DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	1	66
		HWY. 175 & HWY. 175S STRS. & APPRS. (CHEROKEE VILLAGE) (S)				

ARKANSAS DEPARTMENT OF TRANSPORTATION
CONSTRUCTION PLANS FOR STATE HIGHWAY

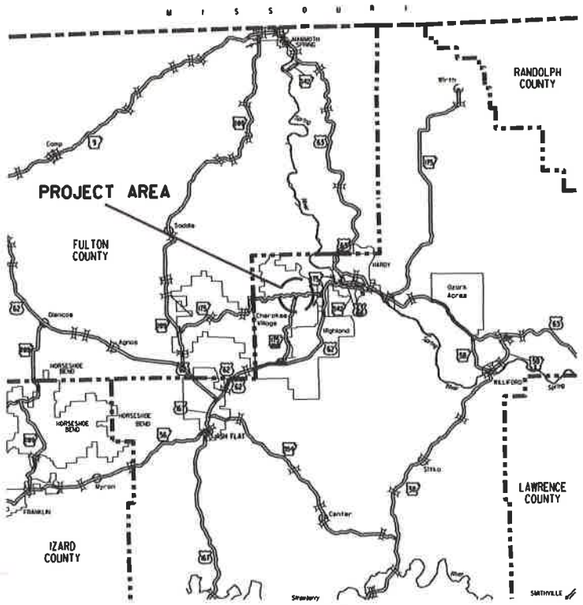
HWY. 175 & HWY. 175S STRS. & APPRS. (CHEROKEE VILLAGE) (S)

SHARP COUNTY

ROUTE 175 SECTION 2
ROUTE 175S SECTION 2S

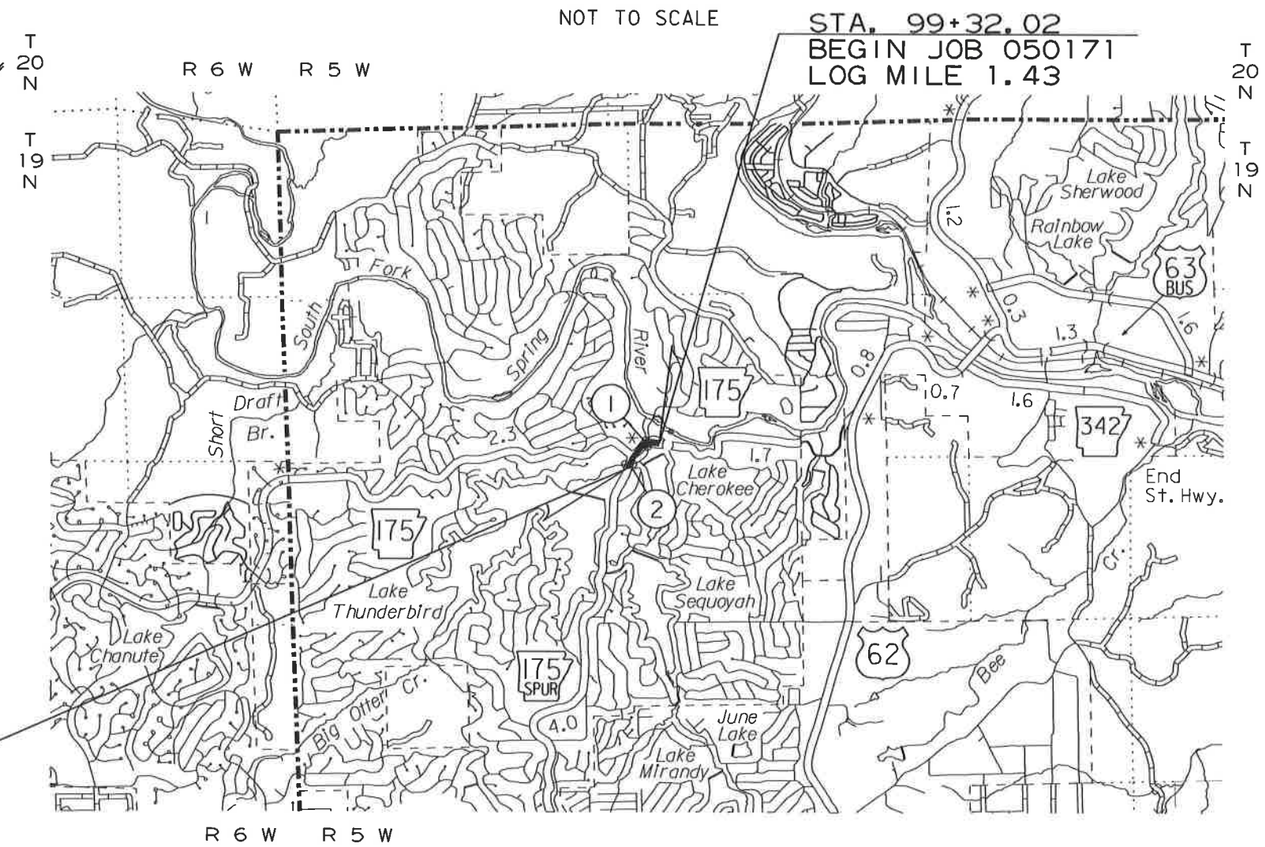
FEDERAL AID PROJ. NHPP-0067(29)

JOB 050171



VICINITY MAP

NOT TO SCALE



ARK. HWY. DIST. NO. 5

DESIGN TRAFFIC DATA

DESIGN YEAR.....2043
2023 ADT.....2200
2043 ADT.....2500
2043 DHV.....275
DIRECTIONAL DISTRIBUTION...0.60
TRUCKS.....1%
DESIGN SPEED.....25 MPH

STRUCTURES OVER 20'-0" SPAN

(1) STA. 103+45 CONSTRUCT
SEXT. 10' X 7' X 54' R.C. BOX
ON 20° LT. FWD. SKEW
WITH 3:1 WINGS LT. AND RT.
Q25 = 3120 CFS; D.A. = 8.76 SQ. MI.
SPAN = 64'-6"

(2) STA. 110+31 CONSTRUCT
QUINT. 10' X 5' X 54' R.C. BOX
ON 20° RT. FWD. SKEW
WITH 3:1 WINGS LT. AND RT.
Q25 = 1900 CFS; D.A. = 5.64 SQ. MI.
SPAN = 53'-8"

APPROVED

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

CHIEF ENGINEER - PRECONSTRUCTION
SEP 21 2023

	BEGIN PROJECT	MID-POINT OF PROJECT	END PROJECT
LATITUDE	N 36°18'31"	N 36°18'30"	N 36°18'24"
LONGITUDE	W 91°31'31"	W 91°31'40"	W 91°31'44"

LENGTH OF PROJECT CALCULATED ALONG C.L.

GROSS LENGTH OF	PROJECT	1442.28	FEET	OR	0.273	MILES
NET	ROADWAY	1324.11			0.251	MILES
NET	BRIDGES	118.17			0.022	MILES
NET	PROJECT	1442.28			0.273	MILES

JY43338 11/14/2022
R050171D08N 11/14/2022

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

Digitally signed by Trinity Smith
Date: 2023.09.22 10:59:25-05'00'

INDEX OF SHEETS

SHEET NO.	TITLE
1	TITLE SHEET
2	INDEX OF SHEETS AND STANDARD DRAWINGS
3	GOVERNING SPECIFICATIONS AND GENERAL NOTES
4 - 5	TYPICAL SECTIONS OF IMPROVEMENT
6 - 16	SPECIAL DETAILS
17 - 21	TEMPORARY EROSION CONTROL DETAILS
22 - 29	MAINTENANCE OF TRAFFIC DETAILS
30	PERMANENT PAVEMENT MARKING DETAILS
31 - 35	QUANTITIES
36	SCHEDULE OF WEIR QUANTITIES
37	SUMMARY OF QUANTITIES AND REVISIONS
38 - 40	SURVEY CONTROL DETAILS
41 - 44	PLAN AND PROFILE SHEETS
45	LAYOUT OF WEIR (SHEET 1 OF 2)
46	LAYOUT OF WEIR (SHEET 2 OF 2)
47	DETAILS OF REINFORCED CONCRETE WEIR (SHEET 1 OF 5)
48	DETAILS OF REINFORCED CONCRETE WEIR (SHEET 2 OF 5)
49	DETAILS OF REINFORCED CONCRETE WEIR (SHEET 3 OF 5)
50	DETAILS OF REINFORCED CONCRETE WEIR (SHEET 4 OF 5)
51	DETAILS OF REINFORCED CONCRETE WEIR (SHEET 5 OF 5)
52	DETAILS OF CABLE FENCE
53 - 66	CROSS SECTIONS

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

ROADWAY STANDARD DRAWINGS

DRWG.NO.	TITLE	DATE
CDP-1	CONCRETE DITCH PAVING	12-08-16
CG-1	CURBING DETAILS	11-29-07
DR-1	DETAILS OF DRIVEWAYS & ISLANDS	05-19-22
DR-2	DETAILS OF DRIVEWAYS & STREET TURNOUTS	05-19-22
FES-1	FLARED END SECTION	10-18-96
FES-2	FLARED END SECTION	10-18-96
FPC-9	DETAILS OF DROP INLETS & JUNCTION BOXES	11-16-01
FPC-9E	DETAILS OF DROP INLETS (TYPE C)	08-22-02
FPC-9M	DETAILS OF DROP INLET (TYPE MO)	08-22-02
MB-1	MAILBOX DETAILS	11-18-04
PBC-1	PRECAST CONCRETE BOX CULVERTS	01-28-15
PCC-1	CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING	02-27-14
PCM-1	METAL PIPE CULVERT FILL HEIGHTS & BEDDING	02-27-14
PCP-1	PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)	02-27-14
PCP-2	PLASTIC PIPE CULVERT (PVC F949)	02-27-14
PCP-3	PLASTIC PIPE CULVERT (POLYPROPYLENE)	02-27-20
PM-1	PAVEMENT MARKING DETAILS	02-27-20
PU-1	DETAILS OF PIPE UNDERDRAIN	12-08-16
RCB-1	REINFORCED CONCRETE BOX CULVERT DETAILS	07-26-12
RCB-2	EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS	11-20-03
SE-3	TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC (4% MAXIMUM)	11-07-19
SI-1	DETAILS OF SPECIAL ITEMS	10-25-18
SI-3	CONCRETE WALK (TYPE SPECIAL)	11-05-20
TC-1	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	11-07-19
TC-2	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	05-20-21
TC-3	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	08-12-21
TEC-1	TEMPORARY EROSION CONTROL DEVCES	11-16-17
TEC-3	TEMPORARY EROSION CONTROL DEVCES	11-03-94
WR-1	WHEELCHAIR RAMPS NEW CONSTRUCTION AND ALTERATIONS	11-10-05

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
10-9-2023		6	ARK.	050171	3	66
		GOVERNING SPECIFICATIONS & GENERAL NOTES				

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

Digitally signed by Trinity Smith
Date: 2023.10.18 15:29:05-05'00'

GOVERNING SPECIFICATIONS

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

NUMBER	TITLE
ERRATA_____	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273__	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273__	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273__	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273__	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273__	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273__	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273__	SUPPLEMENT - WAGE RATE DETERMINATION
100-3_____	CONTRACTOR'S LICENSE
100-4_____	DEPARTMENT NAME CHANGE
102-2_____	ISSUANCE OF PROPOSALS
105-4_____	MAINTENANCE DURING CONSTRUCTION
107-2_____	RESTRAINING CONDITIONS
108-1_____	LIQUIDATED DAMAGES
108-2_____	WORK ALLOWED PRIOR TO ISSUANCE OF WORK ORDER
110-1_____	PROTECTION OF WATER QUALITY AND WETLANDS
210-1_____	UNCLASSIFIED EXCAVATION
303-1_____	AGGREGATE BASE COURSE
306-1_____	QUALITY CONTROL AND ACCEPTANCE
400-1_____	TACK COATS
400-4_____	DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
400-5_____	PERCENT AIR VOIDS FOR ACHM MIX DESIGNS
400-6_____	LIQUID ANTI-STRIP ADDITIVE
400-7_____	TRACKLESS TACK
404-3_____	DESIGN OF ASPHALT MIXTURES
409-2_____	ASPHALT LABORATORY FACILITY
410-1_____	CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
410-2_____	DEVICES FOR MEASURNG DENSITY FOR ROLLING PATTERNS
410-4_____	EVALUATION OF ACHM SUBLOT REPLACEMENT MATERIAL
416-1_____	RECYCLED ASPHALT PAVEMENT
501-2_____	CEMENT
505-1_____	PORTLAND CEMENT CONCRETE DRIVEWAY
600-2_____	INCIDENTAL CONSTRUCTION
603-1_____	LANE CLOSURE NOTIFICATION
604-1_____	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
604-3_____	TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES (MASH)
605-1_____	CONCRETE DITCH PAVING
606-1_____	PIPE CULVERTS FOR SIDE DRAINS
620-1_____	MULCH COVER
621-1_____	FILTER SOCKS
632-1_____	CONCRETE ISLAND
633-1_____	CONCRETE WALKS, CONCRETE STEPS, AND HAND RAILING
634-1_____	CURBING
800-1_____	STRUCTURES
802-4_____	CEMENT
804-2_____	REINFORCING STEEL FOR STRUCTURES
JOB 050171__	ARCHITECTURAL FINISH (CAST-IN PLACE RETAINING WALLS)
JOB 050171__	ARTICULATING BLOCK
JOB 050171__	ASSESSMENT OF WORKING DAYS – MAINTENANCE OF TRAFFIC
JOB 050171__	BIDDING REQUIREMENTS AND CONDITIONS
JOB 050171__	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 050171__	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 050171__	BUY AMERICA - CONSTRUCTION MATERIALS
JOB 050171__	CABLE FENCE
JOB 050171__	CARGO PREFERENCE ACT REQUIREMENTS
JOB 050171__	COLD MILLING – COUNTY PROPERTY
JOB 050171__	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 050171__	CONTACT INFORMATION FOR MOTORIST DAMAGE CLAIMS
JOB 050171__	CULVERT CLEAN OUT
JOB 050171__	DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
JOB 050171__	DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB 050171__	DIVERSION AND CARE OF WATER
JOB 050171__	ESTABLISHING CONTRACT TIME – WORKING DAY CONTRACT
JOB 050171__	FLEXIBLE BEGINNING OF WORK
JOB 050171__	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 050171__	LIQUIDATED DAMAGES PROCEDURE FOR BID LETTINGS
JOB 050171__	MAINTENANCE OF TRAFFIC
JOB 050171__	MANDATORY ELECTRONIC CONTRACT
JOB 050171__	MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB 050171__	OFF-SITE RESTRAINING CONDITIONS FOR INDIANA AND NORTHERN LONG-EARED BATS
JOB 050171__	PARTNERING REQUIREMENTS
JOB 050171__	PERMANENT GROUND ANCHORS
JOB 050171__	PLASTIC PIPE
JOB 050171__	PRICE ADJUSTMENT FOR ASPHALT BINDER
JOB 050171__	PRICE ADJUSTMENT FOR FUEL
JOB 050171__	PROHIBITION OF CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT
JOB 050171__	SEQUENCE OF CONSTRUCTION
JOB 050171__	SHORING FOR CULVERTS
JOB 050171__	SOIL STABILIZATION
JOB 050171__	SPECIAL CLEARING REQUIREMENTS
JOB 050171__	STORM WATER POLLUTION PREVENTION PLAN
JOB 050171__	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 050171__	TEXTURED COATING FINISH (CAST-IN PLACE RETAINING WALLS)
JOB 050171__	TOTAL SOLAR ECLIPSE
JOB 050171__	UTILITY ADJUSTMENTS
JOB 050171__	VALUE ENGINEERING
JOB 050171__	VEGETATED BUFFER ZONE
JOB 050171__	WARM MIX ASPHALT
JOB 050171__	WATER POLLUTION CONTROL

GENERAL NOTES

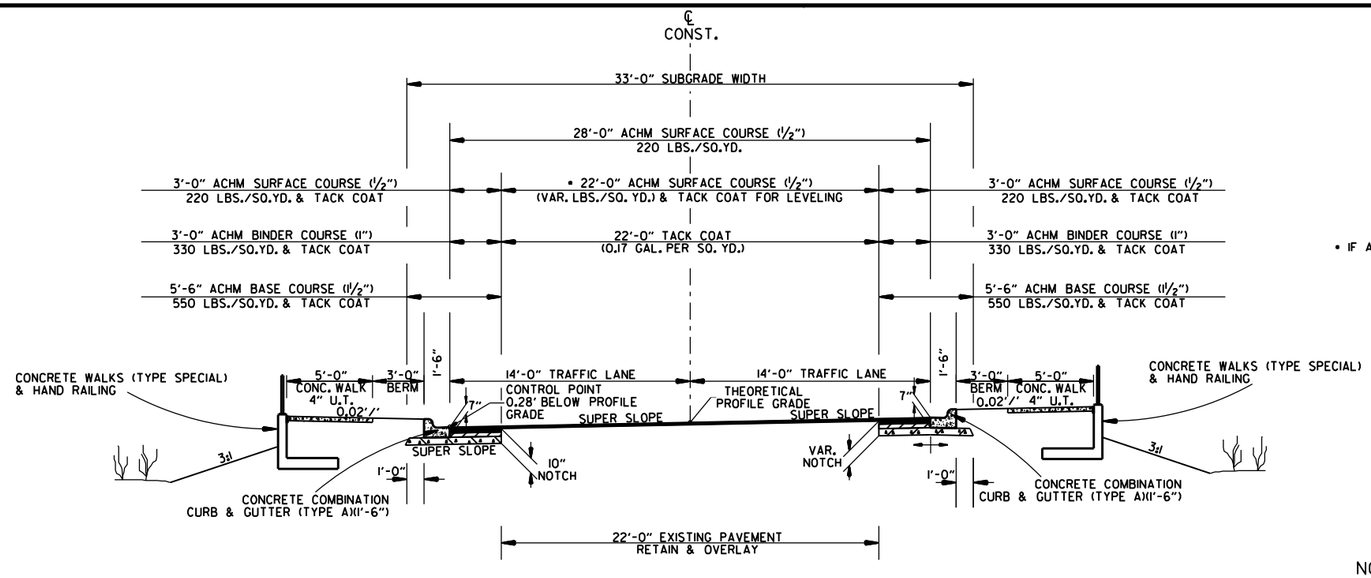
1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
2. ALL PIPE LINES, POWER, TELEPHONE, AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
3. ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY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

JY43338 11/9/2022
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	4	66
		TYPICAL SECTIONS OF IMPROVEMENT				

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

09-22-2023



• IF AND WHERE DIRECTED BY THE ENGINEER

HWY. 175 - NOTCH, WIDENING, AND OVERLAY SECTION - SUPERELEVATION
STA. 99+32.02 - STA. 99+60.00
STA. 104+87.00 - STA. 109+25.00
STA. 111+30.00 - STA. 113+74.30

NOTES:

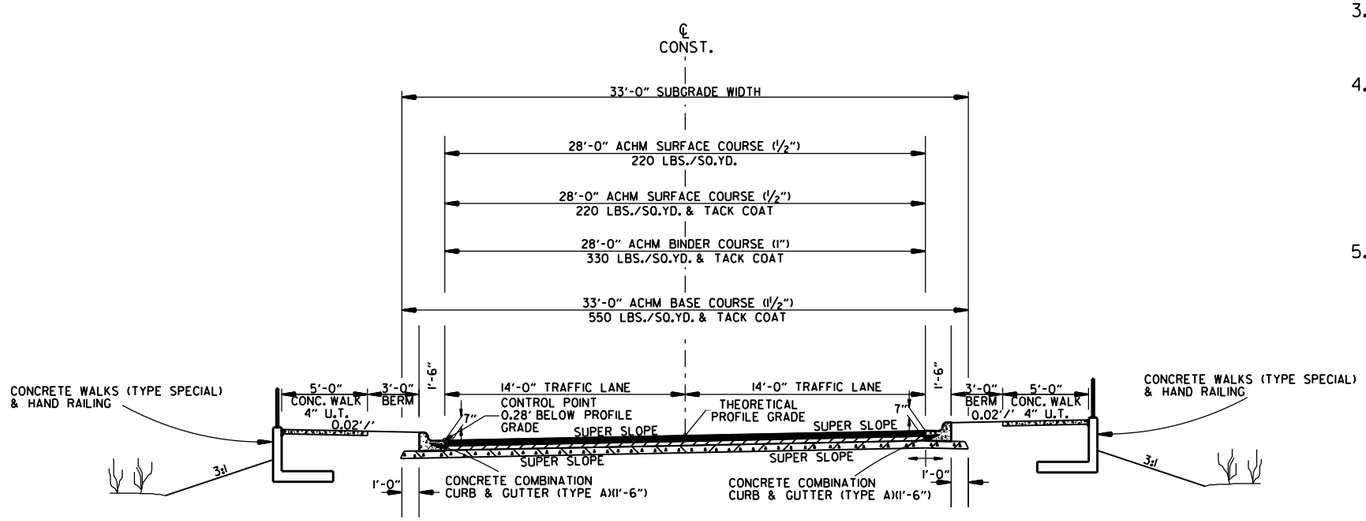
1. REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

2. 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 WILL BE CONSIDERED INCLUDED IN THE VARIOUS PAY ITEMS.

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

4. 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.

5. PRIOR TO AND DURING PLACEMENT OF PAVEMENT IN FRONT OF THE CURB AND GUTTER, THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL TIMES. THE METHOD(S) USED SHALL BE APPROVED BY THE ENGINEER. PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.



HWY. 175 - FULL DEPTH SECTION - SUPERELEVATION
STA. 99+60.00 - STA. 100+38.90
STA. 100+79.67 - STA. 104+87.00
STA. 109+25.00 - STA. 111+30.00

JY43338 11/15/2022
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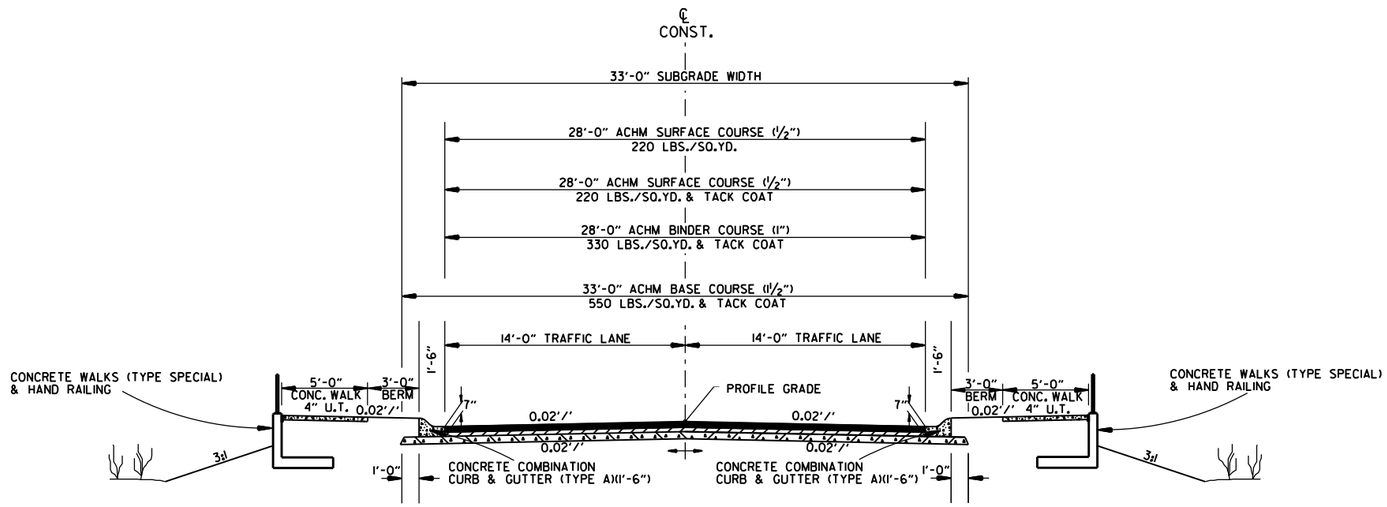
TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	5	66
		TYPICAL SECTIONS OF IMPROVEMENT				

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

09-22-2023



HWY. 175 - FULL DEPTH SECTION
STA. 100+38.90 - STA. 100+79.67

NOTES:

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

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

3. PRIOR TO AND DURING PLACEMENT OF PAVEMENT IN FRONT OF THE CURB AND GUTTER, THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL TIMES. THE METHOD(S) USED SHALL BE APPROVED BY THE ENGINEER. PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

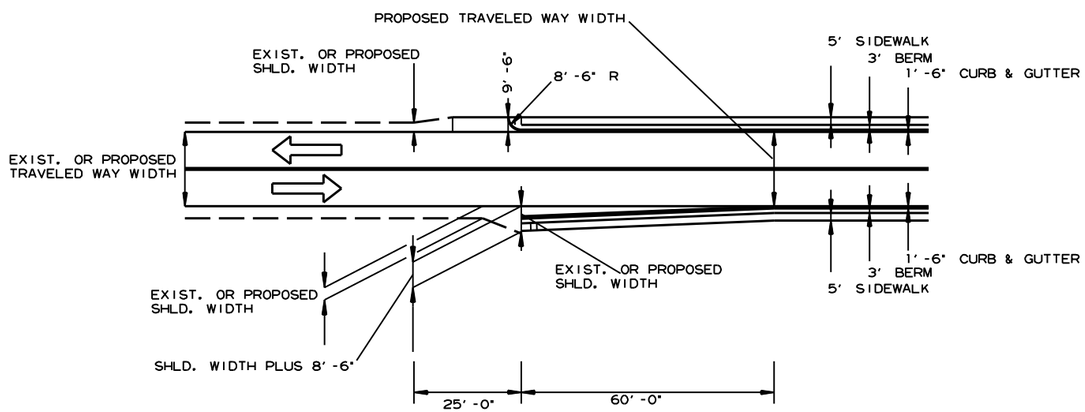
TYPICAL SECTIONS OF IMPROVEMENT

JY43338 11/15/2022
R050171.DGN

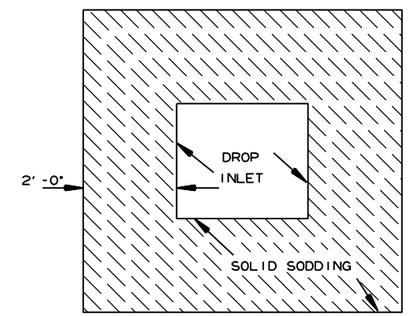
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	6	66
		SPECIAL DETAILS				

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

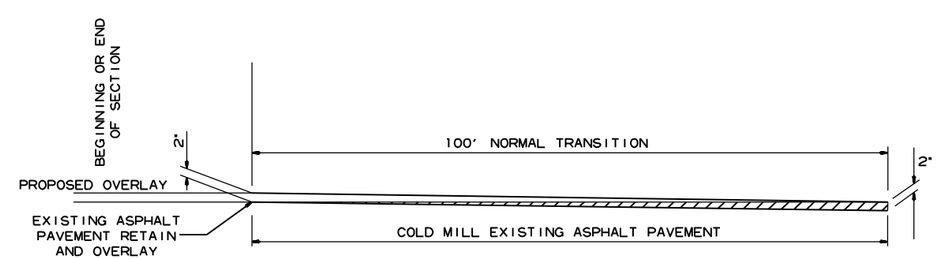
Trinity Smith
09-22-2023



TRANSITION FROM OPEN SHOULDER TO CURB & GUTTER SECTION



DETAIL FOR SOLID SODDING AROUND DROP INLETS



DETAIL FOR TRANSITIONS

JY43338 11/10/2022
R050171.DGN

SPECIAL DETAILS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	7	66
		SPECIAL DETAILS				

STATE OF ARKANSAS
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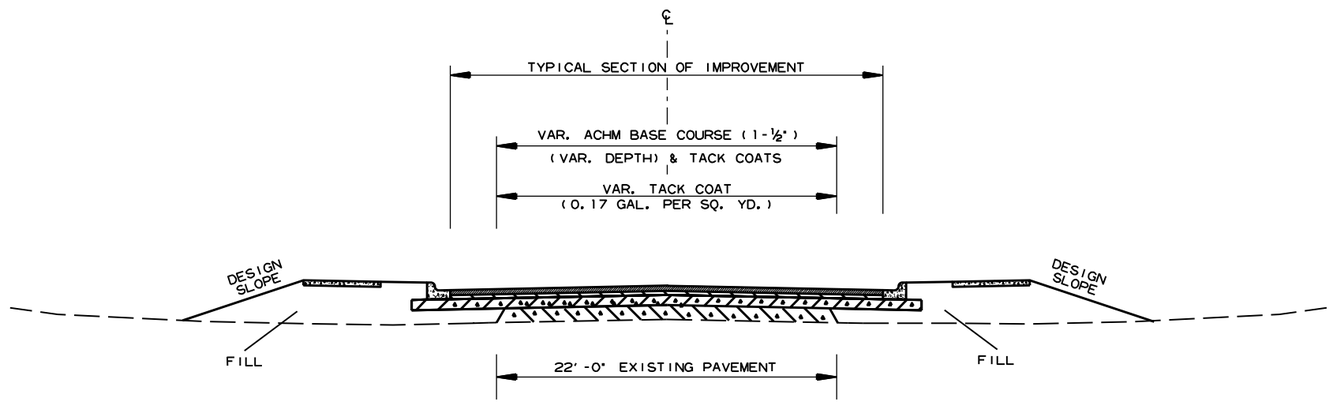


METHOD OF RAISING GRADE

NOTES:

(1) THIS DETAIL TO BE USED IF AND 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.

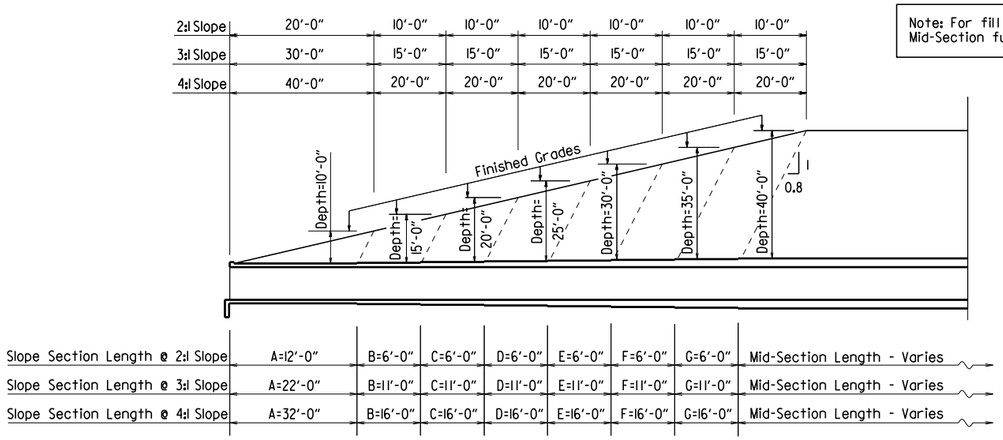
JY43338 11/10/2022
R050171.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050171	8	66

1 SPECIAL DETAILS

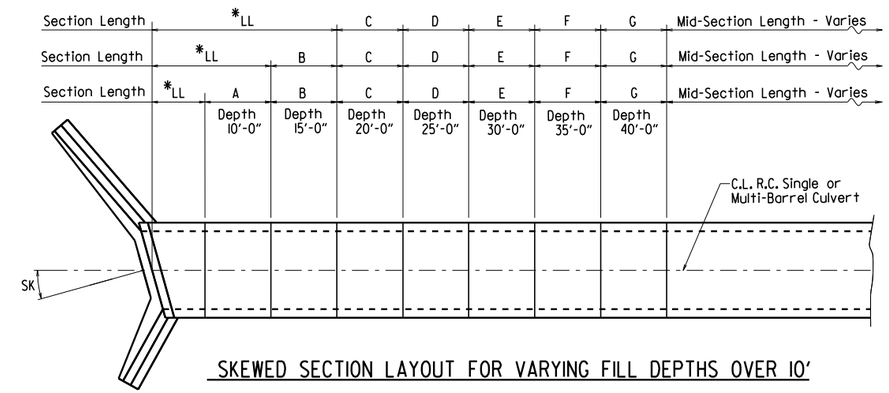
Note: For fill depths 10' and under, use Mid-Section full length of box culvert.

*LL = Skewed End Section Length - See "Skewed End Section Details" Length LL varies with skew angle, overall box width and fill depth and may eliminate the need for some slope section lengths as shown.



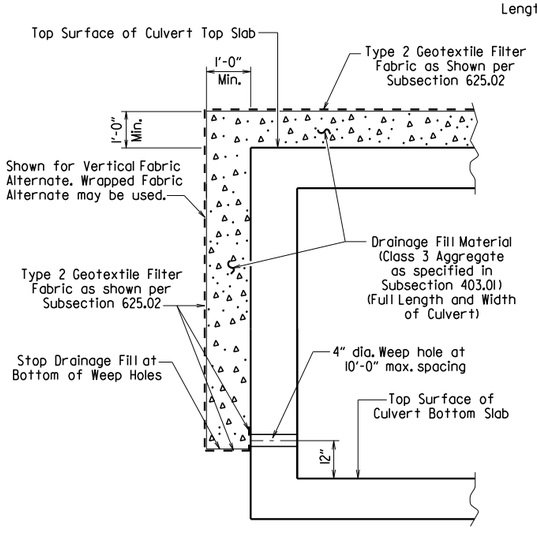
LONGITUDINAL SECTION LENGTH SCHEDULE FOR VARYING FILL DEPTHS OVER 10'

Lengths for Non-Skewed Boxes



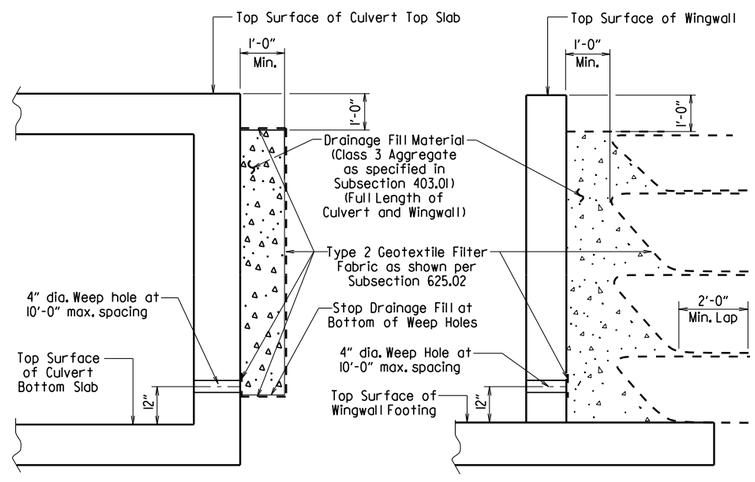
SKEWED SECTION LAYOUT FOR VARYING FILL DEPTHS OVER 10'

STATE OF ARKANSAS
Jun 30 2023 3:01 PM
Charles R. Ellis
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS



CULVERT DRAINAGE DETAIL FOR ROCK FILL

This detail shall be used when rock fill is specified for embankment construction.

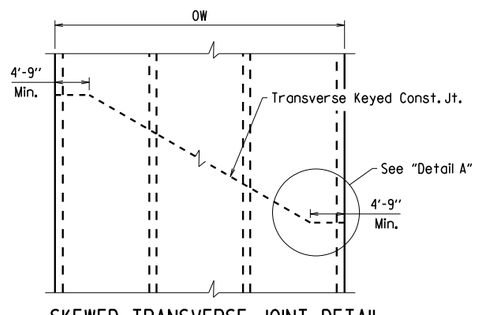


For Details of Excavation and Pay Limits, see Standard Drawing RCB-2.

VERTICAL FABRIC ALTERNATE
(Shown for Culvert, Similar for Wingwall)

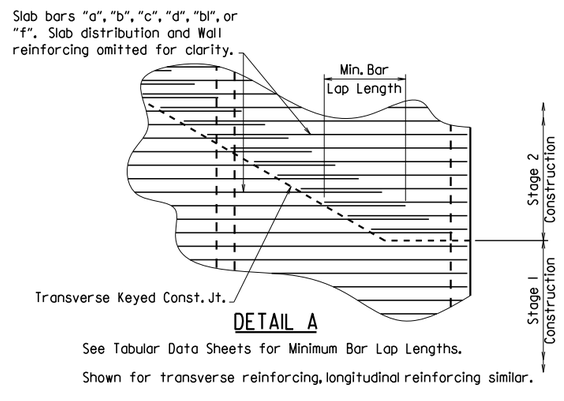
WRAPPED FABRIC ALTERNATE
(Shown for Wingwall, Similar for Culvert)

WINGWALL & CULVERT DRAINAGE DETAIL



SKEWED TRANSVERSE JOINT DETAIL

This detail shall be used to construct a skewed transverse joint only for Multi-Barrel Culverts and only when required by the Maintenance of Traffic Plans. Otherwise, transverse joints should be made normal to the centerline of the barrel.



DETAIL A

See Tabular Data Sheets for Minimum Bar Lap Lengths.

Shown for transverse reinforcing, longitudinal reinforcing similar.

GENERAL NOTES:

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

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Fifth Edition (2010) with 2010 interim revisions.

LIVE LOADING: HL-93

All concrete shall be Class S with a minimum 28-day compressive strength of 3,500 psi and shall be poured in the dry. All exposed corners to have ¾" chamfers.

Reinforcing Steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M31 or M322, Type A, with mill test reports.

Reinforcing Steel Tolerances: The tolerances for reinforcing steel shall meet those listed in 'Manual of Standard Practice' published by Concrete Reinforcing Steel Institute (CRSI) except that the tolerance for truss bars such as Figure 3 on page 7-4 of the CRSI Manual shall be minus zero to plus 1/2 inch.

Excavation and backfilling shall be in accordance with the requirements of Section 801.

Membrane Waterproofing shall conform to the requirements of Section 815. Membrane Waterproofing shall be Type C and as directed by the Engineer applied to all construction joints in the top slab and the sidewalls of R.C. Box culverts and to the construction joint between wingwalls and R.C. Box culvert walls.

Weep Holes in box culvert walls shall have a maximum horizontal spacing of 10'-0" and shall be spaced to clear all reinforcing steel. The drain opening shall be 4" diameter and shall be placed 12" above the top of the bottom slab.

Weep Holes in wingwalls shall have a maximum horizontal spacing of 10'-0" and shall be spaced to clear all reinforcing steel. There shall be a minimum of two (2) weep holes in each wingwall. The drain opening shall be 4" diameter and shall be placed 12" above the top of the wingwall footing.

The barrel components of the culvert may be constructed using continuous pours. For longer culvert construction, the Contractor may use multiple pours with transverse construction joints spaced a minimum of 50 feet apart unless superseded by stage construction or site constraints as approved by the Engineer. Construction joints between footings and walls shall be made only where shown in the Plans. Joints shall be keyed and shall be normal to the centerline of barrel except as noted. Reinforcing shall be continuous through joints unless noted otherwise. Reinforcing through stage construction joints shall provide the minimum bar lap length shown on the Tabular Data Sheets. All longitudinal construction joints shall be submitted to the Engineer for approval.

Membrane Waterproofing, Weep Holes, Geotextile Filter Fabric, and Drainage Fill Material will not be paid for directly but shall be considered subsidiary to Class S Concrete.

When the top slab of the box culvert serves as finished roadway surface, curing and finishing shall be in accordance with subsections 802.17 and 802.20 for bridge roadway surface and a tine finish shall be applied in accordance with subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Curing and finishing shall not be paid for directly, but shall be considered incidental to the item "Class S Concrete-Roadway". Class 1 Protective Surface Treatment shall be applied to the roadway surface and this work shall be paid for under the unit price bid for "Class 1 Protective Surface Treatment".

When precast reinforced concrete box culverts are substituted for cast in place box culverts, they shall be manufactured according to ASTM C 1577 and meet the requirements of Section 607. When the top slab of the box culvert serves as the finished roadway surface, a precast reinforced concrete box culvert substitution is not allowed.

SHEET 1 OF 5

GENERAL DETAILS OF R.C. BOX CULVERT

GENERAL NOTES & LONGITUDINAL SECTION LENGTH SCHEDULE

SPECIAL DETAILS

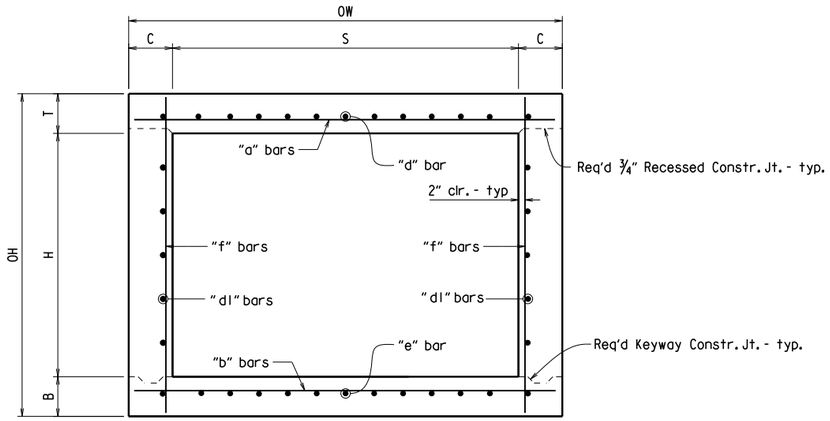
V LI17 FILENAME

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.		050171	9	66

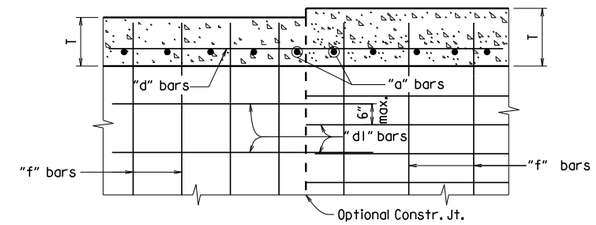
1 SPECIAL DETAILS

STATE OF ARKANSAS
Charles R. Ellis Jun 30 2023 3:01 PM
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS

Note: When top slab of culvert serves as finished roadway surface, see General Notes on Sheet 1 of 4.



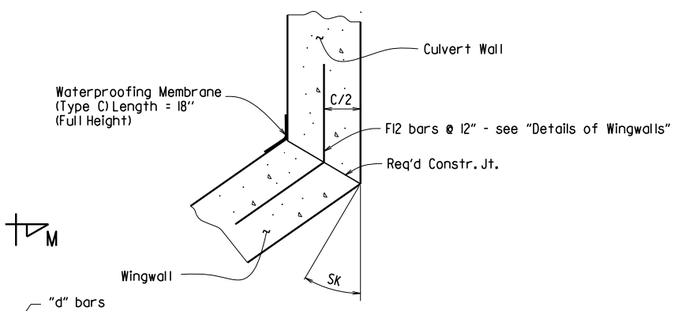
TYPICAL SECTION M-M



Longitudinal Bar Spacing at individual sections shall be maintained, which may result in noncontact bar laps.

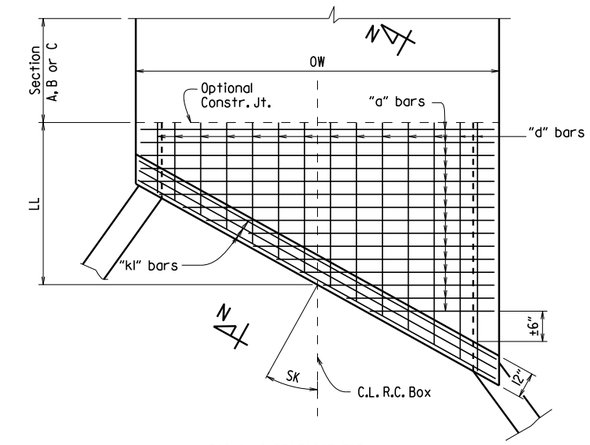
LONGITUDINAL LAP DETAIL AT CHANGE IN SECTIONS

TOP SLAB SHOWN, BOTTOM SLAB SIMILAR

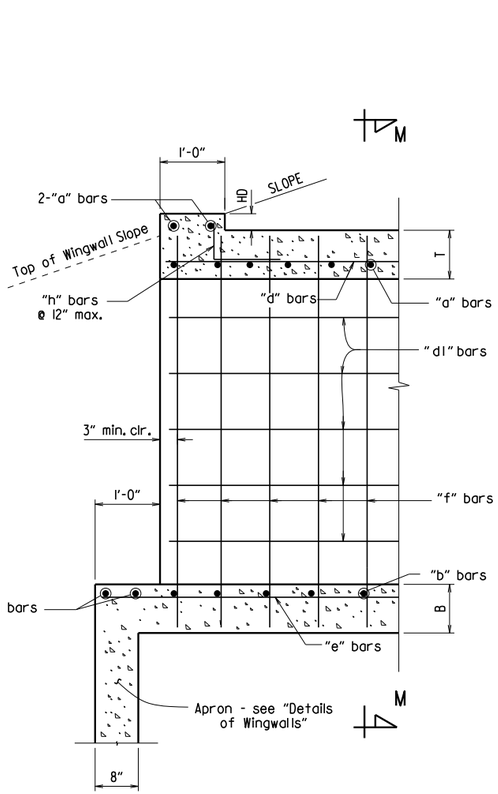


WINGWALL ATTACHMENT

See "Details of Wingwalls" for additional information and wingwall details.

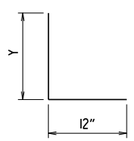


TOP SLAB REINFORCEMENT

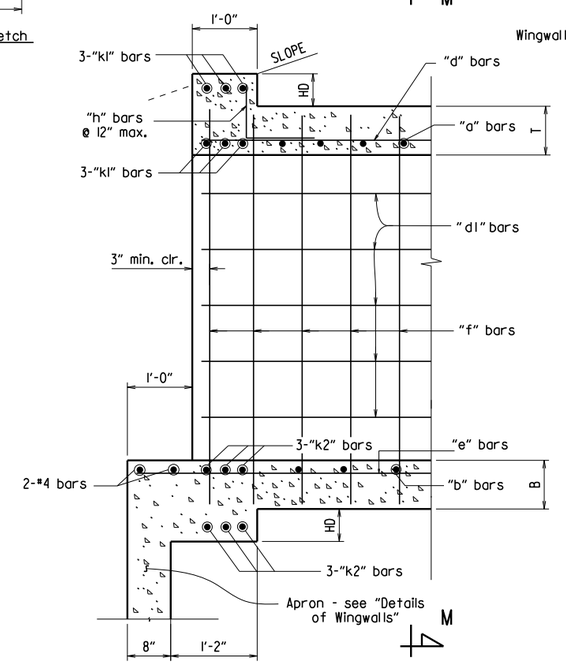


PART LONGITUDINAL SECTION

(Non-Skewed Ends)

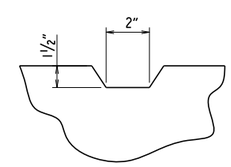


"h" bars sketch



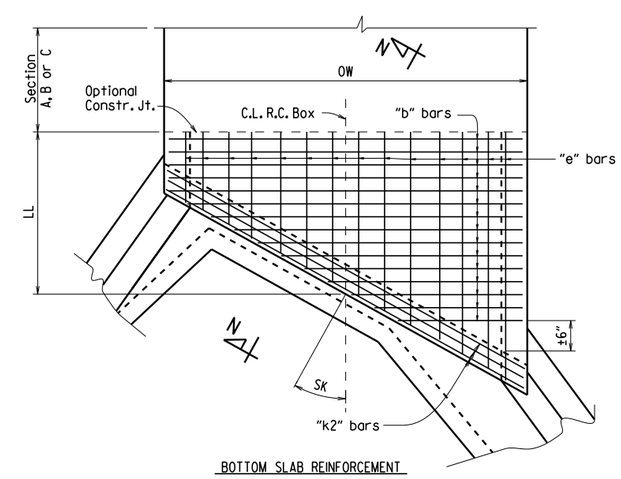
PART LONGITUDINAL SECTION N-N

(Skewed Ends)



TYPICAL KEYWAY DETAIL

(All Construction Joints)



BOTTOM SLAB REINFORCEMENT

SKEWED END SECTION DETAILS

SHEET 2 OF 5
GENERAL DETAILS OF R.C. BOX CULVERT

DETAILS OF SINGLE BARREL R.C. BOX CULVERT

SPECIAL DETAILS

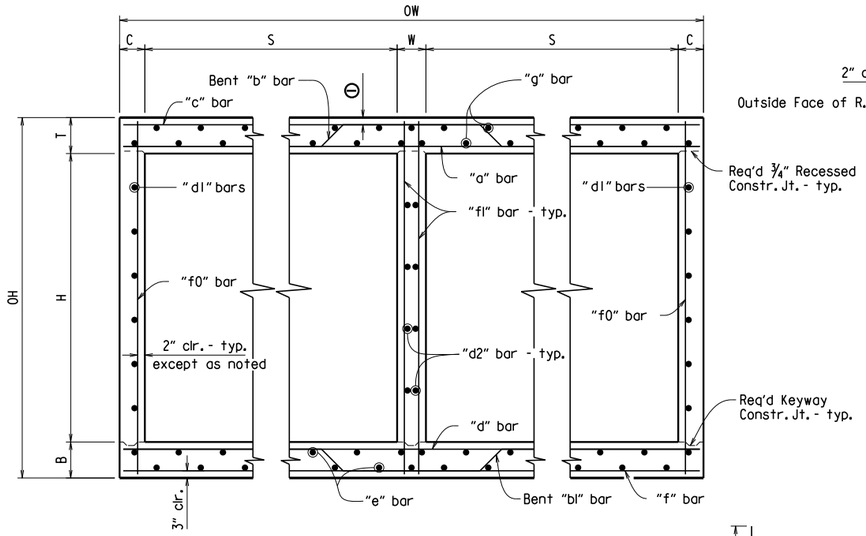
V 1.1.17 FILENAME

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.		050171	10	66

1 SPECIAL DETAILS

① 2" clr. for fill depth (D) greater than 2 ft.
2½" clr. for fill depth (D) equal to or less than 2 ft.

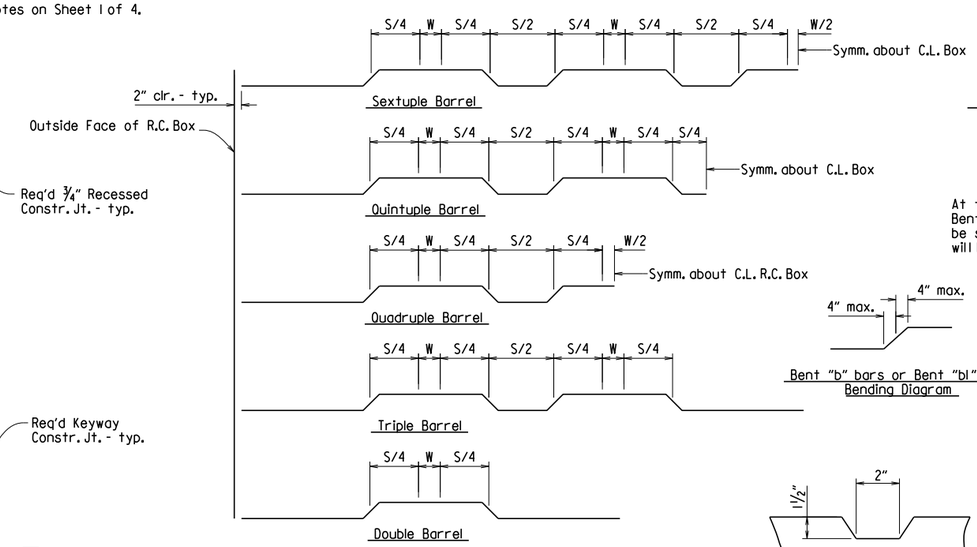
Note: When top slab of culvert serves as finished roadway surface, see General Notes on Sheet 1 of 4.



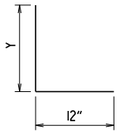
TYPICAL SECTION M-M

Top Slab
Straight "c" bars shall alternate with Bent "b" bars in top.
Straight "a" bars shall alternate with Bent "b" bars in bottom.

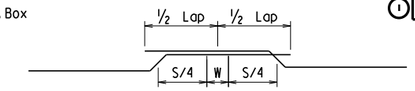
Bottom Slab
Straight "d" bars shall alternate with Bent "bl" bars in top.
Straight "f" bars shall alternate with Bent "bl" bars in bottom.



Bent "b" bars or Bent "bl" bars sketch



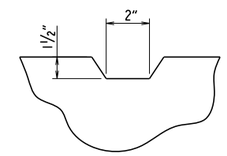
"h" bars sketch



Lap Detail
For Bent "b" bars and Bent "bl" bars

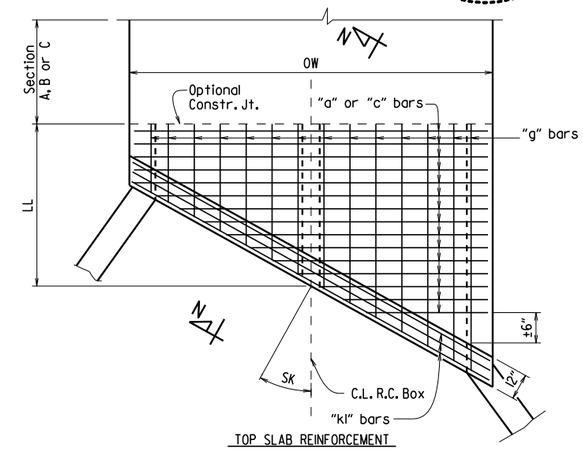
At the Contractor's option in lieu of providing Bent "b" or Bent "bl" bars, one bar top and bottom of equivalent size may be substituted for each bent bar. Payment for the reinforcing will be based on the weight of the "b" or "bl" bar.

Bent "b" bars or Bent "bl" bars
Bending Diagram

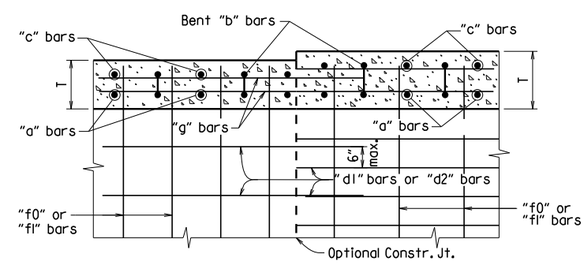


TYPICAL KEYWAY DETAIL

(All Construction Joints)



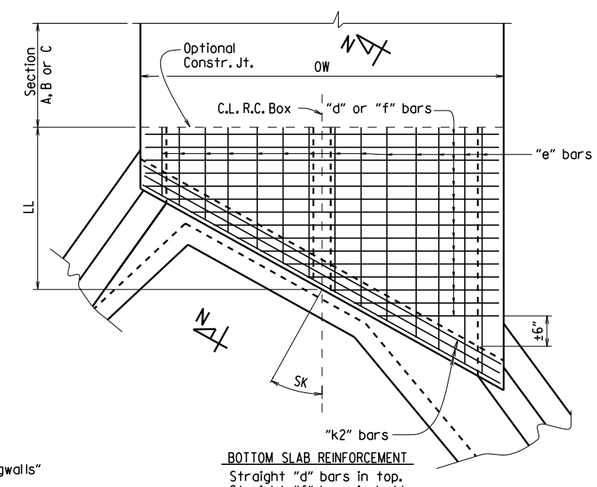
TOP SLAB REINFORCEMENT
Straight "c" bars in top.
Straight "a" bars in bottom.



Longitudinal Bar Spacing at individual sections shall be maintained, which may result in noncontact bar laps.

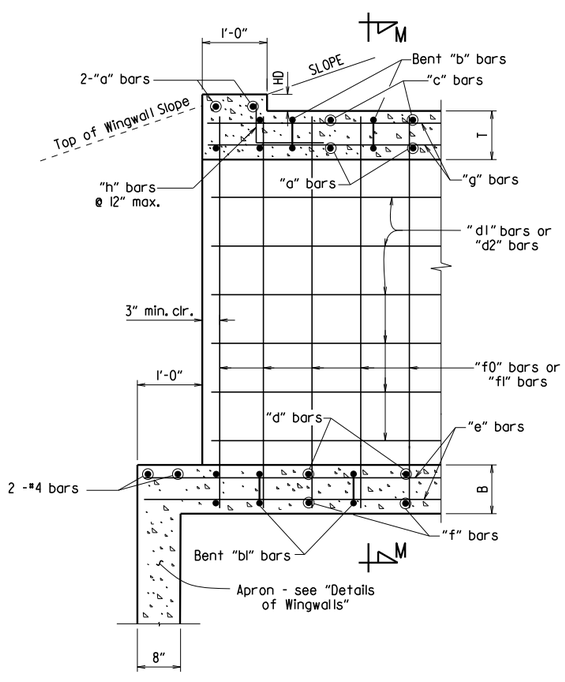
LONGITUDINAL LAP DETAIL AT CHANGE IN SECTIONS

TOP SLAB SHOWN, BOTTOM SLAB SIMILAR



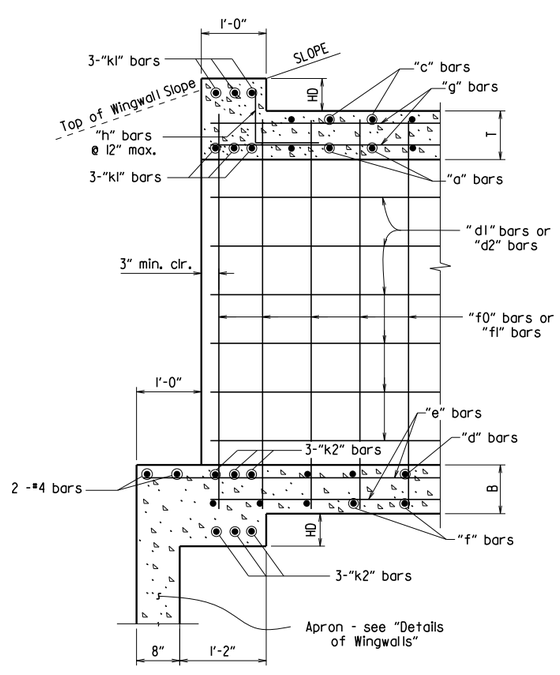
BOTTOM SLAB REINFORCEMENT
Straight "d" bars in top.
Straight "f" bars in bottom.

SKEWED END SECTION DETAILS



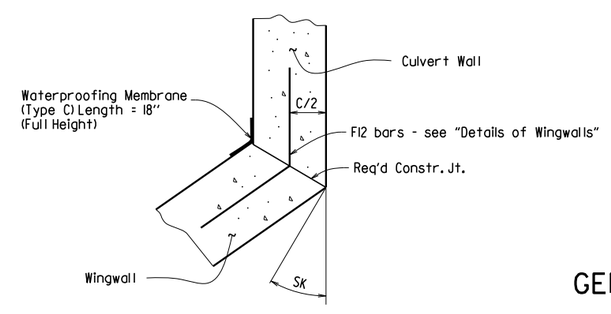
PART LONGITUDINAL SECTION

(Non-Skewed Ends)



PART LONGITUDINAL SECTION N-N

(Skewed Ends)



WINGWALL ATTACHMENT

See "Details of Wingwalls" for additional information and wingwall details.

SHEET 3 OF 5
GENERAL DETAILS OF R.C. BOX CULVERT

DETAILS OF MULTI-BARREL R.C. BOX CULVERT

SPECIAL DETAILS

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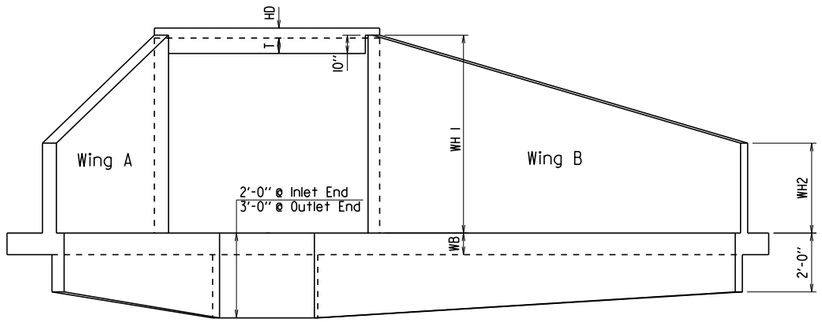
No. 9235
CHARLES R. ELLIS

V 1.1.17 FILENAME

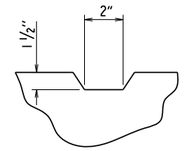
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050171	11	66

① SPECIAL DETAILS



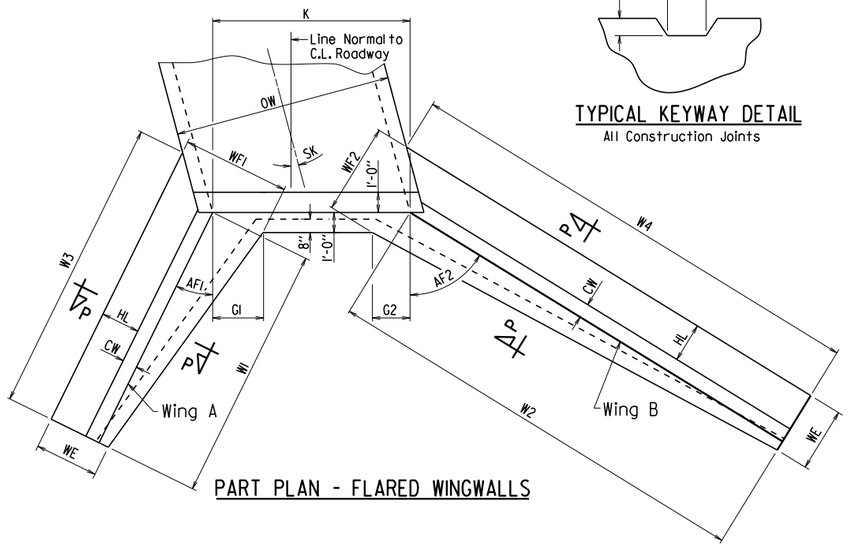
END ELEVATION

Flared Wingwalls Shown

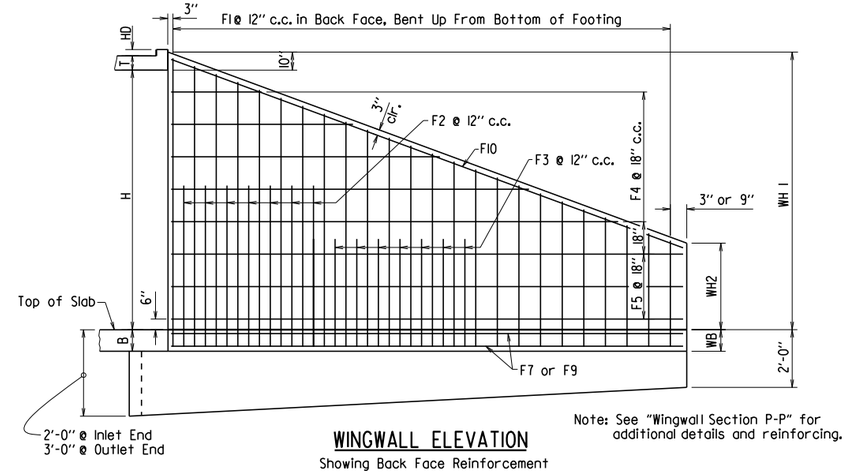


TYPICAL KEYWAY DETAIL

All Construction Joints



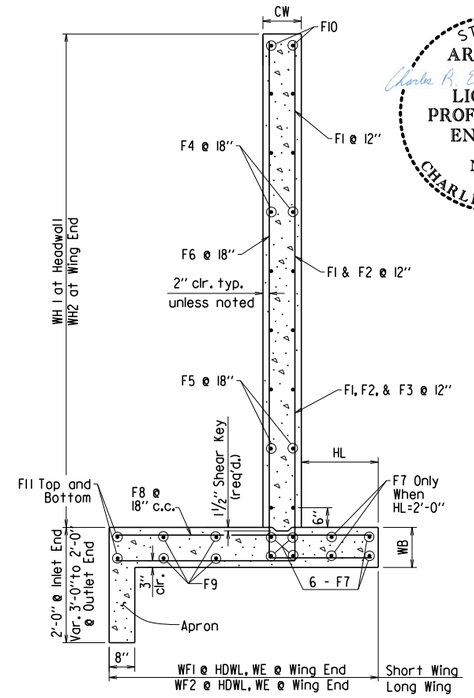
PART PLAN - FLARED WINGWALLS



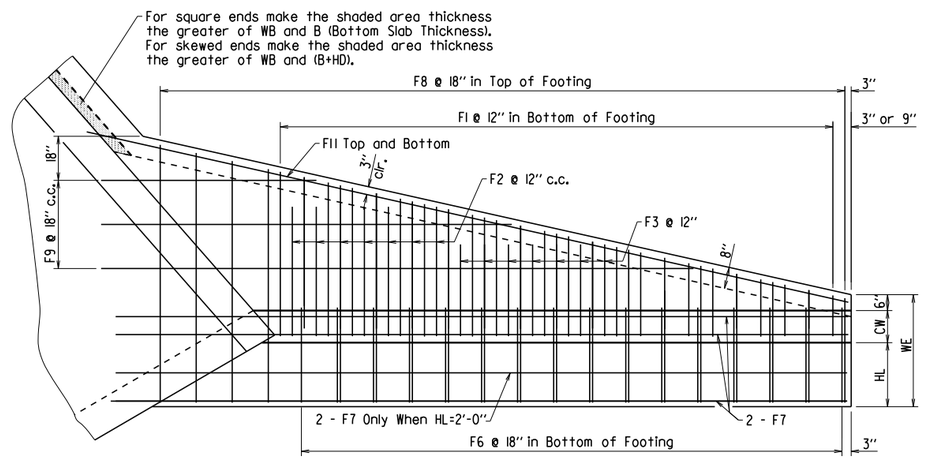
WINGWALL ELEVATION

Showing Back Face Reinforcement

Note: See "Wingwall Section P-P" for additional details and reinforcing.

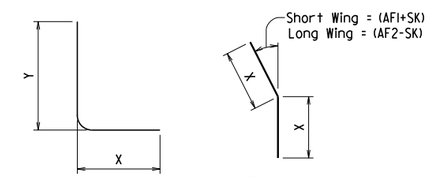


WINGWALL SECTION P-P



PLAN - FLARED WINGWALLS

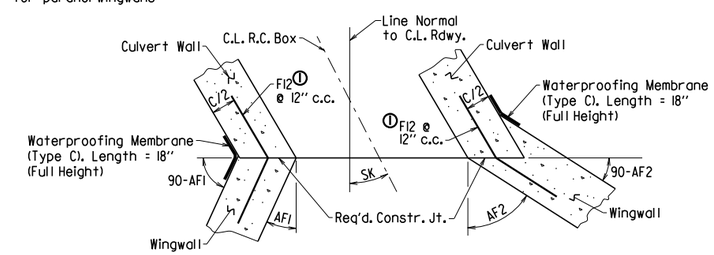
Showing Footing Reinforcement



F1, F2, F3, & F6 BARS

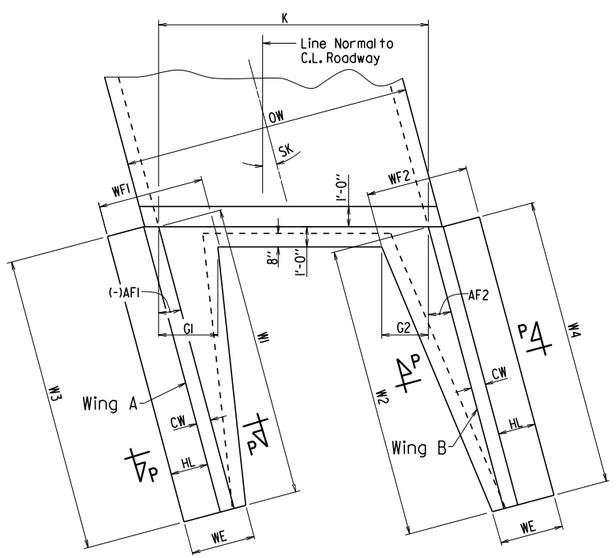
①F12 BAR

①F12 is a straight bar for parallel wingwalls

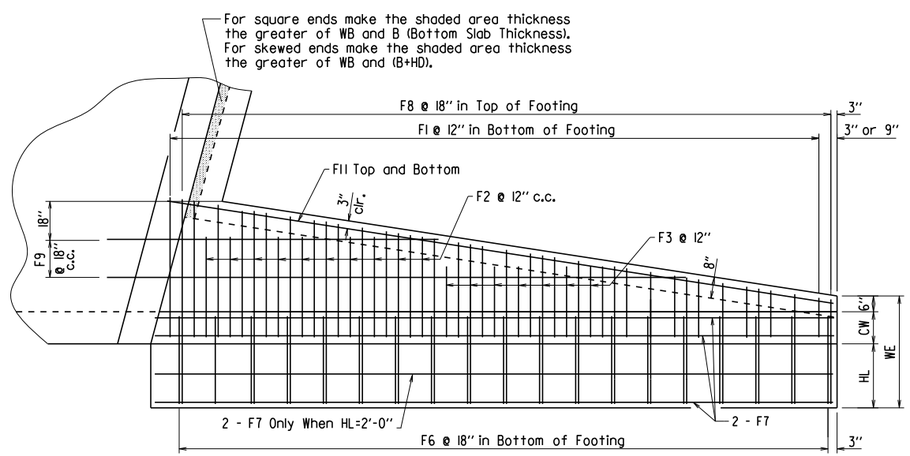


CONSTRUCTION JOINTS

Flared Wingwalls Shown



PART PLAN - PARALLEL WINGWALLS



PLAN - PARALLEL WINGWALLS

Showing Footing Reinforcement

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LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS

SHEET 4 OF 5

GENERAL DETAILS OF R.C. BOX CULVERT

DETAILS OF WINGWALLS

SPECIAL DETAILS

V L117 FILENAME

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.		050171	12	66

① SPECIAL DETAILS

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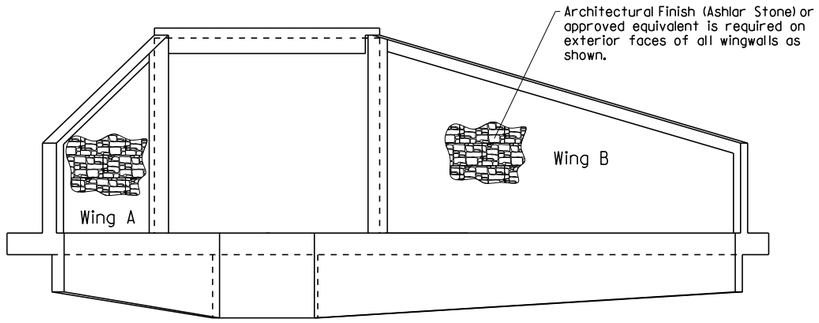
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS

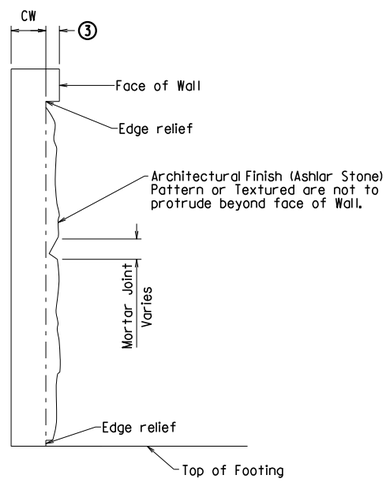


END ELEVATION

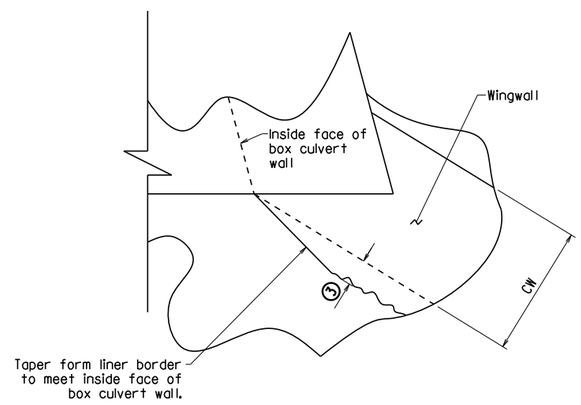
① Class 3 Textured Coating Finish (Color = Brown, Color Chip 33522)

② Class 3 Textured Coating Finish (Color = Brown, Color Chip 30219) and "Ashlar Stone" Pattern Form Liner

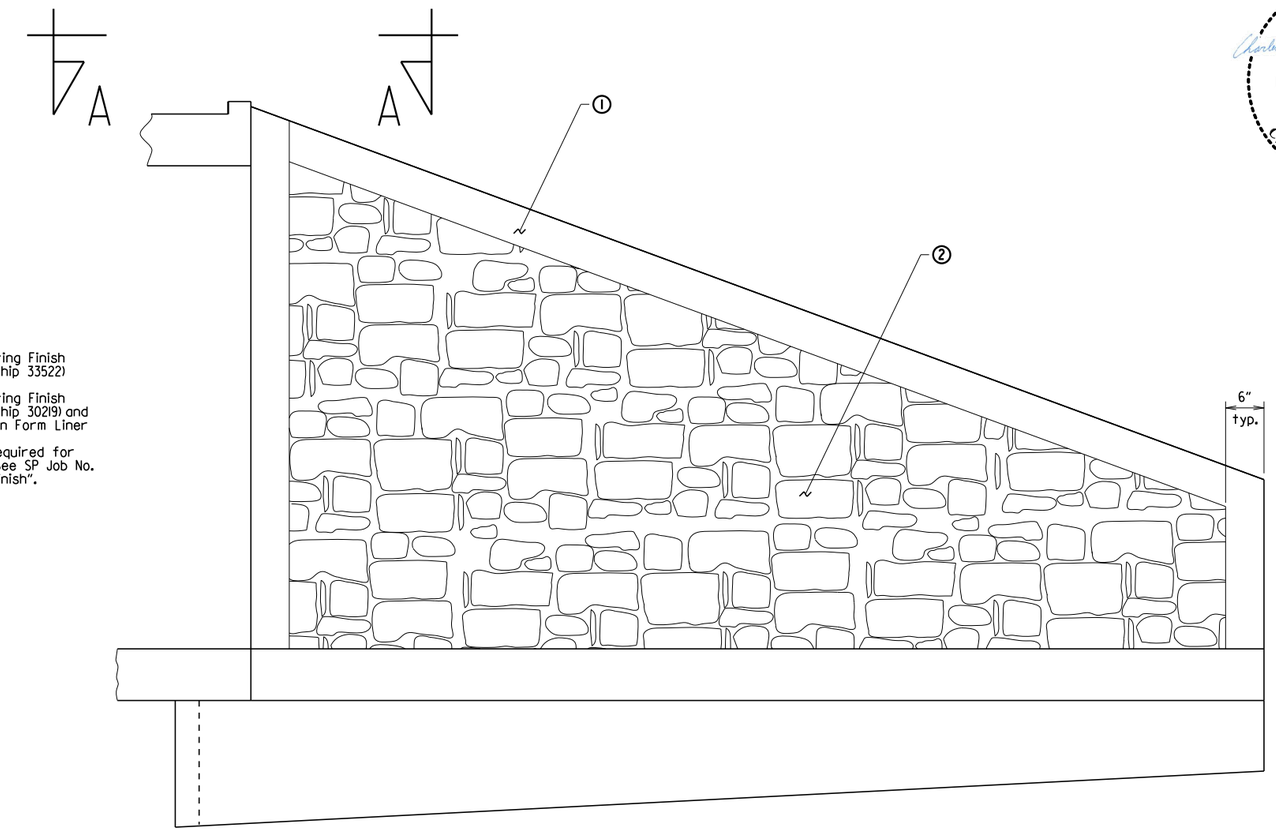
③ Additional concrete required for architectural finish. See SP Job No. 050171 "Architectural Finish".



SECTION VIEW



SECTION A-A



WINGWALL ELEVATION

③ ADDITIONAL QUANTITIES FOR ARCHITECTURAL FINISH

(FOR INFORMATION ONLY)

BOX CULVERT	CLASS "S" CONCRETE (CU. YD.)	ARCHITECTURAL FINISH (SQ. FT.)	TEXTURED COATING FINISH (SQ. YD.)
Sta 103+45	1.98	365	47
Sta 110+31	1.09	191	27

SHEET 5 OF 5

GENERAL DETAILS OF R.C. BOX CULVERT

DETAILS OF WINGWALL ENHANCEMENT

SPECIAL DETAILS

v 1.17 b050171_culvert.dgn

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050171	13	66

1 SPECIAL DETAILS

INLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	LENGTH OF FOOTING HEEL WING A	LENGTH OF FOOTING HEEL WING B	CLASS "S" CONCRETE (Includes apron) INLET	REINFORCING STEEL (Includes apron and laps if required) INLET
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4	CU.YD	LBS.
64'-6"	7'-0"	0'-9"	0'-8"	20	3:1	67'-4 3/4"	2'-0"	7'-10"	2'-4"	10	50	3'-2"	3'-7 3/4"	4'-2 1/8"	0'-9 3/4"	1'-1 7/8"	16'-6"	25'-6"	19'-11 3/8"	28'-11 3/8"	14.76	1284

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY	F1 LENGTHS	F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS	F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS	F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS
WING A	4	12	17	L Min 3'-4" L Max 9'-2" X Min 0'-9" X Max 1'-3" Y Min 2'-8" Y Max 8'-0"		4	12	3	L 3'-7" X 1'-2" Y 2'-6"	-	-	-	L - X - Y -	4	18	6	Min 3'-4" Max 12'-4"	4	18	4	16'-2"
WING B	4	12	26	L Min 3'-4" L Max 9'-8" X Min 0'-9" X Max 1'-9" Y Min 2'-8" Y Max 8'-0"		4	12	5	L 4'-0" X 1'-7" Y 2'-6"	-	-	-	L - X - Y -	4	18	6	Min 5'-3" Max 19'-2"	4	18	4	25'-2"

WING	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY	F6 LENGTHS	F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS	REINF. STEEL QTY. PER WING (LBS)
WING A	4	18	11	L Min 5'-3" L Max 10'-3" X Min 2'-4" X Max 2'-4" Y Min 3'-0" Y Max 8'-0"		4	8	20'-9"	6	18	11	Min 2'-8" Max 3'-2"	-	-	-	Min - Max -	4	2	16'-11"	4	2	17'-6"	6	12	7	L 3'-4" X 1'-8"	498
WING B	4	18	17	L Min 5'-1" L Max 10'-3" X Min 2'-4" X Max 2'-4" Y Min 2'-10" Y Max 8'-0"		4	8	29'-9"	6	18	18	Min 2'-8" Max 3'-8"	4	18	2	Min 40'-7" Max 40'-7"	4	2	25'-7"	4	2	28'-3"	6	12	7	L 3'-4" X 1'-8"	786

MID-SECTION

BAR LAP TABLE

# of Long. Laps Req'd.	SL = Section Length
0	< 40.0 ft
1	>40.0 ft - 78.0 ft
2	>78.0 ft - 116.0 ft
3	>116.0 ft - 154.0 ft
4	>154.0 ft - 192.0 ft
5	>192.0 ft - 230.0 ft
6	>230.0 ft - 268.0 ft
7	>268.0 ft - 306.0 ft
8	>306.0 ft -344.0 ft

Min. Bar Lap Length	
#4	1'-9"
#5	2'-2"
#6	2'-7"
#7	3'-6"
#8	4'-7"

Bar Pin Dia. Table	
#4	3"
#5	3 3/4"
#6	4 1/2"
#7	5 1/4"
#8	6"

STATE OF ARKANSAS
Jun 30 2023 3:02 PM
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS

TABULAR DATA BY: DPT DATE: 1/09/2023
CHECKED BY: BAB DATE: 1/24/2023

This drawing to be used in conjunction with
SHEET 1 OF 5, "GENERAL DETAILS OF R.C. BOX CULVERT", 'GENERAL NOTES & LONGITUDINAL SECTION LENGTH SCHEDULE',
SHEET 3 OF 5, "GENERAL DETAILS OF R.C. BOX CULVERT", 'DETAILS OF MULTI-BARREL R.C. BOX CULVERT',
SHEET 4 OF 5, "GENERAL DETAILS OF R.C. BOX CULVERT", 'DETAILS OF WINGWALLS',
SHEET 5 OF 5, "GENERAL DETAILS OF R.C. BOX CULVERT", 'DETAILS OF WINGWALL ENHANCEMENT', and
STANDARD DRAWING RCB-2.

For additional information and outlet sections, see Sheet 2 of 2.

INLET SKEWED END SECTION

SKEW (DEGREE) SK	SLOPE SL	DESIGN FILL DEPTH (FT.) D	CLEAR SPAN (FT.) S	CLEAR HEIGHT (FT.) H	SECTION LENGTH LL	TOP SLAB THK. T	HDWL DEPTH HD	BOTTOM SLAB THK. B	SIDE WALL THK. C	INTERIOR WALL THK. W	OVER ALL WIDTH OW	OVER ALL HEIGHT OH
20	3:1	5	10	7	13'-9"	12	3	12	7	8	64'-6"	9'-0"

TOP SLAB REINFORCING STEEL "a" SIZE	"a" SPACING	"a" LENGTHS VARY	"a" NO. REQ'D	"c" SIZE	"c" SPACING	"c" LENGTHS VARY	"c" NO. REQ'D	BOTTOM SLAB REINFORCING STEEL "d" SIZE	"d" SPACING	"d" LENGTHS VARY	"d" NO. REQ'D	"f" SIZE	"f" SPACING	"f" LENGTHS VARY	"f" NO. REQ'D
5	5	Max 64'-2" Min 4'-7" 64'-2"	53 5	7	5	Max 64'-2" Min 4'-7" 64'-2"	53 5	4	5	Max 64'-2" Min 4'-7" 64'-2"	53 5	4	7	Max 64'-2" Min 4'-7" 64'-2"	38 4

SIDE WALL REINFORCING STEEL "f0" SIZE	"f0" SPACING	"f0" NO. REQ'D	"f0" LENGTH	INTERIOR WALL REINFORCING STEEL "f1" SIZE	"f1" SPACING	"f1" NO. REQ'D	"f1" LENGTH	TOP SLAB DISTRIBUTION REINFORCING STEEL "g" SIZE	"g" SPACING	"g" NO. REQ'D	"g" LENGTHS VARY	BOTTOM SLAB DISTRIBUTION REINFORCING STEEL "e" SIZE	"e" SPACING	"e" NO. REQ'D	"e" LENGTHS VARY
6	8	42	8'-8"	4	12	150	8'-8"	4	9	179	Max 25'-4" Min 1'-10"	4	9	179	Max 25'-4" Min 1'-10"

SIDE WALL DISTRIBUTION REINFORCING STEEL "d1" SIZE	"d1" SPACING	"d1" NO. REQ'D	"d1" LENGTH	INTERIOR WALL DISTRIBUTION REINFORCING STEEL "d2" SIZE	"d2" SPACING	"d2" NO. REQ'D	"d2" LENGTHS VARY	CLASS "S" CONCRETE (Includes HDWL) CU. YDS.	1 REINFORCING STEEL (GR 60) (Includes HDWL) LBS.
4	12	7	LONG 25'-2" SHORT 2'-0"	4	12	14 42 14	LONG 21'-5" MID 17'-6" SHORT 5'-9"	83.04	15276

1 Any Bar Lap Required for the Skewed End Section shall be considered subsidiary to the item "Reinforcing Steel - Roadway (Grade 60)."

"k1" HDWL BARS SIZE	"k1" LENGTH	"k1" NO. REQ'D	"k2" HDWL BARS SIZE	"k2" LENGTH	"k2" NO. REQ'D	"h" HDWL BARS SIZE	"h" LENGTH	"h" Y	"h" NO. REQ'D
4	35'-0"	12	4	35'-0"	12	4	1'-11"	0'-11"	70

INLET SLOPE SECTION(S)

R.C. BOX SECTION	DESIGN FILL DEPTH (FT.) D	CLEAR SPAN (FT.) S	CLEAR HEIGHT (FT.) H	TOP SLAB THK. T	BOTTOM SLAB THK B	SIDE WALL THK C	INTERIOR WALL THK. W	OVER ALL WIDTH OW	OVER ALL HEIGHT OH	SECTION LENGTH (FT.) SL

TOP SLAB REINFORCING STEEL (LENGTH = OW - 4" + BENDS) "a" SIZE	"a" L	Bent "b" SIZE	Bent "b" L	"c" SIZE	"c" L	SPACING	NO. REQ'D	BOTTOM SLAB REINFORCING STEEL (LENGTH = OW - 4" + BENDS) "d" SIZE	"d" L	Bent "b1" SIZE	Bent "b1" L	"f" SIZE	"f" L	SPACING	NO. REQ'D

SIDE WALL REINFORCING STEEL "f0" (LENGTH = OH - 4") SIZE	SPACING	NO. REQ'D	LENGTH	INTERIOR WALL REINFORCING STEEL "f1" (LENGTH = OH - 4") SIZE	SPACING	NO. REQ'D	LENGTH	TOP SLAB DISTRIBUTION REINF. STEEL "g" (LENGTH = SL) SIZE	SPACING	NO. REQ'D	BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" (LENGTH = SL) SIZE	SPACING	NO. REQ'D

SIDE WALL DISTRIBUTION REINF. STEEL "d1" (LENGTH = SL) SIZE	SPACING	NO. REQ'D	INTERIOR WALL DISTRIBUTION REINF. STEEL "d2" (LENGTH = SL) SIZE	SPACING	NO. REQ'D	CLASS "S" CONCRETE CU. YDS.	REINFORCING STEEL (GR. 60) LBS.
						TOTAL	

HDWL DEPTH HD	ADDITIONAL REINF. FOR HDWL LBS.	"h" HDWL BARS SIZE	Y	LENGTH	NO. REQ'D

Design Fill Depth	Range of Actual Fill Depth
2	0.0 ft - 2.0 ft
5	>2.0 ft - 5.0 ft
10	>5.0 ft - 10.0 ft
15	>10.0 ft - 15.0 ft
20	>15.0 ft - 20.0 ft
25	>20.0 ft - 25.0 ft
30	>25.0 ft - 30.0 ft
35	>30.0 ft - 35.0 ft
40	>35.0 ft - 40.0 ft

Data shown for Mid-Section, Slope Section(s), and Skewed End Section is based on the design fill depth shown in the table, see PLAN AND PROFILE SHEETS for actual fill depth.

MID-SECTION

R.C. BOX SECTION	DESIGN FILL DEPTH (FT.) D	CLEAR SPAN (FT.) S	CLEAR HEIGHT (FT.) H	TOP SLAB THK. T	BOTTOM SLAB THK B	SIDE WALL THK. C	INTERIOR WALL THK. W	OVER ALL WIDTH OW	OVER ALL HEIGHT OH	SECTION LENGTH (FT.) SL
A	5	10	7	12	12	7	8	64'-6"	9'-0"	26.5

TOP SLAB REINFORCING STEEL (LENGTH = OW - 4" + BENDS) "a" SIZE	"a" L	Bent "b" SIZE	Bent "b" L	"c" SIZE	"c" L	SPACING	NO. REQ'D	BOTTOM SLAB REINFORCING STEEL (LENGTH = OW - 4" + BENDS) "d" SIZE	"d" L	Bent "b1" SIZE	Bent "b1" L	"f" SIZE	"f" L	SPACING	NO. REQ'D
5	64'-2"	8	65'-11"	8	64'-2"	14	22	4	64'-2"	4	65'-10"	4	64'-2"	12	26

SIDE WALL REINFORCING STEEL "f0" (LENGTH = OH - 4") SIZE	SPACING	NO. REQ'D	LENGTH	INTERIOR WALL REINFORCING STEEL "f1" (LENGTH = OH - 4") SIZE	SPACING	NO. REQ'D	LENGTH	TOP SLAB DISTRIBUTION REINF. STEEL "g" (LENGTH = SL) SIZE	SPACING	NO. REQ'D	BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" (LENGTH = SL) SIZE	SPACING	NO. REQ'D
6	8	78	8'-8"	4	12	260	8'-8"	4	9	179	4	9	179

SIDE WALL DISTRIBUTION REINF. STEEL "d1" (LENGTH = SL) SIZE	SPACING	NO. REQ'D	INTERIOR WALL DISTRIBUTION REINF. STEEL "d2" (LENGTH = SL) SIZE	SPACING	NO. REQ'D	CLASS "S" CONCRETE CU. YDS.	REINFORCING STEEL (GR. 60) LBS.
4	12	14	4	12	70	157.53	23940

SHEET 1 OF 2
DETAILS OF R.C. BOX CULVERT
SEXTUPLE BARREL BOX CULVERT
Sta. 103+45

SPECIAL DETAILS

Ver. 1.1.17 b050171.cl.dgn

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050171	14	66

(1) SPECIAL DETAILS

STATE OF ARKANSAS
Charles R. Ellis Jun 30 2023 3:02PM
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS

TABULAR DATA BY: DPT DATE: 1/09/2023
CHECKED BY: BAB DATE: 1/24/2023

OUTLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	LENGTH OF FOOTING HEEL WING A	LENGTH OF FOOTING HEEL WING B	CLASS "S" CONCRETE (Includes apron) OUTLET	REINFORCING STEEL (Includes apron and laps if required) OUTLET
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4	CU.YD	LBS.
64'-6"	7'-0"	0'-9"	0'-8"	20	3:1	67'-4 3/4"	2'-0"	7'-10"	2'-4"	10	50	3'-2"	3'-7 3/4"	4'-2 1/8"	0'-9 3/4"	1'-1 7/8"	16'-6"	25'-6"	19'-11 3/8"	28'-11 3/8"	16.88	1284

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY	F1 LENGTHS	F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS	F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS	F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS
WING A	4	12	17	L Min	3'-4"	4	12	3	L 3'-7"	-	-	-	L -	4	18	6	Min 3'-4"	4	18	4	16'-2"
				L Max	9'-2"												Max 12'-4"				
				X Min	0'-9"				X 1'-2"				X -								
				X Max	1'-3"																
				Y Min	2'-8"				Y 2'-6"				Y -								
				Y Max	8'-0"																
WING B	4	12	26	L Min	3'-4"	4	12	5	L 4'-0"	-	-	-	L -	4	18	6	Min 5'-3"	4	18	4	25'-2"
				L Max	9'-8"												Max 19'-2"				
				X Min	0'-9"				X 1'-7"				X -								
				X Max	1'-9"																
				Y Min	2'-8"				Y 2'-6"				Y -								
				Y Max	8'-0"																

WING	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY	F6 LENGTHS	F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS	REINF. STEEL QTY. PER WING (LBS)
WING A	4	18	11	L Min 5'-3"		4	8	20'-9"	6	18	11	Min 2'-8"	-	-	-	Min -	4	2	16'-11"	4	2	17'-6"	6	12	7	L 3'-4"	498
				L Max 10'-3"								Max 3'-2"				Max -										X 1'-8"	
				X Min 2'-4"																							
				X Max 2'-4"																							
				Y Min 3'-0"																							
				Y Max 8'-0"																							
WING B	4	18	17	L Min 5'-1"		4	8	29'-9"	6	18	18	Min 2'-8"	4	18	2	Min 40'-7"	4	2	25'-7"	4	2	28'-3"	6	12	7	L 3'-4"	786
				L Max 10'-3"								Max 3'-8"				Max 40'-7"										X 1'-8"	
				X Min 2'-4"																							
				X Max 2'-4"																							
				Y Min 2'-10"																							
				Y Max 8'-0"																							

Min. Bar Lap Length	
#4	1'-9"
#5	2'-2"
#6	2'-7"
#7	3'-6"
#8	4'-7"

Bar Pin Dia. Table	
#4	3"
#5	3 3/4"
#6	4 1/2"
#7	5 1/4"
#8	6"

(1) Any Bar Lap Required for the Skewed End Section shall be considered subsidiary to the item "Reinforcing Steel - Roadway (Grade 60)."

OUTLET SKEWED END SECTION

SKEW (DEGREE)	SLOPE	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THK.	HDWL DEPTH	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT
SK	SL	D	S	H	LL	T	HD	B	C	W	OW	OH
20	3:1	5	10	7	13'-9"	12	3	12	7	8	64'-6"	9'-0"

TOP SLAB REINFORCING STEEL "a" SIZE	"a" SPACING	"a" LENGTHS VARY	"a" NO. REQ'D	"c" SIZE	"c" SPACING	"c" LENGTHS VARY	"c" NO. REQ'D	BOTTOM SLAB REINFORCING STEEL "d" SIZE	"d" SPACING	"d" LENGTHS VARY	"d" NO. REQ'D	"f" SIZE	"f" SPACING	"f" LENGTHS VARY	"f" NO. REQ'D
5	5	Max 64'-2"	53	7	5	Max 64'-2"	53	4	5	Max 64'-2"	53	4	7	Max 64'-2"	38
		Min 4'-7"				Min 4'-7"				Min 4'-7"				Min 4'-7"	
		64'-2"	5			64'-2"	5			64'-2"	5			64'-2"	4

SIDE WALL REINFORCING STEEL "f0" SIZE	SPACING	NO. REQ'D	LENGTH	INTERIOR WALL REINFORCING STEEL "f1" SIZE	SPACING	NO. REQ'D	LENGTH	TOP SLAB DISTRIBUTION REINFORCING STEEL "g" SIZE	SPACING	NO. REQ'D	LENGTHS VARY	BOTTOM SLAB DISTRIBUTION REINFORCING STEEL "e" SIZE	SPACING	NO. REQ'D	LENGTHS VARY
6	8	42	8'-8"	4	12	150	8'-8"	4	9	179	Max 25'-4"	4	9	179	Max 25'-4"
											Min 1'-10"				Min 1'-10"

SIDE WALL DISTRIBUTION REINFORCING STEEL "d1" SIZE	SPACING	NO. REQ'D	LENGTH	INTERIOR WALL DISTRIBUTION REINFORCING STEEL "d2" SIZE	SPACING	NO. REQ'D	LENGTHS VARY	CLASS "S" CONCRETE (Includes HDWL) CU. YDS.	(1) REINFORCING STEEL (GR 60) (Includes HDWL) LBS.
4	12	7	LONG 25'-2"	4	12	14	LONG 21'-5"	83.04	15276
		7	SHORT 2'-0"			42	MID 17'-6"		
						14	SHORT 5'-9"		

"k1" HDWL BARS SIZE	LENGTH	NO. REQ'D	"k2" HDWL BARS SIZE	LENGTH	NO. REQ'D	"h" HDWL BARS SIZE	LENGTH	Y	NO. REQ'D
4	35'-0"	12	4	35'-0"	12	4	1'-11"	0'-11"	70

OUTLET SLOPE SECTION(S)

R.C. BOX SECTION	DESIGN FILL DEPTH (FT.) D	CLEAR SPAN (FT.) S	CLEAR HEIGHT (FT.) H	TOP SLAB THK. T	BOTTOM SLAB THK B	SIDE WALL THK C	INTERIOR WALL THK. W	OVER ALL WIDTH OW	OVER ALL HEIGHT OH	SECTION LENGTH (FT.) SL

TOP SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS "a" SIZE	"a" L	Bent "b" SIZE	Bent "b" L	"c" SIZE	"c" L	SPACING	NO. REQ'D	BOTTOM SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS "d" SIZE	"d" L	Bent "b1" SIZE	Bent "b1" L	"f" SIZE	"f" L	SPACING	NO. REQ'D

SIDE WALL REINFORCING STEEL "f0" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH	INTERIOR WALL REINFORCING STEEL "f1" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH	TOP SLAB DISTRIBUTION REINF. STEEL "g" LENGTH = SL SIZE	SPACING	NO. REQ'D	BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL SIZE	SPACING	NO. REQ'D

SIDE WALL DISTRIBUTION REINF. STEEL "d1" LENGTH = SL SIZE	SPACING	NO. REQ'D	INTERIOR WALL DISTRIBUTION REINF. STEEL "d2" LENGTH = SL SIZE	SPACING	NO. REQ'D	CLASS "S" CONCRETE CU. YDS.	REINFORCING STEEL (GR. 60) LBS.
						TOTAL	

HDWL DEPTH HD	ADDITIONAL REINF. FOR HDWL LBS.	"h" HDWL BARS SIZE	Y	LENGTH	NO. REQ'D

The required number of bars and lengths shown are for estimating purpose only. The actual number and length required shall be determined in field.

Unless otherwise noted, all dimensions are in inches.

SHEET 2 OF 2
DETAILS OF R.C. BOX CULVERT
SEXTUPLE BARREL BOX CULVERT
Sta. 103+45

SPECIAL DETAILS

Ver. Li7 b050171_cl.dgn

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050171	15	66

1 SPECIAL DETAILS

INLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	LENGTH OF FOOTING HEEL WING A	LENGTH OF FOOTING HEEL WING B
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4
53'-8"	5'-0"	0'-9"	0'-8"	20	3:1	56'-0 1/2"	1'-0"	5'-10"	1'-8"	10	50	2'-2"	2'-9 1/2"	3'-3 1/4"	0'-11 5/8"	1'-3 5/8"	12'-6"	19'-0"	14'-4 5/8"	20'-10 5/8"

CLASS "S" CONCRETE (Includes apron) INLET	REINFORCING STEEL (Includes apron and laps if required) INLET
CU.YD	LBS.
9.41	763

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY		F1 LENGTHS	F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS	F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS	F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY		F6 LENGTHS	F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS		REINF. STEEL QTY. PER WING (LBS)
WING A	4	12	13	L	Min	2'-8"	-	-	-	L	-	-	-	-	L	-	4	18	4	Min	4	18	2	12'-2"	4	18	9	L	Min	3'-3"	4	6	15'-3"	6	18	8	Min	-	-	-	Min	4	2	12'-8"	4	2	13'-7"	6	12	5	L	3'-4"	299
					Max	7'-4"												6'-4"												7'-3"							1'-8"				-										
				X	Min	0'-9"				X	-				X	-							4	18	2	X	Min	1'-4"																					X	1'-8"	
					Max	1'-5"												Max												1'-4"							Max				Max										
				Y	Min	2'-0"				Y	-				Y	-		10'-10"										Y	Min	2'-0"							2'-3"				-										
					Max	6'-0"																								6'-0"																					
WING B	4	12	19	L	Min	2'-9"	-	-	-	L	-	-	-	-	L	-	4	18	6	Min	4	18	2	18'-8"	4	18	13	L	Min	3'-4"	4	6	21'-9"	6	18	13	Min	4	18	2	Min	4	2	19'-0"	4	2	21'-11"	6	12	5	L	3'-4"	464
					Max	7'-9"												2'-10"												7'-3"							1'-8"				28'-7"										
				X	Min	0'-9"				X	-				X	-							4	18	2	X	Min	1'-4"																					X	1'-8"	
					Max	1'-10"												Max												1'-4"							Max				Max										
				Y	Min	2'-1"				Y	-				Y	-		16'-7"										Y	Min	2'-1"							2'-8"				28'-7"										
					Max	6'-0"																								6'-0"																					

MID-SECTION BAR LAP TABLE

# of Long. Laps Req'd.	SL = Section Length
0	< 40.0 ft
1	>40.0 ft - 78.0 ft
2	>78.0 ft - 116.0 ft
3	>116.0 ft - 154.0 ft
4	>154.0 ft - 192.0 ft
5	>192.0 ft - 230.0 ft
6	>230.0 ft - 268.0 ft
7	>268.0 ft - 306.0 ft
8	>306.0 ft -344.0 ft

Min. Bar Lap Length	
#4	1'-9"
#5	2'-2"
#6	2'-7"
#7	3'-6"
#8	4'-7"

Bar Pin Dia. Table	
#4	3"
#5	3 3/4"
#6	4 1/2"
#7	5 1/4"
#8	6"

STATE OF ARKANSAS
Charles R. Ellis
Jun 30 2023 3:02 PM
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS

TABULAR DATA BY: DPT DATE: 1/09/2023
CHECKED BY: BAB DATE: 1/24/2023

This drawing to be used in conjunction with
SHEET 1 OF 5, "GENERAL DETAILS OF R.C. BOX CULVERT", 'GENERAL NOTES & LONGITUDINAL SECTION LENGTH SCHEDULE',
SHEET 3 OF 5, "GENERAL DETAILS OF R.C. BOX CULVERT", 'DETAILS OF MULTI-BARREL R.C. BOX CULVERT',
SHEET 4 OF 5, "GENERAL DETAILS OF R.C. BOX CULVERT", 'DETAILS OF WINGWALLS',
SHEET 5 OF 5, "GENERAL DETAILS OF R.C. BOX CULVERT", 'DETAILS OF WINGWALL ENHANCEMENT', and
STANDARD DRAWING RCB-2.
For additional information and outlet sections, see Sheet 2 of 2.

INLET SKEWED END SECTION

SKEW (DEGREE)	SLOPE	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THK.	HDWL DEPTH	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVERALL WIDTH	OVERALL HEIGHT
SK	SL	D	S	H	LL	T	HD	B	C	W	OW	OH
20	3:1	5	10	5	11'-9"	12	3	12	6	8	53'-8"	7'-0"

TOP SLAB REINFORCING STEEL "a" SIZE	"a" SPACING	"a" LENGTHS VARY	"a" NO. REQ'D	"c" SIZE	"c" SPACING	"c" LENGTHS VARY	"c" NO. REQ'D
5	6	Max 53'-4"	36	5	4	Max 53'-4"	54
		Min 4'-6"				Min 4'-6"	
		53'-4"	4			53'-4"	6

BOTTOM SLAB REINFORCING STEEL "d" SIZE	"d" SPACING	"d" LENGTHS VARY	"d" NO. REQ'D	"f" SIZE	"f" SPACING	"f" LENGTHS VARY	"f" NO. REQ'D
4	5.5	Max 53'-4"	39	4	7.5	Max 53'-4"	29
		Min 4'-6"				Min 4'-6"	
		53'-4"	5			53'-4"	4

SIDE WALL REINFORCING STEEL "f0" SIZE	"f0" SPACING	"f0" NO. REQ'D	"f0" LENGTH	INTERIOR WALL REINFORCING STEEL "f1" SIZE	"f1" SPACING	"f1" NO. REQ'D	"f1" LENGTH
4	5.5	52	6'-8"	4	12	104	6'-8"

TOP SLAB DISTRIBUTION REINFORCING STEEL "g" SIZE	"g" SPACING	"g" NO. REQ'D	"g" LENGTHS VARY	BOTTOM SLAB DISTRIBUTION REINFORCING STEEL "e" SIZE	"e" SPACING	"e" NO. REQ'D	"e" LENGTHS VARY
4	9	149	Max 21'-4"	4	9	149	Max 21'-4"
			Min 1'-10"				Min 1'-10"

SIDE WALL DISTRIBUTION REINFORCING STEEL "d1" SIZE	"d1" SPACING	"d1" NO. REQ'D	"d1" LENGTH	INTERIOR WALL DISTRIBUTION REINFORCING STEEL "d2" SIZE	"d2" SPACING	"d2" NO. REQ'D	"d2" LENGTH
4	12	5	LONG 21'-3"	4	12	10	LONG 17'-6"
			SHORT 1'-11"			20	MID 13'-7"
						10	SHORT 5'-9"

CLASS "S" CONCRETE (Includes HDWL) CU. YDS.	1 REINFORCING STEEL (GR 60) (Includes HDWL) LBS.
56.18	8864

1 Any Bar Lap Required for the Skewed End Section shall be considered subsidiary to the item "Reinforcing Steel - Roadway (Grade 60)."

"k1" HDWL BARS SIZE	"k1" LENGTH	"k1" NO. REQ'D	"k2" HDWL BARS SIZE	"k2" LENGTH	"k2" NO. REQ'D	"h" HDWL BARS SIZE	"h" LENGTH	"h" Y	"h" NO. REQ'D
4	29'-3"	12	4	29'-3"	12	4	1'-11"	0'-11"	59

INLET SLOPE SECTION(S)

R.C. BOX SECTION	DESIGN FILL DEPTH (FT.) D	CLEAR SPAN (FT.) S	CLEAR HEIGHT (FT.) H	TOP SLAB THK. T	BOTTOM SLAB THK. B	SIDE WALL THK. C	INTERIOR WALL THK. W	OVER ALL WIDTH OW	OVER ALL HEIGHT OH	SECTION LENGTH (FT.) SL

TOP SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS "a" SIZE	"a" L	Bent "b" SIZE	Bent "b" L	"c" SIZE	"c" L	SPACING	NO. REQ'D

BOTTOM SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS "d" SIZE	"d" L	Bent "b1" SIZE	Bent "b1" L	"f" SIZE	"f" L	SPACING	NO. REQ'D

SIDE WALL REINFORCING STEEL "f0" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH	INTERIOR WALL REINFORCING STEEL "f1" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH

TOP SLAB DISTRIBUTION REINF. STEEL "g" LENGTH = SL SIZE	SPACING	NO. REQ'D	BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL SIZE	SPACING	NO. REQ'D	SIDE WALL DISTRIBUTION REINF. STEEL "d1" LENGTH = SL SIZE	SPACING	NO. REQ'D	INTERIOR WALL DISTRIBUTION REINF. STEEL "d2" LENGTH = SL SIZE	SPACING	NO. REQ'D

HDWL DEPTH HD	ADDITIONAL REINF. FOR HDWL LBS.	"h" HDWL BARS SIZE	Y	LENGTH	NO. REQ'D

CLASS "S" CONCRETE CU. YDS.	REINFORCING STEEL (GR. 60) LBS.
TOTAL	

Design Fill Depth	Range of Actual Fill Depth
2	0.0 ft - 2.0 ft
5	>2.0 ft - 5.0 ft
10	>5.0 ft - 10.0 ft
15	>10.0 ft - 15.0 ft
20	>15.0 ft - 20.0 ft
25	>20.0 ft - 25.0 ft
30	>25.0 ft - 30.0 ft
35	>30.0 ft - 35.0 ft
40	>35.0 ft - 40.0 ft

Data shown for Mid-Section, Slope Section(s), and Skewed End Section is based on the design fill depth shown in the table, see PLAN AND PROFILE SHEETS for actual fill depth.

MID-SECTION

R.C. BOX SECTION	DESIGN FILL DEPTH (FT.) D	CLEAR SPAN (FT.) S	CLEAR HEIGHT (FT.) H	TOP SLAB THK. T	BOTTOM SLAB THK. B	SIDE WALL THK. C	INTERIOR WALL THK. W	OVER ALL WIDTH OW	OVER ALL HEIGHT OH	SECTION LENGTH (FT.) SL
A	5	10	5	12	12	6	8	53'-8"	7'-0"	30.5

TOP SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS "a" SIZE	"a" L	Bent "b" SIZE	Bent "b" L	"c" SIZE	"c" L	SPACING	NO. REQ'D
5	53'-4"	8	54'-9"	8	53'-4"	13	28

BOTTOM SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS "d" SIZE	"d" L	Bent "b1" SIZE	Bent "b1" L	"f" SIZE	"f" L	SPACING	NO. REQ'D
4	53'-4"	4	54'-8"	4	53'-4"	11	33

SIDE WALL REINFORCING STEEL "f0" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH	INTERIOR WALL REINFORCING STEEL "f1" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH
4	5.5	132	6'-8"	4	12	240	6'-8"

TOP SLAB DISTRIBUTION REINF. STEEL "g" LENGTH = SL SIZE	SPACING	NO. REQ'D	BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL SIZE	SPACING	NO. REQ'D	SIDE WALL DISTRIBUTION REINF. STEEL "d1" LENGTH = SL SIZE	SPACING	NO. REQ'D	INTERIOR WALL DISTRIBUTION REINF. STEEL "d2" LENGTH = SL SIZE	SPACING	NO. REQ'D
4	9	149	4	9	149	4	12	10	4	12	40

CLASS "S" CONCRETE CU. YDS.	REINFORCING STEEL (GR. 60) LBS.
141.96	22915

SHEET 1 OF 2
DETAILS OF R.C. BOX CULVERT
QUINTUPLE BARREL BOX CULVERT
Sta. 110+31

SPECIAL DETAILS

Ver. Lu17 b050171_c2.dgn

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050171	16	66

① SPECIAL DETAILS

STATE OF ARKANSAS
Ellis, Rick
Jun 30 2023 3:02 PM
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS

OUTLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	LENGTH OF FOOTING HEEL WING A	LENGTH OF FOOTING HEEL WING B
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4
53'-8"	5'-0"	0'-9"	0'-8"	20	3:1	56'-0 1/2"	1'-0"	5'-10"	1'-8"	10	50	2'-2"	2'-9 1/2"	3'-3 1/4"	0'-11 5/8"	1'-3 5/8"	12'-6"	19'-0"	14'-4 5/8"	20'-10 5/8"

CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)
OUTLET	OUTLET
CU.YD	LBS.
11.12	763

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY	F1 LENGTHS	F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS	F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS	F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS
WING A	4	12	13	L Min	2'-8"	-	-	-	-	-	-	-	-	4	18	4	Min	4	18	2	12'-2"
				L Max	7'-4"				L -				L -				6'-4"				
				X Min	0'-9"				X -				X -				Max				
				X Max	1'-5"																
				Y Min	2'-0"				Y -				Y -				10'-10"				
				Y Max	6'-0"																
WING B	4	12	19	L Min	2'-9"	-	-	-	-	-	-	-	-	4	18	6	Min	4	18	2	18'-8"
				L Max	7'-9"				L -				L -				2'-10"				
				X Min	0'-9"				X -				X -				Max				
				X Max	1'-10"																
				Y Min	2'-1"				Y -				Y -				16'-7"				
				Y Max	6'-0"																

WING	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY	F6 LENGTHS	F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS	REINF. STEEL QTY. PER WING (LBS)
WING A	4	18	9	L Min	3'-3"	4	6	15'-3"	6	18	8	Min	-	-	-	Min	4	2	12'-8"	4	2	13'-7"	6	12	5	L 3'-4"	299
				L Max	7'-3"							1'-8"				-											
				X Min	1'-4"							Max				Max										X 1'-8"	
				X Max	1'-4"																						
				Y Min	2'-0"							2'-3"				-											
				Y Max	6'-0"																						
WING B	4	18	13	L Min	3'-4"	4	6	21'-9"	6	18	13	Min	4	18	2	Min	4	2	19'-0"	4	2	21'-11"	6	12	5	L 3'-4"	464
				L Max	7'-3"							1'-8"				28'-7"											
				X Min	1'-4"							Max				Max										X 1'-8"	
				X Max	1'-4"																						
				Y Min	2'-1"							2'-8"				28'-7"											
				Y Max	6'-0"																						

Min. Bar Lap Length	
#4	1'-9"
#5	2'-2"
#6	2'-7"
#7	3'-6"
#8	4'-7"

Bar Pin Dia. Table	
#4	3"
#5	3 3/4"
#6	4 1/2"
#7	5 1/4"
#8	6"

TABULAR DATA BY: DPT DATE: 1/09/2023
CHECKED BY: BAB DATE: 1/24/2023

① Any Bar Lap Required for the Skewed End Section shall be considered subsidiary to the item "Reinforcing Steel - Roadway (Grade 60)."

OUTLET SKEWED END SECTION

SKEW (DEGREE)	SLOPE	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THK.	HDWL DEPTH	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVERALL WIDTH	OVERALL HEIGHT
SK	SL	D	S	H	LL	T	HD	B	C	W	OW	OH
20	3:1	5	10	5	11'-9"	12	3	12	6	8	53'-8"	7'-0"

TOP SLAB REINFORCING STEEL "a" SIZE	"a" SPACING	"a" LENGTHS VARY	"a" NO. REQ'D	"c" SIZE	"c" SPACING	"c" LENGTHS VARY	"c" NO. REQ'D
5	6	Max 53'-4"	36	5	4	Max 53'-4"	54
		Min 4'-6"				Min 4'-6"	
		53'-4"	4			53'-4"	6

BOTTOM SLAB REINFORCING STEEL "d" SIZE	"d" SPACING	"d" LENGTHS VARY	"d" NO. REQ'D	"f" SIZE	"f" SPACING	"f" LENGTHS VARY	"f" NO. REQ'D
4	5.5	Max 53'-4"	39	4	7.5	Max 53'-4"	29
		Min 4'-6"				Min 4'-6"	
		53'-4"	5			53'-4"	4

SIDE WALL REINFORCING STEEL "f0" SIZE	"f0" SPACING	"f0" NO. REQ'D	"f0" LENGTH	INTERIOR WALL REINFORCING STEEL "f1" SIZE	"f1" SPACING	"f1" NO. REQ'D	"f1" LENGTH
4	5.5	52	6'-8"	4	12	104	6'-8"

TOP SLAB DISTRIBUTION REINFORCING STEEL "g" SIZE	"g" SPACING	"g" NO. REQ'D	"g" LENGTHS VARY	BOTTOM SLAB DISTRIBUTION REINFORCING STEEL "e" SIZE	"e" SPACING	"e" NO. REQ'D	"e" LENGTHS VARY
4	9	149	Max 21'-4"	4	9	149	Max 21'-4"
			Min 1'-10"				Min 1'-10"

SIDE WALL DISTRIBUTION REINFORCING STEEL "d1" SIZE	"d1" SPACING	"d1" NO. REQ'D	"d1" LENGTH	INTERIOR WALL DISTRIBUTION REINFORCING STEEL "d2" SIZE	"d2" SPACING	"d2" NO. REQ'D	"d2" LENGTH
4	12	5	LONG 21'-3"	4	12	10	LONG 17'-6"
		5	SHORT 1'-11"			20	MID 13'-7"
						10	SHORT 5'-9"

CLASS "S" CONCRETE (Includes HDWL) CU. YDS.	① REINFORCING STEEL (GR 60) (Includes HDWL) LBS.
56.18	8864

"k1" HDWL BARS SIZE	"k1" LENGTH	"k1" NO. REQ'D	"k2" HDWL BARS SIZE	"k2" LENGTH	"k2" NO. REQ'D	"h" HDWL BARS SIZE	"h" LENGTH	"h" Y	"h" NO. REQ'D
4	29'-3"	12	4	29'-3"	12	4	1'-11"	0'-11"	59

OUTLET SLOPE SECTION(S)

R.C. BOX SECTION	DESIGN FILL DEPTH (FT.) D	CLEAR SPAN (FT.) S	CLEAR HEIGHT (FT.) H	TOP SLAB THK. T	BOTTOM SLAB THK. B	SIDE WALL THK. C	INTERIOR WALL THK. W	OVER ALL WIDTH OW	OVER ALL HEIGHT OH	SECTION LENGTH (FT.) SL

TOP SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS "a" SIZE	"a" L	Bent "b" SIZE	Bent "b" L	"c" SIZE	"c" L	SPACING	NO. REQ'D

BOTTOM SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS "d" SIZE	"d" L	Bent "b1" SIZE	Bent "b1" L	"f" SIZE	"f" L	SPACING	NO. REQ'D

SIDE WALL REINFORCING STEEL "f0" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH	INTERIOR WALL REINFORCING STEEL "f1" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH

TOP SLAB DISTRIBUTION REINF. STEEL "g" LENGTH = SL SIZE	SPACING	NO. REQ'D	BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL SIZE	SPACING	NO. REQ'D	SIDE WALL DISTRIBUTION REINF. STEEL "d1" LENGTH = SL SIZE	SPACING	NO. REQ'D	INTERIOR WALL DISTRIBUTION REINF. STEEL "d2" LENGTH = SL SIZE	SPACING	NO. REQ'D

CLASS "S" CONCRETE CU. YDS.	REINFORCING STEEL (GR. 60) LBS.
TOTAL	

HDWL DEPTH HD	ADDITIONAL REINF. FOR HDWL LBS.	"h" BARS SIZE	Y	LENGTH	NO. REQ'D

The required number of bars and lengths shown are for estimating purpose only. The actual number and length required shall be determined in field.

Unless otherwise noted, all dimensions are in inches.

SHEET 2 OF 2
DETAILS OF R.C. BOX CULVERT
QUINTUPLE BARREL BOX CULVERT
Sta. 110+31

SPECIAL DETAILS

Ver. 1.1.17 b050171_c2.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	17	66
		TEMPORARY EROSION CONTROL DETAILS				

REVISIONS

DATE OF REVISION	REVISION

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

Trinity D. Smith
09-22-2023

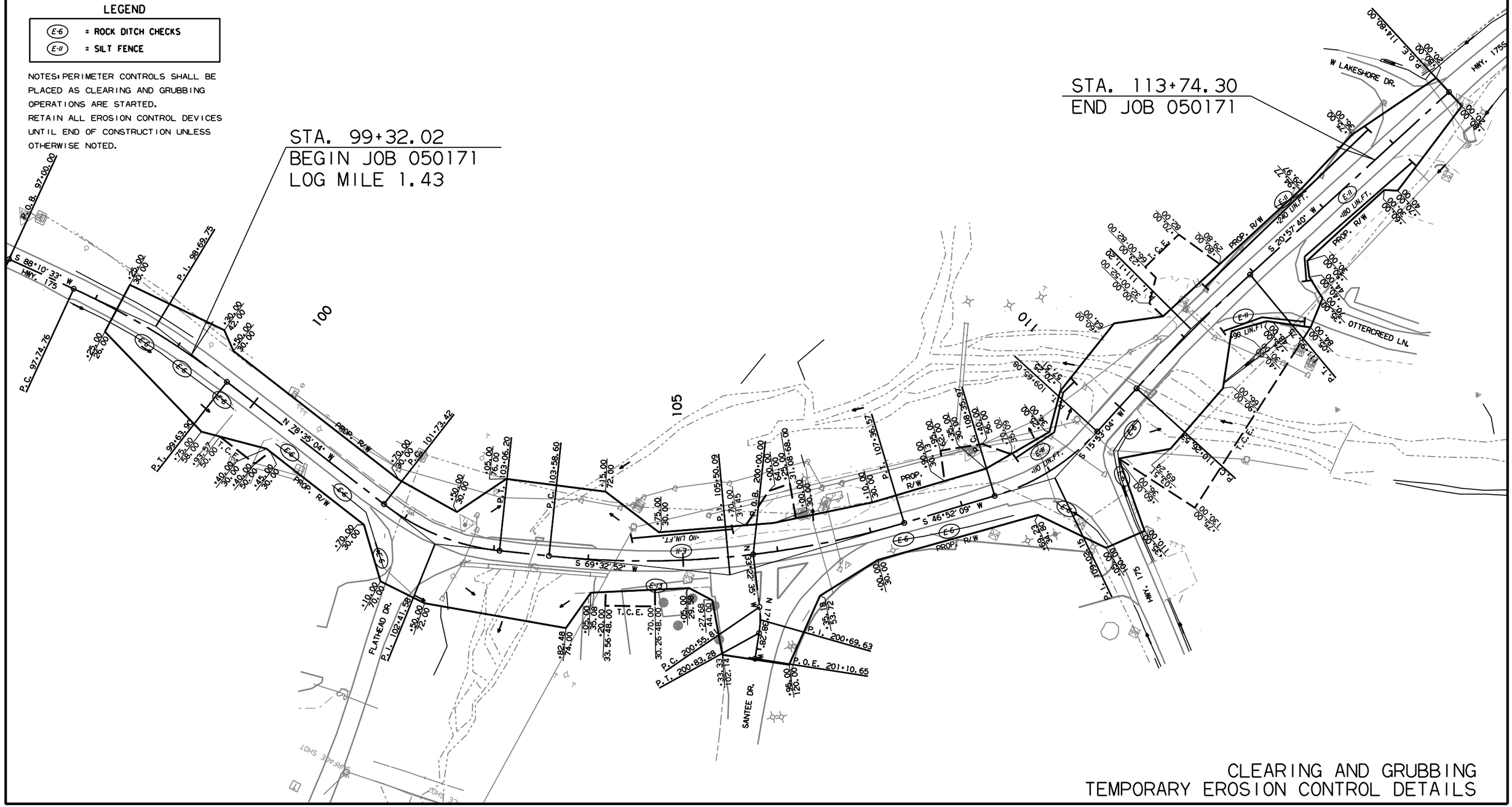
LEGEND

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

NOTES: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.
RETAIN ALL EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION UNLESS OTHERWISE NOTED.

STA. 99+32.02
BEGIN JOB 050171
LOG MILE 1.43

STA. 113+74.30
END JOB 050171



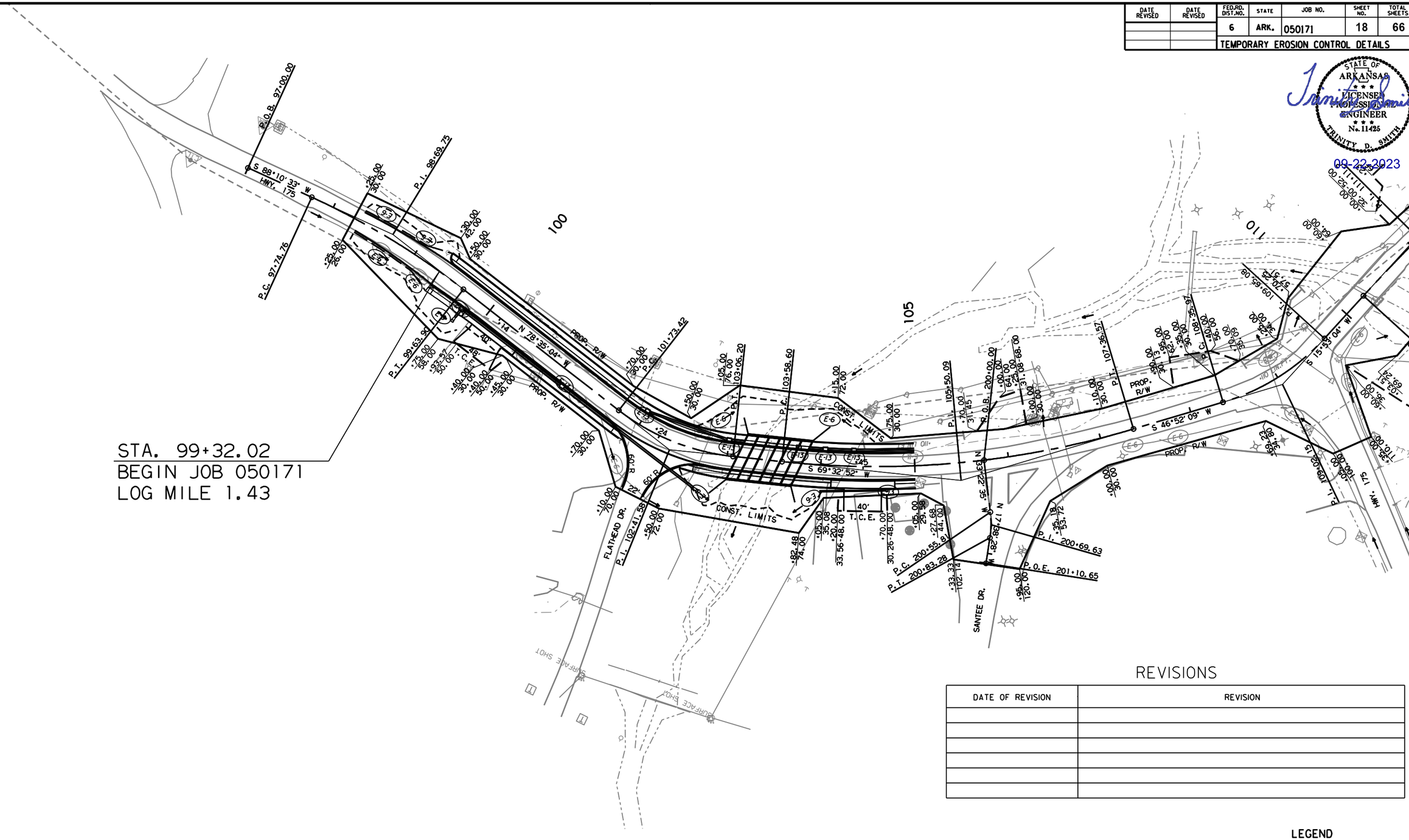
CLEARING AND GRUBBING
TEMPORARY EROSION CONTROL DETAILS

JY43338 11/9/2022
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	18	66
		TEMPORARY EROSION CONTROL DETAILS				

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

Trinity D. Smith
09-22-2023



REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-6	= ROCK DITCH CHECKS
E-11	= SILT FENCE
E-13	= FILTER SOCK

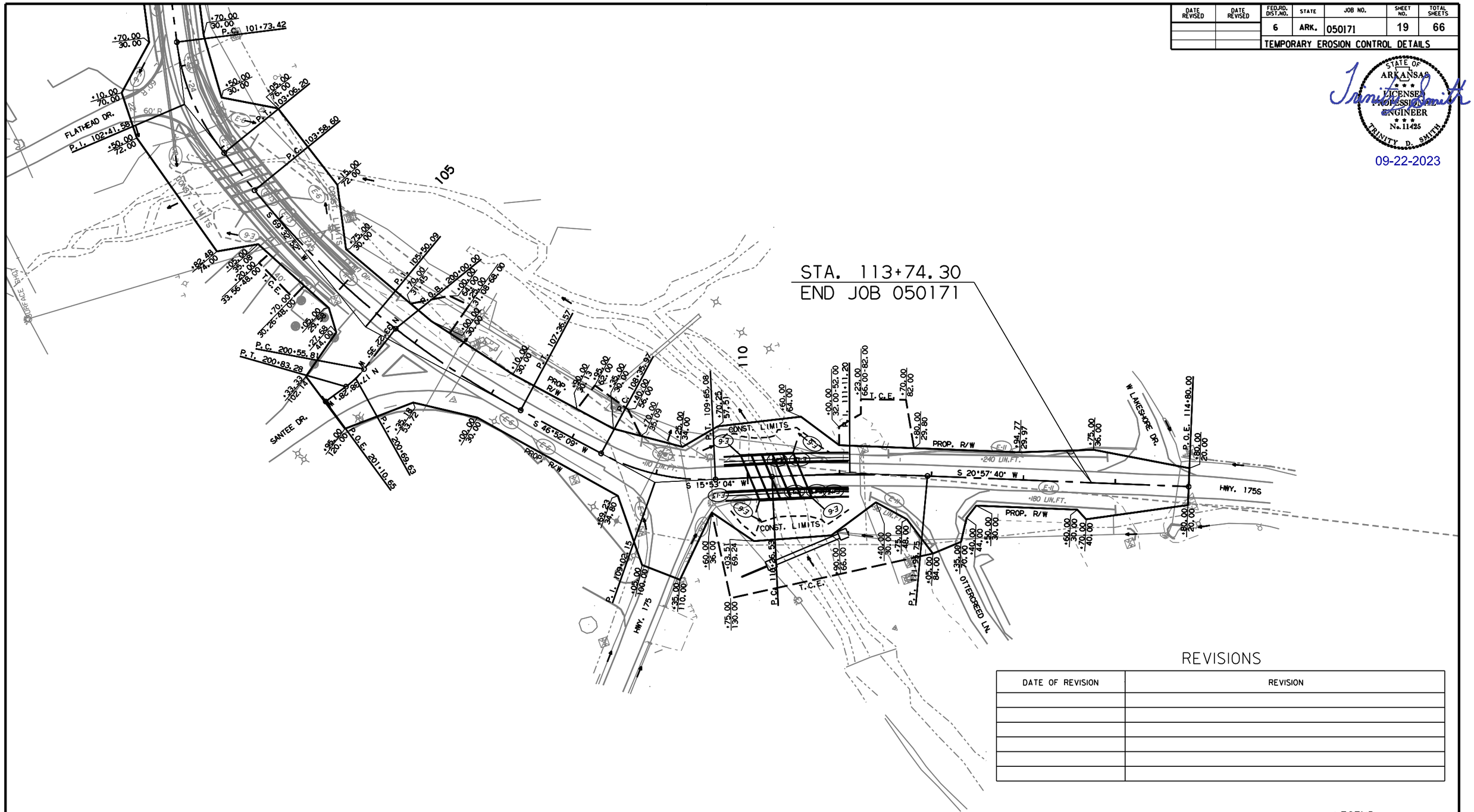
STAGE 1
TEMPORARY EROSION CONTROL DETAILS

JY43338 11/9/2022
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	19	66
		TEMPORARY EROSION CONTROL DETAILS				

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

Trinity D. Smith
09-22-2023



REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-6	= ROCK DITCH CHECKS
E-11	= SILT FENCE
E-13	= FILTER SOCK

STAGE 2
TEMPORARY EROSION CONTROL DETAILS

JY43338 11/9/2022
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	20	66
		TEMPORARY EROSION CONTROL DETAILS				

REVISIONS

DATE OF REVISION	REVISION

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

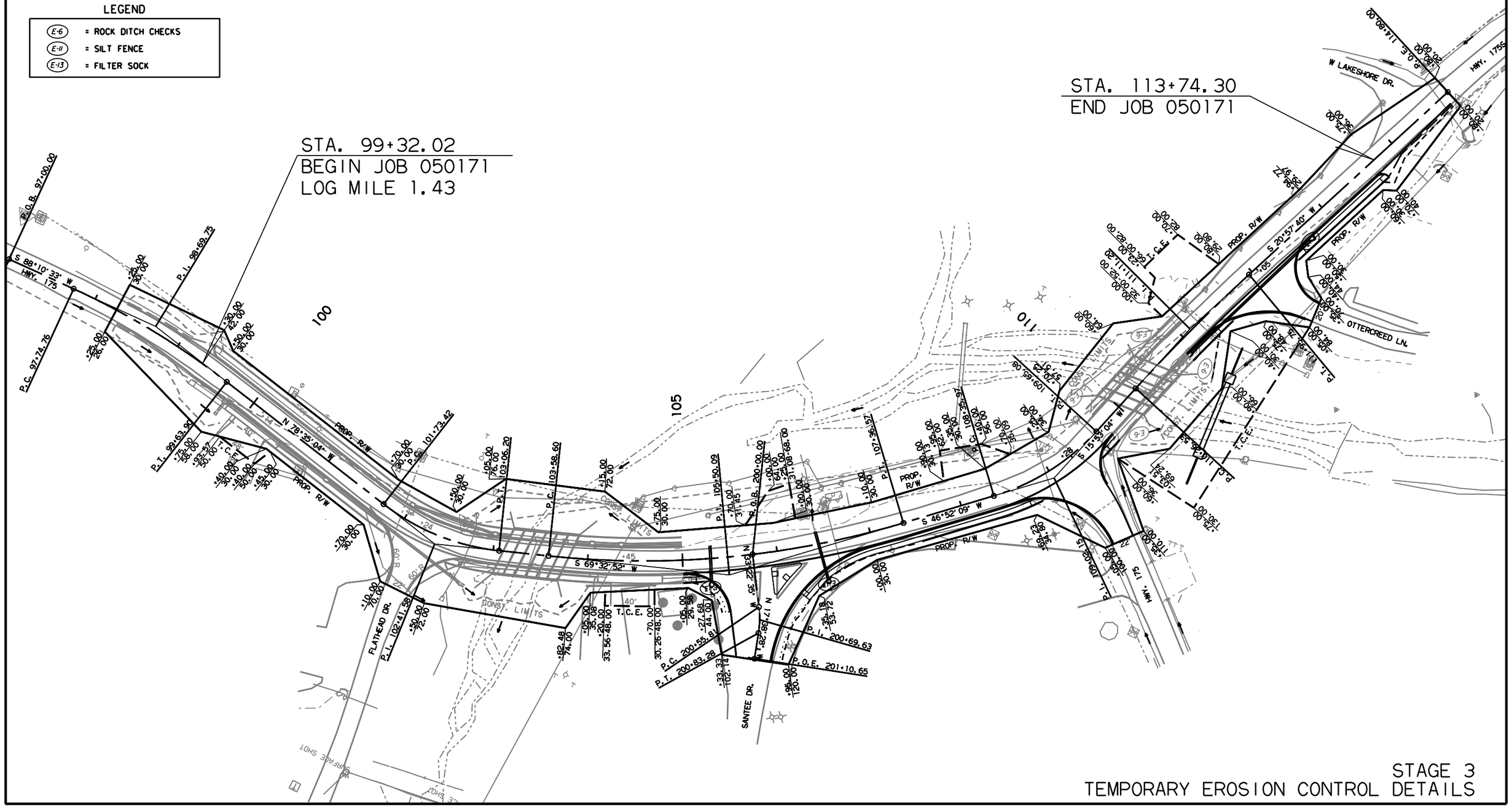
Trinity D. Smith
09-22-2023

LEGEND

- (E-6) = ROCK DITCH CHECKS
- (E-11) = SILT FENCE
- (E-13) = FILTER SOCK

STA. 99+32.02
BEGIN JOB 050171
LOG MILE 1.43

STA. 113+74.30
END JOB 050171



STAGE 3
TEMPORARY EROSION CONTROL DETAILS

JY43338 11/9/2022
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	21	66

TEMPORARY EROSION CONTROL DETAILS

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

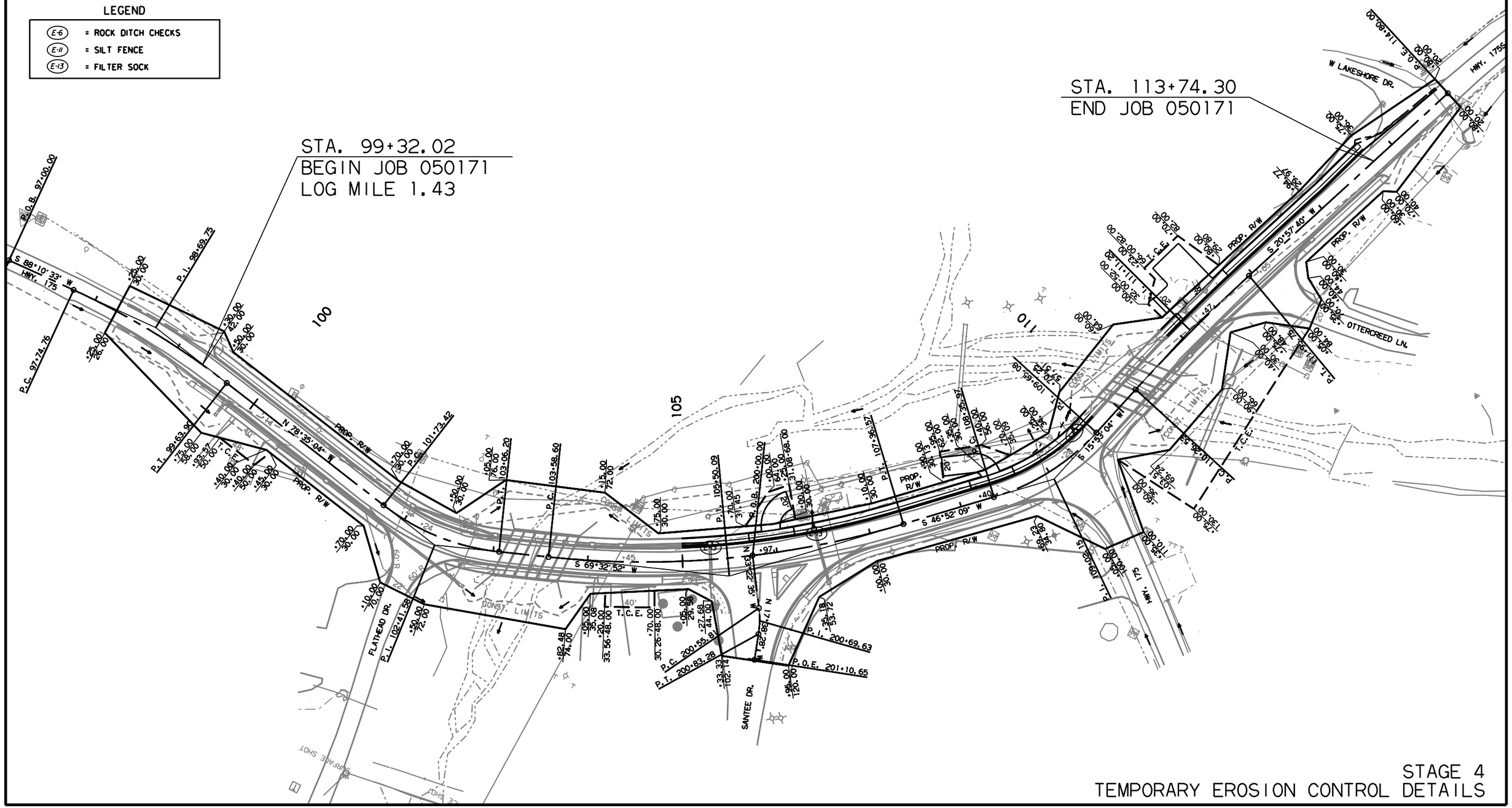
09-22-2023

REVISIONS

DATE OF REVISION	REVISION

LEGEND

- E-6 = ROCK DITCH CHECKS
- E-11 = SILT FENCE
- E-13 = FILTER SOCK



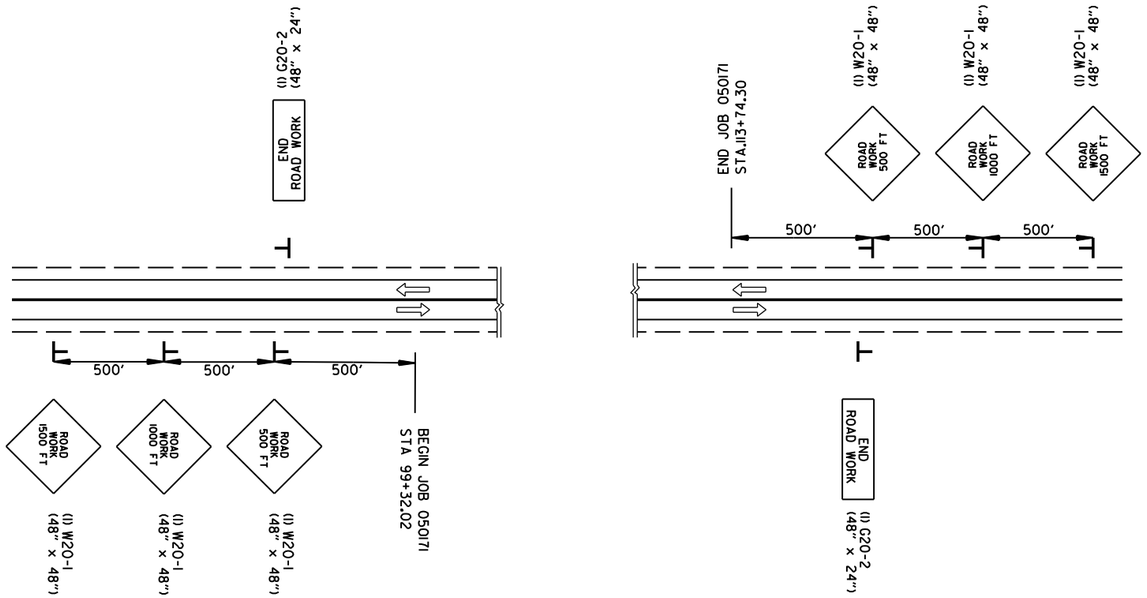
STAGE 4
TEMPORARY EROSION CONTROL DETAILS

JY43338 11/9/2022
R050171.DGN

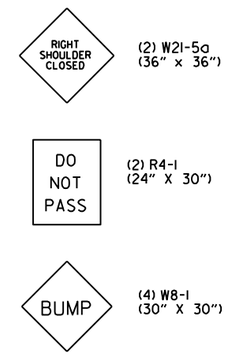
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	22	66
		MAINTENANCE OF TRAFFIC DETAILS				

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

09-22-2023



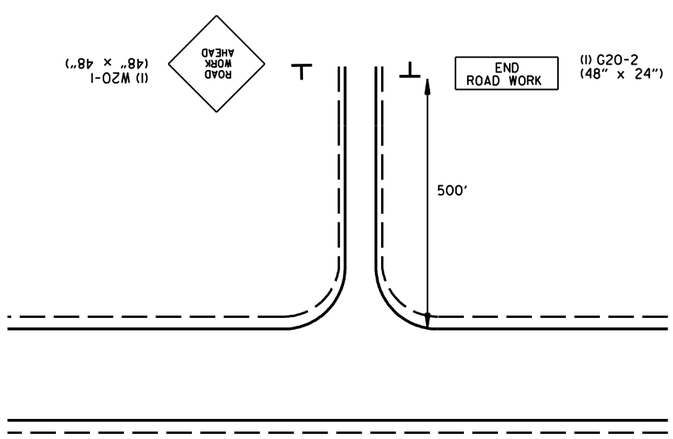
ADVANCE WARNING (ALL STAGES)



ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

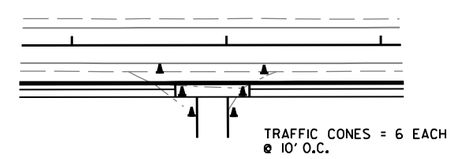
ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER



ADVANCE WARNING - SIDE ROADS
(ALL STAGES)

STA 102+24, FLATHEAD DRIVE
STA 105+74, SHANTEE DRIVE
STA 109+28, HWY. 175
STA 112+05, OTTERCREED LANE
STA 114+40, W LAKESHORE DRIVE



DRIVEWAY/TRAFFIC CONE DETAIL

jy43338 7/15/2021
R050171.DGN

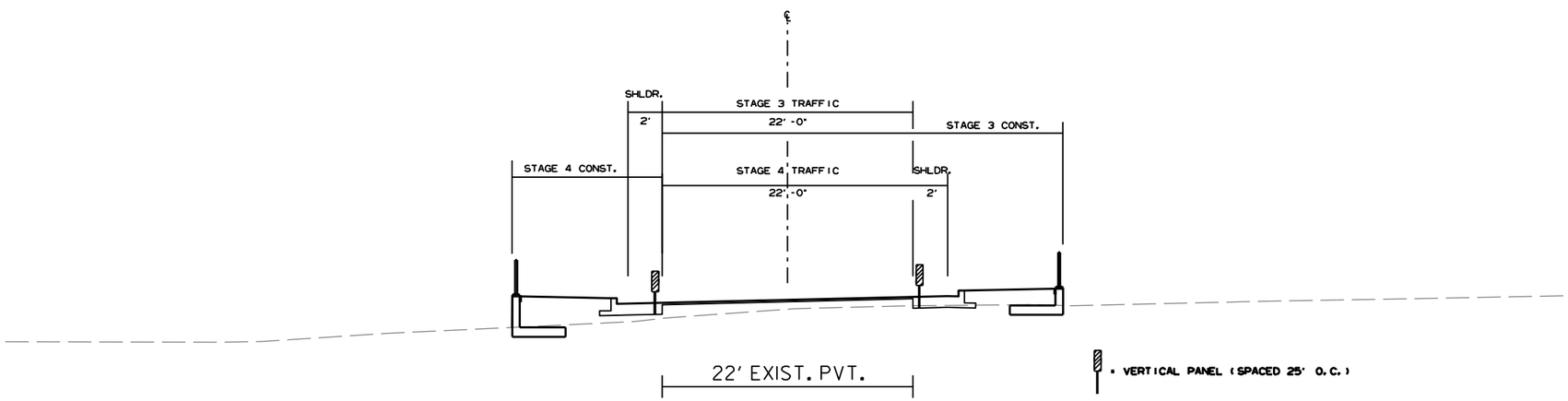
ADVANCE WARNING
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	23	66
		MAINTENANCE OF TRAFFIC DETAILS				

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

Trinity D. Smith

09-22-2023



DETAIL FOR STAGE CONSTRUCTION
STA. 105+00.00 - STA. 109+75.00
STA. 111+10.00 - STA. 114+74.30

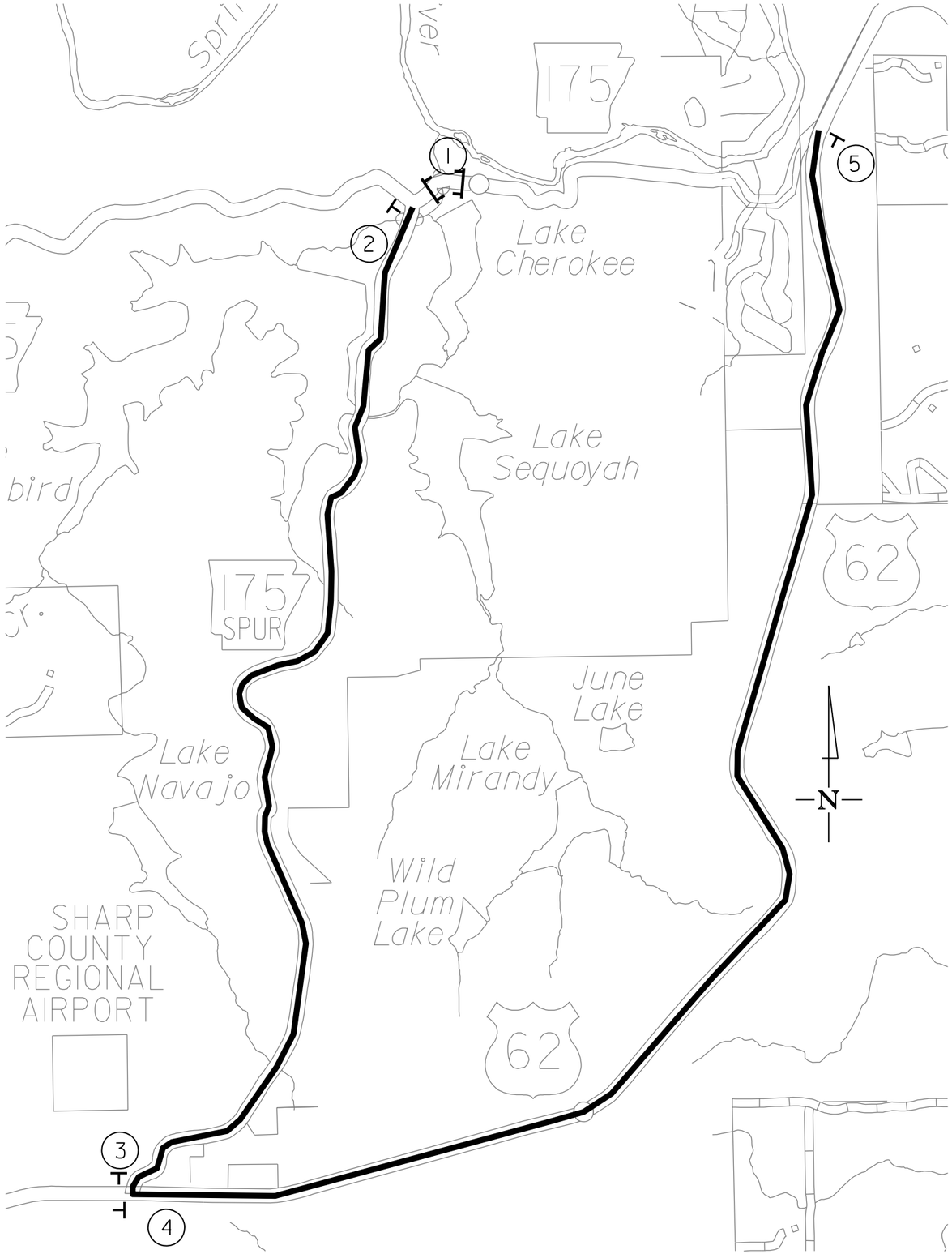
STAGE 3 & STAGE 4
MAINTENANCE OF TRAFFIC DETAILS

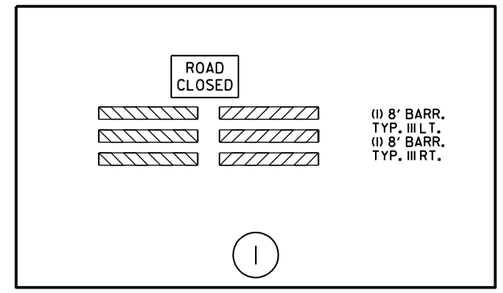
jy43338 7/15/2021
R050171.DGN

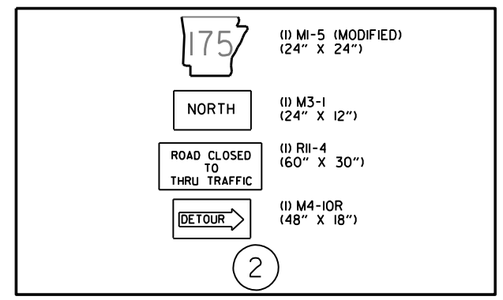
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	24	66
		MAINTENANCE OF TRAFFIC DETAILS				

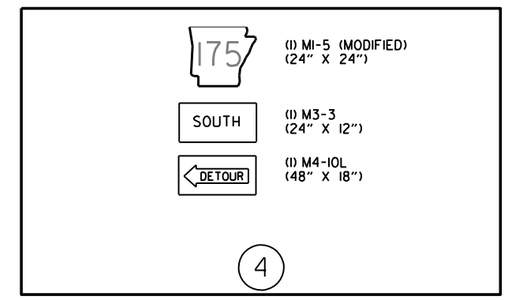
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

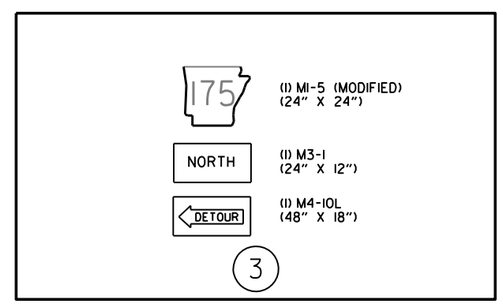
Trinity Smith
09-22-2023

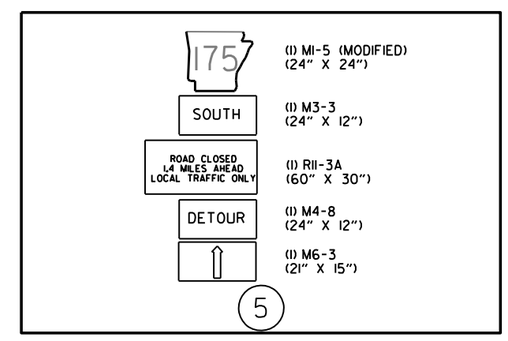












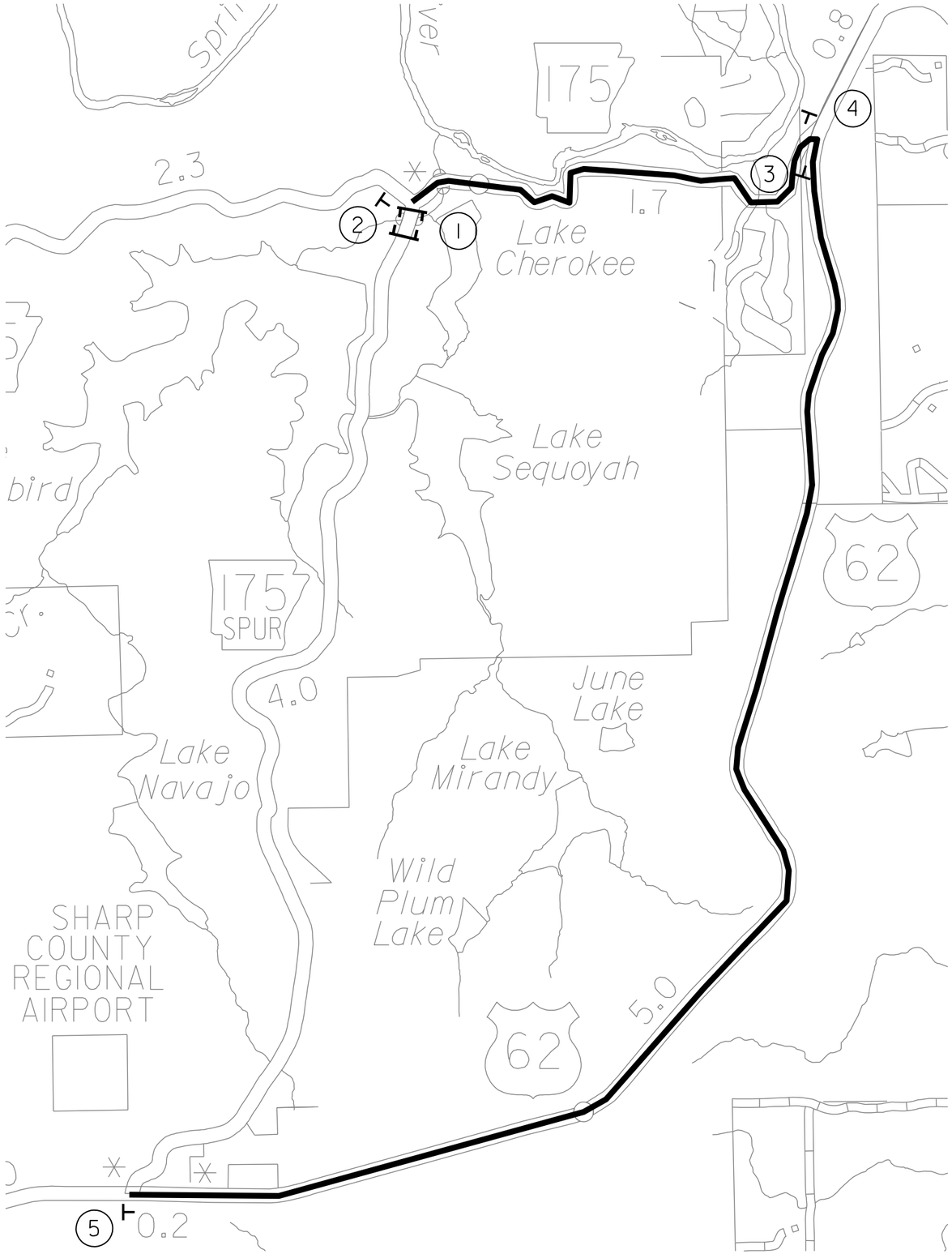
STAGE 1
MAINTENANCE OF TRAFFIC DETAILS

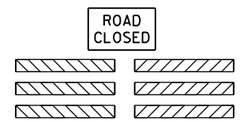
jy43338 7/15/2021
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	25	66
		MAINTENANCE OF TRAFFIC DETAILS				

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

Trinity Smith
09-22-2023

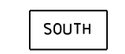




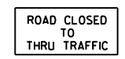
(1) 8' BARR. TYP. III LT.
(1) 8' BARR. TYP. III RT.

1

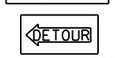
(1) MI-5 (MODIFIED) (24" X 24")



(1) M3-3 (24" X 12")



(1) RII-4 (60" X 30")

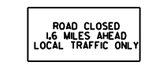


(1) M4-10L (48" X 18")

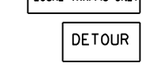
2

(1) MI-5 (MODIFIED) (24" X 24")

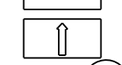
(1) M3-3 (24" X 12")



(1) RII-3A (60" X 30")



(1) M4-8 (24" X 12")

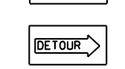


(1) M6-3 (21" X 15")

4

(1) MI-5 (MODIFIED) (24" X 24")

(1) M3-3 (24" X 12")



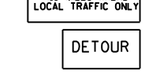
(1) M4-10R (48" X 18")

3

(1) MI-5 (MODIFIED) (24" X 24")

(1) M3-1 (24" X 12")

(1) RII-3A (60" X 30")



(1) M4-8 (24" X 12")

(1) M6-3 (21" X 15")

5

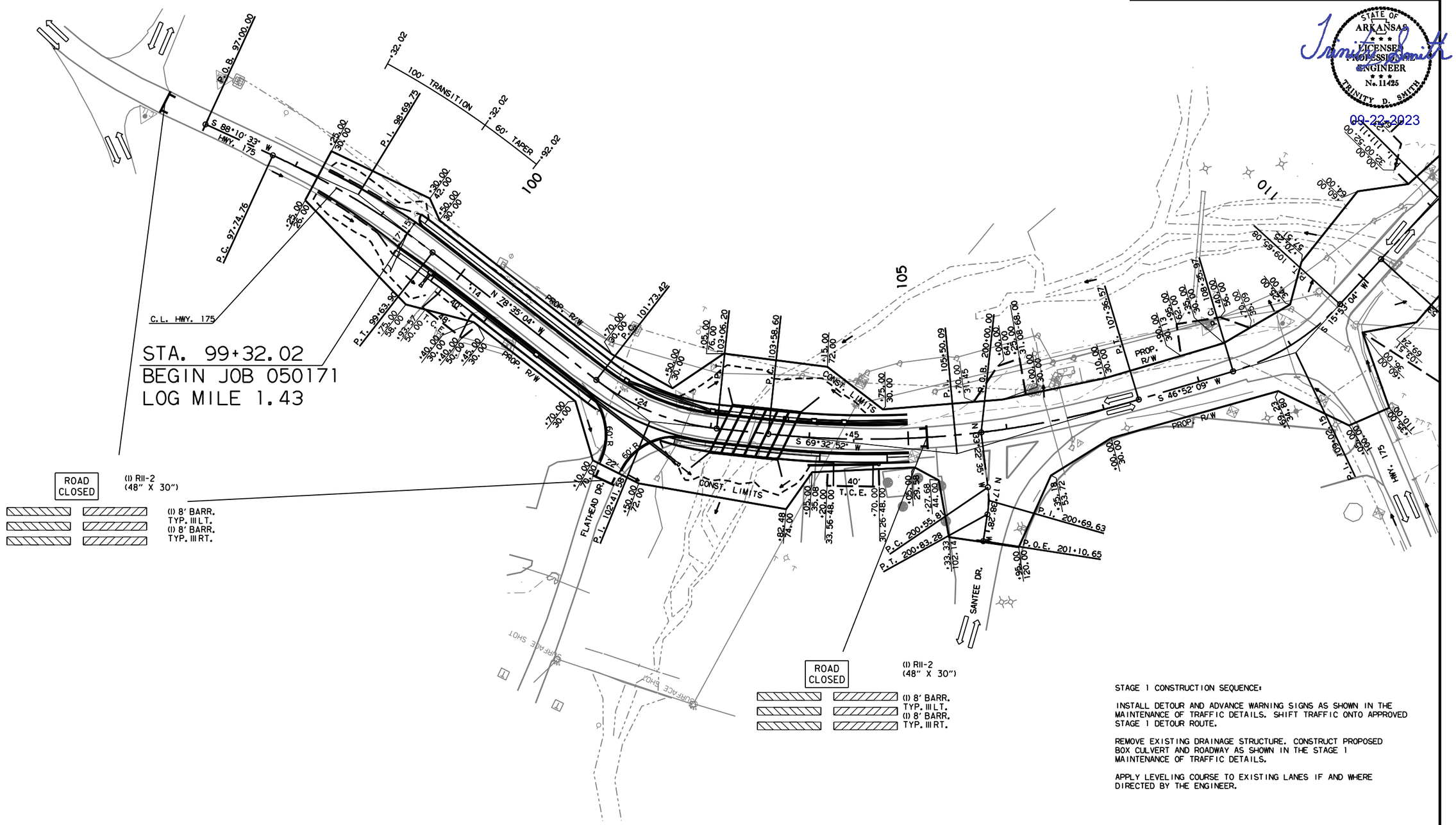
STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

jy43338 7/15/2021
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	26	66
		MAINTENANCE OF TRAFFIC DETAILS				

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

Trinity D. Smith
09-22-2023



STAGE 1 CONSTRUCTION SEQUENCE:

INSTALL DETOUR AND ADVANCE WARNING SIGNS AS SHOWN IN THE MAINTENANCE OF TRAFFIC DETAILS. SHIFT TRAFFIC ONTO APPROVED STAGE 1 DETOUR ROUTE.

REMOVE EXISTING DRAINAGE STRUCTURE. CONSTRUCT PROPOSED BOX CULVERT AND ROADWAY AS SHOWN IN THE STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

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

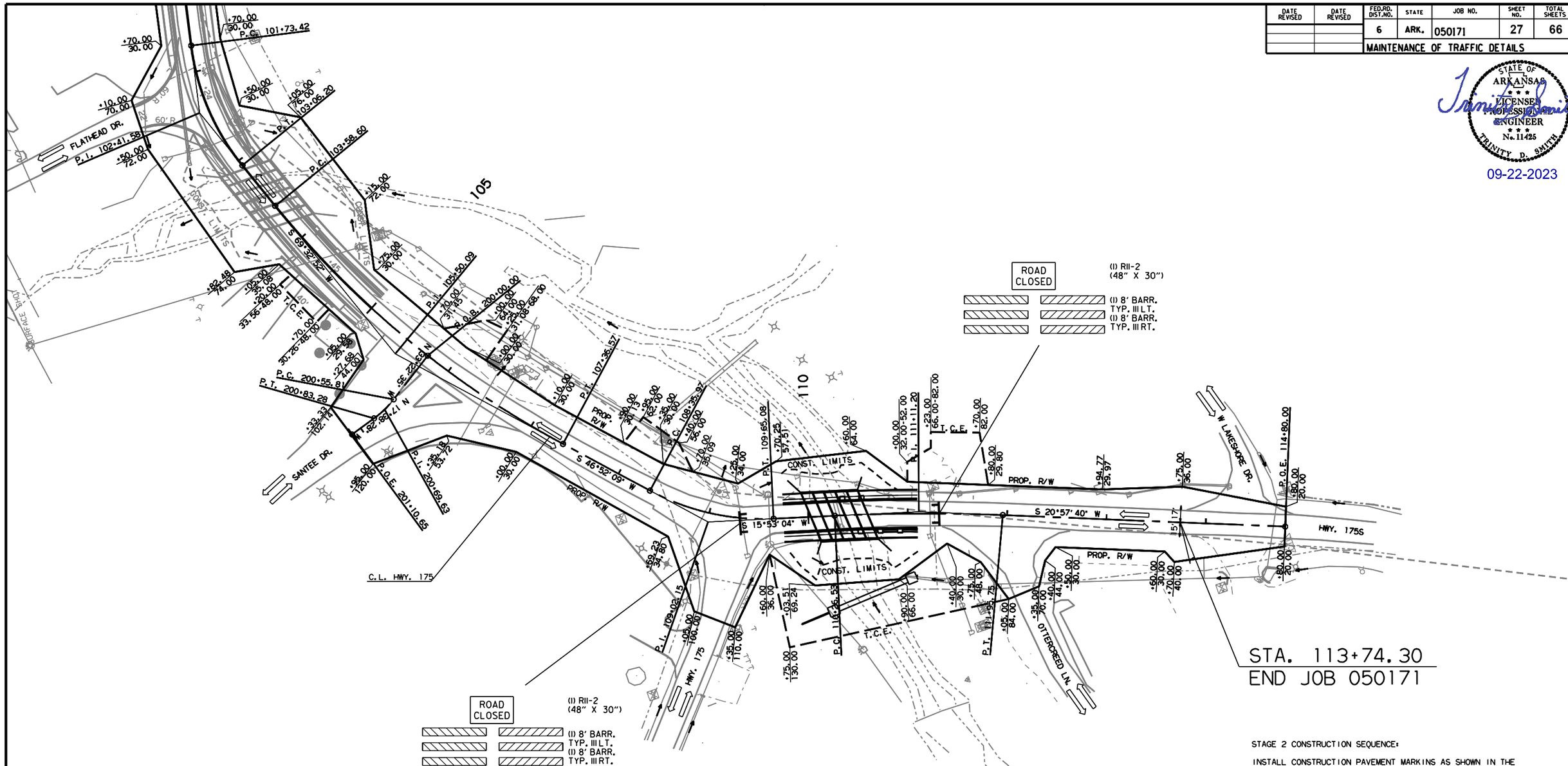
STAGE 1
MAINTENANCE OF TRAFFIC DETAILS

jy43338 7/15/2021
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	27	66
		MAINTENANCE OF TRAFFIC DETAILS				

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

09-22-2023



STA. 113+74.30
END JOB 050171

STAGE 2 CONSTRUCTION SEQUENCE:

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

REMOVE DETOUR SIGNS FROM STAGE 1 AND INSTALL DETOUR SIGNS FOR STAGE 2 AS SHOWN IN THE MAINTENANCE OF TRAFFIC DETAILS. SHIFT TRAFFIC ONTO STAGE 2 APPROVED DETOUR ROUTE.

REMOVE EXISTING DRAINAGE STRUCTURE. CONSTRUCT PROPOSED BOX CULVERT AND ROADWAY AS SHWON IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

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

STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

jy43338 7/15/2021
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	28	66
		MAINTENANCE OF TRAFFIC DETAILS				

STAGE 3 CONSTRUCTION SEQUENCE:

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

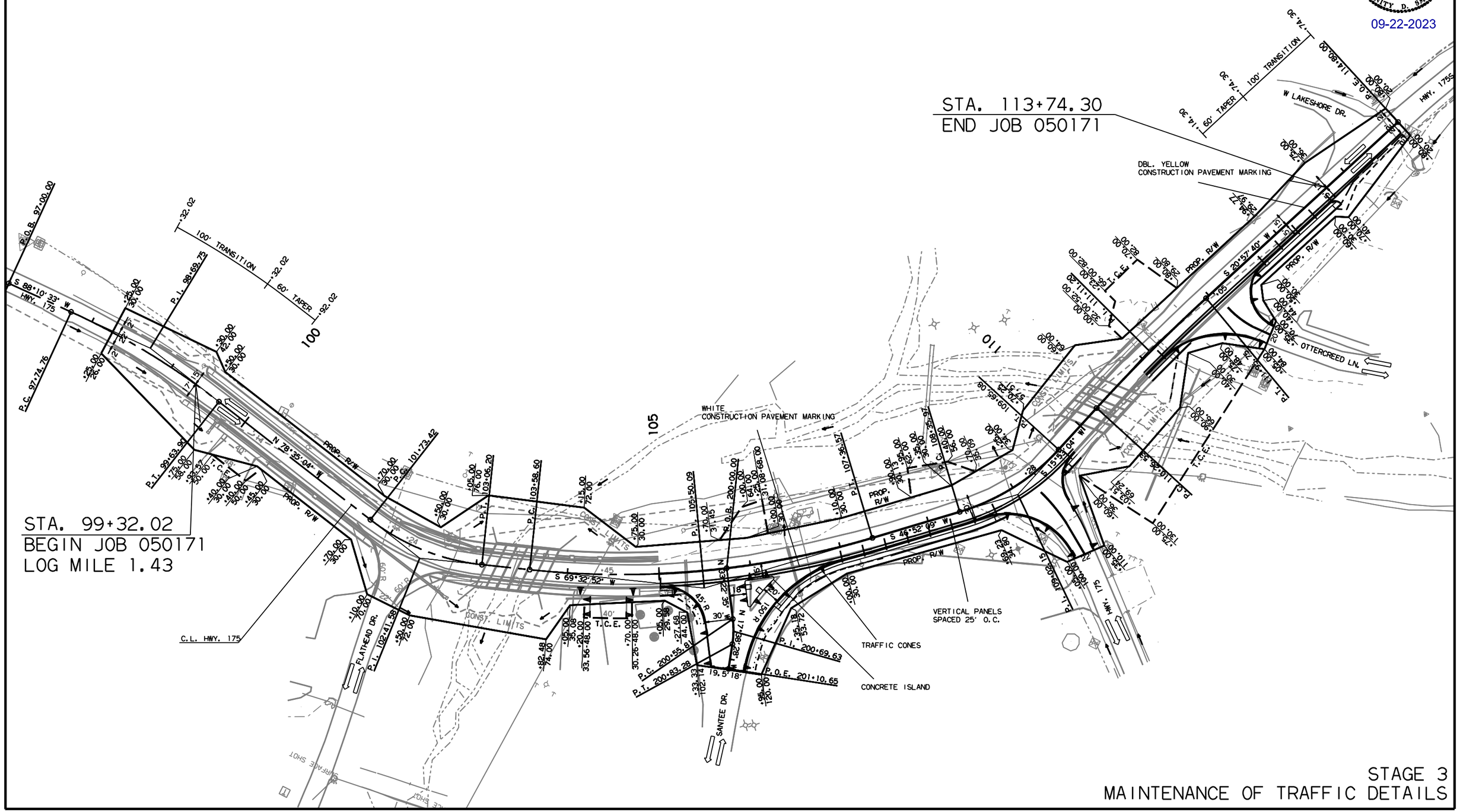
REMOVE DETOUR SIGNS AND OPEN HWY. 175/HWY. 175S TO TRAFFIC.

USE VERTICAL PANELS SPACED 25' O.C. TO DELINEATE THE WORK ZONE. USE TRAFFIC CONES TO DELINEATE DRIVEWAYS.

NOTCH AND WIDEN HWY. 175/HWY. 175S RT. AS SHWON IN THE STAGE 3 MAINTENANCE OF TRAFFIC DETAILS.

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

Trinity D. Smith
09-22-2023



STAGE 3
MAINTENANCE OF TRAFFIC DETAILS

jy43338 7/15/2021
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	29	66

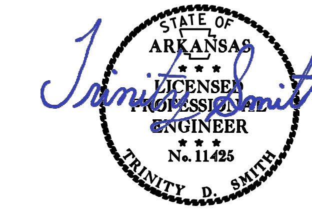
MAINTENANCE OF TRAFFIC DETAILS

RETAIN CONSTRUCTION PAVEMENT MARKINGS FROM STAGE 3 MAINTENANCE OF TRAFFIC DETAILS.

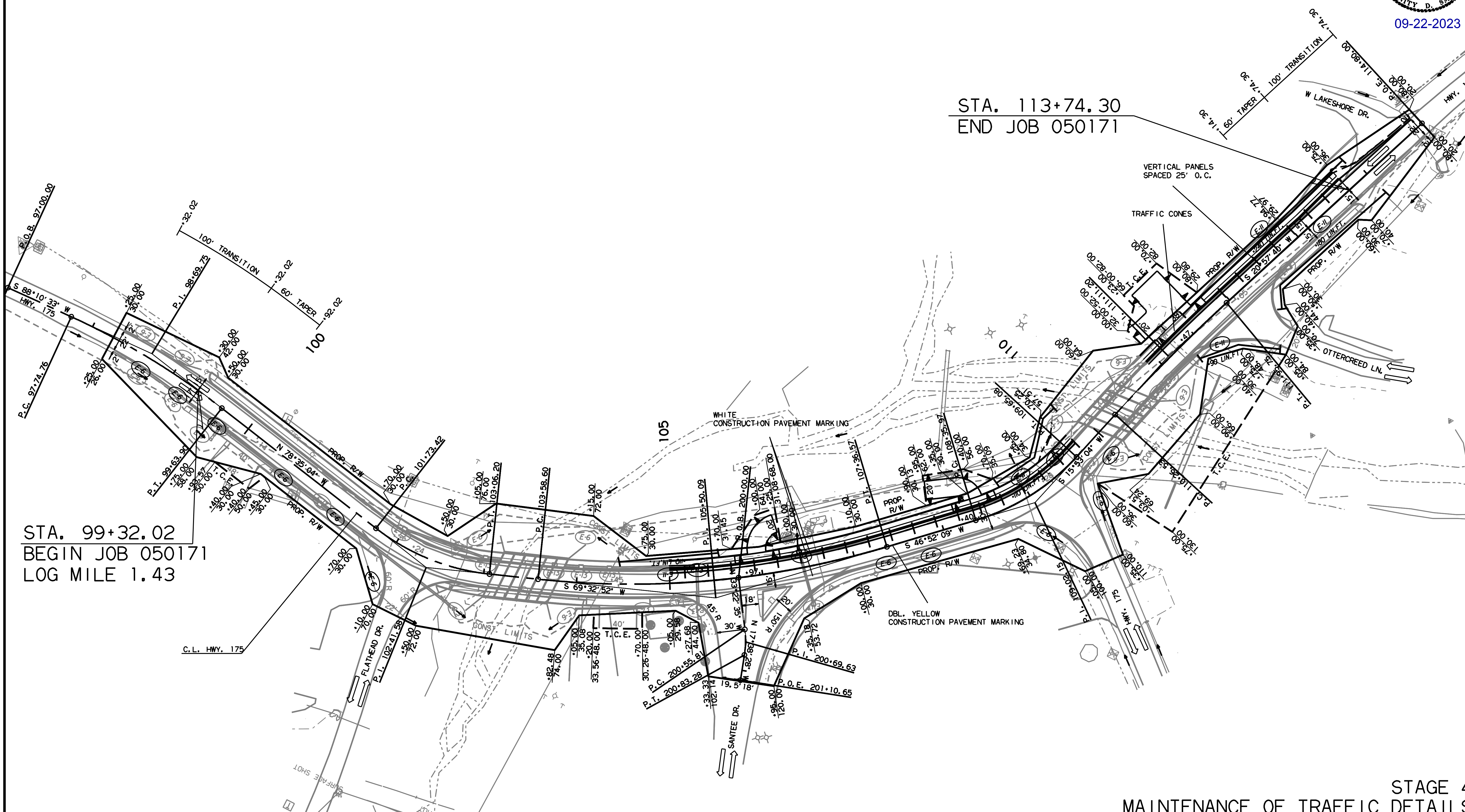
USE VERTICAL PANELS SPACED 25' O.C. TO DELINEATE THE WORK ZONE. USE TRAFFIC CONES TO DELINEATE DRIVEWAYS.

NOTCH AND WIDEN HWY. 175/HWY. 175S LT. AS SHOWN IN THE STAGE 4 MAINTENANCE OF TRAFFIC DETAILS.

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



09-22-2023



STAGE 4
MAINTENANCE OF TRAFFIC DETAILS

jy43338
R050171.DGN
7/15/2021

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	30	66
		PERMANENT PAVEMENT MARKING DETAILS				

PERMANENT PAVEMENT MARKINGS

RAISED PAVEMENT MARKERS TYPE II (YEL/YEL) 80' O.C. = 18 EACH
THERMOPLASTIC PAVEMENT MARKING YELLOW (6") = 3060 LIN. FT.
REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6") = = 270 LIN. FT.
REFLECTORIZED PAINT PAVEMENT MARKING WHITE (10") = 104 LIN. FT.
REFLECTORIZED PAINT PAVEMENT MARKING WHITE (8") = 150 LIN. FT.
REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6") = 190 LIN. FT.
REFLECTORIZED PAINT PAVEMENT MARKING (WHEELCHAIR) = 3 EACH

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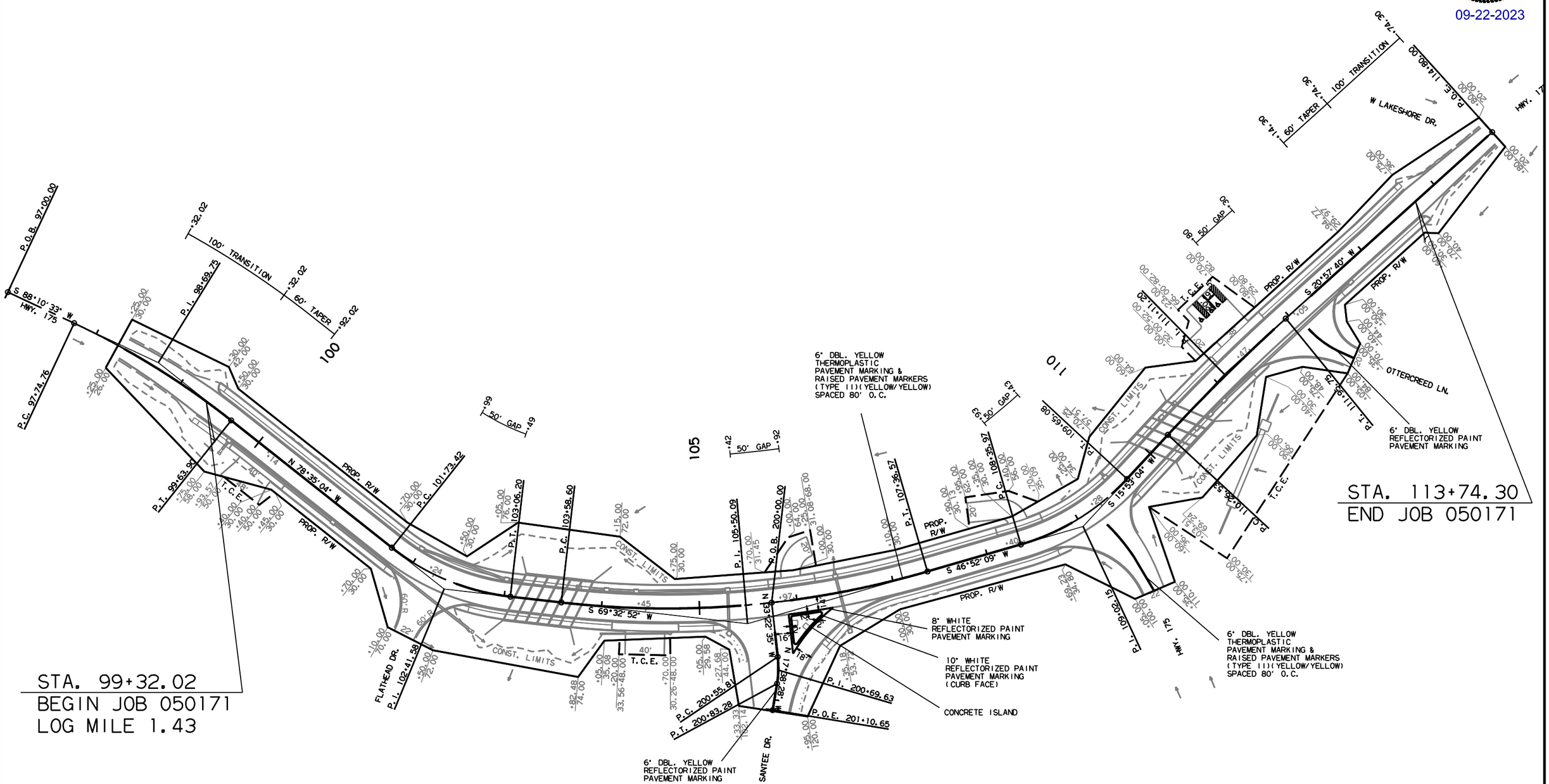
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Trinity D. Smith
09-22-2023



PERMANENT PAVEMENT MARKING DETAILS

jy43338 7/16/2021
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	31	66
		QUANTITIES				

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

09-22-2023

ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	STAGE 3	STAGE 4	END OF JOB	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC CONE	BARRICADES (TYPE III)	
													RIGHT	LEFT
			LIN. FT. - EACH						NO.	SQ. FT.	EACH		LIN. FT.	
W20-1	ROAD WORK 1500 FT.	48"x48"			2	2		2	2	32.0				
W20-1	ROAD WORK 1000 FT.	48"x48"			2	2		2	2	32.0				
W20-1	ROAD WORK 500 FT.	48"x48"			2	2		2	2	32.0				
W20-1	ROAD WORK AHEAD	48"x48"	5	5	5	5		5	5	80.0				
G20-2	END ROAD WORK	48"x24"	5	5	7	7		7	7	56.0				
R11-2	ROAD CLOSED	48"x30"	3	2				3	3	30.0				
R4-1	DO NOT PASS	24"x30"			2	2		2	2	10.0				
W21-5a	RIGHT SHOULDER CLOSED	36"x36"			2	2		2	2	18.0				
W8-1	BUMP	30"x30"			4	4		4	4	25.0				
M1-5	STATE HIGHWAY. 175 (MODIFIED)	24"x24"	4					4	4	16.0				
M1-5	STATE HIGHWAY. 175S (MODIFIED)	24"x24"		4				4	4	16.0				
M3-1	NORTH	24"x12"	2	1										
M3-3	SOUTH	24"x12"	2	3				3	3	6.0				
M4-10L	DETOUR WITH ARROW LEFT	48"x18"	2	1				2	2	12.0				
M4-10R	DETOUR WITH ARROW RIGHT	48"x18"	1	1				1	1	6.0				
M4-8	DETOUR	24"x12"	1	2				2	2	4.0				
M6-3	ARROW	21"x15"	1	2				2	2	4.4				
R11-3A	ROAD CLOSED MILES AHEAD LOCAL TRAFFIC ONLY	60"x30"	1	2				2	2	25.0				
R11-4	ROAD CLOSED TO THRU TRAFFIC	60"x30"	1	1				1	1	12.5				
	VERTICAL PANELS				16	26		26			26			
	TRAFFIC CONES				32	18		32				32		
	TYPE III BARRICADE-RT. (8')		3	2				3					24	
	TYPE III BARRICADE-LT. (8')		3	2				3						24
TOTALS:										416.9	26	32	24	24

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

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 1	STAGE 2	STAGE 3	STAGE 4	END OF JOB	CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS	THERMOPLASTIC PAVEMENT MARKING	REFLECTORIZED PAINT PAVEMENT MARKING				
							TYPE II	6"	6"		8"	10"	WHEELCHAIR
							(YELLOW/YELLOW)	YELLOW	WHITE	YELLOW	WHITE	WHITE	
	LIN. FT. - EACH					LIN. FT.	EACH	LIN. FT.	LIN. FT.				EACH
CONSTRUCTION PAVEMENT MARKINGS		1350	3265	850		5465							
RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW)					18		18						
THERMOPLASTIC PAVEMENT MARKING YELLOW (6")					3060			3060					
REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6")					190				190				
REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6")					270					270			
REFLECTORIZED PAINT PAVEMENT MARKING WHITE (8")					150						150		
REFLECTORIZED PAINT PAVEMENT MARKING WHITE (10")					104							104	
REFLECTORIZED PAINT PAVEMENT MARKING SYMBOLS (WHEELCHAIR)					3								3
TOTALS:						5465	18	3060	190	270	150	104	3

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

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

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	32	66
		QUANTITIES				

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

Trinity Smith

09-22-2023

CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
98+25	99+90	HWY. 175	2	2
104+15	104+75	HWY. 175	1	1
109+76	113+47	HWY. 175	5	5
TOTALS:			8	8

REMOVAL AND DISPOSAL OF CULVERTS AND DROP INLETS

STATION	DESCRIPTION	PIPE CULVERTS	DROP INLETS
		EACH	EACH
103+45	24" X 30' R.C. CROSS DRAIN	1	1
106+47	18" X 68' R.C. CROSS DRAIN	1	
110+31	DBL. 24" X 31' R.C. CROSS DRAIN	2	1
TOTALS:		4	2

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

BENCH MARKS

STATION	LOCATION	BENCH MARKS
		EACH
103+45	HWY. 175 - HDWL. OF R.C. BOX CULVERT ON RT.	1
110+31	HWY. 175 - HDWL. OF R.C. BOX CULVERT ON RT.	1
TOTAL:		2

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

CONCRETE ISLAND

STATION	LOCATION	CURB FACE TYPE	CONCRETE ISLAND
			SQ.YD.
106+00	HWY.175 RT	D	57
TOTAL:			57

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.

PAVEMENT REPAIR OVER CULVERTS (CONCRETE)

STATION	LOCATION	WIDTH	LENGTH	CU.YD.
		FEET		
105+30	HWY 175	7.92	36	10.6
106+45	HWY 175	7.92	42	12.3
TOTAL:				22.9

AVG. DEPTH = 12"

REMOVAL AND DISPOSAL OF ITEMS

STATION	STATION	LOCATION	CURB	RETAINING WALLS	WALKS	SIGNS	HANDRAIL
			LIN. FT.	LIN. FT.	SQ. YD.	EACH	LIN. FT.
99+88	100+38	HWY. 175 RT.	25	28			
100+83	100+83	HWY. 175 RT.			5		
101+93	101+93	HWY. 175 RT.				1	
102+70	104+21	HWY. 175 LT. & RT.	108		69	1	216
105+73	106+29	HWY. 175 RT.	177			1	
108+94	108+94	HWY. 175 RT.				1	
109+44	109+44	HWY. 175 LT.				1	
109+56	110+77	HWY 175. LT. & RT.	123	112			
111+63	111+63	HWY. 175 RT.				1	
111+65	111+65	HWY. 175 LT.				1	
TOTALS:			433	140	74	7	216

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT
			CU. YD.	
98+32.02	105+00.00	STAGE 1 - HWY 175	494	3269
109+75.00	111+10.00	STAGE 2 - HWY 175	207	1177
105+00.00	114+74.30	STAGE 3 - HWY 175 RT	218	375
105+00.00	114+74.30	STAGE 4 - HWY 175 LT	96	396
103+45.00	103+45.00	CHANNEL CHANGE - SEXT. 10' X 7' X 54' R.C. BOX CULVERT	1090	
110+31.00	110+31.00	CHANNEL CHANGE - QUINT. 10' X 5' X 54' R.C. BOX CULVERT	350	
ENTIRE	PROJECT	APPROACHES		315
TOTALS:			2455	5532

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

SOIL STABILIZATION

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

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

SOIL LOG

STATION	LATITUDE			LONGITUDE			LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
	DEG	MIN	SEC	DEG	MIN	SEC		FEET				
101+00	36	18	31.30	91	31	33.20	06 RT	0-5	53	36	A-7-6(14)	BROWN
101+00	36	18	31.40	91	31	33.33	15 RT	0-1.5Z	ND	NP	A-2-4(0)	BROWN
107+00	36	18	29.50	91	31	39.80	06 LT	0-5	35	21	A-6(16)	RD/BR
107+00	36	18	29.50	91	31	39.70	15 LT	0-5	53	36	A-2-7(1)	RD/BR
107+00	36	18	29.40	91	31	39.70	21 LT	0-4Z	29	15	A-6(10)	RD/BR
113+00	36	18	24.30	93	31	43.50	06 RT	0-5	61	39	A-7-6(25)	RD/BR
113+00	36	18	24.30	93	31	43.60	15 RT	0-5	54	34	A-7-6(18)	RD/BR

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

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
98+32.02	99+32.02	MAIN LANES	22.00	244.44
113+74.30	114+74.30	MAIN LANES	22.00	244.44
TOTAL:				488.88

COORDINATE COLD MILLING STOCKPILE LOCATIONS WITH DISTRICT ENGINEER.
STOCKPILE LOCATIONS SHALL BE NO FURTHER THAN FIVE MILES FROM EACH SITE.

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	TON	TACK COAT
		GALLON
ENTIRE PROJECT - TO BE USED IF AND WHERE	10	20
DIRECTED BY THE ENGINEER		
TOTALS:	10	20

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

QUANTITIES

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

Trinity Smith

09-22-2023

EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL						TEMPORARY EROSION CONTROL						
			SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	SOLID SODDING	TEMPORARY SEEDING	MULCH COVER	WATER	ROCK DITCH CHECKS (E-6)	SILT FENCE (E-11)	FILTER SOCK (12") (E-13)	*SEDIMENT REMOVAL & DISPOSAL
			ACRE	TON	ACRE	M.GAL.	ACRE	SQ.YD.	ACRE	ACRE	M.GAL.	CU.YD.	LIN. FT.	LIN.FT.	CU. YD.
ENTIRE	PROJECT	CLEARING AND GRUBBING							1.47	1.47	30.0	33			11
98+32.02	105+00.00	STAGE 1							0.66	0.66	13.5	27		161	15
109+75.00	111+10.00	STAGE 2							0.27	0.27	5.5	12		138	9
105+00.00	114+74.30	STAGE 3							0.28	0.28	5.7			69	3
105+00.00	114+74.30	STAGE 4	0.51	1.02	0.51	61.1	0.51	717	0.26	0.26	5.3		965	69	38
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.			0.13	0.26	0.13	13.3	0.13		0.74	0.74	15.1	18			6
TOTALS:			**0.64**	**1.28**	**0.64**	**74.4**	**0.64**	**717**	**3.68**	**3.68**	**75.1**	**90**	**965**	**437**	**82**

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
WATER.....12.6 GAL. / SQ. YD. OF SOLID SODDING
ROCK DITCH CHECKS.....3 CU.YD./LOCATION

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

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

CONCRETE DITCH PAVING

STATION	STATION	LOCATION	LENGTH	"W"	CONC. DITCH PAVING (TYPE B)	SOLID SODDING	WATER
			LIN. FT.	FEET	SQ. YD.	SQ. YD.	M. GAL.
98+32.02	99+75.00	HWY. ´75 LT.	142.98	6.32	100.40	63.55	0.80
98+32.02	99+75.00	HWY. ´75 RT.	142.98	6.32	100.40	63.55	0.80
102+55.00	102+85.00	HWY. ´75 RT.	30.00	6.32	21.07	13.33	0.17
102+60.00	103+10.00	HWY. ´75 LT.	50.00	6.32	35.11	22.22	0.28
103+75.00	104+05.00	HWY. ´75 RT.	30.00	6.32	21.07	13.33	0.17
104+10.00	104+60.00	HWY. ´75 LT.	50.00	6.32	35.11	22.22	0.28
109+30.00	109+80.00	HWY. ´75 LT.	50.00	6.32	35.11	22.22	0.28
109+75.00	110+05.00	HWY. ´75 RT.	30.00	6.32	21.07	13.33	0.17
110+55.00	110+90.00	HWY. ´75 LT.	35.00	6.32	24.58	15.56	0.20
110+85.00	111+30.00	HWY. ´75 RT.	45.00	6.32	31.60	20.00	0.25
TOTALS:					**425.52**	**269.31**	**3.40**

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

CONCRETE WALKS

STATION	STATION	LOCATION	LENGTH	CONCRETE WALKS
			LIN. FT.	SQ.YD.
99+38	99+80	HWY.175 RT	42	23
106+22	107+50	HWY.175 RT	139	77
TOTAL:				**100**

CONCRETE WALKS (TYPE SPECIAL)

STATION	STATION	LOCATION	CONCRETE WALKS (TYPE SPECIAL)	HAND RAILING	ARCHITECTURAL FINISH	TEXTURED COATING FINISH
			SQ. YD.	LIN. FT.	SQ. FT.	SQ. YD.
99+32	105+86	HWY. 175 LT	363	654	2309	257
106+08	108+29	HWY. 175 LT	123	221	740	82
108+52	111+14	HWY. 175 LT	146	262	786	87
111+66	113+74	HWY. 175 LT	116	208	801	89
100+35	101+90	HWY. 175 RT	86	155	538	60
102+55	104+25	HWY. 175 RT	94	170	547	61
104+65	105+20	HWY. 175 RT	31	55	77	9
107+50	108+80	HWY. 175 RT	72	130	195	22
109+50	111+50	HWY. 175 RT	111	200	436	48
112+45	113+74	HWY. 175 RT	72	129	328	36
TOTALS:			1214	2184	6757	751

CONCRETE COMBINATION CURB AND GUTTER

STATION	STATION	LOCATION	TYPE A (1' 6")
			LIN. FT.
99+32	102+16	HWY.175 RT	317
102+33	105+46	HWY.175 RT	374
105+79	109+12	HWY.175 RT	450
109+37	112+08	HWY.175 RT	313
112+30	113+74	HWY.175 RT	192
99+32	113+74	HWY.175 LT	1426
TOTAL:			**3072**

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	34	66
		QUANTITIES				

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

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WHEELCHAIR RAMPS

STATION	LOCATION	TYPE 3
		SQ.YD.
99+32	HWY.175 RT	2.4
99+32	HWY.175 LT	4.0
102+54	HWY.175 RT	4.1
105+27	HWY.175 RT	6.0
106+18	HWY.175 RT	3.3
108+83	HWY.175 RT	5.0
109+19	HWY.175 RT	5.3
111+53	HWY.175 RT	7.3
112+42	HWY.175 RT	6.2
113+74	HWY.175 RT	3.9
113+74	HWY.175 LT	3.4
TOTAL:		50.9

4" PIPE UNDERDRAIN

STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS
			LIN. FT.
* ENTIRE PROJECT TO BE USED IF AND			500
WHERE DIRECTED BY THE ENGINEER			
TOTAL:			500

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

UNDERDRAINS SHALL BE STUBBED INTO THE PROPOSED DROP INLET IF AND WHERE DIRECTED BY THE ENGINEER. PAYMENT FOR THIS TO BE INCLUDED IN THE UNIT PRICE BID FOR 4" PIPE UNDERDRAIN.

CULVERT CLEAN OUT

STATION	LOCATION	EACH
106+47	HWY. 175	1
108+96	HWY. 175	1
TOTAL:		2

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING
	CU. YD.
ENTIRE PROJECT TO BE USED IF	
AND WHERE DIRECTED BY THE	70
ENGINEER	
TOTAL:	70

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

DRIVEWAYS

STATION	SIDE	LOCATION	WIDTH	**MODIFIED CURB		PORTLAND CEMENT CONCRETE DRIVEWAY	ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22)		AGGREGATE BASE COURSE (CLASS 7)	STANDARD DRAWINGS
			FEET	STATION	STATION	SQ. YD.	SQ. YD.	TON	TON	
100+14	RT	HWY. 175	40	99+80	100+48	60 44	126.89	13.96	51.81	DR-1
104+45	RT	HWY. 175	40	104+11	104+79	167.11				DR-1
105+97	LT	HWY. 175	20	105+73	106+22	42 67	89.12	9.80	36.39	DR-1
108+40	LT	HWY. 175	20	108+15	108+66	42 67	125.55	13.81	51.27	DR-1
111+47	LT	HWY. 175	38	111+14	111+80	58 67	269.70	29.67	110.13	DR-1
* ENTIRE PROJECT TEMPORARY DRIVES									90.00	
TOTALS:						371.56	611.26	67.24	339.60	

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

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

** FOR INFORMATION ONLY

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.

STRUCTURES

STATION	DESCRIPTION	PIPE CULVERT ALTERNATES				SIDE DRAIN	PIPE CULVERT STORM DRAIN ALTERNATES 1, 2, 3, 4, & 5	FLARED END SECTION ALTERNATES FOR PIPE CULVERT	DROP INLETS				YARD DRAINS	SPAN	HEIGHT	LENGTH	CLASS S CONCRETE-ROADWAY	REINF. STEEL-ROADWAY (GRADE 60)	ARCHITECTURAL FINISH	TEXTURED COATING FINISH	UNCL.EXC. FOR STR.-ROADWAY	SOLID SODDIING	WATER	STD. DWG. NOS.
		ALT. 1 (CLASS III)	ALT. 2, 3, 4, 5, 6, AND 7	ALT. 1 (CLASS V)	ALT. 2, 3, 4, 5, 6, AND 7				TYPE			EXT.												
		18"	18"	18"	18"	12"	18"	18"	C	E	MO	4'												
				LIN. FT.				EACH	EACH						LIN. FT.		CU.YT.	POUND	SQ.FT.	SQ.YD.	CU.YD.	SQ.YT.	M.GAL.	
99+75	CONST. DROP INLET ON RT. W/EXT. AND PIPE OUTLET						142	1	1			1										5	0.06	FES-1,FES-2,FPC-9E,FPC-9M, PCC-1,PCM-1,PCP-1,PCP-2,PCP-3
101+10	CONST. DROP INLET ON RT. W/EXT. AND PIPE OUTLET	176	176						1			1												FPC-9E,FPC-9M, PCC-1,PCM-1,PCP-1,PCP-2,PCP-3
102+00	CONST. DROP INLET ON LT. W/EXT. AND PIPE OUTLET						88		1			1												FPC-9E,FPC-9M, PCC-1,PCM-1,PCP-1,PCP-2,PCP-3
103+00	CONST. DROP INLET ON LT. W/EXT. AND PIPE OUTLET						16		1			1												FPC-9E,FPC-9M, PCC-1,PCM-1,PCP-1,PCP-2,PCP-3
103+75	CONST. DROP INLET ON LT. W/EXT. AND PIPE OUTLET								1			1												FPC-9E,FPC-9M, PCC-1,PCM-1,PCP-1,PCP-2,PCP-3
104+04	CONST. DROP INLET ON LT. AND PIPE OUTLET						16		1															FPC-9E,FPC-9M, PCC-1,PCM-1,PCP-1,PCP-2,PCP-3
104+35	CONST. DROP INLET ON LT. W/EXT. AND PIPE OUTLET						26		1			1												FPC-9E,FPC-9M, PCC-1,PCM-1,PCP-1,PCP-2,PCP-3
104+70	CONST. YARD DRAIN ON RT.					72							1											FPC-9
105+30	CONST. DROP INLET ON RT. W/EXT. AND PIPE OUTLET			42	42						1	1												FPC-9E,FPC-9M, PCC-1,PCM-1,PCP-1,PCP-2,PCP-3
105+30	CONST. DROP INLET ON LT. W/EXT. AND PIPE OUTLET						90		1			1												FPC-9E,FPC-9M, PCC-1,PCM-1,PCP-1,PCP-2,PCP-3
106+43	CONST. DROP INLET ON LT. W/EXT. AND PIPE OUTLET						6				1	1												FPC-9E,FPC-9M, PCC-1,PCM-1,PCP-1,PCP-2,PCP-3
106+47	CONST. DROP INLET ON RT. AND PIPE OUTLET			56	56					1														FPC-9E,FPC-9M, PCC-1,PCM-1,PCP-1,PCP-2,PCP-3
109+50	CONST. DROP INLET ON LT. AND PIPE OUTLET						6		1			1												FPC-9E,FPC-9M, PCC-1,PCM-1,PCP-1,PCP-2,PCP-3
110+35	CONST. DROP INLET ON LT. W/EXT. AND PIPE OUTLET								1			1												FPC-9E,FPC-9M, PCC-1,PCM-1,PCP-1,PCP-2,PCP-3
110+52	CONST. DROP INLET ON RT.								1															FPC-9
110+54	CONST. DROP INLET ON LT.								1															FPC-9
110+72	CONST. DROP INLET ON LT. AND PIPE OUTLET						4		1															FPC-9E,FPC-9M, PCC-1,PCM-1,PCP-1,PCP-2,PCP-3
110+92	CONST. DROP INLET ON LT. AND PIPE OUTLET						16		1															FPC-9E,FPC-9M, PCC-1,PCM-1,PCP-1,PCP-2,PCP-3
112+70	CONST. DROP INLET ON LT. W/EXT. AND PIPE OUTLET						174		1			1												FPC-9E,FPC-9M, PCC-1,PCM-1,PCP-1,PCP-2,PCP-3
SUBTOTALS:		176	176	98	98	72	584	1	15	1	2	12	1									5	0.06	
STRUCTURES OVER 20' - 0" SPAN																								
103+45	CONSTRUCT 10' X 7' X 54' R.C. BOX CULVERT													10	7	54	85.02	15276	365	47	139	50	0.63	SPECIAL DETAILS, PBC-1, RCB-1, RCB-2
110+31	CONSTRUCT 10' X 5' X 54' R.C. BOX CULVERT													10	5	54	57	8864	191	27	113	40	0.50	SPECIAL DETAILS, PBC-1, RCB-1, RCB-2
SUBTOTALS:																	142.02	24140	556	74	252	90	1.13	
TOTALS:		176	176	98	98	72	584	1	15	1	2	12	1				142.02	24140	556	74	252	95	1.19	

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.

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	35	66
		QUANTITIES				

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

09-22-2023

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	TACK COAT (0.05 GAL. PER SQ. YD.) TOTAL WID.	SQ.YD.	GALLON	TACK COAT (0.17 GAL. PER SQ YD.) TOTAL WID.	SQ.YD.	GALLON	TOTAL GALLONS	ACHM BASE COURSE (1 1/2") AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	ACHM BINDER COURSE (1") AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	ACHM SURFACE COURSE (1/2") 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	FEET			TON	TON
MAIN LANES																											
98+32.02	99+32.02	HWY. 175 - TRANSITION	100.00	18.00	200.00	10.00	22.00	244.44	41.55	51.55	6.00	66.67	550.00	18.33	6.00	66.67	330.00	11.00	6.00	66.67	220.00	7.33	28.00	311.11	220.00	34.22	41.55
99+32.02	99+60.00	HWY. 175 - NOTCH AND WIDENING SECTION	27.98	27.50	85.49	4.27	22.00	68.40	11.63	15.90	12.50	38.86	550.00	10.69	7.50	23.32	330.00	3.85	7.50	23.32	220.00	2.57	29.50	91.71	220.00	10.09	12.66
99+60.00	104+87.00	HWY. 175 - FULL DEPTH SECTION	527.00	89.00	5211.44	260.57				260.57	33.00	1932.33	550.00	531.39	28.00	1639.56	330.00	270.53	28.00	1639.56	220.00	180.35	28.00	1639.56	220.00	180.35	990.70
104+87.00	105+87.00	HWY. 175 - NOTCH AND WIDENING SECTION	100.00	23.00	255.56	12.78	22.00	244.44	41.55	54.33	11.00	122.22	550.00	33.61	6.00	66.67	330.00	11.00	6.00	66.67	220.00	7.33	28.00	311.11	220.00	34.22	41.55
105+87.00	111+30.00	HWY. 175/175S - FULL DEPTH SECTION	543.00	89.00	5369.67	268.48				268.48	33.00	1991.00	550.00	547.53	28.00	1689.33	330.00	278.74	28.00	1689.33	220.00	185.83	28.00	1689.33	220.00	185.83	371.66
111+30.00	113+14.30	HWY. 175S - NOTCH AND WIDENING SECTION	184.30	23.00	470.99	23.55	22.00	450.51	76.59	100.14	11.00	225.26	550.00	61.95	6.00	122.87	330.00	20.27	6.00	122.87	220.00	13.52	28.00	573.38	220.00	63.07	76.59
113+14.30	113+74.30	HWY. 175S - NOTCH AND WIDENING SECTION	60.00	26.00	173.33	8.67	22.00	146.67	24.93	33.60	12.00	80.00	550.00	22.00	7.00	46.67	330.00	7.70	7.00	46.67	220.00	5.13	29.00	193.33	220.00	21.27	26.40
113+74.30	114+74.30	HWY. 175S - TRANSITION	100.00	18.00	200.00	10.00	22.00	244.44	41.55	51.55	6.00	66.67	550.00	18.33	6.00	66.67	330.00	11.00	6.00	66.67	220.00	7.33	28.00	311.11	220.00	34.22	41.55
ADDITIONAL FOR LEVELING & METHOD OF RAISING GRADE																											
99+32.02	99+60.00	HWY. 175 - LEVELING	27.98	44.00	136.79	6.84	22.00	68.40	11.63	18.47					22.00	68.40	VAR.	16.93	22.00	68.40	220.00	7.52					7.52
104+87.00	105+87.00	HWY. 175 - LEVELING	100.00	66.00	733.33	36.67	22.00	244.44	41.55	78.22					22.00	244.44	VAR.	134.44	22.00	244.44	220.00	26.89					26.89
105+87.00	109+25.00	HWY. 175 - METHOD OF RAISING GRADE	338.00	22.00	826.22	41.31	22.00	826.22	140.46	181.77	22.00	826.22	VAR.	136.33													
111+10.00	111+30.00	HWY. 175S - METHOD OF RAISING GRADE	20.00	22.00	48.89	2.44	22.00	48.89	8.31	10.75	22.00	48.89	VAR.	8.07													
111+30.00	113+74.30	HWY. 175S - LEVELING	244.30	22.00	597.18	29.86	22.00	597.18	101.52	131.38					22.00	597.18	VAR.	98.53	22.00	597.18	220.00	65.69					65.69
ADDITIONAL FOR TURNOUTS																											
101+67.75	102+79.66	HWY. 175 RT. - FLATHEAD DR.	111.91	VAR.	815.94	40.80				40.80	VAR.	302.44	550.00	83.17	VAR.	256.75	330.00	42.36	VAR.	256.75	220.00	28.24	VAR.	253.75	220.00	28.24	96.48
105+02.43	107+02.75	HWY. 175 RT. - SANTEE DR.	200.32	VAR.	2432.90	121.65				121.65	VAR.	856.18	550.00	235.45	VAR.	788.36	330.00	130.08	VAR.	788.36	220.00	86.72	VAR.	788.36	220.00	86.72	173.44
108+54.64	109+71.04	HWY. 175S RT. - HWY. 175	116.40	VAR.	1437.87	71.89				71.89	VAR.	512.45	550.00	140.92	VAR.	462.71	330.00	76.35	VAR.	462.71	220.00	50.90	VAR.	462.71	220.00	50.90	191.80
111+11.54	112+66.54	HWY. 175S RT. - OTTERCREED LN.	155.00	VAR.	1099.42	54.97				54.97	VAR.	403.84	550.00	111.06	VAR.	347.79	330.00	57.39	VAR.	347.79	220.00	38.26	VAR.	347.79	220.00	38.26	76.52
TOTALS:					**20095.02**	**1004.75**		**3184.03**	**541.27**	**1546.02**		**7473.03**		**1958.83**		**6487.39**		**1170.17**		**6487.39**		**713.61**		**6976.25**		**767.39**	**1481.00**

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.5% MIN. AGGR.....5.5% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.5% MIN. AGGR.....4.5% ASPHALT BINDER
ACHM BASE COURSE (1 1/2").....96.0% MIN. AGGR.....4.0% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22
TACK COAT QUANTITIES WERE CALCULATED USING THE EMULSIFIED ASPHALT RATES. REFER TO SS-400-1 FOR THE RESIDUAL ASPHALT APPLICATION RATES.

JY43338 2/20/2023
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	36	66
		- QUANTITIES -				

SCHEDULE OF WEIR QUANTITIES - JOB NO. 050171

UNIT OF STRUCTURE	ITEM NUMBER	801	SP, SS, & 802	SS & 804	SP	SP	SP	SP	SP
	ITEM	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY	(2)(3) CLASS S CONCRETE-ROADWAY	REINFORCING STEEL-ROADWAY (GRADE 60)	ARCHITECTURAL FINISH	ARTICULATING BLOCK	CABLE FENCE	PERMANENT GROUND ANCHORS	TEXTURED COATING FINISH
	UNIT	CU. YD.	CU. YD.	POUND	SQ. FT.	SQ. YD.	LIN. FT.	EACH	SQ. YD.
WEIR CROSSING BIG OTTER CREEK		169	154.90	35,500	600	172	84	2	67
TOTALS FOR JOB NO. 050171		(1)169	154.90	35,500	600	172	84	2	67

(1) Includes approximately 50 cubic yards of rock excavation.

(2) Includes all costs of labor, materials, and incidentals to fabricate and install Stainless Steel Wearing Surface Plates, studs and waterstops. See Sheet Nos. 4 and 6 for additional information.

(3) Includes all costs of labor, materials, and incidentals to fabricate and install Bar Anchors. See Sheet No. 6 for additional information.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.19121
TIMOTHY CRAIG BARNETT JR.

Digitally Signed 08/24/2023

PRINT DATE: 8/23/2023

SCHEDULE OF WEIR QUANTITIES
CROSSING BIG OTTER CREEK
ROUTE SECTION
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY:	JPC	DATE:	FEB. 2022	FILENAME:	b050171_w1.dgn
CHECKED BY:	TCB	DATE:	FEB. 2023		
DESIGNED BY:	---	DATE:	---	SCALE:	No Scale

JUCARNEY 8/23/2023

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
10-9-2023		6	ARK.	050171	37	66
		SUMMARY OF QUANTITIES & REVISIONS				

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

10-18-2023

SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM		QUANTITY	UNIT
SP & 201	CLEARING		8	STATION
SP & 201	GRUBBING		8	STATION
202	REMOVAL AND DISPOSAL OF CURB		433	LIN. FT.
202	REMOVAL AND DISPOSAL OF RETAINING WALLS		140	LIN. FT.
202	REMOVAL AND DISPOSAL OF WALKS		74	SQ. YD.
202	REMOVAL AND DISPOSAL OF DROP INLETS		2	EACH
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS		4	EACH
202	REMOVAL AND DISPOSAL OF SIGNS		7	EACH
202	REMOVAL AND DISPOSAL OF HANDRAIL		216	LIN. FT.
SP, SS, & 210	UNCLASSIFIED EXCAVATION		2455	CU. YD.
SP & 210	COMPACTED EMBANKMENT		5532	CU. YD.
SP & 210	SOIL STABILIZATION		100	TON
SP, SS, & 303	AGGREGATE BASE COURSE (CLASS 7)		340	TON
SS & 401	TACK COAT		1566	GAL.
SP, SS, & 405	MINERAL AGGREGATE IN ACHM BASE COURSE (1 1/2")		1880	TON
SP, SS, & 405	ASPHALT BINDER (PG 64-22) IN ACHM BASE COURSE (1 1/2")		78	TON
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")		1118	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")		53	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")		1463	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")		85	TON
SP & 412	COLD MILLING ASPHALT PAVEMENT		489	SQ. YD.
SP, SS, & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC		10	TON
SP, SS, & 415	ACHM PATCHING OF EXISTING ROADWAY		10	TON
SP, SS, & 505	PORTLAND CEMENT CONCRETE DRIVEWAY		371.56	SQ. YD.
601	MOBILIZATION		1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE		1	EACH
SP, SS, & 603	MAINTENANCE OF TRAFFIC		1.00	LUMP SUM
SS & 604	SIGNS		417	SQ. FT.
SS & 604	BARRICADES		48	LIN. FT.
SS & 604	TRAFFIC CONE		32	EACH
604	CONSTRUCTION PAVEMENT MARKINGS		5465	LIN. FT.
SS & 604	VERTICAL PANELS		26	EACH
SP, SS, & 605	CONCRETE DITCH PAVING (TYPE B)		426	SQ. YD.
* SS & 606	18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	584	LIN. FT.
* SS & 606	18" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE	(ALTERNATE NO. 2)	584	LIN. FT.
* SP, SS, & 606	18" POLYPROPYLENE PIPE	(ALTERNATE NO. 3)	584	LIN. FT.
* SP, SS, & 606	18" HIGH DENSITY POLYETHYLENE PIPE	(ALTERNATE NO. 4)	584	LIN. FT.
* SP, SS, & 606	18" PVC PIPE	(ALTERNATE NO. 5)	584	LIN. FT.
* SS & 606	18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	176	LIN. FT.
* SS & 606	18" ASPHALT COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)	(ALTERNATE NO. 2)	176	LIN. FT.
* SS & 606	18" ALUMINUM COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)	(ALTERNATE NO. 3)	176	LIN. FT.
* SS & 606	18" POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE CULVERT (16 GAUGE)	(ALTERNATE NO. 4)	176	LIN. FT.
* SP, SS, & 606	18" POLYPROPYLENE PIPE	(ALTERNATE NO. 5)	176	LIN. FT.
* SP, SS, & 606	18" HIGH DENSITY POLYETHYLENE PIPE	(ALTERNATE NO. 6)	176	LIN. FT.
* SP, SS, & 606	18" PVC PIPE	(ALTERNATE NO. 7)	176	LIN. FT.
* SS & 606	18" REINFORCED CONCRETE PIPE CULVERTS (CLASS V)	(ALTERNATE NO. 1)	98	LIN. FT.
* SS & 606	18" ASPHALT COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)	(ALTERNATE NO. 2)	98	LIN. FT.
* SS & 606	18" ALUMINUM COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)	(ALTERNATE NO. 3)	98	LIN. FT.
* SS & 606	18" POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE CULVERT (16 GAUGE)	(ALTERNATE NO. 4)	98	LIN. FT.
* SP, SS, & 606	18" POLYPROPYLENE PIPE	(ALTERNATE NO. 5)	98	LIN. FT.
* SP, SS, & 606	18" HIGH DENSITY POLYETHYLENE PIPE	(ALTERNATE NO. 6)	98	LIN. FT.
* SP, SS, & 606	18" PVC PIPE	(ALTERNATE NO. 7)	98	LIN. FT.
SS & 606	12" SIDE DRAIN		72	LIN. FT.
* SS & 606	18" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	(ALTERNATE NO. 1)	1	EACH
* SS & 606	18" FLARED END SECTIONS FOR CORRUGATED STEEL PIPE CULVERTS	(ALTERNATE NO. 2)	1	EACH
SP	CULVERT CLEAN OUT		2	EACH
SS & 606	SELECTED PIPE BEDDING		70	CU. YD.
SS & 609	DROP INLETS (TYPE C)		15	EACH
SS & 609	DROP INLETS (TYPE E)		1	EACH
SS & 609	DROP INLETS (TYPE MO)		2	EACH
SS & 609	DROP INLET EXTENSIONS (4')		12	EACH
SS & 609	YARD DRAINS		1	EACH
SS & 611	4" PIPE UNDERDRAINS		500	LIN. FT.
SS & 615	PAVEMENT REPAIR OVER CULVERTS (CONCRETE)		22.9	CU. YD.
620	LIME		1	TON
620	SEEDING		0.64	ACRE
SS & 620	MULCH COVER		4.32	ACRE
620	WATER		154.1	M. GAL.
621	TEMPORARY SEEDING		3.68	ACRE
621	SILT FENCE		965	LIN. FT.
621	SEDIMENT REMOVAL AND DISPOSAL		82	CU. YD.
621	ROCK DITCH CHECKS		90	CU. YD.
SS & 621	FILTER SOCK (12")		437	LIN. FT.
623	SECOND SEEDING APPLICATION		0.64	ACRE
624	SOLID SODDING		1081	SQ. YD.
SP, SS, & 632	CONCRETE ISLAND		57	SQ. YD.
SP, SS, & 633	CONCRETE WALKS		100	SQ. YD.
SP, SS, & 633	CONCRETE WALKS (TYPE SPECIAL)		1214	SQ. YD.
SS & 633	HAND RAILING		2184	LIN. FT.
SS & 634	CONCRETE COMBINATION CURB AND GUTTER (TYPE A) (1' 6")		3072	LIN. FT.
635	ROADWAY CONSTRUCTION CONTROL		1.00	LUMP SUM
SP, SS, & 641	WHEELCHAIR RAMPS (TYPE 3)		51	SQ. YD.
718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6")		190	LIN. FT.
718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (8")		150	LIN. FT.
718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (10")		104	LIN. FT.
718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6")		270	LIN. FT.
718	REFLECTORIZED PAINT PAVEMENT MARKING SYMBOLS (WHEELCHAIR)		3	EACH
719	THERMOPLASTIC PAVEMENT MARKING YELLOW (6")		3060	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)		18	EACH
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY		169	CU. YD.
SP, SS, & 802	CLASS S CONCRETE-ROADWAY		154.90	CU. YD.
SP	ARCHITECTURAL FINISH		7357	SQ. FT.
SP	TEXTURED COATING FINISH		818	SQ. YD.
SS & 804	REINFORCING STEEL-ROADWAY (GRADE 60)		35500	POUND
SP	ARTICULATING BLOCK		172	SQ.YD.
SP	PERMANENT GROUND ANCHORS		2	EACH
SP	CABLE FENCE		84	LIN. FT.
	STRUCTURES OVER 20' SPAN			
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY		252	CU. YD.
SP, SS, & 802	CLASS S CONCRETE-ROADWAY		142.02	CU. YD.
SS & 804	REINFORCING STEEL-ROADWAY (GRADE 60)		24140	POUND
SP	ARCHITECTURAL FINISH		556	SQ. FT.
SP	TEXTURED COATING FINISH		74	SQ. YD.

* DENOTES ALTERNATE BID ITEMS.

REVISIONS

DATE	REVISION	SHEET NUMBER
10/9/2023	CORRECTED THE SOLID SODDING QUANTITY, CORRECTED THE UNCLASSIFIED EXCAVATION FOR STRUCTURE-BRIDGE, CLASS S CONCRETE-BRIDGE, AND REINFORCING STEEL-BRIDGE (GRADE 60) TO "-ROADWAY", AND ADDED THE VEGETATED BUFFER ZONE SPECIAL PROVISION.	3 & 37

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

Trinity Smith

09-22-2023

SURVEY CONTROL COORDINATES

Project Name: s050171
Date: 10/17/2017
Coordinate System: ARKANSAS STATE PLANE - NORTH ZONE BASED ON STATIC GPS PTS 1 AND 6
PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	717728.6339	1450762.0598	485.831	CTL	STD. ARDOT MON. STAMPED PN:1
2	718486.6051	1451122.8949	404.953	CTL	STD. ARDOT MON. STAMPED PN:2
3	719009.1710	1451355.6560	385.295	CTL	STD. ARDOT MON. STAMPED PN:3
4	719350.8069	1451864.1042	375.448	CTL	STD. ARDOT MON. STAMPED PN:4
5	719334.2045	1452476.8114	439.422	CTL	STD. ARDOT MON. STAMPED PN:5
6	719243.5992	1452836.6375	456.507	CTL	STD. ARDOT MON. STAMPED PN:6
900	721004.5364	1463583.4433	364.109	TBM	CHIS SQUARE IN HW 342 HARDY
901	722065.8595	1460758.9733	403.719	TBM	CHIS SQUARE IN DI 412/62 HARDY
902	720670.8206	1458775.5756	451.837	TBM	CHIS SQUARE IN DI 412/62 HARDY
903	718799.9333	1457350.9381	377.696	TBM	CHIS SQUARE IN S END W CU 175
904	719412.7037	1454129.0019	439.060	TBM	CHIS SQUARE IN ROCK OUTCR 175
905	719268.3645	1452423.2523	439.999	TBM	X CUT IN BOLT HEAD ON FH 175
906	719047.4740	1451422.2440	382.680	TBM	CHIS SQUARE IN CONC BASE 175
907	717367.1513	1450628.5167	492.794	TBM	X CUT IN BOLT HEAD ON FH 175
999	721645.2517	1463834.8933	358.060	BM	STD. NGS DISK O-1 (1928)

*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 0.999999650 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 s050171gi.CTL
HORIZONTAL DATUM: NAD 83 (2011)
VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE
AT A SPECIFIC POINT.

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

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS - 0301-NORTH ZONE
DETERMINED FROM GPS CONTROL POINTS: STATIC GPS PTS 1 AND 6
CONVERGENCE ANGLE: 0-16-28 RIGHT AT PN:3 LT:N 36-18-22 LG:W 090-31-44
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

HWY. 175

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	97+00.00	719314.2365	1452418.3926
8001	PC	97+74.76	719311.8566	1452343.6698
8003	PT	99+63.90	719327.6340	1452155.6113
8004	PC	101+73.42	719369.1031	1451950.2357
8006	PT	103+06.20	719358.7770	1451819.5653
8007	PC	103+58.60	719340.4696	1451770.4754
8009	PT	107+36.57	719142.6391	1451451.3018
8010	PC	108+35.97	719074.6794	1451378.7565
8012	PT	109+65.08	718965.7938	1451312.3529
8013	PC	110+26.53	718906.6921	1451295.5347
8015	PT	111+95.75	718746.1908	1451242.0722
8016	POE	114+80.00	718480.7546	1451140.3872

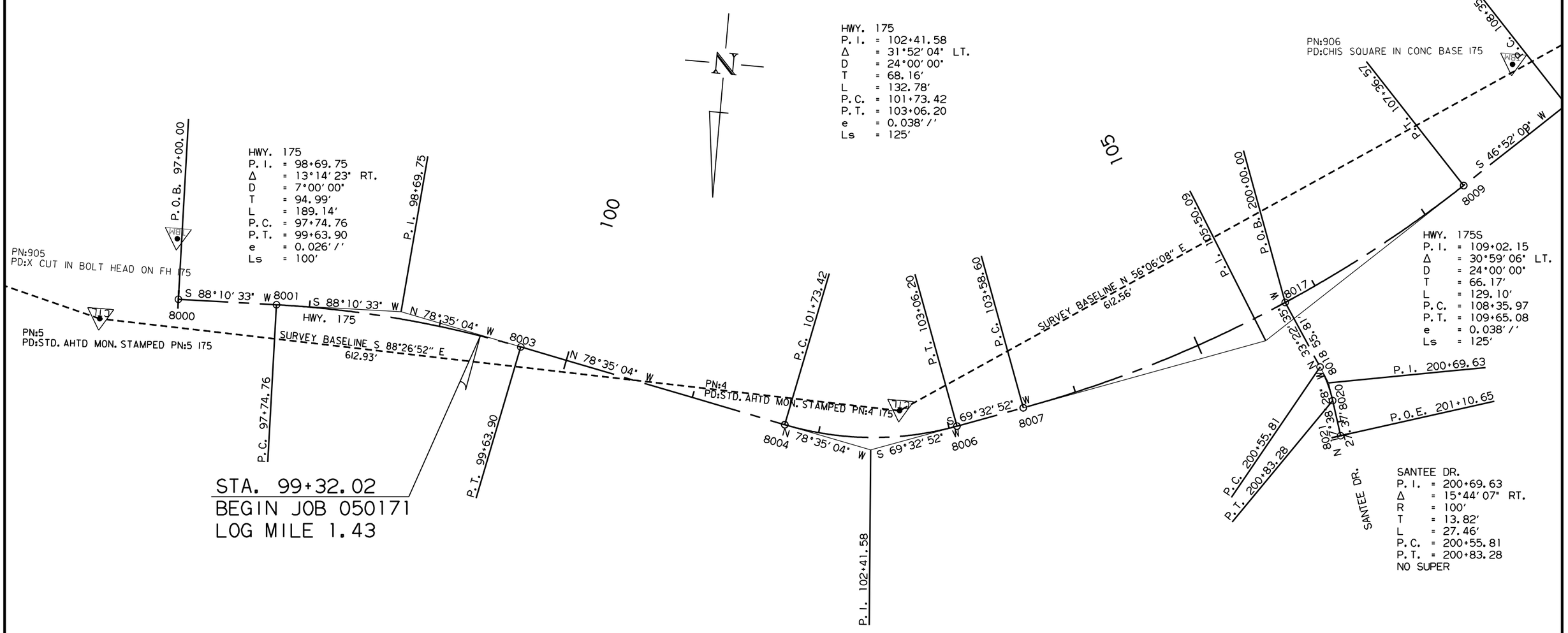
SANTEE DR.

POINT NO.	TYPE	STATION	NORTHING	EASTING
8017	POB	200+00.00	719243.1717	1451578.8102
8018	PC	200+55.81	719289.7791	1451548.1057
8020	PT	200+83.28	719314.4875	1451536.3157
8021	POE	201+10.65	719340.5705	1451528.0210

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	39	66
		SURVEY CONTROL DETAILS				

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

09-22-2023



JY43338 11/8/2022
R050171.DGN

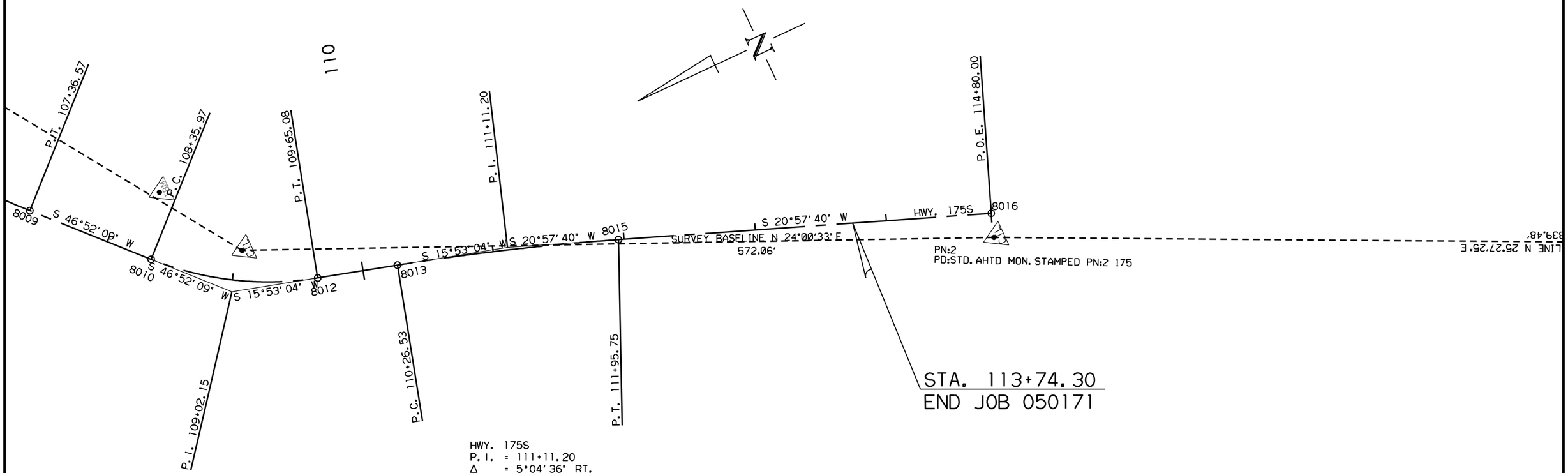
SURVEY CONTROL DETAILS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	40	66
		SURVEY CONTROL DETAILS				

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

09-22-2023

HWY. 175S
P.I. = 109+02.15
Δ = 30°59'06" LT.
D = 24°00'00"
T = 66.17'
L = 129.10'
P.C. = 108+35.97
P.T. = 109+65.08
e = 0.038'/'
Ls = 125'



HWY. 175S
P.I. = 111+11.20
Δ = 5°04'36" RT.
D = 3°00'00"
T = 84.67'
L = 169.23'
P.C. = 110+26.53
P.T. = 111+95.75
e = R.C.
Ls = 100'

JY43338 11/8/2022
R050171.DGN

SURVEY CONTROL DETAILS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	41	66
		PLAN AND PROFILE SHEETS				

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

09-22-2023

WHEELCHAIR RAMPS

STA.	LOCATION	TYPE	SQ. YDS.
99+35	RT.	3	3.4
99+37	LT.	3	4.0
101+88	RT.	3	6.2
102+61	RT.	3	6.2
105+20	RT.	3	6.0
105+95	RT.	3	3.4
106+07	RT.	3	3.4
106+24	RT.	3	3.3
108+76	RT.	3	5.2
109+55	RT.	3	5.7
111+43	RT.	3	7.7
112+49	RT.	3	5.9
113+69	RT.	3	4.0
113+71	LT.	3	3.4

CONCRETE ISLAND

STA.	LOCATION	TYPE	SQ. YDS.
106+00	RT.	D	57

STA. 105+97 CONSTRUCT
APPROACH ON LT. = 35 CU. YD.

STA. 105+30 CONSTRUCT
DROP INLET ON LT.
WITH 4' EXTENSION
AND 18" X 90' PIPE OUTLET
CONNECT TO DROP INLET @ STA. 104+35
DROP INLET H = 4'-0"
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE = 90 LIN. FT.
18" SLPCCS PIPE = 90 LIN. FT.
18" HDPE PIPE (TYPE 2) = 90 LIN. FT.
18" PVC PIPE (TYPE 2) = 90 LIN. FT
18" PPL PIPE (TYPE 2) = 90 LIN. FT

STA. 103+75 CONSTRUCT
DROP INLET ON LT.
WITH 4' EXTENSION
IN TOP OF BOX CULVERT
DROP INLET H = 2'-8"
TYPE C DROP INLET = 4' X 3'

STA. 103+00 CONSTRUCT
DROP INLET ON LT.
WITH 4' EXTENSION
AND 18" X 16' PIPE OUTLET
CONNECT TO BOX CULVERT @ STA. 103+45
DROP INLET H = 3'-8"
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III)(TYPE 3) = 16 LIN. FT.
18" SLPCCS PIPE (TYPE 2) = 16 LIN. FT.
18" HDPE PIPE (TYPE 2) = 16 LIN. FT.
18" PVC PIPE (TYPE 2) = 16 LIN. FT
18" PPL PIPE (TYPE 2) = 16 LIN. FT

STA. 98+32.02 TO STA. 99+75.00 ON LT.
CONC. DITCH PAVING (TYPE B) = 100.40 SQ. YD.

STA. 102+00 CONSTRUCT
DROP INLET ON LT.
WITH 4' EXTENSION
AND 18" X 88' PIPE OUTLET
CONNECT TO DROP INLET @ STA. 103+00
DROP INLET H = 2'-3"
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III)(TYPE 3) = 88 LIN. FT.
18" SLPCCS PIPE (TYPE 2) = 88 LIN. FT.
18" HDPE PIPE (TYPE 2) = 88 LIN. FT.
18" PVC PIPE (TYPE 2) = 88 LIN. FT
18" PPL PIPE (TYPE 2) = 88 LIN. FT

HWY. 175
P.I. = 102+41.58
Δ = 31°52' 04" LT.
D = 24°00' 00"
T = 68.16'
L = 132.78'
P.C. = 101+73.42
P.T. = 103+06.20
e = 0.038'/'
Ls = 125'

STA. 102+60.00 TO STA. 103+10.00 ON LT.
CONC. DITCH PAVING (TYPE B) = 35.11 SQ. YD.

STA. 104+35 CONSTRUCT
DROP INLET ON LT.
WITH 4' EXTENSION
AND 18" X 26' PIPE OUTLET
CONNECT TO DROP INLET @ STA. 104+04
DROP INLET H = 4'-3"
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III)(TYPE 3) = 26 LIN. FT.
18" SLPCCS PIPE (TYPE 2) = 26 LIN. FT.
18" HDPE PIPE (TYPE 2) = 26 LIN. FT.
18" PVC PIPE (TYPE 2) = 26 LIN. FT
18" PPL PIPE (TYPE 2) = 26 LIN. FT

STA. 104+04 CONSTRUCT
DROP INLET ON LT.
AND 18" X 16' PIPE OUTLET
CONNECT TO BOX CULVERT @ STA. 103+45
DROP INLET H = 4'-9"
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III)(TYPE 3) = 16 LIN. FT.
18" SLPCCS PIPE (TYPE 2) = 16 LIN. FT.
18" HDPE PIPE (TYPE 2) = 16 LIN. FT.
18" PVC PIPE (TYPE 2) = 16 LIN. FT
18" PPL PIPE (TYPE 2) = 16 LIN. FT

STA. 104+10.00 TO STA. 104+60.00 ON LT.
CONC. DITCH PAVING (TYPE B) = 35.11 SQ. YD.

HWY. 175
P.I. = 105+50.09
Δ = 22°40' 42" LT.
D = 6°00' 00"
T = 191.49'
L = 377.97'
P.C. = 103+58.60
P.T. = 107+36.57
e = 0.024'/'
Ls = 100'

C.L. HWY. 175 STA. 105+74.00 =
C.L. SANTEE DR. STA. 200+00.00
Δ = 90°00' 00"

STA. 106+43 CONSTRUCT
DROP INLET ON LT.
WITH 4' EXTENSION
AND 18" X 6' PIPE OUTLET
DROP INLET H = 4'-0"
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III)(TYPE 3) = 6 LIN. FT.
18" SLPCCS PIPE (TYPE 2) = 6 LIN. FT.
18" HDPE PIPE (TYPE 2) = 6 LIN. FT.
18" PVC PIPE (TYPE 2) = 6 LIN. FT
18" PPL PIPE (TYPE 2) = 6 LIN. FT

STA. 106+47 IN PLACE
18" X 80' R.C. PIPE CULVERT
CUT AND STUB INTO DROP INLET @ STA. 106+47 RT.

STA. 108+40 CONSTRUCT
APPROACH ON LT. = 120 CU. YD.

HWY. 175S
P.I. = 109+02.15
Δ = 30°59' 06" LT.
D = 24°00' 00"
T = 66.17'
L = 129.10'
P.C. = 108+35.97
P.T. = 109+65.08
e = 0.038'/'
Ls = 125'

STA. 108+96 IN PLACE
24" X 66' R.C. PIPE CULVERT
WITH HDWL. RT.
RETAIN

STA. 99+32.02
BEGIN JOB 050171
LOG MILE 1.43

STA. 102+55.00 TO STA. 102+85.00 ON RT.
CONC. DITCH PAVING (TYPE B) = 21.07 SQ. YD.

STA. 100+14 CONSTRUCT
APPROACH ON RT. = 30 CU. YD.

STA. 99+75 CONSTRUCT
DROP INLET ON RT.
WITH 4' EXTENSION
AND 18" X 10' PIPE INLET WITH F.E.S.
AND 18" X 132' PIPE OUTLET
CONNECT TO DROP INLET @ STA. 101+10
DROP INLET H = 4'-9"
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III)(TYPE 3) = 142 LIN. FT.
18" SLPCCS PIPE (TYPE 2) = 142 LIN. FT.
18" HDPE PIPE (TYPE 2) = 142 LIN. FT.
18" PVC PIPE (TYPE 2) = 142 LIN. FT
18" PPL PIPE (TYPE 2) = 142 LIN. FT
18" F.E.S. = 1 EACH

STA. 101+10 CONSTRUCT
DROP INLET ON RT.
WITH 4' EXTENSION
AND 18" X 176' PIPE OUTLET WITH F.E.S.
DROP INLET H = 3'-8"
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III)(TYPE 3) = 176 LIN. FT.
18" ASPHALT CSP PIPE (TYPE 2) = 176 LIN. FT.
18" ALUM. CSP PIPE (TYPE 2) = 176 LIN. FT.
18" POLYMER CSP PIPE (TYPE 2) = 176 LIN. FT.
18" HDPE PIPE (TYPE 2) = 176 LIN. FT.
18" PVC PIPE (TYPE 2) = 176 LIN. FT.
18" PLL PIPE (TYPE 2) = 176 LIN. FT.

STA. 98+32.02 TO STA. 99+75.00 ON RT.
CONC. DITCH PAVING (TYPE B) = 100.40 SQ. YD.

STA. 102+24 IN PLACE
18" X 40' R.C. PIPE CULVERT
RT. SIDE DRAIN
RETAIN AND CONSTRUCT
TURNOUT ON RT. = 65 CU. YD.

HWY. 175
P.I. = 98+69.75
Δ = 13°14' 23" RT.
D = 7°00' 00"
T = 94.99'
L = 189.14'
P.C. = 97+74.76
P.T. = 99+63.90
e = 0.026'/'
Ls = 100'

SANTEE DR.
P.I. = 200+69.63
Δ = 15°44' 07" RT.
R = 100'
T = 13.82'
L = 27.46'
P.C. = 200+55.81
P.T. = 200+83.28
NO SUPER

STA. 104+45 CONSTRUCT
APPROACH ON RT. = 20 CU. YD.

STA. 105+74 CONSTRUCT
TURNOUT ON RT.

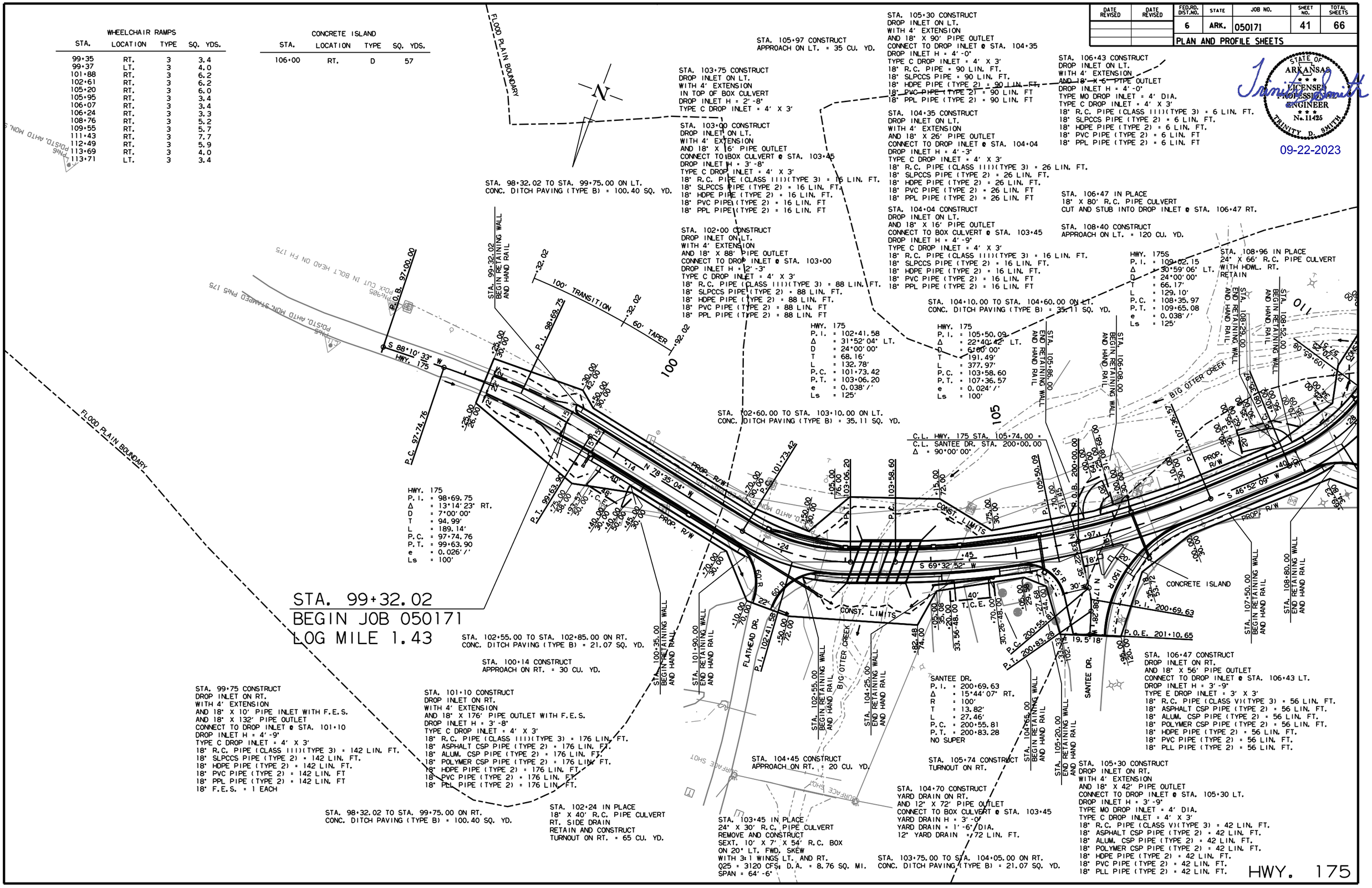
STA. 104+70 CONSTRUCT
YARD DRAIN ON RT.
AND 12" X 72' PIPE OUTLET
CONNECT TO BOX CULVERT @ STA. 103+45
YARD DRAIN H = 3'-0"
YARD DRAIN = 1'-6" DIA.
12" YARD DRAIN = 72 LIN. FT.

STA. 103+45 IN PLACE
24" X 30' R.C. PIPE CULVERT
REMOVE AND CONSTRUCT
SEXT. 10' X 7' X 54' R.C. BOX
ON 20° LT. FWD. SKEW
WITH 3:1 WINGS LT. AND RT.
Q25 = 3120 CFS; D.A. = 8.76 SQ. MI.
SPAN = 64'-6"

STA. 103+75.00 TO STA. 104+05.00 ON RT.
CONC. DITCH PAVING (TYPE B) = 21.07 SQ. YD.

STA. 106+47 CONSTRUCT
DROP INLET ON RT.
AND 18" X 56' PIPE OUTLET
CONNECT TO DROP INLET @ STA. 106+43 LT.
DROP INLET H = 3'-9"
TYPE E DROP INLET = 3' X 3'
18" R.C. PIPE (CLASS V)(TYPE 3) = 56 LIN. FT.
18" ASPHALT CSP PIPE (TYPE 2) = 56 LIN. FT.
18" ALUM. CSP PIPE (TYPE 2) = 56 LIN. FT.
18" POLYMER CSP PIPE (TYPE 2) = 56 LIN. FT.
18" HDPE PIPE (TYPE 2) = 56 LIN. FT.
18" PVC PIPE (TYPE 2) = 56 LIN. FT.
18" PLL PIPE (TYPE 2) = 56 LIN. FT.

STA. 105+30 CONSTRUCT
DROP INLET ON RT.
WITH 4' EXTENSION
AND 18" X 42' PIPE OUTLET
CONNECT TO DROP INLET @ STA. 105+30 LT.
DROP INLET H = 3'-9"
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS V)(TYPE 3) = 42 LIN. FT.
18" ASPHALT CSP PIPE (TYPE 2) = 42 LIN. FT.
18" ALUM. CSP PIPE (TYPE 2) = 42 LIN. FT.
18" POLYMER CSP PIPE (TYPE 2) = 42 LIN. FT.
18" HDPE PIPE (TYPE 2) = 42 LIN. FT.
18" PVC PIPE (TYPE 2) = 42 LIN. FT.
18" PLL PIPE (TYPE 2) = 42 LIN. FT.



HWY. 175

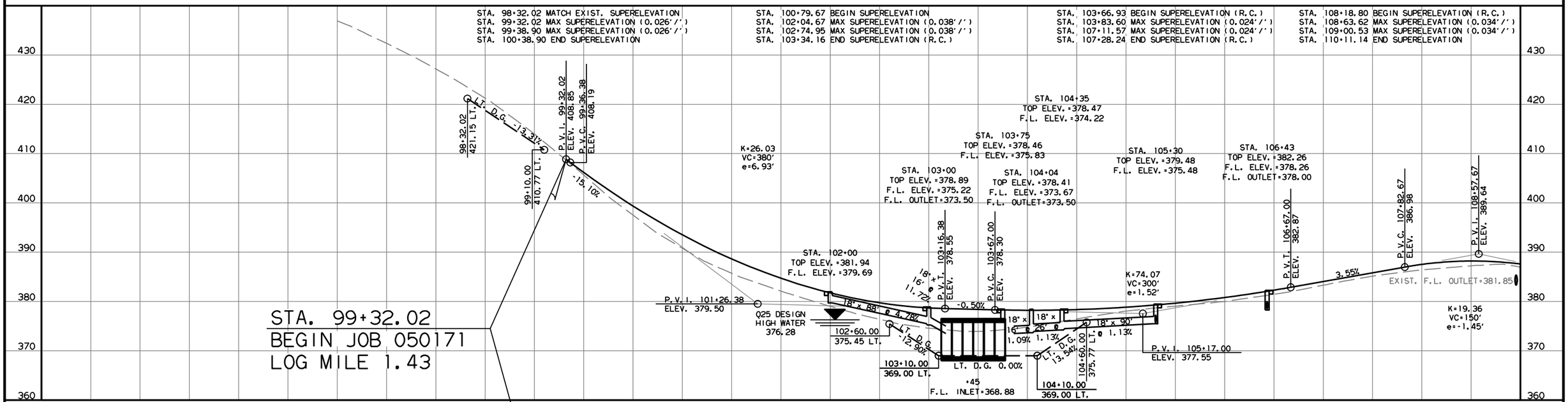
JY43338 2/16/2023
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	42	66
		PLAN AND PROFILE SHEETS				

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

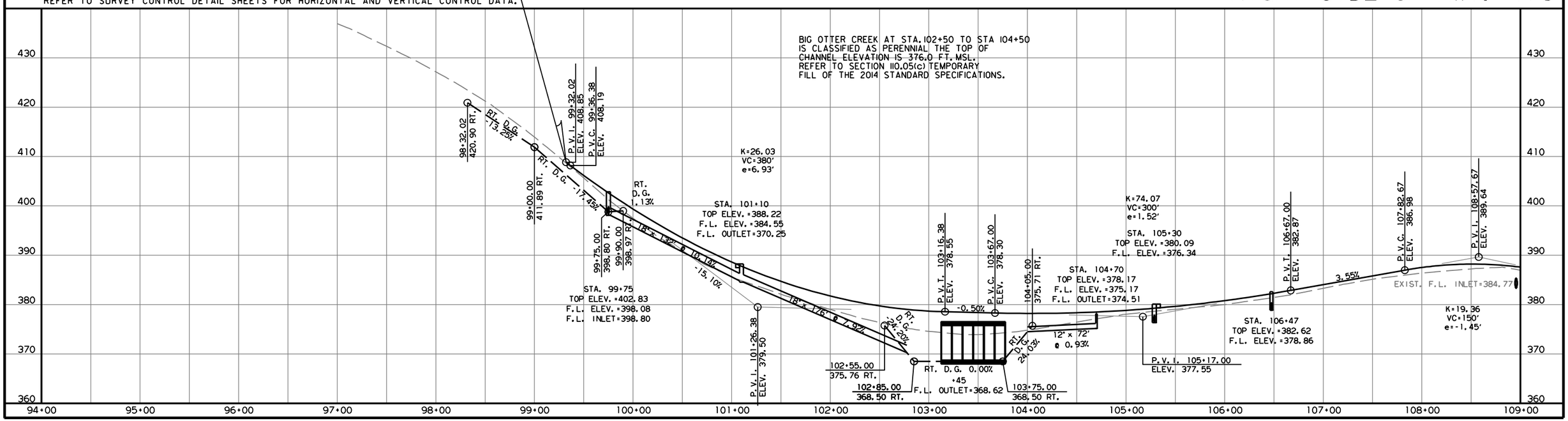
Trinity Smith
09-22-2023

LEFT SIDE OF HWY. 175



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

RIGHT SIDE OF HWY. 175



JY43338 2/16/2023
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	43	66
		PLAN AND PROFILE SHEETS				

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

09-22-2023

STA. 109+50 CONSTRUCT
DROP INLET ON LT.
WITH 4' EXTENSION
AND 18" X 6' PIPE OUTLET
DROP INLET H = 2'-10"
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III)(TYPE 3) = 6 LIN. FT.
18" SLPCCS PIPE (TYPE 2) = 6 LIN. FT.
18" HDPE PIPE (TYPE 2) = 6 LIN. FT.
18" PVC PIPE (TYPE 2) = 6 LIN. FT
18" PPL PIPE (TYPE 2) = 6 LIN. FT

STA. 110+54 CONSTRUCT
DROP INLET ON LT.
IN TOP OF BOX CULVERT
DROP INLET H = 3'-3"
TYPE C DROP INLET = 4' X 3'

STA. 110+55.00 TO STA. 110+90.00 ON LT.
CONC. DITCH PAVING (TYPE B) = 24.58 SQ. YD.

WHEELCHAIR RAMPS

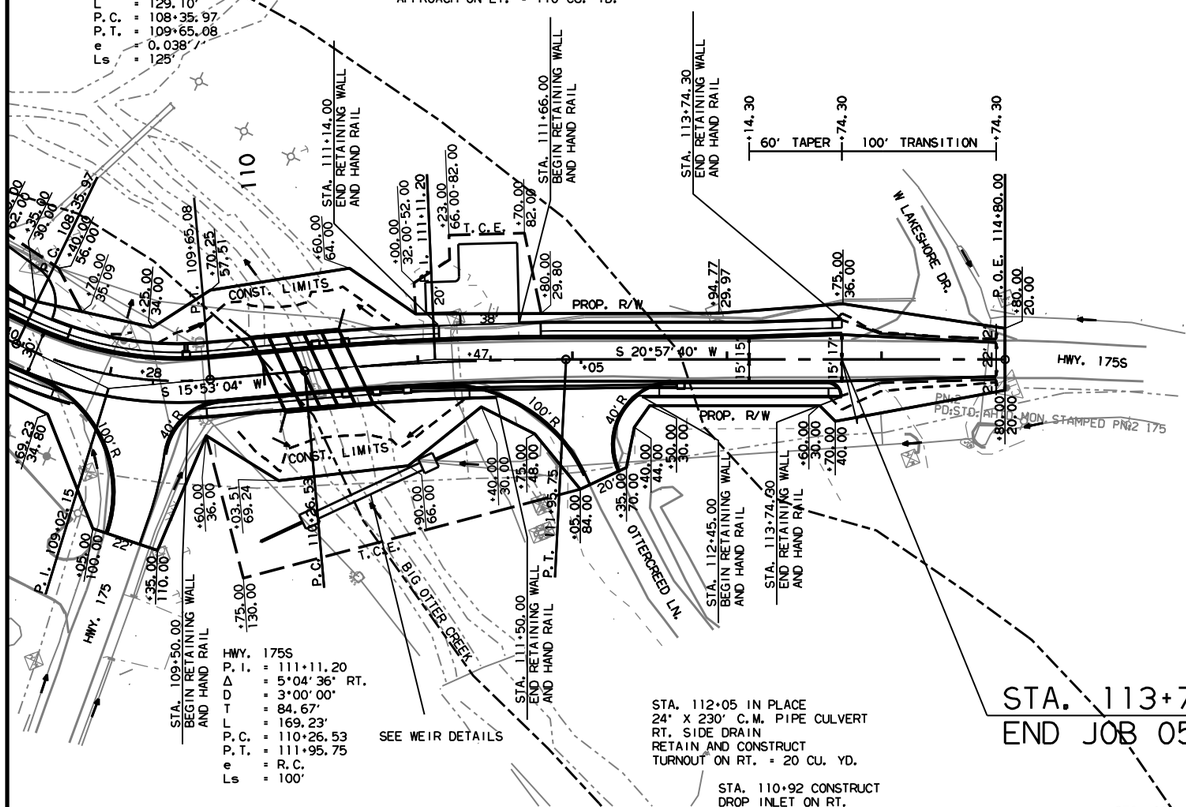
STA.	LOCATION	TYPE	SQ. YDS.
99+35	RT.	3	3.4
99+37	LT.	3	4.0
101+88	RT.	3	6.2
102+61	RT.	3	6.2
105+20	RT.	3	6.0
105+95	RT.	3	3.4
106+07	RT.	3	3.4
106+24	RT.	3	3.3
108+76	RT.	3	5.2
109+55	RT.	3	5.7
111+43	RT.	3	7.7
112+49	RT.	3	5.9
113+69	RT.	3	4.0
113+71	LT.	3	3.4

STA. 109+30.00 TO STA. 109+80.00 ON LT.
CONC. DITCH PAVING (TYPE B) = 35.11 SQ. YD.

STA. 110+35 CONSTRUCT
DROP INLET ON LT.
WITH 4' EXTENSION
IN TOP OF BOX CULVERT
DROP INLET H = 3'-4"
TYPE C DROP INLET = 4' X 3'

HWY. 175S
P.I. = 109+02.15
Δ = 30°59'06" LT.
D = 24°00'00"
T = 66.17'
L = 129.10'
P.C. = 108+35.97
P.T. = 109+65.08
e = 0.038'
Ls = 125'

STA. 111+47 CONSTRUCT
APPROACH ON LT. = 110 CU. YD.



HWY. 175S
P.I. = 111+11.20
Δ = 5°04'36" RT.
D = 3°00'00"
T = 84.67'
L = 169.23'
P.C. = 110+26.53
P.T. = 111+95.75
e = R.C.
Ls = 100'

SEE WEIR DETAILS

STA. 113+74.30
END JOB 050171

STA. 112+05 IN PLACE
24" X 230' C.M. PIPE CULVERT
RT. SIDE DRAIN
RETAIN AND CONSTRUCT
TURNOUT ON RT. = 20 CU. YD.

STA. 110+92 CONSTRUCT
DROP INLET ON RT.
AND 18" X 16' PIPE OUTLET
CONNECT TO DROP INLET @ STA. 110+72
DROP INLET H = 4'-9"
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III)(TYPE 3) = 16 LIN. FT.
18" SLPCCS PIPE (TYPE 2) = 16 LIN. FT.
18" HDPE PIPE (TYPE 2) = 16 LIN. FT.
18" PVC PIPE (TYPE 2) = 16 LIN. FT
18" PPL PIPE (TYPE 2) = 16 LIN. FT

STA. 114+68 IN PLACE
24" X 69' R.C. PIPE CULVERT
WITH HDWL. RT.
RETAIN

STA. 109+28 CONSTRUCT
TURNOUT ON RT. = 10 CU. YD. EXCAVATION

STA. 109+75.00 TO STA. 110+05.00 ON RT.
CONC. DITCH PAVING (TYPE B) = 21.07 SQ. YD.

STA. 110+52 CONSTRUCT
DROP INLET ON RT.
IN TOP OF BOX CULVERT
DROP INLET H = 2'-10"
TYPE C DROP INLET = 4' X 3'

STA. 110+85.00 TO STA. 111+30.00 ON RT.
CONC. DITCH PAVING (TYPE B) = 31.60 SQ. YD.

FLOOD PLAIN BOUNDARY

FLOOD PLAIN BOUNDARY

STA. 110+31 IN PLACE
DBL. 24" X 31' R.C. PIPE CULVERT
REMOVE AND CONSTRUCT
QUINT. 10' X 5' X 54' R.C. BOX
ON 20° RT. FWD. SKEW
WITH 3:1 WINGS LT. AND RT.
Q25 = 1900 CFS; D.A. = 5.64 SQ. MI.
SPAN = 53'-8"

STA. 110+72 CONSTRUCT
DROP INLET ON RT.
AND 18" X 4' PIPE OUTLET
CONNECT TO BOX CULVERT @ STA. 110+31
DROP INLET H = 5'-1"
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III)(TYPE 3) = 4 LIN. FT.
18" SLPCCS PIPE (TYPE 2) = 4 LIN. FT.
18" HDPE PIPE (TYPE 2) = 4 LIN. FT.
18" PVC PIPE (TYPE 2) = 4 LIN. FT
18" PPL PIPE (TYPE 2) = 4 LIN. FT

STA. 112+70 CONSTRUCT
DROP INLET ON RT.
WITH 4' EXTENSION
AND 18" X 174' PIPE OUTLET
CONNECT TO DROP INLET @ STA. 110+92
DROP INLET H = 5'-0"
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III)(TYPE 3) = 174 LIN. FT.
18" SLPCCS PIPE (TYPE 2) = 174 LIN. FT.
18" HDPE PIPE (TYPE 2) = 174 LIN. FT.
18" PVC PIPE (TYPE 2) = 174 LIN. FT
18" PPL PIPE (TYPE 2) = 174 LIN. FT

HWY. 175S

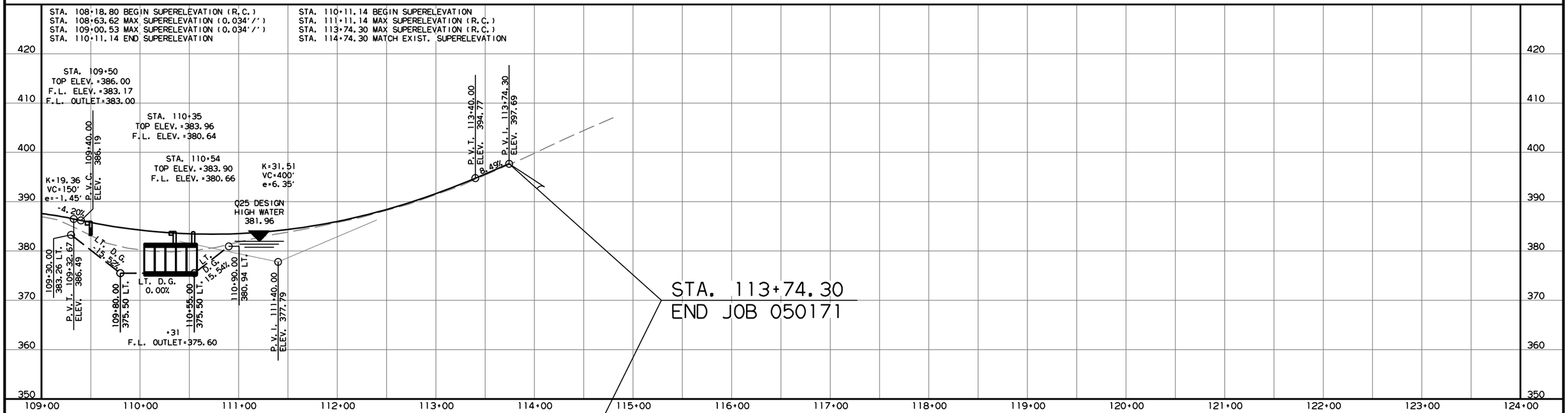
JY43338 2/16/2023
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	44	66
		PLAN AND PROFILE SHEETS				

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

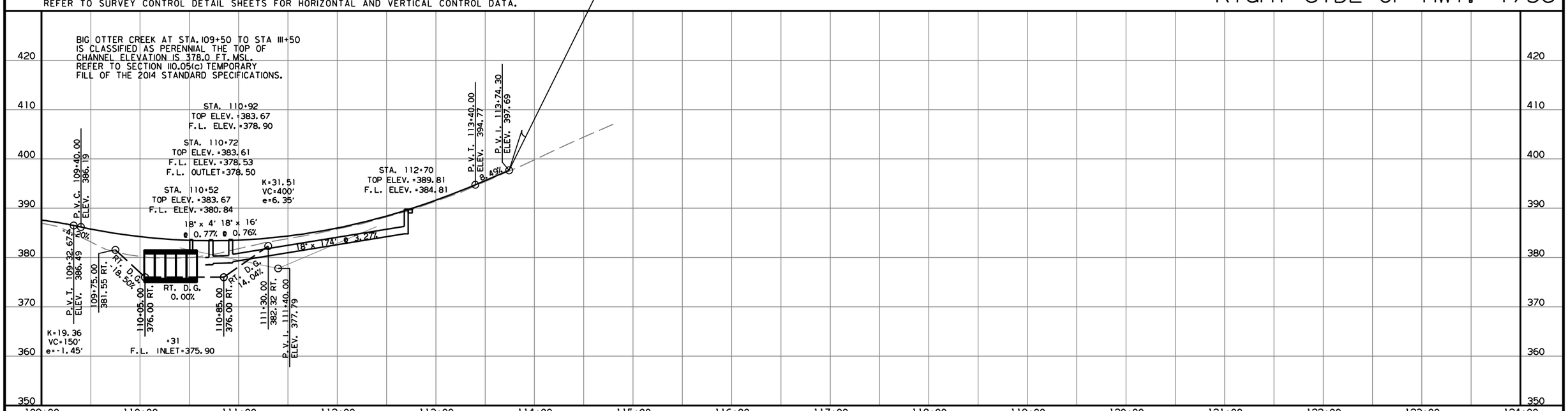
09-22-2023

LEFT SIDE OF HWY. 175S



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

RIGHT SIDE OF HWY. 175S



JY43338 2/16/2023
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
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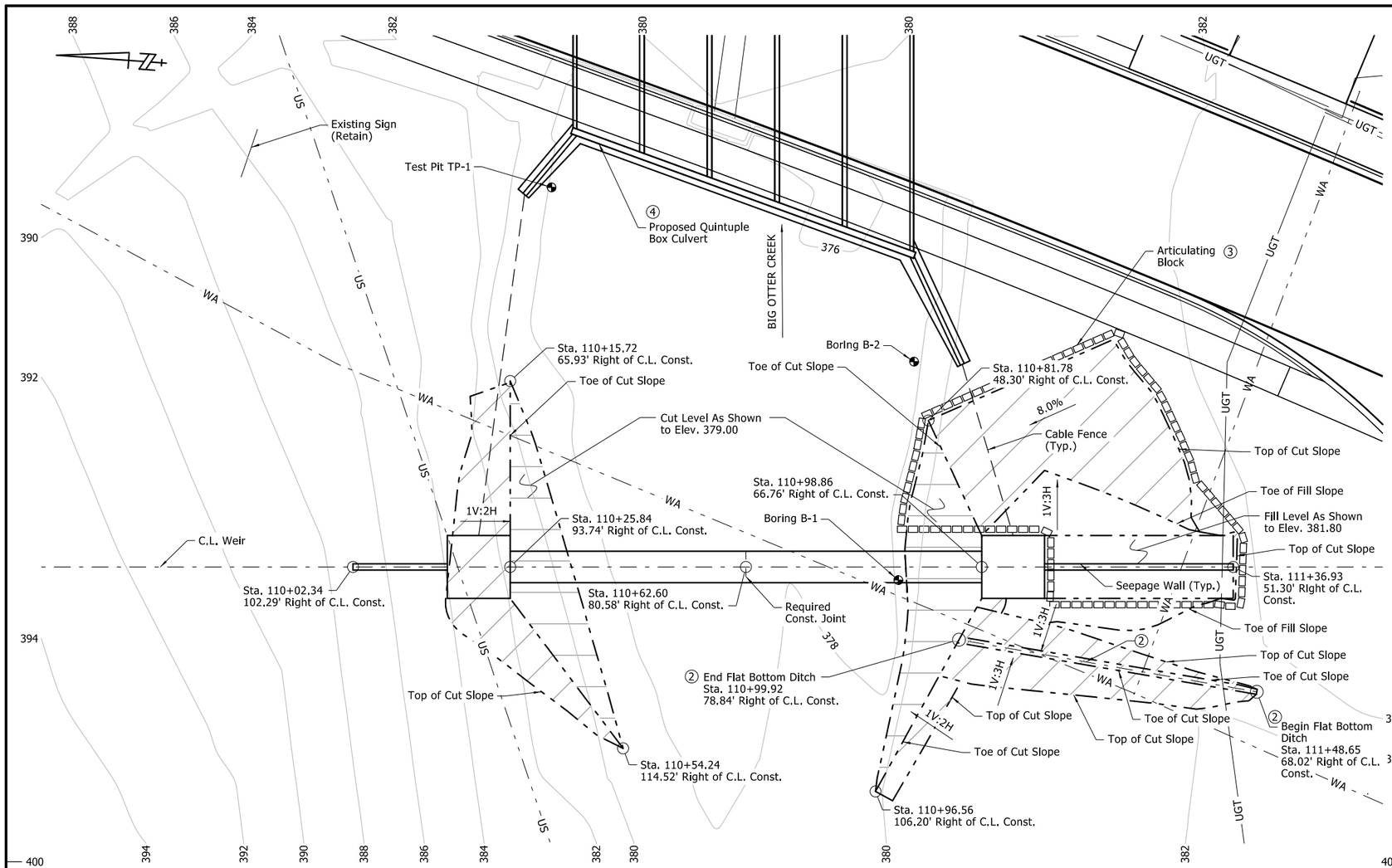
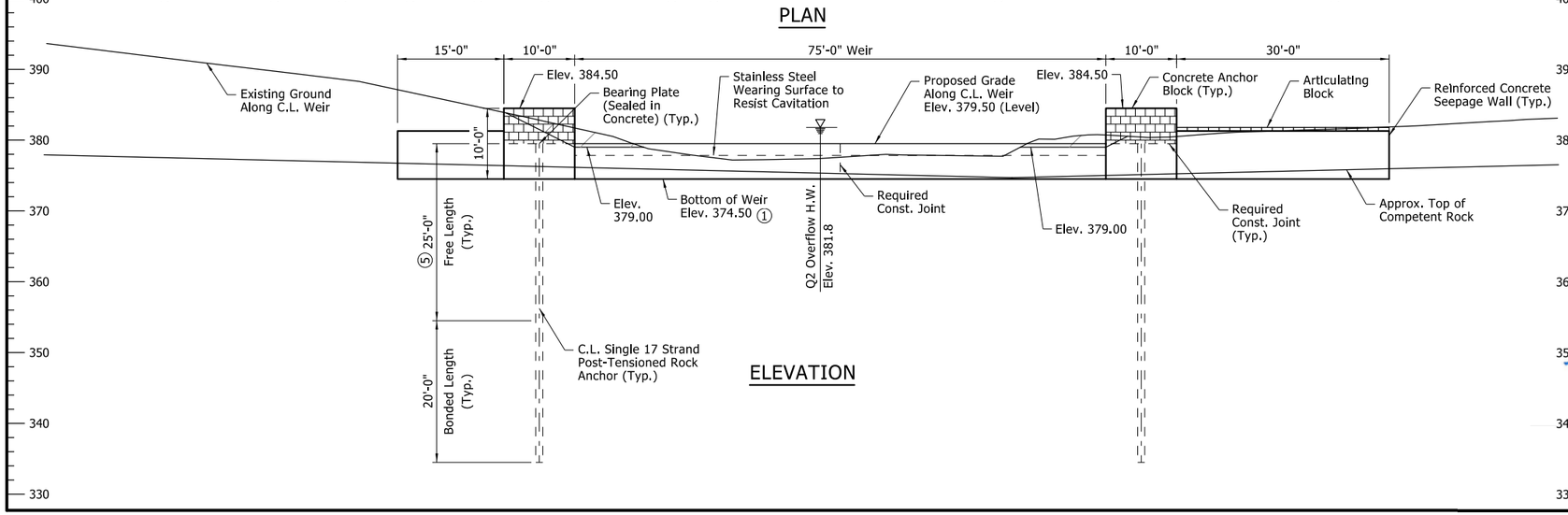
		- LAYOUT -				



PLAN



ELEVATION

GENERAL NOTES

BENCH MARK: Vertical Control Data are shown on the Survey Control Data Sheets.

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

DESIGN SPECIFICATIONS:
USACE Engineer Manual 1110-2-2100 Stability Analysis of Concrete Structures
USACE Engineer Manual 1110-2-2104 Strength Design for Reinforced Concrete Structures
USACE Engineer Manual 1110-1-2908 Rock Foundations
USACE Engineer Manual 1110-2-6053 Earthquake Design and Evaluation of Concrete Hydraulic Structures
ACI 318-19 Building Code Requirements for Structural Concrete (2019)
ACI 350-06 Code Requirements for Environmental Concrete Structures (2006)

SEISMIC EFFECTIVE PEAK ACCELERATION: EPGA = 0.05

MATERIALS AND STRENGTHS:

Class S Concrete (Roadway)	f'c = 4,500 psi
Articulating Block	f'c = 4,000 psi
Reinforcing Steel (AASHTO M 31 or M 322, Type A, Gr. 60)	fy = 60,000 psi
Structural Steel (ASTM A709, Gr. 50)	fy = 50,000 psi
Structural Steel (ASTM A709, Gr. 36)	fy = 36,000 psi
Prestressing Strands (AASHTO M 203, Gr. 270)	fpu = 270,000 psi
Stainless Steel (ASTM A240, Gr. 316)	fy = 30,000 psi

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

WEIR FOOTING: Footing shall be set a minimum of 1'-0" into material designated as dolomite on the boring legend. Excavations shall be made to neat lines of the concrete footings. Care shall be exercised to avoid shattering of the rock faces by excessive blasting. Concrete in footing shall be poured directly against excavated surfaces of rock. Excavations shall be backfilled with grout

PERMANENT GROUND ANCHORS: Furnish and install all hardware, components, strands and grout in accordance with SP Job No. 050171 "PERMANENT GROUND ANCHORS".

TEXTURED COATING FINISH: Class 3 Textured Coating Finish shall be applied to the portions of the concrete anchor block above the required construction joint in accordance with Subsection 802.19(b)(3).

DETAIL DRAWINGS:	SHEET NO(S).
Reinforced Concrete Weir	4 - 8
Cable Fence	9

MAINTENANCE OF TRAFFIC: See Roadway Plans.

EXISTING UTILITIES LEGEND

UGT = Underground Cable
US = Sanitary Sewer
WA = Water Line

NOTE:
Utilities shown are based on locations at time of survey and do not reflect any potential utility relocations prior to construction.

NOTES:
For "ELEVATION OF SOIL BORINGS", see Sheet No. 3.

Elevations shown are actual elevations at C.L. Weir.

The Contractor shall excavate the existing ground as shown. Approx. 48 cubic yards of excavation.

For R/W Data see Roadway Plans.

① Footing shall be set a minimum of 1'-0" into material designated as dolomite on the boring legend. Maximum clear distance without additional reinforcement is 12". See "BORING LEGEND" on Sheet No. 3.

② C.L. 2 foot flat bottom ditch. Begin Elev. 381.50. End Elev. 379.00.

③ Furnish and install Articulating Block per SP Job No. 050171 "ARTICULATING BLOCK".

④ For details of grading near box culvert inlet, see Roadway Plans.

⑤ Minimum free length is based on global stability analysis. Actual free length will vary depending on bonding material used for design and depth of material encountered during construction.

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	FEET
Overflow	2	880	381.8
Design	25	1,900	383.0
Base	100	2,460	383.8
Extreme	500	3,130	384.6

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No.19121 TIMOTHY CRAIG BARNETT JR.

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SHEET 1 OF 2
LAYOUT OF WEIR
BIG OTTER CREEK
HWY. 175 & HWY. 175S STRS. & APPRS.
(CHEROKEE VILLAGE) (S)
SHARP COUNTY
ROUTE 175S SECTION 2S

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: JPC	DATE: DEC. 2021	FILENAME: b050171_l1.dgn		
CHECKED BY: TCB	DATE: FEB. 2023			
DESIGNED BY: AH	DATE: DEC. 2021	SCALE: 1"=10'		

JUCARNEY 8/23/2023

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
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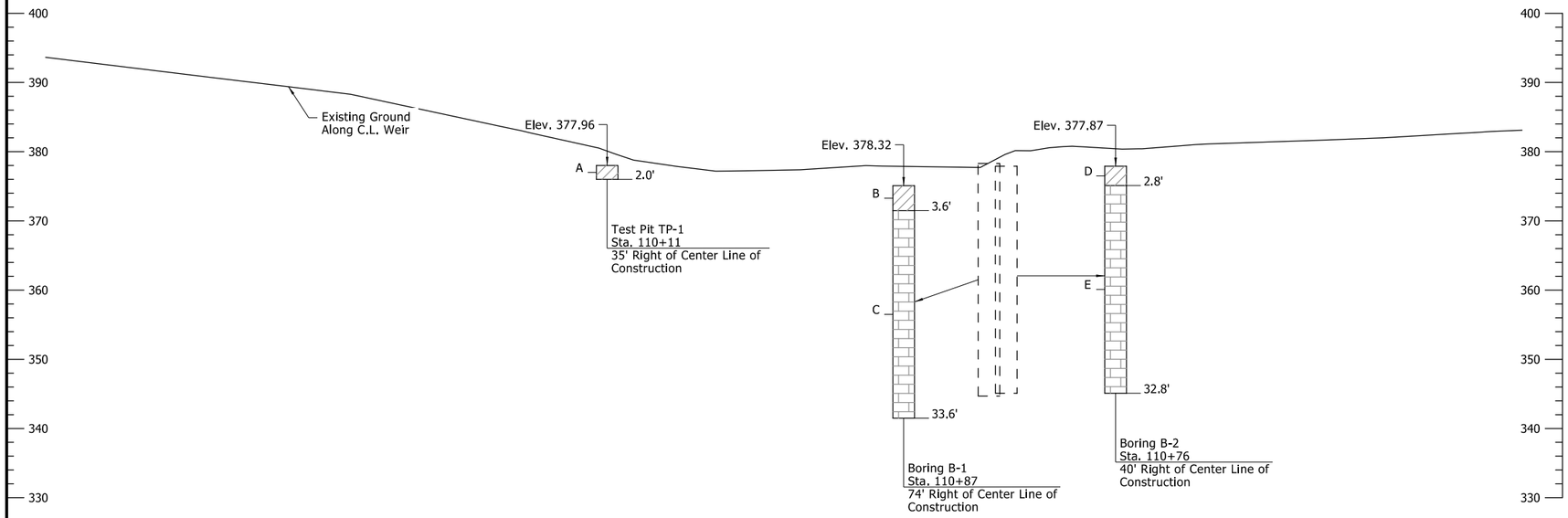

ELEVATION OF SOIL BORINGS

Scale: 1" = 10'

BORING LEGEND

A- CLAYEY SAND WITH GRAVEL, (SC) brown, moist, loose
B- CLAYEY SAND WITH GRAVEL, (SC) brown, moist, very loose to hard, with organics, little rock fragments, little silt
C- DOLOMITE, slightly weathered to unweathered, very light gray to gray, hard to very hard, moist - Quartz seam from 26.3' to 26.4' - Quartz seam from 31.4' to 31.7'
D- CLAYEY SAND WITH GRAVEL, (SC) dark brown to brown, moist, very loose to very dense, with organics, some silt
E- DOLOMITE, moderately weathered to unweathered, light gray to gray, hard to very hard, moist - Quartz seam from 32.4' to 32.5'

"N" VALUES

Boring No. B-1
Sta. 110+87 - 74' Right of Center Line of Construction

1.5 - 2.5 N=3
3.6 - 3.7 N=50/1"

Boring No. B-2
Sta. 110+76 - 40' Right of Center Line of Construction

1.5 - 2.5 N=3
2.8 - 2.8 N=50/0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.19121
TIMOTHY CRAIG BARNETT JR.

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SHEET 2 OF 2
LAYOUT OF WEIR
BIG OTTER CREEK
HWY. 175 & HWY. 175S STRS. & APPRS.
(CHEROKEE VILLAGE) (S)
SHARP COUNTY
ROUTE 175S SECTION 2S
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY:	JPC	DATE:	DEC. 2021	FILENAME:	b050171_l1.dgn
CHECKED BY:	TCB	DATE:	FEB. 2023		
DESIGNED BY:	AH	DATE:	DEC. 2021	SCALE:	1"=10'

JUCARNEY 8/23/2023

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
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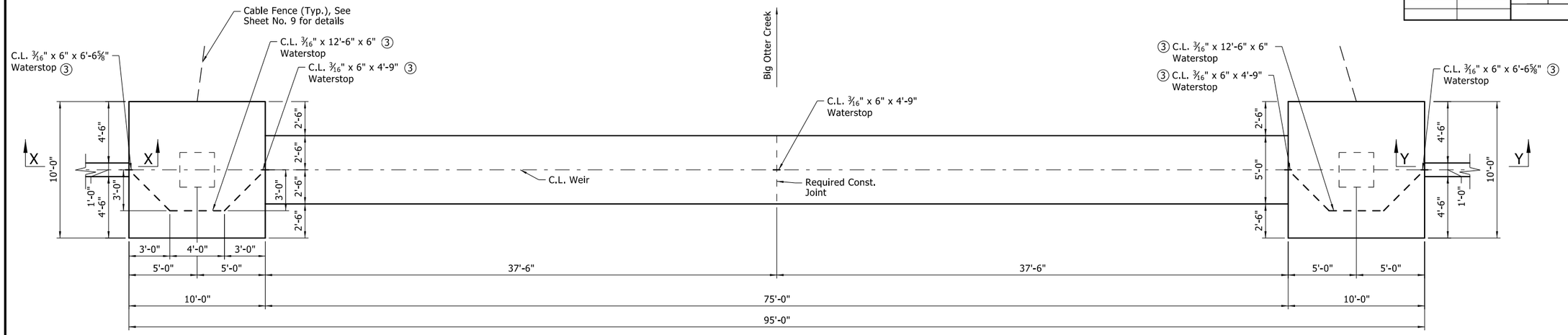


PLAN

③ Install form work to accommodate waterstop material. Install waterstops to form a continuous diaphragm in each joint. Make adequate provisions to support and protect waterstops during progress of work.

All waterstops should be at a minimum 3/16" in thickness and 6" in length. Waterstops should be ribbed with a center bulb.

Minimize number of splices in waterstop. Splice waterstops in accordance with manufacturer's written instructions. The spliced area, when cooled, must show no signs of separation, holes, or other imperfections when bent by hand.

Plastic waterstops shall be made of polyvinyl chloride (PVC) plastic. Plastic waterstops shall conform to the requirements designated in the latest edition of the Corp of Engineers Specifications for Polyvinyl chloride Waterstops CRD-C572.

All costs of labor, materials, and incidentals to fabricate and install Waterstops shall not be paid for directly but will be considered subsidiary to the item "Class S Concrete-Roadway".

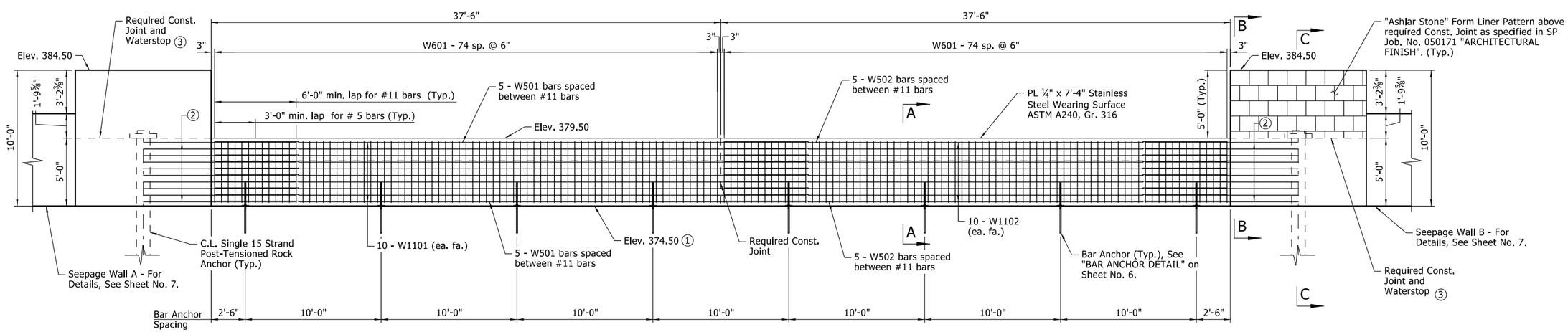
Notes:
Pay limits for "UNCLASSIFIED EXCAVATION FOR STRUCTURES - ROADWAY" shall extend horizontally 4" from all external faces of the weir, anchor blocks, and seepage walls and vertically from the plan bottom of weir, anchor block, or seepage wall elevations to existing ground.

For "SECTION A-A" and "BAR LIST", see Sheet No. 6.

For "GENERAL NOTES" and "SECTION C-C", see Sheet No. 8.

For "SECTION B-B", see Sheet No. 5.

For "SECTION X-X" and "SECTION Y-Y", see Sheet No. 7.



ELEVATION

(Looking downstream)

① Footing shall be set a minimum of 1'-0" into material designated as dolomite on the boring legend. Maximum clear distance without additional reinforcement is 12". See "BORING LEGEND" on Sheet No. 3.

② For details of bars embedded in Concrete Anchor Blocks, See Sheet No. 5.

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No.19121 TIMOTHY CRAIG BARNETT JR.

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PRINT DATE: 8/23/2023

SHEET 1 OF 5
DETAILS OF REINFORCED CONCRETE WEIR CROSSING BIG OTTER CREEK

ROUTE SECTION

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: JPC	DATE: FEB. 2022	FILENAME: b050171_w1.dgn		
CHECKED BY: TCB	DATE: FEB. 2023			
DESIGNED BY: SMS	DATE: FEB. 2022	SCALE: 3/8" = 1'-0"		

8/23/2023

JUCARNEY

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
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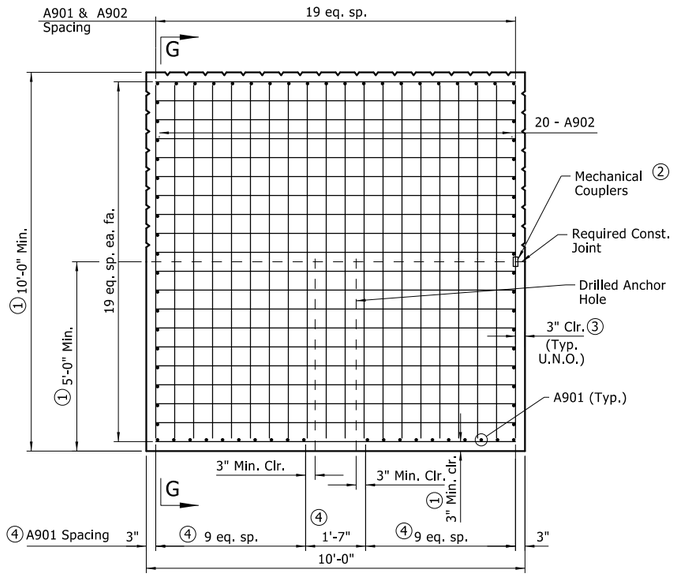
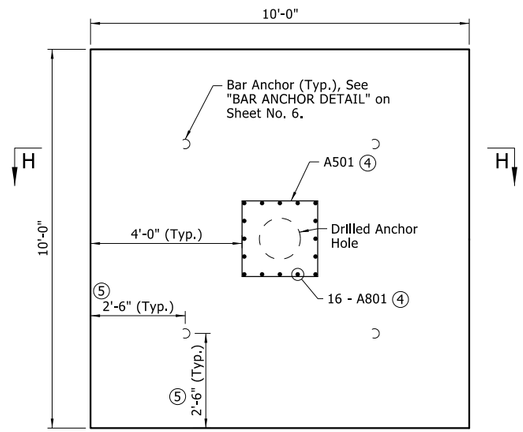
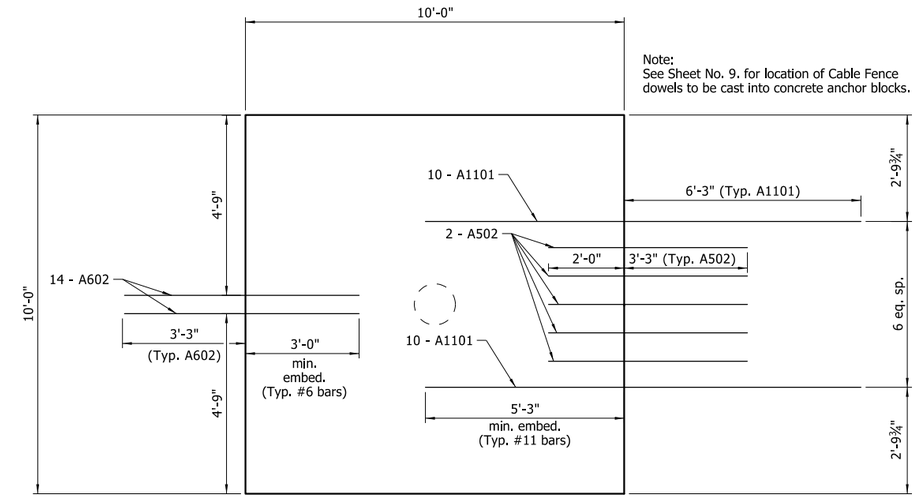


SECTION B-B



PLAN - ANCHOR HOLE REINFORCEMENT AND ANCHOR BLOCK BAR ANCHORS

⑤ Bar Anchor dimensions are to center of Bar Anchor.



PLAN - EMBEDDED WEIR AND SEEPAGE WALL REINFORCEMENT

(Shown at LT. Anchor Block Looking Downstream, Similar for RT. Anchor Block)

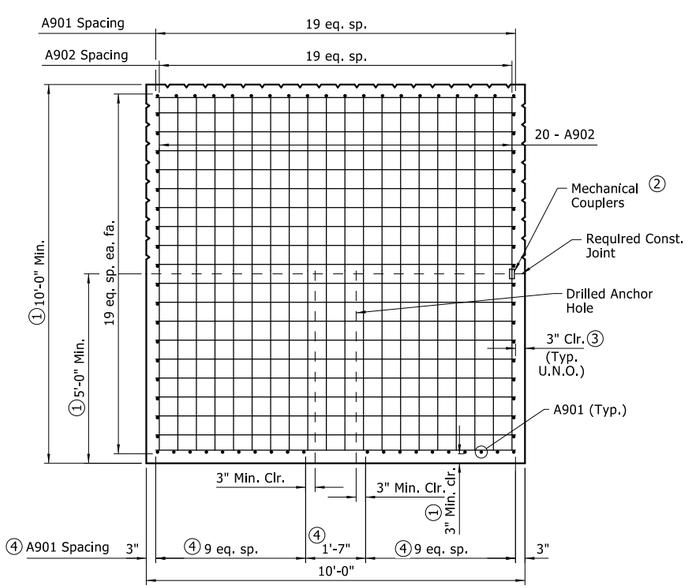
① Footing shall be set a minimum of 1'-0" into material designated as dolomite on the boring legend. Maximum clear distance without additional reinforcement is 12". See "BORING LEGEND" on Sheet No. 3.

② At no additional cost to the Department, A902 bars may be replaced by two separate #9 bars connected at the construction joint by mechanical couplers at locations as determined by the contractor and approved by the Engineer. Mechanical couplers shall be from the Qualified Products List, shall maintain clearances shown, and no additional payment will be made for the utilization of mechanical couplers. The couplers shall develop at least 125% of the specified yield strength of the bar.

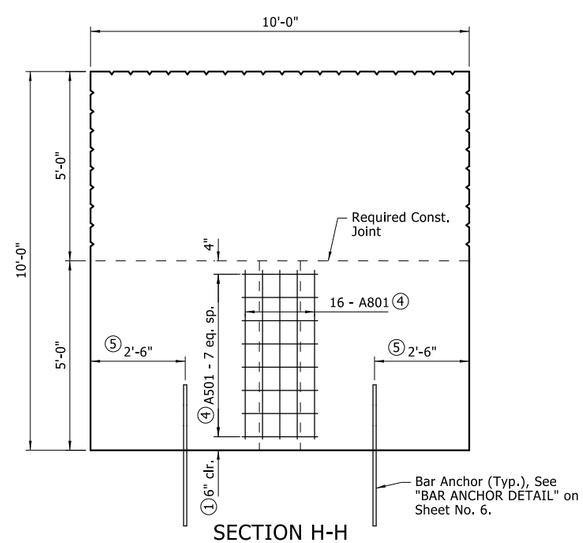
③ Form liner recesses shall be a maximum of 1" to provide a minimum clearance of 2". See SP Job No. 050171 "ARCHITECTURAL FINISH".

④ Bottom Mat and Ancohor Hole reinforcement may be modified to accommodate varying anchor hole diameters with approval of the Engineer. Quantity and diameter of bars shall be as shown on the plans.

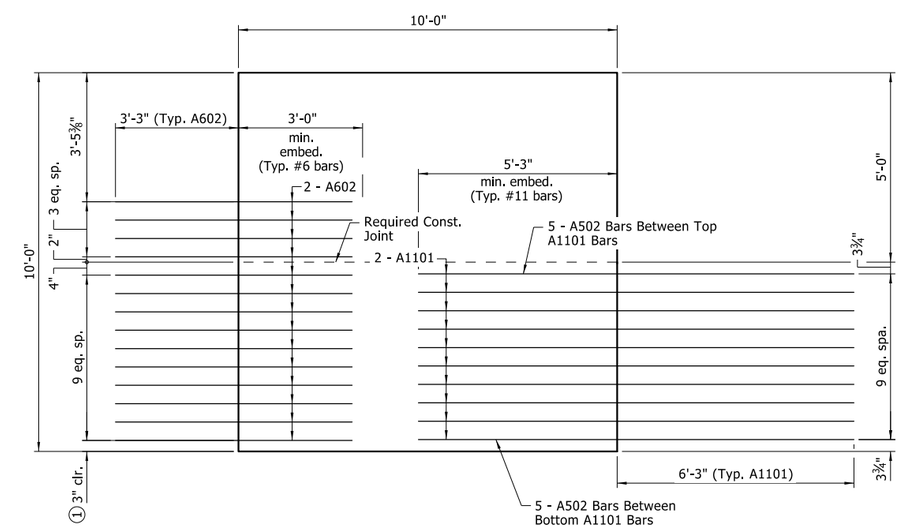
Notes:
For "BAR LIST", see Sheet No. 6.



SECTION G-G



SECTION H-H



ELEVATION - EMBEDDED WEIR AND SEEPAGE WALL REINFORCEMENT

(Shown at LT. Anchor Block Looking Downstream, Similar for RT. Anchor Block)

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No.19121 TIMOTHY CRAIG BARNETT JR.

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SHEET 2 OF 5
DETAILS OF REINFORCED CONCRETE WEIR
CROSSING BIG OTTER CREEK
ROUTE SECTION

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: JPC	DATE: FEB. 2022	FILENAME: b050171_w1.dgn		
CHECKED BY: TCB	DATE: FEB. 2023			
DESIGNED BY: SMS	DATE: FEB. 2022	SCALE: ¾" = 1'-0"		

8/23/2023
JUCARNEY

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
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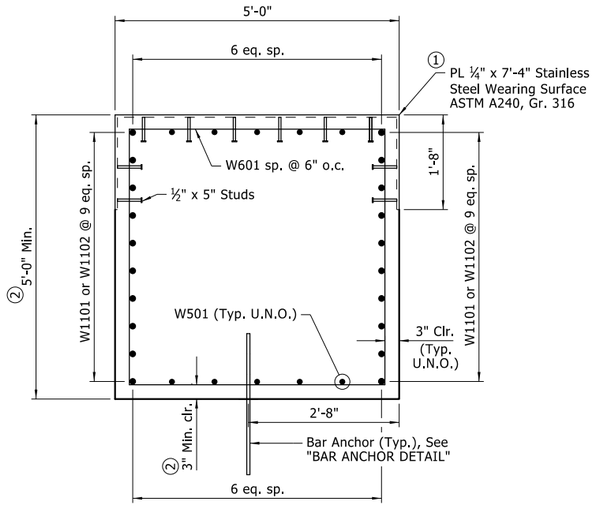
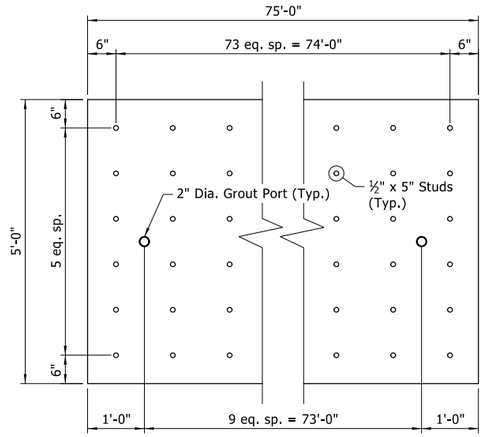


SECTION A-A

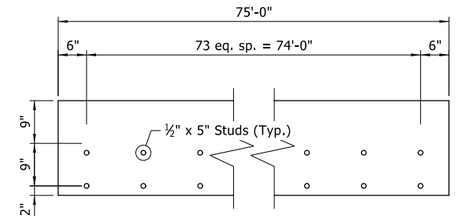
Scale: ¾" = 1'-0"



① PLAN - WEARING SURFACE PLATE

(Looking downstream)

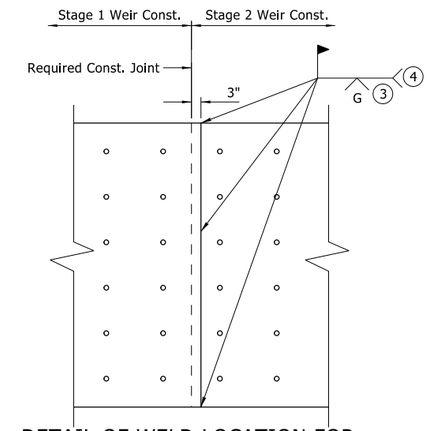
Scale: ¾" = 1'-0"



① ELEVATION - WEARING SURFACE PLATE

(Looking downstream, similar looking upstream)

Scale: ¾" = 1'-0"



DETAIL OF WELD LOCATION FOR ① WEARING SURFACE PLATE

(Looking downstream)

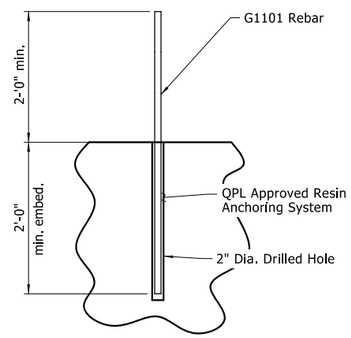
Scale: ¾" = 1'-0"

① All costs of labor, materials, and incidentals to fabricate and install Stainless Steel Wearing Surface Plates and studs shall not be paid for directly but will be considered subsidiary to the item "Class S Concrete-Roadway".

② Footing shall be set a minimum of 1'-0" into material designated as dolomite on the boring legend. Maximum clear distance without additional reinforcement is 12". See "BORING LEGEND" on Sheet No. 3.

③ Grind flush the top and faces of the wearing surface plates

④ Weld after Stage 1 Weir pour and prior to Stage 2 Weir pour.



BAR ANCHOR DETAIL

Scale: 1" = 1'-0"

Notes:
Bar Anchors shall be anchored into place using an ARDOT QPL (Qualified Product List) approved non-shrink resin anchoring system. All costs of labor, materials, and incidentals to fabricate and install the Bar Anchors shall not be paid for directly but will be considered subsidiary to the item "Class S Concrete-Roadway".

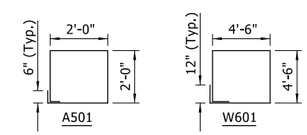
For locations and spacing of Bar Anchors, see "ELEVATION" on Sheet No. 4, and "SECTION X-X" and "SECTION Y-Y" on Sheet No. 7.

BAR LIST

MARK	NO. REQ'D	LENGTH	PIN. DIA.
A501	16	8'-6"	2½"
A502	20	5'-3"	Str.
A602	56	5'-3"	Str.
A801	32	4'-3"	Str.
A901	304	9'-6"	Str.
A902	152	9'-3"	Str.
A1101	40	11'-3"	Str.
S601	180	6'-5"	Str.
S602	28	29'-6"	Str.
S603	28	14'-6"	Str.
W501	10	40'-6"	Str.
W502	10	37'-0"	Str.
W601	150	19'-2"	4½"
W1101	20	43'-6"	Str.
W1102	20	37'-0"	Str.

BENDING DIAGRAMS

Note:
Dimensions of bars are out-to-out.



STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No.19121 TIMOTHY CRAIG BARNETT JR.

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SHEET 3 OF 5
DETAILS OF REINFORCED CONCRETE WEIR
CROSSING BIG OTTER CREEK

ROUTE SECTION

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

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CHECKED BY: TCB	DATE: FEB. 2023			
DESIGNED BY: SMS	DATE: FEB. 2022	SCALE: As Shown		

JUCARNEY 8/23/2023

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	50	66
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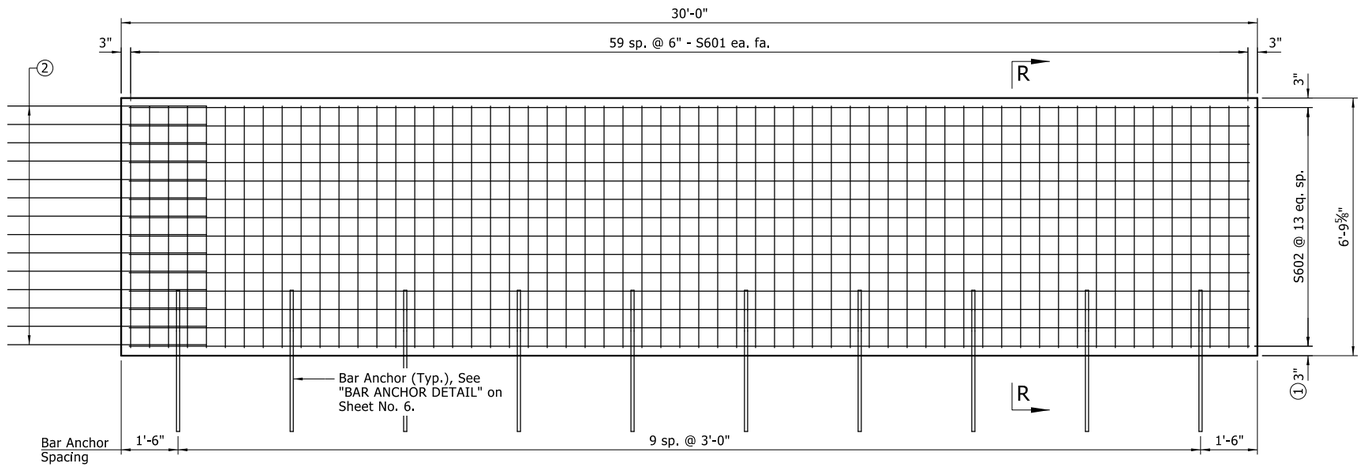
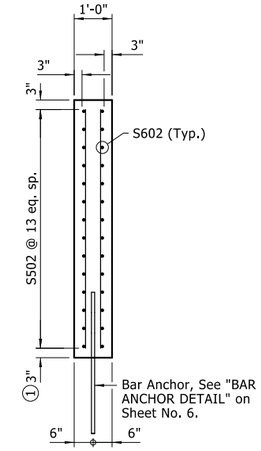
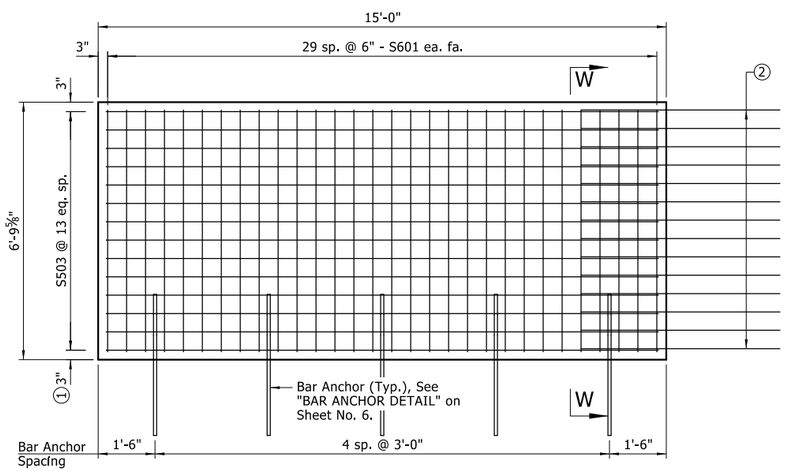


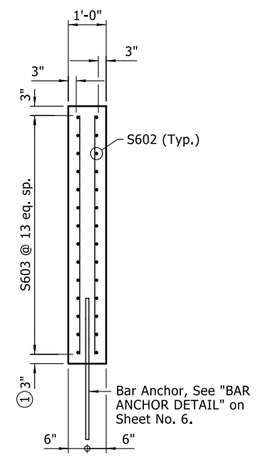
SECTION Y-Y
Seepage Wall B



SECTION R-R
Seepage Wall B



SECTION X-X
Seepage Wall A



SECTION W-W
Seepage Wall A

Notes:
For "BAR LIST", see Sheet No. 6.

1. Footing shall be set a minimum of 1'-0" into material designated as dolomite on the boring legend. Maximum clear distance without additional reinforcement is 12". See "BORING LEGEND" on Sheet No. 3.
2. For details of bars embedded in Concrete Anchor Blocks, See Sheet No. 5.

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No.19121 TIMOTHY CRAIG BARNETT JR.

Digitally Signed 08/24/2023

PRINT DATE: 8/23/2023

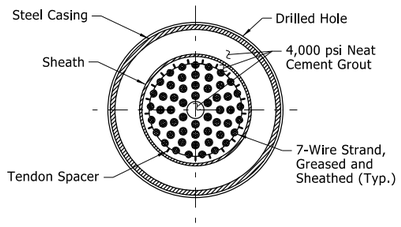
SHEET 4 OF 5
DETAILS OF REINFORCED CONCRETE WEIR
CROSSING BIG OTTER CREEK
ROUTE SECTION
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: JPC	DATE: FEB. 2022	FILENAME: b050171_w1.dgn		
CHECKED BY: TCB	DATE: FEB. 2023			
DESIGNED BY: SMS	DATE: FEB. 2022	SCALE: ¾" = 1'-0"		

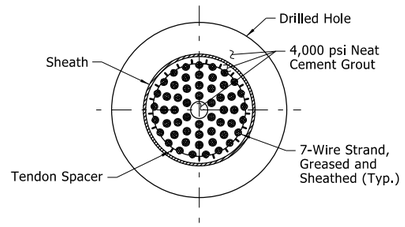
JUCARNEY 8/23/2023

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	51	66
		- WEIR -				

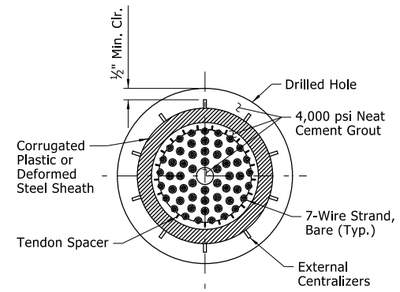
② Strand arrangement and number of strands shown is for illustrative purposes only. Actual strand arrangement will vary based on design, fabricator, and installer.



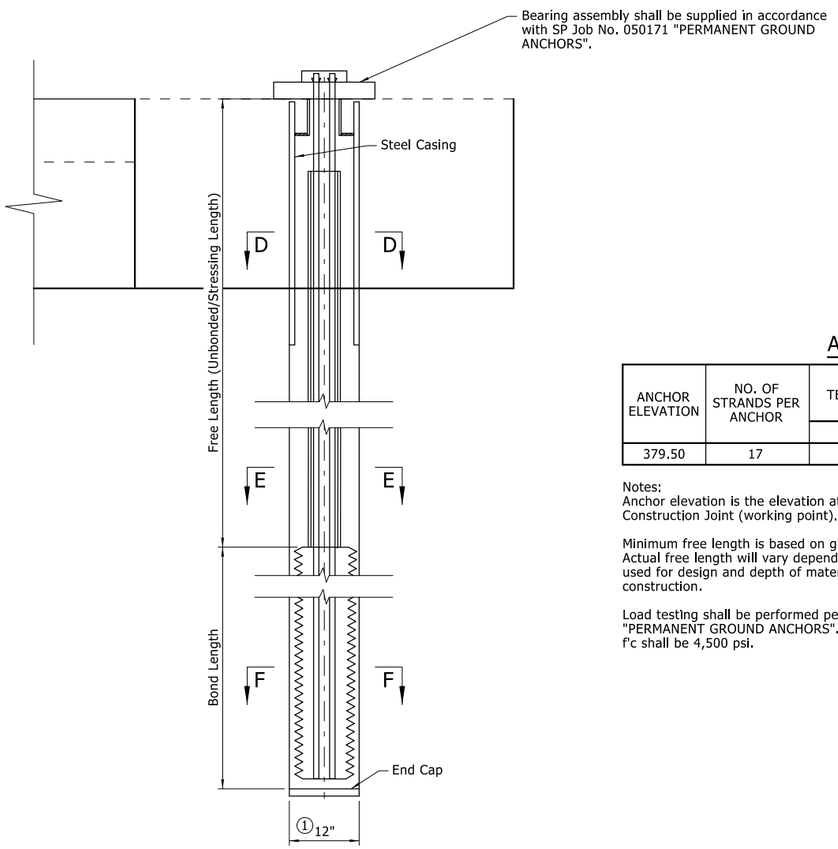
② SECTION D-D
Upper Unbonded Length
Scale: 1½" = 1'-0"



② SECTION E-E
Lower Unbonded Length
Scale: 1½" = 1'-0"



② SECTION F-F
Bonded Length
Scale: 1½" = 1'-0"



SECTION C-C
Grouted Anchor Typical Section
Scale: ½" = 1'-0"

① Anchor Diameter has been assumed for preliminary bond zone design.

ANCHOR SCHEDULE

ANCHOR ELEVATION	NO. OF STRANDS PER ANCHOR	TEST LOAD	DESIGN LOAD	MIN. ANCHOR FREE LENGTH	BOND LENGTH
		KIPS	KIPS	FEET	FEET
379.50	17	797	598	25	20

Notes:
Anchor elevation is the elevation at the Anchor Block Construction Joint (working point).

Minimum free length is based on global stability analysis. Actual free length will vary depending on bonding material used for design and depth of material encountered during construction.

Load testing shall be performed per SP Job No. 050171 "PERMANENT GROUND ANCHORS". Prior to stressing tendons, f'c shall be 4,500 psi.

GENERAL NOTES

CONCRETE: All concrete, except for cable fence footings, shall be Class S with a minimum 28 day compressive strength of f'c = 4,500 psi. Concrete shall be poured in the dry and all exposed corners shall be chamfered ¾" unless otherwise noted.

REINFORCING STEEL: All reinforcing steel shall be grade 60 conforming to AASHTO M31 or M322, Type A, with mill test reports. 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 "Reinforcing Steel - Roadway (Grade 60)".

STRUCTURAL STEEL: Structural steel shall be ASTM A709 with grade and payment as specified in the plans and specifications. Structural steel completely embedded in concrete may be ASTM A709, 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, where applicable, will be based on the shapes and materials shown in the plans, and no additional compensation will be made for any adjustments due to substitutions.

Contractor shall be responsible for the design of all anchor components. Contractor to confirm that drill hole size is adequate to accomodate post tension anchor system.

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. All welding shall conform to Subsection 807.26.

PERMANENT GROUND ANCHORS: Materials for Prestressing Steel, Grout, Steel Elements, Corrosion Protection, Bondbreaker, Spacers, Centralizers, Heat Shrinkable Sleeves, Grout Tubes, Methods of construction, Testing and Acceptance Criteria shall be in accordance with SP Job No. 050171 "PERMANENT GROUND ANCHORS".

Permanent ground anchors including design, furnishing, installing, and testing for permanent ground anchors, anchor head assemblies, labor, equipment, tools, and incidentals necessary to complete the work shall be paid for in accordance with SP Job No. 050171 "PERMANENT GROUND ANCHORS" at the contract unit price Each for "PERMANENT GROUND ANCHORS".

The contractor may submit alternate strand arrangments with design calculations for review and approval in accordance with SP Job No. 050171 "PERMANENT GROUND ANCHORS".

Drawings show general feature of Permanent Ground Anchor design only. Shop drawings shall be in accordance with SP Job No. 050171 "PERMANENT GROUND ANCHORS", submitted, and approval secured before fabrication is begun.

Anchors shall not be stressed until the compressive strength of the concrete is 4,500 psi.

CONSTRUCTION SEQUENCE:
Install necessary Dewatering, Erosion, and Pollution control measures for each construction step per SP Job No. 050171 "DIVERSION AND CARE OF WATER", prior to proceeding with the next step of construction.

Step 1: Excavate and construct bottom half of concrete anchor blocks on LT. and RT. side of the weir.
Step 2: Drill anchor hole to specified depth
Step 3: Install support plates, bearing plates, and ground anchors
Step 4: Perform load testing per SP Job No. 050171 "PERMANENT GROUND ANCHORS" and lock off anchors. Prior to stressing tendons, f'c shall be 4,500 psi.
Step 5: Construct top half of concrete anchor blocks.
Step 6: Construct concrete seepage walls on both sides of proposed weir.
Step 7: Excavate existing ground as shown on Sheet No. 2 and install Articulating Block protection as shown.
Step 8: Construct 1st Stage of weir (LT. looking downstream)
Step 9: Construct 2nd Stage of weir (RT. looking downstream)
Step 10: Install cable fence and signage.

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No.19121 TIMOTHY CRAIG BARNETT JR.

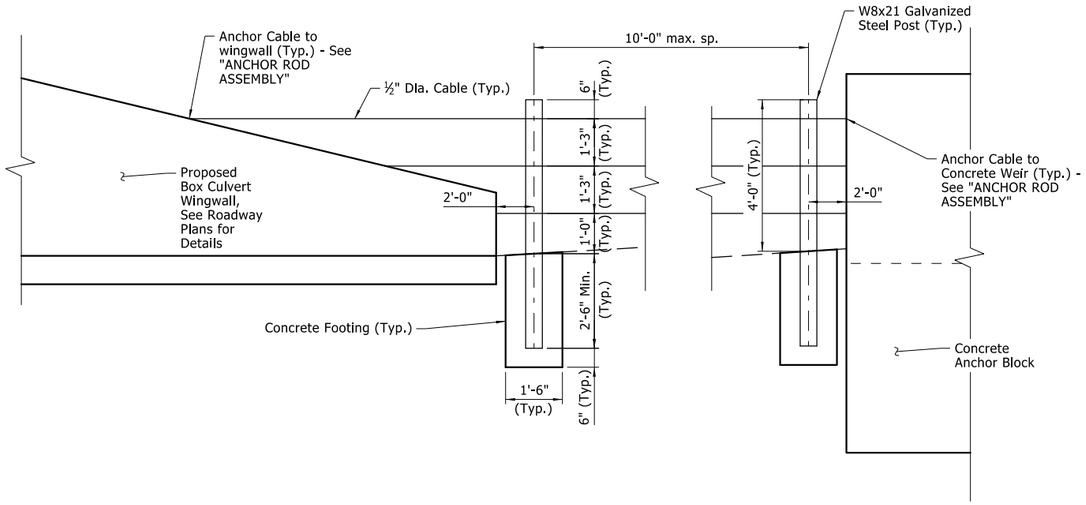
Digitally Signed 08/24/2023
PRINT DATE: 8/23/2023

SHEET 5 OF 5
DETAILS OF REINFORCED CONCRETE WEIR
CROSSING BIG OTTER CREEK
ROUTE SECTION
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: JPC	DATE: FEB. 2022	FILENAME: b050171_w1.dgn		
CHECKED BY: TCB	DATE: FEB. 2023			
DESIGNED BY: SMS	DATE: FEB. 2022	SCALE: As Shown		

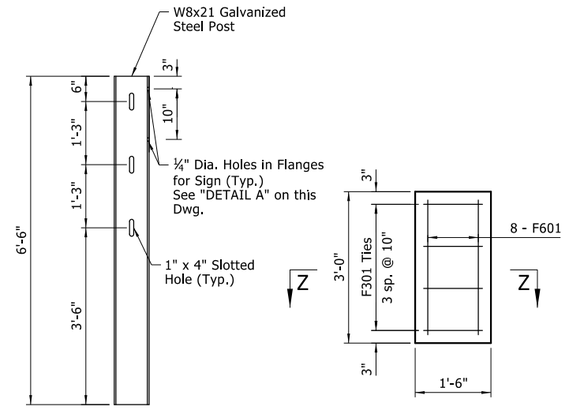
JUCARNEY 8/23/2023

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	52	66
		- CABLE FENCE -				



CABLE FENCE WITH STEEL POSTS

Scale: ¾" = 1'-0"

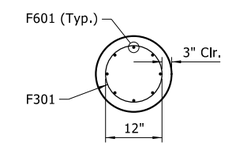


STEEL POST

Scale: 1" = 1'-0"

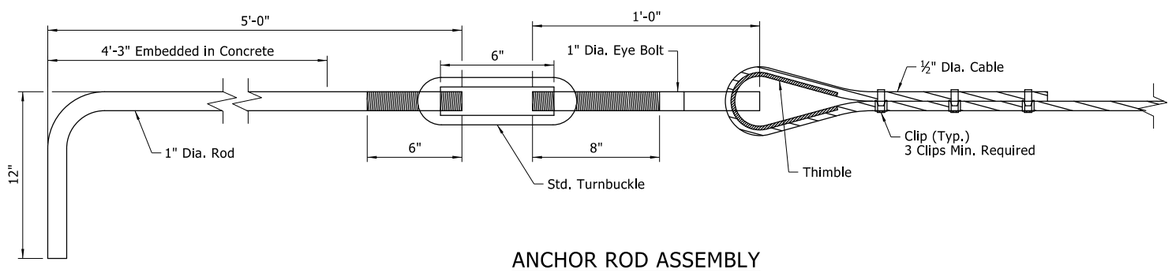
CONCRETE FOOTING

Scale: 1" = 1'-0"



SECTION Z-Z

Scale: 1" = 1'-0"

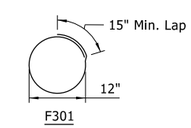


ANCHOR ROD ASSEMBLY

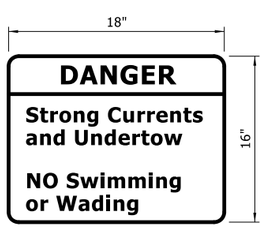
No Scale

BAR LIST - PER CABLE FENCE FOOTING

MARK	NO. REQ'D	LENGTH	PIN. DIA.	BENDING DIAGRAMS
F301	4	4'-5"	2¼"	Note: Dimensions of bars are out-to-out.
F601	8	2'-6"	Str.	



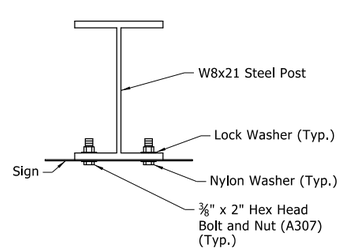
All bars in "BAR LIST - PER CABLE FENCE FOOTING" shall be subsidiary to the item "CABLE FENCE".



1.5" Radius
0.5" Border
White on Red

SIGN LAYOUT

No Scale



DETAIL A

No Scale

Notes:
A single sign shall be mounted to a steel post on both sides of Big Otter Creek with the sign faces directed away from the creek. The signs shall be mounted to the 2nd cable post downstream of the weir.

Signs shall be fabricated and installed per section 726 of the Standard Specifications.

Top of sign shall be flush with top of steel post.

All costs of labor, materials, and incidentals to fabricate and install Signs shall not be paid for directly but will be considered subsidiary to the item "CABLE FENCE".

GENERAL NOTES

Post layout shall conform to the horizontal geometry shown on the plans. Vertical alignment shall conform to the proposed grade.

Maximum post spacing = 10'-0". Minimum post spacing shall be 5'-0".

Guard cable shall not be spliced.

Concrete shall be Class S and shall have a minimum 28 day compressive strength, f'c = 3,500 psi.

Anchor Rods shall be cast into concrete Anchor Blocks as shown.

Cable Fence, Including all posts, guard cable, excavation, backfill, Class S Concrete, reinforcement, anchor rods, labor, equipment, tools, and incidentals necessary to complete the work shall be paid for in according with SP Job No. 050171 "CABLE FENCE" at the contract unit price per linear foot bid for "CABLE FENCE".

Material requirements and construction methods shall be in accordance with SP Job No. 050171 "CABLE FENCE."

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No.19121 TIMOTHY CRAIG BARNETT JR.

Digitally Signed 08/24/2023

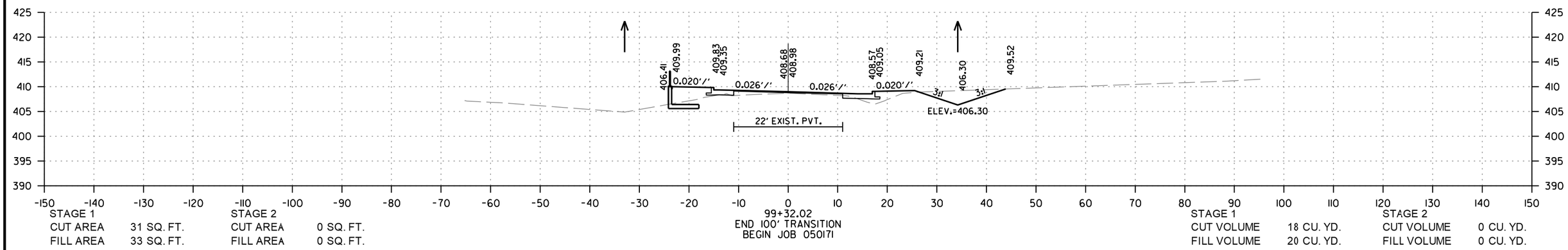
PRINT DATE: 8/23/2023

DETAILS OF CABLE FENCE
WEIR CROSSING BIG OTTER CREEK
ROUTE SECTION
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY:	JPC	DATE:	FEB. 2022	FILENAME:	b050171_w1.dgn
CHECKED BY:	TCB	DATE:	FEB. 2023		
DESIGNED BY:	SMS	DATE:	FEB. 2022	SCALE:	As Shown

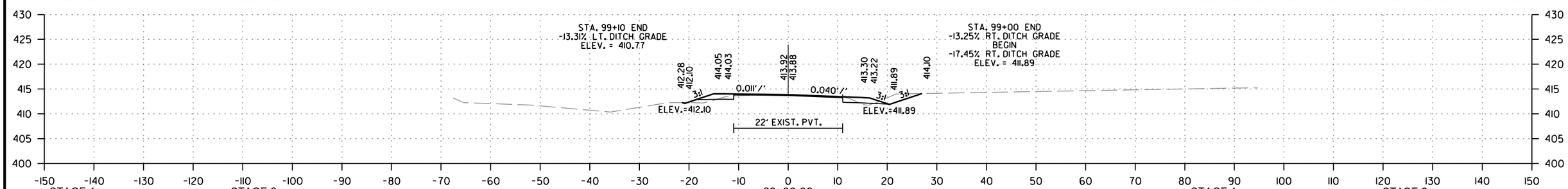
8/23/2023
JUCARNEY

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	53	66
		CROSS SECTIONS				



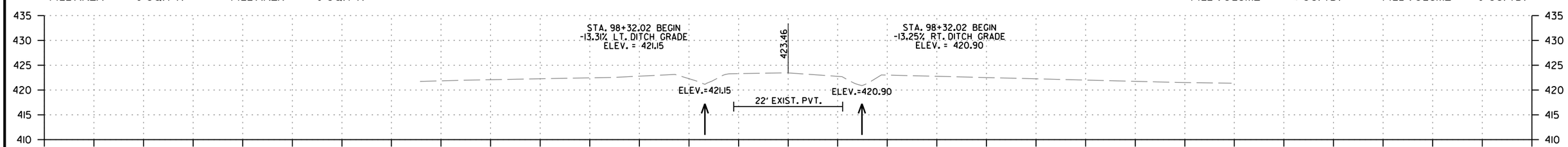
STAGE 1		STAGE 2		STAGE 1		STAGE 2	
CUT AREA	31 SQ. FT.	CUT AREA	0 SQ. FT.	CUT VOLUME	18 CU. YD.	CUT VOLUME	0 CU. YD.
FILL AREA	33 SQ. FT.	FILL AREA	0 SQ. FT.	FILL VOLUME	20 CU. YD.	FILL VOLUME	0 CU. YD.

99+32.02
END 100' TRANSITION
BEGIN JOB 050171



STAGE 1		STAGE 2		STAGE 1		STAGE 2	
CUT AREA	12 SQ. FT.	CUT AREA	0 SQ. FT.	CUT VOLUME	15 CU. YD.	CUT VOLUME	0 CU. YD.
FILL AREA	3 SQ. FT.	FILL AREA	0 SQ. FT.	FILL VOLUME	4 CU. YD.	FILL VOLUME	0 CU. YD.

99+00.00



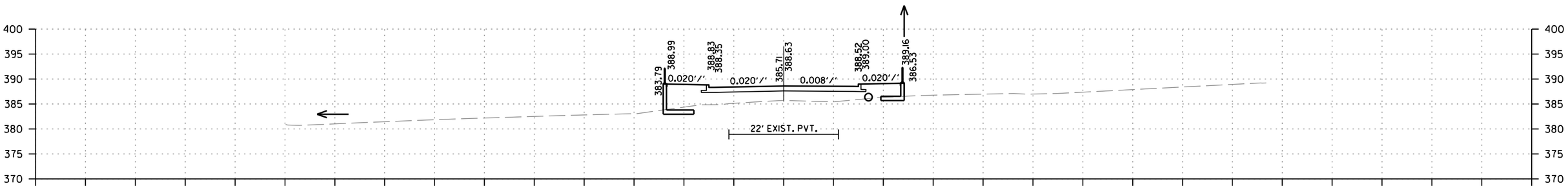
STAGE 1		STAGE 2		STAGE 1		STAGE 2	
CUT AREA	0 SQ. FT.	CUT AREA	0 SQ. FT.	CUT VOLUME	0 CU. YD.	CUT VOLUME	0 CU. YD.
FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.	FILL VOLUME	0 CU. YD.	FILL VOLUME	0 CU. YD.

98+32.02
BEGIN 100' TRANSITION

HWY. 175
STA. 98+32.02 TO STA. 99+32.02

JY43338 2/20/2023
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	54	66
		CROSS SECTIONS				

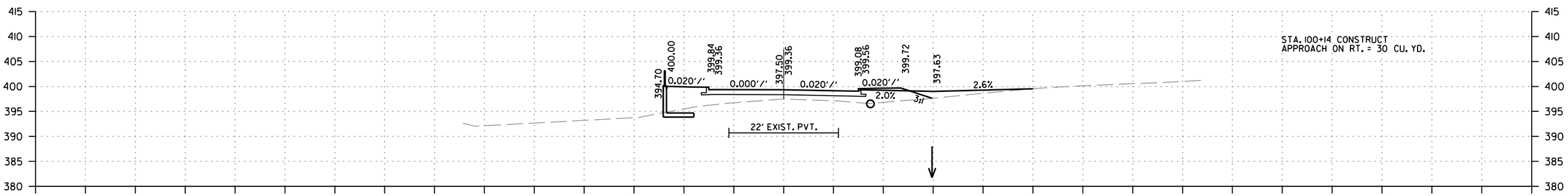


STAGE 1
CUT AREA 9 SQ. FT.
FILL AREA 122 SQ. FT.

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

STAGE 1
CUT VOLUME 26 CU. YD.
FILL VOLUME 419 CU. YD.

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

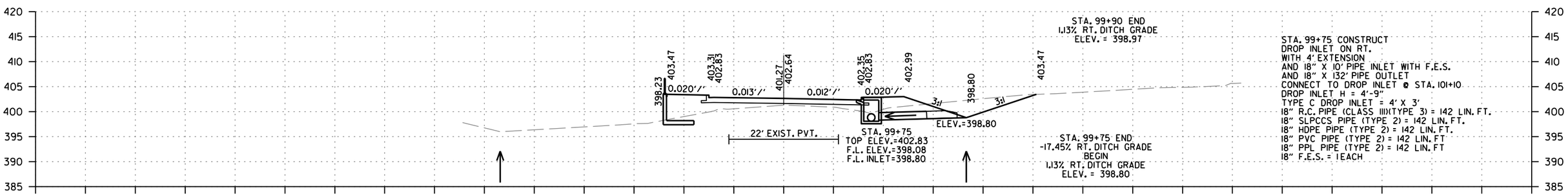


STAGE 1
CUT AREA 5 SQ. FT.
FILL AREA 104 SQ. FT.

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

STAGE 1
CUT VOLUME 23 CU. YD.
FILL VOLUME 81 CU. YD.

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



STAGE 1
CUT AREA 44 SQ. FT.
FILL AREA 70 SQ. FT.

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

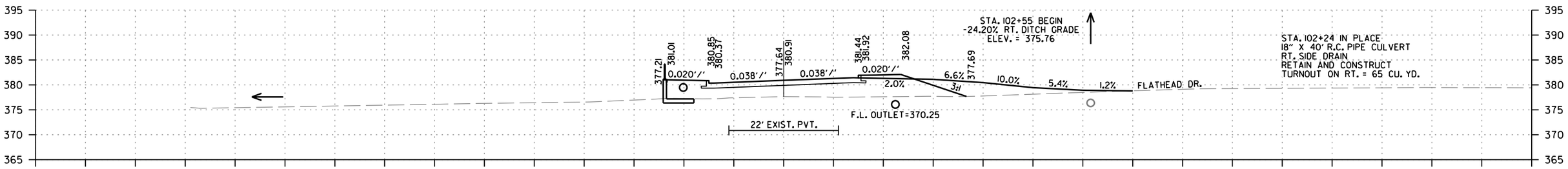
STAGE 1
CUT VOLUME 60 CU. YD.
FILL VOLUME 82 CU. YD.

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

HWY. 175
STA. 99+75 TO STA. 101+00

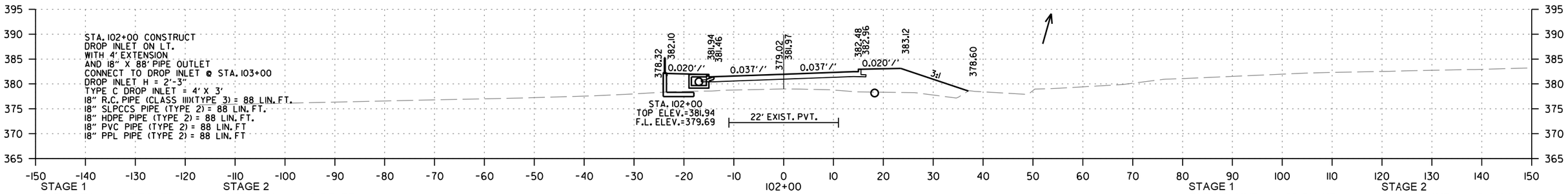
JY43338 2/20/2023
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	55	66
		CROSS SECTIONS				



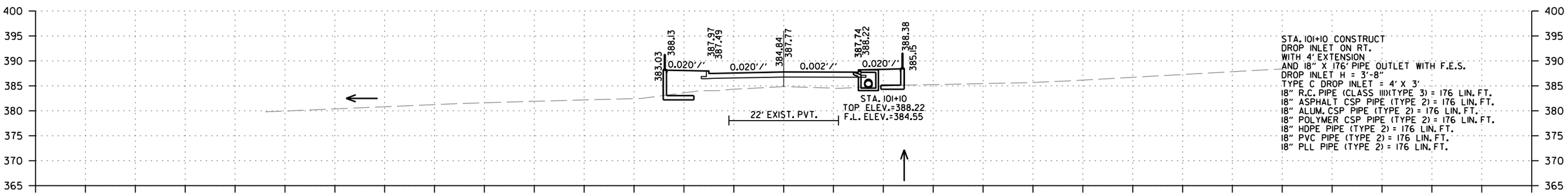
STAGE 1		STAGE 2	
CUT AREA	5 SQ. FT.	CUT AREA	0 SQ. FT.
FILL AREA	167 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	4 CU. YD.	CUT VOLUME	0 CU. YD.
FILL VOLUME	151 CU. YD.	FILL VOLUME	0 CU. YD.



STAGE 1		STAGE 2	
CUT AREA	5 SQ. FT.	CUT AREA	0 SQ. FT.
FILL AREA	172 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	23 CU. YD.	CUT VOLUME	0 CU. YD.
FILL VOLUME	470 CU. YD.	FILL VOLUME	0 CU. YD.



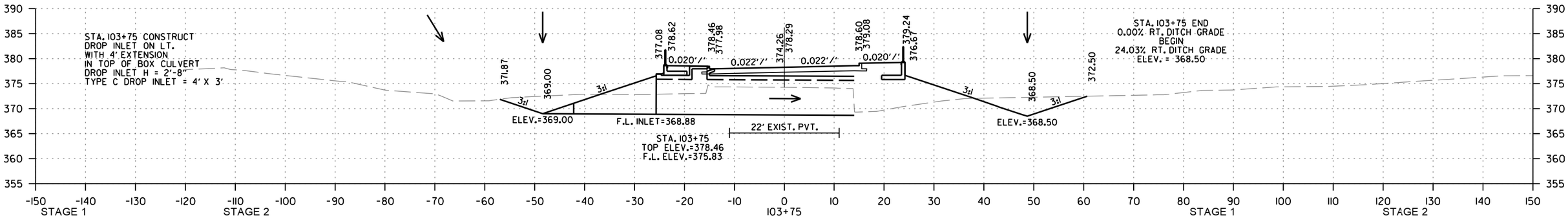
STAGE 1		STAGE 2	
CUT AREA	9 SQ. FT.	CUT AREA	0 SQ. FT.
FILL AREA	110 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	3 CU. YD.	CUT VOLUME	0 CU. YD.
FILL VOLUME	43 CU. YD.	FILL VOLUME	0 CU. YD.

HWY. 175
STA. 101+10 TO STA. 102+24

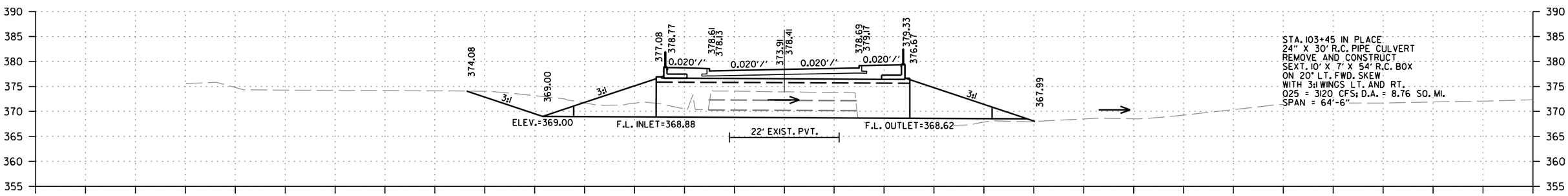
JY43338 2/20/2023
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	56	66
		CROSS SECTIONS				



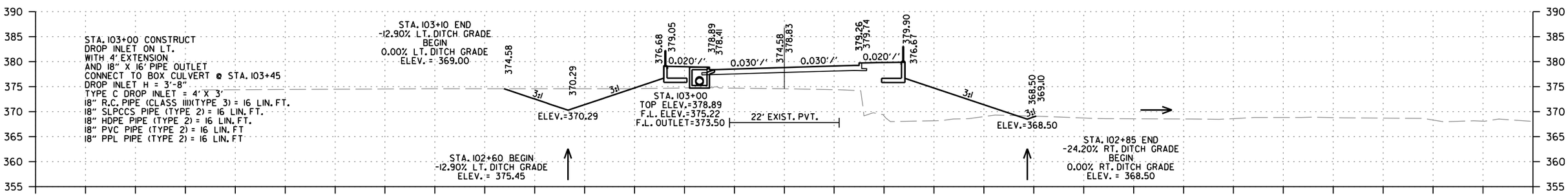
STAGE 1		STAGE 2	
CUT AREA	79 SQ. FT.	CUT AREA	0 SQ. FT.
FILL AREA	289 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	72 CU. YD.	CUT VOLUME	0 CU. YD.
FILL VOLUME	411 CU. YD.	FILL VOLUME	0 CU. YD.



STAGE 1		STAGE 2	
CUT AREA	50 SQ. FT.	CUT AREA	0 SQ. FT.
FILL AREA	450 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	89 CU. YD.	CUT VOLUME	0 CU. YD.
FILL VOLUME	643 CU. YD.	FILL VOLUME	0 CU. YD.



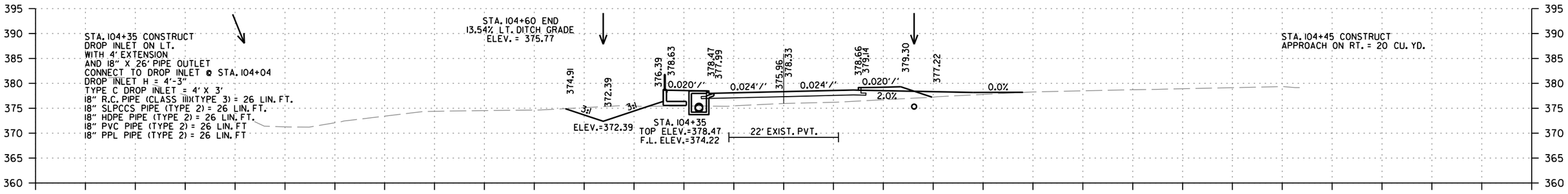
STAGE 1		STAGE 2	
CUT AREA	57 SQ. FT.	CUT AREA	0 SQ. FT.
FILL AREA	322 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	87 CU. YD.	CUT VOLUME	0 CU. YD.
FILL VOLUME	688 CU. YD.	FILL VOLUME	0 CU. YD.

HWY. 175
STA. 103+00 TO STA. 103+75

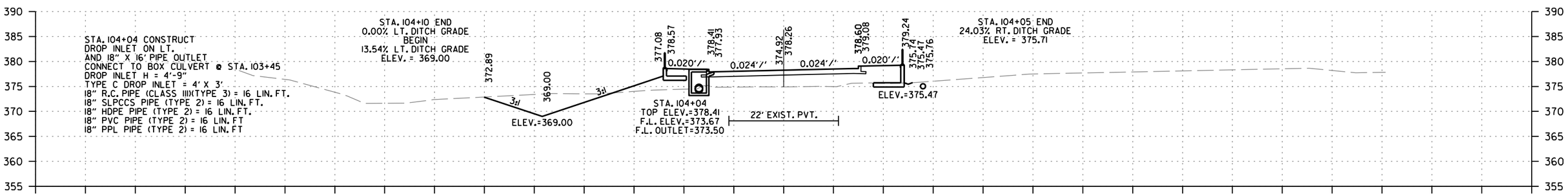
JY43338 2/20/2023
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	57	66
		CROSS SECTIONS				



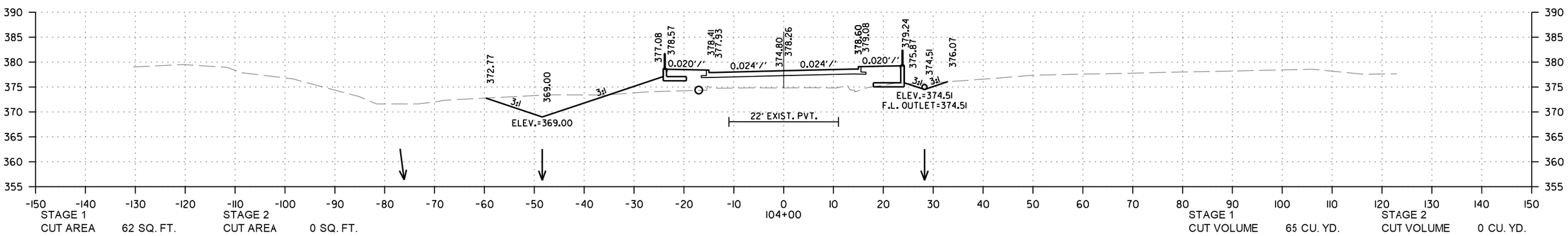
STAGE 1		STAGE 2	
CUT AREA	25 SQ. FT.	CUT AREA	0 SQ. FT.
FILL AREA	63 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	21 CU. YD.	CUT VOLUME	0 CU. YD.
FILL VOLUME	50 CU. YD.	FILL VOLUME	0 CU. YD.



STAGE 1		STAGE 2	
CUT AREA	61 SQ. FT.	CUT AREA	0 SQ. FT.
FILL AREA	145 SQ. FT.	FILL AREA	0 SQ. FT.

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



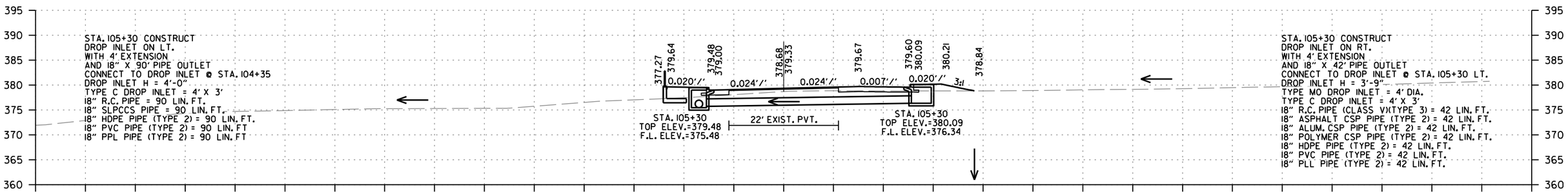
STAGE 1		STAGE 2	
CUT AREA	62 SQ. FT.	CUT AREA	0 SQ. FT.
FILL AREA	152 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	65 CU. YD.	CUT VOLUME	0 CU. YD.
FILL VOLUME	204 CU. YD.	FILL VOLUME	0 CU. YD.

HWY. 175
STA. 104+00 TO STA. 104+35

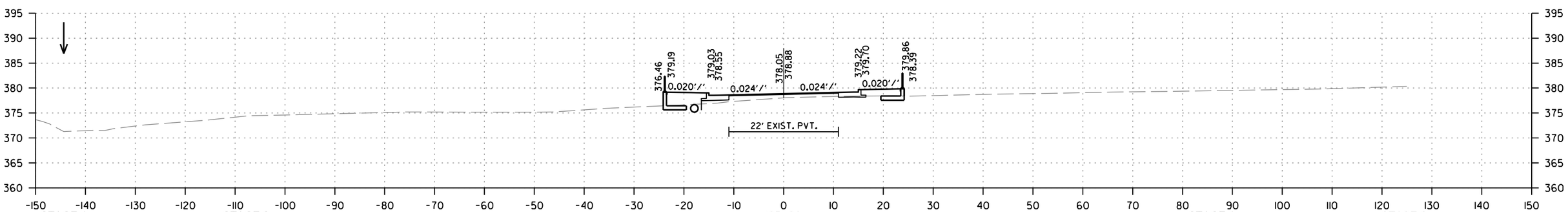
JY43338 2/20/2023
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	58	66
		CROSS SECTIONS				



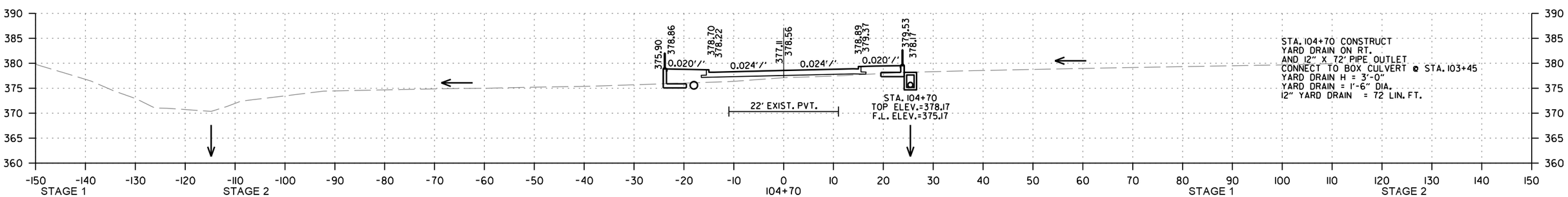
STAGE 3		STAGE 4	
CUT AREA	3 SQ. FT.	CUT AREA	4 SQ. FT.
FILL AREA	12 SQ. FT.	FILL AREA	17 SQ. FT.

STAGE 3		STAGE 4	
CUT VOLUME	4 CU. YD.	CUT VOLUME	5 CU. YD.
FILL VOLUME	13 CU. YD.	FILL VOLUME	16 CU. YD.



STAGE 1		STAGE 2	
CUT AREA	10 SQ. FT.	CUT AREA	0 SQ. FT.
FILL AREA	28 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	9 CU. YD.	CUT VOLUME	0 CU. YD.
FILL VOLUME	30 CU. YD.	FILL VOLUME	0 CU. YD.



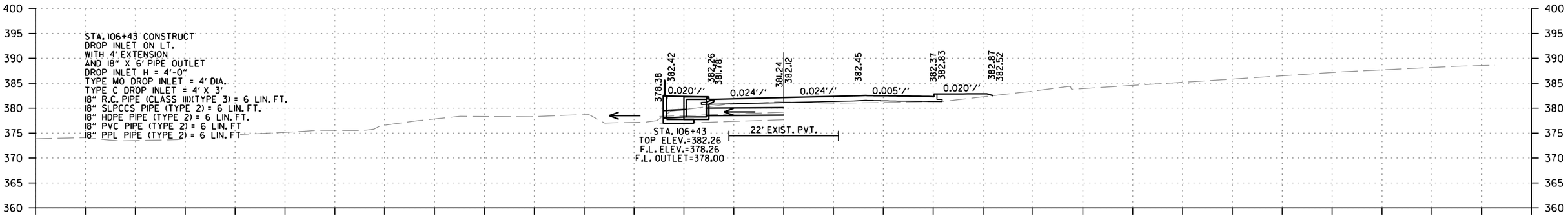
STAGE 1		STAGE 2	
CUT AREA	6 SQ. FT.	CUT AREA	0 SQ. FT.
FILL AREA	26 SQ. FT.	FILL AREA	0 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	20 CU. YD.	CUT VOLUME	0 CU. YD.
FILL VOLUME	58 CU. YD.	FILL VOLUME	0 CU. YD.

HWY. 175
STA. 104+70 TO STA. 105+30

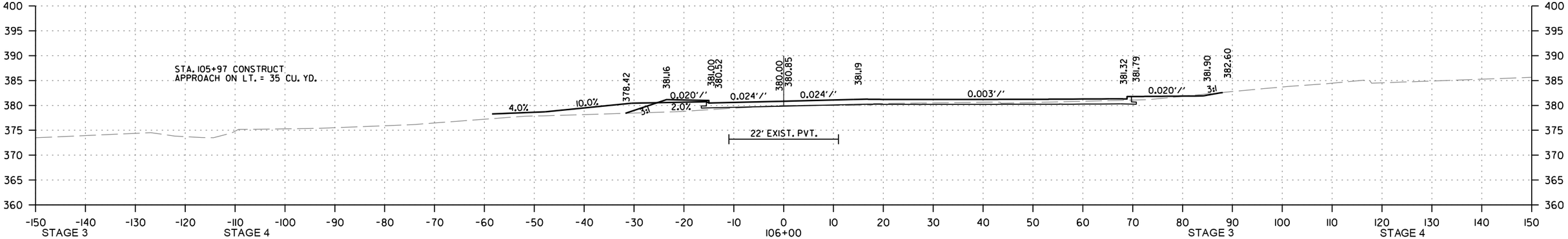
JY43338 2/20/2023
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	59	66
		CROSS SECTIONS				



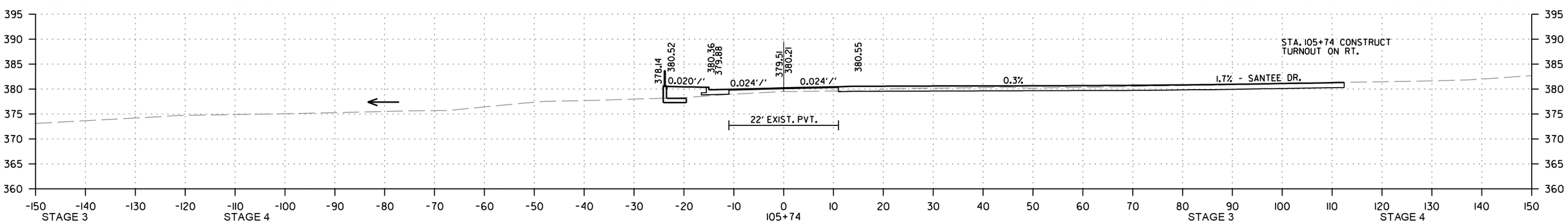
STAGE 3		STAGE 4	
CUT AREA	0 SQ. FT.	CUT AREA	6 SQ. FT.
FILL AREA	16 SQ. FT.	FILL AREA	22 SQ. FT.

STAGE 3		STAGE 4	
CUT VOLUME	18 CU. YD.	CUT VOLUME	8 CU. YD.
FILL VOLUME	18 CU. YD.	FILL VOLUME	33 CU. YD.



STAGE 3		STAGE 4	
CUT AREA	22 SQ. FT.	CUT AREA	4 SQ. FT.
FILL AREA	6 SQ. FT.	FILL AREA	19 SQ. FT.

STAGE 3		STAGE 4	
CUT VOLUME	45 CU. YD.	CUT VOLUME	4 CU. YD.
FILL VOLUME	3 CU. YD.	FILL VOLUME	17 CU. YD.



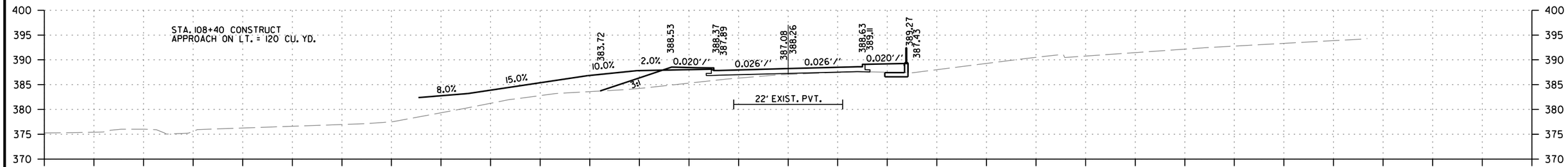
STAGE 3		STAGE 4	
CUT AREA	71 SQ. FT.	CUT AREA	4 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	17 SQ. FT.

STAGE 3		STAGE 4	
CUT VOLUME	60 CU. YD.	CUT VOLUME	7 CU. YD.
FILL VOLUME	10 CU. YD.	FILL VOLUME	28 CU. YD.

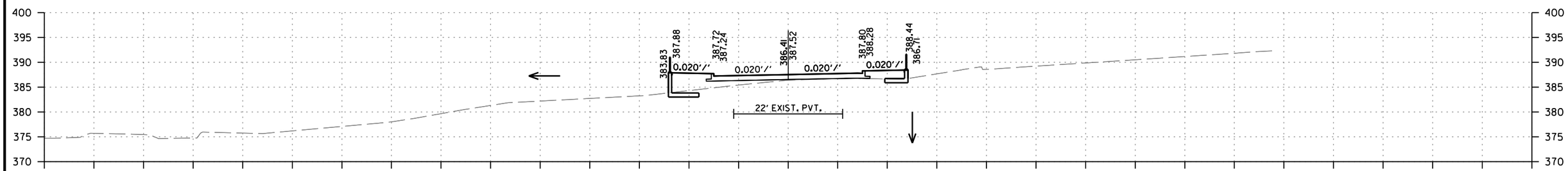
HWY. 175
STA. 105+74 TO STA. 106+43

JY43338 2/20/2023
R050171.DGN

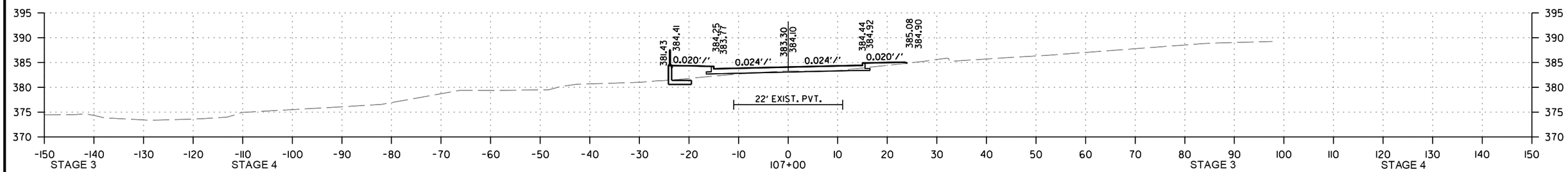
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	60	66
		CROSS SECTIONS				



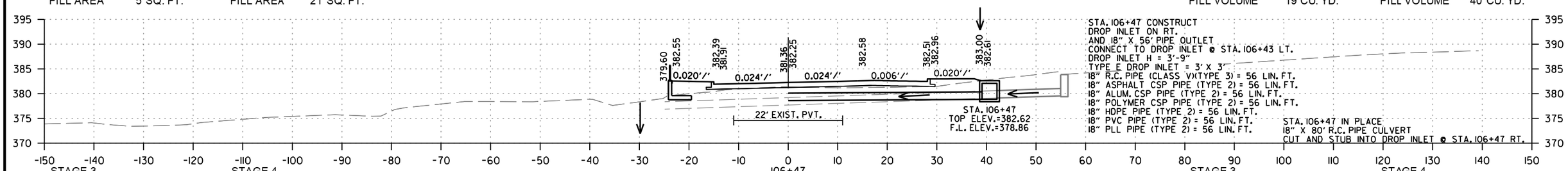
STAGE 3		STAGE 4		STAGE 3		STAGE 4	
CUT AREA	4 SQ. FT.	CUT AREA	0 SQ. FT.	CUT VOLUME	5 CU. YD.	CUT VOLUME	4 CU. YD.
FILL AREA	13 SQ. FT.	FILL AREA	46 SQ. FT.	FILL VOLUME	19 CU. YD.	FILL VOLUME	58 CU. YD.



STAGE 3		STAGE 4		STAGE 3		STAGE 4	
CUT AREA	3 SQ. FT.	CUT AREA	5 SQ. FT.	CUT VOLUME	9 CU. YD.	CUT VOLUME	17 CU. YD.
FILL AREA	13 SQ. FT.	FILL AREA	32 SQ. FT.	FILL VOLUME	33 CU. YD.	FILL VOLUME	98 CU. YD.



STAGE 3		STAGE 4		STAGE 3		STAGE 4	
CUT AREA	2 SQ. FT.	CUT AREA	4 SQ. FT.	CUT VOLUME	2 CU. YD.	CUT VOLUME	8 CU. YD.
FILL AREA	5 SQ. FT.	FILL AREA	21 SQ. FT.	FILL VOLUME	19 CU. YD.	FILL VOLUME	40 CU. YD.



STA. 106+47 CONSTRUCT
DROP INLET ON RT.
AND 18" X 56' PIPE OUTLET
CONNECT TO DROP INLET @ STA. 106+43 LT.
DROP INLET H = 3'-9"
TYPE E DROP INLET = 3' X 3'
18" R.C. PIPE (CLASS V)(TYPE 3) = 56 LIN. FT.
18" ASPHALT CSP PIPE (TYPE 2) = 56 LIN. FT.
18" ALUM. CSP PIPE (TYPE 2) = 56 LIN. FT.
18" POLYMER CSP PIPE (TYPE 2) = 56 LIN. FT.
18" HDPE PIPE (TYPE 2) = 56 LIN. FT.
18" PVC PIPE (TYPE 2) = 56 LIN. FT.
18" PLL PIPE (TYPE 2) = 56 LIN. FT.

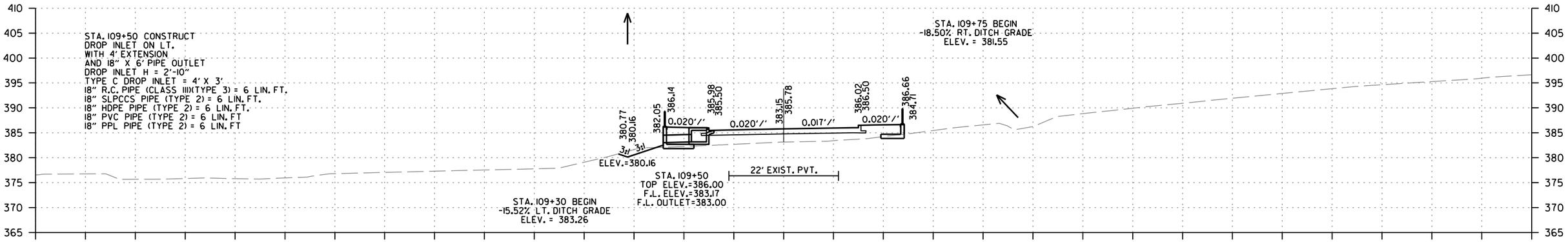
STA. 106+47 IN PLACE
18" X 80' R.C. PIPE CULVERT
CUT AND STUB INTO DROP INLET @ STA. 106+47 RT.

STAGE 3		STAGE 4		STAGE 3		STAGE 4	
CUT AREA	0 SQ. FT.	CUT AREA	4 SQ. FT.	CUT VOLUME	0 CU. YD.	CUT VOLUME	1 CU. YD.
FILL AREA	14 SQ. FT.	FILL AREA	20 SQ. FT.	FILL VOLUME	2 CU. YD.	FILL VOLUME	3 CU. YD.

HWY. 175
STA. 106+47 TO STA. 108+40

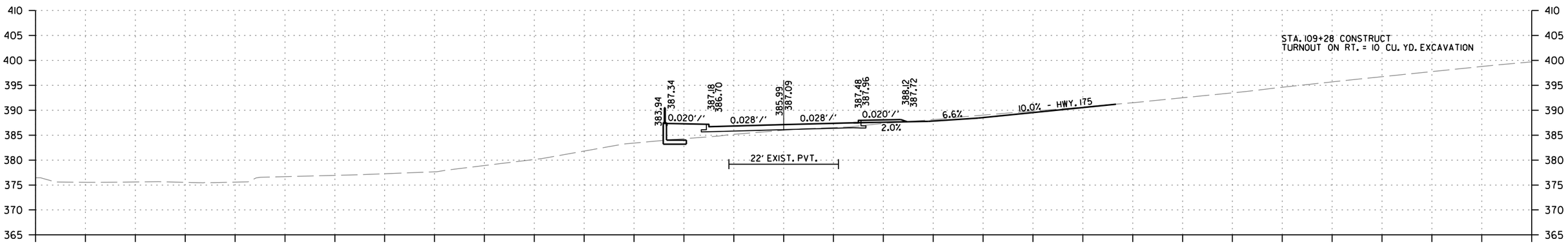
JY43338 2/20/2023
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	61	66
		CROSS SECTIONS				



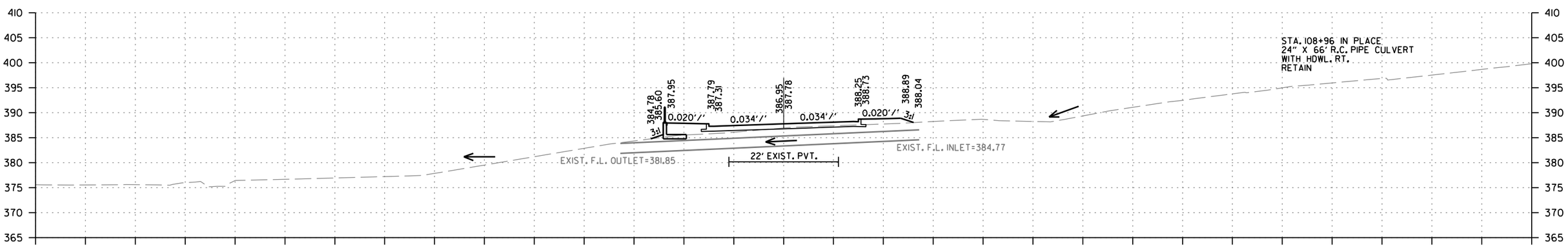
STAGE 1		STAGE 2	
CUT AREA	0 SQ. FT.	CUT AREA	10 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	97 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	0 CU. YD.	CUT VOLUME	6 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	54 CU. YD.



STAGE 3		STAGE 4	
CUT AREA	2 SQ. FT.	CUT AREA	4 SQ. FT.
FILL AREA	6 SQ. FT.	FILL AREA	27 SQ. FT.

STAGE 3		STAGE 4	
CUT VOLUME	1 CU. YD.	CUT VOLUME	3 CU. YD.
FILL VOLUME	6 CU. YD.	FILL VOLUME	17 CU. YD.



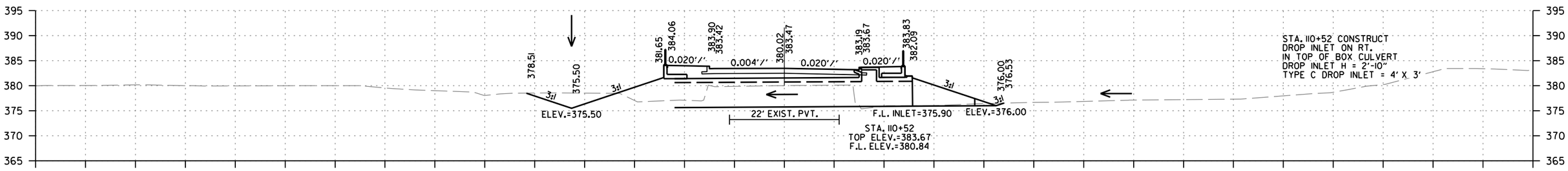
STAGE 3		STAGE 4	
CUT AREA	2 SQ. FT.	CUT AREA	3 SQ. FT.
FILL AREA	10 SQ. FT.	FILL AREA	20 SQ. FT.

STAGE 3		STAGE 4	
CUT VOLUME	9 CU. YD.	CUT VOLUME	15 CU. YD.
FILL VOLUME	43 CU. YD.	FILL VOLUME	96 CU. YD.

HWY. 175/HWY. 175S
STA. 109+00 TO STA. 109+50

JY43338 2/20/2023
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	62	66
		CROSS SECTIONS				

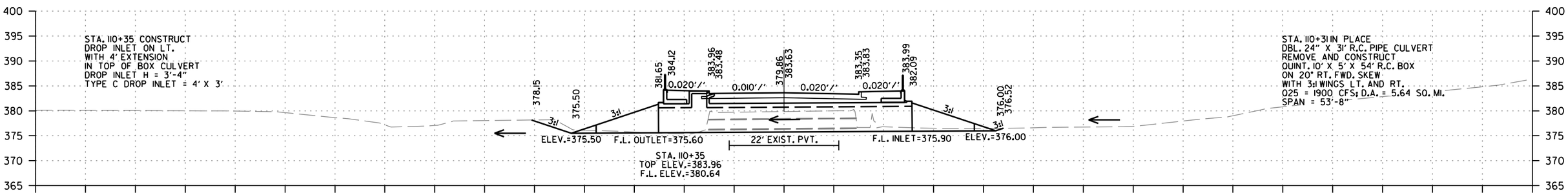


STAGE 1
CUT AREA 0 SQ. FT.
FILL AREA 0 SQ. FT.

STAGE 2
CUT AREA 28 SQ. FT.
FILL AREA 277 SQ. FT.

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

STAGE 2
CUT VOLUME 12 CU. YD.
FILL VOLUME 184 CU. YD.

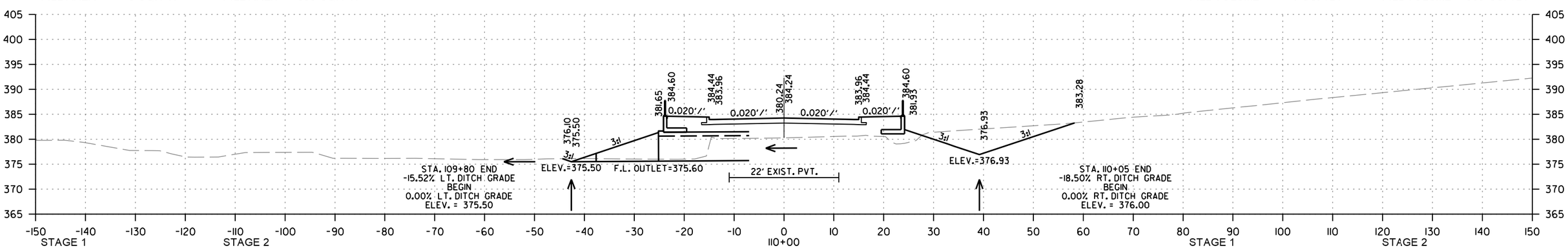


STAGE 1
CUT AREA 0 SQ. FT.
FILL AREA 0 SQ. FT.

STAGE 2
CUT AREA 9 SQ. FT.
FILL AREA 308 SQ. FT.

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

STAGE 2
CUT VOLUME 58 CU. YD.
FILL VOLUME 355 CU. YD.



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

STAGE 2
CUT AREA 81 SQ. FT.
FILL AREA 239 SQ. FT.

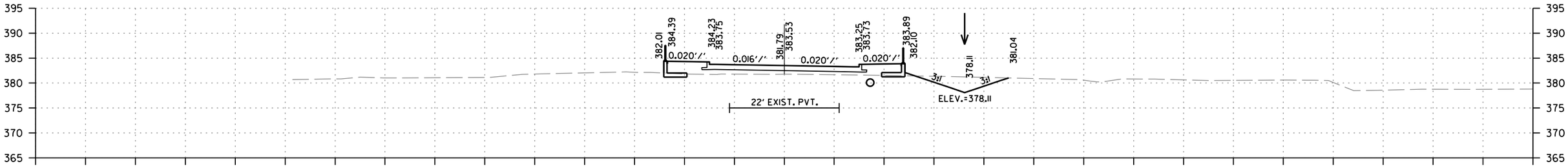
STAGE 1
CUT VOLUME 0 CU. YD.
FILL VOLUME 0 CU. YD.

STAGE 2
CUT VOLUME 84 CU. YD.
FILL VOLUME 311 CU. YD.

HWY. 175S
STA. 110+00 TO STA. 110+52

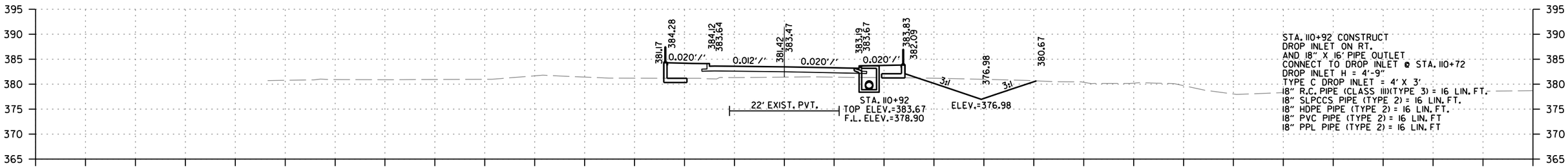
JY43338 2/20/2023
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	63	66
		CROSS SECTIONS				



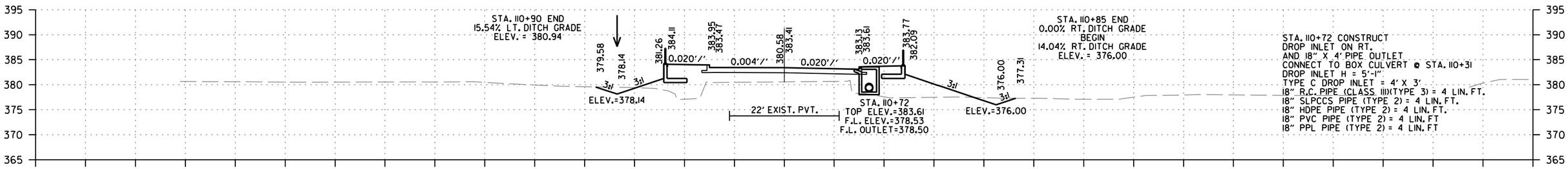
STAGE 1		STAGE 2	
CUT AREA	0 SQ. FT.	CUT AREA	34 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	42 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	0 CU. YD.	CUT VOLUME	13 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	14 CU. YD.



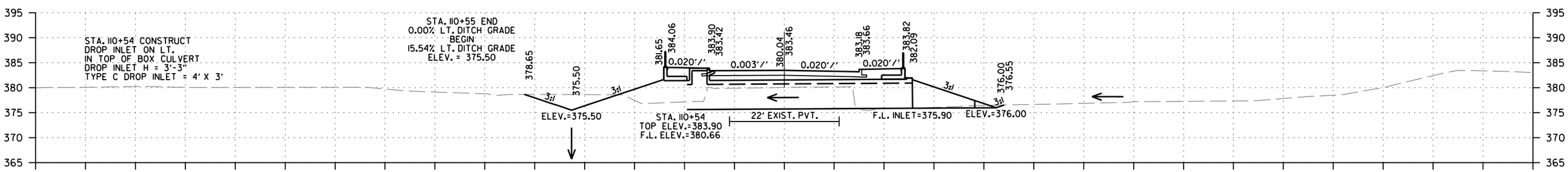
STAGE 1		STAGE 2	
CUT AREA	0 SQ. FT.	CUT AREA	52 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	51 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	0 CU. YD.	CUT VOLUME	23 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	90 CU. YD.



STAGE 1		STAGE 2	
CUT AREA	0 SQ. FT.	CUT AREA	11 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	191 SQ. FT.

STAGE 1		STAGE 2	
CUT VOLUME	0 CU. YD.	CUT VOLUME	14 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	155 CU. YD.



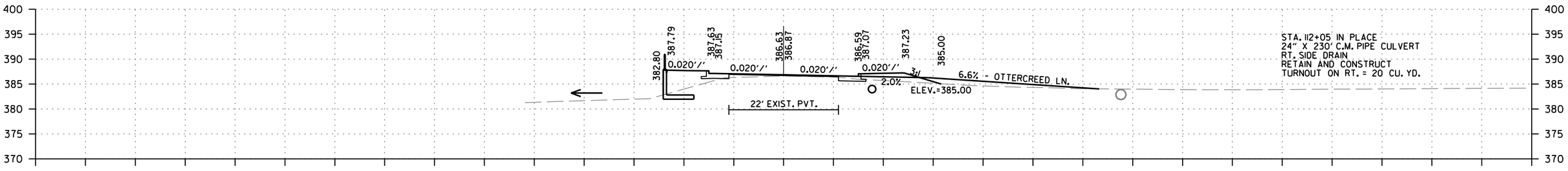
STAGE 1		STAGE 2	
CUT AREA	0 SQ. FT.	CUT AREA	30 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	274 SQ. FT.

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

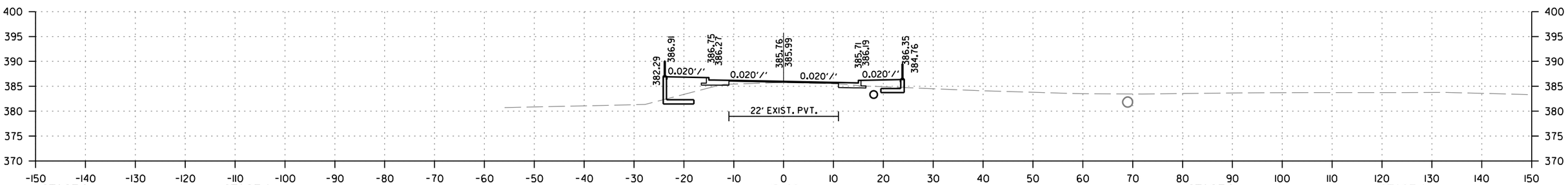
HWY. 175S
STA. 110+54 TO STA. 111+00

JY43338 2/20/2023
R050171.DGN

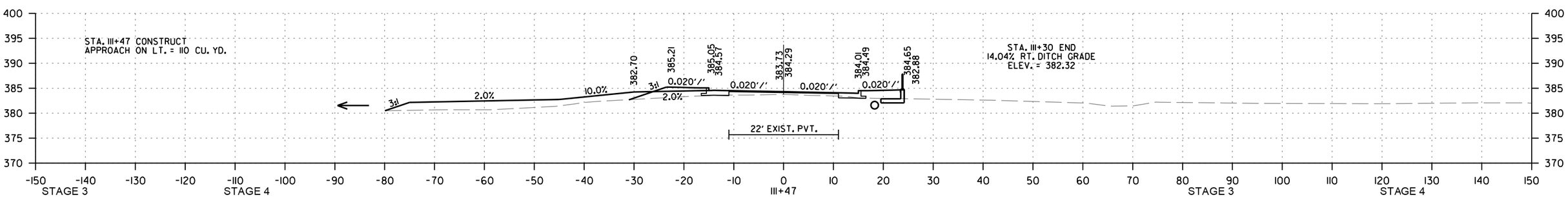
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	64	66
		CROSS SECTIONS				



STAGE 3		STAGE 4		STAGE 3		STAGE 4	
CUT AREA	3 SQ. FT.	CUT AREA	5 SQ. FT.	CUT VOLUME	4 CU. YD.	CUT VOLUME	4 CU. YD.
FILL AREA	18 SQ. FT.	FILL AREA	30 SQ. FT.	FILL VOLUME	11 CU. YD.	FILL VOLUME	21 CU. YD.



STAGE 3		STAGE 4		STAGE 3		STAGE 4	
CUT AREA	7 SQ. FT.	CUT AREA	5 SQ. FT.	CUT VOLUME	11 CU. YD.	CUT VOLUME	5 CU. YD.
FILL AREA	11 SQ. FT.	FILL AREA	27 SQ. FT.	FILL VOLUME	24 CU. YD.	FILL VOLUME	85 CU. YD.

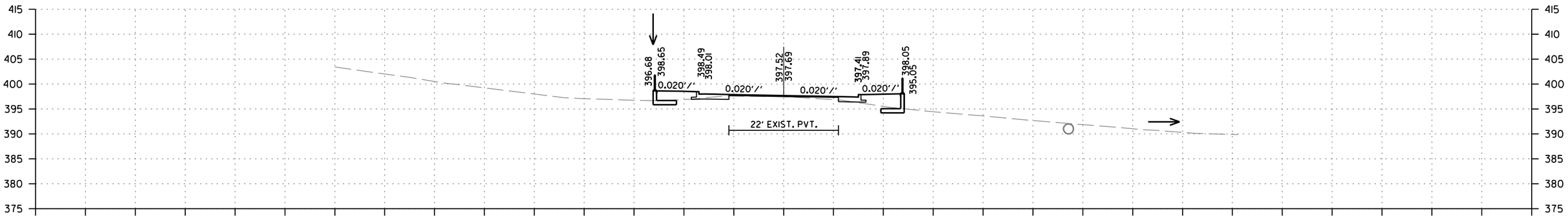


STAGE 3		STAGE 4		STAGE 3		STAGE 4	
CUT AREA	4 SQ. FT.	CUT AREA	0 SQ. FT.	CUT VOLUME	30 CU. YD.	CUT VOLUME	3 CU. YD.
FILL AREA	13 SQ. FT.	FILL AREA	60 SQ. FT.	FILL VOLUME	28 CU. YD.	FILL VOLUME	72 CU. YD.

HWY. 175S
STA. 111+47 TO STA. 112+20

JY43338 2/20/2023
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	65	66
		CROSS SECTIONS				



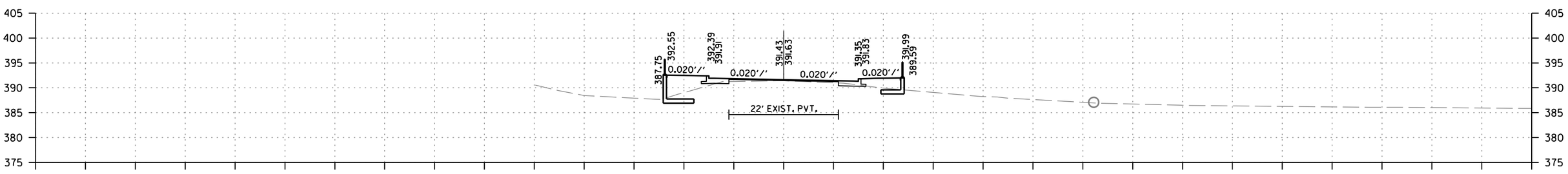
STAGE 3
CUT AREA 1 SQ. FT.
FILL AREA 19 SQ. FT.

STAGE 4
CUT AREA 6 SQ. FT.
FILL AREA 14 SQ. FT.

113+74.30
END JOB 050171
BEGIN 100' TRANSITION

STAGE 3
CUT VOLUME 10 CU. YD.
FILL VOLUME 47 CU. YD.

STAGE 4
CUT VOLUME 17 CU. YD.
FILL VOLUME 56 CU. YD.



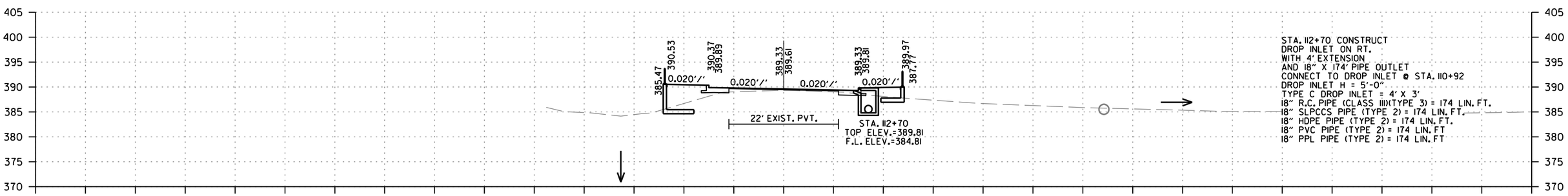
STAGE 3
CUT AREA 6 SQ. FT.
FILL AREA 15 SQ. FT.

STAGE 4
CUT AREA 6 SQ. FT.
FILL AREA 27 SQ. FT.

113+00.00

STAGE 3
CUT VOLUME 7 CU. YD.
FILL VOLUME 16 CU. YD.

STAGE 4
CUT VOLUME 6 CU. YD.
FILL VOLUME 32 CU. YD.



STA. 112+70 CONSTRUCT
DROP INLET ON RT.
WITH 4' EXTENSION
AND 18" X 174' PIPE OUTLET
CONNECT TO DROP INLET @ STA. 110+92
DROP INLET H = 5'-0"
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III)(TYPE 3) = 174 LIN. FT.
18" SLPCCS PIPE (TYPE 2) = 174 LIN. FT.
18" HDPE PIPE (TYPE 2) = 174 LIN. FT.
18" PVC PIPE (TYPE 2) = 174 LIN. FT
18" PPL PIPE (TYPE 2) = 174 LIN. FT

STAGE 3
CUT AREA 6 SQ. FT.
FILL AREA 13 SQ. FT.

STAGE 4
CUT AREA 5 SQ. FT.
FILL AREA 30 SQ. FT.

112+70.00

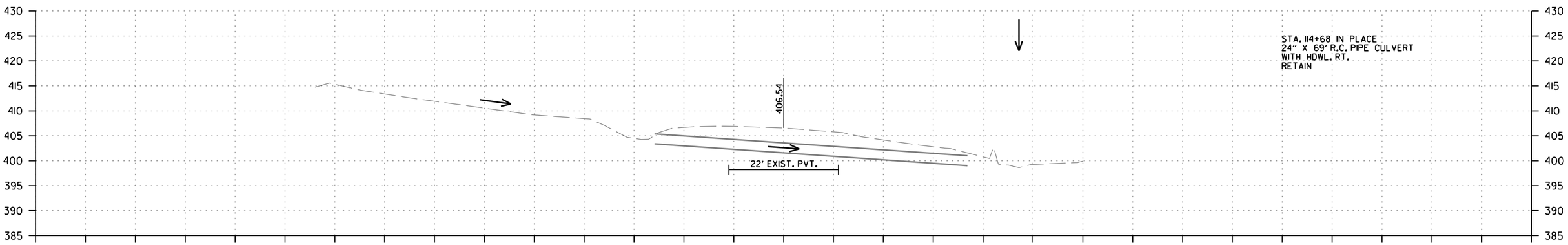
STAGE 3
CUT VOLUME 8 CU. YD.
FILL VOLUME 28 CU. YD.

STAGE 4
CUT VOLUME 9 CU. YD.
FILL VOLUME 56 CU. YD.

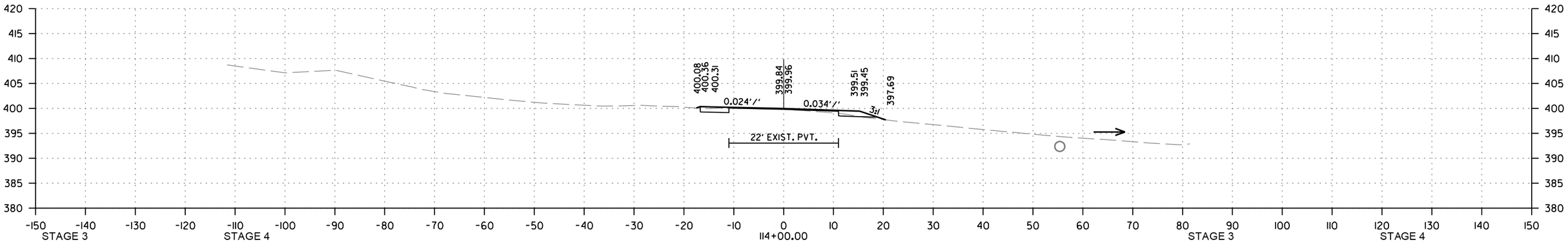
HWY. 175S
STA. 112+70.00 TO STA. 113+74.30

JY43338 2/20/2023
R050171.DGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	050171	66	66
		CROSS SECTIONS				



STAGE 3		STAGE 4		STAGE 3		STAGE 4	
CUT AREA	0 SQ. FT.	CUT AREA	0 SQ. FT.	CUT VOLUME	0 CU. YD.	CUT VOLUME	0 CU. YD.
FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.	FILL VOLUME	0 CU. YD.	FILL VOLUME	0 CU. YD.

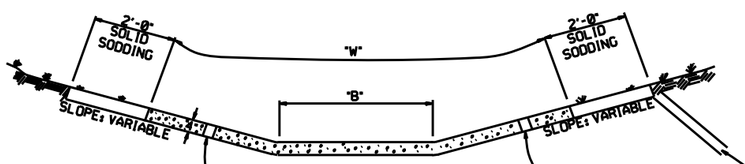


STAGE 3		STAGE 4		STAGE 3		STAGE 4	
CUT AREA	0 SQ. FT.	CUT AREA	0 SQ. FT.	CUT VOLUME	0 CU. YD.	CUT VOLUME	3 CU. YD.
FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.	FILL VOLUME	9 CU. YD.	FILL VOLUME	7 CU. YD.

HWY. 175S
STA. 114+00.00 TO STA. 114+74.30

JY43338 2/20/2023
R050171.DGN

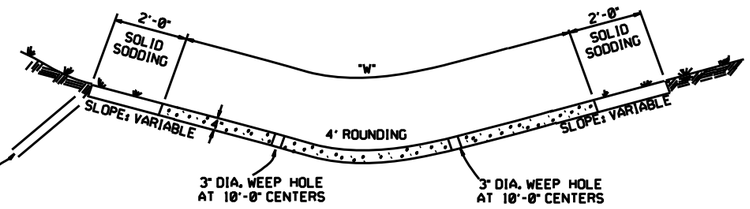
REFER TO TABULATION OF QUANTITIES FOR "W" & "B" DIMENSIONS



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

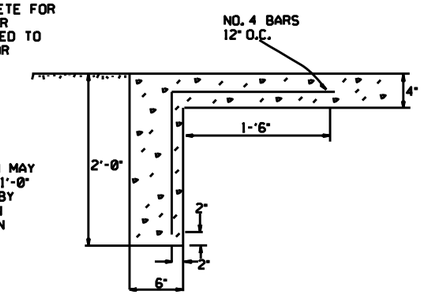
TYPE A

REFER TO TABULATION OF QUANTITIES FOR "W" DIMENSIONS



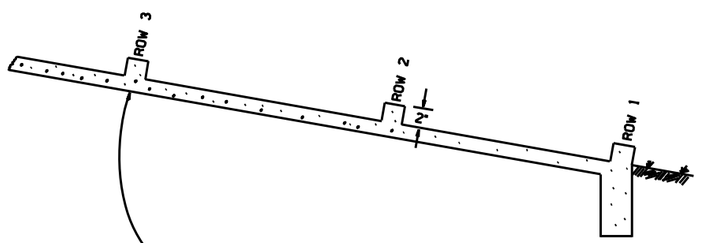
TYPE B

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



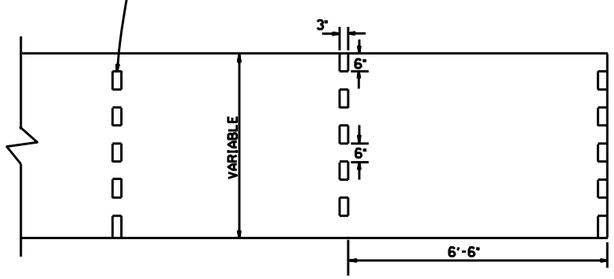
TOE WALL DEPTH MAY BE ALTERED TO 1'-0" WHEN DIRECTED BY THE ENGINEER IN ROCK EXCAVATION

TOE WALL DETAIL FOR CONCRETE DITCH PAVING



NUMBER OF ELEMENTS PER ROW VARIES WITH WIDTH OF PAVING SPECIFIED

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



ENERGY DISSIPATORS
(NO SCALE)

GENERAL NOTES:

THE FULL WIDTH OF EACH SECTION SHALL BE POURED MONOLITHICALLY.

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

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

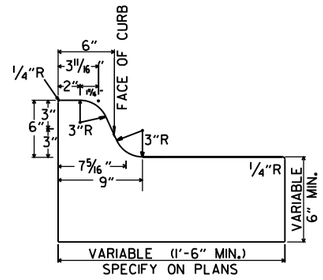
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

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

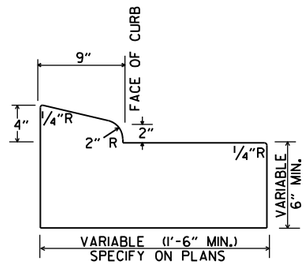
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

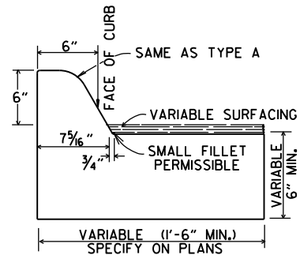
STANDARD DRAWING CDP-1



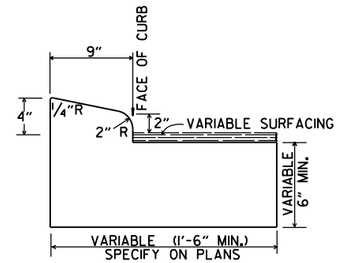
TYPE A



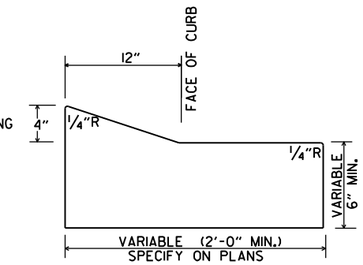
TYPE B-1



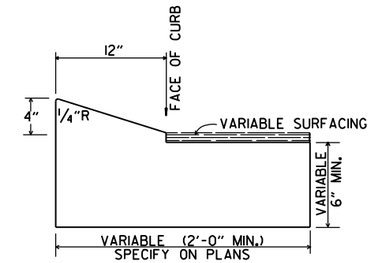
TYPE C



TYPE B-2

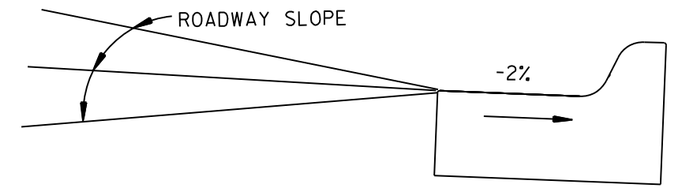


TYPE E-1



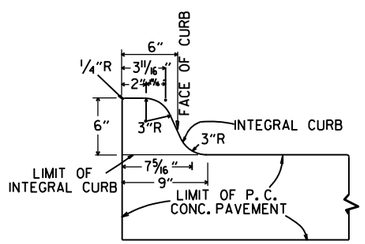
TYPE E-2

CONCRETE COMBINATION CURB AND GUTTER

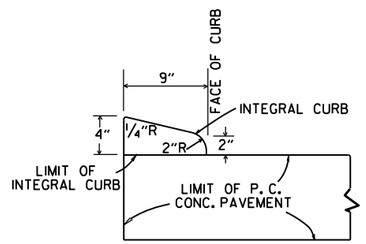


DETAIL OF GUTTER SLOPE

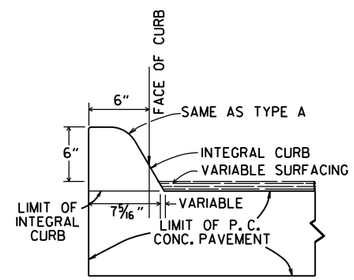
GUTTER SHALL BE CONSTRUCTED ON 2% SLOPE AWAY FROM ROADWAY, REGARDLESS OF ROADWAY SLOPE.



TYPE A

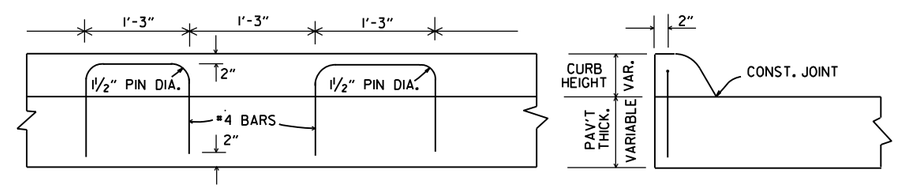


TYPE B

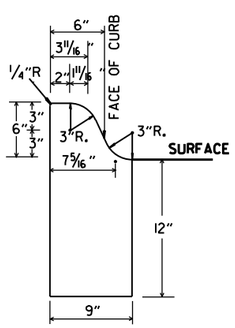


TYPE C

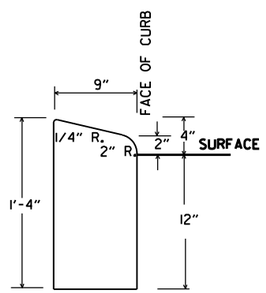
INTEGRAL CURB



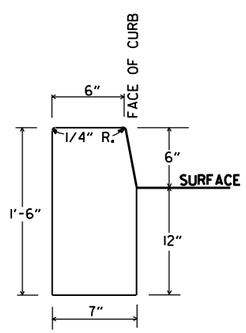
ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB



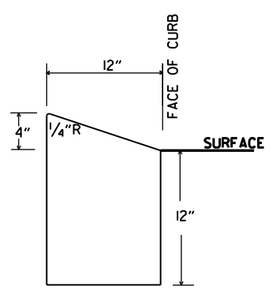
TYPE A



TYPE B

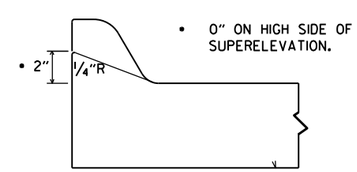


TYPE D



TYPE E

CONCRETE CURB



NOTE: USE MODIFIED CURB AS SPECIFIED ON STD. DR-1. COMPENSATION FOR MODIFIED CURB WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE TYPE OF CURB OR CURB AND GUTTER SPECIFIED.

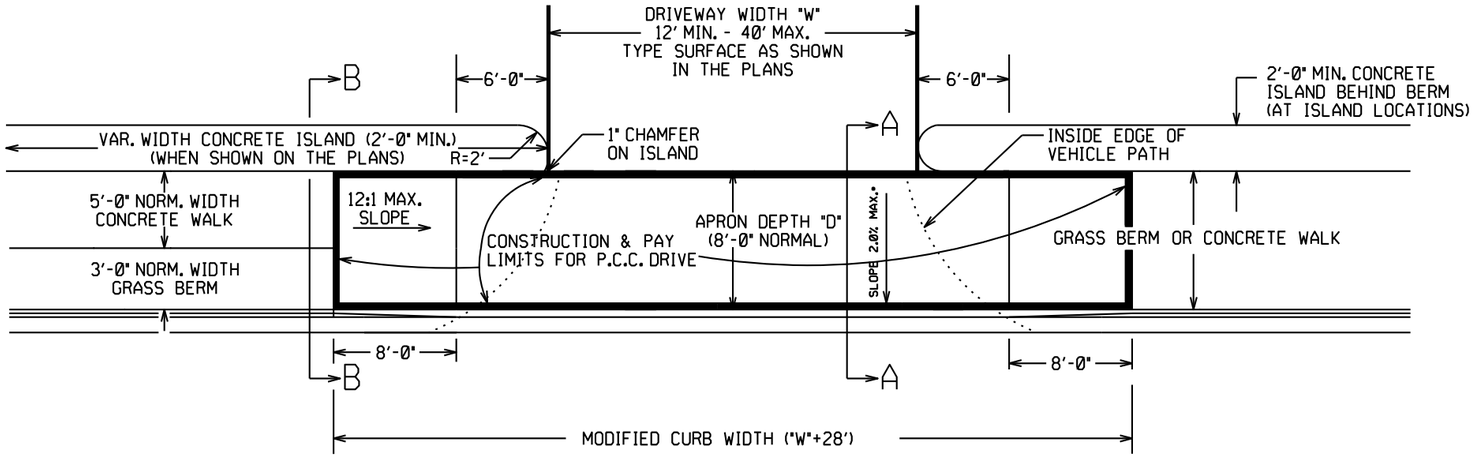
DETAILS OF MODIFIED CURB

DATE	REVISION	DATE FILMED
11-29-07	REVISED GUTTER SLOPE & MODIFIED CURB DETAILS	
11-10-05	ADDED DETAILS OF TYPE E CURBS	
11-16-01	REVISED CONCRETE CURB TYPE B	
11-18-98	REVISED MODIFIED CURB	
6-2-94	ADDED NOTE TO SPECIAL MODIFIED CURB	
8-5-93	CORRECTED GUTTER SLOPE	8-5-93
10-1-92	ADDED DETAILS OF GUTTER SLOPE	10-1-92
5-24-90	ADDED DETAILS OF MODIFIED CURB	5-24-90
11-30-89	VARIBLE DEPTH TYPE A & B I	11-30-89
7-15-88	REVISED MODIFIED CURB	630-7-15-88
11-1-73	REVISED MODIFIED CURB	500-11-1-73
10-2-72	REVISED AND REDRAWN	512-10-2-72

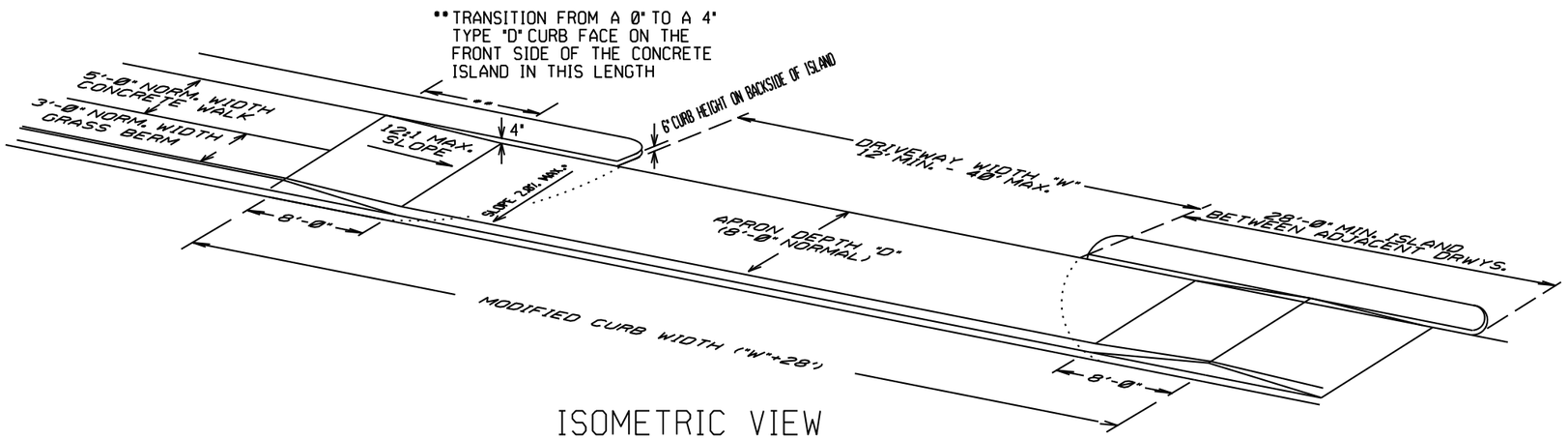
ARKANSAS STATE HIGHWAY COMMISSION

CURBING DETAILS

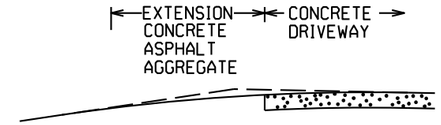
STANDARD DRAWING CG-1



PLAN VIEW



ISOMETRIC VIEW



EXTENSION TYPICAL SECTIONS

1: CONCRETE - 6" P.C. CONCRETE DRIVEWAY

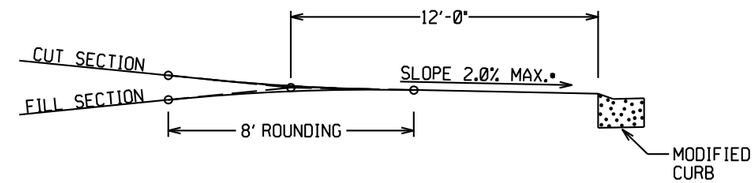
2: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
4" ACHM BINDER COURSE (1") OR
4" ACHM BASE COURSE (1-1/2")

3: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
7" AGGREGATE BASE COURSE

4: AGGREGATE - 6" AGGREGATE BASE COURSE

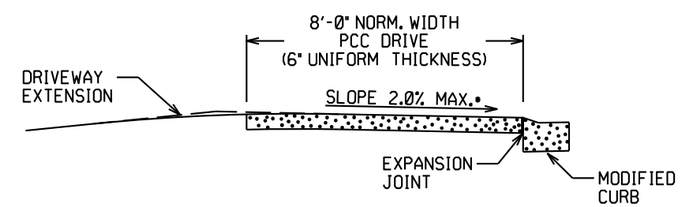
THE TYPE OF EXTENSION SHALL BE AS SHOWN IN THE PLANS. THE CONTRACTOR MAY, WITH THE APPROVAL OF THE ENGINEER, SUBSTITUTE A LOWER NUMBERED TYPE OF EXTENSION IN LIEU OF THE TYPE SPECIFIED IN THE PLANS, BUT AT NO ADDITIONAL COST TO THE DEPARTMENT.

DRIVEWAY EXTENSION DETAILS

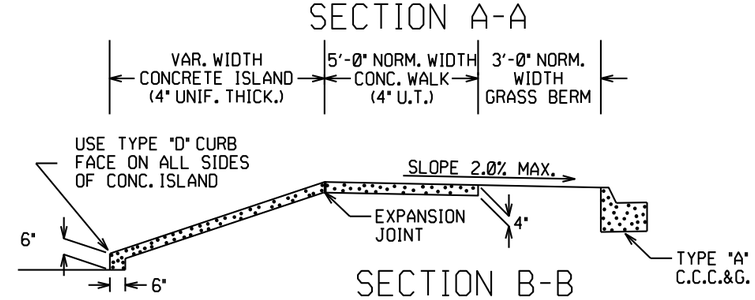


DRIVEWAY VERTICAL ALIGNMENT DETAILS

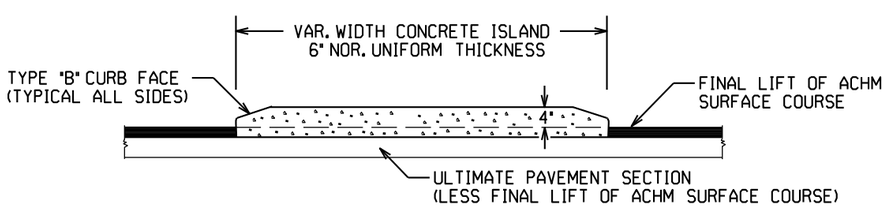
- NOTE: DRIVEWAYS MAY NOT BE SLOPED AWAY FROM THE ROADWAY UNLESS APPROVED BY THE ENGINEER.

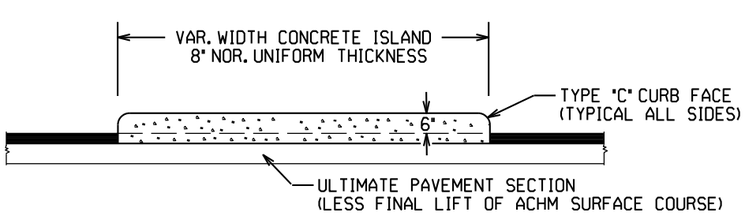


SECTION A-A



SECTION B-B
CURBED ISLAND BEHIND WALK





CURBED ISLANDS FOR CHANNELIZATION

CONCRETE ISLAND NOTES:

1. REFER TO PLANS FOR TYPE OF CURB FACE TO BE USED. NO DIRECT PAYMENT WILL BE MADE FOR THE CURB FACES SHOWN ON THE ISLAND DETAILS. PAYMENT FOR THE CURB FACE WILL BE INCLUDED IN THE UNIT PRICE BID FOR THE ITEM "CONCRETE ISLAND".

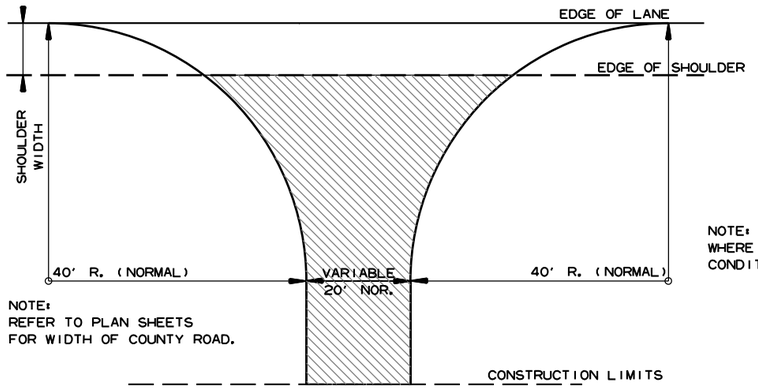
2. TRANSVERSE EXPANSION JOINTS, NOT LESS THAN 1/2" WIDE, SHALL BE PLACED AT MINIMUM INTERVAL OF 45'. TRANSVERSE JOINT SHALL BE CONSTRUCTED USING A JOINT FILLER COMPLYING WITH AASHTO M213.

DATE REV	DATE FILMED	DESCRIPTION
5-19-22		REVISED ISLAND NOTES
11-07-19		REVISED WALK DETAILS
2-27-14		REVISED PLAN & ISOMETRIC VIEW
11-29-07		ADDED CHANNELIZATION ISLAND WITH TYPE C CURB FACE & REVISED DRIVEWAY SLOPE NOTE & VERTICAL ALIGNMENT DETAIL
11-10-05		REV. APRON SLOPE & DEPTH OF AGG. BASE.
8-22-02		ADDED ISLAND DETAILS & NOTES
3-30-00		REV. MOD. CURB WIDTH & TRANS. NOTE
11-19-98		REVISED NOTES
11-18-98		REDRAWN AND REISSUED

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DRIVEWAYS & ISLANDS

STANDARD DRAWING DR-1

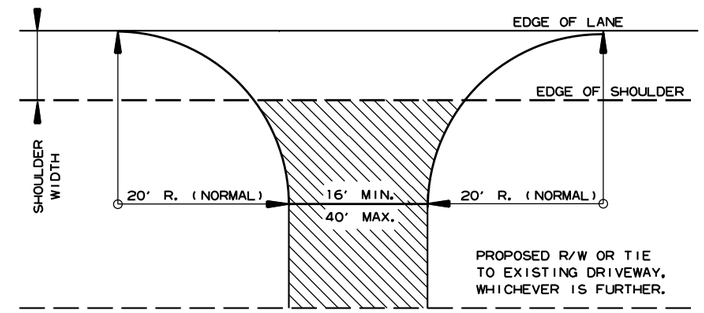


NOTE:
REFER TO PLAN SHEETS
FOR WIDTH OF COUNTY ROAD.

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

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

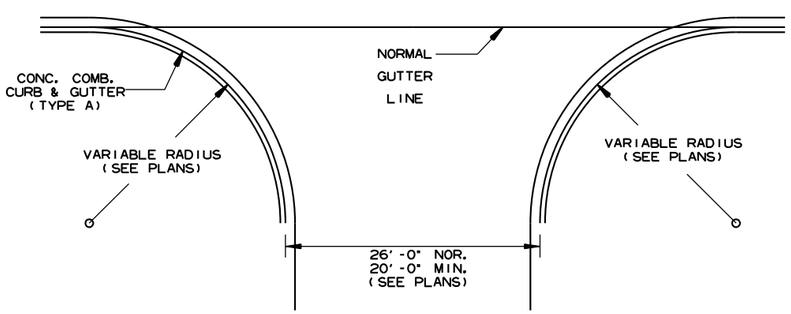
DETAIL FOR COUNTY ROAD TURNOUTS OPEN SHOULDER SECTION



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

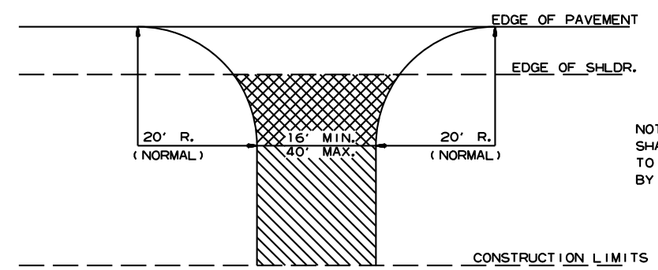
ACHM SURFACE COURSE (1/2") (220 LBS. PER SQ. YD.) AND AGGREGATE BASE COURSE (CLASS 7) 7" COMP. DEPTH IF ASPHALT OR GRAVEL DRIVE EXISTING; OR 6" CONCRETE IF CONCRETE DRIVE EXISTING.

DETAIL FOR DRIVEWAY TURNOUTS OPEN SHOULDER SECTION (ARTERIALS)



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

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



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

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

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

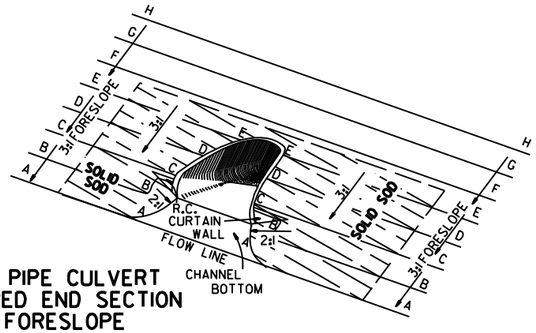
DETAIL FOR DRIVEWAY TURNOUTS (COLLECTORS)

DATE REV	DATE FILMED	DESCRIPTION
5-19-22		ISSUED

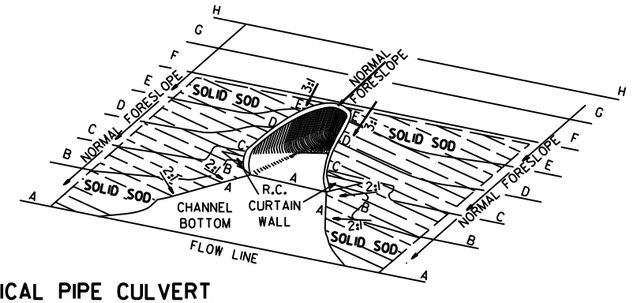
ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DRIVEWAYS & STREET TURNOUTS

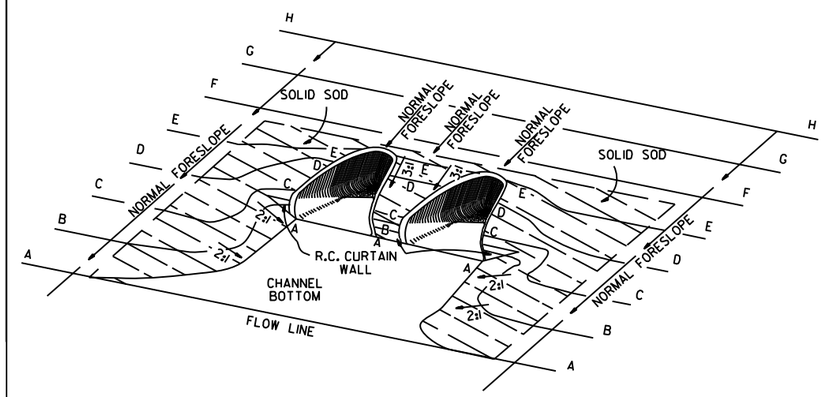
STANDARD DRAWING DR-2



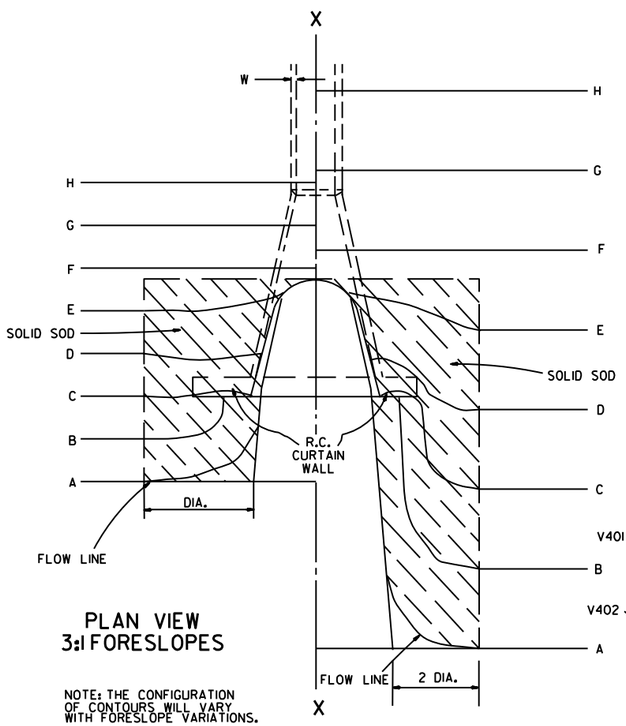
TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& 3:1 FORESLOPE



TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& FLATTENED ADJACENT SLOPES



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



PLAN VIEW
3:1 FORESLOPES

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

PLAN VIEW
FLATTENED FORESLOPES

R.C. CURTAIN WALL DIMENSIONS & QUANTITIES

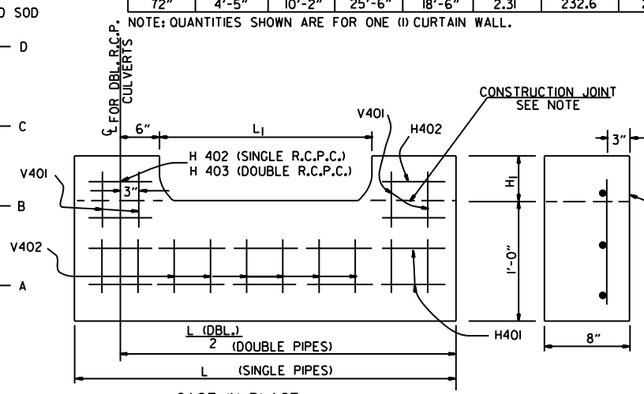
PIPE DIA.	H_1	L_1	L	L (DBL.)/2	SINGLE R.C.P.C. CONC.	SINGLE R.C.P.C. REINF. STEEL	DOUBLE R.C.P.C. CONC.	DOUBLE R.C.P.C. REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	5'-7"	11'-0"	9'-0"	0.45	39.0	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

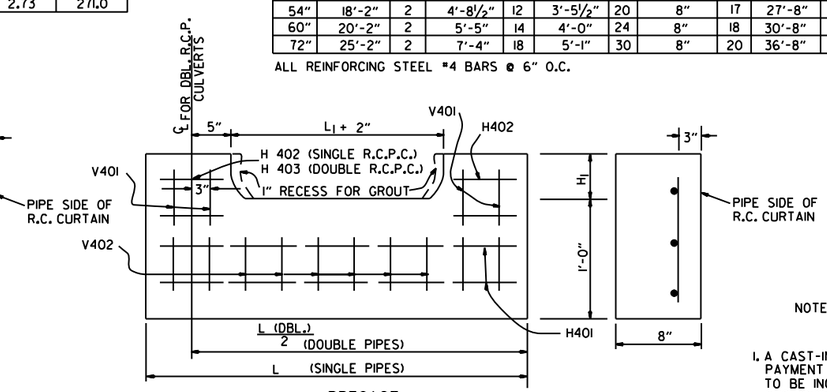
PIPE DIA.	SINGLE R.C. PIPE CULVERT H401 L	H401 NO.	H402 L	H402 NO.	V401 L	V401 NO.	V402 L	V402 NO.	DOUBLE R.C. PIPE CULVERT H401 L	H401 NO.	H402 L	H402 NO.	H403 L	H403 NO.	V401 L	V401 NO.	V402 L	V402 NO.
18"	7'-8"	2	1'-11½"	4	1'-7½"	8	8"	8	12'-2"	2	1'-11½"	4	8"	2	1'-7½"	10	8"	14
24"	9'-2"	2	2'-2"	4	1'-8½"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

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



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

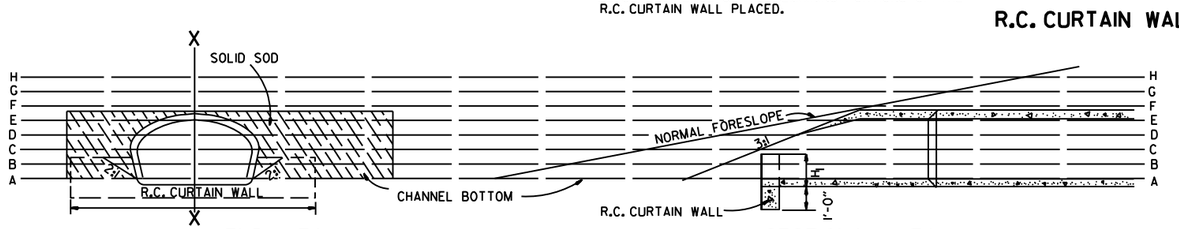
SOLID SODDING

PIPE DIA.	SINGLE R.C.P.C. 3:1	SINGLE R.C.P.C. 4:1	SINGLE R.C.P.C. 6:1	DOUBLE R.C.P.C. 3:1	DOUBLE R.C.P.C. 4:1	DOUBLE R.C.P.C. 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 W/10 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

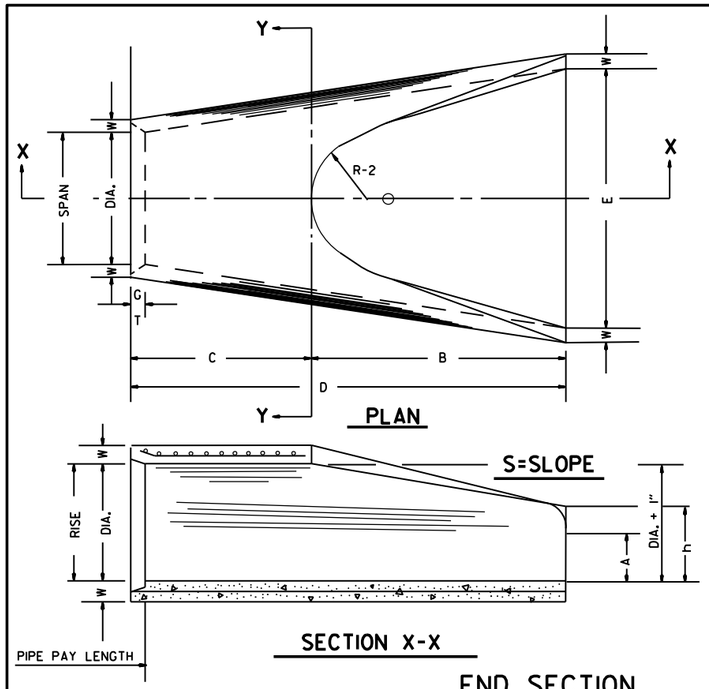


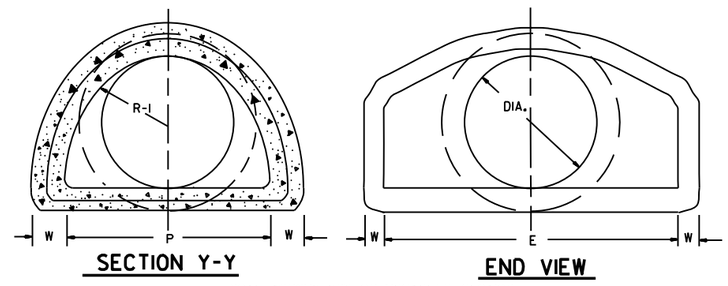
TABLE OF DIMENSIONS

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

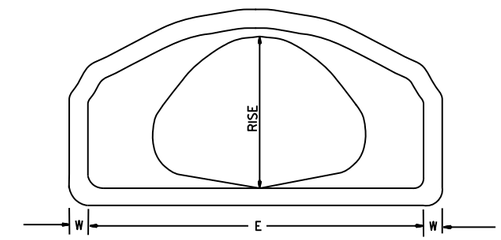
ARCH PIPE

EQUIV. DIA.	• SPAN		• RISE		W	A	B	C	D	E	P	R2	G-T	S
	AASHTO M 206	AHD NOMINAL	AASHTO M 206	AHD NOMINAL										
	INCHES													
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1½"	2½:1
18	22	22	13½	14	2½"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32⅛"	13"	2½"	2½:1
21	26	26	15½	16	2¾"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34⅛"	14"	2½"	2½:1
24	28½	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36 15/16"	15"	2½"	2½:1
30	36¼	36	22½	23	3½"	10"	3'-1"	3'-0½"	6'-1½"	6'-0"	47 15/16"	20"	3"	2½:1
36	43¾	44	26⅝	27	4"	10½"	4'-0"	2'-1½"	6'-1½"	6'-6"	54 9/16"	22"	3½"	2½:1
42	51⅛	51	31 5/16	31	4½"	11½"	4'-7"	1-10¼"	6'-5¼"	7'-2"	59½"	23"	3¾"	2½:1
48	58½	59	36	36	5"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	7'-10"	70 5/16"	24"	4¼"	2½:1
54	65	65	40	40	5½"	1'-7"	5'-3"	2'-11"	8'-2"	8'-6"	72 1/16"	24"	4¾"	2¼:1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77 15/16"	24"	5"	2¼:1

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

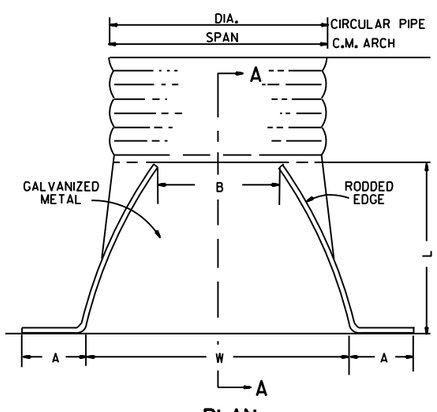


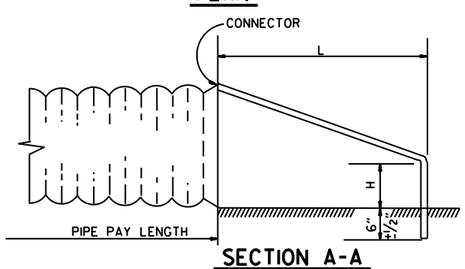
NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

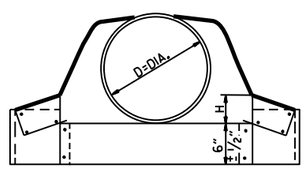


END VIEW
CONCRETE ARCH PIPE

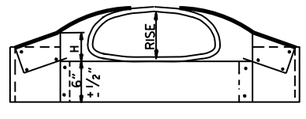
END SECTION FOR REINFORCED CONCRETE PIPE CULVERTS







CIRCULAR PIPE



C.M. ARCH PIPE

CIRCULAR PIPE

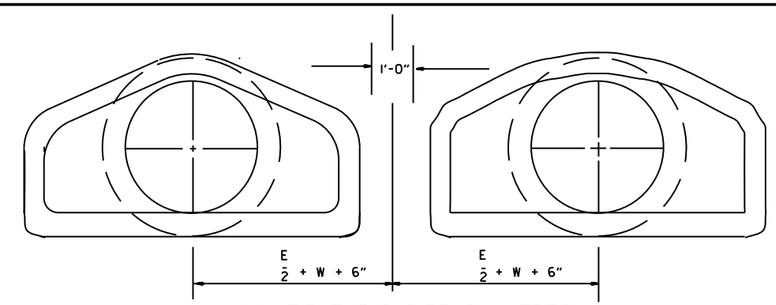
D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" ±	L 1½" ±	W 2" ±	S
		INCHES					
12	16	6	6	6	21	24	2½:1
15	16	7	8	6	26	30	2½:1
18	16	8	10	6	31	36	2½:1
21	16	9	12	6	36	42	2½:1
24	16	10	13	6	41	48	2½:1
30	14	12	16	8	51	60	2½:1
36	14	14	19	9	60	72	2½:1
42	12	16	22	11	69	84	2½:1
48	12	18	27	12	78	90	2½:1
54	12	18	30	12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

C.M. ARCH PIPE

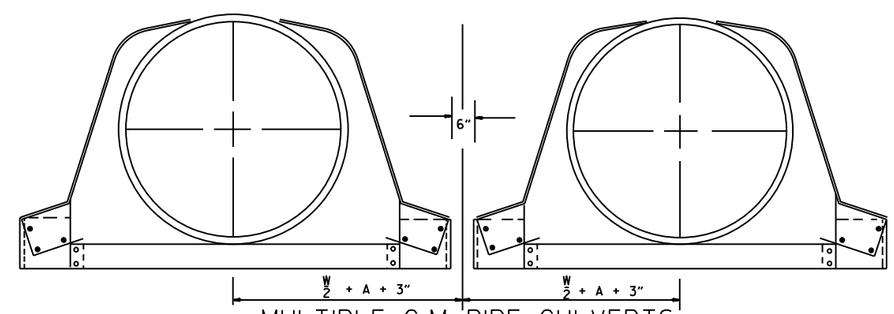
EQUIV. DIA.	SPAN	RISE	A 1" ±	B MAX.	H 1" ±	L 1½" ±	W 2" ±	S	GAUGE
	INCHES								
15"	17	13	7	9	6	19	30	2½:1	16
18"	21	15	7	10	6	23	36	2½:1	16
21"	24	18	8	12	6	28	42	2½:1	16
24"	28	20	9	14	6	32	48	2½:1	16
30"	35	24	10	16	6	39	60	2½:1	14
36"	42	29	12	18	8	46	75	2½:1	14
42"	49	33	13	21	9	53	85	2½:1	12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

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

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS



MULTIPLE R.C. PIPE CULVERTS



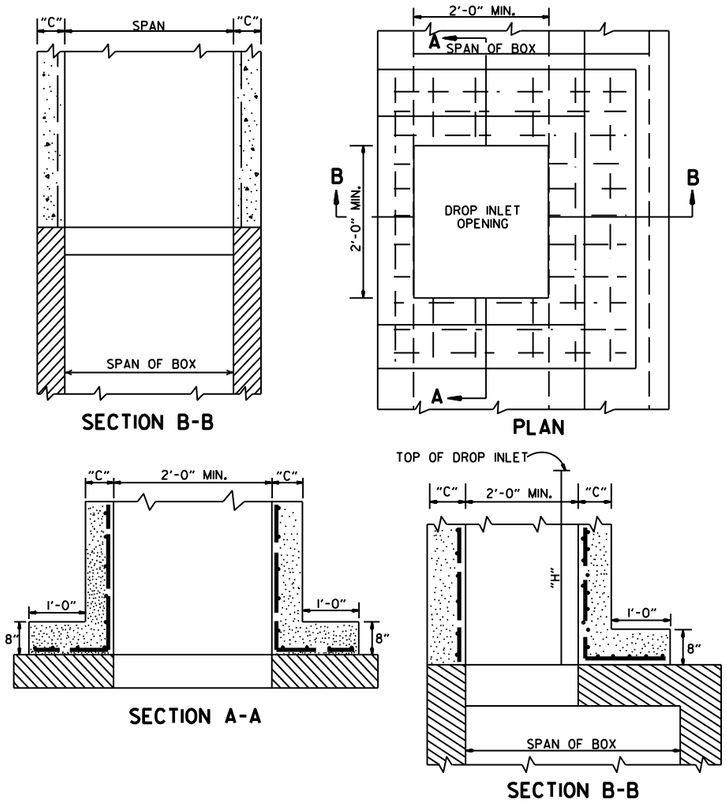
MULTIPLE C.M. PIPE CULVERTS

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

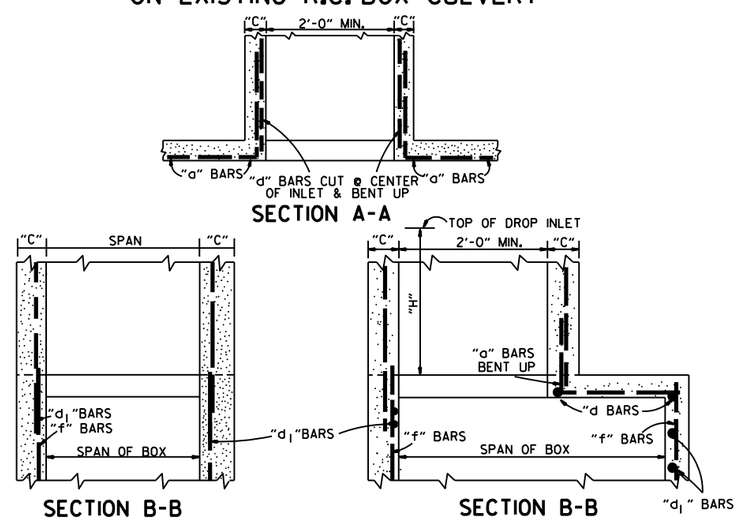
ARKANSAS STATE HIGHWAY COMMISSION

FLARED END SECTION

STANDARD DRAWING FES-2

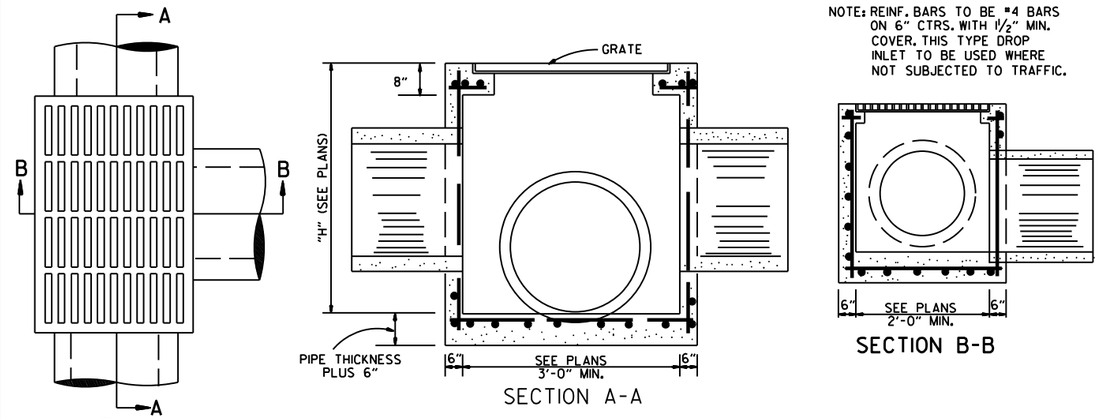


METHOD OF CONSTRUCTING DROP INLET ON EXISTING R.C. BOX CULVERT

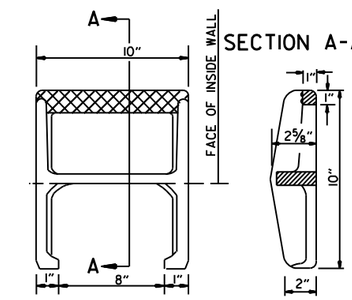


METHOD OF CONSTRUCTING DROP INLET ON NEW R.C. BOX CULVERT

NOTE: "C" DIMENSIONS AND REINFORCING BAR SIZES, SHALL CONFORM TO THOSE SHOWN ON STANDARD DRAWING FOR DROP INLET.



DROP INLET (TYPE E)

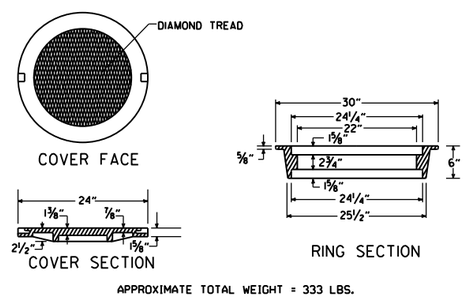


APPROX. WEIGHT = 11 LBS. (CAST IRON)

PLAN

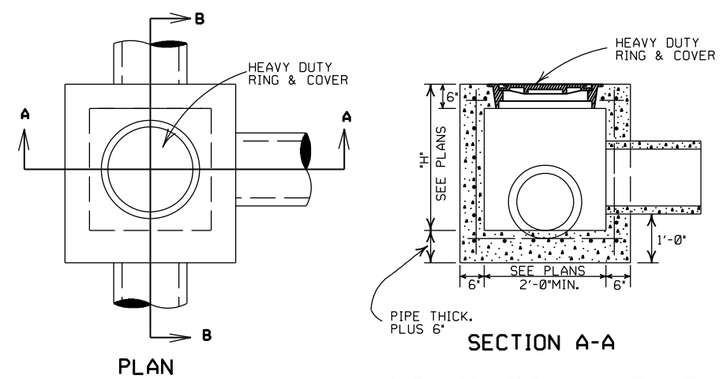
NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

DETAIL OF STEP FOR DROP INLET

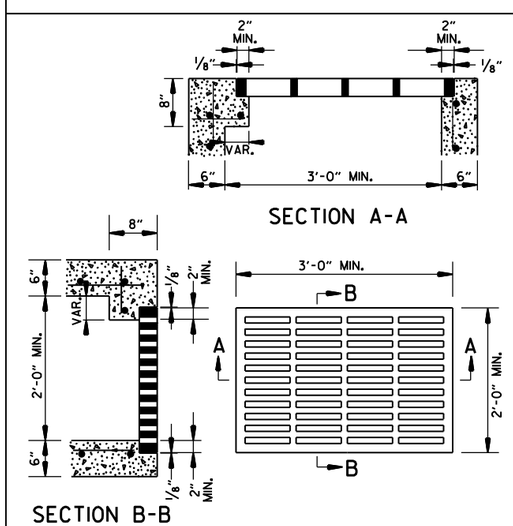


APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER

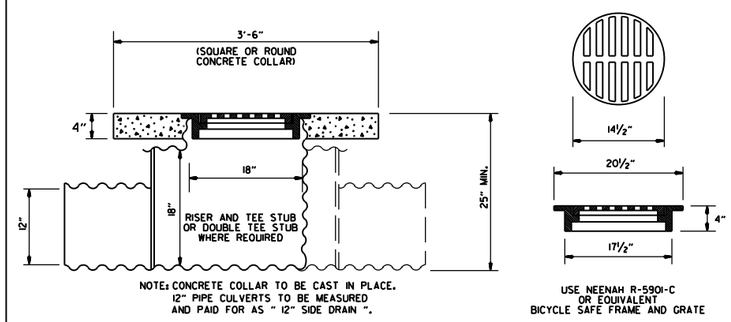


JUNCTION BOX (TYPE E)



APPROXIMATE MINIMUM WATERWAY OPENING = 260 SQ. IN.

GRATE FOR TYPE E DROP INLET



DETAIL OF YARD DRAIN

GENERAL NOTES:

1. ALL EXPOSED CORNERS SHALL BE ¾" CHAMFERED.
2. STEPS SHALL BE INSTALLED ON 16" CENTERS ON ALL INLETS 4'-0" HIGH OR OVER, OR AS APPROVED BY THE ENGINEER.
3. EXPANSION JOINT MATERIAL SHALL BE ¾" PREFORMED FIBER.
4. GRATE OR GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105 CLASS 35B. GRATE MAY BE USED WITHOUT FRAME.
5. GRATE AND FRAME SHALL NOT BE PAINTED.
6. GRATE SHALL BE BICYCLE SAFE.
7. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.
8. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M105 CLASS 35B & AASHTO M306.
9. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
10. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.

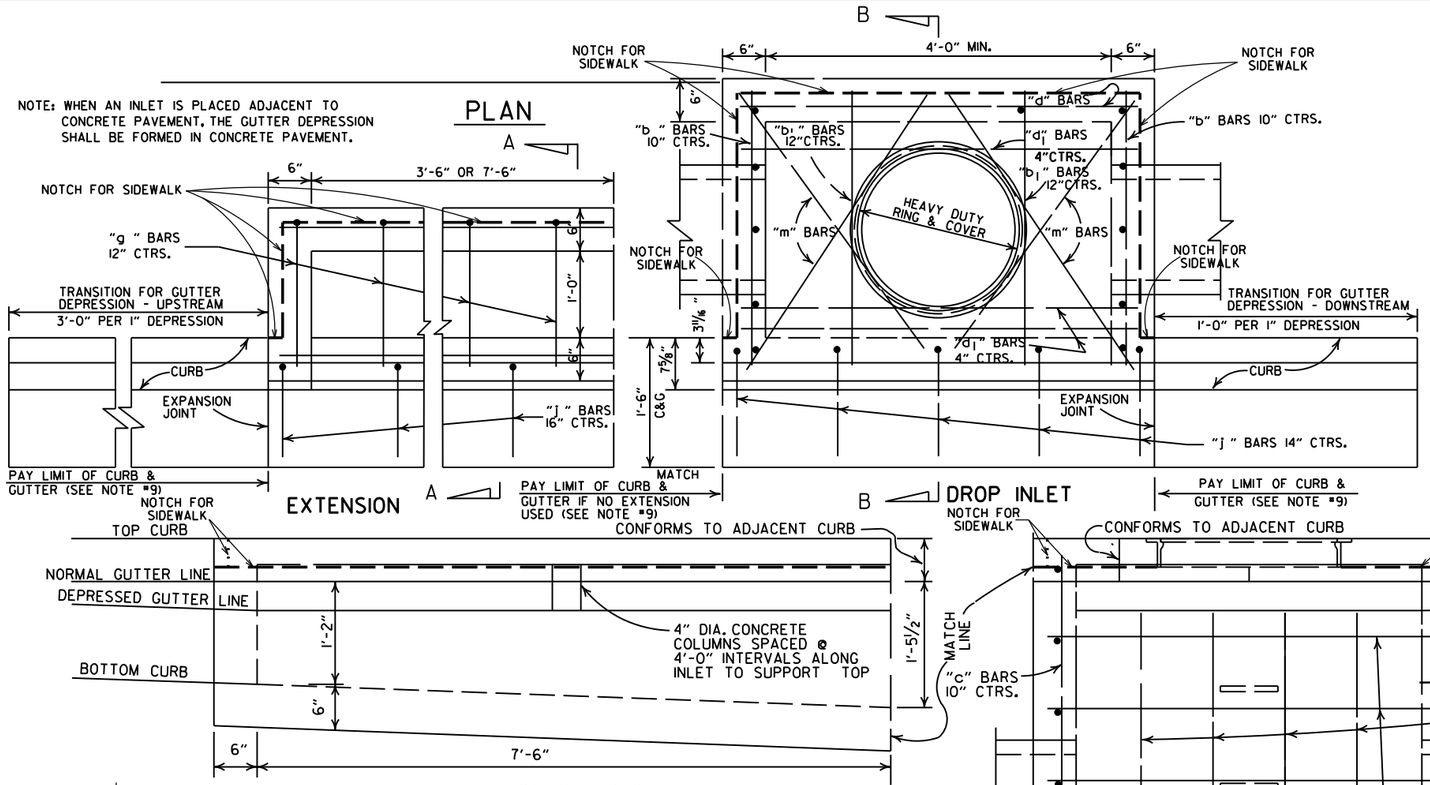
DATE REV.	REVISION	DATE FILMED
11-16-01	ADDED NOTE 10	
1-12-00	REVISED HEAVY DUTY RING & COVER	
7-02-98	CHANGED GRATE DETAIL. DELETED DI(TYPE D), REPLACED RING & COVER W/HEAVY DUTY RING & COVER, ADDED JUNCTION BOX (TYPE E)	
6-26-97	ADDED DIMENSION TO TYPE IV-A	
10-18-96	ADDED DETAIL OF YARD DRAIN	
8-15-91	DELETE TYPE IV GRATE	
7-15-88	REVISED STEP DETAIL	
5-20-83	REVISED DETAILS OF GRATES (TYPE IV & IV-A)	
2-4-83	ADDED GENERAL NOTE NO. 4	
3-2-81	ADDED TYPE IV-A GRATE	
5-22-74	DELETED INLET (TYPE F) & GRATE (TYPE III)	
10-2-72	REVISED AND REDRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLETS & JUNCTION BOXES

STANDARD DRAWING FPC-9

NOTE: WHEN AN INLET IS PLACED ADJACENT TO CONCRETE PAVEMENT, THE GUTTER DEPRESSION SHALL BE FORMED IN CONCRETE PAVEMENT.



4'-0" LENGTH DROP INLET

PIPE SIZE	MIN. WIDTH	HEIGHT 5'-0" CLASS A CONC.	HEIGHT 5'-0" REINF. STEEL	PLUS OR MINUS PER LIN. FT. OF HEIGHT CLASS A CONC.	PLUS OR MINUS PER LIN. FT. OF HEIGHT REINF. STEEL
		CU. YDS.	POUNDS	CU. YDS.	POUNDS
18"	2'-6"	1.77	156	0.28	22
24"	2'-6"	1.79	156	0.28	22
30"	3'-2"	2.39	205	0.30	26
36"	3'-8"	2.63	236	0.32	28
42"	4'-4"	2.95	250	0.34	30
48"	4'-10"	3.21	265	0.36	32

DROP INLET EXTENSION

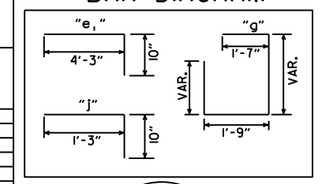
4'-0" CLASS A CONC.	4'-0" REINF. STEEL	8'-0" CLASS A CONC.	8'-0" REINF. STEEL
CU. YDS.	POUNDS	CU. YDS.	POUNDS
0.58	38	0.87	72
DEDUCT FROM QUANTITY COMPUTED FOR EACH EXTENSION ADDED.			
0.04	3		

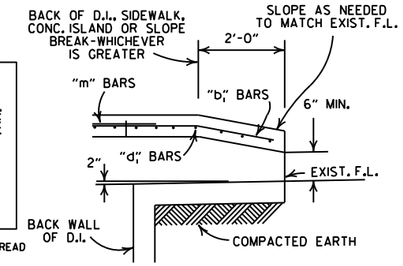
NOTE: QUANTITIES ARE APPROXIMATE AND ARE SHOWN FOR BIDDER INFORMATION ONLY.

DEDUCT FROM QUANTITY COMPUTED FOR EACH PIPE ENTERING INLET

INSIDE DIA. PIPE	CLASS A CONC.	REINF. STEEL
INCHES	CU. YDS.	POUNDS
18	0.05	2
24	0.09	3
30	0.13	4
42	0.24	8

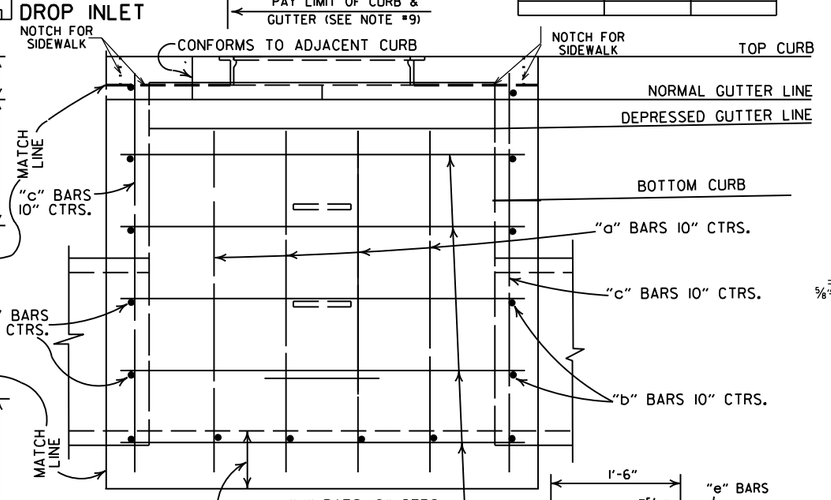
BAR DIAGRAM

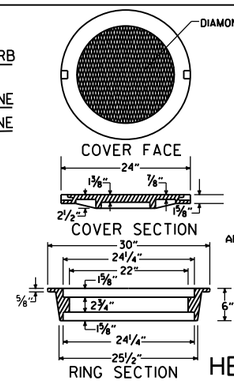




BACK OPENING

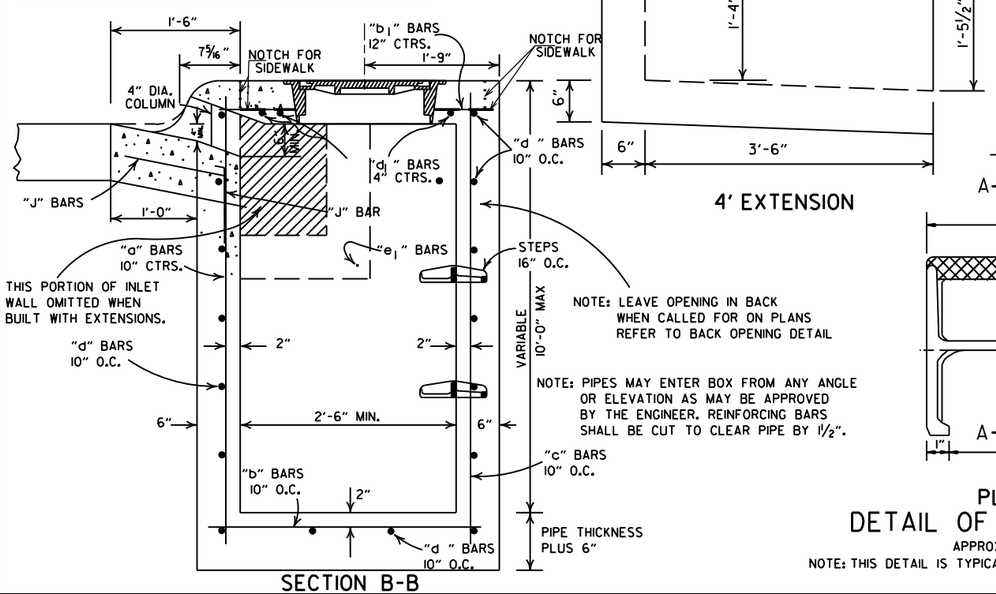
WHEN OPENING IN BACK IS CALLED FOR ON PLANS EXTEND OPENING AS SHOWN IN DETAIL. PAYMENT TO BE INCLUDED IN PRICE BID FOR DROP INLET (TYPE C).





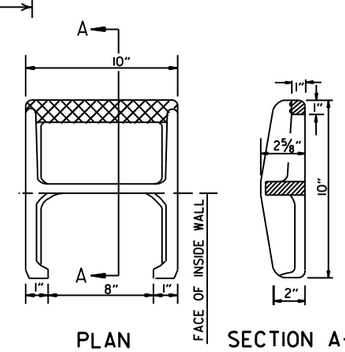
APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER



NOTE: LEAVE OPENING IN BACK WHEN CALLED FOR ON PLANS REFER TO BACK OPENING DETAIL

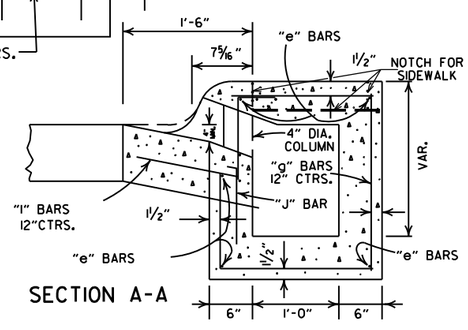
NOTE: PIPES MAY ENTER BOX FROM ANY ANGLE OR ELEVATION AS MAY BE APPROVED BY THE ENGINEER. REINFORCING BARS SHALL BE CUT TO CLEAR PIPE BY 1 1/2".



DETAIL OF STEP FOR DROP INLET

APPROX. WEIGHT = 11 LBS. (CAST IRON)

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



GENERAL NOTES:

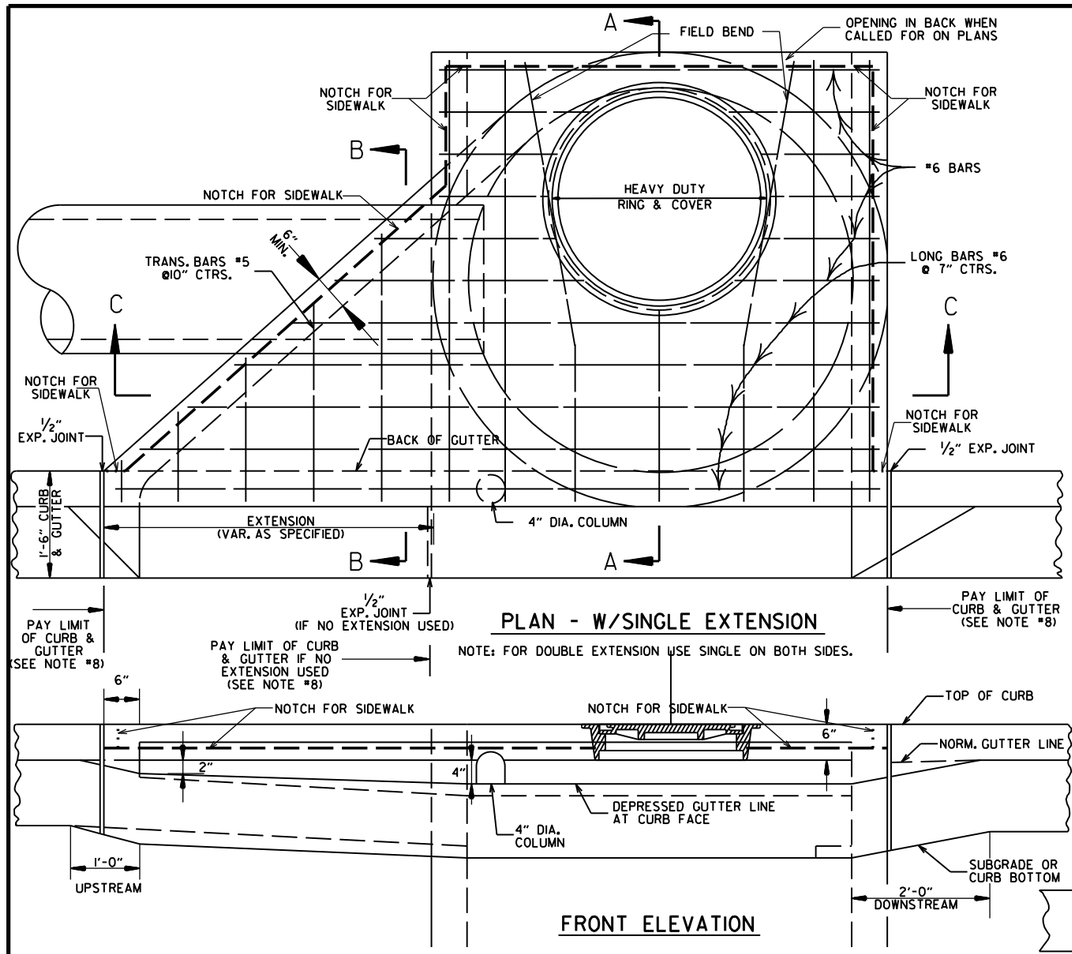
1. ALL EXPOSED CORNERS TO HAVE 3/4" CHAMFER.
2. STEPS SHALL BE INSTALLED IN ALL INLETS 4'-0" HIGH AND OVER OF AS APPROVED BY THE ENGINEER.
3. ALL REINF. BARS SHALL BE #4 AND HAVE 1 1/2" COVER.
4. DROP INLETS AND EXTENSION ON CURVED SECTIONS SHALL CONFORM TO THE CURVATURE OF THE CURB.
5. THIS DROP INLET MAY BE CONSTRUCTED ON NEW OR EXISTING R.C. BOX CULVERT AS SHOWN ON F.P.C.-9.
6. WHEN PLANS CALL FOR DROP INLET OVER 10'-0" HIGH, FLOOR AND WALLS SHALL BE CONSTRUCTED AS SHOWN FOR TYPE "RM" DROP INLET (FPC-9D).
7. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.
8. DURING CONSTRUCTION OF THE ROADWAY THE CONTRACTOR SHALL MAINTAIN DRAINAGE INTO OR AROUND THE DROP INLET AS APPROVED BY THE ENGINEER.
9. PAYMENT FOR CURB AND/OR CURB AND GUTTER WITHIN THE LIMITS OF DROP INLETS AND DROP INLET EXTENSIONS SHALL BE CONSIDERED INCLUDED IN PAYMENT MADE FOR DROP INLETS AND/OR DROP INLET EXTENSIONS.
10. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M105 CLASS 35B & AASHTO M306.
11. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
12. 4"×2" NOTCH SHALL BE FORMED IN ALL DROP INLETS TO SUPPORT SIDEWALK CONSTRUCTION. REFER TO DETAIL OF NOTCH FOR SIDEWALKS.
13. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.

DATE REV.	REVISION	DATE FILMED
8-22-02	ADDED PAY LIMIT CURB NOTES TO SECTIONS A-A & B-B	
11-16-01	ADDED NOTE 13; REVISED SECTION B-B	
1-12-00	CORRECTED DIMENSION ON SECTION B-B & REVISED RING & COVER	
5-13-99	ADDED DETAIL OF NOTCH FOR SIDEWALKS	
7-02-98	REPLACED RING & COVER W/HEAVY DUTY RING & COVER ADDED NOTES 9,10,&11	
10-18-96	CORRECTED SPELLING	
4-26-96	ADDED NOTE 8 & REVISED (4')(8') EXTENSION TITLES	10-18-96
4-1-93	REVISED BACK OPENING & NOTE	
8-15-91	DELETE TYPE IV GRATE	
7-15-88	REVISED STEP DETAIL	
5-20-83	REVISED DETAILS OF GRATES (TYPE IV & IV-A)	
2-4-83	ADDED GENERAL NOTE NO. 4	
3-2-81	ADDED TYPE IV-A GRATE	
5-22-74	DELETED INLET (TYPE F) & GRATE (TYPE III)	
10-2-72	REVISED AND REDRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLETS (TYPE C)

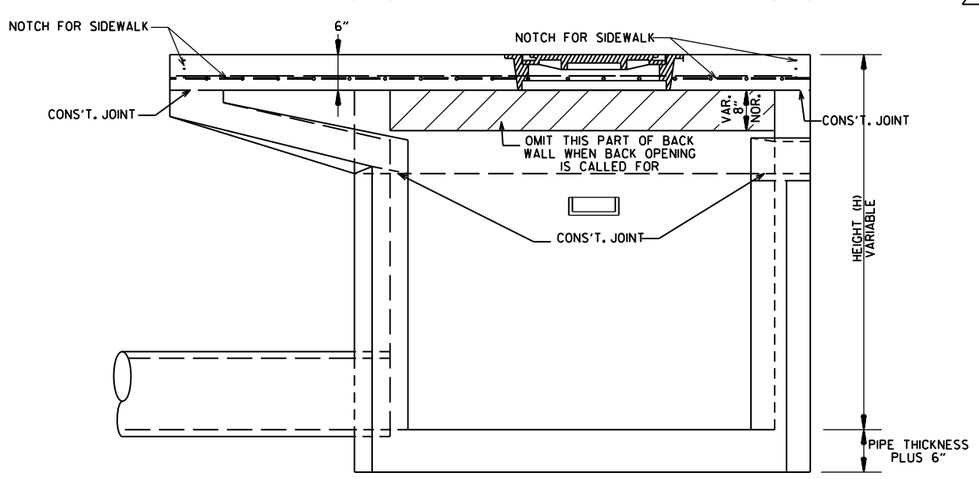
STANDARD DRAWING FPC-9E



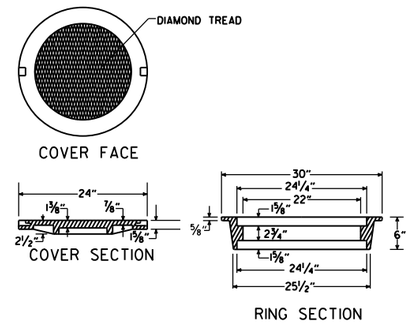
PLAN - W/SINGLE EXTENSION

NOTE: FOR DOUBLE EXTENSION USE SINGLE ON BOTH SIDES.

FRONT ELEVATION



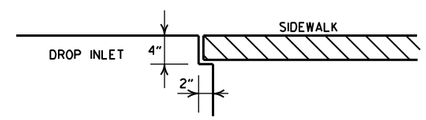
SECTION C-C



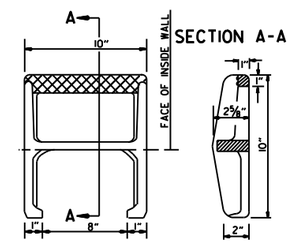
APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER

1. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M105 CLASS 35B & AASHTO M306.
2. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
3. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.



DETAIL OF NOTCH FOR SIDEWALKS

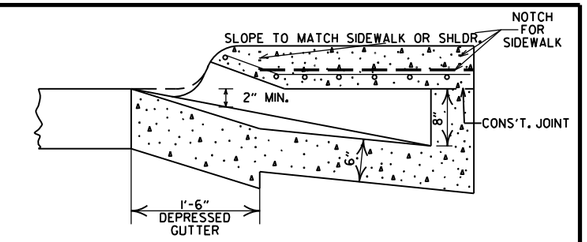


APPROX. WEIGHT = 11 LBS. (CAST IRON)

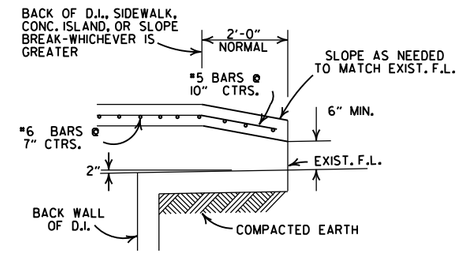
PLAN

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

DETAIL OF STEP FOR DROP INLET



SECTION B-B

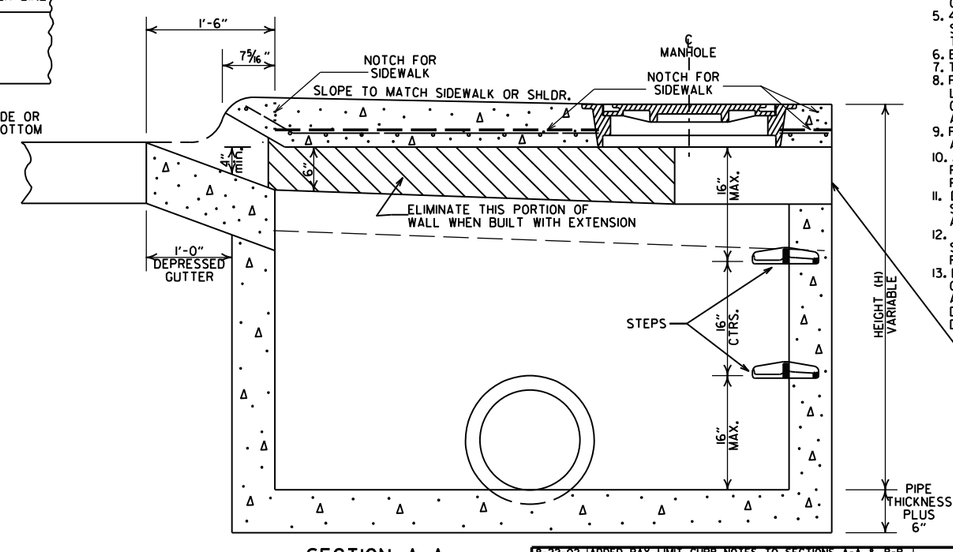


BACK OPENING

WHEN OPENING IN BACK IS CALLED FOR ON PLANS EXTEND OPENING AS SHOWN IN DETAIL. PAYMENT TO BE INCLUDED IN PRICE BID FOR DROP INLET (TYPE MO).

GENERAL NOTES:

1. ALL EXPOSED CORNERS TO HAVE 3/4" CHAMFER.
2. STEPS SHALL BE INSTALLED IN ALL INLETS 4'-0" HIGH AND OVER OR AS DIRECTED BY THE ENGINEER.
3. ALL REINFORCING BARS SHALL BE GRADE 60 AND HAVE MIN. 1 1/2" COVER.
4. DROP INLETS AND EXTENSION ON CURVED SECTIONS SHALL CONFORM TO THE CURVATURE OF THE CURB.
5. 4" DIA. COLUMNS SPACED AT MAX. 4'-0" INTERVALS SHALL BE INSTALLED ALONG INLET AND EXTENSION TO SUPPORT TOP.
6. BASE AND INLET WALLS SHALL BE CAST MONOLITHICALLY.
7. THE THROAT SHALL BE CAST INTEGRALLY WITH THE GUTTER.
8. PAYMENT FOR CURB AND/OR CURB AND GUTTER WITHIN THE LIMITS OF DROP INLETS AND DROP INLET EXTENSIONS SHALL BE CONSIDERED INCLUDED IN PAYMENT MADE FOR DROP INLETS AND/OR DROP INLET EXTENSIONS.
9. PIPES MAY ENTER DROP INLET FROM ANY ANGLE OR ELEVATION AS MAY BE APPROVED BY THE ENGINEER.
10. APPROPRIATE SIZE TYPE C DROP INLETS MAY BE SUBSTITUTED FOR TYPE MO DROP INLETS AS APPROVED BY THE ENGINEER. PAYMENT TO BE AS DROP INLET (TYPE MO).
11. DURING CONSTRUCTION OF THE ROADWAY THE CONTRACTOR SHALL MAINTAIN DRAINAGE INTO OR AROUND THE DROP INLET AS APPROVED BY THE ENGINEER.
12. 4"x2" NOTCH SHALL BE FORMED IN ALL DROP INLETS TO SUPPORT SIDEWALK CONSTRUCTION. REFER TO DETAIL OF NOTCH FOR SIDEWALKS.
13. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.



SECTION A-A

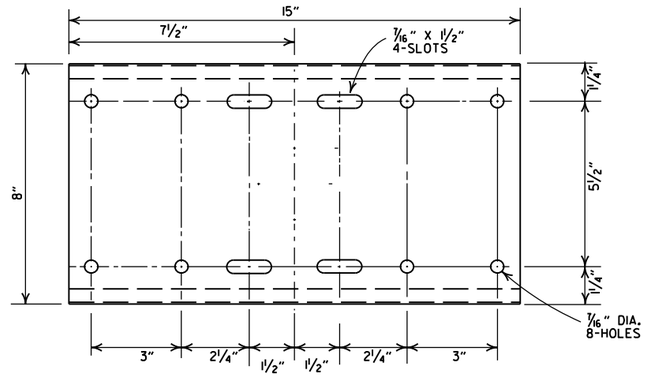
		MINIMUM WALL THICKNESS	
DIA. OF D.I.	DIA. OF OUTLET PIPE	CAST IN PLACE	PRECAST
4' I.D.	12" THRU 27"	6"	5"
5' I.D.	30" THRU 42"	8"	6"
6' I.D.	48" THRU 54"	8"	7"

DATE	REVISIONS	DATE FILMED
8-22-02	ADDED PAY LIMIT CURB NOTES TO SECTIONS A-A & B-B	
11-16-01	ADDED NOTE 13	
1-12-00	REVISED HEAVY DUTY RING & COVER	
5-13-99	ADDED NOTCH DETAIL FOR SIDEWALKS	
7-02-98	REP. NOTE 8. REM. PLAN DET.. REV. PICTURE FOR NEW RING & COVER. ADDED HEAVY DUTY RING & COVER AND DETAIL OF STEP FOR DROP INLET	
4-26-96	ADDED NOTE 12 ADJ. OPENING DIMENSION	
10-12-95	CORRECTED #6 BAR SPACING	
7-20-95	CORRECTED DIAMETER OF D.I. IN BOX	
2-2-95	TYPE C TO MO (OPEN. BACK DETAIL)	
11-3-94	REVISED GENERAL NOTES	11-3-94
4-1-93	REV. BACK OPEN. DETAIL & NOTE	4-1-93
8-16-91	REVISED NOTES 11,12 & ADDED BK.OPEN DETAIL	8-15-91
11-30-89	ADDED NOTE NO. 12	11-30-89
3-23-89	ADDED NOTE & MINUMUM WALL THICKNESS	513-3-23-89
7-15-88	ADDED EXTEND NOTE TO SECTION A-A	639-7-15-88
1-14-87	MODIFIED WALL THICKNESS	783-1-14-87
6-12-87	ISSUED	4-6-12-87

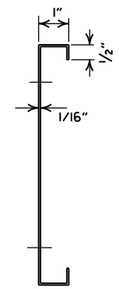
ARKANSAS STATE HIGHWAY COMMISSION

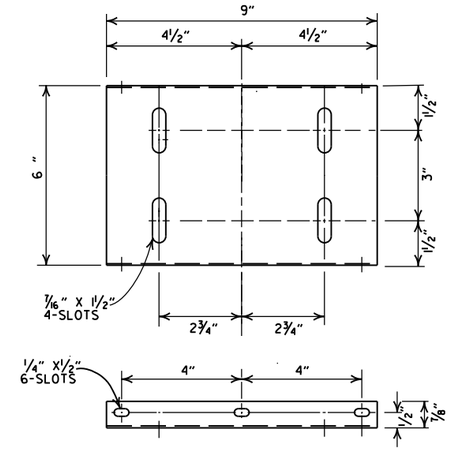
DETAILS OF DROP INLET (TYPE MO)

STANDARD DRAWING FPC-9M

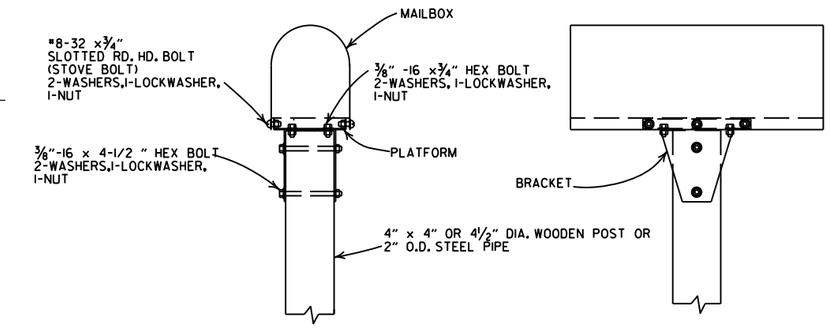


SHELF

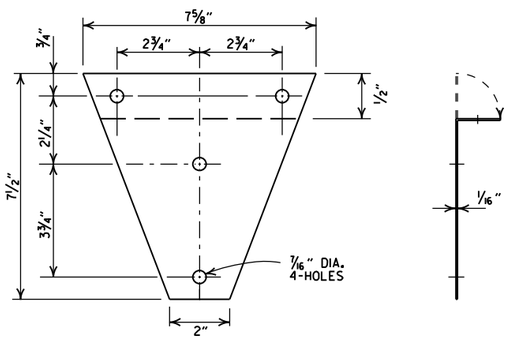




PLATFORM



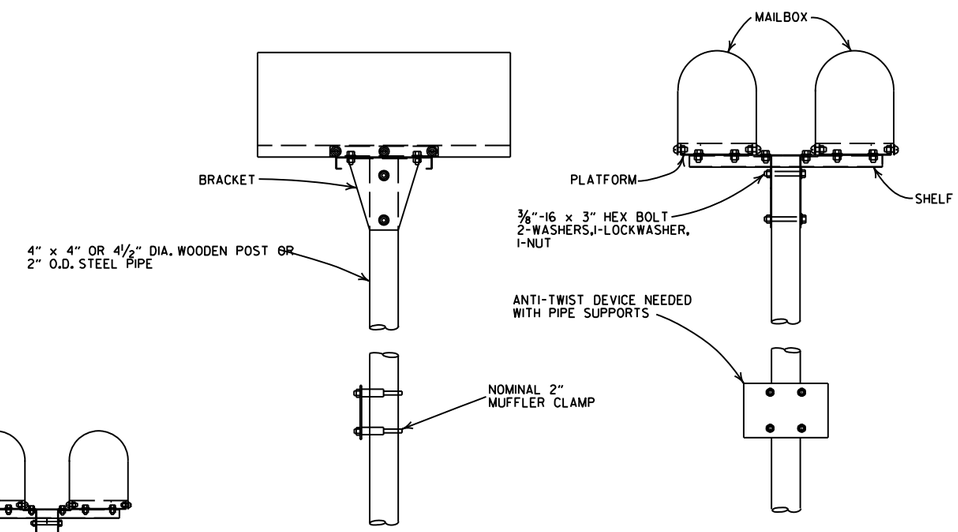
SINGLE INSTALLATION



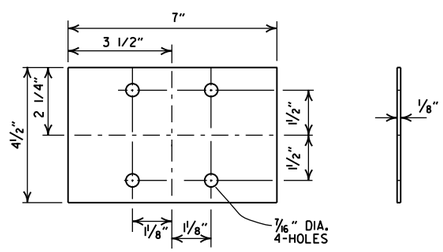
BRACKET

GENERAL NOTES

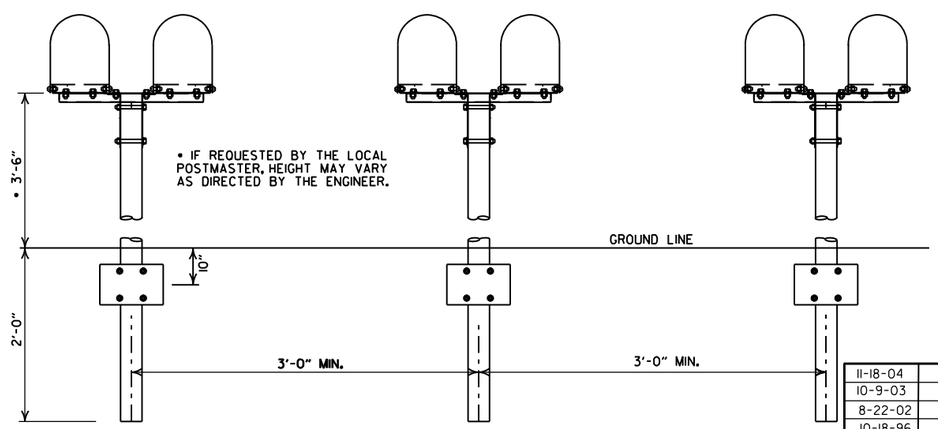
1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
3. MAILBOX SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED OR PAINTED STEEL, HOWEVER TREATED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



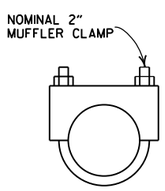
DOUBLE INSTALLATION



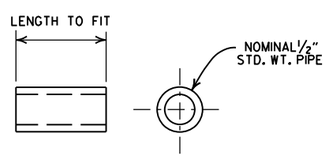
ANTI-TWIST PLATE



SPACING FOR MULTIPLE POST INSTALLATION



CLAMP



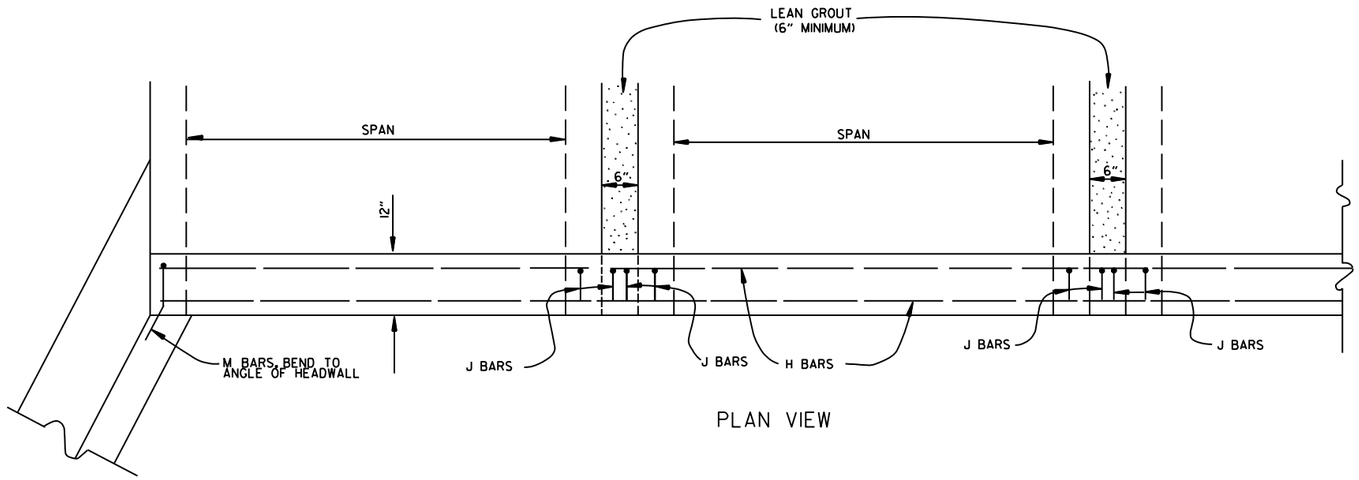
SPACER

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

ARKANSAS STATE HIGHWAY COMMISSION

MAILBOX DETAILS

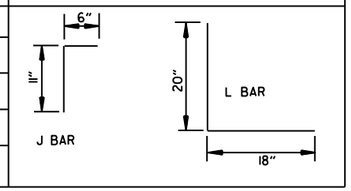
STANDARD DRAWING MB-1



PLAN VIEW

BAR LIST

BAR	NO.	SIZE	LENGTH	BAR BENDING DIAGRAM
H	2	#4	•	
I	•	#4	•	
J	•	#4	1'-5"	
L	•	#4	3'-2"	
M	•	#4	1'-8"	



• NOTE: LENGTH AND NUMBER OF BARS VARIES WITH SIZE OF CULVERT

GENERAL NOTES

WINGS, CURTAIN WALLS AND APRONS SHALL BE TIED TO THE PRECAST CULVERT SECTION BY CASTING BARS IN CULVERT END SECTIONS AS SHOWN OR BY DOWELING AND GROUTING. J BARS AND M BARS SHALL BE EMBEDDED A MINIMUM OF 10" IN PRECAST BOX.

WINGS, FOOTINGS, APRONS AND CURTAIN WALLS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPLICABLE WING DRAWING. STEEL AND CONCRETE QUANTITIES WILL BE ADJUSTED TO FIT THE IN-PLACE WIDTH & HEIGHT OF THE PRECAST CONCRETE BOX CULVERTS.

ALL EXPOSED CORNERS TO HAVE ¾" CHAMFERS.

WINGWALLS AND FOOTINGS MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER.

ALL CONCRETE, REINFORCING STEEL, LEAN GROUT, MEMBRANE WATERPROOFING, DRAINAGE FILL MATERIAL, GEOTEXTILE FILTER FABRIC, LABOR, MATERIALS AND EQUIPMENT REQUIRED FOR INSTALLING PRECAST BOX CULVERTS WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR THE ITEMS AS SPECIFIED IN SECTION 607 OF THE STANDARD SPECIFICATIONS.

LEAN GROUT SHALL CONSIST OF A SAND CEMENT MIXTURE MEETING THE FOLLOWING REQUIREMENTS:
PORTLAND CEMENT SHALL BE TYPE I AND SHALL MEET THE REQUIREMENTS OF AASHTO M 85.
SAND SHALL MEET THE REQUIREMENTS OF FINE AGGREGATE AS SPECIFIED IN SECTION 802.02 OF THE STANDARD SPECIFICATIONS.
THE SAND CEMENT MIXTURE SHALL CONSIST OF NOT LESS THAN 1.5 SACKS OF PORTLAND CEMENT PER TON OF MATERIAL MIXTURE.
THE MIXTURE SHALL CONTAIN SUFFICIENT WATER TO HYDRATE THE CEMENTS. THE SAND CEMENT MIXTURE SHALL BE PLACED IN MAXIMUM 8 INCH THICK LIFTS, LOOSE MEASURE, AND THOROUGHLY RODDED AND TAMPED AROUND BOX TO THOROUGHLY FILL ALL VOIDS.

MEMBRANE WATERPROOFING CONFORMING TO THE REQUIREMENTS OF SECTION 815 OF THE STANDARD SPECIFICATIONS SHALL BE APPLIED TO ALL BOX CULVERT JOINTS.

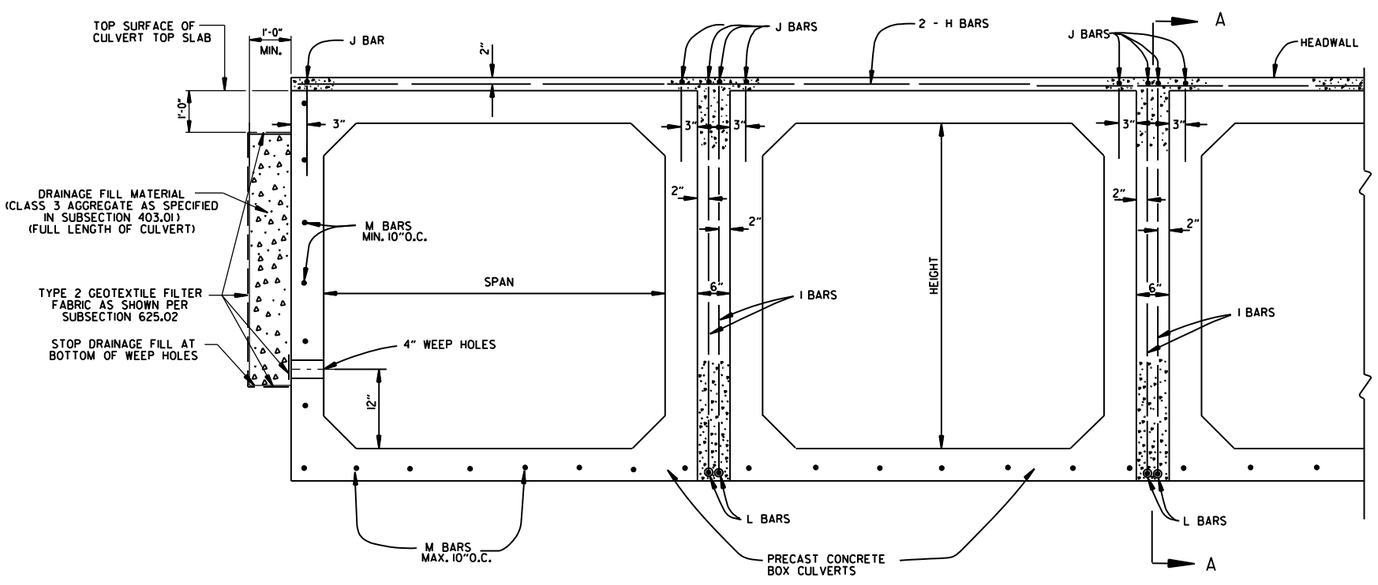
THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP EXTERNAL JOINT AND SHALL EXTEND 1 FOOT DOWN THE SIDES OF THE CULVERT.

IN OUTER BARRELS, ONE WEEP HOLE IS REQUIRED IN EXTERIOR WALLS OF EACH PRECAST CULVERT SECTION. WEEP HOLES SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" IN THE ASSEMBLED CULVERT AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE BOTTOM SLAB.

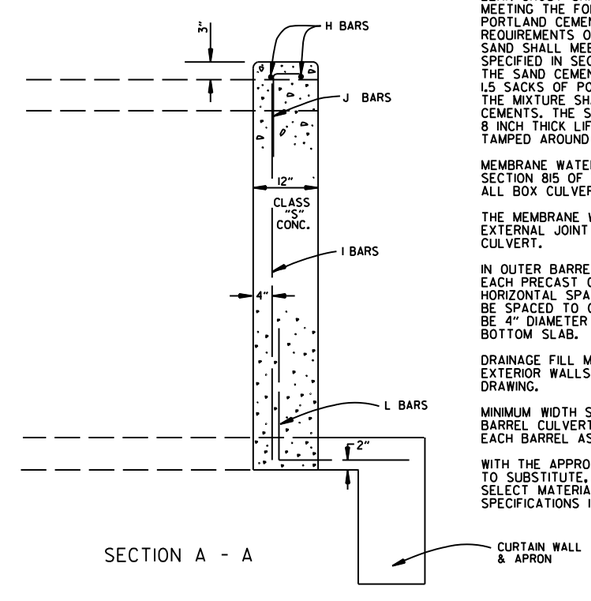
DRAINAGE FILL MATERIAL WITH GEOTEXTILE FABRIC IS REQUIRED AT THE EXTERIOR WALLS OF THE ASSEMBLED CULVERT, SEE DETAILS ON THIS DRAWING.

MINIMUM WIDTH SHALL BE 12" (6" ON EACH SIDE OF JOINT). ON MULTIPLE BARREL CULVERTS, MEMBRANE WATERPROOFING SHALL BE APPLIED TO EACH BARREL AS DESCRIBED ABOVE.

WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, FLOWABLE SELECT MATERIAL CONFORMING TO SECTION 206 OF THE STANDARD SPECIFICATIONS IN LIEU OF LEAN GROUT.



END VIEW



SECTION A - A

DATE	REVISION	DATE FILMED
1-28-15	REVISED GEOTEXTILE FABRIC PLACEMENT	
12-15-11	ADDED NOTE & DTLS FOR WEEP HOLE AND DRAINAGE FILL	
10-15-09	ADDED GENERAL NOTE	
11-10-05	REVISED SPACING OF "M" BARS	
4-10-03	REVISED GENERAL NOTES	
10-18-96	CORRECTED AASHTO REF.	
10-1-92	ADDED NOTE FOR MEMBRANE WATERPROOFING	
8-15-91	ADDED NOTE FOR LEAN GROUT	
11- 8-90	REVISED FOR 1991 SPECS	
11-30-89	ISSUED: JABE	

ARKANSAS STATE HIGHWAY COMMISSION

PRECAST CONCRETE BOX CULVERTS

STANDARD DRAWING PBC-1

REINFORCED CONCRETE ARCH PIPE DIMENSIONS

EQUIV. DIA.	SPAN		RISE	
	AASHTO M 206	ARDOT NOMINAL	AASHTO M 206	ARDOT NOMINAL
INCHES	INCHES			
15	18	18	11	11
18	22	22	13½	14
21	26	26	15½	16
24	28½	29	18	18
30	36¼	36	22½	23
36	43⅜	44	26⅝	27
42	51⅛	51	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.

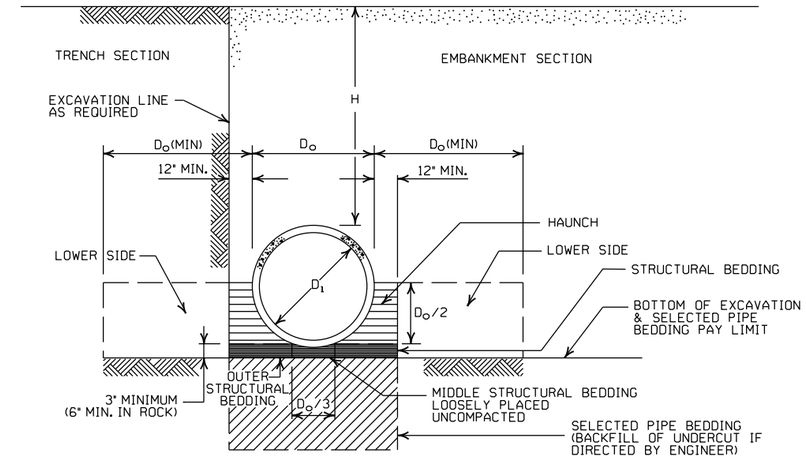
- LEGEND -

D_i = 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

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.) INSTALLATION TYPE 1		MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1
			2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM				2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM		
15	17x13	3	0.064	2		15	0.060	2	15
18	21x15	3	0.064	2		15	0.060	2	15
21	24x18	3	0.064	2.25		15	0.060	2.25	15
24	28x20	3	0.064	2.5		15	0.075	2.5	15
30	35x24	3	0.079	3		12	0.075	3	12
36	42x29	3½	0.079	3		12	0.105	3	12
42	49x33	4	0.079	3		12	0.105	3	12
48	57x38	5	0.109	3		13	0.135	3	13
54	64x43	6	0.109	3		14	0.135	3	14
60	71x47	7	0.138	3		15	0.164	3	15
66	77x52	8	0.168	3		15			
72	83x57	9	0.168	3		15			
			② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM						
				INSTALLATION TYPE 2	INSTALLATION TYPE 1	INSTALLATION TYPE 2 / INSTALLATION 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			

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

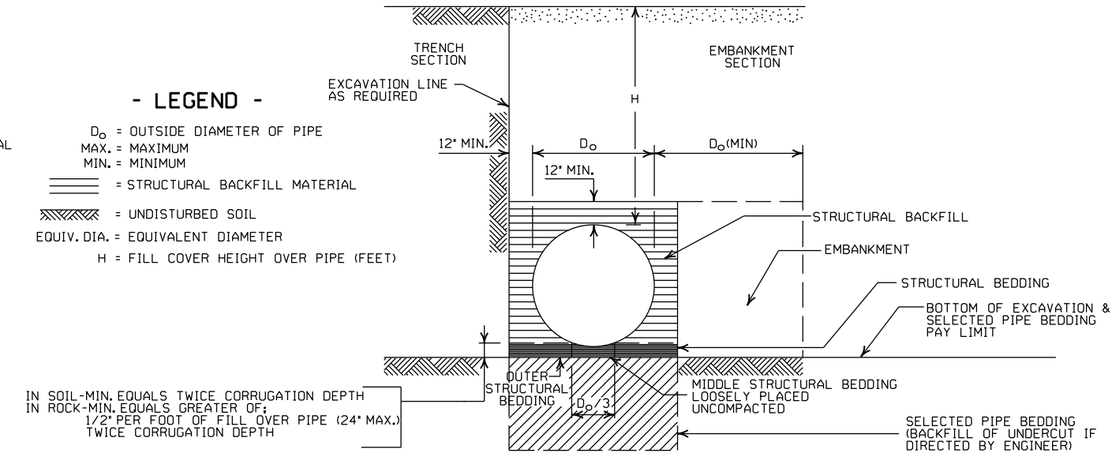
③ SM-3 WILL NOT BE ALLOWED.

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

- 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."

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.

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"	"H" >OR= 10'-0"
18"	4'-6"	4'-6"
24"	5'-0"	6'-0"
30"	5'-6"	7'-6"
36"	6'-0"	9'-0"
42"	7'-0"	10'-6"
48"	8'-0"	12'-0"

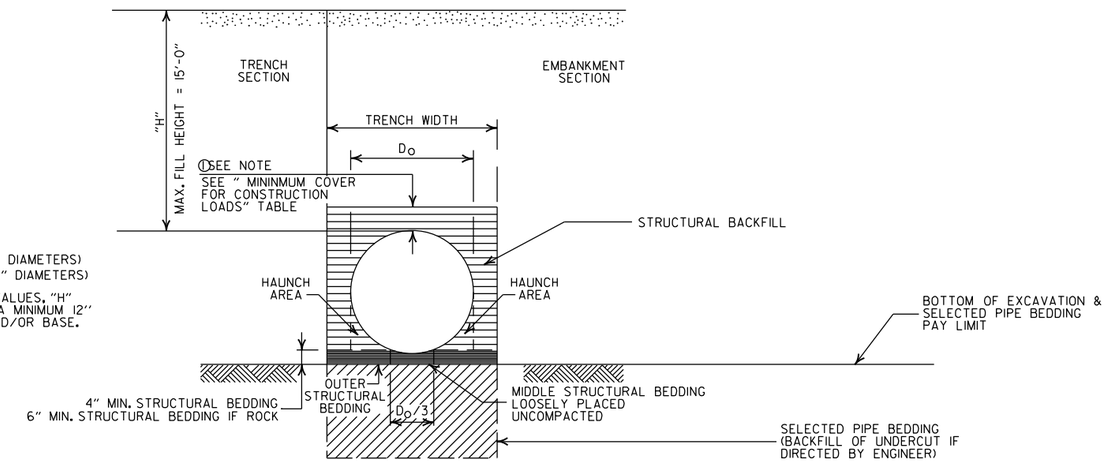
①NOTE:
18" MIN. (18" - 30" DIAMETERS)
24" MIN. (36" - 48" DIAMETERS)

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

MINIMUM COVER FOR CONSTRUCTION LOADS

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS			
	18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-175.0 (KIPS)
36" OR LESS	2'-0"	2'-6"	3'-0"	3'-0"
42" OR GREATER	3'-0"	3'-0"	3'-6"	4'-0"

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. HIGH DENSITY POLYETHYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR HDPE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

H = FILL HEIGHT (FT.)
D_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	REVISED GENERAL NOTES & MINIMUM COVER NOTE	
11-17-10	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)

STANDARD DRAWING PCP-1

INSTALLATION TYPE	•• MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 2	•SELECTED MATERIALS (CLASS SM-1, SM-2, OR SM-4)

• AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7) MAY BE USED IN LIEU OF SELECTED MATERIAL.

SM3 WILL NOT BE ALLOWED.

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

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

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

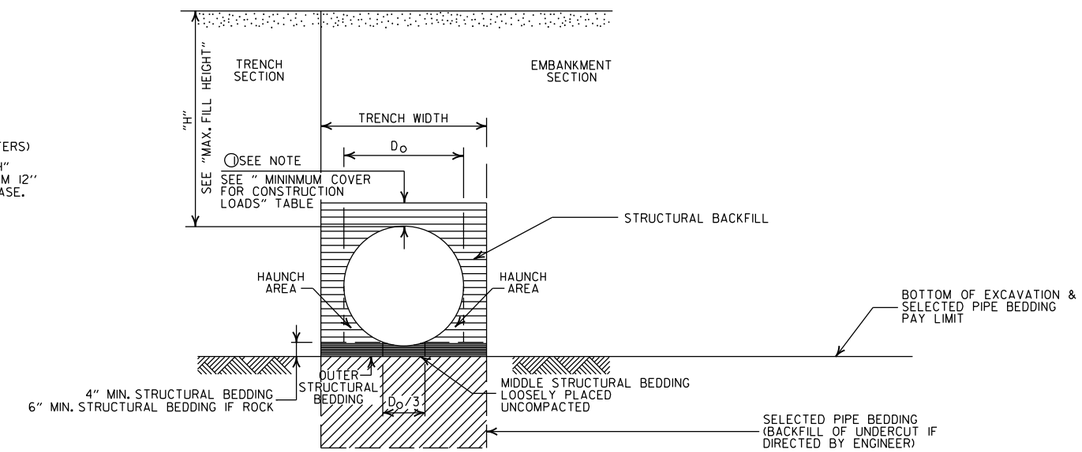
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

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"

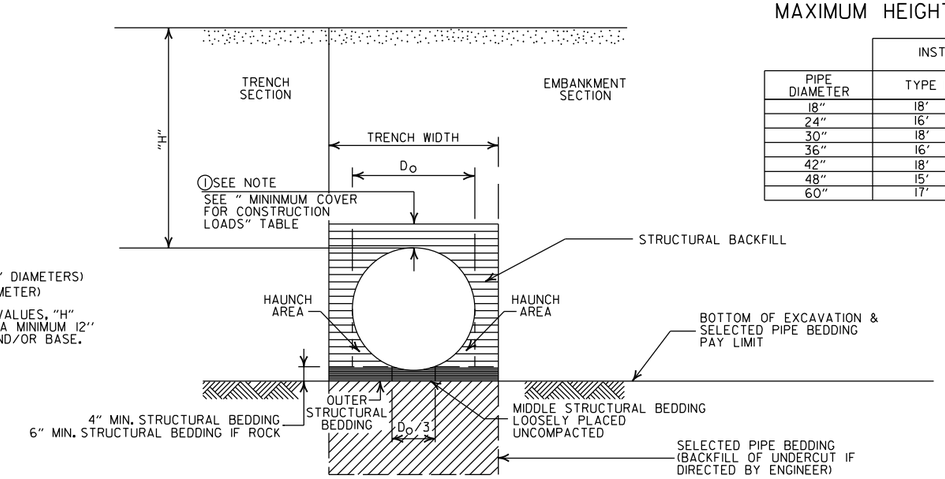
MINIMUM COVER FOR CONSTRUCTION LOADS

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

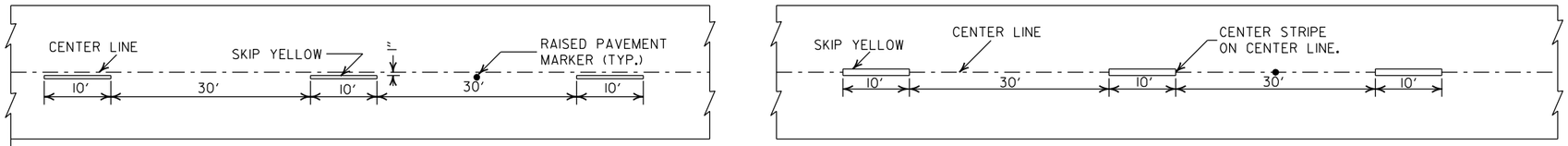
DATE	REVISION	DATE FILMED
02-27-20	REVISED	
11-07-19	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (POLYPROPYLENE)

STANDARD DRAWING PCP-3

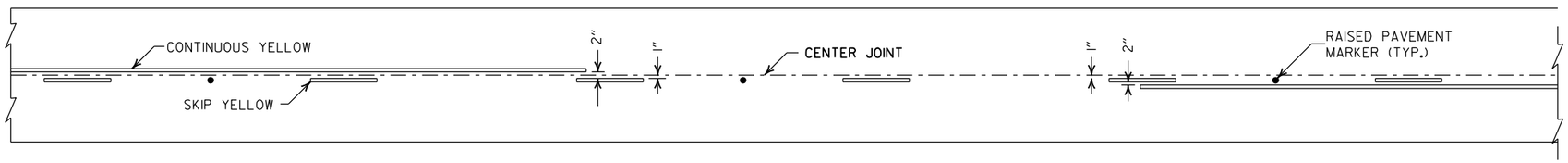
NOTES:
1. REFER TO THE STRIPING DETAILS FOR PAVEMENT MARKING LINE WIDTHS.
2. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
3. RAISED PAVEMENT MARKERS SHALL BE PLACED ON AN 80 FEET SPACING UNLESS OTHERWISE SHOWN IN THE PLANS.



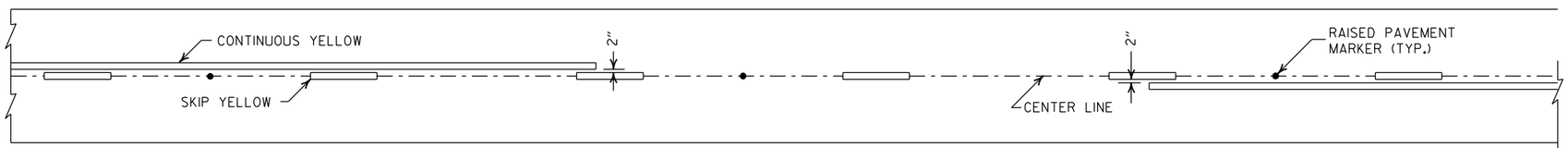
CONCRETE PAVEMENT

ASPHALT PAVEMENT

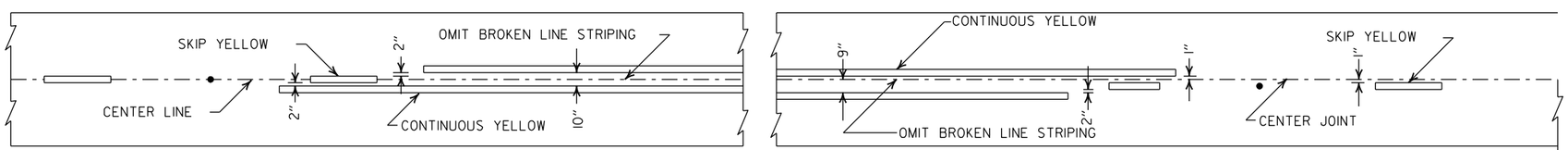
BROKEN LINE STRIPING



SOLID LINE STRIPING ON CONCRETE PAVEMENT



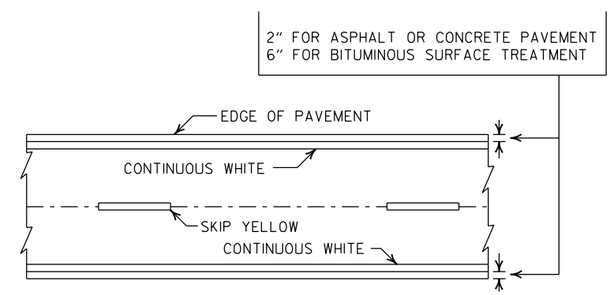
SOLID LINE STRIPING ON ASPHALT PAVEMENT



ASPHALT PAVEMENT

CONCRETE PAVEMENT

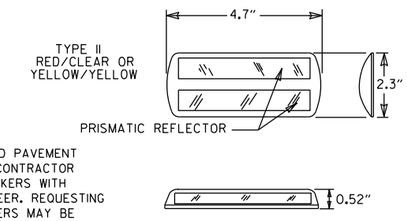
STRIPING AT ADJACENT NO PASSING LANES



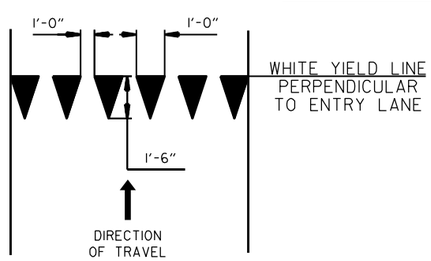
PAVEMENT EDGE LINE MARKING

NOTE:
THE RED LENS OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.

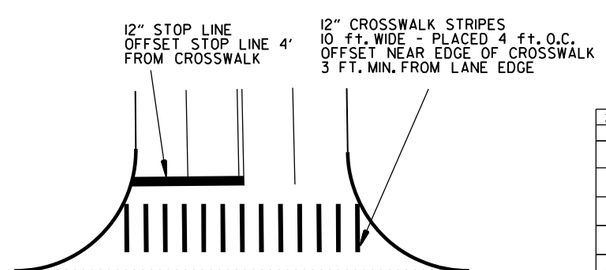
NOTE:
DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE ARDOT QUALIFIED PRODUCTS LIST.



DETAIL OF STANDARD RAISED PAVEMENT MARKERS



YIELD LINE DETAIL



CROSSWALK AND STOP LINE DETAILS

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

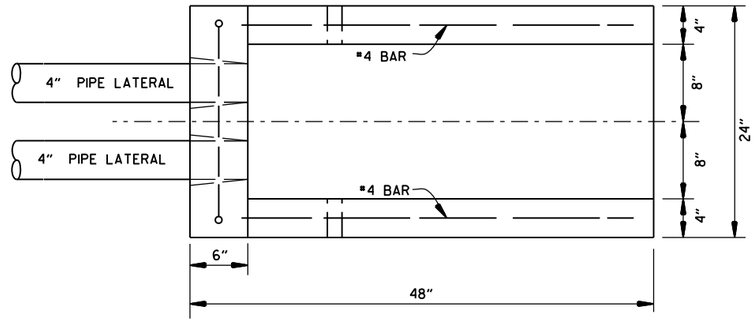
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

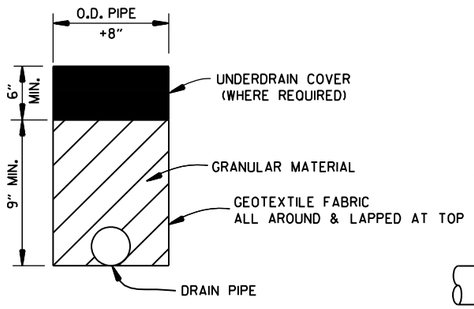
NOTE:

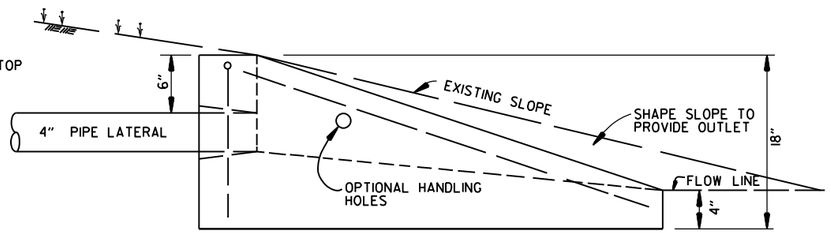
1. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.

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

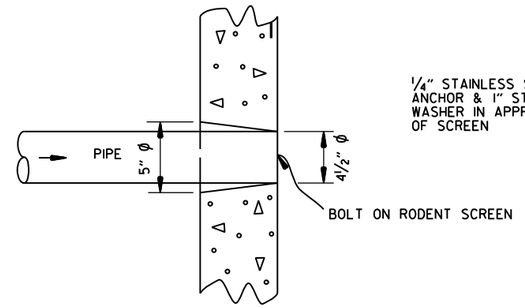


PLAN VIEW

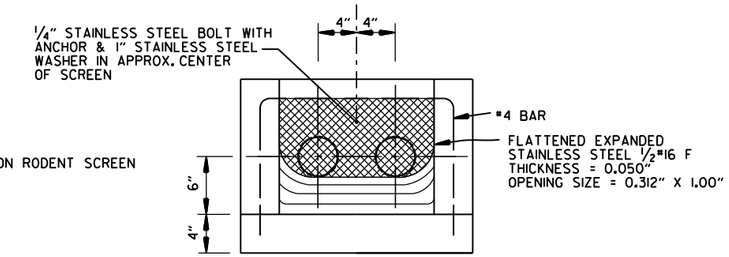




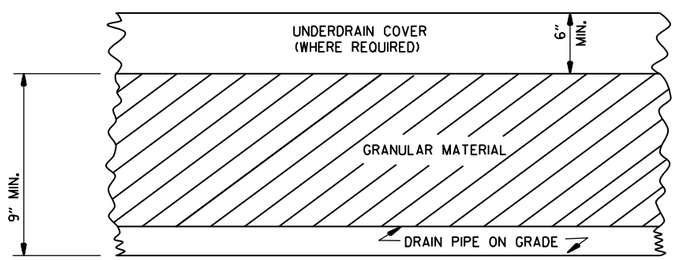
SIDE VIEW



DETAIL OF HOLE
FOR 4" PIPE

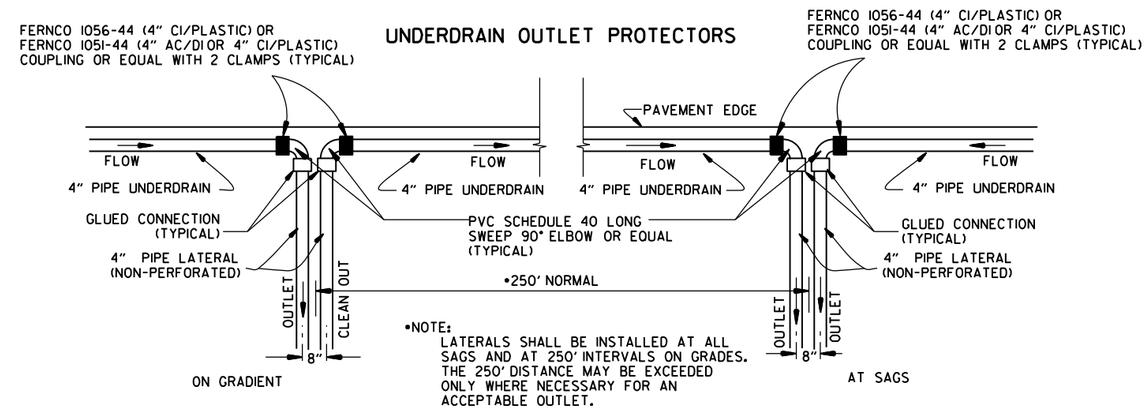


FRONT VIEW
(DETAIL OF RODENT SCREEN)



DETAILS OF PIPE UNDERDRAIN

UNDERDRAIN OUTLET PROTECTORS



•NOTE:
LATERALS SHALL BE INSTALLED AT ALL SAGS AND AT 250' INTERVALS ON GRADES. THE 250' DISTANCE MAY BE EXCEEDED ONLY WHERE NECESSARY FOR AN ACCEPTABLE OUTLET.

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

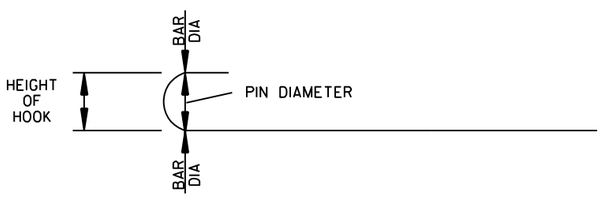
DETAILS OF PIPE UNDERDRAIN

STANDARD DRAWING PU-1

STEEL FABRICATION: REINFORCING STEEL FABRICATION SHALL CONFORM TO THE DIMENSIONS LISTED IN THE TABLE BELOW:

BAR SIZE	PIN DIAMETER	HOOK EXTENSION "K"
3	2¼"	4"
4	3 "	4½"
5	3¾"	5"
6	4½"	6"
7	5¼"	7"
8	6"	8"

IF THE OVERALL HEIGHT OF THE HOOK (SEE DIAGRAM BELOW) FOR A "b", "b1", "b2" or "b3" BENT BAR IS GREATER THAN THE CORRESPONDING TOP OR BOTTOM SLAB THICKNESS, LESS 2¾ INCHES, EACH BENT BAR SHALL BE REPLACED WITH ONE HOOKED BAR AND ONE STRAIGHT BAR, USING LENGTHS AS SHOWN IN THE TABLE BELOW. THE TWO BARS SHALL BE THE SAME DIAMETER AS, AND PLACED AT THE SAME SPACING AS, THE "b", "b1", "b2" OR "b3" BENT BARS THEY REPLACE.



NOTE: DIMENSIONS OF BARS ARE MEASURED OUT TO OUT OF BARS.

OVERALL HEIGHT OF HOOKED BAR DIAGRAM

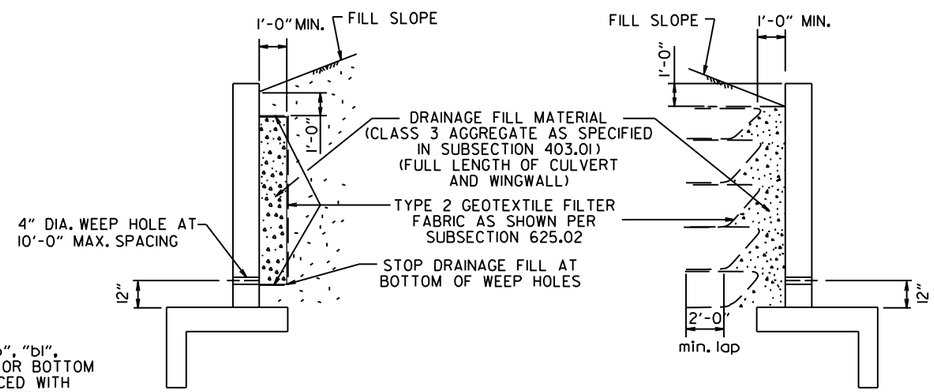
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

FOR SKEWED CULVERTS, THE REPLACEMENT STRAIGHT BAR MAY HAVE TO BE CUT IN FIELD TO FIT.

REPLACEMENT BAR LENGTHS TABLE

BAR SIZE: "b", "b1", "b2" OR "b3"	LENGTH OF HOOKED BAR	LENGTH OF STRAIGHT BAR
#4	L + 1' - 0"	SEE "c" BAR LENGTH
#5	L + 1' - 2"	SEE "c" BAR LENGTH
#6	L + 1' - 4"	SEE "c" BAR LENGTH
#7	L + 1' - 8"	SEE "c" BAR LENGTH
#8	L + 1' - 10"	SEE "c" BAR LENGTH
#9	L + 2' - 6"	SEE "c" BAR LENGTH

L = "OW" - 3 INCHES



WINGWALL & CULVERT DRAINAGE DETAIL

REINFORCED CONCRETE BOX CULVERT GENERAL NOTES

CONCRETE SHALL BE CLASS S WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI.

REINFORCING STEEL SHALL BE AASHTO M 31 OR M 53, GRADE 60.

CONSTRUCTION AND MATERIALS FOR WINGWALL & CULVERT DRAINAGE, INCLUDING WEEP HOLES AND GRANULAR MATERIAL, SHALL BE SUBSIDIARY TO THE BID ITEM, "CLASS S CONCRETE".

MEMBRANE WATERPROOFING SHALL CONFORM TO THE REQUIREMENTS OF SECTION 815 OF THE STANDARD SPECIFICATIONS.

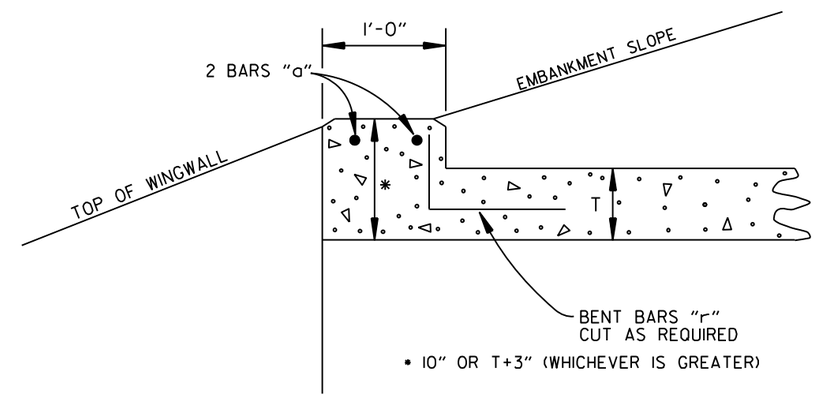
MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

REINFORCING STEEL TOLERANCES: THE TOLERANCES FOR REINFORCING STEEL SHALL MEET THOSE LISTED IN "MANUAL OF STANDARD PRACTICE" PUBLISHED BY CONCRETE REINFORCING STEEL INSTITUTE (CRSI) EXCEPT THAT THE TOLERANCE FOR TRUSS BARS SUCH AS FIGURE 3 ON PAGE 7-4 OF THE CRSI MANUAL SHALL BE MINUS ZERO TO PLUS ½ INCH.

WEEP HOLES IN BOX CULVERT WALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE BOTTOM SLAB.

WEEP HOLES IN WINGWALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THERE SHALL BE A MINIMUM OF TWO (2) WEEP HOLES IN EACH WINGWALL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE WINGWALL FOOTING.

THE REQUIREMENTS SHOWN ON THIS DRAWING SHALL SUPERCEDE THE CORRESPONDING REQUIREMENTS ON ALL REINFORCED CONCRETE BOX CULVERT STANDARD DRAWINGS.



NOTE: FOR ALL SKEWED R.C. BOX CULVERTS THE LENGTH "K" OF THE MODIFIED HEADWALL SHALL BE EQUAL TO THE ROADWAY LENGTH "RL". THE ENDS OF THE HEADWALL SHALL BE CONSTRUCTED PARALLEL TO THE SKEW ANGLE OF THE BOX CULVERT.

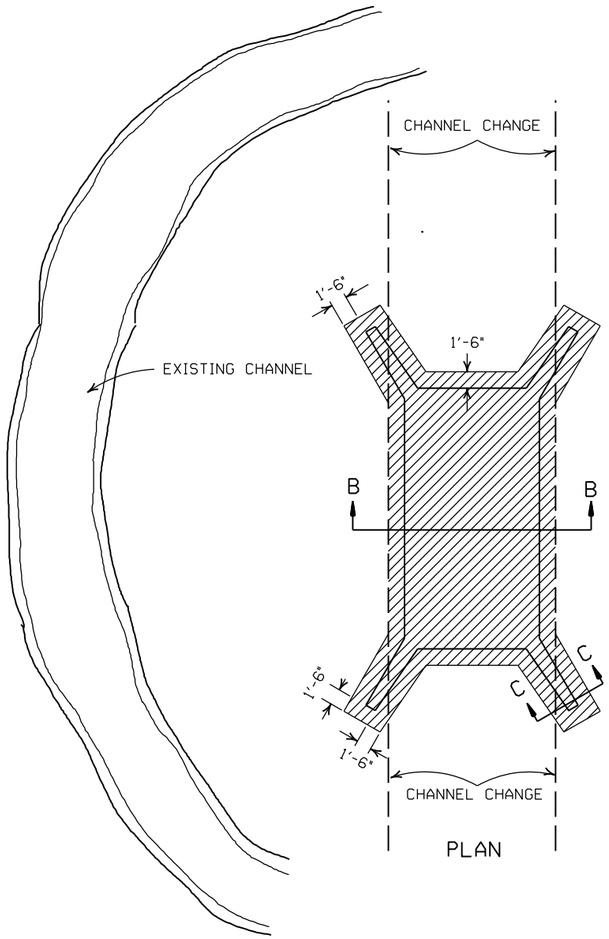
R.C. BOX CULVERT HEADWALL MODIFICATIONS

DATE	REVISION	DATE FILMED
7/26/12	REV. DRAINAGE FILL MATERIAL & DETAIL	
12/15/11	REQUIRE WEEP HOLES IN BOX CULVERT WALLS	
5-25-06	REV. GEN. NOTES AND DETAILS FOR WEEP HOLES; BAR DIAGRAM	
11-16-01	ADDED WINGWALL DRAINAGE DETAIL/EDITED GEN. NOTES	
10-18-96	REV. ASTM REF. TO AASHTO & ADDED BAR DIAGRAM	
10-12-95	MOVED SOLID SODDING DETAIL TO RCB-2	
6-2-94	ADDED SOLID SODDING PLAN DETAIL	
8-5-93	REVISED PIN DIAMETER TO SPECS.	
8-15-91	DRAWN AND ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

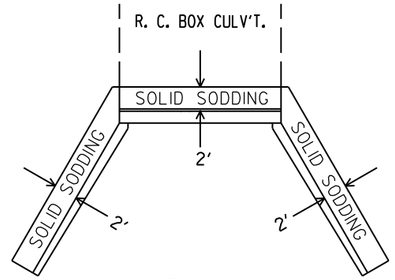
REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1



PLAN

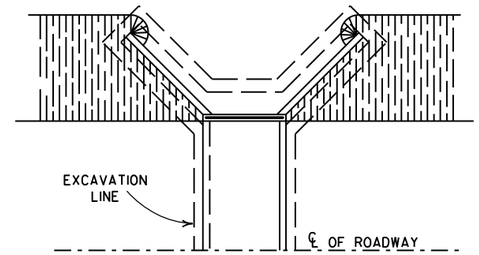
SOLID SODDING



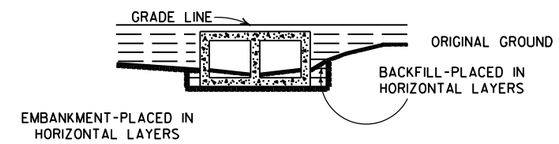
PLAN

PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

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

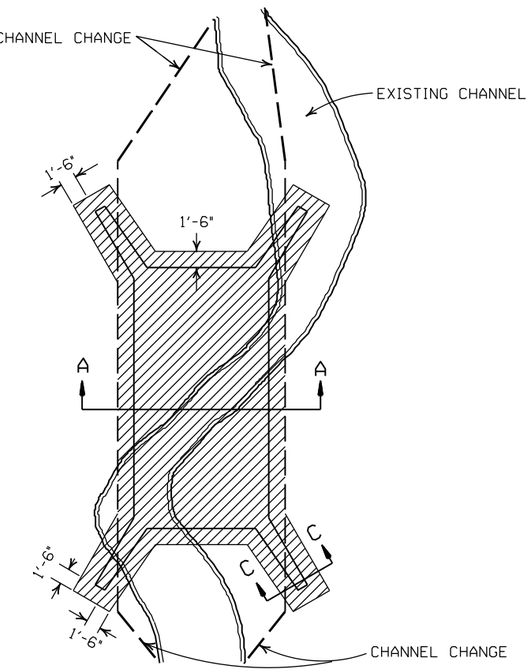


PLAN

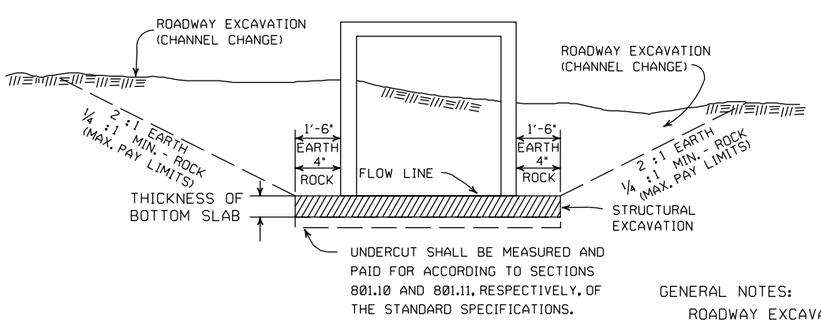


LONGITUDINAL SECTION

BACKFILL DETAILS FOR BOX CULVERT

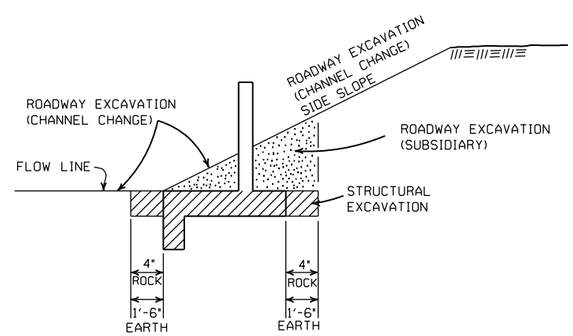


PLAN

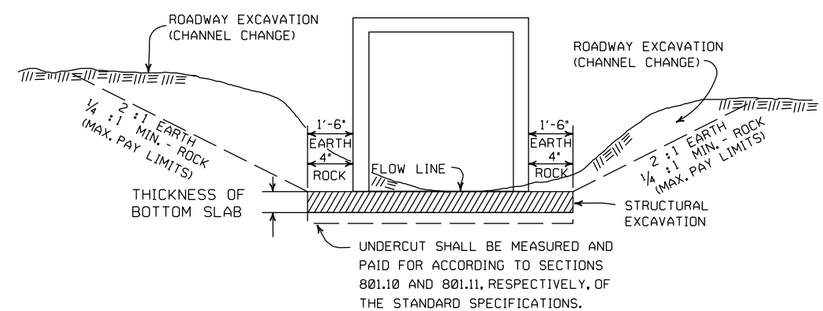


SECTION B-B

DETAILS FOR NEW CHANNELS



SECTION C-C



SECTION A-A

DETAILS THROUGH EXISTING CHANNELS

GENERAL NOTES:

ROADWAY EXCAVATION (CHANNEL CHANGE) WILL BE PAID FOR AT R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS ACTUALLY CUT AND WILL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS ABOVE THE FLOW LINE. ROADWAY EXCAVATION (CHANNEL CHANGE) SHALL BE MEASURED BY CROSS SECTIONS AND VOLUMES COMPUTED BY AVERAGE END AREA METHOD. ALL CHANNEL CHANGES SHALL BE BROUGHT TO GRADE PRIOR TO MAKING ANY EXCAVATION FOR STRUCTURES.

EXCAVATION FOR STRUCTURES WILL BE PAID FOR AT ALL R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS SHOWN AND SHALL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS BELOW THE CHANNEL FLOW LINE.

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

DATE	REVISION	FILMED
11-20-03	REVISED SECTION A-A NOTE	
8-22-02	REVISED SECTION B-B NOTE	
10-12-95	COMBINED 1891B AND 1888A	
1-4-83	REVISED GENERAL NOTES	674-1-4-83
	AND ADDED MAXIMUM PAY	
	LIMIT NOTES.	
2-2-76	EXCAV. PAY LIMITS	917-2-2-76
10-2-72	REVISED AND REDRAWN	564-10-16-72

ARKANSAS STATE HIGHWAY COMMISSION

EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS

STANDARD DRAWING RCB-2

SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC (4% MAXIMUM)

DEGREE OF CURVE	30 MPH e	30 MPH Ls (FT) MINIMUM	30 MPH Ls (FT) DESIRABLE
0° 15'	NC		
0° 30'			
0° 45'			
1° 00'			
1° 15'			
1° 30'			
1° 45'			
2° 00'			
2° 15'	RC	72	100
2° 30'			
2° 45'			
3° 00'			
3° 15'	0.022	75	
3° 30'			
3° 45'	0.024	79	
4° 00'			
4° 15'			
4° 30'			
4° 45'	0.026	83	
5° 00'			
5° 30'			
6° 00'	0.028	86	125
6° 30'			
7° 00'	0.030	90	
7° 30'			
8° 00'			
8° 30'	0.032	93	
9° 00'			
9° 30'			
10° 00'	0.034	97	
10° 30'			
11° 00'			
11° 30'			
12° 00'	0.036	100	
12° 30'			
13° 00'			
13° 30'			
14° 00'	0.038	104	
14° 30'			
15° 00'			
15° 30'			
16° 00'			
16° 30'	0.040	108	150

D MAX = 22° 45'

DEGREE OF CURVE	35 MPH e	35 MPH Ls (FT) MINIMUM	35 MPH Ls (FT) DESIRABLE
0° 15'	NC		
0° 30'			
0° 45'			
1° 00'			
1° 15'			
1° 30'			
1° 45'	RC	78	100
2° 00'			
2° 15'			
2° 30'	0.022	82	
2° 45'	0.024	86	125
3° 00'			
3° 15'			
3° 30'	0.026	90	
3° 45'			
4° 00'			
4° 15'	0.028	94	
4° 30'			
4° 45'	0.030	98	
5° 00'			
5° 30'	0.032	101	
6° 00'			
6° 30'	0.034	105	150
7° 00'			
7° 30'	0.036	109	
8° 00'			
8° 30'	0.038	113	
9° 00'			
9° 30'			
10° 00'			
10° 30'			
11° 00'			
11° 30'	0.040	117	

D MAX = 15° 15'

DEGREE OF CURVE	40 MPH e	40 MPH Ls (FT) MINIMUM	40 MPH Ls (FT) DESIRABLE
0° 15'	NC		
0° 30'			
0° 45'			
1° 00'			
1° 15'	RC	84	100
1° 30'			
1° 45'			
2° 00'	0.022	88	
2° 15'	0.024	92	
2° 30'	0.026	97	125
2° 45'			
3° 00'	0.028	101	
3° 15'			
3° 30'	0.030	105	
3° 45'			
4° 00'	0.032	109	150
4° 15'			
4° 30'	0.034	113	
4° 45'			
5° 00'	0.036	118	
5° 30'			
6° 00'	0.038	122	
6° 30'			
7° 00'			
7° 30'			
8° 00'	0.040	126	

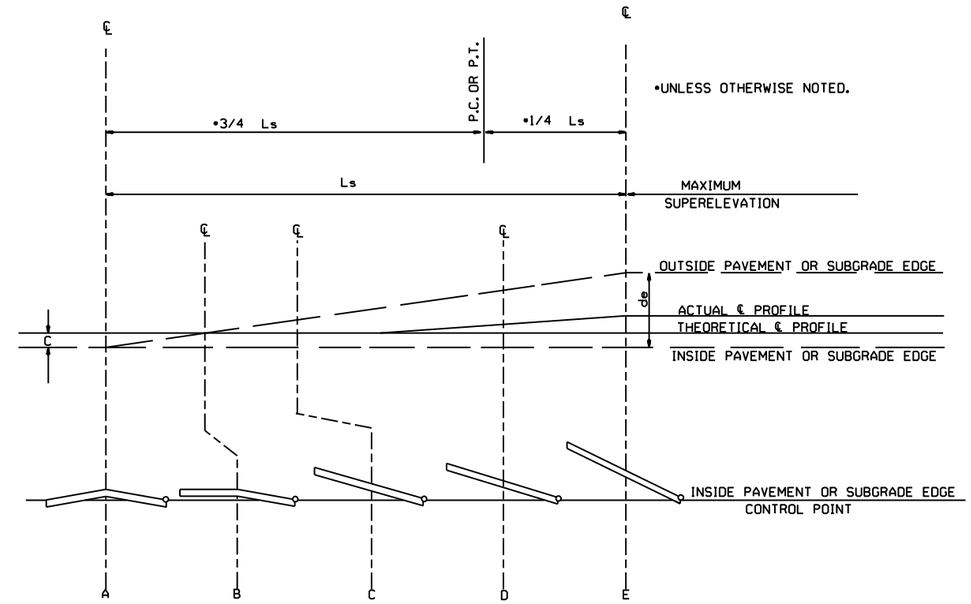
D MAX = 10° 30'

DEGREE OF CURVE	45 MPH e	45 MPH Ls (FT) MINIMUM	45 MPH Ls (FT) DESIRABLE
0° 15'	NC		
0° 30'			
0° 45'			
1° 00'	RC	90	125
1° 15'			
1° 30'	0.022	95	
1° 45'	0.024	99	
2° 00'	0.026	104	
2° 15'			
2° 30'	0.028	108	150
2° 45'	0.030	113	
3° 00'			
3° 15'	0.032	117	
3° 30'			
3° 45'	0.034	122	
4° 00'			
4° 15'			
4° 30'	0.036	126	
4° 45'			
5° 00'	0.038	131	
5° 30'			
6° 00'	0.040	135	

D MAX = 8° 00'

ABBREVIATIONS

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



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

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

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

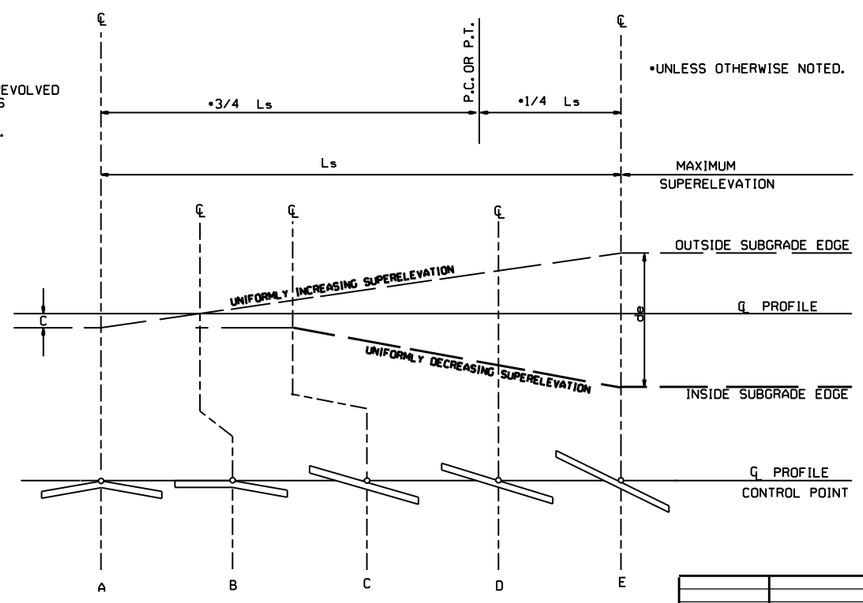
GENERAL NOTES

1. ON PAVEMENT WITH TWO-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE INSIDE PAVEMENT EDGE UNLESS OTHERWISE NOTED ON THE PLANS
2. SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES (+) OR (-) TO BE ADDED TO OR SUBTRACTED FROM THE POINT OF CONTROL.
3. LENGTHS FOR L MAY BE ROUNDED IN MULTIPLES OF 25 FT. OR 50 FT. TO PERMIT SIMPLER CALCULATIONS.
4. PAVEMENTS WIDER THAN 2 LANES SHALL HAVE ADDITIONAL TRANSITION LENGTHS AS FOLLOWS:

3 LANE UNDIVIDED - - - - - +20%
4 LANE UNDIVIDED - - - - - +50%
5 LANE UNDIVIDED - - - - - +80%
6 LANE UNDIVIDED - - - - - +100%

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

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



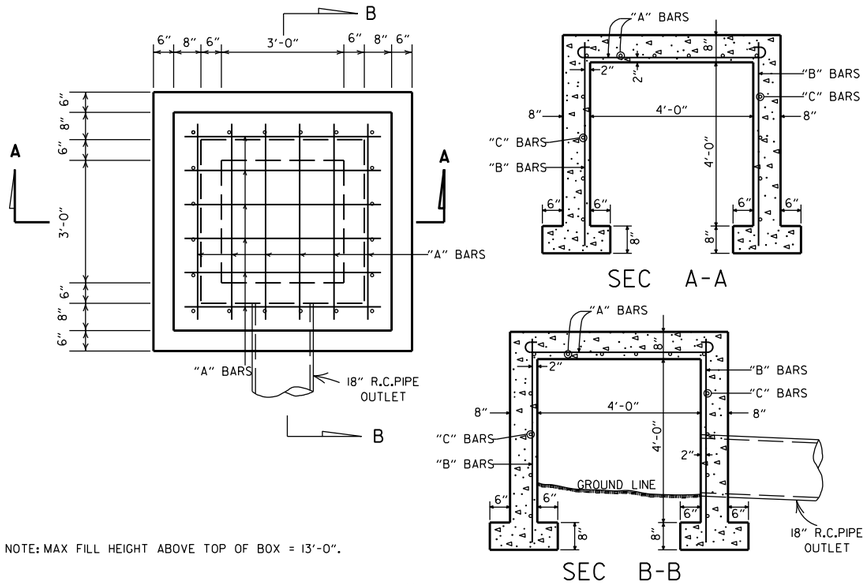
STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

DATE	REVISION	DATE FILMED
11-07-19	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC (4% MAXIMUM)

STANDARD DRAWING SE-3

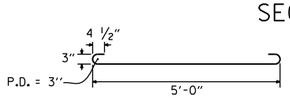


NOTE: MAX FILL HEIGHT ABOVE TOP OF BOX = 13'-0".

STEEL SCHEDULE

BARS	NUMBER	LENGTH	SPACING
"A"	12	6'-0"	10"
"B"	20	5'-0"	10 ½"
"C"	16	5'-0"	12"

ALL STEEL TO BE #4 BARS



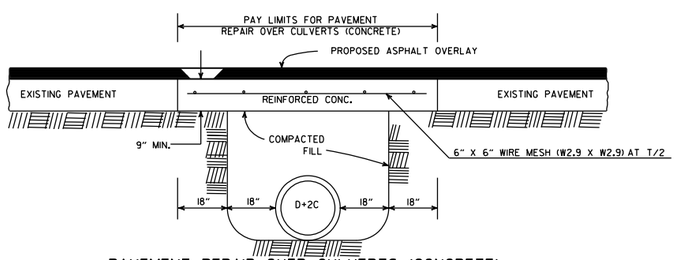
"A" BARS

QUANTITIES

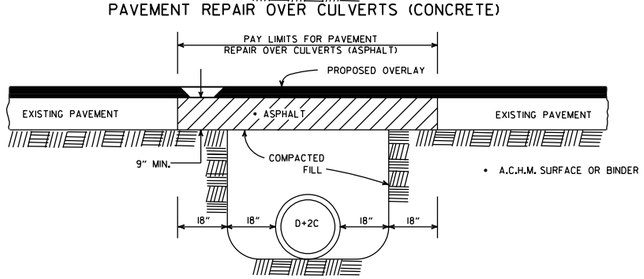
CONCRETE 3.31 CU. YDS.
REINFORCING STEEL 168 LB.

GENERAL NOTE:
THE PAY ITEMS FOR REINFORCED CONCRETE SPRING BOXES SHALL BE FOR THE QUANTITTIES OF CONCRETE OF THE CLASS SPECIFIED, REINFORCING STEEL, EXCAVATION FOR STRUCTURES AND 18" R.C. PIPE CULVERT.

REINFORCED CONCRETE SPRING BOX



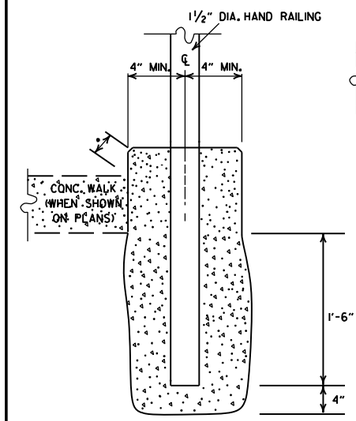
PAVEMENT REPAIR OVER CULVERTS (CONCRETE)



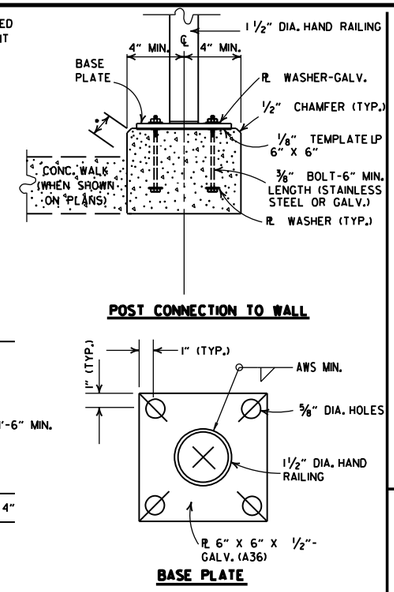
PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS

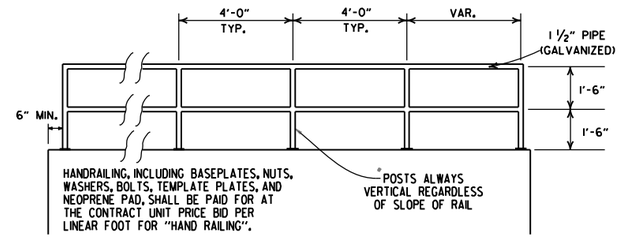
* A 2" MIN. HIGH CURB IS REQUIRED WHEN CONCRETE WALK IS ADJACENT TO THE HAND RAILING. PAYMENT FOR CURB SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR CONCRETE WALKS.



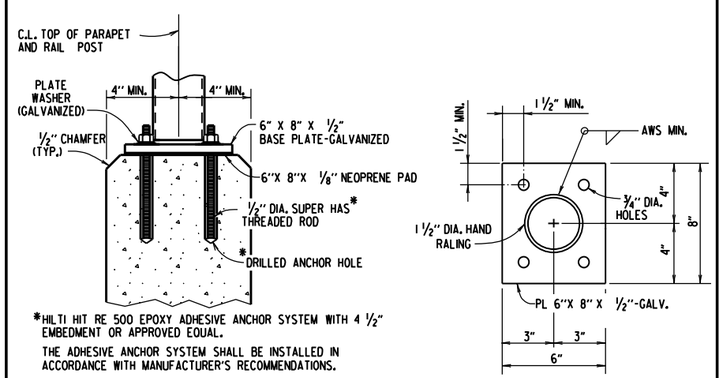
DETAIL OF HAND RAILING SET IN CONCRETE



POST CONNECTION DETAILS

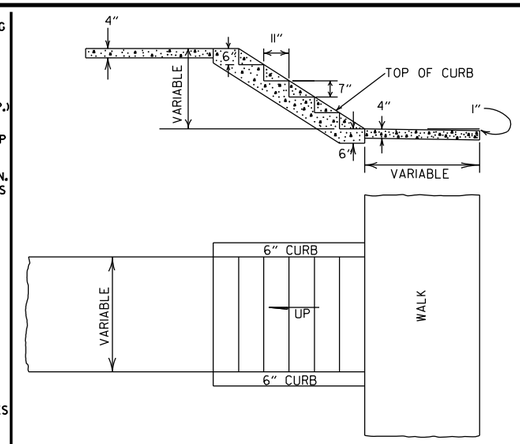


HAND RAILING SHALL CONFORM TO SECTION 633.



DETAILS OF ALTERNATE POST ANCHOR SYSTEM
(EPOXY ADHESIVE ANCHORS)

HAND RAILING DETAILS



GENERAL NOTES

1. RISE AND TREAD DIMENSIONS OF STEPS MAY BE VARIED AS DIRECTED BY THE ENGINEER, HOWEVER, TREAD WIDTHS SHALL BE 11" MIN. ALL STEPS IN A FLIGHT SHALL HAVE CONSISTENT TREAD & RISER DIMENSIONS.
2. 1" TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE WALKS AT 45' INTERVALS.

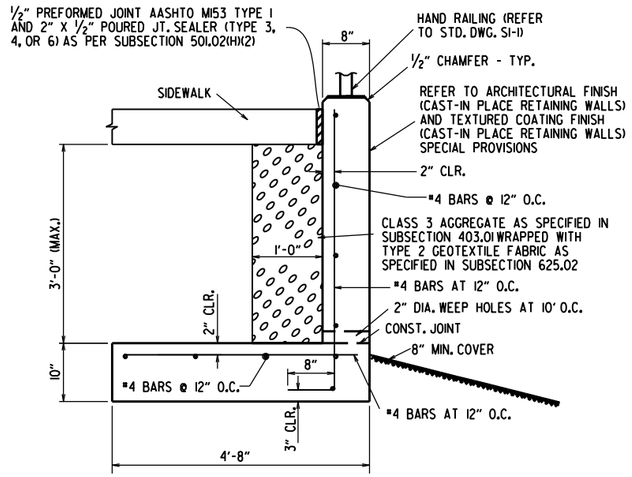
DETAILS OF CONCRETE STEPS & WALKS

DATE	REVISION	DATE FILMED
10-25-18	REVISED DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS	
9-12-13	REVISED REINFORCED CONCRETE SPRING BOX	
7-26-12	REMOVED RETAINING WALL DETAILS & REVISED HAND RAILING DETAILS	
4-17-08	REV. JOINT & FOOTING STEP DETAILS	
11-29-07	REVISED RETAINING WALL DRAINAGE	
5-25-06	REVISED PVMT REPAIR OVER CULVERTS (CONC); REVISED REINFORCED CONC SPRING BOX	
10-9-03	REVISED PIPE RAILING DETAILS TO HAND RAILING DETAILS	
4-10-03	REVISED RETAINING WALL DRAWING	
8-22-02	ADDED HAND RAILING DETAIL	
11-16-01	REVISED PVMT REPAIR OVER CULVERTS (CONC); CORRECTED SPELLING IN GENERAL NOTES	
11-18-98	ADDED GENERAL NOTES TO CONCRETE STEPS & WALKS	
7-02-98	ENLARGED PIPE	
4-03-97	ADDED NOTE TO STEEL BAR SCHED.	
10-18-96	CORRECTED SPELLING	
4-26-96	ADD WEEP HOLE;REV. JOINT SPACING IN RET. WALL	
6-2-94	CHANGED CONST. TO CONTRACTION JOINT	
10-1-92	CHANGED MESH FABRIC TO WIRE MESH	10-1-92
8-15-91	DELETED HDWL MODIFICATION DETAIL	8-15-91
11-8-90	DELETED COLD MIX FROM CULV'T. REPAIR	11-8-90
11-30-89	REV. RETAINING WALL STEEL SCHEDULE	11-30-89
11-17-88	V. BARS BEHIND ARROW	665-11-17-88
7-15-88	REV. PAVEMENT REPAIR ADDED HDWL. MODS. DEL. PIPE UNDERDRAINS	649-7-15-88
11-1-84	REV. TRENCH FOR PIPE UNDERDRAIN	510-11-1-84
1-4-83	ELIMINATED CONC. CLASS & ADDED CHAMFER NOTE	682-1-4-83
3-2-81	SPELLING OF "UNDERDRAIN"	721-3-2-81
4-20-79	REV. UNDERDRAIN DET& PAVEMENT REPAIR	674-4-20-79
2-2-76	12"MIN. GRAN. MAT'L. OVER PIPE	919-2-2-76
4-10-75	REM. SPECS. FOR GRAN. MAT'L.	568-4-10-75-853
5-22-74	GRANULAR MAT'L. TO BE SB-3	567-5-22-74-740
10-2-72	REVISED AND REDRAWN	564-10-16-72

ARKANSAS STATE HIGHWAY COMMISSION

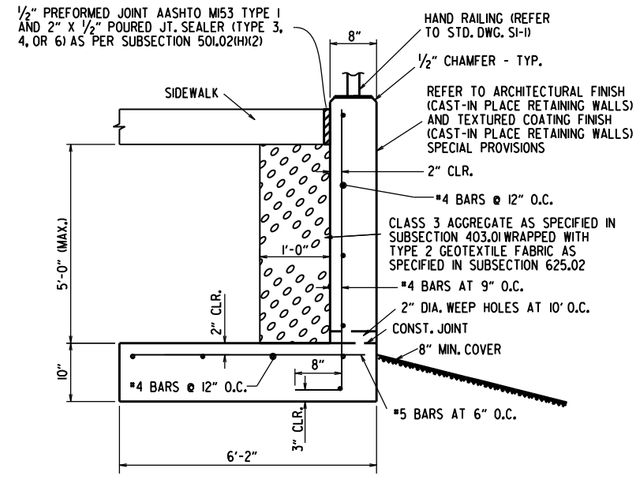
DETAILS OF SPECIAL ITEMS

STANDARD DRAWING SI-1



CONCRETE WALK (TYPE SPECIAL) DETAIL MAX HEIGHT 3'-0"

N.T.S.



CONCRETE WALK (TYPE SPECIAL) DETAIL MAX HEIGHT 5'-0"

N.T.S.

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: 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.

DESIGN SPECIFICATIONS: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SIXTH EDITION (2012).

LIVE LOAD: LIVE LOAD SURCHARGE IS NOT INCLUDED IN THE DESIGN OF THESE WALLS. VEHICULAR LIVE LOAD SHALL NOT BE ALLOWED WITHIN A DISTANCE EQUAL TO ONE-HALF THE HEIGHT OF THE WALL.

CONCRETE: CONCRETE SHALL BE POURED IN THE DRY AND ALL EXPOSED CORNERS TO BE CHAMFERED ½". ALL CONCRETE SHALL BE CLASS S WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH F'C = 3,500 PSI. A CLASS 2 SURFACE FINISH SHALL BE USED ON ALL SURFACES OF THE CONCRETE UNLESS OTHERWISE NOTED. REFER TO ARCHITECTURAL FINISH (CAST-IN PLACE RETAINING WALLS) AND TEXTURED COATING FINISH (CAST-IN PLACE RETAINING WALLS) SPECIAL PROVISIONS.

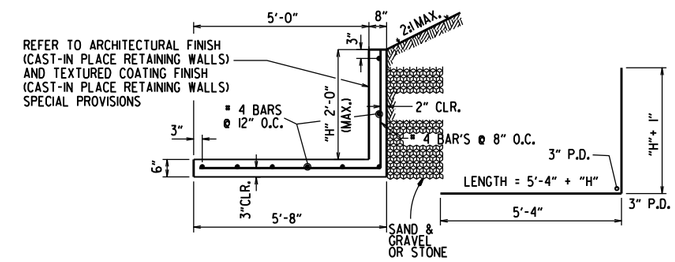
REINFORCING STEEL: ALL REINFORCING STEEL SHALL CONFORM TO AASHTO M31 OR M53, GRADE 60.

FOUNDATIONS FOR FOOTINGS SHALL BE PREPARED IN ACCORDANCE WITH SUBSECTION 801.04. BACKFILL FOR RETAINING WALLS SHALL BE IN ACCORDANCE WITH SUBSECTION 801.08.

WATERPROOF MEMBRANE (TYPE C), WATERSTOPS, PREFORMED JOINTS, PREFORMED JOINT FILLER, WEEP HOLES, CLASS 3 AGGREGATE, REINF. STEEL, CONCRETE, & GEOTEXTILE FABRIC SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO CONCRETE WALKS (TYPE SPECIAL).

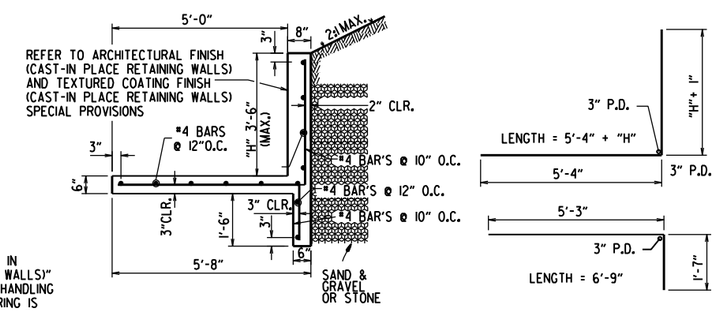
JOINTS IN THE WALL SHALL MATCH TYPE AND SPACING OF THE JOINTS IN THE WALK.

THESE DETAILS ARE NOT INTENDED FOR USE ALONG STREAMS OR DITCHES WITHOUT CONSIDERATION FOR SCOUR.



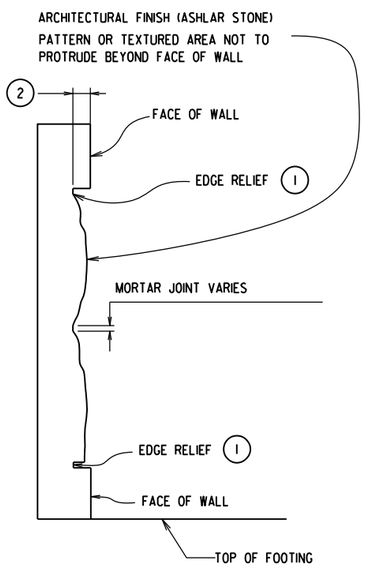
CONCRETE WALK (TYPE SPECIAL) DETAILS MAX HEIGHT 2'-0"

N.T.S.



CONCRETE WALK (TYPE SPECIAL) DETAILS MAX HEIGHT 3'-6"

N.T.S.

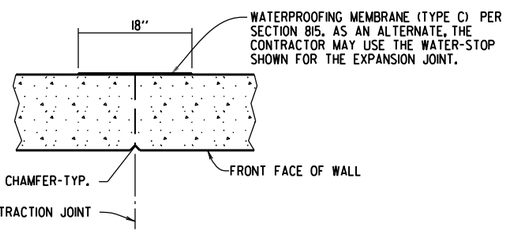


ARCHITECTURAL FINISH DETAILS

N.T.S.

1 PROVIDE EDGE RELIEF AROUND PERIMETER OF TEXTURE. EDGE RELIEF DIMENSIONS SHALL MATCH MANUFACTURERS EDGE DISTANCE.

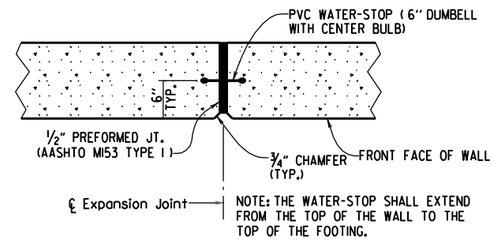
2 DEPTH OF ASHLAR STONE PATTERN APPROX. 1⅝". SEE SP "ARCHITECTURAL FINISH (CAST-IN PLACE RETAINING WALLS)".



TYPICAL CONTRACTION JOINT DETAIL

N.T.S.

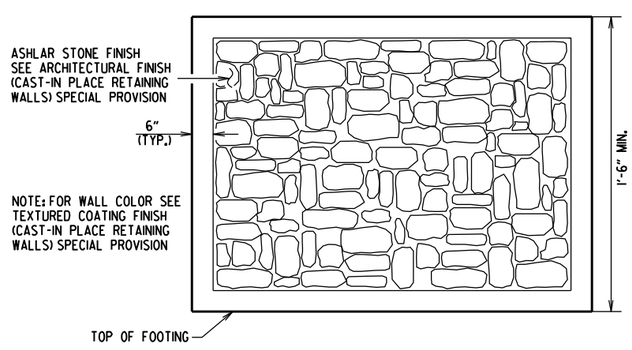
NOTE: 20'-0" MAX. SPACING BETWEEN CONTRACTION JOINTS. HORIZONTAL REINFORCEMENT SHALL BE CONTINUOUS THROUGH CONTRACTION JOINTS.



TYPICAL EXPANSION JOINT DETAIL

N.T.S.

NOTE: 60'-0" MAX. SPACING BETWEEN EXPANSION JOINTS. HORIZONTAL REINFORCING SHALL STOP 2" FROM ℄ EXPANSION JOINT.



ASHLAR STONE FINISH DETAIL

NOTES:

WALL PATTERN SHALL BE APPLIED TO THE EXPOSED SURFACES OF WALL IN ACCORDANCE WITH SP "ARCHITECTURAL FINISH (CAST-IN PLACE RETAINING WALLS)" AND AS SHOWN IN THE PLANS. CARE SHALL BE TAKEN WITH FORM LINER HANDLING AND INSTALLATION TO ENSURE AESTHETIC QUALITY OF THE WALL TEXTURING IS MAINTAINED. WHERE FORM LINER PANELS REQUIRE MODIFICATION TO CONFORM TO THE LOCATION, DIMENSIONS AND LINES SHOWN IN THE PLANS, THE CONTRACTOR SHALL PROVIDE EDGE RELIEF MATCHING THAT OF THE UNALTERED FORM LINER. PAYMENT FOR WALL TEXTURING SHALL BE IN ACCORDANCE WITH SP "ARCHITECTURAL FINISH (CAST-IN PLACE RETAINING WALLS)".

NO ADJUSTMENTS WILL BE MADE IN CONCRETE VOLUME DUE TO THE USE OF "ARCHITECTURAL FINISH". CLASS "S" CONCRETE SHALL BE MEASURED IN ACCORDANCE WITH SUBSECTION 802.24(A). CARE SHALL BE TAKEN IN PLACING CONCRETE TO AVOID SEGREGATION AND TO ELIMINATE FLOW LINES.

CLASS 3 TEXTURED COATING FINISH SHALL BE APPLIED TO WALL SURFACES AS SPECIFIED IN SP "TEXTURED COATING FINISH (CAST-IN PLACE RETAINING WALLS)" AND IN ACCORDANCE WITH SUBSECTION 802.19(B)(3).

DATE	REVISION	DATE FILMED
11-05-20	REVISED GENERAL NOTES	
5-14-20	DRAWING ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

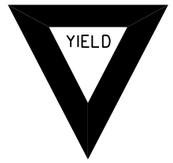
CONCRETE WALK (TYPE SPECIAL)

STANDARD DRAWING SI - 3

R1-1

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

R1-2



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

R2-1

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

W3-5

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

W3-5a

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

R4-1

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

R4-2

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

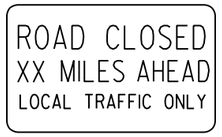
R5-1

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

R11-2

48"X30"

R11-3A



60"X30"

R11-4

60"X30"

W21-5a

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

W1-1

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

W1-2

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

W1-3

STD. 48"X48"

W1-4

STD. 48"X48"

W1-6

STD. 48"X24"
SPECIAL 60"X30"

W1-8

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

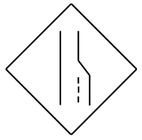
W3-1

STD. 36"X36"
SPECIAL 48"X48"

W3-2

STD. 36"X36"
SPECIAL 48"X48"

W4-2



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

W5-1

STD. 36"X36"
SPECIAL 48"X48"

W6-3

EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7

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

W9-2

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

W13-1

STD. 24"X24"

W20-1

STD. 48"X48"

W20-2

STD. 48"X48"

W20-3

STD. 48"X48"

W20-4

STD. 48"X48"

W20-5

STD. 48"X48"

W20-7a

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

W21-2

STD. 30"X30"
SPECIAL 36"X36"

W21-5

STD. 30"X30"
SPECIAL 36"X36"

W24-1

STD. 36"X36"

W1-4b

STD. 48"X48"

R56-1

STD. 18"X18"

W8-11

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

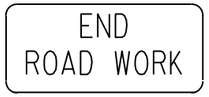
W8-9

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

G20-1

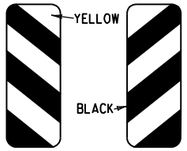
60"X24"

G20-2



48"X24"

OM-3L OM-3R



12"X36"

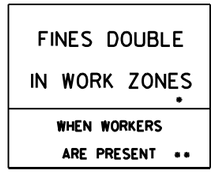
M4-9

STD. 30"X24"
SPECIAL 48"X36"
SPECIAL 60"X48"

M4-10

48"X18"

R55-1



36"X60"

• USE 6" C LETTERS
•• USE 4" D LETTERS

ADVANCE DISTANCES
(XXXX)

500 FT	½ MILE
1000 FT	¾ MILE
1500 FT	1 MILE
	AHEAD

GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION.

2. TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER.

3. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE KEPT IN PROPER POSITION, AND BE CLEAN AND LEGIBLE AT ALL TIMES. SIGNS THAT DO NOT APPLY TO EXISTING CONDITIONS SHALL BE REMOVED. SIGNS THAT ARE DAMAGED, DEFACED, OR THAT ACCUMULATE DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED.

• 4. SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 SQ. FT. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III BARRICADE.

• 5. SIGN POSTS DIRECT BURIED IN SOIL SHALL BE 2 LB. MINIMUM CHANNEL POST OR 4"x4" WOOD POSTS. CHANNEL POSTS SHALL BE PAINTED GREEN. WOOD POSTS SHALL BE PAINTED WHITE. ALL POSTS SHALL BE NEATLY CONSTRUCTED, AND SHALL BE REPLUMBED, CLEANED, OR REPAIRED AS NEEDED FOR THE DURATION OF THE JOB. THERE SHALL NOT BE MORE THAN 2 POSTS IN A 7' PATH FOR WOOD OR CHANNEL POSTS. ANY CHANNEL POST SPLICE SHALL BE IN ACCORDANCE WITH STANDARD DRAWING TC-3.

6. POST MOUNTED SIGNS IN RURAL AREAS SHALL BE CONSTRUCTED WITH THE NEAR EDGE OF THE SIGN FROM 6 TO 12 FEET FROM THE PAVEMENT EDGE. SIGNS IN URBAN AREAS AND BARRICADE MOUNTED SIGNS SHALL BE MOUNTED A MINIMUM OF 2 FEET FROM THE PAVEMENT EDGE.

7. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN URBAN AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN RURAL AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE, EXCEPT A MINIMUM OF 6' SHALL BE USED WHEN MOUNTING AN ADVISORY SIGN BELOW A WARNING SIGN. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE 5'. RETROREFLECTIVE DEVICES SHALL BE USED. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE CONDITIONS. THEY SHALL BE NO LESS THAN ONE (1) FOOT ABOVE THE TRAVELED WAY. LONG-TERM STATIONARY SIGNS SHALL BE DIRECT BURIED IN SOIL, UNLESS CONDITIONS NECESSITATE THE USE OF PORTABLE SIGNS, OR AS APPROVED BY THE ENGINEER. CONCRETE PADS, CONCRETE OR ROCK BALLAST, OR OTHER SOLID MATERIALS SHALL NOT BE UTILIZED WITH PORTABLE SIGN SUPPORTS.

8. FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.

9. MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT. HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER DIRECTION OF MOVEMENT.

10. R55-1 SIGNS SHALL BE PLACED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN.

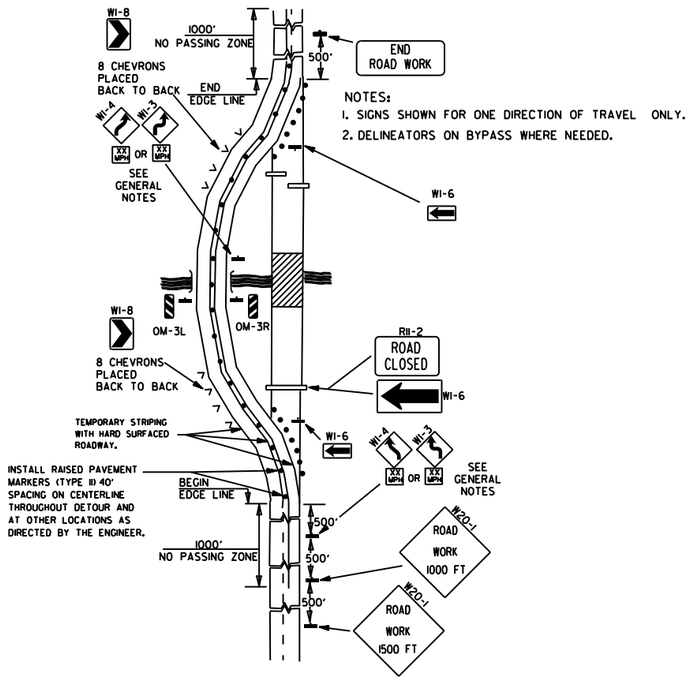
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED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

DATE	REVISION	FILMED
11-07-19	REVISED FOR MASH	
4-13-17	DELETED RSP-1 & ADDED W21-5a	
9-2-15	REVISED REDUCED SPEED LIMIT AHEAD SIGNS REVISED ROAD WORK NEXT XX MILES	
12-15-11	REVISED W24-1	
11-17-10	DELETED W8-9a & ADDED W8-9	
10-15-09	ADDED REFERENCE TO MASH & ADDED SIGN W24-1	
4-17-08	REVISED SIGN DESIGNATIONS	
11-18-04	REVISED NOTES	
10-9-03	REVISED NOTE 1	
11-16-01	REVISED NOTE 7	
9-28-00	REVISED NOTE	
11-18-98	ADDED NOTE	
6-26-97	REVISED NOTE 5	
4-03-97	REVISED NOTE 5	
10-18-96	ADDED CONTROLLED ACCESS HWY. SIGN & TO NOTE 7	
10-12-95	ADDED R55-1	
6-8-95	REVISED TO CORRECT SIGN ILLUSTRATIONS	6-8-95
2-2-95	REVISED PER PART VI, MUTCD SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

ARKANSAS STATE HIGHWAY COMMISSION

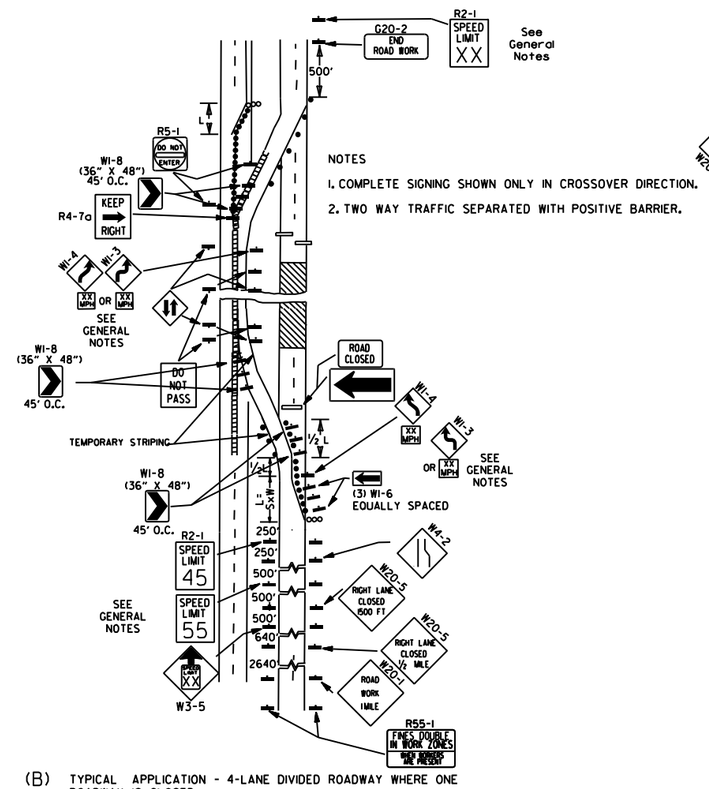
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



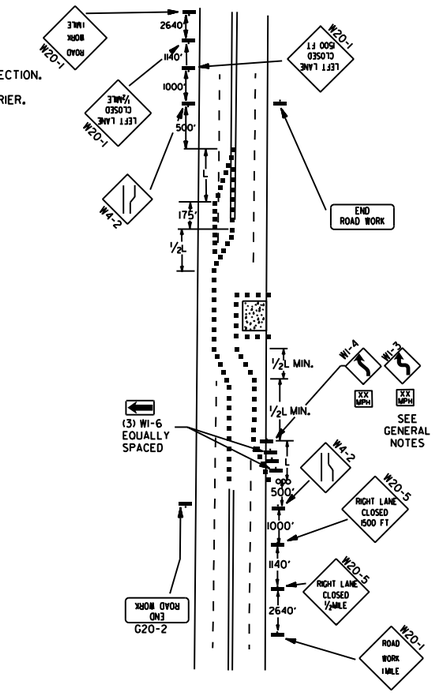
NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

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

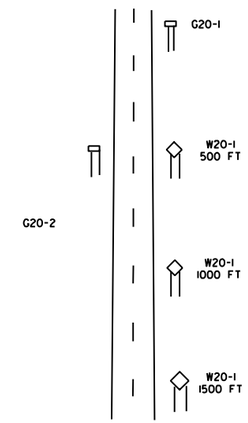


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

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

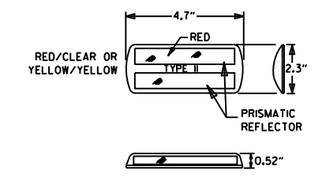


(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



TYPICAL ADVANCE WARNING SIGN PLACEMENT

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



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:

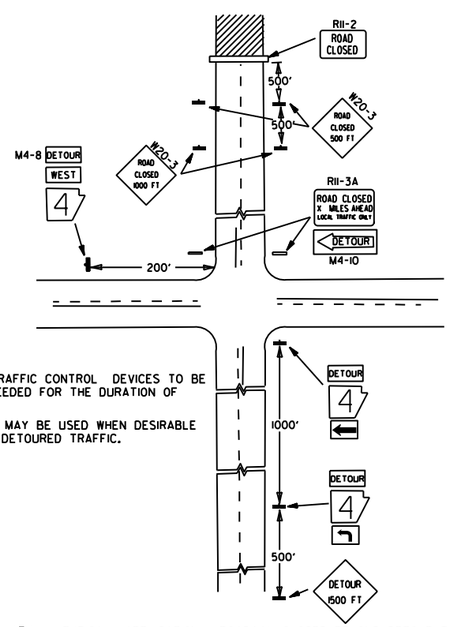
L= MINIMUM LENGTH OF TAPER.

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

W= WIDTH OF OFFSET.

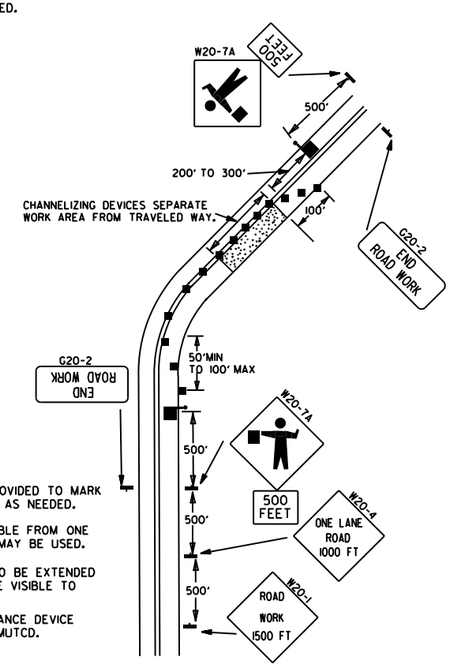
GENERAL NOTES:

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. PAYMENT FOR TRAFFIC DRUMS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR VARIOUS TRAILER MOUNTED DEVICES.
8. DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE ARDOT QUALIFIED PRODUCTS LIST.
9. ALL TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL MEET THE REQUIREMENTS OF THE MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).



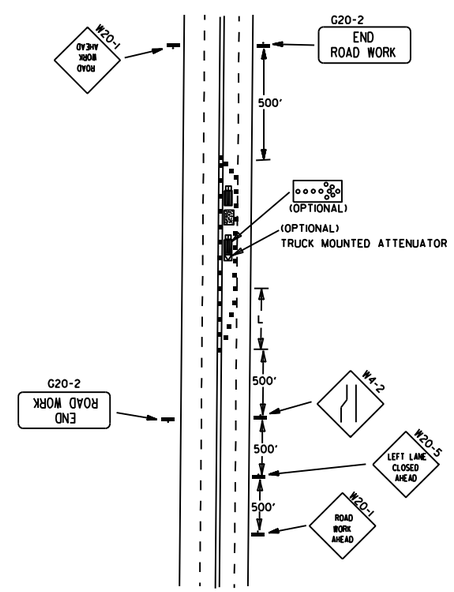
NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

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



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

(E) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON 2-LANE HIGHWAY WHERE ONE LANE IS CLOSED AND FLAGGING IS PROVIDED.



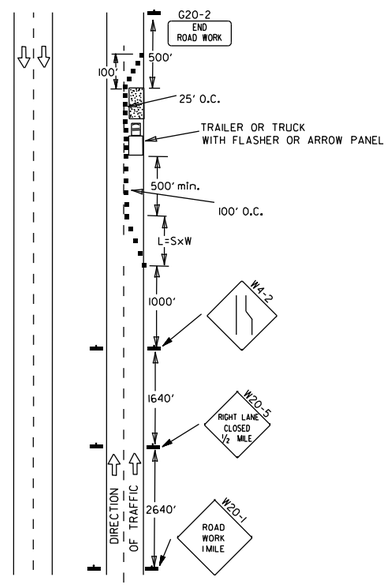
(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.

DATE	REVISION	FILMED
05-20-21	REVISED NOTE 7	
11-07-19	REVISED NOTE 1, ADDED NOTE 9	
9-2-15	REVISED NOTE 2, ADDED NOTE 8, REVISED DRAWING (A) & REPLACED R2-5A WITH W3-5	
9-12-13	REVISED DETAIL OF RAISED PAVEMENT MARKERS	
3-11-10	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (c) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON W1-4A	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

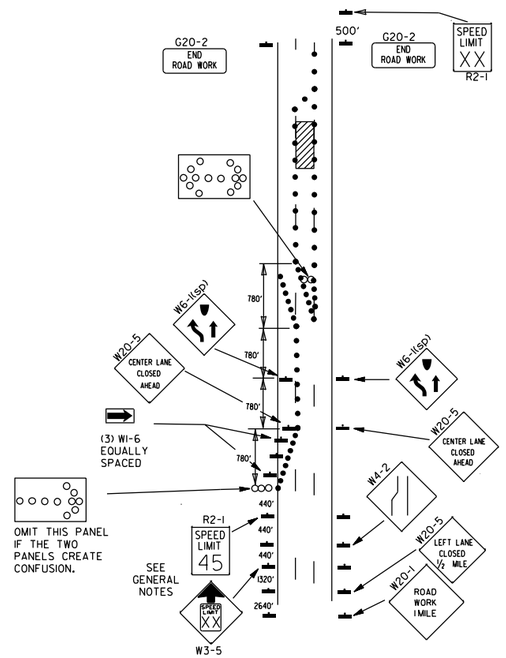
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-2



(A) TYPICAL APPLICATION - DAYTIME MAINTENANCE OPERATIONS OF SHORT DURATION ON A 4-LANE DIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



(B) TYPICAL APPLICATION - 3-LANE ONEWAY ROADWAY WHERE CENTER LANE IS CLOSED.

KEY:

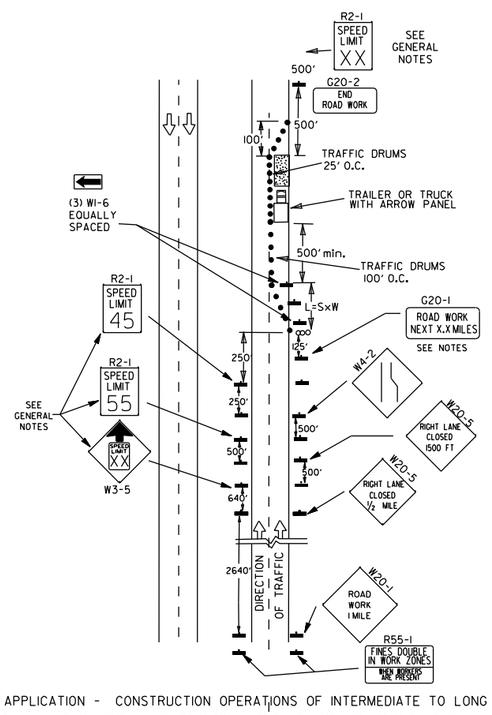
ooo ARROW PANEL (IF REQUIRED)

■ CHANNELIZING DEVICE

● TRAFFIC DRUM

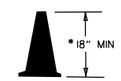
GENERAL NOTES:

1. A SPEED LIMIT REDUCTION MAY BE IMPLEMENTED ONLY WHEN DESIGNATED IN THE PLAN OR WHEN RECOMMENDED BY THE ROADWAY DESIGN DIVISION.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1 45MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(45) SHALL BE OMITTED. ADDITIONAL R2-1 55MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT OR AS DIRECTED BY THE ENGINEER.
5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
7. THE G20-1 SIGN WILL BE REQUIRED ON JOBS OF OVER TWO MILES IN LENGTH. WHEN THE LANE CLOSURE IS NOT AT THE BEGINNING OF THE PROJECT, THE G20-1 SIGN SHALL BE ERECTED 125' IN ADVANCE OF THE JOB LIMIT. ADDITIONAL W20-1 (1 MILE) SIGNS ARE NOT REQUIRED IN ADVANCE OF LANE CLOSURES THAT BEGIN INSIDE THE PROJECT LIMITS.
8. FLAGGERS SHALL USE STOP/SLOW PADDLES FOR CONTROLLING TRAFFIC THROUGH WORK ZONES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
9. ALL PLASTIC DRUMS AND CONES SHALL MEET THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
10. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER. WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE. PAYMENT FOR TRAFFIC DRUMS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR VARIOUS TRAILER MOUNTED DEVICES.
11. ALL TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL MEET THE REQUIREMENTS OF THE MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).



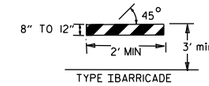
(C) TYPICAL APPLICATION - CONSTRUCTION OPERATIONS OF INTERMEDIATE TO LONG TERM DURATION ON A 4-LANE DIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.

CHANNELIZING DEVICES



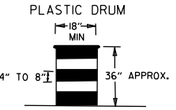
* WHEN CONES ARE USED ON FREEWAYS AND MULTI-LANE HIGHWAYS, THEY SHALL BE 28" MIN. DURING HOURS OF DARKNESS, 28" CONES SHALL BE USED ON ALL ROADWAYS, AND SHALL BE REFLECTORIZED IN ACCORDANCE WITH THE M.U.T.C.D.

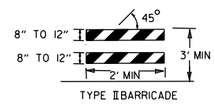
CONES



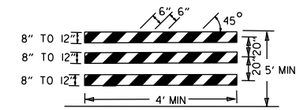
TYPE IBARRICADE

PLASTIC DRUM



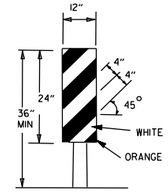


TYPE IIBARRICADE



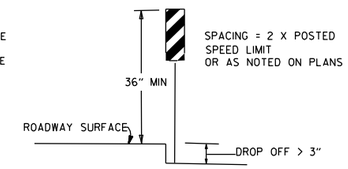
TYPE IIIBARRICADE

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

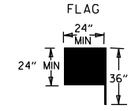


VERTICAL PANEL
VP-1R

VERTICAL PANEL PLACEMENT



FLAG



FLAG SHALL BE OF GOOD GRADE RED MATERIAL

TRAFFIC CONTROL DEVICES

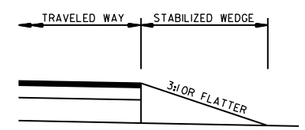
NON-INTERSTATE			
VERTICAL DIFFERENTIAL	LOCATION	TRAFFIC CONTROL	
		≤ 45 MPH	> 45 MPH
≤ 1"	CENTERLINE	W8-11	W8-11
> 1" ≤ 3"	CENTERLINE	W8-11 AND CENTERLINE LANE STRIPING	W8-11 AND CENTERLINE LANE STRIPING
> 3"	CENTERLINE	STANDARD LANE CLOSURE(6)	STANDARD LANE CLOSURE(6)
≤ 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9 AND TRAFFIC DRUMS(1)	W8-9 AND TRAFFIC DRUMS(1)
> 3" ≤ 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS(1)	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS(1)
> 6" ≤ 18"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS(1)	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS(2)
> 18" ≤ 24"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS(1)	A STABILIZED WEDGE, W8-17, EDGE LINE STRIPING AND TRAFFIC DRUMS(5)
> 24"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	PRECAST CONCRETE BARRIER(4) & EDGE LINES	PRECAST CONCRETE BARRIER(4) & EDGE LINES

INTERSTATE		
VERTICAL DIFFERENTIAL	LOCATION	TRAFFIC CONTROL
≤ 3"	CENTERLINE	W8-11 AND LANE STRIPING
≤ 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9, EDGE LINE STRIPING, AND TRAFFIC DRUMS(2)
> 3" ≤ 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS(2)
> 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	PRECAST CONCRETE BARRIER & EDGE LINES

INTERSTATE AND NON-INTERSTATE		
FORESLOPE	HEIGHT	TRAFFIC CONTROL
1:1	> 2 FT	PRECAST CONCRETE BARRIER
2:1	≤ 5 FT	TRAFFIC DRUMS
2:1	> 5 FT	PRECAST CONCRETE BARRIER
Flatter than 2:1	N/A	TRAFFIC DRUMS

GENERAL NOTES:

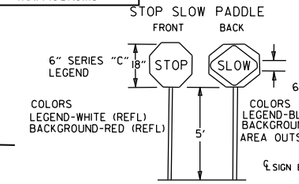
1. WHEN THE SHOULDER AREA IS USED AS PART OF THE TRAVELED LANE AND THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, THEN VERTICAL PANELS SHALL BE USED.
2. WHEN THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, A STABILIZED WEDGE SHALL BE USED.
3. PRECAST CONCRETE BARRIER WALL CAN BE USED IN LIEU OF A STABILIZED WEDGE, W8-17 SIGN, EDGE LINE STRIPING, AND TRAFFIC DRUMS, IF AND WHERE DIRECTED BY THE ENGINEER.
4. A STABILIZED WEDGE, W8-17 SIGN, EDGE LINE STRIPING, AND TRAFFIC DRUMS CAN BE USED IN LIEU OF PRECAST CONCRETE BARRIER WALL, IF AND WHERE DIRECTED BY THE ENGINEER.
5. W21-5, W21-5a, AND/OR W21-5b SIGNS SHALL BE USED WHERE THE ROADWAY IS UNOBSTRUCTED IF AND WHERE DIRECTED BY THE ENGINEER.
6. TIME LIMITATIONS MUST CONFORM TO SECTION 603 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).

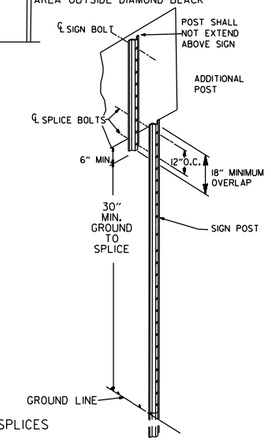


STABILIZED WEDGE

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

STOP SLOW PADDLE

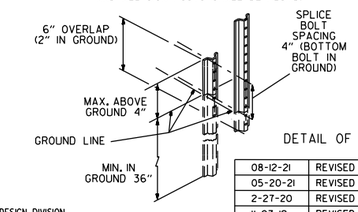




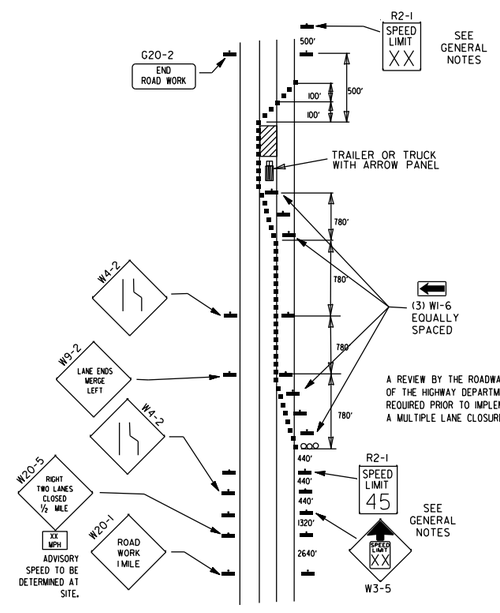
NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-21)

NORMAL INSTALLATIONS WILL REQUIRE 1/4" DIA. BOLTS TO MOUNT SIGNS TO POST AND 5/16" DIA. BOLTS TO ASSEMBLE THE VARIOUS POST SUPPORTS. EACH OF THESE BOLTS SHALL BE CARRIAGE BOLTS.

SIGN POSTS SHALL BE PAINTED GREEN; SIGNS SHALL NOT BE PAINTED, AND ALL SIGN POSTS SHALL BE PLUMB.



DETAIL OF SPLICES



A REVIEW BY THE ROADWAY DESIGN DIVISION OF THE HIGHWAY DEPARTMENT WILL BE REQUIRED PRIOR TO IMPLEMENTING A MULTIPLE LANE CLOSURE.

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

DATE	REVISION	FILMED
08-12-21	REVISED TRAFFIC CONTROL DEVICES AND NOTES	
05-20-21	REVISED NOTE 10	
2-27-20	REVISED TRAFFIC CONTROL DEVICES DETAILS	
11-07-19	REVISED NOTE 9, ADDED NOTE 11	
7-25-19	REVISED TRAFFIC CONTROL DEVICES DETAILS	
9-2-15	REVISED NOTE 2 & REPLACED R2-5A WITH W3-5	
10-15-09	ADDED REFERENCE TO MASH	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED NOTE	
10-1-98	ADDED NOTE	
4-03-97	ADDED (SP) TO W6-1& REVISED TRAFFIC CONTROL DEVICES NOTE	
10-18-96	ADDED R55-1	
10-12-95	MOVED UPPER SPLICE	
6-8-95	REVISED SPLICE DETAIL, TEXT	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

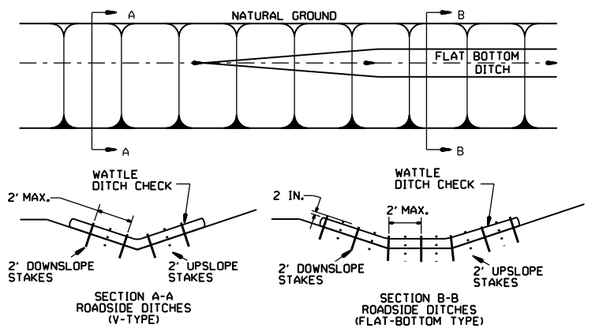
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

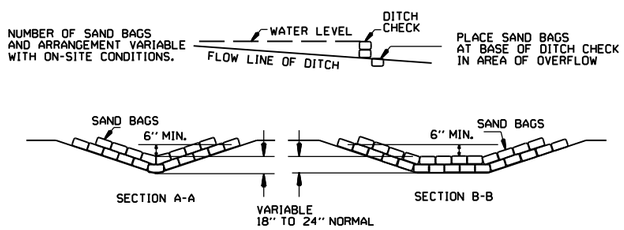
STANDARD DRAWING TC-3

GENERAL NOTES

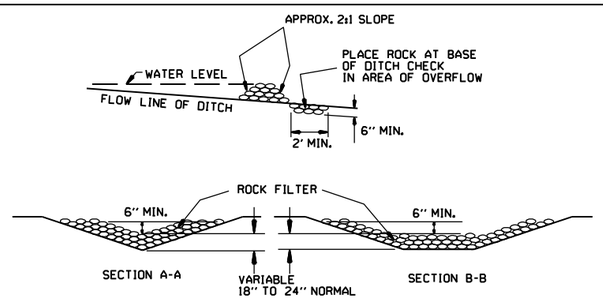
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



SAND BAG DITCH CHECK (E-5)

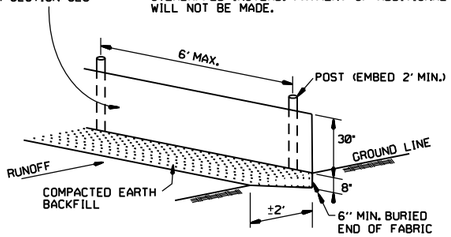


ROCK DITCH CHECK (E-6)

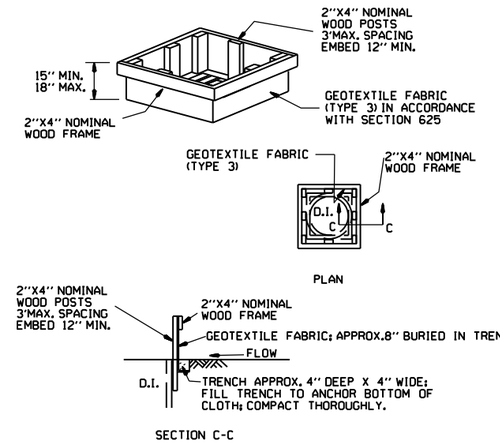
GENERAL NOTES

GEOTEXTILE FABRIC (TYPE 4) IN ACCORDANCE WITH SECTION 625

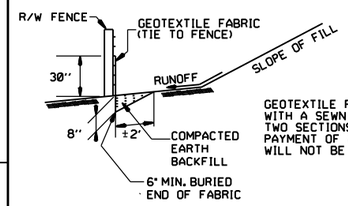
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.



SILT FENCE (E-11)

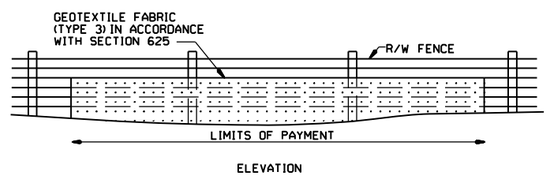


DROP INLET SILT FENCE (E-7)



GENERAL NOTES

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



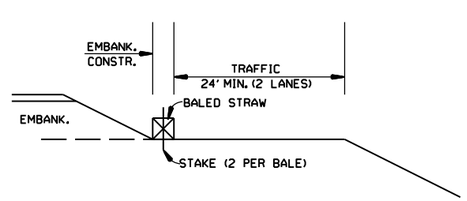
SILT FENCE ON R/W FENCE (E-4)

GENERAL NOTES

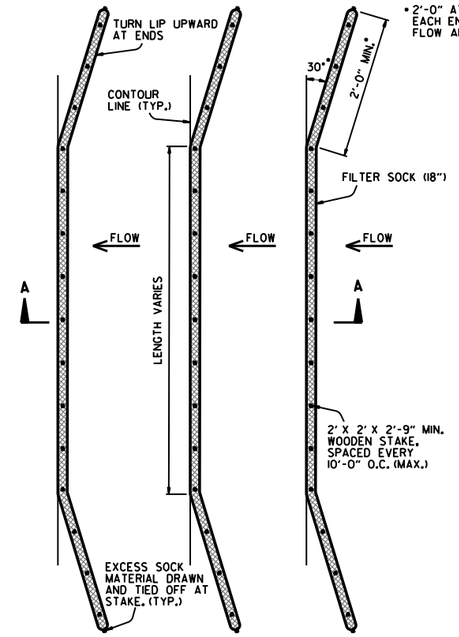
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

2. NO GAPS SHALL BE LEFT BETWEEN BALES.

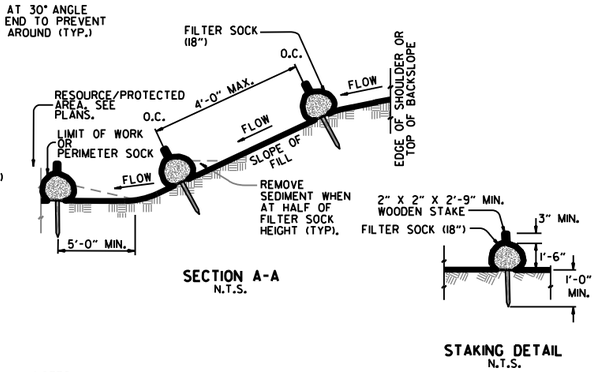
3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.



BALED STRAW FILTER BARRIER (E-2)



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.

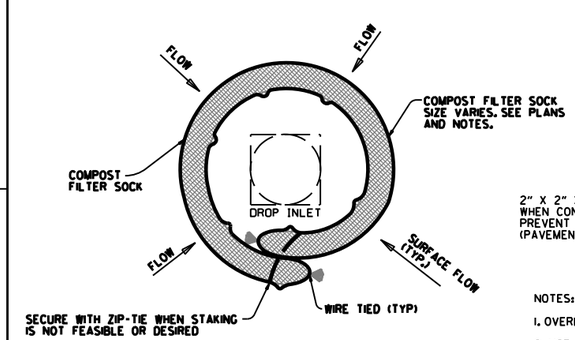
2. FILTER SOCKS ARE TYPICALLY SUPPLIED AND INSTALLED WITH 18 INCH DIAMETERS. DIAMETER TOLERANCE IS 2 INCHES, AS FILTER SOCKS TEND TO FLATTEN OUT WHEN PLACED.

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")."

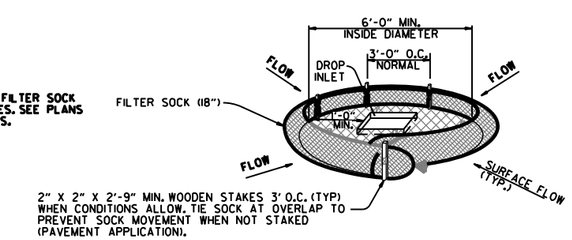
4. FILTER SOCKS MAY BE UP TO 250 FEET LONG. WHEN USED ON LONG SLOPES, FILTER SOCKS MAY BE JOINTED OR STAGGERED AS SHOWN IN DETAILS.

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

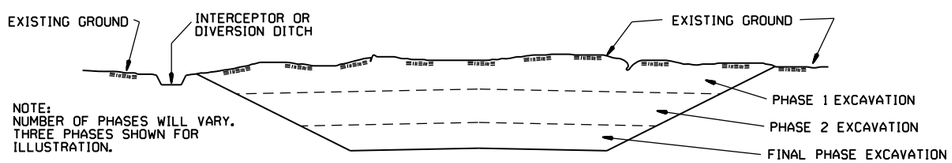
STANDARD DRAWING TEC-1

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



NOTE:
NUMBER OF PHASES WILL VARY. THREE PHASES SHOWN FOR ILLUSTRATION.

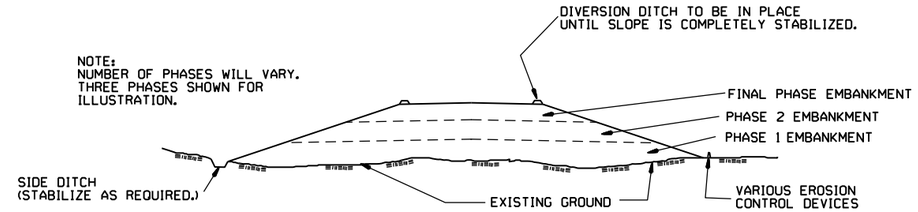
GENERAL NOTE

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



NOTE:
NUMBER OF PHASES WILL VARY. THREE PHASES SHOWN FOR ILLUSTRATION.

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

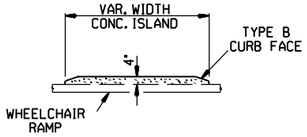
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD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

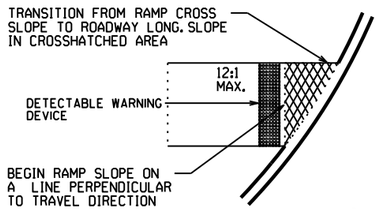
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3



CONCRETE ISLAND DETAIL



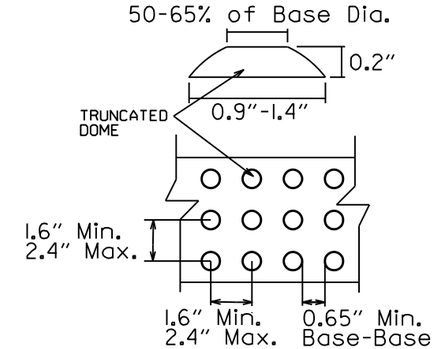
SLOPE TRANSITION DETAILS

TYPE 1 RAMP DIMENSIONS AND QUANTITIES

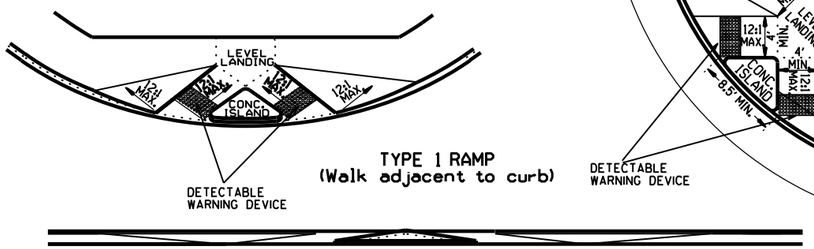
RADIUS "R" FEET	DISTANCE "X" FEET	DISTANCE "Y" FEET	LENGTH "L" FEET	RAMP AREA "A" SQ. YD.
15	11.67	18.82	32.18	26.21
20	11.52	22.28	35.46	30.07
25	11.43	26.60	38.77	33.80
30	11.37	30.26	40.93	36.90
35	11.33	33.51	43.11	39.77
40	11.30	36.45	45.26	42.45
45	11.27	39.16	47.34	44.97
50	11.25	41.69	49.36	47.35
55	11.24	44.07	51.31	49.63
60	11.22	46.33	53.21	51.80

GENERAL NOTES FOR DETECTABLE WARNING DEVICES

THE DETECTABLE WARNING DEVICE SHALL BE LOCATED SO THAT THE NEAREST EDGE OF THE DEVICE IS 6 TO 8 INCHES FROM THE FACE OF THE CURB.
TRUNCATED DOMES IN THE DETECTABLE WARNING SURFACE SHALL MEET THE REQUIREMENTS OF THE GEOMETRIC CONFIGURATION SHOWN.
DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT DIRECTION OF TRAVEL TO PERMIT WHEELS TO ROLL BETWEEN DOMES.
DETECTABLE WARNING DEVICE SHALL BE 24 INCHES IN THE DIRECTION OF TRAVEL AND EXTEND THE FULL WIDTH OF THE CURB RAMP OR FLUSH SURFACE.
DETECTABLE WARNING DEVICE SHALL BE ON THE ARDOT QUALIFIED PRODUCTS LIST FOR CAST-IN-PLACE TACTILE PANELS (ADA DETECTABLE WARNING).

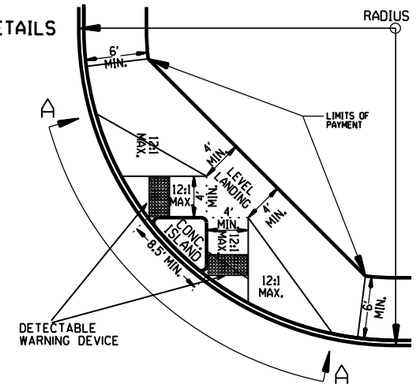


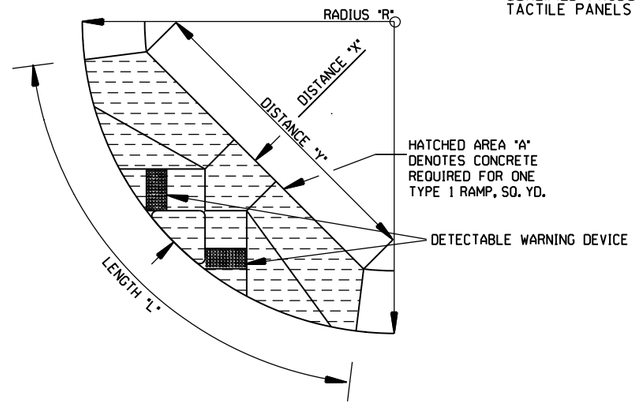
DETECTABLE WARNING DEVICE DETAIL



TYPE 1 RAMP
(Walk adjacent to curb)

SECTION A-A





GENERAL NOTES:

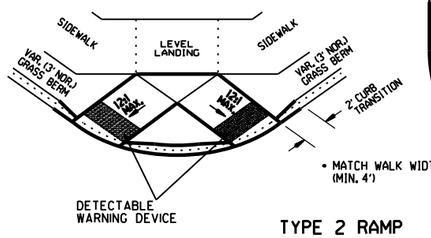
IN NEW CONSTRUCTION, UNLESS OTHERWISE INDICATED ON THE PLANS, WHEELCHAIR RAMPS ARE TO BE PROVIDED AT ALL CORNERS OF CURBED STREET INTERSECTIONS AND MID-BLOCK CROSSWALK LOCATIONS.
IN ALTERATIONS WHEELCHAIR RAMPS ARE TO BE PROVIDED AT CURBED STREET INTERSECTIONS WITH PEDESTRIAN TRAFFIC AND MID-BLOCK CROSSWALK LOCATIONS.

THE LENGTH OF THE RAMP SHALL BE SUCH THAT THE SLOPE DOES NOT EXCEED 12:1. THE SURFACE TEXTURE OF THE RAMP SHALL CONFORM TO A CLASS 6 FINISH ACCORDING TO SECTION 802.19.

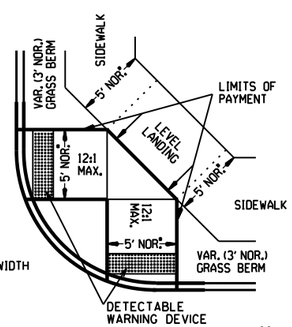
THE NORMAL GUTTER GRADE SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP.
ALL PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION.
THE MINIMUM THICKNESS OF THE RAMP, WALK, & LANDING SHALL BE 4".
THE MINIMUM WIDTH OF THE RAMPS SHALL BE THE WALK WIDTH OR 36", WHICHEVER IS GREATER.

RAMPS SHALL BE MODIFIED AS NECESSARY TO INSURE THAT THEY ARE PARALLEL TO A LINE DRAWN FROM THE CENTER OF ONE RAMP TO THE CENTER OF THE RAMP ON THE OPPOSITE SIDE OF THE INTERSECTION.

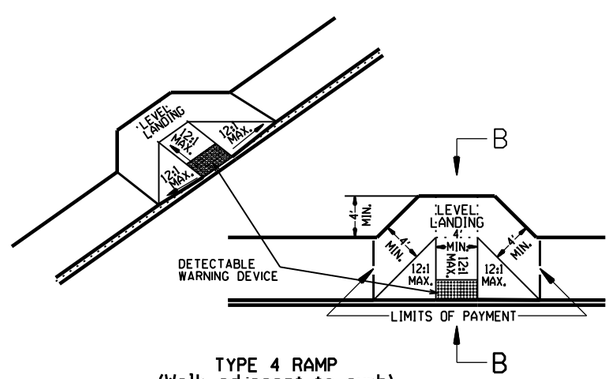
THE DIMENSIONS AND QUANTITIES SHOWN ON THIS DRAWING ARE FOR A 90° INTERSECTION ONLY. DIMENSIONS AND QUANTITIES FOR SKEWED INTERSECTIONS WILL VARY, AND ARE TO BE DETERMINED BY THE ENGINEER.



TYPE 2 RAMP



NOTE:
THE CROSS SLOPE OF THE RAMPS, LEVEL LANDINGS, AND SIDEWALKS SHALL NOT EXCEED 2.0% UNLESS REQUIRED TO MATCH STREET LONGTITUDINAL GRADE.



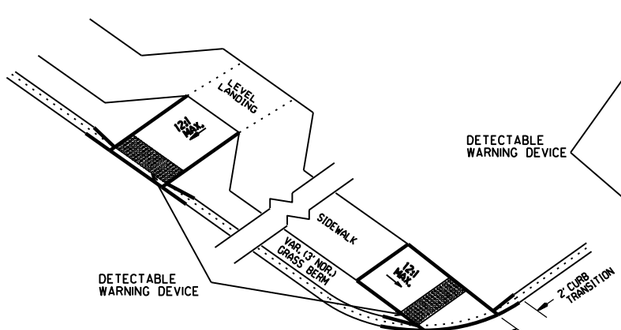
TYPE 4 RAMP
(Walk adjacent to curb)

RAMP SELECTION CRITERIA

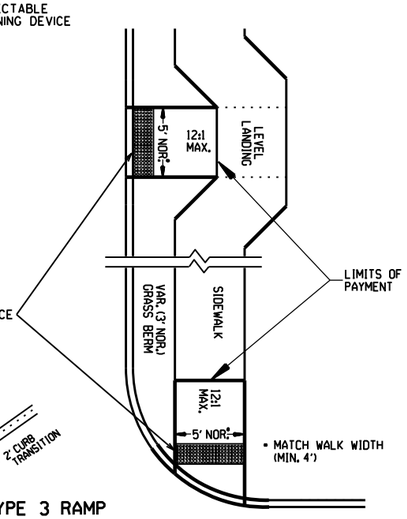
FIRST CHOICE	TYPE 1	CORNER LOCATIONS WITH THE WALK ADJACENT TO THE CURB (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 2	CORNER LOCATIONS WITH THE WALK OFFSET FROM THE CURB A DISTANCE INSUFFICIENT TO ALLOW THE REQUIRED RAMP SLOPE (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 3	CORNER LOCATIONS WITH THE WALK OFFSET FROM THE CURB A DISTANCE SUFFICIENT TO ALLOW THE REQUIRED RAMP SLOPE (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 4	TANGENT LOCATIONS (BOTH NEW CONSTRUCTION AND ALTERATIONS).
SECOND CHOICE	TYPE 5	TANGENT LOCATIONS (ALTERATIONS ONLY).
THIRD CHOICE	TYPE 6	CORNER LOCATIONS (ALTERATIONS ONLY). THIS RAMP MAY BE USED ONLY IF THE TYPE 5 RAMPS CANNOT BE PLACED AT THE ENDS OF THE RADIUS.
FOURTH CHOICE		IF SITE CONSTRAINTS PREVENT THE CONSTRUCTION OF ANY OF THE TYPES LISTED, THEN AND ONLY THEN CAN THE 12:1 MAX. SLOPE ON THE RAMP BE EXCEEDED TO PROVIDE ACCESS TO THE STREET LEVEL (ALTERATIONS ONLY). THE SLOPE CAN BE STEEPENED TO A 10:1 MAX. FOR A MAX. LENGTH OF 5' OR A 8:1 MAX. FOR A MAX. LENGTH OF 2'. SLOPES STEEPER THAN 8:1 ARE NOT ALLOWED UNDER ANY CIRCUMSTANCES.

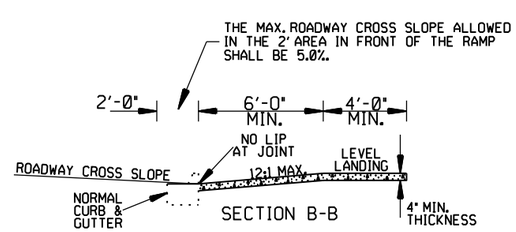
NOTE: IN ALTERATIONS, THE SELECTION OF THE TYPE OF WHEELCHAIR RAMP TO BE CONSTRUCTED SHALL BE BASED ON THE AMOUNT OF RIGHT-OF-WAY AVAILABLE, AND ON THE PRESENCE OF OTHER SITE CONSTRAINTS (UTILITIES, BUILDINGS, ETC.). THE TABLE ABOVE LISTS THE ORDER IN WHICH THE RAMPS ARE TO BE CONSIDERED.

AN ALTERATION IS DEFINED AS A PROJECT THAT CHANGES OR AFFECTS THE USE OF A PEDESTRIAN PATHWAY (OVERLAYS, SIGNALIZATION PROJECTS, ETC.) BUT DOES NOT REQUIRE THE PURCHASE OF ADDITIONAL RIGHT-OF-WAY. ALL PROJECTS THAT REQUIRE THE PURCHASE OF ADDITIONAL RIGHT-OF-WAY WILL USUALLY BE CONSIDERED NEW CONSTRUCTION FOR THE PURPOSES OF THE CHART ABOVE.



TYPE 3 RAMP





SECTION B-B

DATE	REVISION	DATE FILM
11-10-05	REVISED TO NEW SIDEWALK POLICY	
10-9-03	REVISED GEN. NOTES & ADDED NOTE	
4-10-03	REV. DETECTABLE WARNING DEVICES	
8-22-02	ADD DETECTABLE WARNING DEVICES	
3-30-00	ADD. SLOPE TRANS. & REV. ISL. DIMS.	
11-18-98	REVISED NOTES	
8-12-98	REVISED TEXTURE	
7-02-98	REDRAWN & REISSUED	
10-18-96	CORRECTED DIMENSIONS	10-18-96
5-24-90	FROM 8:1 TO 12:1 MAX. SLOPES	5-24-90
7-15-88	ADJUSTED MAX. SLOPE	652-7-15-88
7-14-88	INCLUD. "CONC. ISLD." IN PAY ITEM	------
6-02-76	ISSUED-P.H.D.	299-7-28-76

ARKANSAS STATE HIGHWAY COMMISSION

WHEELCHAIR RAMPS
NEW CONSTRUCTION
AND ALTERATIONS

STANDARD DRAWING WR-1