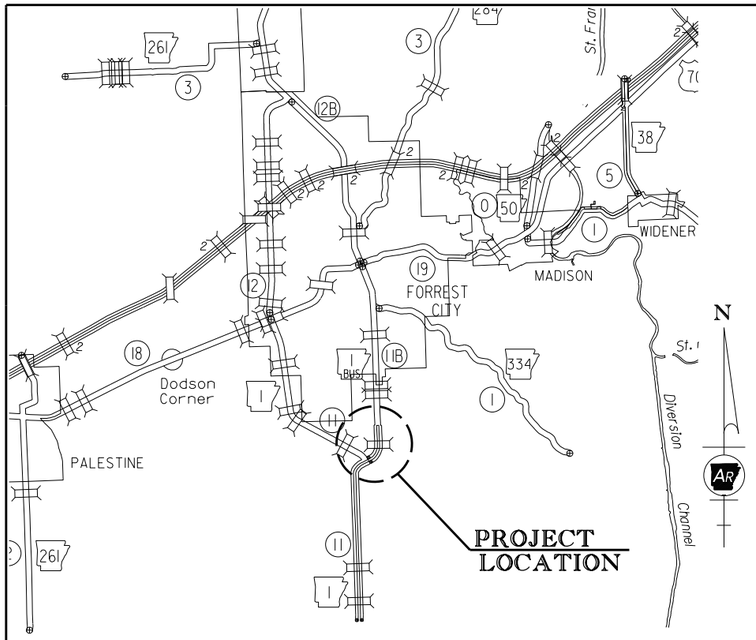
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110702	1	53
				(2)	HWY. 1B STR. & APPRS. (S)			

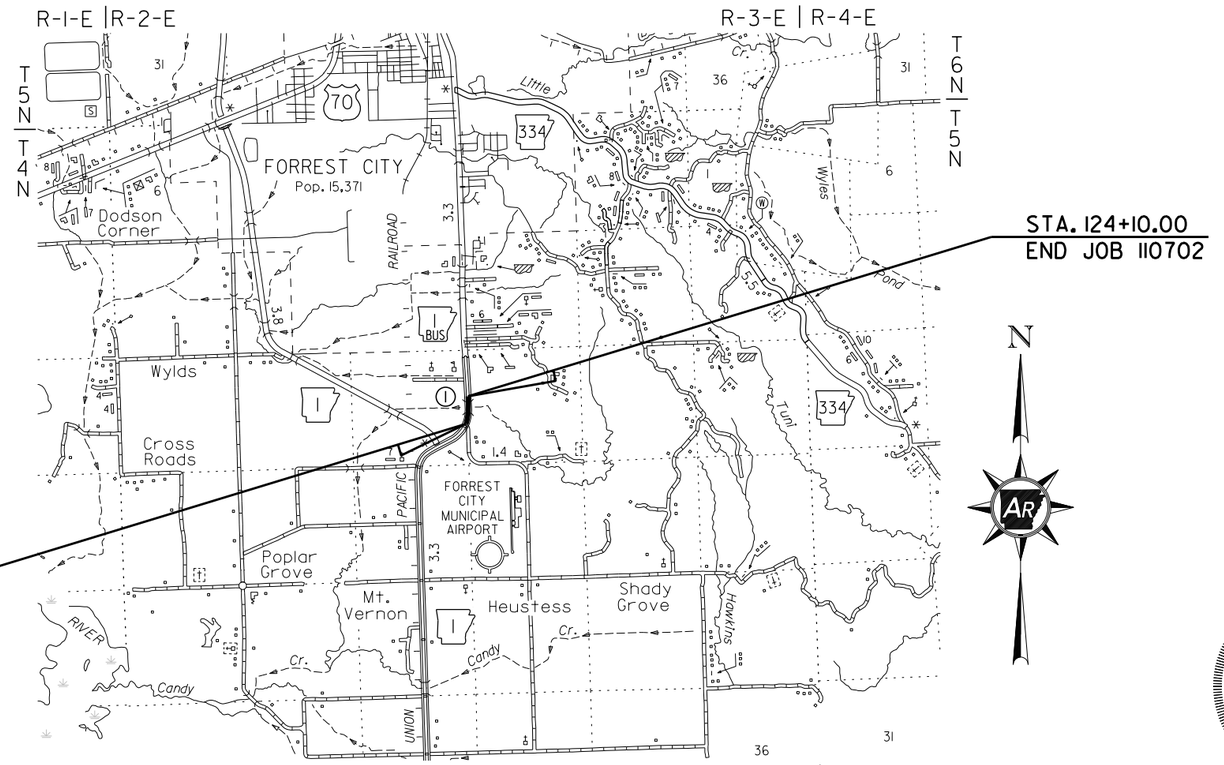
ARKANSAS DEPARTMENT OF TRANSPORTATION
CONSTRUCTION PLANS

HWY. 1B STR. & APPRS. (S)
ST. FRANCIS COUNTY
HWY. 1B SECTION 11B
JOB 110702
FED. AID PROJ. NHPP-0068(44)



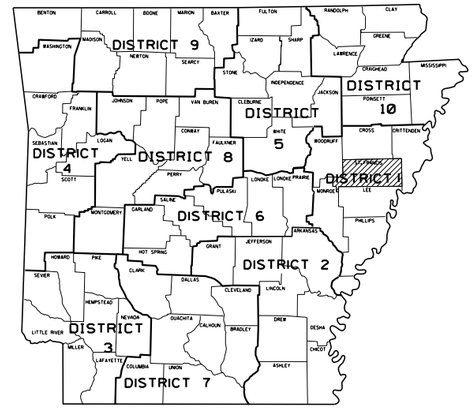
VICINITY MAP

NOT TO SCALE



STA. 113+50.00
BEGIN JOB 110702
L.M. 0.36

STA. 124+10.00
END JOB 110702



ARKANSAS HIGHWAY DISTRICT 1

BRIDGE CONSTRUCTION DATA

(1) STA 118+33.00 BRIDGE END
BRIDGE NO. 07496 OVER CANDY CREEK
69'-0" INTEGRAL W-BEAM SPAN
38'-0" CLEAR ROADWAY
70'-0" BRIDGE LENGTH
STA 119+03.00 BRIDGE END

DESIGN TRAFFIC DATA

DESIGN YEAR----------2041
2021 ADT----------2,700
2041 ADT----------3,300
2041 DHV----------363
DIRECTIONAL DISTRIBUTION----0.60
TRUCKS----------3%
DESIGN SPEED----------60 MPH

	BEGIN OF PROJECT	MID-POINT OF PROJECT	END PROJECT
LATITUDE	N 34° 57' 19"	N 34° 57' 24"	N 34° 57' 29"
LONGITUDE	W 90° 46' 55"	W 90° 46' 55"	W 90° 46' 55"

LENGTH COMPUTED ALONG C.L. HWY. 1B LT. MAIN LANES				
GROSS LENGTH OF PROJECT	1060.00	FEET	0.201	MILES
NET LENGTH OF ROADWAY	990.00	FEET	0.188	MILES
NET LENGTH OF BRIDGES	70.00	FEET	0.013	MILES
NET LENGTH OF PROJECT	1060.00	FEET	0.201	MILES

CERTIFICATE OF AUTHORIZATION
MICHAEL BAKER INTERNATIONAL INC
No. 1126
ARKANSAS - ENGINEER

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
SCOTT P. THORNSBERRY
No. 10887
3-1-2021

LandonMiller 3/1/2021 4:44:08 PM
WORKSPACE: ARDOT
c:\users\landonmiller\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\landon.miller@bakerintl.com
REVISED DATE: $$REVDATE$$
I:\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\landon.miller@bakerintl.com\dms1440\RII0702_01_C0_01.dgn

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.		110702	2	53

(2) INDEX OF SHEETS AND STANDARD DRAWINGS

INDEX OF SHEETS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER
3-3-2021

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	03-24-20
55021	STANDARD DETAILS FOR CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS	03-24-16
55040C1	STANDARD DETAILS FOR TYPE C1 APPROACH SLAB	02-27-14
55070	STANDARD DETAILS FOR BRIDGE TRAFFIC RAIL TYPE SSTR36	11-05-20

ROADWAY STANDARD DRAWINGS

DRWG.NO.	TITLE	DATE
FES-1	FLARED END SECTION	10-18-96
FES-2	FLARED END SECTION	10-18-96
FPC-9D	DETAILS OF DROP INLETS	08-22-02
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-1	TABLES AND METHOD OF SUPERELEVATION FOR ONE-WAY TRAFFIC	11-07-19
TC-1	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	11-07-19
TC-2	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	11-07-19
TC-3	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	02-27-20
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

C:\Users\landon.miller\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\landon.miller@mbakerintl.com\RII0702_02_IND_01.dgn
LandonMiller 3/3/2021 9:20:04 AM
WORKSPACE: ARDOT
C:\Users\landon.miller\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\landon.miller@mbakerintl.com\
REVISED DATE: $$REVDATE$$

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.		110702	3	53

(2) GOVERNING SPECIFICATIONS & GENERAL NOTES

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.10887
SCOTT P. THORNSBERRY
3-1-2021

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
108-1_____LIQUIDATED DAMAGES
108-2_____WORK ALLOWED PRIOR TO ISSUANCE OF WORK ORDER
110-1_____PROTECTION OF WATER QUALITY AND WETLANDS
210-1_____UNCLASSIFIED EXCAVATION
303-1_____AGGREGATE BASE COURSE
306-1_____QUALITY CONTROL AND ACCEPTANCE
400-1_____TACK COATS
400-4_____DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
400-5_____PERCENT AIR VOIDS FOR ACHM MIX DESIGNS
400-6_____LIQUID ANTI-STRIP ADDITIVE
400-7_____TRACKLESS TACK
404-3_____DESIGN OF ASPHALT MIXTURES
410-1_____CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
410-2_____DEVICES FOR MEASURING DENSITY FOR ROLLING PATTERNS
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)
617-1_____GUARDRAIL TERMINAL (TYPE 2)
620-1_____MULCH COVER
621-1_____FILTER SOCKS
800-1_____STRUCTURES
802-3_____CONCRETE FOR STRUCTURES
804-2_____REINFORCING STEEL FOR STRUCTURES
807-2_____STEEL STRUCTURES
JOB 110702__AIRPORT CLEARANCE REQUIREMENTS
JOB 110702__BIDDING REQUIREMENTS AND CONDITIONS
JOB 110702__BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 110702__BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 110702__CARGO PREFERENCE ACT REQUIREMENTS
JOB 110702__CLASS C FLY ASH IN PORTLAND CEMENT CONCRETE PAVEMENT AND CLASS S(AE) CONCRETE
JOB 110702__DELAY IN RIGHT OF WAY OCCUPANCY
JOB 110702__DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES
JOB 110702__DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB 110702__ESTABLISHING CONTRACT TIME - WORKING DAY CONTRACT
JOB 110702__FLEXIBLE BEGINNING OF WORK
JOB 110702__GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 110702__MANDATORY ELECTRONIC CONTRACT
JOB 110702__MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB 110702__NESTING SITES OF MIGRATORY BIRDS
JOB 110702__PARTNERING REQUIREMENTS
JOB 110702__PRICE ADJUSTMENT FOR ASPHALT BINDER
JOB 110702__SECTION 404 NATIONWIDE 14 PERMIT REQUIREMENTS
JOB 110702__SHORING FOR CULVERTS
JOB 110702__SOIL STABILIZATION
JOB 110702__STORM WATER POLLUTION PREVENTION PLAN
JOB 110702__SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 110702__UTILITY ADJUSTMENTS
JOB 110702__VALUE ENGINEERING
JOB 110702__WARM MIX ASPHALT
JOB 110702__WELLHEAD PROTECTION

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 IF AND WHERE DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO ENSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FENCE TO CONTROL LIVESTOCK IN AREAS WHERE PASTURES ARE SEVERED. WIRE FENCE MAY BE CONSTRUCTED INITIALLY, OR IN LIEU THEREOF, THE CONTRACTOR AT HIS OWN EXPENSE, MAY ELECT TO PROVIDE TEMPORARY FENCING SUITABLE TO CONTAIN LIVESTOCK.
7. 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.
8. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.
9. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE. AFTER SAWING, THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN. ANY DAMAGE OF THE ASPHALT PAVEMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

London.Miller 3/1/2021 4:35:22 PM
WORKSPACE: ARDOT
C:\Users\london.miller\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\london.miller\mbaker-int1.com\dms1440\RII0702_03_GN_01.dgn
REVISED DATE: $$REVDATE$$

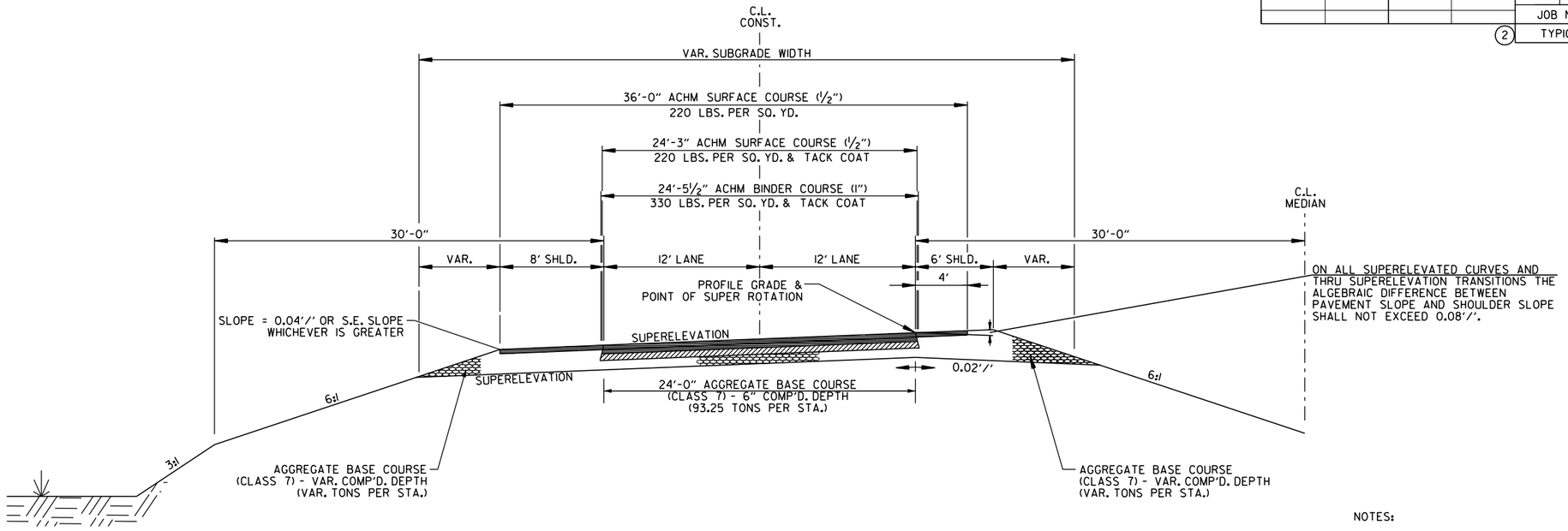
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		110702	4	53

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER

2-19-2021



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

HWY. 1B - SUPERELEVATED SECTION

STA. 113+50.00 TO STA. 117+96.50
STA. 119+39.50 TO STA. 120+31.14

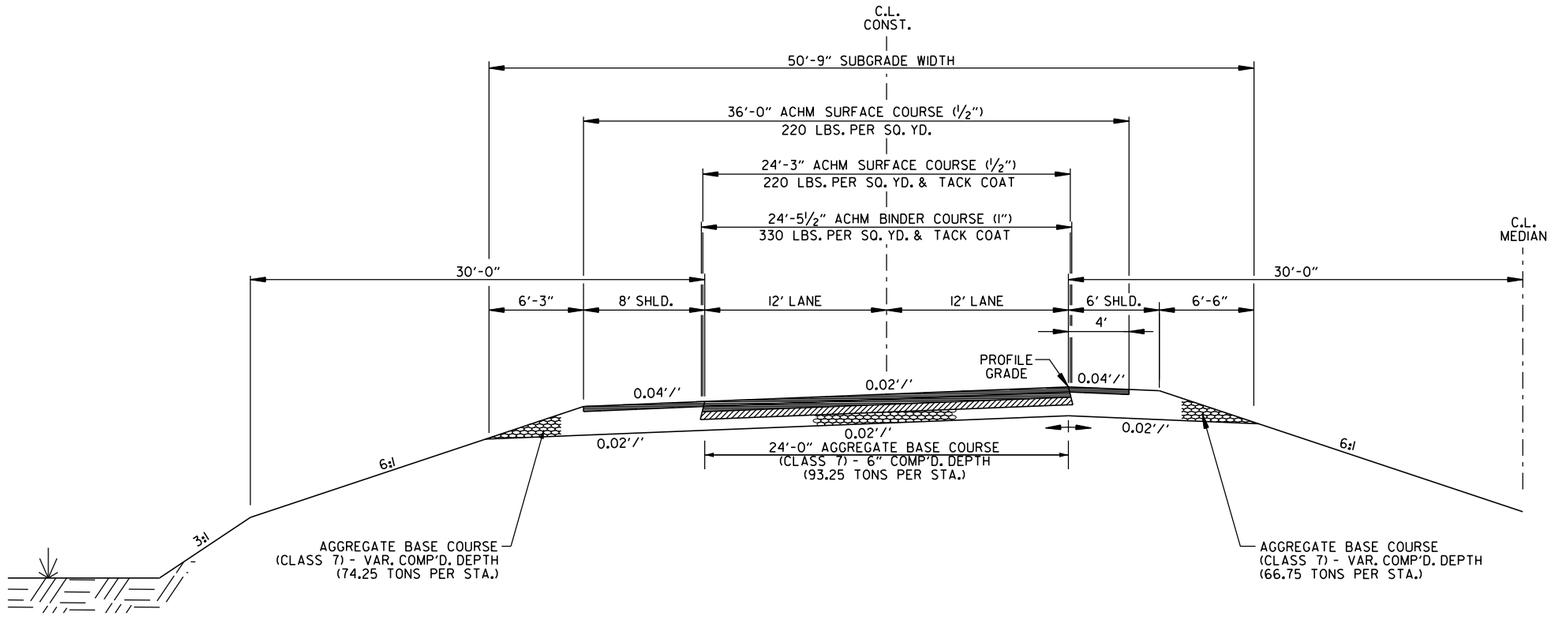
NOTES:

1. REFER TO CROSS SECTIONS FOR DEVIATIONS FROM 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 DOES NOT MEET THE TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

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

4. 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 (1/2") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.



HWY. 1B - TANGENT SECTION

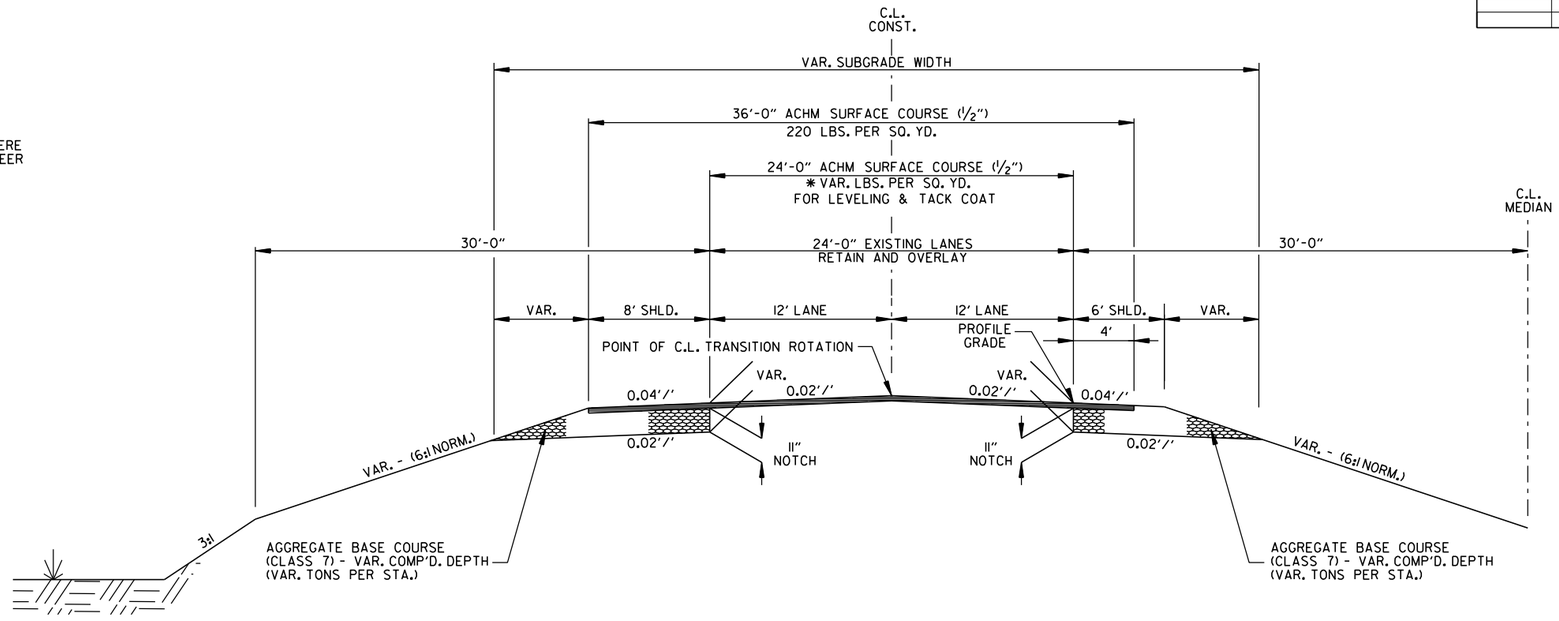
STA. 120+31.14 TO STA. 124+10.00

TYPICAL SECTIONS OF IMPROVEMENT

Leonard.Speed 2/9/2021 12:51:35 PM
WORKSPACE: ARDOT
c:\users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed@mbakerintl.com\dms1401\RI10702_04_TYP_01.dgn
REVISED DATE: $$REVDATE$$

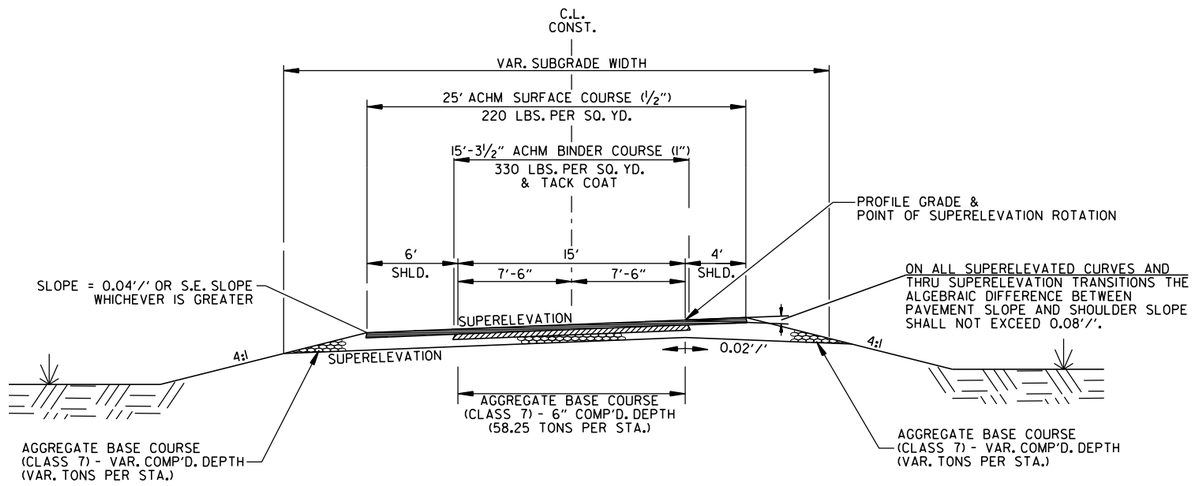
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110702	5	53
				(2)	TYPICAL SECTIONS OF IMPROVEMENT			

* TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER



HWY. IB - NORMAL CROWN TRANSITION SECTION

STA. 124+10.00 TO STA. 127+60.00



MAIN LANE TEMPORARY CROSSOVER FOR MAINTENANCE OF TRAFFIC

STA. 10+93.80 TO STA. 17+37.56

NOTES:

1. REFER TO CROSS SECTIONS FOR DEVIATIONS FROM 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 DOES NOT MEET THE 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 CONSTRUCTING NOTCH AND WIDENING. CALCULATIONS WILL NOT BE PAID FOR DIRECTLY, BUT PAYMENT SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS PAY ITEMS.

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

5. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE. AFTER SAWING, THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN. ANY DAMAGE OF THE ASPHALT PAVEMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

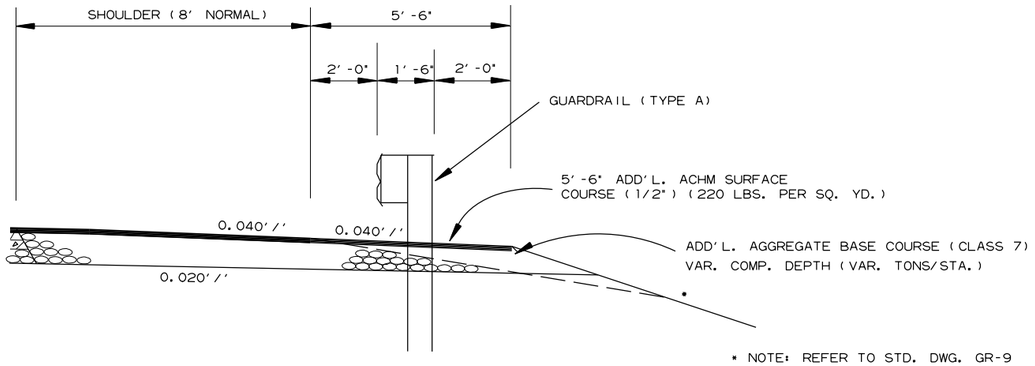
6. WITH APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, THE FIRST LIFT OF ACHM SURFACE COURSE (1/2") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER

2-19-2021

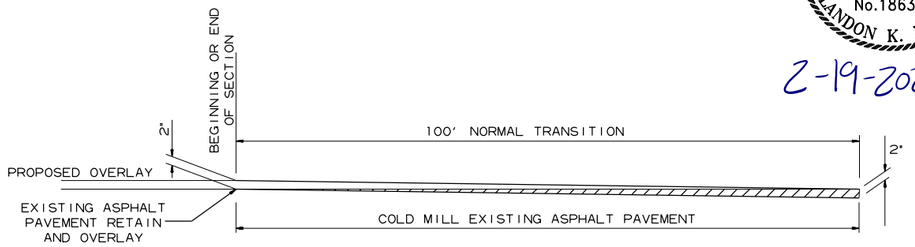
LeonardSpeed 2/19/2021 12:51:37 PM
WORKSPACE: ARDOT
C:\Users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed@mbakerintl.com\dms1440\RI10702_04_TYP_02.dgn
REVISED DATE: $$REVDATE$$

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.		II0702	6	53
				(2)	SPECIAL DETAILS			



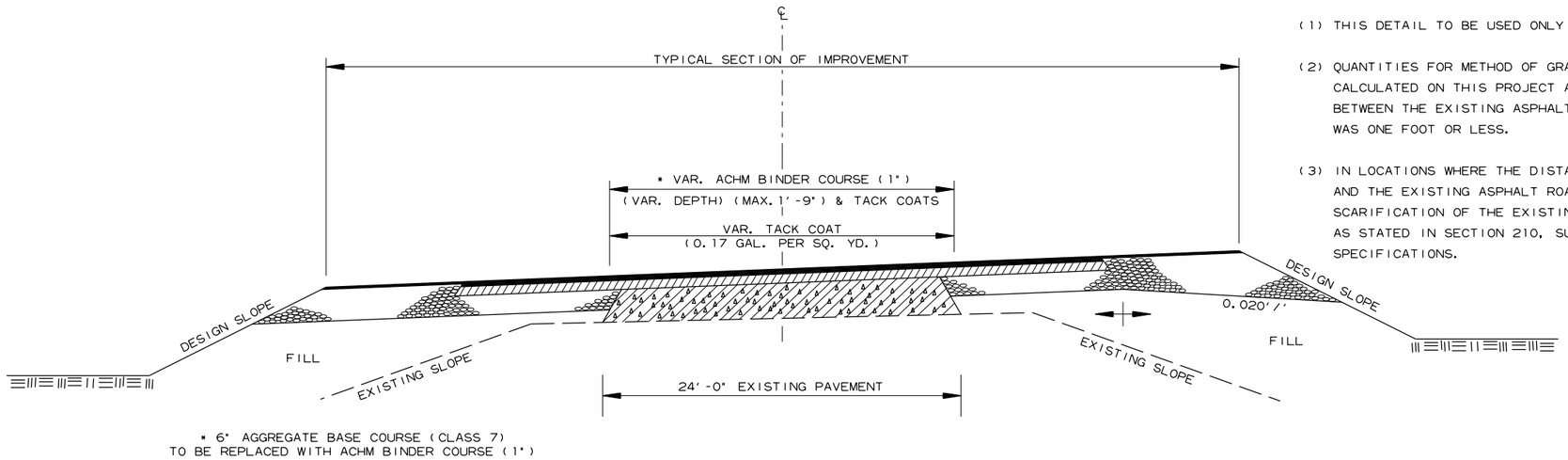
WIDENING FOR GUARDRAIL

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



DETAIL FOR TRANSITIONS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER
2-19-2021



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

METHOD OF RAISING GRADE

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.

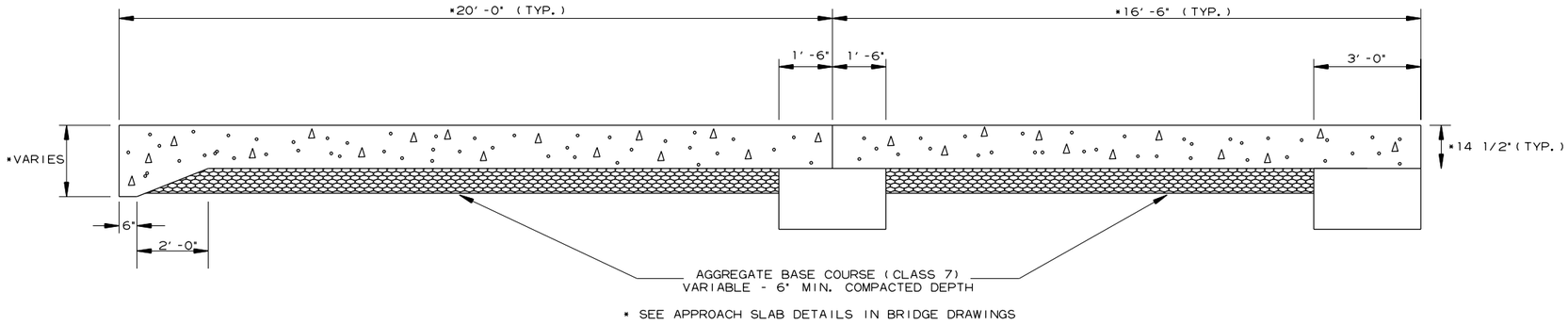
SPECIAL DETAILS

LeonardSpeed 2/9/2021 12:51:39 PM
WORKSPACE: ARDOT
C:\Users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com.mb-us-pw-06\leonard.speed@mbakerintl.com\dms1440\RII0702_05_DET_01.dgn
REVISED DATE: $$REVDATE$$

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.		110702	7	53
				(2)	SPECIAL DETAILS			

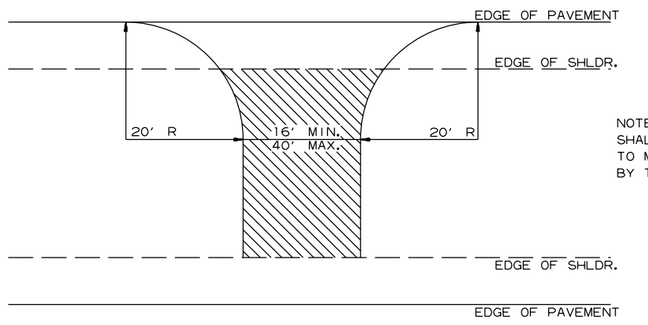
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER

2-19-2021



* SEE APPROACH SLAB DETAILS IN BRIDGE DRAWINGS

SECTION OF APPROACH SLAB



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

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

DETAIL FOR TEMPORARY DRIVEWAY TURNOUTS

LeonardSpeed 2/9/2021 12:51:40 PM
WORKSPACE: ARDOT
C:\Users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com.mb-us-pw-06\leonard.speed@mbakerintl.com\dms1440\RI10702_05_DET_01.dgn
REVISED DATE: $$REVDATE$$

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.		110702	8	53

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER
2-19-2021

SEDIMENT BASIN — E-14 — CU. YDS.
STA. 107+50 — RT. — 176

C.L. HWY. IB (SB) STA. 109+03.23, 79.09' RT. =
C.L. TEMP. CROSSOVER STA. 19+34.68

C.L. HWY. IB (SB) STA. 100+93.80, 4.50' RT. =
C.L. TEMP. CROSSOVER STA. 10+93.80

TEMPORARY EROSION CONTROL GENERAL NOTES

THE QUANTITIES AND LOCATIONS OF THE EROSION CONTROL DEVICES SHOWN IN THE PLANS ARE ESTIMATED AND MAY BE ALTERED IF AND WHERE DIRECTED BY THE ENGINEER TO MAXIMIZE THEIR EFFECTVENESS. THE DEVICES ARE TO BE INSTALLED IN AN AREA ONLY WHEN THE SOIL DISTURBING ACTIVITY IN THAT AREA BEGINS.

REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

EROSION CONTROL MEASURES TO BE PLACED DURING APPROPRIATE STAGES. THESE DEVICES SHALL BE LEFT IN PLACE AS LONG AS REQUIRED TO CONTROL EROSION.

EROSION CONTROL MEASURES PLACE IN CLEARING AND GRUBBING STAGE SHALL BE RETAINED THROUGHOUT STAGE 1OR UNTIL FINAL STABILIZATION

LEGEND

E-14 = SEDIMENT BASIN

E-11 = SILT FENCE

100+00 · POB 100+93.80 HWY. IB (SB) · PC 13+77.97 · 105+00 · 110+00 · 115+00 · 120+00 · 125+00

EXIST. R/W · C.L. HWY. IB (SB) · C.L. TEMP. CROSSOVER · N00°56'59"W · N33°46'12"W · N65°41'34"W

20' X 60'
176 CU. YDS.

POB 19+24.57 · PT 19+34.68 · PI 19+24.57

PI 16+59.20 TEMP. CROSSOVER

PI 10+42.36 HWY. IB (SB)

POB 110+93.80 BEG. TEMP CROSSOVER

25' NATURAL BUFFER REFER TO "STORM WATER POLLUTION PREVENTION PLAN" SPEC. PROV.

CANDY CREEK

PT 117+31.14

PROP. R/W · EXIST. R/W

25' X 60'
236 CU. YDS

20' X 50'
145 CU. YDS

25' X 50'
194 CU. YDS

N00°48'20"W

HWY. 1B (NB)

STA 113+50.00
BEGIN JOB 110702
L.M. 0.36

STA 124+10.00
END JOB 110702

SEDIMENT BASIN	E-14	CU. YDS.
STA. 118+25	RT.	145
STA. 119+00	LT.	236
STA. 119+25	RT.	194

SILT FENCE	E-11	LIN FT
STA. 112+50 TO 118+50	LT.	670
STA. 118+25 TO 118+50	RT.	70
STA. 118+75 TO 119+00	RT.	40
STA. 118+75 TO 127+50	LT.	920

REVISIONS

DATE OF REVISION	REVISION

CLEARING AND GRUBBING
TEMPORARY EROSION CONTROL DETAILS

Leonard.Speed 2/19/2021 12:51:42 PM
WORKSPACE: ARDOT
C:\Users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com.mb-us-pw-06\leonard.speed\dms1440\RI0702_06_EC_01.dgn
REVISED DATE: $$REVDATE$$

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.		110702	9	53

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER
2-19-2021

TEMPORARY EROSION CONTROL GENERAL NOTES

THE QUANTITIES AND LOCATIONS OF THE EROSION CONTROL DEVICES SHOWN IN THE PLANS ARE ESTIMATED AND MAY BE ALTERED IF AND WHERE DIRECTED BY THE ENGINEER TO MAXIMIZE THEIR EFFECTVENESS. THE DEVICES ARE TO BE INSTALLED IN AN AREA ONLY WHEN THE SOIL DISTURBING ACTIVITY IN THAT AREA BEGINS.

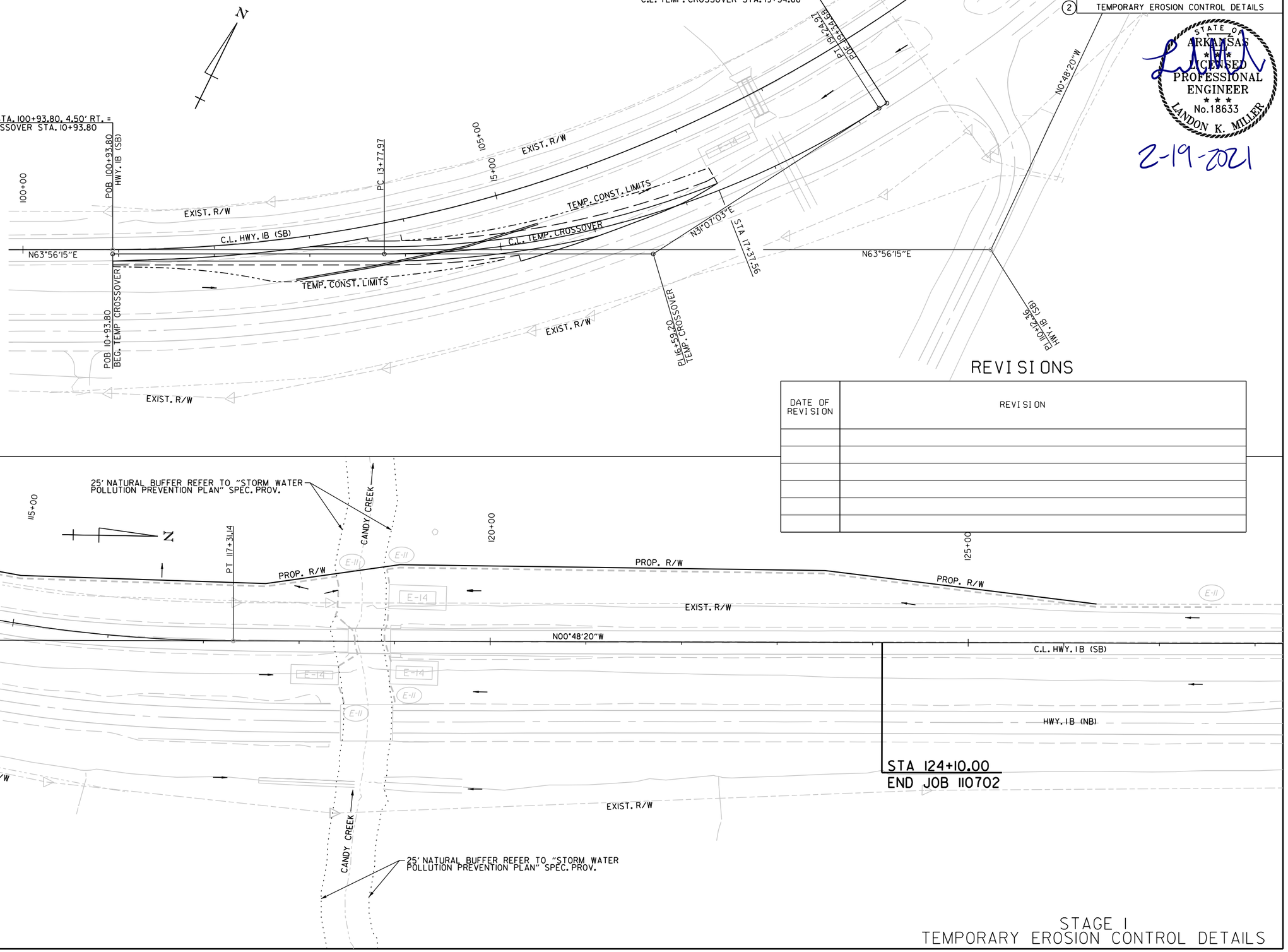
REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

EROSION CONTROL MEASURES TO BE PLACED DURING APPROPRIATE STAGES. THESE DEVICES SHALL BE LEFT IN PLACE AS LONG AS REQUIRED TO CONTROL EROSION.

EROSION CONTROL MEASURES PLACE IN CLEARING AND GRUBBING STAGE SHALL BE RETAINED THROUGHOUT STAGE IOR UNTIL FINAL STABILIZATION

LEGEND

- E-14 = SEDIMENT BASIN
- E-11 = SILT FENCE



REVISIONS

DATE OF REVISION	REVISION

STAGE I
TEMPORARY EROSION CONTROL DETAILS

Leonard.Speed 2/19/2021 12:51:46 PM
WORKSPACE: ARDOT
C:\Users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed@mbakerintl.com\dms1440\RI10702_06_EC_02.dgn
REVISED DATE: $$REVDATE$$

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.		110702	10	53

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER
2-19-2021

TEMPORARY EROSION CONTROL GENERAL NOTES

THE QUANTITIES AND LOCATIONS OF THE EROSION CONTROL DEVICES SHOWN IN THE PLANS ARE ESTIMATED AND MAY BE ALTERED IF AND WHERE DIRECTED BY THE ENGINEER TO MAXIMIZE THEIR EFFECTVENESS. THE DEVICES ARE TO BE INSTALLED IN AN AREA ONLY WHEN THE SOIL DISTURBING ACTIVITY IN THAT AREA BEGINS.

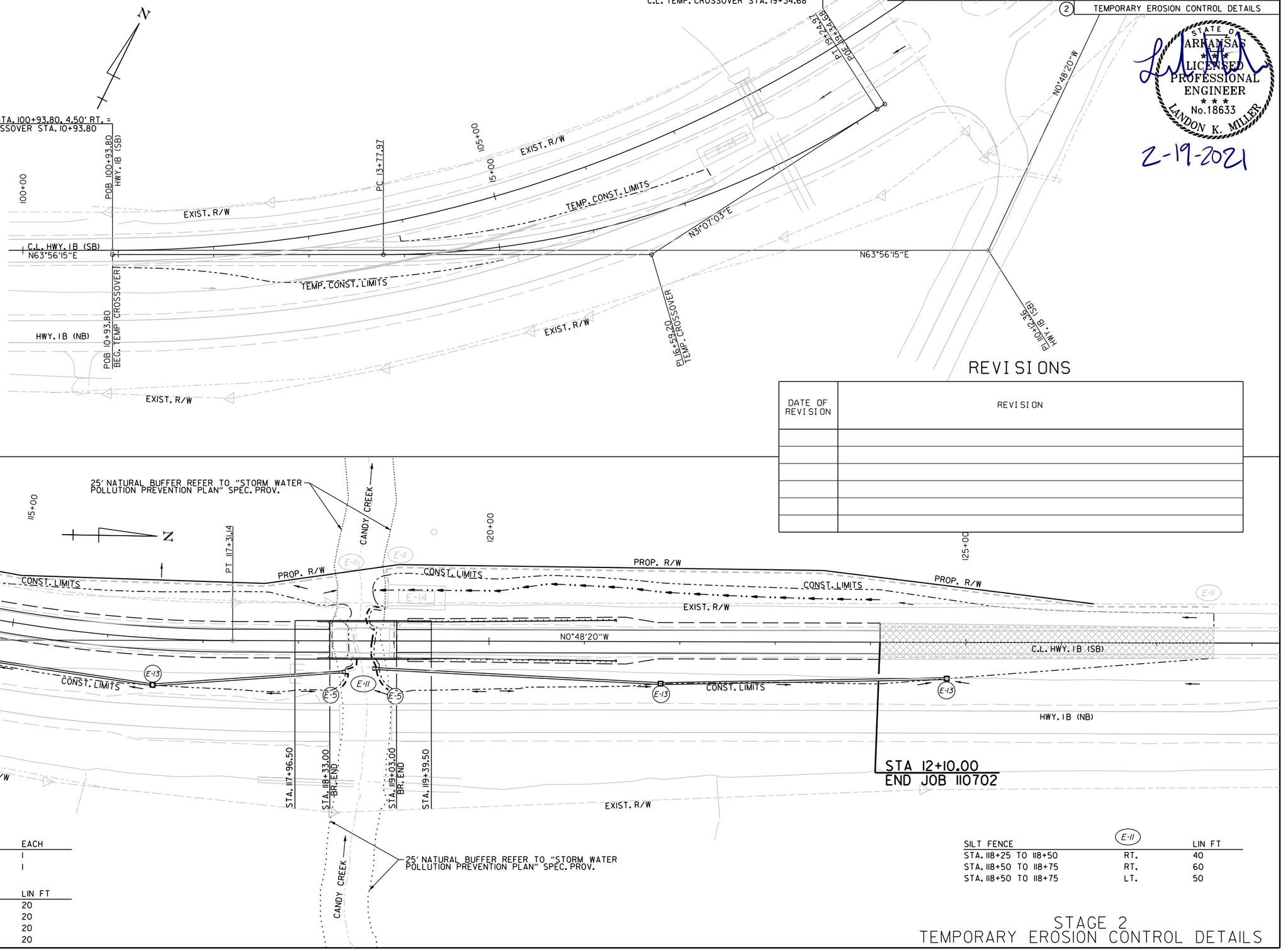
REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

EROSION CONTROL MEASURES TO BE PLACED DURING APPROPRIATE STAGES. THESE DEVICES SHALL BE LEFT IN PLACE AS LONG AS REQUIRED TO CONTROL EROSION.

EROSION CONTROL MEASURES PLACE IN CLEARING AND GRUBBING STAGE SHALL BE RETAINED THROUGHOUT STAGE 1OR UNTIL FINAL STABILIZATION

LEGEND

- E-14 = SEDIMENT BASIN
- E-11 = SILT FENCE
- E-5 = SAND BAG DITCH CHECKS
- E-13 = FILTER SOCK



REVISIONS

DATE OF REVISION	REVISION

SAND BAG DITCH CHECKS	(E-5)	EACH
STA. 118+33	RT.	1
STA. 119+03	RT.	1

FILTER SOCK	(E-13)	LIN FT
STA. 114+40	RT.	20
STA. 116+50	RT.	20
STA. 121+80	RT.	20
STA. 124+80	RT.	20

SILT FENCE	(E-11)	LIN FT
STA. 118+25 TO 118+50	RT.	40
STA. 118+50 TO 118+75	RT.	60
STA. 118+50 TO 118+75	LT.	50

STAGE 2
TEMPORARY EROSION CONTROL DETAILS

Leonard.Speed 2/9/2021 12:51:49 PM
WORKSPACE: ARDOT
c:\users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed@mbakerintl.com\dms1440\RI0702_06_EC_03.dgn
REVISED DATE: $$REVDATE$$

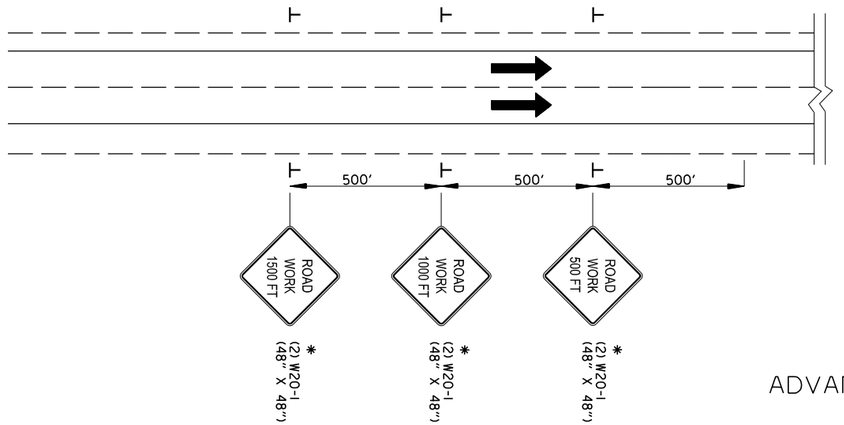
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110702	11	53
				(2)	MAINTENANCE OF TRAFFIC DETAILS			

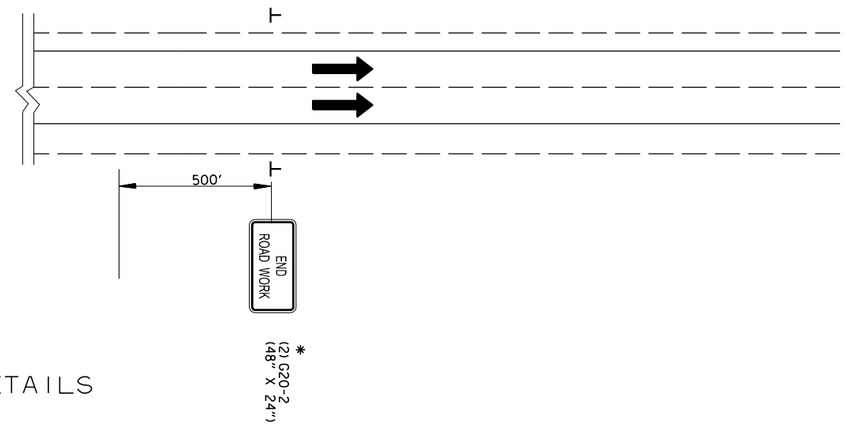
* NORTHBOUND DIVIDED HIGHWAY TWO (2) SIGNS REQUIRED
SOUTHBOUND UNDIVIDED AND STATE HIGHWAYS ONE (1) SIGN REQUIRED

** TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER

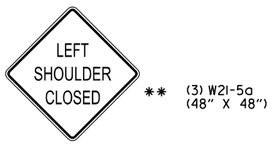
2-19-2021





ADVANCE WARNING DETAILS STAGE 1

HWY. IB
HWY. 980
HWY. 808



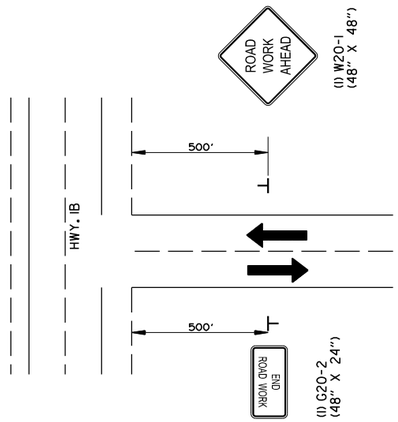
** (3) W21-5a (48" X 48")

** (3) R4-1 (48" X 60")

LEGEND

⊢ TEMPORARY TRAFFIC SIGN

TRAFFIC FLOW ARROWS



ADVANCE WARNING SIDE ROADS (ALL STAGES)

COUNTY RD. 750
COUNTY RD. 762
COUNTY RD. 768

CONSTRUCTION SEQUENCE

STAGE 1:

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE LOCATIONS SHOWN ON THE ADVANCE WARNING DETAILS.

CLEARING AND GRUBBING OPERATIONS MAY BEGIN IF AND WHERE DIRECTED BY THE ENGINEER.

INSTALL MAINTENANCE OF TRAFFIC DEVICES AND CONSTRUCT TEMPORARY CROSSOVER AND DRIVEWAYS IN MEDIAN, AND DRAINAGE FOR PROJECT AS SHOWN IN STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

STAGE 2:

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE LOCATIONS SHOWN ON THE STAGE 2 ADVANCE WARNING DETAILS.

INSTALL STAGE 2 MAINTENANCE OF TRAFFIC DEVICES, AND CONSTRUCTION PAVEMENT MARKINGS. SHIFT NORTHBOUND TRAFFIC ONTO OUTSIDE LANE AND ROUTE SOUTHBOUND TRAFFIC ONTO INSIDE LANE OF NORTHBOUND LANES AND THROUGH THE NEWLY CONSTRUCTED TEMPORARY CROSSOVER.

CONSTRUCT ROADWAY EMBANKMENT, BRIDGE, AND DRAINAGE FOR PROJECT AS SHOWN IN STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

RETURN TRAFFIC TO NORMAL PATTERN ON HWY. 1B (SB) & (NB) AND REMOVE TEMPORARY CROSSOVER.

ADVANCE WARNING MAINTENANCE OF TRAFFIC DETAILS

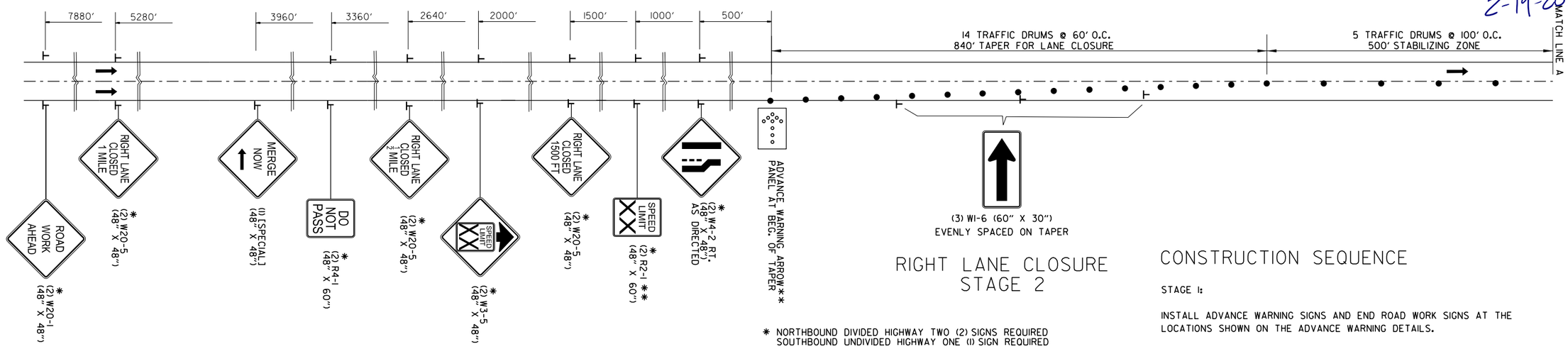
LeonardSpeed 2/9/2021 12:5:52 PM
WORKSPACE: ARDOT
C:\users\leonard\speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com.mb-us-pw-06\leonard.speed@mbakerintl.com\dms1401\RI10702_07_MOT_001.dgn
REVISED DATE: $$REVDATE$$

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.		110702	12	53
				(2)	MAINTENANCE OF TRAFFIC DETAILS			

* TO BE USED IF AND WHERE
DIRECTED BY THE ENGINEER

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER
2-19-2021

NOTE:
MAINTAIN MINIMUM 12' LANE WIDTH
ON LANE REMAINING OPEN



RIGHT LANE CLOSURE
STAGE 2

* NORTHBOUND DIVIDED HIGHWAY TWO (2) SIGNS REQUIRED
SOUTHBOUND UNDIVIDED HIGHWAY ONE (1) SIGN REQUIRED

** TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

CONSTRUCTION SEQUENCE

STAGE 1:

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE LOCATIONS SHOWN ON THE ADVANCE WARNING DETAILS.

CLEARING AND GRUBBING OPERATIONS MAY BEGIN IF AND WHERE DIRECTED BY THE ENGINEER.

INSTALL MAINTENANCE OF TRAFFIC DEVICES AND CONSTRUCT TEMPORARY CROSSOVER AND DRIVEWAYS IN MEDIAN, AND DRAINAGE FOR PROJECT AS SHOWN IN STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

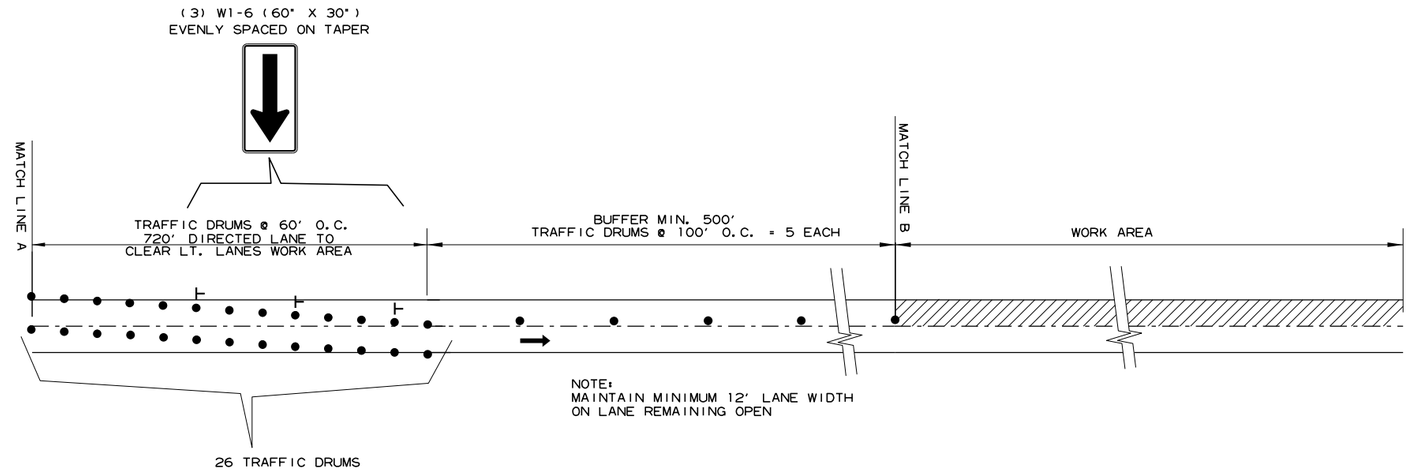
STAGE 2:

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE LOCATIONS SHOWN ON THE STAGE 2 ADVANCE WARNING DETAILS.

INSTALL STAGE 2 MAINTENANCE OF TRAFFIC DEVICES, AND CONSTRUCTION PAVEMENT MARKINGS. SHIFT NORTHBOUND TRAFFIC ONTO OUTSIDE LANE AND ROUTE SOUTHBOUND TRAFFIC ONTO INSIDE LANE OF NORTHBOUND LANES AND THROUGH THE NEWLY CONSTRUCTED TEMPORARY CROSSOVER.

CONSTRUCT ROADWAY EMBANKMENT, BRIDGE, AND DRAINAGE FOR PROJECT AS SHOWN IN STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

RETURN TRAFFIC TO NORMAL PATTERN ON HWY. 1B (SB) & (NB) AND REMOVE TEMPORARY CROSSOVER.



LEGEND

- TRAFFIC DRUM
- TEMPORARY TRAFFIC SIGN
- TRAFFIC FLOW ARROWS

DIVERSION FOR LT. LANE WORK ZONE

ADVANCE WARNING
MAINTENANCE OF TRAFFIC DETAILS

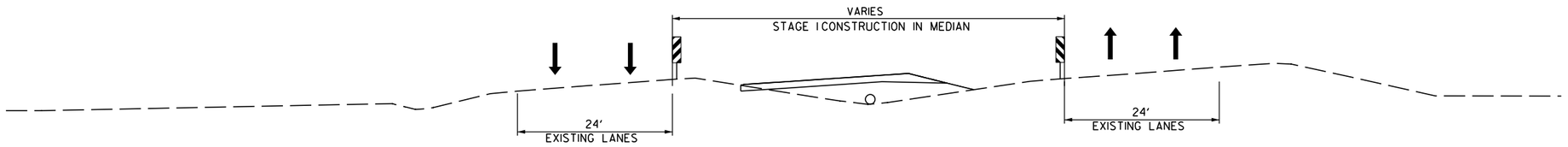
LeonardSpeed 2/19/2021 12:51:57 PM
WORKSPACE: ARDOT
C:\Users\leonardspeed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonardspeed@mbakerintl.com\dms8401\RI0702_07_MOT_002.dgn
REVISED DATE: $$REVDATE$$

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.		110702	13	53
(2)	MAINTENANCE OF TRAFFIC DETAILS			

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER

2-19-2021



TEMPORARY CROSSOVER
STAGE I

CONSTRUCTION SEQUENCE

STAGE I:

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE LOCATIONS SHOWN ON THE ADVANCE WARNING DETAILS.

CLEARING AND GRUBBING OPERATIONS MAY BEGIN IF AND WHERE DIRECTED BY THE ENGINEER.

INSTALL MAINTENANCE OF TRAFFIC DEVICES AND CONSTRUCT TEMPORARY CROSSOVER AND DRIVEWAYS IN MEDIAN, AND DRAINAGE FOR PROJECT AS SHOWN IN STAGE I MAINTENANCE OF TRAFFIC DETAILS.

STAGE 2:

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE LOCATIONS SHOWN ON THE STAGE 2 ADVANCE WARNING DETAILS.

INSTALL STAGE 2 MAINTENANCE OF TRAFFIC DEVICES, AND CONSTRUCTION PAVEMENT MARKINGS. SHIFT NORTHBOUND TRAFFIC ONTO OUTSIDE LANE AND ROUTE SOUTHBOUND TRAFFIC ONTO INSIDE LANE OF NORTHBOUND LANES AND THROUGH THE NEWLY CONSTRUCTED TEMPORARY CROSSOVER.

CONSTRUCT ROADWAY EMBANKMENT, BRIDGE, AND DRAINAGE FOR PROJECT AS SHOWN IN STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

RETURN TRAFFIC TO NORMAL PATTERN ON HWY. 18 (SB) & (NB) AND REMOVE TEMPORARY CROSSOVER.

LEGEND

← TRAFFIC FLOW ARROWS

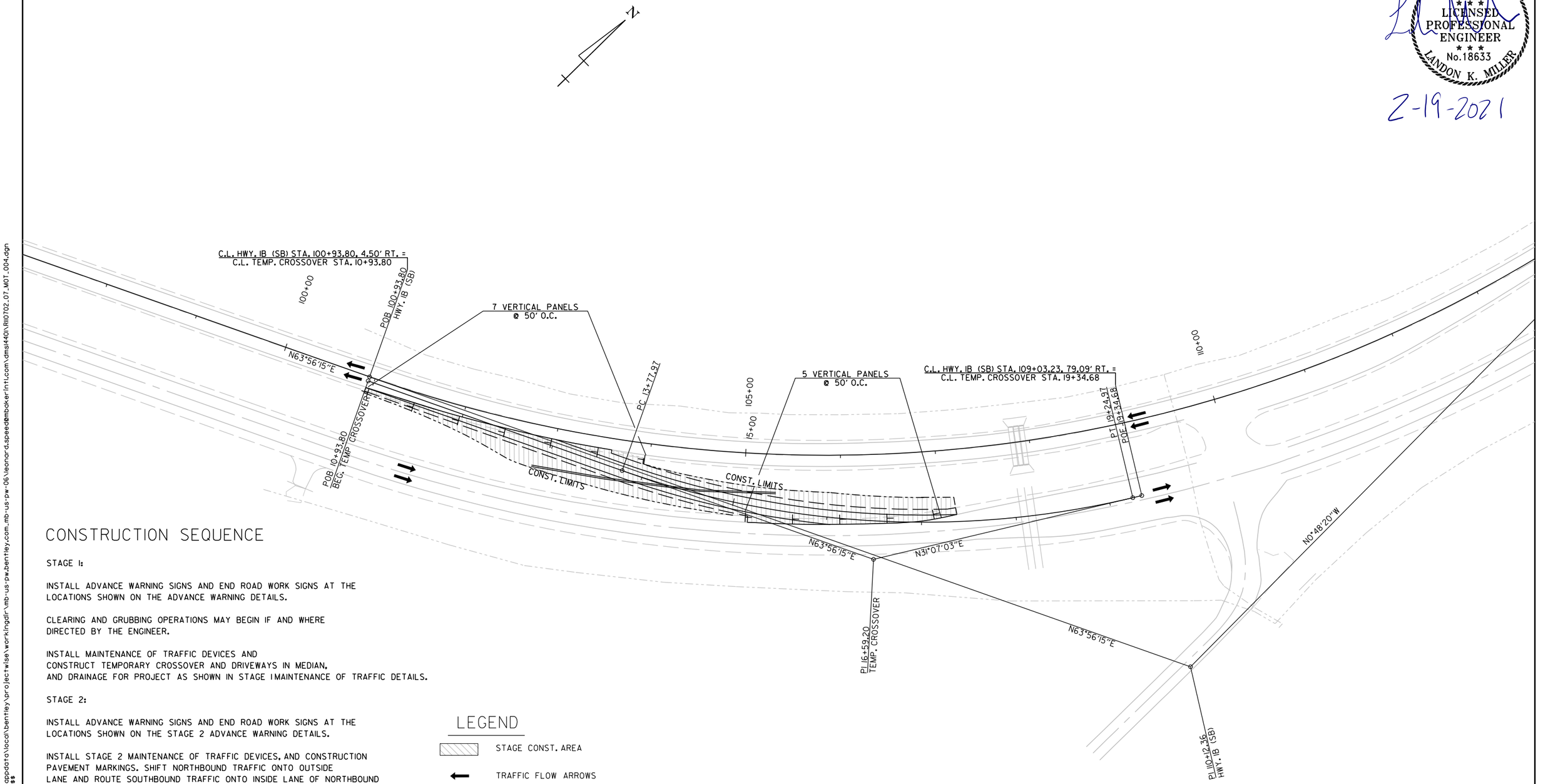
STAGE I - TYPICAL SECTION
MAINTENANCE OF TRAFFIC DETAILS

LeonardSpeed 2/19/2021 12:52:01 PM
WORKSPACE: ARDOT
C:\Users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com.mb-us-pw-06\leonard.speed@mbakerintl.com\dms8440\RI10702_07_MOT_003.dgn
REVISED DATE: $$REVDATE$$

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.		110702	14	53
				(2)	MAINTENANCE OF TRAFFIC DETAILS			

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER

2-19-2021



CONSTRUCTION SEQUENCE

STAGE 1:

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE LOCATIONS SHOWN ON THE ADVANCE WARNING DETAILS.

CLEARING AND GRUBBING OPERATIONS MAY BEGIN IF AND WHERE DIRECTED BY THE ENGINEER.

INSTALL MAINTENANCE OF TRAFFIC DEVICES AND CONSTRUCT TEMPORARY CROSSOVER AND DRIVEWAYS IN MEDIAN, AND DRAINAGE FOR PROJECT AS SHOWN IN STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

STAGE 2:

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE LOCATIONS SHOWN ON THE STAGE 2 ADVANCE WARNING DETAILS.

INSTALL STAGE 2 MAINTENANCE OF TRAFFIC DEVICES, AND CONSTRUCTION PAVEMENT MARKINGS. SHIFT NORTHBOUND TRAFFIC ONTO OUTSIDE LANE AND ROUTE SOUTHBOUND TRAFFIC ONTO INSIDE LANE OF NORTHBOUND LANES AND THROUGH THE NEWLY CONSTRUCTED TEMPORARY CROSSOVER.

CONSTRUCT ROADWAY EMBANKMENT, BRIDGE, AND DRAINAGE FOR PROJECT AS SHOWN IN STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

RETURN TRAFFIC TO NORMAL PATTERN ON HWY. 1B (SB) & (NB) AND REMOVE TEMPORARY CROSSOVER.

LEGEND

- STAGE CONST. AREA
- TRAFFIC FLOW ARROWS
- VERTICAL PANEL

STAGE 1
MAINTENANCE OF TRAFFIC DETAILS

Leonard.Speed 2/19/2021 12:52:04 PM
WORKSPACE: ARDOT
c:\users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com.mb-us-pw-06\leonard.speed@mbakerintl.com\dms1440\RI10702_07_MOT_004.dgn
REVISED DATE: $$REVDATE$$

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.		110702	15	53

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER

2-19-2021

LEGEND

STAGE CONST. AREA

TRAFFIC FLOW ARROWS

TRAFFIC DRUM

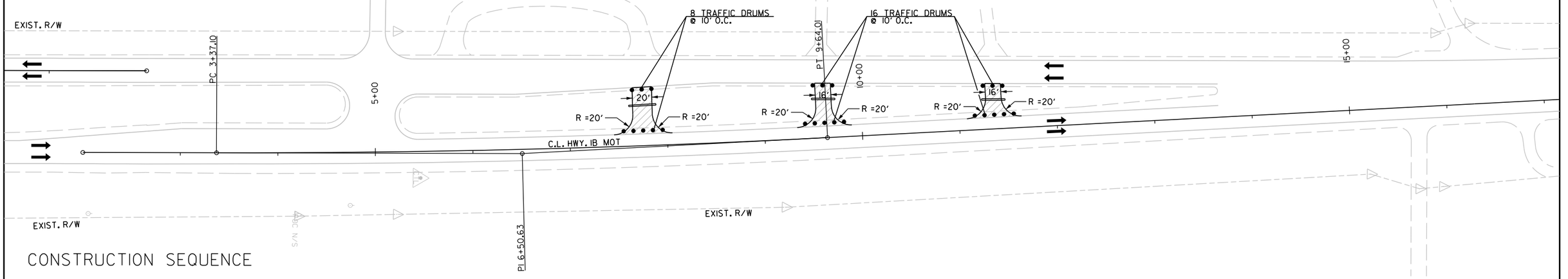
N

C.L. HWY. IB MOT
P.I. = 6+50.63
Δ = 3°08'04" LT.
D = 0°30'00"
T = 313.53'
L = 626.91'
P.C. = 3+37.10
P.T. = 9+64.01

C.L. HWY. IB MOT
STA. 7+74.00 INSTALL
18" X 28' TEMP. PIPE
CULVERT IN MEDIAN
CONST. TEMP. APPROACH =
70 CU. YDS.

C.L. HWY. IB MOT
STA. 9+62.00 INSTALL
18" X 24' TEMP. PIPE
CULVERT IN MEDIAN
CONST. TEMP. APPROACH =
47 CU. YDS.

C.L. HWY. IB MOT
STA. 11+36.00 INSTALL
18" X 24' TEMP. PIPE
CULVERT IN MEDIAN
CONST. TEMP. APPROACH =
24 CU. YDS.



CONSTRUCTION SEQUENCE

STAGE 1:

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE LOCATIONS SHOWN ON THE ADVANCE WARNING DETAILS.

CLEARING AND GRUBBING OPERATIONS MAY BEGIN IF AND WHERE DIRECTED BY THE ENGINEER.

INSTALL MAINTENANCE OF TRAFFIC DEVICES AND CONSTRUCT TEMPORARY CROSSOVER AND DRIVEWAYS IN MEDIAN, AND DRAINAGE FOR PROJECT AS SHOWN IN STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

STAGE 2:

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE LOCATIONS SHOWN ON THE STAGE 2 ADVANCE WARNING DETAILS.

INSTALL STAGE 2 MAINTENANCE OF TRAFFIC DEVICES, AND CONSTRUCTION PAVEMENT MARKINGS. SHIFT NORTHBOUND TRAFFIC ONTO OUTSIDE LANE AND ROUTE SOUTHBOUND TRAFFIC ONTO INSIDE LANE OF NORTHBOUND LANES AND THROUGH THE NEWLY CONSTRUCTED TEMPORARY CROSSOVER.

CONSTRUCT ROADWAY EMBANKMENT, BRIDGE, AND DRAINAGE FOR PROJECT AS SHOWN IN STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

RETURN TRAFFIC TO NORMAL PATTERN ON HWY. 1B (SB) & (NB) AND REMOVE TEMPORARY CROSSOVER.

STAGE 1
MAINTENANCE OF TRAFFIC DETAILS

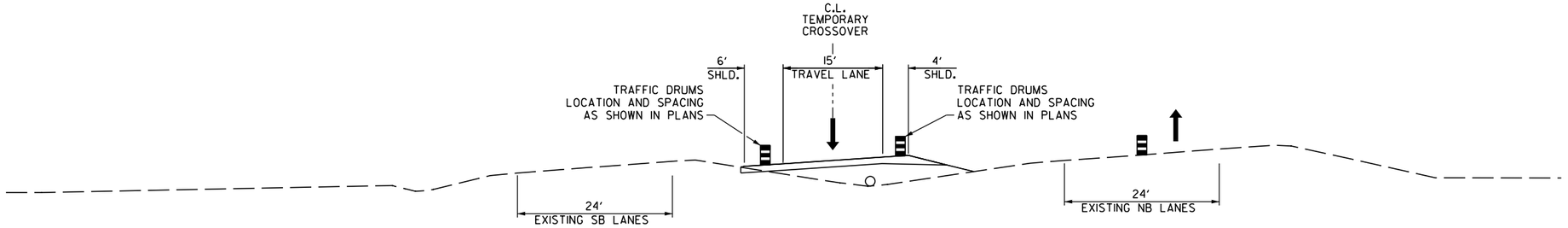
LeonardSpeed 2/19/2021 12:52:07 PM
WORKSPACE: ARDOT
C:\Users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed\RI0702_07_MOT_005.dgn
REVISED DATE: $$REVDATE$$

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.		110702	16	53
(2)	MAINTENANCE OF TRAFFIC DETAILS			

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER

2-19-2021



TEMPORARY CROSSOVER
STAGE 2

CONSTRUCTION SEQUENCE

STAGE 1:

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE LOCATIONS SHOWN ON THE ADVANCE WARNING DETAILS.

CLEARING AND GRUBBING OPERATIONS MAY BEGIN IF AND WHERE DIRECTED BY THE ENGINEER.

INSTALL MAINTENANCE OF TRAFFIC DEVICES AND CONSTRUCT TEMPORARY CROSSOVER AND DRIVEWAYS IN MEDIAN, AND DRAINAGE FOR PROJECT AS SHOWN IN STAGE 1MAINTENANCE OF TRAFFIC DETAILS.

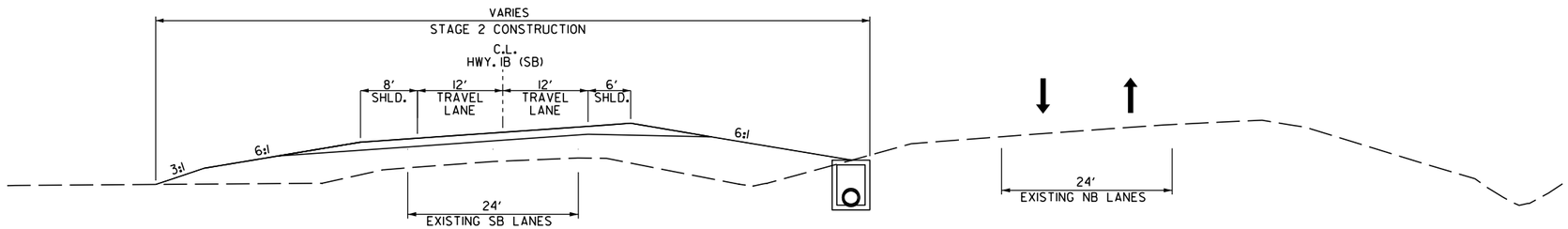
STAGE 2:

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE LOCATIONS SHOWN ON THE STAGE 2 ADVANCE WARNING DETAILS.

INSTALL STAGE 2 MAINTENANCE OF TRAFFIC DEVICES, AND CONSTRUCTION PAVEMENT MARKINGS. SHIFT NORTHBOUND TRAFFIC ONTO OUTSIDE LANE AND ROUTE SOUTHBOUND TRAFFIC ONTO INSIDE LANE OF NORTHBOUND LANES AND THROUGH THE NEWLY CONSTRUCTED TEMPORARY CROSSOVER.

CONSTRUCT ROADWAY EMBANKMENT, BRIDGE, AND DRAINAGE FOR PROJECT AS SHOWN IN STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

RETURN TRAFFIC TO NORMAL PATTERN ON HWY. 1B (SB) & (NB) AND REMOVE TEMPORARY CROSSOVER.



HWY. 1B
STAGE 2

LEGEND

TRAFFIC FLOW ARROWS

STAGE 2 - TYPICAL SECTION
MAINTENANCE OF TRAFFIC DETAILS

LeonardSpeed 2/19/2021 12:52:09 PM
WORKSPACE: ARDOT
C:\Users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com.mb-us-pw-06\leonard.speed@mbakerintl.com\dms1440\RI10702_07_MOT_006.dgn
REVISED DATE: $$REVDATE$$

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.	110702	17	53	
				(2)	MAINTENANCE OF TRAFFIC DETAILS			

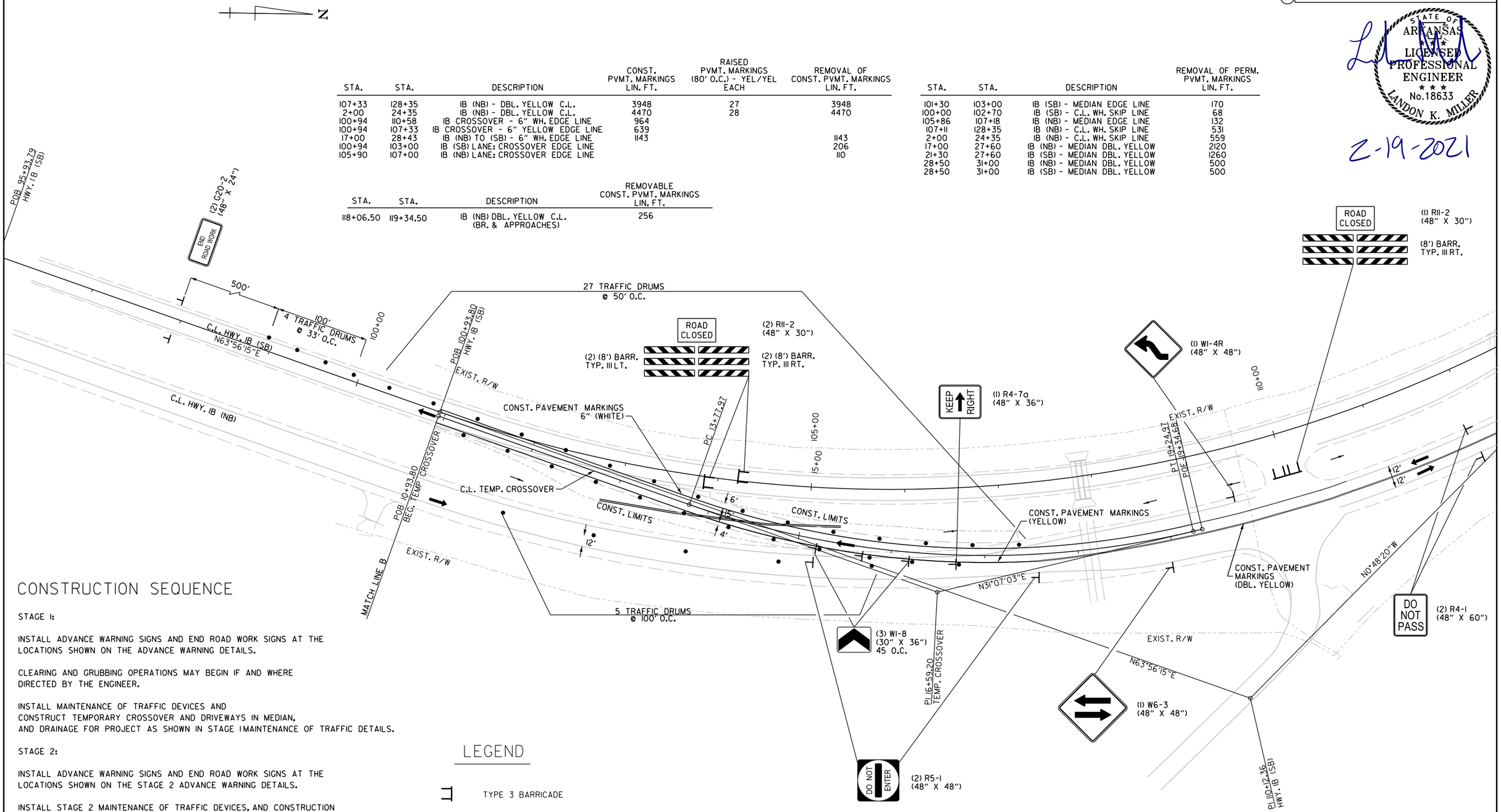
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER

2-19-2021

STA.	STA.	DESCRIPTION	CONST. PVMT. MARKINGS LIN. FT.	RAISED PVMT. MARKINGS (80' O.C.) - YEL/YEL EACH	REMOVAL OF CONST. PVMT. MARKINGS LIN. FT.
107+33	128+35	IB (NB) - DBL. YELLOW C.L.	3948	27	3948
2+00	24+35	IB (NB) - DBL. YELLOW C.L.	4470	28	4470
100+94	110+58	IB CROSSOVER - 6" WH. EDGE LINE	964		
100+94	107+33	IB CROSSOVER - 6" YELLOW EDGE LINE	639		
17+00	28+43	IB (NB) TO (SB) - 6" WH. EDGE LINE	1143		1143
100+94	103+00	IB (SB) LANE: CROSSOVER EDGE LINE			206
105+90	107+00	IB (NB) LANE: CROSSOVER EDGE LINE			110

STA.	STA.	DESCRIPTION	REMOVAL OF PERM. PVMT. MARKINGS LIN. FT.
101+30	103+00	IB (SB) - MEDIAN EDGE LINE	170
100+00	102+70	IB (SB) - C.L. WH. SKIP LINE	68
105+86	107+18	IB (NB) - MEDIAN EDGE LINE	132
107+11	128+35	IB (NB) - C.L. WH. SKIP LINE	531
2+00	24+35	IB (NB) - C.L. WH. SKIP LINE	559
17+00	27+60	IB (NB) - MEDIAN DBL. YELLOW	2120
21+30	27+60	IB (SB) - MEDIAN DBL. YELLOW	1260
28+50	31+00	IB (NB) - MEDIAN DBL. YELLOW	500
28+50	31+00	IB (SB) - MEDIAN DBL. YELLOW	500

STA.	STA.	DESCRIPTION	REMOVABLE CONST. PVMT. MARKINGS LIN. FT.
118+06.50	119+34.50	IB (NB) DBL. YELLOW C.L. (BR. & APPROACHES)	256



CONSTRUCTION SEQUENCE

STAGE 1:

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE LOCATIONS SHOWN ON THE ADVANCE WARNING DETAILS.

CLEARING AND GRUBBING OPERATIONS MAY BEGIN IF AND WHERE DIRECTED BY THE ENGINEER.

INSTALL MAINTENANCE OF TRAFFIC DEVICES AND CONSTRUCT TEMPORARY CROSSOVER AND DRIVEWAYS IN MEDIAN, AND DRAINAGE FOR PROJECT AS SHOWN IN STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

STAGE 2:

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE LOCATIONS SHOWN ON THE STAGE 2 ADVANCE WARNING DETAILS.

INSTALL STAGE 2 MAINTENANCE OF TRAFFIC DEVICES, AND CONSTRUCTION PAVEMENT MARKINGS. SHIFT NORTHBOUND TRAFFIC ONTO OUTSIDE LANE AND ROUTE SOUTHBOUND TRAFFIC ONTO INSIDE LANE OF NORTHBOUND LANES AND THROUGH THE NEWLY CONSTRUCTED TEMPORARY CROSSOVER.

CONSTRUCT ROADWAY EMBANKMENT, BRIDGE, AND DRAINAGE FOR PROJECT AS SHOWN IN STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

RETURN TRAFFIC TO NORMAL PATTERN ON HWY. 1B (SB) & (NB) AND REMOVE TEMPORARY CROSSOVER.

LEGEND

- TYPE 3 BARRICADE
- TRAFFIC FLOW ARROWS
- TRAFFIC DRUM
- TEMPORARY TRAFFIC SIGN

STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

Leonard.Speed 2/19/2021 12:52:12 PM
WORKSPACE: ARDOT
c:\users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed@mbakerintl.com\dms1440\
REVISED DATE: $$REVDATE$$

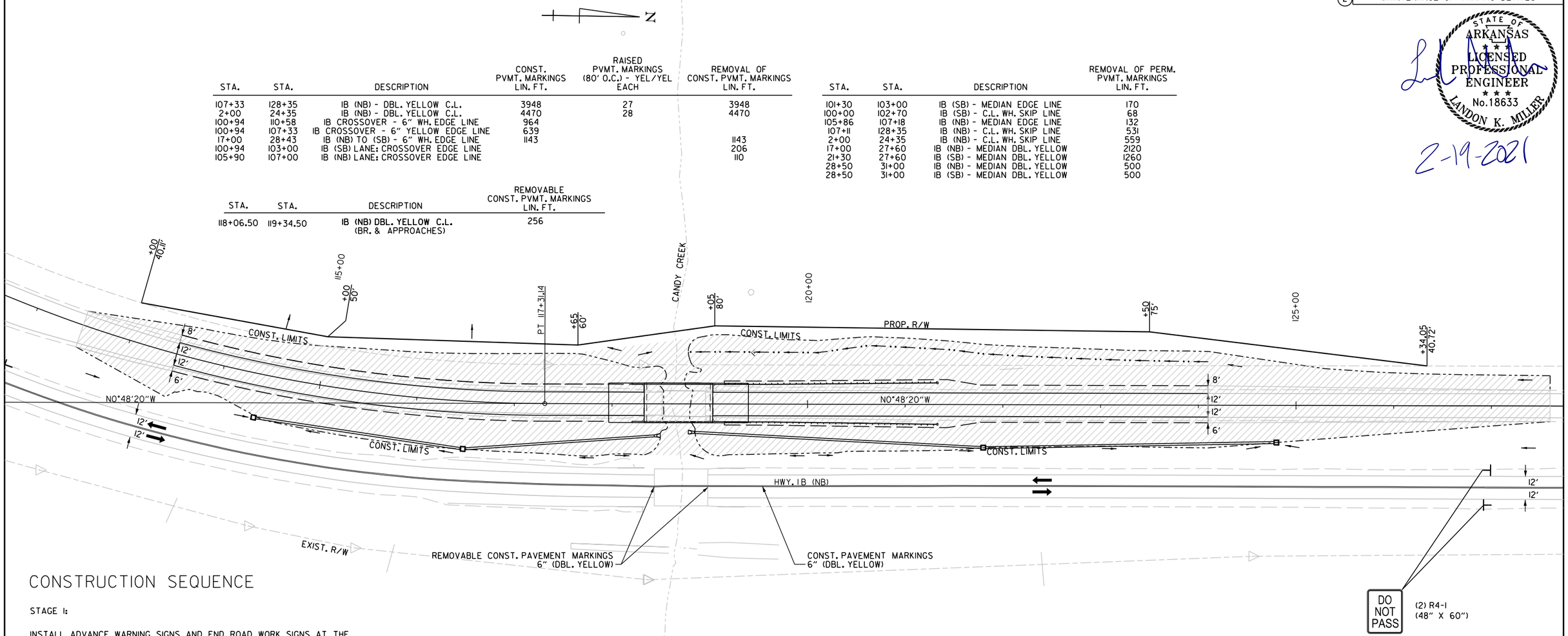
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110702	18	53
				(2)	MAINTENANCE OF TRAFFIC DETAILS			

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER
2-19-2021

STA.	STA.	DESCRIPTION	CONST. PVMT. MARKINGS LIN. FT.	RAISED PVMT. MARKINGS (80' O.C.) - YEL/YEL EACH	REMOVAL OF CONST. PVMT. MARKINGS LIN. FT.
107+33	128+35	IB (NB) - DBL. YELLOW C.L.	3948	27	3948
2+00	24+35	IB (NB) - DBL. YELLOW C.L.	4470	28	4470
100+94	110+58	IB CROSSOVER - 6" WH. EDGE LINE	964		
100+94	107+33	IB CROSSOVER - 6" YELLOW EDGE LINE	639		
17+00	28+43	IB (NB) TO (SB) - 6" WH. EDGE LINE	1143		1143
100+94	103+00	IB (SB) LANE: CROSSOVER EDGE LINE			206
105+90	107+00	IB (NB) LANE: CROSSOVER EDGE LINE			110

STA.	STA.	DESCRIPTION	REMOVAL OF PERM. PVMT. MARKINGS LIN. FT.
101+30	103+00	IB (SB) - MEDIAN EDGE LINE	170
100+00	102+70	IB (SB) - C.L. WH. SKIP LINE	68
105+86	107+18	IB (NB) - MEDIAN EDGE LINE	132
107+11	128+35	IB (NB) - C.L. WH. SKIP LINE	531
2+00	24+35	IB (NB) - C.L. WH. SKIP LINE	559
17+00	27+60	IB (NB) - MEDIAN DBL. YELLOW	2120
21+30	27+60	IB (SB) - MEDIAN DBL. YELLOW	1260
28+50	31+00	IB (NB) - MEDIAN DBL. YELLOW	500
28+50	31+00	IB (SB) - MEDIAN DBL. YELLOW	500

STA.	STA.	DESCRIPTION	REMOVABLE CONST. PVMT. MARKINGS LIN. FT.
118+06.50	119+34.50	IB (NB) DBL. YELLOW C.L. (BR. & APPROACHES)	256



CONSTRUCTION SEQUENCE

STAGE 1:

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE LOCATIONS SHOWN ON THE ADVANCE WARNING DETAILS.

CLEARING AND GRUBBING OPERATIONS MAY BEGIN IF AND WHERE DIRECTED BY THE ENGINEER.

INSTALL MAINTENANCE OF TRAFFIC DEVICES AND CONSTRUCT TEMPORARY CROSSOVER AND DRIVEWAYS IN MEDIAN, AND DRAINAGE FOR PROJECT AS SHOWN IN STAGE 1MAINTENANCE OF TRAFFIC DETAILS.

STAGE 2:

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE LOCATIONS SHOWN ON THE STAGE 2 ADVANCE WARNING DETAILS.

INSTALL STAGE 2 MAINTENANCE OF TRAFFIC DEVICES, AND CONSTRUCTION PAVEMENT MARKINGS. SHIFT NORTHBOUND TRAFFIC ONTO OUTSIDE LANE AND ROUTE SOUTHBOUND TRAFFIC ONTO INSIDE LANE OF NORTHBOUND LANES AND THROUGH THE NEWLY CONSTRUCTED TEMPORARY CROSSOVER.

CONSTRUCT ROADWAY EMBANKMENT, BRIDGE, AND DRAINAGE FOR PROJECT AS SHOWN IN STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

RETURN TRAFFIC TO NORMAL PATTERN ON HWY. 1B (SB) & (NB) AND REMOVE TEMPORARY CROSSOVER.

LEGEND

- STAGE CONST. AREA
- TRAFFIC FLOW ARROWS
- TEMPORARY TRAFFIC SIGN

STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

LeonardSpeed 2/19/2021 12:52:16 PM
WORKSPACE: ARDOT
C:\Users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com.mb-us-pw-06\leonard.speed@mbakerintl.com\dms1401\RI0702_07_MOT_008.dgn
REVISED DATE: $$REVDATE$$

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.		110702	19	53

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER

2-19-2021

N

C.L. HWY. IB MOT
P.I. = 6+50.63
Δ = 3°08'04" LT.
D = 0°30'00"
T = 313.53'
L = 626.91'
P.C. = 6+50.63
P.T. = 9+64.01

ROAD CLOSED
(2) R11-2 (48" X 30")
(2) (8') BARR. TYP. III LT.
(2) (8') BARR. TYP. III RT.
18 TRAFFIC DRUMS @ 12' O.C.
EXIST. R/W
STA. 127+60.00
STA. 128+34.79 (SB) = STA. 2+00.00 MOT (NB)
POE HWY. IB (SB) STA. 129+00.00
N0°48'20"W
POB 2+00.00
PC 3+37.10
5+00
PT 9+64.01
10+00
15+00
C.L. HWY. IB (MOT) S3°56'24"E
12'
(1) R11-2 (48" X 30")
4 TRAFFIC DRUMS @ 15' O.C.
13 TRAFFIC DRUMS @ 25' O.C.
(1) W6-3 (48" X 48")
PI 6+50.63
DO NOT PASS
(2) R4-1 (48" X 60")
CONST. PAVEMENT MARKINGS 6" (DBL. YELLOW)
7 TRAFFIC DRUMS @ 50' O.C.

CONSTRUCTION SEQUENCE

STAGE 1:

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE LOCATIONS SHOWN ON THE ADVANCE WARNING DETAILS.

CLEARING AND GRUBBING OPERATIONS MAY BEGIN IF AND WHERE DIRECTED BY THE ENGINEER.

INSTALL MAINTENANCE OF TRAFFIC DEVICES AND CONSTRUCT TEMPORARY CROSSOVER AND DRIVEWAYS IN MEDIAN, AND DRAINAGE FOR PROJECT AS SHOWN IN STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

STAGE 2:

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE LOCATIONS SHOWN ON THE STAGE 2 ADVANCE WARNING DETAILS.

INSTALL STAGE 2 MAINTENANCE OF TRAFFIC DEVICES, AND CONSTRUCTION PAVEMENT MARKINGS. SHIFT NORTHBOUND TRAFFIC ONTO OUTSIDE LANE AND ROUTE SOUTHBOUND TRAFFIC ONTO INSIDE LANE OF NORTHBOUND LANES AND THROUGH THE NEWLY CONSTRUCTED TEMPORARY CROSSOVER.

CONSTRUCT ROADWAY EMBANKMENT, BRIDGE, AND DRAINAGE FOR PROJECT AS SHOWN IN STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

RETURN TRAFFIC TO NORMAL PATTERN ON HWY. 1B (SB) & (NB) AND REMOVE TEMPORARY CROSSOVER.

STA.	STA.	DESCRIPTION	CONST. PVMT. MARKINGS LIN. FT.	RAISED PVMT. MARKINGS (80' O.C.) - YEL/YEL EACH	REMOVAL OF CONST. PVMT. MARKINGS LIN. FT.
107+33	128+35	1B (NB) - DBL. YELLOW C.L.	3948	27	3948
2+00	24+35	1B (NB) - DBL. YELLOW C.L.	4470	28	4470
100+94	110+58	1B CROSSOVER - 6" WH. EDGE LINE	964		
100+94	107+33	1B CROSSOVER - 6" YELLOW EDGE LINE	639		
17+00	28+43	1B (NB) TO (SB) - 6" WH. EDGE LINE	1143		1143
100+94	103+00	1B (SB) LANE: CROSSOVER EDGE LINE			206
105+90	107+00	1B (NB) LANE: CROSSOVER EDGE LINE			110

STA.	STA.	DESCRIPTION	REMOVAL OF PERM. PVMT. MARKINGS LIN. FT.
101+30	103+00	1B (SB) - MEDIAN EDGE LINE	170
100+00	102+70	1B (SB) - C.L. WH. SKIP LINE	68
105+86	107+18	1B (NB) - MEDIAN EDGE LINE	132
107+11	128+35	1B (NB) - C.L. WH. SKIP LINE	531
2+00	24+35	1B (NB) - C.L. WH. SKIP LINE	559
17+00	27+60	1B (NB) - MEDIAN DBL. YELLOW	2120
21+30	27+60	1B (SB) - MEDIAN DBL. YELLOW	1260
28+50	31+00	1B (NB) - MEDIAN DBL. YELLOW	500
28+50	31+00	1B (SB) - MEDIAN DBL. YELLOW	500

STA.	STA.	DESCRIPTION	REMOVABLE CONST. PVMT. MARKINGS LIN. FT.
118+06.50	119+34.50	1B (NB) DBL. YELLOW C.L. (BR. & APPROACHES)	256

LEGEND

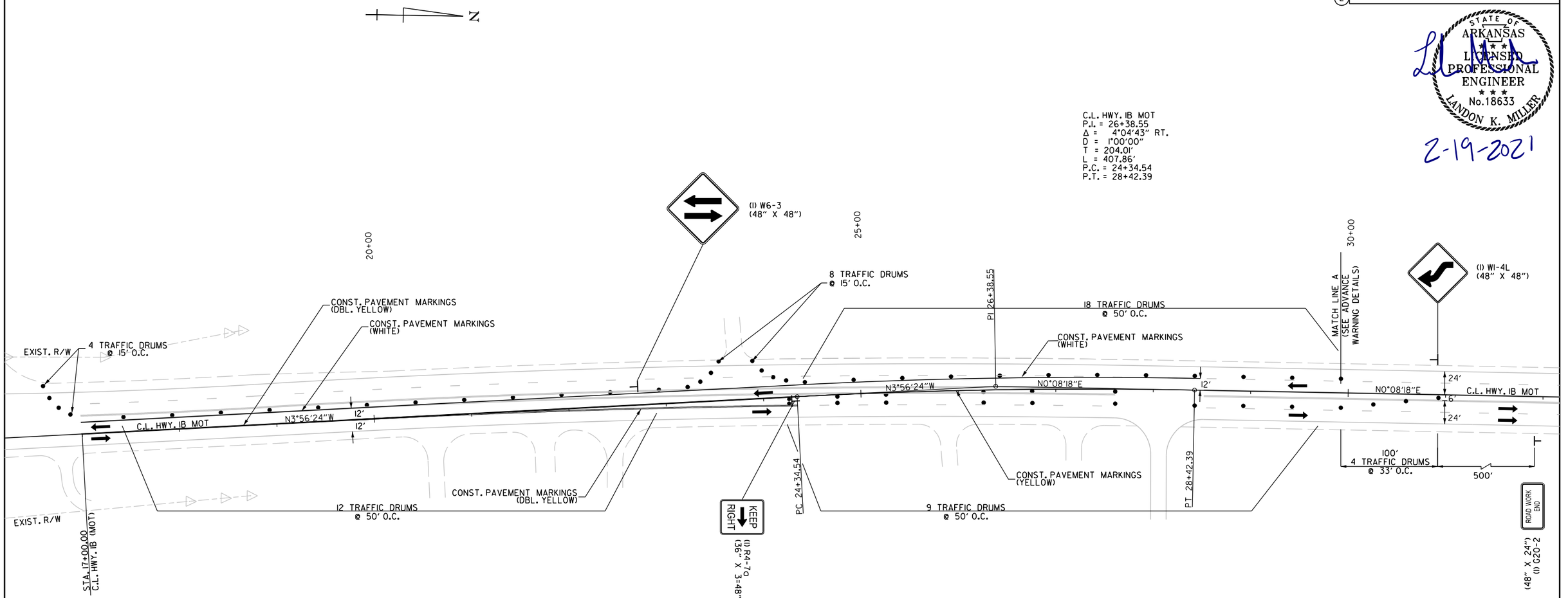
- STAGE CONST. AREA
- TYPE 3 BARRICADE
- TRAFFIC FLOW ARROWS
- TEMPORARY TRAFFIC SIGN
- TRAFFIC DRUM

STAGE 2 MAINTENANCE OF TRAFFIC DETAILS

LeonardSpeed 2/19/2021 12:52:19 PM
WORKSPACE: ARDOT
C:\Users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed\d0702_07_mot_009.dgn
REVISED DATE: $$REVDATE$$

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.		110702	20	53
				(2)	MAINTENANCE OF TRAFFIC DETAILS			

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER
2-19-2021



CONSTRUCTION SEQUENCE

STAGE 1:

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE LOCATIONS SHOWN ON THE ADVANCE WARNING DETAILS.

CLEARING AND GRUBBING OPERATIONS MAY BEGIN IF AND WHERE DIRECTED BY THE ENGINEER.

INSTALL MAINTENANCE OF TRAFFIC DEVICES AND CONSTRUCT TEMPORARY CROSSOVER AND DRIVEWAYS IN MEDIAN, AND DRAINAGE FOR PROJECT AS SHOWN IN STAGE I MAINTENANCE OF TRAFFIC DETAILS.

STAGE 2:

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE LOCATIONS SHOWN ON THE STAGE 2 ADVANCE WARNING DETAILS.

INSTALL STAGE 2 MAINTENANCE OF TRAFFIC DEVICES, AND CONSTRUCTION PAVEMENT MARKINGS. SHIFT NORTHBOUND TRAFFIC ONTO OUTSIDE LANE AND ROUTE SOUTHBOUND TRAFFIC ONTO INSIDE LANE OF NORTHBOUND LANES AND THROUGH THE NEWLY CONSTRUCTED TEMPORARY CROSSOVER.

CONSTRUCT ROADWAY EMBANKMENT, BRIDGE, AND DRAINAGE FOR PROJECT AS SHOWN IN STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

RETURN TRAFFIC TO NORMAL PATTERN ON HWY. IB (SB) & (NB) AND REMOVE TEMPORARY CROSSOVER.

STA.	STA.	DESCRIPTION	CONST. PVMT. MARKINGS LIN. FT.	RAISED PVMT. MARKINGS (80' O.C.) - YEL/YEL EACH	REMOVAL OF CONST. PVMT. MARKINGS LIN. FT.
107+33	128+35	IB (NB) - DBL. YELLOW C.L.	3948	27	3948
2+00	24+35	IB (NB) - DBL. YELLOW C.L.	4470	28	4470
100+94	110+58	IB CROSSOVER - 6" WH. EDGE LINE	964		
100+94	107+33	IB CROSSOVER - 6" YELLOW EDGE LINE	639		
17+00	28+43	IB (NB) TO (SB) - 6" WH. EDGE LINE	1143		1143
100+94	103+00	IB (SB) LANE: CROSSOVER EDGE LINE			206
105+90	107+00	IB (NB) LANE: CROSSOVER EDGE LINE			110

STA.	STA.	DESCRIPTION	REMOVAL OF PERM. PVMT. MARKINGS LIN. FT.
101+30	103+00	IB (SB) - MEDIAN EDGE LINE	170
100+00	102+70	IB (SB) - C.L. WH. SKIP LINE	68
105+86	107+18	IB (NB) - MEDIAN EDGE LINE	132
107+11	128+35	IB (NB) - C.L. WH. SKIP LINE	531
2+00	24+35	IB (NB) - C.L. WH. SKIP LINE	559
17+00	27+60	IB (NB) - MEDIAN DBL. YELLOW	2120
21+30	27+60	IB (SB) - MEDIAN DBL. YELLOW	1260
28+50	31+00	IB (NB) - MEDIAN DBL. YELLOW	500
28+50	31+00	IB (SB) - MEDIAN DBL. YELLOW	500

STA.	STA.	DESCRIPTION	REMOVABLE CONST. PVMT. MARKINGS LIN. FT.
118+06.50	119+34.50	IB (NB) DBL. YELLOW C.L. (BR. & APPROACHES)	256

LEGEND

- TRAFFIC FLOW ARROWS
- TRAFFIC DRUM
- TEMPORARY TRAFFIC SIGN

STAGE 2 MAINTENANCE OF TRAFFIC DETAILS

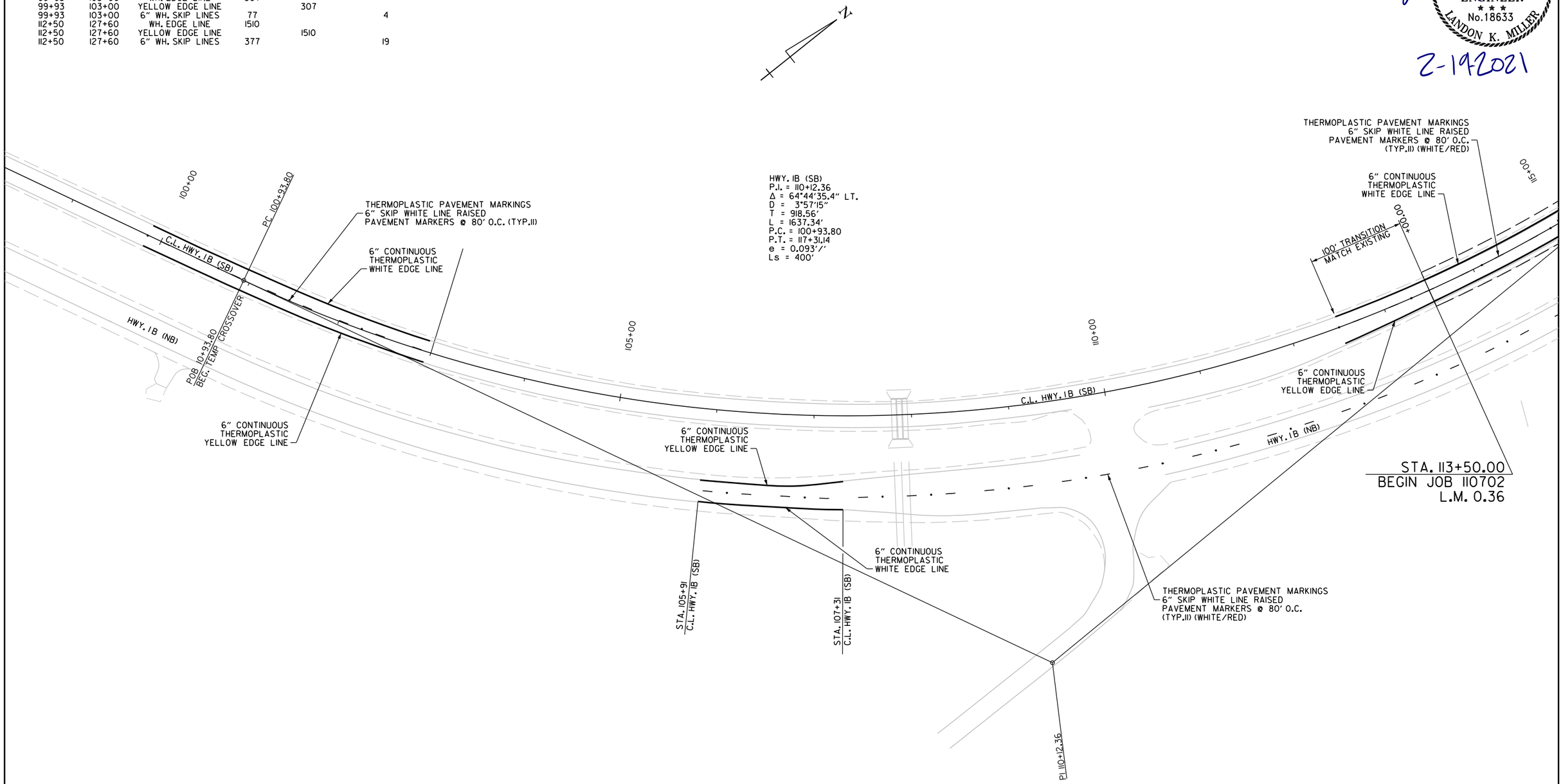
LeonardSpeed 2/19/2021 12:52:24 PM
WORKSPACE: ARDOT
C:\Users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed@mbakerintl.com\dms1401\RI0702_07_MOT_010.dgn
REVISED DATE: $$REVDATE$$

STA.	STA.	HWY. IB (NB.)	THERMO. WHITE	THERMO. YELLOW	RAISED PVMT. MARKERS (WH/RED) TYPE II
105+91	107+31	WH. EDGE LINE	140		
105+91	107+31	YELLOW EDGE LINE		140	
105+91	128+35	6" WH. SKIP LINES	561		28

STA.	STA.	HWY. IB (SB.)	THERMO. WHITE	THERMO. YELLOW	RAISED PVMT. MARKERS (WH/RED) TYPE II
99+93	103+00	WH. EDGE LINE	307		
99+93	103+00	YELLOW EDGE LINE		307	
99+93	103+00	6" WH. SKIP LINES	77		4
112+50	127+60	WH. EDGE LINE	1510		
112+50	127+60	YELLOW EDGE LINE		1510	
112+50	127+60	6" WH. SKIP LINES	377		19

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.		110702	21	53
				(2) PERMANENT PAVEMENT MARKING DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER
2-19-2021



HWY. IB PROJECT QUANTITY TOTALS:

THERMOPLASTIC PAVEMENT MARKINGS
6" WHITE = 3621 LIN. FT.
6" YELLOW = 6169 LIN. FT.
YELLOW/YELLOW (TYPE II) RAISED PAVEMENT MARKERS = 26
WHITE/RED (TYPE II) RAISED PAVEMENT MARKERS = 83

PERMANENT PAVEMENT MARKING DETAILS

Leonard.Speed 2/19/2021 12:52:29 PM
WORKSPACE: ARDOT
c:\users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com.mb-us-pw-06\leonard.speed\mbaker int'l.com\dms1440\RI10702_07_PM_01.dgn
REVISED DATE: $$REVDATE$$

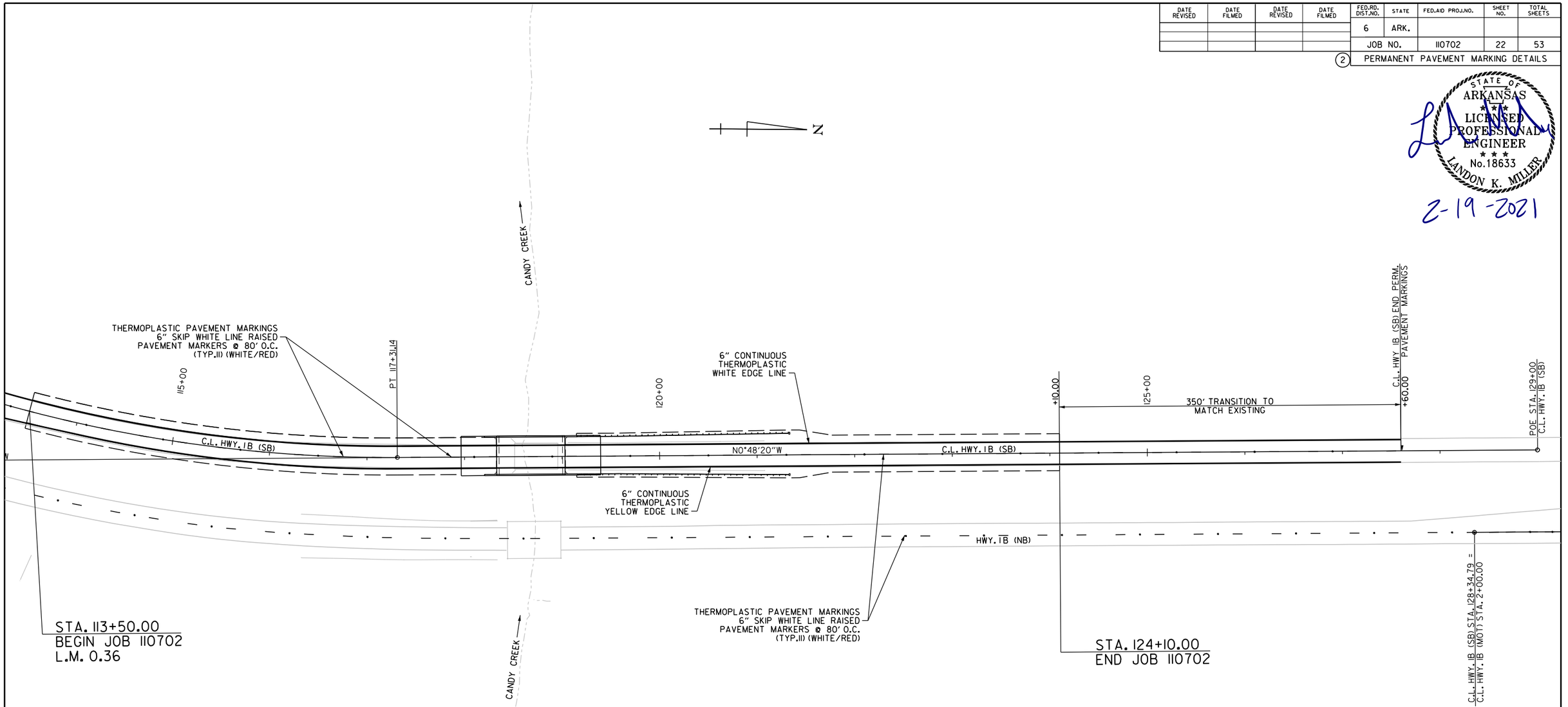
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		110702	22	53

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER

2-19-2021



HWY. IB PROJECT QUANTITY TOTALS:

THERMOPLASTIC PAVEMENT MARKINGS
6" WHITE = 3621 LIN. FT.
6" YELLOW = 6169 LIN. FT.
YELLOW/YELLOW (TYPE II) RAISED PAVEMENT MARKERS = 26
WHITE/RED (TYPE II) RAISED PAVEMENT MARKERS = 83

PERMANENT PAVEMENT MARKING DETAILS

Leonard.Speed 2/19/2021 12:52:32 PM
WORKSPACE: ARDOT
c:\users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com.mb-us-pw-06\leonard.speed@mbakerintl.com\dms1401\RI0702_07_PM_02.dgn
REVISED DATE: $$REVDATE$$

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

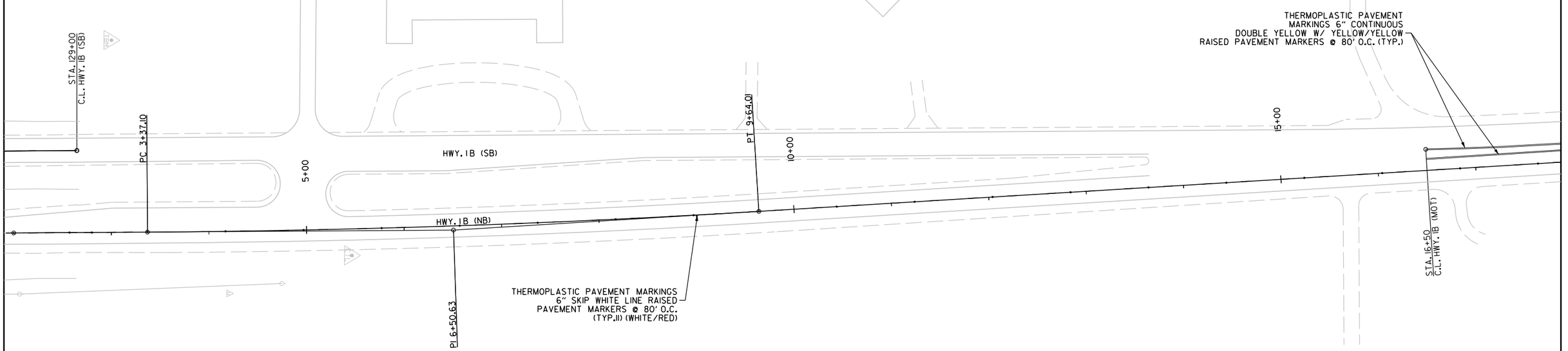
FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		110702	23	53
(2) PERMANENT PAVEMENT MARKING DETAILS				

STA.	STA.	HWY. IB NB	THERMO. WHITE	RAISED PVMT. MARKERS (WH/RED) TYPE II
2+00	27+70	6" WH. SKIP LINES	643	32

STA.	STA.	HWY. IB	THERMO. YELLOW	RAISED PVMT. MARKERS (YEL./YEL.) TYPE II
16+50	22+13	DBL. YELLOW	1126	7
16+50	22+13	DBL. YELLOW	1126	7

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER

2-19-2021



HWY. IB PROJECT QUANTITY TOTALS:

THERMOPLASTIC PAVEMENT MARKINGS
6" WHITE = 3621 LIN. FT.
6" YELLOW = 6169 LIN. FT.
YELLOW/YELLOW (TYPE II) RAISED PAVEMENT MARKERS = 26
WHITE/RED (TYPE II) RAISED PAVEMENT MARKERS = 83

PERMANENT PAVEMENT MARKING DETAILS

Leonard.Speed 2/19/2021 12:52:36 PM
WORKSPACE: ARDOT
c:\users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed@mbakerintl.com\dms1401\RI0702_07_PM_03.dgn
REVISED DATE: $$REVDATE$$

STA.	STA.	HWY. IB	THERMO. YELLOW	RAISED PVMT. MARKERS (YEL./YEL.) TYPE II
22+80	27+70	DBL. YELLOW	980	6
22+80	27+70	DBL. YELLOW	980	6

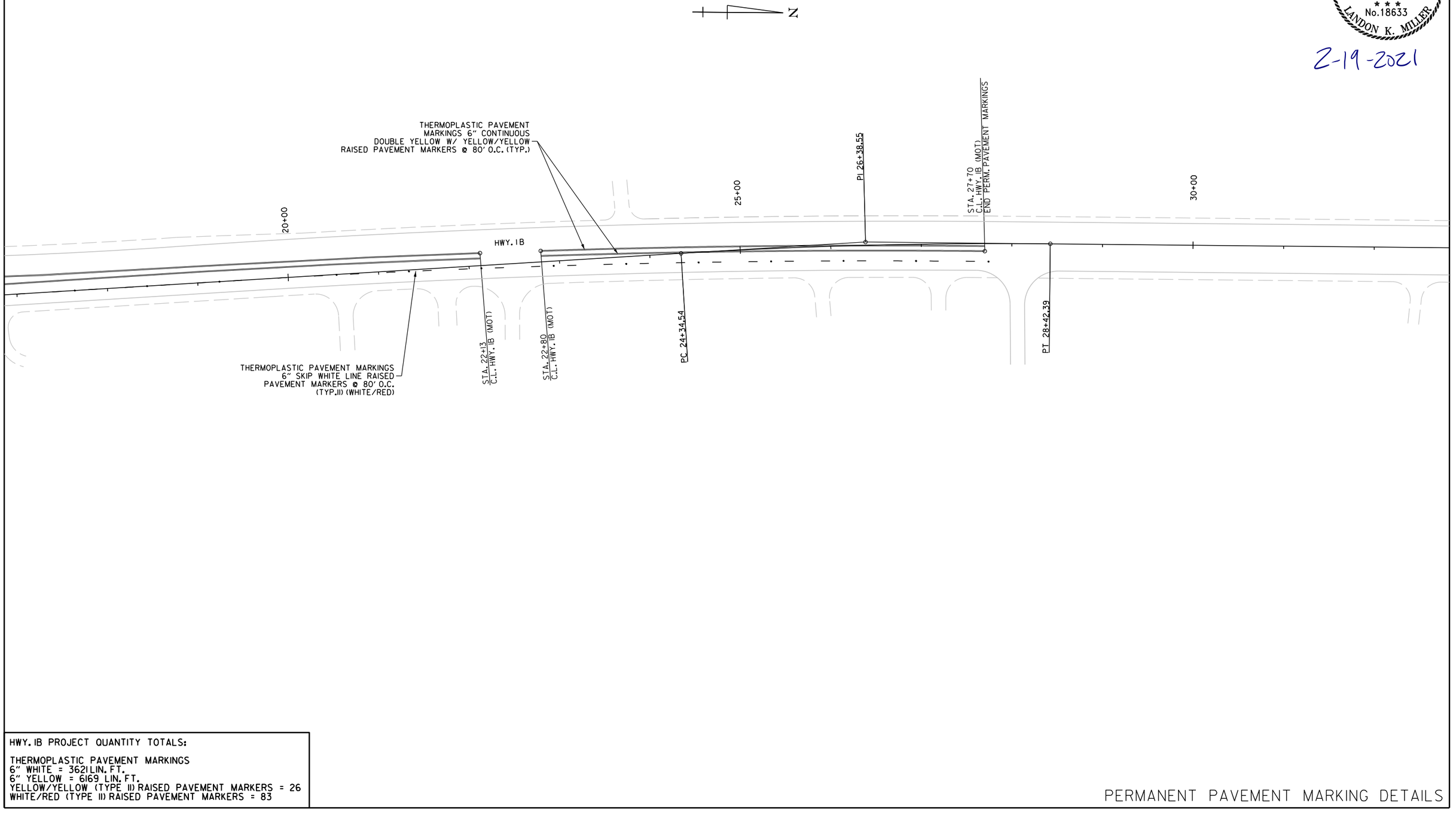
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		110702	24	53

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER

2-19-2021



HWY. IB PROJECT QUANTITY TOTALS:

THERMOPLASTIC PAVEMENT MARKINGS
6" WHITE = 3621 LIN. FT.
6" YELLOW = 6169 LIN. FT.
YELLOW/YELLOW (TYPE II) RAISED PAVEMENT MARKERS = 26
WHITE/RED (TYPE II) RAISED PAVEMENT MARKERS = 83

PERMANENT PAVEMENT MARKING DETAILS

LeonardSpeed 2/19/2021 12:52:39 PM
WORKSPACE: ARDOT
c:\users\leonardspeed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonardspeed\mbakerintl.com\dms1401\RI0702_07_PM_04.dgn
REVISED DATE: $$REVDATE$$

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.		II0702	25	53

(2) QUANTITIES

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER
2-19-2021

ADVANCE WARNING SIGNS AND DEVICES

	SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC DRUMS	BARRICADES (TYPE III)		* ADVANCE WARNING ARROW PANEL
											RIGHT	LEFT	
				LIN. FT. - EACH			NO.	SQ. FT.	EACH		LIN. FT.		DAY
	W20-1	ROAD WORK 1500 FT.	48"x48"	5	5	5	5	80.0					
	W20-1	ROAD WORK 1000 FT.	48"x48"	5	5	5	5	80.0					
	W20-1	ROAD WORK 500 FT.	48"x48"	5	5	5	5	80.0					
	W20-1	ROAD WORK AHEAD	48"x48"	3	3	3	3	48.0					
	G20-2	END ROAD WORK	48"x24"	7	8	8	8	64.0					
	W20-5	RIGHT LANE CLOSED 1 MILE	48"x48"		3	3	3	48.0					
	W20-5	RIGHT LANE CLOSED 1/2 MILE	48"x48"		3	3	3	48.0					
	W20-5	RIGHT LANE CLOSED 1500 FT.	48"x48"		3	3	3	48.0					
	W3-5	SPEED LIMIT (ADVISORY)	48"x48"		3	3	3	48.0					
	W6-3	TWO WAY TRAFFIC	48"x48"		3	3	3	48.0					
	R5-1	DO NOT ENTER	48"x48"		2	2	2	32.0					
	R2-1	SPEED LIMIT	48"x60"		3	3	3	60.0					
	W4-2 RT.	MERGE RIGHT	48"x48"		3	3	3	48.0					
	R4-7a	KEEP RIGHT	48"x36"		2	2	2	24.0					
	W1-6	LARGE ARROW	60"x30"		9	9	9	112.5					
	W1-8	CHEVRONS	30"x36"		3	3	3	22.5					
*	R4-1	DO NOT PASS	48"X60"	3	9	9	9	180.0					
*	W21-5a	LEFT SHOULDER CLOSED	48"X48"	3		3	3	48.0					
	R11-2	ROAD CLOSED	48"x30"		8	8	8	80.0					
	W1-4R	REVERSE CURVE RT.	48"X38"		1	1	1	16.0					
	W1-4L	REVERSE CURVE LT.	48"X48"		1	1	1	16.0					
	SPECIAL	MERGE NOW	48"x48"		2	2	2	32.0					
		VERTICAL PANELS		12		12			12				
		TRAFFIC DRUMS		24	238	238				238			
		TYPE III BARRICADE-RT. (8')			8	8					64		
		TYPE III BARRICADE-LT. (8')			8	8						64	
*		ADVANCE WARNING ARROW PANEL			120	120							120
	TOTALS:							**1263.0**	**12**	**238**	**64**	**64**	**120**

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

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

BENCH MARKS

STATION	LOCATION	BENCH MARKS
		EACH
118+33	C.L. HWY. 1B (SB)	1

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

GUARDRAIL

STATION	STATION	LOCATION	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)
			LIN. FT.	EACH	
119+14.90	121+33.65	LT. OF C.L. HWY. 1B (SB)	150	1	1
119+14.90	121+33.65	RT. OF C.L. HWY. 1B (SB)	150	1	1
TOTALS:			**300**	**2**	**2**

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

	DESCRIPTION	STAGE 1	STAGE 2	REMOVAL OF PERMANENT PAVEMENT MARKINGS	CONSTRUCTION PAVEMENT MARKINGS	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS		THERMOPLASTIC PAVEMENT MARKING	
								TYPE II (WHITE/RED)	TYPE II (YELLOW/YELLOW)	6" WHITE	6" YELLOW
		LIN. FT.						EACH		LIN. FT.	
	REMOVAL OF PERMANENT PAVEMENT MARKINGS		5840	5840							
	CONSTRUCTION PAVEMENT MARKINGS		11164		11164						
	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS		256			256					
	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS		9877				9877				
*	RAISED PVMT. MARKERS - TO BE USED IF & WHERE DIRECT. BY THE ENGINEER		55						55		
	RAISED PAVEMENT MARKERS TYPE II (WHITE/RED)		83					83			
	RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW)		26						26		
	THERMOPLASTIC PAVEMENT MARKING WHITE (6")		3621							3621	
	THERMOPLASTIC PAVEMENT MARKING YELLOW (6")		6169								6169
	TOTALS:			**5840**	**11164**	**256**	**9877**	**83**	**81**	**3621**	**6169**

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

4" PIPE UNDERDRAIN

	STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS	UNDERDRAIN OUTLET PROTECTORS
				LIN. FT.	EACH
*	ENTIRE PROJECT TO BE USED IF AND			500	5
	WHERE DIRECTED BY THE ENGINEER				
	TOTALS:			**500**	**5**

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

Leonard.Speed 2/9/2021 12:52:41 PM
WORKSPACE: ARDOT
C:\Users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com.mb-us-pw-06\leonard.speed\dms140\RI0702_08_QTY_01.dgn
REVISED DATE: $$REVDATE$$

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.		II0702	26	53

(2) QUANTITIES

REMOVAL AND DISPOSAL OF ITEMS

STATION	STATION	LOCATION	GUARDRAIL
			LIN. FT.
119+06	121+07	LT. OF C.L. HWY. 1B (SB)	201
119+07	121+08	RT. OF C.L. HWY. 1B (SB)	201
TOTAL:			**402**

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.

CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
112+50	127+60	C.L. HWY 1B (SB)	16	16
10+93	17+38	TEMP. CROSSOVER	7	7
TOTALS:			**23**	**23**

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING
	CU.YD.
ENTIRE PROJECT TO BE USED IF	
AND WHERE DIRECTED BY THE	90
ENGINEER	
TOTAL:	**90**

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

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER
2-19-2021

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)	FILTER SOCK (E-13)	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.	LIN. FT.	CU.YD.	CU.YD.	CU. YD.
ENTIRE	PROJECT	CLEARING AND GRUBBING						8.00	8.00	163.2			1700		751	751	814
ENTIRE	PROJECT	STAGE 1						2.00	2.00	40.8							
ENTIRE	PROJECT	STAGE 2	3.75	7.50	3.75	382.5	3.75	7.50	7.50	153.0	44		150	80			6
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.			0.50	1.00	0.50	51.0	0.50	1.00	1.00	20.4	44	18	185	10	75	75	82
TOTALS:			**4.25**	**8.50**	**4.25**	**433.5**	**4.25**	**18.50**	**18.50**	**377.4**	**88**	**18**	**2035**	**90**	**826**	**826**	**902**

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

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.

APPROACH GUTTERS AND SLABS

STATION	STATION	LOCATION	APPROACH GUTTER (TYPE SPECIAL)	APPROACH SLABS (TYPE C1)	REINFORCING STEEL-RDWY. (GR. 60)	AGGREGATE BASE COURSE (CLASS 7)
			CU.YD.	CU.YD.	POUND	TON
117+96.50	118+33.00	C.L. HWY. 1B (SB)	24.81	49.15	7119	28.47
119+03.00	119+39.50	C.L. HWY. 1B (SB)	24.81	49.15	7119	28.47
TOTALS:			**49.62**	**98.30**	**14238**	**422.86**

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	* SOIL STABILIZATION
			CU. YD.		TON
10+93.80	17+16.74	TEMPORARY CROSSOVER	128	545	
112+50.00	127+60.00	HWY. 1B (SB) MAIN LANE	1298	9996	
ENTIRE	PROJECT	TEMPORARY APPROACHES		141	
ENTIRE	PROJECT	BRIDGE ENDS	100		
* ENTIRE	PROJECT	TO BE USED IF AND WHERE			200
TOTALS:			**1526**	**10682**	**200**

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

STRUCTURES

STATION	DESCRIPTION	REINFORCED CONCRETE PIPE CULVERT (CLASS III)	FLARED END SECTIONS FOR R.C. PIPE CULVERTS	TEMPORARY CULVERTS	DROP INLETS TYPE	SOLID SODDING	WATER	STD. DWG. NOS.
		24"	24"	18"	RM			
		LIN. FT.	EACH	LIN. FT.	EACH	SQ.YD.	M.GAL.	
114+40	RT. OF C.L. HWY. 1B (SB)	212			1	10	0.13	FPC-9D, PCC-1
116+50	RT. OF C.L. HWY. 1B (SB)	194	1		1	18	0.23	FES-1, FES-2, FPC-9D, PCC-1
121+80	RT. OF C.L. HWY. 1B (SB)	294	1		1	18	0.23	FES-1, FES-2, FPC-9D, PCC-1
124+80	RT. OF C.L. HWY. 1B (SB)	296			1	10	0.13	FPC-9D, PCC-1
14+37	C.L. OF TEMP. CROSSOVER			260				PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
7+74	LT. OF C.L. HWY 1B MOT			28				PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
9+62	LT. OF C.L. HWY 1B MOT			24				PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
11+36	LT. OF C.L. HWY 1B MOT			24				PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
TOTALS:		**996**	**2**	**336**	**4**	**56**	**0.72**	

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.

RUMBLE STRIPS IN ASPHALT SHOULDERS

STATION	STATION	LOCATION	* RUMBLE STRIPS IN ASPHALT SHOULDERS
			LIN.FT.
112+50	127+60	LT. OF C.L. HWY. 1B (SB)	1510
112+50	127+60	RT. OF C.L. HWY. 1B (SB)	1510
TOTAL:			**3020**

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

C:\Users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed@mbakerintl.com\dms1440\RII0702_08_QTY_01.dgn
Leonard.Speed 2/19/2021 12:52:42 PM
WORKSPACE: ARDOT
REVISED DATE: $$REVDATE$$

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.		II0702	27	53

(2) QUANTITIES

SUMMARY SOIL CLASSIFICATION

BORING NO.	APPROX. STATION	SAMPLE DEPTH (ft.)	WATER CONTENT (%)	ATTERBERG LIMITS			PERCENT PASSING #200	UNIFIED CLASS.	AASHTO CLASS.
				LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX			
B-1		3.5 - 5	28	NP	NP	NP	90	ML	A-4
B-1		13.5 - 15	32	38	26	12	96	ML	A-6
B-1		23.5 - 25	33	33	24	9	100	ML	A-4
B-1		33.5 - 35	23	36	19	17	97	CL	A-6
B-1		43.5 - 45	27	48	15	33	92	CL	A-7-6
B-1		68.5 - 70	23	--	--	--	5	SP-SC	A-2-7
B-1		88.5 - 90	22	--	--	--	4	SP	A-2-7
B-1		108.5 - 110	24	--	--	--	6	SP-SC	A-2-7
B-2		13.5 - 15	29	38	23	15	99	CL	A-6
B-2		23.5 - 25	30	30	24	6	93	ML	A-4
B-2		33.5 - 35	24	40	18	22	99	CL	A-6
B-2		43.5 - 45	27	55	18	37	94	CH	A-7-6
B-2		58.5 - 60	20	--	--	--	13	SC	A-2-7
B-2		78.5 -80	19	--	--	--	6	SP-SC	A-2-7
B-2		98.5 - 100	21	--	--	--	6	SP-SC	A-2-7
B-2		118.5 - 120	18	--	--	--	5	SP-SC	A-2-7

NOTE: 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 THE SAME DIFFERING FROM THE ABOVE TABULATIONS.
NP - NON-PLASTIC

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
112+50.00	113+50.00	C.L. HWY. 1B (SB)	35.00	388.89
126+60.00	127+60.00	C.L. HWY. 1B (SB)	30.00	333.33
TOTAL:				722.22

NOTE: AVERAGE MILLING DEPTH 1".

ACHM PATCHING OF EXISTING ROADWAY

DESCRIPTION	TON
ENTIRE PROJECT - TO BE USED IF AND WHERE	10
DIRECTED BY THE ENGINEER	
TOTAL:	10

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

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER
2-19-2021

DRIVEWAYS & TURNOUTS

STATION	SIDE	LOCATION	WIDTH	AGGREGATE BASE COURSE (CLASS 7)	STANDARD DRAWINGS
			FEET	TON	
7+74	LT.	C.L. HWY. 1B MOT	20	32.67	SPECIAL DETAILS
9+62	LT.	C.L. HWY. 1B MOT	16	23.33	SPECIAL DETAILS
11+36	LT.	C.L. HWY. 1B MOT	16	14.00	SPECIAL DETAILS
TOTAL:				70.00	

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

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

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

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT (0.05 GAL. PER SQ. YD.)			TACK COAT (0.17 GAL. PER SQ. YD.)			TOTAL GALLONS	ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")								
				TON / STATION	TON	TOTAL WID	SQ.YD.	GALLON	TOTAL WID.	SQ.YD.	GALLON		AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	TOTAL PG 64-22
			FEET			FEET			FEET				FEET			TON	FEET			TON	FEET			TON	TON
MAIN LANES																									
112+50.00	113+50.00	C.L. HWY. 1B (SB) 100 FT TRANSITION	100.00	115.50	115.50				35.00	388.89	66.11	66.11									35.00	388.89	220.00	42.78	42.78
113+50.00	115+00.00	C.L. HWY. 1B (SB) NOTCH LT.	150.00	122.50	183.75	3.38	56.33	2.82				2.82	1.88	31.33	330.00	5.17	1.50	25.00	220.00	2.75	36.00	600.00	220.00	66.00	68.75
115+00.00	117+96.50	C.L. HWY. 1B (SB) FULL DEPTH	296.50	234.25	694.55	48.71	1604.72	80.24				80.24	24.46	805.82	330.00	132.96	24.25	798.90	220.00	87.88	36.00	1186.00	220.00	130.46	218.34
119+39.50	123+00.00	C.L. HWY. 1B (SB) FULL DEPTH	360.50	234.25	844.47	48.71	1951.11	97.56				97.56	24.46	979.76	330.00	161.66	24.25	971.35	220.00	106.85	36.00	1442.00	220.00	158.62	265.47
123+00.00	124+10.00	C.L. HWY. 1B (SB) OVERLAY	110.00	110.25	121.28																36.00	440.00	220.00	48.40	48.40
124+10.00	127+60.00	C.L. HWY. 1B (SB) 350 FT TRANSITION	350.00	81.75	286.13																33.00	1283.33	220.00	141.17	141.17
TEMPORARY CROSSOVER																									
10+93.80	12+85.00	TEMP. CROSSOVER NOTCH	191.20	74.00	141.49	6.15	130.65	6.53				6.53	6.15	130.65	330.00	21.56					10.00	212.44	220.00	23.37	23.37
12+85.00	16+02.60	TEMP. CROSSOVER FULL DEPTH	317.60	167.50	531.98	15.29	539.57	26.98				26.98	15.29	539.57	330.00	89.03					25.00	882.22	220.00	97.04	97.04
16+02.60	17+37.96	TEMP. CROSSOVER NOTCH	135.36	147.08	199.09	8.90	462.56	23.13				23.13	8.90	133.86	330.00	22.09					14.75	221.84	220.00	24.40	24.40
ADDITIONAL FOR GUARDRAIL																									
119+14.90	119+58.65	LT. OF C.L. HWY. 1B (SB)	43.75	25.00	10.94																3.50	17.01	220.00	1.87	1.87
119+58.65	121+33.65	LT. OF C.L. HWY. 1B (SB)	175.00	32.00	56.00																4.50	87.50	220.00	9.63	9.63
121+33.65	121+43.65	LT. OF C.L. HWY. 1B (SB)	10.00	39.25	3.93																5.50	6.11	220.00	0.67	0.67
121+43.65	121+76.65	LT. OF C.L. HWY. 1B (SB)	33.00	19.50	6.44																2.75	10.08	220.00	1.11	1.11
119+14.90	119+58.65	RT. OF C.L. HWY. 1B (SB)	43.75	25.00	10.94																3.50	17.01	220.00	1.87	1.87
119+58.65	121+33.65	RT. OF C.L. HWY. 1B (SB)	175.00	32.00	56.00																4.50	87.50	220.00	9.63	9.63
121+33.65	121+43.65	RT. OF C.L. HWY. 1B (SB)	10.00	39.25	3.93																5.50	6.11	220.00	0.67	0.67
121+43.65	121+76.65	RT. OF C.L. HWY. 1B (SB)	33.00	19.50	6.44																2.75	10.08	220.00	1.11	1.11
ADDITIONAL FOR SUPERELEVATION																									
113+50.00	117+96.50	C.L. HWY. 1B (SB)	446.50	90.25	402.97																				
119+39.50	120+31.14	C.L. HWY. 1B (SB)	91.64	56.00	51.32																				
ADDITIONAL FOR LEVELING & RAISING GRADE																									
113+50.00	115+00.00	C.L. HWY. 1B (SB)	150.00			27.00	450.00	22.50	27.00	450.00	76.50	99.00	27.00	450.00	660.00	148.50	27.00	450.00	220.00	49.50					49.50
123+00.00	124+10.00	C.L. HWY. 1B (SB)	110.00			30.00	366.67	18.33	30.00	366.67	62.33	80.66	30.00	366.67	890.00	163.17	30.00	366.67	220.00	40.33					40.33
124+10.00	127+60.00	C.L. HWY. 1B (SB) 350 FT TRANSITION	350.00			30.00	1166.67	58.33	30.00	1166.67	198.33	256.66					30.00	1166.67	280.00	163.33					163.33
TOTALS:					**3727.15**		**6728.28**	**336.42**		**2372.23**	**403.27**	**739.69**		**3437.66**		**744.14**		**3778.59**		**450.64**		**6898.12**		**758.80**	**1209.44**

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.7% MIN. AGGR.....5.3% ASPHALT BINDER
ACHM BINDER COURSE (1").....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-400-1 FOR THE RESIDUAL ASPHALT APPLICATION RATES.

Leonard.Speed 2/9/2021 12:52:43 PM
WORKSPACE: ARDOT
C:\Users\Leonard.Speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed@mbakerintl.com\dms440\
REVISED DATE: $$REVDATE$$
c:\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed@mbakerintl.com\dms440\RI0702_08_QTY_01.dgn

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.		110702	28	53
				(1)	07496 - QUANTITIES - 61756			

SCHEDULE OF BRIDGE QUANTITIES - JOB 110702

BRIDGE NUMBER	NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NUMBER	205	801	SS & 802	SP, SS & 802	803	SS & 804	SS & 804	SS & 805	SS & 805	SP, SS & 807	812	816	816
			ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)	UNCLASSIFIED EXCAVATION FOR STRUCTURES -BRIDGE	CLASS S CONCRETE-BRIDGE	CLASS S(AE) CONCRETE-BRIDGE	CLASS 1 PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL-BRIDGE (GRADE 60)	EPOXY COATED REINFORCING STEEL (GRADE 60)	STEEL SHELL PILING (18" DIAMETER)	PREBORING	STRUCTURAL STEEL IN BEAM SPANS (A709, GR. 50W)	BRIDGE NAME PLATE (TYPE D)	DUMPED RIPRAP	FILTER BLANKET
			UNIT	LUMP SUM	CU. YD.	CU. YD.	CU. YD.	GAL.	POUND	POUND	LIN. FT.	LIN. FT.	POUND	EACH	CU. YD.	SQ. YD.
07496	HIGHWAY 1B OVER CANDY CREEK	END BENT NO. 1			14	14.50			2,690	437	410	50	342		77	139
		END BENT NO. 2			9	14.50			2,690	437	450	50	342		115	214
		69'-0" INTEGRAL W-BEAM SPAN					136.10	7.5		28,476			75,876	1		
		EXIST. BRIDGE NO. M0030		1												
		TOTALS FOR JOB NO. 110702		1	23	29.00	136.10	7.5	5,380	29,350	860	100	76,560	1	192	353

STATE OF ARKANSAS
LICENSED
PROFESSIONAL
ENGINEER
No.19149
LUKE POTTHAST

02-19-2021

BRIDGE ENGINEER
PRINT DATE: 2/19/2021

SCHEDULE OF BRIDGE QUANTITIES
HIGHWAY 1B OVER CANDY CREEK
HWY. 1B STR. & APPRS. (S)
ST. FRANCIS COUNTY
ROUTE 1B SECTION 11B

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: MKL DATE: 07/2020 FILENAME: B110702x1_Qx1.dgn
CHECKED BY: SFH DATE: 07/2020
DESIGNED BY: -- DATE: -- SCALE: No Scale
BRIDGE NO. 07496 DRAWING NO. 61756

Leonard.Speed 2/19/2021 12:52:46 PM
WORKSPACE: ARDOT
c:\users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-d6\leonard.speed@mbakerintl.com\dms14390\B110702X1_QX1.dgn
REVISED DATE:

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.		II0702	29	53

(2) SUMMARY OF QUANTITIES AND REVISIONS

SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM	QUANTITY	UNIT
201	CLEARING	23	STATION
201	GRUBBING	23	STATION
202	REMOVAL AND DISPOSAL OF GUARDRAIL	402	LIN. FT.
SS & 210	UNCLASSIFIED EXCAVATION	1526	CU. YD.
210	COMPACTED EMBANKMENT	10682	CU. YD.
SP & 210	SOIL STABILIZATION	200	TON
SS & 303	AGGREGATE BASE COURSE (CLASS 7)	4220	TON
SS & 401	TACK COAT	750	GAL.
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	712	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")	32	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	1145	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")	64	TON
412	COLD MILLING ASPHALT PAVEMENT	722	SQ. YD.
SP, SS, & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC	5	TON
SP, SS, & 415	ACHM PATCHING OF EXISTING ROADWAY	10	TON
504	APPROACH SLABS	98.30	CU. YD.
504	APPROACH GUTTERS	49.62	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	336	LIN. FT.
SS & 604	SIGNS	1263	SQ. FT.
SS & 604	BARRICADES	128	LIN. FT.
SS & 604	TRAFFIC DRUMS	238	EACH
604	CONSTRUCTION PAVEMENT MARKINGS	11164	LIN. FT.
604	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	256	LIN. FT.
604	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	9877	LIN. FT.
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS	5840	LIN. FT.
SS & 604	ADVANCE WARNING ARROW PANEL	120	DAY
SS & 604	VERTICAL PANELS	12	EACH
606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	996	LIN. FT.
606	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	2	EACH
606	SELECTED PIPE BEDDING	90	CU. YD.
SS & 609	DROP INLETS (TYPE RM)	4	EACH
SS & 611	4" PIPE UNDERDRAINS	500	LIN. FT.
SS & 611	UNDERDRAIN OUTLET PROTECTORS	5	EACH
SS & 617	GUARDRAIL (TYPE A)	300	LIN. FT.
SS & 617	GUARDRAIL TERMINAL (TYPE 2)	2	EACH
SS & 617	THRIE BEAM GUARDRAIL TERMINAL	2	EACH
620	LIME	9	TON
620	SEEDING	4.25	ACRE
SS & 620	MULCH COVER	22.75	ACRE
620	WATER	811.6	M. GAL.
621	TEMPORARY SEEDING	18.50	ACRE
621	SILT FENCE	2035	LIN. FT.
621	SAND BAG DITCH CHECKS	88	BAG
621	SEDIMENT BASIN	826	CU. YD.
621	OBLITERATION OF SEDIMENT BASIN	826	CU. YD.
621	SEDIMENT REMOVAL AND DISPOSAL	902	CU. YD.
621	ROCK DITCH CHECKS	18	CU. YD.
SS & 621	FILTER SOCK (18")	90	LIN. FT.
623	SECOND SEEDING APPLICATION	4.25	ACRE
624	SOLID SODDING	56	SQ. YD.
635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
642	RUMBLE STRIPS IN ASPHALT SHOULDERS	3020	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING WHITE (6")	3621	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING YELLOW (6")	6169	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)	164	EACH
SS & 804	REINFORCING STEEL-ROADWAY (GRADE 60)	14238	POUND
	STRUCTURES OVER 20' SPAN		
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)	1.00	LUMP SUM
636	BRIDGE CONSTRUCTION CONTROL	1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	23	CU. YD.
SS & 802	CLASS S CONCRETE-BRIDGE	29.00	CU. YD.
SP, SS, & 802	CLASS S(AE) CONCRETE-BRIDGE	136.10	CU. YD.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT	7.5	GAL.
SS & 804	REINFORCING STEEL-BRIDGE (GRADE 60)	5380	POUND
SS & 804	EPOXY COATED REINFORCING STEEL (GRADE 60)	29350	POUND
SS & 805	STEEL SHELL PILING (18" DIAMETER)	860	LIN. FT.
SS & 805	PREBORING	100	LIN. FT.
SP, SS, & 807	STRUCTURAL STEEL IN BEAM SPANS (A709, GR. 50W)	76560	POUND
812	BRIDGE NAME PLATE (TYPE D)	1	EACH
816	FILTER BLANKET	353	SQ. YD.
816	DUMPED RIPRAP	192	CU. YD.

REVISIONS

DATE	REVISION	SHEET NUMBER

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER

3-1-2021

LandonMiller 3/1/2021 4:36:38 PM
WORKSPACE: ARDOT
C:\Users\landon.miller\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\landon.miller@mbakerintl.com\dms1440\RII0702_08_QTY_01.dgn
REVISED DATE: $$REVDATE$$

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.		II0702	30	53
				(2)	SURVEY CONTROL DETAILS			

SURVEY CONTROL COORDINATES
Project Name: s110702
Date: 1/22/2019
Coordinate System: ARKANSAS STATE PLANE - NORTH ZONE BASED ON GPS CONTROL, 680004 - 680004A PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elevation	Feature	Description
1	227373.8209	1676048.2968	233.67	CTL	STD. ARDOT CAP STAMPED PN:1
2	227646.7301	1676625.8894	235.17	CTL	STD. ARDOT CAP STAMPED PN:2
3	228389.1829	1677368.1599	239.21	CTL	STD. ARDOT CAP STAMPED PN:3
4	229190.9835	1677436.3796	239.78	CTL	STD. ARDOT CAP STAMPED PN:4
5	229873.3853	1677475.6431	234.75	CTL	STD. ARDOT CAP STAMPED PN:5
6	230460.5123	1677466.0030	234.72	CTL	STD. ARDOT CAP STAMPED PN:6
100	224654.9168	1674721.1306	226.73	GPS	ARDOT GPS MON 680004
101	222950.6361	1674724.2477	226.21	GPS	ARDOT GPS MON 680004A
900	225543.5636	1674797.5595	226.05	TBM	CHIS SQ CUT IN CTR HW
901	229121.5811	1677481.0262	243.74	TBM	ARDOT TBM CAP IN BR ARDOT #680051
902	227474.4395	1676159.1121	233.13	TBM	CHISELED SQ SE CORNER OF CONC HW
903	230212.3398	1677247.2105	233.83	TBM	CHISELED SQ IN SW FOOTING PP

---

*Note - Rebar and Cap - Standard - 5/8" Rebar with 2" Aluminum Cap stamped
*(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
ALL DISTANCES ARE GROUND.
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT.
A PROJECT CAF OF 0.999988581 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 s110702gi.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: 680004 - 680004A
CONVERGENCE ANGLE: 01-42-32 RIGHT AT PN:4 LT: N34-57-24 LG: W090-46-53
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

ALIGNMENT NAME: HWY. 1B (SB)

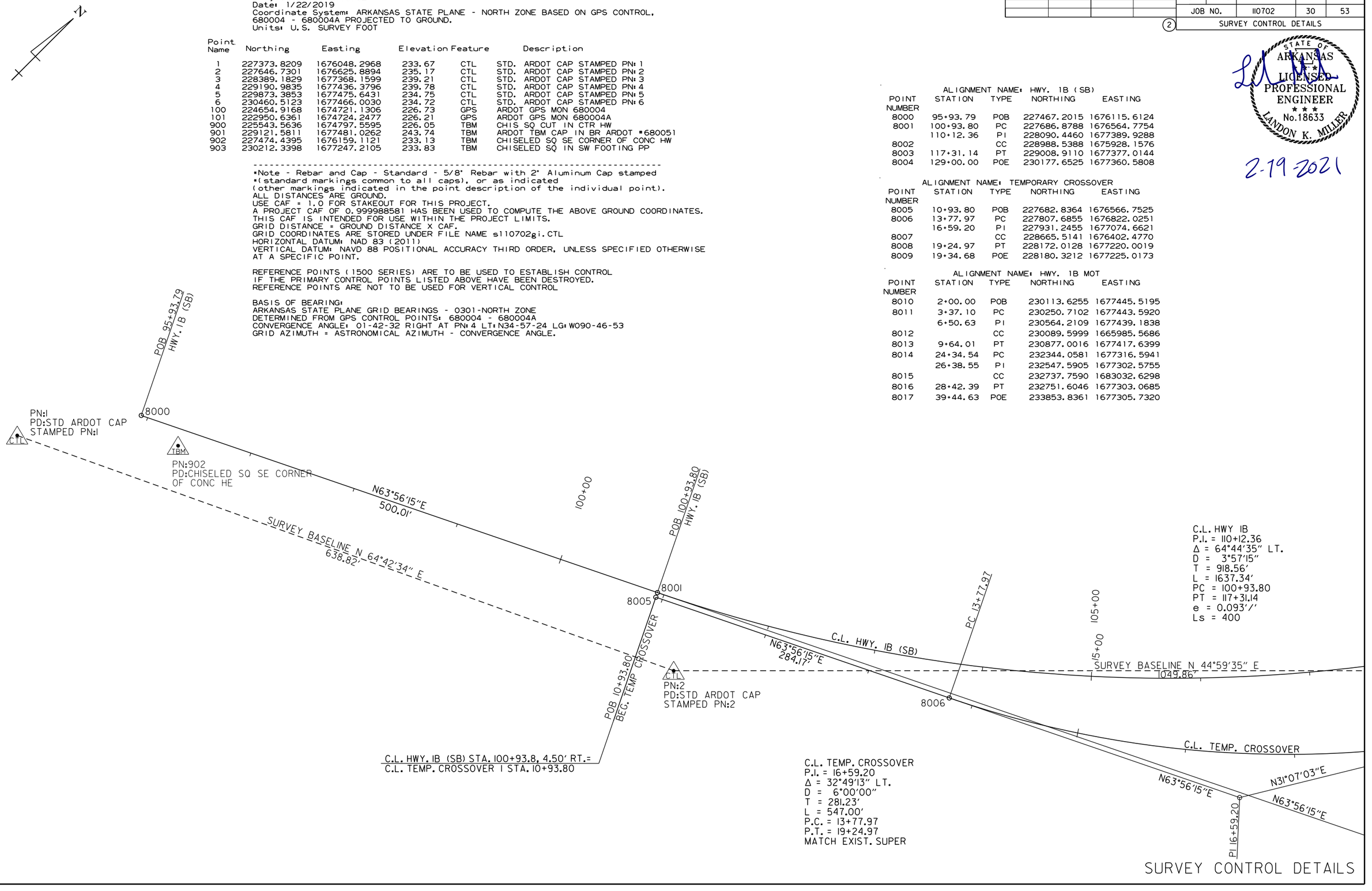
POINT NUMBER	STATION	TYPE	NORTHING	EASTING
8000	95+93.79	POB	227467.2015	1676115.6124
8001	100+93.80	PC	227686.8788	1676564.7754
	110+12.36	PI	228090.4460	1677389.9288
8002		CC	228988.5388	1675928.1576
8003	117+31.14	PT	229008.9110	1677377.0144
8004	129+00.00	POE	230177.6525	1677360.5808

ALIGNMENT NAME: TEMPORARY CROSSOVER

POINT NUMBER	STATION	TYPE	NORTHING	EASTING
8005	10+93.80	POB	227682.8364	1676566.7525
8006	13+77.97	PC	227807.6855	1676822.0251
	16+59.20	PI	227931.2455	1677074.6621
8007		CC	228665.5141	1676402.4770
8008	19+24.97	PT	228172.0128	1677220.0019
8009	19+34.68	POE	228180.3212	1677225.0173

ALIGNMENT NAME: HWY. 1B MOT

POINT NUMBER	STATION	TYPE	NORTHING	EASTING
8010	2+00.00	POB	230113.6255	1677445.5195
8011	3+37.10	PC	230250.7102	1677443.5920
	6+50.63	PI	230564.2109	1677439.1838
8012		CC	230089.5999	1665985.5686
8013	9+64.01	PT	230877.0016	1677417.6399
8014	24+34.54	PC	232344.0581	1677316.5941
	26+38.55	PI	232547.5905	1677302.5755
8015		CC	232737.7590	1683032.6298
8016	28+42.39	PT	232751.6046	1677303.0685
8017	39+44.63	POE	233853.8361	1677305.7320



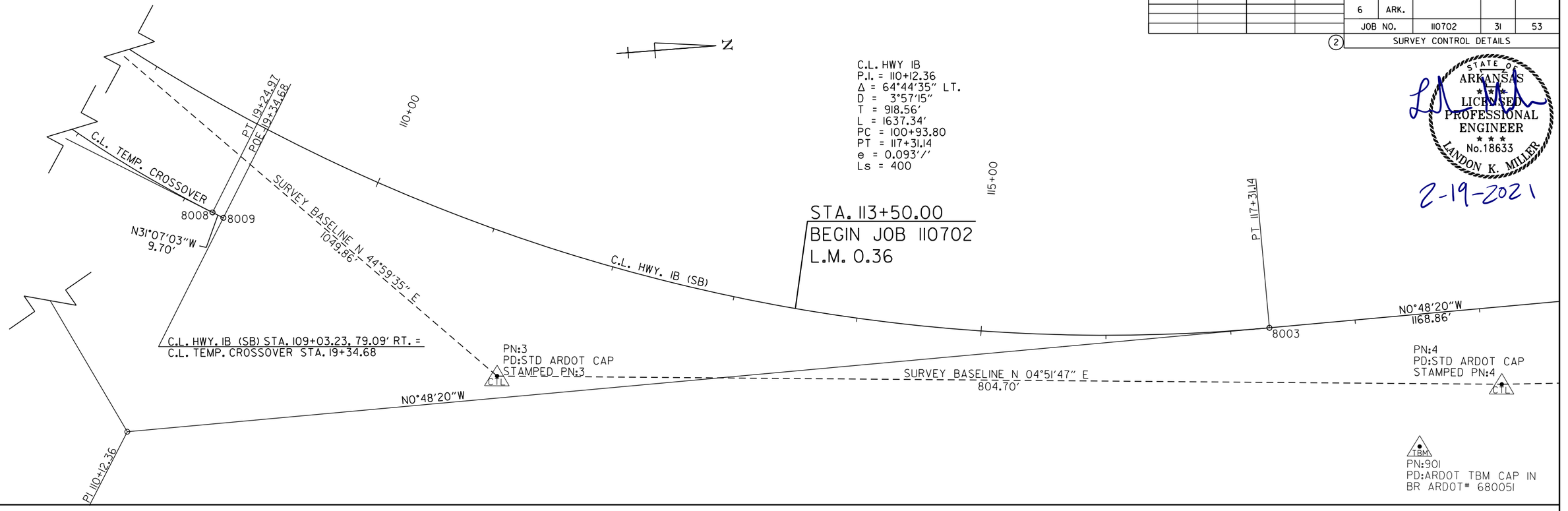
SURVEY CONTROL DETAILS

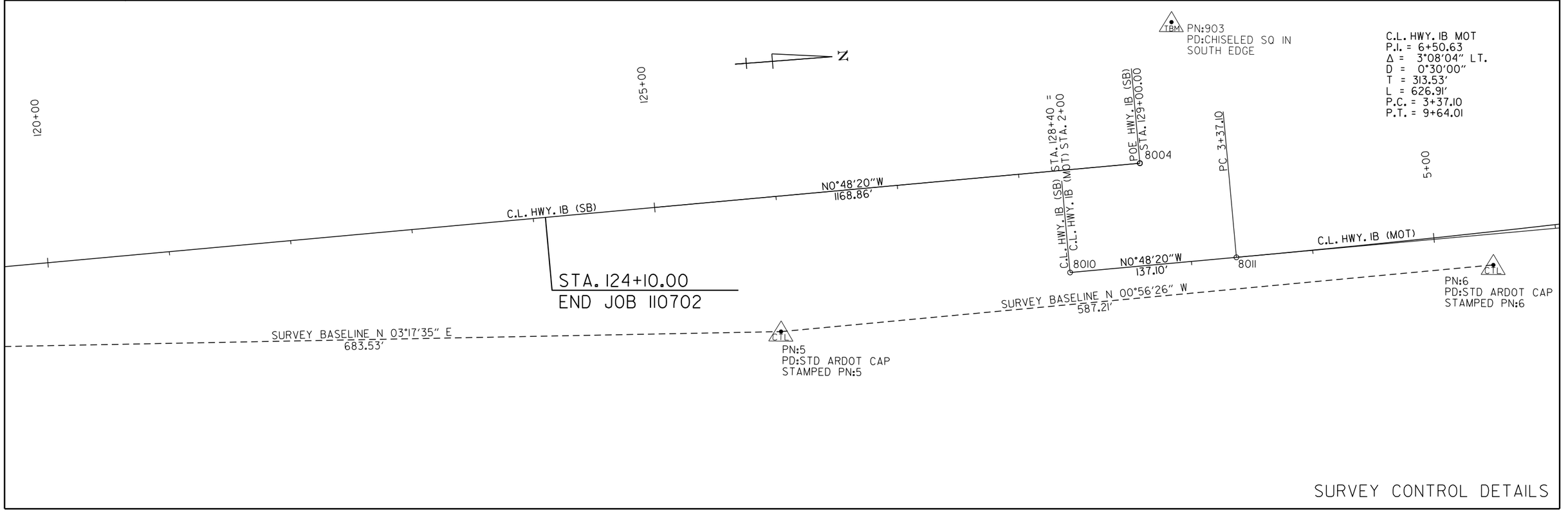
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER
2-19-2021

LeonardSpeed 2/19/2021 12:52:53 PM
WORKSPACE: ARDOT
c:\users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed@mbakerintl.com\dms1440\RII0702_09_SC_01.dgn
REVISED DATE: $$REVDATE$$

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.		110702	31	53
				(2)	SURVEY CONTROL DETAILS			

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER
2-19-2021





SURVEY CONTROL DETAILS

Leonard.Speed 2/19/2021 12:52:59 PM
WORKSPACE: ARDOT
C:\Users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed@mbakerintl.com\dms1440\RI10702_09_SC_02.dgn
REVISED DATE: $$REVDATE$$

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.		110702	32	53

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER

2-19-2021

TBM
PN:903
PD:CHISELED SQ IN
SOUTH EDGE

POE HWY. IB (SB)
STA. 129+00.00
8004

C.L. HWY.
IB (SB)

PC 3+37.10

8011

SURVEY BASELINE N 00°56'26" W
587.21'

PN:6
PD:STD ARDOT CAP
STAMPED PN:6

PI 6+50.63

C.L. HWY. IB (MOT)
P.I. = 6+50.63
Δ = 3°08'04" LT.
D = 0°30'00"
T = 313.53'
L = 626.91'
P.C. = 3+37.10
P.T. = 9+64.01

N0°48'20"W

C.L. HWY. IB (MOT)
N3°56'24"W

PT 9+64.01

8013

N03°56'24"W
1470.53'

5+00
10+00
15+00
20+00
25+00

N

N03°56'24"W
1470.53'

C.L. HWY. IB (MOT)

8014

N3°56'24"W

PI 26+38.55

N0°08'18"E

PC 24+34.54

C.L. HWY. IB MOT
P.I. = 26+38.55
Δ = 4°04'43" RT.
D = 1°00'00"
T = 204.01'
L = 407.86'
P.C. = 24+34.54
P.T. = 28+42.39

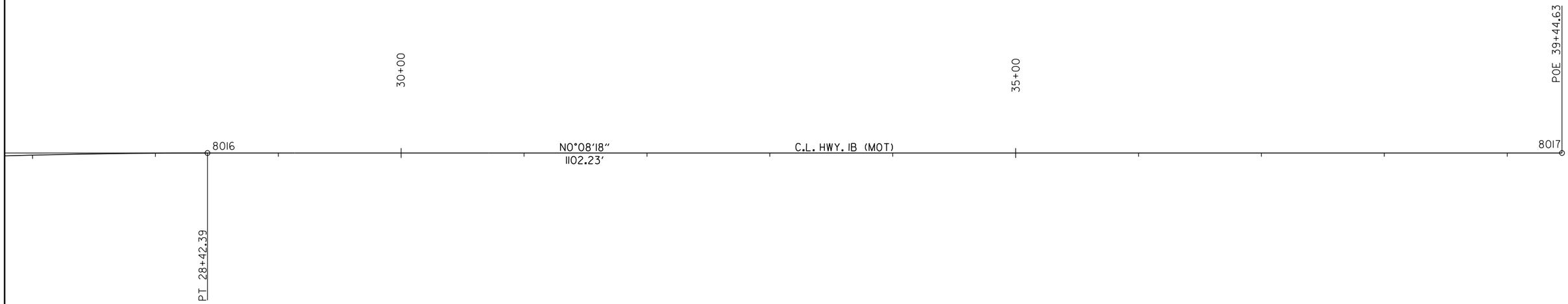
SURVEY CONTROL DETAILS

Leonard.Speed 2/19/2021 12:53:03 PM
WORKSPACE: ARDOT
C:\Users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed@mbakerintl.com\dms8440\RI10702_09_SC_03.dgn
REVISED DATE: $$REVDATE$$

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.		II0702	33	53
				(2)	SURVEY CONTROL DETAILS			

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER

2-19-2021



C.L. HWY. IB MOT
P.I. = 26+38.55
Δ = 4°04'43" RT.
D = 1°00'00"
T = 204.01'
L = 407.86'
P.C. = 24+34.54
P.T. = 28+42.39

SURVEY CONTROL DETAILS

LeonardSpeed 2/9/2021 12:53:06 PM
WORKSPACE: ARDOT
C:\Users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com.mb-us-pw-06\leonard.speed\mbakerintl.com\dms1440\RII0702_09_SC_04.dgn
REVISED DATE: $$REVDATE$$

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.		110702	34	53
(2) PLAN AND PROFILE SHEETS				

LEGEND

PAVEMENT TRANSITION

REMOVAL & DISPOSAL OF GUARDRAIL

STA. 119+06 TO STA. 121+07 LT. OF C.L. HWY IB (SB) = 201 LIN. FT
STA. 119+07 TO STA. 121+08 RT. OF C.L. HWY IB (SB) = 201 LIN. FT

25' NATURAL BUFFER TO "STORM WATER POLLUTION PREVENTION PLAN" SPEC. PROV.

CANDY CREEK

C.L. HWY. IB
P.I. = 110+12.36
Δ = 64°44'35" LT.
D = 3°57'15"
T = 918.56'
L = 1637.34'
P.C. = 100+93.80
P.T. = 117+31.14
e = 0.093'/'
Ls = 400'

STA. 118+50 - STA. 118+95: EXISTING BR. NO. M0030
40' X 27' BRIDGE WITH 18" CONC. SLABS (2 SPANS)
OVERLAID WITH A 14" ACHM SURFACE
SUPPORTED BY CONC. PIER WALL AND ABUTMENTS.
(THE GUARDRAIL (LT. & RT.) IS MOUNTED ON TREATED SIDE TIMBERS.)
REMOVE AS EXISTING STRUCTURE (SITE NO. 1) = 1.00 LUMP SUM

STA. 118+44 - STA. 119+01: EXISTING BR. NO. 06470
57'-1" X 40'-10" BRIDGE WITH STEEL I-BEAM SPAN
SUPPORTED BY REINFORCED CONCRETE ABUTMENTS ON CONCRETE
FILLED STEEL SHELL PILES - RETAIN

STA 118+33.00 BRIDGE END
BRIDGE NO. 07496 OVER CANDY CREEK
69'-0" INTEGRAL W-BEAM SPAN
38'-0" CLEAR ROADWAY
70'-0" BRIDGE LENGTH
STA 119+03.00 BRIDGE END

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 18633
LANDON K. MILLER
2-19-2021

100' TRANSITION MATCH EXISTING

EXIST. R/W
PROP. R/W
CONST. LIMITS
C.L. HWY. IB (SB)
HWY. IB (NB)
N0°48'20"W

STA. 113+50.00
BEGIN JOB 110702
L.M. 0.36

STA. 124+10.00
END JOB 110702

350' TRANSITION TO MATCH EXISTING

STA. 117+96.50
STA. 118+33.00 BRIDGE END
STA. 119+03.00 BRIDGE END
STA. 119+39.50

STA. 114+40.00 45.00' RT. CONSTRUCT
DROP INLET H = 3'-0"
WITH 24" X 212' PIPE OUTLET
TO DROP INLET @ STA. 116+50.00 RT.
TYPE RM DROP INLET = 4' X 4'
24" R.C. PIPE CULVERT (CLASS III)
(TYPE 3 BEDDING) = 212 LIN. FT.

STA. 116+50.00 49.00' RT. CONSTRUCT
DROP INLET H = 6'-4"
WITH 24" X 194' PIPE OUTLET
WITH 24" FES @ OUTLET
TYPE RM DROP INLET = 4' X 4'
24" R.C. PIPE CULVERT (CLASS III)
(TYPE 3 BEDDING) = 194 LIN. FT.
24" FES = 1 EACH

STA. 121+80.00 44.00' RT. CONSTRUCT
DROP INLET H = 6'-6"
WITH 24" X 294' PIPE OUTLET
WITH 24" FES @ OUTLET
TYPE RM DROP INLET = 4' X 4'
24" R.C. PIPE CULVERT (CLASS III)
(TYPE 3 BEDDING) = 294 LIN. FT.
24" FES = 1 EACH

STA. 124+80.00 38.00' RT. CONSTRUCT
DROP INLET H = 3'-0"
WITH 24" X 296' PIPE OUTLET
TO DROP INLET @ STA. 121+80.00 RT.
TYPE RM DROP INLET = 4' X 4'
24" R.C. PIPE CULVERT (CLASS III)
(TYPE 3 BEDDING) = 296 LIN. FT.

HWY. IB

REFER TO SURVERY CONTROL DETAILS FOR HORIZONTAL & VERTICAL CONTROLS.

STA. 113+50.00 MAX SUPERELEVATION (0.070'/') (MATCH EXIST.)
STA. 117+57.17 MAX SUPERELEVATION (0.070'/')
STA. 120+31.14 END SUPERELEVATION

STA. 124+10.00 BEGIN C.L. TRANSITION (-0.020'/')
STA. 127+60.00 END C.L. TRANSTION (N.C.) (MATCH EXIST.)

	GUARDRAIL TYPE A	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)
STA. 119+14.90 TO STA 121+33.65 LT. OF C.L. HWY IB =	150 LIN. FT.	1 EACH	1 EACH
STA. 119+14.90 TO STA 121+33.65 RT. OF C.L. HWY IB =	150 LIN. FT.	1 EACH	1 EACH

STREAM	STATION	STREAM TYPE	TOP OF CHANNEL ELEV.
CANDY CREEK	118+45-118+75	INTERMITTENT	228 FT. MSL

PROFILE GRADE
EXISTING GROUND

PVC 113+50.00 ELEV. 237.35
VC=200.00' K=136 e=0.37'
PVT 115+50.00 ELEV. 239.42
PVI 114+50.00 ELEV. 237.65
PVC 115+90.00 ELEV. 240.13
PVI 118+65.00 ELEV. 245.00
VC=550.00' K=153 e=-2.47'
PVC 121+70.00 ELEV. 239.42
PVI 121+40.00 ELEV. 239.97
VC=240.00' K=138 e=0.52'
PVI 122+90.00 ELEV. 237.22
PVT 124+10.00 ELEV. 237.11

112+50.00
0.24% (EXIST.)
0.30%
1.77%
-1.83%
0.09%
0.16% LT. DT. GR.

24" X 212' @ 0.25%
24" X 194' @ 0.62%
24" X 294' @ 0.22%
24" X 296' @ 0.20%

TOP=233.68
FL OUT=230.68
TOP=236.31
FL IN=230.14
FL OUT=229.98
FL OUT=228.78
FL OUT=227.49
TOP=234.65
FL IN=228.31
FL OUT=228.15
TOP=231.90
FL OUT=228.90

050 DESIGN H.W. Elev. 234.7
LT. 231.00 +78.00
LT. 231.80 +10.00

100' TRANSITION TO MATCH EXISTING
350' TRANSITION TO MATCH EXISTING

280 270 260 250 240 230 220 210 200 190

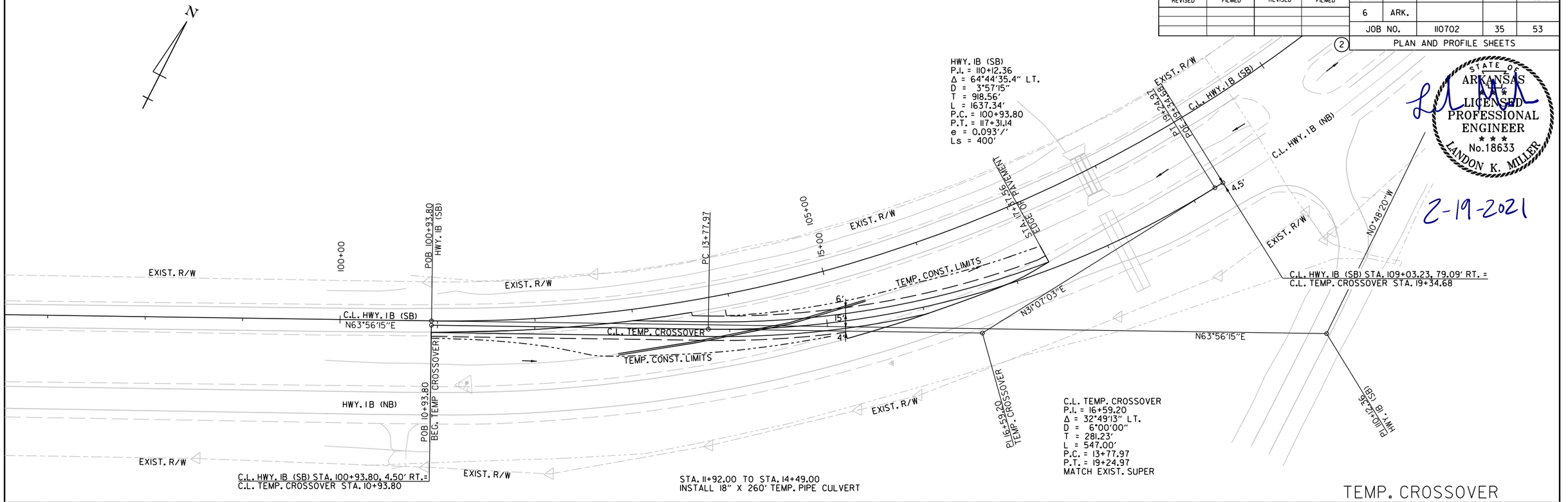
113+00 114+00 115+00 116+00 117+00 118+00 119+00 120+00 121+00 122+00 123+00 124+00 125+00 126+00 127+00 128+00

Leonard.Speed 2/19/2021 12:53:11 PM
WORKSPACE: ARDOT
C:\Users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed@mbakerintl.com\dms1401\RI10702_10_PP_01.dgn
REVISED DATE: $$REVDATE$$

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.		110702	35	53
				2	PLAN AND PROFILE SHEETS			

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.18633
LANDON K. MILLER

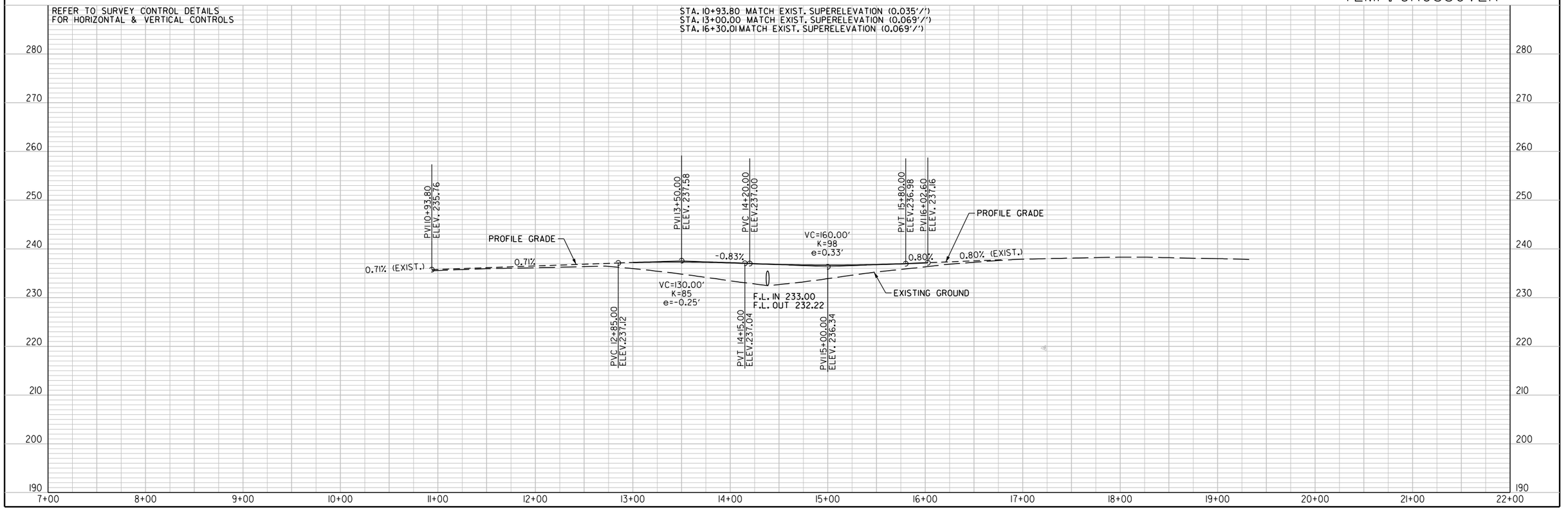
2-19-2021



TEMP. CROSSOVER

REFER TO SURVEY CONTROL DETAILS
FOR HORIZONTAL & VERTICAL CONTROLS

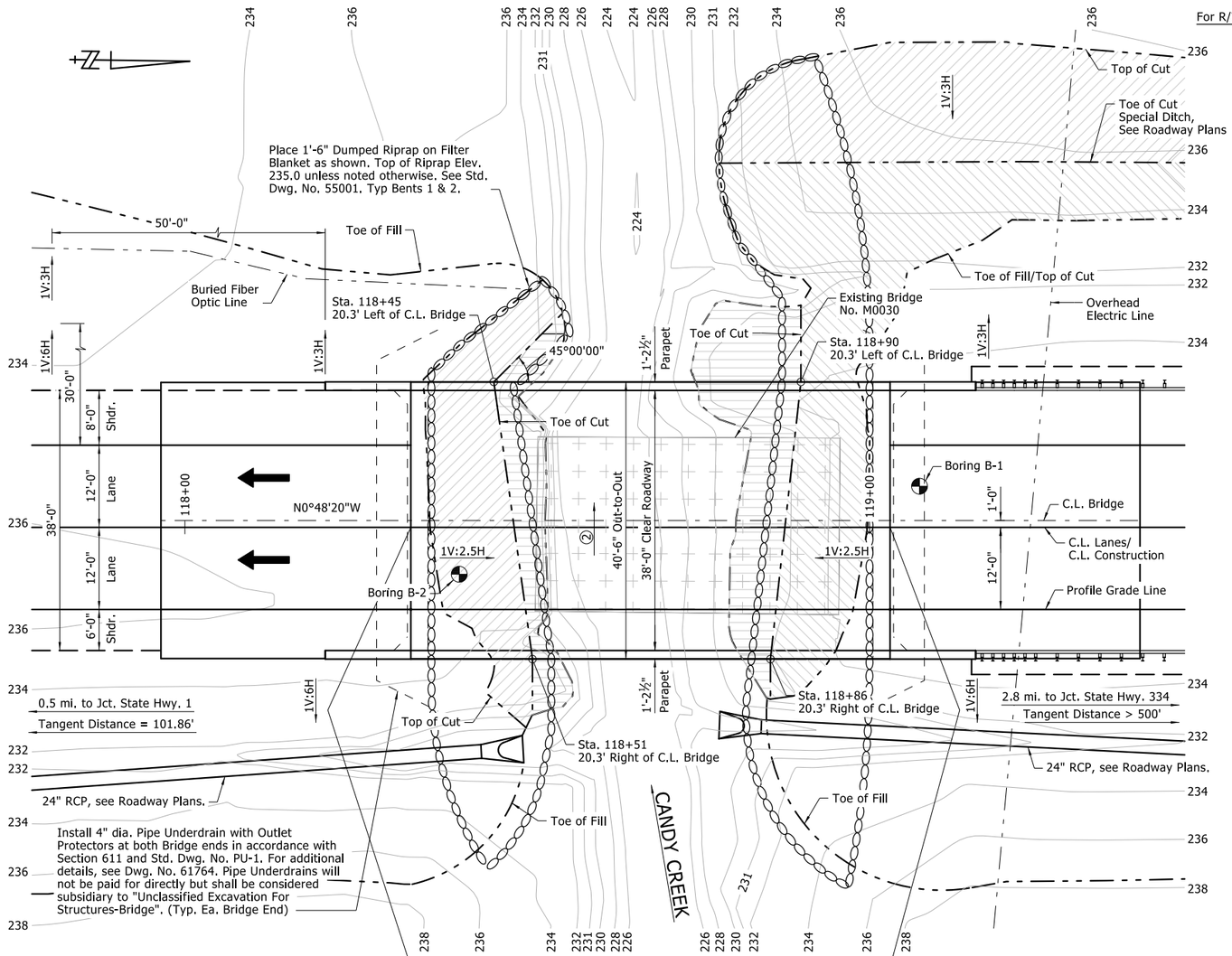
STA. 10+93.80 MATCH EXIST. SUPERELEVATION (0.035'/')
STA. 13+00.00 MATCH EXIST. SUPERELEVATION (0.069'/')
STA. 16+30.01 MATCH EXIST. SUPERELEVATION (0.069'/')



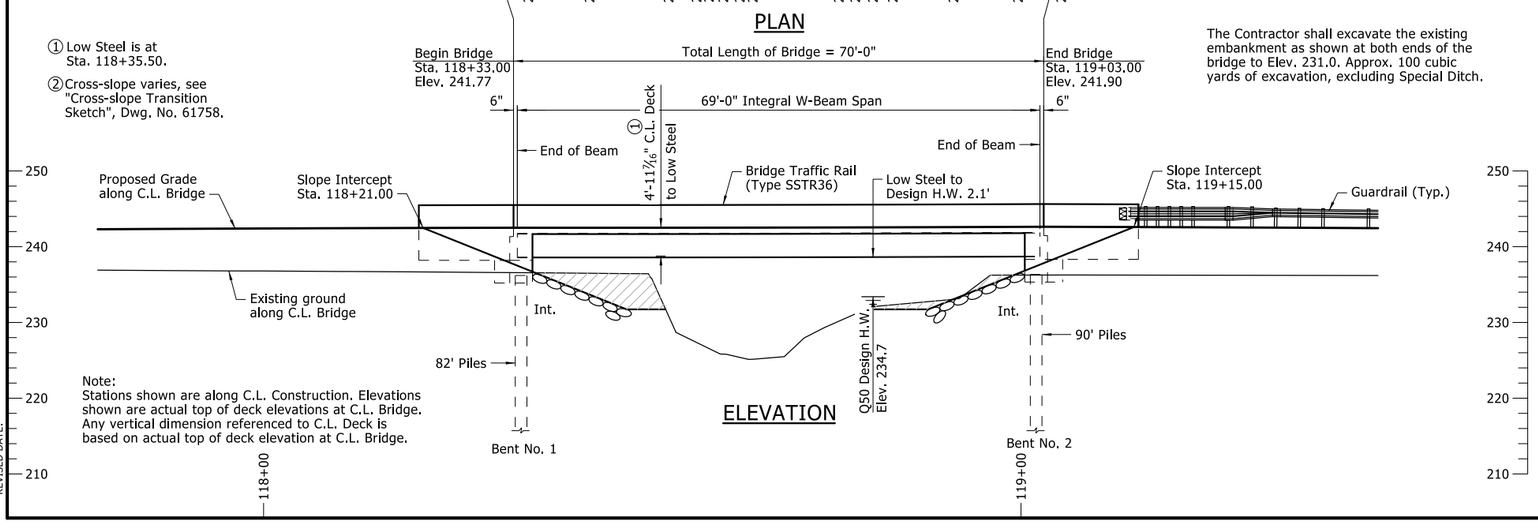
LeonardSpeed 2/19/2021 12:53:15 PM
WORKSPACE: ARDOT
C:\Users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed@mbakerintl.com\dms8401\RI0702_10_PP_02.dgn
REVISED DATE: $$REVDATE$$

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.		110702	36	53
				(1)	07496 - LAYOUT - 61757			

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



PLAN



ELEVATION

The Contractor shall excavate the existing embankment as shown at both ends of the bridge to Elev. 231.0. Approx. 100 cubic yards of excavation, excluding Special Ditch.

GENERAL NOTES

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

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014) 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.

LIVE LOADING: HL-93

SEISMIC ZONE: 4 S_{D1}: 0.558g SITE CLASS: E

SEISMIC OPERATIONAL CLASSIFICATION: Other

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (superstructure)	f'c=4,000psi
Class S Concrete (substructure)	f'c=3,500psi
Reinforcing Steel (AASHTO M 31 or M 322, Type A)	fy=60,000psi
Structural Steel (ASTM A709, Gr. 50W)	Fy=50,000psi
Structural Steel (ASTM A709, Gr. 36)	Fy=36,000psi
Structural Steel Pipe (ASTM A252, Gr. 3)	Fy=45,000psi

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

STEEL SHELL PILING: All piling shall be 18" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 296 tons per pile. All piling shall be driven with an approved air, steam, or diesel hammer to a minimum tip elevation of 153.9 Bent 1 and 145.6 Bent 2 or lower. Piling 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 (18" Dia.)".

PREBORING: Preboring is required for all piling at Bents 1 and 2. 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 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 the ultimate bearing capacity determination for piling shall be based on the requirements of Subsection 805.09(b), "Method B - Wave Equation Analysis (WEAP)". It is estimated that the minimum rated hammer energy required to obtain the ultimate bearing capacity for all piles will be 70 ft-kips per blow.

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 1 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)
Details of End Bents	61759-61760
Details of 69'-0" Integral W-Beam Span	61761-61764
Type Special 1 & 2 Approach Gutters	61765
General Notes For Steel Bridge Structures	55006
Details for Steel Bridge Structures	55007
Concrete Filled Steel Shell Piling	55021
Type C1 Approach Slabs	55040C1
Standard Details for Bridge Traffic Rail Type SSTR36	55070

EXISTING BRIDGE: Existing Bridge No. M0030 (Log Mile 0.46) is 27.0' wide (25.9' clear roadway) and 40.0' long and consists of 18" concrete slab with 14" ACHM overlay (2 spans total) supported by concrete pier wall and concrete abutments. 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 temporary crossover alignment is open to traffic, the Contractor shall remove Existing Bridge No. M0030 in accordance with Section 205. All material from the existing bridge shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

Notes:
Use Type C1 Approach Slab (width=24'-0"), Type Special 1 Approach Gutters, and Type Special 2 Approach Gutters at both ends of bridge. See Std. Dwg. No. 55040C1 and Dwg. Nos. 61766 respectively.

For Soil Borings, Hydraulic Data, Vertical Curve Data, and Cross-Slope Transition Sketch, see Dwg. No. 61758.

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No.19149 LUKE POTTHAST

02-19-2021

BRIDGE ENGINEER
PRINT DATE: 2/19/2021

SHEET 1 OF 2
LAYOUT OF BRIDGE
HIGHWAY 1B OVER CANDY CREEK
HWY. 1B STR. & APPRS. (S)
ST. FRANCIS COUNTY
ROUTE 1B SECTION 11B

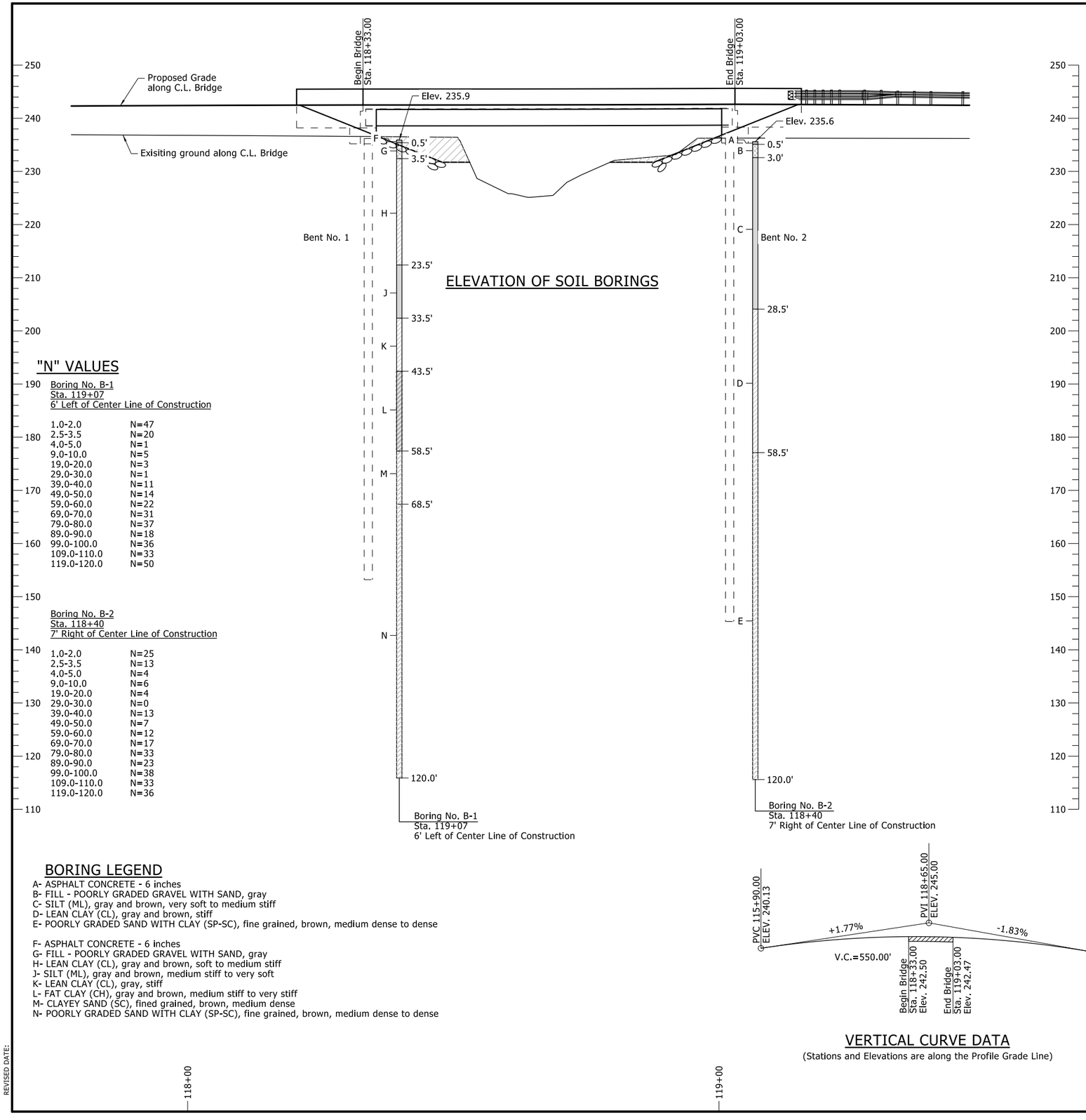
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY:	MKL	DATE:	10/2019	FILENAME: B110702x1_LX1.dgn
CHECKED BY:	SFH	DATE:	02/2020	
DESIGNED BY:	LAP	DATE:	10/2019	SCALE: 1" = 10'
BRIDGE NO.	07496		DRAWING NO.	61757

Leonard.Speed 2/19/2021 12:56:08 PM
WORKSPACE: ARDOT
c:\users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed@mbakerintl.com\dms14390\B110702X1_LX1.dgn
REVISED DATE:

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.		110702	37	53
(1)	07496 - LAYOUT - 61758			



"N" VALUES

Boring No. B-1
Sta. 119+07
6' Left of Center Line of Construction

1.0-2.0	N=47
2.5-3.5	N=20
4.0-5.0	N=1
9.0-10.0	N=5
19.0-20.0	N=3
29.0-30.0	N=1
39.0-40.0	N=11
49.0-50.0	N=14
59.0-60.0	N=22
69.0-70.0	N=31
79.0-80.0	N=37
89.0-90.0	N=18
99.0-100.0	N=36
109.0-110.0	N=33
119.0-120.0	N=50

Boring No. B-2
Sta. 118+40
7' Right of Center Line of Construction

1.0-2.0	N=25
2.5-3.5	N=13
4.0-5.0	N=4
9.0-10.0	N=6
19.0-20.0	N=4
29.0-30.0	N=0
39.0-40.0	N=13
49.0-50.0	N=7
59.0-60.0	N=12
69.0-70.0	N=17
79.0-80.0	N=33
89.0-90.0	N=23
99.0-100.0	N=38
109.0-110.0	N=33
119.0-120.0	N=36

BORING LEGEND

A- ASPHALT CONCRETE - 6 inches
B- FILL - POORLY GRADED GRAVEL WITH SAND, gray
C- SILT (ML), gray and brown, very soft to medium stiff
D- LEAN CLAY (CL), gray and brown, stiff
E- POORLY GRADED SAND WITH CLAY (SP-SC), fine grained, brown, medium dense to dense

F- ASPHALT CONCRETE - 6 inches
G- FILL - POORLY GRADED GRAVEL WITH SAND, gray
H- LEAN CLAY (CL), gray and brown, soft to medium stiff
J- SILT (ML), gray and brown, medium stiff to very soft
K- LEAN CLAY (CL), gray, stiff
L- FAT CLAY (CH), gray and brown, medium stiff to very stiff
M- CLAYEY SAND (SC), fined grained, brown, medium dense
N- POORLY GRADED SAND WITH CLAY (SP-SC), fine grained, brown, medium dense to dense

VERTICAL CURVE DATA

(Stations and Elevations are along the Profile Grade Line)

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	(1) NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	FEET	FEET
Design	50	1,100	234.5	234.7
Base	100	1,250	235.0	235.3
Extreme	500	1,620	236.3	236.4
Overtopping	>500	>500	>500	>500

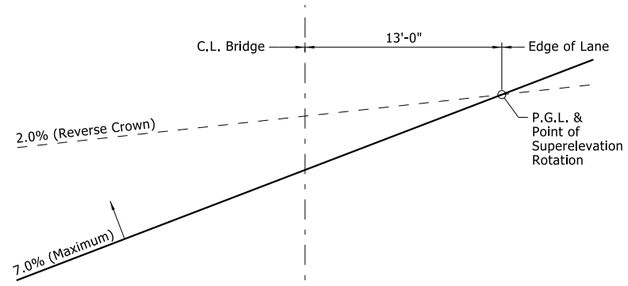
(1) Unconstricted water surface without structure or roadway approaches.

Q100 backwater elevation for existing structure = 235.7 feet.

Proposed Bridge Low Chord Elevation = 236.83 feet at Station 118+35.50.

Drainage area = 2.4 square miles.

Historical H.W. Elev. = Unknown



Full Superelevation (0.070'/') - Sta. 117+57.17
Reverse Crown (0.020'/') - Sta. 120+31.14

CROSS-SLOPE TRANSITION SKETCH

Looking Ahead

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.19149
LUKE POTTHAST

02-19-2021

BRIDGE ENGINEER
PRINT DATE: 2/19/2021

SHEET 2 OF 2
LAYOUT OF BRIDGE
HIGHWAY 1B OVER CANDY CREEK
HWY. 1B STR. & APPRS. (S)
ST. FRANCIS COUNTY
ROUTE 1B SECTION 11B

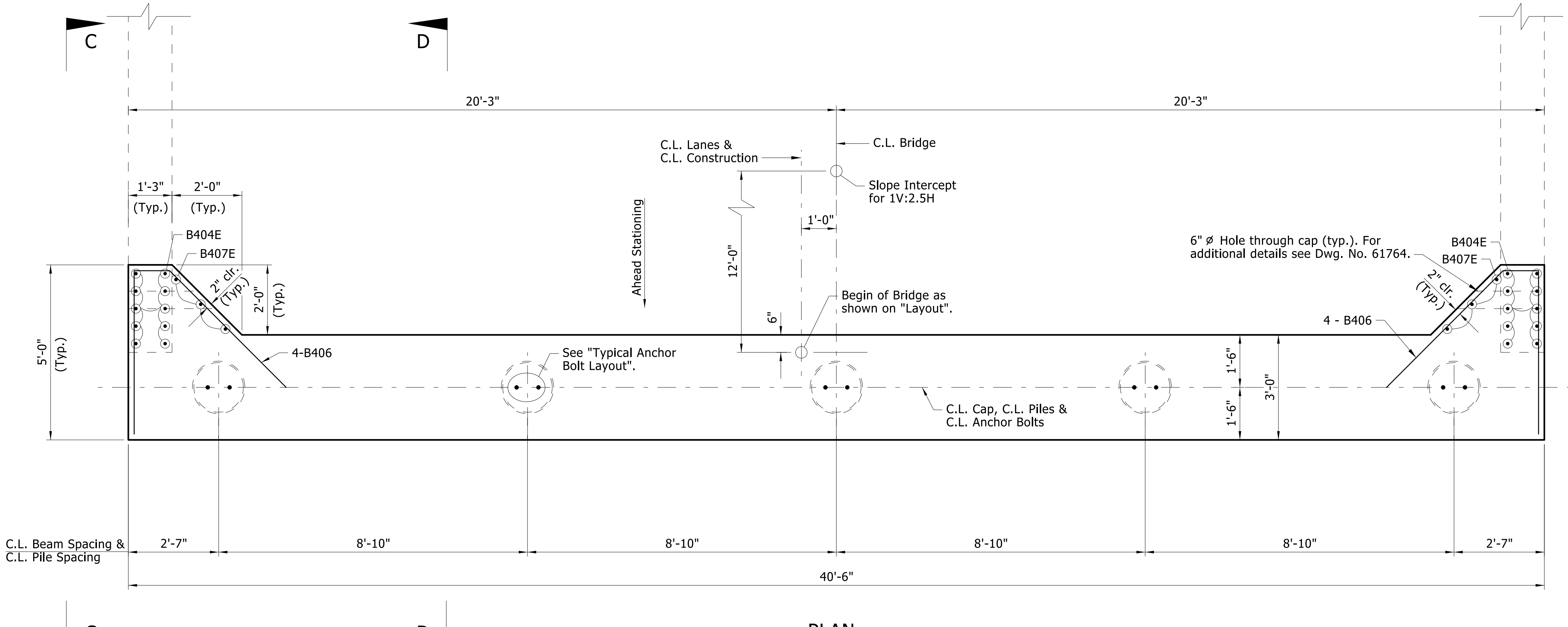
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY:	MKL	DATE:	10/2019	FILENAME:	B110702x1_LX2.dgn
CHECKED BY:	SFH	DATE:	02/2020		
DESIGNED BY:	LAP	DATE:	10/2019	SCALE:	1" = 10'
BRIDGE NO.	07496			DRAWING NO.	61758

Leonard.Speed 2/19/2021 12:56:11 PM
WORKSPACE: ARDOT
c:\users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed@mbakerintl.com\dms14390\B110702X1_LX2.dgn
REVISED DATE:

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.	110702	38	53

07496 - END BENTS - 61759

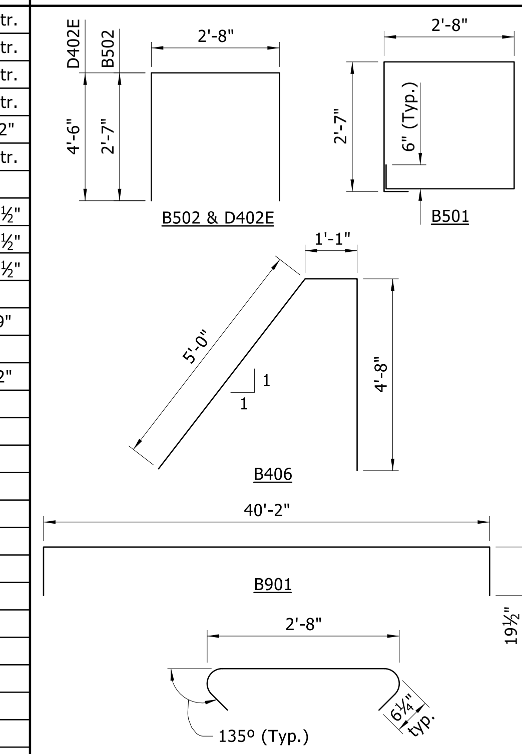


PLAN

Bent 1
½" = 1'-0"

BAR LIST - PER BENT

MARK	NO. REQ'D.	LENGTH	PIN DIA.	BENDING DIAGRAMS Dimensions are out to out of bars.
B401	2	40'-2"	Str.	
B402	16	6'-6"	Str.	
B403	8	1'-3"	Str.	
B404E	20	6'-10"	Str.	
B406	8	10'-8"	2"	
B407E	6	5'-7"	Str.	
B501	42	11'-0"	2½"	
B502	15	7'-8"	2½"	
B503	40	3'-9"	2½"	
B901	12	42'-10"	9"	
D402E	42	11'-6"	2"	



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

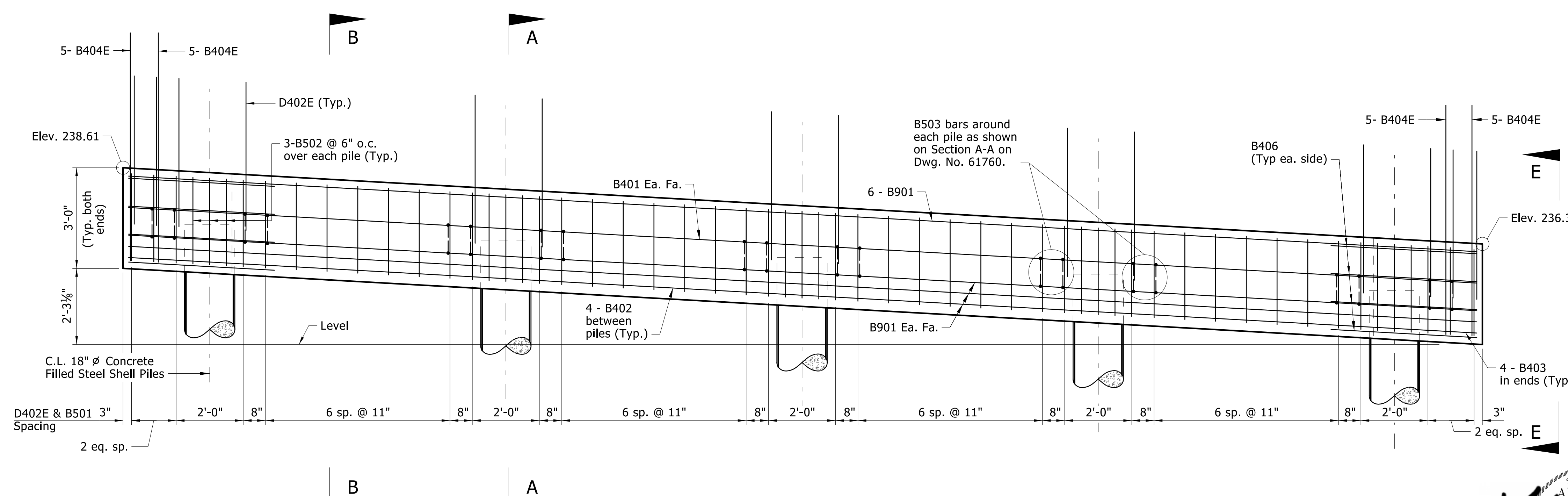
Notes:
For General Notes, see Std. Dwg. No. 55006. For additional information, see Layout.

Granular backfill & pipe underdrain required behind end bent cap. See Dwg. No. 61763.

For Concrete Filled Steel Shell Piles See Std Dwg. 55021.

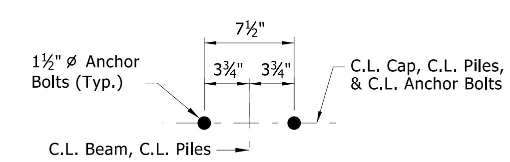
For Sections A-A, Section B-B, and View E-E, see Dwg. No. 61760.

For View C-C and View D-D, see Dwg. No. 61764.



ELEVATION

Bent 1 - Looking Back
½" = 1'-0"



TYPICAL ANCHOR BOLT LAYOUT

No Scale

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No.19149 LUKE POTTHAST

02-19-2021

BRIDGE ENGINEER
PRINT DATE: 2/19/2021

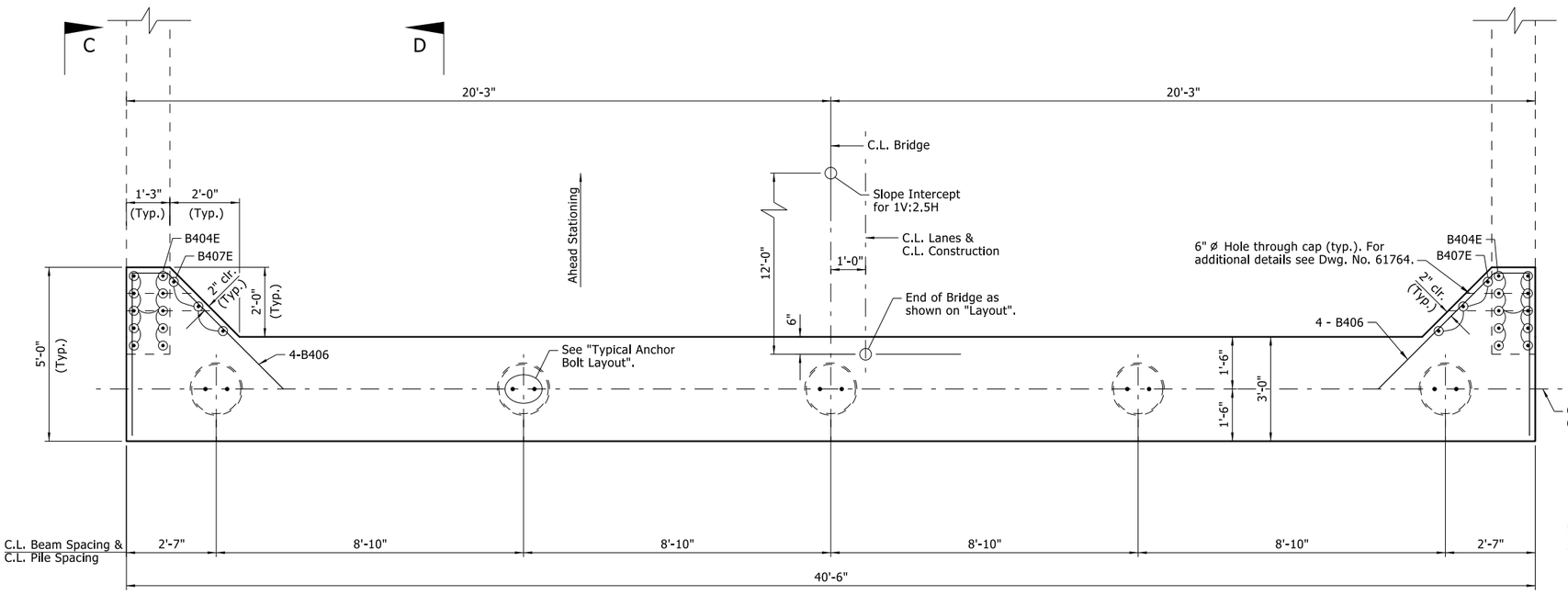
SHEET 1 OF 2
DETAILS OF END BENTS
HIGHWAY 1B OVER CANDY CREEK
ROUTE SECTION
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY:	MKL	DATE:	04/2020	FILENAME:	B110702x1_Ax1.dgn
CHECKED BY:	SFH	DATE:	06/2020		
DESIGNED BY:	LAP	DATE:	04/2020	SCALE:	As Shown
BRIDGE NO.	07496			DRAWING NO.	61759

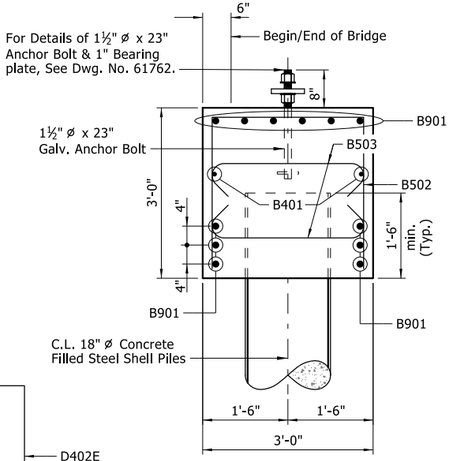
Leonard.Speed 2/19/2021 12:56:13 PM
WORKSPACE: ARDOT
c:\users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed@mbakerintl.com\dms14390\B110702X1_AX1.dgn
REVISED DATE:

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

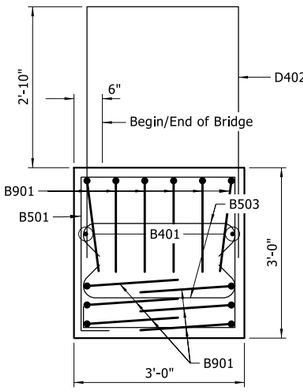
FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		110702	39	53
(1)	07496 - END BENTS - 61760			



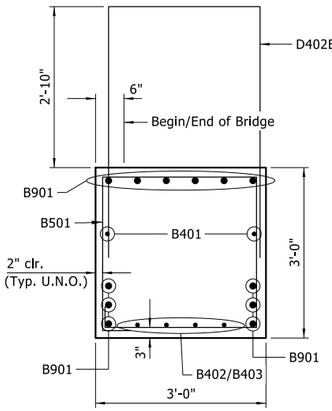
PLAN
Bent 2
½" = 1'-0"



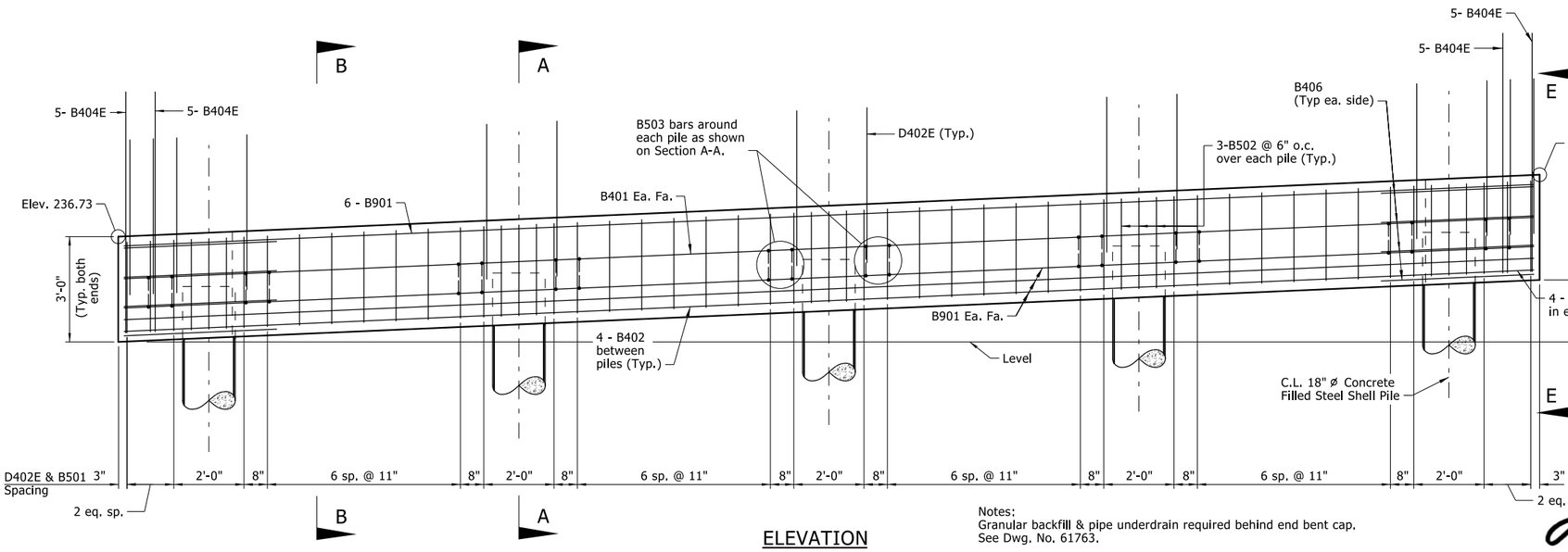
SECTION A-A
¾" = 1'-0"



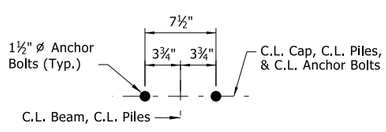
VIEW E-E
¾" = 1'-0"
Showing reinforcing in end of cap.



SECTION B-B
¾" = 1'-0"



ELEVATION
Bent 2 - Looking Ahead
½" = 1'-0"



TYPICAL ANCHOR BOLT LAYOUT
No Scale

Notes:
Granular backfill & pipe underdrain required behind end bent cap. See Dwg. No. 61763.

For Concrete Filled Steel Shell Piles See Std Dwg. 55021.

For View C-C and View D-D, see Dwg. No. 61764.

For details of piles and anchorage, see Std. Dwg. No. 55021.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.19149
LUKE POTTHAST

02-19-2021

BRIDGE ENGINEER
PRINT DATE: 2/19/2021

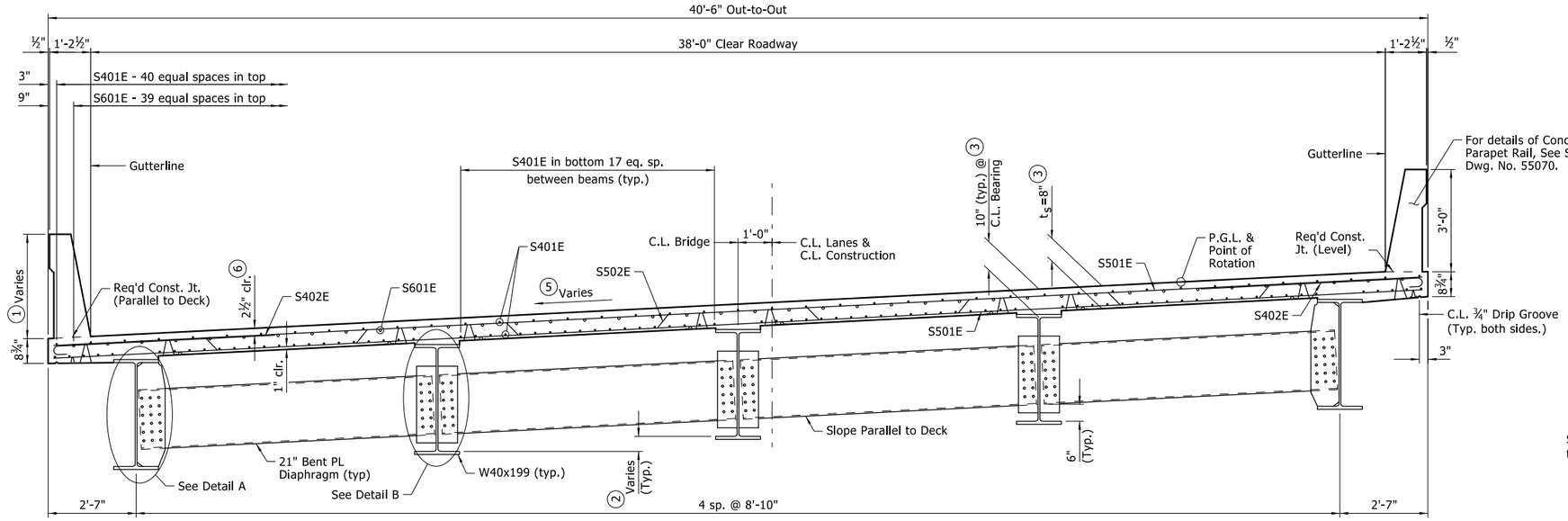
SHEET 2 OF 2
DETAILS OF END BENTS
HIGHWAY 1B OVER CANDY CREEK
ROUTE SECTION
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY:	MKL	DATE:	04/2020	FILENAME: B110702x1_Ax2.dgn
CHECKED BY:	SFH	DATE:	06/2020	
DESIGNED BY:	LAP	DATE:	04/2020	SCALE: As Shown
BRIDGE NO.	07496			DRAWING NO. 61760

Leonard.Speed 2/19/2021 12:56:20 PM
WORKSPACE: ARDOT
c:\users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed@mbakerintl.com\dms14390\B110702X1_AX2.dgn
REVISED DATE:

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

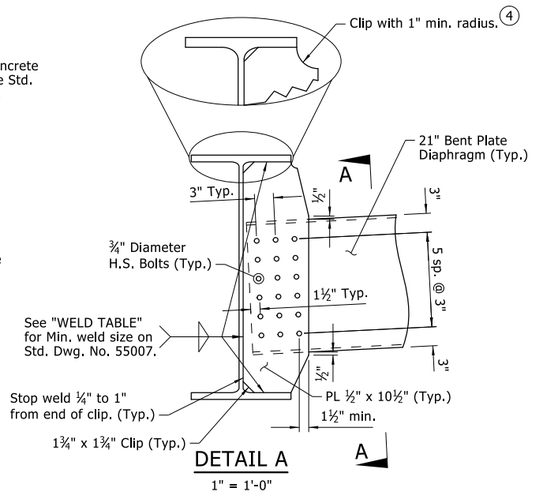
FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		110702	40	53
(1)	07496 - 69'-0" INT. SPAN - 61761			



TYPICAL SECTION

(Looking Forward)

½" = 1'-0"



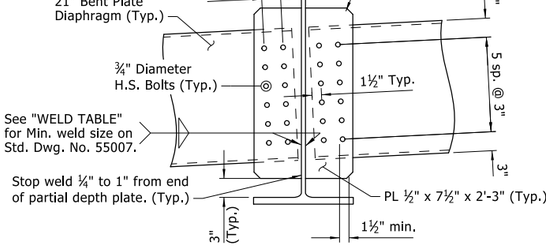
DETAIL A

1" = 1'-0"

Slab Reinforcing:

Transverse: S502E @ 12" o.c. bent up over beams
S501E @ 12" o.c. in bottom — Alternate
S501E @ 12" o.c. in top —
S402E @ 6" o.c. under each parapet bundled w/ #5 in top @ both gutterlines

Longitudinal: S401E placed as shown in top and bottom
S601E placed as shown at end bents



DETAIL B

1" = 1'-0"

(1) Varies with cross-slope from 3'-0 13/16" (Begin Bridge) to 3'- 0 5/8" (End Bridge).

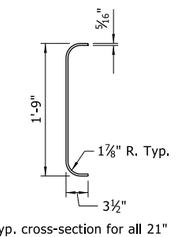
(2) Varies with cross-slope from 5 15/16" (Begin Bridge) to 4 5/8" (End Bridge).

(3) See "Adjustment for Slab Thickness Tolerance" on Std. Dwg. No. 55007.

(4) If permanent steel bridge deck forms are used, the fabricator shall clip plates as necessary to accommodate the deck form supports.

(5) Varies 5.62% (Begin Bridge) to 4.34%(End Bridge). See "CROSS-SLOPE TRANSITION SKETCH" on Dwg. No. 61758.

(6) Tolerance: Minus = ¼"; Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE", Std. Dwg. No. 55007.



Typ. cross-section for all 21" bent plate diaphragms.

SECTION A-A

1" = 1'-0"

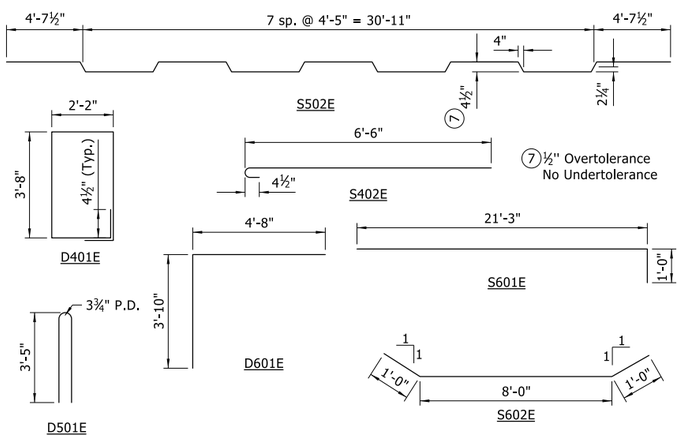
BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.
D401E	84	12'-0"	2"
D403E	16	40'-2"	Str.
D501E	44	7'-0"	3¾"
D601E	84	8'-4"	4½"
S401E	246	36'-1"	Str.
S402E	278	7'-0"	3"
S501E	140	40'-2"	Str.
S502E	69	41'-0"	3"
S601E	80	22'-1"	4½"
S602E	12	10'-0"	4½"
(8) R400E	24	5'-3"	2½"
(8) R401E	368	5'-11"	2½"
R402E	32	5'-6"	Str.
(8) R403E	374	3'-6"	3¾"
R404E	16	10'-8"	Str.
R405E	32	12'-2"	Str.
R406E	40	13'-8"	Str.
R407E	24	15'-8"	Str.
(8) W401E	100	3'-11"	3¾"
W402E	160	4'-10"	Str.
W801E	72	14'-8"	Str.

BENDING DIAGRAMS

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

Dimensions are out to out of bars.



(8) See Std. Dwg. No. 55070 for bending diagram.

Notes:
Class 1 Protective Surface Treatment shall be applied to the Roadway Surface, and the Face and Top of Concrete Parapet Rail.

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

At the Contractor's option, two straight epoxy coated #5 bars may be substituted for Bar S502E. Payment for reinforcing will be based on the weight of Bar S502E.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.19149
LUKE POTTHAST

02-19-2021

BRIDGE ENGINEER
PRINT DATE: 2/19/2021

SHEET 1 OF 4

DETAILS OF 69'-0" INTEGRAL W-BEAM SPAN HIGHWAY 1B OVER CANDY CREEK

ROUTE SECTION

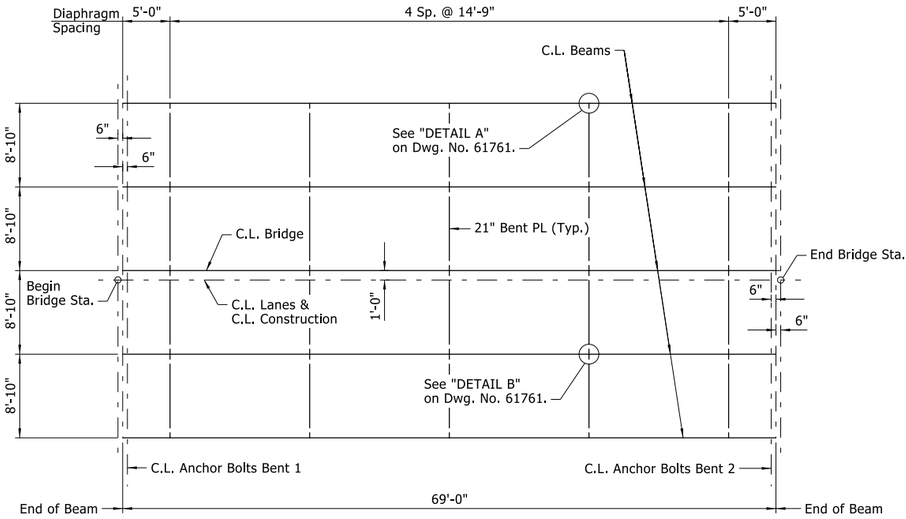
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARKANSAS

DRAWN BY:	MKL	DATE:	04/2020	FILENAME:	B110702x1_Sx1.dgn
CHECKED BY:	SFH	DATE:	06/2020		
DESIGNED BY:	LAP	DATE:	04/2020	SCALE:	As Shown
BRIDGE NO.	07496		DRAWING NO.		61761

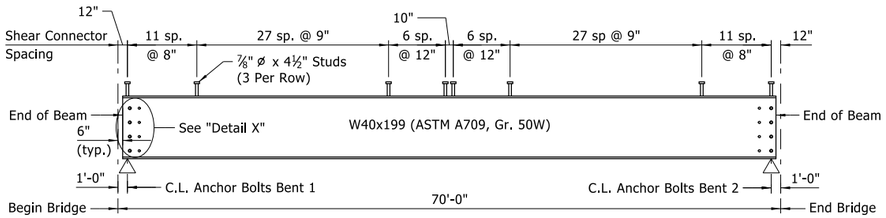
Leonard.Speed 2/19/2021 12:56:24 PM
WORKSPACE: ARDOT
c:\users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw406\leonard.speed@mbakerintl.com\dms143901\B110702X1_SX1.dgn
REVISED DATE:

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.		110702	41	53
				07496 - 69'-0" INT. SPAN - 61762				



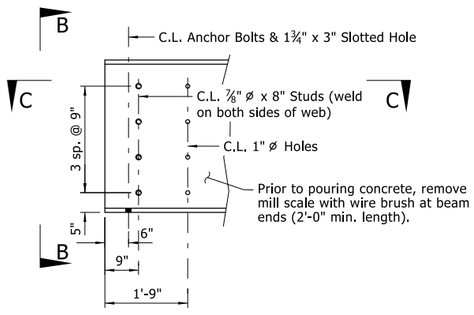
FRAMING PLAN

⅛" = 1'-0"



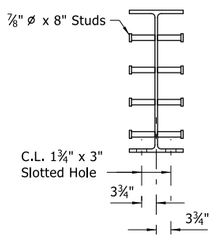
BEAM ELEVATION

No Scale



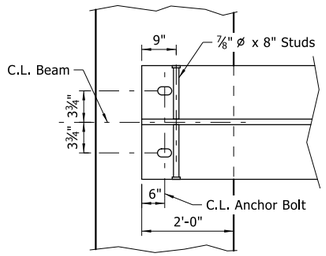
DETAIL X

No Scale



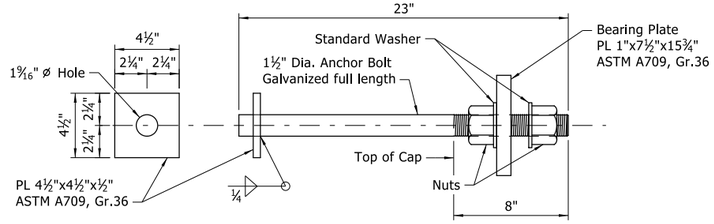
VIEW B-B

No Scale



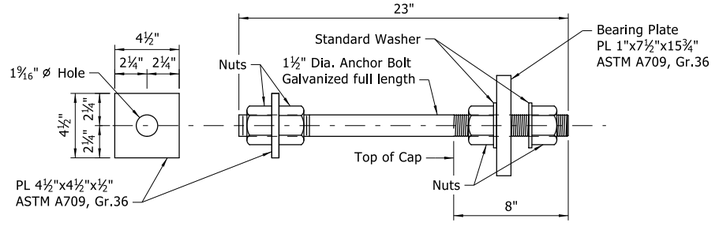
SECTION C-C

No Scale



ANCHOR BOLT DETAIL

No Scale

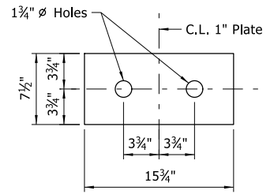


ALTERNATE ANCHOR BOLT DETAIL

No Scale

Anchor bolts shall comply with AASHTO M314, Grade 55, with Supplementary Requirement S1, and galvanized according to subsection 807.07. Nuts for bolts shall be as specified in subsection 807.07. Plates, anchor bolts, nuts and washers shall be paid for at the unit price bid for "Structural Steel in Beam Spans (ASTM A709, Gr.50W)"

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



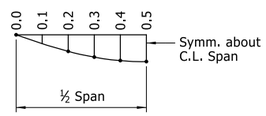
BEARING PLATE DETAIL

No Scale

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Span	Point of Deflection	Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Rail	
		Int.	Ext.	Int.	Ext.	Int.	Ext.
1	0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.084	0.079	0.455	0.375	0.486	0.408
	0.2	0.158	0.149	0.861	0.709	0.919	0.771
	0.3	0.216	0.204	1.178	0.970	1.258	1.055
	0.4	0.253	0.239	1.380	1.135	1.473	1.235
	0.5	0.266	0.251	1.449	1.192	1.547	1.297

Table is symm. about the C.L. Span.



DEAD LOAD DEFLECTION DIAGRAM

Note:
Camber for Dead Load Deflection plus Vertical curve ± ¼" tolerances. Deflections shown are a chord from C.L. Anchor Bolts to C.L. Anchor Bolts. Vertical curve and varying cross-slope corrections not included.

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

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.19149
LUKE POTTHAST

02-19-2021

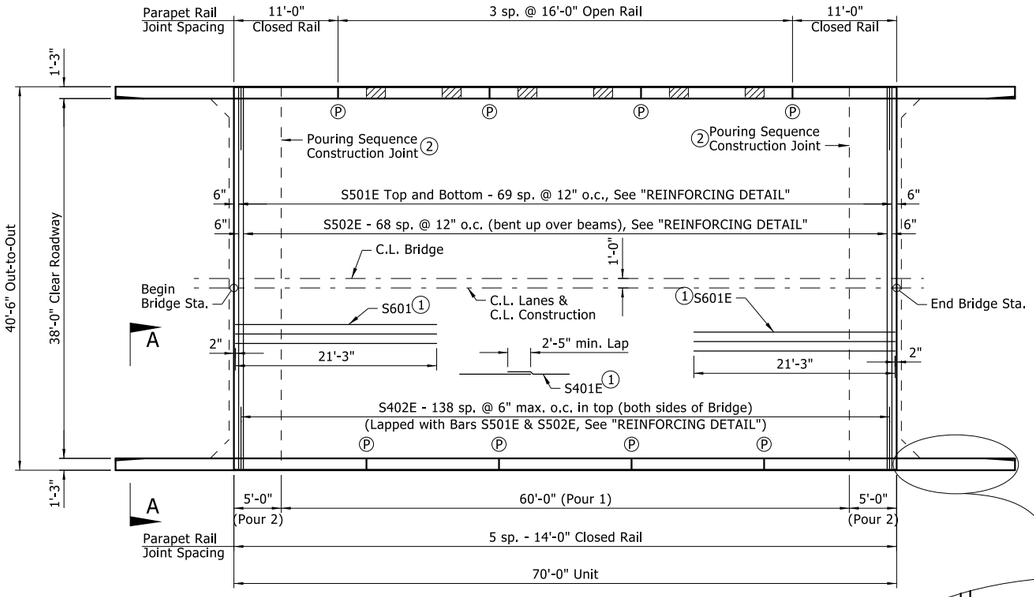
BRIDGE ENGINEER
PRINT DATE: 2/19/2021

SHEET 2 OF 4
DETAILS OF 69'-0" INTEGRAL W-BEAM SPAN
HIGHWAY 1B OVER CANDY CREEK
ROUTE SECTION
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY:	MKL	DATE:	04/2020	FILENAME:	B110702x1_Sx2.dgn
CHECKED BY:	SFH	DATE:	06/2020		
DESIGNED BY:	LAP	DATE:	04/2020	SCALE:	As Shown
BRIDGE NO.	07496		DRAWING NO.	61762	

Leonard.Speed 2/19/2021 12:56:26 PM
WORKSPACE: ARDOT
c:\users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed@mbakerintl.com\dms14390\B110702X1_SX2.dgn
REVISED DATE:

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.		110702	42	53
				(1)	07496 - 69'-0" INT. SPAN - 61763			



REINFORCING PLAN AND POURING SEQUENCE

⅛"=1'-0"

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

(1) Placed as shown in "Typical Section", See Dwg. No. 61761.

(2) See "TRANSVERSE SLAB JOINT DETAIL" on Std. Dwg. 55007.

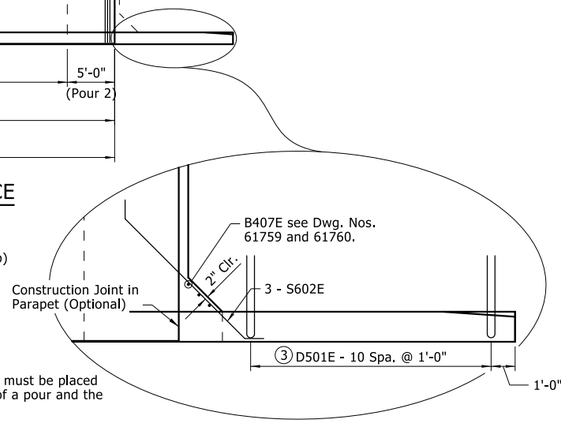
(3) Bars D501E shall extend from Wingwall to Approach Gutter.

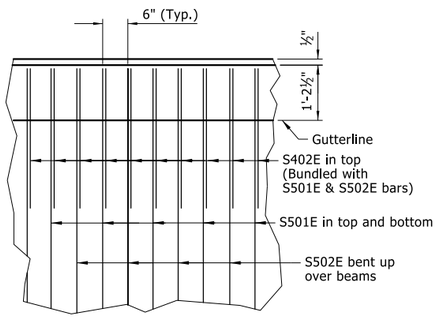
Pours with the same number may be placed simultaneously or separately. All Pour(s) 1 must be placed before Pour(s) 2 can be placed. A minimum of 48 hours shall elapse between the end of a pour and the start of the next pour. A minimum of 72 hours shall elapse between adjacent pours.

Concrete diaphrams shall be poured monolithically with the deck.

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

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

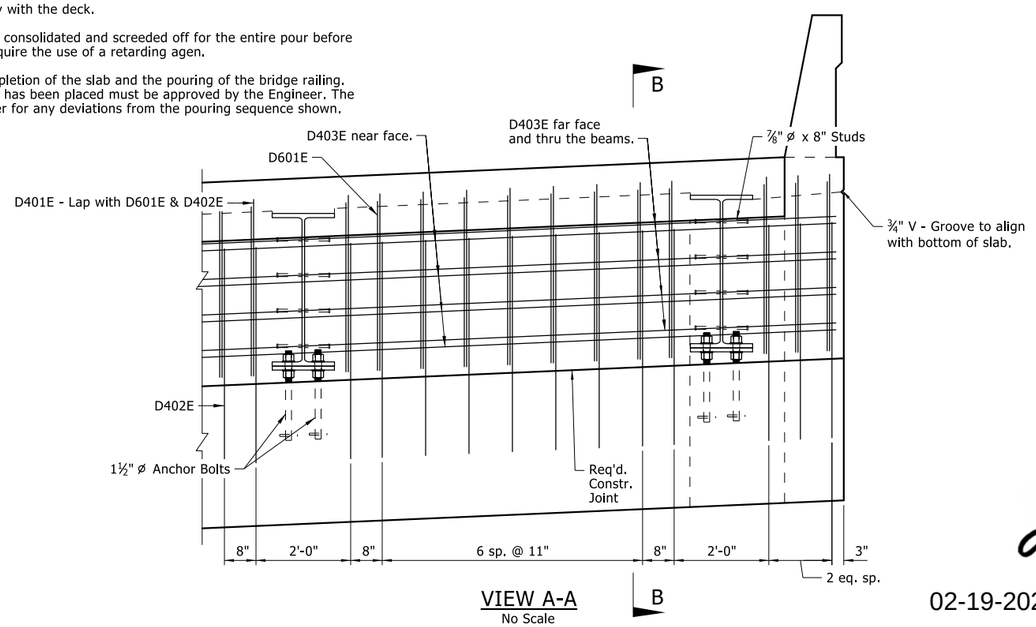




REINFORCING DETAIL

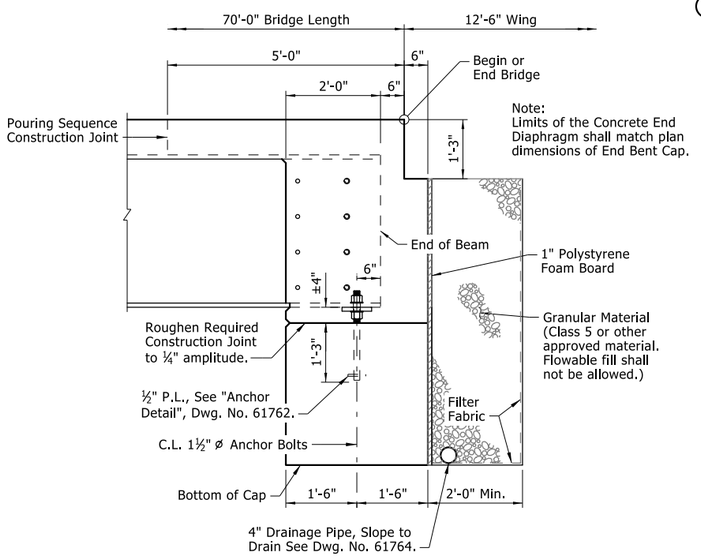
No Scale

Note:
Rails and wings are included in span construction and are included in span quantities.



VIEW A-A

No Scale

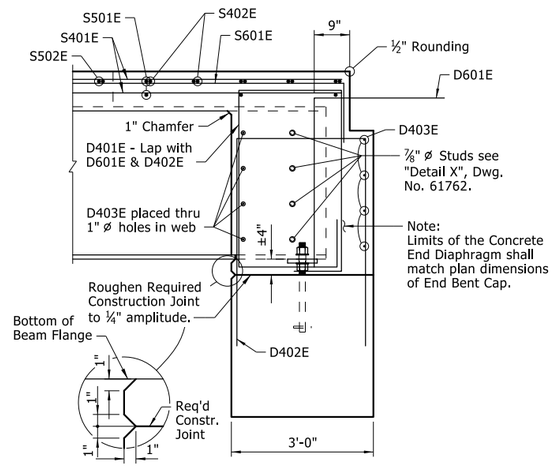


SECTION AT END BENT

No Scale

Note:
For additional details of pipe underdrain see Std. Dwg. PU-1 and Section 611. Pipe underdrains, outlet protectors, granular materials, drain pipe, filter fabric and polystyrene foam board will not be measured or paid for separately, but will be considered subsidiary to the unit price bid for "Unclassified Excavation for Structures-Bridge".

Note:
End Diaphragm shall be poured monolithically with deck slab.



SECTION B-B

No Scale

02-19-2021

BRIDGE ENGINEER
PRINT DATE: 2/19/2021

SHEET 3 OF 4

DETAILS OF 69'-0" INTEGRAL W-BEAM SPAN HIGHWAY 1B OVER CANDY CREEK

ROUTE SECTION

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARKANSAS

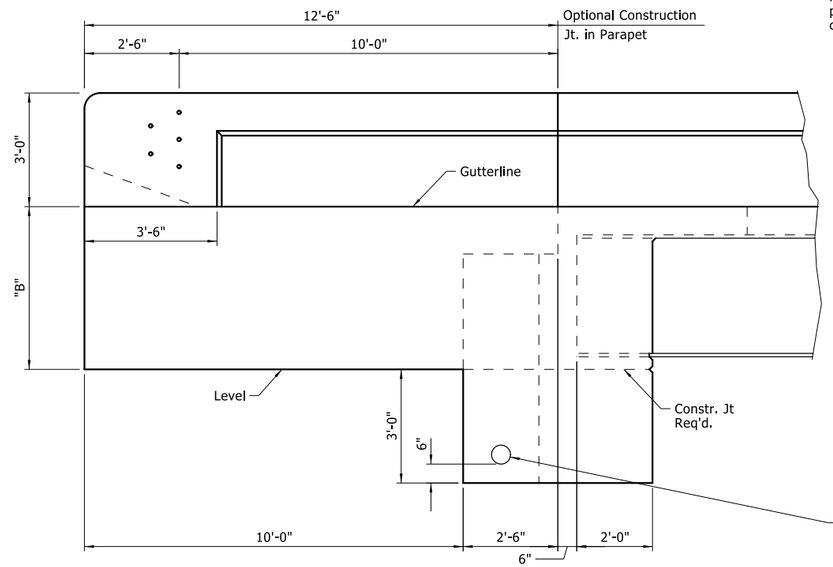
DRAWN BY: MKL DATE: 04/2020 FILENAME: B110702x1_Sx3.dgn
CHECKED BY: SFH DATE: 06/2020
DESIGNED BY: LAP DATE: 04/2020 SCALE: As Shown
BRIDGE NO. 07496 DRAWING NO. 61763

Leonard.Speed 2/19/2021 12:56:28 PM
WORKSPACE: ARDOT
c:\users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed@mbakerintl.com\dms14390\B110702X1_SX3.dgn
REVISED DATE:

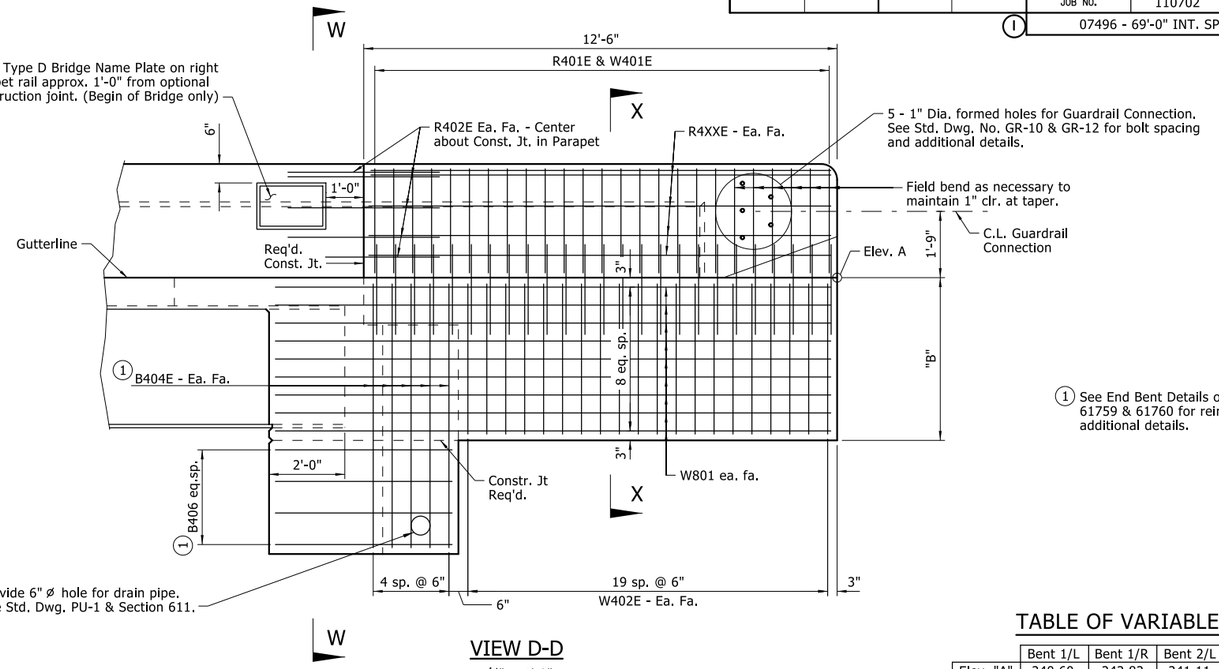
Note:
See Roadway Plans for guardrail locations.

For additional rail details, see Std. Dwg. No. 55070.

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.		110702	43	53
				(1)	07496 - 69'-0" INT. SPAN - 61764			



VIEW C-C
½" = 1'-0"

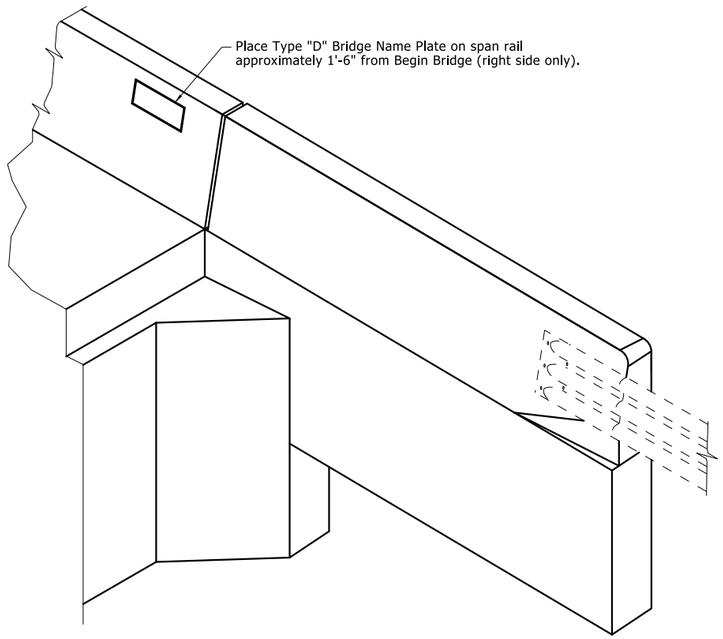


VIEW D-D
½" = 1'-0"

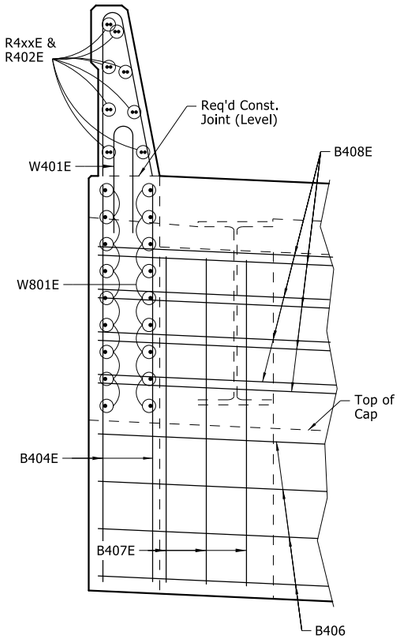
(1) See End Bent Details on Dwg. No. 61759 & 61760 for reinforcing and additional details.

TABLE OF VARIABLES

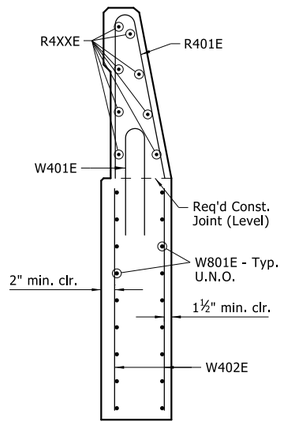
	Bent 1/L	Bent 1/R	Bent 2/L	Bent 2/R
Elev. "A"	240.60	242.82	241.11	242.67
"B"	4'-3"	4'-2½"	4'-4 9/16"	4'-2 3/16"



THREE DIMENSIONAL VIEW OF RAIL & END BENT



VIEW W-W
¾" = 1'-0"



VIEW X-X
¾" = 1'-0"

TABLE OF VARIABLES

For Std. Dwg. No. 55070

Closed Rail Panels			Open Rail Panels						
Panel Length	A	R4XXE	Panel Length	B	C	D	E	F	R4XXE
11'-0"	21	R404E	16'-0"	7	8	3'-0"	11	6'-0"	R407E
12'-6"	24	R405E							
14'-0"	27	R406E							

02-19-2021

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No.19149 LUKE POTTHAST

BRIDGE ENGINEER
PRINT DATE: 2/19/2021

SHEET 4 OF 4
DETAILS OF 69'-0" INTEGRAL W-BEAM SPAN
HIGHWAY 1B OVER CANDY CREEK
ROUTE SECTION
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

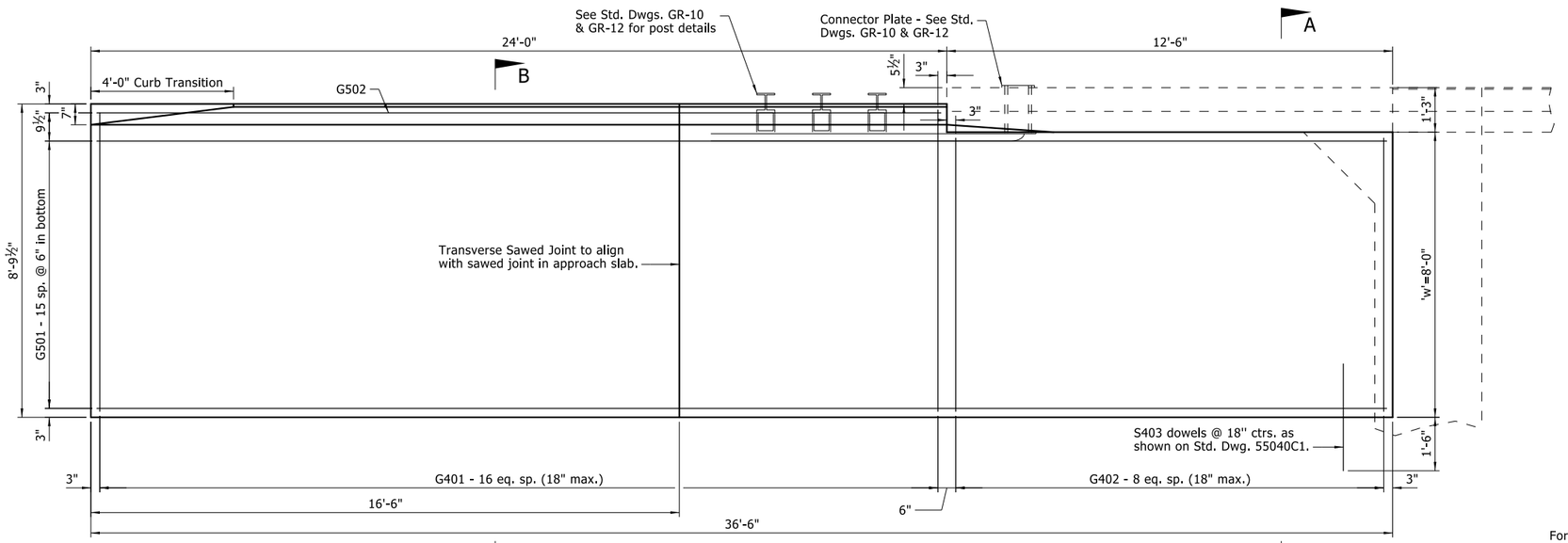
DRAWN BY: MKL DATE: 04/2020 FILENAME: B110702x1_Sx4.dgn
CHECKED BY: SFH DATE: 06/2020
DESIGNED BY: LAP DATE: 04/2020 SCALE: As Shown
BRIDGE NO. 07496 DRAWING NO. 61764

Leonard.Speed 2/19/2021 12:56:30 PM
WORKSPACE: ARDOT
c:\users\leonard.speed\appdata\local\bentley\projectwise\workingdir\imb-us-pw.bentley.com_mb-us-pw-06\leonard.speed@mbakerintl.com\dms14390\B110702X1_SX4.dgn
REVISED DATE:

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

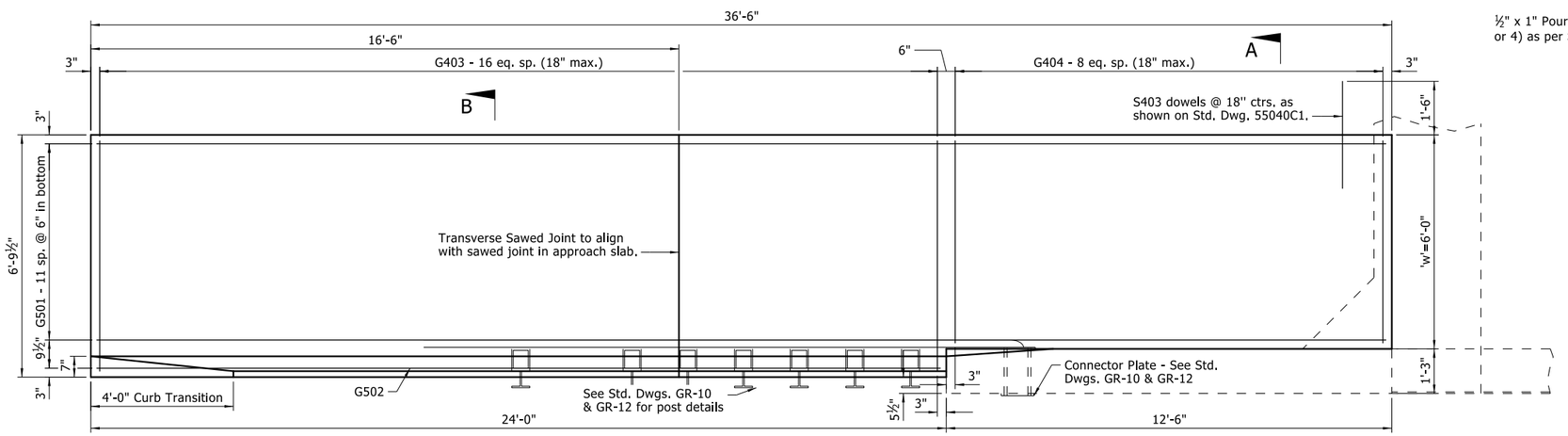
FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		110702	44	53

(1) 07496 - APPROACH GUTTER - 61765



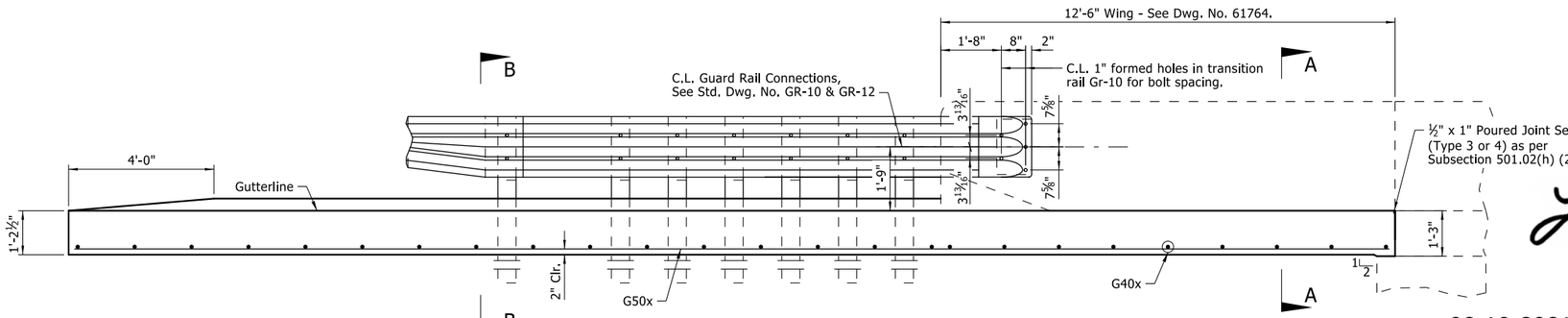
PLAN - TYPE SPECIAL 1

(Shown for Begin Bridge - End Bridge similar)



PLAN - TYPE SPECIAL 2

(Shown for Begin Bridge - End Bridge similar)



LONGITUDINAL SECTION THRU GUTTER

BAR LIST FOR ONE TYPE SPECIAL 1 APPROACH GUTTER

MARK	NO. REQ'D.	LENGTH	PIN DIA.
G401	17	8'-5"	Str.
G402	9	7'-8"	Str.
G501	16	36'-2"	Str.
G502	1	23'-8"	Str.

BAR LIST FOR ONE TYPE SPECIAL 2 APPROACH GUTTER

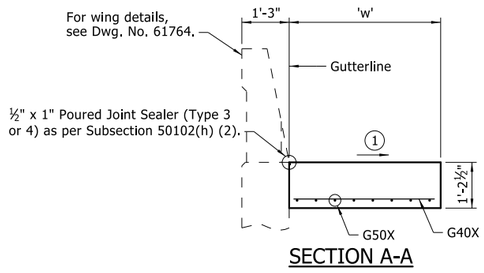
MARK	NO. REQ'D.	LENGTH	PIN DIA.
G403	17	6'-5"	Str.
G404	9	5'-8"	Str.
G501	12	36'-2"	Str.
G502	1	23'-8"	Str.

QUANTITIES FOR ONE TYPE SPECIAL 1 APPROACH GUTTER

Reinforcing Steel (lbs.)	Concrete (cubic yds)
764	14.04

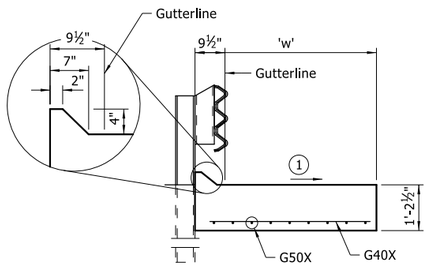
QUANTITIES FOR ONE TYPE SPECIAL 2 APPROACH GUTTER

Reinforcing Steel (lbs.)	Concrete (cubic yds)
580	10.77



SECTION A-A

(1) Match Roadway cross-slope as required at a given approach gutter location.



SECTION B-B

GENERAL NOTES

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

Reinforcing Steel shall conform to AASHTO M31 or M322, Type A with Mill Test Reports, Gr. 60 (fy = 60,000 psi).

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

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

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No.19149 LUKE POTTHAST

02-19-2021

BRIDGE ENGINEER

PRINT DATE: 2/19/2021

TYPE 1 & 2 SPECIAL APPROACH GUTTERS HIGHWAY 1B OVER CANDY CREEK

ROUTE SECTION

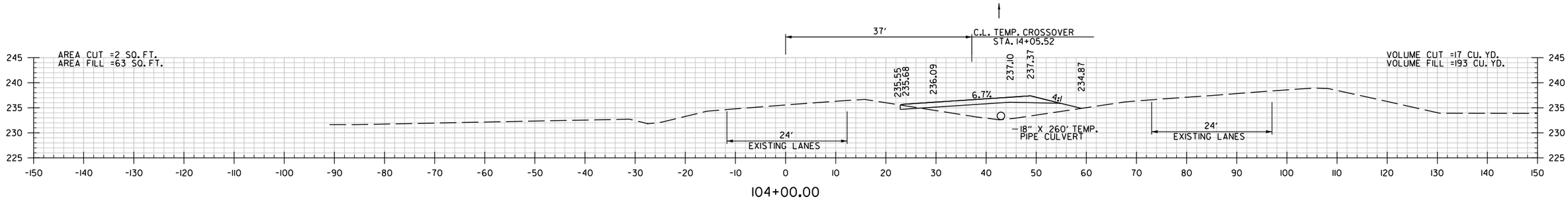
ARKANSAS STATE HIGHWAY COMMISSION

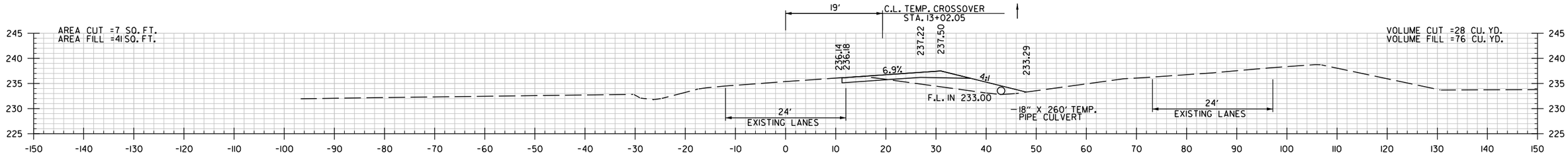
LITTLE ROCK, ARKANSAS

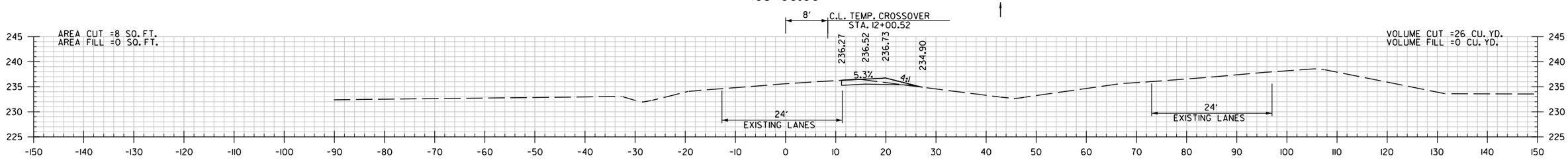
DRAWN BY:	MKL	DATE:	04/2020	FILENAME:	B110702x1_AG1.dgn
CHECKED BY:	SFH	DATE:	06/2020		
DESIGNED BY:	LAP	DATE:	04/2020	SCALE:	½" = 1'-0"
BRIDGE NO.	07496			DRAWING NO.	61765

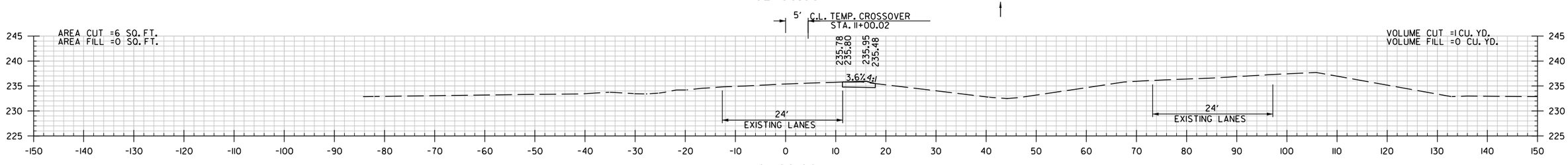
Leonard.Speed 2/19/2021 12:56:35 PM
WORKSPACE: ARDOT
c:\users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed@mbakerintl.com\dms14390\B110702X1_AG1.dgn
REVISED DATE:

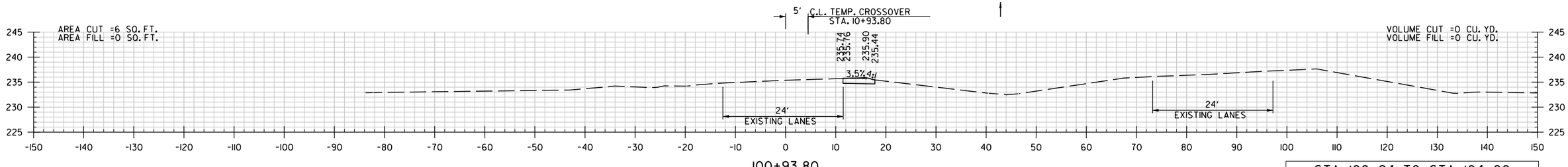
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		II0702	45	53
				(2)	CROSS SECTIONS			











TEMPORARY CROSSOVER

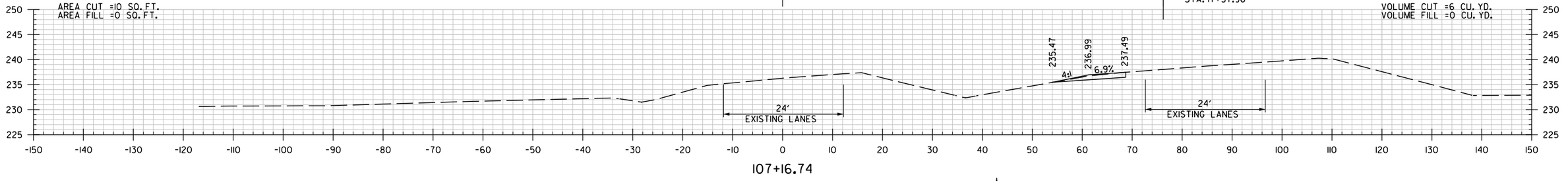
STA. 10+93.80 BEGIN TEMPORARY CROSSOVER

STA. 100+94 TO STA. 104+00

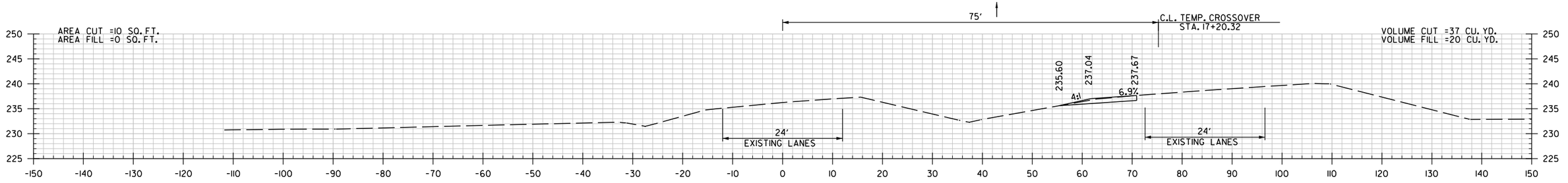
LeonardSpeed 2/19/2021 12:53:59 PM
WORKSPACE: ARDOT
c:\users\leonardspeed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonardspeedembokerintl.com\dms440\RI0702_21_CX_001.dgn
REVISED DATE: $$REVDATE$$

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.		110702	46	53
				(2)	CROSS SECTIONS			

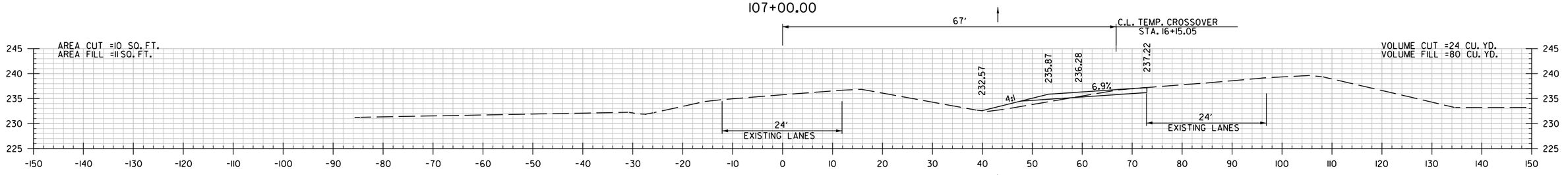
C.L. HWY. 18 (SB) STA. 109+02.23, 79.09 RT. =
END C.L. TEMP. CROSSOVER STA. 19+34.68



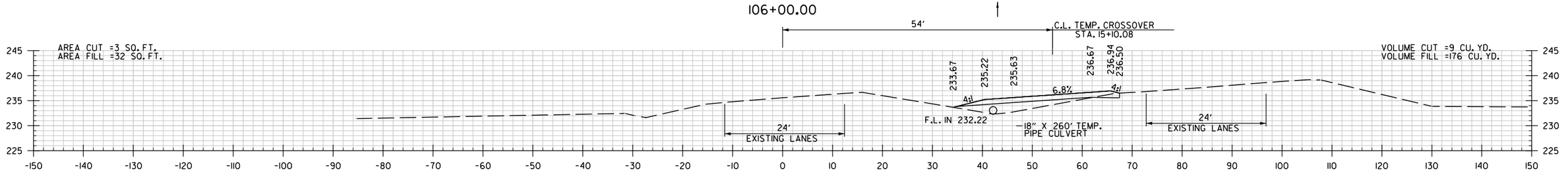
107+16.74



107+00.00



106+00.00



105+00.00

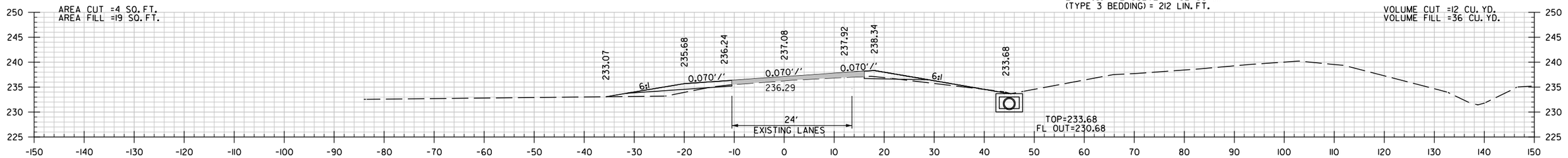
TEMPORARY CROSSOVER

STA. 105+00 TO STA. 107+17

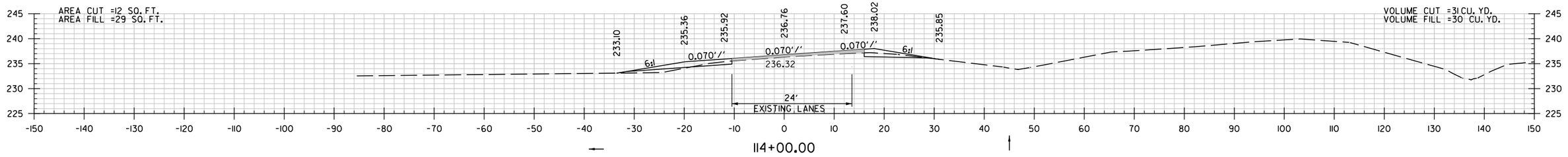
Leonard.Speed 2/9/2021 12:53:59 PM
WORKSPACE: ARDOT
c:\users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed@mbakerintl.com\dms1440\
REVISED DATE: $$REVDATE$$
\\mb-us-pw.bentley.com\dms1440\RI0702.21.CX.001.dgn

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.		110702	47	53
				(2)	CROSS SECTIONS			

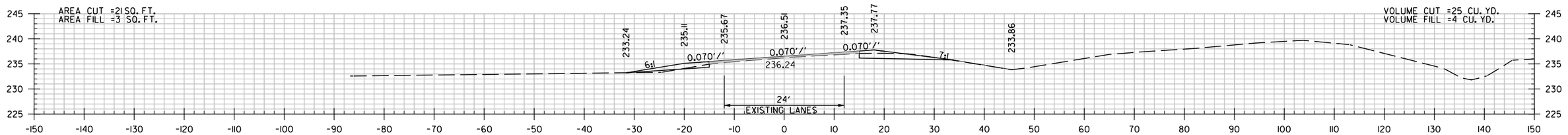
STA. 114+40.00 45.00' RT. CONSTRUCT
DROP INLET H = 3'-0"
WITH 24" X 212' PIPE OUTLET
TO DROP INLET @ STA. 116+50.00 RT.
TYPE RM DROP INLET = 4' X 4'
24" R.C. PIPE CULVERT (CLASS III)
(TYPE 3 BEDDING) = 212 LIN. FT.



114+40.00

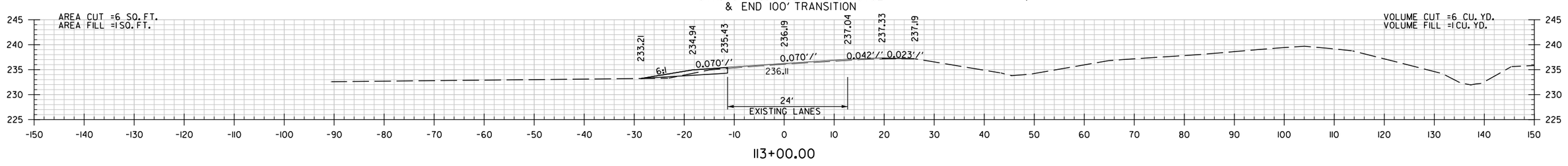


114+00.00

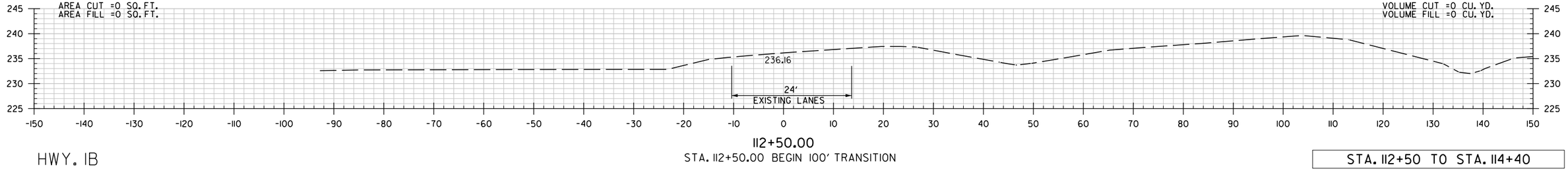


113+50.00

STA. 113+50.00 BEGIN JOB 110702
& END 100' TRANSITION



113+00.00



112+50.00

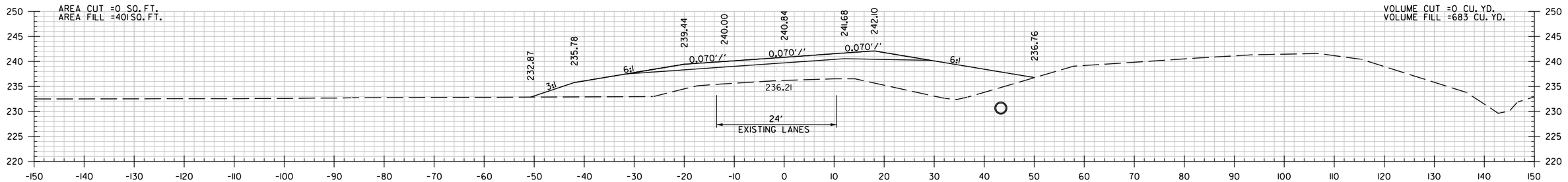
STA. 112+50.00 BEGIN 100' TRANSITION

HWY. 18

STA. 112+50 TO STA. 114+40

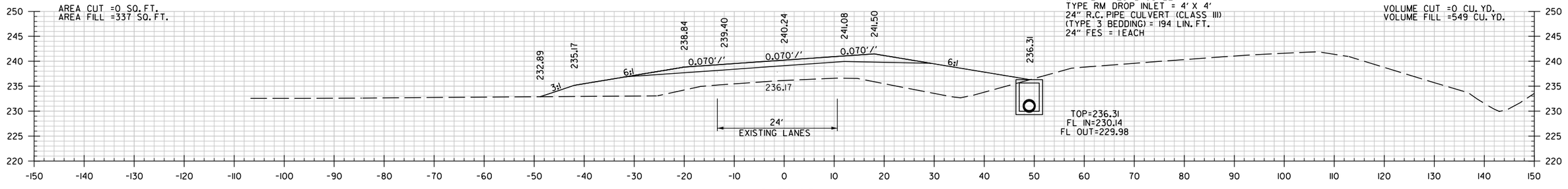
Leonard.Speed 2/19/2021 12:54:00 PM
WORKSPACE: ARDOT
C:\Users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\leonard.speed@mbakerintl.com\dms1401\RI0702_21_CX_001.dgn
REVISED DATE: $$REVDATE$$

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.		110702	48	53
				(2)	CROSS SECTIONS			

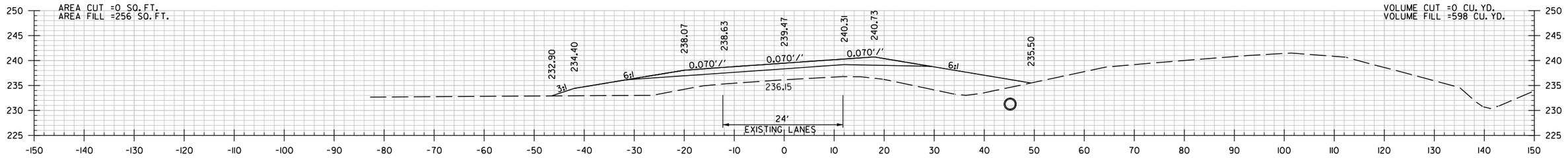


117+00.00

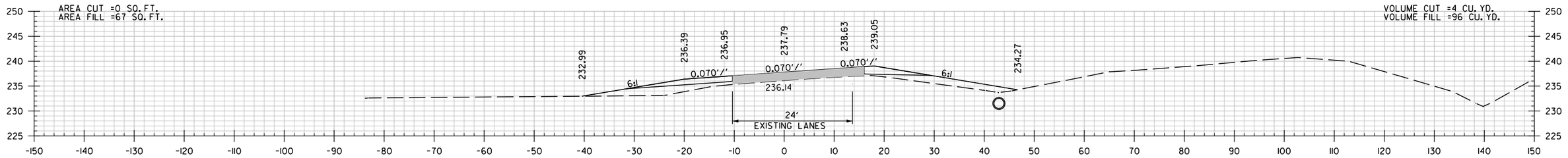
STA. 116+50.00 49.00' RT. CONSTRUCT
DROP INLET H = 6'-4"
WITH 24" X 194' PIPE OUTLET
WITH 24" FES @ OUTLET
TYPE RM DROP INLET = 4' X 4'
24" R.C. PIPE CULVERT (CLASS III)
(TYPE 3 BEDDING) = 194 LIN.FT.
24" FES = 1 EACH



116+50.00



116+00.00



115+00.00

HWY. 1B

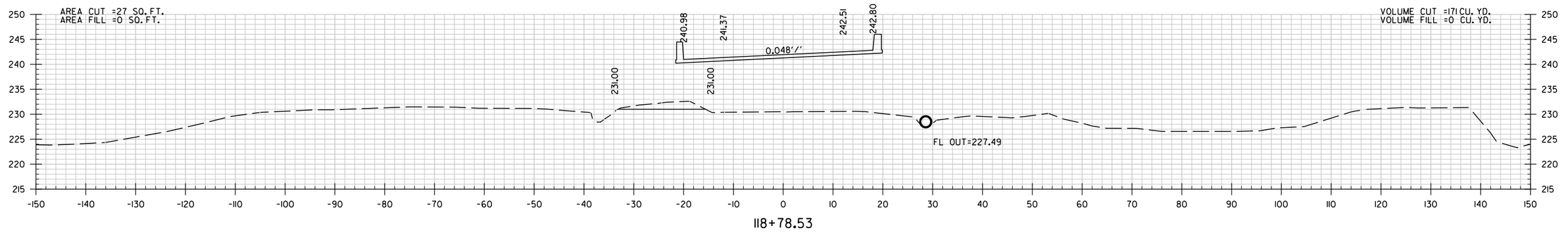
STA. 115+00 TO STA. 117+00

Leonard.Speed 2/9/2021 12:54:00 PM
WORKSPACE: ARDOT
C:\Users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com.mb-us-pw-06\leonard.speed\dms1401\R110702_21_CX_001.dgn
REVISED DATE: $$REVDATE$$

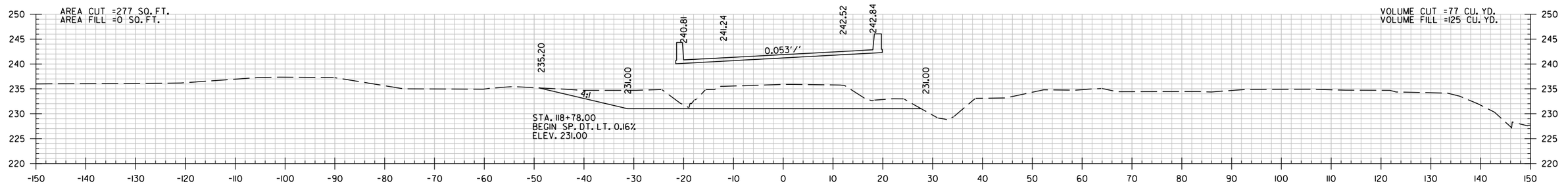
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		110702	49	53

(2) CROSS SECTIONS

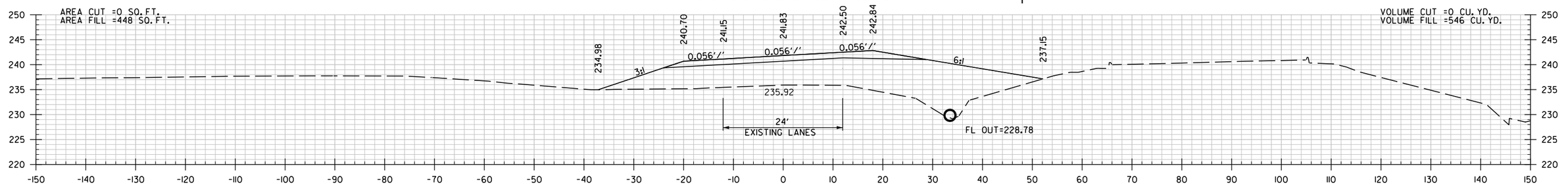


118+78.53



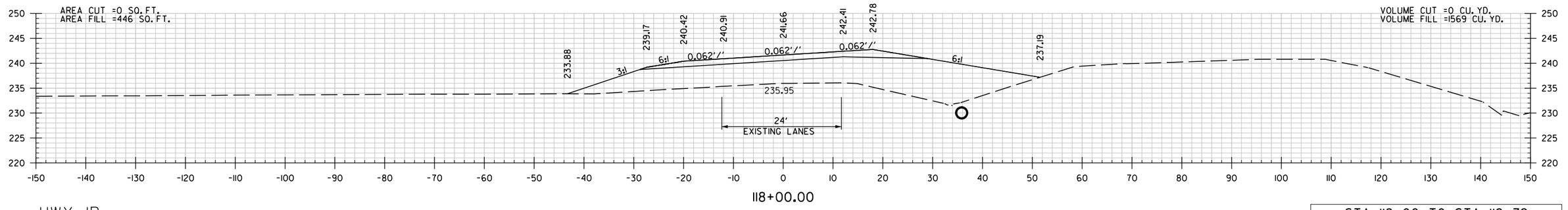
118+48.07

STA. 118+48.07 BRIDGE TOE OF SLOPE



118+33.00

STA. 118+33.00 BEGIN BRIDGE



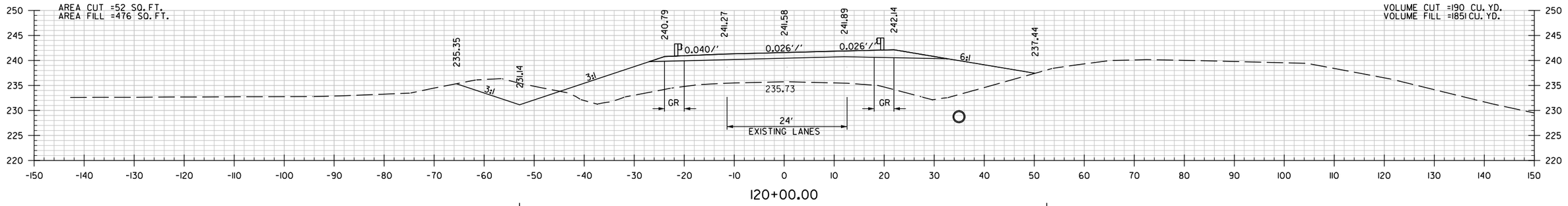
118+00.00

HWY. 1B

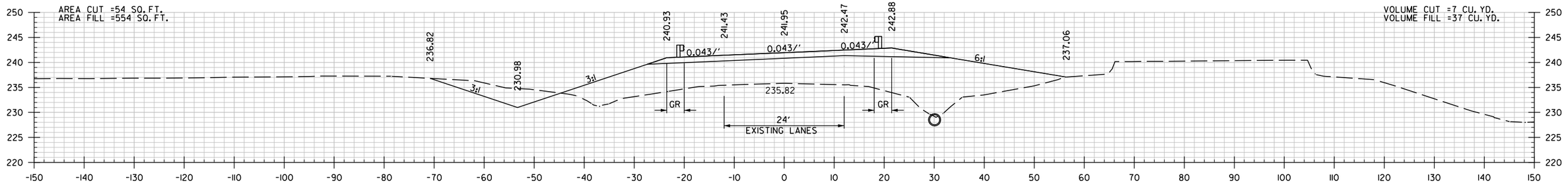
STA. 118+00 TO STA. 118+79

London.Miller 2/25/2021 9:20:34 AM
WORKSPACE: ARDOT
C:\Users\london.miller\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com_mb-us-pw-06\london.miller@mbakerintl.com\dms1440\RII0702_2L_CX_001.dgn
REVISED DATE: $$REVDATE$$

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.		110702	50	53
				(2)	CROSS SECTIONS			

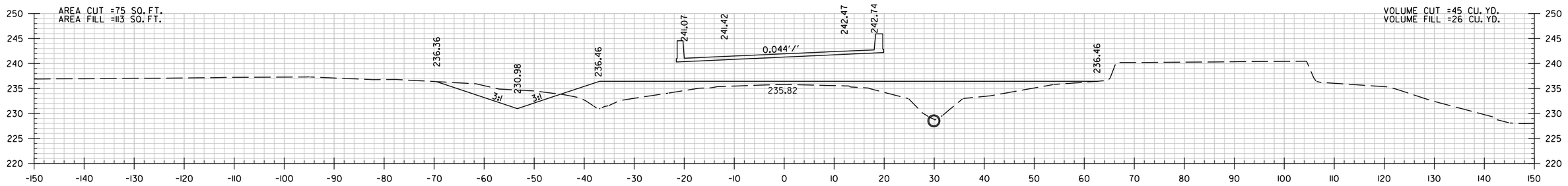


120+00.00

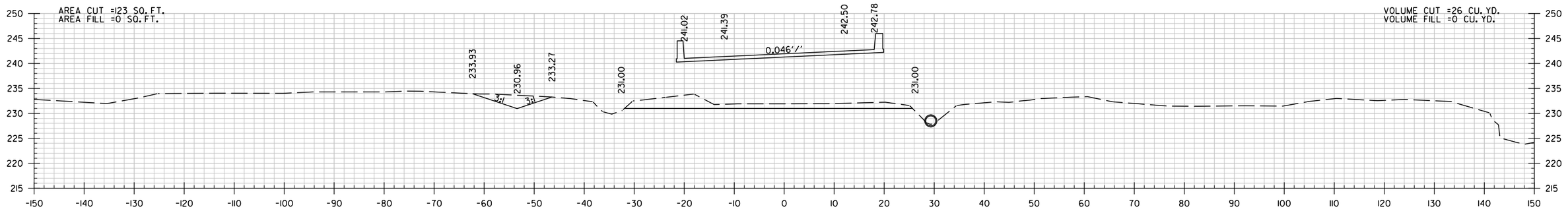


119+03.00

STA. 119+03.00 END BRIDGE



119+00.00



118+87.77

STA. 118+87.77 BRIDGE TOE OF SLOPE

HWY. 18

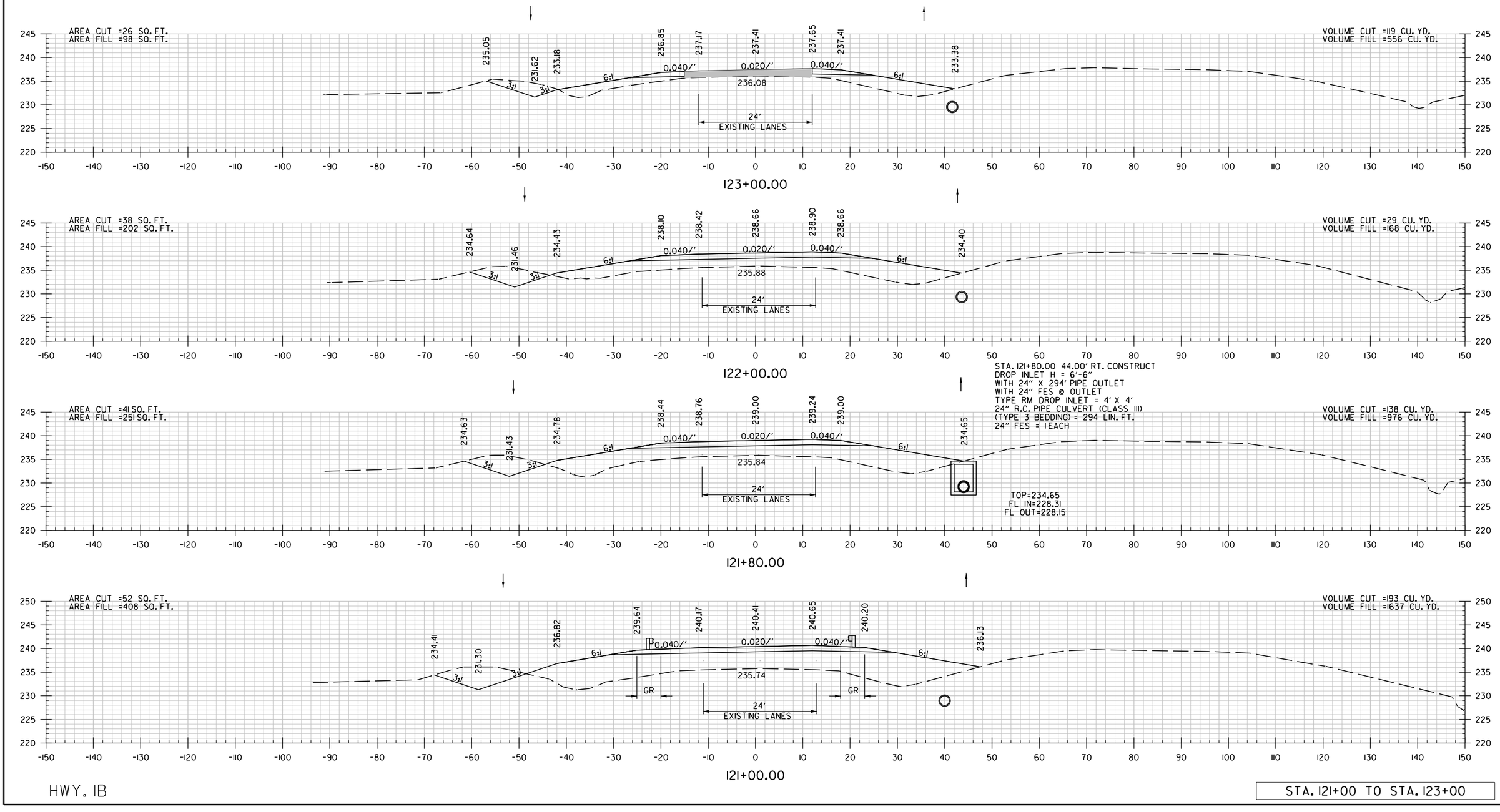
STA. 118+88 TO STA. 120+00

Leonard.Speed 2/19/2021 12:54:01 PM
WORKSPACE: ARDOT
C:\users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com.mb-us-pw-06\leonard.speed\mbakerint\ardot\RI0702_21_CX_001.dgn
REVISED DATE: $$REVDATE$$

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.		110702	51	53

(2) CROSS SECTIONS



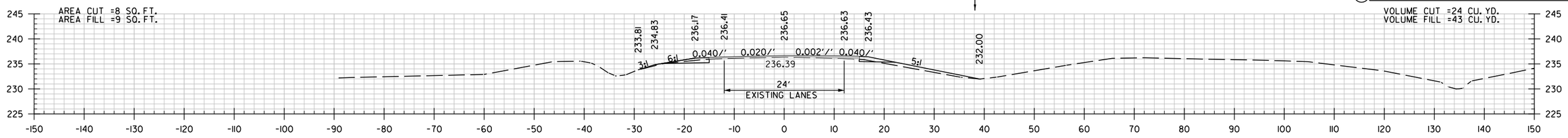
HWY. 1B

STA. 121+00 TO STA. 123+00

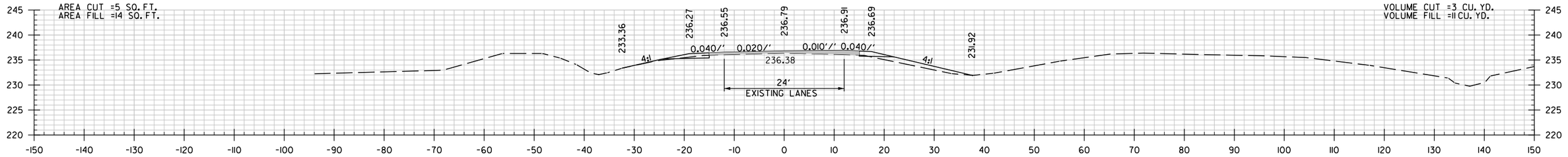
Leonard.Speed 2/19/2021 12:54:03 PM
WORKSPACE: ARDOT
C:\Users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com.mb-us-pw-06\leonard.speed\dms1401\RI0702.21.CX.001.dgn
REVISED DATE: $$REVDATE$$

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.		110702	52	53

(2) CROSS SECTIONS

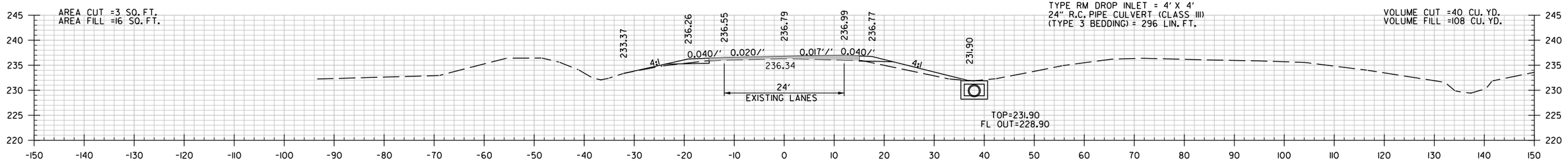


126+00.00

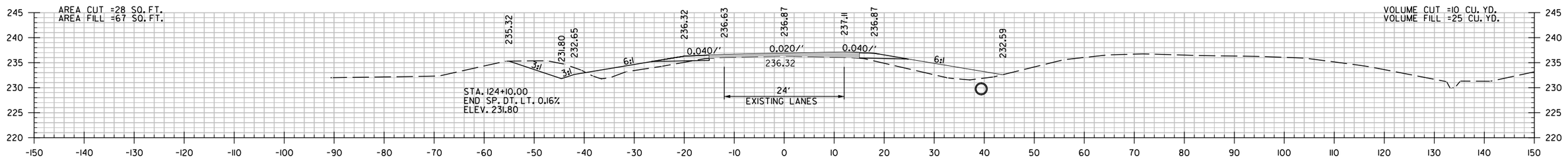


125+00.00

STA. 124+80.00 38.00' RT. CONSTRUCT
DROP INLET H = 3'-0"
WITH 24" X 296' PIPE OUTLET
TO DROP INLET @ STA. 121+80.00 RT.
TYPE RM DROP INLET = 4' X 4'
24" R.C. PIPE CULVERT (CLASS III)
(TYPE 3 BEDDING) = 296 LIN. FT.

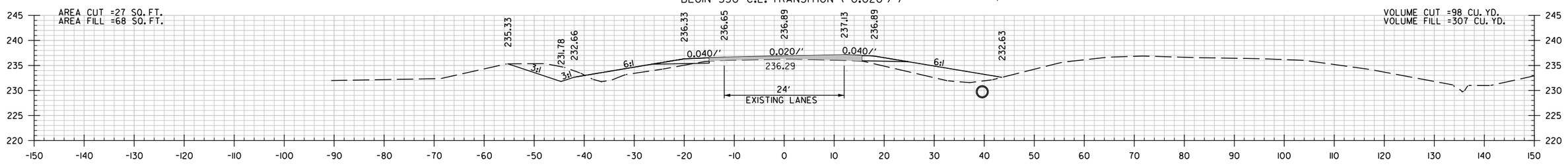


124+80.00



124+10.00

STA. 124+10.00 END JOB 110702 &
BEGIN 350' C.L. TRANSITION (-0.020'/')



124+00.00

HWY. 18

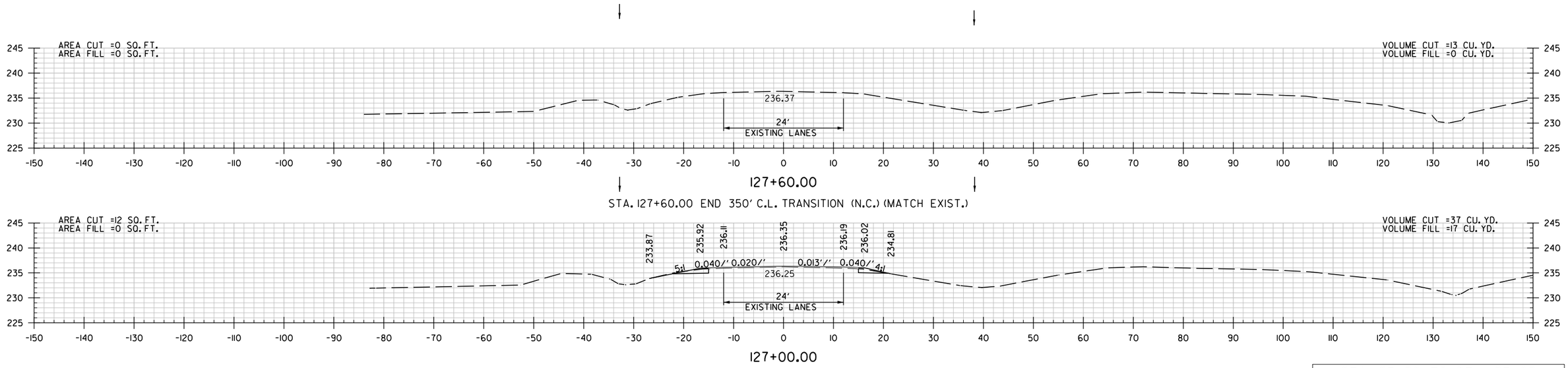
STA. 124+00 TO STA. 126+00

LeonardSpeed 2/9/2021 12:54:08 PM
WORKSPACE: ARDOT
C:\users\leonard\speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com.mb-us-pw-06\leonard.speed@mbakerintl.com\dms1401\RI0702_21_CX_001.dgn
REVISED DATE: $$REVDATE$$

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.		110702	53	53

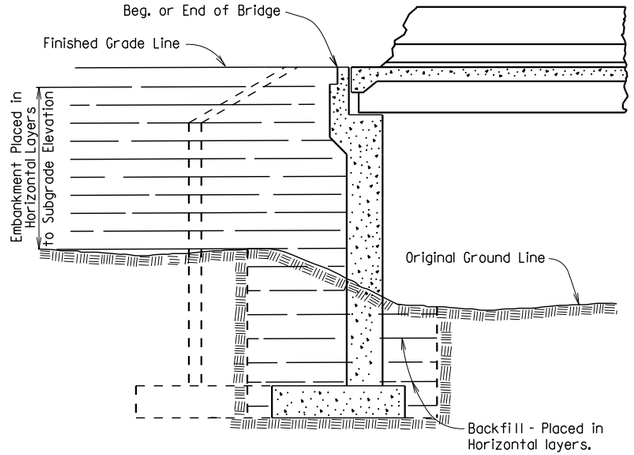
(2) CROSS SECTIONS



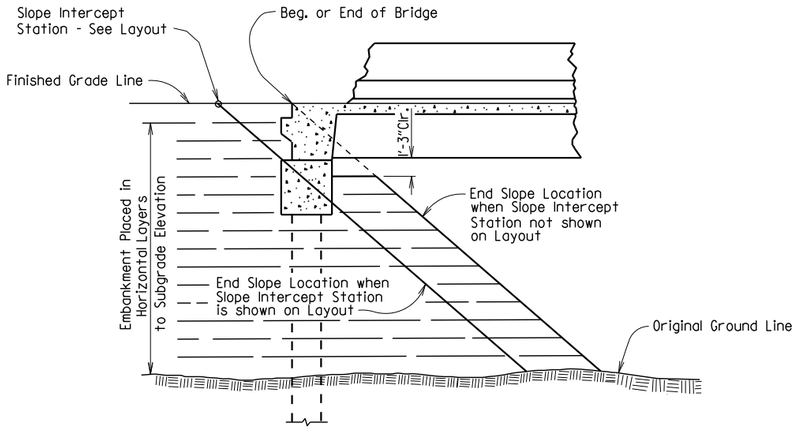
STA. 127+00 TO STA. 127+60

Leonard.Speed 2/19/2021 12:54:11 PM
WORKSPACE: ARDOT
C:\users\leonard.speed\appdata\local\bentley\projectwise\workingdir\mb-us-pw.bentley.com.mb-us-pw-06\leonard.speed\mbakerintl.com\dms1440\RI10702_21_CX_001.dgn
REVISED DATE: $$REVDATE$$

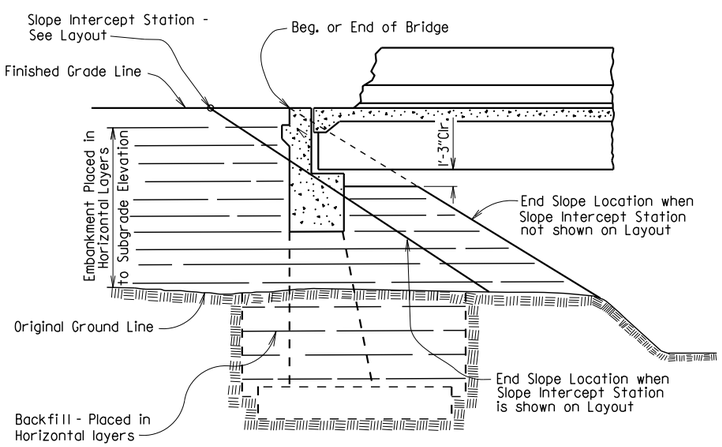
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				
				①	EMBANKMENT & BACKFILL		55000	



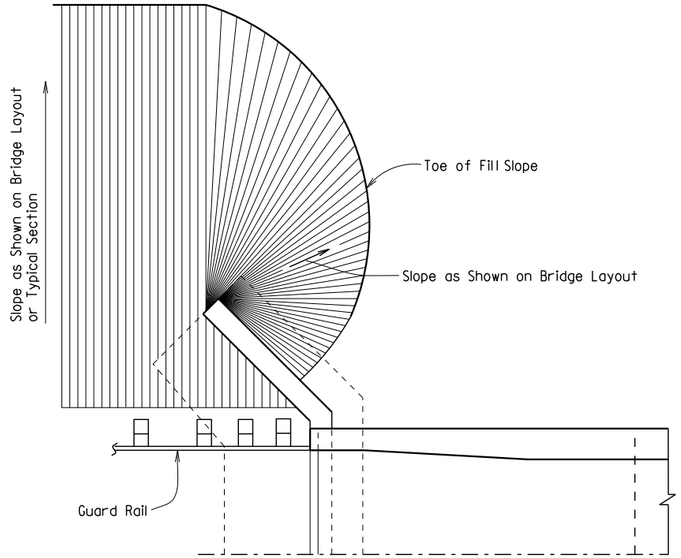
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



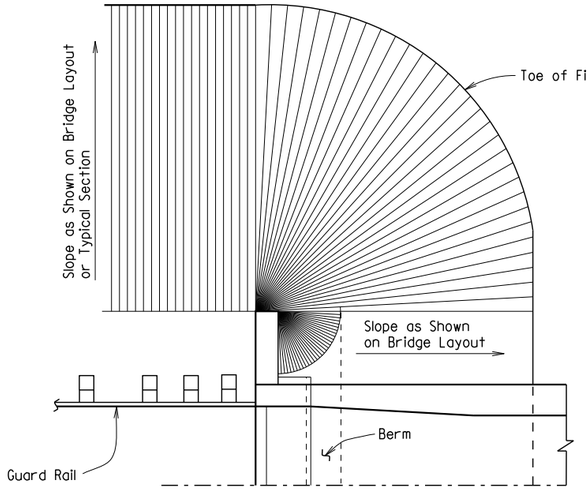
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



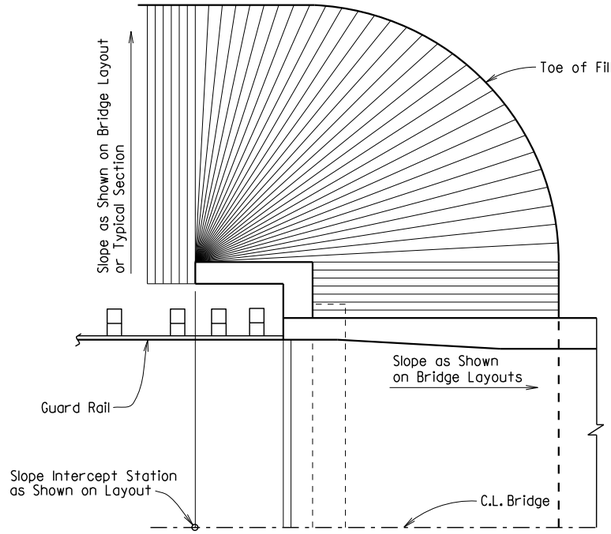
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



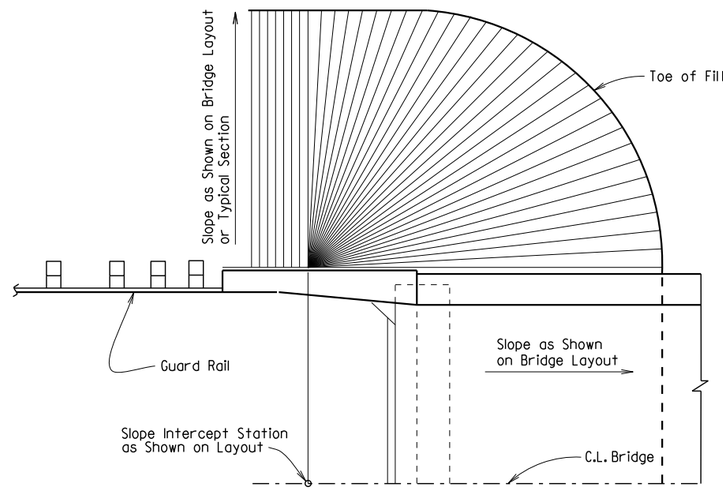
VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH STUB WING



SPILL-THROUGH END BENTS WITH TURNBACK WING



SPILL-THROUGH END BENTS WITH TRANSITION WING

METHOD OF DETERMINING FILL SLOPE LOCATION AT BRIDGE ENDS

GENERAL NOTES

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

STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

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

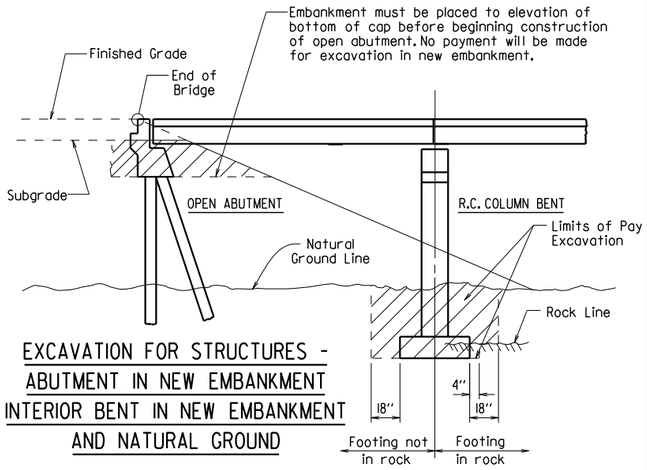
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE

DESIGNED BY: STD. DATE: -

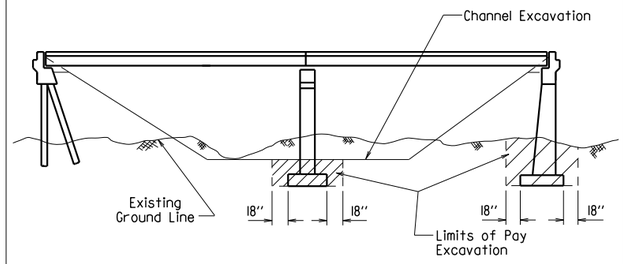
DRAWING NO. 55000

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

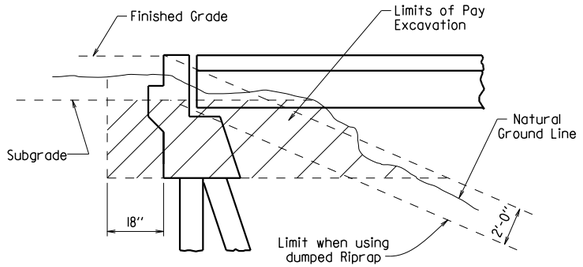
1 RIPRAP & EXCAV. 55001



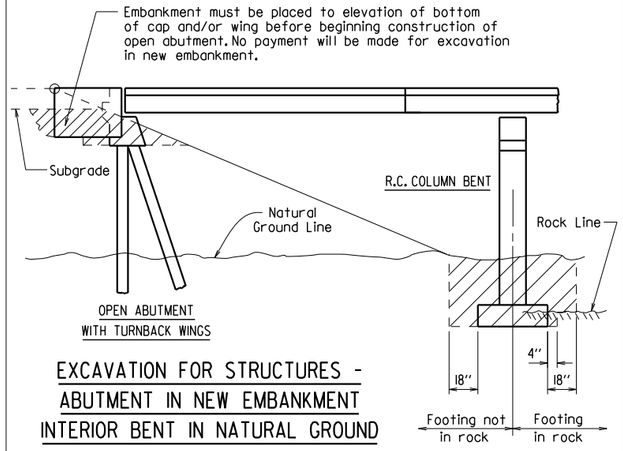
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



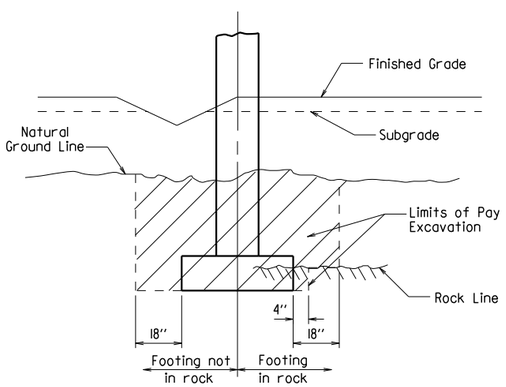
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



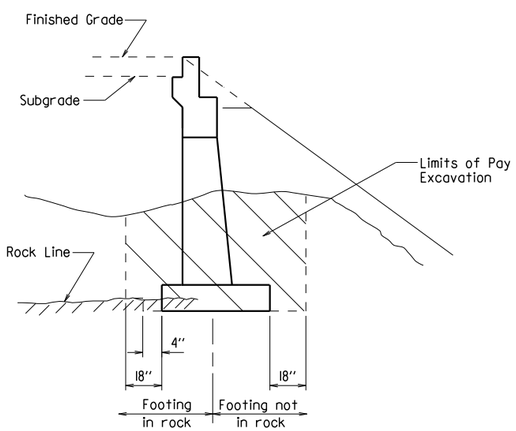
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



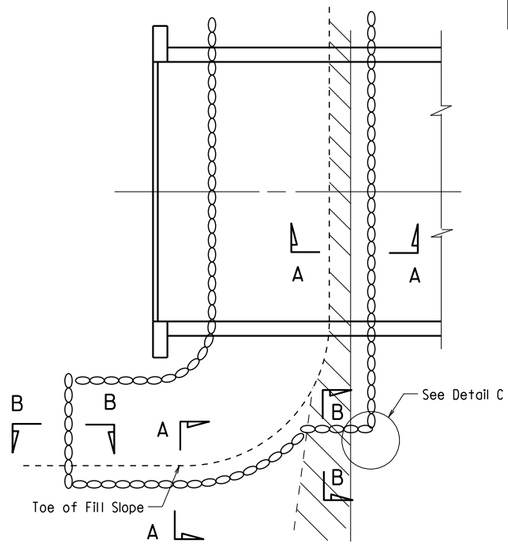
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



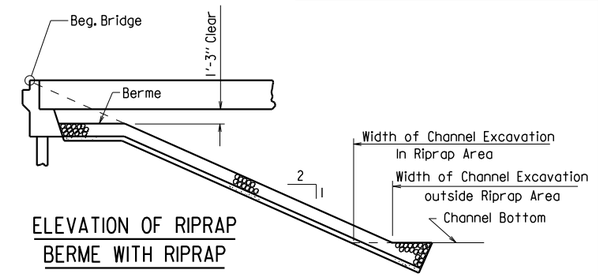
EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



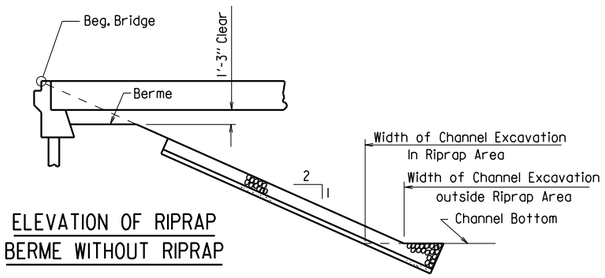
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT



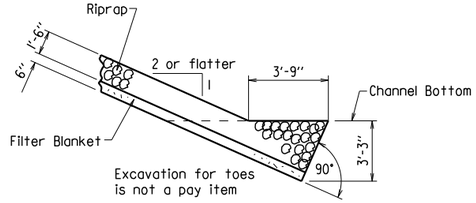
PLAN OF DUMPED RIPRAP



ELEVATION OF RIPRAP BERME WITH RIPRAP

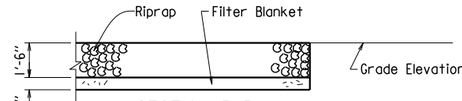


ELEVATION OF RIPRAP BERME WITHOUT RIPRAP

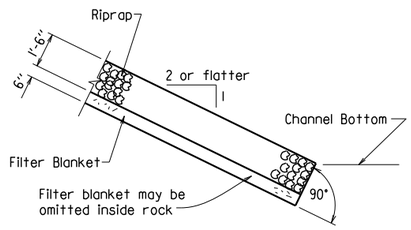


SECTION A-A

(Toe Excavation in Soil)



SECTION B-B



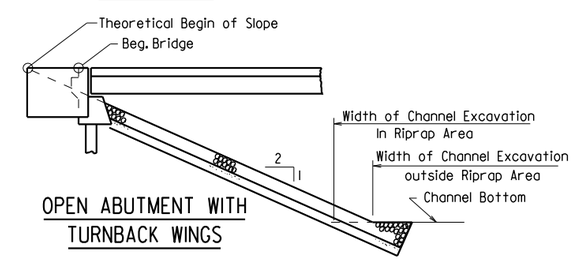
SECTION A-A

(Toe Excavation in Rock)

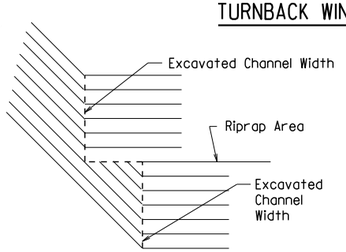
Note : Use this type of toe when rock is encountered which is in a stable condition.

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.



OPEN ABUTMENT WITH TURNBACK WINGS



DETAIL C

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

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

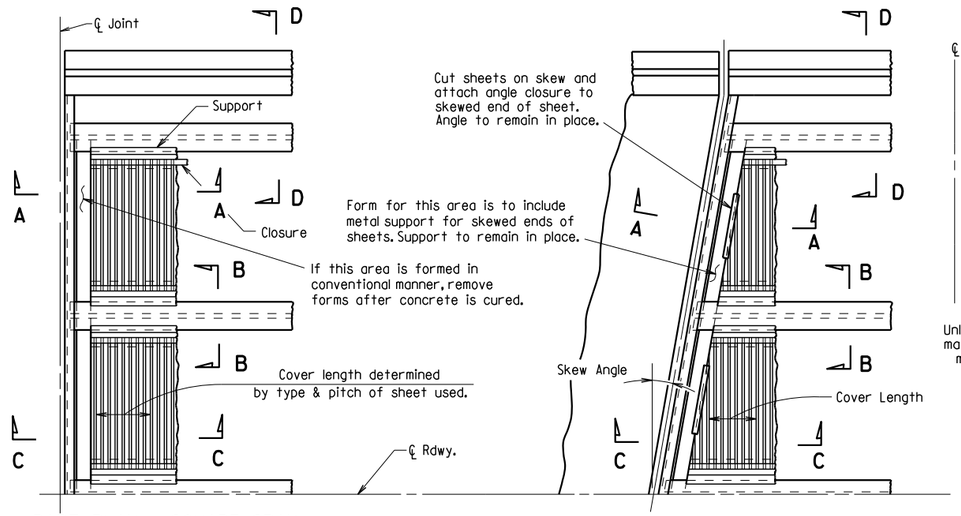
DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55001.dgn

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

DESIGNED BY: STD. DATE:

DRAWING NO. 55001

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

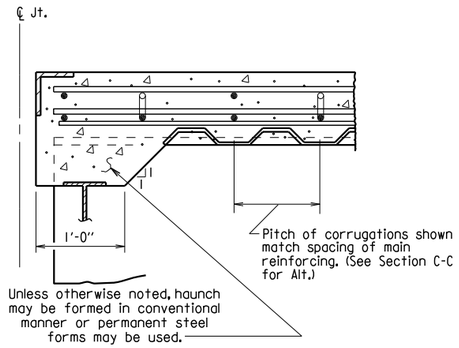


PART PLAN - SQUARE SPAN

3/8" = 1'-0"

PART PLAN - SKEWED SPAN

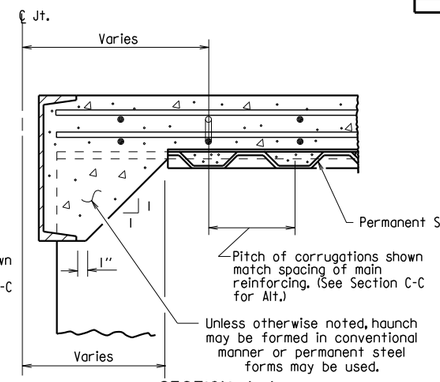
3/8" = 1'-0"



SECTION A-A

N.T.S.

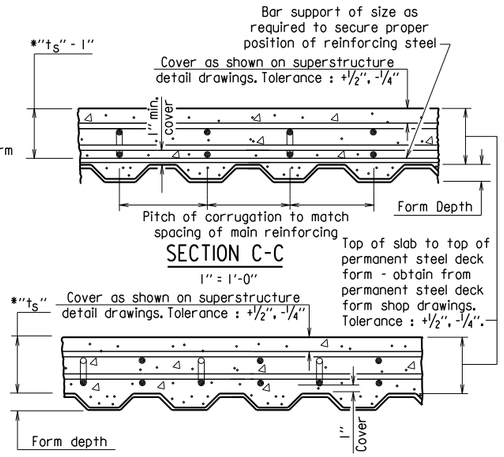
(Angle at end of span)



SECTION A-A

N.T.S.

(Channel at end of span)



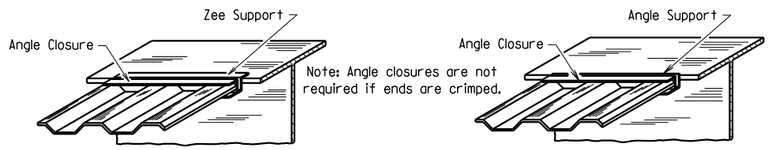
SECTION C-C

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.

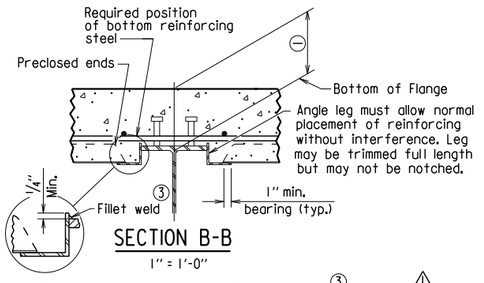
Form sheets shall be fastened to supporting members and to each other with galvanized metal screws sufficient in size and number to provide a secure attachment. Alternate methods of attachment must be approved by the Engineer.

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.

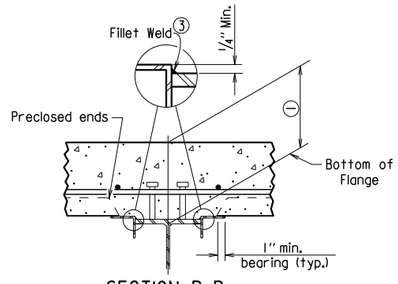


SECTION B-B

1" = 1'-0"

(Showing permissible support for tension flange where shear connectors are used, and for all compression flanges)

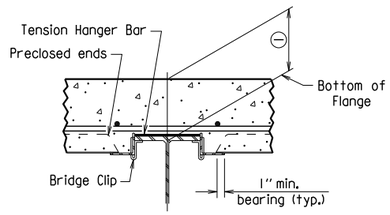
③ ⚠ Minimum weld: ⅛" x 1" @ 18". More weld may be required; maximum length per weld = 1½" (typ.)



SECTION B-B

1" = 1'-0"

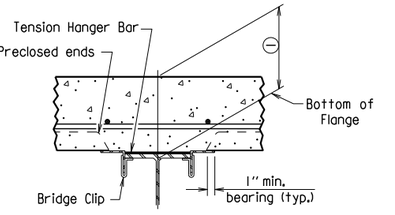
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



SECTION B-B

1" = 1'-0"

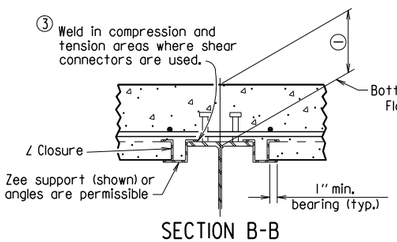
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

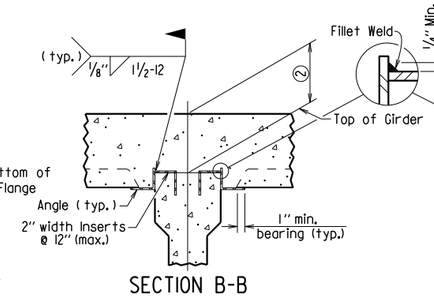
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

(Showing ∠ Closure)

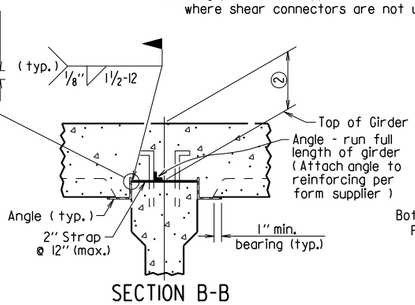


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by Insert cast in girder)

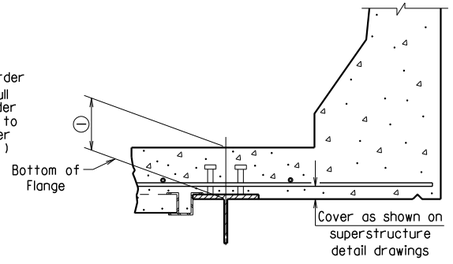


SECTION B-B

(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 + 1¾" + 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

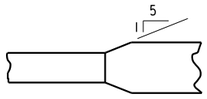
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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

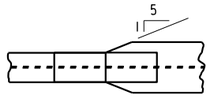
PRINT DATE: 11/7/2019

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			

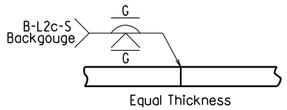


Plan-Unequal Width (Flg.)

FLANGE SPLICE

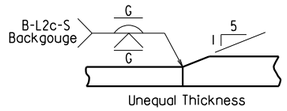


FLANGE SPLICE AT UNEQUAL BOTTOM FLANGE WIDTHS



Equal Thickness

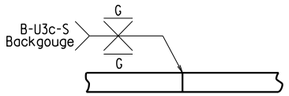
WEB & FLANGE SPLICE



Unequal Thickness

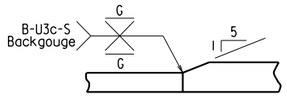
FLANGE SPLICE

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



Equal Thickness

WEB & FLANGE SPLICE

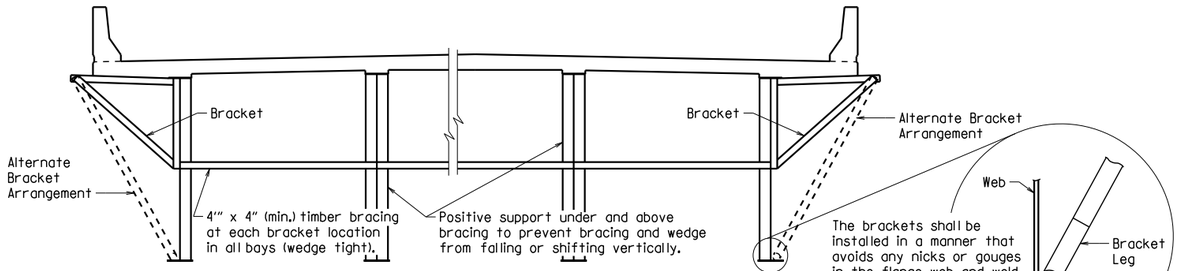


Unequal Thickness

FLANGE SPLICE

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

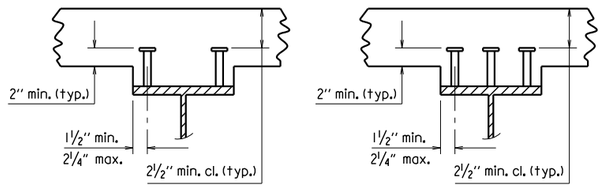
DETAILS OF WELDED SPLICES FOR PLATE GIRDERS



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)

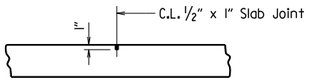


2 STUDS PER ROW

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.

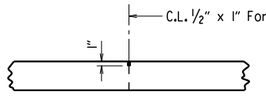
SHEAR CONNECTOR DETAIL



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.

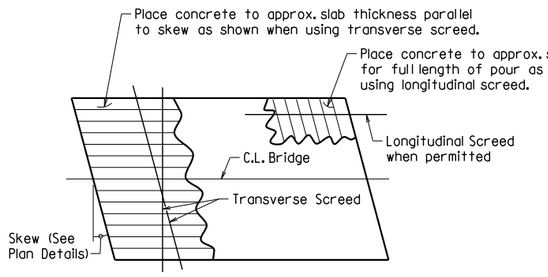
ADDITIONAL NOTES IF SIDEWALKS OR RAISED MEDIANS ARE REQUIRED:
Slab Joints shall be installed before the sidewalk or raised median is poured. After installation of the joint in the sidewalk or raised median and prior to pouring the parapet rail, the joint sealer shall be placed extending across the deck 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



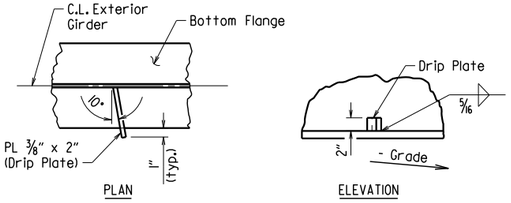
Use ½" x 1" Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer Rod filler will not be required. Joint sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. This joint shall be formed. Seal color shall be gray or other color similar to concrete.

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



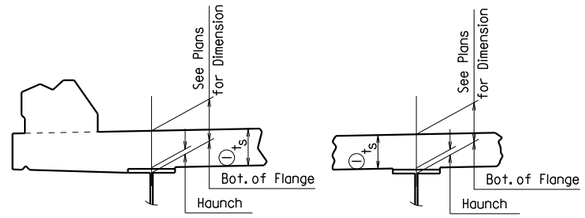
Drip Plate to be welded to the outer side of the bottom flange of the exterior girders.

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

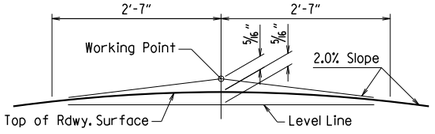
INTERIOR BEAM OR GIRDER

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"	5/16"	

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

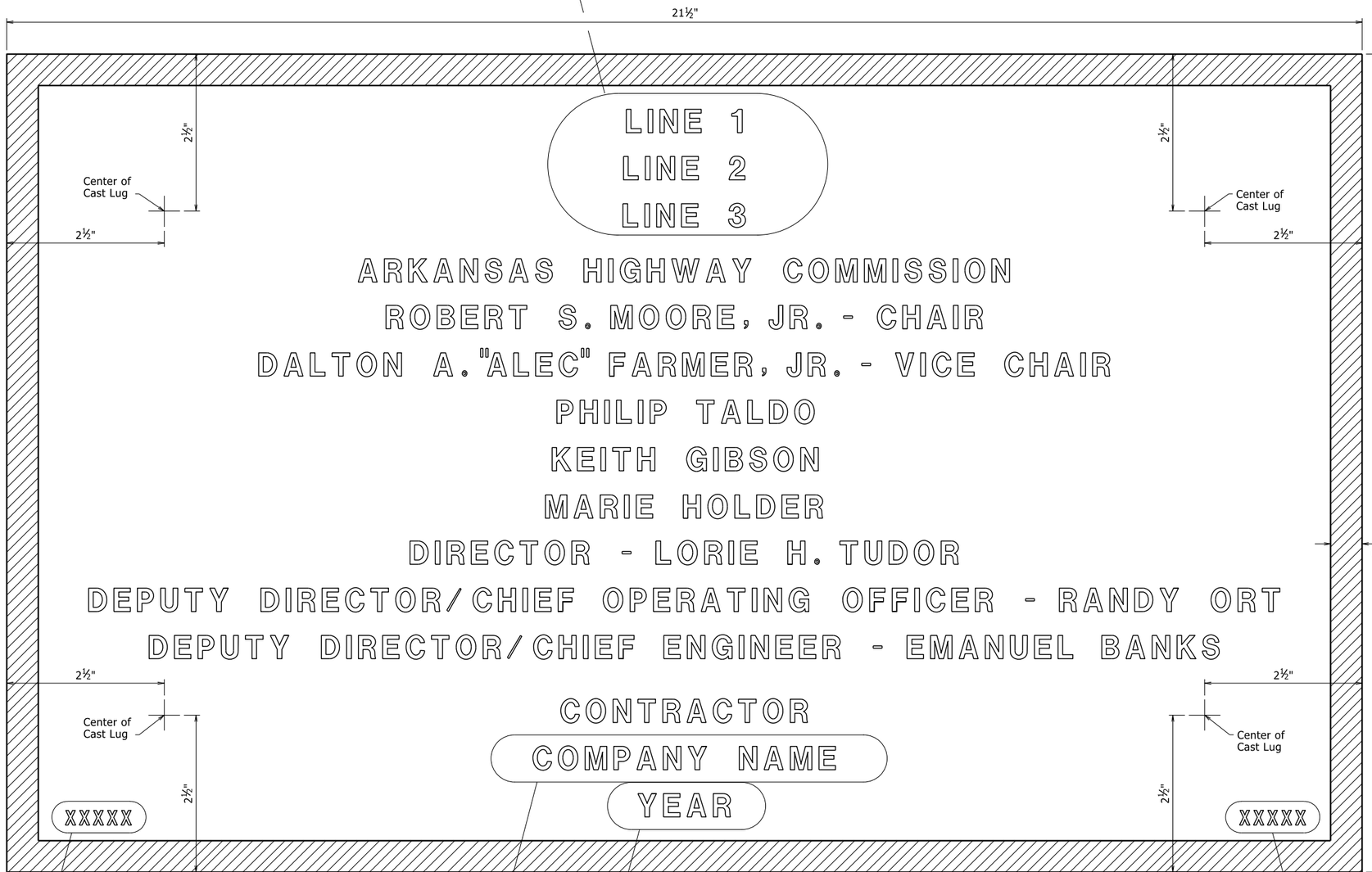
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
12-1-14		1-15-19	
1-14-15		3-24-2020	
1-17-17			

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

(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	



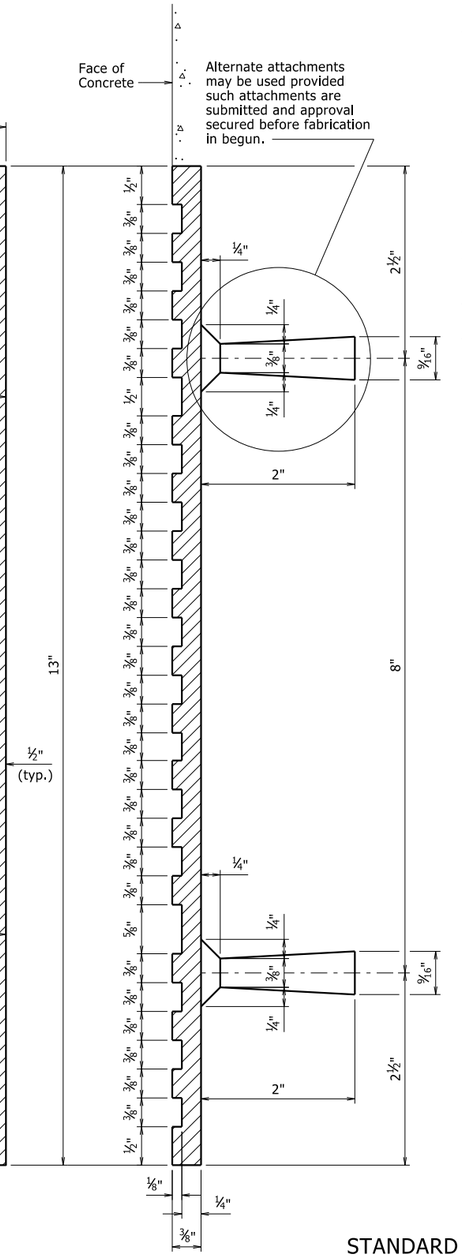
Place the design live loading here using ⅛" raised letters and numerals ¼" high. Examples: HS20, HL-93

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

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.

(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.

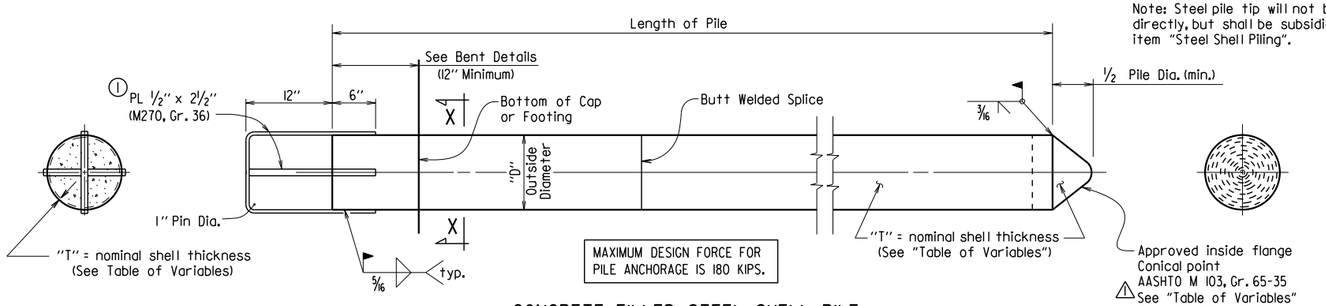
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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: 4/6/2020

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.				
						STEEL SHELL PILES		55021

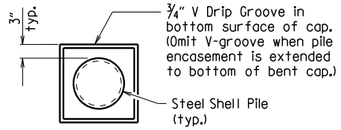


Note: Steel pile tip will not be paid for directly, but shall be subsidiary to the item "Steel Shell Piling".

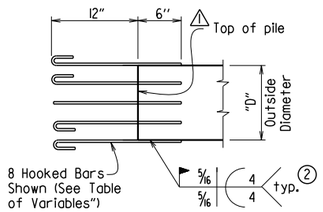
CONCRETE FILLED STEEL SHELL PILE

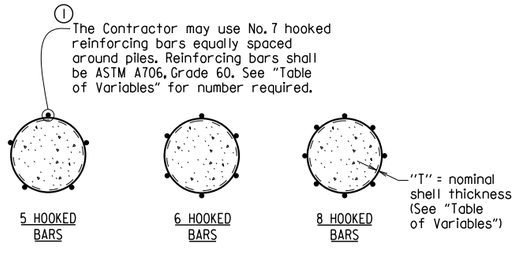
① Pile anchorage shall be placed to minimize interference with anchor bolts and reinforcing in cap or footing.

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.



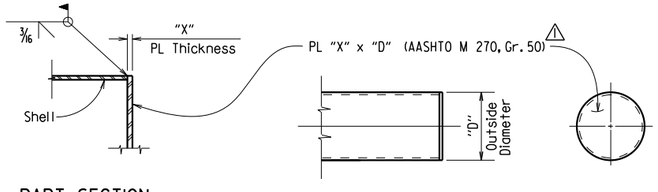
VIEW X-X





ALTERNATE PILE ANCHORAGE DETAIL

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

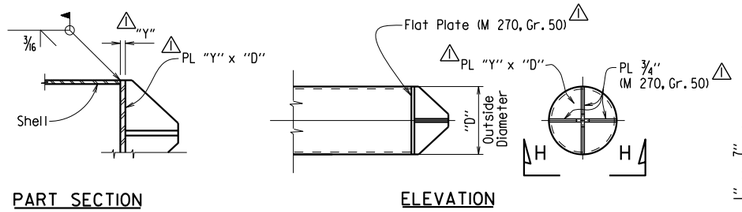


PART SECTION

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

GENERAL NOTES FOR CONCRETE FILLED STEEL SHEEL PILES:

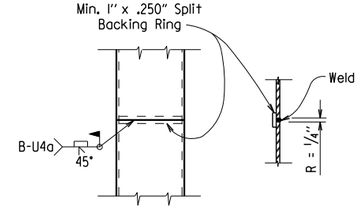
Steel shells shall conform ASTM A252, Grade 3 (Fy = 45,000 psi.)

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.

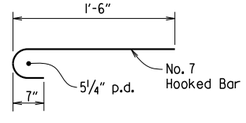
Concrete, structural steel, reinforcing steel (including welding), and painting shall not be paid for directly, but shall be considered subsidiary to the item "Steel Shell Piling".



TYPICAL SPLICE DETAILS

TABLE OF VARIABLES

OUTSIDE DIAMETER "D"	NOMINAL SHELL THICKNESS "T"	⚠ PLATE THICKNESS "X"	⚠ PLATE THICKNESS "Y"	NO. OF HOOKED BARS FOR ALTERNATE PILE ANCHORAGE	⚠ MINIMUM CONICAL TIP DESIGN LOAD (KIPS)
14"	0.50"	2 1/4"	1 1/2"	5	859
16"	0.50"	2 1/4"	1 1/2"	5	986
18"	0.50"	2 1/2"	1 1/2"	6	1,114
20"	0.50"	2 1/2"	1 3/4"	6	1,241
24"	0.50"	2 3/4"	1 3/4"	8	1,495



HOOKED BAR DETAIL

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

GENERAL NOTES FOR PILE ENCASEMENTS:

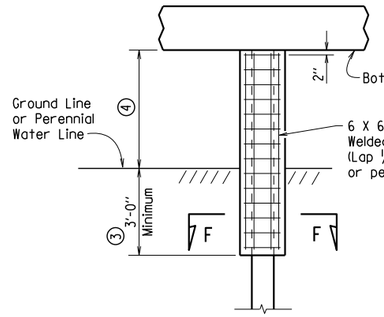
⚠ See Bridge Layout for additional notes, any pile encasement restrictions and required location of pile encasements.

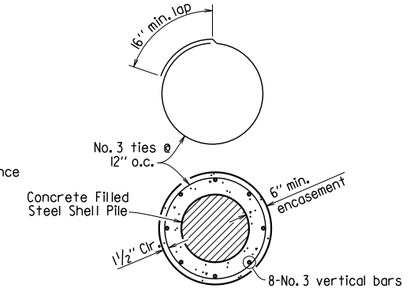
Concrete shall be Class S with a minimum 28-day compressive strength, f'c = 3,500 psi. If concrete cannot be placed in the dry, Seal Concrete may be used from top to bottom of encasement.

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)

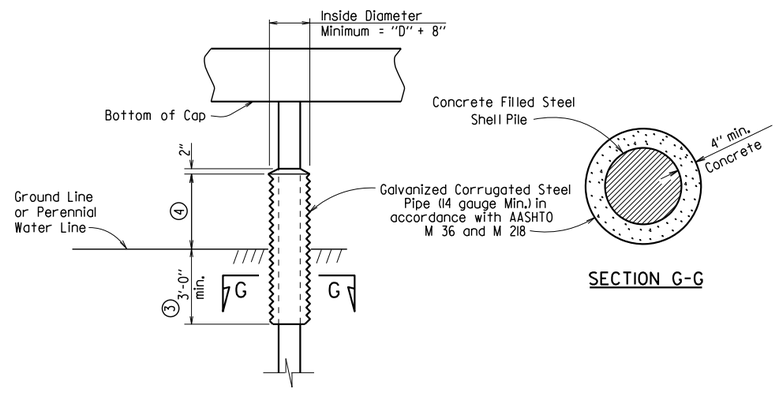
PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES

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

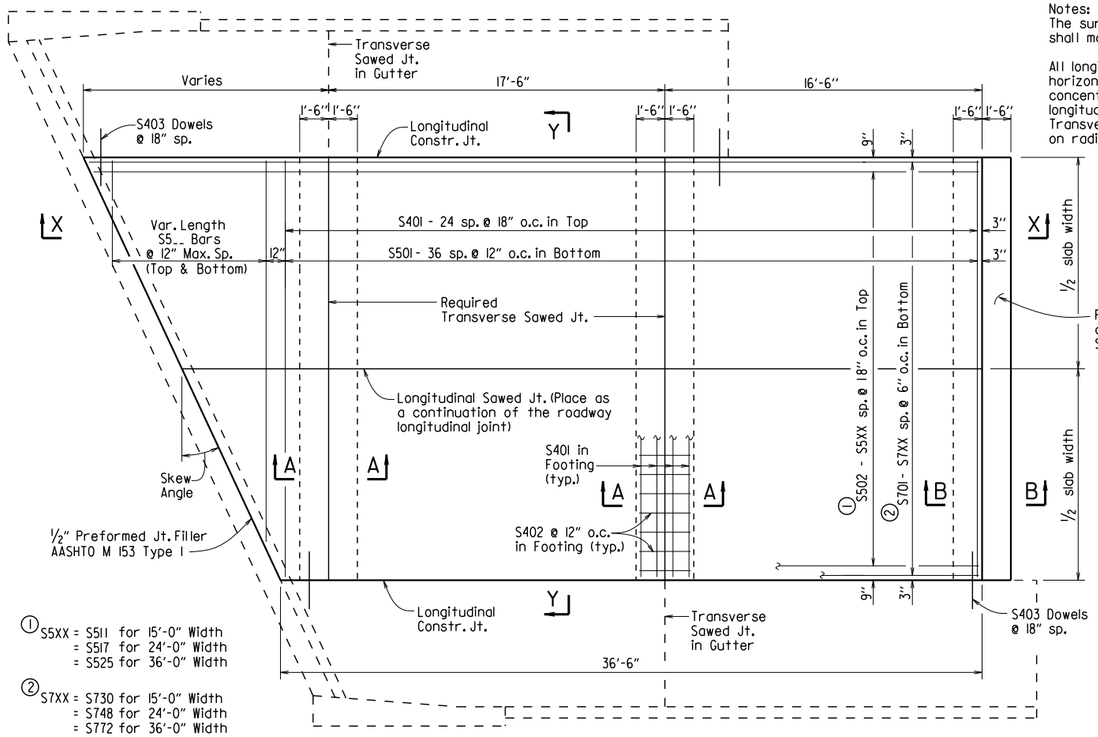
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

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

TYPE CI APPROACH SLAB 55040CI

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

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

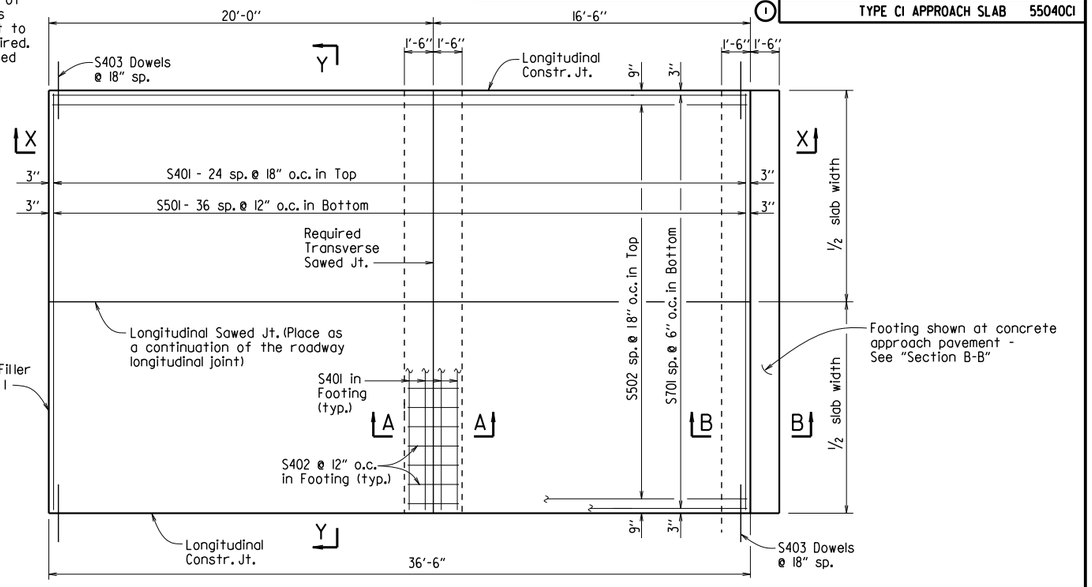


① S5XX = S511 for 15'-0" Width
= S517 for 24'-0" Width
= S525 for 36'-0" Width

② S7XX = S730 for 15'-0" Width
= S748 for 24'-0" Width
= S772 for 36'-0" Width

PLAN - SKEWED APPROACH SLAB WITH APPROACH GUTTERS

1/4" = 1'-0"



PLAN - SQUARE APPROACH SLAB

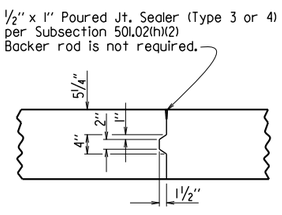
1/4" = 1'-0"

BAR LIST

(Square & Skewed Approach Slabs)

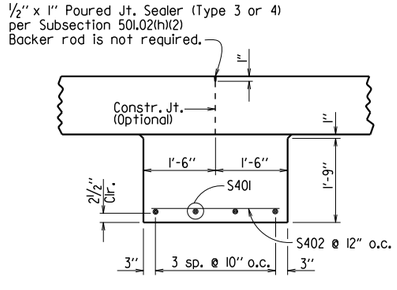
	Mark	Square No. Req'd.	Square Length	Skewed No. Req'd.	Skewed Length
15'-0" Slab Width	S401	33	14'-8"	37	14'-8"
	S402	30	2'-8"	45	2'-8"
	S403	50	3'-0"	*	3'-0"
	S501	37	14'-8"	37	14'-8"
	S502	10	36'-2"	—	—
	S502 - S511	—	—	1 Ea.	36.1' + 0.75'(tan skew angle) to 36.1' + 14.25'(tan skew angle)
	S5_ _	—	—	2 Ea.	14.7' - 0.75'/(tan skew angle) to 2'-0" Min.
	S701	30	36'-2"	—	—
	S701 - S730	—	—	1 Ea.	36.1' + 0.25'(tan skew angle) to 36.1' + 14.75'(tan skew angle)
24'-0" Slab Width	S401	33	23'-8"	37	23'-8"
	S402	48	2'-8"	72	2'-8"
	S403	50	3'-0"	*	3'-0"
	S501	37	23'-8"	37	23'-8"
	S502	16	36'-2"	—	—
	S502 - S517	—	—	1 Ea.	36.1' + 0.75'(tan skew angle) to 36.1' + 23.25'(tan skew angle)
	S5_ _	—	—	2 Ea.	23.7' - 0.75'/(tan skew angle) to 2'-0" Min.
	S701	48	36'-2"	—	—
	S701 - S748	—	—	1 Ea.	36.1' + 0.25'(tan skew angle) to 36.1' + 23.75'(tan skew angle)
36'-0" Slab Width	S401	33	35'-8"	37	35'-8"
	S402	72	2'-8"	108	2'-8"
	S403	50	3'-0"	*	3'-0"
	S501	37	35'-8"	37	35'-8"
	S502	24	36'-2"	—	—
	S502 - S525	—	—	1 Ea.	36.1' + 0.75'(tan skew angle) to 36.1' + 35.25'(tan skew angle)
	S5_ _	—	—	2 Ea.	35.7' - 0.75'/(tan skew angle) to 2'-0" Min.
	S701	72	36'-2"	—	—
	S701 - S772	—	—	1 Ea.	36.1' + 0.25'(tan skew angle) to 36.1' + 35.75'(tan skew angle)

* Varies with skew angle



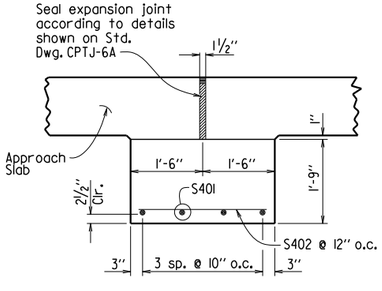
DETAILS OF LONGITUDINAL CONSTRUCTION JOINT

3/4" = 1'-0"



SECTION A-A

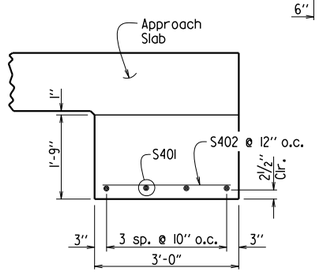
N.T.S.



SECTION B-B

AT CONCRETE APPROACH PAVEMENT

N.T.S.



SECTION B-B

AT ASPHALT APPROACH PAVEMENT

N.T.S.

SECTION X-X

SQUARE APPROACH SLAB SHOWN

1/4" = 1'-0"

SECTION Y-Y

N.T.S.

TABLE OF QUANTITIES FOR ONE SQUARE APPROACH SLAB

(FOR INFORMATION ONLY)

Slab Width	Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
15'-0"	3640	30.75
24'-0"	5775	49.15
36'-0"	8620	73.75

GENERAL NOTES

This drawing shall be used for Approach Slabs in Seismic Performance Zone 1 and for the maximum skew angles shown below:

15'-0" Slab Width: Maximum Skew Angle = 50°
24'-0" Slab Width: Maximum Skew Angle = 40°
36'-0" Slab Width: Maximum Skew Angle = 30°

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

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

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

STANDARD DETAILS FOR TYPE CI APPROACH SLAB

ARKANSAS STATE HIGHWAY COMMISSION

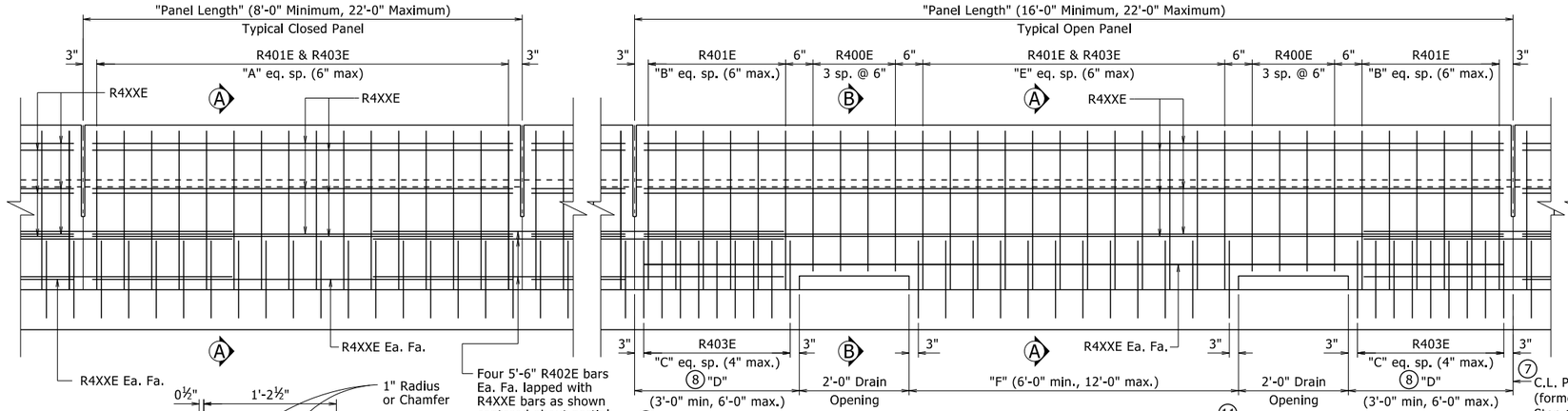
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55040ci.dgn
CHECKED BY: K.W.Y. DATE: 2/27/2014 SCALE: AS SHOWN
DESIGNED BY: STD. DATE:

DRAWING NO. 55040CI

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"

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

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

(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.

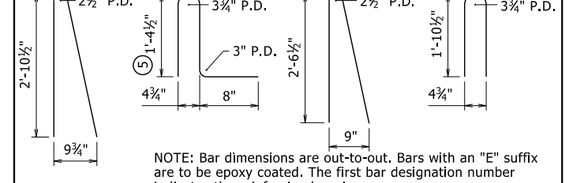
(5) Only applicable for bridges with rail cast directly on bridge deck/slab surface. Increase height as necessary for sidewalks, see Plans for additional information.

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

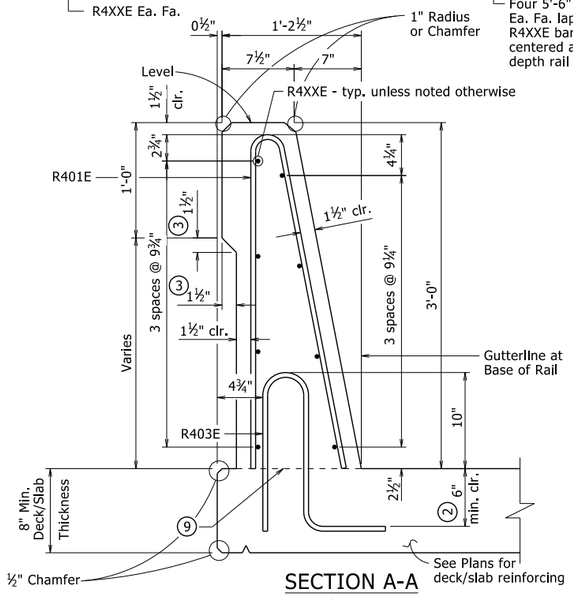
(7) When optional slip forming is used: to control cracking, all rail joints must be V-grooved around the perimeter of the rail prior to concrete set and sawing. Depth of V-groove shall be ½". Sawing of the joints shall be done as soon as practical to a width of ¼", and must be controlled so it will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

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

BENDING DIAGRAM

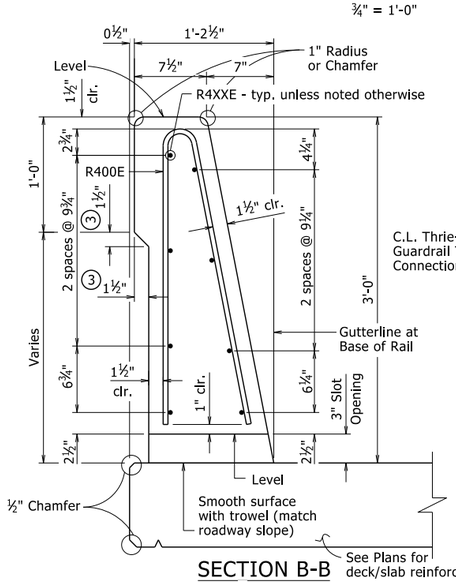


NOTE: Bar dimensions are out-to-out. Bars with an "E" suffix are to be epoxy coated. The first bar designation number indicates the reinforcing bar size.



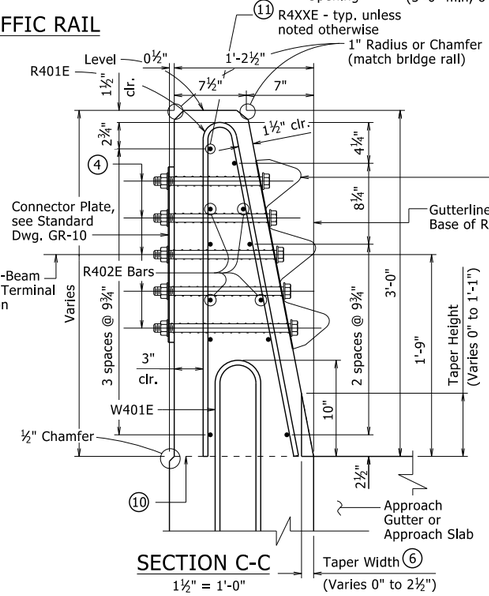
SECTION A-A

1½" = 1'-0"



SECTION B-B

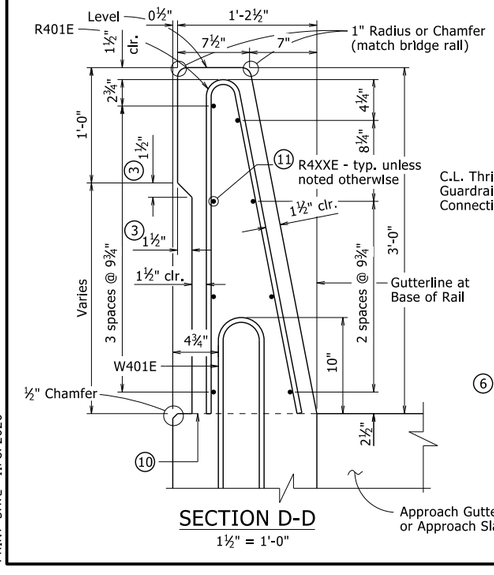
1½" = 1'-0"



SECTION C-C

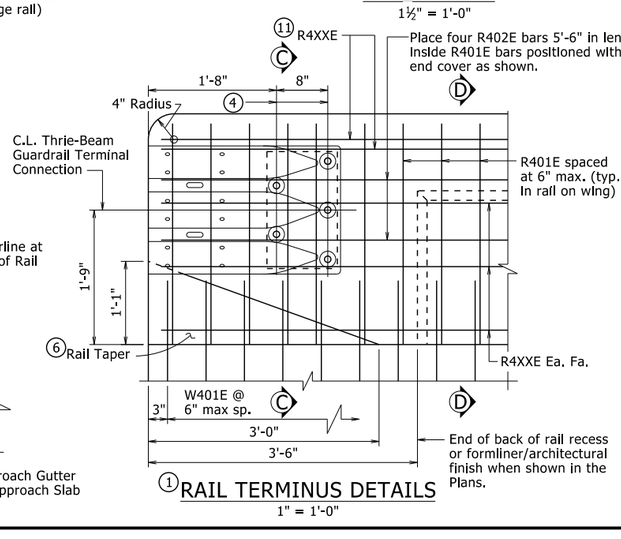
1½" = 1'-0"

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.



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.

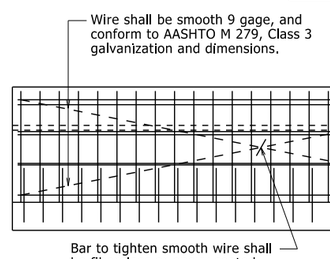
Details shown are general for bridges without sidewalks. See Plans for additional details and requirements specific to bridges with sidewalks.

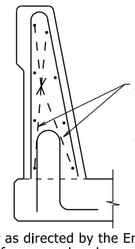
For Table of Variables, Rail Bar List, locations of Full and Partial Depth Rail Joints, and Wing & Rail Bar Lists, see Plans.

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

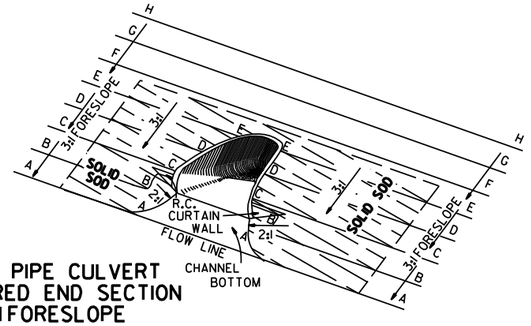
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

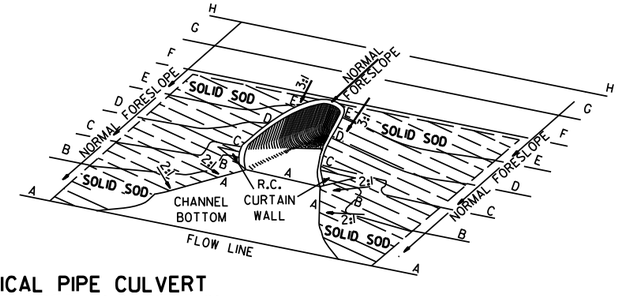
DRAWN BY: KWY DATE: 11/5/2020
CHECKED BY: LJB DATE: 11/5/2020
DESIGNED BY: STD. DATE: -----
FILENAME: b55070.dgn
SCALE: As Noted

DRAWING NO. 55070

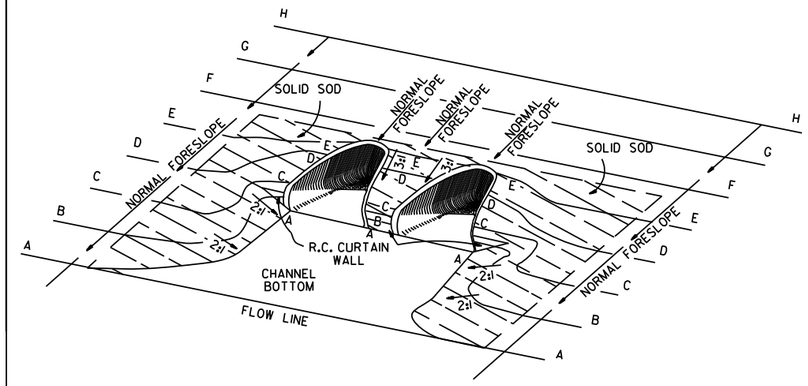
PRINT DATE: 11/5/2020



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



TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& FLATTENED ADJACENT SLOPES



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

R.C. CURTAIN WALL
DIMENSIONS & QUANTITIES

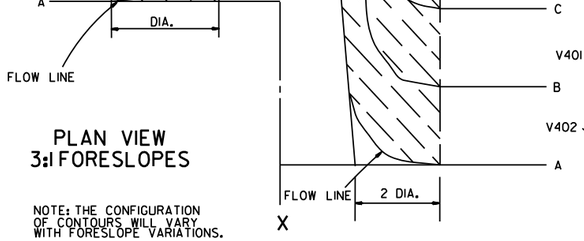
PIPE DIA.	H_1	L_1	L	L (DBL.)/2	SINGLE R.C.P.C.		DOUBLE R.C.P.C.	
					CONC.	REINF. STEEL	CONC.	REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	5'-7"	11'-0"	9'-0"	0.45	39.0	0.67	59.0
36"	1'-7"	6'-8"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

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

REINFORCING STEEL SCHEDULE

PIPE DIA.	SINGLE R.C. PIPE CULVERT								DOUBLE R.C. PIPE CULVERT											
	H401		H402		V401		V402		H401		H402		H403		V401		V402	
	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	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

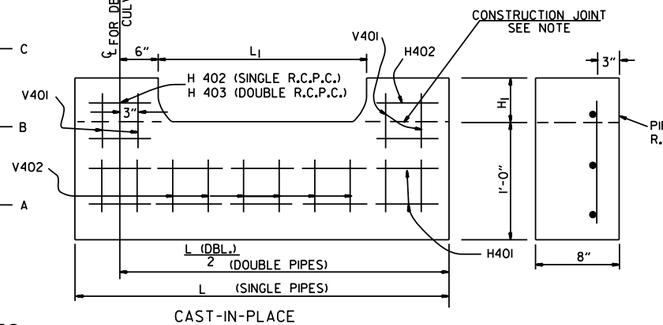
ALL REINFORCING STEEL #4 BARS @ 6" O.C.



PLAN VIEW
3:1 FORESLOPES

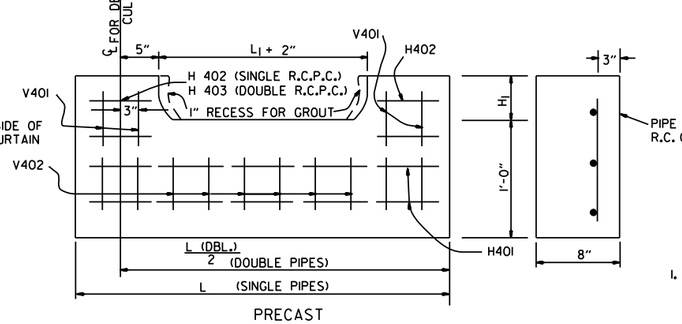
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW
FLATTENED FORESLOPES



CAST-IN-PLACE

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



PRECAST

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

R.C. CURTAIN WALL DETAILS

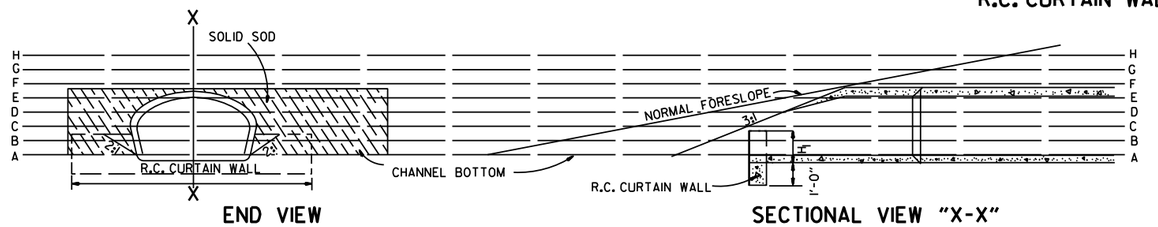
SOLID SODDING

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



END VIEW

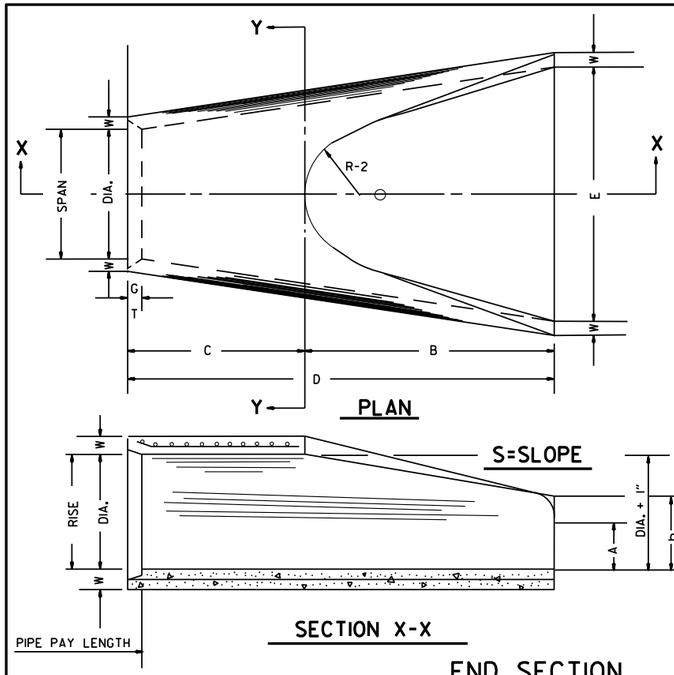
SECTIONAL VIEW "X-X"

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

ARKANSAS STATE HIGHWAY COMMISSION

FLARED END SECTION

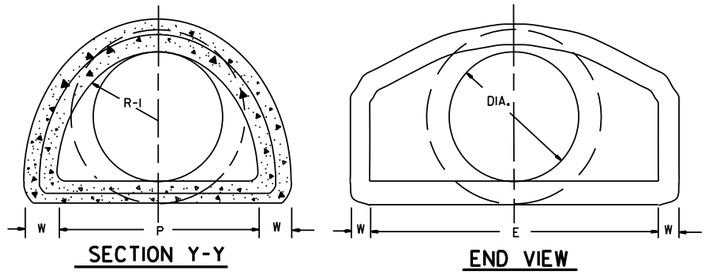
STANDARD DRAWING FES-1



END SECTION FOR REINFORCED CONCRETE PIPE CULVERTS

TABLE OF DIMENSIONS

DIA.	WALL	A	B	C	D	E	S	DIA. + 1"	P	R-I	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"	33⅜"	16⅛"	14"	2½"	1600	1'-1½"
30"	3½"	1'-0"	4'-6"	1'-7¾"	6'-1¾"	5'-0"	3:1	31"	37"	18½"	15"	3¼"	1940	1'-4⅝"
36"	4"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	6'-0"	3:1	37"	47⅛"	24⅜"	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"	36⅛"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77⅛"	38⅝"	24"	5"	13250	4'-6"

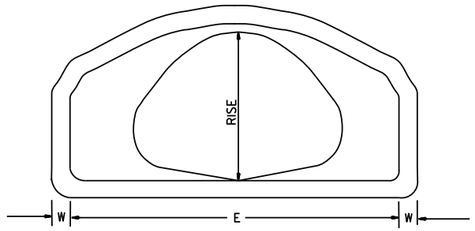


NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

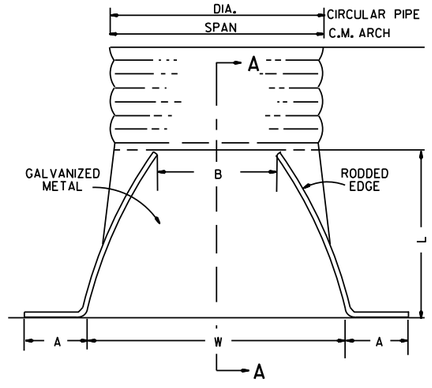
ARCH PIPE

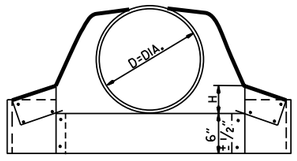
EQUIV. DIA.	• SPAN AASHTO M 206	• SPAN AHD NOMINAL	• RISE AASHTO M 206	• RISE AHD NOMINAL	W	A	B	C	D	E	P	R2	G-T	S
	INCHES													
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1½"	2½:1
18	22	22	13½	14	2½"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32⅛"	13"	2½"	2½:1
21	26	26	15½	16	2¾"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34⅛"	14"	2½"	2½:1
24	28½	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36⅛"	15"	2½"	2½:1
30	36¼	36	22½	23	3½"	10"	3'-1"	3'-0½"	6'-1½"	6'-0"	47⅛"	20"	3"	2½:1
36	43¾	44	26⅝	27	4"	10½"	4'-0"	2'-1½"	6'-1½"	6'-6"	54⅜"	22"	3½"	2½:1
42	51⅛	51	31⅝	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"	70⅜"	24"	4¼"	2½:1
54	65	65	40	40	5½"	1'-7"	5'-3"	2'-11"	8'-2"	8'-6"	72⅛"	24"	4¾"	2¼:1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77⅛"	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

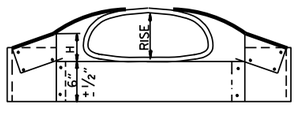




CIRCULAR PIPE

CIRCULAR PIPE

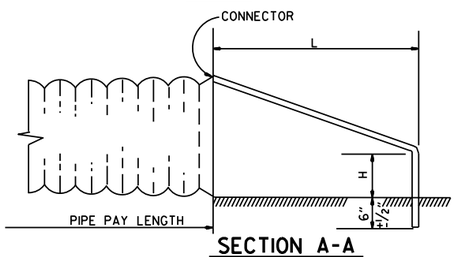
D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" ±	L 1½" ±	W 2" ±	S
		INCHES					
12	16	6	6	6	21	24	2½:1
15	16	7	8	6	26	30	2½:1
18	16	8	10	6	31	36	2½:1
21	16	9	12	6	36	42	2½:1
24	16	10	13	6	41	48	2½:1
30	14	12	16	8	51	60	2½:1
36	14	14	19	9	60	72	2½:1
42	12	16	22	11	69	84	2½:1
48	12	18	27	12	78	90	2½:1
54	12	18	30	12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



C.M. ARCH PIPE

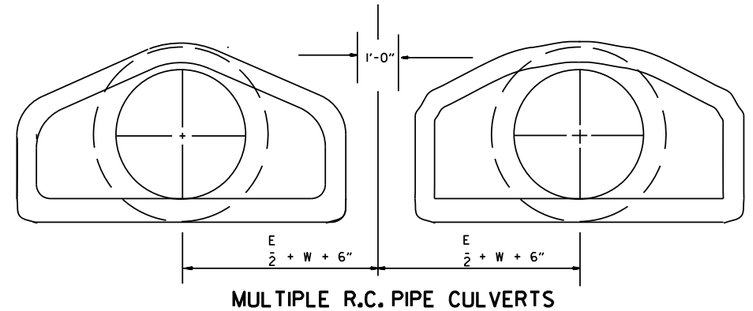
C.M. ARCH PIPE

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

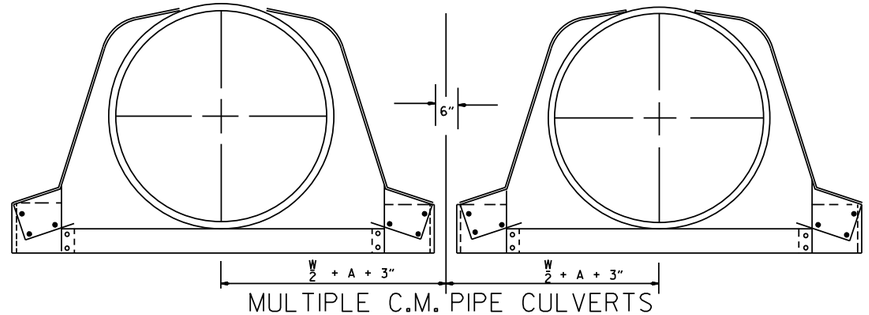


NOTE: ALTERNATE CONNECTIONS TO THE PIPE CULVERTS, IN ACCORDANCE WITH MANUFACTURER'S STANDARD PRACTICES, MAY BE MADE SUBJECT TO THE APPROVAL OF THE ENGINEER.

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS



MULTIPLE R.C. PIPE CULVERTS



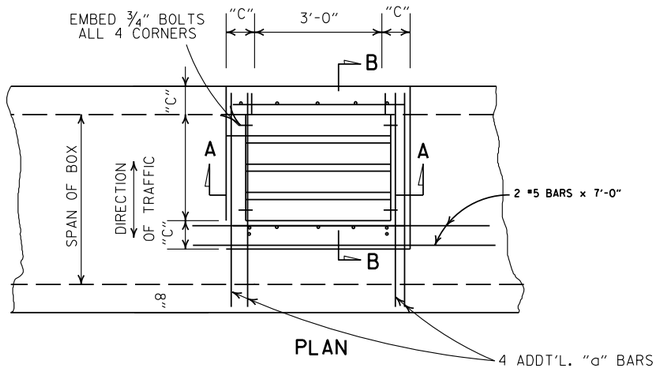
MULTIPLE C.M. PIPE CULVERTS

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

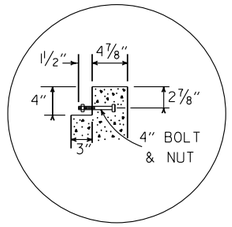
ARKANSAS STATE HIGHWAY COMMISSION

FLARED END SECTION

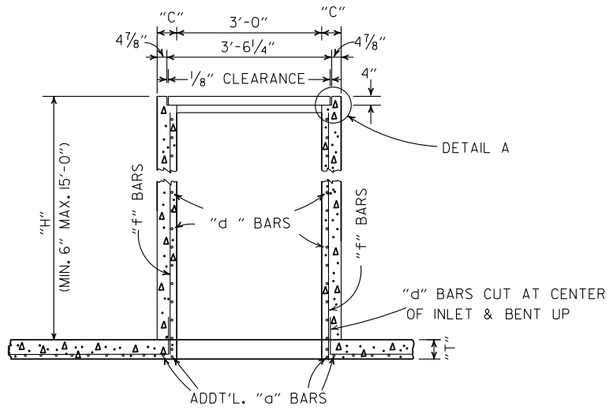
STANDARD DRAWING FES-2



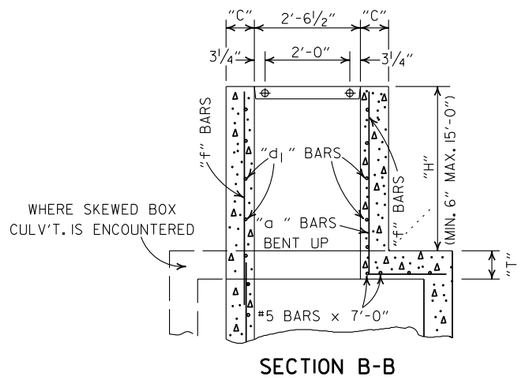
PLAN



DETAIL A



SECTION A-A

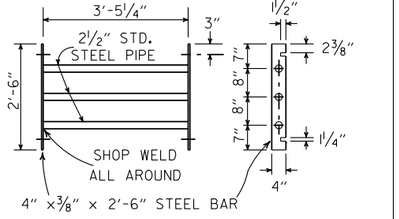


SECTION B-B

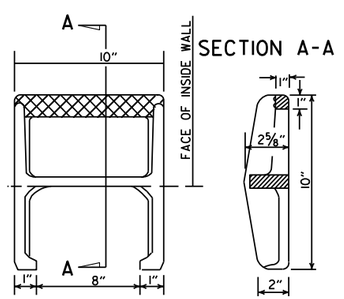
NOTE: ADDT'L.REINF. STEEL TO BE INCLUDED IN UNIT PRICE BID PER TYPE "TM" D.I.

DIMENSIONS & REINF. BARS FOR D.I. TO BE THE SAME AS THOSE SHOWN ON APPLICABLE STD. BARREL DRAWING FOR R.C. BOX CULVERTS.

DROP INLET TYPE "TM"
FOR REINFORCED CONC. BOX CULVERTS



GRATE DETAIL



APPROX. WEIGHT = 11 LBS. (CAST IRON)

PLAN

NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

DETAIL OF STEP FOR DROP INLET

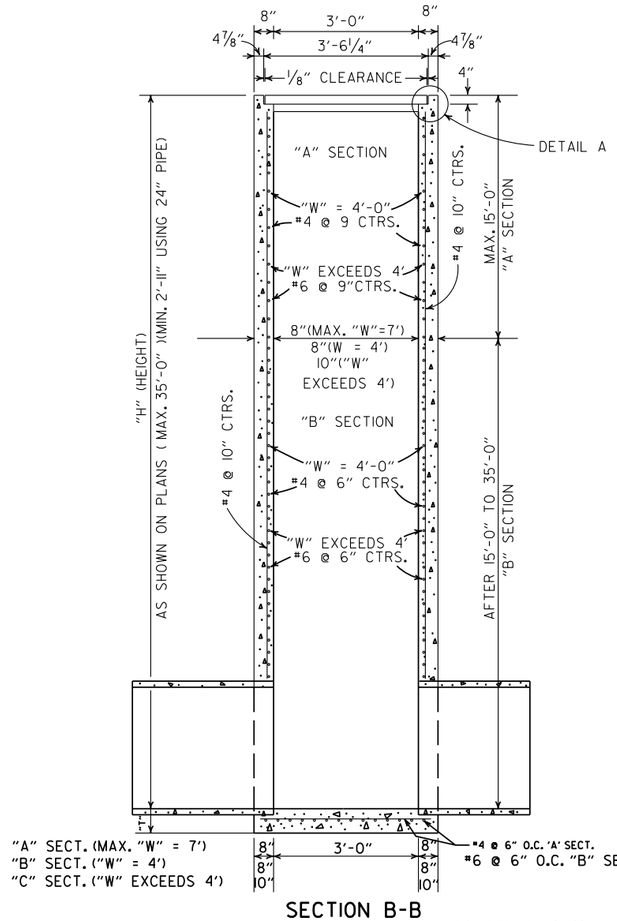
GENERAL NOTES:

1. STEEL PIPE FOR GRATES AND BOLTS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 807. BOLTS SHALL CONFORM TO ONE OF THE FOLLOWING: ASTM A193, GRADE B8 CLASS 1 OR 2, ASTM A307 OR AASHTO M 164.
2. STEEL PIPE FOR GRATES SHALL BE "STANDARD WEIGHT" PIPE CONFORMING TO ASTM A53 NATIONAL STANDARD PIPE.
3. BOLTS, NUTS, WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M 232 OR AASHTO M 298, CLASS 40 OR 50.
4. ALL EXPOSED CORNERS TO HAVE ¾" CHAMFER.
5. ALL #4 AND #5 REINFORCING BARS TO HAVE 1½" COVER. LARGER SIZES TO HAVE 2" COVER.
6. THE COMPLETE PIPE GRATE SHALL BE PAINTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

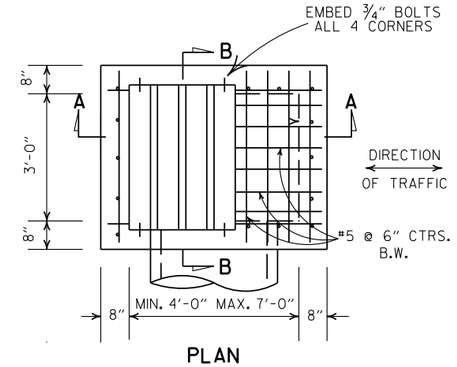
TABLE OF "W" DIMENSIONS

I.D. PIPE	SKEW OF CROSS DRAIN		
	STRAIGHT	30°	45°
	"W"	"W"	"W"
24"	4'-0"	4'-0"	4'-0"
30"	4'-0"	4'-0"	4'-5"
36"	4'-0"	4'-3"	5'-3"
42"	4'-3"	4'-11"	6'-1"
48"	4'-10"	5'-7"	6'-11"

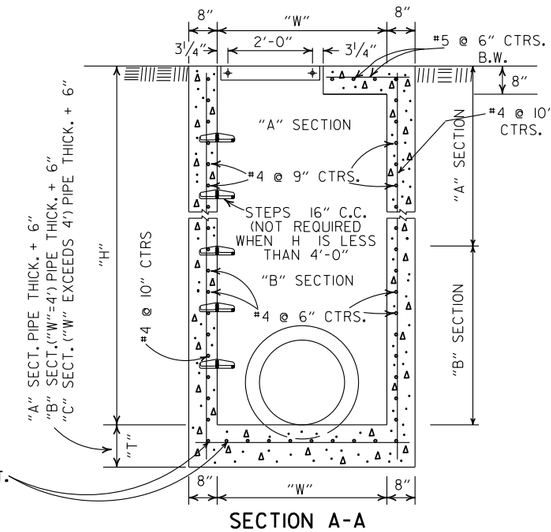
NOTE: DIMENSIONS SHOWN ABOVE ARE FOR PIPES INTERSECTING DROP INLET ON ONE SIDE ONLY. FOR SKEWED PIPES INTERSECTING BOTH SIDES OF DROP INLET, "W" WILL NEED TO BE INCREASED OR AXIS OF INTERSECTING PIPES WILL NEED TO BE SHIFTED.



SECTION B-B



PLAN



SECTION A-A

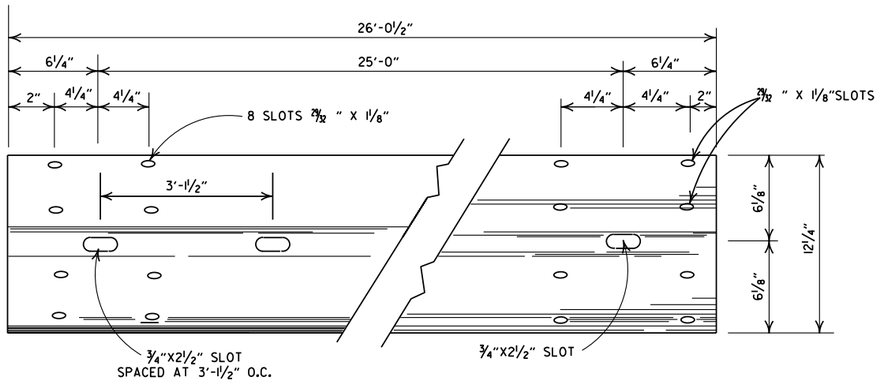
DROP INLET(TYPE RM)

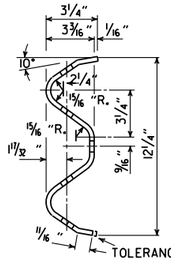
REVISED		DATE FILMED
8-22-02	ADDED & REVISED DIMENSION TO SECTION A-A	
1-12-00	CORRECTED DIMENSION ON SECTION B-B	
11-06-97	ADDED DIMENSION TO SECTION A-A	
10-18-96	REVISED ASTM REF. TO AASHTO AND ADDED NOTE TO TABLE OF "W" DIMENSIONS	
10-1-92	ADDED DIRECTION OF TRAFFIC	10-1-92
8-15-91	ADDED NOTE ABOUT PAINTING OF GRATE	8-15-91
11-30-89	ALTERED DETAIL A	11-30-89
7-15-88	REVISED STEP DETAIL,TM & RM D.I. & GRATE DETAIL	719-7-15-88
10-2-72	REVISED AND REDRAWN	542-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLETS

STANDARD DRAWING FPC-9D

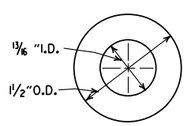




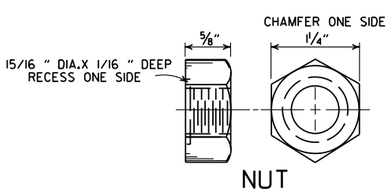
DETAILS OF W-BEAM GUARDRAIL

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

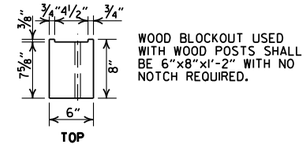
SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



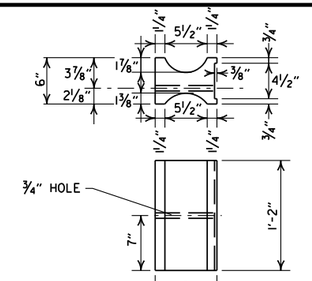
CUT STEEL WASHER



NUT



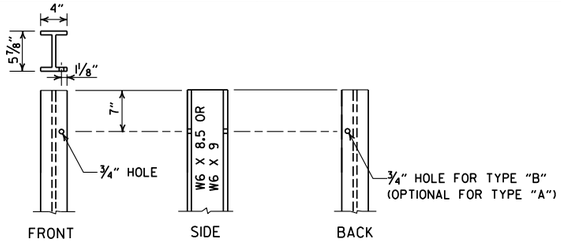
WOOD BLOCKOUT (W-BEAM)



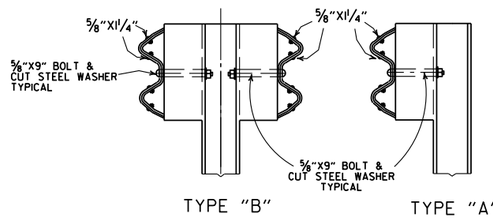
NOTES:

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

PLASTIC BLOCKOUT (W-BEAM)



STEEL POST



DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

-GENERAL NOTES-

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

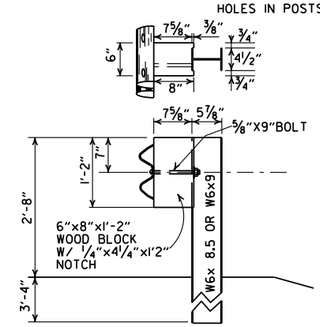
USE W-BEAM GUARDRAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB. FOR EXTENSIONS OR MODIFICATION OF EXISTING GUARDRAIL, W-BEAM GUARDRAIL COMPONENTS OF THE SAME TYPE AS THOSE EXISTING SHALL BE USED.

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

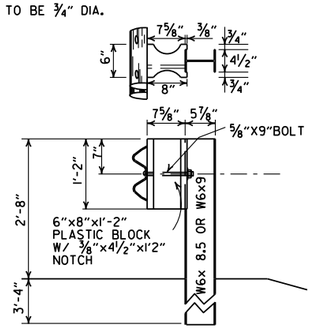
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

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.

HOLES IN POSTS AND BLOCKS TO BE 3/4" DIA.



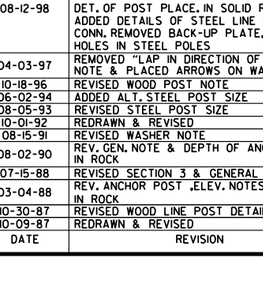
WOOD BLOCKOUT CONNECTIONS



PLASTIC BLOCKOUT CONNECTIONS

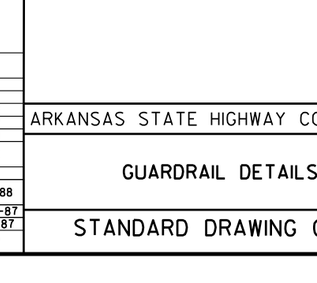
DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

HOLES IN POSTS AND BLOCKS TO BE 3/4" DIA.



POSTS AND BLOCKS TO BE ROUGH SAWN 6"X8" WITH A TOLERANCE OF + OR - 1/4".

WOOD BLOCKOUT CONNECTIONS



PLASTIC BLOCKOUT CONNECTIONS

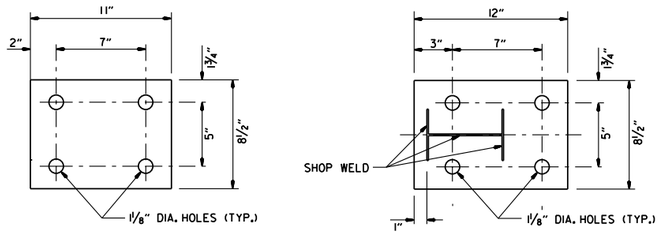
DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

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

ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

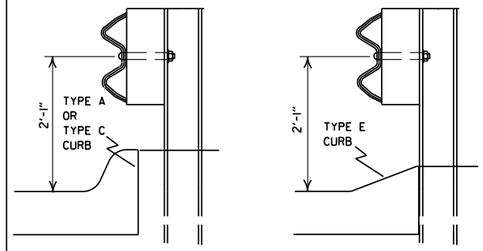
STANDARD DRAWING GR-6



WASHER PLATE

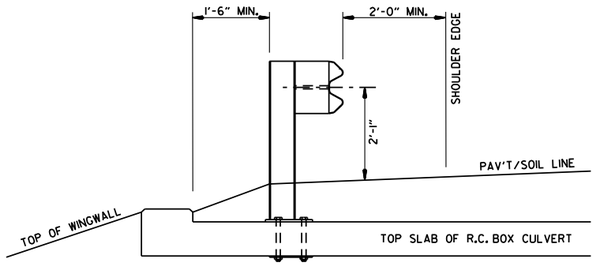
BASE PLATE

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

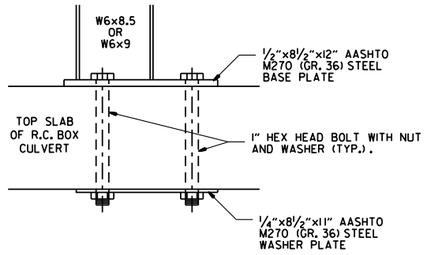


DETAIL OF GUARDRAIL PLACEMENT BEHIND CURB (W-BEAM)

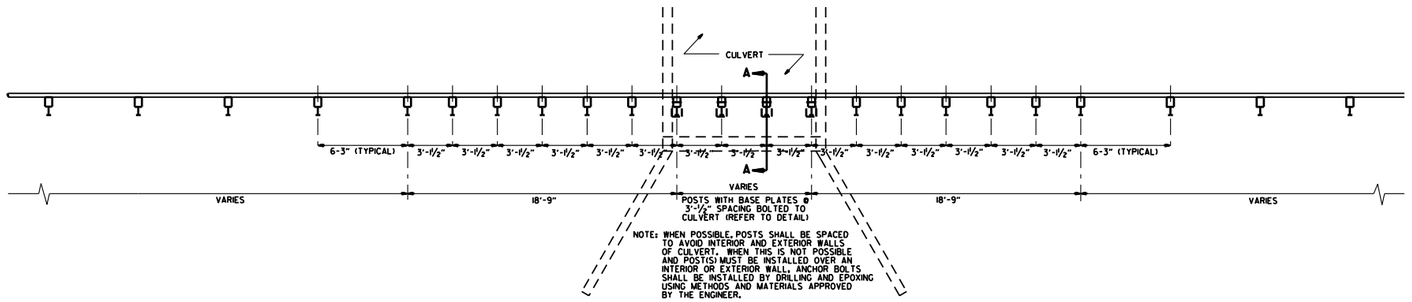
FOR DESIGN SPEEDS OF 50 MPH OR LESS ALL CURB FACES, AS SHOWN ON STD. DRWG. CG-1, MAY BE USED. FOR DESIGN SPEEDS OF 55 MPH OR MORE TYPE "E" CURB FACE SHALL BE USED.



SECTION A-A



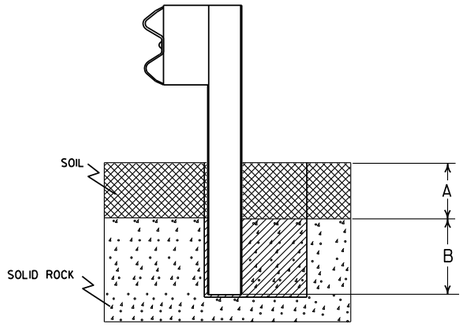
DETAIL OF CONNECTION



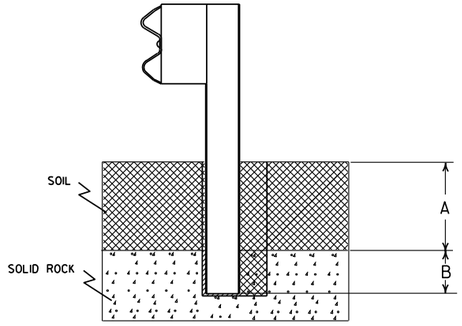
PLAN LAYOUT OF TYPE A GUARDRAIL AT LOW-FILL CULVERTS

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.

Case 1

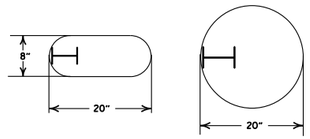


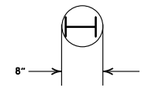
Case 2



Plan View Steel Posts

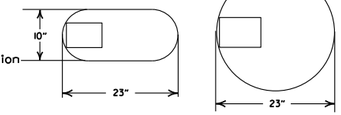
Either hole configuration acceptable

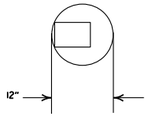




Plan View Wood Posts

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)

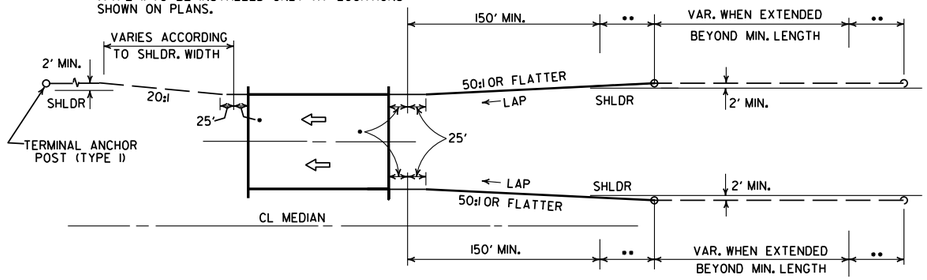
DATE	REVISION	FILMED
11-07-19	RENUMBERED, RENAMED, REVISED REFERENCE	
11-16-17	REVISED GUARDRAIL HEIGHT	
07-14-10	RAISED HEIGHT OF GUARDRAIL 1"	
04-12-07	REVISED DETAIL OF GUARDRAIL PLACEMENT BEHIND CURB	
11-10-05	ADDED GUARDRAIL PLACEMENT BEHIND CURB, REVISED DETAIL OF CONNECTION	
11-18-04	REVISED POST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

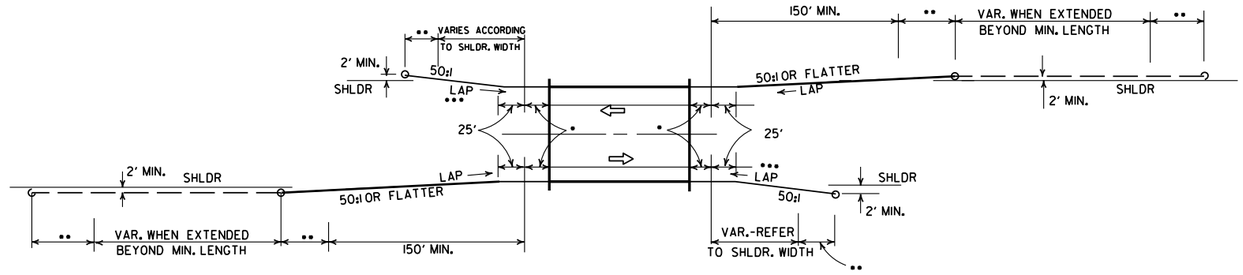
STANDARD DRAWING GR-7

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



ONE-WAY TRAFFIC

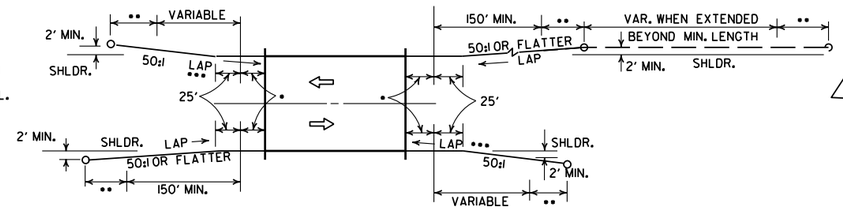
••• LAP OF GUARDRAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.



TWO-WAY TRAFFIC

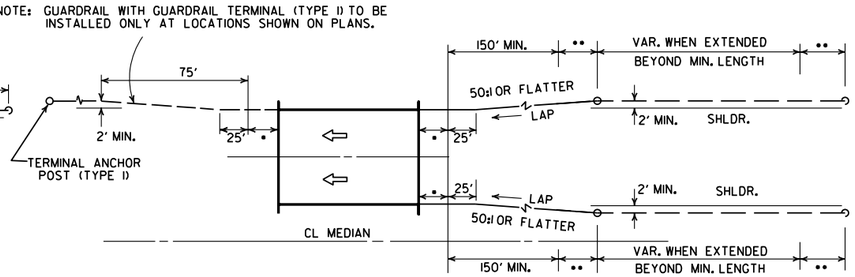
METHODS OF INSTALLATION OF GUARDRAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARDRAIL TERMINAL (TYPE 2)

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



TWO-WAY TRAFFIC

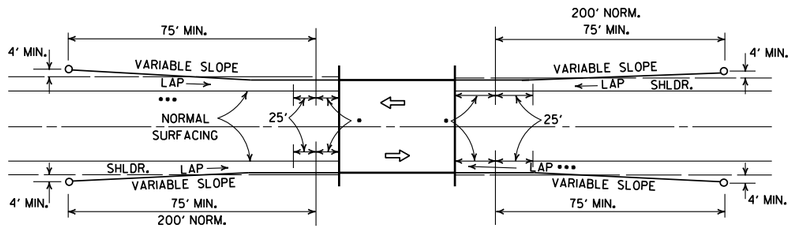
NOTE: GUARDRAIL WITH GUARDRAIL TERMINAL (TYPE I) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



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 I) (FULL SHOULDER WIDTH OR LESS BRIDGES)

LEGEND

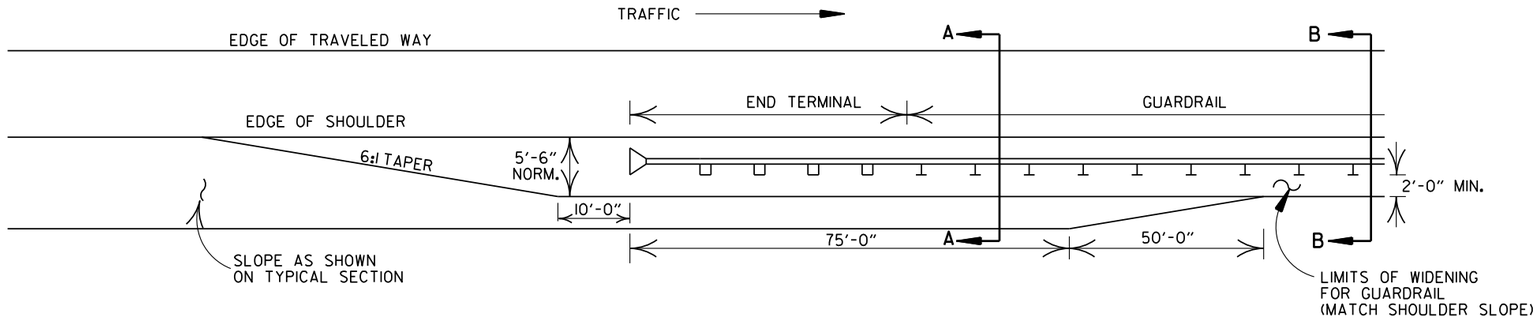
- • THRIE BEAM GUARDRAIL TERMINAL
- •• GUARDRAIL TERMINAL (TYPE 2)

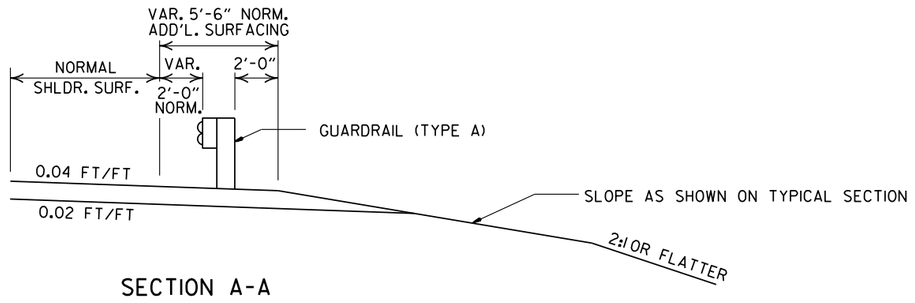
DATE	REVISION	DATE FILM
11-07-19	RENUMBERED AND RENAMED	
4-17-08	REVISED LAYOUTS	
11-10-05	REMOVED GUARDRAIL NOTES AND DETAILS	
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARDRAIL USING GUARDRAIL TERM. (TY. I)	
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00
6-26-97	REVISED LAYOUT	
10-1-92	REDRAWN & REVISED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

ARKANSAS STATE HIGHWAY COMMISSION

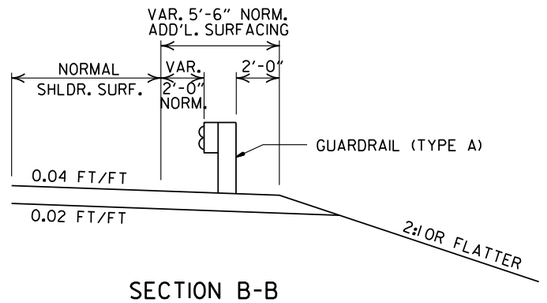
GUARDRAIL DETAILS

STANDARD DRAWING GR-8





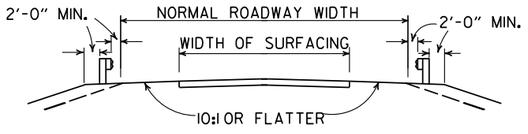
SECTION A-A



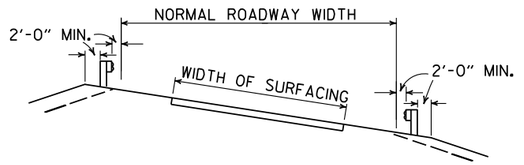
SECTION B-B

DETAILS OF WIDENING FOR GUARDRAIL

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

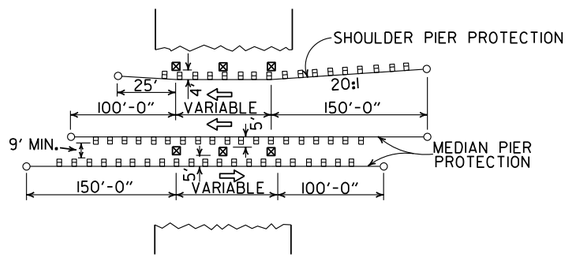


SECTION ON TANGENT



SECTION ON CURVE

DETAILS SHOWING POSITION OF GUARDRAIL ON HIGHWAY



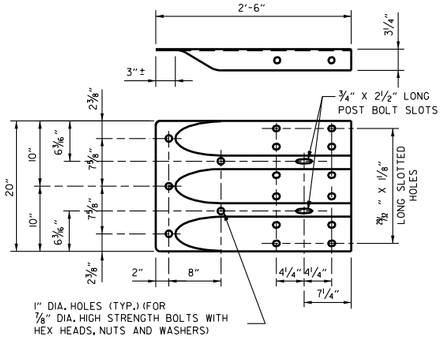
METHOD OF INSTALLATION OF GUARDRAIL AT FIXED OBSTACLE

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

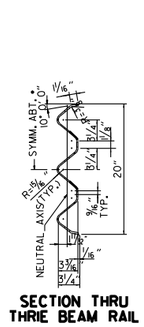
ARKANSAS STATE HIGHWAY COMMISSION

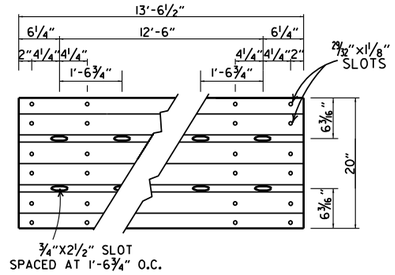
GUARDRAIL DETAILS

STANDARD DRAWING GR-9

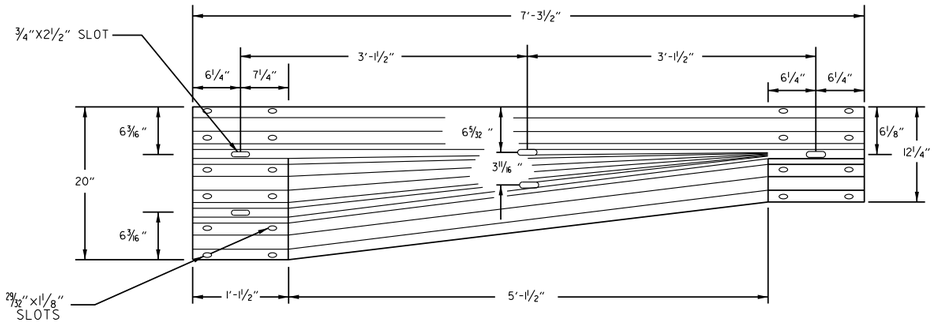


SPECIAL END SHOE

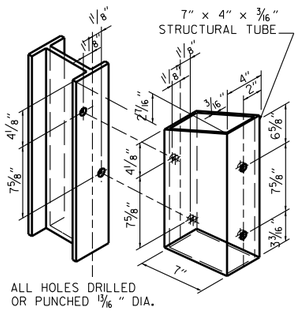




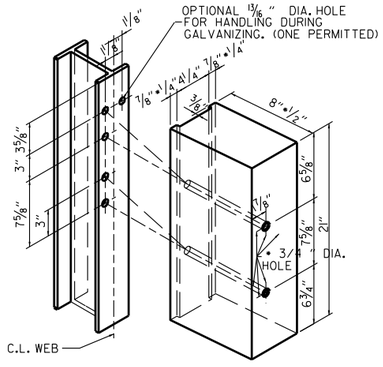
THRIE BEAM RAIL



TRANSITION SECTION



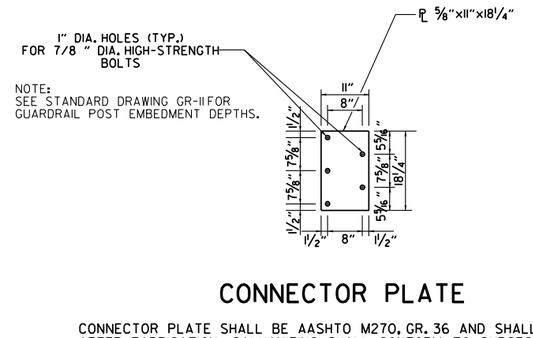
STRUCTURAL STEEL TUBING BLOCKOUT DETAIL



ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED

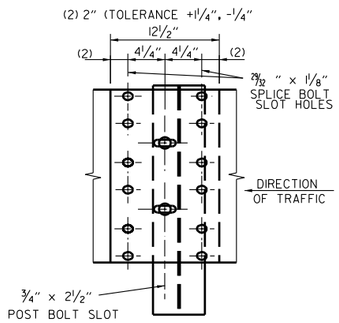
HOLE PUNCHING DETAIL FOR STEEL POST & WOOD OR PLASTIC BLOCKOUTS

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.

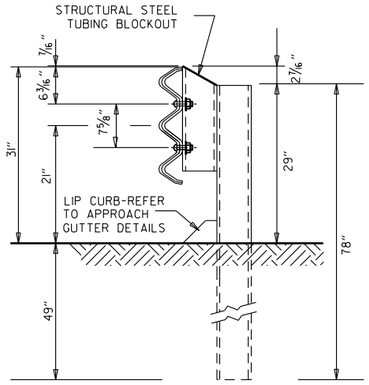
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

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	

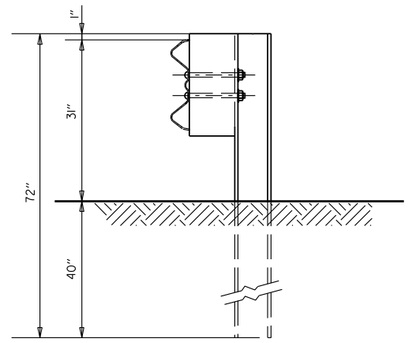
ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

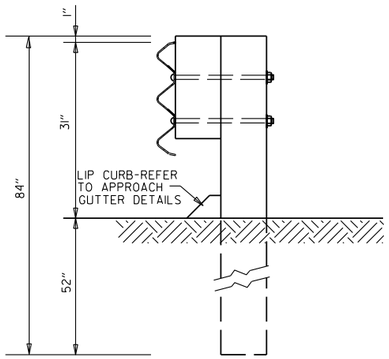
STANDARD DRAWING GR-10



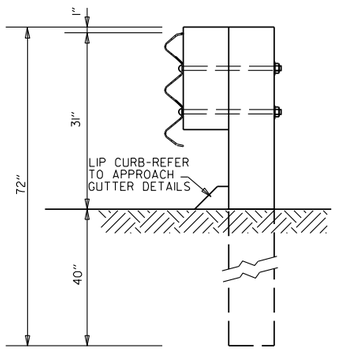
THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7



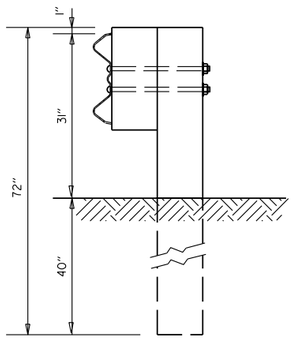
W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8



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.

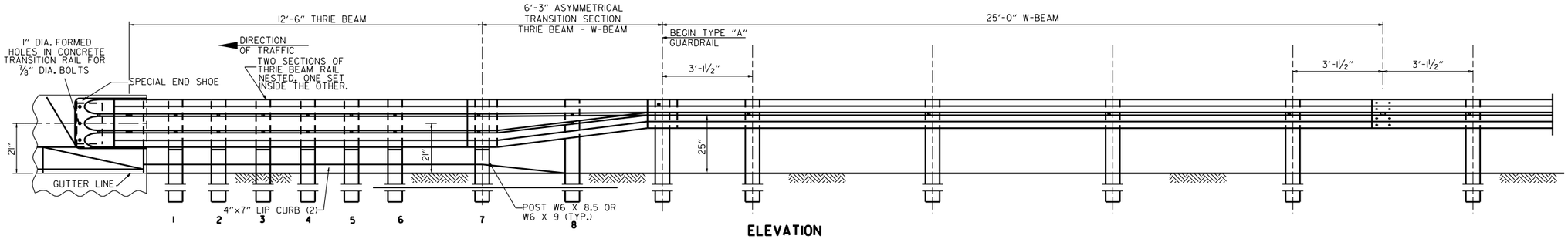
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

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	

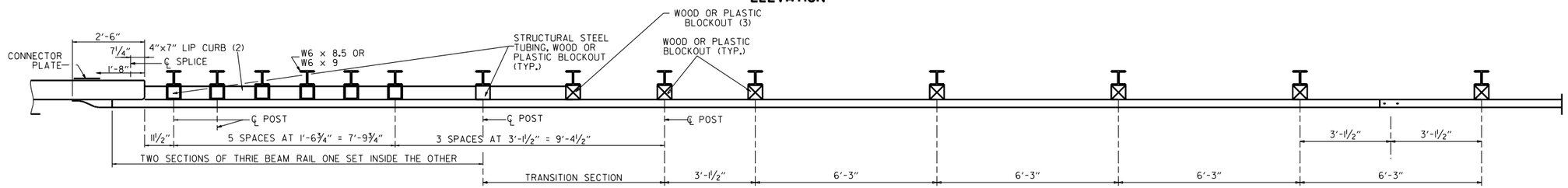
ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

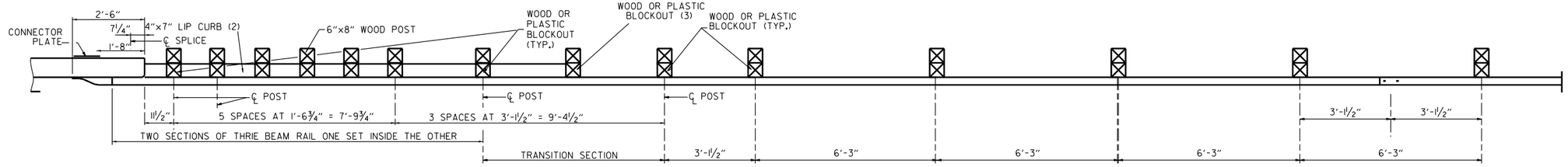
STANDARD DRAWING GR-11



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	31⅝	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.

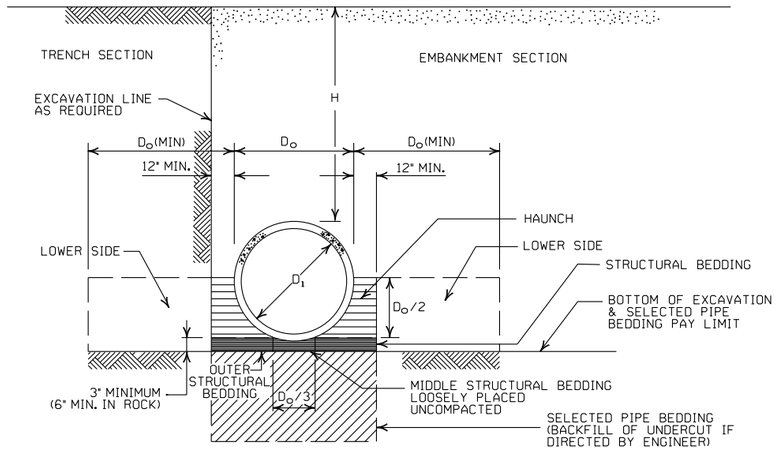
- LEGEND -

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.

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.

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."

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			

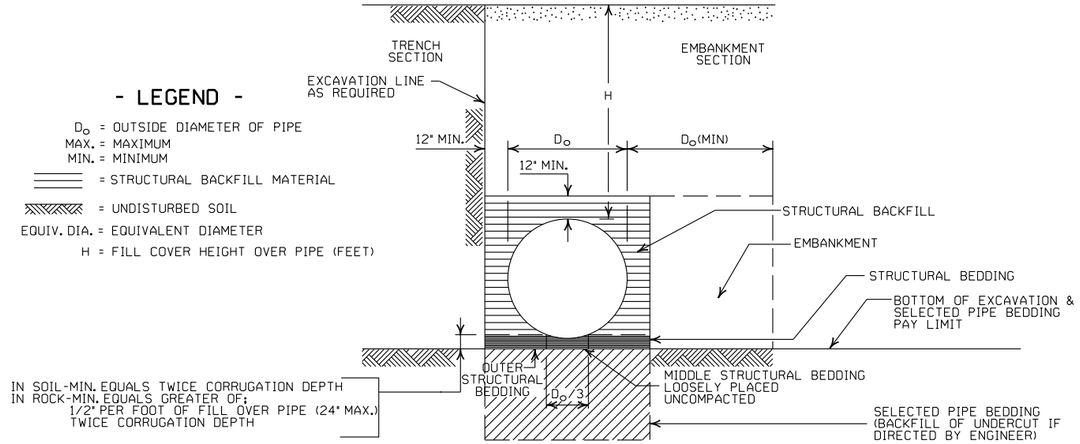
EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINUMUM CORNER RADIUS (INCHES)	② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM			
				INSTALLATION		INSTALLATION
				TYPE 2	TYPE 1	TYPE 2	TYPE 1
36	40x31	5	0.079	3	2	12	15
42	46x36	6	0.079	3	2	13	15
48	53x41	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 1 INCH. 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

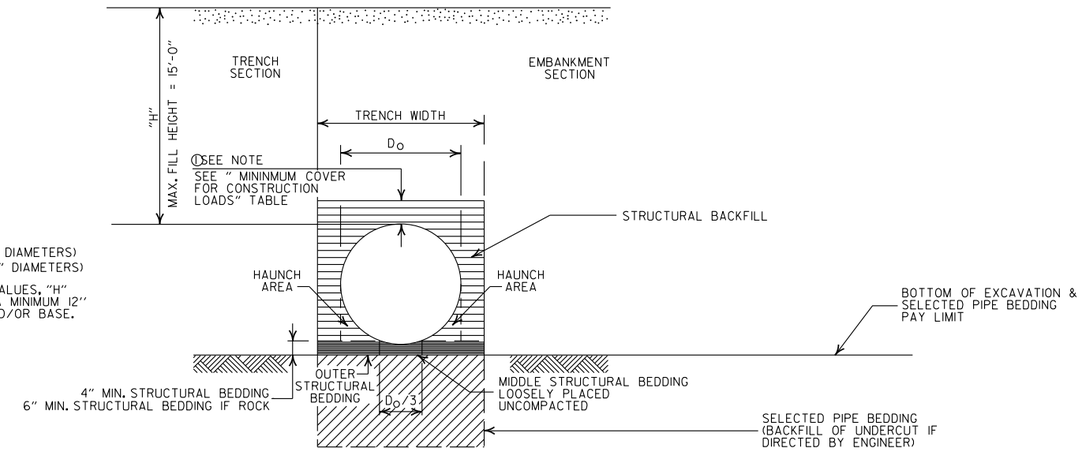
PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	1'-6"
24"	2'-0"
30"	2'-6"
36"	3'-0"
42"	3'-6"
48"	4'-0"

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

PIPE DIAMETER	TRENCH WIDTH (FEET) "H" < 10'-0"	TRENCH WIDTH (FEET) "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.



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.

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.

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.)
Do = 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 1 INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.

STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF PVC PIPE.

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

MULTIPLE INSTALLATION OF PVC PIPES

PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	1'-6"
24"	2'-0"
30"	2'-6"
36"	3'-0"

MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL

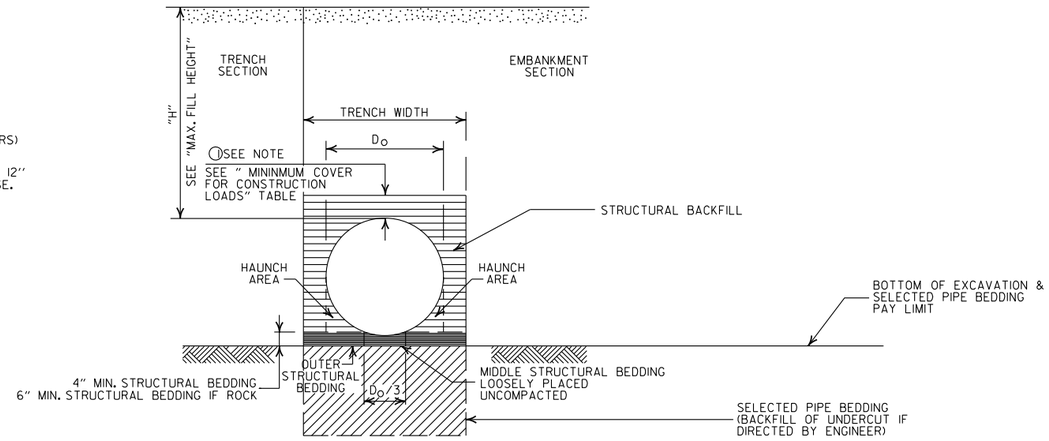
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

① NOTE:
12" MIN. (18" - 36" DIAMETERS)
MINIMUM COVER VALUE, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.

MINIMUM COVER FOR CONSTRUCTION LOADS

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS			
	18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-175.0 (KIPS)
18" THRU 36"	2'-0"	2'-6"	3'-0"	3'-0"

②MINIMUM COVER SHALL BE MEASURED FROM TOP OF PIPE TO TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8". THE LAYERS SHALL BE BROUGHT UP EVENLY AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.
5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALIGNMENT.

GENERAL NOTES

1. PIPE SHALL CONFORM TO ASTM F949, CELL CLASS 12454. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. PVC PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR PVC PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

H = FILL HEIGHT (FT.)
D_O = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

DATE	REVISION	DATE FILMED
2-27-14	REVISED GENERAL NOTE 1.	
12-15-11	REV GENERAL NOTES & MINIMUM COVER NOTE; DELETED SM3 MATERIAL	
11-17-10	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (PVC F949)

STANDARD DRAWING PCP-2

INSTALLATION TYPE	**MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 1	AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7)
TYPE 2	*SELECTED MATERIALS (CLASS SM-1, SM-2 OR SM-4) OR TYPE 1 INSTALLATION MATERIAL

*SM3 WILL NOT BE ALLOWED.

** STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.

STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF POLYPROPYLENE PIPE.

MULTIPLE INSTALLATION OF POLYPROPYLENE PIPES

PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	1'-6"
24"	2'-0"
30"	2'-6"
36"	3'-0"
42"	3'-6"
48"	4'-0"
60"	5'-0"

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

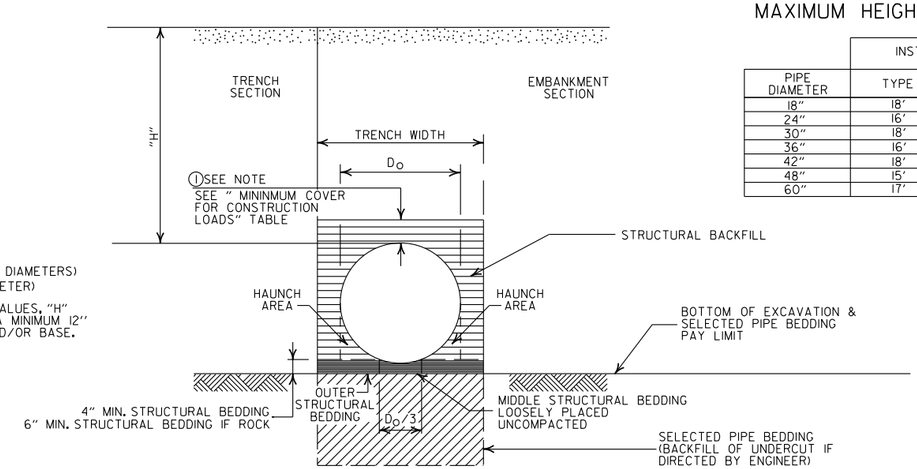
MINIMUM COVER FOR CONSTRUCTION LOADS

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS			
	18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-150.0 (KIPS)
36" OR LESS	2'-0"	2'-6"	3'-0"	3'-0"
42" OR GREATER	3'-0"	3'-0"	3'-6"	4'-0"

②MINIMUM COVER SHALL BE MEASURED FROM TOP OF PIPE TO TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.

①NOTE:
12" MIN. (18" - 42" DIAMETERS)
24" MIN. (60" DIAMETER)

MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.



MAXIMUM HEIGHT OF FILL "H"

PIPE DIAMETER	INSTALLATION TYPE	
	TYPE 1	TYPE 2
18"	18'	14'
24"	16'	12'
30"	18'	14'
36"	16'	12'
42"	18'	13'
48"	15'	11'
60"	17'	12'

EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8". THE LAYERS SHALL BE BROUGHT UP EVENLY AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.
5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALIGNMENT.

GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M330, TYPE S. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SIXTH EDITION (2012) WITH 2013 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. POLYPROPYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR POLYPROPYLENE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN SECTION 26.4.2.4 AND 30.4.2 OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS 3RD EDITION (2010) WITH 2012 INTERIMS. JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

H = FILL HEIGHT (FT.)
D_O = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

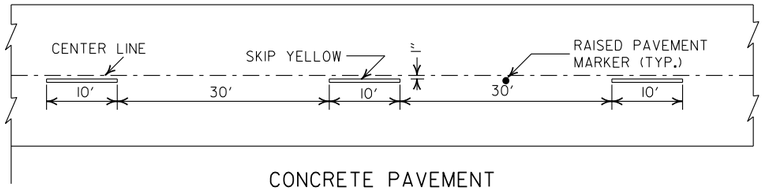
DATE	REVISION	DATE FILMED
02-27-20	REVISED	
11-07-19	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

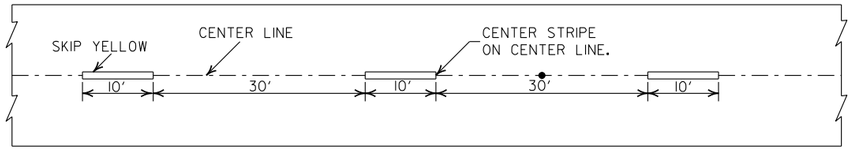
PLASTIC PIPE CULVERT (POLYPROPYLENE)

STANDARD DRAWING PCP-3

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

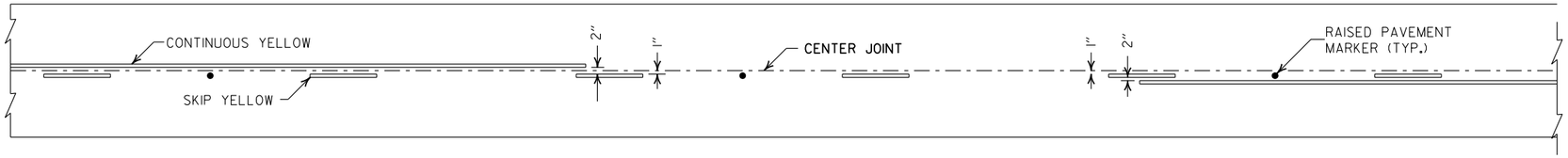


CONCRETE PAVEMENT

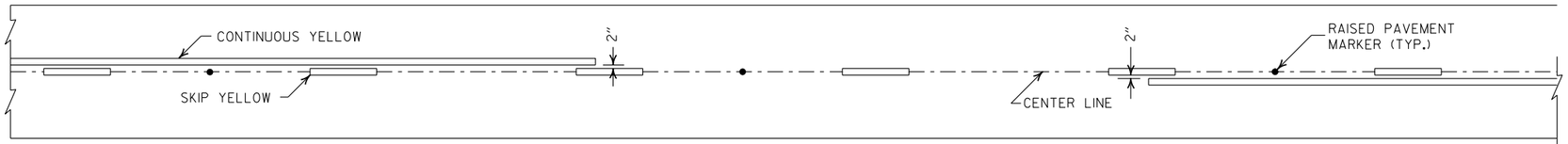


ASPHALT PAVEMENT

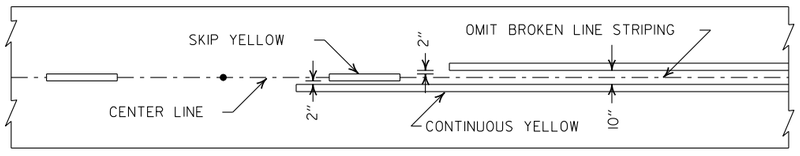
BROKEN LINE STRIPING



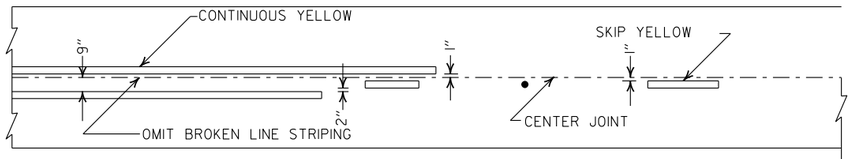
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

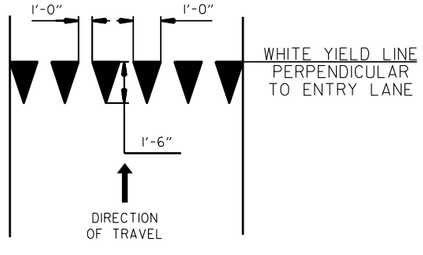


ASPHALT PAVEMENT

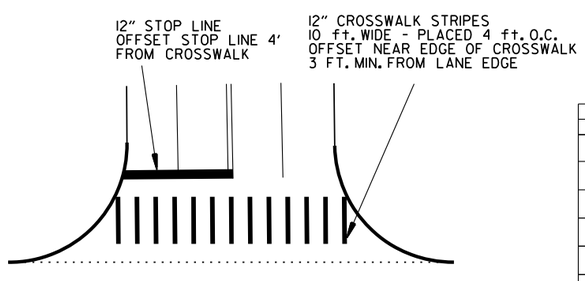


CONCRETE PAVEMENT

STRIPING AT ADJACENT NO PASSING LANES

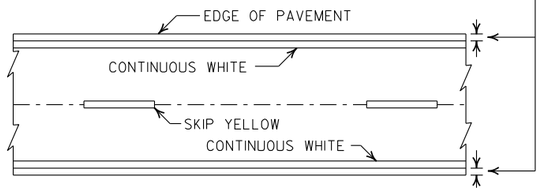


YIELD LINE DETAIL



CROSSWALK AND STOP LINE DETAILS

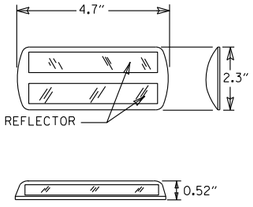
2" FOR ASPHALT OR CONCRETE PAVEMENT
6" FOR BITUMINOUS SURFACE TREATMENT



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

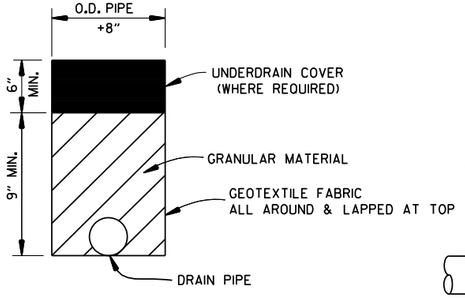
PAVEMENT MARKING DETAILS

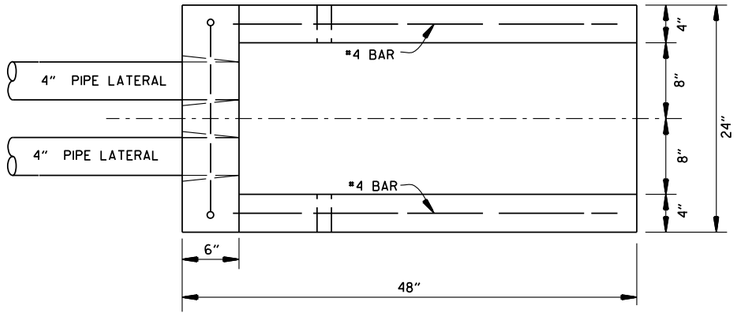
STANDARD DRAWING PM-1

NOTE:

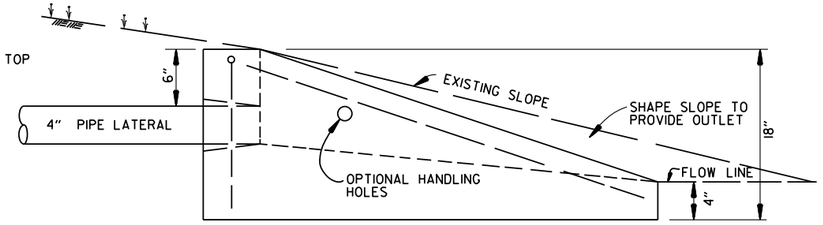
1. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.

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

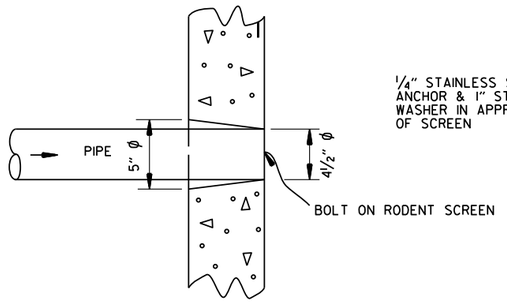




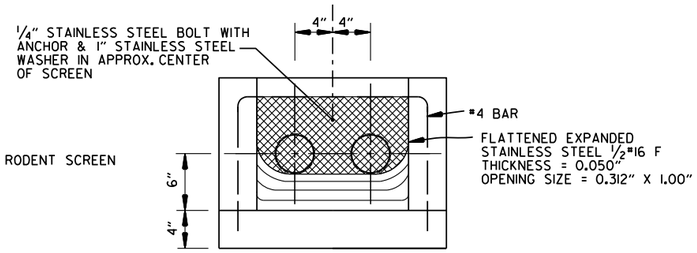
PLAN VIEW



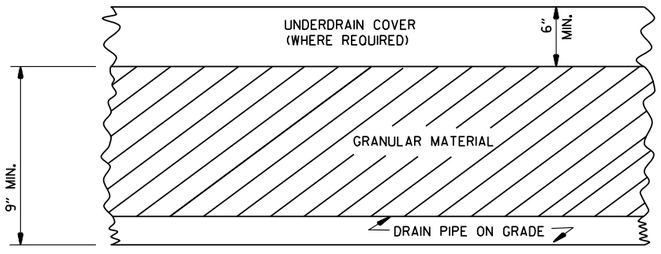
SIDE VIEW



DETAIL OF HOLE FOR 4" PIPE

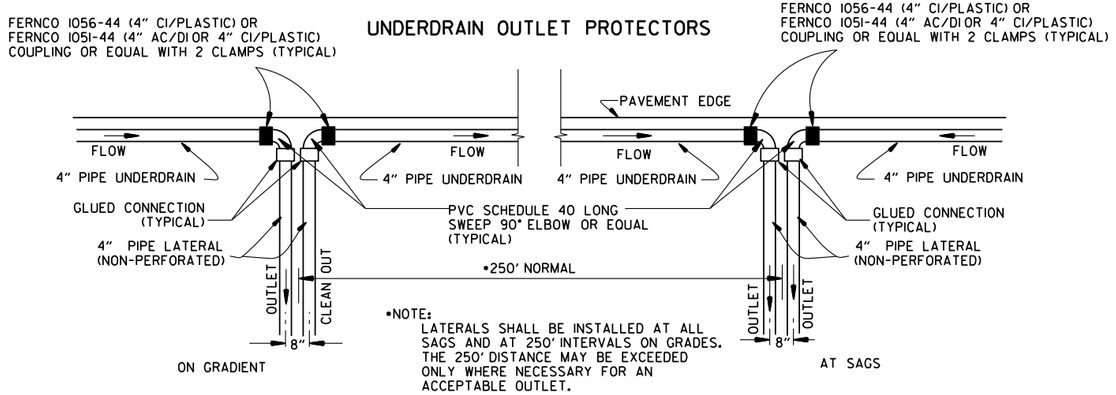


FRONT VIEW
(DETAIL OF RODENT SCREEN)



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 ONE - WAY TRAFFIC

DEGREE OF CURVE	30 MPH			35 MPH			40 MPH			45 MPH			50 MPH			55 MPH			60 MPH			65 MPH			70 MPH			75 MPH		
	e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)	
		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE
0° 15'	NC			NC			NC			NC			NC			NC			NC			NC			NC			NC		
0° 30'	NC			NC			NC			NC			NC			NC			RC	115		RC	115		RC	115		0.022	121	
0° 45'	NC			NC			NC			NC			RC	115		RC	115		0.024	127		0.026	132		0.030	144		0.032	150	
1° 00'	NC			NC			NC			RC	108		0.022	121		0.026	132		0.030	144		0.034	156		0.038	167		0.042	179	350
1° 15'	NC			NC			RC	101		0.022	114		0.028	138		0.032	150		0.038	167		0.042	179		0.046	190	350	0.052	208	
1° 30'	NC			RC	94		0.022	106		0.028	130		0.032	150		0.038	167		0.044	185		0.050	202	350	0.056	218		0.062	236	
1° 45'	RC	86		RC	94		0.026	116		0.030	136		0.036	161		0.044	185		0.050	202	350	0.056	218		0.064	242		0.070	259	
2° 00'	RC	86		0.024	103		0.028	121		0.034	146		0.042	179		0.048	196		0.056	218		0.064	242		0.070	259		0.080	288	400
2° 15'	RC	86		0.026	108		0.032	131		0.038	157		0.046	190		0.054	214		0.062	236		0.070	259		0.078	282		0.088	311	
2° 30'	0.022	90		0.028	113		0.034	136		0.042	168		0.050	202		0.058	224	350	0.068	253		0.076	276		0.086	305	400	0.096	334	450
2° 45'	0.024	95		0.030	118		0.038	146		0.046	179		0.054	214	300	0.064	242		0.072	265		0.082	294	400	0.092	323		0.100	346	
3° 00'	0.026	100		0.034	126		0.040	151		0.050	190	300	0.058	224		0.068	253		0.078	282		0.088	311		0.098	340	450	D MAX = 2° 45'		
3° 15'	0.028	103		0.036	131		0.044	161	250	0.052	194		0.062	236		0.072	265		0.082	294		0.092	323		0.100	346				
3° 30'	0.030	108		0.038	136		0.046	167		0.056	205		0.066	247		0.076	276		0.086	305		0.096	334		D MAX = 3° 30'					
3° 45'	0.032	112		0.040	140		0.050	176		0.058	211		0.070	259		0.080	288		0.090	317		0.098	340							
4° 00'	0.034	116		0.042	145	250	0.052	181		0.062	222		0.072	265		0.084	300		0.094	329	400	0.100	346							
4° 15'	0.036	120		0.044	150		0.054	186		0.064	227		0.076	276		0.086	305		0.096	334		D MAX = 4° 15'								
4° 30'	0.036	120		0.046	155		0.056	192		0.068	238		0.078	282		0.090	317		0.098	340										
4° 45'	0.038	125		0.048	160		0.060	202		0.070	244		0.082	294		0.092	323		0.100	346										
5° 00'	0.040	130		0.050	164		0.062	206		0.072	248		0.084	300		0.094	329	400	D MAX = 5° 15'										
5° 30'	0.044	138	250	0.054	173		0.066	217		0.078	265		0.088	311		0.098	340													
6° 00'	0.046	143		0.058	182		0.070	227		0.082	276		0.092	323		0.100	346													
6° 30'	0.050	151		0.062	192		0.074	238		0.086	287		0.096	334	350	D MAX = 6° 30'													
7° 00'	0.052	156		0.064	197		0.078	247		0.090	298		0.098	340															
7° 30'	0.054	160		0.068	206		0.080	252		0.092	302	350	0.100	346															
8° 00'	0.058	168		0.070	211		0.084	263		0.094	308		D MAX = 8° 25'																
8° 30'	0.060	173		0.072	215		0.086	268	300	0.096	313																		
9° 00'	0.062	178		0.076	224		0.088	272		0.098	319																		
9° 30'	0.064	181		0.078	229		0.092	282		0.100	324																		
10° 00'	0.066	186		0.080	234		0.094	288		D MAX = 10° 30'																			
11° 00'	0.070	194		0.084	244		0.096	293																					
12° 00'	0.074	203		0.088	253	300	0.098	298																					
13° 00'	0.076	208		0.090	258		0.100	302	350																				
14° 00'	0.080	216		0.094	266		D MAX = 13° 45'																						
15° 00'	0.082	221		0.096	271																								
16° 00'	0.086	229		0.098	276																								
17° 00'	0.088	233		0.100	281																								
18° 00'	0.090	238		D MAX = 19° 30'																									
19° 00'	0.092	242																											
20° 00'	0.094	246																											
21° 00'	0.096	251	300																										
22° 00'	0.096	251																											
23° 00'	0.098	254																											
24° 00'	0.098	254																											
25° 00'	0.100	259																											
D MAX = 28° 30'																													

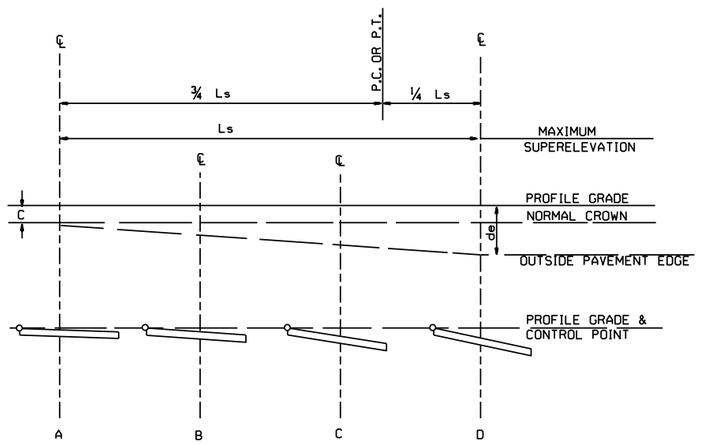
GENERAL NOTES

1. ON PAVEMENT WITH ONE-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE PROFILE GRADE POINT.
2. SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES (+) OR (-) TO BE ADDED OR SUBTRACTED FROM THE POINT OF CONTROL.
3. LENGTHS FOR Ls MAY BE ROUNDED IN MULTIPLES OF 25 FT. OR 50 FT. TO PERMIT SIMPLER CALCULATIONS.
4. MINIMUM Ls VALUES MAY BE USED FOR RAMPS; DESIRABLE VALUES SHALL APPLY TO MAIN LANES.
5. DIVIDED PAVEMENTS WIDER THAN 4 LANES SHALL HAVE ADDITIONAL TRANSITION LENGTHS AS FOLOWS:

6 LANE DIVIDED---------+20%
8 LANE DIVIDED---------+50%

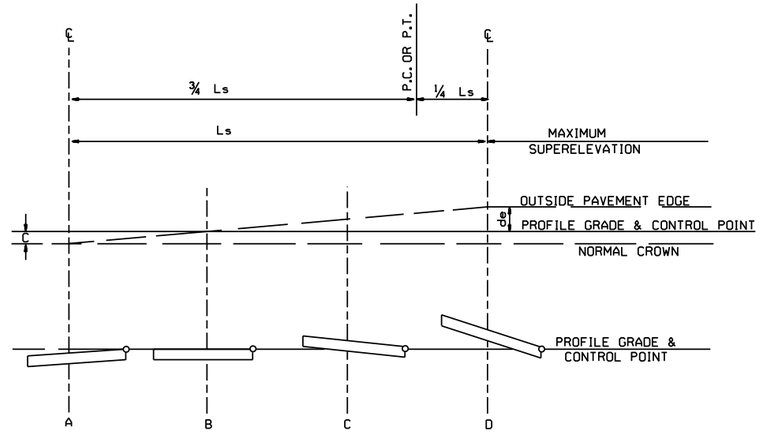
ABBREVIATIONS

NC - NORMAL CROWN
RC - REVERSE CROWN, SUPERELEVATION AT NORMAL CROWN SLOPE
S - SUPERELEVATION
L - DISTANCE FROM BEGINNING OF SUPERELEVATION TRANSITION TO ANY POINT (FT.)
d - WIDTH OF PAVEMENT
e - MAXIMUM RATE OF SUPERELEVATION (FT. PER FT.)
Ls - LENGTH OF SUPERELEVATION TRANSITION (FT.)
C - NORMAL CROWN (FT.)



ONE-WAY TRAFFIC
INSIDE LANE

SUPERELEVATION FORMULA = $S = -\frac{L(de-C)}{Ls} - C$



ONE-WAY TRAFFIC
OUTSIDE LANE

SUPERELEVATION FORMULA = $S = +\frac{L(de+C)}{Ls} - C$

DATE	REVISION	DATE FILMED
11-07-19	REVISED SUPERELEVATION TABLE	
01-09-87	ISSUED	578-1-15-87

ARKANSAS STATE HIGHWAY COMMISSION

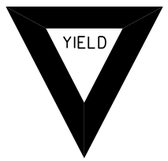
TABLES AND METHOD OF SUPERELEVATION FOR ONE-WAY TRAFFIC

STANDARD DRAWING SE-1

R1-1

STANDARD 30"X30"
EXPRESSWAY 36"X36"
SPECIAL 48"X48"

R1-2



STD. 36"X36"X36"
EXPWY. 48"X48"X48"
FWY. 60"X60"X60"

R2-1

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

W3-5

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

W3-5a

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

R4-1

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R4-2

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

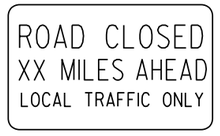
R5-1

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

RII-2

48"X30"

RII-3A



60"X30"

RII-4

60"X30"

W2I-5a

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

WI-1

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

WI-2

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

WI-3

STD. 48"X48"

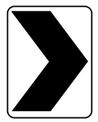
WI-4

STD. 48"X48"

WI-6

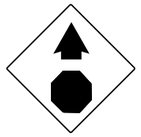
STD. 48"X24"
SPECIAL 60"X30"

WI-8



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

W3-1

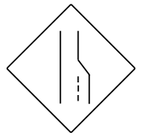


STD. 36"X36"
SPECIAL 48"X48"

W3-2

STD. 36"X36"
SPECIAL 48"X48"

W4-2



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

W5-I

STD. 36"X36"
SPECIAL 48"X48"

W6-3

EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7

EXPWY. 36"X36"
FWY. 48"X48"

W9-2

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

WI3-1

STD. 24"X24"

W20-1

STD. 48"X48"

W20-2

STD. 48"X48"

W20-3

STD.48"X48"

W20-4

STD. 48"X48"

W20-5

STD. 48"X48"

W20-7a

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

W2I-2

STD. 30"X30"
SPECIAL 36"X36"

W2I-5

STD. 30"X30"
SPECIAL 36"X36"

W24-1

STD. 36"X36"

WI-4b

STD. 48"X48"

R56-1

STD. 18"X18"

W8-II

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.

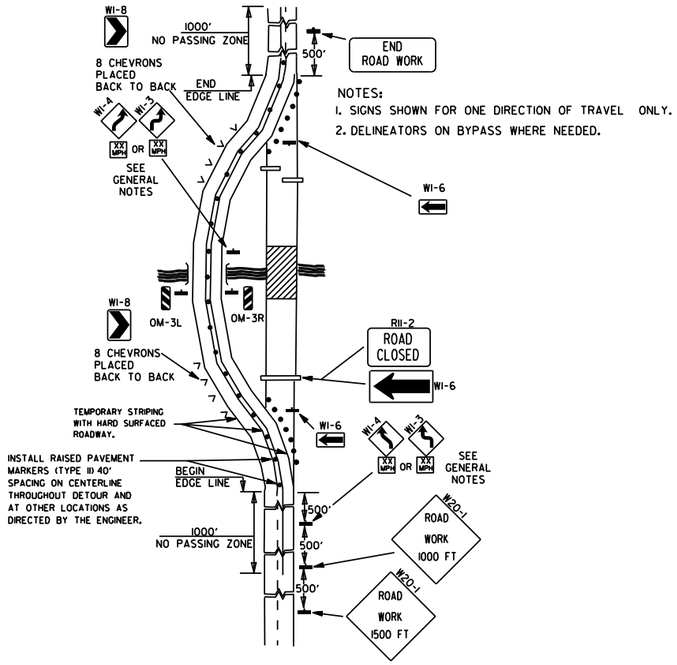
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED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

DATE	REVISION	FILMED
11-07-19	REVISED FOR MASH	
4-13-17	DELETED RSP-1 & ADDED W2I-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

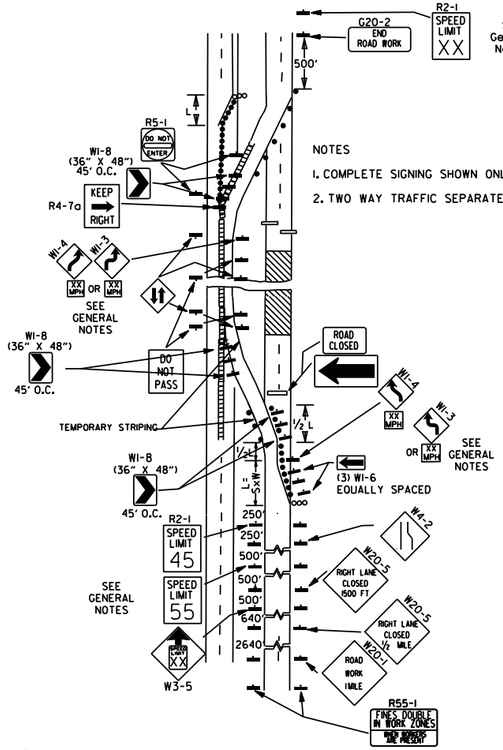
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



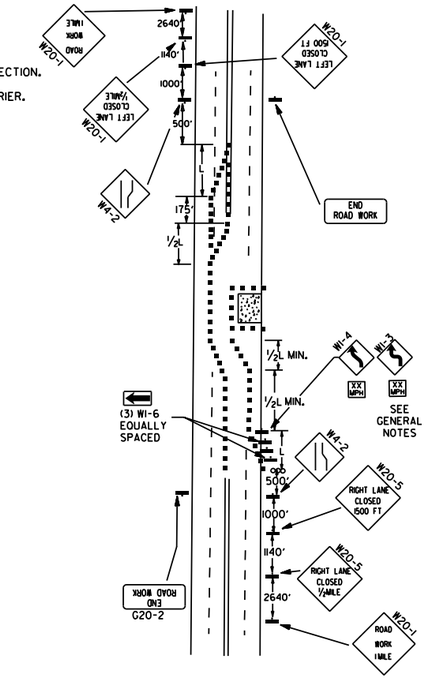
NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

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

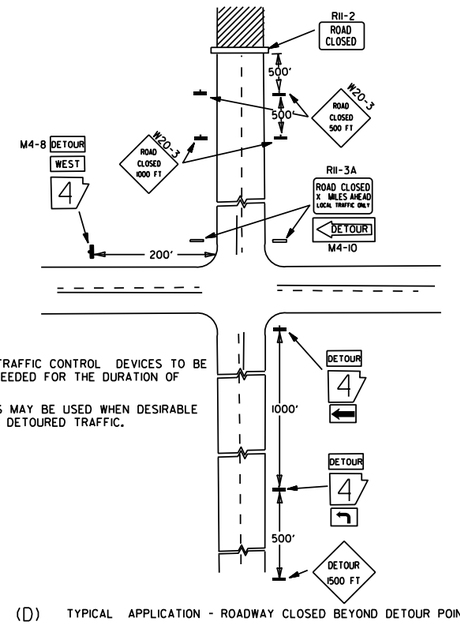


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

(B) TYPICAL APPLICATION - 4-LANE DIVIDED ROADWAY WHERE ONE ROADWAY IS CLOSED.

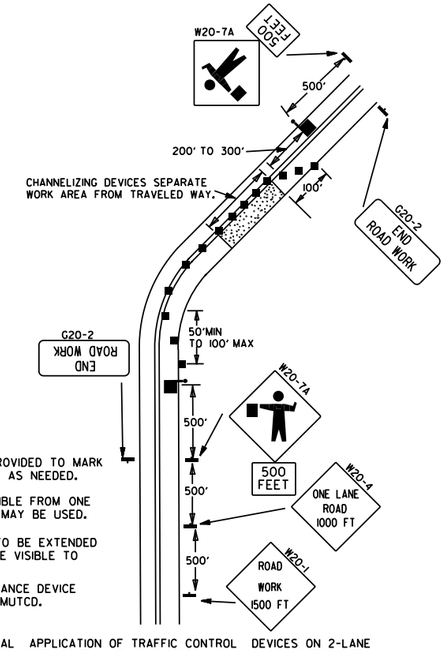


(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



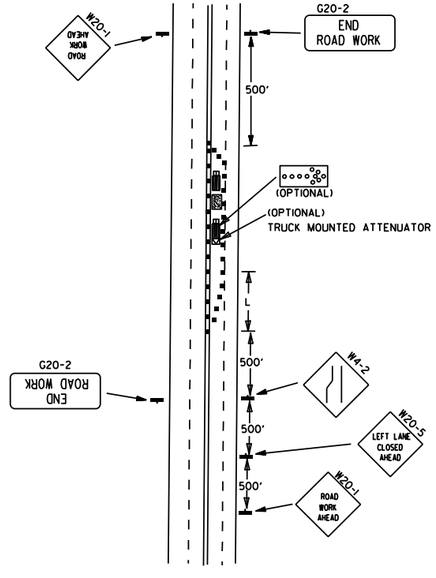
NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

(D) TYPICAL APPLICATION - ROADWAY CLOSED BEYOND DETOUR POINT.



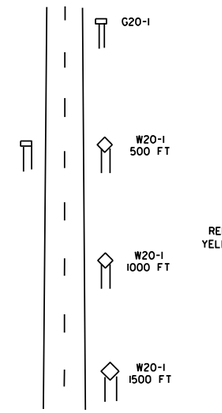
NOTES:
1. FLOOD LIGHTS SHOULD BE PROVIDED TO MARK FLAGGER STATIONS AT NIGHT AS NEEDED.
2. IF ENTIRE WORK AREA IS VISIBLE FROM ONE STATION, A SINGLE FLAGGER MAY BE USED.
3. CHANNELIZING DEVICES ARE TO BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
4. AUTOMATED FLAGGER ASSISTANCE 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.

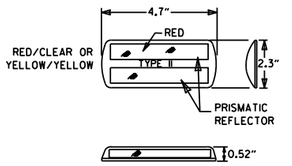


(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.

KEY:
- FLAGGER
- POSITIVE BARRIER
- ARROW PANEL (IF REQUIRED)
- TYPE III BARRICADE
- CHANNELIZING DEVICE
- TRAFFIC DRUM
- RAISED PAVEMENT MARKER



TYPICAL ADVANCE WARNING SIGN PLACEMENT



DETAIL OF RAISED PAVEMENT MARKERS

TAPER FORMULAE:

L=SXW FOR SPEEDS OF 45MPH OR MORE.

$L = \frac{WS^2}{60}$ FOR SPEEDS OF 40MPH OR LESS.

WHERE:

L= MINIMUM LENGTH OF TAPER.

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

W= WIDTH OF OFFSET.

GENERAL NOTES:

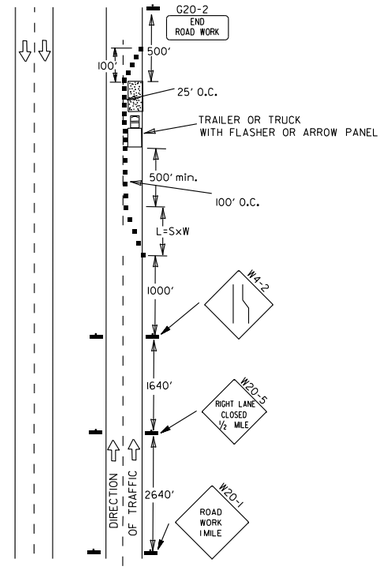
1. THE MAINTENANCE DIVISION SHALL CONDUCT A BALL BANK STUDY TO DETERMINE THE ADVISORY SPEED LIMIT PRIOR TO OPENING TO TRAFFIC. THE ADVISORY SPEED WILL BE POSTED ON W1-3 OR W1-4 CURVE WARNING SIGNS. USE W1-4 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1 45MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(45) SHALL BE OMITTED. ADDITIONAL R2-1 55MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT, OR AS DIRECTED BY THE ENGINEER.
5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
7. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER. WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE.
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).

DATE	REVISION	FILMED
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	

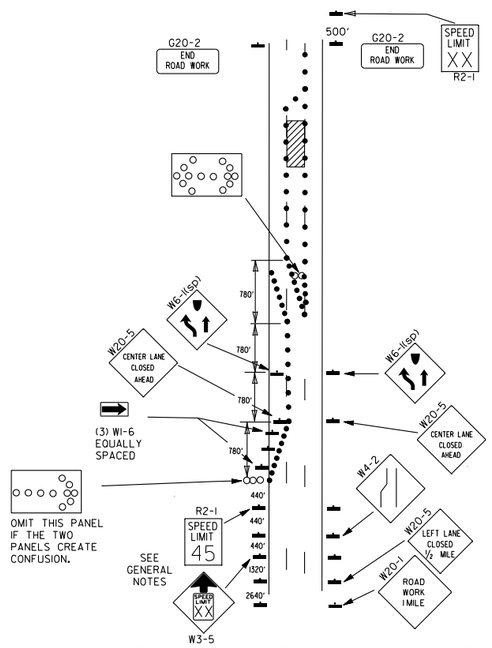
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

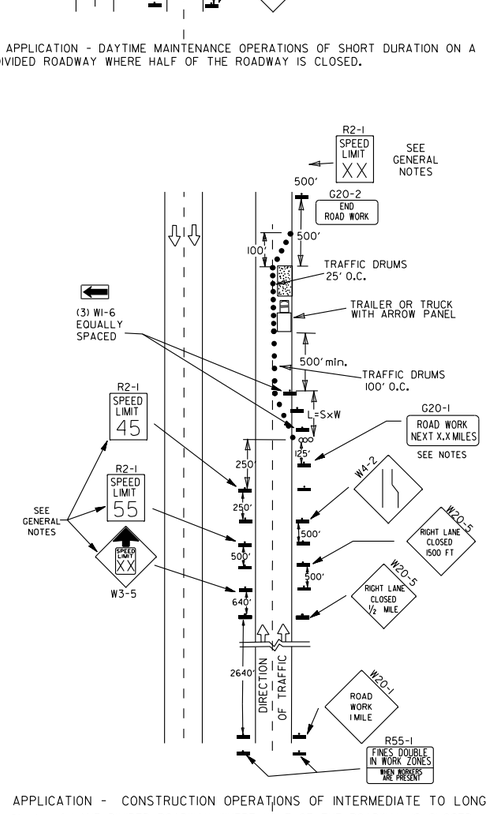
STANDARD DRAWING TC-2



(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.



(C) TYPICAL APPLICATION - CONSTRUCTION OPERATIONS OF INTERMEDIATE TO LONG TERM DURATION ON A 4-LANE DIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.

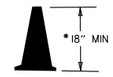
KEY:

- ○○○ ARROW PANEL (IF REQUIRED)
- ■ CHANNELIZING DEVICE
- ● TRAFFIC DRUM

GENERAL NOTES:

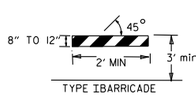
1. A SPEED LIMIT REDUCTION MAY BE IMPLEMENTED ONLY WHEN DESIGNATED IN THE PLAN OR WHEN RECOMMENDED BY THE ROADWAY DESIGN DIVISION.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL 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.
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).

CHANNELIZING DEVICES

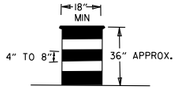


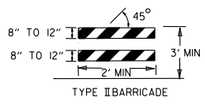
* WHEN CONES ARE USED ON FREEWAYS AND MULTI-LANE HIGHWAYS, THEY SHALL BE 28" MIN. DURING HOURS OF DARKNESS, 28" CONES SHALL BE USED ON ALL ROADWAYS, AND SHALL BE REFLECTORIZED IN ACCORDANCE WITH THE M.U.T.C.D.

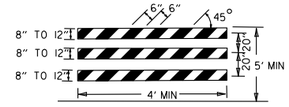
CONES



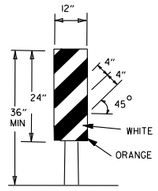
PLASTIC DRUM



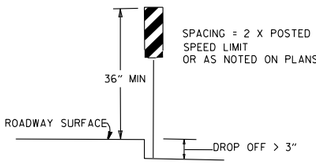




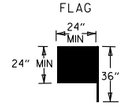
NOTE:
FOR ALL ROAD CLOSURES, THE TYPE III BARRICADES SHALL BE OF SUFFICIENT LENGTH TO EXTEND ACROSS ENTIRE ROADWAY.



VERTICAL PANEL PLACEMENT



FLAG



FLAG SHALL BE OF GOOD GRADE RED MATERIAL

TRAFFIC CONTROL DEVICES

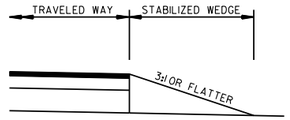
NON-INTERSTATE			
VERTICAL DIFFERENTIAL	LOCATION	TRAFFIC CONTROL	
		≤ 45 MPH	> 45 MPH
≤ 2"	CENTERLINE	W8-11 AND LANE STRIPING	W8-11 AND LANE STRIPING
> 2"	CENTERLINE	STANDARD LANE CLOSURE	STANDARD LANE CLOSURE
≤ 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9, EDGE LINE STRIPING, AND VERTICAL PANELS	W8-9, EDGE LINE STRIPING, AND VERTICAL PANELS
> 3" ≤ 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND VERTICAL PANELS	W8-17, EDGE LINE STRIPING, AND VERTICAL PANELS
> 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
≤ 2"	CENTERLINE	W8-11 AND LANE STRIPING
≤ 2"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9, EDGE LINE STRIPING, AND TRAFFIC DRUMS(2)
> 2" ≤ 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:

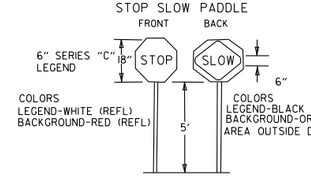
1. WHEN THE SHOULDER AREA IS USED AS PART OF THE TRAVELED LANE AND THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, THEN VERTICAL PANELS SHALL BE USED.
2. WHEN THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, A STABILIZED WEDGE SHALL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



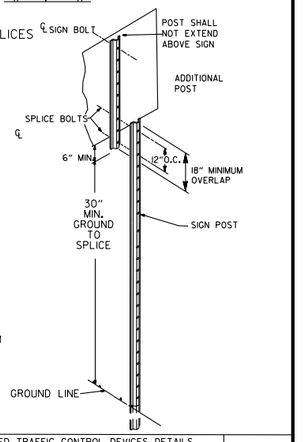
STABILIZED WEDGE

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

STOP SLOW PADDLE



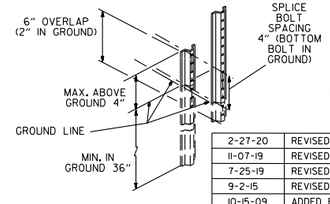
DETAIL OF SPLICES

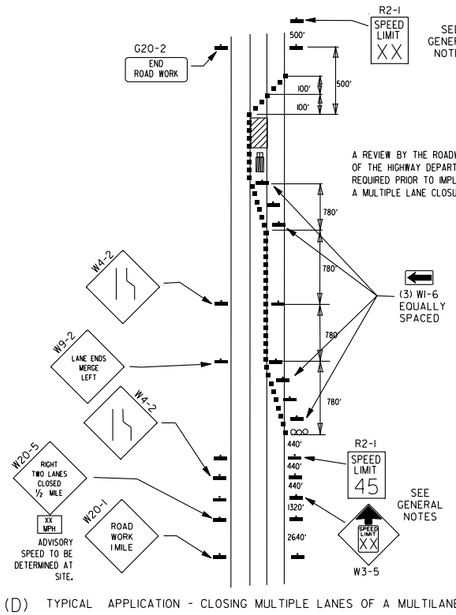


NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-2)

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.





(D) TYPICAL APPLICATION - CLOSING MULTIPLE LANES OF A MULTILANE HIGHWAY.

DATE	REVISION	FILMED
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	

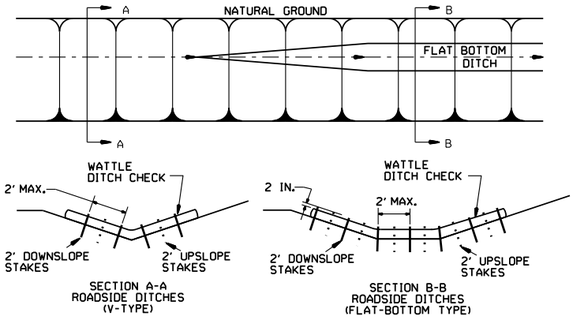
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

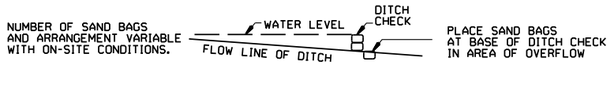
STANDARD DRAWING TC-3

GENERAL NOTES

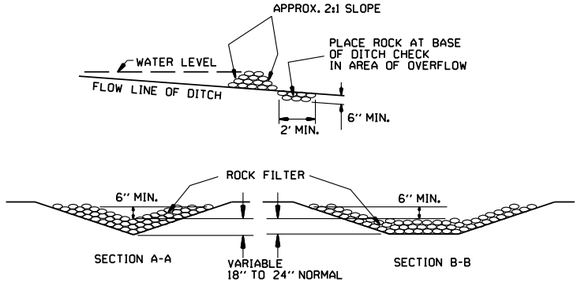
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



SAND BAG DITCH CHECK (E-5)

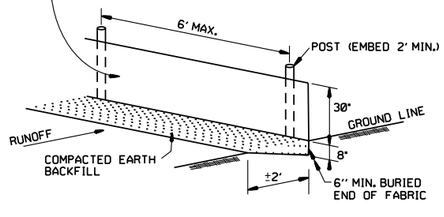


ROCK DITCH CHECK (E-6)

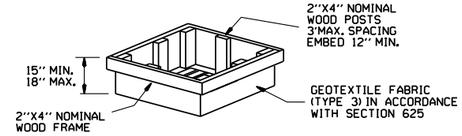
GENERAL NOTES

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.

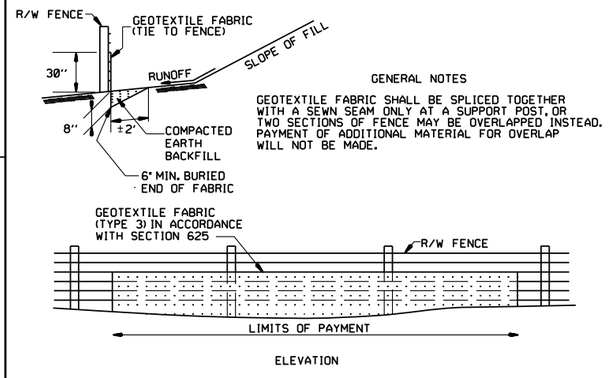


SILT FENCE (E-11)



SECTION C-C

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.

ELEVATION

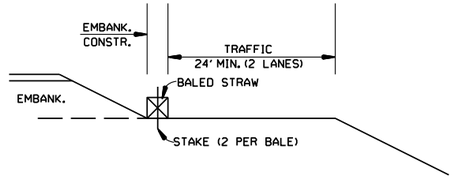
SILT FENCE ON R/W FENCE (E-4)

GENERAL NOTES

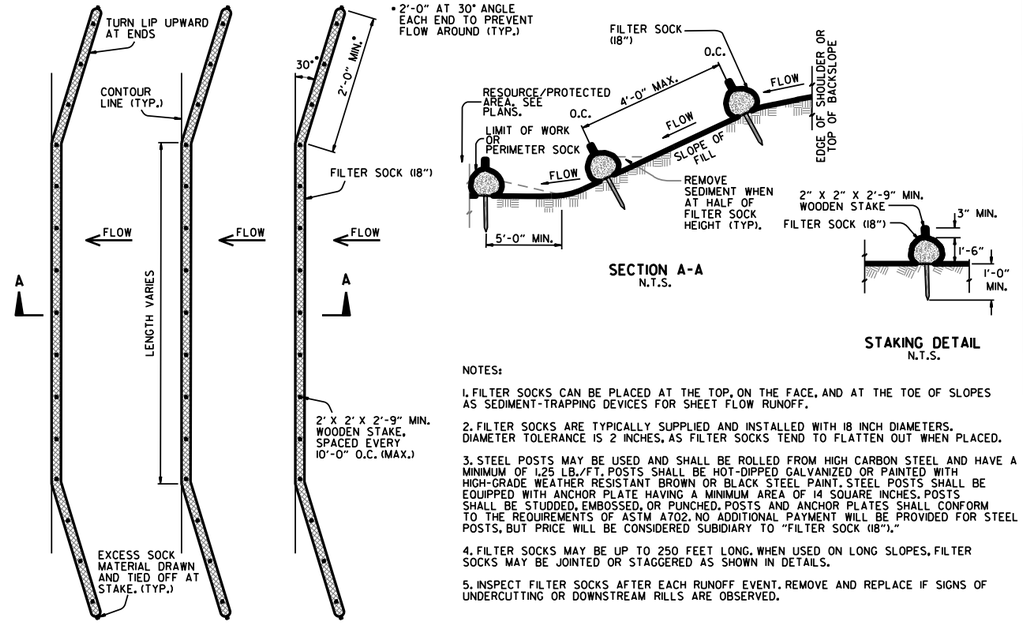
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

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)



PLAN VIEW
N.T.S.

SECTION A-A
N.T.S.

STAKING DETAIL
N.T.S.

NOTES:

1. FILTER SOCKS CAN BE PLACED AT THE TOP, ON THE FACE, AND AT THE TOE OF SLOPES AS SEDIMENT-TRAPPING DEVICES FOR SHEET FLOW RUNOFF.

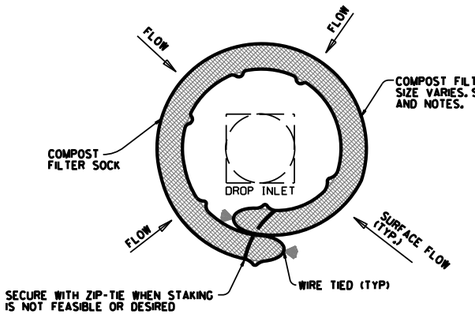
2. FILTER SOCKS ARE TYPICALLY SUPPLIED AND INSTALLED WITH 18 INCH DIAMETERS. DIAMETER TOLERANCE IS 2 INCHES, AS FILTER SOCKS TEND TO FLATTEN OUT WHEN PLACED.

3. STEEL POSTS MAY BE USED AND SHALL BE ROLLED FROM HIGH CARBON STEEL AND HAVE A MINIMUM OF 1.25 LB./FT. POSTS SHALL BE HOT-DIPPED GALVANIZED OR PAINTED WITH HIGH-GRADE WEATHER RESISTANT BROWN OR BLACK STEEL PAINT. STEEL POSTS SHALL BE EQUIPPED WITH ANCHOR PLATE HAVING A MINIMUM AREA OF 14 SQUARE INCHES. POSTS SHALL BE STUDDED, EMBOSSED, OR PUNCHED. POSTS AND ANCHOR PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A702. NO ADDITIONAL PAYMENT WILL BE PROVIDED FOR STEEL POSTS, BUT PRICE WILL BE CONSIDERED SUBIDIARY TO "FILTER SOCK (18")."

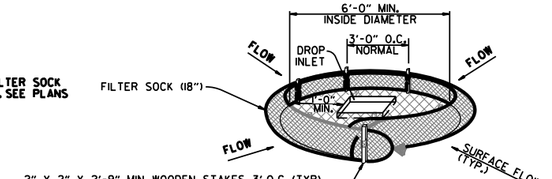
4. FILTER SOCKS MAY BE UP TO 250 FEET LONG. WHEN USED ON LONG SLOPES, FILTER SOCKS MAY BE JOINTED OR STAGGERED AS SHOWN IN DETAILS.

5. INSPECT FILTER SOCKS AFTER EACH RUNOFF EVENT. REMOVE AND REPLACE IF SIGNS OF UNDERCUTTING OR DOWNSTREAM RILLS ARE OBSERVED.

FILTER SOCK ALONG SLOPE (E-3)



DROP INLET PLAN VIEW
N.T.S.



DROP INLET PERSPECTIVE VIEW
N.T.S.

NOTES:

1. OVERLAP ENDS OF SOCK (1' MIN. 3' MAX.).

2. USE 18" DIA. SOCK IN NON-TRAFFIC AREAS OR AREAS WHERE SAFETY IS NOT A CONCERN.

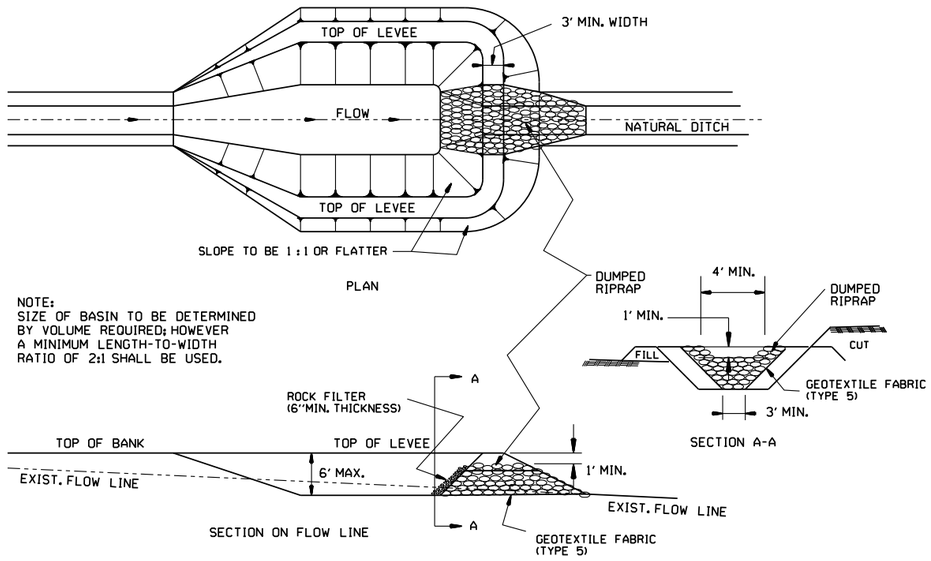
COMPOST FILTER SOCK DROP INLET PROTECTION (E-13)

DATE	REVISION	FILMED
11-16-17	ADDED FILTER SOCK E-3 AND E-13	
12-15-11	DELETED BALED STRAW DITCH CHECK & ADDED WATTLE DITCH CHECK	
11-18-98	ADDED NOTES	
07-02-98	ADDED BALED STRAW FILTER BARRIER (E-2)	
07-20-95	REVISED SILT FENCE E-4 AND E-11	7-20-95
07-15-94	REV. E-4 & E-11 MIN. 13" BURIED END OF FABRIC	
06-02-94	REVISED E-1,4,7 & 11; DELETED E-2 & 3	6-2-94
04-01-93	REDRAWN	
10-01-92	REDRAWN	
08-02-76	ISSUED R.D.M.	298-7-28-76

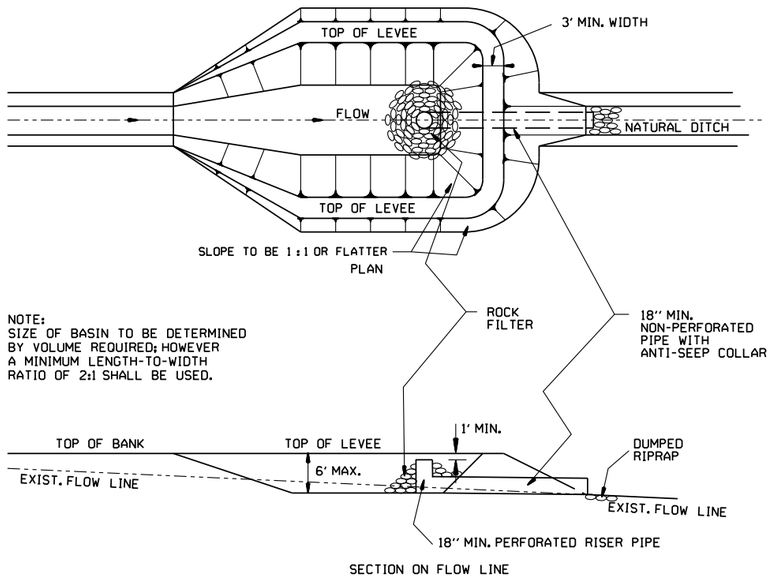
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

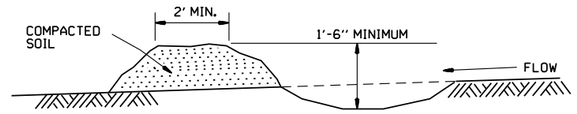
STANDARD DRAWING TEC-1



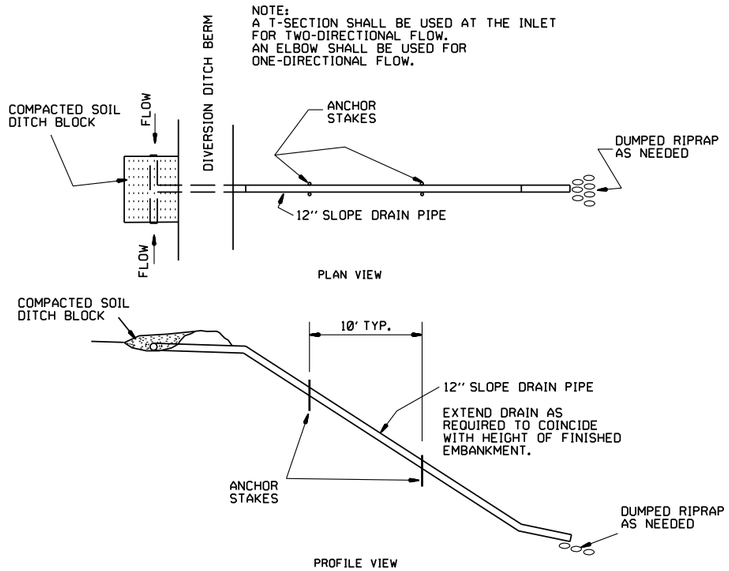
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



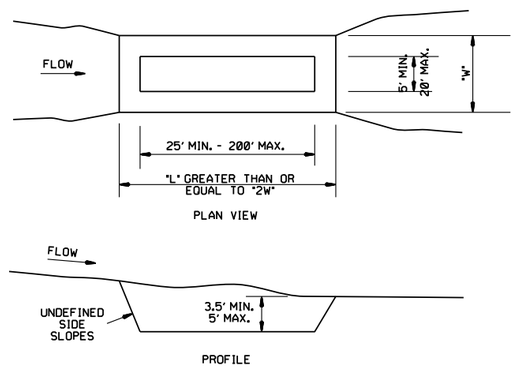
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

DATE	REVISION	FILMED
6-2-94	Revised E-8 & E-12; Added E-14 & Deleted E-13	
4-1-93	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

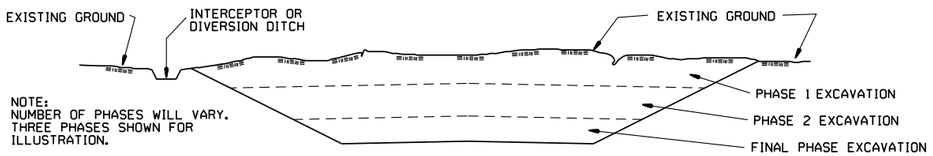
STANDARD DRAWING TEC-2

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

1. PLACE PERIMETER CONTROLS (I.E. SILT FENCES , DIVERSION DITCHES, SEDIMENT BASINS, ETC.)
2. PERFORM CLEARING AND GRUBBING OPERATION.

EXCAVATION



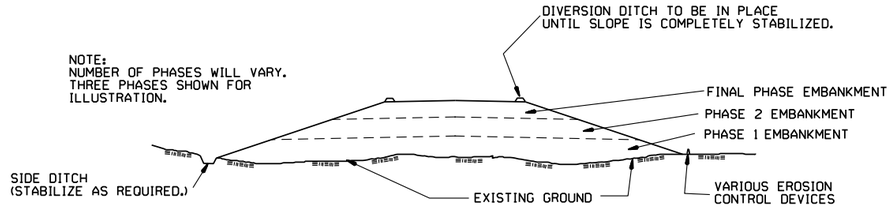
GENERAL NOTE

ALL CUT SLOPES SHALL BE DRESSED, PREPARED, SEEDED, AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE EXCAVATED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 25 FEET, MEASURED VERTICALLY.

CONSTRUCTION SEQUENCE

1. EXCAVATE AND STABILIZE INTERCEPTOR AND/OR DIVERSION DITCHES.
2. PERFORM PHASE 1 EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING.
3. PERFORM PHASE 2 EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING.
4. PERFORM FINAL PHASE OF EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING. STABILIZE DITCHES. CONSTRUCT DITCH CHECKS, DIVERSION DITCHES, SEDIMENT BASINS, OR OTHER EROSION CONTROL DEVICES AS REQUIRED.

EMBANKMENT



GENERAL NOTE

ALL EMBANKMENT SLOPES SHALL BE DRESSED, PREPARED, SEEDED, AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE CONSTRUCTED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 25 FEET, MEASURED VERTICALLY.

CONSTRUCTION SEQUENCE

1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD OF GREATER THAN 21 DAYS.
3. PLACE PHASE 2 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD OF GREATER THAN 21 DAYS.
4. PLACE FINAL PHASE OF EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PLACE DIVERSION DITCHES AND SLOPE DRAINS AND MAINTAIN UNTIL ENTIRE SLOPE IS STABILIZED.

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

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3