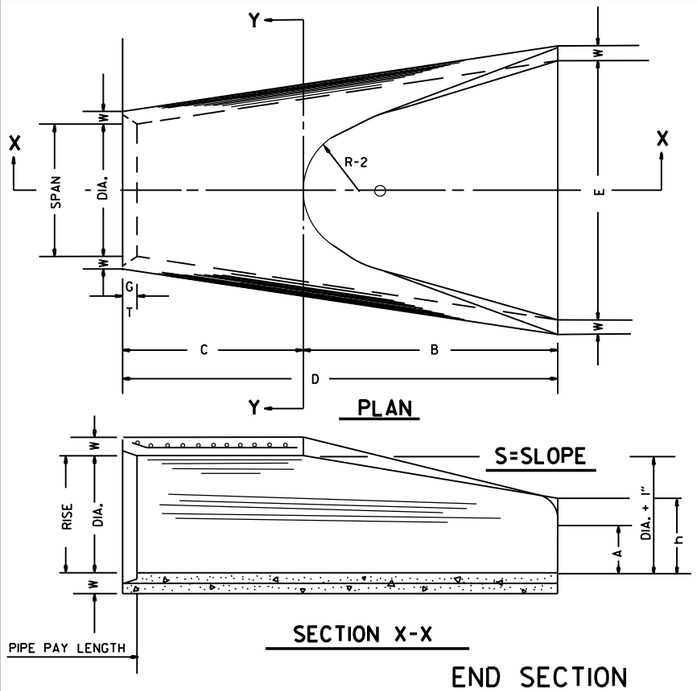
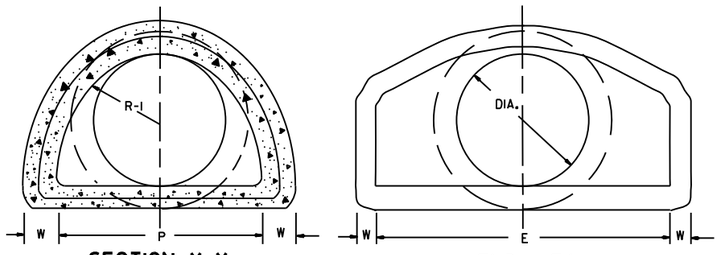


TABLE OF DIMENSIONS

DIA.	WALL	A	B	C	D	E	S	DIA. + 1"	P	R-1	R-2	G-T	WT.	h
18"	2½"	9"	2'-3"	3'-10"	6'-1"	3'-0"	3:1	19"	29"	15½"	12"	2"	1000	1'-0½"
24"	3"	9½"	3'-7½"	2'-6"	6'-1½"	4'-0"	3:1	25"	33 3/16"	16 15/16"	14"	2½"	1600	1'-1½"
30"	3½"	1'-0"	4'-6"	1'-7 3/4"	6'-1 3/4"	5'-0"	3:1	31"	37"	18½"	15"	3¼"	1940	1'-4 5/8"
36"	4"	1'-3"	5'-3"	2'-10 3/4"	8'-1 3/4"	6'-0"	3:1	37"	47 13/16"	24 3/16"	20"	3½"	4100	1'-8"
42"	4½"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3:1	43"	53⅞"	27½"	22"	3½"	5380	2'-2½"
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	3:1	49"	56½"	28½"	22"	3½"	6550	2'-6"
54"	5½"	2'-4"	6'-6"	1'-10"	8'-4"	7'-6"	3:1	55"	65½"	33⅛"	24"	4"	8750	2'-10½"
60"	6"	2'-10"	6'-6"	1'-10"	8'-4"	8'-0"	3:1	61"	72½"	36 11/16"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77 13/16"	38 15/16"	24"	5"	13250	4'-6"

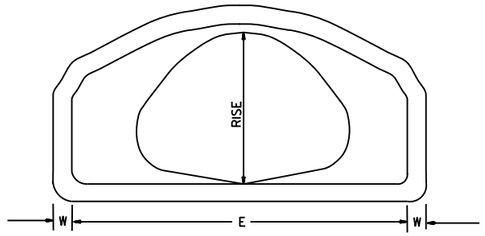


NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

ARCH PIPE

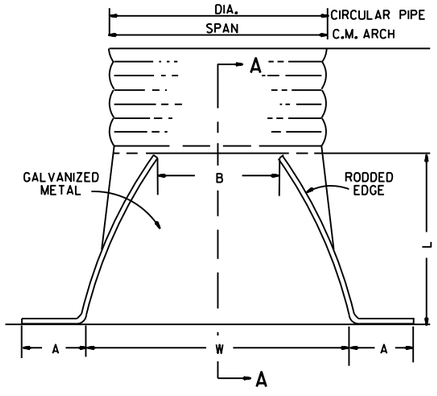
EQUIV. DIA.	• SPAN AASHTO M 206	• SPAN AHD NOMINAL	• RISE AASHTO M 206	• RISE AHD NOMINAL	W	A	B	C	D	E	P	R2	G-T	S
	INCHES													
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1½"	2½:1
18	22	22	13½	14	2½"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32⅛"	13"	2½"	2½:1
21	26	26	15½	16	2¾"	7"	2'-3"	3'-10"	6'-1"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

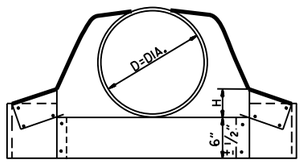
• THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PER CENT FROM THE VALUES SPECIFIED BY AASHTO M 206.

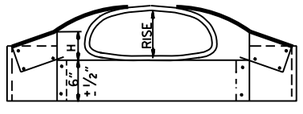


END VIEW
CONCRETE ARCH PIPE

END SECTION FOR REINFORCED CONCRETE PIPE CULVERTS







CIRCULAR PIPE

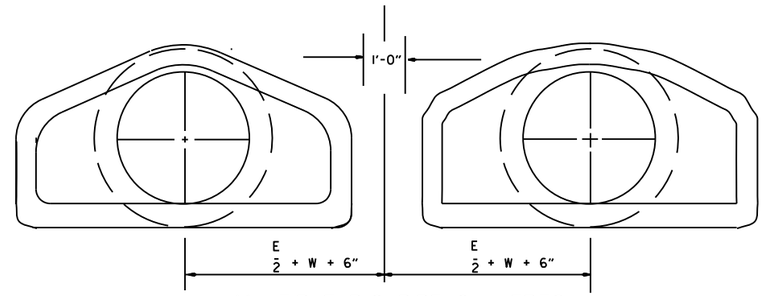
D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" ±	L 1½" ±	W 2" ±	S
		INCHES					
12	16	6	6	6	21	24	2½:1
15	16	7	8	6	26	30	2½:1
18	16	8	10	6	31	36	2½:1
21	16	9	12	6	36	42	2½:1
24	16	10	13	6	41	48	2½:1
30	14	12	16	8	51	60	2½:1
36	14	14	19	9	60	72	2½:1
42	12	16	22	11	69	84	2½:1
48	12	18	27	12	78	90	2½:1
54	12	18	30	12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

C.M. ARCH PIPE

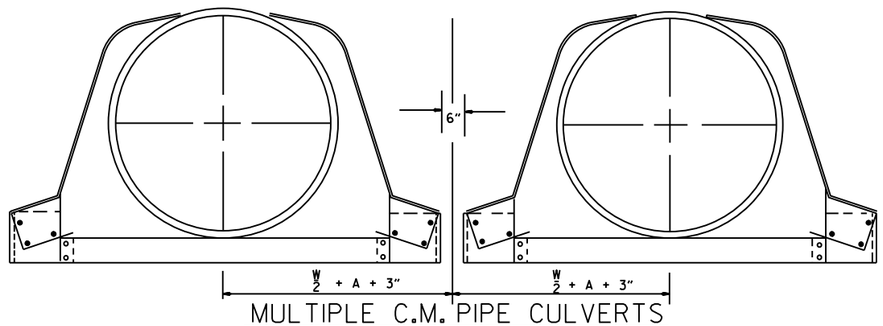
EQUIV. DIA.	SPAN	RISE	A 1" ±	B MAX.	H 1" ±	L 1½" ±	W 2" ±	S	GAUGE
	INCHES								
15"	17	13	7	9	6	19	30	2½:1	16
18"	21	15	7	10	6	23	36	2½:1	16
21"	24	18	8	12	6	28	42	2½:1	16
24"	28	20	9	14	6	32	48	2½:1	16
30"	35	24	10	16	6	39	60	2½:1	14
36"	42	29	12	18	8	46	75	2½:1	14
42"	49	33	13	21	9	53	85	2½:1	12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

NOTE: ALTERNATE CONNECTIONS TO THE PIPE CULVERTS, IN ACCORDANCE WITH MANUFACTURER'S STANDARD PRACTICES, MAY BE MADE SUBJECT TO THE APPROVAL OF THE ENGINEER.

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS



MULTIPLE R.C. PIPE CULVERTS



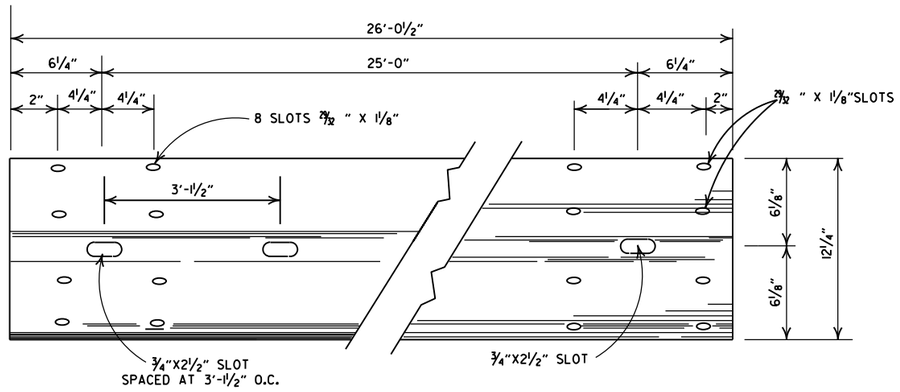
MULTIPLE C.M. PIPE CULVERTS

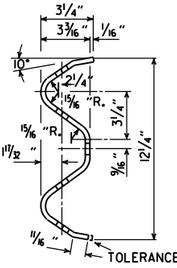
DATE	REVISION	FILMED
10-18-96	REVISED ASTM REF. TO AASHTO	
5-15-80	REVISED DISTANCE BETWEEN MULTIPLE R.C.P. F.E.S.	664-5-15-80
7-14-78	C.M. ARCH SIZES TO CONFORM WITH AASHTO SIZES	752-7-14-78
8-22-75	ADDED MULTIPLE PIPE CULVERTS	517-8-22-75
12-5-74	REMOVED NOTE RE REINF. FOR R.C. F.E.S.	500-12-5-74
5-24-73	CMP END SECTION, SHOW PIPE PAY LENGTH	627-5-24-73
10-2-72	REVISED AND REDRAWN	760-10-2-72

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FLARED END SECTION

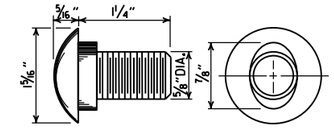
STANDARD DRAWING FES-2



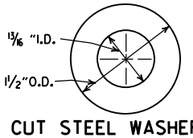


DETAILS OF W-BEAM GUARDRAIL

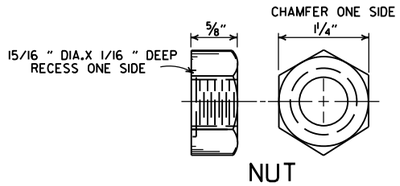
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



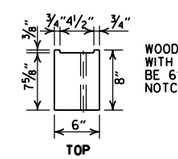
SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



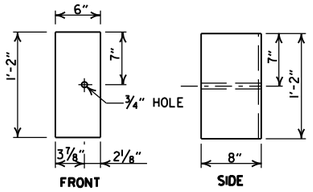
CUT STEEL WASHER



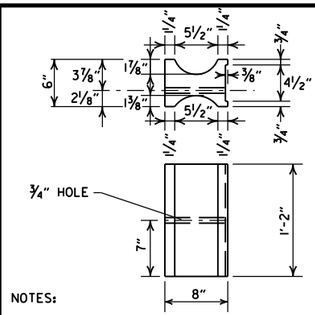
NUT



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



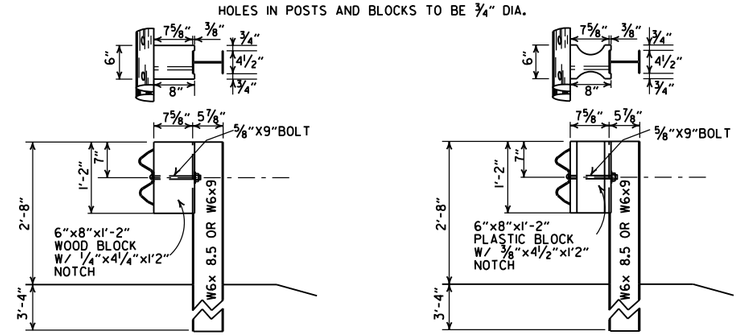
WOOD BLOCKOUT (W-BEAM)



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.

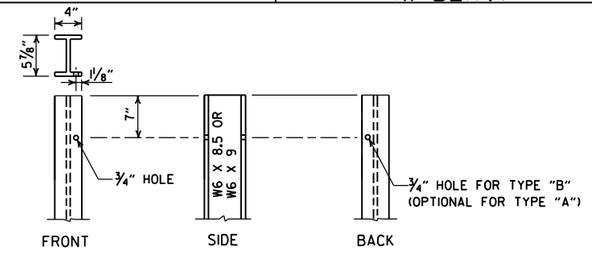
PLASTIC BLOCKOUT (W-BEAM)



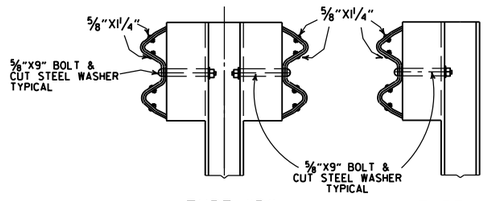
WOOD BLOCKOUT CONNECTIONS

PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)



STEEL POST



TYPE "B" TYPE "A"

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 9.7f (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.

WOOD BLOCKOUT CONNECTIONS

PLASTIC BLOCKOUT CONNECTIONS

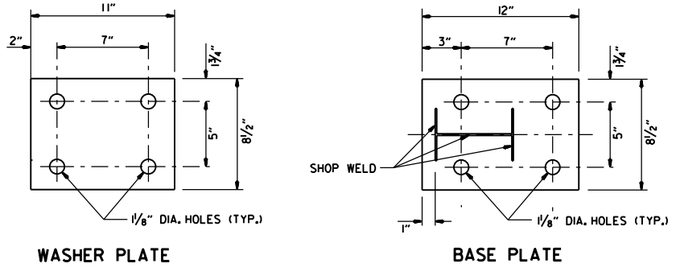
DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

DATE	REVISION	FILMED
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

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GUARDRAIL DETAILS

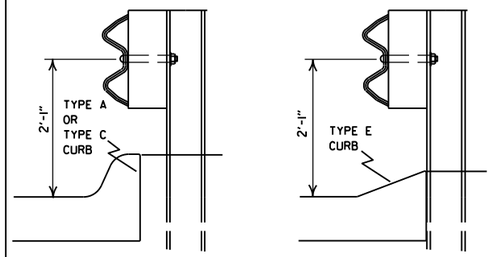
STANDARD DRAWING GR-6



WASHER PLATE

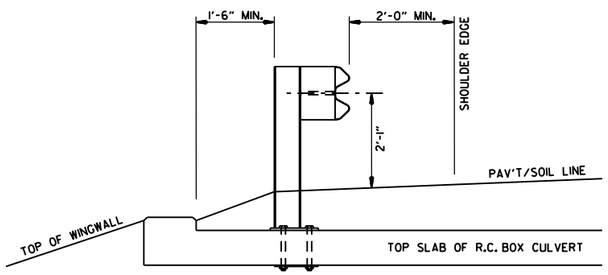
BASE PLATE

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

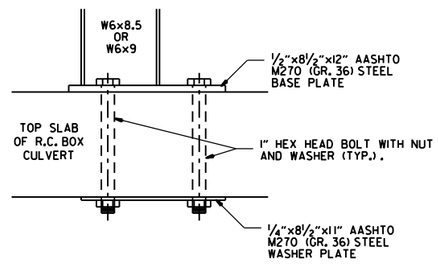


DETAIL OF GUARDRAIL PLACEMENT BEHIND CURB (W-BEAM)

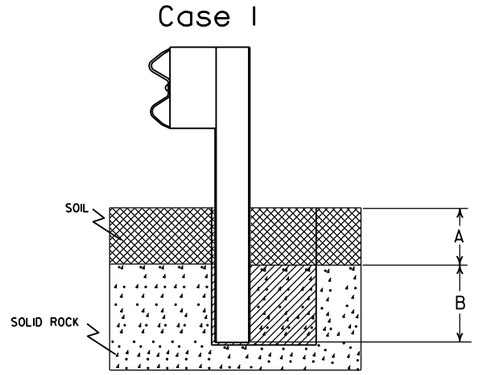
FOR DESIGN SPEEDS OF 50 MPH OR LESS ALL CURB FACES, AS SHOWN ON STD. DRWG. CG-1, MAY BE USED. FOR DESIGN SPEEDS OF 55 MPH OR MORE TYPE "E" CURB FACE SHALL BE USED.



SECTION A-A

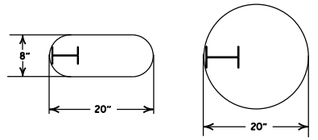


DETAIL OF CONNECTION



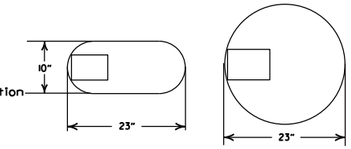
Plan View Steel Posts

Either hole configuration acceptable



Plan View Wood Posts

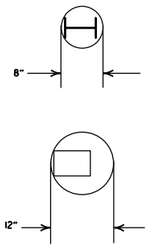
Either hole configuration acceptable



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).

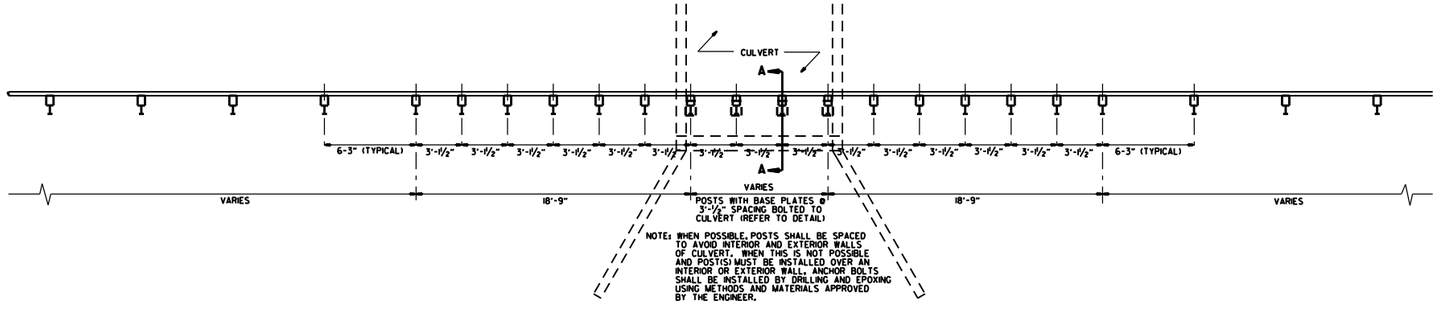
Zone B:
Backfill hole in 6" lifts with material meeting the requirements of Section 802.02(c) - Alternate gradation. Compact to 95% maximum dry density per ASTM D-698.



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.

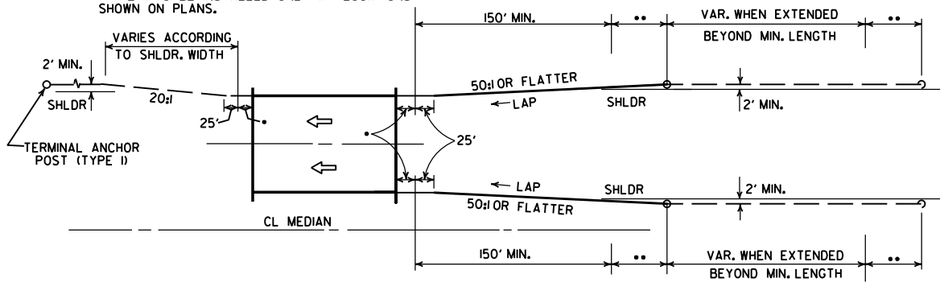
DATE	REVISION	FILMED
11-07-19	RENUMBERED, RENAMED, REVISED REFERENCE	
11-16-17	REVISED GUARDRAIL HEIGHT	
07-14-10	RAISED HEIGHT OF GUARDRAIL 1"	
04-12-07	REVISED DETAIL OF GUARDRAIL PLACEMENT BEHIND CURB	
11-10-05	ADDED GUARDRAIL PLACEMENT BEHIND CURB; REVISED DETAIL OF CONNECTION	
11-18-04	REVISED POST 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

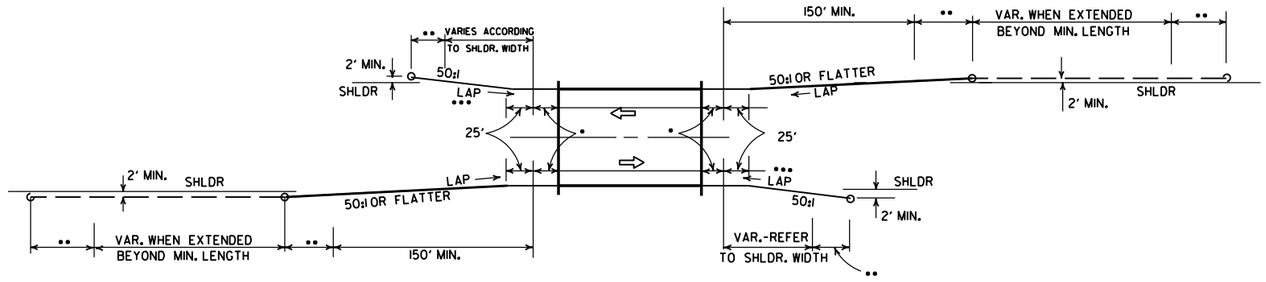
STANDARD DRAWING GR-7

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



ONE-WAY TRAFFIC

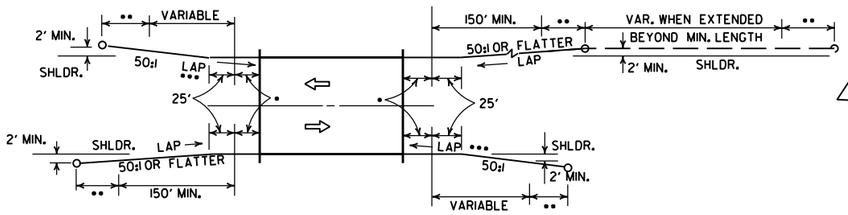
••• LAP OF GUARDRAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200'. CHANGE TO LAP IN DIRECTION OF TRAVEL.



TWO-WAY TRAFFIC

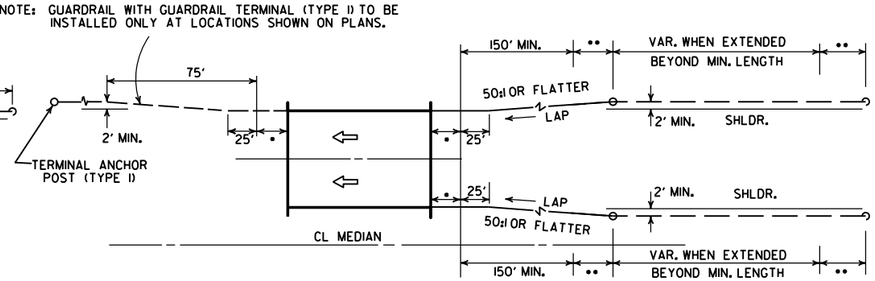
METHODS OF INSTALLATION OF GUARDRAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARDRAIL TERMINAL (TYPE 2)

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



TWO-WAY TRAFFIC

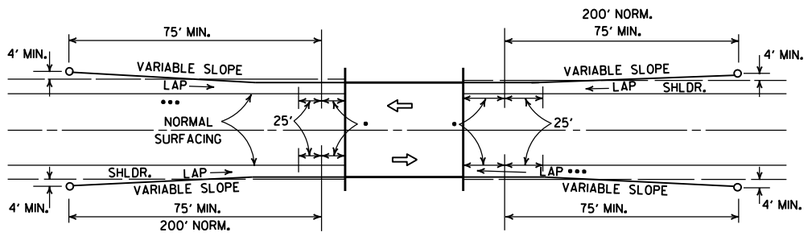
NOTE: GUARDRAIL WITH GUARDRAIL TERMINAL (TYPE 1) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



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

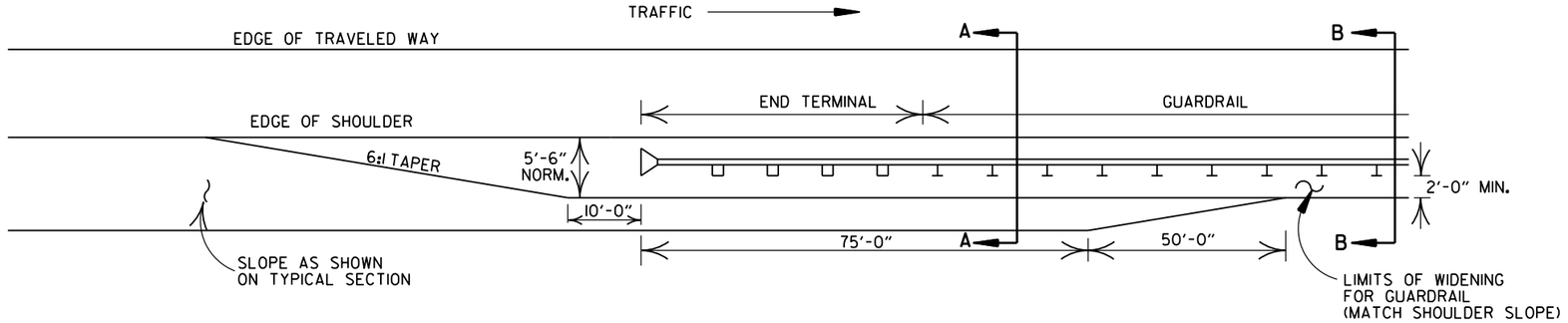
- • THRIE BEAM GUARDRAIL TERMINAL
- •• GUARDRAIL TERMINAL (TYPE 2)

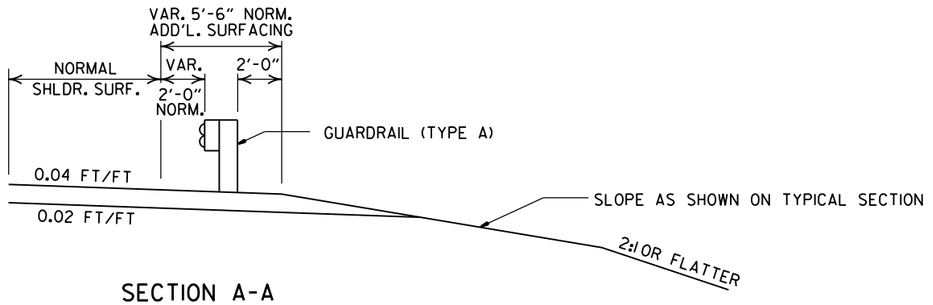
DATE	REVISION	DATE FILM
11-07-19	RENUMBERED AND RENAMED	
4-17-08	REVISED LAYOUTS	
11-10-05	REMOVED GUARDRAIL NOTES AND DETAILS	
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARDRAIL USING GUARDRAIL TERM. (TY. 1)	
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00
6-26-97	REVISED LAYOUT	
10-1-92	REDRAWN & REVISED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

ARKANSAS STATE HIGHWAY COMMISSION

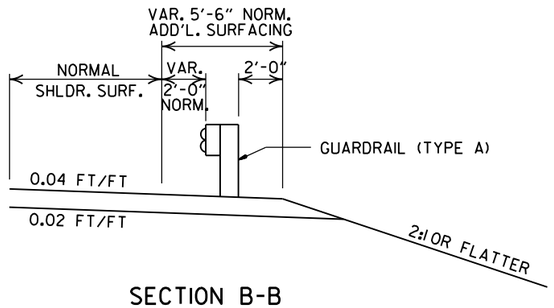
GUARDRAIL DETAILS

STANDARD DRAWING GR-8



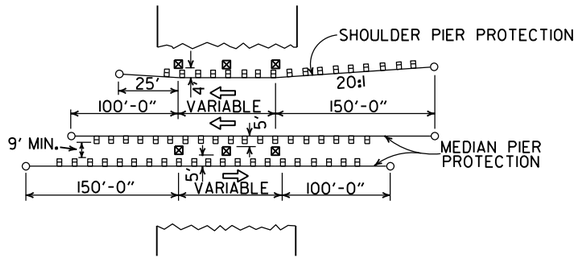


SECTION A-A



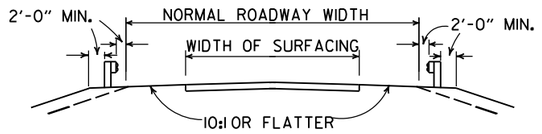
SECTION B-B

DETAILS OF WIDENING FOR GUARDRAIL

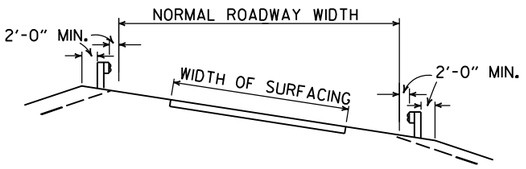


METHOD OF INSTALLATION OF GUARDRAIL AT FIXED OBSTACLE

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



SECTION ON TANGENT



SECTION ON CURVE

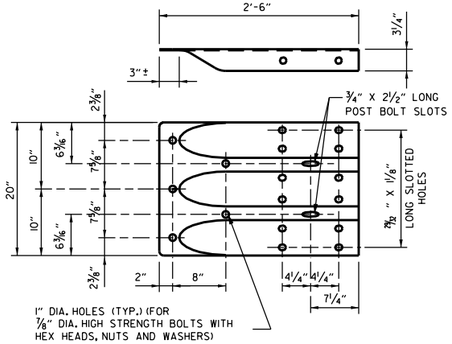
DETAILS SHOWING POSITION OF GUARDRAIL ON HIGHWAY

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

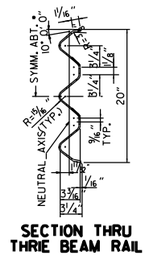
ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

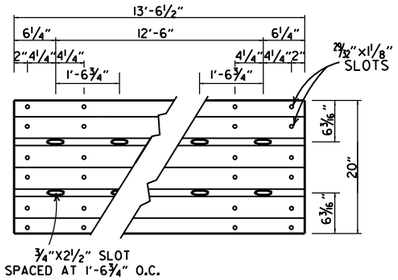
STANDARD DRAWING GR-9



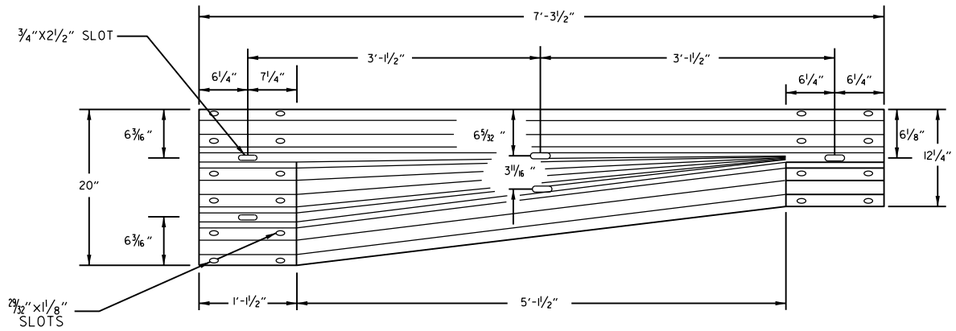
SPECIAL END SHOE



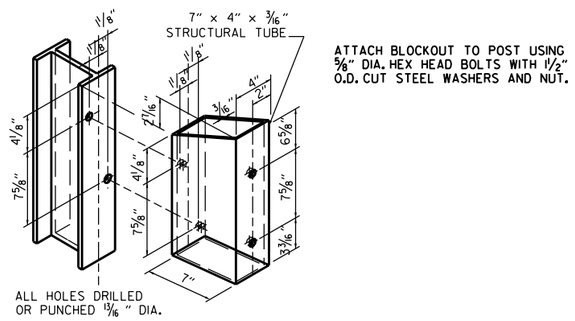
SECTION THRU THRIE BEAM RAIL



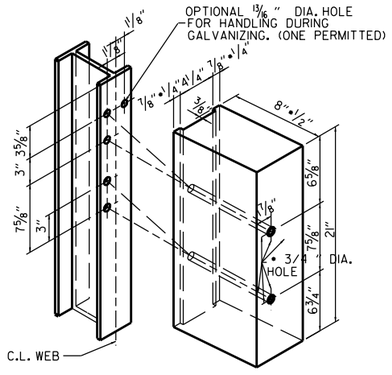
THRIE BEAM RAIL



TRANSITION SECTION



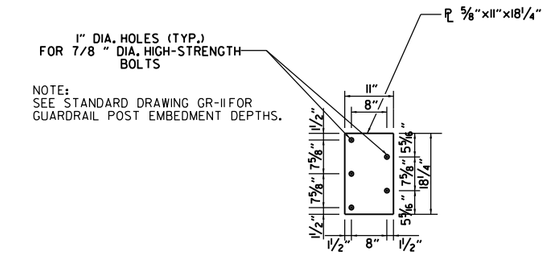
STRUCTURAL STEEL TUBING BLOCKOUT DETAIL



ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED

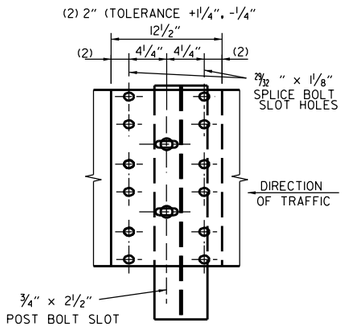
HOLE PUNCHING DETAIL FOR STEEL POST & WOOD OR PLASTIC BLOCKOUTS

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.

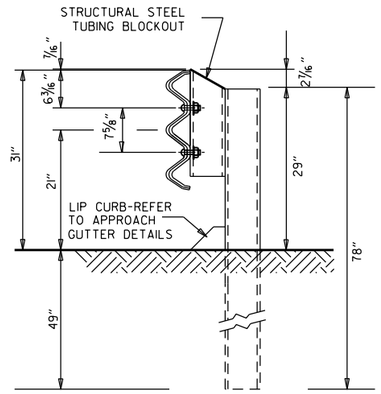
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7 f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

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	

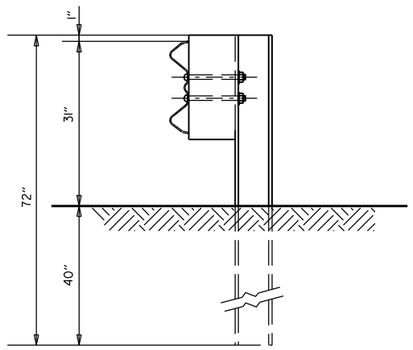
ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

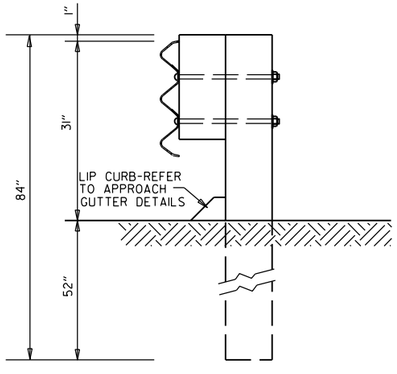
STANDARD DRAWING GR-10



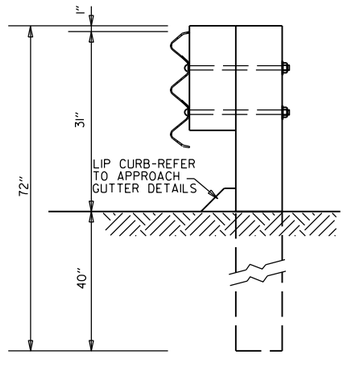
THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7



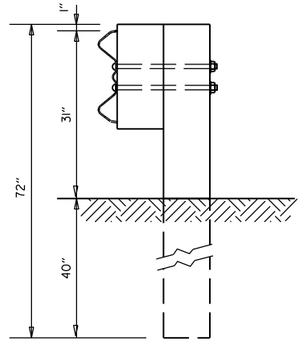
W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8



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.

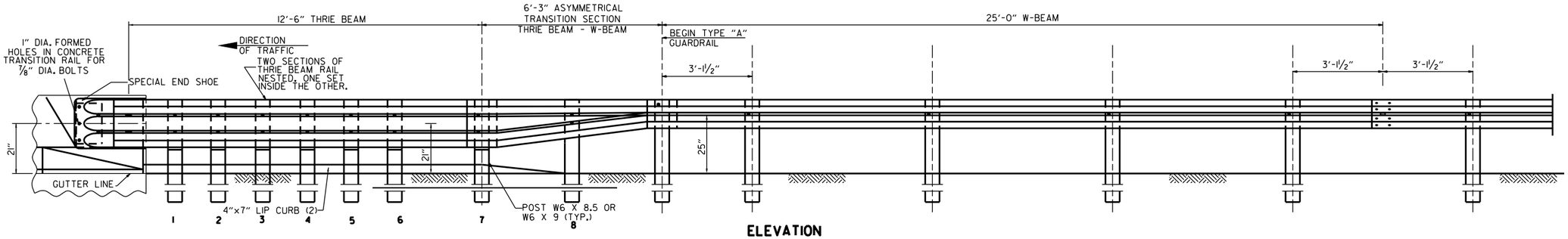
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1STRUCTURAL OR BETTER 9.7f (1400 f) OR NO.1 1350 f SOUTHERN PINE.

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	

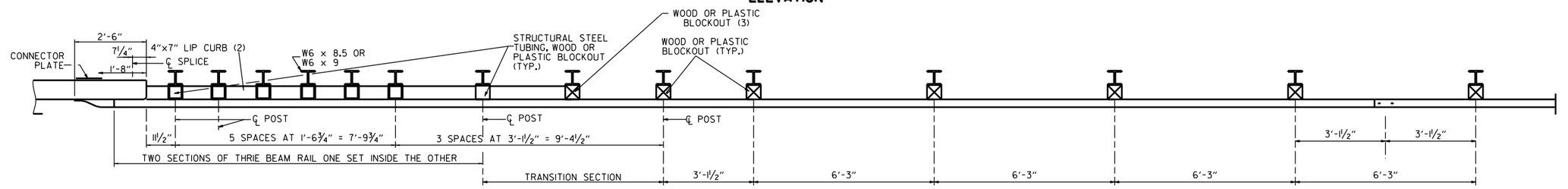
ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

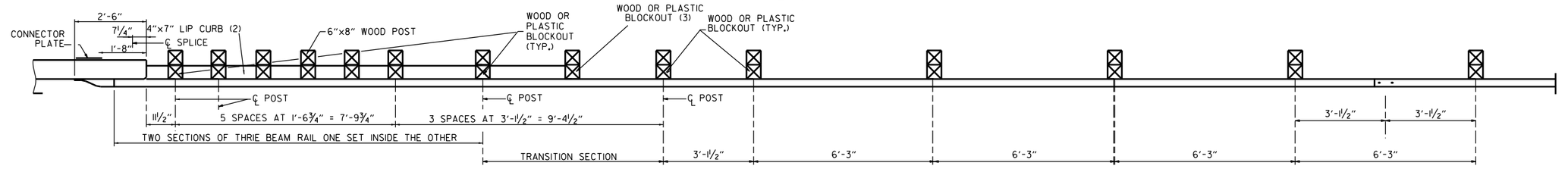
STANDARD DRAWING GR-11



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.

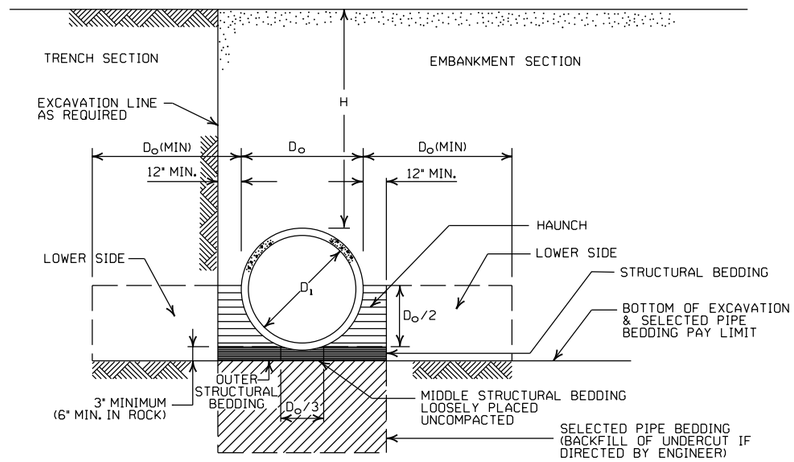
- LEGEND -

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

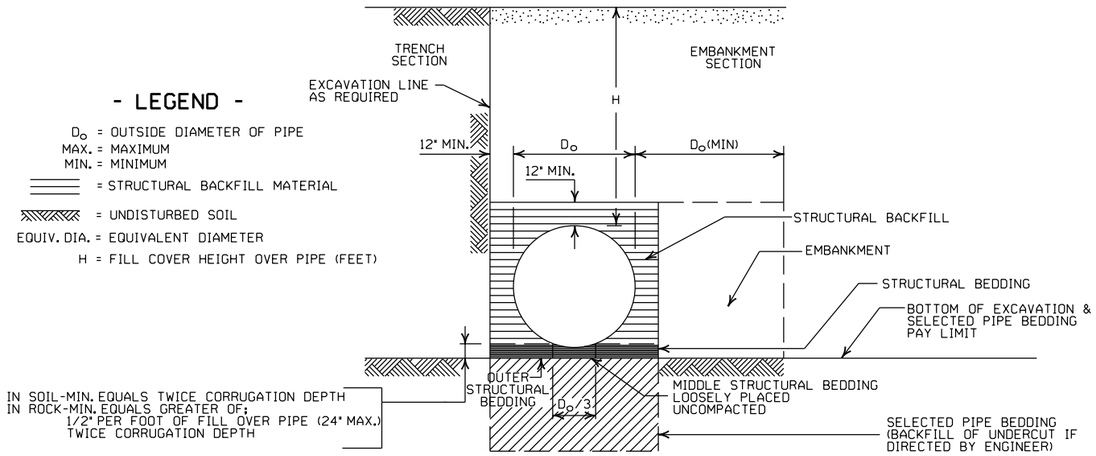
EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINUMUM CORNER RADIUS (INCHES)	STEEL				ALUMINUM			
			MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)	MAX. HEIGHT OF FILL, "H" (FT.)		MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)	MAX. HEIGHT OF FILL, "H" (FT.)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

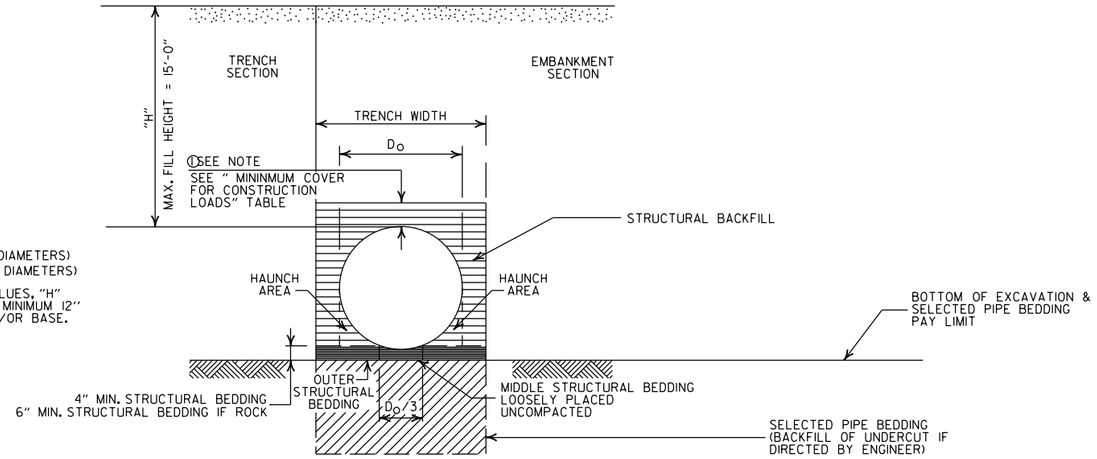
①NOTE:
18" MIN. (18" - 30" DIAMETERS)
24" MIN. (36" - 48" DIAMETERS)

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

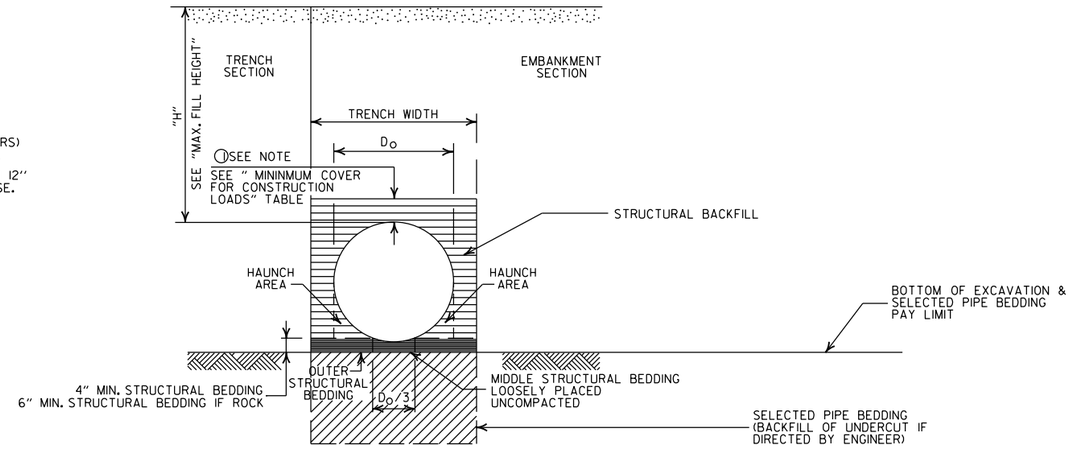
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

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"

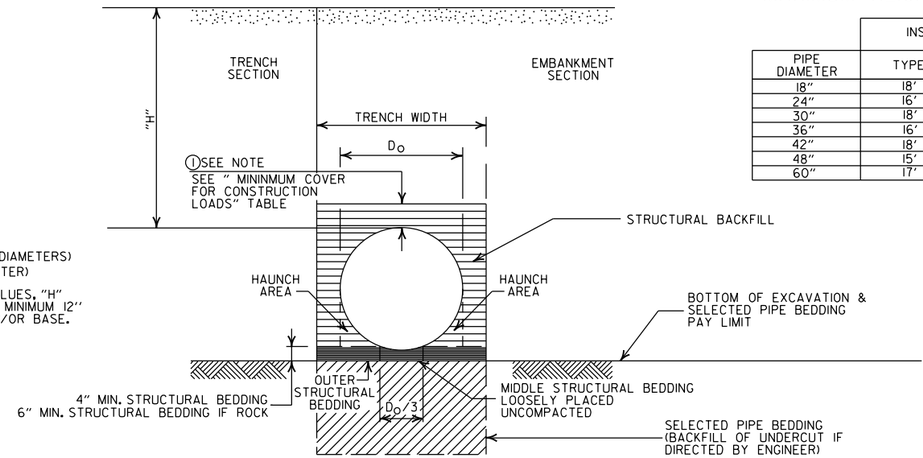
PIPE DIAMETER	TRENCH WIDTH (FEET)	
	"H" < 10'-0"	"H" >OR= 10'-0"
18"	4'-6"	4'-6"
24"	5'-0"	6'-0"
30"	5'-6"	7'-6"
36"	6'-0"	9'-0"
42"	7'-0"	10'-6"
48"	8'-0"	12'-0"
60"	10'-0"	15'-0"

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

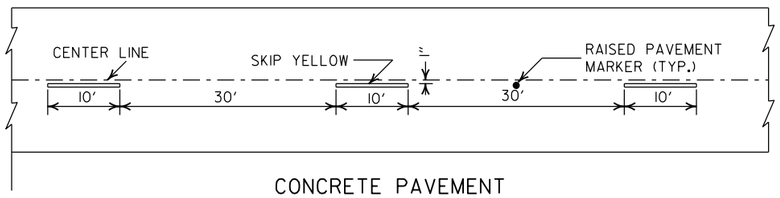
= UNDISTURBED SOIL

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

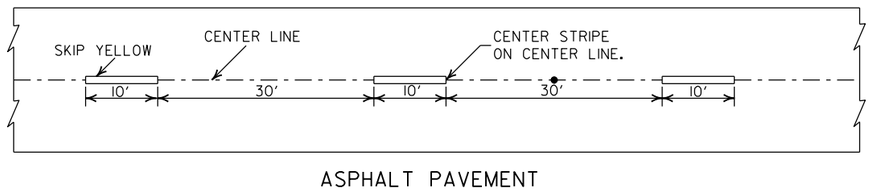
ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (POLYPROPYLENE)

STANDARD DRAWING PCP-3

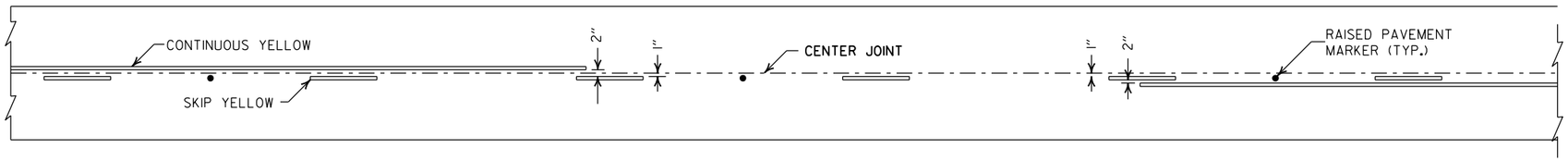


CONCRETE PAVEMENT

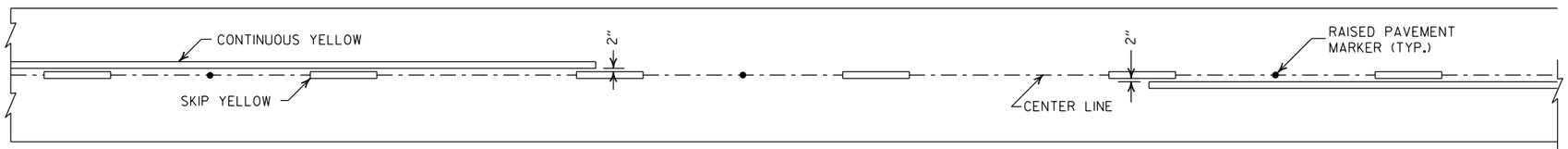


ASPHALT PAVEMENT

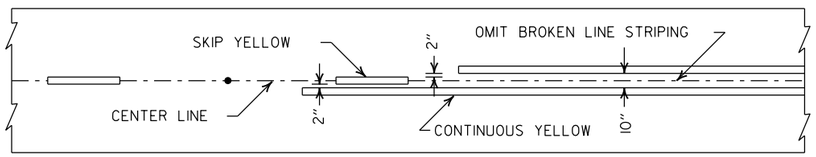
BROKEN LINE STRIPING



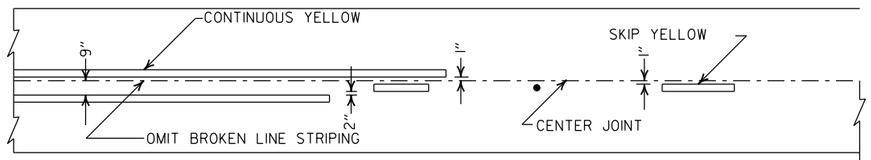
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

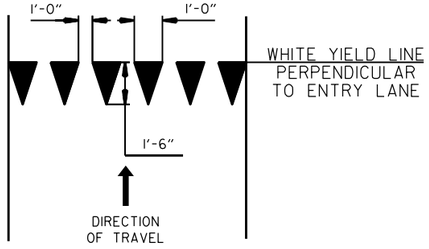


ASPHALT PAVEMENT

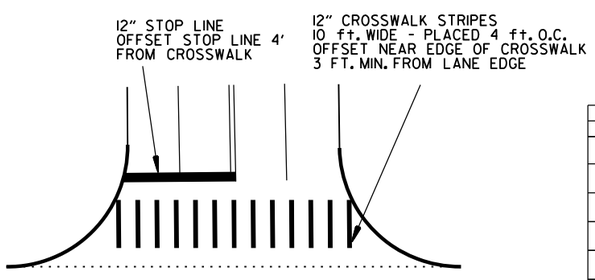


CONCRETE PAVEMENT

STRIPING AT ADJACENT NO PASSING LANES

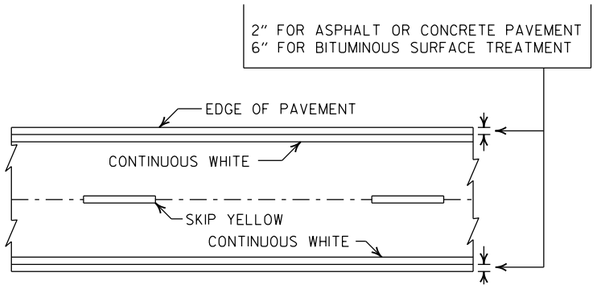


YIELD LINE DETAIL



CROSSWALK AND STOP LINE DETAILS

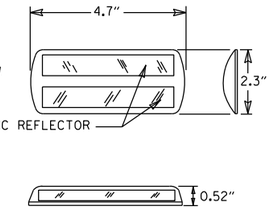
NOTES:
1. REFER TO THE STRIPING DETAILS FOR PAVEMENT MARKING LINE WIDTHS.
2. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
3. RAISED PAVEMENT MARKERS SHALL BE PLACED ON AN 80 FEET SPACING UNLESS OTHERWISE SHOWN IN THE PLANS.



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

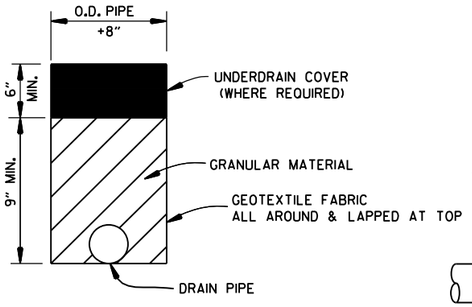
PAVEMENT MARKING DETAILS

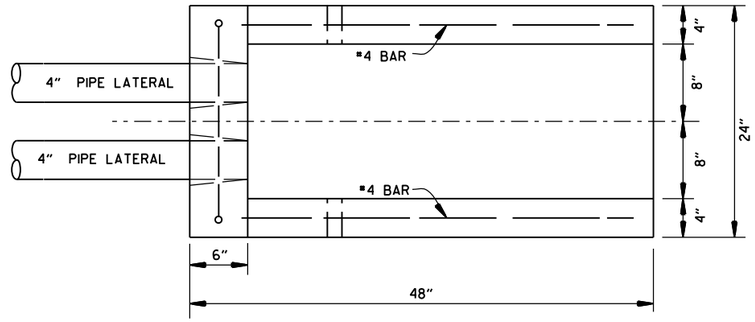
STANDARD DRAWING PM-1

NOTE:

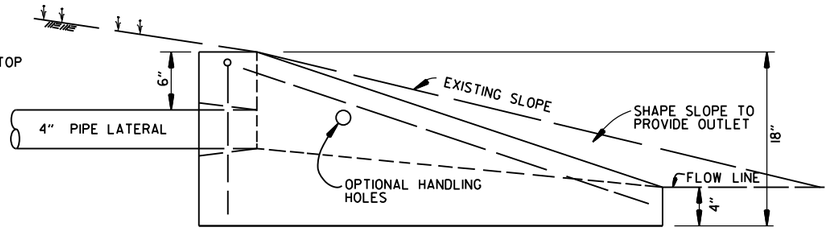
1. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.

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

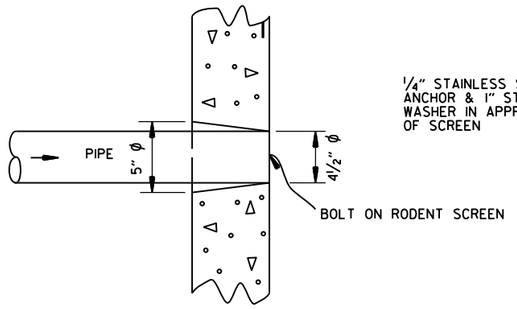




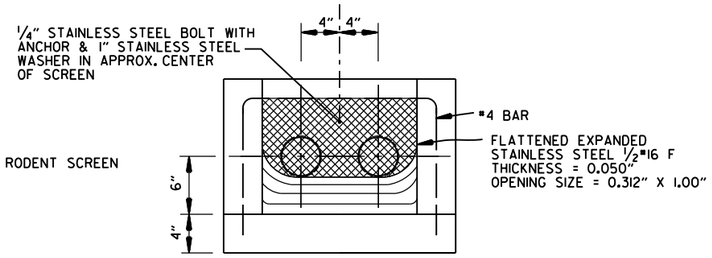
PLAN VIEW



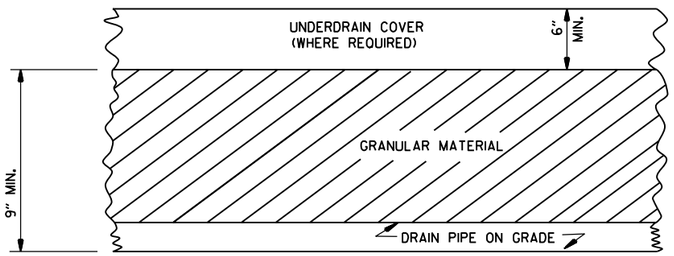
SIDE VIEW



DETAIL OF HOLE
FOR 4" PIPE

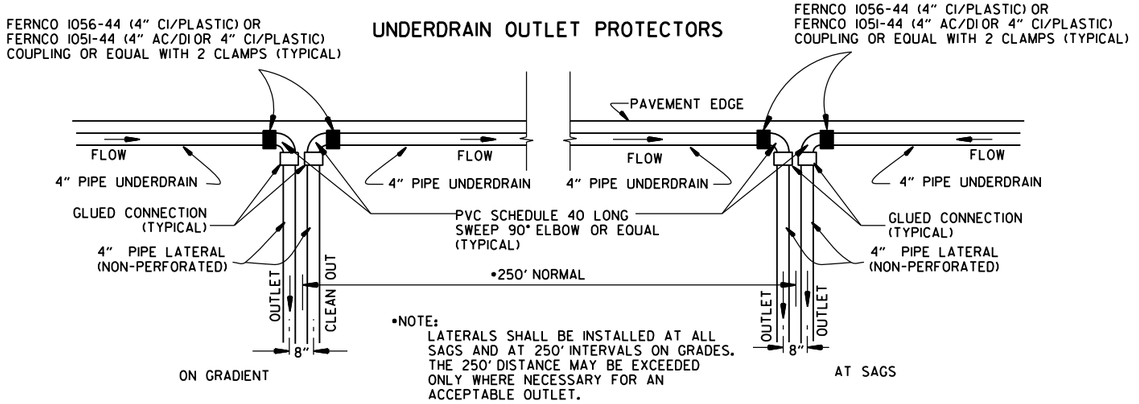


FRONT VIEW
(DETAIL OF RODENT SCREEN)



DETAILS OF PIPE UNDERDRAIN

UNDERDRAIN OUTLET PROTECTORS



DETAIL OF PIPE UNDERDRAIN LATERALS
WHEN PLACED ALONG PAVEMENT EDGE

NOTE: PVC PIPE FOR LATERALS SHALL MEET THE REQUIREMENTS OF ASTM D 1785 (LATEST REVISION) FOR SCHEDULE 40 PIPE.

NOTES FOR PIPE UNDERDRAINS

1. GEOTEXTILE FABRIC SHALL MEET THE REQUIREMENTS OF SECTION 625 FOR TYPE I. PAYMENT FOR GEOTEXTILE FABRIC AND GRANULAR FILTER MATERIAL SHALL BE INCLUDED IN THE PRICE BID PER LIN. FT. FOR "4" PIPE UNDERDRAINS" IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

2. 4" NON-PERFORATED SCHEDULE 40 PVC PIPE LATERALS WITH OUTLET PROTECTORS SHALL BE INSTALLED AS SHOWN HEREON. LATERALS WILL BE MEASURED AND PAID FOR AS "4" PIPE UNDERDRAINS." UNDERDRAIN OUTLET PROTECTORS WILL BE MEASURED AND PAID FOR BY THE UNIT IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

3. EXISTING 4" PIPE UNDERDRAINS MAY BE CONNECTED TO PROPOSED DROP INLETS OR EXTENDED WHERE DIRECTED BY THE ENGINEER. PAYMENT FOR CONNECTING TO DROP INLETS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR "4" PIPE UNDERDRAINS."

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

5. PAYMENT FOR THE RODENT SCREEN SHALL BE INCLUDED IN THE PRICE BID PER EACH FOR "UNDERDRAIN OUTLET PROTECTORS."

6. ANY EXISTING UNDERDRAINS THAT INTERFERE WITH INSTALLATION OF THE NEW UNDERDRAIN SYSTEM SHALL BE REMOVED AND DISPOSED OF AS DIRECTED BY THE ENGINEER. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS. EXISTING UNDERDRAIN OUTLET PROTECTORS SHALL BE REMOVED UNDER THE ITEM "REMOVAL AND DISPOSAL OF UNDERDRAIN OUTLET PROTECTORS."

7. AT LOCATIONS WHERE A SINGLE LATERAL IS USED THE CONTRACTOR SHALL HAVE THE FOLLOWING OPTIONS: 1. INSTALL OUTLET PROTECTOR AS SHOWN ON STANDARD DRAWING PU-1 AND GROUT THE UNUSED HOLE OR 2. INSTALL AN OUTLET PROTECTOR WITH A SINGLE HOLE.

DATE	REVISION	DATE FILMED
12-8-16	ADDED NOTES FOR PIPE UNDERDRAINS, REVISED RODENT SCREEN DETAIL AND NOTES, REMOVED NOTE 1 FOR GRANULAR MATERIAL, ADDED NOTE FOR GEOTEXTILE FABRIC	
4-10-03	REVISED NOTE 3	
1-12-00	REVISED DETAIL OF UNDERDRAIN LATERALS	
11-18-98	REVISED NOTE	
10-18-96	REVISED MIN. DEPTH & GEOTEXTILE FABRIC	
4-26-96	ADDED LATERAL NOTE; 5½" TO 5"	
11-22-95	REVISED LATERALS	
7-20-95	REVISED LATERALS & ADDED NOTE	
11- 3-94	REVISED FOR DUAL LATERALS	11- 3-94
10- 1-92	SUBSTITUTED GEOTEXTILE	10- 1-92
8-15-91	ADDED POLYEDTHYLENE PIPE	8-15-91
11- 8-90	DELETED ALTERNATE NOTE	11- 8-90
1-25-90	ADDED 4" SNAP ADAPTER	1-25-90
11-30-89	DEL. (SUBGRADE); ADDED (WHERE REQUIRED)	11-30-89
7-15-88	ISSUED P.L.M.	647-7-15-88

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

STANDARD DRAWING PU-1

SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	30 MPH			35 MPH			40 MPH			45 MPH			50 MPH			55 MPH			60 MPH			65 MPH			70 MPH			75 MPH		
	e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)	
		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE
0° 15'	NC			NC			NC			NC			NC			NC			NC			NC			NC			NC		
0° 30'	NC			NC			NC			NC			NC			NC			RC	96		RC	96		RC	96		0.022	101	
0° 45'	NC			NC			NC			NC			RC	96		RC	96		0.024	106		0.026	110		0.030	120		0.032	125	
1° 00'	NC			NC			NC			RC	90		0.022	101		0.026	110		0.030	120		0.034	130		0.038	139	300	0.042	149	300
1° 15'	NC			NC			RC	84		0.022	95		0.028	115		0.032	125		0.038	139		0.042	149		0.046	158		0.052	173	
1° 30'	NC			RC	78		0.022	88		0.028	108		0.032	125		0.038	139		0.044	154		0.050	168	300	0.056	182		0.062	197	
1° 45'	RC	72		RC	78		0.026	97		0.030	113		0.036	134		0.044	154		0.050	168	300	0.056	182		0.064	202		0.070	216	
2° 00'	RC	72		0.024	86		0.028	101		0.034	122		0.042	149		0.048	163		0.056	182		0.064	202		0.070	216		0.080	240	
2° 15'	RC	72		0.026	90		0.032	109		0.038	131		0.046	158		0.054	178	300	0.062	197		0.070	216		0.078	235	350	0.088	259	350
2° 30'	0.022	75		0.028	94		0.034	113		0.042	140		0.050	168		0.058	187		0.068	211		0.076	230		0.086	254		0.096	278	
2° 45'	0.024	79		0.030	98		0.038	122		0.046	149	200	0.054	178		0.064	202		0.072	221		0.082	245		0.092	269		0.100	288	400
3° 00'	0.026	83		0.034	105		0.040	126		0.050	158		0.058	187	250	0.068	211		0.078	235		0.088	259		0.098	283	400	D MAX = 2° 45'		
3° 15'	0.028	86		0.036	109		0.044	134		0.052	162		0.062	197		0.072	221		0.082	245		0.092	269		0.100	288				
3° 30'	0.030	90		0.038	113		0.046	139	200	0.056	171		0.066	206		0.076	230		0.086	254		0.096	278	350	D MAX = 3° 30'					
3° 45'	0.032	93		0.040	117		0.050	147		0.058	176		0.070	216		0.080	240		0.090	264		0.098	283							
4° 00'	0.034	97		0.042	121	200	0.052	151		0.062	185		0.072	221		0.084	250		0.094	274	350	0.100	288							
4° 15'	0.036	100		0.044	125		0.054	155		0.064	189		0.076	230		0.086	254	350	0.096	278		D MAX = 4° 15'								
4° 30'	0.036	100		0.046	129		0.056	160		0.068	198		0.078	235		0.090	264		0.098	283										
4° 45'	0.038	104	200	0.048	133		0.060	168		0.070	203		0.082	245		0.092	269		0.100	288										
5° 00'	0.040	108		0.050	137		0.062	172		0.072	207		0.084	250		0.094	274		D MAX = 5° 15'										
5° 30'	0.044	115		0.054	144		0.066	181		0.078	221	250	0.088	259		0.098	283												
6° 00'	0.046	119		0.058	152		0.070	189		0.082	230		0.092	269		0.100	288												
6° 30'	0.050	126		0.062	160		0.074	198		0.086	239		0.096	278	300	D MAX = 6° 30'													
7° 00'	0.052	130		0.064	164		0.078	206		0.090	248		0.098	283															
7° 30'	0.054	133		0.068	172		0.080	210		0.092	252		0.100	288															
8° 00'	0.058	140		0.070	176		0.084	219		0.094	257	300	D MAX = 8° 25'																
8° 30'	0.060	144		0.072	179		0.086	223	250	0.096	261																		
9° 00'	0.062	148		0.076	187		0.088	227		0.098	266																		
9° 30'	0.064	151		0.078	191		0.092	235		0.100	270																		
10° 00'	0.066	155		0.080	195		0.094	240		D MAX = 10° 30'																			
11° 00'	0.070	162		0.084	203		0.096	244																					
12° 00'	0.074	169		0.088	211	250	0.098	248																					
13° 00'	0.076	173		0.090	215		0.100	252	300	D MAX = 13° 45'																			
14° 00'	0.080	180		0.094	222																								
15° 00'	0.082	184		0.096	226																								
16° 00'	0.086	191		0.098	230																								
17° 00'	0.088	194		0.100	234																								
18° 00'	0.090	198	250	D MAX = 19° 30'																									
19° 00'	0.092	202																											
20° 00'	0.094	205																											
21° 00'	0.096	209																											
22° 00'	0.096	209																											
23° 00'	0.098	212																											
24° 00'	0.098	212																											
25° 00'	0.100	216																											
D MAX = 28° 30'																													

ABBREVIATIONS

NC - NORMAL CROWN
RC - REVERSE CROWN, SUPERELEVATION AT NORMAL CROWN SLOPE
e - RATE OF SUPERELEVATION (FT. PER FT.)
Ls - LENGTH OF SUPERELEVATION TRANSITION (FT.)
L - DISTANCE FROM BEGINNING OF SUPERELEVATION TRANSITION TO ANY POINT (FT.)
d - WIDTH OF PAVEMENT (FT.) OR WIDTH OF SUBGRADE (FT.)
C - NORMAL CROWN (FT.)

GENERAL NOTES

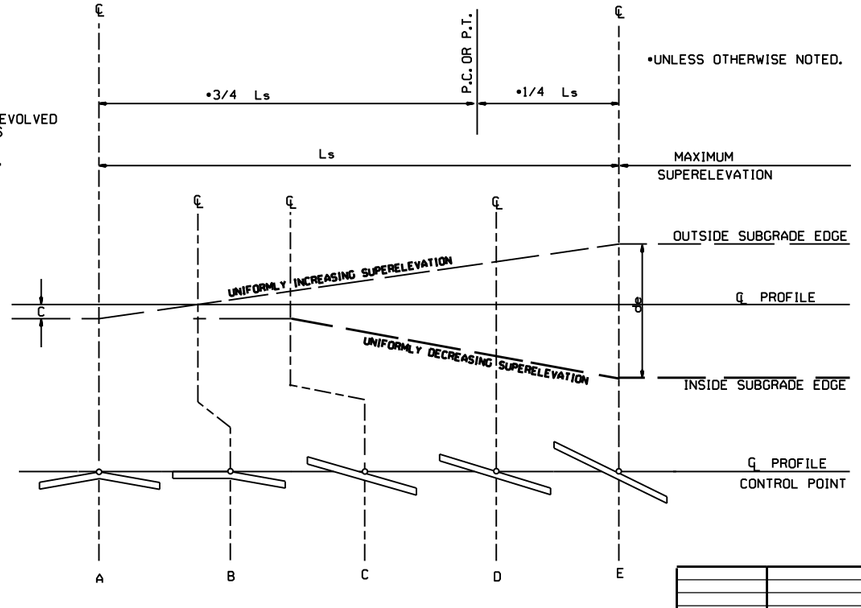
1. ON PAVEMENT WITH TWO-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE INSIDE PAVEMENT EDGE UNLESS OTHERWISE NOTED ON THE PLANS
2. SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES (+) OR (-) TO BE ADDED TO OR SUBTRACTED FROM THE POINT OF CONTROL.
3. LENGTHS FOR L MAY BE ROUNDED IN MULTIPLES OF 25 FT. OR 50 FT. TO PERMIT SIMPLER CALCULATIONS.
4. PAVEMENTS WIDER THAN 2 LANES SHALL HAVE ADDITIONAL TRANSITION LENGTHS AS FOLLOWS:

3 LANE UNDIVIDED - - - - - +20%
4 LANE UNDIVIDED - - - - - +50%
5 LANE UNDIVIDED - - - - - +80%
6 LANE UNDIVIDED - - - - - +100%

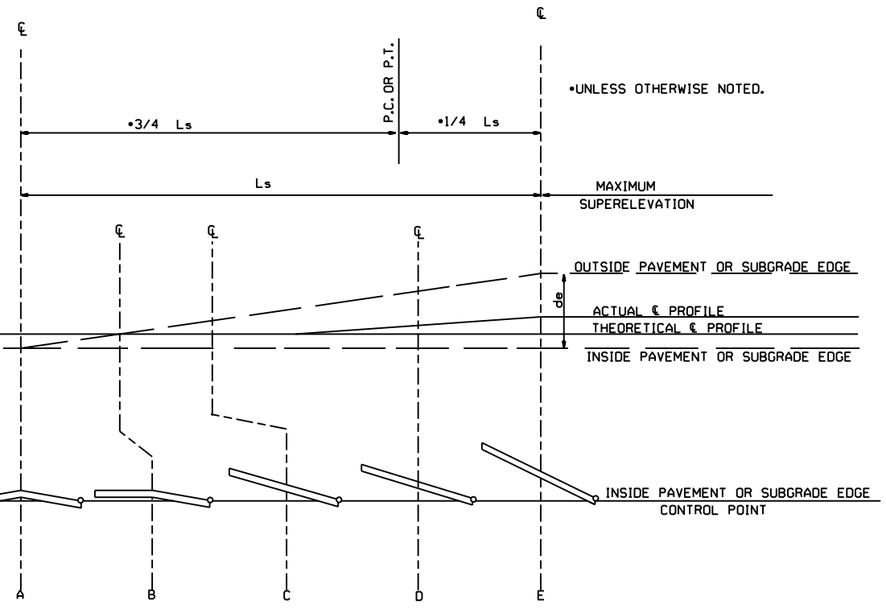
NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

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

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



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE



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

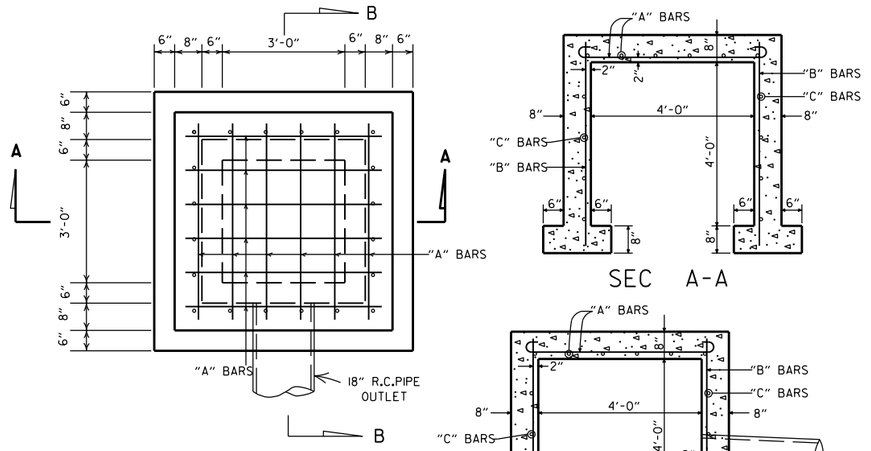
NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

DATE	REVISION	DATE FILLMED
11-07-19	REVISED SUPERELEVATION TABLE	
10-18-96	ADDED FORMULA	
01-09-87	ISSUED	534-1-9-87

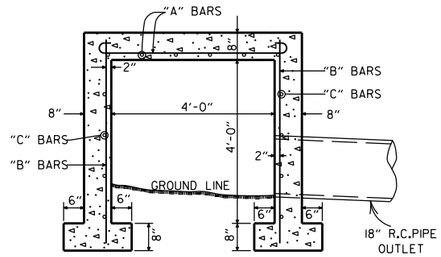
ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

STANDARD DRAWING SE-2



SEC A-A



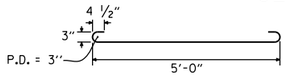
SEC B-B

NOTE: MAX FILL HEIGHT ABOVE TOP OF BOX = 13'-0".

STEEL SCHEDULE

BARS	NUMBER	LENGTH	SPACING
"A"	12	6'-0"	10"
"B"	20	5'-0"	10 ½"
"C"	16	5'-0"	12"

ALL STEEL TO BE #4 BARS



"A" BARS

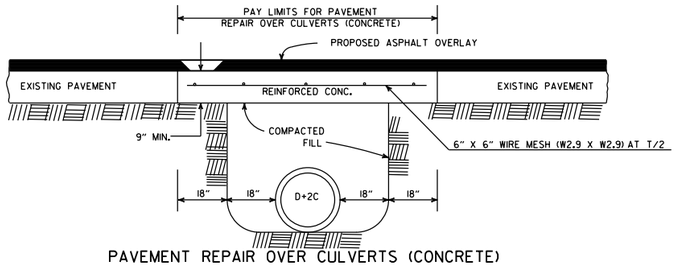
QUANTITIES

CONCRETE 3.31 CU. YDS.
REINFORCING STEEL 168 LB.

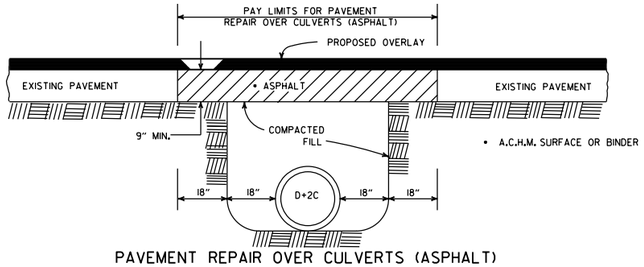
GENERAL NOTE:

THE PAY ITEMS FOR REINFORCED CONCRETE SPRING BOXES SHALL BE FOR THE QUANTITIES OF CONCRETE OF THE CLASS SPECIFIED, REINFORCING STEEL, EXCAVATION FOR STRUCTURES AND 18" R.C. PIPE CULVERT.

REINFORCED CONCRETE SPRING BOX



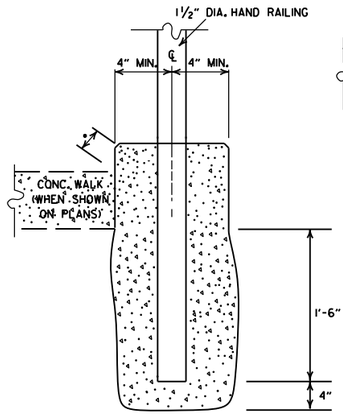
PAVEMENT REPAIR OVER CULVERTS (CONCRETE)



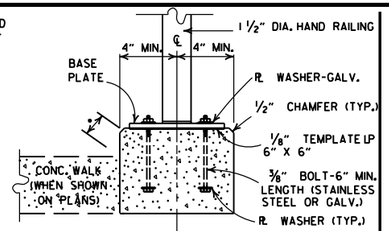
PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS

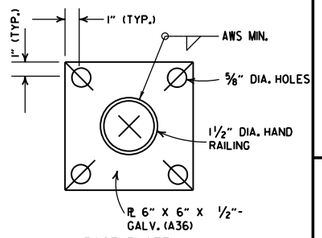
• A 2" MIN. HIGH CURB IS REQUIRED WHEN CONCRETE WALK IS ADJACENT TO THE HAND RAILING. PAYMENT FOR CURB SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR CONCRETE WALKS.



DETAIL OF HAND RAILING SET IN CONCRETE

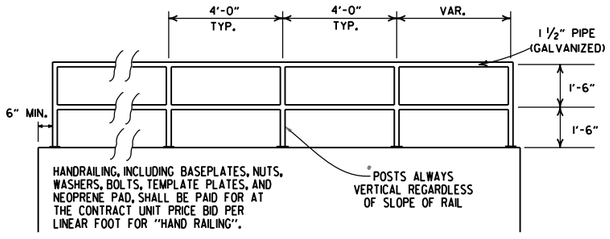


POST CONNECTION TO WALL

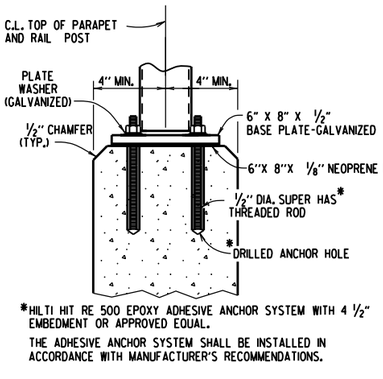


BASE PLATE

POST CONNECTION DETAILS



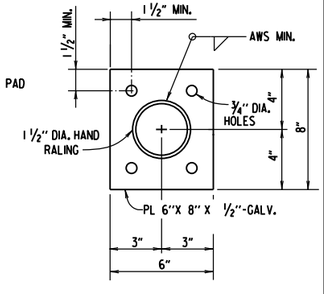
HAND RAILING SHALL CONFORM TO SECTION 633.



*HILTI HIT RE 500 EPOXY ADHESIVE ANCHOR SYSTEM WITH 4 ½" EMBEDMENT OR APPROVED EQUAL.

THE ADHESIVE ANCHOR SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

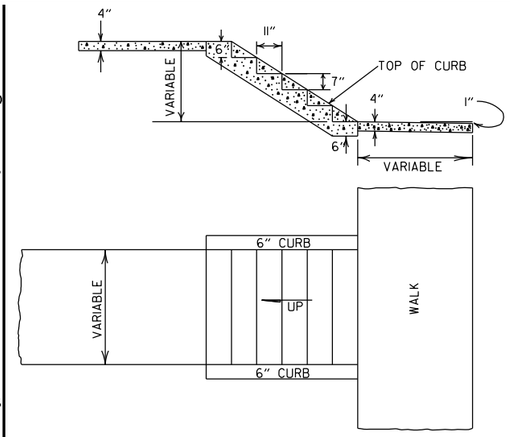
POST CONNECTION TO WALL



BASE PLATE

DETAILS OF ALTERNATE POST ANCHOR SYSTEM (EPOXY ADHESIVE ANCHORS)

HAND RAILING DETAILS



GENERAL NOTES

1. RISE AND TREAD DIMENSIONS OF STEPS MAY BE VARIED AS DIRECTED BY THE ENGINEER, HOWEVER, TREAD WIDTHS SHALL BE 11" MIN. ALL STEPS IN A FLIGHT SHALL HAVE CONSISTENT TREAD & RISER DIMENSIONS.
2. 1" TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE WALKS AT 45' INTERVALS.

DETAILS OF CONCRETE STEPS & WALKS

DATE	REVISION	DATE FILMED
10-25-18	REVISED DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS	
9-12-13	REVISED REINFORCED CONCRETE SPRING BOX	
7-26-12	REMOVED RETAINING WALL DETAILS & REVISED HAND RAILING DETAILS	
4-17-08	REV. JOINT & FOOTING STEP DETAILS	
11-29-07	REVISED RETAINING WALL DRAINAGE	
5-25-06	REVISED PVMT REPAIR OVER CULVERTS (CONC); REVISED REINFORCED CONC SPRING BOX	
10-9-03	REVISED PIPE RAILING DETAILS TO HAND RAILING DETAILS	
4-10-03	REVISED RETAINING WALL DRAWING	
8-22-02	ADDED HAND RAILING DETAIL	
11-16-01	REVISED PVMT REPAIR OVER CULVERTS (CONC); CORRECTED SPELLING IN GENERAL NOTES	
11-18-98	ADDED GENERAL NOTES TO CONCRETE STEPS & WALKS	
7-02-98	ENLARGED PIPE	
4-03-97	ADDED NOTE TO STEEL BAR SCHED.	
10-18-96	CORRECTED SPELLING	
4-26-94	ADD WEEP HOLE;REV. JOINT SPACING IN RET. WALL	
6-2-94	CHANGED CONST. TO CONTRACTION JOINT	
10-1-92	CHANGED MESH FABRIC TO WIRE MESH	10-1-92
8-15-91	DELETED HDWL MODIFICATION DETAIL	8-15-91
11-8-90	DELETED COLD MIX FROM CULV'T. REPAIR	11-8-90
11-30-89	REV. RETAINING WALL STEEL SCHEDULE	11-30-89
11-17-88	V. BARS BEHIND ARROW	665-11-17-88
7-15-88	REV. PAVEMENT REPAIR ADDED HDWL. MODS, DEL. PIPE UNDERDRAINS	649-7-15-88
11-1-84	REV. TRENCH FOR PIPE UNDERDRAIN	510-11-1-84
1-4-83	ELIMINATED CONC. CLASS & ADDED CHAMFER NOTE	682-1-4-83
3-2-81	SPELLING OF "UNDERDRAIN"	721-3-2-81
4-20-79	REV. UNDERDRAIN DET& PAVEMENT REPAIR	674-4-20-79
2-2-76	12"MIN. GRAN. MAT'L. OVER PIPE	919-2-2-76
4-10-75	REM. SPECS. FOR GRAN. MAT'L.	568-4-10-75-853
5-22-74	GRANULAR MAT'L. TO BE SB-3	567-5-22-74-740
10-2-72	REVISED AND REDRAWN	564-10-16-72

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF SPECIAL ITEMS

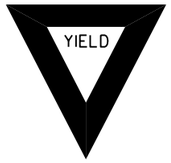
STANDARD DRAWING SI - 1

R1-1



STANDARD 30"X30"
EXPRESSWAY 36"X36"
SPECIAL 48"X48"

R1-2



STD. 36"X36"X36"
EXPWY. 48"X48"X48"
FWY. 60"X60"X60"

R2-1



STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

W3-5



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

W3-5a



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

R4-1



STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R4-2



STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R5-1



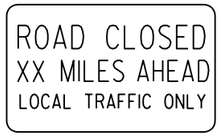
STD. 30"X30"
EXPWY. 36"X36"
SPECIAL 48"X48"

R11-2



48"X30"

R11-3A



60"X30"

R11-4



60"X30"

W21-5a



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

W1-1



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

W1-2



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

W1-3



STD. 48"X48"

W1-4



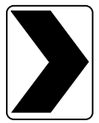
STD. 48"X48"

W1-6



STD. 48"X24"
SPECIAL 60"X30"

W1-8



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

W3-1



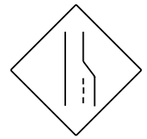
STD. 36"X36"
SPECIAL 48"X48"

W3-2



STD. 36"X36"
SPECIAL 48"X48"

W4-2



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

W5-1



STD. 36"X36"
SPECIAL 48"X48"

W6-3



EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7



EXPWY. 36"X36"
FWY. 48"X48"

W9-2



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

W13-1



STD. 24"X24"

W20-1



STD. 48"X48"

W20-2



STD. 48"X48"

W20-3



STD. 48"X48"

W20-4



STD. 48"X48"

W20-5



STD. 48"X48"

W20-7a



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

W21-2



STD. 30"X30"
SPECIAL 36"X36"

W21-5



STD. 30"X30"
SPECIAL 36"X36"

W24-1



STD. 36"X36"

W1-4b



STD. 48"X48"

R56-1



STD. 18"X18"

W8-11



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

W8-9



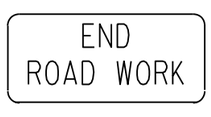
STD. 36"X36"
FWY. 48"X48"

G20-1



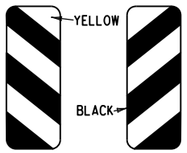
60"X24"

G20-2



48"X24"

OM-3L OM-3R



12"X36"

M4-9



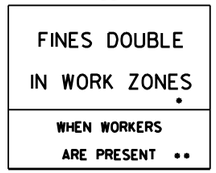
STD. 30"X24"
SPECIAL 48"X36"
SPECIAL 60"X48"

M4-10



48"X18"

R55-1



36"X60"

• USE 6" C LETTERS
•• USE 4" D LETTERS

ADVANCE DISTANCES
(XXXX)

500 FT	½ MILE
1000 FT	¾ MILE
1500 FT	1 MILE AHEAD

GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION.
2. TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER.
3. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE KEPT IN PROPER POSITION, AND BE CLEAN AND LEGIBLE AT ALL TIMES. SIGNS THAT DO NOT APPLY TO EXISTING CONDITIONS SHALL BE REMOVED. SIGNS THAT ARE DAMAGED, DEFACED, OR THAT ACCUMULATE DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED.
- 4. SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 SQ. FT. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III BARRICADE.
- 5. SIGN POSTS DIRECT BURIED IN SOIL SHALL BE 2 LB. MINIMUM CHANNEL POST OR 4"x4" WOOD POSTS. CHANNEL POSTS SHALL BE PAINTED GREEN. WOOD POSTS SHALL BE PAINTED WHITE. ALL POSTS SHALL BE NEATLY CONSTRUCTED, AND SHALL BE REPLUMBED, CLEANED, OR REPAIRED AS NEEDED FOR THE DURATION OF THE JOB. THERE SHALL NOT BE MORE THAN 2 POSTS IN A 7' PATH FOR WOOD OR CHANNEL POSTS. ANY CHANNEL POST SPLICE SHALL BE IN ACCORDANCE WITH STANDARD DRAWING TC-3.
6. POST MOUNTED SIGNS IN RURAL AREAS SHALL BE CONSTRUCTED WITH THE NEAR EDGE OF THE SIGN FROM 6 TO 12 FEET FROM THE PAVEMENT EDGE. SIGNS IN URBAN AREAS AND BARRICADE MOUNTED SIGNS SHALL BE MOUNTED A MINIMUM OF 2 FEET FROM THE PAVEMENT EDGE.
7. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN URBAN AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN RURAL AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE, EXCEPT A MINIMUM OF 6' SHALL BE USED WHEN MOUNTING AN ADVISORY SIGN BELOW A WARNING SIGN. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE 5'. RETROREFLECTIVE DEVICES SHALL BE USED. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE CONDITIONS. THEY SHALL BE NO LESS THAN ONE (1) FOOT ABOVE THE TRAVELED WAY. LONG-TERM STATIONARY SIGNS SHALL BE DIRECT BURIED IN SOIL, UNLESS CONDITIONS NECESSITATE THE USE OF PORTABLE SIGNS, OR AS APPROVED BY THE ENGINEER. CONCRETE PADS, CONCRETE OR ROCK BALLAST, OR OTHER SOLID MATERIALS SHALL NOT BE UTILIZED WITH PORTABLE SIGN SUPPORTS.
8. FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
9. MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT. HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER DIRECTION OF MOVEMENT.
10. R55-1 SIGNS SHALL BE PLACED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN.

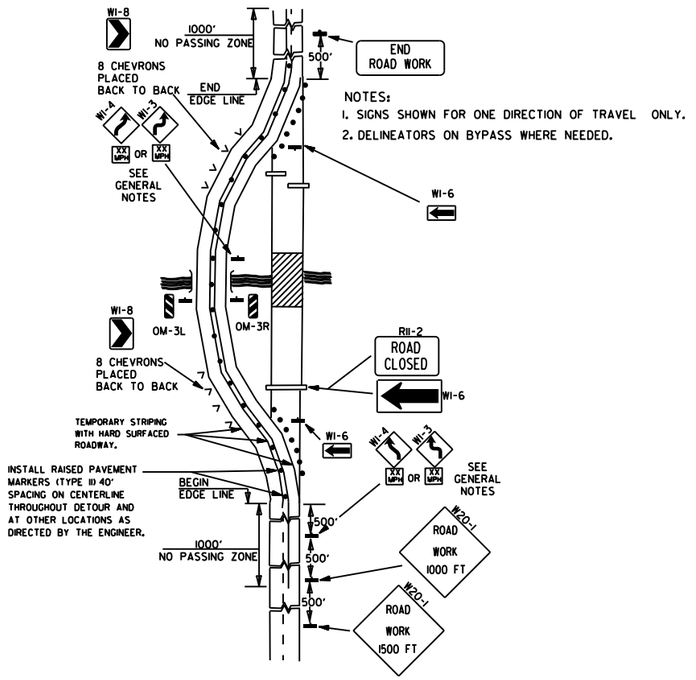
- NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED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

DATE	REVISION	FILMED
11-07-19	REVISED FOR MASH	
4-13-17	DELETED RSP-1 & ADDED W21-5a	
9-2-15	REVISED REDUCED SPEED LIMIT AHEAD SIGNS REVISED ROAD WORK NEXT XX MILES	
12-15-11	REVISED W24-1	
11-17-10	DELETED W8-9a & ADDED W8-9	
10-15-09	ADDED REFERENCE TO MASH & ADDED SIGN W24-1	
4-17-08	REVISED SIGN DESIGNATIONS	
11-18-04	REVISED NOTES	
10-9-03	REVISED NOTE 1	
11-16-01	REVISED NOTE 7	
9-28-00	REVISED NOTE	
11-18-98	ADDED NOTE	
6-26-97	REVISED NOTE 5	
4-03-97	REVISED NOTE 5	
10-18-96	ADDED CONTROLLED ACCESS HWY. SIGN & TO NOTE 7	
10-12-95	ADDED R55-1	
6-8-95	REVISED TO CORRECT SIGN ILLUSTRATIONS	6-8-95
2-2-95	REVISED PER PART VI, MUTCD SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

ARKANSAS STATE HIGHWAY COMMISSION

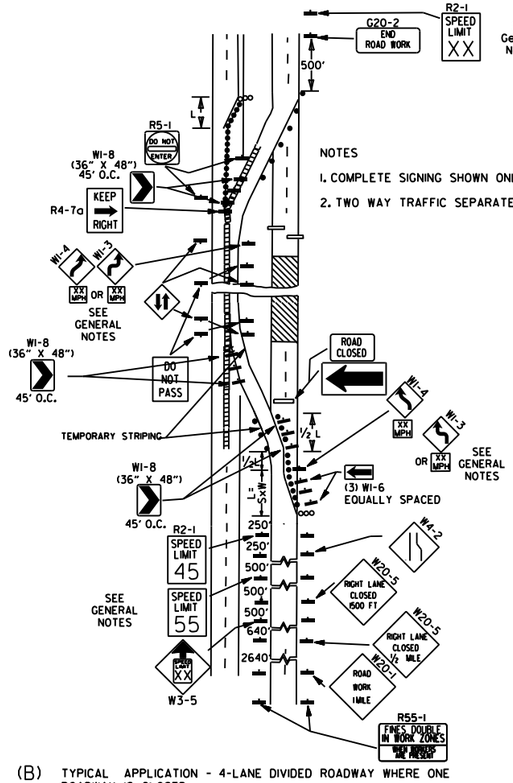
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



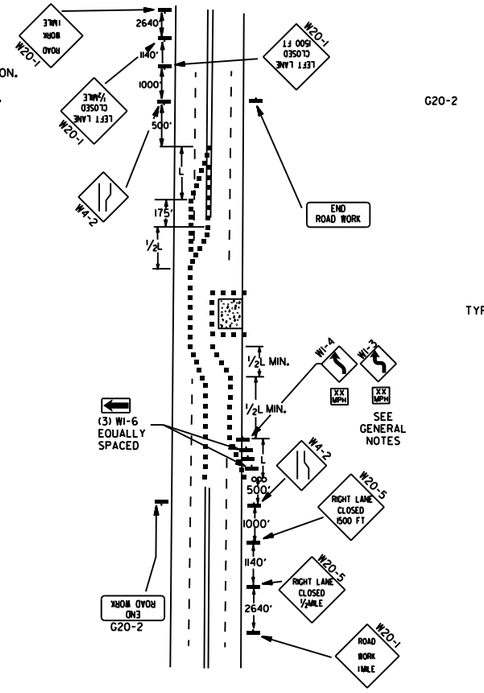
NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

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

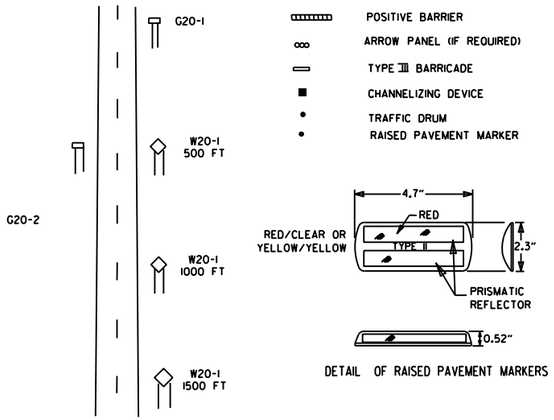


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

(B) TYPICAL APPLICATION - 4-LANE DIVIDED ROADWAY WHERE ONE ROADWAY IS CLOSED.



(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



DETAIL OF RAISED PAVEMENT MARKERS

TYPICAL ADVANCE WARNING SIGN PLACEMENT

TAPER FORMULAE:

L=SXW FOR SPEEDS OF 45MPH OR MORE.

$L = \frac{WS^2}{60}$ FOR SPEEDS OF 40MPH OR LESS.

WHERE:

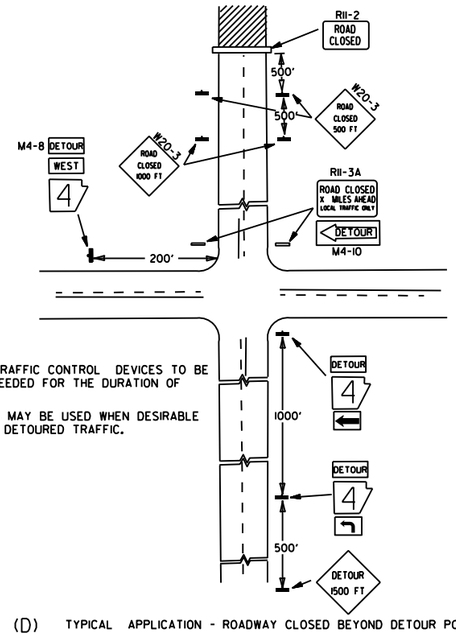
L= MINIMUM LENGTH OF TAPER.

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

W= WIDTH OF OFFSET.

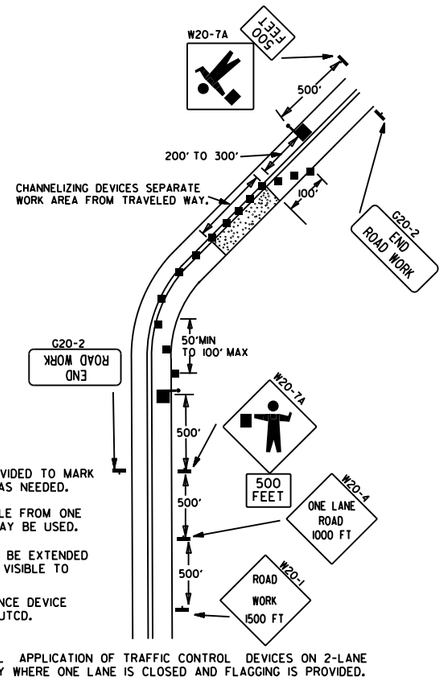
GENERAL NOTES:

1. THE MAINTENANCE DIVISION SHALL CONDUCT A BALL BANK STUDY TO DETERMINE THE ADVISORY SPEED LIMIT PRIOR TO OPENING TO TRAFFIC. THE ADVISORY SPEED WILL BE POSTED ON WI-3 OR WI-4 CURVE WARNING SIGNS. USE WI-4 WHEN SPEED IS GREATER THAN 30MPH AND WI-3 WHEN 30MPH OR LESS
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-145MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(45) SHALL BE OMITTED. ADDITIONAL R2-155MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT, OR AS DIRECTED BY THE ENGINEER.
5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
7. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER. WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE. PAYMENT FOR TRAFFIC DRUMS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR VARIOUS TRAILER MOUNTED DEVICES.
8. DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE ARDOT QUALIFIED PRODUCTS LIST.
9. ALL TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL MEET THE REQUIREMENTS OF THE MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).



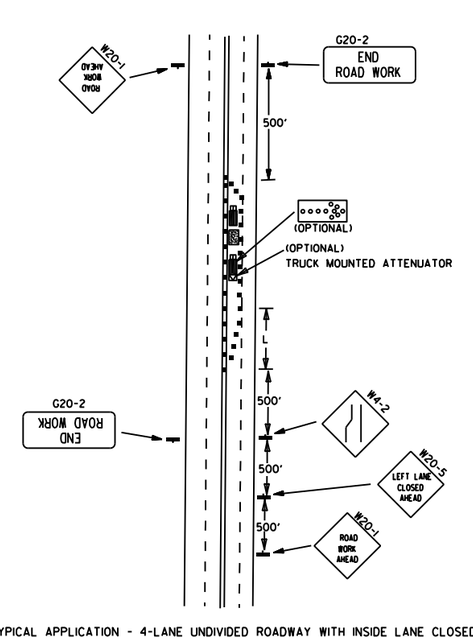
NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

(D) TYPICAL APPLICATION - ROADWAY CLOSED BEYOND DETOUR POINT.



NOTES:
1. FLOOD LIGHTS SHOULD BE PROVIDED TO MARK FLAGGER STATIONS AT NIGHT AS NEEDED.
2. IF ENTIRE WORK AREA IS VISIBLE FROM ONE STATION, A SINGLE FLAGGER MAY BE USED.
3. CHANNELIZING DEVICES ARE TO BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
4. AUTOMATED FLAGGER ASSISTANCE DEVICE (AFAD) OPTIONAL. REFER TO MUTCD.

(E) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON 2-LANE HIGHWAY WHERE ONE LANE IS CLOSED AND FLAGGING IS PROVIDED.



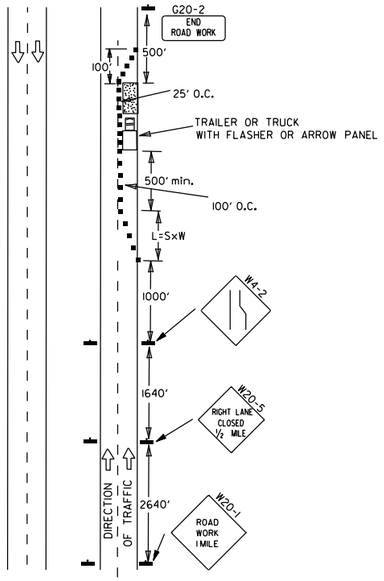
(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.

DATE	REVISION	FILMED
05-20-21	REVISED NOTE 7	
11-07-19	REVISED NOTE 1, ADDED NOTE 9	
9-2-15	REVISED NOTE 2, ADDED NOTE 8, REVISED DRAWING (A) & REPLACED R2-5A WITH W3-5	
9-12-13	REVISED DETAIL OF RAISED PAVEMENT MARKERS	
3-11-10	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (a) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON W1-4A	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

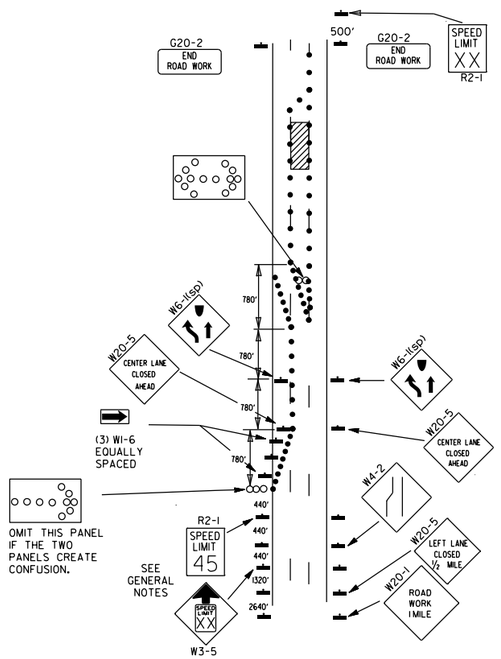
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-2



(A) TYPICAL APPLICATION - DAYTIME MAINTENANCE OPERATIONS OF SHORT DURATION ON A 4-LANE DIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



(B) TYPICAL APPLICATION - 3-LANE ONEWAY ROADWAY WHERE CENTER LANE IS CLOSED.

KEY:

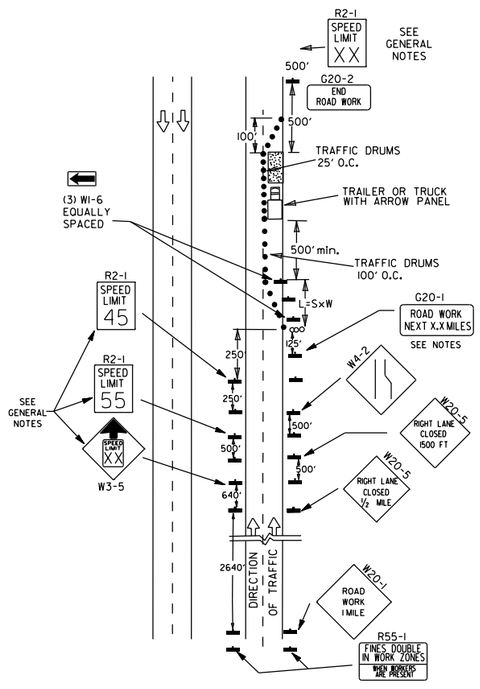
ARROW PANEL (IF REQUIRED)

■ CHANNELIZING DEVICE

● TRAFFIC DRUM

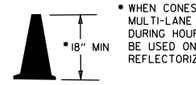
GENERAL NOTES:

1. A SPEED LIMIT REDUCTION MAY BE IMPLEMENTED ONLY WHEN DESIGNATED IN THE PLAN OR WHEN RECOMMENDED BY THE ROADWAY DESIGN DIVISION.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1 45MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(45) SHALL BE OMITTED. ADDITIONAL R2-1 55MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS, AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT OR AS DIRECTED BY THE ENGINEER.
5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
7. THE G20-1 SIGN WILL BE REQUIRED ON JOBS OF OVER TWO MILES IN LENGTH. WHEN THE LANE CLOSURE IS NOT AT THE BEGINNING OF THE PROJECT, THE G20-1 SIGN SHALL BE ERECTED 125' IN ADVANCE OF THE JOB LIMIT. ADDITIONAL W20-1 (1 MILE) SIGNS ARE NOT REQUIRED IN ADVANCE OF LANE CLOSURES THAT BEGIN INSIDE THE PROJECT LIMITS.
8. FLAGGERS SHALL USE STOP/SLOW PADDLES FOR CONTROLLING TRAFFIC THROUGH WORK ZONES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
9. ALL PLASTIC DRUMS AND CONES SHALL MEET THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
10. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER. WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE. PAYMENT FOR TRAFFIC DRUMS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR VARIOUS TRAILER MOUNTED DEVICES.
11. ALL TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL MEET THE REQUIREMENTS OF THE MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).



(C) TYPICAL APPLICATION - CONSTRUCTION OPERATIONS OF INTERMEDIATE TO LONG TERM DURATION ON A 4-LANE DIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.

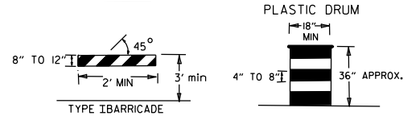
CHANNELIZING DEVICES



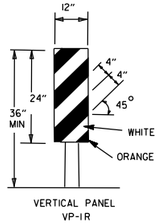
* WHEN CONES ARE USED ON FREEWAYS AND MULTI-LANE HIGHWAYS, THEY SHALL BE 28" MIN. DURING HOURS OF DARKNESS, 28" CONES SHALL BE USED ON ALL ROADWAYS, AND SHALL BE REFLECTORIZED IN ACCORDANCE WITH THE M.U.T.C.D.

CONES

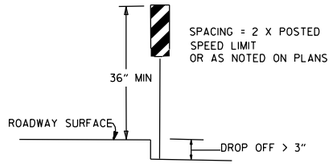
PLASTIC DRUM



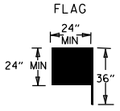
NOTE:
FOR ALL ROAD CLOSURES, THE TYPE III BARRICADES SHALL BE OF SUFFICIENT LENGTH TO EXTEND ACROSS ENTIRE ROADWAY.



VERTICAL PANEL PLACEMENT



FLAG



FLAG SHALL BE OF GOOD GRADE RED MATERIAL

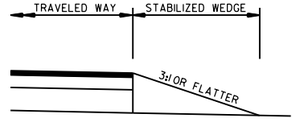
TRAFFIC CONTROL DEVICES			
NON-INTERSTATE			
VERTICAL DIFFERENTIAL	LOCATION	TRAFFIC CONTROL	
		≤ 45 MPH	> 45 MPH
≤ 1"	CENTERLINE	W8-11	W8-11
> 1" ≤ 3"	CENTERLINE	W8-11 AND CENTERLINE LANE STRIPING	W8-11 AND CENTERLINE LANE STRIPING
> 3"	CENTERLINE	STANDARD LANE CLOSURE[6]	STANDARD LANE CLOSURE[6]
≤ 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9 AND TRAFFIC DRUMS[1]	W8-9 AND TRAFFIC DRUMS[1]
> 3" ≤ 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS[1]	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS[1]
> 6" ≤ 18"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS[1]	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS[2]
> 18" ≤ 24"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS[1]	A STABILIZED WEDGE, W8-17, EDGE LINE STRIPING AND TRAFFIC DRUMS[3]
> 24"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	PRECAST CONCRETE BARRIER[4] & EDGE LINES	PRECAST CONCRETE BARRIER[4] & EDGE LINES

INTERSTATE		
VERTICAL DIFFERENTIAL	LOCATION	TRAFFIC CONTROL
≤ 3"	CENTERLINE	W8-11 AND LANE STRIPING
≤ 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9, EDGE LINE STRIPING, AND TRAFFIC DRUMS[2]
> 3" ≤ 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS[2]
> 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	PRECAST CONCRETE BARRIER & EDGE LINES

INTERSTATE AND NON-INTERSTATE		
FORESLOPE	HEIGHT	TRAFFIC CONTROL
1:1	> 2 FT	PRECAST CONCRETE BARRIER
2:1	≤ 5 FT	TRAFFIC DRUMS
2:1	> 5 FT	PRECAST CONCRETE BARRIER
Flatter than 2:1	N/A	TRAFFIC DRUMS

GENERAL NOTES:

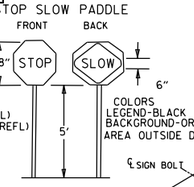
1. WHEN THE SHOULDER AREA IS USED AS PART OF THE TRAVELED LANE AND THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, THEN VERTICAL PANELS SHALL BE USED.
2. WHEN THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, A STABILIZED WEDGE SHALL BE USED.
3. PRECAST CONCRETE BARRIER WALL CAN BE USED IN LIEU OF A STABILIZED WEDGE, W8-17 SIGN, EDGE LINE STRIPING, AND TRAFFIC DRUMS, IF AND WHERE DIRECTED BY THE ENGINEER.
4. A STABILIZED WEDGE, W8-17 SIGN, EDGE LINE STRIPING, AND TRAFFIC DRUMS CAN BE USED IN LIEU OF PRECAST CONCRETE BARRIER WALL, IF AND WHERE DIRECTED BY THE ENGINEER.
5. W21-5, W21-5a, AND/OR W21-5b SIGNS SHALL BE USED WHERE THE ROADWAY IS UNOBSTRUCTED IF AND WHERE DIRECTED BY THE ENGINEER.
6. TIME LIMITATIONS MUST CONFORM TO SECTION 603 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).

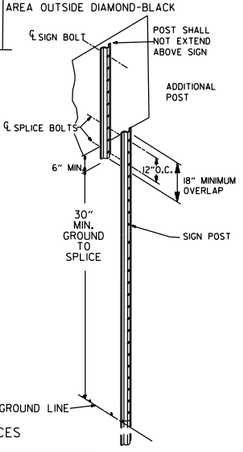


STABILIZED WEDGE

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

STOP SLOW PADDLE

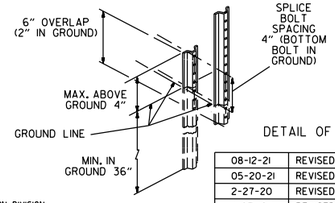




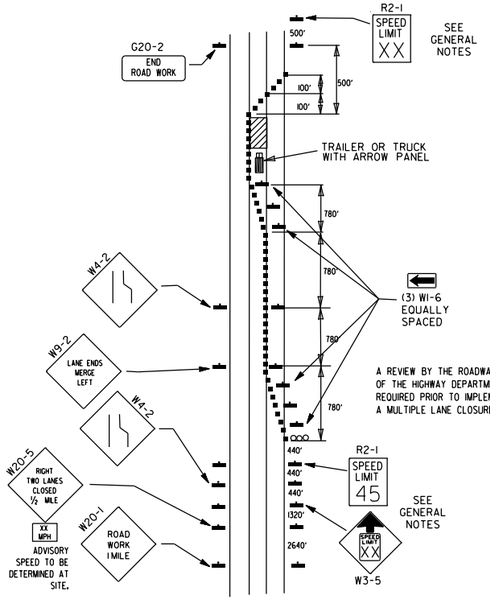
NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-21)

NORMAL INSTALLATIONS WILL REQUIRE 1/4" DIA. BOLTS TO MOUNT SIGNS TO POST AND 5/16" DIA. BOLTS TO ASSEMBLE THE VARIOUS POST SUPPORTS. EACH OF THESE BOLTS SHALL BE CARRIAGE BOLTS.

SIGN POSTS SHALL BE PAINTED GREEN; SIGNS SHALL NOT BE PAINTED, AND ALL SIGN POSTS SHALL BE PLUMB.



DETAIL OF SPLICES



A REVIEW BY THE ROADWAY DESIGN DIVISION OF THE HIGHWAY DEPARTMENT WILL BE REQUIRED PRIOR TO IMPLEMENTING A MULTIPLE LANE CLOSURE.

(D) TYPICAL APPLICATION - CLOSING MULTIPLE LANES OF A MULTILANE HIGHWAY.

DATE	REVISION	FILMED
08-12-21	REVISED TRAFFIC CONTROL DEVICES AND NOTES	
05-20-21	REVISED NOTE 10	
2-27-20	REVISED TRAFFIC CONTROL DEVICES DETAILS	
11-07-19	REVISED NOTE 9, ADDED NOTE 11	
7-25-19	REVISED TRAFFIC CONTROL DEVICES DETAILS	
9-2-15	REVISED NOTE 2 & REPLACED R2-5A WITH W3-5	
10-15-09	ADDED REFERENCE TO MASH	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED NOTE	
10-1-98	ADDED NOTE	
4-03-97	ADDED (SP) TO W6-1& REVISED TRAFFIC CONTROL DEVICES NOTE	
10-18-96	ADDED R55-1	
10-12-95	MOVED UPPER SPLICE	
6-8-95	REVISED SPLICE DETAIL, TEXT	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

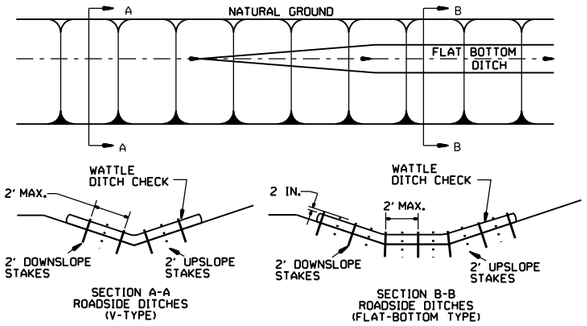
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

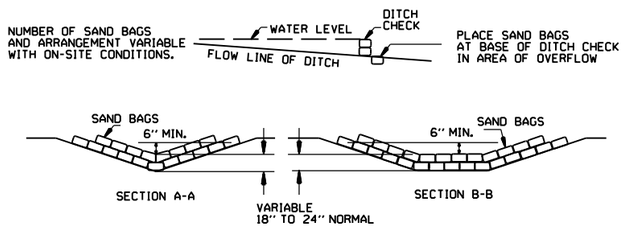
STANDARD DRAWING TC-3

GENERAL NOTES

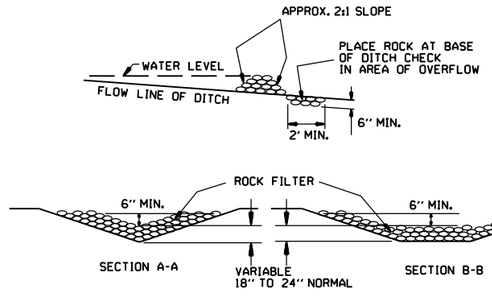
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



SAND BAG DITCH CHECK (E-5)

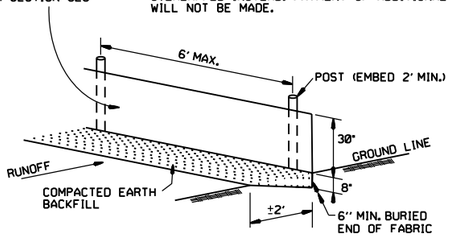


ROCK DITCH CHECK (E-6)

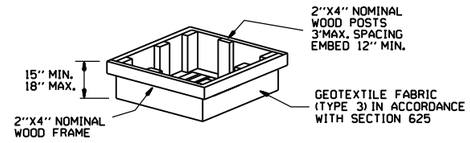
GENERAL NOTES

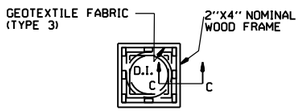
GEOTEXTILE FABRIC (TYPE 4) IN ACCORDANCE WITH SECTION 625

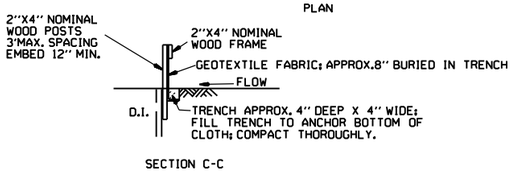
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.



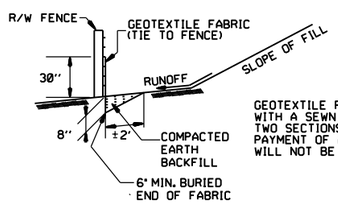
SILT FENCE (E-11)





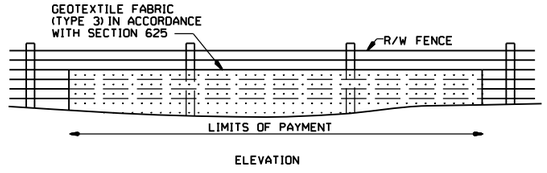


DROP INLET SILT FENCE (E-7)



GENERAL NOTES

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



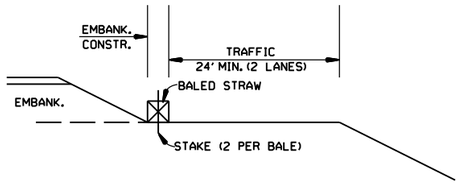
SILT FENCE ON R/W FENCE (E-4)

GENERAL NOTES

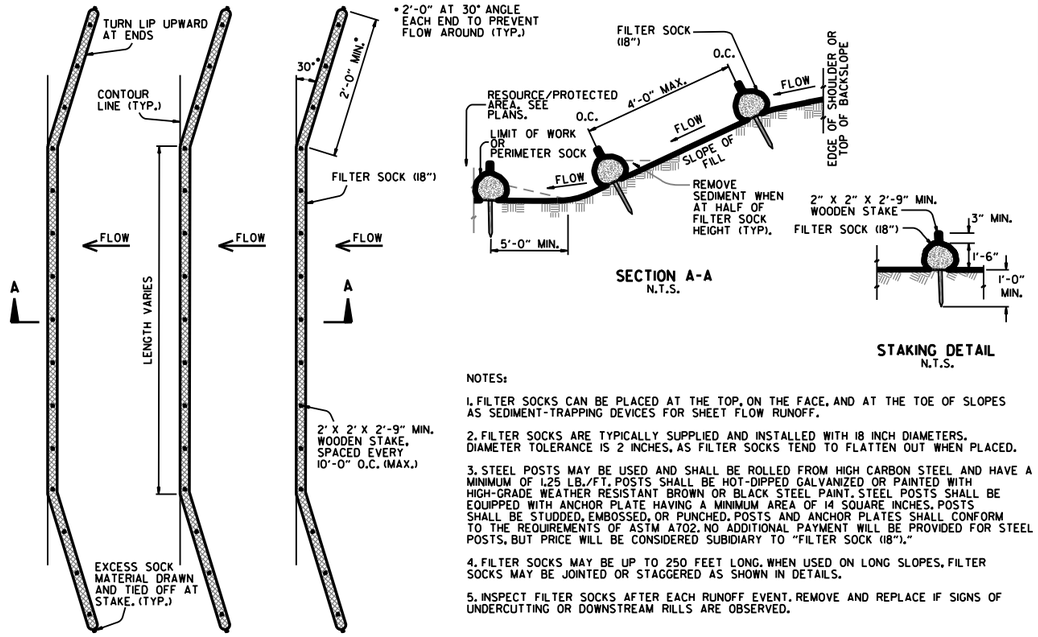
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

2. NO GAPS SHALL BE LEFT BETWEEN BALES.

3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.



BALED STRAW FILTER BARRIER (E-2)



NOTES:

1. FILTER SOCKS CAN BE PLACED AT THE TOP, ON THE FACE, AND AT THE TOE OF SLOPES AS SEDIMENT-TRAPPING DEVICES FOR SHEET FLOW RUNOFF.

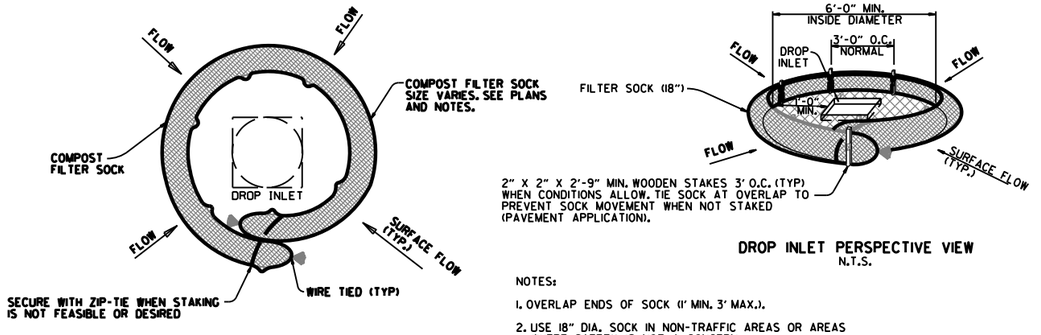
2. FILTER SOCKS ARE TYPICALLY SUPPLIED AND INSTALLED WITH 18 INCH DIAMETERS. DIAMETER TOLERANCE IS 2 INCHES, AS FILTER SOCKS TEND TO FLATTEN OUT WHEN PLACED.

3. STEEL POSTS MAY BE USED AND SHALL BE ROLLED FROM HIGH CARBON STEEL AND HAVE A MINIMUM OF 1.25 LB./FT. POSTS SHALL BE HOT-DIPPED GALVANIZED OR PAINTED WITH HIGH-GRADE WEATHER RESISTANT BROWN OR BLACK STEEL PAINT. STEEL POSTS SHALL BE EQUIPPED WITH ANCHOR PLATE HAVING A MINIMUM AREA OF 14 SQUARE INCHES. POSTS SHALL BE STUDDED, EMBOSSED, OR PUNCHED. POSTS AND ANCHOR PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A702. NO ADDITIONAL PAYMENT WILL BE PROVIDED FOR STEEL POSTS, BUT PRICE WILL BE CONSIDERED SUBIDIARY TO "FILTER SOCK (18")."

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

5. INSPECT FILTER SOCKS AFTER EACH RUNOFF EVENT. REMOVE AND REPLACE IF SIGNS OF UNDERCUTTING OR DOWNSTREAM RILLS ARE OBSERVED.

FILTER SOCK ALONG SLOPE (E-3)



NOTES:

1. OVERLAP ENDS OF SOCK (1' MIN. 3' MAX.).

2. USE 18" DIA. SOCK IN NON-TRAFFIC AREAS OR AREAS WHERE SAFETY IS NOT A CONCERN.

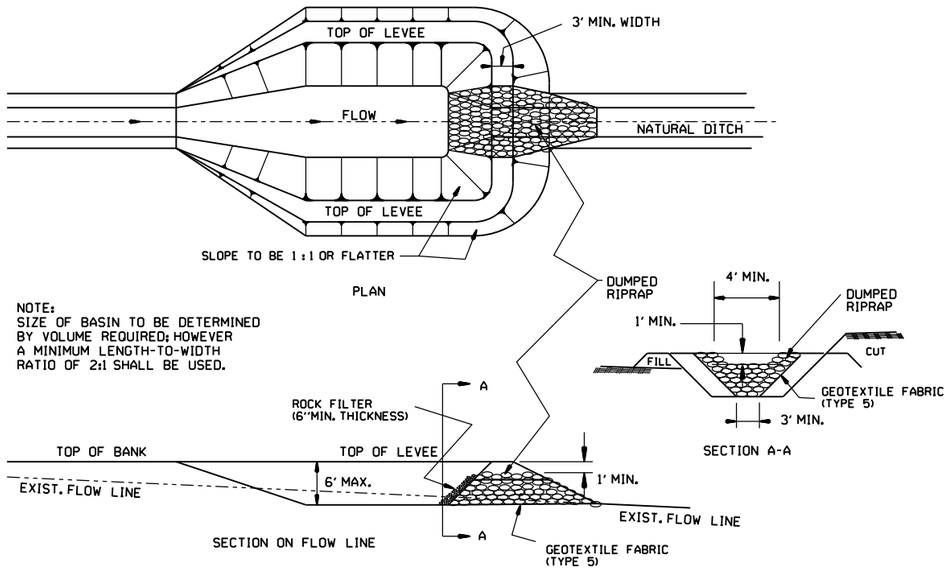
COMPOST FILTER SOCK DROP INLET PROTECTION (E-13)

DATE	REVISION	FILMED
11-16-17	ADDED FILTER SOCK E-3 AND E-13	
12-15-11	DELETED BALED STRAW DITCH CHECK & ADDED WATTLE DITCH CHECK	
11-18-98	ADDED NOTES	
07-02-98	ADDED BALED STRAW FILTER BARRIER (E-2)	
07-20-95	REVISED SILT FENCE E-4 AND E-11	7-20-95
07-15-94	REV. E-4 & E-11 MIN. 13" BURIED END OF FABRIC	
06-02-94	REVISED E-1,4,7 & 11; DELETED E-2 & 3	6-2-94
04-01-93	REDRAWN	
10-01-92	REDRAWN	
08-02-76	ISSUED R.D.M.	298-7-28-76

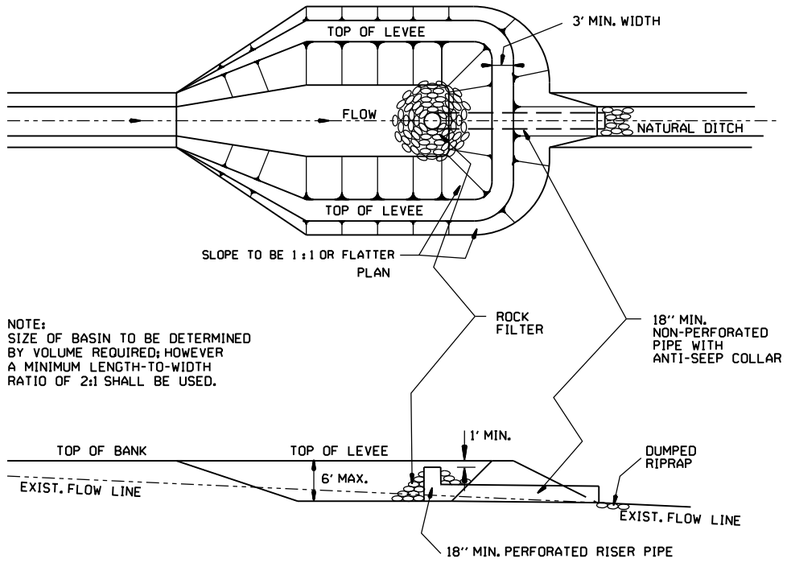
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

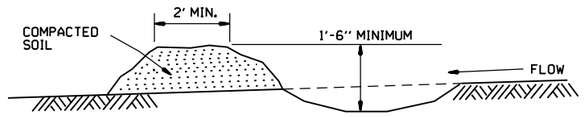
STANDARD DRAWING TEC-1



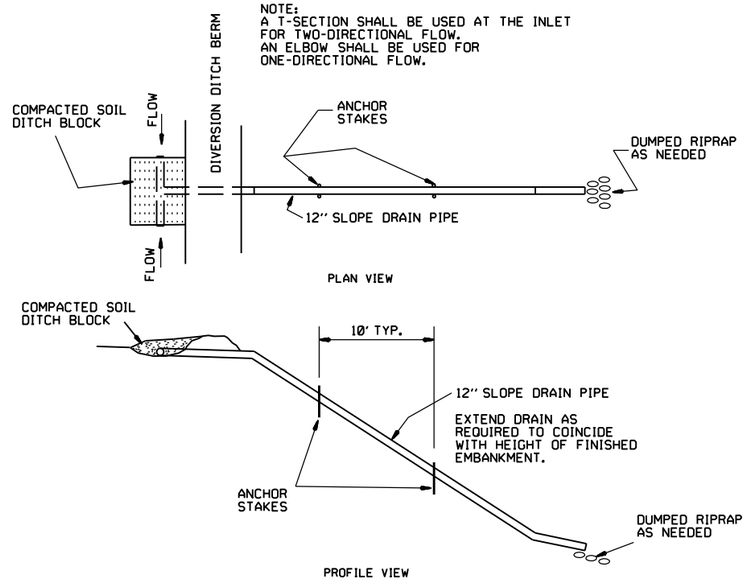
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



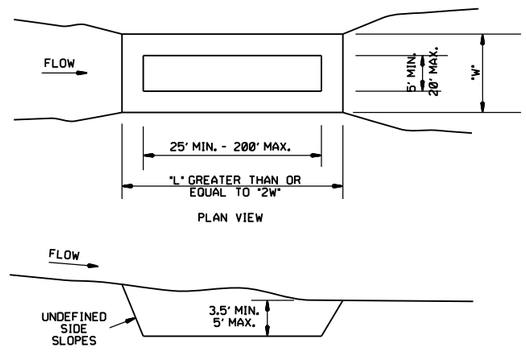
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

DATE	REVISION	FILMED
6-2-94	Revised E-8 & E-12; Added E-14 & Deleted E-13	
4-1-93	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

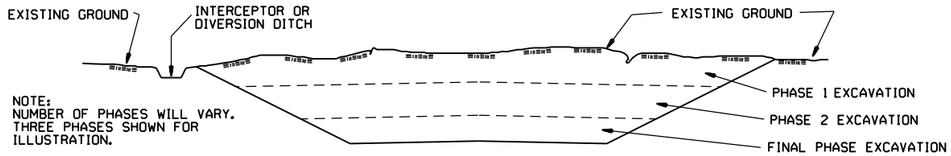
STANDARD DRAWING TEC-2

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

1. PLACE PERIMETER CONTROLS (I.E. SILT FENCES , DIVERSION DITCHES, SEDIMENT BASINS, ETC.)
2. PERFORM CLEARING AND GRUBBING OPERATION.

EXCAVATION



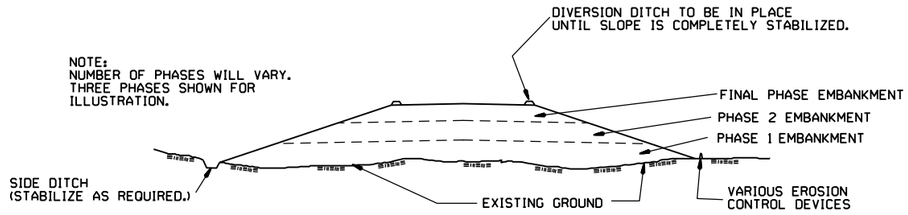
GENERAL NOTE

ALL CUT SLOPES SHALL BE DRESSED, PREPARED, SEEDED, AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE EXCAVATED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 25 FEET, MEASURED VERTICALLY.

CONSTRUCTION SEQUENCE

1. EXCAVATE AND STABILIZE INTERCEPTOR AND/OR DIVERSION DITCHES.
2. PERFORM PHASE 1 EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING.
3. PERFORM PHASE 2 EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING.
4. PERFORM FINAL PHASE OF EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING. STABILIZE DITCHES. CONSTRUCT DITCH CHECKS, DIVERSION DITCHES, SEDIMENT BASINS, OR OTHER EROSION CONTROL DEVICES AS REQUIRED.

EMBANKMENT



GENERAL NOTE

ALL EMBANKMENT SLOPES SHALL BE DRESSED, PREPARED, SEEDED, AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE CONSTRUCTED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 25 FEET, MEASURED VERTICALLY.

CONSTRUCTION SEQUENCE

1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD OF GREATER THAN 21 DAYS.
3. PLACE PHASE 2 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD OF GREATER THAN 21 DAYS.
4. PLACE FINAL PHASE OF EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PLACE DIVERSION DITCHES AND SLOPE DRAINS AND MAINTAIN UNTIL ENTIRE SLOPE IS STABILIZED.

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